

**IBM** Customer Engineering  
Maintenance Manual

**IBM 7040-7044 Data Processing Systems  
Channel A**



**Maintenance Manual**  
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**Channel A**

## PREFACE

This manual describes the instructions used to operate the devices found on channel A of the IBM 7040-7044 Data Processing System. Units covered in this manual are: tape units (IF 0), 1402 card reader-punch and 1403 printer (IF 1, 2, and 3), console printer (typewriter) on IF 4, and the IBM 1401 Data Processing System (IF 5).

This manual describes the instructions for activating the outputs of the decoder stages in the central processing unit, for activating important lines in channel A, taking these lines across the interface into the associated 1414 I-O synchronizer, activating important lines back across the interface into channel A where the operation is terminated.

Included in this manual is a comment sheet for your convenience in offering suggestions regarding the presentation of the materials. We would like to call to your attention that it is YOUR comments, suggestions, and criticisms that determine the format for future manuals. Your comments are appreciated; therefore, we urge you to feel free to write or call your comments into us.

Note that engineering changes may alter logic, timing, and machine functions, causing an I-O device to function differently from the descriptions presented here. If you find that engineering changes have seriously altered any information in this manual and have made the information useless, again, fill out the comment sheet in order that this will be brought to our attention.

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50	RDSA +0762; PRDA -1762 IF 0 Timing	54	103	RCHA +0540 (WRS) IF 3 (Punch) Logic Flow	91
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54	RCHA +0540 (RDS) IF 0 Logic Flow	57			
55	RCHA +0540 (RDS) IF 0 2nd Level ALD Logic	58			



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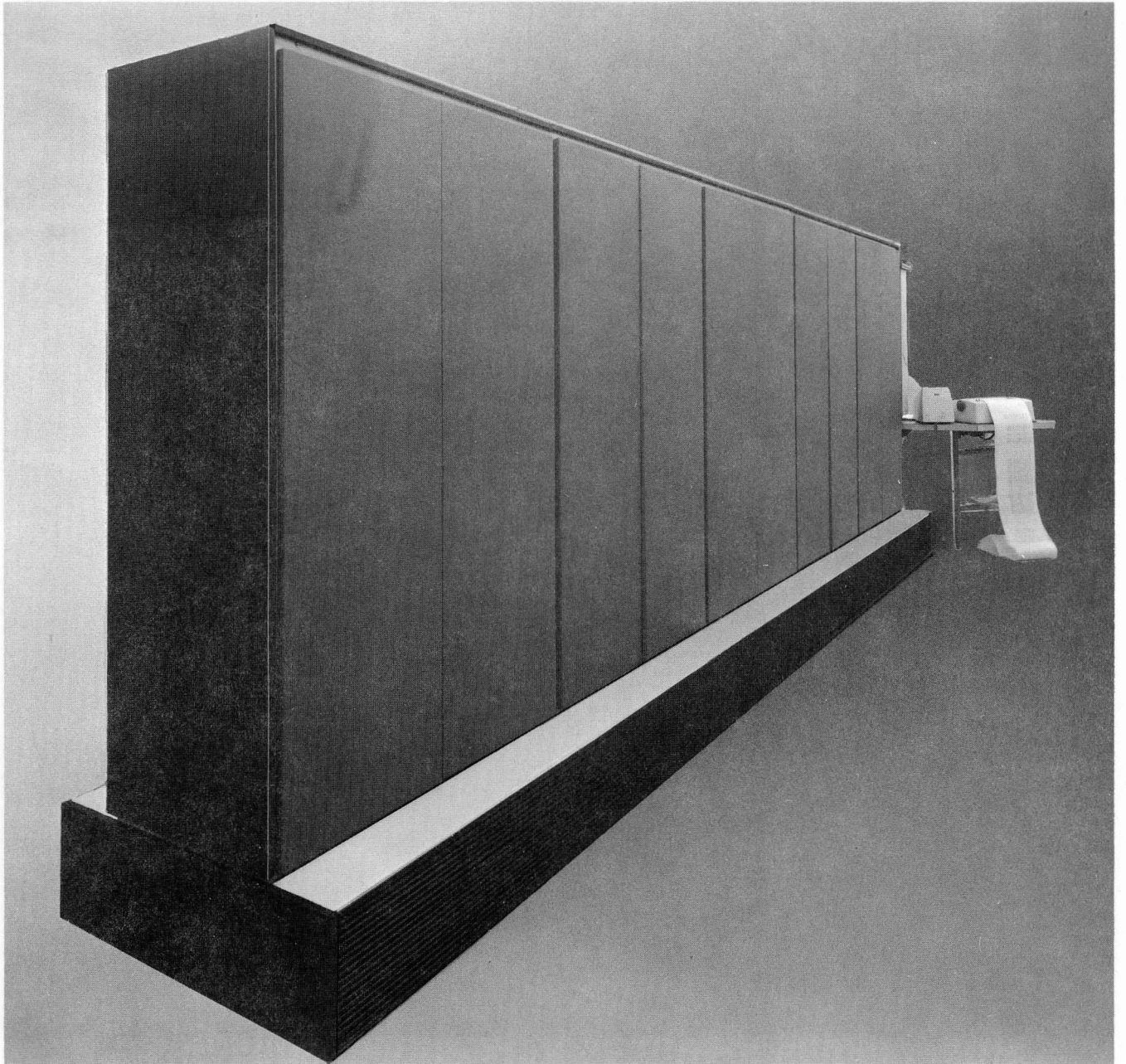
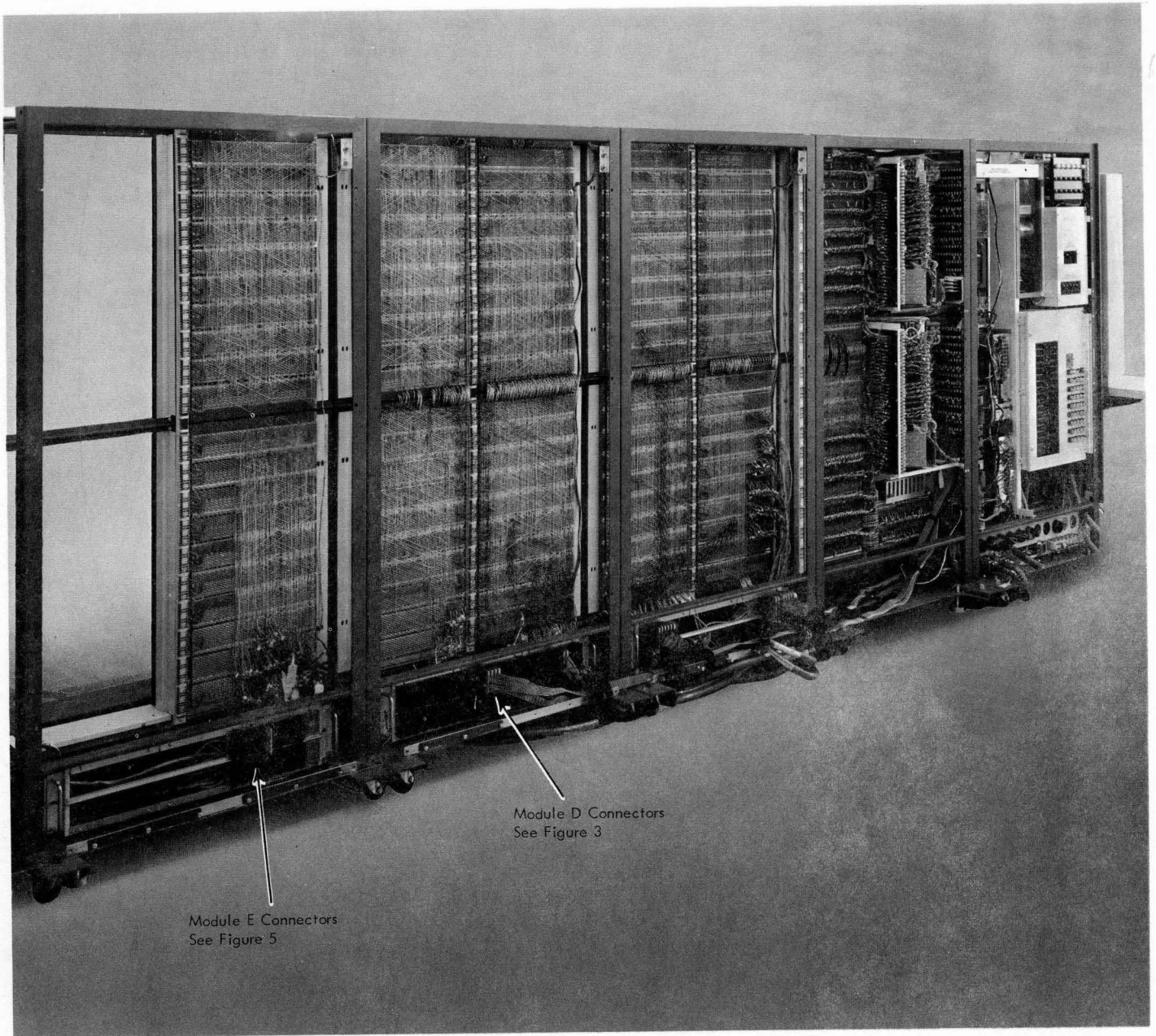


FIGURE 1. 7040-7044 DPS



Module E Connectors  
See Figure 5

Module D Connectors  
See Figure 3

FIGURE 2. DATA PROCESSING SYSTEMS WITHOUT I.F 1 AND 2



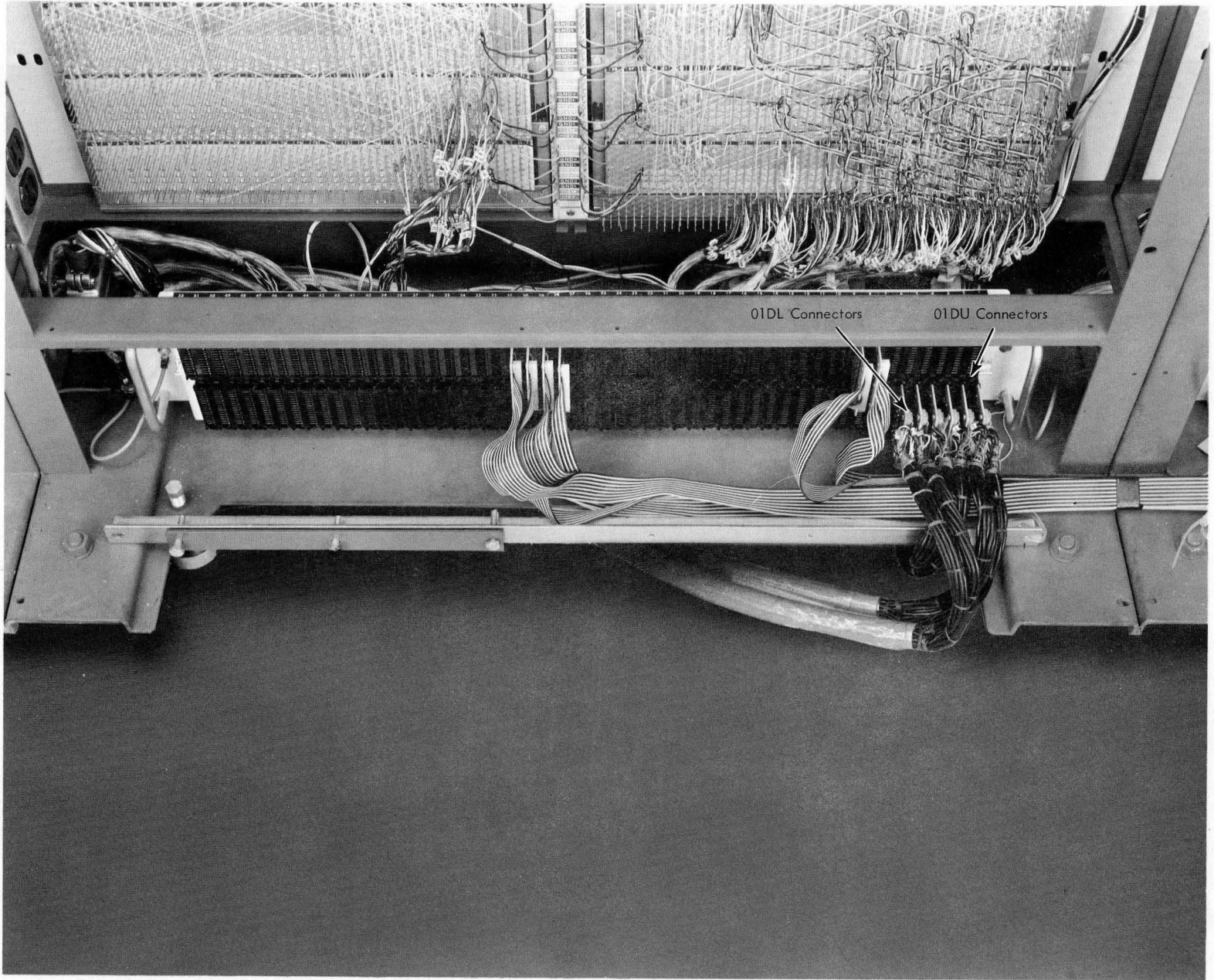
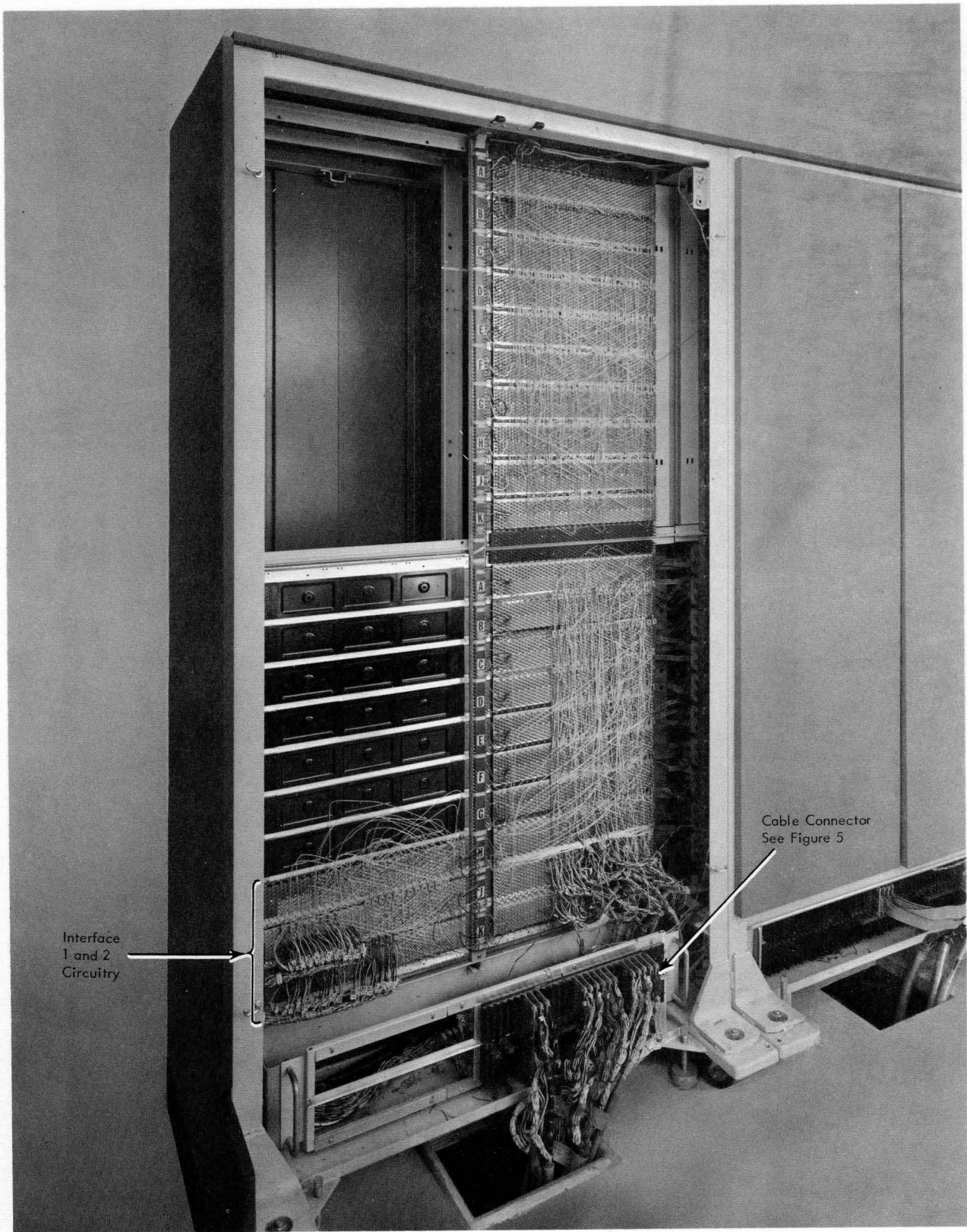


FIGURE 3. 7040-7044 DPS MODULE D CONNECTORS



Interface  
1 and 2  
Circuitry

Cable Connector  
See Figure 5

FIGURE 4. 7040-7044 DPS, MODEL E WITH IF 1 AND 2



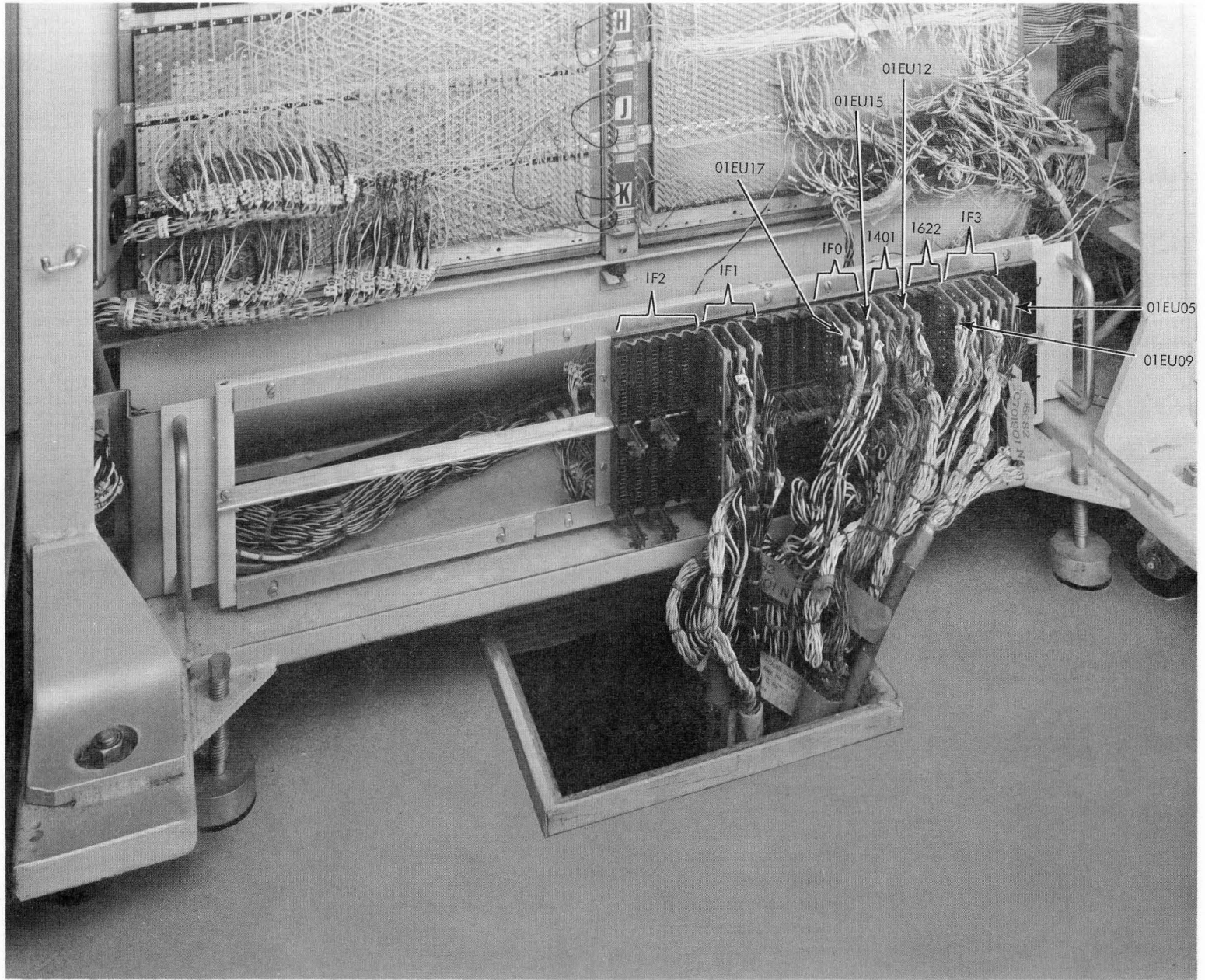
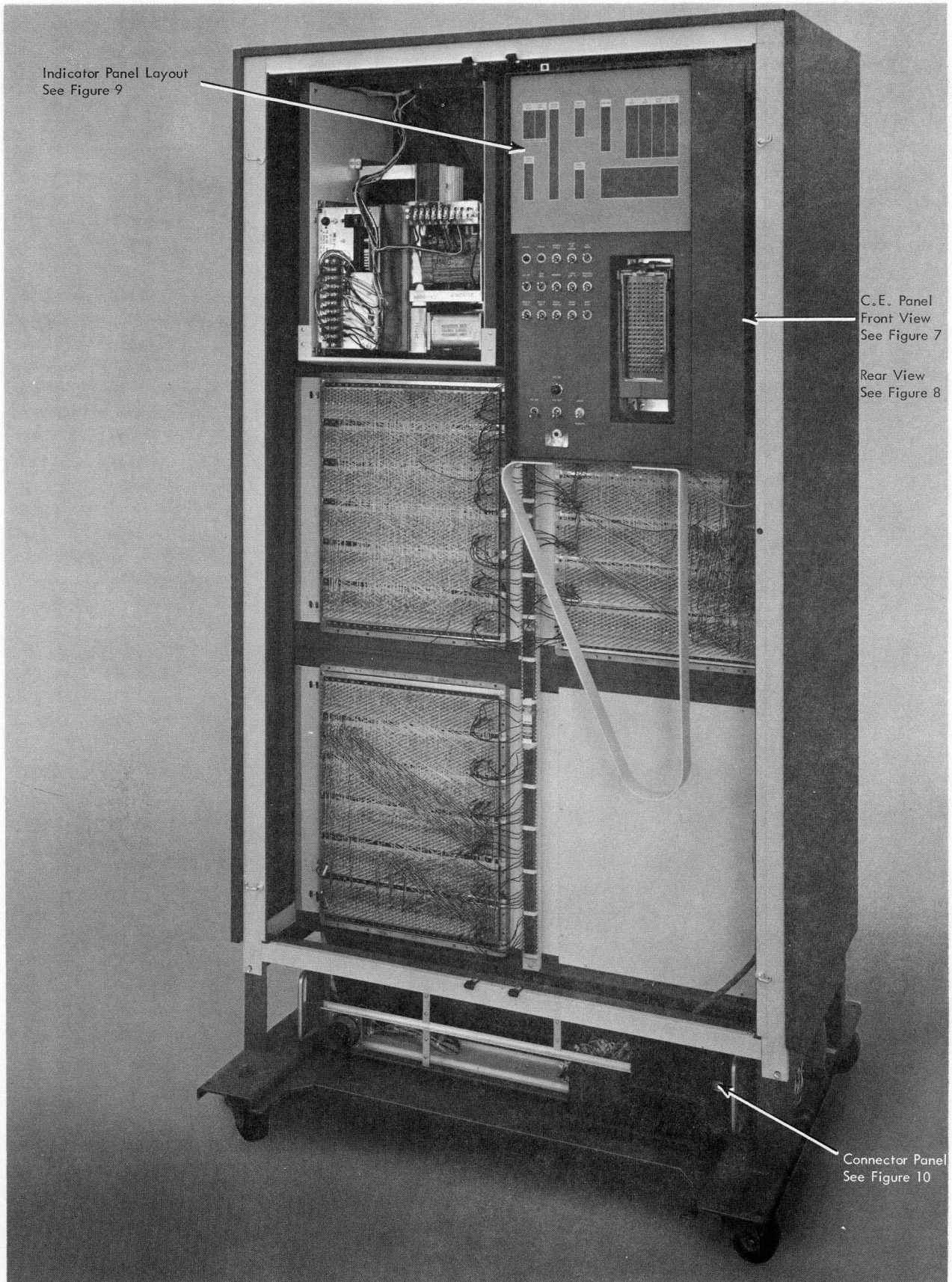


FIGURE 5. 7040-7044 DPS, MODULE E CONNECTOR PANEL



Indicator Panel Layout  
See Figure 9

C.E. Panel  
Front View  
See Figure 7

Rear View  
See Figure 8

Connector Panel  
See Figure 10

FIGURE 6. 1414-2 I-O SYNCHRONIZER



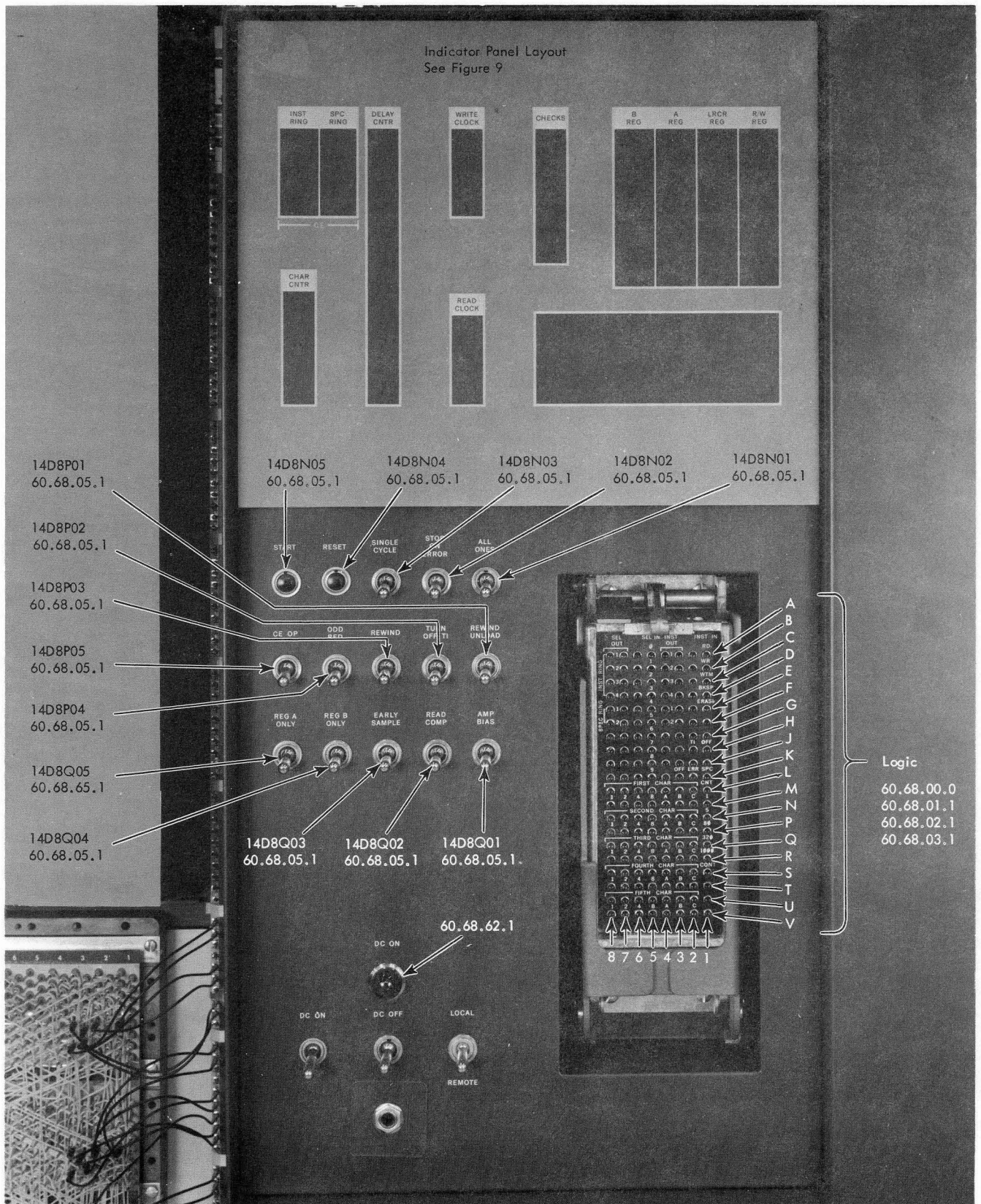


FIGURE 7. 1414-2 I-O SYNCHRONIZER C.E. PANEL (FRONT)



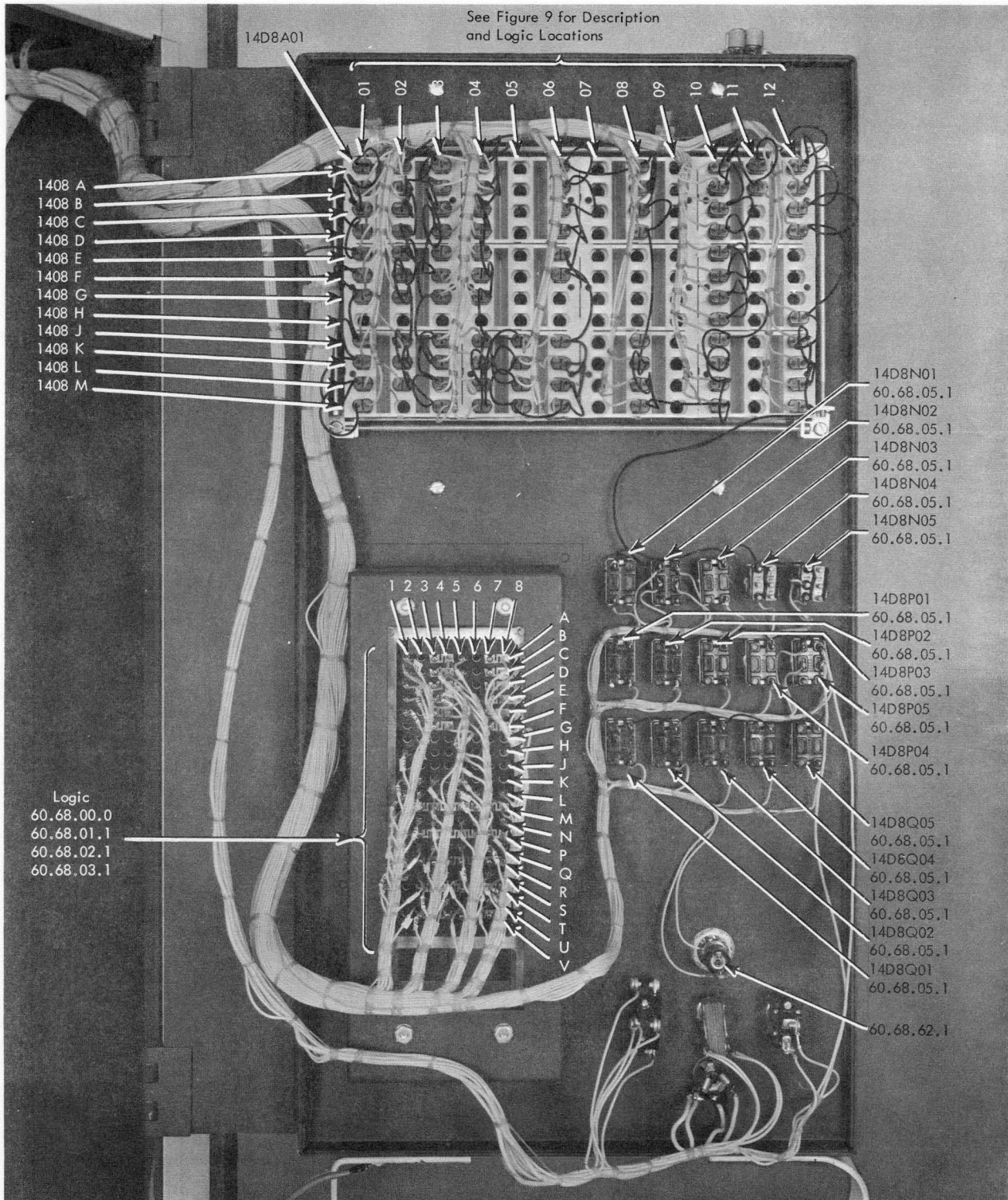


FIGURE 8. 1414-2 I-O SYNCHRONIZER CE PANEL (REAR)

Inst Ring 4 14D8A12 60.68.62.1	SPC Ring 2 14D8A11 60.68.62.1	Delay Cntr 2048 14D8A10 60.68.62.1		Write Clock 8 14D8A08 60.68.60.1		Checks Error 14D8A06 60.68.61.1		B Reg C 14D8A04 60.68.61.1	A Reg C 14D8A03 60.68.60.1	LRCR Reg C 14D8A02 60.68.60.1	R/W Reg C 14D8A01 60.68.60.1
3 14D8B12 60.68.62.1	1 14D8B11 60.68.62.1	1024 14D8B10 60.68.62.1		4 14D8B08 60.68.60.1		A-Reg 14D8B06 60.68.61.1		B 14D8B04 60.68.61.1	B 14D8B03 60.68.60.1	B 14D8B02 60.68.60.1	B 14D8B01 60.68.60.1
2 14D8C12 60.68.62.1		512 14D8C10 60.68.62.1		2 14D8C08 60.68.60.1		R/W VRC 14D8C06 60.68.61.1		A 14D8C04 60.68.61.1	A 14D8C03 68.68.61.1	A 14D8C02 60.68.60.1	A 14D8C01 60.68.60.1
1 14D8D12 60.68.62.1		256 14D8D10 60.68.62.1		1 14D8D08 60.68.60.1		Echo 14D8D06 60.68.60.1		8 14D8D04 60.68.60.1	8 14D8D03 60.68.60.1	8 14D8D02 60.68.60.1	8 14D8D01 60.68.60.1
		128 14D8E10 60.68.62.1				Skew 14D8E06 60.68.61.1		4 14D8E04 60.68.61.1	4 14D8E03 60.68.60.1	4 14D8E02 60.68.60.1	4 14D8E01 60.68.60.1
		64 14D8F10 60.68.62.1				Comp 14D8F06 60.68.60.1		2 14D8F04 60.68.61.1	2 14D8F03 60.68.60.1	2 14D8F02 60.68.60.1	2 14D8F01 60.68.60.1
		32 14D8G10 60.68.62.1						1 14D8G04 60.68.61.1	1 14D8G03 60.68.60.1	1 14D8G02 60.68.60.1	1 14D8G01 60.68.60.1
Char Cntr 640 14D8H12 60.68.62.1		16 14D8H10 60.68.62.1									
320 14D8J12 60.68.62.1		8 14D8J10 60.68.62.1		Read Clock 8 14D8J08 60.68.60.1		Write 14D8J06 60.68.61.1	Read 14D8J05 60.68.61.1	WTM 14D8J04 60.68.61.1	Go 14D8J03 60.68.61.1	Wr Rel 14D8J02 60.68.62.1	No Echo 14D8J01 60.68.62.1
80 14D8K12 60.68.62.1		4 14D8K10 60.68.62.1		4 14D8K08 60.68.60.1		Wr Cond 14D8K06 60.68.61.1	Read Cond 14D8K05 60.68.61.1	Bksp 14D8K04 60.68.61.1	First Char 14D8K03 60.68.61.1	Load Point 14D8K02 60.68.62.1	Fwd Stp Del 14D8K01 60.68.62.1
5 14D8L12 60.68.62.1		2 14D8L10 60.68.62.1		2 14D8L08 60.68.60.1		Wr Delay 14D8L06 60.68.61.1	Read Delay 14D8L05 60.68.61.1	Bkwd 14D8L04 60.68.61.1	Check Char 14D8L03 60.68.61.1	Odd Rcd 14D8L02 60.68.62.1	Rewind 14D8L01 60.68.62.1
1 14D8M12 60.68.62.1		1 14D8M10 60.68.62.1		1 14D8M08 60.68.60.1		WDD 14D8M06 60.68.61.1	RDD 14D8M05 60.68.61.1	Erase 14D8M04 60.68.61.1	Disc 14D8M03 60.68.61.1		Rewind Unload 14D8M01 60.68.62.1

FIGURE 9. 1414-2 I-O SYNCHRONIZER CE PANEL INDICATORS (FRONT)

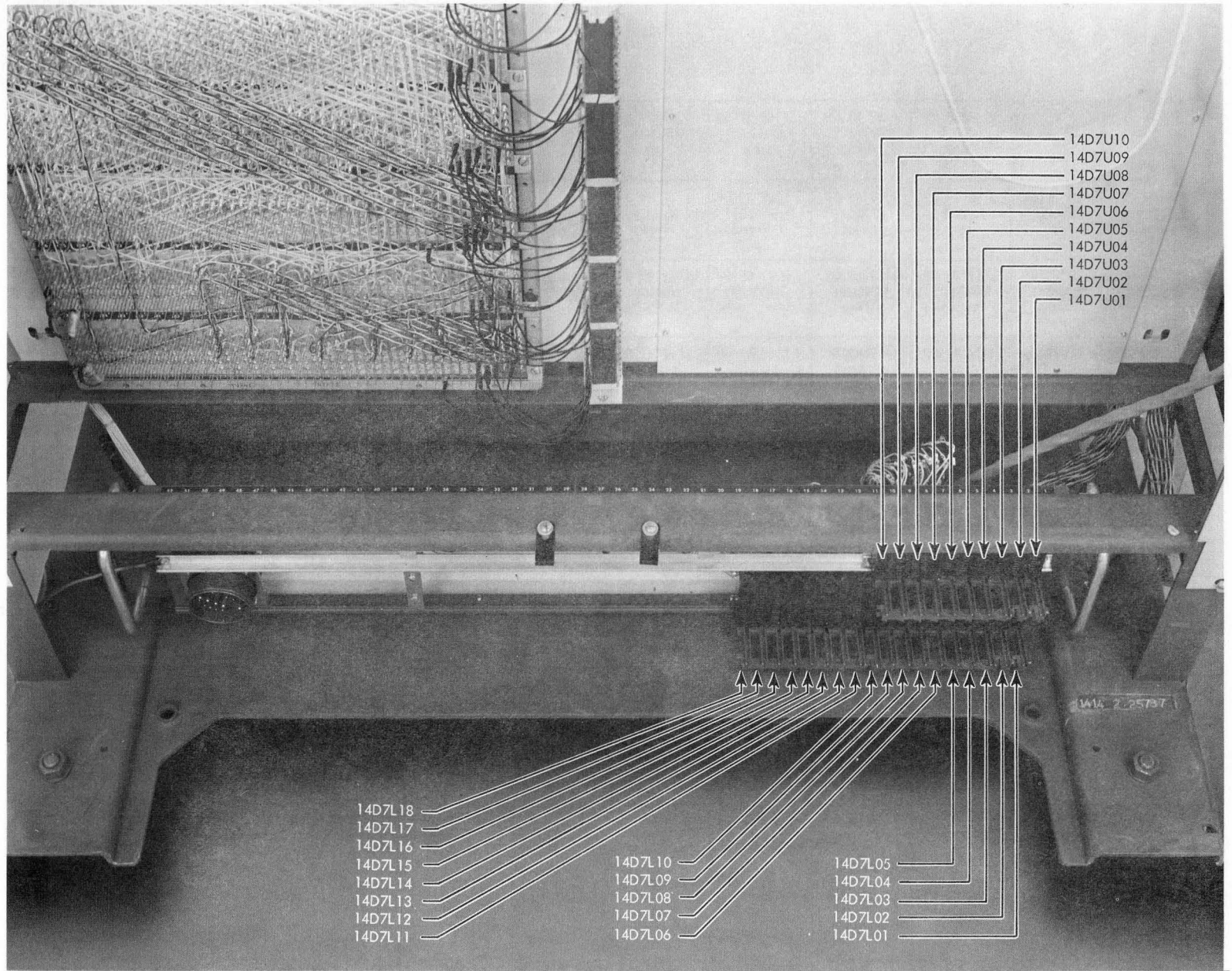


FIGURE 10. 1414-2 I-O SYNCHRONIZER CONNECTOR PANEL



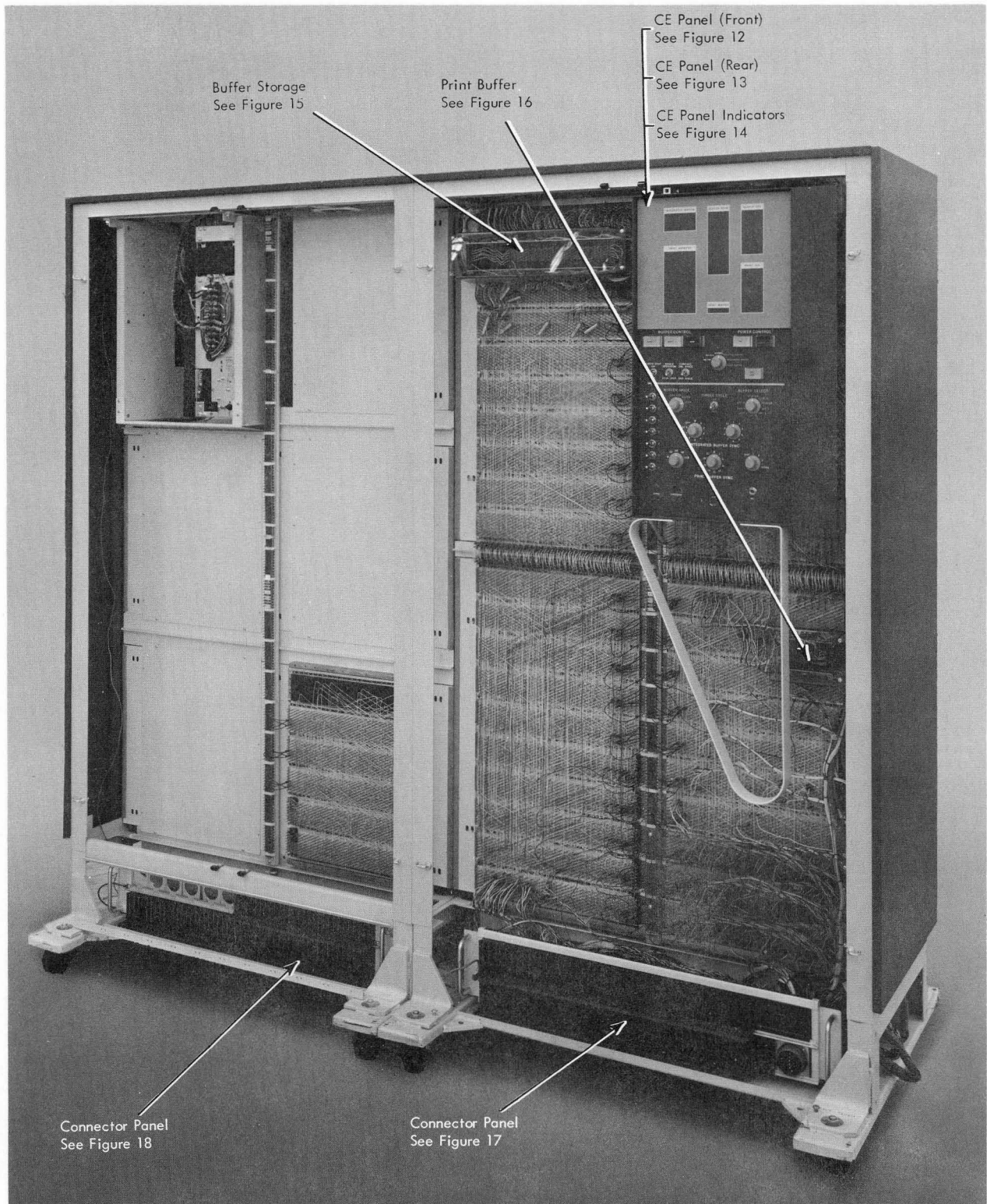


FIGURE 11. 1414-4 I-O SYNCHRONIZER

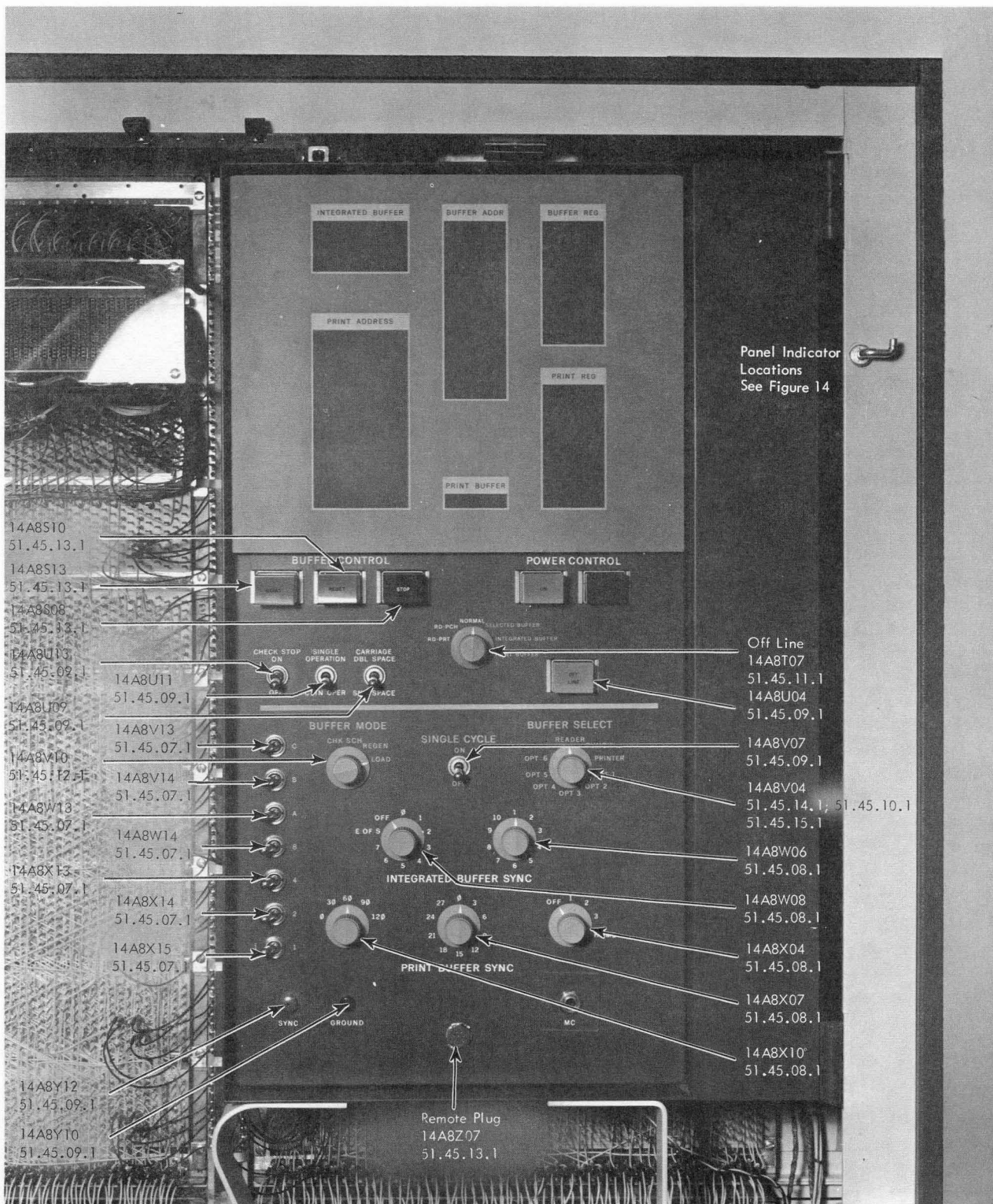


FIGURE 12. 1414-4 I-O SYNCHRONIZER CE PANEL (FRONT)



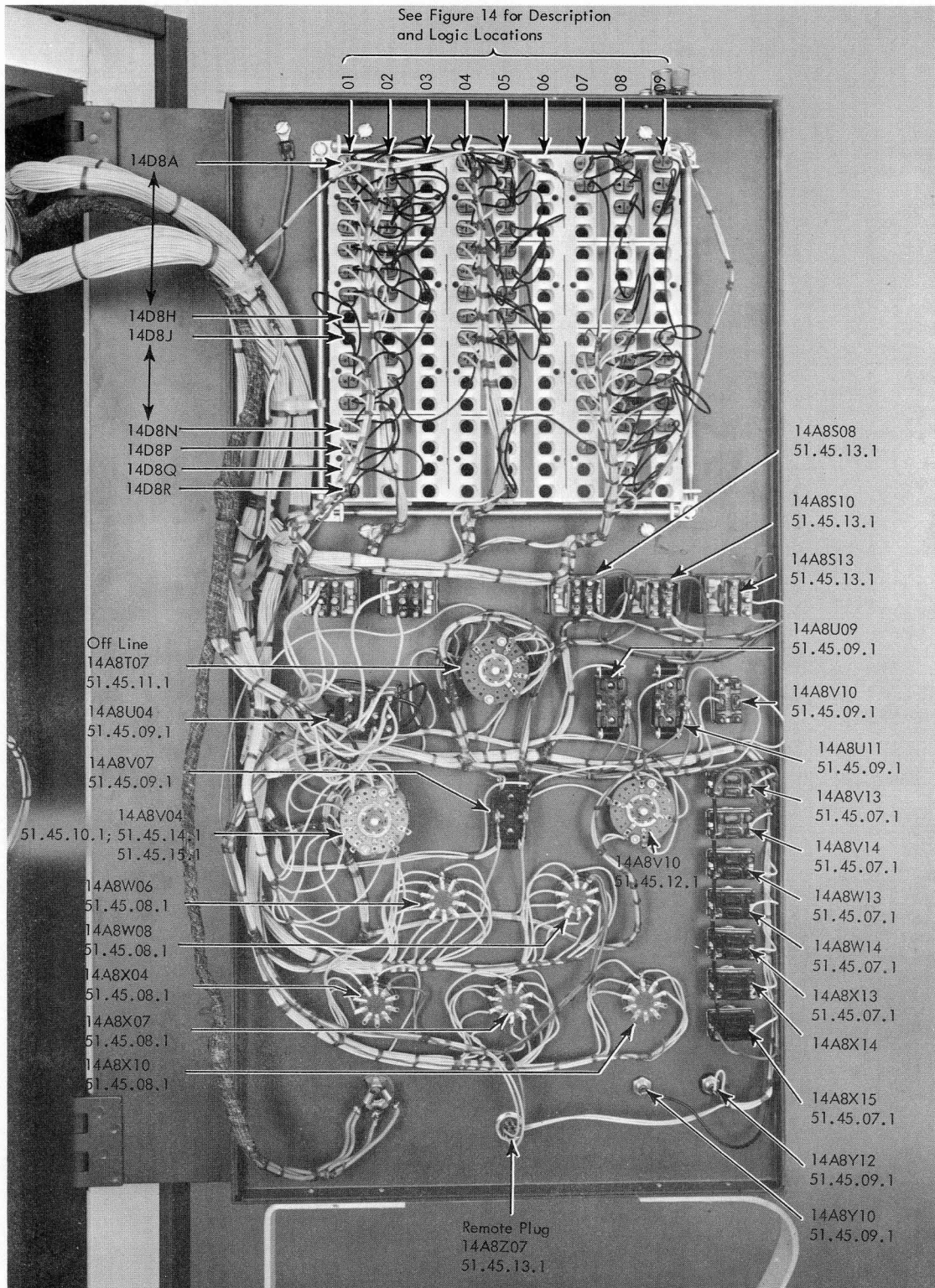


FIGURE 13. 1414-4 I-O SYNCHRONIZER CE PANEL (REAR)

BUFFER REG		BUFFER ADDR		INTEGRATED BUFFER		
C 14A8A01 51.45.03.1	14A8A02 51.45.02.1	1 14A8A04 51.45.01.1	0 14A8A05 51.45.01.1	Opt 1 14A8A07 51.45.04.1	Pch 14A8A08 51.45.04.1	Rd 14A8A09 51.45.04.1
B 14A8B01 51.45.03.1	YL 14A8B02 51.45.02.1	2 14A8B04 51.45.01.1	1 14A8B05 51.45.01.1	Opt 4 14A8B07 51.45.04.1	Opt 3 14A8B08 51.45.04.1	Opt 2 14A8B09 51.45.04.1
A 14A8C01 51.45.03.1	XU 14A8C02 51.45.02.1	3 14A8C04 51.45.01.1	2 14A8C05 51.45.01.1		Opt 6 14A8C08 51.45.04.1	Opt 5 14A8C09 51.45.04.1
8 14A8D01 51.45.03.1	XL 14A8D02 51.45.02.1	4 14A8D04 51.45.01.1	3 14A8D05 51.45.01.1			
4 14A8E01 51.45.03.1	Check Search 14A8E02 51.45.02.1	5 14A8E04 51.45.01.1	4 14A8E05 51.45.01.1			
2 14A8F01 51.45.03.1	Ring Check 14A8F02 51.45.01.1	6 14A8F04 51.45.01.1	5 14A8F05 51.45.01.1			
1 14A8G01 51.45.03.1	Clock Check 14A8G02 51.45.01.1	7 14A8G04 51.45.01.1	6 14A8G05 51.45.01.1	PRINT ADDRESS		
		8 14A8H04 51.45.01.1	7 14A8H05 51.45.01.1		0 14A8G08 51.45.05.1	
		9 14A8J04 51.45.01.1	End of Scan 14A8J05 51.45.01.1		3 14A8H08 51.45.05.1	
PRINT REG		10 14A8K04 51.45.01.1			6 14A8J08 51.45.05.1	0 14A8J09 51.45.05.1
C 14A8K01 51.45.06.1	Hammer Check 14A8K02 51.45.06.1			1 14A8K07 51.45.05.1	9 14A8K08 51.45.05.1	30 14A8K09 51.45.05.1
B 14A8L01 51.45.06.1	Print Compare 14A8L02 51.45.06.1			2 14A8L07 51.45.05.1	12 14A8L08 51.45.05.1	60 14A8L09 51.45.05.1
A 14A8M01 51.45.06.1				3 14A8M07 51.45.05.1	15 14A8M08 51.45.05.1	90 14A8M09 51.45.05.1
8 14A8N01 51.45.06.1					18 14A8N08 51.45.05.1	120 14A8N09 51.45.05.1
4 14A8P01 51.45.06.1				Home 14A8P07 51.45.05.1	21 14A8P08 51.45.05.1	
2 14A8Q01 51.45.06.1					24 14A8Q08 51.45.05.1	
1 14A8R01 51.45.06.1		PRINT BUFFER			27 14A8R08 51.45.05.1	
			Print 14A8R05 51.45.06.1			

FIGURE 14. 1414-4 I-O SYNCHRONIZER CE PANEL INDICATORS (REAR)



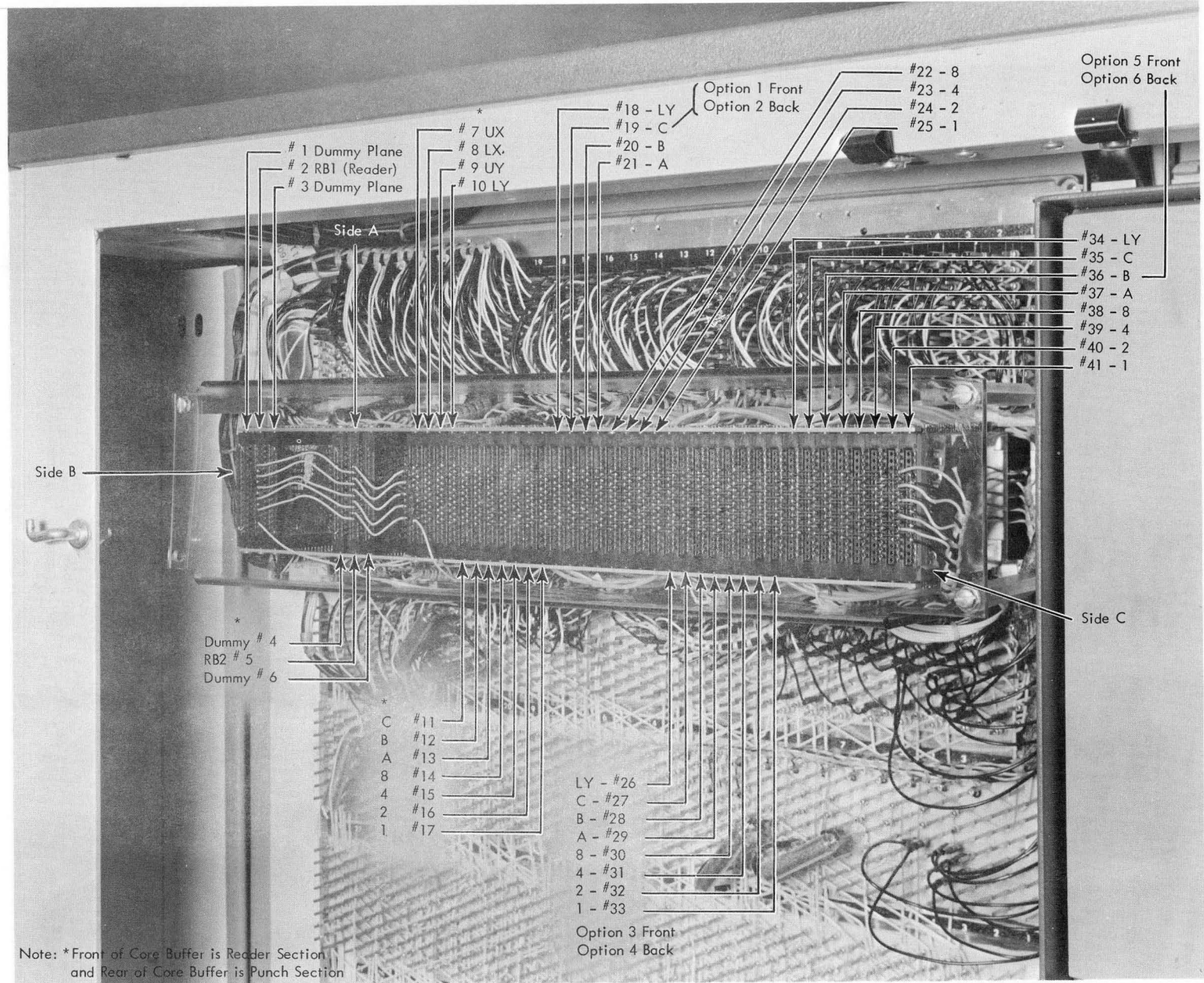


FIGURE 15. 1414-4 I-O SYNCHRONIZER BUFFER STORAGE



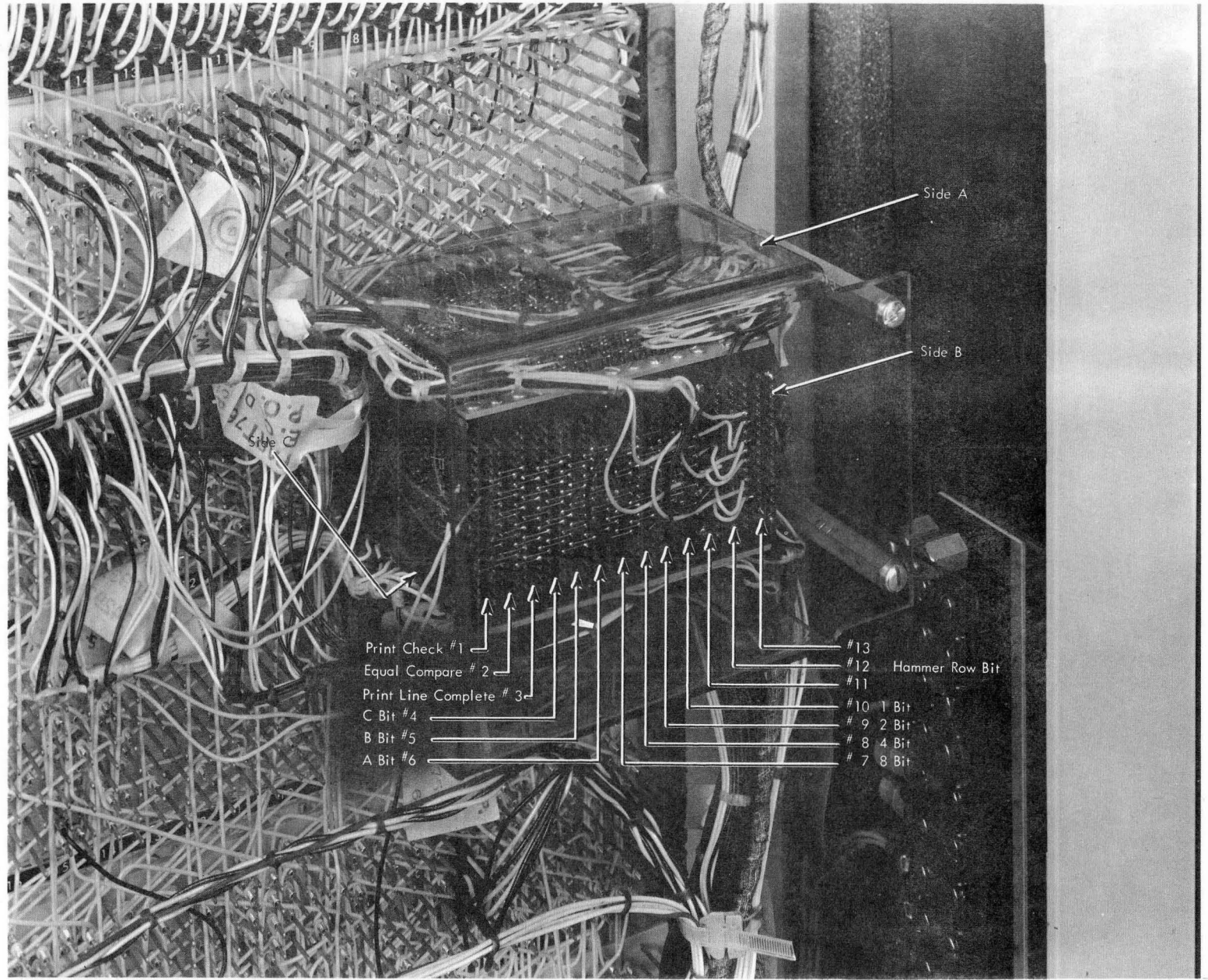


FIGURE 16. 1414-4 I-O SYNCHRONIZER PRINTER BUFFER

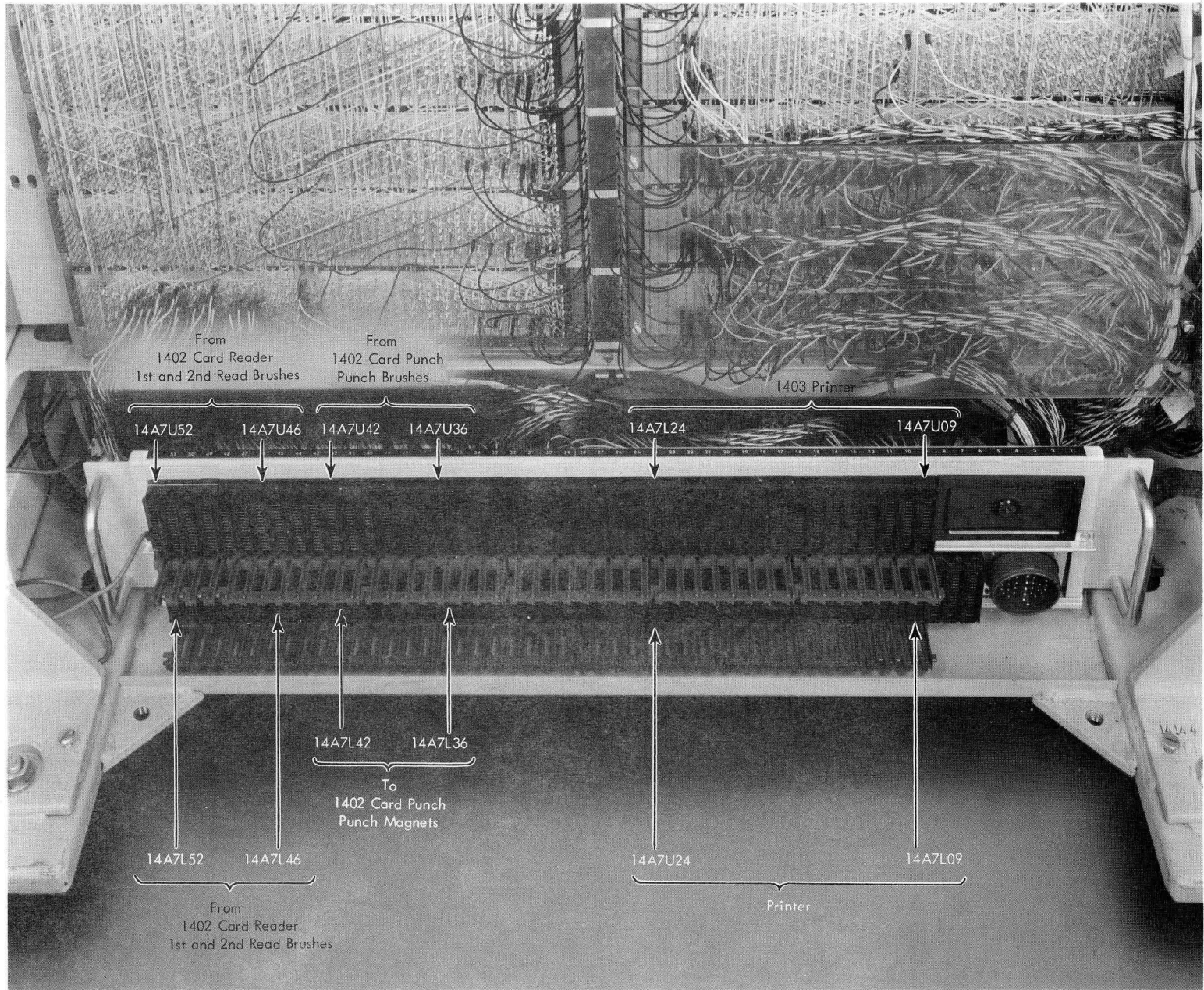


FIGURE 17. 1414-4 I-O SYNCHRONIZER CONNECTOR PANEL A7



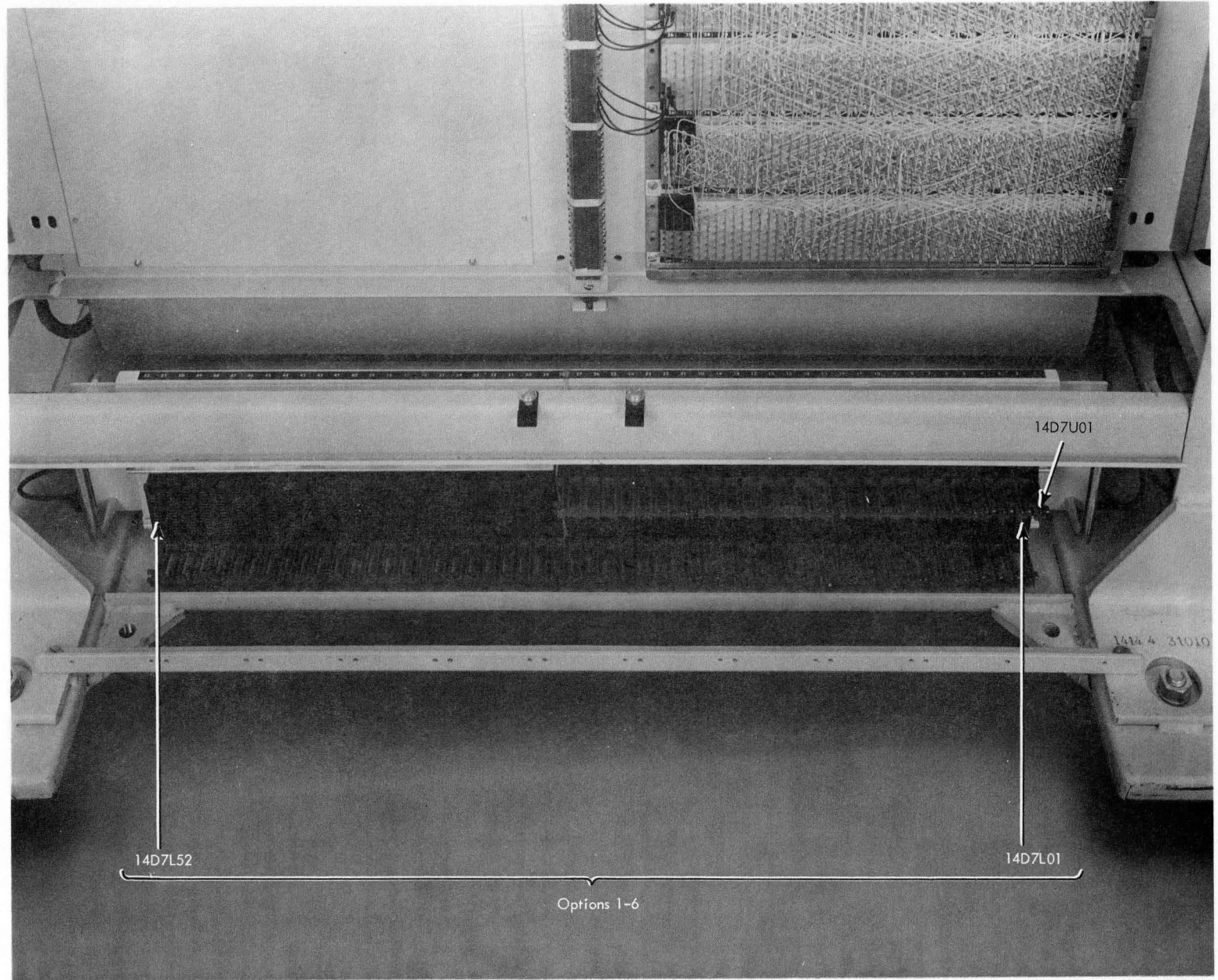


FIGURE 18. 1414-4 I-O SYNCHRONIZER CONNECTOR PANEL D7

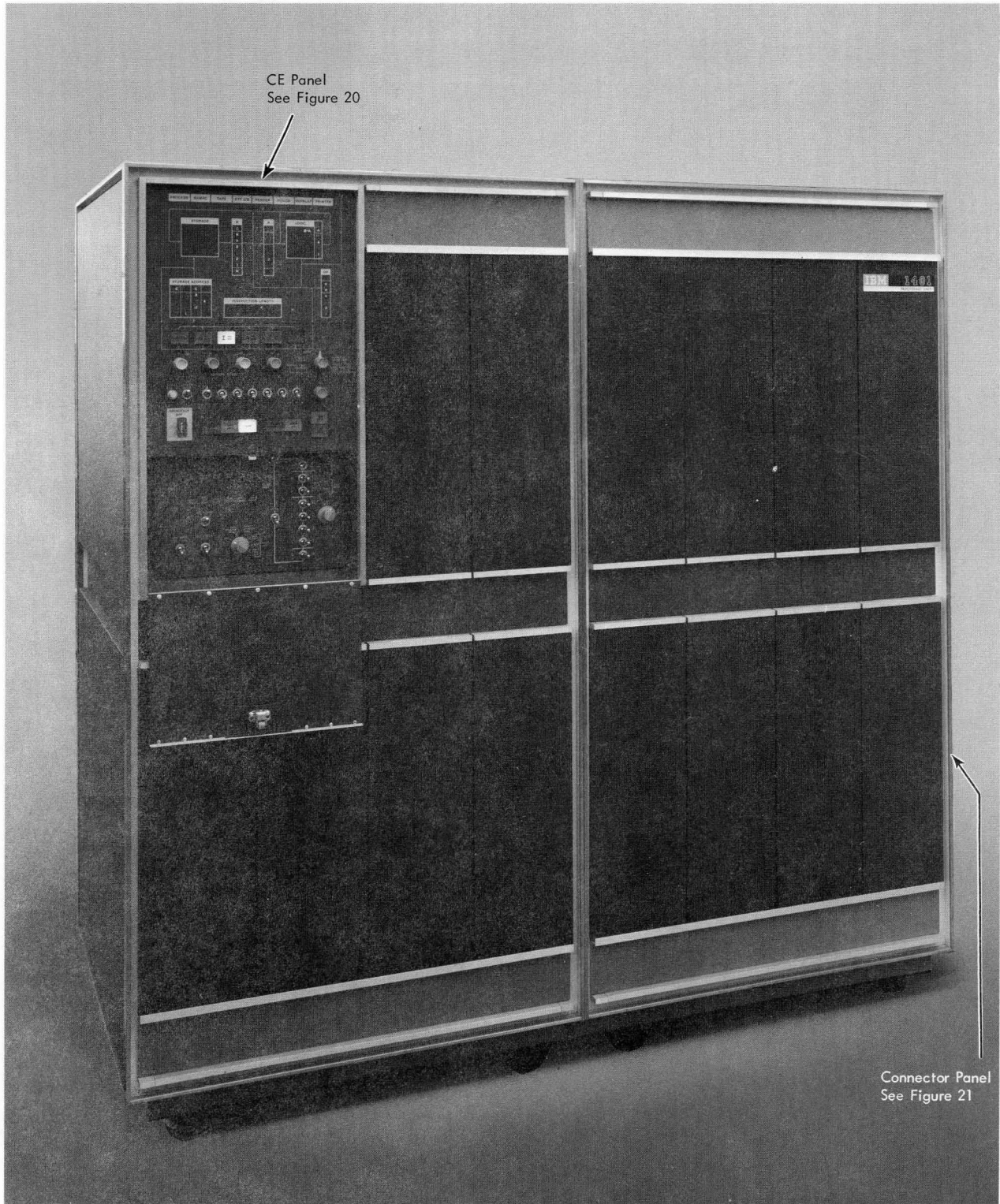


FIGURE 19. 1401 DATA PROCESSING SYSTEM



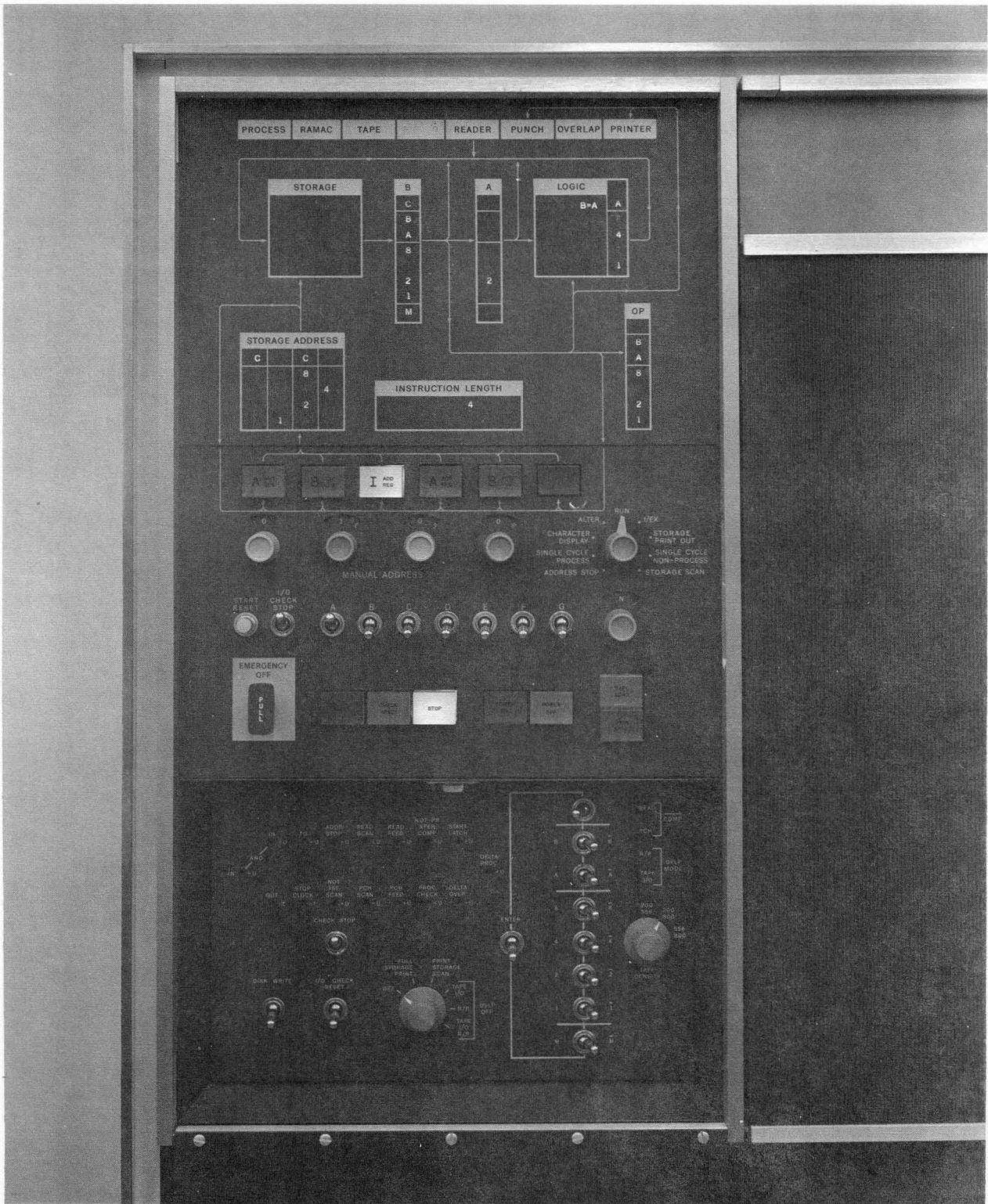


FIGURE 20. 1401 DPS CE PANEL

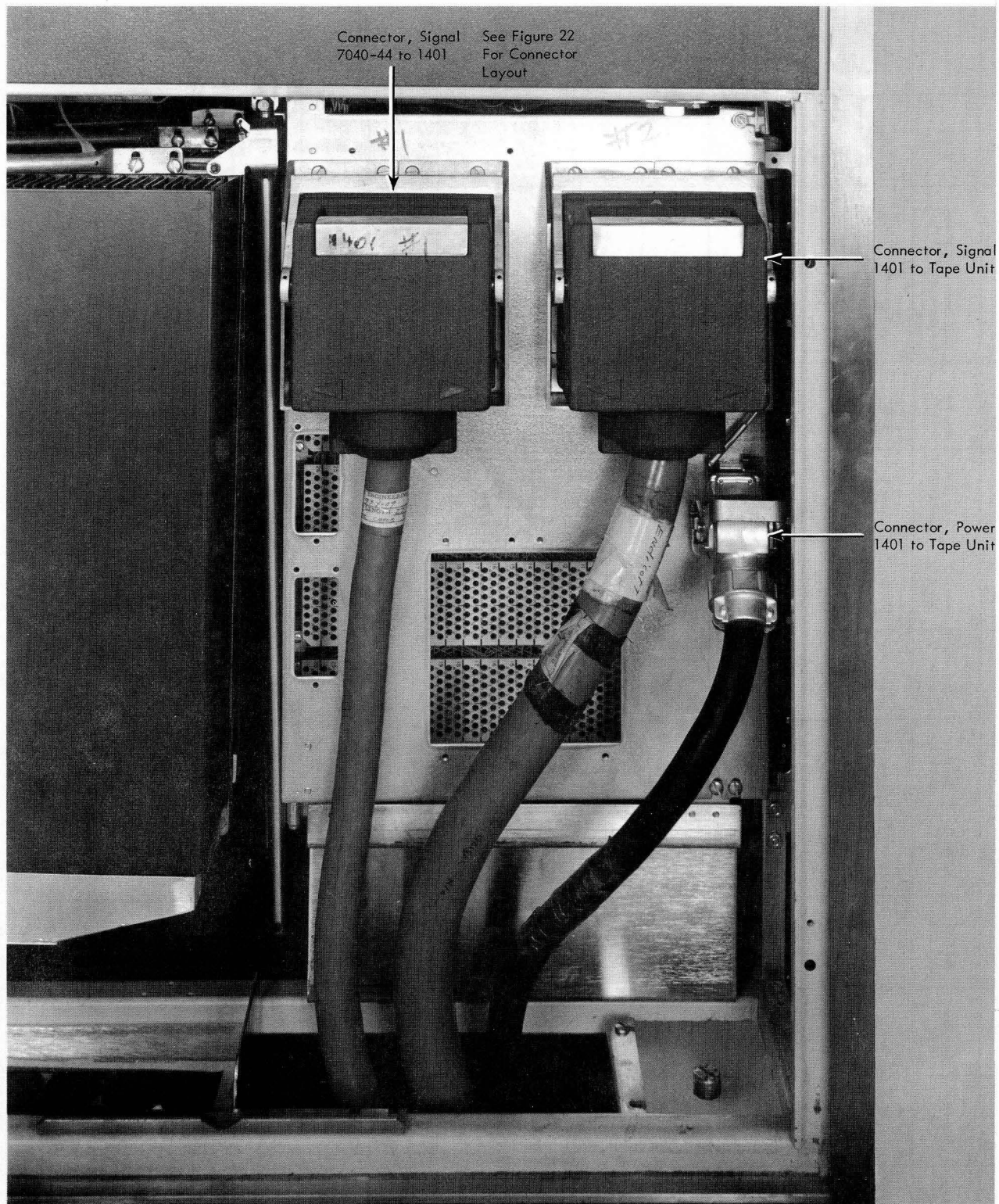


FIGURE 21. 1401 DPS CONNECTOR PANEL



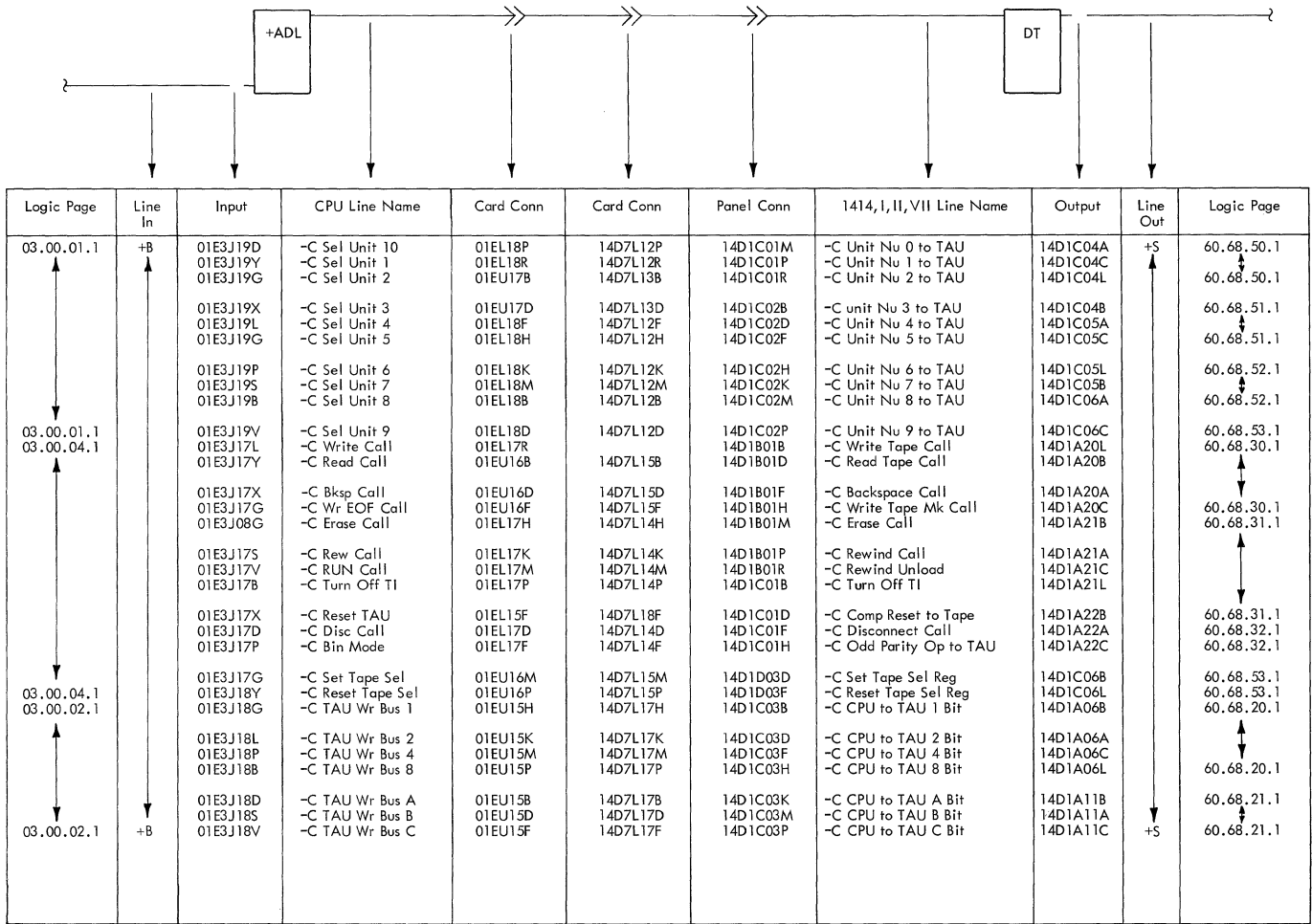


FIGURE 23. CPU TO 1414-I, II, VII IF O LINES

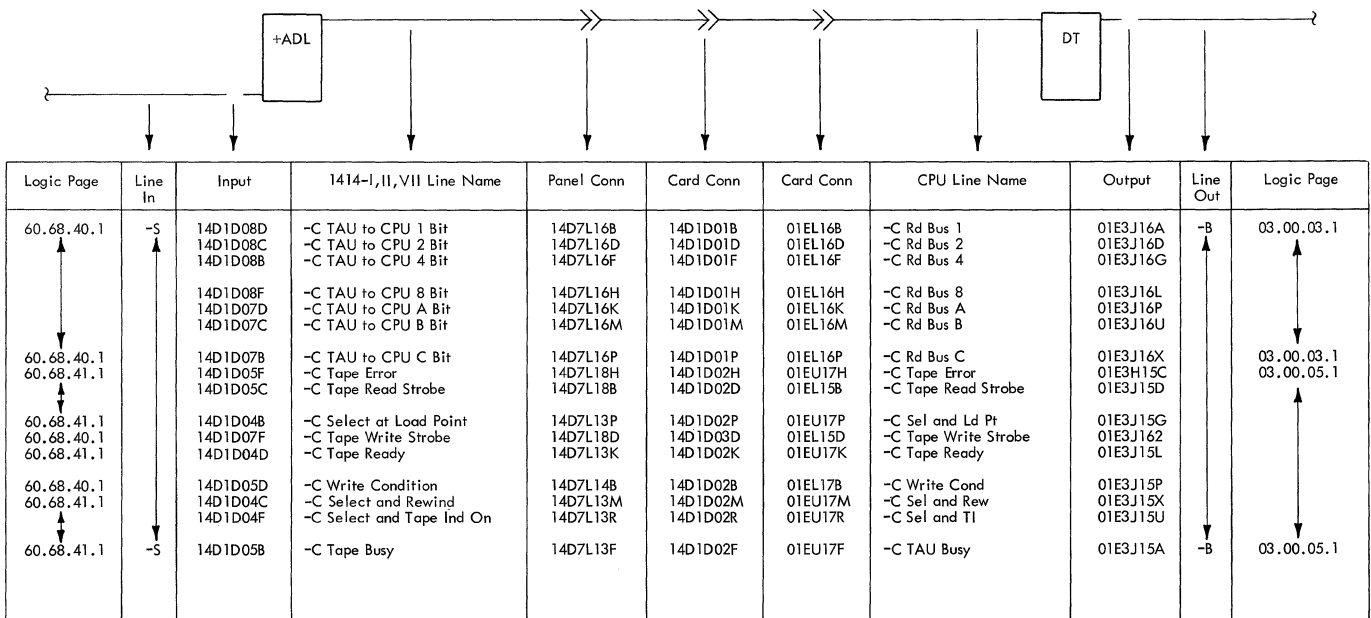


FIGURE 24. 1414-I, II, VII TO CPU O LINES



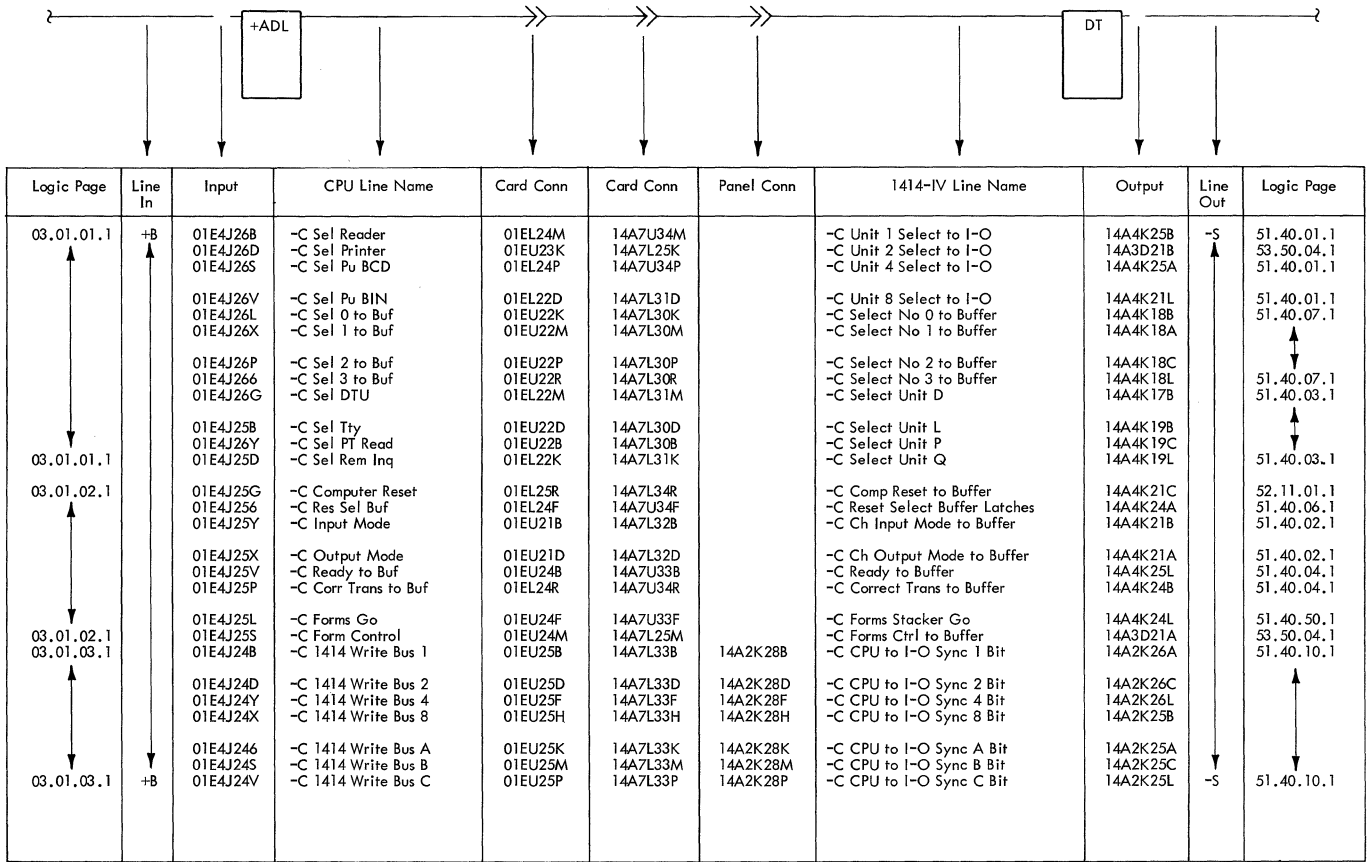


FIGURE 25. CPU TO 1414-III, IV, VIII IF 1 LINES

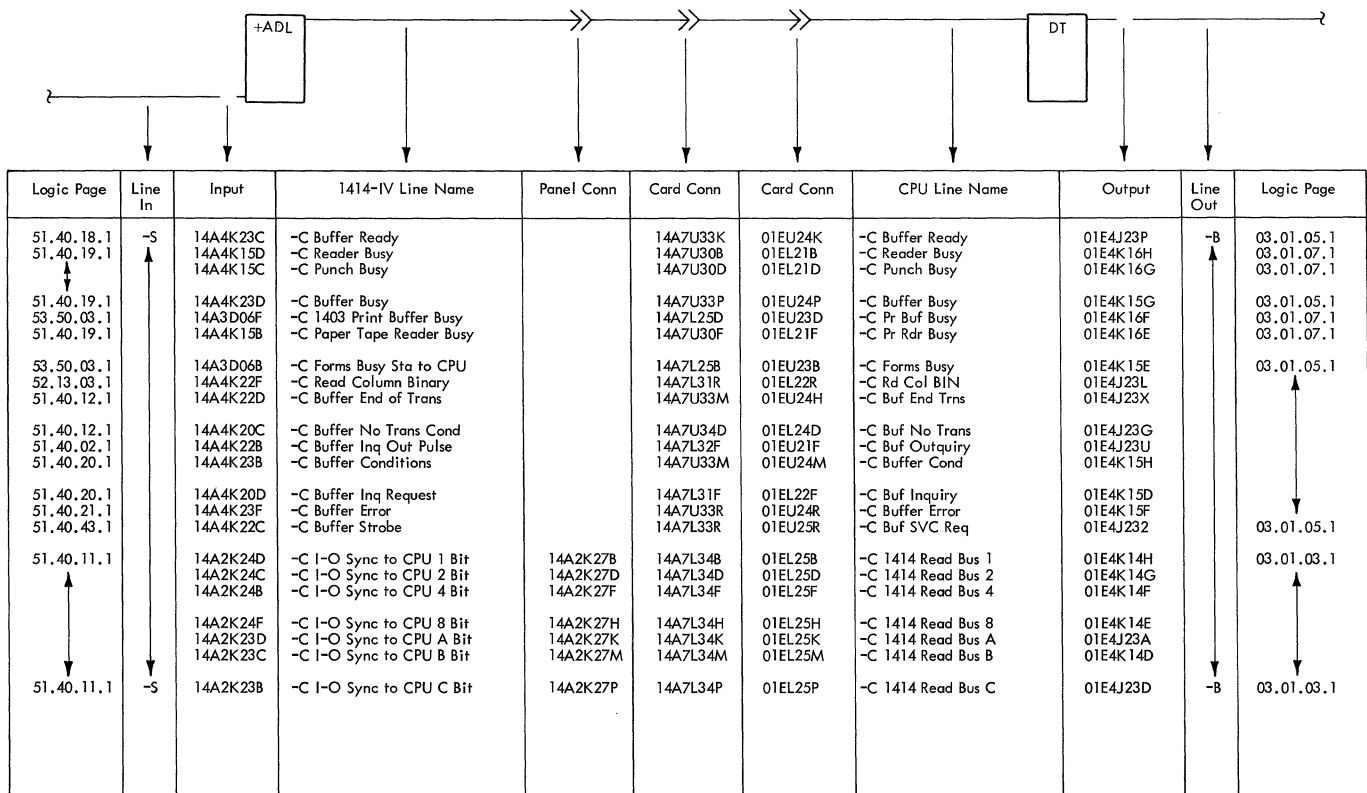


FIGURE 26. 1414-III, IV, VIII TO CPU IF 1 LINES

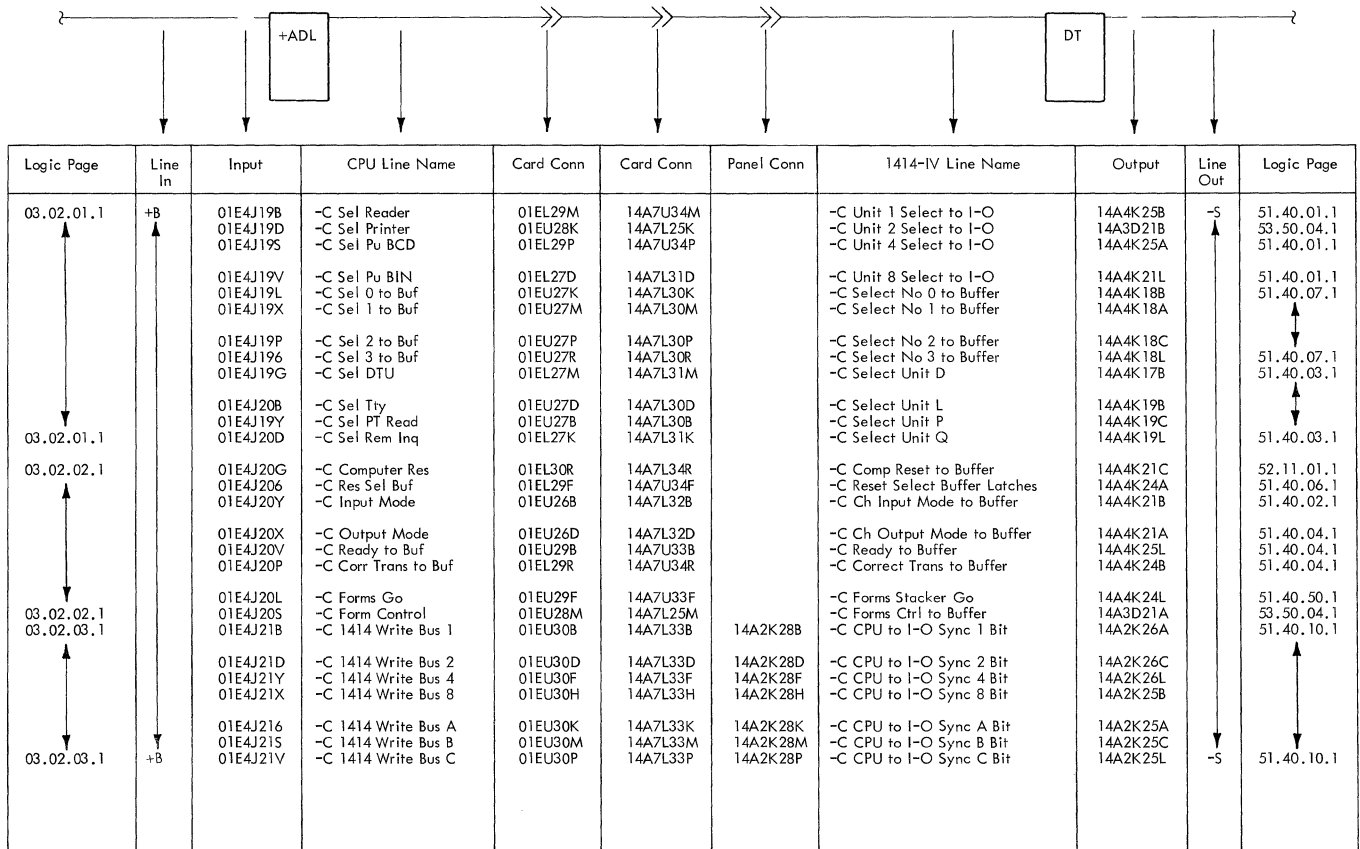


FIGURE 27. CPU TO 1414-III, IV, VIII IF 2 LINES

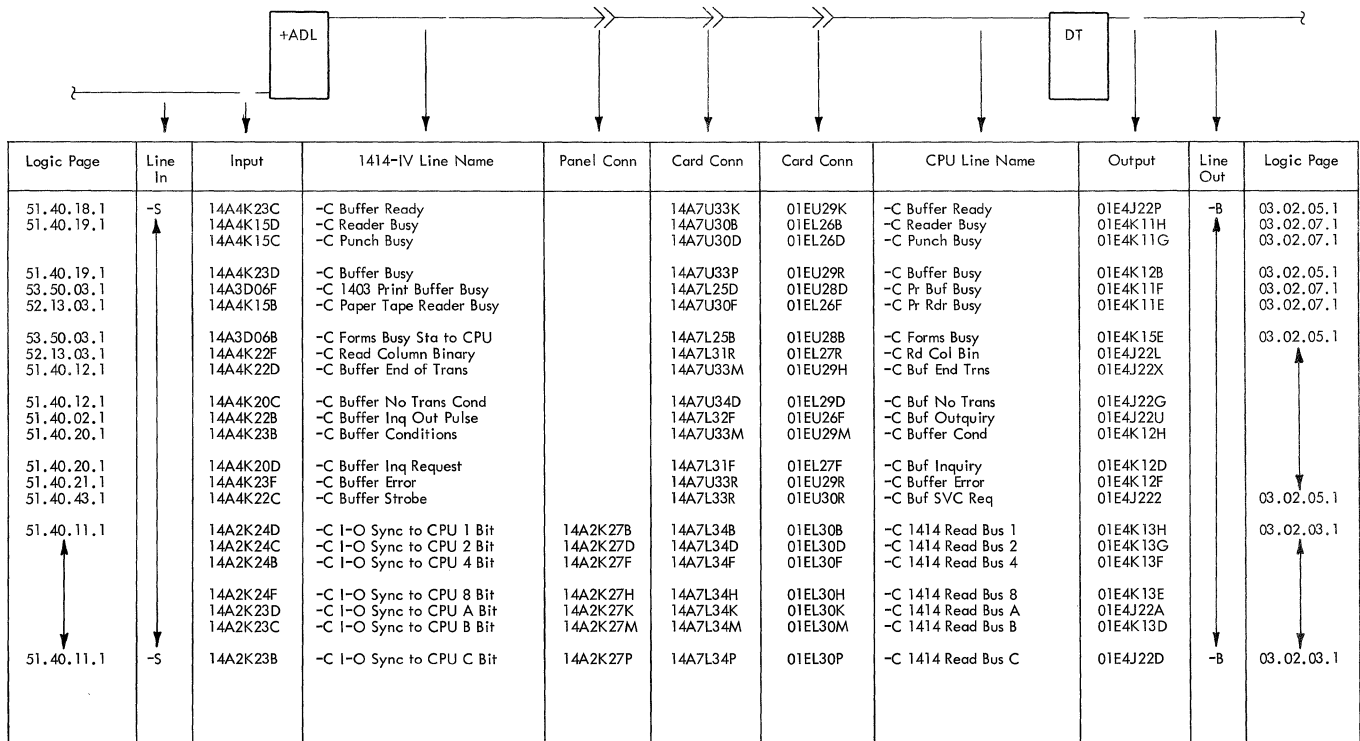


FIGURE 28. 1414-III, IV, VIII TO CPU IF 2 LINES

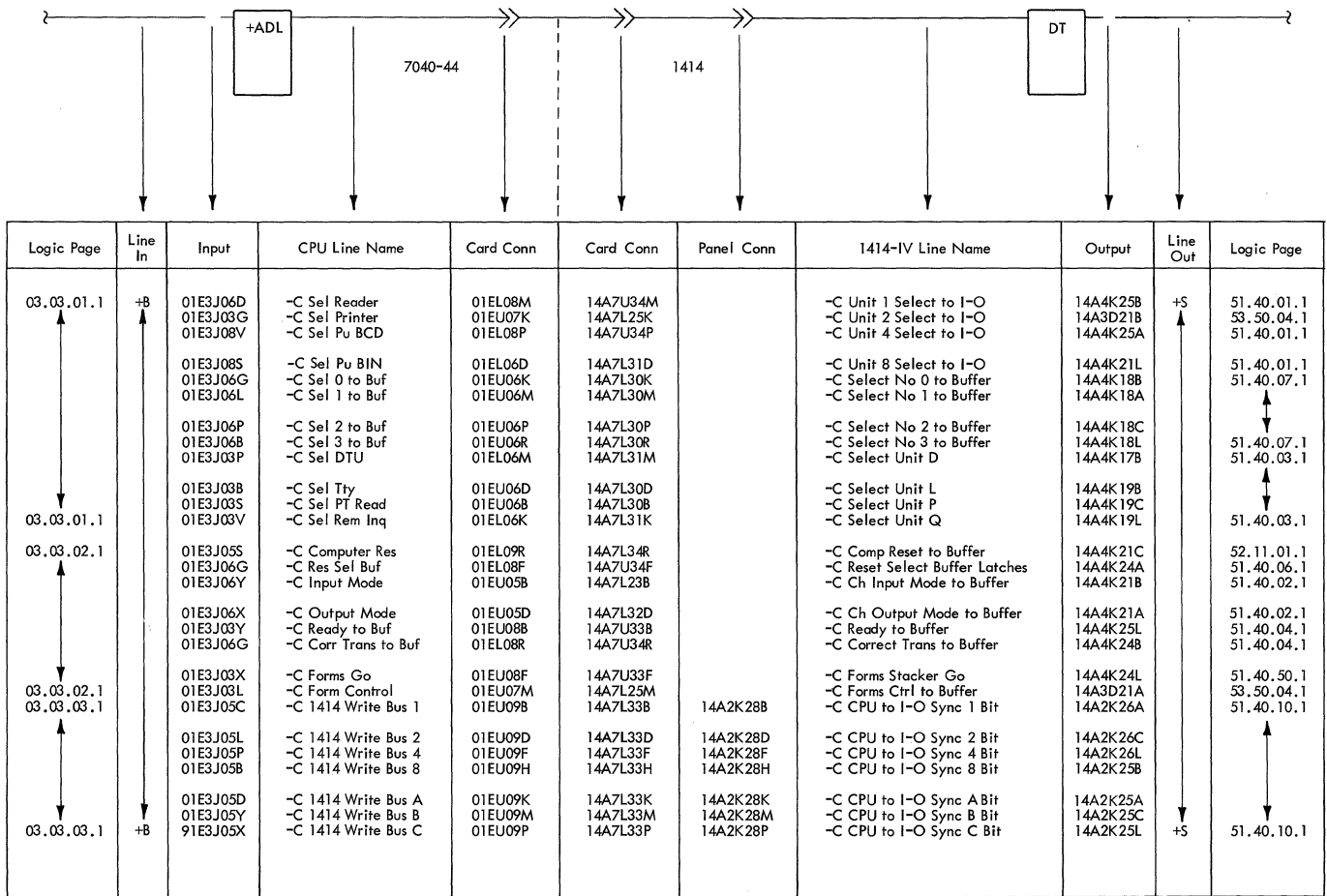


FIGURE 29. CPU TO 1414-III, IV, VIII IF 3 LINES

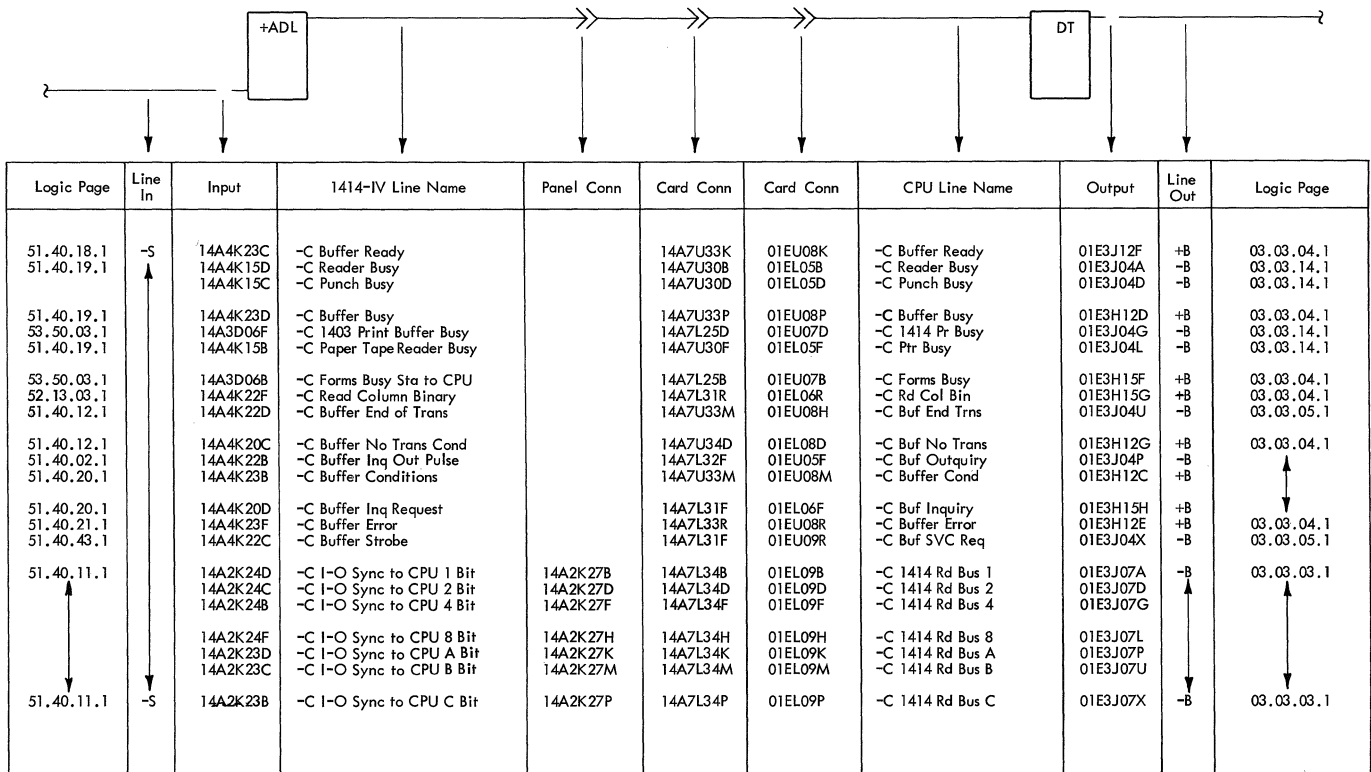


FIGURE 30. 1414-III, IV, VIII TO CPU IF 3 LINES

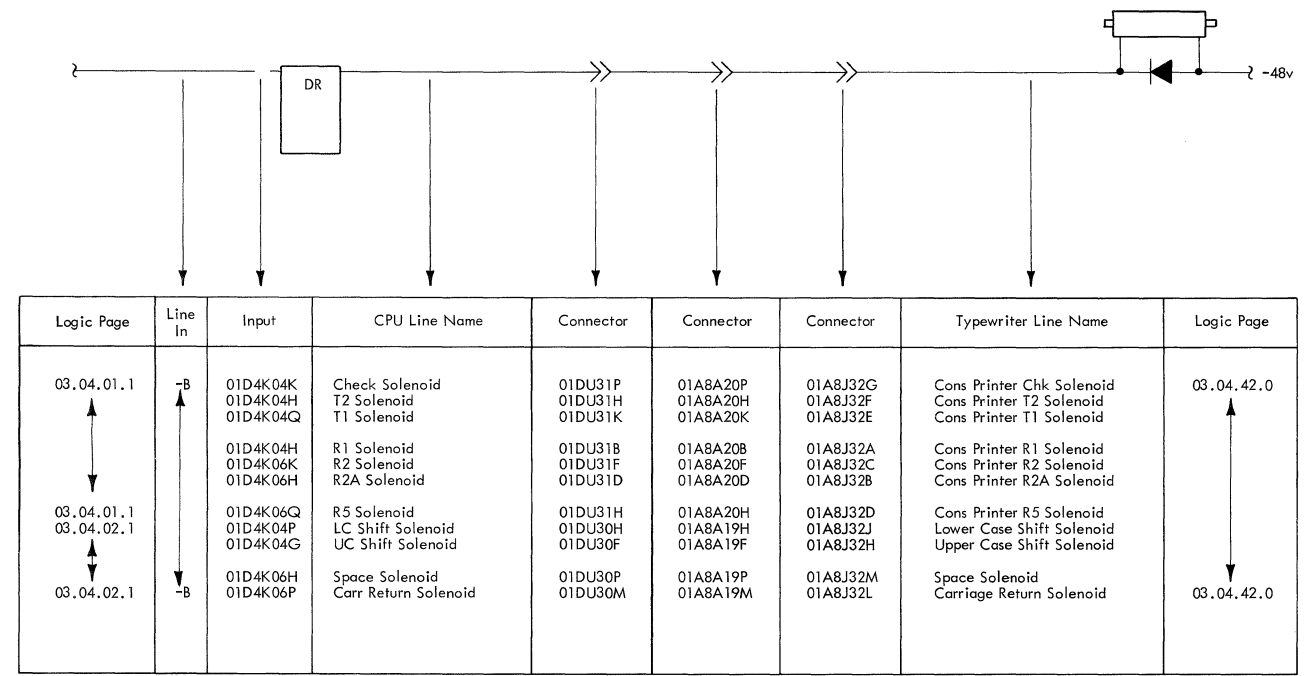


FIGURE 31. CPU TO CONSOLE PRINTER IF 4 LINES

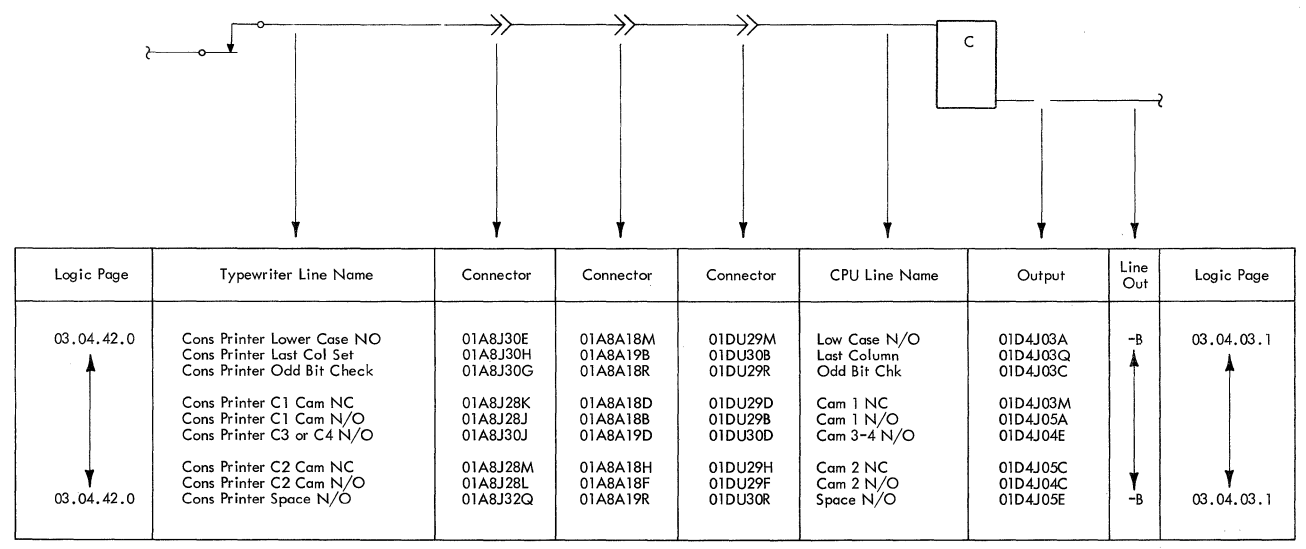


FIGURE 32. CONSOLE PRINTER TO CPU IF 4 LINES

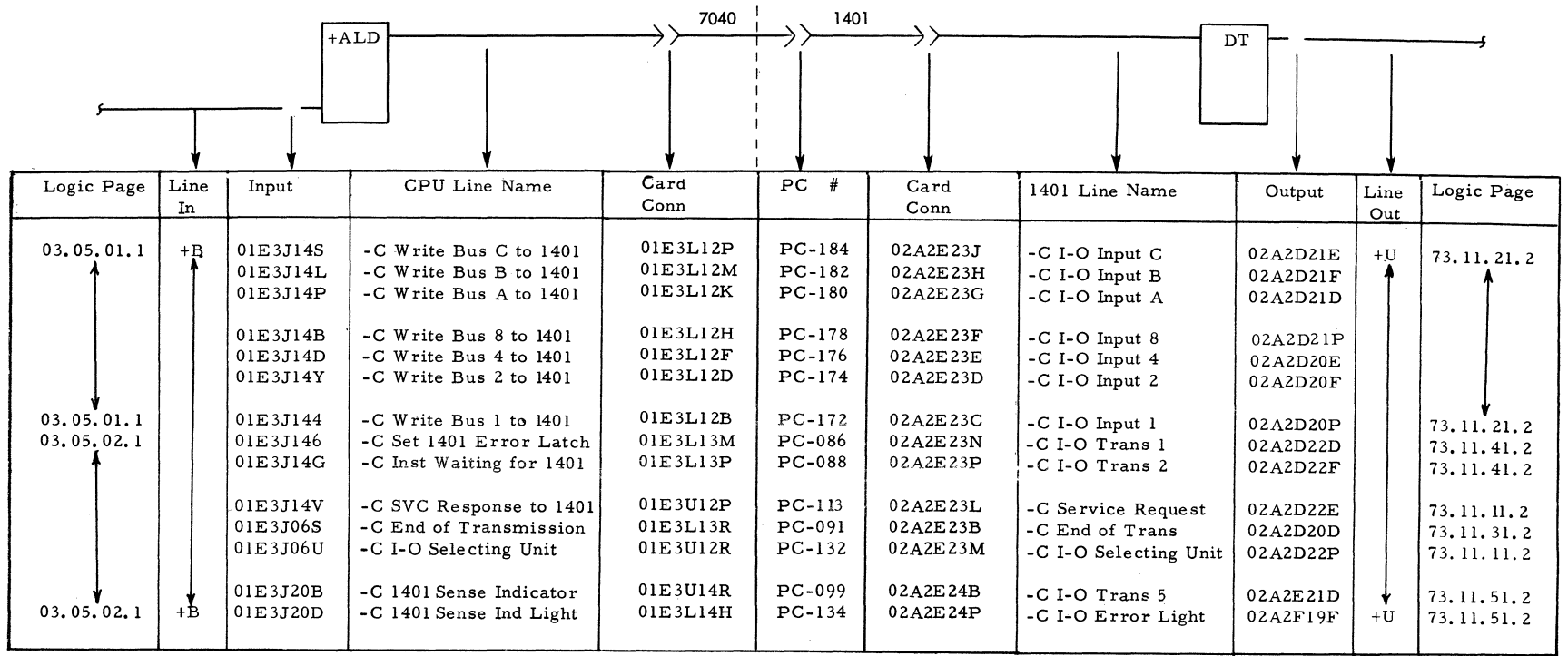


FIGURE 33. CPU TO 1401 DPS, IF 5 LINES

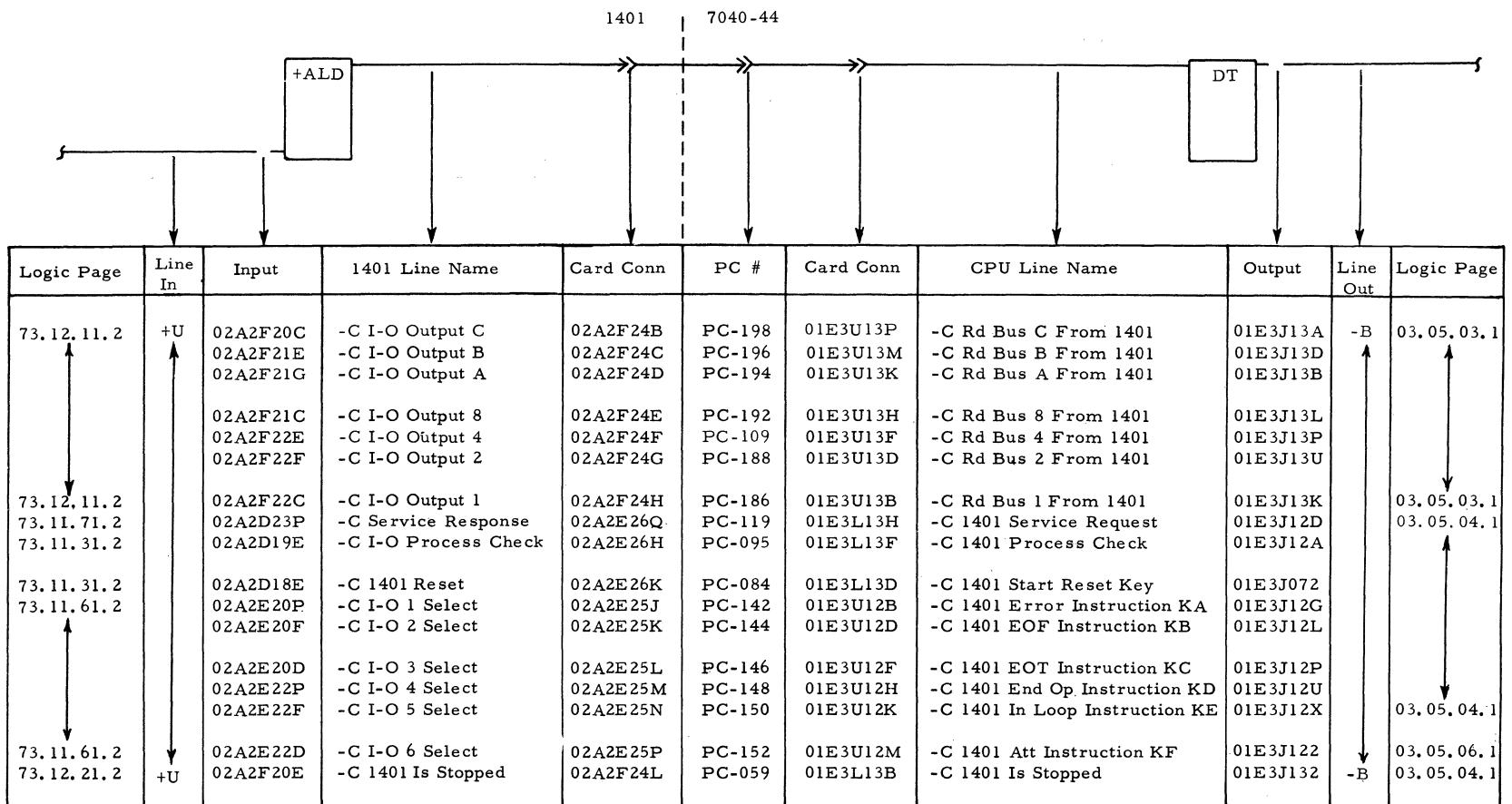


FIGURE 34. 1401 DPS TO CPU, IF 5 LINES

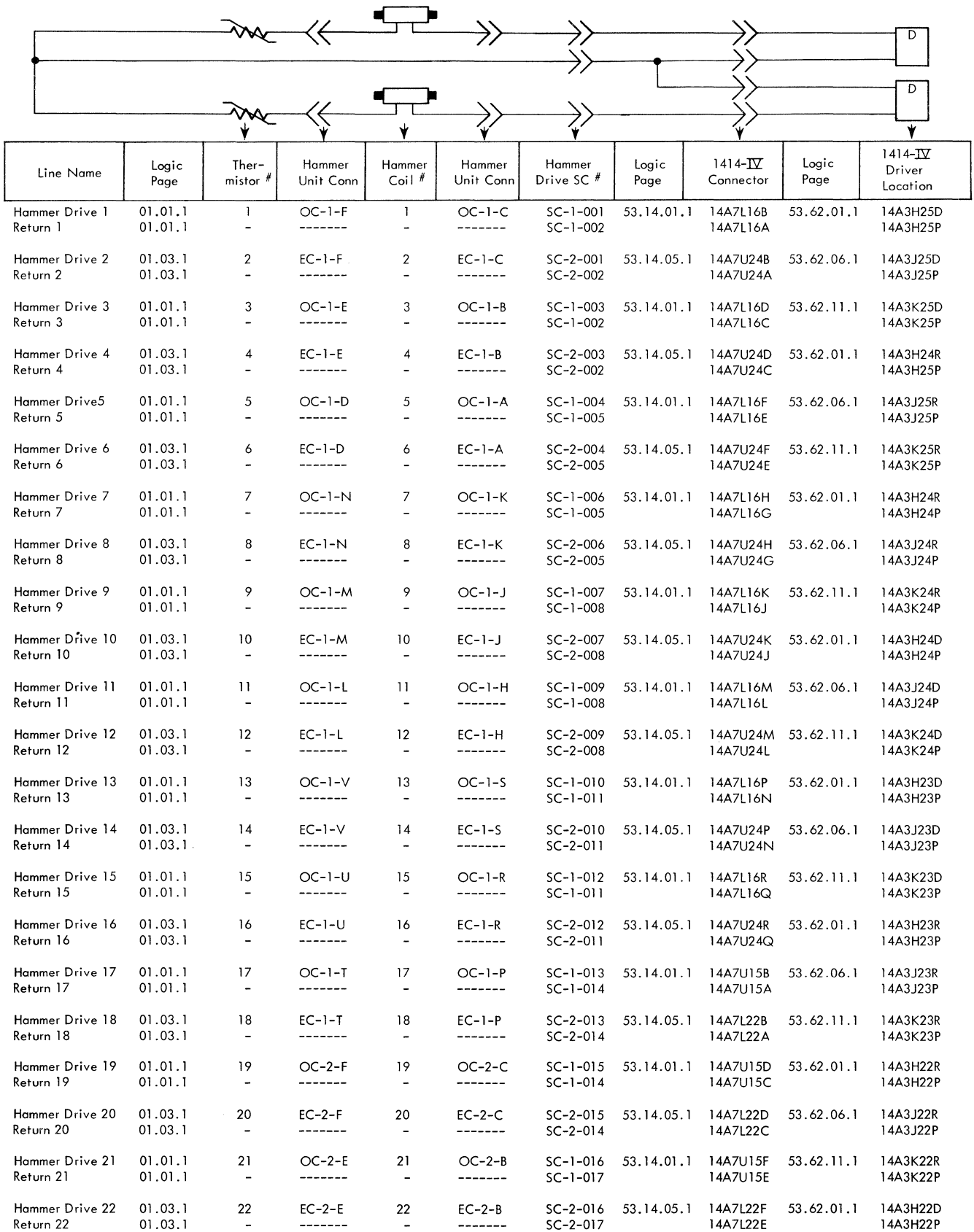
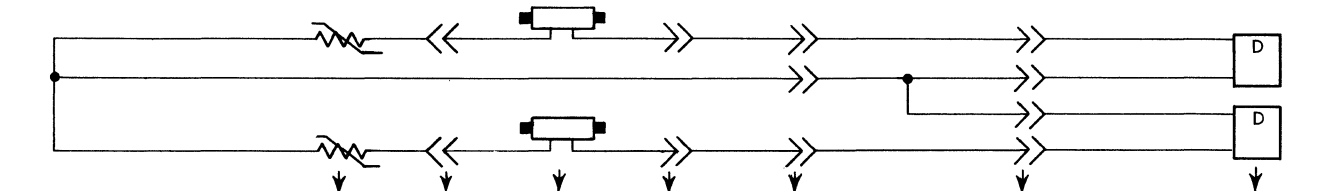


FIGURE 35A. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES



Line Name	Logic Page	Ther-mistor #	Hammer Unit Conn	Hammer Coil #	Hammer Unit Conn	Hammer Drive SC #	Logic Page	1414-IV Connector	Logic Page	1414-IV Driver Location
Hammer Drive 23 Return 23	01.01.1 01.01.1	23 -	OC-2-D -----	23 -	OC-2-A -----	SC-1-018 SC-1-017	53.14.01.1	14A7U15H 14A7U15G	53.62.06.1	14A3J22D 14A3J22P
Hammer Drive 24 Return 24	01.03.1 01.03.1	24 -	EC-2-D -----	24 -	EC-2-D -----	SC-2-018 SC-2-017	53.14.05.11	14A7L22H 14A7L22G	53.62.11.1	14A3K22D 14A3K22P
Hammer Drive 25 Return 25	01.01.1 01.01.1	25 -	OC-2-N -----	25 -	OC-2-K -----	SC-1-019 SC-1-020	53.14.01.1	14A7U15K 14A7U15J	53.62.01.1	14A3H21R 14A3H21P
Hammer Drive 26 Return 26	01.03.1 01.03.1	26 -	EC-2-N -----	26 -	EC-2-K -----	SC-2-019 SC-2-020	53.14.05.1	14A7L22K 14A7L22J	53.62.06.1	14A3J21R 14A3J21P
Hammer Drive 27 Return 27	01.01.1 01.01.1	27 -	OC-2-M -----	27 -	OC-2-J -----	SC-1-021 SC-1-020	53.14.01.1	14A7U15M 14A7U15L	53.62.11.1	14A3K21R 14A3K21P
Hammer Drive 28 Return 28	01.03.1 01.03.1	28 -	EC-2-M -----	28 -	EC-2-J -----	SC-2-021 SC-2-020	53.14.05.1	14A7L22M 14A7L22L	53.62.06.1	14A3H21D 14A3H21P
Hammer Drive 29 Return 29	01.01.1 01.01.1	29 -	OC-2-L -----	29 -	OC-2-H -----	SC-1-022 SC-1-023	53.14.01.1	14A7U15P 14A7U15N	53.62.06.1	14A3J21D 14A3J21P
Hammer Drive 30 Return 30	01.03.1 01.03.1	30 -	EC-2-L -----	30 -	EC-2-H -----	SC-2-022 SC-2-023	53.14.05.1	14A7L22P 14A7L22N	53.62.11.1	14A3K21D 14A3K21P
Hammer Drive 31 Return 31	01.01.1 01.01.1	31 -	OC-2-V -----	31 -	OC-2-S -----	SC-1-024 SC-1-023	53.14.01.1	14A7U15R 14A7U15Q	53.62.02.1	14A3H20D 14A3H20P
Hammer Drive 32 Return 32	01.03.1 01.03.1	32 -	EC-2-V -----	32 -	EC-2-S -----	SC-2-024 SC-2-023	53.14.05.1	14A7L22R 14A7L22Q	53.62.07.1	14A3J20D 14A3J20P
Hammer Drive 33 Return 33	01.01.1 01.01.1	33 -	OC-2-U -----	33 -	OC-2-R -----	SC-1-025 SC-1-026	53.14.01.1	14A7L15B 14A7L15A	53.62.12.1	14A3K20D 14A3K20P
Hammer Drive 34 Return 34	01.03.1 01.03.1	34 -	EC-2-U -----	34 -	EC-2-R -----	SC-2-025 SC-2-026	53.14.05.1	14A7U22B 14A7U22A	53.62.02.1	14A3H20R 14A3H20P
Hammer Drive 35 Return 35	01.01.1 01.01.1	35 -	OC-2-T -----	35 -	OC-2-P -----	SC-1-027 SC-1-026	53.14.01.1	14A7L15D 14A7L15C	53.62.07.1	14A3J20R 14A3J20P
Hammer Drive 36 Return 36	01.03.1 01.03.1	36 -	EC-2-T -----	36 -	EC-2-P -----	SC-2-027 SC-2-026	53.14.05.1	14A7U22D 14A7U22C	53.62.12.1	14A3K20R 14A3K20P
Hammer Drive 37 Return 37	01.01.1 01.01.1	37 -	OC-2-W -----	37 -	OC-2-X -----	SC-1-028 SC-1-029	53.14.01.1	14A7L15F 14A7L15E	53.62.02.1	14A3H19R 14A3H19P
Hammer Drive 38 Return 38	01.03.1 01.03.1	38 -	EC-2-W -----	38 -	EC-2-X -----	SC-2-028 SC-2-029	53.14.05.1	14A7U22F 14A7U22E	53.62.07.1	14A3J19R 14A3J19P
Hammer Drive 39 Return 39	01.01.1 01.01.1	39 -	OC-3-F -----	39 -	OC-3-C -----	SC-1-030 SC-1-029	53.14.01.1	14A7L15H 14A7L15G	53.62.12.1	14A3K19R 14A3K19P
Hammer Drive 40 Return 40	01.03.1 01.03.1	40 -	EC-3-F -----	40 -	EC-3-C -----	SC-2-030 SC-2-029	53.14.05.1	14A7U22H 14A7U22G	53.62.02.1	14A3H19D 14A3H19P
Hammer Drive 41 Return 41	01.01.1 01.01.1	41 -	OC-3-E -----	41 -	OC-3-B -----	SC-1-031 SC-1-032	53.14.01.1	14A7L15K 14A7L15J	53.62.07.1	14A3J19D 14A3J19P
Hammer Drive 42 Return 42	01.03.1 01.03.1	42 -	EC-3-E -----	42 -	EC-3-B -----	SC-2-031 SC-2-032	53.14.05.1	14A7U22K 14A7U22J	53.62.12.1	14A3K19D 14A3K19P
Hammer Drive 43 Return 43	01.01.1 01.01.1	43 -	OC-3-D -----	43 -	OC-3-A -----	SC-1-033 SC-1-032	53.14.01.1	14A7L15M 14A7L15L	53.62.02.1	14A3H17D 14A3H17P
Hammer Drive 44 Return 44	01.03.1 01.03.1	44 -	EC-3-D -----	44 -	EC-3-A -----	SC-2-033 SC-2-032	53.14.05.1	14A7U22M 14A7U22L	53.62.07.1	14A3J17D 14A3H17P

FIGURE 358. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES

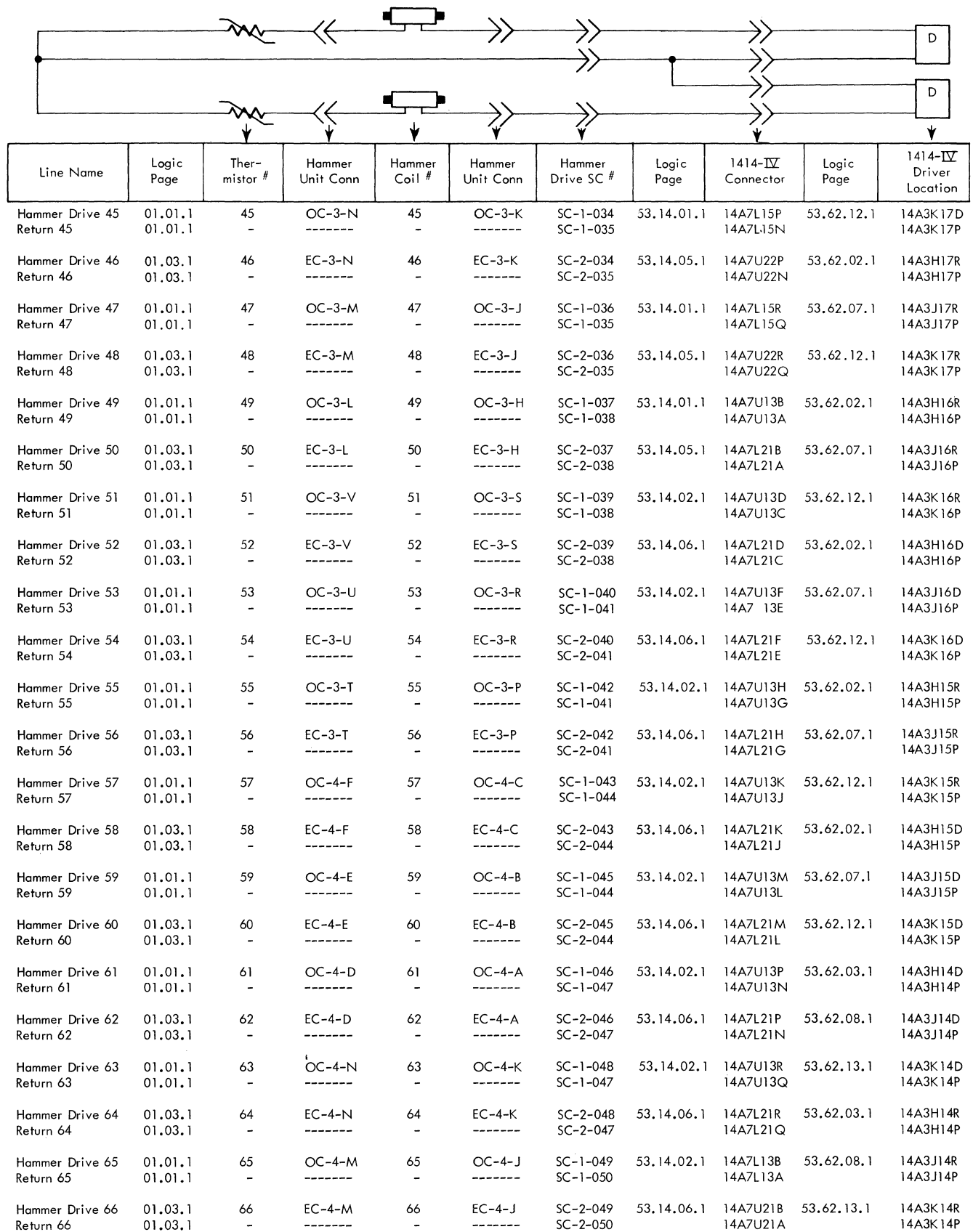
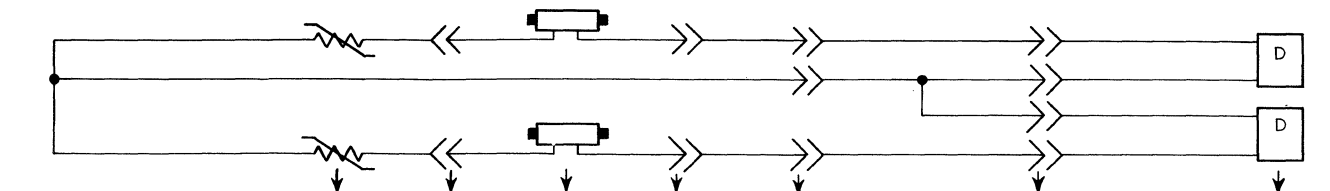


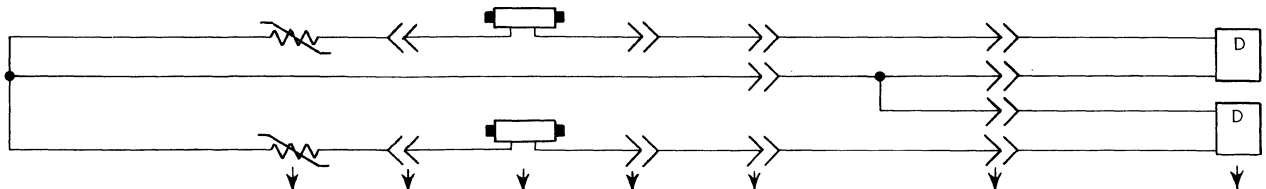
FIGURE 35C. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES





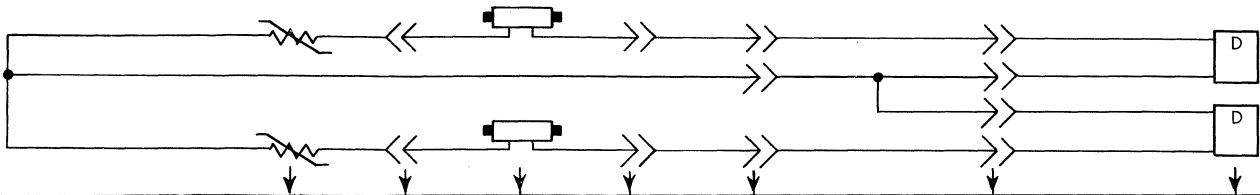
Line Name	Logic Page	Ther-mistor #	Hammer Unit Conn	Hammer Coil #	Hammer Unit Conn	Hammer Drive SC #	Logic Page	1414-IV Connector	Logic Page	1414-IV Driver Location
Hammer Drive 67 Return 67	01.01.1 01.01.1	67 -	OC-4-L -----	67 -	OC-4-N -----	SC-1-051 SC-1-050	53.14.02.1	14A7L13D 14A7L13C	53.62.03.1	14A3H13R 14A3H13P
Hammer Drive 68 Return 68	01.03.1 01.03.1	68 -	EC-4-L -----	68 -	EC-4-N -----	SC-2-051 SC-2-050	53.14.06.1	14A7U21D 14A7U21C	53.62.08.1	14A3J13R 14A3J13P
Hammer Drive 69 Return 69	01.02.1 01.02.1	69 -	OC-4-V -----	69 -	OC-4-S -----	SC-1-052 SC-1-053	53.14.02.1	14A7L13F 14A7L13E	53.62.13.1	14A3K13R 14A3K13P
Hammer Drive 70 Return 70	01.04.1 01.04.1	70 -	EC-4-V -----	70 -	EC-4-S -----	SC-2-052 SC-2-053	53.14.06.1	14A7U21F 14A7U21E	53.62.03.1	14A3H13D 14A3H13P
Hammer Drive 71 Return 71	01.02.1 01.02.1	71 -	OC-4-U -----	71 -	OC-4-R -----	SC-1-054 SC-1-053	53.14.02.1	14A7L13H 14A7L13G	53.62.08.1	14A3J13D 14A3J13P
Hammer Drive 72 Return 72	01.04.1 01.04.1	72 -	EC-4-U -----	72 -	EC-4-R -----	SC-2-054 SC-2-053	53.14.06.1	14A7U21H 14A7U21G	53.62.13.1	14A3K13D 14A3K13P
Hammer Drive 73 Return 73	01.02.1 01.02.1	73 -	OC-4-T -----	73 -	OC-4-P -----	SC-1-055 SC-1-056	53.14.02.1	14A7L13K 14A7L13J	53.62.03.1	14A3H12D 14A3H12P
Hammer Drive 74 Return 74	01.04.1 01.04.1	74 -	EC-4-T -----	74 -	EC-4-P -----	SC-2-055 SC-2-056	53.14.06.1	14A7U21K 14A7U21J	53.62.08.1	14A3J12D 14A3J12P
Hammer Drive 75 Return 75	01.02.1 01.02.1	75 -	OC-4-W -----	75 -	OC-4-X -----	SC-1-057 SC-1-056	53.14.02.1	14A7L13M 14A7L13L	53.62.13.1	14A3K12D 14A3K12P
Hammer Drive 76 Return 76	01.04.1 01.04.1	76 -	EC-4-W -----	76 -	EC-4-X -----	SC-2-057 SC-2-056	53.14.06.1	14A7U21M 14A7U21L	53.62.03.1	14A3H12R 14A3H12P
Hammer Drive 77 Return 77	01.02.1 01.02.1	77 -	OC-5-F -----	77 -	OC-5-C -----	SC-1-058 SC-1-059	53.14.02.1	14A7L13P 14A7L13N	53.62.08.1	14A3J12R 14A3J12P
Hammer Drive 78 Return 78	01.04.1 01.04.1	78 -	EC-5-F -----	78 -	EC-5-C -----	SC-2-058 SC-2-059	53.14.06.1	14A7U21P 14A7U21N	53.62.13.1	14A3K12R 14A3K12P
Hammer Drive 79 Return 79	01.02.1 01.02.1	79 -	OC-5-E -----	79 -	OC-5-B -----	SC-1-060 SC-1-059	53.14.02.1	14A7L13R 14A7L13Q	53.62.03.1	14A3H11R 14A3H11P
Hammer Drive 80 Return 80	01.04.1 01.04.1	80 -	EC-5-E -----	80 -	EC-5-B -----	SC-2-060 SC-2-059	53.14.06.1	14A7U21R 14A7U21Q	53.62.08.1	14A3J11R 14A3J11P
Hammer Drive 81 Return 81	01.02.1 01.02.1	81 -	OC-5-D -----	81 -	OC-5-A -----	SC-1-061 SC-1-062	53.14.02.1	14A7U12B 14A7U12A	53.62.13.1	14A3K11R 14A3K11P
Hammer Drive 82 Return 82	01.04.1 01.04.1	82 -	EC-5-D -----	82 -	EC-5-D -----	SC-2-061 SC-2-062	53.14.06.1	14A7L19B 14A7L19A	53.62.03.1	14A3H11D 14A3H11P
Hammer Drive 83 Return 83	01.02.1 01.02.1	83 -	OC-5-N -----	83 -	OC-5-K -----	SC-1-063 SC-1-062	53.14.02.1	14A7U12D 14A7U12C	53.62.08.1	14A3J11D 14A3J11P
Hammer Drive 84 Return 84	01.04.1 01.04.1	84 -	EC-5-N -----	84 -	EC-5-K -----	SC-2-063 SC-2-062	53.14.06.1	14A7L19D 14A7L19C	53.62.13.1	14A3K11D 14A3K11P
Hammer Drive 85 Return 85	01.02.1 01.02.1	85 -	OC-5-M -----	85 -	OC-5-J -----	SC-1-064 SC-1-065	53.14.02.1	14A7U12F 14A7U12E	53.62.03.1	14A3H10R 14A3H10P
Hammer Drive 86 Return 86	01.04.1 01.04.1	86 -	EC-5-M -----	86 -	EC-5-J -----	SC-2-064 SC-2-065	53.14.06.1	14A7L19F 14A7L19E	53.62.08.1	14A3J10R 14A3J10P
Hammer Drive 87 Return 87	01.02.1 01.02.1	87 -	OC-5-L -----	87 -	OC-5-H -----	SC-1-066 SC-1-065	53.14.02.1	14A7U12H 14A7U12G	53.62.13.1	14A3K10R 14A3K10P
Hammer Drive 88 Return 88	01.04.1 01.04.1	88 -	EC-5-L -----	88 -	EC-5-H -----	SC-2-066 SC-2-065	53.14.02.1	14A7L19H 14A7L19G	53.62.03.1	14A3H10D 14A3H10P

FIGURE 35D. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES



Line Name	Logic Page	Ther-mistor #	Hammer Unit Conn	Hammer Coil #	Hammer Unit Conn	Hammer Drive SC #	Logic Page	1414-IV Connector	Logic Page	1414-IV Driver Location
Hammer Drive 89 Return 89	01.02.1 01.02.1	89 -	OC-5-V -----	89 -	OC-5-S -----	SC-1-067 SC-1-068	53.14.02.1	14A7U12K 14A7U12J	53.62.08.1	14A3J10D 14A3J10P
Hammer Drive 90 Return 90	01.04.1 01.04.1	90 -	EC-5-V -----	90 -	EC-5-S -----	SC-2-067 SC-2-068	53.14.06.1	14A7L19K 14A7L19J	53.62.13.1	14A3K10D 14A3K10P
Hammer Drive 91 Return 91	01.02.1 01.02.1	91 -	OC-5-U -----	91 -	OC-5-R -----	SC-1-069 SC-1-068	53.14.02.1	14A7U12M 14A7U12L	53.62.04.1	14A3H08D 14A3H08P
Hammer Drive 92 Return 92	01.04.1 01.04.1	92 -	EC-5-U -----	92 -	EC-5-U -----	SC-2-069 SC-2-068	53.14.06.1	14A7L19M 14A7L19L	53.62.09.1	14A3J08D 14A3J08P
Hammer Drive 93 Return 93	01.02.1 01.02.1	93 -	OC-5-T -----	93 -	OC-5-P -----	SC-1-070 SC-1-071	53.14.02.1	14A7U12P 14A7U12N	53.62.14.1	14A3K08D 14A3K08P
Hammer Drive 94 Return 94	01.04.1 01.04.1	94 -	EC-5-T -----	94 -	EC-5-P -----	SC-2-070 SC-2-071	53.14.06.1	14A7L19P 14A7L19N	53.62.04.1	14A3H08R 14A3H08P
Hammer Drive 95 Return 95	01.02.1 01.02.1	95 -	OC-6-F -----	95 -	OC-6-C -----	SC-1-072 SC-1-071	53.14.02.1	14A7U12R 14A7U12Q	53.62.09.1	14A3J08R 14A3J08P
Hammer Drive 96 Return 96	01.04.1 01.04.1	96 -	EC-6-F -----	96 -	EC-6-C -----	SC-2-072 SC-2-071	53.14.06.1	14A7L19R 14A7L19Q	53.62.14.1	14A3K08R 14A3K08P
Hammer Drive 97 Return 97	01.02.1 01.02.1	97 -	OC-6-E -----	97 -	OC-6-B -----	SC-1-073 SC-1-074	53.14.02.1	14A7L12B 14A7L12A	53.62.04.1	14A3H07R 14A3H07P
Hammer Drive 98 Return 98	01.04.1 01.04.1	98 -	EC-6-E -----	98 -	EC-6-B -----	SC-2-073 SC-2-074	53.14.06.1	14A7U19B 14A7U19A	53.62.09.1	14A3J07R 14A3J07P
Hammer Drive 99 Return 99	01.02.1 01.02.1	99 -	OC-6-D -----	99 -	OC-6-A -----	SC-1-075 SC-1-074	53.14.02.1	14A7L12D 14A7L12C	53.62.14.1	14A3K07R 14A3K07P
Hammer Drive 100 Return 100	01.04.1 01.04.1	100 -	EC-6-D -----	100 -	EC-6-A -----	SC-2-075 SC-2-074	53.14.06.1	14A7U19D 14A7U19C	53.62.04.1	14A3H07D 14A3H07P
Hammer Drive 101 Return 101	01.02.1 01.02.1	101 -	OC-6-N -----	101 -	OC-6-K -----	SC-1-076 SC-1-077	53.14.02.1	14A7L12F 14A7L12E	53.62.09.1	14A3J07D 14A3J07P
Hammer Drive 102 Return 102	01.04.1 01.04.1	102 -	EC-6-N -----	102 -	EC-6-K -----	SC-2-076 SC-2-077	53.14.06.1	14A7U19F 14A7U19E	53.62.14.1	14A3K07D 14A3K07P
Hammer Drive 103 Return 103	01.02.1 01.02.1	103 -	OC-6-M -----	103 -	OC-6-J -----	SC-1-078 SC-1-077	53.14.03.1	14A7L12H 14A7L12G	53.62.04.1	14A3H06D 14A3H06P
Hammer Drive 104 Return 104	01.04.1 01.04.1	104 -	EC-6-M -----	104 -	EC-6-J -----	SC-2-078 SC-2-077	53.14.07.1	14A7U19H 14A7U19G	53.62.09.1	14A3J06D 14A3J06P
Hammer Drive 105 Return 105	01.02.1 01.02.1	105 -	OC-6-L -----	105 -	OC-6-H -----	SC-1-079 SC-1-080	53.14.03.1	14A7L12K 14A7L12J	53.62.14.1	14A3K06D 14A3K06P
Hammer Drive 106 Return 106	01.04.1 01.04.1	106 -	EC-6-L -----	106 -	EC-6-H -----	SC-2-079 SC-2-080	53.14.07.1	14A7U19K 14A7U19J	53.62.04.1	14A3H06R 14A3H06P
Hammer Drive 107 Return 107	01.02.1 01.02.1	107 -	OC-6-V -----	107 -	OC-6-S -----	SC-1-081 SC-1-080	53.14.03.1	14A7L12M 14A7L12L	53.62.09.1	14A3J06R 14A3J06P
Hammer Drive 108 Return 108	01.04.1 01.04.1	108 -	EC-6-V -----	108 -	EC-6-S -----	SC-2-081 SC-2-080	53.14.07.1	14A7U19M 14A7U19L	53.62.14.1	14A3K06R 14A3K06P
Hammer Drive 109 Return 109	01.02.1 01.02.1	109 -	OC-6-U -----	109 -	OC-6-R -----	SC-1-082 SC-1-083	53.14.03.1	14A7L12P 14A7L12N	53.62.04.1	14A3H05R 14A3H05P
Hammer Drive 110 Return 110	01.04.1 01.04.1	110 -	EC-6-U -----	110 -	EC-6-R -----	SC-2-082 SC-2-083	53.14.07.1	14A7U19P 14A7U19N	53.62.09.1	14A3J05R 14A3J05P

FIGURE 35E. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES



Line Name	Logic Page	Ther-mistor #	Hammer Unit Conn	Hammer Coil #	Hammer Unit Conn	Hammer Drive SC #	Logic Page	1414-IV Connector	Logic Page	1414-IV Driver Location
Hammer Drive 111 Return 111	01.02.1 01.02.1	111 -	OC-6-T -----	111 -	OC-6-P -----	SC-1-084 SC-1-083	53.14.03.1	14A7L12R 14A7L12Q	53.62.14.1	14A3K05R 14A3K05P
Hammer Drive 112 Return 112	01.04.1 01.04.1	112 -	EC-6-T -----	112 -	EC-6-P -----	SC-2-084 SC-2-083	53.14.07.1	14A7U19R 14A7U19Q	53.62.04.1	14A3H05D 14A3H05P
Hammer Drive 113 Return 113	01.02.1 01.02.1	113 -	OC-6-W -----	113 -	OC-6-X -----	SC-1-085 SC-1-086	53.14.03.1	14A7U10B 14A7U10A	53.62.09.1	14A3J05D 14A3J05P
Hammer Drive 114 Return 114	01.04.1 01.04.1	114 -	EC-6-W -----	114 -	EC-6-X -----	SC-2-085 SC-2-086	53.14.07.1	14A7L18B 14A7L18A	53.62.14.1	14A3K05D 14A3K05P
Hammer Drive 115 Return 115	01.02.1 01.02.1	115 -	OC-7-F -----	115 -	OC-7-C -----	SC-1-087 SC-1-086	53.14.03.1	14A7U10D 14A7U10C	53.62.04.1	14A3H04R 14A3H04P
Hammer Drive 116 Return 116	01.04.1 01.04.1	116 -	EC-7-F -----	116 -	EC-7-C -----	SC-2-087 SC-2-086	53.14.07.1	14A7L18D 14A7L18C	53.62.09.1	14A3J04R 14A3J04P
Hammer Drive 117 Return 117	01.02.1 01.02.1	117 -	OC-7-E -----	117 -	OC-7-B -----	SC-1-088 SC-1-089	53.14.03.1	14A7U10F 14A7U10E	53.62.14.1	14A3K04R 14A3K04P
Hammer Drive 118 Return 118	01.04.1 01.04.1	118 -	EC-7-E -----	118 -	EC-7-B -----	SC-2-088 SC-2-089	53.14.07.1	14A7L18F 14A7L18E	53.62.04.1	14A3H04D 14A3H04P
Hammer Drive 119 Return 119	01.02.1 01.02.1	119 -	OC-7-D -----	119 -	OC-7-A -----	SC-1-090 SC-1-089	53.14.03.1	14A7U10H 14A7U10G	53.62.09.1	14A3J04D 14A3J04P
Hammer Drive 120 Return 120	01.04.1 01.04.1	120 -	EC-7-D -----	120 -	EC-7-A -----	SC-2-090 SC-2-089	53.14.07.1	14A7L18H 14A7L18G	53.62.14.1	14A3K04D 14A3K04P
Hammer Drive 121 Return 121	01.02.1 01.02.1	121 -	OC-7-N -----	121 -	OC-7-K -----	SC-1-091 SC-1-092	53.14.03.1	14A7U10K 14A7U10L	53.62.05.1	14A3H03D 14A3H03P
Hammer Drive 122 Return 122	01.04.1 01.04.1	122 -	EC-7-N -----	122 -	EC-7-K -----	SC-2-091 SC-2-092	53.14.07.1	14A7L18K 14A7L18J	53.62.10.1	14A3J03D 14A3J03P
Hammer Drive 123 Return 123	01.02.1 01.02.1	123 -	OC-7-M -----	123 -	OC-7-J -----	SC-1-093 SC-1-092	53.14.03.1	14A7U10M 14A7U10L	53.62.15.1	14A3K03D 14A3K03P
Hammer Drive 124 Return 124	01.04.1 01.04.1	124 -	EC-7-M -----	124 -	EC-7-J -----	SC-2-093 SC-2-092	53.14.07.1	14A7L18M 14A7L19L	53.62.05.1	14A3H03R 14A3H03P
Hammer Drive 125 Return 125	01.02.1 01.02.1	125 -	OC-7-L -----	125 -	OC-7-H -----	SC-1-094 SC-1-095	53.14.03.1	14A7U10P 14A7U10N	53.62.10.1	14A3J03R 14A3J03P
Hammer Drive 126 Return 126	01.04.1 01.04.1	126 -	EC-7-L -----	126 -	EC-7-H -----	SC-2-094 SC-2-095	53.14.07.1	14A7L18P 14A7L18N	53.62.15.1	14A3K03R 14A3K03P
Hammer Drive 127 Return 127	01.02.1 01.02.1	127 -	OC-7-V -----	127 -	OC-7-S -----	SC-1-096 SC-1-095	53.14.03.1	14A7U10R 14A7U10G	53.62.05.1	14A3H02R 14A3H02P
Hammer Drive 128 Return 128	01.04.1 01.04.1	128 -	EC-7-V -----	128 -	EC-7-S -----	SC-2-096 SC-2-095	53.14.07.1	14A7L18R 14A7L18Q	53.62.10.1	14A3J02R 14A3J02P
Hammer Drive 129 Return 129	01.02.1 01.02.1	129 -	OC-7-U -----	129 -	OC-7-R -----	SC-1-097 SC-1-098	53.14.03.1	14A7L10B 14A7L10A	53.62.15.1	14A3K02R 14A3K02P
Hammer Drive 130 Return 130	01.04.1 01.04.1	130 -	EC-7-U -----	130 -	EC-7-R -----	SC-2-097 SC-2-098	53.14.07.1	14A7U18B 14A7U18A	53.62.05.1	14A3H02D 14A3H02P
Hammer Drive 131 Return 131	01.02.1 01.02.1	131 -	OC-7-T -----	131 -	OC-7-P -----	SC-1-099 SC-1-098	53.14.03.1	14A7L10D 14A7L10C	53.62.10.1	14A3J02D 14A3J02P
Hammer Drive 132 Return 132	01.04.1 01.04.1	132 -	EC-7-T -----	132 -	EC-7-P -----	SC-2-099 SC-2-098	53.14.07.1	14A7U18D 14A7U18C	53.62.15.1	14A3K02D 14A3K02P

FIGURE 35F. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES



Line Name	Logic Page	Shoe Conn #	Logic Page	1414-IV Connector	Logic Page
Spare	-----	SC-1-100	-----	-----	-----
Spare	-----	SC-1-101	-----	-----	-----
Spare	-----	SC-1-102	-----	-----	-----
Spare	-----	SC-1-103	-----	-----	-----
Spare	-----	SC-1-104	-----	-----	-----
Spare	-----	SC-1-105	-----	-----	-----
Spare	-----	SC-1-106	-----	-----	-----
Spare	-----	SC-1-107	-----	-----	-----
Spare	-----	SC-1-108	-----	-----	-----
-20V	01.05.1	SC-1-109	53.14.03.1	14A7U09H	98.14.11.0
Spare	-----	SC-1-110	-----	-----	-----
Shield Ground	01.05.1	SC-1-111	53.14.03.1	14A7L10F	98.14.12.0
Shield Ground	01.05.1	SC-1-112	53.14.03.1	14A7L10H	98.14.12.0
Spare	-----	SC-1-113	-----	-----	-----
Spare	-----	SC-1-114	-----	-----	-----
Low Sp Strt Ind	01.07.1	SC-1-115	53.14.03.1	14A7U16A	53.55.02.1
Hi Sp Strt Ind	01.07.1	SC-1-116	53.14.03.1	14A7U16B	53.55.02.1
Forms Chk, Carr. Stp	01.06.1	SC-1-117	53.14.03.1	14A7U16C	53.42.01.1
Lo Sp Stop Ind	01.07.1	SC-1-118	53.14.03.1	14A7U16D	53.55.02.1
Hi Sp Stop Ind	01.07.1	SC-1-119	53.14.03.1	14A7U16E	53.55.02.1
-T Run Mode	01.06.1	SC-1-120	53.14.03.1	14A7_____	_____
-12V	01.05.1	SC-1-121	53.14.03.1	14A7U09N	98.14.11.0
Spare	-----	SC-1-122	-----	-----	-----
Spare	-----	SC-1-123	-----	-----	-----
DC Gnd Ret	01.05.1	SC-1-124	53.14.03.1	14A7U09J	98.14.10.0
Spare	-----	SC-1-125	-----	-----	-----
Spare	-----	SC-1-126	-----	-----	-----
Carriage Intlk	01.07.1	SC-1-127	53.14.03.1	14A7U16P	53.42.02.1
Spare	-----	SC-1-128	-----	-----	-----
Spare	-----	SC-1-129	-----	-----	-----
∕U Print Rdy Ind	01.06.1	SC-1-130	53.14.03.1	14A7U16G	53.42.02.1
Spare	-----	SC-1-131	-----	-----	-----
Print Conn Intlk 1	01.09.1	SC-1-132	53.14.03.1	14A7L10K	98.14.12.0
Chain Mtr Relay	01.07.1	SC-1-133	53.14.03.1	14A7L10M	51.03.18.0
End of Forms	01.07.1	SC-1-134	53.14.03.1	14A7U16J	53.42.01.1
Spare	-----	SC-1-135	-----	-----	-----
-T Start Relay	01.06.1	SC-1-136	-----	-----	-----
∕U Restore Key	01.06.1	SC-1-137	53.14.03.1	14A7U09B	53.50.02.1
-T Restore Key	01.06.1	SC-1-138	53.14.04.1	14A7U09A	53.50.02.1
∕6V	01.05.1	SC-1-139	53.14.04.1	14A7U09Q	98.14.10.0
-6V	01.05.1	SC-1-140	53.14.04.1	14A7U09R	98.14.10.0
Sense Amp 1	01.08.1	SC-1-141	53.14.04.1	14A7U09E	53.30.02.1
Sense Amp 2	01.08.1	SC-1-142	53.14.04.1	14A7U09F	53.30.02.1
∕12V	01.08.1	SC-1-143	53.14.04.1	14A7U09P	98.14.11.0
∕T Check Reset	01.06.1	SC-1-144	53.14.04.1	14A7U16R	53.43.01.1
Spare	-----	SC-1-145	-----	-----	-----
Spare	-----	SC-1-146	-----	-----	-----
∕6V	01.06.1	SC-1-147	53.14.04.1	14A7U09L	98.14.11.0
-6V	01.06.1	SC-1-148	53.14.04.1	14A7U09M	98.14.11.0
-T Stop Key	01.06.1	SC-1-149	53.14.04.1	14A7U16L	53.42.01.1
Print Chk Ind	01.06.1	SC-1-150	53.14.04.1	14A7U16Q	53.10.03.1
-T Single Cycle	01.06.1	SC-1-151	53.14.04.1	14A7U16M	53.42.01.1
∕U Single Cycle	01.06.1	SC-1-152	53.14.04.1	14A7U16N	53.42.01.1
∕U Start Key	01.06.1	SC-1-153	-----	-----	-----
∕U Not Start Key	01.06.1	SC-1-154	53.14.04.1	14A7U16K	53.42.01.1
∕6V	01.06.1	SC-1-155	53.14.04.1	14A7U09K	98.14.10.1
∕U Space Key	01.06.1	SC-1-156	53.14.04.1	14A7U09D	53.50.02.1
-T Space Key	01.06.1	SC-1-157	53.14.04.1	14A7U09C	53.50.02.1
Spare	-----	SC-1-158	-----	-----	-----
∕U End of Form Ind	01.06.1	SC-1-159	53.14.04.1	14A7U16H	53.42.01.1

FIGURE 35G. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES

Line Name	Logic Page	Shoe Conn #	Logic Page	1414-IV Connector	Logic Page
+U Sync Check Ind	01.06.1	SC-1-160	53,14.04.1	14A7U09G	53.42.01.1
Spare	-----	SC-2-100	-----	-----	-----
Spare	-----	SC-2-101	-----	-----	-----
Spare	-----	SC-2-102	-----	-----	-----
Spare	-----	SC-2-103	-----	-----	-----
Spare	-----	SC-2-104	-----	-----	-----
Spare	-----	SC-2-105	-----	-----	-----
Spare	-----	SC-2-106	-----	-----	-----
Spare	-----	SC-2-107	-----	-----	-----
Spare	-----	SC-2-108	-----	-----	-----
Spare	-----	SC-2-109	-----	-----	-----
Spare	-----	SC-2-110	-----	-----	-----
Shield Ground	01.05.1	SC-2-111	53,14.07.1	14A7U18F	98,14.12.0
Shield Ground	01.05.1	SC-2-112	53,14.07.1	14A7U18H	98,14.12.0
Spare	-----	SC-2-113	-----	-----	-----
Spare	-----	SC-2-114	-----	-----	-----
Spare	-----	SC-2-115	-----	-----	-----
Spare	-----	SC-2-116	-----	-----	-----
Spare	-----	SC-2-117	-----	-----	-----
Spare	-----	SC-2-118	-----	-----	-----
Spare	-----	SC-2-119	-----	-----	-----
Spare	-----	SC-2-120	-----	-----	-----
Spare	-----	SC-2-121	-----	-----	-----
Spare	-----	SC-2-122	-----	-----	-----
Spare	-----	SC-2-123	-----	-----	-----
Spare	-----	SC-2-124	-----	-----	-----
Print Conn Intlk 2	01.09.1	SC-2-125	53,14.07.1	14A7U18K	98,14.12.0
-60V Controlled	01.07.1	SC-2-126	53,14.07.1	14A7U18M	98,14.12.0
Spare	-----	SC-2-127	-----	-----	-----
Spare	-----	SC-2-128	-----	-----	-----
Spare	-----	SC-2-129	-----	-----	-----
Slow Brush 1	02.02.1	SC-2-130	53,14.08.1	14A7L24R	53,53.02.1
Slow Brush 2	02.02.1	SC-2-131	53,14.08.1	14A7L24Q	53,53.02.1
Slow Brush 3	02.02.1	SC-2-132	53,14.08.1	14A7L24P	53,53.02.1
Slow Brush 4	02.02.1	SC-2-133	53,14.08.1	14A7L24N	53,53.02.1
Slow Brush 5	02.02.1	SC-2-134	53,14.08.1	14A7L24M	53,53.02.1
Slow Brush 6	02.02.1	SC-2-135	53,14.08.1	14A7L24L	53,53.02.1
Slow Brush 7	02.02.1	SC-2-136	53,14.08.1	14A7L24K	53,53.01.1
Slow Brush 8	02.02.1	SC-2-137	53,14.08.1	14A7L24J	53,53.01.1
Slow Brush 9	02.02.1	SC-2-138	53,14.08.1	14A7L24H	53,53.01.1
Slow Brush 10	02.02.1	SC-2-139	53,14.08.1	14A7L24G	53,53.01.1
Slow Brush 11	02.02.1	SC-2-140	53,14.08.1	14A7L24F	53,53.01.1
Slow Brush 12	02.02.1	SC-2-141	53,14.08.1	14A7L24E	53,53.01.1
Stop Brush 1	02.03.1	SC-2-142	53,14.08.1	14A7L24D	53,52.02.1
Stop Brush 2	02.03.1	SC-2-143	53,14.08.1	14A7L24C	53,52.02.1
Stop Brush 3	02.03.1	SC-2-144	53,14.08.1	14A7L24B	53,52.02.1
Stop Brush 4	02.03.1	SC-2-145	53,14.08.1	14A7L24A	53,52.02.1
Stop Brush 5	02.03.1	SC-2-146	53,14.08.1	14A7U25R	53,52.02.1
Stop Brush 6	02.03.1	SC-2-147	53,14.08.1	14A7U25Q	53,52.02.1
Stop Brush 7	02.03.1	SC-2-148	53,14.08.1	14A7U25P	53,52.01.1
Stop Brush 8	02.03.1	SC-2-149	53,14.08.1	14A7U25N	53,52.01.1
Stop Brush 9	02.03.1	SC-2-150	53,14.08.1	14A7U25M	53,52.01.1
Stop Brush 10	02.03.1	SC-2-151	53,14.08.1	14A7U25L	53,52.01.1
Stop Brush 11	02.03.1	SC-2-152	53,14.08.1	14A7U25K	53,52.01.1
Stop Brush 12	02.03.1	SC-2-153	53,14.08.1	14A7U25J	53,52.01.1
Spare	-----	SC-2-154	-----	-----	-----
Low Speed Start	02.01.1	SC-2-155	53,14.08.1	14A7U25A	53,55.02.1
Low Speed Stop	02.01.1	SC-2-156	53,14.08.1	14A7U25B	53,55.02.1
High Speed Start	02.01.1	SC-2-157	53,14.08.1	14A7U25C	53,55.02.1
High Speed Stop	02.01.1	SC-2-158	53,14.08.1	14A7U25D	53,55.02.1
Emitter	02.01.1	SC-2-159	-----	-----	-----
/U Forms Chk I	01.06.1	SC-2-160	53,14.08.1	14A7U25E	53,42.01.1

FIGURE 35H. 1414-4 TO 1403 PRINTER CONTROL AND SIGNAL LINES

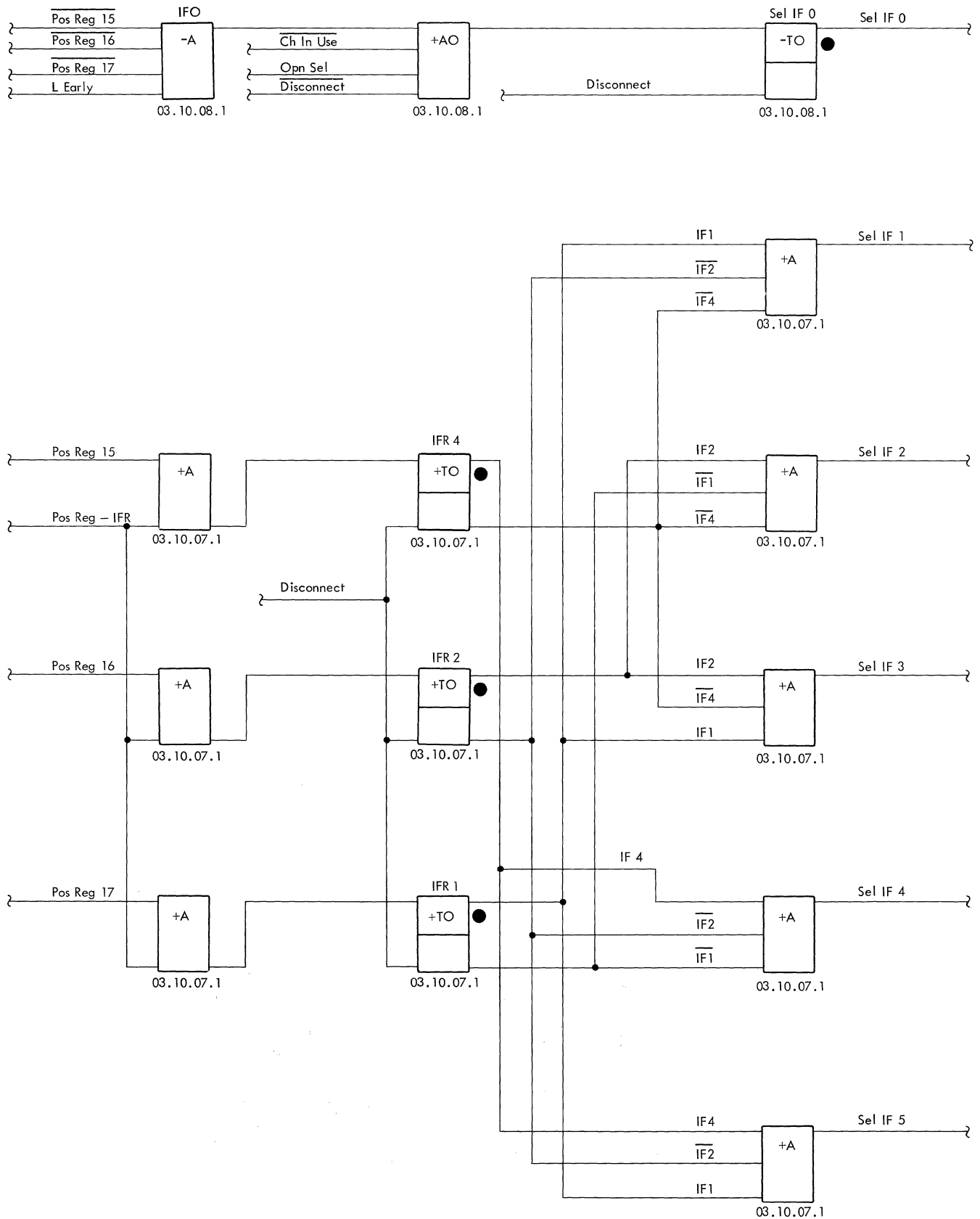


FIGURE 36. 7040-44 DPS INTERFACE DECODING



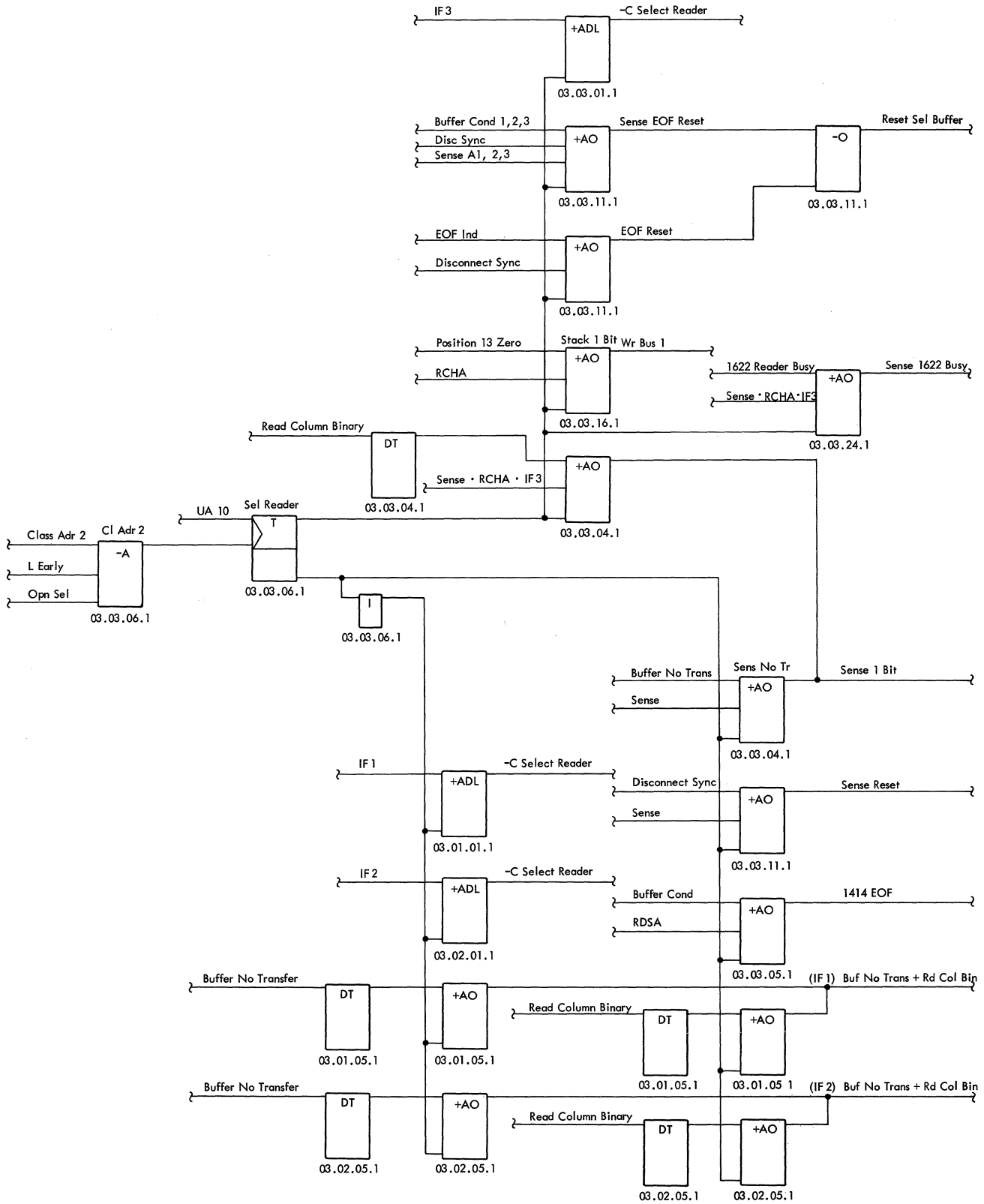


FIGURE 37. UNIT SELECT (SEL READER) CIRCUIT

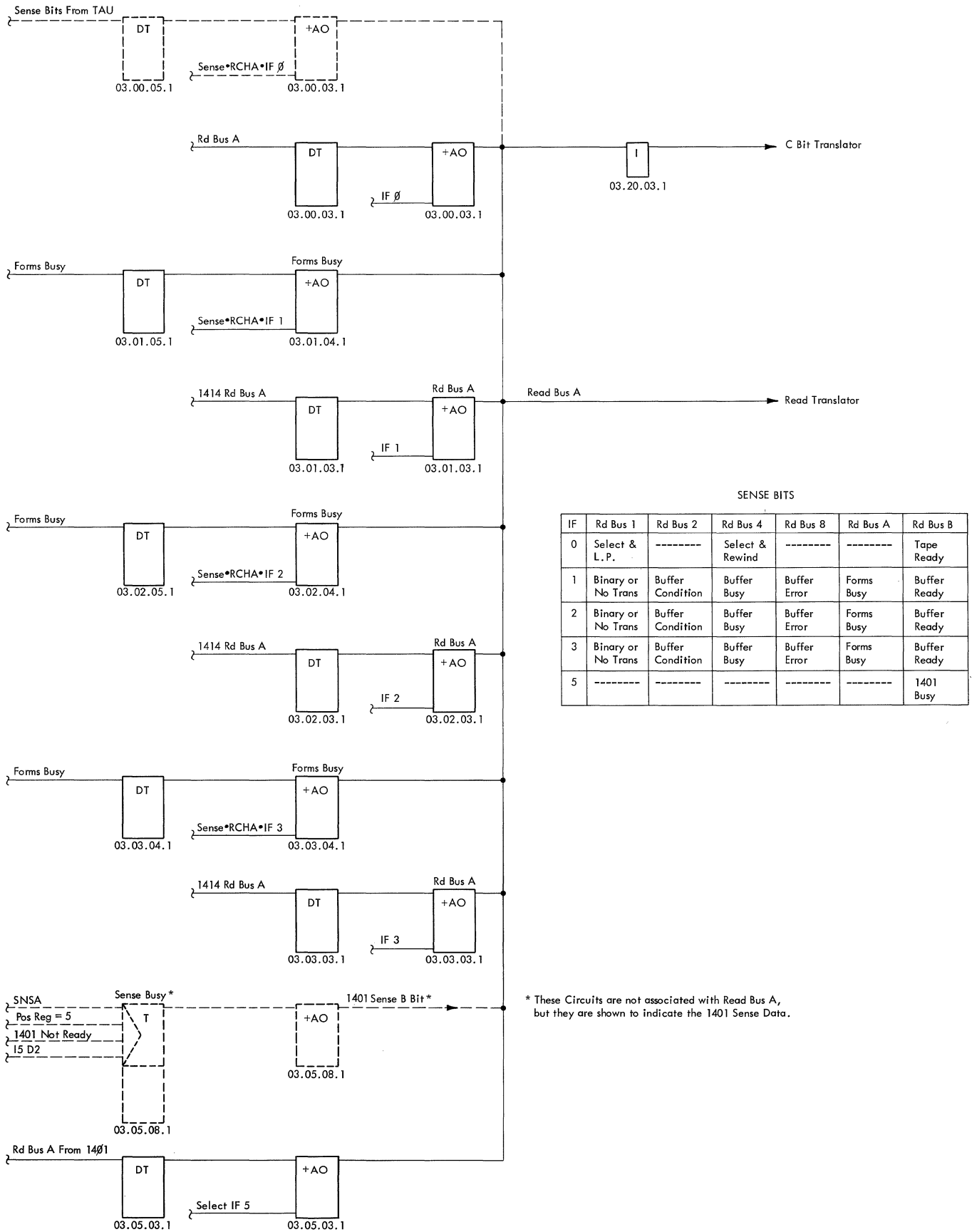


FIGURE 38. TYPICAL READ BUS POSITION IF 0, 1, 2, 3, AND 5

CIRCUIT NAME	CIRC TYPE	IF 1 LOGIC	IF 2 LOGIC	IF 3 LOGIC
1414 Read Bus 1	DT	03.01.03.1	03.02.03.1	03.03.03.1
1414 Read Bus 2	DT	03.01.03.1	03.02.03.1	03.03.03.1
1414 Read Bus 4	DT	03.01.03.1	03.02.03.1	03.03.03.1
1414 Read Bus 8	DT	03.01.03.1	03.02.03.1	03.03.03.1
1414 Read Bus A	DT	03.01.03.1	03.02.03.1	03.03.03.1
1414 Read Bus B	DT	03.01.03.1	03.02.03.1	03.03.03.1
1414 Read Bus C	DT	03.01.03.1	03.02.03.1	03.03.03.1
Buffer No Transfer	DT	03.01.05.1	03.02.05.1	03.03.04.1
Read Column Binary	DT	03.01.05.1	03.02.05.1	03.03.04.1
Buffer Condition	DT	03.01.05.1	03.02.05.1	03.03.04.1
Buffer End Transfer	DT	03.01.05.1	03.02.05.1	03.03.05.1
Buffer Busy	DT	03.01.05.1	03.02.05.1	03.03.04.1
Buffer SVC Request	DT	03.01.05.1	03.02.05.1	03.03.05.1
Buffer Error	DT	03.01.05.1	03.02.05.1	03.03.04.1
Buffer Ready	DT	03.01.05.1	03.02.05.1	03.03.04.1
Forms Busy	DT	03.01.05.1	03.02.05.1	03.03.04.1
Buffer Inquiry	DT	03.01.05.1	03.02.05.1	03.03.04.1
Buffer Outquiry	DT	03.01.05.1	03.02.05.1	03.03.04.1
Reader Busy	DT	03.01.07.1	03.02.07.1	03.03.14.1
Punch Busy	DT	03.01.07.1	03.02.07.1	03.03.14.1
Print Buffer Busy	DT	03.01.07.1	03.02.07.1	03.03.14.1
PT Reader Busy	DT	03.01.07.1	03.02.07.1	03.03.14.1
1414 Write Bus 1	ADL	03.01.03.1	03.02.03.1	03.03.03.1
1414 Write Bus 2	ADL	03.01.03.1	03.02.03.1	03.03.03.1
1414 Write Bus 4	ADL	03.01.03.1	03.02.03.1	03.03.03.1
1414 Write Bus 8	ADL	03.01.03.1	03.02.03.1	03.03.03.1
1414 Write Bus A	ADL	03.01.03.1	03.02.03.1	03.03.03.1
1414 Write Bus B	ADL	03.01.03.1	03.02.03.1	03.03.03.1
1414 Write Bus C	ADL	03.01.03.1	03.02.03.1	03.03.03.1
Select Reader	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select Printer	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select Punch Binary	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select Punch BCD	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select PT Reader	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select 0 to Buffer	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select 1 to Buffer	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select 2 to Buffer	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select 3 to Buffer	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select DTU	ADL	03.01.02.1	03.02.01.1	03.03.01.1
Select TTY	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Select Remote Inquiry	ADL	03.01.01.1	03.02.01.1	03.03.01.1
Input Mode	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Output Mode	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Reset Selected Buffer	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Form Control	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Computer Reset	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Ready to Buffer	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Forms Go	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Correct Transfer to Buf	ADL	03.01.02.1	03.02.02.1	03.03.02.1
Reader Busy	T	03.01.07.1	03.02.07.1	03.03.14.1
Punch Busy	T	03.01.07.1	03.02.07.1	03.03.14.1
Printer Busy	T	03.01.07.1	03.02.07.1	03.03.14.1
PT Reader Busy	T	03.01.07.1	03.02.07.1	03.03.14.1
Unit Record Interrupt	T	03.01.08.1	03.02.08.1	03.03.15.1
Sense IF	A	03.01.04.1	03.02.04.1	03.03.04.1
Bin or No Transfer	A	03.01.04.1	03.02.04.1	03.03.04.1
Sense Condition	A	03.01.04.1	03.02.04.1	03.03.04.1
Forms Busy	A	03.01.04.1	03.02.04.1	03.03.04.1
Sense Busy	A	03.01.04.1	03.02.04.1	03.03.04.1
Sense Error	A	03.01.04.1	03.02.04.1	03.03.04.1
Sense Ready	A	03.01.04.1	03.02.04.1	03.03.04.1
Unit Record Trap Req	A	03.01.08.1	03.02.08.1	03.03.15.1
Unit Record Interrupt Res	A	03.01.08.1	03.02.08.1	03.03.15.1
End of Record	A	03.01.05.1	03.02.05.1	03.03.05.1
Service Request	A	03.01.05.1	03.02.05.1	03.03.05.1
1414 Busy	A	03.01.05.1	03.02.05.1	03.03.05.1

CIRCUIT NAME	CIRC TYPE	COMMON LOGIC
1414 EOF	A	03.03.05.1
Output Error	A	03.03.05.1
EOF End Select	A	03.03.05.1
Block On Sense	A	03.03.05.1
WC Zero EOR	A	03.03.10.1
Forms Go	A	03.03.10.1
Sense EOR	A	03.03.10.1
Sense SVC Request	A	03.03.10.1
EOF Disconnect	A	03.03.10.1
Forms EOR	A	03.03.10.1
Transfer Error	A	03.03.11.1
Hole Count Error	A	03.03.11.1
Sense EOF Reset	A	03.03.11.1
EOF Reset	A	03.03.11.1
Sense Reset	A	03.03.11.1
Correct Transfer to Buf	A	03.03.11.1
Reader Go	A	03.03.11.1
Attention Trap Request	A	03.03.15.1
Stack 8 Bit	A	03.03.16.1
Stack 4 Bit	A	03.03.16.1
Stack 1 Bit	A	03.03.16.1

FIGURE 39. INTERFACE 1, 2, AND 3 CIRCUIT LOCATIONS



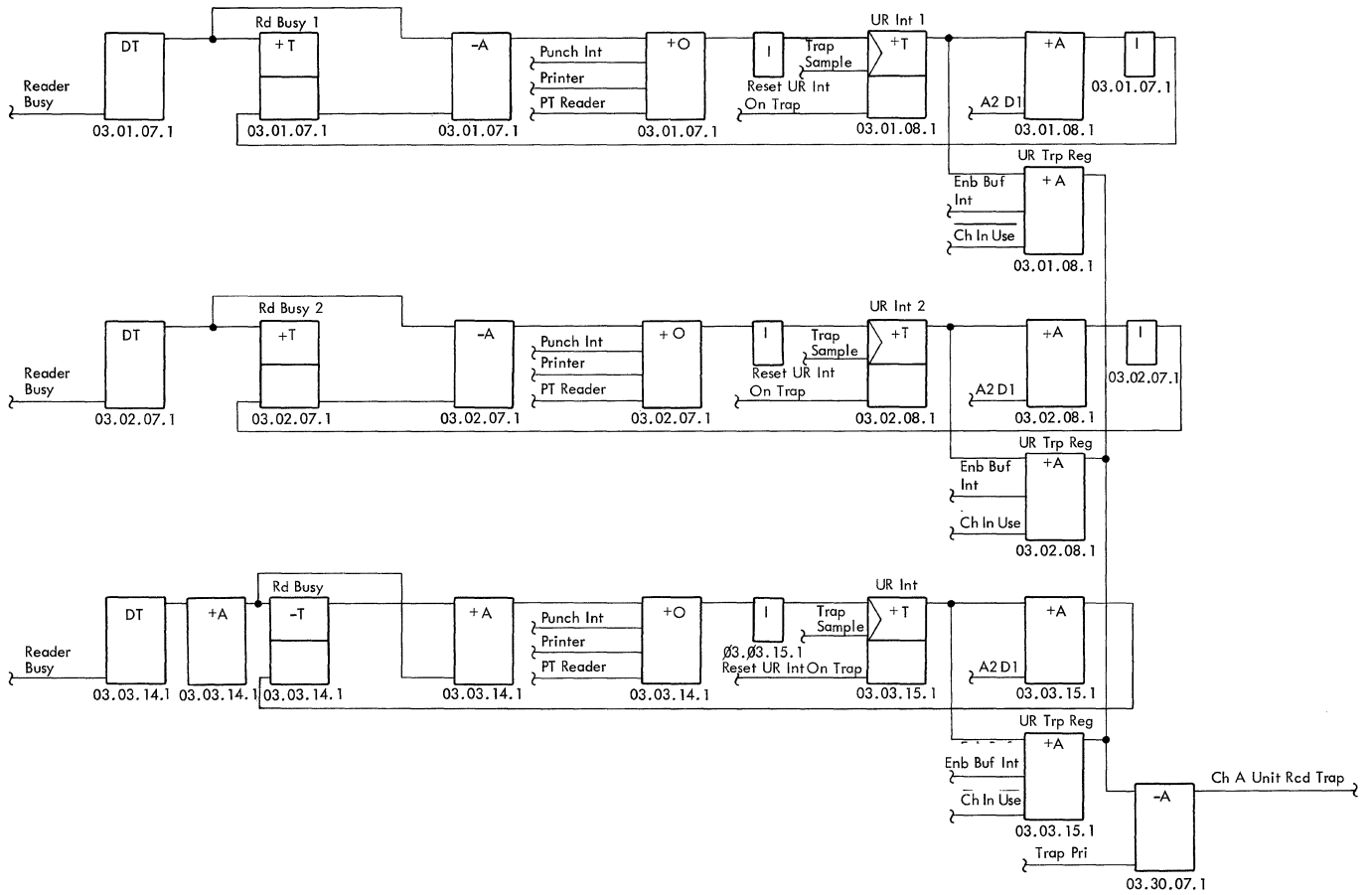


FIGURE 40. UNIT RECORD INTERRUPT (CARD READERS) 2ND LEVEL ALD LOGIC

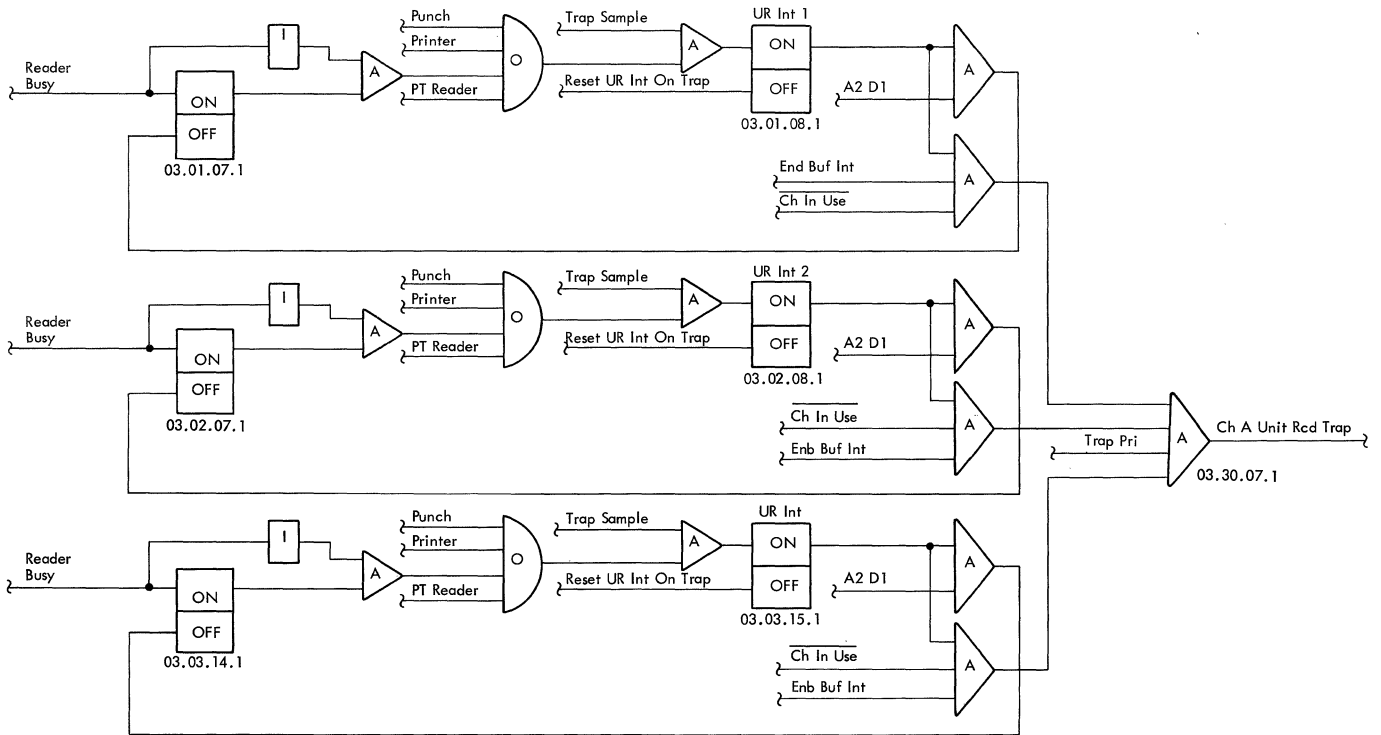


FIGURE 41. UNIT RECORD INTERRUPT (CARD READERS) LOGIC

Name	Logic Page	Test Point +B
Attention Sync	03.03.15.1	01E3B07A
Attention Sync	03.05.06.1	01E3F12C
Backspace-Rewind	03.00.08.1	01E3H18D
Binary Mode	03.10.06.1	01D4E04B
Block Write Solenoid	03.04.05.1	01D4H05E
Buffer Attention	03.03.15.1	01E3B04C
Buffer Go	03.03.10.1	01E3C07H
Busy Status	03.00.10.1	01E3C16A
Carriage Return	03.04.04.1	01D4H11P
Channel In Operation	03.10.02.1	01D4D16H
Channel In Use	03.10.02.1	01D4E06B
Control	03.10.05.1	01D4B24C
Disconnect	03.10.10.1	01D4D21F
Disconnect Delay	03.20.02.1	01D4D25D
Disconnect Sync	03.10.10.1	01D4C17K
Enable Attention	03.30.06.1	01D4G21B
Enable Buffer Interrupt	03.30.06.1	01D4G22C
Enable Parity	03.30.06.1	01D4G21C
End Of File	03.30.04.1	01D4D18B
End Of Record	03.10.10.1	01D4F18B
End Of Tape	03.30.04.1	01D4D26F
End Operation	03.10.03.1	01D4C10C
End Operation Control	03.10.03.1	01D4A05C
End Trap	03.30.07.1	01D4F25A
Erase Control	03.00.10.1	01E3F17B
Fill MQ	03.10.10.1	01D4D13A
First Character TM	03.00.07.1	01E3H16A
Form Delay 1	03.03.10.1	01E3E06B
Form Delay 2	03.03.10.1	01E3E06C
Go to U	03.20.10.1	01D4B10A
In Mode	03.03.12.1	01E3B04F
Inhibit	03.10.09.1	01D4A20G
Initial WC Zero	03.10.06.1	01D4E04C
Instruction TRA	03.05.07.1	01E3F14E
IFR 1	03.10.07.1	01D4C07B
IFR 2	03.10.07.1	01D4C08B
IFR 4	03.10.07.1	01D4C08C
Last Card	03.03.24.1	01E3D10F
Out Mode	03.03.12.1	01E3B04E
Output Response	03.05.07.1	01E3H14A
PT Reader Busy 1	03.01.07.1	01E4H12C
PT Reader Busy 2	03.02.07.1	01E4K07C
PT Reader Busy 3	03.03.14.1	01E3A04B
Position 13 One	03.03.16.1	01E3A06B
Position 13 Zero	03.03.16.1	01E3A06C
Printer Busy 1	03.01.07.1	01E4H11A
Printer Busy 2	03.02.07.1	01E4K08A
Printer Busy 3	03.03.14.1	01E3G08K
Punch Busy 1	03.01.07.1	01E4H11C
Punch Busy 2	03.02.07.1	01E4K08C
Punch Busy 3	03.03.14.1	01E3G08A
Punch Delay	03.03.22.1	01E3D10B
Read	03.10.04.1	01D4A24B
Read Delay 1	03.03.24.1	01E3G10C

Name	Logic Page	Test Point +B
Read End	03.03.24.1	01E3D10C
Read Gate	03.03.23.1	01E3F10B
Read SVC Request	03.03.24.1	01E3F11B
Reader Busy 1	03.01.07.1	01E4H11B
Reader Busy 2	03.02.07.1	01E4K08B
Reader Busy 3	03.03.14.1	01E3G08B
RC Indicator	03.30.03.1	01D4C17B
Select DTU	03.03.07.1	01E3D03B
Select End	03.00.08.1	01E3B15K
Select IF 0	03.10.08.1	01D4A08A
Select PT Reader	03.03.08.1	01E3D04B
Select Printer	03.03.06.1	01E3E03B
Select Punch	03.03.07.1	01E3F07C
Select Reader	03.03.06.1	01E3F07B
Select Remote Inquiry	03.03.08.1	01E3D04C
Select Tty	03.03.07.1	01E3D03C
Select 0	03.03.09.1	01E3D07B
Select 1	03.03.09.1	01E3D07C
Select 2	03.03.09.1	01E3C03B
Select 3	03.03.09.1	01E3C03C
Sense	03.10.05.1	01D4B24B
Sense Busy	03.05.08.1	01E3B13E
SVC Req Pr	03.04.05.1	01D4H07C
SVC Req Sp	03.04.05.1	01D4J06E
SVC Res Wr	03.03.23.1	01E3B10A
SR Ldd	03.20.09.1	01D4D15H
SR Req 1	03.20.09.1	01D4D08A
SR Req 2	03.20.09.1	01D4E05B
Sync 1	03.20.02.1	01D4D21B
Sync 2	03.20.02.1	01D4B22B
Trap Pri	03.30.09.1	01D4E24A
U Late	03.20.10.1	01D4C10B
Unit Record Interrupt 1	03.01.08.1	01E4H17C
Unit Record Interrupt 2	03.02.08.1	01E4J14C
Unit Record Interrupt 3	03.03.15.1	01E3B04B
Unusual End Trap	03.30.10.1	01D4G13C
Word Count Zero	03.10.10.1	01D4G09A
Word Parity	03.30.07.1	01D4D21C
Write	03.10.04.1	01D4A24C
Write End Of Record	03.03.22.1	01E3H10C
Write EOR Delay	03.03.22.1	01E3H10B
Write Gate	03.03.23.1	01E3F10C
Write Gate	03.10.09.1	01D4B20H
Write 1 Bit	03.04.06.1	01D4G05C
Write 2 Bit	03.04.06.1	01D4G05B
Write 4 Bit	03.04.06.1	01D4H04C
Write 8 Bit	03.04.06.1	01D4H04B
Write A Bit	03.04.06.1	01D4G06C
Write B Bit	03.04.06.1	01D4G06B
Write C Bit	03.04.06.1	01D4H07B
1401 Attention	03.05.06.1	01E3F12D
1401 End	03.05.06.1	01E3F13B
1401 Ready	03.05.05.1	01E3D13B
1401 Sense Indicator	03.05.09.1	01E3B12C

FIGURE 42. CHANNEL A LATCHES AND TRIGGER LOCATIONS

**LATCHES**

Latch Name	Logic Page	Test Point
After 9	52.10.14.1	14A4C09C
Auto Space	53.55.01.1	14A3D02D
Block Data Reg	51.50.01.1	14A4C19F
Brush SS	52.10.10.1	14A4E09G
Carriage Moving	53.55.03.1	14A3G20E
CB	52.10.10.1	14A4E092

**CB Latches**

Latch Name	Logic Page	Test Point
CB 1	52.20.02.1	14A2K19P-L
CB 2		14A2K19C
CB 4		14A2K18P-L
CB 8		14A2K18C
CB A	52.20.02.1	14A2K173
CB B		14A2J19P-L
CB C	52.20.02.1	14A2J19G

**CCC Register**

Latch Name	Logic Page	Test Point
1	53.50.01.1	14A3E23C
2		14A3E24P-L
4		14A3E24C
8		14A3E25P-L
A	53.50.01.1	14A3E25C
B		14A3E26P-L
Manual Restore	53.50.02.1	14A3E22C
Manual Space	53.50.02.1	14A3E21P-L

Latch Name	Logic Page	Test Point
CE Check Latch	51.14.01.1	14A2G04C
CE Reader Ready	52.11.01.1	14A4F20C
Channel 9 Indicator	53.56.01.1	14A3D05E
Channel 12 Indicator	53.56.01.1	14A3D05D
Clock Error	51.30.01.1	14A2E19F
Control Bit 1	51.50.05.1	14A4E18C
Control Bit 2	51.50.05.1	14A4E18G
Control Error (Prtr)	53.61.03.1	14A3E27E
Comp Cntr Adv by 2	53.33.05.1	14A1H09G

**Channel Brush**

Latch Name	Logic Page	Test Point
1	53.53.02.1	14A3G20C-L
2		14A3F20K
3		14A3F21C
4	53.53.02.1	14A3F21G
5		14A3F22P-L
6		14A3F22K
7	53.53.01.1	14A3F24P-L
8	53.53.01.1	14A3F24K
9		14A3F25C
10	53.53.01.1	14A3F25G
11		14A3F26P-L
12		14A3F26K

**Data Register (Printer)**

Latch Name	Logic Page	Test Point
1 Bit	53.10.02.1	14A1K03D
2 Bit		14A1K03A
4 Bit		14A1K04D
8 Bit	53.10.02.1	14A1K04A
A Bit		14A1K05D
B Bit		14A1K06A
C Bit	53.10.01.1	14A1K06D
Equal Compare		14A1K07D
Hammer Check		14A1K07A
Hammer Row Bit	53.10.02.1	14A1K02A
Print Line Compl	53.10.01.1	14A1K06A

**Data Register (Punch-Reader)**

Latch Name	Logic Page	Test Point
1 Bit	51.10.02.1	14A2E16C
2 Bit		14A2E16K
4 Bit		14A2E15C
8 Bit	51.10.02.1	14A2E15K
A Bit		14A2E14C
B Bit		14A2E14K
C Bit	51.10.01.1	14A2E13C
LX		14A2E12A
LY		14A2E13P-L
UX	51.10.01.1	14A2E10A
UY		14A2E11A
1st Read		14A2E11D
2nd Read	51.10.01.1	14A2E10D
Pch 1		14A2E12D

Latch Name	Logic Page	Test Point
Delay	53.23.03.1	14A1G14C
Delay Forms	53.51.06.1	14A3D11D
Delay Reset	53.55.03.1	14A3F19E
Emitter Delay	53.52.02.1	14A3G15G
End of File	52.11.01.1	14A4G20D
End of File Delay	52.11.01.1	14A4F22C
End of Transfer 1	51.40.12.1	14A4H173
End of Transfer 2	51.40.12.1	14A4H17F
Fast or Slow Skip	53.54.01.1	14A3E04C
Forms Check	53.42.01.1	14A1F07D
Forms Delay	53.51.06.1	14A3D11D
Hold Over 132	53.40.02.1	14A1E19C
Impulse CB	52.10.10.1	14A4J15K
Indicator Channel 9	53.56.01.1	14A3D05E
Indicator Channel 12	53.56.01.1	14A3D05D
Inhibit Pulse	51.30.05.1	14A2E25A
Insert C Bit	53.11.05.1	14A1E23R
Manual Restore	53.50.02.1	14A3E22C
Manual Space	53.50.02.1	14A3E21P-L
Multi Reed Feed	52.10.08.1	14A4C12G
Print in Process	53.51.06.1	14A3D11E
Printer Control Err	53.61.03.1	14A3E27E
Punch Check 1	52.12.02.1	14A4A031
Punch Check 2	52.12.02.1	14A4A04C
Punch Feed	52.10.14.1	14A4C06E
Punch Scan CB	52.10.14.1	14A4D13D
Punch Stacker Select	52.13.01.1	14A4B03G
Punch Transfer Chk	52.12.01.1	14A4A052
Read Check	52.12.01.1	14A4A06C
Read Feed	52.10.08.1	14A4E06D

Latch Name	Logic Page	Test Point
Read In Interlock	53.40.01.1	14A1E18P
Read In Timing	53.40.01.1	14A1E16C
Read Pulse 1	51.30.05.1	14A2E25D
Read Pulse 2	51.30.05.1	14A2E241
Read Stack 1	52.13.02.1	14A4B05D
Read Stack 2	52.13.02.1	14A4B05E
Reader Ready CE	52.11.01.1	14A4F20C
Ready 1	51.40.04.1	14A4F13D
Ready 2	51.40.04.1	14A4J15G
Serial Scan	51.50.06.1	14A4F18K
Single Line	53.42.01.1	14A1F09K
Space	53.55.01.1	14A3D03E
Space Suppress	53.51.06.1	14A3C15E
Stack 4	52.13.01.1	14A4B06K
Stack 8	53.13.01.1	14A4B03F
Start (Printer)	53.42.01.1	14A1F10G
Start	51.50.03.1	14A4H17D
Stop	51.50.03.1	14A4E17C
Strobe	51.40.43.1	14A4J24B
Switch Bounce	53.42.01.1	14A1F09K
Sync Check	53.43.01.1	14A1H06C
Sync Holdover	53.12.01.1	14A1E20G
T Ring AC	51.32.02.1	14A2H16A
Ten Ring Error	51.32.02.1	14A2H16D
Ten Ring Ind Error	51.32.02.1	14A2H15F
Time Pulse 1	51.30.02.1	14A2E26D
Time Pulse 2	51.30.02.1	14A2E26A
Turn Off Rings	53.23.01.1	14A1K02C
Trans & Print Error	53.12.01.1	14A1E23P
Validity	52.12.02.1	14A4A07E
Write Pulse	51.30.05.1	14A2E243
51 Column Card	52.10.11.1	14A2F09K
1401 Read	53.10.08.1	14A4E06C-L

**TRIGGERS**

**Clock**

Trigger Name	Logic Page	Test Point
000-010	51.30.03.1	14A2F26B
010-020		14A2F24E
020-030		14A2F24C
030-040	51.30.03.1	14A2F22E
040-050		14A2F22C
050-060		14A2G26E
060-070	51.30.03.1	14A2G26C
070-080		14A2G24E
080-090		14A2G24C
090-010	51.30.03.1	14A2G22E
010-000		14A2G22C

Trigger Name	Logic Page	Test Point
CE Go	51.50.03.1	14A4E12B
Chain Home	53.30.01.1	14A1F15P*

\* +S Reference

**Compare Counter**

Trigger Name	Logic Page	Test Point
1	53.33.01.1	14A1J13F
2	53.33.01.1	14A1J12B
4	53.33.02.1	14A1J11B
8	53.33.02.1	14A1J10B
A	53.33.03.1	14A1J09B
B	53.33.03.1	14A1J08B

FIGURE 43. 1414-IV I-O SYNCHRONIZER LATCHES AND TRIGGERS

Fives Ring

Trigger Name	Logic Page	Test Point
1	53.21.01.1	14A1G26B
2		14A1G25B
3		14A1G24B
4	53.21.01.1	14A1G23B
5		14A1G22P
Fives Advance	53.23.02.1	14A1H16B

Trigger Name	Logic Page	Test Point
Home	53.22.01.1	14A1G18B
Parity 1	51.18.01.1	14A2F06B
Parity 2	51.18.01.1	14A2F07B
Parity 1	53.44.02.1	14A1K14B
Parity 2	53.44.02.1	14A1K15B

Print Scan

Trigger Name	Logic Page	Test Point
1	53.32.01.1	14A1G06E
2		14A1G05B
4		14A1G04B
8	53.32.01.1	14A1G03B
16		14A1G06C
32		14A1G02B

Trigger Name	Logic Page	Test Point
Print Sub Scan	53.30.01.1	14A1F16B
PSS 1	53.31.01.1	14A1H04B
PSS 2	53.31.01.1	14A1H03B
PSS 3	53.31.01.1	14A1H02B
Punch Feed	52.10.15.1	14A4D04B
Punch PR Request	52.10.01.1	14A4B17B
Punch Request	52.10.15.1	14A4D06B
Punch Scan	52.10.02.1	14A4B16B
Punch Transfer	52.10.09.1	14A4D05B
Read	53.40.01.1	14A1F26B
Read Feed	52.10.09.1	14A4D07D
Read PR Request	52.10.01.1	14A4A17B
Read Request	52.10.07.1	14A4D09B
Read Scan	52.10.02.1	14A4A16B
Read Transfer	52.10.09.1	14A4D08B
Scan	53.40.01.1	14A1F24B
Scan Call	53.40.01.1	14A1F25B

Tens Ring (Printer)

Trigger Name	Logic Page	Test Point
0	53.20.01.1	14A1H26B
1		14A1H25E
2		14A1H25C
3	53.20.01.1	14A1H24B
4		14A1H23E
5		14A1H23C
6	53.20.02.1	14A1H22E
7		14A1H22C
8		14A1H21E
9	53.20.02.1	14A1H21C
Advance	53.23.02.1	14A1H16B

Tens Ring (Punch-Reader)

Trigger Name	Logic Page	Test Point
0	51.32.01.1	14A2J16E
1		14A2J16C
2		14A2J15E
3	51.32.01.1	14A2J15C
4		14A2J13E
5		14A2J13C
6	51.32.01.1	14A2J12E
7		14A2J12C
Control	51.32.02.1	14A2H13E
End of Scan	51.32.01.1	14A2J11B

Threes Ring

Trigger Name	Logic Page	Test Point
1	53.22.01.1	14A1G21B
2	53.22.01.1	14A1G20B
3	53.22.01.1	14A1G19B
Advance	53.23.02.1	14A1G15B

Units Ring

Trigger Name	Logic Page	Test Point
0	51.31.01.1	14A2G16E
1		14A2G16C
2		14A2G15E
3	51.31.01.1	14A2G15C
4		14A2G13E
5		14A2G13C
6	51.31.01.1	14A2G12E
7		14A2G12C
8		14A2G11E
9	51.31.01.1	14A2G11C
Control	51.31.02.1	14A2H13C

FIGURE 43. 1414-IV I-O SYNCHRONIZER LATCHES AND TRIGGERS (CONT'D)



**AMPLIFIERS**

**Final Amplifiers**

Line Name	Logic Page (1)	Test Point (-Y)
1 Bit	90.40.10.1	14D6E05C-F
1 Bit Lo		14D6D06B
1 Bit Hi		14D6D05B
2 Bit		14D6E07C-F
2 Bit Lo		14D6D08B
2 Bit Hi		14D6D07B
4 Bit		14D6E09C-F
4 Bit Lo		14D6D10B
4 Bit Hi		14D6D09B
8 Bit		14D6E12C-F
8 Bit Lo		14D6D12B
8 Bit Hi		14D6D11B
A Bit	14D6E14C-F	
A Bit Lo	14D6D14B	
A Bit Hi	14D6D13B	
B Bit	14D6E16C-F	
B Bit Lo	14D6D16B	
B Bit Hi	14D6D15B	
C Bit	14D6E18C-F	
C Bit Lo	14D6D18B	
C Bit Hi	14D6D17B	

**LATCHES**

**A-Register**

Line Name	Logic Page (1)	Test Point (-Y)
1 Bit	90.40.20.1	14D6C05H
2 Bit		14D6C07H
4 Bit		14D6C09H
8 Bit		14D6C12H
A Bit	14D6C14H	
B Bit	14D6C16H	
C Bit	90.40.20.1	14D6C18H
VRC	90.50.51.1	14D3A20G

**B-Register**

Line Name	Logic Page (1)	Test Point (-Y)
1 Bit	90.40.20.1	14D6C05G
2 Bit		14D6C07G
4 Bit		14D6C09G
8 Bit		14D6C12G
A Bit	14D6C14G	
B Bit	14D6C16G	
C Bit	90.40.20.1	14D6C18G

Line Name	Logic Page (1)	Test Point (-Y)
Backspace	90.60.40.1	14D3A20C
Backward	90.60.40.1	14D3C11R
Check Character	90.40.61.1	14D3C11F
Compare Check	90.50.30.1	14D6A19P
Disconnect	90.60.31.1	14D3A09G
Echo Error	90.50.50.1	14D3B06C
Erase	90.60.31.1	14D3A09P
Error	90.50.50.1	14D3B16P
First Bit	90.40.60.1	14D6D21C
First Character	90.40.60.1	14D6B16R
Forward Stop Dly	90.30.56.1	14D4E06F
Gt on Final Amps	90.30.52.1	14D4A16F
Go	90.60.11.1	14D3D14P
Load Point	90.60.02.1	14D3A06C
No Echo	90.50.50.1	14D3B06G
Odd Redundancy	90.40.61.1	14D3B07R
Read Delay	90.30.10.1	14D4F12F
Read Disc Delay	90.30.10.1	14D4F12R
Read Condition	90.60.20.1	14D3A17G
Read Only	90.60.20.1	14D3A20F

**Read-Write Register**

Bit	Logic Page (1)	Test Point (-Y)
1 Bit	90.40.50.1	14D6D20H
2 Bit		14D6B21H
4 Bit		14D6B22H
8 Bit	90.40.51.1	14D6B23H
A Bit		14D6B24H
B Bit		14D6B25H
C Bit	90.40.52.1	14D6B26H

Name	Logic Page (1)	Test Point (-Y)
VRC	90.50.50.1	14D3B04F
Rewind	90.60.02.1	14D3B07G
Rewind-Unload	90.60.02.1	14D3B07F
Skew Gate	90.10.31.1	14D4C16L
Skew Error	90.50.51.1	14D3B06R

**Select Tape Unit**

Tape Unit	Logic Page (1)	Test Point (-S)
TU 0	90.68.50.1	14D1B06A
TU 1	90.68.50.1	14D1B06D
TU 2	90.68.50.1	14D1C07A
TU 3	90.68.51.1	14D1C07D
TU 4	90.68.51.1	14D1C08A
TU 5	90.68.51.1	14D1C08D
TU 6	90.68.52.1	14D1B08A
TU 7	90.68.52.1	14D1B08D
TU 8	90.68.52.1	14D1B09A
TU 9	90.68.53.1	14D1B09D

Name	Logic Page (1)	Test Point (-Y)
Tape In Process	90.68.53.1	14D1A14R
Turn on TI	90.60.50.1	14D3C12F
Write	90.60.30.1	14D3A12G
Write Condition	90.60.30.1	14D3B13G
Write Disc Dly	90.30.11.1	14D4B15C
Write Delay	90.30.11.1	14D4B15G
Write Dly Noise	90.50.50.1	14D3A16C
Write TM	90.60.31.1	14D3C11C
Write Tr Rel	90.60.31.1	14D3C11G

**OSCILLATORS**

**Delay Counter Drive**

Name	Logic Page (1)	Test Point
6.7 kc	90.30.20.1	14D4B11A-B
10 kc	90.30.20.1	14D4A11B

**Read Clock**

Name	Logic Page (1)	Test Point
115 kc	90.10.10.1	14D4D22A
240 kc		14D4E23A
320 kc		14D4D23A
360 kc		14D4F22A
667 kc		14D4E22A
1.0 mc		14D4F23A
1.6 mc	90.10.10.1	14D4F24A

**Write Clock**

Name	Logic Page (1)	Test Point
115 kc	90.20.10.1	14D4A22A-B
240 kc		14D4B22A-B
320 kc		14D4B23A-B
360 kc		14D4C22A-B
667 kc		14D4B23A-B
960 kc		14D4B24A-B
1.00 mc	90.20.10.1	14D4C23A-B
1.44 mc		14D4C24A-B

**TRIGGERS**

**Character Counter**

Trigger Name	Logic Page (1)	Test Point (-S)
1	90.68.13.1	14D1C15C
2		14D1C15E
3		14D1C16E
4	90.68.13.1	14D1C16C
5		14D1C17E
5		14D1D18E
10	90.68.14.1	14D1C17C
20		14D1C18E
40		14D1C18C
80		14D1C19E
160	90.68.14.1	14D1C19C
Even		90.40.62.1

**Delay Counter**

Trigger Name	Logic Page (1)	Test Point (-Y)
1	90.30.40.1	14D4C09B
2	90.30.40.1	14D4C09E
4	90.30.40.1	14D4C08B
8	90.30.41.1	14D4C08E
16	90.30.42.1	14D4C07B
32	90.30.42.1	14D4C07E
64		14D4C06B
128		14D4C06E
256	90.30.43.1	14D4C05B
512	90.30.43.1	14D4C05E
1024	90.30.43.1	14D4C04B
2048	90.30.43.1	14D4C04E

**Instruction Ring**

I Ring Name	Logic Page (1)	Test Point (-S)
1	90.68.11.1	14D1C13D-L*
2		14D1C13E
3		14D1C14E
4	90.68.11.1	14D1C14C

\* +S Test Point

**LRCR**

LRCR Tgr	Logic Page (1)	Test Point (-Y)
1	90.50.40.1	14D6C21B
2		14D6C21E
4		14D6C22B
8	90.50.40.1	14D6C22E
A	90.50.41.1	14D6C23B
B	90.50.41.1	14D6C23E
C		14D6C24B

Read Name Clock	Logic Page (1)	Test Point (-Y)
RC 1	90.10.20.1	14D4E18B
RC 2		14D4E18E
RC 4		14D4F18B
RC 8	90.10.20.1	14D4F18E

**Special Ring**

Ring Trigger	Logic Page (1)	Test Point (-S)
1	90.68.12.1	14D1B13E
2	90.68.12.1	14D1B13C

Write Name Clock	Logic Page (1)	Test Point (-Y)
WC 1	90.20.20.1	14D4B19B
WC 2		14D4B19E
WC 4		14D4B18B
WC 8		14D4B18E

Notes:

(1) Logic given is for 1414-7; for 1414-1, 2 See Logic 60.XX.XX.1

FIGURE 44. 1414-7 I-O SYNCHRONIZER LOGIC LOCATIONS

Name	Part Number
AEC-	0371940
AER-	0370252
AEW-	0370254
AHC-	0370293
AJD-	0370260
AJF-	0370414
ANN-	0370697
ANQ-	0370660
CD--	0371029
CKVU	0371269
CLVR	0371075
CRZV	0371274
D8--	0372188
DAC-	0371951
DAW-	0370083
DAX-	0370084
DAZ-	0370127
DBX-	0370261
DBZ-	0370385
DCK-	0370468
DEA-	0371941
DEB-	0371942
DED-	0371987
DEF-	0370216
DEG-	0370217
DEJ-	0370219
DEQ-	0370212
DES-	0370202
DET-	0370203
DEU-	0370200
DEV-	0370214
DEW-	0370211
DEX-	0370210
DEY-	0370208
DEZ-	0370207
DFB-	0370206
DFC-	0370205
DFD-	0370204
DFE-	0370201
DFG-	0370209
DFJ-	0370232
DFK-	0370231
DFL-	0370230
DFQ-	0370225
DFR-	0370226
DFS-	0370234
DFZ-	0370241
DGA-	0370242
DGN-	0370257
DGR-	0370258
DGS-	0370347
DGT-	0370380
DGU-	0370379
DGV-	0370378
DGW-	0370377
DGX-	0370232
DGY-	0370375
DGZ-	0370373
DHA-	0370374
DHB-	0370348
DHC-	0370372
DHD-	0370371
DHE-	0370262

Name	Part Number
DHF-	0370350
DHG-	0370351
DHH-	0370358
DHJ-	0370352
DHK-	0370349
DHQ-	0370503
DLM-	0370659
DLP-	0370787
DLS-	0370662
DLT-	0370786
DLU-	0370657
DMM-	0370889
DMN-	0370890
DMP-	0370891
DMQ-	0372125
DMR-	0370892
DMS-	0370893
DMT-	0370894
DMU-	0370895
DMV-	0370896
DMX-	0370897
DMY-	0370898
DNA-	0372103
DNB-	0372105
DNC-	0372104
DND-	0372127
DNF-	0372106
DNH-	0372137
DNJ-	0372164
DNK-	0372163
DNL-	0372162
DNW-	0372156
DNY-	0372189
DNZ-	0372261
DOM-	0372143
DON-	0372151
DPA-	0372100
DPB-	0372124
DPC-	0372101
DPD-	0372102
DPE-	0372107
DPG-	0372108
DPH-	0372109
DPP-	0372110
DPQ-	0372111
DPR-	0372112
DPS-	0372113
DPT-	0372141
DPU-	0372114
DPV-	0372126
DPY-	0372116
DQA-	0372147
DQB-	0372140
DQC-	0372142
DQD-	0372190
DQE-	0372144
DQF-	0372152
DQJ-	0372150
DQM-	0372143
DQN-	0372151
DQP-	0372145
DQR-	0372138
DQS-	0372155

Name	Part Number
DQT-	0372148
DQU-	0372146
DQW-	0372156
DQX-	0372181
DXA-	0372233
DZA-	0372359
EY--	0371199
FP--	0371453
GK--	0371533
JB--	0371245
JD--	0371478
KG--	0371795
MM--	0371624
MX--	0371661
NC--	0371592
NGXX	0371996
NT--	0371671
PP--	0371365
PQ--	0371370
QC--	0371633
QD--	0371078
RE--	0371699
RF--	0371250
STZ-	0373102
SVR-	0373288
TAB-	0370066
TAF-	0370365
TAM-	0370369
TAU-	0370129
TBG-	0370296
TBQ-	0370295
TBR-	0370297
TBS-	0370298
TBV-	0370299
TC--	0371621
TCK-	0370334
TDB-	0370389
TDC-	0370401
TDD-	0370400
TDE-	0370399
TDF-	0370398
TDG-	0370397
TDH-	0370396
TDK-	0370551
TFM-	0370818
TFR-	0372179
TFS-	0372180
UCA-	0373295
UCB-	0373301
UCC-	0373302
UCD-	0373303
UCE-	0373304
UCF-	0373296
UCG-	0373297
UCH-	0373298
UCK-	0373312
UCL-	0373299
UCM-	0373313
UCN-	0373350
UCP-	0373351
UCQ-	0373349
V7--	0372187
VJG-	0373101

Name	Part Number
YAA-	0370093
YAB-	0370095
YBY-	0370417
YCA-	0370419
YCB-	0370420
YCC-	0370421
YGA-	0370575
YGB-	0370576
YGE-	0370579
YGH-	0370610
YGL-	0370612
YJG-	0370825

Note: Cards given are those used in the 7040-7044 CPU; 1414-I,II,V,VI; 1414-III without options 1-6.

FIGURE 45. SMS CARD ALPHABETICAL LISTING

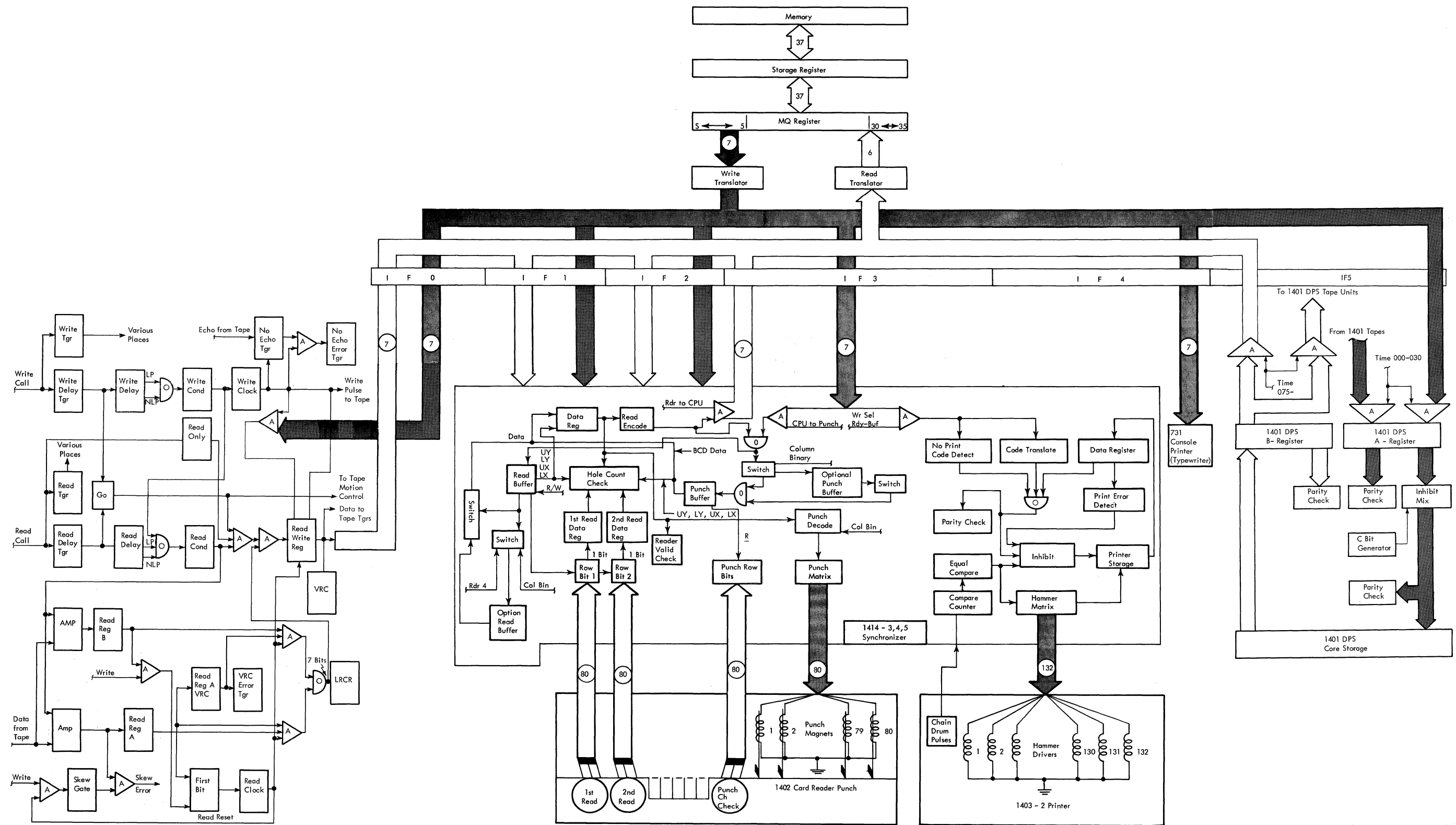


FIGURE 46. 7040-7044 CHANNEL A DATA FLOW

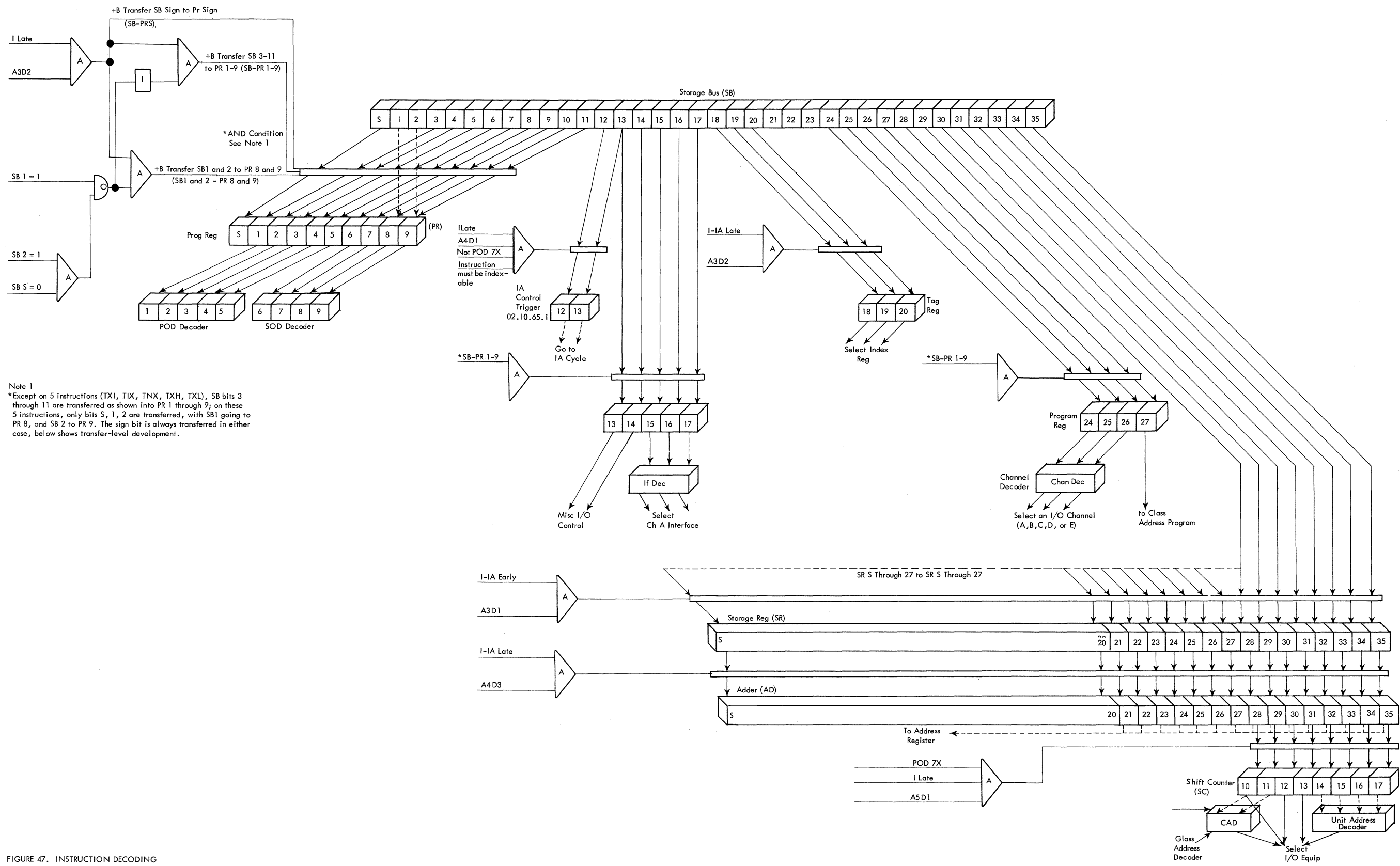


FIGURE 47. INSTRUCTION DECODING



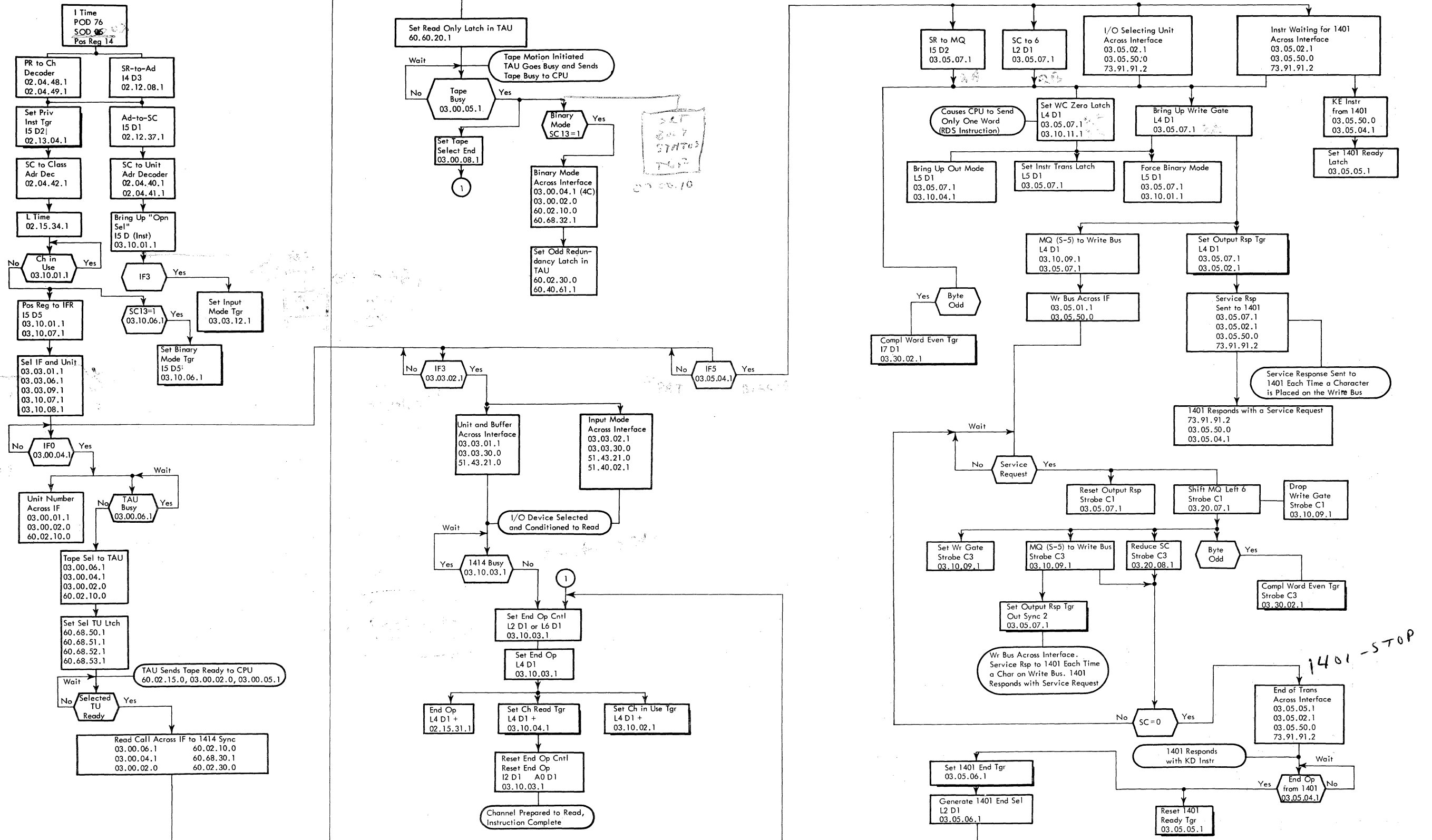


FIGURE 48. RDSA +0762; PRDA -1762 OVERALL LOGIC FLOW

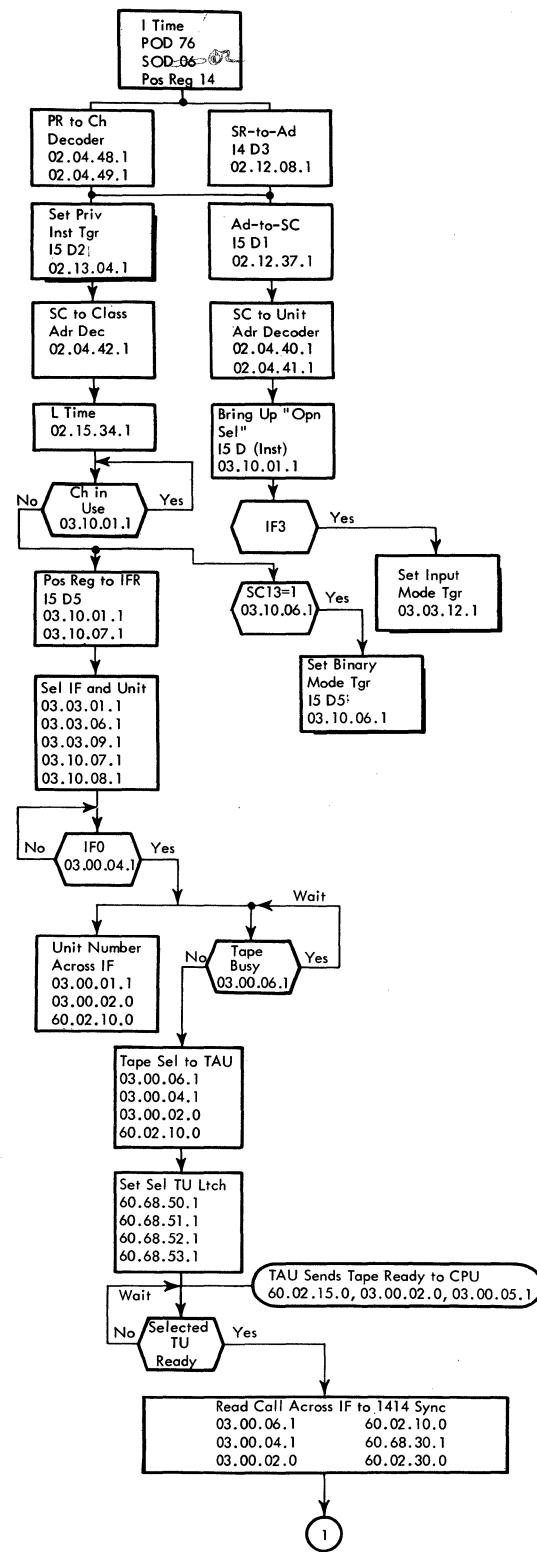


FIGURE 49. RDSA + 0762; PRDA - 1762 I.F. 0 LOGIC FLOW

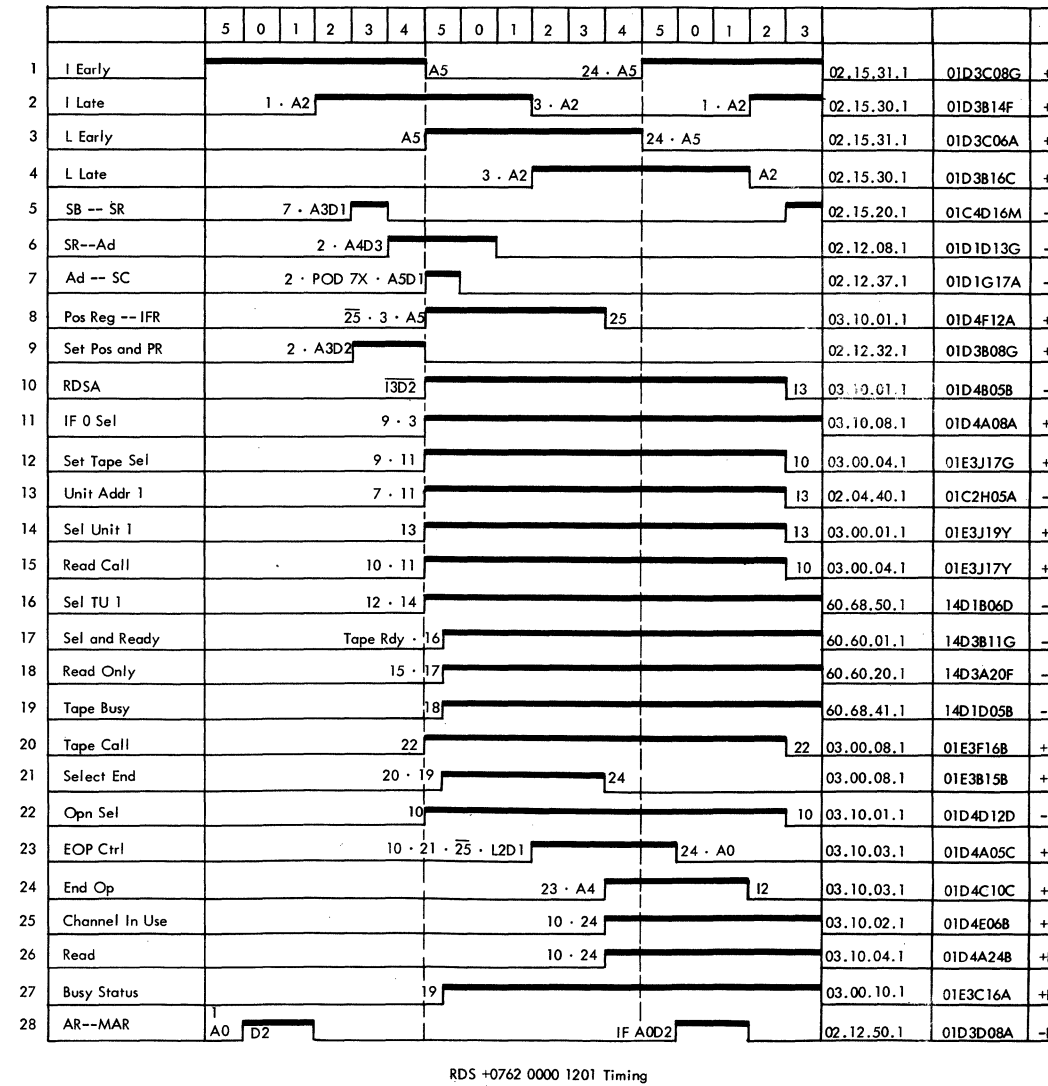
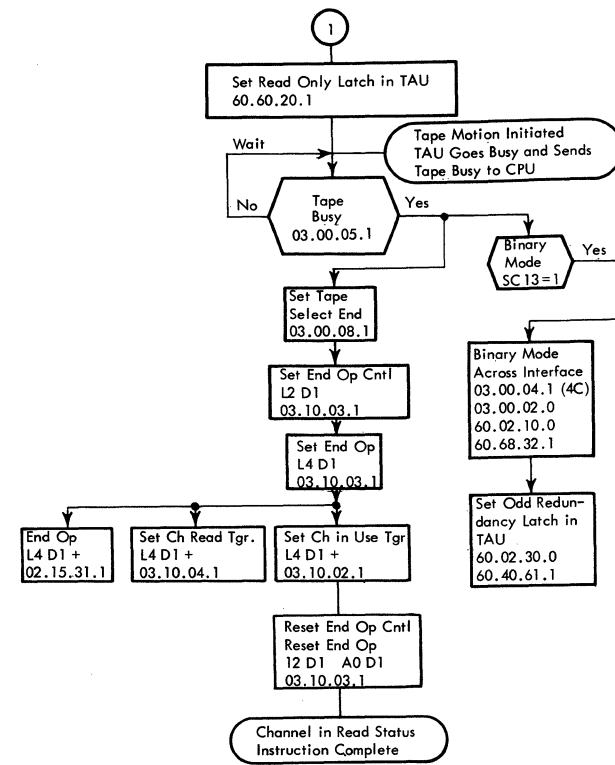


FIGURE 50. RDSA + 0762; PRDA - 1762 I.F. 0 TIMING





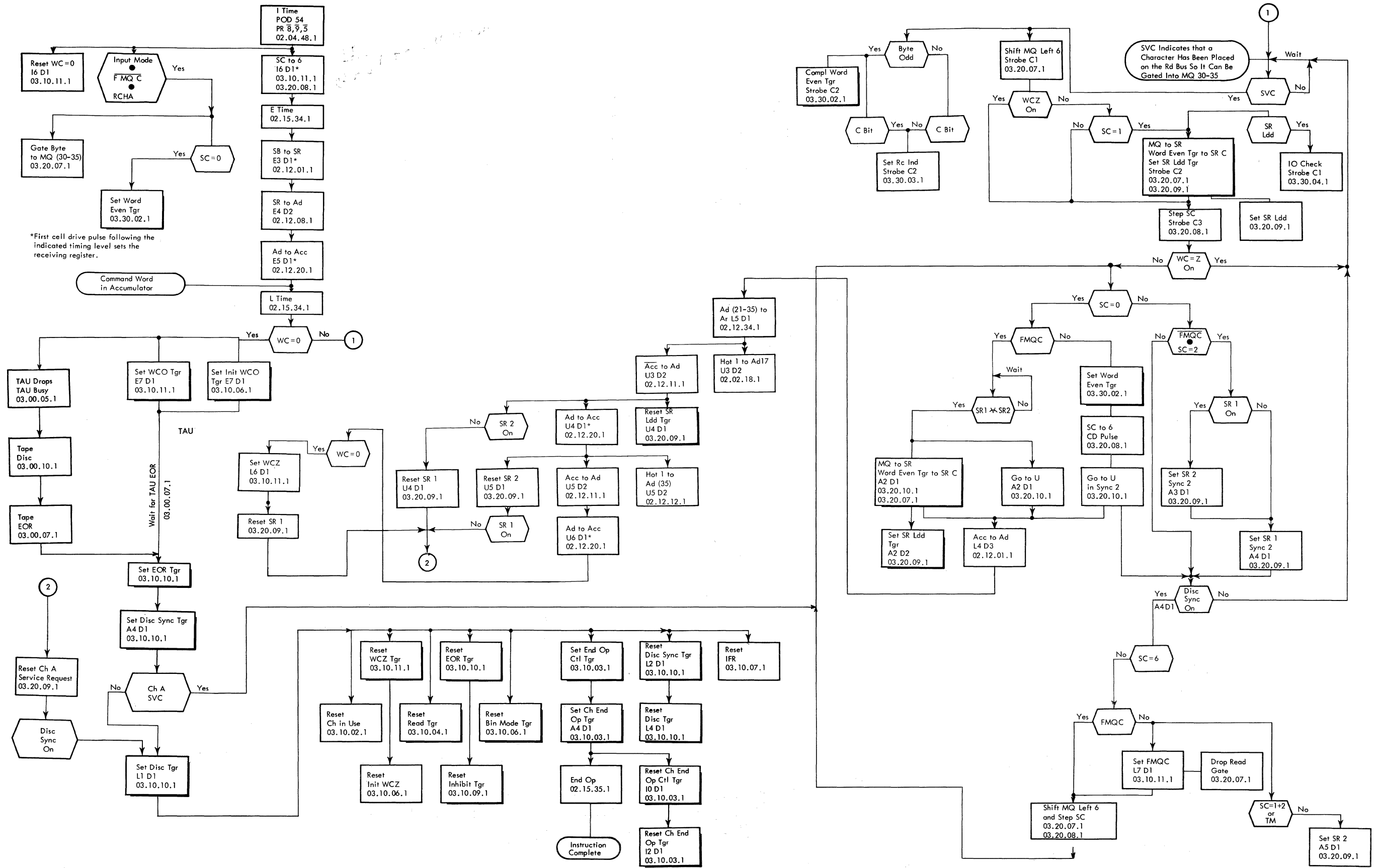


FIGURE 54. RCHA + 0540 (RDS) I. F. O LOGIC FLOW





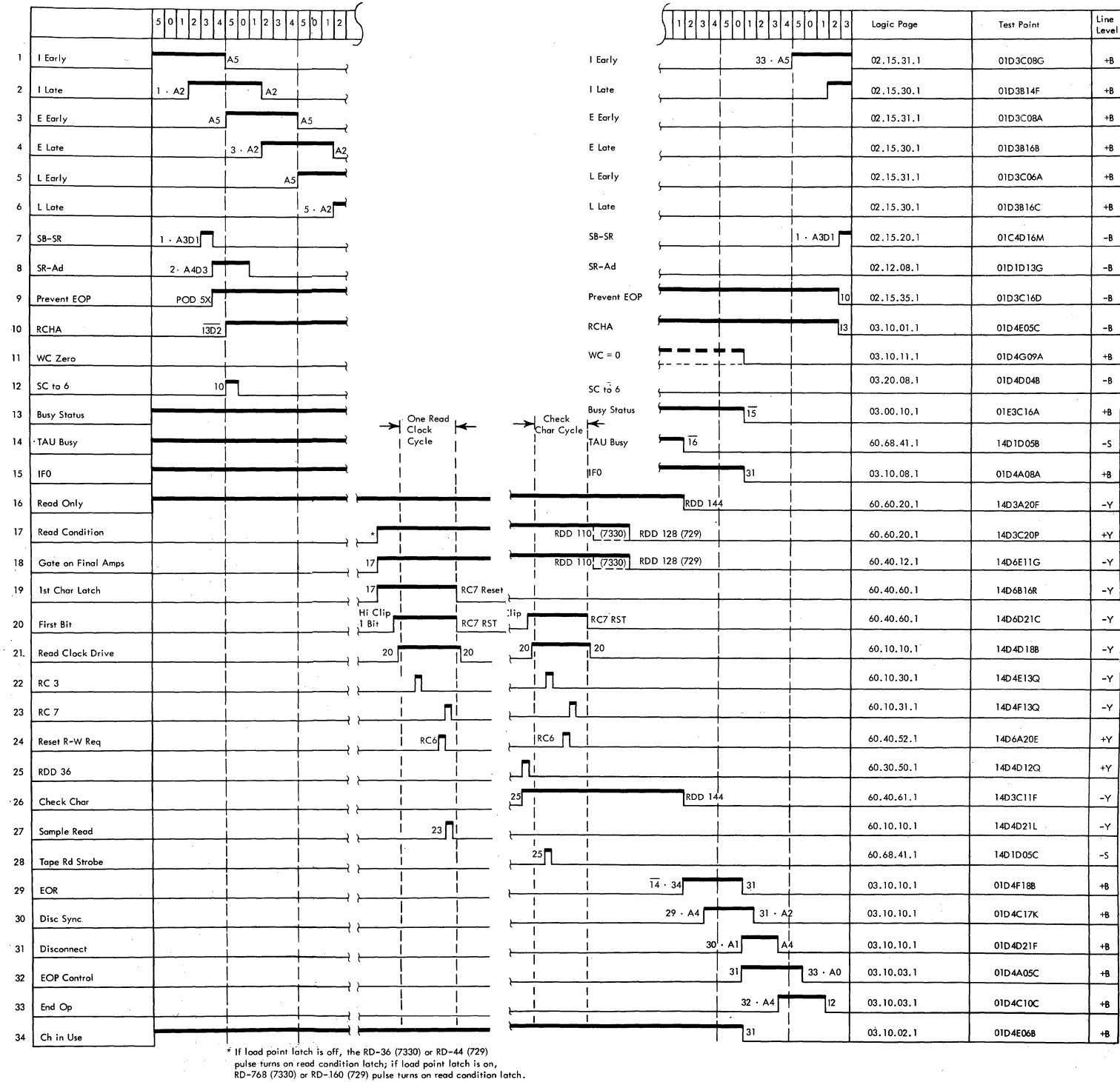


FIGURE 57. RCHA + 0540 (RDS) I. F. 0 WORD COUNT ≠ 0 TIMING

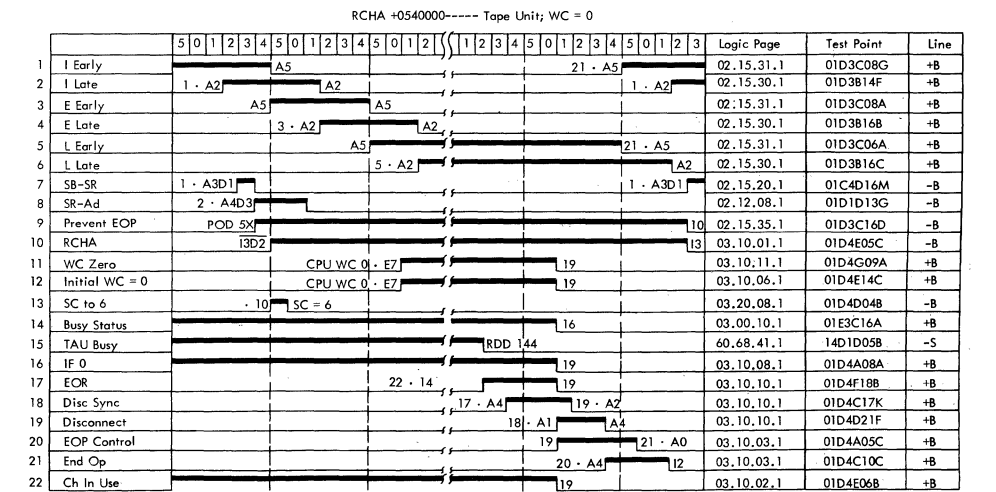


FIGURE 58. RCHA + 0540 (RDS) I. F. 0 WORD COUNT = 0 TIMING

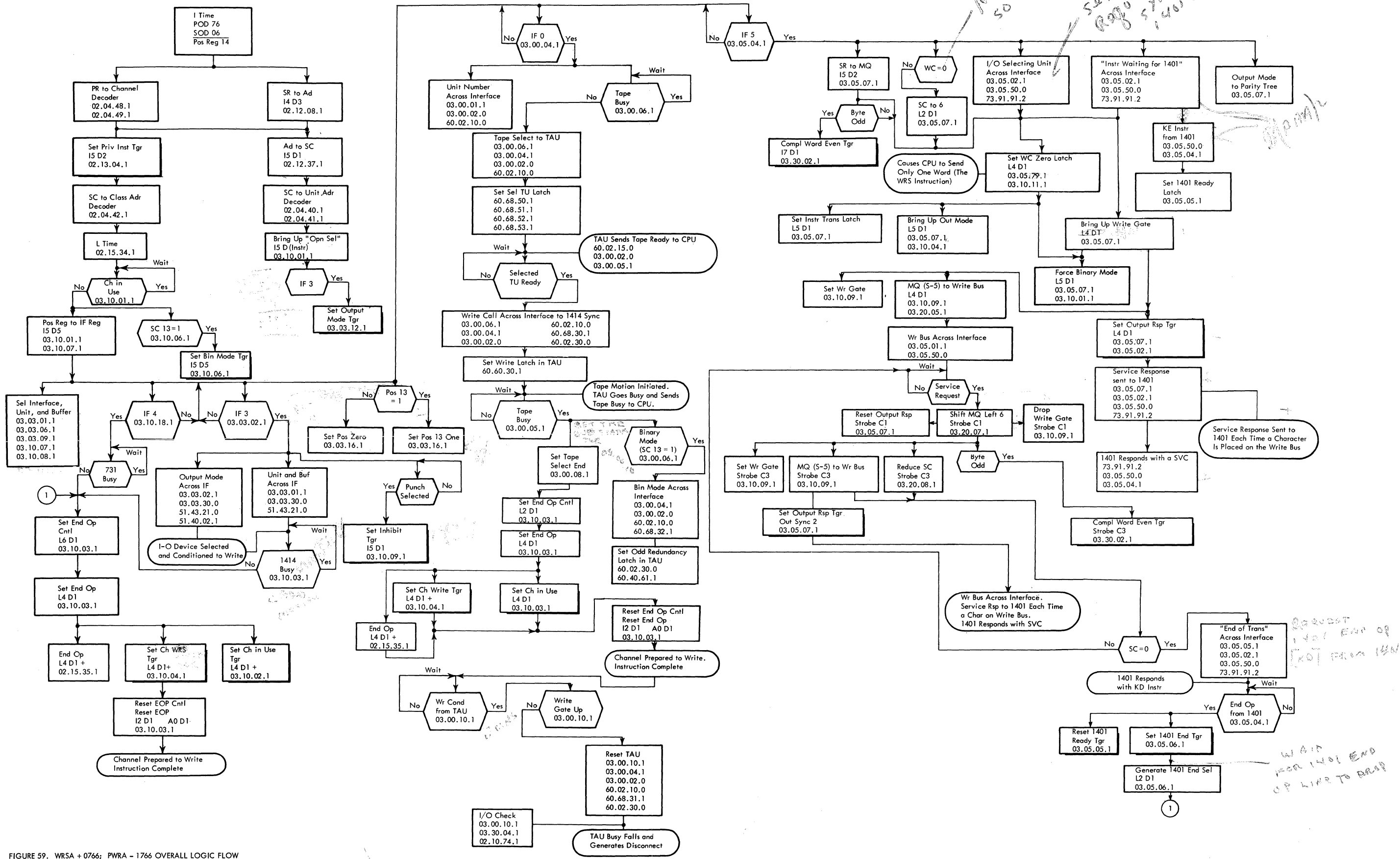


FIGURE 59. WRSR + 0766; PWRA - 1766 OVERALL LOGIC FLOW

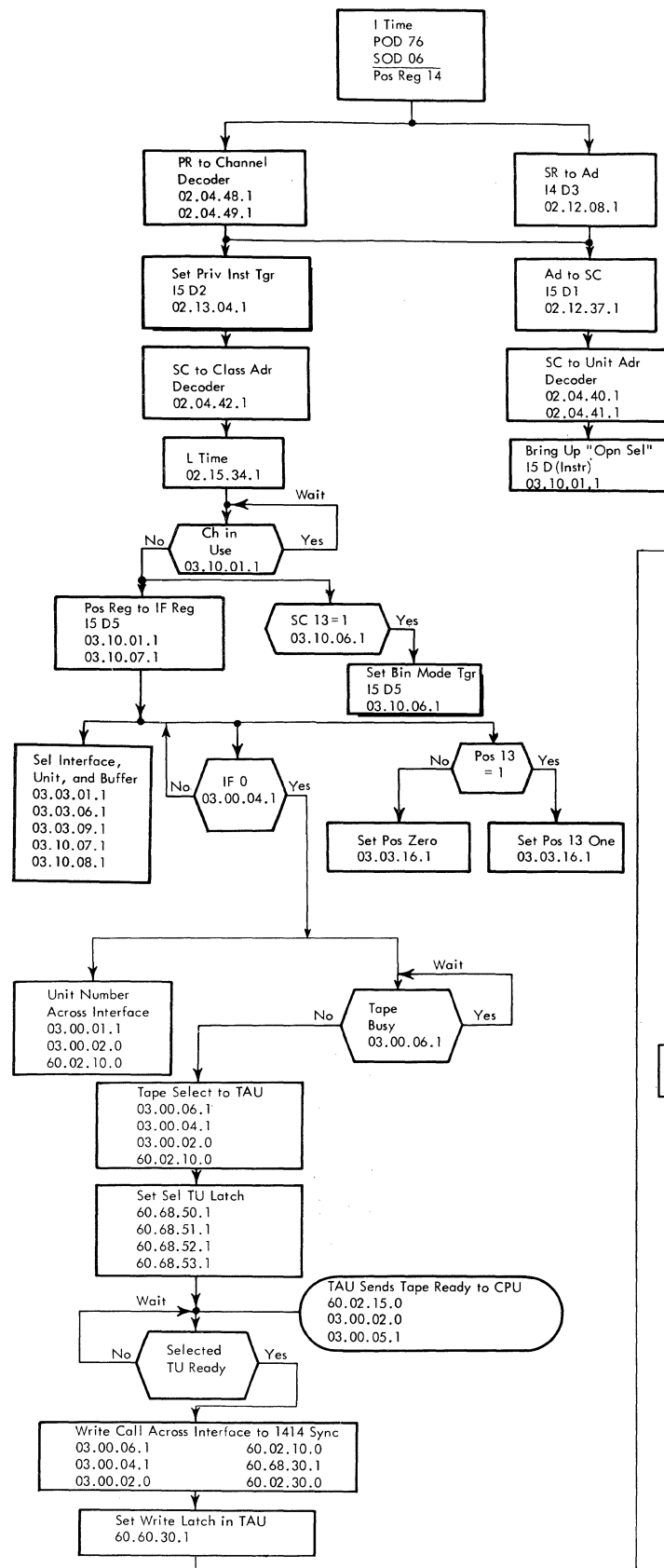
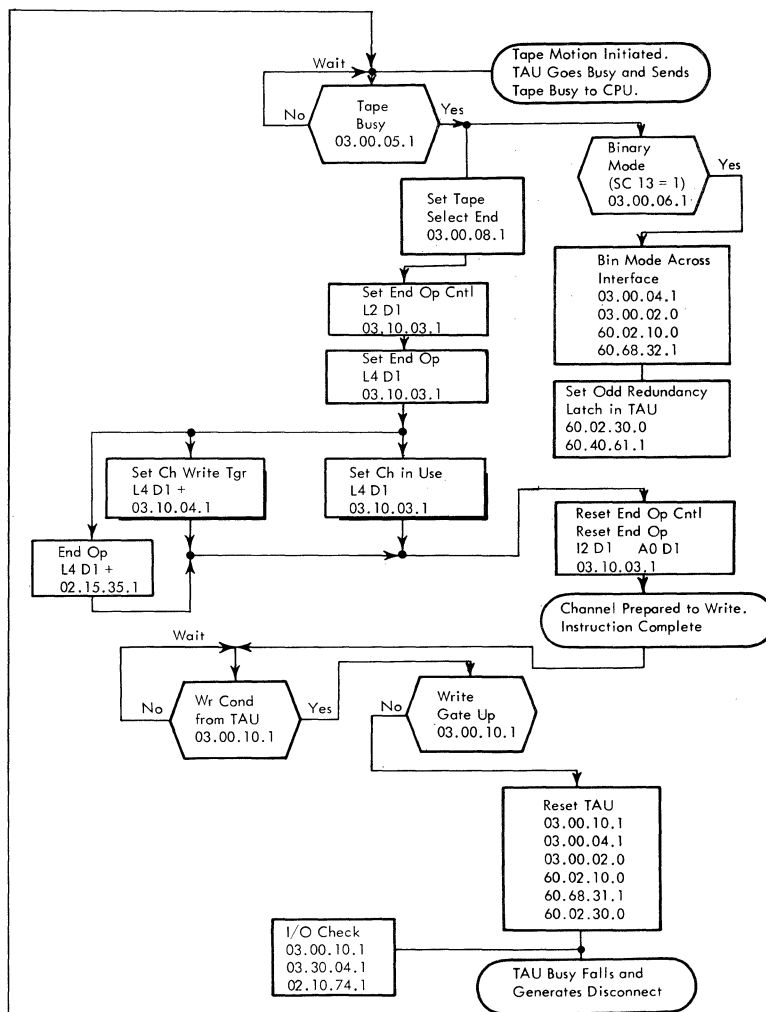


FIGURE 60. WRSA + 0766; PWRA - 1766 I. F. 0 LOGIC FLOW



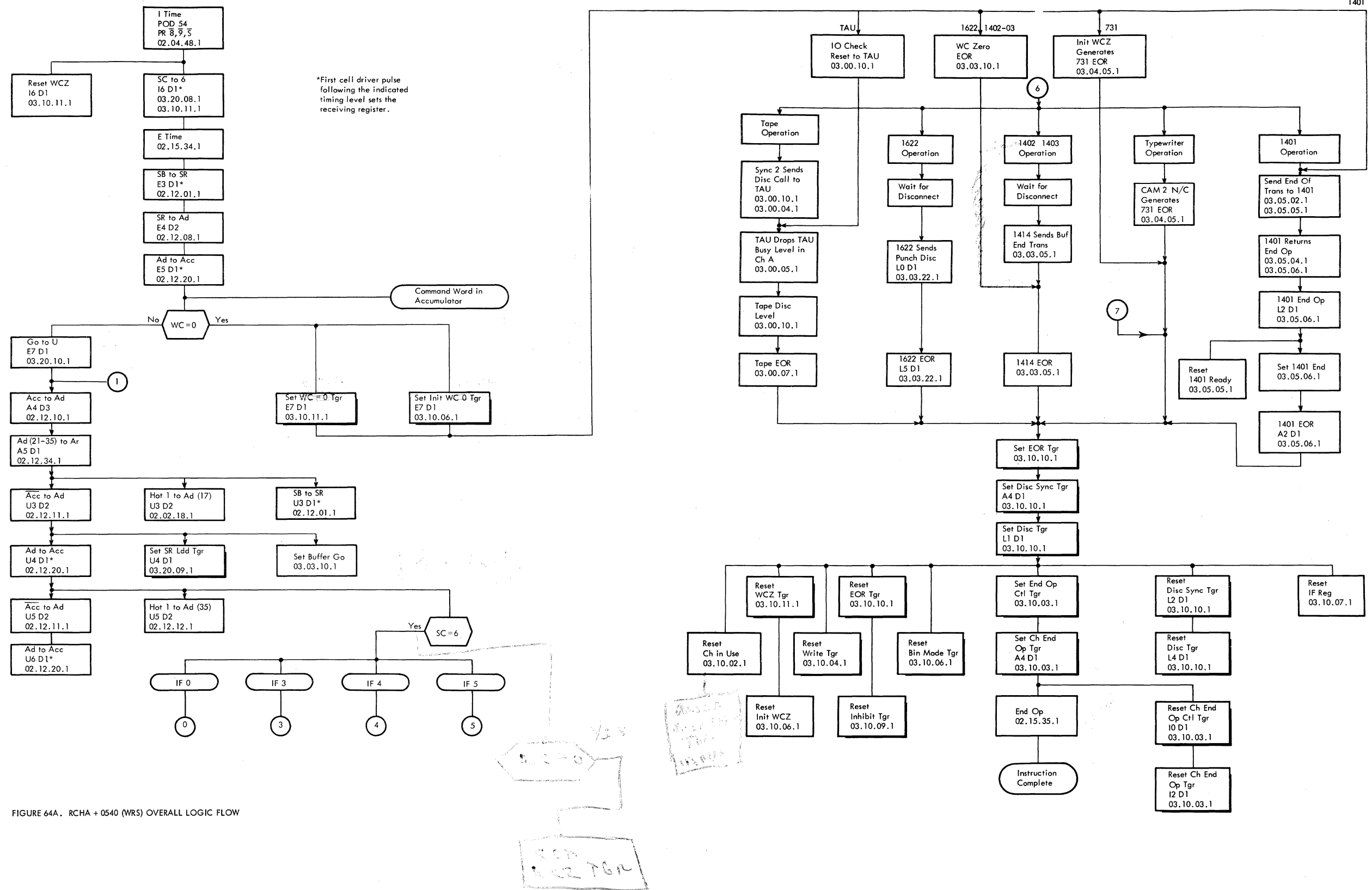
	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	Logic	Test Point	Line Level
1							A5						24	A5				02.15.31.1	01D3C08G	+B
2			1	A2														02.15.30.1	01D3B14F	+B
3							A5							A5				02.15.31.1	01D3C06A	+B
4																		02.15.30.1	01D3B16C	+B
5																		02.15.20.1	01C4D16M	-B
6																		02.12.08.1	01D1D13G	-B
7																		02.12.37.1	01D1G17A	-B
8																		03.10.01.1	01D4F12A	+B
9																		02.12.32.1	01D3B08G	+B
10																		03.10.01.1	01D4B05A	-B
11																		03.10.08.1	01D4A08A	+B
12																		03.00.04.1	01E3J17G	+B
13																		02.04.40.1	01C2H05A	-B
14																		03.00.01.1	01E3J19Y	+B
15																		03.00.04.1	01E3J17L	+B
16																		60.68.50.1	14D1B06D	-S
17																		60.60.01.1	14D3B11G	-Y
18																		60.60.30.1	14D3A12G	-Y
19																		60.68.41.1	14D1D05B	-S
20																		03.00.08.1	01E3F16B	+B
21																		03.00.08.1	01E3B15B	+B
22																		03.10.01.1	01D4D12D	-B
23																		03.10.03.1	01D4A05C	+B
24																		03.10.03.1	01D4C10C	+B
25																		03.10.02.1	01D4E06B	+B
26																		03.10.04.1	01D4A24C	+B
27																		03.00.10.1	01E3C16A	+B
28																		02.12.50.1	01D3D08A	-B
29																		60.30.11.1	14D4B15G	-Y

WRSA +0766 0000 1201 Timing

FIGURE 61. WRSA + 0766; PWRA - 1766 I.F. 0 TIMING







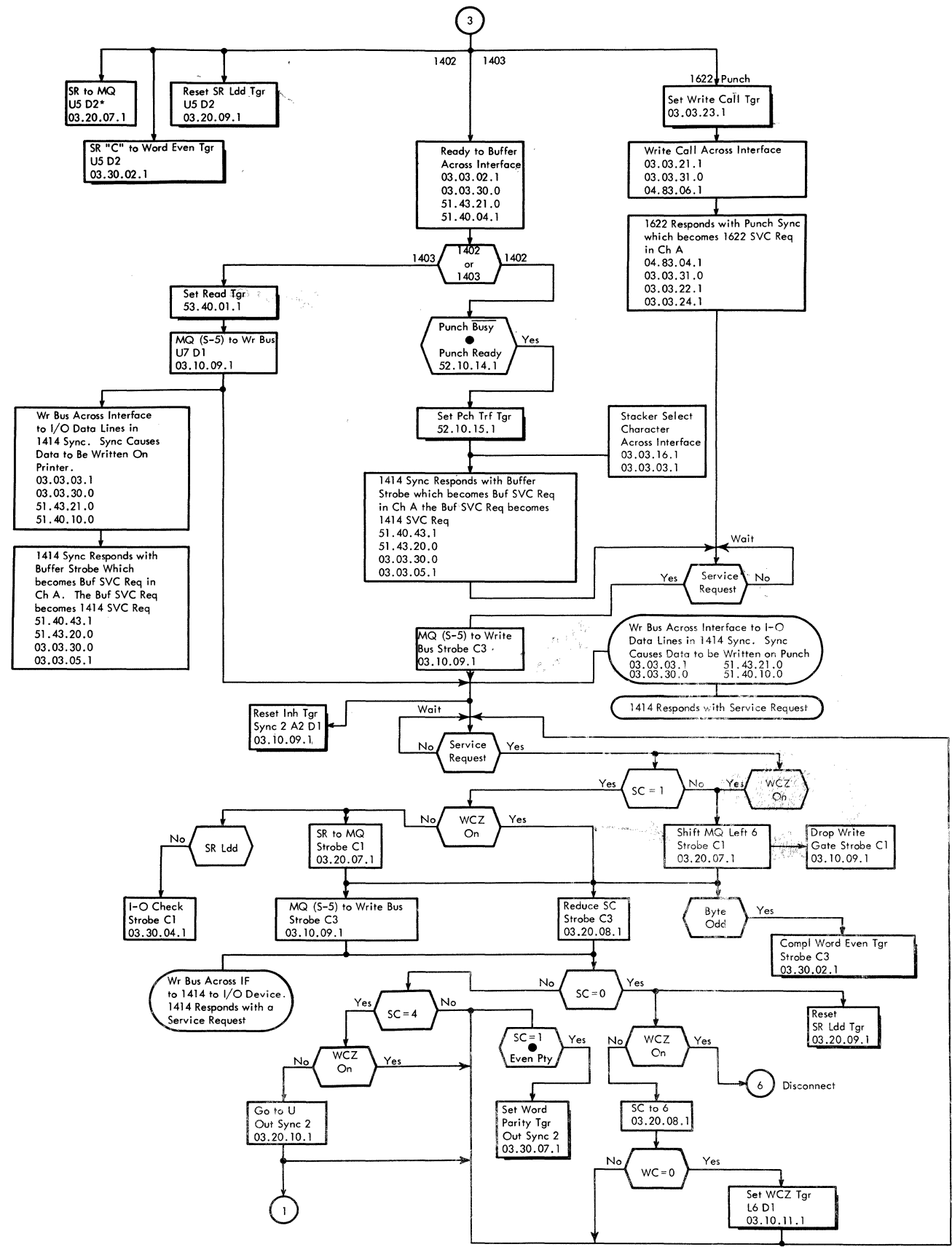
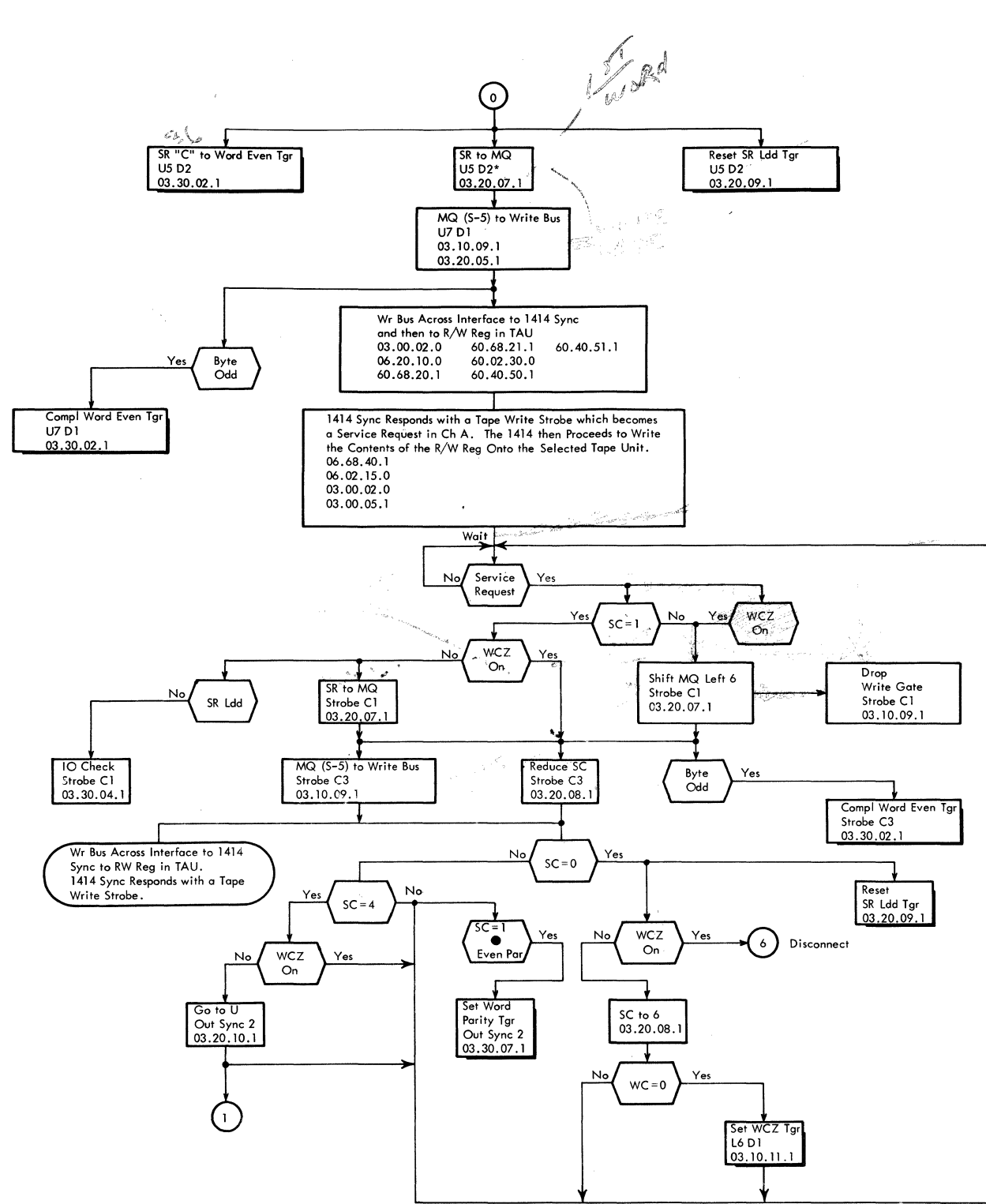


FIGURE 64B. RCHA + 0540 (WRS) OVERALL LOGIC FLOW

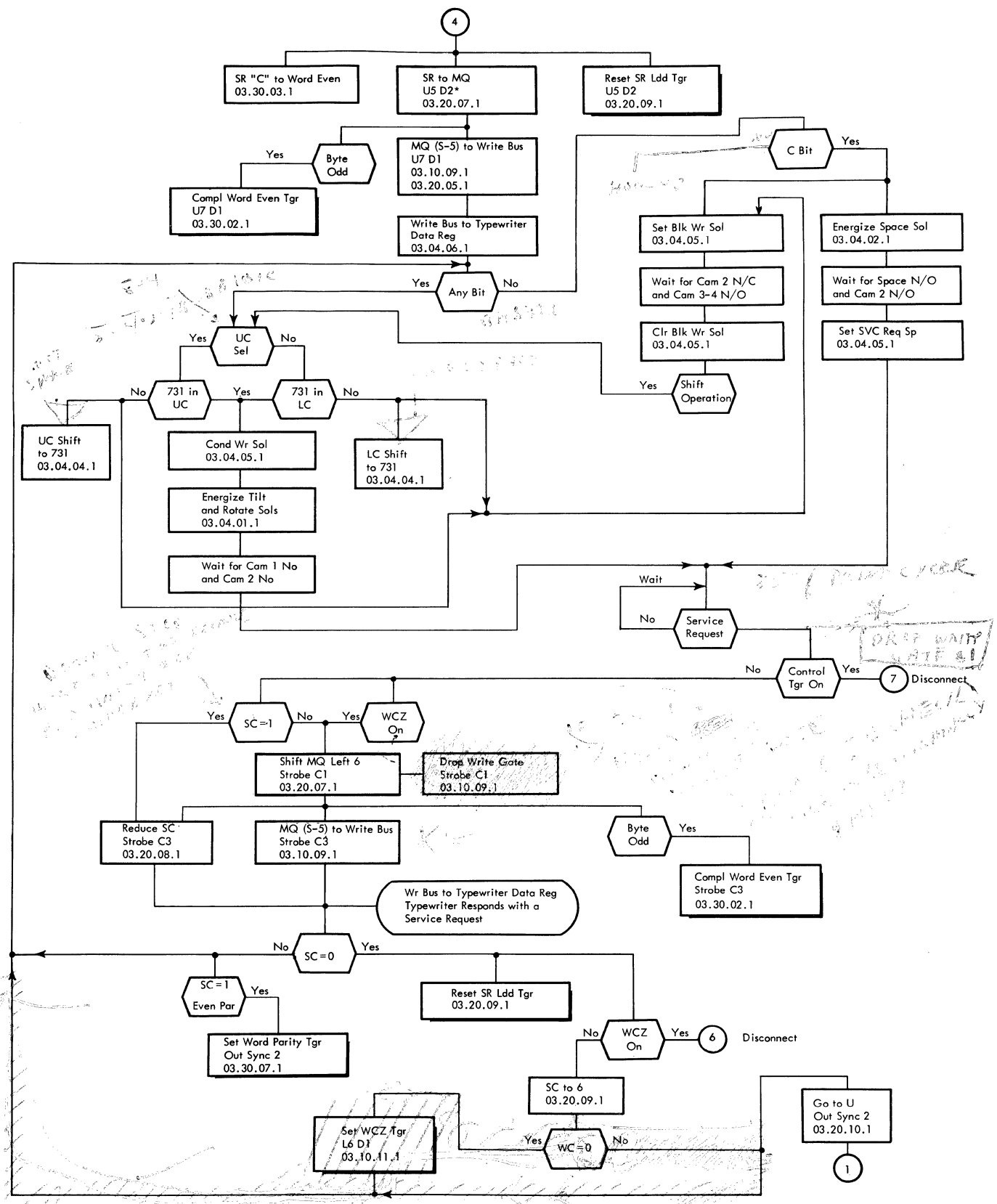
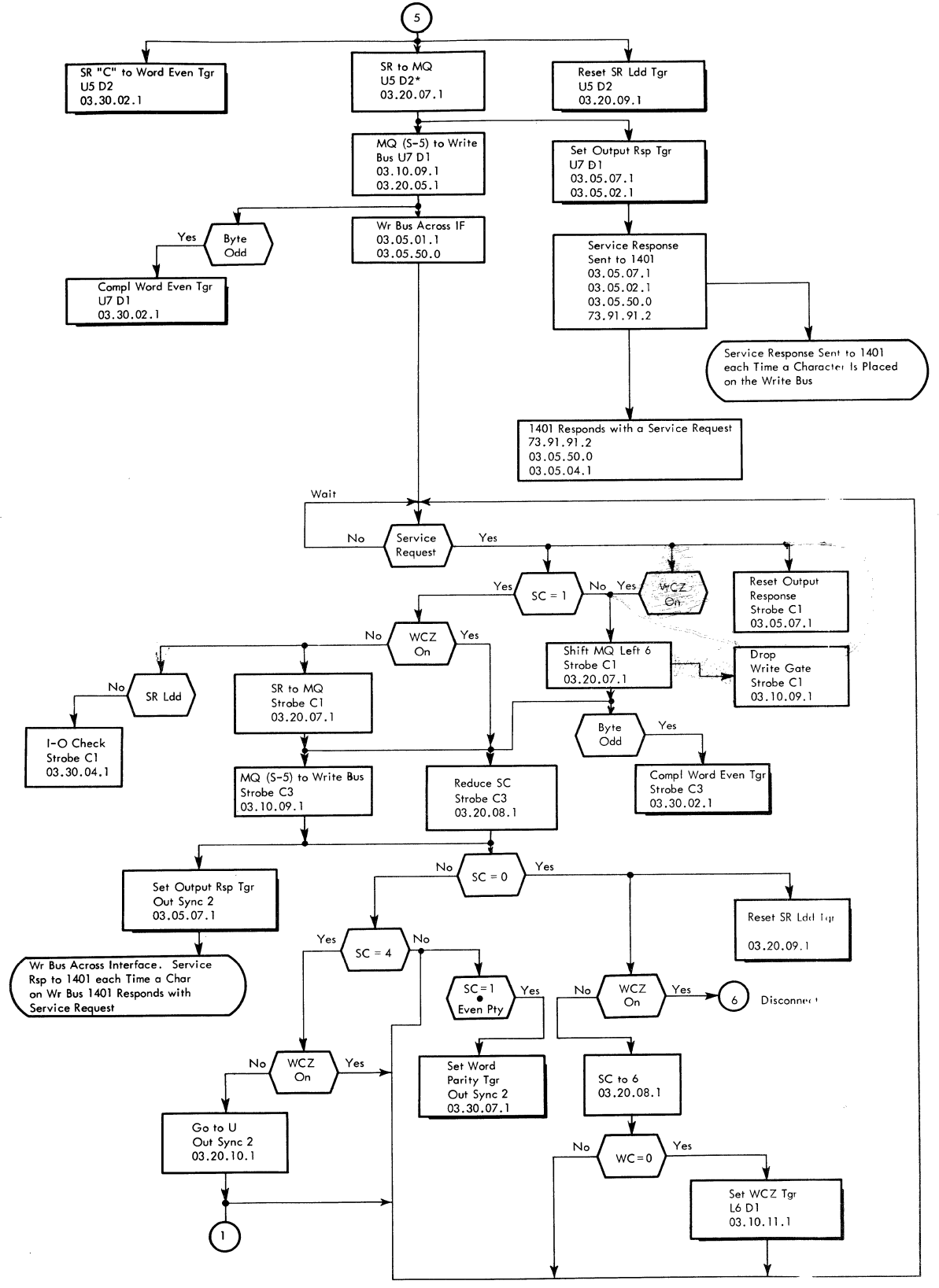


FIGURE 64C. RCHA + 0540 (WRS) OVERALL LOGIC FLOW





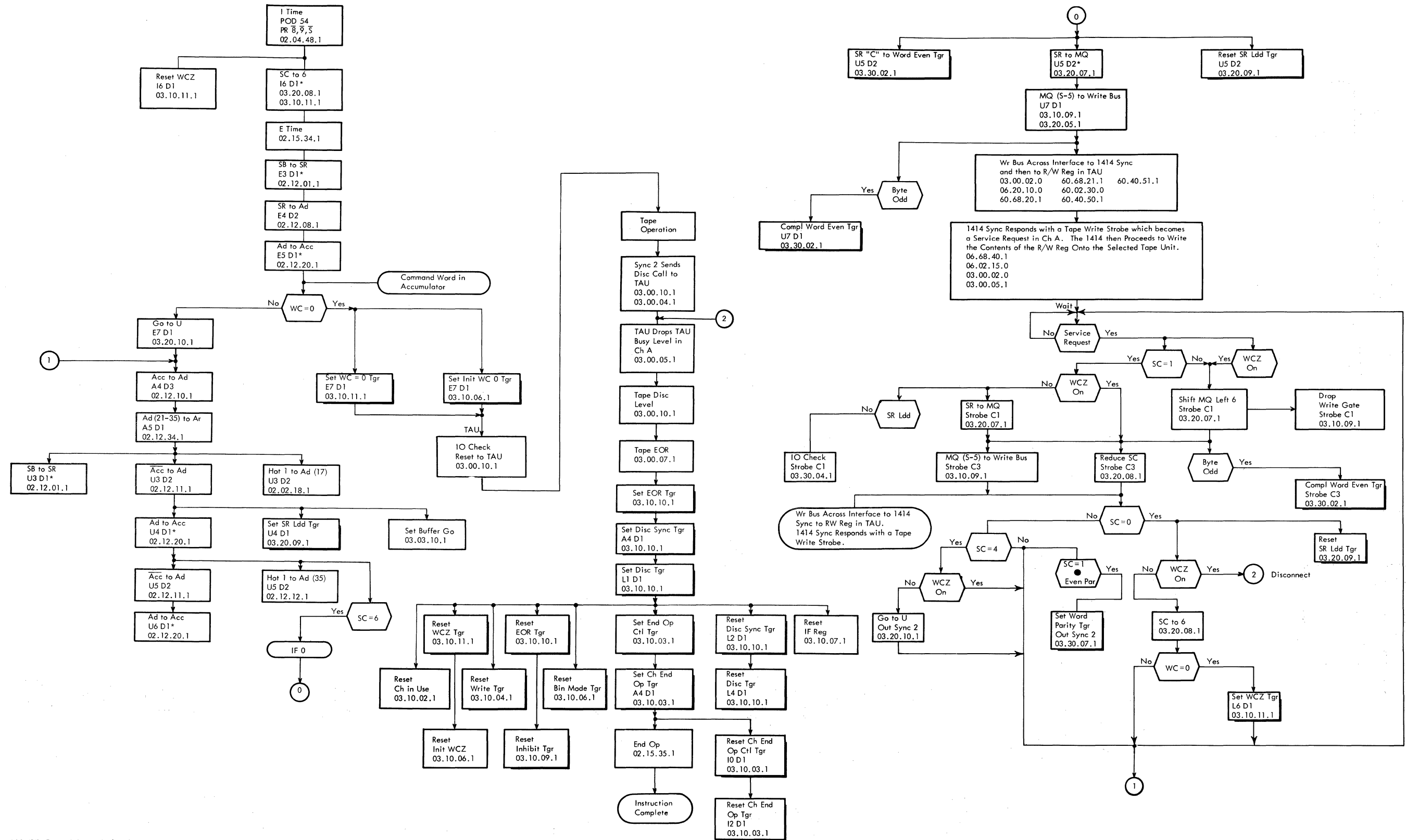


FIGURE 65. RCHA + 0540 (WRS) I. F. 0 LOGIC FLOW



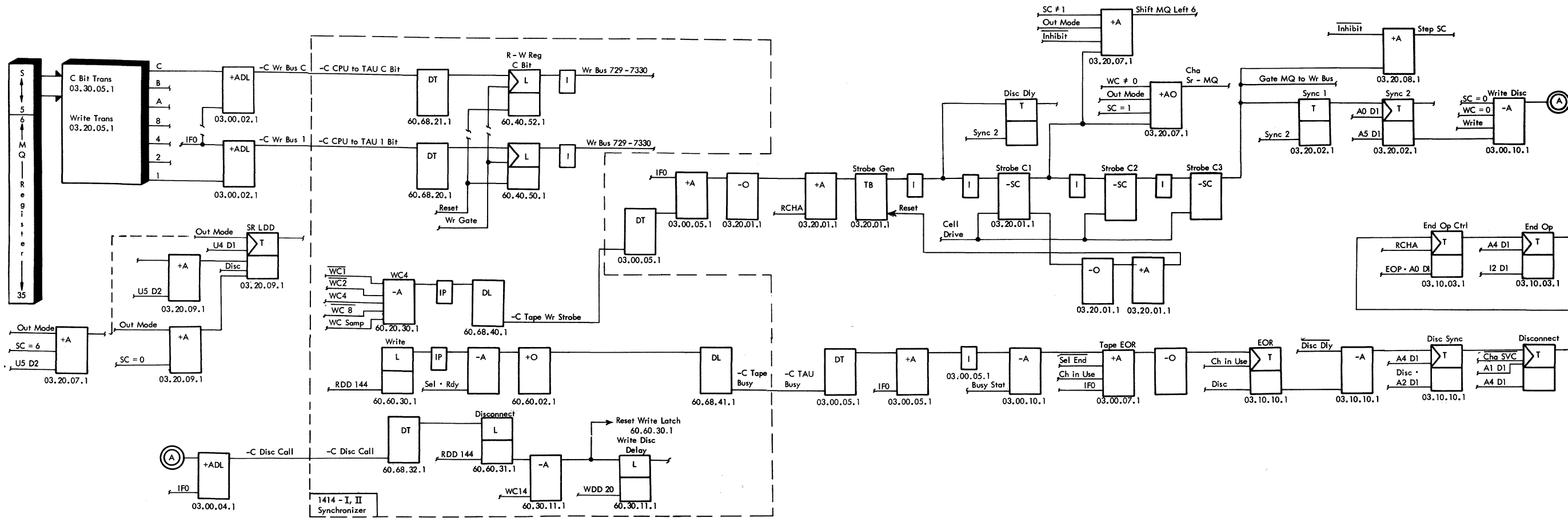


FIGURE 66. RCHA + 0540 (WRS) I. F. 0 2ND LEVEL ALD LOGIC

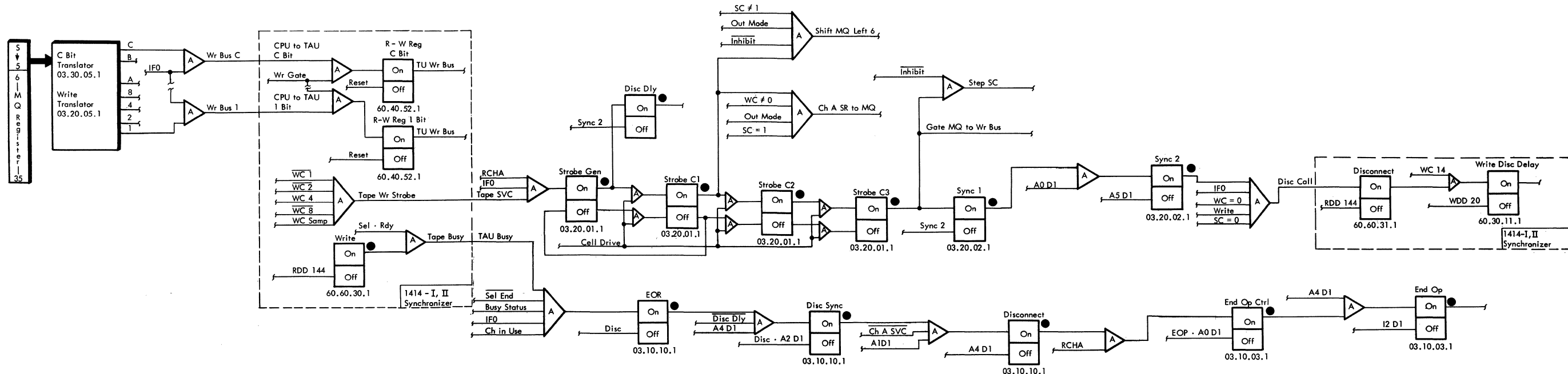


FIGURE 67. RCHA + 0540 (WRS) I. F. 0 LOGIC

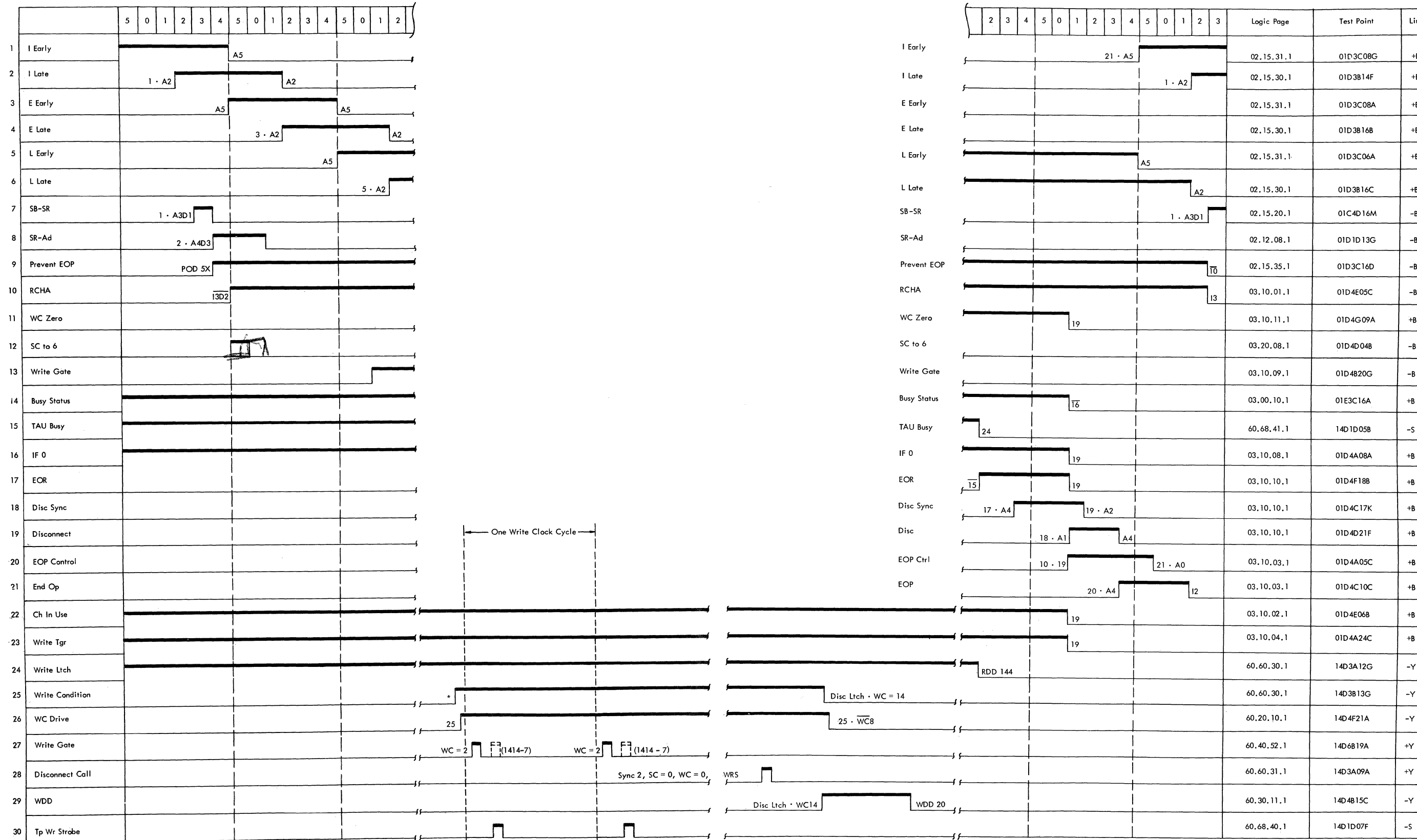


FIGURE 68. RCHA + 0540 (WRS) I.F. 0 WORD COUNT ≠ 0 TIMING

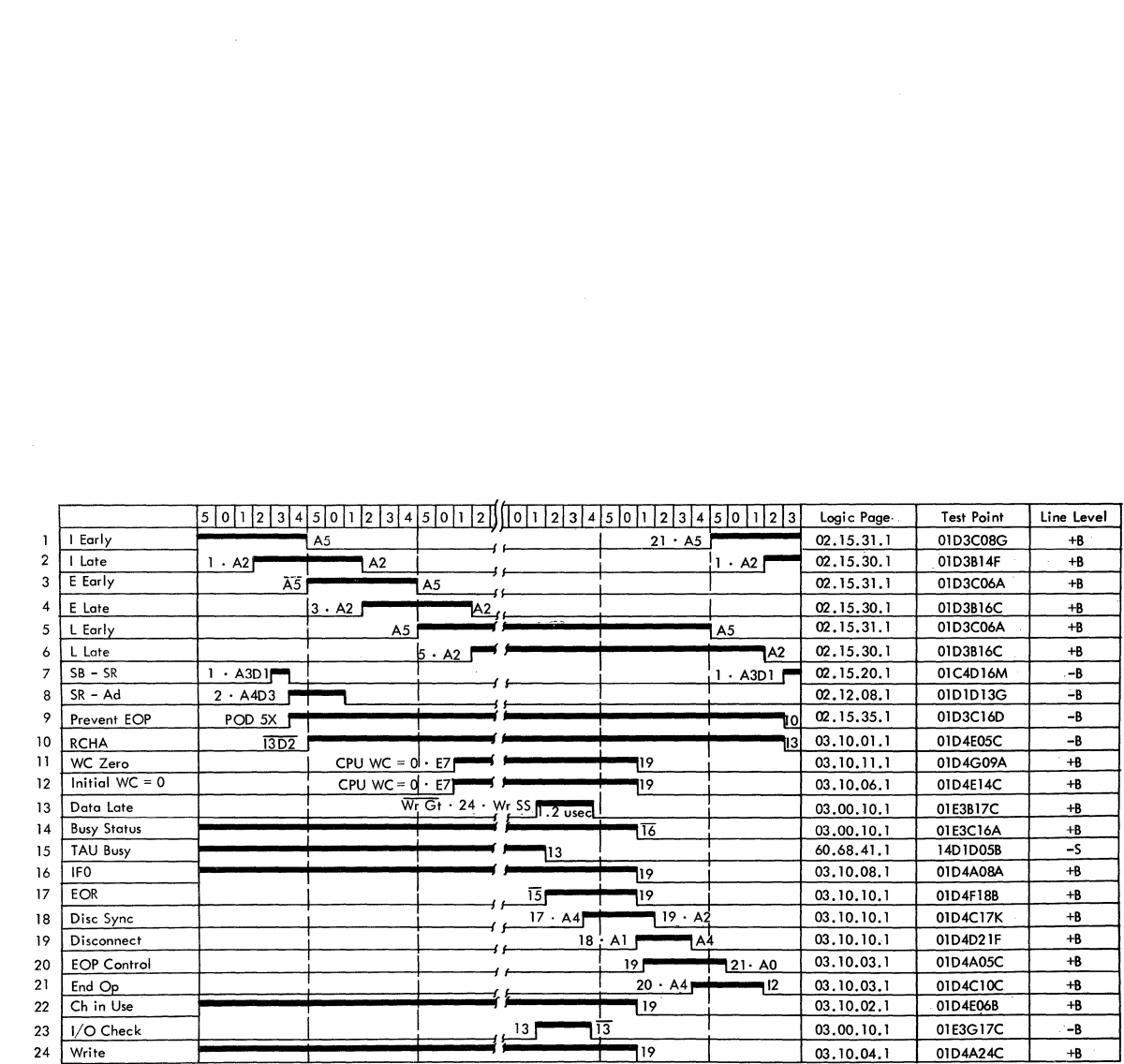


FIGURE 69. RCHA + 0540 (WRS) I.F. 0 WORD CCOUNT = 0 TIMING

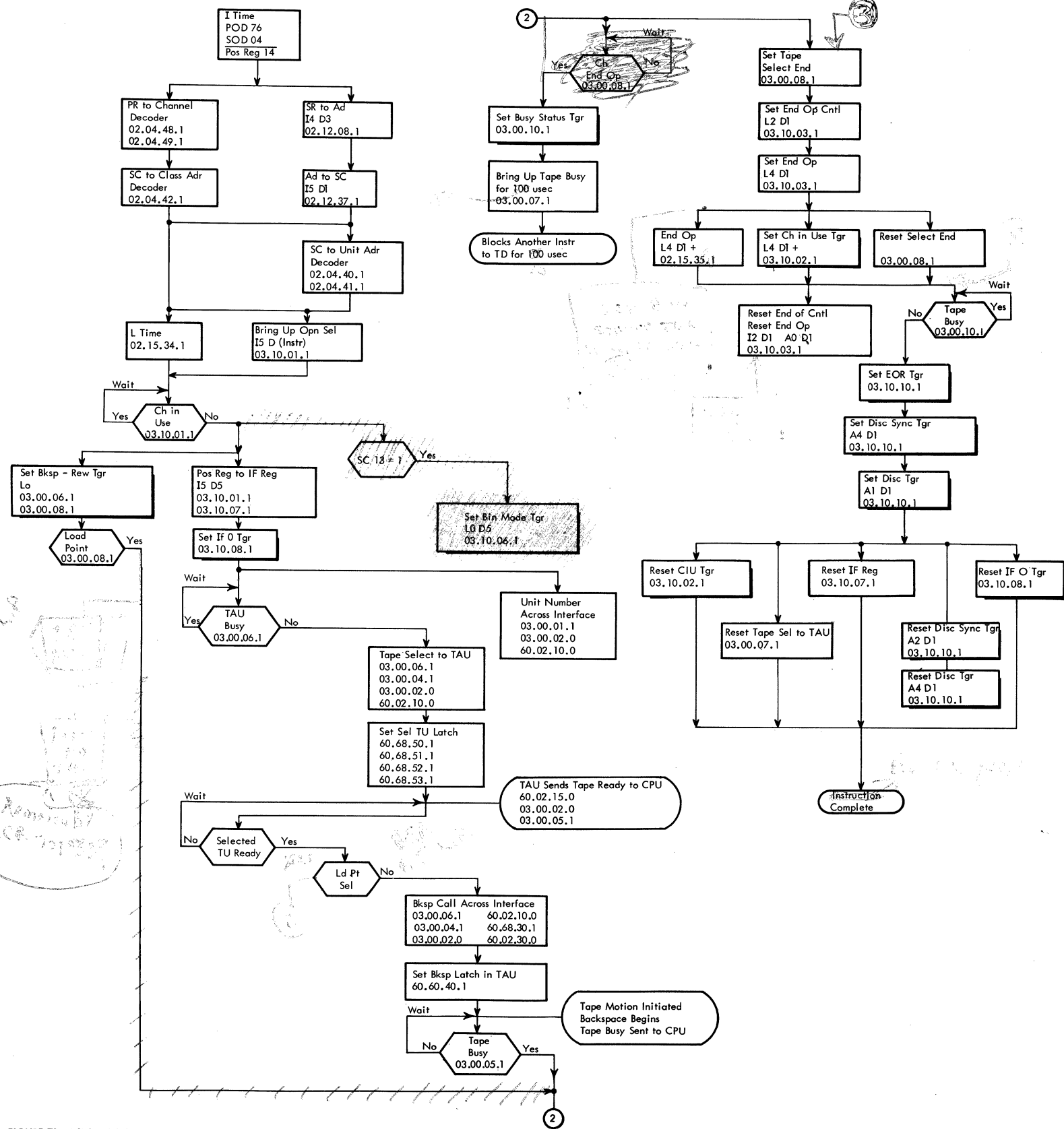


FIGURE 70. BSRA + 0764 LOGIC FLOW

	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	Logic Page	Test Point	Line Level
1 I Early	A5				A5												02.15.31.1	01D3C08G	+B		
2 I Late	1 · A2		A2		1 · A2										02.15.30.1	01D3B14F	+B				
3 L Early	A5				A5												02.15.31.1	01D3C06A	+B		
4 L Late	3 · A2		A2														02.15.30.1	01D3B16C	+B		
5 SB-SR	1 · A3D1		A3D1														02.15.20.1	01C4D16M	-B		
6 SR-Ad	2 · A4D3		A4D3														02.12.08.1	01D1D13G	-B		
7 Ad-SC	POD 7X · 2 · A5D1																02.12.37.1	01D1G17A	-B		
8 Pos Reg - IFR	23 · 10 · 3		23														03.10.01.1	01D4F12A	+B		
9 Set Pos and PR	2 · A3D2		A3D2														02.12.32.1	01D3B08G	+B		
10 BSRA	I3D2		I3														03.10.01.1	01D4D05D	-B		
11 Opn Sel	10		10														03.10.01.1	01D4D21D	-B		
12 Sel Unit 1	7 · 17		13														03.00.01.1	01E3J19Y	+B		
13 Set Tp Sel	17 · 19		19														03.00.04.1	01E3J17G	+B		
4 Bksp Call	10 · 17		13														03.00.04.1	01E3J17X	+B		
15 Sel TU 1	12 · 13		27														60.68.50.1	14D1B06D	-S		
16 Backspace Latch	14 · 18		Rdd 2106 + Lo Pt + Rdd 152														60.60.40.1	14D3A20C	-Y		
17 IF 0 Trigger	3 · 9 · 23 · 27		27														03.10.08.1	01D4A08A	+B		
18 Select and Ready	TU Rdy · 15		17														60.60.01.1	14D3B11G	-Y		
19 TAU Busy	16		16														60.68.41.1	14D1D05B	-S		
20 Select End	11 · 17 · 19		22														03.00.08.1	01E3B15B	+B		
21 EOP Ctrl	L2 · 11 · 20 · 23		23 · A0														03.10.03.1	01D4A05C	+B		
22 End Op	21 · A4		I2														03.10.03.1	01D4C10C	+B		
23 Ch In Use	22		27														03.10.02.1	01D4E06B	+B		
24 Busy Status	19		17														03.00.10.1	01E3C16A	+B		
25 EOR	20 · 17 · 24 · 23		27														03.10.10.1	01D4F18B	+B		
26 Disc Sync	25 · A4		27 · A2														03.10.10.1	01D4C17R	+B		
27 Disconnect	26 · A1		A4														03.10.10.1	01D4D21F	+B		

FIGURE 71. BSRA + 0764 TIMING

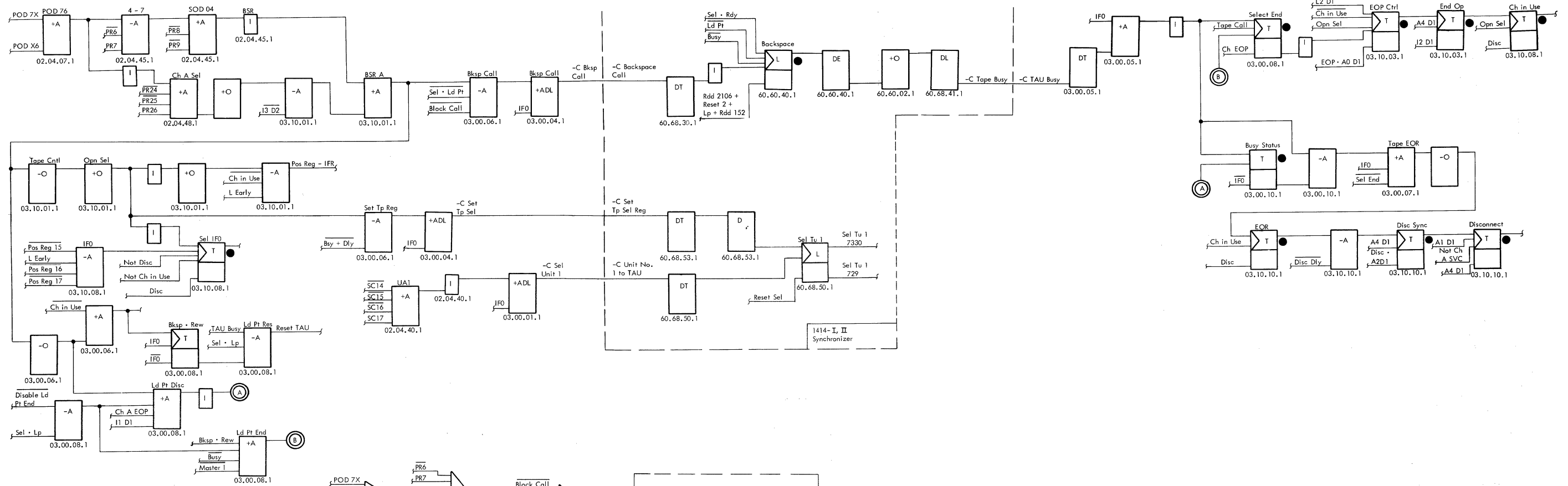


FIGURE 72. BSRA + 0764 2ND LEVEL ALD LOGIC

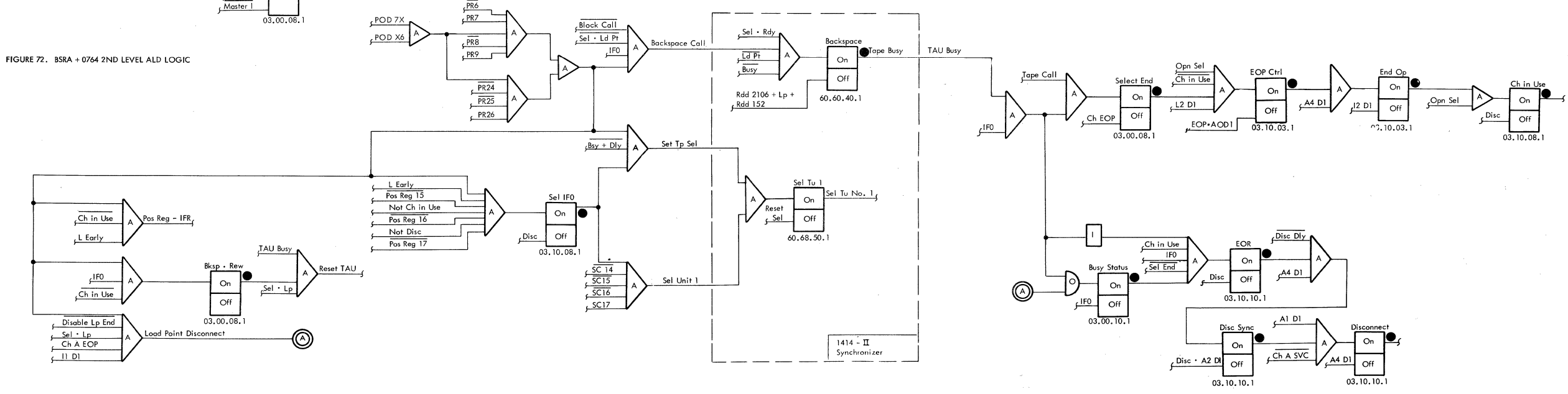


FIGURE 73. BSRA + 0764 LOGIC

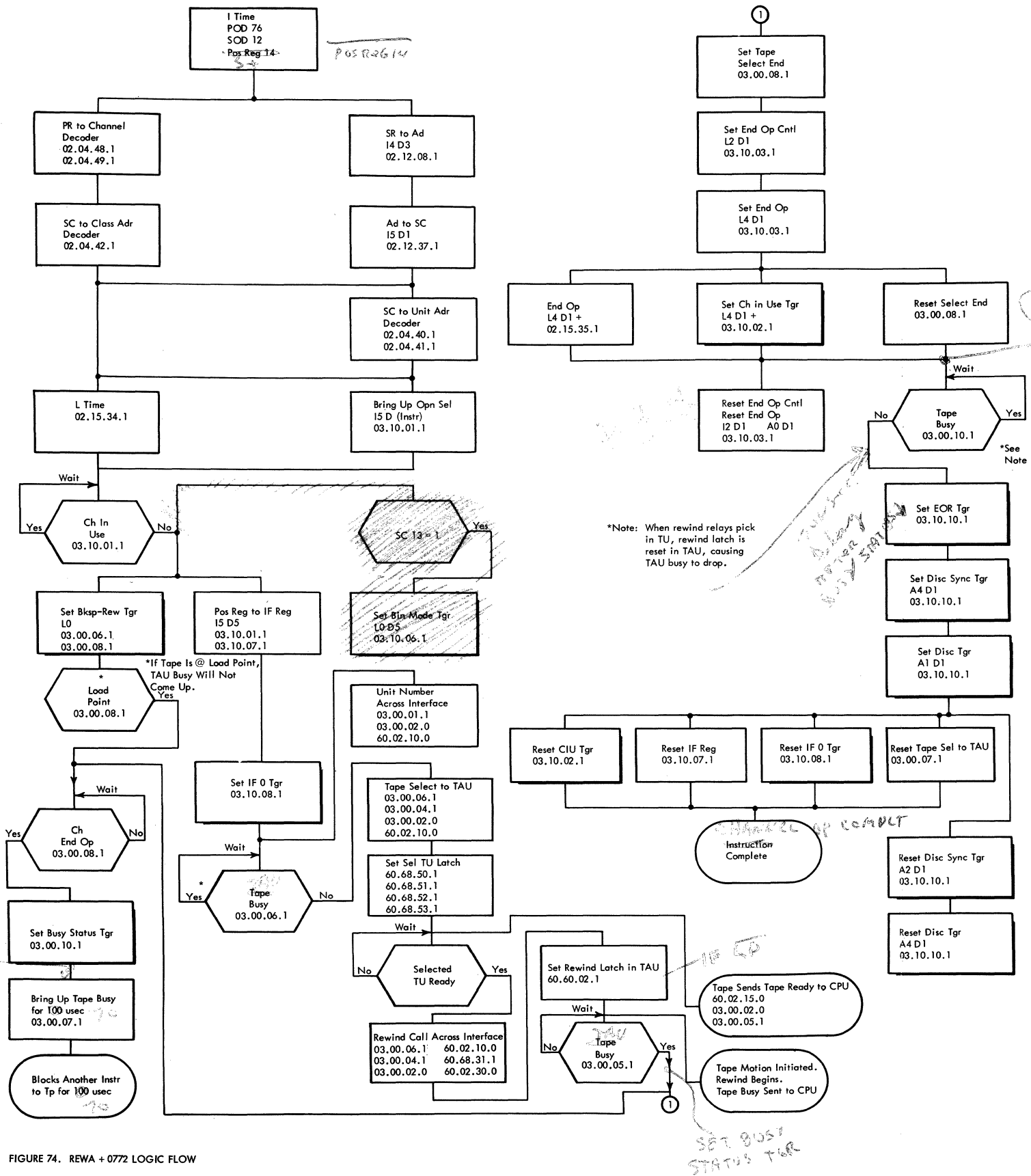


FIGURE 74. REWA + 0772 LOGIC FLOW

	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	Logic Page	Test Point	Line Level
1 I Early						A5							22 · A5							A5					02.15.31.1	01D3C08G	+B
2 I Late		1 · A2																							02.15.30.1	01D3B14F	+B
3 L Early						A5														A5					02.15.31.1	01D3C06A	+B
4 L Late													3 · A2												02.15.30.1	01D3B16C	+B
5 SB-SR			1 · A3D1																						02.15.20.1	01C4D16M	-B
6 SR-Ad																									02.12.08.1	01D1D13G	-B
7 Ad-SC																									02.12.37.1	01D1D13A	-B
8 Pos Reg-IFR																									03.10.01.1	01D4F12A	+B
9 Set Pos and PR																									02.12.32.1	01D3B08G	+B
10 REWA																									03.10.01.1	01D4D05D	-B
11 Opn Sel																									03.10.01.1	01D4D21D	-B
12 Sel Unit 1																									03.00.01.1	01E3J19Y	+B
13 Set Tp Sel																									03.00.04.1	01E3J17G	+B
14 Rew Call																									03.00.04.1	01E3J17S	+B
15 Sel TU 1																									60.68.50.1	14D1B06D	-S
16 Rewind																									60.60.02.1	14D3B07G	-Y
17 IF 0 Tgr																									03.10.08.1	01D4A08A	+B
18 Select and Ready																									60.60.01.1	14D3B11G	-Y
19 TAU Busy																									60.68.41.1	14D1D05B	-S
20 Select End																									03.00.08.1	01E3B15B	+B
21 EOP Ctrl																									03.10.03.1	01D4A05C	+B
22 End Op																									03.10.03.1	01D4C10C	+B
23 Ch In Use																									03.10.02.1	01D4E06B	+B
24 Busy Status																									03.00.10.1	01E3C16A	+B
25 EOR																									03.10.10.1	01D4F18B	+B
26 Disc Sync																									03.10.10.1	01D4C17K	+B
27 Disconnect																									03.10.10.1	01D4D21F	+B

FIGURE 75. REWA + 0772 TIMING



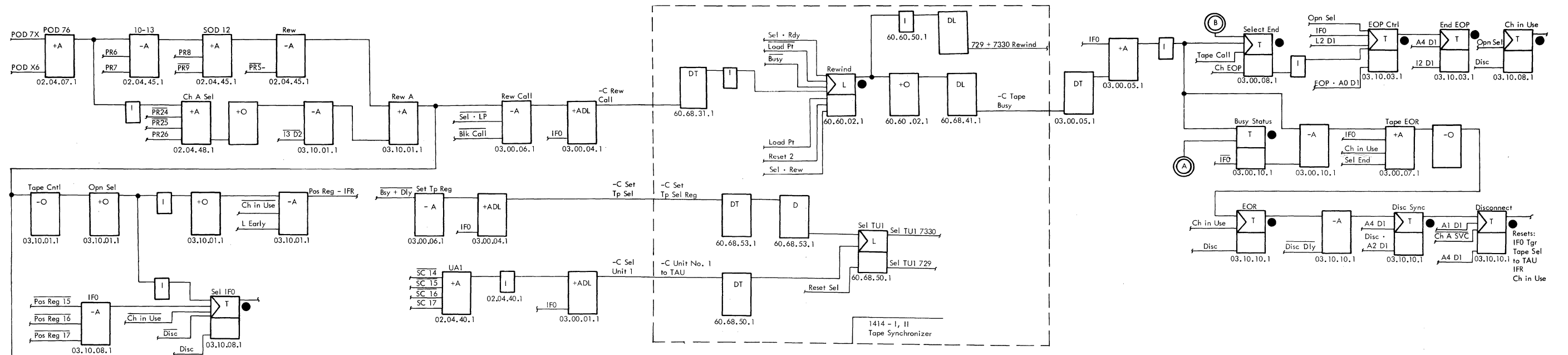


FIGURE 76. REWA + 0772 2ND LEVEL ALD LOGIC

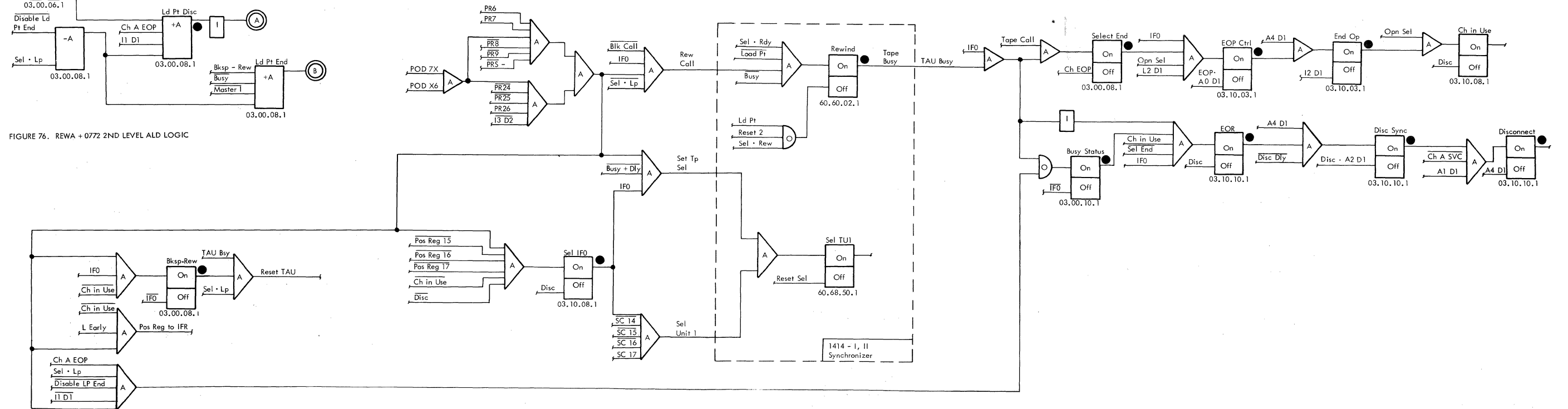


FIGURE 77. REWA + 0772 LOGIC

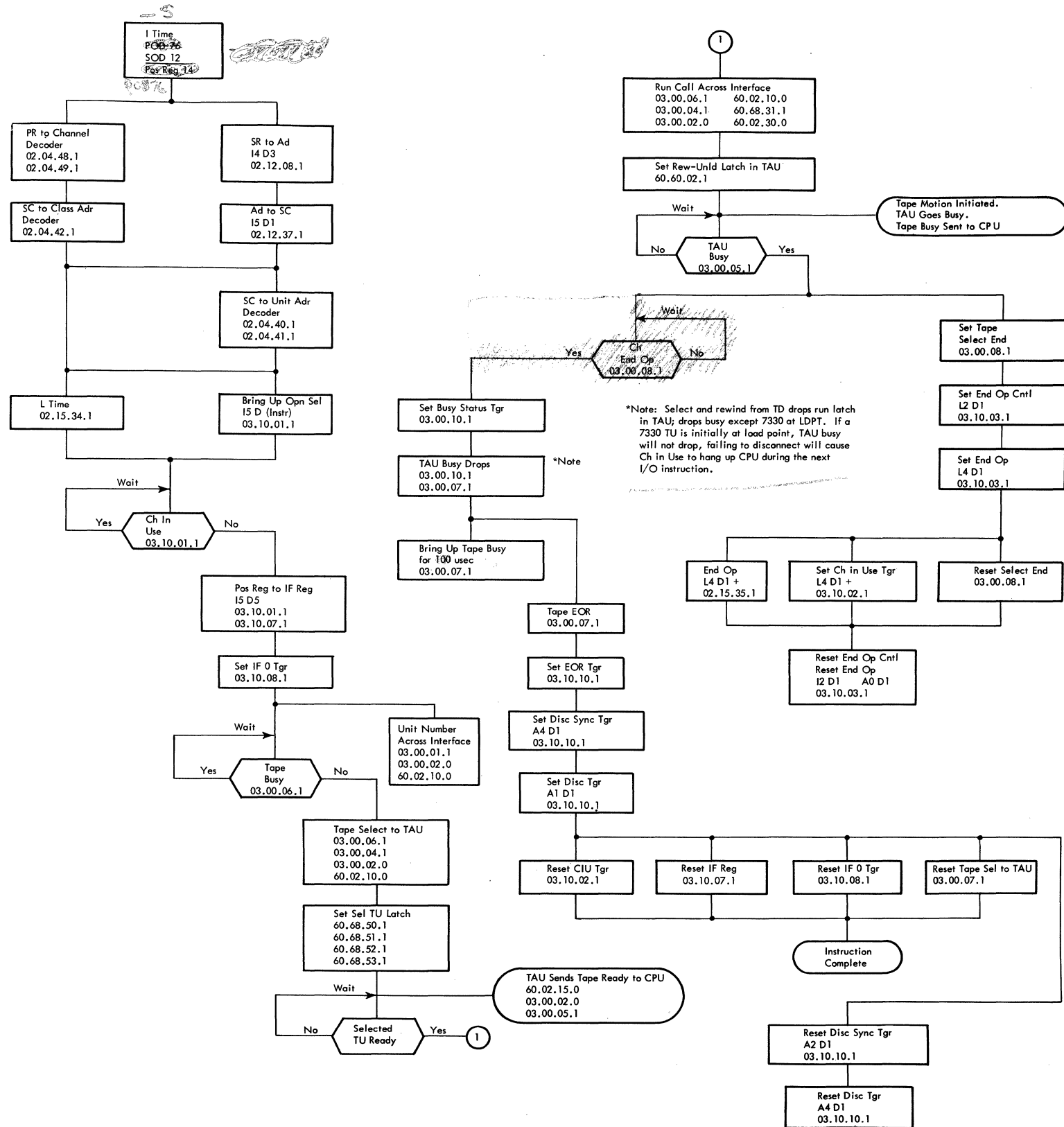


FIGURE 78. RUNA - 0772 LOGIC FLOW

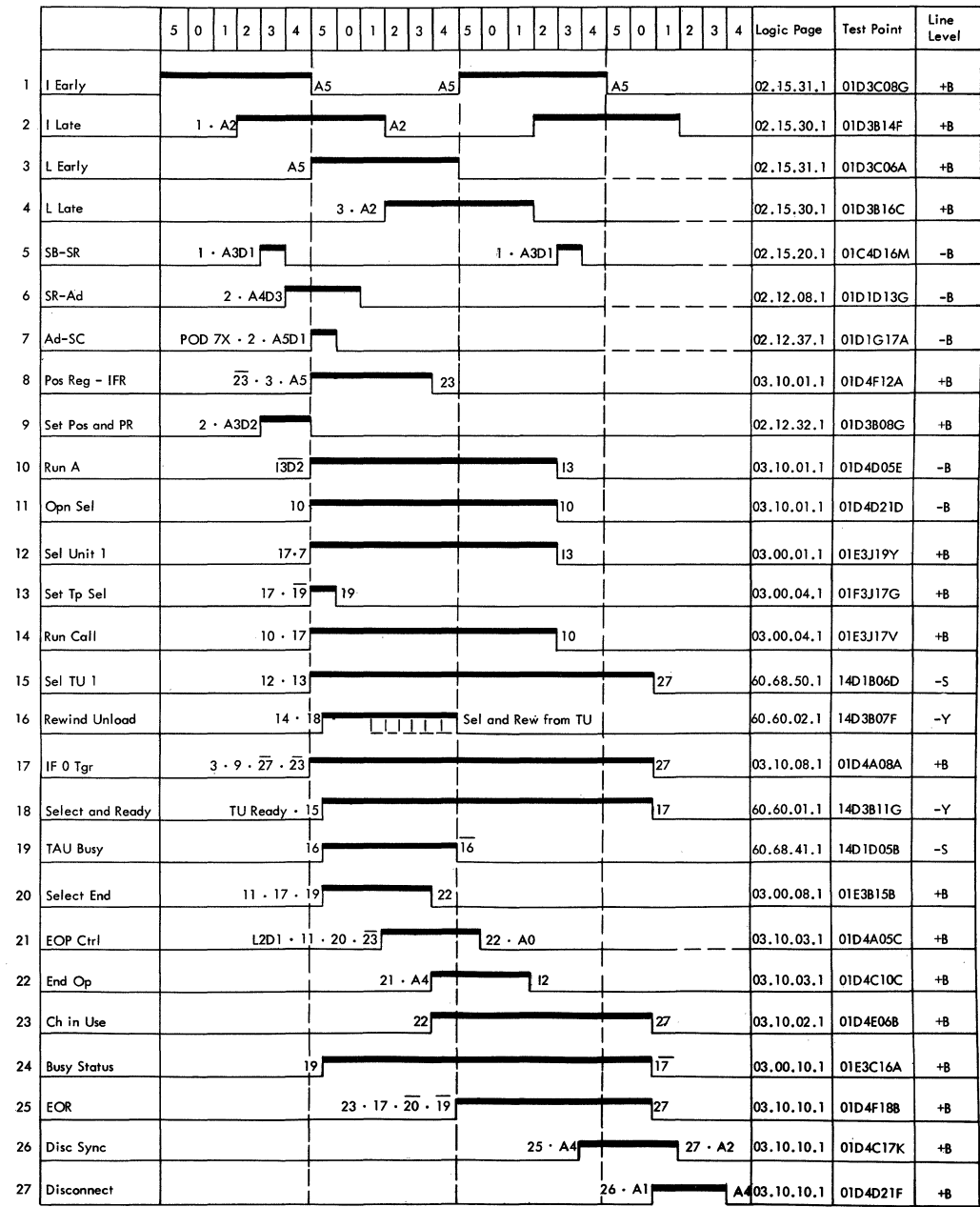


FIGURE 79. RUNA - 0772 TIMING

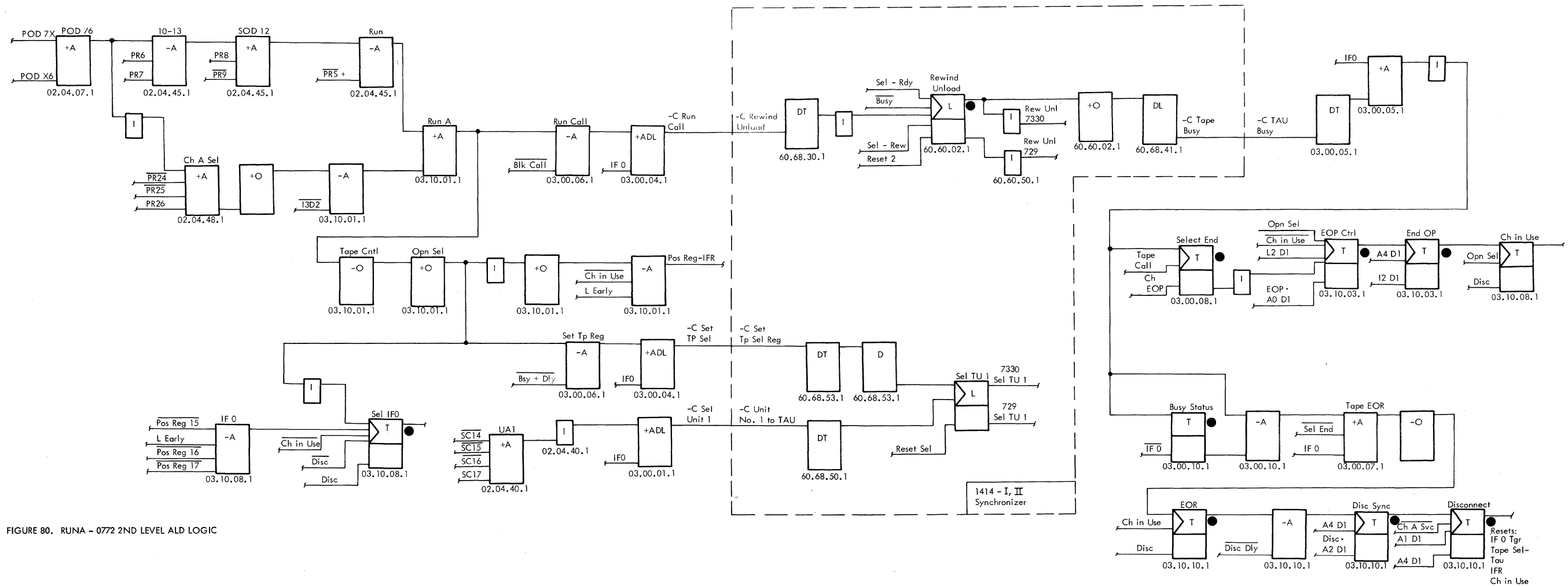


FIGURE 80. RUNA - 0772 2ND LEVEL ALD LOGIC

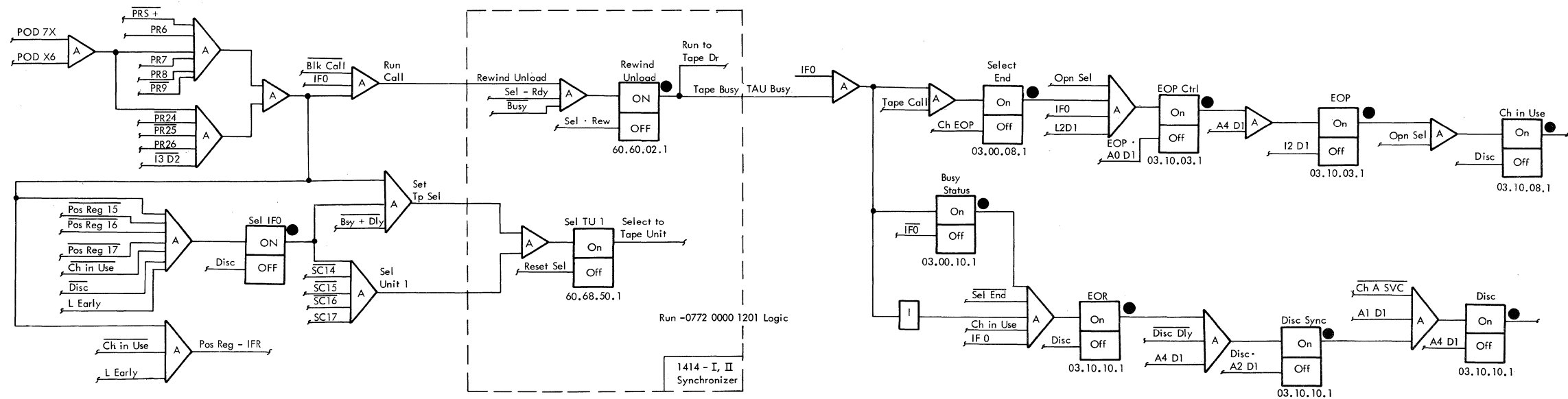


FIGURE 81. RUNA - 0772 LOGIC

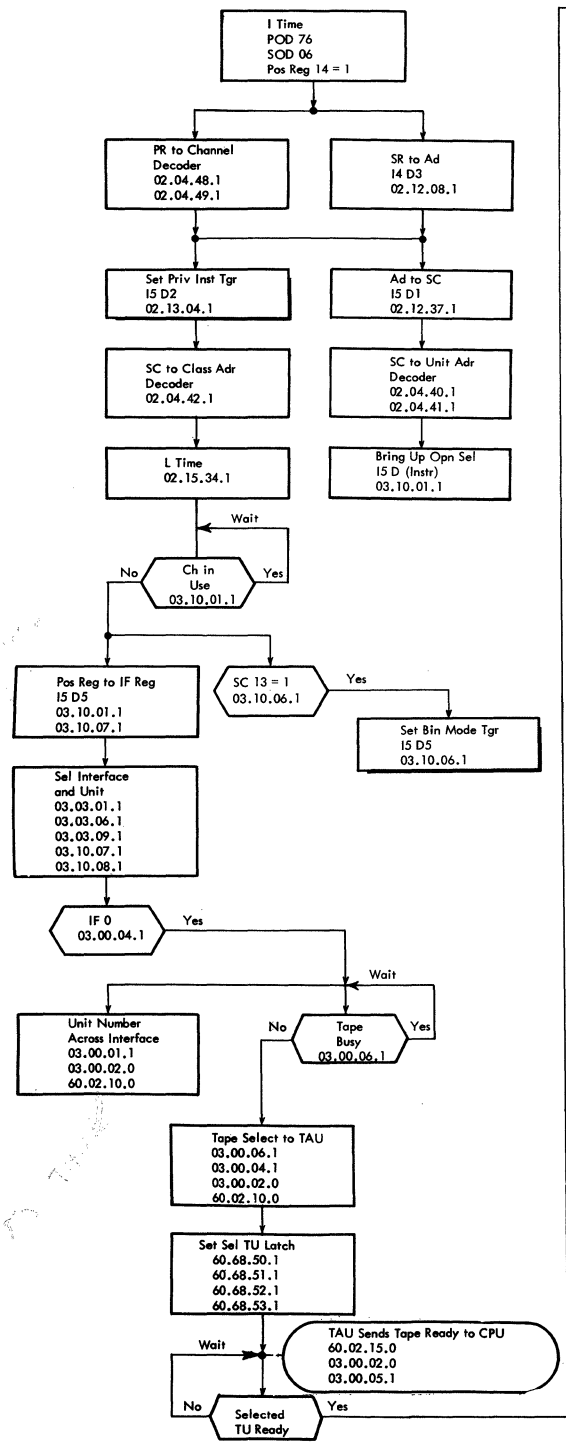


FIGURE 82. WBTA + 0766 LOGIC FLOW

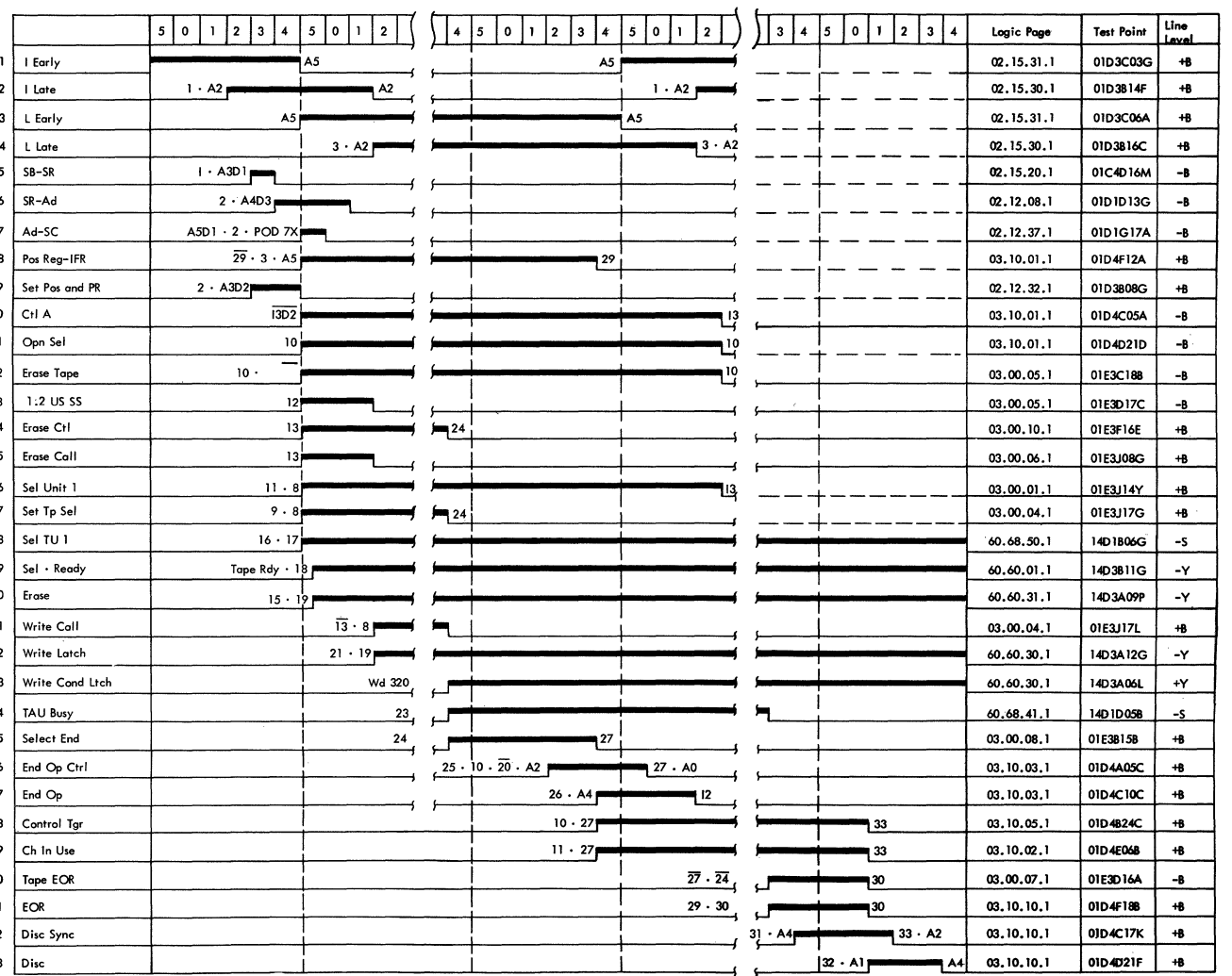
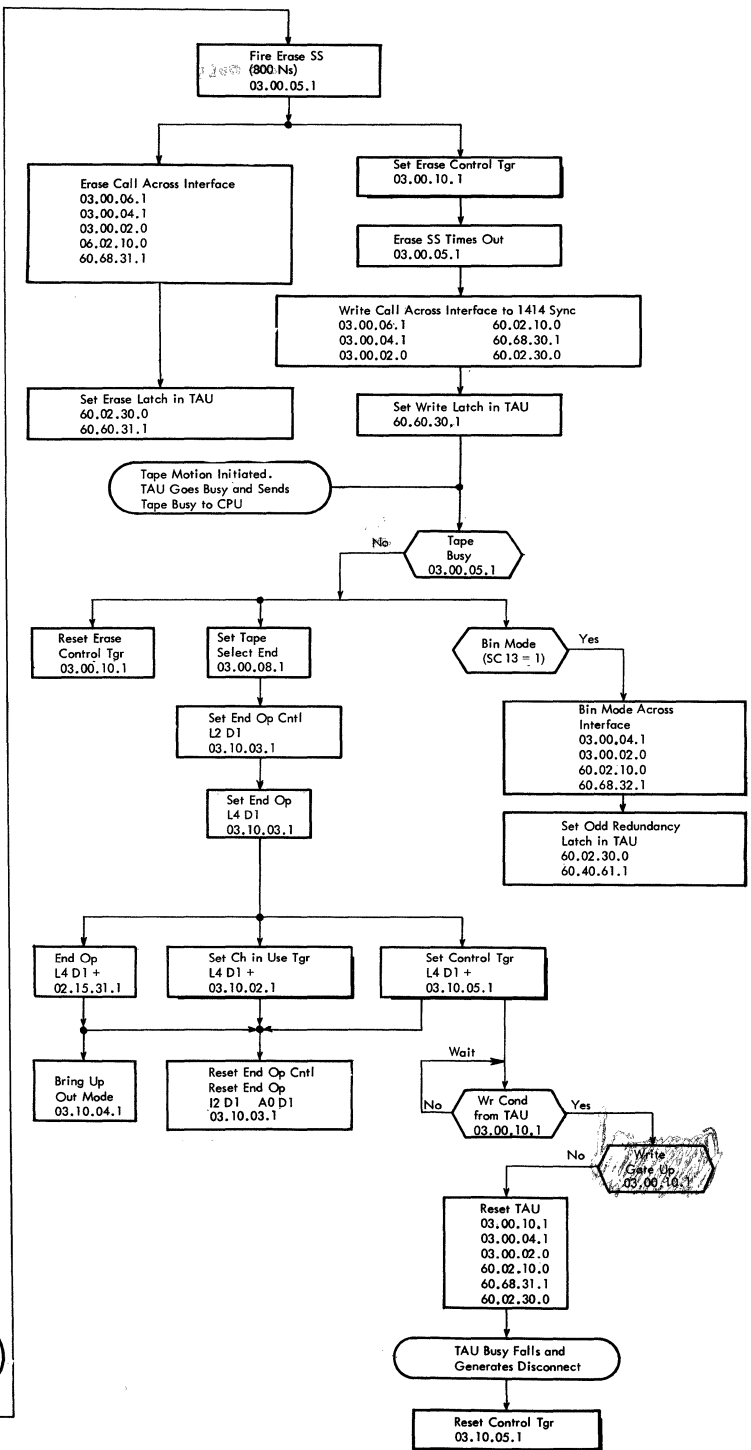


FIGURE 83. WBTA + 0766 TIMING

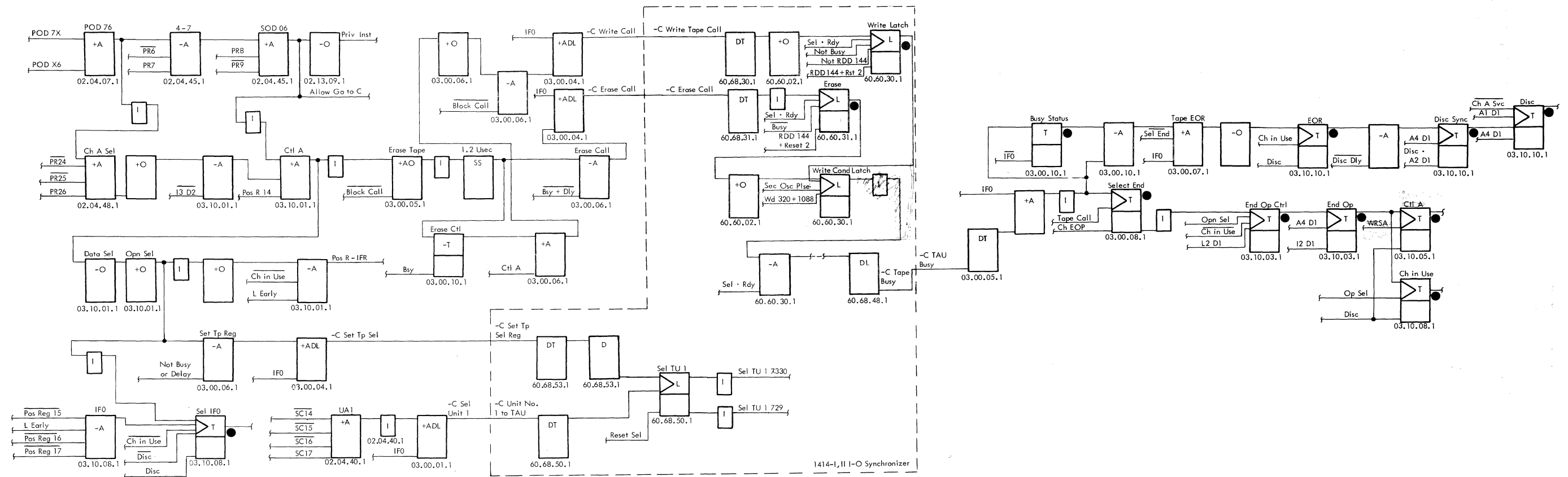


FIGURE 84. WBTA + 0766 2ND LEVEL ALD LOGIC

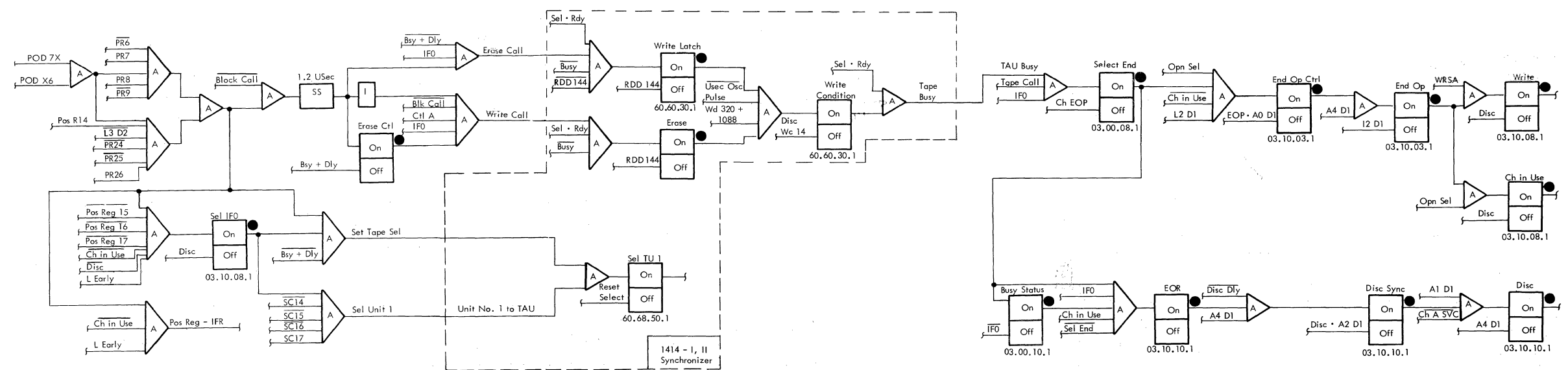


FIGURE 85. WBTA + 0766 LOGIC



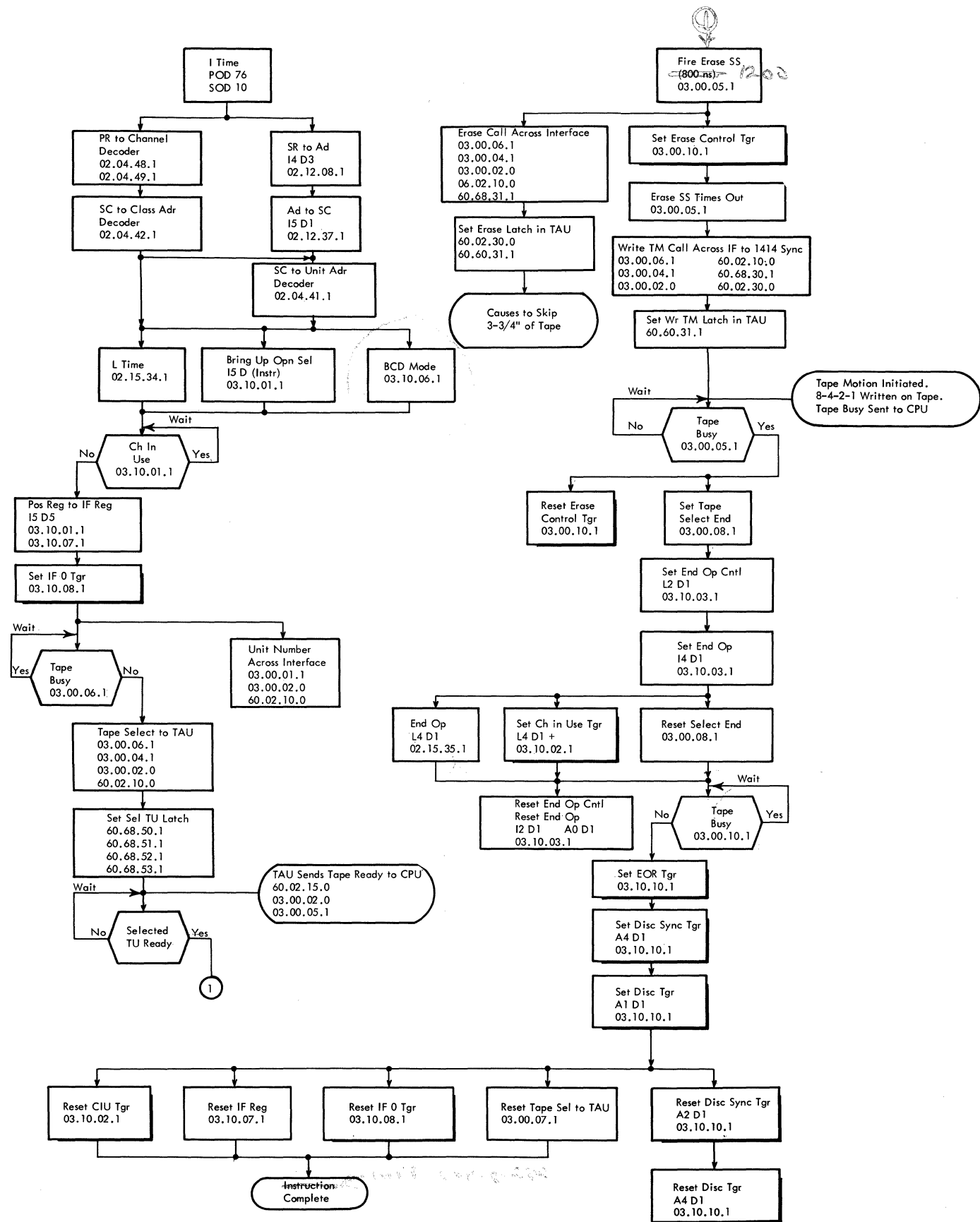


FIGURE 86. WEFA + 0770 LOGIC FLOW

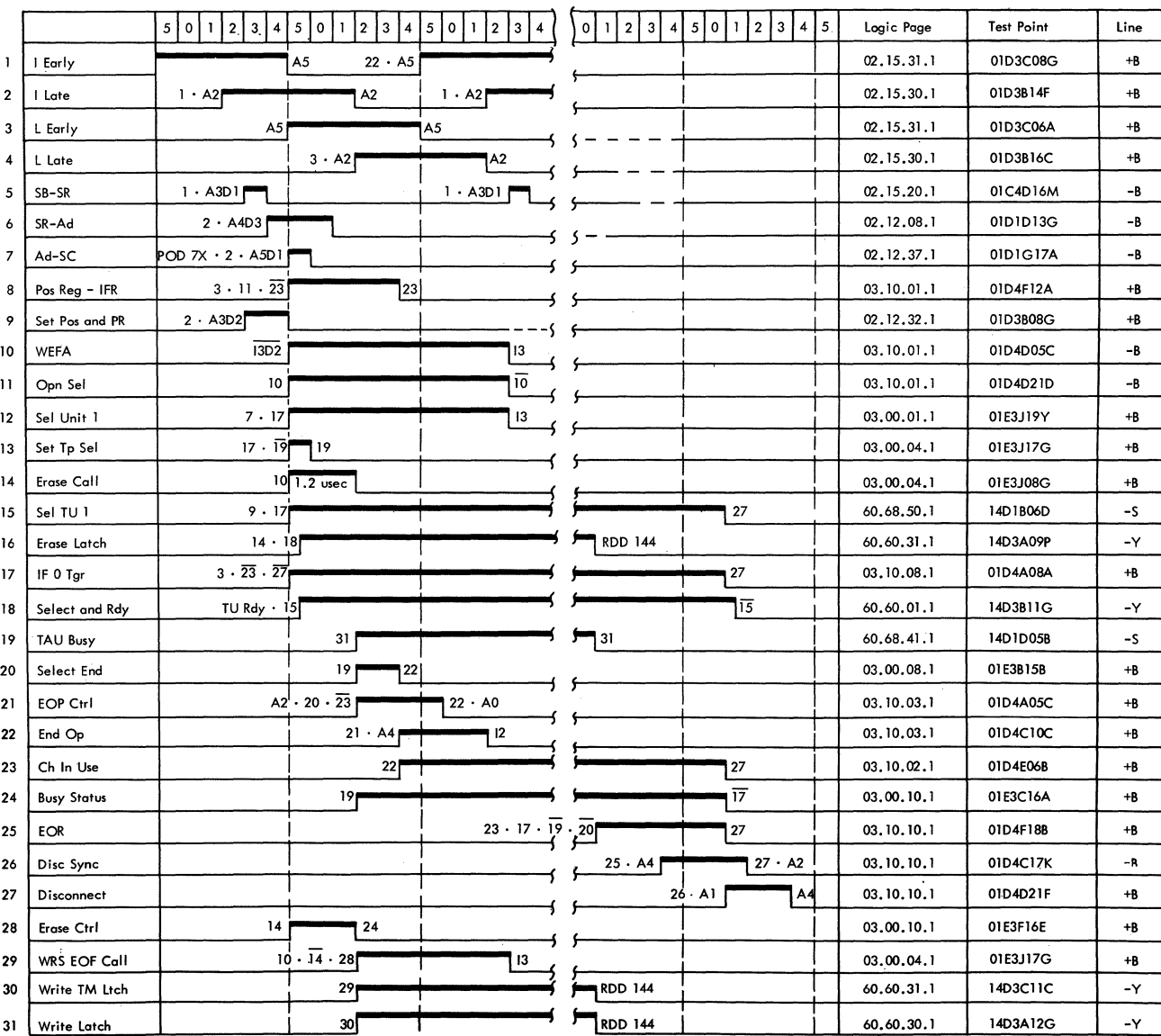


FIGURE 87. WEFA + 0770 TIMING

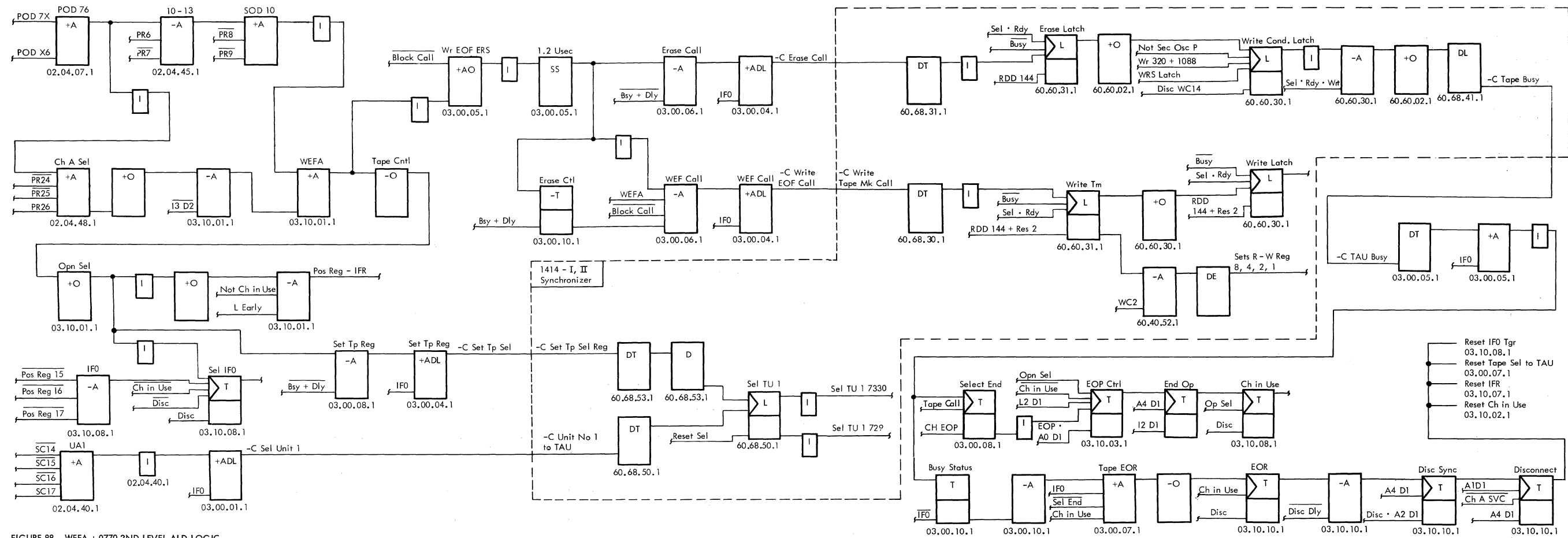


FIGURE 88. WEFA + 0770 2ND LEVEL ALD LOGIC

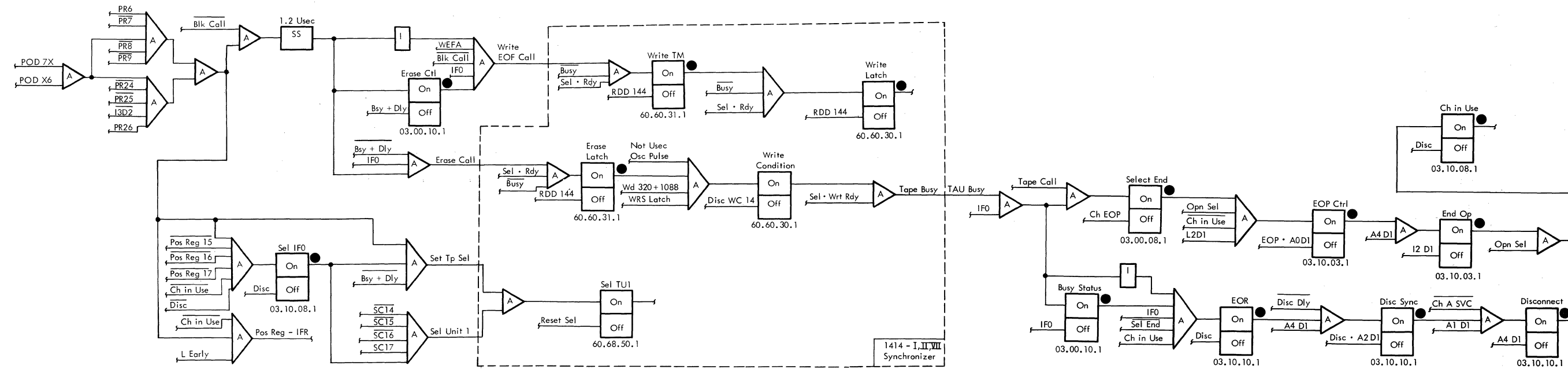


FIGURE 89. WEFA + 0770 LOGIC

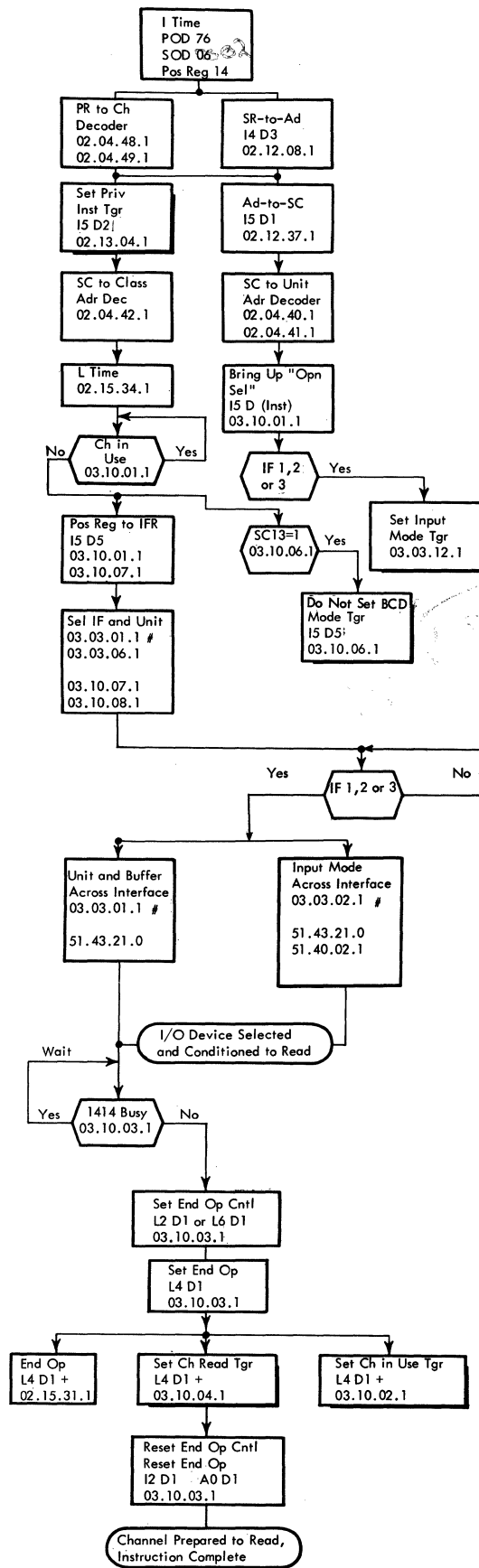


FIGURE 90. RDSA + 0762; PRDA - 1762 I. F. 3 LOGIC FLOW

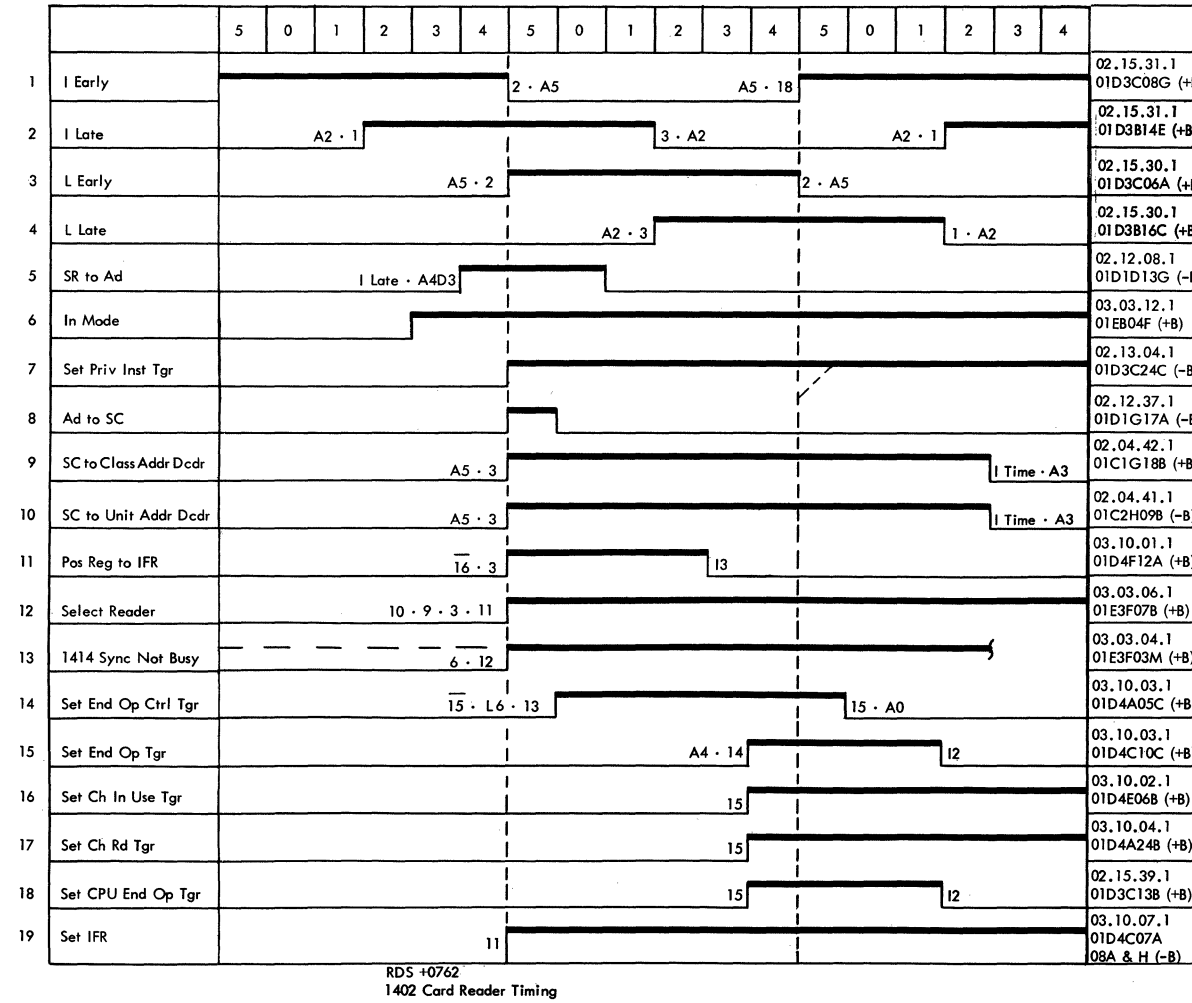


FIGURE 91. RDSA + 0762; PRDA - 1762 I. F. 3 TIMING

Notes:  
 # For IF 1 see 03.01.XX.1 Logic  
 For IF 2 see 03.02.XX.1 Logic

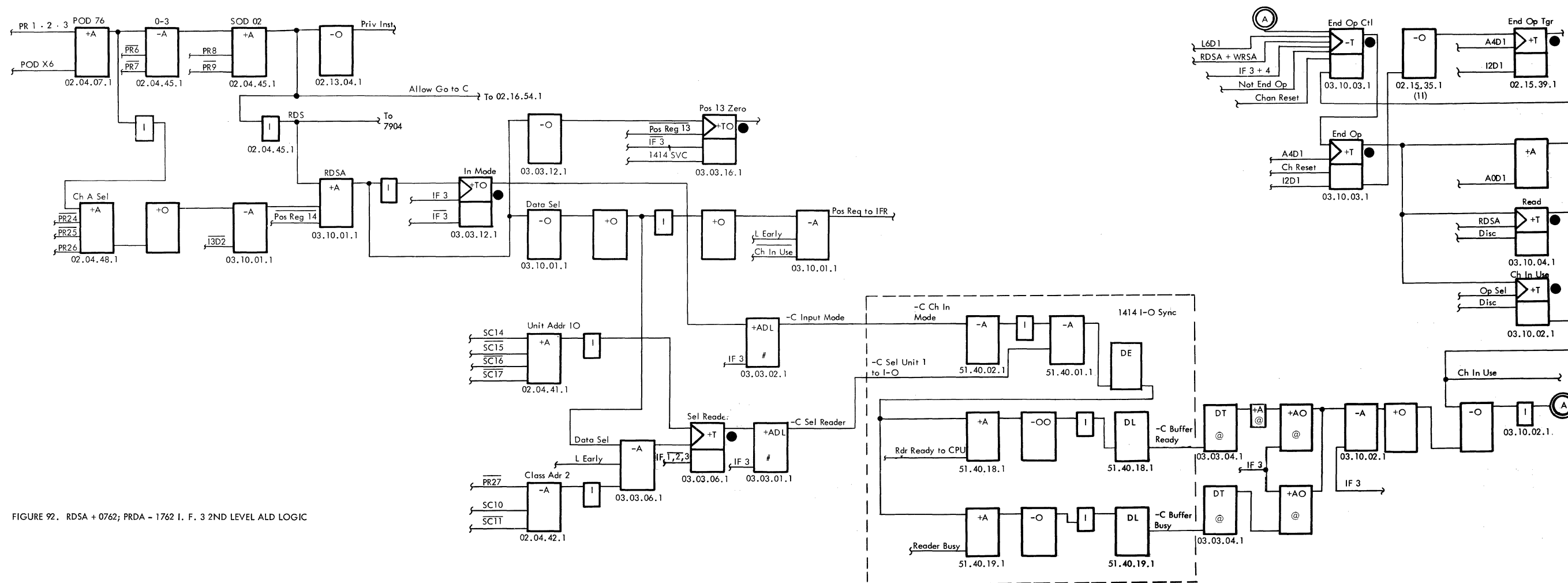
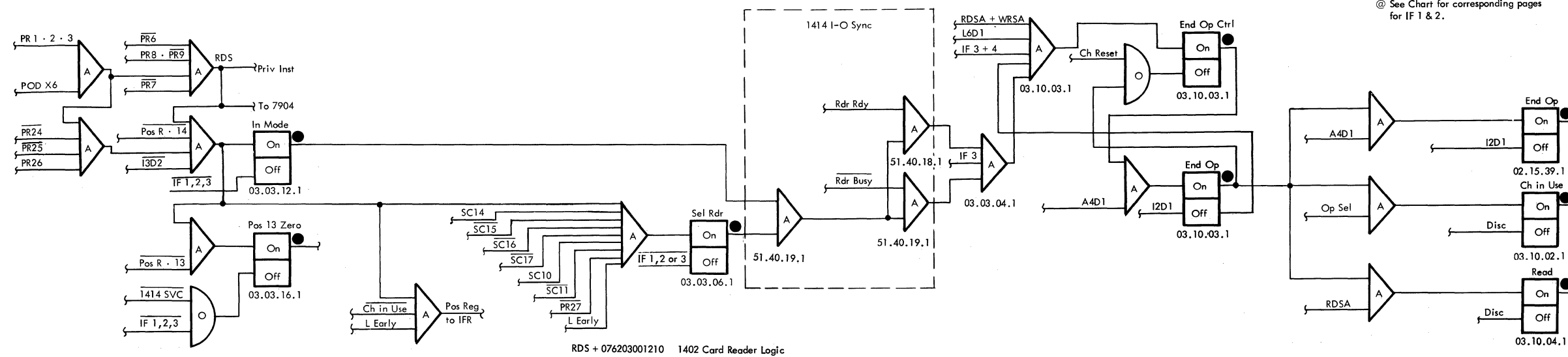


FIGURE 92. RDSA + 0762; PRDA - 1762 I. F. 3 2ND LEVEL ALD LOGIC

Notes:  
 # See Logic 03.01.XX.1 for IF 1.  
 See Logic 03.02.XX.1 for IF 2  
 @ See Chart for corresponding pages for IF 1 & 2.



RDSA + 076203001210 1402 Card Reader Logic

FIGURE 93. RDSA + 0762; PRDA - 1762 I. F. 3 LOGIC







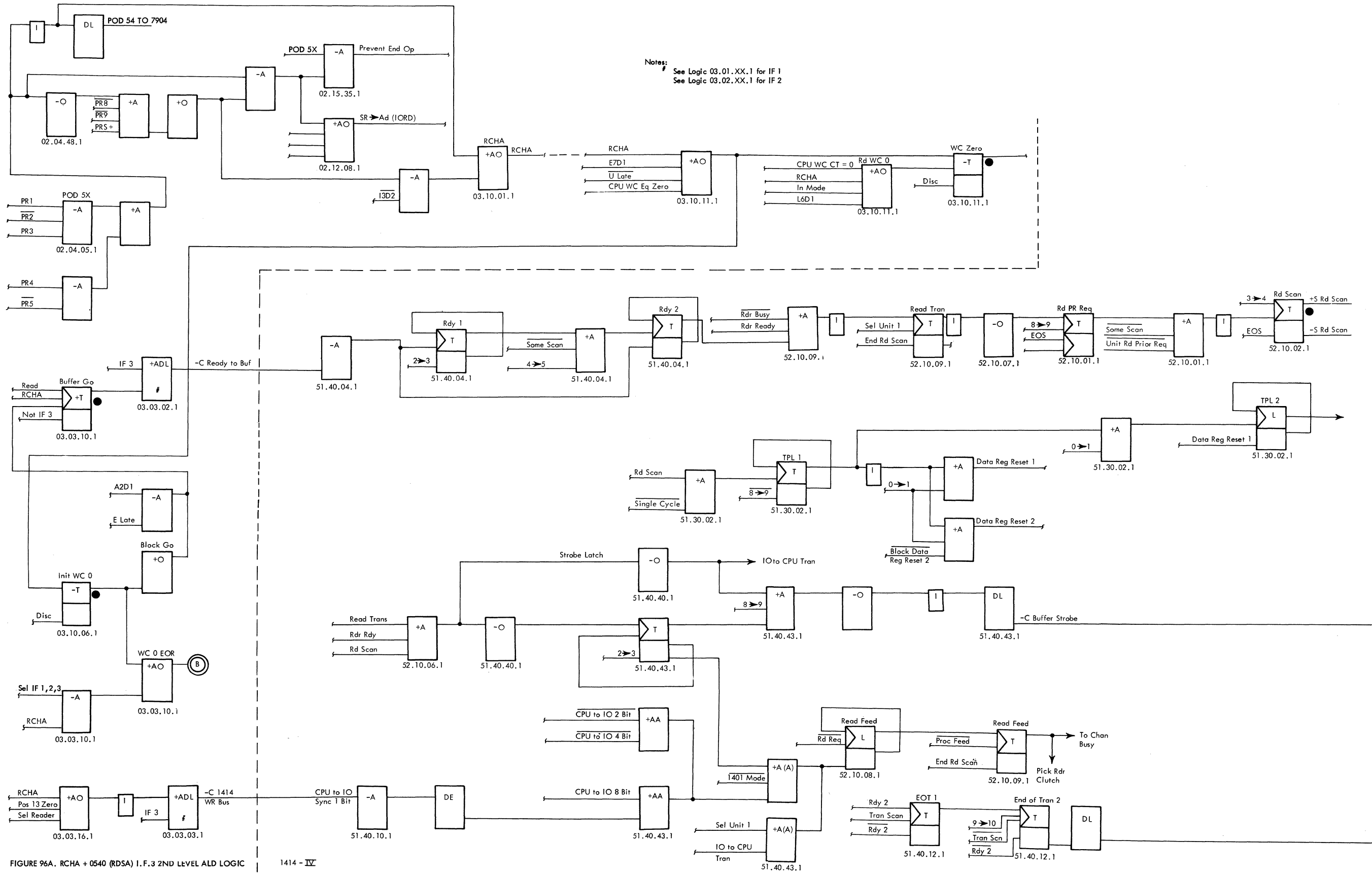


FIGURE 96A. RCHA + 0540 (RDSA) I.F.3 2ND LEVEL ALD LOGIC

1414 - IV

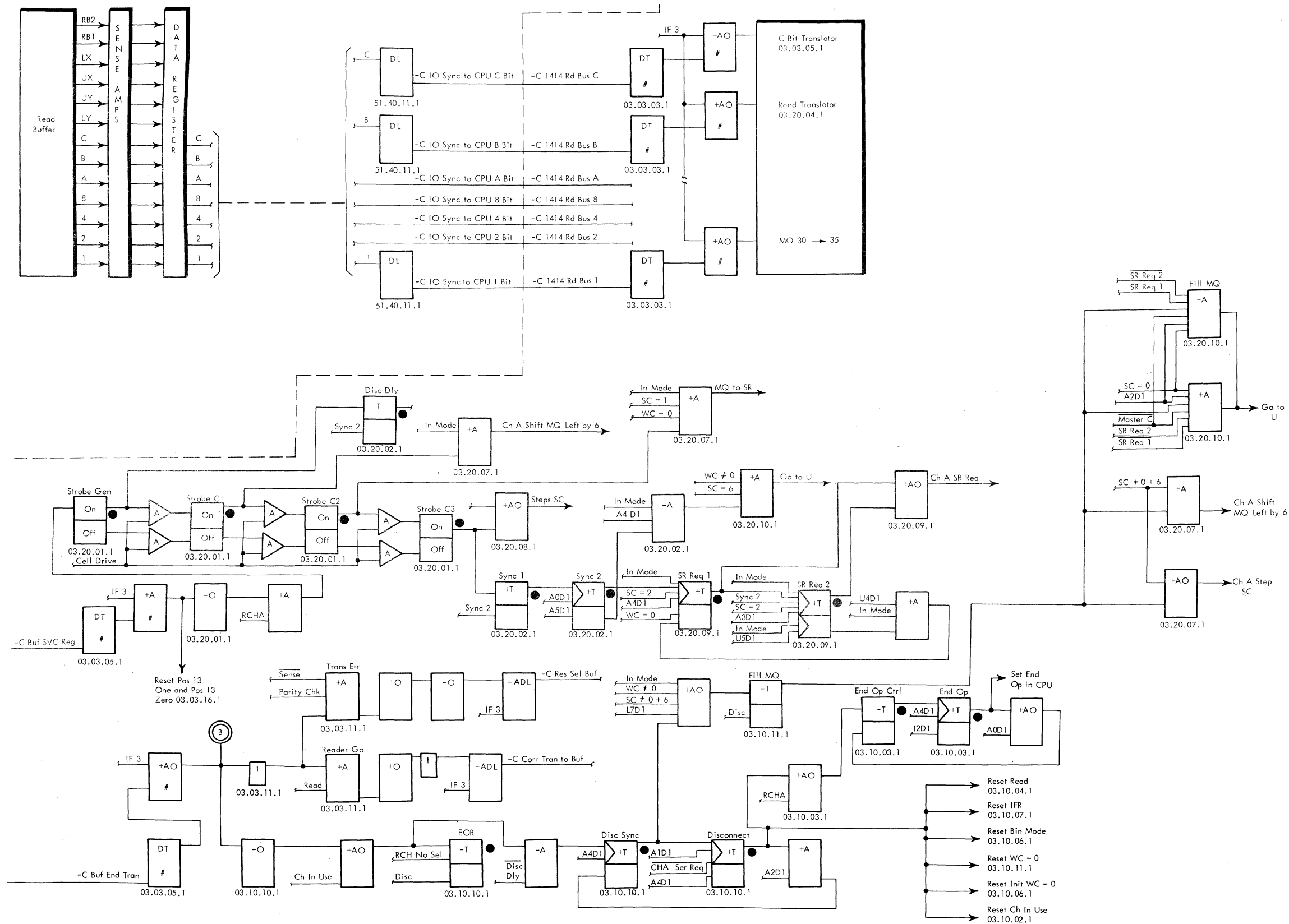


FIGURE 96B. RCHA + 0540 (RDSA) I.F. 3 2ND LEVEL ALD LOGIC

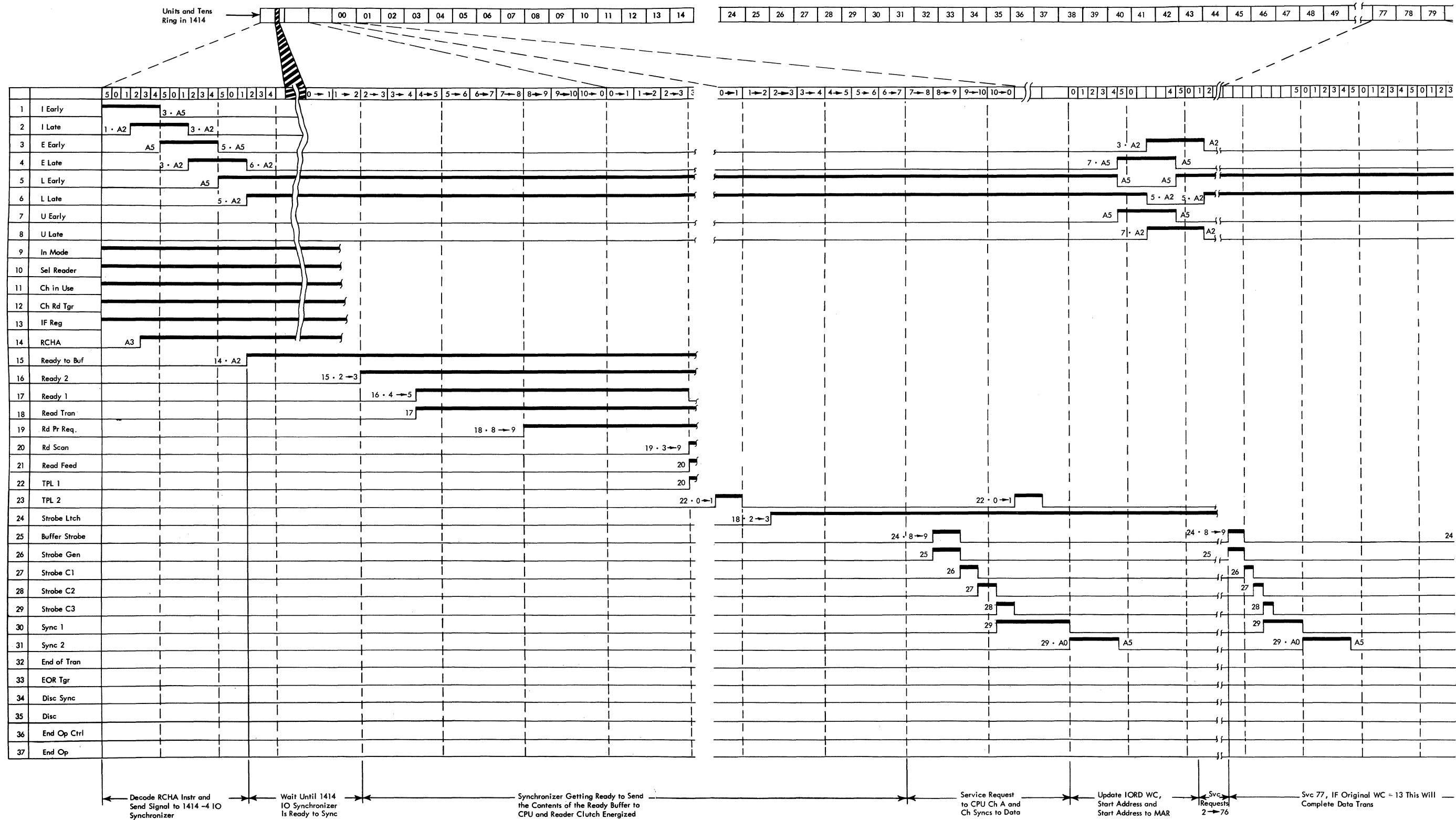


FIGURE 97A. RCHA + 0540 (RDSA) I. F. 3 WORD COUNT ≠ TIMING

Notes:  
 See Logic 03.01.XX.1 for I.F. 1  
 See Logic 03.02.XX.1 for I.F. 2

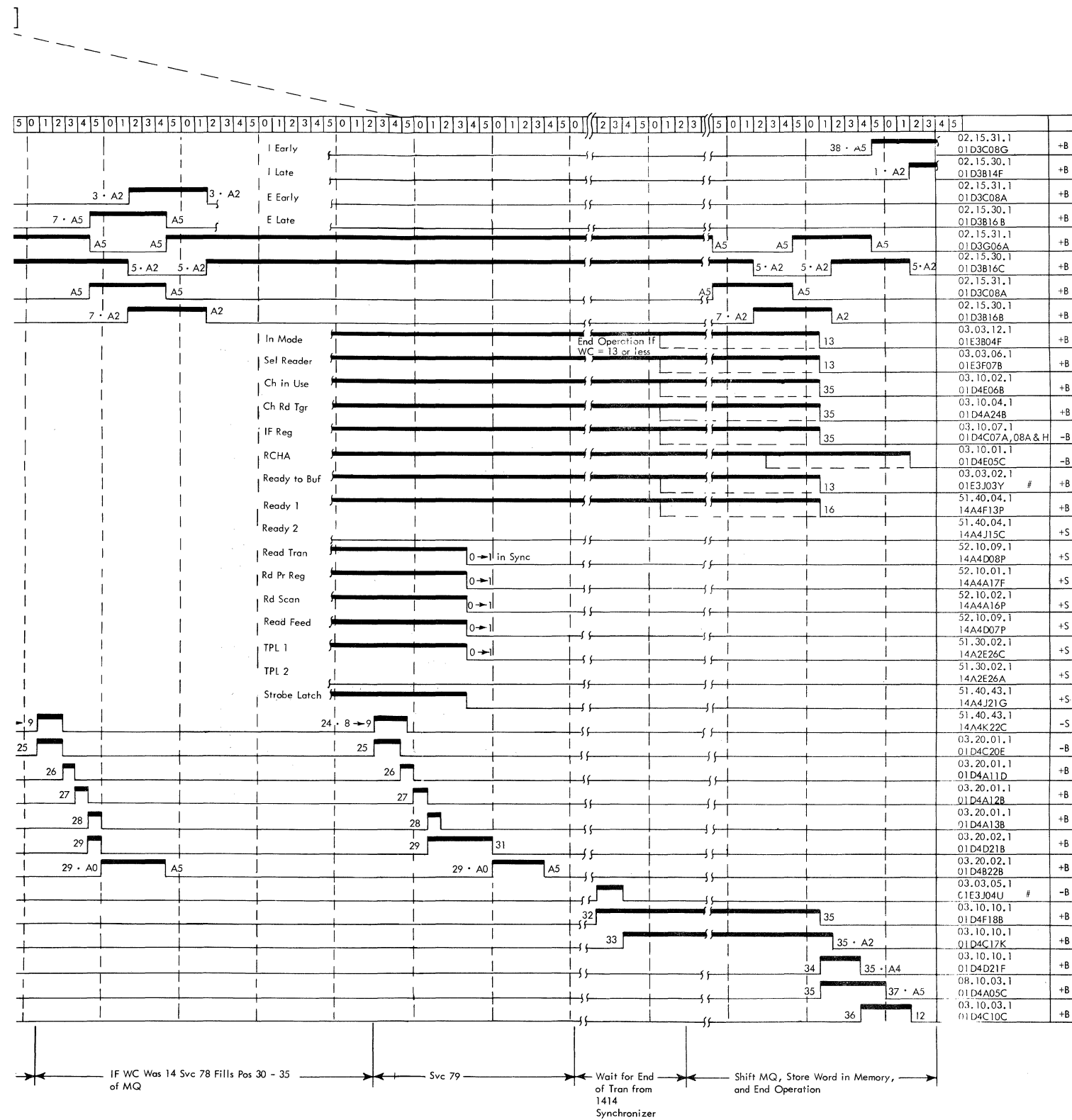


FIGURE 97B. RCHA + 0540 (RDSA) I.F. 3 WORD COUNT ≠ TIMING

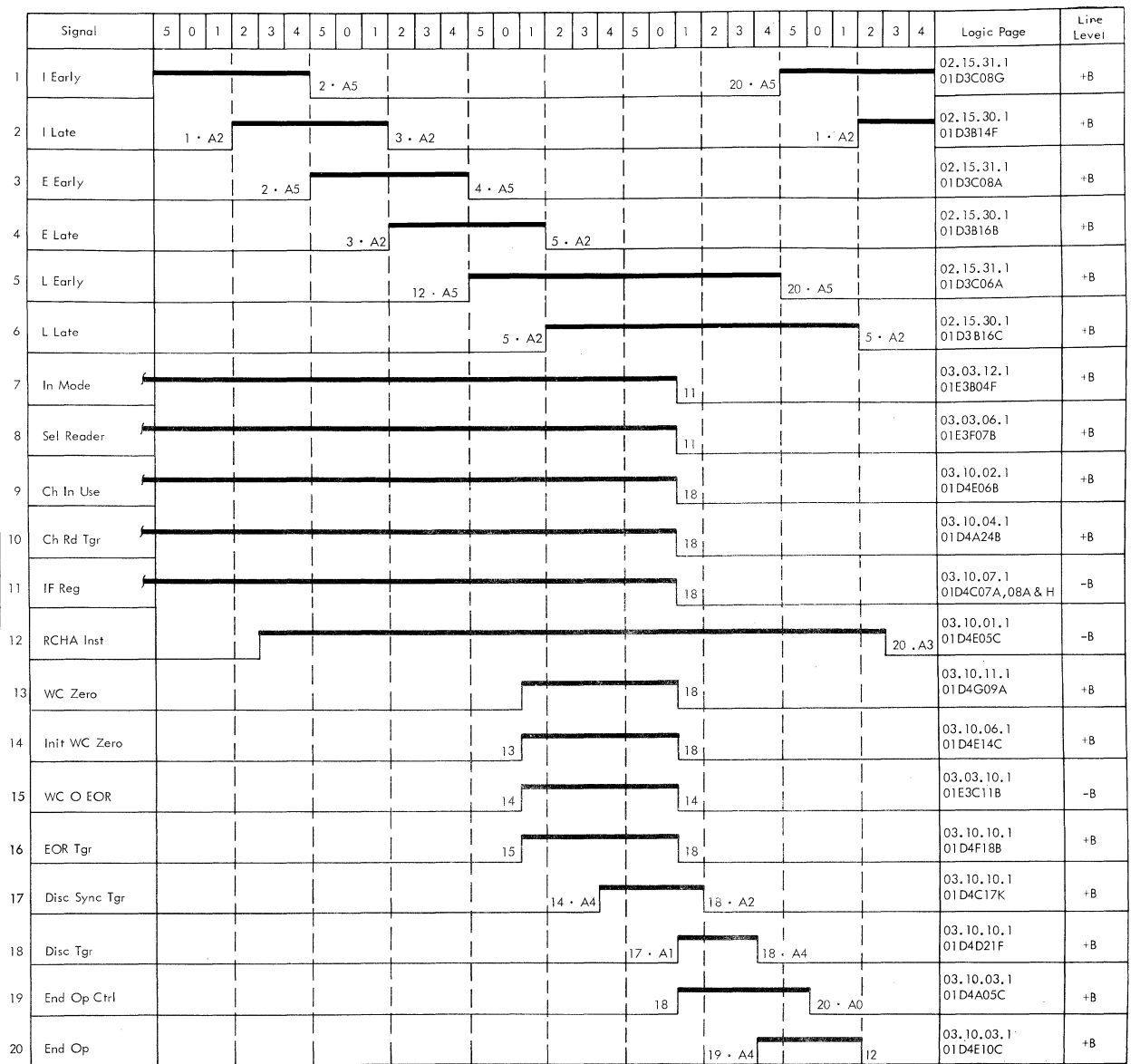


FIGURE 98. RCHA + 0540 (RDSA) I.F. 3 WORD COUNT = 0 TIMING

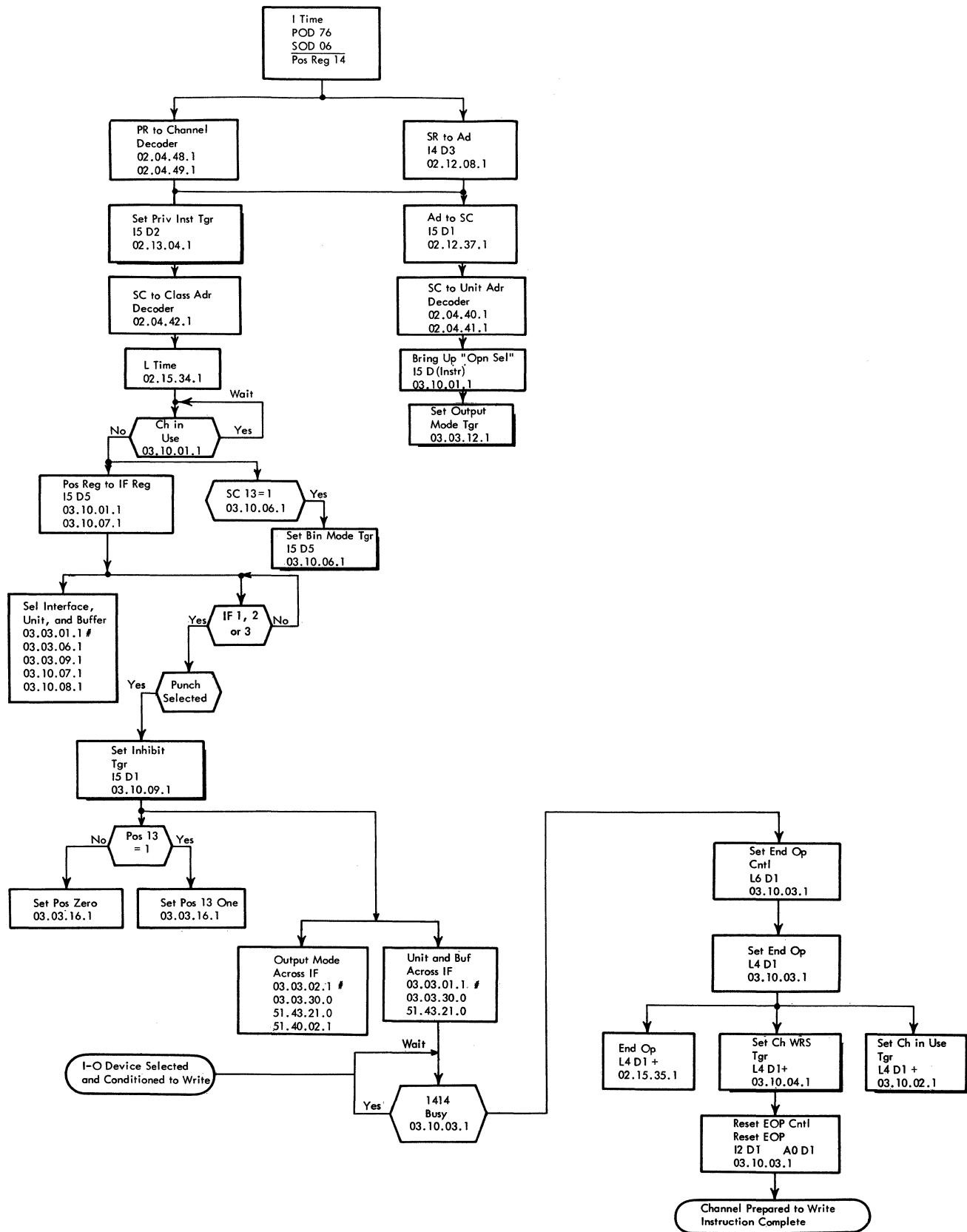
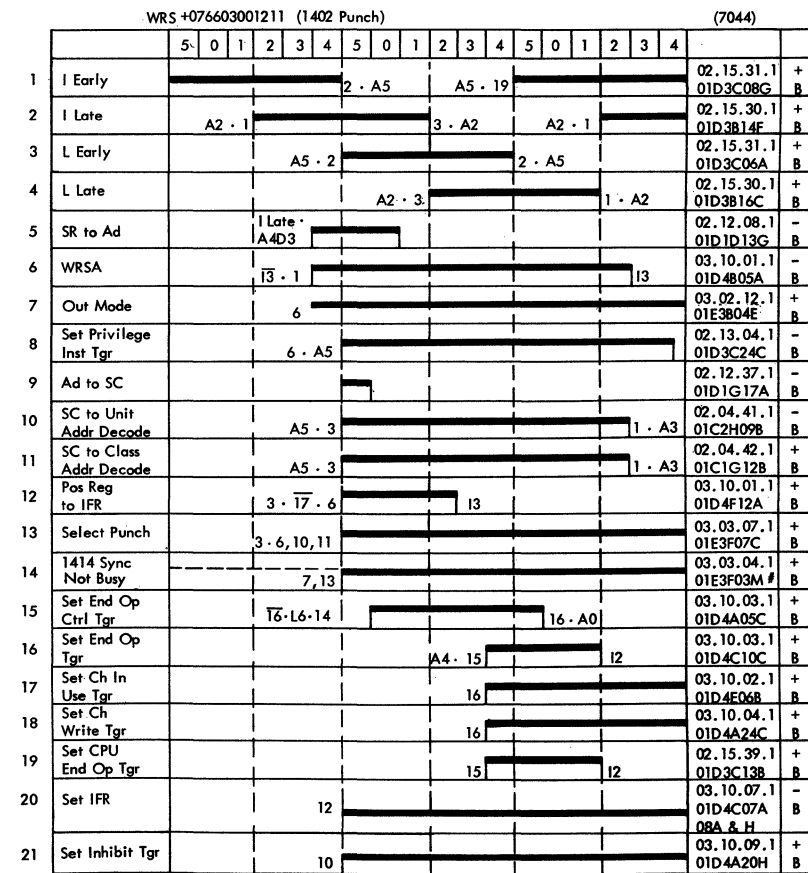


FIGURE 99. WRS + 0766; PWRA - 1766 I. F. 3 (PUNCH) LOGIC FLOW



Notes:  
 # See Logic 03.01.XX.1 for IF 1  
 # See Logic 03.02.XX.1 for IF 2

Note  
 A5 - 3 is A5 AND Line 3  
 A5 + 3 is A5 OR Line 3

FIGURE 100. WRS + 0766; PWRA - 1766 I. F. 3 (PUNCH) TIMING

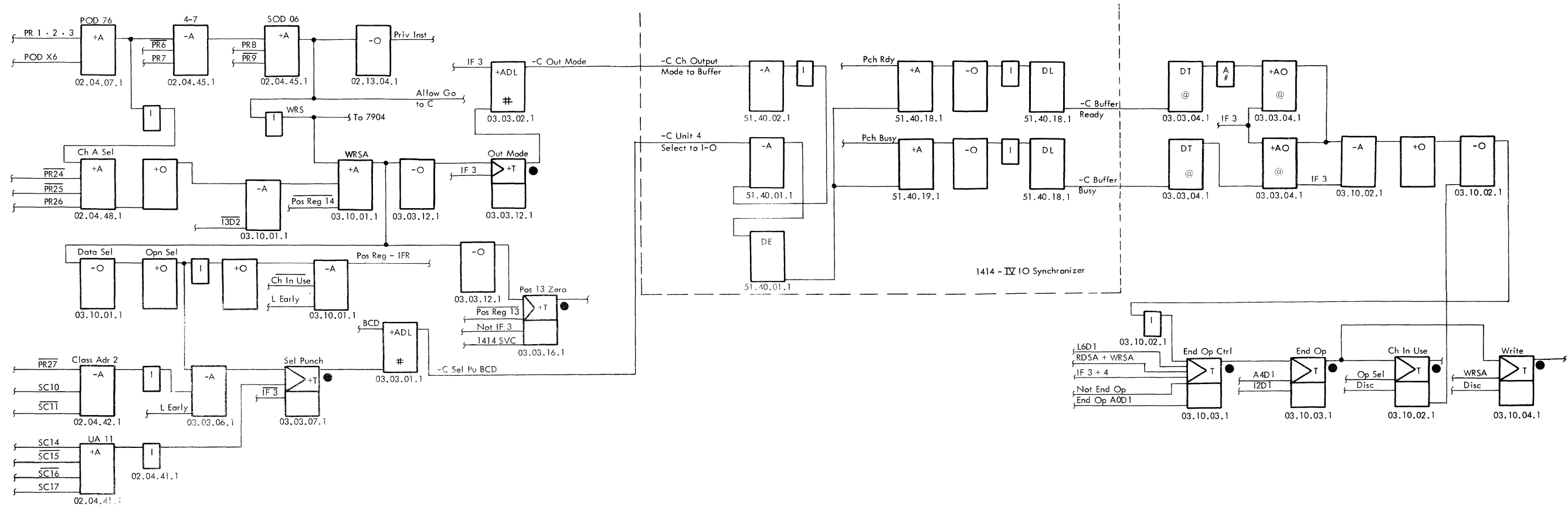


FIGURE 101. WRSA + 0766; PWRA - 1766 I. F. 3 (PUNCH) 2ND LEVEL ALD LOGIC

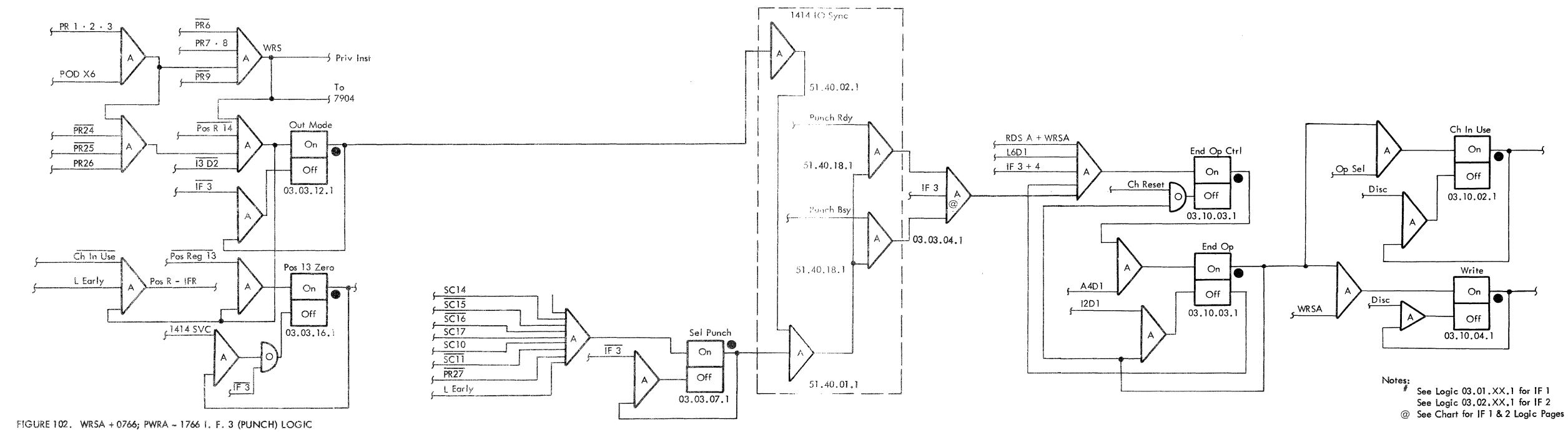


FIGURE 102. WRSA + 0766; PWRA - 1766 I. F. 3 (PUNCH) LOGIC





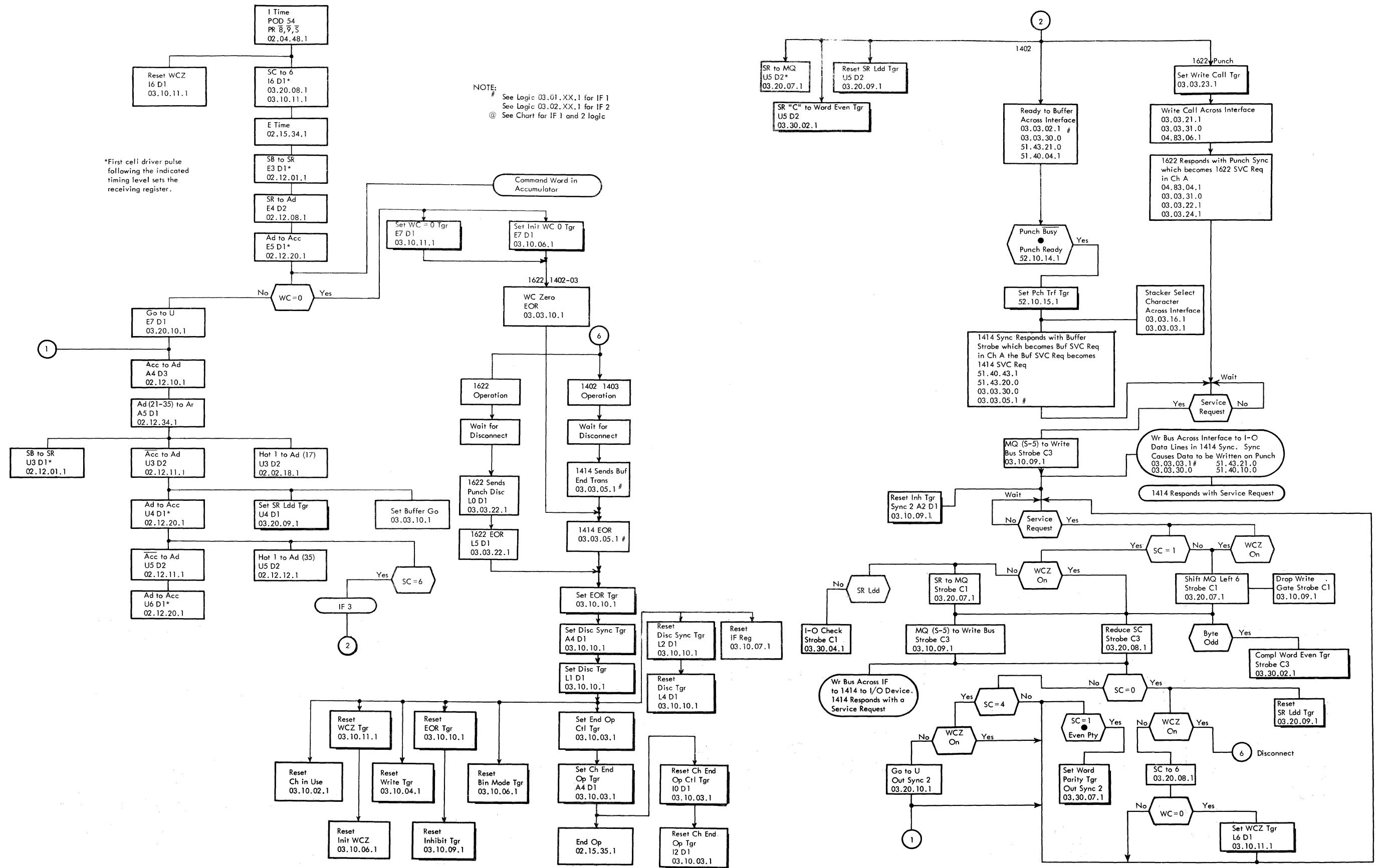


FIGURE 103. RCHA + 0540 (WRS) I. F. 3 (PUNCH) LOGIC FLOW

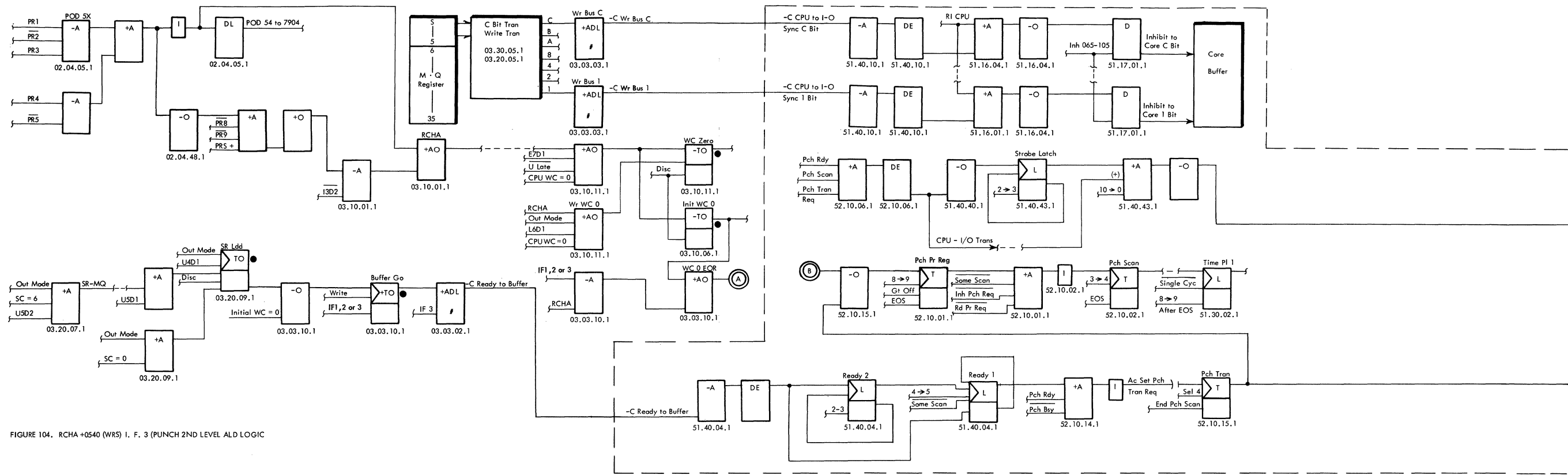


FIGURE 104. RCHA +0540 (WRS) I. F. 3 (PUNCH 2ND LEVEL ALD LOGIC)

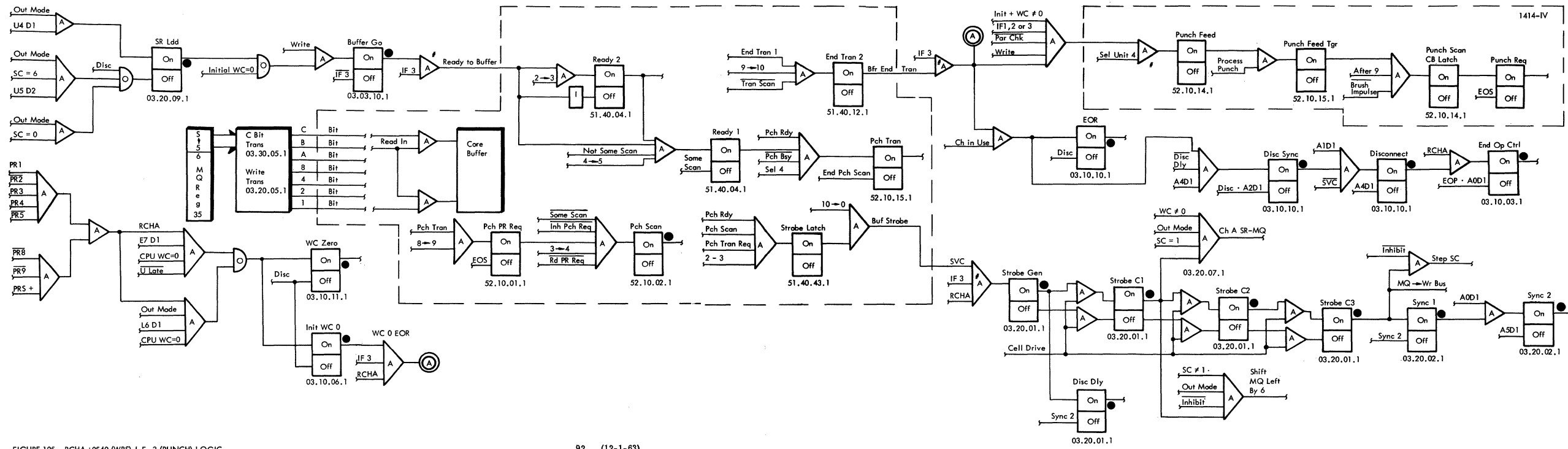


FIGURE 105. RCHA +0540 (WRS) I. F. 3 (PUNCH) LOGIC

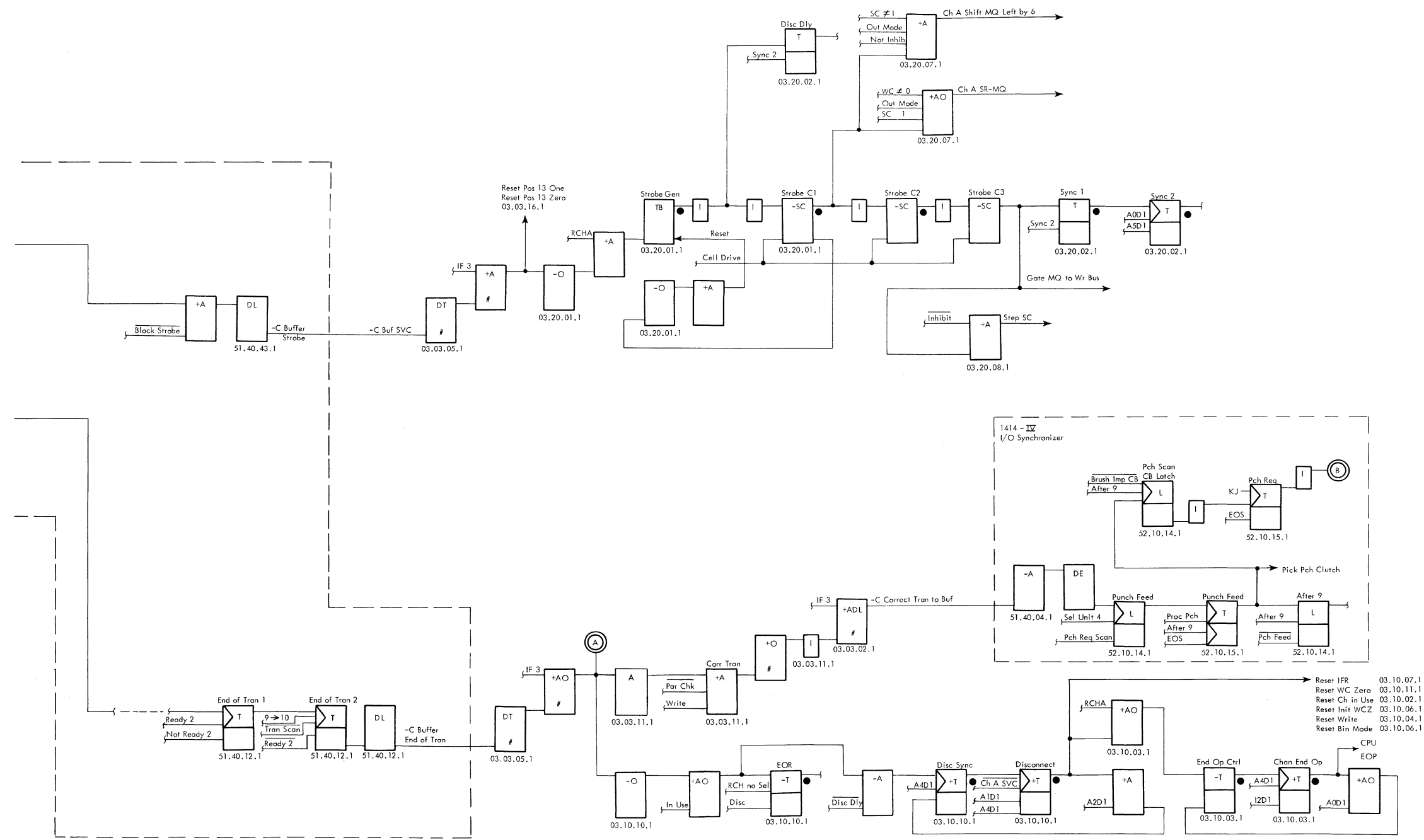


FIGURE 104. (CON'T)

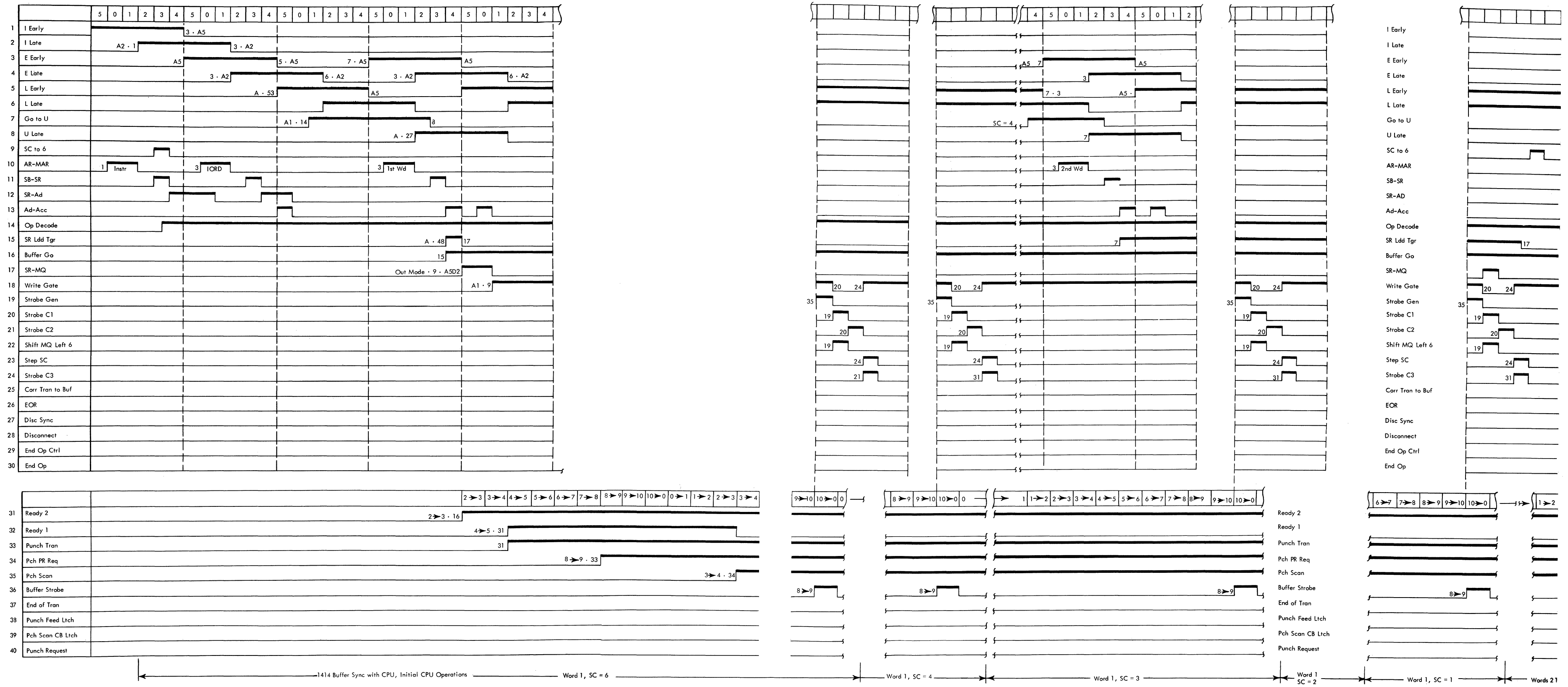


FIGURE 106A. RCHA + 0540 (WRS) I.F. 3 (PUNCH) WORD COUNT 0 TIMING

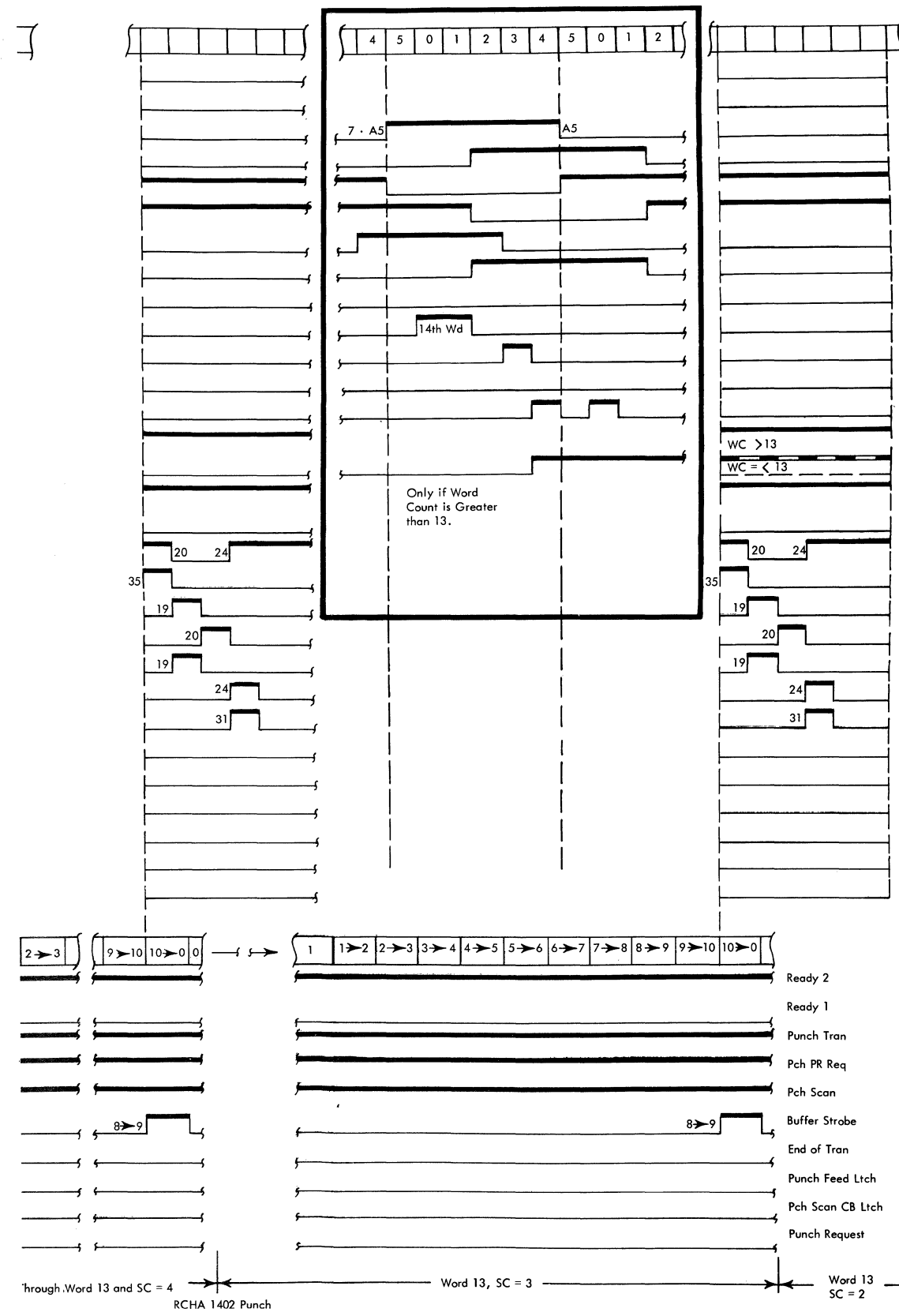


FIGURE 106B. RCHA + 0540 (WRS) I.F. 3 (PUNCH) WORD COUNT ≠ 13

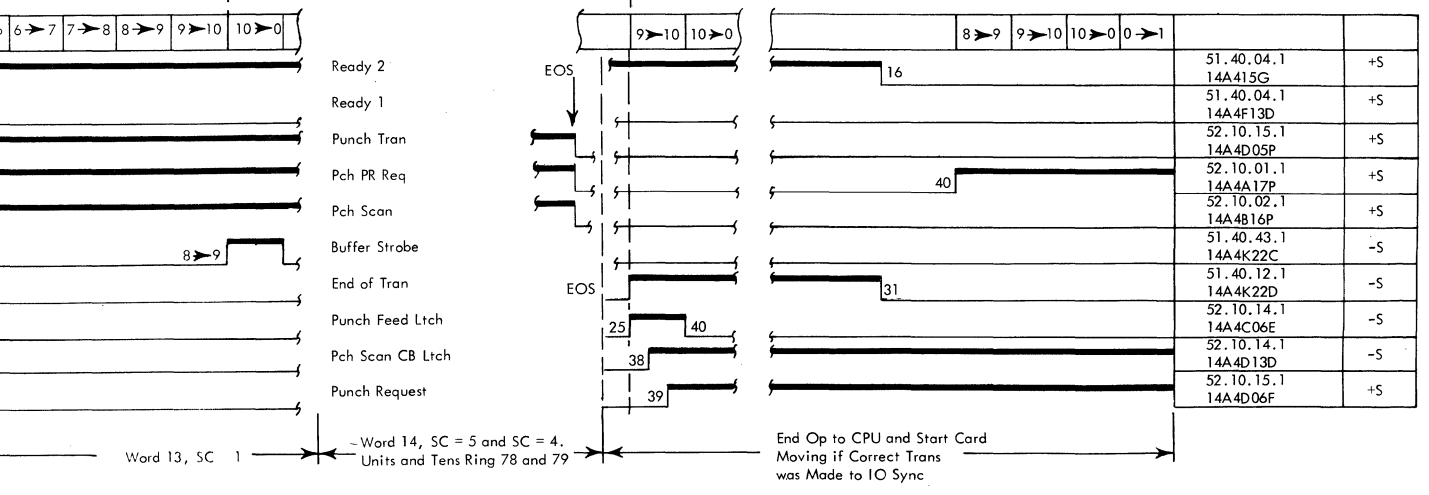
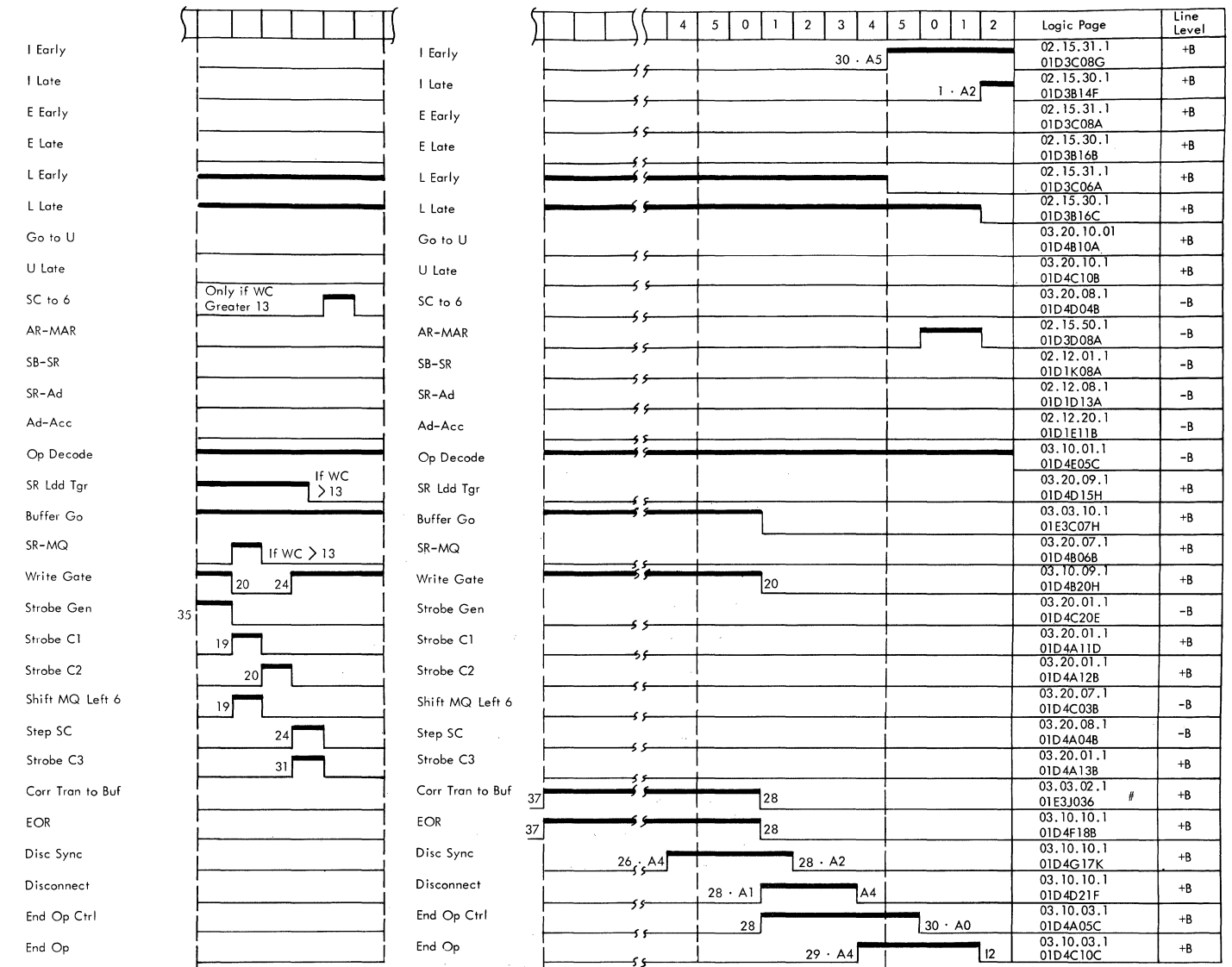
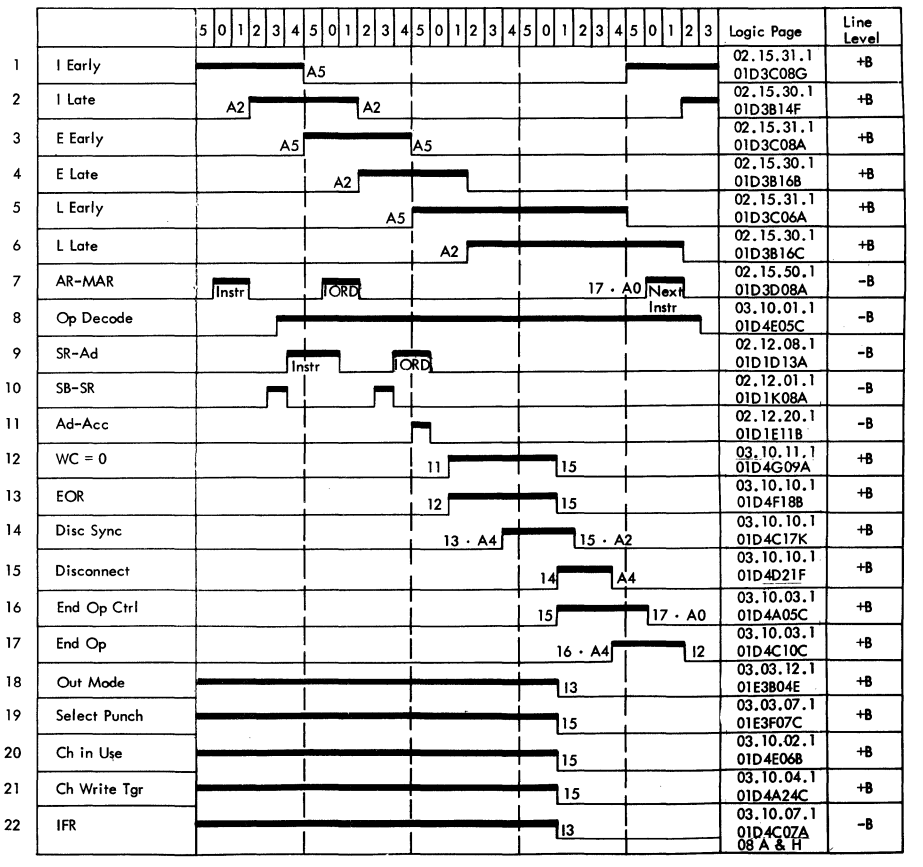
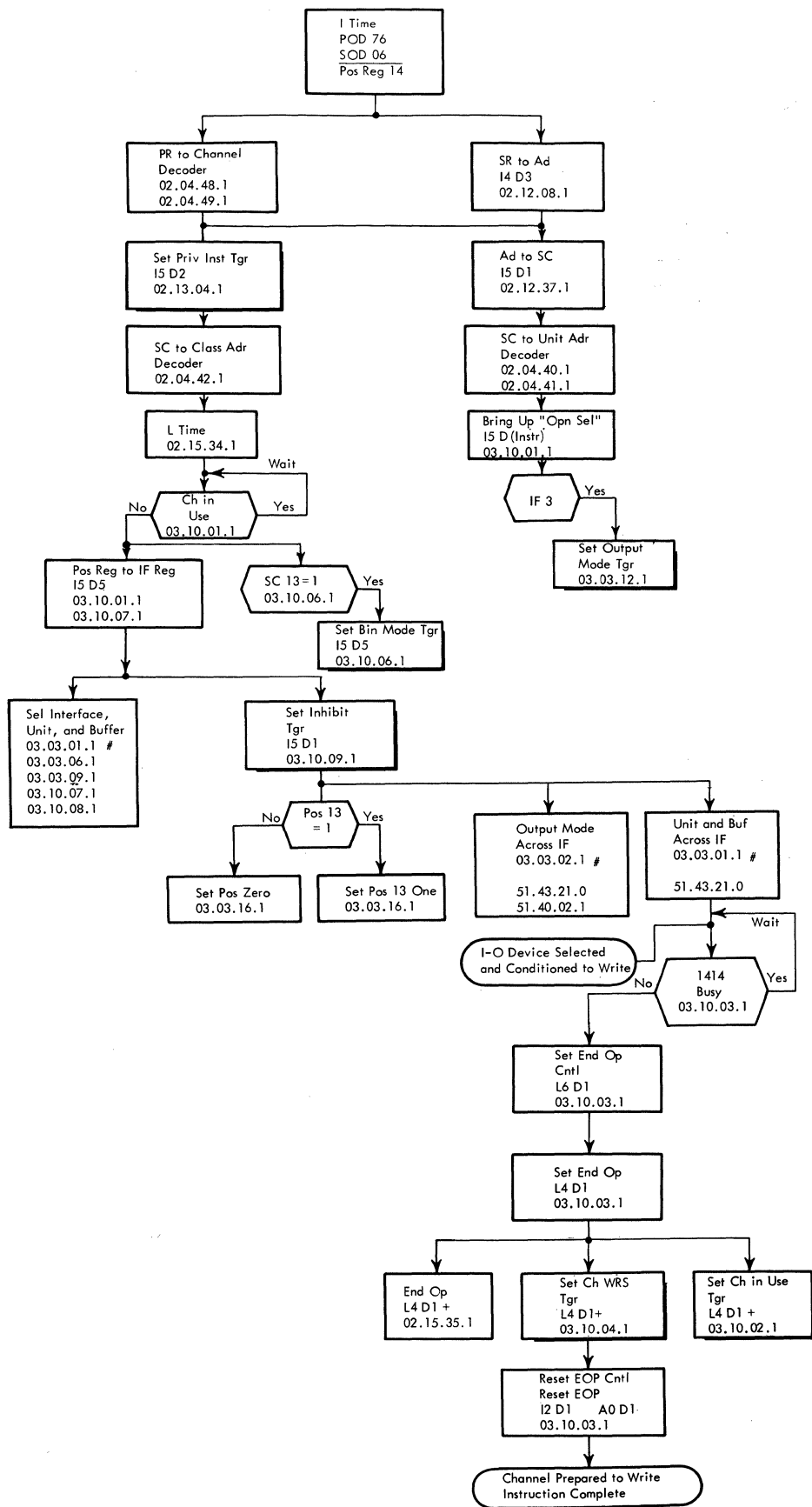


FIGURE 107. RCHA + 0540 (WRS) I.F. 3 (PUNCH) WORD COUNT = 0 TIMING



Note:  
 \* See Logic 03.01.XX.1 for IF 1  
 See Logic 03.02.XX.1 for IF 2  
 © See Chart for IF 1 and 2 Logic

FIGURE 107. RCHA + 0540 (WRS) I.F. 3 (PUNCH) WORD COUNT = 0 TIMING



NOTE:  
# See Logic 03.01.XX.1 for IF 1  
See Logic 03.02.XX.1 for IF 2  
@ See Chart for IF 1 and 2 logic

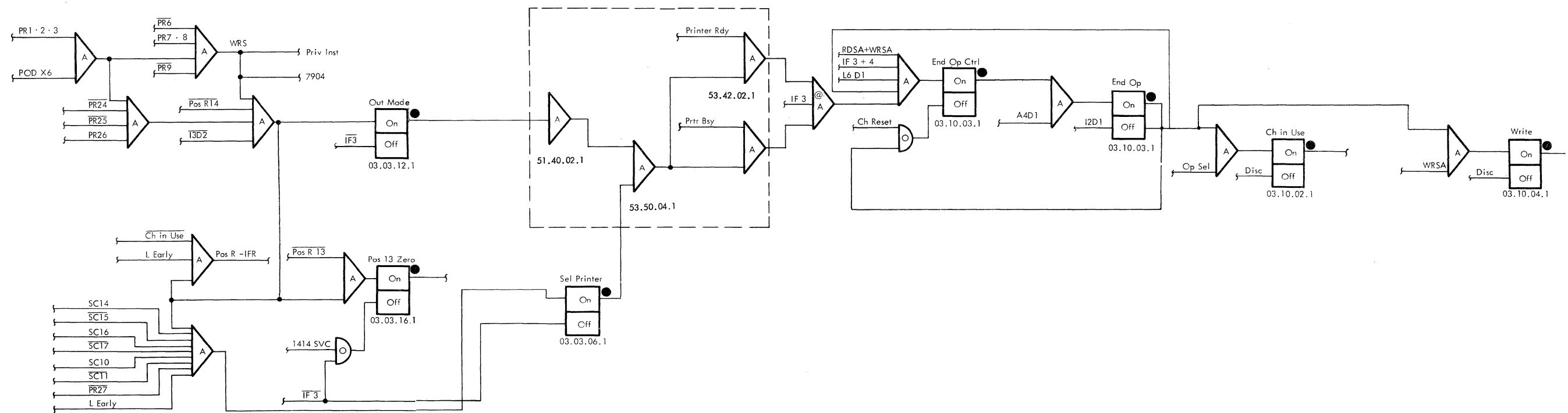
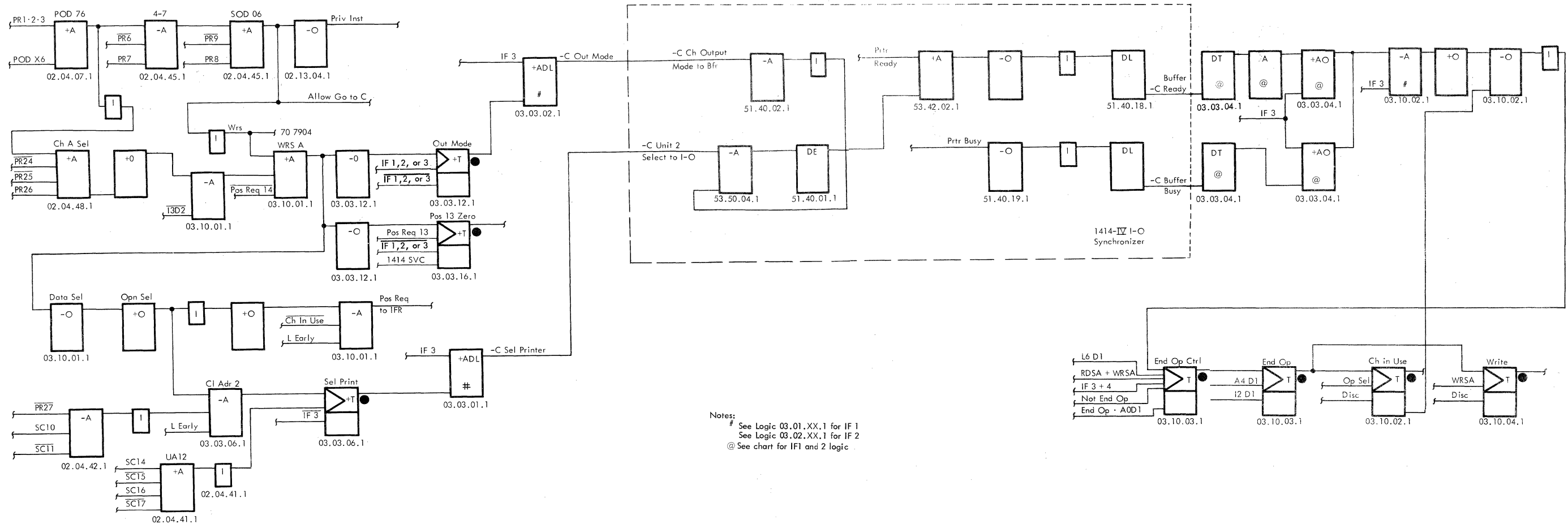
	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4		
1. I Early							2 · A5		A5 · 19										02.15.31.1	+ B
2. I Late	A2 · 1								3 · A2						1.				02.15.30.1	+ B
3. L Early					A5 · 2								2 · A5						02.15.31.1	+ B
4. L Late							A2 · 3								1 · A2				02.15.30.1	+ B
5. SR to Ad					A4D3														02.13.08.1	- B
6. WRSA			I3 · 1														I3		03.10.01.1	- B
7. Out Mode			6																03.03.12.1	+ B
8. Set Privilege Inst Tgr			6 · A5																02.13.04.1	- B
9. Ad to SC																			02.12.37.1	- B
10. SC to Unit Adr Decode			A5 · 3												1.				02.04.41.1	- B
11. SC to Class Adr Decode			A5 · 3												1.				02.04.42.1	+ B
12. Pos Reg to IFR			I3 · I7 · 6								I3								03.10.01.1	+ B
13. Select Printer			I3 · 10,6,11																03.03.06.1	+ B
14. 1414 Sync Not Busy			7 · 13																03.03.04.1	+ B
15. Set End Op Ctrl Tgr			I6 · L6 · 14										I6 · A0						03.10.03.1	+ B
16. Set End Op Tgr									A4 · 15						I2				03.10.03.1	+ B
17. Set Ch in Use Tgr											I6								03.10.02.1	+ B
18. Set Ch Write Tgr											I6								03.10.04.1	+ B
19. Set CPU End Op Tgr													I5				I2		02.15.39.1	+ B
20. Set IFR					I2														03.10.07.1	- B
																			01D4C07A	- B
																			08A & 11	- B

WRSA 1403 Printer Timing

FIGURE 108. WRSA + 0766; PWRA - 1766 I. F. 3 (PRINTER) LOGIC FLOW

FIGURE 109. WRSA + 0766; PWRA - 1766 I. F. 3 (PRINTER) TIMING





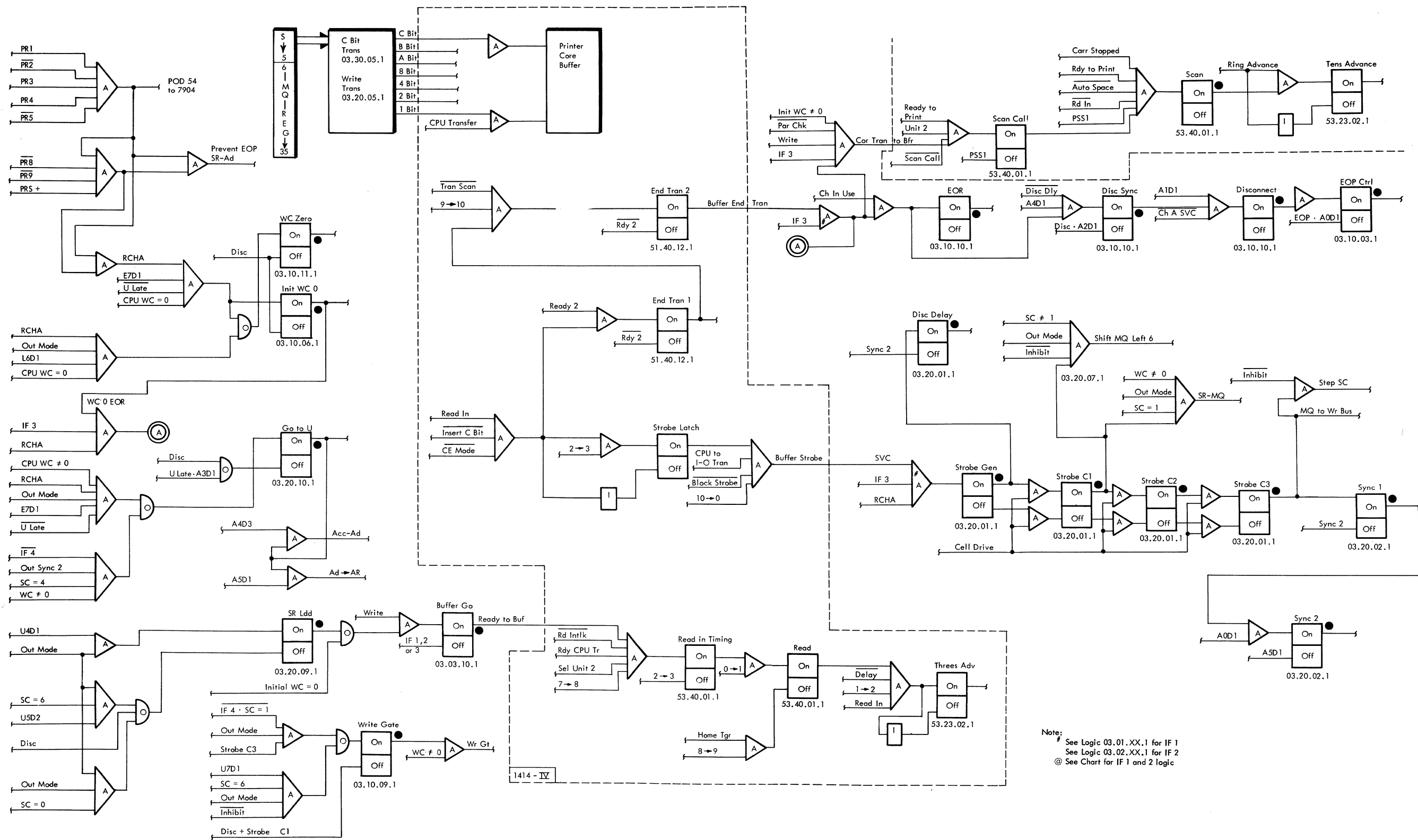
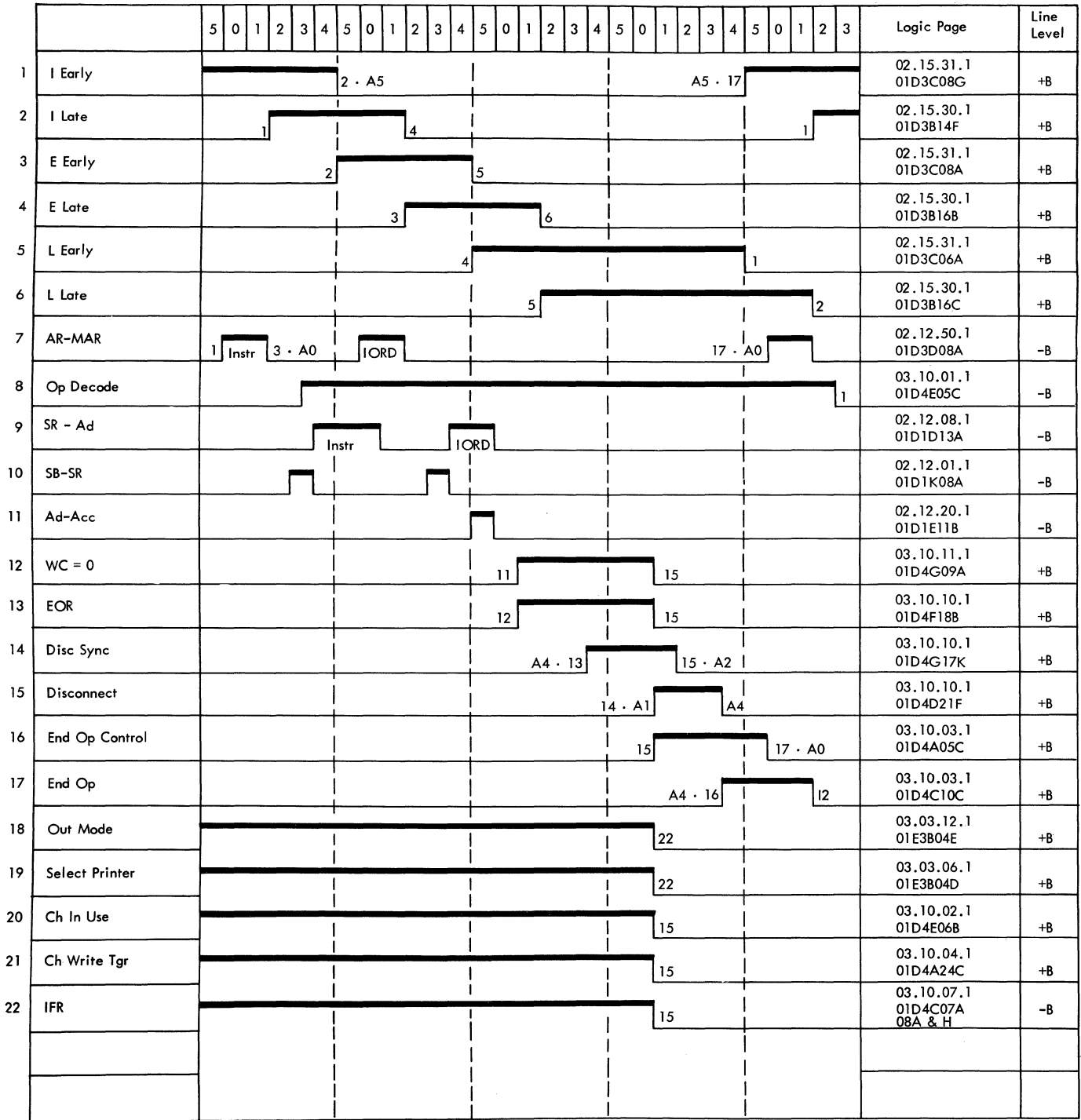


FIGURE 112. RCHA + 0540 (WRS) 1. F. 3 (PRINTER) LOGIC



RCHA +0540  
1403 Printer Timing (Word Count = 0)

FIGURE 113. RCHA +0540 (WRS) I. F. 3 (PRINTER) WORD COUNT = 0 TIMING

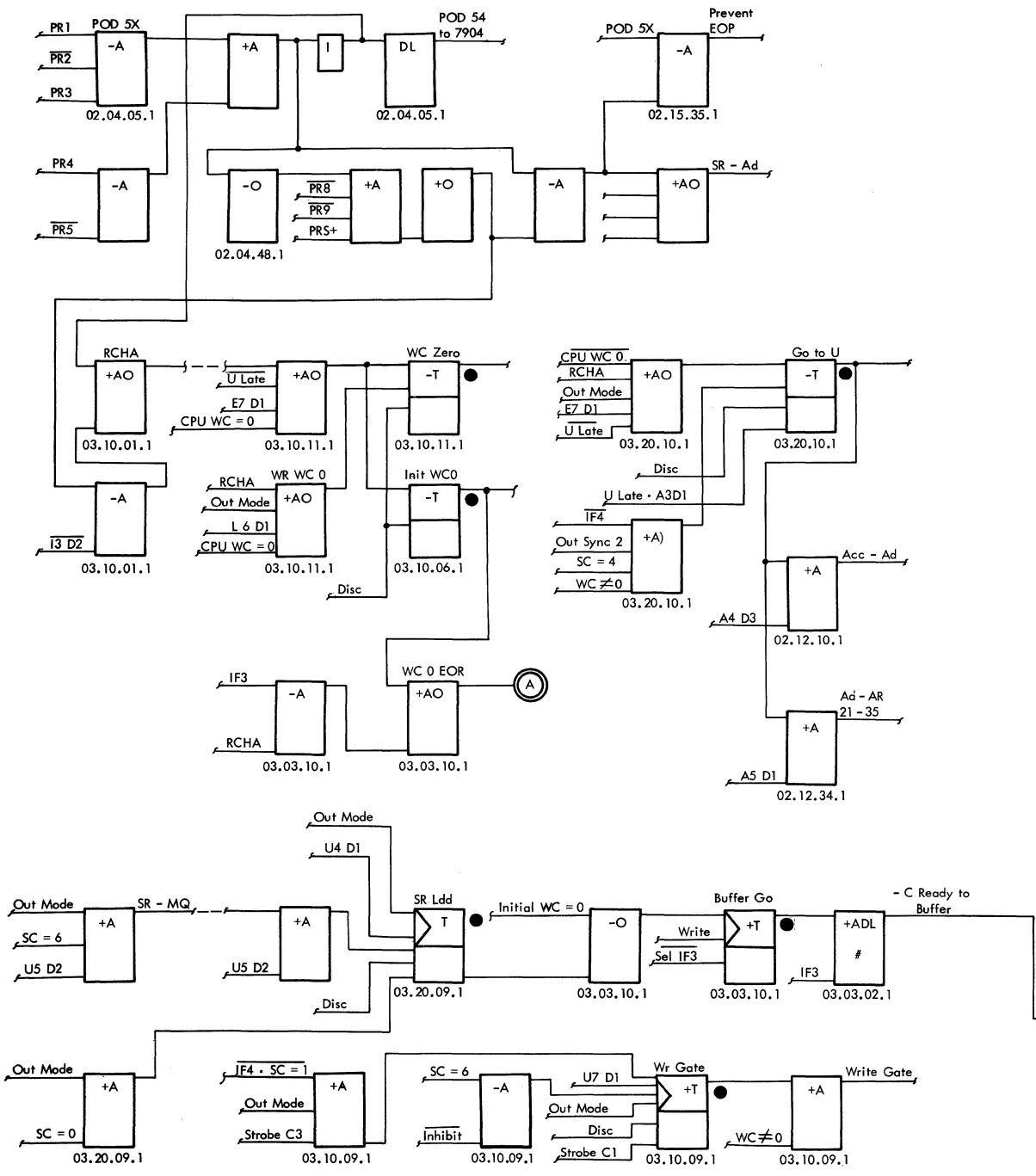
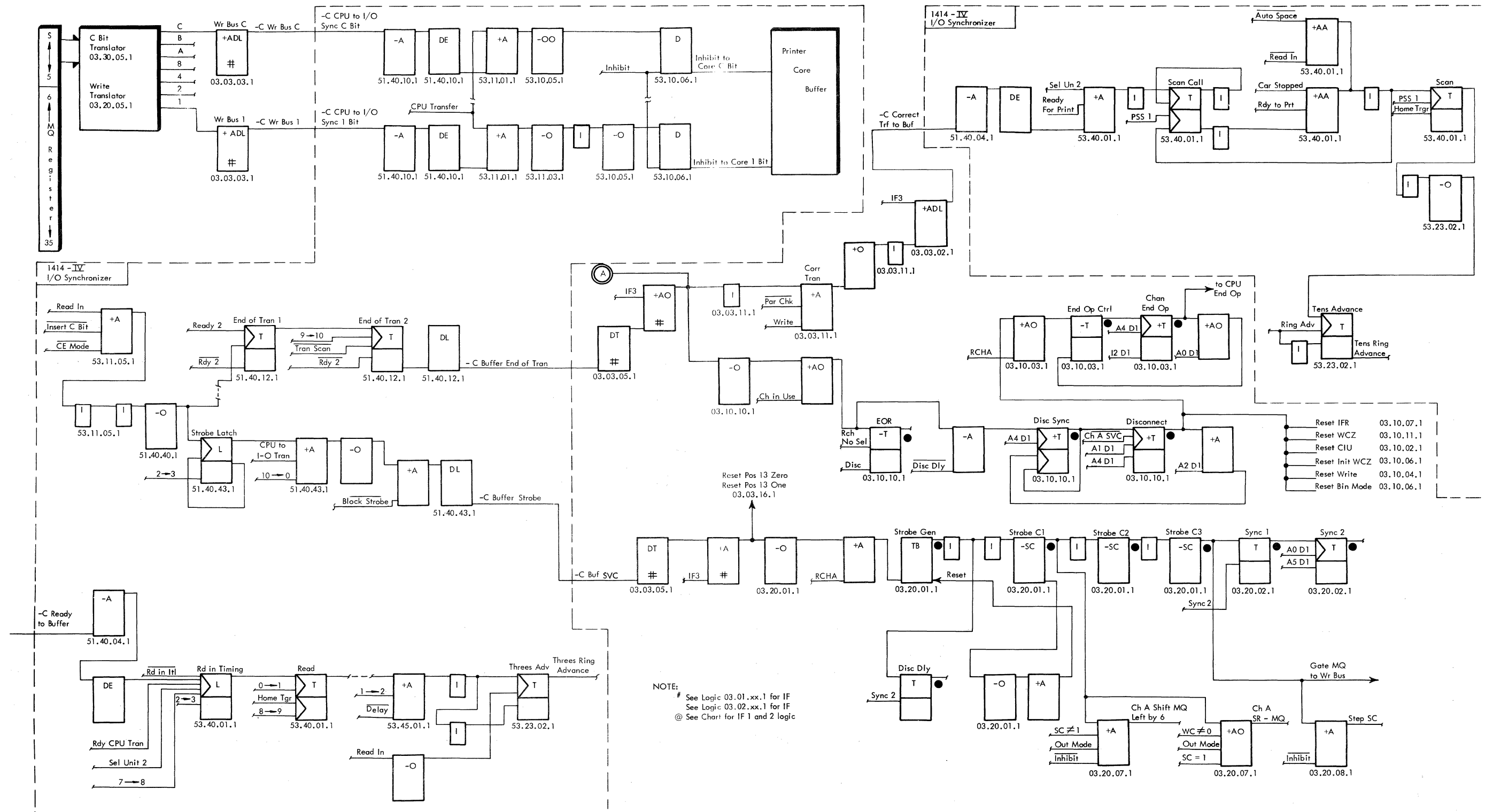


FIGURE 114. RCHA + 0540 (WRS) I.F. 3 (PRINTER) 2ND LEVEL ALD LOGIC





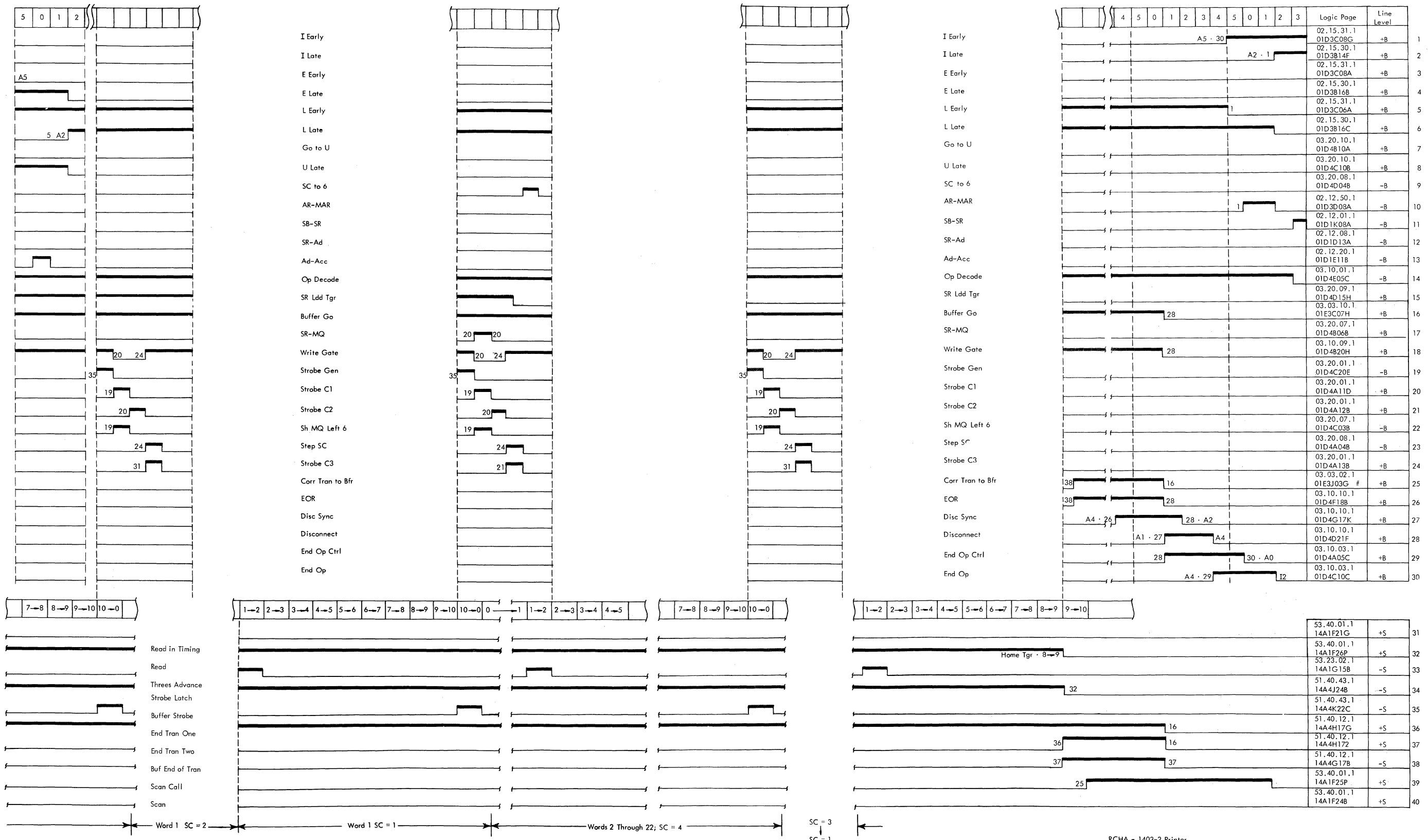


FIGURE 115B. RCHA +0540 (WRS) 1.F. 3 (PRINTER) WORD COUNT ≠ 0 TIMING

Logic Page	Line Level
02.15.31.1 01D3C08G	+B
02.15.30.1 01D3B14F	+B
02.15.31.1 01D3C08A	+B
02.15.30.1 01D3B16B	+B
02.15.31.1 01D3C06A	+B
02.15.30.1 01D3B16C	+B
03.20.10.1 01D4B10A	+B
03.20.10.1 01D4C10B	+B
03.20.08.1 01D4D04B	-B
02.12.50.1 01D3D08A	-B
02.12.01.1 01D1K08A	-B
02.12.08.1 01D1D13A	-B
02.12.20.1 01D1E11B	-B
03.10.01.1 01D4E05C	-B
03.20.09.1 01D4D15H	+B
03.03.10.1 01E3C07H	+B
03.20.07.1 01D4B06B	+B
03.10.09.1 01D4B20H	+B
03.20.01.1 01D4C20E	-B
03.20.01.1 01D4A11D	+B
03.20.01.1 01D4A12B	+B
03.20.07.1 01D4C03B	-B
03.20.08.1 01D4A04B	-B
03.20.01.1 01D4A13B	+B
03.03.02.1 01E3J03G #	+B
03.10.10.1 01D4F18B	+B
03.10.10.1 01D4G17K	+B
03.10.10.1 01D4D21F	+B
03.10.03.1 01D4A05C	+B
03.10.03.1 01D4C10C	+B

53.40.01.1 14A1F21G	+S
53.40.01.1 14A1F26P	+S
53.23.02.1 14A1G15B	-S
51.40.43.1 14A4J24B	-S
51.40.43.1 14A4K22C	-S
51.40.12.1 14A4H17G	+S
51.40.12.1 14A4H172	+S
51.40.12.1 14A4G17B	-S
53.40.01.1 14A1F25P	+S
53.40.01.1 14A1F24B	+S

RCHA - 1403-2 Printer



*Code in case was BCD mode*

*WR5 WAITS FOR PUT BUS? CTR " FORAS "*

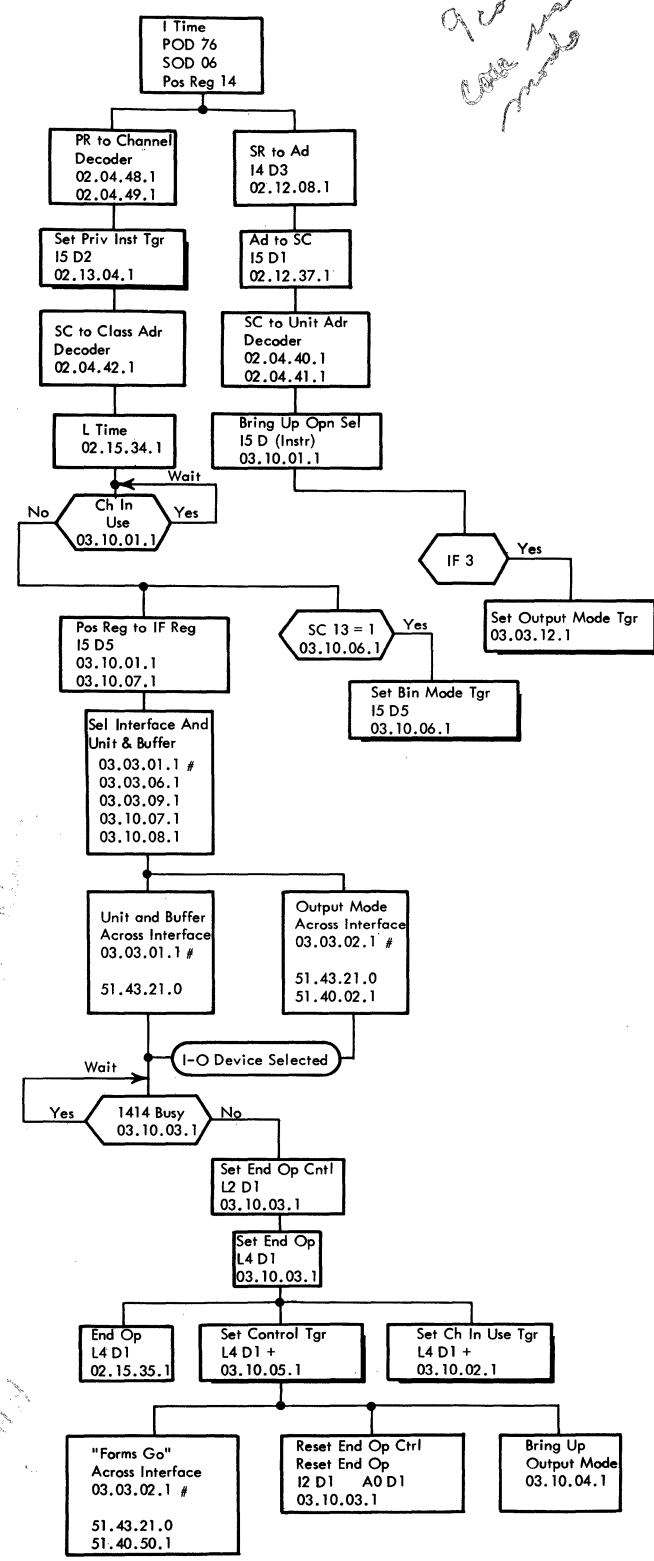
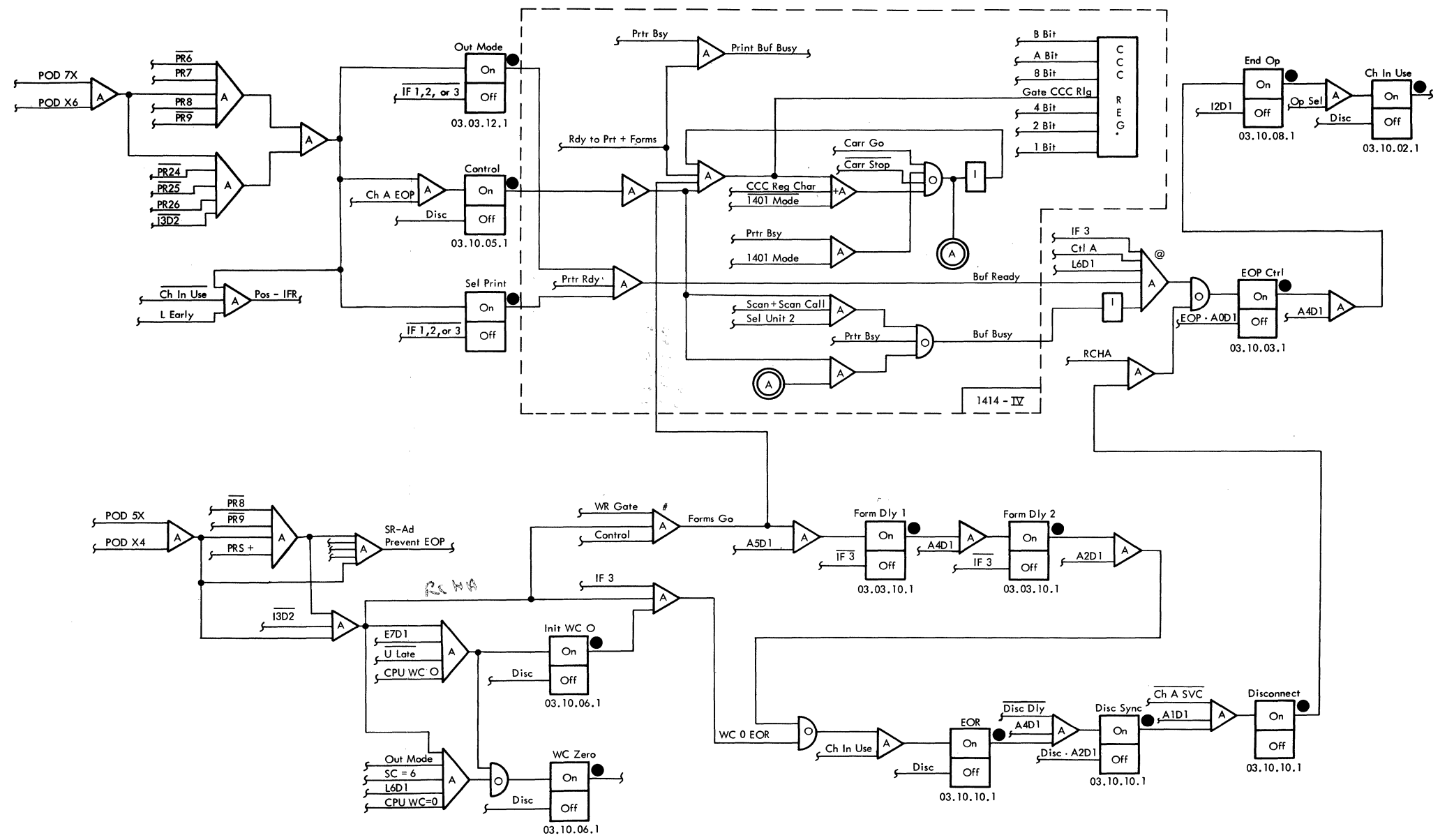
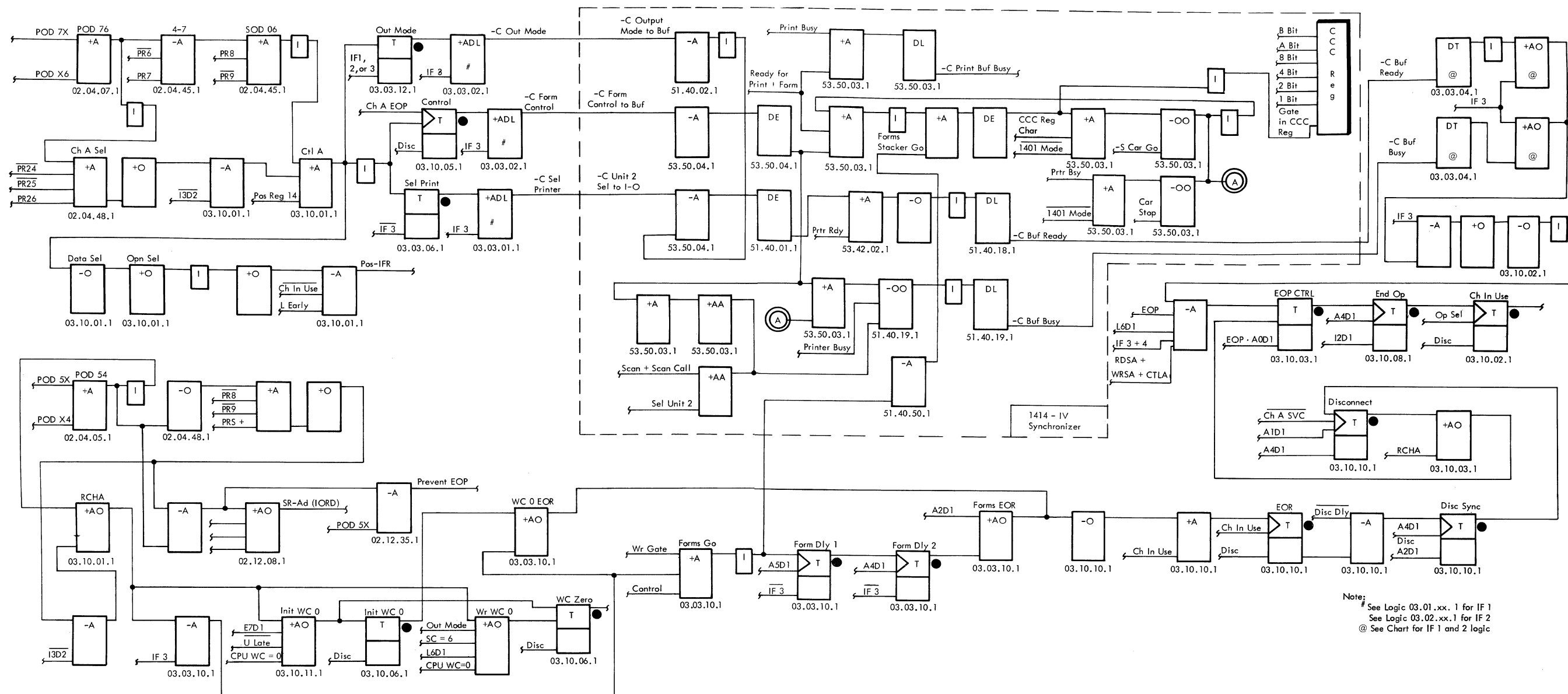


FIGURE 116. CTR-1766 I.F.3 (PRINTER) LOGIC FLOW



Note:  
 # See Logic 03.01.xx.1 for IF 1  
 See Logic 03.02.xx.1 for IF 2  
 @See Chart for IF 1 and 2 logic

FIGURE 117. CTR-1766 I.F.3 (PRINTER) LOGIC



Note:  
 # See Logic 03.01.xx.1 for IF 1  
 See Logic 03.02.xx.1 for IF 2  
 @ See Chart for IF 1 and 2 logic

FIGURE 118. CTRA - 1766 I.F. 3 (PRINTER) 2ND LEVEL ALD LOGIC

	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	Logic Page	Test Point	Level
1	I Early						A5						14 · A5					02.15.31.1	01D3C08G	+B
2	I Late		1 · A2															02.15.30.1	01D3B14F	+B
3	L Early				A5													02.15.31.1	01D3C06A	+B
4	L Late																	02.15.30.1	01D3B16C	+B
5	SB-SR		1 · A3D1															02.15.20.1	01C4D16M	-B
6	SR-Ad		2 · A4D3															02.12.08.1	01D1D13G	-B
7	CTLA				13D2													03.10.01.1	01D4C05A	-B
8	Opn Sel																	03.10.01.1	01D4D21D	-B
9	Pos Reg - IFR		8 · 3 · 15															03.10.01.1	01D4F12A	+B
10	Out Mode																	03.03.12.1	01E3B04E	+B
11	Sel Printer																	03.03.06.1	01E3E03B	+B
12	Buf Ready																	51.40.18.1	14A4K23C	-S
13	EOP Ctrl																	03.10.03.1	01D4A05C	+B
14	End Op																	03.10.08.1	01D4C10C	+B
15	Ch In Use																	03.10.02.1	01D4E06B	+B
16	Control																	03.10.05.1	01D4B24C	+B
17	Form Control																	03.03.02.1 #	01E3J03L	+B
18	IF 3																	03.10.07.1	01D4D09B	-B

FIGURE 119. CTRA - 1766 I.F. 3 (PRINTER) TIMING

	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	4	5	0	1	2	3	Logic Page	Test Point	Line
1	I Early																							02.15.31.1	01D3C08G	+B
2	I Late		1 · A2																					02.15.30.1	01D3B14F	+B
3	E Early																							02.15.31.1	01D3C08A	+B
4	E Late																							02.15.30.1	01D3B16B	+B
5	L Early																							02.15.31.1	01D3C06A	+B
6	L Late																							02.15.30.1	01D3B16C	+B
7	SB-SR		1 · A3D1																					02.15.20.1	01C4D16M	-B
8	SR-Ad		2 · A4D3																					02.12.08.1	01D1D13G	-B
9	RCHA																							03.10.01.1	01D4E05C	-B
10	Forms Go																							03.03.02.1 #	01E3J03X	+B
11	Form Dly 1																							03.03.10.1	01E3E06B	+B
12	Form Dly 2																							03.03.10.1	01E3E06C	+B
13	Forms EOR																							03.03.10.1	01E3H04M	-B
14	EOR																							03.10.10.1	01D4F18B	+B
15	Disc Sync																							03.10.10.1	01D4C17K	+B
16	Disconnect																							03.10.10.1	01D4D21F	+B
17	EOP Ctrl																							03.10.03.1	01D4A05C	+B
18	End Op																							03.10.08.1	01D4C10C	+B
19	Ch In Use																							03.10.02.1	01D4E06A	+B
20	Control																							03.10.05.1	01D4B24C	+B
21	IF 3																							03.10.07.1	01D4D09B	-B

FIGURE 120. RCHA +0540 (CTR) I.F. 3 TIMING

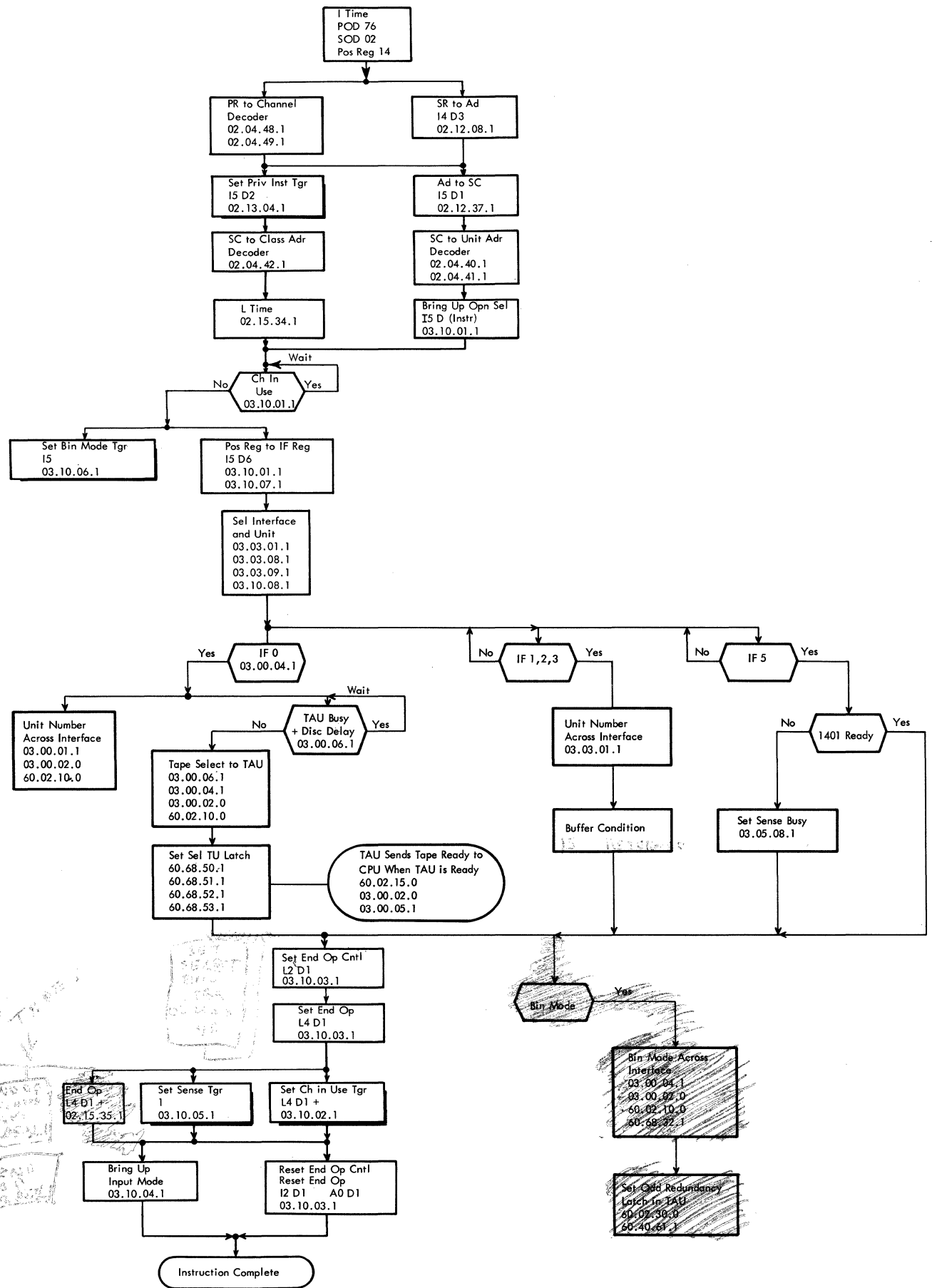


FIGURE 121. SNSA - 1762 I. F. 0 AND 3 LOGIC FLOW

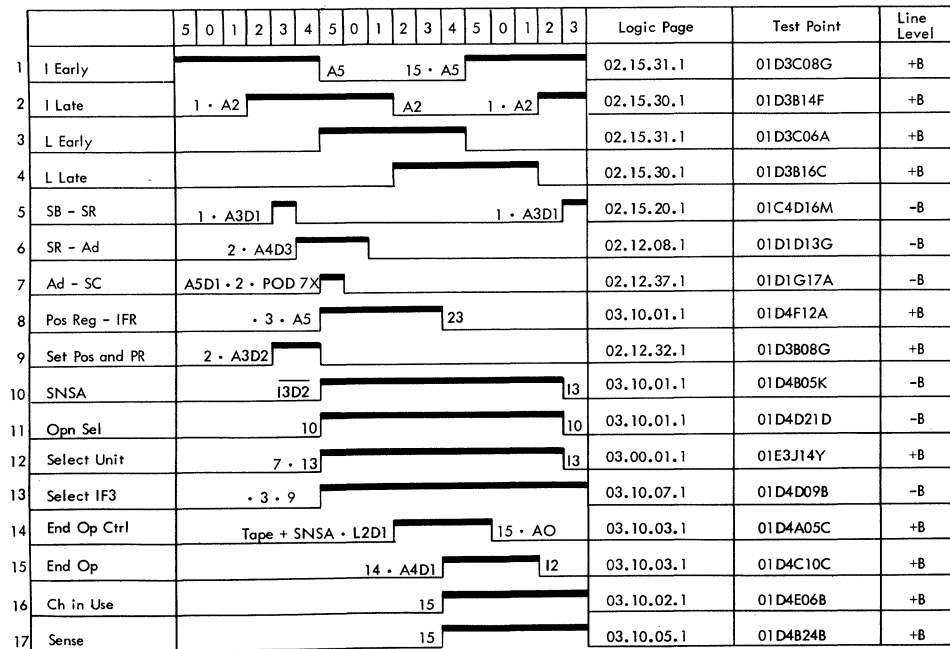


FIGURE 122. SNSA - 1762 I. F. 0 AND 3 TIMING

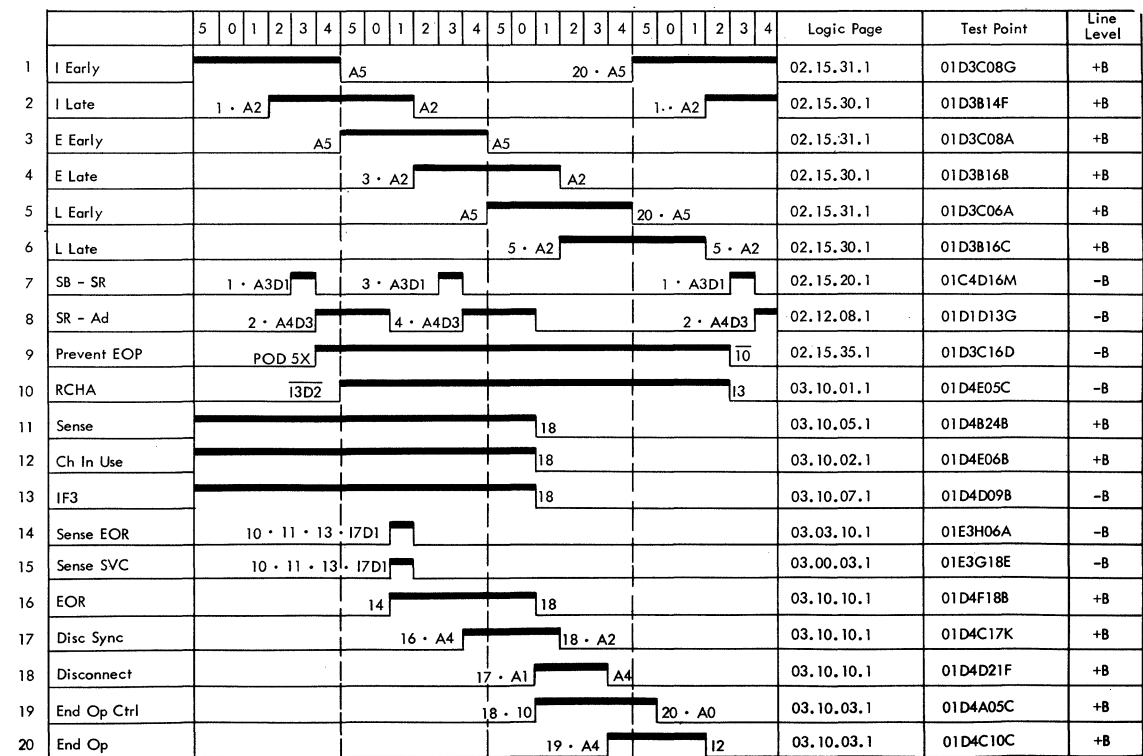


FIGURE 123. RCHA + 0540 (SNS) I. F. 0 AND 3 TIMING

Read Bus Position	Rd Bus B	Rd Bus A	Rd Bus 8	Rd Bus 4	Rd Bus 2	Rd Bus 1
First Word Spec by RCHA will have:	Position Sign	Position 1	Position 2	Position 3	Position 4	Position 5
MACHINE AND OPERATION	NOT READY		CHECK	BUSY	CONDITION	NO TRANSFER
1401 DPS	1401 Busy	Not Used	Not Used	Not Used	Not Used	Not Used
1402 Card Read Operation	Out of Cards; no End of File. Off line. Reader power off. Stop key depressed.		Card code other than 64 valid characters. Check status is not turned off with SENA instruction. Chan A redundancy chk turned on when RDS is given for card. Hole count, parity, ring check, or cloak error.	Card filling the buffer.	Status bit indicates EOF and is turned on after the last card has been transferred from buffer to CPU. If EOF key has been depressed. Indicator sensed and turned off by SENA instruction, if reader is not busy.	Used with column binary feature on 1414-4 and indicates the card in the read buffer had column 1, 7 and 9 punches, and there are 160 characters of information available.
1402 Card Punch Operation	Out of cards. Off line. Power off. Stop key depressed.		Clock ring or parity error during punch transfer scan.	Punching a card.	Hole count check on 1st card while 2nd is being punched, clock ring or parity error in punch scans.	Not Used
1403 Printer Operation	Out of forms. Off line. Power off. Stop key depressed.	Forms Busy	Same as conditions given in position 4	Printer printing a line. or forms busy	Parity error detected during a print scan. A print hammer failed to fire. Printer timing circuit was out of sync with print chain.	Not Used
1009 Data Transmission Unit (Input Status)	Off line. Power off.		A parity error was detected during filling of the buffer.	Buffer being filled.	CPU did not empty the buffer in time and a message has been lost.	End of message, or no message is in the buffer.
1009 Data Transmission Unit (Output Status)	Off line. Power off.		Not Used	Both buffers have data, one is emptying.	Last message sent had an error. Message was transmitted to the local 1009 but was not sent successfully to the remote 1009.	End of message.
1011 Paper Tape Reader	Out of tape. Tape broken. Off line. Power off.		Parity error while buffer was being loaded.	Buffer being filled.	Not Used	Not Used
1014 Remote Inquiry Unit (Input Status)	Off line. Power off.		Error was detected during filling of the buffer.	Not Used	Not Used	No message in the buffer. Buffer being filled.
1014 Remote Inquiry Unit (Output Status)	Off line. Power off.		Not Used	Buffer being emptied.	Error was detected during sending of previous message.	Previous message was not sent; station addressed inoperative.
Telegraph Type Input-Output (Input Status)	Buffer off line. Power off.		Parity error during filling of the buffer. Format check during filling of the buffer. Part of a message has been lost.	Buffer being filled.	CPU did not empty buffer in time and one or more messages have been lost.	No message in the buffer.
Telegraph Type Input-Output (Output Status)	Buffer off line. Power off. Local telegraph unit is not ready.		Not Used	Buffer being emptied.	An error was detected during the transmission of the previous message.	Previous message was sent but received incorrectly or not at all, because of invalid format, line failure, or excessive delay in getting characters to the output line.
Tapes	Ready	Not Used	Not Used	Sense Rewind	Not Used	Sense Load Point

Normal Sequence:	S	1	11	12	13	14	15
SENA - 1762	1	0	1	1	1	1	0
RCHA + 0540	0	0	0	1	0	0	0

FIGURE 124. SNSA - 1762; SENSE BITS





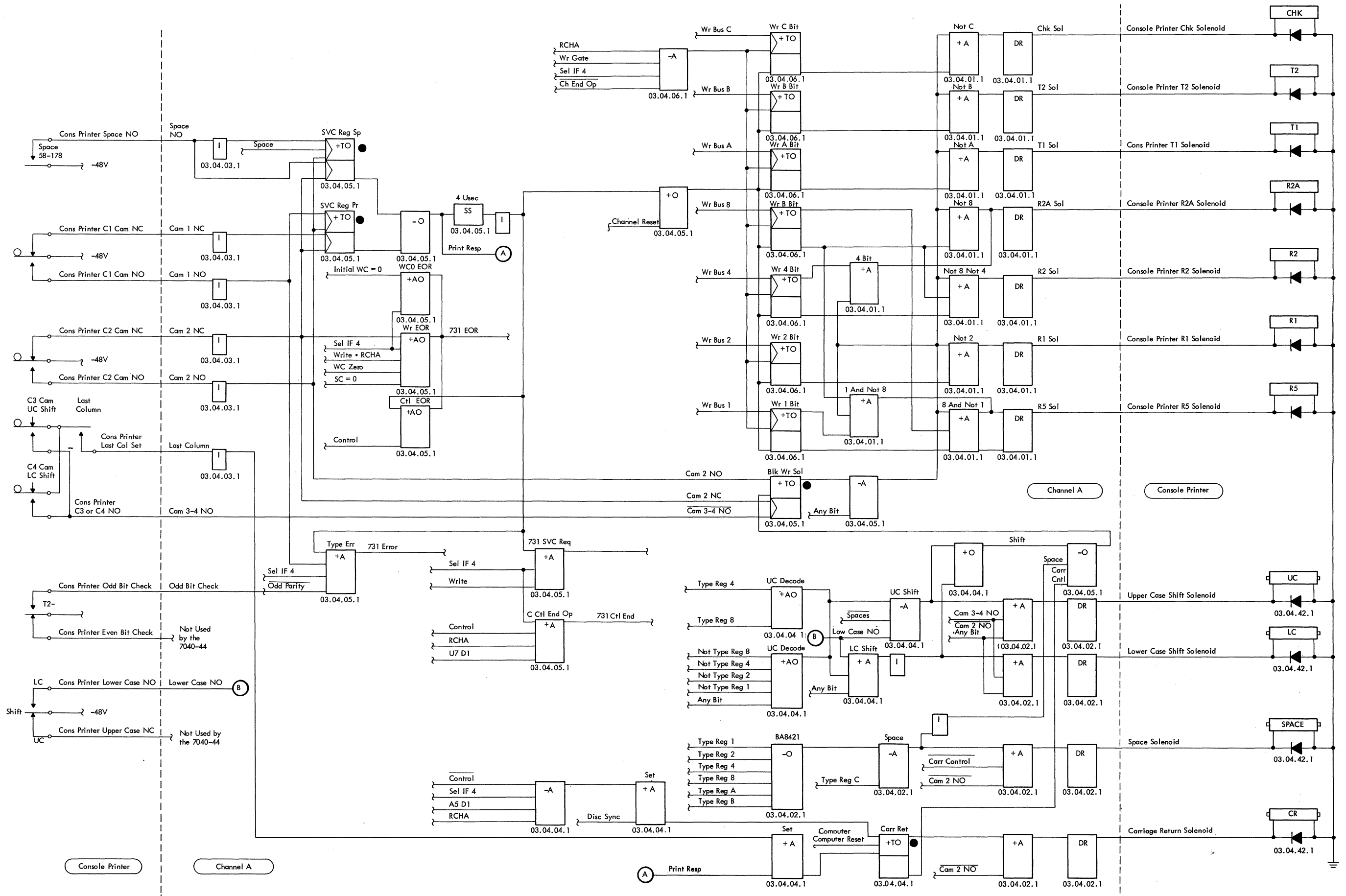


FIGURE 127. CHANNEL A - CONSOLE PRINTER OPERATION, 2ND LEVEL ALD LOGIC



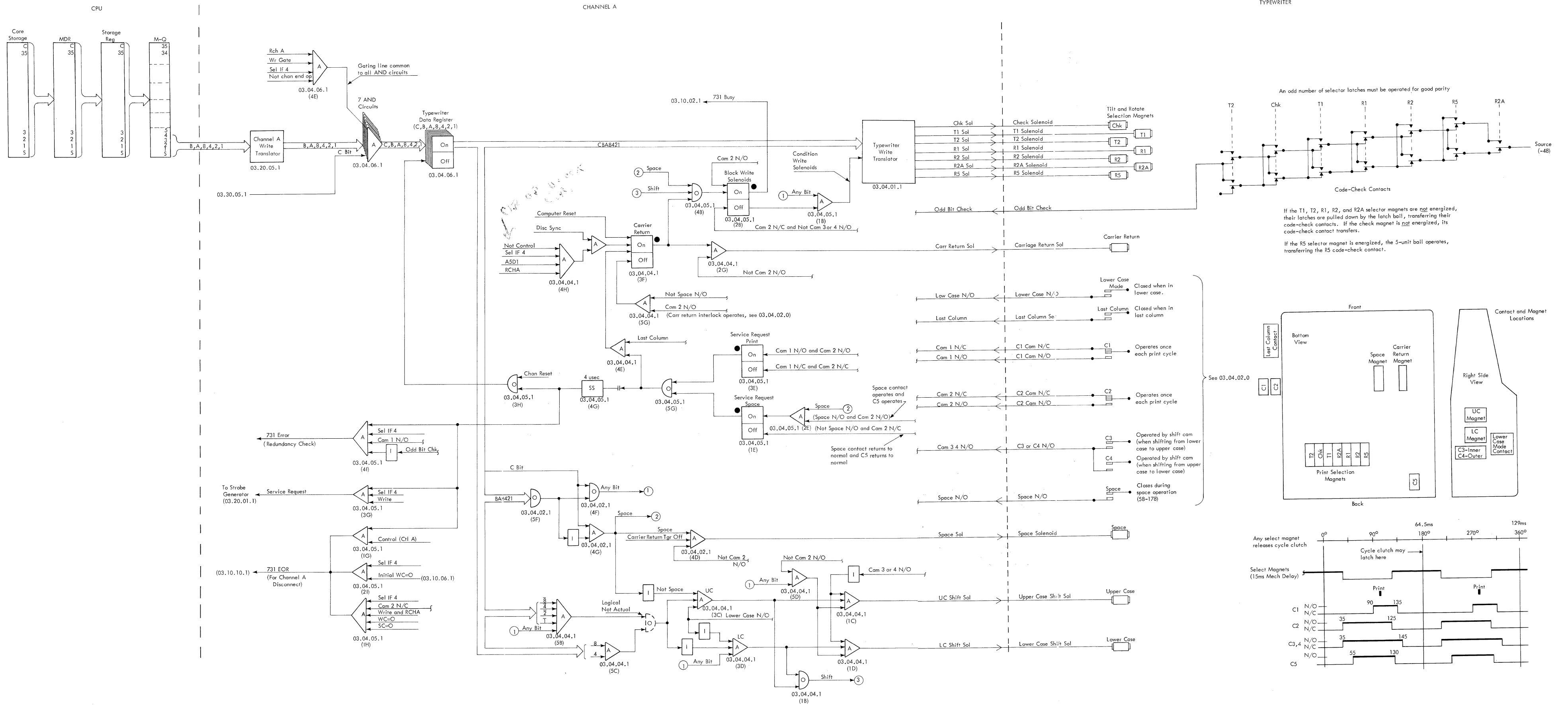


FIGURE 126. CHANNEL A, CONSOLE PRINTER OPERATION

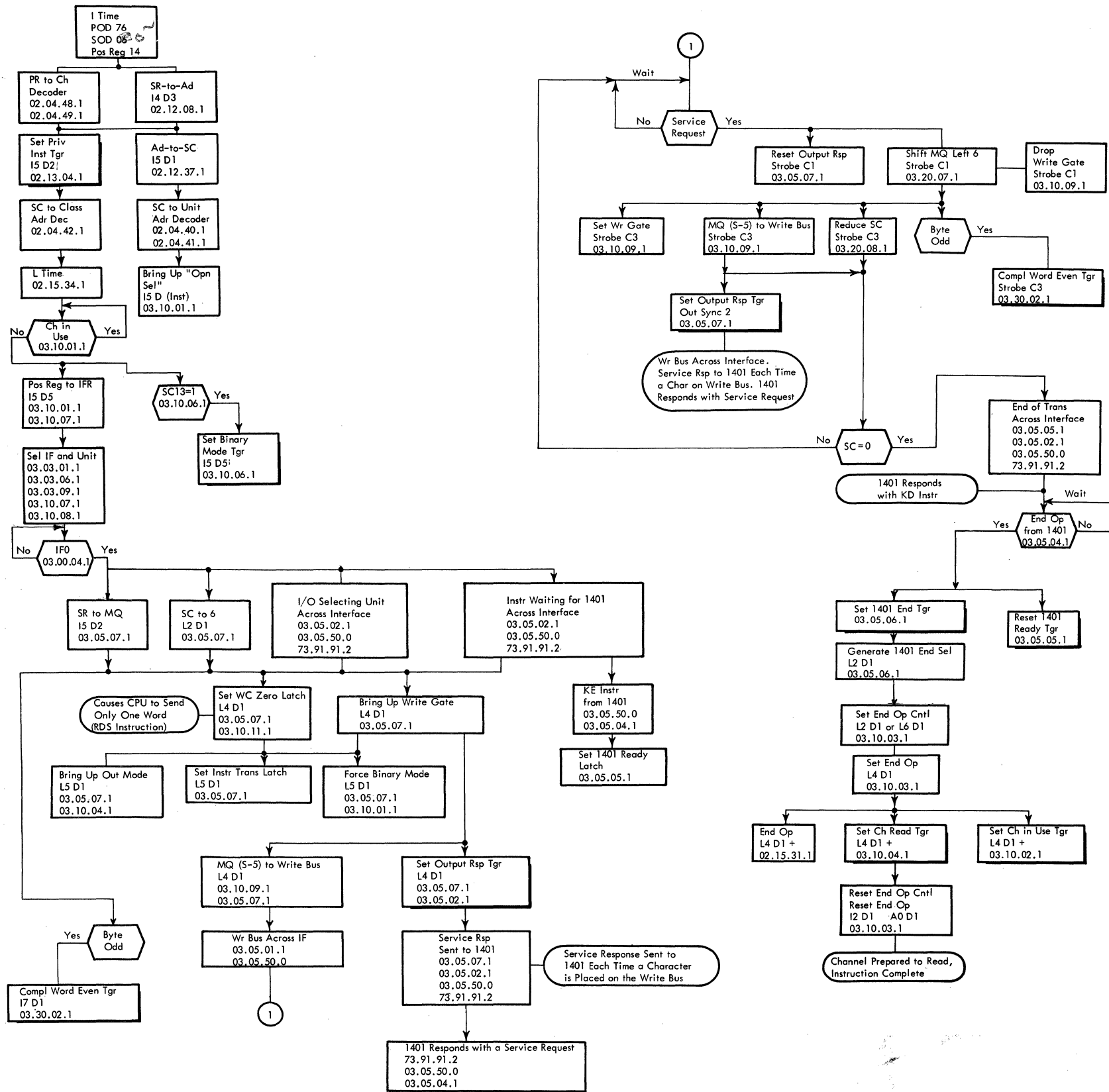


FIGURE 129. RDSA + 0762; PRDA - 1762 I. F. 5 LOGIC FLOW

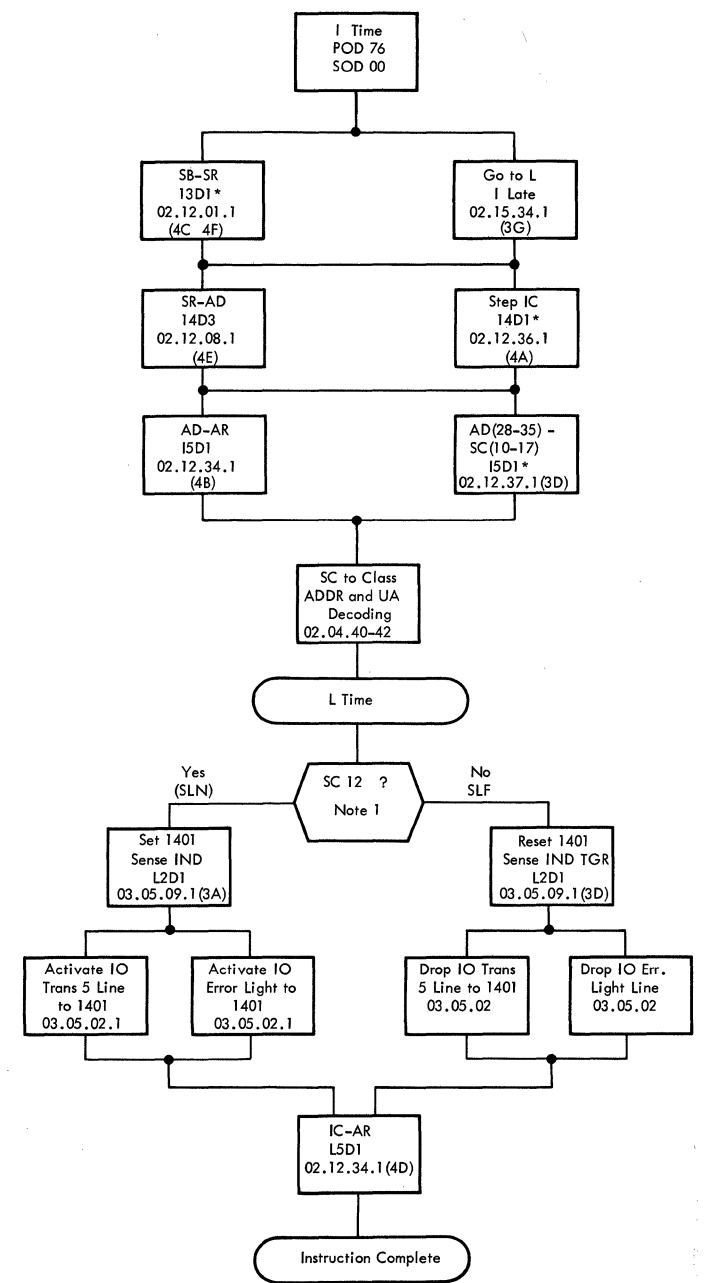


FIGURE 130. SLNA - 1760 ....01541; SLA - 1760 ....01501 LOGIC FLOW

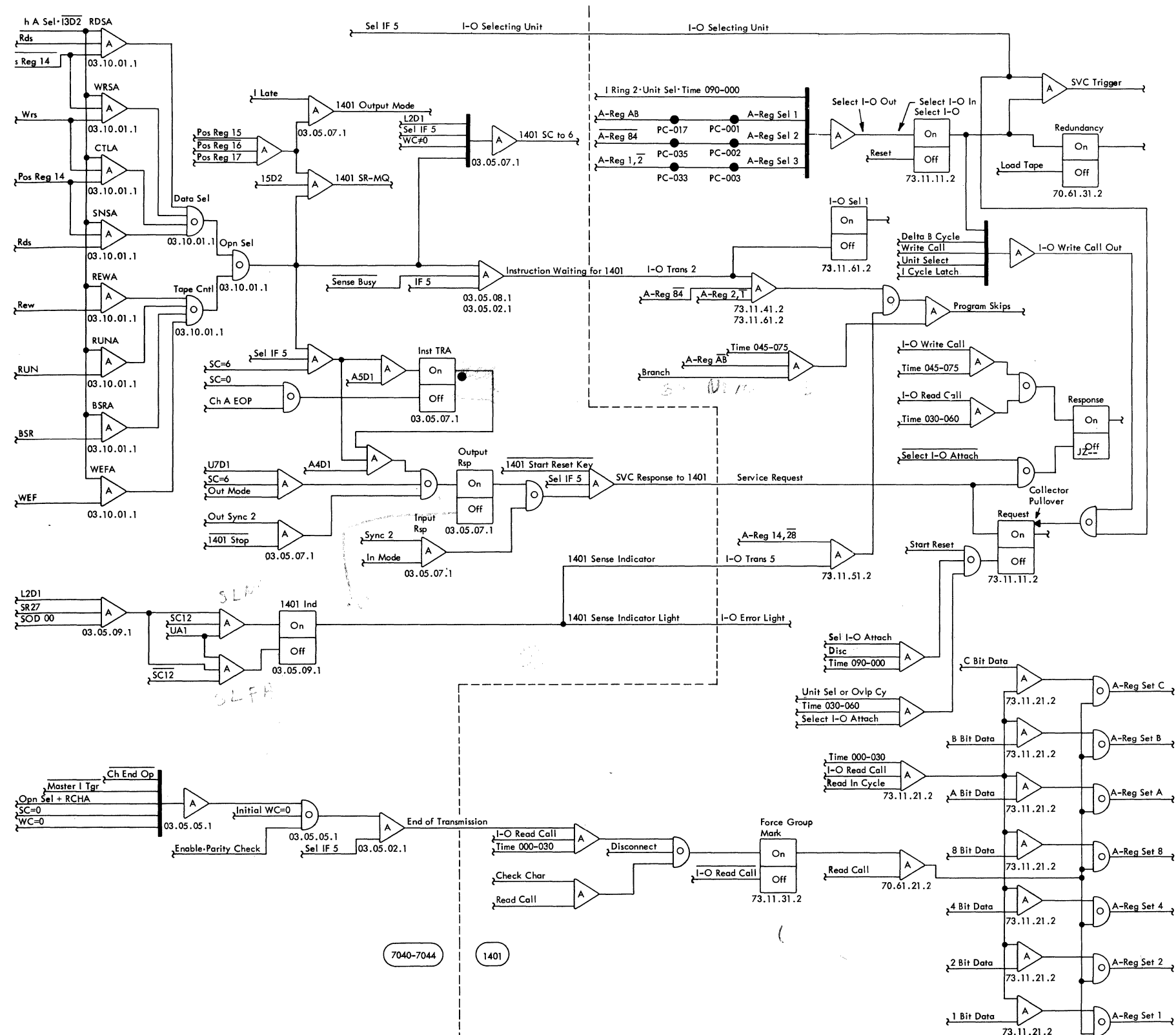


FIGURE 134. 7040-7044 TO 1401 SELECTION AND CONTROL LOGIC

	5	0	1	2	3	4	5	0	1	2	3	4	5	0	
1. I Early	A5						02.15.31.1 01D3C0B8								
2. I Late	1-A2						A2						02.15.30.1 01D3B14F		
3. Unit Address 1	I3D2						03.05.09.1								
4. SOD 00	ISB-SR						03.05.09.1								
5. SR 27	ISB-SR						03.05.09.1								
6. 1401 Indicator Tgr	3-4-5-L2						03.05.09.1								
7. 1401 Sense Indicator	6						03.05.02.1								

FIGURE 135. SLNA INSTRUCTION INITIAL TIMING

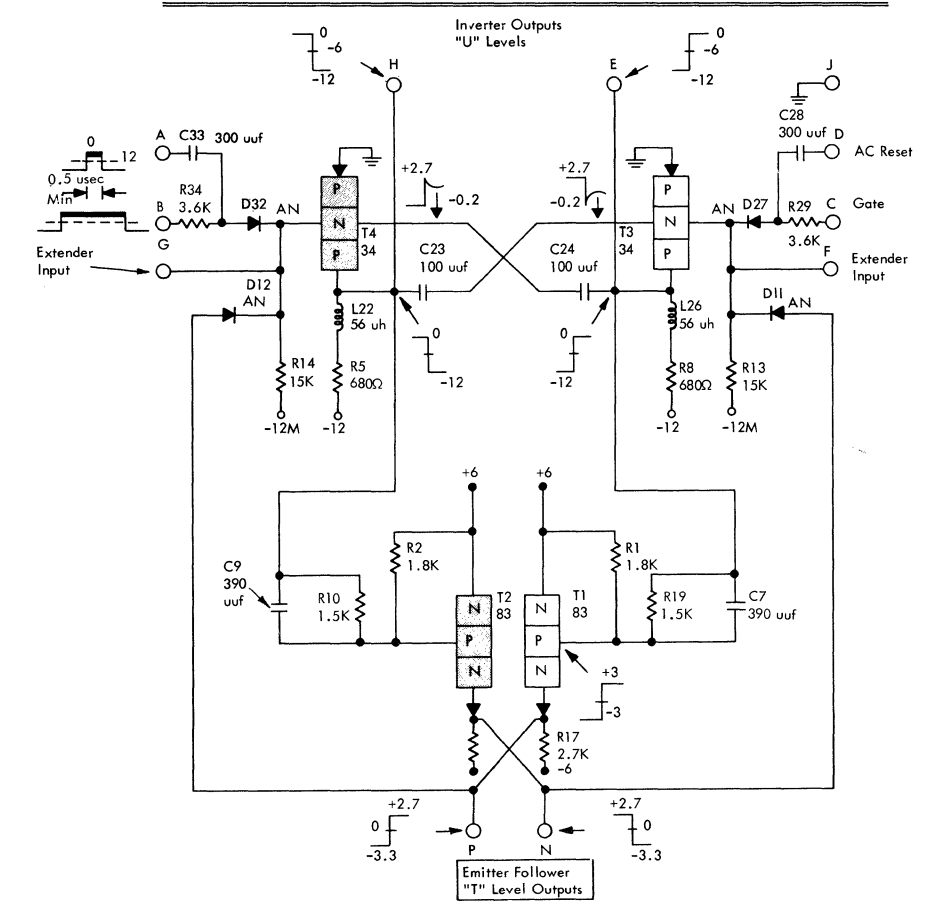
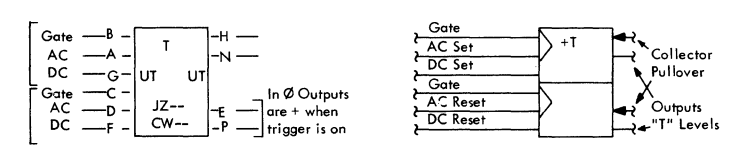


FIGURE 136. JZ--; 371082; CW-- 371534 TRIGGERS

REC'D BY  
BYTE

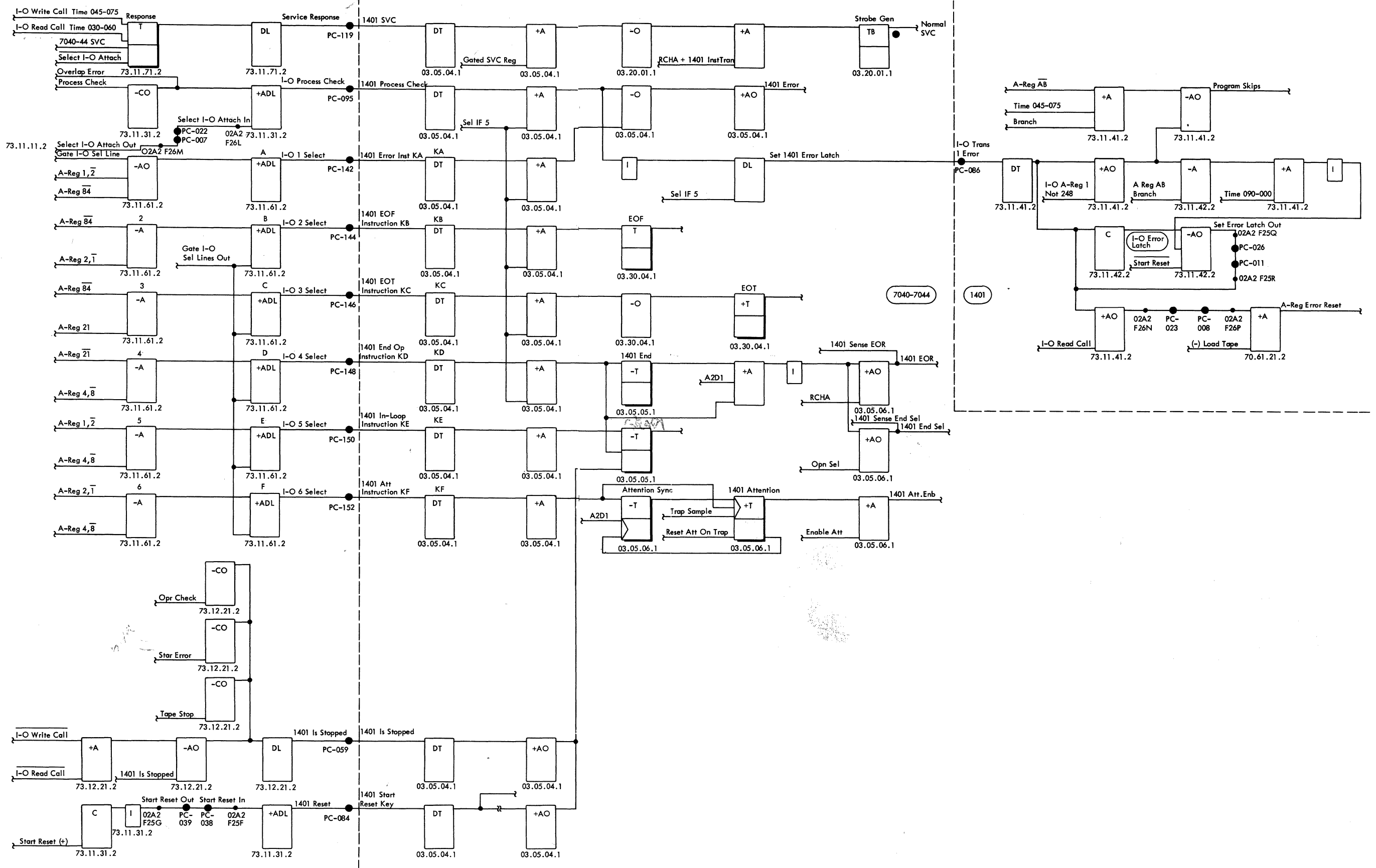


FIGURE 137. 1401 TO 7040-7044 SELECTION AND CONTROL; 2ND LEVEL ALD LOGIC

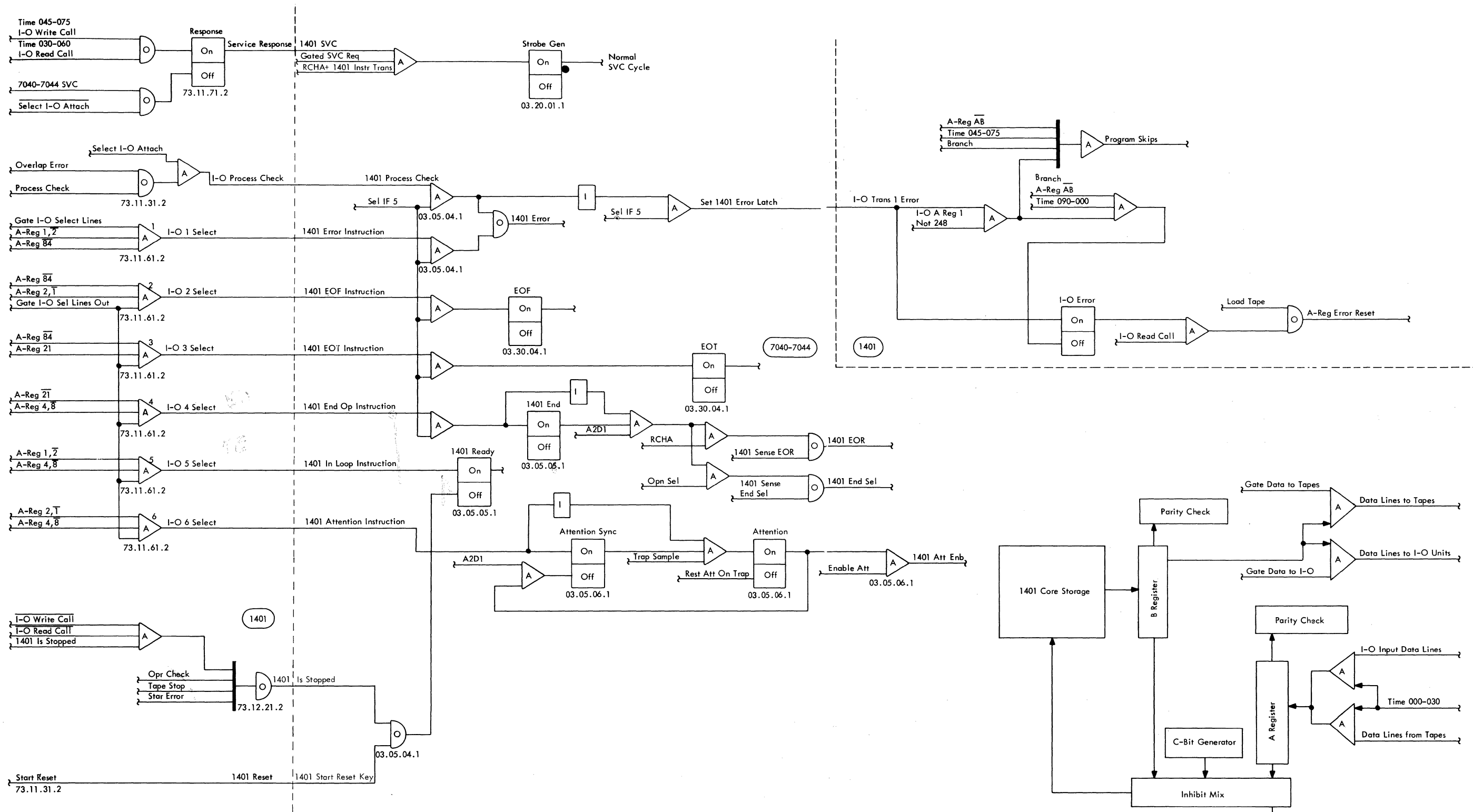


FIGURE 138. 1401 TO 7040-7044 SELECTION AND CONTROL LOGIC

FIGURE 139. BLOCK LOGIC SERIAL I-O ADAPTER

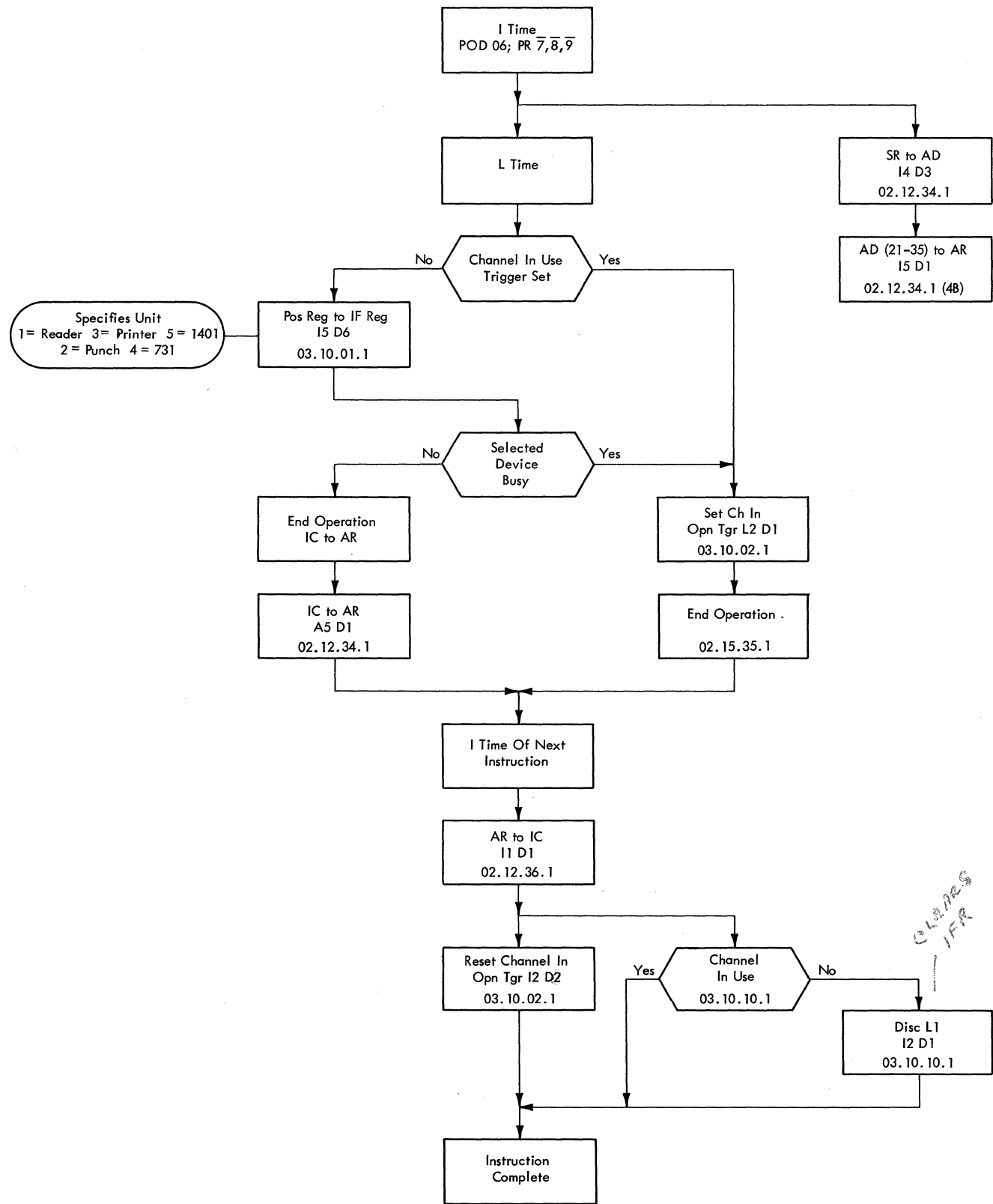


FIGURE 140. TCOA +0060; TDOA - 1060 LOGIC FLOW

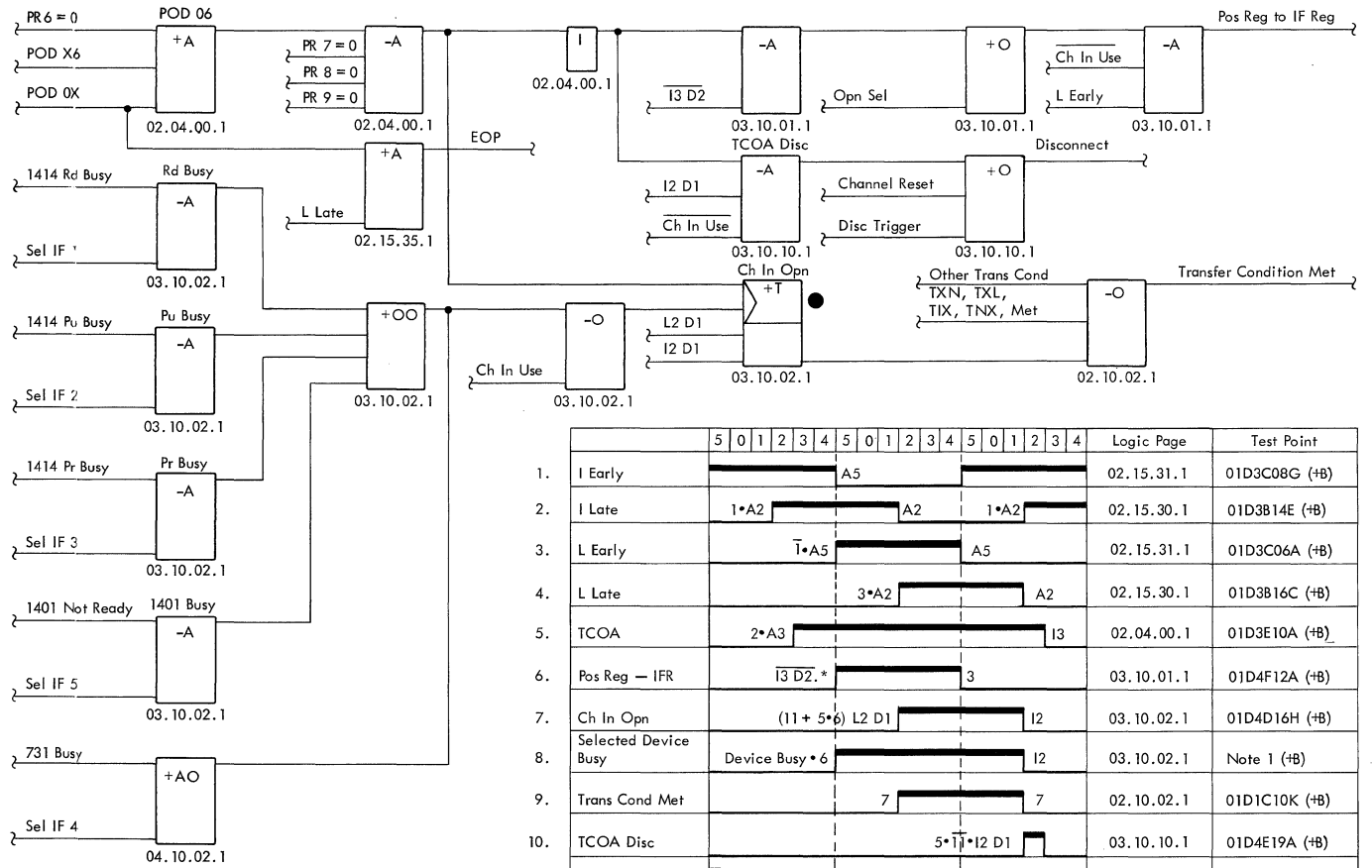


Figure 141. TCOA +0060; TDOA - 1060 2nd Level ALD Logic

	5	0	1	2	3	4	5	0	1	2	3	4	Logic Page	Test Point
1.	I Early				A5								02.15.31.1	01D3C08G (+B)
2.	I Late				1*A2				A2				02.15.30.1	01D3B14E (+B)
3.	L Early				1*A5				A5				02.15.31.1	01D3C06A (+B)
4.	L Late				3*A2				A2				02.15.30.1	01D3B16C (+B)
5.	TCOA				2*A3				I3				02.04.00.1	01D3E10A (+B)
6.	Pos Reg - IFR				I3 D2 *				3				03.10.01.1	01D4F12A (+B)
7.	Ch In Opn				(11 + 5*6) L2 D1				I2				03.10.02.1	01D4D16H (+B)
8.	Selected Device Busy				Device Busy * 6				I2				03.10.02.1	Note 1 (+B)
9.	Trans Cond Met				7				7				02.10.02.1	01D1C10K (+B)
10.	TCOA Disc				5*11*12 D1								03.10.10.1	01D4E19A (+B)
11.	Ch In Use				**								03.10.02.1	01D4E06B (+B)

\* Conditional: If Channel Is In Use, this line will not be active

\*\* Conditional: Channel In Use May or May not be On.

Note 1:

Rd Busy 01D4F14B      1401 Busy 01D4F14D  
 Pu Busy 01D4F14C      731 Busy 01D4F07K  
 Pr Busy 01D4F14A

FIGURE 141. TCOA +0060; TDOA - 1060 2ND LEVEL ALD LOGIC

FIGURE 142. TCOA +0060; TDOA - 1060 TIMING

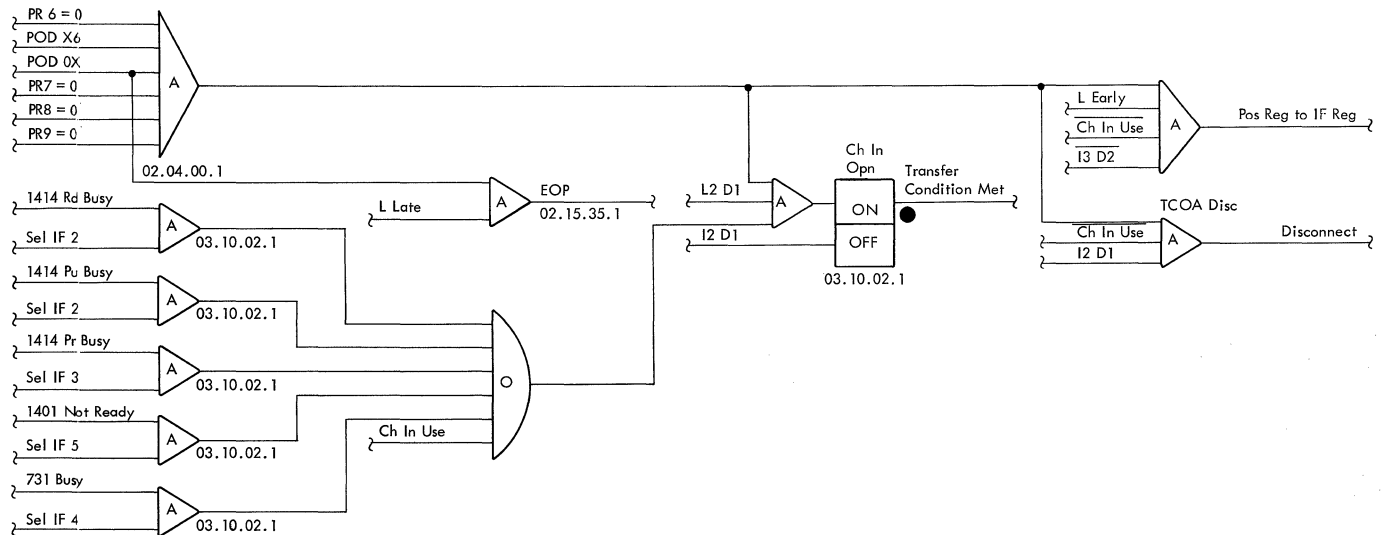


FIGURE 143. TCOA +0060; TDOA - 1060 LOGIC



\* NOTE: SC of 352 Prevents Execution of Other POD 76, SOD 00 Instructions

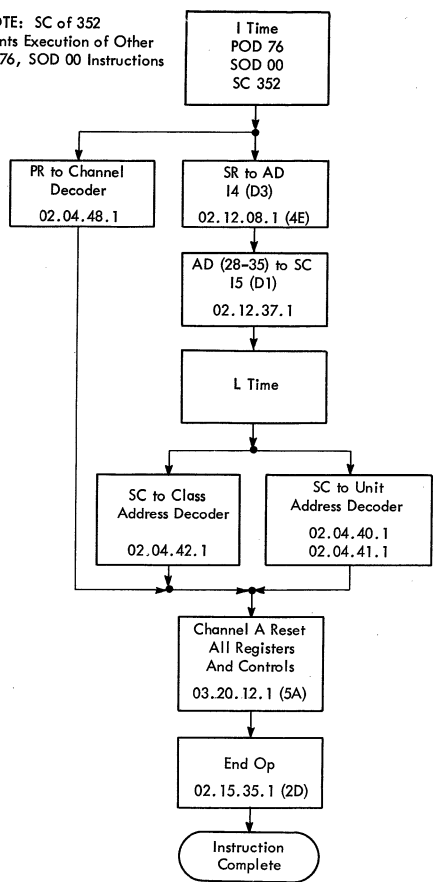


FIGURE 144. RDCA +0760... 1352 LOGIC FLOW

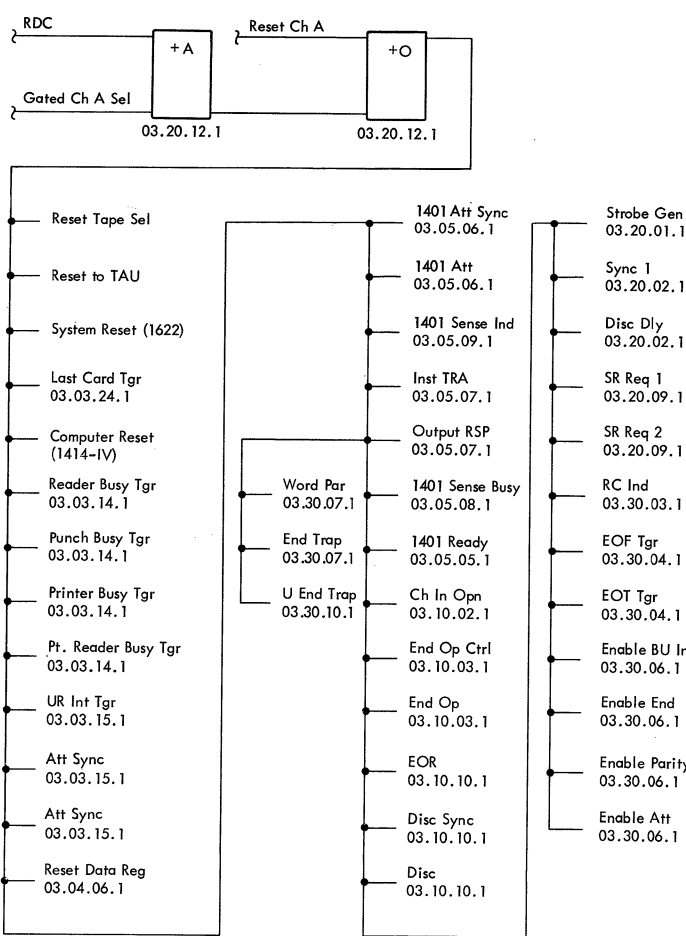


FIGURE 145. RDCA +0760... 1352 2ND LEVEL ALD LOGIC

\* First Cell Driver Pulse Following the Indicated Timing Levels Sets the Receiving Register

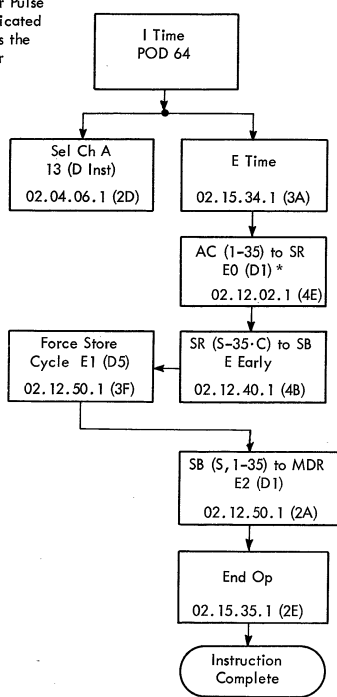


FIGURE 146. SCHA +0640; LOGIC FLOW

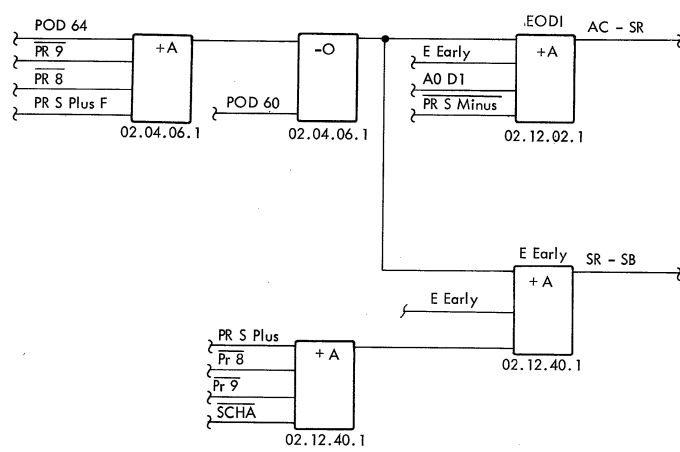


FIGURE 147. SCHA +0640; 2ND LEVEL ALD LOGIC

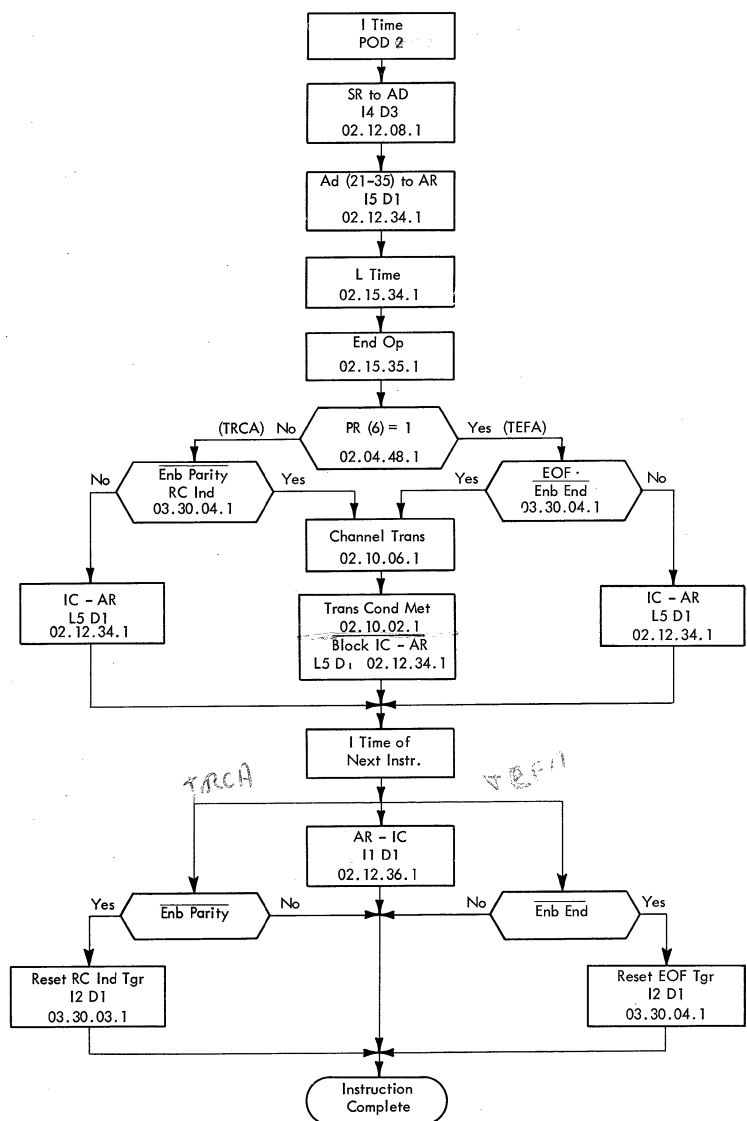


FIGURE 148. +0030; TRCA + 0022; LOGIC FLOW

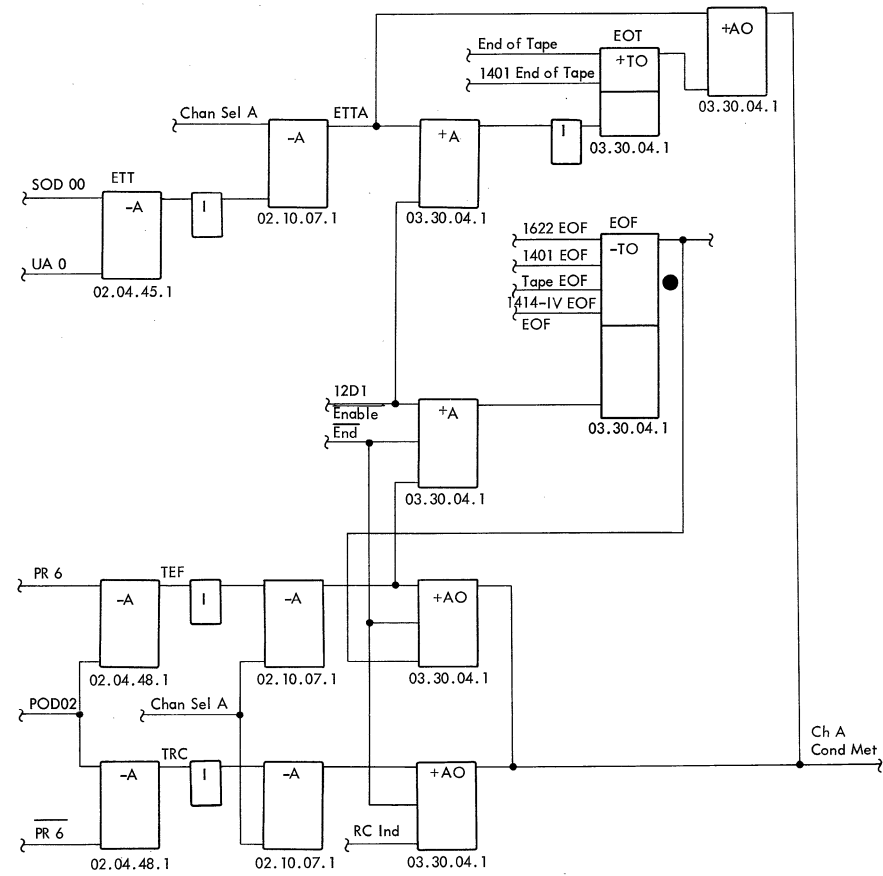


FIGURE 149. TEFA + 0030; TRCA + 0022; ETTA -0760; 2ND LEVEL ALD LOGIC

TEFA

TRCA

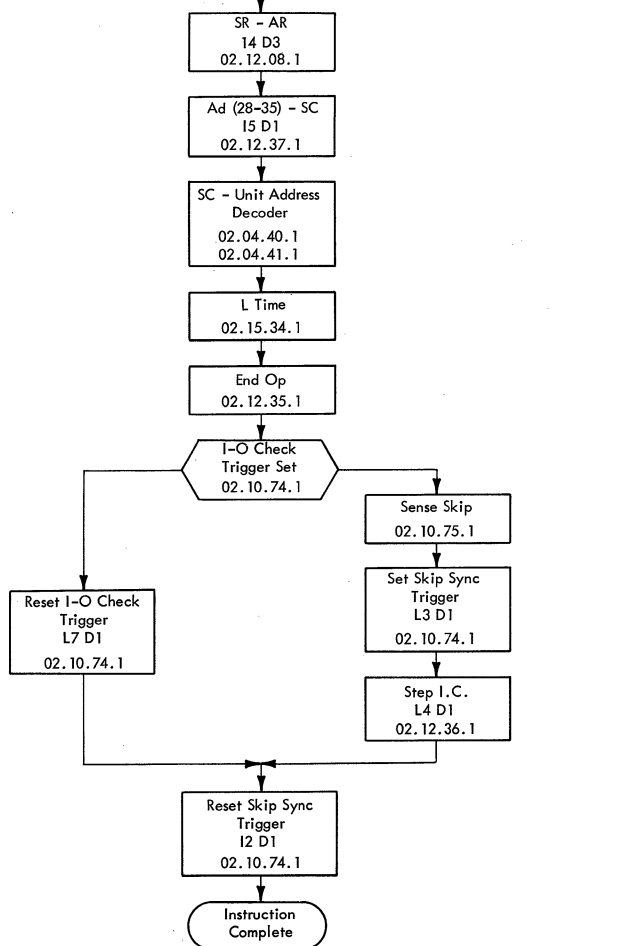


FIGURE 150. IOTA +0760... 00005; LOGIC FLOW

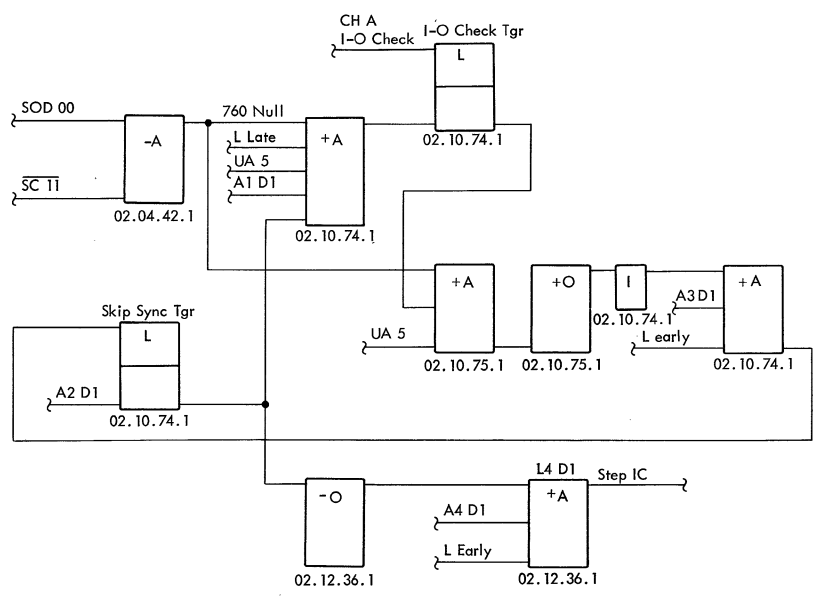


FIGURE 151. IOTA +0760... 00005; 2ND LEVEL ALD LOGIC

COMMENT SHEET

IBM 7040-7044 DATA PROCESSING SYSTEM CHANNEL A

CUSTOMER ENGINEERING MAINTENANCE MANUAL. FORM 223-2644-1

FROM

NAME

Patricia O'Hara

OFFICE NO.

257 Lexington N.Y.

FOLD

Your comments and suggestions on this 7040-7044 Channel A Customer Engineering Maintenance Manual are appreciated. Use the following questions as a guide in your evaluation of this manual.\*

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1. Do you use the 2nd level ALD logic diagrams for learning, troubleshooting, or as a guide in locating the associated circuits in the ALD logic?
2. Do you need figures similar to Figure 35a-h, pages 33 through 40 (1414-IV to 1403 Printer Control and Signal Lines) for the 1402 Punch or Reader?
3. Are there areas that need more information?
4. Does this manual serve your needs?

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\* Note: Suggestions giving specific solutions and intended for award considerations should be submitted through the IBM suggestions plan.

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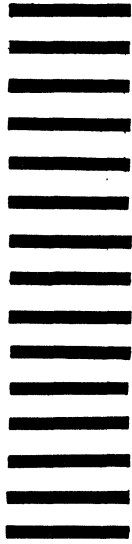
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