

KD11K/KU11L

MICRODIAGNOSTICS
MD-11-DQKUB-A

EPDQKUB-A-DL-A
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FICHE 1 OF 3

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This page contains a grid of 120 small diagnostic charts and tables, arranged in 10 rows and 12 columns. Each cell contains technical data, including waveforms, bar graphs, and alphanumeric codes, used for microdiagnostics. The charts are organized into several sections, with some larger charts on the left side and smaller ones on the right. The data is presented in a structured, grid-like format, typical of technical documentation for hardware diagnostics.

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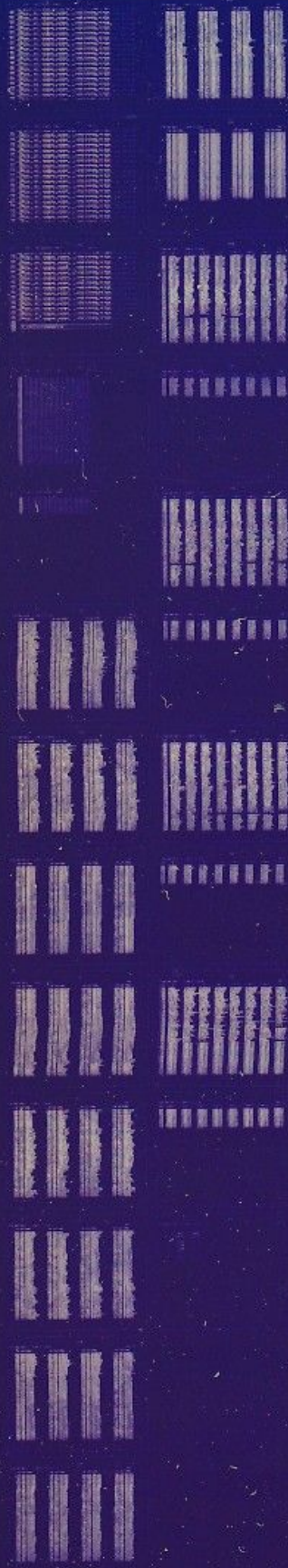
This microfiche card contains a grid of 14 columns and 18 rows of tiny data frames. Each frame contains technical information, likely diagnostic data for a computer system, including various alphanumeric strings and small tables. The text is too small to read in detail but appears to be organized into a structured format across the entire card.

KD11-K

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DOKUB-A-LA
PRODUCT NAME: KD11-K MICRODIAGNOSTIC
MAINTAINER: DIAGNOSTIC ENGINEERING
AUTHOR: DON NORTH
DATE CREATED: 18-JANUARY-1977
LAST REVISION: 18-JANUARY-1977

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719	--	NO BUT

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878	--	<NEXT-PAGE>-NEW PAGE ADDRESS LOADED DURING BUT(SUBROUTINE)
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1052	--	SPECIAL DCS FIELDS
1056	--	FIELDS USED IN PAGES 4, 5, OR 6 OF DCS
1059	--	<LOAD-DCS-CTR>-LOAD DIAGNOSTIC COUNTER FROM EMITH
1072	--	<CTR>-4 BIT DCS COUNTER VALUE FROM EMIT
1096	--	<LOAD-ENUA-ERRCOD>-LOAD THE ENUA AND ERRCOD REGISTERS
1106	--	<ENUA>-ENUA VALUE FROM EMIT
1113	--	<VERIFY>-VERIFY BIT FOR SELF CHECK TEST
1125	--	FIELDS USED IN PAGE 7 OF DCS EXTENSION
1128	--	<EOP>-SIGNAL SUCCESSFUL END OF PASS
1137	--	<DAD>-DCS CONTROL OF BASE MACHINE EXTENSION DAD BITS
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1849	--	DATA INTO ASP, BSP, AT P2-T * P3
2055	--	D AND SR <- (BUS-A FCN BUS-B), AT P2-T OR P3-T
2098	--	DIC GETS SET
2116	--	D-REGISTER <- (DBUS = ABUS), BITWISE, AT P2-T OR P3-T
2153	--	D-REGISTER <- D-REGISTER THRU SHIFT-TREE
2187	--	D <- WHATEVER'S LEFT, AT P2-T OR P3-T
2234	--	SR <- DATA, AT P2 T OR P3 T
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2364	--	CACHE/KT UCON FUNCTIONS
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2602	--	TEST001-007: NUA SEQUENCING
2775	--	TEST010-011: MICROSUBROUTINE OPERATION
2906	--	INIT REGISTERS, CONSOLE DEFAULT ERROR DISPLAY, REVISION CODE
2996	--	TEST012-050: IR DECODE (INSTRI, INSTRS, FLTPT, RELATED "BUTS")
5139	--	TEST101: D -> DBUF -> IR PATH
5188	--	TEST102-104: TESTING CSP ADDRESS/READ/WRITE FUNCTIONS
5573	--	TEST105: SR CAN LOAD/STORE AS A REGISTER

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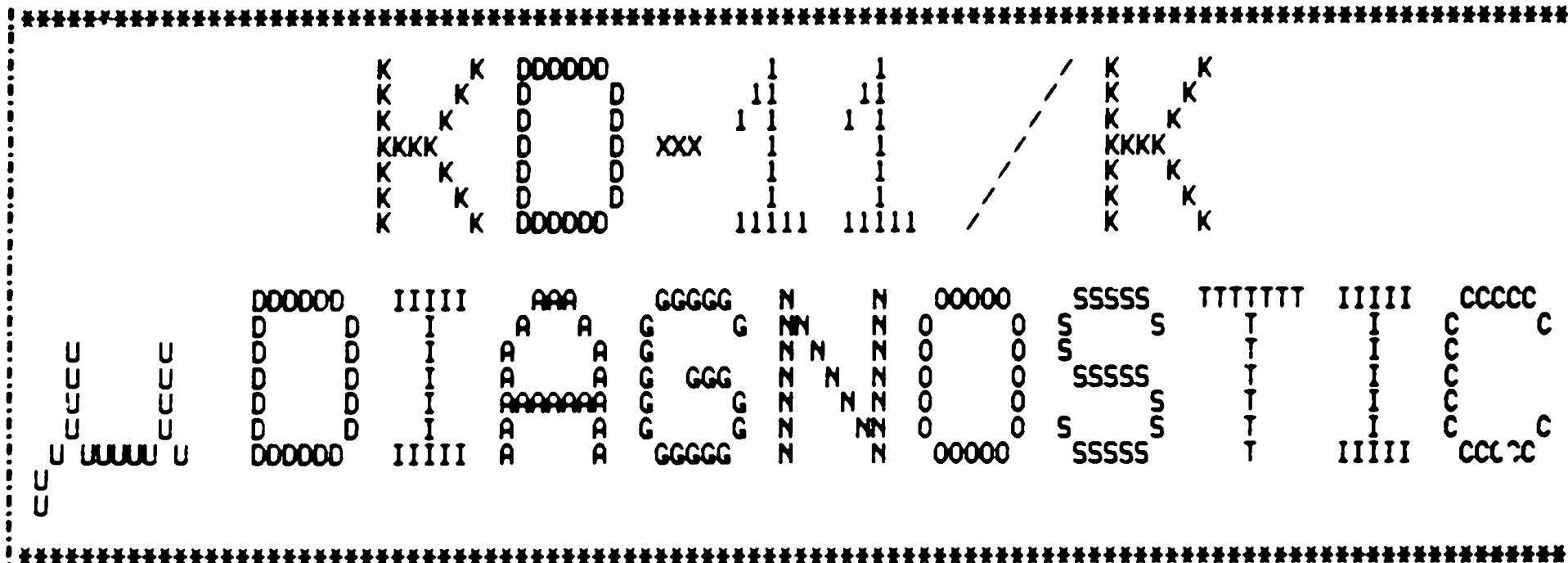
5772	--	TEST114-121: ALU LOGIC TESTS / D[0] TESTS
7236	--	TEST130-136: ALU ARITHMETIC FUNCTION/CARRY LOOKAHEAD TESTS
8078	--	TEST320: D[0] SELECTION / COUT07-DOUT07 / D<14:00>=ZERO2BIT<00>
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9840	--	TEST374: A/B SP RE WRITE MODES VERIFICATION
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14702	--	TEST610: CONDITION CODE LOGIC
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15901	--	TEST701-702: LOAD/READ THE BA, FULL 18. BITS
16132	--	TEST710-722: BUS FUNCTION DECODE, BUS ERROR CONDITIONS
17056	--	TEST730-731: BUS CYCLES TO/FROM MEMORY
17523	--	TEST740: BUS CYCLE MODIFICATION - PREFETCH ALTERATION, OVERLAP YANK
17687	--	TEST761-763: TESTING UNIBUS INTERRUPT SERVICE WITH DL11-W LINE CLOCK
18191	--	END OF PASS CODE
18294	--	VERIFY MODE CODE
18352	--	DCS MICROCODE REVISION NUMBER
18394	--	COMMON SUBROUTINES
18396	--	CONSOLE DISPLAY SUBROUTINE
18445	--	CLEAR I-0 / BUS CONTROL / SERVICE AREA STATUS LATCHES SUBR
18491	--	SUBR FOR PUTTING SELECTED PORTIONS OF D[15-00] INTO IR
18570	--	UCON SUBROUTINES (FLAGS, PS, FPS, CUA, SERVICE, JAM, PBA)
18691	--	SUBR FOR LOADING FPS<3:0> [VIA BUTA(DIAGNOSE)]
18738	--	SUBR TO COPY D-REGISTER TO DBUF TO IR
18810	--	JAM UPP SERVICE SUBROUTINE
18894	--	MICROBRANCH [BUT] TAKEOFF WORDS
19233	--	MICROBRANCH [BUT] TARGET WORDS
19766	--	END OF KD11-K MICRODIAGNOSTIC CODE

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!.PAGE=====

.TOC * IDENTIFICATION

.TITLE KD11-K MICRODIAGNOSTIC



!.PAGE=====

.TOC * REVISION HISTORY

.IDENT /V101AD/

REV-NUMBER	::=	000101	!NO BIT15 DURING EXECUTION
REV-NUMBER-AND-B15	::=	100101	!BUT SET W/REV. NUMBER AT EOP ONLY

!.PAGE=====

.TOC * MICROWORD FIELD DEFINITIONS

! NOTE: THE FOLLOWING ARE THE ASSIGNED RANGES OF THE

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MICROWORD FIELD BIT DEFINITIONS USED IN THIS SOURCE LISTING:

BITS(NUMBER)	WHERE HELD
[47:00] 48/48	MAIN MACHINE ROM, DCS MAIN ROM
[59:48] 12/12 *	MAIN MACHINE ROM EXTENSION, USES 12/12 BITS
[54:48] 7/12 *	DCS 4-BIT ROM EXTENSION, USES 7/12 BITS, [54:48]

* = NOTE OVERLAP OF BM EXTENSION/DCS EXTENSION BITS. THESE BITS ARE MUTUALLY EXCLUSIVE.

! .PAGE=====

TOC	* MICROWORD BIT	LAYOUT				DCS	UCON
	BASE	1-EMIT	4-UCON-DATA	6-RETURN	9-RES-BITS	EXTENSION	PROCESSOR
	MACHINE	2-SHIFT-TREE	5-CSP-ADDRESS	7-PAGING	10-MULTIPLE		CONTROL
	CONTROL	3-RESIDUAL-CTL		8-UCON-CONTROL			
U47	ALU3	1-EMITH15	4-UCONL10			DCS-CTR3	PS<3:0>-CLK
U46	ALU2	1-EMITH14	4-UCON-I/O-SEL	6-RETR11	9-HISMUXSELL	DCS-CTR2	
U45	ALU1	1-EMITH13	4-UCON-WCS-SEL	6-RETR10	9-SRS1-L	DCS-CTR1	
U44	ALU0	1-EMITH12	4-UCON-KT-SEL	6-RETR09	9-SRS0-L	DCS-CTR0	
U43	BEN1						
U42	BEN0		4-UCONL09				UBREAK-CLK
U41	BSEL1	1-EMITH11	4-UCONL08	6-RETR08	9-GUARD-EN-H	ENUA11	<NU>
U40	BSEL0	1-EMITH10	4-UCONL07	6-RETR07		ENUA10	<NU>
U39	REN1	1-EMITH09	4-UCONL06	6-RETR06		ENUA09	SEL-HBMUX1L
U38	REN0	1-EMITH08	4-UCONL05	6-RETR05		ENUA08	SEL-HBMUX0L
U37	ASEL1	1-EMITL07		6-RETR04		ENUA07	
U36	ASEL0	1-EMITL06	4-UCON-PROC-SEL	6-RETR03		ENUA06	
U35	RIF2	1-EMITL05	4-UCONH12	6-RETR02		ENUA05	FPS<7:4>-CLK
U34	RIF1	1-EMITL04	4-UCONH11	6-RETR01		ENUA04	PS<7:4>-CLK
U33	RIF0	1-EMITL03	4-UCON-FP-SEL	6-RETR00		ENUA03	
U32	COUT2	1-EMITL02	4-UCONH15	7-NEXT-PAGE2	10-MULT-SEL2	ENUA02	IR-CLOCK
U31	COUT1	1-EMITL01	4-UCONH14	7-NEXT-PAGE1	10-MULT-SEL1	ENUA01	PS<15:12>-CLK
U30	COUT0	1-EMITL00	4-UCONH13	7-NEXT-PAGE0	10-MULT-SELO	ENUA00	FLAG<8:0>-CLK
U29	* WHEN						
U28	* CLK-D						
U27	* CLK-SR						
U26	* CLK-BA						
U25	* SET-CC						
U24	* BEGIN						
U23	SELECT(=0)	2-BMUX	5-CSPADR3	8-SELECT(=1)			
U22	BUSCOD2	2-AMUX2	5-CSPADR2	8-FLPG0			
U21	BUSCOD1	2-AMUX1	5-CSPADR1	8-UCON-XFER			
U20	BUSCOD0	2-AMUX0	5-CSPADR0	8-UCON-LOAD			
U19	* WRCSP						


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163 :U18 HI/LO          3-LOAD-RES
164 :U17 WRSEL
165 :U16 WRB          3-LOAD-COUNT
166 :U15 WRA
167 :U14 * MOD(=0)    3-MOD(=1)
168 :U13 * UBF4
169 :U12 * UBF3
170 :U11 * UBF2
171 :U10 * UBF1
172 :U09 * UBF0
173 :U08 * UPF8
174 :U07 * UPF7
175 :U06 * UPF6
176 :U05 * UPF5
177 :U04 * UPF4
178 :U03 * UPF3
179 :U02 * UPF2
180 :U01 * UPF1
181 :U00 * UPF0
    
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(* = DEDICATED TO THE CORRESPONDING SINGLE FUNCTION)

! .PAGE=====

TOC * A & B & C SCRATCHPAD LAYOUT, DCS SPECIFIC

THE USE OF THE A, B, & C SCRATCHPADS AS TEMPORARY STORAGE AREAS IS OUTLINED BELOW. NOTE THAT IN MOST CASES, THE REGISTERS EMPLOYED HAVE NO RESEMBLANCE TO ANY SIMILAR NAMED REGISTER IN THE KD11-K BASE MACHINE MICROCODE, EITHER LIVING OR DEAD.

THE BELOW DEFINITIONS ARE -DCS SPECIFIC- ONLY.

OCTAL ADDRESS	ASPHI	ASPLO	BSPHI	BSPLO	CSP
00	...	...	...	...	<RETURN>
01	(000000)	...	(000000)	...	TEMP/(000152)
02	...	...	...	...	TEMP/(000125)
03	(177777)	...	(177777)	...	TEMP
04	...	...	...	...	TEMP/(125200)
05	(125252)	...	(125252)	...	TEMP/(052522)/(170360)
06	TEMP/(053433)/(007417)
07	(052525)	...	(052525)	...	TEMP
10	(052525)

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11	(000001)	. . .	(000001)	. . .	(125252)
12	(177777)
13	(100000)	. . .	(100000)	. . .	(000000)
14	TEMP/(000100)/(057077)
15	(000200)	. . .	(000200)	. . .	TEMP/(000077)/(177067)
16	. . .	. . .	. . .	. . .	TEMP/(170000)
17	TEMPAHI	TEMPALO	TEMPBHI	TEMPBLO	TEMP/(007700)

NOTES: (XXXXXX) ::= A REGISTER W/ A CONSTANT VALUE, NAMED:
 CXXXXXX-A, IF ON THE A-SIDE, OR
 CXXXXXX-B, IF ON THE B-SIDE

! .PAGE=====

.TOC * MICROWORD FIELD SPECIFICATION

!-----

.TOC * MICROWORD FIELD FORMAT

.RADIX B ! ALL NUMBERS ARE OCTAL, UNLESS OTHERWISE NOTED

.WIDTH 64R ! MICROWORD IS 64\10 BITS WIDE, BIT <00> IS RIGHTMOST BIT

.BOUNDS [4000:7777] ! ADDRESSES ARE 12 BITS, ON PAGES 4:7

!.OBJECT <15:00>'<31:16>'<47:32>'<63:48> ! OUTPUT FORMAT (DEFAULT SPEC)

!-----

.TOC * NULL FIELD/MACRO SPECIFICATION

.FIELD N::=<63>
 .MACRO NULL::=N/0

.TOC * ALU AND INTERNAL DATA BUS CONTROL

.TOC * <ALU>-ALU FUNCTION CONTROL BITS

271 !SPECIFIES ALU FUNCTION CODE AND CINMUX SELECT. ALWAYS IN EFFECT.

272 .FIELD ALU::=(47:44)

273	---	FUNCTION---	LOGIC/ARITH	ALUS(3:0)	H	CINMUX L
274	NOT-A::=00	!COMPLEMENT A,	L	0000		-1
275	A-PLUS-B-PLUS-PS(C)::=01	!ADD,	A	1001		-PS(C)
276	NOT-A-AND-B::=02	!AND,	L	0010		-PS(C)
277	ZERO::=03	!ZERO,	L	0011		-PS(C)
278	A-PLUS-B-PLUS-D(C)::=04	!PLUS,	A	1001		-D(C)
279	A-PLUS-NOT-B-PLUS-D(C)::=05	!PLUS,	A	0110		-D(C)
280	A-XOR-B::=06	!XOR,	L	0110		-D(C)
281	A-AND-NOT-B::=07	!AND,	L	0111		-D(C)
282	DIVIDE::=10	!DIVIDE STEP				
283		!SUB, IF D(C)H=1	A	0110		-D(C)=-1
284		!ADD, IF D(C)H=0	A	1001		-D(C)=-0
285	A-PLUS-B::=11	!PLUS,	A	1001		-0
286	B::=12	!SELECT B,	L	1010		-0
287	A-AND-B::=13	!AND,	L	1011		-0
288	A-PLUS-B-PLUS-1::=14	!PLUS,	A	1001		-1
289	A-MINUS-B::=15	!MINUS,	A	0110		-1
290	A-IOR-B::=16	!IOR,	L	1110		-1
291	A::=17	!SELECT A,	L	1111		-1

295 .TOC * <BEN>-B-BUS DATA SOURCE
 296 !SPECIFIES GATING OF DATA ONTO B-BUS. ALWAYS IN EFFECT.

297 .FIELD BEN::=(43:42)

298	BSPLO::=0	!DIRECT BSP LOCATIONS 00-17
299	BSPHI::=1	!DIRECT BSP LOCATIONS 20-37
300	CSP::=2	!USE <CSPADDR> [SIC] AS ADDRESS (4 BIT)
301	BASCON::=3	!1 OF 4 BASE CONSTANTS IN CSP17 TO CSP14 (2 BIT)

305 .TOC * <BSEL>-B-BUS SOURCE SELECTION CONTROL
 306 !SPECIFIES CONTROL OF INDIVIDUAL B-BUS SOURCES. ALWAYS IN EFFECT.

307 .FIELD BSEL::=(41:40)

308 !NOT USED WHEN BEN/CSP
 309 !CSP17 TO CSP14 IMMEDIATE ADDRESS WHEN BEN/BASCON

310	B17::=0	!USED IN CONJUNCTION WITH <RIF> FOR SP ADDRESS WHEN BEN/BSPLO OR BEN/BSPHI	
311	B16::=1		
312	B15::=2		
313	B14::=3		
314	DF::=0		!DESTINATION FIELD
315	SF::=1		!SOURCE FIELD
316	IMMED0::=2		!DIRECT ADDRESS, LOW BIT=0
317	RO0::=2		!FOR JOINT USE W/ RIF FIELD
318	RO2::=2		
319	RO4::=2		
320	RO6::=2		
321	RO8::=2		
322	RO10::=2		
323	RO12::=2		
324	RO14::=2		


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325      R16::=2
326      IMMEDI::=3
327      R01::=3
328      R03::=3
329      R05::=3
330      R07::=3
331      R11::=3
332      R13::=3
333      R15::=3
334      R17::=3
335      C000000::=3
336      C177777::=3
337      C125252::=3
338      C052525::=3
339      C000001::=3
340      C100000::=3
341      C000200::=3
342
343
344
345      .TOC * <AEN>-A-BUS DATA SOURCE
346      !SPECIFIES GATING OF DATA ONTO A-BUS. ALWAYS IN EFFECT.
347      .FIELD AEN::=<39:38>
348      XMUX::=0
349      CMUX::=1
350      ASPLO::=2
351      ASPHI::=3
352
353
354
355      .TOC * <ASEL>-A-BUS SOURCE SELECTION CONTROL
356      !SPECIFIES CONTROL OF INDIVIDUAL A-BUS SOURCES. ALWAYS IN EFFECT.
357      .FIELD ASELO::=<36>
358      !XMUX CONTROL WHEN AEN/XMUX [USES ASELO ONLY]
359      SR::=0
360      FLTPT::=1
361      .FIELD ASEL::=<37:36>
362      !CMUX CONTROL WHEN AEN/CMUX. SHIFTS CMUX INPUT APPROPRIATE AMOUNT
363      LEFT-1::=0
364      DIRECT::=1
365      RIGHT-1::=2
366      RIGHT-2::=3
367      !USED IN CONJUNCTION WITH <RIF> FOR SP ADDRESS WHEN AEN/ASPLO OR AEN/ASPHI
368      IMMEDO::=0
369      R00::=0
370      R02::=0
371      R04::=0
372      R06::=0
373      R10::=0
374      R12::=0
375      R14::=0
376      R16::=0
377      IMMEDI::=1
378      R01::=1

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!DIRECT ADDRESS, LOW BIT=1
!FOR JOINT USE W/ RIF FIELD

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!ASPHI/BSPHI CONSTANTS

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!XMUX=SR OR FLTPT ASSEMBLE
!SHIFT TREE
!DIRECT ASP LOCATIONS 00-17
!DIRECT ASP LOCATIONS 20-37

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!LOW BIT GETS SENDMUX OUTPUT
!OUTPUT=INPUT
!HIGH BIT GETS D(C)
!HIGH BITS BOTH GET D(C)
!DIRECT ADDRESS, LOW BIT=0
!FOR JOINT USE W/ RIF FIELD

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!DIRECT ADDRESS, LOW BIT=1
!FOR JOINT USE W/ RIF FIELD

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R03::=1
R05::=1
R07::=1
R11::=1
R13::=1
R15::=1
R17::=1
C000000::=1
C177777::=1
C125252::=1
C052525::=1
C000001::=1
C100000::=1
C000200::=1
DF::=2
SF::=3

ASPBI/BSPI CONSTANTS
DESTINATION FIELD
SOURCE FIELD

.TOC * <RIF>-ASP, BSP REGISTER IMMEDIATE FIELD
:SPECIFIES ADDRESSES WITH ASP, BSP ALONG WITH AEN, ASEL & BEN, BSEL
.FIELD RIF::=<35:33>

R00-OR-01::=4
R00::=4
R01::=4
R02-OR-03::=5
R02::=5
R03::=5
R04-OR-05::=6
R04::=6
R05::=6
R06-OR-07::=7
R06::=7
R07::=7
R10-OR-11::=0
R10::=0
R11::=0
R12-OR-13::=1
R12::=1
R13::=1
R14-OR-15::=2
R14::=2
R15::=2
R16-OR-17::=3
R16::=3
R17::=3

LOW BIT IS 0/1, SPECIFIED BY
USING EITHER IMMEDO/IMMEDI MODES
ADDR<3:0>H = -RIF<2>H # RIF<1:0>H # A/BSEL<0>H
ASPBI/BSPI CONSTANTS

C000000::=4
C177777::=5
C125252::=6
C052525::=7
C000001::=0
C100000::=1
C000200::=2

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433 .TOC * <COUT>-CARRY OUT BIT MUX SELECTION
434 !SPECIFY INPUT TO D(C) REGISTER, LOADED WHEN D REGISTER LOADED. ALWAYS IN EFFECT.
435 .FIELD COUT::=<32:30>
436 CIN::=0 !OUTPUT OF CINMUX (SIC)
437 PS(C)::=1 !PS C-BIT
438 ALU00::=2 !ALU OUTPUT BIT 00
439 ALU07::=3 !ALU OUTPUT BIT 07
440 ALU15::=4 !ALU OUTPUT BIT 15
441 COUT07::=5 !BYTE CARRY BIT
442 COUT15::=6 !WORD CARRY BIT
443 D(C)::=7 !PROPOGATE (SAVE) LAST D(C)
444 -----
445
446 .TOC * CLOCKS
447
448 .TOC * <WHEN>-D/SR WHEN TO CLOCK
449 !SPECIFY CLOCK D/SR REGISTERS AT P2 T OR P3 T. ALWAYS IN EFFECT.
450 .FIELD WHEN::=<29>,0
451 AT-P2-T::=0 !CLOCK D AND/OR SR AT P2 T[100 NS].
452 AT-P3-T::=1 !CLOCK D AND/OR SR AT P3 T[150 NS].
453
454 .TOC * <CLKD>-ENABLE D-REGISTER CLOCKING
455 !ENABLES CLOCKING OF D-REGISTER. ALWAYS IN EFFECT.
456 .FIELD CLKD::=<28>,0
457 NO::=0 !NOP
458 YES::=1 !CLOCK D(C), D-REGISTER AT <WHEN>
459
460 .TOC * <CLKSR>-ENABLE SR-REGISTER CLOCKING
461 !ENABLES CLOCKING OF SR-REGISTER. ALWAYS IN EFFECT.
462 .FIELD CLKSR::=<27>,0
463 NO::=0 !NOP
464 YES::=1 !CLOCK SR-REGISTER AT <WHEN>
465
466 .TOC * <CLKBA>-ENABLE CLOCKING OF BA-REGISTER
467 !ENABLES CLOCKING OF BA-REGISTER AT P1 T[60 NS]. ALWAYS IN EFFECT.
468 .FIELD CLKBA::=<26>,0
469 NO::=0 !NOP
470 YES::=1 !CLOCK BA-REGISTER AT P1 T[60 NS].
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487 .TOC # <SCC>-ENABLE SETTING OF PS CONDITION CODES
488 !ENABLE CLOCKING OF PS CONDITION CODES AT P2 T(100 NS) OF NEXT UWORD. 0 MUST
489 !BE CLOCKED AT P2 T OR EARLIER OF PREVIOUS MICROWORD. ALWAYS IN EFFECT.
490 .FIELD SCC::=(25),0
491 NO::=0 !NOP
492 YES::=1 !ENABLE CLOCKING IN NEXT UWORD
493 -----
494
497 .TOC # BUS/UCON & CSP-ADDRESS & SHIFT-TREE CONTROL
498
499
500
501 .TOC # BUS/UCON CONTROL
502
503
504
505 .TOC # <BEGIN>-BEGIN BUS/UCON OPERATION
506 !INITIATE BUS XOR UCON OPERATION. ALWAYS IN EFFECT.
507 .FIELD BEGIN::=(24),0
508 NO::=0 !NOP FOR BUS AND UCON OPERATIONS
509 YES::=1 !BEGIN OPERATION SPECIFIED
510
511
512
513 .TOC # <SELECT>-SELECT BUS OR UCON
514 !SELECT BUS XOR UCON. ONLY USED IF BEGIN/YES.
515 .FIELD SELECT::=(23)
516 BUS::=0 !SELECT BUS
517 UCON::=1 !SELECT UCON
518
519
520
521 .TOC # BUS CONTROL
522
523
524
525 .TOC # <BUSCODE>-BUS CODE ACTION FIELD
526 !BUS ACTION CODES. ONLY USED IF BEGIN/YES & SELECT/BUS.
527 .FIELD BUSCODE::=(22:20)
528 DATI-CLKIR::=0 !DATA IN, LOAD IR
529 DATI-NOINT::=1 !DATA IN, NO INTERNAL ADDRESS
530 DATO::=2 !DATA OUT
531 DATIB::=3 !DATA IN, ALLOW: ODD ADDRESS
532 DATIB(P)::=3 !DATA IN, ALLOW: ODD ADDRESS, FORCE TO PAUSE
533 DATIP::=4 !DATA IN, NO CACHE, LOCK BUS
534 DATOB::=5 !DATA OUT, ALLOW: ODD ADDRESS
535 DATI::=6 !DATA IN
536 DATI(P)::=6 !DATA IN, ALLOW: FORCE TO PAUSE
537 INVALIDATE::=7 !INVALIDATE CACHE LOCATION FUNCTION
538
539
540 .TOC # UCON CONTROL

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.TOC *      <FLPGO>-START HOT FLOATING POINT
!INITIATES HOT FLOATING POINT FUNCTION. ONLY USED IF BEGIN/YES & SELECT/UCON.
.FIELD FLPGO::=<22>
      NO::=0          !NOP
      YES::=1        !YELL GO
```

```
.TOC *      <UCON-XFER>-UCON OPERATION
!EXECUTE A UCON FUNCTION. ONLY USED IF BEGIN/YES & SELECT/UCON.
.FIELD UCON-XFER::=<21>
      NO::=0          !NOP
      YES::=1        !START UCON OPERATION
```

```
.TOC *      <UCON-LOAD>-LOAD UCON REGISTER
!LOAD UCON CONTROL REGISTER. ONLY USED IF BEGIN/YES & SELECT/UCON.
.FIELD UCON-LOAD::=<20>
      NO::=0          !NOP
      YES::=1        !LOAD UCON CONTROL REGISTER
```

```
.TOC *      CSP ADDRESS SPECIFICATION
```

```
.TOC *      <CSPADDR>-CSP IMMEDIATE ADDRESS
!SPECIFY CSP 4 BIT ADDRESS. ONLY USED IF BEN/CSP.
.FIELD CSPADDR::=<23:20>
      D00::=17      !NOTE INVERSION
      D01::=16
      D02::=15
      D03::=14
      D04::=13
      D05::=12
      D06::=11
      D07::=10
      D10::=07
      D11::=06
      D12::=05
      D13::=04
      D14::=03
      D15::=02
      D16::=01
      D17::=00
      C052525::=07   !CSP/DCS CONSTANTS
      C125252::=06
      C177777::=05
      C000000::=04
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.TOC * SHIFT CONTROL

.TOC * <BMUX>-SECOND LEVEL OF SHIFT TREE
!BMUX CONTROLS SHIFT RIGHT OF 0 OR 4. ALWAYS IN EFFECT.

.FIELD BMUX::=<23>
DIRECT::=0 !AMUX<15:00>
RIGHT-4::=1 !4*D(C) # AMUX <15:04>

.TOC * <AMUX>-FIRST LEVEL OF SHIFT TREE
!AMUX CONTROLS INPUT OF D-REG/COUNTER TO TREE. ALWAYS IN EFFECT.

.FIELD AMUX::=<22:20>
DIRECT::=0 !D<HI> # D<LO>
D[LO]#D[LO]::=1 !D<LO> # D<LO>
SIGNEXT::=2 !8*D(C) # D<LO>
COUNTER#D[LO]::=3 !COUNTER # D<LO>
COUNTER::=3 !SAME
D[HI]#D[HI]::=4 !D<HI> # D<HI>
SWAB::=5 !D<LO> # D<HI>
RIGHT-8::=6 !8*D(C) # D<HI>
COUNTER#D[HI]::=7 !COUNTER # D<HI>

.TOC * SP REWRITE & REGISTER CLOCKS

.TOC * <WRCSP>-WRITE TO CSP
!WRITE CSP FROM DMUX (BUSDIN/CACHE). ALWAYS IN EFFECT.

.FIELD WRCSP::=<19>,0
NO::=0 !NOP
YES::=1 !ON P3, 120-150 NS.

.TOC * <MOD>-MODE CONTROL OF FOLLOWING BITS
!CONTROLS REDEFINITION OF SP REWRITE/REGISTER CLOCK BITS. ALWAYS IN EFFECT.

.FIELD MOD::=<14>,0
CLKSP::=0 !CONTROL ASP/BSP CLOCKING
LOADREG::=1 !CONTROL RES-REG/COUNTER LOADING

.TOC * SP REWRITE (A,B) CONTROL
!WHEN MOD/CLKSP

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649 .TOC * <HILO>-SP HI/LO SELECT
650 !WHICH HALF OF SP'S TO REWRITE. ONLY IF MOD/CLKSP.
651 .FIELD HILO::=<18>
652     LO::=0           !REWRITE ENABLE A/B SP LO [00-17]
653     L::=0           !
654     HI::=1         !REWRITE ENABLE A/B SP HI [20-37]
655     H::=1         !
656
657
658
659 .TOC * <WRSEL>-REWRITE ADDRESS SELECT
660 !WHICH WRITE ADDRESS TO USE ON REWRITE. ONLY IF MOD/CLKSP.
661 .FIELD WRSEL::=<17>
662     A-ADDR::=0       !USE A ADDRESS ON REWRITE
663     A::=0           !
664     B-ADDR::=1     !USE B ADDRESS ON REWRITE
665     B::=1         !
666
667
668
669 .TOC * <WRSP>-REWRITE A/B SELECT
670 !ENABLE REWRITE OF SPECIFIC SP'S. ONLY IF MOD/CLKSP.
671 .FIELD WRSP::=<16:15>
672     NOP::=0         !NO ASP/BSP REWRITE
673     MR-A::=1       !WRITE ASP ONLY, ON P3 120-150 NS.
674     A::=1         !
675     ASP::=1       !
676     MR-B::=2     !WRITE BSP ONLY, ON P3 120-150 NS.
677     B::=2         !
678     BSP::=2       !
679     MR-A-AND-B::=3 !WRITE BOTH ON P3
680     AB::=3        !
681     BA::=3        !
682     ABSP::=3     !
683     BASP::=3     !
684     BOTH::=3     !
685
686
687
688 .TOC * REGISTER LOADING
689 !WHEN MOD/LOADREG
690
691
692 .TOC * <LOADRES>-LOAD RESIDUAL CONTROL REGISTER
693 !ENABLE LOAD OF RESIDUAL CONTROL REGISTER FROM B-BUS. ONLY IF MOD/LOADREG.
694 .FIELD LOADRES::=<18>
695     NO::=0         !NOP
696     YES::=1       !LOAD RES WITH B-BUS<14:11>
697                     !AT P2 T(100 NS), B-BUS<14> COMPLEMENTED
698
699
700
701 .TOC * <LOADCOUNT>-LOAD COUNTER
702 !ENABLE LOAD OF COUNTER FROM B-BUS <7:0>. ONLY IF MOD/LOADREG.

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703 .FIELD LOADCOUNT::=<16>
704     NO::=0           !NOP
705     YES::=1         !LOAD COUNTER AT P2 T(100 NS).
706
707 -----
708
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710
711 .TOC * SEQUENCING FIELD
712
713
714
715 .TOC * <UBF>-BUT MICROBRANCH FIELD
716 !SPECIFIES CONDITIONS TO MODIFY <UPF>/<J> FIELD DURING BRANCH. ALWAYS IN EFFECT.
717 .FIELD UBF::=<13:9>,30
718
719 .TOC * NO BUT
720     NULL::=30       !SPECIFY NO MODIFICATION - DEFAULT
721
722 .TOC * ACTIVE ONLY
723 !PURELY ACTIVE BUTS GENERATE SIDE AFFECTS; THEY DO NOT MODIFY THE <UPF> FIELD
724 !BY THE "OR-ING"-IN-OF-CONDITIONS METHOD. THEY MAY MODIFY EXPLICITLY THE ENTIRE <UPF> FIELD,
725 !AS IN BUT(RETURN)
726     R-OR-1::=22     !FORM R(SF)-IOR-"001
727     CUA-TRACK::=31 !RESUME/RESTART CUA TRACKING
728     CLR-FLAG-RES-UCON::=32 !CLEAR FLAGS<2:0>, EX-FLAG<1>, RES-REGISTER, UCON-REGISTER
729     DIAGNOSE::=33  !SPECIAL DIAGNOSTIC BUT
730     SUBR8::=34     !RETURN (- EMIT<14:03>, PAGE (- EMIT<02:00>
731     SUBR-B::=34    !SYNONYMS ARE:
732     GOTO::=34
733     GO-TO::=34
734     SUBRA::=35    !RETURN (- D<14:03>, PAGE (- EMIT<02:00>
735     SUBR-A::=35   !SYNONYM
736     B#36::=36    !TBD
737     RETURN::=37  !PAGE (- RETURN<11:09>, NUA (- RETURN<08:00>
738
739 .TOC * INACTIVE ONLY
740 !INACTIVE BUTS ONLY CAUSE MODIFICATION OF THE <UPF> FIELD BY THE "OR-ING"-
741 !IN-OF-CONDITIONS METHOD.
742
743     !-----UPF MASK-----
744     SR3-0::=00    !876 543 210 OCTAL *=NOT AFFECTED
745     CASE::=00    !*** **0 000 (000)
746     SR03::=00    !*** **0 111 (007)
747     SR02::=00    !*** **1 011 (013)
748     SR01::=00    !*** **1 101 (015)
749     SR00::=00    !*** **1 110 (016)
750     IR15-12::=01 !*** **0 000 (000)
751     DOP::=01
752     INSTRS::=02  !*** *00 000 (000)
753     INSTR-5::=02
754     IR11#FLTPT3-0::=03 !*** *00 000 (000)
755     IR11-A::=03  !*** *01 111 (017)
756     IR9-6::=04   !*** **0 000 (000)

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757	SOP::=04	***	**0	000	(000)
758	MOV-DR7#IRS-3::=05	***	**0	111	(007)
759	MOV-DR7::=05	***	**1	000	(010)
760	IRS-3::=05	***	**0	000	(000)
761	BGSERV-FPSERV#D(C)#FRET::=07	***	**0	111	(007)
762	BGSERV-FPSERV::=07	***	**1	011	(013)
763	D(C)-C::=07	***	**1	100	(014)
764	FRET1-0::=07	***	***	000	(000)
765	COUT07#DOUT07#FPSOS::=10	***	***	011	(003)
766	COUT07::=10	***	***	101	(005)
767	DOUT07::=10	***	***	001	(001)
768	COUT07#DOUT07::=10	***	***	110	(006)
769	FPSOS::=10	***	***	000	(000)
770	DMD#SMD#BYTE::=11	***	***	011	(003)
771	DMD::=11	***	***	101	(005)
772	SMD::=11	***	***	110	(006)
773	BYTE::=11	***	***	*00	(000)
774	GD3-2::=12	***	***	000	(000)
775	BG-SERVICE-L#MFSS#MULTIPLE::=14	***	***	011	(003)
776	BG-SERVICE-L::=14	***	***	101	(005)
777	MFSS::=14	***	***	110	(006)
778	MULTIPLE::=14	***	***		
779	MASKED-PS(T)::=14				
780	DOO::=14				
781	PS(N)::=14				
782	FLAG7::=14				
783	EXFLAG1::=14				
784	FLTPTS::=14				
785	EXFLAG2::=14				
786	INIT-JAM::=14				
787	D14-00E00#D15::=15	***	***	*0C	(000)
788	D14-00-E0-0#D15::=15				
789	D14-00-E0-0::=15	***	***	*01	(001)
790	D15::=15	***	***	*10	(002)
791	IR11#PS15::=16	***	***	*00	(000)
792	IR11-8::=16	***	***	*01	(001)
793	PS15::=16	***	***	*10	(002)
794	VECTOR-LOAD#DR6-7L::=21	***	***	*00	(000)
795	VECTOR-LOAD::=21	***	***	*01	(001)
796	DR6-7L::=21	***	***	*10	(002)
797	D(C)#BA00::=23	***	***	*00	(000)
798	D(C)-B::=23	***	***	*01	(001)
799	BA00::=23	***	***	*10	(002)
800	OTHER-JAM#FP-PROC::=24	***	***	*00	(000)
801	OTHER-JAM::=24	***	***	*01	(001)
802	FP-PROC::=24	***	***	*10	(002)
803	INTR-HIGH#INSTR-BRANCH-L::=26	***	***	*00	(000)
804	INTR-HIGH::=26	***	***	*01	(001)
805	INSTR-BRANCH-L::=26	***	***	*10	(002)
806	PREFETCH-JAM#FP-FD::=27	***	***	*00	(000)
807	PREFETCH-JAM::=27	***	***	*01	(001)
808	FP-FD::=27	***	***	*10	(002)

810 .TOC * BOTH ACTIVE AND INACTIVE

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811 !THESE BUTS HAVE BOTH ACTIVE AND INACTIVE EFFECTS
812
813          :-----UPF MASK-----
814          :876 543 210 OCTAL  *=NOT AFFECTED
815          :*00 000 000 (000)  BUS CONTROL, SP REWRITE DEFEAT
816          INSTR1::=06
817          INSTR-1::=06
818          SRI-0#COUNT-IS-377::=13
819          SRI-0::=13
820          COUNT-IS-377-A::=13
821          COUNT-IS-377#D(C)::=17
822          COUNT-IS-377-B::=17
823          D(C)-A::=17
824          COUNT-IS-377::=25
825          PREFETCH-L#SERVICE::=20
826          PREFETCH-L::=20
827          SERVICE::=20
828          LAST::=20
829
830          :*** ** 000 (000)  BUMP COUNTER
831          :*** ** 001 (001)  STILL BUMP COUNTER
832          :*** ** 110 (006)  BUMP COUNTER
833          :*** ** *00 (000)  BUMP COUNTER
834          :*** ** *01 (001)  BUMP COUNTER
835          :*** ** *10 (002)  STILL BUMP COUNTER
836          :*** ** *11 (003)  BUMP COUNTER
837          :*** ** *00 (000)  TIMING
838          :*** ** *01 (001)  TIMING
839          :*** ** *10 (002)  TIMING
840          :*** ** *11 (003)  TIMING

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841 .TOC * <UPF>-MICRO POINTER FIELD
842 !SPECIFIES EITHER NEXT MICROINSTRUCTION ADDRESS OR BASE TARGET
843 !ADDRESS TO BE USED "UNDER" THE BUT-CODE IN <UBF>.
844 .FIELD UPF::=<8:0>,000 !ACTUAL MICROWORD POINTER FIELD
845 .ADDRESS J::=<8:0> !THIS FIELD ALSO HAS MICROADDRESS QUALITIES

```

!BASE MACHINE MICROCODE ENTRY POINTS:

```

846
847 !THESE ENTRY POINTS HAVE BEEN FIXED AS OF 31-AUGUST-1976.
848 INIT01 ::= 3412 !INITIALIZATION SUBROUTINE
849 CON99 ::= 1040 !FORCE "CONSOLE-MODE HALT"
850 FET01 ::= 0702 !INSTR FETCH, NO OVERLAP
851 FET03 ::= 0700 !INSTR FETCH, OVERLAP
852 SER01 ::= 0701 !SERVICE ENTRY, OVERLAP
853 SER02 ::= 0703 !SERVICE ENTRY, NO OVERLAP

```

!ENTRY POINTS INTO BASE MACHINE FOR "BUTA(DIAGNOSE)":

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854 !THESE ENTRY POINTS FIXED AS OF 26-OCT-76:
855 MED23 ::= 3200 !FOR FLPADR: D+ASPLO[DF]-TOP
856 MED25 ::= 3020 !FOR FLPADR: D+ASPHI[DF]-TOP
857 MED27 ::= 3210 !FOR FLPADR: ASPLO[DF]-TOP+D
858 MED29 ::= 3214 !FOR FLPADR: ASPHI[DF]-TOP+D
859 MED31 ::= 3044 !FOR FLPADR: D+BSPLO[DF]-TOP
860 MED33 ::= 3230 !FOR FLPADR: D+BSPHI[DF]-TOP
861 MED35 ::= 3234 !FOR FLPADR: BSPLO[DF]-TOP+D
862 MED37 ::= 3064 !FOR FLPADR: BSPHI[DF]-TOP+D
863
864 BYTE01 ::= 0032 !FOR KJENAB: DAT08*KJENAB
865
866 RTS02 ::= 4034 !FOR SPBYKT: DAT1, BA+SP-A, SP+SP+2
867
868 DST01 ::= 0511 !FOR ALTER: DAT1B(P)
869 DST02 ::= 0512
870 DST20 ::= 0527

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865     DST22 ::= 0525      !
866
867     LOADNZW4 ::= 4330    !FOR FPSCC@CLKFPSCC: D+CSP(MD)
868     LOADNZW5 ::= 4332    !                               FPS<3:0>+D<3:0>
869

```

!-----

```

870
871
872
873
874 .TOC * MISCELLANEOUS FIELDS
875

```

```

876
877
878 .TOC * <NEXT-PAGE>-NEW PAGE ADDRESS LOADED DURING BUT(SUBROUTINE)
879 !THESE 3 BITS ARE CLOCKED INTO PAGE REGISTER DURING A BUT(SUBRA) OR
880 !BUT(SUBRB). ONLY USED WHEN UBF/BUT(SUBRA) OR UBF/BUT(SUBRB).
881 .FIELD NEXT-PAGE::=<32:30>
882

```

```

883
884 .TOC * <MULTIPLE>-SELECT CODE FOR BUT(MULTIPLE)
885 !MUST BE SET IN BOTH PREVIOUS AND CURRENT MICROWORDS WHEN BUT(MULTIPLE) IS TO BE EMPLOYED.
886 .FIELD MULTIPLE::=<32:30>
887     MASKED-PS(T)::=0      !
888     DOO::=1              !
889     PS(N)::=2            !
890     FLAG7::=3            !
891     EXFLAG1::=4          !
892     FLTPTS::=5           !
893     EXFLAG2::=6          !
894     INIT-JAM::=7        !
895

```

```

896
897
898 .TOC * EMIT FIELD - IMMEDIATE DATA FROM MICROWORD
899 !USED WHENEVER LOADING IMMEDIATE DATA FROM MICROWORD
900 .FIELD EMIT::=<47:44>'<41:30>
901 .FIELD EMITH::=<47:44>
902 .FIELD EMITHM::=<41:38>
903 .FIELD EMITL::=<37:30>
904 .FIELD EMITML::=<41:30>
905 .FIELD EMIT9-6::=<39:36>
906 .FIELD EMIT15::=<47>
907 .FIELD EMIT14::=<46>
908 .FIELD EMIT13::=<45>
909 .FIELD EMIT12::=<44>
910 .FIELD EMIT11::=<41>
911 .FIELD EMIT10::=<40>
912 .FIELD EMIT09::=<39>
913 .FIELD EMIT08::=<38>
914 .FIELD EMIT07::=<37>
915 .FIELD EMIT06::=<36>
916 .FIELD EMIT05::=<35>
917 .FIELD EMIT04::=<34>
918 .FIELD EMIT03::=<33>

```

```

919 .FIELD EMIT02::=<32>
920 .FIELD EMIT01::=<31>
921 .FIELD EMIT00::=<30>
922
923
924
925 .TOC * RETURN ADDRESS - FOR MICROSUBROUTINE CALLS
926 !USED WITH BUT(SUBR8) AND BUT(SUBR4)
927 .FIELD RETURN::=<46:44>'<41:33> !PAGE # D.I.P.
928
929
930
931 .TOC * UCON SELECTION AND CONTROL FIELDS
932
933
934 .TOC * SELECTION
935 !SELECT PARTICULAR UCON. ONLY USED IF BEGIN/YES & SELECT/UCON.
936 .FIELD UCON-SEL-EMIT::=<43> !SELECT EMIT CAN ONLY BE DONE BY USING
937 ! NO::=0 ! BUTA(CLR-FLAG-RES-UCON) TO ASSERT UCON-SEL-EMIT-L
938 ! YES::=1
939 .FIELD UCON-SEL-I-0::=<46> !SELECT I-0 (BUS) CONTROL
940 ! NO::=0
941 ! YES::=1
942 .FIELD UCON-SEL-WCS::=<45> !SELECT WCS/ECS/DCS
943 ! NO::=0
944 ! YES::=1
945 .FIELD UCON-SEL-CACHEKT::=<44> !SELECT CACHE/KT
946 ! NO::=0
947 ! YES::=1
948 .FIELD UCON-SEL-PROC::=<36> !SELECT PROCESSOR CONTROL
949 ! NO::=0
950 ! YES::=1
951 .FIELD UCON-SEL-FLTPT::=<33> !SELECT HOT FLOATING POINT
952 ! NO::=0
953 ! YES::=1
954
955
956
957 .TOC * CONTROL
958 !AFTER UCON(S) SELECTED FROM ABOVE, CONTROL COMES FROM HERE.
959 .FIELD UCON::=<32:30>'<35:34>'<47>'<42:38>
960 .FIELD UCONH::=<32:30>
961 .FIELD UCONH::=<35:34>
962 .FIELD UCONL::=<47>'<42:38>
963 .FIELD UCON15::=<32>
964 .FIELD UCON14::=<31>
965 .FIELD UCON13::=<30>
966 .FIELD UCON12::=<35>
967 .FIELD UCON11::=<34>
968 .FIELD UCON10::=<47>
969 .FIELD UCON09::=<42>
970 .FIELD UCON08::=<41>
971 .FIELD UCON07::=<40>
972 .FIELD UCON06::=<39>

```

973 .FIELD UCOND5::=<38>

974
975 !-----

976
977

978
979 .TOC * BASE MACHINE EXTENSION BITS

980 LAYOUT IN BASE MACHINE [NOT DCS] ADDRESS SPACE:

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1001
1002

1003
1004

1005 .FIELD ROMEX00::=<60> :ACTIVE HIGH

1006 ZERO::=0

1007 ONE::=1

1008 .FIELD ROMEX01::=<61> :ACTIVE HIGH

1009 ZERO::=0

1010 ONE::=1

1011 .FIELD ROMEX03::=<62> :ACTIVE HIGH

1012 ZERO::=0

1013 ONE::=1

1014 .FIELD FPSEL::=<57> :ACTIVE LOW

1015 ZERO::=1

1016 ONE::=0

1017 .FIELD SFCC::=<58> :ACTIVE LOW

1018 ZERO::=1

1019 ONE::=0

1020 .FIELD FLPAOR::=<59> :ACTIVE LOW

1021 ZERO::=1

1022 ONE::=0

1023 .FIELD SPBYKT::=<55> :ACTIVE LOW

1024 ZERO::=1

1025 ONE::=0

1026 .FIELD UDADD1::=<53> :ACTIVE LOW

---	NAME	---	PAGE					
			0	1	2	3	4	
	ROMEX 00	H	X					X
	ROMEX 01	H			X	X		
	ROMEX 03	H				X		
	FPSEL	L	X		X			X
	SFCC	L	X		X			X
	FLPAOR	L	X		X	X		X
	SPBYKT	L	X					X
	UDADD1	L	X					X
	UDADD0	L	X					X
	UKJCONT	L	X					X
	UKTO1	H	X					X
	UKTO0	H	X					X
	UALTER	L	X					X
	UKTEN	L	X					X

NULL BIT DEFINITIONS:

- .FIELD ROMEX00::=<60> :ACTIVE HIGH
- ZERO::=0
- ONE::=1
- .FIELD ROMEX01::=<61> :ACTIVE HIGH
- ZERO::=0
- ONE::=1
- .FIELD ROMEX03::=<62> :ACTIVE HIGH
- ZERO::=0
- ONE::=1
- .FIELD FPSEL::=<57> :ACTIVE LOW
- ZERO::=1
- ONE::=0
- .FIELD SFCC::=<58> :ACTIVE LOW
- ZERO::=1
- ONE::=0
- .FIELD FLPAOR::=<59> :ACTIVE LOW
- ZERO::=1
- ONE::=0
- .FIELD SPBYKT::=<55> :ACTIVE LOW
- ZERO::=1
- ONE::=0
- .FIELD UDADD1::=<53> :ACTIVE LOW


```

1027     ZERO::=1
1028     ONE::=0
1029     .FIELD  UDR000::=<52>           ACTIVE LOW
1030     ZERO::=1
1031     ONE::=0
1032     .FIELD  UKJCONT::=<54>         ACTIVE LOW
1033     ZERO::=1
1034     ONE::=0
1035     .FIELD  UKT01::=<49>           ACTIVE HIGH
1036     ZERO::=0
1037     ONE::=1
1038     .FIELD  UKT00::=<48>           ACTIVE HIGH
1039     ZERO::=0
1040     ONE::=1
1041     .FIELD  UALTER::=<51>         ACTIVE LOW
1042     ZERO::=1
1043     ONE::=0
1044     .FIELD  UKTEN::=<50>          ACTIVE LOW
1045     ZERO::=1
1046     ONE::=0
1047
1048     !-----
1049
1050
1051
1052     .TOC   *   SPECIAL DCS FIELDS
1053
1054
1055
1056     .TOC   *   FIELDS USED IN PAGES 4, 5, OR 6 OF DCS
1057
1058
1059     .TOC   *   <LOAD-DCS-CTR>-LOAD DIAGNOSTIC COUNTER FROM EMITH
1060     !THIS CODE LOADS THE 4-BIT DCS COUNTER FROM THE CURRENT
1061     !MICROWORD'S EMITH FIELD.  THIS COUNTER IS CLOCKED AT EVERY PD
1062     !FOLLOWING, UNTIL THE COUNTER REACHES ZERO.  AT THIS POINT, THE
1063     !COMPARE IS ENABLED, CLOCKING THE RESULT OF THE CURRENT ENUA:TNUA
1064     !COMPARE INTO THE ERROR LATCH.
1065     !ONLY USED IN PAGES 4, 5, OR 6 OF DCS.
1066     .FIELD  LOAD-DCS-CTR::=<51>,0
1067     NOP::=0           !NOP
1068     YES::=1          !LOAD, COUNT, AND ENABLE COMPARE
1069
1070
1071
1072     .TOC   *   <CTR>-4 BIT DCS COUNTER VALUE FROM EMIT
1073     !THIS FOUR BIT VALUE IS LOADED INTO THE COUNTER (DIAGNOSTIC!),
1074     !WHEN LOAD COUNTDOWN/YES.  COMPLEMENT OF ACTUAL VALUE IS USED, FOR COUNT DOWN.
1075     !LOADING COUNTER VALUE OF 17(8) CAUSES COMPARE AT END OF THIS UWORD.
1076     .FIELD  CTR::=<47:44>
1077     C0::=17
1078     C1::=16
1079     C2::=15
1080     C3::=14

```

```

1081      C4.::=13
1082      C5.::=12
1083      C6.::=11
1084      C7.::=10
1085      C8.::=07
1086      C9.::=06
1087      C10.::=05
1088      C11.::=04
1089      C12.::=03
1090      C13.::=02
1091      C14.::=01
1092      C15.::=00

```

```

1096      .TOC *      <LOAD-ENUA-ERRCOD>-LOAD THE ENUA AND ERRCOD REGISTERS
1097      !THIS CODE LOADS THE 12-BIT ENUA REGISTER FROM THE <EMITM,EMITL> FIELD
1098      !OF THE CURRENT MICROWORD, AND LATCHES THE NUA INTO THE ERRCOD REGISTER.
1099      !ONLY USED IN PAGES 4, 5, OR 6 OF DCS.
1100      .FIELD LOAD-ENUA-ERRCOD::=<54>,0
1101      NOP::=0          !NOP
1102      YES::=1         !LOAD REGISTERS AT PO

```

```

1106      .TOC *      <ENUA>-ENUA VALUE FROM EMIT
1107      !THIS 12 BIT FIELD IS LOADED FROM <EMIT> TO THE ENUA REGISTER
1108      !WHEN LOAD ENUA-ERRCOD/YES.
1109      .FIELD ENUA::=<41:30>

```

```

1113      .TOC *      <VERIFY>-VERIFY BIT FOR SELF CHECK TEST
1114      !WHEN IN SELF TEST MODE OF DCS, SETTING THIS BIT CAUSES THE VERIFY COUNTER TO BE
1115      !BUMPED AT THE START OF THIS MICROWORD. THE VERIFY BIT IS IMPLICITLY SET FOR
1116      !ANY REFERENCE TO PAGE 7 (IE, THE COUNTER IS AUTOMATICALLY BUMPED ON A REFERENCE
1117      !TO PAGE 7).
1118      !ONLY [EXPLICITLY] USED IN PAGES 4, 5, OR 6 OF DCS, WHEN IN SELF TEST MODE.
1119      .FIELD VERIFY::=<48>,0
1120      NOP::=0          !NO ACTION
1121      BUMP::=1        !BUMP VERIFY COUNTER AT PO, WHEN IN SELF TEST MODE

```

```

1125      .TOC *      FIELDS USED IN PAGE 7 OF DCS EXTENSION

```

```

1128      .TOC *      <EOP>-SIGNAL SUCCESSFUL END OF PASS
1129      !THIS CODE SETS THE END OF PASS LATCH, LIGHTING THE EOP LED
1130      !ONLY USED IN PAGE 7 OF DCS.
1131      .FIELD EOP::=<49>,0
1132      NO::=0          !NO EOP
1133      SIGNAL::=1     !SIGNAL SUCCESSFUL EOP AT PO
1134

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1188

```
.TOC *      <DAD>-DCS CONTROL OF BASE MACHINE EXTENSION DAD BITS
!THESE BITS ARE WIRE-AND'ED INTO THE BASE MACHINE DAD<1:0> BITS.
!MUST BE SPECIFIED IN UWORD BEFORE CSP REFERENCE.
!ONLY USED IN PAGE 7 OF DCS.
.FIELD DAD::=<53:52>,0
      NO-DAD::=0
      FIRST-1-OR-2::=1      !SETUP BYTE-CONST ROM INPUT
      SECOND-1-OR-2::=2
      WRITE-BYTE::=3      !SETUP FOR BYTE WRITE TO ASP/BSP
```

```
.TOC *      FIELDS USED IN ALL PAGES OF DCS EXTENSION
```

```
.TOC *      <SCOPE>-SCOPE ON ERROR, DIAGNOSTIC BUT
!THIS CODE IS A SPECIAL BUT, THAT, WHEN ENABLED, CHECKS THE ERROR
!LATCH TO SEE IF IT IS SET. IF IT IS, NUADD IS FORCED TO A ZERO!
!ELSE IT IS LEFT UNCHANGED. USED TO IMPLEMENT FORCED SCOPE LOOP ON ERROR.
!USED IN ALL PAGES OF DCS.
.FIELD SCOPE::=<50>,0
      NOP::=0      !NOP
      ENABLED::=1      !ENABLE SCOPE LOOPING FACILITY
```

```
-----
!END OF MICROWORD FIELD DEFINITIONS
-----
```

```
! .PAGE=====
```

```
.TOC *      MACRO DEFINITIONS
```

```
.TOC *      PRIMITIVE OPERATIONS
```

```
.TOC *      TIMING
.MACRO P0      ::= NULL      !0 NS., UP3 VIEWED AS THE START OF A MICROCYCLE
.MACRO P1      ::= NULL      !60 NS., AT P1
.MACRO P1-L    ::= NULL      !30 NS., AT P1 LEADING EDGE
.MACRO P1-T    ::= NULL      !60 NS., AT P1 TRAILING EDGE
.MACRO P2      ::= NULL      !100 NS., AT 2
.MACRO P2-L    ::= NULL      !70 NS., AT P2 LEADING EDGE
.MACRO P2-T    ::= WHEN/AT-P2-T !100 NS., AT P2 TRAILING EDGE
.MACRO P2-U    ::= NULL      !UNSUPPRESSED P2, CLOCK CONTINUOUSLY
.MACRO P3      ::= NULL      !150 NS., 120-150 NS., AT P3
```



```

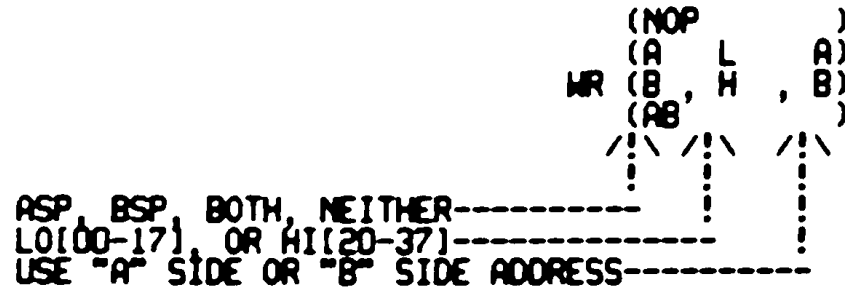
1189 .MACRO P3-L      ::= NULL      !120 NS., AT P3 LEADING EDGE
1190 .MACRO P3-T      ::= W/EN/AT-P3-T !150 NS., AT P3 TRAILING EDGE
1191 .MACRO P3-U      ::= NULL      !UNSUPPRESSED P3, CLOCK CONTINUOUSLY
1192
1193 .MACRO UP3       ::= NULL      !P3 DELAYED BY 5 NS., P0 VIEWED AS THE END OF A
1194 .MICROCYCLE. LATCHES NEW MICROINSTRUCTION INTO
1195 .THE MICROWORD BUFFER REGISTER.
1196
1197 .MACRO DEFER      ::= NULL      !CONTROL IS ISSUED AT THIS TIME,
1198 .ANY REQUIRED CLOCKING OCCURS LATER
1199 .MACRO NEXT       ::= NULL      !WHERE TO GO NEXT, CLOCKED AT UP3
1200 .MACRO SETUP      ::= NULL      !SETUP DATA/CONTROL
1201 .MACRO SELECT     ::= NULL      !MAKE A HOT-BOX SELECTION
1202 .MACRO ISSUE      ::= NULL      !SET/CLEAR HOT-BOX FLAG
1203 .MACRO ENABLE     ::= NULL      !DITTO
1204 .MACRO EMITC      ::= NULL      !SPECIFY AN EMIT-CONSTANT VALUE
1205
1206
1207

```

! .PAGE=====

TO. * WRITING THE A AND B SCRATCH PADS

WRITING THE APPROPRIATE SCRATCH PADS:



WRITES CONTENTS OF D-REGISTER INTO ADDRESSED SCRATCH PADS (SEE BELOW) DURING P3

```

1227 .MACRO WR(AB,HL,ADDR) ::= MOD/CLKSP, !CLOCK SP MODE
1228 .WASP/2AB, !NOP, A, ASP, B, BSP, AB, ABSP, BA, BASP, BOTH ARE CHOICES
1229 .HILO/2HL, !HI, LO, H, L ARE CHOICES
1230 .WRSEL/2ADDR !A, B, A-ADDR, B-ADDR ARE CHOICES
1231
1232
1233

```

TOC * ASP AND BSP PHYSICAL REGISTER ADDRESSES

ENABLE INPUT/OUTPUT (FOR READ AND/OR WRITE) OF THE APPROPRIATE SCRATCH PAD ONTO EITHER BUS-A OR BUS-B VIA EXACT PHYSICAL ADDRESS

```

1239 .MACRO ASPLO(XX) ::= AEN/ASPLO, !SELECT
1240 .ASEL/2XX, !REGISTER &
1241 .RIF/2XX, !ENABLE ON BUS-A
1242

```

```

1243 .MACRO ASPHI(XX) ::= REN/ASPHI, !SELECT
1244 ASEL/2XX, !REGISTER &
1245 RIF/2XX !ENABLE ON BUS-A
1246
1247 .MACRO ASP(XX) ::= ASEL/2XX, !SELECT REGISTER,
1248 RIF/2XX !NO ENABLE
1249
1250
1251 .MACRO BSPL0(XX) ::= BEN/BSPL0, !SELECT
1252 BSEL/2XX, !REGISTER &
1253 RIF/2XX !ENABLE ON BUS-B
1254
1255 .MACRO BSPHI(XX) ::= BEN/BSPHI, !SELECT
1256 BSEL/2XX, !REGISTER &
1257 RIF/2XX !ENABLE ON BUS-B
1258
1259 .MACRO BSP(XX) ::= BSEL/2XX, !SELECT REGISTER,
1260 RIF/2XX !NO ENABLE
1261
1262
1263
1264
1265
1266 .TOC * ASP AND BSP BASE MACHINE FUNCTIONAL REGISTER ADDRESSES
1267
1268 .ENABLE INPUT/OUTPUT (FOR READ AND/OR WRITE) OF THE APPROPRIATE SCRATCH PAD ONTO
1269 EITHER BUS-A "-A" OR BUS-B "-B" VIA FUNCTIONAL REGISTER DESIGNATION
1270
1271 .MACRO R0-A ::= ASPLO(R00)
1272 .MACRO R0-B ::= BSPL0(R00)
1273 .MACRO R1-A ::= ASPLO(R01)
1274 .MACRO R1-B ::= BSPL0(R01)
1275 .MACRO R2-A ::= ASPLO(R02)
1276 .MACRO R2-B ::= BSPL0(R02)
1277 .MACRO R3-A ::= ASPLO(R03)
1278 .MACRO R3-B ::= BSPL0(R03)
1279 .MACRO R4-A ::= ASPLO(R04)
1280 .MACRO R4-B ::= BSPL0(R04)
1281 .MACRO R5-A ::= ASPLO(R05)
1282 .MACRO R5-B ::= BSPL0(R05)
1283 .MACRO R6-A ::= ASPLO(R06)
1284 .MACRO R6-B ::= BSPL0(R06)
1285 .MACRO R7-A ::= ASPLO(R07)
1286 .MACRO R7-B ::= BSPL0(R07)
1287 .MACRO FACB(0)-B ::= BSPHI(R10)
1288 .MACRO FACB(0)-A ::= ASPHI(R10)
1289 .MACRO FACB(1)-B ::= BSPL0(R10)
1290 .MACRO FACB(1)-A ::= ASPLO(R10)
1291 .MACRO FACB(1)-B ::= BSPHI(R11)
1292 .MACRO FACB(1)-A ::= ASPHI(R11)
1293 .MACRO FACB(1)-B ::= BSPL0(R11)
1294 .MACRO FACB(1)-A ::= ASPLO(R11)
1295 .MACRO FACB(2)-B ::= BSPHI(R12)
1296 .MACRO FACB(2)-A ::= ASPHI(R12)

```

```

1297 .MACRO FAC2(2)-B      ::= BSPLO(R12)
1298 .MACRO FACD(2)-A      ::= PC7LO(R12)
1299 .MACRO FAC3(3)-B      ::= BSPHI(R13)
1300 .MACRO FACB(3)-A      ::= ASPHI(R13)
1301 .MACRO FAC3(3)-B      ::= BSPLO(R13)
1302 .MACRO FACD(3)-A      ::= ASPLO(R13)
1303 .MACRO FAC4(4)-B      ::= BSPHI(R14)
1304 .MACRO FACB(4)-A      ::= ASPHI(R14)
1305 .MACRO FAC4(4)-B      ::= BSPLO(R14)
1306 .MACRO FACD(4)-A      ::= ASPLO(R14)
1307 .MACRO FAC5(5)-B      ::= BSPHI(R15)
1308 .MACRO FACB(5)-A      ::= ASPHI(R15)
1309 .MACRO FAC5(5)-B      ::= BSPLO(R15)
1310 .MACRO FACD(5)-A      ::= ASPLO(R15)
1311 .MACRO FDSTA-B        ::= BSPHI(R17)
1312 .MACRO FDSTB-A        ::= ASPHI(R17)
1313 .MACRO FDSTC-B        ::= BSPLO(R17)
1314 .MACRO FDSTD-A        ::= ASPLO(R17)
1315 .MACRO FPSHI#FEC-A    ::= ASPHI(R16)
1316 .MACRO FEA-B          ::= BSPHI(R16)
1317 .MACRO USER-SP-A     ::= ASPLO(R16)
1318 .MACRO USER-SP-B     ::= BSPLO(R16)
1319 .MACRO MHAMI-A        ::= ASPHI(R02)
1320 .MACRO R(ZERO)-B     ::= BSPHI(R03)
1321 .MACRO R(IR)-A       ::= ASPHI(R17)
1322 .MACRO R(SRC)-B      ::= BSPHI(R04)
1323 .MACRO R(SRC)-A      ::= ASPHI(R04)
1324 .MACRO R(DST)-B      ::= BSPHI(R05)
1325 .MACRO R(DST)-A      ::= ASPHI(R05)
1326 .MACRO R(VECT)-B     ::= BSPHI(R02)
1327 .MACRO MCSB(0)-B     ::= BSPHI(R00)
1328 .MACRO MCSB(1)-B     ::= BSPHI(R01)
1329 .MACRO MCSA(0)-A     ::= ASPHI(R00)
1330 .MACRO MCSA(1)-A     ::= ASPHI(R01)
1331 .MACRO FPA-B         ::= BSPHI(R06)
1332 .MACRO CNL-CNTL-B    ::= BSPHI(R07)
1333 .MACRO CNL-CAOR-A    ::= ASPHI(R07)
1334 .MACRO CNL-SW-A      ::= ASPHI(R06)
1335 .MACRO CNL-TMPSW-A   ::= ASPHI(R03)

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TOC * ASP AND BSP INDIRECT REGISTER ADDRESSES

ENABLE INPUT/OUTPUT (FOR READ AND/OR WRITE) OF THE APPROPRIATE SCRATCH PAD ON BUS-A (A) OR BUS-B (B) USING INDIRECT ADDRESSING WITH THE IR, WHERE:

$$SF<3:0>H = [FLPADR H + KTSRCAORS3 H] \# [FLTPT L * IR8 H] \# [IR7 H] \# [IR6 H + ROR1 H]$$

$$DF<3:0>H = [FLPADR H + KTDSTAORS3 H] \# [IR2 H] \# [IR1 H] \# [IRO H]$$

```

.MACRO R(SF)-LO-A      ::= AEN/ASPLO,ASEL/SF
.MACRO R(SF)-LO-B      ::= BEN/BSPLO,BSEL/SF

```



```

1351 .MACRO R(SF)-HI-A      ::= AEN/ASPFI,ASEL/SF
1352 .MACRO R(SF)-HI-B      ::= BEN/BSPFI,BSEL/SF
1353 .MACRO R(DF)-LO-A      ::= AEN/ASPLO,ASEL/DF
1354 .MACRO R(DF)-LO-B      ::= BEN/BSPLO,BSEL/DF
1355 .MACRO R(DF)-HI-A      ::= AEN/ASPFI,ASEL/DF
1356 .MACRO R(DF)-HI-B      ::= BEN/BSPFI,BSEL/DF
1357 .MACRO R(SF)-A         ::= R(SF)-LO-A
1358 .MACRO R(SF)-B         ::= R(SF)-LO-B
1359 .MACRO R(DF)-A         ::= R(DF)-LO-A
1360 .MACRO R(DF)-B         ::= R(DF)-LO-B

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1361
1362
1363

```

1364 .TOC * ASP, BSP INDIRECT ADDRESSING

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1367
1368

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THESE MACROS ONLY SELECT THE ADDRESS MODE FOR THE ASP AND BSP;
THE SELECTED SP IS NOT ENABLED ONTO THE BUS

```

1369
1370
1371
1372

```

.MACRO ASP-ADDRS-R(DF) ::= ASEL/DF
.MACRO ASP-ADDRS-R(SF) ::= ASEL/SF
.MACRO BSP-ADDRS-R(DF) ::= BSEL/DF
.MACRO BSP-ADDRS-R(SF) ::= BSEL/SF

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1377 .TOC * ASP AND BSP DCS SPECIFIC FUNCTIONAL REGISTER ADDRESSES

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ENABLE INPUT/OUTPUT (FOR READ AND/OR WRITE) OF THE APPROPRIATE SCRATCH PAD ONTO
EITHER BUS-A "-A" OR BUS-B "-B" VIA FUNCTIONAL REGISTER DESIGNATION

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.MACRO C000000-A      ::= ASPFI(C000000)    !IN R01
.MACRO C000000-B      ::= BSPFI(C000000)    !IN R01
.MACRO C177777-A      ::= ASPFI(C177777)    !IN R03
.MACRO C177777-B      ::= BSPFI(C177777)    !IN R03
.MACRO C125252-A      ::= ASPFI(C125252)    !IN R05
.MACRO C125252-B      ::= BSPFI(C125252)    !IN R05
.MACRO C052525-A      ::= ASPFI(C052525)    !IN R07
.MACRO C052525-B      ::= BSPFI(C052525)    !IN R07
.MACRO C000001-A      ::= ASPFI(C000001)    !IN R11
.MACRO C000001-B      ::= BSPFI(C000001)    !IN R11
.MACRO C100000-A      ::= ASPFI(C100000)    !IN R13
.MACRO C100000-B      ::= BSPFI(C100000)    !IN R13
.MACRO C000200-A      ::= ASPFI(C000200)    !IN R15
.MACRO C000200-B      ::= BSPFI(C000200)    !IN R15

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! .PAGE=====

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.TOC * WRITING THE C SCRATCH PAD

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WRITE DATA ON BUSDIN (ACTUALLY DMUX OUTPUT) INTO ADDRESSED CSP LOCATION
(SEE BELOW) DURING P3

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1405 .
1406 .MACRO MR-CSP          ::= WRCSP/YES
1407
1408
1409
1410 .TOC *   CSP IMPLIED ADDRESSING
1411
1412 .ENABLE FOR INPUT/OUTPUT (READ AND/OR WRITE) ONTO BUS-B ONLY A SPECIFIC CSP LOCATION,
1413 .WHERE THE ADDRESS IS DETERMINED AS FOLLOWS:
1414
1415 .      CSPADDR<3:0>H = -[ 0 # 0 # BSEL<1>H # BSEL<0>H ]
1416
1417 .MACRO CSPB(XX)        ::= BEN/BASCON,          !USE IMMEDIATE MODE
1418 .                        BSEL/@XX              !WHICH ONE
1419
1420
1421
1422 .TOC *   CSP DIRECT ADDRESSING
1423
1424 .ENABLE FOR INPUT/OUTPUT (READ AND/OR WRITE) ONTO BUS-B ONLY A SPECIFIC CSP LOCATION,
1425 .WHERE THE ADDRESS IS DETERMINED AS FOLLOWS:
1426
1427 .      CSPADDR<3:0>H = -UMWORD<23:20> H
1428
1429 .MACRO CSPD(XX)        ::= BEN/CSP,             !USE CSP-ADDR MODE
1430 .                        CSPADDR/@XX          !WHICH ONE
1431
1432
1433
1434 !.PAGE=====
1435
1436 .TOC *   SHIFT TREE SPECIFICATION
1437 .N.B. MAY REQUIRE PRIOR SETUP OF RES-REGISTER FOR SHIFT END MUX SELECTION CONTROL
1438 .(EG, WHEN ASEL/LEFT-1 IS USED).
1439
1440 .TOC *   ENABLED ONTO BUS A
1441 .MACRO D-RIGHT-14      ::= REN/CMUX, AMUX/RIGHT-8, BMUX/RIGHT-4, ASEL/RIGHT-2
1442 .MACRO D-RIGHT-13      ::= REN/CMUX, AMUX/RIGHT-8, BMUX/RIGHT-4, ASEL/RIGHT-1
1443 .MACRO D-RIGHT-12      ::= REN/CMUX, AMUX/RIGHT-8, BMUX/RIGHT-4, ASEL/DIRECT
1444 .MACRO D-RIGHT-11      ::= REN/CMUX, AMUX/RIGHT-8, BMUX/RIGHT-4, ASEL/LEFT-1      !SENDMUX SETUP
1445 .MACRO D-RIGHT-10      ::= REN/CMUX, AMUX/RIGHT-8, BMUX/DIRECT, ASEL/RIGHT-2
1446 .MACRO D-RIGHT-9       ::= REN/CMUX, AMUX/RIGHT-8, BMUX/DIRECT, ASEL/RIGHT-1
1447 .MACRO D-RIGHT-8       ::= REN/CMUX, AMUX/RIGHT-8, BMUX/DIRECT, ASEL/DIRECT
1448 .MACRO D-RIGHT-7       ::= REN/CMUX, AMUX/RIGHT-8, BMUX/DIRECT, ASEL/LEFT-1      !SENDMUX SETUP
1449 .MACRO D-RIGHT-6       ::= REN/CMUX, AMUX/DIRECT, BMUX/RIGHT-4, ASEL/RIGHT-2
1450 .MACRO D-RIGHT-5       ::= REN/CMUX, AMUX/DIRECT, BMUX/RIGHT-4, ASEL/RIGHT-1
1451 .MACRO D-RIGHT-4       ::= REN/CMUX, AMUX/DIRECT, BMUX/RIGHT-4, ASEL/DIRECT
1452 .MACRO D-RIGHT-3       ::= REN/CMUX, AMUX/DIRECT, BMUX/RIGHT-4, ASEL/LEFT-1      !SENDMUX SETUP
1453 .MACRO D-RIGHT-2       ::= REN/CMUX, AMUX/DIRECT, BMUX/DIRECT, ASEL/RIGHT-2
1454 .MACRO D-RIGHT-1       ::= REN/CMUX, AMUX/DIRECT, BMUX/DIRECT, ASEL/RIGHT-1
1455 .MACRO D-NO-SHIFT      ::= REN/CMUX, AMUX/DIRECT, BMUX/DIRECT, ASEL/DIRECT
1456 .MACRO D-DIRECT        ::= D-NO-SHIFT
1457 .MACRO D-LEFT-1       ::= REN/CMUX, AMUX/DIRECT, BMUX/DIRECT, ASEL/LEFT-1      !SENDMUX SETUP
1458 .MACRO D-SWAB          ::= REN/CMUX, AMUX/SWAB, BMUX/DIRECT, ASEL/DIRECT

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1459 .MACRO D-SWAB-RIGHT-3      ::= REN/CMUX, AMUX/SWAB, BMUX/RIGHT-4, ASEL/LEFT-1      !SENDMUX SETUP
1460 .MACRO D-SWAB-LEFT-1     ::= REN/CMUX, AMUX/SWAB, BMUX/DIRECT, ASEL/LEFT-1      !SENDMUX SETUP
1461 .MACRO D-SIGNEXT          ::= REN/CMUX, AMUX/SIGNEXT, BMUX/DIRECT, ASEL/DIRECT
1462 .MACRO D-SIGNEXT-RIGHT-1 ::= REN/CMUX, AMUX/SIGNEXT, BMUX/DIRECT, ASEL/RIGHT-1
1463 .MACRO D-SIGNEXT-LEFT-1  ::= REN/CMUX, AMUX/SIGNEXT, BMUX/DIRECT, ASEL/LEFT-1      !SENDMUX SETUP
1464 .MACRO NO-SHIFT           ::= REN/CMUX, BMUX/DIRECT, ASEL/DIRECT
1465 .MACRO DIRECT             ::= NO-SHIFT
1466 .MACRO COUNT#D[HI]       ::= REN/CMUX, AMUX/COUNTER#D[HI], BMUX/DIRECT, ASEL/DIRECT
1467 .MACRO COUNT#D[LO]      ::= REN/CMUX, AMUX/COUNTER#D[LO], BMUX/DIRECT, ASEL/DIRECT
1468
1469
1470

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1471 .TOC * FIRST TWO LEVELS ONLY (AMUX, BMUX)
1472 !N.B.: FOR USE WHEN SHIFTING SR RIGHT, SR{15} (- BMUX<00>)
1473 .MACRO D-DIRECT[BMUX]    ::= AMUX/DIRECT, BMUX/DIRECT
1474
1475
1476

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1477 !.PAGE=====
1478

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1479 .TOC * ALU FUNCTIONS
1480 ! [SEE FIELD DESCRIPTION OF "ALU" FOR FULL DESCRIPTION]
1481 .MACRO ZERO              ::= ALU/ZERO
1482 .MACRO A-XOR-B          ::= ALU/A-XOR-B
1483 .MACRO B                 ::= ALU/B
1484 .MACRO A-AND-B          ::= ALU/A-AND-B
1485 .MACRO A-IOR-B         ::= ALU/A-IOR-B
1486 .MACRO A                ::= ALU/A
1487 .MACRO NOT-A            ::= ALU/NOT-A
1488 .MACRO NOT-A-AND-B     ::= ALU/NOT-A-AND-B
1489 .MACRO A-AND-NOT-B     ::= ALU/A-AND-NOT-B
1490
1491 .MACRO DIVIDE           ::= ALU/DIVIDE
1492 .MACRO A-PLUS-B        ::= ALU/A-PLUS-B
1493 .MACRO A-MINUS-B       ::= ALU/A-MINUS-B
1494 .MACRO A-PLUS-B-PLUS-PS[C] ::= ALU/A-PLUS-B-PLUS-PS[C]
1495 .MACRO A-PLUS-B-PLUS-D[C] ::= ALU/A-PLUS-B-PLUS-D[C]
1496 .MACRO A-PLUS-NOT-B-PLUS-D[C] ::= ALU/A-PLUS-NOT-B-PLUS-D[C]
1497 .MACRO A-PLUS-B-PLUS-1 ::= ALU/A-PLUS-B-PLUS-1
1498
1499

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1500 .TOC * COUT GENERATION
1501 ! [SEE FIELD DESCRIPTION OF "COUT" FOR FULL DESCRIPTION]
1502 .MACRO COUT+CIN         ::= COUT/CIN
1503 .MACRO COUT+PS[C]      ::= COUT/PS[C]
1504 .MACRO COUT+ALU00      ::= COUT/ALU00
1505 .MACRO COUT+ALU07      ::= COUT/ALU07
1506 .MACRO COUT+ALU15      ::= COUT/ALU15
1507 .MACRO COUT+COUT07     ::= COUT/COUT07
1508 .MACRO COUT+COUT15     ::= COUT/COUT15
1509 .MACRO COUT+D[C]       ::= COUT/D[C]
1510
1511
1512

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1513 !.PAGE=====
1514
1515 .TOC *   CLOCKS
1516
1517
1518
1519 .TOC *   BASIC REGISTER CLOCKS (D, SR, BA, CC)
1520 .MACRO CLK-D           ::= CLKD/YES      !MUST SPECIFY P2 T OR P3 T
1521 .MACRO CLK-SR         ::= CLKSr/YES     !MUST SPECIFY P2 T OR P3 T
1522 .MACRO CLK-BA         ::= CLKBA/YES    !AT P1 T ONLY
1523 .MACRO SET-CC         ::= SCC/YES      !SETUP HERE, CLOCKED AT P2 T **OF NEXT UWORD** ONLY
1524 .MACRO CLK-CC         ::= NULL         !IN NEXT UWORD, FOR DOCUMENTATION
1525
1526
1527
1528 .TOC *   REDEFINED FROM SP REWRITE FIELD (RES, COUNTER)
1529 .MACRO LOAD-RES       ::= MOD/LOADREG,LOADRES/YES !AT P2 T ONLY, FROM B-BUS<14:11>
1530 .MACRO LOAD-COUNTER  ::= MOD/LOADREG,LOADCOUNT/YES !DURING ENTIRE UWORD, FROM B-BUS<7:0>
1531
1532
1533
1534 .TOC *   RES REGISTER CONTROL VALUES (FROM EMIT)
1535 !LOADED VIA: EMIT<14:11> -> CSP[XX]<14:11> -> B-BUS<14:11> -> RES<3:0>
1536 .MACRO SENDMUX-0123-SEL ::= EMIT14/1      !FOR SHIFT TREE
1537 .MACRO SENDMUX-4567-SEL ::= EMIT14/0      !FOR SHIFT TREE
1538 .MACRO SR-LOAD         ::= EMIT13/0,EMIT12/0 !FOR SR/GUARD
1539 .MACRO SR-LEFT         ::= EMIT13/0,EMIT12/1 !FOR SR/GUARD
1540 .MACRO SR-RIGHT        ::= EMIT13/1,EMIT12/0 !FOR SR/GUARD
1541 .MACRO SR-NOP          ::= EMIT13/1,EMIT12/1 !FOR SR/GUARD
1542 .MACRO GUARD-EN        ::= EMIT11/1      !FOR SR/GUARD
1543 .MACRO GUARD-DIS       ::= EMIT11/0      !FOR SR/GUARD
1544
1545
1546
1547
1548 .TOC *   CC CONTROL (FROM EMIT)
1549 !USED VIA: BUS-U37-H -> EMIT07-H -> MODIFY-V(1)-H
1550 .MACRO MODIFY-VBIT     ::= EMIT07/1
1551 .MACRO NOT-MODIFY-VBIT ::= EMIT07/0
1552
1553
1554
1555 !.PAGE=====
1556
1557 .TOC *   BUS CONTROL MACROS
1558 .MACRO DATI-CLKIR      ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATI-CLKIR
1559 .MACRO DATI-NOINT     ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATI-NOINT
1560 .MACRO DATI           ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATI
1561 .MACRO DATI[P]        ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATI[P] !WITH ALTER/ALLOWED
1562 .MACRO DATO           ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATO
1563 .MACRO DATIB          ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATIB
1564 .MACRO DATIB[P]       ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATIB[P] !WITH ALTER/ALLOWED
1565 .MACRO DATIP          ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATIP
1566 .MACRO DATOB          ::= BEGIN/YES,SELECT/BUS,BUSCODE/DATOB

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1567 .MACRO INVALDATE      ::= BEGIN/YES,SELECT/BUS,BUSCODE/INVALDATE
1568
1569
1570
1571 .TOC *      KT/KJ CONTROL FUNCTIONS
1572
1573      !THESE BITS ACTUALLY ARISE OUT OF THE BASE MACHINE EXTENSION ROMS,
1574      !AND AS SUCH ARENT DIRECTLY ACCESSIBLE FROM THE DCS.  THEY ARE
1575      !INCLUDED HERE ONLY FOR DOCUMENTATION PURPOSES.
1576
1577 .MACRO KJ-ENABLE      ::= KJ/ONE
1578
1579 .MACRO MAINTENANCE    ::= UKTEN/ONE
1580 .MACRO CURRENT-MODE  ::= UKT01/ONE,UKT00/ZERO
1581 .MACRO KERNAL-MODE   ::= UKT01/ONE,UKT00/ONE
1582 .MACRO MT-MODE       ::= UKT01/ZERO,UKT00/ONE
1583 .MACRO MF-MODE       ::= UKT01/ZERO,UKT00/ZERO
1584
1585
1586
1587 !.PAGE=====
1588
1589 .TOC *      UCON CONTROL MACROS
1590 .MACRO SET-UCON-CONTROL ::= BEGIN/YES,SELECT/UCON,UCON-LOAD/YES !LOAD UCON CONTROL REGISTER AT PO
1591 .MACRO UCON-OPERATION  ::= BEGIN/YES,SELECT/UCON,UCON-XFER/YES !PERFORM UCON OPERATION
1592
1593
1594
1595 .TOC *      PROCESSOR UCON CONTROL SETUP
1596 .MACRO UCON-PROC      ::= UCON-SEL-PROC/YES           !SELECT PROCESSOR
1597 .MACRO EN-CLK-IR[15-00] ::= UCON15/1                 !ENABLE OPERATIONS
1598 .MACRO EN-CLK-PS[15-12] ::= UCON14/1
1599 .MACRO EN-CLK-FLAG[8-0]  ::= UCON13/1
1600 .MACRO EN-CLK-FPS[7-4]   ::= UCON12/1
1601 .MACRO EN-CLK-PS[7-4]   ::= UCON11/1
1602 .MACRO EN-CLK-PS[3-0]   ::= UCON10/1
1603 .MACRO EN-CLK-UBREAK[11-00] ::= UCON09/1
1604      !UCON<8:7> ARE NOT USED IN PROCESSOR CONTROL
1605 .MACRO BUSDIN+EMIT[15-00] ::= UCON06/0,UCON05/0       !HBMUX SELECT
1606 .MACRO BUSDIN+CUA[14-03]  ::= UCON06/0,UCON05/1
1607 .MACRO BUSDIN+PS[15-00]  ::= UCON06/1,UCON05/0
1608 .MACRO BUSDIN+FLAG[8-0]#FPS[7-0] ::= UCON06/1,UCON05/1
1609
1610
1611
1612
1613 .TOC *      DCS/WCS/ECS CONTROL
1614 .MACRO UCON-DCS      ::= UCON-SEL-WCS/YES           !SELECT DCS
1615 .MACRO BUSDIN+TNUA[11-00] ::= UCON14/0             !DCS BUSDIN MUX SEL
1616 .MACRO BUSDIN+ERR#EOP#ERRCOD[11-00] ::= UCON14/1
1617 .MACRO START-DCS    ::= UCON15/1
1618
1619
1620

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1621 .TOC *          CACHE/KT UCON CONTROL
1622 .MACRO UCON-CACHE-KT          ::= UCON-SEL-CACHEKT/YES          !SELECT CACHE / KT UCON FUNCTION
1623 !UCON<15> NOT USED HERE
1624 .MACRO EN-KT-NO-RELOCATE      ::= UCON14/1          !INHIBIT KT FROM ANY RELOCATION OF BA -> PBA
1625 .MACRO BUSDIN+BUS-INTERNAL-ADDR[15-00] ::= UCON13/0,UCON12/1 !FROM INTERNAL ADDR ROM
1626 .MACRO BUSDIN+CPU-INTERNAL-ADDR[15-00] ::= UCON13/1,UCON12/1 !DITTO ...
1627 .MACRO BUSDIN+MMR2[15-00]      ::= UCON11/1,UCON09/0 !VIRTUAL PC
1628 .MACRO BUSDIN+CACHE-STATUS[15-00] ::= UCON11/1,UCON09/1 !CACHE INFO
1629 .MACRO BUSDIN+KT-SEL          ::= UCON10/1          !FOR PAR-S, PDR-S ETC
1630 .MACRO KT-WRITE-HIGH          ::= UCON08/1          !WRITE REGISTER <15:08>
1631 .MACRO KT-WRITE-LOW          ::= UCON07/1          !WRITE REGISTER <07:00>
1632 .MACRO KT-WRITE              ::= UCON08/1,UCON07/1 !WRITE REGISTER <15:00>
1633 .MACRO KT-SEL-SLR+CCR        ::= UCON06/0,UCON05/0 !SELECT KT-MUX OUTPUT
1634 .MACRO KT-SEL-MMR0          ::= UCON06/0,UCON05/1
1635 .MACRO KT-SEL-PDR          ::= UCON06/1,UCON05/0
1636 .MACRO KT-SEL-PAR          ::= UCON06/1,UCON05/1
1637
1638
1639
1640
1641 .TOC *          I/O UCON CONTROL
1642 .MACRO UCON-I-0          ::= UCON-SEL-I-0/YES          !SELECT I-0 CONTROL
1643
1644
1645
1646 .TOC *          BUS CONTROL
1647 .MACRO EN-LOAD-DBUF[15-00]      ::= UCON15/1          !EN LOAD DBUF AT P3
1648 .MACRO BUSDIN+DBUF[15-00]      ::= UCON15/1          !DBUF ON BUSDIN
1649 .MACRO EN-STATUS-MUX          ::= UCON15/0          !STATUS-MUX ENABLE ON BUSDIN
1650 !UCON<14:11> ARE NOT USED IN UCON BUS CONTROL
1651 .MACRO BUSDIN+SERVICE[15-00]  ::= UCON10/0,UCON09/1
1652 .MACRO BUSDIN+JAM[15-00]       ::= UCON10/1,UCON09/0
1653 .MACRO BUSDIN+PBA[15-00]       ::= UCON10/1,UCON09/1
1654 .MACRO DMUX+CACHE+DATA[15-00]  ::= UCON08/1
1655 .MACRO EN-BC-FCM-0            ::= UCON07/0,UCON06/0,UCON05/0 !SELECT BUS CONTROL FUNCTION
1656 .MACRO EN-START-DELAY          ::= UCON07/0,UCON06/0,UCON05/1
1657 .MACRO EN-CLR-JAM-ERRORS       ::= UCON07/0,UCON06/1,UCON05/0
1658 .MACRO EN-CLR-NPR-TIMEOUT      ::= UCON07/0,UCON06/1,UCON05/1
1659 .MACRO EN-CLR-PWR-FAIL        ::= UCON07/1,UCON06/0,UCON05/0
1660 .MACRO EN-CLR-YELLOW-ZONE      ::= UCON07/1,UCON06/0,UCON05/1
1661 .MACRO EN-ALLOW-BG[1]H        ::= UCON07/1,UCON06/1,UCON05/0
1662 .MACRO EN-BUS-INIT-UCON        ::= UCON07/1,UCON06/1,UCON05/1
1663
1664
1665
1666 .TOC *          CONSOLE I-0
1667 .MACRO EN-CONSOLE-COMMAND      ::= UCON15/0,UCON14/0 !SETS UP UCON I-0 BITS FOR CONSOLE COMMANDS
1668 !ALSO SELECTS STATUS-MUX ON BUSDIN
1669 .MACRO EN-CNSL-NOP              ::= UCON13/0,UCON12/0,UCON11/0 !ENABLE CONSOLE NO OPERATION
1670 .MACRO EN-CLR-COUNTR           ::= UCON13/0,UCON12/0,UCON11/1 !ENABLE CLEAR DIGIT PAIR COUNTER
1671 .MACRO EN-INCR-COUNTR          ::= UCON13/0,UCON12/1,UCON11/0 !ENABLE BUMP TO NEXT DIGIT PAIR
1672 .MACRO EN-CLR-CNSL-SRVC        ::= UCON13/0,UCON12/1,UCON11/1 !ENABLE CLEAR CONSOLE SERVICE RST FLOP
1673 .MACRO EN-STRB-DISP            ::= UCON13/1,UCON12/0,UCON11/0 !ENABLE WRITE DIGIT PAIR TO DISPLAY LATCH
1674 .MACRO EN-CLR-CNSL             ::= UCON13/1,UCON12/0,UCON11/1 !ENABLE CLEAR CONSOLE LED

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1675 .MACRO EN-SET-CNSL          ::= UCON13/1,UCON12/1,UCON11/0      !ENABLE SET CONSOLE LED
1676 .MACRO EN-SET-DP          ::= UCON13/1,UCON12/1,UCON11/1      !ENABLE SET ALL DP LEDS
1677 .MACRO BUSDIN+CONSOLE(06-00) ::= UCON10/0,UCON09/0          !STATUS-MUX SELECT
1678 !UCON<8:5> ARE NOT USED IN UCON CONSOLE CONTROL
1679
1680
1681
1682 .TOC *          REMOTE CONSOLE INTERFACE
1683 !N.B.: "EN CONSOLE COMMAND" DOES NOT APPLY TO REMOTE CONSOLE
1684 .MACRO EN-REMSTRB          ::= UCON14/1          !EN REMOTE CONSOLE STROBE
1685 .MACRO EN-REMCODE1        ::= UCON12/1          !EN SPECIAL CODE 1
1686 .MACRO EN-REMCODE0        ::= UCON11/1          !EN SPECIAL CODE 0
1687
1688
1689
1690 !.PAGE=====
1691
1692 .TOC *          DCS ROM EXTENSION MACROS
1693
1694 .TOC *          GENERAL FUNCTIONS
1695 .MACRO LOAD-ENUA(MICROADDR) ::= LOAD-ENUA-ERRCOD/YES,          !SPECIFY LOAD
1696                                ENUA/2MICROADDR                !AND VALUE
1697 .MACRO LOAD-ERROR(MICROADDR) ::= LOAD-ENUA-ERRCOD/YES          !FOR EFFECT ONLY - ALWAYS ACCOMPANIES ABOVE
1698 .MACRO BUMP-VERIFY          ::= VERIFY/BUMP                    !BUMP VERIFY COUNTER WHEN IN SELF TEST MODE
1699 .MACRO SIGNAL-EOP          ::= EOP/SIGNAL                      !SIGNAL END OF PASS
1700 .MACRO DCS-CTR(XX)          ::= LOAD-DCS-CTR/YES,              !SPECIFY LOAD COUNTER (DCS!)
1701                                CTR/2XX                          !AND VALUE
1702
1703
1704
1705 .TOC *          DAD<1:0> BIT FUNCTIONS
1706 .MACRO NO-DAD              ::= DAD/NO-DAD                      !DON'T ASSERT DAD BITS
1707 .MACRO FIRST-1-OR-2        ::= DAD/FIRST-1-OR-2              !SELECT CSP CONSTANT 1/2, FIRST USE
1708 .MACRO SECOND-1-OR-2       ::= DAD/SECOND-1-OR-2             !SELECT CSP CONSTANT 1/2, SECOND USE
1709 .MACRO WRITE-BYTE          ::= DAD/WRITE-BYTE                 !BYTE WRITE ENABLE TO ASP/BSP
1710 .MACRO BYTE-WRITE          ::= DAD/WRITE-BYTE
1711
1712
1713
1714 .TOC *          DIAGNOSTIC MODE BUT ENABLES
1715
1716 .MACRO BUTD(SCOPE)          ::= SCOPE/ENABLED                 !ENABLE SCOPE LOOPING CHECK
1717 .MACRO BUTD(ERROR)         ::= SCOPE/ENABLED                 !FORCES NUAD0=0 IF ERROR(1)H SET
1718
1719 .MACRO BUTD(VERIFY-MODE)    ::= NULL                          !CHECK IMPLICITLY FOR VERIFY MODE
1720                                !'SIGNAL EOP' MUST BE PRESENT IN SAME WORD
1721                                !FORCES NUAD1=0 IF VERIFY SWITCH SET
1722
1723 .MACRO BUTD(EOP-OVERFLOW)   ::= NULL                          !AFTER 'SIGNAL EOP' GIVEN, ADDRESS IS FORCED
1724                                !TO (4000) IF HARDWARE EOP/VERIFY COUNTER
1725                                !HAS NOT YET OVERFLOWED, FORCING ANOTHER
1726                                !PASS. ELSE ADDRESS IN UPF IS TAKEN UNMODIFIED.
1727
1728

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1729
1730 !.PAGE=====
1731
1732 .TOC * MICROBRANCH FIELD MACROS
1733 ! [SEE <UBF> FIELD DESCRIPTION FOR FULL INFO]
1734
1735 .MACRO BUT(XX) ::= UBF/2XX !INACTIVE, FULL WIDTH
1736 .MACRO BUTR(XX) ::= UBF/2XX !INACTIVE, RESTRICTED WIDTH
1737
1738 .MACRO BUTA(XX) ::= UBF/2XX !ACTIVE, FULL WIDTH
1739 .MACRO BUTRA(XX) ::= UBF/2XX !ACTIVE, RESTRICTED WIDTH
1740
1741 .MACRO TEST(XX) ::= MULTIPLE/2XX !FOR BUTR(MULTIPLE) SETUP
1742 .MACRO BUTM(XX) ::= MULTIPLE/2XX,UBF/2XX !A MULTIPLE BUTR
1743
1744
1745 !.PAGE=====
1746
1747 .TOC * MISCELLANEOUS
1748
1749 .TOC * OTHER SOURCES ENABLED FOR A-BUS
1750 .MACRO SR ::= AEN/XMUX,ASELO/SR
1751 .MACRO FLTPT ::= AEN/XMUX,ASELO/FLTPT
1752
1753
1754
1755 .TOC * PAGING, RETURN REGISTER
1756
1757 !PAGE FIELD ONLY:
1758 .MACRO PAGE(X) ::= NEXT-PAGE/2X
1759
1760 !PAGE FIELD AND BUT(SUBR B):
1761 .MACRO GOTO-PAGE(X) ::= NEXT-PAGE/2X,UBF/SUBR-B
1762
1763 !RETURN REGISTER (- D<14:03>, PAGE (- EMIT<02:00> ON BUTA(SUBR-A)
1764 .MACRO RETURN+D(14-33) ::= UBF/SUBR-A
1765
1766
1767
1768 !.PAGE=====
1769
1770 .TOC * ADVANCED OPERATIONS
1771
1772
1773
1774 .TOC * DATA INTO CSP, AT P3 ONLY
1775
1776 !N.B.: BUSDIN IS ANY BUT EMIT [OVERLAPS BSEL<1:0>]
1777 .MACRO CSPB(14)+BUSDIN ::= CSPB(B14),WR-CSP
1778 .MACRO CSPB(15)+BUSDIN ::= CSPB(B15),WR-CSP
1779 .MACRO CSPB(16)+BUSDIN ::= CSPB(B16),WR-CSP
1780 .MACRO CSPB(17)+BUSDIN ::= CSPB(B17),WR-CSP
1781
1782

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1783      !N.B.: GETS WHATEVER IS ON BUSDIN
1784      .MACRO CSPD[00]+BUSDIN      ::= CSPD(000),WR-CSP
1785      .MACRO CSPD[01]+BUSDIN      ::= CSPD(001),WR-CSP
1786      .MACRO CSPD[02]+BUSDIN      ::= CSPD(002),WR-CSP
1787      .MACRO CSPD[03]+BUSDIN      ::= CSPD(003),WR-CSP
1788      .MACRO CSPD[04]+BUSDIN      ::= CSPD(004),WR-CSP
1789      .MACRO CSPD[05]+BUSDIN      ::= CSPD(005),WR-CSP
1790      .MACRO CSPD[06]+BUSDIN      ::= CSPD(006),WR-CSP
1791      .MACRO CSPD[07]+BUSDIN      ::= CSPD(007),WR-CSP
1792      .MACRO CSPD[10]+BUSDIN      ::= CSPD(010),WR-CSP
1793      .MACRO CSPD[11]+BUSDIN      ::= CSPD(011),WR-CSP
1794      .MACRO CSPD[12]+BUSDIN      ::= CSPD(012),WR-CSP
1795      .MACRO CSPD[13]+BUSDIN      ::= CSPD(013),WR-CSP
1796      .MACRO CSPD[14]+BUSDIN      ::= CSPD(014),WR-CSP
1797      .MACRO CSPD[15]+BUSDIN      ::= CSPD(015),WR-CSP
1798      .MACRO CSPD[16]+BUSDIN      ::= CSPD(016),WR-CSP
1799      .MACRO CSPD[17]+BUSDIN      ::= CSPD(017),WR-CSP
1800
1801      !N.B.: REQUIRED THAT BUSDIN+EMIT[15-00] PREVIOUSLY SET UP
1802      .MACRO CSPD[00]+EMIT        ::= CSPD(000),WR-CSP
1803      .MACRO CSPD[01]+EMIT        ::= CSPD(001),WR-CSP
1804      .MACRO CSPD[02]+EMIT        ::= CSPD(002),WR-CSP
1805      .MACRO CSPD[03]+EMIT        ::= CSPD(003),WR-CSP
1806      .MACRO CSPD[04]+EMIT        ::= CSPD(004),WR-CSP
1807      .MACRO CSPD[05]+EMIT        ::= CSPD(005),WR-CSP
1808      .MACRO CSPD[06]+EMIT        ::= CSPD(006),WR-CSP
1809      .MACRO CSPD[07]+EMIT        ::= CSPD(007),WR-CSP
1810      .MACRO CSPD[10]+EMIT        ::= CSPD(010),WR-CSP
1811      .MACRO CSPD[11]+EMIT        ::= CSPD(011),WR-CSP
1812      .MACRO CSPD[12]+EMIT        ::= CSPD(012),WR-CSP
1813      .MACRO CSPD[13]+EMIT        ::= CSPD(013),WR-CSP
1814      .MACRO CSPD[14]+EMIT        ::= CSPD(014),WR-CSP
1815      .MACRO CSPD[15]+EMIT        ::= CSPD(015),WR-CSP
1816      .MACRO CSPD[16]+EMIT        ::= CSPD(016),WR-CSP
1817      .MACRO CSPD[17]+EMIT        ::= CSPD(017),WR-CSP
1818
1819
1820
1821      .TOC *      MISC CONSTANTS INTO ASP, BSP, AT P2-T * P3
1822
1823      .MACRO A#BSPHI[C100000]+D    ::= ASP(C100000),BSP(C100000),WR(AB,H,B)
1824      .MACRO A#BSPHI[C000200]+D    ::= ASP(C000200),BSP(C000200),WR(AB,H,B)
1825      .MACRO A#SPHI[C000000]+D     ::= ASP(C000000),BSP(C000000),WR(AB,H,B)
1826      .MACRO A#SPHI[C177777]+D     ::= ASP(C177777),BSP(C177777),WR(AB,H,B)
1827      .MACRO A#SPHI[C000001]+D     ::= ASP(C000001),BSP(C000001),WR(AB,H,B)
1828      .MACRO A#BSPHI[C052525]+D    ::= ASP(C052525),BSP(C052525),WR(AB,H,B)
1829      .MACRO A#BSPHI[C125252]+D    ::= ASP(C125252),BSP(C125252),WR(AB,H,B)
1830
1831      .MACRO A#BSPHI[C100000]+D-[B] ::= BSP(C100000),WR(AB,H,B)
1832      .MACRO A#BSPHI[C000200]+D-[B] ::= BSP(C000200),WR(AB,H,B)
1833      .MACRO A#BSPHI[C000000]+D-[B] ::= BSP(C000000),WR(AB,H,B)
1834      .MACRO A#BSPHI[C177777]+D-[B] ::= BSP(C177777),WR(AB,H,B)
1835      .MACRO A#BSPHI[C000001]+D-[B] ::= BSP(C000001),WR(AB,H,B)
1836      .MACRO A#BSPHI[C052525]+D-[B] ::= BSP(C052525),WR(AB,H,B)

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1837 .MACRO A#BSPHI[C125252]+D-[B] ::= BSP(C125252),WR(AB,H,B)
1838
1839 .MACRO A#BSPHI[C100000]+D-[A] ::= ASP(C100000),WR(AB,H,A)
1840 .MACRO A#SPHI[C000200]+D-[A] ::= ASP(C000200),WR(AB,H,A)
1841 .MACRO A#SPHI[C000000]+D-[A] ::= ASP(C000000),WR(AB,H,A)
1842 .MACRO A#SPHI[C177777]+D-[A] ::= ASP(C177777),WR(AB,H,A)
1843 .MACRO A#SPHI[C000001]+D-[A] ::= ASP(C000001),WR(AB,H,A)
1844 .MACRO A#BSPHI[C052525]+D-[A] ::= ASP(C052525),WR(AB,H,A)
1845 .MACRO A#BSPHI[C125252]+D-[A] ::= ASP(C125252),WR(AB,H,A)
1846
1847
1848
1849 .TOC * DATA INTO ASP, BSP, AT P2-T * P3
1850
1851 .MACRO ASPLO[17]+CSPB(XX) ::= B,ASPLO(R17),CSPB(XX),CLK-D,P2-T,WR(A,L,A)
1852 .MACRO ASPLO[17]+CSPD(XX) ::= B,ASPLO(R17),CSPD(XX),CLK-D,P2-T,WR(A,L,A)
1853 .MACRO PC+D ::= PC-A,WR(AB,L,A)
1854 .MACRO RS+D ::= RS-A,WR(AB,L,A)
1855
1856 .MACRO ASPLO[00]+D ::= ASP(R00),WR(A,L,A)
1857 .MACRO ASPLO[01]+D ::= ASP(R01),WR(A,L,A)
1858 .MACRO ASPLO[02]+D ::= ASP(R02),WR(A,L,A)
1859 .MACRO ASPLO[03]+D ::= ASP(R03),WR(A,L,A)
1860 .MACRO ASPLO[04]+D ::= ASP(R04),WR(A,L,A)
1861 .MACRO ASPLO[05]+D ::= ASP(R05),WR(A,L,A)
1862 .MACRO ASPLO[06]+D ::= ASP(R06),WR(A,L,A)
1863 .MACRO ASPLO[07]+D ::= ASP(R07),WR(A,L,A)
1864 .MACRO ASPLO[10]+D ::= ASP(R10),WR(A,L,A)
1865 .MACRO ASPLO[11]+D ::= ASP(R11),WR(A,L,A)
1866 .MACRO ASPLO[12]+D ::= ASP(R12),WR(A,L,A)
1867 .MACRO ASPLO[13]+D ::= ASP(R13),WR(A,L,A)
1868 .MACRO ASPLO[14]+D ::= ASP(R14),WR(A,L,A)
1869 .MACRO ASPLO[15]+D ::= ASP(R15),WR(A,L,A)
1870 .MACRO ASPLO[16]+D ::= ASP(R16),WR(A,L,A)
1871 .MACRO ASPLO[17]+D ::= ASP(R17),WR(A,L,A)
1872
1873 .MACRO ASPHI[00]+D ::= ASP(R00),WR(A,H,A)
1874 .MACRO ASPHI[01]+D ::= ASP(R01),WR(A,H,A)
1875 .MACRO ASPHI[02]+D ::= ASP(R02),WR(A,H,A)
1876 .MACRO ASPHI[03]+D ::= ASP(R03),WR(A,H,A)
1877 .MACRO ASPHI[04]+D ::= ASP(R04),WR(A,H,A)
1878 .MACRO ASPHI[05]+D ::= ASP(R05),WR(A,H,A)
1879 .MACRO ASPHI[06]+D ::= ASP(R06),WR(A,H,A)
1880 .MACRO ASPHI[07]+D ::= ASP(R07),WR(A,H,A)
1881 .MACRO ASPHI[10]+D ::= ASP(R10),WR(A,H,A)
1882 .MACRO ASPHI[11]+D ::= ASP(R11),WR(A,H,A)
1883 .MACRO ASPHI[12]+D ::= ASP(R12),WR(A,H,A)
1884 .MACRO ASPHI[13]+D ::= ASP(R13),WR(A,H,A)
1885 .MACRO ASPHI[14]+D ::= ASP(R14),WR(A,H,A)
1886 .MACRO ASPHI[15]+D ::= ASP(R15),WR(A,H,A)
1887 .MACRO ASPHI[16]+D ::= ASP(R16),WR(A,H,A)
1888 .MACRO ASPHI[17]+D ::= ASP(R17),WR(A,H,A)
1889
1890 .MACRO BSPL0[00]+D ::= BSP(R00),WR(B,L,B)

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1891	.MACRO	BSPLO(01)+D	BSP (R00), BSP (R00), H (R00), H, A
1892	.MACRO	BSPLO(02)+D	BSP (R01), BSP (R01), H (R00), H, A
1893	.MACRO	BSPLO(03)+D	.....	BSP (R02), BSP (R02), H (R00), H, A
1894	.MACRO	BSPLO(04)+D	.....	BSP (R03), BSP (R03), H (R00), H, A
1895	.MACRO	BSPLO(05)+D	.....	BSP (R04), BSP (R04), H (R00), H, A
1896	.MACRO	BSPLO(06)+D	.....	BSP (R05), BSP (R05), H (R00), H, A
1897	.MACRO	BSPLO(07)+D	.....	BSP (R06), BSP (R06), H (R00), H, A
1898	.MACRO	BSPLO(10)+D	.....	BSP (R10), BSP (R10), H (R00), H, A
1899	.MACRO	BSPLO(11)+D	.....	BSP (R11), BSP (R11), H (R00), H, A
1900	.MACRO	BSPLO(12)+D	.....	BSP (R12), BSP (R12), H (R00), H, A
1901	.MACRO	BSPLO(13)+D	.....	BSP (R13), BSP (R13), H (R00), H, A
1902	.MACRO	BSPLO(14)+D	.....	BSP (R14), BSP (R14), H (R00), H, A
1903	.MACRO	BSPLO(15)+D	.....	BSP (R15), BSP (R15), H (R00), H, A
1904	.MACRO	BSPLO(16)+D	.....	BSP (R16), BSP (R16), H (R00), H, A
1905	.MACRO	BSPLO(17)+D	.....	BSP (R17), BSP (R17), H (R00), H, A
1906				
1907	.MACRO	BSPHI(00)+D	.....	BSP (R00), BSP (R00), H (R00), H, A
1908	.MACRO	BSPHI(01)+D	.....	BSP (R01), BSP (R01), H (R00), H, A
1909	.MACRO	BSPHI(02)+D	.....	BSP (R02), BSP (R02), H (R00), H, A
1910	.MACRO	BSPHI(03)+D	.....	BSP (R03), BSP (R03), H (R00), H, A
1911	.MACRO	BSPHI(04)+D	.....	BSP (R04), BSP (R04), H (R00), H, A
1912	.MACRO	BSPHI(05)+D	.....	BSP (R05), BSP (R05), H (R00), H, A
1913	.MACRO	BSPHI(06)+D	.....	BSP (R06), BSP (R06), H (R00), H, A
1914	.MACRO	BSPHI(07)+D	.....	BSP (R07), BSP (R07), H (R00), H, A
1915	.MACRO	BSPHI(10)+D	.....	BSP (R10), BSP (R10), H (R00), H, A
1916	.MACRO	BSPHI(11)+D	.....	BSP (R11), BSP (R11), H (R00), H, A
1917	.MACRO	BSPHI(12)+D	.....	BSP (R12), BSP (R12), H (R00), H, A
1918	.MACRO	BSPHI(13)+D	.....	BSP (R13), BSP (R13), H (R00), H, A
1919	.MACRO	BSPHI(14)+D	.....	BSP (R14), BSP (R14), H (R00), H, A
1920	.MACRO	BSPHI(15)+D	.....	BSP (R15), BSP (R15), H (R00), H, A
1921	.MACRO	BSPHI(16)+D	.....	BSP (R16), BSP (R16), H (R00), H, A
1922	.MACRO	BSPHI(17)+D	.....	BSP (R17), BSP (R17), H (R00), H, A
1923				
1924	.MACRO	AMBSPLO(00)+D	.....	BSP (R00), BSP (R00), H (R00), H, A
1925	.MACRO	AMBSPLO(01)+D	.....	BSP (R01), BSP (R01), H (R00), H, A
1926	.MACRO	AMBSPLO(02)+D	.....	BSP (R02), BSP (R02), H (R00), H, A
1927	.MACRO	AMBSPLO(03)+D	.....	BSP (R03), BSP (R03), H (R00), H, A
1928	.MACRO	AMBSPLO(04)+D	.....	BSP (R04), BSP (R04), H (R00), H, A
1929	.MACRO	AMBSPLO(05)+D	.....	BSP (R05), BSP (R05), H (R00), H, A
1930	.MACRO	AMBSPLO(06)+D	.....	BSP (R06), BSP (R06), H (R00), H, A
1931	.MACRO	AMBSPLO(07)+D	.....	BSP (R07), BSP (R07), H (R00), H, A
1932	.MACRO	AMBSPLO(10)+D	.....	BSP (R10), BSP (R10), H (R00), H, A
1933	.MACRO	AMBSPLO(11)+D	.....	BSP (R11), BSP (R11), H (R00), H, A
1934	.MACRO	AMBSPLO(12)+D	.....	BSP (R12), BSP (R12), H (R00), H, A
1935	.MACRO	AMBSPLO(13)+D	.....	BSP (R13), BSP (R13), H (R00), H, A
1936	.MACRO	AMBSPLO(14)+D	.....	BSP (R14), BSP (R14), H (R00), H, A
1937	.MACRO	AMBSPLO(15)+D	.....	BSP (R15), BSP (R15), H (R00), H, A
1938	.MACRO	AMBSPLO(16)+D	.....	BSP (R16), BSP (R16), H (R00), H, A
1939	.MACRO	AMBSPLO(17)+D	.....	BSP (R17), BSP (R17), H (R00), H, A
1940				
1941	.MACRO	AMBSPHI(00)+D	.....	BSP (R00), BSP (R00), H (R00), H, A
1942	.MACRO	AMBSPHI(01)+D	.....	BSP (R01), BSP (R01), H (R00), H, A
1943	.MACRO	AMBSPHI(02)+D	.....	BSP (R02), BSP (R02), H (R00), H, A
1944	.MACRO	AMBSPHI(03)+D	.....	BSP (R03), BSP (R03), H (R00), H, A

1945	.MACRO	AMPHI[04]D	...	RS (R04)	RS (R04)	RS (R04)	RS (R04)	H,A
1946	.MACRO	AMPHI[05]D	.....	RS (R05)	RS (R05)	RS (R05)	RS (R05)	H,A
1947	.MACRO	AMPHI[06]D	.....	RS (R06)	RS (R06)	RS (R06)	RS (R06)	H,A
1948	.MACRO	AMPHI[07]D	.....	RS (R07)	RS (R07)	RS (R07)	RS (R07)	H,A
1949	.MACRO	AMPHI[10]D	.....	RS (R10)	RS (R10)	RS (R10)	RS (R10)	H,A
1950	.MACRO	AMPHI[11]D	.....	RS (R11)	RS (R11)	RS (R11)	RS (R11)	H,A
1951	.MACRO	AMPHI[12]D	.....	RS (R12)	RS (R12)	RS (R12)	RS (R12)	H,A
1952	.MACRO	AMPHI[13]D	.....	RS (R13)	RS (R13)	RS (R13)	RS (R13)	H,A
1953	.MACRO	AMPHI[14]D	.....	RS (R14)	RS (R14)	RS (R14)	RS (R14)	H,A
1954	.MACRO	AMPHI[15]D	.....	RS (R15)	RS (R15)	RS (R15)	RS (R15)	H,A
1955	.MACRO	AMPHI[16]D	.....	RS (R16)	RS (R16)	RS (R16)	RS (R16)	H,A
1956	.MACRO	AMPHI[17]D	.....	RS (R17)	RS (R17)	RS (R17)	RS (R17)	H,A
1957								
1958	.MACRO	AMPHI[00]D	.....	RS (R00)	RS (R00)	RS (R00)	RS (R00)	H,A
1959	.MACRO	AMPHI[01]D	.....	RS (R01)	RS (R01)	RS (R01)	RS (R01)	H,A
1960	.MACRO	AMPHI[02]D	.....	RS (R02)	RS (R02)	RS (R02)	RS (R02)	H,A
1961	.MACRO	AMPHI[03]D	.....	RS (R03)	RS (R03)	RS (R03)	RS (R03)	H,A
1962	.MACRO	AMPHI[04]D	.....	RS (R04)	RS (R04)	RS (R04)	RS (R04)	H,A
1963	.MACRO	AMPHI[05]D	.....	RS (R05)	RS (R05)	RS (R05)	RS (R05)	H,A
1964	.MACRO	AMPHI[06]D	.....	RS (R06)	RS (R06)	RS (R06)	RS (R06)	H,A
1965	.MACRO	AMPHI[07]D	.....	RS (R07)	RS (R07)	RS (R07)	RS (R07)	H,A
1966	.MACRO	AMPHI[10]D	.....	RS (R10)	RS (R10)	RS (R10)	RS (R10)	H,A
1967	.MACRO	AMPHI[11]D	.....	RS (R11)	RS (R11)	RS (R11)	RS (R11)	H,A
1968	.MACRO	AMPHI[12]D	.....	RS (R12)	RS (R12)	RS (R12)	RS (R12)	H,A
1969	.MACRO	AMPHI[13]D	.....	RS (R13)	RS (R13)	RS (R13)	RS (R13)	H,A
1970	.MACRO	AMPHI[14]D	.....	RS (R14)	RS (R14)	RS (R14)	RS (R14)	H,A
1971	.MACRO	AMPHI[15]D	.....	RS (R15)	RS (R15)	RS (R15)	RS (R15)	H,A
1972	.MACRO	AMPHI[16]D	.....	RS (R16)	RS (R16)	RS (R16)	RS (R16)	H,A
1973	.MACRO	AMPHI[17]D	.....	RS (R17)	RS (R17)	RS (R17)	RS (R17)	H,A
1974								
1975	.MACRO	AMPHI[00]D	.....	RS (R00)	RS (R00)	RS (R00)	RS (R00)	H,A
1976	.MACRO	AMPHI[01]D	.....	RS (R01)	RS (R01)	RS (R01)	RS (R01)	H,A
1977	.MACRO	AMPHI[02]D	.....	RS (R02)	RS (R02)	RS (R02)	RS (R02)	H,A
1978	.MACRO	AMPHI[03]D	.....	RS (R03)	RS (R03)	RS (R03)	RS (R03)	H,A
1979	.MACRO	AMPHI[04]D	.....	RS (R04)	RS (R04)	RS (R04)	RS (R04)	H,A
1980	.MACRO	AMPHI[05]D	.....	RS (R05)	RS (R05)	RS (R05)	RS (R05)	H,A
1981	.MACRO	AMPHI[06]D	.....	RS (R06)	RS (R06)	RS (R06)	RS (R06)	H,A
1982	.MACRO	AMPHI[07]D	.....	RS (R07)	RS (R07)	RS (R07)	RS (R07)	H,A
1983	.MACRO	AMPHI[10]D	.....	RS (R10)	RS (R10)	RS (R10)	RS (R10)	H,A
1984	.MACRO	AMPHI[11]D	.....	RS (R11)	RS (R11)	RS (R11)	RS (R11)	H,A
1985	.MACRO	AMPHI[12]D	.....	RS (R12)	RS (R12)	RS (R12)	RS (R12)	H,A
1986	.MACRO	AMPHI[13]D	.....	RS (R13)	RS (R13)	RS (R13)	RS (R13)	H,A
1987	.MACRO	AMPHI[14]D	.....	RS (R14)	RS (R14)	RS (R14)	RS (R14)	H,A
1988	.MACRO	AMPHI[15]D	.....	RS (R15)	RS (R15)	RS (R15)	RS (R15)	H,A
1989	.MACRO	AMPHI[16]D	.....	RS (R16)	RS (R16)	RS (R16)	RS (R16)	H,A
1990	.MACRO	AMPHI[17]D	.....	RS (R17)	RS (R17)	RS (R17)	RS (R17)	H,A
1991								
1992	.MACRO	AMPHI[00]D	.....	RS (R00)	RS (R00)	RS (R00)	RS (R00)	H,A
1993	.MACRO	AMPHI[01]D	.....	RS (R01)	RS (R01)	RS (R01)	RS (R01)	H,A
1994	.MACRO	AMPHI[02]D	.....	RS (R02)	RS (R02)	RS (R02)	RS (R02)	H,A
1995	.MACRO	AMPHI[03]D	.....	RS (R03)	RS (R03)	RS (R03)	RS (R03)	H,A
1996	.MACRO	AMPHI[04]D	.....	RS (R04)	RS (R04)	RS (R04)	RS (R04)	H,A
1997	.MACRO	AMPHI[05]D	RS (R05)	RS (R05)	RS (R05)	RS (R05)	H,A
1998	.MACRO	AMPHI[06]D	RS (R06)	RS (R06)	RS (R06)	RS (R06)	H,A

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1999 .MACRO A#BSPLO[07] +D-[B]          ...: BSP (R07), WR (AB, L, B)
2000 .MACRO A#BSPLO[10] +D-[B]         ...: BSP (R10), WR (AB, L, B)
2001 .MACRO A# PLO[11] +D-[B]          ...: BSP (R11), WR (AB, L, B)
2002 .MACRO A# PLO[12] +D-[B]          ...: BSP (R12), WR (AB, L, B)
2003 .MACRO A# PLO[13] +D-[B]          ...: BSP (R13), WR (AB, L, B)
2004 .MACRO A# PLO[14] +D-[B]          ...: BSP (R14), WR (AB, L, B)
2005 .MACRO A# PLO[15] +D-[B]          ...: BSP (R15), WR (AB, L, B)
2006 .MACRO A# PLO[16] +D-[B]          ...: BSP (R16), WR (AB, L, B)
2007 .MACRO A#BSPLO[17] +D-[B]         ...: BSP (R17), WR (AB, L, B)
2008
2009 .MACRO A#BSPHI[00] +D-[B]          ...: BSP (R00), WR (AB, H, B)
2010 .MACRO A# PHI[01] +D-[B]          ...: BSP (R01), WR (AB, H, B)
2011 .MACRO A# PHI[02] +D-[B]          ...: BSP (R02), WR (AB, H, B)
2012 .MACRO A# PHI[03] +D-[B]          ...: BSP (R03), WR (AB, H, B)
2013 .MACRO A# PHI[04] +D-[B]          ...: BSP (R04), WR (AB, H, B)
2014 .MACRO A# PHI[05] +D-[B]          ...: BSP (R05), WR (AB, H, B)
2015 .MACRO A# PHI[06] +D-[B]          ...: BSP (R06), WR (AB, H, B)
2016 .MACRO A# PHI[07] +D-[B]          ...: BSP (R07), WR (AB, H, B)
2017 .MACRO A# PHI[10] +D-[B]          ...: BSP (R10), WR (AB, H, B)
2018 .MACRO A# PHI[11] +D-[B]          ...: BSP (R11), WR (AB, H, B)
2019 .MACRO A# PHI[12] +D-[B]          ...: BSP (R12), WR (AB, H, B)
2020 .MACRO A# PHI[13] +D-[B]          ...: BSP (R13), WR (AB, H, B)
2021 .MACRO A# PHI[14] +D-[B]          ...: BSP (R14), WR (AB, H, B)
2022 .MACRO A# PHI[15] +D-[B]          ...: BSP (R15), WR (AB, H, B)
2023 .MACRO A# PHI[16] +D-[B]          ...: BSP (R16), WR (AB, H, B)
2024 .MACRO A# PHI[17] +D-[B]          ...: BSP (R17), WR (AB, H, B)
2025
2026 .MACRO ASPLO[DF] +D               ...: ASP-ADORS-R[DF], WR (A, L, A)
2027 .MACRO ASPHI[DF] +D              ...: ASP-ADORS-R[DF], WR (A, H, A)
2028 .MACRO BSPLO[DF] +D              ...: BSP-ADORS-R[DF], WR (B, L, B)
2029 .MACRO BSPHI[DF] +D              ...: BSP-ADORS-R[DF], WR (B, H, B)
2030
2031 .MACRO ASPLO[SF] +D               ...: ASP-ADORS-R[SF], WR (A, L, A)
2032 .MACRO ASPHI[SF] +D              ...: ASP-ADORS-R[SF], WR (A, H, A)
2033 .MACRO BSPLO[SF] +D              ...: BSP-ADORS-R[SF], WR (B, L, B)
2034 .MACRO BSPHI[SF] +D              ...: BSP-ADORS-R[SF], WR (B, H, B)
2035
2036 .MACRO A#BSPLO[DF] +D-[A]         ...: ASP-ADORS-R[DF], WR (AB, L, A)
2037 .MACRO A# PHI[DF] +D-[A]         ...: ASP-ADORS-R[DF], WR (AB, H, A)
2038 .MACRO A# PLO[DF] +D-[B]         ...: BSP-ADORS-R[DF], WR (AB, L, B)
2039 .MACRO A#BSPHI[DF] +D-[B]       ...: BSP-ADORS-R[DF], WR (AB, H, B)
2040
2041 .MACRO A#BSPLO[SF] +D-[A]         ...: ASP-ADORS-R[SF], WR (AB, L, A)
2042 .MACRO A# PHI[SF] +D-[A]         ...: ASP-ADORS-R[SF], WR (AB, H, A)
2043 .MACRO A# PLO[SF] +D-[B]         ...: BSP-ADORS-R[SF], WR (AB, L, B)
2044 .MACRO A#BSPHI[SF] +D-[B]       ...: BSP-ADORS-R[SF], WR (AB, H, B)
2045
2046 .MACRO A#BSPLO[SF] +D             ...: ASP-ADORS-R[SF], BSP-ADORS-R[SF], WR (AB, L, A)
2047 .MACRO A#BSPLO[DF] +D           ...: ASP-ADORS-R[DF], BSP-ADORS-R[DF], WR (AB, L, A)
2048 .MACRO A#BSPHI[SF] +D           ...: ASP-ADORS-R[SF], BSP-ADORS-R[SF], WR (AB, H, A)
2049 .MACRO A#BSPHI[DF] +D           ...: ASP-ADORS-R[DF], BSP-ADORS-R[DF], WR (AB, H, A)
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2053 !.PAGE=====
2054
2055 .TOC *      D AND SR (- (BUS-A FCN BUS-B), AT P2-T OR P3-T
2056
2057      !LOGIC FUNCTIONS:
2058 .MACRO SR+ZERO          ::= ZERO,CLK-SR
2059 .MACRO SR+A-XOR-B      ::= A-XOR-B,CLK-SR
2060 .MACRO SR+B            ::= B,CLK-SR
2061 .MACRO SR+A-AND-B      ::= A-AND-B,CLK-SR
2062 .MACRO SR+A-IOR-B      ::= A-IOR-B,CLK-SR
2063 .MACRO SR+A            ::= A,CLK-SR
2064 .MACRO SR+NOT-A        ::= NOT-A,CLK-SR
2065 .MACRO SR+NOT-A-AND-B  ::= NOT-A-AND-B,CLK-SR
2066 .MACRO SR+A-AND-NOT-B  ::= A-AND-NOT-B,CLK-SR
2067 .MACRO D+ZERO          ::= ZERO,CLK-D
2068 .MACRO D+A-XOR-B       ::= A-XOR-B,CLK-D
2069 .MACRO D+B             ::= B,CLK-D
2070 .MACRO D+A-AND-B       ::= A-AND-B,CLK-D
2071 .MACRO D+A-IOR-B       ::= A-IOR-B,CLK-D
2072 .MACRO D+A             ::= A,CLK-D
2073 .MACRO D+NOT-A         ::= NOT-A,CLK-D
2074 .MACRO D+NOT-A-AND-B   ::= NOT-A-AND-B,CLK-D
2075 .MACRO D+A-AND-NOT-B   ::= A-AND-NOT-B,CLK-D
2076
2077      !ARITH FUNCTIONS:
2078 .MACRO D+DIVIDE-STEP    ::= DIVIDE,CLK-D
2079 .MACRO D+A-PLUS-B      ::= A-PLUS-B,CLK-D
2080 .MACRO D+A-PLUS-B-PLUS-0 ::= A-PLUS-B,CLK-D
2081 .MACRO D+A-MINUS-B     ::= A-MINUS-B,CLK-D
2082 .MACRO D+A-PLUS-B-PLUS-PS(C) ::= A-PLUS-B-PLUS-PS(C),CLK-D
2083 .MACRO D+A-PLUS-B-PLUS-D(C) ::= A-PLUS-B-PLUS-D(C),CLK-D
2084 .MACRO D+A-PLUS-NOT-B-PLUS-D(C) ::= A-PLUS-NOT-B-PLUS-D(C),CLK-D
2085 .MACRO D+A-PLUS-B-PLUS-1 ::= A-PLUS-B-PLUS-1,CLK-D
2086 .MACRO SR+DIVIDE-STEP ::= DIVIDE,CLK-SR
2087 .MACRO SR+A-PLUS-B     ::= A-PLUS-B,CLK-SR
2088 .MACRO SR+A-PLUS-B-PLUS-0 ::= A-PLUS-B,CLK-SR
2089 .MACRO SR+A-MINUS-B    ::= A-MINUS-B,CLK-SR
2090 .MACRO SR+A-PLUS-B-PLUS-PS(C) ::= A-PLUS-B-PLUS-PS(C),CLK-SR
2091 .MACRO SR+A-PLUS-B-PLUS-D(C) ::= A-PLUS-B-PLUS-D(C),CLK-SR
2092 .MACRO SR+A-PLUS-NOT-B-PLUS-D(C) ::= A-PLUS-NOT-B-PLUS-D(C),CLK-SR
2093 .MACRO SR+A-PLUS-B-PLUS-1 ::= A-PLUS-B-PLUS-1,CLK-SR
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2095
2096
2097
2098 .TOC *      D(C) GETS SET
2099
2100 .MACRO D(C)+CINMUX      ::= CLK-D,COUT+CIN
2101 .MACRO D(C)+1          ::= CLK-D,COUT+CIN      !NEEDS SPECIFIC ALU/---
2102 .MACRO D(C)+0          ::= CLK-D,COUT+CIN      !NEEDS SPECIFIC ALU/---
2103 .MACRO D(C)+PS(C)      ::= CLK-D,COUT+PS(C)
2104 .MACRO D(C)+ALU00      ::= CLK-D,COUT+ALU00
2105 .MACRO D(C)+ALU07      ::= CLK-D,COUT+ALU07
2106 .MACRO D(C)+ALU15      ::= CLK-D,COUT+ALU15

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2107 .MACRO D(C)←COUT07      ::= CLK-D,COUT←COUT07
2108 .MACRO D(C)←COUT15      ::= CLK-D,COUT←COUT15
2109 .MACRO D(C)←D(C)        ::= CLK-D,COUT←D(C)
2110 .MACRO SAVE-D(C)        ::= CLK-D,COUT←D(C)
2111
2112
2113
2114
2115
2116 .TOC *      D-REGISTER (- [BBUS = ABUS], BITWISE, AT P2-T OR P3-T
2117
2118 !N.B.: SHIFT TREE ENABLED SEPARATELY
2119 .MACRO D←D-SHIFTED-XOR-CSPB(XX) ::= A-XOR-B,CSPB(2XX),CLK-D
2120 .MACRO D←D-SHIFTED-XOR-BSPHI(XX) ::= A-XOR-B,BSPHI(2XX),CLK-D
2121
2122 .MACRO D←FLTPT-XOR-CSPB(XX) ::= A-XOR-B,FLTPT,CSPB(2XX),CLK-D
2123 .MACRO D←FLTPT-XOR-CSPD(XX) ::= A-XOR-B,FLTPT,CSPD(2XX),CLK-D
2124 .MACRO D←FLTPT-XOR-BSPHI(XX) ::= A-XOR-B,FLTPT,BSPHI(2XX),CLK-D
2125
2126 .MACRO D←SR-XOR-CSPB(XX) ::= A-XOR-B,SR,CSPB(2XX),CLK-D
2127 .MACRO D←SR-XOR-CSPD(XX) ::= A-XOR-B,SR,CSPD(2XX),CLK-D
2128 .MACRO D←SR-XOR-BSPHI(XX) ::= A-XOR-B,SR,BSPHI(2XX),CLK-D
2129
2130 .MACRO D←ASPLO(17)-XOR-CSPD(XX) ::= A-XOR-B,ASPLO(R17),CSPD(2XX),CLK-D
2131 .MACRO D←ASPLO(07)-XOR-BSPHI(XX) ::= A-XOR-B,ASPLO(R07),BSPHI(2XX),CLK-D
2132 .MACRO D←ASPLO(05)-XOR-BSPHI(XX) ::= A-XOR-B,ASPLO(R05),BSPHI(2XX),CLK-D
2133
2134 .MACRO D←SR-XOR-BSPLO(SF) ::= A-XOR-B,SR,R(SF)-LO-B,CLK-D
2135 .MACRO D←SR-XOR-BSPHI(DF) ::= A-XOR-B,SR,R(DF)-HI-B,CLK-D
2136
2137 .MACRO D←ASPLO(DF)-XOR-BSPHI(SF) ::= A-XOR-B,R(DF)-LO-A,R(SF)-HI-B,CLK-D
2138 .MACRO D←ASPHI(SF)-XOR-BSPLO(DF) ::= A-XOR-B,R(SF)-HI-A,R(DF)-LO-B,CLK-D
2139
2140 .MACRO D←CSPD(05)-XOR-ASPLO(XX) ::= A-XOR-B,CSPD(005),ASPLO(2XX),CLK-D
2141 .MACRO D←CSPD(05)-XOR-ASPHI(XX) ::= A-XOR-B,CSPD(005),ASPHI(2XX),CLK-D
2142 .MACRO D←CSPD(06)-XOR-ASPLO(XX) ::= A-XOR-B,CSPD(006),ASPLO(2XX),CLK-D
2143 .MACRO D←CSPD(06)-XOR-ASPHI(XX) ::= A-XOR-B,CSPD(006),ASPHI(2XX),CLK-D
2144 .MACRO D←CSPD(17)-XOR-ASPHI(XX) ::= A-XOR-B,CSPD(D17),ASPHI(2XX),CLK-D
2145
2146 .MACRO D←ASPLO(02)-XOR-BSPLO(XX) ::= A-XOR-B,ASPLO(R02),BSPLO(2XX),CLK-D
2147 .MACRO D←ASPLO(03)-XOR-BSPLO(XX) ::= A-XOR-B,ASPLO(R03),BSPLO(2XX),CLK-D
2148 .MACRO D←ASPLO(04)-XOR-BSPLO(XX) ::= A-XOR-B,ASPLO(R04),BSPLO(2XX),CLK-D
2149 .MACRO D←ASPLO(05)-XOR-BSPLO(XX) ::= A-XOR-B,ASPLO(R05),BSPLO(2XX),CLK-D
2150
2151
2152
2153 .TOC *      D-REGISTER (- D-REGISTER THRU SHIFT-TREE
2154
2155 .MACRO D←D-RIGHT-14      ::= A,D-RIGHT-14,CLK-D
2156 .MACRO D←D-RIGHT-13      ::= A,D-RIGHT-13,CLK-D
2157 .MACRO D←D-RIGHT-12      ::= A,D-RIGHT-12,CLK-D
2158 .MACRO D←D-RIGHT-11      ::= A,D-RIGHT-11,CLK-D
2159 .MACRO D←D-RIGHT-10      ::= A,D-RIGHT-10,CLK-D
2160 .MACRO D←D-RIGHT-9       ::= A,D-RIGHT-9,CLK-D

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2161 .MACRO D+D-RIGHT-8      ::= A, D-RIGHT-8, CLK-D
2162 .MACRO D+D-RIGHT-7      ::= A, D-RIGHT-7, CLK-D
2163 .MACRO D+D-RIGHT-6      ::= A, D-RIGHT-6, CLK-D
2164 .MACRO D+D-RIGHT-5      ::= A, D-RIGHT-5, CLK-D
2165 .MACRO D+D-RIGHT-4      ::= A, D-RIGHT-4, CLK-D
2166 .MACRO D+D-RIGHT-3      ::= A, D-RIGHT-3, CLK-D
2167 .MACRO D+D-RIGHT-2      ::= A, D-RIGHT-2, CLK-D
2168 .MACRO D+D-RIGHT-1      ::= A, D-RIGHT-1, CLK-D
2169 .MACRO D+D-NO-SHIFT     ::= A, D-NO-SHIFT, CLK-D
2170 .MACRO D+D-DIRECT      ::= A, D-DIRECT, CLK-D
2171 .MACRO D+D              ::= A, D-DIRECT, CLK-D
2172 .MACRO SAVE-D          ::= A, D-DIRECT, CLK-D
2173 .MACRO D+D-LEFT-1      ::= A, D-LEFT-1, CLK-D
2174 .MACRO D+D-SWAB        ::= A, D-SWAB, CLK-D
2175 .MACRO D+D-SWAB-RIGHT-3 ::= A, D-SWAB-RIGHT-3, CLK-D
2176 .MACRO D+D-SWAB-LEFT-1 ::= A, D-SWAB-LEFT-1, CLK-D
2177 .MACRO D+D-SIGNEXT     ::= A, D-SIGNEXT, CLK-D
2178 .MACRO D+D-SIGNEXT-RIGHT-1 ::= A, D-SIGNEXT-RIGHT-1, CLK-D
2179 .MACRO D+D-SIGNEXT-LEFT-1 ::= A, D-SIGNEXT-LEFT-1, CLK-D
2180 .MACRO D+D-NO-SHIFT     ::= A, D-NO-SHIFT, CLK-D
2181 .MACRO D+D-DIRECT      ::= A, D-DIRECT, CLK-D
2182 .MACRO D+COUNT#D[HI]  ::= A, COUNT#D[HI], CLK-D
2183 .MACRO D+COUNT#D[LO]  ::= A, COUNT#D[LO], CLK-D
2184
2185
2186
2187 .TOC * D <- WHATEVER'S LEFT, AT P2-T OR P3-T
2188
2189 .MACRO D+NOT-ASPHI(XX)   ::= NOT-A, ASPHI(@XX), CLK-D
2190 .MACRO D+NOT-ASPLO(XX)  ::= NOT-A, ASPLO(@XX), CLK-D
2191 .MACRO D+NOT-CSPB(XX)   ::= A-AND-NOT-B, C177777-A, CSPB(@XX), CLK-D
2192 .MACRO D+NOT-CSPD(XX)   ::= A-AND-NOT-B, C177777-A, CSPD(@XX), CLK-D
2193
2194 .MACRO D+CSPD(XX)        ::= B, CSPD(@XX), CLK-D
2195 .MACRO D+CSPB(XX)        ::= B, CSPB(@XX), CLK-D
2196 .MACRO D+CSPB[16]#D[C]+1 ::= A-IOR-B, C000000-A, CSPB(B16), CLK-D, D[C]+CINMUX
2197
2198 .MACRO D+BSPHI(XX)       ::= B, BSPHI(@XX), CLK-D
2199 .MACRO D+BSPL0(XX)       ::= B, BSPL0(@XX), CLK-D
2200 .MACRO D+ASPHI(XX)       ::= A, ASPHI(@XX), CLK-D
2201 .MACRO D+ASPLO(XX)       ::= A, ASPLO(@XX), CLK-D
2202
2203 .MACRO D+ASPLO[DF]        ::= A, R[DF]-LO-A, CLK-D
2204 .MACRO D+ASPHI[DF]       ::= A, R[DF]-HI-A, CLK-D
2205 .MACRO D+BSPL0[DF]       ::= B, R[DF]-LO-B, CLK-D
2206 .MACRO D+BSPHI[DF]       ::= B, R[DF]-HI-B, CLK-D
2207 .MACRO D+ASPLO[SF]       ::= A, R[SF]-LO-A, CLK-D
2208 .MACRO D+ASPHI[SF]       ::= A, R[SF]-HI-A, CLK-D
2209 .MACRO D+BSPL0[SF]       ::= B, R[SF]-LO-B, CLK-D
2210 .MACRO D+BSPHI[SF]       ::= B, R[SF]-HI-B, CLK-D
2211
2212 .MACRO D+CSPD[14]-AND-ASPHI(XX) ::= A-AND-B, CSPD(D14), ASPHI(@XX), CLK-D
2213 .MACRO D+CSPD[15]-AND-ASPHI(XX) ::= A-AND-B, CSPD(D15), ASPHI(@XX), CLK-D
2214

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2215 .MACRO SR+ASPHI[17]-AND-007700      ::= A-AND-B, ASPHI(R17), CSPB(B17), CLK-SR
2216 .MACRO D+SR-IOR-170000             ::= A-IOR-B, SR, CSPB(B16), CLK-D
2217 .MACRO SR+ASPHI[17]-AND-000077     ::= A-AND-B, ASPHI(R17), CSPB(B15), CLK-SR
2218 .MACRO D+SR-IOR-000100             ::= A-IOR-B, SR, CSPB(B14), CLK-D
2219
2220 .MACRO D+ASPLO[17]-AND-CSPD(XX)      ::= A-AND-B, ASPLO(R17), CSPD(@XX), CLK-D
2221 .MACRO D+ASPHI[00]-IOR-CSPD(XX)     ::= A-IOR-B, ASPHI(R00), CSPD(@XX), CLK-D
2222 .MACRO D+ASPHI[00]-IOR-CSPB(XX)     ::= A-IOR-B, ASPHI(R00), CSPB(@XX), CLK-D
2223
2224 .MACRO D+SR                          ::= A, SR, CLK-D
2225 .MACRO D+ALL-ONES                    ::= A, C177777-A, CLK-D
2226 .MACRO D+D-PLUS-1                   ::= A-PLUS-B, D-DIRECT, C000001-B, CLK-D
2227 .MACRO D+JUNK                        ::= ZERO, CLK-D
2228 .MACRO D+TWO                         ::= A-PLUS-B, C000001-A, C000001-B, CLK-D
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2232 !.PAGE=====
2233

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2234 .TOC * SR <- DATA, AT P2 T OR P3 T

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2235 !N.B.: THE PARTICULAR FUNCTION SELECTED REQUIRES THE RESIDUAL
2236 !CONTROL REGISTER ("RES-REG") TO HAVE THE APPROPRIATE
2237 !FUNCTION SETUP FOR THE SR OPERATION.
2238 !
2239 !

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2240 ! POSSIBLE FUNCTIONS: LOAD, LEFT, RIGHT, NOP
2241

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2242 .MACRO SR+ASPHI(XX)                   ::= A, ASPHI(@XX), CLK-SR
2243 .MACRO SR+NOT-ASPHI(XX)              ::= NOT-A, ASPHI(@XX), CLK-SR
2244 .MACRO SR+CSPB(XX)                   ::= B, CSPB(@XX), CLK-SR
2245 .MACRO SR+CSPD(XX)                   ::= B, CSPD(@XX), CLK-SR
2246 .MACRO SR+NOT-BSPHI(XX)              ::= A-AND-NOT-B, BSPHI(@XX), C177777-A, CLK-SR
2247 .MACRO SR+BSPHI(XX)                  ::= B, BSPHI(@XX), CLK-SR
2248 .MACRO SR+SR-PLUS-1                  ::= A-PLUS-B, C000001-B, SR, CLK-SR
2249 .MACRO SR+ALL-ONES                    ::= A, C177777-A, CLK-SR
2250 .MACRO SR+NOT-CSPB(XX)                ::= A-AND-NOT-B, C177777-A, CSPB(@XX), CLK-SR
2251 .MACRO SR+NOT-CSPD(XX)                ::= A-AND-NOT-B, C177777-A, CSPD(@XX), CLK-SR
2252 .MACRO SR+SR-RIGHT-1                  ::= D-DIRECT(BMUX), CLK-SR
2253 .MACRO SR+SR-LEFT-1                  ::= CLK-SR
2254 .MACRO SR+JUNK                        ::= ZERO, CLK-SR
2255 .MACRO SR+D                           ::= A, D-DIRECT, CLK-SR
2256 .MACRO SR+ASPLO[DF]                  ::= A, R[DF]-LO-A, CLK-SR
2257 .MACRO SR+ASPHI[DF]                  ::= A, R[DF]-HI-A, CLK-SR
2258 .MACRO SR+BSPLO[DF]                  ::= B, R[DF]-LO-B, CLK-SR
2259 .MACRO SR+BSPHI[DF]                  ::= B, R[DF]-HI-B, CLK-SR
2260 .MACRO SR+ASPLO[SF]                  ::= A, R[SF]-LO-A, CLK-SR
2261 .MACRO SR+ASPHI[SF]                  ::= A, R[SF]-HI-A, CLK-SR
2262 .MACRO SR+BSPLO[SF]                  ::= B, R[SF]-LO-B, CLK-SR
2263 .MACRO SR+BSPHI[SF]                  ::= B, R[SF]-HI-B, CLK-SR
2264
2265
2266
2267
2268

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2269 .TOC * RES-REG OPERATION MACROS
2270
2271 .MACRO RES+CSPD(XX) ::= CSPD(@XX),LOAD-RES
2272 .MACRO RES+CSPB(XX) ::= CSPB(@XX),LOAD-RES
2273
2274
2275
2276
2277
2278 .TOC * BASE MACHINE COUNTER
2279
2280 .MACRO COUNTER+CSPD(XX) ::= LOAD-COUNTER,CSPD(@XX)
2281 .MACRO COUNTER+BSPHI(XX) ::= LOAD-COUNTER,BSPHI(@XX)
2282
2283
2284
2285
2286 .TOC * ENABLE ON BUS-A/B ONLY
2287
2288 .MACRO BUS-A+ASPLO(SF) ::= R(SF)-LO-A
2289 .MACRO BUS-A+ASPLO(DF) ::= R(DF)-LO-A
2290 .MACRO BUS-A+ASPHI(SF) ::= R(SF)-HI-A
2291 .MACRO BUS-A+ASPHI(DF) ::= R(DF)-HI-A
2292 .MACRO BUS-A ::= NULL
2293 .MACRO BUS-A+ASPLO(XX) ::= ASPLO(@XX)
2294 .MACRO BUS-A+ASPHI(XX) ::= ASPHI(@XX)
2295 .MACRO BUS-A+SR ::= SR
2296 .MACRO BUS-A+FLTPT ::= FLTPT
2297
2298 .MACRO BUS-B+BSPLO(SF) ::= R(SF)-LO-B
2299 .MACRO BUS-B+BSPLO(DF) ::= R(DF)-LO-B
2300 .MACRO BUS-B+BSPHI(SF) ::= R(SF)-HI-B
2301 .MACRO BUS-B+BSPHI(DF) ::= R(DF)-HI-B
2302 .MACRO BUS-B ::= NULL
2303 .MACRO BUS-B+BSPLO(XX) ::= BSPLO(@XX)
2304 .MACRO BUS-B+BSPHI(XX) ::= BSPHI(@XX)
2305 .MACRO BUS-B+CSPD(XX) ::= CSPD(@XX)
2306 .MACRO BUS-B+CSPB(XX) ::= CSPB(@XX)
2307
2308
2309
2310
2311
2312 .TOC * LOADING BA REGISTER
2313 !LOADED AT P1-T ONLY, FROM BUS-B<01:00>#BUS-A<15:00> -> BA<17:00>
2314
2315 .MACRO BA+BSPLO(XX) ::= CLK-BA,BSPLO(@XX)
2316 .MACRO BA+BSPHI(XX) ::= CLK-BA,BSPHI(@XX)
2317 .MACRO BA+SR ::= CLK-BA,SR
2318 .MACRO BA+ASPLO(XX) ::= CLK-BA,ASPLO(@XX)
2319 .MACRO BA+ASPHI(XX) ::= CLK-BA,ASPHI(@XX)
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.TOC * D AND SR TOGETHER

.MACRO SR#D+SR-PLUS-CSPD(XX) ::= A-PLUS-B, SR, CSPD(2XX), CLK-D, CLK-SR

!.PAGE=====

.TOC * UCON FUNCTIONS

.TOC * PROCESSOR UCON FUNCTIONS

!PREVIOUSLY SET UP [UCON-PROC, SET-UCON-CONTROL, EN "FUNCTION"]

.MACRO IR+EMIT ::= UCON-OPERATION
 .MACRO PS[15-12]+D[15#13] ::= UCON-OPERATION
 .MACRO FLAG[8-0]+D[15-8] ::= UCON-OPERATION
 .MACRO FPS[7-4]+D[7-4] ::= UCON-OPERATION
 .MACRO PS[7-4]+D[7-4] ::= UCON-OPERATION
 .MACRO PS[3-0]+D[3-0] ::= UCON-OPERATION
 .MACRO PS+D ::= UCON-OPERATION
 .MACRO UBREAK+BUSDIN[11-00] ::= UCON-OPERATION

!SETUP UCON AND EXECUTE IN 1 MICROWORD:

.MACRO PS[15-12]+D[15#13]-[I] ::= UCON-PROC, SET-UCON-CONTROL, UCON-OPERATION, EN-CLK-PS[15-12]
 .MACRO FLAG[8-0]+D[15-8]-[I] ::= UCON-PROC, SET-UCON-CONTROL, UCON-OPERATION, EN-CLK-FLAG[8-0]
 .MACRO FPS[7-4]+D[7-4]-[I] ::= UCON-PROC, SET-UCON-CONTROL, UCON-OPERATION, EN-CLK-FPS[7-4]
 .MACRO PS[7-4]+D[7-4]-[I] ::= UCON-PROC, SET-UCON-CONTROL, UCON-OPERATION, EN-CLK-PS[7-4]
 .MACRO PS[3-0]+D[3-0]-[I] ::= UCON-PROC, SET-UCON-CONTROL, UCON-OPERATION, EN-CLK-PS[3-0]
 .MACRO PS+D-[I] ::= UCON-PROC, SET-UCON-CONTROL, UCON-OPERATION,
 EN-CLK-PS[15-12] EN-CLK-PS[7-4] EN-CLK-PS[3-0]
 .MACRO BUSDIN+CUA-[I] ::= UCON-PROC, SET-UCON-CONTROL, BUSDIN+CUA[14-03]
 .MACRO BUSDIN+FLAG#FPS-[I] ::= UCON-PROC, SET-UCON-CONTROL, BUSDIN+FLAG[8-0]#FPS[7-0]
 .MACRO BUSDIN+PS-[I] ::= UCON-PROC, SET-UCON-CONTROL, BUSDIN+PS[15-00]
 .MACRO BUSDIN+EMIT-[I] ::= UCON-PROC, SET-UCON-CONTROL, BUSDIN+EMIT[15-00]

.TOC * CACHE/KT UCON FUNCTIONS

!SETUP, EXECUTE IN 1 MICROWORD

.MACRO KT-NO-RELOCATE-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, EN-KT-NO-RELOCATE
 .MACRO BUSDIN+BUS-INTERNAL-ADDR-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+BUS-INTERNAL-ADDR[15-00]
 .MACRO BUSDIN+CPU-INTERNAL-ADDR-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+CPU-INTERNAL-ADDR[15-00]
 .MACRO BUSDIN+MMR2-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+MMR2[15-00]
 .MACRO BUSDIN+CACHE-STATUS-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+CACHE-STATUS[15-00]
 .MACRO BUSDIN+SLR#CCR-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+KT-SEL, KT-SEL-SLR#CCR
 .MACRO BUSDIN+MMR0-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+KT-SEL, KT-SEL-MMR0
 .MACRO BUSDIN+POR-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+KT-SEL, KT-SEL-POR
 .MACRO BUSDIN+PAR-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, BUSDIN+KT-SEL, KT-SEL-PAR
 .MACRO SLR[15-08]+D[15-08]-[I] ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-SLR#CCR, KT-WRITE-HIGH

```

2377 .MACRO CCR(07-02)+D(07-02)-[I]      ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-SLR#CCR, KT-WRITE-LOW
2378 .MACRO MMRO+D-[I]                  ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-MMRO, KT-WRITE
2379 .MACRO MMRO(00)+D(00)-[I]          ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-MMRO, KT-WRITE-LOW
2380 .MACRO MMRO(15-01)+D(15-01)-[I]    ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-MMRO, KT-WRITE-HIGH
2381 .MACRO PDR+D-[I]                    ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-PDR, KT-WRITE
2382 .MACRO PDR(03-01)+D(03-01)-[I]     ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-PDR, KT-WRITE-LOW
2383 .MACRO PDR(14-08)+D(14-08)-[I]     ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-PDR, KT-WRITE-HIGH
2384 .MACRO PAR+D-[I]                    ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-PAR, KT-WRITE
2385 .MACRO PAR(07-00)+D(07-00)-[I]     ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-PAR, KT-WRITE-LOW
2386 .MACRO PAR(11-08)+D(11-08)-[I]     ::= UCON-CACHE-KT, SET-UCON-CONTROL, UCON-OPERATION, KT-SEL-PAR, KT-WRITE-HIGH

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.TOC * I-O UCON FUNCTIONS

!N.B.: SETUP IN 1 MICROWORD

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2393 .MACRO BUSDIN+JAM-[I]                ::= UCON-I-0, EN-STATUS-MUX, SET-UCON-CONTROL, BUSDIN+JAM(15-00)
2394 .MACRO BUSDIN+SERVICE-[I]          ::= UCON-I-0, EN-STATUS-MUX, SET-UCON-CONTROL, BUSDIN+SERVICE(15-00)
2395 .MACRO BUSDIN+PBA-[I]                ::= UCON-I-0, EN-STATUS-MUX, SET-UCON-CONTROL, BUSDIN+PBA(15-00)
2396 .MACRO BC-FCN-0-[I]                 ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-BC-FCN-0
2397 .MACRO START-DELAY-[I]               ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-START-DELAY
2398 .MACRO CLR-JAM-ERRORS-[I]            ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-JAM-ERRORS
2399 .MACRO CLR-NPR-TIMEOUT-[I]           ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-NPR-TIMEOUT
2400 .MACRO CLR-PWR-FAIL-[I]              ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-PWR-FAIL
2401 .MACRO CLR-YELLOW-ZONE-[I]           ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-YELLOW-ZONE
2402 .MACRO ALLOW-BG(1)H-[I]              ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-ALLOW-BG(1)H
2403 .MACRO BUS-INIT-UCON-[I]             ::= UCON-I-0, SET-UCON-CONTROL, UCON-OPERATION, EN-BUS-INIT-UCON

```

.TOC * DCS UCON FUNCTIONS

!SETUP IN 1 MICROWORD:

```

2409 .MACRO BUSDIN+TNUA-[I]                ::= UCON-DCS, SET-UCON-CONTROL, BUSDIN+TNUA(11-00)
2410 .MACRO BUSDIN+ERRROR-CODE-[I]        ::= UCON-DCS, SET-UCON-CONTROL, BUSDIN+ERRROR#EOP#ERRCOD(11-00)

```

.TOC * CONSOLE UCON FUNCTIONS

!SETS UP AND PERFORMS INDICATED OPERATION IN 1 MICROWORD

```

2416 .MACRO CONSOLE-NOP                    ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-CNSL-NOP
2417 .MACRO CLEAR-CONSOLE-COUNTER          ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-COUNTR
2418 .MACRO INCREMENT-CONSOLE-COUNTER      ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-INCR-COUNTR
2419 .MACRO CLEAR-CONSOLE-SERVICE          ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-CNSL-SRVC
2420 .MACRO STROBE-CONSOLE-DISPLAY         ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-STRB-DISP
2421 .MACRO CLEAR-CONSOLE-LED              ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-CLR-CNSL
2422 .MACRO SET-CONSOLE-LED                 ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-SET-CNSL
2423 .MACRO SET-CONSOLE-DP-LEDS            ::= UCON-I-0, EN-CONSOLE-COMMAND, SET-UCON-CONTROL, UCON-OPERATION, EN-SET-DP
2424 .MACRO BUSDIN+CONSOLE-[I]              ::= UCON-I-0, EN-STATUS-MUX, SET-UCON-CONTROL, BUSDIN+CONSOLE(06-00)

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.TOC * DBUF UCON FUNCTIONS

!PREVIOUSLY SETUP UCON-I-0, EN LOAD DBUF

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.MACRO DBUF+D                ::= UCON-OPERATION

!SETUP AND EXECUTE IN 1 MICROWORD:
.MACRO DBUF+D-[I]            ::= UCON-I-0,SET-UCON-CONTROL,UCON-OPERATION,EN-LOAD-DBUF[15-00]

.TOC *      MULTIPLE UCON FUNCTIONS

!THESE ARE FUNCTIONS OF MORE THAN 1 UCON ENABLED SIMULTANEOUSLY

!PREVIOUSLY SETUP:
.MACRO IR+DBUF                ::= UCON-OPERATION

!SETUP AND EXECUTE IN 1 MICROWORD:
.MACRO IR+DBUF-[I]           ::= UCON-PROC,UCON-I-0,SET-UCON-CONTROL,
                               UCON-OPERATION,EN-CLK-IR[15-00],BUSDIN+DBUF[15-00]

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.TOC * SPECIFIC MACROS FOR PREFETCH/OVERLAP/SP-INHIBIT TESTS

```

.MACRO CSPD[17]+Q20010      ::= EMIT/Q20010,CSPD[17]+EMIT
.MACRO A+BSPLO[OVERLAP]+D   ::= ASPLO(R10),WR(AB,.,A)
.MACRO A+BSPHI[PATTERN]+D   ::= ASPHI(R17),WR(AB,H,A)
.MACRO A+BSPHI[PREFETCH]+D  ::= ASPHI(R10),WR(AB,H,A)
.MACRO ASPLO[OVERLAP]+D     ::= ASPLO(R10),WR(A,L,A)
.MACRO BSPLO[OVERLAP]+D     ::= BSPLO(R10),WR(B,L,B)
.MACRO ASPHI[PREFETCH]+D    ::= ASPHI(R10),WR(A,H,A)

.MACRO D+ASPLO[OVERLAP]-PLUS-1 ::= A-PLUS-B,ASPLO(R10),C000001-B,CLK-D
.MACRO D+BSPLO[OVERLAP]-PLUS-1 ::= A-PLUS-B,BSPLO(R10),C000001-A,CLK-D
.MACRO D+ASPHI[PREFETCH]-PLUS-1 ::= A-PLUS-B,ASPHI(R10),C000001-B,CLK-D
.MACRO D+ASPHI[PATTERN]-PLUS-Q20010-PLUS-1 ::= A-PLUS-B-PLUS-1,ASPHI(R17),CSPB(B17),CLK-D
.MACRO D+ASPHI[PATTERN]-AND-NOT-Q20010 ::= A-AND-NOT-B,ASPHI(R17),CSPB(B17),CLK-D

.MACRO D+BSPHI[PREFETCH]     ::= B,BSPHI(R10),CLK-D
.MACRO D+ASPLO[OVERLAP]-MINUS-CSPB[EXPEC] ::= A-MINUS-B,ASPLO(R10),CSPB(B17),CLK-D
.MACRO D+ASPHI[PREFETCH]-MINUS-CSPB[EXPEC] ::= A-MINUS-B,ASPHI(R10),CSPB(B17),CLK-D
.MACRO D+ASPLO[OVERLAP]-MINUS-BSPLO[OVERLAP] ::= A-MINUS-B,ASPLO(R10),BSPLO(R10),CLK-D

.MACRO CSPD[EXPEC]+EMIT     ::= CSPD[17]+EMIT

```

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.TOC * SPECIFIC MACROS FOR BYTE/BYTE CONSTANT/D=ZERO TESTS

```

.MACRO D+ASPLO[DNONZERO]-PLUS-1 ::= A-PLUS-B,ASPLO(R11),C000001-B,CLK-D
.MACRO D+BSPLO[DZERO]-PLUS-1   ::= A-PLUS-B,C000001-A,BSPLO(R11),CLK-D
.MACRO D+BSPLO[IR-DATA]-PLUS-2  ::= A-PLUS-B-PLUS-1,C000001-A,BSPLO(R10),CLK-D
.MACRO D+BSPHI[WORD]-PLUS-1    ::= A-PLUS-B,C000001-A,BSPHI(R10),CLK-D

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.MACRO D+BSPL0(IR-DATA) ::= B,BSPL0(R10),CLK-D
.MACRO D+BSPL0(DZERO) ::= B,BSPL0(R11),CLK-D
.MACRO D+SR-MINUS-BSPHI(WORD) ::= A-MINUS-B,SR,BSPHI(R10),CLK-D,P3-T
.MACRO D+ASPL0(DNONZERO)-MINUS-CSPD(17) ::= A-MINUS-B,ASPL0(R11),CSPD(D17),CLK-D,P3-T
.MACRO D+ASPHI(BYTE-FIRST)-MINUS-CSPD(17) ::= A-MINUS-B,ASPHI(R10),CSPD(D17),CLK-D,P3-T
.MACRO D+ASPL0(BYTE-SECOND)-MINUS-CSPD(17) ::= A-MINUS-B,ASPL0(R10),CSPD(D17),CLK-D,P3-T
.MACRO D+ASPHI(BYTE-FIRST)-PLUS-CSP(1-0) ::= A-PLUS-B,ASPHI(R10),CSPD(D13),CLK-D
.MACRO D+ASPL0(BYTE-SECOND)-PLUS-CSP(1-0) ::= A-PLUS-B,ASPL0(R10),CSPD(D13),CLK-D
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.TOC * SUBROUTINE CALL MACROS

```
.MACRO CALL(DISPLAY) ::= GOTO-PAGE(7),J/DISPLAY

.MACRO CALL(DINTOIR) ::= GOTO-PAGE(7),J/DINTOIR
.MACRO CALL(DINTOIR-5) ::= GOTO-PAGE(7),J/DINTOIRS
.MACRO CALL(SRINTOIR) ::= GOTO-PAGE(7),J/SRINTOIR
.MACRO CALL(SRINTOIR-5) ::= GOTO-PAGE(7),J/SRINTOIRS

.MACRO CALL(FLAGFPST00) ::= GOTO-PAGE(7),J/FLAGFPST00
.MACRO CALL(PST00) ::= GOTO-PAGE(7),J/PST00
.MACRO CALL(CUAT00) ::= GOTO-PAGE(7),J/CUAT00
.MACRO CALL(CLRJAMT00) ::= GOTO-PAGE(7),J/CLRJAMT00
.MACRO CALL(ODDJAMT00) ::= GOTO-PAGE(7),J/ODDJAMT00
.MACRO CALL(JAMT00) ::= GOTO-PAGE(7),J/JAMT00
.MACRO CALL(CLRSERVICET00) ::= GOTO-PAGE(7),J/CLRSERVICET00
.MACRO CALL(DATISERVICET00) ::= GOTO-PAGE(7),J/DATISERVICET00
.MACRO CALL(DATOSERVICET00) ::= GOTO-PAGE(7),J/DATOSERVICET00
.MACRO CALL(CJESERVICET00) ::= GOTO-PAGE(7),J/CJESERVICET00
.MACRO CALL(SERVICET00) ::= GOTO-PAGE(7),J/SERVICET00
.MACRO CALL(PBAT00) ::= GOTO-PAGE(7),J/PBAT00
.MACRO CALL(PSSEQLO0) ::= GOTO-PAGE(7),J/PSSEQLO0
.MACRO CALL(FLAGFPSSEQLO0) ::= GOTO-PAGE(7),J/FLAGFPSSEQLO0
.MACRO CALL(FLAGLO0) ::= GOTO-PAGE(7),J/FLAGFSQ03
.MACRO CALL(GETPROC DAT) ::= GOTO-PAGE(7),J/GETPROC DAT

.MACRO CALL(CLEAR-I-0-A) ::= GOTO-PAGE(7),J/CLEAR-I-0-A
.MACRO CALL(CLEAR-I-0-B) ::= GOTO-PAGE(7),J/CLEAR-I-0-B

.MACRO CALL(BUSDINX0R125252) ::= GOTO-PAGE(7),J/BDX12
.MACRO CALL(BUSDINX0R052525) ::= GOTO-PAGE(7),J/BDX05
.MACRO CALL(CSP17X0R125252) ::= GOTO-PAGE(7),J/C17X12
.MACRO CALL(CSP17X0R052525) ::= GOTO-PAGE(7),J/C17X05

.MACRO CALL(D15-12) ::= GOTO-PAGE(7),J/D[15-12]
.MACRO CALL(D11-06) ::= GOTO-PAGE(7),J/D[11-06]
.MACRO CALL(D05-00) ::= GOTO-PAGE(7),J/D[05-00]
.MACRO CALL(DZERO) ::= GOTO-PAGE(7),J/DZERO

.MACRO CALL(ZEROSF04DF02) ::= GOTO-PAGE(7),J/ZEROSF04DF02
.MACRO CALL(ZEROSF02DF04) ::= GOTO-PAGE(7),J/ZEROSF02DF04
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2539 .MACRO CALL[ZEROSFDF] ::= GOTO-PAGE(7),J/ZEROSFDF
2540 .MACRO CALL[ZEROOF] ::= GOTO-PAGE(7),J/ZEROOF
2541
2542 .MACRO CALL[SFDFTOSR] ::= GOTO-PAGE(5),J/SFDFTOSR
2543
2544 .MACRO CALL[ALUCARRY1] ::= GOTO-PAGE(7),J/ALUCARRY1
2545 .MACRO CALL[ALUCARRY2] ::= GOTO-PAGE(7),J/ALUCARRY2
2546
2547 .MACRO CALL[LOADFPSCC] ::= GOTO-PAGE(7),J/LOADFPSCC
2548 .MACRO XFR-TO-BM[LOADNZM4] ::= GOTO-PAGE(4),J/LOADNZM4
2549
2550 .MACRO CALL[SETUPPSCC#DC] ::= GOTO-PAGE(7),J/SETUPPSCC#DC
2551 .MACRO CALL[PSCCTOSR3-0] ::= GOTO-PAGE(7),J/PSCCTOSR3-0
2552
2553 .MACRO CALL[CSP16XORSRTOIR-5] ::= GOTO-PAGE(7),J/CSP16XORSRTOIRS
2554 .MACRO CALL[CSP16XORFLTTOIR-5] ::= GOTO-PAGE(7),J/CSP16XORFLTTOIRS
2555
2556 .MACRO CALL[MFSS-TEST] ::= GOTO-PAGE(6),J/MFSS01
2557
2558 .MACRO CALL[KTSRCDST] ::= GOTO-PAGE(7),J/KTSRCDST01
2559 .MACRO CALL[KTDSTBSP] ::= GOTO-PAGE(7),J/KTSRCDST08
2560 .MACRO CALL[KTSRCBSP] ::= GOTO-PAGE(7),J/KTSRCDST07
2561
2562 .MACRO CALL[COUNT-TEST] ::= GOTO-PAGE(4),J/COUNTER01
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.TOC * JAM UPP LOG MACROS

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!MACROS CONCERNED WITH CSP LOG AFTER UNEXPECTED JAMUPP
!MACROS REQUIRE APPROPRIATE REGISTER ENABLED ON BUSDIN

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2573 .MACRO CSPD[00]+LOG-CUA ::= CSPD(D00),WR-CSP
2574 .MACRO CSPD[01]+LOG-SERVICE ::= CSPD(D01),WR-CSP
2575 .MACRO CSPD[02]+LOG-JAM ::= CSPD(D02),WR-CSP

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!***** END OF MACRO DEFINITIONS *****

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.TOC * - - - MICRODIAGNOSTIC CODE - - - - -

.CODE

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!*** VERSION /V101A0/ ***

!***** MICRODIAGNOSTIC INITIAL STARTUP LOCATION *****

.TOC * TEST001-007: NUA SEQUENCING

TESTS: 001 - 007 UMWORDS: 010 + 000

FUNCTIONS: TESTS 001 - 007 TEST THE NUA SEQUENCING LOGIC.
PATTERNS ARE RUN THRU THE NUA LOGIC ESTABLISHING
THAT ALL BITS CAN BE SET AND CLEARED, AND THAT THE
STATE (SET, CLEARED) OF NO ONE BIT AFFECTS THE
ABILITY TO SET/CLEAR ANY OTHER BIT. THE PAGE
CHANGING FUNCTIONS OF BUTA(SUBR-A) AND BUTA(SUBR-B)
ARE ALSO TESTED FOR PAGES 4, 5, 6, & 7. NOTE
THAT THE RETURN ADDRESS SIMULTANEOUSLY LOADED
IS NOT CHECKED FOR VALIDITY AT THIS POINT.

NOTES: TEST(N) DOES THE SETUP FOR TEST(N+1). THE ACTUAL TEST CONSISTS
OF BEING IN THE RIGHT PLACE (MICROWORD) AT THE RIGHT TIME.

!-----

!*** TEST 001 ***

!TEST NUA LOGIC WITH PATTERN "100 000 000 000"

4000:

TEST001:
PO, LOAD-ENUA(6252) !LOAD ENUA WITH ADDR(NEXT UWORD)
LOAD-ERROR(TEST001), !ERROR DIRECTORY KEY
DCS-CTR(C1.) !COMPARE AT NEXT UWORD
NEXT, PAGE(2), BUTA(SUBR-B), !CHANGING TO PAGE 2 (ACTUALLY 6), VIA SUBR-B
J/TEST002 !NOTE OVERLAP: NEXTPAGE<2:0>=ENUA<2:0>
(4000) DCS[1.00.1.0.0.0] BM[1110..00.11..00.10..101..010...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.010] !NOTE ALSO DCS MODULE FORCES NUA<11>=1, SO
!PAGES 2/6 ARE EQUIVALENT REFERENCES.

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!*** TEST 002 ***
!TEST NUA LOGIC WITH PATTERN "010 010 101 010"

6252:
TEST002:
PO, LOAD-ENUA(6631), !LOAD ENUA WITH ADDR(NEXT UWORD)
LOAD-ERROR(TEST002), !ERROR DIRECTORY KEY
DCS-CTR(C1.), !COMPARE AT NEXT UWORD
BUMP-VERIFY, !COUNT
NEXT J/TEST003
(6252) DCS[1.00.1.0.0.1] BM[1110..00.11..01.10..011..001...0.0.0..0..0...0.0000...0..0000.0...11.00C...110.011.001]

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!*** TEST 003 ***
!TEST NUA LOGIC WITH PATTERN "010 110 011 001"

6631:
TEST003:
PO, LOAD-ENUA(5525), !LOAD ENUA WITH ADDR(NEXT UWORD)
LOAD-ERROR(TEST003), !ERROR DIRECTORY KEY
DCS-CTR(C1.), !COMPARE AT NEXT UWORD
NEXT, PAGE(5), BUTA(SUBR-A), !CHANGING TO PAGE 5, VIA SUBR-A
J/TEST004 !NOTE OVERLAP: NEXTPAGE<2:0>=ENUA<2:0>
(6631) DCS[1.00.1.0.0.0] BM[1110..00.10..11.01..010..101...0.0.0..0..0...0.0000...0..0000.0...11.101...101.010.101]

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!*** TEST 004 ***
!TEST NUA LOGIC WITH PATTERN "101 101 010 101"

5525:
TEST004:
PO, LOAD-ENUA(5146), !LOAD ENUA WITH ADDR(NEXT UWORD)
LOAD-ERROR(TEST004), !ERROR DIRECTORY KEY

```

2695 DCS-CTR(C1.), !COMPARE AT NEXT UWORD
2696 BUMP-VERIFY, !COUNT
2697 J/TEST005
(5525) DCS[1.00.1.0.0.1] BM[1110..00.10..10.01..100..110...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.110]

```

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2698
2699
2700
2701
2702
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2704
2705

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```

2706 ! -----
2707
2708 !*** TEST 005 ***
2709 !TEST NUA LOGIC WITH PATTERN "101 001 100 110"
2710 5146:
2711 TEST005:
2712 PO, LOAD-ENUA(4474) !LOAD ENUA WITH ADDR(NEXT UWORD)
2713 LOAD-ERROR(TEST005), !ERROR DIRECTORY KEY
2714 DCS-CTR(C1.) !COMPARE AT NEXT UWORD
2715 NEXT, PAGE(4) BUTA(SUBR-B), !CHANGING TO PAGE 4 VIA SUBR-B
2716 J/TEST006 !NOTE OVERLAP: NEXTPAGE<2:0>=ENUA<2:0>
(5146) DCS[1.00.1.0.0.0] BM[1110..00.10..01.00..111..100...0.0.0..0..0...0.0000...0..0000.0...11.100...100.111.100]

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2725 ! -----
2726
2727 !*** TEST 006 ***
2728 !TEST NUA LOGIC WITH PATTERN "100 100 111 100"
2729 4474:
2730 TEST006:
2731 PO, LOAD-ENUA(4377) !LOAD ENUA WITH ADDR(NEXT UWORD)
2732 LOAD-ERROR(TEST006), !ERROR DIRECTORY KEY
2733 DCS-CTR(C1.) !COMPARE AT NEXT UWORD
2734 BUMP-VERIFY, !COUNT
2735 J/TEST007
(4474) DCS[1.00.1.0.0.1] BM[1110..00.10..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.111]

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2743
2744 ! -----

```

```

2745
2746 !*** TEST 007 ***
2747 !TEST NUA LOGIC WITH PATTERN "100 011 111 111"
2748 4377:
2749 TEST007:
2750 PO, LOAD-ENUA(7303), !LOAD ENUA WITH ADDR(NEXT UWORD)
2751 LOAD-ERROR(TEST007), !ERROR DIRECTORY KEY
2752 DCS-CTR(C1.) !COMPARE AT NEXT UWORD
2753 NEXT, PAGE(3), BUTA(SUBR-A), !CHANGING TO PAGE 3 (ACTUALLY 7), VIA SUBR-A
2754 J/NEXT007 !NOTE OVERLAP: NEXTPAGE<2:0>=ENUA<2:0>
(4377) DCS[1.00.1.0.0.0] BM[1110..00.11..10.11..000..011...0.0.0..0..0...0.0000...0..0000.0...11.101...011.000.011]
!NOTE ALSO DCS MODULE FORCES NUA<11>=1, SO
!PAGES 3/7 ARE EQUIVALENT REFERENCES.

```

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2762 !-----
2763
2764 !*** TEST 007-1/2 ***
2765 !TEST NUA LOGIC WITH PATTERN "011 011 000 011"
2766 7303:
2767 NEXT007:
2768 NEXT, PAGE(4), BUTA(SUBR-B), !CHANGING TO PAGE 4, VIA SUBR B
2769 J/TEST010 !OFF TO NEXT TEST
(7303) DCS[0.00.0.0.0.0] BM[0000..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.100...111.111.101]

```

```

2770
2771
2772 !.PAGE=====
2773
2774 .TOC * TEST010-011: MICROSUBROUTINE OPERATION
2775
2776
2777 !*****
2778 !*
2779 !* TESTS: 010 - 011 UWORDS: 007 + 002 *
2780 !*
2781 !* FUNCTIONS: THESE TWO TESTS DETERMINE THAT THE RETURN REGISTER AND *
2782 !* ASSOCIATED DECODE, MUX, AND ENABLING LOGIC IS ABLE TO *
2783 !* LOAD THE 12-BIT NUA RETURN REGISTER FROM THE EMIT *
2784 !* FIELD, AND THEN ENTER THE REGISTER CONTENTS ONTO THE *
2785 !* UWORD ADDRESS BUS (WHEN ENABLED BY A BUTA[RETURN]) IN *
2786 !* TIME TO FETCH THE NEXT MICROWORD. TWO ALTERNATING *
2787 !* BIT TESTS ARE USED TO CHECK THAT EACH BIT CAN BE SET *
2788 !* AND CLEARED, INDEPENDENT OF ADJACENT BITS. *
2789 !*
2790 !*****

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2800
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!-----

!*** TEST 010 ***
!TEST RETURN LOGIC WITH PATTERN "1010 1010 0101" (5245)

4775:
TEST010:
PO, LOAD-ENUA(NEXT010), !LOAD ENUA WITH EXPECTED RETURN ADDRESS
LOAD-ERROR(TEST010), !ERROR DIRECTORY KEY
DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
NEXT, J/LOAD010 !GO LOAD
(4775) DCS(1.00.1.0.0.0) BM(1011..00.10..10.10..100..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.000.000)

4100: !(FREE)
LOAD010:
SETUP, RETURN/NEXT010, !SET RETURN ADDRESS FROM EMIT
NEXT, PAGE(7), !"SUBR" IS ON PAGE 7
BUTA(SUBR-B), !WITH B VERSION
J/SUBR010 !"SUBR" DISP. ON PAGE
(4100) DCS(0.00.0.0.0.0) BM(0101..00.01..01.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.000.000)

7000: !(FREE)
SUBR010:
SETUP, RETURN/ERROR010, !NOISE BITS IN EMIT-RETURN FIELD
P3, BUTA(CLR-FLAG-RES-UCON), !NOISE IN UBF FIELD
NEXT, J/ZTARGET777 !BEFORE DO BUTA[RETURN]
(7000) DCS(0.00.0.0.0.0) BM(0110..00.10..11.00..011..000...0.0.0..0..0...0.0000...0..0000.0...11.010...111.111.111)

! REMAINDER OF SUBROUTINE IS AT ZTARGET777 [LOCATION 7777(8)], WHICH IMMEDIATELY DOES A BUTA[RETURN]
! TO THE ADDRESS IN THE RETURN REGISTER, WHICH SHOULD BE THE VALUE LOADED IN WORD
! LOAD010. THE RETURN REGISTER WAS SET TO POINT TO THE START OF THE NEXT TEST
! [NEXT010], AT WHICH POINT THE ENUA:TNUA COMPARE IS SET TO TAKE PLACE.

6543:
ERROR010:
PO, BUMP-VERIFY, !COUNT
NEXT, PAGE(4), !IF WE END UP HERE, THE NOISE BITS
J/TEST010 !WERE LOADED INTO THE RETURN REGISTER INSTEAD
(6543) DCS(0.00.0.0.0.1) BM(0000..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.000...111.111.101)

5245:
NEXT010:
PO, BUMP-VERIFY, !COUNT
NEXT, J/TEST011 !RETURNED OK, COMPARE ENUA:TNUA DONE HERE
(5245) DCS(0.00.0.0.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.111.111)


```

2842 ! -----
2843
2844 !*** TEST 011 ***
2845 !TEST RETURN LOGIC WITH PATTERN "1101 0101 1010" (6532)
2846 5777:
2847 TEST011:
2848     PD,      LOAD-ENUA(INITIALIZED01),      !LOAD ENUA WITH EXPECTED RETURN ADDRESS
2849             LOAD-ERROR(TEST011),          !ERROR DIRECTORY KEY
2850             DCS-CTR(C3.),                 !COMPARE ENUA:TNUA IN 3. MICROWORDS
2851     NEXT,    J/LOAD011                     !GO LOAD
(5777) DCS[1.00.1.0.0.0] BM[1100..00.11..01.01..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.001]

2852
2853 5001: !(FREE)
2854 LOAD011:
2855     SETUP,   RETURN/INITIALIZED01,        !SET RETURN ADDRESS IN EMIT
2856     NEXT,    PAGE(7),                     !"SUBR" IS ON PAGE 7
2857             BUTA(SUBR-8),                 !VIA 8 VERSION
2858             J/RESETUONP                    !"SUBR" DISP. ON PAGE
(5001) DCS[0.00.0.0.0.0] BM[0110..00.10..10.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.001]

2859 !
2860 ! "ONE-WORD SUBROUTINE" IS AT LABEL "RESETUONP", WHICH IMMEDIATELY DOES A BUTA(RETURN)
2861 ! TO THE ADDRESS IN THE RETURN REGISTER, WHICH SHOULD BE THE VALUE LOADED AT SYMBOLIC LABEL
2862 ! "LOAD011". THE RETURN REGISTER WAS SET TO POINT TO THE INITIALIZATION CODE ON THE NEXT PAGE:
2863 ! "INITIALIZED01", AT WHICH POINT THE ENUA:TNUA COMPARE IS SET TO TAKE PLACE.
2864 ! THIS SUBROUTINE ALSO 'ATTEMPTS' TO SET THE UCON CONTROL TO: 'PROC', 'BUSDIN+EMIT', AND
2865 ! 'EN-CLK-IR', FOR USE IN THE FOLLOWING INITIALIZATION ROUTINE.
2866 !
2867 !
2868 !
2869 ! + + + + +
2870 !
2871 ! *** BUTA(RETURN) ERROR LOOP WGRDS:
2872 !
2873 ! IF AT ANY TIME, A 'BUTA(RETURN)' FAILS, ONE OF THE FOLLOWING MICROWORDS WILL BE
2874 ! CONTINUOUSLY LOOPEL UPON. THIS IS DUE TO THE FACT THAT FOR EACH MICROWORD THAT
2875 ! CONTAINS THIS 'BUTA(RETURN)', THE UPF FIELD (WHICH WOULD NORMALLY NOT BE USED IN THIS
2876 ! MICROWORD EXECUTION) CONTAINS THE VALUE "J/BUTERROR#", WHERE NUMBER (#) IS THE
2877 ! CURRENT MICROWORD'S PAGE NUMBER (4-7).
2878 !
2879 4376:
2880 BUTERROR4:
2881     PD,      DCS-CTR(C0.),                 !FORCE AN ERROR, ERROR-CODE=LAST LOADED
2882     NEXT,    J/BUTERROR4                    !HANG UP
(4376) DCS[0.00.1.0.0.0] BM[1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.110]

2883
2884 5376:
2885 BUTERROR5:
2886     PD,      DCS-CTR(C0.),                 !FORCE AN ERROR, ERROR-CODE=LAST LOADED
2887     NEXT,    J/BUTERROR5                    !HANG UP
(5376) DCS[0.00.1.0.0.0] BM[1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.110]

2889
2890

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2891 6376:
2892 BUTERROR6:
2893     PD,      DCS-CTR(CO.),      !FORCE AN ERROR, ERROR-CODE=LAST LOADED
2894     NEXT,    J/BUTERROR6        !HANG UP
(6376) DCS(0.00.1.0.0.0) BM(1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.110)

```

```

2895
2896
2897 7376:
2898 BUTERROR7:
2899     PD,      !DCS-CTR(CO.),      !FORCE AN ERROR, ERROR-CODE=LAST LOADED
2900     NEXT,    J/BUTERROR7        !HANG UP
(7376) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.110)

```

```

2901
2902
2903
2904 !.PAGE=====

```

```

2905
2906 .TOC * INIT REGISTERS, CONSOLE DEFAULT ERROR DISPLAY, REVISION CODE

```

```

2907
2908
2909 !*****
2910 !*
2911 !* TESTS: INITIALIZATION                UWORDS: 011 + 011
2912 !*
2913 !* FUNCTIONS:
2914 !*
2915 !* TRY TO PUT AN OCTAL (00000) IN THE CONSOLE DISPLAY AS AN ERROR INDICATOR
2916 !*
2917 !* PUT REVISION CODE, BIT15 CLEAR, IN GPR R5
2918 !*
2919 !* SET FLAGS, FPS, PS, UBREAK REGISTERS TO ALL ZEROS TO DISABLE AS MUCH
2920 !* AS POSSIBLE ANY SPURIOUS HOT FLOATING POINT STARTUPS, UBREAKS, ETC.
2921 !*
2922 !* TURN OFF CACHE (SET BOTH FORCE MISS BITS), AND TURN OFF KT (MEMORY
2923 !* MANAGEMENT (BY CLEARING ENABLE BIT).
2924 !*
2925 !*****

```

```

2926
2927
2928 !RETURNED OK, COMPARE OF ENUA:TNUA
2929 !FOR PREV TEST DONE HERE

```

```

2930 6532:
2931 INITIALIZED1:
2932     SETUP,   RETURN/INITIALIZED3,      !GO TO SUBR THAT PUTS REVISION NUMBER,
2933     NEXT,    GOTO-PAGE(7),             ! WITH B<15>=(0), INTO B.M. GPR "R5"
2934     J/INSERTREVNO
(6532) DCS(0.00.0.0.0.0) BM(0111..00.00..00.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.001.110)

```

```

2935
2936 7001: !(FREE)
2937 INITIALIZED3:
2938     P3,      CSPD(17)+EMIT, EMIT/000014, !EMITCON TO DISABLE CACHE, KT
2939     NEXT,    J/INITIALIZED4
(7001) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..001..100...0.0.0..0..0...0.0000...1..0000.0...11.000...000.000.011)

```

```

2940
2941 7003: !(FREE)
2942 INITIALIZE04:
2943 P2-T, D+CSPD(017), D(C)+0, !GET ABOVE CONSTANT INTO D
2944 P2, RES+CSPD(017) !BITS<14:11>=0/00/0 FOR SR-LOAD, GUARD-DIS
2945 NEXT, J/INITIALIZE05
(7003) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0000...0..1000.1...11.000...000.000.100)

2946
2947 7004: !(FREE)
2948 INITIALIZE05:
2949 P2-T, CCR(07-02)+D(07-02)-(1), !LOAD CCR, DISABLING CACHE
2950 NEXT, J/INITIALIZE06 !BITS<3:2> SET FORCE MISS
(7004) DCS(0.00.0.0.0.0) BM(0001..00.01..00.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...000.000.101)

2951
2952 7005: !(FREE)
2953 INITIALIZE06:
2954 P2-T, MMRO+D-(1), !LOAD MMRO, DISABLING KT11
2955 NEXT, J/INITIALIZE07 !BIT<00> CLEAR DISABLES KT11
(7005) DCS(0.00.0.0.0.0) BM(0001..00.11..01.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...000.000.110)

2956
2957 7006: !(FREE)
2958 INITIALIZE07:
2959 P2-T, D+ZERO, !DEFAULT TO ALL ZEROS FOR ERROR
2960 SR+ZERO, !ZERO SR FOR JAMUPP IS ERROR
2961 NEXT, GOTO-PAGE(4) !XFER
2962 J/INITIALIZE10
(7006) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..100...0.1.1..0..0...0.0000...0..0000.0...11.100...001.000.001)

2963
2964 4101: !(FREE)
2965 INITIALIZE10:
2966 SELECT, UCON-PROC, !ENABLE CLOCKING THE FOLLOWING
2967 ENABLE, EN-CLK-PS(15-12), EN-CLK-PS(7-4), !PROCESSOR REGISTERS:
2968 EN-CLK-PS(3-0), EN-CLK-FLAG(8-0),
2969 EN-CLK-FPS(7-4), EN-CLK-UBREAK(11-00),
2970 BUSDIN+EMIT(15-00), !FOR UBREAK CONSTANT
2971 P0, SET-UCON-CONTROL, !WRITE CONTROLS
2972 BUMP-VERIFY, !COUNT
2973 P3, BUTA(CUA-TRACK), !RESET CUA TRACKING
2974 NEXT, J/INITIALIZE11
(4101) DCS(0.00.0.0.0.1) BM(1000..01.00..00.01..110..011...0.0.0..0..0...1.1001...0..0000.0...11.001...001.000.010)

2975
2976 4102: !(FREE)
2977 INITIALIZE11:
2978 P0, DCS-CTR(C15.), !DISABLE DCS-CTR FOR NOW
2979 EMITC, EMIT/000000, !FOR UBREAK REGISTER LOAD
2980 P2, PS(3-0)+D(3-0),
2981 UBREAK+BUSDIN(11-00),
2982 P3, PS(15-12)+D(15-13), PS(7-4)+D(7-4),
2983 FPS(7-4)+D(7-4), FLAG(8-0)+D(15-8),
2984 NEXT, BUTD(SCOPE), !NO ERROR: "INITIALIZE12" (+1. WORDS)
2985 J/INITIALIZE12 !ERROR: "TEST001" (BACK AT START)
(4102) DCS(0.00.1.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...000.000.001)

2986

```

```

2987 4001:
2988 INITIALIZE12:
2989     SETUP, RETURN/TEST012A, !RETURN TO NEXT TEST START
2990     NEXT, CALL[DISPLAY] !GO DISPLAY CONTENTS OF D-REGISTER IN LIGHTS
(4001) DCS[0.00.0.0.0.0] BM[0101..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.010.001]

```

```

2991
2992
2993
2994 !.PAGE=====
2995

```

```

2996 .TOC * TEST012-050: IR DECODE (INSTR1, INSTRS, FLTPT, RELATED "BUTS")
2997

```

```

2998 !*****
2999 !
3000 ! TESTS: 012 - 050 UNWORDS: 274 + 206
3001 !
3002 ! FUNCTIONS:
3003 !
3004 ! THE FOLLOWING TESTS EXERCISE THE IR-DECODE RELATED LOGIC:
3005 !
3006 ! INSTR-1, INSTR-5, FLOATING-POINT DECODE 'BUTS'
3007 ! IR<15:12>, IR<11> (TWO), IR<9:6>, IR<5:3> BIT 'BUTS'
3008 ! MOV/DR7, BYTE/DMD/SMD, DR6-7 DECODE-RELATED 'BUTS'
3009 !
3010 ! NOTE ALSO THAT THE FIRST TIME THE PROCESSOR 'UCON':
3011 ! BUSDIN+EMIT, AND EN-CLK-IR, IS EMPLOYED IS IN TEST-012-A.
3012 !
3013 !*****

```

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3021 ! -----

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3023 !*** TEST 012 ***
3024 !TEST-012 USES A DATA PATTERN OF: "1 111 111 111 111 111" (177777)
3025

```

```

3026 ! -----

```

```

3028 !* PART A *
3029 !TEST-012-A CHECKS THAT BUT[IR<15:12>] READS THE "1111" IN IR<15:12>H CORRECTLY

```

```

3030 5775:
3031 TEST012A:
3032     PO, LOAD-ENUA(ZTARGET417), !LOAD EXPECTED ADDRESS AFTER "BUT"
3033     LOAD-ERROR(TEST012A), !ERROR DIRECTORY KEY
3034     DCS-CTR(CS.), !COMPARE ENUA:TNUA IN 5. MICROWORDS
3035     NEXT, J/SETIRA !SETUP FOR IR TESTS
(5775) DCS[1.00.1.0.0.0] BM[1010..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...111.110.000]
3036

```

```

3037  !*** SETUP PROCESSOR UCON FOR BUSDIN <- EMIT, CLOCKING INSTRUCTION REGISTER ***
3038  5760:
3039  SETIRA:
3040      SELECT, UCON-PROC          !SELECT PROCESSOR UCON CONTROL:
3041      ENABLE, EN-CLK-IR(15-00), !ENABLE CLOCK IR OPERATION
3042      BUSDIN+EMIT(15-00),        !PUT EMIT(15:00) ONTO BUSDIN
3043      PO, SET-UCON-CONTROL,      !LOAD UCON REGISTER AT PO
3044      BUMP-VERIFY,              !COUNT
3045      NEXT, J/LOAD012A           !GO TO FIRST TEST, PART A
(5760) DCS(0.00.0.0.0.1) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...000.000.010)

3046
3047  5002: !(FREE)
3048  LOAD012A:
3049      P2-U, IR+EMIT,            !LOAD IR WITH TEST PATTERN
3050      EMIT/177777,             ! (177777)
3051      NEXT, J/GOBUTO12A        !GO SETUP FOR "BUT"
(5002) DCS(0.00.0.0.0.0) BM(1111..00.11..11.11..111..111...0.0.0..0..0...1.1010...0..0000.0...11.000...000.000.011)

3053
3054  5003: !(FREE)
3055  GOBUTO12A:
3056      SETUP, RETURN/TEST012B, !RETURN TO START OF NEXT SUBTEST
3057      NEXT, GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3058      J/BUTIR15-12            !GO DO "BUT" ON IR<15:12>H
(5003) DCS(0.00.0.0.0.0) BM(0101..00.11..11.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.000)

3060
3061  ! - - - - -
3062
3063  !* PART B *
3064  !TEST-012-B CHECKS THAT BUT[IR<11>#FLTPT<3:0>] READS THE "1" IN IR<11>H CORRECTLY,
3065  !AND THE FLTPT DECODE ROM GETS ADDRESS (776), WHICH IS A CMPF/D INSTR;
3066  !DATA OUTPUT SHOULD BE (17)
3067  5773:
3068  TEST012B:
3069      PO, LOAD-ENUA(ZTARGET437), !LOAD EXPECTED ADDRESS AFTER "BUT"
3070      LOAD-ERROR(TEST012B),      !ERROR DIRECTORY KEY
3071      DCS-CTR(C3.),              !COMPARE ENUA:INUA IN 3. MICROWORDS
3072      NEXT, J/GOBUTO12B         !GO SETUP FOR "BUT"
(5773) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.100)

3074
3075  5004: !(FREE)
3076  GOBUTO12B:
3077      SETUP, RETURN/TEST012C, !RETURN TO START OF NEXT SUBTEST
3078      NEXT, GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3079      J/BUTIR11FLTPT3-0        !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H
(5004) DCS(0.00.0.0.0.0) BM(0101..00.11..11.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.010)

3081
3082  ! - - - - -
3083

```

```

3084
3085 !* PART C *
3086 !TEST-012-C CHECKS THAT BUTR(IR<11>B) READS THE "1" IN IR<11>H CORRECTLY
3087 5771:
3088 TEST012C:
3089     PD,          LOAD-ENUA(ZTARGET403),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3090                LOAD-ERROR(TEST012C),          !ERROR DIRECTORY KEY
3091                DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
3092                BUMP-VERIFY,                   !COUNT
3093     NEXT,        J/GOBUTO12C                   !GO SETUP FOR "BUT"
(5771) DCS(1.00.1.0.0.1) BM(1100 00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.101)

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```

3094
3095 5005: !(FREE)
3096 GOBUTO12C:
3097     SETUP,      RETURN/TEST012D,              !RETURN TO START OF NEXT SUBTEST
3098     NEXT,       GOTO-PAGE(7),                 !BUT TABLE IS ON PAGE 7
3099                J/BUTIR118                    !GO DO "BUT" ON IR<11>H
3100 (5005) DCS(0.00.0.0.0.0) BM(0101..00.11..11.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.010)

```

```

3101 ! - - - - -
3102
3103
3104

```

```

3105 !* PART D *
3106 !TEST-012-D CHECKS THAT BUT(IR<9:6>) READS THE "1111" IN IR<9:6>H CORRECTLY
3107 5767:
3108 TEST012D:
3109     PD,          LOAD-ENUA(ZTARGET417),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3110                LOAD-ERROR(TEST012D),          !ERROR DIRECTORY KEY
3111                DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
3112     NEXT,        J/GOBUTO12D                   !GO SETUP FOR "BUT"
(5767) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.110)

```

```

3113
3114 5006: !(FREE)
3115 GOBUTO12D:
3116     SETUP,      RETURN/TEST012E,              !RETURN TO START OF NEXT SUBTEST
3117     NEXT,       GOTO-PAGE(7),                 !BUT TABLE IS ON PAGE 7
3118                J/BUTIR9-6                    !GO DO "BUT" ON IR<9:6>H
3119 (5006) DCS(0.00.0.0.0.0) BM(0101..00.11..11.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.100)

```

```

3120 ! - - - - -
3121
3122
3123

```

```

3124 !* PART E *
3125 !TEST-012-E CHECKS THAT BUT(MOV-DR7#IR<5:3>) READS THE (-FLTPT*MOV+FLTPT*DR7) AND "111" IN IR<5:3>H CORRECTLY
3126 5765:
3127 TEST012E:
3128     PD,          LOAD-ENUA(ZTARGET417),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3129                LOAD-ERROR(TEST012E),          !ERROR DIRECTORY KEY
3130                DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
3131     NEXT,        J/GOBUTO12E                   !GO SETUP FOR "BUT"

```


(5765) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.111)

3132
3133
3134
3135
3136
3137
3138

5007: !(FREE)

GOBUTO12E:

SETUP, RETURN/TEST012F,

NEXT, GOTO-PAGE(7)

J/BUTMOVDR7IRS-3

!RETURN TO START OF NEXT SUBTEST

!BUT TABLE IS ON PAGE 7

!GO DO "BUT" ON (-FLTPT*MOV+FLTPT*DR7) * IR<5:3>H

(5007) DCS(0.00.0.0.0.0) BM(0101..00.11..11.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.101)

3139
3140
3141
3142
3143
3144
3145
3146
3147
3148
3149
3150
3151

! * PART F *

!TEST-012-F CHECKS THAT BUT(DR6-7 L) READS THE "11" IN IR<2:1> H CORRECTLY

!AND DOES ASSERT THE SIGNAL

5764:

TEST012F:

PO, LOAD-ENUA(ZTARGET402),

LOAD-ERROR(TEST012F),

DCS-CTR(C3.),

NEXT, J/GOBUTO12F

!LOAD EXPECTED ADDRESS AFTER "BUT"

!ERROR DIRECTORY KEY

!COMPARE ENUA:TNUA IN 3. MICROWORDS

!GO SETUP FOR "BUT"

(5764) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.000)

3152
3153
3154
3155
3156
3157
3158
3159

5010: !(FREE)

GOBUTO12F:

SETUP, RETURN/TEST012G,

PO, BUMP-VERIFY

NEXT, GOTO-PAGE(7),

J/BUTDR6-7L

!RETURN TO START OF NEXT SUBTEST

!COUNT

!BUT TABLE IS ON PAGE 7

!GO DO "BUT" ON DR 6/7 L

(5010) DCS(0.00.0.0.0.1) BM(0101..00.11..11.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.111)

3160
3161
3162
3163
3164
3165
3166
3167
3168
3169
3170
3171
3172
3173

! * PART G *

!TEST-012G CHECKS THAT BUT(INSTR1) READS THE ONES IN IR<15:00>H CORRECTLY

!AS CLASS-A-FLTPT, AND CORRECTLY TARGETS TO INSTR1 FLTPT (474)

! BIT<1:0> = FLAG<4:5>H = "00" FROM INITIALIZATION CODE

5763:

TEST012G:

PO, LOAD-ENUA(ZTARGET474),

LOAD-ERROR(TEST012G),

DCS-CTR(C3.),

NEXT, J/GOBUTO12G

!LOAD EXPECTED ADDRESS AFTER "BUT"

!ERROR DIRECTORY KEY

!COMPARE ENUA:TNUA IN 3. MICROWORDS

!GO SETUP FOR "BUT"

(5763) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..111..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.001)

3174
3175
3176
3177
3178

5011: !(FREE)

GOBUTO12G:

SETUP, RETURN/SCOPE012,

!RETURN TO SCOPE LOOP TEST WORD

3179 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3180 J/BUTINSTR1 !GO DO INSTR1 "BUT"
 (5011) DCS(0.00.0.0.0.0) BM(0101..00.00..00.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

3181
 3182
 3183
 3184 5012: !(FREE)
 3185 SCOPE012:
 3186 PO, BUMP-VERIFY, !COUNT
 3187 NEXT, BUTD(SCOPE), !NO ERROR: "TEST013A" [+1. WORDS]
 3188 J/TEST013A ! ERROR: "SETIRA" [-16. WORDS]
 (5012) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.110.001)

3189
 3190
 3191
 3192
 3193
 3194
 3195 ! - - - - -
 3196
 3197 !*** TEST 013 ***
 3198 !TEST-013 USES AN IR DATA PATTERN OF: "0 000 000 000 000 000" (000000)
 3199
 3200 ! - - - - -

3201
 3202 !* PART A *
 3203 !TEST-013-A CHECKS THAT BUT [IR<15:12>] READS THE "0000" IN IR<15:12>H CORRECTLY
 3204 5761:
 3205 TEST013A:
 3206 PO, LOAD-ENUA(ZTARGET400), !LOAD EXPECTED ADDRESS AFTER "BUT"
 3207 LOAD-ERROR(TEST013A), !ERROR DIRECTORY KEY
 3208 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
 3209 NEXT, J/LOAD013A !GO LOAD PATTERN
 (5761) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.100.100)

3210
 3211
 3212 5744:
 3213 LOAD013A:
 3214 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
 3215 EMIT/000000, !(000000)
 3216 NEXT, J/GOBUTO13A !GO SETUP FOR "BUT"
 (5744) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...000.001.011)

3217
 3218
 3219 5013: !(FREE)
 3220 GOBUTO13A:
 3221 SETUP, RETURN/TEST013B, !RETURN TO START OF NEXT SUBTEST
 3222 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3223 J/BUTIR15-12 !GO DO "BUT" ON IR<15:12>H
 (5013) DCS(0.00.0.0.0.0) BM(0101..00.11..11.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.000)

3224
 3225

```

3226 ! - - - - -
3227
3228 !* PART B *
3229 !TEST-013-B CHECKS THAT BUT[IR<11>#FLTPT<3:0>] READS THE "0" IN IR<11>H CORRECTLY,
3230 !AND THE FLTPT DECODE ROM GETS ADDRESS (000), WHICH IS A SETF/SETI/CFCC INSTR;
3231 !DATA OUTPUT SHOULD BE (00)
3232 5757:
3233 TEST013B:
3234     PO,          LOAD-ENUA(ZTARGET400),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3235                LOAD-ERROR(TEST013B),          !ERROR DIRECTORY KEY
3236                DCS-CTR(C3.),                !COMPARE ENUA-TNUA IN 3. MICROWORDS
3237                BUMP-VERIFY,                !COUNT
3238     NEXT,        J/GOBUTO13B                !GO SETUP FOR "BUT"
3239 (5757) DCS[1.00.1.0.0.1] BM[1100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.100]
3240
3241 5014: !(FREE)
3242 GOBUTO13B:
3243     SETUP,       RETURN/TEST013C,          !RETURN TO START OF NEXT SUBTEST
3244     NEXT,        GOTO-PAGE(7),            !BUT TABLE IS ON PAGE 7
3245                J/BUTIR11FLTPT3-0        !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H
3246 (5014) DCS[0.00.0.0.0.0] BM[0101..00.11..11.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.010]
3247
3248 ! - - - - -
3249
3250 !* PART C *
3251 !TEST-013-C CHECKS THAT BUTR[IR<11>B] READS THE "0" IN IR<11>H CORRECTLY
3252 5755:
3253 TEST013C:
3254     PO,          LOAD-ENUA(ZTARGET401),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3255                LOAD-ERROR(TEST013C),          !ERROR DIRECTORY KEY
3256                DCS-CTR(C3.),                !COMPARE ENUA:TNUA IN 3. MICROWORDS
3257     NEXT,        J/GOBUTO13C                !GO SETUP FOR "BUT"
3258 (5755) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.101]
3259
3260 5015: !(FREE)
3261 GOBUTO13C:
3262     SETUP,       RETURN/TEST013D,          !RETURN TO START OF NEXT SUBTEST
3263     NEXT,        GOTO-PAGE(7),            !BUT TABLE IS ON PAGE 7
3264                J/BUTIR11B                !GO DO BUT ON IR<11>H
3265 (5015) DCS[0.00.0.0.0.0] BM[0101..00.11..11.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.010]
3266
3267 ! - - - - -
3268
3269 !* PART D *
3270 !TEST-013-D CHECKS THAT BUT[IR<9:6>] READS THE "0000" IN IR<9:6>H CORRECTLY
3271 5753:
3272 TEST013D:
3273     PO,          LOAD-ENUA(ZTARGET400),          !LOAD EXPECTED ADDRESS AFTER "BUT"

```

```

3274          LOAD-ERROR(TEST013D),          !ERROR DIRECTORY KEY
3275          DCS-CTR(C3.),                    !COMPARE ENUA:TNUA IN 3. MICROWORDS
3276          NEXT, J/GOBUTO13D                !GO SETUP FOR "BUT"
(5753) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.110)

```

```

3277
3278
3279          5016: !(FREE)
3280          GOBUTO13D:
3281          SETUP, RETURN/TEST013E,          !RETURN TO START OF NEXT SUBTEST
3282          NEXT,  GOTO-PAGE(7),            !BUT TABLE IS ON PAGE 7
3283          J/BUTIR9-6                       !GO DO "BUT" ON IR<9:6>H
(5016) DCS(0.00.0.0.0.0) BM(0101..00.11..11.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.100)

```

```

3284
3285
3286          ! - - - - -
3287

```

```

3288          !* PART E *
3289          !TEST-013-E CHECKS THAT BUT(MOV-DR7#IR<5:3>) READS THE -(-FLTPT*MOV+FLTPT*DR7) AND "000" IN IR<5:3>H CORRECTLY
3290          5751:
3291          TEST013E:
3292          PO,          LOAD-ENUA(ZTARGET400),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3293          LOAD-ERROR(TEST013E),                    !ERROR DIRECTORY KEY
3294          DCS-CTR(C3.),                    !COMPARE ENUA:TNUA IN 3. MICROWORDS
3295          NEXT, J/GOBUTO13E                !GO SETUP FOR "BUT"
(5751) DCS(1.00.1.0.0.0) BM(1100. 00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.111)

```

```

3296
3297
3298          5017: !(FREE)
3299          GOBUTO13E:
3300          SETUP, RETURN/TEST013F,          !RETURN TO START OF NEXT SUBTEST
3301          PO,          BUMP-VERIFY,          !COUNT
3302          NEXT,  GOTO-PAGE(7),            !BUT TABLE IS ON PAGE 7
3303          J/BUTMOVDR7IR5-3                !GO DO "BUT" ON (-FLTPT*MOV+FLTPT*DR7) # IR<5:3>H
(5017) DCS(0.00.0.0.0.1) BM(0101..00.11..11.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.101)

```

```

3304
3305
3306          ! - - - - -
3307

```

```

3308          !* PART F *
3309          !TEST-013-F CHECKS THAT BUT(INSTR5) READS THE ZEROS IN IR<15:00>H CORRECTLY
3310          !AS (000000)=HALT, AND CORRECTLY TARGETS TO (434)
3311          5750:
3312          TEST013F:
3313          PO,          LOAD-ENUA(ZTARGET434),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3314          LOAD-ERROR(TEST013F),                    !ERROR DIRECTORY KEY
3315          DCS-CTR(C3.),                    !COMPARE ENUA:TNUA IN 3. MICROWORDS
3316          NEXT, J/GOBUTO13F                !GO SETUP FOR "BUT"
(5750) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.000)

```

```

3317
3318
3319          5020: !(FREE)
3320          GOBUTO13F:

```

```

3321          SETUP, RETURN/TEST013G,          !RETURN TO START OF NEXT SUBTEST
3322          NEXT,  GOTO-PAGE(7),              !BUT TABLE IS ON PAGE 7
3323          J/BUTINSTRS                          !GO DO INSTRS "BUT"
(5020) DCS(0.00 0.0.0.0) BM(0101..00.11..11.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

```

```

3324          ! - - - - -
3325

```

```

3326          !* PART G *
3327          !TEST-013-G CHECKS THAT BUT(INSTR1) READS THE ZEROS IN IR<15:00>H CORRECTLY
3328          !AS NOT(CLASS-A THRU G), AND CORRECTLY TARGETS TO (417) [OTHER]
3329          5747:
3330          TEST013G:

```

```

3331          PO,          LOAD-ENUA(ZTARGET417),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3332          LOAD-ERROR(TEST013G),                    !ERROR DIRECTORY KEY
3333          DCS-CTR(C3.),                               !COMPARE ENUA:TNUA IN 3. MICROWORDS
3334          NEXT, J/GOBUTO13G                          !GO SETUP FOR "BUT"
3335          (5747) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.001)

```

```

3336          5021: !(FREE)
3337          GOBUTO13G:

```

```

3338          SETUP, RETURN/SCOPE013,          !RETURN TO SCOPE LOOP TEST WORD
3339          NEXT,  GOTO-PAGE(7),              !BUT TABLE IS ON PAGE 7
3340          J/BUTINSTR1                          !GO DO INSTR1 "BUT"
3341          (5021) DCS(0.00.0.0.0.0) BM(0101..00.00..00.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)
3342

```

```

3343          5022: !(FREE)
3344          SCOPE013:

```

```

3345          NEXT, BUTD(SCOPE),                    !NO ERROR: "TEST014A" [+1. WORD]
3346          J/TEST014A                          ! ERROR: "LOAD013A" [-14. WORDS]
3347          (5022) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.100.101)
3348

```

```

3349          ! - - - - -
3350

```

```

3351          !*** TEST 014 ***
3352          !TEST-014 USES AN IR DATA PATTERN OF: "0 000 000 001 010 101" (000125)
3353          ! - - - - -

```

```

3354          !* PART A *
3355          !TEST-014-A CHECKS THAT BUT(INSTRS) READS THE IR CORRECTLY
3356          !AS ROM ADDRESS=(125) ON THE INSTRS E88 ROM, AND RECEIVES THE DIAGNOSTIC VALUE
3357          !OF (12), TARGETING TO (432) AFTER THE DECODE
3358          5745:
3359          TEST014A:

```

```

3360
3361
3362
3363
3364
3365
3366
3367
3368

```

```

3369      PD,      LOAD-ENUA(ZTARGET432),      !LOAD EXPECTED ADDRESS AFTER "BUT"
3370      LOAD-ERROR(TEST014A),      !ERROR DIRECTORY KEY
3371      DCS-CTR(C4.),      !COMPARE ENUA:TNUA IN 4. MICROWORDS
3372      NEXT,      J/LOAD0014A      !GO LOAD PATTERN
(5745) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...111.100.010)

```

```

3373
3374
3375      5742:
3376      LOAD0014A:
3377      P2-U,      IR+EMIT      !LOAD IR WITH TEST PATTERN
3378      EMIT/000125,      ! (000125)
3379      NEXT,      J/GOBUTO14A      !GO SETUP FOR "BUT"
(5742) DCS(0.00.0.0.0.0) BM(0000. 00.00..00.01..010..101...0.0.0..0..0...1.1010...0..0000.0...11.000...000.010.011)

```

```

3380
3381      5023: !(FREE)
3382      GOBUTO14A:
3383      SETUP,      RETURN/TEST014B,      !RETURN TO START OF NEXT SUBTEST
3384      NEXT,      GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3385      J/BUTINSTRS      !GO DO INSTRS "BUT"
(5023) DCS(0.00.0.0.0.0) BM(0101..00.11. 11.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

```

```

3386
3387
3388      ! - - - - -
3389

```

```

3390      !* PART B *
3391      !TEST-014-B CHECKS THAT BUT(DR6-7 L) READS THE "10" IN IR<2:1> H CORRECTLY
3392      !AND DOES NOT ASSERT THE SIGNAL

```

```

3393      5752:
3394      TEST014B:
3395      PD,      LOAD-ENUA(ZTARGET403),      !LOAD EXPECTED ADDRESS AFTER "BUT"
3396      LOAD-ERROR(TEST014B),      !ERROR DIRECTORY KEY
3397      DCS-CTR(C3.),      !COMPARE ENUA:TNUA IN 3. MICROWORDS
3398      BUMP-VERIFY,      !COUNT
3399      NEXT,      J/GOBUTO14B      !GO SETUP FOR "BUT"
(5752) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.100)

```

```

3400
3401      5024: !(FREE)
3402      GOBUTO14B:
3403      SETUP,      RETURN/TEST014C,      !RETURN TO START OF NEXT SUBTEST
3404      NEXT,      GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3405      J/BUTDR6-7L      !GO DO DR 6-7 L "BUT"
3406      J/BUTDR6-7L
(5024) DCS(0.00.0.0.0.0) BM(0101..00.11..11.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.111)

```

```

3407
3408      ! - - - - -
3409

```

```

3410      !* PART C *
3411      !TEST-014-C CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
3412      !AS CLASS-E=JMP, IR<5:3>H="010", AND TARGETS TO (652)

```

```

3413      5762:
3414      TEST014C:
3415      PD,      LOAD-ENUA(ZTARGET652),      !LOAD EXPECTED ADDRESS AFTER "BUT"

```


3416 LOAD-ERROR(TEST014C), !ERROR DIRECTORY KEY
 3417 DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
 3418 NEXT J/GOBUTO14C !GO SETUP FOR "BUT"
 (5762) DCS(1.00.1.0.0.0) BM(1100..00.11..11.10..101..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.101)

3419
 3420
 3421 5025: !(FREE)
 3422 GOBUTO14C:
 3423 SETUP, RETURN/TEST014D, !RETURN TO START OF NEXT SUBTEST
 3424 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3425 J/BUTINSTR1 !GO DO INSTR1 "BUT"
 (5025) DCS(0.00.0.0.0.0) BM(0101..00.11..10.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

3426
 3427
 3428
 3429 ! - - - - -

3430
 3431 !* PART D *
 3432 !TEST-014-D CHECKS THAT BL*(IR<11>#FLTPT<3:0>) READS THE "0" IN IR<11>H CORRECTLY,
 3433 !AND THE FLTPT DECODE ROM GETS ADDRESS (020), WHICH IS A STST INSTR;
 3434 !DATA OUTPUT SHOULD BE (01)

3435 5710:
 3436 TEST014D:
 3437 PO, LOAD-ENUA(ZTARGET401), !LOAD EXPECTED ADDRESS AFTER "BUT"
 3438 LOAD-ERROR(TEST014D), !ERROR DIRECTORY KEY
 3439 DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
 3440 NEXT J/GOBUTO14C !GO SETUP FOR "BUT"
 (5710) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.110)

3441
 3442
 3443 5026: !(FREE)
 3444 GOBUTO14D:
 3445 SETUP, RETURN/SCOPE014, !RETURN TO SCOPE LOOP TEST WORD
 3446 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3447 J/BUTIR11FLTPT3-0 !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H
 (5026) DCS(0.00.0.0.0.0) BM(0101..00.00..00.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.010)

3448
 3449
 3450
 3451 5027: !(FREE)
 3452 SCOPE014:
 3453 NEXT, BUTD(SCOPE), !NO ERROR: "TEST015A" [+1. WORD]
 3454 J/TEST015A ! ERROR: "LOAD014A" [-8. WORDS]
 (5027) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.100.011)

3455
 3456
 3457
 3458
 3459
 3460
 3461 ! - - - - -
 3462

```

3463 !*** TEST 015 ***
3464 !TEST-015 USES AN IR DATA PATTERN OF: "0 000 000 001 101 010" (000152)
3465 !
3466 !-----
3467
3468 !* PART A *
3469 !TEST-015-A CHECKS THAT BUT[INSTRS] READS THE IR CORRECTLY
3470 !AS ROM ADDRESS=(152) ON THE INSTRS E86 ROM, AND RECEIVES THE DIAGNOSTIC VALUE
3471 !OF (05), TARGETING TO (425) AFTER THE DECODE
3472 5743:
3473 TEST015A:
3474     PO,          LOAD-ENUA(ZTARGET425),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3475                 LOAD-ERROR(TEST015A),          !ERROR DIRECTORY KEY
3476                 DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
3477     NEXT,        J/LOAD015A                      !GO LOAD PATTERN
(5743) DCS[1.00.1.0.0.0] BM[1011..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...111.100.000]

3478
3479 5740:
3480 LOAD015A:
3481     PO,          BUMP-VERIFY,                    !COUNT
3482     P2-U,        IR-EMIT,                        !LOAD IR WITH TEST PATTERN
3483                 EMIT/000152,                    ! (L00152)
3484     NEXT,        J/GOBUTO15A                     !GO SETUP FOR "BUT"
(5740) DCS[0.00.0.0.0.1] BM[0000..00.00..00.01..101..010...0.0.0..0..0...1.1010...0..0000.0...11.000...000.011.000]

3485
3486 5030: !(FREE)
3487 GOBUTO15A:
3488     SETUP,      RETURN/TEST015B,                !RETURN TO START OF NEXT SUBTEST
3489     NEXT,       GOTO-PAGE(7),                   !BUT TABLE IS ON PAGE 7
3490                 J/BUTINSTRS                     !GO DO INSTRS "BUT"
3491 (5030) DCS[0.00.0.0.0.0] BM[0101..00.11..11.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001]

3492
3493 !-----
3494 !
3495 !* PART B *
3496 !TEST-015-B CHECKS THAT BUT[DR6-7 L] READS THE "01" IN IR<2:1> H CORRECTLY
3497 !AND DOES NOT ASSERT THE SIGNAL
3498 5772:
3499 TEST015B:
3500     PO,          LOAD-ENUA(ZTARGET403),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3501                 LOAD-ERROR(TEST015B),          !ERROR DIRECTORY KEY
3502                 DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
3503     NEXT,        J/GOBUTO15B                     !GO SETUP FOR "BUT"
(5772) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.001]

3504
3505 5031: !(FREE)
3506 GOBUTO15B:
3507     SETUP,      RETURN/TEST015C,                !RETURN TO START OF NEXT SUBTEST
3508     NEXT,       GOTO-PAGE(7),                   !BUT TABLE IS ON PAGE 7
3509                 J/BUTDR6-7L                     !GO DO DR 6-7 L "BUT"
3510
3511

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(5031) DCS(0.00.0.0.0.0) BM(0101..00.11..10.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.111)

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3523

! * PART C *
! TEST-015-C CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
! AS CLASS-E=JMP, IR<5:3>H="101", AND TARGETS TO (655)

5722:

TEST015C:

PO, LOAD-ENUA(ZTARGET655), !LOAD EXPECTED ADDRESS AFTER "BUT"
LOAD-ERROR(TEST015C), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
NEXT, J/GOBUTO15C !GO SETUP FOR "BUT"

(5722) DCS(1.00.1.0.0.0) BM(1100..00.11..11.10..101..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.010)

3524
3525
3526
3527
3528
3529
3530

5032: !(FREE)

GOBUTO15C:

SETUP, RETURN/SCOPE015, !RETURN TO SCOPE LOOP TEST WORD
NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
J/BUTINSTR1 !GO DO INSTR1 "BUT"

(5032) DCS(0.00.0.0.0.0) BM(0101..00.00..00.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

3531
3532
3533
3534
3535
3536

5033: !(FREE)

SCOPE015:

PO, BUMP-VERIFY, !COUNT
NEXT, BUTD(SCOPE), !NO ERROR: "TEST016A" [+1. WORD]
J/TEST016A !ERROR: "LOAD015A" [-6. WORDS]

(5033) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.100.001)

3537
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3539
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3541
3542
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3544

! *** TEST 016 ***
! TEST-016 USES AN IR DATA PATTERN OF: "1 000 000 000 000 000" (100000)

3545
3546
3547
3548
3549

! * PART A *
! TEST-016-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
! AS CLASS-F=BRANCH, IR<14:11>H="0000", IR<15#10:08>H# "0000",
! AND TARGETS TO (757)

5741:

TEST016A:

PO, LOAD-ENUA(ZTARGET757), !LOAD EXPECTED ADDRESS AFTER "BUT"
LOAD-ERROR(TEST016A), !ERROR DIRECTORY KEY
DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
NEXT, J/LOAD016A !GO LOAD PATTERN

3550
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3556
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3559

```

(5741) DCS(1.00.1.0.0.0) BM(1011..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.000...111.011.110)
3560
3561
3562 5736:
3563 LOAD016A:
3564 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
3565 EMIT/100000, !(100000)
3566 NEXT, J/GOBUTO16A !GO SETUP FOR "BUT"
(5736) DCS(0.00.0.0.0.0) BM(1000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...000.011.100)
3567
3568 5034: !(FREE)
3569 GOBUTO16A:
3570 SETUP, RETURN/SCOPE016, !RETURN TO SCOPE LOOP TEST WORD
3571 PO, BUMP-VERIFY, !COUNT
3572 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
3573 J/BUTINSTRI !GO DO INSTRI "BUT"
3574
(5034) DCS(0.00.0.0.0.1) BM(0101..00.00..00.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)
3575
3576 5035: !(FREE)
3577 SCOPE016:
3578 NEXT, BUTD(SCOPE), !NO ERROR: "TEST017A" [+1. WORD]
3579 J/TEST017A ! ERROR: "LOAD016A" [-2. WORDS]
3580
(5035) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.011.111)
3581
3582
3583
3584
3585
3586
3587 ! -----
3588
3589 !*** TEST 017 ***
3590 !TEST-017 USES A DATA PATTERN OF: "0 000 000 101 010 010" (000522)
3591
3592 ! -----
3593
3594 !* PART A *
3595 !TEST-017-A CHECKS THAT BUT(IR<9:6>) READS THE ALTERNATING PATTERN "0101"
3596 !IN IR<9:6>H CORRECTLY
3597 5737:
3598 TEST017A:
3599 PO, LOAD-ENUA(ZTARGET405), !LOAD EXPECTED ADDRESS AFTER "BUT"
3600 LOAD-ERROR(TEST017A), !ERROR DIRECTORY KEY
3601 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
3602 NEXT, J/LOAD017A !GO LOAD PATTERN
(5737) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...111.011.010)
3603
3604 5732:
3605 LOAD017A:
3606 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
3607

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3608 EMIT/000522, !(000522)
 3609 NEXT, J/GOBUTO17A !GO SETUP FOR "BUT"
 (5732) DCS(0.00.0.0.0.0) BM(0000..00.00..01.01..010..010...0.0.0..0..0...1.1010...0..0000.0...11.000...000.011.110)

3610
 3611
 3612 5036: !(FREE)
 3613 GOBUTO17A:
 3614 SETUP, RETURN/TEST017B, !RETURN TO START OF NEXT SUBTEST
 3615 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3616 J/BUTIR9-6 !GO DO "BUT" ON IR<9:6>H
 (5036) DCS(0.00.0.0.0.0) BM(0101..00.11..10.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.100)

! - - - - -

3621 !* PART B *
 3622 !TEST-017-B CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
 3623 !AS CLASS-F=BRANCH, IR<14:11>H="0000", IR<15:10:08>H="0000",
 3624 !AND TARGETS TO (757)
 3625 5735:
 3626 TEST017B:
 3627 PO, LOAD-ENUA(ZTARGET757), !LOAD EXPECTED ADDRESS AFTER "BUT"
 3628 LOAD-ERROR(TEST017B), !ERROR DIRECTORY KEY
 3629 DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
 3630 BUMP-VERIFY, !COUNT
 3631 NEXT, J/GOBUTO17B !GO SETUP FOR "BUT"
 (5735) DCS(1.00.1.0.0.1) BM(1100..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.111)

3632
 3633
 3634 5037: !(FREE)
 3635 GOBUTO17B:
 3636 SETUP, RETURN/SCOPE017, !RETURN TO SCOPE LOOP TEST WORD
 3637 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3638 J/BUTINSTR1 !GO DO INSTR1 "BUT"
 (5037) DCS(0.00.0.0.0.0) BM(0101..00.00..01.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

3639
 3640
 3641 5040: !(FREE)
 3642 SCOPE017:
 3643 NEXT, BUTD(SCOPE), !NO ERROR: "TEST020A" [+1. WORD]
 3644 J/TEST020A ! ERROR: "LOAD017A" [-4. WORDS]
 (5040) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.011.011)

! - - - - -

3653 !*** TEST 020 ***
 3654 !TEST-020 USES A DATA PATTERN OF: "0 000 001 010 101 111" (001257)

```

3655
3656 ! - - - - -
3657
3658 !* PART A *
3659 !TEST-020-A CHECKS THAT BUT(IR<9:6>) READS THE ALTERNATING PATTERN "1010"
3660 !IN IR<9:6>H CORRECTLY
3661 5733:
3662 TEST020A:
3663     PO,          LOAD-ENUA(ZTARGET412),      !LOAD EXPECTED ADDRESS AFT.R "BUT"
3664                LOAD-ERROR(TEST020A),      !ERROR DIRECTORY KEY
3665                DCS-CTR(C4.),              !COMPARE ENUA:TNUA IN 4. MICROWORDS
3666     NEXT        J/LOAD020A                 !GO LOAD PATTERN
(5733) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...111.010.100)

3667
3668 5724:
3669 LOAD020A:
3670     P2-U,      IR+EMIT,                    !LOAD IR WITH TEST PATTERN
3671                EMIT/001257,                ! (001257)
3672     NEXT        J/GOBUT020A                 !GO SETUP FOR "BUT"
(5724) DCS(0.00.0.0.0.0) BM(0000..00.00..10.10..101..111...0.0.0..0..0...1.1010...0..0000.0...11.000...000.100.001)

3674
3675 5041: !(FREE)
3676 GOBUT020A:
3677     SETUP,     RETURN/TEST020B,            !RETURN TO START OF NEXT SUBTEST
3678     NEXT,      GOTO-PAGE(7),               !BUT TABLE IS ON PAGE 7
3679                J/BUTIR9-6                 !GO DO "BUT" ON IR<9:6>H
3680 (5041) DCS(0.00.0.0.0.0) BM(0101..00.11..10.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.100)

3681
3682 ! - - - - -
3683
3684 !* PART B *
3685 !TEST-020-B CHECKS THAT BUT(MOV-DR7*IR<5:3>) READS THE --(FLTPT*MOV+FLTPT*DR7) AND
3686 !ALTERNATING PATTERN "101" IN IR<5:3>H CORRECTLY
3687 5731:
3688 TEST020B:
3689     PO,          LOAD-ENUA(ZTARGET405),      !LOAD EXPECTED ADDRESS AFTER "BUT"
3690                LOAD-ERROR(TEST020B),      !ERROR DIRECTORY KEY
3691                DCS-CTR(C3.),              !COMPARE ENUA:TNUA IN 3. MICROWORDS
3692     NEXT        J/GOBUT020B                 !GO SETUP FOR "BUT"
(5731) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.010)

3694
3695 5042: !(FREE)
3696 GOBUT020B:
3697     SETUP,     RETURN/TEST020C,            !RETURN TO START OF NEXT SUBTEST
3698     PO,          BUMP-VERIFY,               !COUNT
3699     NEXT,      GOTO-PAGE(7),               !BUT TABLE IS ON PAGE 7
3700                J/BUTMOVDR7IRS-3          !GO DO "BUT"
3701 (5042) DCS(0.00.0.0.0.1) BM(0101..00.11..10.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.101)

```



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3702
3703
3704 ! - - - - -
3705
3706 !* PART C *
3707 !TEST-020-C CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
3708 !AS CLASS-F=BRANCH, IR<14:11>H="0000", IR<15:10:08>H#"0000",
3709 !AND TARGETS TO (757)
3710 5727:
3711 TEST020C:
3712     PO,          LOAD-ENUA(ZTARGET757),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3713                 LOAD-ERROR(TEST020C),          !ERROR DIRECTORY KEY
3714                 DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
3715     NEXT,        J/GOBUT020C                    !GO SETUP FOR "BUT"
(5727) DCS(1.00.1.0.0.0) BM(1100..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.011)

3716
3717
3718 5043: !(FREE)
3719 GOBUT020C:
3720     SETUP,      RETURN/SCOPE020,                !RETURN TO SCOPE LOOP TEST WORD
3721     NEXT,       GOTO-PAGE(7),                  !BUT TABLE IS ON PAGE 7
3722     J/BUTINSTR1 !GO DO INSTR1 "BUT"
(5043) DCS(0.00.0.0.0.0) BM(0101..00.00..01.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

3723
3724
3725 5044: !(FREE)
3726 SCOPE020:
3727     NEXT,      BUTD(SCOPE),                    !NO ERROR: "TEST021A" [+1. WRD]
3728     J/TEST021A !ERROR: "LOAD020A" [-6. WORDS]
(5044) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.010.101)

3729
3730
3731
3732
3733
3734
3735 ! - - - - -
3736
3737 !*** TEST 021 ***
3738 !TEST-021 USES A DATA PATTERN OF: "0 000 010 011 001 101" (002315)
3739
3740 ! - - - - -
3741
3742 !* PART A *
3743 !TEST-021-A CHECKS THAT BUT(DMO#SMO#BYTE),
3744 !DM=IR<5:3>H="001", DMOH=0; SM=IR<11:9>H="010", SMOH=0; BYTE H=0
3745 5725:
3746 TEST021A:
3747     PO,          LOAD-ENUA(ZTARGET400),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3748                 LOAD-ERROR(TEST021A),          !ERROR DIRECTORY KEY
3749                 DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
3750     NEXT,        J/LOAD021A                    !GO LOAD PATTERN
(5725) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.010.000)

```

```

3751
3752
3753 5720:
3754 LOAD021A:
3755     PO,      BUMP-VERIFY,      !COUNT
3756     P2-U,    IR+EMIT,          !LOAD IR WITH TEST PATTERN
3757     NEXT,    EMIT/002315,      !(002315)
3758     J/GOBUT021A,      !GO SETUP FOR "BUT"
(5720) DCS(0.00.0.0.0.1) BM(0000..00.01..00.11..001..101...0.0.0..0..0...1.1010...0..0000.0...11.000...000.100.101)

```

```

3759
3760
3761 5045: !(FREE)
3762 GOBUT021A:
3763     SETUP,    RETURN/TEST021B,  !RETURN TO START OF NEXT SUBTEST
3764     NEXT,    GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3765     J/BUTDMSHBYTE,          !GO DO "BUT" ON DMSH#BYTE
(5045) DCS(0.00.0.0.0.0) BM(0101..00.11..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.011)

```

```

3766
3767
3768 ! - - - - -
3769

```

```

3770 !* PART B *
3771 !TEST-021-B CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
3772 !AS CLASS-F=BRANCH, IR<14:11>H="0000", IR<15:10:08>H="0000",
3773 !AND TARGETS TO (757)
3774 5723:
3775 TEST021B:
3776     PO,      LOAD-ENUA(ZTARGET757), !LOAD EXPECTED ADDRESS AFTER "BUT"
3777     NEXT,    LOAD-ERROR(TEST021B), !ERROR DIRECTORY KEY
3778     J/GOBUT021B,      DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
3779     J/GOBUT021B,      !GO SETUP FOR "BUT"
(5723) DCS(1.00.1.0.0.0) BM(1100..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.110)

```

```

3780
3781
3782 5046: !(FREE)
3783 GOBUT021B:
3784     SETUP,    RETURN/TEST021C,  !RETURN TO START OF NEXT SUBTEST
3785     NEXT,    GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3786     J/BUTINSTR1,          !GO DO INSTR1 "BUT"
(5046) DCS(0.00.0.0.0.0) BM(0101..00.11..11.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

```

3787
3788
3789 ! - - - - -
3790

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```

3791 !* PART C *
3792 !TEST-021-C CHECKS THAT BUT(IR<11>#FLTPT<3:0>) READS THE "0" IN IR<11>H CORRECTLY,
3793 !AND THE FLTPT DECODE ROM GETS ADDRESS (462), WHICH IS A ADDF/D MODE1-7 INSTR;
3794 !DATA OUTPUT SHOULD BE (11)
3795 5774:
3796 TEST021C:
3797     PO,      LOAD-ENUA(ZTARGET411), !LOAD EXPECTED ADDRESS AFTER "BUT"
3798

```

3799 LOAD-ERROR(TEST021C), !ERROR DIRECTORY KEY
 3800 DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
 3801 J/GOBUTO21C, !GO SETUP FOR "BUT"
 (5774) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.1111)

3802
 3803
 3804 5047: !(FREE)
 3805 GOBUTO21C:
 3806 SETUP, RETURN/SCOPE021, !RETURN TO SCOPE LOOP TEST WORD
 3807 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 3808 J/BUTIR11FLTPT3-0 !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H
 (5047) DCS(0.00.0.0.0.0) BM(0101..00.00..01.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.0101)

3809
 3810
 3811 5050: !(FREE)
 3812 SCOPE021:
 3813 NEXT, BUTD(SCOPE), !NO ERROR: "TEST022A" [+1. WORDS]
 3814 J/TEST022A !ERROR: "LOAD021A" [-6. WORDS]
 (5050) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.010.0011)

3815
 3816
 3817
 3818
 3819
 3820

3821 ! - - - - -
 3822
 3823 !*** TEST 022 ***
 3824 !TEST-022 USES A DATA PATTERN OF: "0 000 011 000 110 011" (003063)
 3825
 3826 ! - - - - -

3827
 3828 !* PART A *
 3829 !TEST-022-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
 3830 !AS CLASS-F=BRANCH, IR<14:11>H="0000", IR<15#10:08>H#"0000",
 3831 !AND TARGETS TO (757)
 3832 5721:
 3833 TEST022A:

3834 PO, LOAD-ENUA(ZTARGET757), !LOAD EXPECTED ADDRESS AFTER "BUT"
 3835 LOAD-ERROR(TEST022A), !ERROR DIRECTORY KEY
 3836 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
 3837 NEXT, J/LOAD022A !GO LOAD PATTERN
 (5721) DCS(1.00.1.0.0.0) BM(1011..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.000...111.001.1101)

3838
 3839
 3840 5716:
 3841 LOAD022A:
 3842 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
 3843 EMIT/003063, ! (003063)
 3844 NEXT, J/GOBUTO22A !GO SETUP FOR "BUT"
 (5716) DCS(0.00.0.0.0.0) BM(0000..00.01..10.00..110..011...0.0.0..0..0...1.1010...0..0000.0...11.000...000.101.0011)

3845
 3846

```

3847 5051: !(FREE)
3848 GOBUTO22A:
3849     SETUP, RETURN/SCOPE022, !RETURN TO SCOPE LOOP TEST WORD
3850     NEXT,  GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
3851     J/BUTINSTR1              !GO DO INSTR1 "BUT"
(5051) DCS(0.00.0.0.0.0) BM(0101..00.00..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

```

3852
3853
3854
3855 5052: !(FREE)
3856 SCOPE022:
3857     NEXT,  BUTD[SCOPE],      !NO ERROR: "TEST023A" [+1. WORD]
3858     J/TEST023A              ! ERROR: "LOAD022A" [-2. WORDS]
(5052) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.001.111)

```

```

3859
3860
3861
3862
3863
3864
3865 !-----
3866
3867 !*** TEST 023 ***
3868 !TEST-023 USES A DATA PATTERN OF: "1 000 110 000 000 100" (106004)
3869
3870 !-----
3871

```

```

3872 !* PART A *
3873 !TEST-023-A CHECKS THAT BUT[INSTR1] READS THE IR CORRECTLY
3874 !AS CLASS-D=SOP#DMO; IR<14:06>H="000 110 000"; IR<15>H="1";
3875 !DM=IR<5:3>H="000", DMOH=1; AND TARGETS TO (560)
3876 5717:
3877 TEST023A:
3878     PO,      LOAD-ENUA(ZTARGET560), !LOAD EXPECTED ADDRESS AFTER "BUT"
3879     LOAD-ERROR(TEST023A),          !ERROR DIRECTORY KEY
3880     DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
3881     NEXT,    J/LOAD023A            !GO LOAD PATTERN
(5717) DCS(1.00.1.0.0.0) BM(1011..00.11..11.01..110..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.001.100)

```

```

3882
3883
3884 5714:
3885 LOAD023A:
3886     P2-U,    IR+EMIT,             !LOAD IR WITH TEST PATTERN
3887     EMIT/106004,                  !(.06004)
3888     NEXT,    J/GOBUTO23A         !G) SETUP FOR "BUT"
(5714) DCS(0.00.0.0.0.0) BM(1000..00.11..00.00..000..100...0.0.0..0..0...1.1010...0..0000.0...11.000...000.101.011)

```

```

3889
3890
3891 5053: !(FREE)
3892 GOBUTO23A:
3893     SETUP, RETURN/SCOPE023,      !RETURN TO SCOPE LOOP TEST WORD
3894     NEXT,  GOTO-PAGE(7),        !BUT TABLE IS ON PAGE 7
3895     J/BUTINSTR1                !GO DO INSTR1 "BUT"

```

```

3896 (5053) DCS(0.00.0.0.0.0) BM(0101..00.00..01.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)
3897
3898 5054: !(FREE)
3899 SCOPE023:
3900 PO, BUMP-VERIFY, !COUNT
3901 NEXT, BUTD(SCOPE), !NO ERROR: "TEST024A" [+1. WORD]
3902 J/TEST024A !ERROR: "LOAD023A" [-2. WORDS]
(5054) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.001.101)
3903
3904
3905
3906
3907
3908
3909 ! - - - - -
3910
3911 !*** TEST 024 ***
3912 !TEST-024 USES A DATA PATTERN OF: "0 000 101 111 000 110" (005706)
3913
3914 ! - - - - -
3915
3916 !* PART A *
3917 !TEST-024-A CHECKS THAT BUT(DR6-7 L) READS THE "11" IN IR<2:1> H CORRECTLY
3918 !AND DOES ASSERT THE SIGNAL
3919 5715:
3920 TEST024A:
3921 PO, LOAD-ENUA(ZTARGET402), !LOAD EXPECTED ADDRESS AFTER "BUT"
3922 LOAD-ERROR(TEST024A), !ERROR DIRECTORY KEY
3923 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
3924 NEXT, J/LOAD024A
(5715) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.110)
3925
3926 5706:
3927 LOAD024A:
3928 PO, BUMP-VERIFY, !COUNT
3929 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
3930 EMIT/005706, !(005706)
3931 NEXT, J/GOBUT024A !GO SETUP FOR "BUT"
3932 (5706) DCS(0.00.0.0.0.1) BM(0000..00.10..11.11..000..110...0.0.0..0..0...1.1010...0..0000.0...11.000...000.101.101)
3933
3934 5055: !(FREE)
3935 GOBUT024A:
3936 SETUP, RETURN/TEST024B, !RETURN TO START OF NEXT SUBTEST
3937 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
3938 J/BUTDR6-7L !GO DO "BUT" ON DR 6/7 L
3939 (5055) DCS(0.00.0.0.0.0) BM(0101..00.11..10.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.111)
3940
3941 ! - - - - -
3942

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```

3943
3944 !* PART B *
3945 !TEST-024-B CHECKS THAT BUT[INSTR1] READS THE IR CORRECTLY
3946 !AS CLASS-D=SOP#DMO; I<14:06>H="000 101 111"; IR<15>H="0";
3947 !DM=IR<5:3>H="000", DMOH=1; AND TARGETS TO (557)
3948 5711:
3949 TEST024B:
3950     PO,          LOAD-ENUA(ZTARGET557),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3951                LOAD-ERROR(TEST024B),          !ERROR DIRECTORY KEY
3952                DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
3953     NEXT,        J/GOBUT024B                    !GO SETUP FOR "BUT"
(5711) DCS(1.00.1.0.0.0) BM(1100..00.11..11.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.110)

3954
3955
3956 5056: !(FREE)
3957 GOPJT024B:
3958     SETUP,      RETURN/SCOPE024,              !RETURN TO SCOPE LOOP TEST WORD
3959     PO,          BUMP-VERIFY                    !COUNT
3960     NEXT,        GOTO-PAGE(7),                 !BUT TABLE IS ON PAGE 7
3961                J/BUTINSTR1                    !GO DO INSTR1 "BUT"
(5056) DCS(0.00.0.0.0.1) BM(0101..00.00..01.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

3962
3963
3964 5057: !(FREE)
3965 SCOPE024:
3966     NEXT,        BUTD(SCOPE),                  !NO ERROR: "TEST025A" [+1. WORD]
3967                J/TEST025A                      !ERROR: "LOAD024A" [-4. WORDS]
(5057) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.111)

3968
3969
3970
3971
3972
3973
3974 ! -----
3975
3976 !*** TEST 025 ***
3977 !TEST-025 USES A DATA PATTERN OF: "0 000 110 011 000 011" (006303)
3978 ! -----
3979
3980
3981 !* PART A *
3982 !TEST-025-A CHECKS THAT BUT[INSTR1] READS THE IR CORRECTLY
3983 !AS CLASS-D=SOP#DMO; IR<14:06>H="000 110 011"; IR<15>H="0";
3984 !DM=IR<5:3>H="000", DMOH=1; AND TARGETS TO (543)
3985 5707:
3986 TEST025A:
3987     PO,          LOAD-ENUA(ZTARGET543),          !LOAD EXPECTED ADDRESS AFTER "BUT"
3988                LOAD-ERROR(TEST025A),          !ERROR DIRECTORY KEY
3989                DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
3990     NEXT,        J/LOAD025A                    !GO LOAD PATTERN
(5707) DCS(1.00.1.0.0.0) BM(1011..00.11..11.01..100..011...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.100)
3991

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```

3992
3993 5704:
3994 LOAD025A:
3995     P2-U,      IR+EMIT,          !LOAD IR WITH TEST PATTERN
3996     EMIT/006303,    ! (006303)
3997     NEXT,      J/GOBUT025A,     !GO SETUP FOR "BUT"
(5704) DCS(0.00.0.0.0.0) BM(0000..00.11..00.11..000..011...0.0.0..0..0...1.1010...0..0000.0...11.000...000.110.000)

3998
3999 5060: !(FREE)
4000 GOBUT025A:
4001     SETUP,    RETURN/SCOPE025,   !RETURN TO SCOPE LOOP TEST WORD
4002     NEXT,    GOTO-PAGE(7),       !BUT TABLE IS ON PAGE 7
4003     J/BUTINSTR1,    !GO DO INSTR1 "BUT"
4004 (5060) DCS(0.00.0.0.0.0) BM(0101..00.00..01.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

4005
4006 5061: !(FREE)
4007 SCOPE025:
4008     NEXT,    BUTD(SCOPE),        !NO ERROR: "TEST026A" [+1. WORD]
4009     J/TEST026A,    !ERROR: "LOAD025A" [-2. WORDS]
4010 (5061) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.101)

4011
4012
4013
4014
4015
4016
4017 ! -----
4018
4019 !*** TEST 026 ***
4020 !TEST-026 USES A DATA PATTERN OF: "1 000 101 100 000 011" (105403)
4021 ! -----
4022
4023 !* PART A *
4024 !TEST-026-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4025 !AS CLASS-D=SOP*DMO; IR<14:06>H="000 101 100"; IR<15>H="1";
4026 !DM=IR<5:3>H="000", DMOH=1; AND TARGETS TO (574)
4027 5705:
4028 TEST026A:
4029     PO,      LOAD-ENUA(ZTARGET574),    !LOAD EXPECTED ADDRESS AFTER "BUT"
4030     LOAD-ERROR(TEST026A),             !ERROR DIRECTORY KEY
4031     DCS-CTR(C4.),                     !COMPARE ENUA:TNUA IN 4. MICROWORDS
4032     BUMP-VERIFY,                       !COUNT
4033     NEXT,    J/LOAD026A,               !GO LOAD PATTERN
4034 (5705) DCS(1.00.1.0.0.1) BM(1011..00.11..11.01..111..100...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.010)

4035
4036 5702:
4037 LOAD026A:
4038     P2-U,      IR+EMIT,          !LOAD IR WITH TEST PATTERN
4039     EMIT/105403,    ! (105403)
4040

```

4041 NEXT, J/GOBUTO26A !GO SETUP FOR "BUT"
 (5702) DCS(0.00.0.0.0.0) BM(1000..00.10..11.00..000..011...0.0.0..0..0...1.1010...0..0000.0...11.000...000.110.010)

4042
 4043
 4044 5062: !(FREE)
 4045 GOBUTO26A:
 4046 SETUP, RETURN/SCOPE026, !RETURN TO SCOPE LOOP TEST WORD
 4047 PO, BUMP-VERIFY !COUNT
 4048 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 4049 J/BUTINSTR1 !GO DO INSTR1 "BUT"
 (5062) DCS(0.00.0.0.0.1) BM(0101..00.00..01.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

4050
 4051 5063: !(FREE)
 4052 SCOPE026:
 4053 NEXT, BUTD(SCOPE), !NO ERROR: "TEST027A" [+1. WORD]
 4054 J/TEST027A ! ERROR: "LOAD026A" [-2. WORDS]
 4055 (5063) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.011)

4056
 4057
 4058
 4059
 4060
 4061

4062 ! - - - - -
 4063
 4064 !*** TEST 027 ***
 4065 !TEST-027 USES A DATA PATTERN OF: "1 000 110 001 000 010" (106102)
 4066
 4067 ! - - - - -

4068
 4069 !* PART A *
 4070 !TEST-027-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
 4071 !AS CLASS-0=SOP*DM0; IR<14:06>H="000 110 001"; IR<15>H="1";
 4072 !DM=IR<5:3>H="000", DM0H=1; AND TARGETS TO (561)

4073 5703:
 4074 TEST027A:
 4075 PO, LOAD-ENUA(ZTARGET561), !LOAD EXPECTED ADDRESS AFTER "BUT"
 4076 LOAD-ERROR(TEST027A), !ERROR DIRECTORY KEY
 4077 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
 4078 NEXT, J/LOAD027A !GO LOAD PATTERN
 (5703) DCS(1.00.1.0.0.0) BM(1011..00.11..11.01..110..001...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.000)

4079
 4080 5700:
 4081 LOAD027A:
 4082 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
 4083 EMIT/106102, !(106102)
 4084 NEXT, J/GOBUTO27A !GO SETUP FOR "BUT"
 4085 (5700) DCS(0.00.0.0.0.0) BM(1000..00.11..00.01..000..010...0.0.0..0..0...1.1010...0..0000.0...11.000...000.110.100)

4086
 4087 5064: !(FREE)
 4088

```

4089 GOBUT027A:
4090     SETUP, RETURN/SCOPE027,      !RETURN TO SCOPE LOOP TEST WORD
4091     NEXT,  GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
4092     J/BUTINSTR1                  !GO DO INSTR1 "BUT"
(5064) DCS(0.00.0.0.0.0) BM(0101..00.00..01.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

4093
4094 5065: !(FREE)
4095 SCOPE027:
4096     PO,      BUMP-VERIFY,         !COUNT
4097     NEXT,    BUTD(SCOPE),         !NO ERROR: "TEST030A" [+1. WORD]
4098     J/TEST030A                    !ERROR: "LOAD027A" [-2. WORDS]
(5065) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.001)

4099
4100
4101
4102
4103
4104
4105 !-----
4106
4107 !*** TEST 030 ***
4108 !TEST-030 USES A DATA PATTERN OF: "0 000 101 010 000 100" (005204)
4109
4110 !-----
4111
4112 !* PART A *
4113 !TEST-030-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4114 !AS CLASS-D=SOP*DMO; IR<14:06>H="000 101 010"; IR<15>H="0";
4115 !DM=IR<5:3>H="000", DMOH=1; AND TARGETS TO (552)
4116 5701:
4117 TEST030A:
4118     PO,      LOAD-ENUA(ZTARGET552), !LOAD EXPECTED ADDRESS AFTER "BUT"
4119     LOAD-ERROR(TEST030A),          !ERROR DIRECTORY KEY
4120     DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
4121     NEXT,    J/LOAD030A            !GO LOAD PATTERN
(5701) DCS(1.00.1.0.0.0) BM(1011..00.11..11.01..101..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.110)

4122
4123
4124 5676:
4125 LOAD030A:
4126     P2-U,    IR+EMIT,              !LOAD IR WITH TEST PATTERN
4127     EMIT/005204,                    ! (005204)
4128     NEXT,    J/GOBUT030A           !GO SETUP FOR "BUT"
(5676) DCS(0.00.0.0.0.0) BM(0000..00.10..10.10..000..100...0.0.0..0..0...1.1010...0..0000.0...11.000...000.110.110)

4129
4130
4131 5066: !(FREE)
4132 GOBUT030A:
4133     SETUP,   RETURN/TEST030B,      !RETURN TO START OF NEXT SUBTEST
4134     NEXT,    GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
4135     J/BUTINSTR1                    !GO DO INSTR1 "BUT"
(5066) DCS(0.00.0.0.0.0) BM(0101..00.11..10.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

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4180
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4183

! - - - - -

!* PART B *
!TEST-030-B CHECKS THAT BUT[IR<11>#FLTPT<3:0>] READS THE "1" IN IR<11>H CORRECTLY,
!AND THE FLTPT DECODE ROM GETS ADDRESS (240), WHICH IS A MULF/MODE-0 INSTR,
!DATA SHOULD BE (04)

5712:

TEST030B:

PO, LOAD-ENUA(ZTARGET424), !LOAD EXPECTED ADDRESS AFTER "BUT"
LOAD-ERROR(TEST030B), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
NEXT, J/GOBUTO30B !GO SETUP FOR "BUT"

(5712) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..010..100...0.0.0..0..0...0.0000...0..0000.0...11.00C...000.110.111]

5067: !(FREE)
GOBUTO30B:

SETUP, RETURN/TEST030C, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
J/BUTIR11FLTPT3-0 !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H

(5067) DCS[0.00.0.0.0.0] BM[0101..00.11..10.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.010]

! - - - - -

!* PART C *
!TEST-030-C CHECKS THAT BUTR[IR<11>B] READS THE "1" IN IR<11>H CORRECTLY

5713:

TEST030C:

PO, LOAD-ENUA(ZTARGET403), !LOAD EXPECTED ADDRESS AFTER "BUT"
LOAD-ERROR(TEST030C), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
NEXT, J/GOBUTO30C !GO SETUP FOR "BUT"

(5713) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.111.000]

5070: !(FREE)
GOBUTO30C:

SETUP, RETURN/TEST030C, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
J/BUTIR11B !GO DO "BUT" ON IR<11>H

(5070) DCS[0.00.0.0.0.0] BM[0101..00.11..10.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.010]

! - - - - -

```

4184 !* PART D *
4185 !TEST-030-D CHECKS THAT BUT[INSTRS] READS THE IR CORRECTLY
4186 !AS ROM ADDRESS=(452) ON THE INSTRS E78 ROM, AND RECEIVES THE DIAGNOSTIC VALUE
4187 !OF (05), TARGETING TO (405) AFTER THE DECODE
4188 5734:
4189 TEST0300:
4190     PO,          LOAD-ENUA(ZTARGET405),          !LOAD EXPECTED ADDRESS AFTER "BUT"
4191                LOAD-ERROR(TEST0300),          !ERROR DIRECTORY KEY
4192                DCS-CTR(C3.),                  !COMPARE ENUA:TNUA IN 3. MICROWORDS
4193     NEXT        J/GOBUT0300                    !GO SETUP FOR "BUT"
(5734) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.001]

4194
4195 5071: !(FREE)
4196 GOBUT0300:
4197     SETUP,      RETURN/SCOPE030,              !RETURN TO SCOPE LOOP TEST WORD
4198     NEXT,       GOTO-PAGE(7),                 !BUT TABLE IS ON PAGE 7
4199                J/BUTINSTRS                    !GO DO "BUT" ON INSTRS<4:0>H
4200 (5071) DCS[0.00.0.0.0.0] BM[0101..00.00..01.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001]

4201
4202 5072: !(FREE)
4203 SCOPE030:
4204     NEXT,       BUTD[SCOPE],                  !NO ERROR: "TEST031A" [+1. WORD]
4205                J/TEST031A                    ! ERROR: "LOAD030A" [-8. WORDS]
4206 (5072) DCS[0.00.0.1.0.0] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.111]

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4208
4209
4210
4211
4212
4213 ! - - - - -
4214
4215 !*** TEST 031 ***
4216 !TEST-031 USES A DATA PATTERN OF:  "0 001 000 010 100 010" (040212)
4217 ! - - - - -
4218
4219
4220 !* PART A *
4221 !TEST-031-A CHECKS THAT BUT[DMO#SMO#BYTE]
4222 !DM=IR<5:3>H="100", DMOH=0; SM=IR<11:9>H="000", SMOH=1; BYTE H=0
4223 5677:
4224 TEST031A:
4225     PO,          LOAD-ENUA(ZTARGET402),          !LOAD EXPECTED ADDRESS AFTER "BUT"
4226                LOAD-ERROR(TEST031A),          !ERROR DIRECTORY KEY
4227                DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
4228     NEXT        J/LOAD031A                    !GO LOAD PATTERN
(5677) DCS[1.00.1.0.0.0] BM[1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.010]

4229
4230
4231 5672:
4232 LOAD031A:

```

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4233          PO,      BUMP-VERIFY,          !COUNT
4234          P2-U,    IR+EMIT,              !LOAD IR WITH TEST PATTERN
4235          NEXT,    EMIT/010242,          ! (010242)
4236          J/GOBUT031A,          !GO SETUP FOR "BUT"
(5672) DCS(0.00.0.0.0.0.1) BM(0001..00.00..00.10..100..010...0.0.0..0..0...1.1010...0..0000.0...11.000...000.111.011)

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4237
4238
4239          5073:  !(FREE)
4240          GOBUT031A:
4241          SETUP,   RETURN/TEST031B,      !RETURN TO START OF NEXT SUBTEST
4242          NEXT,    GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
4243          J/BUTDMSMBYTE,          !GO DO "BUT"
(5073) DCS(0.00.0.0.0.0) BM(0101..00.11..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.011)

```

```

4244
4245
4246          ! - - - - -
4247

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```

4248          !* PART B *
4249          !TEST-031-B CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4250          !AS CLASS-C=MOV*SMD*-DMO: IR<14:9>H="001 000"; IR<15>H="0";
4251          !DM=IR<5:3>H="100"; AND TARGETS TO (604)
4252          5675:
4253          TEST031B:

```

```

4254          PO,      LOAD-ENUA(ZTARGET604), !LOAD EXPECTED ADDRESS AFTER "BUT"
4255          LOAD-ERROR(TEST031B),         !ERROR DIRECTORY KEY
4256          DCS-CTR(C3.),                 !COMPARE ENUA:TNUA IN 3. MICROWORDS
4257          NEXT,    J/GOBUT031B,         !GO SETUP FOR "BUT"
(5675) DCS(1.00.1.0.0.0) BM(1100..00.11..11.10..000..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.100)

```

```

4258
4259          5074:  !(FREE)
4260          GOBUT031B:
4261          SETUP,   RETURN/SCOPE031,      !RETURN TO SCOPE LOOP TEST WORD
4262          NEXT,    GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
4263          J/BUTINSTR1,          !GO DO INSTR1 "BUT"
(5074) DCS(0.00.0.0.0.0.1) BM(0101..00.00..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

```

4265
4266          5075:  !(FREE)
4267          SCOPE031:
4268          NEXT,    BUTD(SCOPE),          !NO ERROR: "TEST032A" [+1. WORDS]
4269          J/TEST032A,          ! ERROR: "LOAD031A" [-4. WORDS]
(5075) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.011)

```

```

4271
4272
4273
4274
4275
4276
4277          ! - - - - -
4278
4279          !*** TEST 032 ***

```

```

4280 !TEST-032 USES A DATA PATTERN OF: "1 001 000 001 010 101" (110125)
4281
4282 ! - - - - -
4283
4284 !* PART A *
4285 !TEST-032-A CHECKS THAT BUT(MOV-DR7#IR<5:3>] READS THE (-FLTPT#MOV+FLTPT#DR7) AND
4286 !ALTERNATING PATTERN "010" IN IR<5:3>H CORRECTLY
4287 5673:
4288 TEST032A:
4289     PO,          LOAD-ENUA(ZTARGET412),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4290                LOAD-ERROR(TEST032A),      !ERROR DIRECTORY KEY
4291                DCS-CTR(C4.),              !COMPARE ENUA:TNUA IN 4. MICROWORDS
4292                BUMP-VERIFY,              !COUNT
4293     NEXT,        J/LOAD032A                !GO LOAD PATTERN
(5673) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.110)

4294
4295
4296 5666:
4297 LOAD032A:
4298     P2-U,        IR+EMIT                    !LOAD IR WITH TEST PATTERN
4299                EMIT/110125,                ! (110125)
4300     NEXT,        J/GOBUT032A              !GO SETUP FOR "BUT"
(5666) DCS(0.00.0.0.0.0) BM(1001..00.00..00.01..010..101...0.0.0..0..0...1.1010...0..0000.0...11.000...000.111.110)

4301
4302
4303 5076: !(FREE)
4304 GOBUT032A:
4305     SETUP,      RETURN/TEST032B,          !RETURN TO START OF NEXT SUBTEST
4306     NEXT,       GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7
4307     J/BUTMOVDR7IR5-3                      !GO DO "BUT"
(5076) DCS(0.00.0.0.0.0) BM(0101..00.11..01.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.101)

4308
4309
4310 ! - - - - -
4311
4312 !* PART B *
4313 !TEST-032-B CHECKS THAT BUT(INSTR1] READS THE IR CORRECTLY
4314 !AS CLASS-C=MOV#SHD*-DMO; IR<14:9>H="001 000"; IR<15>H="1";
4315 !DM=IR<5:3>H="010"; AND TARGETS TO (612)
4316 5671:
4317 TEST032B:
4318     PO,          LOAD-ENUA(ZTARGET612),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4319                LOAD-ERROR(TEST032B),      !ERROR DIRECTORY KEY
4320                DCS-CTR(C3.),              !COMPARE ENUA:TNUA IN 3. MICROWORDS
4321     NEXT,        J/GOBUT032B              !GO SETUP FOR "BUT"
(5671) DCS(1.00.1.0.0.0) BM(1100..00.11..11.10..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.111)

4322
4323
4324 5077: !(FREE)
4325 GOBUT032B:
4326     SETUP,      RETURN/SCOPE032,          !RETURN TO SCOPE LOOP TEST WORD
4327     PO,         BUMP-VERIFY,              !COUNT
4328     NEXT,       GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7

```



```

4329          J/BUTINSTR1          !GO DO INSTR1 "BUT"
(5077) DCS(0.00.0.0.0.1) BM(0101..00.00..10.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)
4330
4331
4332          5100: !(FREE)
4333          SCOPE032:
4334          NEXT, BUTD(SCOPE),          !NO ERROR: "TEST033A" [+1. WORDS]
4335          J/TEST033A          !ERROR: "LOAD032A" [-4. WORDS]
(5100) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.111)
4336
4337
4338
4339
4340
4341
4342          ! -----
4343
4344          !*** TEST 033 ***
4345          !TEST-033 USES A DATA PATTERN OF: "1 000 110 010 111 100" (106274)
4346
4347          ! -----
4348
4349          !* PART A *
4350          !TEST-033-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4351          !AS CLASS-B=SOP*-DMO; IR<14:08>H="000 110 0":
4352          !DM=IR<5:3>H="111", DMOH=0; AND TARGETS TO (517)
4353          5667:
4354          TEST033A:
4355          PO,          LOAD-ENUA(ZTARGET517),          !LOC EXPECTED ADDRESS AFTER "BUT"
4356          LOAD-ERROR(TEST033A),          !ERROR DIRECTORY KEY
4357          DCS-CTR(C4.),          !COMPARE ENUA:TNUA IN 4. MICROWORDS
4358          BUMP-VERIFY,          !COUNT
4359          NEXT,          J/LOAD033A          !GO LOAD PATTERN
(5667) DCS(1.00.1.0.0.1) BM(1011..00.11..11.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.100)
4360
4361          5664:
4362          LOAD033A:
4363          P2-U,          IR+EMIT,          !LOAD IR WITH TEST PATTERN
4364          EMIT/106274,          !:(106274)
4365          NEXT,          J/GOBUT033A          !GO SETUP FOR "BUT"
(5664) DCS(0.00.0.0.0.0) BM(1000..00.11..00.10..111..100...0.0.0..0..0...1.1010...0..0000.0...11.000...001.000.001)
4366
4367
4368          5101: !(FREE)
4369          GOBUT033A:
4370          SETUP,          RETURN/SCOPE033,          !RETURN TO SCOPE LOOP TEST WORD
4371          PO,          BUMP-VERIFY,          !COUNT
4372          NEXT,          GOTO-PAGE(7),          !BUT TABLE IS ON PAGE 7
4373          J/BUTINSTR1          !GO DO INSTR1 "BUT"
(5101) DCS(0.00.0.0.0.1) BM(0101..00.00..10.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)
4374
4375

```

```

4376
4377 5102: !(FREE)
4378 SCOPE033:
4379     NEXT, BUTD(SCOPE),           !NO ERROR: "TEST034A" [+1. WORD]
4380     J/TEST034A                   !ERROR: "LOAD033A" [-2. WORDS]
(5102) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.101)

```

```

4381
4382
4383
4384
4385
4386 !-----
4387
4388 !*** TEST 034 ***
4389 !TEST-034 USES A DATA PATTERN OF: "0 000 101 001 001 010" (005112)
4390
4391 !-----
4392

```

```

4393 !* PART A *
4394 !TEST-034-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4395 !AS CLASS-B=SOP*-DMO; IR<14:09>H="000 101";
4396 !DM=IR<5:3>H="001", DMOH=0; AND TARGETS TO (511)
4397 5665:
4398 TEST034A:
4399     PO,      LOAD-ENUA(ZTARGET511),           !LOAD EXPECTED ADDRESS AFTER "BUT"
4400     LOAD-ERROR(TEST034A),                   !ERROR DIRECTORY KEY
4401     DCS-CTR(C4.),                           !COMPARE ENUA:TNUA IN 4. MICROWORDS
4402     NEXT,   J/LOAD034A                       !GO LOAD PATTERN
(5665) DCS(1.00.1.0.0.0) BM(1011..00.11..11.01..001..001...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.010)

```

```

4403
4404
4405 5662:
4406 LOAD034A:
4407     PO,      BUMP-VERIFY,                   !COUNT
4408     P2-U,    IR+EMIT,                       !LOAD IR WITH TEST PATTERN
4409     EMIT/005112,                             ! (005112)
4410     NEXT,   J/GOBUT034A                     !GO SETUP FOR "BUT"
(5662) DCS(0.00.0.0.0.1) BM(0000..00.10..10.01..001..010...0.0.0..0..0...1.1010...0..0000.0...11.000...001.000.011)

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4411
4412
4413 5103: !(FREE)
4414 GOBUT034A:
4415     SETUP,  RETURN/SCOPE034,               !RETURN TO SCOPE LOOP TEST WORD
4416     NEXT,   GOTO-PAGE(7),                  !BUT TABLE IS ON PAGE 7
4417     J/BUTINSTR1                             !GO DO INSTR1 "BUT"
(5103) DCS(0.00.0.0.0.0) BM(0101..00.00..10.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

```

4418
4419
4420 5104: !(FREE)
4421 SCOPE034:
4422     NEXT,   BUTD(SCOPE),                   !NO ERROR: "TEST035A" [+1. WORD]
4423     J/TEST035A                             !ERROR: "LOAD034A" [-2. WORDS]
(5104) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.011)

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! - - - - -
! *** TEST 035 ***
! TEST-035 USES A DATA PATTERN OF: "0 011 000 111 000 001" (030701)
! - - - - -

! * PART A *
! TEST-035-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
! AS CLASS-A=DOP*SMD*DMO; IR<15:12>H="0011";
! SM=IR<11:9>H="000", SMDH=1; DM=IR<5:3>H="000", DMDH=1; AND TARGETS TO (443)
5663:

TEST035A:
PO, LOAD-ENUA(ZTARGET443), !LOAD EXPECTED ADDRESS AFTER "BUT"
LOAD-ERROR(TEST035A), !ERROR DIRECTORY KEY
DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
NEXT, J/LOAD035A !GO LOAD PATTERN
(5663) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..100..011...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.0001

5660:
LOAD035A:
P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
EMIT/030701, !(030701)
NEXT, J/GOBUT035A !GO SETUP FOR "BUT"
(5660) DCS(0.00.0.0.0.0) BM(0011..00.00..01.11..000..001...0.0.0..0..0...1.1010...0..0000.0...11.000...001.000.101)

5105: !(FREE)
GOBUT035A:
SETUP, RETURN/SCOPE035, !RETURN TO SCOPE LOOP TEST WORD
PO, BUMP-VERIFY !COUNT
NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
J/BUTINSTR1 !GO DO INSTR1 "BUT"
(5105) DCS(0.00.0.0.0.1) BM(0101..00.00..10.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

5106: !(FREE)
SCOPE035:
NEXT, BUTD(SCOPE), !NO ERROR: "TEST036A" [+1. WORD]
J/TEST036A ! ERROR: "LOAD035A" [-2. WORDS]
(5106) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.001)

```

4473
4474 ! -----
4475
4476 !*** TEST 036 ***
4477 !TEST-036 USES A DATA PATTERN OF: "1 101 000 101 000 110" (150506)
4478
4479 ! -----
4480
4481 !* PART A *
4482 !TEST-036-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4483 !AS CLASS-A=DOP*SMD*DMO: IR<15:12>H="1101":
4484 !SM=IR<11:9>H="000", SMOH=1; DM=IR<5:3>H="000", DMOH=1; AND TARGETS TO (455)
4485 5661:
4486 TEST036A:
4487     PO,          LOAD-ENUA(ZTARGET455),          !LOAD EXPECTED ADDRESS AFTER "BUT"
4488                LOAD-ERROR(TEST036A),          !ERROR DIRECTORY KEY
4489                DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
4490     NEXT,        J/LOAD036A                    !GO LOAD PATTERN
(5661) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..101..101...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.110)

4491
4492
4493 5656:
4494 LOAD036A:
4495     PO,          BUMP-VERIFY,                  !COUNT
4496     P2-U,        IR+EMIT,                      !LOAD IR WITH TEST PATTERN
4497     NEXT,        EMIT/150506,                  ! (150506)
4498                J/GOBUT036A                    !GO SETUP FOR "BUT"
(5656) DCS(0.00.0.0.0.1) BM(1101..00.00..01.01..000..110...0.0.0..0..0...1.1010...0..0000.0...11.000...001.000.111)

4499
4500
4501 5107: !(FREE)
4502 GOBUT036A:
4503     SETUP,       RETURN/SCOPE036,              !RETURN TO SCOPE LOOP TEST WORD
4504     NEXT,        GOTO-PAGE(7),                 !BUT TABLE IS ON PAGE 7
4505                J/BUTINSTR1                    !GO DO INSTR1 "BUT"
(5107) DCS(0.00.0.0.0.0) BM(0101..00.00..10.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

4506
4507
4508
4509 5110: !(FREE)
4510 SCOPE036:
4511     NEXT,        BUTD(SCOPE),                  !NO ERROR: "TEST037A" [+1. WORD]
4512                J/TEST037A                    ! ERROR: "LOAD036A" [-2. WORDS]
(5110) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.111)

4513
4514
4515
4516
4517
4518
4519 ! -----
4520
4521 !*** TEST 037 ***

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4522 !TEST-037 USES A DATA PATTERN OF: "0 110 000 010 000 101" (060205)
4523 ! - - - - -
4524
4525 !* PART A *
4526 !TEST-037-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4527 !AS CLASS-A=DOP*SNO*DMO: IR<15:12>H="0110":
4528 !SM=IR<11:9>H="000", SMOH=1; DM=IR<5:3>H="000", DMO=1; AND TARGETS TO (446)
4529 S657:
4530 TEST037A:
4531     PO,          LOAD-ENUA(ZTARGET446),          !LOAD EXPECTED ADDRESS AFTER "BUT"
4532     LOAD-ERROR(TEST037A),          !ERROR DIRECTORY KEY
4533     DCS-CTR(C4.),          !COMPARE ENUA:TNUA IN 4. MICROWORDS
4534     NEXT,        J/LOAD037A          !GO LOAD PATTERN
4535 (5657) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..100..110...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.100)
4536
4537 S654:
4538 LOAD037A:
4539     P2-U,        IR+EMIT,          !LOAD IR WITH TEST PATTERN
4540     EMIT/060205,          ! (060205)
4541     NEXT,        J/GOBUT037A      !GO SETUP FOR "BUT"
4542 (5654) DCS(0.00.0.0.0.0) BM(0110..00.00..00.10..000..101...0.0.0..0..0...1.1010...0..0000.0...11.000...001.001.001)
4543
4544 S111: !(FREE)
4545 GOBUT037A:
4546     SETUP,      RETURN/SCOPE037,   !RETURN TO SCOPE LOOP TEST WORD
4547     PO,          BUMP-VERIFY,      !COUNT
4548     NEXT,        GOTO-PAGE(7),     !BUT TABLE IS ON PAGE 7
4549     J/BUTINSTR1 !GO DO INSTR1 "BUT"
4550 (5111) DCS(0.00.0.0.0.1) BM(0101..00.00..10.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)
4551
4552 S112: !(FREE)
4553 SCOPE037:
4554     NEXT,        BUTD(SCOPE),      !NO ERROR: "TEST040A" [+1. WORD]
4555     J/TEST040A  !ERROR: "LOAD037A" [-2. WORDS]
4556 (5112) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.101)
4557
4558
4559
4560
4561
4562
4563 ! - - - - -
4564
4565 !*** TEST 040 ***
4566 !TEST-040 USES A DATA PATTERN OF: "0 101 000 111 111 111 " (050777)
4567 ! - - - - -
4568
4569 !* PART A *
4570

```

```

4571 !TEST-040-A CHECKS THAT BUT [IR<15:12>] READS THE
4572 !ALTERNATING PATTERN "0101" IN IR<15:12>H CORRECTLY
4573 5655:
4574 TEST040A:
4575     PO,          LOAD-ENUA(ZTARGET405),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4576                LOAD-ERROR(TEST040A),      !ERROR DIRECTORY KEY
4577                DCS-CTR(C4.),              !COMPARE ENUA:TNUA IN 4. MICROWORDS
4578     NEXT,        J/LOAD040A                !GO LOAD PATTERN
(5655) DCS[1.00.1.0.0.0] BM[1011..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.000]

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4579
4580
4581 5650:
4582 LOAD040A:
4583     P2-U,        IR+EMIT                    !LOAD IR WITH TEST PATTERN
4584                EMIT/050777,                ! (050777)
4585     NEXT,        J/GOBUTO40A                !GO SETUP FOR "BUT"
(5650) DCS[0.00.0.0.0.0] BM[0101..00.00..01.11..111..111...0.0.0..0..0...1.1010...0..0000.0...11.000...001.001.011]

```

```

4586
4587
4588 5113: !(FREE)
4589 GOBUTO40A:
4590     SETUP,       RETURN/TEST040B,          !RETURN TO START OF NEXT SUBTEST
4591     NEXT,        GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7
4592                J/BUTIR15-12              !GO DO "BUT"
(5113) DCS[0.00.0.0.0.0] BM[0101..00.11..01.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.000]

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4593
4594
4595 ! - - - - -
4596

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4597 !* PART B *
4598 !TEST-040-B CHECKS THAT BUT[INSTR1] READS THE IR CORRECTLY
4599 !AS CLASS-B=DOP*-MOV*SMO*-DMO; DM=IR<5:3>H="111";
4600 !DOP=IR<14:12>H="101"; TARGETS TO (517)
4601 5653:
4602 TEST040B:
4603     PO,          LOAD-ENUA(ZTARGET517),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4604                LOAD-ERROR(TEST040B),      !ERROR DIRECTORY KEY
4605                DCS-CTR(C3.),              !COMPARE ENUA:TNUA IN 3. MICROWORDS
4606                BUMP-VERIFY,                !COUNT
4607     NEXT,        J/GOBUTO40B                !GO SETUP FOR "BUT"
(5653) DCS[1.00.1.0.0.1] BM[1100..00.11..11.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.100]

```

```

4608
4609
4610 5114: !(FREE)
4611 GOBUTO40B:
4612     SETUP,       RETURN/SCOPE040,          !RETURN TO SCOPE LOOP TEST WORD
4613     NEXT,        GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7
4614                J/BUTINSTR1              !GO DO INSTR1 "BUT"
(5114) DCS[0.00.0.0.0.0] BM[0101..00.00..10.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110]

```

```

4615
4616
4617 5115: !(FREE)

```

4618 SCOPE040:
 4619 NEXT, BUTD(SCOPE), !NO ERROR: "TEST041A" [+1. WORDS]
 4620 J/TEST041A !ERROR: "LOAD040A" [-4. WORDS]
 (5115) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.001)

4621
4622
4623
4624
4625
4626
4627

! - - - - -

4628 !*** TEST 041 ***
 4629 !TEST-041 USES A DATA PATTERN OF: "1 010 000 111 111 111 " (120777)
 4630
 4631 ! - - - - -

4632
4633

4634 !* PART A *
 4635 !TEST-041-A CHECKS THAT BUT(IR<15:12>) READS THE
 4636 !ALTERNATING PATTERN "1010" IN IR<15:12>H CORRECTLY

4637 5651:
 4638 TEST041A:
 4639 PO, LOAD-ENUA(ZTARGET412), !LOAD EXPECTED ADDRESS AFTER "BUT"
 4640 LOAD-ERROR(TEST041A), !ERROR DIRECTORY KEY
 4641 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
 4642 NEXT, J/LOAD041A !GO LOAD PATTERN

(5651) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.100.100)

4643
4644

4645 5644:
 4646 LOAD041A:
 4647 PO, BUMP-VERIFY, !COUNT
 4648 P2-U, IR+EMIT !LOAD IR WITH TEST PATTERN
 4649 EMIT/120777, !(120777)
 4650 NEXT, J/GOBUTO41A !GO SETUP FOR "BUT"

(5644) DCS(0.00.0.0.0.1) BM(1010..00.00..01.11..111..111...0.0.0..0..0...1.1010...0..0000.0...11.000...001.001.110)

4651
4652

4653 5116: !(FREE)
 4654 GOBUTO41A:
 4655 SETUP, RETURN/TEST041B, !RETURN TO START OF NEXT SUBTEST
 4656 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 4657 J/BUTIR15-12 !GO DO "BUT"

(5116) DCS(0.00.0.0.0.0) BM(0101..00.11..01.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.000)

4658
4659
4660
4661

! - - - - -

4662 !* PART B *
 4663 !TEST041-B CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
 4664 !AS CLASS-B=DOP*-MOV*SMO*-DMO; DM=IR<5:3>H="111";
 4665 !DOP=IR<14:12>H="010"; TARGETS TO (517)
 4666 5647:

4667 TEST041B:
 4668 PO, LOAD-ENUA(ZTARGET517), !LOAD EXPECTED ADDRESS AFTER "BUT"
 4669 LOAD-ERROR(TEST041B), !ERROR DIRECTORY KEY
 4670 DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
 4671 BUMP-VERIFY, !COUNT
 4672 NEXT, J/GOBUTO41B !GO SETUP FOR "BUT"
 (5647) DCS(1.00.1.0.0.0) BM(1100..00.11..11.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.111)

4673
 4674 5117: !(FREE)
 4675 GOBUTO41B:
 4676 SETUP, RETURN/SCOPE041, !RETURN TO SCOPE LOOP TEST WORD
 4677 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 4678 J/BUTINSTR1 !GO DO INSTR1 "BUT"
 4679 (5117) DCS(0.00.0.0.0.0) BM(0101..00.00..10.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

4680
 4681 5120: !(FREE)
 4682 SCOPE041:
 4683 NEXT, BUTD(SCOPE), !NO ERROR: "TEST042A" [+1. WORDS]
 4684 J/TEST042A !ERROR: "LOAD041A" [-4. WORDS]
 4685 (5120) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.100.101)

4686
 4687
 4688
 4689
 4690
 4691
 4692 !-----
 4693
 4694 !*** TEST 042 ***
 4695 !TEST-042 USES A DATA PATTERN OF: "1 100 100 000 010 000" (144020)
 4696
 4697 !-----

4698
 4699 !* PART A *
 4700 !TEST-042-A CHECKS THAT BUT(DMO#SMO#BYTE)
 4701 !DM=IR<5:3>H="010", DMOH=0; SM=IR<11:9>H="100", SMOH=0; BYTE H=1

4702 5645:
 4703 TEST042A:
 4704 PO, LOAD-ENUA(ZTARGET401), !LOAD EXPECTED ADDRESS AFTER "BUT"
 4705 LOAD-ERROR(TEST042A), !ERROR DIRECTORY KEY
 4706 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
 4707 NEXT, J/LOAD042A !GO LOAD PATTERN
 (5645) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...110.100.000)

4708
 4709 5640:
 4710 LOAD042A:
 4711 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
 4712 EMIT/144020, !(144020)
 4713 NEXT, J/GOBUTO42A !GO SETUP FOR "BUT"
 4714 (5640) DCS(0.00.0.0.0.0) BM(1100..00.10..00.00..010..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.010.001)

```

4715
4716
4717 5121: !(FREE)
4718 GOBUTO42A:
4719     SETUP, RETURN/TEST042B, !RETURN TO START OF NEXT SUBTEST
4720     NEXT,   GOTO-PAGE(7)      !BUT TABLE IS ON PAGE 7
4721     J/BUTDMSMBYTE           !GO DO "BUT"
(5121) DCS(0.00.0.0.0.0) BM(0101..00.11..01.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.011)

```

```

4722
4723
4724 ! - - - - -
4725
4726 !* PART B *
4727 !TEST-042-B CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4728 !AS CLASS-G=DOP*-SMD; DOP=IR<14:12>H="100";
4729 !SM=IR<11:9>H="100"; TARGETS TO (714)
4730 5643:
4731 TEST042B:
4732     PO,     LOAD-ENUA(ZTARGET714), !LOAD EXPECTED ADDRESS AFTER "BUT"
4733     LOAD-ERROR(TEST042B), !ERROR DIRECTORY KEY
4734     DCS-CTR(C3.), !COMPARE ENUA:TNUA IN 3. MICROWORDS
4735     NEXT,   J/GOBUTO42B           !GO SETUP FOR "BUT"
(5643) DCS(1.00.1.0.0.0) BM(1100..00.11..11.11..001..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.010)

```

```

4736
4737
4738 5122: !(FREE)
4739 GOBUTO42B:
4740     SETUP, RETURN/SCOPE042, !RETURN TO SCOPE LOOP TEST WORD
4741     PO,     BUMP-VERIFY, !COUNT
4742     NEXT,   GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
4743     J/BUTINSTR1           !GO DO INSTR1 "BUT"
(5122) DCS(0.00.0.0.0.0) BM(0101..00.00..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

```

4744
4745
4746 5123: !(FREE)
4747 SCOPE042:
4748     NEXT,   BUTD(SCOPE), !NO ERROR: "TEST043A" [+1. WORDS]
4749     J/TEST043A           ! ERROR: "LOAD042A" [-4. WORDS]
(5123) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.100.001)

```

```

4750
4751
4752
4753
4754
4755
4756 ! - - - - -
4757
4758 !*** TEST 043 ***
4759 !TEST-043 USES A DATA PATTERN OF: "1 110 001 111 000 111" (161707)
4760
4761 ! - - - - -
4762

```

```

4763 !* PART A *
4764 !TEST-043-A CHECKS THAT BUT(DMO#SMO#BYTE)
4765 !DM=IR<5:3>H="000", DMOH=1; SM=IR<11:9>H="001", SMOH=0; BYTE H=0
4766 5641:
4767 TEST043A:
4768     PO,          LOAD-ENUA(ZTARGET404),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4769     LOAD-ERROR(TEST043A),      !ERROR DIRECTORY KEY
4770     DCS-CTR(C4.),              !COMPARE ENUA:TNUA IN 4. MICROWORDS
4771     NEXT,          J/LOAD043A                !GO LOAD PATTERN
(5641) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.100)

```

```

4772
4773
4774 5634:
4775 LOAD043A:
4776     PO,          BUMP-VERIFY,                !COUNT
4777     P2-U,        IR+EMIT                      !LOAD IR WITH TEST PATTERN
4778     EMIT/161707,  ! (161707)
4779     NEXT,        J/GOBUTO43A                !GO SETUP FOR "BUT"
(5634) DCS(0.00.0.0.0.1) BM(1110..00.00..11.11..000..111...0.0.0..0..0...1.1010...0..0000.0...11.000...001.010.100)

```

```

4780
4781
4782 5124: !(FREE)
4783 GOBUTO43A:
4784     SETUP,      RETURN/TEST0438,           !RETURN TO START OF NEXT SUBTEST
4785     NEXT,        GOTO-PAGE(7),              !BUT TABLE IS ON PAGE 7
4786     J/BUTDMSMByte, !GO DO "BUT"
(5124) DCS(0.00.0.0.0.0) BM(0101..00.11..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.011)

```

! - - - - -

```

4791 !* PART B *
4792 !TEST-043-B CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4793 !AS CLASS-G=DOP*-SMO; DOP=IR<14:12>H="110";
4794 !SM=IR<11:9>H="001"; TARGETS TO (711)
4795 5637:
4796 TEST0438:
4797     PO,          LOAD-ENUA(ZTARGET711),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4798     LOAD-ERROR(TEST0438),      !ERROR DIRECTORY KEY
4799     DCS-CTR(C3.),              !COMPARE ENUA:TNUA IN 3. MICROWORDS
4800     NEXT,        J/GOBUTO438                !GO SETUP FOR "BUT"
(5637) DCS(1.00.1.0.0.0) BM(1100..00.11..11.11..001..001...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.101)

```

```

4801
4802
4803 5125: !(FREE)
4804 GOBUTO438:
4805     SETUP,      RETURN/SCOPE043,           !RETURN TO SCOPE LOOP TEST WORD
4806     NEXT,        GOTO-PAGE(7),              !BUT TABLE IS ON PAGE 7
4807     J/BUTINSTR1, !GO DO INSTR1 "BUT"
(5125) DCS(0.00.0.0.0.0) BM(0101..00.00..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

4808
4809

```

4810 5126: !(FREE)
4811 SCOPE043:
4812 PO, BUMP-VERIFY, !COUNT
4813 NEXT, BUTD(SCOPE), !NO ERROR: "TEST044A" [+1. WORDS]
4814 J/TEST044A !ERROR: "LOAD043A" [-4. WORDS]
(5126) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.101)

```

```

4815
4816
4817
4818
4819
4820
4821
4822 !-----
4823
4824 !*** TEST 044 ***
4825 !TEST-044 USES A DATA PATTERN OF: "0 111 110 010 101 000" (076250)
4826
4827 !-----
4828

```

```

4829 !* PART A *
4830 !TEST-044-A CHECKS THAT BUT(INSTR1) READS THE IR CORRECTLY
4831 !AS CLASS-A=XFC; IR<15:9>H="0 111 110"; AND TARGETS TO (447)
4832 5635:
4833 TEST044A:
4834 PO, LOAD-ENUA(ZTARGET447), !LOAD EXPECTED ADDRESS AFTER "BUT"
4835 LOAD-ERROR(TEST044A), !ERROR DIRECTORY KEY
4836 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
4837 NEXT, J/LOAD044A !GO LOAD PATTERN
(5635) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.010)

```

```

4838
4839 5632:
4840 LOAD044A:
4841 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
4842 EMIT/076250, ! (076250)
4843 NEXT, J/GOBUTO44A !GO SETUP FOR "BUT"
4844 (5632) DCS(0.00.0.0.0.0) BM(0111..00.11..00.10..101..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.010.111)

```

```

4845
4846 5127: !(FREE)
4847 GOBUTO44A:
4848 FTUP, RETURN/SCOPE044, !RETURN TO SCOPE LOOP TEST WORD
4849 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
4850 J/BUTINSTR1 !GO DO INSTR1 "BUT"
4851 (5127) DCS(0.00.0.0.0.0) BM(0101..00.00..10.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

```

```

4852
4853 5130: !(FREE)
4854 SCOPE044:
4855 PO, BUMP-VERIFY, !COUNT
4856 NEXT, BUTD(SCOPE), !NO ERROR: "TEST045A" [+1. WORD]
4857 J/TEST045A !ERROR: "LOAD044A" [-2. WORDS]
4858

```

(5130) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.011)

4859
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4888
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4899
4900
4901
4902
4903
4904
4905
4906

!-----

!*** TEST 045 ***
!TEST-045 USES A DATA PATTERN OF: "0 000 100 011 000 000" (004300)

!-----

!* PART A *
!TEST-045-A CHECKS THAT BUT(DM#SM#BYTE) READS THE IR CORRECTLY AS:
!DM H="000" DMOH=1; SM H="100" SMOH=0; BYTE H=1 (IR=SWAB, SORT OF)
!CHECKS THAT SWAB INSTR ASSERTS BYTE H

5633:
TEST045A:
 PO, LOAD-ENUA(ZTARGET405), !LOAD EXPECTED ADDRESS AFTER "BUT"
 LOAD-ERROR(TEST045A), !ERROR DIRECTORY KEY
 DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
 NEXT J/LOAD045A !GO LOAD PATTERN

(5633) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.000)

5630:
LOAD045A:
 P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
 EMIT/004300, !(004300)
 NEXT J/GOBUTO45A !GO SETUP FOR "BUT"

(5630) DCS(0.00.0.0.0.0) BM(0000..00.10..00.11..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.011.001)

5131: !(FREE)
GOBUTO45A:
 SETUP, RETURN/SCOPE045, !RETURN TO SCOPE LOOP TEST WORD
 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
 J/BUTDM#SM#BYTE !GO DO BUT ON DM#SM#BYTE

(5131) DCS(0.00.0.0.0.0) BM(0101..00.00..10.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.011)

5132: !(FREE)
SCOPE045:
 NEXT, BUTD(SCOPE), !NO ERROR: "TEST046A" [+1. WORD]
 J/TEST046A ! ERROR: "LOAD045A" [-2. WORDS]

(5132) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.001)

```

4907
4908 ! -----
4909
4910 !*** TEST 046 ***
4911 !TEST-046 USES A DATA PATTERN OF: "0 000 000 010 000 000" (000200)
4912 ! -----
4913
4914
4915 !* PART A *
4916 !TEST-046-A CHECKS THAT BUT(INSTRS) READS THE IR CORRECTLY
4917 !AS ROM ADDRESS=(426) ON THE INSTRS E88 ROM, AND RECEIVES THE VALUE
4918 !OF (06), TARGETING TO (426) AFTER THE DECODE
4919 5631:
4920 TEST046A:
4921     PO,          LOAD-ENUA(ZTARGET426),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4922                 LOAD-ERROR(TEST046A),      !ERROR DIRECTORY KEY
4923                 DCS-CTR(C4.),              !COMPARE ENUA:TNUA IN 4. MICROWORDS
4924     NEXT,        J/LOAD046A                !GO LOAD PATTERN
(5631) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..010..110...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.000)

4925
4926
4927 5560:
4928 LOAD046A:
4929     P2-U,        IR+EMIT,                  !LOAD IR WITH TEST PATTERN
4930                 EMIT/000200,              !(000200)
4931     NEXT,        J/GOBUTO46A              !GO SETUP FOR "BUT"
(5560) DCS(0.00.0.0.0.0) BM(0000..00.00..00.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.011.011)

4932
4933
4934 5133: !(FREE)
4935 GOBUTO46A:
4936     SETUP,       RETURN/TEST046B,         !RETURN TO START OF NEXT SUBTEST
4937     NEXT,        GOTO-PAGE(7),           !BUT TABLE IS ON PAGE 7
4938                 J/BUTINSTRS             !GO DO INSTRS "BUT"
(5133) DCS(0.00.0.0.0.0) BM(0101..00.11..11.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

4939
4940
4941
4942
4943 ! -----
4944
4945 !* PART B *
4946 !TEST-046-B CHECKS THAT BUT(IR<11>#FLTPT<3:0>) READS THE "0" IN IR<11>H CORRECTLY,
4947 !AND THE FLTPT DECODE ROM GETS ADDRESS (040), WHICH IS A STST INSTR,
4948 !DATA SHOULD BE (01)
4949 5770:
4950 TEST046B:
4951     PO,          LOAD-ENUA(ZTARGET401),      !LOAD EXPECTED ADDRESS AFTER "BUT"
4952                 LOAD-ERROR(TEST046B),      !ERROR DIRECTORY KEY
4953                 DCS-CTR(C3.),              !COMPARE ENUA:TNUA IN 3. MICROWORDS
4954     NEXT,        J/GOBUTO46B
(5770) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.100)

4955

```

```

4956
4957 5134: !(FREE)
4958 GOBUTO468:
4959     SETUP, RETURN/SCOPE046, !RETURN TO SCOPE LOOP TEST WORD
4960     NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
4961     J/BUTIR11FLTPT3-0 !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H
(5134) DCS(0.00.0.0.0.0) BM(0101..00.00..10.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.010)

```

```

4962
4963
4964
4965
4966 5135: !(FREE)
4967 SCOPE046:
4968     NEXT, BUTD(SCOPE), !NO ERROR: "TEST047A" [+1. WORD]
4969     J/TEST047A !ERROR: "LOAD046A" [-4. WORDS]
(5135) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.001)

```

```

4970
4971
4972
4973
4974
4975
4976 ! - - - - -
4977

```

```

4978 !*** TEST 047 ***
4979 !TEST-047 USES A DATA PATTERN OF: "1 010 010 101 110 110" (122566)
4980 ! - - - - -
4981

```

```

4982 !* PART A *
4983 !TEST-047-A CHECKS THAT BUT(INSTR5) READS THE IR CORRECTLY
4984 !AS ROM ADDRESS=(325) ON THE INSTR5 E78 ROM, AND RECEIVES THE DIAGNOSTIC VALUE
4985 !OF (12), TARGETING TO (412) AFTER THE DECODE
4986

```

```

4987 5561:
4988 TEST047A:
4989     PO, LOAD-ENUA(ZTARGET412), !LOAD EXPECTED ADDRESS AFTER "BUT"
4990     LOAD-ERROR(TEST047A), !ERROR DIRECTORY KEY
4991     DCS-CTR(C4.), !COMPARE ENUA:TNUA IN 4. MICROWORDS
4992     BUMP-VERIFY, !COUNT
4993     NEXT, J/LOAD047A !GO LOAD PATTERN
(5561) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.101.000)

```

```

4994
4995
4996 5550:
4997 LOAD047A:
4998     P2-U, IR+EMIT, !LOAD IR WITH TEST PATTERN
4999     EMIT/122566, !(122566)
5000     NEXT, J/GOBUTO47A !GO SETUP FOR "BUT"
(5550) DCS(0.00.0.0.0.0) BM(1010..00.01..01.01..110..110...0.0.0..0..0...1.1010...0..0000.0...11.000...001.011.110)

```

```

5001
5002
5003 5136: !(FREE)
5004 GOBUTO47A:

```



```

5005          SETUP, RETURN/TEST047B,          !RETURN TO START OF NEXT SUBTEST
5006          NEXT,  GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7
5007          J/BUTINSTRS                       !GO DO INSTRS "BUT"
(5136) DCS[0.00.0.0.0.0] BM[0101..00.11..01.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001]

```

```

5008
5009
5010
5011
5012
5013
5014
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5018
5019
5020
5021
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5023

```

```

!# PART B #
!TEST-047-B CHECKS THAT BUT[IR<11>#FLTPT<3:0>] READS THE "0" IN IR<11>H CORRECTLY,
!AND THE FLTPT DECODE ROM GETS ADDRESS (534), WHICH IS A LOG2/MODE-6 INSTR,
!DATA SHOULD BE (13)
5670:
TEST047B:

```

```

5020          PO,          LOAD-ENUA(ZTARGET413),          !LOAD EXPECTED ADDRESS AFTER "BUT"
5021          LOAD-ERROR(TEST047B),          !ERROR DIRECTORY KEY
5022          DCS-CTR(C3.),          !COMPARE ENUA:TNUA IN 3. MICROWORDS
5023          NEXT, J/GOBUTO47B
(5670) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.111]

```

```

5024
5025
5026
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5028
5029
5030
5031

```

```

5137: !(FREE)
GOBUTO47B:
5028          PO          BUMP-VERIFY          !COUNT
5029          SETUP, RETURN/TEST047C,          !RETURN TO START OF NEXT SUBTEST
5030          NEXT,  GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7
5031          J/BUTIR11FLTPT3-0                !GO DO "BUT" ON IR<11>H#FLTPT<3:0>H

```

```

(5137) DCS[0.00.0.0.0.0] BM[0101..00.11..10.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.010]

```

```

5032
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5038
5039
5040
5041
5042
5043

```

```

!# PART C #
!TEST-047-C CHECKS THAT BUT[MOV-DR7#IR<5:3>] READS THE --(FLTPT*MOV+FLTPT*DR7), IR<5:3>="110"
5730:
TEST047C:

```

```

5040          PO,          LOAD-ENUA(ZTARGET406),          !LOAD EXPECTED ADDRESS AFTER "BUT"
5041          LOAD-ERROR(TEST047C),          !ERROR DIRECTORY KEY
5042          DCS-CTR(C3.),          !COMPARE ENUA:TNUA IN 3. MICROWORDS
5043          NEXT, J/GOBUTO47C                !GO SETUP FOR "BUT"
(5730) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.000]

```

```

5044
5045
5046
5047
5048
5049
5050

```

```

5140: !(FREE)
GOBUTO47C:
5048          SETUP, RETURN/SCOPE047,          !RETURN TO SCOPE LOOP TEST WORD
5049          NEXT,  GOTO-PAGE(7),             !BUT TABLE IS ON PAGE 7
5050          J/BUTMOVDR7IR5-3                !GO DO "BUT" ON (MOV/DR7)#IR<5:3>H

```

```

(5140) DCS[0.00.0.0.0.0] BM[0101..00.00..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.101]

```

```

5051
5052
5053
5054
5055      5141:  !(FREE)
5056      SCOPE047:
5057          NEXT,  BUT0(SCOPE),          !NO ERROR: "TEST050A" [+1. WORD]
5058          J/TEST050A                    ! ERROR: "LOAD0047A" [-6. WORDS]
(5141) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.101.001)

5059
5060
5061
5062
5063
5064      ! -----
5065
5066      !*** TEST 050 ***
5067      !TEST-050-A USES A DATA PATTERN OF: "1 111 010 101 000 000" (172500)
5068      !TEST-050-B USES A DATA PATTERN OF: "1 111 101 010 000 000" (175200)
5069
5070      ! -----
5071
5072      !* PART A *
5073      !TEST-050-A CHECKS THAT BUT(INSTRS) READS THE IR CORRECTLY
5074      !AS ROM ADDRESS=(725) ON THE INSTRS E78 ROM, AND RECEIVES THE DIAGNOSTIC VALUE
5075      !OF (05), TARGETING TO (405) AFTER THE DECODE
5076      5551:
5077      TEST050A:
5078          PO,          LOAD-ENUA(ZTARGET405),          !LOAD EXPECTED ADDRESS AFTER "BUT"
5079          LOAD-ERROR(TEST050A),          !ERROR DIRECTORY KEY
5080          DCS-CTR(C4.),          !COMPARE ENUA:TNUA IN 4. MICROWORDS
5081          BUMP-VERIFY,          !COUNT
5082          NEXT,          J/LOAD050A          !GO LOAD PATTERN
(5551) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...101.101.010)

5083
5084
5085      5552:
5086      LOAD050A:
5087          P2-U,          IR+EMIT,          !LOAD IR WITH TEST PATTERN
5088          EMIT/172500,          ! (172500)
5089          NEXT,          J/GOBUT050A          !GO SETUP FOR "BUT"
(5552) DCS(0.00.0.0.0.0) BM(1111. 00.01..01.01..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.100.010)

5090
5091
5092      5142:  !(FREE)
5093      GOBUT050A:
5094          SETUP,          RETURN/TEST050B,          !RETURN TO START OF NEXT SUBTEST
5095          NEXT,          GOTO-PAGE(7),          !BUT TABLE IS ON PAGE 7
5096          J/BUTINSTRS          !GO DO INSTRS "BUT"
(5142) DCS(0.00.0.0.0.0) BM(0101..00.11..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

5097
5098
5099

```

```

S100
S101 ! - - - - -
S102
S103 !* PART B *
S104 !TEST-050-B CHECKS THAT BUT(INSTR-5) READS THE IR CORRECTLY
S105 !AS ROM ADDR=(752) ON THE INSTRS E78 ROM, AND RECEIVES THE DIAGNOSTIC VALUE
S106 !OF (12), TARGETING TO (412) AFTER THE DECODE
S107 5726:
S108 TEST050B:
S109     PO,          LOAD-ENUA(ZTARGET412),          !LOAD EXPECTED ADDRESS AFTER "BUT"
S110                LOAD-ERROR(TEST050B),          !ERROR DIRECTORY KEY
S111                DCS-CTR(C4.),                  !COMPARE ENUA:TNUA IN 4. MICROWORDS
S112     NEXT,       J/LOAD050B
(5726) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.011)

S113
S114
S115 5143: !(FREE)
S116 LOAD050B:
S117     P2-U,       IR+EMIT,                        !LOAD IR WITH TEST PATTERN
S118                EMIT/175200,                    ! (175200)
S119     NEXT,       J/GOBUT050B                    !GO SETUP FOR "BUT"
(5143) DCS(0.00.0.0.0.0) BM(1111..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.100.100)

S120
S121 5144: !(FREE)
S122 GOBUT050B:
S123     SETUP,     RETURN/SCOPE050,                !RETURN TO SCOPE LOOP TEST WORD
S124     NEXT,     GOTO-PAGE(7),                    !BUT TABLE IS ON PAGE 7
S125     J/BUTINSTRS                                !DO INSTRS BUT
(5144) DCS(0.00.0.0.0.0) BM(0101..00.00..11.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

S126
S127
S128 5145: !(FREE)
S129 SCOPE050:
S130     PO,        BUSDIN+EMIT-(!),                !RESET PROC UCON
S131                EN-CLK-IR(15-00),
S132     NEXT,     BUTD(SCOPE),                      !NO ERROR: "TEST101A" [+1. WORD]
S133     J/TEST101A                                !ERROR: "LOAD050A" [-5. WORDS]
(5145) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.101.011)

```

```

S134
S135
S136
S137 !.PAGE-----
S138
S139 .TOC * TEST101: D -> DBUF -> IR PATH
S140
S141
S142 !*****
S143 !*
S144 !* TESTS: 101 - 104                                UWORDS: 057 + 067
S145 !*
S146 !* FUNCTIONS:
S147 !*
S148 !* THESE TESTS VERIFY THE "EMIT -> CSP -> BBUS -> D -> DBUF -> IR" DATAPATH.

```

```

5149  : *
5150  : *   TEST 101 FIRST VERIFIES THE "D -> DBUF -> IR" DATA PATH, INSURING THAT THE
5151  : *   DBUF LATCH CAN BE WRITTEN WITH ZEROES, AND ENABLED ONTC BUSDIN, TO BE PUT
5152  : *   INTO THE IR AND VERIFIED (VIA INSTRS DECODE, AS A HALT INSTRUCTION).
5153  : *
5154  : *   TESTS 102-104 THEN GO ON TO FURTHER TEST THE FULL DATAPATH FROM EMIT TO
5155  : *   IR, VIA THE EXTENDED ROUTE. THESE TESTS THEN VERIFY THE CSP WRITE, ADDRESSING AND
5156  : *   DATAPATHS LOGIC.
5157  : *
5158  : *****
5159
5160  5553:
5161  TEST101A:
5162  PO,      LOAD-ENUA(ZTARGET434),      !INSTRS EBB OUTPUT FOR IR=(000000)
5163  LOAD-ERROR(TEST101A),      !ERROR DIRECTORY KEY
5164  DCS-CTR(C7.),      !COMPARE AT TARGET
5165  NEXT,    J/LOAD0101A
(5553) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.010.000)

5166
5167  5520:
5168  LOAD0101A:
5169  P2-T,    D+ZERO,      !PUT (000000) IN D
5170  NEXT,    J/GOTEST101A
(5520) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...001.100.111)

5171
5172  5147:  !(FREE)
5173  GOTEST101A:
5174  SETUP,  RETURN/SCOPE101,      !GOT TO SUBR THAT:
5175  NEXT,   CALL(DINTOIR-5)      !D -> DBUF -> IR, THEN BUT(INSTRS)
(5147) DCS(0.00.0.0.0.0) BM(0101..00.00..11.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

5176
5177
5178
5179  5150:  !(FREE)
5180  SCOPE101:
5181  NEXT,  BUTD(SCOPE),      !NO ERROR: "TEST102A" (+1. WORDS)
5182  J/TEST102A      ! ERROR: "LOADCSP101A" (-3. WORDS)
(5150) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.010.001)

5183
5184
5185  ! -----
5186
5187
5188  .TOC * TEST102-104: TESTING CSP ADDRESS/READ/WRITE FUNCTIONS
5189
5190  !THE FOLLOWING SET OF FOUR TESTS VERIFIES THAT THE CSP, AND THE CSP ADDRESS FIELD "CSPADDR"
5191  !HAS NO STUCK ZERO BITS, AND THAT THE EMIT -> CSP -> D -> DBUF -> IR DATAPATH
5192  !IS FULLY FUNCTIONAL.
5193
5194  AFTER TEST 104B COMPLETES, THE CSP WILL LOOK AS FOLLOWS:
5195
5196  "BAS-COM"      "CSP-ADR"      CSP      INSTRS
5197  U<41:40>H      U<23:20>H      LOCT      -DATA-  TARGET

```

5198					
5199		1111	08	000000	E78/434
5200		1110	01	000152	E78/425
5201		1101	02	000125	E78/432
5202		1100	03		
5203		1011	04	125200	E88/412
5204		1010	05		
5205		1001	06		
5206		1000	07	152500	E88/405
5207		0111	10	125200	E88/405
5208		0110	11		
5209		0101	12		
5210		0100	13	125200	E88/412
5211	11	0011	14		
5212	10	0010	15	000125	E78/432
5213	01	0001	16	000152	E78/425
5214	00	0000	17	000000	E78/434
5215					
5216					
5217					
5218					
5219					
5220					

!TEST 102A VERIFIES THAT CSPD(02) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
 ! (000125) E78 TARGET (432). LOOKING FOR CSP ADDRESS BIT(01) STUCK ONE/ZERO,
 ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.

5521:

TEST102A:

```

PO,      LOAD-ENUA(ZTARGET432),      !INSTRS E78 OUTPUT
        LOAD-ERROR(TEST102A),      !ERROR DIRECTORY KEY
        DCS-CTR(C12.),              !COMPARE AT TARGET
NEXT     J/LOAD01-102A

```

(5521) DCS[1.00.1.0.0.0] BM[0011..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.000]

5530:

LOAD01-102A:

```

P3,      CSPD(01)+EMIT, EMIT/000152, !INSTRS DATA PATTERN:
NEXT     J/LOAD02-102A              ! (000152)=E78(425)

```

(5530) DCS[0.00.0.0.0.0] BM[0000..10.00..00.01..101..010...0.0.0..0..0...0.1110...1..0000.0...11.000...001.101.001]

5151: !(FREE)

LOAD02-102A:

```

P3,      CSPD(02)+EMIT, EMIT/000125, !INSTRS DATA PATTERN:
NEXT     J/LOAD04-102A              ! (000125)=E78(432)

```

(5151) DCS[0.00.0.0.0.0] BM[0000..10.00..00.01..010..101...0.0.0..0..0...0.1101...1..0000.0...11.000...001.101.010]

5152: !(FREE)

LOAD04-102A:

```

P3,      CSPD(04)+EMIT, EMIT/125200, !INSTRS DATA PATTERN:
NEXT     J/LOAD10-102A             ! (125200)=E88(412)

```

(5152) DCS[0.00.0.0.0.0] BM[1010..10.10..10.10..000..000...0.0.0..0..0...0.1011...1..0000.0...11.000...001.101.011]

5153: !(FREE)

LOAD10-102A:

```

5248      P3,      CSPD(10)+EMIT, EMIT/152500,      ! INSTRS DATA PATTERN:
5249      NEXT     J/LOAD000-102A                    ! (152500)=EBB(405)
(5153) DCS(0.00.0.0.0.0) BM(1101..10.01..01.01..000..000...0.0.0..0..0...0.0111...1..0000.0...11.000...001.101.100)

5250
5251      5154:  !(FREE)
5252      LOAD000-102A:
5253      P3,      CSPD(00)+EMIT, EMIT/000000,      ! INSTRS DATA PATTERN:
5254      NEXT     J/LOAD0102A                        ! (000000)=E78(434)
5255      (5154) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.1111...1..0000.0...11.000...001.101.101)
! IF THIS DATA USED, CSP ADDRESSING ERROR

5256
5257      5155:  !(FREE)
5258      LOAD0102A:
5259      P2-T,    D+CSPD(D02), BSEL/B17,            ! GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
5260      NEXT     J/GOTEST102A
(5155) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.1101...0..0000.0...11.000...001.101.110)

5261
5262      5156:  !(FREE)
5263      GOTEST102A:
5264      SETUP,   RETURN/TEST102B,                  ! GO TO SUBR WHICH:
5265      NEXT     CALL(DINTOIR-5)                    ! D -> DBUF -> IR, THEN BUT(INSTRS)
(5156) DCS(0.00.0.0.0.0) BM(0101..00.10..11.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

5266
5267
5268
5269
5270
5271      ! - - - - -
5272
5273      ! TEST 102B VERIFIES THAT CSPD(10) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
5274      ! (152500), EBB TARGET (405).  LOOKING FOR CSP ADDRESS BIT(03) STUCK ONE/ZERO,
5275      ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.
5276      5574:
5277      TEST102B:
5278      PD,      LOAD-ENVA(ZTARGET405),              ! INSTRS EBB OUTPUT
5279      LOAD-ERROR(TEST102B),                        ! ERROR DIRECTORY KEY
5280      DCS-CTR(C7.),                                ! COMPARE AT TARGET
5281      NEXT     J/LOAD0102B
(5574) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.111)

5282
5283      5157:  !(FREE)
5284      LOAD0102B:
5285      P2-T,    D+CSPD(D10), BSEL/B17,            ! GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
5286      NEXT     J/GOTEST102B
(5157) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0111...0..0000.0...11.000...001.110.000)

5287
5288      5160:  !(FREE)
5289      GOTEST102B:
5290      SETUP,   RETURN/TEST102C,                  ! GO TO SUBR WHICH:
5291      NEXT     CALL(DINTOIR-5)                    ! D -> DBUF -> IR, THEN BUT(INSTRS)
(5160) DCS(0.00.0.0.0.0) BM(0101..00.10..11.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

5292

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! - - - - -

!TEST 102C VERIFIES THAT CSPD(04) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
! (125200), E88 TARGET (412). LOOKING FOR CSP ADDRESS BIT<02> STUCK ONE/ZERO,
! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.

5564:

TEST102C:

PO, LOAD-ENUA(ZTARGET412), !INSTRS E88 OUTPUT
LOAD-ERROR(TEST102C), !ERROR DIRECTORY KEY
DCS-CTR(C7.), !COMPARE AT TARGET
BUMP-VERIFY, !COUNT
NEXT, J/LOAD0102C

(5564) DCS[1.00.1.0.0.1] BM[1000..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.00C...001.110.001]

5161: !(FREE)

LOAD0102C:

P2-T, D+CSPD(04), BSEL/B17, !GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
NEXT, J/GOTEST102C

(5161) DCS[0.00.0.0.0.0] BM[1010..10.00..00.00..000..000...0.1.0..0..0...0.1011...0..0000.0...11.000...001.110.010]

5162: !(FREE)

GOTEST102C:

SETUP, RETURN/TEST102D, !GO TO SUBR WHICH:
NEXT, CALL(DINTOIR-5) ! D -> DBUF -> IR, THEN BUT(INSTRS)

(5162) DCS[0.00.0.0.0.0] BM[0101..00.10..11.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

! - - - - -

!TEST 102D VERIFIES THAT CSPD(01) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
! (000152), E78 TARGET (425). LOOKING FOR CSP ADDRESS BIT<00> STUCK ONE/ZERO,
! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.

5554:

TEST102D:

PO, LOAD-ENUA(ZTARGET425), !INSTRS E88 OUTPUT
LOAD-ERROR(TEST102D), !ERROR DIRECTORY KEY
DCS-CTR(C7.), !COMPARE AT TARGET
NEXT, J/LOAD0102D

(5554) DCS[1.00.1.0.0.0] BM[1000..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.011]

5163: !(FREE)

LOAD0102D:

P2-T, D+CSPD(001), BSEL/B17, !GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
NEXT, J/GOTEST102D

(5163) DCS[0.00.0.0.0.0] BM[1010..10.00..00.00..000..000...0.1.0..0..0...0.1110...0..0000.0...11.000...001.110.100]


```

5341 5164: !(FREE)
5342 GOTEST1020:
5343     SETUP, RETURN/SCOPE102,           !GO TO SUBR WHICH:
5344     NEXT,  CALL(DINTOIR-5)           ! D -> DBUF -> IR, THEN BUT(INSTRS)
(5164) DCS(0.00.0.0.0.0) BM(0101..00.00..11.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

```

```

5345
5346
5347
5348
5349 5165: !(FREE)
5350 SCOPE102:
5351     NEXT,  BUTD(SCOPE),               !NO ERROR: "TEST103A" (+1. WORDS)
5352     J/TEST103A                       ! ERROR: "LOAD01-102A" (-16. WORDS)
(5165) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.001)

```

```

5353
5354
5355 ! -----
5356
5357
5358 !THE FOLLOWING SET OF FOUR TESTS VERIFIES THAT THE CSP, AND THE CSP ADDRESS FIELD "CSPADDR"
5359 !HAS NO STUCK ONE BITS, AND THAT THE EMIT -> CSP -> D -> DBUF -> IR DATAPATH
5360 !IS FULLY FUNCTIONAL.

```

```

5361
5362
5363 ! -----
5364
5365
5366 !TEST 103A VERIFIES THAT CSPD(13) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
5367 ! (125200), E88 TARGET (412). LOOKING FOR CSP ADDRESS BIT<02> STUCK ONE/ZERO,
5368 ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.

```

```

5369 5531:
5370 TEST103A:
5371     PD,      LOAD-ENUA(ZTARGET412),      !INSTRS E88 OUTPUT
5372     LOAD-ERROR(TEST103A),              !ERROR DIRECTORY KEY
5373     DCS-CTR(C12.),                     !COMPARE AT TARGET
5374     NEXT,   J/LOAD16-103A
(5531) DCS(1.00.1.0.0.0) BM(0011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.110)

```

```

5375
5376 5546:
5377 LOAD16-103A:
5378     PD,      BUMP-VERIFY,               !COUNT
5379     P3,      CSPD(16)+EMIT, EMIT/000152, !INSTRS DATA PATTERN:
5380     NEXT,   J/LOAD15-103A              ! (000152)=E78(425)
(5546) DCS(0.00.0.0.0.1) BM(0000..10.00..00.01..101..010...0.0.0..0..0...0.0001...1..0000.0...11.000...001.110.110)

```

```

5381
5382 5166: !(FREE)
5383 LOAD15-103A:
5384     P3,      CSPD(15)+EMIT, EMIT/000125, !INSTRS DATA PATTERN:
5385     NEXT,   J/LOAD13-103A              ! (000125)=E78(432)
(5166) DCS(0.00.0.0.0.0) BM(0000..10.00..00.01..010..101...0.0.0..0..0...0.0010...1..0000.0...11.000...001.110.111)

```

```

5386
5387 5167: !(FREE)
5388 LOAD13-103A:

```

```

5389      P3,      CSPD(13)+EMIT, EMIT/125200,      ! INSTRS DATA PATTERN:
5390      NEXT,     J/LOAD07-103A                    ! (125200)=E88(412)
(5167) DCS(0.00.0.0.0.0) BM(1010..10.10..10.10..000..000...0.0.0..0..0...0.0100...1..0000.0...11.000...001.111.000)

5391      5170:  !(FREE)
5392      LOAD07-103A:
5393      P3,      CSPD(07)+EMIT, EMIT/152500,      ! INSTRS DATA PATTERN:
5394      NEXT,     J/LOAD17-103A                    ! (152500)=E88(405)
(5170) DCS(0.00.0.0.0.0) BM(1101..10.01..01.01..000..000...0.0.0..0..0...0.1000...1..0000.0...11.000...001.111.001)

5396      5171:  !(FREE)
5397      LOAD17-103A:
5398      P3,      CSPD(17)+EMIT, EMIT/000000,      ! INSTRS DATA PATTERN:
5399      NEXT,     J/LOAD0103A                      ! (000000)=E78(434)
5400      ! IF THIS DATA USED, CSP ADDRESSING ERROR
5401      (5171) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.111.010)

5402      5172:  !(FREE)
5403      LOAD0103A:
5404      P2-T,     D+CSPD(013), BSEL/B17,           ! GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
5405      NEXT,     J/GOTEST103A
5406      (5172) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0100...0..0000.0...11.000...001.111.011)

5407      5173:  !(FREE)
5408      GOTEST103A:
5409      SETUP,    RETURN/TEST1038,                ! GO TO SUBR WHICH:
5410      NEXT,     CALL(DINTOIR-5)                 ! D -> DBUF -> IR, THEN BUT(INSTRS)
5411      (5173) DCS(0.00.0.0.0.0) BM(0101..00.10..11.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

5412
5413
5414
5415
5416
5417      ! - - - - -
5418
5419      ! TEST 1038 VERIFIES THAT CSPD(15) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
5420      ! (000125), E78 TARGET (432). LOOKING FOR CSP ADDRESS BIT<01> STUCK ONE/ZERO,
5421      ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.
5422      5572:
5423      TEST1038:
5424      PD,      LOAD-ENUA(ZTARGET432),           ! INSTRS E78 OUTPUT
5425      LOAD-ERROR(TEST1038),                    ! ERROR DIRECTORY KEY
5426      DCS-CTR(C7.),                             ! COMPARE AT TARGET
5427      NEXT,     J/LOAD01038
(5572) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.100)

5428      5174:  !(FREE)
5429      LOAD01038:
5430      P2-T,     D+CSPD(015), BSEL/B17,           ! GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
5431      NEXT,     J/GOTEST1038
(5174) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0010...0..0000.0...11.000...001.111.101)

5433      5175:  !(FREE)
5434

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5435 GOTEST1038:
5436     SETUP, RETURN/TEST103C,           !GO TO SUBR WHICH:
5437     NEXT,  CALL(DINTOIR-5)           ! D -> DBUF -> IR, THEN BUT(INSTR5)
(5175) DCS(0.00.0.0.0.0) BM(0101..00.10..11.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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5445 ! TEST 103C VERIFIES THAT CSPD(16) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
5446 ! (000152), E78 TARGET (425).  LOOKING FOR CSP ADDRESS BIT<00> STUCK ONE/ZERO,
5447 ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.
5448
5449 5576:
5450 TEST103C:
5451     PO,      LOAD-ENUA(ZTARGET425),      !INSTRS E78 OUTPUT
5452             LOAD-ERROR(TEST103C),      !ERROR DIRECTORY KEY
5453             DCS-CTR(C7.),              !COMPARE AT TARGET
5454             BUMP-VERIFY,                !COUNT
5455     NEXT,    J/LOADD103C
(5576) DCS(1.00.1.0.0.1) BM(1000..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.110)

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5456 5176: !(FREE)
5457 LOADD103C:
5458     P2-T,   D+CSPD(D16), BSEL/B17,      !GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
5459     NEXT,   J/GOTEST103C
(5176) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0001...0..0000.0...11.000...001.111.111)

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5460 5177: !(FREE)
5461 GOTEST103C:
5462     SETUP, RETURN/TEST103D,           !GO TO SUBR WHICH:
5463     NEXT,  CALL(DINTOIR-5)           ! D -> DBUF -> IR, THEN BUT(INSTR5)
(5177) DCS(0.00.0.0.0.0) BM(0101..00.11..01.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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5472 ! TEST 103D VERIFIES THAT CSPD(07) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
5473 ! (152500), E88 TARGET (405).  LOOKING FOR CSP ADDRESS BIT<03> STUCK ONE/ZERO,
5474 ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.
5475
5476 5674:
5477 TEST103D:
5478     PO,      LOAD-ENUA(ZTARGET405),      !INSTRS E88 OUTPUT
5479             LOAD-ERROR(TEST103D),      !ERROR DIRECTORY KEY
5480             DCS-CTR(C7.),              !COMPARE AT TARGET
5481     NEXT,    J/LOADD103D
(5674) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.000)

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5482 5200: !(FREE)
5483 LOAD01030:
5484 P2-T, D+CSPD(007), BSEL/B17, !GET CSP LOC VIA CSPADDR, BASCON FIELD "00"
5485 NEXT, J/GOTEST1030 !
(5200) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.1000...0..0000.0...11.000...010.000.001)

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```

5486 5201: !(FREE)
5487 GOTEST1030:
5488 SETUP, RETURN/SCOPE103, !GO TO SUBR WHICH:
5489 NEXT, CALLIDINTOIR-5) ! D -> DBUF -> IR, THEN BUT(INSTRS)
5490 (5201) DCS(0.00.0.0.0.0) BM(0101..00.01..00.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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5491
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5495 5202: !(FREE)
5496 SCOPE103:
5497 NEXT, BUTD(SCOPE), !NO ERROR: "TEST104A" (+1. WORDS)
5498 J/TEST104A ! ERROR: "LOAD16-103A" (-16. WORDS)
(5202) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.111)

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5499
5500 ! -----
5501 !
5502 !THE FOLLOWING SET OF TWO TESTS VERIFIES THAT THE CSP, AND THE CSP ADDRESS FIELD "BASCON"
5503 !HAS NO STUCK ZERO/ONE BITS, AND THAT THE EMIT -> CSP -> D -> DBUF -> IR DATAPATH
5504 !IS FULLY FUNCTIONAL.
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5507 ! -----
5508 !
5509

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5510 !TEST 104A VERIFIES THAT CSPB(16) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
5511 ! (000152), E78 TARGET (425). LOOKING FOR CSP ADDRESS BIT<00> STUCK ONE/ZERO,
5512 ! OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.
5513 !THIS TEST USES THE "BASCON" ADDRESS MODE FOR THE CSP.
5514
5515 5547:
5516 TEST104A:
5517 PO, LOAD-ENUA(ZTARGET425), !INSTRS E78 OUTPUT
5518 LOAD-ERROR(TEST104A), !ERROR DIRECTORY KEY
5519 DCS-CTR(C7.), !COMPARE AT TARGET
5520 NEXT, J/LOAD0104A !
(5547) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.000)

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5521 5540:
5522 LOAD0104A:
5523 P2-T, D+CSPB(B16), CSPADDR/D17, !GET CSP LOC VIA BASCON, CSPADDR FIELD "0000"
5524 NEXT, J/GOTEST104A !
5525 (5540) DCS(0.00.0.0.0.0) BM(1010..11.01..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...010.000.011)

```

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5526 5203: !(FREE)
5527 GOTEST104A:
5528 SETUP, RETURN/TEST104B, !GO TO SUBR WHICH:
5529

```

5530 NEXT CALL(DINTOIR-5) ! D -> DBUF -> IR, THEN BUT(INSTRS)
 (5203) DCS(0.00.0.0.0.0) BM(0101..00.11..01.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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! - - - - -

! TEST 1048 VERIFIES THAT CSP8(15) WAS WRITTEN WITH THE UNIQUE INSTRS PATTERN:
 (000125), E78 TARGET (432). LOOKING FOR CSP ADDRESS BIT<01> STUCK ONE/ZERO,
 OR ERRORS IN DATAPATH FROM EMIT -> CSP -> ALU-B -> D -> DBUF -> IR.

! THIS TEST USES THE "BASCON" ADDRESS MODE FOR THE CSP.

5646:

TEST1048:

PO, LOAD-ENVA(ZTARGET432), ! INSTRS E78 OUTPUT
 LOAD-ERROR(TEST1048), ! ERROR DIRECTORY KEY
 DCS-CTR(C7.), ! COMPARE AT TARGET

NEXT, J/LOAD01048

(5646) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.100)

5204: !(FREE)

LOAD01048:

P2-T, D+CSP8(B15), CSPADDR/D17, ! GET CSP LOC VIA BASCON, CSPADDR FIELD "0000"

NEXT, J/GOTEST1048

(5204) DCS(0.00.0.0.0.0) BM(1010..11.10..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...010.000.101)

5205: !(FREE)

GOTEST1048:

SETUP, RETURN/SCOPE104, ! GO TO SUBR WHICH:

NEXT, CALL(DINTOIR-5) ! D -> DBUF -> IR, THEN BUT(INSTRS)

(5205) DCS(0.00.0.0.0.0) BM(0101..00.01..00.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

5206: !(FREE)

SCOPE104:

PO, BUSDIN+EMIT-[1], ! RESET PROC UCON

EN-CLK-IR[15-00],

NEXT, BUTD(SCOPE), ! NO ERROR: "TEST105A" (+1. WORDS)

J/TEST105A ! ERROR: "LOAD0104A" (-5. WORDS)

(5206) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.100.001)

!.PAGE=====

.TOC * TEST105: SR CAN LOAD/STORE AS A REGISTER

!*****

!*

UWORDS: 023 + 032

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!* TESTS: 105
!*
!* FUNCTIONS:
!*
!* THE FOLLOWING TESTS VERIFY THE VALIDITY OF THE SR AS A TEMPORARY REGISTER,
!* (IE, IT CAN BE LOADED/READ) IN ALL BIT POSITIONS, AND THAT THE ALU-A SIDE CAN
!* PASS DATA INTO D.
!*
*****
!TEST 105A VERIFIES THAT THE SR CAN BE LOADED/READ WITH THE INSTRS PATTERN:
! (000125), E78 TARGET (432), AND TO VERIFY THE:
! DATAPATH FROM SR -> ALU-A -> D -> DBUF -> IR.
5541:
TEST105A:
    PO,      LOAD-ENUA(ZTARGET432),      !INSTRS E78 OUTPUT
            LOAD-ERROR(TEST105A),      !ERROR DIRECTORY KEY
            DCS-CTR(C8.),               !COMPARE AT TARGET
            BUMP-VERIFY,                !COUNT
    NEXT,    J/LOADSR105A
(5541) DCS(1.00.1.0.0.1) BM(0111..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.0101

5542:
LOADSR105A:
    P2,      RES+CSPD(D02),              !BITS<13:11>=00/0, WHICH IS: SR/LOAD, GUARD/DISABLED
    P3-T,    SR+CSPD(D02), BSEL/B17,     !DATA IS (000125) = INSTRS E78 (432)
    NEXT,    J/GOTEST105A
(5542) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.0.1..0..0...0.1101...0..1000.1...11.000...010.000.1111

5207: !(FREE)
GOTEST105A:
    PO,      BUMP-VERIFY,                !COUNT
    SETUP,   RETURN/TEST105A1,          !GO TO SUBR WHICH:
    NEXT,    CALL(SRINTOIR-5)           ! SR -> D -> DBUF -> IR, THEN BUT(INSTRS)
(5207) DCS(0.00.0.0.0.1) BM(0101..00.11..00.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.0101

! - - - - -
!TEST 105A1 VERIFIES THAT THE BUT(SR3-0) SEES THE "0101" IN THE SR.
5610:
TEST105A1:
    PO,      LOAD-ENUA(ZTARGET405),      !BIT<3:0> = "0101"
            LOAD-ERROR(TEST105A1),      !ERROR DIRECTORY KEY
            DCS-CTR(C3.),               !COMPARE AT TARGET
    NEXT,    J/GOBUT105A1
(5610) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.0001

5210: !(FREE)

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5626 GOBUT10SA1:
5627     PO      BUMP-VERIFY          !COUNT
5628     SETUP,  RETURN/TEST10SB,    !RETURN TO START OF NEXT SUBTEST
5629     NEXT,   GOTO-PAGE(7),       !BUT TABLE
5630     J/BUTSR3-0                    !SR<3:0> IN BIT<3:0>
(5210) DCS(0.00.0.0.0.1) BM(0101..00.11..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.110)

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! - - - - -
! TEST 10SB VERIFIES THAT THE SR CAN BE LOADED/READ WITH THE INSTR5 PATTERN:
! (000152), E78 TARGET (425), AND TO VERIFY THE:
! DATAPATH FROM SR -> ALU-A -> D -> DBUF -> IR.

```

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5641 5652:
5642 TEST10SB:
5643     PO,      LOAD-ENLUA(ZTARGET425), !INSTR5 E78 OUTPUT
5644     LOAD-ERROR(TEST10SB),          !ERROR DIRECTORY KEY
5645     DCS-CTR(C8.),                  !COMPARE AT TARGET
5646     NEXT,   J/LOADSR10SB
(5652) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.001)

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```

5647 5211: !(FREE)
5648 LOADSR10SB:
5649     P2-T,   SR+(SPD(001), BSEL/B17, !DATA IS (000152) = INSTR5 E78 (425)
5650     NEXT,   J/GOTEST10SB
(5211) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1110...0..0000.0...11.000...010.001.010)

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5652 5212: !(FREE)
5653 GOTEST10SB:
5654     SETUP,  RETURN/TEST10SB1,      !GO TO SUBR WHICH:
5655     NEXT,   CALL(CRINTOIR-5)        ! SR -> D -> DBUF -> IR, THEN BUT(INSTR5)
(5212) DCS(0.00.0.0.0.0) BM(0101..00.11..00.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.010)

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! - - - - -
! TEST 10SB1 VERIFIES THAT THE BUT(SR3-0) SEES THE "1010" IN THE SR.

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5663 5600:
5664 TEST10SB1:
5665     PO,      LOAD-ENLUA(ZTARGET412), !BIT<3:0> = "1010"
5666     LOAD-ERROR(TEST10SB1),          !ERROR DIRECTORY KEY
5667     DCS-CTR(C3.),                  !COMPARE AT TARGET
5668     BUMP-VERIFY,                    !COUNT
5669     NEXT,   J/GOBUT10SB1
(5600) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.011)

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5673 5213: !(FREE)
5674 GOBUT105B1:
5675     SETUP, RETURN/TEST105C,      !RETURN TO START OF NEXT SUBTEST
5676     NEXT,  GOTO-PAGE(7),        !BUT TABLE
5677     J/BUTSR3-0                   !SR<3:0> IN BIT<3:0>
(5213) DCS(0.00.0.0.0.0) BM(0101..00.11..01.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.1101)

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! - - - - -
5686 !TEST 105C VERIFIES THAT THE SR CAN BE LOADED/READ WITH THE INSTR5 PATTERN:
5687 ! (125200), E88 TARGET (412), AND TO VERIFY THE:
5688 ! DATAPATH FROM SR -> ALU-A -> D -> DBUF -> IR.
5689 5642:
5690 TEST105C:
5691     PD,      LOAD-ENUA(ZTARGET412),      !INSTR5 E88 OUTPUT
5692     LOAD-ERROR(TEST105C),              !ERROR DIRECTORY KEY
5693     DCS-CTR(CB.),                       !COMPARE AT TARGET
5694     NEXT,    J/LOADSR105C
(5642) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.1001)

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5695 5214: !(FREE)
5696 LOADSR105C:
5697     P2-T,   SR+CSPD(D04), BSEL/B17,      !DATA IS (125200) = INSTR5 E88 (412)
5698     NEXT,   J/GOTEST105C
(5214) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1011...0..0000.0...11.000...010.001.1011)

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5700 5215: !(FREE)
5701 GOTEST105D:
5702     SETUP, RETURN/TEST105D,      !GO TO SUBR WHICH:
5703     NEXT,  CALL(SRINTOIR-5)      !SR -> D -> DBUF -> IR, THEN BUT(INSTR5)
(5215) DCS(0.00.0.0.0.0) BM(0101..00.11..00.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.0101)

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! - - - - -
5712 !TEST 105D VERIFIES THAT THE SR CAN BE LOADED/READ WITH THE INSTR5 PATTERN:
5713 ! (152500), E88 TARGET (405), AND TO VERIFY THE:
5714 ! DATAPATH FROM SR -> ALU-A -> D -> DBUF -> IR.
5715 5636:
5716 TEST105D:
5717     PD,      LOAD-ENUA(ZTARGET405),      !INSTR5 E88 OUTPUT
5718     LOAD-ERROR(TEST105D),              !ERROR DIRECTORY KEY
5719     DCS-CTR(CB.),                       !COMPARE AT TARGET
5720     NEXT,    J/LOADSR105D

```


(5636) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.110)

5721
5722 5216: !(FREE)
5723 LOADSR105D:
5724 PO, BUMP-VERIFY, !COUNT
5725 P2-T, SR+CSPD(D10), BSEL/B17, !DATA IS (152500) = INSTRS E88 (405)
5726 NEXT, J/GOTEST105D

(5216) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.0111...0..0000.0...11.000...010.001.111)

5727
5728 5217: !(FREE)
5729 GOTEST105D:
5730 SETUP, RETURN/TEST105E, !GO TO SUBR WHICH:
5731 NEXT, CALL(SRINTOIR-5) !SR -> D -> DBUF -> IR, THEN BUT(INSTRS)

(5217) DCS(0.00.0.0.0.0) BM(0101..00.11..00.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.010)

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!TEST 105E VERIFIES THE DATAPATH FROM:
!EMIT -> CSP -> ALU-B -> SR -> ALU-A -> D -> DBUF -> IR,
!IS A VALID "1101" IN BITS<15:12>. SR VALUE = (152500) FROM PREVIOUS TEST.

5620:
TEST105E:
PO, LOAD-ENUA(ZTARGET415), !BIT<15:12> = "1101"
LOAD-ERROR(TEST105E), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE AT TARGET
NEXT, J/GOTEST105E

(5620) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.010.000)

5748
5749 5220: !(FREE)
5750 GOTEST105E:
5751 SETUP, RETURN/SCOPE105, !RETURN TO SCOPE LOOP TEST WORD
5752 NEXT, GOTO-PAGE(7), !BUT TABLE
5753 J/BUTIR15-12 !BIT<15:12> TEST

(5220) DCS(0.00.0.0.0.0) BM(0101..00.01..00.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.000)

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5757 5221: !(FREE)
5758 SCOPE105:
5759 PO, BUSDIN+EMIT-(!), !RESET PROC UCON
5760 EN-CLK-IR(15-00),
5761 NEXT, BUTD(SCOPE), !NO ERROR: "SETUPCSP17A" (+1. WORDS)
5762 J/SETUPCSP17A !ERROR: "LOADSR105A" (-17. WORDS)

(5221) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.100.011)

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!..PAGE=====

.TOC * TEST114-121: ALU LOGIC TESTS / D(C) TESTS

* TESTS: 114 - 121 UWORDS: 250 + 300

* FUNCTIONS:

* THESE TESTS TEST THE ALU LOGIC FUNCTIONS.

SUMMARY OF ALU LOGIC / D(C) TESTS:

TEST NUMB	ALU FUNCTION	OPERANDS A/B=D	D(C) FUNCTION
114A	ZERO	1/1=0	CIN=PS(C)=0
115A	NOT-A	1/1=0	CIN=1
115B	NOT-A	0/1=1	PS(C)=0
115C	NOT-A	0/0=1	
115D	NOT-A	1/0=0	
116A	NOT-A-AND-B	1/1=1	ALU15=1, D(C)=1
116B	ZERO	1/0=0	
116C	NOT-A-AND-B	0/0=0	ALU15=0, D(C)=0
116D	ZERO	0/1=0	
117A	A-AND-NOT-B	1/0=1	CIN=D(C)=0
117B	A-AND-NOT-B	1/1=0	(ALU15=1)
117C	A-AND-NOT-B	0/0=0	CIN=D(C)=1
120A	A-AND-B	0/1=0	
120B	A-AND-B	1/1=1	CIN=0
121A	A-XOR-B	0/0=0	ALU00=1
121B	A-XOR-B	1/0=1	ALU00=0
121C	A-XOR-B	0/1=1	ALU07=1
121D	A-XOR-B	1/1=0	ALU07=0
122A	A-IOR-B	0/0=0	CIN=1
122A3	BUT(D<14-00>=ZERO#D15) W/ D=(000000)		
122A4	BUT(D<14-00>=ZERO#D15) W/ D=(125252)		

```

5821 !
5822
5823 !FOR THE ALU LOGIC TESTS FOLLOWING, THE REQUIRED CONSTANTS
5824 !IN THE CSP ARE:
5825 5543:
5826 SETUPCSP17A:
5827     P3,      CSPD[15]+EMIT, EMIT/000077,      !MASK FOR BITS<05:00>
5828     NEXT,    GOTO-PAGE(7)                    !XFR
5829     J/SETUPCSP16A
(5543) DCS[0.00.0.0.0.0] BM[0000..10.00..00.00..111..111...0.0.0..0..0...0.0010...1..0000.0...11.100...000.000.010]

5830
5831 7002: !(FREE)
5832 SETUPCSP16A:
5833     P3,      CSPD[16]+EMIT, EMIT/170000,      !BITS<15:12> SET
5834     NEXT,    J/SETUPCSP15A
(7002) DCS[0.00.0.0.0.0] BM[1111..10.00..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.001.000]

5835
5836 7010: !(FREE)
5837 SETUPCSP15A:
5838     P3,      CSPD[17]+EMIT, EMIT/007700,      !MASK FOR BITS<11:06>
5839     NEXT,    J/SETUPCSP14A
(7010) DCS[0.00.0.0.0.0] BM[0000..10.11..11.11..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...000.001.001]

5840
5841 7011: !(FREE)
5842 SETUPCSP14A:
5843     P3,      CSPD[14]+EMIT, EMIT/000100,      !BIT<06> SET
5844     NEXT,    J/SETUPCSP12A
(7011) DCS[0.00.0.0.0.0] BM[0000..10.00..00.01..000..000...0.0.0..0..0...0.0011...1..0000.0...11.000...000.001.010]

5845
5846 7012: !(FREE)
5847 SETUPCSP12A:
5848     P3,      CSPD[11]+EMIT, EMIT/125252,      !PATTERN: "1010 1010 1010 1010"
5849     NEXT,    J/SETUPCSP05A
(7012) DCS[0.00.0.0.0.0] BM[1010..10.10..10.10..101..010...0.0.0..0..0...0.0110...1..0000.0...11.000...000.001.011]

5850
5851 7013: !(FREE)
5852 SETUPCSP05A:
5853     P3,      CSPD[10]+EMIT, EMIT/052525,      !PATTERN: "0101 0101 0101 0101"
5854     NEXT,    J/SETUPCSP07A
(7013) DCS[0.00.0.0.0.0] BM[0101..10.01..01.01..010..101...0.0.0..0..0...0.0111...1..0000.0...11.000...000.001.100]

5855
5856 7014: !(FREE)
5857 SETUPCSP07A:
5858     P3,      CSPD[12]+EMIT, EMIT/177777,      !PATTERN: "1111 1111 1111 1111 "
5859     NEXT,    J/SETUPCSP00A
(7014) DCS[0.00.0.0.0.0] BM[1111..10.11..11.11..111..111...0.0.0..0..0...0.0101...1..0000.0...11.000...000.001.101]

5860
5861 7015: !(FREE)
5862 SETUPCSP00A:
5863     P3,      CSPD[13]+EMIT, EMIT/000000,      !PATTERN: "0000 0000 0000 0000"
5864     NEXT,    GOTO-PAGE(0),                    !SAME AS (4)
5865     J/TEST114A

```

(7015) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.0100...1..0000.0...11.100...110.000.111)

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!-----
!VERIFY THAT WITH: ALU=(ZERO), A=(177777), B=(177777), THEN D=(000000), AND D(C)=CIN=PS(C)=(0)

4607:

TEST114A:

PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
LOAD-ERROR(TEST114A), !ERROR DIRECTORY KEY
DCS-CTR(C8.), !COMPARE AT TARGET
NEXT, J/GETONES114A

(4607) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...110.000.000)

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4600:

GETONES114A:

P2-T, D+CSPD(C177777), D(C)+ALU15, !ALL ONES STORED HERE
P3, A#BSPHI(C177777)+D, !WRITE INTO ASP,BSP
NEXT, J/ALU114A

(4600) DCS(0.00.0.0.0.0) BM(1010..10.11..00.01..101..100...0.1.0..0..0...0.0101...0..1111.0...11.000...000.000.011)

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5888
5889
5890
5891

4003: !(FREE)

ALU114A:

P2-T, D+ZERO, D(C)+CINMUX, !ALU=(ZERO), D(C)=CIN=PS(C)=(0)
BUS-A+ASPHI(C177777), !A=(177777)
BUS-B+CSPD(C177777), !B=(177777)
NEXT, J/GETZEROS114A !D=(000000)

(4003) DCS(0.00.0.0.0.0) BM(0011..10.00..11.01..101..000...0.1.0..0..0...0.0101...0..0000.0...11.000...000.000.100)

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5896

4004: !(FREE)

GETZEROS114A:

P3, A#BSPHI(000000)+D, !ALL ZEROS STORED HERE IN ASP, BSP
NEXT, J/GOBUT114A

(4004) DCS(0.00.0.0.0.0) BM(0000..00.11..00.01..100..000...0.0.0..0..0...0.0000...0..1111.0...11.000...000.000.101)

5897
5898
5899
5900
5901
5902

4005: !(FREE)

GOBUT114A:

SETUP, RETURN/TEST114A2, !EXEC SUBR WHICH:
NEXT, CALL(DZERO) ! (1) D -> IR
! (2) BUT(INSTRS) INTO Z-TARGET---

(4005) DCS(0.00.0.0.0.0) BM(0100..00.11..00.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.010)

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5910

!CHECK THAT D(C) GOT A (0) FROM "CINMUX=PS(C)", ABOVE

4603:

TEST114A2:

PO, LOAD-ENUA(ZTARGET402), !BIT <00> = D(C) = (0)
LOAD-ERROR(TEST114A2), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE AT TARGET
NEXT, J/GOBUT114A2

(4603) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.110)

5911

```

5912 4006: !(FREE)
5913 GOBUT114A2:
5914     SETUP, RETURN/SCOPE114A,      !RETURN TO SCOPE LOOP TEST WORD
5915     NEXT,  GOTO-PAGE(7),          !BUT TABLE
5916           J/BUTD(C)A              !D(C)H IN BIT<00>
(4006) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)

```

```

5917
5918
5919 4007: !(FREE)
5920 SCOPE114A:
5921     P2-T,  D+CSPD(C052525) SAVE-D(C), !STORE A CONSTANT
5922     P3,    A#BSPHI(C052525)+D,
5923     NEXT,  BUTD(SCOPE),              !NO ERROR: "TEST115A1" (+1.WORDS)
5924           J/TEST115A1              !ERROR: "GETONES114A" (-6.WORDS)
(4007) DCS(0.00.0.1.0.0) BM(1010..10.11..00.01..111..111...0.1.0..0..0...0.0111...0..1111.0...11.000...110.000.001)

```

```

5925
5926
5927
5928
5929
5930 !-----
5931 !THIS NEXT SET OF 12. TESTS EXERCISES THE "NOT-A" ALU FUNCTION
5932 !-----
5933
5934
5935

```

```

5936 !TESTS 115A 1-3 VERIFIES THAT WITH:
5937 !ALU=(NOT-A), A=(052525), B=(177777), THEN D=(125252), AND D(C)=CINMUX=(1)
5938 4601:
5939 TEST115A1:
5940     PD,    LOAD-ENVA(ZTARGET412),    !BIT<15:12> = "1010"
5941           LOAD-ERROR(TEST115A1),    !ERROR DIRECTORY KEY
5942           DCS-CTR(C7.),              !COMPARE AT TARGET
5943     NEXT,  J/ALU115A1
(4601) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.001.000)

```

```

5944
5945 4610:
5946 ALU115A1:
5947     PD,    BUMP-VERIFY,              !COUNT
5948     P2-T,  D+NOT-A, D(C)+CINMUX,     !ALU=(NOT-A) D(C)=CINMUX=(1)
5949           BUS-A+ASPHI(C052525),     !A=(052525)
5950           BUS-B+CSPD(C177777),     !B=(177777)
5951     NEXT,  J/GETALTN115A1          !D=(125252)
(4610) DCS(0.00.0.0.0.1) BM(0000..10.00..11.01..111..000...0.1.0..0..0...0.0101...0..0000.0...11.000...000.001.000)

```

```

5952
5953 4010: !(FREE)
5954 GETALTN115A1:
5955     P3,    A#BSPHI(C125252)+D,      !STORE CONSTANT (125252), HOPEFULLY
5956     NEXT,  J/GOBUT115A1
(4010) DCS(0.00.0.0.0.0) BM(0000..00.11..00.01..110..000...0.0.0..0..0...0.0000...0..1111.0...11.000...000.001.001)

```

```

5957
5958 4011: !(FREE)
5959 GOBUT115A1:

```

```

5960          SETUP, RETURN/TEST115A4,          !EXEC SUBR WHICH:
5961          NEXT, CALL(D15-12)                 ! (1) D<15:12> -> IR<15:12>
5962 (4011) DCS(0.00.0.0.0.0) BM(0100..00.11..00.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
5963
5964          !CHECK THAT D(C) GOT A (1) FROM "CINMUX=(1)", ABOVE
5965          4604:
5966          TEST115A4:
5967          PO,          LOAD-ENUA(ZTARGET403),          !BIT <00> = D(C) = (1)
5968          LOAD-ERROR(TEST115A4),          !ERROR DIRECTORY KEY
5969          DCS-CTR(C3.),          !COMPARE AT TARGET
5970          BUMP-VERIFY,          !COUNT
5971          NEXT, J/GOBUT115A4
5972 (4604) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.010)
5973
5974          4012: !(FREE)
5975          GOBUT115A4:
5976          SETUP, RETURN/TEST115A2,          !RETURN TO START OF NEXT SUBTEST
5977          NEXT, GOTO-PAGE(7),          !BUT TABLE
5978          J/BUTD(C)A          !D(C)H IN BIT<00>
(4012) DCS(0.00.0.0.0.0) BM(0100..00.11..00.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)
5979
5980          !CHECK BIT<11:06> = "1010 10"
5981          4616:
5982          TEST115A2:
5983          PO,          LOAD-ENUA(ZTARGET412),          !INSTR5-E78 OUTPUT FOR BIT <11:06>="101 010"
5984          LOAD-ERROR(TEST115A2),          !ERROR DIRECTORY KEY
5985          DCS-CTR(C6.),          !COMPARE AT TARGET
5986          BUMP-VERIFY,          !COUNT
5987          NEXT, J/GOBUT115A2
5988 (4616) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.011)
5989
5990          4013: !(FREE)
5991          GOBUT115A2:
5992          SETUP, RETURN/TEST115A3,          !EXEC SUBR WHICH:
5993          NEXT, CALL(D11-06)                 ! (1) D<11:06> -> IR<11:06>
5994 (4013) DCS(0.00.0.0.0.0) BM(0100..00.11..00.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
5995
5996          !CHECK BIT<05:00> = "10 1010"
5997          4615:
5998          TEST115A3:
5999          PO,          LOAD-ENUA(ZTARGET425),          !INSTR5-E88 OUTPUT FOR BIT <05:00> = "101 010"
6000          LOAD-ERROR(TEST115A3),          !ERROR DIRECTORY KEY
6001          DCS-CTR(C6.),          !COMPARE AT TARGET
6002          NEXT, J/GOBUT115A3
6003
6004
6005

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(4615) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.100)
6006
6007 4014: !(FREE)
6008 GOBUT115A3:
6009     SETUP, RETURN/TEST115B1,           !EXEC SUBR WHICH:
6010                                     ! (1) D<05:00> -> IR<05:00>
6011     NEXT, CALL(D05-00)                   ! (2) BUT(INSTRS) INTO ZTARGET---
(4014) DCS(0.00.0.0.0.0) BM(0100..00.11..00.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)
6012
6013
6014
6015
6016 ! - - - - -
6017
6018 !TESTS 115B 1-3 VERIFIES THAT WITH:
6019 !ALU=(NOT-A), A=(125252), B=(177777), THEN D=(052525), AND D(C)+PS(C)=(0)
6020 4614:
6021 TEST115B1:
6022     PO, LOAD-ENUA(ZTARGET405),           !BIT <15:12> = "0101"
6023         LOAD-ERROR(TEST115B1),         !ERROR DIRECTORY KEY
6024         DCS-CTR(C6.),                  !COMPARE AT TARGET
6025     NEXT, J/ALU115B1
(4614) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.101)
6026
6027 4015: !(FREE)
6028 ALU115B1:
6029     PO, BUMP-VERIFY,                   !COUNT
6030         P2-T, D+NOT-A, D(C)+PS(C),     !ALU=(NOT-A), D(C)=PS(C)=(0)
6031         BUS-A+ASPHI(C125252),         !A=(125252)
6032         BUS-B+CSPO(C177777),         !B=(177777)
6033     NEXT, J/GOBUT115B1                 !D=(052525)
(4015) DCS(0.00.0.0.0.1) BM(0000..10.00..11.01..110..001...0...0..0..0...0.0101...0..0000.0...11.000...000.001.110)
6034
6035 4016: !(FREE)
6036 GOBUT115B1:
6037     SETUP, RETURN/TEST115B4,           !EXEC SUBR WHICH:
6038                                     ! (1) D<15:12> -> IR<15:12>
6039     NEXT, CALL(D15-12)                 ! (2) BUT(IR15-12) INTO ZTARGET---
(4016) DCS(0.00.0.0.0.0) BM(0100..00.11..00.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
6040
6041 !CHECK THAT D(C) GOT A (0) FROM "PS(C)", ABOVE
6042 4602:
6043 TEST115B4:
6044     PO, LOAD-ENUA(ZTARGET402),           !BIT <00> = D(C) = (0)
6045         LOAD-ERROR(TEST115B4),         !ERROR DIRECTORY KEY
6046         DCS-CTR(C3.),                  !COMPARE AT TARGET
6047         BUMP-VERIFY,                   !COUNT
6048     NEXT, J/GOBUT115B4
(4602) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.111)
6050
6051 4017: !(FREE)

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6052 GOBUT11584:
6053     SETUP, RETURN/TEST11582,           !RETURN TO START OF NEXT SUBTEST
6054     NEXT,  GOTO-PAGE(7),              !BUT TABLE
6055     J/BUTD(C)A                          !D(C)H IN BIT<00>
(4017) DCS(0.00.0.0.0.0) BM(0100..00.11..00.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)

6056
6057
6058     !CHECK BIT<11:06> = "0101 01"
6059     4613:
6060     TEST11582:
6061         PO,      LOAD-ENVA(ZTARGET405),           !INSTR5-E78 OUTPUT FOR BIT <11:06> = "010 101"
6062         LOAD-ERROR(TEST11582),                   !ERROR DIRECTORY KEY
6063         DCS-CTR(C6.),                             !COMPARE AT TARGET
6064         BUMP-VERIFY,                              !COUNT
6065     NEXT,  J/GOBUT11582
(4613) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.000)

6066
6067     4020: !(FREE)
6068     GOBUT11582:
6069         SETUP, RETURN/TEST11583,           !EXEC SUBR WHICH:
6070         NEXT,  CALL(D1!-06)                !(1) D<11:06> -> IR<11:06>
6071     (4020) DCS(0.00.0.0.0.0) BM(0100..00.11..00.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
                                           !(2) BUT(INSTR5) INTO ZTARGET---

6072
6073
6074     !CHECK BIT<05:00> = "01 0101"
6075     4612:
6076     TEST11583:
6077
6078         PO,      LOAD-ENVA(ZTARGET432),           !INSTR5-E88 OUTPUT FOR BIT<05:00> = "010 101"
6079         LOAD-ERROR(TEST11583),                   !ERROR DIRECTORY KEY
6080         DCS-CTR(C6.),                             !COMPARE AT TARGET
6081     NEXT,  J/GOBUT11583
(4612) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..011..010...0.0.0..0..0...0.0000. .0..0000.0...11.000...000.010.001)

6083
6084     4021: !(FREE)
6085     GOBUT11583:
6086         SETUP, RETURN/SCOPE1158,           !EXEC SUBR WHICH:
6087         NEXT,  CALL(D05-00)                !(1) D<05:00> -> IR<05:00>
6088     (4021) DCS(0.00.0.0.0.0) BM(0100..00.00..00.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)
                                           !(2) BUT(INSTR5) INTO ZTARGET---

6089
6090     4022: !(FREE)
6091     SCOPE1158:
6092         NEXT,  BUTD(SCOPE),                   !NO ERROR: "TEST115C1" (+1.WORDS)
6093         J/TEST115C1                          ! ERROR: "ALU115A1" (-17.WORDS)
6094     (4022) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.001.001)

6095
6096

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6097
6098
6099 ! - - - - -
6100
6101 ! TESTS 115C 1-3 VERIFIES THAT WITH:
6102 ! ALU=(NOT-A), A=(052525), B=(000000), THEN D=(125252)
6103 4611:
6104 TEST115C1:
6105     PO,          LOAD-ENUA(ZTARGET412),          ! BIT <15:12> = "1010"
6106     LOAD-ERROR(TEST115C1),          ! ERROR DIRECTORY KEY
6107     DCS-CTR(C6.),          ! COMPARE AT TARGET
6108     NEXT,        J/ALU115C1
(4611) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.010.010]

6109
6110 4622:
6111 ALU115C1:
6112     PO,          BUMP-VERIFY,          ! COUNT
6113     P2-T,        D+NOT-A, SAVE-D[0],    ! ALU=(NOT-A)
6114     BUS-A+ASPHI(C052525),          ! A=(052525)
6115     BUS-B+CSPD(C000000),          ! B=(000000)
6116     NEXT,        J/GOBUT115C1          ! D=(125252)
(4622) DCS[0.00.0.0.0.1] BM[0000..10.00..11.01..111..111...0.1.0..0..0...0.0100...0..0000.0...11.000...000.010.011]

6117
6118 4023: !(FREE)
6119 GOBUT115C1:
6120     SETUP,      RETURN/TEST115C2,      ! EXEC SUBR WHICH:
6121     ! (1) D<15:12> -> IR<15:12>
6122     NEXT,        CALL[D15-12]          ! (2) BUT(IR15-12) INTO ZTARGET---
(4023) DCS[0.00.0.0.0.0] BM[0100..00.11..00.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100]

6123
6124 ! CHECK BIT<11:06> = "1010 10"
6125 4617:
6126 TEST115C2:
6127     PO,          LOAD-ENUA(ZTARGET412),          ! INSTR5-E78 OUTPUT FOR BIT <11:06> = "101 010"
6128     LOAD-ERROR(TEST115C2),          ! ERROR DIRECTORY KEY
6129     DCS-CTR(C6.),          ! COMPARE AT TARGET
6130     BUMP-VERIFY,          ! COUNT
6131     NEXT,        J/GOBUT115C2
(4617) DCS[1.00.1.0.0.1] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.100]

6132
6133 4024: !(FREE)
6134 GOBUT115C2:
6135     SETUP,      RETURN/TEST115C3,      ! EXEC SUBR WHICH:
6136     ! (1) D<11:06> -> IR<11:06>
6137     NEXT,        CALL[D11-06]          ! (2) BUT(INSTR5) INTO ZTARGET---
(4024) DCS[0.00.0.0.0.0] BM[0100..00.11..00.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110]

6138
6139
6140
6141 ! CHECK BIT<05:00> = "10 1010"
6142 4627:
6143 TEST115C3:

```

```

6144
6145      PO,      LOAD-ENUA(ZTARGET425),      !INSTR5-E88 OUTPUT FOR BIT<05:00> = "101 010"
6146      LOAD-ERROR(TEST115C3),      !ERROR DIRECTORY KEY
6147      DCS-CTR(C6.),      !COMPARE AT TARGET
6148      NEXT      J/GOBUT115C3
(4627) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.101]
6149
6150      4025:      !(FREE)
6151      GOBUT115C3:
6152      SETUP,      RETURN/TEST115D1,      !EXEC SUBR WHICH:
6153      !          ! (1) D<05:00> -> IR<05:00>
6154      NEXT      CALL[005-00]      ! (2) BUT(INSTR5) INTO ZTARGET---
(4025) DCS[0.00.0.0.0.0] BM[0100..00.11..00.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000]
6155
6156
6157
6158
6159      ! - - - - -
6160
6161      !TESTS 115D 1-3 VERIFIES THAT WITH:
6162      !ALU=(NOT-A, A=(125252), B=(000000), THEN D=(052525)
6163      4626:
6164      TEST115D1:
6165      PO,      LOAD-ENUA(ZTARGET405),      !BIT<15:12> = "0101"
6166      LOAD-ERROR(TEST115D1),      !ERROR DIRECTORY KEY
6167      DCS-CTR(C6.),      !COMPARE AT TARGET
6168      NEXT      J/ALU115D1
(4626) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.110]
6169
6170      4026:      !(FREE)
6171      ALU115D1:
6172      PO,      BUMP-VERIFY,      !COUNT
6173      P2-T,      D+NOT-A, SAVE-D[C],      !ALU=(NOT-A), D[C]+0
6174      BUS-A+ASPHI(C125252),      !A=(125252)
6175      BUS-B+CSPO(C000000),      !B=(000000)
6176      NEXT      J/GOBUT115D1      !D=(052525)
(4026) DCS[0.00.0.0.0.1] BM[0000..10.00..11.01..110..111...0.1.0..0..0...0.0100...0..0000.0...11.000...000.010.111]
6177
6178      4027:      !(FREE)
6179      GOBUT115D1:
6180      SETUP,      RETURN/TEST115D2,      !EXEC SUBR WHICH:
6181      !          ! (1) D<15:12> -> IR<15:12>
6182      NEXT      CALL[015-12]      ! (2) BUT(IR15-12) INTO ZTARGET---
(4027) DCS[0.00.0.0.0.0] BM[0100..00.11..00.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100]
6183
6184      !CHECK BIT<11:06> = "0101 01"
6185      4625:
6186      TEST115D2:
6187      PO,      LOAD-ENUA(ZTARGET405),      !INSTR5-E78 OUTPUT FOR BIT<11:06> = "010 101"
6188      LOAD-ERROR(TEST115D2),      !ERROR DIRECTORY KEY
6189      DCS-CTR(C6.),      !COMPARE AT TARGET
6190      BUMP-VERIFY,      !COUNT

```

```

6191      NEXT,      J/GOBUT11502
(4625) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..000..101!...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.000]
6192
6193      4030:  !(FREE)
6194      GOBUT11502:
6195          SETUP,  RETURN/TEST11503,
6196
6197          NEXT,    CALL[D11-06]
(4030) DCS[0.00.0.0.0.0] BM[0100..00.11..00.10..100..111!...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110]
!EXEC SUBR WHICH:
!(1) D<11:06> -> IR<11:06>
!(2) BUT(INSTR5) INTO ZTARGET---

6198
6199
6200
6201      !CHECK BIT<05:00> = "01 0101"
6202      4624:
6203      TEST11503:
6204
6205          PD,      LOAD-ENUA(ZTARGET432),
6206                  LOAD-ERROR(TEST11503),
6207                  DCS-CTR(C6.),
6208
6209          NEXT,    J/GOBUT11503
(4624) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..011..010!...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.001]
!INSTR5-E88 OUTPUT FOR BIT<05:00> = "010 101"
!ERROR DIRECTORY KEY
!COMAPRE AT TARGET

6209
6210      4031:  !(FREE)
6211      GOBUT11503:
6212          SETUP,  RETURN/SCOPE1150,
6213
6214          NEXT,    CALL[D05-00]
(4031) DCS[0.00.0.0.0.0] BM[0100..00.00..00.11..010..111!...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000]
!EXEC SUBR WHICH:
!(1) D<05:00> -> IR<05:00>
!(2) BUT(INSTR5) INTO ZTARGET---

6215
6216      4032:  !(FREE)
6217      SCOPE1150:
6218          PD,      BUMP-VERIFY,
6219          NEXT,    BUTD(SCOPE),
6220                  J/TEST116A1
(4032) DCS[0.00.0.1.0.1] BM[0000..00.00..00.00..000..000!...0.0.0..0..0...0.0000...0..0000.0...11.000...110.010.011]
!COUNT
!NO ERROR: "TEST116A1" (+1. WORDS)
!ERROR: "ALU115C1" (-13. WORDS)

6221
6222
6223
6224
6225      !-----
6226
6227      !THIS NEXT SET OF 12. TESTS EXERCISES THE ALU FUNCTIONS
6228      !"ZERO" AND "NOT-A-AND-B", AND THE D[C] INPUTS "ALU15" AND "D[C]"
6229
6230      !-----
6231
6232      !TESTS 116A 1-5 VERIFIES THAT WITH:
6233      !ALU=(NOT-A-AND-B), A=(000000), B=(125252), THEN D=(125252)
6234      4623:
6235      TEST116A1:
6236          PD,      LOAD-ENUA(ZTARGET412),
6237                  LOAD-ERROR(TEST116A1),
!BIT<15:12> = "1010"
!ERROR DIRECTORY KEY

```

```

6238          DCS-CTR(C6.),          !COMPARE AT TARGET
6239      NEXT,      J/ALU116A1
(4623) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.100]

6240
6241      4634:
6242      ALU116A1:
6243          PO,      BUMP-VERIFY,          !COUNT
6244          P2-T,      D+NOT-A-AND-B, D(C)+ALU15,      !ALU=(NOT-A-AND-B), D(C)=(1)
6245          BUS-A+ASPHI(C000000),      !A=(000000)
6246          BUS-B+CSPD(C125252),      !B=(125252)
6247      NEXT,      J/GOBUT116A1          !D=(125252)
(4634) DCS[0.00.0.0.0.0] BM[0010..10.00..11.01..100..100...0.1.0..0..0...0.0110...0..0000.0...11.000...000.011.011]

6248
6249      4033: !(FREE)
6250      GOBUT116A1:
6251          SETUP,      RETURN/TEST116A2,          !EXEC SUBR WHICH:
6252          !          !          !          !          !          !
6253      NEXT,      CALL[D15-12]          !          !          !          !          !          !
(4033) DCS[0.00.0.0.0.0] BM[0100..00.11..00.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100]

6254          !CHECK THAT D(C) GOT A (1) FROM "ALU15," ABOVE
6255      4621:
6256      TEST116A2:
6257          PO,      LOAD-ENUA(ZTARGET403),          !BIT <00> = D(C) = (1)
6258          LOAD-ERROR(TEST116A2),          !ERROR DIRECTORY KEY
6259          DCS-CTR(C3.),          !COMPARE AT TARGET
6260          BUMP-VERIFY,          !COUNT
6261      NEXT,      J/GOBUT116A2
(4621) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.100]

6262
6263      4034: !(FREE)
6264      GOBUT116A2:
6265          SETUP,      RETURN/TEST116A3,          !RETURN TO START OF NEXT SUBTEST
6266          NEXT,      GOTO-PAGE(7),          !BUT TABLE
6267          J/BUTD(C)A          !D(C)H IN BIT <00>
(4034) DCS[0.00.0.0.0.0] BM[0100..00.11..00.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100]

6268          !CHECK BIT<11:06> = "1010 10"
6269      4620:
6270      TEST116A3:
6271          PO,      LOAD-ENUA(ZTARGET412),          !INSTR5-E78 OUTPUT FOR BIT <11:06> = "101 010"
6272          LOAD-ERROR(TEST116A3),          !ERROR DIRECTORY KEY
6273          DCS-CTR(C6.),          !COMPARE AT TARGET
6274          BUMP-VERIFY,          !COUNT
6275      NEXT,      J/GOBUT116A3
(4620) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.101]

6276
6277      4035: !(FREE)
6278      GOBUT116A3:
6279          SETUP,      RETURN/TEST116A4,          !EXEC SUBR WHICH:
6280          !          !          !          !          !          !
6281          NEXT,      CALL[D11-06]          !          !          !          !          !          !
6282          !          !          !          !          !          !

```

(4035) DCS(0.00.0.0.0.0) BM(0100..00.11..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)

6283
6284
6285
6286
6287
6288
6289
6290
6291
6292
6293

!CHECK BIT<05:00> = "10 1010"
4637:
TEST116A4:

PO, LOAD-ENVA(ZTARGET425),
LOAD-ERROR(TEST116A4),
DCS-CTR(C6.),
NEXT, J/GOBUT116A4

!INSTR5-E88 OUTPUT FOR BIT <05:00> ="101 010"
!ERROR DIRECTORY KEY
!COMPARE AT TARGET

(4637) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.110)

6294
6295
6296
6297
6298
6299

4036: !(FREE)
GOBUT116A4:
SETUP, RETURN/TEST116A5,

!EXEC SUBR WHICH:
!(1) D<05:00> -> IR<05:00>
!(2) BUT(INSTR5) INTO ZTARGET---

NEXT, CALL(DOS-00)

(4036) DCS(0.00.0.0.0.0) BM(0100..00.11..00.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)

6300
6301
6302
6303
6304
6305
6306
6307
6308
6309

!CHECK THAT D[C] WAS PROPOGATED UNCHANGED AS A (1), VIA D[C]+D[C]
4636:
TEST116A5:

PO, LOAD-ENVA(ZTARGET403),
LOAD-ERROR(TEST116A5),
DCS-CTR(C3.),
NEXT, J/GOBUT116A5

!BIT<01> = D[C] = (1)
!ERROR DIRECTORY KEY
!COMPARE AT TARGET

(4636) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.111)

6310
6311
6312
6313
6314
6315

4037: !(FREE)
GOBUT116A5:
SETUP, RETURN/TEST116B,
NEXT, GOTO-PAGE(7),
J/BUTD[C]B

!RETURN TO START OF NEXT SUBTEST
!BUT TABLE
!D[C]H IN BIT <01>

(4037) DCS(0.00.0.0.0.0) BM(0100..00.11..00.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)

6316
6317
6318
6319
6320
6321

! - - - - -
!TEST 116B VERIFIES THAT WITH:
!ALU=(ZERO), A=(125252), B=(052525), THEN D=(000000)
4606:

TEST116B:
PO, LOAD-ENVA(ZTARGET434),
LOAD-ERROR(TEST116B),
DCS-CTR(C6.),

!INSTR5 FOR IR=(000000)
!ERROR DIRECTORY KEY
!COMPARE AT TARGET

6325
6326
6327
6328
6329

6330 NEXT J/ALU116B
 (4606) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..011..100!...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.000]

6331 4040: !(FREE)
 6332 ALU116B:

6334 P2-T, D+ZERO, SAVE-D(C), !ALU=(ZERO), D(C)=D(C)=(1)
 6335 BUS-A+ASPHI(C125252), !A=(125252)
 6336 BUS-B+CSPD(C052525), !B=(052525)
 6337 NEXT J/GOBUT116B !D=(000000)

(4040) DCS[0.00.0.0.0.0] BM[0011..10.00..11.01..110..111...0.1.0..0..0...0.0111...0..0000.0...11.000...000.100.001]

6338 4041: !(FREE)
 6339 GOBUT116B:

6341 SETUP, RETURN/SCOPE116C, !EXEC SUBR WHICH:
 6342 ! (1) D-> IR
 6343 NEXT CALL(DZERO) ! (2) BUT(INSTRS) INTO ZTARGET---

(4041) DCS[0.00.0.0.0.0] BM[0100..00.00..01.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.010]

6344 4042: !(FREE)
 6345 SCOPE116C:

6347 NEXT, BUTD(SCOPE), !NO ERROR: "TEST116C1" (+1. WORDS)
 6348 J/TEST116C1 ! ERROR: "ALU116A1" (-13. WORDS)
 6349 (4042) DCS[0.00.0.1.0.0] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.011.101]

6351 ! - - - - -
 6352
 6353
 6354
 6355

6356 !TEST 116C 1-5 VERIFIES THAT WITH:
 6357 !ALU=(NOT-A-AND-B), A=(000000), B=(052525), THEN D=(052525)
 6358 4635:

6359 TEST116C1:
 6360 PO, LOAD-ENVA(ZTARGET405), !BIT<15:12> = "0101"
 6361 LOAD-ERROR(TEST116C1), !ERROR DIRECTORY KEY
 6362 DCS-CTR(C6.), !COMPARE AT TARGET
 6363 NEXT J/ALU116C1

(4635) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...110.100.110]

6364 4646:
 6365 ALU116C1:

6367 PO, BUMP-VERIFY, !COUNT
 6368 P2-T, D+NOT-A-AND-B, D(C)+ALU15, !ALU=(NOT-A-AND-B), D(C)=(0)
 6369 BUS-A+ASPHI(C000000), !A=(000000)
 6370 BUS-B+CSPD(C052525), !B=(052525)
 6371 NEXT J/GOBUT116C1 !D=(052525)

(4646) DCS[0.00.0.0.0.1] BM[0010..10.00..11.01..100..100...0.1.0..0..0...0.0111...0..0000.0...11.000...000.100.011]

6372 4043: !(FREE)
 6373 GOBUT116C1:

6374 SETUP, RETURN/TEST116C2, !EXEC SUBR WHICH:
 6375 ! (1) D<15:12> -> IR<15:12>
 6376

```

6377      NEXT      CALL(D15-12)                !(2) BUT(IR15-12) INTO ZTARGET---
(4043) DCS(0.00.0.0.0.0) BM(0100..00.11..00.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
6378
6379      !CHECK THAT D(C) GOT A (0) FROM "ALU15", ABOVE
6380      4633:
6381      TEST116C2:
6382          PO,          LOAD-ENVA(ZTARGET402),          !BIT <00> = D(C) = (0)
6383          LOAD-ERROR(TEST116C2),          !ERROR DIRECTORY KEY
6384          DCS-CTR(C3.),          !COMPARE AT TARGET
6385          BUMP-VERIFY,          !COUNT
6386          NEXT      J/GOBUT116C2
(4633) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.100)
6387
6388      4044: !(FREE)
6389      GOBUT116C2:
6390          SETUP,      RETURN/TEST116C3,          !RETURN TO START OF NEXT SUBTEST
6391          NEXT,        GOTO-PAGE(7),          !BUT TABLE
6392          J/BUTD(C)A          !D(C)H IN BIT<00>
(4044) DCS(0.00.0.0.0.0) BM(0100..00.11..00.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)
6393
6394      !CHECK BIT<11:06> = "0101 01"
6395      4632:
6396      TEST116C3:
6397          PO,          LOAD-ENVA(ZTARGET405),          !INSTRS-E78 OUTPUT FOR BIT<11:06>="010 101"
6398          LOAD-ERROR(TEST116C3),          !ERROR DIRECTORY KEY
6399          DCS-CTR(C6.),          !COMPARE AT TARGET
6400          BUMP-VERIFY,          !COUNT
6401          NEXT      J/GOBUT116C3
(4632) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.101)
6402
6403      4045: !(FREE)
6404      GOBUT116C3:
6405          SETUP,      RETURN/TEST116C4,          !EXEC SUBR WHICH:
6406          NEXT,        CALL(D11-06)          !(1) D<11:06>-> IR<11:06>
6407          !!(2) BUT(INSTRS) INTO ZTARGET---
(4045) DCS(0.00.0.0.0.0) BM(0100..00.11..00.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
6408
6409
6410
6411      !CHECK BIT <05:00> = "01 0101"
6412      4631:
6413      TEST116C4:
6414
6415          PO,          LOAD-ENVA(ZTARGET432),          !INSTRS-E88 OUTPUT FOR BIT <05:00> = "010 101"
6416          LOAD-ERROR(TEST116C4),          !ERROR DIRECTORY KEY
6417          NEXT      J/GOBUT116C4
(4631) DCS(1.00.0.0.0.0) BM(0000..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.110)
6418
6419      4046: !(FREE)
6420      GOBUT116C4:
6421          SETUP,      RETURN/TEST116C5,          !EXEC SUBR WHICH:

```

```

6422                                     !(1) D<05:00> -> IR<05:00>
6423 NEXT CALL(D05-00)                   !(2) BUT(INSTRS) INTO ZTARGET---
(4046) DCS(0.00.0.0.0.0) BM(0100..00.11..00.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)

```

```

6424
6425
6426
6427 !CHECK THAT D[C] WAS PROPOGATED UNCHANGED AS A (0), VIA D[C]+D[C]
6428
6429 4630:
6430 TEST116C5:
6431 PO, LOAD-ENUA(ZTARGET401), !BIT<01> = D[C] = (0)
6432 LOAD-ERROR(TEST116C5), !ERROR DIRECTORY KEY
6433 DCS-CTR(C3.), !COMPARE AT TARGET

```

```

6434 NEXT J/GOBUT116C5
(4630) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.111)

```

```

6435 4047: !(FREE)
6436 GOBUT116C5:

```

```

6437
6438 SETUP, RETURN/TEST116D, !RETURN TO START OF NEXT SUBTEST
6439 NEXT, GOTO-PAGE(7), !BUT TABLE
6440 J/BUTD[C]B !D[C]H IN BIT <01>
(4047) DCS(0.00.0.0.0.0) BM(0100..00.11..01.00..101..111...0.0.0..0 0...0.0000...0..0000.0...11.100...011.101.000)

```

```

6441
6442
6443
6444
6445
6446
6447 ! - - - - -
6448

```

```

6449 !TEST 116D VERIFIES THAT WITH:
6450 !ALU=(ZERO), A=(052525), B=(125252), THEN D=(000000)
6451 4645:
6452 TEST116D:

```

```

6453 PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
6454 LOAD-ERROR(TEST116D), !ERROR DIRECTORY KEY
6455 DCS-CTR(C6.), !COMPARE AT TARGET
6456 NEXT J/ALU116D
(4645) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.000)

```

```

6457 4050: !(FREE)
6458 ALU116D:
6459 P2-T, D+ZERO, SAVE-D[C], !ALU=(ZERO), D[C]=D[C]=(0)
6460 BUS-A+ASPHI(C052525), !A=(052525)
6461 BUS-B+CSPD(C125252), !B=(125252)
6462 !D=(000000)
6463 NEXT J/GOBUT116D
(4050) DCS(0.00.0.0.0.0) BM(0011..10.00..11.01..111..111...0.1.0..0..0...0.0110...0..0000.0...11.000...000.101.001)

```

```

6464 4051: !(FREE)
6465 GOBUT116D:
6466 SETUP, RETURN/SCOPE116D, !EXEC SUBR WHICH:
6467 ! (1) D -> IR
6468

```


KD11-K

MICRO

V00A-1 00:00:03 12-MAR-77

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6469      NEXT, CALL(DZERO)                !(2) BUT(INSTR5) INTO ZTARGET---
(4051) DCS(0.00.0.0.0.0) BM(0100..00.00..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.010)
6470
6471
6472
6473      4052: !(FREE)
6474      SCOPE1160:
6475      NEXT, BUTD(SCOPE),                !NO ERROR: "TEST117A1" (+1. WORDS)
6476      J/TEST117A1                       ! ERROR: "ALU116C1" (-13. WORDS)
(4052) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.100.111)
6477
6478
6479
6480
6481
6482      ! -----
6483
6484      !THIS NEXT SET OF 9. TESTS EXERCIZES THE ALU FUNCTION
6485      !"A-AND-NOT-B", AND THE CARRYOUT OF "CINMUX=D(C)" INTO D(C)
6486
6487
6488
6489
6490      ! -----
6491
6492      !TESTS 117A 1-4 VERIFIES THAT WITH:
6493      !ALU=(A-AND-NOT-B), A=(177777), B=(125252), THEN D=(052525)
6494      4647:
6495      TEST117A1:
6496      PO, LOAD-ENUA(ZTARGET405),          !BIT<15:12> = "0101"
6497      LOAD-ERROR(TEST117A1),             !ERROR DIRECTORY KEY
6498      DCS-CTR(C6.),                       !COMPARE AT TARGET
6499      NEXT, J/ALU117A1
(4647) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.110)
6500
6501      4666:
6502      ALU117A1:
6503      PO, BUMP-VERIFY,                    !COUNT
6504      P2-T, D+A-AND-NOT-B, D(C)+CINMUX,   !ALU=(A-AND-NOT-B), D(C)=CIN=D(C)=(0)
6505      BUS-A+ASPHI(C177777),              !A=(177777)
6506      BUS-B+CSPD(C125252),               !B=(125252)
6507      NEXT, J/GOBUT117A1                  !D=(052525)
(4666) DCS(0.00.0.0.0.1) BM(0111..10.00..11.01..101..000...0.1.0..0..0...0.0110...0..0000.0...11.000...000.101.011)
6508
6509      4053: !(FREE)
6510      GOBUT117A1:
6511      SETUP, RETURN/TEST117A2,          !EXEC SUBR WHICH:
6512      ! (1) D<15:12> -> IR<15:12>
6513      NEXT, CALL(D15-12)                 ! (2) BUT(IR15-12) INTO ZTARGET---
(4053) DCS(0.00.0.0.0.0) BM(0100..00.11..01.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
6514
6515      !CHECK BIT<11:06> = "0101 01"

```

```

6516 4644:
6517 TEST117A2:
6518     PO,          LOAD-ENVA(ZTARGET405),          !INSTRS-E78 OUTPUT FOR BIT<11:06>="010 101"
6519     LOAD-ERROR(TEST117A2),          !ERROR DIRECTORY KEY
6520     DCS-CTR(C6.),          !COMPARE AT TARGET
6521     BUMP-VERIFY,          !COUNT
6522     NEXT          J/GOBUT117A2
(4644) DCS[1.00.1.0.0.1] BM[1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.100]

6523
6524 4054: !(FREE)
6525 GOBUT117A2:
6526     SETUP,       RETURN/TEST117A3,          !EXEC SUBR WHICH:
6527     NEXT          CALL[D11-06]              ! (1) D<11:06> -> IR<11:06>
6528 (4054) DCS[0.00.0.0.0.0] BM[0100..00.11..01.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110]

6529
6530
6531 !CHECK BIT<05:00> = "01 0101"
6532 4643:
6533 TEST117A3:
6534
6535     PO,          LOAD-ENVA(ZTARGET432),          !INSTRS-E88 OUTPUT FOR BIT <05:00>="010 101"
6536     LOAD-ERROR(TEST117A3),          !ERROR DIRECTORY KEY
6537     DCS-CTR(C6.),          !COMPARE AT TARGET
6538     NEXT          J/GOBUT117A3
(4643) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.101]

6539
6540
6541 4055: !(FREE)
6542 GOBUT117A3:
6543     SETUP,       RETURN/TEST117A4,          !EXEC SUBR WHICH:
6544     NEXT          CALL[D05-00]              ! (1) D<05:00> -> IR<05:00>
6545 (4055) DCS[0.00.0.0.0.0] BM[0100..00.11..01.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000]

6546
6547 !CHECK THAT D[C] GOT A (0) FROM CINMUX, ABOVE
6548 4642:
6549 TEST117A4:
6550     PO,          LOAD-ENVA(ZTARGET413),          !BIT<02> = D[C] = (0)
6551     LOAD-ERROR(TEST117A4),          !ERROR DIRECTORY KEY
6552     DCS-CTR(C3.),          !COMPARE AT TARGET
6553     BUMP-VERIFY,          !COUNT
6554     NEXT          J/GOBUT117A4
(4642) DCS[1.00.1.0.0.1] BM[1100..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.110]

6555
6556 4056: !(FREE)
6557 GOBUT117A4:
6558     SETUP,       RETURN/TEST117B1,          !RETURN TO START OF NEXT SUBTEST
6559     NEXT          GOTO-PAGE(7),              !BUT TABLE
6560 (4056) DCS[0.00.0.0.0.0] BM[0100..00.11..01.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000]

```

```

6561
6562
6563
6564
6565 ! - - - - -
6566
6567 !TESTS 117B 1-3 VERIFIES THAT WITH:
6568 !ALU=(A-AND-NOT-B), A=(177777), B=(052525), THEN D=(125252)
6569 4641:
6570 TEST117B1:
6571     PO,          LOAD-ENUA(ZTARGET412),          !BIT<15:12> = "1010"
6572     LOAD-ERROR(TEST117B1),          !ERROR DIRECTORY KEY
6573     DCS-CTR(C6.),          !COMPARE AT TARGET
6574     NEXT,        J/ALU117B1
(4641) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.111]

6575
6576 4057: !(FREE)
6577 ALU117B1:
6578     PO,          BUMP-VERIFY,          !COUNT
6579     P2-T,        D+A-AND-NOT-B, D[C]=ALU15, !ALU=(A-AND-NOT-B), D[C]=ALU15=(1)
6580     BUS-A+ASPHI(C177777),          !A=(177777)
6581     BUS-B+CSPD(C052525),          !B=(052525)
6582     NEXT,        J/GOBUT117B1          !D=(125252)
(4057) DCS[0.00.0.0.0.0] BM[0111..10.00..11.01..101..100...0.1.0..0..0...0.0111...0..0000.0...11.000...000.110.000]

6583
6584 4060: !(FREE)
6585 GOBUT117B1:
6586     SETUP,       RETURN/TEST117B2,          !EXEC SUBR WHICH:
6587     NEXT,        CALL[D15-12]              ! (1) D<15:12> -> IR<15:12>
6588     ! (2) BUT(IR15-12) INTO ZTARGET---
(4060) DCS[0.00.0.0.0.0] BM[0100..00.11..01.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100]

6589
6590 !CHECK BIT <11:06> = "1010 10"
6591 4640:
6592 TEST117B2:
6593     PO,          LOAD-ENUA(ZTARGET412),          !INSTR5-E78 OUTPUT FOR BIT <11:06>="101 010"
6594     LOAD-ERROR(TEST117B2),          !ERROR DIRECTORY KEY
6595     DCS-CTR(C6.),          !COMPARE AT TARGET
6596     BUMP-VERIFY,          !COUNT
6597     NEXT,        J/GOBUT117B2
(4640) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.001]

6598
6599 4061: !(FREE)
6600 GOBUT117B2:
6601     SETUP,       RETURN/TEST117B3,          !EXEC SUBR WHICH:
6602     NEXT,        CALL[D11-06]              ! (1) D<11:06> -> IR<11:06>
6603     ! (2) BUT(INSTR5) INTO ZTARGET---
(4061) DCS[0.00.0.0.0.0] BM[0100..00.11..01.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110]

6604
6605
6606
6607 !CHECK BIT<05:00> = "10 1010"

```

```

6608 4657:
6609 TEST117B3:
6610
6611 PO, LOAD-ENUA(ZTARGET425), !INSTRS-ERR OUTPUT FOR BIT <05:00> = "101 010"
6612 LOAD-ERROR(TEST117B3), !ERROR DIRECTORY KEY
6613 DCS-CTR(C6.), !COMPARE AT TARGET
6614 NEXT, J/GOBUT117B3
(4657) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.010]
6615
6616 4062: !(FREE)
6617 GOBUT117B3:
6618 SETUP, RETURN/TEST117C1, !EXEC SUBR WHICH:
6619 ! (1) D<05:00> -> IR<05:00>
6620 NEXT, CALL(D05-00) ! (2) BUT (INSTRS) INTO ZTARGET---
(4062) DCS[0.00.0.0.0.0] BM[0100..00.11..01.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000]
6621
6622
6623
6624
6625
6626
6627
6628 ! - - - - -
6629
6630 !TESTS 117C 1-2 VERIFIES THAT WITH:
6631 !ALU=(A-AND-NOT-B), A=(000000), B=(000000), THEN D=(000000)
6632 4656:
6633 TEST117C1:
6634 PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
6635 LOAD-ERROR(TEST117C1), !ERROR DIRECTORY KEY
6636 DCS-CTR(C6.), !COMPARE AT TARGET
6637 NEXT, J/ALU117C1
(4656) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.011]
6638
6639 4063: !(FREE)
6640 ALU117C1:
6641 P2-T, D+A-AND-NOT-B, D[C]+CINMUX, !ALU=(A-AND-NOT-B), D[C]=CINMUX=D[C]=(1)
6642 BUS-A+ASPHI(C000000), !A=(000000)
6643 BUS-B+CSPD(C000000), !B=(000000)
6644 NEXT, J/GOBUT117C1
(4063) DCS[0.00.0.0.0.0] BM[0111..10.00..11.01..100..000...0.1.0..0..0...0.0100...0..0000.0...11.000...000.110.100]
6645
6646 4064: !(FREE)
6647 GOBUT117C1:
6648 SETUP, RETURN/TEST117C2, !EXEC SUBR WHICH:
6649 ! (1) D -> IR
6650 NEXT, CALL(DZERO) ! (2) BUT (INSTRS) INTO ZTARGET---
(4064) DCS[0.00.0.0.0.0] BM[0100..00.11..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.010]
6651
6652
6653 !CHECK THAT D[C] GOT A (1) FROM CINMUX, ABOVE
6654 4677:

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```

6655 TEST117C2:
6656     PO,          LOAD-ENUA(ZTARGET417),          !BIT<02> = D[C] = (1)
6657     LOAD-ERROR(TEST117C2),          !ERROR DIRECTORY KEY
6658     DCS-CTR(C3.),          !COMPARE AT TARGET
6659     NEXT,        J/GOBUT117C2
(4677) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.101]

6660
6661 4065:  !(FREE)
6662 GOBUT117C2:
6663     SETUP,       RETURN/SCOPE117C,          !RETURN TO SCOPE LOOP TEST WORD
6664     NEXT,        GOTO-PAGE(7),          !BUT TABLE
6665     J/BUTD[C]C          !BIT<02> = D[C]H
(4065) DCS[0.00.0.0.0.0] BM[0100..00.00..01.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000]

6666
6667
6668
6669 4066:  !(FREE)
6670 SCOPE117C:
6671     NEXT,        BUTD[SCOPE],          !NO ERROR: "TEST120A1" (+1. WORDS)
6672     J/TEST120A1          !ERROR: "ALU117A1" (-20. WORDS)
(4066) DCS[0.00.0.1.0.0] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.111]

6673
6674
6675 !-----
6676
6677 !THIS NEXT SET OF 7. TESTS EXERCIZES THE ALU FUNCTION
6678 !"A-AND-B", AND THE CARRYOUT OF "CINMUX =(0) INTO D[C]
6679
6680 !-----
6681
6682 !TESTS 120A 1-3 VERIFIES THAT WITH:
6683 !ALU=(A-AND-B), A=(125252), B=(177777), THEN D=(125252)
6684 4667:
6685 TEST120A1:
6686     PO,          LOAD-ENUA(ZTARGET412),          !BIT<15:12> = "1010"
6687     LOAD-ERROR(TEST120A1),          !ERROR DIRECTORY KEY
6688     DCS-CTR(C6.),          !COMPARE AT TARGET
6689     NEXT,        J/ALU120A1
(4667) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.100]

6690
6691 4664:
6692 ALU120A1:
6693     PC          BUMP-VERIFY,          !COUNT
6694     P2-T,       D+A-AND-B, D[C]+ALU15,          !ALU=(A-AND-B), D[C]=(1)
6695     BUS-A+ASPHI(C125252),          !A=(125252)
6696     BUS-B+CSPD(C177777),          !B=(177777)
6697     NEXT,        J/GOBUT120A1          !D=(125252)
(4664) DCS[0.00.0.0.0.1] BM[1011..10.00..11.01..110..100...0.1.0..0..0...0.0101...0..0000.0...11.000...000.110.111]

6698
6699 4067:  !(FREE)
6700 GOBUT120A1:
6701     SETUP,       RETURN/TEST120A2,          !EXEC SUBR WHICH:
6702                                     !(1) D<15:12> -> IR<15:12>

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```

6703      NEXT      CALL(D15-12)      !(2) BUT(IR15-12) INTO ZTARGET---
(4067) DCS(0.00.0.0.0.0) BM(0100..00.11..01.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
6704      !CHECK BIT <11:06> = "1010 10"
6705      4655:
6706      TEST120A2:
6707      PO,      LOAD-ENUA(ZTARGET412),      !INSTR5-E78 OUTPUT FOR BIT <11:06> = "101 010"
6708      LOAD-ERROR(TEST120A2),      !ERROR DIRECTORY KEY
6709      DCS-CTR(C6.),      !COMPARE AT TARGET
6710      BUMP-VERIFY,      !COUNT
6711      NEXT      J/GOBUT120A2
6712      (4655) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.000)
6713      4070:      !(FREE)
6714      GOBUT120A2:
6715      SETUP,      RETURN/TEST120A3,      !EXEC SUBR WHICH:
6716      !          (1) D<11:06> -> IR<11:06>
6717      NEXT      CALL(D11-06)      !(2) BUT(INSTR5) INTO ZTARGET---
6718      (4070) DCS(0.00.0.0.0.0) BM(0100..00.11..01.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
6719
6720
6721      !CHECK BIT<05:00> = "10 1010"
6722      4654:
6723      TEST120A3:
6724      PO,      LOAD-ENUA(ZTARGET425),      !INSTR5-E88 OUTPUT FOR BIT<05:00>="101 010"
6725      LOAD-ERROR(TEST120A3),      !ERROR DIRECTORY KEY
6726      DCS-CTR(C6.),      !COMPARE AT TARGET
6727      NEXT      J/GOBUT120A3
6728      (4654) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.001)
6729
6730      4071:      !(FREE)
6731      GOBUT120A3:
6732      SETUP,      RETURN/TEST120B1,      !EXEC SUBR WHICH:
6733      !          (1) D<05:00> -> IR<05:00>
6734      NEXT      CALL(D05-00)      !(2) BUT(INSTR5) INTO ZTARGET---
6735      (4071) DCS(0.00.0.0.0.0) BM(0100..00.11..01.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)
6736
6737
6738
6739
6740      ! - - - - -
6741
6742      !TESTS 120B 1-4 VERIFIES THAT WITH:
6743      !ALU=(A-AND-B), A=(052525), B=(177777), THEN D=(052525)
6744      4653:
6745      TEST120B1:
6746      PO,      LOAD-ENUA(ZTARGET405),      !BIT<15:12> = "0101"
6747      LOAD-ERROR(TEST120B1),      !ERROR DIRECTORY KEY
6748      DCS-CTR(C6.),      !COMPARE AT TARGET

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6749      NEXT,      J/ALU12081
(4653) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.010)
6750
6751      4072:      !(FREE)
6752      ALU12081:
6753
6754      P2-T,      D+A-AND-B, D(C)+CINMUX,          !ALU=(A-AND-B), D(C)=CIN=(0)
6755      BUS-A+ASPHI(C052525),          !A=(052525)
6756      BUS-B+CSPD(C177777),          !B=(177777)
6757      NEXT,      J/GOBUT12081          !D=(052525)
(4072) DCS(0.00.0.0.0.0) BM(1011..10.00..11.01..111..000...0.1.0..0..0...0.0101...0..0000.0...11.000...000.111.011)
6758
6759      4073:      !(FREE)
6760      GOBUT12081:
6761      SETUP,      RETURN/TEST12082,          !EXEC SUBR WHICH:
6762      NEXT,      CALL(D15-12)          ! (1) D<15:12> -> IR<15:12>
6763      (4073) DCS(0.00.0.0.0.0) BM(0100..00.11..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
6764      !CHECK BIT<11:06> = "0101 01"
6765      4652:
6766      TEST12082:
6767      PO,          LOAD-ENUA(ZTARGET405),          !INSTR5-E78 OUTPUT FOR BIT<11:06>="010 101"
6768      LOAD-ERROR(TEST12082),          !ERROR DIRECTORY KEY
6769      DCS-CTR(C6.),          !COMPARE AT TARGET
6770      BUMP-VERIFY,          !COUNT
6771      NEXT,      J/GOBUT12082
(4652) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.100)
6773
6774      4074:      !(FREE)
6775      GOBUT12082:
6776      SETUP,      RETURN/TEST12083,          !EXEC SUBR WHICH:
6777      NEXT,      CALL(D11-06)          ! (1) D<11:06> -> IR<11:06>
6778      (4074) DCS(0.00.0.0.0.0) BM(0100..00.11..01.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
6779
6780
6781      !CHECK BIT<05:00> = "01 0101"
6782      4651:
6783      TEST12083:
6784
6785      PO,          LOAD-ENUA(ZTARGET432),          !INSTR5-E88 OUTPUT FOR BIT <05:00>="010 101"
6786      LOAD-ERROR(TEST12083),          !ERROR DIRECTORY KEY
6787      DCS-CTR(C6.),          !COMPARE AT TARGET
6788      NEXT,      J/GOBUT12083
(4651) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.101)
6790
6791      4075:      !(FREE)
6792      GOBUT12083:
6793      SETUP,      RETURN/TEST12084,          !EXEC SUBR WHICH:
6794      ! (1) D<05:00> -> IR<05:00>

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```

6795      NEXT, CALL(D05-00)                                !(2) BUT(INSTRS) INTO ZTARGET---
(4075) DCS(0.00.0.0.0.0) BM(0100..00.11..01.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)
6796
6797      !CHECK THAT D(C) GOT A (0) FROM "CINMUX" = (0)
6798      4650:
6799      TEST12084:
6800          PO,      LOAD-ENUA(ZTARGET402),                !BIT<00> = D(C) = (0)
6801          LOAD-ERROR(TEST12084),                        !ERROR DIRECTORY KEY
6802          DCS-CTR(C3.),                                  !COMPARE AT TARGET
6803          BUMP-VERIFY,                                   !COUNT
6804          NEXT,    J/GOBUT12084
(4650) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.110)
6805
6806      4076: !(FREE)
6807      GOBUT12084:
6808          SETUP, RETURN/SCOPE1208,                       !RETURN TO SCOPE LOOP TEST WORD
6809          NEXT,  GOTO-PAGE(7),                            !BUT TABLE
6810          J/BUTD(C)A,                                     !D(C)H IN BIT <00>
(4076) DCS(0.00.0.0.0.0) BM(0100..00.00..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)
6811
6812      4077: !(FREE)
6813      SCOPE1208:
6814          NEXT, BUTD(SCOPE),                               !NO ERROR: "TEST121A1" (+1. WORDS)
6815          J/TEST121A1,                                     !ERROR: "ALU120A1" (-15. WORDS)
(4077) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.101)
6816
6817
6818
6819
6820
6821      ! -----
6822
6823      !THIS NEXT SET OF 16. TESTS EXERCIZES THE ALU FUNCTION
6824      !"A-XOR-B", AND THE CARRYOUT FUNCTIONS OF "ALU00" AND "ALU07" INTO D(C)
6825
6826      ! -----
6827
6828
6829      !TESTS 121A 1-4 VERIFIES THAT WITH:
6830      !ALU=(A-XOR-B), A=(000000), B=(052525), THEN D=(052525)
6831      4665:
6832      TEST121A1:
6833          PO,      LOAD-ENUA(ZTARGET405),                !BIT<15:12> = "0101"
6834          LOAD-ERROR(TEST121A1),                        !ERROR DIRECTORY KEY
6835          DCS-CTR(C6.),                                  !COMPARE AT TARGET
6836          NEXT,    J/ALU121A1
(4665) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.110)
6837
6838      4706:
6839      ALU121A1:
6840          PO,      BUMP-VERIFY,                            !COUNT
6841          P2-T,    D+A-XOR-B, D(C)+ALU00,                !ALU=(A-XOR-B), D(C)=ALU00=(1)

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```

6842          BUS-A+ASPHI(C000000),          !A=(000000)
6843          BUS-B+CSPD(C052525),          !B=(052525)
6844          NEXT, J/GOBUT121A1           !D=(052525)
(4706) DCS(0.00.0.0.0.1) BM(0110..10.00..11.01..100..010...0.1.0..0...0.0111...0..0000.0...11.000...001.000.0111)

6845          4103: !(FREE)
6846          GOBUT121A1:
6847          SETUP, RETURN/TEST121A2,          !EXEC SUBR WHICH:
6848          !EXEC SUBR WHICH:
6849          ! (1) D<15:12> -> IR<15:12>
6850          NEXT, CALL(D15-12)           ! (2) BUT(IR15-12) INTO ZTARGET---
(4103) DCS(0.00.0.0.0.0) BM(0100..00.11..01.11..110..111...0.0.0..0...0.0000...0..0000.0...11.100...010.011.1001)

6851          !CHECK BIT<11:06> = "0101 01"
6852          4676:
6853          TEST121A2:
6854          PO,          LOAD-ENUA(ZTARGET405),          !INSTR5-E78 OUTPUT FOR BIT<11:06>="010 101"
6855          LOAD-ERROR(TEST121A2),          !ERROR DIRECTORY KEY
6856          DCS-CTR(C6.),          !COMPARE AT TARGET
6857          BUMP-VERIFY,          !COUNT
6858          NEXT, J/GOBUT121A2
6859          (4676) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..000..101...0.0.0..0...0.0000...0..0000.0...11.000...001.000.1001)

6860          4104: !(FREE)
6861          GOBUT121A2:
6862          SETUP, RETURN/TEST121A3,          !EXEC SUBR WHICH:
6863          !EXEC SUBR WHICH:
6864          ! (1) D<11:06> -> IR<11:06>
6865          NEXT, CALL(D11-06)           ! (2) BUT(INSTR5) INTO ZTARGET---
(4104) DCS(0.00.0.0.0.0) BM(0100..00.11..01.11..101..111...0.0.0..0...0.0000...0..0000.0...11.100...010.011.1101)

6866          !CHECK BIT<05:00> = "01 0101"
6867          4675:
6868          TEST121A3:
6869          PO,          LOAD-ENUA(ZTARGET432),          !INSTR5-E88 OUTPUT FOR BIT<05:00>="010 101"
6870          LOAD-ERROR(TEST121A3),          !ERROR DIRECTORY KEY
6871          DCS-CTR(C6.),          !COMPARE AT TARGET
6872          NEXT, J/GOBUT121A3
6873          (4675) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..011..010...0.0.0..0...0.0000...0..0000.0...11.000...001.000.1011)

6876          4105: !(FREE)
6877          GOBUT121A3:
6878          SETUP, RETURN/TEST121A4,          !EXEC SUBR WHICH:
6879          !EXEC SUBR WHICH:
6880          ! (1) D<05:00> -> IR<05:00>
6881          NEXT, CALL(D05-00)           ! (2) BUT(INSTR5) INTO ZTARGET---
(4105) DCS(0.00.0.0.0.0) BM(0100..00.11..01.11..100..111...0.0.0..0...0.0000...0..0000.0...11.100...010.100.0001)

6882          !CHECK THAT D(C) GOT A (1) FROM "ALU00"
6883          4674:
6884          TEST121A4:
6885          PO,          LOAD-ENUA(ZTARGET403),          !BIT<01> = D(C) = (1)
6886

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```

6887 LOAD-ERROR(TEST121A4), !ERROR DIRECTORY KEY
6888 DCS-CTR(C3.), !COMPARE AT TARGET
6889 BUMP-VERIFY, !COUNT
6890 NEXT, J/GOBUT121A4
(4674) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.000.110)

6891 4106: !(FREE)
6892 GOBUT121A4:
6893 SETUP, RETURN/TEST121B1, !RETURN TO START OF NEXT SUBTEST
6894 NEXT, GOTO-PAGE(7), !BUT TABLE
6895 J/BUTD(C1B) !D(C)H IN BIT<01>
6896 (4106) DCS(0.00.0.0.0.0) BM(0100..00.11..01.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)

6897
6898
6899
6900
6901 ! - - - - -
6902
6903 !TESTS 121B 1-4 VERIFIES THAT WITH:
6904 !ALU=(A-XOR-B), A=(177777), B=(052525), THEN D=(125252)
6905 4663:
6906 TEST121B1:
6907 PO, LOAD-ENUA(ZTARGET412), !BIT<15:12> = "1010"
6908 LOAD-ERROR(TEST121B1), !ERROR DIRECTORY KEY
6909 DCS-CTR(C6.), !COMPARE AT TARGET
6910 NEXT, J/ALU121B1
(4663) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.000.111)

6911 4107: !(FREE)
6912 ALU121B1:
6913 PO, BUMP-VERIFY, !COUNT
6914 P2-T, D+A-XOR-B, D(C)+ALU00, !ALU=(A-XOR-B), D(C)=ALU00=(0)
6915 BUS-A+ASPHI(C177777), !A=(177777)
6916 BUS-B+CSPO(C052525), !B=(052525)
6917 NEXT, J/GOBUT121B1 !D=(125252)
6918 (4107) DCS(0.00.0.0.0.1) BM(0110..10.00..11.01..101..010...0.1.0..0..0...0.0111...0..0000.0...11.000...001.001.000)

6919 4110: !(FREE)
6920 GOBUT121B1:
6921 SETUP, RETURN/TEST121B2, !EXEC SUBR WHICH:
6922 NEXT, CALL(C15-12) !(1) D<15:12> -> IR<15:12>
6923 !(2) BUT(IR15-12) INTO ZTARGET---
6924 (4110) DCS(0.00.0.0.0.0) BM(0100..00.11..01.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)

6925 !CHECK BIT<11:06> = "1010 10"
6926 4662:
6927 TEST121B2:
6928 PO, LOAD-ENUA(ZTARGET412), !INSTR5-E78 OUTPUT FOR BIT<11:06>="101 010"
6929 LOAD-ERROR(TEST121B2), !ERROR DIRECTORY KEY
6930 DCS-CTR(C6.), !COMPARE AT TARGET
6931 BUMP-VERIFY, !COUNT
6932 NEXT, J/GOBUT121B2
6933

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(4662) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.001)
6934
6935 4111: !(FREE)
6936 GOBUT12182:
6937     SETUP, RETURN/TEST12183,           !EXEC SUBR WHICH:
6938     NEXT,   CALL(D11-06)                ! (1) D<11:06> -> IR<11:06>
6939     ! (2) BUT(INSTRS) INTO ZTARGET---
(4111) DCS(0.00.0.0.0.0) BM(0100..00.11..01.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
6940
6941
6942 !CHECK BIT<05:00> = "10 1010"
6943 4661:
6944 TEST12183:
6945
6946     PD,   LOAD-ENUA(ZTARGET425),         !INSTRS-EBB OUTPUT FOR BIT<05:00>="101 010"
6947     LOAD-ERROR(TEST12183),              !ERROR DIRECTORY KEY
6948     DCS-CTR(C6.),                        !COMPARE AT TARGET
6949     NEXT, J/GOBUT12183
6950 (4661) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.010)
6951
6952 4112: !(FREE)
6953 GOBUT12183:
6954     SETUP, RETURN/TEST12184,           !EXEC SUBR WHICH:
6955     NEXT,   CALL(D05-00)                ! (1) D<05:00> -> IR<05:00>
6956     ! (2) BUT(INSTRS) INTO ZTARGET---
(4112) DCS(0.00.0.0.0.0) BM(0100..00.11..01.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)
6957
6958 !CHECK THAT D[C] GOT A (0) FROM "ALU00"
6959 4660:
6960 TEST12184:
6961     PD,   LOAD-ENUA(ZTARGET401),         !BIT<01> = D[C] = (0)
6962     LOAD-ERROR(TEST12184),              !ERROR DIRECTORY KEY
6963     DCS-CTR(C3.),                        !COMPARE AT TARGET
6964     BUMP-VERIFY,                          !COUNT
6965     NEXT, J/GOBUT12184
(4660) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.011)
6966
6967 4113: !(FREE)
6968 GOBUT12184:
6969     SETUP, RETURN/SCOPE121C.            !RETURN TO SCOPE LOOP TEST WORD
6970     NEXT,   GOTO-PAGE(7),                !BUT TABLE
6971     J/BUTD[C]B                            !D[C]H IN BIT<01>
(4113) DCS(0.00.0.0.0.0) BM(0100..00.00..10.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)
6972
6973
6974 4114: !(FREE)
6975 SCOPE121C:
6976     NEXT, BUTD[SCOPE],                    !NO ERROR: "TEST121C1" (+1. WORDS)
6977     J/TEST121C1                            ! ERROR: "ALU121A1" (-17. WORDS)
6978

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(4114) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.111)

6979
6980
6981
6982
6983
6984
6985
6986
6987
6988
6989
6990
6991

! TESTS 121C 1-4 VERIFIES THAT WITH:
! ALU=(A-XOR-B), A=(000000), B=(125252), THEN D=(125252)

4707:

TEST121C1:

PO, LOAD-ENVA(ZTARGET412),
LOAD-ERROR(TEST121C1),
DCS-CTR(C6.),
NEXT, J/ALU121C1

! BIT<15:12> = "1010"
! ERROR DIRECTORY KEY
! COMPARE AT TARGET

(4707) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.000)

6992
6993
6994
6995
6996
6997
6998
6999

4670:

ALU121C1:

PO, BUMP-VERIFY,
P2-T, D+A-XOR-B, D(C)+ALU07,
BUS-A+ASPHI(C000000),
BUS-B+CSPD(C125252),
NEXT, J/GOBUT121C1

! COUNT
! ALU=(A-XOR-B), D(C)=ALU07=(1)
! A=(000000)
! B=(125252)
! D=(125252)

(4670) DCS(0.00.0.0.0.0) BM(0110..10.00..11.01..100..011...0.1.0..0..0...0.0110...0..0000.0...11.000...001.001.101)

7000
7001
7002
7003
7004
7005

4115: !(FREE)

GOBUT121C1:

SETUP, RETURN/TEST121C2,

NEXT, CALL(D15-12)

! EXEC SUBR WHICH:
! (1) D<15:12> -> IR<15:12>
! (2) BUT(IR15-12) INTO ZTARGET---

(4115) DCS(0.00.0.0.0.0) BM(0100..00.11..00.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)

7006
7007
7008
7009
7010
7011
7012
7013
7014

! CHECK BIT<11:06> = "1010 10"

4605:

TEST121C2:

PO, LOAD-ENVA(ZTARGET412),
LOAD-ERROR(TEST121C2),
DCS-CTR(C6.),
BUMP-VERIFY,
NEXT, J/GOBUT121C2

! INSTR5-E78 OUTPUT FOR BIT<11:06>="101 010"
! ERROR DIRECTORY KEY
! COMPARE AT TARGET
! COUNT

(4605) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.110)

7015
7016
7017
7018
7019
7020

4116: !(FREE)

GOBUT121C2:

SETUP, RETURN/TEST121C3,

NEXT, CALL(D11-06)

! EXEC SUBR WHICH:
! (1) D<11:06> -> IR<11:06>
! (2) BUT(INSTR5) INTO ZTARGET---

(4116) DCS(0.00.0.0.0.0) BM(0100..00.11..10.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)

7021
7022
7023
7024

! CHECK BIT<05:00> = "10 1010"

4717:

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7025 TEST121C3:
7026
7027     PO,      LOAD-ENVA(ZTARGET425),      !INSTRS-ERR OUTPUT FOR BIT<05:00>="101 010"
7028     LOAD-ERROR(TEST121C3),              !ERROR DIRECTORY KEY
7029     DCS-CTR(C6.),                        !COMPARE AT TARGET
7030     NEXT,    J/GOBUT121C3
(4717) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.111]

7031
7032     4117:    !(FREE)
7033     GOBUT121C3:
7034     SETUP,  RETURN/TEST121C4,           !EXEC SUBR WHICH:
7035     NEXT,    CALL(D05-00)                ! (1) D<05:00> -> 9<05:00>
7036     (4117) DCS[0.00.0.0.0.0] BM[0100..00.11..10.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000]
                                           ! (2) BUT(INSTRS) INTO ZTARGET---

7037
7038     !CHECK THAT D[C] GOT A (1) FROM "ALU07"
7039     4716:
7040     TEST121C4:
7041     PO,      LOAD-ENVA(ZTARGET417),      !BIT<02> = D[C] = (1)
7042     LOAD-ERROR(TEST121C4),              !ERROR DIRECTORY KEY
7043     DCS-CTR(C3.),                        !COMPARE AT TARGET
7044     BUMP-VERIFY,                          !COUNT
7045     NEXT,    J/GOBUT121C4
(4716) DCS[1.00.1.0.0.1] BM[1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.000]

7046
7047     4120:    !(FREE)
7048     GOBUT121C4:
7049     SETUP,  RETURN/TEST121D1,           !RETURN TO START OF NEXT SUBTEST
7050     NEXT,    GOTO-PAGE(7),              !BUT TABLE
7051     (4120) DCS[0.00.0.0.0.0] BM[0100..00.11..10.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000]
                                           !D[C]H IN BIT<02>

7052
7053
7054
7055
7056     ! - - - - -
7057
7058     !TESTS 121D 1-4 VERIFIES THAT WITH:
7059     !ALU=(A-XOR-B), A=(177777), B=(125252), THEN D=(052525)
7060     4727:
7061     TEST121D1:
7062     PO,      LOAD-ENVA(ZTARGET405),      !BIT<15:12> = "0101"
7063     LOAD-ERROR(TEST121D1),              !ERROR DIRECTORY KEY
7064     DCS-CTR(C6.),                        !COMPARE AT TARGET
7065     NEXT,    J/ALU121D1
(4727) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.001]

7066
7067     4121:    !(FREE)
7068     ALU121D1:
7069     PO,      BUMP-VERIFY,                !COUNT
7070     P2-T,    D+A-XOR-B, D[C]+ALU07,      !ALU=(A-XOR-B), D[C]=ALU07=(0)
7071     BUS-A+ASPHI(C177777),              !A=(177777)

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7072          BUS-B+CSPD(C125252),          !B=(125252)
7073          NEXT J/GOBUT121D1             !D=(052525)
(4121) DCS(0.00.0.0.0.1) BM(0110..10.00..11.01..101..011...0.1.0..0..0...0.0110...0..0000.0...11.000...001.010.010)

7074          4122: !(FREE)
7075          GOBUT121D1:
7076          SETUP, RETURN/TEST121D2,
7077          NEXT CALL(D15-12)
7078          (4122) DCS(0.00.0.0.0.0) BM(0100..00.11..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.100)
7079          !CHECK BIT<11:06> = "0101 01"
7080          4726:
7081          TEST121D2:
7082          PO, LOAD-ENUA(ZTARGET405),          !INSTRS-E78 OUTPUT FOR BIT<11:06>="010 101"
7083          LOAD-ERROR(TEST121D2),          !ERROR DIRECTORY KEY
7084          DCS-CTR(C6.),                   !COMPARE AT TARGET
7085          BUMP-VERIFY,                    !COUNT
7086          NEXT J/GOBUT121D2
7087          (4726) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.011)
7088          4123: !(FREE)
7089          GOBUT121D2:
7090          SETUP, RETURN/TEST121D3,
7091          NEXT CALL(D11-06)
7092          (4123) DCS(0.00.0.0.0.0) BM(0100..00.11..10.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.110)
7093          !CHECK BIT<05:00> = "01 0101"
7094          4737:
7095          TEST121D3:
7096          PO, LOAD-ENUA(ZTARGET432),          !INSTRS-E88 OUTPUT FOR BIT<05:00>="010 101"
7097          LOAD-ERROR(TEST121D3),          !ERROR DIRECTORY KEY
7098          DCS-CTR(C6.),                   !COMPARE AT TARGET
7099          NEXT J/GOBUT121D3
7100          (4737) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.100)
7101          4124: !(FREE)
7102          GOBUT121D3:
7103          SETUP, RETURN/TEST121D4,
7104          NEXT CALL(D05-00)
7105          (4124) DCS(0.00.0.0.0.0) BM(0100..00.11..10.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.000)
7106          !CHECK THAT D(C) GOT A (0) FROM "ALU07"
7107          4736:
7108          TEST121D4:
7109          PO, LOAD-ENUA(ZTARGET413),          !BIT<02> = D(C) = (0)
7110          7111
7111          7112
7112          7113
7113          7114
7114          7115
7115          7116

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7117          LOAD-ERROR(TEST121D4),          !ERROR DIRECTORY KEY
7118          DCS-CTR(C3.),                    !COMPARE AT TARGET
7119          BUMP-VERIFY,                       !COUNT
7120          NEXT, J/GOBUT121D4
(4736) DCS[1.00.1.0.0.1] BM[1100..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.101]

7121          4125: !(FREE)
7122          GOBUT121D4:
7123          SETUP, RETURN/SCOPE121D,          !RETURN TO SCOPE LOOP TEST WORD
7124          NEXT, GOTO-PAGE(7),              !BUT TABLE
7125          J/BUTD[C]C,                       !D[C] IN BIT(02)
7126          (4125) DCS[0.00.0.0.0.0] BM[0100..00.00..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000]

7127          4126: !(FREE)
7128          SCOPE121D:
7129          PO, BUMP-VERIFY,                  !COUNT
7130          NEXT, BUTD[SCOPE],                !NO ERROR: "TEST122A1" (+1. WORDS)
7131          J/TEST122A1,                      ! ERROR: "ALU121C1" (-17. WORDS)
7132          (4126) DCS[0.00.0.1.0.1] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.001]

7133
7134
7135
7136
7137
7138
7139
7140
7141          ! -----
7142
7143          !THIS NEXT SET OF B. TESTS CHECK THE ALU FUNCTIONS "A"
7144          !AND "A-IOR-B" THE FUNCTION D[C]=CINMUX=(1) AND ALSO
7145          !THE BUT(D<14:00>=ZERO#D<15>) BUT FOR D=(0)(00000) AND
7146          !D=(1)(25252)
7147          4671:
7148          TEST122A1:
7149          PO, LOAD-ENVA(ZTARGET434),        !INSTRS FOR IR=(000000)
7150          LOAD-ERROR(TEST122A1),            !ERROR DIRECTORY KEY
7151          DCS-CTR(C6.),                      !COMPARE AT TARGET
7152          NEXT, J/ALU122A1
(4671) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.010]

7153          4672:
7154          ALU122A1:
7155          PO, BUMP-VERIFY,                  !COUNT
7156          P2-T, D+A-IOR-B, D[C]+CINMUX,     !ALU=(A-IOR-B), D[C]=CINMUX=(1)
7157          BUS-A+ASPHI(C000000),            !A=(000000)
7158          BUS-B+BSPHI(C000000),            !B=(000000)
7159          NEXT, J/GOBUT122A1,              !D=(000000)
7160          (4672) DCS[0.00.0.0.0.1] BM[1110..01.11..11.01..100..000...0.1.0..0..0...0.0000...0..0000.0...11.000...001.010.111]

7161          4127: !(FREE)
7162          GOBUT122A1:
7163          SETUP, RETURN/TEST122A2,          !EXEC SUBR WHICH:
7164

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7165                                     !(1) D -> IR
7166      NEXT      CALL(DZERO)          !(2) BUT(INSTR5) INTO ZTARGET---
(4127) DCS(0.00.0.0.0.0) BM(0100..00.10..11.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.010)

7167
7168
7169
7170      !CHECK THAT D(C) GOT A (1) FROM CINMUX=(1)
7171      4570:
7172      TEST122A2:
7173          PO,          LOAD-ENUA(ZTARGET403),          !BIT<00> = D(C) = (1)
7174          LOAD-ERROR(TEST122A2),          !ERROR DIRECTORY KEY
7175          DCS-CTR(C3.),          !COMPARE AT TARGET
7176      NEXT      J/GOBUT122A2

(4570) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.000)

7177
7178      4130: !(FREE)
7179      GOBUT122A2:
7180          SETUP, RETURN/TEST122A3,          !RETURN TO START OF NEXT SUBTEST
7181          NEXT,  GOTO-PAGE(7),          !BUT TABLE
7182          J/BUTD(C)A          !D(C)H IN BIT <00>
(4130) DCS(0.00.0.0.0.0) BM(0100..00.11..10.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)

7183
7184
7185
7186      !CHECK THAT D<15>=0, [D<14:00>=ZERO]=1 WHEN D=(000000)
7187      4734:
7188      TEST122A3:
7189          PO,          LOAD-ENUA(ZTARGET402),          !SETUP FOR D<15:00>=ZERO
7190          LOAD-ERROR(TEST122A3),          !ERROR DIRECTORY KEY
7191          DCS-CTR(C3.),          !COMPARE AT TARGET
7192      NEXT      J/GOBUT122A3

(4734) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.001)

7193
7194      4131: !(FREE)
7195      GOBUT122A3:
7196          SETUP, RETURN/TEST122A4,          !RETURN TO START OF NEXT SUBTEST
7197          NEXT,  GOTO-PAGE(7),          !BUT TABLE
7198          J/BUTD-IS-ZERO          !BIT<1:0> = D<15># D<14:00>=ZERO
(4131) DCS(0.00.0.0.0.0) BM(0100..00.11..10.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

7199
7200      !CHECK THAT D<15>=(1), [D<14:00>=ZERO]=(0) WHEN D=(125252)
7201      4735:
7202      TEST122A4:
7203          PO,          LOAD-ENUA(ZTARGET401),          !SETUP FOR D<15:00>=(125252)
7204          LOAD-ERROR(TEST122A4),          !ERROR DIRECTORY KEY
7205          DCS-CTR(C4.),          !COMPARE AT TARGET
7206          BUMP-VERIFY,          !COUNT
7207      NEXT      J/SETD122A4

(4735) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.010)

7208
7209      4132: !(FREE)

```



```

7210 SETD122A4:
7211     P2-T,    D+CSP0(C125252), D(C)+0,      !SETUP D FOR TEST
7212     NEXT,    J/GOBUT122A4
(4132) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0110...0..0000.0...11.000...001.011.011)

7213
7214 4133: !(FREE)
7215 GOBUT122A4:
7216     SETUP,   RETURN/SCOPE122A,             !RETURN TO SCOPE LOOP TEST WORD
7217     NEXT,    GOTO-PAGE(7),                 !BUT TABLE
7218     J/BUTD-IS-ZERO                          !BIT<1:0> = D15*(D<14:00>=ZERO)
(4133) DCS(0.00.0.0.0.0) BM(0100..00.00..10.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

7219
7220
7221
7222 4134: !(FREE)
7223 SCOPE122A:
7224     PO,      BUSDIN+EMIT-[1],              !RESET PROC UCON
7225     EN-CLK-IR[15-00],
7226     NEXT,    BUTD[SCOPE],                  !NO ERROR: "TEST130A1" (+1. WORDS)
7227     J/TEST130A1                             !ERROR: "ALU122A1" (-8. WORDS)
(4134) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.111.011)

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7228
7229
7230
7231
7232
7233 !.PAGE=====
7234
7235

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```

7236 .TOC * TEST130-136: ALU ARITHMETIC FUNCTION/CARRY LOOKAHEAD TESTS
7237

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```

7238 !*****
7239 !*
7240 !* TESTS: 130 - 136                                UWORDS: 127 + 160
7241 !*
7242 !* FUNCTIONS:
7243 !*
7244 !* ALU ARITHMETIC FUNCTION DECODE, INTERNAL CARRIES, CARRYOUTS, CARRY LOOKAHEAD.
7245 !*
7246 !*****

```

```

7247
7248 !
7249 ! SUMMARY OF ALU ARITHMETIC / CARRY LOOKAHEAD TESTS:
7250 !
7251 ! TEST          OPERANDS EMPLOYED:          ALU FUNCTION
7252 ! NUMB         (A/B)+(B/A)+(CIN)=(COUT)(D)  -----
7253 ! -----
7254 !
7255 ! 130A         (0101)+(0101)+(0)=(0)(1010)    A-PLUS-B-PLUS-0
7256 ! 130B         (1010)+(1010)+(1)=(1)(0101)    A-PLUS-B-PLUS-1
7257 !
7258 ! 131A         (1010)+(0101)+(0)=(0)(1111)    A-PLUS-B-PLUS-PS(C)
7259 ! 131B         (0101)+(1010)+(0)=(0)(1111)    DIVIDE/D(C)=0/A-PLUS-B-PLUS-0

```

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7260 :
7261 : 132A (1010)-(1010)-(0)=(1)(0000) A-MINUS-B-MINUS-0
7262 : 132B (0101)-(0101)-(0)=(1)(0000) DIVIDE/D(C)=1/A-MINUS-B-MINUS-0
7263 :
7264 : 133A (1000)+(1000)+(0)=(1)(0000) A-PLUS-B-PLUS-D(C)
7265 : 133B (0111)+(0111)+(1)=(0)(1111) A-PLUS-NOT-B-PLUS-D(C)
7266 :
7267 : 134A (0100)+(1100)+(0)=(1)(0000) A-PLUS-B-PLUS-D(C)
7268 : 134B (1011)+(0011)+(1)=(0)(1111) A-PLUS-NOT-B-PLUS-D(C)
7269 :
7270 : 135A (1010)+(0110)+(0)=(1)(0000) A-PLUS-B-PLUS-D(C)
7271 : 135B (0101)+(1001)+(1)=(0)(1111) A-PLUS-NOT-B-PLUS-D(C)
7272 :
7273 : 136A (0101)+(1011)+(0)=(1)(0000) A-PLUS-B-PLUS-D(C)
7274 : 136B (1010)+(0100)+(1)=(0)(1111) A-PLUS-NOT-B-PLUS-D(C)
7275 :
7276 :
7277 :
7278 :
7279 : !CHECK INTERNAL ALU CARRIES WITH: (052525)+(052525)+(0)=(125252)
7280 : !ALSO CHECK ALU FUNCTION "A-PLUS-B-PLUS-0", D(C)+COUT15=(0)
7281 :
7282 : 4673:
7283 : TEST130A1:
7284 : PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/BUTINSTRS TEST
7285 : LOAD-ERROR(TEST130A1), !ERROR DIRECTORY KEY
7286 : DCS-CTR(CB.), !COMPARE AT TARGET
7287 : NEXT, J/ARITH130A1
(4673) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.000)

7288 :
7289 : 4540:
7290 : ARITH130A1:
7291 : P2-T, D+A-PLUS-B-PLUS-0, !ALU=(A-PLUS-B), CIN=(0)
7292 : D(C)+COUT15 !GET CARRYOUT
7293 : BUS-A+ASPHI(C052525), !A=(052525)
7294 : BUS-B+BSPHI(C052525), !B=(052525)
7295 : SR+A-PLUS-B-PLUS-0, !D=(125252), COUT15=(0)
7296 : NEXT, J/COMP130A1
(4540) DCS(0.00.0.0.0.0) BM(1001..01.11..11.01..111..110...0.1.1..0..0...0.0000...0..0000.0...11.000...001.011.101)

7297 :
7298 : 4135: !(FREE)
7299 : COMP130A1:
7300 : PO, BUMP-VERIFY !COUNT
7301 : P2-T, D+SR-XOR-CSPD(C125252), !COMPARE RECEIVED: EXPECTED
7302 : SAVE-D(C) !SAVE CARRY
7303 : NEXT, J/GOBUT130A1
(4135) DCS(0.00.0.0.0.1) BM(0110..10.00..00.00..000..111...0.1.0..0..0...0.0110...0..0000.0...11.000...001.011.110)

7304 :
7305 : 4136: !(FREE)
7306 : GOBUT130A1:
7307 : SETUP, RETURN/TEST130A2, !RETURN TO START OF NEXT SUBTEST
7308 : NEXT, CALL(DINTOIR-5) !GO PUT D -> IR, BUT(INSTR5)
(4136) DCS(0.00.0.0.0.0) BM(0100..00.10..11.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

```

```

7309
7310
7311
7312 !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7313 4550:
7314 TEST130A2:
7315     PO,          LOAD-ENUA(ZTARGET402),      !BIT<00> CLEAR
7316                 LOAD-ERROR(TEST130A2),      !ERROR DIRECTORY KEY
7317                 DCS-CTR(C3.),                !COMPARE AT TARGET
7318     NEXT,        J/GOBUT130A2
(4550) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.111]

7319
7320 4137: !(FREE)
7321 GOBUT130A2:
7322     SETUP,       RETURN/TEST130B1,            !RETURN TO START OF NEXT SUBTEST
7323     NEXT,        GOTO-PAGE(7),                !BUT TABLE
7324                 J/BUTD[C]A                    !D[C]H= COUT15 H IN BIT<00>
(4137) DCS[0.00.0.0.0.0] BM[0100..00.10..10.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100]

7325
7326
7327
7328 ! - - - - -
7329
7330 !CHECK INTERNAL ALU CARRIES WITH: (125252)+(125252)+(1)=(052525)
7331 !ALSO CHECK ALU FUNCTION "A-PLUS-B-PLUS-1", D[C]+COUT15=(1)
7332
7333 4530:
7334 TEST130B1:
7335     PO,          LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/BUTINSTRS TEST
7336                 LOAD-ERROR(TEST130B1),      !ERROR DIRECTORY KEY
7337                 DCS-CTR(C8.),                !COMPARE AT TARGET
7338     NEXT,        J/ARITH130B1
(4530) DCS[1.00.1.0.0.0] BM[0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.000]

7339
7340 4140: !(FREE)
7341 ARITH130B1:
7342     P2-T,        D+A-PLUS-B-PLUS-1,          !ALU=(A-PLUS-B), CIN=(1)
7343                 D[C]+COUT15,                 !GET CARRYOUT
7344                 BUS-A+ASPHI(C125252),        !A=(125252)
7345                 BUS-B+BSPHI(C125252),        !B=(125252)
7346                 SR+A-PLUS-B-PLUS-1,          !D=(052525), COUT15=(1)
7347     NEXT,        J/COMP130B1
(4140) DCS[0.00.0.0.0.0] BM[1100..01.11..11.01..110..110...0.1.1..0..0...0.0000...0..0000.0...11.000...001.100.001]

7348
7349 4141: !(FREE)
7350 COMP130B1:
7351     PO,          BUMP-VERIFY,                 !COUNT
7352     P2-T,        D+SR-XOR-CSPD(C052525),      !COMPARE RECEIVED: EXPECTED
7353                 SAVE-D[C],                    !SAVE CARRY
7354     NEXT,        J/GOBUT130B1
(4141) DCS[0.00.0.0.0.1] BM[0110..10.00..00.00..000..111...0.1.0..0..0...0.0111...0..0000.0...11.000...001.100.010]

7355
7356 4142: !(FREE)

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```

7357 GOBUT13081:
7358     SETUP, RETURN/TEST13082,      !RETURN TO START OF NEXT SUBTEST
7359     NEXT,  CALL(DINTOIR-5)        !GO PUT 0 -> IR, BUT(INSTR5)
(4142) DCS(0.00.0.0.0.0) BM(0100..00.10..10.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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```

7360
7361
7362
7363 !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7364 4532:
7365 TEST13082:
7366     PO,      LOAD-ENUA(ZTARGET403),      !BIT<00> SET
7367     LOAD-ERROR(TEST13082),              !ERROR DIRECTORY KEY
7368     DCS-CTR(C3.),                       !COMPARE AT TARGET
7369     NEXT,   J/GOBUT13082
(4532) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.011)

```

```

7370
7371 4143: !(FREE)
7372 GOBUT13082:
7373     SETUP, RETURN/SCOPE1308,          !RETURN TO SCOPE LOOP TEST WORD
7374     NEXT,  GOTO-PAGE(7),              !BUT TABLE
7375     J/BUTD(C)A                        !D(C)H= COUT15 H IN BIT<00>
(4143) DCS(0.00.0.0.0.0) BM(0100..00.00..11.00..100..111...0.0.0..0..0...0.0000...0 .0000.0...11.100...011.100.100)

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```

7376
7377
7378
7379 4144: !(FREE)
7380 SCOPE1308:
7381     NEXT,  BUTD(SCOPE),                !NO ERROR: "TEST131A1" (+1.WORDS)
7382     J/TEST131A1                       !ERROR: "ARITH130A1" (-11.WORDS)
(4144) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.001)

```

```

7383
7384
7385 ! - - - - -
7386
7387
7388 !CHECK INTERNAL ALU CARRIES WITH: (125252)+(052525)+(0)=(177777)
7389 !ALSO CHECK ALU FUNCTION "A-PLUS-B-PLUS-PS(C)", D(C)+COUT15=(0)
7390 !CIN=PS(C)=(0) FROM INITIALIZATION ROUTINE

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```

7391 4541:
7392 TEST131A1:
7393     PO,      LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/BUTINSTR5 TEST
7394     LOAD-ERROR(TEST131A1),              !ERROR DIRECTORY KEY
7395     DCS-CTR(C8.),                       !COMPARE AT TARGET
7396     NEXT,   J/ARITH131A1
(4541) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.010.000)

```

```

7397
7398 4520:
7399 ARITH131A1:
7400     P2-T,   D+A-PLUS-B-PLUS-PS(C),      !ALU=(A-PLUS-B), CIN=PS(C)=(0)
7401     D(C)+COUT15,                        !GET CARRYOUT
7402     BUS-A+ASPHI(C125252),               !A=(125252)
7403     BUS-B+CSPD(C052525),                !B=(052525)

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```

7404          SR+A-PLUS-B-PLUS-PS(C),          !D=(177777), COUT15=(0)
7405      NEXT J/COMP131A1
(4520) DCS(0.00.0.0.0.0) BM(0001..10.00..11.01..110..110...0.1.1..0..0...0.0111...0..0000.0...11.000...001.100.101)

7406      4145: !(FREE)
7407      COMP131A1:
7409          PD,          BUMP-VERIFY,          !COUNT
7410          P2-T,        D+SR-XOR-CSPD(C177777), !COMPARE RECEIVED: EXPECTED
7411          SAVE-D(C)    !SAVE CARRY
7412      NEXT J/GOBUT131A1
(4145) DCS(0.00.0.0.0.1) BM(0110..10.00..00.00..000..111...0.1.0..0..0...0.0101...0..0000.0...11.000...001.100.110)

7413      4146: !(FREE)
7414      GOBUT131A1:
7416          SETUP,      RETURN/TEST131A2,      !RETURN TO START OF NEXT SUBTEST
7417          NEXT,        CALL(DINTOIR-5)        !GO PUT D -> IR, BUT(INSTR5)
(4146) DCS(0.00.0.0.0.0) BM(0100..00.10..11.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

7418
7419
7420
7421      !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7422      4544:
7423      TEST131A2:
7424          PD,          LOAD-ENUA(ZTARGET401), !BIT<01> CLEAR
7425          LOAD-ERROR(TEST131A2), !ERROR DIRECTORY KEY
7426          DCS-CTR(C3.), !COMPARE AT TARGET
7427      NEXT J/GOBUT131A2
(4544) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.111)

7428      4147: !(FREE)
7429      GOBUT131A2:
7431          SETUP,      RETURN/TEST131B1,      !RETURN TO START OF NEXT SUBTEST
7432          NEXT,        GOTO-PAGE(7),         !BUT TABLE
7433          J/BUTD(C)B   !D(C)H= COUT15 H IN BIT<01>
(4147) DCS(0.00.0.0.0.0) BM(0100..00.10..11.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)

7434
7435
7436
7437      ! - - - - -
7438
7439      !CHECK INTERNAL ALU CARRIES WITH:          (052525)+(125252)+(0)=(177777)
7440      !ALSO CHECK ALU FUNCTION "DIVIDE-STEP" = "A-PLUS-B" SINCE D(C)H=(0)
7441      !FROM ABOVE. D(C)+COUT15=(^)
7442      4546:
7443      TEST131B1:
7444          PD,          LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/BUTINSTR5 TEST
7445          LOAD-ERROR(TEST131B1), !ERROR DIRECTORY KEY
7446          DCS-CTR(C8.), !COMPARE AT TARGET
7447      NEXT J/ARITH131B1
(4546) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.000)

7448      4150: !(FREE)
7449

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```

7450 ARITH131B1:
7451     P2-T,    D+DIVIDE-STEP,           !ALU=(A-PLUS-B), CIN=(0)
7452           D(C)+COUT15,           !GET CARRYOUT
7453           BUS-A+ASPHI(C052525),  !A=(052525)
7454           BUS-B+CSPD(C125252),   !B=(125252)
7455           SR-DIVIDE-STEP,       !D=(177777), COUT15=(0)
7456     NEXT,    J/COMP131B1
(4150) DCS(0.00.0.0.0.0) BM(1000..10.00..11.01..111..110...0.1.1..0..0...0.0110...0..0000.0...11.000...001.101.001)

7457
7458 4151: !(FREE)
7459 COMP131B1:
7460     PO,      BUMP-VERIFY,           !COUNT
7461     P2-T,    D+SR-XOR-CSPD(C177777), !COMPARE RECEIVED: EXPECTED
7462           SAVE-D(C)                !SAVE CARRY
7463     NEXT,    J/GOBUT131B1
(4151) DCS(0.00.0.0.0.1) BM(0110..10.00..00.00..000..111...0.1.0..0..0...0.0101...0..0000.0...11.000...001.101.010)

7464
7465 4152: !(FREE)
7466 GOBUT131B1:
7467     SETUP,   RETURN/TEST131B2,      !RETURN TO START OF NEXT SUBTEST
7468     NEXT,    CALL(DINTOIR-5)        !GO PUT D -> IR, BUT(INSTR5)
(4152) DCS(0.00.0.0.0.0) BM(0100..00.11..11.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

7469
7470
7471
7472 !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7473 4750:
7474 TEST131B2:
7475     PO,      LOAD-ENUA(ZTARGET413),  !BIT<02> CLEAR
7476           LOAD-ERROR(TEST131B2),    !ERROR DIRECTORY KEY
7477           DCS-CTR(C3.),             !COMPARE AT TARGET
7478     NEXT,    J/GOBUT131B2
(4750) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.011)

7479
7480 4153: !(FREE)
7481 GOBUT131B2:
7482     SETUP,   RETURN/SCOPE131B,      !RETURN TO SCOPE LOOP TEST WORD
7483     NEXT,    GOTO-PAGE(7),          !BUT TABLE
7484           J/BUTD(C)                !D(C)H= COUT15 H IN BIT<02>
(4153) DCS(0.00.0.0.0.0) BM(0100..00.00..11.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000)

7485
7486
7487 4154: !(FREE)
7488 SCOPE131B:
7489     P3,      CSPD(05)+EMIT, EMIT/170360, !CONSTANT FOR USE BELOW
7490     NEXT,    BUTD(SCOPE),           !NO ERROR: "TEST132A1" (+1. WORDS)
7491           J/TEST132A1              ! ERROR: "ARITH131A1" (-11. WORDS)
(4154) DCS(0.00.0.1.0.0) BM(1111..10.00..00.11..110..000...0.0.0..0..0...0.1010...1..0000.0...11.000...101.010.001)

7493
7494
7495

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7496 ! - - - - -
7497
7498 !CHECK INTERNAL ALU CARRIES WITH: (125252)-(125252)-(0)=(000000)
7499 !ALSO CHECK ALU FUNCTION "A-MINUS-B", D(C)+COUT15=(1)
7500
7501 4521:
7502 TEST132A1:
7503     PO,      LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/BUTINSTR5 TEST
7504             LOAD-ERROR(TEST132A1),      !ERROR DIRECTORY KEY
7505             DCS-CTR(C7.),                !COMPARE AT TARGET
7506     NEXT,    J/ARITH132A1
(4521) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.010.010)

7507
7508 4522:
7509 ARITH132A1:
7510     P3-T,    D+A-MINUS-B,                !ALU=(A-MINUS-B-MINUS-1), CIN=(1)
7511             D(C)+COUT15,                !GET CARRYOUT
7512             BUS-A+ASPHI(C125252),        !A=(125252)
7513             BUS-B+BSPHI(C125252),        !B=(125252)
7514             D=(000000), COUT15=(1)
7515     NEXT,    J/GOBUT132A1
(4522) DCS(0.00.0.0.0.0) BM(1101..01.11..11.01..110..110...1.1.0..0..0...0.0000...0..0000.0...11.000...001.101.101)

7516
7517 4155: !(FREE)
7518 GOBUT132A1:
7519     PO,      BUMP-VERIFY,                !COUNT
7520     SETUP,   RETURN/TEST132A2,           !RETURN TO START OF NEXT SUBTEST
7521     NEXT,    CALL(DINTOIR-5)             !GO PUT D -> IR, BUT(INSTR5)
(4155) DCS(0.00.0.0.0.1) BM(0100..00.10..10.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

7522
7523
7524
7525 !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7526 4516:
7527 TEST132A2:
7528     PO,      LOAD-ENUA(ZTARGET403),      !BIT<01> SET
7529             LOAD-ERROR(TEST132A2),      !ERROR DIRECTORY KEY
7530             DCS-CTR(C3.),                !COMPARE AT TARGET
7531     NEXT,    J/GOBUT132A2
(4516) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.110)

7532
7533 4156: !(FREE)
7534 GOBUT132A2:
7535     SETUP,   RETURN/TEST132B1,           !RETURN TO START OF NEXT SUBTEST
7536     NEXT,    GOTO-PAGE(7),               !BUT TABLE
7537             J/BUTD(C)B                    !D(C)H= COUT15 H IN BIT<01>
(4156) DCS(0.00.0.0.0.0) BM(0100..00.10..10.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)

7538
7539
7540
7541 ! - - - - -
7542

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7543 !CHECK INTERNAL ALU CARRIES WITH: (052525)-(052525)-(0)=(000000)
7544 !ALSO CHECK ALU FUNCTION "DIVIDE-STEP" = "A-MINUS-B" SINCE D(C)=(1)
7545 !FROM ABOVE. D(C)+COUT15=(1)
7546 4517:
7547 TEST13281:
7548 PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/BUTINSTRS TEST
7549 LOAD-ERROR(TEST13281), !ERROR DIRECTORY KEY
7550 DCS-CTR(C7.), !COMPARE AT TARGET
7551 NEXT, J/ARITH13281
(4517) DCS[1.00.1.0.0.0] BM[1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.111]

7552 4157: !(FREE)
7553 ARITH13281:
7554 P3-T, D+DIVIDE-STEP, !ALU=(A-MINUS-B-MINUS-1), CIN=(1)
7555 D(C)+COUT15, !GET CARRYOUT
7556 BUS-A+ASPHI(C052525), !A=(052525)
7557 BUS-B+BSPHI(C052525), !B=(052525)
7558 !D=(000000), COUT15=(1)
7559 NEXT, J/GOBUT13281
7560 (4157) DCS[0.00.0.0.0.0] BM[1000..01.11..11.01..111..110...1.1.0..0..0...0.0000...0..0000.0...11.000...001.110.000]

7561 4160: !(FREE)
7562 GOBUT13281:
7563 PO BUMP-VERIFY, !COUNT
7564 SETUP, RETURN/TEST13282, !RETURN TO START OF NEXT SUBTEST
7565 NEXT, CALL(DINTOIR-5) !GO PUT D -> IR, BUT(INSTRS)
7566 (4160) DCS[0.00.0.0.0.1] BM[0100..00.10..01.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

7567 !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7568 4472:
7569 TEST13282:
7570 PO, LOAD-ENUA(ZTARGET417), !BIT<02> SET
7571 LOAD-ERROR(TEST13282), !ERROR DIRECTORY KEY
7572 DCS-CTR(C3.), !COMPARE AT TARGET
7573 NEXT, J/GOBUT13282
7574 (4472) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..031..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.001]

7575 !CHECK THAT CARRYOUT OF BIT15 (COUT15) WAS CORRECT
7576 4161: !(FREE)
7577 GOBUT13282:
7578 SETUP, RETURN/SCOPE1328, !RETURN TO SCOPE LOOP TEST WORD
7579 NEXT, GOTO-PAGE(7), !BUT TABLE
7580 !D(C)H=COUT15 H IN BIT <02>
7581 (4161) DCS[0.00.0.0.0.0] BM[0100..00.00..11.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000]

7582 4162: !(FREE)
7583 SCOPE1328:
7584 P3, CSPD[06]+EMIT, EMIT/007417, !CONSTANT FOR USE BELOW
7585 NEXT, BUTD(SCOPE), !NO ERROR: "TEST133A1" (+1. WORDS)
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7587
7588
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7590          J/TEST133A1          ! ERROR: "ARITH132A1" (-9. WORDS)
(4162) DCS(0.00.0.1.0.0) BM(0000..10.11..11.00..001..111...0.0.0..0..0...0.1001...1..0000.0...11.000...101.010.011)
7591
7592
7593
7594
7595          ! -----
7596
7597          !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH:
7598          !((103607)-PLUS-(103607)-PLUS-(1))=(007417), COUT15=(1)
7599          4523:
7600          TEST133A1:
7601              PO,          LOAD-ENUA(ZTARGET434),          !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7602              LOAD-ERROR(TEST133A1),          !ERROR DIRECTORY KEY
7603              DCS-CTR(C10.),          !COMPARE AT TARGET
7604          NEXT,          J/OPB133A1
(4523) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.000)
7605
7606          4510:
7607          OPB133A1:
7608              P3,          CSPD(16)+EMIT,          !A,B-SIDE OPERANDS:
7609              EMIT/103607,          !"1000 0111 1000 0111"
7610          NEXT,          J/DOPA133A1
(4510) DCS(0.00.0.0.0.0) BM(1000..10.01..11.10..000..111...0.0.0..0..0...0.0001...1..0000.0...11.000...001.110.011)
7611
7612          4163: !(FREE)
7613          DOPA133A1:
7614              P2-T,          D+CSPD(D16), D(C)+ALU15,          !OP-A INTO D, D(C)+1
7615              SR+CSPD(D16),          !OP-A INTO SR TOO
7616          NEXT,          J/GOTEST133A1          ! (OPA=OPB)
(4163) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..100...0.1.1..0..0...0.0001...0..0000.0...11.000...001.110.100)
7617
7618          4164: !(FREE)
7619          GOTEST133A1:
7620              PO          BUMP-VERIFY          !COUNT
7621              SETUP,          RETURN/TEST133A2,          !EXEC SUBR WHICH:
7622              ! (1) D+OPA-PLUS-OPB-PLUS-1
7623              ! (2) D+007417-XOR-D (EQUAL?)
7624          NEXT,          CALL[ALUCARRY1]          ! (3) J/BUTINSTRS/(000000) (CHECK ANSWER)
(4164) DCS(0.00.0.0.0.1) BM(0100..00.10..10.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.000.111)
7625
7626
7627
7628          !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (1)
7629          4500:
7630          TEST133A2:
7631              PO,          LOAD-ENUA(ZTARGET403),          !BIT<00>SET
7632              LOAD-ERROR(TEST133A2),          !ERROR DIRECTORY KEY
7633              DCS-CTR(C3.),          !COMPARE AT TARGET
7634              BUMP-VERIFY          !COUNT
7635          NEXT,          J/GOBUT133A2
(4500) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.101)
7636

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7637 4165: !(FREE)
7638 GOBUT133A2:
7639     SETUP, RETURN/TEST133B1,      !RETURN TO START OF NEXT SUBTEST
7640     NEXT,  GOTO-PAGE(7),          !BUT TABLE
7641     J/BUTD(C)A                     !D(C)H = COUT15 IN BIT<00>
(4165) DCS(0.00.0.0.0.0) BM(0100..00.10..10.00..001..111..0.0.0..0..0..0.0000...0..0000.0...11.100...011.100.100)

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7642
7643
7644
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7646
7647 ! - - - - -
7648
7649 !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH COMPLEMENT OF ABOVE:
7650 !((074170)-PLUS-(074170)-PLUS-(0))=(170360), COUT15=(0)
7651 4501:
7652 TEST133B1:
7653     PO,      LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7654     LOAD-ERROR(TEST133B1),              !ERROR DIRECTORY KEY
7655     DCS-CTR(C9.),                        !COMPARE AT TARGET
7656     NEXT,   J/OPA133B1
(4501) DCS(1.00.1.0.0.0) BM(0110..00.11..11.00..011..100...0.0.0..0..0..0.0000...0..0000.0...11.000...001.110.110)

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7657
7658 4166: !(FREE)
7659 OPA133B1:
7660     P2-T,   D+NOT-CSPD(D16),              !
7661     D(C)+ALU15,                               !OP-A INTO D, D(C)+0
7662     SR+NOT-CSPD(D16),                          !OP-A INTO SR TOO
7663     NEXT,   J/GOTEST133B1                    !A-SIDE OPERAND:
7664     J/GOTEST133B1                             !"0111 1000 0111 1000"
7665     J/GOTEST133B1                             !B-SIDE OPERAND WILL BE:
7666     J/GOTEST133B1                             !(SAME AS OP-A)
(4166) DCS(0.00.0.0.0.0) BM(0111..10.00..11.01..101..100...0.1.1..0..0..0.0001...0..0000.0...11.000...001.110.111)

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```

7667
7668 4167: !(FREE)
7669 GOTEST133B1:
7670     SETUP, RETURN/TEST133B2,              !EXEC SUBR WHICH:
7671     NEXT,   CALL[ALUCARRY2]                !(1) D+(NOT-OPA)-PLUS-(NOT-OPB)
7672     CALL[ALUCARRY2]                          !(2) D+170360-XOR-D (EQUAL?)
7673     CALL[ALUCARRY2]                          !(3) J/BUTINSTRS/(000000) (CHECK ANSWER)
(4167) DCS(0.00.0.0.0.0) BM(0100..00.10..10.00..010..111..0.0.0..0..0..0.0000...0..0000.0...11.100...000.010.000)

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7674
7675
7676
7677 !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (0)
7678 4502:
7679 TEST133B2:
7680     PO,      LOAD-ENUA(ZTARGET402),      !BIT<00> CLEAR
7681     LOAD-ERROR(TEST133B2),              !ERROR DIRECTORY KEY
7682     NEXT,   J/GOBUT133B2
(4502) DCS(1.00.0.0.0.0) BM(0000..00.11..11.00..000..010...0.0.0..0..0..0.0000...0..0000.0...11.000...001.111.000)
7683

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7684 4170: !(FREE)
7685 GOBUT13382:
7686     SETUP, RETURN/SCOPE1338, !RETURN TO SCOPE LOOP TEST WORD
7687     NEXT,  GOTO-PAGE(7),      !BUT TABLE
7688     J/BUTD(C)A                !D(C)H = COUT15 H IN BIT<00>
(4170) DCS[0.00.0.0.0.0] BM[0100..00.00..11.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100]

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7689
7690
7691
7692 4171: !(FREE)
7693 SCOPE1338:
7694     PO, BUMP-VERIFY, !COUNT
7695     NEXT, BUTD(SCOPE), !NO ERROR: "TEST134A1" (+1. WORDS)
7696     J/TEST134A1        !ERROR: "OPA133A1" (-11. WORDS)
(4171) DCS[0.00.0.1.0.1] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.001]

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7697
7698
7699

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7700 ! - - - - -
7701

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7702 !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH:
7703 ! (045513)-PLUS-(141703)-PLUS-(1)=(007417), COUT15=(1)
7704 4511:
7705 TEST134A1:
7706     PO, LOAD-ENUA(ZTARGE,434), !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7707     LOAD-ERROR(TEST134A1), !ERROR DIRECTORY KEY
7708     DCS-CTR(C11.), !COMPARE AT TARGET
7709     NEXT J/OP134A1
(4511) DCS[1.00.1.0.0.0] BM[0100..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.010]

```

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7710
7711 4512:
7712 OPA134A1:
7713     PO, BUMP-VERIFY, !COUNT
7714     P3, CSPD[17]+EMIT, !A-SIDE OPERAND:
7715     EMIT/045513, !"0100 1011 0100 1011"
7716     NEXT J/OPA134A1
(4512) DCS[0.00.0.0.0.1] BM[0100..10.10..11.01..001..011...0.0.0..0..0...0.0000...1..0000.0...11.000...001.111.010]

```

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7717
7718 4172: !(FREE)
7719 OPB134A1:
7720     P3, CSPD[16]+EMIT, !B-SIDE OPERAND:
7721     EMIT/141703, !"1100 0011 1100 0011"
7722     NEXT J/DOPA134A1
(4172) DCS[0.00.0.0.0.0] BM[1100..10.00..11.11..000..011...0.0.0..0..0...0.0001...1..0000.0...11.000...001.111.011]

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7723
7724 4173: !(FREE)
7725 DOPA134A1:
7726     P2-T, D+CSPD(D17), D(C)+ALU00, !OP-A INTO D, D(C)+1
7727     SR+CSPD(D17), !OP-A INTO SR TOO
7728     NEXT J/GOTEST134A1
(4173) DCS[0.00.0.0.0.0] BM[1010..10.00..00.00..000..010...0.1.1..0..0...0.0000...0..0000.0...11.000...001.111.100]

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```

7729
7730 4174: !(FREE)

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7731 GOTEST134A1:
7732     PO      BUMP-VERIFY          !COUNT
7733     SETUP,  RETURN/TEST134A2,    !EXEC SUBR WHICH:
7734                                     ! (1) D+OPA-PLUS-OPB-PLUS-1
7735                                     ! (2) D+007417-XOR-D (EQUAL?)
7736     NEXT,   CALL[ALUCARRY1]      ! (3) J/BUTINSTRS/(00000) (CHECK ANSWER)
(4174) DCS[0.00.0.0.0.0] BM[0100..00.10..10.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.000.1111]

7737
7738
7739
7740 !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (1)
7741 4503:
7742 TEST134A2:
7743     PO,      LOAD-ENUA(ZTARGET403), !BIT<01> SET
7744             LOAD-ERROR(TEST134A2), !ERROR DIRECTORY KEY
7745             DCS-CTR(C3.),          !COMPARE AT TARGET
7746             BUMP-VERIFY,          !COUNT
7747     NEXT,    J/GOBUT134A2
(4503) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.101]

7748
7749 4175: !(FREE)
7750 GOBUT134A2:
7751     SETUP,  RETURN/TEST134B1,    !RETURN TO START OF NEXT SUBTEST
7752     NEXT,   GOTO-PAGE(7),        !BUT TABLE
7753             J/BUTD[C]B          !D[C] = COUT15 IN BIT<01>
(4175) DCS[0.00.0.0.0.0] BM[0100..00.10..10.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000]

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7758
7759 !-----
7760
7761 !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH COMPLEMENT OF ABOVE:
7762 !((132264)-PLUS-(036074)-PLUS-(0))=(170360), COUT15=(0)
7763 4504:
7764 TEST134B1:
7765     PO,      LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7766             LOAD-ERROR(TEST134B1), !ERROR DIRECTORY KEY
7767             DCS-CTR(C9.),          !COMPARE AT TARGET
7768     NEXT,    J/OPA134B1
(4504) DCS[1.00.1.0.0.0] BM[0110..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.110]

7769
7770 4176: !(FREE)
7771 OPA134B1:
7772     P2-T,   D+NOT-CSPD(D17),      !
7773             D[C]+ALU00,          !OP-A INTO D, D[C]+(0)
7774             SR+NOT-CSPD(D17),    !OP-A INTO SR TOO
7775                                     !A-SIDE OPERAND:
7776                                     !"1011 0100 1011 0100"
7777                                     !B-SIDE OPERAND WILL BE:
7778     NEXT,   J/GOTEST134B1        !"0011 1100 0011 1100"

```

(4176) DCS(0.00.0.0.0.0) BM(0111..10.00..11.01..101..010...0.1.1..0..0...0.0000...0..0000.0...11.000...001.111.111)

7779
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7781
7782
7783
7784
7785

4177: !(FREE)
GCTEST13481:
SETUP, RETURN/TEST13482,

NEXT, CALL(ALUCARRY2)

!EXEC SUBR WHICH:
!(1) D+(NOT-OPA)-PLUS-(NOT-OPB)
!(2) D+170360-XOR-D (EQUAL?)
!(3) J/BUTINSTRS/(000000) (CHECK ANSWER)

(4177) DCS(0.00.0.0.0.0) BM(0100..00.10..10.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.010.000)

7786
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7791
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7793
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7795

!CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (0)
4505:
TEST13482:
PO, LOAD-ENVA(ZTARGET401),
LOAD-ERROR(TEST13482),
DCS-CTR(C3.),
NEXT, J/GOBUT13482

!BIT<01> CLEAR
!ERROR DIRECTORY KEY
!COMPARE AT TARGET

(4505) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.000)

7796
7797
7798
7799
7800
7801

4200: !(FREE)
GOBUT13482:
SETUP, RETURN/SCOPE1348,
NEXT, GOTO-PAGE(7),
J/BUTD(C18)

!RETURN TO SCOPE LOOP TEST WORD
!BUT TABLE
!D(C)H = COUT15 H IN BIT<01>

(4200) DCS(0.00.0.0.0.0) BM(0100..00.01..00.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)

7802
7803
7804
7805
7806
7807
7808
7809

4201: !(FREE)
SCOPE1348:
PO, BUMP-VERIFY,
NEXT, BUTD(SCOPE),
J/TEST135A1

!COUNT
!NO ERROR: "TEST135A1" (+1. WORDS)
!ERROR: "OPA134A1" (-11. WORDS)

(4201) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.011)

7810
7811
7812
7813
7814
7815
7816
7817
7818
7819
7820
7821
7822

!CHECK CARRY PROPOGATE/GENERATE LOGIC WITH:
!(122645)-PLUS-(064551)-PLUS-(1)=(007417), COUT15=(1)
4513:
TEST135A1:
PO, LOAD-ENVA(ZTARGET434),
LOAD-ERROR(TEST135A1),
DCS-CTR(C11.),
NEXT, J/OPA135A1

!SETUP FOR IR=(000000)/BUTINSTRS COMPARE
!ERROR DIRECTORY KEY
!COMPARE AT TARGET

(4513) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.100)

7823
7824

4514:

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7825 OPA135A1:
7826 PO, BUMP-VERIFY !COUNT
7827 P3, CSPD(17)+EMIT, !A-SIDE OPERAND:
7828 EMIT/122645, !"1010 0101 1010 0101"
7829 NEXT J/OPB135A1
(4514) DCS(0.00.0.0.0.1) BM(1010..10.01..01.10..100..101...0.0.0..0..0...0.0000...1..0000.0...11.000...010.000.0101)

7830
7831 4202: !(FREE)
7832 OPB135A1:
7833 P3, CSPD(16)+EMIT, !B-SIDE OPERAND:
7834 EMIT/064551, !"0110 1001 0110 1001"
7835 NEXT J/DOPA135A1
(4202) DCS(0.00.0.0.0.0) BM(0110..10.10..01.01..101..001...0.0.0..0..0...0.0001...1..0000.0...11.000...010.000 0111)

7836
7837 4203: !(FREE)
7838 DOPA135A1:
7839 P2-T, D+CSPD(D17), D(C)+ALU15, !OP-A INTO D, D(C)+1
7840 SR+CSPD(D17), !OP-A INTO SR TOO
7841 NEXT J/GOTEST135A1
(4203) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..100...0.1.1..0..0...0.0000...0..0000.0...11.000...010.000.1001)

7842
7843 4204: !(FREE)
7844 GOTEST135A1:
7845 PO, BUMP-VERIFY !COUNT
7846 SETUP, RETURN/TEST135A2, !EXEC SUBR WHICH:
7847 ! (1) D+OPA-PLUS-OPB-PLUS-1
7848 ! (2) D+007417-XOR-D (EQUAL?)
7849 NEXT CALL(ALUCARRY1) ! (3) J/BUTINSTRS/(000000) (CHECK ANSWER)
(4204) DCS(0.00.0.0.0.1) BM(0100..00.10..10.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.000.1111)

7850
7851 !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (1)
7852
7853 4506:
7854 TEST135A2:
7855 PO, LOAD-ENVA(ZTARGET417), !BIT<02> SET
7856 LOAD-ERROR(TEST135A2), !ERROR DIRECTORY KEY
7857 DCS-CTR(C3.), !COMPARE AT TARGET
7858 BUMP-VERIFY !COUNT
7859 NEXT J/GOBUT135A2
(4506) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.1011)

7861
7862 4205: !(FREE)
7863 GOBUT135A2:
7864 SETUP, RETURN/TEST135B1, !RETURN TO START OF NEXT SUBTEST
7865 NEXT, GOTO-PAGE(7), !BUT TABLE
7866 J/BUTD(C)C !D(C)H = COUT15 IN BIT<02>
(4205) DCS(0.00.0.0.0.0) BM(0100..00.10..10.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.0001)

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7869
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7871
7872 ! - - - - -
7873
7874 !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH COMPLEMENT OF ABOVE:
7875 !:(055132)-PLUS-(113226)-PLUS-(0)=(170360), COUT15=(0)
7876 4507:
7877 TEST13581:
7878     PD,          LOAD-ENUA(ZTARGET434),          !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7879                LOAD-ERROR(TEST13581),          !ERROR DIRECTORY KEY
7880                DCS-CTR(C9.),                    !COMPARE AT TARGET
7881     NEXT,        J/OPA13581
(4507) DCS[1.00.1.0.0.0] BM[0110..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.110]

7882
7883 4206: !(FREE)
7884 OPA13581:
7885     P2-T,        D+NOT-CSPD(D17),
7886                D[C]+ALU15,
7887                SR+NOT-CSPD(D17)
7888
7889                !OP-A INTO D, D[C]+(0)
7890                !OP-A INTO SR TOO
7891     NEXT,        J/GOTEST13581
(4206) DCS[0.00.0.0.0.0] BM[0111..10.00..11.01..101..100...0.1.1..0..0...0.0000...0..0000.0...11.000...010.000.111]

7892
7893 4207: !(FREE)
7894 GOTEST13581:
7895     SETUP,      RETURN/TEST13582,
7896
7897                !EXEC SUBR WHICH:
7898     NEXT,        CALL[ALUCARRY2]
(4207) DCS[0.00.0.0.0.0] BM[0100..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.010.000]

7899
7900
7901 !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (0)
7902 4477:
7903 TEST13582:
7904     PD,          LOAD-ENUA(ZTARGET413),          !BIT<02> CLEAR
7905                LOAD-ERROR(TEST13582),          !ERROR DIRECTORY KEY
7906                DCS-CTR(C3.),                    !COMPARE AT TARGET
7907     NEXT,        J/GOBUT13582
(4477) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.000]

7909
7910 4210: !(FREE)
7911 GOBUT13582:
7912     SETUP,      RETURN/SCOPE1358,
7913     NEXT,        GOTO-PAGE(7),
7914     J/BUTD[C]C
(4210) DCS[0.00.0.0.0.0] BM[0100..00.01..00.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000]

7915
7916
7917

```

```

7918 4211: !(FREE)
7919 SCOPE1358:
7920 PO, BUMP-VERIFY, !COUNT
7921 NEXT, BUTD(SCOPE), !NO ERROR: "TEST136A1" (+1. WORDS)
7922 J/TEST136A1 !ERROR: "OPA135A1" (-11. WORDS)
(4211) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000..0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.101)

7923
7924
7925
7926 ! - - - - -
7927
7928 !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH:
7929 !(055132)-PLUS-(1322.4)-PLUS-(1)=(007417), COUT15=(1)
7930 4515:
7931 TEST136A1:
7932 PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7933 LOAD-ERROR(TEST136A1), !ERROR DIRECTORY KEY
7934 DCS-CTR(C10.), !COMPARE AT TARGET
7935 NEXT, J/OPB136A1
(4515) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.010)

7936
7937 4542:
7938 OPB136A1:
7939 P3, CSPD(161)+EMIT, !B-SIDE OPERAND:
7940 EMIT/132264, !"1011 0100 1011 0100"
7941 NEXT, J/DOPA136A1
(4542) DCS(0.00.0.0.0.0) BM(1011..10.01..00.10..110..100...0.0.0..0..0...0.0001...1..0000.0...11.000...010.001.010)

7942
7943 4212: !(FREE)
7944 DOPA136A1:
7945 P2-T, D+NOT-CSPD(D17), D(C)+COUT07, !OP-A INTO D, D(C)+1
7946 SR+NOT-CSPD(D17), !OP-A INTO SR TOO
7947 NEXT, J/GOTEST136A1 !"0101 1010 0101 1010"
(4212) DCS(0.00.)0.0.0.0) BM(0111..10.00..11.01..101..101...0.1.1..0..0...0.0000...0..0000.0...11.000...010.001.011)

7948
7949 4213: !(FREE)
7950 GOTEST136A1:
7951 PO, BUMP-VERIFY, !COUNT
7952 SETUP, RETURN/TEST136A2, !EXEC SUBR WHICH:
7953 ! (1) D+OPA-PLUS-OPB-PLUS-1
7954 ! (2) D+007417-XOR-0 EQUAL?
7955 NEXT, CALL(ALUCARRY1) ! (3) J/BUTINSTR5/(000000) (CHECK ANSWER)
(4213) DCS(0.00.0.0.0.1) BM(0100..00.10..01.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.000.111)

7956
7957
7958
7959 !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (1)
7960 4476:
7961 TEST136A2:
7962 PO, LOAD-ENUA(ZTARGET403), !BIT<00> SET
7963 LOAD-ERROR(TEST136A2), !ERROR DIRECTORY KEY
7964 DCS-CTR(C3.), !COMPARE AT TARGET
7965 BUMP-VERIFY, !COUNT

```



```

7966      NEXT      J/GOBUT136A2
(4476) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.100)
7967
7968      4214: !(FREE)
7969      GOBUT136A2:
7970          SETUP, RETURN/TEST136B1,      !RETURN TO START OF NEXT SUBTEST
7971          NEXT,  GOTO-PAGE(7),          !BUT TABLE
7972          J/BUTD(C)A                    !D(C)H = COUT15 IN BIT<00>
(4214) DCS(0.00.0.0.0.0) BM(0100..00.10..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)
7973
7974
7975
7976
7977
7978      ! - - - - -
7979
7980      !CHECK CARRY PROPOGATE/GENERATE LOGIC WITH COMPLEMENT OF ABOVE:
7981      !(122645)-PLUS-(132264)-PLUS-(0)=(170360), COUT15=(0)
7982      4475:
7983      TEST136B1:
7984          PO,      LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/BUTINSTRS COMPARE
7985          LOAD-ERROR(TEST136B1),              !ERROR DIRECTORY KEY
7986          DCS-CTR(C9.),                        !COMPARE AT TARGET
7987      NEXT,      J/OPA136B1
(4475) DCS(1.00.1.0.0.0) BM(0110..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.101)
7988
7989      4215: !(FREE)
7990      OPA136B1:
7991          P2-T,      D+CSPD(017),              !
7992          D(C)+0,      !OP-A INTO D, D(C)+0
7993          SR+CSPD(017),      !OP-A INTO SR TOO
7994          !A-SIDE OPERAND:
7995          !"1010 0101 1010 0101"
7996          !B-SIDE OPERAND WILL BE:
7997          !"0100 1011 0100 1011"
(4215) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.1..0..0...0.0000...0..0000.0...11.000...010.001.110)
7998
7999      4216: !(FREE)
8000      GOTEST136B1:
8001          SETUP, RETURN/TEST136B2,      !EXEC SUBR WHICH:
8002          ! (1) D+(NOT-OPA)-PLUS-(NOT-OPB)
8003          ! (2) D+170360-XOR-D (EQUAL?)
8004      NEXT,      CALL[ALUCARRY2]          ! (3) J/BUTINSTRS/(000000) (CHECK ANSWER)
(4216) DCS(0.00.0.0.0.0) BM(0100..00.10..01.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.010.000)
8005
8006
8007
8008      !CHECK THAT CARRYOUT COUT15 ABOVE GENERATED CORRECTLY AS A (0)
8009      4473:
8010      TEST136B2:
8011          PO,      LOAD-ENUA(ZTARGET402),      !BIT<00> CLEAR
8012          LOAD-ERROR(TEST136B2),          !ERROR DIRECTORY KEY

```

8013 DCS-CTR(C3.), !COMPARE AT TARGET
 8014 NEXT J/GOBUT13682 !
 (4473) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.111)

8015 4217: !(FREE)
 8016 GOBUT13682:
 8017 SETUP, RETURN/SCOPE1368, !RETURN TO SCOPE LOOP TEST WORD
 8018 NEXT, GOTO-PAGE(7), !BUT TABLE
 8019 J/BUTD(C)A !D(C)H = COUT15 H IN BIT(00)
 8020 (4217) DCS(0.00.0.0.0.0) BM(0100..00.01..00.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)

8021 4220: !(FREE)
 8022 SCOPE1368:
 8023 PO, BUMP-VERIFY, !COUNT
 8024 NEXT, BUTD(SCOPE), !NO ERROR: "TEST320A" (+1. WORDS)
 8025 J/TEST320A !ERROR: "OPA136A1" (-11. WORDS)
 8026 (4220) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.011)

8029
 8030
 8031
 8032
 8033
 8034

! -----
 ! THE FOLLOWING TWO SUBROUTINES ARE USED IN THE ABOVE CARRY LOOKAHEAD/INTERNAL CARRIES TESTS:

8035 7007: !(FREE)
 8036 ALUCARRY1:
 8037 P3-T, D+A-PLUS-B-PLUS-D(C), !D <- SUM OF A, B; D(C) WAS SET PREVIOUSLY
 8038 D(C)+COUT15, !GET CARRYOUT FOR EXAMINATION LATER
 8039 SR+A-PLUS-B-PLUS-D(C), !ALSO GET IT INTO THE SR
 8040 BUS-A+SR, !A-SIDE OPERAND WAS IN THE SR
 8041 BUS-B+CSPD(D16), !B-SIDE OPERAND WAS IN CSP(16)
 8042 NEXT, J/ALUCARRY1A
 8043 (7007) DCS(0.00.0.0.0.0) BM(0100..10.00..00.00..000..110...1.1.1..0..0...0.0001...0..0000.0...11.000...000.001.111)

8048 7017: !(FREE)
 8049 ALUCARRY1A:
 8050 P2-T, D+SR-XOR-CSPD(D06), SAVE-D(C), !COMPARE RECEIVED : (007417)
 8051 NEXT, J/DINTOIRS !GO PUT D -> IR, BUT(INSTR5) FOR (000000)
 8052 (7017) DCS(0.00.0.0.0.0) BM(0110..10.00..00.00..000..111...0.1.0..0..0...0.1001...0..0000.0...11.000...010.111.011)

8053 7020: !(FREE)
 8054 ALUCARRY2:
 8055 P3-T, D+A-PLUS-NOT-B-PLUS-D(C), !D <- DIFF OF A, B; D(C) WAS SET PREVIOUSLY
 8056 D(C)+COUT15, !GET CARRYOUT FOR EXAMINATION LATER
 8057
 8058
 8059
 8060

```

8061 SR+A-PLUS-NOT-B-PLUS-D(C), !ALSO GET IT INTO THE SR
8062 BUS-A+SR !A-SIDE OPERAND WAS IN THE SR
8063 BUS-B+CSPD(D16), !B-SIDE OPERAND WAS IN CSP(16)
8064 NEXT J/ALUCARRY2A
(7020) DCS(0.00.0.0.0.0) BM(0101..10.00..00.00..000..110...1.1.1..0..0...0.0001...0..0000.0...11.000...000.010.001)

```

```

8065 7021: !(FREE)
8066 ALUCARRY2A:
8067 P2-T, D+SR-XOR-CSPD(D05), SAVE-D(C), !COMPARE RECEIVED : (170360)
8068 NEXT J/DINTOIRS !GO PUT D -> IR, BUT(INSTR5) FOR (000000)
8069 (7021) DCS(0.00.0.0.0.0) BM(0110..10.00..00.00..000..111...0.1.0..0..0...0.1010...0..0000.0...11.000...010.111.011)

```

```

8070
8071
8072
8073
8074
8075 !.PAGE=====
8076
8077

```

```

8078 .TOC * TEST320: D(C) SELECTION / COUT07-DOUT07 / D<14:00>=ZERO BIT<00>
8079
8080

```

```

8081 !*****
8082 !*
8083 !* TESTS: 320 A - F UWORDS: 026 + 014
8084 !*
8085 !* FUNCTIONS:
8086 !*
8087 !* THESE SIX TESTS CHECK THE D(C) ADDRESS SELECTION LOGIC, COUT07 CARRY
8088 !* AND DOUT07 BUTS, AND THE D<14:00>=ZERO BUT, WHEN ONLY BIT<00>=1 (NOT
8089 !* CHECKED IN TEST410).
8090 !*
8091 !*****

```

```

8092
8093
8094
8095 !TEST-320-A SETS ONLY THE D(C) INPUT "ALU00" (CODE=010), AND THEN CHECKS THAT D(C)+ALU00
8096 ! RESULTS IN A "1".
8097 4543:
8098 TEST320A:

```

```

8099 PO, LOAD-ENUA(ZTARGET403), !BIT<00> SET
8100 LOAD-ERROR(TEST320A), !ERROR DIRECTORY KEY
8101 DCS-CTR(C6.), !COMPARE AT TARGET
8102 NEXT J/SETONE320A
(4543) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.000)

```

```

8103 4700:
8104 SETONE320A:
8105 PO, BUMP-VERIFY !COUNT
8106 P3, CSPD(17)+EMIT, EMIT/000001, !A ONE
8107 NEXT J/SET0320A
8108 (4700) DCS(0.00.0.0.0.1) BM(0000..10.00..00.00..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...010.010.001)

```

```

8109 4221: !(FREE)
8110

```

```

8111 SETD320A:
8112     P2-T,    D+CSPD(D17), D(C)+0,           !D GETS (000001)
8113     SR+CSPD(D17)                               !SO DOES SR
8114     P3,     A#8SPHI(11)+0,                   !STORE THE CONSTANT
8115     NEXT,    J/GETDC320A
(4221) DCS(0.00.0.0.0.0) BM(1010..10.11..00.01..000..000...0.1.1..0..0...0.0000...0..1011.0...11.000...010.010.010)

```

```

8116
8117 4222: !(FREE)
8118 GETDC320A:
8119     P2-T,    D+A-PLUS-B-PLUS-0, D(C)+ALU00,   !D(C) CODE (010)
8120     BUS-A+SR,                               !A=(000001)
8121     BUS-B+CSPD(C000000),                     !B=(000000)
8122     NEXT,    J/GOBUT320A                       !D=(000001), ONLY D(C)=ALU00 SET
(4222) DCS(0.00.0.0.0.0) BM(1001..10.00..00.00..000..010...0.1.0..0..0...0.0100...0..0000.0...11.000...010.010.011)

```

```

8123
8124 4223: !(FREE)
8125 GOBUT320A:
8126     PO,     BUMP-VERIFY,                       !COUNT
8127     SETUP,   RETURN/TEST320B,                  !RETURN TO START OF NEXT SUBTEST
8128     NEXT,    GOTO-PAGE(7),                      !BUT TABLE
8129     J/BUTD(C)A,                                 !D(C)H IN BIT<00>
(4223) DCS(0.00.0.0.0.1) BM(0100..00.10..11.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.100)

```

```

8130
8131
8132
8133
8134 ! - - - - -
8135
8136 !TEST-320-B CHECKS THAT D<14:00>=ZERO IS NOT SET WHEN D=(000001)
8137 4552:
8138 TEST320B:

```

```

8139     PO,     LOAD-ENVA(ZTARGET400),              !BIT<01> CLEAR
8140     LOAD-ERROR(TEST320B),                       !ERROR DIRECTORY KEY
8141     DCS-CTR(C3.),                               !COMPARE AT TARGET
8142     BUMP-VERIFY,                                !COUNT
8143     NEXT,    J/GOBUT320B
(4552) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...010.010.100)

```

```

8144
8145 4224: !(FREE)
8146 GOBUT320B:
8147     SETUP,   RETURN/TEST320C,                  !RETURN TO START OF NEXT SUBTEST
8148     NEXT,    GOTO-PAGE(7),                      !BUT TABLE
8149     J/BUTD-IS-ZERO,                             !CHEK ON IT
(4224) DCS(0.00.0.0.0.0) BM(0100..00.10..11.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

```

8150
8151
8152
8153 ! - - - - -
8154
8155 !TEST-320-C CHECKS THAT THE COUT15/COUT07 SIGNALS DON'T TRACK EACH OTHER
8156 4562:
8157 TEST320C:

```

```

8158          PO,          LOAD-ENUA(ZTARGET413),          !BIT<02> CLEAR
8159          LOAD-ERROR(TEST320C),          !ERROR DIRECTORY KEY
8160          DCS-CTR(C6.),          !COMPARE AT TARGET
8161          NEXT          J/SETONE320C
(4562) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.010.101)

8162          4225: !(FREE)
8163          SETONE320C:
8164          P3,          CSPD(16)+EMIT, EMIT/100000,          !A ONE IN B15
8165          NEXT          J/SETD320C
(4225) DCS(0.00.0.0.0.0) BM(1000..10.00..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...010.010.110)

8167          4226: !(FREE)
8168          SETD320C:
8169          P2-T,          D+CSPD(D16), D(C)+ALU15,          !D GETS (100000)
8170          SR+CSPD(D16),          !SO DOES SR
8171          P3,          A#BSPHI(13)+0,          !STORE THE CONSTANT
8172          NEXT          J/GETDC320C
(4226) DCS(0.00.0.0.0.0) BM(1010..10.11..00.01..001..100...0.1.1..0..0...0.0001...0..1011.0...11.000...010.010.111)

8174          4227: !(FREE)
8175          GETDC320C:
8176          PO,          BUMP-VERIFY,          !COUNT
8177          P2-T,          D+A-PLUS-B-PLUS-0, D(C)+COUT07,          !D(C) GETS COUT07=0, COUT15=1
8178          BUS-A+SR,          !A=(100000)
8179          BUS-B+CSPD(C125252),          !B=(125252)
8180          NEXT          J/GOBUT320C          !D=(025252)
(4227) DCS(0.00.0.0.0.1) BM(1001..10.00..00.00..000..101...0.1.0..0..0...0.0110...0..0000.0...11.000...010.011.000)

8182          4230: !(FREE)
8183          GOBUT320C:
8184          SETUP,          RETURN/TEST3200,          !RETURN TO START OF NEXT SUBTEST
8185          NEXT,          GOTO-PAGE(7),          !BUT TABLE
8186          J/BUTO(C)          !D(C)H IN BIT<02>
(4230) DCS(0.00.0.0.0.0) BM(0100..00.10..10.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.000)

8188
8189
8190
8191
8192
8193          ! - - - - -
8194
8195          !TEST-320-D CHECKS THAT THE BUTR(COUT07#DOUT07) SEES THE (01*) THAT WAS GENERATED
8196          4537:
8197          TEST3200:
8198          PO,          LOAD-ENUA(ZTARGET403),          !BIT<2:1> = "01"
8199          LOAD-ERROR(TEST3200),          !ERROR DIRECTORY KEY
8200          DCS-CTR(C3.),          !COMPARE AT TARGET
8201          NEXT          J/GOBUT3200
(4537) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.001)

8202          4231: !(FREE)
8203          GOBUT3200:
8204

```

```

8205          SETUP, RETURN/TEST320E,          !RETURN TO START OF NEXT SUBTEST
8206          NEXT,  GOTO-PAGE(7),             !BUT TABLE
8207          J/BUTCOUT7DOUT7                 !COUT07#D07 IN BIT<2:1>
(4231) DCS(0.00.0.0.0.0) BM(0100..00.10..11.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.001)

8208
8209
8210
8211
8212          ! - - - - -
8213
8214          !TEST-320-E SETS ONLY THE D(C) INPUT "COUT07" (CODE=101), AND THEN CHECKS THAT D(C)+COUT07
8215          ! RESULTS IN A "1".
8216          4554:
8217          TEST320E:
8218          PO,          LOAD-ENUA(ZTARGET403),          !BIT<01> SET
8219          LOAD-ERROR(TEST320E),          !ERROR DIRECTORY KEY
8220          DCS-CTR(C6.),          !COMPARE AT TARGET
8221          NEXT,        J/SETONE320E
(4554) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.010)

8222          4232: !(FREE)
8223          SETONE320E:
8224          PO,          BUMP-VERIFY          !COUNT
8225          P3,          CSPD(15)+EMIT, EMIT/000200,    !A ONE IN BIT07
8226          NEXT,        J/SETD320E
(4232) DCS(0.00.0.0.0.1) BM(0000..10.00..00.10..000..000...0.0.0..0..0...0.0010...1..0000.0...11.000...010.011.011)

8228          4233: !(FREE)
8229          SETD320E:
8230          P2-T,        D+CSPD(D15), D(C)+0,          !D GETS (000200)
8231          SR+CSPD(D15),          !SO DOES SR
8232          P3,          A#BSPHI(15)+0,          !STORE THE CONSTANT
8233          NEXT,        J/GETDC320E
(4233) DCS(0.00.0.0.0.0) BM(1010..10.11..00.01..010..000...0.1.1..0..0...0.0010...0..1011.0...11.000...010.011.100)

8235          4234: !(FREE)
8236          GETDC320E:
8237          P2-T,        D+A-PLUS-B-PLUS-0, D(C)+COUT07,    !D(C) CODE (101)
8238          BUS-A+SR,          !A=(000200)
8239          BUS-B+CSPD(D15),    !B=(000200)
8240          NEXT,        J/GOBUT320E          !D=(000400), ONLY D(C)=COUT07 SET
(4234) DCS(0.00.0.0.0.0) BM(1001..10.00..00.00..000..101...0.1.0..0..0...0.0010...0..0000.0...11.000...010.011.101)

8242          4235: !(FREE)
8243          GOBUT320E:
8244          SETUP, RETURN/TEST320F,          !RETURN TO START OF NEXT SUBTEST
8245          NEXT,  GOTO-PAGE(7),             !BUT TABLE
8246          J/BUTD(C)B                     !D(C)H IN BIT<01>
(4235) DCS(0.00.0.0.0.0) BM(0100..00.10..11.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.000)

8248
8249
8250

```

```

8251
8252 ! - - - - -
8253
8254 !TEST-320-F CHECKS THAT THE BUTR(COUT07#DOUT07) SEES THE (10*) THAT WAS GENERATED
8255 4556:
8256 TEST320F:
8257     PO,      LOAD-ENVA(ZTARGET405),      !BIT<2:1> = "13"
8258             LOAD-ERROR(TEST320F),      !ERROR DIRECTORY KEY
8259             DCS-CTR(C3.),              !COMPARE AT TARGET
8260     NEXT,    J/GOBUT320F
(4556) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.110]

```

```

8261
8262 4236: !(FREE)
8263 GOBUT320F:
8264     SETUP,  RETURN/SCOPE320,           !RETURN TO SCOPE LOOP TEST WORD
8265     NEXT,   GOTO-PAGE(7),             !BUT TABLE
8266             J/BUTCOUT7DOUT7          !COUT07#D07 IN BIT<2:1>
(4236) DCS[0.00.0.0.0.0] BM[0100..00.01..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.001]

```

```

8267
8268
8269 4237: !(FREE)
8270 SCOPE320:
8271     PO,      BUMP-VERIFY,              !COUNT
8272             BUSDIN+EMIT-[I],          !RESET PROC UCONS
8273             EN-CLK-IR[15-00],
8274     NEXT,    BUTD[SCOPE],              !NO ERROR: "TEST350" (+1. WORDS)
8275             J/TEST350                  !ERROR: "SETONE320A" (-20. WORDS)
(4237) DCS[0.00.0.1.0.1] BM[0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...111.000.001]

```

```

8276
8277
8278
8279
8280
8281
8282
8283 !.PAGE=====
8284
8285

```

```

8286 .TOC * TEST350-352: ASP/BSP HI/LO ADDRESSING MODES, DATA VALIDITY
8287
8288 !*****
8289 !*
8290 !* TESTS: 350 - 352                                UWORDS: 075 + 125
8291 !*
8292 !* FUNCTIONS:
8293 !*
8294 !* VERIFIES THE ASP/BSP ADDRESSING MODES.
8295 !*
8296 !*****
8297
8298
8299

```

```

8300 !TEST 350 A-D USES THE A/B SP "SF" AND "DF" ADDRESS MODES TO WRITE A UNIQUE PATTERN TO

```

8301 !LOCATIONS (00:07) OF ASPHI, ASPLO, BSPHI, BSPLO, THRU USE OF A COUNT LOOP.
 8302 !THE GENERATED PATTERN IS THEN READ BACK, AND COMPARED TO A REGENERATED ORIGINAL.
 8303 !TO CHECK FOR ADDRESSING CORRECTNESS, ABILITY TO READ/WRITE, AND DATAPATH VALIDITY.

8304
 8305 !FIRST FILL UP THE SCRATCHPADS:

8306
 8307 AT THE END OF THE FILLUP LOOP, A/B SP HI/LO LOOK LIKE THIS:

8308	LOCTN	ASPHI	BSPHI	ASPLO	BSPLO
8310	-----	-----	-----	-----	-----
8311					
8312	00	050700	050700	057077	057077
8313	01	051611	051611	056166	056166
8314	02	052522	052522	055255	055255
8315	03	053433	053433	054344	054344
8316	04	054344	054344	053433	053433
8317	05	055255	055255	052522	052522
8318	06	056166	056166	051611	051611
8319	07	057077	057077	050700	050700
8320	10	-----	-----	-----	-----
8321	11	000001	000001	-----	-----
8322	12	000152	000152	-----	-----
8323	13	100000	100000	000125	000125
8324	14	-----	-----	-----	-----
8325	15	000200	000200	-----	-----
8326	16	-----	-----	-----	-----
8327	17	-----	-----	-----	-----

8328
 8329 NOTE: CONSTANTS FOR DCS IN ASPHI/BSPHI 01/03/05/07 WERE DESTROYED,
 8330 AND *MUST* BE RESTORED AFTER LEAVING THIS TEST SEQUENCE.

8331
 8332
 8333
 8334
 8335
 8336 4701:

8337 TEST350:

8338 PO, LOAD-ERROR(TEST350), !ERROR DIRECTORY KEY
 8339 P3, CSPD(15)+EMIT, EMIT/177067, !ADDED TO PATTERN "N" TO GET "N+1"
 8340 NEXT, J/START350

(4701) DCS(1.00.0.0.0.0) BM(1111..10.11..10.00..110..111...0.0.0..0..0...0.0010...1..0000.0...11.000...010.100.000)

8341 4240: !(FREE)

8342 START350:

8343 PO, BUMP-VERIFY, !COUNT
 8344 P3, CSPD(14)+EMIT, EMIT/057077, !THE INITIAL PATTERN
 8345 !SF=0, DM=7, DF=7
 8346 NEXT, J/LOADSRD350

(4240) DCS(0.00.0.0.0.1) BM(0101..10.11..10.00..111..111...0.0.0..0..0...0.0011...1..0000.0...11.000...010.100.001)

8347
 8348 4241: !(FREE)

8349 LOADSRD350:

8350 P2-T, D+CSPD(D14), !INITIAL PATTERN
 8351 SR+CSPD(D14), !D->IR, SR-TEMP
 8352


```

8353         NEXT,   GOTO-PAGE(7),
8354         J/DINTOIR350
(4241) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..111...0.1.1..0..0...0.0011...0..0000.0...11.100...011.101.011)
8355
8356         !*** LOOP BACK POINT FOR SP FILLUP ***
8357
8358         7353:
8359         DINTOIR350:
8360         SETUP,   RETURN/WRTDF350,
8361         NEXT,   CALL(DINTOIR)
(7353) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.110.111)
8362
8363         4002:  !(FREE)
8364         WRTDF350:
8365         P0,     DCS-CTR(C15.),
8366         P3,     A#BSPHI(DF)+D,
8367         NEXT,   GOTO-PAGE(7),
8368         J/WRTSF350
(4002) DCS(0.00.1.0.0.0) BM(0000..00.00..00.10..000..111...0.0.0..0..0...0.0000...0..1011.0...11.100...000.001.110)
8369
8370         7016:  !(FREE)
8371         WRTSF350:
8372         P3,     A#BSPLO(SF)+D,
8373         NEXT,   J/NEXTPAT350
(7016) DCS(0.00.0.0.0.0) BM(0000..00.01..00.11..000..000...0.0.0..0..0...0.0000...0..0011.0...11.000...000.010.011)
8374
8375         7023:  !(FREE)
8376         NEXTPAT350:
8377         P2-T,   SR#D+SR-PLUS-CSPD(D15), SAVE-D(C),
8378         NEXT,   BUTR(DMD),
8379         J/DINTOIR350
(7023) DCS(0.00.0.0.0.0) BM(1001..10.00..00.00..000..111...0.1.1..0..0...0.0010...0..0000.0...01.001...011.101.011)
8380
8381         !COME HERE IF DONE LOOPING
8382         7357:
8383         LOADHI350:
8384
8385         !*** IF ANY ASP/BSP HI/LO BIT<03> IN ADDR STUCK ZERO,
8386         !           ONE OF THE FOLLOWING TWO WORDS WILL OVERWRITE
8387         !           A PREVIOUSLY WRITTEN LOCATION (IE, 02 OR 03) ***
8388         P2-T,   D+CSPD(001), SAVE-D(C),
8389         P3,     A#BSPHI(12)+D,
8390         NEXT,   J/LOADHIA350
(7357) DCS(0.00.0.0.0.0) BM(1010..10.10..00.00..001..111...0.1.0..0..0...0.1110...0..1011.0...11.000...000.010.100)
8391
8392         7024:  !(FREE)
8393         LOADHIA350:
8394         P2-T,   D+CSPD(002), SAVE-D(C),
8395         P3,     A#BSPLO(13)+D,
8396         NEXT,   J/AGAINSRD350
(7024) DCS(0.00.0.0.0.0) BM(1010..10.11..00.01..001..111...0.1.0..0..0...0.1101...0..0011.0...11.000...000.010.101)
8397

```

```

8398 7025: !(FREE)
8399 AGAINSR0350:
8400 P2-T, D+CSPD(D14), !AGAIN RESET D, SR TO INITIAL PATTERN
8401 SR+CSPD(D14), !OF (057077)
8402 NEXT, GOTO-PAGE(4)
8403 J/DINTOIRA350
(7025) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..100...0.1.1..0..0...0.0011...0..0000.0...11.100...101.110.011)
8404
8405 !*** LOOP BACK ENTRY POINT FOR TESTS ***
8406
8407 4563:
8408 DINTOIRA350:
8409 SETUP, RETURN/TEST350A, !GO TO SUBR WHICH PUTS SR -> IR FOR SF/DF/DM
8410 NEXT, CALL(SRINTOIR)
(4563) DCS(0.00.0.0.0.0) BM(0100..00.11..11.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.110.110)
8411
8412 ! - - - - -
8413
8414 !TEST 350A CHECKS BSP-ADDRS/SF, BSPLO ADDRS FOR ERRORS
8415 4752:
8416 TEST350A:
8417 PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
8418 LOAD-ERROR(TEST350A), !ERROR DIRECTORY KEY
8419 DCS-CTR(C7.), !COMPARE AT TARGET
8420 NEXT, J/COMP350A
8421 (4752) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.010)
8422
8423 4702:
8424 COMP350A:
8425 P2-T, D+SR-XOR-BSPLO(SF), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
8426 NEXT, J/GOBUT350A
(4702) DCS(0.00.0.0.0.0) BM(0110..00.01..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.100.011)
8427
8428 4243: !(FREE)
8429 GOBUT350A:
8430 PO BUMP-VERIFY !COUNT
8431 SETUP, RETURN/RESETIR350A, !GO TO SUBR WHICH:
8432 NEXT, CALL(DINTOIR-5) ! D -> IR, BUT(INSTRS)
(4243) DCS(0.00.0.0.0.1) BM(0111..00.00..00.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
8433
8434 7022: !(FREE)
8435 RESETIR350A:
8436 SETUP, RETURN/TEST350B, !GO TO SUBR WHICH PUTS SR -> IR FOR SF/DF/DM
8437 NEXT, CALL(SRINTOIR)
(7022) DCS(0.00.0.0.0.0) BM(0100..00.11..11.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.110.110)
8438
8439 ! - - - - -
8440
8441 !TEST 350B CHECKS BSP-ADDRS/DF, BSPHI ADDRS FOR ERRORS
8442

```

```

8443 4753:
8444 TEST350B:
8445     PO,          LOAD-ENUA(ZTARGET434),          !INSTRS FOR IR=(000000)
8446     LOAD-ERROR(TEST350B),          !ERROR DIRECTORY KEY
8447     DCS-CTR(C7.),          !COMPARE AT TARGET
8448     NEXT,        J/COMP350B
(4753) DCS[1.00.1.0.0.0] BM[1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.100.100]

8449 4244: !(FREE)
8450 COMP350B:
8451     P2-T,        D+SR-XOR-BSPHI[DF], SAVE-D[C],          !COMPARE EXPECTED:RECEIVED, BITWISE
8452     NEXT,        J/GOBUT350B
(4244) DCS[0.00.0.0.0.0] BM[0110..01.00..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.100.101]

8454 4245: !(FREE)
8455 GOBUT350B:
8456     SETUP,       RETURN/RESETIR350B,          !GO TO SUBR WHICH:
8457     NEXT,        CALL[DINTOIR-5]          !  D -> IR, BUT(INSTRS)
(4245) DCS[0.00.0.0.0.0] BM[0111..00.00..00.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

8459 7026: !(FREE)
8460 RESETIR350B:
8461     SETUP,       RETURN/TEST350C,          !GO TO SUBR WHICH PUTS SR -> IR FOR SF/DF/DM
8462     NEXT,        CALL[SRINTOIR]
(7026) DCS[0.00.0.0.0.0] BM[0100..00.11..11.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.110.110]

8464 ! - - - - -
8465 !
8466 !
8467 !
8468 !
8469 !TEST 350C CHECKS ASP-ADDRS/DF, ASPLO ADDRS FOR ERRORS
8470 4742:
8471 TEST350C:
8472     PO,          LOAD-ENUA(ZTARGET434),          !INSTRS FOR IR=(000000)
8473     LOAD-ERROR(TEST350C),          !ERROR DIRECTORY KEY
8474     DCS-CTR(C7.),          !COMPARE AT TARGET
8475     BUMP-VERIFY,          !COUNT
8476     NEXT,        J/COMP350C
(4742) DCS[1.00.1.0.0.1] BM[1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.100.110]

8477 4246: !(FREE)
8478 COMP350C:
8479     P2-T,        D+ASPLO[DF]-XOR-BSPHI[SF], SAVE-D[C],          !COMPARE RECEIVED:EXPECTED, BITWISE
8480     NEXT,        J/GOBUT350C
(4246) DCS[0.00.0.0.0.0] BM[0110..01.01..10.10..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.100.111]

8482 4247: !(FREE)
8483 GOBUT350C:
8484     SETUP,       RETURN/RESETIR350C,          !GO TO SUBR WHICH:
8485     NEXT,        CALL[DINTOIR-5]          !  D -> IR, BUT(INSTRS)
(4247) DCS[0.00.0.0.0.0] BM[0111..00.00..00.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

8487

```

```

8488 7027: !(FREE)
8489 RESEIR350C:
8490     SETUP, RETURN/TEST350D,           !GO TO SUBR WHICH PUTS SR -> IR FOR SF/DF/DM
8491     NEXT,  CALL(SRINTOIR)
(7027) DCS(0.00.0.0.0.0) BM(0100..00.11..11.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.110.110)

```

```

8492
8493
8494
8495 ! - - - - -
8496

```

```

8497 !TEST 3500 CHECKS ASP-ADDRS/SF, ASPHI ADDRS FOR ERRORS
8498 4743:
8499 TEST3500:
8500     PO,      LOAD-ENVA(ZTARGET434),      !INSTRS FOR IR=(000000)
8501             LOAD-ERROR(TEST3500),      !ERROR DIRECTORY KEY
8502             DCS-CTR(C7.),              !COMPARE AT TARGET
8503     NEXT,    J/COMP3500
(4743) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.101.000)

```

```

8504
8505 4250: !(FREE)
8506 COMP3500:
8507     PO,      BUMP-VERIFY,                !COUNT
8508     P2-T,    D+ASPHI(SF)-XOR-BSPLO(DF), SAVE-D(C), !COMPARE RECEIVED:EXPECTED, BITWISE
8509     NEXT,    J/GOBUT3500
(4250) DCS(0.00.0.0.0.1) BM(0110..00.00..11.11..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.101.001)

```

```

8510
8511 4251: !(FREE)
8512 GOBUT3500:
8513     PO,      BUMP-VERIFY,                !COUNT
8514     SETUP,   RETURN/SCOPE350,           !GO TO SUBR WHICH:
8515     NEXT,    CALL(DINTOIR-5)           ! D -> IR, BUT(INSTRS)
(4251) DCS(0.00.0.0.0.1) BM(0100..00.01..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

```

```

8516
8517
8518
8519 4252: !(FREE)
8520 SCOPE350:
8521     P2-T,    D+SR, SAVE-D(C),           !FOR DISPLAY OF SF/DM/DF
8522     NEXT,    BUTD(SCOPE),              !NO ERROR: "RESEIR350" (+1. WORDS) KEEP ON TESTING
8523             J/RESEIR350                ! ERROR: "COMP350A" (-11. WORDS) HOLD UP PATTERN
(4252) DCS(0.00.0.1.0.0) BM(1111..00.00..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...111.000.011)

```

```

8524
8525
8526
8527 ! - - - - -
8528

```

```

8529 4703:
8530 RESEIR350:
8531     PO,      BUMP-VERIFY,                !COUNT
8532     SETUP,   RETURN/NEXTPATA350,        !PUT OLD PAT FROM SR INTO IR FOR DMO TEST
8533     NEXT,    CALL(SRINTOIR)
(4703) DCS(0.00.0.0.0.1) BM(0100..00.01..01.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.110.110)

```

```

8534
8535 4253: !(FREE)
8536 NEXTPATA350:
8537 P2-T, SR#D+SR-PLUS-CSPD(D15), SAVE-D(C), !GENER NEXT PATTERN INTO D, SR
8538 NEXT, BUTR(DMD), !IF TRUE: "LOAD05-351" (+1. WORDS) ALL DONE HERE
8539 J/DINTOIRA350 !IF FALSE: "DINTOIRA" (-14. WORDS) KEEP ON TESTING
(4253) DCS(0.00.0.0.0.0) BM(1001..10.00..00.00..000..111...0.1.1..0..0...0.0010...0..0000.0...01.001...101.110.011)

```

```

8540
8541
8542
8543 ! - - - - -
8544
8545 !COME HERE IF DONE LOOPING
8546 !THESE CONSTANTS ARE USED IN THE NEXT TESTS:
8547 4567:
8548 LOAD05-351:
8549 PO, BUMP-VERIFY, !COUNT
8550 P3, CSPD(05)+EMIT, EMIT/055255, !SF=2, DF=5 CONSTANT
8551 NEXT, J/LOAD06-351
(4567) DCS(0.00.0.0.0.1) BM(0101..10.10..10.10..101..101...0.0.0..0..0...0.1010...1..0000.0...11.000...010.101.100)

```

```

8552
8553 4254: !(FREE)
8554 LOAD06-351:
8555 P3, CSPD(06)+EMIT, EMIT/054344, !SF=3, DF=4 CONSTANT
8556 NEXT, J/TEST351A
(4254) DCS(0.00.0.0.0.0) BM(0101..10.10..00.11..100..100...0.0.0..0..0...0.1001...1..0000.0...11.000...111.011.010)

```

```

8557
8558
8559
8560
8561 ! - - - - -
8562 !TESTS 351 A-D VERIFY THAT THE RIF ADDRESS, WITH ASP HI/LO IMMEDO/1 MODES, OPERATES CORRECTLY
8563
8564 ! - - - - -
8565
8566 !TEST 351A CHECKS ASPLO RIF ADDR "001 0"=(02)
8567 4732:
8568 TEST351A:
8569 PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
8570 LOAD-ERROR(TEST351A), !ERROR DIRECTORY KEY
8571 DCS-CTR(C7.), !COMPARE AT TARGET
8572 NEXT, J/COMP351A
(4732) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...111.000.100)

```

```

8574
8575 4704:
8576 COMP351A:
8577 P2-T, D+CSPD(05)-XOR-ASPLO(R02), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
8578 NEXT, J/GOBUT351A !CSP(05)=(055255)
(4704) DCS(0.00.0.0.0.0) BM(0110..10.00..10.00..101..111...0.1.0..0..0...0.1010...0..0000.0...11.000...010.101.110)

```

```

8579
8580 4256: !(FREE)
8581 GOBUT351A:
8582 PO, BUMP-VERIFY, !COUNT

```

```

8583      SETUP, RETURN/TEST351B,          !GO TO SUBR WHICH:
8584      NEXT,  CALL[DINTOIR-5]           !  D -> IR, BUT(INSTR5)
(4256) DCS[0.00.0.0.0.0.1] BM[0100..00.11..10.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

```

```

8585
8586
8587      ! - - - - -
8588

```

```

8589      !TEST 351B CHECKS ASPLO RIF ADDR "001 1"=(03)
8590      4722:
8591      TEST351B:
8592          PO,      LOAD-ENUA(ZTARGET434),      !INSTR5 FOR IR=(000000)
8593          LOAD-ERROR(TEST351B),              !ERROR DIRECTORY KEY
8594          DCS-CTR(C7.),                      !COMPARE AT TARGET
8595      NEXT,      J/COMP351B
(4722) DCS[1.00.1.0.0.0] BM[1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.101.111]

```

```

8596      4257:      !(FREE)
8597      COMP351B:
8598          P2-T,   D+CSPD[06]-XOR-ASPLO(R03), SAVE-D[C], !COMPARE EXPECTED:RECEIVED, BITWISE
8599          NEXT,   J/GOBUT351B                !CSP[06]=(054344)
8600      (4257) DCS[0.00.0.0.0.0] BM[0110..10.00..10.01..101..111...0.1.0..0..0...0.1001...0..0000.0...11.000...010.110.000]

```

```

8601      4260:      !(FREE)
8602      GOBUT351B:
8603          SETUP, RETURN/TEST351C,          !GO TO SUBR WHICH:
8604          NEXT,  CALL[DINTOIR-5]           !  D -> IR, BUT(INSTR5)
8605      (4260) DCS[0.00.0.0.0.0] BM[0100..00.11..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

```

```

8606
8607      ! - - - - -
8608

```

```

8609      !TEST 351C CHECKS ASPHI RIF ADDR "010 0"=(04)
8610      4723:
8611      TEST351C:
8612          PO,      LOAD-ENUA(ZTARGET434),      !INSTR5 FOR IR=(000000)
8613          LOAD-ERROR(TEST351C),              !ERROR DIRECTORY KEY
8614          DCS-CTR(C7.),                      !COMPARE AT TARGET
8615          BUMP-VERIFY,                      !COUNT
8616      NEXT,      J/COMP351C
(4723) DCS[1.00.1.0.0.1] BM[1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.001]

```

```

8618      4261:      !(FREE)
8619      COMP351C:
8620          P2-T,   D+CSPD[06]-XOR-ASPHI(R04), SAVE-D[C], !COMPARE EXPECTED:RECEIVED, BITWISE
8621          NEXT,   J/GOBUT351C                !CSP[06]=(054344)
8622      (4261) DCS[0.00.0.0.0.0] BM[0110..10.00..11.00..110..111...0.1.0..0..0...0.1001...0..0000.0...11.000...010.110.010]

```

```

8623      4262:      !(FREE)
8624      GOBUT351C:
8625          SETUP, RETURN/TEST351D,          !GO TO SUBR WHICH:
8626          NEXT,  CALL[DINTOIR-5]           !  D -> IR, BUT(INSTR5)
8627

```

```

(4262) DCS(0.00.0.0.0.0) BM(0100..00.11..10.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
8628
8629
8630 ! - - - - -
8631
8632 !TEST 351D CHECKS ASPHI RIF ADDR "010 1"=(05)
8633 4712:
8634 TEST351D:
8635     PO,          LOAD-ENUA(ZTARGET434),          !INSTRS FOR IR=(000000)
8636     LOAD-ERROR(TEST351D),          !ERROR DIRECTORY KEY
8637     DCS-CTR(C7.),          !COMPARE AT TARGET
8638     NEXT,        J/COMP351D
(4712) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.011)
8639
8640 4263: !(FREE)
8641 COMP351D:
8642     PO,          BUMP-VERIFY,          !COUNT
8643     P2-T,        D+CSPD(05)-XOR-ASPHI(RO5), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
8644     NEXT,        J/GOBUT351D          !CSP(05)=(055255)
(4263) DCS(0.00.0.0.0.1) BM(0110..10.00..11.01..110..111...0.1.0..0..0...0.1010...0..0000.0...11.000...010.110.100)
8645
8646 4264: !(FREE)
8647 GOBUT351D:
8648     PO,          BUMP-VERIFY,          !COUNT
8649     SETUP,       RETURN/SCOPE351,      !GO TO SUBR WHICH:
8650     NEXT,        CALL(DINTOIR-5)      ! D -> IR, BUT(INSTR5)
(4264) DCS(0.00.0.0.0.1) BM(0100..00.01..01.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
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8653
8654 4265: !(FREE)
8655 SCOPE351:
8656     NEXT,        BUTD(SCOPE),          !NO ERROR: "TEST352A" (+1. WORDS)
8657     J/TEST352A          !ERROR: "COMP351A" (-11. WORDS)
(4265) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000. .111.000.101)
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8661 ! - - - - -
8662
8663 !TESTS 352 A-D VERIFY THAT THE RIF ADDRESS, WITH BSP HI/LO IMMEDO/1 MODES, OPERATES CORRECTLY
8664
8665 ! - - - - -
8666
8667 !TEST 352A CHECKS BSPLO RIF ADDR "001 0"=(02)
8668 4705:
8669 TEST352A:
8670     PO,          LOAD-ENUA(ZTARGET434),          !INSTRS FOR IR=(000000)
8671     LOAD-ERROR(TEST352A),          !ERROR DIRECTORY KEY
8672     DCS-CTR(C7.),          !COMPARE AT TARGET
8673     NEXT,        J/COMP352A
(4705) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...111.001.100)

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8675
8676 4714:
8677 COMP352A:
8678     P2-T, D+ASPLO(02)-XOR-BSPLO(R02), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
8679     NEXT, J/GOBUT352A !DATA=(055255)
(4714) DCS(0.00.0.0.0.0) BM(0110..00.10..10.00..101..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.110.110)

8680
8681 4266: !(FREE)
8682 GOBUT352A:
8683     PO, BUMP-VERIFY, !COUNT
8684     SETUP, RETURN/TEST352B, !GO TO SUBR WHICH:
8685     NEXT, CALL(DINTOIR-5) ! D -> IR, BUT(INSTRS)
(4266) DCS(0.00.0.0.0.1) BM(0100..00.11..10.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

8686
8687 ! - - - - -
8688
8689 !TEST 352B CHECKS BSPLO RIF ADDR "001 1"=(03)
8690 4713:
8691 TEST352B:
8692     PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
8693     LOAD-ERROR(TEST352B), !ERROR DIRECTORY KEY
8694     DCS-CTR(C7.), !COMPARE AT TARGET
8695     NEXT, J/COMP352B
(4713) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.111)

8697
8698 4267: !(FREE)
8699 COMP352B:
8700     P2-T, D+ASPLO(03)-XOR-BSPLO(R03), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
8701     NEXT, J/GOBUT352B !DATA=(054344)
(4267) DCS(0.00.0.0.0.0) BM(0110..00.11..10.01..101..111...0.1.0..0..0...0.0000..0..0000.0...11.000...010.111.000)

8702
8703 4270: !(FREE)
8704 GOBUT352B:
8705     SETUP, RETURN/TEST352C, !GO TO SUBR WHICH:
8706     NEXT, CALL(DINTOIR-5) ! D -> IR, BUT(INSTRS)
(4270) DCS(0.00.0.0.0.0) BM(0100..00.11..10.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

8707
8708 ! - - - - -
8709
8710 !TEST 352C CHECKS BSPLO RIF ADDR "010 0"=(04)
8711 4724:
8712 TEST352C:
8713     PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
8714     LOAD-ERROR(TEST352C), !ERROR DIRECTORY KEY
8715     DCS-CTR(C7.), !COMPARE AT TARGET
8716     BUMP-VERIFY, !COUNT
8717     NEXT, J/COMP352C
(4724) DCS(1.00.1.0.0.1) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.111.001)

8719
8720 4271: !(FREE)

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8721 COMP352C:
 8722 P2-T, D+ASPL0(04)-XOR-BSPL0(R04), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
 8723 NEXT, J/GOBUT352C !DATA=(053433)
 (4271) DCS(0.00.0.0.0.0) BM(0110..00.10..10.00..110..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.111.010)

8724 4272: !(FREE)
 8725 GOBUT352C:
 8726 SETUP, RETURN/TEST3520, !GO TO SUBR WHICH:
 8727 NEXT, CALL(DINTOIR-5) ! D -> IR, BUT(INSTRS)
 8728 (4272) DCS(0.00.0.0.0.0) BM(0100..00.11..10.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

8729
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 8731 ! - - - - -
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8733 !TEST 3520 CHECKS BSPL0 RIF ADDR "010 1"=(05)
 8734 4725:
 8735 TEST3520:
 8736 PO, LOAD-ENUA(ZTARGET434), !INSTRS FOR IR=(000000)
 8737 LOAD-ERROR(TEST3520), !ERROR DIRECTORY KEY
 8738 DCS-CTR(C7.), !COMPARE AT TARGET
 8739 NEXT, J/COMP3520
 (4275) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.111.011)

8740 4273: !(FREE)
 8741 COMP3520:
 8742 PO, BUMP-VERIFY, !COUNT
 8743 P2-T, D+ASPL0(05)-XOR-BSPL0(R05), SAVE-D(C), !COMPARE EXPECTED:RECEIVED, BITWISE
 8744 NEXT, J/GOBUT3520 !DATA=(052522)
 8745 (4273) DCS(0.00.0.0.0.1) BM(0110..00.11..10.01..110..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.111.100)

8746 4274: !(FREE)
 8747 GOBUT3520:
 8748 PO, BUMP-VERIFY, !COUNT
 8749 SETUP, RETURN/SCOPE352, !GO TO SUBR WHICH:
 8750 NEXT, CALL(DINTOIR-5) ! D -> IR, BUT(INSTRS)
 8751 (4274) DCS(0.00.0.0.0.1) BM(0100..00.01..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

8752 4275: !(FREE)
 8753 SCOPE352:
 8754 P2-T, D+CSPD(013), D(C)+0, !RESTORE CONSTANT (000000)
 8755 P3, A#BSPHI(01)+D,
 8756 NEXT, BUTD(SCOPE), !NO ERROR: "RESTORE01" (+1. WORDS)
 8757 J/RESTORE01 !ERROR: "COMP352A" (-11. WORDS)
 8758 (4275) DCS(0.00.0.1.0.0) BM(1010..10.11..00.01..100..000...0.1.0..0..0...0.0100...0..1011.0...11.000...!11.001.101)

8761
 8762 ! - - - - -
 8763 !
 8764 ! THIS SECTION OF CODE FINISHES RESTORING THE 4 CONSTANTS IN ASPHI/BSPHI
 8765 ! THAT WERE WIPE OUT IN THE PREVIOUS GROUP OF TESTS.
 8766 !

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8767
8768 4715:
8769 RESTORE01:
8770 P2-T, D+CSPD(010), (052525)
8771 P3, A#BSPHI[07]+0,
8772 NEXT, GOTO-PAGE(7),
8773 J/RESTORE02
(4715) DCS[0.00.0.0.0.0] BM[1010..10.11..00.01..111..111...0.1.0..0..0...0.0111...0..1011.0...11.100...000.011.000]

8774 7030: !(FREE)
8775 RESTORE02:
8776 P2-T, D+CSPD(011), D[C]+0, (125252)
8777 P3, A#BSPHI[05]+0,
8778 NEXT, J/RESTORE03
8779 (7030) DCS[0.00.0.0.0.0] BM[1010..10.11..00.01..110..000...0.1.0..0..0...0.0110...0..1011.0...11.000...000.011.010]

8780 7032: !(FREE)
8781 RESTORE03:
8782 P2-T, D+CSPD(012), D[C]+0, (177777)
8783 P3, A#BSPHI[03]+0,
8784 NEXT, J/RESTORE04
8785 (7032) DCS[0.00.0.0.0.0] BM[1010..10.11..00.01..101..000...0.1.0..0..0...0.0101...0..1011.0...11.000...000.011.011]

8786 7033: !(FREE)
8787 RESTORE04:
8788 SETUP, RETURN/TEST361A, !GO TO SUBR THAT RESTORES CURRENT
8789 NEXT, GOTO-PAGE(7), !DCS MICROCODE VERSION NUMBER,
8790 J/INSERTREVNO !B<15>=(0), INTO B.M. GPR "RS"
8791 (7033) DCS[0.00.0.0.0.0] BM[0110..00.10..11.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.001.110]

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8800 .TOC * TEST361-372: TESTING SR, GUARD, RES, AND XMUX
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8802 !*****
8803 !*
8804 !* TESTS: 361 - 372 UWORDS: 125 + 117
8805 !*
8806 !* FUNCTIONS: TESTS THAT SR CAN BE LOADED FROM ALU OUT, READ THRU
8807 !* SR AND FLOAT PORTS OF XMUX, SR CAN BE SHIFTED LEFT, RIGHT,
8808 !* AND NOP, GUARD-ENABLED, DISABLED, SHIFTED, AND THAT
8809 !* ANY "BUTTABLE" BITS CAN BE TESTED.
8810 !* PREVIOUSLY TESTED IN TEST 105 A-E WAS THE ABILITY TO
8811 !* LOAD/READ THE SR THRU XMUX/SR, AND BUT(SR3-0).
8812 !* THESE FUNCTIONS ARE NOT TESTED HERE.
8813 !*
8814 !*****
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!*** TEST 361A ***

!TEST-361A TESTS THAT SR CAN BE LOADED, GUARD CLEARED, WITH PATTERN (052525)(0);

!READ THRU XMUX-FLTPT PORT = (100125)

6573:

TEST361A:

PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/INSTRS TEST
LOAD-ERROR(TEST361A), !ERROR DIRECTORY KEY
DCS-CTR(C11.), !COMPARE ENUA:TNUA AT TARGET
NEXT, J/SETRES361A

(6573) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.00C...101.111.000)

6570:

SETRES361A:

P3, CSPD(16)+EMIT, !CSP GETS
EMITC, SENDMUX-4567-SEL, !RES REG VALUES
SR-LOAD, GUARD-EN,
NEXT, J/LOADRES361A

(6570) DCS(0.00.0.0.0.0) BM(0000..10.10..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.000.001)

6001: !(FREE)

LOADRES361A:

PO, BUMP-VERIFY, !COUNT
P2-T, RES+CSPB(816), !STORE RES
D+ASPHI(000000), D(C)+1, !SET D=ZER0ES, D(C)=1
NEXT, J/LOADSR361A

(6001) DCS(0.00.0.0.0.1) BM(1111..11.01..11.01..100..000...0.1.0..0..0...0.0000...0..1000.1...11.000...000.000.010)

6002: !(FREE)

LOADSR361A:

P2-T, SR+BSPHI(052525), !LOAD SR WITH DATA
NEXT, J/EXPEC361B

(6002) DCS(0.00.0.0.0.0) BM(1010..01.11..00.00..111..000...0.0.1..0..0...0.0000...0..0000.0...11.000...000.000.011)

6003: !(FREE)

EXPEC361B:

PO, BUMP-VERIFY, !COUNT
P3, CSPD(16)+EMIT, !EXPECTED VALUE OUT OF XMUX-FLOAT
EMIT/100125, ! (100125)
NEXT, J/COMP361B

(6003) DCS(0.00.0.0.0.1) BM(1000..10.00..00.01..010..101...0.0.0..0..0...0.0001...1..0000.0...11.000...000.000.100)

6004: !(FREE)

COMP361B:

SETUP, RETURN/TEST361D, !RETURN TO START OF NEXT SUBTEST
NEXT, CALL(CSP16XORFLTTOIR-5) !SUBR: CSP(16).XOR.FLOAT -> IR, BUT(INSTRS)

(6004) DCS(0.00.0.0.0.0) BM(0110..00.11..11.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.101)

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!*** TEST 361D ***
!TEST 361D CHECKS THAT THE BUT ON SR<1:0> READS THE (052525) IN THE SR CORRECTLY

6771:

TEST361D:

PO, LOAD-ENUA(ZTARGET403), !EXPECTED VALUE "01"#"1" IN SR<1:0>
LOAD-ERROR(TEST361D), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE ENUA:TNUA AT TARGET
NEXT J/GOBUT361D !COUNT

(6771) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..011...0.0.0 .0..0...0.0000...0..0000.0...11.000...000.000.101]

6005: !(FREE)

GOBUT361D:

SETUP, RETURN/TEST361E, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT'S ARE ON PAGE 7
J/BUTSR1-0 !GO BUT ON SR<1:0>

(6005) DCS[0.00.0.0.0.0] BM[0110..00.11..11.10..111..111...0.0.0..0..0...0.0000...0..0000.0 .11.100...011.001.101]

!-----

!*** TEST 361E ***
!TEST-361E CHECKS THAT GD<3:2> IS CLEARED UNDER SR-LOAD, GUARD-ENABLED

6767:

TEST361E:

PO, LOAD-ENUA(ZTARGET400), !EXPECTED VALUE "00" IN GUARD<3:2>
LOAD-ERROR(TEST361E), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE ENUA:TNUA AT TARGET
BUMP-VERIFY, !COUNT
NEXT J/GOBUT361E !COUNT

(6767) DCS[1.00.1.0.0.1] BM[1100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.110]

6006: !(FREE)

GOBUT361E:

SETUP, RETURN/TEST362A, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT'S ARE ON PAGE 7
J/BUTGD3-2 !GO BUT ON GD<3:2>

(6006) DCS[0.00.0.0.0.0] BM[0110..00.11..11.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100]

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8911 ! -----
8912
8913 !*** TEST 362A ***
8914 !TEST-362A CHECKS THAT THE SR#GD CAN BE SHIFTED RIGHT 1 POSITION, INSERTING
8915 !A "1" FROM D<00> INTO SR<15>, SHIFTING THE "1" IN SR<00> INTO GD<3>
8916 6765:
8917 TEST362A:
8918     PO,          LOAD-ENUA(ZTARGET434),          !SETUP FOR IR=(000000)/INSTRS TEST
8919     LOAD-ERROR(TEST362A),          !ERROR DIRECTORY KEY
8920     DCS-CTR(C10.),          !COMPARE ENUA:TNUA AT TARGET
8921     NEXT,        J/SETRES362A
(6765) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.000.111)

8922 6007: !(FREE)
8923 SETRES362A:
8924     PO,          BUMP-VERIFY          !COUNT
8925     P3,          CSPD(16)+EMIT        !CSP GETS
8926     EMITC,      SENDMUX-4567-SEL     !RES REG VALUES
8927     SR-RIGHT,  GUARD-EN,
8928     NEXT,        J/SETDOC362A
(6007) DCS(0.00.0.0.0.1) BM(0010..10.10..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.001.000)

8930 6010: !(FREE)
8931 SETDOC362A:
8932     P2-T,      D+ESPFI(C000001), D(C)+0,          !SETUP D<00>=1 FOR SHIFT
8933     NEXT,      J/LOADRES362A
(6010) DCS(0.00.0.(1).0.0) BM(1010..01.11..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...000.001.001)

8935 6011: !(FREE)
8936 LOADRES362A:
8937     P2,          RES+CSPB(B16),          !STORE RES
8938     P3-T,      SF+SR-RIGHT-1,          !SHIFT SR RIGHT, GUARD-ENABLED
8939     NEXT,      J/COMP362A
(6011) DCS(0.00.0.J.0.0) BM(0000..11.01..00.00..000..000...1.0.1..0..0...0.0000...0..1000.1...11.000...000.001.010)

8941 6012: !(FREE)
8942 COMP362A:
8943     PO,          BUMP-VERIFY          !COUNT
8944     P2-T,      D+SR-XOR-ESPFI(C125252), SAVE-D(C), !D + (125252)=SR, BITWISE
8945     NEXT,      J/GOBUT362A
(6012) DCS(0.00.0.0.0.1) BM(0110..01.11..00.00..110..111...0.1.0..0..0...0.0000...0..0000.0...11.000...000.001.011)

8947 6013: !(FREE)
8948 GOBUT362A:
8949     SETUP,      RETURN/TEST362B,          !RETURN TO START OF NEXT SUBTEST
8950     NEXT,      CALL(DINTOIR-5)          !SUBR: D -> IR, BUT(INSTRS)
(6013) DCS(0.00.0.0.0.0) BM(0110..00.11..11.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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8959 !*** TEST 3628 ***
8960 !TEST-3628 CHECKS THAT SR-XMUX-FLOAT PORT CAN BE READ, WITH SR=(125252)
8961 6763:
8962 TEST3628:
8963     PO,      LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/INSTRS TEST
8964     LOAD-ERROR(TEST3628),      !ERROR DIRECTORY KEY
8965     DCS-CTR(C8.),      !COMPARE ENUA:TNUA AT TARGET
8966     NEXT,    J/EXPEC3628
(6763) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.100)

8967
8968 6014:  !(FREE)
8969 EXPEC3628:
8970     PO,      BUMP-VERIFY,      !COUNT
8971     P3,      CSPD(16)+EMIT,      !EXPECTED VALUE OF XMUX-FLOAT
8972     EMIT/000052,      !(000052)
8973     NEXT,    J/COMP3628
(6014) DCS(0.00.0.0.0.0.1) BM(0000..10.00..00.00..101..010...0.0.0..0..0...0.0001...1..0000.0...11.000...000.001.101)

8974
8975 6015:  !(FREE)
8976 COMP3628:
8977     SETUP,   RETURN/TEST3620,      !RETURN TO START OF NEXT SUBTEST
8978     NEXT,    CALL(CSP16XORFLTTOIR-5) !SUBR: CSP(16).XOR.FLOAT -> IR, BUT(INSTRS)
(6015) DCS(0.00.0.0.0.0) BM(0110..00.11..11.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.101)

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8984 ! -----
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8986 !*** TEST 3620 ***
8987 !TEST-3620 CHECKS THAT THE BUT ON SR<1:0> READS THE (125252) IN THE SR CORRECTLY
8988 6757:
8989 TEST3620:
8990     PO,      LOAD-ENUA(ZTARGET405),      !EXPECTED VALUE "10""1" IN SR<1:0>
8991     LOAD-ERROR(TEST3620),      !ERROR DIRECTORY KEY
8992     DCS-CTR(C3.),      !COMPARE ENUA:TNUA AT TARGET
8993     NEXT,    J/GOBUT3620
(6757) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.110)

8994
8995 6016:  !(FREE)
8996 GOBUT3620:
8997     SETUP,   RETURN/TEST362E,      !RETURN TO START OF NEXT SUBTEST
8998     NEXT,    GOTO-PAGE(7),      !BUT'S ARE ON PAGE 7
8999     J/BUTSR1-0,      !GO BUT ON SR<1:0>
(6016) DCS(0.00.0.0.0.0) BM(0110..00.11..11.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.101)

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9005 ! -----
9006
9007 !*** TEST 362E ***
9008 !TEST-362E CHECKS THAT GD<3:2> RECEIVED THE "1" IN SR<00> AFTER THE SHIFT RIGHT
9009 6755:
9010 TEST362E:
9011     PO,          LOAD-ENUA(ZTARGET402),          !EXPECTED VALUE "10" IN GUARD<3:2>
9012                LOAD-ERROR(TEST362E),          !ERROR DIRECTORY KEY
9013                DCS-CTR(C3.),                  !COMPARE ENUA:TNUA AT TARGET
9014     NEXT,        J/GOBUT362E
(6755) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.001.111)

9015 6017: !(FREE)
9016 GOBUT362E:
9017     SETUP,      RETURN/TEST363A,              !RETURN TO START OF NEXT SUBTEST
9018     PO,          BUMP-VERIFY,                 !COUNT
9019     NEXT,        GOTO-PAGE(7),                 !BUT'S ARE ON PAGE 7
9020                J/BUTGD3-2,                   !GO BUT ON GD<3:2>
9021 (6017) DCS(0.00.0.0.0.1) BM(0110..00.11..11.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100)

9022
9023
9024
9025
9026
9027 ! -----
9028
9029 !*** TEST 363A ***
9030 !TEST-363A CHECKS THAT THE SR#GD CAN AGAIN BE SHIFTED RIGHT 1 POSITION, INSERTING
9031 !A "0" FROM D<00> INTO SR<15>, SHIFTING THE "0" IN SR<00> INTO GD<3>
9032 6753:
9033 TEST363A:
9034     PO,          LOAD-ENUA(ZTARGET434),          !SETUP FOR IR=(000000)/INSTRS TEST
9035                LOAD-ERROR(TEST363A),          !ERROR DIRECTORY KEY
9036                DCS-CTR(C9.),                  !COMPARE ENUA:TNUA AT TARGET
9037     NEXT,        J/SETDOC363A
(6753) DCS(1.00.1.0.0.0) BM(0110..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.000)

9038 6020: !(FREE)
9039 SETDOC363A:
9040     P3-T,        D+NOT-ASPHI(C000001), D(C)+1, !SETUP D=(177776), D(C)=0 FOR SHIFT RIGHT
9041     NEXT,        J/SHIFT363A
(6020) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..000..000...1.1.0..0..0...0.0000...0..0000.0...11.000...000.010.001)

9043 6021: !(FREE)
9044 SHIFT363A:
9045     PO,          BUMP-VERIFY,                 !COUNT
9046     P2-T,        SR+SR-RIGHT-1,               !SHIFT SR RIGHT, GUARD-ENABLED
9047     NEXT,        J/COMP363A
(6021) DCS(0.00.0.0.0.1) BM(0000..00.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...000.010.010)

9049 6022: !(FREE)
9050 COMP363A:
9051     P2-T,        D+SR-XOR-BSPHI(C052525), SAVE-D(C), !D + (052525)=SR, BITWISE
9052

```

9053 NEXT J/GOBUT363A
 (6022) DCS[0.00.0.0.0.0] BM[0110..01.11..00.00..111..111...0.1.0..0..0...0.0000...0..0000.0...11.000...000.010.011]

9054
 9055 6023: !(FREE)
 9056 GOBUT363A:

9057 SETUP, RETURN/TEST363B, !RETURN TO START OF NEXT SUBTEST
 9058 NEXT, CALL(DINTOIR-5) !SUBR: 0 -> IR, BUT(INSTR5)
 (6023) DCS[0.00.0.0.0.0] BM[0110..00.11..11.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

9059
 9060
 9061
 9062
 9063

! -----

9064
 9065
 9066 !*** TEST 3638 ***
 9067 !TEST-3638 CHECKS THE GUARD REGISTER WAS SHIFTED RIGHT ALSO

9068 6751:
 9069 TEST3638:
 9070 PO, LOAD-ENUA(ZTARGET401), !EXPECTED VALUE "01" IN GUARD<3:2>
 9071 LOAD-ERROR(TEST3638), !ERROR DIRECTORY KEY
 9072 DCS-CTR(C3.), !COMPARE ENUA:TNUA AT TARGET
 9073 NEXT, J/GOBUT363B
 (6751) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.100]

9074
 9075 6024: !(FREE)
 9076 GOBUT3638:

9077 SETUP, RETURN/TEST364A, !RETURN TO START OF NEXT SUBTEST
 9078 NEXT, GOTO-PAGE(7), !BUT'S ARE ON PAGE 7
 9079 J/BUTGD3-2 !GO BUT ON GD<3:2>
 (6024) DCS[0.00.0.0.0.0] BM[0110..00.11..11.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100]

9080
 9081
 9082
 9083
 9084

! -----

9085
 9086
 9087 !*** TEST 364A ***
 9088 !TEST-364A/364B CHECK THAT WE ARE ABLE TO FILTER A "1" DOWN TO GD<0>, AND
 9089 !SUBSEQUENTLY ABLE TO RECOVER IT, SO GD<3:0>="0101"

9090 6747:
 9091 TEST364A:
 9092 PO, LOAD-ENUA(ZTARGET402), !EXPECTED VALUE "10" IN GUARD <3:2>
 9093 LOAD-ERROR(TEST364A), !ERROR DIRECTORY KEY
 9094 DCS-CTR(C4.), !COMPARE ENUA:TNUA AT TARGET
 9095 BUMP-VERIFY, !COUNT
 9096 NEXT, J/SETDOC364A
 (6747) DCS[1.00.1.0.0.1] BM[1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.101]

9097
 9098 6025: !(FREE)
 9099 SETDOC364A:


```

9100      P2-T,  D+NOT-ASPHI(C000001), D(C)+1,      !SETUP D=(177776), D(C)=0 FOR SHIFT RIGHT
9101      NEXT,  J/GOBUT364A                          ! WHERE SR<15> <- (0)
(6025) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...000.010.110)

9102      6026:  !(FREE)
9103      GOBUT364A:
9104      SETUP, RETURN/TEST364B,                      !RETURN TO START OF NEXT SUBTEST
9105      P3-T,  SR+SR-RIGHT-1,                        !SHIFT SR#GD RIGHT
9106      NEXT,  GOTO-PAGE(7),                          !BUT'S ARE ON PAGE 7
9107      J/BUTGD3-2                                    !GO BUT ON GD<3:2>
9108      (6026) DCS(0.00.0.0.0.0) BM(0110..00.11..11.00..101..111...1.0.1..0..0...0.0000...0..0000.0...11.100...011.001.100)

9109
9110
9111
9112
9113
9114      ! -----
9115
9116      !*** TEST 364B ***
9117      !TEST-364B CHECKS THAT GD<3:2> READS AS "01"
9118      6745:
9119      TEST364B:
9120      PO,      LOAD-ENUA(ZTARGET401),                !EXPECTED VALUE "01" IN GUARD<3:2>
9121      LOAD-ERROR(TEST364B),                          !ERROR DIRECTORY KEY
9122      DCS-CTR(C4.),                                  !COMPARE ENUA:TNUA AT TARGET
9123      NEXT,    J/SETDDC364B
(6745) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.010.111)

9124      6027:  !(FREE)
9125      SETDDC364B:
9126      P3-T,  D+BSPHI(C000001), D(C)+0,              !SETUP D, D(C) FOR SR<15>+"1"
9127      NEXT,  J/GOBUT364B
(6027) DCS(0.00.0.0.0.0) BM(1010..01.11..00.00..000..000...1.1.0..0..0...0.0000...0..0000.0...11.000...000.011.000)

9129      6030:  !(FREE)
9130      GOBUT364B:
9131      SETUP, RETURN/TEST365A,                      !RETURN TO START OF NEXT SUBTEST
9132      P2-T,  SR+SR-RIGHT-1,                        !SHIFT SR#GD RIGHT AGAIN
9133      NEXT,  GOTO-PAGE(7),                          !BUT'S ARE ON PAGE 7
9134      J/BUTGD3-2                                    !GO BUT ON GD<3:2>
(6030) DCS(0.00.0.0.0.0) BM(0110..00.11..11.00..011..111...0.0.1..0..0...0.0000...0..0000.0...11.100...011.001.100)

9136
9137
9138
9139
9140
9141      ! -----
9142
9143      !*** TEST 365A ***
9144      !TEST-365A CHECKS THAT CAN SHIFT SR-RIGHT, W/GUARD-DISABLED
9145      6743:
9146      TEST365A:

```

```

9147          PO,      LOAD-ENUA(ZTARGET434),      !SETUP FOR IR=(000000)/INSTR5 TEST
9148          LOAD-ERROR(TEST365A),                !ERROR DIRECTORY KEY
9149          DCS-CTR(C10.),                          !COMPARE ENUA:TNUA AT TARGET
9150          NEXT     J/SETRES365A
(6743) DCS[1.00.1.0.0.0] BM[0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.001]

```

```

9151          6031:  !(FREE)
9152          SETRES365A:
9153          PO,      BUMP-VERIFY,                    !COUNT
9154          P3,      CSPD[16]+EMIT,                  !CSP GETS
9155          EMITC,   SENDMUX-4567-SEL,              !RES REG VALUES
9156          SR-RIGHT, GUARD-DIS,
9157          NEXT     J/LOADRES365A
(6031) DCS[0.00.0.0.0.0.1] BM[0010..10.00..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.011.010]

```

```

9159          6032:  !(FREE)
9160          LOADRES365A:
9161          P2,      RES+CSP8(816),                  !STORE RES
9162          P3-T,   SR+SR-RIGHT-1,                  !SHIFT SR RIGHT, GUARD-DISABLED
9163          NEXT     J/EXPEC365A
(6032) DCS[0.00.0.0.0.0.0] BM[0000..11.01..00.00..000..000...1.0.1..0..0...0.0000...0..1000.1...11.000...000.011.011]

```

```

9165          6033:  !(FREE)
9166          EXPEC365A:
9167          PO,      BUMP-VERIFY,                    !COUNT
9168          P3,      CSPD[16]+EMIT,                  !EXPECTED VALUE OUT OF XMUX-SR
9169          EMIT/145252,                              !((145252))
9170          NEXT     J/COMP365A
(6033) DCS[0.00.0.0.0.0.1] BM[1100..10.10..10.10..101..010...0.0.0..0..0...0.0001...1..0000.0...11.000...000.011.100]

```

```

9172          6034:  !(FREE)
9173          COMP365A:
9174          SETUP,   RETURN/TEST3658,                !RETURN TO START OF NEXT SUBTEST
9175          NEXT     CALL(CSP16XORSR[OIR-5])         !SUBR: CSP(16).XOR.SR -> IR, BUT(INSTR5)
9176          (6034) DCS[0.00.0.0.0.0.0] BM[0110..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.001]

```

```

9177
9178
9179
9180
9181
9182  ! -----
9183

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```

9184  !*** TEST 3658 ***
9185  !TEST-3658 CHECKS THAT THE GUARD WASN'T ALTERED ON SHIFT RIGHT/DISABLED
9186  6741:
9187  TEST3658:
9188          PO,      LOAD-ENUA(ZTARGET401),          !EXPECTED VALUE "01" IN GUARD<3:2>
9189          LOAD-ERROR(TEST3658),                    !ERROR DIRECTORY KEY
9190          DCS-CTR(C3.),                              !COMPARE ENUA:TNUA AT TARGET
9191          NEXT     J/GOBUT3658
(6741) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.101]

```

```

9192          6035:  !(FREE)
9193

```

```

9194 G0BUT365B:
9195     SETUP, RETURN/TEST366A, !RETURN TO START OF NEXT SUBTEST
9196     NEXT,  GOTO-PAGE(7), !BUT'S ARE ON PAGE 7
9197     J/BUTGD3-2 !GO BUT ON GD(3:2)
(6035) DCS(0.00.0.0.0.0) BM(0110..00.11..10.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100)

9198
9199
9200
9201
9202
9203 ! -----
9204
9205 !*** TEST 366A ***
9206 !TEST-366A CHECKS THAT SR CAN SHIFT LEFT, GUARD-DISABLED & NOT ALTERED, "0" IN
9207 !D(C) SHIFTED INTO SR(00)
9208 6737:
9209 TEST366A:
9210     PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/INSTRS TEST
9211     LOAD-ERROR(TEST366A), !ERROR DIRECTORY KEY
9212     DCS-CTR(C11.), !COMPARE ENUA:TNUA AT TARGET
9213     NEXT, J/SETRES366A
(6737) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.011.110)

9214
9215 6036: !(FREE)
9216 SETRES366A:
9217     PO, BUMP-VERIFY !COUNT
9218     P3, CSPD(16)+EMIT !CSP GETS
9219     EMITC, SENDMUX-4567-SEL !RES REG VALUES
9220     SR-LEFT, GUARD-DIS,
9221     NEXT, J/LOADRES366A
(6036) DCS(0.00.0.0.0.1) BM(0001..10.00..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.011.111)

9222
9223 6037: !(FREE)
9224 LOADRES366A:
9225     P2-T, RES+CSPB(B16) !STORE RES
9226     D+ZERO, D(C)+ALU07, !AND SET D, D(C)
9227     NEXT, J/SHIFT366A
(6037) DCS(0.00.0.0.0.0) BM(0011..11.01..00.00..000..011...0.1.0..0..0...0.0000...0..1000.1...11.000...000.100.000)

9228
9229 6040: !(FREE)
9230 SHIFT366A:
9231     PO, BUMP-VERIFY !COUNT
9232     P3-T, SR+SR-LEFT-1, !SHIFT SR LEFT 1, SR(00)+D(C)="0"
9233     NEXT, J/EXPEC366A
(6040) DCS(0.00.0.0.0.1) BM(0000..00.00..00.00..000..000...1.0.1..0..0...0.0000...0..0000.0...11.000...000.100.001)

9234
9235 6041: !(FREE)
9236 EXPEC366A:
9237     P3, CSPD(16)+EMIT, !EXPECTED RESULT AFTER SHIFT
9238     EMIT/112524, !(112524)
9239     NEXT, J/COMP366A
(6041) DCS(0.00.0.0.0.0) BM(1001..10.01..01.01..010..100...0.0.0..0..0...0.0001...1..0000.0...11.000...000.100.010)

9240

```

```

9241 6042: !(FREE)
9242 COMP366A:
9243     SETUP, RETURN/TEST366B,           !RETURN TO START OF NEXT SUBTEST
9244     NEXT,  CALL(CSP16XORSRTOIR-5)    !SUBR: CSP(16).XOR.SR -> IR, BUT(INSTR5)
(6042) DCS(0.00.0.0.0.0) BM(0110..00.11..10.11..101..111...0.0.0..0..0...J.0000...0..0000.0...11.100...000.011.001)

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9253
9254

```

```

!-----
*** TEST 366B ***
!TEST-366B CHECKS THAT GUARD WASN'T ALTERED ON SHIFT LEFT/GUARD-DISABLED
6735:
TEST366B:
9257     PO,      LOAD-ENUA(ZTARGET401),    !GUARD SHOULD STILL BE "01"*"01"
9258             LOAD-ERROR(TEST366B),      !ERROR DIRECTORY KEY
9259             DCS-CTR(C3.),              !COMPARE ENUA:TNUA AT TARGET
9260     NEXT,     J/GOBUT366B
(6735) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.011)

```

```

9261 6043: !(FREE)
9262 GOBUT366B:
9263     SETUP, RETURN/TEST366C,           !RETURN TO START OF NEXT SUBTEST
9264     NEXT,  GOTO-PAGE(7),              !BUT'S ARE ON PAGE 7
9265             J/BUTGD3-2                !GO BUT ON GUARD (3:2)
9266 (6043) DCS(0.00.0.0.0.0) BM(0110..00.11..10.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100)

```

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9272
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9274
9275
9276

```

```

!-----
*** TEST 366C ***
!TEST-366C CHECKS THAT SR CAN AGAIN SHIFT LEFT, GUARD-DISABLED, SR<00>+D(C)="1"
6733:
TEST366C:
9279     PO,      LOAD-ENUA(ZTARGET434),    !SETUP FOR IR=(000000)/INSTR5 TEST
9280             LOAD-ERROR(TEST366C),      !ERROR DIRECTORY KEY
9281             DCS-CTR(C10.),              !COMPARE ENUA:TNUA AT TARGET
9282     NEXT,     J/SETDDC366C
(6733) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.100.100)

```

```

9283 6044: !(FREE)
9284 SETDDC366C:
9285     P2-T,     D+ASPHI(C177777), D(C)+1, !SETUP D, D(C)
9286     NEXT,     J/SHIFT366C
9287 (6044) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..101..000...0.1.0..0..0...0.0000...0..0000.0...11.000...000.100.101)

```

```

9288
9289 6045: !(FREE)
9290 SHIFT366C:
9291 P2-T, SR+SR-LEFT-1, !SHIFT SR LEFT 1, SR<00>+D[C]="1"
9292 NEXT, J/EXPEC366C
(6045) DCS[0.00.0.0.0.0] BM[0000..00.00..00.00..000..000..0.0.1..0..0...0.0000...0..0000.0...11.000...000.100.110]

```

```

9293
9294 6046: !(FREE)
9295 EXPEC366C:
9296 PO, BUMP-VERIFY, !COUNT
9297 P3, CSPD[16]+EMIT, !EXPECTED VALUE AFTER SHIFT
9298 EMIT/025251, !(025251)
9299 NEXT, J/COMP366C
(6046) DCS[0.00.0.0.0.1] BM[0010..10.10..10.10..101..001...0.0.0..0..0...0.0001...1..0000.0...11.000...000.100.111]

```

```

9300
9301 6047: !(FREE)
9302 COMP366C:
9303 SETUP, RETURN/TEST367A, !RETURN TO START OF NEXT SUBTEST
9304 NEXT, CALL[CSP16XORSR<0IR-5] !SUBR: CSP(16).XOR.SR -> IR, BUT(INSTRS)
(6047) DCS[0.00.0.0.0.0] BM[0110..00.11..10.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100..000.011.001]

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9305
9306
9307
9308
9309
9310
9311 !-----
9312

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```

9313 !*** TEST 367A ***
9314 !TEST-367A CHECKS THAT LOAD/GUARD-DISABLED LOADS SR, GUARD NOT ALTERED
9315 !CHECK THAT BUTA(CLEAR-FLAGS) CLEARS RES TO SR-LOAD/GUARD-DIS
9316 6731:
9317 TEST367A:
9318 PO, LOAD-ENUA(ZTARGET401), !GUARD SHOULD STILL BE "01"#"01" AFTER LOAD
9319 LOAD-ERROR(TEST367A), !ERROR DIRECTORY KEY
9320 DCS-CTR(C6.), !COMPARE ENUA:TNUA AT TARGET
9321 NEXT, J/SETRES367A
(6731) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.000]

```

```

9322
9323 6050: !(FREE)
9324 SETRES367A:
9325 PO, BUMP-VERIFY, !COUNT
9326 P3, CSPD[16]+EMIT, !CSP GETS
9327 EMITC, SENDMUX-4567-SEL, !RES VALUES
9328 SR-NOP, GUARD-EN, !FIRST LOAD COMPLEMENT OF THOSE AFTER BUTA(CLEAR-FLAGS)
9329 NEXT, J/LOADRES367A
(6050) DCS[0.00.0.0.0.1] BM[0011..10.10..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.101.001]

```

```

9330
9331 6051: !(FREE)
9332 LOADRES367A:
9333 PO, BUMP-VERIFY, !COUNT
9334 P2-T, RES+CSPB(B16), !STORE RES
9335 D+ZERO, D[C]+ALU07, !SET D, D[C]

```

```

9336      P3,      BUTA(CLR-FLAG-RES-UCON),      !RESET RES TO SR-LOAD, GUARD-DIS
9337      NEXT,     J/LOADSR367A
(6051) DCS(0.00.0.0.0.1) BM(0011..11.01..00.00..000..011...0.1.0..0..0...0.000...0..1000.1...11.010...000.101.010)
9338
9339      6052:  !(FREE)
9340      LOADSR367A:
9341      P2-T,     SR+BSPHI(C052525),           !SR+(052525)
9342      NEXT,     J/GOBUT367B
(6052) DCS(0.00.0.0.0.0) BM(1010..01.11..00.00..111..000...0.0.1..0..0...0.0000...0..0000.0...11.000...000.101.011)
9343
9344      6053:  !(FREE)
9345      GOBUT367B:
9346      SETUP,   RETURN/TEST370A,           !RETURN TO START OF NEXT SUBTEST
9347      NEXT,     GOTO-PAGE(7),             !BUT'S ARE ON PAGE 7
9348      J/BUTGD3-2,           !GO BUT ON GUARD <3:2>
(6053) DCS(0.00.0.0.0.0) BM(0110..00.11..10.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100)
9349
9350
9351
9352
9353
9354
9355      ! -----
9356
9357      !*** TEST 370A ***
9358      !TEST-370A CHECKS THAT SHIFT LEFT/GUARD-ENABLED SHIFTS GD<3>="0" INTO SR<00>
9359      6725:
9360      TEST370A:
9361      PO,       LOAD-ENUA(ZTARGET434),       !SETUP FOR IR=(000000)/INSTRS TEST
9362      LOAD-ERROR(TEST370A),                 !ERROR DIRECTORY KEY
9363      DCS-CTR(C10.),                         !COMPARE ENUA:TNUA AT TARGET
9364      NEXT,     J/SETRES370A
(6725) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.101.100)
9365
9366      6054:  !(FREE)
9367      SETRES370A:
9368      PO,       BUMP-VERIFY,                 !COUNT
9369      P3,       CSPD(16)+EMIT,               !CSP GETS
9370      EMITC,    SENDMUX-4567-SEL,           !RES VALUES
9371      SR-LEFT,  GUARD-EN,
9372      NEXT,     J/LOADRES370A
(6054) DCS(0.00.0.0.0.1) BM(0001..10.10..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.101.101)
9373
9374      6055:  !(FREE)
9375      LOADRES370A:
9376      P2-T,     RES+CSPB(816),              !STORE RES
9377      D+ASPHI(C000000), D(C)+1,           !SETUP D, D(C)
9378      NEXT,     J/SHIFT370A
(6055) DCS(0.00.0.0.0.0) BM(1111..11.01..11.01..100..000...0.1.0..0..0...0.0000...0..1000.1...11.000...000.101.110)
9379
9380      6056:  !(FREE)
9381      SHIFT370A:
9382      P2-T,     SR+SR-LEFT-1,              !SHIFT SR LEFT 1, SR<00>+GD<3>="0"

```

9383 NEXT J/COMP370A
 (6056) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...000.101.1111)

9384
 9385 6057: !(FREE)
 9386 COMP370A:
 9387 P2-T, D+SR-XOR-BSPHI(C125252), SAVE-D(C), !D + (125252)=SR, BITWISE
 9388 NEXT J/GOBUT370A
 (6057) DCS(0.00.0.0.0.0) BM(0110..01.11..00.00..110..111...0.1.0..0..0...0.0000...0..0000.0...11.000...000.110.000)

9389
 9390 6060: !(FREE)
 9391 GOBUT370A:
 9392 SETUP, RETURN/TEST370B, !RETURN TO START OF NEXT SUBTEST
 9393 NEXT, CALL(DINTOIR-5) !SUBR: D -> IR, BUT(INSTRS)
 (6060) DCS(0.00.0.0.0.0) BM(0110..00.11..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.0111)

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 9400 ! - - - - -

9401
 9402 !*** TEST 370B ***
 9403 !TEST-370B CHECKS THAT THE GUARD, NOW ENABLED, WAS ALSO SHIFTED LEFT
 9404 6723:
 9405 TEST370B:
 9406 PO, LOAD-ENUA(ZTARGET402), !GUARD IS NOW "10"#"10"
 9407 LOAD-ERROR(TEST370B), !ERROR DIRECTORY KEY
 9408 DCS-CTR(C3.), !COMPARE ENUA:TNUA AT TARGET
 9409 NEXT J/GOBUT370B
 (6723) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.0011)

9410
 9411 6061: !(FREE)
 9412 GOBUT370B:
 9413 SETUP, RETURN/TEST370C, !RETURN TO START OF NEXT SUBTEST
 9414 PO, BUMP-VERIFY, !COUNT
 9415 NEXT, GOTO-PAGE(7), !BUT'S ARE ON PAGE 7
 9416 J/BUTGD3-2 !GO BUT ON GUARD <3:2>
 (6061) DCS(0.00.0.0.0.1) BM(0110..00.11..10.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100)

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 9424 ! - - - - -

9425
 9426 !*** TEST 370C ***
 9427 !TEST-370C CHECKS THAT SHIFT LEFT/GUARD-ENABLED SHIFTS GD<3>="1" INTO SR<00>
 9428 6721:
 9429 TEST370C:

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9430          PO,          LOAD-ENUA(ZTARGET434),          !SETUP FOR IR=(000000)/INSTRS TEST
9431          LOAD-ERROR(TEST370C),          !ERROR DIRECTORY KEY
9432          DCS-CTR(C9.),          !COMPARE ENUA:TNUA AT TARGET
9433          NEXT          J/SETDOC370C
(6721) DCS(1.00.1.0.0.0) BM(0110..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.010)

9434          6062:  !(FREE)
9435          SETDOC370C:
9436          PO,          BUMP-VERIFY          !COUNT
9437          P2-T,          D+ZERO D(C)+ALU07,          !SET D, D(C)
9438          NEXT          J/SHIFT370C
(6062) DCS(0.00.0.0.0.0.1) BM(0011..00.00..00.00..000..011...0.1.0..0..0...0.0000...0..0000.0...11.000...000.110.011)

9440          6063:  !(FREE)
9441          SHIFT370C:
9442          P3-T,          SR+SR-LEFT-1,          !SHIFT SR LEFT, SR<00>+GD<3>="1"
9443          NEXT          J/COMP370C
(6063) DCS(0.00.0.0.0.0.0) BM(0000..00.00..00.00..000..000...1.0.1..0..0...0.0000...0..0000.0...11.000...000.110.100)

9445          6064:  !(FREE)
9446          COMP370C:
9447          P2-T,          D+SR-XOR-BSPHI(C052525), SAVE-D(C),          !D + (052525)=SR, BITWISE
9448          NEXT          J/GOBUT370C
(6064) DCS(0.00.0.0.0.0.0) BM(0110..01.11..00.00..111..111...0.1.0..0..0...0.0000...0..0000.0...11.000...000.110.101)

9450          6065:  !(FREE)
9451          GOBUT370C:
9452          SETUP,          RETURN/TEST3700,          !RETURN TO START OF NEXT SUBTEST
9453          NEXT          CALL(DINTOIR-5)          !SUBR: D -> IR, BUT(INSTRS)
(6065) DCS(0.00.0.0.0.0.0) BM(0110..00.11..10.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

9455          ! -----
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9462          !
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9464          !*** TEST 3700 ***
9465          !TEST-3700 CHECKS THAT THE "1" THAT GOT PUT IN GD<0> CAN BE SHIFTED BACK
9466          6717:
9467          TEST3700:
9468          PO,          LOAD-ENUA(ZTARGET401),          !GUARD IS NOW "01"#"00"
9469          LOAD-ERROR(TEST3700),          !ERROR DIRECTORY KEY
9470          DCS-CTR(C3.),          !COMPARE ENUA:TNUA AT TARGET
9471          NEXT          J/GOBUT3700
(6717) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.110)

9472          6066:  !(FREE)
9473          GOBUT3700:
9474          SETUP,          RETURN/TEST371A,          !RETURN TO START OF NEXT SUBTEST
9475          NEXT,          GOTO-PAGE(7),          !BUT'S ARE ON PAGE 7
9476

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9477 J/BUTGD3-2 !GO BUT ON GUARD (3:2)
 (6066) DCS[0.00.0.0.0.0] BM[0110..00.11..10.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100]

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!*** TEST 371A ***
 !TEST-371A CHECKS THAT SR-NOP FUNCTION DOES NOTHING

6715:

TEST371A:

PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=(000000)/INSTRS TEST
 LOAD-ERROR(TEST371A), !ERROR DIRECTORY KEY
 DCS-CTR(C10.), !COMPARE ENUA:TNUA AT TARGET
 J/SETRES371A

(6715) DCS[1.00.1.0.0.0] BM[0101..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...000.110.111]

6067: !(FREE)

SETRES371A:

PO, BUMP-VERIFY, !COUNT
 P3, CSPD[16]+EMIT, !CSP GETS
 EMITC, SENDMUX-4567-SEL, !RES VALUES
 SR-NOP GUARD-EN,
 J/LOADRES371A

(6067) DCS[0.00.0.0.0.1] BM[0011..10.10..00.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...000.111.000]

6070: !(FREE)

LOADRES371A:

P2-T, RES+CSPB(B16), !STORE RES
 D+ASPHI(C000000), D[C]+1, !SETUP D, D[C]
 J/SHIFT371A

(6070) DCS[0.00.0.0.0.0] BM[1111..11.01..11.01..100..000...0.1.0..0..0...0.0000...0..1000.1...11.000...000.111.001]

6071: !(FREE)

SHIFT371A:

PO, BUMP-VERIFY, !COUNT
 P2-T, CLK-SR, !DO AN SR-NOP
 J/COMP371A

(6071) DCS[0.00.0.0.0.1] BM[0000..00.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...000.111.010]

6072: !(FREE)

COMP371A:

P2-T, D+SR-XOR-BSPHI(C052525), SAVE-D[C], !D + (052525)=SR, BITWISE
 J/GOBUT371A

(6072) DCS[0.00.0.0.0.0] BM[0110..01.11..00.00..111..111...0.1.0..0..0...0.0000...0..0000.0...11.000...000.111.011]

6073: !(FREE)

GOBUT371A:

SETUP, RETURN/TEST371B, !RETURN TO START OF NEXT SUBTEST

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9524          PO,      BUMP-VERIFY,          !COUNT
9525          NEXT,    CALL(DINTOIR-5)       !SUBR: D -> IR, BUT(INSTRS)
(6073) DCS(0.00.0.0.0.1) BM(0110..00.11..10.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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! *** TEST 3718 ***
! TEST-3718 CHECKS THAT THE GUARD WASN'T ALTERED EITHER

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9535 6713:
9536 TEST3718:
9537     PO,      LOAD-ENUA(ZTARGET401),      !GUARD IS STILL "01"#"00"
9538     NEXT,    LOAD-ERROR(TEST3718),      !ERROR DIRECTORY KEY
9539     P2,      DCS-CTR(C3.),              !COMPARE ENUA:TNUA AT TARGET
9540     NEXT,    J/GOBUT3718
(6713) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...000.111.100)

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9541 6074: !(FREE)
9542 GOBUT3718:
9543     SETUP,   RETURN/SCOPE371,           !RETURN TO SCOPE LOOP TEST WORD
9544     NEXT,    GOTO-PAGE(7),             !BUT'S ARE ON PAGE 7
9545     J/BUTGD3-2                          !GO BUT ON GUARD (3:2)
(6074) DCS(0.00.0.0.0.0) BM(0110..00.00..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.100)

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9546 !SCOPE LOOP TEST FOR SR, GUARD, XMUX, RES AREA CODE
9547 6075: !(FREE)
9548 SCOPE371:
9549     PO,      BUMP-VERIFY,          !COUNT
9550     P2,      RES+CSPD(C000000),      !RESET RES TO SR-LOAD/GUARD-DIS
9551     NEXT,    BUTD(SCOPE),           !NO ERROR: "TEST372A" [+3. WORDS]
9552     J/TEST372A                       ! ERROR: "SETRES361A" [-85. WORDS]
(6075) DCS(0.00.0.1.0.1) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.0100...0..1000.1...11.000...101.111.001)

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! ---
! THE FOLLOWING TWO SUBROUTINES ARE ALSO USED IN THE ABOVE TESTS:

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9553 7031: !(FREE)
9554 CSP16XORSRTOIRS:
9555     P2-T,    D+SR-XOR-CSPB(B16), SAVE-D(C), !COMPARE SR-XMUX:EXPECTED VALUE, BITWISE
9556     NEXT,    J/DINTOIRS             ! AND PUT IN IR TO DO INSTRS TEST
(7031) DCS(0.00.0.0.0.0) BM(0110..11.01..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.111.011)
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9573 7035: !(FREE)
9574 CSP16XORFLTTOIRS:
9575     P2-T, D+FLTPT-XOR-CSPB(B16), SAVE-D(C), !COMPARE FLTPT-XMUX:EXPECTED VALUE, BITWISE
9576     NEXT, J/DINTOIRS ! AND PUT IN IR TO DO INSTRS TEST
(7035) DCS[0.00.0.0.0.0] BM[0110..11.01..00.01..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.111.011]

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9582 !.PAGE=====
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9585 .TOC * TEST372A-372B: TESTING CUA, PROCESSOR MUX, AND BUTA(SUBR A)
9586
9587 !*****
9588 !
9589 ! TESTS: 372A - 372B UMWORDS: 015 + 002
9590 !
9591 ! FUNCTIONS: TESTS THAT CUA IS LOADED, AND CAN BE READ THRU PROCESSOR MUX.
9592 ! ALSO TESTS THAT CAN BE PUT INTO D, AND BUT(SUBR A) LOADS
9593 ! D<14:03> INTO RETURN.
9594 !
9595 !*****
9596
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9600

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9601 ! -----
9602
9603 !*** TEST 372A ***
9604 !TEST-372A CHECKS THE CUA -> D -> SUBR A -> RETURN PATH WITH PATTERN [6222]
9605 6571:
9606 TEST372A:
9607     PO, LOAD-ENUA(CUA372A) !WHERE WE BUT (RETURN) TO
9608     LOAD-ERROR(TEST372A), !ERROR DIRECTORY KEY
9609     DCS-CTR(C7.), !IN 7. MICROWORDS
9610     NEXT J/LOOP372A
(6571) DCS[1.00.1.0.0.0] BM[1000..00.11..00.10..010..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.000]

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9611
9612 6540:
9613 LOOP372A:
9614     SELECT, UCON-PROC !SELECT PROCESSOR UCON CONTROL
9615     ENABLE, BUSDIN+CUA[14-03], ! PUT 0#CUA[11-00]#EXFLAG<2:1>#FOVP ON BUSDIN
9616     PO, SET-UCON-CONTROL, !LOAD UCON REGISTER AT PO
9617     BUMP-VERIFY !COUNT
9618     P3, BUTA(CUA-TRACK), !RESET TRACKING OF CUA
9619     NEXT J/SETDC372A
(6540) DCS[0.00.0.0.0.1] BM[0000..00.00..01.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.001...000.111.110]

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9620
9621 6076: !(FREE)

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(6100) DCS(0.00.0.0.0.0) BM(0101..00.01..11.11..110..101...0.0.0..0..0...0.0000...0..0000.0...11.100...000.000.000)

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5000: !(FREE)

SETDC372B:

P0, BUMP-VERIFY, !COUNT
P2-T, D+ASPHI(C000000), D(C)+1, !SET D(C) FLAG = (1) FOR FIRST LOOP
P3, BUTA(CUA-TRACK), !RESET TRACKING OF CUA
NEXT, J/CUA372B

(5000) DCS(0.00.0.0.0.1) BM(1111..00.00..11.01..100..000...0.1.0..0..0...0.0000...0..0000.0...11.001...101.101.101)

5555:

CUA372B:

P3, CSPD(16)+BUSDIN, RETURN/BUTERRORS, !COPY CUA [WHICH IS ADDRESS OF THIS WORD] INTO CSP
NEXT, BUTR(D(C)-8), !IF D(C) SET [PASS 1], GO TO "LOAD372B"
J/SCOPE372B !IF D(C) RESET [PASS2], GO TO "SCOPE372B"

(5555) DCS(0.00.0.0.0.0) BM(0101..10.01..11.11..110..000...0.0.0..0..0...0.0001...1..0000.0...10.011...101.000.001)

5503:

LOAD372B:

P2-T, D+CSPB(816), D(C)+0, !PUT CUA FROM CSP INTO D, RESET D(C)
NEXT, J/SUBRA372B

(5503) DCS(0.00.0.0.0.0) BM(1010..11.01..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...010.010.011)

5223: !(FREE)

SUBRA372B:

P0, BUMP-VERIFY, !COUNT
SETUP, RETURN/BUTERRORS, !IF BUTA(SUBR-B) USED INSTEAD
NEXT, PAGE(7), !SUBROUTINE IS ON PAGE 7
BUTA(SUBR-A), !LOAD PAGE, LOAD RETURN FROM D
J/RESETUONP !THE SUBR: RESETS PROC UCON: BUSDIN+EMIT, EN-CLK-IR

(5223) DCS(0.00.0.0.0.1) BM(0101..00.01..11.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.101...010.111.001)

!NEXT WORD COMES FROM 'RESETUONP' WHICH DOES ONLY A BUTA(RETURN),
!WHICH SHOULD RETURN TO 'CUA372B' [-3.WORDS]

5501:

SCOPE372B:

NEXT, GOTO-PAGE(6), !XFER
BUTD(SCOPE), !NO ERROR: "TEST373A" [+1.WORDS]
J/TEST373A ! ERROR: "LOOP372A" [-12.WORDS]

(5501) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...101.100.001)

!.PAGE=====

.TOC * TEST373: CHECK JAMUPP W/ BUTA(DIAGNOSE), BM EXT BIT FLPADR

```

9715 !*****
9716 !*
9717 !* TESTS: 373 A - B UWORDS: 007 + 014
9718 !*
9719 !* FUNCTIONS:
9720 !*
9721 !* THE FOLLOWING SET OF TWO TESTS PERFORMS SEVERAL FUNCTIONS:
9722 !*
9723 !* TEST-373-A CHECKS THAT CONTROL CAN BE PASSED TO THE BASE MACHINE, VIA
9724 !* BUTA(DIAGNOSE), AND SEVERAL B.M. WORDS EXECUTED. A BUTA(DIAGNOSE) IN
9725 !* THE B.M. SHOULD THEN BE ENCOUNTERED, RETURNING CONTROL TO THE DCS VIA
9726 !* A JAMUPP FORCE.
9727 !*
9728 !* TEST-373-B THEN CHECKS THAT THE B.M. MACHINE CODE CORRECTL
9729 !* ASSERTED THE "FLPADR-L" EXTENSION BIT, FORCING A READ, VIA THE ASP/DF
9730 !* FIELD MODE, OF A SCRATCHPAD.
9731 !*
9732 !*****
9733
9734
9735
9736 !THIS TEST GOES TO THE B.M. VIA BUTA(DIAGNOSE)
9737 6541:
9738 TEST373A:
9739 PO, LOAD-ENUA(4777), !JAMUPPS GO HERE IN DCS
9740 LOAD-ERROR(TEST373A), !ERROR DIRECTORY KEY
9741 DCS-CTR(C7.), !COMPARE AT JAMUPP
9742 NEXT, J/RETURN373A
(6541) DCS(1.00.1.0.0.0) BM(1000.00.10.01.11.111.111...0.0.0.0.0.0...0.0000...0.0000.0...11.000...101.110.010)
9743
9744 6562:
9745 RETURN373A:
9746 P3, CSPD(00)+EMIT, RETURN/TEST373B, !RETURN AFTER PROCESSING, TO NEXT TEST
9747 NEXT, GOTO-PAGE(7), !JAMUPP ROUTINE EXPECTS RETURN ADDRESS IN CSP(00)
9748 J/SETIR373A
(6562) DCS(0.00.0.0.0.0) BM(0110.10.10.11.11.010.111...0.0.0.0.0.0...0.1111...1.0000.0...11.100...000.011.100)
9749
9750 7034: !(FREE)
9751 SETIR373A:
9752 P2-U, IR+EMIT, EMIT/000002, !SET DF=(2) IN IR
9753 P3, BUTA(DIAGNOSE), !BEGIN THE TRANSFER SEQUENCE
9754 NEXT, J/SETSR373A
(7034) DCS(0.00.0.0.0.0) BM(0000.00.00.00.00.000.010...0.0.0.0.0.0...1.1010...0.0000.0...11.011...000.011.111)
9755
9756 7037: !(FREE)
9757 SETSR373A:
9758 P2-T, SR+CSPD(C052525), !SET SR(00)=(1) FOR JAMUPP EXPECTED (BY JAMUPP SERVICER)
9759 NEXT, GOTO-PAGE(3), !SET PAGE TO BE ACTUAL (3)
9760 J/MED25 !POINT UPF TO B.M. DISP. ON PAGE
(7037) DCS(0.00.0.0.0.0) BM(1010.10.00.00.00.000.011...0.0.1.0.0.0...0.0111...0.0000.0...11.100...000.010.000)
9761
9762 !THE SEQUENCE OF CONTROL SHOULD NOW BE COMING FROM THE B.M.:

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KD11-K MICRO V00A-1 00:00:03 12-MAR-77

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9763
9764 :3020:
9765 :MED25:
9766     NEXT,      GOTO-PAGE(2),      :XFER
9767     J/MED25A
9768
9769 :2071:
9770 :MED25A:
9771     P2-T,      D+ASPHI(DF)-TOP, SA'E-D(C), :READ FROM ASPHI/DF, WITH FLPADR ASSERTED
9772     P3,          BUTA(DIAGNOSE),      :SINCE DF=(2), THE SPADORS=(12) WILL BE FORCED
9773     NEXT,      J/MED19A              :ALSO START TO RETURN XFER TO DCS, VIA JAMUPP
9774
9775
9776 :2066:
9777 :MED19A:
9778     NEXT,      GOTO-PAGE(3),
9779     J/MED19
9780
9781 *** CONTROL NOW COMES BACK TO DCS JAMUPP POINT ***
9782
9783 :4777:
9784 :JAMUPP001:
9785     P3-T,      SR+D
9786     NEXT,      BUTR(SR00),
9787
9788     J/JAMUPP003
9789
9790 * COME HERE FOR EXPECTED JAM *
9791 :4757:
9792 :JAMUPP002B:
9793     P2-T,      D+CSPD(000), SAVE-D(C), :GET RETURN ADDRESS, STORED IN CSP(00)
9794     NEXT,      J/JAMUPP002C
9795
9796 =[4000:4777]
9797 :JAMUPP002C:
9798     P0,          RETURN+D(14-03), PAGE(7), :PUT RETURN ADDRESS INTO RETURN REGISTER
9799     P2-T,      D+SR, SAVE-D(C), :RESTORE OLD D
9800     NEXT,      J/JAMUPP002D
9801
9802 =[7000:7377]
9803 :JAMUPP002D:
9804     P2-T,      SR+ZERO
9805     NEXT,      BUTA(RETURN),
9806     J/BUTERROR7
9807
9808
9809 !AT THIS POINT, CONTROL SHOULD NOW RETURN TO THIS POINT; THE NEXT TEST
9810 !THIS TEST NOW CHECKS TO SEE THAT THE B.M. FUNCTION WAS EXECUTED CORRECTLY
9811 !NOTE THAT IN TEST-350 ( A WHILE BACK ), A#SPHI(12) WERE LOADED WITH (000152) DATA
9812
9813 6572:
9814 TEST373B:
9815     P0,          LOAD-ENUA(ZTARGET425), :FOR INSTR5-E78-(425) DECOJE
9816     LOAD-ERROR(TEST373B), :ERROR DIRECTORY KEY

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9817          DCS-CTR(C6.),          !COMPARE AT TARGET
9818      NEXT,  J/GOBUT3738          !
(6572) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..010..101...0.0.0..0..0...0.0000...0..0000.0...11.000...001.000.001]
9819
9820      6101:  !(FREE)
9821      GOBUT3738:
9822          SETUP,  RETURN/SCOPE373,  !RETURN TO SCOPE LOOP TEST WORD
9823      NEXT,  CALL(DINTOIR-5)      !GO DO D -> DBUF -> IR, BUT(INSTRS)
(6101) DCS[0.00.0.0.0.0] BM[0110..00.00..10.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]
9824
9825
9826
9827      6102:  !(FREE)
9828      SCOPE373:
9829          PO,  BUMP-VERIFY,      !COUNT
9830      NEXT,  BUTD(SCOPE),      !NO ERROR: "TEST374" (+1. WORDS)
9831          J/TEST374          !      ERROR: "RETURN373A" (-12. WORDS)
(6102) DCS[0.00.0.1.0.1] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.011]

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! .PAGE=====

.TOC * TEST374: A/B SP REWRITE MODES VERIFICATION

!*****

* TESTS: 374 A - F UWORDS: 076 + 336

* FUNCTIONS:

* THE FOLLOWING GROUP OF TWELVE TESTS PERFORMS A VERIFICATION OF THE A/B SP REWRITE FUNCTIONS:

WR(A,L,A)	WR(A,L,B)	WR(A,H,A)	WR(A,H,B)
WR(B,L,A)	WR(B,L,B)	WR(B,H,A)	WR(B,H,B)
WR(AB,L,A)	WR(AB,L,B)	WR(AB,H,A)	WR(AB,H,B)

* EACH FUNCTION IS INVOKED, AND THE RESULTANT SCRATCHPADS ARE CHECKED TO INSURE THAT (1) ONLY THE RIGHT SCRATCHPADS WERE WRITTEN, AND (2) THE CORRECT ADDRESS WAS USED FOR THE REWRITE.

!*****

! SUMMARY OF ASP/BSP HI/LO REWRITE FUNCTIONALITY TESTS:

			--DF---	--SF---	
TEST REWRITE--FUNCTION	ASP	BSP	ASP BSP	ASP BSP	SR IN

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NUMB	A/B	HI/LO	A/B-ADDR	ADDR	ADDR	H-L	H-L	H-L	H-L	OCTAL
9867										
9868										
9869										
9870	A1	A	LO	A-ADDR	SF/4	DF/2	0 0 0 0	0 1 0 0	0 0 0 0	002100
9871	A2	"	"	B-ADDR			0 1 0 0	0 0 0 0		
9872										
9873	B1	A	HI	A-ADDR	DF/2	SF/4	1 0 0 0	0 0 0 0	1 0 0 0	100010
9874	B2	"	"	B-ADDR			0 0 0 0	1 0 0 0		
9875										
9876	C1	B	LO	A-ADDR	DF/4	SF/2	0 0 0 1	0 0 0 0	0 1 0 0	010001
9877	C2	"	"	B-ADDR			0 0 0 0	0 0 0 1		
9878										
9879	D1	B	HI	A-ADDR	SF/2	DF/4	0 0 0 0	0 0 1 0	0 0 1 0	001040
9880	D2	"	"	B-ADDR			0 0 1 0	0 0 0 0		
9881										
9882	E1	AB	LO	A-ADDR	SF/4	DF/2	0 0 0 0	0 1 0 1	0 1 0 1	002520
9883	E2	"	"	B-ADDR			0 1 0 1	0 0 0 0		
9884										
9885	F1	AB	HI	A-ADDR	DF/4	SF/2	1 0 1 0	0 0 0 0	1 0 1 0	120012
9886	F2	"	"	B-ADDR			0 0 0 0	1 0 1 0		

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!*** TEST 374A ***

6563: TEST374:

PO, BUMP-VERIFY, !COUNT
 LOAD-ERROR(TEST374), !ERROR DIRECTORY KEY
 P3, CSPD(01)+EMIT, !CONSTANT FOR:
 EMITC, SR-LEFT, GUARD-DIS, !SETUP RES FOR SR FUNCTION
 EMIT07/1, !FLAG BIT FOR TESTING
 NEXT, J/LOADRES374

(6563) DCS(1.00.0.0.0.1) BM(0001..10.00..00.10..000..000...0.0.0..0..0...0.1110...1..0000.0...11.000...001.000.011)

6103: !(FREE)
LOADRES374:

PO, DCS-CTR(C15.), !HOLD UP ERROR COUNTER
 P2, RES+CSPD(001), !SR NOW SETUP
 NEXT, GOTO-PAGE(5), !XFR
 J/EXPEC374A1

(6103) DCS(0.00.1.0.0.0) BM(0000..10.00..00.00..000..101...0.0.0..0..0...0.1110...0..1000.1...11.100...010.010.010)

5222: !(FREE)
EXPEC374A1:

P3, CSPD(02)+EMIT, EMIT/002100, !EXPECTED "SERIAL" REPRESENTATION OF RESULT
 NEXT, J/ZERO374A1

(5222) DCS(0.00.0.0.0.0) BM(0000..10.01..00.01..000..000...0.0.0..0..0...0.1101...1..0000.0...11.000...101.011.110)

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9917
9918 5536:
9919 ZER0374A1:
9920 PO BUMP-VERIFY !COUNT
9921 SETUP, RETURN/DOWRITE374A1, !EXEC SUBR WHICH:
9922 ! (1) (000402) -> IR,
9923 NEXT, CALL(ZER0SF04DF02) ! (2) WRITES ZEROES TO A/B SP HI/LO SF/DF
(5536) DCS(0.00.0.0.0.1) BM(0101..00.01..00.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.001)

9924
9925 5225: !(FREE)
9926 DOWRITE374A1:
9927 P2-T, D+CSPD(D01) D(C)+0, !DATA WITH BIT<07> SET
9928 ASP-ADDRS-R(SF), !ADDRESS ASP WITH SF MODE
9929 BSP-ADDRS-R(DF), !ADDRESS BSP WITH DF MODE
9930 P3, WR(A,LO,A-ADDR), !SELECT THE PARTICULAR FUNCTION TO TEST,
9931 NEXT, J/GETTEM374A1 ! USING A-ADDR FOR REWRITE
(5225) DCS(0.00.0.0.0.0) BM(1010..10.00..00.11..000..000...0.1.0..0..0...0.1110...0..0001.0...11.000...010.010.110)

9932
9933 5226: !(FREE)
9934 GETTEM374A1:
9935 P3, CSPD(00)+EMIT, RETURN/ZER0374A2, !(SEE DESCRIPT OF SUBR FOR FUNCTION)
9936 NEXT, CALL(SFDFT0SR)
(5226) DCS(0.00.0.0.0.0) BM(0101..10.01..00.10..111..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

9937
9938
9939
9940 5227: !(FREE)
9941 ZER0374A2:
9942 SETUP, RETURN/DOWRITE374A2, !AGAIN GO WRITE ZEROES TO A/B-SP-HI/LO
9943 NEXT, CALL(ZER0SF04DF02)
(5227) DCS(0.00.0.0.0.0) BM(0101..00.01..00.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.001)

9944
9945 5230: !(FREE)
9946 DOWRITE374A2:
9947 P2-T, D+CSPD(D01) D(C)+0, !DATA WITH BIT<07> SET
9948 ASP-ADDRS-R(SF), !ADDRESS ASP WITH SF MODE
9949 BSP-ADDRS-R(DF), !ADDRESS BSP WITH DF MODE
9950 P3, WR(A,LO,B-ADDR), !USE SAME FUNCTION AS ABOVE
9951 NEXT, J/GETTEM374A2 ! ONLY USE B-ADDR FOR REWRITE THIS TIME
(5230) DCS(0.00.0.0.0.0) BM(1010..10.00..00.11..000..000...0.1.0..0..0...0.1110...0..0101.0...11.000...010.011.001)

9952
9953 5231: !(FREE)
9954 GETTEM374A2:
9955 P3, CSPD(00)+EMIT, RETURN/TEST374A2, !(SEE DESCRIPT OF SUBR FOR FUNCTION)
9956 NEXT, CALL(SFDFT0SR)
(5231) DCS(0.00.0.0.0.0) BM(0101..10.11..00.00..100..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

9957
9958 5604:
9959 TEST374A2:
9960 PO, LOAD-ENVA(ZTARGET434), !NOW SETUP FOR IR=ZERO COMPARE
9961 LOAD-ERROR(TEST374A2), !ERROR DIRECTORY KEY
9962 DCS-CTR(C6.), !COMPARE AT TARGET

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9963          BUMP-VERIFY          !COUNT
9964          NEXT, J/GOTEST374A2
(5604) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.010)
9965
9966          5232: !(FREE)
9967          GOTEST374A2:
9968          SETUP, RETURN/SCOPE374A, !GO EXEC SUBR THAT:
9969          NEXT, CALL(DINTOIR-5) ! PUTS D -> IR, BUT(INSTRS) TO TEST FOR ZERO
(5232) DCS(0.00.0.0.0.0) BM(0101..00.01..00.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
9970
9971
9972
9973
9974          5233: !(FREE)
9975          SCOPE374A:
9976          NEXT, BUTD(SCOPE), !NO ERROR: "EXPEC374B1" (+1. WORDS)
9977          J/EXPEC374B1 ! ERROR: "ZER0374A1" (-8. WORDS)
(5233) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.111)
9978
9979
9980
9981
9982          ! - - - - -
9983
9984          !*** TEST 374B ***
9985
9986          5537:
9987          EXPEC374B1:
9988          P3, CSPD(02)+EMIT, EMIT/100010, !EXPECTED "SERIAL" REPRESENTATION OF RESULT
9989          NEXT, J/ZER0374B1
(5537) DCS(0.00.0.0.0.0) BM(1000..10.00..00.00..001..000...0.0.0..0..0...0.1101...1..0000.0...11.000...101.101.110)
9990
9991          5556:
9992          ZER0374B1:
9993          P0, BUMP-VERIFY !COUNT
9994          SETUP, RETURN/DOWRITE374B1, !EXEC SUBR WHICH:
9995          NEXT, CALL(ZER0SF04DF02) ! (1) (000402) -> IR,
9996          ! (2) WRITES ZEROES TO A/B SP HI/LO SF/DF
(5556) DCS(0.00.0.0.0.1) BM(0101..00.01..00.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.001)
9997
9998          5234: !(FREE)
9999          DOWRITE374B1:
10000          P2-T, D+CSPD(001), D(C)+0, !DATA WITH BIT(07) SET
10001          ASP-ADDRS-R(DF), !ADDRESS ASP WITH DF MODE
10002          BSP-ADDRS-R(SF), !ADDRESS BSP WITH SF MODE
10003          P3, MR(A HI, A-ADDR), !SELECT THE PARTICULAR FUNCTION TO TEST,
10004          NEXT, J/GETTEM374B1 ! USING A-ADDR FOR REWRITE
(5234) DCS(0.00.0.0.0.0) BM(1010..10.01..00.10..000..000...0.1.0..0..0...0.1110...0..1001.0...11.000...010.011.101)
10005
10006          5235: !(FREE)
10007          GETTEM374B1:
10008          P3, CSPD(00)+EMIT, RETURN/ZER0374B2, !(SEE DESCIP OF SUBR FOR FUNCTION)

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10009      NEXT,      CALL(SFDFTOSR)
(5235) DCS(0.00.0.0.0.0) BM(0101..10.01..00.11..110..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)
10010
10011
10012
10013      5236:  !(FREE)
10014      ZERO37482:
10015          SETUP,  RETURN/DOWRITE37482,          !AGAIN GO WRITE ZEROES TO A/B-SP-HI/LO
10016          NEXT,   CALL(ZEROSF040F02)
(5236) DCS(0.00.0.0.0.0) BM(0101..00.01..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.001)
10017
10018      5237:  !(FREE)
10019      DOWRITE37482:
10020          P2-T,    D=CSPD(001) D(C)+0,          !DATA WITH BIT(07) SET
10021          ASP-ADDRS-R(DF),          !ADDRESS ASP WITH DF MODE
10022          BSP-ADDRS-R(SF),          !ADDRESS BSP WITH SF MODE
10023          P3,      WR(A HI, B-ADDR),          !USE SAME FUNCTION AS ABOVE
10024          NEXT,    J/GETTEN37482
(5237) DCS(0.00.0.0.0.0) BM(1010..10.01..00.10..000..000...0.1.0..0..0...0.1110...0..1101.0...11.000...010.100.000)
10025
10026      5240:  !(FREE)
10027      GETTEN37482:
10028          P3,      CSPD(00)+EMIT, RETURN/TEST37482,  !(SEE DESCRIPT OF SUBR FOR FUNCTION)
10029          NEXT,    CALL(SFDFTOSR)
(5240) DCS(0.00.0.0.0.0) BM(0101..10.11..00.00..110..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)
10030
10031      5606:
10032      TEST37482:
10033          PD,      LOAD-ENUA(ZTARGET434),          !NOW SETUP FOR IR=ZERO COMPARE
10034          LOAD-ERROR(TEST37482),          !ERROR DIRECTORY KEY
10035          DCS-CTR(C6.),          !COMPARE AT TARGET
10036          BUMP-VERIFY,          !COUNT
10037          NEXT,    J/GOTEST37482
(5606) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.100.001)
10038
10039      5241:  !(FREE)
10040      GOTEST37482:
10041          SETUP,  RETURN/SCOPE3748,          !GO EXEC SUBR THAT:
10042          NEXT,   CALL(DINTOIR-5)          ! PUTS 0 -> IR, BUT(INSTRS) TO TEST FOR ZERO
(5241) DCS(0.00.0.0.0.0) BM(0101..00.01..01.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
10043
10044
10045
10046
10047      5242:  !(FREE)
10048      SCOPE3748:
10049          NEXT,    BUTD(SCOPE)          !NO ERROR: "EXPEC374C1" (+1. WORDS)
10050          J/EXPEC374C1          ! ERROR: "ZERO37481" (-8. WORDS)
(5242) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.101.111)
10051
10052
10053

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10054
10055 : - - - - -
10056
10057 :*** TEST 374C ***
10058
10059 5557:
10060 EXPECT374C1:
10061     P3,      CSPD(02)+EMIT, EMIT/010001,      ! EXPECTED "SERIAL" REPRESENTATION OF RESULT
10062     NEXT,    J/ZER0374C1
(5557) DCS(0.00.0.0.0.0) BM(0001..10.00..00.00..000..001...0.0.0..0..0...0.1101...1..0000.0...11.000...101.110.110)

10063
10064 5566:
10065 ZER0374C1:
10066     P0,      BUMP-VERIFY,                      ! COUNT
10067     SETUP,  RETURN/DOWRITE374C1,              ! EXEC SUBR WHICH:
10068     NEXT,    CALL(ZER0SF02DF04)                ! (1) (000204) -> IR,
10069 (5566) DCS(0.00.0.0.0.1) BM(0101..00.01..01.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.110)

10070
10071 5243: !(FREE)
10072 DOWRITE374C1:
10073     P2-T,   D+CSPD(001), D(C)+0,              ! DATA WITH BIT<07> SET
10074           ASP-ADDRS-R(DF),                    ! ADDRESS ASP WITH DF MODE
10075           BSP-ADDRS-R(SF),                    ! ADDRESS BSP WITH SF MODE
10076     P3,      MR(B,LO,A-ADDR),                 ! SELECT THE PARTICULAR FUNCTION TO TEST,
10077     NEXT,    J/GETTEM374C1                     ! USING A-ADDR FOR REWRITE
(5243) DCS(0.00.0.0.0.0) BM(1010..10.01..00.10..000..000...0.1.0..0..0...0.1110...0..0010.0...11.000...010.100.100)

10078
10079 5244: !(FREE)
10080 GETTEM374C1:
10081     P3,      CSPD(00)+EMIT, RETURN/ZER0374C2, ! (SEE DESCRIPT OF SUBR FOR FUNCTION)
10082     NEXT,    CALL(SFDFTOSR)
(5244) DCS(0.00.0.0.0.0) BM(0101..10.01..01.00..110..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

10083
10084
10085
10086 5246: !(FREE)
10087 ZER0374C2:
10088     SETUP,  RETURN/DOWRITE374C2,              ! AGAIN GO WRITE ZEROES TO A/B-SP-HI/LO
10089     NEXT,    CALL(ZER0SF02DF04)
(5246) DCS(0.00.0.0.0.0) BM(0101..00.01..01.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.110)

10090
10091 5247: !(FREE)
10092 DOWRITE374C2:
10093     P2-T,   D+CSPD(001), D(C)+0,              ! DATA WITH BIT<07> SET
10094           ASP-ADDRS-R(DF),                    ! ADDRESS ASP WITH DF MODE
10095           BSP-ADDRS-R(SF),                    ! ADDRESS BSP WITH SF MODE
10096     P3,      MR(B,LO,B-ADDR),                 ! USE SAME FUNCTION AS ABOVE
10097     NEXT,    J/GETTEM374C2                     ! ONLY USE B-ADDR FOR REWRITE THIS TIME
(5247) DCS(0.00.0.0.0.0) BM(1010..10.01..00.10..000..000...0.1.0..0..0...0.1110...0..0110.0...11.000...010.101.000)

10098
10099 5250: !(FREE)

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10100 GETTEM374C2:
 10101 P3, CSPD(00)+EMIT, RETURN/TEST374C2, ;(SEE DESCRIP OF SUBR FOR FUNCTION)
 10102 NEXT, CALL(SFDFTSR)
 (5250) DCS(0.00.0.0.0.0) BM(0101..10.10..10.10..100..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

10103
 10104 5524:
 10105 TEST374C2:
 10106 PO, LOAD-ENVA(ZTARGET434), ;NOW SETUP FOR IR=ZERO COMPARE
 10107 LOAD-ERROR(TEST374C2), ;ERROR DIRECTORY KEY
 10108 DCS-CTR(C6.), ;COMPARE AT TARGET
 10109 BUMP-VERIFY, ;COUNT
 10110 NEXT, J/GOTEST374C2
 (5524) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0..11.000...010.101.001)

10111
 10112 5251: ;(FREE)
 10113 GOTEST374C2:
 10114 SETUP, RETURN/SCOPE374C, ;GO EXEC SUBR THAT:
 10115 NEXT, CALL(DINTOIR-5) ; PUTS D -> IR, BUT(INSTRS) TO TEST FOR ZERO
 (5251) DCS(0.00.0.0.0.0) BM(0101..00.01..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

10116
 10117
 10118
 10119
 10120 5252: ;(FREE)
 10121 SCOPE374C:
 10122 NEXT, BUTD(SCOPE), ;NO ERROR: "EXPEC374D1" (+1. WORDS)
 10123 J/EXPEC374D1 ; ERROR: "ZER0374C1" (-8. WORDS)
 (5252) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.111)

10124
 10125
 10126
 10127
 10128 ! - - - - -
 10129
 10130 !*** TEST 3740 ***
 10131

10132 5567:
 10133 EXPEC374D1:
 10134 P3, CSPD(02)+EMIT, EMIT/001040, ;EXPECTED "SERIAL" REPRESENTATION OF RESULT
 10135 NEXT, J/ZER0374D1
 (5567) DCS(0.00.0.0.0.0) BM(0000..10.00..10.00..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...101.001.100)

10136
 10137 5514:
 10138 ZER0374D1:
 10139 PO, BUMP-VERIFY, ;COUNT
 10140 SETUP, RETURN/DOWRITE374D1, ;EXEC SUBR WHICH:
 10141 ;(1) (000204) -> IR,
 10142 NEXT, CALL(ZER0SF02DF04) ;(2) WRITES ZEROES TO A/B SP HI/LO SF/DF
 (5514) DCS(0.00.0.0.0.1) BM(0101..00.01..01.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.110)

10143
 10144 5253: ;(FREE)
 10145 DOWRITE374D1:

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10146      P2-T,   D=CSPD(001), D(C)+0,          !DATA WITH BIT<07> SET
10147      ASP-ADDRS-R(SF),                       !ADDRESS ASP WITH SF MODE
10148      BSP-ADDRS-R(DF),                       !ADDRESS BSP WITH DF MODE
10149      P3,     WR(B,HI,A-ADDR),              !SELECT THE PARTICULAR FUNCTION TO TEST,
10150      NEXT,    J/GETTEM37401                 !   USING A-ADDR FOR REWRITE
(5253) DCS(0.00.0.0.0.0) BM(1010..10.00..00.11..000..000...0.1.0..0..0...0.1110...0..1010.0...11.000...010.101.100)

10151      5254:  !(FREE)
10152      GETTEM37401:
10153      P3,     CSPD(00)+EMIT, RETURN/ZERO37402,      !(SEE DESCRIP OF SUBR FOR FUNCTION)
10154      NEXT,    CALL(SFDFTOSR)
10155 (5254) DCS(0.00.0.0.0.0) BM(0101..10.01..01.01..101..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

10156      5255:  !(FREE)
10157      ZERO37402:
10158      SETUP,  RETURN/DOWRITE37402,             !AGAIN GO WRITE ZEROES TO A/B-SP-HI/LO
10159      NEXT,    CALL(ZEROSF02DF04)
10160 (5255) DCS(0.00.0.0.0.0) BM(0101..00.01..01.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.110)

10161      5256:  !(FREE)
10162      DOWRITE37402:
10163      P2-T,   D=CSPD(001), D(C)+0,          !DATA WITH BIT<07> SET
10164      ASP-ADDRS-R(SF),                       !ADDRESS ASP WITH SF MODE
10165      BSP-ADDRS-R(DF),                       !ADDRESS BSP WITH DF MODE
10166      P3,     WR(B,HI,B-ADDR),              !USE SAME FUNCTION AS ABOVE,
10167      NEXT,    J/GETTEM37402                 !   ONLY USE B-ADDR FOR REWRITE THIS TIME
10168 (5256) DCS(0.00.0.0.0.0) BM(1010..10.00..00.11..000..000...0.1.0..0..0...0.1110...0..1110.0...11.000...010.101.111)

10169      5257:  !(FREE)
10170      GETTEM37402:
10171      P3,     CSPD(00)+EMIT, RETURN/TEST37402,      !(SEE DESCRIP OF SUBR FOR FUNCTION)
10172      NEXT,    CALL(SFDFTOSR)
10173 (5257) DCS(0.00.0.0.0.0) BM(0101..10.10..10.00..000..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

10174      5500:
10175      TEST37402:
10176      PD,     LOAD-ENUA(ZTARGET434),          !NOW SETUP FOR IR=ZERO COMPARE
10177      LOAD-ERROR(TEST37402),                 !ERROR DIRECTORY KEY
10178      DCS-CTR(C6.),                          !COMPARE AT TARGET
10179      BUMP-VERIFY,                            !COUNT
10180 (5500) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.000)

10181      5260:  !(FREE)
10182      GOTEST37402:
10183      SETUP,  RETURN/SCOPE3740,              !GO EXEC SUBR THAT:
10184      NEXT,    CALL(DINTOIR-5)              ! PUTS D -> IR, BUT(INSTRS) TO TEST FOR ZERO
10185 (5260) DCS(0.00.0.0.0.0) BM(0101..00.01..01 10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
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5261: !(FREE)
SCOPE3740:

NEXT, BUTD(SCOPE), !NO ERROR: "EXPEC374E1" (+1. WORDS)
J/EXPEC374E1, ! ERROR: "ZER0374D1" (-8. WORDS)

(5261) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.101)

! - - - - -

!*** TEST 374E ***

5515:
EXPEC374E1:

P3, CSPD(02)+EMIT, EMIT/002520, !EXPECTED "SERIAL" REPRESENTATION OF RESULT
NEXT, J/ZER0374E1

(5515) DCS(0.00.0.0.0.0) BM(0000..10.01..01.01..010..000...0.0.0..0..0...0.1101...1..0000.0...11.000...101.010.110)

5526:
ZER0374E1:

P0, BUMP-VERIFY, !COUNT
SETUP, RETURN/DOWRITE374E1, !EXEC SUBR WHICH:
NEXT, CALL(ZER0SF04DF02) ! (1) (000402) -> IR,
! (2) WRITES ZEROES TO A/B SP HI/LO SF/DF

(5526) DCS(0.00.0.0.0.1) BM(0101..00.01..01.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.001)

5262: !(FREE)
DOWRITE374E1:

P2-T, D+CSPD(001), D(C)+0, !DATA WITH BIT<07> SET
ASP-ADDRS-R(SF), !ADDRESS ASP WITH SF MODE
BSP-ADDRS-R(DF), !ADDRESS BSP WITH DF MODE
P3, WR(AB,LO,A-ADDR), !SELECT THE PARTICULAR FUNCTION TO TEST,
NEXT, J/GETTEM374E1 ! USING A-ADDR FOR REWRITE

(5262) DCS(0.00.0.0.0.0) BM(1010..10.00..00.11..000..000...0.1.0..0..0...0.1110...0..0011.0...11.000...010.110.011)

5263: !(FREE)
GETTEM374E1:

P3, CSPD(00)+EMIT, RETURN/ZER0374E2, !(SEE DESCRIP OF SUBR FOR FUNCTION)
NEXT, CALL(SFDFT0SR)

(5263) DCS(0.00.0.0.0.0) BM(0101..10.01..01.10..100..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

5264: !(FREE)
ZER0374E2:

SETUP, RETURN/DOWRITE374E2, !AGAIN GO WRITE ZEROES TO A/B-SP-HI/LO
NEXT, CALL(ZER0SF04DF02)

(5264) DCS(0.00.0.0.0.0) BM(0101..00.01..01.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.001)


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10237 5265: !(FREE)
10238 DOWRITE374E2:
10239 P2-T, D=CSPD(001), D(C)+0, !DATA WITH BIT<07> SET
10240 ASP-ADDRS-R[SF], !ADDRESS ASP WITH SF MODE
10241 BSP-ADDRS-R[DF], !ADDRESS BSP WITH DF MODE
10242 P3, MR(AB,LO,B-ADDR), !USE SAME FUNCTION AS ABOVE
10243 NEXT, J/GETTEM374E2 ! ONLY USE B-ADDR FOR ALWRITE THIS TIME
(5265) DCS(0.00.0.0.0.0) BM(1010..10.00..00.11..000..000...0.1.0..0..0...0.1110...0..0111.0...11.000...010.110.110)

```

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10244 5266: !(FREE)
10245 GETTEM374E2:
10246 P3, CSPD(00)+EMIT, RETURN/TEST374E2, !(SEE DESCRIPT OF SUBR FOR FUNCTION)
10247 NEXT, CALL[SFDFTOSR]
10248 (5266) DCS(0.00.0.0.0.0) BM(0101..10.10..10.00..010..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.110)

```

```

10249 5502:
10250 TEST374E2:
10251 PD, LOAD-ENUA(ZTARGET434), !NOW SETUP FOR IR=ZERO COMPARE
10252 LOAD-ERROR(TEST374E2), !ERROR DIRECTORY KEY
10253 DCS-CTR(C6.), !COMPARE AT TARGET
10254 BUMP-VERIFY, !COUNT
10255 NEXT, J/GOTEST374E2
10256 (5502) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..711..100...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.111)

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```

10257 5267: !(FREE)
10258 GOTEST374E2:
10259 SETUP, RETURN/SCOPE374E, !GO EXEC SUBR THAT:
10260 NEXT, CALL[DINTOIR-5] ! PUTS D -> IR, BUT(INSTRS) TO TEST FOR ZERO
10261 (5267) DCS(0.00.0.0.0.0) BM(0101..00.01..01.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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```

10262 5270: !(FREE)
10263 SCOPE374E:
10264 NEXT, BUTD(SCOPE), !NO ERROR: "EXPEC374F1" (+1. WORDS)
10265 J/EXPEC374F1 ! ERROR: "ZER0374E1" (-8. WORDS)
10266 (5270) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.010.111)

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10270 ! - - - - -
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10276 !*** TEST 374F ***
10277

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10278 5527:
10279 EXPEC374F1:
10280 P3, CSPD(02)+EMIT, EMIT/120012, !EXPECTED "SERIAL" REPRESENTATION OF RESULT
10281 NEXT, J/ZER0374F1
(5527) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..001..010...0.0.0..0..0...0.1101...1..0000.0...11.000...101.001.110)

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10282 5516:
10283

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KD11-K MICRO V00A-1 00:00:03 12-MAR-77

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10284 ZERO374F1:
10285     PO,      BUMP-VERIFY,          !COUNT
10286     SETUP,   RETURN/DOWRITE374F1, !EXEC SUBR WHICH:
10287     NEXT,     CALL(ZEROSF02DF04)    ! (1) (000204) -> IR,
10288 (5516) DCS(0.00.0.0.0.1) BM(0101..00.01..01.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.1101)
! (2) WRITES ZEROES TO A/B SP HI/LO SF/DF

10289
10290     5271:  ! (FREE)
10291     DOWRITE374F1:
10292     P2-T,    D+CSPD(D01), D(C)+0,    !DATA WITH BIT<07> SET
10293     ASP-ADDRS-R[DF],    !ADDRESS ASP WITH DF MODE
10294     BSP-ADDRS-R[SF],    !ADDRESS BSP WITH SF MODE
10295     P3,      WR(AB,HI,A-ADDR),        !SELECT THE PARTICULAR FUNCTION TO TEST,
10296     NEXT,    J/GETTEM374F1           ! USING A-ADDR FOR REWRITE
(5271) DCS(0.00.0.0.0.0) BM(1010..10.01..00.10..000..000...0.1.0..0..0...0.1110...0..1011.0...11.000...010.111.0101)

10297
10298     5272:  ! (FREE)
10299     GETTEM374F1:
10300     P3,      CSPD[00]+EMIT, RETURN/ZERO374F2,    ! (SEE DESCRIPT OF SUBR FOR FUNCTION)
10301     NEXT,    CALL(SFDFTOSR)
(5272) DCS(0.00.0.0.0.0) BM(0101..10.01..01.11..011..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.1101)

10302
10303
10304
10305     5273:  ! (FREE)
10306     ZERO374F2:
10307     SETUP,   RETURN/DOWRITE374F2,    !AGAIN GO WRITE ZEROES TO A/B-SP-HI/LO
10308     NEXT,     CALL(ZEROSF02DF04)
(5273) DCS(0.00.0.0.0.0) BM(0101..00.01..01.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.011.1101)

10309
10310     5274:  ! (FREE)
10311     DOWRITE374F2:
10312     P2-T,    D+CSPD(D01), D(C)+0,    !DATA WITH BIT<07> SET
10313     ASP-ADDRS-R[DF],    !ADDRESS ASP WITH DF MODE
10314     BSP-ADDRS-R[SF],    !ADDRESS BSP WITH SF MODE
10315     P3,      WR(AB,HI,B-ADDR),        !USE SAME FUNCTION AS ABOVE,
10316     NEXT,    J/GETTEM374F2           ! ONLY USE B-ADDR FOR REWRITE THIS TIME
(5274) DCS(0.00.0.0.0.0) BM(1010..10.01..00.10..000..000...0.1.0..0..0...0.1110...0..1111.0...11.000...010.111.1011)

10317
10318     5275:  ! (FREE)
10319     GETTEM374F2:
10320     P3,      CSPD[00]+EMIT, RETURN/TEST374F2,    ! (SEE DESCRIPT OF SUBR FOR FUNCTION)
10321     NEXT,    CALL(SFDFTOSR)
(5275) DCS(0.00.0.0.0.0) BM(0101..10.10..10.00..100..101...0.0.0..0..0...0.1111...1..0000.0...11.100...111.100.1101)

10322
10323     5504:
10324     TEST374F2:
10325     PO,      LOAD-EMUA(ZTARGET434),    !NOW SETUP FOR IR=ZERO COMPARE
10326     LOAD-ERROR(TEST374F2),            !ERROR DIRECTORY KEY
10327     DCS-CTR(C6.),                      !COMPARE AT TARGET
10328     BUMP-VERIFY,                        !COUNT
10329     NEXT,    J/GOTEST374F2

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10330 (5504) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000.. 0..0000.0...11.000...010.111.110)
10331 5276: !(FREE)
10332 GOTEST374F2:
10333     SETUP, RETURN/SCOPE374F, !GO EXEC SUBR THAT:
10334     NEXT, CALL(DINTOIR-5) ! PUTS D -> IR, BUT(INSTR5) TO TEST FOR ZERO
(5276) DCS(0.00.0.0.0.0) BM(0101..00.01..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
    
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10335
10336
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10338
10339 5277: !(FREE)
10340 SCOPE374F:
10341     P2, RES+CSP0(C000000), !RESET RES TO SR-LOAD/GUARD-DISABLED
10342     NEXT, BUTD(SCOPE), !NO ERROR: "TEST375A" (+17. WORDS)
10343     J/TEST375A ! ERROR: "ZER0374F1" (-8. WORDS)
(5277) DCS(0.00.0.1.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.0100...0..1000.1...11.000...101.001.111)
    
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THE FOLLOWING SUBROUTINES ARE USED IN THE ABOVE TESTS (374 A1-F2):

THIS FIRST SUBROUTINE LOADS THE IR WITH THE APPROPRIATELY SELECTED SF AND DF FIELD VALUES, THEN PROCEEDS TO ZERO OUT THE ASP AND BSP LOCATIONS CORRESPONDING TO THESE VALUES, IN BOTH ASP/BSP HI/LO SP'S.

NOTE: THIS SUBR MUST BE ENTERED WITH BUSDIN+EMIT AND EN CLK IR PROC UCONS ENABLED

ALSO: THE WRITE FUNCTION USED IS: WR(AB,H,A) OR WR(AB,L,A) WITH A-ADDR = SF OR DF, RESPECTIVELY

```

10364 7036: !(FREE)
10365 ZEROSF02DF04:
10366     P2-U, IR+EMIT, EMIT/000204, !SF=2, DF=4
10367     NEXT, J/ZEROSFDF !GO ZERO
(7036) DCS(0.00.0.0.0.0) BM(0000..00.00..00.10..000..100...0.0.0..0..0...1.1010...0..0000.0...11.000...000.100.010)
    
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10368
10369 7041: !(FREE)
10370 ZEROSF04DF02:
10371     P2-U, IR+EMIT, EMIT/000402, !SF=4, DF=2
10372     NEXT, J/ZEROSFDF !GO ZERO
(7041) DCS(0.00.0.0.0.0) BM(0000..00.00..01.00..000..010...0.0.0..0..0...1.1010...0..0000.0...11.000...000.100.010)
    
```

```

10373
10374 7042: !(FREE)
10375 ZEROSFDF:
10376     P2-T, D+ZERO, SAVE-D(C), !ZER0ES
10377     P3, A#BSPHI(DF)+D, !
    
```

10378 NEXT, J/ZEROSFDFA
 (7042) DCS(0.00.0.0.0.0) BM(0011..00.00..00.10..000..111...0.1.0..0..0...0.0000...0..1011.0...11.000...000.100.011)

10379 7043: !(FREE)
 10380 ZEROSFDFA:
 10381 P3, A#BSPLO(DF)+D,
 10382 NEXT, J/ZEROSF
 10383 (7043) DCS(0.00.0.0.0.0) BM(0000..00.00..00.10..000..000...0.0.0..0..0...0.0000...0..0011.0...11.000...000.100.100)

10384 7044: !(FREE)
 10385 ZEROSF:
 10386 P2-T, D+ZERO, SAVE-D(C), !ENTER HERE FOR SF ONLY
 10387 P3, A#BSPHI(SF)+D,
 10388 NEXT, J/ZEROSFA
 10389 (7044) DCS(0.00.0.0.0.0) BM(0011..00.01..00.11..000..111...0.1.0..0..0...0.0000...0..1011.0...11.000...000.100.101)

10390 7045: !(FREE)
 10391 ZEROSFA:
 10392 P3, A#BSPLO(SF)+D,
 10393 NEXT, BUTA(RETURN), !AND RETURN
 10394 J/BUTERROR7
 10395 (7045) DCS(0.00.0.0.0.0) BM(0000..00.01..00.11..000..000...0.0.0..0..0...0.0000...0..0011.0...11.111...011.111.110)

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 10400
 10401 ! - - - - -
 10402 ! THIS SECOND SUBROUTINE NOW READS BACK ALL THE REGISTERS IN ASP/BSP,
 10403 ! HI/LO, SF/DF THAT THE WRITE COULD HAVE REFERENCED.
 10404 ! IF LOCATION WAS WRITTEN, BIT<07> SHOULD BE SET,
 10405 ! ELSE IT SHOULD REMAIN CLEAR (FROM ZEROSFXDXFX ROUTINE)
 10406 ! THE BITS ARE SHIFTED SERIALLY INTO THE SR, AND AFTER
 10407 ! TWO WRITES (WHICH GIVES 16. BITS, THE SR JUST FILLED),
 10408 ! THE COMPARE IS MADE BETWEEN EXPECTED:RECEIVED ANSWERS.
 10409 ! NOTE: THIS SUBR REQUIRES SR-LEFT/GUARD-DISABLED SETUP,
 10410 ! AND CSP(02) CONTAINS EXPECTED ANSWER.
 10411 ! CSP(00) CONTAINS RETURN ADDRESS, IN BITS<14:03>.
 10412 !
 10413 !

10414 5746:
 10415 SFDFTOSR:
 10416 P0, LOAD-ENUA(ZTARGET777), !COMPARE POINT IS AT EXIT
 10417 LOAD-ERROR(SFDFTOSR), !THEORETICALLY THIS CODE SHOULD NEVER BE USED
 10418 DCS-CTR(C11.), !COMPARE AT TARGET
 10419 NEXT, GOTO-PAGE(7), !SUBR IS HERE, NOTE OVERLAP W/ BIT<2:0> OF ENUA
 10420 J/SFDFTOSRAA
 (5746) DCS(1.00.1.0.0.0) BM(0100..00.11..11.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.100.000)

10421 7040: !(FREE)
 10422 SFDFTOSRAA:
 10423 P2-T, D+ASPHI(DF), D(C)+ALU07, !SR<15,07> = ASPHI/DF
 10424 NEXT, J/SFDFTOSRA
 10425

```

(7040) DCS(0.00.0.0.0.0) BM(1111..00.00..11.10..000..011...0.1.0..0..0...0.0000...0..0000.0...11.000...000.100.111)
10426
10427 7047: !(FREE)
10428 SFDFTOSRA:
10429 P2-T, SR+SR-LEFT-1, !STORE PAST
10430 D+ASPLO(DF), D(C)+ALU07, !SR<14,06> = ASPLO/DF
10431 NEXT J/SFDFTOSRB
(7047) DCS(0.00.0.0.0.0) BM(1111..00.00..10.10..000..011...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.000)
10432
10433 7050: !(FREE)
10434 SFDFTOSRB:
10435 P2-T, SR+SR-LEFT-1, !STORE PAST
10436 D+BSPHI(DF), D(C)+ALU07, !SR<13,05> = BSPHI/DF
10437 NEXT J/SFDFTOSRC
(7050) DCS(0.00.0.0.0.0) BM(1010..01.00..00.00..000. 0'1...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.001)
10438
10439 7051: !(FREE)
10440 SFDFTOSRC:
10441 P2-T, SR+SR-LEFT-1, !STORE PAST
10442 D+BSPLO(DF), D(C)+ALU07, !SR<12,04> = BSPLO/DF
10443 NEXT J/SFDFTOSRD
(7051) DCS(0.00.0.0.0.0) BM(1010..00.00..00.00..000..011...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.010)
10444
10445 7052: !(FREE)
10446 SFDFTOSRD:
10447 P2-T, SR+SR-LEFT-1, !STORE PAST
10448 D+ASPFI(SF), D(C)+ALU07, !SR<11,03> = ASPFI/SF
10449 NEXT J/SFDFTOSRE
(7052) DCS(0.00.0.0.0.0) BM(1111..00.00..11.11..000..011...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.011)
10450
10451 7053: !(FREE)
10452 SFDFTOSRE:
10453 P2-T, SR+SR-LEFT-1, !STORE PAST
10454 D+ASPLO(SF), D(C)+ALU07, !SR<10,02> = ASPLO/SF
10455 NEXT J/SFDFTOSRF
(7053) DCS(0.00.0.0.0.0) BM(1111..00.00..10.11..000..011...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.100)
10456
10457 7054: !(FREE)
10458 SFDFTOSRF:
10459 P2-T, SR+SR-LEFT-1, !STORE PAST
10460 D+BSPHI(SF), D(C)+ALU07, !SR<09,01> = BSPHI/SF
10461 NEXT J/SFDFTOSRG
(7054) DCS(0.00.0.0.0.0) BM(1010..01.01..00.00..000..011...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.101)
10462
10463 7055: !(FREE)
10464 SFDFTOSRG:
10465 P2-T, SR+SR-LEFT-1, !STORE PAST
10466 D+BSPLO(SF), D(C)+ALU07, !SR<08,00> = BSPLO/SF
10467 NEXT J/SFDFTOSRH
(7055) DCS(0.00.0.0.0.0) BM(1010..00.01..00.00..000..011...0.1.1..0..0...0.0000...0..0000.0...11.000...000.101.110)
10468
10469 7056: !(FREE)
10470 SFDFTOSRH:
10471 P2-T, SR+SR-LEFT-1, !STORE PAST

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10472          D+CSPD(000), D(C)+0,          !RETRIEVE RETURN ADDRESS
10473      NEXT J/SFDFTSRI
(7056) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.1..0..0...0.1111...0..0000.0...11.000...000.101.111)
10474
10475      7057: !(FREE)
10476      SFDFTSRI:
10477          PO,          RETURN+D(14-03), PAGE(7),          !PUT RETURN ADDRESS INTO RETURN REGISTER,
10478          P2-T,        D+SR-XOR-CSPD(002), SAVE-D(C),      !COMPARE RECEIVED:EXPECTED
10479      NEXT J/ZTARGET777          !GO DO A BUTA(RETURN)
(7057) DCS(0.00.0.0.0.0) BM(0110..10.00..00.00..000..111...0.1.0..0..0...0.1101...0..0000.0...11.101...111.111.111)

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! .PAGE=====

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.TOC * TEST375-376: BYTE WRITE TO ASP/BSP LO, SP ADDRS R-OR-1/FLTPT-INHIBIT

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*****
*
* TESTS: 375A - 376          UWORDS: 020 + 017
*
* FUNCTIONS:
*
* THE FOLLOWING SET OF THREE CHECKS TESTS THE FOLLOWING FEATURES OF THE ASP/BSP:
*
* TEST 375 A/B TEST THAT BYTE WRITES CAN BE PERFORMED TO ASP/BSP LO, USING THE
* "DAD" EXTENSION BIT COMBINATION.
*
* TEST 376 VERIFIES THAT A FLOATING POINT INSTRUCTION IN THE IR FORCES SF-ADDRS
* BIT<02> TO A (0), AND THAT BUTA(R-OR-1) IN THE REFERENCING MICROWORD FORCES
* BIT<00> TO A (1).
*
*****

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!TEST 375 A CHECKS THAT THE DAD BIT COMBINATION /11 DOES A BYTE WRITE (IE, LO BYTE ONLY)

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5517:
TEST375A:
      PO,          LOAD-ENUA(ZTARGET432),          !SETUP FOR INSTRS IR=(000125)/E78/432
          LOAD-ERROR(TEST375A),          !ERROR DIRECTORY KEY
          DCS-CTR(C11.),          !COMPARE AT TARGET
      NEXT J/SETSP375A
(5517) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.110)

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3506:
SETSP375A:
      P2-T,        D+CSPD(C125252),          !FIRST SETUP SP'S WITH JUNK
          P3,          A#BSPL0[06]+D-(A),
      NEXT,        GOTO-PAGE(7),          !XFER FOR DCS-DAD BITS

```

```

10523          J/FIRST375A
(5506) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..111..111...0.1.0..0..0...0.0110...0..0011.0...11.100...000.100.110)
10524
10525 7046: !(FREE)
10526 FIRST375A:
10527     SETUP, FIRST-1-OR-2,          !DAD/01, SHOULDN'T CAUSE BYTE WRITE
10528     P2-T,  D+ZERO                !SHOULD WRITE ALL ZEROES
10529     P3,    ASPL0(06)+0
10530     NEXT,  J/SECOND375A
(7046) DCS(0.01.0.0.0.0) BM(0011..00.00..00.00..111..000...0.1.0..0..0...0.0000...0..00C1.0...11.000...000.110.001)
10531
10532 7061: !(FREE)
10533 SECOND375A:
10534     SETUP, SECOND-1-OR-2,        !DAD/10, SHOULDN'T CAUSE BYTE WRITE
10535     P2-T,  D+ZERO                !SHOULD WRITE ALL ZEROES
10536     P3,    BSPL0(06)+0
10537     NEXT,  J/BYTE375A
(7061) DCS(0.10.0.0.0.0) BM(0011..00.10..00.00..111..000...0.1.0..0..0...0.0000...0..0110.0...11.000...000.110.010)
10538
10539 7062: !(FREE)
10540 BYTE375A:
10541     SETUP, BYTE-WRITE,           !DAD/11, SHOULD CAUSE A BYTE WRITE
10542     P2-T,  D+ASPHI(C052525),     !WRITE THE (125) IN THE LOW BYTE
10543     P3,    A#BSPL0(06)+D-(B),    !UPPER BYTE SHOULD BE (000) FROM ABOVE
10544     NEXT,  J/CHECK375A
(7062) DCS(0.11.0.0.0.0) BM(1111..00.10..11.01..111..000...0.1.0..0..0...0.0000...0..0111.0...11.000...000.110.011)
10545
10546 7063: !(FREE)
10547 CHECK375A:
10548     P2-T,  D+ASPL0(R06),         !GET THE A SIDE SP
10549     NEXT,  J/GOBUT375A
(7063) DCS(0.00.0.0.0.0) BM(1111..00.00..10.00..111..000...0.1.0..0..0...0.0000...0..0000.0...11.000...000.110.100)
10550
10551 7064: !(FREE)
10552 GOBUT375A:
10553     SETUP, RETURN/TEST375B,      !RETURN TO START OF NEXT SUBTEST
10554     NEXT,  CALL(DINTOIR-5),      !GO CHECK (000125) OBTAINED
(7064) DCS(0.00.0.0.0.0) BM(0101..00.11..00.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
10555
10556
10557
10558
10559
10560
10561 !TEST 375 B NOW CHECKS THE SAME THING (000125) IS ON THE B SIDE
10562 5625:
10563 TEST375B:
10564     PO,    LOAD-ENUA(ZTARGET432), !SETUP FOR INSTRS IR=(000125)/E78/432
10565     LOAD-ERROR(TEST375B),        !ERROR DIRECTORY KEY
10566     DCS-CTR(C7.),               !COMPARE AT TARGET
10567     NEXT,  J/CHECK375B
(5625) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.000.000)
10568

```

```

10569 5300: !(FREE)
10570 CHECK375B:
10571 P2-T, D+BSPL0(R06), !GET THE B SIDE SP
10572 NEXT, J/G08UT375B
(5300) DCS(0.00.0.0.0.0) BM(1010..00.10..00.00..111..000...0.1.0..0..0...0.0000...0..0000.0...1'.000...011.000.001)

```

```

10573 5301: !(FREE)
10574 G08UT375B:
10575 SE 7UP, RETURN/TEST376A, !RETURN TO START OF NEXT SUBTEST
10576 NEXT, CALL(DINTOIR-5) !GO CHECK (000125) OBTAINED
10577 (5301) DCS(0.00.0.0.0.0) BM(0101..00.10..10.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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10579
10580
10581
10582
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10584
10585

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!TEST 376 A NOW DOES THE SF ADDRESS MODE, W/ FLTPT-INHIBIT AND BUTA(R-OR-1) ACTIVE

```

```

!NOTE: THE ASPHI CONTAINS THE FOLLOWING VALUES IN THESE LOCATIONS:

```

ASPHI(02)	ASPHI(03)	ASPHI(06)	ASPHI(07)
(052522)	(177777)	(056166)	(052525)

```

10593 5513:
10594 TEST376A:
10595 PD, LOAD-ENUA(D0IT376A), !MAKE SURE BUTA(R-OR-1) DOESN'T CAUSE A BRANCH
10596 LOAD-ERFOR(TEST376A), !ERROR DIRECTORY KEY
10597 DCS-CTR(C2.), !COMPARE AT TARGET
10598 NEXT, J/SETIR376A
10599 (5513) DCS(1.00.1.0.0.0) BM(1101..00.10..11.00..100..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.000.010)

```

```

10600 5302: !(FREE)
10601 SETIR376A:
10602 SETUP, BUTA(R-OR-1), !SETUP ACTIVE BUT MODIFICATION OF SF BIT(00) ADDRESS
10603 P2-U, IR+EMIT, EMIT/170600, !IR=FLTPT INSTR, SF=(6)
10604 NEXT, J/D0IT376A
10605 (5302) DCS(0.00.0.0.0.0) BM(1111..00.00..01.10..000..000...0.0.0..0..0...1.1010...0..0000.0...10.010...100.100.000)

```

```

10606 5440:
10607 D0IT376A:
10608 P2-T, D+A-XOR-B, !COMPARE SF/OBTAINED:REGISTER EXPECTED
10609 BUS-A+ASPHI(SF), !SF ON A GOES FROM (6) -> (2) FROM FLTPT,
10610 BUS-B+BSPHI(R03), !AND FROM (2) -> (3) FOR (R-OR-1)
10611 NEXT, J/TEST376A !THIS WE EXPECT
10612 (5440) DCS(0.00.0.0.0.0) BM(0110..01.11..11.11..101..000...0.1.0..0..0...0.0000...0..0000.0...11.000...110.001.100)

```

```

10614
10615
10616

```



```

10617 !NOW CHECK THE RIGHT RESULT WAS OBTAINED
10618 5614:
10619 TEST376A1:
10620 PO, LOAD-ENVA(ZTARGET434), !SETUP FOR IR=(000000)/INSTRS COMPARE
10621 LOAD-ERROR(TEST376A1), !ERROR DIRECTORY KEY
10622 DCS-CTR(C6.), !COMPARE AT TARGET
10623 NEXT J/GOBUT376A
(5614) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...011.000.011]

10624 5303: !(FREE)
10625 GOBUT376A:
10626 SETUP, RETURN/SCOPE376, !RETURN TO SCOPE LOOP TEST WORD
10627 NEXT, CALL[DINTOIR-5] !CHECK FOR (000000)
10628 (5303) DCS[0.00.0.0.0.0] BM[0101..00.01..10.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011]

10629 5304: !(FREE)
10630 SCOPE376:
10631 PO, BUMP-VERIFY, !COUNT
10632 NEXT, BUTD[SCOPE], !NO ERROR: "TEST410" (+1. WORDS)
10633 ! ERROR: "SETSP375A" (-12. WORDS)
10634 J/TEST410
10635 (5304) DCS[0.00.0.1.0.1] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.111]
10636
10637
10638
10639
10640
10641
10642 !.PAGE=====
10643
10644 .TOC * TEST410: BYTE/BYTE CONSTANT/D=ZERO
10645
10646
10647
10648 !*****
10649 !*
10650 !* TESTS: 410 A - E UWORDS: 044 + 020
10651 !*
10652 !* FUNCTIONS:
10653 !*
10654 !* THE FOLLOWING TESTS RUN A COUNT PATTERN THRU THE IR, MAINTAINING TOTALS OF
10655 !* THE NUMBER OF TIMES:
10656 !*
10657 !* BYTE-H=LOW, BYTE/1-OR-2-FIRST=HIGH, BYTE/1-OR-2-SECOND=HIGH,
10658 !* (D=ZERO)-H=HIGH, AND (D=ZERO)-H=LOW.
10659 !*
10660 !* AT THE END, THE TESTS COMPARE THE EXPECTED COUNTS TO THE RECEIVED COUNTS.
10661 !*
10662 !*****
10663
10664
10665 5507:
10666 TEST410:

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10667      PO,      LOAD-ERROR(TEST410),      !ERROR DIRECTORY KEY
10668      DCS-CTR(C6.),      !COMPARE BELOW
10669      NEXT,     GOTO-PAGE(6),      !XFER
10670      J/SETBYTEB410
(5507) DCS(1.00.1.0.0.0) BM(1001..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...101.110.000)

10671      6560:
10672      SETBYTEB410:
10673      P2-T,     D+ZERO,      !ZER0ES INTO:
10674      P3,      A#BSPHI(10)+D-(A),      !ASPHI(10) = BYTE-FIRST
10675      NEXT,     GOTO-PAGE(7),      !
10676      J/SETBYTEC410      !BSPHI(10) = WORD (=BYTE)
10677      (6560) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..111...0.1.0..0..0...0.0000...0..1011.0...11.100...000.110.000)

10678      7060:  !(FREE)
10679      SETBYTEC410:
10680      P3,      A#BSPL0(10)+D-(B),      !ASPL0(10) = BYTE-SECOND
10681      NEXT,     J/SETBYTED410      !BSPL0(10) = IR-DATA
10682      (7060) DCS(0.00.0.0.0.0) BM(0000..00.10..00.00..000..000...0.0.0..0..0...0.0000...0..0111.0...11.000...000.110.110)

10683      7066:  !(FREE)
10684      SETBYTED410:
10685      P3,      A#BSPL0(11)+D-(B),      !ASPL0(11) = D-NONZERO
10686      NEXT,     GOTO-PAGE(6),      !BSPL0(11) = D-ZERO
10687      J/SETBYTEE410
10688      (7066) DCS(0.00.0.0.0.0) BM(0000..00.11..00.00..000..110...0.0.0..0..0...0.0000...0..0111.0...11.100...000.000.000)

10689      6000:  !(FREE)
10690      SETBYTEE410:
10691      PO,      BUMP-VERIFY,      !COUNT
10692      P3,      CSP0(17)+EMIT, EMIT/000001,      !A (1) IN BYTE-CONSTANT
10693      NEXT,     J/SETBYTEG410      ! LOCATION IN CSP
10694      (6000) DCS(0.00.0.0.0.1) BM(0000..10.00..00.00..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...001.000.101)

10695      6105:  !(FREE)
10696      SETBYTEG410:
10697      P2-U,     IR+DBUF-[I],      !SETUP UCONS FOR D --> IR
10698      P3,      DBUF+D-[I],      !
10699      NEXT,     J/TESTD410
10700      (6105) DCS(0.00.0.0.0.0) BM(0100..00.00..00.01..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...111.111.011)

10701
10702
10703      !*** LOOP BACK ENTRY POINT ***
10704
10705      6773:
10706      TESTD410:
10707      PO,      LOAD-ENUA(GOFOR410),      !COMPARE AT END OF LOOP
10708      LOAD-ERROR(TESTD410),      !ERROR DIRECTORY KEY
10709      DCS-CTR(C15.),      !RELOAD EACH TIME THROUGH
10710      P2-U,     IR+DBUF,      ! (DON'T CARE HERE)
10711

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10712          P3,      DBUF+D,          !COPY IR-DATA FROM D --> DBUF
10713          NEXT,    BUTR(D<14-00-EQ-0>), !TEST D<14:00>H:
10714          J/DNONZERO410          !ZERO --> DZERO410, NONZERO --> DNONZERO410
(6773) DCS(1.00.1.0.0.0) BM(0000..00.11..10.11..110..001...0.0.0..0..0...1.1010...0..0000.0...01.101...101.011.001)

10715          !ENTER HERE IF D<14:00> WAS DETECTED AS NON-ZERO
10716          6531:
10717          DNONZERO410:
10718          P2-T,      D+ASPLO(DNONZERO)-PLUS-1,          !BUMP NON ZERO COUNTER
10719          P2-U,      IR+DBUF,          !COPY IR-DATA FROM DBUF --> IR
10720          P3,        ASPLO(11)+D,          !SAVE NON ZERO COUNTER
10721          DBUF+D,          ! (DON'T CARE HERE)
10722          NEXT,      GOTO-PAGE(7),          !XFR TO 7 FOR DAD
10723          J/NEXTPAT410
10724          (6531) DCS(0.00.0.0.0.0) BM(1001..01.11..10.01..000..111...0.1.0..0..0...1.1010...0..0001.0...11.100...000.110.101)

10725          !ENTER HERE IF D<14:00> WAS DETECTED AS ZERO
10726          6533:
10727          DZERO410:
10728          P2-T,      D+BSPLO(DZERO)-PLUS-1,          !BUMP ZERO COUNTER
10729          P2-U,      IR+DBUF,          !COPY IR-DATA FROM DBUF --> IR
10730          P3,        BSPLO(11)+D,          !SAVE ZERO COUNTER
10731          DBUF+D,          ! (DON'T CARE NOW)
10732          NEXT,      GOTO-PAGE(7),          !XFR TO 7 FOR DAD
10733          J/NEXTPAT410
10734          (6533) DCS(0.00.0.0.0.0) BM(1001..00.11..11.01..000..111...0.1.0..0..0...1.1010...0..0110.0...11.100...000.110.101)

10735          7065: !(FREE)
10736          NEXTPAT410:
10737          SETUP,     FIRST-1-OR-2,          !SELECT DAD BITS FOR "BYTEFIRST410"
10738          P2-T,      D+BSPLO(IR-DATA)-PLUS-2,          ! (INCR DATA FOR -NEXT- TIME THRU)
10739          D(C)+COUT15,          !WHEN THIS SETS WE'RE DONE
10740          P3,        BSPLO(10)+D,          !SAVE NEXT
10741          NEXT,      J/BYTEFIRST410
10742          (7065) DCS(0.01.0.0.0.0) BM(1100..00.10..11.01..000..110...0.1.0..0..0...0.0000...0..0110.0...11.000...000.111.000)

10743          7070: !(FREE)
10744          BYTEFIRST410:
10745          SETUP,     SECOND-1-OR-2,          !SELECT DAD BITS FOR "BYTESECOND410"
10746          P2-T,      D+ASPHI(BYTE-FIRST)-PLUS-CSP(1-0), !BYTE-FIRST SELECTS EITHER
10747          SAVE-D(C),          !CSP(17)=1 OR CSP(13)=0
10748          P3,        ASPHI(10)+D,          !WRITE BACK
10749          NEXT,      BUTR(BYTE),          !BYTE --> "BYTESECOND410"
10750          J/WORD410          !-BYTE --> "WORD410"
10751          (7070) DCS(0.10.0.0.0.0) BM(1001..10.00..11.00..000..111...0.1.0..0..0...0.0100...0..1001.0...01.001...011.110.110)

10752          !ENTER HERE IF BYTE-H NOT ASSERTED, IE IR=(WORD)
10753          7366:
10754          WORD410:
10755          SETUP,     SECOND-1-OR-2,          !SELECT DAD BITS FOR "BYTESECOND410"
10756          P2-T,      D+BSPHI(WORD)-PLUS-1,          !BUMP WORD=-BYTE COUNTER
10757          SAVE-D(C),          !SAVE PAST CARRYOUT STATUS
10758

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10759          P3,      BSPHI(10)+D,      !WRITE BACK
10760          NEXT,    J/BYTESECOND410    !NOW GO TRY BYTE-SECOND
(7366) DCS(0.10.0.0.0.0) BM(1001..01.10..11.01..000..111...0.1.0..0..0...0.0000...0..1110.0...11.000...011.110.111)
10761          !ENTER HERE IF BYTE-H WAS ASSERTED, IE IR=(BYTE)
10762          7367:
10763          BYTESECOND410:
10764          SETUP,   NO-DAD,              !KEEP FOR NOISE
10765          P2-T,    D+ASPLO(BYTE-SECOND)-PLUS-CSP(1-0), !BYTE-SECOND SELECTS EITHER
10766          P2-T,    SAVE-D(C),          !CSP(17)=1 OR CSP(13)=0
10767          P3,      ASPLO(10)+D,        !WRITE BACK
10768          NEXT,    BUTR(D(C)-8),       !IF SET, SKIP OUT TO TEST-410A
10769          J/GOFOR410                    !IF CLEAR, FALL THRU TO NEXT
10770          (7367) DCS(0.00.0.0.0.0) BM(1001..10.00..10.00..000..111...0.1.0..0..0...0.0100...0..0001.0...10.011...011.110.001)
10771          7361:                          !01, P7
10772          GOFOR410:
10773          P2-T,    D+BSPLO(IR-DATA),    !GET DATA FOR IR INTO D
10774          NEXT,    GOTO-PAGE(6),        !
10775          J/TESTD410                      !LOOP BACK FOR NEXT
10776          (7361) DCS(0.00.0.0.0.0) BM(1010..00.10..00.00..000..110...0.1.0..0..0...0.0000...0..0000.0...11.100...111.111.011)
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10781          ! - - - - -
10782
10783          !TEST 410A CHECKS THAT D<14:00>=ZERO WAS ONLY ASSERTED TWICE
10784          7363:                          !11, P7
10785          EXPEC410A:
10786          NEXT,    GOTO-PAGE(6),        !FOR LOADING DCS-CTR
10787          J/TEST410A                      !
(7363) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...111.001.001)
10788
10789          6711:
10790          TEST410A:
10791          PO,      LOAD-ENUA(ZTARGET422), !FOR IR=(000002) W/INSTRS
10792          LOAD-ERROR(TEST410A),         !ERROR DIRECTORY KEY
10793          DCS-CTR(C7.),                 !COMPARE AT TARGET
10794          NEXT,    J/COMP410A          !
(6711) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..010..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.000.110)
10795          6106: !(FREE)
10796          COMP410A:
10797          P2-T,    D+BSPLO(DZERO),      !GET DATA
10798          NEXT,    J/INTOIR410A        !
(6106) DCS(0.00.0.0.0.0) BM(1010..00.11..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...001.000.111)
10800          6107: !(FREE)
10801          INTOIR410A:
10802          SETUP,  RETURN/TEST410B,     !COPY D --> IR, RESET BUSDIN+EMIT
10803          NEXT,  CALL(DINTOIR-5)      ! AND CHECK ITS ALL ZERO
10804

```

(6107) DCS(0.00.0.0.0.0) BM(0110..00.11..10.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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! - - - - -

!TEST 410B CHECKS THAT D<14:00>=ZERO WAS NOT ASSERTED
! 32768.-2. = 32766. (077776) TIMES

6704:
TEST410B:
PO, LOAD-ENUA(ZTARGET434), !FOR IR=(000000) W/INSTRS
LOAD-ERROR(TEST410B), !ERROR DIRECTORY KEY
DCS-CTR(C8.), !COMPARE AT TARGET
BUMP-VERIFY, !COUNT
NEXT J/EXPEC410B

(6704) DCS(1.00.1.0.0.1) BM(0111..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.000)

6110: !(FREE)
EXPEC410B:
P3, CSPD[17]+EMIT, EMIT/077776, !EXPECTED NUMBER OF TIMES
NEXT J/COMP410B !D<14:00> WAS NON ZERO

(6110) DCS(0.00.0.0.0.0) BM(0111..10.11..11.11..111..110...0.0.0..0..0...0.0000...1..0000.0...11.000...001.001.001)

6111: !(FREE)
COMP410B:
P3-T, D+ASPL0(DNONZERO)-MINUS-CSPD[17], !COMPARE RECEIVED:EXPECTED
NEXT J/GOPUT410B

(6111) DCS(0.00.0.0.0.0) BM(1101..10.00..10.01..000..000...1.1.0..0..0...0.0000...0..0000.0...11.000...001.001.010)

6112: !(FREE)
GOPUT410B:
SETUP, RETURN/TEST410C, !GO PUT D --> IR
NEXT CALL(DINTOIR-5) ! AND CHECK IT-S ALL ZERO

(6112) DCS(0.00.0.0.0.0) BM(0110..00.11..10.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

! - - - - -

!TEST 410C CHECKS THAT BYTE-H WAS NOT ASSERTED 21696.,
!OR WAS ASSERTED 11072. TIMES IN 32768. ITERATIONS

6707:
TEST410C:
PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
LOAD-ERROR(TEST410C), !ERROR DIRECTORY KEY
DCS-CTR(C6.), !COMPARE AT TARGET
NEXT J/EXPEC410C

(6707) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.011)

6113: !(FREE)

```

10851 EXPEC410C:
10852 P3, CSPD(17)+EMIT, EMIT/52300, !32768.-#TIMES BYTE-H ASSERTED
10853 NEXT, J/ASIDE410C ! 216%=(52300)
(6113) DCS(0.00.0.0.0.0) BM(0101..10.01..00.11..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.001.100)

10854 6114: !(FREE)
10855 ASIDE410C:
10856 P2-T, SR+CSPD(017), !GET ONTO A-SIDE
10857 NEXT, J/COMP410C
(6114) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...001.001.101)

10859 6115: !(FREE)
10860 COMP410C:
10861 P3-T, D+SR-MINUS-BSPHI(WORD), !COMPARE EXPEC:RECEIVED
10862 NEXT, J/GOBUT410C
(6115) DCS(0.00.0.0.0.0) BM(1101..01.10..00.00..000..000...1.1.0..0..0...0.0000...0..0000.0...11.000...001.001.110)

10864 6116: !(FREE)
10865 GOBUT410C:
10866 SETUP, RETURN/TEST4100, !RETURN TO START OF NEXT SUBTEST
10867 NEXT, GOTO-PAGE(7) !BUT TABLE
10868 J/BUTD-IS-ZERO !GO CHECK EQUALITY
(6116) DCS(0.00.0.0.0.0) BM(0110..00.11..10.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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10874 ! - - - - -
10875
10876 !TEST 4100 CHECKS THAT BYTE-CONSTANT WAS ASSERTED (4270)=2232.
10877 !TIMES UNDER "FIRST-1-OR-2"
10878 6727:
10879 TEST4100:
10880 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
10881 LOAD-ERROR(TEST4100), !ERROR DIRECTORY KEY
10882 DCS-CTR(C5.), !COMPARE AT TARGET
10883 NEXT, J/EXPEC4100
(6727) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.001.111)

10884 6117: !(FREE)
10885 EXPEC4100:
10886 PO, BUMP-VERIFY, !COUNT
10887 P3, CSPD(17)+EMIT, !
10888 EMIT/004270, !
10889 NEXT, J/COMP4100 !
(6117) DCS(0.00.0.0.0.1) BM(0000..10.10..00.10..111..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.010.000)

10891 6120: !(FREE)
10892 COMP4100:
10893 P3-T, D+ASPHI(BYTE-FIRST)-MINUS-CSPD(17), !COMPARE RECEIVED:EXPEC
10894 NEXT, J/GOBUT4100
(6120) DCS(0.00.0.0.0.0) BM(1101..10.00..11.00..000..000...1.1.0..0..0...0.0000...0..0000.0...11.000...001.010.001)

10896

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10897 6121: !(FREE)
10898 GOBUT4100:
10899     SETUP, RETURN/TEST410E, !RETURN TO START OF NEXT SUBTEST
10900     NEXT,   GOTO-PAGE(7),    !BUT TABLE
10901     J/BUTD-IS-ZERO          !CHECK EQUALITY
(6121) DCS(0.00.0.0.0.0) BM(0110..00.11..10.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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10908 !TEST 410E CHECKS THAT BYTE-CONSTANT WAS ASSERTED (3600)=1920.
10909 !TIMES UNDER "SECOND-1-OR-2"
10910 6705:
10911 TEST410E:
10912     PO,      LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
10913     NEXT,    LOAD-ERROR(TEST410E), !ERROR DIRECTORY KEY
10914     J/EXPEC410E, DCS-CTR(CS.), !COMPARE AT TARGET
10915     J/EXPEC410E
(6705) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.010.010)

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10916 6122: !(FREE)
10917 EXPEC410E:
10918     PO,      BUMP-VERIFY, !COUNT
10919     P3,      CSPD(17)+EMIT, !
10920     NEXT,    EMIT/003600, !
10921     J/COMP410E, !
10922     J/COMP410E, !
(6122) DCS(0.00.0.0.0.1) BM(0000..10.01..11.10..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.010.011)

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10923 6123: !(FREE)
10924 COMP410E:
10925     P3-T,   D+ASPLO(BYTE-SECOND)-MINUS-CSPD(17), !COMPARE RECEIVED:EXPEC
10926     NEXT,   J/GOBUT410E
(6123) DCS(0.00.0.0.0.0) BM(1101..10.00..10.00..000..000...1.1.0..0..0...0.0000...0..0000.0...11.000...001.010.100)

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10928 6124: !(FREE)
10929 GOBUT410E:
10930     SETUP, RETURN/SCOPE410, !RETURN TO SCOPE LOOP TEST WORD
10931     NEXT,   GOTO-PAGE(7),    !BUT TABLE
10932     J/BUTD-IS-ZERO          !CHECK EQUALITY
(6124) DCS(0.00.0.0.0.0) BM(0110..00.00..10.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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```

10934 6125: !(FREE)
10935 SCOPE410:
10936     PO,      BUSDIN+EMIT-(I), !RESET PROC UCON
10937     NEXT,    EN-CLK-IR(15-00), !
10938     J/TEST500, !
10939     J/TEST500, !
10940     J/TEST500, !
10941     J/TEST500, !
(6125) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.110.001)
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!.PAGE=====

!*** VERSION /V101A0/ ***

.TOC * TEST500: PREFETCH/OVERLAP/SP DEFEAT

*
* TESTS: 500C - 500F UWORDS: 034 + 013
*
* FUNCTIONS: TESTS 500C - 500F RUN PATTERNS THRU THE IR TO TEST
* THE PREFETCH/OVERLAP ROM & THE SP WRITE DEFEAT LOGIC.
*

6561:

TEST500:

PO, LOAD-ENUA(SETFETCH500), !INTERMEDIATE COMPARE AT START OF LOOP
LOAD-ERROR(TEST500), !ERROR DIRECTORY KEY
DCS-CTR(CS.) !COMPARE AT TARGET
NEXT J/SETFETCH500

(6561) DCS(1.00.1.0.0.0) BM(1010..00.11..00.01..011..001...0.0.0..0..0...0.0000...0..0000.0...11.000...110.111.110)

6676:

SETFETCH500:

P2-T, D+ZERO, D(C)+ALU15, !ZERO
SR+ZERO !TO FLAG JAMUPPS AS ILLEGAL -- KEEP ZERO THRU "TEST505"
P3, A#BSFLO(OVERLAP)+D, !ZERO OVERLAP -A, -B COUNTERS
NEXT J/SETFETCH500

(6676) DCS(0.00.0.0.0.0) BM(0011..00.00..10.00..000..100...0.1.1..0..0...0.0000...0..0011.0...11.000...001.010.110)

6126: !(FREE)

SETFETCH500:

P3, A#BSPHI(PATTERN)+D, !ZERO PATTERN (A AND B)
NEXT J/SETFETCH500

(6126) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..011..000...0.0.0..0..0...0.0000...0..1011.0...11.000...001.010.111)

6127: !(FREE)

SETFETCH500:

P3, A#BSPHI(PREFETCH)+D, !ZERO PREFETCH-A COUNTER, ALSO B SIDE
NEXT J/SETFETCH500

(6127) DCS(0.00.0.0.0.0) BM(0000..00.00..11.00..000..000...0.0.0..0..0...0.0000...0..1011.0...11.000...001.011.000)

6130: !(FREE)

SETFETCH500:


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10993          PO,      BUMP-VERIFY,          !COUNT
10994          P3,      CSPD(17)+020010,      !
10995          NEXT,     J/SETFETCHG500        !MASK CONSTANT FOR DATA PATTERN
(6130) DCS(0.00.0.0.0.1) BM(0010..10.00..00.00..001..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.011.001)

10996          6131:  !(FREE)
10997          SETFETCHG500:
10999          PO,      BUMP-VERIFY,          !COUNT
11000          P2-U,     IR+DBUF-[1],         !SETUP THESE UCON'S,
11001          P3,      DBUF+D-[1],         !DON'T WORRY ABOUT EFFECT HERE
11002          NEXT,     J/TESTD500
(6131) DCS(0.00.0.0.0.1) BM(0100..00.00..00.01..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...110.111.001)

11003
11004
11005          !*** LOOP-BACK ENTRY POINT ***
11006
11007          6671:
11008          TESTD500:
11009          PO,      LOAD-ENVA(NEXTPAT500), !COMPARE POINT IN LOOP
11010          LOAD-ERROR(TESTD500),         !ERROR DIRECTORY KEY
11011          DCS-CTR(C4.),                 !COMPARE AT TARGET
11012          P2-U,     IR+DBUF,             !JUST HAPPENS, DON'T CARE NOW
11013          P3,      DBUF+D,             !PUT PATTERN LEFT IN D INTO DBUF
11014          NEXT,     J/LOADIRS00
(6671) DCS(1.00.1.0.0.0) BM(1011..00.11..00.11..111..111...0.0.0..0..0...1.1010...0..0000.0...11.000...001.011.010)

11015
11016          6132:  !(FREE)
11017          LOADIRS00:
11018          P2-U,     IR+DBUF,             !PUT PATTERN NOW IN DBUF TO IR
11019          P3,      DBUF+D,             !JUST HAPPENS, DON'T CARE NOW
11020          NEXT,     J/TESTINHSP500
(6132) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.011.011)

11021
11022          6133:  !(FREE)
11023          TESTINHSP500:
11024          P2-T,     D+BSPL0(OVERLAP)-PLUS-1, !GET BUMPED OVERLAP COUNT, B-SIDE
11025          D(C)+0,
11026          P3,      BSPLO(OVERLAP)+D,     !ONLY WRITTEN BACK IF
11027          BUTA(INSTR-1),                 !"OVERLAP L" ASSERTED
11028          NEXT,     J/TESTINHSP500        !(BRANCH EFFECT OF BUT MASKED)
(6133) DCS(0.00.0.0.0.0) BM(1001..00.10..11.01..000..000...0.1.0..0..0...0.0000...0..0110.0...00.110...111.111.111)

11029
11030          6777:
11031          TESTINHSP500:
11032          P2-T,     D+ASPLO(OVERLAP)-PLUS-1, !GET BUMPED OVERLAP COUNT, A-SIDE
11033          SAVE-D(C),
11034          P3,      ASPLO(OVERLAP)+D,     !ONLY WRITTEN BACK IF
11035          BUTA(INSTR-1),                 !"OVERLAP L" ASSERTED
11036          NEXT,     J/NEXTPAT500        !(BRANCH EFFECT OF BUT MASKED)
(6777) DCS(0.00.0.0.0.0) BM(1001..01.11..10.00..000..111...0.1.0..0..0...0.0000...0..0001.0...00.110...011.111.111)

11037
11038          6377:
11039          NEXTPAT500:
11040          P2-T,     D+ASPHI(PATTERN)-PLUS-020010-PLUS-1, !GET NEXT DATA PATTERN IN D

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11041          D(C)+COUT15,          !GET D(C)=OVERFLOW OUT OF BIT<15>
11042          P3,          A#BSPHI(PATTERN)+D,          !WRITE BACK UNMASKED NEXT PATTERN
11043          NEXT,          BUTR(PREFETCH-L),          !IF ASSERTED, "ASSERTFOV500"
11044          J/ASSERTFOV500          !OTHERWISE, "FIXPAT500"
(6377) DCS(0.00.0.0.0.0) BM(1100..11.00..11.01..011..110...0.1.0..0..0...0.0000...0..1011.0...10.000...101.010.101)

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11045          !ENTER HERE IF "PREFETCH-L" WAS ASSERTED, LOW
11046          6525:
11047          ASSERTFOV500:
11048          P2-T,          D+ASPHI(PREFETCH)-PLUS-1,          !"PREFETCH(0)" ASSERTED, BUMP COUNT
11049          SAVE-D(C),          ! (SAVE CARRYOUT)
11050          P3,          ASPHI(PREFETCH)+D,
11051          NEXT,          J/FIXPAT500
11052          (6525) DCS(0.00.0.0.0.0) BM(1001..01.11..11.00..000..111...0.1.0..0..0...0.0000...0..1001.0...11.000...101.010.111)

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11053          !ENTER HERE IF "PREFETCH-L" WAS NOT ASSERTED, HIGH
11054          6527:
11055          FIXPAT500:
11056          P2-T,          D+ASPHI(PATTERN)-AND-NOT-02J010,          !CLEAR UNNEEDED BITS
11057          SAVE-D(C),          !KEEP D(C) CONSTANT FOR "BUT"
11058          P3,          A#BSPHI(PATTERN)+D,          !RESTORE PATTERN, ALSO LEAVE IN D
11059          NEXT,          BUTR(D(C)-B),          !TEST CARRYOUT:
11060          J/TESTD500          !IF CLEAR, NEXT PATTERN AT: "TESTD500" (-6. WORDS)
11061          (6527) DCS(0.00.0.0.0.0) BM(0111..11.00..11.01..011..111...0.1.0..0..0...0.0000...0..1011.0...10.011...110.111.001)

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11062          !IF SET, EXIT LOOP TO: "TEST500A" (+1. WORD)
11063
11064          ! - - - - -
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11066

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11067          !*** TEST 500A ***
11068          !CHECK THAT REGISTER OPPOSITE ASPHI(PREFETCH), IN BSPHI, STILL ZERO
11069          6673:
11070          TEST500A:
11071          PD,          LOAD-ENUA(ZTARGET434),          !SETUP FOR IR=(000000)/INSTRS TEST
11072          LOAD-ERROR(TEST500A),          !ERROR DIRECTORY KEY
11073          DCS-CTR(C7.),          !COMPARE AT TARGET
11074          BUMP-VERIFY,          !COUNT
11075          NEXT,          J/COMP500A
(6673) DCS(1.00.1.0.0.1) BM(1000..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.100)

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11076          6134: !(FREE)
11077          COMP500A:
11078          P2-T,          D+BSPHI(PREFETCH),          !GET REGISTER
11079          SAVE-D(C),
11080          NEXT,          J/GOBUT500A
11081          (6134) DCS(0.00.0.0.0.0) BM(1010..01.10..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...001.011.101)

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11082          6135: !(FREE)
11083          GOBUT500A:
11084          PD,          BUMP-VERIFY,          !COUNT
11085          SETUP,          RETURN/TEST500C,          !RETURN TO START OF NEXT SUBTEST
11086          NEXT,          CALL(DINTOIR-5)          !PUT D -> DBUF -> IR, DO INSTRS BUT FOR (000000)
11087          (6135) DCS(0.00.0.0.0.1) BM(0110..00.11..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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!*** ALSO SETS UP BUSDIN (- EMIT UPON EXIT ***

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!*** TEST 500C ***

!CHECK THAT ASSERTING "OVERLAP L" ONLY ALLOWED A SP REWRITE (DURING
!A BUT(INSTR-1)) IN ASPLO 4005. TIMES / 16384. DATA PATTERNS

6726:

TEST500C:

PO, LOAD-ENUA(ZTARGET402),
LOAD-ERROR(TEST500C),
DCS-CTR(CS.),
BUMP-VERIFY,
NEXT J/EXPEC500C

!SETUP FOR D =0 TEST
!ERROR DIRECTORY KEY
!COMPARE AT TARGET
!COUNT

(6726) DCS(1.00.1.0.0.1) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.011.1101

6136: !(FREE)

EXPEC500C:

P3, CSPD(EXPEC)+EMIT,
EMIT/7645
NEXT J/COMP500C

!EXPECTED COUNT =
(7645) = 4005.

(6136) DCS(0.00.0.0.0.0) BM(0000..10.11..11.10..100..101...0.0.0..0..0...0.0000...1..0000.0...11.000...001.011.1111

6137: !(FREE)

COMP500C:

PO, BUMP-VERIFY,
P3-T, D+ASPLO(OVERLAP)-MINUS-CSPB(EXPEC),
SAVE-D(C),
NEXT J/GOBUT500C

!COUNT
!COMPARE RECEIVED:EXPECTED

(6137) DCS(0.00.0.0.0.1) BM(1101..11.00..10.00..000..111...1.1.0..0..0...0.0000...0..0000.0...11.000...001.100.0001

6140: !(FREE)

GOBUT500C:

SETUP, RETURN/TEST5000,
NEXT, GO10-PAGE(7),
J/BUTO-IS-ZER?

!RETURN TO START OF NEXT SUBTEST
!BUT TABLE
!CHECK EQUALITY

(6140) DCS(0.00.0.0.0.0) BM(0110..00.11..11.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.0011

!*** TEST 5000 ***

!CHECK THAT ASSERTING "OVERLAP L" ALLOWED THE SAME NUMBER OF SP REWRITES
!TO ASPLO (CHECKED ABOVE) AS TO BSPLO (CHECKED HERE)

6746:

TEST5000:

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11137      PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=0 TEST
11138      LOAD-ERROR(TEST5000),      !ERROR DIRECTORY KEY
11139      DCS-CTR(C4.),      !COMPARE AT TARGET
11140      NEXT,      J/COMPS000
(6746) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.001)

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11141      6141:      !(FREE)
11142      COMPS000:
11143      P3-T,      D+ASPLO(OVERLAP)-MINUS-BSPLO(OVERLAP),      !COMPARE A-COUNT:B-COUNT
11144      SAVE-D(C),
11145      NEXT,      J/GOBUTS000
11146      (6141) DCS(0.00.0.0.0.0) BM(1101..00.10..10.00..000..111...1.1.0..0..0...0.0000...0..0000.0...11.000...001.100.010)

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11147      6142:      !(FREE)
11148      GOBUTS000:
11149      PO,      BUMP-VERIFY,      !COUNT
11150      SETUP,      RETURN/TEST500E,      !RETURN TO START OF NEXT SUBTEST
11151      NEXT,      GOTO-PAGE(7),      !BUT TABLE
11152      J/BUTD-IS-ZERO      !CHECK EQUALITY
11153      (6142) DCS(0.00.0.0.0.1) BM(0110..00.11..10.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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11159      ! - - - - -
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11161      !*** TEST 500E ***
11162      !CHECK THAT "PREFETCH(0)H" WAS ONLY ASSERTED 357. TIMES/16384. DATA PATTERNS
11163      6736:
11164      TEST500E:

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11165      PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=0 TEST
11166      LOAD-ERROR(TEST500E),      !ERROR DIRECTORY KEY
11167      DCS-CTR(C5.),      !COMPARE AT TARGET
11168      NEXT,      J/EXPEC500E
(6736) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.100.011)

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11169      6143:      !(FREE)
11170      EXPEC500E:
11171      PO,      BUMP-VERIFY,
11172      P3,      CSPD(EXPEC)+EMIT,      !EXPECTED COUNT=
11173      EMIT/545      (545)=357.
11174      NEXT,      J/COMPS00E
11175      (6143) DCS(0.00.0.0.0.1) BM(0000..10.00..01.01..100..101...0.0.0..0..0...0.0000...1..0000.0...11.000...001.100.100)

```

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11176      6144:      !(FREE)
11177      COMPS00E:
11178      P3-T,      D+ASPHI(PREFETCH)-MINUS-CSPB(EXPEC),      !COMPARE RECEIVED:EXPECTED
11179      SAVE-D(C),
11180      NEXT,      J/GOBUTS00E
11181      (6144) DCS(0.00.0.0.0.0) BM(1101..11.00..11.00..000..111...1.1.0..0..0...0.0000...0..0000.0...11.000...001.100.101)

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11182      6145:      !(FREE)
11183

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11184 GOBUTS00E:
11185     SETUP, RETURN/SCOPE500F,      !RETURN TO SCOPE LOOP TEST WORD
11186     NEXT,  GOTO-PAGE(7),          !BUT TABLE
11187     J/BUTD-IS-ZERO                !CHECK EQUALITY
(6145) DCS(0.00.0.0.0.0) BM(0110..00.00..11.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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11188
11189
11190
11191 6146: !(FREE)
11192 SCOPE500F:
11193     PO,      BUMP-VERIFY,          !COUNT
11194     EN-CLK-IR(15-00),             !RESET PROC UCON
11195     NEXT,    BUTD(SCOPE),
11196     J/TEST503A                    !NO ERROR: "TEST503A" (+1. WORDS)
11197 (6146) DCS(0.00.0.1.0.1) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.111.111)

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11198
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11200
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11202
11203 !.PAGE=====
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11206 .TOC * TEST503-510: PROCESSOR UCON TESTS (FLAGS, FPS, PS, BUTM) & ASSOC LOGIC
11207

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11208 !*****
11209 !*
11210 !* TESTS: 503A - 510F                      UWORDS: 214 + 245
11211 !*
11212 !* FUNCTIONS: TESTS 503A - 510F MANIPULATE THE VARIOUS PROCESSOR UCON
11213 !* FUNCTIONS (FLAGS, EXFLAGS, FPS, PS, CUA) AND RELATED "BUT"
11214 !* TESTS TO SEE THAT ALL ARE FUNCTIONAL.
11215 !*
11216 !*****

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11224 ! - - - - -

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11225
11226 !*** TEST 503 ***
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11228 !TESTS 503 A-I USE DATA PATTERNS OF:
11229 !   FLAG<8:4,2:0>H = "10101010", EXFLAG<2:1>H = "01",
11230 !   FPS<7:0>H = "1010 1010"
11231
11232 ! - - - - -

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11233
11234 !*** TEST 503A ***

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11235 !LOAD FLAGS<8:4,2:0> WITH "10101010", EXFLAGS<2:1> WITH "01", FPS<7:4> WITH "1010",
11236 !FPS<3:0> WITH "1010", AND READ BACK THRU "FLAGS#FPS" PORT OF PROCESSOR MUX
11237 6677:
11238 TEST503A:
11239     PD,      LOAD-ENVA(L0ADNZW5),      !COMPARE 1/2 WAY THRU BM SUBR
11240             LOAD-ERROR(TEST503A),      !ERROR DIRECTORY KEY
11241             DCS-CTR(C10.),             !COMPARE IN ...
11242             BUMP-VERIFY,               !COUNT
11243     NEXT     J/LOADFLAG503A
(6677) DCS(1.00.1.0.0.1) BM(0101..00.10..00.11..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.001.100)

11244 6614:
11245 LOADFLAG503A:
11246     P2-U,    IR+EMIT,                  ! (125122)=NOT-FLTPT-H INSTR (NOTE UCON/CSPADDR OVLAP)
11247                                     ! ALSO NOTE IR=(NOT-PREFETCH), SO PREFETCH-SAVE WILL GET "0"
11248                                     ! AFTER SUBSEQUENT JAMUPP (IN LOADFPSCC ROUTINE EXIT)
11249                                     ! INITIAL VALUE:
11250     P3,      CSPD(05)+EMIT,            ! FLAG<8:4,2:0>="10101010", EXFLAG<2:1>="01"
11251             EMIT/125122,              ! "10101010 0101 0010"
11252     NEXT     J/LOADFPSS03A
(6614) DCS(0.00.0.0.0.0) BM(1010..10.10..10.01..010..010...0.0.0..0..0...1.1010...1..0000.0...11.000...001.100.111)

11253 6147: !(FREE)
11254 LOADFPSS03A:
11255     PD,      BUMP-VERIFY,              !COUNT
11256     P3,      CSPD(06)+EMIT,            !INITIAL VALUE IN FPS<7:4>:
11257             EMIT/052655,              ! "01010101 1010 1101"
11258     NEXT     J/EXPEC503A
(6147) DCS(0.00.0.0.0.1) BM(0101..10.01..01.10..101..101...0.0.0..0..0...0.1001...1..0000.0...11.000...001.101.000)

11260 6150: !(FREE)
11261 EXPEC503A:
11262     !*** NOTE: FLAG<8>, LBREAK ENABLE, GETS SET HERE. KEEP SR=(000000) (SET IN TEST500) TO FLAG
11263     ! THAT ANY SPURIOUS LBREAKS ARE ILLEGAL (IE, CAUSING A JAMUPP SEQUENCE) ***
11264     P3,      CSPD(02)+EMIT,            ! EXPECTED VALUE LOADS FLAGS, FPS<7:0>
11265             EMIT/125252,              ! OF "FLAGS#FPS" PORT
11266     NEXT     J/MASK503A                ! "10101010 1010 1010"
(6150) DCS(0.00.0.0.0.0) BM(1010..10.10..10.10..101..010...0.0.0..0..0...0.1101...1..0000.0...11.000...001.101.001)

11268 6151: !(FREE)
11269 MASK503A:
11270     P3,      CSPD(04)+EMIT,            ! MASK OUT (TO ZEROS)
11271             EMIT/177777,              ! LOOK AT ALL THE BITS
11272     NEXT     J/LOADFCC503A
(6151) DCS(0.00.0.0.0.0) BM(1111..10.11..11.11..111..111...0.0.0..0..0...0.1011...1..0000.0...11.000...001.101.010)

11274 6152: !(FREE)
11275 LOADFCC503A:
11276     P3,      CSPD(15)+EMIT,            ! FPS<3:0> COME FROM CSP(15)<3:0>[MD]
11277             EMIT/000012,              ! "1010"
11278     NEXT     J/DOFCC503A
(6152) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..001..010...0.0.0..0..0...0.0010...1..0000.0...11.000...001.101.011)

11280 6153: !(FREE)
11281 DOFCC503A:
11282

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11283          P3,      CSPD(00)+EMIT,          !CALL BM SUBR WHICH DOES THE LOAD
11284          RETURN/TEST503A,                !RETURN INLINE
11285          NEXT,    CALL(LoadFPSCT)
(6153) DCS(0.00.0.0.0.0) BM(0110..10.11..10.01..100..111...0.0.0..0..0...0.1111...1..0000.0...11.100...010.110.100)
11286          ! - - - - -
11287
11288          !NOW CHECK ALL THE RITE BITS WERE SET BY READING THEM BACK
11289
11290          6714:
11291          TEST503A:
11292          PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
11293                  LOAD-ERROR(TEST503A),      !ERROR DIRECTORY KEY
11294                  DCS-CTR(C14.),              !COMPARE AT TARGET
11295                  BUTA(CUA-TRACK),           !RESET CUA TRACKING AFTER JAMUPP
11296          P3,      J/GOPUT503A
11297          NEXT,
(6714) DCS(1.00.1.0.0.0) BM(0001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.001...001.101.100)
11298
11299          6154:  ! (FREE)
11300          GOPUT503A:
11301          SETUP,  RETURN/GOBUT503A,          !GO TO SUBR WHICH:
11302          NEXT,   CALL(FLAGFPSSEQ100)        !1) CSP(05) -> FLAGS, EXFLAGS
(6154) DCS(0.00.0.0.0.0) BM(0110..00.00..11.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.111.011)
!2) CSP(06) -> FPS(7:4)
11303
11304          6155:  ! (FREE)
11305          GOBUT503A:
11306          SETUP,  RETURN/TEST503B,          !RETURN TO START OF NEXT SUBTEST
11307          NEXT,   CALL(FLAGFPST00)          ! FLAGS#FPS.XOR.CSP(02) -> D, BUT(D=0)
11308          (6155) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.010)
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11312          ! - - - - -
11313
11314          !*** TEST 503B ***
11315          !DO THE "MULTIPLE BUT" ON "FLAG7-H" TO CHECK IT'S CLEAR
11316          6630:
11317          TEST503B:
11318          PO,      LOAD-ENUA(ZTARGET406),      !BIT<00> CLEAR
11319                  LOAD-ERROR(TEST503B),      !ERROR DIRECTORY KEY
11320                  DCS-CTR(C4.),              !COMPARE AT TARGET
11321          NEXT,   J/GOBUT503B
11322          (6630) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.110)
11323
11324          6156:  ! (FREE)
11325          GOBUT503B:
11326          SETUP,  RETURN/TEST503C,          !RETURN TO START OF NEXT SUBTEST
11327          NEXT,   GOTO-PAGE(7),             !BUT TABLE
11328          J/BUTMFLAG7                        !FLAG 7-H IN BIT<00>

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(6156) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.101)

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! - - - - -

!*** TEST 503C ***
!DO THE "BUT" ON "FLTPT-PROC-H"="FLAGS-H*EXFLAG1-L" TO CHECK IT'S CLEAR

6632:
TEST503C:
 PO, LOAD-ENUA(ZTARGET402), !BIT<00> CLEAR
 LOAD-ERROR(TEST503C), !ERROR DIRECTORY KEY
 DCS-CTR(C3.), !COMPARE AT TARGET
 BUMP-VERIFY, !COUNT
 NEXT, J/GOBUT503C

(6632) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.101.111)

6157: !(FREE)
GOBUT503C:
 SETUP, RETURN/TEST5030A, !RETURN TO START OF NEXT SUBTEST
 NEXT, GOTO-PAGE(7), !BUT TABLE
 J/BUTFPPROC !FLAGS-H*EXFLAG1-L IN BIT<00>

(6157) DCS(0.00.0.0.0.0) BM(0110..00.11..00.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.100)

! - - - - -

:*** TEST 5030A ***
!DO THE "MULTIPLE BUT" ON "FLTPT" TO CHECK IT'S CLEAR, IR=(125122), NOT-FLTPT-H INSTR

6601:
TEST5030A:
 PO, LOAD-ENUA(ZTARGET406), !BIT 00> CLEAR
 LOAD-ERROR(TEST5030A), !ERR(R DIRECTORY KEY
 DCS-CTR(C4.), !COMPARE AT TARGET
 NEXT, J/GOBUT5030A

(6601) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0. 0000.0...11.000...001.110.000)

6160: !(FREE)
GOBUT5030A:
 SETUP, RETURN/TEST5030, !RETURN TO START OF NEXT SUBTEST
 NEXT, GOTO-PAGE(7), !BUT TABLE
 J/BUTMFLTPTS !FLTPT-H IN BIT<00>

(6160) DCS(0.00.0.0.0.0) BM(0110..00.11..01.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.001)

! - - - - -


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11375
11376 !*** TEST 5030 ***
11377 !DO AN INSTR-1 FLOATING POINT DECODE, TO CHECK THAT FLAG<4:5> -> BIT<1:0>
11378 6670:
11379 TEST5030:
11380 PO, LOAD-ENUA(ZTARGET476), !INSTR-1 FLTPT, BIT<1:0>="10"
11381 LOAD-ERROR(TEST5030), !ERROR DIRECTORY KEY
11382 DCS-CTR(C4.), !COMPARE AT TARGET
11383 NEXT J/LOADIRS030
(6670) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..111..110...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.001)

11384 6161: !(FREE)
11385 LOADIRS030:
11386 PO, BUMP-VERIFY, !COUNT
11387 P2-U, IR+EMIT, !IR <- FLTPT INSTR
11388 EMIT/175252,
11389 NEXT J/GOBUT5030
(6161) DCS(0.00.0.0.0.1) BM(1111..00.10..10.10..101..010...0.0.0..0..0...1.1010...0..0000.0...11.000...001.110.010)

11391 6162: !(FREE)
11392 GOBUT5030:
11393 SETUP, RETURN/TEST503E, !RETURN TO START OF NEXT SUBTEST
11394 NEXT, GOTO-PAGE(7), !BUT TABLE
11395 J/BUTINSTR1 !FULL WIDTH
(6162) DCS(0.00.0.0.0.0) BM(0110..00.11..10.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

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11401 ! - - - - -
11402
11403 !*** TEST 503E ***
11404 !READ EXFLAGS<2:1> = "01" IN CUA-PORT<2:1>,
11405 !ALSO "PREFETCH-SAVE-H" = "0" FROM PREVIOUS SETUP
11406 6700:
11407 TEST503E:
11408 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=0 TEST
11409 LOAD-ERROR(TEST503E), !ERROR DIRECTORY KEY
11410 DCS-CTR(C10.), !COMPARE AT TARGET
11411 NEXT J/EXPEC503E
(6700) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.011)

11412 6163: !(FREE)
11413 EXPEC503E:
11414 PO, BUMP-VERIFY, !COUNT
11415 P3, CSPD(02)+EMIT, !CUA PORT READS AS:
11416 EMIT/073732, !0#CUA<11:00>#EXFLAG<2:1>#PREFETCH
11417 NEXT J/GOPUT503E
(6163) DCS(0.00.0.0.0.1) BM(0111..10.01..11.11..011..010...0.0.0..0..0...0.1101...1..0000.0...11.000...001.110.100)

11419 6164: !(FREE)
11420 GOPUT503E:
11421 SETUP, RETURN/TEST503F, !GO TO SUBR WHICH:
11422

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11423 NEXT CALL(CUAT00) !PUTS CUA#EXFLAGS.XOR.CSP(02) -> D, BUT(D=ZERO)
 (6164) DCS(0.00.0.0.0.0) BM(0110..00.11..10.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.111)

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11428 ! - - - - -

11430 !*** TEST 503F ***
 11431 !DO THE "MULTIPLE BUT" ON EXFLAG<2> TO CHECK IT'S CLEAR

11432 6710:
 11433 TEST503F:
 11434 PO, LOAD-ENUA(ZTARGET406), !BIT<00> CLEAR
 11435 LOAD-ERROR(TEST503F), !ERROR DIRECTORY KEY
 11436 DCS-CTR(C4.), !COMPARE AT TARGET
 11437 NEXT, J/GOBUT503F

(6710) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.101)

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11439 6165: !(FREE)
 11440 GOBUT503F:
 11441 SETUP, RETURN/TEST503G, !RETURN TO START OF NEXT SUBTEST
 11442 NEXT, GOTO-PAGE(7), !BUT TABLE
 11443 J/BUTMEXFLAG2 !EXFLAG<2>H IN BIT<00>

(6165) DCS(0.00.0.0.0.0) BM(0110..00.11..10.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.011)

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 11445
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 11447

11448 ! - - - - -

11450 !*** TEST 503G ***
 11451 !DO THE "MULTIPLE BUT" ON EXFLAG<1> TO CHECK IT'S SET

11452 6720:
 11453 TEST503G:
 11454 PO, LOAD-ENUA(ZTARGET407), !BIT<00> SET
 11455 LOAD-ERROR(TEST503G), !ERROR DIRECTORY KEY
 11456 DCS-CTR(C4.), !COMPARE AT TARGET
 11457 BUMP-VERIFY, !COUNT
 11458 NEXT, J/GOBUT503G

(6720) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.110)

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11460 6166: !(FREE)
 11461 GOBUT503G:
 11462 SETUP, RETURN/TEST503H, !RETURN TO START OF NEXT SUBTEST
 11463 NEXT, GOTO-PAGE(7), !BUT TABLE
 11464 J/BUTMEXFLAG1 !EXFLAG<1>H IN BIT<00>

(6166) DCS(0.00.0.0.0.0) BM(0110..00.11..10.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.111)

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11469 ! - - - - -
11470
11471 !*** TEST 503H ***
11472 !CHECK FPS<5> SET, VIA BUTR
11473 6732:
11474 TEST503H:
11475     PO,          LOAD-ENUA(ZTARGET407),      !BIT<00> SET
11476                LOAD-ERROR(TEST503H),      !ERROR DIRECTORY KEY
11477                DCS-CTR(C3.),              !COMPARE AT TARGET
11478                BUMP-VERIFY,                !COUNT
11479                NEXT, J/GOBUT503H
(6732) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.110.111)

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11480
11481 6167: !(FREE)
11482 GOBUT503H:
11483     SETUP,      RETURN/TEST503I,          !RETURN TO START OF NEXT SUBTEST
11484     NEXT,       GOTO-PAGE(7),             !BUT TABLE
11485                J/BUTFPS05                !FPS <05> IN BIT<00>
(6167) DCS(0.00.0.0.0.0) BM(0110..00.11..11.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.010)

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11490 ! - - - - -

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11491
11492 !*** TEST 503I ***
11493 !CHECK FLTPT-FD-H = F(FPS<7:6>, FLAG<5,2,1,EX1>) IS CLEAR
11494 6742:
11495 TEST503I:
11496     PO,          LOAD-ENUA(ZTARGET402),      !BIT<00> CLEAR
11497                LOAD-ERROR(TEST503I),      !ERROR DIRECTORY KEY
11498                DCS-CTR(C3.),              !COMPARE AT TARGET
11499                NEXT, J/GOBUT503I
(6742) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.000)

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11500
11501 6170: !(FREE)
11502 GOBUT503I:
11503     PO,          BUMP-VERIFY,              !COUNT
11504     SETUP,      RETURN/TEST503J,          !RETURN TO START OF NEXT SUBTEST
11505     NEXT,       GOTO-PAGE(7),             !BUT TABLE
11506                J/BUTFPFD                !FLTPT-FD-H IN BIT<00>
(6170) DCS(0.00.0.0.0.1) BM(0110..00.11..11.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.111.001)

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11507 ! - - - - -

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11508
11509
11510 !*** TEST 503J ***
11511 !DO THE "MULTIPLE BUT" ON "D<00>" TO CHECK IT'S CLEAR (D WAS ZEROED IN TEST503E, ABOVE)
11512 6756:
11513 TEST503J:
11514     PO,          LOAD-ENUA(ZTARGET406),      !BIT<00> CLEAR
11515                LOAD-ERROR(TEST503J),      !ERROR DIRECTORY KEY
11516                DCS-CTR(C4.),              !COMPARE AT TARGET

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11517      NEXT      J/GOBUT503J
(6756) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.001)
11518
11519      6171:  !(FREE)
11520      GOBUT503J:
11521          SETUP,  RETURN/TEST503K,      !RETURN TO START OF NEXT SUBTEST
11522          NEXT,   GOTO-PAGE(7),        !BUT TABLE
11523          J/BUTM000                      !D<00>-H IN BIT<00>
(6171) DCS(0.00.0.0.0.0) BM(0110..00.11..01.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.001)
11524
11525      ! - - - - -
11526
11527
11528      !*** TEST 503K ***
11529      !DO THE "MULTIPLE BUT" ON "FLTPT" TO CHECK IT'S SET, IR=(175252), FLTPT-H INSTR
11530      6646:
11531      TEST503K:
11532          PO,      LOAD-ENVA(ZTARGET407),      !BIT<00> SET
11533          LOAD-ERROR(TEST503K),                !ERROR DIRECTORY KEY
11534          DCS-CTR(C4.),                        !COMPARE AT TARGET
11535          BUMP-VERIFY,                          !COUNT
11536          NEXT,   J/GOBUT503K
(6646) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...001.111.010)
11537
11538      6172:  !(FREE)
11539      GOBUT503K:
11540          SETUP,  RETURN/SCOPE503,          !RETURN TO SCOPE LOOP TEST WORD
11541          NEXT,   GOTO-PAGE(7),            !BUT TABLE
11542          J/BUTMFLTPTS                      !FLTPT-H IN BIT<00>
(6172) DCS(0.00.0.0.0.0) BM(0110..00.00..11.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.001)
11543
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11549      6173:  !(FREE)
11550      SCOPE503:
11551          PO,      BUSDIN+EMIT-[I],          !RESET PROC UCONS
11552          EN-CLK-IR[15-00],
11553          NEXT,   BUTD[SCOPE],              !NO ERROR: "TEST504A" (+1. WORDS)
11554          J/TEST504A                        !ERROR: "LOADFLAG503A" (-34. WORDS)
(6173) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.001.101)
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11564 ! -----
11565
11566 !*** TEST 504 ***
11567
11568 !TESTS 504 A-I USE DATA PATTERNS OF:
11569 !FLAG<8:4,2:0>H = "01010101", EXFLAG<2:1>H = "10",
11570 !FPS<7:0>H = "0101 0101"
11571
11572 ! -----
11573
11574 !*** TEST 504A ***
11575 !LOAD FLAGS<8:4,2:0> WITH "01010101", EXFLAGS<2:1> WITH "10", FPS<7:4> WITH "0101",
11576 !FPS<3:0> WITH "0101", AND READ BACK THRU "FLAGS#FPS" PORT OF PROCESSOR MUX
11577
11578 6615:
11579 TEST504A:
11579     PO,          LOAD-ENUA(4777),          !SETUP FOR COMPARE 1/2 WAY + 1 THRU BM SUBR
11580                LOAD-ERROR(TEST504A),      !ERROR DIRECTORY KEY
11581                DCS-CTR(C11.),             !COMPARE AT ...
11582                NEXT, J/LOADFLAG504A
11583 (6615) DCS(1.00.1.0.0.0) BM(0100..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...110.010.010)
11584
11585 6622:
11585 LOADFLAG504A:
11586     P2-U,        IR+EMIT,                  !ALSO NOTE IR=(NOT-PREFETCH), SO PREFETCH-SAVE WILL GET "0"
11587                !AFTER SUBSEQUENT JAMUPP (IN LOADFPSCC ROUTINE EXIT)
11588     P3,          CSPD(05)+EMIT,            !INITIAL VALUE:
11589                EMIT/052644,              !FLAG<8:4,2:0>="01010101", EXFLAG<2:1>="10"
11590                NEXT, J/LOADFPSS04A        !"01010101 1010 0100"
11591 (6622) DCS(0.00.0.0.0.0) BM(0101..10.01..01.10..100..100...0.0.0..0..0...1.1010...1..0000.0...11.000...001.111.100)
11592
11593 6174: !(FREE)
11593 LOADFPSS04A:
11594     P3,          CSPD(06)+EMIT,            !INITIAL VALUE IN FPS<7:4>:
11595                EMIT/125133,              !"10101010 0101 1011"
11596     NEXT,        J/EXPEC504A
11597 (6174) DCS(0.00.0.0.0.0) BM(1010..10.10..10.01..011..011...0.0.0..0..0...0.1001...1..0000.0...11.000...001.111.101)
11598
11598 6175: !(FREE)
11598 EXPEC504A:
11600     P3,          CSPD(02)+EMIT,            !EXPECTED VALUE LOADS FLAGS, FPS<7:0>
11601                EMIT/052525,              !OF "FLAGS#FPS" PORT
11602     NEXT,        J/LOADFCC504A           !"01010101 0101 0101"
11603 (6175) DCS(0.00.0.0.0.0) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.1101...1..0000.0...11.000...001.111.110)
11604
11604 6176: !(FREE)
11604 LOADFCC504A:
11606     P3,          CSPD(15)+EMIT,           !FPS<3:0> COME FROM CSP(15)<3:0>["0]
11607                EMIT/000005,            !"0101"
11608     NEXT,        J/DOFCC504A
11609 (6176) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..101...0.0.0..0..0...0.0010...1..0000.0...11.000...001.111.111)
11610
11610 6177: !(FREE)
11611 DOFCC504A:
11612     P3,          CSPD(00)+EMIT,           !CALL BM SUBR WHICH DOES THE LOAD

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11613 RETURN/TEST504A, !RETURN INLINE
11614 NEXT, CALL[LOADFPSCC]
(6177) DCS[0.00.0.0.0.0] BM[0110..10.11..11.10..110..111...0.0.0..0..0...0.1111...1..0000.0...11.100...010.110.100]
11615 ! - - - - -
11616 !
11617 !
11618 !NOW CHECK ALL THE RITE BITS WERE SET BY READING THEM BACK
11619 !
11620 6766:
11621 TEST504A:
11622 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
11623 LOAD-ERROR(TEST504A), !ERROR DIRECTORY KEY
11624 DCS-CTR(C14.), !COMPARE AT TARGET
11625 BUMP-VERIFY, !COUNT
11626 P3, BUTA(CUA-TRACK), !RESET CUA TRACKING AFTER JAMUPP
11627 NEXT, J/GOPUT504A
(6766) DCS[1.00.1.0.0.1] BM[0001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.001...010.000.000]
11628 6200: !(FREE)
11629 GOPUT504A:
11631 SETUP, RETURN/GOBUT504A, !GO TO SUBR WHICH:
11632 NEXT, CALL[FLAGFPSSEQL00] !1) CSP(05) -> FLAGS, EXFLAGS
(6200) DCS[0.00.0.0.0.0] BM[0110..00.01..00.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.111.011]
!2) CSP(06) -> FPS<7:4>
11633 6201: !(FREE)
11634 GOBUT504A:
11637 SETUP, RETURN/TEST504B, !RETURN TO START OF NEXT SUBTEST
11638 NEXT, CALL[FLAGFPST00] ! FLAGS#FPS.XOR.CSP(02) -> D, BUT(D=0)
(6201) DCS[0.00.0.0.0.0] BM[0110..00.11..10.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.010]
11639 ! - - - - -
11640 !
11641 !
11642 !
11643 !
11644 !*** TEST 504B ***
11645 !DO THE "MULTIPLE BUT" ON "FLAG7-H" TO CHECK IT'S SET
11646 6730:
11647 TEST504B:
11648 PO, LOAD-ENUA(ZTARGET407), !BIT<00> SET
11649 LOAD-ERROR(TEST504B), !ERROR DIRECTORY KEY
11650 DCS-CTR(C4.), !COMPARE AT TARGET
11651 NEXT, J/GOBUT504B
(6730) DCS[1.00.1.0.0.0] BM[1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.010]
11652 6202: !(FREE)
11653 GOBUT504B:
11655 SETUP, RETURN/TEST504C, !RETURN TO START OF NEXT SUBTEST
11656 NEXT, GOTO-PAGE(7), !BUT TABLE
11657 J/BUTMFLAG7 !FLAG7-H IN BIT<00>

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(6202) DCS(0.00.0.0.0.0) BM(0110..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.101)

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! - - - - -
!*** TEST 504C ***
!DO THE "BUT" ON "FLTPT-PROC-H"="FLAG<5>-H*EXFLAG<1>-L" TO CHECK IT'S SET

6740:
TEST504C:
PO, LOAD-ENUA(ZTARGET403), !BIT<00> SET
LOAD-ERROR(TEST504C), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE AT TARGET
BUMP-VERIFY, !COUNT
NEXT J/GOBUT504C

(6740) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.00C...010.000.011)

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6203: !(FREE)
GOBUT504C:
SETUP, RETURN/TEST504D, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT TABLE
J/BUTFPFPROC !FLAGS-H*EXFLAG1-L IN BIT<00>

(6203) DCS(0.00.0.0.0.0) BM(0110..00.11..11.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.100)

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! - - - - -
!*** TEST 504D ***
!DO AN INSTR-1 FLOATING POINT DECODE, TO CHECK THAT FLAG<4:5> -> BIT<1:0>

6750:
TEST504D:
PO, LOAD-ENUA(ZTARGET475), !INSTR-1 FLTPT, BIT<1:0>="01"
LOAD-ERROR(TEST504D), !ERROR DIRECTORY KEY
DCS-CTR(C4.), !COMPARE AT TARGET
NEXT J/LOADIR504D

(6750) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..111..101...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.100)

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6204: !(FREE)
LOADIR504D:
PO, BUMP-VERIFY, !COUNT
P2-U, IR+EMIT, !IR <- FLTPT INSTR
EMIT/172525,
NEXT J/GOBUT504D

(6204) DCS(0.00.0.0.0.1) BM(1111..00.01..01.01..010..101...0.0.0..0..0...1.1010...0..0000.0...11.000...010.000.101)

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11705

6205: !(FREE)
GOBUT504D:
SETUP, RETURN/TEST504E, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT TABLE
J/BUTINSTRI !FULL WIDTH

(6205) DCS(0.00.0.0.0.0) BM(0110..00.11..11.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.110)

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! - - - - -

11711
11712 :*** TEST 504E ***
11713 :READ EXFLAGS<2:1>="10" IN CUA-PORT<2:1>
11714 :ALSO "PREFETCH-SAVE-H"="0" FROM PREVIOUS SETUP

11715 6760:
11716 TEST504E:
11717 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=0 TEST
11718 LOAD-ERROR(TEST504E), !ERROR DIRECTORY KEY
11719 DCS-CTR(C10.), !COMPARE AT TARGET
11720 NEXT, J/EXPEC504E

(6760) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.000.110)

11721
11722 6206: !(FREE)
11723 EXPEC504E:
11724 PO, BUMP-VERIFY, !COUNT
11725 P3, CSP(02)+EMIT, !CUA PORT READS AS:
11726 EMIT/073734, !0#CUA<11:00>#EXFLAG<2:1>#PREFETCH
11727 NEXT, J/GOPUT504E

(6206) DCS(0.00.0.0.0.1) BM(0111..10.01..11.11..011..100...0.0.0..0..0...0.1101...1..0000.0...11.000...010.000.111)

11728
11729 6207: !(FREE)
11730 GOPUT504E:
11731 SETUP, RETURN/TEST504F, !GO TO SUBR WHICH:
11732 NEXT, CALL(CUAT00) !PUTS CUA#EXFLAGS.XOR.CSP(02) -> D, BUT(D=ZERO)

(6207) DCS(0.00.0.0.0.0) BM(0110..00.11..01.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.111)

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11739 :*** TEST 504F ***
11740 :DO THE "MULTIPLE BUT" ON EXFLAG<2> TO CHECK IT'S SET

11741 6672:
11742 TEST504F:
11743 PO, LOAD-ENUA(ZTARGET407), !BIT<00> SET
11744 LOAD-ERROR(TEST504F), !ERROR DIRECTORY KEY
11745 DCS-CTR(C4.), !COMPARE AT TARGET
11746 NEXT, J/GOBUT504F

(6672) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.000)

11747
11748 6210: !(FREE)
11749 GOBUT504F:
11750 SETUP, RETURN/TEST504G, !RETURN TO START OF NEXT SUBTEST
11751 NEXT, GOTO-PAGE(7) !BUT TABLE
11752 J/BUTMEXFLAG2 !EXFLAG<2>H IN BIT 0

(6210) DCS(0.00.0.0.0.0) BM(0110..00.11..10.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.011)

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! - - - - -
!*** TEST 504G ***
!DO THE "MULTIPLE BUT" ON EXFLAG<1> TO CHECK IT'S CLEAR

6702:

TEST504G:

PO,

LOAD-ENVA(ZTARGET406),

!BIT<00> CLEAR

LOAD-ERROR(TEST504G),

!ERROR DIRECTORY KEY

DCS-CTR(C4.),

!COMPARE AT TARGET

BUMP-VERIFY,

!COUNT

NEXT,

J/GOBUT504G

(6702) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.001)

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6211: !(FREE)

GOBUT504G:

SETUP,

RETURN/TEST504H,

!RETURN TO START OF NEXT SUBTEST

NEXT,

GOTO-PAGE(7),

!BUT TABLE

J/BUTEXFLAG

!EXFLAG<1>H IN BIT 0

(6211) DCS(0.00.0.0.0.0) BM(0110..00.11..10.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.111)

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! - - - - -
!*** TEST 504H ***
!CHECK FPS<5> CLEAR, VIA BUTR

6706:

TEST504H:

PO,

LOAD-ENVA(ZTARGET406),

!BIT<00> CLEAR

LOAD-ERROR(TEST504H),

!ERROR DIRECTORY KEY

DCS-CTR(C3.),

!COMPARE AT TARGET

BUMP-VERIFY,

!COUNT

NEXT,

J/GOBUT504H

(6706) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.010)

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6212: !(FREE)

GOBUT504H:

SETUP,

RETURN/TEST504I,

!RETURN TO START OF NEXT SUBTEST

NEXT,

GOTO-PAGE(7),

!BUT TABLE

J/BUTFPS05

!FPS<05> IN BIT<00>

(6212) DCS(0.00.0.0.0.0) BM(0110..00.11..10.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.010)

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11799 ! - - - - -
11800
11801 !*** TEST 504I ***
11802 !CHECK FLTPT-FD-H = F(FPS<7:6>,FLAG<5,2,1,EX1>) IS SET
11803 6716:
11804 TEST504I:
11805     PO,          LOAD-ENUA(ZTARGET403),          !BIT<00> SET
11806                LOAD-ERROR(TEST504I),          !ERROR DIRECTORY KEY
11807                DCS-CTR(C3.),                !COMPARE AT TARGET
11808     NEXT,        J/GOBUT504I
(6716) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.001.011)

11809 6213: !(FREE)
11810 GOBUT504I:
11811     PO,          BUMP-VERIFY,                !COUNT
11812                SETUP, RETURN/SCOPE504,        !RETURN TO SCOPE LOOP TEST WORD
11813                NEXT,  GOTO-PAGE(7),          !BUT TABLE
11814                J/BUTFPFD                    !FLTPT-FD-H IN BIT<00>
11815 (6213) DCS(0.00.0.0.0.1) BM(0110..00.01..00.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.111.001)

11816
11817
11818 6214: !(FREE)
11819 SCOPE504:
11820     PO,          BUSDIN+EMIT-[1],            !RESET PROC UCON
11821                EN-CLK-IR[15-00],
11822     NEXT,        BUTD[SCOPE],                !NO ERROR: "TEST505A" (+1. WORDS)
11823                J/TEST505A                    !ERROR: "LOADFLAG504A" (-27. WORDS)
11824 (6214) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.010.011)

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11834 ! - - - - -
11835
11836 !*** TEST 505 ***
11837
11838 !TESTS 505 A-C USE DATA PATTERNS OF:
11839 !   FLAG<8:4,2:0>H = "11111000", EXFLAG<2:1>H = "10",
11840 !   FPS<7:0>H = "0101 0101"
11841 ! - - - - -
11842
11843 !*** TEST 505A ***
11844 !CHECK THAT BUTA(CLEAR-FLAG-RES-UCON) ONLY CLEARS SHORT-TERM FLAGS
11845 6623:
11846 TEST505A:
11847     PO,          LOAD-ENUA(ZTARGET402),          !SERUP FOR D=ZERO TEST
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11849          LOAD-ERROR(TEST505A),          !ERROR DIRECTORY KEY
11850          DCS-CTR(C15.),                  !COMPARE AT TARGET
11851      NEXT, J/LOAD505A
(6623) DCS(1.00.1.0.0.0) BM(0000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.010.000)

11852      6620:
11853      LOAD505A:
11854          P3,          CSPD(05)+EMIT,          !LOAD FLAGS<8:4.2:0>
11855          EMIT/177406,          !EXFLAG<2:1> WITH ALL 1-S
11856      NEXT, J/EXPECS05A
11857 (6620) DCS(0.00.0.0.0.0) BM(1111..10.11..11.00..000..110...0.0.0..0..0...0.1010...1..0000.0...11.000...010.001.101)

11858      6215: !(FREE)
11859      EXPECS05A:
11860          PO,          BUMP-VERIFY          !COUNT
11861          P3,          CSPD(02)+EMIT,          !AFTER BUTA(CLR-FLAG-...), EXPECT THIS IN FLAGS#FPS PORT:
11862          EMIT/174125,          !"11111000 0101 0101"
11863      NEXT, J/SETFLAS05A
11864 (6215) DCS(0.00.0.0.0.1) BM(1111..10.10..00.01..010..101...0.0.0..0..0...0.1101...1..0000.0...11.000...010.001.110)

11865      6216: !(FREE)
11866      SETFLAS05A:
11867          PO,          BUMP-VERIFY          !COUNT
11868          SETUP, RETURN/BUTCLRS05A,          !GO TO SUBR WHICH:
11869          NEXT, CALL[FLAGL00]          !PUTS CSP(05) INTO THE FLAGS
11870 (6216) DCS(0.00.0.0.0.1) BM(0110..00.01..00.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...000.111.110)

11871      6217: !(FREE)
11872      BUTCLRS05A:
11873          PO,          DCS-CTR(C9.)          !POINT COUNTER AT TARGET
11874          P3,          BUTA(CLR-FLAG-RES-UCON),          !CLEAR SHORT-TERM FLAGS
11875      NEXT, J/GOPUTS05A
11876 (6217) DCS(0.00.1.0.0.0) BM(0110..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.010...010.010.000)

11877      6220: !(FREE)
11878      GOPUTS05A:
11879          SETUP, RETURN/TEST505B          !GO TO SUBR WHICH:
11880          NEXT, CALL[FLAGFPST00]          !FLAGS#FPS.XOR.CSP(2) -> D, BUT(D=ZERO)
11881 (6220) DCS(0.00.0.0.0.0) BM(0110..00.11..10.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.010)

11882      ! - - - - -
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11888      !*** TEST 505B ***
11889      !CHECK EXFLAG<2> NOT CLEARED, VIA BUTM
11890      6712:
11891      TEST505B:
11892          PO,          LOAD-ENUA(ZTARGET407),          !BIT<00> SET
11893          LOAD-ERROR(TEST505B),          !ERROR DIRECTORY KEY
11894          DCS-CTR(C4.),          !COMPARE AT TARGET

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11895 BUMP-VERIFY, !COUNT
 11896 NEXT, J/GOBUTS05B
 (6712) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.010.001)

11897 6221: !(FREE)
 11898 GOBUTS05B:
 11899 SETUP, RETURN/TEST505C, !RETURN TO START OF NEXT SUBTEST
 11900 NEXT, GOTO-PAGE(7) !BUT TABLE
 11901 J/BUTMEXFLAG2 !EXFLAG(2) IN BIT(00)
 11902 (6221) DCS(0.00.0.0.0.0) BM(0110..00.11..10.10..010..111. .0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.011)

11903
 11904
 11905
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 11907 ! - - - - -
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11909 !*** TEST 505C ***
 11910 !CHECK EXFLAG(1) WAS CLEARED, VIA BUTM
 11911 6722:
 11912 TEST505C:
 11913 PO, LOAD-ENUA(ZTARGET406), !BIT(00) CLEAR
 11914 LOAD-ERROR(TEST505C), !ERROR DIRECTORY KEY
 11915 DCS-CTR(C4.), !COMPARE AT TARGET
 11916 NEXT, J/GOBUTS05C
 (6722) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...010.010.011)

11917 6223: !(FREE)
 11918 GOBUTS05C:
 11919 SETUP, RETURN/SCOPE505, !RETURN TO SCOPE LOOP TEST WORD
 11920 NEXT, GOTO-PAGE(7) !BUT TABLE
 11921 J/BUTMEXFLAG1 !EXFLAG(1) IN BIT(00)
 11922 (6223) DCS(0.00.0.0.0.0) BM(0110..00.01..00.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.111)

11923 6224: !(FREE)
 11924 SCOPE505:
 11925 PO, BUMP-VERIFY, !COUNT
 11926 BUSDIN+EMIT-[I], !EMIT FOR CONSTANTS
 11927 P3, FLAG(8-0)+D(15-8)-[I], !ZERO ALL FLAGS. 0 WAS LEFT
 11928 FPS(7-4)+D(7-4)-[I], !ZERO FROM TEST505A, IF ALL OK.
 11929 NEXT, BUTD(SCOPE), !NO ERROR: "TEST506A" (+1. WORDS)
 11930 J/TEST506A !ERROR: "LOAD505A" (-9. WORDS)
 11931 (6224) DCS(0.00.0.1.0.1) BM(0000..00.00..00.01..100..001...0.0.0..0..0...1.1011...0..0000.0...11.000...110.010.001)

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 11937 ! - - - - -

11938 !*** TEST 506 ***
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11942 !TESTS 506 A-E USE A "0-1-1010-1010" PATTERN IN PS<15,13,7:4,3:0>
11943 !
11944 ! - - - - -
11945 !
11946 !* TEST 506A *
11947 !LOAD UP PS<HI,MID,LO> IN ORDER, READ BACK THRU PS PORT OF PROC MUX
11948 !ALSO CHECK THAT BUTA(CLR-FLAG-RES-UCON) CLEARS UCON REGISTER, SO THAT:
11949 ! (1) BUSDIN+EMIT IS SELECTED, VIA UCON-SELECT(1)H=LOW, AND
11950 ! (2) MAKE SURE THAT THE OTHER UCON BIT LATCHES ARE ALSO CLEARED
11951 6621:
11952 TEST506A:
11953     PO,      LOAD-ENUR(ZTARGET402),      !SETUP FOR D=ZERO TEST
11954     LOAD-ERROR(TEST506A),      !ERROR DIRECTORY KEY
11955     DCS-CTR(C15.),      !STALL FOR NOW
11956     NEXT     J/EXPEC506A
(6621) DCS(1.00.1.0.0.0) BM(0000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.001.010)

11957 6612:
11958 EXPEC506A:
11959     P3,      CSPD(02)+EMIT,      !EXPECTED VALUE TO BE READ OUT OF
11960     EMIT/030252,      !PS AFTER LOADING:
11961     NEXT     J/SETUCON506A      !"0011 0000 1010 1010"
(6612) DCS(0.00.0.0.0.0) BM(0011..10.00..00.10..101..010...0.0.0..0..0...0.1101...1..0000.0...11.000...010.010.101)

11963 6225: !(FREE)
11964 SETUCON506A:
11965     PO,      BUSDIN+FLAGS#FPS-[1],      !TAKE EMIT OFF BUSDIN, FLAG#FPS=(000005)
11966     P3,      BUTA(CLR-FLAG-RES-UCON),      !THIS SHOULD NOW CLEAR THE UCON REGISTER,
11967     NEXT     J/PSHI506A      !SETTING UCON-SELECT(1)H=L; FORCING BUSDIN+EMIT
(6225) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.010...010.010.110)

11970 6226: !(FREE)
11971 PSHI506A:
11972     PO,      BUMP-VERIFY,      !COUNT
11973     P3,      CSPD(05)+EMIT,      !VALUE IN D WHEN LOAD PS<15,13>:
11974     EMIT/063125,      !"0110 0110 0101 0101"
11975     NEXT     J/PSMI0506A
(6226) DCS(0.00.0.0.0.1) BM(0110..10.01..10.01..010..101...0.0.0..0..0...0.1010...1..0000.0...11.000...010.010.111)

11977 6227: !(FREE)
11978 PSMI0506A:
11979     P3,      CSPD(06)+EMIT,      !VALUE IN D WHEN LOAD PS<7:4>:
11980     EMIT/143245,      !"1100 0110 1010 0101"
11981     NEXT     J/PSLO506A
(6227) DCS(0.00.0.0.0.0) BM(1100..10.01..10.10..100..101...0.0.0..0..0...0.1001...1..0000.0...11.000...010.011.000)

11983 6230: !(FREE)
11984 PSLO506A:
11985     PO,      BUMP-VERIFY,      !COUNT
11986     P3,      CSPD(07)+EMIT,      !VALUE IN D WHEN LOAD PS<3:0>:
11987     EMIT/143132,      !"1100 0110 0101 1010"
11988     NEXT     J/FUDGEPS506A
(6230) DCS(0.00.0.0.0.1) BM(1100..10.01..10.01..011..010...0.0.0..0..0...0.1000...1..0000.0...11.000...010.011.001)

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11990
11991 6231: !(FREE)
11992 FUDGEPS506A:
11993     SETUP, RETURN/LOADUCON506A,           !GO TO SUBR WHICH:
11994                                           !1) CSP(05) -> PS<15,13>
11995                                           !2) CSP(06) -> PS<7:4>
11996                                           !3) CSP(07) -> PS<3:0>
(6231) DCS(0.00.0.0.0.0) BM(0111..00.00..0i.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.000.000)

11997
11998 7067: !(FREE)
11999 LOADUCON506A:
12000     SETUP, UCON-PROC,                     !SETUP FOR UCON-PROC:
12001     ENABLE, BUSDIN+FLAGS#FPS-[I],          !FLAGS#FPS=(000005)
12002     EN-CLK-PS(15-12), EN-CLK-PS(7-4),     !SETUP FOR CLOCKING PS BITS
12003     EN-CLK-PS(3-0)
12004     P0, SET-UCON-CONTROL,                  !WRITE THE UCON REGISTER AT P0,
12005     P3, BUTA(CLR-FLAG-RES-UCON),          !BUT AT P3, NOW CLEAR IT OUT
12006     NEXT, J/DOIT506A
(7067) DCS(0.00.0.0.0.0) BM(1000..00.00..11.01..010..010...0.0.0..0..0...1.1001...0..0000.0...11.010...000.111.010)

12007
12008 7072: !(FREE)
12009 DOIT506A:
12010     P2-T, D+ZERO,                          !SETUP D WITH A (000000)
12011     NEXT, GOTO-PAGE(6),                    !XFER
12012     J/LOADDCS506A
(7072) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..110...0.1.0..0..0...0.0000...0..0000.0...11.100...001.000.100)

12013
12014 6104: !(FREE)
12015 LOADDCS506A:
12016     P0, DCS-CTR(C9.),                      !COMPARE AT TARGET
12017     P2, UCON-OPERATION,                   !IF THE UCON REGISTER WASN'T CLEARED, ABOVE,
12018     NEXT, GOTO-PAGE(7),                   !THE PS SHOULD BE OVER-WRITTEN WITH (000000),
12019     J/GOBUT506A,                          !IN SOME COMBINATION OF PS<15:12,7:4,3:0>
(6104) DCS(0.00.1.0.0.0) BM(0110..00.00..00.00..000..111...0.0.0..0..0...1.1010...0..0000.0...11.100...000.111.001)

12020
12021 7071: !(FREE)
12022 GOBUT506A:
12023     SETUP, RETURN/TEST5068,                !RETURN TO START OF NEXT SUBTEST
12024     NEXT, CALL(PS100)                      !PS-XOR-CSP(02) -> 0, BUT(0=ZERO)
(7071) DCS(0.00.0.0.0.0) BM(0110..00.11..11.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.011)

12025
12026
12027
12028
12029 ! - - - - -
12030
12031 !* TEST 5068 *
12032 !CHECK THAT BUTR(PS15) SHOWS PS<15>H CLEAR
12033 6754:
12034 TEST5068:
12035     P0, LOAD-ENUA(ZTARGET402),             !BIT<00> CLEAR

```

12036 LOAD-ERROR(TEST506B), !ERROR DIRECTORY KEY
 12037 DCS-CTR(C3.), !COMPARE AT TARGET
 12038 NEXT, J/GOBUT506B
 (6754) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.011]

12039 6233: !(FREE)
 12040 GOBUT506B:
 12041 SETUP, RETURN/TEST506C, !RETURN TO START OF NEXT SUBTEST
 12042 NEXT, GOTO-PAGE(7), !BUT TABLE HERE
 12043 J/BUTPS15 !PS<15>H IN BIT<00>
 12044 (6233) DCS[0.00.0.0.0.0] BM[0110..00.11..11.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.011]

! - - - - -

12050 !* TEST 506C *
 12051 !CHECK THAT BUTM(PS03) SHOWS PS<03>H SET
 12052 6744:
 12053 TEST506C:
 12054 PO, LOAD-ENUA(ZTARGET407), !BIT<00> SET
 12055 LOAD-ERROR(TEST506C), !ERROR DIRECTORY KEY
 12056 DCS-CTR(C4.), !COMPARE AT TARGET
 12057 BUMP-VERIFY, !COUNT
 12058 NEXT, J/GOBUT506C
 12059 (6744) DCS[1.00.1.0.0.1] BM[1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.100]

12060 6234: !(FREE)
 12061 GOBUT506C:
 12062 SETUP, RETURN/TEST506D, !RETURN TO START OF NEXT SUBTEST
 12063 NEXT, GOTO-PAGE(7), !BUT TABLE HERE
 12064 J/BUTMPS[N] !PS[N]=PS<03>H IN BIT<00>
 12065 (6234) DCS[0.00.0.0.0.0] BM[0110..00.11..10.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.011]

! - - - - -

12070 !* TEST 506D *
 12071 !CHECK THAT WHEN FLAG<0>H=L AND PS<04>H=L,
 12072 ! MASKED-PS[T]-H=FLAG<0>L*PS<04>H, IS LOW
 12073 6734:
 12074 TEST506D:
 12075 PO, LOAD-ENUA(ZTARGET406), !BIT<00> CLEAR
 12076 LOAD-ERROR(TEST506D), !ERROR DIRECTORY KEY
 12077 DCS-CTR(C4.), !COMPARE AT TARGET
 12078 NEXT, J/GOBUT506D
 12079 (6734) DCS[1.00.1.0.0.0] BM[1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.101]

12081 6235: !(FREE)
 12082

```

12083 GOBUTS060:
12084 PO, BUMP-VERIFY, !COUNT
12085 SETUP, RETURN/TEST506E, !RETURN TO START OF NEXT SUBTEST
12086 NEXT, GOTO-PAGE(7), !BUT TABLE HERE
12087 J/BUTMASKPS(T) !FLAG<0>L*PS<04>H IN BIT<00>
(6235) DCS(0.00.0.0.0.1) BM(0110..00.11..00.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.111)

```

```

12088
12089
12090
12091
12092 ! - - - - -
12093

```

```

12094 !* TEST 506E *
12095 !CHECK THAT INTR-HIGH-H=SERVICE(0)H*NOT(MASKED-PS(T)-H) IS HIGH,
12096 ! WHEN SERVICE(0)H=HIGH, MASKED-PS(T)-H=LOW
12097 !NOTE: THE SUBR CALLED SHOULD SET SERVICE(0)H=HIGH (NEGATED) BY CLEARING OUT ALL ITS INPUT CONDITIONS
12098 6605:
12099 TEST506E:

```

```

12100 PO, LOAD-ENUA(ZTARGET403), !BIT<01> SET
12101 LOAD-ERROR(TEST506E), !ERROR DIRECTORY KEY
12102 DCS-CTR(C9.), !COMPARE AT TARGET
12103 NEXT, J/CLEAR506E
(6605) DCS(1.00.1.0.0.0) BM(0110..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.011.110)

```

```

12104 6236: !(FREE)
12105 CLEAR506E:
12106 PO, BUMP-VERIFY, !COUNT
12107 SETUP, RETURN/GOBUTS06E, !GO TO SUBR WHICH CLEARS OUT
12108 NEXT, CALL(CLEAR-I-O-B) ! ALL THE UNIBUS/I-O/SERVICE LATCHES (NO UNIBUS INIT)
12109 (6236) DCS(0.00.0.0.0.1) BM(0110..00.01..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.000)

```

```

12110 6237: !(FREE)
12111 GOBUTS06E:
12112 SETUP, RETURN/SCOPE506, !RETURN TO SCOPE LOOP TEST WORD
12113 NEXT, GOTO-PAGE(7), !BUT TABLE HERE
12114 J/BUTINTRHIGH !INTR HIGH H IN BIT<01>
12115 (6237) DCS(0.00.0.0.0.0) BM(0110..00.01..01.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.101)

```

```

12116
12117
12118
12119
12120 6240: !(FREE)
12121 SCOPE506:
12122 PO, BUSDIN+EMIT-[I], !KEEP EMIT FOR CONSTANTS
12123 P2, PS+D-[I], !ZERO PS: 0 LEFT ZERO FROM
12124 !PREVIOUS TESTS IF ALL OK
12125 NEXT, BUTD(SCOPE), !NO ERROR: "TEST507A" (+1. WORDS)
12126 J/TEST507A ! ERROR: "MASK506A" (-16. WORDS)
(6240) DCS(0.00.0.1.0.0) BM(1000..00.00..00.01..010..010...0.0.0..0..0...1.1011...0..0000.0...11.000...110.001.011)

```

```

12127
12128

```



```

12129
12130
12131
12132
12133 ! -----
12134
12135 !*** TEST 507 ***
12136
12137 !TESTS 507 A-F USE A "1-0-0101-0101" PATTERN IN PS<15,13,7:4,3:0>
12138
12139 ! -----
12140
12141 !* TEST 507A *
12142 !LOAD UP PS<HI,MID,LO> IN ORDER, READ BACK THRU PS PORT OF PROC MUX
12143 6613:
12144 TEST507A:
12145     PD,      LOAD-ENVA(ZTARGET402),      !SETUP FOR D=ZERO TEST
12146     P3,      LOAD-ERROR(TEST507A),      !ERROR DIRECTORY KEY
12147     NEXT,    DCS-CTR(C15.),             !STALL FOR NOW
12148     J/EXPEC507A
12149 (6613) DCS(1.00.1.0.0.0) BM(0000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.000.010)
12150
12151 6602:
12152 EXPEC507A:
12153     PD,      CSPD(02)+EMIT,             !EXPECTED VALUE TO BE READ OUT OF
12154     P3,      EMIT/140125,             !PS AFTER LOADING:
12155     NEXT,    J/PSHI507A              !"1100 0000 0101 0101"
12156 (6602) DCS(0.00.0.0.0.0) BM(1100..10.00..00.01..010..101...0.0.0..0..0...0.1101...1..0000.0...11.000...010.100.001)
12157
12158 6241: !(FREE)
12159 PSHI507A:
12160     PD,      BUMP-VERIFY,             !COUNT
12161     P3,      CSPD(05)+EMIT,           !VALUE IN D WHEN LOAD PS<15,13>:
12162     NEXT,    EMIT/113252,             !"1001 0110 1010 1010"
12163     J/PSMID507A
12164 (6241) DCS(0.00.0.0.0.1) BM(1001..10.01..10.10..101..010...0.0.0..0..0...0.1010...1..0000.0...11.000...010.100.010)
12165
12166 6242: !(FREE)
12167 PSMID507A:
12168     PD,      CSPD(06)+EMIT,           !VALUE IN D WHEN LOAD PS<7:4>:
12169     P3,      EMIT/033122,             !"0011 0110 0101 1010"
12170     NEXT,    J/PSLO507A
12171 (6242) DCS(0.00.0.0.0.0) BM(0011..10.01..10.01..010..010...0.0.0..0..0...0.1001...1..0000.0...11.000...010.100.011)
12172
12173 6243: !(FREE)
12174 PSLO507A:
12175     PD,      BUMP-VERIFY,             !COUNT
12176     P3,      CSPD(07)+EMIT,           !VALUE IN D WHEN LOAD PS<3:0>:
12177     NEXT,    EMIT/033245,             !"0011 0110 1010 0101"
12178     J/FUDGEPS507A
12179 (6243) DCS(0.00.0.0.0.1) BM(0011..10.01..10.10..100..101...0.0.0..0..0...0.1000...1..0000.0...11.000...010.100.100)
12180
12181 6244: !(FREE)
12182 FUDGEPS507A:

```

12178 SETUP, RETURN/LOADDCS507A, !GO TO SUBR WHICH:
 12179 NEXT, CALL[PSSEQLOD] !1) CSP(05) -> PS<15,13>
 (6244) DCS[0.00.0.0.0.0] BM[0110..00.01..01.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.000.000]

12180 !2) CSP(06) -> PS<7:4>
 12181 !3) CSP(07) -> PS<3:0>

12182
 12183 6245: !(FREE)
 12184 LOADDCS507A:
 12185 PO, DCS-CTR(C9.), !COMPARE AT TARGET
 12186 NEXT J/GOBUT507A
 (6245) DCS[0.00.1.0.0.0] BM[0110..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...010.100.110]

12187 6246: !(FREE)
 12188 GOBUT507A:
 12189 !RETURN TO START OF NEXT SUBTEST
 12190 SETUP, RETURN/TEST507B, ! CSP(02)-XOR-PS -> 0, BUT(D=ZERO)
 12191 NEXT, CALL[PST00]
 (6246) DCS[0.00.0.0.0.0] BM[0110..00.11..10.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.011]

12192
 12193
 12194
 12195
 12196 ! - - - - -

12197 !* TEST 507B *
 12198 !CHECK THAT BUTR(PS15) SHOWS PS<15>H SET
 12199 6724:
 12200 TEST507B:
 12201 PO, LOAD-ENUA(ZTARGET403), !BIT<00> SET
 12202 LOAD-ERROR(TEST507B), !ERROR DIRECTORY KEY
 12203 DCS-CTR(C3.), !COMPARE AT TARGET
 12204 NEXT J/GOBUT507B
 (6724) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.100.111]

12206 6247: !(FREE)
 12207 GOBUT507B:
 12208 !RETURN TO START OF NEXT SUBTEST
 12209 SETUP, RETURN/TEST507C, !BUT TABLE HERE
 12210 NEXT, GOTO-PAGE(7), !PS<15>H IN BIT<00>
 12211 J/BUTPS15
 (6247) DCS[0.00.0.0.0.0] BM[0110..00.11..00.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.011]

12212
 12213
 12214
 12215
 12216 ! - - - - -

12217 !* TEST 507C *
 12218 !CHECK THAT BUTM(PS03) SHOWS PS<03>H CLEAR
 12219 6611:
 12220 TEST507C:
 12221 PO, LOAD-ENUA(ZTARGET406), !BIT<00> CLEAR
 12222 LOAD-ERROR(TEST507C), !ERROR DIRECTORY KEY
 12223

12224 DCS-CTR(C4.), !COMPARE AT TARGET
 12225 BUMP-VERIFY, !COUNT
 12226 NEXT J/GOBUT507C
 (6611) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...010.101.000)

12227 6250: !(FREE)
 12228 GOBUT507C:
 12229 SETUP, RETURN/TEST507D, !RETURN TO START OF NEXT SUBTEST
 12230 NEXT, GOTO-PAGE(7), !EJT TABLE HERE
 12231 J/BUTMPS(N) !PS(N)=PS(03)H IN BIT(00)
 12232 (6250) DCS(0.00.0.0.0.0) BM(0110..00.10..11.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.011)

12233
 12234
 12235
 12236
 12237 ! - - - - -
 12238

12239 !* TEST 507D *
 12240 !CHECK THAT WHEN FLAG(0)H=L AND PS(04)H=H,
 12241 ! MASKED-PS(T)-H=FLAG(0)L*PS(04)H, IS HIGH
 12242 6557:
 12243 TEST507D:

12244 PO, LOAD-ENUA(ZTARGET407), !BIT(00) SET
 12245 LOAD-ERROR(TEST507D), !ERROR DIRECTORY KEY
 12246 DCS-CTR(C4.), !COMPARE AT TARGET
 12247 NEXT J/GOBUT507C
 (6557) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.101.001)

12248 6251: !(FREE)
 12249 GOBUT507D:
 12250 PO, BUMP-VERIFY, !COUNT
 12251 SETUP, RETURN/TEST507E, !RETURN TO START OF NEXT SUBTEST
 12252 NEXT, GOTO-PAGE(7), !EJT TABLE HERE
 12253 J/BUTMASKPS(T) !FLAG(0)L*PS(04)H IN BIT(00)
 12254 (6251) DCS(0.00.0.0.0.1) BM(0110..00.11..01.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.111)

12255
 12256
 12257
 12258
 12259 ! - - - - -
 12260

12261 !* TEST 507E *
 12262 !CHECK THAT INTR-HIGH-H=SERVICE(0)H*NOT(MASKED-PS(T)-H) IS LOW,
 12263 ! WHEN SERVICE(0)H=HIGH, MASKED-PS(T)-H=HIGH
 12264 6674:
 12265 TEST507E:

12266 PO, LOAD-ENUA(ZTARGET401), !BIT(01) CLEAR
 12267 LOAD-ERROR(TEST507E), !ERROR DIRECTORY KEY
 12268 DCS-CTR(C3.), !COMPARE AT TARGET
 12269 BUMP-VERIFY, !COUNT
 12270 NEXT J/GOBUT507C
 (6674) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...010.101.011)

```

12271
12272 6253: !(FREE)
12273 GOBUT507E:
12274     SETUP, RETURN/TEST507F, !RETURN TO START OF NEXT SUBTEST
12275     NEXT,  GOTO-PAGE(7),      !BUT TABLE HERE
12276     J/BUTINTRHIGH,           !INTR HIGH H IN BIT<01>
(6253) DCS(0.00.0.0.0.0) BM(0110..00.11..01.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.101)

12277
12278
12279
12280 ! - - - - -
12281
12282 !* TEST 507F *
12283 !CHECK THAT PS[C]-H CAN BE READ AS A "1" THRU D[C]+CINMUX=PS[C], AND D[C]+PS[C]
12284 ! IT WAS PREVIOUSLY CHECKED, IN ALU LOGIC TESTS, THAT THESE WERE OK WITH PS[C]="0"
12285 6647:
12286 TEST507F:
12287     PO,      LOAD-ENVA(ZTARGET407), !SETUP FOR SR<3:0> = "0111"
12288     LOAD-ERROR(TEST507F),          !ERROR DIRECTORY KEY
12289     DCS-CTR(C7.),                  !COMPARE AT TARGET
12290     NEXT,    J/CIN507F
(6647) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.101.100)

12291
12292 6254: !(FREE)
12293 CIN507F:
12294     PO,      BUMP-VERIFY,          !COUNT
12295     P2-T,    D+ZERO, D[C]+CINMUX,  !SET D[C]=CINMUX=PS[C]=(1)
12296     SR+ZERO, !SET SR<3:0>="0000"
12297     P3,      BSPL0(17)+D,          !B-SIDE COPY OF SR
12298     NEXT,    J/SETPS507F
(6254) DCS(0.00.0.0.0.1) BM(0011..00.11..00.00..011..000...0.1.1..0..0...0.0000...0..0110.0...11.000...010.101.110)

12299
12300 6256: !(FREE)
12301 SETPS507F:
12302     P2-T,    D+A-PLUS-B-PLUS-D[C], D[C]+PS[C], !SET D[C]=PS[C]=(1)
12303     SR+A-PLUS-B-PLUS-D[C],        !D, SR, BSP (- SR-LEFT-1, SR<02> (- PREV D[C] = CINMUX/PS[C])
12304     BUS-A+SR,
12305     BUS-B+BSPL0(R17),
12306     P3,      BSPL0(17)+D,          !SAVE ON B-SIDE
12307     NEXT,    J/SETSR507F
(6256) DCS(0.00.0.0.0.0) BM(0100..00.11..00.00..011..001...0.1.1..0..0...0.0000...0..0110.0...11.000...010.101.111)

12308
12309 6257: !(FREE)
12310 SETSR507F:
12311     PO,      BUMP-VERIFY,          !COUNT
12312     P2-T,    D+A-PLUS-B-PLUS-D[C], D[C]+ALU15, !SET D[C]=0
12313     SR+A-PLUS-B-PLUS-D[C],        !D, SR, BSP (- SR-LEFT-1, SR<01> (- PREV D[C] = PS[C])
12314     BUS-A+SR,
12315     BUS-B+BSPL0(R17),
12316     P3,      BSPL0(17)+D,          !SAVE ON B-SIDE
12317     NEXT,    J/SETCIN507F
(6257) DCS(0.00.0.0.0.1) BM(0100..00.11..00.00..011..100...0.1.1..0..0...0.0000...0..0110.0...11.000...010.110.000)

12318

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```

12319 6260: !(FREE)
12320 SETCINS07F:
12321 P2-T, D+A-PLUS-B-PLUS-PS(C), D(C)+ALU15, !SET D(C)=0
12322 SR+A-PLUS-B-PLUS-PS(C), !D, SR, BSP <- SR-LEFT-1, SR<00> <- CIN/PS(C)
12323 BUS-A+SR
12324 BUS-B+BSPLO(R17),
12325 NEXT, J/GOBUT507F
(6260) DCS(0.00.0.0.0.0) BM(0001..00.11..00.00..011..100...0.1.1..0..0...0.0000...0..0000.0...11.000...010.110.001)

```

```

12326 6261: !(FREE)
12327 GOBUT507F:
12328 SETUP, RETURN/SCOPE507, !RETURN TO SCOPE LOOP TEST WORD
12329 NEXT, GOTO-PAGE(7), !BUT TABLE
12330 J/BUTSR3-0 !CHECK THAT WE GOT "0111" = (07)
12331 (6261) DCS(0.00.0.0.0.0) BM(0110..00.01..01.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.110)

```

```

12332
12333
12334
12335
12336 6262: !(FREE)
12337 SCOPE507:
12338 P0, BUSDIN+EMIT-[I], !KEEP EMIT FOR CONSTANTS
12339 P2, PS+D-[I], !ZERO PS: 0 LEFT ZERO FROM
12340 !PREVIOUS TESTS IF ALL OK
12341 NEXT, BUTD(SCOPE), !NO ERROR: "TEST510A" (+1. WORDS)
12342 J/TEST510A !ERROR: "EXPEC507A" (-21. WORDS)
12343 (6262) DCS(0.00.0.1.0.0) BM(1000..00.00..00.01..010..010...0.0.0..0..0...1.1011...0..0000.0...11.000...110.000.011)

```

```

12344
12345
12346
12347
12348
12349
12350 ! -----

```

```

12351 !*** TEST 510 ***
12352
12353 !TESTS 510 A-F USE PS<7:5>H="111", PS<4>H="1", VARIOUS FLAG<7,0>H COMBINATIONS,
12354 ! TO TEST THE INTR-HIGH-H, SERVICE-H, AND MASKED-PS(T)-H LOGIC
12355
12356 ! -----

```

```

12357
12358 !* TEST 510A *
12359 !CHECK THAT BG-SERVICE(0)H=HIGH WHEN PS<7:5>H="111" (PSW PRIORITY 7); EG, BR>PS-H=LOW, SINCE NO
12360 ! EXTERNAL UNIBUS DEVICE CAN THEN REQUEST AN INTERRUPT (IE, IT IS MASKED OUT)

```

```

12361 6603:
12362 TEST510A:
12363 PO, LOAD-ENVA(ZTARGET407), !BIT<02> SET
12364 LOAD-ERROR(TEST510A), !ERROR DIRECTORY KEY
12365 DCS-CTR(CS.) !COMPARE AT TARGET
12366 NEXT, J/SETONE510A
12367 (6603) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...110.000.110)

```

```

12368
12369 6606:
12370 SETONES10A:
12371 P2-T, D+ALL-ONES, SAVE-D(C), !ALL ONES FOR LOAD PRIORITY 7
12372 NEXT, J/LOADPRIOS10A
(6606) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..101..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.110.011)

```

```

12373
12374 6263: !(FREE)
12375 LOADPRIOS10A:
12376 PO, BUSDIN+EMIT-(I) !KEEP IT ON
12377 P3-T, PS(7-4)+D(7-4)-(I), !PRIO 7, T-BIT (PS04) SET
12378 NEXT, J/GOBUTS10A
(6263) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..010..000...1.0.0..0..0...1.1011...0..0000.0...11.000...010.110.100)

```

```

12379
12380 6264: !(FREE)
12381 GOBUTS10A:
12382 SETUP, RETURN/TESTS10B, !RETURN TO START OF NEXT SUBTEST
12383 NEXT, GOTO-PAGE(7), !BUT TABLE
12384 J/BUTBGSERV !BG-SERVICE(0)H IN BIT<02>
(6264) DCS(0.00.0.0.0.0) BM(0110..00.11..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.110)

```

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12385
12386
12387
12388
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12390 ! - - - - -
12391

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```

12392 !* TEST 510B *
12393 !CHECK THAT BUT( NOT(BG-SERVICE(0)H) + NOT(FLTPT-SERVICE-L) ) IN BIT<03>
12394 ! SEES BG-SERVICE(0)H=HIGH, FLTPT-SERVICE-L=HIGH, AND THUS IS NOT ASSERTED (=LOW)
12395

```

```

12396 6675:
12397 TESTS10B:
12398 PO, LOAD-ENVA(ZTARGET407), !BIT<03> CLEAR
12399 LOAD-ERROR(TESTS10B), !ERROR DIRECTORY KEY
12400 NEXT, DCS-CTR(C3.), !COMPARE AT TARGET
J/GOBUTS10B
(6675) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.101)

```

```

12401
12402 6265: !(FREE)
12403 GOBUTS10B:
12404 SETUP, RETURN/TESTS10C, !RETURN TO START OF NEXT SUBTEST
12405 NEXT, GOTO-PAGE(7), !BUT TABLE
12406 J/BUTBGFPSERV !RESULT IN BIT<03>
(6265) DCS(0.00.0.0.0.0) BM(0110..00.11..00.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.111)

```

```

12407
12408
12409
12410
12411 ! - - - - -
12412

```

```

12413 !* TEST 510C *
12414

```

```

12415 !CHECK THAT SERVICE-H=INTR-HIGH-H=BG-SERVICE(0)H#NOT(FLAG<7>H) IS HIGH,
12416 ! WHEN INTR-HIGH-H=LOW, BG-SERVICE(0)H=HIGH, FLAG<7>H=LOW
12417 6616:
12418 TESTS10C:
12419     PO,          LOAD-ENUA(ZTARGET403),          !BIT<00> SET
12420                 LOAD-ERROR(TESTS10C),          !ERROR DIRECTORY KEY
12421                 DCS-CTR(C3.),                 !COMPARE AT TARGET
12422     NEXT        J/GOBUTS10C
(6616) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.110)

12423 6266: !(FREE)
12424 GOBUTS10C:
12425     SETUP,      RETURN/TESTS10D,              !RETURN TO START OF NEXT SUBTEST
12426     NEXT,       GOTO-PAGE(7),                !BUT TABLE
12427                 J/BUTSERVICE                !SERVICE-H IN BIT<00>
12428 (6266) DCS(0.00.0.0.0.0) BM(0110..00.11..00.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.101)

12429
12430
12431
12432 ! - - - - -
12433
12434 !* TEST 5100 *
12435 !SET ONLY FLAG<0>H, FLAG<7>H, LEAVE PS<04>H SET,
12436 !CHECK MASKED-PS(T)-H=PS<04>H#FLAG<0>L IS LOW
12437 6600:
12438 TESTS10D:
12439     PO,          LOAD-ENUA(ZTARGET406),          !BIT<00> CLEAR
12440                 LOAD-ERROR(TESTS10D),          !ERROR DIRECTORY KEY
12441                 DCS-CTR(C7.),                 !COMPARE AT TARGET
12442                 BUMP-VERIFY,                 !COUNT
12443     NEXT        J/FLAGS100
(6600) DCS(1.00.1.0.0.1) BM(1000..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...010.110.111)

12444 6267: !(FREE)
12445 FLAGS100:
12446     P3,         CSPD(011)+EMIT,                !
12447                 EMIT/040401                 !BITS FOR FLAG<7,0> ONLY, BIT<00> OF 0
12448     NEXT        J/ENFLAGS100
(6267) DCS(0.00.0.0.0.0) BM(0100..10.00..01.00..000..001...0.0.0..0..0...0.1110...1..0000.0...11.000...010.111.000)

12450 6270: !(FREE)
12451 ENFLAGS100:
12452     P3-T,       D+CSPD(001), D(C)+0,          !INTO 0
12453     NEXT        J/SETFLAGS100
(6270) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.1.0..0..0...0.1110...0..0000.0...11.000...010.111.001)

12455 6271: !(FREE)
12456 SETFLAGS100:
12457     P3-T,       FLAG(8-0)+0(15-8)-(1),        !SET FLAGS<7,0>H ONLY
12458     NEXT        J/GOBUTS10D
(6271) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..001...1.0.0..0..0...1.1011...0..0000.0...11.000...010.111.010)

12460 6272: !(FREE)
12461

```

```

12462 GOBUTS100:
12463     SETUP, RETURN/TESTS100A,      !RETURN TO START OF NEXT SUBTEST
12464     NEXT,  GOTO-PAGE(7),          !BUT TABLE HERE
12465     J/BUTMASKPS(T)                !FLAG<0>L#PS<04>H IN BIT<00>
(6272) DCS(0.00.0.0.0.0) BM(0110..00.11..00.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.111)

12466
12467
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12470 ! - - - - -
12471
12472 !*** TEST 5100A ***
12473 !DO THE "MULTIPLE BUT" ON "D<00>H" TO CHECK IT'S SET (DURING TESTS100, ABOVE)
12474 6617:
12475 TESTS100A:
12476     PO,      LOAD-ENVA(ZTARGET407),      !BIT<00> SET
12477             LOAD-ERROR(TESTS100A),      !ERROR DIRECTORY KEY
12478             DCS-CTR(C4.),                !COMPARE AT TARGET
12479             BUMP-VERIFY,                  !COUNT
12480     NEXT,    J/GOBUTS100A
(6617) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...010.111.011)

12481 6273: !(FREE)
12482 GOBUTS100A:
12483     SETUP, RETURN/TESTS100E,      !RETURN TO START OF NEXT SUBTEST
12484     NEXT,  GOTO-PAGE(7),          !BUT TABLE
12485     J/BUTM000                       !D<00>-H IN BIT<00>
(6273) DCS(0.00.0.0.0.0) BM(0110..00.11..00.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.010.001)

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12491 ! - - - - -
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12493 !* TEST 510E *
12494 !CHECK THAT SERVICE-H=INTR-H#BG-SERVICE(0)H#NOT(FLAG<7>H) IS HIGH,
12495 ! WHEN INTR-HIGH-H=HIGH, BG-SERVICE(0)H=HIGH, FLAG<7>H=HIGH
12496 6604:
12497 TESTS100E:
12498     PO,      LOAD-ENVA(ZTARGET403),      !BIT<00> SET
12499             LOAD-ERROR(TESTS100E),      !ERROR DIRECTORY KEY
12500             DCS-CTR(C4.),                !COMPARE AT TARGET
12501     NEXT,    J/ZER00S10E
(6604) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...010.111.100)

12502 6274: !(FREE)
12503 ZER00S10E:
12504     P2-T,   D+ZERO, D(C)+ALU15,      !ZER0ES FOR BELOW
12505     NEXT,   J/GOBUTS10E
(6274) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..100...0.1.0..0..0...0.0000...0..0000.0...11.000...010.111.101)

12507 6275: !(FREE)
12508

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```

12509 GOBUTS10E:
12510     PD,      BUMP-VERIFY,      !COUNT
12511     SETUP,   RETURN/TESTS10F, !RETURN TO START OF NEXT SUBTEST
12512     NEXT,    GOTO-PAGE(7),      !BUT TABLE HERE
12513           J/BUTSERVICE        !SERVICE-H IN BIT<00>
(6275) DCS(0.00.0.0.0.0) BM(0110..00.11..00.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.101)

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12514
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12518 ! - - - - -
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12520 !* TEST 510F *
12521 !CHECK THAT SERVICE-H=INTR-HIGH-H#BG-SERVICE(0)H#NOT(FLAG<7>H) IS LOW,
12522 ! WHEN INTR-HIGH-H=HIGH, BG-SERVICE(0)H=HIGH, FLAG<7>H=LOW
12523 6610:
12524 TESTS10F:
12525     PD,      LOAD-ENVA(ZTARGET402), !BIT<00> CLEAR
12526           LOAD-ERROR(TESTS10F), !ERROR DIRECTORY KEY
12527           DCS-CTR(C4.)           !COMPARE AT TARGET
12528     NEXT,    J/ZEROFLAGS10E
(6610) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...010.111.110)

```

```

12529 6276: !(FREE)
12530 ZEROFLAGS10E:
12531     P2,      PS=D-[1],           !ZERO PS-T-BIT, AND ALL THE OTHERS,
12532           FPS(7-4)+D(7-4)-[1], !ZERO THE FPS
12533     P3,      FLAG(8-0)+D(15-8)-[1], !ZERO FLAGS (D ZEROED ABOVE)
12534     NEXT,    J/GOBUTS10E
(6276) DCS(0.00.0.0.0.0) BM(1000..00.00..00.01..110..011...0.0.0..0..0...1.1011...0..0000.0...11.000...010.111.111)

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12536 6277: !(FREE)
12537 GOBUTS10F:
12538     SETUP,   RETURN/SCOPE510,    !RETURN TO SCOPE LOOP TEST WORD
12539     NEXT,    GOTO-PAGE(7),      !BUT TABLE HERE
12540           J/BUTSERVICE        !SERVICE-H IN BIT<00>
12541 (6277) DCS(0.00.0.0.0.0) BM(0110..00.01..10.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.101)

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12542
12543
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12545
12546 6300: !(FREE)
12547 SCOPE510:
12548     PD,      BUSDIN+EMIT-[1],    !KEEP EMIT FOR CONSTANTS
12549     P2,      PS=D-[1],           !ZERO PS: D LEFT ZERO FROM
12550           !PREVIOUS TESTS IF ALL OK
12551     NEXT,    BUTD(SCOPE),        !NO ERROR: "TEST511A" (+11. WORDS)
12552           J/TEST511A           !ERROR: "SETONE510A" (-20. WORDS)
12553 (6300) DCS(0.00.0.1.0.0) BM(1000..00.00..00.01..010..010...0.0.0..0..0...1.1011...0..0000.0...11.000...110.000.111)

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12555

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:
: THIS FIRST SUBROUTINE COPIES:
:   CSP(06) -> FPS(7:4)
:   CSP(05) -> FLAGS(8:4,2:0), EXFLAG(2:1)
: THEN RETURNS
:
7073:  !(FREE)
FLAGFPS00:
:   P3-T,  D+CSPD(006), D(C)+0,          !GET VALUE TO LOAD TO FPS(7:4)H
:   NEXT,  J/FLAGFPS02
(7073) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.1.0..0..0...0.1001...0..0000.0...11.000...000.111.101)

7075:  !(FREE)
FLAGFPS02:
:   PO,    BUSDIN+EMIT-(I),
:   P3-T,  FPS(7-4)+D(7-4)-(I),        !LOAD FPS(7:4)H FROM D(7:4)H
:   NEXT,  J/FLAGFPS03
(7075) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..100..000...1.0.0..0..0...1.1011...0..0000.0...11.000...000.111.110)

7076:  !(FREE)
FLAGFPS03:
:   P3-T,  D+CSPD(005), D(C)+0,          !GET VALUE TO LOAD TO FLAGS(8:0)H,
:   NEXT,  J/FLAGFPS04                  !EXFLAG(2:1)H
(7076) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.1.0..0..0...0.1010...0..0000.0...11.000...000.111.111)

7077:  !(FREE)
FLAGFPS04:
:   PO,    BUSDIN+EMIT-(I),
:   P3-T,  FLAG(8-0)+D(15-8)-(I),        !KEEP IT ON
:   NEXT,  BUTA(RETURN),                !LOAD FLAGS FROM D
:   J/BUTERROR7                          !AND RETURN
(7077) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..001...1.0.0..0..0...1.1011...0..0000.0...11.111...011.111.110)

:
: THIS SECOND SUBROUTINE COPIES:
:   CSP(05) -> PS(15:12)
:   CSP(06) -> PS(7:4)
:   CSP(07) -> PS(3:0)
: THEN RETURNS
:
7100:  !(FREE)
PSSEQ00:
:   P3-T,  D+CSPD(005), D(C)+0,          !GET VALUE TO LOAD PS(15:12)H
:   NEXT,  J/PSSEQ0002
(7100) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.1.0..0..0...0.1010...0..0000.0...11.000...001.000.001)

7101:  !(FREE)
PSSEQ0002:
:   PO,    BUSDIN+EMIT-(I),
:   P3-T,  PS(15-12)+D(15-13)-(I),        !LOAD PS(15-12)H FROM D(15,13)H
:   NEXT,  J/PSSEQ0003

```

(7101) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..010...1.0.0..0..0...1.1011...0..0000.0...11.000...001.000.010)

12605
12606 7102: !(FREE)

12607 PSSEQ0003:
12608 P3-T, D+CSPD(D06), D(C)+0, !GET VALUE TO LOAD PS<7:4>H
12609 NEXT, J/PSSEQ0004

(7102) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.1.0..0..0...0.1001...0..0000.0...11.000...001.000.011)

12610
12611 7103: !(FREE)

12612 PSSEQ0004:
12613 PO, BUSDIN+EMIT-[I],
12614 P3-T, PS(7-4)+D(7-4)-[I], !LOAD PS<7:4>H FROM D<7:4>H
12615 NEXT, J/PSSEQ0005

(7103) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..010..000...1.0.0..0..0...1.1011...0..0000.0...11.000...001.000.100)

12616
12617 7104: !(FREE)

12618 PSSEQ0005:
12619 P3-T, D+CSPD(D07), D(C)+0, !GET VALUE TO LOAD TO PS<3:0>H
12620 NEXT, J/PSSEQ0006

(7104) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...1.1.0..0..0...0.1000...0..0000.0...11.000...001.000.101)

12621
12622 7105: !(FREE)

12623 PSSEQ0006:
12624 PO, BUSDIN+EMIT-[I], !KEEP IT ON
12625 P2-T, PS(3-0)+D(3-0)-[I], !LOAD PS<3:0>H FROM D<3:0>H
12626 NEXT, BUTA(RETURN), !AND RETURN
12627 J/BUTERROR7

(7105) DCS(0.00.0.0.0.0) BM(1000..00.00..00.01..000..000...0.0.0..0..0...1.1011...0..0000.0...11.111...011.111.110)

12628
12629
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12632

!.PAGE=====

12633
12634
12635
12636 .TOC * TEST511: MFSS LOGIC TESTS

12637
12638
12639 !*****

12640 !*
12641 !* TESTS: 511 A - B UWORDS: 022 + 060
12642 !*

12643 !* FUNCTIONS:
12644 !*

12645 !* THE FOLLOWING TESTS VERIFY THAT THE "MF SAME STACK" LOGIC OPERATES
12646 !* CORRECTLY, AND THAT THE "SR6-H" DECODE IS CORRECT.
12647 !*

12648 !*****

12649
12650
12651
12652 !
12653 ! SUMMARY OF "MF SAME STACK H" LOGIC TESTS

12654 MF SAME STACK H = FLAG2-H * IR8-H * IR7-H * IR6-L * (PS15-H=PS13-H)-H

TEST	PS15,13H	FLAG2H	IR8-6H/SR6H	MFSS-H	DATA	
12658						
12659						
12660	A1	0-0	1	110-1	1	002601
12661						
12662	A2	0-1	1	110-1	0	022600
12663						
12664	A3	1-1	1	110-1	1	122601
12665						
12666	A4	1-0	1	110-1	0	102600
12667						
12668						
12669	B1	0-0	0	110-1	0	000600
12670						
12671	B2	0-0	1	010-0	0	002200
12672						
12673	B3	0-0	1	100-0	0	002400
12674						
12675	B4	0-0	1	111-0	0	002700
12676						
12677						
12678						

12679 TESTING SUBR USED FOR ABOVE TESTS USES THE DATA AS FOLLOWS:

12680 DATA<15,13> -> PS<15,13>, DATA<10> -> FLAG<2>,
 12681 DATA<8:6> -> IR<8:6>, DATA<0> = EXPECTED MFSS-H OUTPUT

12682
 12683
 12684
 12685 6232: !(FREE)

12686 MFSS01:

12687 P2-U, IR+DBUF-[1], !DONT CARE ABOUT AFFECT, ONLY SET
 12688 P3, DBUF+D-[1], !THESE UCONS UP
 12689 NEXT J/MFSS02

(6232) DCS(0.00.0.0.0.0.0.1) BM(0100..00.00..00.01..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...011.000.010)

12690
 12691 6302: !(FREE)

12692 MFSS02:

12693 P2-T, D+CSPB(B17), D(C)+ALU00, !GET DATA INTO D, D(C)+EXPECTED MFSS-H
 12694 P2-U, IR+DBUF, !IGNORE FOR NOW
 12695 P3, DBUF+D, !GET DATA INTO DBUF, TO GO TO IR NEXT
 12696 NEXT J/MFSS03

(6302) DCS(0.00.0.0.0.0.0.1) BM(1010..11.00..00.00..000..010...0.1.0..0..0...1.1010...0..0000.0...11.000...011.000.011)

12697
 12698 6303: !(FREE)

12699 MFSS03:

12700 P0, BUMP-VERIFY, !COUNT
 12701 P2-U, IR+DBUF, !SETUP IR<8:6> FROM DATA<8:6>
 12702 P3, DBUF+D, !IGNORE FOR NOW
 12703 NEXT J/MFSS04

(6303) DCS(0.00.0.0.0.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.000.100)

12704

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12705 6304: !(FREE)
12706 MFSS04:
12707 PO, BUSDIN+EMIT-[I], !RESET
12708 P3, FLAG(8-0)+0[15-8]-[I], !SETUP FLAG(2) FROM DATA(10)
12709 PS[15-12]+0[15-13]-[I], !SETUP P5(15,13) FROM 0(15,13)
12710 NEXT, BUTR(D(C)-A), !IF EXPECT MFSS-H=(1), J/MFSS06
12711 J/MFSS05 !IF EXPECT MFSS-H=(0), J/MFSS05
(6304) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..011...0.0.0..0..0...1.1011...0..0000.0...01.111...101.101.010)

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```

12712 !* COME HERE IF EXPECT MFSS-H=(0)
12713 6552:
12714 MFSS05:
12715 PO, LOAD-ENUA(MFSS05EXPECO), !SETUP FOR (0)
12716 LOAD-ERROR(MFSS05), !ERROR DIRECTORY KEY
12717 DCS-CTR(C1.), !COMPARE AT TARGET
12718 BUMP-VERIFY, !COUNT
12719 NEXT, BUTR(MFSS), !TEST MFSS: (0)=MFSS05EXPECO, (1)=MFSS05EXPEC1
12720 J/MFSS05EXPECO
12721 (6552) DCS(1.00.1.0.0.1) BM(1110..00.11..01.01..100..101...0.0.0..0..0...0.0000...0..0000.0...01.100...101.100.101)

```

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12722 !* COME HERE IF EXPECT MFSS-H=(1)
12723 6553:
12724 MFSS06:
12725 P1, LOAD-ENUA(MFSS06EXPEC1), !SETUP FOR (0)
12726 LOAD-ERROR(MFSS06), !ERROR DIRECTORY KEY
12727 DCS-CTR(C1.), !COMPARE AT TARGET
12728 NEXT, BUTR(MFSS), !TEST MFSS: (0)=MFSS06EXPECO, (1)=MFSS06EXPEC1
12729 J/MFSS06EXPEC1
12730 (6553) DCS(1.00.1.0.0.0) BM(1110..00.11..01.01..100..111...0.0.0..0..0...0.0000...0..0000.0...01.100...101.100.101)

```

```

12731 !* COME HERE IF MFSS-H TESTS AS A (0)
12732 6545:
12733 MFSS05EXPECO:
12734 PO, BUSDIN+EMIT-[I], !RESET PROC UCON
12735 NEXT, BUTA(RETURN), !AND RETURN
12736 J/BUTERROR6 !*** COMPARE DONE HERE ***
12737 (6545) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.111...011.111.110)
12738

```

```

12739 !* COME HERE IF MFSS-H TESTS AS A (1)
12740 6547:
12741 MFSS06EXPEC1:
12742 PO, BUSDIN+EMIT-[I], !RESET PROC UCON
12743 NEXT, BUTA(RETURN), !AND RETURN
12744 J/BUTERROR6 !*** COMPARE DONE HERE ***
12745 (6547) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.111...011.111.110)

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12746 ! - - - - -
12747 !
12748 ! THE TESTS ACTUALLY START HERE:
12749 !
12750 ! - - - - -
12751 !
12752 !
12753 !

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12754 6607:
12755 TESTS11A:
12756     PO,      LOAD-ERROR(TESTS11A),      !ERROR DIRECTORY KEY
12757     P3,      CSPD(17)+EMIT, EMIT/002601, !* TEST 511 A1 DATA *
12758     NEXT,    J/GOTESTS11A1
(6607) DCS(1.00.0.0.0.0) BM(0000..10.01..01.10..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...101.101.000)

12759 6550:
12760 GOTESTS11A1:
12761     SETUP,   RETURN/TESTS11A2,          !GO DO THE TEST
12762     NEXT,    CALL(MFSS-TEST)
12763 (6550) DCS(0.00.0.0.0.0) BM(0111..00.00..01.11..100..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

12764 7074: !(FREE)
12765 TESTS11A2:
12766     P3,      CSPD(17)+EMIT, EMIT/022600, !* TEST 511 A2 DATA *
12767     NEXT,    J/GOTESTS11A2
(7074) DCS(0.00.0.0.0.0) BM(0010..10.01..01.10..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.000.111)

12770 7107: !(FREE)
12771 GOTESTS11A2:
12772     SETUP,   RETURN/TESTS11A3,          !GO DO THE TEST
12773     NEXT,    CALL(MFSS-TEST)
12774 (7107) DCS(0.00.0.0.0.0) BM(0111..00.00..10.01..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

12775 7110: !(FREE)
12776 TESTS11A3:
12777     P3,      CSPD(17)+EMIT, EMIT/122601, !* TEST 511 A3 DATA *
12778     NEXT,    J/GOTESTS11A3
12779 (7110) DCS(0.00.0.0.0.0) BM(1010..10.01..01.10..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...001.001.001)
12780

12781 7111: !(FREE)
12782 GOTESTS11A3:
12783     SETUP,   RETURN/TESTS11A4,          !GO DO THE TEST
12784     NEXT,    CALL(MFSS-TEST)
12785 (7111) DCS(0.00.0.0.0.0) BM(0111..00.00..10.01..010..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

12786 7112: !(FREE)
12787 TESTS11A4:
12788     P3,      CSPD(17)+EMIT, EMIT/102600, !* TEST 511 A4 DATA *
12789     NEXT,    J/GOTESTS11A4
12790 (7112) DCS(0.00.0.0.0.0) BM(1000..10.01..01.10..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.001.011)
12791

12792 7113: !(FREE)
12793 GOTESTS11A4:
12794     SETUP,   RETURN/SCOPE511A,          !GO DO THE TEST
12795     NEXT,    CALL(MFSS-TEST)
12796 (7113) DCS(0.00.0.0.0.0) BM(0110..00.01..10.00..001..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

```

```

12797
12798
12799      6301:  !(FREE)
12800      SCOPE511A:
12801          P3,      CSPD[17]+EMIT, EMIT/002601,      !RESET DATA FOR TEST 511 A1
12802          NEXT,    BUTD[SCOPE],      !NO ERROR: "TEST511B1" (+1. WORDS)
12803          J/TEST511B1      ! ERROR: "GOTEST511A1" (-7. WORDS)
(6301) DCS(0.00.0.1.0.0) BM(0000..10.01..01.10..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...101.101.001)

12804
12805
12806
12807
12808      ! - - - - -
12809
12810
12811      6551:
12812      TEST511B1:
12813          P3,      CSPD[17]+EMIT, EMIT/000600,      !* TEST 511 B1 DATA *
12814          NEXT,    J/GOTEST511B1
(6551) DCS(0.00.0.0.0.0) BM(0000..10.00..01.10..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...101.101.100)

12815
12816      6554:
12817      GOTEST511B1:
12818          SETUP,    RETURN/TEST511B2,      !GO DO THE TEST
12819          NEXT,    CALL(MFSS-TEST)
(6554) DCS(0.00.0.0.0.0) BM(0111..00.00..10.00..110. 110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

12820
12821
12822      7106:  !(FREE)
12823      TEST511B2:
12824          P3,      CSPD[17]+EMIT, EMIT/002200,      !* TEST 511 B2 DATA *
12825          NEXT,    J/GOTEST511B2
(7106) DCS(0.00.0.0.0.0) BM(0000..10.01..00.10..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.001.101)

12826
12827      7115:  !(FREE)
12828      GOTEST511B2:
12829          SETUP,    RETURN/TEST511B3,      !GO DO THE TEST
12830          NEXT,    CALL(MFSS-TEST)
(7115) DCS(0.00.0.0.0.0) BM(0111..00.00..10.01..110..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

12831
12832
12833      7116:  !(FREE)
12834      TEST511B3:
12835          P3,      CSPD[17]+EMIT, EMIT/002400,      !* TEST 511 B3 DATA *
12836          NEXT,    J/GOTEST511B3
(7116) DCS(0.00.0.0.0.0) BM(0000..10.01..01.00..000..000...0.0.0..0..0...0.0000...1..0300.0...11.000...001.001.111)

12837
12838      7117:  !(FREE)
12839      GOTEST511B3:
12840          SETUP,    RETURN/TEST511B4,      !GO DO THE TEST
12841          NEXT,    CALL(MFSS-TEST)
(7117) DCS(0.00.0.0.0.0) BM(0111..00.00..10.10..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

```

```

12842
12843
12844 7120: !(FREE)
12845 TESTS11B4:
12846     P3,      CSPD[17]*EMIT, EMIT/002700,      !* TEST 511 B4 DATA *
12847     NEXT,    J/GOTESTS11B4
(7120) DCS(0.00.0.0.0.0) BM(0000..10.01..01.11..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...001.010.001)

12848
12849 7121: !(FREE)
12850 GOTESTS11B4:
12851     SETUP,   RETURN/SCOPE511B,      !GO DO THE TEST
12852     NEXT,    CALL(MFSS-TEST)
(7121) DCS(0.00.0.0.0.0) BM(0110..00.01..10.00..101..110...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.010)

12853
12854 6305: !(FREE)
12855 SCOPE511B:
12856     P3,      CSPD[17]*EMIT, EMIT/000600,      !RESET DATA FOR TEST 511 B1
12857     NEXT,    BUTD(SCOPE),      !NO ERROR: "SETUP512A" (+1. WORDS)
12858     J/SETUP512A,      !ERROR: "GOTES51121" (-7. WORDS)
(6305) DCS(0.00.0.1.0.0) BM(0000..10.00..01.10..000..000...0.0.0..0..0...0.000...1..0000.0...11.000...101.101.101)

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12860
12861
12862
12863
12864
12865 !.PAGE=====
12866
12867

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12868 .TOC * TESTS12: KT SRC/DST ADDRESSING LOGIC TESTS
12869
12870

```

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12871
12872 !*****
12873 !*
12874 !* TESTS: 512 A - E                                UWORDS: 044 + 062
12875 !*
12876 !* FUNCTIONS:
12877 !*
12878 !* THE FOLLOWING TEN TESTS VERIFY THE KT-SRC/DST-ADDRS ROM OUTPUT AND INPUT LINES
12879 !* FUNCTION CORRECTLY, IN RESPECT TO NO STUCK ONE/ZERO CONDITIONS.
12880 !*
12881 !*****

```

```

12882
12883
12884 ! KT SRC/DST LOGIC EQUATIONS:      (IMPLEMENTED IN ROM)
12885
12886 ! KT-SRC-ADDRS-3 =      NOT-F2.AND.SR6.AND.PS15
12887 !                   .OR. F2.AND.SR6.AND.NOT-SM0.AND.PS15
12888 !                   .OR. F2.AND.SR6.AND.SM0.AND.PS13.AND.NOT-FLTPT
12889 !                   .OR. SR6.AND.PS15.AND.FLTPT
12890
12891 ! KT-DST-ADDRS-3 =      NOT-F1.AND.DR6.AND.PS15

```


12892 .OR. F1.AND.DR6.AND.NOT-DMO.AND.PS15
 12893 .OR. F1.AND.DR6.AND.DMO.AND.PS13.AND.NOT-FLTPT
 12894 .OR. DR6.AND.PS15.AND.FLTPT
 12895
 12896

SUMMARY OF KT ASP/BSP SRC/DST STACK POINTER ADDRESSING LOGIC:

TEST NUMB	PS 15:13H	FLAG 2:1H	IR	FLT	SMD	SR6H	DMOH	DR6H	KT-SRC ADR-H	KT-DST ADR-H	HOW READ:
A1	1,0	1,1	172206	0	0	0	1	1	0	1	ASPHI[SF]=(02) BSPHI[DF]=(16)
A2											
B1	0,1	1,0	070606	1	1	1	1	1	1	0	ASPHI[DF]=(06) BSPHI[SF]=(16)
B2											
C1	0,1	1,1	134606	1	0	1	1	1	0	1	ASPHI[DF]=(16) BSPHI[SF]=(06)
C2											
D1	1,0	0,1	160612	1	1	1	0	0	1	0	ASPHI[SF]=(16) BSPHI[DF]=(02)
D2											
E1	1,0	1,1	150626	1	1	1	0	1	0	1	ASPHI[DF]=(16) BSPHI[SF]=(06)
E2											

KT SRC/DST STACK POINTER ADDRESS MODE TEST SUBROUTINE:

ENTER WITH: CSP(17) = VALUE TO GO INTO IR, TO SETUP FLTPT/SMD/SR6/DMO/DR6
 CSP(16) = BIT<15,13> -> PS<15,13>
 BIT<10:09> -> FLAG<2:1>
 ** BIT<00> IS AN INTERNAL FLAG TO INDICATE WHICH REGISTER
 TO PUT IN THE SR ON EXIT:
 BIT<00> = (1) -> ASPHI[DF], BIT<00> = (0) -> ASPHI[SF]

```

12932 7114: !(FREE)
12933 KTSRCDST01:
12934 P2-T, D+CSPD(D17), D(C)+0, !INITIAL DATA TO GO INTO IR
12935 NEXT J/KTSRCDST02
(7114) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...001.010.011)

12936 7123: !(FREE)
12937 KTSRCDST02:
12938 P2-U, IR+DBUF-[I], !IGNORE FOR NOW
12939 P3, DBUF+D-[I], !COPY IR DATA FROM D -> DBUF
12940 NEXT J/KTSRCDST03
(7123) DCS(0.00.0.0.0.0) BM(0100..00.00..00.01..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...001.010.100)

12942 7124: !(FREE)
12943

```

```

12944 KTSRCDST03:
12945     P2-U,   IR+DBUF           !COPY IR DATA FROM DBUF -> IR
12946     P3-T,   D+CSP8(B16), D(C)+ALU00, !GET PS/FLAGS/REGISTER SELECT DATA
12947     P3,     DBUF+D           !D(C) = REGISTER SELECT FLAG
12948     NEXT,    J/KTSRCDST04
(7124) DCS(0.00.0.0.0.0) BM(1010..11.01..00.00..000..010...1.1.0..0..0...1.1010...0..0000.0...11.000...001.010.101)

12949     7125:   !(FREE)
12950 KTSRCDST04:
12951     P0,     BUSDIN+EMIT-[I]    !KEEP IT ON
12952     P3,     PS(15-12)+0(15#13)-[I], !SETUP PS<15,13> AS REQUIRED
12953     NEXT,    FLAG(8-0)+0(15-8)-[I], !SETUP FLAG<2:1> AS REQUIRED
12954     J/KTSRCDST04B
12955 (7125) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..011...0.0.0..0..0...1.1011...0..0000.0...11.000...001.010.110)

12956     7126:   !(FREE)
12957 KTSRCDST04B:
12958
12959     !THIS WORD NEEDED FOR 1 WORD DELAY FOR ROM TO SETTLE
12960     P2-T,   D+CSPD(C052525), SAVE-D(C), !DATA PATTERN IN SCRATCH PAD ADDRESS [02]
12961     P3,     A#BSPHI(02)+D,      !BIT<3:0> = (05)
12962     NEXT,    BUTR(D(C)-8),      !KEY=(1) -> READ ASPHI[DF] -> SR
12963     J/KTSRCDST05                !KEY=(0) -> READ ASPHI[SF] -> SR
(7126) DCS(0.00.0.0.0.0) BM(1010..10.10..00.00..101..111...0.1.0..0..0...0.0111...0..1011.0...10.011...011.011.101)

12964 !ENTER HERE IF D(C) CLEAR, SF SELECTED
12965 7335:
12966 KTSRCDST05:
12967     P2-T,   SR+ASPHI(SF),      !USE ASP/SF
12968     NEXT,    J/BUTSR3-0        !AND NOW GO CHECK WHOM WAS READ
12969 (7335) DCS(0.00.0.0.0.0) BM(1111..00.00..11.11..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...010.111.110)

12970 !ENTER HERE IF D(C) SET, DF SELECTED
12971 7337:
12972 KTSRCDST06:
12973     P2-T,   SR+ASPHI(DF),      !USE ASP/DF
12974     NEXT,    J/BUTSR3-0        !AND NOW GO CHECK WHOM WAS READ
12975 (7337) DCS(0.00.0.0.0.0) BM(1111..00.00..11.10..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...010.111.110)

12976
12977 !* WE ALSO NEED TWO ENTRY POINTS TO READ BSP SF & DF:
12978
12979     7127:   !(FREE)
12980 KTSRCDST07:
12981     P2-T,   SR+BSPHI(SF),      !USE BSP/SF
12982     NEXT,    J/BUTSR3-0        !AND NOW GO CHECK WHOM WAS READ
12983 (7127) DCS(0.00.0.0.0.0) BM(1010..01.01..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...010.111.110)

12984
12985     7130:   !(FREE)
12986 KTSRCDST08:
12987     P2-T,   SR+BSPHI(DF),      !USE BSP/DF
12988     NEXT,    J/BUTSR3-0        !AND NOW GO CHECK WHOM WAS READ
12989 (7130) DCS(0.00.0.0.0.0) BM(1010..01.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...010.111.110)
12990

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12991
12992 ! -----
12993
12994 !   ***  KT SRC/DST ENTERS HERE  ***
12995
12996 ! -----
12997
12998
12999 !THESE FIRST TWO WORDS DO SOME PRELIMINAR SETUP OF SCRATCHPAD LOCATIONS (06)/(16)
13000 6555:
13001  SETUPS12A:
13002     P2-T,  D+CSPD(C125252), D(C)+0,
13003     P3,    A#BSPHI(06)+D,
13004     NEXT,  J/SETUPS12B
(6555) DCS(0.00.0.0.0.0) BM(1010..10.10..00.00..111..000...0.1.0..0..0...0.0110...0..1011.0...11.000...011.000.111)
! KERNAL SP LOCATION:
! BIT<3:0> = (12) = SP-ADDRESS(06)

13005
13006 6307: !(FREE)
13007  SETUPS12B:
13008     P2-T,  D+CSPD(C000000), D(C)+0,
13009     P3,    A#BSPHI(16)+D,
13010     NEXT,  J/TESTS12A1
(6307) DCS(0.00.0.0.0.0) BM(1010..10.10..00.00..011..000...0.1.0..0..0...0.0100...0..1011.0...11.000...101.100.010)
! USER SP LOCATION:
! BIT<3:0> = (00) = SP-ADDRESS(16)

13011
13012
13013
13014
13015
13016
13017
13018
13019
13020 ! -----
13021
13022 !* TEST 512 A1 *
13023
13024 !   TEST 512 A 1-2 SETS UP FOR:  ASP-SF-ADDRESS=(02),  BSP-DF-ADDRESS=(16)
13025 6542:
13026  TESTS12A1:
13027     PO,    LOAD-ENVA(ZTARGET405),
13028     LOAD-ERROR(TESTS12A1),
13029     DCS-CTR(C11.),
13030     NEXT,  J/SETIRS12A1
(6542) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.100)
! BIT<3:0> = (05) = SP-ADDRESS(02)
! ERROR DIRECTORY KEY
! COMPARE AT TARGET

13031
13032 6564:
13033  SETIRS12A1:
13034     PO,    BUMP-VERIFY
13035     P3,    CSPD(17)+EMIT, EMIT/172206,
13036     NEXT,  J/SETPSFLAG512A1
(6564) DCS(0.00.0.0.0.1) BM(1111..10.01..00.10..000...110...0.0.0..0..0...0.0000...1..0000.0...11.000...011.001.000)
! COUNT
! SETUP IR:  FLTPT/SMD/SR6/DMD/DR6

13037
13038 6310: !(FREE)
13039  SETPSFLAG512A1:
13040     P3,    CSPD(16)+EMIT, EMIT/103000,
!BIT<15,13> -> PS<15,13>,

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13041                                     !BIT<10:9> -> FLAGS<2:1>
13042 NEXT, J/GOTESTS12A1                 !BIT<00> IS REGISTER KEY (SEE SUBR)
(6310) DCS(0.00.0.0.0.0) BM(1000..10.01..10.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...011.001.001)

13043
13044 6311: !(FREE)
13045 GOTESTS12A1:
13046 SETUP, RETURN/TESTS12A2,          !GO EXEC KT SRC/DST TEST SUBR AT
13047 NEXT, CALL(KTSRCDST)              ! INITIALIZATION POINT
(6311) DCS(0.00.0.0.0.0) BM(0110..00.10..11.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.001.100)

13048
13049
13050
13051 !* TEST 512A2 NOW READS THE COMPLEMENTARY REGISTER TO THAT USED IN TESTS12A1, INTO THE SR
13052 6544:
13053 TESTS12A2:
13054 PO, LOAD-ENUA(ZTARGET400),          !BIT<3:0> = (00) = SP-ADDRESS(16)
13055 LOAD-ERROR(TESTS12A2),             !ERROR DIRECTORY KEY
13056 DCS-CTR(C4.)                       !COMPARE AT TARGET
13057 NEXT, J/GOTESTS12A2
(6544) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.001.010)

13058
13059 6312: !(FREE)
13060 GOTESTS12A2:
13061 SETUP, RETURN/SCOPE512A,          !READ REGISTER BSPHI(DF) TO SR,
13062 NEXT, CALL(KTDSTBSP)              ! THEN DO BUT(SR3-0)
(6312) DCS(0.00.0.0.0.0) BM(0110..00.01..10.01..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.011.000)

13063
13064
13065 6313: !(FREE)
13066 SCOPE512A:
13067 PO, BUSDIN+EMIT-[I],               !RESET PROC UCON
13068 EN-CLK-IR[15-00],
13069 NEXT, BUTD(SCOPE),                 !NO ERROR: "TESTS12B1" (+1. WORDS)
13070 J/TESTS12B1                       !ERROR: "SETIRS12A1" (-5. WORDS)
(6313) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.110.101)

13071
13072
13073
13074
13075 ! - - - - -
13076 !* TEST 512 B1 *
13077
13078 ! TEST 512 B 1-2 SETS UP FOR: ASP-DF-ADDRESS=(06), BSP-SF-ADDRESS=(16)
13079
13080 6565:
13081 TESTS12B1:
13082 PO, LOAD-ENUA(ZTARGET412),          !BIT<3:0> = (12) = SP-ADDRESS(06)
13083 LOAD-ERROR(TESTS12B1),             !ERROR DIRECTORY KEY
13084 DCS-CTR(C11.),                     !COMPARE AT TARGET
13085 NEXT, J/SETIRS12B1
(6565) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.110)

13086

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```

13087 6536:
13088 SETIRS1281:
13089 PO, BUMP-VERIFY, !COUNT
13090 P3, CSPD(17)+EMIT, EMIT/070606, !SETUP IR: FLTPT/SMO/SR6/DMO/DR6
13091 NEXT, J/SETPSFLAGS1281
(6536) DCS(0.00.0.0.0.1) BM(0111..10.00..01.10..000..110...0.0.0..0..0...0.0000...1..0000.0...11.000...011.001.100)

```

```

13092
13093 6314: !(FREE)
13094 SETPSFLAGS1281:
13095 P3, CSPD(16)+EMIT, EMIT/022001, !BIT<15,13> -> PS<15,13>,
13096 !BIT<10:9> -> FLAGS<2:1>
13097 NEXT, J/GOTESTS1281 !BIT<00> IS REGISTER KEY (SEE SUBR)
(6314) DCS(0.00.0.0.0.0) BM(0010..10.01..00.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...011.001.101)

```

```

13098
13099 6315: !(FREE)
13100 GOTESTS1281:
13101 SETUP, RETURN/TESTS1282, !GO EXEC KT SRC/DST TEST SUBR AT
13102 NEXT, CALL(KTSRCSST) !INITIALIZATION POINT
(6315) DCS(0.00.0.0.0.0) BM(0110..00.10..11.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.001.100)

```

```

13103
13104
13105

```

```

13106 !* TEST 51282 NOW READS THE COMPLEMENTARY REGISTER TO THAT USED IN TESTS1281, INTO THE SR
13107 6546:
13108 TESTS1282:
13109 PO, LOAD-ENUA(ZTARGET400), !BIT<3:0> = (00) = SP-ADDRESS(16)
13110 LOAD-ERROR(TESTS1282), !ERROR DIRECTORY KEY
13111 DCS-CTR(C4.) !COMPARE AT TARGET
13112 NEXT, J/GOTESTS1282
(6546) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.001.110)

```

```

13113
13114 6316: !(FREE)
13115 GOTESTS1282:
13116 SETUP, RETURN/TESTS12C1, !READ REGISTER BSPHI(SF) TO SR,
13117 NEXT, CALL(KTSRCSBSP) ! THEN DO BUT(S 3-0)
(6316) DCS(0.00.0.0.0.0) BM(0110..00.10..11.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.111)

```

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13118
13119
13120
13121
13122
13123

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```

13124 ! - - - - -
13125
13126 !* TEST 512 C1 *
13127
13128 ! TEST 512 C 1-2 SETS UP FOR: RSP-DF-ADDRESS=(16), BSP-SF-ADDRESS=(06)

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```

13129 6556:
13130 TESTS12C1:
13131 PO, LOAD-ENUA(ZTARGET400), !BIT<3:0> = (00) = SP-ADDRESS(16)
13132 LOAD-ERROR(TESTS12C1), !ERROR DIRECTORY KEY
13133 DCS-CTR(C11.), !COMPARE AT TARGET

```

KD11-K MICRO V00A-1 00:00:03 12-MAR-77

```

13134 NEXT, J/SETIRS12C1
(6556) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.001.111)
13135
13136 6317: !(FREE)
13137 SETIRS12C1:
13138 PO, BUMP-VERIFY, !COUNT
13139 P3, CSPD(17)+EMIT, EMIT/134606, !SETUP IR: FLTPT/SMD/SR6/DMD/DR6
13140 NEXT, J/SETPSFLAGS12C1
(6317) DCS(0.00.0.0.0.0.1) BM(1011..10.10..01.10..000..110...0.0.0..0..0...0.0000...1..0000.0...11.000...011.010.000)
13141
13142 6320: !(FREE)
13143 SETPSFLAGS12C1:
13144 P3, CSP..16)+EMIT, EMIT/023001, !BIT<15,13> -> PS<15,13>
13145 !BIT<10:9> -> FLAGS<2:1>
13146 NEXT, J/GOTESTS12C1 !BIT<00> IS REGISTER KEY (SEE SUBR)
(6320) DCS(0.00.0.0.0.0.0) BM(0010..10.01..10.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...011.010.001)
13147
13148 6321: !(FREE)
13149 GOTESTS12C1:
13150 SETUP, RETURN/TESTS12C2, !GO EXEC KT SRC/DST TEST SUBR AT
13151 NEXT, CALL(KTSRCDST) !INITIALIZATION POINT
(6321) DCS(0.00.0.0.0.0.0) BM(0110..00.10..11.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.001.100)
13152
13153
13154
13155 !* TEST 512C2 NOW READS THE COMPLEMENTARY REGISTER TO THAT USED IN TESTS12C1, INTO THE SR
13156 6566:
13157 TESTS12C2:
13158 PO, LOAD-ENUA(ZTARGET412), !BIT<3:0> = (12) = SP-ADDRESS(06)
13159 LOAD-ERROR(TESTS12C2), !ERROR DIRECTORY KEY
13160 DCS-CTR(C4.) !COMPARE AT TARGET
13161 NEXT, J/GOTESTS12C2
(6566) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.010)
13162
13163 6322: !(FREE)
13164 GOTESTS12C2:
13165 SETUP, RETURN/SCOPE512C, !READ REGISTER BSPHI[5F] TO SR,
13166 NEXT, CALL(KTSRCBSP) ! THEN DO BUT(SR3-0)
(6322) DCS(0.00.0.0.0.0.0) BM(0110..00.01..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.111)
13167
13168
13169 6323: !(FREE)
13170 SCOPE512C:
13171 PO, BUSDIN+EMIT-(1), !RESET PROC UCON
13172 EN-CLK-IR[15-00],
13173 NEXT, BUTD(SCOPE), !NO ERROR: "TESTS1201" (+1. WORDS)
13174 J/TESTS1201 ! ERROR: "SETIRS1281" (-11. WORDS)
(6323) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.011.111)
13175
13176
13177
13178

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13179 ! - - - - -
13180
13181 !* TEST 512 D1 *
13182
13183 ! TEST 512 D 1-2 SETS UP FOR: ASP-SF-ADDRESS=(16), BSP-DF-ADDRESS=(02)
13184 6537:
13185 TESTS12D1:
13186 PO, LOAD-ENVA(ZTARGET400), !BIT<3:0> = (00) = SP-ADDRESS(16)
13187 LOAD-ERROR(TESTS12D1), !ERROR DIRECTORY KEY
13188 DCS-CTR(C11.), !COMPARE AT TARGET
13189 NEXT J/SETIRS12D1
(6537) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.010.110)

13190 6626:
13191 SETIRS12D1:
13192 PO, BUMP-VERIFY, !COUNT
13193 P3, CSPD(17)+EMIT, EMIT/160612, !SETUP IR: FLTPT/SMD/SR6/DMD/DR6
13194 NEXT J/SETPSFLAGS12D1
(6626) DCS(0.00.0.0.0.0.1) BM(1110..10.00..01.10..001..010...0.0.0..0..0...0.0000...1..0000.0...11.000...011.010.100)

13196 6324: !(FREE)
13197 SETPSFLAGS12D1:
13198 P3, CSPD(16)+EMIT, EMIT/101000, !BIT<15,13> -> PS<15,13>,
13199 !BIT<10:9> -> FLAGS<2:1>
13200 NEXT J/GOTESTS12D1 !BIT<00> IS REGISTER KEY (SEE SUBR)
(6324) DCS(0.00.0.0.0.0) BM(1000..10.00..10.00..000..000...0.0.0..0..0...0.0001...1..0000.0...11.000...011.010.101)

13202 6325: !(FREE)
13203 GOTESTS12D1:
13204 SETUP, RETURN/TESTS12D2, !GO EXEC KT SRC/DST TEST SUBR AT
13205 NEXT, CALL(KTSRCDST) !INITIALIZATION POINT
(6325) DCS(0.00.0.0.0.0) BM(0110..00.10..11.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.001.100)

13207
13208
13209
13210 !* TEST 512D2 NOW READS THE COMPLEMENTARY REGISTER TO THAT USED IN TESTS12D1, INTO THE SR
13211 6576:
13212 TESTS12D2:
13213 PO, LOAD-ENVA(ZTARGET405), !BIT<3:0> = (05) = SP-ADDRESS(02)
13214 LOAD-ERROR(TESTS12D2), !ERROR DIRECTORY KEY
13215 DCS-CTR(C4.), !COMPARE AT TARGET
13216 NEXT J/GOTESTS12D2
(6576) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.110)

13217 6326: !(FREE)
13218 GOTESTS12D2:
13219 SETUP, RETURN/TESTS12E1, !READ REGISTER BSPHI(DF) TO SR,
13220 NEXT, CALL(KTDSTBSP) ! THEN DO BUT(SR3=0)
(6326) DCS(0.00.0.0.0.0) BM(0110..00.10..11.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.011.000)

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13223
13224

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13225
13226
13227
13228 ! - - - - -
13229
13230 !* TEST 512 E1 *
13231
13232 ! TEST 512 E 1-2 SETS UP FOR: ASP-DF-ADDRESS=(16), BSP-SF-ADDRESS=(06)
13233 6577:
13234 TESTS12E1:
13235 PO, LOAD-ENUA(ZTARGET400), !BIT<3:0> = (00) = SP-ADDRESS(16)
13236 LOAD-ERROR(TESTS12E1), !ERROR DIRECTORY KEY
13237 DCS-CTR(C11.), !COMPARE AT TARGET
13238 NEXT J/SETIRS12E1
(6577) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.111)

13239 6327: !(FREE)
13240 SETIRS12E1:
13241 PO, BUMP-VERIFY, !COUNT
13242 P3, CSPD(17)+EMIT, EMIT/150626, !SETUP IR: FLTPT/SMD/SR6/DMD/DR6
13243 NEXT J/SETPSFLAGS12E1
(6327) DCS(0.00.0.0.0.1) BM(1101..10.00..01.10..010..110...0.0.0..0..0...0.0000...1..0000.0...11.000...011.011.000)

13245 6330: !(FREE)
13246 SETPSFLAGS12E1:
13247 P3, CSPD(16)+EMIT, EMIT/103001, !BIT<15,13> -> PS<15,13>
13248 NEXT J/GOTESTS12E1 !BIT<10:9> -> FLAGS<2:1>
13249 !BIT<00> IS REGISTER KEY (SEE SUBR)
(6330) DCS(0.00.0.0.0.0) BM(1000..10.01..10.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...011.011.001)

13251 6331: !(FREE)
13252 GOTESTS12E1:
13253 SETUP, RETURN/TESTS12E2, !GO EXEC KT SRC/DST TEST SUBR AT
13254 NEXT CALL(KTSRCDST) !INITIALIZATION POINT
(6331) DCS(0.00.0.0.0.0) BM(0110..00.10..10.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.001.100)

13256 !* TEST 512E2 NOW READS THE COMPLEMENTARY REGISTER TO THAT USED IN TESTS12E1, INTO THE SR
13257
13258
13259 6535:
13260 TESTS12E2:
13261 PO, LOAD-ENUA(ZTARGET412), !BIT<3:0> = (12) = SP-ADDRESS(06)
13262 LOAD-ERROR(TESTS12E2), !ERROR DIRECTORY KEY
13263 DCS-CTR(C4.), !COMPARE AT TARGET
13264 NEXT J/GOTESTS12E2
(6535) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.010)

13266 6332: !(FREE)
13267 GOTESTS12E2:
13268 SETUP, RETURN/SCOPE512E, !READ REGISTER BSPHI(SF) TO SR,
13269 NEXT CALL(KTSRCBSP) ! THEN DO BUT(SR3-0)
(6332) DCS(0.00.0.0.0.0) BM(0110..00.01..10.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.111)

```



```

13271
13272
13273
13274 6333: !(FREE)
13275 SCOPE$12E:
13276     PO,      BUSDIN+EMIT-[I],      !RESET PROC UCON
13277             EN-CLK-IR[15-00],
13278     NEXT,     BUTD[SCOPE],          !NO ERROR: "TEST520A" (+1. WORDS)
13279             J/TEST520A            !ERROR: "SETIR51201" (-11. WORDS)
(6333) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.010.111)

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13280
13281
13282
13283
13284

!.PAGE=====

13288 .TOC * TEST520A-520E: TESTING THE "INSTR BRANCH" ROM

```

13290 *****
13291 *
13292 * TESTS: 520A - 520E                                UWORDS: 020 + 031
13293 *
13294 * FUNCTIONS:
13295 *
13296 * THE FOLLOWING FIVE TESTS VERIFY THE VALIDITY OF THE INSTRUCTION BRANCH ROM
13297 * INPUTS AND OUTPUTS, IN REGARD TO NO STUCK ONE/ZERO CONDITIONS.
13298 *
13299 *****

```

13302 SUMMARY OF INSTR BRANCH ROM TESTS:

TEST NUMB	IR<15,10:08>H	B-- ?	ON:	PS<3:0>H N Z V C	INSTR BRANCH L
520A	1 0 1 0	BHI	C.IOR.Z=0	0 1 0 0	1, NEGATED
520B	0 1 1 0	BGT	Z.IOR.(N.XOR.V)=0	0 0 0 0	0, ASSERTED
520C	0 1 0 1	BLT	N.XOR.V=1	1 1 1 0	1, NEGATED
520D	1 0 1 1	BLOS	C.IOR.Z=1	0 0 0 1	0, ASSERTED
520E	1 1 1 1	BLO	C=1	0 1 1 0	1, NEGATED

! - - - - -

```

13318 !*** TEST 520A ***
13319 !TEST-520-A SETS UP IR<15,10:08>H="1010", PS<3:0>H="0100",
13320 ! AND THEN BUTS ON "INSTR BRANCH L"

```

```

13321 6627:
13322 TEST520A:
13323     PO,      LOAD-ENUA(ZTARGET403),      !NOT ASSERTED

```

```

13324 LOAD-ERROR(TEST520A), !ERROR DIRECTORY KEY
13325 DCS-CTR(C8.), !COMPARE ENUA:TNUA AT TARGET
13326 NEXT J/UCONS20A
(6627) DCS(1.00.1.0.0.0) BM(0111..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...110.010.100)

```

```

13327
13328 6624:
13329 UCONS20A:
13330 SELECT, UCON-PROC !PROCESSOR UCON:
13331 ENABLE, BUSDIN+EMIT(15-00), !EMIT ON BUSDIN
13332 EN-CLK-IR(15-00), !AND CLOCKING IR
13333 PO, BUMP-VERIFY !COUNT
13334 SET-UCON-CONTROL, !WRITE CONTROLS
13335 NEXT J/SETUPS20A
(6624) DCS(0.00.0.0.0.1) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...011.011.100)

```

```

13336
13337 6334: !(FREE)
13338 SETUPS20A:
13339 PO, BUMP-VERIFY, !COUNT
13340 EMITC, EMIT/101004, !PS<3:0>H="0100"
13341 P2-U, IR+EMIT
13342 P3, CSPO(05)+EMIT, !IR<15,10:08>H="1010"
13343 NEXT J/GOTESTS20A
(6334) DCS(0.00.0.0.0.1) BM(1000..10.00..10.00..000..100...0.0.0..0..0...1.1010...1..0000.0...11.000...011.011.101)

```

```

13344
13345 6335: !(FREE)
13346 GOTESTS20A:
13347 SETUP, RETURN/TESTS20B, !RETURN TO START OF NEXT SUBTEST
13348 NEXT, GOTO-PAGE(7), !GO TO CODE THAT LOADS PS[CC], AND
13349 J/SUCBRTEST0 ! THEN BUTS ON THE "INSTR BRANCH" ROM OUTPUT
(6335) DCS(0.00.0.0.0.0) BM(0110..00.11..11.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.010)

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13351
13352
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13354 ! - - - - -
13355

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13356 !*** TEST 520B ***
13357 !TEST-520-B SETS UP IR<15,10:08>H="0110", PS<3:0>H="0000",
13358 ! AND THEN BUTS ON "INSTR BRANCH L"
13359 6764:

```

```

13360 TEST520B:
13361 PO, LOAD-ENUA(ZTARGET402), !ASSERTED
13362 LOAD-ERROR(TEST520B), !ERROR DIRECTORY KEY
13363 DCS-CTR(C7.), !COMPARE ENUA:TNUA AT TARGET
13364 NEXT J/SETUPS20B
(6764) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.110)

```

```

13365
13366 6336: !(FREE)
13367 SETUPS20B:
13368 EMITC, EMIT/003000, !PS<3:0>H="0000"
13369 P2-U, IR+EMIT
13370 P3, CSPO(05)+EMIT, !IR<15,10:08>H="0110"
13371 NEXT, J/GOTEST520B

```

(6336) DCS(0.00.0.0.0.0) BM(0000..10.01..10.00..000..000...0.0.0..0..0...1.1010...1..0000.0...11.000...011.011.111)

```

13372
13373 6337: !(FREE)
13374 GOTEST520B:
13375     SETUP, RETURN/TEST520C,           !RETURN TO START OF NEXT SUBTEST
13376     NEXT,  GOTO-PAGE(7)              !GO TO CODE THAT LOADS PS(CC), AND
13377           J/SUCBRTEST0!                ! THEN BUTS ON THE "INSTR BRANCH" ROM OUTPUT
(6337) DCS(0.00.0.0.0.0) BM(0110..00.11..11.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.010)

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13378
13379
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13381
13382 ! - - - - -
13383

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13384 !*** TEST 520C ***
13385 !TEST-520-C SETS UP IR<15,10:08>H="0101", PS<3:0>H="1110",
13386 ! AND THEN BUTS ON "INSTR BRANCH L"
13387 6772:
13388 TEST520C:
13389     PO, LOAD-ENUA(ZTARGET403),           !NEGATED
13390         LOAD-ERROR(TEST520C),          !ERROR DIRECTORY KEY
13391         DCS-CTR(C7.),                  !COMPARE ENUA:TNUA AT TARGET
13392         BUMP-VERIFY,                   !COUNT
13393     NEXT, J/SETUP520C
(6772) DCS(1.00.1.0.0.1) BM(1000..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.000)

```

```

13394
13395 6340: !(FREE)
13396 SETUP520C:
13397     EMITC, EMIT/002416,                !PS<3:0>H="1110"
13398     P2-U,  IR+EMIT,                   !IR<15,10:08>H="0101"
13399     P3,    CSPD(05)+EMIT,
13400     NEXT,  J/GOTEST520C
(6340) DCS(0.00.0.0.0.0) BM(0000..10.01..01.00..001..110...0.0.0..0..0...1.1010...1..0000.0...11.000...011.100.001)

```

```

13401
13402 6341: !(FREE)
13403 GOTEST520C:
13404     SETUP, RETURN/TEST520D,           !RETURN TO START OF NEXT SUBTEST
13405     NEXT,  GOTO-PAGE(7)              !GO TO CODE THAT LOADS PS(CC), AND
13406           J/SUCBRTEST0!                ! THEN BUTS ON THE "INSTR BRANCH" ROM OUTPUT
(6341) DCS(0.00.0.0.0.0) BM(0110..00.11..11.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.010)

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13407
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13409
13410 ! - - - - -
13411

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13412 !*** TEST 520D ***
13413 !TEST-520-D SETS UP IR<15,10:08>H="1011", PS<3:0>H="0001",
13414 ! AND THEN BUTS ON "INSTR BRANCH L"
13415 6762:
13416 TEST520D:
13417     PO, LOAD-ENUA(ZTARGET402),         !ASSERTED
13418

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13419 LOAD-ERROR(TEST5200), !ERROR DIRECTORY KEY
13420 DCS-CTR(C7.), !COMPARE ENUA:TNUA AT TARGET
13421 NEXT J/SETUPS200
(6762) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.010)

13422 6342: !(FREE)
13423 SETUP5200:
13424 EMITC, EMIT/101401, !PS<3:0>H="0001"
13425 P2-U, IR+EMIT, !
13426 P3, CSPO(05)+EMIT, !IR<15,10:08>H="1011"
13427 NEXT J/GOTESTS200
13428 (6342) DCS(0.00.0.0.0.0) BM(1000..10.00..11.00..000..001...0.0.0..0..0...1.1010...1..0000.0...11.000...011.100.011)

13429 6343: !(FREE)
13430 GOTESTS200:
13431 SETUP, RETURN/TESTS20E, !RETURN TO START OF NEXT SUBTEST
13432 NEXT, GOTO-PAGE(7) !GO TO CODE THAT LOADS PS(CC), AND
13433 ! THEN BUTS ON THE "INSTR BRANCH" ROM OUTPUT
13434 (6343) DCS(0.00.0.0.0.0) BM(0110..00.11..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.010)

13435 ! - - - - -
13436
13437
13438
13439 !
13440
13441 !*** TEST 520E ***
13442 !TEST-520-E SETS UP IR<15,10:08>H="1111", PS<3:0>H="0110",
13443 ! AND THEN BUTS ON "INSTR BRANCH L"
13444 6775:
13445 TESTS20E:
13446 PO, LOAD-ENUA(ZTARGET403), !NEGATED
13447 LOAD-ERROR(TESTS20E), !ERROR DIRECTORY KEY
13448 DCS-CTR(C7.), !COMPARE ENUA:TNUA AT TARGET
13449 NEXT J/SETUPS20E
(6775) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.100)

13450 6344: !(FREE)
13451 SETUP520E:
13452 PO, BUMP-VERIFY, !COUNT
13453 EMITC, EMIT/103406, !PS<3:0>H="0110"
13454 P2-U, IR+EMIT, !
13455 P3, CSPO(05)+EMIT, !IR<15,10:08>H="1111"
13456 NEXT J/GOTESTS20E
13457 (6344) DCS(0.00.0.0.0.1) BM(1000..10.01..11.00..000..110...0.0.0..0..0...1.1010...1..0000.0...11.000...011.100.101)

13458 6345: !(FREE)
13459 GOTESTS20E:
13460 SETUP, RETURN/SCOPE520, !RETURN TO SCOPE LOOP TEST WORD
13461 NEXT, GOTO-PAGE(7) !GO TO CODE THAT LOADS PS(CC), AND
13462 ! THEN BUTS ON THE "INSTR BRANCH" ROM OUTPUT
13463 (6345) DCS(0.00.0.0.0.0) BM(0110..00.01..11.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.010.010)

13464

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13465
13466
13467
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13470
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13472
13473

6346: !(FREE)
SCOPE520:

PO, BUSDIN+EMIT-[I],
EN-CLK-IR[15-00],
NEXT, BUTD[SCOPE],
J/TEST533A

!RESET PROC UCONS
!NO ERROR: "TEST533A" [+4. WORDS]
!ERROR: "UCONS20A" [-15. WORDS]

(6346) DCS[0.00.0.1.0.0] BM[0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.010.101]

13474
13475
13476
13477
13478
13479
13480

7122: !(FREE)
SUCBRTEST01:

P2-T, D+CSPD(DOS), D[C]+0,
NEXT, J/SUCBRTEST02

!GET PATTERN

(7122) DCS[0.00.0.0.0.0] BM[1010..10.00..00.00..000..000...0.1.0..0..0...0.1010...0..0000.0...11.000...001.011.010]

13485
13486
13487
13488
13489

7132: !(FREE)
SUCBRTEST02:

P2-T, PS[3-0]+D[3-0]-[I],
NEXT, J/SUCBRTEST03

!INTO PS[CC]

(7132) DCS[0.00.0.0.0.0] BM[1000..00.00..00.01..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...001.011.011]

13490
13491
13492
13493
13494
13495
13496
13497

7133: !(FREE)
SUCBRTEST03:

SELECT, UCON-PROC,
ENABLE, BUSDIN+EMIT[15-00],
EN-CLK-IR[15-00],
PO, SET-UCON-CONTROL,
NEXT, J/BUTINSTRBRANCH

!LEAVE WITH EMIT ON BUSDIN,
!CLOCK IR ENABLED
!WRITE CONTROLS

(7133) DCS[0.00.0.0.0.0] BM[0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...011.101.110]

13498
13499
13500
13501
13502
13503
13504
13505
13506
13507
13508
13509
13510
13511
13512
13513
13514

!.PAGE=====

.TOC * TEST533-537: SHIFT TREE

!*****
!*
!* TESTS: 533A - 537A UMWORDS: 170 + 044
!*
!* FUNCTIONS: TESTS 533A - 537A VERIFY THE DATA AND CONTROL PATHS
!* OF THE 3 LEVEL BARREL SHIFTER (SHIFT TREE).
!*

```

13515 !*****
13516
13517
13518
13519
13520
13521
13522 !
13523 !
13524 !*** TEST 533A ***
13525 !READ D DIRECTLY THRU "D(HI)#D(LO)" PORT OF AMUX(HI#LO), BMUX-CMUX/DIRECT
13526 !IN(0)(052652), OUT(052652)
13527 6625:
13528 TEST533A:
13529     PO,          LOAD-ENVA(ZTARGET402),          !SETUP FOR D = ZERO TEST
13530     LOAD-ERROR(TEST533A),          !ERROR DIRECTORY KEY
13531     DCS-CTR(C6.),          !COMPARE AT TARGET
13532     NEXT,        J/INIT533A
13533 (6625) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.110)
13534 6666:
13535 INIT533A:
13536     PO,          BUMP-VERIFY,          !COUNT
13537     P3,          CSPD(17)+EMIT,          !GET INITIAL PATTERN FOR D
13538     EMIT/052652,          !"0101 0101 1010 1010"
13539     NEXT,        J/INITD533A
13540 (6666) DCS(0.00.0.0.0.0.1) BM(0101..10.01..01.10..101..010...0.0.0..0..0...0.0000...1..0000.0...11.000...011.100.111)
13541 6347: !(FREE)
13542 INITD533A:
13543     P2-T,        D+CSPD(017),          !INITIAL D =(052652)
13544     D(C)+ALU15,          !SETUP D(C) FOR SHIFT = "0"
13545     NEXT,        J/COMPS33A
13546 (6347) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..100...0.1.0..0..0...0.0000...0..0000.0...11.000...011.101.000)
13547 6350: !(FREE)
13548 COMPS33A:
13549     PO,          BUMP-VERIFY,          !COUNT
13550     SETUP,        D-DIRECT,          !AMUX-BMUX-CMUX ALL DIRECT
13551     P2-T,        D+D-SHIFTED-XOR-CSPB(817),          !COMPARE D-SHIFTED:EXPECTED, BITWISE
13552     NEXT,        J/GOBUT533A          !EXPECTED =(052652)
13553 (6350) DCS(0.00.0.0.0.0.1) BM(0110..11.00..01.01..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...011.101.001)
13554 6351: !(FREE)
13555 GOBUT533A:
13556     SETUP,        RETURN/TEST533B,          !RETURN TO START OF NEXT SUBTEST
13557     NEXT,        GOTO-PAGE(7),          !BUT TABLE IS ON PAGE 7
13558     J/BUTD-IS-ZERO          !GO TEST D IS ALL ZERO
13559 (6351) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)
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13563 ! - - - - -
13564
13565 !*** TEST 5338 ***
13566 !READ D DIRECTLY THRU "D(HI)ND(LO)" PORT OF AMUX(HI#LO), BMUX-CMUX/DIRECT
13567 !IN(D)(125125), OUT(125125)
13568 6633:
13569 TEST5338:
13570     PO,      LOAD-EMUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
13571             LOAD-ERROR(TEST5338),      !ERROR DIRECTORY KEY
13572             DCS-CTR(C6.),              !COMPARE AT TARGET
13573     NEXT,    J/INIT5338
(6633) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.101.010)

13574 6352: !(FREE)
13575 INIT5338:
13576     P3,      CSPD(16)+EMIT,              !GET INITIAL PATTERN FOR D
13577             EMIT/125125,              !"1010 1010 0101 0101"
13578     NEXT,    J/INIT5338
(6352) DCS(0.00.0.0.0.0) BM(1010..10.10..10.01..010..101...0.0.0..0..0...0.0001...1..0000.0...11.000...011.101.011)

13580 6353: !(FREE)
13581 INITD5338:
13582     PO,      BUMP-VERIFY,              !COUNT
13583             P2-T,  D+CSPD(D16),        !INITIAL D=(125125)
13584             D(C)+ALL07,                !SETUP D(C) FOR SHIFT = "0"
13585     NEXT,    J/COMPS338
(6353) DCS(0.00.0.0.0.1) BM(1010..10.00..00.00..000..011...0.1.0..0..0...0.0001...0..0000.0...11.000...011.101.100)

13587 6354: !(FREE)
13588 COMPS338:
13589     SETUP,   D-DIRECT,                 !AMUX-BMUX-CMUX ALL DIRECT
13590             P2-T,  D+D-SHIFTED-XOR-CSPB(816), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13591             NEXT,  J/GOBUT5338         !EXPECTED=(125125)
(6354) DCS(0.00.0.0.0.0) BM(0110..11.01..01.01..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...011.101.101)

13593 6355: !(FREE)
13594 GOBUT5338:
13595     SETUP,   RETURN/SCOPE5338,        !RETURN TO SCOPE LOOP TEST WORD
13596             NEXT,  GOTO-PAGE(7)      !BUT TABLE IS ON PAGE 7
13597             J/BUTD-IS-ZERO          !GO TEST D IS ALL ZERO
(6355) DCS(0.00.0.0.0.0) BM(0110..00.01..11.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

13599 6356: !(FREE)
13600 SCOPE5338:
13601     P3,      CSPD(14)+EMIT, EMIT/000377, !CONSTANT FOR USE BELOW
13602     NEXT,    BUTD(SCOPE),              !NO ERROR: "TEST534A" (+1.WORDS)
13603             J/TEST534A              !ERROR: "INIT533A" (-9.WORDS)
(6356) DCS(0.00.0.1.0.0) BM(0000..10.00..00.11..111..111...0.0.0..0..0...0.0011...1..0000.0...11.000...110.110.111)

13605 ! - - - - -
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13610
13611 !*** TEST 534A ***
13612 !READ D THRU "D[LO]#D[HI]" PORT OF AMUX[HI,LO], BMUX-CMUX/DIRECT
13613 !IN(0)(052652), OUT(125125)
13614 6667:
13615 TEST534A:
13616     PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
13617             LOAD-ERROR(TEST534A),      !ERROR DIRECTORY KEY
13618             DCS-CTR(CS.),               !COMPARE AT TARGET
13619             BUTA(CLR-FLAG-RES-UCON),    !EMIT ON BUSDIN
13620     NEXT,    J/INITD534A
(6667) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.010...110.110.100)

13621
13622 6664:
13623 INITD534A:
13624     PO,      BUMP-VERIFY,               !COUNT
13625     P2-T,    D+CSPD(017),              !INITIAL D=(052652)
13626             D(C)+ALU15,                !SETUP D(C) FOR SHIFT = "0"
13627     NEXT,    J/COMPS34A
(6664) DCS(0.00.0.0.0.1) BM(1010..10.00..00.00..000..100...0.1.0..0..0...0.0000...0..0000.0...11.000...011.101.111)

13628
13629 6357: !(FREE)
13630 COMPS34A:
13631     SETUP,   D-SWAB,                   !AMUX/SWAB, BMUX-CMUX/DIRECT
13632     P2-T,    D+D-SHIFTED-XOR-CSPB(B16), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13633     NEXT,    J/GOBUT534A              !EXPECTED=(125125)
(6357) DCS(0.00.0.0.0.0) BM(0110..11.01..01.01..000..000...0.1.0..0..0...0.0101...0..0000.0...11.000...011.110.000)

13634
13635 6360: !(FREE)
13636 GOBUT534A:
13637     SETUP,   RETURN/TEST534B,         !RETURN TO START OF NEXT SUBTEST
13638     NEXT,    GOTO-PAGE(7),            !BUT TABLE IS ON PAGE 7
13639             J/BUTD-IS-ZERO           !GO TEST D IS ALL ZERO
(6360) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

13640
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13644 ! - - - - -
13645
13646 !*** TEST 534B ***
13647 !READ D THRU "D[LO]#D[HI]" PORT OF AMUX[HI,LO], BMUX-CMUX/DIRECT
13648 !IN(0)(125125), OUT(052652)
13649 6634:
13650 TEST534B:
13651     PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
13652             LOAD-ERROR(TEST534B),      !ERROR DIRECTORY KEY
13653             DCS-CTR(CS.),               !COMPARE AT TARGET
13654             BUMP-VERIFY,                !COUNT
13655     NEXT,    J/INITD534B
(6634) DCS(1.00.1.0.0.1) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.001)

13656
13657 6361: !(FREE)

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13658 INITD534B:
13659 P2-T, D+CSPD(D16), !INITIAL D=(125125)
13660 D(C)+ALU07, !SETUP D(C) FOR SHIFT = "0"
13661 NEXT J/COMP534B
(6361) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..011...0.1.0..0..0...0.0001...0..0000.0...11.000...011.110.010)

```

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13662 6362: !(FREE)
13663 COMP534B:
13664 PO, BUMP-VERIFY, !COUNT
13665 SETUP, D-SWAB, !AMUX/SWAB, BMUX-CMUX/DIRECT
13666 P2-T, D+D-SHIFTED-XOR-CSPB(B17), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13667 NEXT, J/GOBUT534B !EXPECTED=(052652)
(6362) DCS(0.00.0.0.0.1) BM(0110..11.00..01.01..000..000...0.1.0..0..0...0.0101...0..0000.0...11.000...011.110.011)

```

```

13669 6363: !(FREE)
13670 GOBUT534B:
13671 SETUP, RETURN/SCOPE534B, !RETURN TO SCOPE LOOP TEST WORD
13672 NEXT, GOTO-PAGE(7), !BUT TABLE IS ON PAGE 7
13673 J/BUTD-IS-ZERO !GO TEST D IS ALL ZERO
(6363) DCS(0.00.0.0.0.0) BM(0110..00.01..11 10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

```

13675 6364: !(FREE)
13676 SCOPE534B:
13677 P3, CSPD(15)+EMIT, EMIT/177400, !CONSTANT FOR USE BELOW
13678 NEXT, BUTD(SCOPE), !NO ERROR: "TEST534C" (+1.WORDS)
13679 J/TEST534C !ERROR: "INITD534A" (-7.WORDS)
(6364) DCS(0.00.0.1.0.0) BM(1111..10.11..11.00..000..000...0.0.0..0..0...0.0010...1..0000.0...11.000...110.110.101)

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13687 !*** TEST 534C ***
13688 !READ D THRU "B*D(C)#D(HI)" PORT OF AMUX(HI#LO), BMUX-CMUX/DIRECT
13689 !IN(1)(000000), OUT(177400)
13690 6665:
13691 TEST534C:
13692 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
13693 LOAD-ERROR(TEST534C), !ERROR DIRECTORY KEY
13694 DCS-CTR(CS.), !COMPARE AT TARGET
13695 NEXT, J/INITD534C
(6665) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.010)

```

```

13696 6662:
13697 INITD534C:
13698 P2-T, D+ASPHI(000000), !INITIAL D=(000000)
13699 D(C)+1, !SETUP D(C) FOR SHIFT = "1"
13700 NEXT, J/COMP534C
(6662) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..100..000...0.1.0..0..0...0.0000...0..0000.0...11.000...011.110.101)

```

```

13702 6365: !(FREE)
13703 COMP534C:
13704

```

```

13705                                     !CSP(15)=(177400)="1111 1111 0000 0000"
13706         SETUP,  D-RIGHT-8,           !AMUX/8#D(C)#D(HI), BMUX-CMUX/DIRECT
13707         P2-T,   D+D-SHIFTED-XOR-CSP8(B15), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13708         NEXT,    J/GOBUT534C          !EXPECTED=(177400)

```

```

(6365) DCS(0.00.0.0.0.0) BM(0110..11.10..01.01..000..000...0.1.0..0..0...0.0110...0..0000.0...11.000...011.110.110)

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```

13709
13710     6366:  !(FREE)
13711     GOBUT534C:

```

```

13712         SETUP,  RETURN/TEST5340,      !RETURN TO START OF .EXT SUBTEST
13713         NEXT,   GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
13714         J/BUTD-IS-ZERO                !GO TEST D IS ALL ZERO

```

```

(6366) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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13719  ! - - - - -
13720

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13721  !*** TEST 5340 ***
13722  !READ D THRU "8#D(C)#D(LO)" PORT OF AMUX(HI#LO), BMUX-CMUX/DIRECT
13723  !IN(0)(177777), OUT(000377)

```

```

13724     6635:
13725     TEST5340:
13726         PD,      LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
13727         LOAD-ERROR(TEST5340),          !ERROR DIRECTORY KEY
13728         DCS-CTR(C5.),                   !COMPARE AT TARGET
13729         NEXT,    J/INITD5340

```

```

(6635) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.111)

```

```

13730
13731     6367:  !(FREE)
13732     INITD5340:

```

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13733         P2-T,   D+BSPHI(C177777),      !INITIAL D=(177777)
13734         D(C)+0, !SETUP D(C) FOR SHIFT = "0"
13735         NEXT,   J/COMPS5340

```

```

(6367) DCS(0.00.0.0.0.0) BM(1010..01.11..00.00..101..000...0.1.0..0..0...0.0000...0..0000.0...11.000...011.111.000)

```

```

13736
13737     6370:  !(FREE)
13738     COMPS5340:

```

```

13739
13740         SETUP,  D-SIGNEXT,             !CSP(14)=(000377)="0000 0000 1111 1111"
13741         P2-T,   D+D-SHIFTED-XOR-CSP8(B14), !AMUX/8#D(C)#D(LO), BMUX-CMUX/DIRECT
13742         NEXT,    J/GOBUT534C          !COMPARE D-SHIFTED:EXPECTED, BITWISE
                                           !EXPECTED=(000377)

```

```

(6370) DCS(0.00.0.0.0.0) BM(0110..11.11..01.01..000..000...0.1.0..0..0...0.0010...0..0000.0...11.000...011.111.001)

```

```

13743
13744     6371:  !(FREE)
13745     GOBUT5340:

```

```

13746         PD,      BUMP-VERIFY,          !COUNT
13747         SETUP,  RETURN/SCOPE5340,      !RETURN TO SCOPE LOOP TEST WORD
13748         NEXT,   GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
13749         J/BUTD-IS-ZERO                !GO TEST D IS ALL ZERO

```

```

(6371) DCS(0.00.0.0.0.1) BM(0110..00.01..11.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

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13750

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13751 6372: !(FREE)
13752 SCOPE5340:
13753 NEXT, BUTD(SCOPE), !NO ERROR: "TEST534E" (+1 WORDS)
13754 J/TEST534E !ERROR: "EXPEC534C" (-9 WORDS)
(6372) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.011)

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13761 !*** TEST 534E ***
13762 !READ D THRU "COUNTER#D(LO)" PORT OF AMUX(HI#LO); BMUX-CMUX/DIRECT
13763 !IN(0)(000125), OUT(125125), CTR(252)
13764 6663:
13765 TEST534E:
13766 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D =ZERO TEST
13767 LOAD-ERROR(TEST534E), !ERROR DIRECTORY KEY
13768 DCS-CTR(C6.) !COMPARE AT TARGET
13769 NEXT, J/LOADCNTRS34E
(6663) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.000)

```

```

13770 6660:
13771 LOADCNTRS34E:
13772 PO, BUMP-VERIFY, !COUNT
13773 P2, COUNTER+BSPHI(C125252), !PUT A (252) IN BM COUNTER
13774 NEXT, J/INITD534E ! (GETS B-BUS(7:0))
13775 (6660) DCS(0.00.0.0.0.1) BM(0000..01.11..00.00..110..000...0.0.0..0..0...0.0000...0..0010.1...11.000...011.111.011)

```

```

13776 6373: !(FREE)
13777 INITD534E:
13778 PO, BUMP-VERIFY, !COUNT
13779 P2-T, D+CSPD(14)-AND-ASPHI(C052525), !INITIAL D=(000125) CSP(14)=(000377)
13780 D(C)+ALU15, !SETUP D(C) FOR SHIFT = "0"
13781 J/COMPS34E
13782 (6373) DCS(0.00.0.0.0.1) BM(1011..10.00..11.01..111..100...0.1.0..0..0...0.0011...0..0000.0...11.000...011.111.100)

```

```

13783 6374: !(FREE)
13784 COMPS34E:
13785 SETUP, COUNT#D(LO), !AMUX/COUNTER#D(LO) BMUX-CMUX/DIRECT
13786 P2-T, D=D-SHIFTED-XOR-CSPB(816), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13787 NEXT, J/GOBUT534E !EXPECTED=(125125)
13788 (6374) DCS(0.00.0.0.0.0) BM(0110..11.01..01.01..000..000...0.1.0..0..0...0.0011...0..0000.0...11.000...011.111.101)

```

```

13789 6375: !(FREE)
13790 GOBUT534E:
13791 SETUP, RETURN/TEST534F, !RETURN TO START OF NEXT SUBTEST
13792 NEXT, GOTO-PAGE(7) !BUT TABLE IS ON PAGE 7
13793 J/BUTD-IS-ZERO !GO TEST D IS ALL ZERO
13794 (6375) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

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13795
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13798
13799 ! - - - - -
13800
13801 !*** TEST 534F ***
13802 !READ D THRU "COUNTER#D(HI)" PORT OF AMUX(HI#LO), BMUX-CMUX/DIRECT
13803 !IN(0)(125000), OUT(052652), CTR(125)
13804 6636:
13805 TEST534F:
13806     PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
13807             LOAD-ERROR(TEST534F),      !ERROR DIRECTORY KEY
13808             DCS-CTR(C6.)                !COMPARE AT TARGET
13809     NEXT     J/LODCNTRS34F
(6636) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.000)

13810 6400: !(FREE)
13811 LODCNTRS34F:
13812     P2,      COUNTER+BSPHI(C052525),      !PUT A (125) IN BM COUNTER
13813     NEXT     J/INITD534F                ! (GETS B-BUS(7-0))
(6400) DCS(0.00.0.0.0.0) BM(0000..01.11..00.00..111..000...0.0.0..0..0...0.0000...0..0010.1...11.000...100.000.001)

13815 6401: !(FREE)
13816 INITD534F:
13817     PO,      BUMP-VERIFY,                !COUNT
13818     P2-T,    D+CSPD(15)-AND-ASPHI(C125252), !INITIAL D=(125000), CSP(15)=(177400)
13819             D(C)+ALU00,                !SETUP D(C) FOR SHIFT = "0"
13820     NEXT     J/COMPS34F
(6401) DCS(0.00.0.0.0.1) BM(1011..10.00..11.01..110..010...0.1.0..0..0...0.0010...0..0000.0...11.000...100.000.010)

13822 6402: !(FREE)
13823 COMPS34F:
13824     SETUP,   COUNT#D(HI),                !AMUX/COUNTER#D(HI), BMUX-CMUX/DIRECT
13825     P2-T,    D+D-SHIFTED-XOR-CSPB(B17), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13826     P3,      BUTA(LAST),                 !CLEAR CTR TO (000) DURING P3
13827     NEXT     J/GOBUTS34F                !EXPECTED=(052652)
(6402) DCS(0.00.0.0.0.0) BM(0110..11.00..01.01..000..000...0.1.0..0..0...0.0111...0..0000.0...10.000...100.000.011)

13829 6403: !(FREE)
13830 GOBUTS34F:
13831     SETUP,   RETURN/TEST534G,            !RETURN TO START OF NEXT SUBTEST
13832     NEXT,    GOTO-PAGE(7),               !BUT TABLE IS ON PAGE 7
13833             J/BUTD-IS-ZERO              !GO TEST D IS ALL ZERO
(6403) DCS(0.00.0.0.0.0) BM(0110..00.11..11.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

13835
13836 ! - - - - -
13837
13838 !*** TEST 534G ***
13839 !READ D THRU "COUNTER#D(LO)" PORT OF AMUX(HI#LO), BMUX-CMUX/DIRECT
13840 !COUNTER AND D SHOULD READ ALL ZERO, AFTER BEING ZAPPED IN TEST-534-F
13841 6752:
13842 TEST534G:
13843     PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
13844
13845

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13846          LOAD-ERROR(TEST534G),          !ERROR DIRECTORY KEY
13847          DCS-CTR(C4),                    !COMPARE AT TARGET
13848          NEXT, J/COUNTERS34G
(6752) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..010...0.0.0..0 .0...0.0000...0..0000.0...11.000...100.000.100)

13849          6404: !(FREE)
13850          COUNTERS34G:
13851          P2-T, D-COUNT#0(10),          !READ THE MUX INTO D
13852          NEXT, J/GOBUTS34G
(6404) DCS(0.00.0.0.0.0) BM(1111..00.00..01.01..000..000...0.1.0..0..0...0.0011...0..0000.0...11.000...100.000.101)

13854          6405: !(FREE)
13855          GOBUTS34G:
13856          PO, BUMP-VERIFY,          !COUNT
13857          SETUP, RETURN/SCOPE534G,    !RETURN TO SCOPE LOOP TEST WORD
13858          NEXT, GOTO-PAGE(7),        !BUT TABLE
13859          J/BUTD-IS-ZERO,          !GO TEST D IS ALL ZERO
(6405) DCS(0.00.0.0.0.1) BM(0110..00.10..00.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

13861
13862
13863
13864          6406: !(FREE)
13865          SCOPE534G:
13866          NEXT, BUTD(SCOPE),          !NO ERROR: "TEST535A" (+1.WORDS)
13867          J/TEST535A,                !ERROR: "LODCNTRS34E" (-11.WORDS)
(6406) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.110.001)

13869
13870
13871
13872
13873          ! - - - - -
13874
13875          !*** TEST 535A ***
13876          !READ D THRU "4*D(C)AMUX<15:04>" PORT OF BMUX, AMUX-CMUX/DIRECT
13877          !IN(1)(122645), OUT(175132)
13878          6661:
13879          TEST535A:
13880          PO, LOAD-ENLRA(ZTARGET402), !SETUP FOR D=ZERO TEST
13881          LOAD-ERROR(TEST535A),       !ERROR DIRECTORY KEY
13882          DCS-CTR(C7.),               !COMPARE AT TARGET
13883          BUMP-VERIFY,                !COUNT
13884          NEXT, J/INIT535A
(6661) DCS(1.00.1.0.0.1) BM(1000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.110)

13885          6656:
13886          INIT535A:
13887          P3, CSPD(15)+EMIT,          !GET INITIAL PATTERN FOR D
13888          EMIT/122645,                !"1010 0101 1010 0101"
13889          NEXT, J/EXPEC535A
(6656) DCS(0.00.0.0.0.0) BM(1010..10.01..01.10..100..101...0.0.0..0..0...0.0010...1..0000.0...11.000...100.000.111)

13891          6407: !(FREE)
13892

```

```

13893 EXPECTS35A:
13894     P3,      CSPD(14)+EMIT,      !GET EXPECTED PATTERN AFTER SHIFT
13895           EMIT/175132,          !"1111 1010 0101 1010"
13896     NEXT,    J/INITD535^
(6407) DCS(0.00.0.0.0.0) BM(1111..10.10..10.01..011..010...0.0.0..0..0...0.0011...1..0000.0...11.000...100.001.000)

13897 6410: !(FREE)
13898 INITD535A:
13900     PO,      BUMP-VERIFY,      !COUNT
13901     P2-T,     D+CSPD(015),      !INITIAL D=(122645)
13902           D(C)+ALU15,          !SETUP D(C) FOR SHIFT = "1"
13903     NEXT,    J/COMPS35A
(6410) DCS(0.00.0.0.0.1) BM(1010..10.00..00.00..000..100...0.1.0..0..0...0.0010...0..0000.0...11.000...100.001.001)

13904 6411: !(FREE)
13905 COMPS35A:
13907     SETUP,   D-RIGHT-4,          !AMUX/DIRECT, BMUX/RIGHT-4, CMUX/DIRECT
13908     P2-T,     D+D-SHIFTED-XOR-CSPB(B14), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13909     NEXT,    J/GOBUT535A          !EXPECTED=(175132)
(6411) DCS(0.00.0.0.0.0) BM(0110..11.11..01.01..000..000...0.1.0..0..0...0.1000...0..0000.0...11.000...100.001.010)

13910 6412: !(FREE)
13911 GOBUT535A:
13913     SETUP,   RETURN/TEST535B,    !RETURN TO START OF NEXT SUBTEST
13914     NEXT,    GOTO-PAGE(7),        !BUT TABLE IS ON PAGE 7
13915           J/BUTD-IS-ZERO        !GO TEST D IS ALL ZERO
(6412) DCS(0.00.0.0.0.0) BM(0110..00.11..00.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

13916
13917
13918
13919
13920 ! - - - - -
13921
13922 !*** TEST 535B ***
13923 !READ D THRU "4*D(C)AMUX<15:04>" PORT OF BMUX, AMUX-CMUX/DIRECT
13924 !IN(0)(055132), OUT (002645)
13925 6637:
13926 TEST535B:
13927     PO,      LOAD-EMUA(ZTARGET402), !SETUP FOR D=ZERO TEST
13928           LOAD-ERROR(TEST535B),    !ERROR DIRECTORY KEY
13929           DCS-CTR(C6.),            !COMPARE AT TARGET
13930           BUMP-VERIFY,            !COUNT
13931     NEXT,    J/EXPCS35B
(6637) DCS(1.00.1.0.0.1) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.011)

13932 6413: !(FREE)
13933 EXPCS35B:
13934     P3,      CSPD(14)+EMIT,      !GET EXPECTED PATTERN AFTER SHIFT
13935           EMIT/002645,          !"0000 0101 1010 0101"
13936     NEXT,    J/INITD535B
(6413) DCS(0.00.0.0.0.0) BM(0000..10.01..01.10..100..101...0.0.0..0..0...0.0011...1..0000.0...11.000...100.001.100)

13938 6414: !(FREE)
13939

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13940 INITD535B:
13941     P2-T,    D+NOT-CSPB(815),      !INITIAL D=(055132)
13942     NEXT,    D(C)+ALU15,           !SETUP D(C) FOR SHIFT = "0"
13943     J/COMPS35B
(6414) DCS(0.00.0.0.0.0) BM(0111..11.10..11.01..101..100...0.1.0..0..0...0.0000...0..0000.0...11.000...100.001.101)

13944 6415: !(FREE)
13945 COMPS35B:
13946     SETUP,   D-RIGHT-4,           !AMUX/DIRECT, BMUX/RIGHT-4, CMUX/DIRECT
13947     P2-T,    D+D-SHIFTED-XOR-CSPB(814), !COMPARE D-SHIFTED:EXPECTED, BITWISE
13948     NEXT,    J/GOBUTS35B          !EXPECTED=(002645)
13949 (6415) DCS(0.00.0.0.0.0) BM(0110..11.11..01.01..000..000...0.1.0..0..0...0.1000...0..0000.0...11.000...100.001.110)

13950 6416: !(FREE)
13951 GOBUTS35B:
13952     PO,      BUMP-VERIFY,          !COUNT
13953     SETUP,   RETURN/SCOPE535B,     !RETURN TO SCOPE LOOP TEST WORD
13954     NEXT,    GOTO-PAGE(7),         !BUT TABLE IS ON PAGE 7
13955     J/BUTD-IS-ZERO                !GO TEST D IS ALL ZERO
13956 (6416) DCS(0.00.0.0.0.1) BM(0110..00.10..00.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

13957 6417: !(FREE)
13958 SCOPE535B:
13959     P3,      CSPD(16)+EMIT, EMIT/114631, !CONSTANT FOR USE BELOW
13960     NEXT,    BUTD(SCOPE),          !NO ERROR: "TEST536A" (+1.WORDS)
13961     J/TEST536A                    !ERROR: "INIT535A" (-10.WORDS)
13962 (6417) DCS(0.00.0.1.0.0) BM(1001..10.10..01.10..011..001...0.0.0..0..0...0.0001...1..0000.0...11.000...110.101.111)

13963 !
13964 !
13965 !
13966 !
13967 !
13968 !
13969 !*** TEST 536A ***
13970 !READ D THRU "2*D(C)BMUX<15:02>" PORT OF CMUX, AMUX-BMUX/DIRECT
13971 !IN(1)(016161), OUT(143434)
13972 6657:
13973 TEST536A:
13974     PO,      LOAD-EMUA(ZTARGET402), !SETUP FOR DO=ZERO TEST
13975     LOAD-ERROR(TESP536A),          !ERROR DIRECTORY KEY
13976     DCS-CTR(C7.),                  !COMPARE AT TARGET
13977     NEXT,    J/INIT536A
(6657) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.100)

13978 6654:
13979 INIT536A:
13980     P3,      CSPD(15)+EMIT,        !GET INITIAL PATTERN FOR D
13981     EMIT/016161,                    !"0001 1100 0111 0001"
13982     NEXT,    J/EXPEC536A
13983 (6654) DCS(0.00.0.0.0.0) BM(0001..10.11..00.01..110..001...0.0.0..0..0...0.0010...1..0000.0...11.000...100.010.000)

13984 6420: !(FREE)
13985 EXPEC536A:
13986

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13987      PO,      BUMP-VERIFY,      !COUNT
13988      P3,      CSPD(14)+EMIT,      !GET EXPECTED PATTERN AFTER SHIFT
13989      EMIT/143434,      !"1100 0111 0001 1100"
13990      NEXT,      J/INITD536A
(6420) DCS(0.00.0.0.0.1) BM(1100..10.01..11.00..011..100...0.0.0..0..0...0.0011...1..0000.0...11.000...100.010.001)

13991      6421: !(FREE)
13992      INITD536A:
13993      P2-T,      D+CSPD(015),      !INITIAL D=(016161)
13994      D(C)+ALU00,      !SETUP D(C) FOR SHIFT = "1"
13995      NEXT,      J/COMPS36A
13996      (6421) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..010...0.1.0..0..0...0.0010...0..0000.0...11.000...100.010.010)

13997      6422: !(FREE)
13998      COMPS36A:
13999      SETUP,      D-RIGHT-2,      !AMUX-BMUX/DIRECT, CMUX/RIGHT-2
14000      P2-T,      D+D-SHIFTED-XOR-CSPB(814),      !COMPARE D-SHIFTED:EXPECTED, BITWISE
14001      NEXT,      J/GOBUT536A      !EXPECTED =(143434)
14002      (6422) DCS(0.00.0.0.0.0) BM(0110..11.11..01.11..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...100.010.011)

14003      6423: !(FREE)
14004      GOBUT536A:
14005      SETUP,      RETURN/TESTS368,      !RETURN TO START OF NEXT SUBTEST
14006      NEXT,      GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
14007      J/BUTD-IS-ZERO      !GO TEST D IS ALL ZERO
14008      (6423) DCS(0.00.0.0.0.0) BM(0110..00.11..01.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

14009
14010
14011
14012
14013      ! - - - - -
14014
14015      !*** TEST 5368 ***
14016      !READ D THRU "2*D(C)BMUX(15:02)" PORT OF CMUX, AMUX-BMUX/DIRECT
14017      !IN(0)(161616), OUT(034343)
14018      6640:
14019      TESTS368:
14020      PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
14021      LOAD-ERROR(TESTS368),      !ERROR DIRECTORY KEY
14022      DCS-CTR(C6.),      !COMPARE AT TARGET
14023      NEXT,      J/EXPEC5368
(6640) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000 ..0..0000.0...11.000...100.010.100)

14024      6424: !(FREE)
14025      EXPEC5368:
14026      PO,      BUMP-VERIFY,      !COUNT
14027      P3,      CSPD(14)+EMIT,      !GET EXPECTED PATTERN AFTER SHIFT
14028      EMIT/034343,      !"1110 0011 1000 1110"
14029      NEXT,      J/INITD5368
14030      (6424) DCS(0.00.0.0.0.1) BM(0011..10.10..00.11..100..011...0.0.0..0..0...0.0011...1..0000.0...11.000...100.010.101)

14031      6425: !(FREE)
14032      INITD5368:
14033

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14034      P2-T,    D+NOT-CSPB(B15),      !INITIAL D=(161616)
14035      D(C)+ALU00,      !SETUP D(C) FOR SHIFT = "0"
14036      NEXT,      J/COMPS36B
(6425) DCS(0.00.0.0.0.0) BM(0111..11.10..11.01..101..010...0.1.0..0..0...0.0000...0..0000.0...11.000...100.010.110)

14037      6426:  !(FREE)
14038      COMPS36B:
14039      PO,      BUMP-VERIFY,      !COUNT
14040      SETUP,    D-RIGHT-2,      !AMUX-BMUX/DIRECT, CMUX/RIGHT-2
14041      P2-T,    D+D-SHIFTED-XOR-CSPB(B14), !COMPARE D-SHIFTED:EXPECTED, BITWISE
14042      NEXT,      J/GOBUT536B      !EXPECTED=(034343)
(6426) DCS(0.00.0.0.0.1) BM(0110..11.11..01.11..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...100.010.111)

14044      6427:  !(FREE)
14045      GOBUT536B:
14046      SETUP,    RETURN/SCOPE536B,      !RETURN TO SCOPE LOOP TEST WORD
14047      NEXT,      GOTO-PAGE(7)      !BUT TABLE IS ON PAGE 7
14048      J/BUTD-IS-ZERO      !GO TEST D IS ALL ZERO
(6427) DCS(0.00.0.0.0.0) BM(0110..00.10..00.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

14050      6430:  !(FREE)
14051      SCOPE536B:
14052      PO,      BUMP-VERIFY,      !COUNT
14053      P3,      CSPD(17)+EMIT, EMIT/031463, !CONSTANT FOR USE BELOW
14054      NEXT,    BUTD(SCOPE),      !NO ERROR: "TEST536C" (+1.WORDS)
14055      J/TEST536C      !ERROR: "INIT536A" (-10.WORDS)
(6430) DCS(0.00.0.1.0.1) BM(0011..10.00..11.00..110..011...0.0.0..0..0...0.0000...1..0000.0...11.000...110.101.101)

14057
14058
14059
14060
14061      ! - - - - -
14062
14063      !*** TEST 536C ***
14064      !READ D THRU "D(C)BMUX<15:01>" PORT OF CMUX, AMUX-BMUX/DIRECT
14065      !IN(1)(031463), OUT(114631)
14066      6655:
14067      TEST536C:
14068      PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO TEST
14069      LOAD-ERROR(TEST536C),      !ERROR DIRECTORY KEY
14070      DCS-CTR(C5.),      !COMPARE AT TARGET
14071      BUMP-VERIFY,      !COUNT
14072      NEXT,      J/INITD536C
(6655) DCS(1.00.1.0.0.1) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.010)

14073      6652:
14074      INITD536C:
14075      PO,      BUMP-VERIFY,      !COUNT
14076      P2-T,    D+CSPD(D17),      !INITIAL D=(031463)
14077      D(C)+ALU00,      !SETUP D(C) FOR SHIFT = "1"
14078      NEXT,      J/COMPS36C      !"0011 0011 0011 0011"
(6652) DCS(0.00.0.0.0.1) BM(1010..10.00..00.00..000..010...0.1.0..0..0...0.0000...0..0000.0...11.000...100.011.001)

14080

```

```

14081 6431: !(FREE)
14082 COMPS360:
14083     SETUP, D-RIGHT-1,           !AMUX-BMUX/DIRECT, CMUX/RIGHT-1
14084     P2-T,  D+D-SHIFTED-XOR-CSPB(816), !COMPARE D-SHIFTED:EXPECTED, BITWISE
14085     NEXT,   J/GOBUT536C         !EXPECTED=(114631)
(6431) DCS(0.00.0.0.0.0) BM(0110..11.01..01.10..000..000..0.1.0..0..0..0.0000...0..0000.0...11.000...100.011.010)
! "1001 1001 1001 1001"

```

```

14086
14087
14088 6432: !(FREE)
14089 GOBUT5360:
14090     SETUP, RETURN/TEST5360,     !RETURN TO START OF NEXT SUBTEST
14091     NEXT,   GOTO-PAGE(7),       !BUT TABLE IS ON PAGE 7
14092     J/BUTD-IS-ZERO              !GO TEST D IS ALL ZERO
(6432) DCS(0.00.0.0.0.0) BM(0110..00.11..01.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

```

14093
14094
14095
14096
14097 ! - - - - -
14098

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14099 !*** TEST 5360 ***
14100 !READ D THRU "D(C)BMUX<15:01>" PORT OF CMUX, AMUX-BMUX/DIRECT
14101 !IN(0)(146314), OUT(063146)
14102 6641:
14103 TEST5360:
14104     PO,      LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
14105     LOAD-ERROR(TEST5360),         !ERROR DIRECTORY KEY
14106     DCS-CTR(C7.),                 !COMPARE AT TARGET
14107     NEXT,    J/INIT5360
(6641) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.011.011)

```

```

14108
14109 6433: !(FREE)
14110 INIT5360:
14111     P3,      CSPD(15)+EMIT,        !GET INITIAL PATTERN FOR D
14112     EMIT/146314,                   ! "1100 1100 1100 1100"
14113     NEXT,    J/EXPEC5360
(6433) DCS(0.00.0.0.0.0) BM(1100..10.11..00.11..001..100...0.0.0..0..0...0.0010...1..0000.0...11.000...100.011.100)

```

```

14114
14115 6434: !(FREE)
14116 EXPEC5360:
14117     P3,      CSPD(14)+EMIT,        !GET EXPECTED PATTERN AFTER SHIFT
14118     EMIT/063146,                   ! "0110 0110 0110 0110"
14119     NEXT,    J/INITD5360
(6434) DCS(0.00.0.0.0.0) BM(0110..10.01..10.01..100..110...0.0.0..0..0...0.0011...1..0000.0...11.000...100.011.101)

```

```

14120
14121 6435: !(FREE)
14122 INITD5360:
14123     PO,      BUMP-VERIFY,          !COUNT
14124     P2-T,    D+CSPD(D15),         !INITIAL D=(146314)
14125     D(C)+0,   !SETUP D(C) FOR SHIFT = "0"
14126     NEXT,    J/COMPS360
(6435) DCS(0.00.0.0.0.1) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0010...0..0000.0...11.000...100.011.110)
14127

```

```

14128 6436: !(FREE)
14129 COMPS360:
14130     SETUP, D-RIGHT-1,           !AMUX-BMUX/DIRECT, CMUX/RIGHT-1
14131     P2-T,  D+D-SHIFTED-XOR-CSPB(B14), !COMPARE D-SHIFTED:EXPECTED, BITWISE
14132     NEXT,  J/GOBUT5360          !EXPECTED=(063146)
(6436) DCS(0.00.0.0.0.0) BM(0110..11.11..01.10..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...100.011.1111)

14133 6437: !(FREE)
14134 GOBUT5360:
14135     SETUP, RETURN/SCOPE5360,    !RETURN TO SCOPE LOOP TEST WORD
14136     P2-T,  GOTO-PAGE(7)        !BUT TABLE IS ON PAGE 7
14137     NEXT,  J/BUTD-IS-ZERO      !GO TEST D IS ALL ZERO
14138 (6437) DCS(0.00.0.0.0.0) BM(0110..00.10..01.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.0011)

14139 6440: !(FREE)
14140 SCOPE5360:
14141     NEXT,  BUTD(SCOPE),         !NO ERROR: "TEST536E" (+1.WORDS)
14142     NEXT,  J/TEST536E         !ERROR: "INIT536C" (-11.WORDS)
14143 (6440) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.101.0111)

14144
14145
14146
14147
14148 ! - - - - -
14149
14150 !*** TEST 536E ***
14151 !READ D THRU BMUX<14:00> SENDMUX(=SR15) PORT OF CMUX, AMUX-BMUX/DIRECT
14152 !IN(0)(146314), OUT(114631), SR=(100000)
14153 6653:
14154 TEST536E:
14155     P0,    LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
14156     P2-T,  LOAD-ERROR(TEST536E), !ERROR DIRECTORY KEY
14157     P3,    DCS-CTR(C6.)          !COMPARE AT TARGET
14158     NEXT,  BUTA(CLR-FLAG-RES-UCON), !SELECT SR-LOAD, SENDMUX PORTS 0123, BUSDIN+EMIT
14159 (6653) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.010...110.101.0001)

14160 6650:
14161 LOADSRS36E:
14162     P0,    BUMP-VERIFY,         !COUNT
14163     P2-T,  SR+BSPHI(C100000),  ! (100000) IN SR<15:00>
14164     NEXT,  J/INITD536E
14165 (6650) DCS(0.00.0.0.0.1) BM(1010..01.11..00.00..001..000...0.0.1..0..0...0.0000...0..0000.0...11.000...100.100.0011)

14166 6441: !(FREE)
14167 INITD536E:
14168     P0,    BUMP-VERIFY,         !COUNT
14169     P2-T,  D+CSPD(D15),        !INITIAL D=(146314)
14170     NEXT,  D(C)+0,             !SETUP D(C) FOR SHIFT = "0"
14171     NEXT,  J/COMPS360
14172 (6441) DCS(0.00.0.0.0.1) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0010...0..0000.0...11.000...100.100.0101)

14173 6442: !(FREE)
14174

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```

14175 COMPS36E:
14176     SETUP, D-LEFT-1,          !AMUX-BMUX/DIRECT, CMUX/LEFT-1
14177     P2-T,   D+D-SHIFTED-XOR-CSPB(816), !BIT<00> = SR<15> = SENDMUX PORT 0 = (1)
14178     NEXT,   J/GOBUT536E        !COMPARE D-SHIFTED:EXPECTED, BITWISE
14179     (6442) DCS(0.00.0.0.0.0) BM(0110..11.01..01.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...100.100.011)
14180
14181     6443: !(FREE)
14182     GOBUT536E:
14183     SETUP, RETURN/TEST536F,    !RETURN TO START OF NEXT SUBTEST
14184     NEXT,   GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
14185     (6443) DCS(0.00.0.0.0.0) BM(0110..00.11..01.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)
14186
14187
14188
14189
14190 ! - - - - -
14191
14192 !*** TEST 536F ***
14193 !READ D THRU BMUX<14:00>#SENDMUX(=SR15) PORT OF CMUX, AMUX-BMUX/DIRECT
14194 !IN(0)(031463), (063146), SR=(077777)
14195 6642:
14196 TEST536F:
14197     PO,      LOAD-ENVA(ZTARGET402), !SETUP FOR D=ZERO TEST
14198     P2-T,    LOAD-ERROR(TEST536F), !ERROR DIRECTORY KEY
14199     NEXT,    DCS-CTR(C6.),         !COMPARE AT TARGET
14200     (6642) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.100.100)
14201
14202     6444: !(FREE)
14203     LOADSRS36F:
14204     PO,      BUMP-VERIFY,         !COUNT
14205     P2-T,    SR+NOT-ASPH(C100000), ! (07777) IN SR <15:00>
14206     NEXT,    J/INITD536F
14207     (6444) DCS(0.00.0.0.0.1) BM(0000..00.00..11.01..001..000...0.0.1..0..0...0.0000...0..0000.0...11.000...100.100.101)
14208
14209     6445: !(FREE)
14210     INITD536F:
14211     P2-T,    D+CSPD(D17),        !INITIAL D=(031463)
14212     NEXT,    D(C)+0,             !SETUP D(C) FOR SHIFT = "0"
14213     (6445) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00)..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...100.100.110)
14214
14215     6446: !(FREE)
14216     COMPS36E:
14217     SETUP, D-LEFT-1,          !AMUX-BMUX/DIRECT, CMUX/LEFT-1
14218     P2-T,   D+D-SHIFTED-XOR-CSPB(814), !BIT<00> = SR<15> = SENDMUX PORT 0 = (0)
14219     NEXT,   J/GOBUT536E        !COMPARE D-SHIFTED:EXPECTED, BITWISE
14220     (6446) DCS(0.00.0.0.0.0) BM(0110..11.11..01.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...100.100.111)
14221
14222     6447: !(FREE)

```

```

14222 GOBUT536F:
14223     SETUP, RETURN/SCOPE536F, !RETURN TO SCOPE LOOP TEST WORD
14224     NEXT,  GOTO-PAGE(7),      !BUT TABLE IS ON PAGE 7
14225     J/BUTD-IS-ZERO           !GO TEST D IS ALL ZERO
(6447) DCS(0.00.0.0.0.0) BM(0110..00.10..01.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

14226
14227 6450: !(FREE)
14228 SCOPE536F:
14229     P0, BUMP-VERIFY, !COUNT
14230     P3, CSPD(02)+EMIT, !RES-CON #1: (FOR USE BELOW)
14231     EMITC, SENDMUX-0123-SEL, !SELECT SENDMUX PORTS 0-3
14232     SR-LEFT, GUARD-DIS, !SR GOES LEFT, SR(00)+0(C)
14233     NEXT, BUTD(SCOPE), !NO ERROR: "SETEMIT537A" (+1.WORDS)
14234     J/SETEMIT537A, !ERROR: "LOADSR536E" (-9.WORDS)
(6450) DCS(0.00.0.1.0.1) BM(0101..10.00..00.00..000..000...0.0.0..0..0...0.1101...1..0000.0...11.000...110.101.001)

14235
14236
14237
14238
14239 ! - - - - -
14240
14241 !*** TEST 537A ***
14242 !THIS TEST VALIDATES THE "SENDMUX" INPUTS TO THE SHIFT-TREE.
14243 !EACH 'SENDMUX' OUTPUT IS SET TO 1/0 VALUES, AND THEN READ OUT INTO THE 'SR' WHERE THEY
14244 !ARE ALL SAVED TO CHECK AT ONCE.
14245 6651:
14246 SETEMIT537A:
14247     P0, DCS-CTR(C15.), !HOLD UP FOR NOW
14248     NEXT, GOTO-PAGE(4), !XFER
14249     J/LOAD16537A
(6651) DCS(0.00.1.0.0.0) BM(0000..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.100...101.111.100)

14250
14251 4574:
14252 LOAD16537A:
14253     P3, CSPD(16)+EMIT, !BIT03 ONLY SET
14254     EMIT/000010, !
14255     BUTA(CLR-FLAG-RES-UCON), !BUSDIN <- EMIT, SR LOAD
14256     NEXT, J/LOAD14537A
(4574) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..001..000...0.0.0..0..0...0.0001...1..0000.0...11.010...010.111.110)

14257
14258 4276: !(FREE)
14259 LOAD14537A:
14260
14261     P3, CSPD(14)+EMIT, !BIT11 ONLY SET
14262     EMIT/004000, !
14263     NEXT, J/LOAD03537A
(4276) DCS(0.00.0.0.0.0) BM(0000..10.10..00.00..000..000...0.0.0..0..0...0.0011...1..0000.0...11.000...010.111.111)

14264
14265 4277: !(FREE)
14266 LOAD03537A:
14267     P3, CSPD(03)+EMIT, !WHAT THE 'SR' SHOULD BE
14268     EMIT/177252, !AFTER THIS TEST

```

```

14269      NEXT, J/LOAD01537A
(4277) DCS(0.00.0.0.0.0) BM(1111..10.11..10.10..101..010...0.0.0..0..0...0.1100...1..0000.0...11.000...011.000.000)

14270
14271      4300: !(FREE)
14272      LOAD01537A:
14273          P3, CSPD(01)+EMIT,
14274          EMITC, SENDMUX-4567-SEL,
14275          SR-LEFT GUARD-DIS,
14276          NEXT, GOTO-PAGE(7),
14277          J/INITSRS37A
(4300) DCS(0.00.0.0.0.0) BM(0001..10.00..00.00..000..111...0.0.0..0..0...0.1110...1..0000.0...11.100...001.011.001)

14278
14279      7131: !(FREE)
14280      INITSRS37A:
14281          P2-T, SR+ALL-ONES,
14282          NEXT, J/SETRESAS37A
(7131) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..101..000...0.0.1..0..0...0.0000...0..0000.0...11.000...001.011.101)

14283
14284      7135: !(FREE)
14285      SETRESAS37A:
14286          P2, RES+CSPD(002),
14287          NEXT, GOTO-PAGE(6),
14288          J/NEWCTRS37A
(7135) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..110...0.0.0..0..0...0.1101...0..1000.1...11.100...110.100.011)

14289
14290      6643:
14291      NEWCTRS37A:
14292          PO, LOAD-ENUA(SETRESBS37A),
14293          LOAD-ERROR(NEWCTRS37A),
14294          DCS-CTR(C14.),
14295          NEXT, J/AR3-537A
(6643) DCS(1.00.1.0.0.0) BM(0001..00.11..10.11..111..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.101.001)

14296
14297      6451: !(FREE)
14298      AR3-537A:
14299          PO, BUMP-VERIFY,
14300          P2-T, D+NOT-CSPD(016),
14301          NEXT, GOTO-PAGE(7),
14302          J/BR3-537A
(6451) DCS(0.00.0.0.0.1) BM(0111..10.00..11.01..101..111...0.1.0..0..0...0.0001...0..0000.0...11.100...001.011.100)

14303
14304      7134: !(FREE)
14305      BR3-537A:
14306          P2-T, D+D-RIGHT-3,
14307          D(C)+ALU00,
14308          NEXT, J/CR3-537A
(7134) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.1000...0..0000.0...11.000...001.011.111)

14309
14310      7137: !(FREE)
14311      CR3-537A:
14312          P2-T, SR+SR-LEFT-1,
!SENDMUX OUTPUT INTO SR<00>

```

```

!RES-CON #2:
!SELECT SENDMUX PORTS 4-7
!SR GOES LEFT, SR<00>+D(C)
!XFER

```

```

!START 'SR' WITH ALL ONES

```

```

!LOAD RES W/ RES-CON#1 (SENDMUX-0123)
!XFER

```

```

!COMPARE POINT #2
!ERROR DIRECTORY KEY
!COMPARE BELOW

```

```

!COUNT
!D=(177767), BIT03="0"
!XFER

```

```

!USE SENDMUX PORT 1 = AMUX03 = "0"
!INTO D(C) FOR SR

```

```

14313          D←CSPB(B16), SAVE-D(C),          !D=(000010), BIT03="1"
14314          NEXT J/DR3-537A
(7137) DCS(0.00.0.0.0.0) BM(1010..11.01..00.00..000..111...0.1.1..0..0...0.0000...0..0000.0...11.000...001.100.000)

14315          7140: !(FREE)
14316          DR3-537A:
14317          P2-T, D←D-RIGHT-3,                !USE SENDMUX PORT 1 = AMUX03 = "1"
14318          D(C)←ALU00,                        !INTO D(C) FOR SR
14319          NEXT J/AR7-537A
14320 (7140) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.1000...0..0000.0...11.000...001.100.001)

14321          7141: !(FREE)
14322          AR7-537A:
14323          P2-T, SR←SR-LEFT-1,                !SENDMUX OUTPUT INTO SR<00>
14324          D←NOT-ASPHI(C000200), SAVE-D(C),   !D=(177577), BIT07="0"
14325          NEXT J/BR7-537A
14326 (7141) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..010..111...0.1.1..0..0...0.0000...0..0000.0...11.000...001.100.010)

14327          7142: !(FREE)
14328          BR7-537A:
14329          P2-T, D←D-RIGHT-7,                !USE SENDMUX PORT 2 = D07 = "0"
14330          D(C)←ALU00,                        !INTO D(C) FOR SR
14331          NEXT J/CR7-537A
14332 (7142) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.0110...0..0000.0...11.000...001.100.011)

14333          7143: !(FREE)
14334          CR7-537A:
14335          P2-T, SR←SR-LEFT-1,                !SENDMUX OUTPUT INTO SR<00>
14336          D←ASPHI(C000200), SAVE-D(C),       !D=(000200), BIT07="1"
14337          NEXT J/DR7-537A
14338 (7143) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..010..111...0.1.1..0..0...0.0000...0..0000.0...11.000...001.100.100)

14339          7144: !(FREE)
14340          DR7-537A:
14341          P2-T, D←D-RIGHT-7,                !USE SENDMUX PORT 2 = D07 = "1"
14342          D(C)←ALU00,                        !INTO D(C) FOR SR
14343          NEXT J/AR11-537A
14344 (7144) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.0110...0..0000.0...11.000...001.100.101)

14345          7145: !(FREE)
14346          AR11-537A:
14347          P2-T, SR←SR-LEFT-1,                !SENDMUX OUTPUT INTO SR<00>
14348          D←NOT-CSPB(B14), SAVE-D(C),        !D=(173777), BIT11="0"
14349          NEXT J/BR11-537A
14350 (7145) DCS(0.00.0.0.0.0) BM(0111..11.11..11.01..101..111...0.1.1..0..0...0.0000...0..0000.0...11.000...001.100.110)

14351          7146: !(FREE)
14352          BR11-537A:
14353          P2-T, D←D-RIGHT-11,                !USE SENDMUX PORT 3 = AMUX03 = "0"
14354          D(C)←ALU00,                        !INTO D(C) FOR SR
14355          NEXT J/CR11-537A
14356 (7146) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.1110...0..0000.0...11.000...001.100.111)

14357          7147: !(FREE)
14358

```

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14359 CR11-537A:
14360 P2-T, SR+SR-LEFT-1, !SENDMUX OUTPUT INTO SR<00>
14361 D+CSPB(B14), SAVE-D(C), !D=(004000), BIT11="1"
14362 NEXT, J/DR11-537A
(7147) DCS(0.00.0.0.0.0) BM(1010..11.11..00.00..000..111...0.1.1..0..0...0.0000...0..0000.0...11.000...001.101.000)

14363 7150: !(FREE)
14364 DR11-537A:
14365 P2-T, D+D-RIGHT-11, !USE SENDMUX PORT 3 = AMUX03 = "1"
14366 D(C)+ALU00, !INTO D(C) FOR SR
14367 NEXT, J/ER3-537A
14368 (7150) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.1110...0..0000.0...11.000...001.101.001)

14369 7151: !(FREE)
14370 ER3-537A:
14371 P2-T, SR+SR-LEFT-1, !SENDMUX OUTPUT INTO SR<00>
14372 D+NOT-CSPB(B16), SAVE-D(C), !D=(177767), BIT03="0"
14373 NEXT, J/SETRES8537A
14374 (7151) DCS(0.00.0.0.0.0) BM(0111..11.01..11.01..101..111...0.1.1..0..0...0.0000...0..0000.0...11.000...011.111.000)

14375 7370:
14376 SETRES8537A:
14377 P2 RES+CSPD(001), !LOAD RES W/RES-CON#2 (SENDMUX-4567)
14378 NEXT, J/FR3-537A
14379 (7370) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.1110...0..1000.1...11.000...001.101.010)

14380 7152: !(FREE)
14381 FR3-537A:
14382 P2-T, D+D-RIGHT-3, !USE SENDMUX PORT 5 = AMUX03 = "0"
14383 D(C)+ALU00, !INTO D(C) FOR SR
14384 NEXT, J/GR3-537A
14385 (7152) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.1000...0..0000.0...11.000...001.101.011)

14386 7153: !(FREE)
14387 GR3-537A:
14388 P2-T, SR+SR-LEFT-1, !SENDMUX OUTPUT INTO SR<00>
14389 D+CSPB(B16), SAVE-D(C), !D=(000010), BIT03="1"
14390 NEXT, J/HR3-537A
14391 (7153) DCS(0.00.0.0.0.0) BM(1010..11.01..00.00..000..111...0.1.1..0..0...0.0000...0..0000.0...11.000...001.101.100)

14392 7154: !(FREE)
14393 HR3-537A:
14394 P2-T, D+D-RIGHT-3, !USE SENDMUX PORT 5 = AMUX03 = "1"
14395 D(C)+ALU00, !INTO D(C) FOR SR
14396 NEXT, J/AL1-537A
14397 (7154) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.1000...0..0000.0...11.000...001.101.101)

14398 7155: !(FREE)
14399 AL1-537A:
14400 P2-T, SR+SR-LEFT-1, !SENDMUX OUTPUT INTO SR<00>
14401 D+ALL-ONES, !D=(177777)
14402 NEXT, GOTO-PAGE(4), !XFER
14403 J/BL1-537A
14404

```



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(7155) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..101..100...0.1.1..0..0...0.0000...0..0000.0...11.100...010.100.010)
14405
14406 4242: !(FREE)
14407 BL1-537A:
14408 P2-T, D+D-LEFT-1, !USE SENDMUX PORT 4 = HARD "0"
14409 D(C)+ALU00, !INTO D(C) FOR SR
14410 NEXT, J/TEST537A
(4242) DCS(0.00.0.0.0.0) BM(1111..00.00..01.00..000..010...0.1.0..0..0...0.0000...0..0000.0...11.000...101.111.010)
14411
14412 4572:
14413 TEST537A:
14414 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D-IS-ZERO COMPARE
14415 LOAD-ERROR(TEST537A), !ERROR DIRECTORY KEY
14416 DCS-CTR(C4.), !COMPARE AT TARGET
14417 BUMP-VERIFY, !COUNT
14418 P2-T, SR+SR-LEFT-1, !SENDMUX OUTPUT INTO SR<00>
14419 NEXT, J/COMPS37A
(4572) DCS(1.00.1.0.0.1) BM(1011..00.11..11.00..000..010...0.0.1..0..0...0.0000...0..0000.0...11.000...011.000.010)
14420
14421 4302: !(FREE)
14422 COMPS37A:
14423 P2-T, D+SR-XOR-CSPD(D03), !COMPARE RECEIVED:EXPECTED BITWISE
14424 P3, BUTA(CLR-FLAG-RES-UCON), !RESET SR TO LOAD/GUARD-DIS
14425 NEXT, J/GOBUT537A
(4302) DCS(0.00.0.0.0.0) BM(0110..10.00..00.00..000..000...0.1.0..0..0...0.1100...0..0000.0...11.010...011.000.011)
14426
14427 4303: !(FREE)
14428 GOBUT537A:
14429 SETUP, RETURN/SCOPE537A, !RETURN TO SCOPE LOOP TEST WORD
14430 NEXT, GOTO-PAGE(7) !BUT TABLE IS ON PAGE 7
14431 J/BUTD-IS-ZERO !GO TEST D IS ALL ZERO
(4303) DCS(0.00.0.0.0.0) BM(0100..00.01..10.00..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)
14432
14433 4304: !(FREE)
14434 SCOPE537A:
14435 PO, BUMP-VERIFY, !COUNT
14436 BUSDIN+EMIT-(!), !RESET PROC UCON
14437 EN-CLK-IR(15-00),
14438 NEXT, BUTD(SCOPE), !NO ERROR: "TEST551A" (+1.WORD)
14439 J/TEST551A !ERROR: "LOAD16537A" (-30.WORDS)
(4304) DCS(0.00.0.1.0.1) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.111.101)
14440
14441
14442
14443
14444 !.PAGE=====
14445
14446
14447
14448 .TOC * TEST551: BASE MACHINE DATAPATH COUNTER CAN COUNT
14449
14450
14451 !*****

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14452 :
14453 : TESTS: 551 A - C                                UWORDS: 015 + 035
14454 :
14455 : FUNCTIONS:
14456 :
14457 : THE FOLLOWING THREE TESTS USE A COMMON SUBROUTINE TO TEST THE COUNTING
14458 : ABILITY OF THE BASE MACHINE DATAPATH COUNTER; USING THE THREE ACTIVE
14459 : BUTS THAT ENABLE COUNTING. ADMITTEDLY THIS SEEMS LIKE OVERKILL, BUT
14460 : THIS METHOD WAS THE LEAST EXPENSIVE IN TERMS OF NUMBER OF MICROWORDS
14461 : USED FOR THE TESTING.
14462 :
14463 :*****
14464 :
14465 :
14466 :
14467 :!THE FIRST TEST USES THE ACTIVE BUT(#13) "SR<1:0>#COUNT-IS-377" TO CHECK THE COUNTER
14468 :4575:
14469 :TEST551A:
14470 :    PO,      LOAD-ERROR(TEST551A),                !ERROR DIRECTORY KEY
14471 :             DCS-CTR(C15.),                       !HOLD UP FOR NOW
14472 :             BUMP-VERIFY                          !BUMP DCS COUNTER
14473 :    NEXT,    J/LOADINS51A
14474 : (4575) DCS(1.00.1.0.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.000.101)
14475 :
14476 :4305: !(FREE)
14477 :LOADINS51A:
14478 :    P3,      CSPD(17)+EMIT, EMIT/400,              !INCREMENT FOR D, TO MATCH COUNTER
14479 :    NEXT,    J/SETSR551A
14480 : (4305) DCS(0.00.0.0.0.0) BM(0000..10.00..01.00..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...011.000.110)
14481 :
14482 :4306: !(FREE)
14483 :SETSR551A:
14484 :    PO,      BUMP-VERIFY,                          !COUNT
14485 :    P2-T,    SR+ZERO                               !KEY IN SR<1:0>=(00) FOR SELECT THIS BUT
14486 :    NEXT,    J/GOTEST551A
14487 : (4306) DCS(0.00.0.0.0.1) BM(0011..00.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...101.110.100)
14488 :
14489 :4564:
14490 :GOTEST551A:
14491 :    SETUP,   RETURN/TEST551B,                      !GO TO TEST SUBROUTINE
14492 :    NEXT,    CALL(COUNT-TEST)                      ! (SEE DESCRIP, FOLLOWING)
14493 : (4564) DCS(0.00.0.0.0.0) BM(0100. 00.10..11.11..110..100...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)
14494 :
14495 :
14496 :!THE SECOND TEST USES THE ACTIVE BUT(#25) "COUNT-IS-377" TO CHECK THE COUNTER
14497 :4576:
14498 :TEST551B:
14499 :    PO,      LOAD-ENUA(ZTARGET400),                !BIT<1:0> CLEAR
14500 :             LOAD-ERROR(TEST551B),                !ERROR DIRECTORY KEY
14501 :             DCS-CTR(C4.),                        !COMPARE AT TARGET

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14502 NEXT, BUTD(SCOPE), !NO ERROR: "SETSR551B" (+1. WORDS)
 14503 J/SETSR551B ! ERROR: "GOTEST551A" (-1. WORDS) REPEAT PREV TEST
 (4576) DCS(1.00.1.1.0.0) BM(1011..00.11..11.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.101)

14504 4565:
 14505 SETSR551B:
 14506 P2-T, SR+SR-PLUS-1, !KEY IN SR<1:0>=(01) FOR SELECT THIS BUT
 14507 NEXT, J/GOTEST551B
 14508 (4565) DCS(0.00.0.0.0.0) BM(1001..01.11..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.000...101.110.000)

14509 4560:
 14510 GOTEST551B:
 14511 SETUP, RETURN/GOTEST551B1, !RETURN TO START OF NEXT SUBTEST
 14512 NEXT, GOTO-PAGE(7) !BUT TABLE
 14513 J/BUTCOUNT-IS-377 !FAKE A TEST
 14514 (4560) DCS(0.00.0.0.0.0) BM(0111..00.00..11.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.01..101)

14515 7136: !(FREE)
 14516 BUTCOUNT-IS-377:
 14517 NEXT, BUT(COUNT-IS-377), !SHOULD TARGET INTO *** ** *00
 14518 J/ZTARGET400 !BIT<1:0> BOTH CLEAR
 14519 (7136) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.101...100.000.000)

14520 ! - - - - -
 14521
 14522
 14523
 14524

14525 ! AND NOW TEST THAT THE ACTUAL BUT/COUNTER WORKS
 14526
 14527 7157: !(FREE)
 14528 GOTEST551B1:
 14529 SETUP, RETURN/TEST551C, !GO TO TEST SUBROUTINE
 14530 NEXT, CALL(COUNT-TEST) ! (SEE DESCRIP, FOLLOWING)
 (7157) DCS(0.00.0.0.0.0) BM(0100..00.10..11.10..110..100...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

14531 ! - - - - -
 14532
 14533
 14534
 14535
 14536

14537 !THE THIRD TEST USES THE ACTIVE BUT(#17) "COUNT-IS-377#D(C)" TO CHECK THE COUNTER
 14538 4566:
 14539 TEST551C:
 14540 PD, LOAD-ERROR(TEST551C), !ERROR DIRECTORY KEY
 14541 DCS-CTR(C15.), !HOLD UP FOR NOW
 14542 NEXT, BUTD(SCOPE), !NO ERROR: "SETSR551C" (+1. WORDS)
 14543 J/SETSR551C ! ERROR: "GOTEST551B" (-3. WORDS) REPEAT PREV TEST
 (4566) DCS(1.00.1.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.001)

14544 4561:
 14545 SETSR551C:
 14546 P2-T, SR+SR-PLUS-1, !KEY IN SR<1:0>=(10) FOR SELECT THIS BUT
 14547

```

14548 NEXT, GOTO-PAGE(5), ;XFER
14549 J/GOTEST551C
(4561) DCS(0.00.0.0.0.0) BM(1001..01.11..00.00..000..101...0.0.1..0..0...0.0000...0..0000.0...11.100...110.010.110)

```

```

14550
14551 5626:
14552 GOTEST551C:
14553 SETUP, RETURN/SCOPE551 ;GO TO TEST SUBROUTINE
14554 NEXT, CALL(COUNT-TEST) ; (SEE DESCIP, FOLLOWING)
(5626) DCS(0.00.0.0.0.0) BM(0101..00.01..10.00..101..100...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

```

```

14555
14556
14557
14558 5305: !(FREE)
14559 SCOPE551:
14560 P0, BUSDIN+EMIT-[I], ;RESET PROC UCON
14561 EN-CLK-IR[15-00],
14562 NEXT, BUTD(SCOPE), ;NO ERROR: "TEST610A1" (NEXT SECTION)
14563 J/TEST610A1 ; ERROR: "GOTEST551C" (-1. WORDS) REPEAT PREV TEST
(5305) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...110.010.111)

```

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14564
14565
14566
14567 !-----

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14568
14569 !*** B.M. COUNTER TESTING ROUTINE ***
14570
14571 ! THIS ROUTINE USES THE B.M. COUNTER TO COUNT FROM 000-377, WAITING FOR IT
14572 ! TO OVERFLOW AT THE RIGHT MOMENT. AT THE SAME TIME THE D REGISTER HAS BEEN
14573 ! TRACKING THE PROGRESS OF THE COUNTER, WAITING FOR IT TO OVERFLOW, COMPARING
14574 ! COUNT FOR COUNT THE INCREMENTED VALUES, AND GUARANTEEING WE WILL EXIT THE
14575 ! LOOP IF THE COUNTER SOMEHOW NEVER OVERFLOWS.
14576
14577

```

```

14578 4301: !(FREE)
14579 COUNTER01:
14580 P2, COUNTER+BSPHI(C000000), ;LOAD COUNTER WITH (000) TO START
14581 NEXT, J/COUNTER02
(4301) DCS(0.00.0.0.0.0) BM(0000..01.11..00.00..100..000...0.0.0..0..0...0.0000...0..0010.1...11.000...011.001.000)

```

```

14582
14583 4310: !(FREE)
14584 COUNTER02:
14585 P2-T, D+ZERO, D(C)+ALU15, ;ZERO D, D(C)
14586 P3, A#BSPHI[17]+D, ;ASPHI[17] WILL TRACK THE COUNTER
14587 NEXT, J/COUNTER03
(4310) DCS(0.00.0.0.0.0) BM(0011..00.11..00.01..011..100...0.1.0..0..0...0.0000...0..1011.0...11.000...101.010.110)

```

```

14588
14589 !*** THE LOOP FOR THE COUNTER TEST ENTERS HERE ***
14590
14591 4526:
14592 COUNTER03:
14593 P2-T, D+A-XOR-B, SAVE-D(C), ;COMPARE COUNTER:TRACKER
14594 BUS-A, COUNT#D(L0), ;=(COUNTER)#(000)

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14595          BUS-B+BSPI(R17),          !=(TRACKER)#(000)
14596      NEXT,  BUTR(D(C)-B),          !D(C) HOLDS THE CARRYOUT FROM THE TRACKING REGISTER
14597          J/COUNTER04              !IF (0), GOTO(COUNTER04), CONTINUE TESTING
14598 (4526) DCS(0.00.0.0.0.0) BM(0110..01.11..01.01..011..111...0.1.0..0..0...0.0011...0..0000.0...10.011...101.100.101)
!IF (1), GOTO(COUNTER11), ERROR, D OVERFLOW BEFORE COUNTER

14599
14600
14601      !ENTER HERE FOR CONTINUE TEST
14602      4545:
14603      COUNTER04:
14604          P0,  DCS-CTR(CS,)          !HOLD UP ON DCS COMPARE
14605      NEXT,  BUTR(D14-00-E0-0),      !COMPARE COUNTER: TRACKER, GENERATED ABOVE
14606          J/COUNTER12              !IF EQUAL, GOTO(COUNTER05), CONTINUE TEST
14607 (4545) DCS(0.00.1.0.0.0) BM(1010..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.101...101.101.101)
!IF NOT EQUAL, GOTO(COUNTER12), COUNTER#TRACKER ERROR

14608
14609
14610      !ENTER HERE FOR CONTINUE TEST
14611      4557:
14612      COUNTER05:
14613          P2-T,  D+ZERO, D(C)+ALU15,  !TRY TO FORCE EXIT
14614      NEXT,  BUTR(CASE),          !DETERMINE WHO TO TEST:
14615          J/COUNTER06              !SR=0 -> COUNTER06
14616          J/COUNTER06              !SR=1 -> COUNTER07
14617 (4557) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..100...0.1.0..0..0...0.0000...0..0000.0...00.000...101.011.100)
!SR=2 -> COUNTER08 (SR=3 NOT USED)

14618
14619      !ENTER HERE FOR SR=0
14620      4534:
14621      COUNTER06:
14622          P2-T,  D+A-PLUS-B, D(C)+COUT15,  !INCREMENT TRACKING REGISTER
14623          BUS-A+ASPI(R17),
14624          BUS-B+CSPD(D17),          !CONSTANT (400)
14625          P3,  A#BSPI(17)+D,        !SAVE NEW
14626      NEXT,  BUTA(SR1-0#COUNT-15-377),  !IF SET, GOTO(COUNTER10), B.M. COUNTER OVERFLOWED
14627          J/COUNTER03              !IF CLEAR, GOTO(COUNTER03), NEXT PASS THRU TEST
(4534) DCS(0.00.0.0.0.0) BM(1001..10.11..11.01..011..110...0.1.0..0..0...0.0000...0..1011.0...01.011...101.010.110)

14628
14629      !ENTER HERE FOR SR=1
14630      4535:
14631      COUNTER07:
14632          P2-T,  D+A-PLUS-B, D(C)+COUT15,  !INCREMENT TRACKING REGISTER
14633          BUS-A+ASPI(R17),
14634          BUS-B+CSPD(D17),          !CONSTANT (400)
14635          P3,  A#BSPI(17)+D,        !SAVE NEW
14636      NEXT,  BUTA(COUNT-15-377),      !IF SET, GOTO(COUNTER10), B.M. COUNTER OVERFLOWED
14637          J/COUNTER03              !IF CLEAR, GOTO(COUNTER03), NEXT PASS THRU TEST
(4535) DCS(0.00.0.0.0.0) BM(1001..10.11..11.01..011..110...0.1.0..0..0...0.0000...0..1011.0...10.101...101.010.110)

14638
14639      !ENTER HERE FOR SR=2
14640      4536:
14641      COUNTER08:
14642          P2-T,  D+A-PLUS-B, D(C)+COUT15,  !INCREMENT TRACKING REGISTER
14643          BUS-A+ASPI(R17),

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14644          BUS-B+CSPD(D17),          !CONSTANT (400)
14645          P3,          A#BSPHI(17)+D, !SAVE NEW
14646          NEXT,        BUTA(COUNT-IS-377#D(C)), !IF SET, GOTO(COUNTER10), B.M. COUNTER OVERFLOWED
14647          J/COUNTER09          !IF CLEAR, GOTO(COUNTER09), NEXT PASS THRU TEST
(4536) DCS(0.00.0.0.0.0) BM(1001..10.11..11.01..011..110...0.1.0..0..0...0.0000...0..1011.0...01.111...101.010.101)

14648
14649          !INTERMEDIATE WORD FOR NEXT PASS
14650          4525:
14651          COUNTER09:
14652          NEXT,          J/COUNTER03          !NEXT PASS
14653          (4525) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.010.110)

14654
14655
14656
14657          ! - - - - -
14658
14659          !ENTER THIS SECTION WHEN HIT AN END CONDITION:
14660
14661          !ENTER HERE WHEN COUNTER SIGNALS IT HAS OVERFLOWN:
14662          4527:
14663          COUNTER10:
14664          PD,          DCS-CTR(C15.),          !HOLD UP
14665          NEXT,        BUTR(D(C)-B),          !NOW TEST THAT D HAS ALSO OVERFLOWED, AT THE SAME TIME
14666          J/COUNTER10B          !IF TRUE, GOTO(COUNTER10A), ALL IS OK, END THE TEST
14667          (4527) DCS(0.00.1.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.011...101.011.001)
!IF FALSE, GOTO(COUNTER10B), ERROR, COUNTER OVERFLOWED TOO SOON

14668
14669          4533:
14670          COUNTER10A:
14671          PD,          DCS-CTR(C15.),          !ALL, END THE TEST WITH NO ERRORS
14672          NEXT,        BUTA(RETURN),          !
14673          J/BUTERROR4          !
(4533) DCS(0.00.1.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)

14674
14675          4531:
14676          COUNTER10B:
14677          PD,          DCS-CTR(C0.),          !FORCE ERROR NOW,
14678          NEXT,        BUTA(RETURN),          ! B.M. COUNTER OVERFLOWED TOO SOON
14679          J/BUTERROR4          !
(4531) DCS(0.00.1.0.0.0) BM(1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)

14680
14681          !ENTER HERE WHEN WE GET A "D OVERFLOWED BEFORE COUNTER" CONDITION
14682          4547:
14683          COUNTER11:
14684          PD,          DCS-CTR(C0.),          !FORCE ERROR NOW,
14685          NEXT,        BUTA(RETURN),          ! B.M. COUNTER DIDN'T OVERFLOW ON TIME
14686          J/BUTERROR4          !
(4547) DCS(0.00.1.0.0.0) BM(1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)

14687
14688          !ENTER HERE WHEN WE GET A "TRACKER : COUNTER" MISCOMPARE
14689          4555:
14690          COUNTER12:
14691          PD,          DCS-CTR(C0.),          !FORCE ERROR NOW,

```

14692 NEXT, BUTA(RETURN), ; B.M. COUNTER DIDN'T INCREMENT IN STEP WITH TRACKER
 14693 J/BUTERROR4 ;
 (4555) DCS(0.00.1.0.0.0) BM(1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)

14694
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!.PAGE=====

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 14700
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.TOC * TEST610: CONDITION CODE LOGIC

14706
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*****
*
* TESTS: 610 A - D                                UWORDS: 074 + 070
*
* FUNCTIONS:
*
* THE FOLLOWING EIGHT TESTS EXERCISE THE PSW CC LOGIC (THE NZVC BITS)
* AND THE ASSOCIATED ROMS/MUXES ETC. TO VERIFY THE ABSCENCE OF STUCK
* ONE/ZERO CONDITIONS ON ALL LOGIC LINES.
*
*****

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SUMMARY OF CC-LOGIC TESTS:

TEST NUMB	ROM ADR	IR DATA	CC CLASS	BYTE-H	D(C)/D-REG	A-SIDE	B-SIDE	MODIFY VBIT-H	PREV NZVC	GENERATED NZVC
A1	665	105200	010	1	1-100000	177700	100100	1	1010	0101
A2	145	105200	010	1	0-100000	077600	000200	0	1001	0110
B1	132	105300	101	1	1-000200	100000	000200	0	0100	1011
B2	253	005300	101	0	0-000000	100200	000200	1	1001	0110
C1	437	072000	111	0	1-000000	000200	000200	0	1010	0111
C2	037	072000	111	0	1-077776	037777	037777	0	1100	0001
D1	216	072000	111	0	0-177400	077600	077600	1	0101	1000
D2	116	072000	111	0	0-100000	000200	100200	0	0101	1000

14736
 14737
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! - - - - -
*** TEST 610A1 ***
5627:
TEST610A1:

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14745      PO,      LOAD-ENVA(ZTARGET405),      !NZVC AFTER = "0101"
14746      LOAD-ERROR(TEST610A1),      !ERROR DIRECTORY KEY
14747      DCS-CTR(C15.),      !COMPARE AT TARGET
14748      BUMP-VERIFY,      !COUNT
14749      NEXT,      J/LOADIR610A1
(5627) DCS[1.00.1.0.0.1] BM[0000..00.11..11.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.010]

14750      5532:
14751      LOADIR610A1:
14752      PO,      BUMP-VERIFY,      !COUNT
14753      P2-U,      IR+EMIT, EMIT/105200,      !(105200)=INCB, CC-CLASS="010", BYTE-H
14754      NEXT,      J/LOAD01-610A1
14755      (5532) DCS[0.00.0.0.0.1] BM[1000..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.000.110]

14756      5306: !(FREE)
14757      LOAD01-610A1:
14758      PO,      BUMP-VERIFY,      !COUNT
14759      P3,      CSPD[01]+EMIT, EMIT/100012,      !FOR D[C]=(1), PS[NZVC]="1010" PREVIOUSLY
14760      NEXT,      J/LOAD05-610A1
14761      (5306) DCS[0.00.0.0.0.1] BM[1000..10.00..00.00..001..010...0.0.0..0..0...0.1110...1..0000.0...11.000...011.000.111]

14762      5307: !(FREE)
14763      LOAD05-610A1:
14764      P3,      CSPD[05]+EMIT, EMIT/177700,      !A-SIDE DATA
14765      NEXT,      J/LOAD06-610A1
14766      (5307) DCS[0.00.0.0.0.0] BM[1111..10.11..11.11..000..000...0.0.0..0..0...0.1010...1..0000.0...11.000...011.001.000]

14767      5310: !(FREE)
14768      LOAD06-610A1:
14769      P3,      CSPD[06]+EMIT, EMIT/100100,      !B-SIDE DATA
14770      NEXT,      J/PSCC-DC610A1
14771      (5310) DCS[0.00.0.0.0.0] BM[1000..10.00..00.01..000..000...0.0.0..0..0...0.1001...1..0000.0...11.000...011.001.001]

14772      5311: !(FREE)
14773      PSCC-DC610A1:
14774      SETUP,      RETURN/SETBUS610A1,      !EXEC SUBR WHICH:
14775      NEXT,      CALL[SETUPPSCC#DC]      !(1) CSP(10)<3:0> -> PS[NZVC]
14776      !!(2) CSP(10)<15> -> D[C]
14777      (5311) DCS[0.00.0.0.0.0] BM[0101..00.01..10.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110]

14778      5312: !(FREE)
14779      SETBUS610A1:
14780      P2-T,      SR+CSPD(D05),      !GET CONSTANT FOR A-SIDE WHEN CC SET
14781      NEXT,      J/DOIT610A1
14782      (5312) DCS[0.00.0.0.0.0] BM[1010..10.00..00.00..000..000...0.0.1..0..0...0.1010...0..0000.0...11.000...011.001.011]

14783      5313: !(FREE)
14784      DOIT610A1:
14785      SETUP,      SET-CC,      !FOR CLOCKING CC-S IN NEXT UWORD
14786      MODIFY-VBIT,      !EXTRA CC ROM INPUT
14787      P2-T,      D+A-PLUS-B, SAVE-D[C],      !D=(100000), D[C]=(1)
14788      BUS-A+SR,      !A=(177700)
14789      BUS-B+CSPD(D06),      !B=(100100)
14790

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14791      NEXT      J/GETIT610A1
(5313) DCS(0.00.0.0.0.0) BM(1001..10.00..00.10..000..111...0.1.0..0..1...0.1001...0..0000.0...11.000...011.001.100)
14792
14793      5314:  !(FREE)
14794      GETIT610A1:
14795      P2-T,      CLK-CC,
14796      SETUP,     RETURN/TEST610A2
14797      NEXT      CALL(PSCCTOSR3-0)
!PS(NZVC) GENERATED ABOVE LATCHED HERE
!EXEC SUBR WHICH:
!PS<3:0> -> SR<3:0>, J/BUT(SR3-0)
(5314) DCS(0.00.0.0.0.0) BM(0101..00.11..00.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)
14798
14799
14800
14801      ! - - - - -
14802
14803      !*** TEST 610A2 ***
14804
14805      5622:
14806      TEST610A2:
14807      PO,        LOAD-ENVA(ZTARGET406),
14808      LOAD-ERROR(TEST610A2),
14809      DCS-CTR(C13.),
14810      NEXT      J/LJAD06-610A2
!NZVC AFTER = "0110"
!ERROR DIRECTORY KEY
!COMPARE AT TARGET
(5622) DCS(1.00.1.0.0.0) BM(0010..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...011.001.101)
14811
14812      5315:  !(FREE)
14813      LOAD06-610A2:
14814      PO,        BUMP-VERIFY
14815      P3,        CSPD(06)+EMIT, EMIT/077600,
14816      NEXT      J/LOAD01-610A2
!COUNT
!A-SIDE DATA
(5315) DCS(0.00.0.0.0.1) BM(0111..10.11...1.10..000..000...0.0.0..0..0...0.1001...1..0000.0...11.000...011.001.110)
14817
14818      5316:  !(FREE)
14819      LOAD01-610A2:
14820      P3,        CSPD(01)+EMIT, EMIT/000011,
14821      NEXT      J/PSCC-DC610A2
!FOR D(C)=(0), PS(NZVC)="1001" PREVIOUSLY
(5316) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..001..001...0.0.0..0..0...0.1110...1..0000.0...11.000...011.001.111)
14822
14823      5317:  !(FREE)
14824      PSCC-DC610A2:
14825      SETUP,     RETURN/SETBUSA610A2,
14826      NEXT      CALL(SETUPPSCC#DC)
!EXEC SUBR WHICH:
!(1) CSP(10)<3:0> -> PS(NZVC)
!(2) CSP(10)<15> -> D(C)
(5317) DCS(0.00.0.0.0.0) BM(0101..00.01..10.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110)
14828
14829      5320:  !(FREE)
14830      SETBUSA610A2:
14831      P2-T,      SR+CSPD(D06),
14832      NEXT      J/DOIT610A2
!GET CONSTANT FOR A-SIDE WHEN CC SET
(5320) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1001...0..0000.0...11.000...011.010.001)
14833
14834      5321:  !(FREE)
14835      DOIT610A2:

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14836 SETUP, SET-CC, !FOR CLOCKING CC-S IN NEXT UWORD
14837 NOT-MODIFY-VBIT, !EXTRA CC ROM INPUT
14838 P2-T, D+A-PLUS-B, SAVE-D(C), !D=(100000), D(C)=(0)
14839 BUS-A+SR, !A=(077600)
14840 BUS-B+BSPI(C000200), !B=(000200)
14841 NEXT, J/GETIT610A2
(5321) DCS(0.00.0.0.0.0) BM(1001..01.11..00.00..010..111...0.1.0..0..1...0.0000...0..0000.0...11.000...011.010.010)

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14842 5322: !(FREE)
14843 GETIT610A2:
14844 P2-T, CLK-CC, !PS(NZVC) GENERATED ABOVE LATCHED HERE
14845 SETUP, RETURN/SCOPE610A, !EXEC SUBR WHICH:
14846 NEXT, CALL(PSCCTOSR3-0) ! PS(3:0) -> SR(3:0), J/BUT(SR3-0)
14847 (5322) DCS(0.00.0.0.0.0) BM(0101..00.01..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)

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14848 5323: !(FREE)
14849 SCOPE610A:
14850 PO, BUMP-VERIFY, !COUNT
14851 NEXT, BUTD(SCOPE), !NO ERROR: "TEST610B1" (+1. WORDS)
14852 J/TEST610B1 ! ERROR: "LOADIR610A1" (-15. WORDS)
14853 (5323) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.011)

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14864 !*** TEST 610B1 ***
14865
14866 5533:
14867 TEST610B1:
14868 PO, LOAD-ENVA(ZTARGET413), !NZVC AFTER = "1011"
14869 LOAD-ERROR(TEST610B1), !ERROR DIRECTORY KEY
14870 DCS-CTR(C13.), !COMPARE AT TARGET
14871 NEXT, J/LOADIR610B1
14872 (5533) DCS(1.00.1.0.0.0) BM(0010..00.11..11.00..001..011...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.100)

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14874 5534:
14875 LOADIR610B1:
14876 PO, BUMP-VERIFY, !COUNT
14877 P2-U, IR+EMIT, EMIT/105300, !(105300)=DECB, CC-CLASS="101", BYTE-H
14878 NEXT, J/LOAD01-610B1
14879 (5534) DCS(0.00.0.0.0.1) BM(1000..00.10..10.11..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.010.100)

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14880 5324: !(FREE)
14881 LOAD01-610B1:
14882 P3, CSPD(01)+EMIT, EMIT/100004, !FOR D(C)=(1), PS(NZVC)="0100" PREVIOUSLY
14883

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14884 NEXT J/PSCC-DC610B1
(5324) DCS(0.00.0.0.0.0) BM(1000..10.00..00.00..000..100...0.0.0..0..0...0.1110...1..0000.0...11.000...011.010.101)
14885
14886 5325: !(FREE)
14887 PSCC-DC610B1:
14888 SETUP, RETURN/SETBUSA610B1, !EXEC SUBR WHICH:
14889 ! (1) CSP(10)<3:0> -> PS(NZVC)
14890 NEXT CALL(SETUPPSCC#DC) ! (2) CSP(10)<15> -> D(C)
(5325) DCS(0.00.0.0.0.0) BM(0101..00.01..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110)
14891
14892 5326: !(FREE)
14893 SETBUSA610B1:
14894 P2-T, SR+BSPHI(C100000), !GET CONSTANT FOR A-SIDE WHEN CC SET
14895 NEXT J/DOIT610B1
(5326) DCS(0.00.0.0.0.0) BM(1010..01.11..00.00..001..000...0.0.1..0..0...0.0000...0..0000.0...11.000...011.010.111)
14896
14897 5327: !(FREE)
14898 DOIT610B1:
14899 SETUP, SET-CC !FOR CLOCKING CC-S IN NEXT UWORD
14900 NOT-MODIFY-VBIT !EXTRA CC ROM INPUT
14901 P2-T, D+NOT-A-AND-B, SAVE-D(C), !D=(000200), D(C)=(1)
14902 BUS-A+SR !A=(100000)
14903 BUS-B+BSPHI(C000200), !B=(000200)
14904 NEXT J/GETIT610B1
(5327) DCS(0.00.0.0.0.0) BM(0010..01.11..00.00..010..111...0.1.0..0..1...0.0000...0..0000.0...11.000...011.011.000)
14905
14906 5330: !(FREE)
14907 GETIT610B1:
14908 P2-T, CLK-CC, !PS(NZVC) GENERATED ABOVE LATCHED HERE
14909 SETUP, RETURN/TEST610B2, !EXEC SUBR WHICH:
14910 NEXT CALL(PSCCTOSR3-0) ! PS<3:0> -> SR<3:0>, J/BUT(SR3-0)
(5330) DCS(0.00.0.0.0.0) BM(0101..00.11..00.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)
14911
14912
14913
14914 ! - - - - -
14915
14916 !*** TEST 610B2 ***
14917
14918 5612:
14919 TEST610B2:
14920 PO, LOAD-ENUA(ZTARGET406), !NZVC AFTER = "0110"
14921 LOAD-ERROR(TEST610B2), !ERROR DIRECTORY KEY
14922 DCS-CTR(C14.), !COMPARE AT TARGET
14923 NEXT J/LOADIR610B2
(5612) DCS(1.00.1.0.0.0) BM(0001..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.001)
14924
14925 5331: !(FREE)
14926 LOADIR610B2:
14927 PO, BUMP-VERIFY !COUNT
14928 P2-U, IR+EMIT, EMIT/005300, ! (005300)=DEC, CC-CLASS="101", NOT-BYTE-H
14929 NEXT J/LOAD007-610B2

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(5331) DCS(0.00.0.0.0.0) BM(0000..00.10..10.11..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.011.010)
14930
14931 5332: !(FREE)
14932 LOAD07-610B2:
14933 P3, CSPD(07)+EMIT, EMIT/100200, !A-SIDE DATA
14934 NEXT, J/LOAD01-610B2
(5332) DCS(0.00.0.0.0.0) BM(1000..10.00..00.10..000..000...0.0.0..0..0...0.1000...1..0000.0...11.000...011.011.011)
14935
14936 5333: !(FREE)
14937 LOAD01-610B2:
14938 P3, CSPD(01)+EMIT, EMIT/000011, !FOR D(C)=(0), PS(NZVC)="1001" PREVIOUSLY
14939 NEXT, J/PSCC-DC610B2
(5333) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..001..001...0.0.0..0..0...0.1110...1..0000.0...11.000...011.011.100)
14940
14941 5334: !(FREE)
14942 PSCC-DC610B2:
14943 SETUP, RETURN/SETBUS610B2, !EXEC SUBR WHICH:
14944 NEXT, CALL(SETUPPSCC#DC) ! (1) CSP(10)<3:0> -> PS(NZVC)
14945 ! (2) CSP(10)<15> -> D(C)
(5334) DCS(0.00.0.0.0.0) BM(0101..00.01..10.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110)
14946
14947 5335: !(FREE)
14948 SETBUS610B2:
14949 P2-T, SR+CSPD(007), !GET CONSTANT FOR A-SIDE WHEN CC SET
14950 NEXT, J/DOIT610B2
(5335) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1000...0..0000.0...11.000...011.011.110)
14951
14952 5336: !(FREE)
14953 DOIT610B2:
14954 SETUP, SET-CC, !FOR CLOCKING CC-S IN NEXT UWORD
14955 MODIFY-VBIT, !EXTRA CC ROM INPUT
14956 P2-T, D+NOT-A-AND-B, SAVE-D(C), !D=(000000), D(C)=(0)
14957 BUS-A+SR, !A=(100200)
14958 BUS-B+BSPHI(C000200), !B=(000200)
14959 NEXT, J/GETIT610B2
(5336) DCS(0.00.0.0.0.0) BM(0010..01.11..00.10..010..111...0.1.0..0..1...0.0000...0..0000.0...11.000...011.011.111)
14960
14961 5337: !(FREE)
14962 GETIT610B2:
14963 P2-T, CLK-CC, !PS(NZVC) GENERATED ABOVE LATCHED HERE
14964 SETUP, RETURN/SCOPE610B, !EXEC SUBR WHICH:
14965 NEXT, CALL(PSCCTOSR3-0) ! PS<3:0> -> SR<3:0> J/BUT(SR3-0)
(5337) DCS(0.00.0.0.0.0) BM(0101..00.01..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)
14966
14967
14968
14969 5340: !(FREE)
14970 SCOPE610B:
14971 P0, BUMP-VERIFY, !COUNT
14972 NEXT, BUTD(SCOPE), !NO ERROR: "TEST610C1" (+1. WORDS)
14973 J/TEST610C1 ! ERROR: "LOADIR610B1" (-14. WORDS)
(5340) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.011.101)

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!*** TEST 610C1 ***

5535:

TEST610C1:

PO, LOAD-ENUA(ZTARGET407), !NZVC AFTER = "0111"
LOAD-ERROR(TEST610C1), !ERROR DIRECTORY KEY
DCS-CTR(C13.), !COMPARE AT TARGET
NEXT, J/LOADIR610C1

(5535) DCS[1.00.1.0.0.0] BM[0010.00.11.11.00.000.111...0.0.0.0.0...0.0000...0..0000.0...11.000...101.100.100]

5544:

LOADIR610C1:

PO, BUMP-VERIFY, !COUNT
P2-U, IR+EMIT, EMIT/072000, !(072000)=ASH, CC-CLASS="111", NOT-BYTE-H
NEXT, J/LOAD01-610C1

(5544) DCS[0.00.0.0.0.1] BM[0111..00.01..00.00..00C..000...0.0.0.0.0...1.1010...0..0000.0...11.000...011.100.001]

5341: !(FREE)

LOAD01-610C1:

P3, CSPD[01]+EMIT, EMIT/100012, !FOR D[C]=(1), PS[NZVC]="1010" PREVIOUSLY
NEXT, J/PSCC-DC610C1

(5341) DCS[0.00.0.0.0.0] BM[1000..10.00..00.00..001..010...0.0.0.0.0...0.1110...1..0000.0...11.000...011.100.010]

5342: !(FREE)

PSCC-DC610C1:

SETUP, RETURN/SETBUSA610C1, !EXEC SUBR WHICH:
NEXT, CALL[SETUPPSCC#DC] !(1) CSP(10)<3:0> -> PS[NZVC]
!(2) CSP(10)<15> -> D[C]

(5342) DCS[0.00.0.0.0.0] BM[0101..00.01..11.00..011..111...0.0.0.0.0...0.0000...0..0000.0...11.100...001.101.110]

5343: !(FREE)

SETBUSA610C1:

P2-T, SR+BSPHI(C000200), !GET CONSTANT FOR A-SIDE WHEN CC SET
NEXT, J/DOIT610C1

(5343) DCS[0.00.0.0.0.0] BM[1010..01.11..00.00..010..000...0.0.1.0.0...0.0000...0..0000.0...11.000...011.100.100]

5344: !(FREE)

DOIT610C1:

SETUP, SET-CC, !FOR CLOCKING CC-S IN NEXT UWORD
NOT-MODIFY-VBIT, !EXTRA CC ROM INPUT
P2-T, D+A-XOR-B, SAVE-D[C], !D=(000000), D[C]=(1)
BUS-A+SR, !A=(000200)
BUS-B+BSPHI(C000200), !B=(000200)

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15022      NEXT,      J/GETIT610C1
(5344) DCS(0.00.0.0.0.0) BM(0110..01.11..00.00..010..111...0.1.0..0..1...0.0000...0..0000.0...11.000...011.100.101)
15023
15024      5345:  !(FREE)
15025      GETIT610C1:
15026      P2-T,      CLK-CC,      !PS(NZVC) GENERATED ABOVE LATCHED HERE
15027      SETUP,     RETURN/TEST610C2, !EXEC SUBR WHICH:
15028      NEXT,      CALL(PSCCT0SR3-0) ! PS<3:0> -> SR<3:0>, J/BUT(SR3-0)
(5345) DCS(0.00.0.0.0.0) BM(0101..00.11..00.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)
15029
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15033      ! - - - - -
15034
15035      !*** TEST 610C2 ***
15036
15037      5602:
15038      TEST610C2:
15039      PO,      LOAD-ENUA(ZTARGET401), !NZVC AFTER = "0001"
15040      LOAD-ERROR(TEST610C2), !ERROR DIRECTORY KEY
15041      DCS-CTR(C13.), !COMPARE AT TARGET
15042      NEXT,     J/LOAD05-610C2
(5602) DCS(1.00.1.0.0.0) BM(0010..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.110)
15043
15044      5346:  !(FREE)
15045      LOAD05-610C2:
15046      PO,      BUMP-VERIFY,      !COUNT
15047      P3,      CSPD(05)+EMIT, EMIT/037777, !A AND B SIDE DATA
15048      NEXT,     J/LOAD01-610C2
(5346) DCS(0.00.0.0.0.1) BM(0011..10.11..11.11..111..111...0.0.0..0..0...0.1010...1..0000.0...11.000...011.100.111)
15049
15050      5347:  !(FREE)
15051      LOAD01-610C2:
15052      P3,      CSPD(01)+EMIT, EMIT/100014, !FOR D(C)=(1), PS(NZVC)="1100" PREVIOUSLY
15053      NEXT,     J/PSCC-DC610C2
(5347) DCS(0.00.0.0.0.0) BM(1000..10.00..00.00..001..100...0.0.0..0..0...0.1110...1..0000.0...11.000...011.101.000)
15054
15055      5350:  !(FREE)
15056      PSCC-DC610C2:
15057      SETUP,     RETURN/SETBUS610C2, !EXEC SUBR WHICH:
15058      NEXT,     CALL(SETUPPSCC#DC) ! (1) CSP(10)<3:0> -> PS(NZVC)
15059      ! (2) CSP(10)<15> -> D(C)
(5350) DCS(0.00.0.0.0.0) BM(0101..00.01..11.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110)
15060
15061      5351:  !(FREE)
15062      SETBUS610C2:
15063      P2-T,      SR+CSPD(005), !GET CONSTANT FOR A-SIDE WHEN CC SET
15064      NEXT,     J/DOIT610C2
(5351) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1010...0..0000.0...11.000...011.101.010)
15065
15066      5352:  !(FREE)

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15067 DOIT610C2:
15068     SETUP, SET-CC,                !FOR CLOCKING CC-5 IN NEXT UWORD
15069     NOT-MODIFY-VBIT,            !EXTRA CC ROM INPUT
15070     P2-T,  D+A-PLUS-B, SAVE-D(C), !D=(077776), D(C)=(1)
15071     BUS-A+SR,                    !A=(037777)
15072     BUS-B+CSPD(DOS),            !B=(037777)
15073     NEXT, J/GETIT610C2
(5352) DCS(0.00.0.0.0.0) BM(1001..10.00..00.00..000..111...0.1.0..0..1...0.1010...0..0000.0...11.000...011.101.011)

15074
15075 5353: !(FREE)
15076 GETIT610C2:
15077     P2-T, CLK-CC,                !PS(NZVC) GENERATED ABOVE LATCHED HERE
15078     SETUP, RETURN/SCOPE610C,    !EXEC SUBR WHICH:
15079     NEXT, CALL(PSCCTOSR3-0)      ! PS<3:0> -> SR<3:0>, J/BUT(SR3-0)
(5353) DCS(0.00.0.0.0.0) BM(0101..00.01..11.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)

15080
15081
15082
15083 5354: !(FREE)
15084 SCOPE610C:
15085     PD, BUMP-VERIFY,             !COUNT
15086     NEXT, BUTD(SCOPE),           !NO ERROR: "TEST61001" (+1. WORDS)
15087     J/TEST61001                 ! ERROR: "LOADIR610C1" (-13. WORDS)
(5354) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.100.101)

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15096 ! - - - - -
15097
15098 !*** TEST 61001 ***
15099
15100 5545:
15101 TEST61001:
15102     PD, LOAD-ENUA(ZTARGET410),    !NZVC AFTER = "1000"
15103     LOAD-ERROR(TEST61001),       !ERROR DIRECTORY KEY
15104     DCS-CTR(C12.)                !COMPARE AT TARGET
15105     NEXT, J/LOAD001-61001
(5545) DCS(1.00.1.0.0.0) BM(0011..00.11..11.00..001..000...0.0.0..0..0...0.0000...0..0000.0...11.000...101.001.000)

15106
15107 5510:
15108 LOAD001-61001:
15109     P3, CSPD(011)+EMIT, EMIT/000005, !FOR D(C)=(0), PS(NZVC)="0101" PREVIOUSLY
15110     NEXT, J/PSCC-DC61001
(5510) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..101...0.0.0..0..0...0.1110...1..0000.0...11.000...011.101.101)

15111
15112 5355: !(FREE)
15113 PSCC-DC61001:
15114     SETUP, RETURN/SETBUSA61001, !EXEC SUBR WHICH:

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15115                                     !(1) CSP(10)<3:0> -> PS(NZVC)
15116 NEXT, CALL[SETUPPSCC#DC]           !(2) CSP(10)<15> -> D(C)
(5355) DCS(0.00.0.0.0.0) BM(0101..00.01..11.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110)

15117
15118 5356: !(FREE)
15119 SETBUS61001:
15120 P2-T, SR+CSPD(D06),                !GET CONSTANT FOR A-SIDE WHEN CC SET
15121 NEXT, J/DOIT61001
(5356) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1001...0..0000.0...11.000...011.101.111)

15122
15123 5357: !(FREE)
15124 DOIT61001:
15125 SETUP, SET-CC,                      !FOR CLOCKING CC-S IN NEXT UWORD
15126        MODIFY-VBIT,                 !EXTRA CC ROM INPUT
15127 P2-T, D+A-PLUS-B, SAVE-D(C),       !D=(177400), D(C)=(0)
15128        BUS-A+SR,                    !A=(077600)
15129        BUS-B+CSPD(D06),             !B=(077600)
15130 NEXT, J/GETIT61001
(5357) DCS(0.00.0.0.0.0) BM(1001..10.00..00.10..000..111...0.1.0..0..1...0.1001...0..0000.0...11.000...011.110.000)

15131
15132 5360: !(FREE)
15133 GETIT61001:
15134 P2-T, CLK-CC,                        !PS(NZVC) GENERATED ABOVE LATCHED HERE
15135 SETUP, RETURN/TEST61002,           !EXEC SUBR WHICH:
15136 NEXT, CALL[PSCCTOSR3-0]           ! PS<3:0> -> SR<3:0>, J/BUT(SR3-0)
(5360) DCS(0.00.0.0.0.0) BM(0101..00.11..00.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)

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15140 ! - - - - -
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15142 !*** TEST 61002 ***
15143
15144 5624:
15145 TEST61002:
15146 PO, LOAD-ENUA(ZTARGET410),          !NZVC AFTER = "1000"
15147        LOAD-ERROR(TEST61002),      !ERROR DIRECTORY KEY
15148        DCS-CTR(C11.),               !COMPARE AT TARGET
15149 NEXT, J/PSCC-DC61002
(5624) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..001..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.001)

15150
15151 5361: !(FREE)
15152 PSCC-DC61002:
15153 SETUP, RETURN/SETBUS61002,          !EXEC SUBR WHICH:
15154        NEXT, CALL[SETUPPSCC#DC]     !(1) CSP(10)<3:0> -> PS(NZVC)
15155 (5361) DCS(0.00.0.0.0.0) BM(0101..00.01..11.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.101.110)

15156
15157 5362: !(FREE)
15158 SETBUS61002:
15159 P2-T, SR+BSPHI(C000200),           !GET CONSTANT FOR A-SIDE WHEN CC SET

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15160 NEXT J/DOIT61002
 (5362) DCS(0.00.0.0.0.0) BM(1010..01.11..00.00..010..000...0.0.1..0..0...0.0000...0..0000.0...11.000...011.110.011)

15161
 15162 5363: !(FREE)
 15163 DOIT61002:
 15164 SETUP, SET-CC, !FOR CLOCKING CC-S IN NEXT UWORD
 15165 NOT-MODIFY-VBIT, !EXTRA CC ROM INPUT
 15166 P2-T, D+NOT-A-AND-B, SAVE-D(C), !D=(100000), D(C)=(0)
 15167 BUS-A+SR, !A=(000200)
 15168 BUS-B+CSPD(D07), !B=(100200)
 15169 NEXT J/GETIT61002

(5363) DCS(0.00.0.0.0.0) BM(0010..10.00..00.00..000..111...0.1.0..0..1...0.1000...0..0000.0...11.000...011.110.100)

15170
 15171 5364: !(FREE)
 15172 GETIT61002:
 15173 P2-T, CLK-CC, !PS(NZVC) GENERATED ABOVE LATCHED HERE
 15174 SETUP, RETURN/SCOPE6100, !EXEC SUBR WHICH:
 15175 NEXT, CALL(PSCCTOSR3-0) ! PS<3:0> -> SR<3:0> J/BUT(SR3-0)

(5364) DCS(0.00.0.0.0.0) BM(0101..00.01..11.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.110.010)

15176
 15177
 15178
 15179 5365: !(FREE)
 15180 SCOPE6100:
 15181 PD, BUSDIN+EMIT-[I], !RESET PROC UCONS
 15182 EN-CLK-IR[15-00],
 15183 NEXT, BUTD(SCOPE), !NO ERROR: "TEST620A" (+6. WORDS)
 15184 J/TEST620A ! ERROR: "LOAD01-61001" (-10. WORDS)

(5365) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...101.001.001)

15185
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 15192 ! - - - - -
 15193
 15194 ! THESE TWO SUBROUTINES ARE USED IN THE ABOVE CC-LOGIC TESTS:
 15195

15196 7156: !(FREE)
 15197 SETUPPSCC#DC:
 15198 P2-T, D+CSPD(D01), D(C)+ALU15, !SET D(C) FROM BIT<15>
 15199 NEXT, J/SETUPPSCC#DC02

(7156) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..100...0.1.0..0..0...0.1110...0..0000.0...11.000...001.110.001)

15200 7161: !(FREE)
 15201 SETUPPSCC#DC02:
 15202 P2, PS[3-0]+D[3-0]-[I], !SET PS[CC] FROM BIT<03:00>
 15203 BUSDIN+PS-[I], !SETUP BUSDIN TO READ PS
 15204 NEXT, BUTA(RETURN), !AND RETURN
 15205 J/BUTERROR7 !ERROR IF HERE

(7161) DCS(0.00.0.0.0.0) BM(1000..00.00..10.01..000..000...0.0.0..0..0...1.1011...0..0000.0...11.111...011.111.110)

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15207
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15210
15211 7162: !(FREE)
15212 PSCCTOSR3-0:
15213 P3, CSPD(03)+BUSDIN, !GET ENABLED PS INTO CSP
15214 NEXT J/PSCCTOSR3-0AA
(7162) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.1100...1..0000.0...11.000...001.110.011)

15215
15216 7163: !(FREE)
15217 PSCCTOSR3-0AA:
15218 P2-T, SR+CSPD(003), !MOVE PS(CC) TO SR<3:0>
15219 NEXT J/PSCCTOSR3-0BB
(7163) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1100...0..0000.0...11.000...001.110.100)

15220
15221 7164: !(FREE)
15222 PSCCTOSR3-0BB:
15223 PO, BUSDIN+EMIT-(I), !RESET EMIT FOR CONSTANTS
15224 EN-CLK-IR(15-00), !AND IR LOADING
15225 NEXT J/BUTSR3-0 !AND GO TEST THE BITS
(7164) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...010.111.110)

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15231 !.PAGE=====

15234 .TOC * TEST620-624: TESTING UBREAK AND JAMUPP

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15236 !*****
15237 !*
15238 !* TESTS: 620 - 624 UMWORDS: 101 + 133
15239 !*
15240 !* FUNCTIONS:
15241 !*
15242 !* THE FOLLOWING GROUP OF TEST FORCES A JAMUPP CONDITION VIA THE UBREAK FACILITY.
15243 !* TESTS ARE THEN PERFORMED ON JAMUPP RELATED SIDE EFFECTS:
15244 !*
15245 !* ALL JAM CONDITION BITS CAN BE RESET; ACTIVE BUT ROM, CSP WRITE BIT ARE CLEARED
15246 !* IN WORD WHICH JAM OCCURS; NON-INTERNAL-JAM IS SET; CUA IS LOCKED, UNLOCKED BY
15247 !* BUTA(TRACK); PREFETCH#JAM SET/CLEARED.
15248 !*
15249 !*****

```

```

15253 ! - - - - -
15254 !*** TEST 620 ***
15255 ! - - - - -
15256 ! - - - - -
15257

```

```

15258
15259 !* PART A ***
15260 !TEST-620-A DOES A 'CLR-JAM-ERRORS' UCON-I-O FUNCTION, THEN CHECKS 'INIT JAM'=0
15261 5511:
15262 TEST620A:
15263     PO,          LOAD-ENUA(ZTARGET406),          !EXPECTED ADDRESS AFTER 'BUT'
15264     LOAD-ERROR(TEST620A),          !ERROR DIRECTORY KEY
15265     DCS-CTR(C5.),          !COMPARE AT TARGET
15266     NEXT,        J/BCERC620A
(5511) DCS[1.00.1.0.0.0] BM[1010..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...101.111.000]

```

```

15267
15268 5570:
15269 BCERC620A:
15270     PO,          BUMP-VERIFY,          !COUNT
15271     P2,          CLR-JAM-ERRORS-[1],      !CLEAR OUT ERROR REGISTERS
15272     NEXT,        J/GOBUT620A
(5570) DCS[0.00.0.0.0.1] BM[0100..00.00..10.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...011.110.110]

```

```

15273
15274 5366: !(FREE)
15275 GOBUTS20A:
15276     SETUP,      RETURN/TEST620B,        !RETURN TO START OF NEXT SUBTEST
15277     NEXT,        GOTO-PAGE(7),          !BUT TABLE IS ON PAGE 7
15278     J/BUTINITJAM,          !GO DO MULTIPLE 'BUT' ON INIT JAM
(5366) DCS[0.00.0.0.0.0] BM[0101..00.11..00.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.110]

```

! - - - - -

```

15282 !* PART B *
15283 !TEST-620-B CHECKS THAT 'OTHER-JAM-H'=0 ALSO
15284 5623:
15285 TEST620B:
15286     PO,          LOAD-ENUA(ZTARGET401),          !BIT<01> CLEAR
15287     LOAD-ERROR(TEST620B),          !ERROR DIRECTORY KEY
15288     DCS-CTR(C3.),          !COMPARE AT TARGET
15289     NEXT,        J/GOBUT620B
(5623) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.111]

```

```

15291
15292 5367: !(FREE)
15293 GOBUT620B:
15294     SETUP,      RETURN/TEST620C,        !RETURN TO START OF NEXT SUBTEST
15295     NEXT,        GOTO-PAGE(7),          !BUT TABLE IS ON PAGE 7
15296     J/BUTOTHERJAM,          !GO DO BUT ON OTHER-JAM-H SIGNAL
(5367) DCS[0.00.0.0.0.0] BM[0101..00.11..00.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.010]

```

! - - - - -

```

15301 !* PART C *
15302 !TEST-620-C CHECKS THAT STATUS MUX PORT 2 (JAM REG) READS (001000) WHEN RESET
15303 ! "CLEAR-JAM-ERRORS" FUNCTION CLEARS BITS<15,13,11,8-2,0> OF JAM-REG
15304 ! "CLR-YELLOW-ZONE" FUNCTION CLEARS BIT<12> OF JAM-REG

```

```

15305      !      BIT<9> IS ACTIVE LOW, READS AS "1" H
15306      !      BITS<10,1> READ "0" SINCE NO WCS PRESENT
15307      !      BIT<14> IS "0" ALWAYS
15308      5621:
15309      TEST620C:
15310      PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D<15:00>=0 TEST RESULT
15311      LOAD-ERROR(TEST620C),      !ERROR DIRECTORY KEY
15312      DCS-CTR(C11.),      !COMPARE AT TARGET
15313      P3,      BUTA(CLR-FLAG-RES-UCON),      !PUT EMIT ONTO BUSDIN, CLEAR OUT I-O UCON
15314      NEXT,      J/MASK620C
(5621) DCS[1.00.1.0.0.0] BM[0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.010...011.111.000]

15315      5370:      !(FREE)
15316      MASK620C:
15317      PO,      BUMP-VERIFY,      !COUNT
15318      P3,      CSPD[04]+EMIT,      !DON'T NEED TO MASK ANYTHING
15319      EMITC,      EMIT/177777
15320      NEXT,      J/GETJAM620C
(5370) DCS[0.00.0.0.0.1] BM[1111..10.11..11.11..111..111...0.0.0..0..0...0.1011...1..0000.0...11.000...011.111.001]

15322      5371:      !(FREE)
15323      GETJAM620C:
15324      SETUP,      RETURN/TEST621A,      !GO EXECUTE SUBR WHICH:
15325      PO,      BUMP-VERIFY,      !COUNT
15326      NEXT,      CALL[CLRJAM00]
15327      (JAMREG)-XOR-CSP(02)/(001000) -> D, BUT(D=ZERO)
(5371) DCS[0.00.0.0.0.1] BM[0101..00.11..00.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.101]

15328
15329
15330
15331
15332
15333      ! -----
15334
15335      !*** TEST 621 ***
15336      !CAUSE A MICROBREAK JAM, AND CHECK ALL THE APPROPRIATE SIGNALS ARE SET
15337
15338      ! -----
15339
15340      !* PART A *
15341      !TEST-621-A CAUSES A MICROBREAK JAM AT A SPECIFIC MICROADDRESS, AND CHECKS
15342      !THAT THE MICROCODE JAMS TO LOCATION (4777) IMMEDIATELY
15343      5617:
15344      TEST621A:
15345      PO,      LOAD-ENUA(4777),      !SETUP JAMUPP ADDRESS
15346      LOAD-ERROR(TEST621A),      !ERROR DIRECTORY KEY
15347      DCS-CTR(C9.),      !COMPARE AT JAMUPP WORD
15348      P3,      BUTA(CUA-TRACK),      !RESET CUA TRACKING IF HASN'T BEEN
15349      NEXT,      J/CSP1L621A
(5617) DCS[1.00.1.0.0.0] BM[0110..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.001...011.111.010]

15350
15351      5372:      !(FREE)
15352      CSP1L621A:
15353      PO,      BUMP-VERIFY,      !COUNT

```

```

15354      EMITC,  EMIT/100377,
15355      P2-U,   IR+EMIT
15356      P3,    CSPD(05)+EMIT,
15357      NEXT,  J/SETBRK621A
(5372) DCS(0.00.0.0.0.1) BM(1000..10.00..00.11..111..111)
!A BRANCH INSTR, SO 'PREFETCH H' = "0"
!FLAG(8)="1" FOR UBREAK EN; EXFLAG(2:1)="11", FOR ACTIVE BUT TEST
!BIT00="1" FOR JAMUPP ROUTINE
!NOTE CSPADR(05)/UCON-OPERATION BIT OVERLAP

15358
15359
15360      5373:  !(FREE)
15361      SETBRK621A:
15362      SELECT, UCON-PROC
15363      ENABLE, EN-CLK-UBREAK(11-00),
15364      BUSDIN+EMIT(15-00),
15365      PO,    SET-UCON-CONTROL,
15366      NEXT,  J/LOADBRK621A
(5373) DCS(0.00.0.0.0.0) BM(0000..01.00..00.01..000..000)
!PROCESSOR UCON:
!FOR UBREAK REG LOAD
!AND KEEP EMIT ON BUSDIN
!WRITE UCON REGISTER

15367
15368      5374:  !(FREE)
15369      LOADBRK621A:
15370      P2-T,  SR+ZERO,
15371      UBREAK+BUSDIN(11-00),
15372      EMITL/5522,
15373      NEXT,  J/SETRET621A
(5374) DCS(0.00.0.0.0.0) BM(0011..00.10..11.01..010..010)
!ZERO SR(00) TO PREVENT SPURIOUS UBREAKS FROM GETTING THRU
!LOAD MICROBREAK REGISTER
!WITH SELECTED ADDRESS FROM EMIT

15374
15375      5375:  !(FREE)
15376      SETRET621A:
15377      PO,    BUMP-VERIFY,
15378      P3,    CSPD(00)+EMIT, RETURN/TEST621B,
15379      NEXT,  J/SETFLG621A
(5375) DCS(0.00.0.0.0.1) BM(0101..10.11..00.01..011..000)
!COUNT
!RETURN ADDRESS FOR AFTER JAMUPP

15380
15381      5377:  !(FREE)
15382      SETFLG621A:
15383      P2-T,  D+CSPD(05), D(C)+0,
15384      P3,    ASPHI(16)+0
15385      NEXT,  J/LOADFLG621A
(5377) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..011..000)
!GET VALUES TO LOAD INTO FLAGS
!AND SAVE IN ASP FOR COMPARE LATER

15386
15387      5400:  !(FREE)
15388      LOADFLG621A:
15389      PO,    BUSDIN+EMIT-(1),
15390      BUMP-VERIFY,
15391      P3,    FLAG(8-0)+D(15-8)-(1),
15392      NEXT,  J/SETSR621A
(5400) DCS(0.00.0.0.0.1) BM(0000..00.00..00.01..000..001)
!KEEP IT ON
!COUNT
!ENABLE U-BREAK, FLAG 8; SET EXFLAGS FOR LATER

15393
15394      5401:  !(FREE)
15395      SETSR621A:
15396      P2-T,  SR+CSPD(05),
15397      NEXT,  J/UBRK621A
(5401) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000)
!MAKE SR(00)=1, FOR JAMUPP EXPECTED
!(FOR UBREAK JAM EXPECTED)

15398
15399      5522:
15400      UBRK621A:
!*** MICROBREAK HERE ***

```

```

15401 P3-T, D+ZERO, D(C)+ALUIS, !UMWORD LATCH FOR CLK-D NOT CLEARED, CLK-D SHOULD HAPPEN
15402 BUTA(CLR-FLAG-RES-UCON), !JAMUPP CLEAR SHOULD ZAP ACTIVE BUT LATCH, BUTA(CLR-...) SHOULDN'T HA
15403 !CUA GETS LOCKED WITH UADDR OF THIS UWORD (5522) ON JAMUPP
15404 !PREFETCH#JAM(I)H GETS PREFETCH-H (=0) AT JAMUPP
15405 P3, CSPD(05)+EMIT, EMIT/030004, !LATCH HOLDING "WRCS" BIT SHOULD GET ZAPPED ON JAMUPP,
15406 !THIS WRITE SHOULDN'T HAPPEN
15407 NEXT J/ERROR621A !THIS UPF SHOULD NOT BE USED
(5522) DCS(0.00.0.0.0.0) BM(0011..10.00..00.00..000..100...1.1.0..0..0...0.1010...1..0000.0...11.010...110.001.101)

```

```

15408
15409
15410 ! (4777) JAMUPP001: ***COMPARE ENABLED ABOVE DONE HERE***
15411 ! THIS WORD TESTS SR<00>, WHICH SHOULD BE SET
15412 ! IF SR<00>=1, GOTO(JAMUPP002B), IF SR<00>=0, GOTO(JAMUPP003) (ERROR)
15413 ! P3-T, SR+0 SAVE OLD D IN SR, FOR NOW
15414
15415 ! (4757) JAMUPP002B: P2-T, D+CSPD(00) GET RETURN ADDRESS INTO D
15416
15417 ! (4XXX) JAMUPP002C: P0, RETURN+D LOAD RETURN ADDRESS
15418 ! P2-T, D+SR RESTORE OLD D FROM SR
15419
15420 ! (7XXX) JAMUPP002D: P2-T, SR+ZERO, ZERO OUT SR, JAMUPPS NOW ILLEGAL
15421 ! NEXT, BUTA(RETURN) AND NOW RETURN
15422

```

```

15423
15424 !EXECUTE THE FOLLOWING WORD ONLY IF NO JAMUPP OCCURRED:
15425 5615:
15426 ERROR621A:
15427 P0, LOAD-ENUA(0000) !FORCE ERROR
15428 LOAD-ERROR(ERROR621A), !ERROR DIRECTORY KEY
15429 DCS-CTR(C0.), !FORCE COMPARE AT P3-T
15430 BUMP-VERIFY, !COUNT
15431 NEXT J/TEST621B
(5615) DCS(1.00.1.0.0.1) BM(1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...110.001.011)

```

```

15432
15433
15434 ! - - - - -
15435
15436 !* PART B *
15437 !TEST-621-B CHECKS THAT D WAS ZEROED; IE, P3 PULSE WAS SUPPRESSED IN JAM WORD,
15438 ! BUT UWORD LATCH FOR CLK-D BIT NOT ZAPPED, SO BIT WAS SAVED FOR EXECUTE LATER
15439 5613:
15440 TEST621B:
15441 P0, LOAD-ENUA(ZTARGET402), !SETUP FOR D = ZERO TEST
15442 LOAD-ERROR(TEST621B), !ERROR DIRECTORY KEY
15443 DCS-CTR(C3.), !COMPARE AT TARGET
15444 NEXT J/GOBUT621B
(5613) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.010)

```

```

15445
15446 5402: !(FREE)
15447 GOBUT621B:
15448 SETUP, RETURN/TEST621C, !RETURN TO START OF NEXT SUBTEST
15449 NEXT, GOTO-PAGE(7) !BUT TABLE ON PAGE 7
15450 J/BUTD-IS-ZERO !BUT ON D CONTENTS

```

(5402) DCS(0.00.0.0.0.0) BM(0101..00.11..00.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

15451
15452
15453
15454
15455
15456
15457
15458
15459
15460
15461
15462

! - - - - -

!* PART C *
!TEST-621-C CHECKS THAT 'INIT JAM' STILL OFF

5611:
TEST621C:
PO, LOAD-ENUA(ZTARGET406), !BIT<00> CLEAR
LOAD-ERROR(TEST621C), !ERROR DIRECTORY KEY
DCS-CTR(C4.), !COMPARE AT TARGET
NEXT, J/GOBUT621C

(5611) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.011)

15463
15464
15465
15466
15467
15468

5403: !(FREE)
GOBUT621C:
SETUP, RETURN/TEST621D, !RETURN TO START OF NEXT SUBTEST
NEXT, GOTO-PAGE(7), !BUT TABLE ON PAGE 7
J/BUTINITJAM !GO TEST INIT JAM

(5403) DCS(0.00.0.0.0.0) BM(0101..00.11..00.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.110)

15469
15470
15471
15472

! - - - - -

!* PART D *
!TEST-621-D CHECKS THAT 'OTHER-JAM-H'=1, WAS SET FOR UBREAK

5607:
TEST621D:
PO, LOAD-ENUA(ZTARGET403), !BIT<01> SET
LOAD-ERROR(TEST621D), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE AT TARGET
NEXT, J/GOBUT621D

(5607) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.100)

15481
15482
15483
15484
15485
15486
15487

5404: !(FREE)
GOBUT621D:
SETUP, RETURN/TEST621E, !RETURN TO START OF NEXT SUBTEST
PO, BUMP-VERIFY, !COUNT
NEXT, GOTO-PAGE(7), !BUT TABLE ON PAGE 7
J/BUTOTHERJAM !GO TEST 'OTHER-JAM-H' IS SET

(5404) DCS(0.00.0.0.0.1) BM(0101..00.11..00.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.010)

15488
15489
15490
15491

! - - - - -

!* PART E *
!TEST-621-E CHECKS UBREAK ONLY BIT SET FROM UBREAK JAMUPP IN STATUS MUX PORT 2 (JAM REG)

5605:
TEST621E:
PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D = ZERO COMPARE
LOAD-ERROR(TEST621E), !ERROR DIRECTORY KEY

15497

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15498 DCS-CTR(C10.),          !COMPARE AT TARGET
15499 NEXT J/EXPEC621E
(5605) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.101)

```

```

15500 5405: !(FREE)
15501 EXPEC621E:
15502 P3, CSPD(02)+EMIT,          !WHAT WE EXPECT TO SEE IN JAM IS:
15503 EMITC, EMIT/001001,        ! (001001), LBREAK H IN BIT00
15504 NEXT J/GETJAM621E
15505 (5405) DCS(0.00.0.0.0.0) BM(0000..10.00..10.00..000..001...0.0.0..0..0...0.1101...1..0000.0...11.000...100.000.110)

```

```

15506 5406: !(FREE)
15507 GETJAM621E:
15508 SETUP, RETURN/TEST621F,    !GO TO SUBR WHICH:
15509 NEXT CALL(JAMTOD)          ! (JAMREG)-XOR-CSP(02) -> D, BUT(D=ZERO)
15510 (5406) DCS(0.00.0.0.0.0) BM(0101..00.11..00.00..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.110)

```

```

15511 ! - - - - -
15512
15513
15514
15515

```

```

15516 !* PART F *
15517 !TEST-621-F CHECKS THAT THE RIGHT CUA WAS LOCKED, AND SHORT TERM FLAGS NOT CLEARED (IE,
15518 ! BUTA(CLR-FLAG-...) IN LBREAK WORD DIDN'T CLEAR EXFLAG1), INDICATING JAMUPP CLEAR L
15519 ! DID IN FACT ZAP THE ACTIVE BUT ROM LATCH. ALSO PREFETCH#JAM(1)H GETS PREFETCH-H="0".
15520 5603:

```

```

15521 TEST621F:
15522 PO, LOAD-ENJA(ZTARGET402), !SETUP FOR D = ZERO COMPARE
15523 LOAD-ERRR(TEST621F),        !ERROR DIRECTORY KEY
15524 DCS-CTR(C10.),             !COMPARE AT TARGET
15525 NEXT J/EXPEC621F
(5603) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.111)

```

```

15526 5407: !(FREE)
15527 EXPEC621F:
15528 PO, BUMP-VERIFY,           !COUNT
15529 P3, CSPD(02)+EMIT,        ! (USE MASK OF ALL 1'S FROM BEFORE)
15530 EMITC, EMIT/055226,       !WHAT THE CUA-EXFLAG-FOVP PORT OF MEMUX SHOULD BE
15531 NEXT J/GETCUA621F        !CUA=(5522), EXFLAG(2:1)="11", PREFETCH#JAM(1)H="0"
15532 (5407) DCS(0.00.0.0.0.1) BM(0101..10.10..10.10..010..110 ..0.0.0..0..0...0.1101...1..0000.0...11.000...100.001.000)

```

```

15533 5410: !(FREE)
15534 GETCUA621F:
15535 SETUP, RETURN/TEST621G,    !GO TO SUBR WHICH:
15536 PO, BUMP-VERIFY,          !COUNT
15537 NEXT CALL(CUATOD)         ! (CUA)-XOR-CSP(02) -> D, BUT(D=ZERO)
15538 (5410) DCS(0.00.0.0.0.1) BM(0101..00.11..11.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.111)

```

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15539
15540
15541
15542
15543

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15544
15545 : - - - - -
15546
15547 !* PART G *
15548 !TEST-621-G CHECKS THAT 'PREFETCH#JAM(1)H' GOT 'PREFETCH-H'="0" AFTER JAMUPP
15549 5766:
15550 TEST621G:
15551     PO,      LOAD-ENUA(ZTARGET401),      !BIT01 CLEAR
15552             LOAD-ERROR(TEST621G),      !ERROR DIRECTORY KEY
15553             DCS-CTR(C3.),              !COMPARE AT TARGET
15554     NEXT,    J/GOBUT621G
(5766) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.001)

15555
15556 5411: !(FREE)
15557 GOBUT621G:
15558     SETUP,   RETURN/TEST621H,          !RETURN TO START OF NEXT SUBTEST
15559     PO,      BUMP-VERIFY,              !COUNT
15560     NEXT,    GOTO-PAGE(7),             !BUT TABLE ON PAGE 7
15561             J/BUTPREFETCHJAM          !PREFETCH#JAM(1)H IN BIT01
(5411) DCS(0.00.0.0.0.0.1) BM(0101..00.11..1. 01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.110.000)

15562
15563 : - - - - -
15564
15565 !* PART H *
15566 !TEST-621-H CHECKS THAT CSP(05) DID NOT GET WRITTEN IN THE JAMMED WORD ABOVE,
15567 ! AND IS IN FACT, EQUAL TO THE SAVED COPY OF ITS CONTENTS, IN ASPHI(16)
15568 5754:
15569 TEST621H:
15570     PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
15571             LOAD-ERROR(TEST621H),      !ERROR DIRECTORY KEY
15572             DCS-CTR(C4.),              !COMPARE AT TARGET
15573             BUMP-VERIFY,              !COUNT
15574     NEXT,    J/COMP621H
(5754) DCS(1.00.1.0.0.0.1) BM(1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.010)

15575
15576 5412: !(FREE)
15577 COMP621H:
15578     P2-T,    D+CSPD(05)-XOR-ASPHI(R16), !COMPARE CURRENT:SAVED, SHOUL BE SAME
15579     NEXT,    GOTO-PAGE(7),             !XFER
15580             J/GOBUT621H
(5412) DCS(0.00.0.0.0.0.0) BM(0110..10.00..11.00..011..111...0.1.0..0..0...0.1010...0..0000.0...11.100...001.110.000)

15581
15582 7160: !(FREE)
15583 GOBUT621H:
15584     SETUP,   RETURN/TEST622A,          !RETURN TO START OF NEXT SUBTEST
15585     NEXT,    GOTO-PAGE(7),             !BUT TABLE ON PAGE 7
15586             J/BUTD-IS-ZERO           !TEST FOR EQUALITY
(7160) DCS(0.00.0.0.0.0.0) BM(0101..00.11..00.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

15587
15588
15589
15590

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```

15591
15592
15593 ! -----
15594
15595 !*** TEST 622 ***
15596 !DO A 'CLR-JAM-ERRORS' FUNCTION TO CLEAR OUT SET BITS
15597 !MAKE SURE THAT 'START-DELAY', 'CLR-NPR-TIMEOUT' DON'T CLEAR THEM
15598
15599 ! -----
15600
15601 !* PART A *
15602 !TEST-622-A CHECKS THAT 'START-DELAY', 'CLR-NPR-TIMEOUT' DON'T AFFECT
15603 !THE 'CLR-JAM-ERRORS' FUNCTION'
15604 5601:
15605 TEST622A:
15606     PO,          LOAD-ENUA(ZTARGET403),          !SETUP FOR BUT ON 'OTHER-JAM-H'=(1)
15607                 LOAD-ERROR(TEST622A),          !ERROR DIRECTORY KEY
15608                 DCS-CTR(C5.),                  !COMPARE AT TARGET
15609     NEXT        J/BCIFC622A
(5601) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.011)
15610
15611 5413: !(FREE)
15612 BCIFC622A:
15613     PO,          BUMP-VERIFY,                    !COUNT
15614     P2,          START-DELAY-[[1],              !DO A 'START-DELAY'
15615     NEXT        J/CNST0622A
(5413) DCS(0.00.0.0.0.0.1) BM(0100..00.00..01.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...100.001.100)
15616
15617 5414: !(FREE)
15618 CNST0622A:
15619     P2,          CLR-NPR-TIMEOUT-[[1],          !DO A 'CLR-NPR-TIMEOUT'
15620     NEXT        J/GOBUT622A                    !NEITHER OF THESE SHOULD ASSERT 'CLR-JAM-ERRORS'
(5414) DCS(0.00.0.0.0.0.0) BM(0100..00.00..11.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...100.001.101)
15621
15622 5415: !(FREE)
15623 GOBUT622A:
15624     SETUP,      RETURN/TEST622B,              !RETURN TO START OF NEXT SUBTEST
15625     NEXT,       GOTO-PAGE(7),                 !BUT TABLE ON PAGE 7
15626     J/BUTOTHERJAM                             !TEST 'OTHER-JAM-H' STILL SET
(5415) DCS(0.00.0.0.0.0.0) BM(0101..00.10..11.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.010)
15627
15628 ! -----
15629
15630 !* PART B*
15631 !TEST-622-B NOW CHECKS THAT 'CLR-JAM-ERRORS' DOES JUST THAT
15632 5577:
15633 TEST622B:
15634     PO,          LOAD-ENUA(ZTARGET401),          !SETUP FOR BUT ON 'OTHER-JAM-H'=(0)
15635                 LOAD-ERROR(TEST622B),          !ERROR DIRECTORY KEY
15636                 DCS-CTR(C4.),                  !COMPARE AT TARGET
15637     NEXT        J/BCERC622B
(5577) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.110)

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15639
15640 5416: !(FREE)
15641 BCERC622B:
15642 P2, CLR-JAM-ERRORS-[I], !DO IT
15643 NEXT J/GOBUT622B
(5416) DCS(0.00.0.0.0.0) BM(0100..00.00..10.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...100.001.111)

15644
15645 5417: !(FREE)
15646 GOBUT622B:
15647 SETUP, RETURN/TEST622C, !RETURN TO START OF NEXT SUBTEST
15648 NEXT, GOTO-PAGE(7), !BUT TABLE ON PAGE 7,
15649 J/BUTOTHERJAM !TEST 'OTHER-JAM-H' NOW CLEAR
(5417) DCS(0.00.0.0.0.0) BM(0101..00.10..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.010)

15650
15651 ! - - - - -
15652
15653
15654 !* PART C *
15655 !TEST-622-C TESTS THAT STATUS MUX PORT 2 (JAM REG) READS (001000) WHEN RESET
15656 5575:
15657 TEST622C:
15658 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D = ZERO TEST
15659 LOAD-ERROR(TEST622C), !ERROR DIRECTORY KEY
15660 DCS-CTR(C10.), !COMPARE AT TARGET
15661 P3, BUTA(CLR-FLAG-RES-UCON), !PUT EMIT ON BUSDIN, CLEAR SHORT TERM FLAGS
15662 NEXT J/GETJAM622C
(5575) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.010...100.010.000)

15663
15664 5420: !(FREE)
15665 GETJAM622C:
15666 SETUP, RETURN/TEST623, !GO TO SUBR WHICH:
15667 NEXT, CALL[CLRJAMTOD] ! (JAMREG)-XOR-CSP(02)/(001000) -> D, BUT(D=ZERO)
(5420) DCS(0.00.0.0.0.0) BM(0101..00.10..11.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.101)

15668
15669
15670
15671
15672
15673
15674
15675 ! - - - - -
15676
15677 !*** TEST 623 ***
15678 !TEST-623 CHECKS THAT BUTA(CUA-TRACK) RESTARTS CUA TRACKING
15679 5573:
15680 TEST623:
15681 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D = ZERO TEST
15682 LOAD-ERROR(TEST623), !ERROR DIRECTORY KEY
15683 DCS-CTR(C10.), !COMPARE AT TARGET
15684 P3, BUTA(CUA-TRACK), !RESET TO TRACKING CUA MODE
15685 NEXT J/EXPEC623
(5573) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.001...100.010.001)

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15686
15687 5421: !(FREE)
15688 EXPECT623:
15689 PO, BUMP-VERIFY !COUNT
15690 P3, CSPD(02)+EMIT, ! (PREV MASK)
15691 EMITC, EMIT/073734, ! CUA IS WORD WHICH LOADS CUA INTO CSP, ONLY
15692 NEXT, J/GETCUR623, ! EXFLAG(1) CLEARED FROM BUTA(CLR-FLAG-...), ABOVE
(5421) DCS(0.00.0.0.0.1) BM(0111..10.01..11.11..011..100...0.0.0..0..0...0.1101...1..0000.0...11.000...100.010.010)

15693
15694 5422: !(FREE)
15695 GETCUR623:
15696 SETUP, RETURN/SCOPE623, !GO TO SUBR WHICH:
15697 NEXT, CALL(CUAT00) ! CUA=(WORD WHICH READS CUA), SINCE TRACKING RESET
15698 (5422) DCS(0.00.0.0.0.0) BM(0101..00.10..00.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.111)

15699
15700 5423: !(FREE)
15701 SCOPE623:
15702 PO, BUSDIN+EMIT-[1], !RESET PROC UCONS
15703 P3, EN-CLK-IR[15-00], !IR GETS JUNK, BUT DON'T CARE
15704 NEXT, FLAG[8-0]+D[15-8]-[1], !RESET FLAGS TO ALL ZERO
15705 J/TEST624A, !NO ERROR: "TEST624A" [+1. WORDS]
15706 (5423) DCS(0.00.0.1.0.0) BM(0000..00.00..00.01..000..101...0.0.0..0..0...1.1011...0..0000.0...11.000...101.111.001)
15707

15708
15709
15710
15711
15712 ! -----
15713 !
15714 !*** TEST 624 ***
15715 !DO ANOTHER UBREAK JAM, CHECK JAM OCCURS, AND THAT P2 IS SEEN IN JAM WORD
15716 !
15717 ! -----
15718 !
15719
15720 !* PART A *
15721 !TEST-624-A CAUSES A UBREAK JAM, AND CHECKS TO SEE IT OCCURS
15722
15723 5571:
15724 TEST624A:
15725 PO, LOAD-ENUA(4777), !SETUP JAMUPP ADDRESS
15726 LOAD-ERROR(TEST624A), !ERROR DIRECTORY KEY
15727 DCS-CTR(C9.), !COMPARE AT JAMUPP WORD
15728 NEXT, J/LODIR624A
(5571) DCS(1.00.1.0.0.0) BM(0110..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...101.110.010)

15729
15730 5562:
15731 LODIR624A:
15732 P2-U, IR+EMIT, !IR PATTERN ASSERTS PREFETCH-H:
15733 P3, EMIT/030603, ! PREFETCH-H=(DOPH*MOVBL*SMOH*SR7L*DMOH*DR7L)
15734 FLAG[8-0]+D[15-8], !FLAGS GET D, WHICH IS ZERO

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15735      NEXT      J/SETBRK624A      !      * (SOPH*NEGL*SBCL*ROAL*ASRL*DMOH*DR7L)
(5562) DCS(0.00.0.0.0.0) BM(0011..00.00..01.10..000..011...0.0.0..0..0...1.1010...0..0000.0...11.000...100.010.100)
15736
15737      5424:      !(FREE)
15738      SETBRK624A:
15739      SELECT,    UCON-PROC      !ENABLE PROCESSOR UCON:
15740      ENABLE,    EN-CLK-UBREAK(11-00),      ! EN UBREAK LOAD,
15741      BUSDIN+EMIT(15-00),      ! KEEP EMIT ON BUSDIN
15742      PO,        SET-UCON-CONTROL,      !WRITE CONTROLS
15743      BUMP-VERIFY,      !COUNT
15744      NEXT      J/LOADBRK624A
(5424) DCS(0.00.0.0.0.1) BM(0000..01.00..00.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...100.010.101)
15745
15746      5425:      !(FREE)
15747      LOADBRK624A:
15748      PO,        BUMP-VERIFY      !COUNT
15749      P2-T,      UBREAK+BUSDIN(11-00),      !LOAD UBREAK REGISTER
15750      EMITML/6255,      ! WITH SELECTED ADDRESS FROM EMIT
15751      NEXT      J/SETRET624A
(5425) DCS(0.00.0.0.0.1) BM(0000..00.11..00.10..101..101...0.0.0..0..0...1.1010...0..0000.0...11.000...100.010.110)
15752
15753      5426:      !(FREE)
15754      SETRET624A:
15755      P3,        CSPD(00)+EMIT, RETURN/TEST624B,      !RETURN ADDRESS FOR AFTER JAMUPP
15756      NEXT,      GOTO-PAGE(6),      ! RETURN TO START OF NEXT SUBTEST
15757      J/SETD624A
(5426) DCS(0.00.0.0.0.0) BM(0101..10.10..11.10..101..110...0.0.0..0..0...0.1111...1..0000.0...11.100...011.000.110)
15758
15759      6306:      !(FREE)
15760      SETD624A:
15761      P2-T,      D+CSPD(D05), D(C)+ALU15,      !SETUP D WITH VALUE TO GO INTO FLAGS<8:0>
15762      NEXT,      J/SETFLG624A
(6306) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..100...0.1.0..0..0...0.1010...0..0000.0...11.000...100.101.011)
15763
15764      6453:      (FREE)
15765      SETFLG624A:
15766      PO,        BUSDIN+EMIT-[I],      !KEEP IT ON
15767      P3,        FLAG(8-0)+D(15-8)-[I],      !SET UBRK FLAG<8>
15768      NEXT,      J/SETSR624A
(6453) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..001...0.0.0..0..0...1.1011...0..0000.0...11.000...100.101.100)
15769
15770      6454:      !(FREE)
15771      SETSR624A:
15772      P2-T,      SR+CSPD(D05),      !SET SR<00>=1 FOR UBRK JAMUPP EXPECTED
15773      NEXT,      J/UBRK624A
(6454) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1010...0..0000.0...11.000...010.101.101)
15774
15775      6255:
15776      UBRK624A:
15777      P2-T,      D+ZERO, D(C)+ALU15,      !*** MICROBREAK HERE ***
15778      !P2 PULSE SHOULD OCCUR, SO D SHOULD BE ZEROED.
15779      !CUA GETS LOCKED WITH UADDR OF THIS UWORD (6255) ON JAMUPP
      !PREFETCH*JAM(1)H GETS PREFETCH-H ("1") AT JAMUPP

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15780 P3, FLAG(8-0)+D(15-8), !ZERO ALL THE FLAGS IN THIS UWORD. THE UBREAK SHOULD
15781 !STILL OCCUR, HOWEVER, AS IT LOOKS AT THE 'NUA'.
15782 NEXT J/ERROR624A !UPF SHOULD NOT BE USED.
(6255) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..100...0.1.0..0..0...1.1010...0..0000.0...11.000...101.110.111)

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15783
15784
15785 ! (4777) JAMUPP001: ***COMPARE ENABLED ABOVE DONE HERE***
15786 THIS WORD TESTS SR<00>, WHICH SHOULD BE SET
15787 IF SR<00>=1, GOTO(JAMUPP002B), IF SR<00>=0, GOTO(JAMUPP003) [ERROR]
15788 P3-T, SR+D SAVE OLD D IN SR, FOR NOW
15789
15790 ! (4757) JAMUPP002B: P2-T, D+CSPD(00) GET RETURN ADDRESS INTO D
15791
15792 ! (4XXX) JAMUPP002C: P0, RETURN+D LOAD RETURN ADDRESS
15793 P2-T, D+SR RESTORE OLD D FROM SR
15794
15795 ! (7XXX) JAMUPP002D: P2-T, SR+ZERO, ZERO OUT SR, JAMUPPS NOW ILLEGAL
15796 NEXT, BUTA(RETURN) AND NOW RETURN
15797
15798
15799
15800

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!EXECUTE THE FOLLOWING WORD ONLY IF NO JAMUPP OCCURRED:

```

15801 6567:
15802 ERROR624A:
15803 PO, LOAD-ENUA(0005), !FORCE ERROR
15804 LOAD-ERROR(ERROR624A), !ERROR DIRECTORY KEY
15805 DCS-CTR(C0.), !FORCE COMPARE AT P3-T
15806 BUMP-VERIFY, !COUNT
15807 NEXT, GOTO-PAGE(5), !XFER TO 5
15808 J/TEST624B
15809 (6567) DCS(1.00.1.0.0.1) BM(1111..00.00..00.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.100...101.110.101)

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! - - - - -

! * PART B *

! TEST-624-B CHECKS THAT D WAS ZEROED, IE, P2 DID OCCUR IN JAM WORD

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15810
15811
15812
15813
15814 5565:
15815 TEST624B:
15816 PO, LOAD-ENUA(ZTARGET434), !SETUP FOR IR=ZERO TEST
15817 LOAD-ERROR(TEST624B), !ERROR DIRECTORY KEY
15818 DCS-CTR(C6.), !COMPARE AT TARGET
15819 NEXT, J/ZEROIR624B
15820
15821 (5565) DCS(1.00.1.0.0.0) BM(1001..00.11..11.00..011..100...0.0.0..0..0...0.0000...0..0000.0...11.000...100.010.111)

```

5427: !(FREE)

ZEROIR624B:

SETUP, RETURN/TEST624C, !PUT THE ZEROES IN D INTO THE IR,

NEXT, CALL(DINTOIR-5) ! TO NEGATE PREFETCH-H (000000)=HALT

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15822
15823 (5427) DCS(0.00.0.0.0.0) BM(0101..00.11..11.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)
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! - - - - -

!* PART C *
!TEST-624-C CHECKS THAT THE RIGHT CUA WAS LOCKED,
!THAT THE EXFLAGS(2:1)H READ AS "00" AND
!THAT PREFETCH*JAM(1)H = "1" FROM TEST-624-A, EVEN THOUGH TEST-624-B
! RESET THE IR SO THAT PREFETCH-H="0"

5776:
TEST624C:
PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D = ZERO COMPARE
LOAD-ERROR(TEST624C), !ERROR DIRECTORY KEY
DCS-CTR(C10.), !COMPARE AT TARGET
NEXT, J/EXPEC624C
(5776) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.011.000)

5430: !(FREE)
EXPEC624C:
P3, CSPD(02)+EMIT, !(USE MASK OF ALL 1'S FROM BEFORE)
EMIT/062551 !WHAT THE CUA-EXFLAG-FOVP PORT OF HBMUX SHOULD BE
NEXT, J/GETCUA624C !CUA=(6255), EXFLAG="00", PREFETCH*JAM(1)H="1"
(5430) DCS(0.00.0.0.0.0) BM(0110..10.01..01.01..101..001...0.0.0..0..0...0.1101...1..0000.0...11.000...100.011.001)

5431: !(FREE)
GETCUA624C:
SETUP, RETURN/TEST624D, !GO TO SUBR WHICH:
PO, BUMP-VERIFY !COUNT
NEXT, CALL(CUAT0D) ! (CUA)-XOR-CSP(02) -> D, BUT(D=ZERO)
(5431) DCS(0.00.0.0.0.1) BM(0101..00.11..11.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.111)

! - - - - -

!* PART D *
!TEST-624-D CHECKS THAT 'PREFETCH*JAM(1)H' GOT 'PREFETCH-H'="1" AFTER JAMUPP

5756:
TEST624D:
PO, LOAD-ENUA(ZTARGET403), !BIT01 SET
LOAD-ERROR(TEST624D), !ERROR DIRECTORY KEY
DCS-CTR(C3.), !COMPARE AT TARGET
NEXT, J/GOBUT624D
(5756) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...100.011.010)

5432: !(FREE)
GOBUT624D:
SETUP, RETURN/CLEAR624, !RETURN TO SCOPE LOOP TEST WORD
NEXT, GOTO-PAGE(7), !BUT TABLE ON PAGE 7
J/BUTPREFETCHJAM !PREFETCH*JAM(1)H IN BIT01
(5432) DCS(0.00.0.0.0.0) BM(0111..00.00..11.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.110.000)

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15875
15876
15877 7165: !(FREE)
15878 CLEAR624:
15879     SETUP, RETURN/SCOPE624, !RETURN FOR SCOPE LOOP TEST
15880     NEXT, CALL(CLEAR-I-O-B) !CLEAR OUT WHAT I'VE DONE
(7165) DCS(0.00.0.0.0.0) BM(0101..00.01..00.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.011.000)

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15881
15882
15883 5224: !(FREE)
15884 SCOPE624:
15885     P0, BUMP-VERIFY, !COUNT
15886     BUSDIN+EMIT-[I], !RESET PROC UCON
15887     EN-CLK-IR[15-00],
15888     P3, BUTA(CUA-TRACK), !AND START CUA TRACKING AGAIN
15889     NEXT, BUTD(SCOPE), !NO ERROR: "TEST701A" [+1. WORDS]
15890     J/TEST701A !ERROR: "SETIR624A" [-18. WORDS]
(5224) DCS(0.00.0.1.0.1) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.001...101.110.011)

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15898 !.PAGE=====
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15900
15901 .TOC * TEST701-702: LOAD/READ THE BA, FULL 18. BITS
15902
15903 !*****
15904 !*
15905 !* TESTS: 701A - 702B UWORDS: 033 + 042
15906 !*
15907 !* FUNCTIONS:
15908 !*
15909 !* THIS NEXT SET OF SIX TESTS CHECKS THE "BA" REGISTER RELATED FUNCTIONS:
15910 !* SPECIFICALLY,
15911 !* 1) LOAD/READ OF BA<15:00>, FROM BUS-A -> BA -> STATUS-MUX/PBA-PORT
15912 !* 2) BUT ON "BA<00>"
15913 !* 3) LOAD READ OF BA<17:16>, FROM BUS-B -> BA -> STATUS-MUX/SERVICE-PORT
15914 !* THE EFFECT OF PARTICULAR KT-UCCN-FUNCTIONS/CONSOLE-18.-BIT-MODE
15915 !* IN THIS SITUATION IS ALSO EXAMINED FOR FUNCTIONALITY.
15916 !*
15917 !*****

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15921 ! - - - - -
15922
15923 !TEST-701-A CHECKS THAT BA<15:00> CAN BE LOADED, AND READ BACK WITH (052525)
15924 5563:
15925 TEST701A:
15926     P0, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE

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15927          LOAD-ERROR(TEST701A),          !ERROR DIRECTORY KEY
15928          DCS-CTR(C12.),                  !COMPARE AT TARGET
15929          BUMP-VERIFY,                     !COUNT
15930          NEXT,                             J/MASK701A
(5563) DCS(1.00.1.0.0.1) BM(0011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.110)

15931          5476: !(FREE)
15932          MASK701A:
15933          P3,          CSPD(04)+EMIT, EMIT/177777,          !MASK TO READ ALL THE BITS
15934          NEXT,       GOTO-PAGE(7),                      !XFER
15935          J/EXPECT701A
(5476) DCS(0.00.0.0.0.0) BM(1111..10.11..11.11..111..111...0.0.0..0..0...0.1011...1..0000.0...11.100...001.110.110)

15937          7166: !(FREE)
15938          EXPECT701A:
15939          P3,          CSPD(02)+EMIT, EMIT/052525,          !EXPECTED DATA TO BE READ OUT OF PBA AFTER LOAD:
15940          NEXT,       J/LOADBA701A                      !"0101 0101 0101 0101"
(7166) DCS(0.00.0.0.0.0) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.1101...1..0000.0...11.000...001.111.000)

15942          7170: !(FREE)
15943          LOADBA701A:
15944          P1,          BA+ASPHI(C052525),                !LOAD BA<15:00> WITH PATTERN
15945          NEXT,       J/GOTEST701A
(7170) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..111..000...0.0.0..1..0...0.0000...0..0000.0...11.000...001.111.001)

15947          7171: !(FREE)
15948          GOTEST701A:
15949          SETUP,     RETURN/TEST701B,                  !GO TO SUBR THAT:
15950          NEXT,       CALL(PBAT00)                     ! (PBA)-XOR-CSP(02)->D, BUT(D-IS-ZERO)
(7171) DCS(0.00.0.0.0.0) BM(0101..00.10..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.001)

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15958          ! - - - - -
15959
15960          !TEST-701-B CHECKS THAT BA<00> WAS LOADED WITH A (1)
15961          5523:
15962          TEST701B:
15963          PO,          LOAD-ENUA(ZTARGET403),            !BIT<00> SET
15964          LOAD-ERROR(TEST701B),                !ERROR DIRECTORY KEY
15965          DCS-CTR(C3.),                          !COMPARE AT TARGET
15966          NEXT,       J/GOBUT701B
(5523) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...100.011.100)

15967          5434: !(FREE)
15968          GOBUT701B:
15969          SETUP,     RETURN/TEST701C,                  !RETURN TO START OF NEXT SUBTEST
15970          NEXT,       GOTO-PAGE(7),                      !BUT TABLE
15971          J/BUTBA00                                     !BA<00>H IN BIT<00>
15972

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(5434) DCS(0.00.0.0.0.0) BM(0110..00.11..11.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.001)

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15978
15979
15980
15981
15982
15983
15984
15985

! - - - - -

!TEST-701-C CHECKS THAT BA<15:00> CAN BE LOADED, AND READ BACK WITH (125252)

6770:

TEST701C:

PO,

LOAD-ENUA(ZTARGET402),

!SETUP FOR D=ZERO COMPARE

LOAD-ERROR(TEST701C),

!ERROR DIRECTORY KEY

DCS-CTR(C11.),

!COMPARE AT TARGET

NEXT,

J/EXPEC701C

(6770) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.101.101)

15986
15987
15988
15989
15990

6455: !(FREE)

EXPEC701C:

P3,

CSPD(02)+EMIT, EMIT/125252,

!EXPECTED DATA TO BE READ OUT OF PBA AFTER LOAD:

NEXT,

J/LOADBA701C

! "1010 1010 1010 1010"

(6455) DCS(0.00.0.0.0.0) BM(1010..10.10..10.10..101..010...0.0.0..0..0...0.1101...1..0000.0...11.000...100.101.110)

15991
15992
15993
15994
15995

6456: !(FREE)

LOADBA701C:

P1,

BA+ASPHI(C125252),

!LOAD BA<15:00> WITH PATTERN

NEXT,

J/GOTEST701C

(6456) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..110..000...0.0.0..1..0...0.0000...0..0000.0...11.000...100.101.111)

15996
15997
15998
15999
16000

6457: !(FREE)

GOTEST701C:

SETUP,

RETURN/TEST701D,

!GO TO SUBR THAT:

NEXT,

CALL(PBAT00)

! (PBA)-XOR-CSP(02)->D, BUT(D-IS-ZERO)

(6457) DCS(0.00.0.0.0.0) BM(0101..00.10..10.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.001)

16001
16002
16003
16004
16005
16006

! - - - - -

!TEST-701-D CHECKS THAT BA<00> WAS LOADED WITH A (0)

5512:

TEST701D:

PO,

LOAD-ENUA(ZTARGET402),

!BIT<00> CLEAR

LOAD-ERROR(TEST701D),

!ERROR DIRECTORY KEY

DCS-CTR(C3.),

!COMPARE AT TARGET

NEXT,

J/GOBUT701D

(5512) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.011.101)

16016
16017
16018
16019

5435: !(FREE)

GOBUT701D:

SETUP,

RETURN/SCOPE701,

!RETURN TO SCOPE LOOP TEST WORD

```

16020         NEXT,      GOTO-PAGE(7),          !BUT TABLE
16021         J/BUTBA00          !BA<00>H IN BIT<00>
(5435) DCS(0.00.0.0.0.0) BM(0101..00.10..00.11..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.001)

16022
16023
16024
16025
16026         5436:  !(FREE)
16027         SCOPE701:
16028         PO,      BUMP-VERIFY,          !COUNT
16029         NEXT,    BUTD(SCOPE),          !NO ERROR: "TEST702A" (+1. WORDS)
16030         J/TEST702A          !ERROR: "MASK701A" (-12. WORDS)
(5436) DCS(0.00.0.1.0.1) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.111)

16031
16032
16033
16034
16035         ! - - - - -
16036
16037         !TEST-702-A CHECKS THAT BA<17:16> CAN BE LOADED, AND READ BACK WITH "01"
16038         ! WHEN IN 18. BIT CONSOLE MODE AND KT-NO-RELOCATE MODE
16039         5477:
16040         TEST702A:
16041         PO,      LOAD-ENVA(ZTARGET402),    !SETUP FOR D=ZERO COMPARE
16042         LOAD-ERROR(TEST702A),          !ERROR DIRECTORY KEY
16043         DCS-CTR(C13.),          !COMPARE AT TARGET
16044         NEXT,    J/MASK702A
(5477) DCS(1.00.1.0.0.0) BM(0010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.!00)

16045
16046         5474:
16047         MASK702A:
16048         P3,      CSPD(04)+EMIT, EMIT/001400,    !MASK TO READ ONLY BITS<9:8>
16049         NEXT,    J/EXPECT702A
(5474) DCS(0.00.0.0.0.0) BM(0000..10.00..11.00..000..000...0.0.0..0..0...0.1011...1..0000.0...11.000...100.011.111)

16050
16051         5437:  !(FREE)
16052         EXPECT702A:
16053         P3,      CSPD(02)+EMIT, EMIT/000400,    !EXPECTED DATA TO BE READ OUT OF SERVICE<9:8> AFTER LOAD:
16054         NEXT,    J/SETLED702A          !"0000 0001 0000 0000"
(5437) DCS(0.00.0.0.0.0) BM(0000..10.00..01.00..000..000...0.0.0..0..0...0.1101...1..0000.0...11.000.. 100.100.001)

16055
16056         5441:  !(FREE)
16057         SETLED702A:
16058         P3,      SET-CONSOLE-LED,          !ENTER INTO 18. BIT MODE FOR PBA<17:16> READ
16059         NEXT,    J/SETKT702A
(5441) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..100..001...0.0.0..0..0...1.1011...0..0000.0...11.000...100.100.010)

16060
16061         5442:  !(FREE)
16062         SETKT702A:
16063         PO,      BUMP-VERIFY,          !COUNT
16064         BUSDIN+SERVICE-[I],          !READ SERVICE PORT BITS<9:8>
16065         KT-NO-RELOCATE-[I],          !SETUP KT FOR BA<17:16> LOADABILITY
16066         NEXT,    J/LOADBA702A

```

```

(5442) DCS(0.00.0.0.0.1) BM(0101..01.00..00.00..000..010...0.0.0..0..0...1.1001...0..0000.0...11.000...100.100.011)
16067
16068 5443: !(FREE)
16069 LOADBA702A:
16070 P1, BA+BSPHI(C052525), !LOAD BA<17:16> WITH PATTERN "01"
16071 NEXT, J/GOTEST702A !
(5443) DCS(0.00.0.0.0.0) BM(0000..01.11..00.00..111..000...0.0.0..1..0...0.0000...0..0000.0...11.000...100.100.100)
16072
16073 5444: !(FREE)
16074 GOTEST702A:
16075 SETUP, RETURN/TEST702B, !GO TO SUBR THAT:
16076 NEXT, CALL(GETPROCDAT) ! (SERVICE<9:8>)-XOR-CSP(02)->D, BUT(D-IS-ZERO)
(5444) DCS(0.00.0.0.0.0) BM(0110..00.11 .11.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.111.011)
16077
16078
16079
16080
16081
16082
16083
16084 ! - - - - -
16085
16086 !TEST-702-B CHECKS THAT BA<17:16> CAN BE LOADED, AND READ BACK WITH "10"
16087 ! WHEN IN 18. BIT CONSOLE MODE AND KT-NO-RELOCATE MODE
16088 6761:
16089 TEST702B:
16090 PO, LOAD-ENVA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16091 LOAD-ERROR(TEST702B), !ERROR DIRECTORY KEY
16092 DCS-CTR(C11.), !COMPARE AT TARGET
16093 NEXT, J/EXPEC702B !
(6761) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.000)
16094
16095 6460: !(FREE)
16096 EXPEC702B:
16097 P3, CSPD(02)+EMIT, EMIT/001000, !EXPECTED DATA TO BE READ OUT OF SERVICE<9:8> AFTER LOAD:
16098 NEXT, J/SETKT702B !"0000 0010 0000 0000"
(6460) DCS(0.00.0.0.0.0) BM(0000..10.00..10.00..000..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.110.001)
16099
16100 6461: !(FREE)
16101 SETKT702B:
16102 PO, BUSDIN+SERVICE-[I], !READ SERVICE PORT BITS<9:8>
16103 KT-NO-RELOCATE-[I], !SETUP KT FOR BA<17:16> LOADABILITY
16104 NEXT, J/LOADBA702B !
(6461) DCS(0.00.0.0.0.0) BM(0101..01.00..00.00..000..010...0.0.0..0..0...1.1001...0..0000.0...11.000...100.110.010)
16105
16106 6462: !(FREE)
16107 LOADBA702B:
16108 PO, BUMP-VERIFY, !COUNT
16109 P1, BA+BSPHI(C125252), !LOAD BA<17:16> WITH PATTERN "10"
16110 NEXT, J/GOTEST702B !
(6462) DCS(0.00.0.0.0.1) BM(0000..01.11..00.00..110..000...0.0.0..1..0...0.0000...0..0000.0...11.000...100.110.011)
16111
16112 6463: !(FREE)

```

```

16113 GOTEST702B:
16114     SETUP, RETURN/SCOPE702, !GO TO SUBR THAT:
16115     NEXT, CALL(GETPROCDAT) ! (SERVICE<9:8>)-XOR-CSP(02)->0, BUT(D-IS-ZERO)
(6463) DCS(0.00.0.0.0.0) BM(0101..00.10..00.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.111.011)

```

```

16116
16117
16118
16119 5433: :(FREE)
16120 SCOPE702:
16121     P3, CSPD(04)+EMIT, EMIT/177777, !RESET MASK FOR SUBSEQUENT TESTS
16122     NEXT, BUTD(SCOPE), !NO ERROR: "TEST710A" (+1. WORDS)
16123     J/TEST710A !ERROR: "MASK702A" (-11. WORDS)
(5433) DCS(0.00.0.1.0.0) BM(1111..10.11..11.11..111..111...0.0.0..0..0...0.1011...1..0000.0...11.000...100.111.101)

```

```

16124
16125
16126
16127
16128
16129 !.PAGE=====
16130
16131
16132 .TOC * TEST710-722: BUS FUNCTION DECODE, BUS ERROR CONDITIONS
16133

```

```

16134 !*****
16135 !*
16136 !* TESTS: 710A - 722C UWORDS: 133 + 274
16137 !*
16138 !* FUNCTIONS:
16139 !*
16140 !* WE GET SNEAKY HERE AND TEST THE FULL BUS DECODE/STATUS MIX LOGIC, AND THE BUS ERROR
16141 !* CONDITIONS (ODD ADDRESS, INTERNAL ADDRESS, ETC) ALMOST WITHOUT EVER GOING OUT ON THE
16142 !* BUS (WE DO ONCE, FOR SSYN TIMEOUT).
16143 !*
16144 !*****
16145
16146
16147
16148 ! - - - - -
16149
16150 !TESTING 'DATO', 'ODD-ADDRESS' JAMUPP, 18./16. BIT IO-PAGE DECODE
16151
16152 ! - - - - -
16153
16154 !TEST-710-A FIRST ATTEMPTS TO DO A BUS "DATO" FUNCTION, TRYING TO FORCE AN "ODD ADDRESS"
16155 ! ABORT/JAMUPP
16156 5475:
16157 TEST710A:
16158     PO, LOAD-EMUA(4777), !JAMUPP ADDRESS
16159     LOAD-ERROR(TEST710A), !ERROR DIRECTORY KEY
16160     DCS-CTR(C6.) !COMPARE JUST AFTER BUS CYCLE UWORD, AT JAM
16161     NEXT, J/LOADRET710A
(5475) DCS(1.00.1.0.0.0) BM(1001..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.010)
16162

```

```

16163 5472:
16164 LOADRET710A:
16165 P3, CSPD(00)+EMIT, RETURN/TEST710B, !RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16166 NEXT, GOTO-PAGE(4) !XFER
16167 J/LOADADR710A
(5472) DCS(0.00.0.0.0.0) BM(0110..10.11..01.00..100..100...0.0.0..0..0...0.1111...1..0000.0...11.100...011.000.111)

16168 4307: !(FREE)
16169 LOADADR710A:
16171 P3, CSPD(16)+EMIT, EMIT/160001, !"DIAGNOSTIC" UNIBUS I/O PAGE ADDRESS; 000 BYTE
16172 NEXT, J/SETJAM710A
(4307) DCS(0.00.0.0.0.0) BM(1110..10.00..00.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...011.001.010)

16173 4312: !(FREE)
16174 SETJAM710A:
16176 P2, SR+CSPD(D16), !SET BIT<00>=(1) FOR JAMUPP EXPECTED
16177 NEXT, J/BUSFCN710A
(4312) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.0001...0..0000.0...11.000...011.001.011)

16178 4313: !(FREE)
16179 BUSFCN710A:
16181 P1, BA+SR, BSPHI(C177777), !SET BA<17:00>=(760001), ALTERED TO(160001)
16182 P2-T, D+ZERO, !SINCE WE'VE LEFT 18. BIT MODE (IN LOADING BA, THAT IS)
16183 P3, DATO, !DO A BUS "DATO", SHOULD GET 000 ADDRESS ABORTED
16184 NEXT, J/NEXT710A !GO DELAY
(4313) DCS(0.00.0.0.0.0) BM(0011..01.11..00.00..101..000...0.1.0..1..0...1.0010...0..0000.0...11.000...100.100.101)

16186 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16187 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16188 !** RETURN TO ADDRESS LEFT IN CSP(00) **
16189
16190 !*** END UP HERE IF NO JAMUPP ***
16191 4445:
16192 NEXT710A:
16194 SETUP, RETURN/TEST710A, !FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST
16195 NEXT, GOTO-PAGE(7) ! MUST DELAY A FEW MICROWORDS FOR BUS
16196 J/BUTD-IS-ZERO ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
(4445) DCS(0.00.0.0.0.0) BM(0101..00.10..01.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

16197 !*** END UP HERE IF JAMUPP ***
16198
16199 ! - - - - -
16200
16201 !
16202 !
16203 !
16204 !TEST-710-B CHECKS THAT THE RIGHT JAM (000 ADDRESS) IS INDICATED IN THE JAMREG:
16205 !
16206 ! BIT: 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01 00
16207 ! FCN: 000 0 SSYN YEL RED WCS POW MEM SSYN CACH ILL MGT RED 000 WCS UBRK
16208 ! ADR 0 TIME ZON ZON PAR DIS PAR TIME ERR ADR ABT ZON ADR PAR TRAP
16209 ! (101004) 1 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0

```

```

16210
16211 6644:
16212 TEST710B:
16213     PO,          LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
16214                LOAD-ERROR(TEST710B),      !ERROR DIRECTORY KEY
16215                DCS-CTR(C10.),             !COMPARE AT TARGET
16216                NEXT, J/GOTEST710B
(6644) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.100)

```

```

16217
16218 6464: !(FREE)
16219 GOTEST710B:
16220     SETUP,      RETURN/TEST710C,           !GO TO SUBR WHICH:
16221     NEXT,       CALL(000JAMT00)           ! (JAMREG)-XOR-(101004) -> 0, BUT(D=ZERO) [000-ADDRESS]
(6464) DCS(0.00.0.0.0.0) BM(0110..00.11..01.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.100)

```

```

16222
16223
16224
16225 ! - - - - -

```

```

16226 !TEST-710-C CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:
16227 NOTE PBA<17:16> READ "TRUE" (OUT OF BA) WHEN IN 18. BIT CONSOLE MODE
16228
16229
16230 BIT:      15  14  13  12  11  10  09  08  07  06  05  04  03  02  01  00
16231 FCN:     DATI  BG   0  NPR DAT08 DAT0 PBA  PBA  HIB  LOB  TAG  CON  FLT  POW  CACH YEL
16232                SERV  TIME  17  16  ERR  ERR  ERR SERV SERV FAIL  ERR ZON
16233 (002340)  0   0   0   0   0   1   0   0   1   1   1   0   0   0   0   0

```

```

16234
16235 6645:
16236 TEST710C:
16237     PO,          LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
16238                LOAD-ERROR(TEST710C),      !ERROR DIRECTORY KEY
16239                DCS-CTR(C10.),             !COMPARE AT TARGET
16240                NEXT, J/EXPEC710C
(6645) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.101)

```

```

16241
16242 6465: !(FREE)
16243 EXPEC710C:
16244     P3,         CSPD(02)+EMIT, EMIT/002340,  !DAT0(1)H SET, PBA<17:16>="00" IN 18. BIT CONSOLE MODE
16245     NEXT,       J/GOTEST710C              ! IN SERVICE REG
(6465) DCS(0.00.0.0.0.0) BM(0000..10.01..00.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.110.110)

```

```

16246
16247 6466: !(FREE)
16248 GOTEST710C:
16249     SETUP,      RETURN/TEST710D,           !GO TO SUBR WHICH:
16250     NEXT,       CALL(SERVICET00)          ! (SERVICE)-XOR-CSP(02) -> 0, BUT(D-IS-ZERO)
(6466) DCS(0.00.0.0.0.0) BM(0110..00.10..11.11..100..111...0.0.C..0..0...0.0000...0..0000.0...11.100...010.101.000)

```

```

16251
16252
16253
16254 ! - - - - -
16255 !TEST-710-D CHECKS THAT PBA<17:16> ARE INDICATED IN SERVICE REG:
16256

```

```

16257 ! NOTE PBA<17:16> READ AS BA<15:13>="111" WHEN IN 16. BIT MODE
16258
16259 BIT:      15  14  13  12  11  10  09  08  07  06  05  04  03  02  01  00
16260 FCN:    DATA  BG  0  NPA  DATA  DATA  PBA  PBA  HIB  LOB  TAG  CON  FLY  POW  CACH  YEL
16261 (003740) 0  0  0  0  0  1  1  1  1  1  1  0  0  0  0
16262
16263
16264 6574:
16265 TEST7100:
16266 PO,      LOAD-ENVA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
16267          LOAD-ERROR(TEST7100),      !ERROR DIRECTORY KEY
16268          DCS-CTR(C11.),              !COMPARE AT TARGET
16269          NEXT,      J/EXPEC7100
(6574) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.111)

16270
16271 6467:  !(FREE)
16272 EXPEC7100:
16273 PO,      BUMP-VERIFY,                  !COUNT
16274 P3,      CSPD(02)+EMIT, EMIT/003740,    !DATO(1)H SET, PBA<17:16>="11" IN 16. BIT MODE
16275          NEXT,      J/CLEAR7100        ! IN SERVICE REG
(6467) DCS(0.00.0.0.0.1) BM(0000..10.01..11.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.111.000)

16276
16277 6470:  !(FREE)
16278 CLEAR7100:
16279 P3,      CLR-JAM-ERRORS-[1],          !CLEAR OUT JAM-REG, FOR USE IN NEXT TEST
16280          CLEAR-CONSOLE-LED,          !BACK TO 16. BIT MODE
16281          NEXT,      J/GOTEST7100
(6470) DCS(0.00.0.0.0.0) BM(0100..00.00..10.00..010..001...0.0.0..0..0...1.1011...0..0000.0...11.000...100.111.001)

16282
16283 6471:  !(FREE)
16284 GOTEST7100:
16285          SETUP,      RETURN/TEST710E,    !GO TO SUBR WHICH:
16286          NEXT,      CALL(SERVICET00)    ! (SERVICE)-XOR-CSP(02) -> 0, BUT(D-IS-ZERO)
(6471) DCS(0.00.0.0.0.0) BM(0110..00.10..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.000)

16287
16288
16289
16290 ! - - - - -
16291
16292 !TEST-710-E CHECKS THAT THE CLEAR-JAM-ERRORS CLEARED THE JAM REG TO (001000)
16293 6575:
16294 TEST710E:
16295 PO,      LOAD-ENVA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
16296          LOAD-ERROR(TEST710E),      !ERROR DIRECTORY KEY
16297          DCS-CTR(C10.),              !COMPARE AT TARGET
16298          NEXT,      J/GOTEST710E
(6575) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.010)

16299
16300 6472:  !(FREE)
16301 GOTEST710E:
16302 PO,      BUMP-VERIFY,                  !COUNT
16303          SETUP,      RETURN/SCOPE710,    !GO TO SUBR WHICH:
16304          ! CSP(02) <- (001000)

```


16305 NEXT CALL(CLRJAMTOD) ! (JAMREG)-XOR-CSP(02) -> 0, BUT(D-IS-ZERO)
(6472) DCS(0.00.0.0.0.1) BM(0101..00.10..01.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.101)

16306
16307
16308
16309 5445: !(FREE)
16310 SCOPE710:
16311 P2-U, IR+EMIT, EMIT/123456, !A "CMP-BYTE" INSTR. FOR NEXT TEST SERIES
16312 NEXT, BUTD(SCOPE), !NO ERROR: "TEST711A" (+1. WORDS)
16313 J/TEST711A ! ERROR: "LOADRET710A" (-17. WORDS)
(5445) DCS(0.00.0.1.0.0) BM(1010..00.01..11.00..101..110...0.0.0..0..0...1.1010...0..0000.0...11.000...100.111.011)

16314
16315
16316
16317
16318
16319
16320 ! -----
16321
16322 !TESTING 'DATOB*BYTE', 'SSYN TIMEOUT' JAMUPP
16323
16324 ! -----
16325
16326 !TEST-711-A DOES A BUS "DATOB*BYTE" FUNCTION, TRYING TO FORCE AN "SSYN TIMEOUT" ABORT/JAMUPP
16327 5473:
16328 TEST711A:
16329 PO, LOAD-ENVA(4777), !JAMUPP ADDRESS
16330 LOAD-ERROR(TEST711A), !ERROR DIRECTORY KEY
16331 DCS-CTR(C4.) !COMPARE JUST AFTER BUS CYCLE UWORD, AT JAM
16332 NEXT, J/LOADRET711A

(5473) DCS(1.00.1.0.0.0) BM(1011..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.000)

16333
16334 5470:
16335 LOADRET711A:
16336 PO, BUMP-VERIFY, !COUNT
16337 P3, CSPD(00)+EMIT, RETURN/TEST711B, !RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16338 NEXT, GOTO-PAGE(4), !XFER
16339 NEXT, J/BUSFCN711A
(5470) DCS(0.00.0.0.0.1) BM(0110..10.10..10.11..100..100...0.0.0..0..0...0.1111...1..0000.0...11.100...011.001.001)

16340
16341 4311: !(FREE)
16342 BUSFCN711A:
16343 !NOTE: BA=(160001) FROM PREVIOUS TEST
16344 P2-T, SR+CSP8(B16), !SET BIT(00)=(1) FOR JAMUPP EXPECTED
16345 P3, DATOB, !DO A BUS "DATOB*BYTE", SHOULD GET SSYN TIMEOUT ABORTED
16346 ! SINCE WERE USING THE "DIAGNOSTIC" UNIBUS TIMEOUT ADDR
16347 NEXT, J/NEXT711A !GO DELAY
(4311) DCS(0.00.0.0.0.0) BM(1010..11.01..00.00..000..000...0.0.1..0..0...1.0101...0..0000.0...11.000...100.100.110)

16348
16349 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16350 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16351 !** RETURN TO ADDRESS LEFT IN CSP(00) **

```

16352
16353 !*** END UP HERE IF NO JAMUPP ***
16354 4446.
16355 NEXT711A:
16356     SETUP, RETURN/TEST711A,           !FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST
16357     NEXT,   GOTO-PAGE(7),             ! MUST DELAY A FEW MICROWORDS FOR BUS
16358     J/BUTO-IS-ZERO                    ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
(4446) DCS(0.00.0.0.0.0) BM(0101..00.10..01.11..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

```

16359
16360
16361 !*** END UP HERE IF JAMUPP ***
16362
16363
16364 ! - - - - -

```

```

16365 !TEST-711-B CHECKS THAT THE RIGHT JAM (SSYN TIMEOUT) IS INDICATED IN THE JAMREG:
16366
16367
16368 BIT:      15   14   13   12   11   10   09   08   07   06   05   04   03   02   01   00
16369 FCN:      ODD   0   SSYN YEL  RED  WCS  POW  MEM  SSYN CACH ILL  MGT  RED  ODD  WCS  LIBRK
16370          ADR   0   TIME ZON  ZON  PAR  DIS  PAR  TIME ERR ADR  ABT  ZON  ADR  PAR  TRAP
16371 (021200)  0   0   1   0   0   0   1   0   1   0   0   0   0   0   0

```

```

16372
16373 6534:
16374 TEST711B:
16375     PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
16376     LOAD-ERROR(TEST711B),              !ERROR DIRECTORY KEY
16377     DCS-CTR(C10.),                      !COMPARE AT TARGET
16378     NEXT,    J/EXPEC711B
(6534) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.011)

```

```

16379
16380 6473: !(FREE)
16381 EXPEC711B:
16382     PO,      BUMP-VERIFY,                !COUNT
16383     P3,      CSP0(02)+EMIT, EMIT/021200, !"SSYN TIMEOUT(1)H" SET
16384     NEXT,    J/GOTEST711B                ! IN JAMREG
(6473) DCS(0.00.0.0.0.1) BM(0010..10.00..10.10..000..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.111.100)

```

```

16385
16386 6474: !(FREE)
16387 GOTEST711B:
16388     SETUP,   RETURN/TEST711C,           !GO TO SUBR WHICH:
16389     NEXT,    CALL(JAMTOD)               ! (JAMREG)-XOR-CSP(02) -> D, BUT(D-IS-ZERO)
(6474) DCS(0.00.0.0.0.0) BM(0110..00.10..10.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.110)

```

```

16390
16391
16392 ! - - - - -
16393
16394 !TEST-711-C CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:
16395 ! BACK IN 16. BIT MODE, SINCE I-0 PAGE, PBA<17:16> READ AS "11"
16396
16397
16398 BIT:      15   14   13   12   11   10   09   08   07   06   05   04   03   02   01   00
16399 FCN:      DATI  BG   0   NPR DATOB DATO PBA  PBA  HIB  LOB  TAG  CON  FLT  POW  CACH YEL

```

```

16400 :
16401 : (005740) 0 SERV 0 TIME 1 0 17 16 ERR ERR ERR SERV SERV FAIL ERR ZON
16402 :
16403 6530:
16404 TEST711C:
16405 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16406 LOAD-ERROR(TEST711C), !ERROR DIRECTORY KEY
16407 DCS-CTR(C11.), !COMPARE AT TARGET
16408 NEXT, J/EXPEC711C
(6530) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.101)

16409 6475: !(FREE)
16410 EXPEC711C:
16411 P3, CSPD(02)+EMIT, EMIT/005740, !DAT08(1)H SET, PBA(17:16)="11"
16412 NEXT, J/GOTEST711C ! IN SERVICE REG
16413 (6475) DCS(0.00.0.0.0.0) BM(0000..10.10..11.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.111.110)

16414 6476: !(FREE)
16415 GOTEST711C:
16416 SETUP, RETURN/TEST711D, !GO TO SUBR WHICH:
16417 ! CLR-JAM-ERRORS-[1], FOR NEXT TEST
16418 NEXT, CALL(CJESERVICETOD) ! (SERVICE)-XOR-CSP(02) -> D, BUT(D-IS-ZERO)
16419 (6476) DCS(0.00.0.0.0.0) BM(0110..00.10..10.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.111)

16420
16421
16422
16423 ! - - - - -
16424 ! TEST-711-D CHECKS THAT THE CLEAR-JAM-ERRORS CLEARED THE JAM REG TO (001000)
16425 6526:
16426 TEST711D:
16427 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16428 LOAD-ERROR(TEST711D), !ERROR DIRECTORY KEY
16429 DCS-CTR(C10.), !COMPARE AT TARGET
16430 BUMP-VERIFY, !COUNT
16431 NEXT, J/GOTEST711D
(6526) DCS(1.00.1.0.0.1) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.111)

16432
16433 6477: !(FREE)
16434 GOTEST711D:
16435 SETUP, RETURN/SCOPE711, !GO TO SUBR WHICH:
16436 ! CSP(02) (- (001000)
16437 NEXT, CALL(CLRJAMTOD) ! (JAMREG)-XOR-CSP(02) -> D, BUT(D-IS-ZERO)
16438 (6477) DCS(0.00.0.0.0.0) BM(0101..00.10..01.00..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.101)

16439
16440
16441 5446: !(FREE)
16442 SCOPE711:
16443 NEXT, BUTD(SCOPE), !NO ERROR: "TEST712A" (+1. WORDS)
16444 J/TEST712A ! ERROR: "LOADRET711A" (-11. WORDS)
16445 (5446) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.001)

```

```

16446
16447
16448
16449
16450
16451
16452 ! -----
16453
16454 !TESTING 'DATI', 'INTERNAL ADDRESS' JAMUPP
16455
16456 ! -----
16457
16458 !TEST-712-A DOES A BUS "DATI" FUNCTION TO AN INTERNAL ADDRESS, TRYING TO FORCE AN "INTERNAL ADDRESS" ABORT/JAMUPP
16459 5471:
16460 TEST712A:
16461     PO,      LOAD-ENUA(4777),          !JAMUPP ADDRESS
16462     LOAD-ERROR(TEST712A),          !ERROR DIRECTORY KEY
16463     DCS-CTR(CS.),                 !COMPARE JUST AFTER BUS CYCLE UWORD, AT JAM
16464     NEXT,    J/LOADRET712A
(5471) DCS(1.00.1.0.0.0) BM(1010..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.110)

16465
16466 5466:
16467 LOADRET712A:
16468     PO,      BUMP-VERIFY,           !COUNT
16469     P3,      CSPD(00)+EMIT, RETURN/TEST712B, !RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16470     NEXT,    GOTO-PAGE(4),         !XFER
16471     J/GENADR712A
(5466) DCS(0.00.0.0.0.1) BM(0101..10.10..10.00..101..100...0.0.0..0..0...0.1111...1..0000.0...11.100...011.001.100)

16472
16473 4314: !(FREE)
16474 GENADR712A:
16475     P2-T,    D+NOT-ASPHI(C000001),    !MAKE D=(177776), INTERNAL ADDRESS OF PSW
16476     P3,      ASPLO(11)+D,             !AND SAVE IT
16477     NEXT,    J/BUSFCN712A
(4314) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..000..000...0.1.0..0..0...0.0000...0..0001.0...11.000...011.001.110)

16478
16479 4316: !(FREE)
16480 BUSFCN712A:
16481     P1,      BA+ASPLO(R11),          !BA=(177776)
16482     P2-T,    SR+BSPHI(C000001),     !SET BIT(00)=(1) FOR JAMUPP EXPECTED
16483     P3,      DATI,                   !DO A BUS "DATI", SHOULD GET INTERNAL ADDR ABORTED
16484     NEXT,    J/NEXT712A             !GO DELAY
(4316) DCS(0.00.0.0.0.0) BM(1010..01.11..10.01..000..000...0.0.1..1..0...1.0110...0..0000.0...11.000...100.100.111)

16485
16486 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16487 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16488 !** RETURN TO ADDRESS LEFT IN CSP(00) **
16489
16490 !*** END UP HERE IF NO JAMUPP ***
16491 4447:
16492 NEXT712A:
16493     SETUP,   RETURN/TEST712A,       !FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST
16494     NEXT,    GOTO-PAGE(7),          ! MUST DELAY A FEW MICROWORDS FOR BUS

```

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16495 J/BUTD-IS-ZERO ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
(4447) DCS(0.00.0.0.0.0) BM(0101..00.10..01.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

16496
16497
16498 !*** END UP HERE IF JAMUPP ***
16499

16500 ! - - - - -

16501 !
16502 ! TEST-712-B CHECKS THAT THE RIGHT JAM (INTERNAL ADDRESS) IS INDICATED IN THE JAMREG:
16503 ! FOR THIS JAM, THE JAMREG SHOULD REMAIN CLEAR

BIT:	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FCN:	000	0	SSYN	YEL	RED	WCS	POW	MEM	SSYN	CACH	ILL	MGT	RED	000	WCS	UBRK
	ADR		TIME	ZON	ZON	PAR	DIS	PAR	TIME	ERR	ADR	ABT	ZON	ADR	PAR	TRAP
(001000)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

16510
16511 5505:
16512 TEST712B:
16513 PO, LOAD-ENUA(ZTARGET402), ! SETUP FOR D=ZERO COMPARE
16514 LOAD-ERROR(TEST712B), ! ERROR DIRECTORY KEY
16515 DCS-CTR(C10.), ! COMPARE AT TARGET
16516 NEXT, J/GOTEST712P
(5505) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.101.000)

16517
16518 5450: !(FREE)
16519 GOTEST712B:
16520 SETUP, RETURN/TEST712C, ! GO TO SUBR WHICH:
16521 ! (001000) -> CSP(02)
16522 NEXT, CALL(CLRJAMT00) ! (JAMREG)-XOR-CSP(02) -> D, BUT(D-IS-ZERO)
(5450) DCS(0.00.0.0.0.0) BM(0110..00.10..10.10..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.101)

16523 ! - - - - -

16524 ! TEST-712-C CHECKS THAT THE "OTHER-JAM-H" SIGNAL IS LOW, INDICATING AN INTERNAL ADDRESS JAM

16525
16526 !
16527 !
16528 6524:
16529 TEST712C:
16530 PO, LOAD-ENUA(ZTARGET401), ! BIT<01> CLEAR
16531 LOAD-ERROR(TEST712C), ! ERROR DIRECTORY KEY
16532 DCS-CTR(C3.), ! COMPARE AT TARGET
16533 NEXT, J/GOBUT712C
16534 (6524) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.000)

16535
16536 6500: !(FREE)
16537 GOBUT712C:
16538 SETUP, RETURN/TEST712D, ! RETURN TO START OF NEXT SUBTEST
16539 NEXT, GOTO-PAGE(7), ! BUT TABLE
16540 J/BUTOTHERJAM ! "OTHER JAM H" IN BIT<01>
(6500) DCS(0.00.0.0.0.0) BM(0110..00.10..10.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.010)

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16589

! - - - - -
! TEST-712-D CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:
! BACK IN 16. BIT MODE, SINCE I-O PAGE, PBA<17:16> READ AS "11"

BIT:	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FCN:	DATI	BG	0	NPR	DAT08	DAT0	PBA	PBA	HIB	LOB	TAG	CON	FLT	POW	CACH	YEL
	SERV		TIME				17	16	ERR	ERR	ERR	SERV	SERV	FAIL	ERR	ZON
(101740)	1	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0

6523:
TEST7120:
PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
LOAD-ERROR(TEST7120), !ERROR DIRECTORY KEY
DCS-CTR(C11.), !COMPARE AT TARGET
J/EXPEC7120
(6523) DCS[1.00.1.0.0.0] BM[0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.001]

6501: !(FREE)
EXPEC7120:
P3, CSPD[02]+EMIT, EMIT/101740, !DATI(1)H SET, PBA<17:16>="11"
NEXT, J/GOTEST7120 ! IN SERVICE REG
(6501) DCS[0.00.0.0.0.0] BM[1000..10.00..11.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...101.000.010]

6502: !(FREE)
GOTEST7120:
SETUP, RETURN/SCOPE712, !GO TO SUBR WHICH:
! CLR-JAM-ERRORS-[1], FOR NEXT TEST
NEXT, CALL(CJESERVICET00) ! (SERVICE)-XOR-CSP(02) -> 0, BUT(D-IS-ZERO)
(6502) DCS[0.00.0.0.0.0] BM[0101..00.10..01.00..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.111]

5447: !(FREE)
SCOPE712:
NEXT, BUTD(SCOPE), !NO ERROR: "TEST713A" (+1. WORDS)
J/TEST713A ! ERROR: "LOADRET712A" (-12. WORDS)
(5447) DCS[0.00.0.1.0.0] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.111]

! - - - - -
! TESTING 'DATI-NOINT', 'ILLEGAL INTERNAL ADDRESS' JAMUPP
! - - - - -

```

16590 !TEST-713-A DOES A BUS "DATI-NOINT" FUNCTION TO AN INTERNAL ADDRESS, TRYING TO FORCE
16591 ! AN "ILLEGAL INTERNAL ADDRESS" ABORT/JAMUPP
16592 5467:
16593 TEST713A:
16594     PO,          LOAD-ENUA(4777),          !JAMUPP ADDRESS
16595                LOAD-ERROR(TEST713A),      !ERROR DIRECTORY KEY
16596                DCS-CTR(C4.),              !COMPARE JUST AFTER BUS CYCLE UNORD, AT JAM
16597                BUMP-VERIFY,               !COUNT
16598                NEXT, J/LOADRET713A
16599 (5467) DCS(1.00.1.0.0.1) BM(1011..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.100)

```

```

16600 5464:
16601 LOADRET713A:
16602     P3,          CSPD(00)+EMIT, RETURN/TEST7138, !RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16603     NEXT,        GOTO-PAGE(7),                !XFER
16604                J/BUSFCN713A
16605 (5464) DCS(0.00.0.0.0.0) BM(0101..10.11..00.01..110..111...0.0.0..0..0...0.1111...1..0000.0...11.100...001.110.111)

```

```

16606 7167: !(FREE)
16607 BUSFCN713A:
16608     P1,          BA+ASPLO(R11),                !BA=(177776), GENERATED IN PREVIOUS SET OF TESTS
16609     P2-T,        SR+BSPHI(C000001),           !SET BIT<00>=(1) FOR JAMUPP EXPECTED
16610     P3,          DATI-NOINT,                   !DO A BUS "DATI-NOINT"
16611                NEXT, J/NEXT713A              !SHOULD GET "ILLEGAL INTERNAL ADDR" ABORTED
16612                GO DELAY                       !GO DELAY
16613 (7167) DCS(0.00.0.0.0.0) BM(1010..01.11..10.01..000..000...0.0.1..1..0...1.0001...0..0000.0...11.000...011.110.101)

```

```

16614 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16615 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16616 !** RETURN TO ADDRESS LEFT IN CSP(00) **

```

```

16617 !*** END UP HERE IF NO JAMUPP ***
16618 7365:
16619 NEXT713A:
16620     SETUP,       RETURN/TEST713A,             !FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST
16621     NEXT,        GOTO-PAGE(7),                ! MUST DELAY A FEW MICROWORDS FOR BUS
16622                J/BUTD-IS-ZERO               ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
16623 (7365) DCS(0.00.0.0.0.0) BM(0101..00.10..01.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

```

16624 !*** END UP HERE IF JAMUPP ***

```

```

16625 ! - - - - -
16626
16627
16628
16629
16630
16631

```

```

16632 !TEST-713-B CHECKS THAT THE RIGHT JAM (ILLEGAL INTERNAL ADDRESS) IS INDICATED IN THE JAMREG:

```

```

16633 !
16634 ! BIT:      15   14   13   12   11   10   09   08   07   06   05   04   03   02   01   00
16635 ! FCN:      ODD   0   SSYN YEL  RED  WCS  POW  MEM  SSYN CACH ILL  MGT  RED  ODD  WCS  UBRK
16636 !           ADR   TIME ZON  ZON  PAR  DIS  PAR  TIME ERR  ADR  ABT  ZON  ADR  PAR  TRAP
16637 ! (001040) 0   0   0   0   0   0   1   0   0   0   1   0   0   0   0
16638 !

```

```

16639 5616:
16640 TEST7138:
16641 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16642 LOAD-ERROR(TEST7138), !ERROR DIRECTORY KEY
16643 DCS-CTR(C10.), !COMPARE AT TARGET
16644 BUMP-VERIFY, !COUNT
16645 J/EXPEC7138
(5616) DCS(1.00.1.0.0.1) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.101.010)

```

```

16646 5452: !(FREE)
16647 EXPEC7138:
16648 P3, CSPD(02)+EMIT, EMIT/001040, !"ILLEGAL INTERNAL ADDRESS(1)H" SET
16649 NEXT, J/GOTEST7138
16650 (5452) DCS(0.00.0.0.0.0) BM(0000..10.00..10.00..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.101.011)

```

```

16651 5453: !(FREE)
16652 GOTEST7138:
16653 SETUP, RETURN/TEST713C, !GO TO SUBR WHICH:
16654 NEXT, CALL(JAM00) ! (JAMREG)-XOR-CSP(02) -> D, BUT(D-IS-ZERO)
16655 (5453) DCS(0.00.0.0.0.0) BM(0110..00.10..10.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.110)

```

```

16656 ! - - - - -
16657 !
16658 !
16659 !
16660 !
16661 !TEST-713-C CHECKS THAT THE "OTHER-JAM-H" SIGNAL IS HIGH, INDICATING A JAM PRESENT OTHER
16662 ! THAN ONLY A VALID "INTERNAL ADDRESS" JAM

```

```

16663 6522:
16664 TEST713C:
16665 PO, LOAD-ENUA(ZTARGET403), !BIT<01> SET
16666 LOAD-ERROR(TEST713C), !ERROR DIRECTORY KEY
16667 DCS-CTR(C3.), !COMPARE AT TARGET
16668 J/GOBUT713C
(6522) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.011)

```

```

16669 6503: !(FREE)
16670 GOBUT713C:
16671 SETUP, RETURN/TEST7130, !RETURN TO START OF NEXT SUBTEST
16672 NEXT, GOTO-PAGE(7) !BUT TABLE
16673 J/BUTOTHERJAM !"OTHER JAM H" IN BIT<01>
16674 (6503) DCS(0.00.0.0.0.0) BM(0110..00.10..10.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.101.010)

```

```

16675 ! - - - - -
16676 !
16677 !
16678 !
16679 !
16680 !TEST-713-D CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:
16681 ! BACK IN 16. BIT MODE, SINCE I-0 PAGE, PBA<17:16> READ AS "11"

```

```

16682 !
16683 ! BIT: 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01 00
16684 ! FCN: DATI BG 0 NPR DATOB DATO PBA PBA HIB LOB TAG CON FLT POW CACH YEL
16685 ! SERV TIME 17 16 ERR ERR ERR SERV SERV FAIL ERR ZON

```



```

16686 ! (101740) 1 0 0 0 0 0 1 1 1 1 1 0 0 0 0
16687
16688 6521:
16689 TEST7130:
16690 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16691 LOAD-ERROR(TEST7130), !ERROR DIRECTORY KEY
16692 DCS-CTR(C11.), !COMPARE AT TARGET
16693 BUMP-VERIFY, !COUNT
16694 J/EXPEC7130
(6521) DCS(1.00.1.0.0.1) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.100)

16695
16696 6504: !(FREE)
16697 EXPEC7130:
16698 P3, CSPD(02)+EMIT, EMIT/101740, !DATI(1)H SET, PBA(17:16)="11"
16699 NEXT, J/GOTEST7130 ! IN SERVICE REG
(6504) DCS(0.00.0.0.0.0) BM(1000..10.00..11.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...101.000.101)

16700
16701 6505: !(FREE)
16702 GOTEST7130:
16703 SETUP, RETURN/SCOPE713, !GO TO SUBR WHICH:
16704 ! CLR-JAM-ERRORS-[I] FOR NEXT TEST
16705 NEXT, CALL(CJESERVICETOD) ! (SERVICE)-XOR-CSP(02) -> D, BUT(D-IS-ZERO)
(6505) DCS(0.00.0.0.0.0) BM(0101..00.10..01.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.111)

16706
16707
16708
16709
16710 5451: !(FREE)
16711 SCOPE713:
16712 NEXT, BUTD(SCOPE), !NO ERROR: "TEST720A" (+1. WORDS)
16713 J/TEST720A ! ERROR: "LOADRET713A" (-11. WORDS)
(5451) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.101)

16714
16715
16716
16717
16718
16719
16720
16721 ! -----
16722
16723 !TESTING 'DATIB*-BYTE', 'ODD-ADDRESS' JAMUPP, I/O-PAGE-PBA(17:16) DECODE
16724
16725 ! -----
16726
16727 !TEST-720-A ATTEMPTS TO DO A BUS "DATIB*-BYTE" FUNCTION, TRYING TO FORCE AN "ODD ADDRESS"
16728 ! ABORT/JAMUPP, ALSO CHECKING THAT ALL SERVICE / JAM STATUS BITS SET CORRECTLY
16729 5465:
16730 TEST720A:
16731 PO, LOAD-ENUA(4777), !JAMUPP ADDRESS
16732 LOAD-ERROR(TEST720A), !ERROR DIRECTORY KEY
16733 DCS-CTR(C7.) !COMPARE JUST AFTER BUS CYCLE UWORD, AT JAM
16734 NEXT, J/LOADRET720A

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(5465) DCS(1.00.1.0.0.0) BM(1000..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.010)
16735 5462:
16736 LOADRET720A:
16737 P3, CSPD(00)+EMIT, RETURN/TEST720B, !RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16738 NEXT, GOTO-PAGE(7), !XFER
16739 J/LCADIR720A
16740 (5462) DCS(0.00.0.0.0.0) BM(0110..10.10..10.10..000..111...0.0.0..0..0...0.1111...1..0000.0...11.100...001.111.010)
16741 7172: !(FREE)
16742 LOADIR720A:
16743 P2-U, IR+EMIT, EMIT/000000, !"HALT" INSTRUCTION IS -BYTE
16744 NEXT, J/SETADR720A
16745 (7172) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...001.111.100)
16746 7174: !(FREE)
16747 SETADR720A:
16748 P3, CSPD(16)+EMIT, EMIT/060001, !BIT<15:13>="011", -IOPAGE; 000-ADDRESS
16749 NEXT, J/SETJAM720A
16750 (7174) DCS(0.00.0.0.0.0) BM(0110..10.00..00.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...001.111.101)
16751 7175: !(FREE)
16752 SETJAM720A:
16753 P2-T, SR+CSPD(D16), !SET BIT<00>=(1) FOR JAMUPP EXPECTED
16754 NEXT, J/BUSFCN720A
16755 (7175) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.0001...0..0000.0...11.000...001.111.110)
16756 7176: !(FREE)
16757 BUSFCN720A:
16758 P1, BA+SR, !SET BA<17:00>=(060001)
16759 P3, DATIB, !DO A BUS "DATIB*-BYTE", SHOULD GET 000 ADDRESS ABORTED
16760 NEXT, J/NEXT720A !GO DELAY
16761 (7176) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..1..0...1.0011...0..0000.0...11.000...011.110.100)
16762 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16763 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16764 !** RETURN TO ADDRESS LEFT IN CSP(00) **
16765 !*** END UP HERE IF NO JAMUPP ***
16766 7364:
16767 NEXT720A:
16768 SETUP, RETURN/TEST720A, !FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST
16769 NEXT, GOTO-PAGE(7), ! MUST DELAY A FEW MICROWORDS FOR BUS
16770 J/BUTD-IS-ZERO ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
16771 (7364) DCS(0.00.0.0.0.0) BM(0101..00.10..01.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)
16772 !*** END UP HERE IF JAMUPP ***
16773 ! - - - - -
16774 !
16775 !
16776 !
16777 !
16778 !
16779 !
16780 !TEST-720-B CHECKS THAT THE RIGHT JAM (000 ADDRESS) IS INDICATED IN THE JAMREG:

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```

16781
16782 BIT: 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01 00
16783 FCN: 000 0 Ssyn YEL RED WCS POW MEM Ssyn CACH ILL MGT RED 000 WCS UBRK
16784 ADR TIME ZON ZON PAR DIS PAR TIME ERR ADR ADR ZON ADR PAR TRAP
16785 (101004) 1 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0
16786
16787 6520:
16788 TEST7208:
16789 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16790 LOAD-ERROR(TEST7208), !ERROR DIRECTORY KEY
16791 DCS-CTR(C10.), !COMPARE AT TARGET
16792 BUMP-VERIFY !COUNT
16793 J/GOTEST7208
(6520) DCS(1.00.1.0.0.1) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...101.000.110)

```

```

16794
16795 6506: !(FREE)
16796 GOTEST7208:
16797 SETUP, RETURN/TEST720C, !GO TO SUBR WHICH:
16798 NEXT, CALL(000JAMT00) ! (JAMREG)-XOR-(101004) -> 0, BUT(D=ZERO) (000-ADDRESS)
(6506) DCS(0.00.0.0.0.0) BM(0100..00.11..11.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.100)

```

```

16799
16800
16801
16802 ! - - - - -
16803

```

```

16804 !TEST-720-C CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:
16805 NOTE: PBA<17:16> SHOULD NOT BE FORCED TO "11", IN 16. BIT MODE, WHEN BA<15:13>="011"
16806
16807 BIT: 15 14 13 12 11 10 09 08 07 06 05 04 03 02 01 00
16808 FCN: DATI BG 0 NPR DATOB DATO PBA PBA HIB LOB TAG CON FLT POW CACH YEL
16809 SERV TIME 17 16 ERR ERR ERR SERV SERV FAIL ERR ZON
16810 (100340) 1 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0
16811

```

```

16812 4760:
16813 TEST720C:
16814 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
16815 LOAD-ERROR(TEST720C), !ERROR DIRECTORY KEY
16816 DCS-CTR(C11.), !COMPARE AT TARGET
16817 J/GOTEST720C
(4760) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.001.111)

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```

16818
16819 4317: !(FREE)
16820 GOTEST720C:
16821 SETUP, RETURN/TEST721A, !GO TO SUBR WHICH:
16822 NEXT, CALL(DATISERVICET00) ! CLR-JAM-ERRORS, TO RESET FOR NEXT TEST
16823 (4317) DCS(0.00.0.0.0.0) BM(0100..00.10..11.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.101)

```

```

16824
16825
16826
16827
16828

```

```

16829
16830
16831 ! -----
16832 ! TESTING 'DATOB*-BYTE', 'ODD-ADDRESS' JAMUPP, I/O-PAGE-PBA<17:16> DECODE
16833 ! -----
16834
16835 !
16836
16837 ! TEST-721-A ATTEMPTS TO DO A BUS "DATOB*-BYTE" FUNCTION, TRYING TO FORCE AN "ODD ADDRESS"
16838 ! ABORT/JAMUPP, ALSO CHECKING THAT ALL SERVICE / JAM STATUS BITS SET CORRECTLY
16839 4571:
16840 TEST721A:
16841     PO,      LOAD-ENJA(4777),      ! JAMUPP ADDRESS
16842             LOAD-ERROR(TEST721A), ! ERROR DIRECTORY KEY
16843             DCS-CTR(C6.),         ! COMPARE JUST AFTER BUS CYCLE UWORD, AT JAM
16844     NEXT,    J/LOADRET721A
(4571) DCS(1.00.1.0.0.0) BM(1001..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.000)

16845
16846 4320: !(FREE)
16847 LOADRET721A:
16848     P3,      CSPD(00)+EMIT, RETURN/TEST721B, ! RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16849     NEXT,    GOTO-PAGE(7),           ! XFER
16850     NEXT,    J/SETADR721A
(4320) DCS(0.00.0.0.0.0) BM(0100..10.10..11.11..011..111...0.0.0..0..0...0.1111...1..0000.0...11.100...001.111.011)

16851
16852 7173: !(FREE)
16853 SETADR721A:
16854     P3,      CSPD(16)+EMIT, EMIT/120001, ! BIT<15:13>="101", -IOPAGE; ODD-ADDRESS
16855     NEXT,    J/SETJAM721A
(7173) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...010.000.000)

16856
16857 7200: !(FREE)
16858 SETJAM721A:
16859     P2-T,    SR+CSPD(016),          ! SET BIT<00>=(1) FOR JAMUPP EXPECTED
16860     NEXT,    J/BUSFCN721A
(7200) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.0001...0..0000.0...11.000...010.000.001)

16861
16862 7201: !(FREE)
16863 BUSFCN721A:
16864                                     ! NOTE: "IR"=(000000)=-BYTE FROM PREV TEST
16865     P1,      BA+SR,                 ! SET BA<17:00>=(120001)
16866     P3,      DATOB,                 ! DO A BUS "DATOB*-BYTE", SHOULD GET ODD ADDRESS ABORTED
16867     NEXT,    J/NEXT721A             ! GO DELAY
(7201) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..1..0...1.0101...0..0000.0...11.000...011.110.010)

16868
16869 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16870 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16871 !** RETURN TO ADDRESS LEFT IN CSP(00) **
16872
16873 !*** END UP HERE IF NO JAMUPP ***
16874 7362:
16875 NEXT721A:
16876     SETUP,   RETURN/TEST721A,      ! FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST

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KD11-K MICRO V00A-1 00:00:03 12-MAR-77

16877 NEXT, GOTO-PAGE(7), ! MUST DELAY A FEW MICROWORDS FOR BUS
 16878 J/BUTD-IS-ZERO ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
 (7362) DCS(0.00.0.0.0.0) BM(0100..00.10..11.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

!*** END UP HERE IF JAMUPP ***

! TEST-721-B CHECKS THAT THE RIGHT JAM (ODD ADDRESS) IS INDICATED IN THE JAMREG:

BIT:	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FCN:	000	0	SSYN	YEL	RED	WCS	POW	MEM	SSYN	CACH	ILL	MGT	RED	000	WCS	UBRK
	ADR		TIME	ZON	ZON	PAR	DIS	PAR	TIME	ERR	ADR	ABT	ZON	ADR	PAR	TRAP
(101004)	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0

4573:

TEST721B:

PO, LOAD-ENUA(ZTARGET402), ! SETUP FOR D=ZERO COMPARE
 LOAD-ERROR(TEST721B), ! ERROR DIRECTORY KEY
 DCS-CTR(C10.), ! COMPARE AT TARGET
 J/GOTEST721B

(4573) DCS(1.00.1.0.0.0) BM(0101..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.001)

4321: !(FREE)

GOTEST721B:

SETUP, RETURN/TEST721C, ! GO TO SUBR WHICH:
 NEXT, CALL(ODDJAMT00) ! (JAMREG)-XOR-(101004) -> D, BUT(D=ZERO) [ODD-ADDRESS]

(4321) DCS(0.00.0.0.0.0) BM(0100..00.10..11.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.100)

! TEST-721-C CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:

NOTE: PBA<17:16> SHOULD NOT BE FORCED TO "11", IN 16. BIT MODE, WHEN BA<15:13>="101"

BIT:	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FCN:	DATI	BG	0	NPR	DAT08	DAT0	PBA	PBA	HIB	LOB	TAG	CON	FLT	POW	CACH	YEL
		SERV		TIME			17	16	ERR	ERR	ERR	SERV	SERV	FAIL	ERR	ZON
(002340)	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0

4577:

TEST721C:

PO, LOAD-ENUA(ZTARGET402), ! SETUP FOR D=ZERO COMPARE
 LOAD-ERROR(TEST721C), ! ERROR DIRECTORY KEY
 DCS-CTR(C11.), ! COMPARE AT TARGET
 J/GOTEST721C

(4577) DCS(1.00.1.0.0.0) BM(0100. 00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.010)

4322: !(FREE)

GOTEST721C:

16923
16924
16925

```

16926          SETUP, RETURN/SCOPE721,          !GO TO SUBR WHICH:
16927          !                                ! CLR-JAM-ERRORS, TO RESET FOR NEXT TEST
16928          NEXT, CALL(DATOSERVICET00)         ! (SERVICE)-XOR-(002340) -> 0, BUT(D=ZERO) (DATO(1)H)
(4322) DCS(0.00.0.0.0.0) BM(0101..00.10..01.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.110)
16929
16930
16931
16932
16933          5454: !(FREE)
16934          SCOPE721:
16935          NEXT, BUTD(SCOPE),                  !NO ERROR: "TEST722A" (+1. WORDS)
16936          J/TEST722A                          ! ERROR: "LOADRET720A" (-24. WORDS)
(5454) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.110.011)
16937
16938
16939
16940
16941
16942          ! -----
16943          ! TESTING 'INVALIDATE', 'ODD-ADDRESS' JAMUPP, I/O-PAGE-PBA<17:16> DECODE
16944          ! -----
16945          !
16946          !
16947          !
16948          ! TEST-722-A ATTEMPTS TO DO A BUS "INVALIDATE" FUNCTION, TRYING TO FORCE AN "ODD ADDRESS"
16949          ! ABORT/JAMUPP, ALSO CHECKING THAT ALL SERVICE / JAM STATUS BITS SET CORRECTLY
16950          5463:
16951          TEST722A:
16952          PD, LOAD-ENUA(4777),                ! JAMUPP ADDRESS
16953          LOAD-ERROR(TEST722A),              ! ERROR DIRECTORY KEY
16954          DCS-CTR(C6.),                      ! COMPARE JUST AFTER BUS CYCLE UWORD, AT JAM
16955          NEXT, J/LOADRET722A
(5463) DCS(1.00.1.0.0.0) BM(1001..00.10..01.11..111..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.101.110)
16956
16957          5456: !(FREE)
16958          LOADRET722A:
16959          P3, CSPD(00)+EMIT, RETURN/TEST722B, !RETURN AFTER SUCCESSFUL JAM TO NEXT TEST
16960          NEXT, GOTO-PAGE(4),                !XFER
16961          NEXT, J/SETADR722A
(5456) DCS(0.00.0.0.0.0) BM(0100..10.10..01.10..100..100...0.0.0..0..0...0.1111...1..0000.0...11.100...100.111.000)
16962
16963          4470:
16964          SETADR722A:
16965          P3, CSPD(16)+EMIT, EMIT/140001,    !BIT<15:13>="110", -IOPAGE; ODD-ADDRESS
16966          NEXT, J/SETJAM722A
(4470) DCS(0.00.0.0.0.0) BM(1100..10.00..00.00..000..001...0.0.0..0..0...0.0001...1..0000.0...11.000...011.010.011)
16967
16968          4323: !(FREE)
16969          SETJAM722A:
16970          P2-T, SR+CSPD(016),                !SET BIT<00>=(1) FOR JAMUPP EXPECTED
16971          NEXT, J/BUSFCN722A
(4323) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.0001...0..0000.0...11.000...011.010.100)

```

```

16972
16973 4324: !(FREE)
16974 BUSFCN722A:
16975 P1, BA+SR, !SET BA<17:00>=(140001)
16976 P3, INVALIDATE, !DO A BUS "INVALIDATE", SHOULD GET OOD ADDRESS ABORTED
16977 NEXT, J/NEXT722A, !GO DELAY
(4324) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..1..0...1.0111...0..0000.0...11.000...101.010.100)

```

```

16978
16979 !** AT THIS POINT JAMUPP SHOULD OCCUR **
16980 !** CLASSIC FLOW (4777) -> (4757) -> (7XXX) -> (4XXX), AND THEN WE'RE BACK HERE **
16981 !** RETURN TO ADDRESS LEFT IN CSP(00) **

```

```

16982 !*** END UP HERE IF NO JAMUPP ***
16983 4524:
16984 NEXT722A:
16985 SETUP, RETURN/TEST722A, !FORCE A SCOPE LOOP ON THIS TEST, BUT FIRST
16986 NEXT, GOTO-PAGE(7), ! MUST DELAY A FEW MICROWORDS FOR BUS
16987 J/BUTD-IS-ZERO, ! ERROR TO TAKE EFFECT (IGNORE "BUT" OUTCOME HERE)
16988 (4524) DCS(0.00.0.0.0.0) BM(0101..00.10..01.10..011..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

```

```

16989
16990 !*** END UP HERE IF JAMUPP ***
16991
16992

```

```

16993 ! - - - - -
16994 !
16995 !
16996 ! TEST-722-B CHECKS THAT THE RIGHT JAM (OOD ADDRESS) IS INDICATED IN THE JAMREG:
16997 !

```

BIT:	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FCN:	000	0	SSYN	YEL	RED	WCS	POW	MEM	SSYN	CACH	ILL	MGT	RED	000	WCS	UBRK
	ADR		TIME	ZON	ZON	PAR	DIS	PAR	TIME	ERR	ADR	ABT	ZON	ADR	PAR	TRAP
(101004)	1	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0

```

17000
17001 4464:
17002 TEST722B:
17003 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
17004 LOAD-ERROR(TEST722B), !ERROR DIRECTORY KEY
17005 DCS-CTR(C11.), !COMPARE AT TARGET
17006 BUMP-VERIFY, !COUNT
17007 NEXT, J/GOTEST722B
17008 (4464) DCS(1.00.1.0.0.1) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.101)
17009

```

```

17010 4325: !(FREE)
17011 GOTEST722B:
17012 SETUP, RETURN/TEST722C, !GO TO SUBR WHICH:
17013 NEXT, CALL(OODJAMTOD), ! (JAMREG)-XOR-(101004) -> D, BUT(D=ZERO) [OOD-ADDRESS]
17014 (4325) DCS(0.00.0.0.0.0) BM(0100..00.10..01.10..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.100)

```

```

17015
17016 ! - - - - -
17017 !
17018 !
17019 !

```

17020 !TEST-722-C CHECKS THAT THE RIGHT BUS FUNCTION DECODE / PBA<17:16> ARE INDICATED IN SERVICE REG:
17021 NOTE: PBA<17:16> SHOULD NOT BE FORCED TO "11", IN 16. BIT MODE, WHEN BA<15:13>="110"

BIT:	15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
FCN:	DATI	BG	0	NPR	DAT08	DATO	PBA	PBA	HIB	LOB	TAG	CON	FLT	POW	CACH	YEL
		SERV		TIME			17	16	ERR	ERR	ERR	SERV	SERV	FAIL	ERR	ZON
(002340)	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	0

17027
17028 4465:
17029 TEST722C:
17030 PO, LOAD-ENVA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
17031 LOAD-ERROR(TEST722C), !ERROR DIRECTORY KEY
17032 DCS-CTR(C11.), !COMPARE AT TARGET
17033 NEXT, J/GOTEST722C

(4465) DCS[1.00.1.0.0.0] BM[0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.110]

17034 4326: !(FREE)
17035 GOTEST722C:
17036 SETUP, RETURN/SCOPE722, !GO TO SUBR WHICH:
17037 ! CLR-JAM-ERRORS, TO RESET FOR NEXT TEST
17038 ! (SERVICE)-XOR-(002340) -> 0, BUT(D=ZERO) (DATO[1]H)
17039 NEXT CALL(DATOSERVICET00)

(4326) DCS[0.00.0.0.0.0] BM[0100..00.01..10.10..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.110]

17040 4327: !(FREE)
17041 SCOPE722:
17042 NEXT, BUTD(SCOPE), !NO ERROR: "TEST730A" (+1. WORDS)
17043 J/TEST730A ! ERROR: "SETADR720A" (-11. WORDS)
17044

(4327) DCS[0.00.0.1.0.0] BM[0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...100.111.001]

!.PAGE=====

.TOC * TEST730-731: BUS CYCLES TO/FROM MEMORY

*
* TESTS. 730A - 731E UWORDS: 063 + 057
*
* FUNCTIONS:
*
* THESE TESTS CHECK THAT ACTUAL BUS CYCLES CAN BE CORRECTLY EXECUTED.
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17070
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17072
17073 ! -----
17074
17075 ! THIS FIRST SERIES OF TESTS DOES A DATO/DATIP/DATO/DATIB SEQUENCE, CHECKING THAT
17076 ! EACH FUNCTION OPERATES AS EXPECTED.
17077 ! -----
17078
17079 ! TEST-730-A DOES A DATO, AND THEN CHECKS THAT THE DBUF LATCH (DS) ALSO GETS LOADED WITH THE
17080 ! DATA, AND THAT IT IS ENABLED ON BUSDIN IN THE MICROWORD AFTER THE BUS CYCLE (IE, EMIT
17081 ! IS TEMPORARILY DISABLED)
17082
17083 4471:
17084 TEST730A:
17085     PO,      LOAD-ENUA(ZTARGET402),      ! SETUP FOR D=ZERO COMPARE
17086             LOAD-ERROR(TEST730A),      ! ERROR DIRECTORY KEY
17087             DCS-CTR(C9.),              ! COMPARE AT TARGET
17088     NEXT,    J/LOADIR730A
(4471) DCS(1.00.1.0.0.0) BM(0110..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...111.101.100)

17089
17090 4754:
17091 LOADIR730A:
17092     P2-U,    IR+EMIT, EMIT/125200,      ! "CMP-BYTE" INSTR; INSTR5-E88(412) DECODE
17093     NEXT,    J/LOADDATA730A
(4754) DCS(0.00.0.0.0.0) BM(1010..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.011.000)

17094
17095 4330: !(FREE)
17096 LOADDATA730A:
17097     P3,      CSPD[16]+EMIT, EMIT/125252, ! PATTERN (125252) IN BASCON AREA
17098     NEXT,    J/BUSFCN730A
(4330) DCS(0.00.0.0.0.0) BM(1010..10.10..10.10..101..010...0.0.0..0..0...0.0001...1..0000.0...11.000...011.011.001)

17099
17100 4331: !(FREE)
17101 BUSFCN730A:
17102     PO,      BUMP-VERIFY,              ! COUNT
17103     P1,      BA+ASPHI(C000000),        ! USE MEMORY ADDR(000000)
17104     P2-T,    D+CSPB(B16), D(C)+0,      ! USE DATA (125252)
17105     P3,      DATO,                    ! FOR A BUS "DATO" CYCLE
17106     NEXT,    J/GETDBUF730A
(4331) DCS(0.00.0.0.0.1) BM(1010..11.01..11.01..100..000...0.1.0..1..0...1.0010...0..0000.0...11.000...011.011.010)

17107
17108 4332: !(FREE)
17109 GETDBUF730A:
17110     PO,      BUMP-VERIFY,              ! COUNT
17111     P3,      CSPD[17]+BUSDIN, EMIT/037777, ! DBUF SHOULD BE ENABLED; EMIT IS NOISE
17112     P3-T,    D+JUNK, SAVE-D(C),        ! MANGLE DATA IN D, DONT CARE WHAT RESULTS
17113     NEXT,    J/COMP730A
(4332) DCS(0.00.0.0.0.1) BM(0011..10.11..11.11..111..111...1.1.0..0..0...0.0000...1..0000.0...11.000...011.011.011)

17114
17115 4333: !(FREE)
17116 COMP730A:
17117     PO,      BUMP-VERIFY,              ! COUNT
17118     P2-T,    D+CSPD[17]-XOR-ASPHI(C125252), ! COMPARE RECEIVED:EXPECTED

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17119      NEXT,      J/ZAPDBUF730A
(4333) DCS(0.00.0.0.0.1) BM(0110..10.00..11.01..110..000...0.1.0..0..0...0.0000...0..0000.0...11.000...011.011.100)
17120
17121      4334:  !(FREE)
17122      ZAPDBUF730A:
17123      P3,      DBUF+D-[I],      !COPY ZEROED(?) D-REG INTO DBUF
17124      NEXT,      J/GOBUT730A
(4334) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...011.011.10.)
17125
17126      4335:  !(FREE)
17127      GOBUT730A:
17128      SETUP,    RETURN/TEST730B,      !RETURN TO START OF NEXT SUBTEST
17129      NEXT,      GOTO-PAGE(7),      !BUT TABLE
17130      J/BUTD-IS-ZERO      !CHECK FOR EQUALITY
(4335) DCS(0.00.0.0.0.0) BM(0100..00.10..01.10..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)
17131
17132
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17138      ! - - - - -
17139
17140      !TEST-730-B DOES A DATIP, AND THEN CHECKS THAT:
17141      ! 1) NO OOD ADDRESS ERROR RESULTS
17142      ! 2) THE RIGHT DATA (OUTPUT ABOVE) IS RETRIEVED (NOTE DBUF LATCH WAS ZEROED
17143      ! TO ALTER ITS COPY OF THE DATA)
17144      ! 3) THE BUS HOLDING FUNCTION OF THE 'DATIP' SHOULD BE EMPLOYED: 'BBSY' SHOULD REMAIN ASSERTED
17145      ! WELL PAST THE 'NORMAL' 1 MICROWORD AFTER THE BUS CYCLE. IN FACT, IT SHOULD REMAIN ASSERTED
17146      ! (HOLDING BUSDIN=UNIBUS-DATA-BUFFER, NOT EMIT, ETC) UNTIL CLEARED BY ANOTHER BUS CYCLE
17147      ! (NOT A DATIP), OR A BUTA(LAST) [DONE HERE].
17148
17149      4466:
17150      TEST730B:
17151      PO,      LOAD-ENUA(ZTARGET402),      !SETUP FOR D=ZERO COMPARE
17152      LOAD-ERROR(TEST730B),      !ERROR DIRECTORY KEY
17153      DCS-CTR(C7.),      !COMPARE AT TARGET
17154      NEXT,      J/EXPEC730B
(4466) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.110)
17155
17156      4336:  !(FREE)
17157      EXPEC730B:
17158      P3,      CSPD(02)+EMIT, EMIT/000340,      !SERVICE PORT BITS FOR A "DATIP"
17159      NEXT,      J/BUSFCN730B
(4336) DCS(0.00.0.0.0.0) BM(0000..10.00..00.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...011.011.111)
17160
17161      4337:  !(FREE)
17162      BUSFCN730B:
17163      P1,      BA+ASPHI(C000001),      !USE MEMORY ADDR(000001), OOD BYTE
17164      P2-T,    D+ZERO, D(C)+ALUI5,      !ZAP 0
17165      P3,      DATIP,      !FOR A BUS "DATIP" CYCLE
17166      BUTA(CLR-FLAG-RES-UCON),      !RESET BUSDIN TO EMIT/ZAP DBUF+D UCON
17167      NEXT,      J/GETIT730B

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17167 (4337) DCS(0.00.0.0.0.0) BM(0011..00.00..11.01..000..100...0.1.0..1..0...i.0100...0..0000.0...11.010...011.100.000)
17168 4340: !(FREE)
17169 GETIT730B:
17170 PO, BUMP-VERIFY, !COUNT
17171 P3, CSPD(17)+BUSDIN, EMIT/052525, !UNIBUS DATA SHOULD BE ENABLED; EMIT IS NOISE
17172 NEXT, J/GOBUT730B
(4340) DCS(0.00.0.0.0.1) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.0000...1..0000.0...11.000...011.100.001)
17173 4341: !(FREE)
17174 GOBUT730B:
17175 SETUP, RETURN/TEST730C, !EXEC SUBR WHICH:
17176 NEXT, CALL(CSP17XOR125252) ! CSP(17)-XOR-(125252) -> D, BUT(D=ZERO)
17177 (4341) DCS(0.00.0.0.0.0) BM(0100..00.10..01.10..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.000.011)
17178
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17183 ! - - - - -
17184
17185 !TEST-730-C NOW CHECKS THAT THE 'DATIP' FUNCTION IS STILL HOLDING THE BUS BY
17186 ! VERIFYING THAT THE UNIBUS DATA BUFFER IS STILL ENABLED ON BUSDIN, DATA=(125252)
17187 4460:
17188 TEST730C:
17189 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
17190 LOAD-ERROR(TEST730C), !ERROR DIRECTORY KEY
17191 DCS-CTR(CS.), !COMPARE AT TARGET
17192 BUMP-VERIFY, !COUNT
17193 NEXT, J/GOBUT730C
(4460) DCS(1.00.1.0.0.1) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.010)
17194 4342: !(FREE)
17195 GOBUT730C:
17196 SETUP, RETURN/TEST730C1, !EXEC SUBR WHICH:
17197 NEXT, CALL(BUSDINXOR125252) ! 1) BUSDIN -> CSP(17), EMIT=(052525)
17198 ! 2) CSP(17)-XOR-(125252) -> D, BUT(D=ZERO)
17199 (4342) DCS(0.00.0.0.0.0) BM(0100..00.10..01.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...001.111.111)
17200
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17205 ! - - - - -
17206
17207 !TEST-730-C1 NOW CHECKS THAT THE 'DATIP' FUNCTION WILL RELEASE THE BUS BY
17208 ! VERIFYING THAT THE UNIBUS DATA BUFFER IS NOT ENABLED ON BUSDIN, DATA=(125252),
17209 ! AFTER ISSUING BUTA(LAST), WHICH SHOULD CLEAR THE DATIP/BBSY FLOP
17210 4450:
17211 TEST730C1:
17212 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
17213 LOAD-ERROR(TEST730C1), !ERROR DIRECTORY KEY

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17214          DCS-CTR(C5.),          !COMPARE AT TARGET
17215          P3, BUTA(LAST),          !ACTIVE BUT EFFECT: CLEAR OUT DATIP
17216          NEXT, J/GOBUT730C1
(4450) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...10.000...100.100.011)

17217          4443:
17218          GOBUT730C1:
17219          SETUP, RETURN/TEST7300,          !EXEC SUBR WHICH:
17220          !      1) BUSDIN -> CSP(17), EMIT=(052525)
17221          !      2) CSP(17)-XOR-(052525) -> D, BUT(D=ZERO)
17222          NEXT, CALL(BUSDINXOR052525)
(4443) DCS(0.00.0.0.0.0) BM(0100..00.10..01.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.000.100)

17223
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17227          ! - - - - -
17228
17229          !TEST-730-D DOES A DATO FOLLOWED BY A DATIB*BYTE*000, AND THEN CHECKS THAT THE RIGHT DATA
17230          ! IS WRITTEN/RETRIEVED FROM MEMORY LOCATIONS (00000)/(000001)
17231          ! AND THAT THE EMIT-DISABLE/UNIBUS DATA BUFFER ENABLE IS HANDLED CORRECTLY
17232          4461:
17233          TEST7300:
17234          PO,          LOAD-ENUA(ZTARGET402),          !SETUP FOR D=ZERO COMPARE
17235          LOAD-ERROR(TEST7300),          !ERROR DIRECTORY KEY
17236          DCS-CTR(C15.),          !HOLD UP FOR NOW
17237          NEXT, J/LOADDATA7300
(4461) DCS(1.00.1.0.0.0) BM(0000..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.011)

17238          4343: !(FREE)
17239          LOADDATA7300:
17240          P3,          CSPD(16)+EMIT, EMIT/052525,          !PATTERN (052525) IN BASCON AREA
17241          NEXT, J/SETZER7300
(4343) DCS(0.00.0.0.0.0) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.0001...1..0000.0...11.000...011.100.100)

17242
17243          4344: !(FREE)
17244          SETZER7300:
17245          P1,          BA+ASPHI(C000000),          !USE MEMORY ADDR(000000)
17246          P2-T,          D+CSPB(816), D(C)+0,          !USE C TA (052525)
17247          P3,          DATO,          !FOR A BUS "DATO" CYCLE
17248          NEXT, J/MANGLED7300
(4344) DCS(0.00.0.0.0.0) BM(1010..11.01..11.01..100..000...0.1.0..1..0...1.0010...0..0000.0...11.000...011.100.101)

17249
17250          4345: !(FREE)
17251          MANGLED7300:
17252          P3-T,          D+ASPHI(C125252), SAVE-D(C),          !MANGLE D CONTENTS, AFTER/AT P3-T
17253          NEXT, J/BUSFCN7300
(4345) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..110..111...1.1.0..0..0...0.0000...0..0000.0...11.000...011.100.110)

17254
17255          4346: !(FREE)
17256          BUSFCN7300:
17257          PO,          BUMP-VERIFY,          !COUNT
17258          DCS-CTR(C12.),          !COMPARE AT TARGET
17259          P1,          BA+ASPHI(C000001),          !ADDRESS ODD BYTE
17260

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17261          P3,          DATIB,          !BYTE READ -> PLAIN DATI; NO ODD ADDRESS ERROR
17262          NEXT,        J/GETIT730I)
(4346) DCS(0.00.1.0.0.1) BM(0011..00.00..11.01..000..000...0.0.0..1..0...1.0011...0..0000.0...11.000...011.100.111)

17263          4347:  !(FREE)
17264          GETIT7300:
17265          P3,          CSPD(17)+BUSDIN, EMIT/000000,          !UNIBUS DATA SHOULD BE ENABLED; EMIT IS NOISE
17266          NEXT,        J/GOBUT7300
(4347) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.0000...1..0000.0...11.000...011.101.000)

17268          4350:  !(FREE)
17269          GOBUT7300:
17270          SETUP,       RETURN/TEST730E,          !GO TO SUBR WHICH:
17271          NEXT,        CALL[CLRSERVICE(00)]          ! (SERVICE)-XOR-(000340) -> 0, BUT(D=ZERO)
(4350) DCS(0.00.0.0.0.0) BM(0100..00.10..01.10..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.100)

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17280 ! - - - - -
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17283 !TEST-730-E NOW CHECKS THAT THE BUS FUNCTION ABOVE ACTUALLY RETRIEVED THE RIGHT DATA:
17284 ! THE (052525) WRITTEN TO MEMORY LOCATION (000000) IN TEST7300
17285 4462:
17286 TEST730E:
17287     PO,          LOAD-ENVA(ZTARGET402),          !SETUP FOR D=ZERO COMPARE
17288                LOAD-ERROR(TEST730E),          !ERROR DIRECTORY KEY
17289                DCS-CTR(C4.),          !COMPARE AT TARGET
17290     NEXT,        J/GOBUT730E
(4462) DCS(1.00.1.0.0.0) BM(1011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.101.001)

17291          4351:  !(FREE)
17292          GOBUT730E:
17293          SETUP,       RETURN/SCOPE730,          !EXEC SUBP WHICH:
17294          NEXT,        CALL[CSP17XOR052525]          ! CSP(17)-XOR-(052525) -> 0, BUT(D=ZERO)
(4351) DCS(0.00.0.0.0.0) BM(0100..00.01..11.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.000.101)

17296          4352:  !(FREE)
17297          SCOPE730:
17298          NEXT,        BUTD(SCOPE),          !NO ERROR: "TEST731A" (+1. WORDS)
17300                J/TEST731A          ! ERROR: "LOADIR730A" (-24. WORDS)
(4352) DCS(0.00.0.1.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.101.101)

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17310 !-----
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17312 !THIS SECOND SERIES OF TESTS DOES A DATOB/DATI/DATI-CLKIR SEQUENCE, CHECKING THAT
17313 !EACH FUNCTION OPERATES AS EXPECTED.
17314 !-----
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17316
17317 !TEST-731-A DOES A DATOB*BYTE*000, AND THEN CHECKS THAT THE DBUF LATCH (DS) ALSO GETS LOADED WITH THE
17318 ! DATA, AND THAT IT IS ENABLED ON BUSDIN IN THE MICROWORD AFTER THE BUS CYCLE (IE, EMIT
17319 ! IS TEMPORARILY DISABLED)
17320 4755:
17321 TEST731A:
17322     PO,          LOAD-ENUA(ZTARGET402),          !SETUP FOR D=ZERO COMPARE
17323                 LOAD-ERROR(TEST731A),          !ERROR DIRECTORY KEY
17324                 DCS-CTR(C6.),                 !COMPARE AT TARGET
17325     NEXT,        J/BUSFCN731A
(4755) DCS[1.00.1.0.0.0] BM[1001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...111.110.100]

17326
17327 4764:
17328 BUSFCN731A:
17329     P1,          BA+ASPHI(C000001),          !USE MEMORY ADDR(000001), 000 BYTE
17330     P2-T,        D+ZERO, D[C]+ALUI5,        !USE DATA (000), ONE BYTE (000) ONLY
17331     P3,          DATOB,                      !FOR A BUS "DATOB*BYTE*000" CYCLE
17332     NEXT,        J/GETDBUF731A
(4764) DCS[0.00.0.0.0.0] BM[0011..00.00..11.01..000..100...0.1.0..1..0...1.0101...0..0000.0...11.000...011.101.011]

17333
17334 4353: !(FREE)
17335 GETDBUF731A:
17336     PO,          BUMP-VERIFY,                !COUNT
17337     P3,          CSPD(17)+BUSDIN,            !DBUF SHOULD BE ENABLED; EMIT IS NOISE
17338     P3-T,        D+ASPHI(C177777), SAVE-D[C], !MANGLE DATA IN D, DONT CARE WHAT RESULTS
17339     NEXT,        J/COMP731A
(4353) DCS[0.00.0.0.0.1] BM[1111..10.00..11.01..101..111...1.1.0..0..0...0.0000...1..0000.0...11.000...011.101.100]

17340
17341 4354: !(FREE)
17342 COMP731A:
17343     P2-T,        D+CSPD(D17), SAVE-D[C],    !COMPARE RECEIVED:(000000)
17344     NEXT,        J/GOBUT731A
(4354) DCS[0.00.0.0.0.0] BM[1010..10.00..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...011.101.101]

17345
17346 4355: !(FREE)
17347 GOBUT731A:
17348     SETUP,       RETURN/TEST731B,           !RETURN TO START OF NEXT SUBTEST
17349     NEXT,        GOTO-PAGE(7),              !BUT TABLE
17350     T/BUTO-IS-ZERO, !CHECK FOR EQUALITY
(4355) DCS[0.00.0.0.0.0] BM[0100..00.10..01.01..111..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001]

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17358 ! - - - - -
17359
17360 !TEST-731-B NOW CHECKS THAT NONE OF THE ABOVE BUS FUNCTIONS HAS ALTERED THE IR FROM WHEN
17361 ! IT WAS LOADED IN TEST730A, WITH THE VALUE (125200), INSTR5-E88(412) DECODE
17362 4457:
17363 TEST731B:
17364     PO,      LOAD-ENUA(ZTARGET412),      !SETUP FOR INSTR5/E88 DECODE
17365             LOAD-ERROR(TEST731B),      !ERROR DIRECTORY KEY
17366             DCS-CTR(CS.),              !COMPARE AT TARGET
17367             NEXT, J/BUSFCN731B
(4457) DCS(1.00.1.0.0.0) BM(1010..00.11..11.00..001..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.101.110)

17368
17369 4356: !(FREE)
17370 BUSFCN731B:
17371     P1,      BA+ASPHI(C000000),          !USE MEMORY ADDR(000000)
17372     P3,      DATI,                      !FOR A BUS "DATI" CYCLE
17373     NEXT,    J/GETIT731B
(4356) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..100. 000...0.0.0..1..0...1.0110...0..0000.0...11.000...011.101.111)

17374
17375 4357: !(FREE)
17376 GETIT731B:
17377     PO,      BUMP-VERIFY,               !COUNT
17378     P3,      CSPD(17)+BUSDIN, EMIT/152500, !UNIBUS DATA SHOULD BE ENABLED; EMIT IS NOISE
17379     NEXT,    J/GOBUT731B                ! THIS DATA IS INSTR5-E88(405) DECODE
(4357) DCS(0.00.0.0.0.1) BM(1101..10.01..01.01..000..000...0.0.0..0..0...0 000...1..0000.0...11.000...011.110.000)

17380
17381 4360: !(FREE)
17382 GOBUT731B:
17383     SETUP,   RETURN/TEST731C,          !RETURN TO START OF NEXT SUBTEST
17384     NEXT,    GOTO-PAGE(7),             !BUT TABLE
17385             J/BUTINSTRS                !CHECK THAT IR STILL HAS DATA (125200)
(4360) DCS(0.00.0.0.0.0) BM(0100..00.10..01.01..110..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

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17393 ! - - - - -
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17396 !TEST-731-C NOW CHECKS THAT THE BUS FUNCTION ABOVE ACTUALLY RETRIEVED THE RIGHT DATA:
17397 ! THE (052525) WRITTEN TO MEMORY LOCATION (001)/(000) IN TEST7300
17398 ! AND THE (000) WRITTEN TO MEMORY LOCATION (001) IN TEST731A
17399 ! TOGETHER THESE FORM A (000125) IN MEMORY LOCATION (001)@(000): INSTR5-E78(432) DECODE
17400 4456:
17401 TEST731C:
17402     PO,      LOAD-ENUA(ZTARGET432),      !SETUP FOR INSTR5-E78(432) DECODE
17403             LOAD-ERROR(TEST731C),      !ERROR DIRECTORY KEY

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17404          DCS-CTR(C7.),          !COMPARE AT TARGET
17405          BUMP-VERIFY,          !COUNT
17406          NEXT J/COMP731C
(4456) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.001)

17407          4361: !(FREE)
17408          COMP731C:
17409          P2-T, D+CSPD(D17), D(C)+0,          !GET DATA READ FROM DATI, ABOVE
17410          NEXT J/GOBUT731C
(4361) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0000...0..0000.0...11.000...011.110.010)

17412          4362: !(FREE)
17413          GOBUT731C:
17414          SETUP, RETURN/TEST731D,          !RETURN TO START OF NEXT SUBTEST
17415          NEXT CALL(DINTOIR-5)          !SUBR FOR: D -> IR, BUT(INSTR5)
(4362) DCS(0.00.0.0.0.0) BM(0100..00.10..01.01..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.111.011)

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17418
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17422          ! - - - - -
17423
17424          !TEST-731-D DOES A DATI-CLKIR, AND THEN CHECKS THAT THE RIGHT DATA
17425          ! IS WRITTEN/RETRIEVED FROM MEMORY LOCATIONS (000000)/(000001)
17426          ! AND THAT THE EMIT-DISABLE/UNIBUS DATA BUFFER ENABLE IS HANDLED CORRECTLY
17427          4455:
17428          TEST731D:
17429          PO,          LOAD-ENUA(ZTARGET402),          !SETUP FOR D=ZERO COMPARE
17430          LOAD-ERROR(TEST731D),          !ERROR DIRECTORY KEY
17431          DCS-CTR(C14.),          !COMPARE AT TARGET
17432          NEXT J/LOADIR731D
(4455) DCS(1.00.1.0.0.0) BM(0001..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.011)

17433          4363: !(FREE)
17434          LOADIR731D:
17435          P2-U,          IR+EMIT, EMIT/125200,          !PREV DATA IN IR FOR INSTR5-E88(412)
17436          NEXT J/BUSFCN731D
(4363) DCS(0.00.0.0.0.0) BM(1010..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.110.100)

17438          4364: !(FREE)
17439          BUSFCN731D:
17440          P1,          BA+ASPHI(000000),          !FROM LOCATION (000000)
17441          P3,          DATI-CLKIR,          !DO A DATI, AND CLKIR
17442          NEXT J/MANGLED731D
(4364) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..100..000...0.0.0..1..0...1.0000...0..0000.0...11.000...011.110.101)

17444          4365: !(FREE)
17445          MANGLED731D:
17446          P2-U,          !IR+DATA,          !IR SHOULD GET DATA HERE
17447          EMIT/152500,          !NOISE ON EMIT: INSTR5-E88(405)
17448          NEXT J/GOBUT731D
(4365) DCS(0.00.0.0.0.0) BM(1101..00.01..01.01..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.110)

```



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17450
17451 4366: !(FREE)
17452 GOBUT731D:
17453     SETUP, RETURN/TEST731E,           !GO TO SUBR WHICH:
17454     NEXT,  CALL(CLRSERVICE100)      ! (SERVICE)-XOR-(000340) -> D, BUT(D=ZERO)
(4366) DCS(0.00.0.0.0.0) BM(0100..00.10..01.01..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.100)

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17456
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17460
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17462 ! - - - - -
17463
17464

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17465 !TEST-731-E NOW CHECKS THAT THE BUS FUNCTION ABOVE ACTUALLY RETRIEVED THE RIGHT DATA:
17466 4454:
17467 TEST731E:
17468     PO, LOAD-ENIUA(ZTARGET432),       !SETUP FOR INSTRS-E78(432) DECODE
17469     LOAD-ERROR(TEST731E),           !ERROR DIRECTORY KEY
17470     DCS-CTR(C3.),                   !COMPARE AT TARGET
17471     NEXT, J/GOBUT731E
(4454) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..011..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.110.111)

```

```

17472
17473 4367: !(FREE)
17474 GOBUT731E:
17475     SETUP, RETURN/SCOPE731,         !RETURN TO SCOPE LOOP TEST WORD
17476     NEXT,  GOTO-PAGE(7),           !BUT TABLE
17477     J/BUTINSTRS                     !CHECK FOR RIGHT DATA
(4367) DCS(0.00.0.0.0.0) BM(0100..00.01..11.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.001)

```

```

17478
17479 4370: !(FREE)
17480 SCOPE731:
17481     P2-U, IR+EMIT, EMIT/125200,     !RESET IR FOR SCOPE LOOP
17482     NEXT, BUTD(SCOPE),              !NO ERROR: "LOADIR740A" (+5. WORDS)
17483     J/LOADIR740A                    ! ERROR: "BUSFCN731A" (-18. WORDS)
(4370) DCS(0.00.0.1.0.0) BM(1010..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...111.110.101)

```

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17485
17486 ! - - - - -
17487
17488 ! THESE SUBROUTINES ARE USED IN THE PREVIOUS TESTS:
17489
17490

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17491 7177: !(FREE)
17492 BOX12:
17493     P3, CSPD(17)+BUSDIN, EMIT/052525, !ENTRY FOR "BUSDINXOR125252"
17494     NEXT, J/C17X12
(7177) DCS(0.00.0.0.0.0) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.0000...1..0000.0...11.000...010.000.011)

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17495 7203: !(FREE)
17496

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17497 C17X12:
 17498 P2-T, D+CSPD(17)-XOR-ASPHI(C125252), !ENTRY FOR "CSP17XOR125252"
 17499 SAVE-D(C),
 17500 NEXT, J/BUTD-IS-ZERO !FINISH OUT BY TESTING RESULT OF COMPARISON
 (7203) DCS(0.00.0.0.0.0) BM(0110..10.00..11.01..110..111...0.1.0..0..0...0.0000...0..0000.0...11.000...011.100.001)

17501
 17502 7204: !(FREE)
 17503 BOX05:
 17504 P3, CSPD(17)+BUSDIN, EMIT/052525, !ENTRY FOR "BUSDINXOR052525"
 17505 NEXT, J/C17X05
 17506 (7204) DCS(0.00.0.0.0.0) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.0000...1..0000.0...11.000...010.000.101)

17507
 17508 7205: !(FREE)
 17509 C17X05:
 17510 P2-T, D+CSPD(17)-XOR-ASPHI(C052525), !ENTRY FOR "CSP17XOR052525"
 17511 SAVE-D(C),
 17512 NEXT, J/BUTD-IS-ZERO !FINISH OUT BY TESTING RESULT OF COMPARISON
 (7205) DCS(0.00.0.0.0.0) BM(0110..10.00..11.01..111..111...0.1.0..0..0...0.0000...0..0000.0...11.000...011.100.001)

17513
 17514 ! - - - - -
 17515
 17516
 17517
 17518
 17519

17520 !.PAGE=====

17521
 17522
 17523 .TOC * TEST740: BUS CYCLE MODIFICATION - PREFETCH ALTERATION, OVERLAP YANK
 17524

17525 !*****
 17526 !*
 17527 !* TESTS: 740A - 740D UWORDS: 020 + 043
 17528 !*
 17529 !* FUNCTIONS:
 17530 !*
 17531 !* THESE FOUR TESTS CHECK THAT LOGIC CONCERNED WITH:
 17532 !*
 17533 !* 1) BCO/PREFETCH = BCO(1) * NOT(PREFETCH*BUS[BUT(INSTR1)])
 17534 !* IE, ALTER BUS CODE (**1) -> (**0), IN A PREFETCH SITUATION
 17535 !*
 17536 !* AND 2) BEGIN-DATA-XFER = BEGIN(BUS/UCON) * NOT(PULSE-SUPPRESS(0)) * NOT(INH-SPLO)
 17537 !* IE, 'YANK' [STOP] A BUS CYCLE IN A NON-OVERLAP SITUATION
 17538 !*
 17539 !*****

17540
 17541
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 17544
 17545
 17546 ! - - - - -
 17547

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17548 !TEST-740-A CHECKS THAT BC(0)-H DOES NOT GET ALTERED FROM (1) -> (0) WHEN:
17549 ! BUTA(INSTR1)-H IS ASSERTED, BUT PREFETCH-H IS NEGATED
17550 4765:
17551 LOADIR740A:
17552 P2-U, IR+EMIT, EMIT/056000, ! (OVERLAP, -PREFETCH), (-BYTE, DOP, -SMO)
17553 NEXT, J/TEST740A
(4765) DCS(0.00.0.0.0.0) BM(0101..00.11..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...111.100.100)
    
```

```

17554 4744:
17555 TEST740A:
17556 PO, LOAD-ENUA(ZTARGET402), ! SETUP FOR D=ZERO COMPARE
17557 LOAD-ERROR(TEST740A), ! ERROR DIRECTORY KEY
17558 DCS-CTR(C12.), ! COMPARE AT TARGET
17559 NEXT, J/BUSFCN740A
17560 (4744) DCS(1.00.1.0.0.0) BM(0011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.001)
    
```

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17561 4371: !(FREE)
17562 BUSFCN740A:
17563 PO, BUMP-VERIFY ! COUNT
17564 P1, BA+ASPHI(000000), ! USE MEMORY ADDR (000000)
17565 P2-T, SR+ZERO, ! SR(00)=(0) FOR UNEXPECTED JAMUPS
17566 P3, DATIB, ! CODE=(3)/DATIB, POSSIBLY ALTERED TO (2)/DATO
17567 BUTA(INSTR-1), ! ACTIVE EFFECT ONLY - BRANCH MASKED
17568 NEXT, J/GOBUT740A ! (056000) TARGETS TO (316), MASKED UNDER (776)
17569 (4371) DCS(0.00.0.0.0.1) BM(0011..00.00..11.01..100..000...0.0.1..1..0...1.0011...0..0000.0...00.110...111.111.110)
    
```

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17570 4776:
17571 GOBUT740A:
17572 SETUP, RETURN/LOADIR740B, ! GO TO SUBR WHICH:
17573 ! CLR-JAM-ERRORS, FOR INSURANCE
17574 NEXT, CALL(DATISERVICETOD) ! (SERVICE)-XOR-(100340) -> D, BUT(D=ZERO)
17575 (4776) DCS(0.00.0.0.0.0) BM(0100..00.01..11.11..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.101)
    
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17576 ! - - - - -
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17583 !TEST-740-B CHECKS THAT BC(0)-H DOES GET ALTERED FROM (1) -> (0) WHEN:
17584 ! BUTA(INSTR1)-H IS ASSERTED, AND PREFETCH-H IS ASSERTED
17585 4372: !(FREE)
17586 LOADIR740B:
17587 P2-U, IR+EMIT, EMIT/020606, ! (OVERLAP, PREFETCH), (-BYTE, DOP, SMO)
17588 NEXT, J/TEST740B
(4372) DCS(0.00.0.0.0.0) BM(0010..00.00..01.10..000..110...0.0.0..0..0...1.1010...0..0000.0...11.000...100.101.011)
    
```

```

17589 4453:
17590 TEST740B:
17591 PO, LOAD-ENUA(ZTARGET402), ! SETUP FOR D=ZERO COMPARE
17592 LOAD-ERROR(TEST740B), ! ERROR DIRECTORY KEY
17593 DCS-CTR(C12.), ! COMPARE AT TARGET
17594 NEXT, J/BUSFCN740B
17595
    
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(4453) DCS(1.00.1.0.0.0) BM(0011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.011)
17596
17597 4373: !(FREE)
17599 BUSFCN740B:
1759J P1, BA+ASPHI(C00000G), !USE MEMORY ADDR (000000)
17600 P3, DATIB, !CODE=(3)/DATIB, POSSIBLY ALTERED TO (2)/DATO
17601 BUTA(INSTR-1), !ACTIVE EFFECT ONLY - BRANCH MASKED
17602 NEXT, J/GOBUT740B ! (020606) TARGETS TO (042), MASKED UNDER (766)
(4373) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..100..000...0.0.0..1..0...1.0011...0..0000.0...00.110...111.110.110)
17603
17604 4766:
17605 GOBUT740B:
17606 SETUP, RETURN/TEST740C, !GO TO SUBR WHICH:
17607 ! CLR-JAM-ERRORS, FOR INSURANCE
17608 NEXT, CALL(DATOSERVICET00) ! (SERVICE)-XOR-(002340) -> 0, BUT(D=ZERO)
(4766) DCS(0.00.0.0.0.0) BM(0100..00.10..01.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.110)
17609
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17614 ! - - - - -
17615
17616 !TEST-740-C CHECKS THAT BC(D)-H DOES NOT GET ALTERED FROM (1) -> (0) WHEN:
17617 ! BUTA(INSTR1)-H IS NEGATED, BUT PREFETCH-H IS ASSERTED
17618 4452:
17619 TEST740C:
17620 PD, LOAD-ENUA(ZTARGET7402), !SETUP FOR D=ZERO COMPARE
17621 LOAD-ERROR(TEST740C), !ERROR DIRECTORY KEY
17622 DCS-CTR(C12.), !COMPARE AT TARGET
17623 BUMP-VERIFY, !COUNT
17624 NEXT, J/BUSFCN740C !IR AS ABOVE: (OVERLAP,PREFETCH), (-BYTE DOP,SMD)
(4452) DCS(1.00.1.0.0.1) BM(0011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.111.100)
17625
17626 4374: !(FREE)
17627 BUSFCN740C:
17628 P1, BA+ASPHI(C000000), !USE MEMORY ADDR (000000)
17629 P3, DATIB, !CODE=(3)/DATIB, POSSIBLY ALTERED TO (2)/DATO
17630 NEXT, J/GOBUT740C ! (020606) TARGETS TO (042), MASKED UNDER (766)
(4374) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..100..000...0.0.0..1..0...1.0011...0..0000.0...11.000...011.111.101)
17631
17632 4375: !(FREE)
17633 GOBUT740C:
17634 SETUP, RETURN/LOADIR7400, !GO TO SUBR WHICH:
17635 ! CLR-JAM-ERRORS, FOR INSURANCE
17636 NEXT, CALL(DATISERVICET00) ! (SERVICE)-XOR-(100340) -> 0, BUT(D=ZERO)
(4375) DCS(0.00.0.0.0.0) BM(0100..00.10..00.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.101)
17637
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17642 ! - - - - -
17643
17644 !TEST-740-D CHECKS THAT WHEN BUTA(INSTR1)-H IS ASSERTED, AND OVERLAP-L IS
17645 ! NEGATED, THEN THE BUS CYCLE IS NOT EVEN ALLOWED TO BEGIN
17646 4400: !(FREE)
17647 LOADIR7400:
17648 PO, BUMP-VERIFY, !COUNT
17649 P2-U, IR+EMIT, EMIT/076000, !(-OVERLAP, -PREFETCH), (-BYTE, -DOP, -SOP)
17650 NEXT, J/TEST7400
(4400) DCS(0.00.0.0.0.0.1) BM(0111..00.11..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...100.101.001)

17651
17652 4451:
17653 TEST7400:
17654 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO COMPARE
17655 LOAD-ERROR(TEST7400), !ERROR DIRECTORY KEY
17656 DCS-CTR(C11.), !COMPARE AT TARGET
17657 NEXT, J/BUSFCN7400
(4451) DCS(1.00.1.0.0.0) BM(0100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.001)

17658
17659 4401: !(FREE)
17660 BUSFCN7400:
17661 P1, BA+ASPHI(C000001), !USE MEMORY ADDR (000001), TRY TO FORCE ODD ADDR
17662 P3, DATO, !TRY TO ALTER SERVICE FROM (100340)/DATI TO (002340)/DATO
17663 BUTA(INSTR-1), !ACTIVE EFFECT ONLY - BRANCH MASKED
17664 NEXT, J/GOBUT7400, !((076000) TARGETS TO (047), MASKED UNDER (767))
(4401) DCS(0.00.0.0.0.0.0) BM(0000..00.00..11.01..000..000...0.0.0..1..0...1.0010...0..0000.0...00.110...111.110.111)

17665
17666 4767:
17667 GOBUT7400:
17668 SETUP, RETURN/SCOPE740, !GO TO SUBR WHICH:
17669 NEXT, CALL(CJESERVICET00) ! [CSP(02) LOADED IN LAST TEST: SAME VALUE= (100340)]
17670 ! (SERVICE)-XOR-CSP(02) -> 0, BUT(D=ZERO)
(4767) DCS(0.00.0.0.0.0.0) BM(0100..00.10..00.00..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.100.111)

17671
17672
17673 4402: !(FREE)
17674 SCOPE740:
17675 P2-U, IR+EMIT, EMIT/056000, !RELOAD IR FOR TEST740A
17676 NEXT, BUT(SCOPE1), !NO ERROR: "TEST761A" (+1. WORDS)
17677 ! ERROR: "LOADIR740A" (-16. WORDS)
17678 ! TEST761A
(4402) DCS(0.00..1.0.0) BM(0101..00.11..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...111.100.101)

17679
17680
17681
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17684 !.PAGE=====
17685
17686
17687 .TOC * TEST761-763: TESTING UNIBUS INTERRUPT SERVICE WITH DL11-W LINE CLOCK
17688
17689 !*****

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17690 !*
17691 !* TESTS: 761A - 7630 UWORDS: 060 + 045
17692 !*
17693 !* FUNCTIONS: TESTS 761A - 7630 CAUSE AN INTERRUPT ON THE UNIBUS AT
17694 !* LEVEL BR6, USING THE DL11-W LINE CLOCK AS A GENERATOR,
17695 !* THEN TEST TO SEE THAT ALL THE APPROPRIATE BELLS AND
17696 !* WHISTLES AND PARAPHERNALEAXJAISOURE ALSO RESPOND.
17697 !*
17698 !*****
17699
17700
17701
17702
17703
17704
17705 !-----
17706
17707 !THIS FIRST SET OF THREE TESTS CLEAR OUT ALL THE I-O UCON REGISTERS:
17708 !CLR-JAM-ERRORS, CLR-YELLOW-ZONE, CLEAR-CONSOLE-SERVICE, CLR-NPR-TIMEOUT, CLR-PWR-FAIL, AND
17709 !ALSO THIS TIME DO AN "INIT" ON THE UNIBUS, VIA THE BUS-INIT-UCON FUNCTION.
17710 !ALSO SET ALL THE FLAGS<8:0>H=ZERO, AND THE FULL PS<15:00>H=ZERO,
17711 ! (IE, PROCESSOR PRIO=0, T-BIT=0).
17712
17713 !THEN CHECK TO SEE THAT ALL THE RELEVANT BUS CONTROL INTERRUPT LOGIC IS RESET.
17714
17715
17716
17717
17718
17719 !-----
17720
17721 !TEST 761A CHECKS THAT SERVICE-H=NOT(INTR-HIGH-H*FLAG7(0)H*BG-SERVICE(0)H) IS LOW,
17722 ! WHEN INTR-HIGH-H=HIGH, FLAG7(0)H=HIGH, AND BG-SERVICE(0)H=HIGH
17723 ! IE, AFTER UNIBUS-INIT, AND CLEAR SERVICE CONDITIONS, W/ PSW PRIO=000,
17724 ! THERE SHOULD BE NOTHING PENDING
17725 4745:
17726 TEST761A:
17727 PO, LOAD-ENUA(ZTARGET402), !BIT<00> CLEAR
17728 LOAD-ERROR(TEST761A), !ERROR DIRECTORY KEY
17729 DCS-CTR(C12.), !COMPARE AT TARGET
17730 P3, BUTA(CLR-FLAG-RES-UCON), !SET SR/LOAD, BUSDIN/EMIT
17731 NEXT, J/ZERODSR761A
(4745) DCS(1.00.1.0.0.0) BM(0011..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.010...111.111.010)
17732
17733 4772:
17734 ZERODSR761A:
17735 P2-T, D+ZERO, SR+ZERO, D(C)+ALU15, !ZERO FOR FLAGS/PS/JAMUPP FLAG
17736 NEXT, J/ZEROIT761A
(4772) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..100...0.1.1..0..0...0.0000...0..0000.0...11.000...100.000.011)
17737
17738 4403: !(FREE)
17739 ZEROIT761A:
17740 PO, BUMP-VERIFY, !COUNT
17741 BUSDIN+EMIT-(!), !KEEP IT ON

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17742      P3,      FLAG(B-0)+D(15-8)-(I),      !ZERO THE FLAGS
17743      PS+D-(I),      !ZERO ALL OF THE PS
17744      NEXT      J/CLEAR761A
(4403) DCS(0.00.0 0.1) BM(1000..00.00..00.01..010..011...0.0.0..0..0...1.1011...0..0000.0...11.000...100.000.100)

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17745      4404:      !(FREE)
17746      CLEAR761A:
17747      SETUP,      RETURN/GOBUT761A,      !GO TO SUBR WHICH DOES THE CLEARS AND BUS-INIT
17748      NEXT,      CALL(CLEAR-I-O-A)
17749      (4404) DCS(0.00.0.0.0.0) BM(0100..00.10..00.00..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.010.111)

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17750      4405:      !(FREE)
17751      GOBUT761G:
17752      SETUP,      RETURN/TEST761B,      !RETURN TO START OF NEXT SUBTEST
17753      NEXT,      GOTO-PAGE(7),      !BUT TABLE
17754      J/BUTSERVICE      !SERVICE-H IN BIT<00>
17755      (4405) DCS(0.00.0.0.0.0) BM(0100..00.11..11.11..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.101)

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17761      ! - - - - -
17762
17763      !TEST 761B CHECKS THAT VECTOR-LOAD(1)H=-(UNIBUS-INTR-L) IS LOW
17764      4771:
17765      TEST761B:
17766      PO,      LOAD-ENUA(ZTARGET401),      !BIT<01> CLEAR
17767      LOAD-ERROR(TEST761B),      !ERROR DIRECTORY KEY
17768      DCS-CTR(C3.),      !COMPARE AT TARGET
17769      BUMP-VERIFY,      !COUNT
17770      NEXT,      J/GOBUT761B
(4771) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.110)

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17771      4406:      !(FREE)
17772      GOBUT761B:
17773      SETUP,      RETURN/TEST761C,      !RETURN TO START OF NEXT SUBTEST
17774      NEXT,      GOTO-PAGE(7),      !BUT TABLE
17775      J/BUTVECTLOAD      !VECTOR-LOAD(1)H IN BIT<01>
17776      (4406) DCS(0.00.0.0.0.0) BM(0100..00.11..11.11..100..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.110)

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17782      ! - - - - -
17783
17784      !TEST 761C CHECKS THAT BG-SERVICE(0)H=BR>PS-L IS HIGH WHEN NO DEVICES REQUEST INTR ON UNIBUS
17785      4774:
17786      TEST761C:
17787      PO,      LOAD-ENUA(ZTARGET407),      !BIT<02> SET (ACTIVE LOW)

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17788 LOAD-ERROR(TEST761C), !ERROR DIRECTORY KEY
17789 DCS-CTR(C3.), !COMPARE AT TARGET
17790 NEXT, J/GOBUT761C
(4774) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.000.111]

```

```

17791 4407: !(FREE)
17792 GOBUT761C:
17793 SETUP, RETURN/SCOPE761, !RETURN TO SCOPE LOOP TEST WORD
17794 NEXT, GOTO-PAGE(7), !BUT TABLE
17795 J/BUTBGSERVL !BG-SERVICE[0]H IN BIT<02>
17796 (4407) DCS[0.00.0.0.0.0] BM[0100..00.10..00.01..000..111...0.0.0..0..0...0.0000...0 .0000.0...11.100...011.001.110]

```

```

17797 4410: !(FREE)
17798 SCOPE761:
17799 PO, BUMP-VERIFY, !COUNT
17800 P3, CSPO[05]+EMIT, EMIT/177546, ! (177546) IS UNIBUS ADDR OF CSR FOR DL11-W
17801 NEXT, BUTD[SCOPE], !NO ERROR: "TEST762A" (+1. WORDS)
17802 J/TEST762A ! ERROR: "ZERODSR761A" (-8. WORDS)
17803 (4410) DCS[0.00.0.1.0.1] BM[1111..10.11..11.01..100..110...0.0.0..0..0...0.1010...1..0000.0...11.000...111.111.011]
17804
17805

```

```

17806 ! -----
17807 ! THE FOLLOWING FIVE TESTS NOW CAUSE AN INTERRUPT ON THE UNIBUS, AND THEN
17808 ! CHECK THAT THE BUS CONTROL LOGIC RESPONDS CORRECTLY.
17809 ! FIRST THE LINE CLOCK INTR ENABLE BIT<06> IS SET, AND THE PROCESSOR PRIORITY IS SET TO (6).
17810 ! SINCE THE DL11-W IS A BR6 DEVICE, THE INTERRUPT SHOULD NOT COME THRU UNTIL THE PRIORITY IS
17811 ! LOWERED TO LEVEL (5) OR LOWER. NOTE THAT THE MICROCODE MUST GO IN TO A WAIT LOOP FOR A
17812 ! MINIMUM OF 16.7 MILLISEC @ 60 HZ, OR 20 MILLISEC @ 50 HZ TO GUARANTEE THAT AN INTERRUPT WILL
17813 ! BE PENDING. THE DELAY, BASED UPON UP3-UP3 = 170 NS, WILL BE 22.3 MILLISEC; AN ADEQUATE MARGIN.
17814
17815
17816
17817
17818
17819
17820
17821
17822
17823
17824 ! -----
17825
17826
17827 ! TEST 762A ENABLES THE INTERRUPT, THEN WAITS FOR THE DELAY PERIOD.
17828
17829
17830
17831
17832
17833

```

```

17834 !TEST 762A ENABLES THE INTERRUPT, THEN WAITS FOR THE DELAY PERIOD.
17835 4773:
17836 TEST762A:
17837 PO, LOAD-ENUA(ZAPD762A), !COMPARE JUST AFTER BUS CYCLE INVOKED
17838 LOAD-ERROR(TEST762A), !ERROR DIRECTORY KEY
17839 DCS-CTR(C5.), !COMPARE JUST AFTER "DATO" INITIATED, BELOW
17840 NEXT, J/DW11L762A
(4773) DCS[1.00.1.0.0.0] BM[1010..00.10..00.11..001..101...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.001]

```

```

17834 4411: !(FREE)
17835 DW11L762A:
17836

```



```

17837      P2-T,  SR+CSPD(005),      !GET SR=(177546), ADDR OF DL11-W CSR
17838      NEXT,   GOTO-PAGE(7);      !XFER
17839      J/MASK762A
(4411) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..111...0.0.1..0..0...0.1010...0..0000.0...11.100...010.000.010)

17840      7202:  !(FREE)
17841      MASK762A:
17842      P3,     CSPD(04)+EMIT, EMIT/177777,      !READ ALL BITS IN REGISTERS READ
17843      NEXT,   J/PRI06762A
(7202) DCS(0.00.0.0.0.0) BM(1111..10.11..11.11..111..111...0.0.0..0..0...0.1011...1..0000.0...11.000...010.000.111)

17845      7207:  !(FREE)
17846      PRI06762A:
17847      P3,     CSPD(15)+EMIT,      !EMITCON FOR: PS<7:5>="110"=(6), T-BIT=0
17848      NEXT,   EMIT/000300,      AND BIT<06> SET FOR DL11-W INTR ENABLE
17849      J/GETIT762A
(7207) DCS(0.00.0.0.0.0) BM(0000..10.00..00.11..000..000...0.0.0..0..0...0.0010...1..0000.0...11.000...010.001.000)

17851      7210:  !(FREE)
17852      GETIT762A:
17853      P1,     BA+SR,      !BA (- (177546), BITS<17:16> FORCED TO "11" ON IO-PAGE ADDRESS
17854      P2-T,   D+CSPB(815),  ! (000300) INTO 0 ** NOTE: BIT<1:0> = 00 FOR BA LOAD **
17855      P3,     DATO,      !WRITE IT OUT
17856      NEXT,   GOTO-PAGE(4),  !XFER FOR DCS XTN BITS
17857      J/ZAPD762A
(7210) DCS(0.00.0.0.0.0) BM(1010..11.10..00.00..000..100...0.1.0..1..0...1.0010...0..0000.0...11.100...011.001.101)

17859      4315:  !(FREE)
17860      ZAPD762A:
17861      P3-T,   D+ZERO, D(C)+ALU15,      !ZERO D, D(C) FOR LOOP; MUST DO AFTER P3-T
17862      NEXT,   J/NEXTD762A      !ENTER AT 2ND WORD OF LOOP; LET D SETTLE
(4315) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..100...1.1.0..0..0...0.0000...0..0000.0...11.000...100.110.111)

17864      !*** THE FOLLOWING TWO WORDS NOW GO INTO A COUNT LOOP TO WAIT FOR THE LINE CLOCK TO INTERRUPT
17865      !*** THE WAIT WILL BE A MAXIMUM DELAY, DEPENDING UPON THE PROCESSOR UP3-UP3 CYCLE TIME:
17866      !***
17867      !***
17868      !***
17869      !***
17870      !***
17871      !***
17872      !***
17873      !***
17874      !***
17875      !***
17876      !***
17877      !***
17878      !***
17879      !***
17880      !***
17881      !***
17882      !***
17883      !* ENTER HERE FOR ANOTHER LOOP *

```

PROCESSOR CYCLE TIME (NANOSEC)	TIME DELAY (MILLISEC)
150	19.7
160	21.0
* 170 *	* 22.3 *
180	23.6
190	24.9

< NOMINAL VALUE >

NOTE THAT THE ABOVE LOOP TIME IS A MAXIMUM VALUE; WE WILL EXIT EARLY IF THE INTERRUPT COMES THROUGH BEFORE WE OVERFLOW THE COUNTER. IF NO INTERRUPT COMES THROUGH BY THE TIME THE COUNT HAS OVERFLOWN, IT WILL BE CONSIDERED AN ERROR.

```

17884 4551:
17885 BUMP0762A:
17886 P3-T, D+D-PLUS-1, D(C)+COUT15, !BUMP D, SAVE CARRYOUT
17887 NEXT, BUTR(BG-SERVICE-L), !NEGATED: "NEXTD762A"
17888 J/SETPR6-762A !ASSERTED: "SETPR6-762A"
(4551) DCS(0.00.0.0.0.0) BM(1001..01.11..01.01..000..110...1.1.0..0..0...0.0000...0..0000.0...01.100...100.110.011)

```

```

17889 4467:
17890 NEXTD762A:
17891 PO, DCS-CTR(C15.), !STALL; NOTE: NO BUMP-VERIFIES IN THIS LOOP
17892 NEXT, BUTR(D(C)-8), !SET: "TEST762A1" D OVERFLOWN, ERROR
17893 J/BUMP0762A !CLEAR: "BUMP0762A" GO FOR NEXT LOOP
17894 (4467) DCS(0.00.1.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.011...101.101.001)

```

```

17895 !* COME HERE IF D OVERFLOWN *
17896 4553:
17897 TEST762A1:
17898 PO, LOAD-ERROR(TEST762A1), !ERROR DIRECTORY KEY
17899 DCS-CTR(C0.), !SIGNAL ERROR NOW
17900 NEXT, J/TEST762A !FORCE A SCOPE LOOP
17901 (4553) DCS(1.00.1.0.0.0) BM(1111..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...111.111.011)

```

```

17903 !*** COME HERE IF EXIT LOOP OK: D NOT OVERFLOWED, INTERRUPT PENDING ***
17904 4463:
17905 SETPR6-762A:
17906 P2-T, D+CSPD(D15), D(C)+0, !GET D<7:5>=(6), D<4>=(0)
17907 NEXT, J/SETPRI762A
17908 (4463) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.1.0..0..0...0.0010...0..0000.0...11.000...100.001.011)

```

```

17910 4413: !(FREE)
17911 SETPRI762A:
17912 PO, BUSDIN+EMIT-[I], !KEEP IT ON
17913 P2, PS[3-0]+D[3-0]-[I], !FOR USE IN TEST763A, PS(CC)="0000" HERE
17914 P3, PS[7-4]+D[7-4]-[I], !PRIO=6, ↑-BIT=0
17915 NEXT, J/TEST762B !NOTE: THE BR6 PENDING INTR SHOULD NOW HIDE UNDER PROCESSOR PRIO(6)
17916 (4413) DCS(0.00.0.0.0.0) BM(1000..00.00..00.01..010..000...0.0.0..0..0...1.1011...0..0000.0...11.000...111.101.001)

```

```

17917 ! - - - - -
17918 !
17919 !
17920 !
17921 !TEST 762B CHECKS THAT BG-SERVICE(0)H=BR>PS-L IS HIGH WHEN THE PROCESSOR PRIORITY(=6) IS AS HIGH
17922 !AS THE ONLY DEVICE WISHING TO REQUEST AN INTERRUPT (AT BR6).
17923 4751:
17924 TEST762B:

```

```

17925 PO, LOAD-ENUA(ZTARGET407), !BIT<02> SET (ACTIVE LOW)
17926 LOAD-ERROR(TEST762B), !ERROR DIRECTORY KEY
17927 DCS-CTR(C3.), !COMPARE AT TARGET
17928 BUMP-VERIFY,
17929 NEXT, J/GOBUT762B
(4751) DCS(1.00.1.0.0.1) BM(1100..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...111.110.010)

```

```

17930 4762:
17931

```

```

17932 GOBUT762B:
17933     SETUP, RETURN/TEST762C,      !RETURN TO START OF NEXT SUBTEST
17934     NEXT,  GOTO-PAGE(7),         !BUT TABLE
17935     J/BUTBGSERVL                !BG-SERVICE[0]H IN BIT<02>
(4762) DCS(0.00.0.0.0.0) BM(0100..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.110)

```

```

17936
17937
17938
17939
17940
17941
17942

```

```

! - - - - -
!TEST 762C CHECKS THAT BG-SERVICE[0]H=BR>PS-L IS LOW WHEN A DEVICE (DL11-W) IS REQUESTING AN INTR,
!AND THE PROCESSOR PRIORITY(=5) IS < THE BR LEVEL(=6). NO SUCH DEVICES PRESENT.
4740:

```

```

17946 TEST762C:
17947     PO,      LOAD-ENVA(ZTARGET403), !BIT<02> CLEAR (ACTIVE LOW)
17948     LOAD-ERROR(TEST762C),         !ERROR DIRECTORY KEY
17949     DCS-CTR(C7.),                 !COMPARE AT TARGET
17950     NEXT,   J/FILL762C
(4740) DCS(1.00.1.0.0.0) BM(1000..00.11..11.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.100)

```

```

17951 4414: !(FREE)
17952 FILL762C:
17953     P2-T,   D+ASPHI(C125252), D(C)+ALU00, !BIT<7:5>="101"=(5), BIT<4>=0
17954     NEXT,   J/DELAY762C
(4414) DCS(0.00.0.0.0.0) BM(1111..00.00..11.01..110..010...0.1.0..0..0...0.0000...0..0000.0...11.000...100.001.101)

```

```

17956 4415: !(FREE)
17957 DELAY762C:
17958     SETUP, RETURN/SETPRI762C,      !EXEC 3. UWORDS AFTER SETTING PRIORITY, FOR DELAY
17959     P2,     PS(3-0)+0(3-0),         !FOR USE IN TEST763A, PS(CC)="1010"
17960     P3,     PS(7-4)+0(7-4),         !SET PRIORITY(=5), AT P3-T OF THIS UWORD
17961     NEXT,   GOTO-PAGE(7),          !GO DO A JUMP, AND A BUTA(RETURN)
17962     J/BUTD-IS-ZERO                 !DON'T REALLY CARE ABOUT THE RESULT OF THIS
17963 (4415) DCS(0.00.0.0.0.0) BM(0111..00.01..00.00..110..111...0.0.0..0..0...1.1010...0..0000.0...11.100...011.100.001)

```

```

17964 7206: !(FREE)
17965 SETPRI762C:
17966
17967     !BG-SERVICE[0]H SHOULD BE ASSERTED BY NOW
17968     SETUP, RETURN/TEST762C,      !RETURN TO START OF NEXT SUBTEST
17969     NEXT,   GOTO-PAGE(7),         !BUT TABLE
17970     J/BUTBGSERVL                !BG-SERVICE[0]H IN BIT<02>
(7206) DCS(0.00.0.0.0.0) BM(0100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.110)

```

```

17971
17972
17973
17974
17975
17976 ! - - - - -
17977 !TEST 762D CHECKS THAT BG-SERVICE[1]H+FLTPT-SERVICE-H IS HIGH, WHEN BG-SERVICE[1]H IS SET
17978

```

```

17979 4741:
17980 TEST7620:
17981 PO, LOAD-ENUA(ZTARGET417), !BIT<03> SET
17982 LOAD-ERROR(TEST7620), !ERROR DIRECTORY KEY
17983 DCS-CTR(C3.), !COMPARE AT TARGET
17984 NEXT, J/GOBUT7620
(4741) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..001..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.110)

```

```

17985
17986 4416: !(FREE)
17987 GOBUT7620:
17988 SETUP, RETURN/TEST762E, !RETURN TO START OF NEXT SUBTEST
17989 NEXT, GOTO-PAGE(7), !BUT TABLE
17990 J/BUTBGFPSEV !BG-SERVICE(1)H+FLTPT-SERVICE-H IN BIT<03>
(4416) DCS(0.00.0.0.0.0) BM(0100..00.11..10.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.000.111)

```

```

17991
17992
17993
17994
17995
17996
17997

```

```

17998 !TEST 762E NOW READS THE "SERVICE" PORT OF THE STATUS MUX TO SEE:
17999 !SERVICE<15:00>H = "0 100 011 111 100 000"
18000

```

```

18001 IMPORTANT BITS ARE:
18002 B15 = DATI(1)H = 0 B14 = BG-SERVICE(1)H = 1 B11 = DATOB(1)H = 0
18003 B10 = DATO(1)H = 1 B09 = PBA<17>H = 1 B08 = PBA<16>H = 1
18004

```

```

18005 4730:
18006 TEST762E:
18007 PO, LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
18008 LOAD-ERROR(TEST762E), !ERROR DIRECTORY KEY
18009 DCS-CTR(C10.), !COMPARE AT TARGET
18010 NEXT, J/EXPEC762E
(4730) DCS(1.00.1.0.0.0) BM(0101..00 1..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.001.111)

```

```

18011
18012 4417: !(FREE)
18013 EXPEC762E:
18014 P3, CSPD(02)+EMIT, !EXPECTED VALUE OUT OF SERVICE PORT:
18015 EMIT/043740, !"0100 0111 1110 0000"
18016 NEXT, J/GOGET762E
(4417) DCS(0.00.0.0.0.0) BM(0100..10.01..11.11..100..000...0.0.0..0..0...0.1101...1..0000.0...11.000...100.010.000)

```

```

18017
18018 4420: !(FREE)
18019 GOGET762E:
18020 PO BUMP-VERIFY
18021 SETUP, RETURN/TEST762F, !GO TO SUBR WHICH:
18022 NEXT, CALL(SERVICET00) !CSP(02).XOR.SERVICE -> 0, BUT(D=ZERO)
(4420) DCS(0.00.0.0.0.1) BM(0100..00.11..10.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.101.000)

```

```

18023
18024
18025

```

```

18026 ! -----
18027
18028 !TEST 762F CHECKS THAT SERVICE-H=NOT(INTR-HIGH-H*FLAG7(0)H*BG-SERVICE(0)H) IS HIGH,
18029 ! WHEN INTR-HIGH-H=HIGH, FLAG7(0)H=HIGH, AND BG-SERVICE(0)H=LOW
18030 4711:
18031 TEST762F:
18032     PO,      LOAD-ENUA(ZTARGET403),      !BIT<00> SET
18033             LOAD-ERROR(TEST762F),      !ERROR DIRECTORY KEY
18034             DCS-CTR(C3.),              !COMPARE AT TARGET
18035     NEXT,    J/GOBUT762F
(4711) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..011..0.0.0..0..0..0.0000...0..0000.0...11.000...100.010.001)

```

```

18036
18037 4421: !(FREE)
18038 GOBUT762F:
18039     SETUP,  RETURN/TEST763A,          !RETURN TO START OF NEXT SUBTEST
18040     NEXT,   GOTO-PAGE(7),            !BUT TABLE
18041             J/BUTSERVICE            !SERVICE-H IN BIT<00>
(4421) DCS(0.00.0.0.0.0) BM(0100..00.11..11.10..001..111...0.0.0..0..0..0.0000...0..0000.0...11.100...011.100.101)

```

```

18042
18043
18044
18045
18046
18047 ! -----
18048

```

```

18049 !THIS NEXT SEQUENCE OF TWO TESTS RESPONDS TO THE BUS INTERRUPT REQUEST BY:
18050 ! (1) ASSERTING "ALLOW-BG[1]H", THUS ALLOWING THE BUS GRANT TO THE DL11-W, SO THAT
18051 ! (2) "VECTOR-LOAD[1]H" WILL BE ASSERTED, INDICATING THAT THE DEVICE HAS PUT ITS
18052 !     VECTOR ON UNIBUS DATA<B:0>L, AND THEN
18053 ! (3) ACTUALLY READING THE VECTOR FOR THE DL11-W (100)(B), AND VALIDATING ITS CORRECTNESS.
18054
18055
18056

```

```

18057 ! -----
18058

```

```

18059 !TEST 763A CHECKS THAT AFTER "ALLOW-BG[1]H" IS GIVEN TO THE INTERRUPTING DEVICE,
18060 ! THEN "VECTOR-LOAD[1]H" IS ASSERTED
18061 4761:
18062 TEST763A:
18063     PO,      LOAD-ENUA(VECTLOAD763A),  !COMPARE AT "VECTOR-LOAD[1]H" IN BIT<01> SET
18064             LOAD-ERROR(TEST763A),      !ERROR DIRECTORY KEY
18065             DCS-CTR(C5.),              !COMPARE AT TARGET
18066     NEXT,    J/EXPEC763A
(4761) DCS(1.00.1.0.0.0) BM(1010..00.10..01.11..011..011...0.0.0..0..0..0.0000...0..0000.0...11.000...100.010.010)

```

```

18067
18068 4422: !(FREE)
18069 EXPEC763A:
18070     PO,      BUMP-VERIFY,              !COUNT
18071     P3,      CSPD(01)+EMIT, EMIT/100,  !DL11-W VECTOR IS (100)B
18072     NEXT,    J/ALLOW763A
(4422) DCS(0.00.0.0.0.1) BM(0000..10.00..00.01..000..000...0.0.0..0..0..0.1110...1..0000.0...11.000...111.011.001)

```

```

18073
18074 4731:                                     !*** ** *01

```

```

18075 ALLOW763A:
18076     PD,      BUSDIN+PS-[I],      !NOISE BITS ON BUSDIN TO IMPEDE READING VECTOR
18077                                     !AT THIS POINT PS=(000252)
18078     P2,      ALLOW-BG[1]H-[I],    !GIVE BUS GRANT TO PENDING INTERRUPT
18079     NEXT,     J/READVECT763A
(4731) DCS(0.00.0.0.0.0) BM(0100..00.01..10.01..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...100.010.011)

18080
18081 4423: !(FREE)
18082 READVECT763A:
18083     P3,      CSPD(07)+BUSDIN,      !MUST READ BUSDIN=VECTOR RITE HERE, OR
18084                                     !WE WILL LOSE IT
18085     EMIT/052525,
18086     NEXT,     J/TESTVECT763A
(4423) DCS(0.0.0.0.0.0) BM(0101..10.01..01.01..010..101...0.0.0..0..0...0.1000...1..0000.0...11.000...100.010.100)

18087
18088 4424: !(FREE)
18089 TESTVECT763A:
18090     P2-T,     SR+CSPD(D01),         !SR=(000100), EXPECTED VECTOR
18091     NEXT,     BUTR(VECTOR-LOAD),    !IF SET, "VECTLOAD763A", THIS IS EXPECTED
18092                                     !IF CLR, "ALLOW763A", VECTOR-LOAD[1]H NOT SET, ERROR
(4424) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..000...0.0.1..0..0...0.1110...0..0000.0...10.001...111.011.001)

18093
18094
18095
18096
18097 ! - - - - -
18098
18099 !IF VECTOR-LOAD[1]H="1", COME TO HERE.
18100
18101 !TEST 7638 NOW CHECKS THAT THE CORRECT VECTOR FOR THE DL11-W = 100(8) WAS READ
18102 4733:
18103 VECTLOAD763A:
18104     P2-T,     D+SR-XOR-CSPD(D07),    !COMPARE EXPECTED VECTOR:RECEIVED VECTOR
18105     NEXT,     J/TEST7638
(4733) DCS(0.00.0.0.0.0) BM(0110..10.00..00.00..000..000...0.1.0..0..0...0.1000...0..0000.0...11.000...111.010.000)

18106
18107 4720:
18108 TEST7638:
18109     PD,      LOAD-ENUA(ZTARGET402), !SETUP FOR D=ZERO TEST
18110     LOAD-ERROR(TEST7638),          !ERROR DIRECTORY KEY
18111     DCS-CTR(C3.),                  !COMPARE AT TARGET
18112     NEXT,     J/GOBUT7638
(4720) DCS(1.00.1.0.0.0) BM(1100..00.11..11.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...100.010.101)

18113
18114 4425: !(FREE)
18115 GOBUT7638:
18116     SETUP,    RETURN/TEST763C,      !RETURN TO START OF NEXT SUBTEST
18117     NEXT,     GOTO-PAGE(7),         !BUT TABLE
18118     J/BUTD-IS-ZERO,                 !CHECK EQUALITY
(4425) DCS(0.00.0.0.0.0) BM(0100..00.11..10.10..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.001)

18119
18120
18121

```

```

18122
18123
18124 ! - - - - -
18125
18126 !TEST 763C CHECKS THAT VECTOR-LOAD[1]H=-(UNIBUS-INTR-L) IS AGAIN LOW
18127 4721:
18128 TEST763C:
18129     PO,          LOAD-ENUA(ZTARGET401),          !BIT<01> CLEAR
18130                   LOAD-ERROR(TEST763C),          !ERROR DIRECTORY KEY
18131                   DCS-CTR(C3.),                  !COMPARE AT TARGET
18132                   BUMP-VERIFY,                   !COUNT
18133                   NEXT, J/GOBUT763C
(4721) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..001...0.0.0..0..0...0.0000...0..0000.0. .11.000...100.010.110]

18134
18135 4426: !(FREE)
18136 GOBUT763C:
18137     SETUP,      RETURN/TEST763D,          !RETURN TO START OF NEXT SUBTEST
18138     NEXT,        GOTO-PAGE(7),            !BUT TABLE
18139                   J/BUTVECTLOAD          !VECTOR-LOAD[1]H IN BIT<01>
(4426) DCS[0.00.0.0.0.0] BM[0100..00.11..10.01..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.100.110]

18140
18141
18142 ! - - - - -
18143
18144 !TEST 763D CHECKS THAT BG-SERVICE(0)H=BR>PS-L IS HIGH WHEN UNIBUS INTR REQUEST HAS BEEN SATISFIED
18145 4710:
18146 TEST763D:
18147     PO,          LOAD-ENUA(ZTARGET407),          !BIT<02> SET (ACTIVE LOW)
18148                   LOAD-ERROR(TEST763D),          !ERROR DIRECTORY KEY
18149                   DCS-CTR(C3.),                  !COMPARE AT TARGET
18150                   NEXT, J/GOBUT763D
18151
18152 (4710) DCS[1.00.1.0.0.0] BM[1100..00.11..11.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...100.010.111]

18153
18154 4427: !(FREE)
18155 GOBUT763D:
18156     SETUP,      RETURN/SCOPE763,          !RETURN TO SCOPE LOOP TEST WORD
18157     NEXT,        GOTO-PAGE(7),            !BUT TABLE
18158                   J/BUTBGSERVL          !BG-SERVICE[0]H IN BIT<02>
(4427) DCS[0.00.0.0.0.0] BM[0100..00.10..00.11..000..111...0.0.0..0..0...0.0000...0..0000.0...11.100...011.001.110]

18159
18160
18161 4430: !(FREE)
18162 SCOPE763:
18163     PO,          BUSDIN+EMIT-[I],          !RESET PROC UCON FOR EMIT
18164                   P2,          PS+D-[I],      !ZAP THE PS TO ZERO
18165                   NEXT, BUTD(SCOPE),        !NO ERROR: "KILL764A" (+1. WORDS)
18166                   J/KILL764A              ! ERROR: "EXPEC763A" (-11. WORDS)
18167 (4430) DCS[0.00.0.1.0.0] BM[1000..00.00..00.01..010..010...0.0.0..0..0...1.1011...0..0000.0...11.000...111.110.011]
18168

```

18169
18170
18171
18172
18173
18174
18175
18176
18177
18178
18179
18180

!-----
!*** ALL DONE WITH LINE CLOCK, DISABLE IT FROM FURTHER INTERRUPTS BEFORE LEAVING FOR EOP ***

4763:
KILL764A:
P2-T, D=ZERO, D(C)+ALU00, !NOW MUST GO KILL THE LINE CLOCK
P3, DATO !BA=(177546), DL11-W CSR
BUTA(CLR-FLAG-RES-UCON), !ZAP UCON, RES-CONTROL FOR EOP ROUTINE (MUST BE DONE)
NEXT, J/EOP001

(4763) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..010...0.1.0..0..0...1.0010...0..0000.0...11.010...100.011.001)

18181
18182
18183
18184
18185
18186
18187

!.PAGE=====

18188
18189

.TOC * END OF PASS CODE

18190
18191

18192
18193

FINAL ENTRY HERE TO TEST FOR MULTIPLE PASSES, VERIFY MODE, ET AL

18194
18195

*** INDICATIONS ON CONSOLE DISPLAY ***

18196
18197

0.0.0.0.0.0. DCS IS RUNNING; REQUIRES APPROX 8. SECONDS/64. PASSES
"RUN" "PROC" "USER" "CONSOLE" "BATTERY"
(ON) (BLINK) (BLINK) (OFF) (OFF)

18200
18201

OR 0 0 0 0 0 0 ERROR DETECTED / PASS=1 / SCOPE LOOPING
2 1 2 1 2 1

18202
18203

OR 0.0.0.0.0.0. ERROR DETECTED / 1<PASS<64. / SCOPE LOOPING
2.1.2.1.2.1.

18204
18205

1.2.3.3.2.1. SUCCESSFUL 64. PASSES COMPLETED

18206
18207

AT END OF PASS, THE GENERAL REGISTERS (BASE MACHINE R0-R7)
CONTAIN THE FOLLOWING INFORMATION:

18208
18209

R0 = (NU)
R1 = (NU)
R2 = (NU)
R3 = (NU)
R4 = (NU)
R5 = REVISION NUMBER OF DCS MICROCODE, WITH

18210
18211

18212
18213

18214
18215

18216
18217

18218
18219

18220
18221


```

18222  |
18223  |          BIT15 SET TO INDICATE END OF PASS
18224  |          R6 = (NU)
18225  |          R7 = (123321), END OF PASS INDICATION CONSTANT
18226  | *****
18227  |
18228  |
18229  | 4431:  !(FREE)
18230  | EOP001:
18231  |     PD,    DCS-CTR(C15.),          !HOLD UP ERROR COMPARE
18232  |     NEXT,  GOTO-PAGE(6),          !XFER
18233  |     J/EOP002
(4431) DCS(0.00.1.0.0.0) BM(0000..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...100.101.010)

18234  |
18235  |
18236  | 6452:  !(FREE)
18237  | EOP002:
18238  |     P3,    CSPD(01)+EMIT, EMIT/123321, !SETUP SUCCESSFUL END OF PASS CONSTANT
18239  |     NEXT,  J/EOP003
(6452) DCS(0.00.0.0.0.0) BM(1010..10.01..10.11..010..001...0.0.0..0..0...0.1110...1..0000.0...11.000...101.001.000)

18240  |
18241  |
18242  | 6510:  !(FREE)
18243  | EOP003:
18244  |     P2-T,  D+CSPD(D01), D(C)+0,      !GET EOP CONSTANT INTO
18245  |     P3,    PC+D,                    !GPR PC, ON BOTH SP SIDES
18246  |     NEXT,  J/EOP004                 !FOR DISPLAY FROM "CONSOLE HALT" ROUTINE
(6510) DCS(0.00.0.0.0.0) BM(1010..10.00..10.01..111..000...0.1.0..0..0...0.1110...0..0011.0...11.000...101.001.001)

18247  |
18248  |
18249  | 6511:  !(FREE)
18250  | EOP004:
18251  |     SETUP, RETURN/EOP005,          !GO TO DISPLAY-D-IN-LIGHTS ROUTINE
18252  |     NEXT,  CALL(DISPLAY)           !WHICH SHOULD PUT (212121) INTO DISPLAY
(6511) DCS(0.00.0.0.0.0) BM(0111..00.01..00.01..001..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.010.001)
! FOR INTERMEDIATE EOP INDICATION

18253  |
18254  |
18255  | 7211:  !(FREE)
18256  | EOP005:
18257  |     PD,    SIGNAL-EOP,              !TRY TO SIGNAL EOP
18258  |     P2-T,  SR+ALL-ONES,            !SET SR TO ALL ONES, FOR FULL BASE MACHINE INIT
18259  |     NEXT,  GOTO-PAGE(6),          !XFER TO 6
18260  |     BUTD(VERIFY-MODE),            !IF TRUE, "VFY001" (NEXT PAGE FOLLOWING)
18261  |     J/EOP006                       !IF FALSE, "EOP006" (NEXT MICROWORD)
(7211) DCS(0.00.0.0.1.0) BM(1111..00.00..11.01..101..110...0.0.1..0..0...0.0000...0..0000.0...11.100...111.111.110)

18262  |
18263  |
18264  | 6776:
18265  | EOP006:
18266  |     PD,    DCS-CTR(C11.),          !HOLD UP ERROR COMPARE
18267  |     P3-U,  SET-CONSOLE-DP-LEDS,    !UCON SET DP LEDS, INDICATING >=1 SUCCESSFUL PASSES

```

```

18268      NEXT, BUTD(EOP-OVERFLOW),      !IF TRUE, "EOP007" FOLLOWING, DONE 64. PASSES
18269      J/EOP007                          !IF FALSE, "TEST001" GO FOR NEXT PASS AT (4000)
(6776) DCS(0.00.1.0.0.0) BM(0100..00.00..00.00..110..001...0.0.0..0..0...1.1011...0..0000.0...11.000...101.001.010)
18270      !BEGIN COUNTDOWN
18271      ! 3 ... 2 ... 1 .

```

```

18272
18273
18274      6512: !(FREE)
18275      EOP007:
18276      SETUP, RETURN/EOP010,           !GO TO SUBR THAT PUTS REV-NUMBER, WITH
18277      NEXT, GOTO-PAGE(7),             ! B<15>=(1), INTO B.M. GPR "RS"
18278      J/INSERTEOPREVNO
(6512) DCS(0.00.0.0.0.0) BM(0111..00.01..00.01..010..111...0.0.0..0..0...0.0000...0..0000.0...11.100...010.001.100)

```

```

18279
18280
18281      7212: !(FREE)
18282      EOP010:
18283      SETUP, RETURN/CON99,             !RETURN TO "FORCE CONSOLE-MODE HALT" ROUTINE IN BASE MACHINE
18284      NEXT, GOTO-PAGE(3),             !GOTO "INIT---" ROUTINE FOR FULL BASE MACHINE
18285      J/INIT01                          ! MICROCODE INITIALIZATION, BUTA(RETURN) AT END TO "CON99"
(7212) DCS(0.00.0.0.0.0) BM(0001..00.00..01.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.100...100.001.010)

```

! .PAGE=====

```

18294 .TOC * VERIFY MODE CODE
18295
18296 !
18297 ! VERIFY MODE ENTERS HERE:
18298 !

```

```

18300      6774:
18301      VFY001:
18302      PD, DCS-CTR(C4.),                !LOAD COUNTER FOR COMPARE IN 4. MICROWORDS
18303      NEXT, GOTO-PAGE(4),             !ZFER
18304      J/VFY002
(6774) DCS(0.00.1.0.0.0) BM(1011..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.100...100.001.010)

```

```

18305
18306
18307      4412: !(FREE)
18308      VFY002:
18309      P3, CLEAR-CONSOLE-LED,           !MAKE "CONSOLE" LED BLINK, JUST FOR FUN
18310      NEXT, J/VFY003
(4412) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..010..001...0.0.0..0..0...1.1011...0..0000.0...11.000...010.101.101)

```

18311 4255:

```

18313 VFY003:
18314 PO, LOAD-ENUA(ZTARGET523), !ERROR CODE = [4255], ENUA = [7523]
18315 LOAD-ERROR(VFY003), !ERROR DIRECTORY KEY
18316 BUTP-VERIFY, !GIVE A VERIFY PULSE
18317 NEXT, J/VFY004
(4255) DCS[1.00.0.0.0.1] BM[0000..00.11..11.01..010..011...0.0.0..0..0...0.0000...0..0000.0...11.000...100.011.011]

```

```

18318
18319
18320 4433: !(FREE)
18321 VFY004:
18322 SETUP, RETURN/VFY005, !RETURN TO INLINE
18323 NEXT, GOTO-PAGE(7), !BUT'S ARE ON PAGE 7
18324 J/ZTARGET522, !TNUA = [7522], NOT EQUAL TO ENUA
(4433) DCS[0.00.0.0.0.0] BM[0111..00.01..11.11..101..111...0.0.0..0..0...0.0000...0..0000.0...11.100...101.010.010]

```

```

18325
18326
18327 ! NEXT MICROWORD COMES FROM ZTARGET522, AT WHICH THE ENABLED COMPARE
18328 ! TAKES PLACE. ENUA WAS SETUP NOT EQUAL TO TNUA, SO ERROR SHOULD BE SIGNALLED
18329
18330
18331

```

```

18332 7375:
18333 VFY005:
18334 P' SET-CONSOLE-LED, !THE OTHER HALF OF MAKING IT BLINK
18335 NEXT, BUTD(SCOPE), !NO ERROR: "VFY005" [SELF LOOP, SHOULDN'T HAPPEN]
18336 J/VFY005 ! ERROR: "VFY006" [SHOULD HAPPEN]
(7375) DCS[0.00.0.1.0.0] BM[0100..00.00..00.00..100..001...0.0.0..0..0...1.1011...0..0000.0...11.000...011.111.101]

```

```

18337
18338
18339 7374:
18340 VFY006:
18341 PO, SIGNAL-EOP, !GIVE AN EOP PULSE, AFTER ERROR SIGNALLED
18342 NEXT, GOTO-PAGE(6), !LOOP BACK
18343 J/VFY001 ! ON CONTINUOUS VERIFY
(7374) DCS[0.00.0.0.1.0] BM[0000..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.100...111.111.100]

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18344
18345
18346
18347
18348
18349 !.PAGE=====
18350
18351

```

```

18352 .TOC * DCS MICROCODE REVISION NUMBER
18353
18354 ! THE FOLLOWING ROUTINE WILL PUT THE CURRENT DCS MICROCODE REVISION NUMBER
18355 ! INTO B.M. GPR "RS", FROM THE EMIT FIELD OF THE MICROWORD.
18356 !
18357 ! THE ENTRY "INSERTREVNO" IS USED, EXCEPT AT END OF PASS; IE B<15>=(0)
18358 ! THE ENTRY "INSERTEOPREVNO" IS USED ONLY AT END OF PASS; IE, B<15>=(1)
18359
18360

```

```

18361 7214: !(FREE)
18362 INSERTEOPREVNO:
18363     P0,     BUSDIN+EMIT-[1],           !SELECT EMIT
18364     NEXT,    J/INSERT02
(7214) DCS[0.00.0.0.0.0] BM[0000..00.00..00.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...010.001.101]

```

```

18365 7215: !(FREE)
18366 INSERT02:
18367     P3,     CSPD[17]+EMIT, EMIT/REV-NUMBER-AND-B15, !DCS REVISION NUMBER, B15 SET
18368     NEXT,    J/INSERT04
(7215) DCS[0.00.0.0.0.0] BM[1000..10.00..00.01..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...010.010.000]

```

```

18370 7216: !(FREE)
18371 INSERTREVNO:
18372     P0,     BUSDIN+EMIT-[1],           !SELECT EMIT
18373     NEXT,    J/INSERT03
(7216) DCS[0.00.0.0.0.0] BM[0000..00.00..00.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...010.001.111]

```

```

18376 7217: !(FREE)
18377 INSERT03:
18378     P3,     CSPD[17]+EMIT, EMIT/REV-NUMBER,           !DCS REVISION NUMBER, B15 CLEAR
18379     NEXT,    J/INSERT04
(7217) DCS[0.00.0.0.0.0] BM[0000..10.00..00.01..000..001...0.0.0..0..0...0.0000...1..0000.0...11.000...010.010.000]

```

```

18381 7220: !(FREE)
18382 INSERT04:
18383     P2-T,    D+CSPD(D17), D[C]+0,           !GET IT
18384     P3,     RS+D,                               !AND STUFF IT
18385     NEXT,    J/RESETUONP                       !AND RETURN
(7220) DCS[0.00.0.0.0.0] BM[1010..10.00..10.01..110..000...0.1.0..0..0...0.0000...0..0011.0...11.000...010.111.001]

```

```

18388
18389
18390
18391 !.PAGE=====

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```

18392 .TOC * COMMON SUBROUTINES
18393 .TOC * CONSOLE DISPLAY SUBROUTINE
18394
18395
18396
18397
18398
18399
18400
18401
18402
18403
18404
18405
18406
18407
18408

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```

18403 7221: !(FREE)
18404 DISPLAY:
18405     P3-U,    CLEAR-CONSOLE-COUNTER,           !POINT TO DIGITS ....XX
18406     NEXT,    J/DISPO02
(7221) DCS[0.00.0.0.0.0] BM[0100..00.00..00.00..010..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.010.010]

```

```

18409 7222: !(FREE)
18410 DISPO02:
18411 P3-U, STROBE-CONSOLE-DISPLAY, !WRITE OUT DIGITS ....XX
18412 NEXT, J/DISPO03
(7222) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..000..001...0.0.0..0..0...1.1011...0..0000.0...11.000...010.010.011)

```

```

18413
18414 7223: !(FREE)
18415 DISPO03:
18416 P3-U, INCREMENT-CONSOLE-COUNTER, !POINT TO DIGITS ..XX..
18417 NEXT, J/DISPO04
18418 (7223) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..100..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.010.100)

```

```

18419
18420 7224: !(FREE)
18421 DISPO04:
18422 P3-U, STROBE-CONSOLE-DISPLAY, !WRITE OUT DIGITS ..XX..
18423 NEXT, J/DISPO05
18424 (7224) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..000..001...0.0.0..0..0...1.1011...0..0000.0...11.000...010.010.101)

```

```

18425
18426 7225: !(FREE)
18427 DISPO05:
18428 P3-U, INCREMENT-CONSOLE-COUNTER, !POINT TO DIGITS XX....
18429 NEXT, J/DISPO06
18430 (7225) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..100..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.010.110)

```

```

18431
18432 7226: !(FREE)
18433 DISPO06:
18434 P3-U, STROBE-CONSOLE-DISPLAY, !WRITE OUT DIGITS XX....
18435 NEXT, J/RESETUONP !GO RESET PROC UCON/EMIT, DO A (RETURN)
18436 (7226) DCS(0.00.0.0.0.0) BM(0100..00.00..00.00..000..001...0.0.0..0..0...1.1011...0..0000.0...11.000...010.111.001)

```

```

18437
18438 !.PAGE=====
18439
18440
18441

```

```

18442 .TOC * CLEAR I-O / BUS CONTROL / SERVICE AREA STATUS LATCHES SUBR
18443
18444

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18445
18446
18447
18448
18449
18450
18451
18452
18453
18454
18455
18456

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```

: THIS SUBR CLEARS OUT, VIA I-O UCON COMMANDS, THOSE STATUS LATCHES
: CONCERNED WITH SERVICE CONDITIONS, UNIBUS ERROR CONDITIONS, ETC.
:

```

```

18453 7227: !(FREE)
18454 CLEAR-I-O-A:
18455 P3, BUS-INIT-UCON-[[I], !DO A 10 MILLISEC UNIBUS INIT
18456 NEXT, J/CLEAR-I-O-B
(7227) DCS(0.00.0.0.0.0) BM(0100..00.01..11.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.011.000)

```

```

18457
18458 7230: !(FREE)
18459 CLEAR-I-0-B:
18460 P3, CLR-JAM-ERROR-(I), !RESET CACHE ERROR STATUS
18461 NEXT, J/CLEARI002
(7230) DCS(0.00.0.0.0.0) BM(0100..00.00..10.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.011.001)

```

```

18462
18463 7231: !(FREE)
18464 CLEARI002:
18465 P3, CLEAR-CONSOLE-SERVICE, !CLEAR OUT CONSOLE SRVC(1)H
18466 P3, CLR-NPR-TIMEOUT-(I), !RESET NPR/SACK TIME OUT STATUS
18467 NEXT, J/CLEARI004
(7231) DCS(0.00.0.0.0.0) BM(0100..00.00..11.00..110..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.011.010)

```

```

18468
18469 7232: !(FREE)
18470 CLEARI004:
18471 P3, CLEAR-CONSOLE-LED, !SETUP FOR 16. BIT ADDRESS MODE ON UNIBUS
18472 P3, CLR-PWR-FAIL-(I), !RESET POWER FAIL STATUS
18473 NEXT, J/CLEARI005
(7232) DCS(0.00.0.0.0.0) BM(0100..00.01..00.00..010..001...0.0.0..0..0...1.1011...0..0000.0...11.000...010.011.011)

```

```

18474
18475 7233: !(FREE)
18476 CLEARI005:
18477 P3, CLR-YELLOW-ZONE-(I), !RESET YELLOW ZONE STATUS
18478 NEXT, J/RESETUCOMP
(7233) DCS(0.00.0.0.0.0) BM(0100..00.01..01.00..000..000...0.0.0..0..0...1.1011...0..0000.0...11.000...010.111.001)

```

```

18479 !"RESETUCOMP" IS AT END OF "DINTOIR" SUBROUTINE
18480 !THIS WORD (1) ENABLES BUSDIN+EMIT, (2) ENABLES PROC EN-CLK-IR,
18481 !AND EXITS WITH A BUTA(RETURN)
18482
18483
18484
18485
18486
18487

```

```

18488 !.PAGE=====
18489
18490
18491 .TOC * SUBR FOR PUTTING SELECTED PORTIONS OF D(15-00) INTO IR
18492
18493
18494
18495
18496
18497
18498
18499
18500
18501
18502
18503
18504
18505
18506

```

```

THESE SUBR(S) ARE USED IN TESTING THE ALU/LOGIC FUNCTIONS.

NOTE: ENTRY POINTS "D(15-12)", "D(11-06)", "D(05-00)" EXPECT THAT:
(1) 'IR+DBUF', 'DBUF+D' FUNCTIONS ARE ALREADY ENABLED
(2) THE FOLLOWING CONSTANTS ARE IN CSP(17:14):
      CSP(17) = (007700);    CSP(16) = (170000);
      CSP(15) = (000077);    CSP(14) = (000100);

FURTHERMORE:
(1) ENTRY POINT "DZERO" SETS UP THE UCONS:
      'IR+DBUF', 'DBUF+D'
(2) ENTRY POINT "D(15-12)" COPIES THE ORIGINAL PATTERN, LEFT IN
      D, INTO ASPHI[17] FOR SAFEKEEPING, AND REUSE LATER

```

```

18507 :
18508
18509
18510 7234: !(FREE)
18511 D[15-12]:
18512 P2-U, IR+DBUF, !JUST HAPPENS, DONT CARE NOW
18513 P3, DBUF+D, !PATTERN IN D -> DBUF
18514 A#SPHI[17]+D, !SAVE IN ASPHI, TOO
18515 NEXT, J/D1512A
(7234) DCS[0.00.0.0.0.0] BM[0000..00.11..00.01..011..000...0.0.0..0..0...1.1010...0..1011.0...11.000...010.011.1011]

18516 7235: !(FREE)
18517 D1512A:
18518 P2-U, IR+DBUF, !SEND DBUF -> IR
18519 P3, DBUF+D, !JUST HAPPENS, DONT CARE NOW
18520 NEXT, J/BUTIR15-12 !IR<15:12>H IN BIT<03:00> "BUT"
18521 (7235) DCS[0.00.0.0.0.0] BM[0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.000.000]

18522 7236: !(FREE)
18523 D[11-06]:
18524 P2-T, SR+ASPHI[17]-AND-007700, !MASK ALL BITS EXCEPT D<11:06> TO ZEROES
18525 NEXT, J/D1106A
18526 (7236) DCS[0.00.0.0.0.0] BM[1011..11.00..11.01..011..000...0.0.1..0..0...0.0000...0..0000.0...11.000...010.011.1111]

18527 7237: !(FREE)
18528 D1106A:
18529 P2-T, D+SR-IOR-170000, SAVE-D[C], !FORCE BITS D<15:12> TO ONES
18530 !THIS MANUEVER SHOULD FORCE INSTRS DIAGNOSTIC (E78)
18531 !ROM ADDRESSES (752), (725) WHEN PATTERN GOES INTO IR
18532 P2-U, IR+DBUF, !JUST HAPPENS, DONT CARE NOW
18533 P3, DBUF+D, !PUT PATTERN JUST SET IN D INTO DBUF
18534 NEXT, J/D10IRB
18535 (7237) DCS[0.00.0.0.0.0] BM[1110..11.01..00.00..000..111...0.1.0..0..0...1.1010...0..0000.0...11.000...010.100.0111]

18536 7240: !(FREE)
18537 D[05-00]:
18538 P2-T, SR+ASPHI[17]-AND-000077, !MASK ALL BITS EXCEPT D<05:00> TO ZEROES
18539 NEXT, J/D0500A
18540 (7240) DCS[0.00.0.0.0.0] BM[1011..11.10..11.01..011..000...0.0.1..0..0...0.0000...0..0000.0...11.000...010.100.0011]

18541 7241: !(FREE)
18542 D0500A:
18543 P2-T, D+SR-IOR-000100, SAVE-D[C], !FORCE BIT D<06> TO A ONE
18544 !THIS MANUEVER SHOULD FORCE INSTRS DIAGNOSTIC (E88)
18545 !ROM ADDRESSES (152), (125) WHEN PATTERN GOES INTO IR
18546 P2-U, IR+DBUF, !JUST HAPPENS, DONT CARE NOW
18547 P3, DBUF+D, !PUT PATTERN JUST SET IN D INTO DBUF
18548 NEXT, J/D10IRB
18549 (7241) DCS[0.00.0.0.0.0] BM[1110..11.11..00.00..000..111...0.1.0..0..0...1.1010...0..0000.0...11.000...010.100.0111]

18550 7242: !(FREE)
18551 DZERO:
18552 P2-U, IR+DBUF-[I], !JUST HAPPENS, DONT CARE
18553 P3, DBUF+D-[I], !COPY PATTERN IN D TO DBUF
18554

```

18555 (7242) NEXT J/DT0IRB
 DCS(0.00.0.0.0.0) BM(0100..00.00..00.01..000..100!...0.0.0..0..0...1.1011...0..0000.0...11.000...010.100.0111)

18556
 18557 7243: !(FREE)
 18558 CTOIRB:

18559 P2-U, IR+DBUF, !NOW COPY PATTERN IN DBUF TO IR
 18560 P3, DBUF+D, !JUST HAPPENS, DONT CARE
 18561 NEXT J/BUTINSTRS !GO DO INSTRS "BUT" ON PATTERN IN IR
 (7243) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...011.000.0011)

18562
 18563
 18564
 18565
 18566

!.PAGE=====

18570 .TOC * UCON SUBROUTINES (FLAGS, PS, FPS, CUA, SERVICE, JAM, PBA)

18572 THESE SUBROUTINES MANIPULATE THE PROCESSOR UCONS, AND VARIOUS OTHER BUSDIN DRIVERS

18575 ASPLO(17) = A TEMPORARY LOCATION, DESTROYED

18577 CSP(02) = VALUE EXPECTED TO BE READ

18578 CSP(03) = ACTUAL VALUE READ

18579 CSP(04) = MASK VALUE

18581 AT RETURN, D = (BUSDINSELECT.AND.MASKVALUE).XOR.EXPECTEDVALUE

18584 7244: !(FREE)
 18585 CLRSERVICE00:

18586 P3, CSPD(02)+EMIT, EMIT/000340, !SERVICE PORT OF STATUS: ALL BITS RESET
 18587 NEXT J/CJESERVICE00
 (7244) DCS(0.00.0.0.0.0) BM(0000..10.00..00.11..100..000...0.0.0..0.0...0.1101...1..0000.0...11.000...010.100.1111)

18588 7245: !(FREE)
 18589 DATISERVICE00:

18591 P3, CSPD(02)+EMIT, EMIT/100340, !SERVICE PORT OF STATUS: ONLY DATI(1)H SET
 18592 NEXT J/CJESERVICE00
 (7245) DCS(0.00.0.0.0.0) BM(1000..10.00..00.11..100..000...0.0.0..0.0...0.1101...1..0000.0. .11.000...010.100.1111)

18593 7246: !(FREE)
 18594 DATOSERVICE00:

18596 P3, CSPD(02)+EMIT, EMIT/002340, !SERVICE PORT OF STATUS: ONLY DATO(1)H SET
 18597 NEXT J/CJESERVICE00
 (7246) DCS(0.00.0.0.0.0) BM(0000..10.01..00.11..100..000...0.0.0..0.0...0.1101...1..0000.0...11.000...010.100.1111)

18598 7247: !(FREE)
 18599 CJESERVICE00:

18601 P3, CLR-JAM-ERRORS-(1), !SPECIAL ENTRY POINT TO CLEAR OUT JAM
 18602 NEXT J/SERVICE00 ! PORT OF STATUS MUX, BEFORE READ SERVICE
 (7247) DCS(0.00.0.0.0.0) BM(0100..00.00..10.00..000..000...0.0.0..0.0...1.1011...0..0000.0...11.000...010.101.0001)


```

18603
18604 7250: !(FREE)
18605 SERVICE00:
18606 PO, BUSDIN+SERVICE-[I], !SERVICE (PORT 1) OF STATUS MUX
18607 NEXT, J/GETPROCDAT
(7250) DCS(0.00.0.0.0.0) BM(0100..01.00..00.00..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...011.111.011)
! - - - - -
18608
18609
18610
18611 7251: !(FREE)
18612 PBA00:
18613 PO, BUSDIN+PBA-[I], !PBA (PORT 3) OF STATUS MUX
18614 NEXT, J/GETPROCDAT
(7251) DCS(0.00.0.0.0.0) BM(1100..01.00..00.00..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...011.111.011)
! - - - - -
18615
18616
18617
18618 7252: !(FREE)
18619 FLAGFPST00:
18620 PO, BUSDIN+FLAGS#FPS-[I], !PUT FLAGS, FPS ON BUSDIN
18621 NEXT, J/GETPROCDAT
(7252) DCS(0.00.0.0.0.0) BM(0000..00.00..11.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...011.111.011)
! - - - - -
18622
18623
18624
18625 7253: !(FREE)
18626 PST00:
18627 PO, BUSDIN+PS-[I], !PUT PS ON BUSDIN
18628 NEXT, J/GETPROCDAT
(7253) DCS(0.00.0.0.0.0) BM(0000..00.00..10.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...011.111.011)
! - - - - -
18629
18630
18631
18632 7254: !(FREE)
18633 ODDJAMT00:
18634 P3, CSPD(02)+EMIT, EMIT/101004, !JAM PORT OF STATUS: ONLY ODD-ADDR[1]H SET
18635 NEXT, J/JAMT00
(7254) DCS(0.00.0.0.0.0) BM(1000..10.00..10.00..000..100...0.0.0..0..0...0.1101...1..0000.0...11.000...010.101.110)
! - - - - -
18636
18637 7255: !(FREE)
18638 CLRJAMT00:
18639 P3, CSPD(02)+EMIT, EMIT/001000, !JAM PORT OF STATUS: ALL BITS RESET
18640 NEXT, J/JAMT00
(7255) DCS(0.00.0.0.0.0) BM(0000..10.00..10.00..000..000...0.0.0..0..0...0.1101...1..0000.0...11.000...010.101.110)
! - - - - -
18641
18642 7256: !(FREE)
18643 JAMT00:
18644 PO, BUSDIN+JAM-[I], !PUT JAM REG (STATUS MUX PORT 2)
18645 NEXT, J/GETPROCDAT !ONTO BUSDIN
(7256) DCS(0.00.0.0.0.0) BM(1100..00.00..00.00..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...011.111.011)
! - - - - -
18646
18647
18648
18649 7257: !(FREE)

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18650 CUAT00:
18651 PO, BUSDIN+CUA-[I], !PUT CUA REG (HBMUX PORT 2)
18652 NEXT, J/GETPROC DAT !ONTO BUSDIN
(7257) DCS(0.00.0.0.0.0) BM(0000..00.00..01.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...011.111.011)

```

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18653 ! - - - - -
18654 !
18655 !

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18656 7373:
18657 GETPROC DAT:
18658 P3, CSPD(03)+BUSDIN, !GET PREVIOUSLY ENABLED PROC DATA
18659 NEXT, J/GETMSKPROC DAT
(7373) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.1100...1..0000.0...11.000...010.110.000)

```

```

18660 7260: !(FREE)
18661 GETMSKPROC DAT:
18662 P2-T, D+CSPD(004), D(C)+0, !GET MASK VALUE
18663 P3, ASPL0[17]+0, !INTO A-SIDE
18664 NEXT, J/MSKPROC DAT
(7260) DCS(0.00.0.0.0.0) BM(1010..10.00..00.01..011..000...0.1.0..0..0...0.1011...0..0001.0...11.000...010.110.001)

```

```

18666 7261: !(FREE)
18667 MSKPROC DAT:
18668 P2-T, D+ASPL0[17]-AND-CSPD(003), SAVE-D(C), !MASK OUT UNWANTED BITS
18669 P3, ASPL0[17]+0, !AND WRITE BACK
18670 NEXT, J/CHPPROC DAT
(7261) DCS(0.00.0.0.0.0) BM(1011..10.00..10.01..011..111...0.1.0..0..0...0.1100...0..0001.0...11.000...010.110.010)

```

```

18672 7262: !(FREE)
18673 CHPPROC DAT:
18674 P2-T, D+ASPL0[17]-XOR-CSPD(002), SAVE-D(C), !COMPARE OBTAINED, EXPECTED BITWISE
18675 NEXT, J/RESETPROC DAT
(7262) DCS(0.00.0.0.0.0) BM(0110..10.00..10.01..011..111...0.1.0..0..0...0.1101...0..0000.0...11.000...010.110.011)

```

```

18677 7263: !(FREE)
18678 RESETPROC DAT:
18679 PO, BUSDIN+EMIT-[I], !RESET PROC UCON
18680 EN-CLK-IR(15-00),
18681 NEXT, J/BUTD-IS-ZERO !AND GO TEST D<15:00>
(7263) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...011.100.001)

```

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18683 !.PAGE=====
18684
18685
18686
18687
18688
18689

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```

18690 .TOC * SUBR FOR LOADING FPS<3:0> (VIA BUTA(DIAGNOSE))
18691
18692
18693 : THIS SUBROUTINE LOADS CSP(16)<3:0> -> FPS<3:0> VIA THE BUTA(DIAGNOSE) FUNCTION.
18694 :
18695 : REQUIREMENTS FOR ENTRY:
18696 :
18697

```

```

18698 | (1) LOADING SR MUST BE SETUP
18699 | (2) CSP(16) SETUP WITH BITS TO LOAD
18700 | (3) CSP(00) CONTAINS RETURN MICROADDRESS IN BITS<14:03>
18701 |
18702 |
18703 | 7264: !(FREE)
18704 | LOADFPSCC:
18705 | P2-T, SR+ALL-ONES !SET BIT<00> FOR JAMUPP EXPECTED
18706 | P3, BUTA(DIAGNOSE), !START THE XFR TO BM SEQUENCE
18707 | NEXT, J/LOADFPSCC02
(7264) DCS[0.00.0.0.0.0] BM[1111..00.00..11.01..101..000...0.0.1..0..0...0.0000...0..0000.0...11.011...010.110.101]

18708 |
18709 | 7265: !(FREE)
18710 | LOADFPSCC02:
18711 | NEXT, XFR-TO-BM[LOADNZW4] !LOAD PAGE, POINT UPF AT BM CODE
(7265) DCS[0.00.0.0.0.0] BM[0000..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.100...011.011.000]

18712 | !LOADNZW4: ! (THIS WORD ACTUALLY COMES OUT OF BM ROMS)
18713 | P2-T, D+CSPB(16), !PUT "MD" = CSP(16) INTO D
18714 | NEXT, J/LOADNZW5
18715 |
18716 |
18717 | !LOADNZW5:
18718 | P2, FPS[CC]+D[3-0], !LOAD FPS<3:0>
18719 | P3, BUTA(DIAGNOSE), !BEGIN XFR SEQUENCE BACK TO DCS ROMS
18720 | NEXT, J/NZER02
18721 |
18722 | !NZER02:
18723 | NEXT, GOTO-PAGE(4),
18724 | J/XXXXXX
18725 |
18726 | ! (CONTROL NOW RETURNS TO DCS AT "JAMUPP001" WORD)
18727 | !4777:
18728 | !JAMUPP001:
18729 | ! *** SEE FLOWS ON SUBSEQUENT PAGE ***
18730 |
18731 |
18732 |
18733 |
18734 |
18735 | !.PAGE=====
18736 |
18737 |
18738 | .TOC * SUBR TO COPY D-REGISTER TO DBUF TO IR
18739 |
18740 |
18741 | ! SUBROUTINE TO COPY D-REGISTER TO DBUF TO IR
18742 | ! AND LEAVE PROCESSOR UCON "CLK IR" AND "BUSDIN+EMIT" ACTIVE
18743 |
18744 |
18745 |
18746 | 7266: !(FREE)
18747 | SRINTOIR:
18748 | P2-T, D+SR, SAVE-D(C), !COPY SR TO D

```

```

18749      NEXT,      J/DINTOIR
(7266) DCS(0.00.0.0.0.0) BM(1111..00.00..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.110.111)
18750
18751      7267:  !(FREE)
18752      DINTOIR:
18753          P2-U,      IR+DBUF-[I],      !JUST HAPPENS - DON'T CARE
18754          P3-U,      DBUF+D-[I],      !TRANSFER D -> DBUF
18755      NEXT,      J/DBUFINTOIR
(7267) DCS(0.00.0.0.0.0) BM(0100..00.00..00.01..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...010.111.000)
18756
18757      7270:  !(FREE)
18758      DBUFINTOIR:
18759          EMITC,      EMIT/125200,      !JUNK ON EMIT:  INSTRS/EB8/405 PATTERN
18760          P2-U,      IR+DBUF,      !TRANSFER DBUF -> BUSDIN -> IR
18761          P3-U,      DBUF+D,      !JUST HAPPENS - DON'T CARE
18762      NEXT,      J/RESEUONP
(7270) DCS(0.00.0.0.0.0) BM(1010..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...010.111.001)
18763
18764      7271:  !(FREE)
18765      RESEUONP:
18766          SELECT,      UCON-PROC,      !RESET TO PROCESSOR UCON:
18767          ENABLE,      EN-CLK-IR(15-00),      !ENABLE CLOCKING IR
18768          PD,          BUSDIN+EMIT(15-00),      !PUT EMIT ONTO BUSDIN
18769          NEXT,      SET-UCON-CONTROL,      !WRITE CONTROLS
18770          BUTA(RETURN),      !RETURN TO CALLER
18771          J/BUTERROR7,      !FATAL ERROR IF GO HERE
(7271) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.111...011.111.110)
18772
18773      ! - - - - -
18774
18775      7272:  !(FREE)
18776      SRINTOIRS:
18777          P2-T,      D+SR, SAVE-D(C),      !COPY SR TO D
18778          NEXT,      J/DINTOIRS
18779      (7272) DCS(0.00.0.0.0.0) BM(1111..00.00..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.000...010.111.011)
18780
18781      7273:  !(FREE)
18782      DINTOIRS:
18783          P2-U,      IR+DBUF-[I],      !JUST HAPPENS - DON'T CARE
18784          P3-U,      DBUF+D-[I],      !TRANSFER D -> DBUF
18785      NEXT,      J/DBUFINTOIRS
(7273) DCS(0.00.0.0.0.0) BM(0100..00.00..00.01..000..100...0.0.0..0..0...1.1011...0..0000.0...11.000...010.111.100)
18786
18787      7274:  !(FREE)
18788      DBUFINTOIRS:
18789          EMITC,      EMIT/125200,      !JUNK ON EMIT:  INSTRS/EB8/405 PATTERN
18790          P2-U,      IR+DBUF,      !TRANSFER DBUF -> BUSDIN -> IR
18791          P3-U,      DBUF+D,      !JUST HAPPENS - DON'T CARE
18792      NEXT,      J/RESEUONPS
(7274) DCS(0.00.0.0.0.0) BM(1010..00.10..10.10..000..000...0.0.0..0..0...1.1010...0..0000.0...11.000...010.111.101)
18793
18794      7275:  !(FREE)
18795      RESEUONPS:

```

```

18796 SELECT, UCON-PROC          !RESET TO PROCESSOR UCON:
18797 ENABLE, EN-CLK-IR(15-00) ! ENABLE CLOCKING IR
18798 BUSDYN+EMIT(15-00),      ! PUT EMIT ONTO BUSDIN
18799 PO, SET-UCON-CONTROL,    !WRITE CONTROLS
18800 NEXT, J/BUTINSTRS        !AND EXIT TO DO INSTR-5 BUT INTO TARGET AREA
(7275) DCS(0.00.0.0.0.0) BM(0000..00.00..00.01..000..100...0.0.0..0..0...1.1001...0..0000.0...11.000...011.000.001)
    
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! .PAGE=====

.TOC * JAM UPP SERVICE SUBROUTINE

IF A JAMUPP TO 0777/4777 OCCURS, ACTION DEPENDS UPON SR<00> CONTENTS:

SR<00>=1 -> RESET SR TO (000000), DO A BUTA(RETURN) TO ADDRESS IN CSP(00)

SR<00>=0 -> SIGNAL ERROR, LOG STATUS, RETURN VIA "CUA" CONTENTS
ERROR-CODE ::= INDICATES LAST TEST EXECUTED

4777:

JAMUPP001:

```

P3-T, SR+D,          !SAVE CURRENT D CONTENTS IN SR
NEXT, BUTR(SR00),    !TEST SR<00> FLAG (PREV SR00 CONTENTS)
!IF SR<00>=1, EXPECTED JAM, GOTO "JAMUPP002B"
!IF SR<00>=0, NO JAM WAS EXPECTED, FORCE ERROR AT "JAMUPP003"
J/JAMUPP003
    
```

(4777) DCS(0.00.0.0.0.0) BM(1111..00.00..01.01..000..000...1.0.1..0..0...0.0000...0..0000.0...00.000...111.101.110)

4757:

JAMUPP002B:

```

P2-T, D+CSPD(000), SAVE-D(C), !GET RETURN ADDRESS
NEXT, J/JAMUPP002C
    
```

(4757) DCS(0.00.0.0.0.0) BM(1010..10.00..00.00..000..111...0.1.0..0..0...0.1111...0..0000.0...11.000...100.011.100)

4434: !(FREE)

JAMUPP002C:

```

PO, RETURN+D(14-03), PAGE(7), !PUT RETURN ADDRESS INTO REG
P2-T, D+SR, SAVE-D(C), !RESTORE OLD D
NEXT, J/JAMUPP002D
    
```

(4434) DCS(0.00.0.0.0.0) BM(1111..00.00..00.00..000..111...0.1.0..0..0...0.0000...0..0000.0...11.101...010.001.011)

7213: !(FREE)

JAMUPP002D:

```

P2-T, SR+ZERO, !ZERO OUT SR FOR RETURN
NEXT, BUTA(RETURN), !NOW RETURN
J/BUTERROR7 !ERROR IF GO HERE
    
```

```

(7213) DCS(0.00.0.0.0.0) BM(0011..00.00..00.00..000..000...0.0.1..0..0...0.0000...0..0000.0...11.111...011.111.110)
18845
18846 4756:
18847 JAMUPP003:
18848     SELECT, BUSDIN+CUA-[I],           !ENABLE READ JAMUPP MICROADDR
18849     NEXT,   BUTA(ERROR),             !WAS ERROR PREVIOUSLY SET ?
18850     J/JAMUPP005,                     ! YES/JAMUPP004, NO/JAMUPP005
(4756) DCS(0.00.0.1.0.0) BM(0000..00.00..01.01..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...111.100.111)
18851
18852 !* ENTER HERE IF "ERROR" WAS PREVIOUSLY SET (INHIBIT LOG)
18853 4746:
18854 JAMUPP004:
18855     P3,   CSPD(00)+LOG-CUA,           !GET RETURN LOC (- SAVED CUA
18856     P3-T, BUTA(CUA-TRACK),           !START CUA GOING AGAIN
18857     NEXT, J/JAMUPP002B,              !INHIBIT LOG IF PREV ERROR
(4746) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...1.0.0..0..0...0.1111...1..0000.0...11.001...111.101.111)
18858
18859 !* ENTER HERE IF "ERROR" NOT YET SET (LOG FIRST MODE)
18860 4747:
18861 JAMUPP005:
18862     P0,   DCS-CTR(CO.),               !FORCE ERROR WITH PREV ERROR-CODE/ENUA, TNUA=(4747)
18863     P3,   CSPD(00)+LOG-CUA,           !RETURN LOC (- RETURN ADDR FROM CUA
18864     NEXT, J/JAMUPP006,               !AND GO LOG REGISTERS THIS TIME
(4747) DCS(0.00.1.0.0.0) BM(1111..10.00..00.00..000..000...0.0.0..0..0...0.1111...1..0000.0...11.000...100.011.101)
18865
18866 4435: !(FREE)
18867 JAMUPP006:
18868     SELECT, BUSDIN+SERVICE-[I],     !SERVICE REGISTER
18869     NEXT,   J/JAMUPP007
(4435) DCS(0.00.0.0.0.0) BM(0100..01.00..00.00..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...100.011.110)
18870
18871 4436: !(FREE)
18872 JAMUPP007:
18873     P3,   CSPD(01)+LOG-SERVICE,     !LOG SERVICE INFO REGISTER
18874     NEXT, J/JAMUPP010
(4436) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.1110...1..0000.0...11.000...100.011.111)
18875
18876 4437: !(FREE)
18877 JAMUPP010:
18878     SELECT, BUSDIN+JAM-[I],          !JAM REGISTER
18879     NEXT,   J/JAMUPP011
(4437) DCS(0.00.0.0.0.0) BM(1100..00.00..00.00..000..000...0.0.0..0..0...1.1001...0..0000.0...11.000...100.100.000)
18880
18881 4440: !(FREE)
18882 JAMUPP011:
18883     P3,   CSPD(02)+LOG-JAM,          !LOG JAMUPP CAUSE INFO
18884     BUTA(CUA-TRACK),                 !RESET CUA TO TRACK, IN CASE ANOTHER JAM COMES
18885     NEXT, J/JAMUPP002B,              !GO TO TOP OF THIS PAGE, AND RETURN INLINE
(4440) DCS(0.00.0.0.0.0) BM(0000..10.00..00.00..000..000...0.0.0..0..0...0.1101...1..0000.0...11.001...111.101.111)
18886
18887
18888
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18890

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KD11-K

MICRO

VOOA-1 00:00:03 12-MAR-77

18891 !.PAGE=====

18892

18893

18894 .TOC * MICROBRANCH [BUT] TAKEOFF WORDS

18895

18896 !*****

18897 !* UWORDS: 000 + 056 *

18898 !*

18899 !*

18900 !* FUNCTION: THESE WORDS ARE THE INACTIVE-"BUT" (BRANCHING TYPE) *

18901 !* "TAKEOFF" OR SUBROUTINE MICROWORDS. ANY TEST WHICH *

18902 !* REQUIRES A SPECIFIC "BUT" CONDITION TO BE TESTED WILL USE *

18903 !* ONE OF THESE MICROWORDS AS A TAKEOFF POINT INTO THE "BUT *

18904 !* TARGET TABLE" (DESCRIBED NEXT), WHERE AN ENUA:TNUA *

18905 !* COMPARISON WILL HAVE BEEN PREVIOUSLY ENABLED (VIA SET- *

18906 !* TING THE DIAGNOSTIC COUNTER TO THE APPROPRIATE VALUE. *

18907 !*

18908 !*****

18909

18910

18911

18912

18913 !*** BUT 00 ***

18914 !FULL WIDTH IS BUT(SR<3:0>)

18915 7276: !(FREE)

18916 BUTSR3-0:

18917 NEXT, BUT(SR3-0), !TO (400)-(417), W4

18918 J/ZTARGET400 !NO MASK

(7276) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.000...100.000.000)

18919

18920

18921 !*** BUT 01 ***

18922 !FULL WIDTH IS BUT(IR<15:12>)

18923 7300: !(FREE)

18924 BUTIR15-12:

18925 NEXT, BUT(IR15-12), !TO (400)-(417), W4

18926 J/ZTARGET400 !NO MASK

(7300) DCS(0.00.0 0.0.0) BM(0000..00.00..00.00..000..000...0 0.0..0..0...0.0000...0..0000.0...00.001...100.000.000)

18927

18928

18929 !*** BUT 02 ***

18930 !FULL WIDTH IS BUT(INSTR 5)

18931 7301: !(FREE)

18932 BUTINSTR5:

18933 NEXT, BUT(INSTR5), !TO (400)-(437), W5

18934 J/ZTARGET400 !NO MASK

(7301) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.010...100.000.000)

18935

18936

18937 !*** BUT 03 ***

18938 !FULL WIDTH IS BUT(IR11#FLTPT<3:0>)

18939 7302: !(FREE)

18940 BUTIR11FLTPT3-0:

18941 NEXT, BUT(IR11#FLTPT3-0), !TO (400)-(437), W5

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18942          J/ZTARGET400          !NO MASK
(7302) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.011...100.000.000)
18943
18944
18945      !*** BUT 04 ***
18946      !FULL WIDTH IS BUT(IR<9:6>)
18947      7304: !(FREE)
18948      BUTIR9-6:
18949          NEXT, BUT(IR9-6),          !TO (400)-(417), W4
18950          J/ZTARGET400          !NO MASK
(7304) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.100...100.000.000)
18951
18952      !*** BUT 05 ***
18953      !FULL WIDTH IS BUT(MOV-DR7#IR<5:3>)
18954      7305: !(FREE)
18955      BUTMOVDR7IRS-3:
18956          NEXT, BUT(MOV-DR7#IRS-3),          !TO (400)-(417), W4
18957          J/ZTARGET400          !NO MASK
18958 (7305) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.101...100.000.000)
18959
18960      !*** BUT 06 ***
18961      !FULL WIDTH IS BUT(INSTR 1)          *** N.B.: THIS BUT IS ALSO ACTIVE ***
18962      7306: !(FREE)
18963      BUTINSTR1:
18964          NEXT, BUTA(INSTR1),          !TO (400)-(777), W8
18965          J/ZTARGET400          !NO MASK
18966 (7306) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.110...100.000.000)
18967
18968      !*** BUT 07 ***
18969      !FULL WIDTH IS BUT(BG-SERV-H+FP-SERV-H#D(C)#FPRET<1:0>)
18970      7307: !(FREE)
18971      BUTBGFPSEV:
18972          NEXT, BUT(BGSEV-FPSEV#D(C)#FPRET),          !TO (407),(417), W1
18973          J/ZTARGET407          !MASK OUT D(C), FPRET<1:0>
18974 (7307) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.111...100.000.111)
18975
18976      7310: !(FREE)
18977      BUTD(C)C:
18978          NEXT, BUT(BGSEV-FPSEV#D(C)#FPRET),          !TO (413),(417), W1
18979          J/ZTARGET413          !MASK OUT BG-SERV-H+FP-SERV-H, FPRET<1:0>
(7310) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...00.111...100.001.011)
18980
18981      !*** BUT 10 ***
18982      !FULL WIDTH IS BUT(COUT07#DOUT07#FPS05)
18983      7311: !(FREE)
18984      BUTCOUT7DOUT7:
18985          NEXT, BUT(COUT07#DOUT07#FPS05),          !TO (401),(403),(405),(407), W2
18986          J/ZTARGET401          !MASK OUT FPS05
18987 (7311) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.000...100.000.001)
18988

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18989 7312: !(FREE)
18990 BUTFPSOS:
18991 NEXT, BUT(COUT07#DOUT07#FPSOS), !TO (406),(407), W1
18992 J/ZTARGET406 !MASK OUT COUT7, DOUT7
(7312) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.000...100.000.110)

18993
18994
18995 !*** BUT 11 ***
18996 !FULL WIDTH IS BUT(DMO#SMO#8BYTE)
18997 7313: !(FREE)
18998 BUTDMS8BYTE:
18999 NEXT, BUT(DMO#SMO#8BYTE), !TO (400)-(407), W3
19000 J/ZTARGET400 !NO MASK
(7313) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.001...100.000.000)

19001
19002
19003 !*** BUT 12 ***
19004 !FULL WIDTH IS BUT(GD<3:2.)
19005 7314: !(FREE)
19006 BUTGD3-2:
19007 NEXT, BUT(GD3-2), !TO (400)-(403), W2
19008 J/ZTARGET400 !NO MASK
(7314) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.010...100.000.000)

19009
19010
19011 !*** BUT 13 ***
19012 !FULL WIDTH IS BUT(SR<1:0>#COUNT-IS-377) *** N.B.: THIS BUT IS ALSO ACTIVE ***
19013 7315: !(FREE)
19014 BUTSR1-0:
19015 NEXT, BUTA(SR1-0#COUNT-IS-377), !TO (401),(403),(405),(407), W2
19016 J/ZTARGET401 !MASK OUT COUNT-IS-377
(7315) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.011...100.000.001)

19017
19018
19019 !*** BUT 14 ***
19020 !FULL WIDTH IS BUT(BG-SERVCE-L#MFSS#MULTIPLE)
19021 7316: !(FREE)
19022 BUTBGSERVL:
19023 NEXT, BUT(BG-SERVCE-L#MFSS#MULTIPLE), !TO (403),(407), W1
19024 J/ZTARGET403 !MASK OUT MFSS, MULTIPLE
(7316) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.011)

19025
19026 7317: !(FREE)
19027 BUTMNXTPS(T):
19028 SETUP, TEST(MASKED-PS(T)), !SELECT MULTIPLE BUT
19029 NEXT, J/BUTMNXTOO !NEXT
(7317) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.000)

19030
19031 7320: !(FREE)
19032 BUTMNXTOO:
19033 SETUP, TEST(MASKED-PS(T)), !SELECT MULTIPLE BUT
19034 NEXT, BUT(BG-SERVCE-L#MFSS#MULTIPLE), !TO (406),(407), W1
19035 J/ZTARGET406 !MASK OUT BG-SERVCE-L, MFSS
(7320) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

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19036
19037 7321: !(FREE)
19038 BUTND00:
19039     SETUP, TEST(D00),           !SELECT MULTIPLE BUT
19040     NEXT,  J/BUTMNXT001        !NEXT
(7321) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..001...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.010)

19041
19042 7322: !(FREE)
19043 BUTMNXT001:
19044     SETUP, TEST(D00),           !SELECT MULTIPLE BUT
19045     NEXT,  BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
19046     J/ZTARGET406              !MASK OUT BG-SERVICE-L, MFSS
(7322) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..001...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19047
19048 7323: !(FREE)
19049 BUTMPS(N):
19050     SETUP, TEST(PS(N)),        !SELECT MULTIPLE BUT
19051     NEXT,  J/BUTMNXT002        !NEXT
(7323) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..010...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.100)

19052
19053 7324: !(FREE)
19054 BUTMNXT002:
19055     SETUP, TEST(PS(N)),        !SELECT MULTIPLE BUT
19056     NEXT,  BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
19057     J/ZTARGET406              !MASK OUT BG-SERVICE-L, MFSS
(7324) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..010...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19058
19059 7325: !(FREE)
19060 BUTMFLAG7:
19061     SETUP, TEST(FLAG7),       !SELECT MULTIPLE BUT
19062     NEXT,  J/BUTMNXT003        !NEXT
(7325) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..011...0.0.0..0..0...0.0000...0..0000.0...11.000...011.010.110)

19063
19064 7326: !(FREE)
19065 BUTMNXT003:
19066     SETUP, TEST(FLAG7),       !SELECT MULTIPLE BUT
19067     NEXT,  BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
19068     J/ZTARGET406              !MASK OUT BG-SERVICE-L, MFSS
(7326) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..011...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19069
19070 7327: !(FREE)
19071 BUTMEXFLAG1:
19072     SETUP, TEST(EXFLAG1),     !SELECT MULTIPLE BUT
19073     NEXT,  J/BUTMNXT004        !NEXT
(7327) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.000)

19074
19075 7330: !(FREE)
19076 BUTMNXT004:
19077     SETUP, TEST(EXFLAG1),     !SELECT MULTIPLE BUT
19078     NEXT,  BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
19079     J/ZTARGET406              !MASK OUT BG-SERVICE-L, MFSS
(7330) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..100...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19080
19081 7331: !(FREE)

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19082 BUTMFLTPS:
 19083 SETUP, TEST(FLTPS), !SELECT MULTIPLE BUT
 19084 NEXT, J/BUTMNXTOOS !NEXT
 (7331) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..101...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.010)

19085 7332: !(FREE)
 19086 BUTMNXTOOS:
 19087 SETUP, TEST(FLTPS), !SELECT MULTIPLE BUT
 19088 NEXT, BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
 19089 J/ZTARGET406 !MASK OUT BG-SERVICE-L, MFSS
 19090 (7332) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..101...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19091 7333: !(FREE)
 19092 BUTMEXFLAG2:
 19093 SETUP, TEST(EXFLAG2), !SELECT MULTIPLE BUT
 19094 NEXT, J/BUTMNXTOOS !NEXT
 (7333) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...11.000...011.011.100)

19096 7334: !(FREE)
 19097 BUTMNXTOOS:
 19098 SETUP, TEST(EXFLAG2), !SELECT MULTIPLE BUT
 19099 NEXT, BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
 19100 J/ZTARGET406 !MASK OUT BG-SERVICE-L, MFSS
 19101 (7334) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..110...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19102 7336: !(FREE)
 19103 BUTMINITJAM:
 19104 SETUP, TEST(INIT-JAM), !SELECT MULTIPLE BUT
 19105 NEXT, J/BUTMNXTOOS !NEXT
 (7336) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..111...0.0.0..0..0...0.0000...0..0000.0...11.000...011.100.000)

19108 7340: !(FREE)
 19109 BUTMNXTOOS:
 19110 SETUP, TEST(INIT-JAM), !SELECT MULTIPLE BUT
 19111 NEXT, BUT(BG-SERVICE-L#MFSS#MULTIPLE), !TO (406),(407), W1
 19112 J/ZTARGET406 !MASK OUT BG-SERVICE-L, MFSS
 19113 (7340) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..111...0.0.0..0..0...0.0000...0..0000.0...01.100...100.000.110)

19114 !*** BUT 15 ***
 19115 !FULL WIDTH IS BUT(D<14:00>=0#D15)
 19116 7341: !(FREE)
 19117 BUTD-IS-ZERO:
 19118 NEXT, BUT(D14-00E00#D15), !TO (400)-(403), W2
 19119 J/ZTARGET400 !NO MASK
 19120 (7341) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.101...100.000.000)

19121 !*** BUT 16 ***
 19122 !FULL WIDTH IS BUT(IR11#PS15)
 19123 7342: !(FREE)
 19124 BUTIR11B:
 19125 NEXT, BUT(IR11#PS15), !TO (401),(403), W1
 19126 J/ZTARGET401 !MASK OUT PS15
 19127
 19128

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(7342) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.110...100.000.001)
19129
19130 7343: !(FREE)
19131 BUTPS15:
19132 NEXT, BUT(IR11#PS15), !TO (402),(403), W1
19133 J/ZTARGET402 !MASK OUT IR11
(7343) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.110...100.000.010)
19134
19135
19136 !*** BUT 17 ***
19137 !FULL WIDTH IS BUT(COUNT-IS-377#D(C)) *** N.B.: THIS BUT IS ALSO ACTIVE ***
19138 7344: !(FREE)
19139 BUTD(C)A:
19140 NEXT, BUTA(COUNT-IS-377#D(C)), !TO (402),(403), W1
19141 J/ZTARGET402 !MASK OUT COUNT-IS-377
(7344) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...01.111...100.000.010)
19142
19143
19144 !*** BUT 20 ***
19145 !FULL WIDTH IS BUT(PREFETCH-L#SERVICE) *** N.B.: THIS BUT IS ALSO ACTIVE ***
19146 7345: !(FREE)
19147 BUTSERVICE:
19148 NEXT, BUTA(PREFETCH-L#SERVICE), !TO (402),(403), W1
19149 J/ZTARGET402 !MASK OUT PREFETCH-L
(7345) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.000...100.000.010)
19150
19151
19152 !*** BUT 21 ***
19153 !FULL WIDTH IS BUT(VECTOR-LOAD#DR6/7L)
19154 7346: !(FREE)
19155 BUTVECTLOAD:
19156 NEXT, BUT(VECTOR-LOAD#DR6-7L), !TO (401), (403), W1
19157 J/ZTARGET401 !MASK OUT DR6/7-L
(7346) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.001...100.000.001)
19158
19159 7347: !(FREE)
19160 BUTDR6-7L:
19161 NEXT, BUT(VECTOR-LOAD#DR6-7L), !TO (402), (403), W1
19162 J/ZTARGET402 !MASK OUT VECTOR-LOAD
(7347) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.001...100.000.010)
19163
19164
19165 !*** BUT 22 ***
19166 !THIS IS AN ACTIVE BUT - NO BRANCH MODIFICATION
19167 !(THIS BUT IS NOT USED WITH THE TARGET TABLE)
19168
19169
19170 !*** BUT 23 ***
19171 !FULL WIDTH IS BUT(D(C)#BA00)
19172 7350: !(FREE)
19173 BUTD(C)B:
19174 NEXT, BUT(D(C)#BA00), !TO (401), (403), W1
19175 J/ZTARGET401 !MASK OUT BA00
(7350) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.011...100.000.001)

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KD11-K MICRO V00A-1 00:00:03 12-MAR-77

19176
 19177 7351: !(FREE)
 19178 BUTBAD0:
 19179 NEXT, BUT(DIC#BAD0), !TO (402),(403), W1
 19180 J/ZTARGET402 !MASK OUT DIC)
 (7351) DCS(0.0.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.011...100.000.010)

19181
 19182
 19183 !*** BUT 24 ***
 19184 !FULL WIDTH IS BUT(OTHER-JAM#FP-PROC)
 19185 7352: !(FREE)
 19186 BUTOTHERJAM:
 19187 NEXT, BUT(OTHER-JAM#FP-PROC), !TO (401),(403), W1
 19188 J/ZTARGET401 !MASK OUT FLTPT-PROC-H
 (7352) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.100...100.000.001)

19189
 19190 7354: !(FREE)
 19191 BUTFPPROC:
 19192 NEXT, BUT(OTHER-JAM#FP-PROC), !TO (402),(403), W1
 19193 J/ZTARGET402 !MASK OUT OTHER-JAM
 (7354) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.100...100.000.010)

19194
 19195
 19196 !*** BUT 25 ***
 19197 !FULL WIDTH IS BUT(COUNT-IS-377) *** N.B.: THIS BUT IS ALSO ACTIVE ***
 19198 !(THIS BUT IS NOT USED WITH THE TARGET TABLE)
 19199

19200
 19201 !*** BUT 26 ***
 19202 !FULL WIDTH IS BUT(INTR-HIGH#INSTR-BRANCH-L)
 19203 7355: !(FREE)
 19204 BUTINTRHIGH:
 19205 NEXT, BUT(INTR-HIGH#INSTR-BRANCH-L), !TO (401),(403), W1
 19206 J/ZTARGET401 !MASK OUT INSTR-BRANCH-L
 (7355) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.110...100.000.001)

19207
 19208 7356: !(FREE)
 19209 BUTINSTRBRANCH:
 19210 NEXT, BUT(INTR-HIGH#INSTR-BRANCH-L), !TO (402),(403), W1
 19211 J/ZTARGET402 !MASK OUT INTR-HIGH-H
 (7356) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.110...100.000.010)

19212
 19213
 19214 !*** BUT 27 ***
 19215 !FULL WIDTH IS BUT(PREFETCH-JAM#FP-FD)
 19216 7360: !(FREE)
 19217 BUTPREFETCHJAM:
 19218 NEXT, BUT(PREFETCH-JAM#FP-FD), !TO (401),(403), W1
 19219 J/ZTARGET401 !MASK OUT FLTPT-FD-H
 (7360) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.111...100.000.001)

19220
 19221 7371: !(FREE)
 19222 BUTFPFD:
 19223 NEXT, BUT(PREFETCH-JAM#FP-FD), !TO (402),(403), W1

19224 J/ZTARGET402 !MASK OUT PREFETCH-JAM-H
(7371) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...10.111...100.000.010)

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!.PAGE=====

.TOC * MICROBRANCH [BUT] TARGET WORDS

```
*****
*
*                               UWORDS: 000 + 400
*
* FUNCTION: TARGET BUT TABLE
* ALL THE ABOVE BUTS TARGET INTO THIS TABLE OF MICROWORDS,
* ALL OF WHICH DO A BUTA(RETURN). IN THIS MANNER, ANY OF
* THE ABOVE BRANCHES MAY BE EXECUTED, AND CONTROL WILL ALWAYS
* RETURN TO WHERE THE "BUT TES" SUBROUTINE WAS CALLED.
*
*****
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!*** THE TARGET BUT TABLE ***

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7400:
ZTARGET400: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7400) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7401:
ZTARGET401: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7401) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7402:
ZTARGET402: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7402) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7403:
ZTARGET403: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7403) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7404:
ZTARGET404: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7404) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7405:
ZTARGET405: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7405) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7406:
ZTARGET406: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7406) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7407:
ZTARGET407: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7407) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
7410:
ZTARGET410: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
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(7410) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19269 7411:
19270 ZTARGET411: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7411) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19271 7412:
19272 ZTARGET412: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7412) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19273 7413:
19274 ZTARGET413: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7413) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19275 7414:
19276 ZTARGET414: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7414) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19277 7415:
19278 ZTARGET415: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7415) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19279 7416:
19280 ZTARGET416: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7416) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19281 7417:
19282 ZTARGET417: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7417) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19283 7420:
19284 ZTARGET420: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7420) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19285 7421:
19286 ZTARGET421: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7421) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19287 7422:
19288 ZTARGET422: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7422) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19289 7423:
19290 ZTARGET423: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7423) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19291 7424:
19292 ZTARGET424: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7424) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19293 7425:
19294 ZTARGET425: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7425) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19295 7426:
19296 ZTARGET426: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7426) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19297 7427:
19298 ZTARGET427: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7427) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19299 7430:
19300 ZTARGET430: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7430) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19301 7431:
19302 ZTARGET431: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7431) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19303 7432:
19304 ZTARGET432: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7432) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19305 7433:
19306 ZTARGET433: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7433) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19307 7434:
19308 ZTARGET434: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7434) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19309 7435:
19310 ZTARGET435: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7435) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19311 7436:
19312 ZTARGET436: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7436) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19313 7437:
19314 ZTARGET437: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7437) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19315 7440:
19316 ZTARGET440: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7440) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19317 7441:
19318 ZTARGET441: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7441) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19319 7442:
19320 ZTARGET442: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7442) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19321 7443:
19322 ZTARGET443: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7443) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19323 7444:
19324 ZTARGET444: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7444) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19325 7445:
19326 ZTARGET445: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7445) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19327 7446:
19328 ZTARGET446: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7446) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19329 7447:
19330 ZTARGET447: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7447) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19331 7450:
19332 ZTARGET450: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7450) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19333 7451:
19334 ZTARGET451: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7451) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19335 7452:
19336 ZTARGET452: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7452) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19337 7453:
19338 ZTARGET453: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7453) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19339 7454:
19340 ZTARGET454: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7454) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19341 7455:
19342 ZTARGET455: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7455) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19343 7456:
19344 ZTARGET456: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7456) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19345 7457:
19346 ZTARGET457: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7457) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19347 7460:
19348 ZTARGET460: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7460) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19349 7461:
19350 ZTARGET461: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7461) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19351 7462:
19352 ZTARGET462: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7462) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19353 7463:
19354 ZTARGET463: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7463) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19355 7464:
19356 ZTARGET464: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7464) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19357 7465:
19358 ZTARGET465: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7465) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19359 7466:
19360 ZTARGET466: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7466) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19361 7467:
19362 ZTARGET467: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7467) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19363 7470:
19364 ZTARGET470: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7470) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19365 7471:
19366 ZTARGET471: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7471) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19367 7472:
19368 ZTARGET472: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7472) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19369 7473:
19370 ZTARGET473: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7473) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19371 7474:
19372 ZTARGET474: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7474) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19373 7475:
19374 ZTARGET475: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7475) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19375 7476:
19376 ZTARGET476: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7476) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19377 7477:
19378 ZTARGET477: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7477) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19379 7500:
19380 ZTARGET500: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7500) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19381 7501:
19382 ZTARGET501: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7501) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19383 7502:
19384 ZTARGET502: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7502) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19385 7503:
19386 ZTARGET503: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7503) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19387 7504:
19388 ZTARGET504: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7504) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19389 7505:
19390 ZTARGET505: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7505) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19391 7506:
19392 ZTARGET506: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7506) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19393 7507:
19394 ZTARGET507: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7507) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19395 7510:
19396 ZTARGET510: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7510) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19397 7511:
19398 ZTARGET511: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7511) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19399 7512:
19400 ZTARGET512: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7512) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19401 7513:
19402 ZTARGET513: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7513) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19403 7514:
19404 ZTARGET514: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7514) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19405 7515:
19406 ZTARGET515: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7515) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19407 7516:
19408 ZTARGET516: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7516) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19409 7517:
19410 ZTARGET517: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7517) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19411 7520:
19412 ZTARGET520: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7520) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19413 7521:
19414 ZTARGET521: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7521) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19415 7522:
19416 ZTARGET522: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7522) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19417 7523:
19418 ZTARGET523: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7523) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19419 7524:
19420 ZTARGET524: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7524) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19421 7525:
19422 ZTARGET525: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7525) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19423 7526:
19424 ZTARGET526: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7526) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19425 7527:
19426 ZTARGET527: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7527) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19427 7530:
19428 ZTARGET530: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7530) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19429 7531:
19430 ZTARGET531: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7531) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19431 7532:
19432 ZTARGET532: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7532) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19433 7533:
19434 ZTARGET533: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7533) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19435 7534:
19436 ZTARGET534: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7534) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19437 7535:
19438 ZTARGET535: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7535) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19439 7536:
19440 ZTARGET536: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7536) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19441 7537:
19442 ZTARGET537: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7537) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19443 7540:
19444 ZTARGET540: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7540) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19445 7541:
19446 ZTARGET541: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7541) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19447 7542:
19448 ZTARGET542: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7542) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19449 7543:
19450 ZTARGET543: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7543) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19451 7544:
19452 ZTARGET544: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7544) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19453 7545:
19454 ZTARGET545: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7545) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19455 7546:
19456 ZTARGET546: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7546) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19457 7547:
19458 ZTARGET547: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7547) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19459 7550:
19460 ZTARGET550: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7550) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19461 7551:
19462 ZTARGET551: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7551) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19463 7552:
19464 ZTARGET552: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7552) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19465 7553:
19466 ZTARGET553: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7553) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19467 7554:
19468 ZTARGET554: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7554) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19469 7555:
19470 ZTARGET555: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7555) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19471 7556:
19472 ZTARGET556: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7556) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19473 7557:
19474 ZTARGET557: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7557) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19475 7560:
19476 ZTARGET560: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7560) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19477 7561:
19478 ZTARGET561: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7561) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19479 7562:
19480 ZTARGET562: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7562) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19481 7563:
19482 ZTARGET563: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7563) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19483 7564:
19484 ZTARGET564: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7564) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19485 7565:
19486 ZTARGET565: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7565) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19487 7566:
19488 ZTARGET566: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7566) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19489 7567:
19490 ZTARGET567: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7567) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19491 7570:
19492 ZTARGET570: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7570) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19493 7571:
19494 ZTARGET571: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7571) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19495 7572:
19496 ZTARGET572: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7572) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19497 7573:
19498 ZTARGET573: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7573) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19499 7574:
19500 ZTARGET574: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7574) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19501 7575:
19502 ZTARGET575: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7575) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19503 7576:
19504 ZTARGET576: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7576) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19505 7577:
19506 ZTARGET577: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7577) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19507 7600:
19508 ZTARGET600: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7600) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19509 7601:
19510 ZTARGET601: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7601) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19511 7602:
19512 ZTARGET602: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7602) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19513 7603:
19514 ZTARGET603: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7603) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19515 7604:
19516 ZTARGET604: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7604) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19517 7605:
19518 ZTARGET605: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7605) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19519 7606:
19520 ZTARGET606: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7606) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19521 7607:
19522 ZTARGET607: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7607) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19523 7610:
19524 ZTARGET610: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7610) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19525 7611:
19526 ZTARGET611: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7611) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19527 7612:
19528 ZTARGET612: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7612) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19529 7613:
19530 ZTARGET613: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7613) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19531 7614:
19532 ZTARGET614: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7614) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19533 7615:
19534 ZTARGET615: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7615) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19535 7616:
19536 ZTARGET616: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7616) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19537 7617:
19538 ZTARGET617: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7617) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19539 7620:
19540 ZTARGET620: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7620) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19541 7621:
19542 ZTARGET621: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7621) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19543 7622:
19544 ZTARGET622: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7622) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19545 7623:
19546 ZTARGET623: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7623) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19547 7624:
19548 ZTARGET624: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7624) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19549 7625:
19550 ZTARGET625: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7625) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19551 7626:
19552 ZTARGET626: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7626) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19553 7627:
19554 ZTARGET627: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7627) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19555 7630:
19556 ZTARGET630: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7630) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19557 7631:
19558 ZTARGET631: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7631) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19559 7632:
19560 ZTARGET632: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7632) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19561 7633:
19562 ZTARGET633: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7633) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19563 7634:
19564 ZTARGET634: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7634) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19565 7635:
19566 ZTARGET635: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7635) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19567 7636:
19568 ZTARGET636: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7636) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19569 7637:
19570 ZTARGET637: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7637) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19571 7640:
19572 ZTARGET640: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7640) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19573 7641:
19574 ZTARGET641: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7641) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19575 7642:
19576 ZTARGET642: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7642) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19577 7643:
19578 ZTARGET643: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7643) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19579 7644:
19580 ZTARGET644: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7644) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19581 7645:
19582 ZTARGET645: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7645) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19583 7646:
19584 ZTARGET646: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7646) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19585 7647:
19586 ZTARGET647: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7647) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19587 7650:
19588 ZTARGET650: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7650) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19589 7651:
19590 ZTARGET651: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7651) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19591 7652:
19592 ZTARGET652: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7652) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19593 7653:
19594 ZTARGET653: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7653) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19595 7654:
19596 ZTARGET654: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7654) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19597 7655:
19598 ZTARGET655: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7655) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19599 7656:
19600 ZTARGET656: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7656) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19601 7657:
19602 ZTARGET657: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7657) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19603 7660:
19604 ZTARGET660: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7660) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19605 7661:
19606 ZTARGET661: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7661) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19607 7662:
19608 ZTARGET662: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7662) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19609 7663:
19610 ZTARGET663: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7663) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19611 7664:
19612 ZTARGET664: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7664) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19613 7665:
19614 ZTARGET665: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7665) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19615 7666:
19616 ZTARGET666: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7666) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19617 7667:
19618 ZTARGET667: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7667) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19619 7670:
19620 ZTARGET670: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7670) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19621 7671:
19622 ZTARGET671: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7671) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19623 7672:
19624 ZTARGET672: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7672) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19625 7673:
19626 ZTARGET673: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7673) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19627 7674:
19628 ZTARGET674: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7674) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19629 7675:
19630 ZTARGET675: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7675) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19631 7676:
19632 ZTARGET676: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7676) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19633 7677:
19634 ZTARGET677: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7677) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19635 7700:
19636 ZTARGET700: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7700) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19637 7701:
19638 ZTARGET701: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7701) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19639 7702:
19640 ZTARGET702: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7702) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19641 7703:
19642 ZTARGET703: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7703) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19643 7704:
19644 ZTARGET704: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7704) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19645 7705:
19646 ZTARGET705: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7705) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19647 7706:
19648 ZTARGET706: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7706) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19649 7707:
19650 ZTARGET707: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7707) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19651 7710:
19652 ZTARGET710: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7710) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19653 7711:
19654 ZTARGET711: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7711) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19655 7712:
19656 ZTARGET712: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7712) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19657 7713:
19658 ZTARGET713: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7713) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19659 7714:
19660 ZTARGET714: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7714) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19661 7715:
19662 ZTARGET715: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7715) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19663 7716:
19664 ZTARGET716: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7716) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19665 7717:
19666 ZTARGET717: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7717) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19667 7720:
19668 ZTARGET720: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7720) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19669 7721:
19670 ZTARGET721: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7721) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19671 7722:
19672 ZTARGET722: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7722) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19673 7723:
19674 ZTARGET723: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7723) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19675 7724:
19676 ZTARGET724: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7724) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19677 7725:
19678 ZTARGET725: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7725) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19679 7726:
19680 ZTARGET726: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7726) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19681 7727:
19682 ZTARGET727: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7727) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19683 7730:
19684 ZTARGET730: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7730) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19685 7731:
19686 ZTARGET731: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7731) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19687 7732:
19688 ZTARGET732: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7732) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19689 7733:
19690 ZTARGET733: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7733) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19691 7734:
19692 ZTARGET734: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7734) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19693 7735:
19694 ZTARGET735: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7735) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19695 7736:
19696 ZTARGET736: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7736) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19697 7737:
19698 ZTARGET737: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7737) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19699 7740:
19700 ZTARGET740: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7740) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0 .0..0...0.0000...0..0000.0...11.111...011.111).1101
19701 7741:
19702 ZTARGET741: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7741) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19703 7742:
19704 ZTARGET742: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7742) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19705 7743:
19706 ZTARGET743: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7743) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19707 7744:
19708 ZTARGET744: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7744) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19709 7745:
19710 ZTARGET745: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7745) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19711 7746:
19712 ZTARGET746: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7746) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19713 7747:
19714 ZTARGET747: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7747) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19715 7750:
19716 ZTARGET750: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7750) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19717 7751:
19718 ZTARGET751: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7751) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19719 7752:
19720 ZTARGET752: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7752) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19721 7753:
19722 ZTARGET753: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7753) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19723 7754:
19724 ZTARGET754: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7754) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19725 7755:
19726 ZTARGET755: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7755) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19727 7756:
19728 ZTARGET756: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7756) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19729 7757:
19730 ZTARGET757: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7757) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19731 7760:
19732 ZTARGET760: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7760) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19733 7761:
19734 ZTARGET761: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7761) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.1101
19735 7762:
19736 ZTARGET762: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN

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(7762) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19737 7763:
19738 ZTARGET763: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7763) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.1'1...011.111.110)
19739 7764:
19740 ZTARGET764: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7764) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19741 7765:
19742 ZTARGET765: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7765) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19743 7766:
19744 ZTARGET766: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7766) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19745 7767:
19746 ZTARGET767: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7767) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19747 7770:
19748 ZTARGET770: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7770) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19749 7771:
19750 ZTARGET771: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7771) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19751 7772:
19752 ZTARGET772: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7772) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19753 7773:
19754 ZTARGET773: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7773) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19755 7774:
19756 ZTARGET774: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7774) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19757 7775:
19758 ZTARGET775: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7775) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19759 7776:
19760 ZTARGET776: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7776) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19761 7777:
19762 ZTARGET777: NEXT, BUTA(RETURN), J/BUTERROR7 !COMPARE MICROADDRESS, THEN RETURN
(7777) DCS(0.00.0.0.0.0) BM(0000..00.00..00.00..000..000...0.0.0..0..0...0.0000...0..0000.0...11.111...011.111.110)
19763
19764
19765 !*****
19766 .TOC * END OF KD11-K MICRODIAGNOSTIC CODE
19767 !*****
19768
19769 .END

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LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL
8399	7025	AGAINSRD350	14400	7155	AL1-537A	18075	4731	ALLOW763A	5887	4003	ALU114A
5946	4610	ALU115A1	6028	4015	ALU11581	6111	4622	ALU115C1	6171	4026	ALU11501
6242	4634	ALU116A1	6333	4040	ALU1168	6366	4646	ALU116C1	6459	4050	ALU1160
6502	4666	ALU117A1	6577	4057	ALU11781	6640	4063	ALU117C1	6692	4664	ALU120A1
6752	4072	ALU12081	6839	4706	ALU121A1	6913	4107	ALU12181	6994	4670	ALU121C1
7068	4121	ALU12101	7155	4672	ALU122A1	8041	7007	ALUCARRY1	8050	7017	ALUCARRY1A
8058	7020	ALUCARRY2	8067	7021	ALUCARRY2A	14347	7145	AR11-537A	14298	6451	AR3-537A
14323	7141	AR7-537A	7290	4540	ARITH130A1	7341	4140	ARITH13081	7399	4520	ARITH131A1
7450	4150	ARITH13181	7509	4522	ARITH132A1	7554	4157	ARITH13281	10856	6114	ASIDE410C
11048	6525	ASSERTFOV500	15612	5413	BC1FCN622A	15269	5570	BCERC620A	15641	5416	BCERC6228
17504	7204	BOX05	17492	7177	BOX12	14407	4242	BL1-537A	14353	7146	BR11-537A
14305	7134	BR3-537A	14329	7142	BR7-537A	17885	4551	BUMP0762A	16180	4313	BUSFCN710A
16342	4311	BUSFCN711A	16480	4316	BUSFCN712A	16608	7167	BUSFCN713A	16758	7176	BUSFCN720A
16863	7201	BUSFCN721A	16974	4324	BUSFCN722A	17101	4331	BUSFCN730A	17161	4337	BUSFCN7308
17257	4346	BUSFCN7300	17328	4764	BUSFCN731A	17370	4356	BUSFCN7318	17440	4364	BUSFCN7310
17563	4371	BUSFCN740A	17598	4373	BUSFCN7408	17627	4374	BUSFCN740C	17660	4401	BUSFCN7400
19178	7351	BUTBA00	18972	7307	BUTBGFPSERV	19022	7316	BUTBGSERV	11873	6217	BUTCLRS05A
14517	7136	BUTCOUNT-IS-377	18985	7311	BUTCOUT7DOUT7	19118	7341	BUTD-IS-ZERO	18998	7313	BUTDMSBYTE
19160	7347	BUTDR6-7L	19139	7344	BUTD(C)A	19173	7350	BUTD(C)B	18977	7310	BUTD(C)C
2880	4376	BUTERROR4	2886	5376	BUTERRORS	2892	6376	BUTERROR6	2898	7376	BUTERROR7
19222	7371	BUTFPFD	19191	7354	BUTFPROC	18990	7312	BUTFPS05	19006	7314	BUTG03-2
18964	7306	BUTINSTR1	18932	7301	BUTINSTRS	19209	7356	BUTINSTRBRANCH	19204	7355	BUTINTRHIGH
19126	7342	BUTIR118	18940	7302	BUTIR11FLTPT3-0	18924	7300	BUTIR15-12	18948	7304	BUTIR9-6
19038	7321	BUTMD00	19071	7327	BUTMEX-FLAG1	19093	7333	BUTMEXFLAG2	19060	7325	BUTMFLAG7
19082	7331	BUTMFLTPTS	19105	7336	BUTMINITJAM	19027	7317	BUTMASKPS(T)	19032	7320	BUTMNXT000
19043	7322	BUTMNXT001	19054	7324	BUTMNXT002	19065	7326	BUTMNXT003	19076	7330	BUTMNXT004
19087	7332	BUTMNXT005	19098	7334	BUTMNXT006	19110	7340	BUTMNXT007	18956	7305	BUTMOVDR7IR5-3
19049	7323	BUTMPS(N)	19186	7352	BUTOTHERJAM	19217	7360	BUTPREFETCHJAM	19131	7343	BUTPS15
19147	7345	BUTSERVICE	19014	7315	BUTSR1-0	18916	7276	BUTSR3-0	19155	7346	BUTVECTLOAD
10540	7062	BYTE375A	10745	7070	BYTEFIRST410	10764	7367	BYTESECOND410	17509	7205	C17X05
17497	7203	C17X12	10547	7063	CHECK375A	10570	5300	CHECK375B	12293	6254	CIN507F
18600	7247	CJESERVICET00	18454	7227	CLEAR-I-0-A	18459	7230	CLEAR-I-0-B	12106	6236	CLEAR506E
15878	7165	CLEAR624	16278	6470	CLEAR7100	17747	4404	CLEAR761A	18464	7231	CLEAR1002
18470	7232	CLEAR1004	18476	7233	CLEAR1005	18638	7255	CLRJAMT00	18585	7244	CLRSERVICET00
18674	7262	CHPPROCDAT	15618	5414	CNST0622A	7299	4135	COMP130A1	7350	4141	COMP13081
7408	4145	COMP131A1	7459	4151	COMP13181	8424	4702	COMP350A	8451	4244	COMP3508
8479	4246	COMP350C	8506	4250	COMP3500	8576	4704	COMP351A	8598	4257	COMP3518
8620	4261	COMP351C	8641	4263	COMP3510	8677	4714	COMP352A	8699	4267	COMP3528
8721	4271	COMP352C	8742	4273	COMP3520	8860	6004	COMP3618	8943	6012	COMP362A
8976	6015	COMP3628	9051	6022	COMP363A	9174	6034	COMP365A	9242	6042	COMP366A
9302	6047	COMP366C	9386	6057	COMP370A	9447	6064	COMP370C	9517	6072	COMP371A
10797	6106	COMP410A	10827	6111	COMP4108	10861	6115	COMP410C	10893	6120	COMP4100
10925	6123	COMP410E	11078	6134	COMP500A	11114	6137	COMP500C	11143	6141	COMP5000
11178	6144	COMP500E	13548	6350	COMP533A	13589	6354	COMP5338	13630	6357	COMP534A
13664	6362	COMP5348	13704	6365	COMP534C	13738	6370	COMP534D	13785	6374	COMP534E
13824	6402	COMP534F	13906	6411	COMP535A	13946	6415	COMP5358	13999	6422	COMP536A
14039	6426	COMP5368	14082	6431	COMP536C	14129	6436	COMP536D	14175	6442	COMP536E
14215	6446	COMP536F	14422	4302	COMP537A	15580	5412	COMP621H	17116	4333	COMP730A
17342	4354	COMP731A	17409	4361	COMP731C	14579	4301	COUNTER01	14584	4310	COUNTER02
14592	4526	COUNTER03	14603	4545	COUNTER04	14612	4557	COUNTER05	14621	4534	COUNTER06
14631	4535	COUNTER07	14641	4536	COUNTER08	14652	4525	COUNTER09	14663	4527	COUNTER10
14670	4533	COUNTER10A	14676	4531	COUNTER108	14683	4547	COUNTER11	14690	4555	COUNTER12

LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL
13851	6404	COUNTERS34G	14359	7147	CR11-537A	14311	7137	CR3-537A	14335	7143	CR7-537A
9574	7035	CSP16XOPFLTTOIRS	9568	7031	CSP16XORSRTOIPS	15352	5372	CSP1L621A	3627	6222	CUA372A
9678	5555	CUA372B	18650	7257	CUA100	18543	7241	DOS00A	18529	7237	D1106A
18518	7235	D1512A	18590	7245	DATISERVICET00	18595	7246	DATOSERVICET00	18758	7270	DBUFINTOIR
18788	7274	DBUFINTOIRS	17958	4415	DELAY762C	18752	7267	DINTOIR	8359	7353	DINTOIR350
18782	7273	DINTOIRS	8408	4563	DINTOIRA350	18410	7222	DISP002	18416	7223	DISP003
18422	7224	DISP004	18428	7225	DISP005	18434	7226	DISP006	18404	7221	DISPLAY
10718	6531	DNONZER0410	11282	6153	DOFCC503A	11611	6177	DOFCC504A	10608	5440	DOIT376A
12009	7072	DOIT506A	14785	5313	DOIT610A!	14835	5321	DOIT610A2	14898	5327	DOIT610B1
14953	5336	DOIT610B2	15016	5344	DOIT610C1	15067	5352	DOIT610C2	15124	5357	DOIT610D1
15163	5363	DOIT610D2	7613	4163	DOPA133A1	7725	4173	DOPA134A1	7838	4203	DOPA135A1
7944	4212	DOPA136A1	9926	5225	DOWRITE374A1	9946	5230	DOWRITE374A2	9999	5234	DOWRITE374B1
10019	5237	DOWRITE374B2	10072	5243	DOWRITE374C1	10092	5247	DOWRITE374C2	10145	5253	DOWRITE374D1
10165	5256	DOWRITE374D2	10218	5262	DOWRITE374E1	10238	5265	DOWRITE374E2	10291	5271	DOWRITE374F1
10311	5274	DOWRITE374F2	14365	7150	DR11-537A	14317	7140	DR3-537A	14341	7144	DR7-537A
18558	7243	DTOIRB	17836	4411	DWILL762A	18552	7242	DZERO	10728	6533	DZER0410
18538	7240	D[05-00]	18524	7236	D[11-06]	18511	7234	D[15-12]	12452	6270	ENFLAG5100
18230	4431	EOP001	18237	6452	EOP002	18243	6510	EOP003	18250	6511	EOP004
18256	7211	EOP005	18265	6776	EOP006	18275	6512	EOP007	18282	7212	EOP010
14371	7151	ER3-537A	2827	6543	ERROR010	15426	5615	ERROR621A	15803	6567	ERROR624A
8853	6003	EXPEC361B	8969	6014	EXPEC362B	9167	6033	EXPEC365A	9236	6741	EXPEC366A
9295	6046	EXPEC366C	9914	5222	EXPEC374A1	9987	5537	EXPEC374B1	10060	5557	EXPEC374C1
10133	5567	EXPEC374D1	10206	5515	EXPEC374E1	10279	5527	EXPEC374F1	10785	7363	EXPEC410A
10822	6110	EXPEC410B	10851	6113	EXPEC410C	10886	6117	EXPEC410D	10918	6122	EXPEC410E
11108	6136	EXPEC500C	11171	6143	EXPEC500E	11262	6150	EXPEC503A	11414	6163	EXPEC503E
11599	6175	EXPEC504A	11723	6206	EXPEC504E	11860	6215	EXPEC505A	11959	6612	EXPEC506A
12151	6602	EXPEC507A	13893	6407	EXPEC535A	13934	6413	EXPEC535B	13986	6420	EXPEC536A
14026	6424	EXPEC536B	14116	6434	EXPEC536D	15502	5405	EXPEC621E	15528	5407	EXPEC621F
15688	5421	EXPEC623	15846	5430	EXPEC624C	15939	7166	EXPEC701A	15988	6455	EXPEC701C
16052	5437	EXPEC702A	16096	6460	EXPEC702B	16243	6465	EXPEC710C	16272	6467	EXPEC710D
16381	6473	EXPEC711B	16411	6475	EXPEC711C	16562	6501	EXPEC7120	16648	5452	EXPEC713B
16697	6504	EXPEC7130	17156	4336	EXPEC730B	18013	4417	EXPEC762E	18069	4422	EXPEC763A
17953	4414	FILL762C	10526	7046	FIRST375A	11056	6527	FIXPAT500	12446	6267	FLAG5100
12571	7075	FLAGFPS02	12577	7076	FLAGFPS03	12582	7077	FLAGFPS04	12566	7073	FLAGFPSSEQL00
18619	7252	FLAGFPST00	14382	7152	FR3-537A	11992	6231	FUDGEPS506A	12177	6244	FUDGEPS507A
16474	4314	GENADR712A	5954	4010	GETALTN115A1	15535	5410	GETCUA621F	15695	5422	GETCUA623
15852	5431	GETCUA624C	17109	4332	GETDBUF730A	17335	4353	GETDBUF731A	8118	4222	GETDC320A
8176	4227	GETDC320C	8237	4234	GETDC320E	14794	5314	GETIT610A1	14844	5322	GETIT610A2
14907	5330	GETIT610B1	14962	5337	GETIT610B2	15025	5345	GETIT610C1	15076	5353	GETIT610C2
15133	5360	GETIT610D1	15172	5364	GETIT610D2	17169	4340	GETIT730B	17265	4347	GETIT730D
17376	4357	GETIT731B	17853	7210	GETIT762A	15324	5371	GETJAM620C	15508	5406	GETJAM621E
15665	5420	GETJAM622C	18662	7260	GETMSKPROCDAT	5881	4600	GETONES114A	18657	7373	GETPROC DAT
9934	5226	GETTEM374A1	9954	5231	GETTEM374A2	10007	5235	GETTEM374B1	10027	5240	GETTEM374B2
10080	5244	GETTEM374C1	10100	5250	GETTEM374C2	10153	5254	GETTEM374D1	10173	5257	GETTEM374D2
10226	5263	GETTEM374E1	10246	5266	GETTEM374E2	10299	5272	GETTEM374F1	10319	5275	GETTEM374F2
5894	4004	GETZER0ES114A	3056	5003	GOBUTO12A	3077	5004	GOBUTO12B	3097	5005	GOBUTO12C
3116	5006	GOBUTO12D	3135	5007	GOBUTO12E	3155	5010	GOBUTO12F	3177	5011	GOBUTO12G
3220	5013	GOBUTO13A	3242	5014	GOBUTO13B	3261	5015	GOBUTO13C	3280	5016	GOBUTO13D
3299	5017	GOBUTO13E	3320	5020	GOBUTO13F	3339	5021	GOBUTO13G	3382	5023	GOBUTO14A
3403	5024	GOBUTO14B	3422	5025	GOBUTO14C	3444	5026	GOBUTO14D	3488	5030	GOBUTO15A
3508	5031	GOBUTO15B	3527	5032	GOBUTO15C	3570	5034	GOBUTO16A	3613	5036	GOBUTO17A
3635	5037	GOBUTO17B	3677	5041	GOBUTO20A	3697	5042	GOBUTO20B	3719	5043	GOBUTO20C

LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL
3762	5045	GOBUT021A	3783	5046	GOBUT021B	3805	5047	GOBUT021C	3848	5051	GOBUT022A
3892	5053	GOBUT023A	3936	5055	GOBUT024A	3957	5056	GOBUT024B	4001	5060	GOBUT025A
4045	5062	GOBUT026A	4089	5064	GOBUT027A	4132	5066	GOBUT030A	4155	5067	GOBUT030B
4174	5070	GOBUT030C	4197	5071	GOBUT0300	4240	5073	GOBUT031A	4261	5074	GOBUT031B
4304	5076	GOBUT032A	4325	5077	GOBUT032B	4370	5101	GOBUT033A	4414	5103	GOBUT034A
4457	5105	GOBUT035A	4502	5107	GOBUT036A	4546	5111	GOBUT037A	4589	5113	GOBUT04CA
4611	5114	GOBUT040B	4654	5116	GOBUT041A	4676	5117	GOBUT041B	4718	5121	GOBUT042A
4739	5122	GOBUT042B	4783	5124	GOBUT043A	4804	5125	GOBUT043B	4848	5127	GOBUT044A
4893	5131	GOBUT045A	4935	5133	GOBUT046A	4958	5134	GOBUT046B	5004	5136	GOBUT047A
5027	5137	GOBUT047B	5047	5140	GOBUT047C	5093	5142	GOBUT050A	5122	5144	GOBUT050B
5626	5210	GOBUT105A1	5674	5213	GOBUT105B1	5899	4005	GOBUT114A	5913	4006	GOBUT114A2
5959	4011	GOBUT115A1	5991	4013	GOBUT115A2	6008	4014	GOBUT115A3	5975	4012	GOBUT115A4
6036	4016	GOBUT115B1	6068	4020	GOBUT115B2	6085	4021	GOBUT115B3	6052	4017	GOBUT115B4
6119	4023	GOBUT115C1	6134	4024	GOBUT115C2	6151	4025	GOBUT115C3	6179	4027	GOBUT115D1
6194	4030	GOBUT115D2	6211	4031	GOBUT115D3	6250	4033	GOBUT116A1	6264	4034	GOBUT116A2
6279	4035	GOBUT116A3	6296	4036	GOBUT116A4	6312	4037	GOBUT116A5	6340	4041	GOBUT116B
6374	4043	GOBUT116C1	6389	4044	GOBUT116C2	6404	4045	GOBUT116C3	6420	4046	GOBUT116C4
6436	4047	GOBUT116C5	6466	4051	GOBUT116D	6510	4053	GOBUT117A1	6525	4054	GOBUT117A2
6542	4055	GOBUT117A3	6557	4056	GOBUT117A4	6585	4060	GOBUT117B1	6600	4061	GOBUT117B2
6617	4062	GOBUT117B3	6647	4064	GOBUT117C1	6662	4065	GOBUT117C2	6700	4067	GOBUT120A1
6715	4070	GOBUT120A2	6732	4071	GOBUT120A3	6760	4073	GOBUT120B1	6775	4074	GOBUT120B2
6792	4075	GOBUT120B3	6807	4076	GOBUT120B4	6847	4103	GOBUT121A1	6862	4104	GOBUT121A2
6878	4105	GOBUT121A3	6893	4106	GOBUT121A4	6921	4110	GOBUT121B1	6936	4111	GOBUT121B2
6953	4112	GOBUT121B3	6968	4113	GOBUT121B4	7002	4115	GOBUT121C1	7017	4116	GOBUT121C2
7033	4117	GOBUT121C3	7048	4120	GOBUT121C4	7076	4122	GOBUT121D1	7091	4123	GOBUT121D2
7108	4124	GOBUT121D3	7123	4125	GOBUT121D4	7163	4127	GOBUT122A1	7179	4130	GOBUT122A2
7195	4131	GOBUT122A3	7215	4133	GOBUT122A4	7306	4136	GOBUT130A1	7321	4137	GOBUT130A2
7357	4142	GOBUT130B1	7372	4143	GOBUT130B2	7415	4146	GOBUT131A1	7430	4147	GOBUT131A2
7466	4152	GOBUT131B1	7481	4153	GOBUT131B2	7518	4155	GOBUT132A1	7534	4156	GOBUT132A2
7563	4160	GOBUT132B1	7579	4161	GOBUT132B2	7638	4165	GOBUT133A2	7685	4170	GOBUT133B2
7750	4175	GOBUT134A2	7798	4200	GOBUT134B2	7863	4205	GOBUT135A2	7911	4210	GOBUT135B2
7969	4214	GOBUT136A2	8017	4217	GOBUT135B2	8125	4223	GOBUT320A	8146	4224	GOBUT320B
8184	4230	GOBUT320C	8204	4231	GOBUT320D	8244	4235	GOBUT320E	8263	4236	GOBUT320F
8429	4243	GOBUT350A	8456	4245	GOBUT350B	8484	4247	GOBUT350C	8512	4251	GOBUT350D
8581	4256	GOBUT351A	8603	4260	GOBUT351B	8625	4262	GOBUT351C	8647	4264	GOBUT351D
8682	4266	GOBUT352A	8704	4270	GOBUT352B	8726	4272	GOBUT352C	8748	4274	GOBUT352D
8880	6005	GOBUT361D	8902	6006	GOBUT361E	8949	6013	GOBUT362A	8996	6016	GOBUT362D
9017	6017	GOBUT362E	9056	6023	GOBUT363A	9076	6024	GOBUT363B	9104	6026	GOBUT364A
9131	6030	GOBUT364B	9194	6035	GOBUT365B	9263	6043	GOBUT366B	9345	6053	GOBUT367B
9391	6060	GOBUT370A	9412	6061	GOBUT370B	9452	6065	GOBUT370C	9474	6066	GOBUT370D
9522	6073	GOBUT371A	9545	6074	GOBUT371B	9821	6101	GOBUT373B	10552	7064	GOBUT375A
10575	5301	GOBUT375B	10626	5303	GOBUT376A	10866	6116	GOBUT410C	10898	6121	GOBUT410D
10930	6124	GOBUT410E	11084	6135	GOBUT500A	11121	6140	GOBUT500C	11149	6142	GOBUT500D
11184	6145	GOBUT500E	11306	6155	GOBUT503A	11325	6156	GOBUT503B	11346	6157	GOBUT503C
11393	6162	GOBUT503D	11366	6160	GOBUT503DA	11440	6165	GOBUT503F	11461	6166	GOBUT503G
11482	6167	GOBUT503H	11502	6170	GOBUT503I	11520	6171	GOBUT503J	11539	6172	GOBUT503K
11636	6201	GOBUT504A	11654	6202	GOBUT504B	11675	6203	GOBUT504C	11702	6205	GOBUT504D
11749	6210	GOBUT504F	11770	6211	GOBUT504G	11791	6212	GOBUT504H	11811	6213	GOBUT504I
11899	6221	GOBUT505B	11919	6223	GOBUT505C	12022	7071	GOBUT506A	12041	6233	GOBUT506B
12062	6234	GOBUT506C	12083	6235	GOBUT506D	12112	6237	GOBUT506E	12189	6246	GOBUT507A
12208	6247	GOBUT507B	12229	6250	GOBUT507C	12250	6251	GOBUT507D	12273	6253	GOBUT507E
12328	6261	GOBUT507F	12381	6264	GOBUT510A	12403	6265	GOBUT510B	12425	6266	GOBUT510C

LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL
12462	6272	GOBUT5100	12483	6273	GOBUT5100A	12509	6275	GOBUT510E	12538	6277	GOBUT510F
13555	6351	GOBUT533A	13595	6355	GOBUT533B	13636	6360	GOBUT534A	13671	6363	GOBUT534B
13711	6366	GOBUT534C	13745	6371	GOBUT534D	13791	6375	GOBUT534E	13831	6403	GOBUT534F
13856	6405	GOBUT534G	13912	6412	GOBUT535A	13952	6416	GOBUT535B	14005	6423	GOBUT536A
14046	6427	GOBUT536B	14089	6432	GOBUT536C	14135	6437	GOBUT536D	14182	6443	GOBUT536E
14222	6447	GOBUT536F	14428	4303	GOBUT537A	15275	5366	GOBUT620A	15293	5367	GOBUT620B
15447	5402	GOBUT621B	15465	5403	GOBUT621C	15483	5404	GOBUT621D	15557	5411	GOBUT621G
15586	7160	GOBUT621H	15623	5415	GOBUT622A	15646	5417	GOBUT622B	15871	5432	GOBUT624D
15969	5434	GOBUT701B	16018	5435	GOBUT701D	16537	6500	GOBUT712C	16671	6503	GOBUT713C
17127	4335	GOBUT730A	17175	4341	GOBUT730B	17196	4342	GOBUT730C	17219	4443	GOBUT730C1
17270	4350	GOBUT730D	17293	4351	GOBUT730E	17347	4355	GOBUT731A	17382	4360	GOBUT731B
17414	4362	GOBUT731C	17452	4366	GOBUT731D	17474	4367	GOBUT731E	17572	4776	GOBUT740A
17605	4766	GOBUT740B	17633	4375	GOBUT740C	17667	4767	GOBUT740D	17752	4405	GOBUT761A
17773	4406	GOBUT761B	17793	4407	GOBUT761C	17932	4762	GOBUT762B	17987	416	GOBUT762D
18038	4421	GOBUT762F	18115	4425	GOBUT763B	18136	4426	GOBUT763C	18155	4427	GOBUT763D
10773	7361	GOFOR410	18019	4420	GOPUT762E	10832	6112	GOPUT410B	11300	6154	GOPUT503A
11421	6164	GOPUT503E	11630	6200	GOPUT504A	11730	6207	GOPUT504E	11879	6220	GOPUT505A
5173	5147	GOTEST101A	5263	5156	GOTEST102A	5289	5160	GOTEST102B	5316	5162	GOTEST102C
5342	5164	GOTEST102D	5409	5173	GOTEST103A	5435	5175	GOTEST103B	5462	5177	GOTEST103C
5488	5201	GOTEST103D	5528	5203	GOTEST104A	5555	5205	GOTEST104B	5606	5207	GOTEST105A
5654	5212	GOTEST105B	5702	5215	GOTEST105C	5729	5217	GOTEST105D	5750	5220	GOTEST105E
7619	4164	GOTEST133A1	7669	4167	GOTEST133B1	7731	4174	GOTEST134A1	7781	4177	GOTEST134B1
7844	4204	GOTEST135A1	7894	4207	GOTEST135B1	7950	4213	GOTEST136A1	8000	4216	GOTEST136B1
9967	5232	GOTEST374A2	10040	5241	GOTEST374B2	10113	5251	GOTEST374C2	10186	5260	GOTEST374D2
10259	5267	GOTEST374E2	10332	5276	GOTEST374F2	12761	6550	GOTEST511A1	12772	7107	GOTEST511A2
12783	7111	GOTEST511A3	12794	7113	GOTEST511A4	12817	6554	GOTEST511B1	12828	7115	GOTEST511B2
12839	7117	GOTEST511B3	12850	7121	GOTEST511B4	13045	6311	GOTEST512A1	13060	6312	GOTEST512A2
13100	6315	GOTEST512B1	13115	6316	GOTEST512B2	13149	6321	GOTEST512C1	13164	6322	GOTEST512C2
13204	6325	GOTEST512D1	13219	6326	GOTEST512D2	13253	6331	GOTEST512E1	13268	6332	GOTEST512E2
13346	6335	GOTEST520A	13374	6337	GOTEST520B	13403	6341	GOTEST520C	13431	6343	GOTEST520D
13460	6345	GOTEST520E	14487	4564	GOTEST551A	14511	4560	GOTEST551B	14528	7157	GOTEST551B1
14552	5626	GOTEST551C	15949	7171	GOTEST701A	15998	6457	GOTEST701C	16074	5444	GOTEST702A
16113	6463	GOTEST702B	16219	6464	GOTEST710B	16248	6466	GOTEST710C	16284	6471	GOTEST710D
16301	6472	GOTEST710E	16387	6474	GOTEST711B	16416	6476	GOTEST711C	16435	6477	GOTEST711D
16519	5450	GOTEST712B	16567	6502	GOTEST712D	16653	5453	GOTEST713B	16702	6505	GOTEST713D
16796	6506	GOTEST720B	16820	4317	GOTEST720C	16901	4321	GOTEST721B	16925	4322	GOTEST721C
17012	4325	GOTEST722B	17036	4326	GOTEST722C	14388	7153	GR3-537A	14394	7154	HR3-537A
13535	6666	INIT533A	13576	6352	INIT533B	13887	6656	INIT535A	13980	6654	INIT536A
14110	6433	INIT536D	13542	6347	INITD533A	13582	6353	INITD533B	13623	6664	INITD534A
13658	6361	INITD534B	13698	6662	INITD534C	13732	6367	INITD534D	13778	6373	INITD534E
13817	6401	INITD534F	13899	6410	INITD535A	13940	6414	INITD535B	13993	6421	INITD536A
14033	6425	INITD536B	14075	6652	INITD536C	14122	6435	INITD536D	14168	6441	INITD536E
14209	6445	INITD536F	2931	6532	INITIALIZE01	2937	7001	INITIALIZE03	2942	7003	INITIALIZE04
2948	7004	INITIALIZE05	2953	7005	INITIALIZE06	2958	7006	INITIALIZE07	2965	4101	INITIALIZE10
2977	4102	INITIALIZE11	2988	4001	INITIALIZE12	14280	7131	INITSR537A	18367	7215	INSERT02
18378	7217	INSERT03	18384	7220	INSERT04	18362	7214	INSERTOPREVNO	18373	7216	INSERTREVNO
10802	6107	INTOIR410A	18643	7256	JAMTOD	18822	4777	JAMUPP001	18830	4757	JAMUPP002B
18835	4434	JAMUPP002C	18841	7213	JAMUPP002D	18847	4756	JAMUPP003	18854	4746	JAMUPP004
18861	4747	JAMUPP005	18867	4435	JAMUPP006	18872	4436	JAMUPP007	18877	4437	JAMUPP010
18882	4440	JAMUPP011	18176	4763	KILL764A	12933	7114	KTSRCDST01	12938	7123	KTSRCDST02
12944	7124	KTSRCDST03	12951	7125	KTSRCDST04	12958	7126	KTSRCDST04B	12967	7335	KTSRCDST05
12973	7337	KTSRCDST06	12981	7127	KTSRCDST07	12987	7130	KTSRCDST08	5252	5154	LOAD00-102A

LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL
5232	5530	LOAD01-102A	14758	5306	LOAD01-610A1	14819	5316	LOAD01-610A2	14882	5324	LOAD01-610B1
14937	5333	LOAD01-610B2	15000	5341	LOAD01-610C1	15051	5347	LOAD01-610C2	15108	5510	LOAD01-610D1
2809	4100	LOAD010	2854	5001	LOAD011	3049	5002	LOAD012A	3213	5744	LOAD013A
3376	5742	LOAD014A	14272	4300	LOAD01537A	3481	5740	LOAD015A	3563	5736	LOAD016A
3606	5732	LOAD017A	5237	5151	LOAD02-102A	3670	5724	LOAD020A	3754	5720	LOAD021A
3841	5716	LOAD022A	3885	5714	LOAD023A	3928	5706	LOAD024A	3994	5704	LOAD025A
4038	5702	LOAD026A	4082	5700	LOAD027A	4125	5676	LOAD030A	4232	5672	LOAD031A
4297	5666	LOAD032A	4363	5664	LOAD033A	4406	5662	LOAD034A	14266	4277	LOAD03537A
4450	5660	LOAD035A	4771	5656	LOAD036A	4539	5654	LOAD037A	5242	5152	LOAD04-102A
4582	5650	LOAD040A	4646	5644	LOAD041A	4711	5640	LOAD042A	4775	5634	LOAD043A
4841	5632	LOAD044A	4886	5630	LOAD045A	4928	5560	LOAD046A	4997	5550	LOAD047A
8548	4567	LOAD05-351	14764	5307	LOAD05-610A1	15045	5346	LOAD05-610C2	5086	5552	LOAD050A
5116	5143	LOAD050B	8554	4254	LOAD06-351	14769	5310	LOAD06-610A1	14813	5315	LOAD06-610A2
5393	5170	LOAD07-103A	14932	5332	LOAD07-610B2	5247	5153	LOAD10-102A	5388	5167	LOAD13-103A
14259	4276	LOAD14537A	5383	5166	LOAD15-103A	5377	5546	LOAD16-103A	14252	4574	LOAD16537A
5398	5171	LOAD17-103A	9633	6703	LOAD372A	9684	5503	LOAD372B	11854	6620	LOAD505A
16170	4307	LOADADR710A	15944	7170	LOAD8A701A	15993	6456	LOAD8A701C	16069	5443	LOAD8A702A
16107	6462	LOAD8A702B	5168	5520	LOAD0101A	5258	5155	LOAD0102A	5284	5157	LOAD0102B
5311	5161	LOAD0102C	5337	5163	LOAD0102D	5404	5172	LOAD0103A	5430	5174	LOAD0103B
5457	5176	LOAD0103C	5483	5200	LOAD0103D	5523	5540	LOAD0104A	5550	5204	LOAD0104B
17096	4330	LOADDATA730A	17240	4343	LOADDATA730D	12015	6104	LOADDC5506A	12184	6245	LOADDC5507A
11276	6152	LOADFCC503A	11605	6176	LOADFCC504A	11246	6614	LOADFLAG503A	11585	6622	LOADFLAG504A
11255	6147	LOADFPSS03A	11593	6174	LOADFPSS04A	18704	7264	LOADFPSCC	18710	7265	LOADFPSCC02
8384	7357	LOADHI35G	8393	7024	LOADHI35D	14476	4305	LOADIN551A	11017	6132	LOADIR500
11386	6161	LOADIR503D	11695	6204	LOADIR504D	14752	5532	LOADIR610A1	14876	5534	LOADIR610B1
14926	5331	LOADIR610B2	14994	5544	LOADIR610C1	16743	7172	LOADIR720A	17091	4754	LOADIR730A
17435	4363	LOADIR731D	17551	4765	LOADIR740A	17586	4772	LOADIR740B	17647	4400	LOADIR740D
12375	6263	LOADPRI0510A	8841	6001	LOADRES361A	8937	6011	LOADRES362A	9161	6032	LOADRES365A
9224	6037	LOADRES366A	9332	6051	LOADRES367A	9375	6055	LOADRES370A	9505	6070	LOADRES371A
9907	6103	LOADRES374	16164	5472	LOADRET710A	16335	5470	LOADRET711A	16467	5466	LOADRET712A
16602	5464	LOADRET713A	16737	5462	LOADRET720A	16847	4320	LOADRET721A	16958	5456	LOADRET722A
5600	5542	LOADSR105A	5649	5211	LOADSR105B	5697	5214	LOADSR105C	5723	5216	LOADSR105D
8848	6002	LOADSR361A	9340	6052	LOADSR367A	14162	6650	LOADSR536E	14203	6444	LOADSR536F
8350	4241	LOADSR0350	11999	7067	LOADUCN506A	15359	5374	LOADBRK621A	15747	5425	LOADBRK624A
13772	6660	LOADCNTR534E	13812	6400	LOADCNTR534F	15388	5400	LOADFLG621A	15731	5562	LOADIR624A
9613	6540	LOOP372A	17252	4345	MANGLED730D	17446	4365	MANGLED731D	11270	6151	MASK503A
15317	5370	MASK620C	15933	5476	MASK701A	16047	5474	MASK702A	17842	7202	MASK762A
12686	6232	MFSS01	12692	6302	MFSS02	12699	6303	MFSS03	12706	6304	MFSS04
12715	6552	MFSS05	12725	6553	MFSS06	12735	6545	MFSSSEXPECO	12742	6547	MFSSSEXPEC1
18668	7261	MSKPROC0AT	14291	6643	NEWCTR537A	2767	7303	NEXT007	2833	5245	NEXT010
16193	4445	NEXT710A	16355	4446	NEXT711A	16492	4447	NEXT712A	16621	7365	NEXT713A
16769	7364	NEXT720A	16875	7362	NEXT721A	16985	4524	NEXT722A	17891	4467	NEXTD762A
8376	7023	NEXTPAT350	10737	7065	NEXTPAT410	11039	6377	NEXTPAT500	8536	4253	NEXTPATA350
18633	7254	OODJAMT00	7659	4166	OPA133B1	7712	4512	OPA134A1	7771	4176	OPA134B1
7825	4514	OPA135A1	7884	4206	OPA135B1	7990	4215	OPA136B1	7607	4510	OPB133A1
7719	4172	OPB134A1	7832	4202	OPB135A1	7938	4542	OPB136A1	9665	6100	PAGE372B
18612	7251	PBAT00	17847	7207	PRI06762A	14774	5311	PSCC-DC610A1	14824	5317	PSCC-DC610A2
14887	5325	PSCC-DC610B1	14942	5334	PSCC-DC610B2	15005	5342	PSCC-DC610C1	15056	5350	PSCC-DC610C2
15113	5355	PSCC-DC610D1	15152	5361	PSCC-DC610D2	15212	7162	PSCCT0SR3-0	15217	7163	PSCCT0SR3-0AA
15222	7164	PSCCT0SR3-0BB	11972	6226	PSHI506A	12157	6241	PSHI507A	11985	6230	PSL0506A
12170	6243	PSL0507A	11979	6227	PSMID506A	12164	6242	PSMID507A	12596	7100	PSSEQL00
12601	7101	PSSEQL0002	12607	7102	PSSEQL0003	12612	7103	PSSEQL0004	12618	7104	PSSEQL0005

LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL	LINE	LOCN	SYMBOL
12623	7105	PSSEQLO006	18626	7253	PST00	18082	4423	READVECT763A	8530	4703	RESETIR350
8435	7022	RESETIR350A	8461	702E	RESETIR350B	8489	7027	RESETIR350C	18679	7263	RESETPROC DAT
18765	7271	RESETUONP	18795	7275	RESETUONP5	8769	4715	RESTORE01	8776	7030	RESTORE02
8782	7032	RESTORE03	8788	7033	RESTORE04	9745	6562	RETURN373A	3185	5012	SCOPE012
3347	5022	SCOPE013	3452	5027	SCOPE014	3533	5033	SCOPE015	3578	5035	SCOPE016
3642	5040	SCOPE017	3726	5044	SCOPE020	3812	5050	SCOPE021	3856	5052	SCOPE022
3899	5054	SCOPE023	3965	5057	SCOPE024	4008	5061	SCOPE025	4053	5063	SCOPE026
4095	5065	SCOPE027	4204	5072	SCOPE030	4268	5075	SCOPE031	4333	5100	SCOPE032
4378	5102	SCOPE033	4421	5104	SCOPE034	4465	5106	SCOPE035	4510	5110	SCOPE036
4554	5112	SCOPE037	4618	5115	SCOPE040	4683	5120	SCOPE041	4747	5123	SCOPE042
4811	5126	SCOPE043	4855	5130	SCOPE044	4900	5132	SCOPE045	4967	5135	SCOPE046
5056	5141	SCOPE047	5129	5145	SCOPE050	5180	5150	SCOPE101	5350	5165	SCOPE102
5496	5202	SCOPE103	5563	5206	SCOPE104	5758	5221	SCOPE105	5920	4007	SCOPE114A
6092	4022	SCOPE115B	6217	4032	SCOPE115D	6348	4042	SCOPE116C	6474	4052	SCOPE116D
6670	4066	SCOPE117C	6813	4077	SCOPE120B	6976	4114	SCOPE121C	7129	4126	SCOPE121D
7223	4134	SCOPE122A	7380	4144	SCOPE130B	7489	4154	SCOPE131B	7587	4162	SCOPE132B
7693	4171	SCOPE133B	7806	4201	SCOPE134B	7919	4211	SCOPE135B	8025	4220	SCOPE136B
8270	4237	SCOPE320	8520	4252	SCOPE350	8655	4265	SCOPE351	8756	4275	SCOPE352
9553	6075	SCOPE371	9700	5501	SCOPE372B	9828	6102	SCOPE373	9975	5233	SCOPE374A
10048	5242	SCOPE374B	10121	5252	SCOPE374C	10194	5261	SCOPE374D	10267	5270	SCOPE374E
10340	5277	SCOPE374F	10633	5304	SCOPE376	10937	6125	SCOPE410	11192	6146	SCOPE500F
11550	6173	SCOPE503	11820	6214	SCOPE504	11925	6224	SCOPE505	12121	6240	SCOPE506
12338	6262	SCOPE507	12548	6300	SCOPE510	12800	6301	SCOPE511A	12856	6305	SCOPE511B
13066	6313	SCOPE512A	13170	6323	SCOPE512C	13275	6333	SCOPE512E	13469	6346	SCOPE520
13601	6356	SCOPE533B	13677	6364	SCOPE534B	13752	6372	SCOPE534D	13866	6406	SCOPE534G
13959	6417	SCOPE535B	14052	6430	SCOPE536B	14141	6440	SCOPE536D	14228	6450	SCOPE536F
14434	4304	SCOPE537A	14559	5305	SCOPE551	14852	5323	SCOPE610A	14970	5340	SCOPE610B
15084	5354	SCOPE610C	15180	5365	SCOPE610D	15702	5423	SCOPE623	15884	5224	SCOPE624
16027	5436	SCOPE701	16120	5433	SCOPE702	16310	5445	SCOPE710	16443	5446	SCOPE711
16576	5447	SCOPE712	16711	5451	SCOPE713	16934	5454	SCOPE721	17045	4327	SCOPE722
17299	4352	SCOPE730	17481	4370	SCOPE731	17675	4402	SCOPE740	17801	4410	SCOPE761
18163	4430	SCOPE763	10533	7061	SECOND375A	18605	7250	SERVICET00	16748	7174	SETADR720A
16853	7173	SETADR721A	16964	4470	SETADR722A	15361	5373	SETBRK621A	15738	5424	SETBRK624A
14780	5312	SETBUSA610A1	14830	5320	SETBUSA610A2	14893	5326	SETBUSA610B1	14948	5335	SETBUSA610B2
15011	5343	SETBUSA610C1	15062	5351	SETBUSA610C2	15119	5356	SETBUSA610D1	15158	5362	SETBUSA610D2
10673	6560	SETBYTEB410	10680	7060	SETBYTEC410	10685	7066	SETBYTED410	10691	6000	SETBYTEE410
10697	6105	SETBYTEG410	12320	6260	SETCINS07F	7210	4132	SETD122A4	8111	4221	SETD320A
8169	4226	SETD320C	8230	4233	SETD320E	15760	6306	SETD624A	9622	6076	SETDC372A
9671	5000	SETDC372B	8932	6010	SETDOC362A	9040	6020	SETDOC363A	9099	6025	SETDOC364A
9126	6027	SETDOC364B	9285	6044	SETDOC366C	9436	6062	SETDOC370C	14246	6651	SETEMITS37A
10975	6676	SETFETCH8500	10982	6126	SETFETCHD500	10987	6127	SETFETCHE500	10992	6130	SETFETCHF500
10998	6131	SETFETCHG500	11867	6216	SETFLAG505A	12457	6271	SETFLAG510D	15382	5377	SETFLG621A
15765	6453	SETFLG624A	9751	7034	SETIR373A	10602	5302	SETIR376A	13033	6564	SETIRS12A1
13088	6536	SETIRS12B1	13137	6317	SETIRS12C1	13192	6626	SETIRS12D1	13241	6327	SETIRS12E1
3039	5760	SETIRA	16175	4312	SETJAM710A	16753	7175	SETJAM720A	16858	7200	SETJAM721A
16969	4323	SETJAM722A	16062	5442	SETKT702A	16101	6461	SETKT702B	16057	5441	SETLED702A
8105	4700	SETONE320A	8164	4225	SETONE320C	8224	4232	SETONE320E	12370	6606	SETONE5510A
17907	4463	SETPR6-762A	17912	4413	SETPRI762A	17966	7206	SETPRI762C	12301	6256	SETPS507F
13039	6310	SETPSFLAG512A1	13094	6314	SETPSFLAG512B1	13143	6320	SETPSFLAG512C1	13198	6324	SETPSFLAG512D1
13247	6330	SETPSFLAG512E1	8834	6570	SETRES361A	8924	6007	SETRES362A	9153	6031	SETRES365A
9216	6036	SETRES366A	9324	6050	SETRES367A	9367	6054	SETRES370A	9497	6067	SETRES371A
14285	7135	SETRESA537A	14377	7370	SETRESB537A	15376	5375	SETRET621A	15754	5426	SETRET624A

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14506	4565	SETSR551B	14546	4561	SETSR551C	15395	5401	SETSR621A	15771	6454	SETSR624A
11965	6225	SETUCONS06A	13001	6555	SETUPS12A	13007	6307	SETUPS12B	13338	6334	SETUPS20A
13367	6336	SETUPS20B	13396	6340	SETUPS20C	13424	6342	SETUPS20D	13452	6344	SETUPS20E
5862	7015	SETUPCSP00A	5852	7013	SETUPCSP05A	5857	7014	SETUPCSP07A	5847	7012	SETUPCSP12A
5842	7011	SETUPCSP14A	5837	7010	SETUPCSP15A	5832	7002	SETUPCSP16A	5826	5543	SETUPCSP17A
15197	7156	SETUPPSCC#DC	15202	7161	SETUPPSCC#DC02	17245	4344	SETZER7300	10415	5746	SFDFIOSR
10428	7047	SFDFIOSRA	10423	7040	SFDFIOSRAA	10434	7050	SFDFIOSRB	10440	7051	SFDFIOSRC
10446	7052	SFDFIOSRD	10452	7053	SFDFIOSRE	10458	7054	SFDFIOSRF	10464	7055	SFDFIOSRG
10470	7056	SFDFIOSRH	10476	7057	SFDFIOSRI	9045	6021	SHIFT363A	9230	6040	SHIFT366A
9290	6045	SHIFT366C	9381	6056	SHIFT370A	9442	6063	SHIFT370C	9511	6071	SHIFT371A
18747	7266	SRINTOIR	18777	7272	SRINTOIRS	8343	4240	START350	2816	7000	SUBR010
9639	6077	SUBRA372A	9689	5223	SUBRA372B	13482	7122	SUCBRTEST01	13487	7132	SUCBRTEST02
13492	7133	SUCBRTEST03	2633	4000	TEST001	2654	6252	TEST002	2673	6631	TEST003
2692	5525	TEST004	2711	5146	TEST005	2730	4474	TEST006	2749	4377	TEST007
2802	4775	TEST010	2847	5777	TEST011	3031	5775	TEST012A	3069	5773	TEST012B
3088	5771	TEST012C	3108	5767	TEST012D	3127	5765	TEST012E	3147	5764	TEST012F
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3368	5745	TEST014A	3394	5752	TEST014B	3414	5762	TEST014C	3436	5710	TEST014D
3473	5743	TEST015A	3500	5772	TEST015B	3519	5722	TEST015C	3555	5741	TEST016A
3598	5737	TEST017A	3626	5735	TEST017B	3662	5733	TEST020A	3689	5731	TEST020B
3711	5727	TEST020C	3746	5725	TEST021A	3775	5723	TEST021B	3797	5774	TEST021C
3833	5721	TEST022A	3877	5717	TEST023A	3920	5715	TEST024A	3949	5711	TEST024B
3986	5707	TEST025A	4029	5705	TEST026A	4074	5703	TEST027A	4117	5701	TEST030A
4147	5712	TEST030B	4166	5713	TEST030C	4189	5734	TEST030D	4224	5677	TEST031A
4253	5675	TEST031B	4288	5673	TEST032A	4317	5671	TEST032B	4354	5667	TEST033A
4398	5665	TEST034A	4442	5663	TEST035A	4486	5661	TEST036A	4531	5657	TEST037A
4574	5655	TEST040A	4602	5653	TEST040B	4638	5651	TEST041A	4667	5647	TEST041B
4703	5645	TEST042A	4731	5643	TEST042B	4767	5641	TEST043A	4796	5637	TEST043B
4833	5635	TEST044A	4878	5633	TEST045A	4920	5631	TEST046A	4950	5770	TEST046B
4988	5561	TEST047A	5019	5670	TEST047B	5039	5730	TEST047C	5077	5551	TEST050A
5108	5726	TEST050B	5161	5553	TEST101A	5225	5521	TEST102A	5277	5574	TEST102B
5303	5564	TEST102C	5330	5554	TEST102D	5370	5531	TEST103A	5423	5572	TEST103B
5449	5576	TEST103C	5476	5674	TEST103D	5516	5547	TEST104A	5543	5646	TEST104B
5592	5541	TEST105A	5619	5610	TEST105A1	5642	5652	TEST105B	5666	5600	TEST105B1
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5906	4603	TEST114A2	5939	4601	TEST115A1	5983	4616	TEST115A2	6000	4615	TEST115A3
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6164	4626	TEST115D1	6186	4625	TEST115D2	6203	4624	TEST115D3	6235	4623	TEST116A1
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6767	4652	TEST120B2	6784	4651	TEST120B3	6799	4650	TEST120B4	6832	4665	TEST121A1
6854	4676	TEST121A2	6871	4675	TEST121A3	6885	4674	TEST121A4	6906	4663	TEST121B1
6928	4662	TEST121B2	6945	4661	TEST121B3	6960	4660	TEST121B4	6987	4707	TEST121C1
7009	4605	TEST121C2	7025	4717	TEST121C3	7040	4716	TEST121C4	7061	4727	TEST121D1
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7314	4550	TEST130A2	7334	4530	TEST130B1	7365	4532	TEST130B2	7392	4541	TEST131A1
7423	4544	TEST131A2	7443	4546	TEST131B1	7474	4750	TEST131B2	7502	4521	TEST132A1
7527	4516	TEST132A2	7547	4517	TEST132B1	7572	4472	TEST132B2	7600	4523	TEST133A1
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8713	4724	TEST352C	8735	4725	TEST352D	8827	6573	TEST361A	8873	6771	TEST361D
8894	6767	TEST361E	8917	6765	TEST362A	8962	6763	TEST362B	8989	6757	TEST362D
9010	6755	TEST362E	9033	6753	TEST363A	9069	6751	TEST363B	9091	6747	TEST364A
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12265	6674	TEST507E	12286	6647	TEST507F	12363	6603	TEST510A	12396	6675	TEST510B
12418	6616	TEST510C	12438	6600	TEST510D	12475	6617	TEST510D A	12497	6604	TEST510E
12524	6610	TEST510F	12755	6607	TEST511A	12767	7074	TEST511A2	12778	7110	TEST511A3
12789	7112	TEST511A4	12812	6551	TEST511B1	12823	7106	TEST511B2	12834	7116	TEST511B3
12845	7120	TEST511B4	13026	6542	TEST512A1	13053	6544	TEST512A2	13081	6565	TEST512B1
13108	6546	TEST512B2	13130	6556	TEST512C1	13157	6566	TEST512C2	13185	6537	TEST512D1
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13528	6625	TEST533A	13569	6633	TEST533B	13615	6667	TEST534A	13650	6634	TEST534B
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13844	6752	TEST534G	13879	6661	TEST535A	13926	6637	TEST535B	13973	6657	TEST536A
14019	6640	TEST536B	14067	6655	TEST536C	14103	6641	TEST536D	14154	6653	TEST536E
14196	6642	TEST536F	14413	4572	TEST537A	14469	4575	TEST551A	14498	4576	TEST551B
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15344	5617	TEST621A	15440	5613	TEST621B	15458	5611	TEST621C	15476	5607	TEST621D
15495	5605	TEST621E	15521	5603	TEST621F	15550	5766	TEST621G	15572	5754	TEST621H
15605	5601	TEST622A	15634	5577	TEST622B	15657	5575	TEST622C	15680	5573	TEST623

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15925	5563	TEST701A	15962	5523	TEST701B	15981	6770	TEST701C	16011	5512	TEST701D
16040	5477	TEST702A	16089	6761	TEST702B	16157	5475	TEST710A	16212	6644	TEST710B
16236	6645	TEST710C	16265	6574	TEST710D	16294	6575	TEST710E	16328	5473	TEST711A
16374	6534	TEST711B	16404	6530	TEST711C	16427	6526	TEST711D	16460	5471	TEST712A
16512	5505	TEST712B	16530	6524	TEST712C	16555	6523	TEST712D	16594	5467	TEST713A
16640	5616	TEST713B	16664	6522	TEST713C	16689	6521	TEST713D	16730	5465	TEST720A
16788	6520	TEST720B	16813	4760	TEST720C	16840	4571	TEST721A	16894	4573	TEST721B
16918	4577	TEST721C	16951	5463	TEST722A	17004	4464	TEST722B	17029	4465	TEST722C
17084	4471	TEST730A	17149	4466	TEST730B	17188	4460	TEST730C	17211	4450	TEST730C1
17233	4461	TEST730D	17286	4462	TEST730E	17321	4755	TEST731A	17363	4457	TEST731B
17401	4456	TEST731C	17428	4455	TEST731D	17467	4454	TEST731E	17556	4744	TEST740A
17591	4453	TEST740B	17619	4452	TEST740C	17653	4451	TEST740D	17726	4745	TEST761A
17765	4771	TEST761B	17786	4774	TEST761C	17829	4773	TEST762A	17899	4553	TEST762A1
17924	4751	TEST762B	17946	4740	TEST762C	17980	4741	TEST762D	18006	4730	TEST762E
18031	4711	TEST762F	18062	4761	TEST763A	18108	4720	TEST763B	18128	4721	TEST763C
18148	4710	TEST763D	11292	6714	TESTA503A	11621	6766	TESTA504A	10707	6773	TESTD410
11008	6671	TESTD500	11031	6777	TESTINHASP500	11023	6133	TESTINHASP500	18089	4424	TESTVECT763A
15400	5522	UBRK621A	15776	6255	UBRK624A	13329	6624	UCONS20A	18103	4733	VECTL0A0763A
18301	6774	VFY001	18308	4412	VFY002	18313	4255	VFY003	18321	4433	VFY004
18333	7375	VFY005	18340	7374	VFY006	10755	7366	WORD410	8364	4002	WRITEDFS50
8371	7016	WRITESF350	17861	4315	ZAPD762A	17122	4334	ZAPD8UF730A	9919	5536	ZER0374A1
9941	5227	ZER0374A2	9992	5556	ZER0374B1	10014	5236	ZER0374B2	10065	5566	ZER0374C1
10087	5246	ZER0374C2	10138	5514	ZER0374D1	10160	5255	ZER0374D2	10211	5526	ZER0374E1
10233	5264	ZER0374E2	10284	5516	ZER0374F1	10306	5273	ZER0374F2	12504	6274	ZER00510E
17734	4772	ZER00SR761A	12531	6276	ZER0FLAG510E	15824	5427	ZER0IR624B	17739	4403	ZER0IT761A
10386	7044	ZEROSF	10365	7036	ZEROSF02DF04	10370	7041	ZEROSF04DF02	10392	7045	ZEROSFA
10375	7042	ZEROSFDF	10381	7043	ZEROSF0FA	19252	7400	ZTARGET400	19254	7401	ZTARGET401
19256	7402	ZTARGET402	19258	7403	ZTARGET403	19260	7404	ZTARGET404	19262	7405	ZTARGET405
19264	7406	ZTARGET406	19266	7407	ZTARGET407	19268	7410	ZTARGET410	19270	7411	ZTARGET411
19272	7412	ZTARGET412	19274	7413	ZTARGET413	19276	7414	ZTARGET414	19278	7415	ZTARGET415
19280	7416	ZTARGET416	19282	7417	ZTARGET417	19284	7420	ZTARGET420	19286	7421	ZTARGET421
19288	7422	ZTARGET422	19290	7423	ZTARGET423	19292	7424	ZTARGET424	19294	7425	ZTARGET425
19296	7426	ZTARGET426	19298	7427	ZTARGET427	19300	7430	ZTARGET430	19302	7431	ZTARGET431
19304	7432	ZTARGET432	19306	7433	ZTARGET433	19308	7434	ZTARGET434	19310	7435	ZTARGET435
19312	7436	ZTARGET436	19314	7437	ZTARGET437	19316	7440	ZTARGET440	19318	7441	ZTARGET441
19320	7442	ZTARGET442	19322	7443	ZTARGET443	19324	7444	ZTARGET444	19326	7445	ZTARGET445
19328	7446	ZTARGET446	19330	7447	ZTARGET447	19332	7450	ZTARGET450	19334	7451	ZTARGET451
19336	7452	ZTARGET452	19338	7453	ZTARGET453	19340	7454	ZTARGET454	19342	7455	ZTARGET455
19344	7456	ZTARGET456	19346	7457	ZTARGET457	19348	7460	ZTARGET460	19350	7461	ZTARGET461
19352	7462	ZTARGET462	19354	7463	ZTARGET463	19356	7464	ZTARGET464	19358	7465	ZTARGET465
19360	7466	ZTARGET466	19362	7467	ZTARGET467	19364	7470	ZTARGET470	19366	7471	ZTARGET471
19368	7472	ZTARGET472	19370	7473	ZTARGET473	19372	7474	ZTARGET474	19374	7475	ZTARGET475
19376	7476	ZTARGET476	19378	7477	ZTARGET477	19380	7500	ZTARGET500	19382	7501	ZTARGET501
19384	7502	ZTARGET502	19386	7503	ZTARGET503	19388	7504	ZTARGET504	19390	7505	ZTARGET505
19392	7506	ZTARGET506	19394	7507	ZTARGET507	19396	7510	ZTARGET510	19398	7511	ZTARGET511
19400	7512	ZTARGET512	19402	7513	ZTARGET513	19404	7514	ZTARGET514	19406	7515	ZTARGET515
19408	7516	ZTARGET516	19410	7517	ZTARGET517	19412	7520	ZTARGET520	19414	7521	ZTARGET521
19416	7522	ZTARGET522	19418	7523	ZTARGET523	19420	7524	ZTARGET524	19422	7525	ZTARGET525
19424	7526	ZTARGET526	19426	7527	ZTARGET527	19428	7530	ZTARGET530	19430	7531	ZTARGET531
19432	7532	ZTARGET532	19434	7533	ZTARGET533	19436	7534	ZTARGET534	19438	7535	ZTARGET535
19440	7536	ZTARGET536	19442	7537	ZTARGET537	19444	7540	ZTARGET540	19446	7541	ZTARGET541

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19456	7546	ZTARGET546	19458	7547	ZTARGET547	19460	7550	ZTARGET550	19462	7551	ZTARGET551
19464	7552	ZTARGET552	19466	7553	ZTARGET553	19468	7554	ZTARGET554	19470	7555	ZTARGET555
19472	7556	ZTARGET556	19474	7557	ZTARGET557	19476	7560	ZTARGET560	19478	7561	ZTARGET561
19480	7562	ZTARGET562	19482	7563	ZTARGET563	19484	7564	ZTARGET564	19486	7565	ZTARGET565
19488	7566	ZTARGET566	19490	7567	ZTARGET567	19492	7570	ZTARGET570	19494	7571	ZTARGET571
19496	7572	ZTARGET572	19498	7573	ZTARGET573	19500	7574	ZTARGET574	19502	7575	ZTARGET575
19504	7576	ZTARGET576	19506	7577	ZTARGET577	19508	7600	ZTARGET600	19510	7601	ZTARGET601
19512	7602	ZTARGET602	19514	7603	ZTARGET603	19516	7604	ZTARGET604	19518	7605	ZTARGET605
19520	7606	ZTARGET606	19522	7607	ZTARGET607	19524	7610	ZTARGET610	19526	7611	ZTARGET611
19528	7612	ZTARGET612	19530	7613	ZTARGET613	19532	7614	ZTARGET614	19534	7615	ZTARGET615
19536	7616	ZTARGET616	19538	7617	ZTARGET617	19540	7620	ZTARGET620	19542	7621	ZTARGET621
19544	7622	ZTARGET622	19546	7623	ZTARGET623	19548	7624	ZTARGET624	19550	7625	ZTARGET625
19552	7626	ZTARGET626	19554	7627	ZTARGET627	19556	7630	ZTARGET630	19558	7631	ZTARGET631
19560	7632	ZTARGET632	19562	7633	ZTARGET633	19564	7634	ZTARGET634	19566	7635	ZTARGET635
19568	7636	ZTARGET636	19570	7637	ZTARGET637	19572	7640	ZTARGET640	19574	7641	ZTARGET641
19576	7642	ZTARGET642	19578	7643	ZTARGET643	19580	7644	ZTARGET644	19582	7645	ZTARGET645
19584	7646	ZTARGET646	19586	7647	ZTARGET647	19588	7650	ZTARGET650	19590	7651	ZTARGET651
19592	7652	ZTARGET652	19594	7653	ZTARGET653	19596	7654	ZTARGET654	19598	7655	ZTARGET655
19600	7656	ZTARGET656	19602	7657	ZTARGET657	19604	7660	ZTARGET660	19606	7661	ZTARGET661
19608	7662	ZTARGET662	19610	7663	ZTARGET663	19612	7664	ZTARGET664	19614	7665	ZTARGET665
19616	7666	ZTARGET666	19618	7667	ZTARGET667	19620	7670	ZTARGET670	19622	7671	ZTARGET671
19624	7672	ZTARGET672	19626	7673	ZTARGET673	19628	7674	ZTARGET674	19630	7675	ZTARGET675
19632	7676	ZTARGET676	19634	7677	ZTARGET677	19636	7700	ZTARGET700	19638	7701	ZTARGET701
19640	7702	ZTARGET702	19642	7703	ZTARGET703	19644	7704	ZTARGET704	19646	7705	ZTARGET705
19648	7706	ZTARGET706	19650	7707	ZTARGET707	19652	7710	ZTARGET710	19654	7711	ZTARGET711
19656	7712	ZTARGET712	19658	7713	ZTARGET713	19660	7714	ZTARGET714	19662	7715	ZTARGET715
19664	7716	ZTARGET716	19666	7717	ZTARGET717	19668	7720	ZTARGET720	19670	7721	ZTARGET721
19672	7722	ZTARGET722	19674	7723	ZTARGET723	19676	7724	ZTARGET724	19678	7725	ZTARGET725
19680	7726	ZTARGET726	19682	7727	ZTARGET727	19684	7730	ZTARGET730	19686	7731	ZTARGET731
19688	7732	ZTARGET732	19690	7733	ZTARGET733	19692	7734	ZTARGET734	19694	7735	ZTARGET735
19696	7736	ZTARGET736	19698	7737	ZTARGET737	19700	7740	ZTARGET740	19702	7741	ZTARGET741
19704	7742	ZTARGET742	19706	7743	ZTARGET743	19708	7744	ZTARGET744	19710	7745	ZTARGET745
19712	7746	ZTARGET746	19714	7747	ZTARGET747	19716	7750	ZTARGET750	19718	7751	ZTARGET751
19720	7752	ZTARGET752	19722	7753	ZTARGET753	19724	7754	ZTARGET754	19726	7755	ZTARGET755
19728	7756	ZTARGET756	19730	7757	ZTARGET757	19732	7760	ZTARGET760	19734	7761	ZTARGET761
19736	7762	ZTARGET762	19738	7763	ZTARGET763	19740	7764	ZTARGET764	19742	7765	ZTARGET765
19744	7766	ZTARGET766	19746	7767	ZTARGET767	19748	7770	ZTARGET770	19750	7771	ZTARGET771
19752	7772	ZTARGET772	19754	7773	ZTARGET773	19756	7774	ZTARGET774	19758	7775	ZTARGET775
19760	7776	ZTARGET776	19762	7777	ZTARGET777						

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4000	TEST001	INITIALIZE12	WRITEDF350	ALU114A	GETZER0ES114A	GOBUT114A	GOBUT114A2	SCOPE114A
4010	GETALTN115A1	GOBUT115A1	GOBUT115A4	GOBUT115A2	GOBUT115A3	ALU115B1	GOBUT115B1	GOBUT115B4
4020	GOBUT115B2	GOBUT115B3	SCOPE115B	GOBUT115C1	GOBUT115C2	GOBUT115C3	ALU115D1	GOBUT115D1
4030	GOBUT115D2	GOBUT115D3	SCOPE115D	GOBUT116A1	GOBUT116A2	GOBUT116A3	GOBUT116A4	GOBUT116A5
4040	ALU116B	GOBUT116B	SCOPE116C	GOBUT116C1	GOBUT116C2	GOBUT116C3	GOBUT116C4	GOBUT116C5
4050	ALU116D	GOBUT116D	SCOPE116D	GOBUT117A1	GOBUT117A2	GOBUT117A3	GOBUT117A4	ALU117B1
4060	GOBUT117B1	GOBUT117B2	GOBUT117B3	ALU117C1	GOBUT117C1	GOBUT117C2	GOBUT117C2	SCOPE117C
4070	GOBUT120A2	GOBUT120A3	ALU120B1	GOBUT120B1	GOBUT120B2	GOBUT120B3	GOBUT120B4	GOBUT120A1
4100	LOAD010	INITIALIZE10	INITIALIZE11	GOBUT121A1	GOBUT121A2	GOBUT121A3	GOBUT121A4	SCOPE120B
4110	GOBUT121B1	GOBUT121B2	GOBUT121B3	GOBUT121B4	SCOPE121C	GOBUT121C1	GOBUT121C2	ALU121B1
4120	GOBUT121C4	ALU121D1	GOBUT121D1	GOBUT121D2	GOBUT121D3	GOBUT121D4	SCOPE121D	GOBUT121C3
4130	GOBUT122A2	GOBUT122A3	SETD122A4	GOBUT122A4	SCOPE122A	COMP130A1	GOBUT130A1	GOBUT122A1
4140	ARITH130B1	COMP130B1	GOBUT130B1	GOBUT130B2	SCOPE130B	COMP131A1	GOBUT131A1	GOBUT130A2
4150	ARITH131B1	COMP131B1	GOBUT131B1	GOBUT131B2	SCOPE131B	GOBUT132A1	GOBUT132A2	GOBUT131A2
4160	GOBUT132B1	GOBUT132B2	SCOPE132B	DOPA133A1	GOTEST133A1	GOBUT133A2	OPA133B1	ARITH132B1
4170	GOBUT133B2	SCOPE133B	OPB134A1	DOPA134A1	GOTEST134A1	GOBUT134A2	OPA134B1	GOTEST133B1
4200	GOBUT134B2	SCOPE134B	OPB135A1	DOPA135A1	GOTEST135A1	GOBUT135A2	OPA135B1	GOTEST134B1
4210	GOBUT135B2	SCOPE135B	DOPA136A1	GOTEST136A1	GOBUT136A2	OPA136B1	GOTEST136B1	GOTEST135B1
4220	SCOPE136B	SETD320A	GETDC320A	GOBUT320A	GOBUT320B	SETONE320C	SETD320C	GOBUT136B2
4230	GOBUT320C	GOBUT320D	SETONE320E	SETD320E	GETDC320E	GOBUT320E	GOBUT320F	GETDC320C
4240	START350	LOADSRD350	BL1-537A	GOBUT350A	COMP350B	GOBUT350B	COMP350C	SCOPE320
4250	COMP350D	GOBUT350D	SCOPE350	NEXTPATA350	LOAD06-351	VFY003	GOBUT351A	GOBUT350C
4260	GOBUT351B	COMP351C	GOBUT351C	COMP351D	GOBUT351D	SCOPE351	GOBUT352A	COMP351B
4270	GOBUT352B	COMP352C	GOBUT352C	COMP352D	GOBUT352D	SCOPE352	LOAD14537A	COMP352B
4300	LOAD01537A	COUNTER01	COMP537A	GOBUT537A	SCOPE537A	LOADIN551A	SETSR551A	LOAD03537A
4310	COUNTER02	BUSFCN711A	SETJAM710A	BUSFCN710A	GENADR712A	ZAPD762A	BUSFCN712A	LOADADR710A
4320	LOADRET721A	GOTEST721B	GOTEST721C	SETJAM722A	BUSFCN722A	GOTEST722B	GOTEST722C	GOTEST720C
4330	LOADDATA730A	BUSFCN730A	GETDBUF730A	COMP730A	ZAPDBUF730A	GOBUT730A	EXPEC730B	SCOPE722
4340	GETIT730B	GOBUT730B	GOBUT730C	LOADDATA730D	SETZER730D	MANGLED730D	BUSFCN730D	BUSFCN730B
4350	GOBUT730D	GOBUT730E	SCOPE730	GETDBUF731A	COMP731A	GOBUT731A	BUSFCN731B	GETIT730D
4360	GOBUT731B	COMP731C	GOBUT731C	LOADIR731D	BUSFCN731D	MANGLED731D	GOBUT731D	GETIT731B
4370	SCOPE731	BUSFCN740A	LOADIR740B	BUSFCN740B	BUSFCN740C	GOBUT740C	BUTERROR4	GOBUT731E
4400	LOADIR740D	BUSFCN740D	SCOPE740	ZER0IT761A	CLEAR761A	GOBUT761A	GOBUT761B	TEST007
4410	SCOPE761	DW11L762A	VFY002	SETPRI762A	FILL762C	GOBUT762C	GOBUT762D	GOBUT761C
4420	GOGET762E	GOBUT762F	EXPEC763A	READVECT763A	TESTVECT763A	GOBUT763B	GOBUT763C	EXPEC762E
4430	SCOPE763	EOP001		VFY004	JAMUPP002C	JAMUPP006	JAMUPP007	GOBUT763D
4440	JAMUPP011			GOBUT730C1		NEXT710A	NEXT711A	JAMUPP010
4450	TEST730C1	TEST740D	TEST740C	TEST740B	TEST731E	TEST710A	TEST731C	NEXT712A
4460	TEST730C	TEST730D	TEST730E	SETPR6-762A	TEST722B	TEST731D	TEST730B	TEST731B
4470	SETADR722A	TEST730A	TEST132B2	TEST136B2	TEST006	TEST722C	TEST136A2	NEXTD762A
4500	TEST133A2	TEST133B1	TEST133B2	TEST134A2	TEST134B1	TEST136B1	TEST134B2	TEST135B2
4510	OPB133A1	TEST134A1	OPA134A1	TEST135A1	OPA135A1	TEST134B2	TEST135A2	TEST135B1
4520	ARITH131A1	TEST132A1	ARITH132A1	TEST133A1	NEXT722A	TEST136A1	TEST132A2	TEST132B1
4530	TEST130B1	COUNTER10B	TEST130B2	COUNTER10A	COUNTER06	COUNTER09	COUNTER03	COUNTER10
4540	ARITH130A1	TEST131A1	OPB136A1	TEST320A	TEST131A2	COUNTER07	COUNTER08	TEST320D
4550	TEST130A2	BUMPD762A	TEST320B	TEST762A1	TEST320E	COUNTER04	TEST131B1	COUNTER11
4560	GOTEST551B	SETSR551C	TEST320C	DINTOIRA350	GOTEST551A	COUNTER12	TEST320F	COUNTER05
4570	TEST122A2	TEST721A	TEST537A	TEST721B	LOAD16537A	SETSR551B	TEST551C	LOAD05-351
4600	GETONES114A	TEST115A1	TEST115B4	TEST114A2	TEST115A4	TEST551A	TEST551B	TEST721C
4610	ALU115A1	TEST115C1	TEST115B3	TEST115A2	TEST115B1	TEST121C2	TEST116B	TEST114A
4620	TEST116A3	TEST116A2	ALU115C1	TEST116A1	TEST115D3	TEST115A3	TEST115A2	TEST115C2
4630	TEST116C5	TEST116C4	TEST116C3	TEST116C2	ALU116A1	TEST115D2	TEST115D1	TEST115C3
						TEST116C1	TEST116A5	TEST116A4

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4640	TEST117B2	TEST117B1	TEST117A4	TEST117A3	TEST117A2	TEST116D	ALU116C1	TEST117A1
4650	TEST120B4	TEST120B3	TEST120B2	TEST120B1	TEST120A3	TEST120A2	TEST117C1	TEST117B3
4660	TEST121B4	TEST121B3	TEST121B2	TEST121B1	ALU120A1	TEST121A1	ALU117A1	TEST120A1
4670	ALU121C1	TEST122A1	ALU122A1	TEST130A1	TEST121A4	TEST121A3	TEST121A2	TEST117C2
4700	SETONE320A	TEST350	COMP350A	RESETIR350	COMP351A	TEST352A	ALU121A1	TEST121C1
4710	TEST763D	TEST762F	TEST351D	TEST352B	COMP352A	RESTORE01	TEST121C4	TEST121C3
4720	TEST763B	TEST763C	TEST351B	TEST351C	TEST352C	TEST352D	TEST121D2	TEST121D1
4730	TEST762E	ALLOW763A	TEST351A	VECTLOAD763A	TEST122A3	TEST122A4	TEST121D4	TEST121D3
4740	TEST762C	TEST762D	TEST350C	TEST350D	TEST740A	TEST761A	JAMUPP004	JAMUPP005
4750	TEST131B2	TEST762B	TEST350A	TEST350B	LOADIR730A	TEST731A	JAMUPP003	JAMUPP002B
4760	TEST720C	TEST763A	GOBUT762B	KILL764A	BUSFCN731A	LOADIR740A	GOBUT740B	GOBUT740C
4770		TEST761B	ZERODSR761A	TEST762A	TEST761C	TEST010	GOBLT740A	JAMUPP001

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5000	SETDC372B	LOAD011	LOAD012A	GOBUTO12A	GOBUTO12B	GOBUTO12C	GOBUTO120	GOBUTO12E
5010	GOBUTO12F	GOBUTO12G	SCOPE012	GOBUTO13A	GOBUTO13B	GOBUTO13C	GOBUTO130	GOBUTO13E
5020	GOBUTO13F	GOBUTO13G	SCOPE013	GOBUTO14A	GOBUTO14B	GOBUTO14C	GOBUTO140	SCOPE014
5030	GOBUTO15A	GOBUTO15B	GOBUTO15C	SCOPE015	GOBUTO16A	SCOPE016	GOBUTO17A	GOBUTO17B
5040	SCOPE017	GOBUTO20A	GOBUTO20B	GOBUTO20C	SCOPE020	GOBUTO21A	GOBUTO21B	GOBUTO21C
5050	SCOPE021	GOBUTO22A	SCOPE022	GOBUTO23A	SCOPE023	GOBUTO24A	GOBUTO24B	SCOPE024
5060	GOBUTO25A	SCOPE025	GOBUTO26A	SCOPE026	GOBUTO27A	SCOPE027	GOBUTO30A	GOBUTO30B
5070	GOBUTO30C	GOBUTO300	GOBUTO30	GOBUTO31A	GOBUTO31B	SCOPE031	GOBUTO32A	GOBUTO32B
5100	SCOPE032	GOBUTO33A	SCOPE033	GOBUTO34A	SCOPE034	GOBUTO35A	SCOPE035	GOBUTO36A
5110	SCOPE036	GOBUTO37A	SCOPE037	GOBUTO40A	GOBUTO40B	SCOPE040	GOBUTO41A	GOBUTO41B
5120	SCOPE041	GOBUTO42A	GOBUTO42B	SCOPE042	GOBUTO43A	GOBUTO43B	SCOPE043	GOBUTO44A
5130	SCOPE044	GOBUTO45A	SCOPE045	GOBUTO46A	GOBUTO46B	SCOPE046	GOBUTO47A	GOBUTO47B
5140	GOBUTO47C	SCOPE047	GOBUTO50A	LOAD050B	GOBUTO50B	SCOPE050	TEST005	GOTEST101A
5150	SCOPE101	LOAD02-102A	LOAD04-102A	LOAD10-102A	LOAD00-102A	LOAD0102A	GOTEST102A	LOAD0102B
5160	GOTEST102B	LOAD0102C	GOTEST102C	LOAD0102D	GOTEST102D	SCOPE102	LOAD15-103A	LOAD13-103A
5170	LOAD07-103A	LOAD17-103A	LOAD0103A	GOTEST103A	LOAD0103B	GOTEST103B	LOAD0103C	GOTEST103C
5200	LOAD0103D	GOTEST103D	SCOPE103	GOTEST104A	LOAD0104B	GOTEST104B	SCOPE104	GOTEST105A
5210	GOBUT105A1	LOADSR105B	GOTEST105B	GOBUT105B1	LOADSR105C	GOTEST105C	LOADSR105D	GOTEST105D
5220	GOTEST105E	SCOPE105	EXPEC374A1	SUBRA372B	SCOPE624	DOWRITE374A1	GETTEM374A1	ZER0374A2
5230	DOWRITE374A2	GETTEM374A2	GOTEST374A2	SCOPE374A	DOWRITE374B1	GETTEM374B1	ZER0374B2	DOWRITE374B2
5240	GETTEM374B2	GOTEST374B2	SCOPE374B	DOWRITE374C1	GETTEM374C1	NEXT010	ZER0374C2	DOWRITE374C2
5250	GETTEM374C2	GOTEST374C2	SCOPE374C	DOWRITE374D1	GETTEM374D1	ZER0374D2	DOWRITE374D2	GETTEM374D2
5260	GOTEST374D2	SCOPE374D	DOWRITE374E1	GETTEM374E1	ZER0374E2	DOWRITE374E2	GETTEM374E2	GOTEST374E2
5270	SCOPE374E	DOWRITE374F1	GETTEM374F1	ZER0374F2	DOWRITE374F2	GETTEM374F2	GOTEST374F2	SCOPE374F
5300	CHECK375B	GOBUT375B	SETIR376A	GOBUT376A	SCOPE376	SCOPE551	LOAD01-610A1	LOAD05-610A1
5310	LOAD06-610A1	PSCC-DC610A1	SETBUSA610A1	DOIT610A1	GETIT610A1	LOAD06-610A2	LOAD01-610A2	PSCC-DC610A2
5320	SETBUSA610A2	DOIT610A2	GETIT610A2	SCOPE610A	LOAD01-610B1	PSCC-DC610B1	SETBUSA610B1	DOIT610B1
5330	GETIT610B1	LOADIR610B2	LOAD07-610B2	LOAD01-610B2	PSCC-DC610B2	SETBUSA610B2	DOIT610B2	GETIT610B2
5340	SCOPE610B	LOAD01-610C1	PSCC-DC610C1	SETBUSA610C1	DOIT610C1	GETIT610C1	LOAD05-610C2	LOAD01-610C2
5350	PSCC-DC610C2	SETBUSA610C2	DOIT610C2	GETIT610C2	SCOPE610C	PSCC-DC610D1	SETBUSA610D1	DOIT610D1
5360	GETIT610D1	PSCC-DC610D2	SETBUSA610D2	DOIT610D2	GETIT610D2	SCOPE610D	GOBUT620A	GOBUT620B
5370	MASK620C	GETJAM620C	CSP1L621A	SETBRK621A	LOOBRK621A	SETRET621A	BUTERRORS	SETFLG621A
5400	LODFLG621A	SETSR621A	GOBUT621B	GOBUT621C	GOBUT621D	EXPEC621E	GETJAM621E	EXPEC621F
5410	GETCUA621F	GOBUT621G	COMP621H	BC1FCN622A	CNST0622A	GOBUT622A	BCERC622B	GOBUT622B
5420	GETJAM622C	EXPEC623	GETCUA623	SCOPE623	SETBRK624A	LOOBRK624A	SETRET624A	ZER01R624B
5430	EXPEC624C	GETCUA624C	GOBUT624D	SCOPE702	GOBUT701B	GOBUT701D	SCOPE701	EXPEC702A
5440	DOIT376A	SETLED702A	SETKT702A	LOADBA702A	GOTEST702A	SCOPE710	SCOPE711	SCOPE712
5450	GOTEST712B	SCOPE713	EXPEC713B	GOTEST713B	SCOPE721	TEST720A	LOADRET722A	TEST713A
5460			LOADRET720A	TEST722A	LOADRET713A	TEST710A	LOADRET712A	TEST702A
5470	LOADRET711A	TEST712A	LOADRET710A	TEST711A	MASK702A	TEST712B	MASK701A	TEST410
5500	TEST374D2	SCOPE372B	TEST374E2	LOAD372B	TEST374F2	EXPEC374E1	SETSP375A	TEST375A
5510	LOAD01-610D1	TEST620A	TEST701D	TEST376A	ZER0374D1	TEST004	ZER0374F1	EXPEC374F1
5520	LOAD0101A	TEST102A	UBRK621A	TEST701B	TEST374C2	TEST610C1	ZER0374E1	EXPEC374B1
5530	LOAD01-102A	TEST103A	LOADIR610A1	TEST610B1	LOADIR610B1	TEST610D1	ZER0374A1	TEST104A
5540	LOAD0104A	TEST105A	LOADSR105A	SETUPCSP17A	LOADIR610C1	CUA372B	LOAD16-103A	EXPEC374C1
5550	LOAD047A	TEST050A	LOAD050A	TEST101A	TEST102D	TEST624B	ZER0374B1	EXPEC374D1
5560	LOAD046A	TEST047A	LOADIR624A	TEST701A	TEST102C	TEST622C	ZER0374C1	TEST622B
5570	BCERC620A	TEST624A	TEST103B	TEST623	TEST102B	TEST621E	TEST103C	TEST621D
5600	TEST105B1	TEST622A	TEST610C2	TEST621F	TEST374A2	ERROR621A	TEST374B2	TEST621A
5610	TEST105A1	TEST621C	TEST610B2	TEST621B	TEST376A1	TEST375B	TEST713B	TEST610A1
5620	TEST105E	TEST620C	TEST610A2	TEST620B	TEST610C2	TEST044A	GOTEST551C	TEST043B
5630	LOAD045A	TEST046A	LOAD044A	*EST045A	LOAD043A		TEST105D	

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5640	LOAD042A	TEST043A	TEST105C	TEST042B	LOAD041A	TEST0427	TEST104B	TEST041B
5650	LOAD040A	TEST041A	TEST105B	TEST040B	LOAD037A	TEST040A	LOAD036A	TEST037A
5660	LOAD035A	TEST036A	LOAD034A	TEST035A	LOAD033A	TEST034A	LOAD032A	TEST033A
5670	TEST047B	TEST032B	LOAD031A	TEST032A	TEST1030	TEST031B	LOAD030A	TEST031A
5700	LOAD027A	TEST030A	LOAD026A	TEST027A	LOAD025A	TEST026A	LOAD024A	TEST025A
5710	TEST0140	TEST024B	TEST030B	TEST030C	LOAD023A	TEST024A	LOAD022A	TEST023A
5720	LOAD021A	TEST022A	TEST015C	TEST021B	LOAD020A	TEST021A	TEST050B	TEST020C
5730	TEST047C	TEST020B	LOAD017A	TEST020A	TEST030D	TEST017B	LOAD016A	TEST017A
5740	LOAD015A	TEST016A	LOAD014A	TEST015A	LOAD013A	TEST014A	SFDF105R	TEST013G
5750	TEST013F	TEST013E	TEST014B	TEST0130	TEST621H	TEST013C	TEST624D	TEST013B
5760	SETIRA	TEST013A	TEST014C	TEST012G	TEST012F	TEST012E	TEST621G	TEST012D
5770	TEST046B	TEST012C	TEST015B	TEST012B	TEST021C	TEST012A	TEST624C	TEST011

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6000	SETBYTEE410	LOADRES361A	LOADSR361A	EXPEC361B	COMP361B	GOBUT3610	GOBUT361E	SETRES362A
6010	SETDDC362A	LOADRES362A	COMP362A	GOBUT362A	EXPEC362B	COMP362B	GOBUT362D	GOBUT362E
6020	SETDDC363A	SHIFT363A	COMP363A	GOBUT363A	GOBUT363B	SETDDC364A	GOBUT364A	SETDDC364B
6030	GOBUT364B	SETRES365A	LOADRES365A	EXPEC365A	COMP365A	GOBUT365B	SETRES366A	LOADRES366A
6040	SHIFT366A	EXPEC366A	COMP366A	GOBUT366B	SETDDC366C	SHIFT366C	EXPEC366C	COMP366C
6050	SETRES367A	LOADRES367A	LOADSR367A	GOBUT367B	SETRES370A	LOADRES370A	SHIFT370A	COMP370A
6060	GOBUT370A	GOBUT370B	SETDDC370C	SHIFT370C	COMP370C	GOBUT370C	GOBUT370D	SETRES371A
6070	LOADRES371A	SHIFT371A	COMP371A	GOBUT371A	GOBUT371B	SCOPE371	SETDC372A	SUBRA372A
6100	PAGE372B	GOBUT373B	SCOPE373	LOADRES374	LOADDCS506A	SETBYTEG410	COMP410A	INTOIR410A
6110	EXPEC410B	COMP410B	GOPUT410B	EXPEC410C	ASIDE410C	COMP410C	GOBUT410C	EXPEC410D
6120	COMP410D	GOBUT410D	EXPEC410E	COMP410E	GOBUT410E	SCOPE410	SETFETCHD500	SETFETCHE500
6130	SETFETCHF500	SETFETCHG500	LOADIR500	TESTINH8SP500	COMP500A	GOBUT500A	EXPEC500C	COMP500C
6140	GOBUT500C	COMP500D	GOBUT500D	EXPEC500E	COMP500E	GOBUT500E	SCOPE500F	LOADFPS503A
6150	EXPEC503A	MASK503A	LOADFCC503A	DOFCC503A	GOPUT503A	GOBUT503A	GOBUT503B	GOBUT503C
6160	GOBUT5030A	LOADIR503D	GOBUT503D	EXPEC503E	GOPUT503E	GOBUT503F	GOBUT503G	GOBUT503H
6170	GOBUT503I	GOBUT503J	GOBUT503K	SCOPE503	LOADFPS504A	EXPEC504A	LOADFCC504A	DOFCC504A
6200	GOPUT504A	GOBUT504A	GOBUT504B	GOBUT504C	LOADIR504D	GOBUT504D	EXPEC504E	GOPUT504E
6210	GOBUT504F	GOBUT504G	GOBUT504H	GOBUT504I	SCOPE504	EXPEC505A	SETFLAG505A	BUTCLR505A
6220	GOPUT505A	GOBUT505B	CUA372A	GOBUT505C	SCOPE505	SETUCON506A	PSHI506A	PSMID506A
6230	PSL0506A	FUDGEPS506A	MFS501	GOBUT506B	GOBUT506C	GOBUT506D	CLEAR506E	GOBUT506E
6240	SCOPE506	PSHI507A	PSMID507A	PSL0507A	FUDGEPS507A	LOADDCS507A	GOBUT507A	GOBUT507B
6250	GOBUT507C	GOBUT507D	TEST002	GOBUT507E	CINS07F	UBRK624A	SETPS507F	SETSR507F
6260	SETCINS07F	GOBUT507F	SCOPE507	LOADPRI0510A	GOBUT510A	GOBUT510B	GOBUT510C	FLAGS100
6270	ENFLAGS100	SETFLAGS100	GOBUT510D	GOBUT5100A	ZER00510E	GOBUT510E	ZER0FLAG510E	GOBUT510F
6300	SCOPE510	SCOPE511A	MFS502	GOBUT5100A	MFS504	SCOPE511B	SETD624A	SETUPS12B
6310	SETPSFLAG512A1	GOTEST512A1	GOTEST512A2	MFS503	SETPSFLAG512B1	GOTEST512B1	GOTEST512B2	SETIRS12C1
6320	SETPSFLAG512C1	GOTEST512C1	GOTEST512C2	SCOPE512A	SETPSFLAG512D1	GOTEST512D1	GOTEST512D2	SETIRS12E1
6330	SETPSFLAG512E1	GOTEST512E1	GOTEST512E2	SCOPE512E	SETUP520A	GOTEST520A	SETUP520B	GOTEST520B
6340	SETUPS20C	GOTEST520C	SETUPS20D	GOTEST520D	SETUP520E	GOTEST520E	SCOPE520	INITD533A
6350	COMP533A	GOBUT533A	INIT533B	INITD533B	COMP533B	GOBUT533B	SCOPE533B	COMP534A
6360	GOBUT534A	INITD534B	COMP534B	GOBUT534B	SCOPE534B	COMP534C	GOBUT534C	INITD534D
6370	COMP534D	GOBUT534D	SCOPE534D	INITD534E	COMP534E	GOBUT534E	BUTERROR6	NEXTPAT500
6400	LOADCNTR534F	INITD534F	COMP534F	GOBUT534F	COUNTER534G	GOBUT534G	SCOPE534G	EXPEC535A
6410	INITD535A	COMP535A	GOBUT535A	EXPEC535B	INITD535B	COMP535B	GOBUT535B	SCOPE535B
6420	EXPEC536A	INITD536A	COMP536A	GOBUT536A	EXPEC536B	INITD536B	COMP536B	GOBUT536B
6430	SCOPE536B	COMP536C	GOBUT536C	INIT536D	EXPEC536D	INITD536D	COMP536D	GOBUT536D
6440	SCOPE536D	INITD536E	COMP536E	GOBUT536E	LOADSR536F	INITD536F	COMP536F	GOBUT536F
6450	SCOPE536F	ARR3-537A	EOP002	SETFLG624A	SETSR624A	EXPEC701C	LOADBA701C	GOTEST701C
6460	EXPEC702B	SETKT702B	EOP007	GOTEST702B	GOTEST710B	EXPEC710C	GOTEST710C	EXPEC710D
6470	CLEAR710D	GOTEST710D	LOADBA702B	EXPEC711B	GOTEST711B	EXPEC711C	GOTEST711C	GOTEST711D
6500	GOBUT712C	EXPEC712D	GOTEST710E	GOBUT713C	GOTEST711C	GOTEST713D	GOTEST720B	
6510	EOP003	EOP004	GOTEST712D					
6520	TEST720B	TEST713D	TEST713C	TEST712C	ASSERTFOV500	TEST711D	TEST711D	FIXPAT500
6530	TEST711C	DNONZER0410	INITIALIZED01	TEST711B	TEST512E2	SETIRS12B1	SETIRS12B1	TEST512D1
6540	LOOP372A	TEST373A	TEST512A1	ERROR010	MFSSEXPECO	TEST512B2	TEST512B2	MFSSEXPEC1
6550	GOTEST511A1	TEST511B1	MFS505	MFS506	SETUPS12A	TEST512C1	TEST512C1	TEST507D
6560	SETBYTEB410	TEST500	RETURN373A	TEST374	TEST512B1	TEST512C2	TEST512C2	ERROR624A
6570	SETRES361A	TEST372A	TEST373B	TEST361A	TEST710D	TEST512D2	TEST512D2	TEST512E1
6600	TEST510D	TEST5030A	EXPEC507A	TEST510A	TEST510E	SETONES510A	SETONES510A	TEST511A
6610	TEST510F	TEST507C	EXPEC506A	TEST507A	TEST506E	TEST510C	TEST510C	TEST510D
6620	LOAD505A	TEST506A	LOADFLAG504A	TEST505A	LOADFLAG503A	TEST504A	SETIRS12D1	TEST520A
6630	TEST503B	TEST003	TEST503C	TEST533B	UCON520A	TEST533A	TEST534F	TEST535B

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6640	TEST536B	TEST536D	TEST536F	NEWCTR537A	TEST710B	TEST710C	TEST503K	TEST507F
6650	LOADSR536E	SETEMIT537A	INITD536C	TEST536E	INIT536A	TEST536C	INIT535A	TEST536A
6660	LODCNTR534E	TEST535A	INITD534C	TEST534E	INITD534A	TEST534C	INIT533A	TEST534A
6670	TEST503D	TESTD500	TEST504F	TEST500A	TEST507E	TEST510B	SETFETCH8500	TEST503A
6700	TEST503E	TEST372B	TEST504G	LOAD372A	TEST410B	TEST410E	TEST504H	TEST410C
6710	TEST503F	TEST410A	TEST505B	TEST371B	TESTA503A	TEST371A	TEST504I	TEST370D
6720	TEST503G	TEST370C	TEST505C	TEST370B	TEST507B	TEST370A	TEST500C	TEST410D
6730	TEST504B	TEST367A	TEST503H	TEST366C	TEST506D	TEST366B	TEST500E	TEST366A
6740	TEST504C	TEST365B	TEST503I	TEST365A	TEST506C	TEST364B	TEST500D	TEST364A
6750	TEST504D	TEST363B	TEST534G	TEST363A	TEST506B	TEST362E	TEST503J	TEST362D
6760	TEST504E	TEST702B	TEST520D	TEST362B	TEST520B	TEST362A	TESTA504A	TEST361E
6770	TEST701C	TEST361D	TEST520C	TESTD410	VFY001	TEST520E	EOP006	TESTINHASPSOC

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7000	SUBR010	INITIALIZE03	SETUPCSP16A	INITIALIZE04	INITIALIZE05	INITIALIZE06	INITIALIZE07	ALUCARRY1
7010	SETUPCSP15A	SETUPCSP14A	SETUPCSP12A	SETUPCSP05A	SETUPCSP07A	SETUPCSP00A	WRITESF350	ALUCARRY1A
7020	ALUCARRY2	ALUCARRY2A	RESETIR350A	NEXTPAT350	LOADHIA350	AGAINSRD350	RESETIR350B	RESETIR350C
7030	RESTORE02	CSP16XORSRTOIRSR	RESTORE03	RESTORE04	SETIR373A	CSP16XORFLTTOIR	ZEROSF02DF04	SETSR373A
7040	SFDFTOSRAA	ZEROSF04DF02	ZEROSFDF	ZEROSFDF	ZEROSF	ZEROSFA	FIRST375A	SFDFTOSRA
7050	SFDFTOSRB	SFDFTOSRC	SFDFTOSRD	SFDFTOSRE	SFDFTOSRF	SFDFTOSRG	SFDFTOSRH	SFDFTOSRI
7060	SETBYTEC410	SECOND375A	BYTE375A	CHECK375A	GOBUT375A	NEXTPAT410	SETBYTED410	LOADUCON506A
7070	BYTEFIRST410	GOBUT506A	DOIT506A	FLAGFPSSEQL00	TEST511A2	FLAGFPS02	FLAGFPS03	FLAGFPS04
7100	PSSEQL00	PSSEQL0002	PSSEQL0003	PSSEQL0004	PSSEQL0005	PSSEQL0006	TEST511B2	GOTEST511A2
7110	TEST511A3	GOTEST511A3	TEST511A4	GOTEST511A4	KTSRCDST01	GOTEST511B2	TEST511B3	GOTEST511B3
7120	TEST511B4	GOTEST511B4	SUCBRTEST01	KTSRCDST02	KTSRCDST03	KTSRCDST04	KTSRCDST04B	KTSRCDST07
7130	KTSRCDST08	INITSR537A	SUCBRTEST02	SUCBRTEST03	BR3-537A	SETRESA537A	BUTCOUNT-15-377	CR3-537A
7140	DR3-537A	AR7-537A	BR7-537A	CR7-537A	DR7-537A	AR11-537A	BR11-537A	CR11-537A
7150	DR11-537A	ER3-537A	FR3-537A	GR3-537A	HR3-537A	AL1-537A	SETUPPSCC#DC	GOTEST551B1
7160	GOBUT621H	SETUPPSCC#DC02	PSCCTOSR3-0	PSCCTOSR3-0AA	PSCCTOSR3-0BB	CLEAR624	EXPEC701A	BUSFCN713A
7170	LOADBA701A	GOTEST701A	LOADIR720A	SETADR721A	SETADR720A	SETJAM720A	BUSFCN720A	BOX12
7200	SETJAM721A	BUSFCN721A	MASK762A	C17X12	BOX05	C17X05	SETPRI762C	PRI06762A
7210	GETIT762A	EOP005	EOP010	JAMUPP0020	INSERTEOPREVN0	INSERT02	INSERTREVN0	INSERT03
7220	INSERT04	DISPLAY	DISP002	DISP003	DISP004	DISP005	DISP006	CLEAR-I-0-A
7230	CLEAR-I-0-B	CLEARI002	CLEARI004	CLEARI005	D[15-12]	D1512A	D[11-06]	D1106A
7240	D[05-00]	D0500A	DZERO	DTOIRB	CLRSERVICET00	DATISERVICET00	DATOSERVICET00	CJESERVICET00
7250	SERVICET00	PBAT00	FLAGFPST00	PST00	ODDJAMT00	CLRJAMT00	JAMT00	CUAT00
7260	GETMSKPROC DAT	MSKPROC DAT	CMPPROC DAT	RESETPROC DAT	LOADFPSCC	LOADFPSCC02	SRINTOIR	DINTOIR
7270	DBUFINTOIR	RESETUCOMP	SRINTOIRS	DINTOIRS	DBUFINTOIRS	RESEUCOMPS	BUTSR3-0	BUTBGFPSE RV
7300	BUTIR15-12	BUTINSTR5	BUTIR11FLTPT3-0	NEXT007	BUTIR9-6	BUTMOVDR7IRS-3	BUTINSTR1	BUTMMASKPS(T)
7310	BUTD(C)C	BUTCOUT7DOUT7	BUTFPS05	BUTDMSMBYTE	BUTG03-2	BUTSR1-0	BUTBGSE RV	BUTMEXFLAG1
7320	BUTMNXT000	BUTMD00	BUTMNXT001	BUTMPS(N)	BUTMNXT002	BUTMFLAG7	BUTMNXT003	BUTMEXFLAG1
7330	BUTMNXT004	BUTMFLTPS	BUTMNXT005	BUTMEXFLAG2	BUTMNXT006	KTSRCDST05	BUTMINITJAM	KTSRCDST06
7340	BUTMNXT007	BUTD-15-ZERO	BUTIR11B	BUTPS15	BUTD(C)A	BUTSERVICE	BUTVECTLOAD	BUTDR6-7L
7350	BUTD(C)B	BUTBAG0	BUTOTHERJAM	DINTOIR350	BUTFPPROC	BUTINTRHIGH	BUTINSTRBRANCH	LOADHIA350
7360	BUTPREFETCHJAM	GOFOR410	NEXT721A	EXPEC410A	NEXT720A	NEXT713A	WORD410	BYTESECOND410
7370	SETRES537A	BUTFPFD		GETPROC DAT	VFY006	VFY005	BUTERROR7	
7400	ZTARGET400	ZTARGET401	ZTARGET402	ZTARGET403	ZTARGET404	ZTARGET405	ZTARGET406	ZTARGET407
7410	ZTARGET410	ZTARGET411	ZTARGET412	ZTARGET413	ZTARGET414	ZTARGET415	ZTARGET416	ZTARGET417
7420	ZTARGET420	ZTARGET421	ZTARGET422	ZTARGET423	ZTARGET424	ZTARGET425	ZTARGET426	ZTARGET427
7430	ZTARGET430	ZTARGET431	ZTARGET432	ZTARGET433	ZTARGET434	ZTARGET435	ZTARGET436	ZTARGET437
7440	ZTARGET440	ZTARGET441	ZTARGET442	ZTARGET443	ZTARGET444	ZTARGET445	ZTARGET446	ZTARGET447
7450	ZTARGET450	ZTARGET451	ZTARGET452	ZTARGET453	ZTARGET454	ZTARGET455	ZTARGET456	ZTARGET457
7460	ZTARGET460	ZTARGET461	ZTARGET462	ZTARGET463	ZTARGET464	ZTARGET465	ZTARGET466	ZTARGET467
7470	ZTARGET470	ZTARGET471	ZTARGET472	ZTARGET473	ZTARGET474	ZTARGET475	ZTARGET476	ZTARGET477
7500	ZTARGET500	ZTARGET501	ZTARGET502	ZTARGET503	ZTARGET504	ZTARGET505	ZTARGET506	ZTARGET507
7510	ZTARGET510	ZTARGET511	ZTARGET512	ZTARGET513	ZTARGET514	ZTARGET515	ZTARGET516	ZTARGET517
7520	ZTARGET520	ZTARGET521	ZTARGET522	ZTARGET523	ZTARGET524	ZTARGET525	ZTARGET526	ZTARGET527
7530	ZTARGET530	ZTARGET531	ZTARGET532	ZTARGET533	ZTARGET534	ZTARGET535	ZTARGET536	ZTARGET537
7540	ZTARGET540	ZTARGET541	ZTARGET542	ZTARGET543	ZTARGET544	ZTARGET545	ZTARGET546	ZTARGET547
7550	ZTARGET550	ZTARGET551	ZTARGET552	ZTARGET553	ZTARGET554	ZTARGET555	ZTARGET556	ZTARGET557
7560	ZTARGET560	ZTARGET561	ZTARGET562	ZTARGET563	ZTARGET564	ZTARGET565	ZTARGET566	ZTARGET567
7570	ZTARGET570	ZTARGET571	ZTARGET572	ZTARGET573	ZTARGET574	ZTARGET575	ZTARGET576	ZTARGET577
7600	ZTARGET600	ZTARGET601	ZTARGET602	ZTARGET603	ZTARGET604	ZTARGET605	ZTARGET606	ZTARGET607
7610	ZTARGET610	ZTARGET611	ZTARGET612	ZTARGET613	ZTARGET614	ZTARGET615	ZTARGET616	ZTARGET617
7620	ZTARGET620	ZTARGET621	ZTARGET622	ZTARGET623	ZTARGET624	ZTARGET625	ZTARGET626	ZTARGET627
7630	ZTARGET630	ZTARGET631	ZTARGET632	ZTARGET633	ZTARGET634	ZTARGET635	ZTARGET636	ZTARGET637

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7640	ZTARGET640	ZTARGET641	ZTARGET642	ZTARGET643	ZTARGET644	ZTARGET645	ZTARGET646	ZTARGET647
7650	ZTARGET650	ZTARGET651	ZTARGET652	ZTARGET653	ZTARGET654	ZTARGET655	ZTARGET656	ZTARGET657
7660	ZTARGET660	ZTARGET661	ZTARGET662	ZTARGET663	ZTARGET664	ZTARGET665	ZTARGET666	ZTARGET667
7670	ZTARGET670	ZTARGET671	ZTARGET672	ZTARGET673	ZTARGET674	ZTARGET675	ZTARGET676	ZTARGET677
7700	ZTARGET700	ZTARGET701	ZTARGET702	ZTARGET703	ZTARGET704	ZTARGET705	ZTARGET706	ZTARGET707
7710	ZTARGET710	ZTARGET711	ZTARGET712	ZTARGET713	ZTARGET714	ZTARGET715	ZTARGET716	ZTARGET717
7720	ZTARGET720	ZTARGET721	ZTARGET722	ZTARGET723	ZTARGET724	ZTARGET725	ZTARGET726	ZTARGET727
7730	ZTARGET730	ZTARGET731	ZTARGET732	ZTARGET733	ZTARGET734	ZTARGET735	ZTARGET736	ZTARGET737
7740	ZTARGET740	ZTARGET741	ZTARGET742	ZTARGET743	ZTARGET744	ZTARGET745	ZTARGET746	ZTARGET747
7750	ZTARGET750	ZTARGET751	ZTARGET752	ZTARGET753	ZTARGET754	ZTARGET755	ZTARGET756	ZTARGET757
7760	ZTARGET760	ZTARGET761	ZTARGET762	ZTARGET763	ZTARGET764	ZTARGET765	ZTARGET766	ZTARGET767
7770	ZTARGET770	ZTARGET771	ZTARGET772	ZTARGET773	ZTARGET774	ZTARGET775	ZTARGET776	ZTARGET777

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	OCTAL/DEC.	OCTAL/DEC.
4	773/507	5/ 5
5	774/508	4/ 4
6	772/506	6/ 6
7	775/509	3/ 3
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