

AOP4 DISK SYSTEM TEST MODULE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
			2		DECK	1
		0000	3		DISK	START 0
		0A00	4		ORG	X'A00'
			5		*****	
			6	*	10/21/70	LAST UPDATE
			7		*****	
			8	*	DISK SYSTEM TEST MODULE	
			9		*****	
			10	*	SECTION PREFACE	
			11		*****	
0A00	AOP4		12	DC	XL2'AOP4'	PROGRAM ID AND REVISION LEVEL
0A02	00	0A01	13	DC	XL1'00'	SECTION FLAGS
0A03	01	0A03	14	DC	XL1'01'	CURRENT ROUTINE NUMBER
0A04	0000	0A05	15	DC	XL2'0000'	RESERVED
0A06	0A12	0A07	16	DC	AL2(RTN01)	FIRST ROUTINE ADDRESS
0A08	0E92	0A09	17	DC	AL2(ERTAB)	ERROR TABLE ADDRESS
0A0A	A04000	0A0C	18	AUDT	DC XL3'A04000'	SECTION PREFACE UNIT DEF. TABLE
0A0D	B01000	0A0F	19	BUDT	DC XL3'B01000'	SECTION PREFACE UNIT DEF.
			20		*****	
			21	*	PROGRAM NOTES	
			22		*****	
			23	*	WARNING - DO NOT ALTER PROGRAM WITHOUT CAREFULLY STUDYING HOW*	
			24	*	***** IT RUNS. TO CONSERVE CORE, FUNNY THINGS ARE DONE. *	
			25	*	-BE CAREFUL-.	
			26	*		
			27	*	TO CONSERVE CORE, PROGRAM PARTS -RTN01- -CMPAR- -BUSY- -HALF-*	
			28	*	NEED BE RUN ONLY ONCE. THEREFORE THEY WILL BECOME PART OF THE*	
			29	*	READ IN AREA. NOTE, A BRANCH TO -GOOF- OR BUSY- INSTRUCTION *	
			30	*	IS PLACED WHERE -BEGIN- IS. THIS WILL BRANCH OVER THE READ *	
			31	*	IN AREA.	
			32		*****	
			33	*		
			34	*		
			35		*****	
			36	*	RTN01 *	
			37		*****	
			38	*	PROGRAM SENSES STATUS BYTES OF *	
			39	*	THE SPINDLES AND CHECKS FOR ANY *	
			40	*	ERROR CONDITIONS.	
			41		*****	
0A10	0000	0A11	42	DC	XL2'0000'	
0A12	01	0A12	43	RTN01	DC XL1'01'	ROUTINE NUMBER
0A13	00	0A13	44	DC	XL1'00'	NO MANYAL INTERVENTION REQUIRED
0A14	FFFF	0A15	45	DC	XL2'FFFF'	LAST ROUTINE
0A16	30 A2 0E88		46	BEGIN	SNS STAT1,X'A2'	'NSE STATUS BYTES 0,1,2,3, FOR
0A1A	30 A3 0E8A		47		SNS STAT3,X'A3'	SPINDLE -1-.
0A1E	C0 87 0A3C		48		B CKST	GO ANALYZE THE BYTES.
0A22	38 20 0A0E		49	TRN	BUDT-1,X'20'	SPINDLE -2- DEFINED?
0A26	F2 90 24		50	JF	HALF	JUMP IF NOT.
0A29	3A 10 0EDB		51	SBN	HLTID-1,X'10'	SET UP FOR DRIVE 2.
0A2D	30 B2 0E88		52	SNS	STAT1,X'B2'	SENSE STATUS BYTES 0,1,2,3 FOR
0A31	30 B3 0E8A		53	SNS	JTAT3,X'B3'	SPINDLE -2-.
0A35	C0 87 0A3C		54	B	CKST	GO ANALYZE THE BYTES.
0A39	F2 87 11		55	J	HALF	GO CHECK DISK CAPACITIES.
			56	*	CHECK THE STATUS BYTES FOR THE SPINDLE(S).	
0A3C	34 08 0A47		57	CKST	ST STCK+3,ARR	STORE THE RETURN ADDRESS.
0A40	38 10 0E88		58	TRN	STAT1,X'10'	SEEK BUSY BIT STUCK ON?
0A44	C0 90 0000		59	STCK	BF *-*	BRANCH BACK IF OFF.
0A48	C0 87 0E8C		60	P	ERROR	LOG ERROR - SEEK BUSY CHECK.
0A4C	01	0A4C	61	DC	XL1'01'	*ID -01-.
			62		*****	
			63	*	HALF *	
			64		*****	
			65	*	DETERMINE WHETHER OR NOT THE *	
			66	*	DISKS ARE FULL OR HALF CAPACITY *	
			67	*	AND MODIFY THE COMMANDS TABLE *	
			68	*	ACCORDINGLY.	
			69	HALF	TRN	AUDT,CAP2
						HALF CAP DISK?

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ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0A51	F2	90 07	70	JF	SET100	JUMP IF NOT
0A54	3A	10 0E7E	71	SBN	FLAG,X'10'	SET HALF CAP FLAG.
0A58	F2	87 26	72	J	LOKB	
0A5B	3C	64 0E6A	73	SET100	MVI TEMP,100	MODIFY INCR FOR FULL CAP.
0A5F	C2	01 0E1A	74	HEY	LA CMNDS,XR1	SET POINTER TO COMMANDS TABLE.
0A63	4E	00 04 0E6A	75	ALC	4(1,XR1),TEMP	MODIFY THE COMMANDS TABLE TO CORR
0A68	4E	00 06 0E6A	76	ALC	6(1,XR1),TEMP	TO A FULL CAPACITY DISK (ADD 100).
0A6D	4E	00 08 0E6A	77	ALC	8(1,XR1),TEMP	
0A72	4E	00 0C 0E6A	78	ALC	12(1,XP1),TEMP	
0A77	4E	00 10 0E6A	79	ALC	16(1,XR1),TEMP	
0A7C	4E	00 16 0E6A	80	ALC	22(1,XR1),TEMP	
0A81	38	20 0A0E	81	LOKB	TBN BU DT-1,X'20'	SPINDLE -2- DEFINED?
0A85	72	10 07	82	JT	**+10	JUMP IF NOT.
0A88	7C	00 0D95	83	MVI	JMP+2,X'00'	MODIFY JUMP COMMAND IN 'SIO'
0A8C	F2	87 10	84	J	BUSY	
0A8F	38	02 0A0F	85	TBN	BU DT,CAP2	HALF CAPACITY DISK?
0A93	F2	90 09	86	JF	BUSY	JUMP IF NOT.
0A96	3A	20 0E7F	87	SBN	FLAG,X'20'	SET SPINDLE -2- HALF CAP. FLAG BIT.
			88		*****	
			89		* BUSY *	
			90		*****	
			91		*	PROGRAM CHECKS TO BE SURE THAT *
			92		*	THE SPINDLES ARE NOT INITIALLY *
			93		*	BUSY. *
			94		*****	
0A9A	C0	87 0EBC	95	BISY	B ERROR	LOG ERROR - BUSY CHECK.
0A9E	02		96	DC	XL1'02'	*ID -02-
0A9F	3B	10 0FDR	97	BUSY	SBF HLTID-1,X'10'	SET UP FOR DRIVE 1.
0AA3	C1	A2 0A9A	98	TIO	BISY,X'A2'	BRANCH IF SPINDLE -A- IS BUSY.
0AA7	38	20 0A0E	99	TBN	BU DT-1,X'20'	SPINDLE -2- DEFINED?
0AAB	F2	90 08	100	JF	CMPAR	JUMP IF NOT.
0AAE	3A	10 0EDB	101	SBN	HLTID-1,X'10'	SET UP FOR DRIVE 2.
0AB2	C1	B2 0A9A	102	TIO	BISY,X'32'	BRANCH IF SPINDLE -2- IS BUSY.
			103		*****	
			104		* CMPAR *	
			105		*****	
			106		*	PROGRAM LOADS AND SENSES THE DISK*
			107		*	REGISTERS. A CHECK IS MADE TO *
			108		*	ENSURE THAT THE LOADED DATA COM- *
			109		*	PARS WITH THE SENSED DATA. *
			110		*****	
0AB6	3B	10 0EDB	111	CMPAR	SBF HLTID-1,X'10'	SET UP FOR DRIVE 1.
0ABA	C2	01 0E84	112	LA	PATRN,XR1	LOAD TEST PATTERN ADDRESS.
0ABE	71	A4 00	113	LIO1	LIO 0(,XR1),X'A4'	LOAD DATA ADDRESS REGISTER.
0AC1	71	A6 00	114	LIO	0(,XR1),X'A6'	LOAD CONTROL REGISTER.
0AC4	30	A4 0E88	115	SNS	STAT1,X'A4'	SENSE DATA ADDRESS REGISTER.
0AC8	30	A6 0E8A	116	SNS	STAT3,X'A6'	SENSE CONTROL REGISTER.
0ACC	4D	01 00 0E88	117	CLC	0(2,XR1),STAT1	DATA ADDRESS REGISTER AS EXPECTED?
0AD1	F2	01 49	118	JNE	MSTK	JUMP IF NOT.
0AD4	4D	01 00 0E8A	119	CLC	0(2,XR1),STAT3	CONTROL REGISTER AS EXPECTED?
0AD9	F2	01 41	120	JNE	MSTK	JUMP IF NOT.
0ADC	7D	A8 00	121	CLI	0(,XP1),X'A8'	LAST TEST PATTERN?
0AEF	F2	81 07	122	JF	DAFLG	JUMP IF SO.
0AE2	D2	01 01	123	LA	1(,XR1),XR1	INCREMENT TEST POINTER.
0AE5	C0	87 0ABE	124	B	LIO1	GO TEST NEXT PATTERN.
0AE9	38	20 0A0E	125	DAFLG	TBN BU DT-1,X'20'	SPINDLE -2- DEFINED?
0AED	F2	90 1F	126	JF	CLIT	JUMP IF NOT.
0AF0	38	10 0ABF	127	TBN	LIO1+1,X'10'	SPINDLE -2 -REGISTERS CHECKED?
0AF4	F2	10 18	128	JT	CLIT	JUMP IF SO.
0AF7	3A	10 0ABF	129	SBN	LIO1+1,X'10'	SET UP THE LIO'S AND SNS'S FOR
0AFB	3A	10 0AC2	130	SBN	LIO1+4,X'10'	SPINDLE -2- ADDRESSING.
0AFF	3A	10 0AC5	131	SBN	LIO1+7,X'10'	
0B03	3A	10 0AC9	132	SBN	LIO1+11,X'10'	
0B07	3A	10 0EDB	133	SBN	HLTID-1,X'10'	SET UP FOR DRIVE 2.
0B0B	C0	87 0ABA	134	B	CMPAR+4	GO DO SPINDLE -2- LIO AND SNS.
0B0F	5C	09 06 07	135	CLIT	MVC 6(10,XR1),7(,R1)	CLEAR CONTROL FIELDS.
0B13	0C	03 0A19 0B25	136	MVC	BEGIN+3(4),BRNCH2	STORE NEW BRANCH ADDRESS.
0B19	C0	87 0CAD	137	B	GOOF	GO RECALIBRATE DISK(S).

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ERR LOC	OBJCT	CODE	ADDR	STMT	SOURCE	STATEMENT
				138	*	LOAD/SENSE ERROR MESSAGE *
OB1D	C0 87	OERC		139	MSTK B	ERROR LOG ERROR - LIO/SNS CHECK.
OB21	01		OB21	140	DC	XL1'01' *ID -03-
OB22	C087		OB23	141	DC	XL2'C087'
OB24	OCAD		OB25	142	BRNCH2 DC	AL2(GOOF)
				143	*****	
				144	* DECID *	
				145	*****	*****
				146	*	PROGRAM DECIDES IF IT IS SPINDLE *
				147	*	-1- OR SPINDLE -2- TURN FOR A *
				148	*	COMMAND. A CHECK IS MADE TO SEE *
				149	*	IF THE SPINDLE IS BUSY. *
				150	*****	*****
OB26	0F 01	OB25 0A12		151	ITBSY SLC	WORK(2),N001 DECREMENT TIME-OUT COUNT.
OB2C	F2 84	05		152	JP	DECID CONTINUE IF VALUE IS STILL POSITIVE.
OB2F	C0 87	0EAA		153	B	ERRORS LOG ERROR - BUSY TIME-OUT CHECK.
OB33	08		OB33	154	DC	XL1'08' *ID -08-
OB34	C0 87	0DA3		155	DECID B	EXIT EXIT TILL SELECTED SPINDLE NOT BYSY.
OB38	38 10	0D8D		156	TBN	ASIO+1,X'10' LAST CMND SET FOR SPINDLE -2- ?
OB3C	F2 10	12		157	JT	ITSA JUMP TO SPINDLE -1- IF SO.
OB3F	38 20	0A0E		158	TBN	BUDT-1,X'20' IS SPINDLE -2- DEFINED?
OB43	F2 90	08		159	JF	ITSA GO TO SPINDLE -1- IF NOT.
OB46	C1 B2	OB26		160	TIO	ITBSY,X'B2' BRANCH IF SPINDLE -2- IS BUSY.
OB4A	3B 01	0CF9		161	SBF	SET,X'01' TURN ON SET BIT IN SET INSTRUCTION.
OB4E	F2 87	08		162	J	ENDDF GO CHECK LAST COMMAND.
OB51	C1 A2	OB26		163	ITSA TIO	ITBSY,X'A2' BRANCH IF SPINDLE -1- IS BUSY.
OB55	3A 01	0CF9		164	SBN	SET,X'01' TURN OFF SET BIT IN SET INSTRUCTION.
OB59	BD FF	00		165	ENDDF CLI	0(,XR2),X'FF' END OF TABLE FLAG?
OB5C	C0 81	OCAD		166	BE	GOOF JUMP TO RESET POINTER IF SO.
				167	*****	
				168	* DARCK *	
				169	*****	*****
				170	*	CHECK THE DATA ADDRESS REGISTER *
				171	*	FOR PROPER INCREMENTATION AFTER *
				172	*	DOING A READ OR WRITE. A CHECK IS *
				173	*	MADE TO INSURE DATA TRANSMISSION *
				174	*	AFTER READ AND WRITE COMMANDS. *
				175	*****	*****
OB60	39 07	0D8D		176	DARCK TBF	ASIO+1,X'07' LAST COMMAND A SEEK?
OB64	F2 10	96		177	JT	SEKBOB JUMP IF SO.
OB67	38 03	0D8D		178	TBN	ASIO+1,X'03' THIS A SCAN TYPE COMMAND?
OB6B	C0 10	0CF9		179	BT	SIO JUMP IF SO.
OB6F	38 10	0D8D		180	TBN	ASIO+1,X'10' LAST COMMAND FOR -2-?
OB73	F2 10	07		181	JT	*+10 JUMP IF SO.
OB76	30 A4	0E8A		182	SNS	DAR,X'A4' SENSE DRIVE -1- DAR.
OB7A	F2 87	04		183	J	*+7
OB7D	30 B4	0E8A		184	SNS	DAR,X'B4' SENSE DRIVE -2- DAR.
OB81	0D 01	0E8A 0E6F		185	CLC	DAR(2),LSTAD DID THE DAR INCREMENT FOR A READ?
OB87	F2 81	34		186	JE	CKDATA GO ON IF EVERYTHING DUCKY.
OB8A	0D 01	0E8A 0E70		187	CLC	DAR(2),LSTWR DID THE DAR INCREMENT FOR A WRITE?
OB90	F2 81	28		188	JE	CKDATA GO ON IF EVERYTHING DUCKY.
OB93	0D 01	0E8A 0E72		189	CLC	DAR(2),LSTWR+2 DID THE DAR INCREMENT FOR A WRITE?
OB99	F2 81	22		190	JE	CKDATA GO ON IF EVERYTHING DUCKY.
OB9C	3D 00	0E7F		191	CLI	CCWA-3,X'00' IS THE FLAG BYTE CLEAR?
OBA0	F2 81	16		192	JE	ER09 JUMP IF SO.
OBA3	38 10	0D8D		193	TBN	ASIO+1,X'10' THIS A DRIVE 2 COMMAND?
OBA7	F2 10	07		194	JT	*+10 JUMP IF SO.
OBAA	30 A2	0E8F		195	SNS	STAT1,X'A2' CLEAR DRIVE 1 STATUS.
OBAE	F2 87	04		196	J	*+7
OBBI	30 B2	0E88		197	SNS	STAT1,X'B2' CLEAR DRIVE 2 STATUS
OBBS	C0 87	0CEE		198	B	SIO GO TO NEXT COMMAND.
OBBD	C0 87	0EAA		199	ER09 B	ERRORS LOG ERROR - DAR INCR CHECK.
OBBD	09		OBBD	200	DC	XL1'09' *ID -09-
OBBE	38 02	0D8D		201	CKDATA TBN	ASIO+1,X'02' LAST COMMAND A WRITE?
OBC2	C0 10	0CEE		202	BT	SIO JUMP IF SO.
OBC6	0D FF	0C33 0B19		203	CLC	DECID+255(256),DATA+255
OBC8	F2 81	29		204	JE	KFER JUMP IF DATA IDD NOT TRANSFER.
OBCF	8D 02	00 0E33		205	CLC	0(3,XR2),CMNDS+25 THIS A CE TRACK READ COMMAND?

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ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0BD4	C0 01 0CEE		206	BNE	SIO JUMP IF NOT.
0BD8	0D FF 0B19 0C25		207	CLC	DATA+255(256),ITBSY+255
0BDE	C0 81 0CEE		208	BE	SIO
0BE2	39 10 0E6C		209	TBN	READ+2,X'10'
0BE6	F2 90 0A		210	JF	CKOC THIS THE ALTERNATE PATTERN?
0BE9	0D FF 0B19 0C26		211	CLC	DATA+255(256),ITBSY+256
0BEF	C0 81 0CEF		212	BE	SIO
0BF3	C0 87 0EAA		213	CKOC	B JUMP IF DATA WAS WRITTEN AND READ OL
0BF7	0C	0BF7	214	DC	ERFORS LOG ERROR - WRITE DATA CHECK.
0BF8	C0 87 0EAA		215	XFER	B *ID -0C-
0BFC	0A	0BFC	216	DC	ERRORS LOG ERROR - READ DATA CHECK.
			217	*****	*ID -0A-
			218	* SEKBOS *	
			219	*****	
			220	*	SEEK BUSY IS MONITORED AND CHECK-
			221	*	ED FOR NOT TIMING OUT. *
			222	*****	
0BFD	0C 01 0B25 0D35		223	SEKBOS	MVC WORK(2),SKTIM STORE SEEK TIME-OUT VALUE.
0C03	39 10 0D8D		224	SNSIT	TBN ASIO+1,X'10'
0C07	F2 90 07		225	JF	**+10
0C0A	30 B2 0E88		226	SNS	STAT1,X'B2'
0C0E	F2 87 04		227	J	**+7
0C11	30 A2 0E88		228	SNS	STAT1,X'A2'
0C15	38 10 0E88		229	TBN	STAT1,X'10'
0C19	F2 90 13		230	JF	CKSEEK
0C1C	C0 87 0DA3		231	B	GO EXIT.
0C20	0F 01 0B25 0A12		232	SLC	WORK(2),N001
0C26	C0 84 0C03		233	BP	SNSIT
0C2A	C0 87 0EAA		234	B	ERRORS
0C2E	07	0C2E	235	DC	XL1'07'
			236	*****	
			237	* CKSEEK *	
			238	*****	
			239	*	THE SEEK COMMAND IS CHECKED TO *
			240	*	SEE IF THE HEADS ARE AT THE COR- *
			241	*	RECT TRACK. *
			242	*****	
0C2F	38 10 0D8D		243	CKSEEK	TBN ASIO+1,X'10'
0C33	F2 10 0F		244	JT	CKYB
0C36	0C 03 0E90 0F82		245	MVC	CCWX(4),CCWA
0C3C	0C 00 0E8C 0E8D		246	MVC	AF(1),CCWX-3
0C42	F2 87 0C		247	J	CKVCK
0C45	0C 03 0E90 0E82		248	CKYB	MVC CCWX(4),CCWB
0C4B	0C 00 0E8B 0E8D		249	MVC	BF(1),CCWX-3
0C51	0C 03 0E86 0E90		250	CKYCK	MVC CCWY(4),CCWX
0C57	3B FF 0E86		251	SBF	CCWY,X'FF'
0C5B	08 00 0C76 0D8D		252	MZZ	VER+1,ASIO+1
0C61	08 00 0C72 0D8D		253	MZZ	VER-3,ASIO+1
0C67	08 00 0C6E 0D8D		254	MZZ	TIOID+1,ASIO+1
0C6D	C1 00 0CA8		255	TIOID	TIO ERROE,X'00'
0C71	31 A6 0E64		256	LIO	TSTID,X'A6'
0C75	F3 A1 01		257	VER	SIO X'01',X'A1'
0C78	0C 01 0B25 0D35		258	MVC	WORK(2),BSYTIM
0C7E	C0 87 0DA3		259	GOEXIT	B EXIT
0C82	08 00 0C97 0D8D		260	MZZ	TIO+1,ASIO+1
0C88	0F 01 0B25 0A12		261	SLC	WORK(2),N001
0C8E	F2 84 05		262	JP	TIO
0C91	C0 87 0EAA		263	B	ERRORS
0C95	08	0C95	264	DC	XL1'08'
0C96	C1 A2 0C7E		265	TIO	GOXIT,X'A2'
0C9A	0D 00 0E8F 0F84		266	CLC	CCWX-2(1),CCWY-2
0CA0	F2 81 4B		267	JE	SIO
			268	* SEEK CHECK MESSAGES *	
0CA3	C0 87 0EAA		269	B	ERRORS
0CA7	04	0CA7	270	DC	XL1'04'
0CA8	C0 87 0EAA		271	ERROE	B
0CAC	0E	0CAC	272	DC	XL1'0E'
			273	*****	

AOF4 DISK SYSTEM TEST MODULE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		274	*	REINITIALIZE COMMANDS TABLE POINTER AND ALTER THE SELECTION * OF THE HEADS AND/OR DISK. *
		275	*	*****
0CAD	C2 02 0E1A	276	GOOF	LA CMNDS, XR2 RESTORE CMNDS TABLE POINTER.
0CB1	3A 01 0CF9	277	SBN	SEC, X'01' RESET FOR SPINDLE -1-.
		278	*	*****
		279	*	NOTE - LABEL 'ITBSY' MUST BE ON AN EVEN ADDRESS FOR THE * FOLLOWING TO WORK PROPERLY. *
		280	*	*****
0CB5	38 01 0E6C	281	TBN	READ+2, X'01' ALTERNATE THE WRITE AREA ADDRESS
0CB9	F2 10 07	282	JT	TRNOFF POINTER SO THAT DIFFERENT DATA IS
0CBC	3A 01 0E6C	283	SBN	READ+2, X'01' WRITTEN ON EACH CE SECTOR WITH
0CC0	F2 87 04	284	J	**+7 EACH NEW TABLE PASS.
0CC3	38 01 0E6C	285	TRNOFF	SBF READ+2, X'01'
0CC7	38 01 0D06	286	TBN	STHDA, X'01' LAST COMMAND FOR HEAD 0?
0CCB	F2 10 07	287	JT	DOHD1 JUMP IF SO.
0CCE	3A 01 0D06	288	SBN	STHDA, X'01' FIX INSTRUCTIONS TO SET HEAD 0.
0CD2	F2 87 07	289	J	FRDSK GO TEST OTHER DISK.
0CD5	3B 01 0D06	290	DOHD1	SBF STHDA, X'01' FIX INSTRUCTION TO SET HEAD 1.
0CD9	F2 87 12	291	J	SIO GO TEST HEAD 1 COMMANDS.
0CDC	38 01 0CFD	292	FRDSK	TBN SETR, X'01' INSTRUCTION TURNING OFF FIXED DISK?
0CE0	F2 10 07	293	JT	TRNON JUMP IF SO.
0CE3	3A 01 0CFD	294	SBN	SETR, X'01' SET IF TO TURN OFF FIXED DISK BIT.
0CE7	F2 87 04	295	J	**+7
0CEA	3B 01 0CFD	296	TRNON	SBF SETR, X'01' SET IT TO TURN OFF FIXED DISK BIT.
		297	*	*****
		298	*	SIO *
		299	*	*****
		300	*	*****
		301	*	*****
		302	*	THE LIO'S AND SIO COMMANDS ARE *
		303	*	SET UP AND EXECUTED. INDEX REGIS-*
		304	*	TER 2 CONTAINS THE POINTER FOR *
		305	*	THE COMMANDS TABLE. *
		306	*	*****
0CEE	0C FF 0B19 0C33	307	SIO	MVC DATA+255(256), DECID+255 FILL READ FIELD WITH CODING.
0CF4	2C 00 0D8D 03	308	MVC	ASIO+1(1), 3(, XR2) STORE NEW COMMAND.
0CF9	3B 10 0D8D	309	SET	SBF ASIO+1, X'10' TURN -B- BIT ON/OFF.
0CFD	3A 08 0D8D	310	SETR	SBN ASIO+1, X'08' TURN FIXED DISK BIT ON/OFF.
0D01	2C 02 0E82 02	311	MVC	CCWA, 2(3, XR2) SET UP CONTROL REGISTER.
0D06	3B 80 0E81	312	STHDA	SBF CCWA-1, X'80' TURN ON/OFF HEAD BIT.
0D0A	38 10 0D8D	313	TBN	ASIO+1, X'10' IS THIS A SPINDLE -2- COMMAND?
0D0E	F2 10 17	314	JT	SIOB JUMP IF SO.
0D11	0C 02 0D83 0E7A	315	DOA	MVC TIOIT+3(3), TIOA+2 SET UP DRIVE 1 TEST I/O COMMAND.
0D17	0C 00 0E7F 0E9C	316	MVC	CCWA-3(1), AF SET FLAG BYTE TO CORR.
0D1D	3B 10 0D85	317	SBF	LIOA+1, X'10' SET THE LIO COMMANDS FOR SPINDLE -1-
0D21	3B 10 0D89	318	SBF	LI0B+1, X'10'
0D25	F2 87 2E	319	J	RDWRT GO EXECUTE THE START I/O.
		320	*	*****
		321	*	SKIP SPINDLE -2- WRITE CMND IF 2'S CAP. IS DIFFERENT FROM 1'S*
		322	*	*****
0D29	0C 02 0D83 0E7D	323	SIOB	MVC TIOIT+3(3), TIOB+2 SET UP DRIVE 2 TEST I/O COMMAND.
0D2E	38 01 03	324	TBN	3(, XR2), X'01' IS THIS A NON-WRITE CMND?
0D31	F2 10 14	325	JT	DOITB JUMP IF SO.
0D34	B8 02 03	326	TBN	3(, XR2), X'02' IS THIS A WRITE CMND?
0D37	F2 90 0E	327	JF	DOITB JUMP IF NOT.
0D3A	38 30 0E7E	328	TBN	FLAG, X'30' BOTH SPINDLES HALF CAP.?
0D3E	F2 10 07	329	JT	DOITB JUMP IF SO.
0D41	39 F0 0E7E	330	TBF	FLAG, X'F0' ARE BOTH SPINDLES FULL CAP.?
0D45	F2 90 4E	331	JF	ININC JUMP IF NOT.
0D48	0C 00 0E7F 0E8B	332	DOITB	MVC CCWB-3(1), 3F SET FLAG BYTE IN CONTROL FIELD.
0D4E	3A 10 0D85	333	SBN	LIOA+1, X'10' SET LIO COMMANDS FOR SPINDLE -2-.
0D52	3A 10 0D89	334	SBN	LI0B+1, X'10'
0D56	BD A2 03	335	RDWRT	CLI 3(, XR2), X'A2' CURRENT COMMAND A WRITE.
0D59	F2 81 09	336	JE	FIXIT JUMP IF SO.
0D5C	0C 01 0E6A 0E68	337	MVC	READ(2), READ-2 SET ADDRESS FOR READING.
0D62	F2 87 06	338	J	**+9
0D65	0C 01 0E6A 0E6C	339	FIXIT	MVC READ(2), READ+2 SET ADDRESS FOR WRITING.
0D6B	38 10 0D8D	340	TBN	ASIO+1, X'10' THIS A DRIVE 2 COMMAND?
0D6F	F2 90 0E	341	JF	TIOIT JUMP IF NOT.

AOP4 DISK SYSTEM TEST MODULE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT
OD72	38	08	OD8D	342	TBN	ASIO+1,X'09'	FIXED DISK SPECIFIED?
OD76	F2	90	07	343	JF	TIOIT	JUMP IF NOT.
OD79	38	01	0A0F	344	TBN	BUDT,MOD3	THIS A MOD 3 SYSTEM?
OD7D	F2	10	6E	345	JT	JMPR	JUMP IF SO.
OD80	C1	00	0000	346	TIOIT	TIO *-*,X'00'	CORRESPONDING TIO FOR THE DRIVE.
OD84	31	A6	0E6	347	LIOA	LIO DECR,X'A6'	LOAD DISK CONTROL REGISTER.
OD88	31	A4	0F'	348	LIOB	LIO READ,X'A4'	LOAD DISK DATA ADDRESS REGISTER.
OD8C	F3	00	00	349	ASIO	SIO X'00',X'00'	ISSUE THIS COMMAND.
OD8F	38	10	0D8D	350	CKLST	TBN ASIO+1,X'10'	LAST COMMAND FOR SPINDLE -2-?
ODS3	F2	90	03	351	JMP	JF DOXIT	JUMP IF NOT.
OD96	E2	02	04	352	ININC	LA 4(,XR2),XR2	INCREMENT POINTER FOR NEXT COMMAND.
OD99	0C	01	0B25	OD35	353	DOXIT MVC WOPK(2),BSYTIM	STORE BUSY TIME-OUT VALUE.
OD9F	C0	87	0B34	354	B	DECID	SO DECIDE NEXT COMMAND.
				355	*****		
				356	* EXIT *		
				357	*****		
				358	* THIS SUBROUTINE IS A LINK BETWEEN*		
				359	* THIS MODULE AND DCP. *		
				359	*****		
ODA3	34	08	0DB5	360	EXIT	ST XIT+3,ARR	STORE MODULE RETURN ADDRESS.
ODA7	3D	A0	0A00	361	CLI	X'0A00',X'A0'	THIS MODULE IN SYSTEM TEST?
ODAB	F2	91	04	362	JF	XIT	JUMP IF NOT.
ODAE	C0	87	0A0A	363	B	SYS	RETURN TO SYSTEM SUPERVISOR.
ODB2	C0	87	0000	364	XIT	B *-*	RETURN TO MODULE.
				365	*****		
				366	* WHATX *		
				367	*		
				368	* SUBROUTINE IS CALLED WHEN A SPIN-*		
				369	* DLE DROPS READY. THE STATUS BYTES*		
				370	* ARE SENSED AND ANALYSED FOR ANY *		
				371	* ERROR CONDITIONS. *		
				371	*****		
ODB6	30	A2	0E88	372	WHATA	SNS STAT1,X'A2'	SENSE SPINDLE -1- STATUS BYTES 0 & 1.
ODBA	30	A3	0E8A	373		SNS STAT3,X'A3'	SENSE SPINDLE -1- STATUS BYTES 2 & 3
ODBE	F2	87	08	374	J	CKOUT	GO CHECK RESULTS.
ODC1	30	F2	0E88	375	WHATB	SNS STAT1,X'B2'	SENSE SPINDLE -2- STATUS BYTES 0 & 1
ODC5	30	B3	0E8A	376		SNS STAT3,X'B3'	SENSE SPINDLE -2- STATUS BYTES 2 & 3
ODC9	38	40	0E87	377	CKOUT	TBN STAT0,X'40'	INTERVENTION BIT ON?
ODCD	F2	90	0F	378	JF	OOPS	JUMP IF NOT.
ODDO	39	BF	0E87	379	TBF	STAT0,X'BF'	IS STATUS BYTE 0 AS EXPECTED?
ODD4	F2	90	07	380	JF	OOPS	JUMP IF NOT.
ODD7	39	90	0E89	381	TBF	STAT2,X'90'	IS STATUS BYTE 1 AS EXPECTED?
ODDB	F2	10	05	382	JT	NTRDY	PRINT -NOT READY- IF SO.
				383	* STATUS ERROR MESSAGE *		
ODEE	C0	87	0EAA	384	OOPS	B ERRORS	LOG ERROR - STATUS CHECK
ODE2	05			ODE2	385	DC XL1'05'	*ID -05-
ODE3	3C	03	0DE6	ODE76	386	NTRDY MVC NTRDY+3(4),JMPP	MOVE IN BRANCH COMMAND.
ODE9	C0	87	0EAA	387	B	ERRORS	LOG ERROR - NOT READY.
ODED	06			ODED	388	DC XL1'06'	*ID -06-
ODEE	C0	87	0DA3	389	JMPR	B EXIT	GO EXIT.
ODF2	38	10	0D8D	390	TBN	ASIO+1,X'10'	IS DRIVE 2 NOT READY?
ODF6	F2	10	0F	391	JT	DUMYB	JUMP IF SO.
ODF9	38	20	0A0E	392	TBN	RUDT-1,X'20'	DRIVE 2 DEFINED?
ODFD	C0	90	0CAD	393	BF	GOOF	BRANCH IF NOT.
OE01	3B	01	0CF9	394	SBF	SET,X'01'	SET UP FOR DRIVE 2 CMND.
OE05	F2	87	0E	395	J	GOSIO	
OE08	3A	01	0CF9	396	DUMYB	SBN SET,X'01'	SET UP FOR DRIVE 1 CMND.
OE0C	E2	02	04	397	SKIP	LA 4(,XR2),XR2	INCR POINTER FOR NEXT CMND.
OE0F	BD	FF	00	398	CLI	0(,XR2),X'FF'	END OF TABLE FLAG?
OE12	C0	81	0CAD	399	BE	GOOF	JUMP IF SO.
OE16	C0	87	0CFE	400	GOSIO	B SIO	GO EXECUTE THIS NEW CMND.
				401	*****		
				402	* COMMANDS TABLE *		
				403	*		
				404	* THE NEXT DISK COMMAND IS SELECTED*		
				405	* FROM THIS TABLE. THE TABLE FORMAT*		
				406	* IS AS FOLLOWS. *		
				407	*		
				408	DC	XL3'DISK CONTROL FIELD'	*
				409	DC	XL1'START I/O COMMAND'	*
				409	*****		

AOP4 DISK SYSTEM TEST MODULE

ERR	LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT	COMMANDS	LOCATIONS
				0E1A	410	CMNDS	EQU *		COMMANDS LOCATIONS
0E1A	0000FF			0E1C	411	DC	XL3'0000FF'	SEEK	TRACK 00
0E1D	A0			0E1D	412	DC	XL1'A0'		
0E1E	670167			0E20	413	DC	XL3'670167'	SEEK	CE TRACK
0E21	A0			0E21	414	DC	XL1'A0'	(HALF	CAPACITY)
0E22	670000			0E24	415	DC	XL3'670000'	WRITE	SECTOR 0
0E25	A2			0E25	416	DC	XL1'A2'		
0E26	670000			0E28	417	DC	XL3'670000'	SEEK	CE TRACK
0E29	A0			0E29	418	DC	XL1'A0'		
0E2A	670000			0E2C	419	DC	XL3'670000'	READ	SECTOR 0
0E2D	A1			0E2D	420	DC	XL1'A1'		
0E2F	08005F			0E30	421	DC	XL3'08005F'	SEEK	TRACK 8
0E31	A0			0E31	422	DC	XL1'A0'		
0E32	080800			0E34	423	DC	XL3'080800'	READ	SECTOR 2
0E35	A1			0E35	424	DC	XL1'A1'		
0E36	0F0107			0E38	425	DC	XL3'0F0107'	SEEK	TRACK 15
0E39	A0			0E39	426	DC	XL1'A0'		
0E3A	0F2800			0E3C	427	DC	XL3'0F2800'	READ	SECTOR 10
0E3D	A1			0E3D	428	DC	XL1'A1'		
0E3E	460137			0E40	429	DC	XL3'460137'	SEEK	TRACK 70
0E41	A0			0E41	430	DC	XL1'A0'		
0E42	460000			0E44	431	DC	XL3'460000'	SCAN	EQL SECTOR 0
0E45	A3			0E45	432	DC	XL1'A3'		
0E46	3C000A			0E48	433	DC	XL3'3C000A'	SEEK	TRACK 60
0E49	A0			0E49	434	DC	XL1'A0'		
0E4A	3C5C00			0E4C	435	DC	XL3'3C5C00'	READ	SECTOR 23
0E4D	A1			0E4D	436	DC	XL1'A1'		
0E4E	280014			0E50	437	DC	XL3'280014'	SEEK	TRACK 40
0E51	A0			0E51	438	DC	XL1'A0'		
0E52	290101			0E54	439	DC	XL3'290101'	SEEK	TRACK 41
0E55	A0			0E55	440	DC	XL1'A0'		
0E56	270002			0E58	441	DC	XL3'270002'	SEEK	TRACK 39
0E59	A0			0E59	442	DC	XL1'A0'		
0E5A	4C0125			0E5C	443	DC	XL3'4C0125'	SEEK	TRACK 76
0E5D	A0			0E5D	444	DC	XL1'A0'		
0E5E	4C0C00			0E60	445	DC	XL3'4C0C00'	READ	SECTOR 3
0E61	A1			0E61	446	DC	XL1'A1'		
0E62	FF			0E62	447	DC	XL1'FF'	**	END OF TABLE **
				449			*****		
				449			* CONSTANTS *		
				450			*****		
0E63	0E83			0E64	451	TSTID	DC AL2(CCWY-3)		
0E65	0E7F			0E66	452	DFCR	DC AL2(CCWA-3)		
0E67	0A1A			0E68	453		DC AL2(DATA)		
0E69	0000			0E6A	454	READ	DC AL2(*-*)		
0E6B	0B26			0E6C	455		DC AL2(ITBSY)		
0E6D	0B1A			0E6E	456	LSTAD	DC AL2(DATA+256)		
0E6F	0C26			0E70	457	LSTWP	DC AL2(ITBSY+256)		
0E71	0C27			0E72	458		DC AL2(ITBSY+257)		
0E73	C087			0E74	459		DC XL2'C087'		
0E75	0DEF			0E76	460	JMPP	DC AL2(JMPR)		
0E77	00A0			0E78	461	TIOA	DC XL2'A0'		
0E79	0DB6			0E7A	462		DC AL2(WHATA)		
0E7B	B0			0E7B	463	TIOB	DC XL1'B0'		
0E7C	0DC1			0E7D	464		DC AL2(WHATB)		
				465			****'		
0E7E	00			0E7E	466	FLAG	DC XL1'00'	FLAG	BYTE *
				467			*	BIT 2 - SPINDLE -2- HALF CAP.	*
				468			*	BIT 3 - SPINDLE -1- HALF CAP.	*
				469			*****		
				470			*		
				471			*****		
				472			* RESERVED STORAGE *		
				473			*****		
0E7F	00000000			0E82	474	CCWA	DC XL4'00000000'	CURRENT	CONTROL REGISTER STORAGE.
0E83	AA5565A8			0E86	475	CCWY	DC XL4'AA5565A8'	TEMPORARY	STORAGE OF CONTROL REG.
0E87	00			0E87	476	STAT0	DC XL1'00'	STATUS	BYTE 0 STORAGE.
0E88	00			0E88	477	STAT1	DC XL1'00'	STATUS	BYTE 1 STORAGE.

AOP4 DISK SYSTEM TEST MODULE

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	
0F89	00	0E89	478	STAT2 DC	XL1'00'	STATUS BYTE 2 STORAGE.
0E8A	00	0E8A	479	STAT3 DC	XL1'00'	STATUS BYTE 3 STORAGE.
0F8B	00	0E8B	480	BF DC	XL1'00'	FLAG BYTE STORAGE FOR -2.
0E8C	00	0E8C	481	AF DC	XL1'00'	FLAG BYTE STORAGE FOR -1.
0E8D	0000'000	0E90	482	CCWX DC	XL4'00000000'	TEMPORARY CCW STORAGE.
0F91	00	0E91	483	DC	XL1'00'	CLEARING BYTE.
		484	*****			
		485	* ERTAB *			
		486	*****			
		487	ERROR RECORDING TABLE FORMAT -			
		488	*			
		489	DISK CKS			
		490	AOXX			
		491	AOXX			
		492	*****			
		0E92	493	ERTAB EQU	*	
0E92	80C8	0E93	494	DC	XL2'8008'	
0E94	C4C9E2D240C3D2E2	0E98	495	DC	CL8'DISK CKS'	
0E9C	4002	0E9D	496	DC	XL2'4002'	
0E9E	0000	0E9F	497	DC	XL2'0000'	
0EA0	4002	0EA1	498	DC	XL2'4002'	
0EA2	0000	0EA3	499	DC	XL2'0000'	
0EA4	4002	0EA5	500	DC	XL2'4002'	
0EA6	0000	0EA7	501	DC	XL2'0000'	
0EA8	FFFF	0EA9	502	DC	XL2'FFFF'	
		503	*****			
		504	* ERROR *			
		505	*****			
		506	SUBROUTINE STORES ERROR HALT ID			
		507	IN THE ERROR LOG-OUT TABLE AND			
		508	THEN HALTS.			
		509	*****			
0EAA	38 10 0DR1	509	ERRORS TBN	TIOIT+1,X'10'	THIS A DRIVE 2 ERROR?	
0EAE	F2 10 07	510	JT	**+10	JUMP IF SO.	
0EB1	38 10 0EDF	511	SBF	HLTID-1,X'10'	SET UP FOR DRIVE 1.	
0EB5	F2 87 04	512	J	**+7		
0EB8	3A 10 0EDF	513	SBN	HLTID-1,X'10'	SET JP FOR DRIVE 2.	
0EBC	34 08 0EC5	514	ERROR ST	**+9,APP	STORE ERROR ID ADDRESS.	
0EC0	0C 00 0EDC 0000	515	MVC	HLTID(1),**	STORE THE ERROR ID.	
0EC6	C2 01 0E92	516	LA	ERTAB,XR1	INITIALIZE THE TABLE POINTER.	
		517	* UPDATE ERROR TABLE LOGOUT.			
0ECA	5C 01 0D 11	518	MVC	13(2,XR1),17(,XR1)	MOVE UP PREVIOUS ERRORS.	
0ECE	5C 01 11 15	519	MVC	17(2,XP1),21(,XR1)		
0ED2	4C 01 1' 0EDC	520	MVC	21(2,XP1),HLTID	MOVE IN LATEST ERROR.	
0ED7	C0 87 0222	521	B	HALT	ERROR HALT -AOXX-	
0EDB	A000	0EDC	522	HLTID DC	XL2'A000'	
0EDD	38 40 0E87	523	TBN	STAT0,X'40'	INTERVENTION REQUIRED?	
0EE1	C0 10 0A16	524	BT	BEGIN	BRANCH IF SO.	
0EE5	C2 02 0E1A	525	LA	CMNDS,XR2	RESET COMMAND POINTER.	
0EE9	2C 02 0E82 02	526	MVC	CCWA,2(3,XP2)	RESET COMMAND FIELD.	
0EEB	3B 07 0D8D	527	SBF	ASIO+1,X'07'	MAKE LIKE A SEEK.	
0EF2	C0 87 0D84	528	B	LIOA	GO RECALIBRATE.	
		529	*****			
		530	* EQUATES *			
		531	*****			
		0A0A	532	SYS EQU	X'0A0A'	
		0001	533	XR1 EQU	X'01'	
		0002	534	XR2 EQU	X'02'	
		0008	535	APP EQU	X'08'	
		0222	536	HALT EQU	X'0222'	
		0A1A	537	DATA EQU	BEGIN+4	START OF DISK READ IN AREA
		0E8A	538	DAP EQU	STAT3	
		0E84	539	PATRN EQU	CCWY-2	
		0E6A	540	TEMP EQU	READ	
		0A12	541	N001 EQU	BTN01	
		0D35	542	SKTIM EQU	TIMVAL+1	CODING USED FOR SEEK TIME-OUT VALUE.
		0D35	543	BSYTIM EQU	TIMVAL+1	CODING USED FOR BUSY TIME-OUT VALUE.
		0E82	544	CCWB EQU	CCWA	
		0002	545	CAP2 EQU	X'02'	HALF CAPACITY FLAG.



AOF4 DISK SYSTEM TEST MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0001 546 MOD3 EQU X'01'  
0B25 547 WORK EQU ITBSY-1  
0A16 548 END BEGIN

MOD 3 COFIGURATION FLAG.  
WORK AREA FOR TIME-OUT VALUES.

AOP4 DISK SYSTEM TEST MODULE

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AF	A	001	0E8C	0481	0246* 0316
ARR	C	001	00C8	0535	0057 0360 0514
ASIO	A	003	0D8C	0349	0156 0176 0178 0180 0193 0201 0224 0243 0252 0253 0254 0260 0308* 0309* 0310* 0313 0340 0342 0350 0390 0527*
AUDT	A	003	0A0C	0018	0069
BEGIN	A	004	0A16	0046	0136* 0524 0537 0548
BF	A	001	0E8F	0480	0249* 0332
BISY	A	004	0A9A	0095	0098 0102
BRNCH2	A	002	0B25	0142	0136
BSYTIM	A	003	0D35	0543	0258 0353
BUDT	A	003	0A0F	0019	0049 0091 0085 0099 0125 0158 0344 0392
BUSY	A	004	0A9F	0097	0084 0086
CAP2	C	001	0002	0545	0069 0085
CCWA	A	004	0E82	0474	0191 0245 0311* 0312* 0316* 0452 0526* 0544
CCWR	A	004	0E82	0544	0248 0332*
CCWX	A	004	0E90	0482	0245* 0246 0248* 0249 0250 0266
CCWY	A	004	0E86	0475	0250* 0251* 0266 0451 0539
CKDATA	A	004	0PFE	0201	0186 0188 0190
CKLST	A	004	0D8F	0350	
CKOUT	A	004	0DC9	0377	0374
CKSEEK	A	004	0C2F	0243	0230
CKST	A	004	0A3C	0057	0048 0054
CKYB	A	006	0C45	0248	0244
CKYCK	A	006	0C51	0250	0247
CKOC	A	004	0BF3	0213	0210
CLIT	A	004	0B0F	0135	0126 0128
CMNDS	A	001	0E1A	0410	0074 0205 0277 0525
CMPAR	A	004	0AB6	0111	0100 0134
DAFLG	A	004	0AE9	0125	0122
DAP	A	001	0E8A	0538	0182* 0184* 0185 0187 0189
DARCK	A	004	0B60	0176	
DATA	A	004	0A1A	0537	0203 0207 0211 0307* 0453 0456
DECID	A	004	0B34	0155	0152 0203 0307 0354
DFCR	A	002	0E66	0452	0347
DISK	A	001	0000	0003	
DOA	A	006	0D11	0315	
DOHD1	A	004	0CDE	0292	0289
DOITP	A	006	0D48	0332	0325 0327 0329
DOXIT	A	006	0D99	0353	0351
DUMYB	A	004	0E68	0396	0391
ENDEFF	A	003	0B59	0165	0162
ERPOR	A	004	0E8C	0514	0060 0095 0139
ERRORS	A	004	0EAA	0509	0153 0199 0213 0215 0234 0263 0269 0271 0384 0387
FRROE	A	004	0CA8	0271	0255
ERTAR	A	001	0E92	0493	0017 0516
FR09	A	004	0B89	0199	0192
EXIT	A	004	0DA3	0360	0155 0231 0259 0389
FIXIT	A	006	0D65	0339	0336
FLAG	A	001	0E7E	0466	0071* 0087* 0328 0330
FRDSK	A	004	0CDC	0294	0291
GOOF	A	004	0CAD	0277	0137 0142 0166 0393 0399
GOSIO	A	004	0E16	0400	0395
LOXIT	A	004	0C7F	0259	0265
HALF	A	004	0A4D	0069	0050 0055
HALT	C	001	0222	0536	0521
HPY	A	004	0A5F	0074	
HLTID	A	002	0EDC	0522	0051* 0097* 0101* 0111* 0133* 0511* 0513* 0515* 0520
ININC	A	003	0D96	0352	0331
ITBSY	A	006	0B26	0151	0160 0163 0207 0211 0455 0457 0458 0547
ITSA	A	004	0B51	0163	0157 0159
JMP	A	003	0D93	0351	0083*
JMPP	A	002	0F76	0460	0386
JMPR	A	004	0DEF	0389	0345 0460
LIOA	A	004	0D84	0347	0317* 0333* 0528
LIOB	A	004	0D88	0348	0318* 0334*
LIO1	A	003	0ABF	0111	0124 0127 0129* 0130* 0131* 0132*

AOP4 DISK SYSTEM TEST MODULE

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
LOKR	A	004	0A81	0081	0072
LSTAD	A	002	0E6F	0456	0185
LSTWR	A	002	0E70	0457	0187 0189
MOD3	C	001	0001	0546	0344
MSTK	A	004	0B1D	0139	0118 0120
NTRDY	A	005	0DE3	0396	0382 0386*
NO01	A	001	0A12	0541	0151 0232 0261
ODPS	A	004	0DDE	0394	0378 0380
PATRN	A	004	0E84	0539	0112
PDWRT	A	003	0D56	0335	0319
READ	A	002	0E6A	0454	0209 0283 0285* 0287* 0337 0337* 0339 0339* 0348 0540
RTN01	A	001	0A12	0043	0016 0541
SEKBCS	A	006	0BFD	0223	0177
SET	A	004	0CF9	0309	0161* 0164* 0278* 0394* 0396*
SETR	A	004	0CFD	0310	0294 0296* 0298*
SET100	A	004	0A5P	0073	0070
SIO	A	006	0CFE	0307	0179 0198 0202 0206 0208 0212 0267 0293 0400
SIOP	A	006	0D28	0323	0314
SKIP	A	003	0E0C	0397	
SKTIM	A	003	0D35	0542	0223
SNSIT	A	004	0C03	0224	0233
STAT0	A	001	0E87	0476	0377 0379 0523
STAT1	A	001	0E88	0477	0046* 0052* 0058 0115* 0117 0195* 0197* 0226* 0228* 0229 0372* 0375*
STAT2	A	001	0E89	0478	0381
STAT3	A	001	0E8A	0479	0047* 0053* 0116* 0119 0373* 0376* 0538
STCK	A	004	0A44	0059	0057*
STHDA	A	004	0D06	0312	0288 0290* 0292*
SYS	C	001	0A0A	0532	0363
TEMP	A	002	0E6A	0540	0073* 0075 0076 0077 0078 0079 0080
TIMVAL	A	003	0D34	0326	0542 0543
TIO	A	004	0C96	0265	0260* 0262
TIOA	A	002	0E78	0461	0315
TIOB	A	001	0E78	0463	0323
TIOID	A	004	0C6D	0255	0254*
TIOIT	A	004	0D80	0346	0315* 0323* 0341 0343 0509
TRNOFF	A	004	0CC3	0297	0284
TRNON	A	004	0CEA	0298	0295
TSTID	A	002	0E64	0451	0256
VER	A	003	0C75	0257	0252* 0253*
WHATA	A	004	0DB6	0372	0462
WHATB	A	004	0DC1	0375	0464
WOPK	A	006	0B25	0547	0151* 0223* 0232* 0258* 0261* 0353*
XFFR	A	004	0BFR	0215	0204
XIT	A	004	0DB2	0364	0360* 0362
XR1	C	001	0001	0533	0074* 0075 0076 0077 0078 0079 0080 0112* 0113 0114 0117 0119 0121 0123 0123* 0135 0135 0516* 0518 0518 0519 0519 0520 0165 0205 0277* 0308 0311 0324 0326 0335 0352 0352* 0397 0397*
XR2	C	001	0002	0534	0278 0525* 0526

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

AOF4 DISK SYSTEM TEST MODULE

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T<-Y2Y S S B/H	+JDA . S SC	""3BSCY-0Y0:H0H*	H C--R-#2UBS:D #	S<.4+SCB3 C %IKD	)F5UG08<A0F40001
T<EZUCY, /OY@BY*	J( -HJ3-SCYT U	OH**? D8 -Y<@Z	G+/ +->HGIT1UCW,	B S8EL- .2%UGJ-	SC MA:A8A0F40002
T<SDOA 9DL- FCWZ	+ -+FUR C 9DL-	SCWZ+ AQ+ET--B-#	2D *@ 6NBY*E+ H	HC"H8BLY .KQ-F1Q	JC *BKCVA0F40003
T< ,GH 9=OH**? H	#D *\$0HHHT--B-#	2U -:D *\$0HHHT%	SC_?B S:D*E8 *EQ	<H5+S 0ISH;F/<	1B005N/4A0F40004
T<O, #<HQ+S04A :	H@-EILSD CY, 2 %E	'D C2-8-K 8G /0D	=+B HC?H8G3-8B,"	2DA-:D D"+- 2%28	-D -C:IYA0F40005
T. S3ZD ,B+ / H1LY	8R5U:D *\$0H*H>V0	IA-*< 0Y9B2P /02	_OH**? G /02_COD	.IS B4ZIR *F/H	+B-QB), MA0F40006
T<S_BB/.2/ P /0:	DB<BGC<8D 6 (3/	K+B HC?H8B8F2B2Q	* S39BY*H0EH.ITY	AC W"0 .SYTG1-	JCS-A@2UA0F40007
T.O>.0HD<, LUGCQ7	2DIQ8 06 (0A <#T-	8CQ72D *0Z :HBY*	D<.S+S-4ACYY+\$?H	A /4A H8S-UGJQ	KC-*CQI%0F40008
T< >@CYI+* HAH04	ACYI+*?HAHT4 CX"	2-JQ8D 6 (3/ 8<HH	+S HGACB2CYT /03	>OH**D- 0.B-/F/<	<B-<AL2UA0F40009
T.O?%BL-BCQ7 D 3	>C-><<0%PBYDZT8H	CT  S3>C->.F80	V0HD<#T-8CW32U Y	("0%P BAYTB ;F/Q	+C -D43<A0F40010
T< 0)CB8 -83>OH*	+D-3 /0:DB-0AB2M	((L-8CQ72H *0%-:	HBY*D<HH+SC-8CYT	2UA  /0 ,I2 8EJK	+8%MA@2@A0F40011
T. -1<CE<  S%VB/.	/ 0C0H**D-*8D 6	(2/  C <+U :8C	+T : (BY* <C <+U :	8C .BYTHJ48E @	.A0MA0H<A0F40012
T. 19CY%+T80CCYQ	+HC?"CYQH 16CQ4	H 12CQ4H 1>CQ7	A 2Y<EQ+R +/ 8C	A KH1@)FJ*LD84	IA0<A0Z4A0F40013
T. -2YB2M ((%BGC<E<	H 2PCQ4  S%VB/.	2/ P /0:DB<FSC88	( :+CYL2-M? /0:	DA< .RMTG1YLD84	.A0<A-H@A0F40014
T<83E/0:DC%HBC/Y	: 839+ D+\$ H8A3Y	ACW32/08# 89%+ D	(A?H8A3YAC8\$2/0*	* 84F8Y* .2-/GJQ	1B0*B;8@A0F40015
T< 4.DT-AC 72D *	: 83BY*D+0D<"83	"B1H<<20 CQ4C+1	(TLVHCQ4% -:B T>	CYD8D >HKM/GA-	0D-8D8\$8A0F40016
T. 04#CQ72DA* <-6	CCXY< 9"CY0#D 6	F+1 (S-HG.-0BCQ<	+<8-A "H8E.-B "H	8CE-0 HJ@8EA	+B--A78@A0F40017
T< 5%CX*2D *9@ 9	=@ZA+C +>0: .+ /	(/LY8CQW'Y- 2-8U	< 89DCWT2/0Q< 89	DCW08D >.BMTFJM	JCO-AJQYA0F40018
T<-6-CQ72U 88B 6	(@Z G+ DHC"H88\$%D	12-9W<8E+8?<	C-8CQ72U IS -8	< S%VCLP CD?IJ8	8CO-AEJHA0F40019
T<87J/0%4 ( - (L6	-B-C2-8L /0YH0H*	CBSCY-0Y0:HBY*	H<.H+SCB3CYI88 :	G8Z ++\$@ %H88	)F80B@E@A0F40020
T< 8RCY-2U *9- :	I@/ P0H**D-M< 07	WCX\$ /0:DA%BGC<E<	8D 6 (2/  +B HC8B	8CH4# S >H8<-F/Q	MC0-A;K8A0F40021

AOP4 DISK SYSTEM TEST MODULE

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T(-89CIX2/0R: E3	9R-ND?-@ OHDK,*B	GC+8  =-ROEXYF*	HIX B-RO YE-	P: HB B/CODGY	OD--AK2-AOP40022
T( 9>C2- YMQA(:A	F RTI HYC1* HD	Y AK-HEDAYB* DA	< KO-L O Y-@+-09	"B/Y %WB1Y CE	2.SOD*HYAOP40023
T(E:UCBQ<I@BGC;8	Y 66% 7A B	DNOOY	B R<LI@_I O'	SE H D B A 8	.AO<A:24AOP40024
T<O*Q " " @SD 6	A@/ G+1 +6" HGACY	EC_%4B #EC +7	0-D+UVOACJE* JD	NL DXC_3 /O 1IA8	EE-@HOE8AOP40025
TG #5 SH- C/ CY-	D YOO-H+FSOBCYH	B+0*(T*BGCQ@			GA- LC0%G48-AOP40026
EB/R*E7*=-DC"PH\$	= "7%SF    C	P% ASC R A	SO Q	15050501700	617717:HAOP40027

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