Y27-2044-1

IBM Field Engineering Diagram Manual

Restricted Distribution

2250 Display Unit Model 1

IBM®

Field Engineering

Diagram Manual

Restricted Distribution

2250 Display Unit Model 1

PREFACE

This manual contains the maintenance-oriented and "recall" diagrams referenced in the 2250-1 Display Unit FE Theory of Operation Manual, Form Y27-2043, and FE Maintenance Manual, Form Y27-2045. Placing the diagrams in this manual allows ready reference during maintenance.

The diagrams are in numerical order, grouped according to type. Diagram numbers are consecutive only within a diagram type.

Related manuals that may be used for reference are:
2250-1 FETOM, Form Y27-2043.
2250-1 FEMM, Form Y27-2045.
2250-1 Installation Manual (FEIM), Form 226-2022.

This diagram manual supersedes the 2250-1 FE Diagram Manual, Form Y27-2044-0. Major changes are the addition of diagrams to cover the graphic design feature and the updating of existing diagrams. A block diagram of the 2250-1, an intensity diagnostic flow chart, and a diagram of the arc-protection circuit have also been added.

If the 2250 is equipped with the graphic design feature (GDF), use the diagrams listed in column 2 below instead of those listed in column 1. Any reference to a diagram listed in column 1 (when concerned with GDF) should be interpreted as a reference to its counterpart in column 2.

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This manual has been prepared by the IBM Systems Development Division, Product Publications, Dept. 520, CPO Box 120, Kingston, N. Y. 12401. Address comments concerning the manual to this address.

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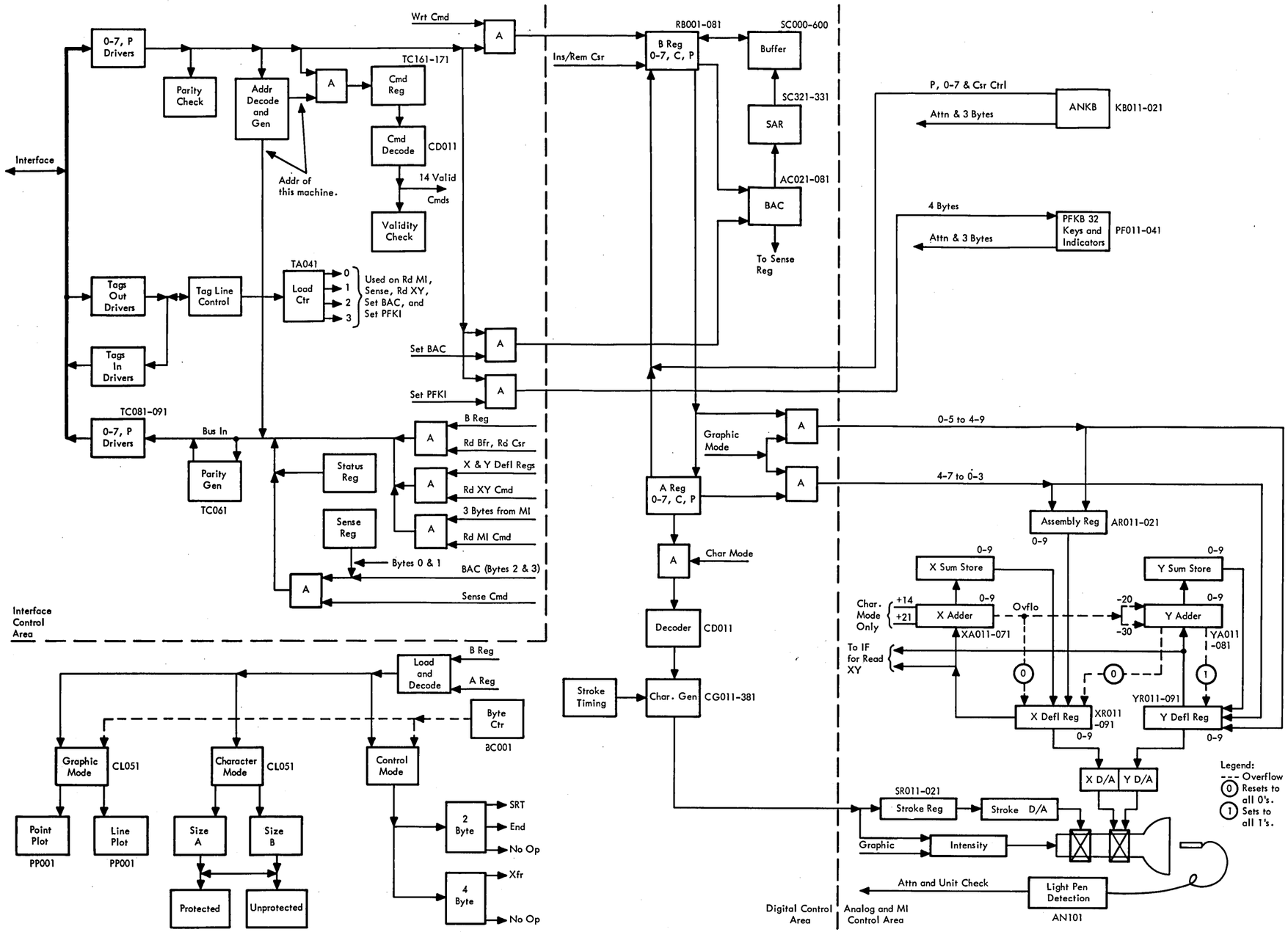

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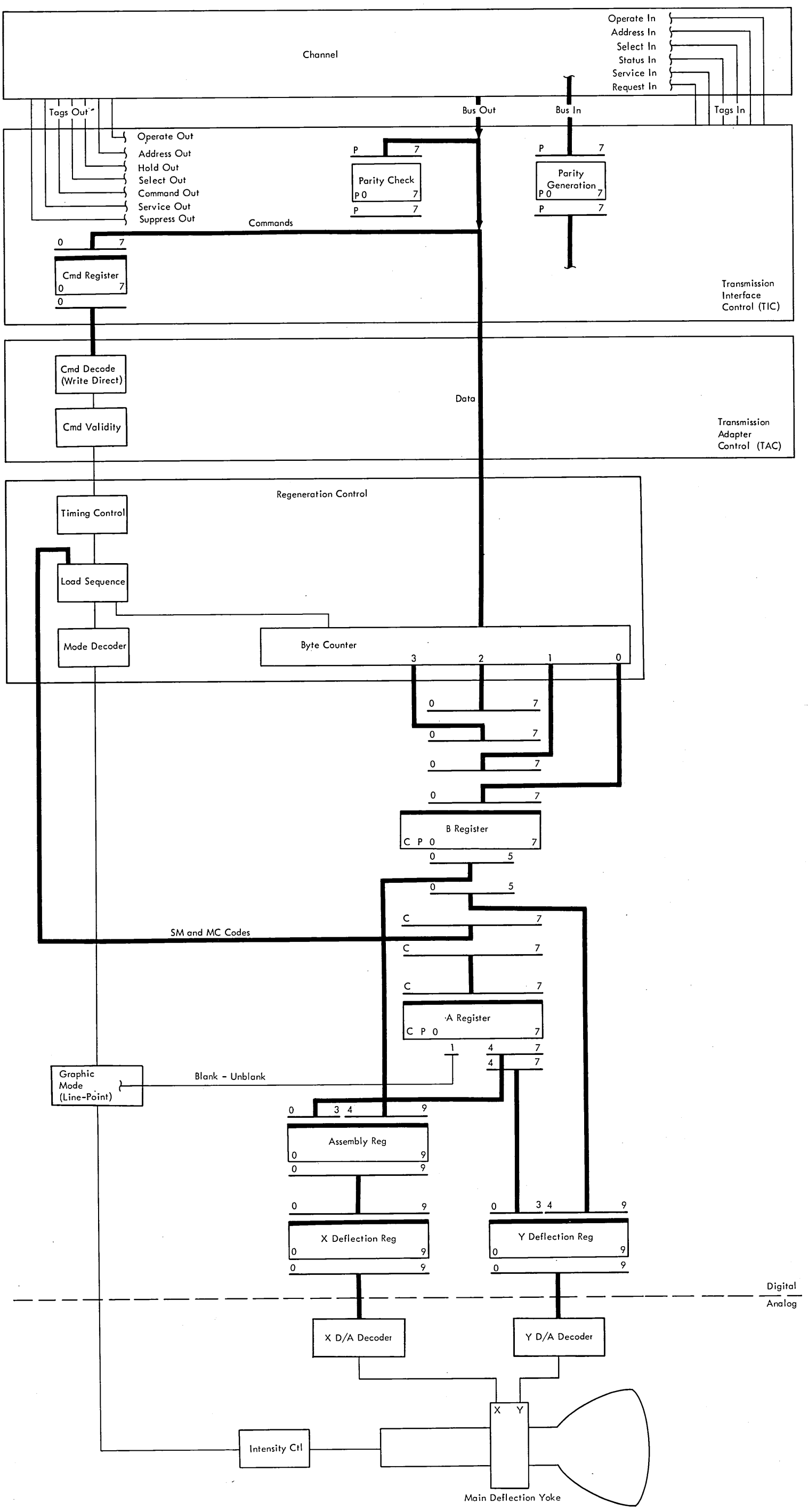

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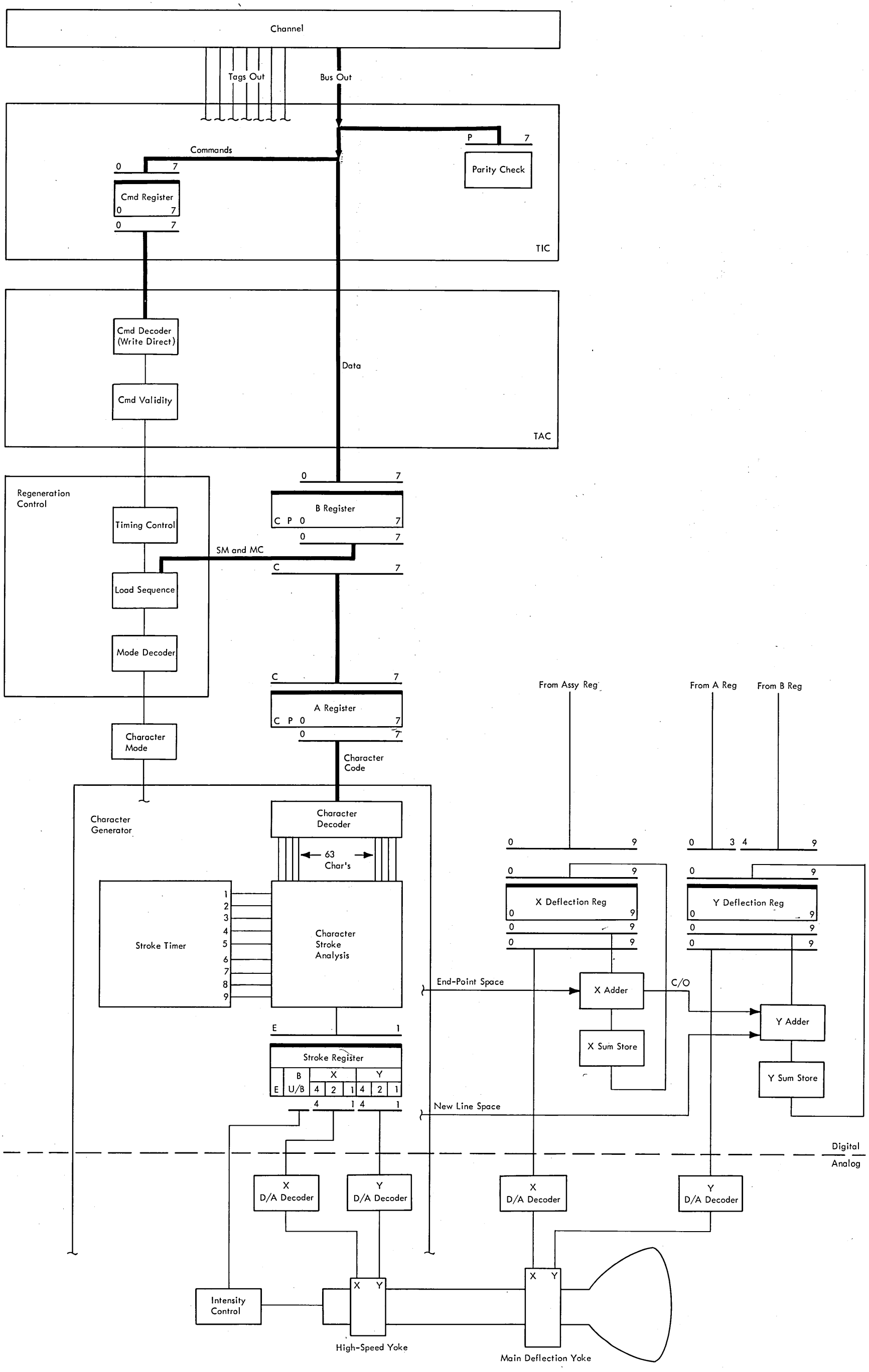

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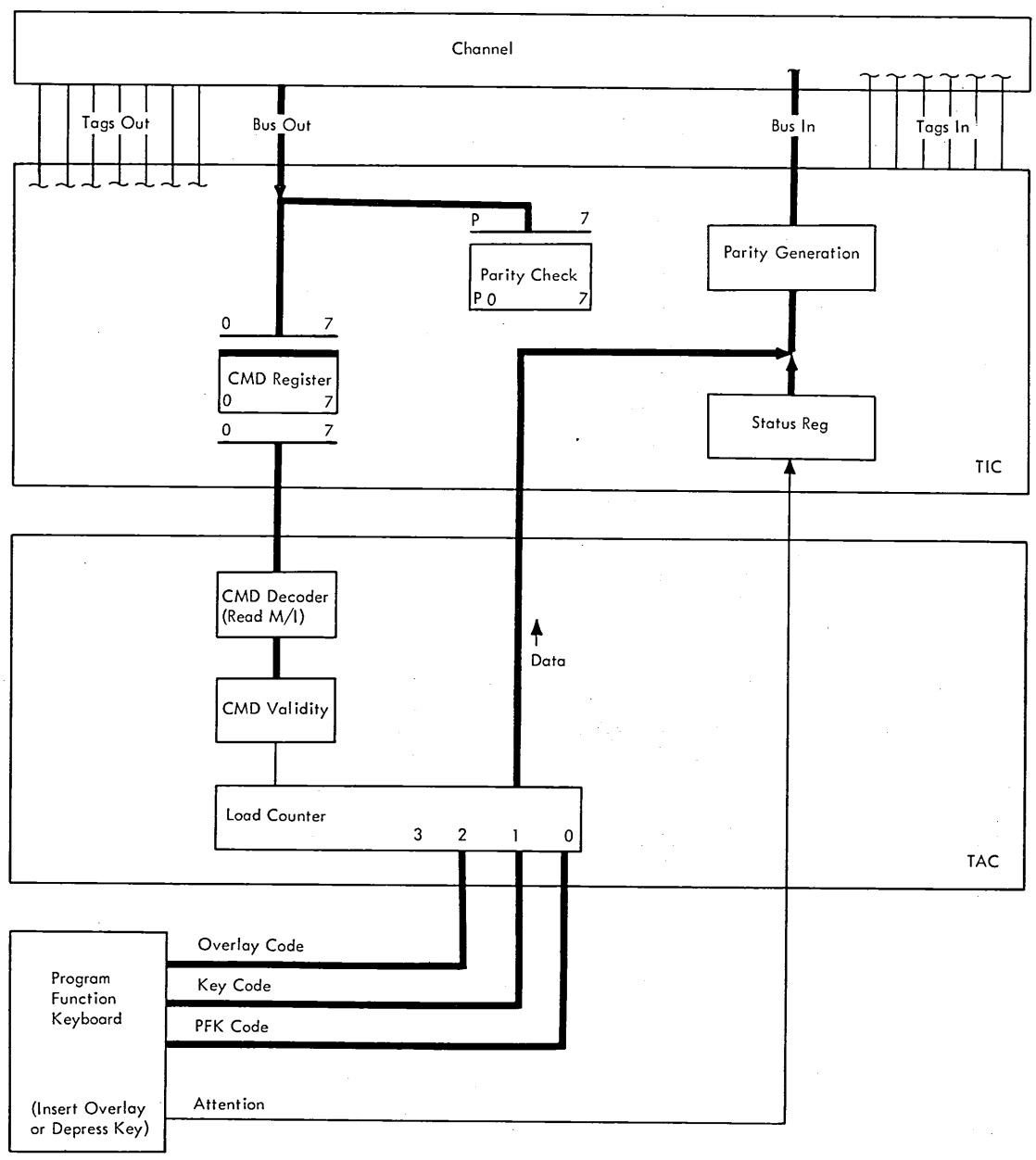

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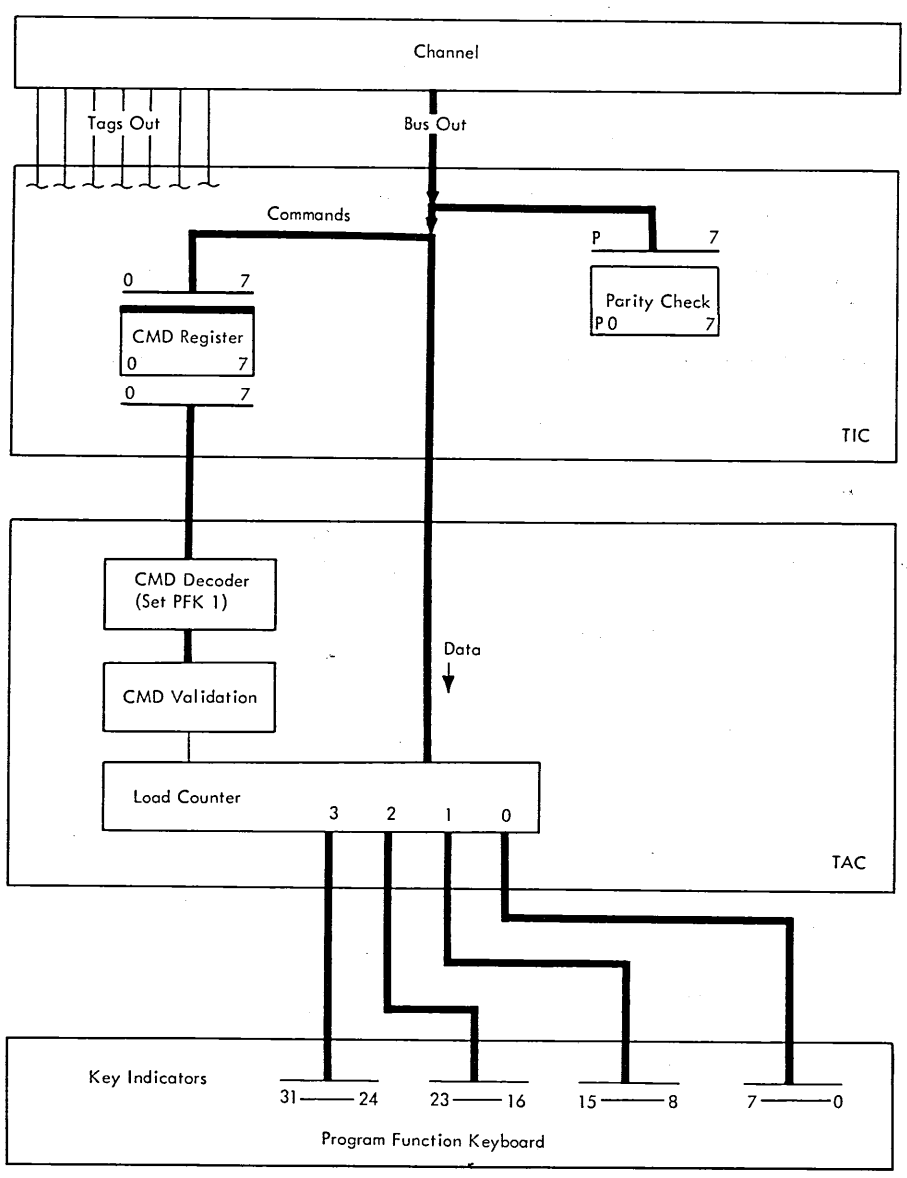

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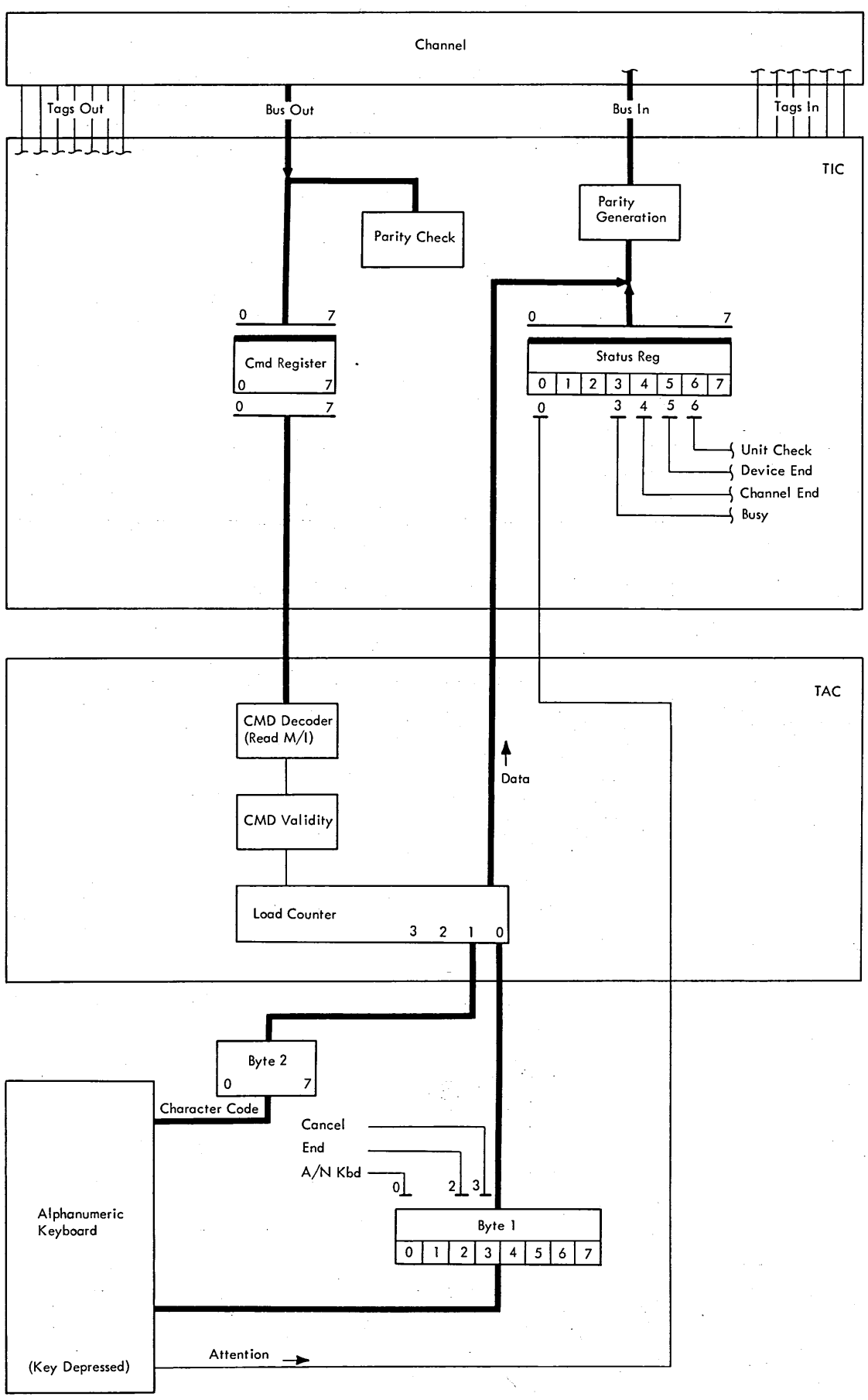

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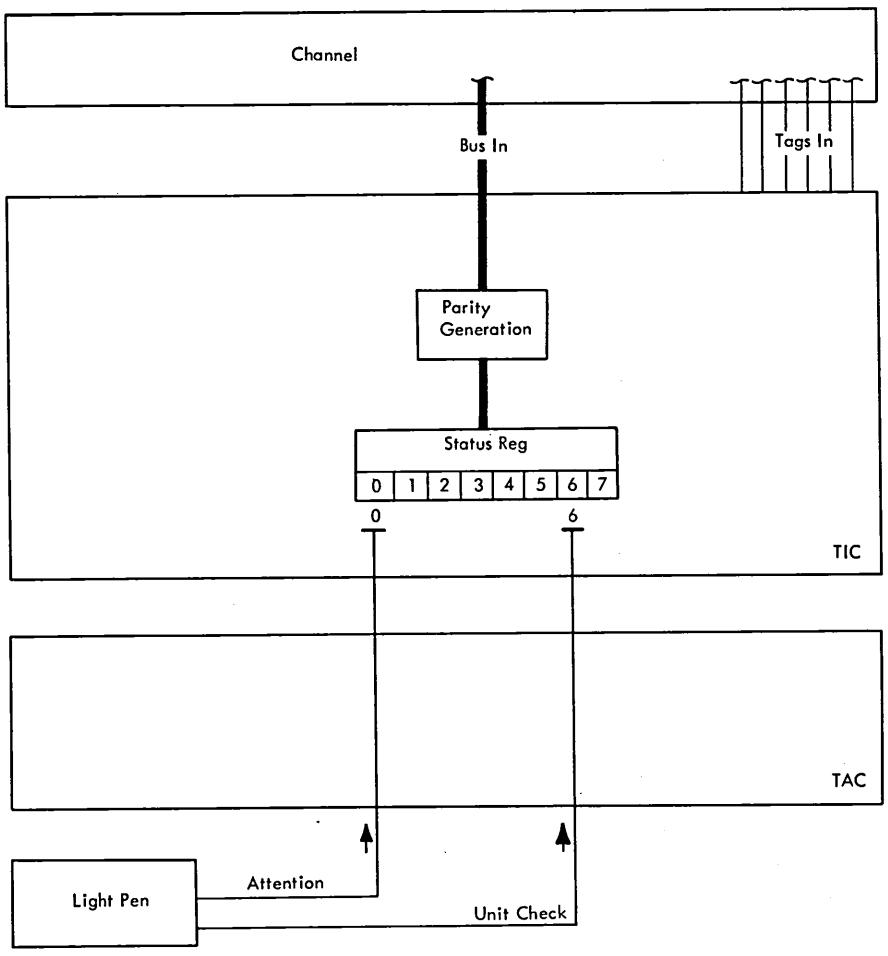

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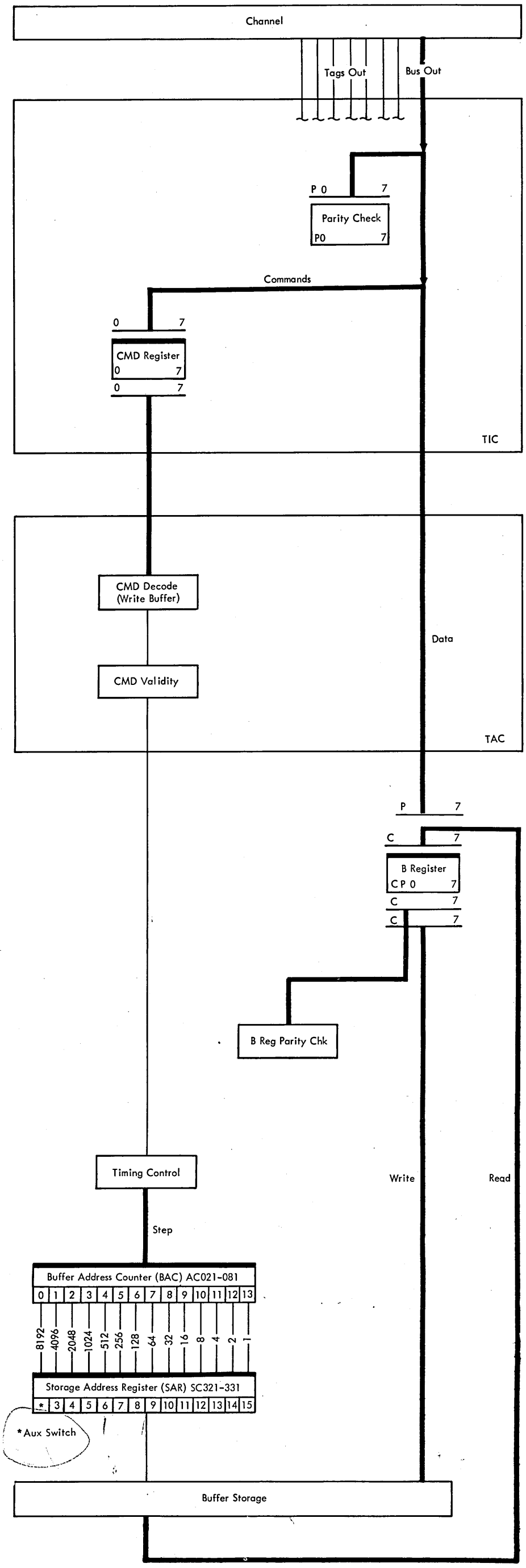

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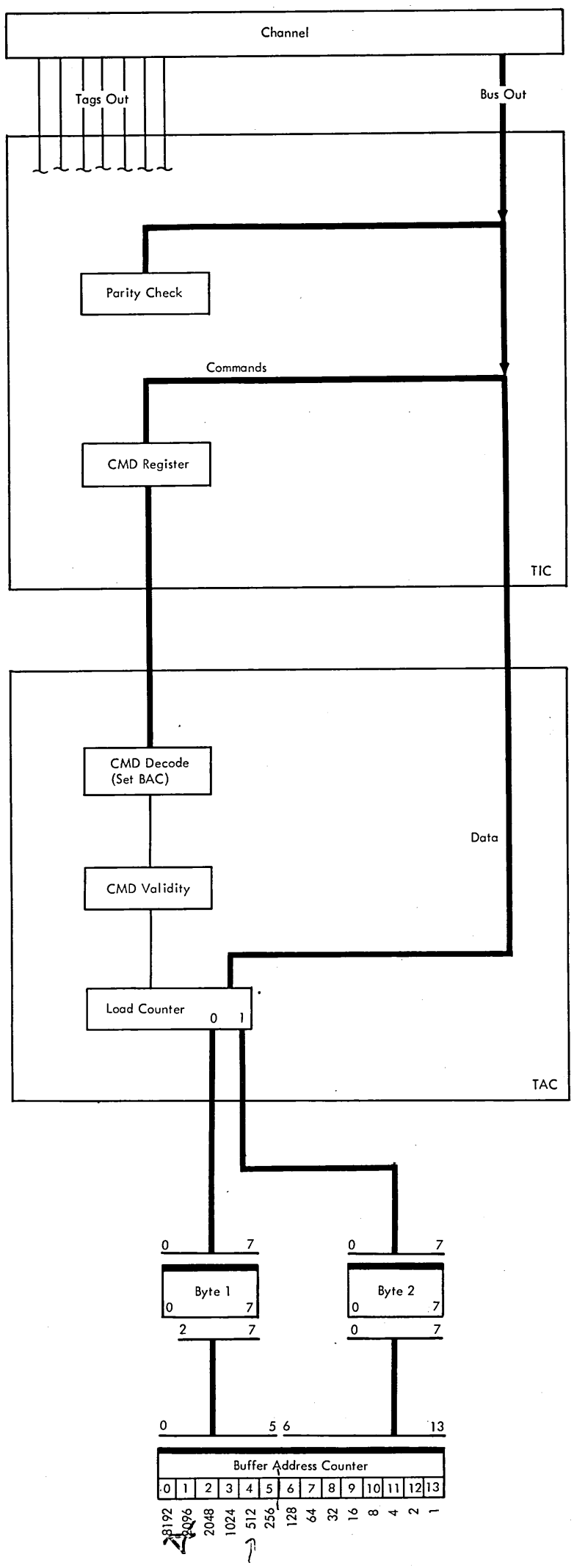

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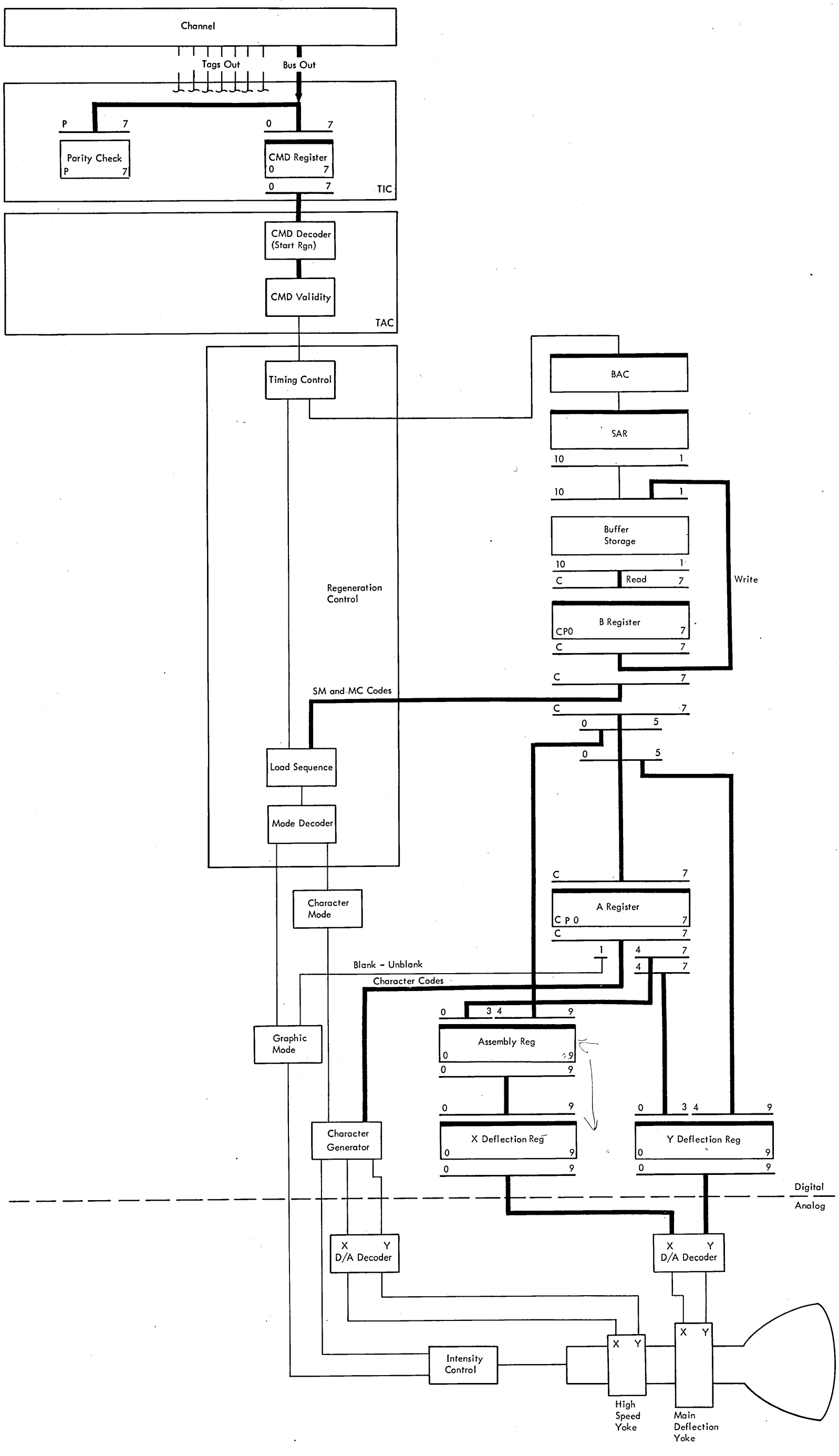

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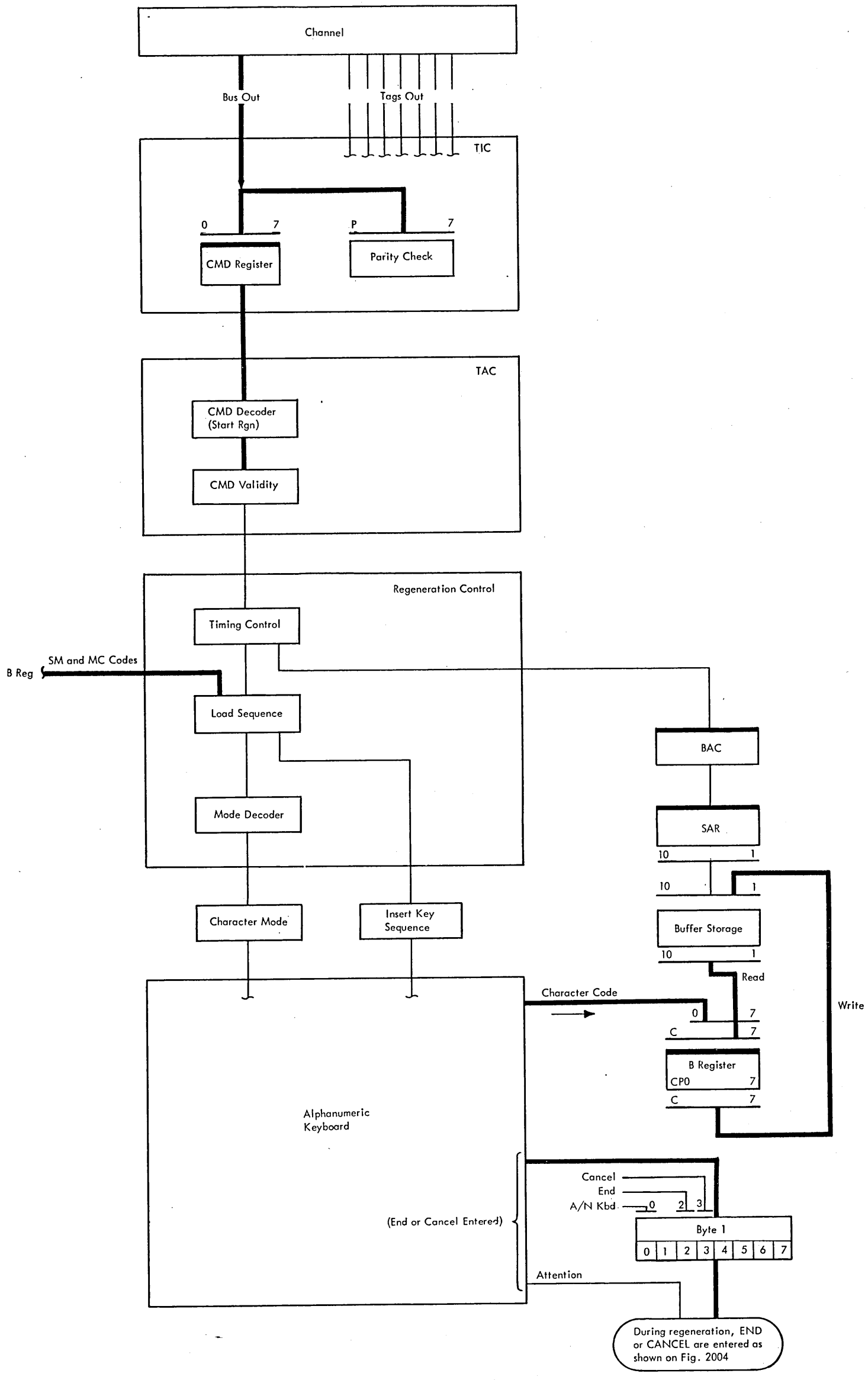

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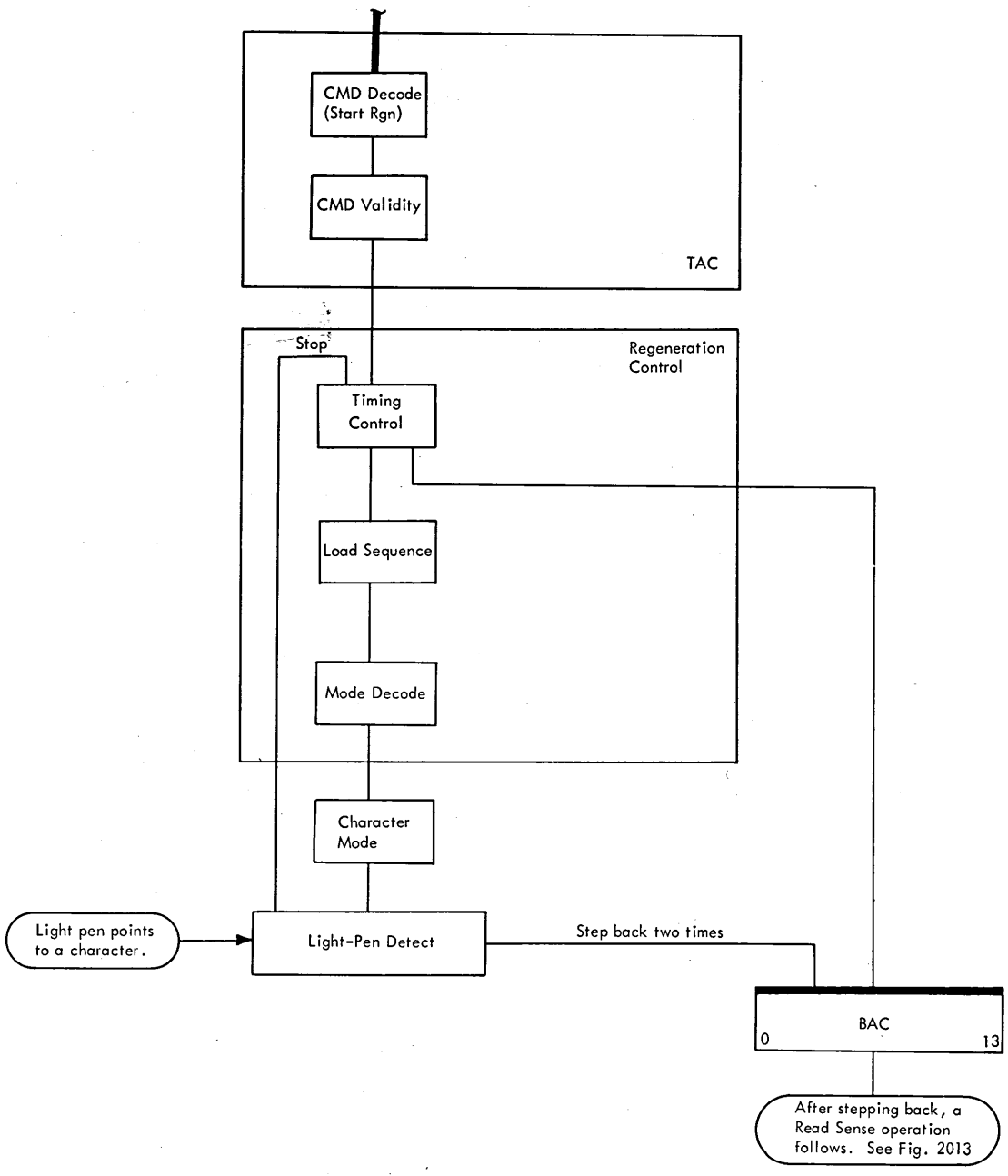

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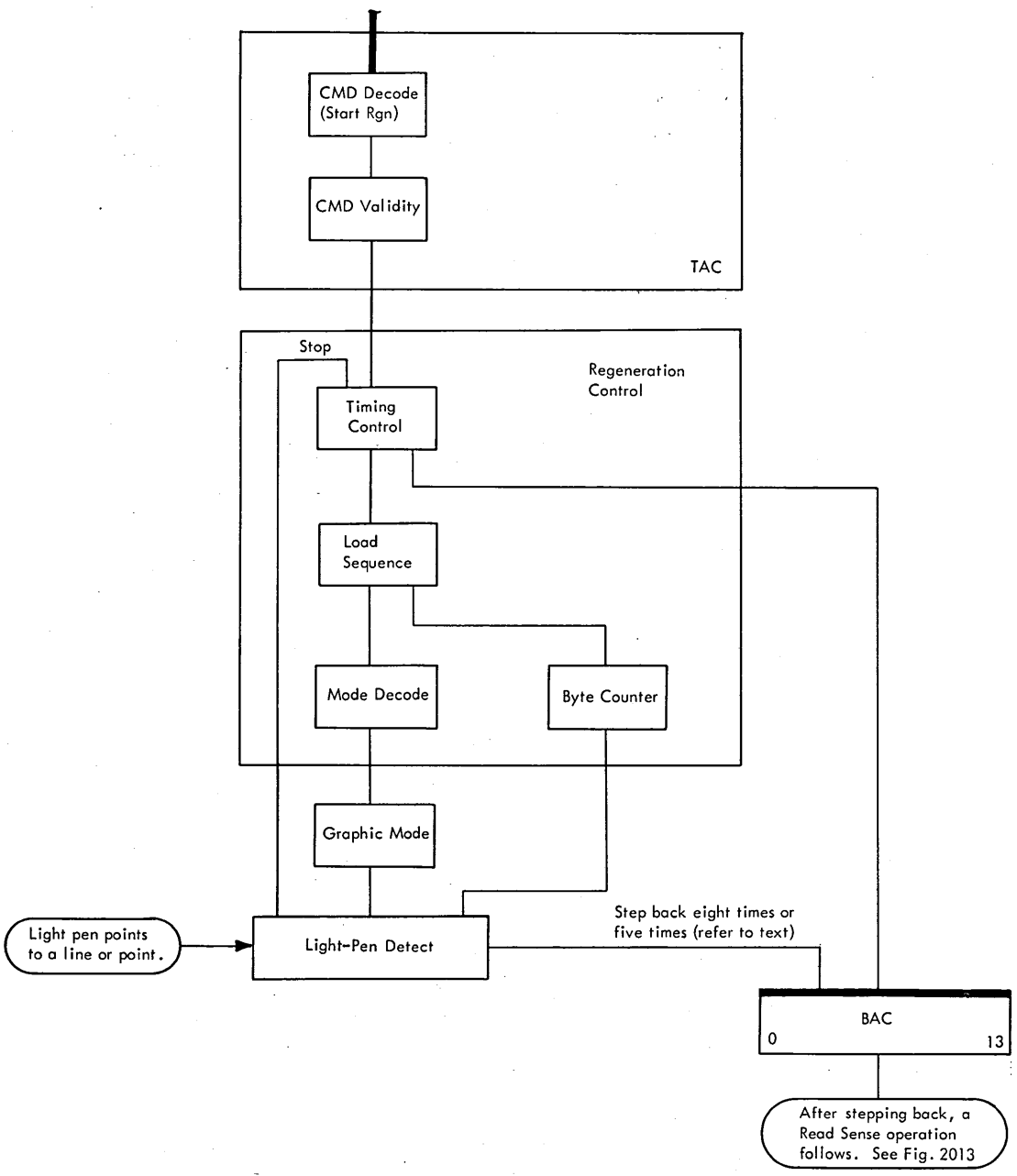

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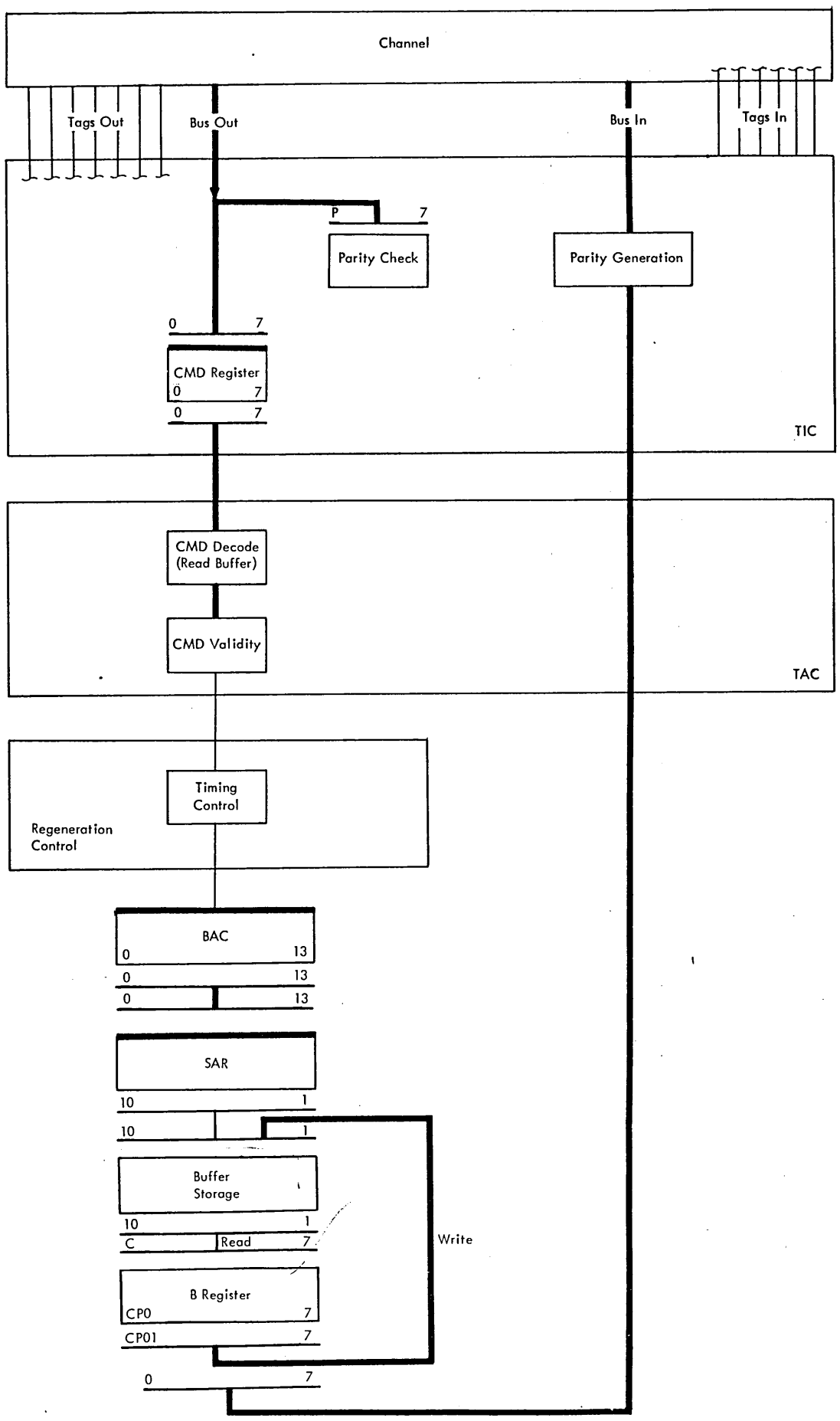

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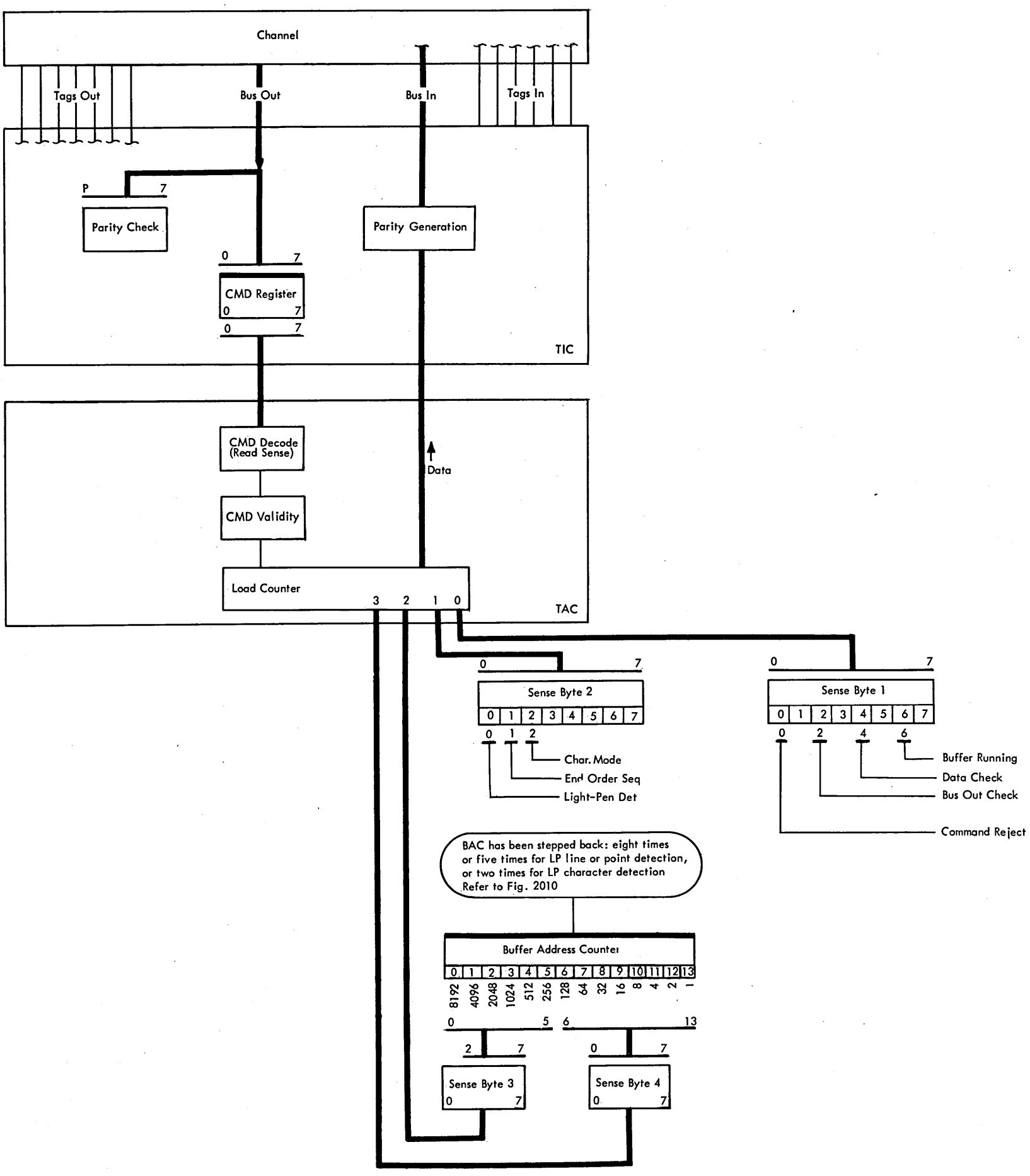

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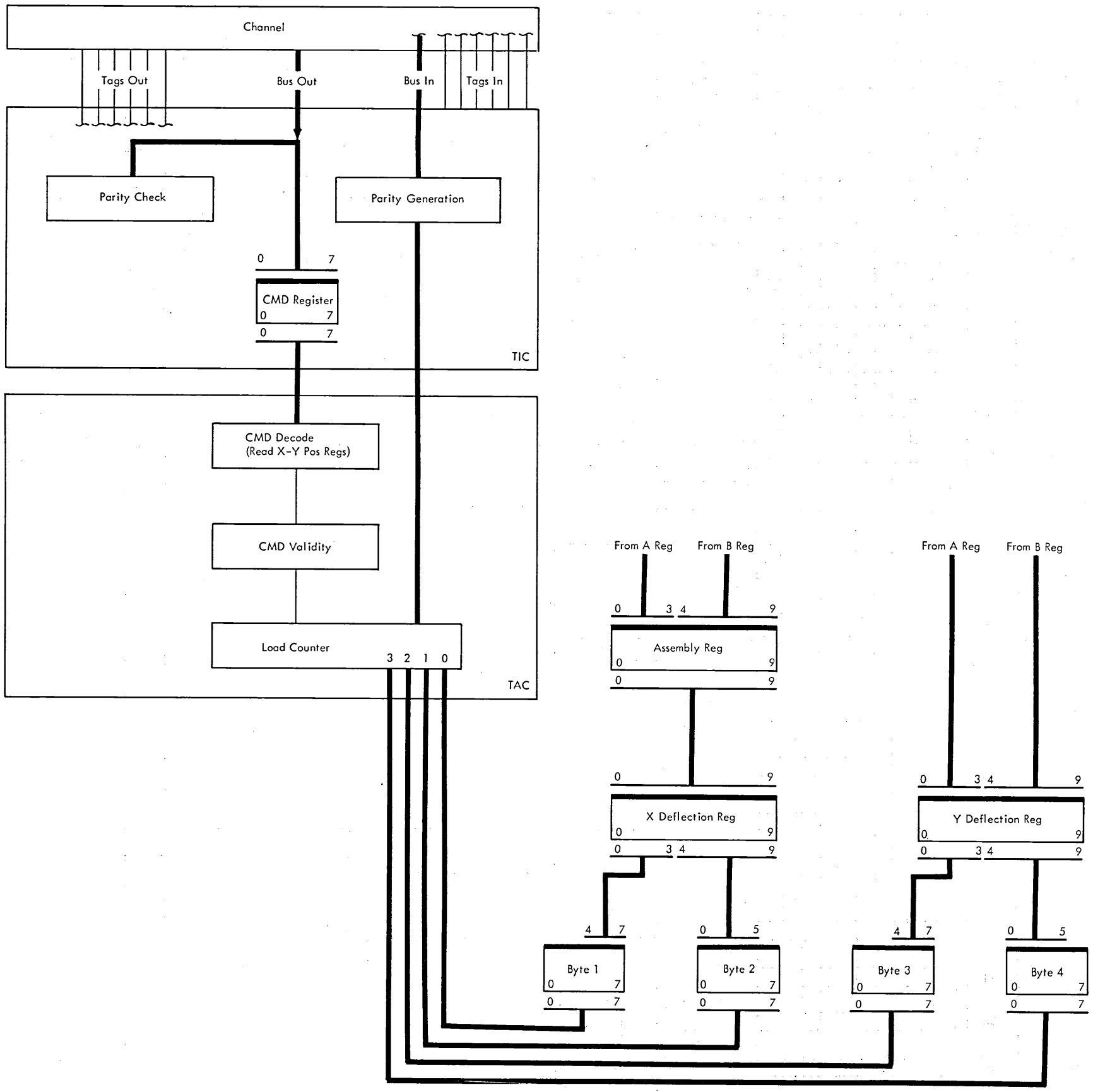

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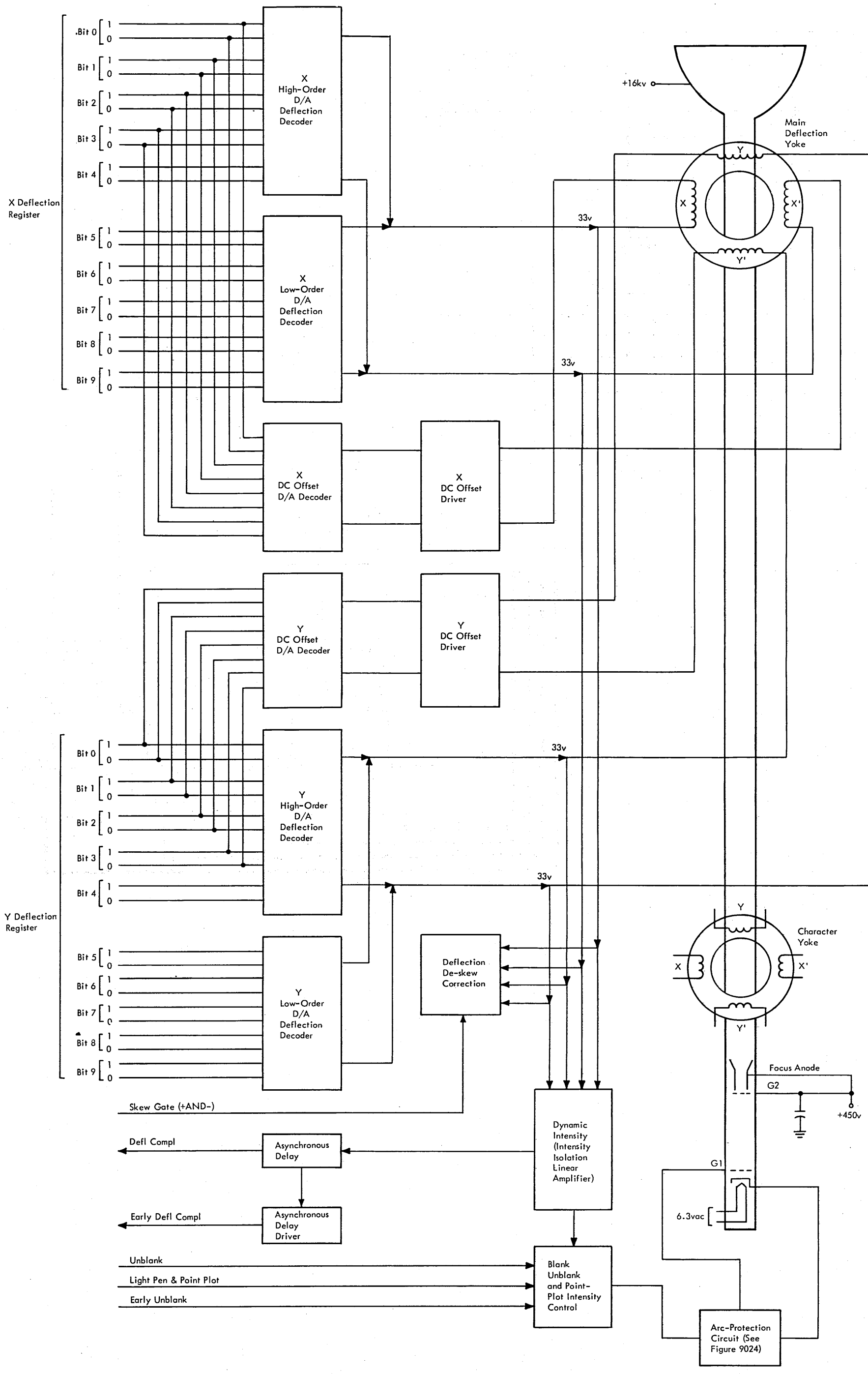

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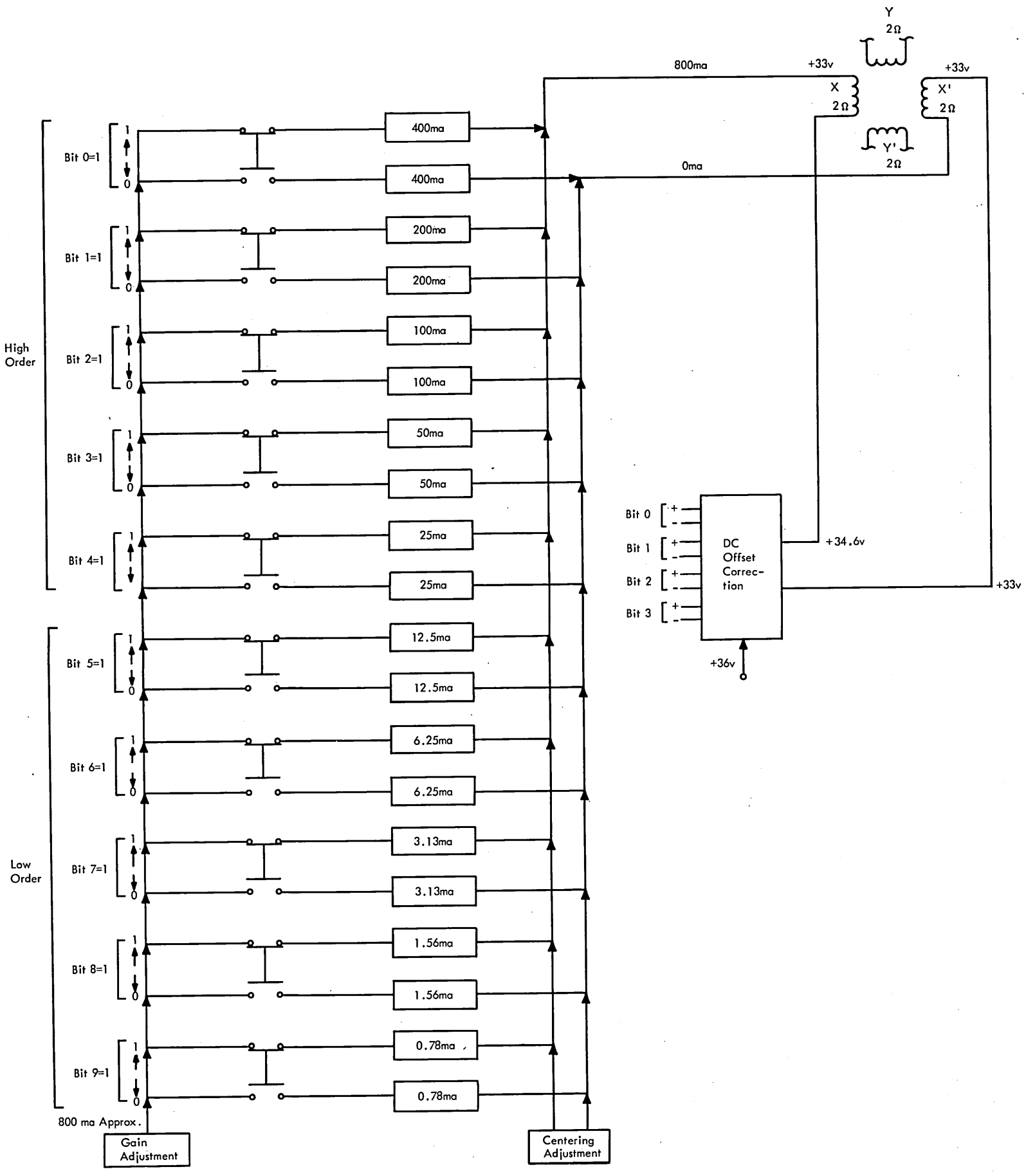

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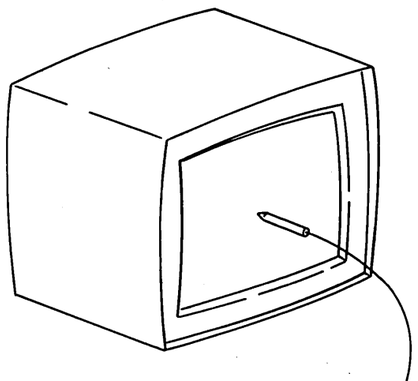

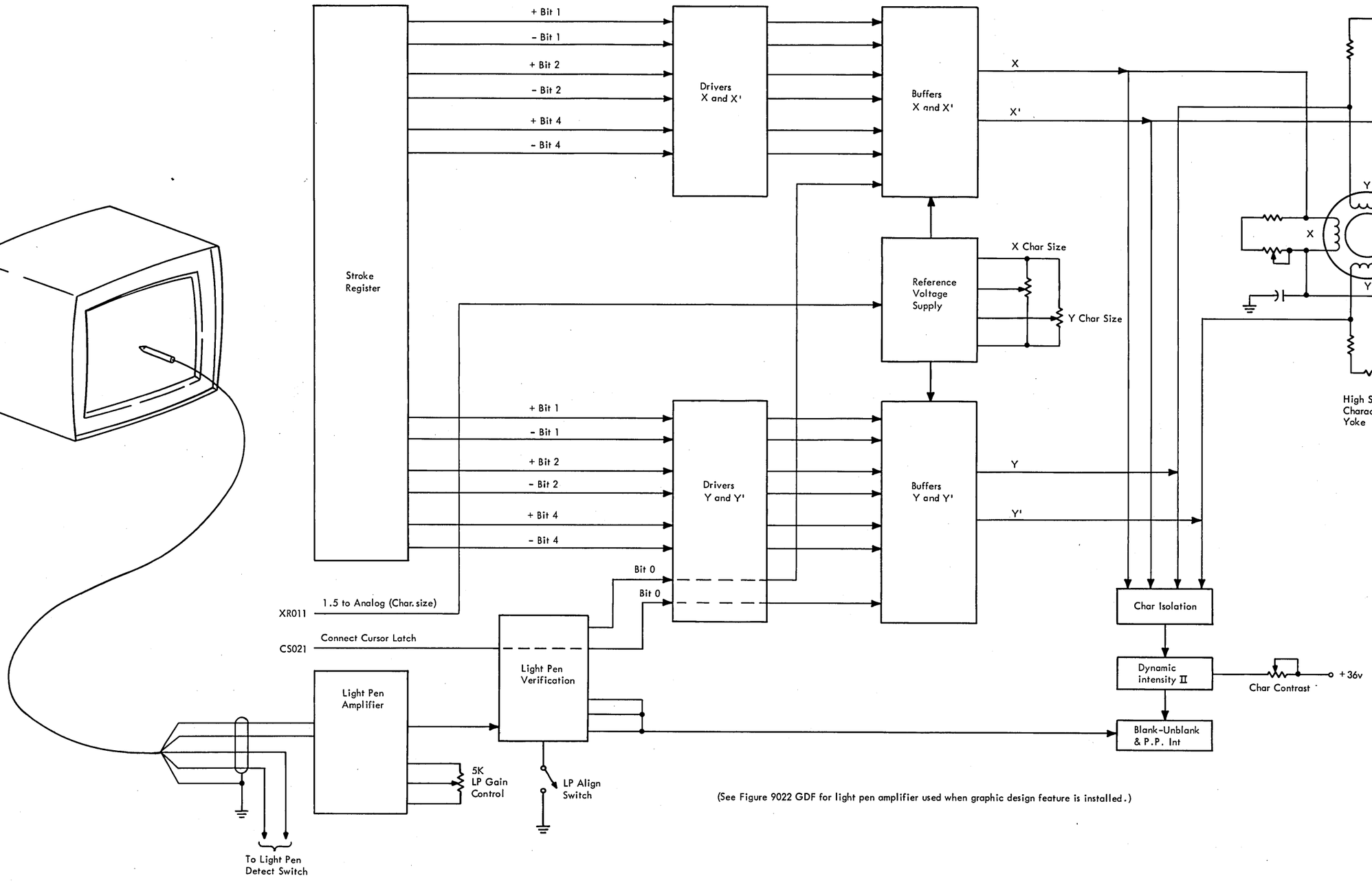

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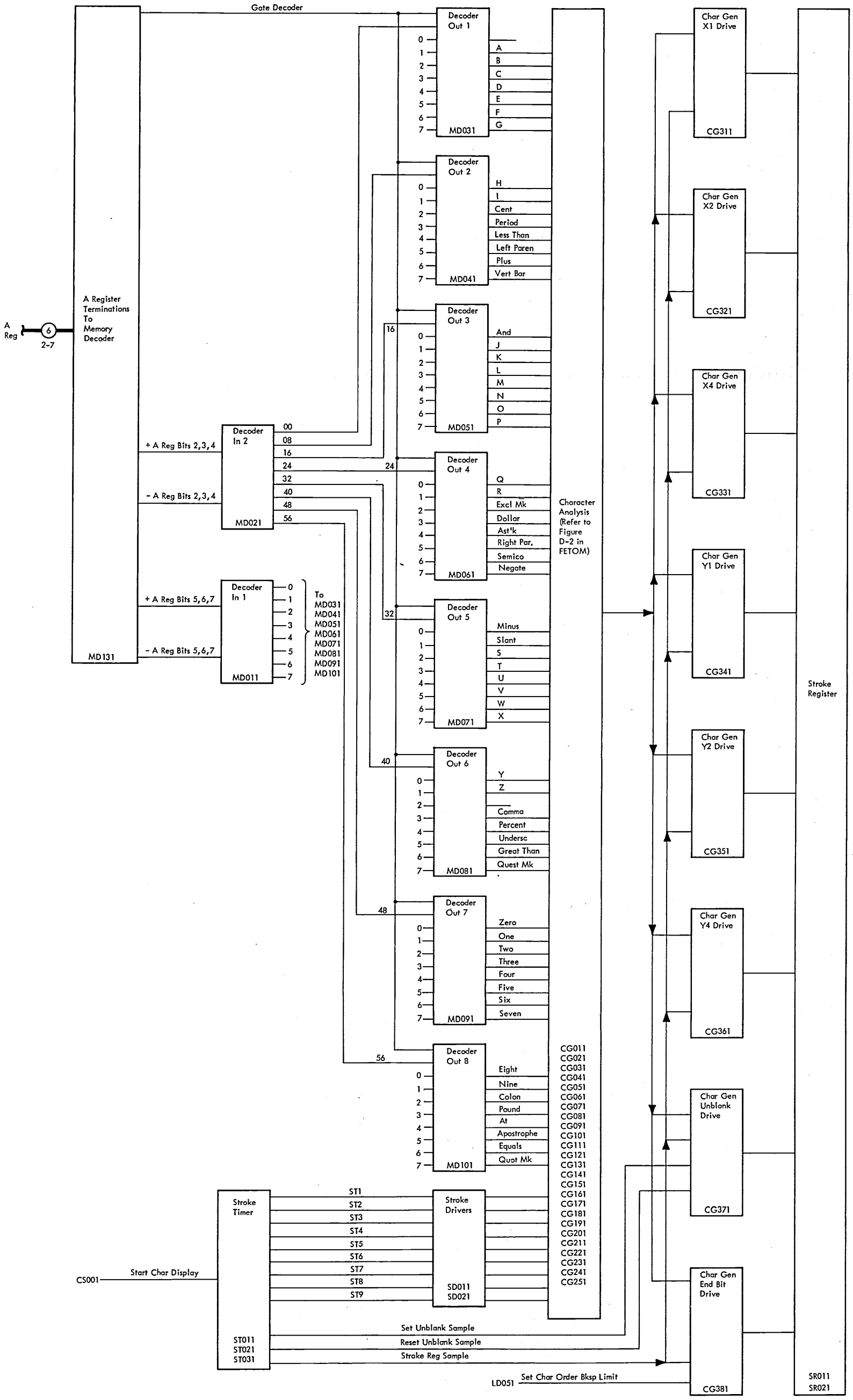

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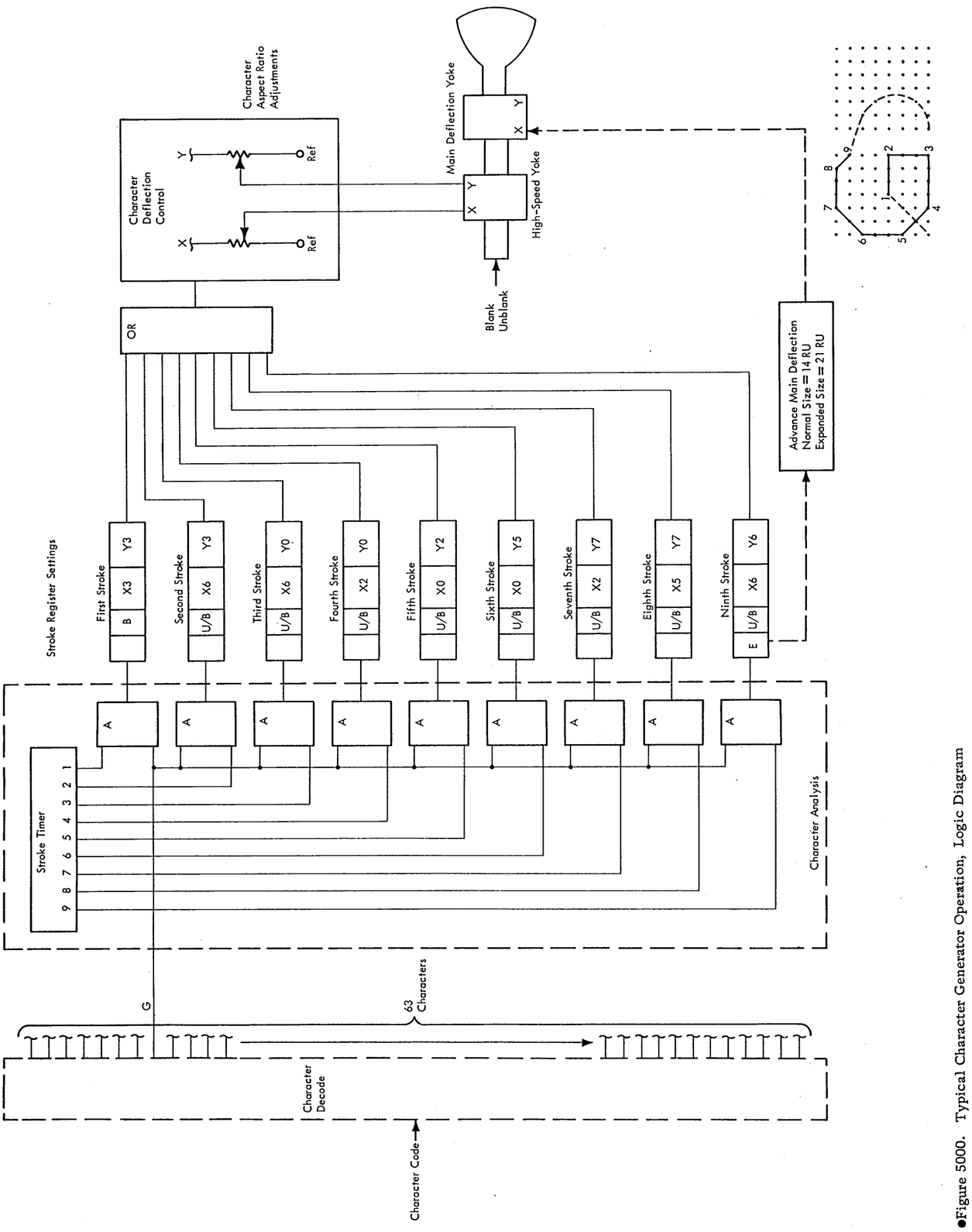

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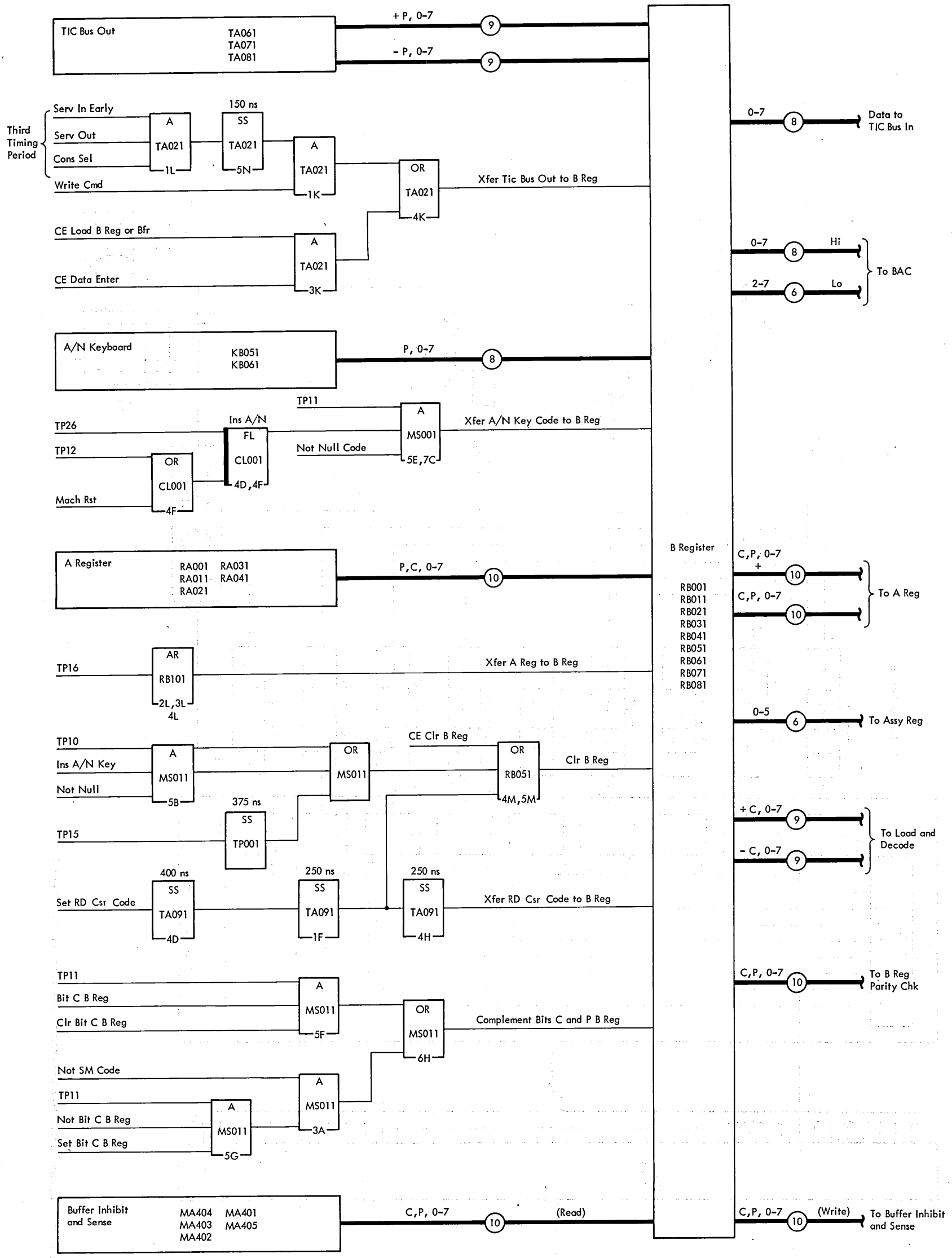

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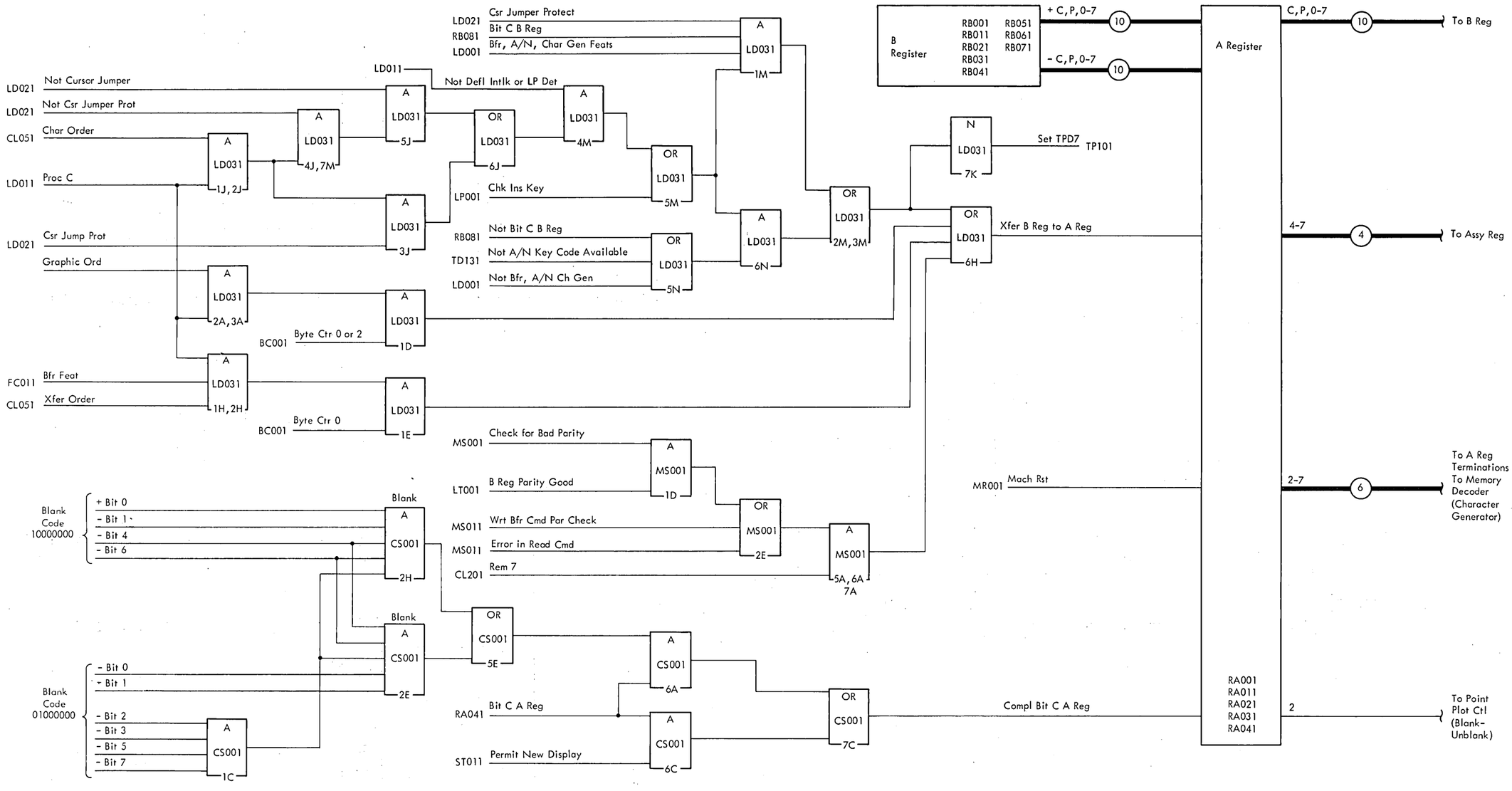

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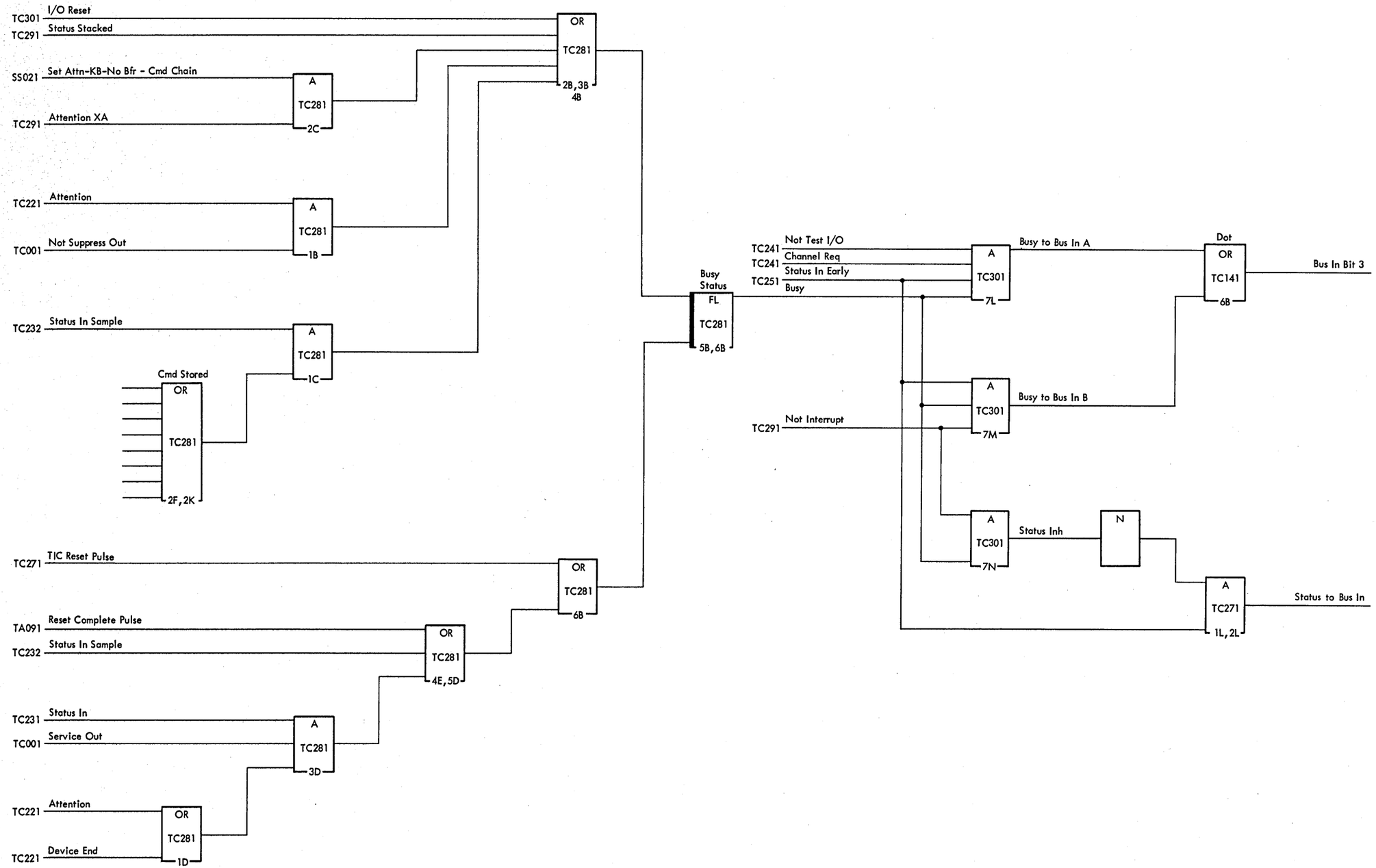

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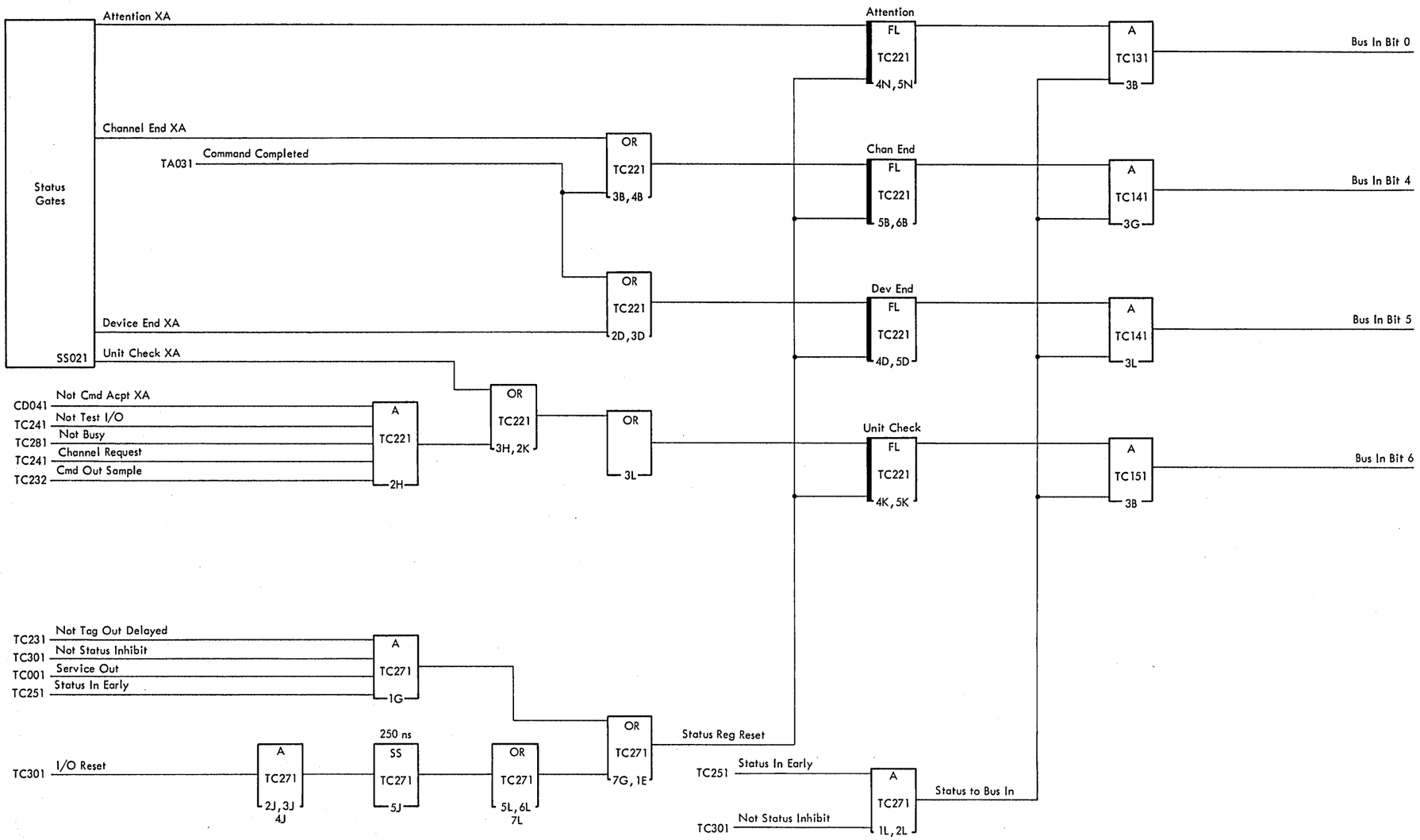

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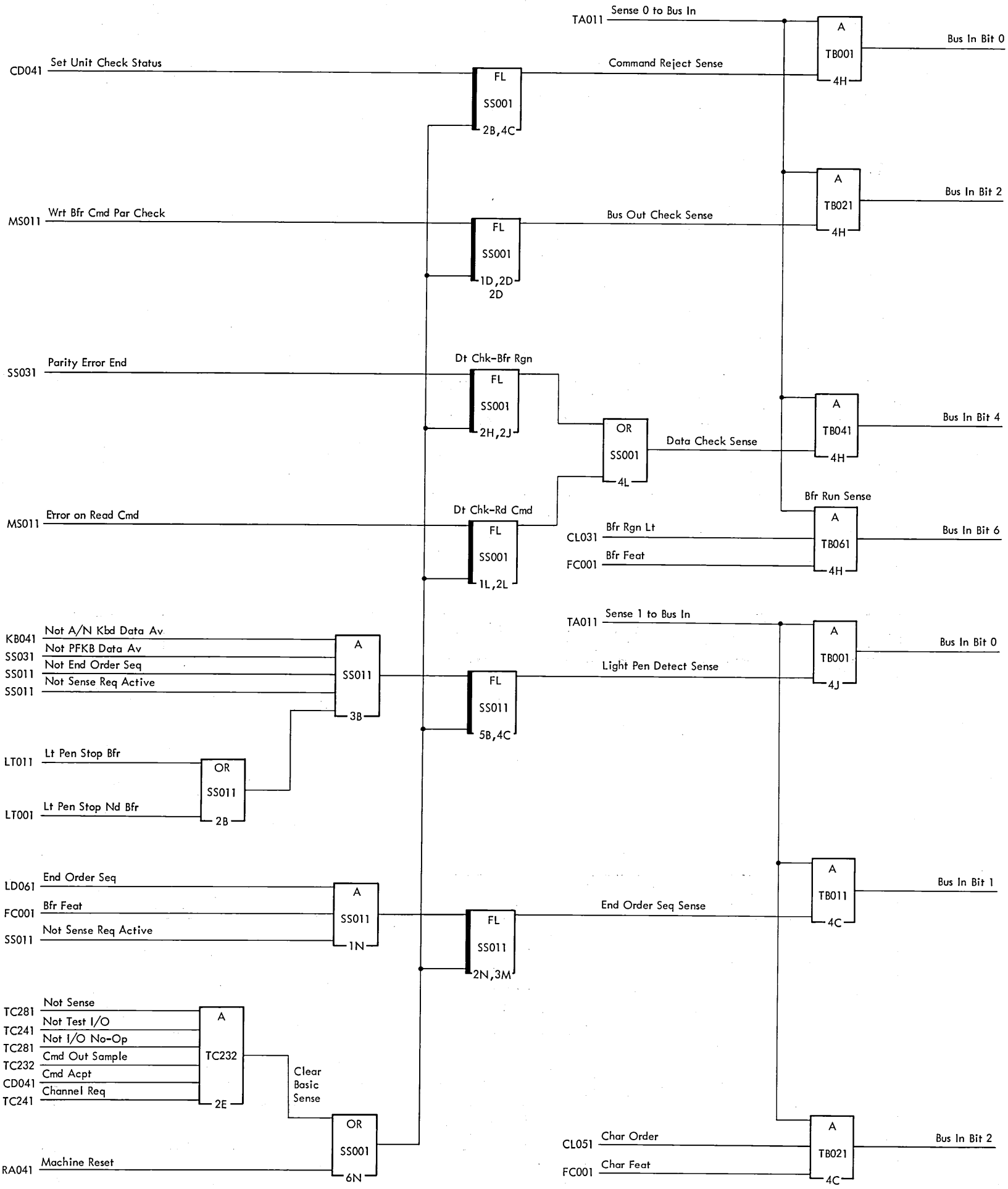

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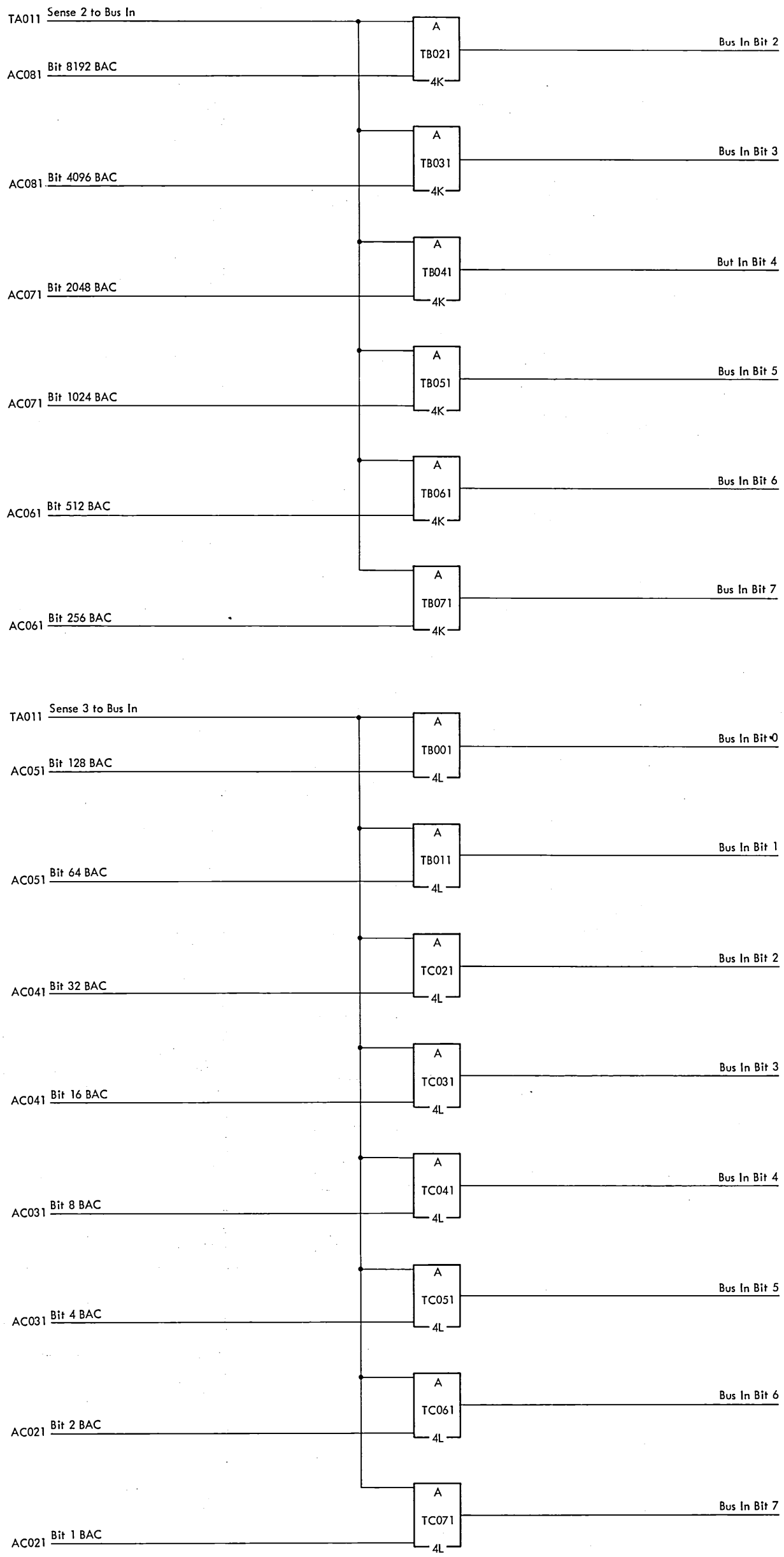

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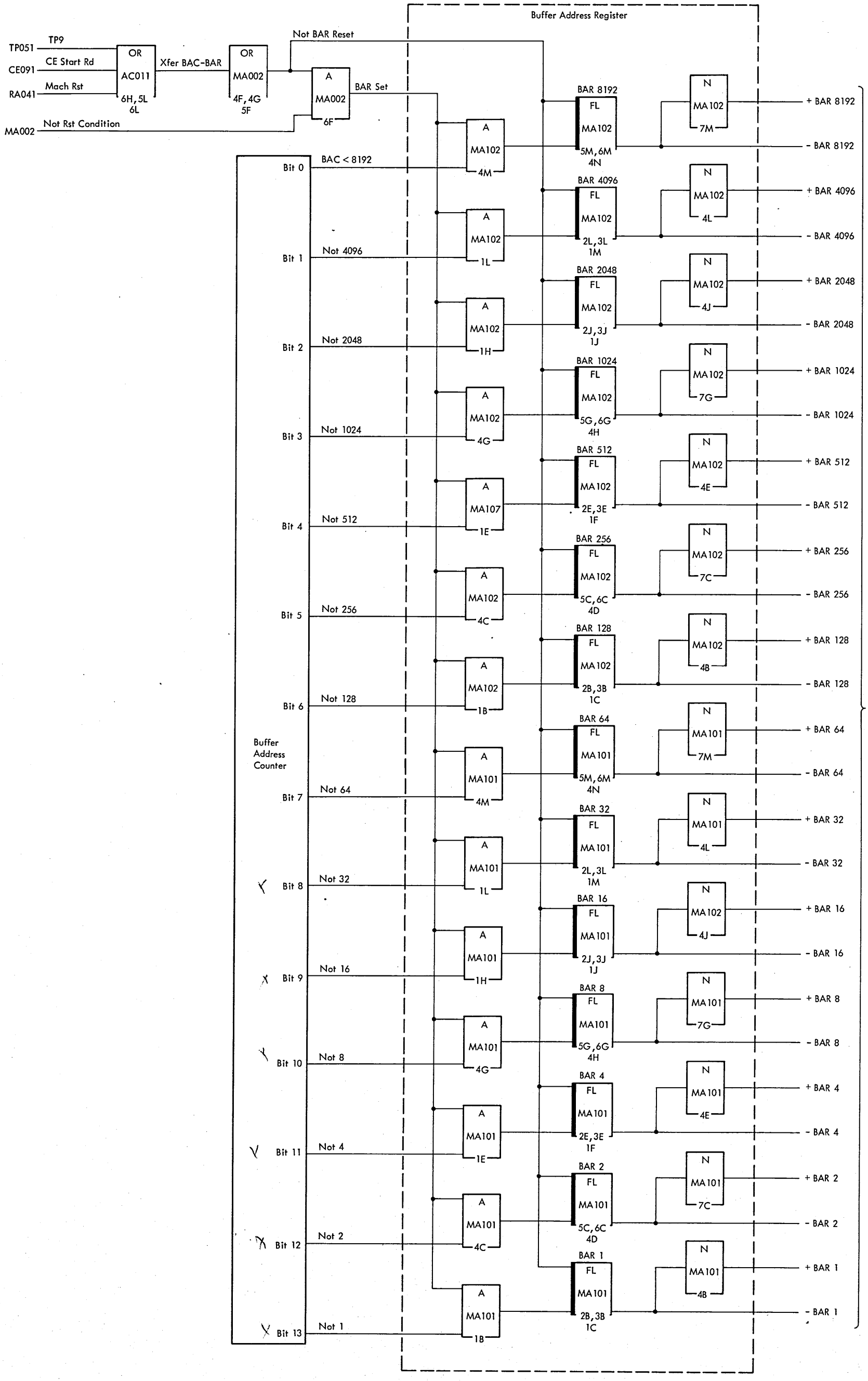

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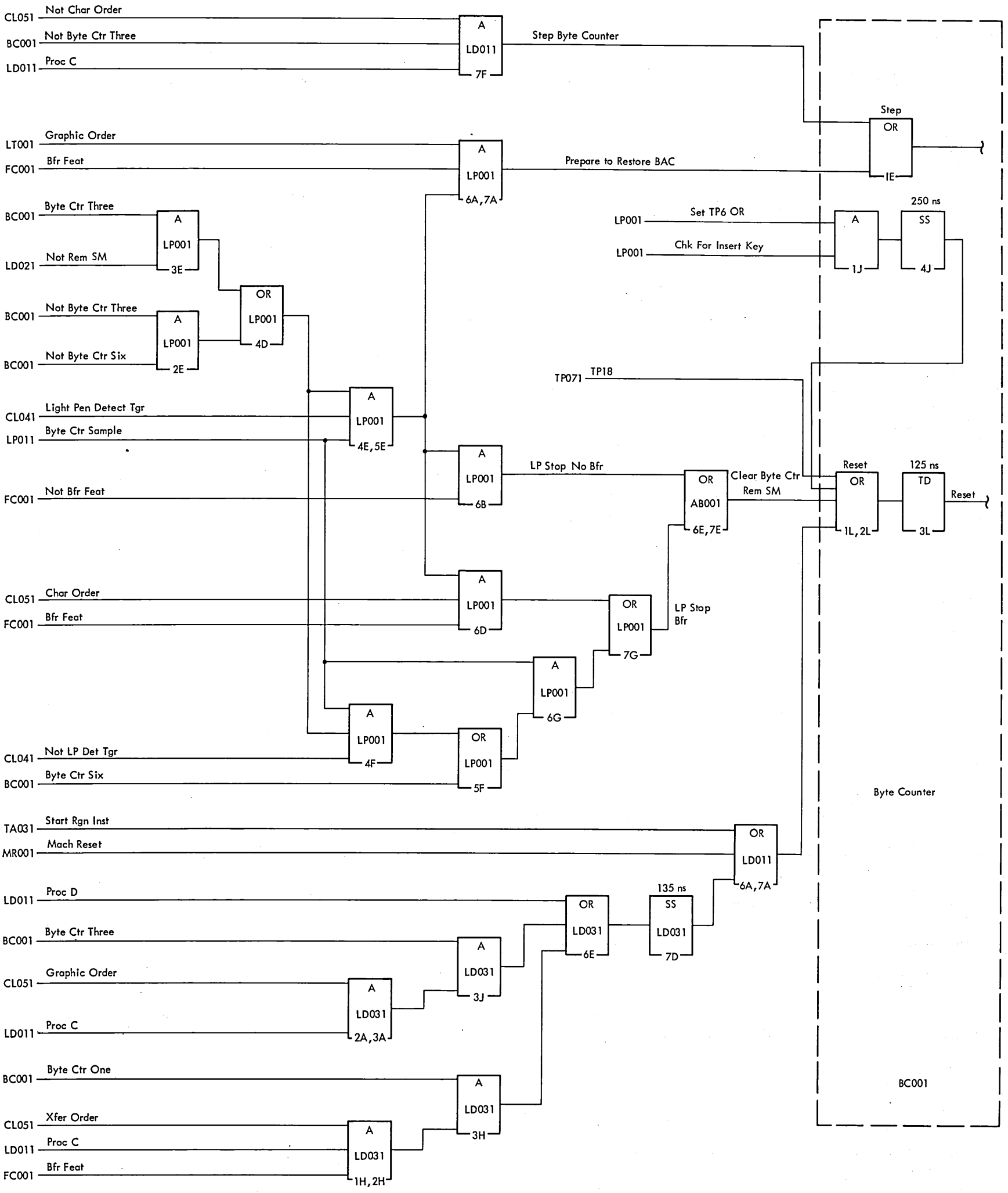

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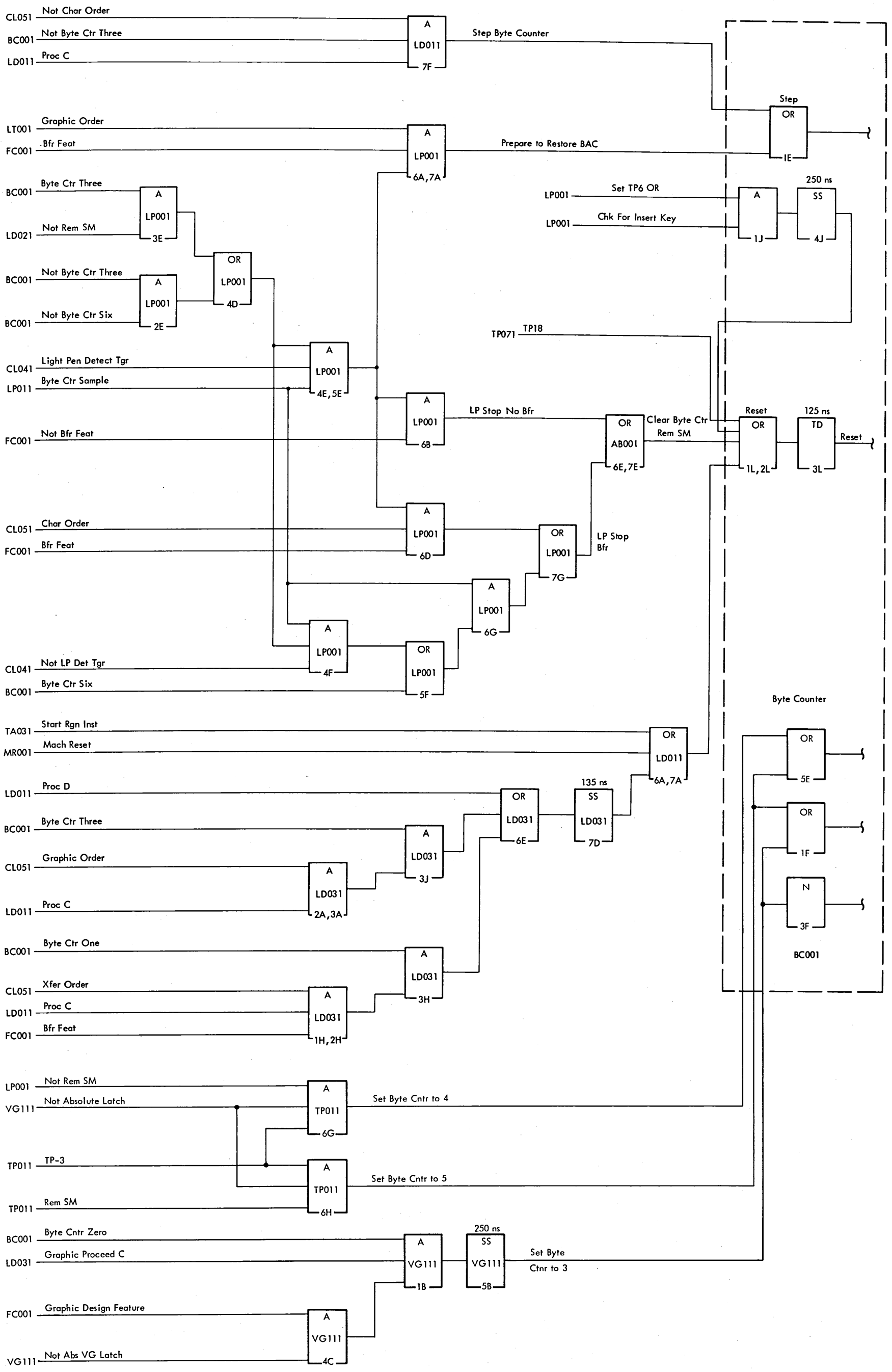

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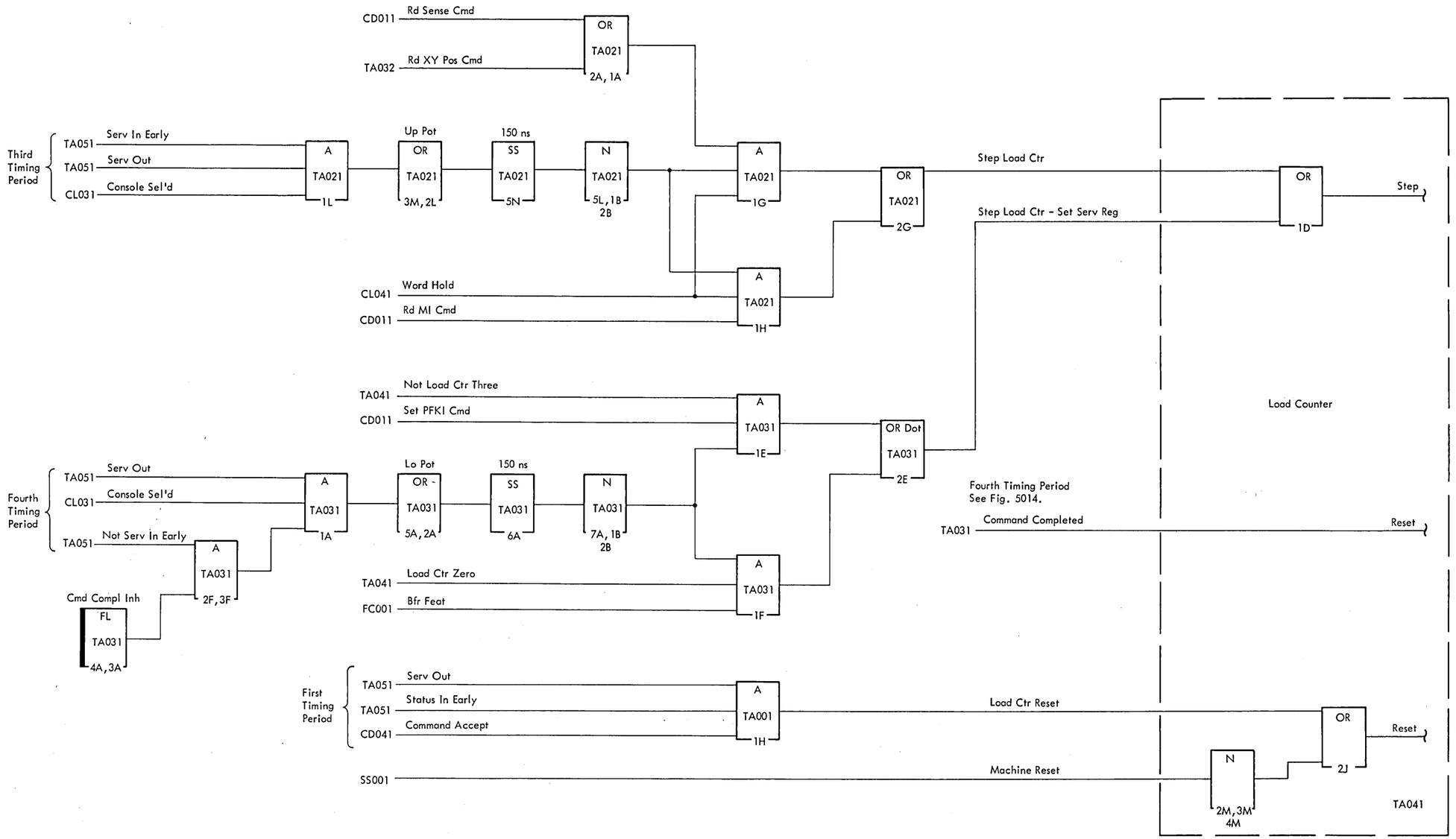

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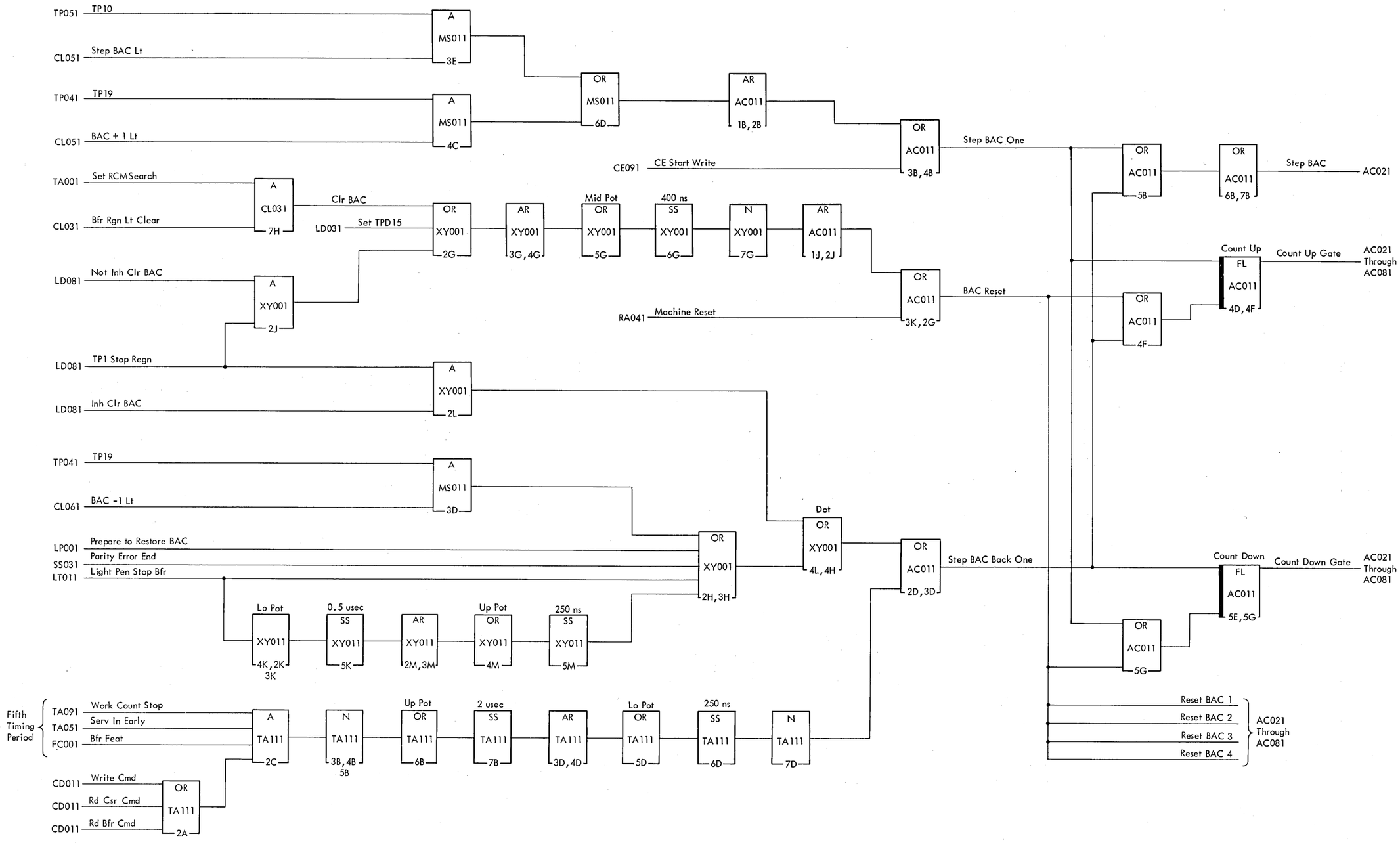

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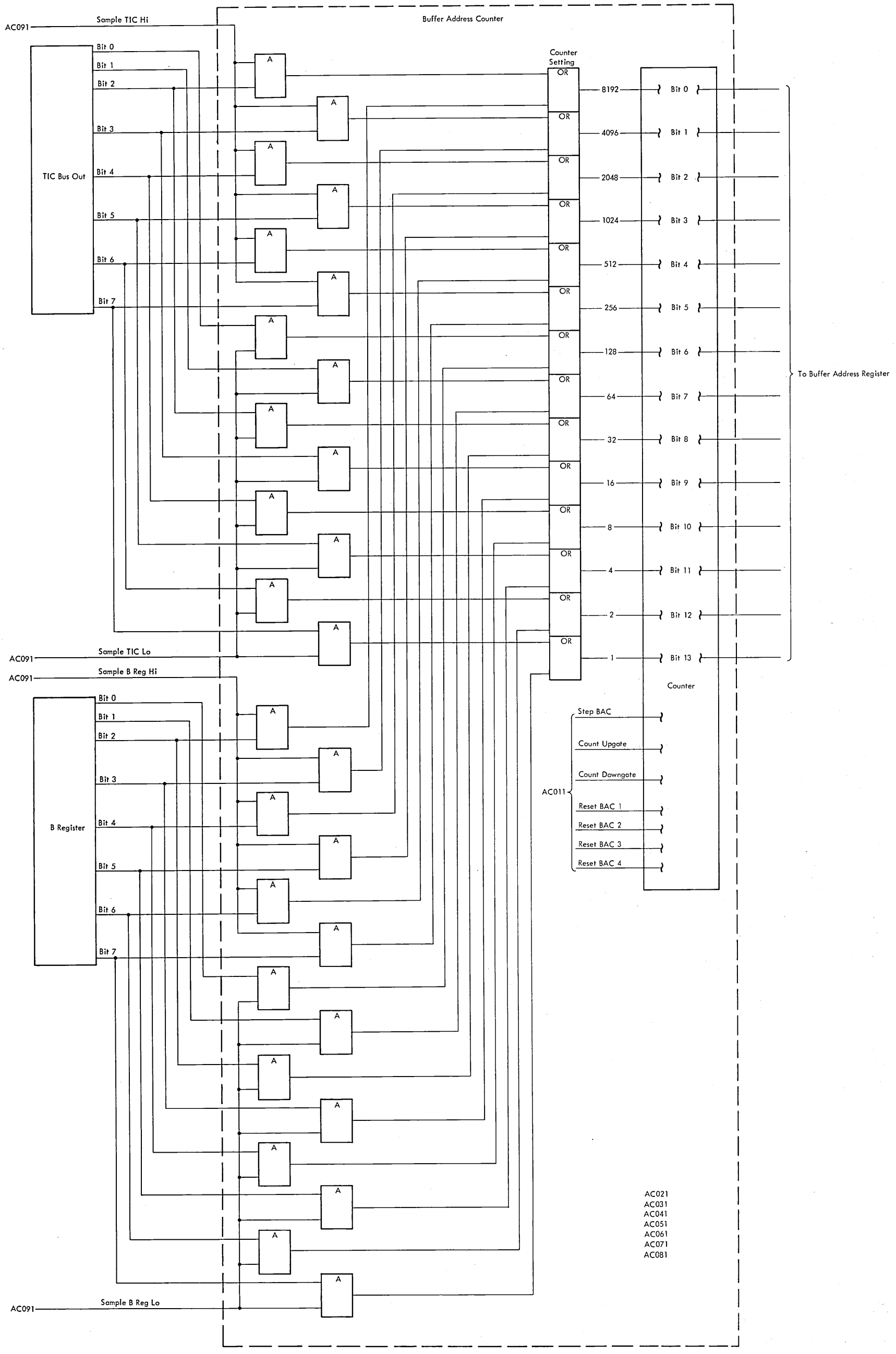

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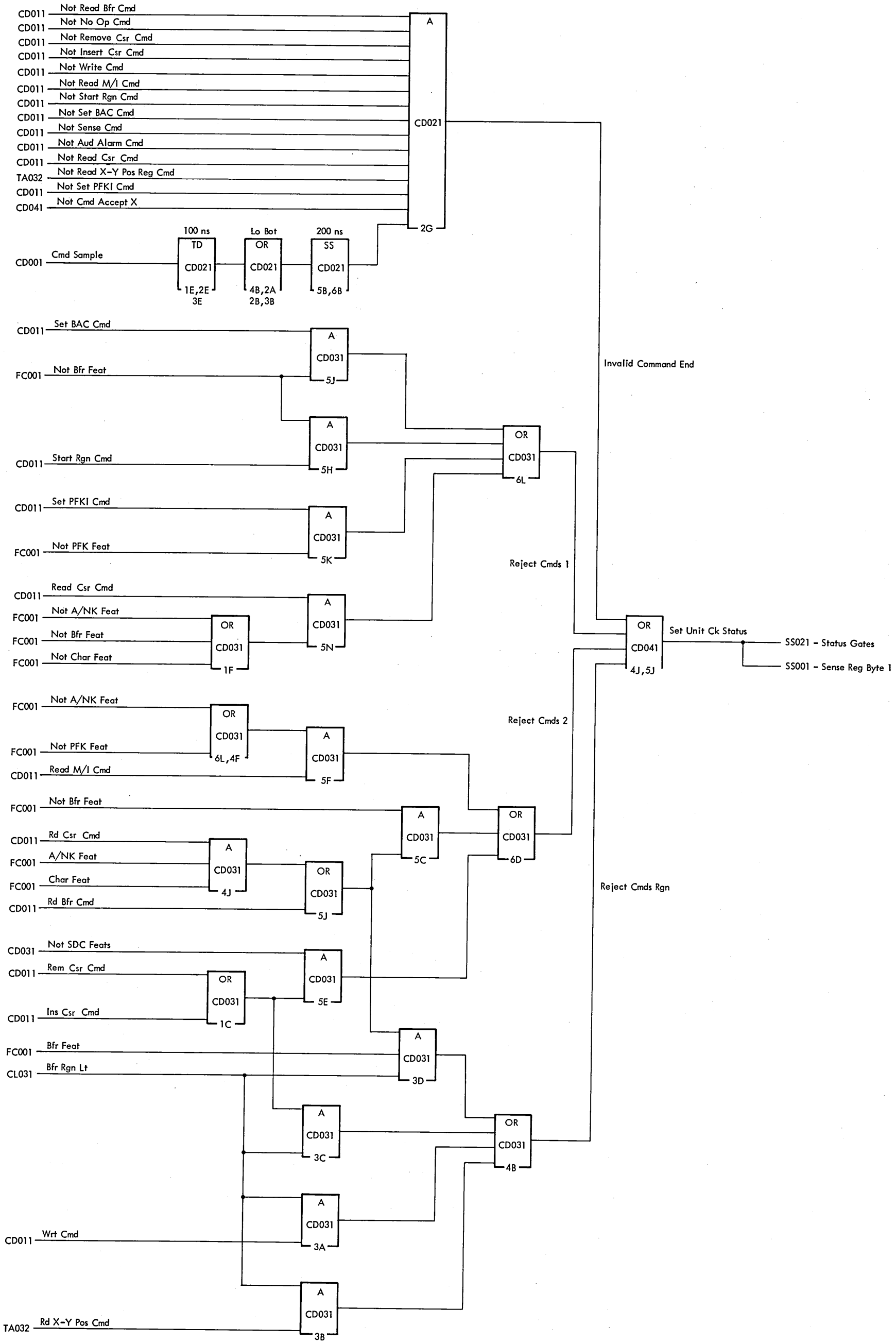

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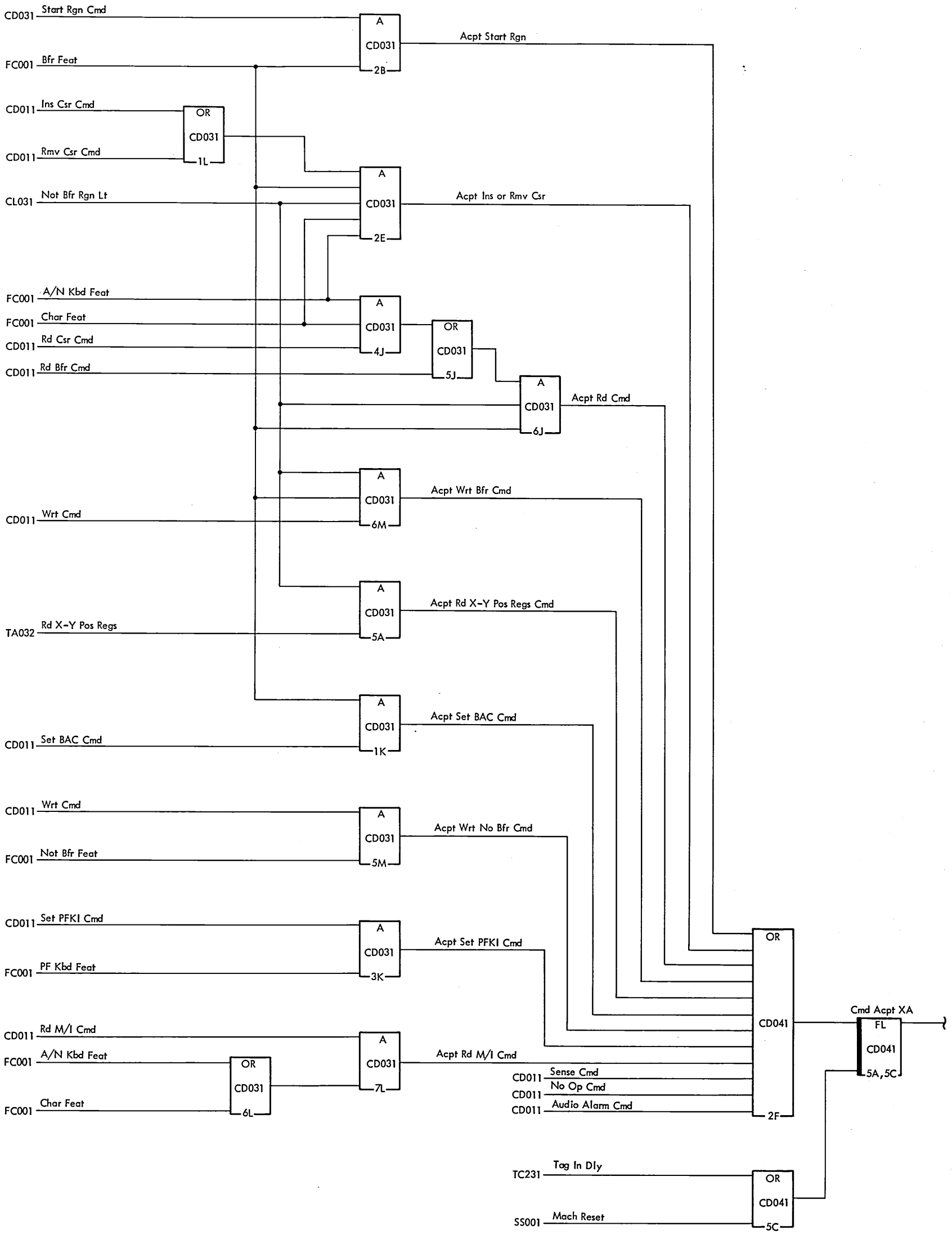

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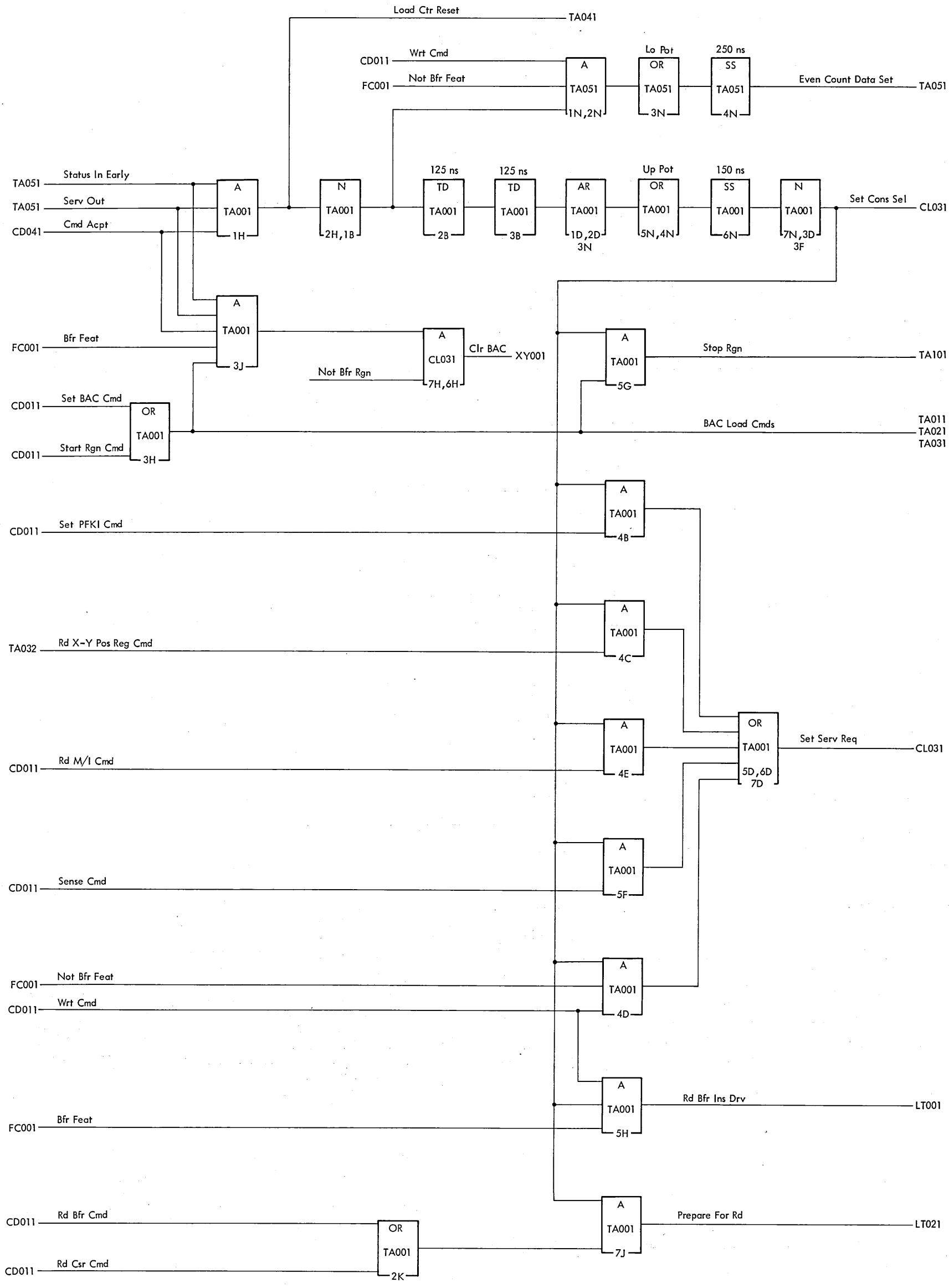

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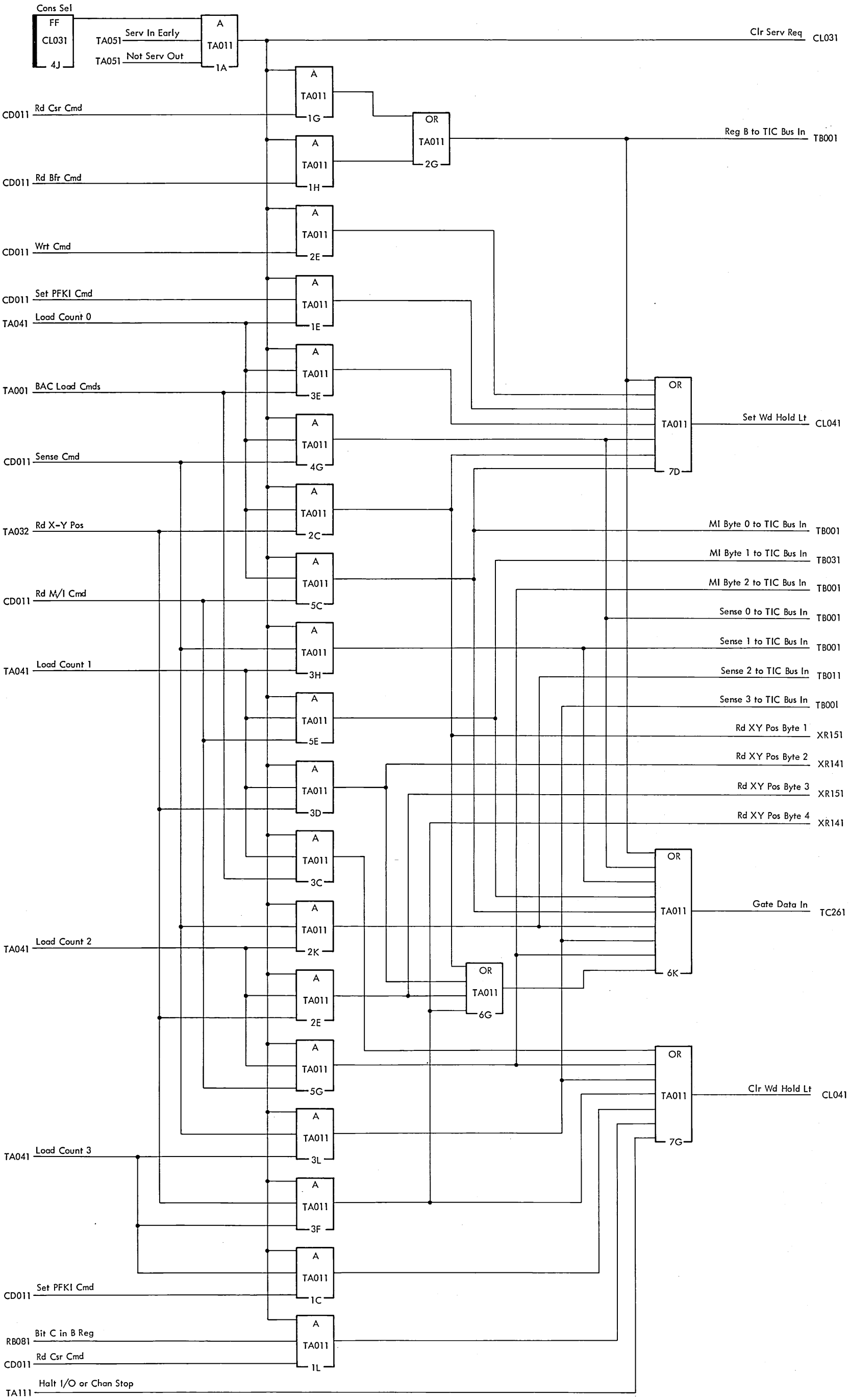

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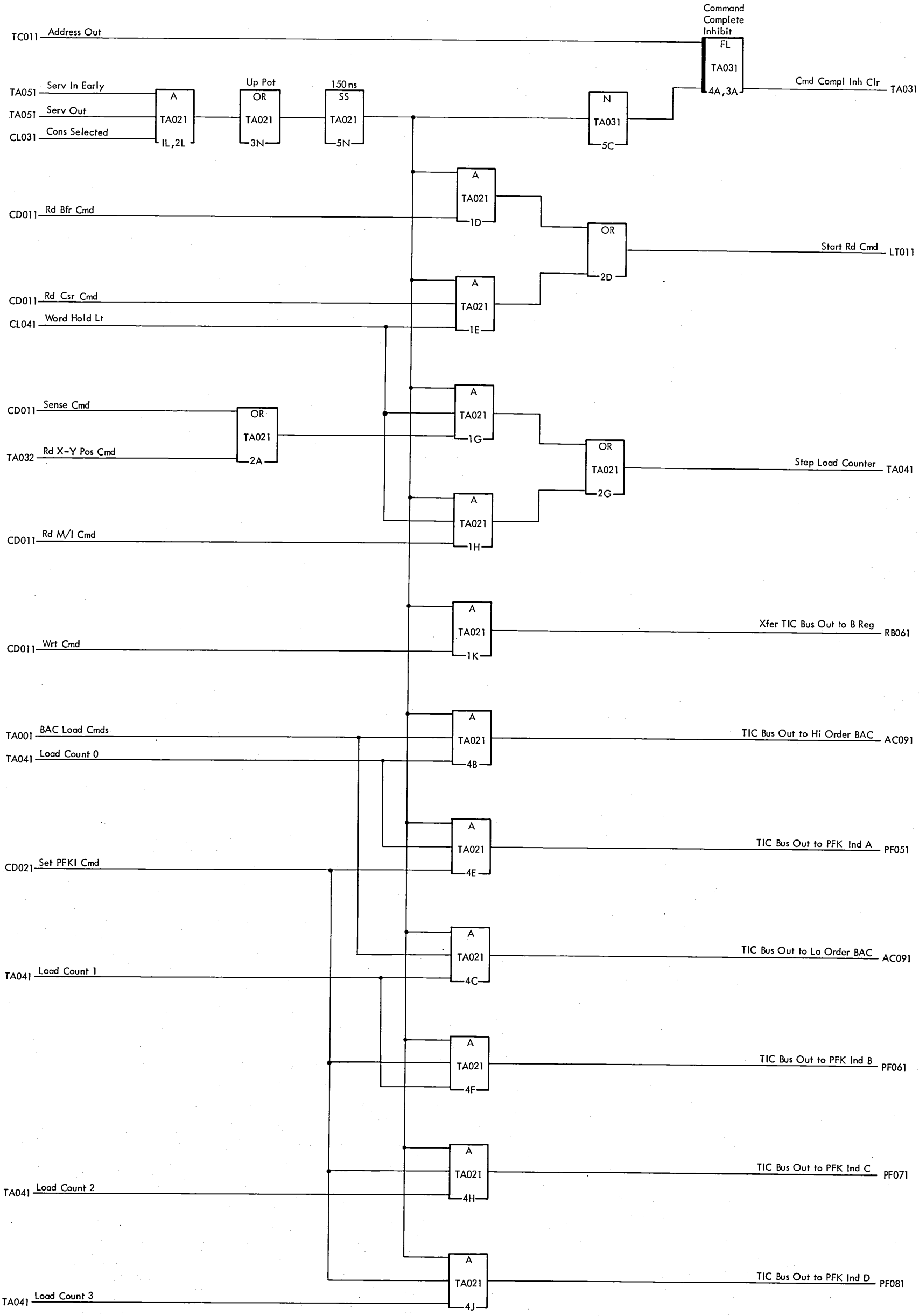

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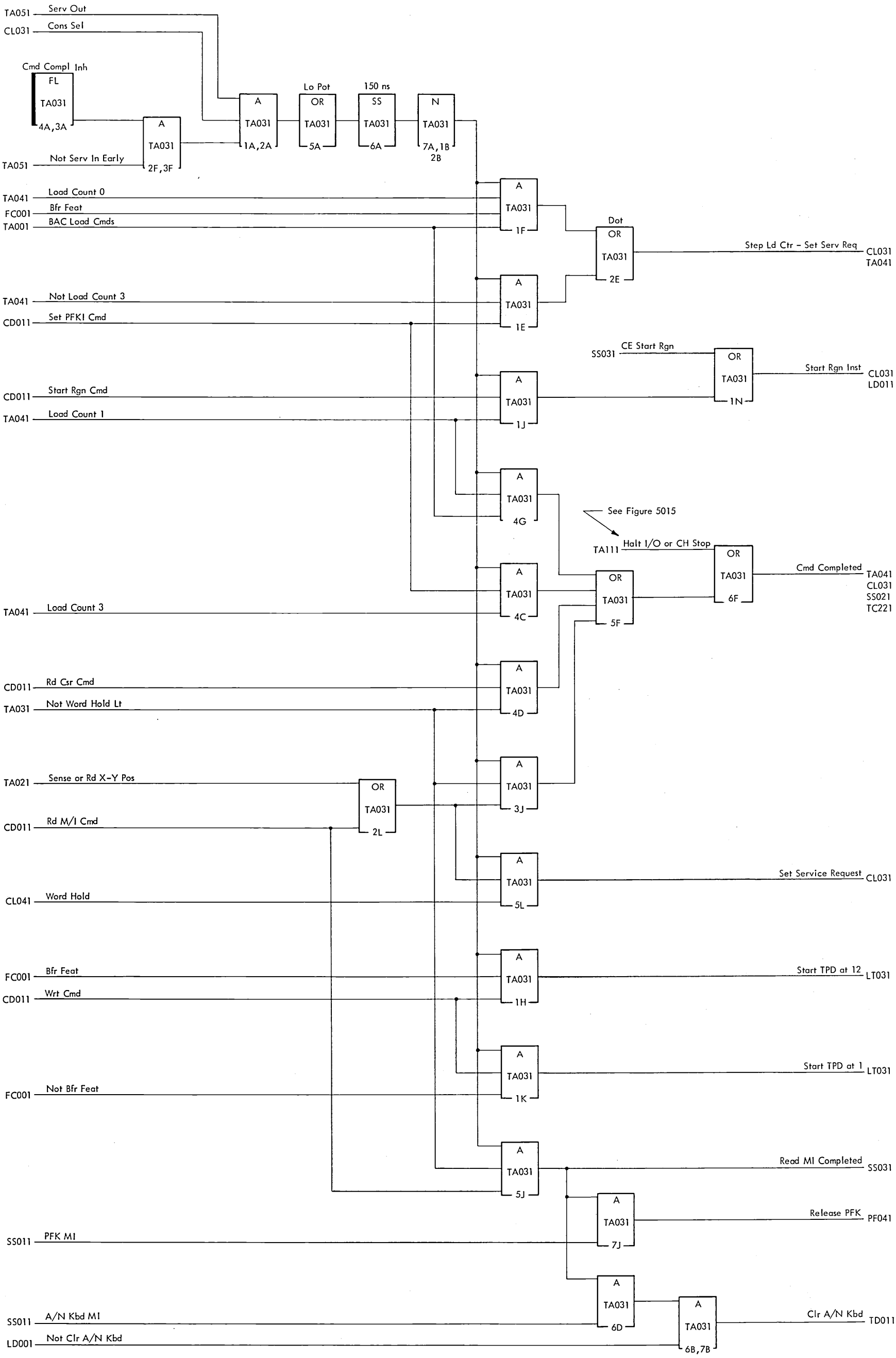

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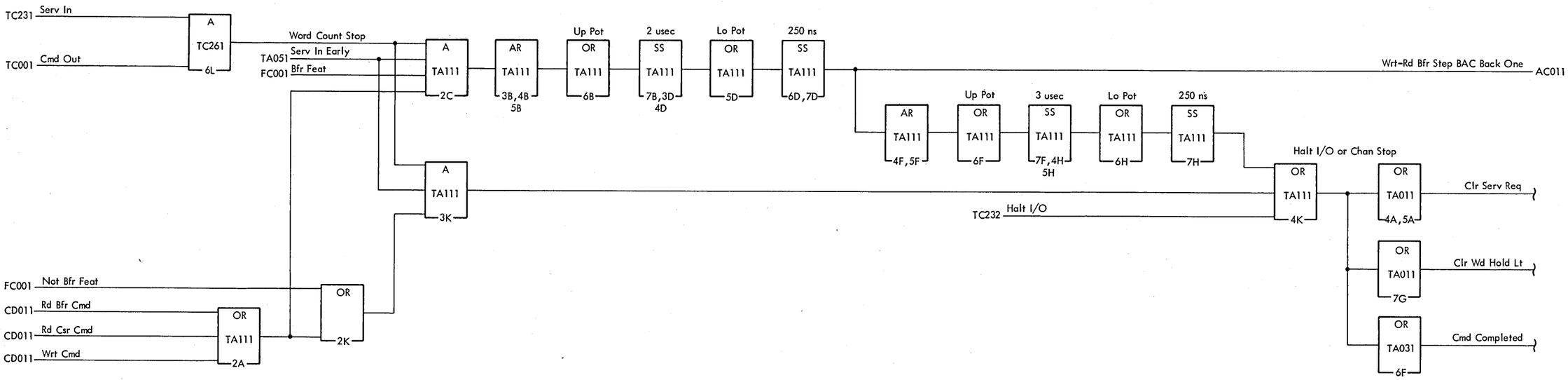

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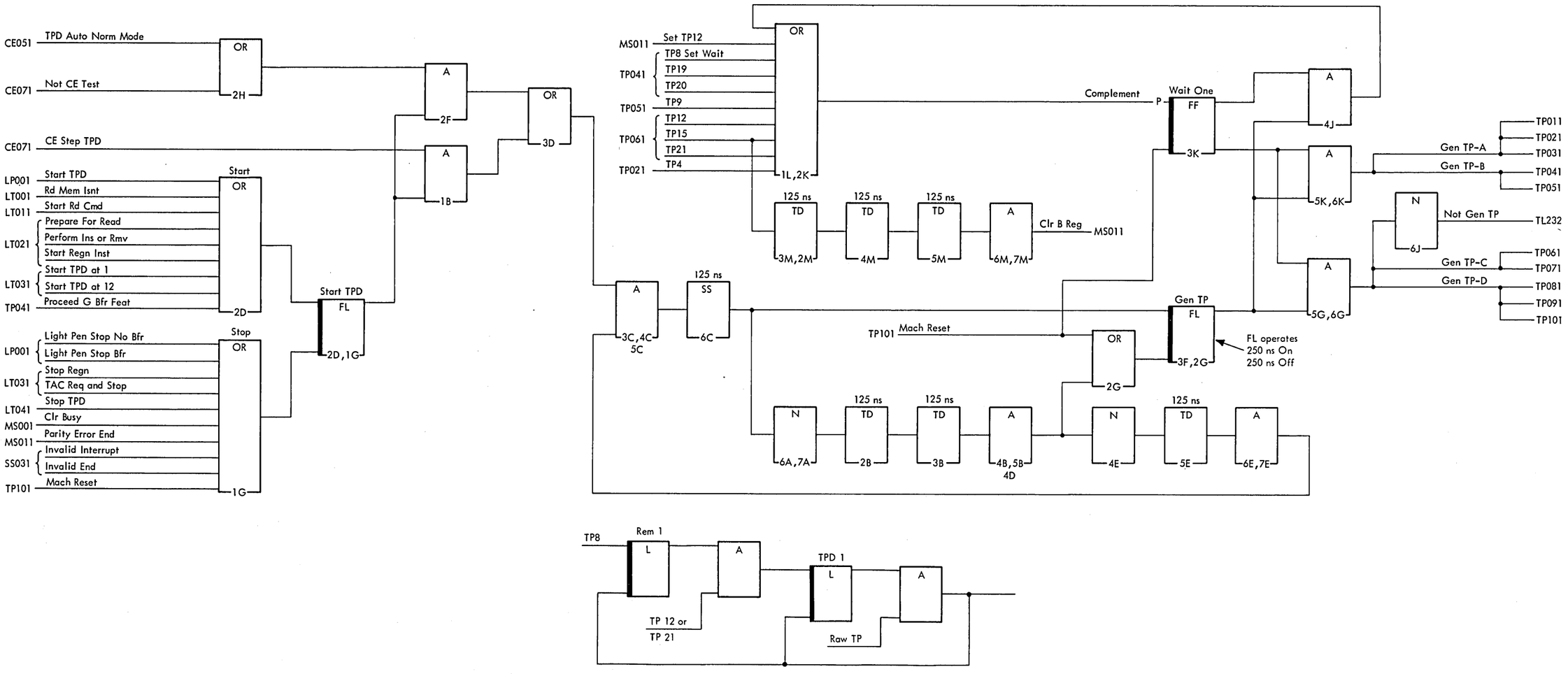

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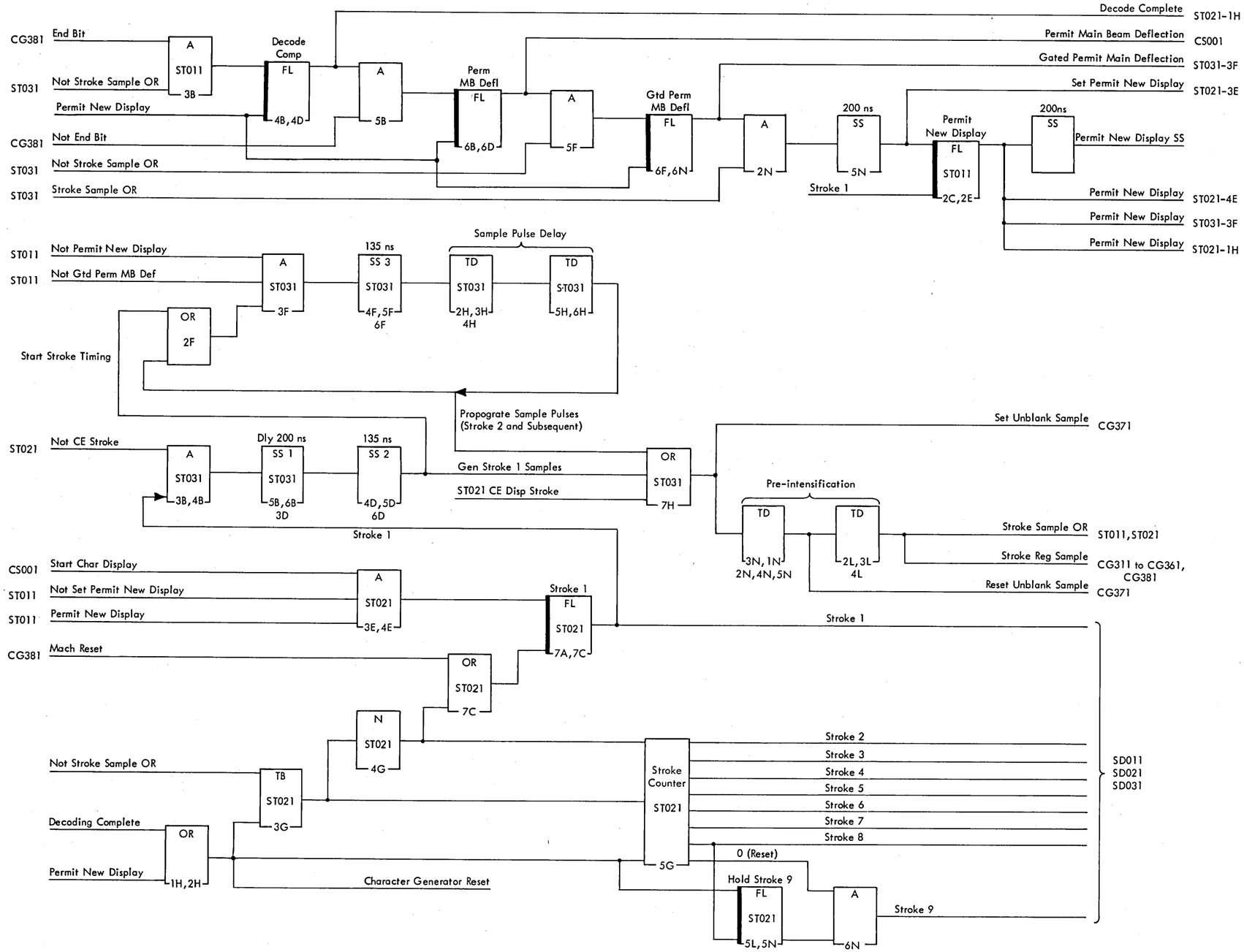

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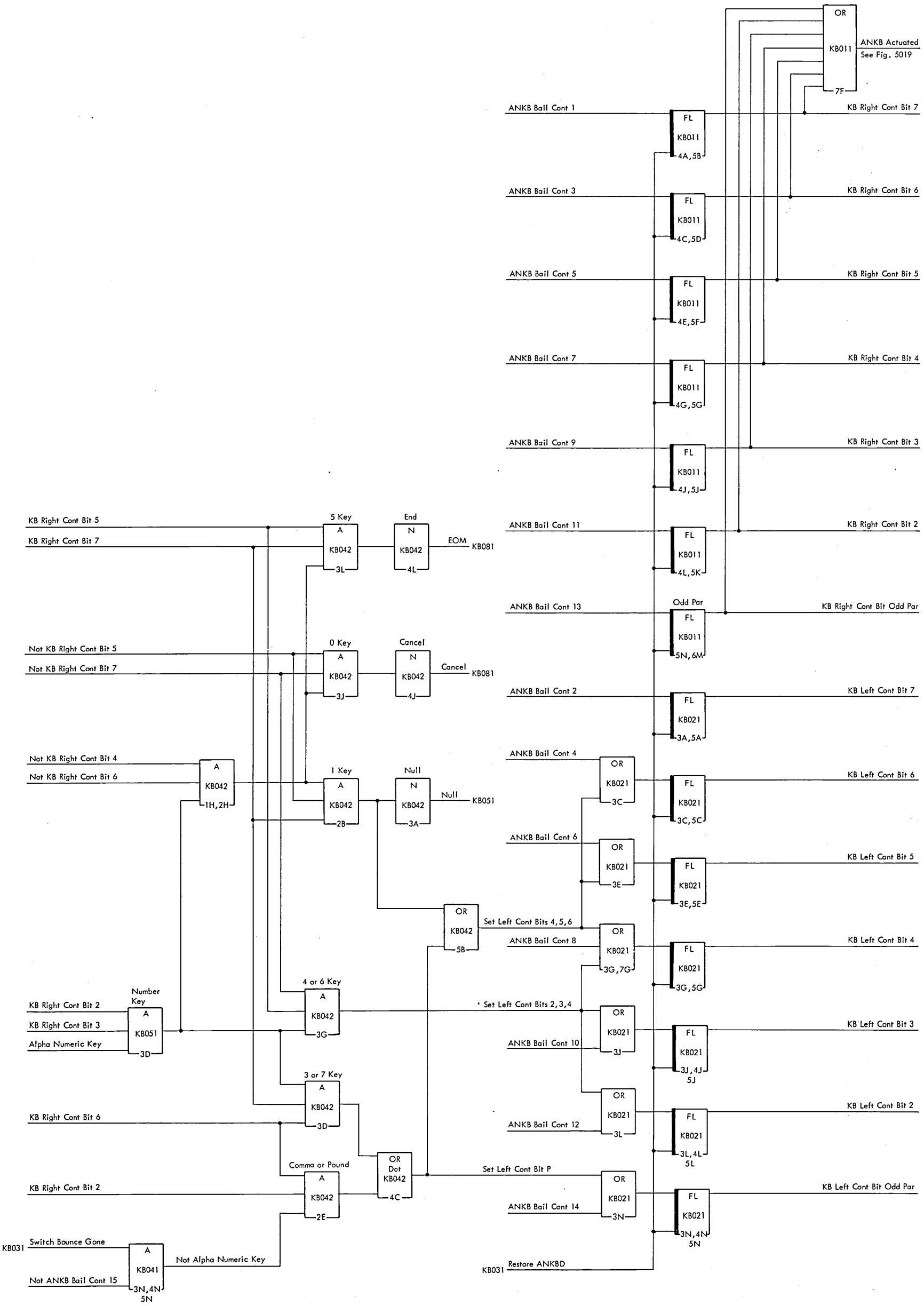

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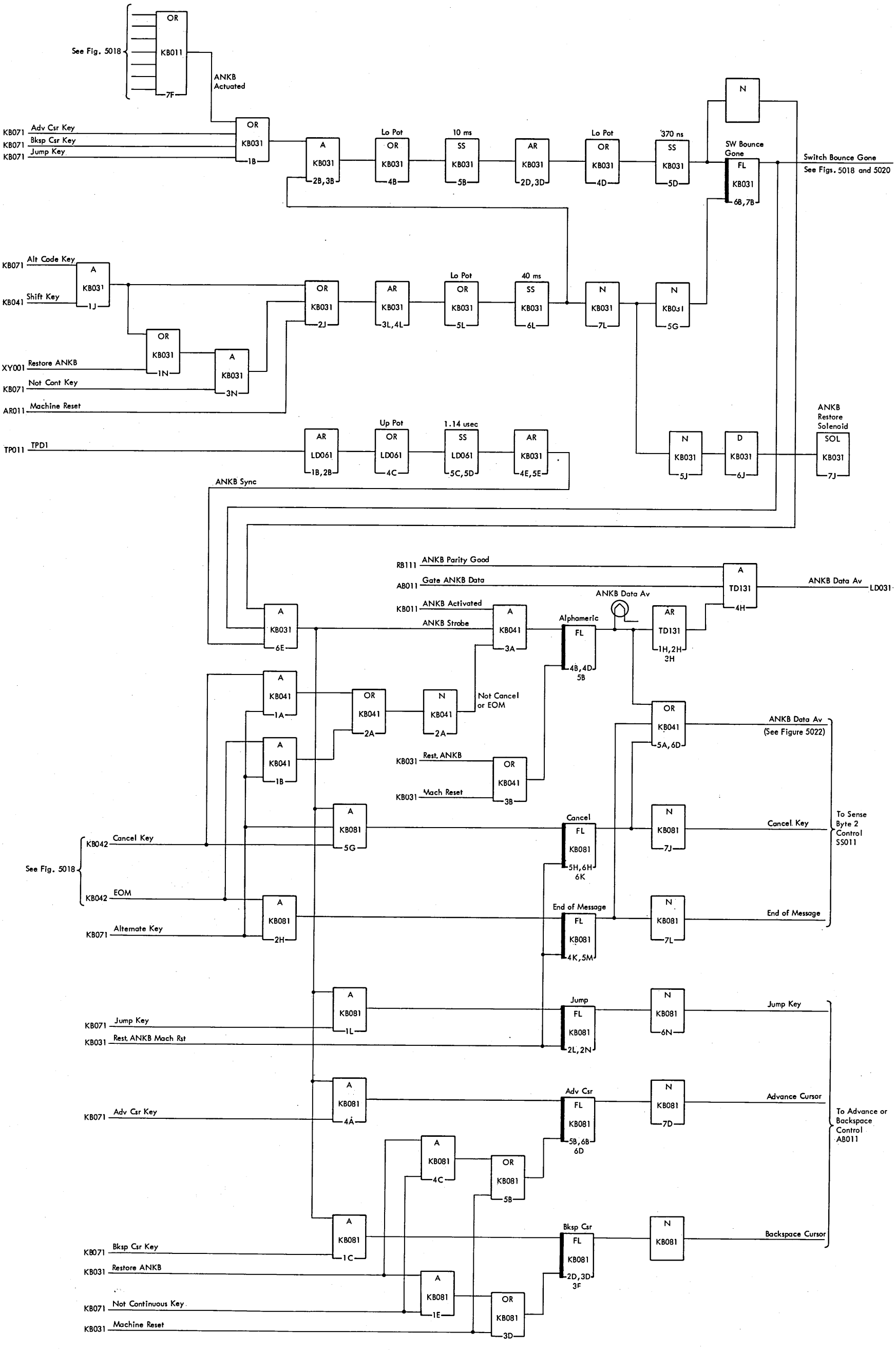

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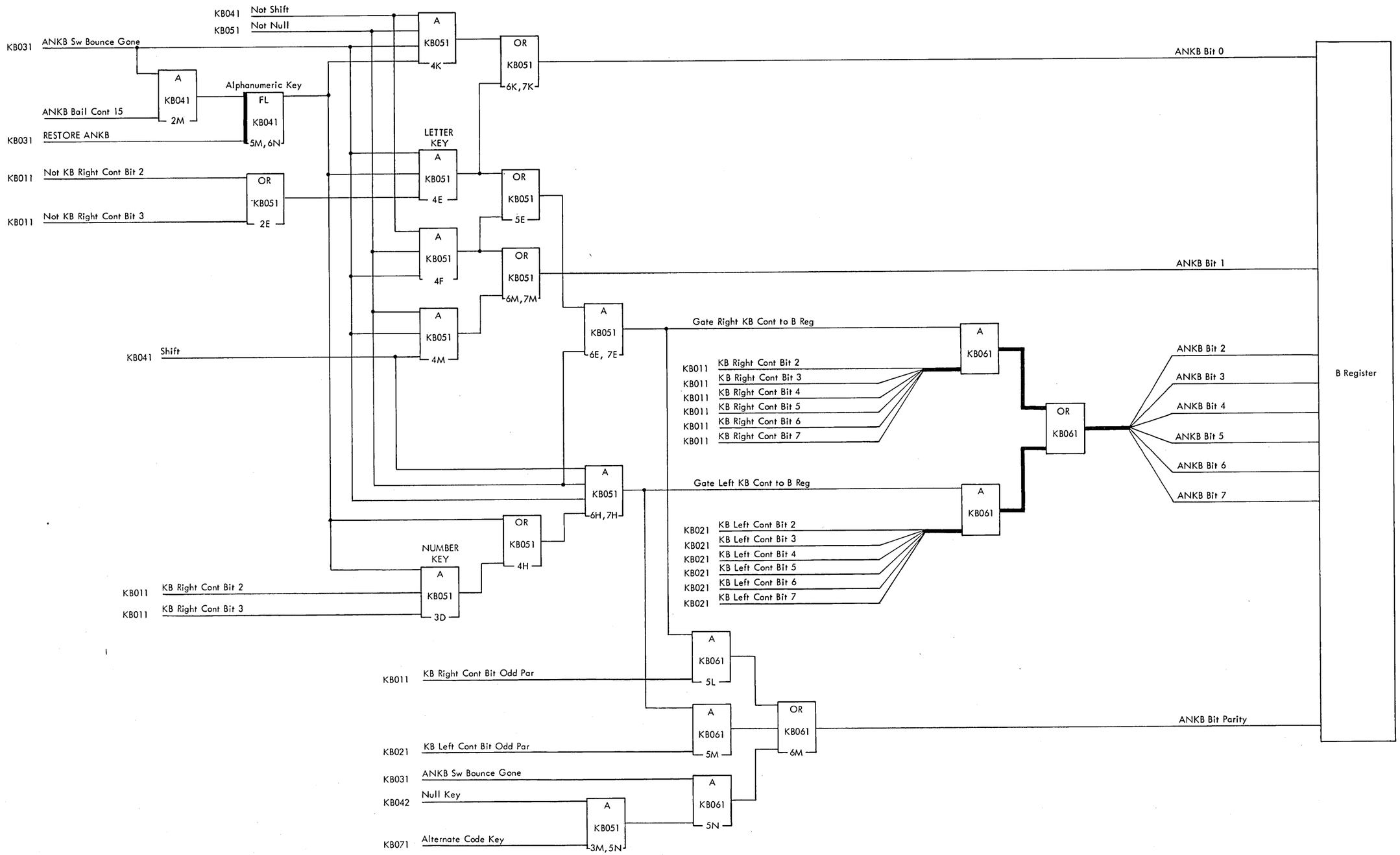

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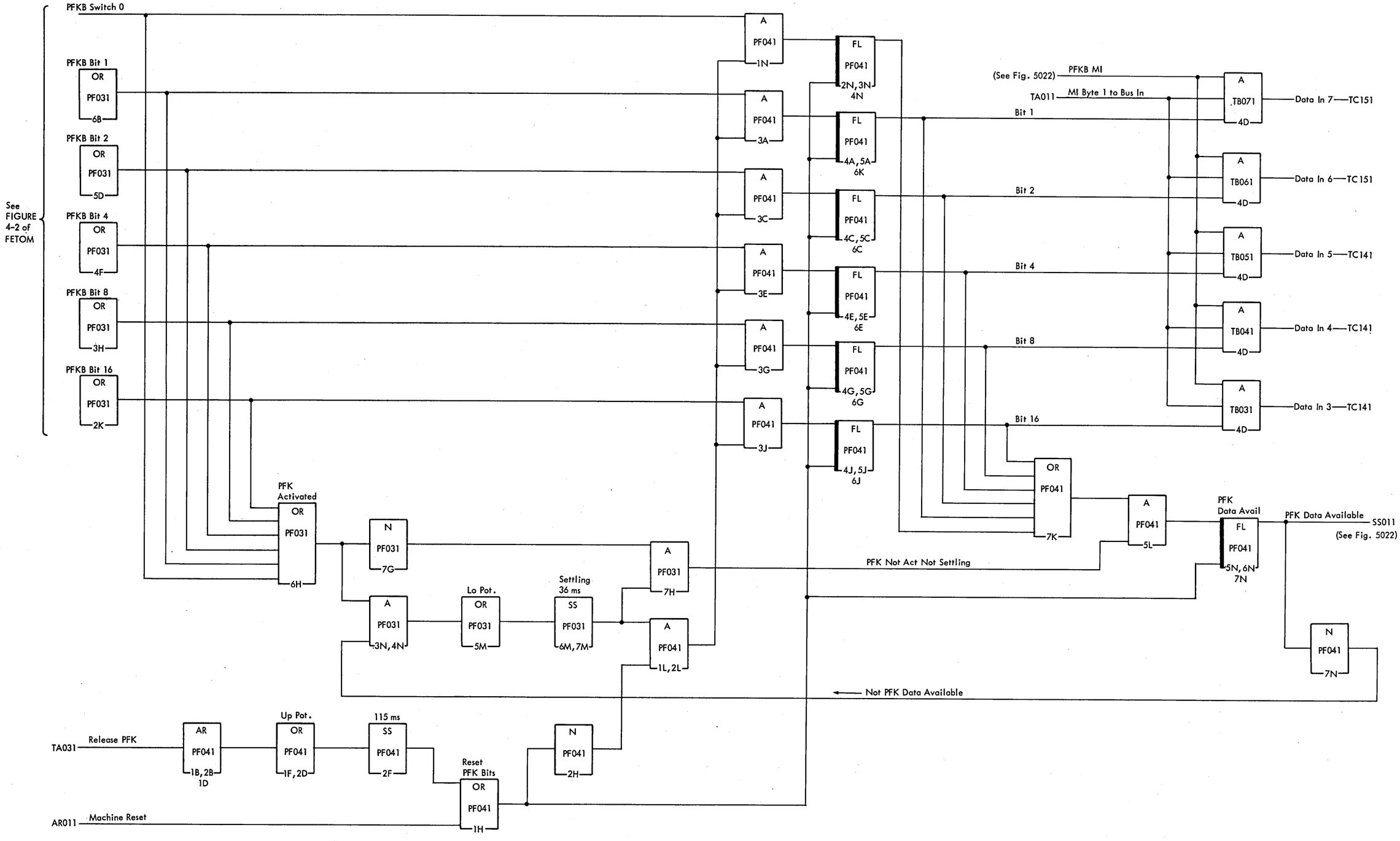

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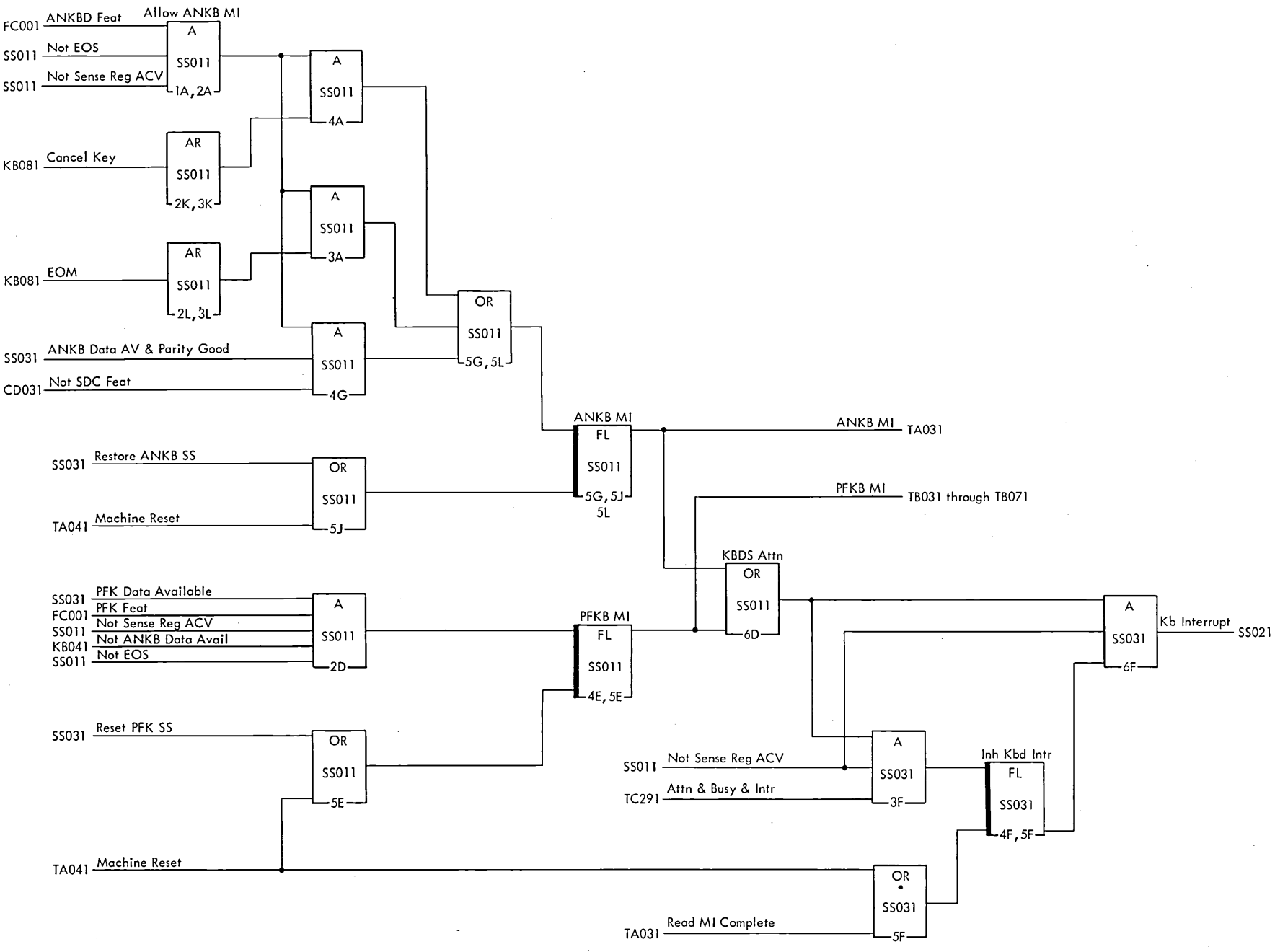

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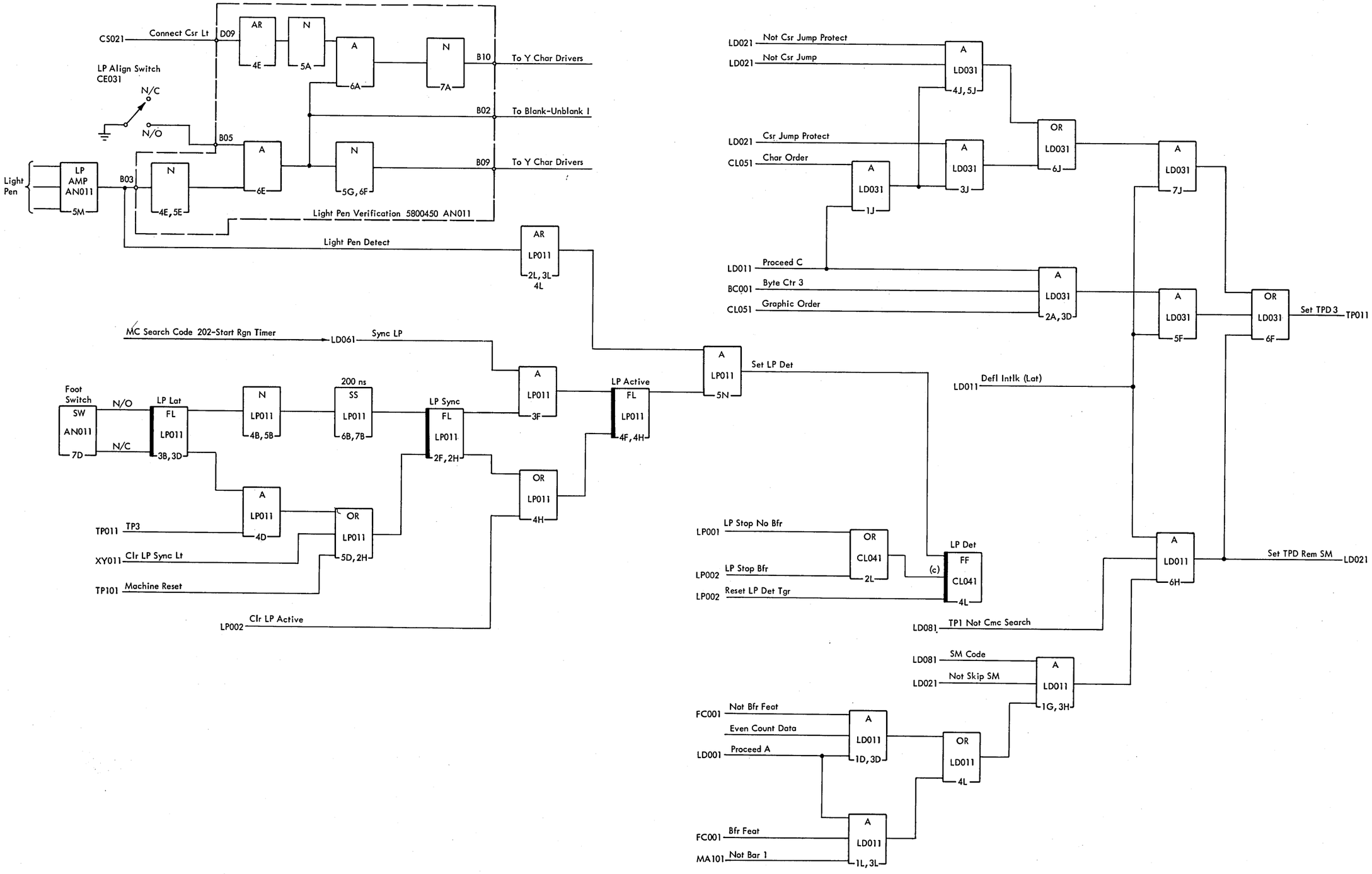

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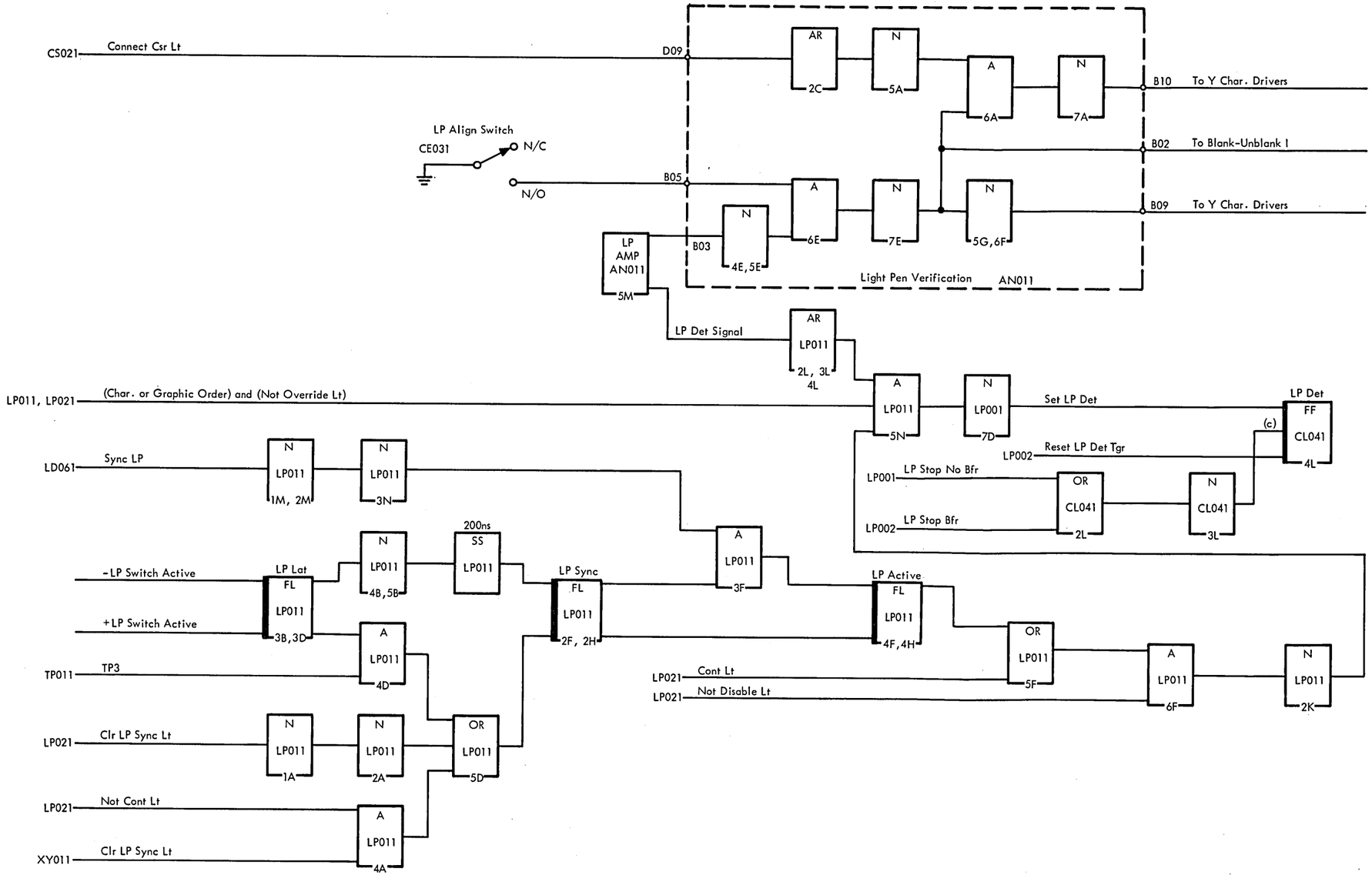


Figure 5023GDF. Light Pen Deflection (for GDF Machines)

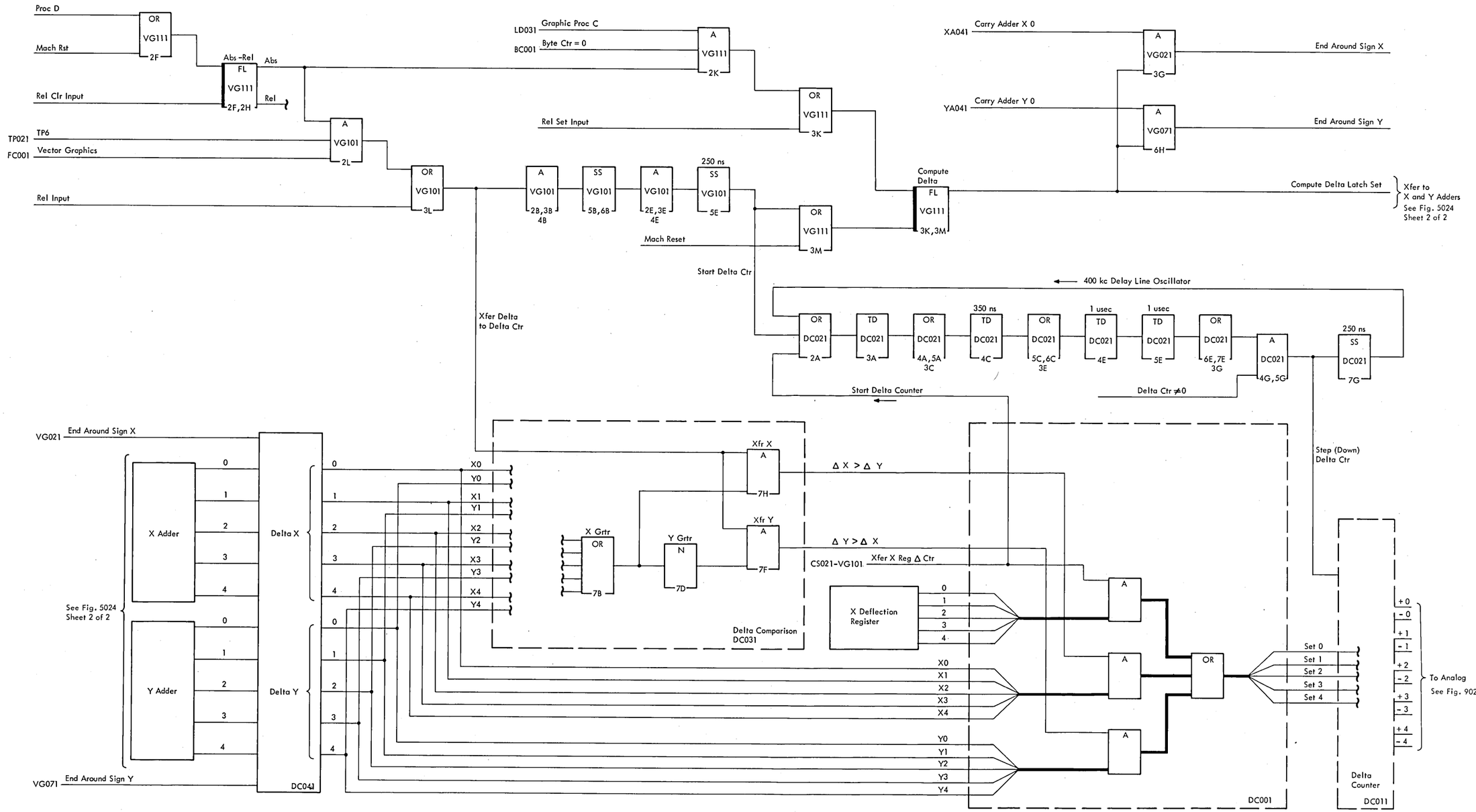
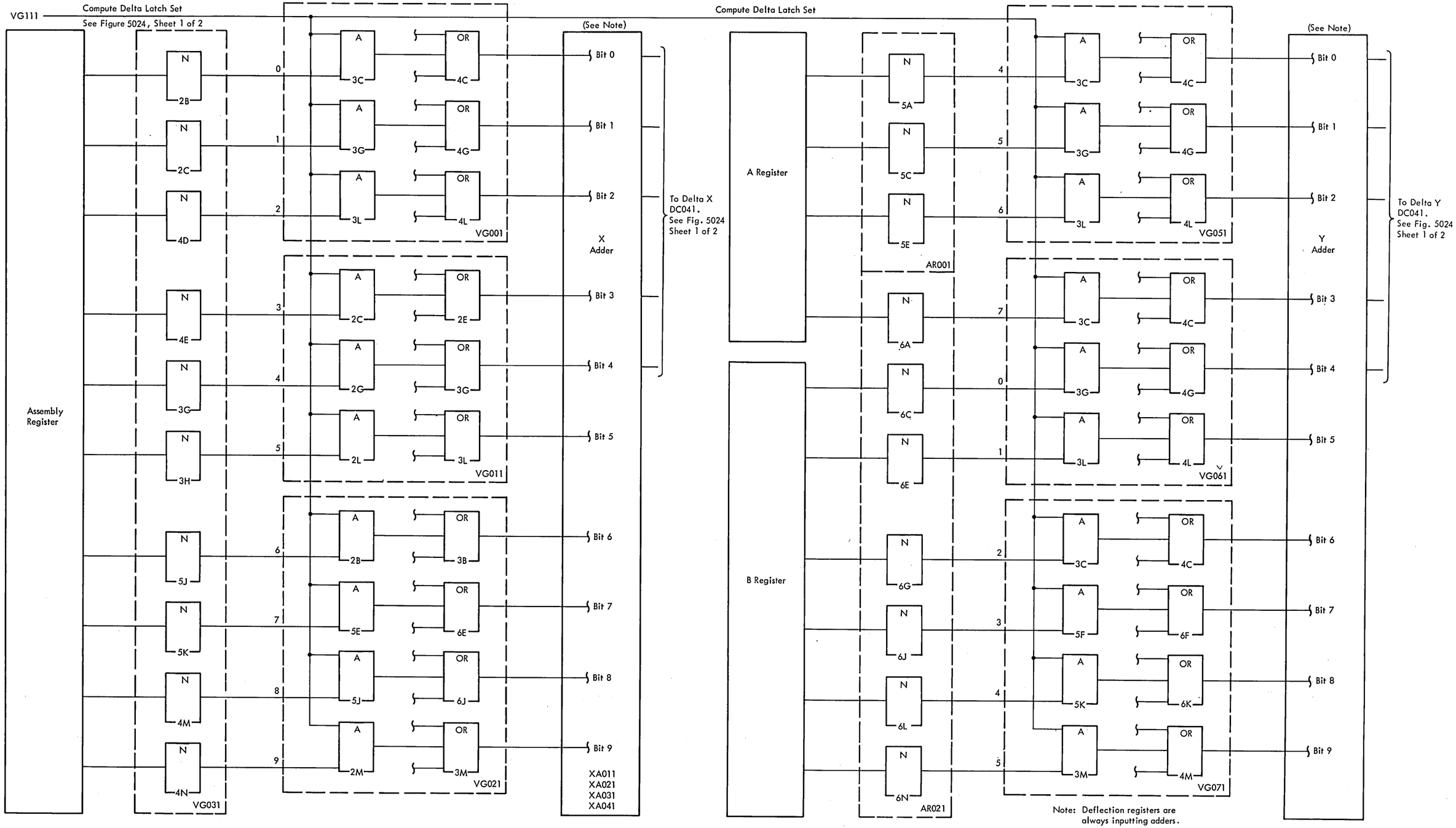


Figure 5024. Absolute Vector Graphics Control (Sheet 1 of 2)



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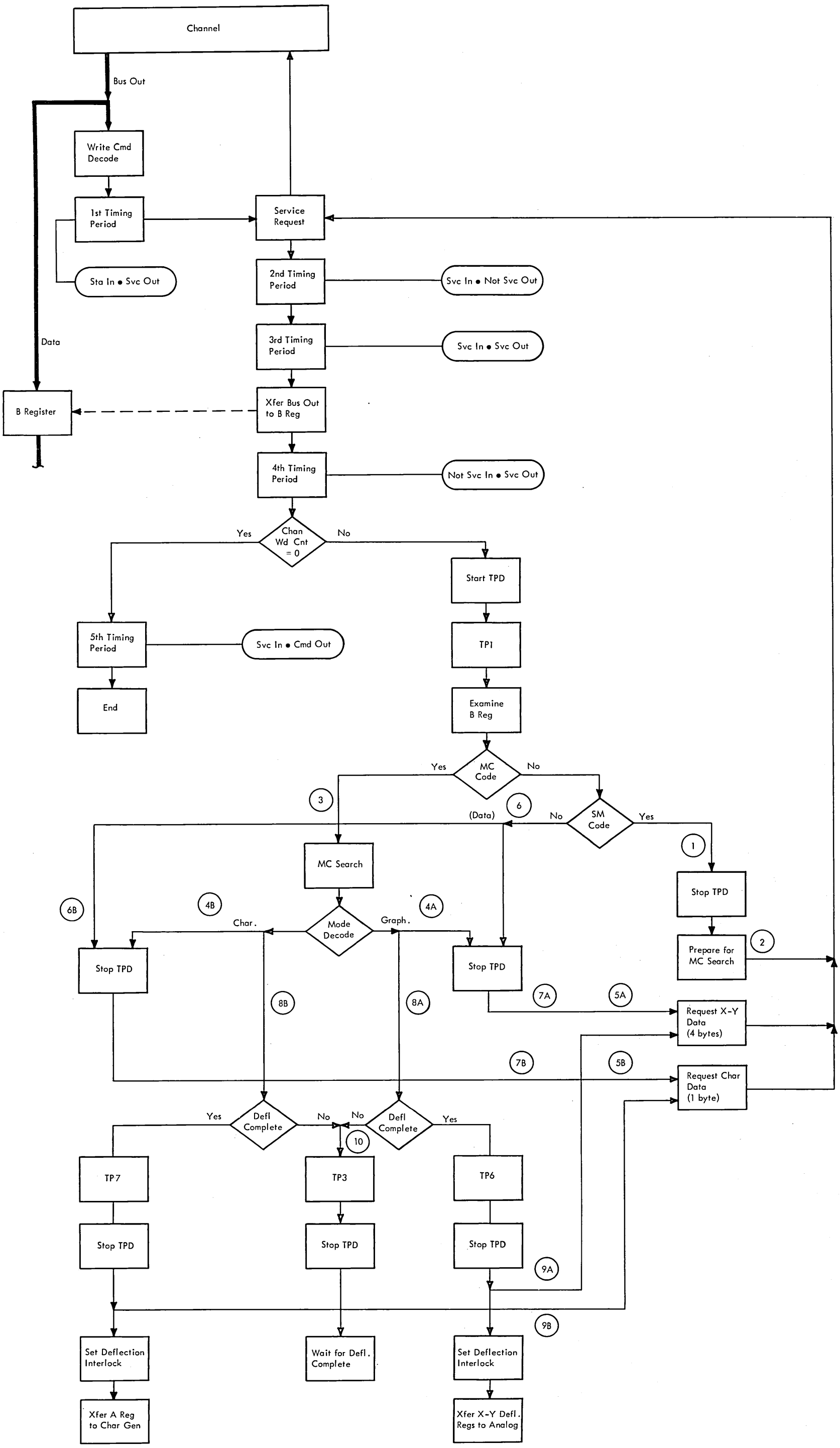


Figure 6000. Write Direct Command Process, Simplified Flow Chart

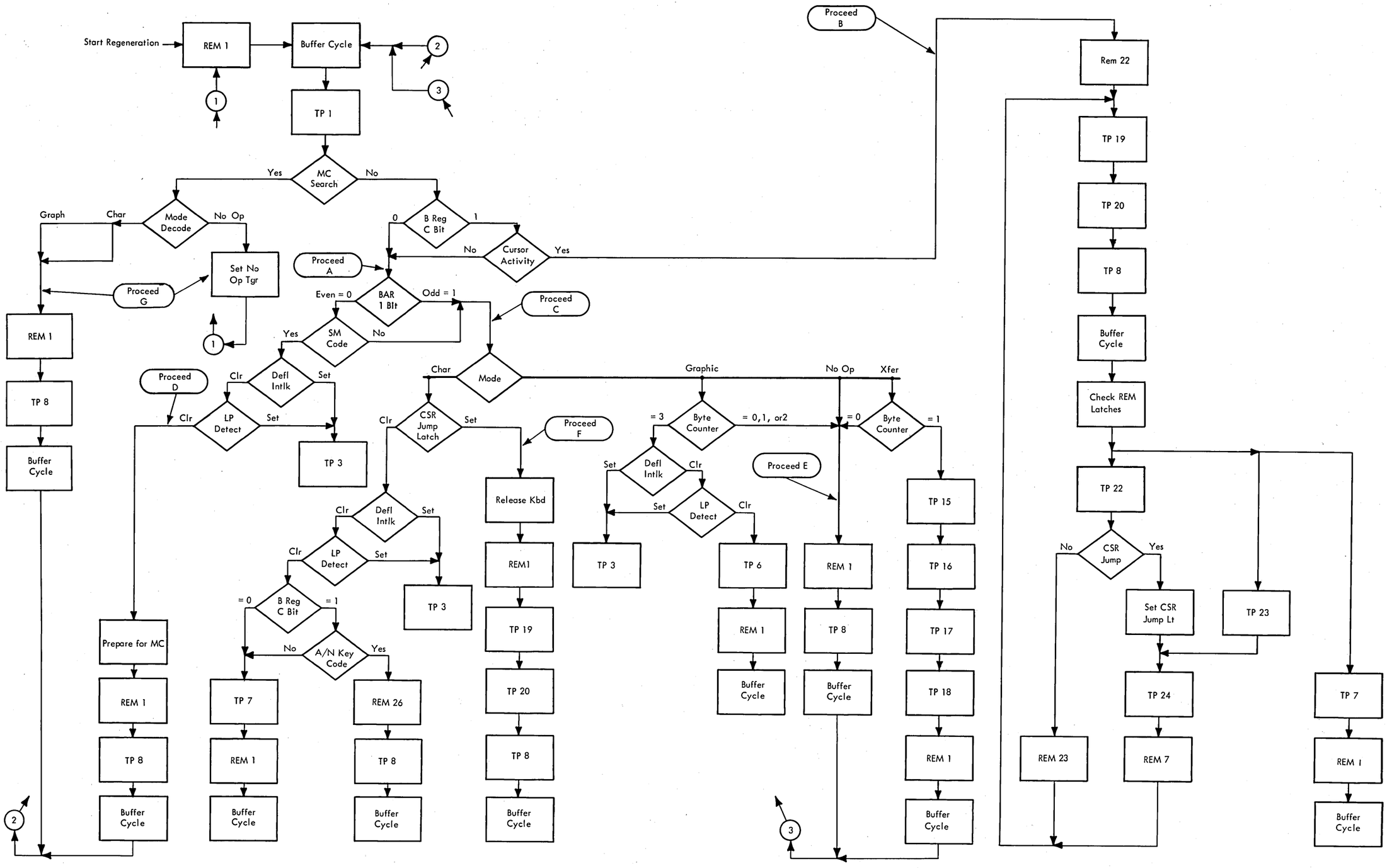


Figure 6001. Buffer Regeneration Timing Sequence, Simplified Flow Chart

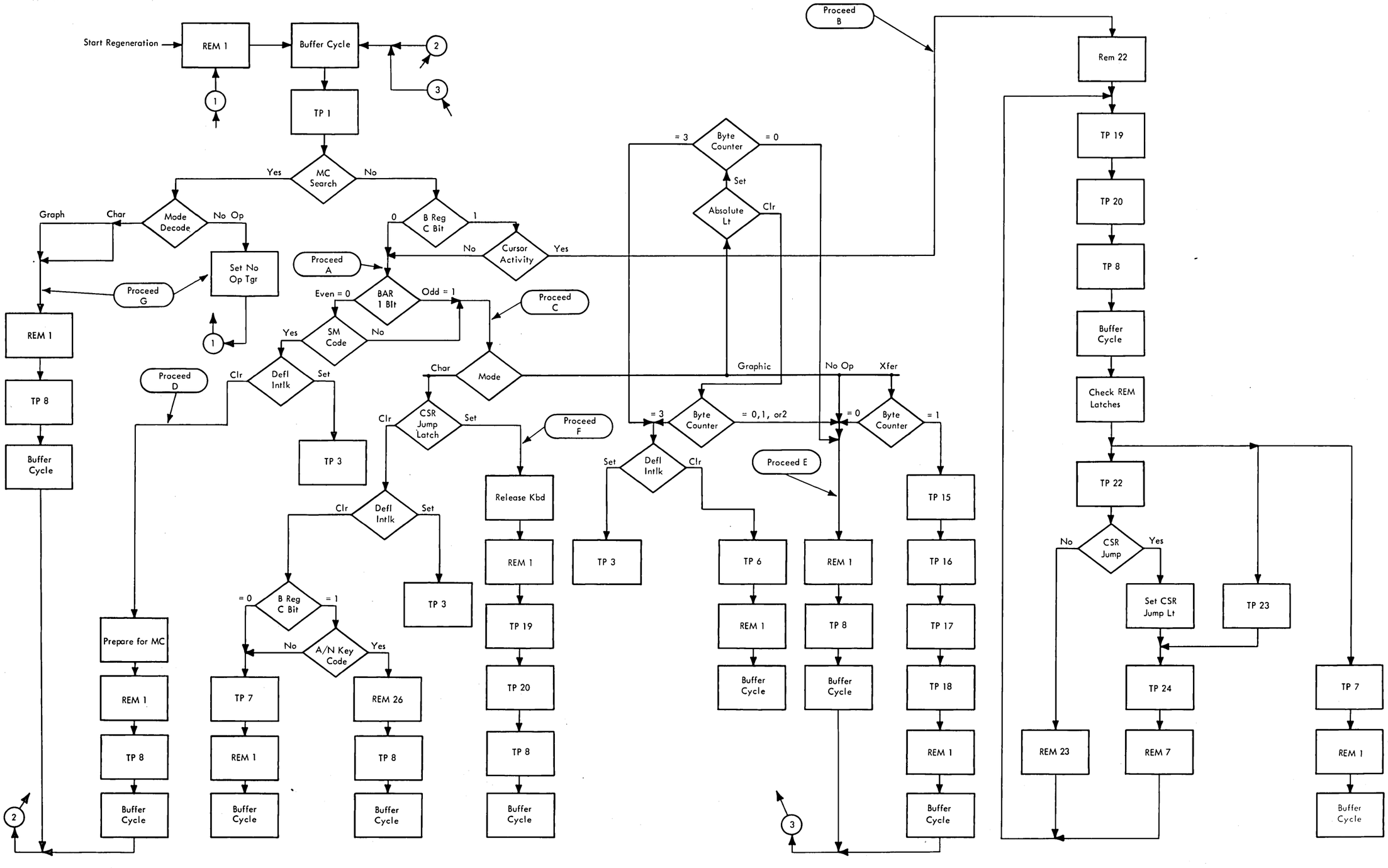


Figure 6001GDF. Buffer Regeneration Timing Sequence, Simplified Flow Chart (for GDF Machines)

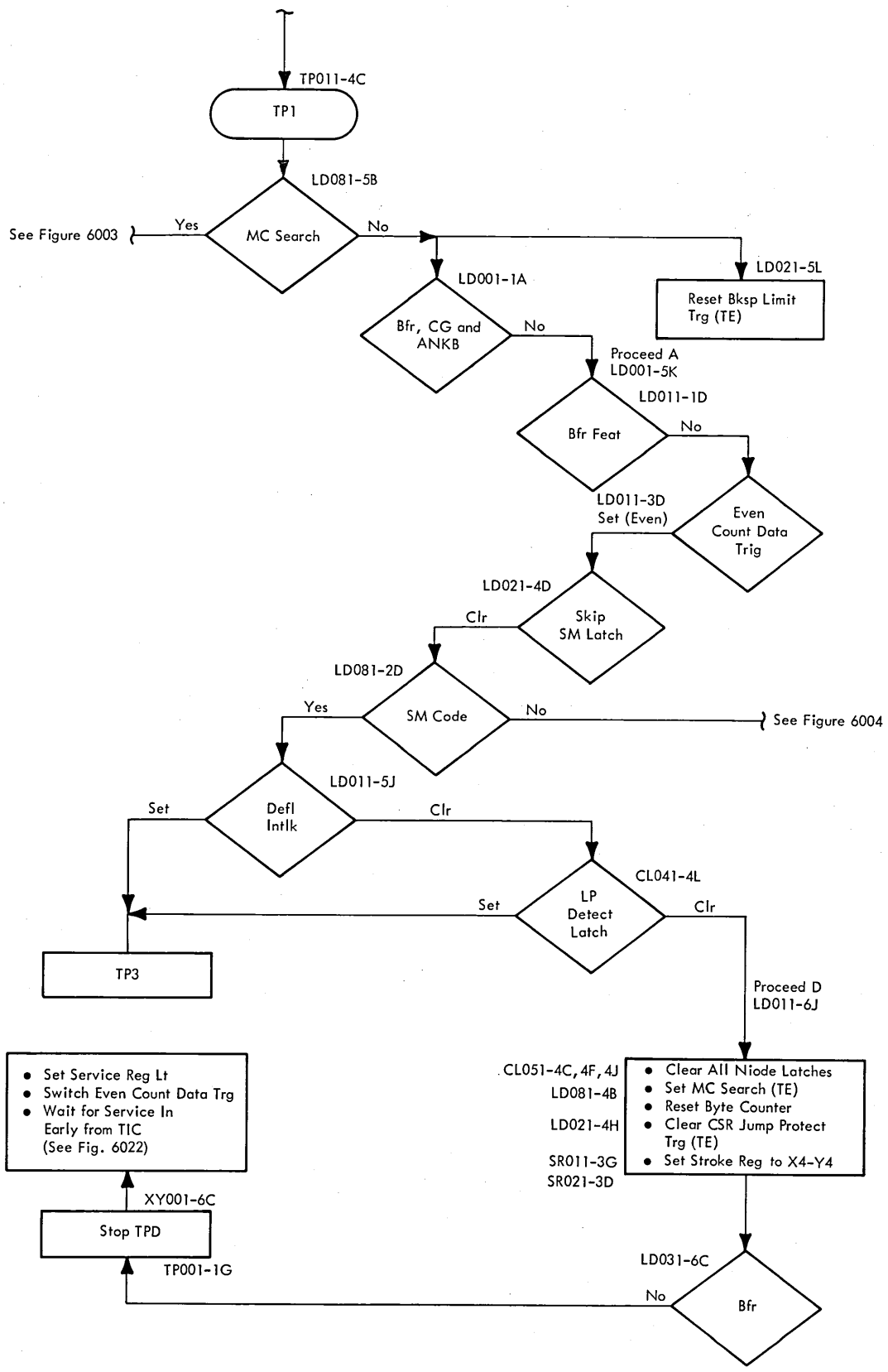


Figure 6002. SM Search-Write, No Buffer, Flow Chart

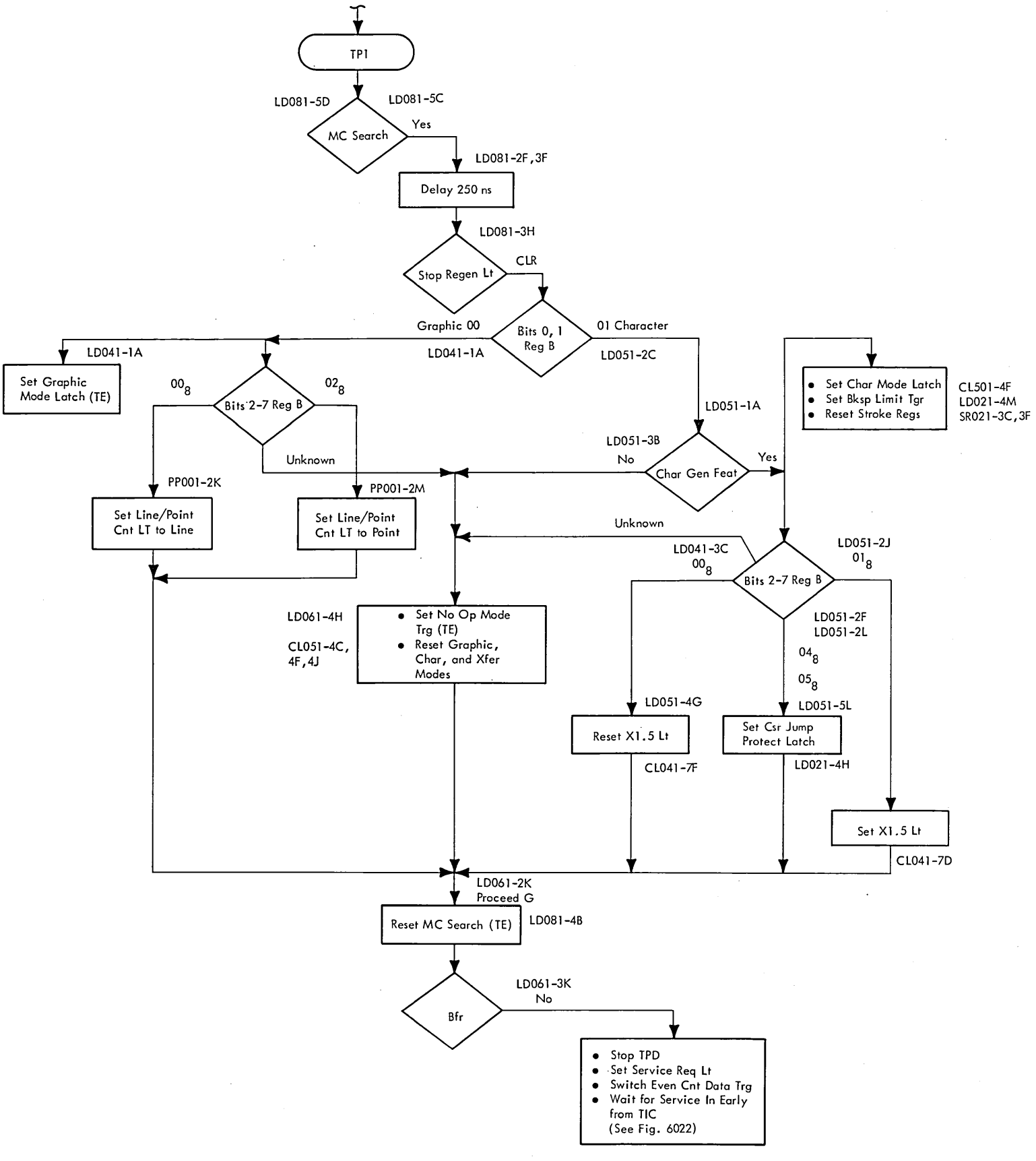


Figure 6003. MC Search-Write, No Buffer, Flow Chart

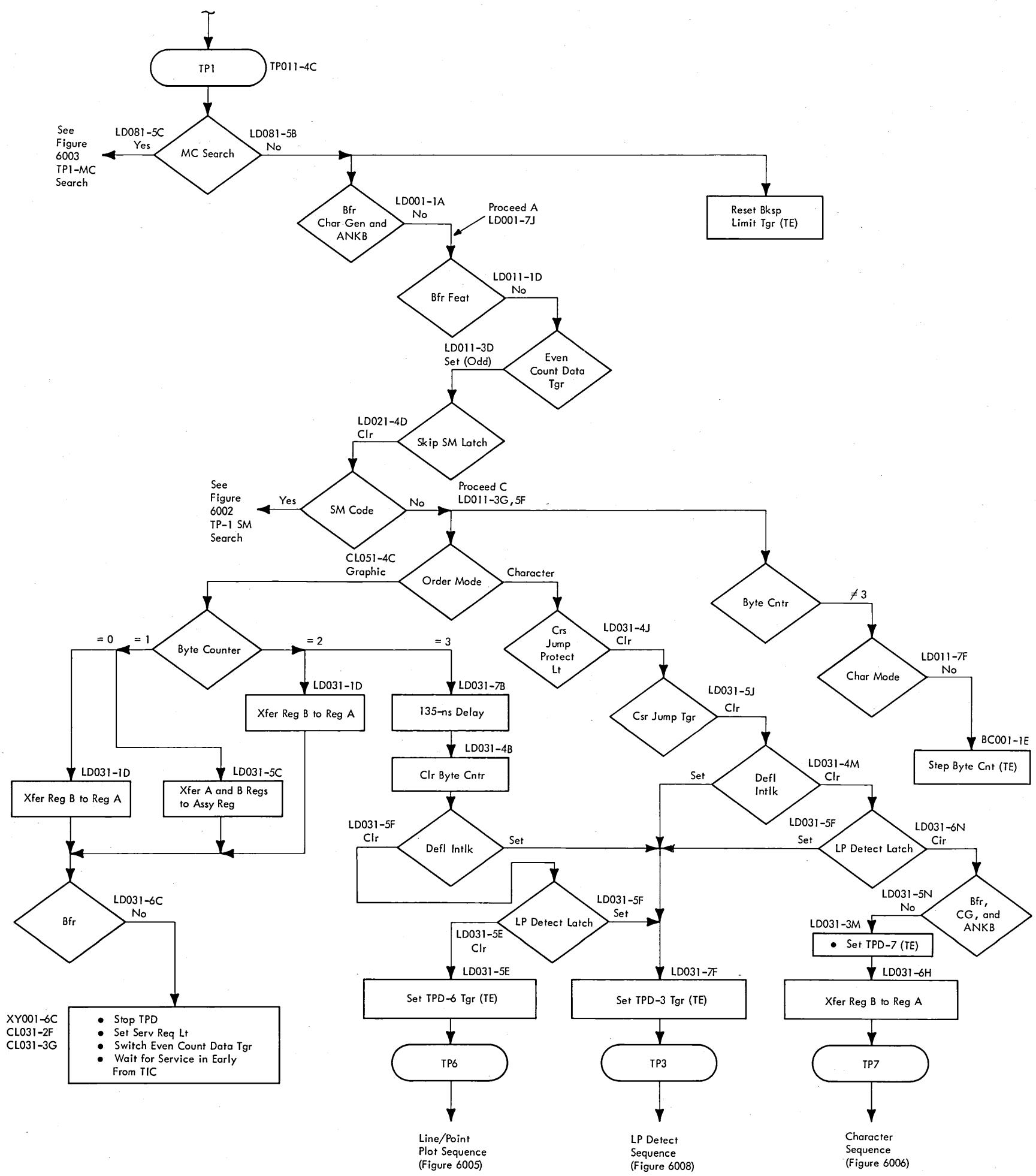


Figure 6004. Mode Sequence - Graphic or Character No Buffer, Flow Chart

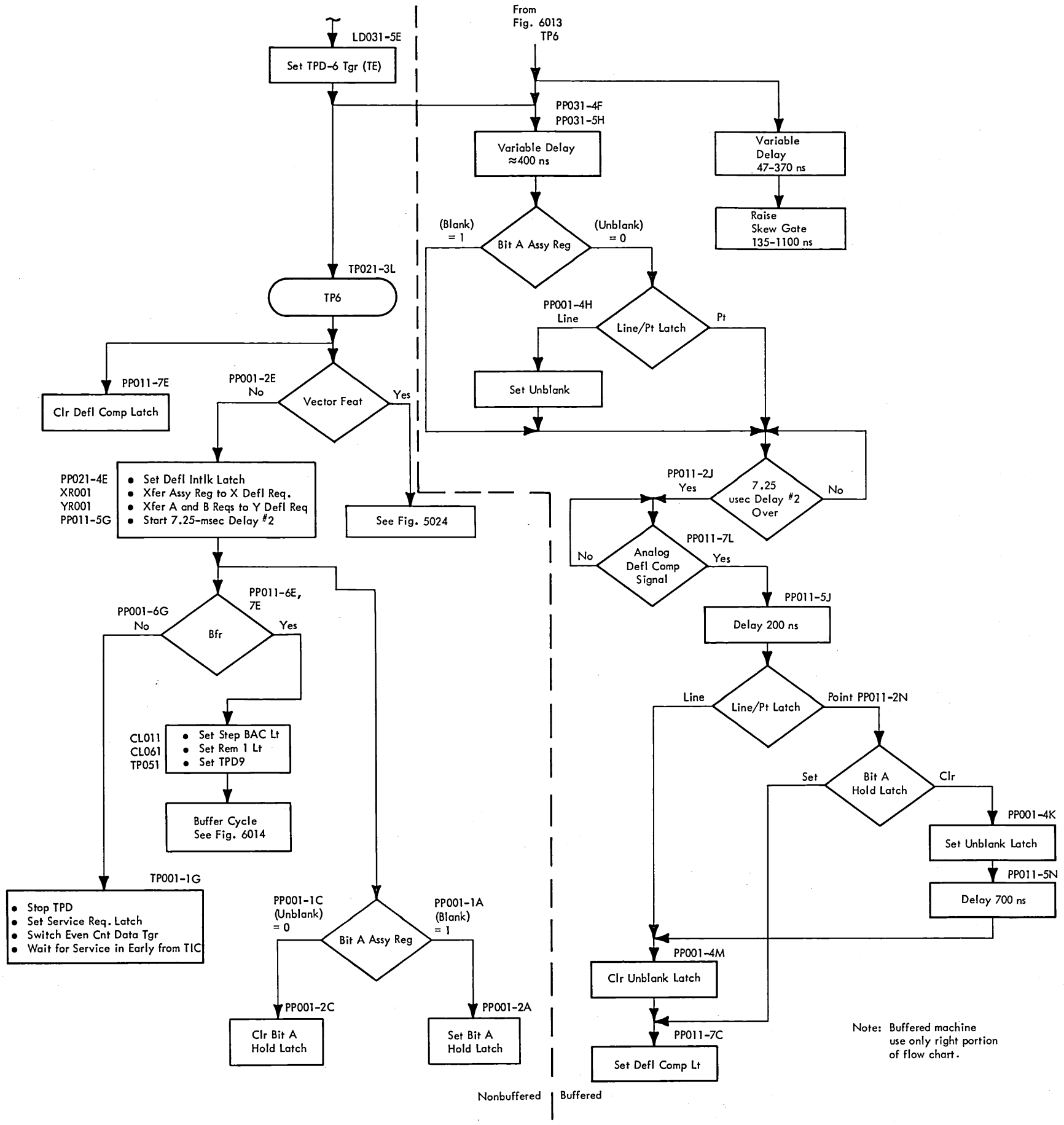


Figure 6005. Line/Point Sequence, Flow Chart

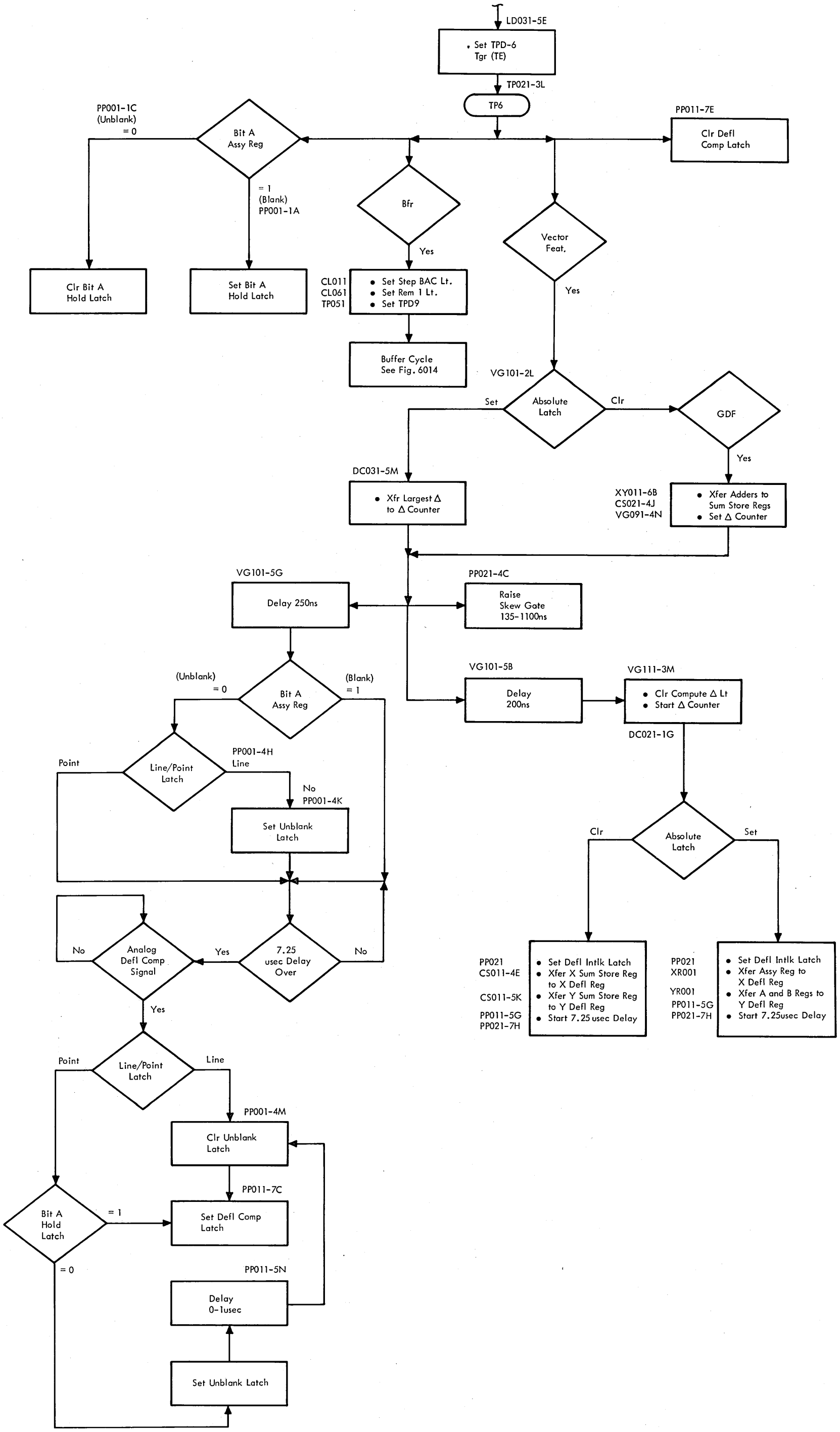


Figure 6005GDF. Line/Point Sequence, Flow Chart (for GDF Machines)

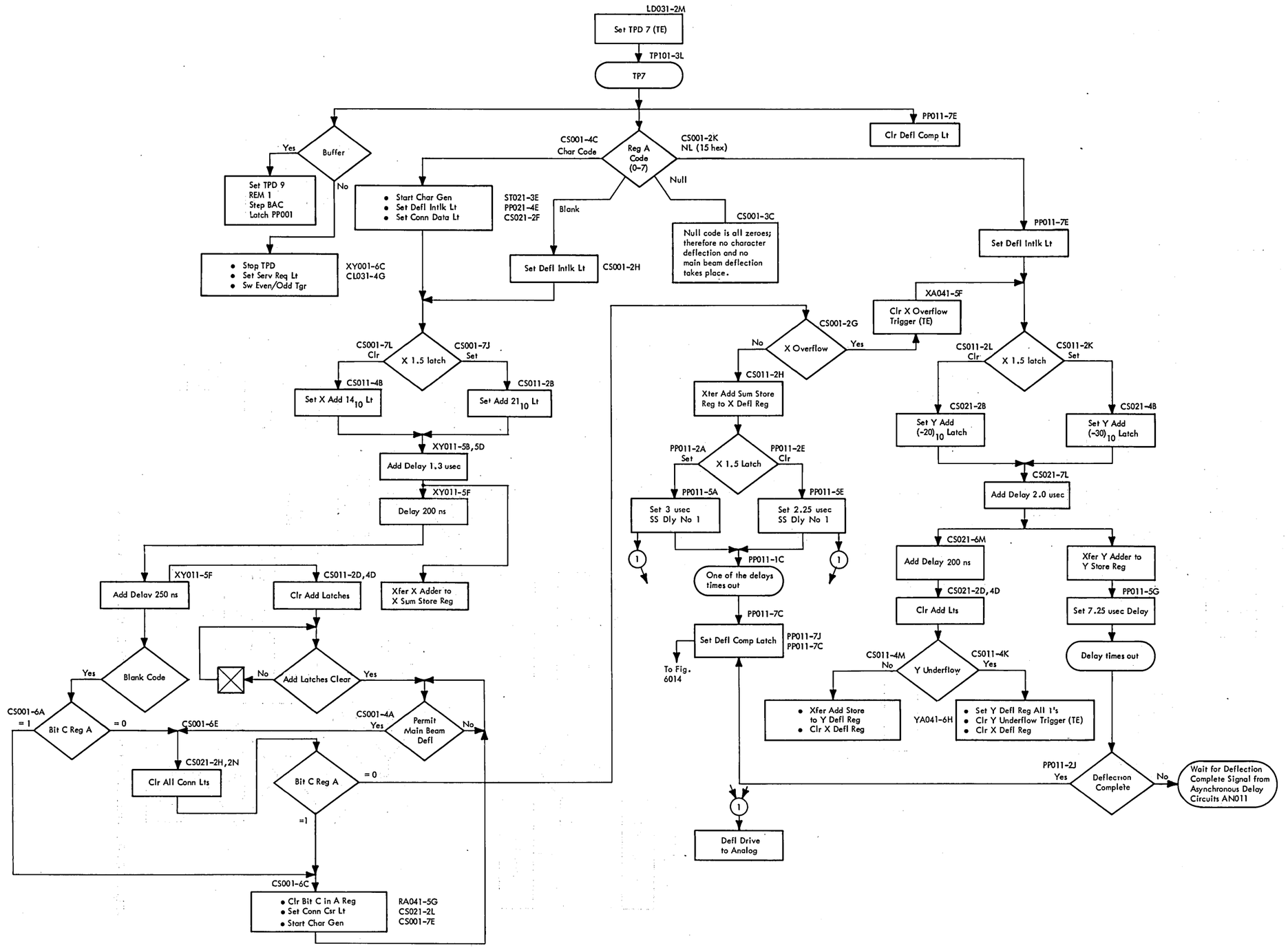
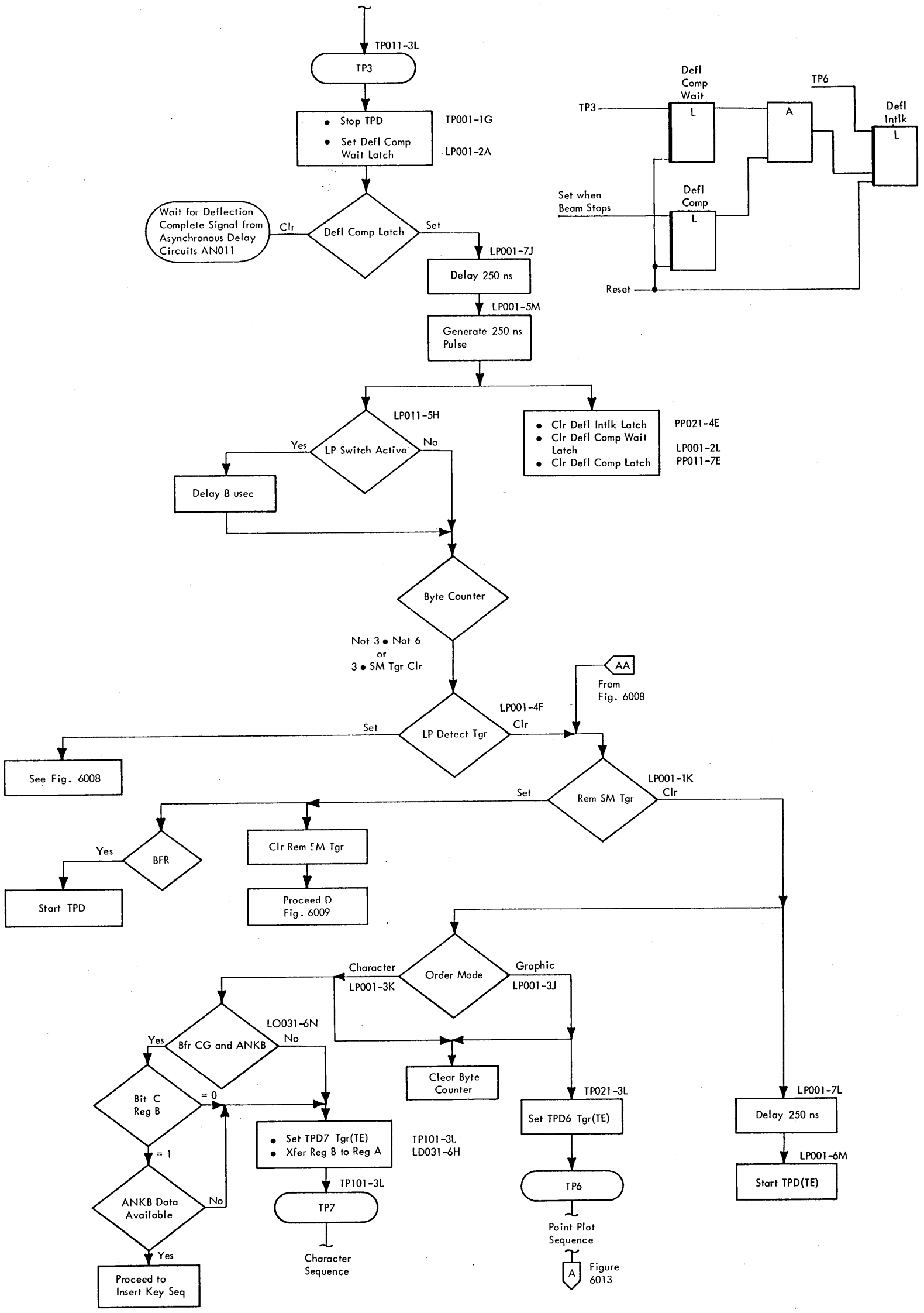


Figure 6006. Character Sequence, Flow Chart



•Figure 6007. Deflection Interlock Wait (No LP Detect) Flow Chart

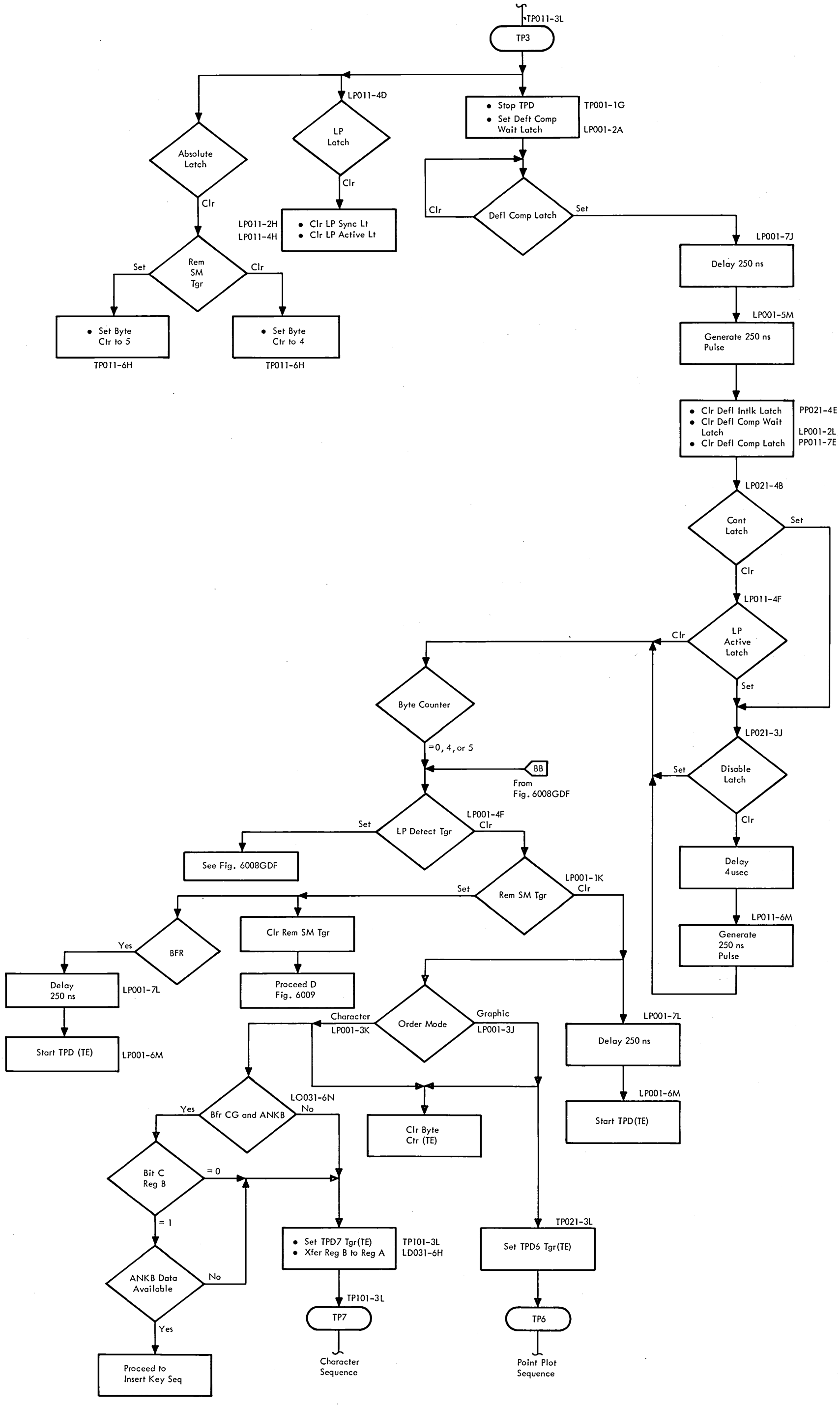


Figure 6007GDF. Deflection Interlock Wait (No LP Detect) Flow Chart (for GDF Machines)

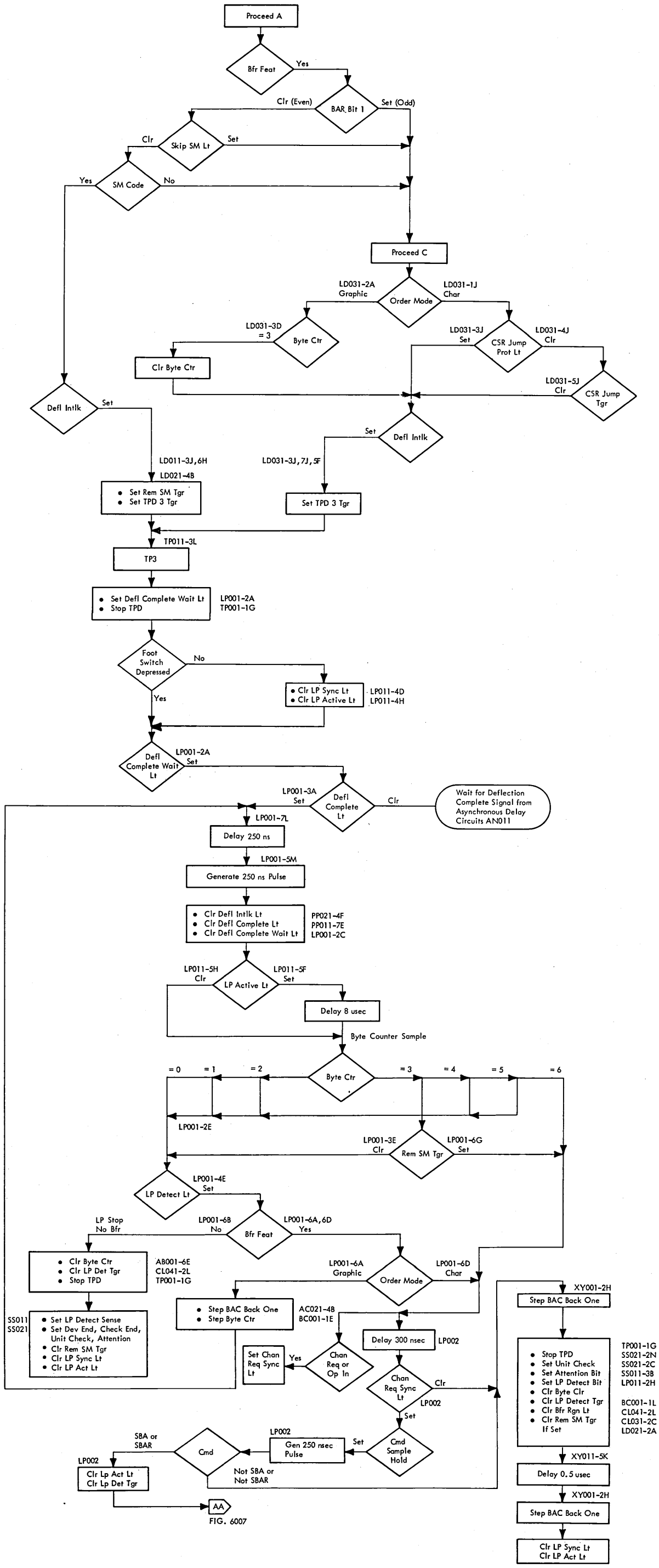


Figure 6008. Light Pen Detection Process, Flow Chart

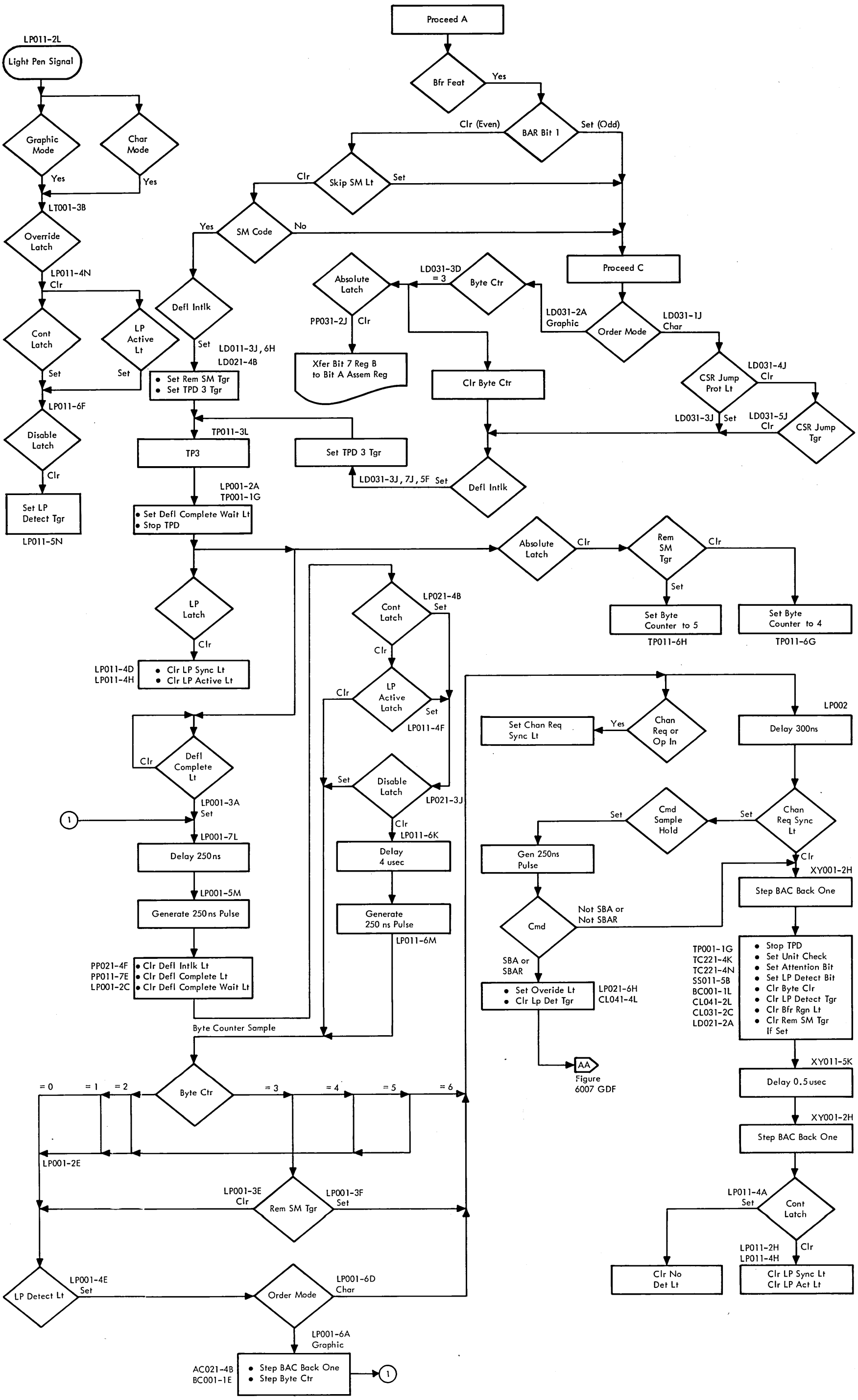
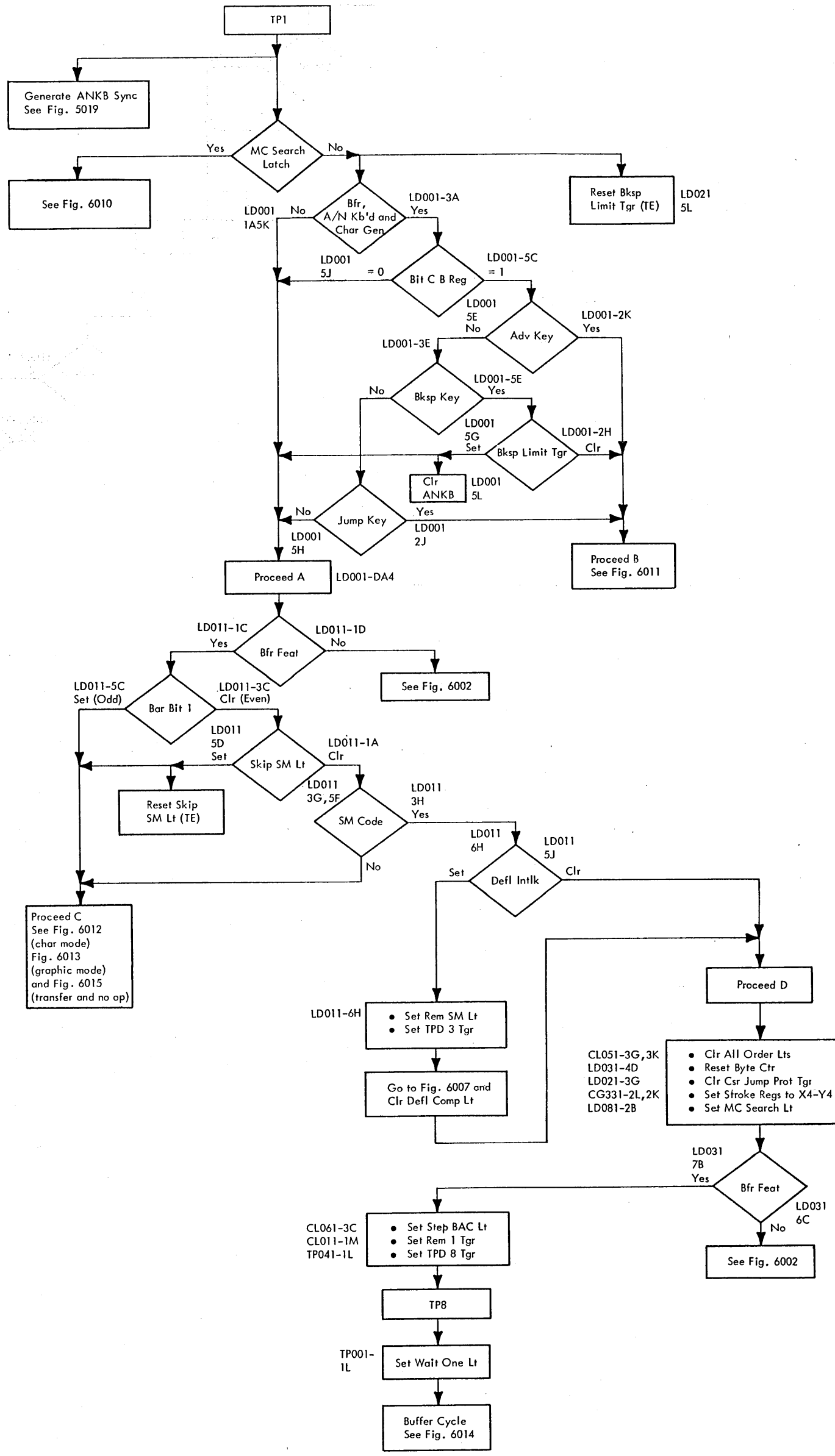


Figure 6008GDF. Light Pen Detection Process, Flow Chart (for GDF Machines)



•Figure 6009. Buffer Regeneration, Proceed A and Proceed D, SM Search, Flow Chart

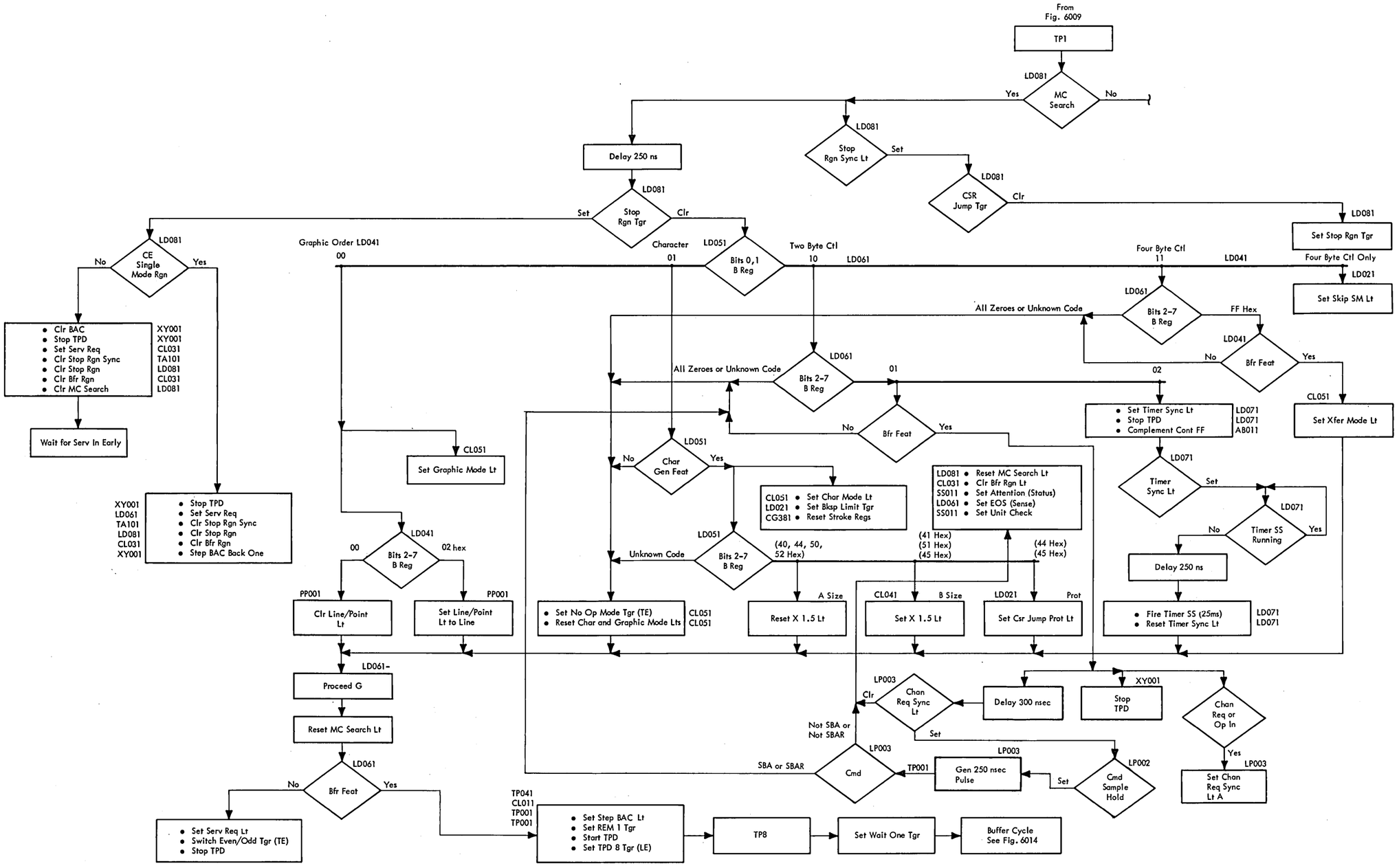


Figure 6010. Buffer Regeneration, MC Search and Proceed G, Flow Chart

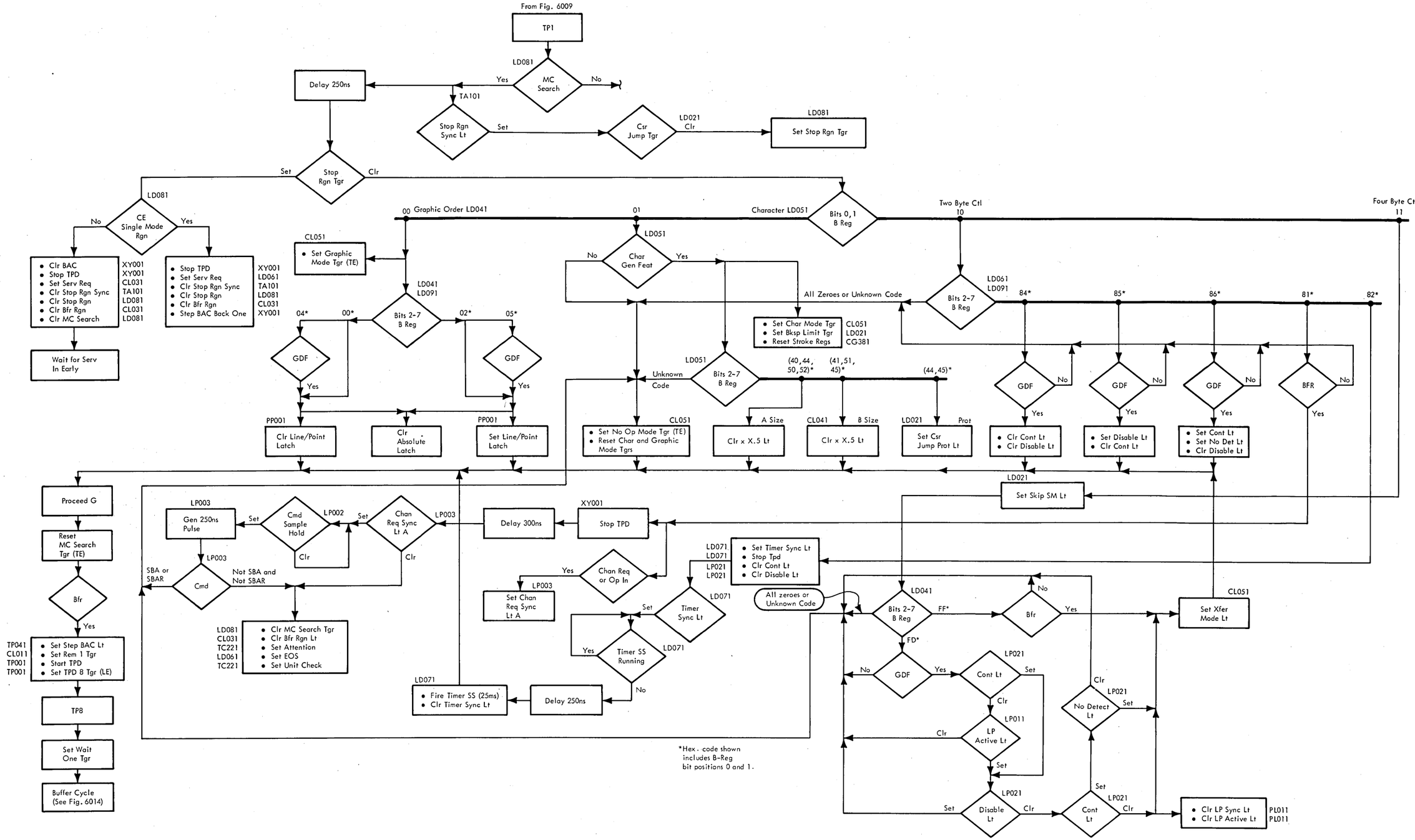


Figure 6010GDF. Buffer Regeneration, MC Search and Proceed G, Flow Chart (for GDF Machines)

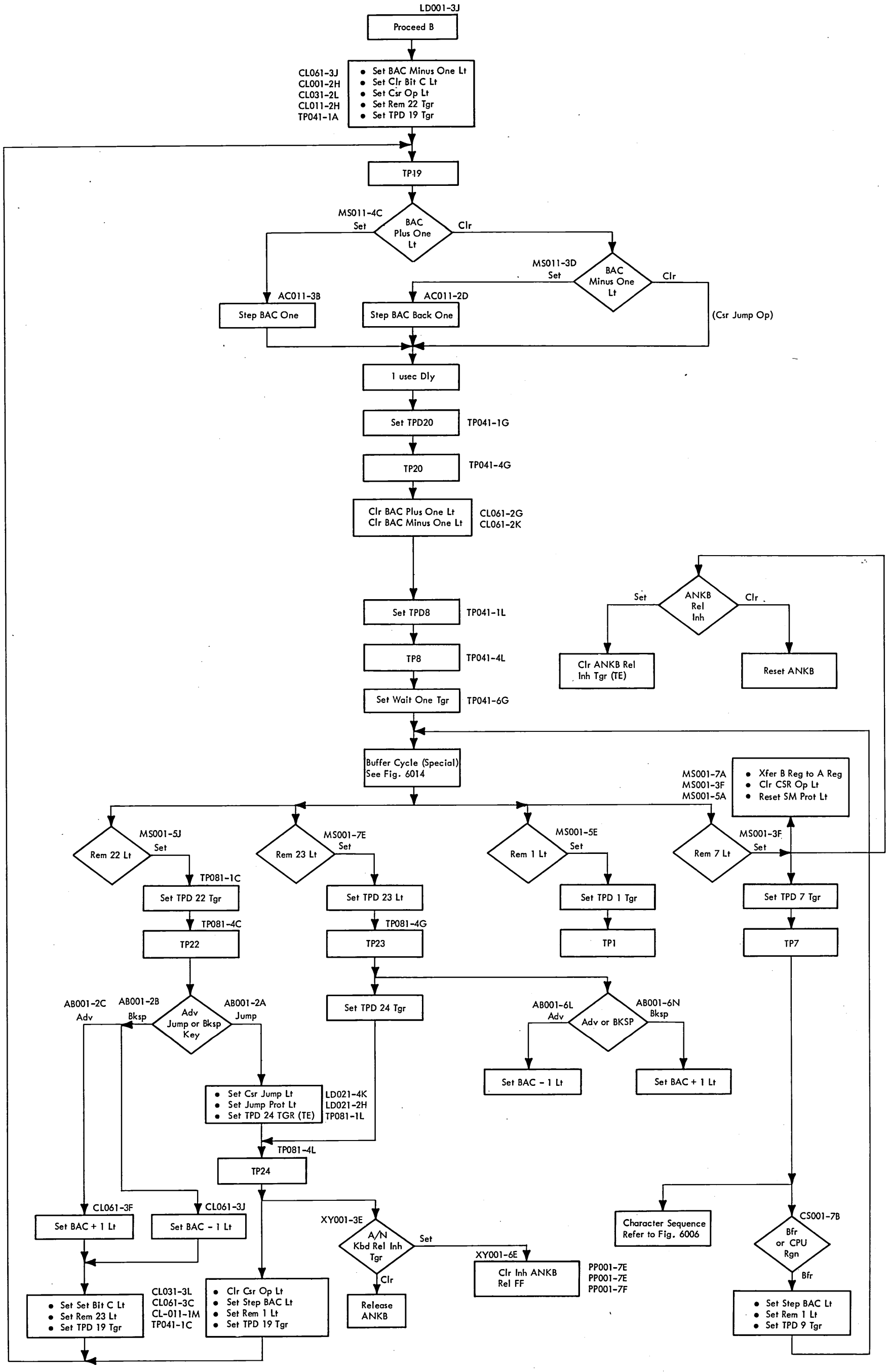
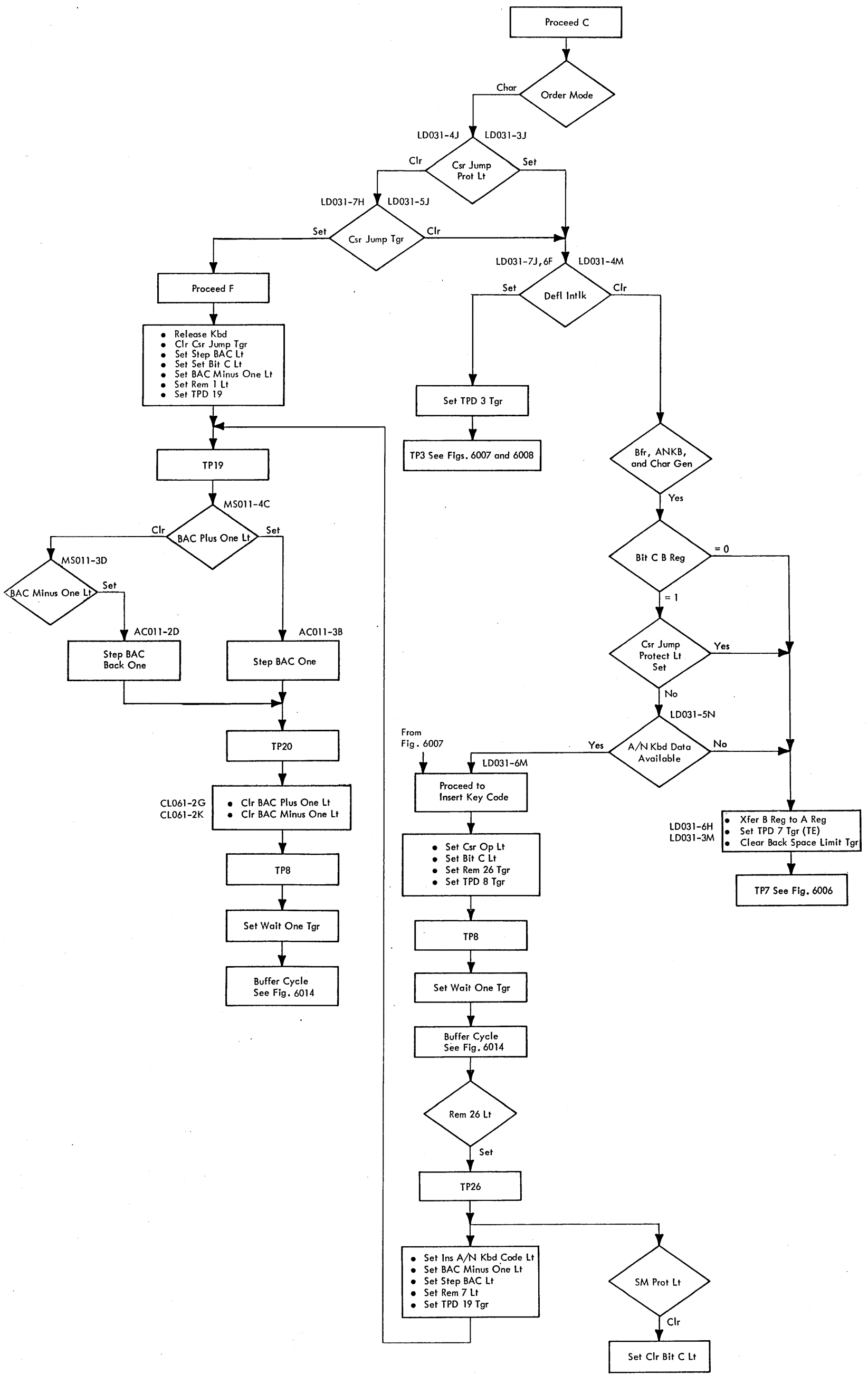
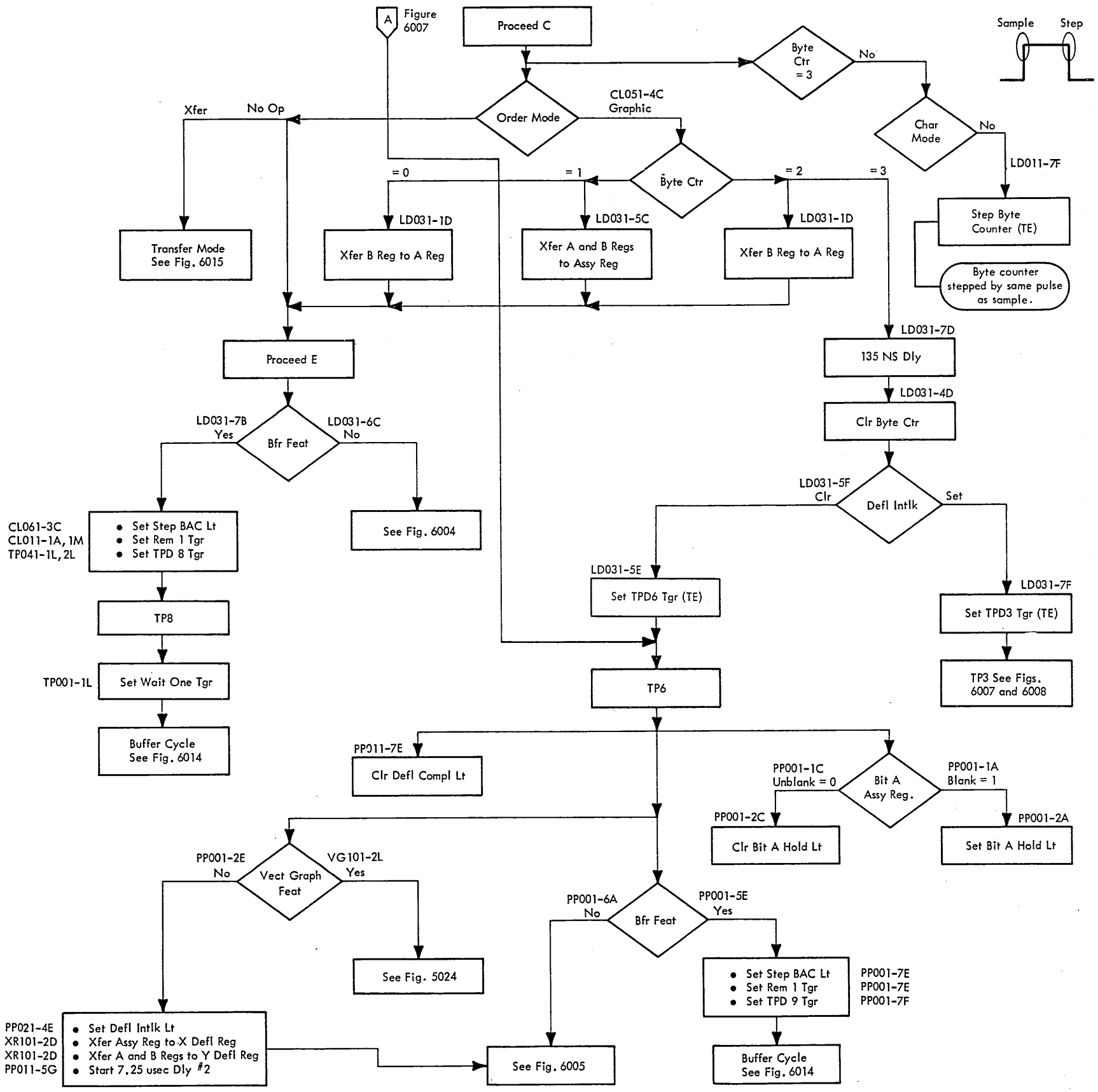


Figure 6011. Buffer Regeneration, Proceed B, Cursor Adjustment Process, Flow Chart



•Figure 6012. Buffer Regeneration, Proceed C and Proceed F, Character Mode, Flow Chart



•Figure 6013. Buffer Regeneration, Proceed C and Proceed E, Graphic, Transfer and No Op Modes, Flow Chart

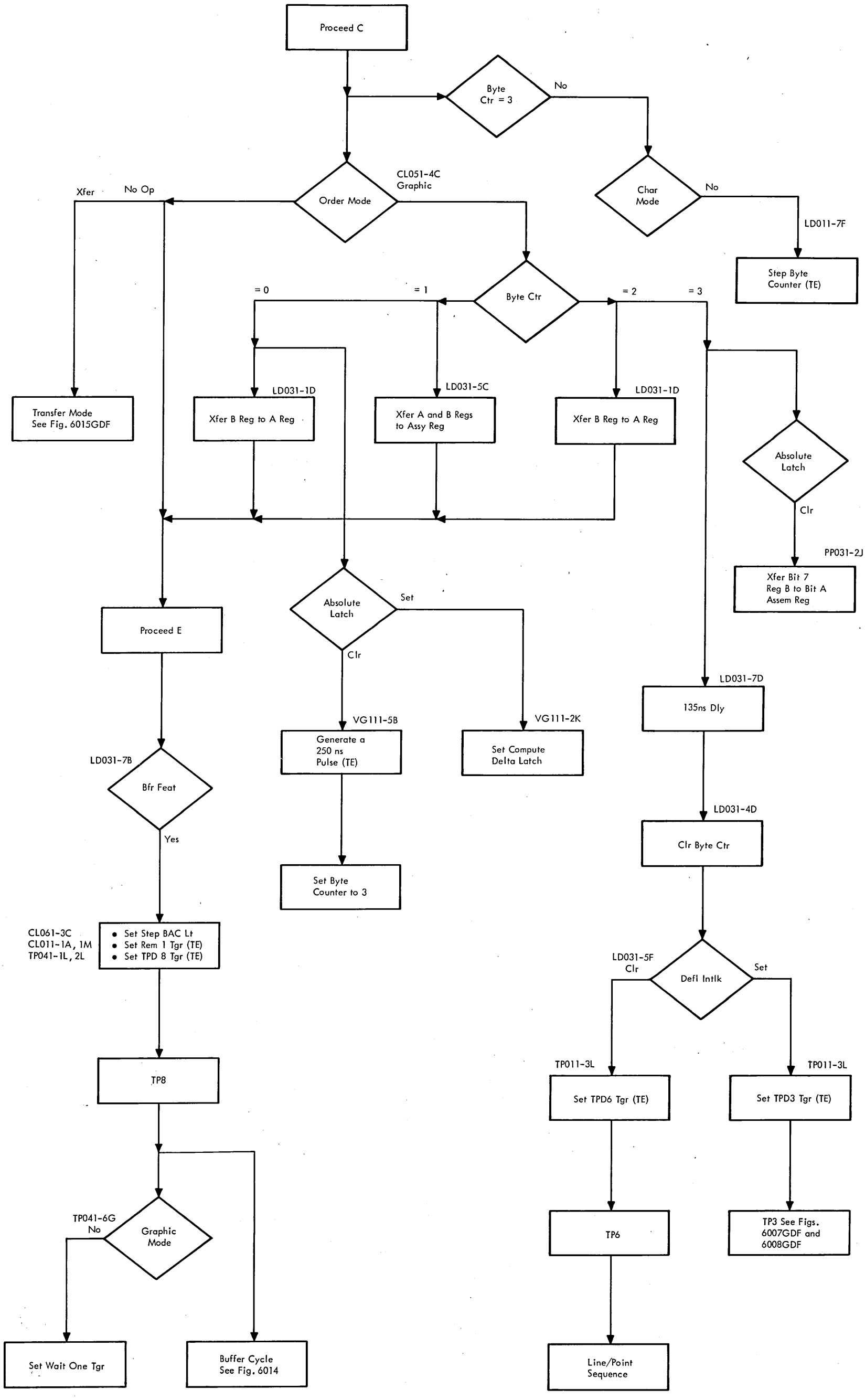
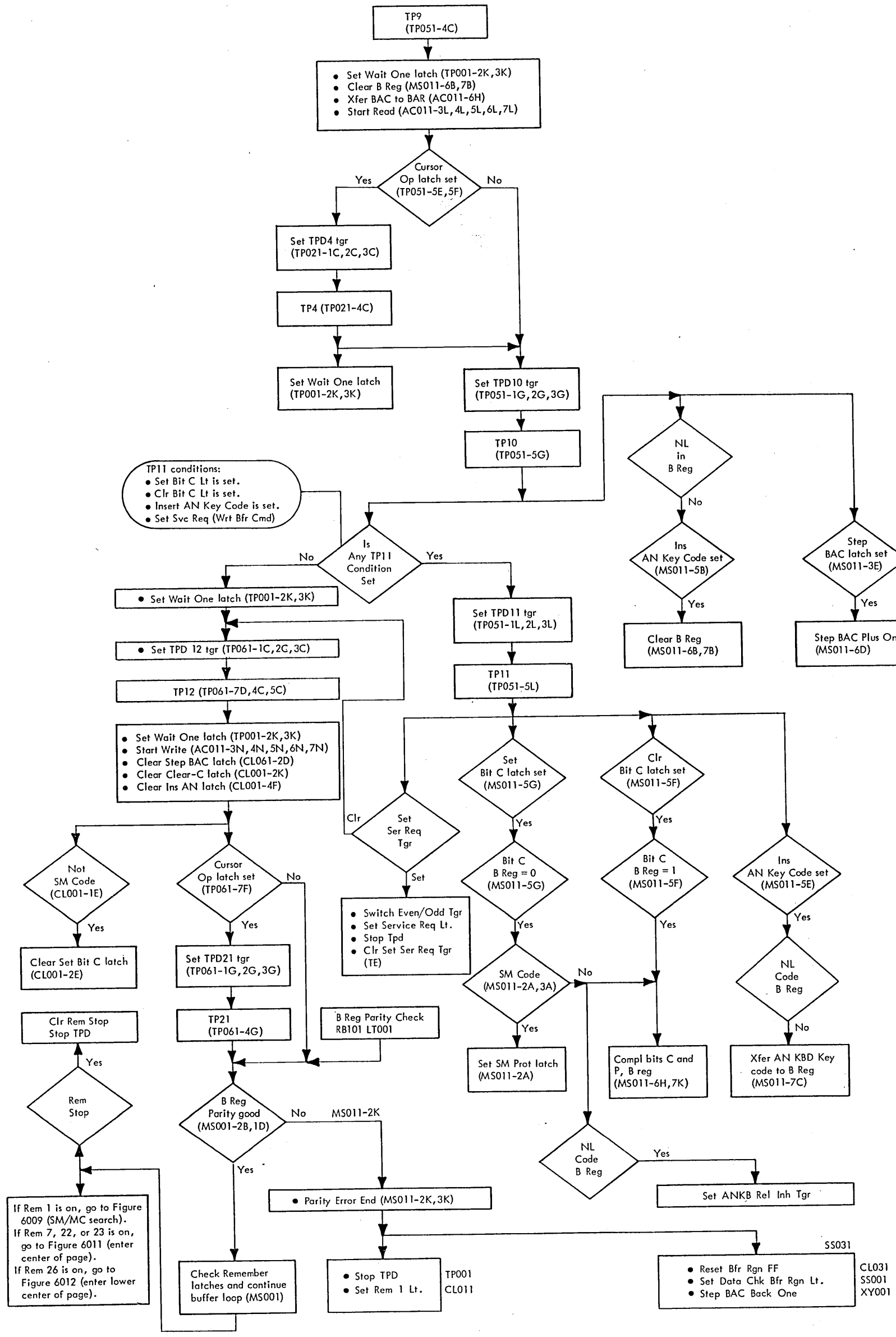


Figure 6013GDF. Buffer Regeneration, Proceed C and Proceed E, Graphic, Transfer and No Op Modes, Flow Chart (for GDF Machines)



•Figure 6014. Buffer Regeneration, Buffer Cycle, Flow Chart

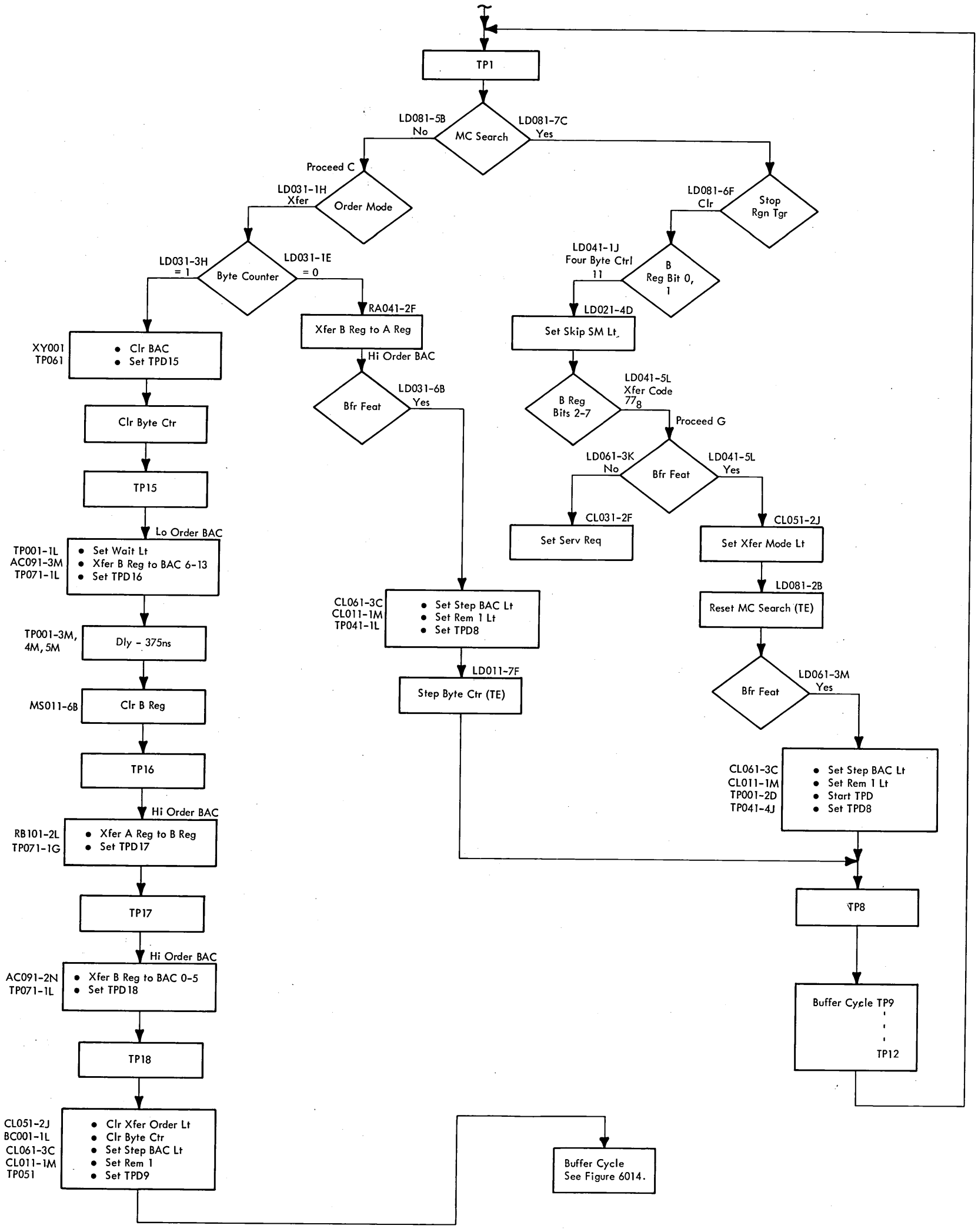


Figure 6015. Buffer Regeneration, Transfer Order Process, Flow Chart

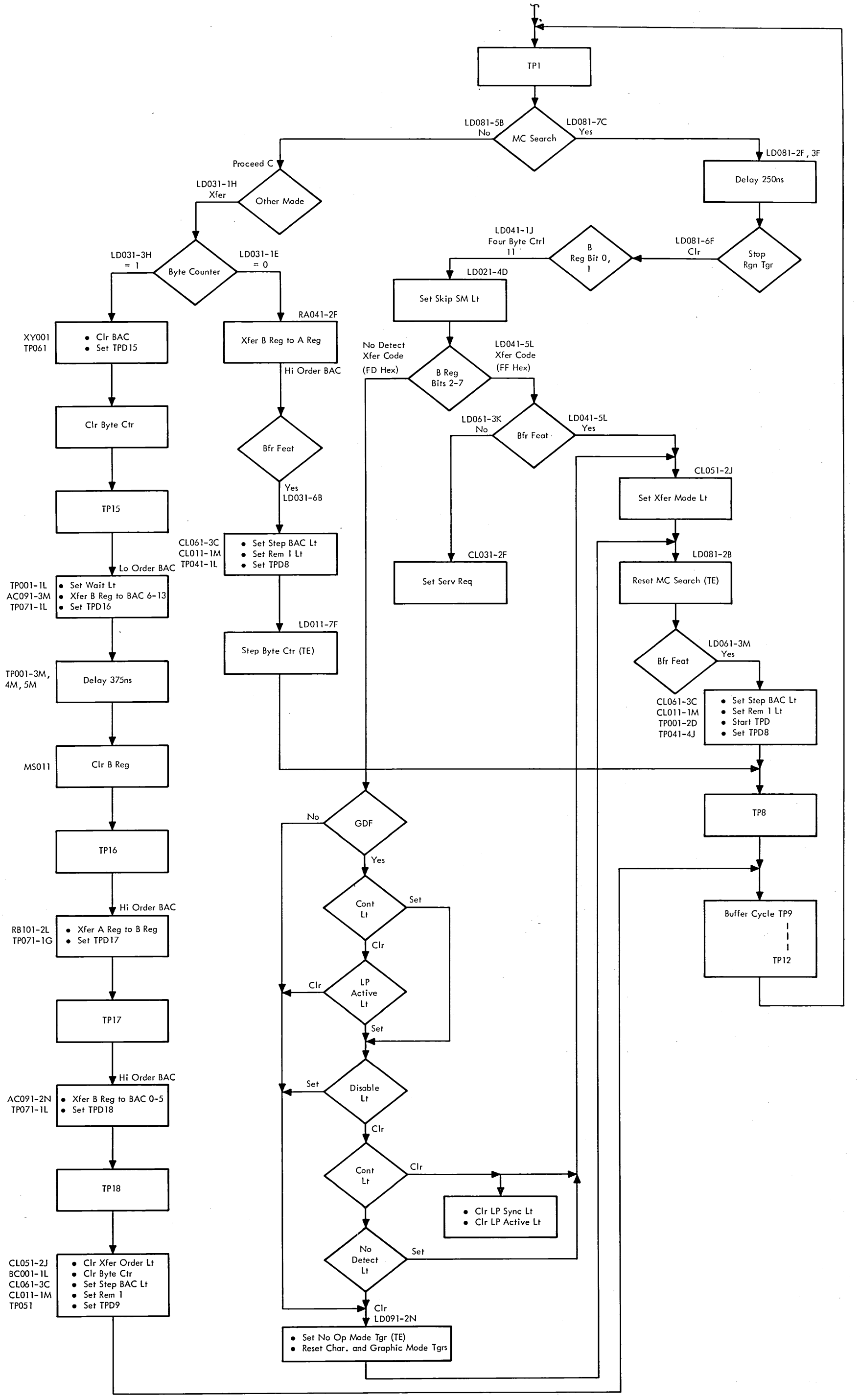


Figure 6015GDF. Buffer Regeneration, Transfer Order Process, Flow Chart (for GDF Machines)

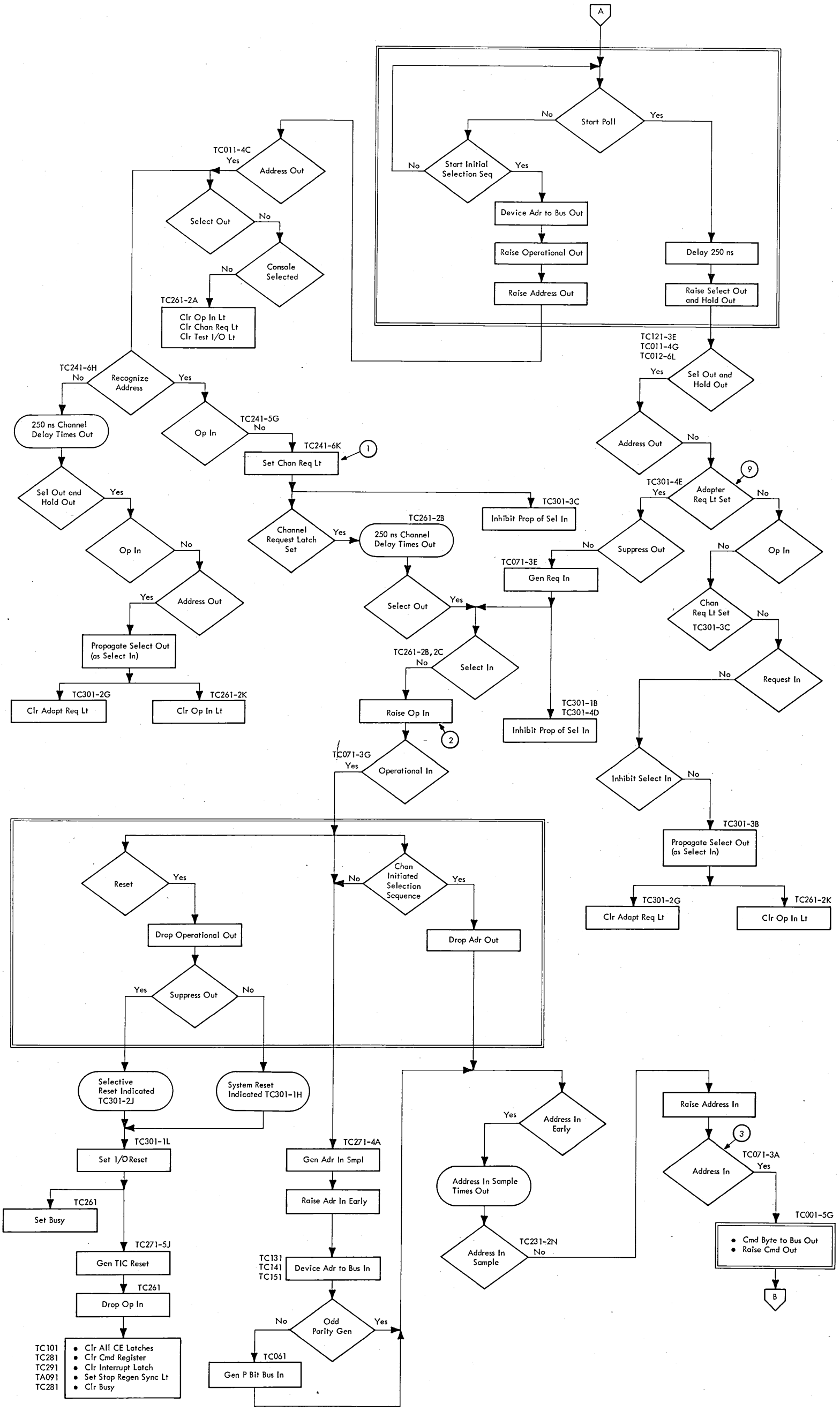


Figure 6016. Transmission Interface Control, Initial Selection Sequence, Flow Chart (Sheet 1 of 4)

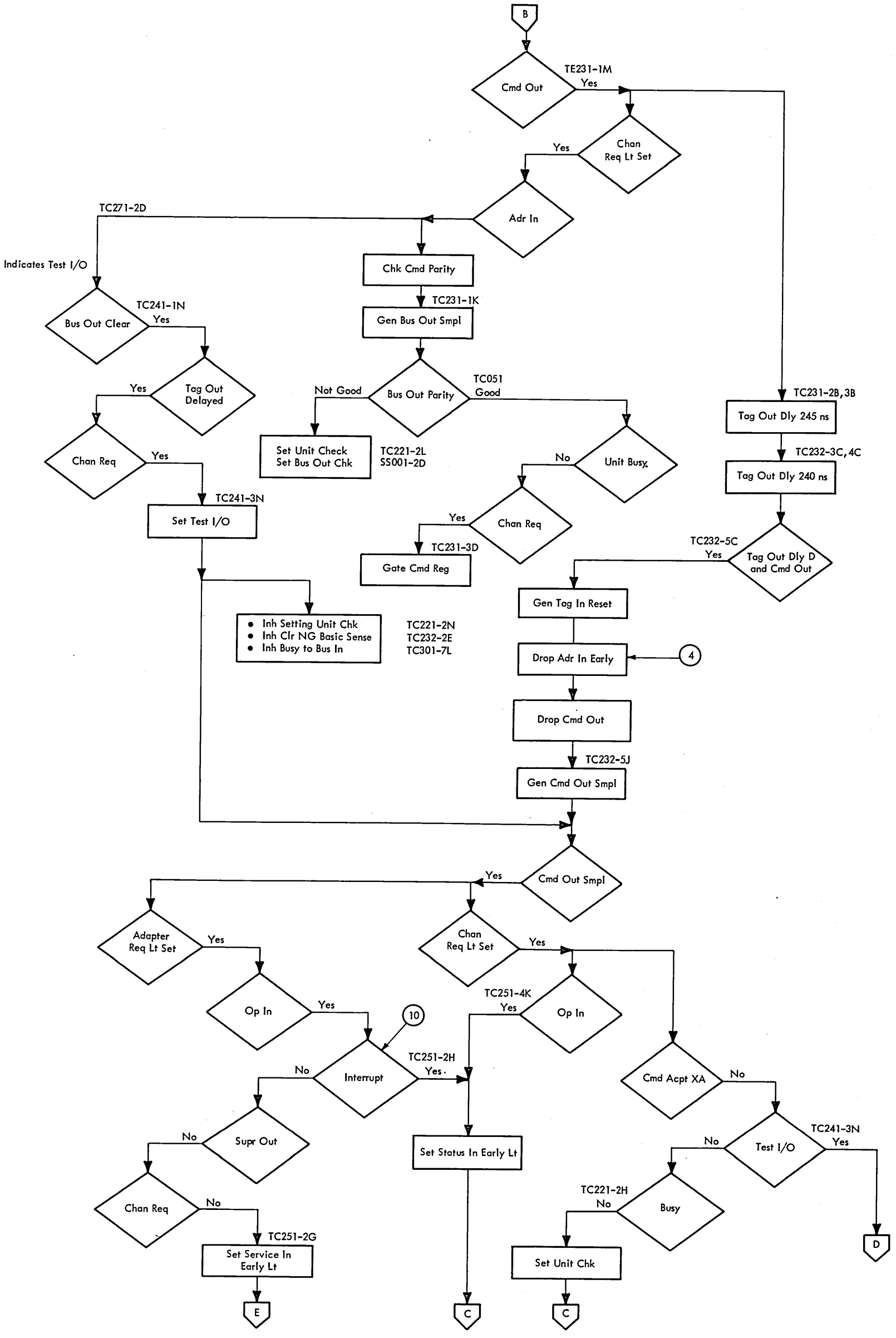


Figure 6016. Transmission Interface Control, Initial Selection Sequence, Flow Chart (Sheet 2 of 4)

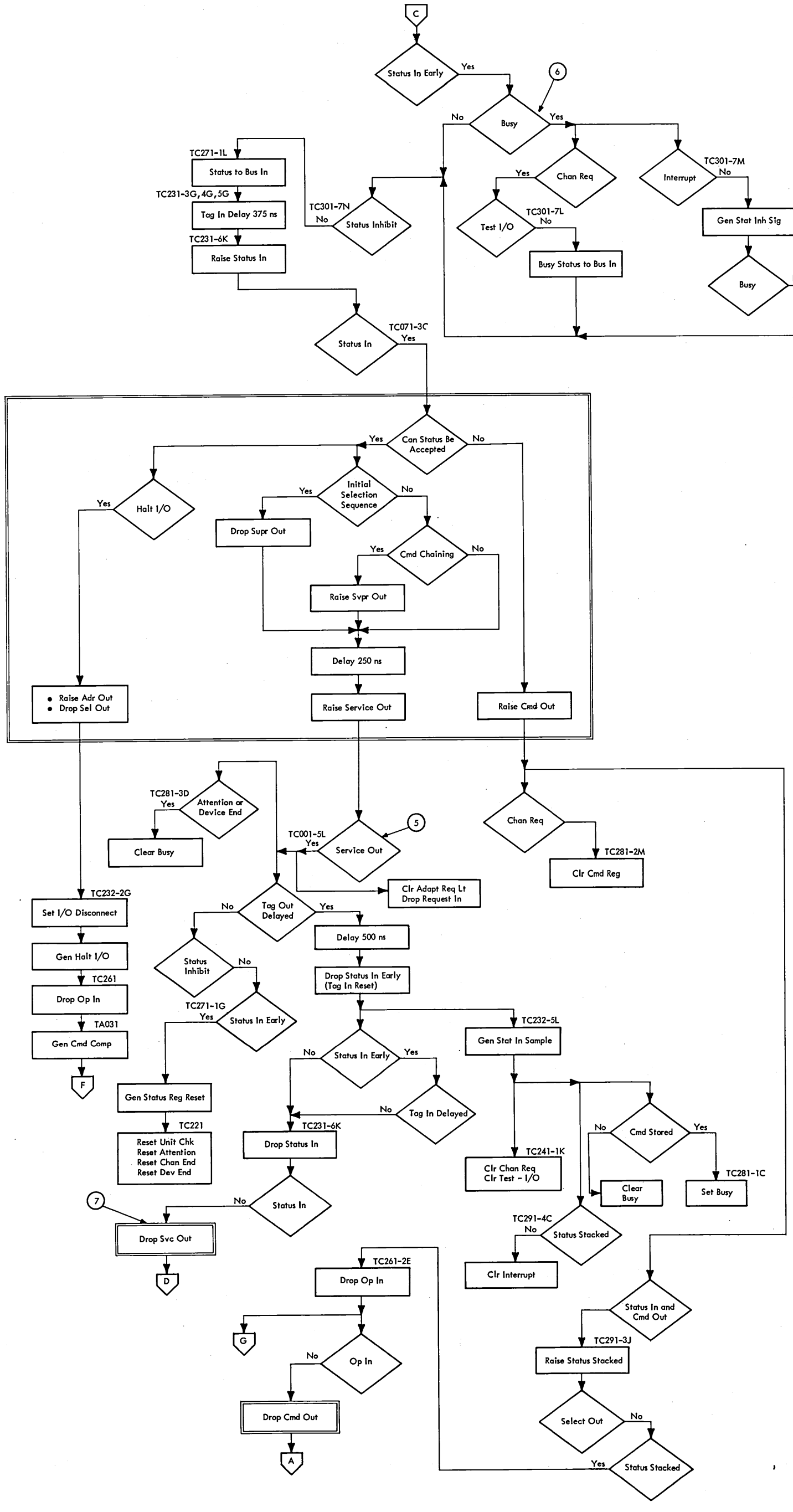


Figure 6016. Transmission Interface Control, Initial Selection Sequence, Flow Chart (Sheet 3 of 4)

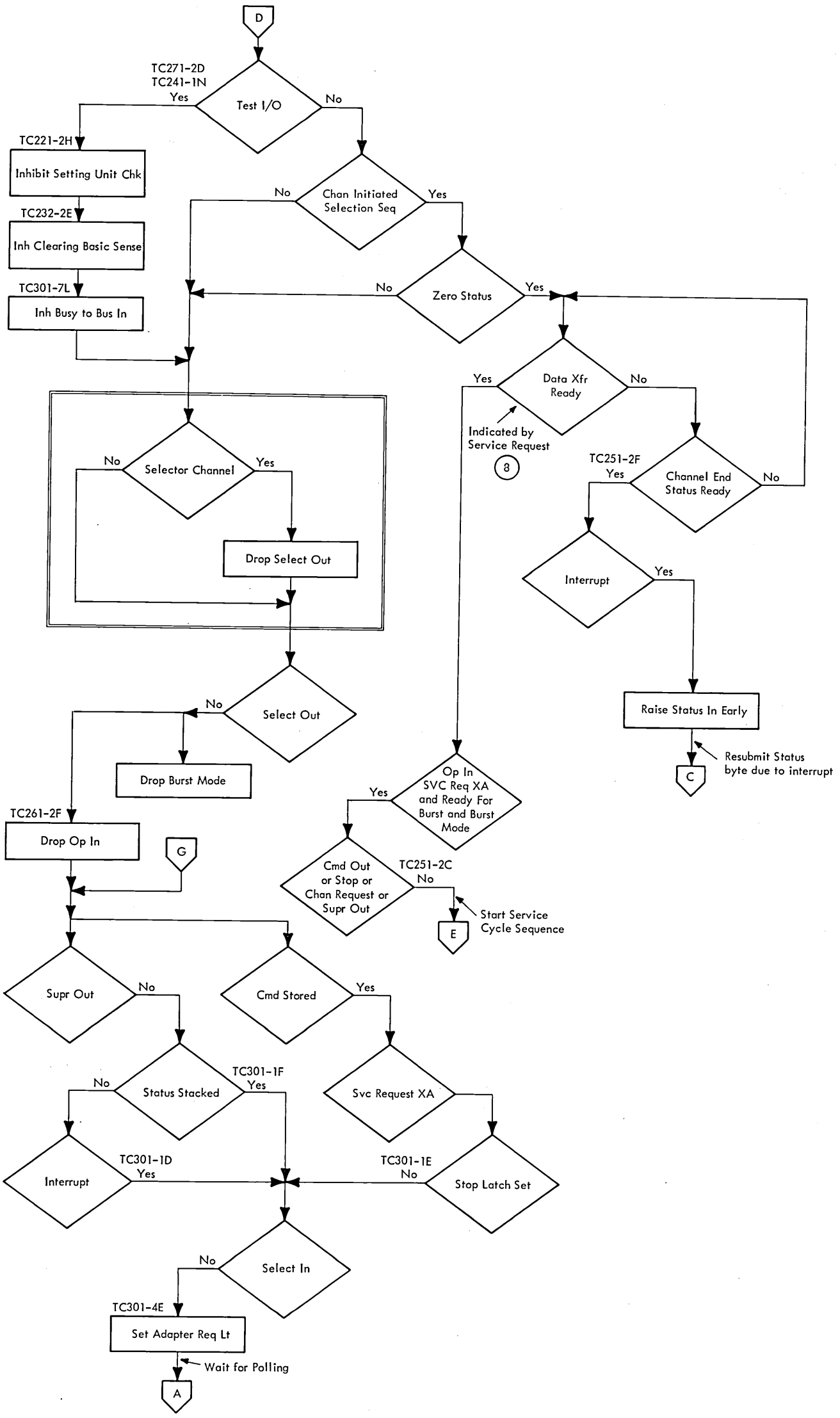


Figure 6016. Transmission Interface Control, Initial Selection Sequence, Flow Chart (Sheet 4 of 4)

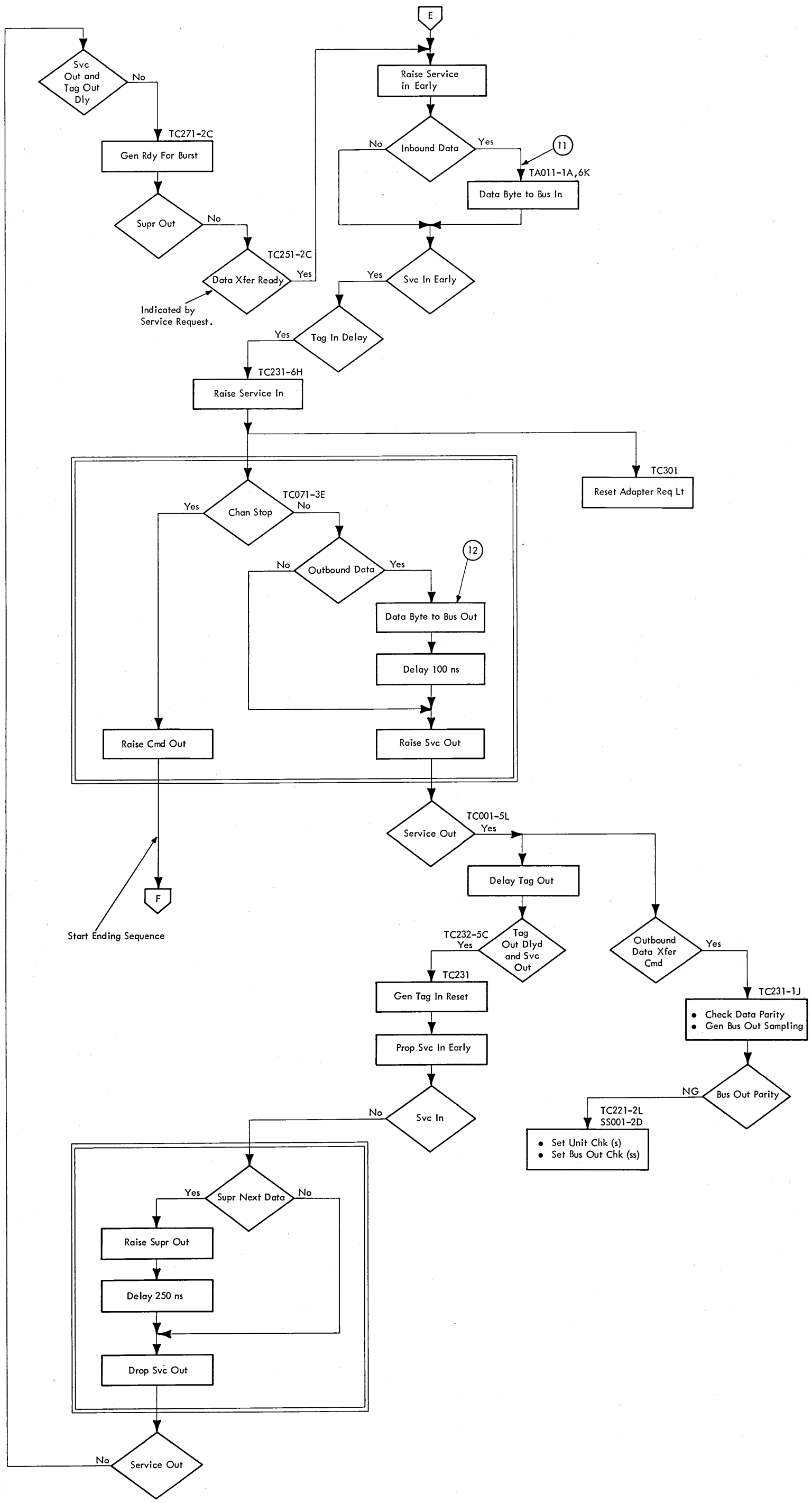


Figure 6017. Transmission Interface Control, Service Cycle Sequence, Flow Chart

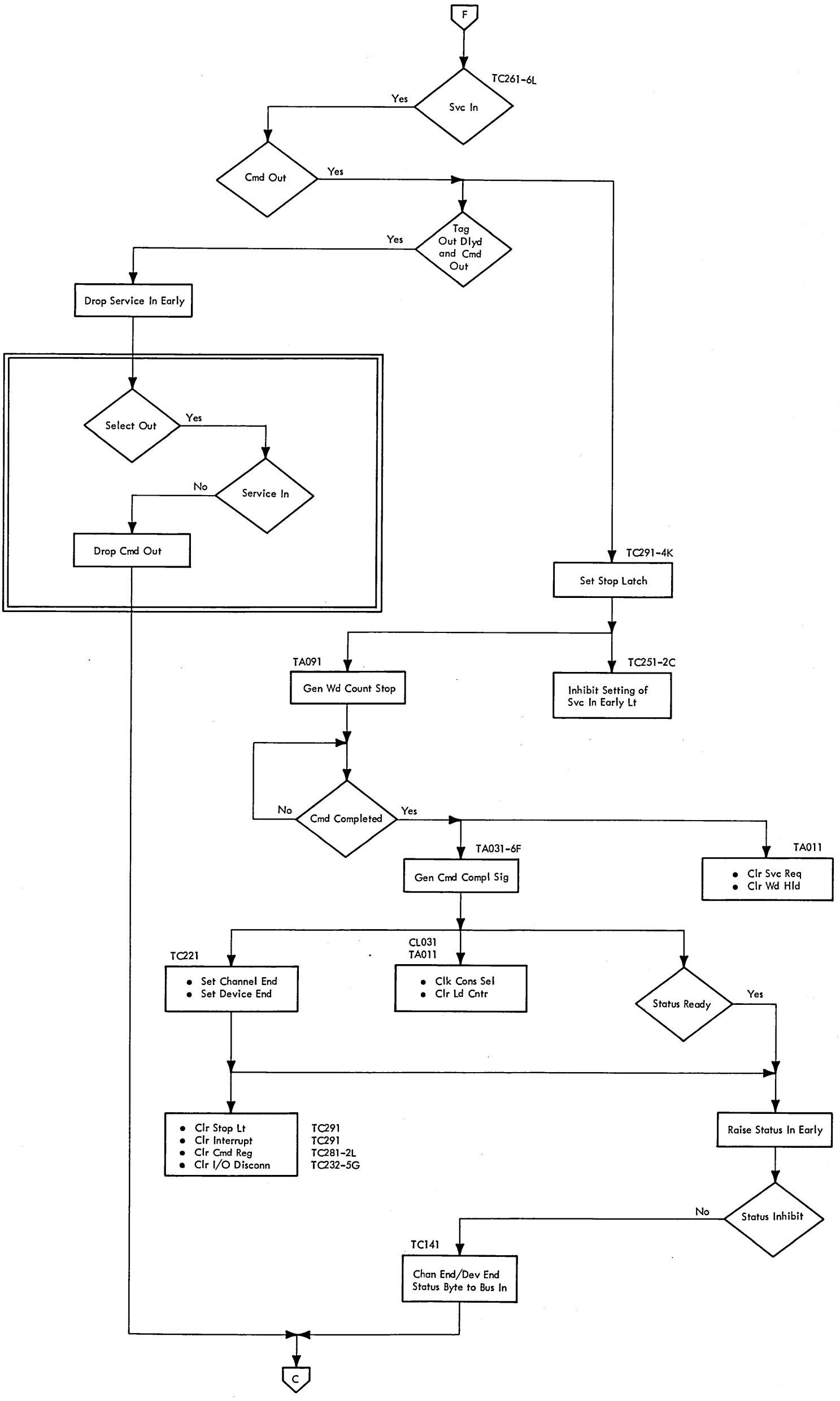


Figure 6018. Transmission Interface Control, Ending Sequence, Flow Chart

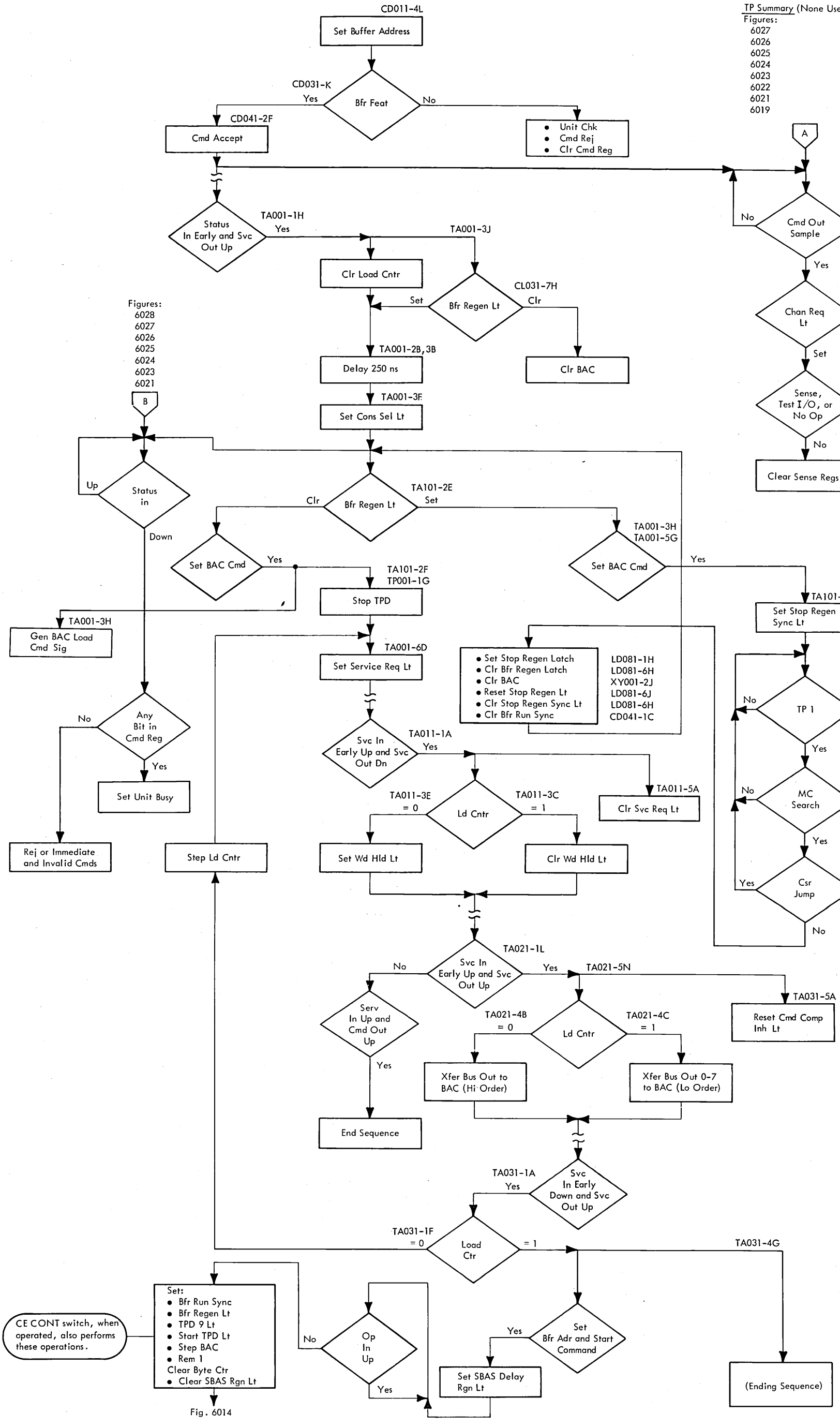


Figure 6019. Set Buffer Address Command, Flow Chart

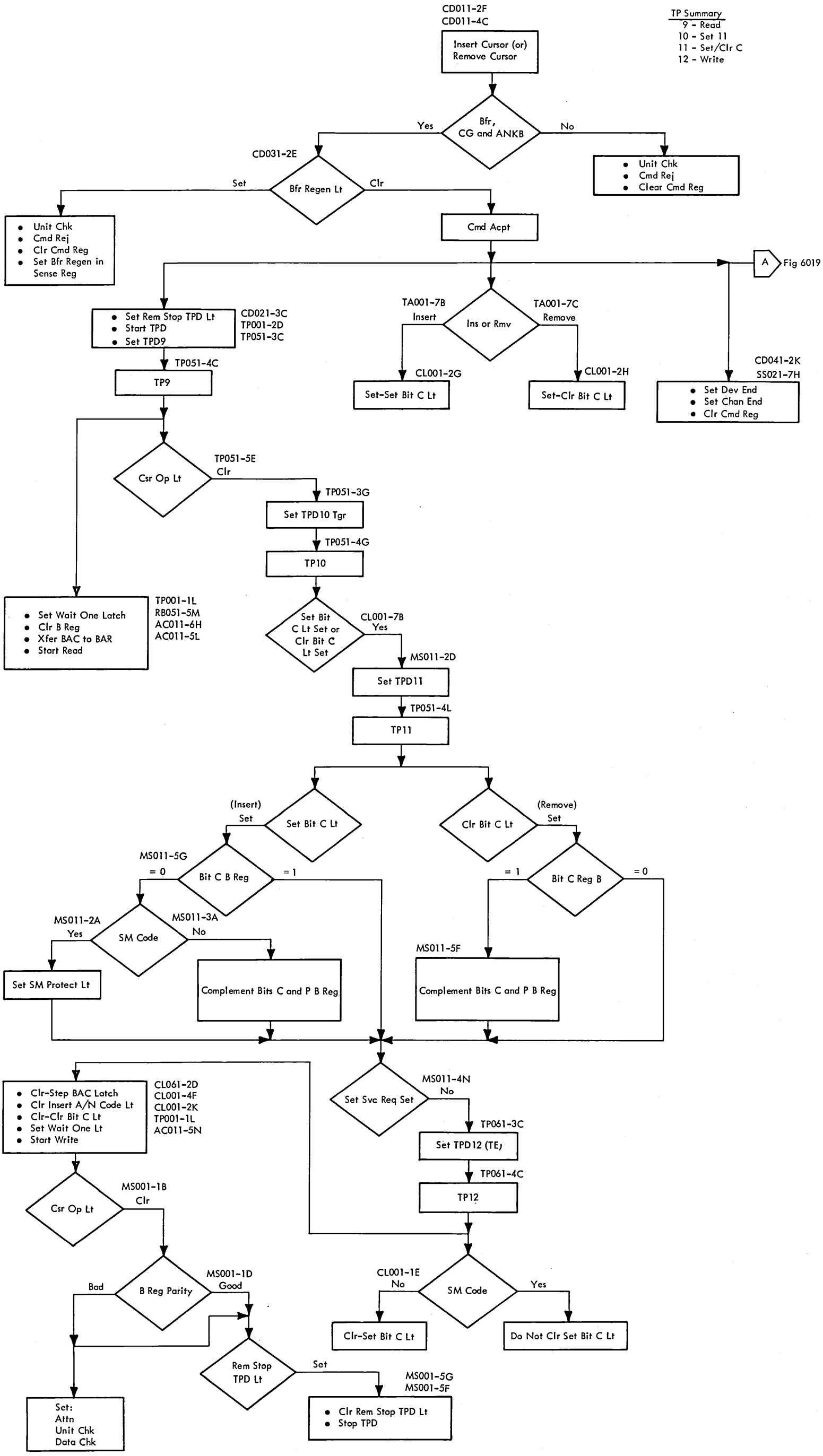


Figure 6020. Insert-Remove Cursor Command, Flow Chart

TP Summary
None used

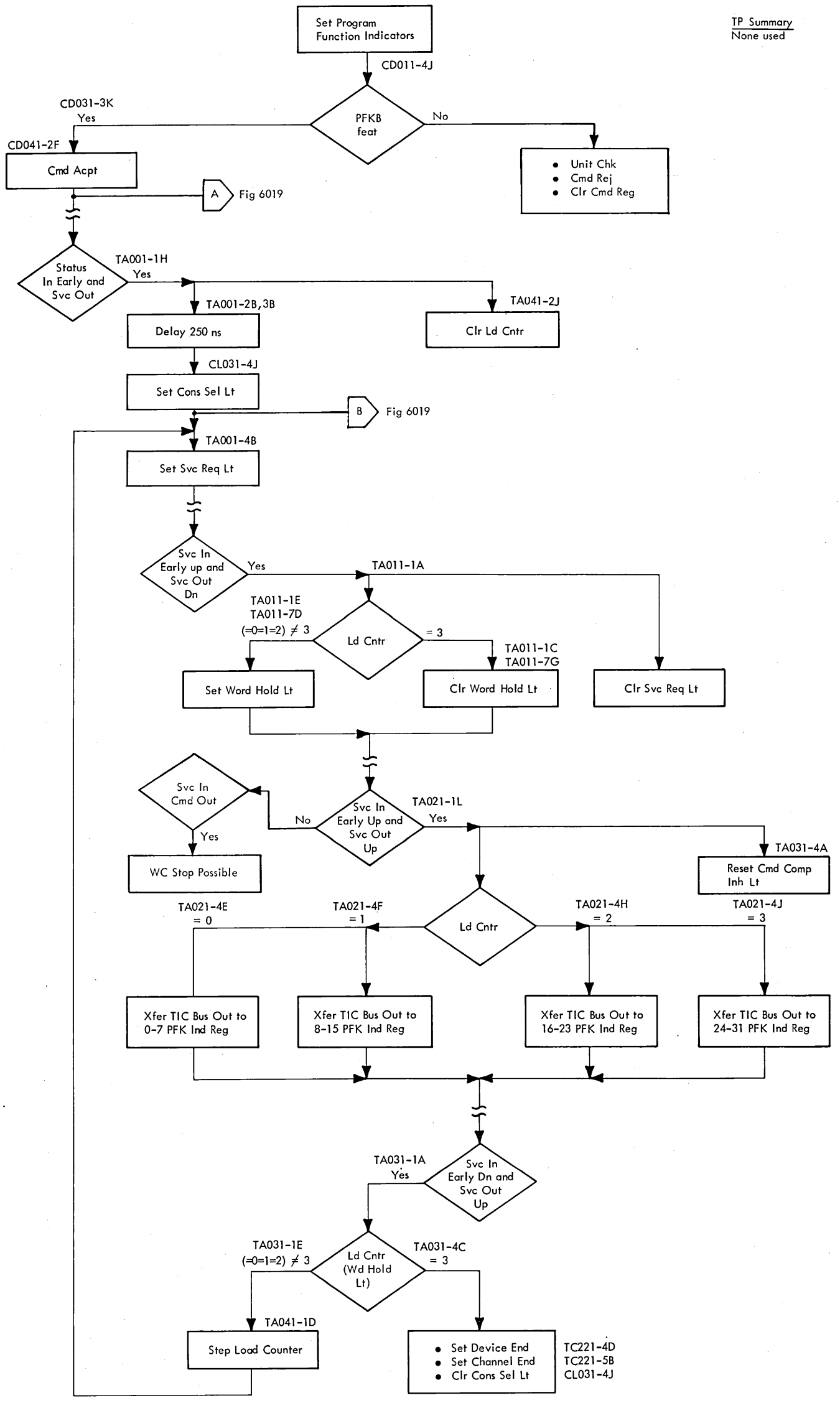


Figure 6021. Set Program Function Keyboard Indicators Command, Flow Chart

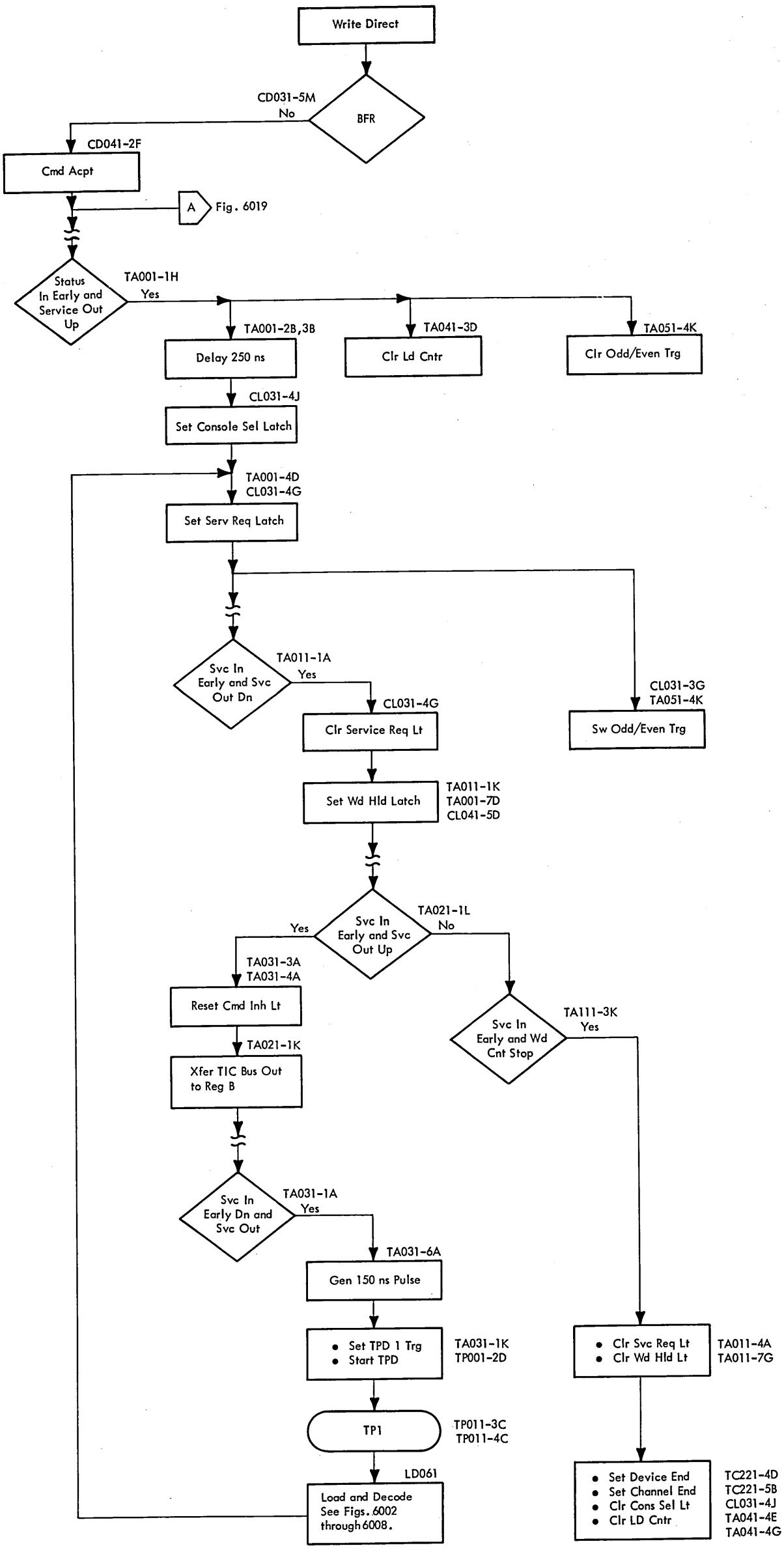
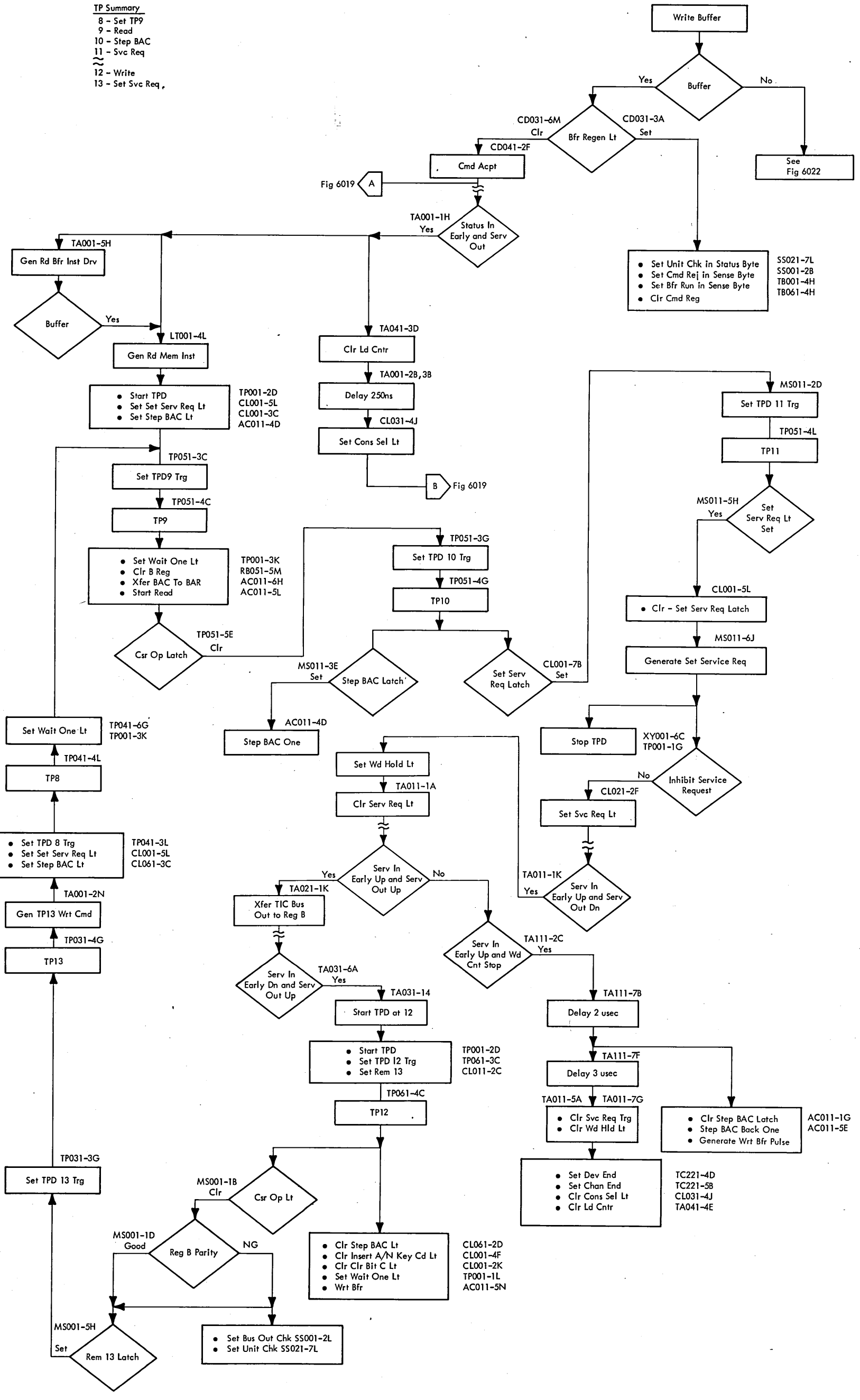


Figure 6022. Write Direct Command, Flow Chart



•Figure 6023. Write Buffer Command, Flow Chart

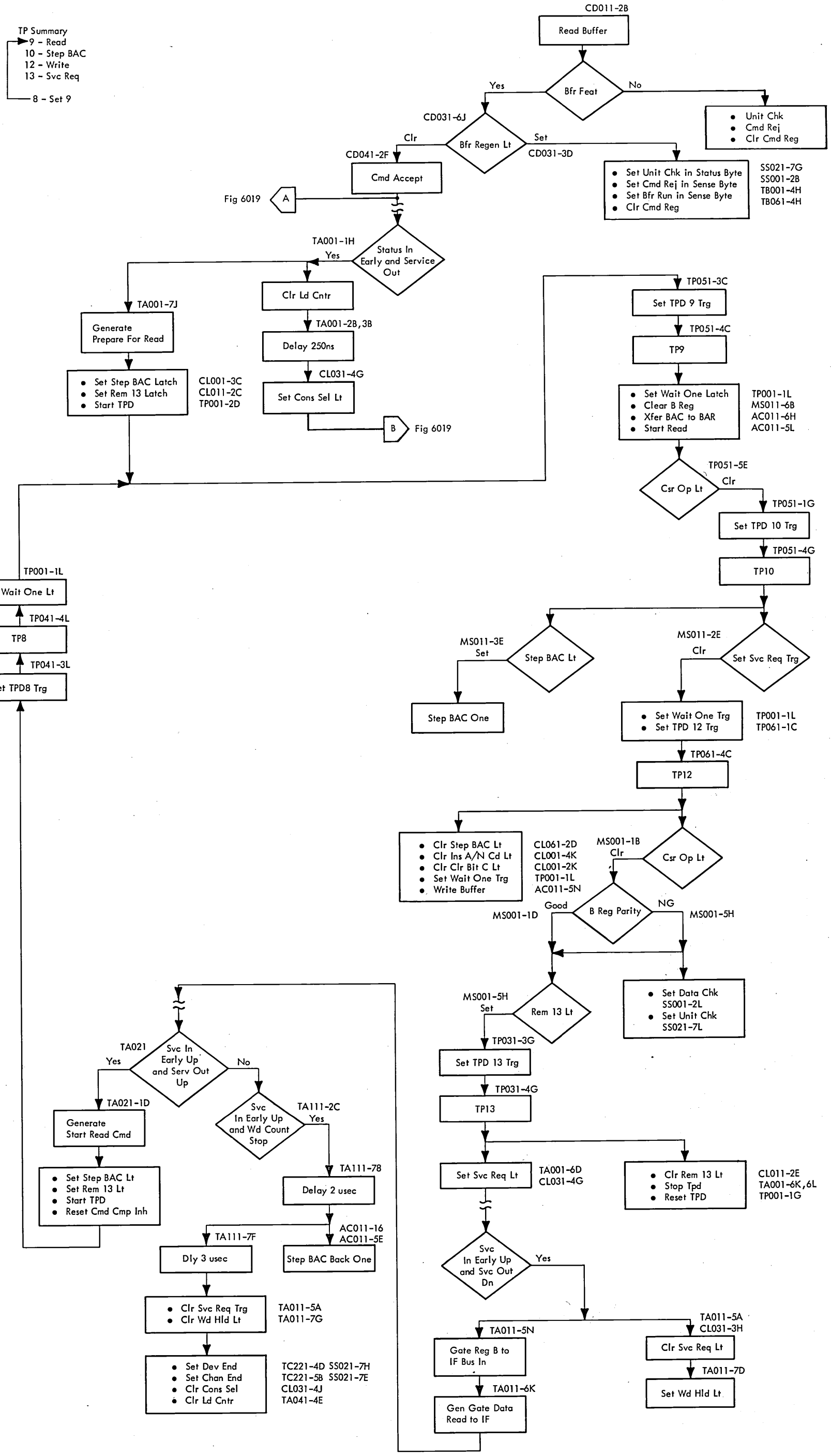


Figure 6024. Read Buffer Command, Flow Chart

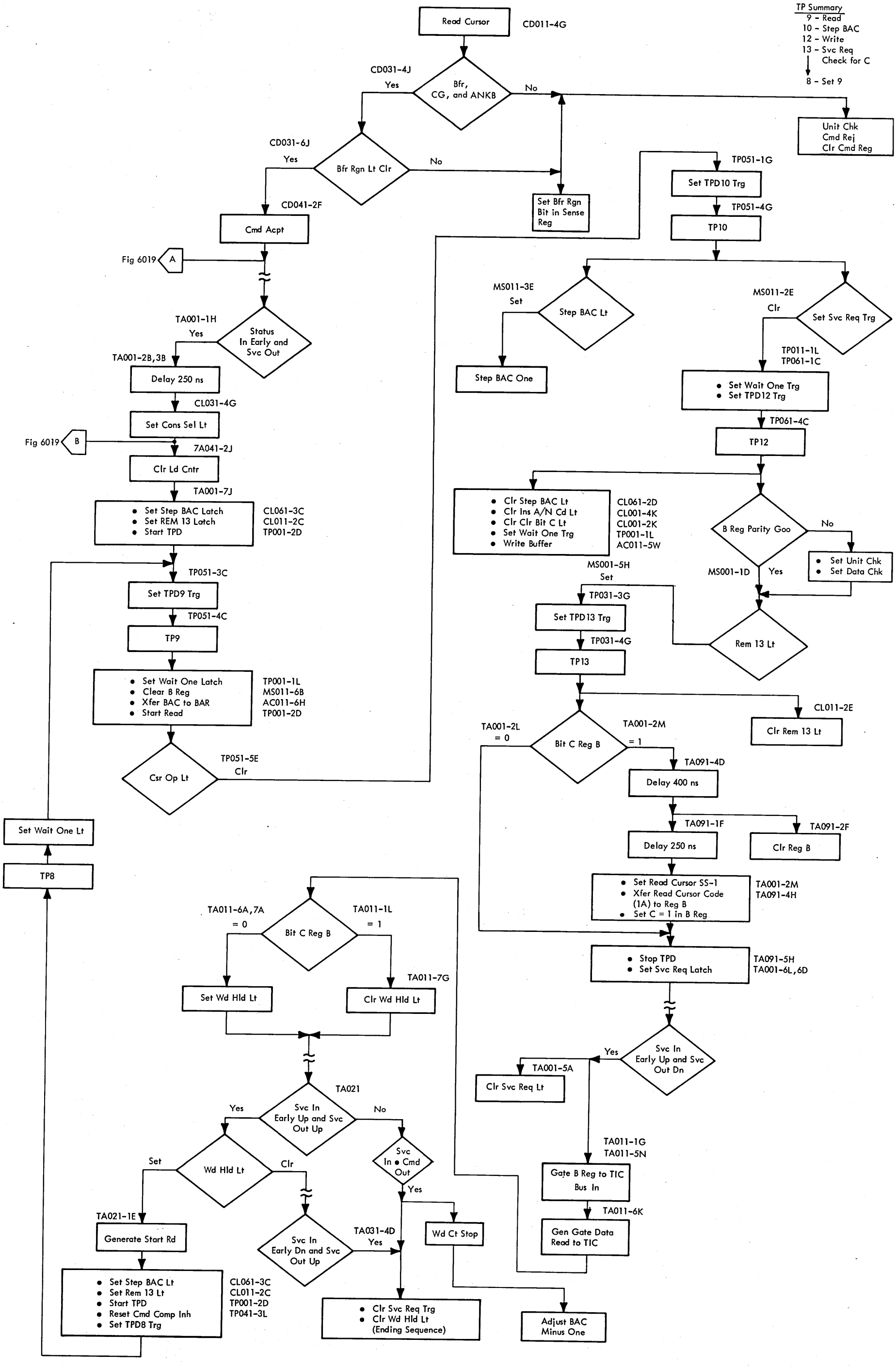


Figure 6025. Read Cursor Command, Flow Chart

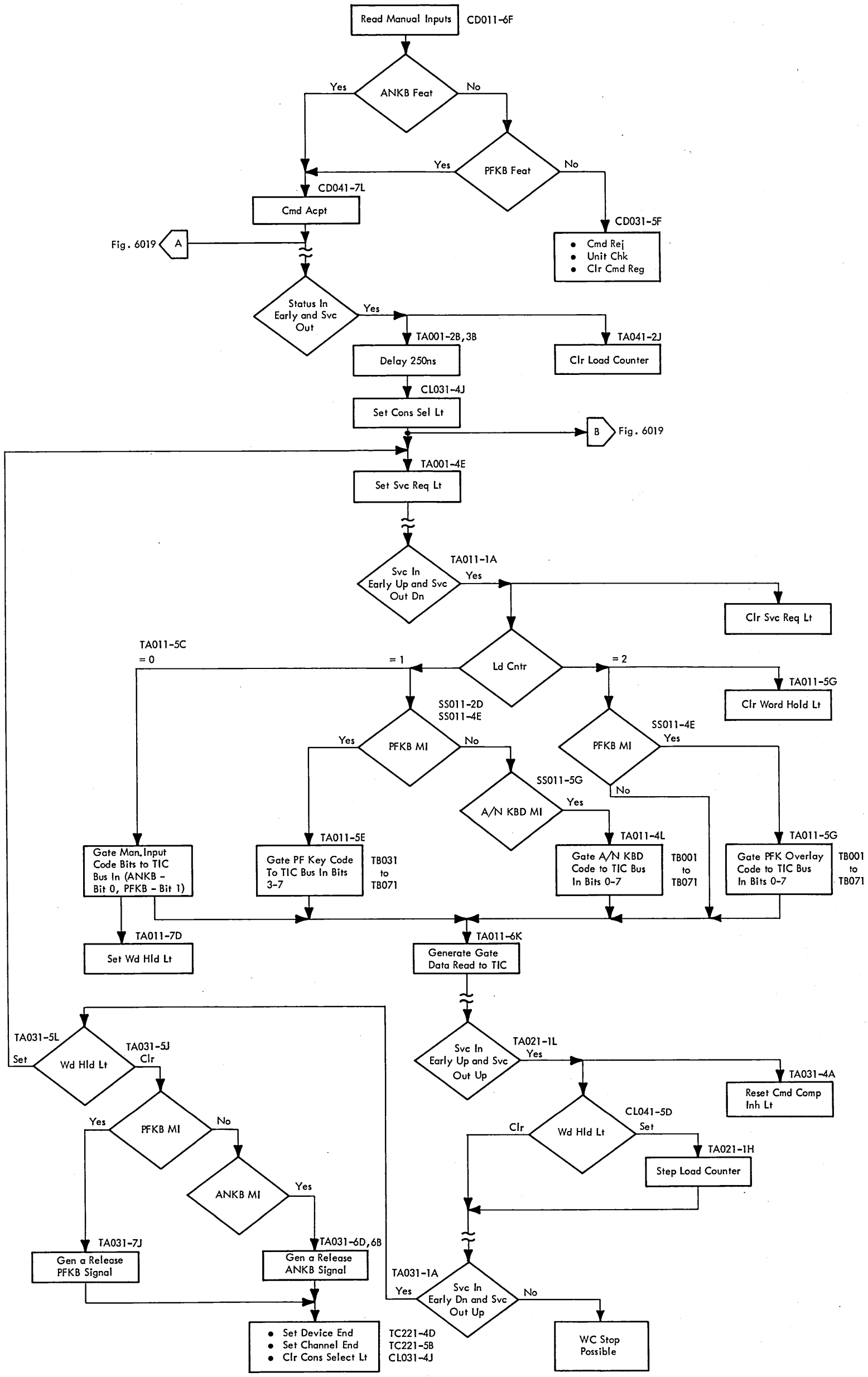


Figure 6026. Read Manual Inputs Command, Flow Chart

TP Summary (None Used)

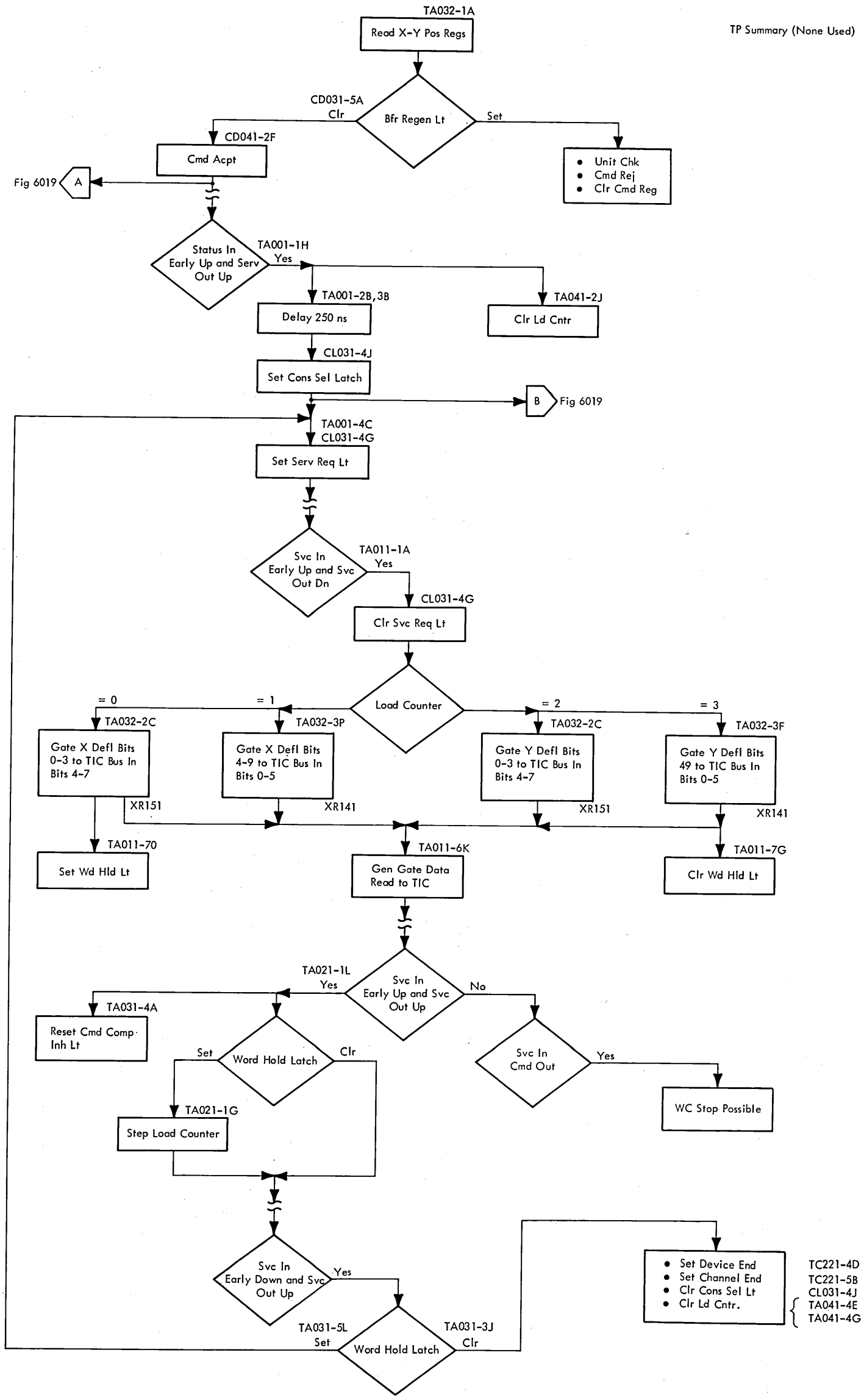


Figure 6027. Read X-Y Position Registers Command, Flow Chart

TP Summary (None Used)

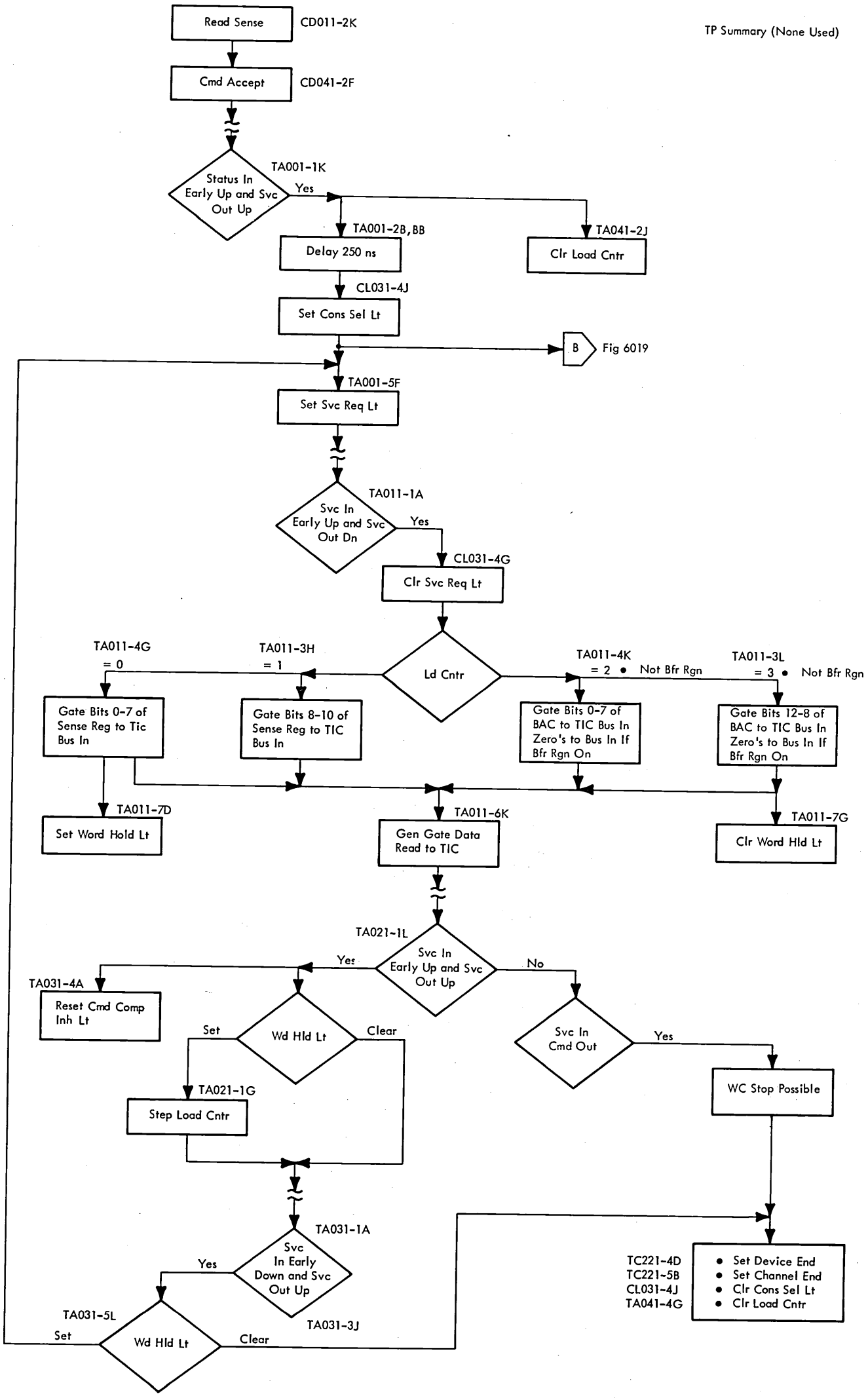


Figure 6028. Sense Command, Flow Chart

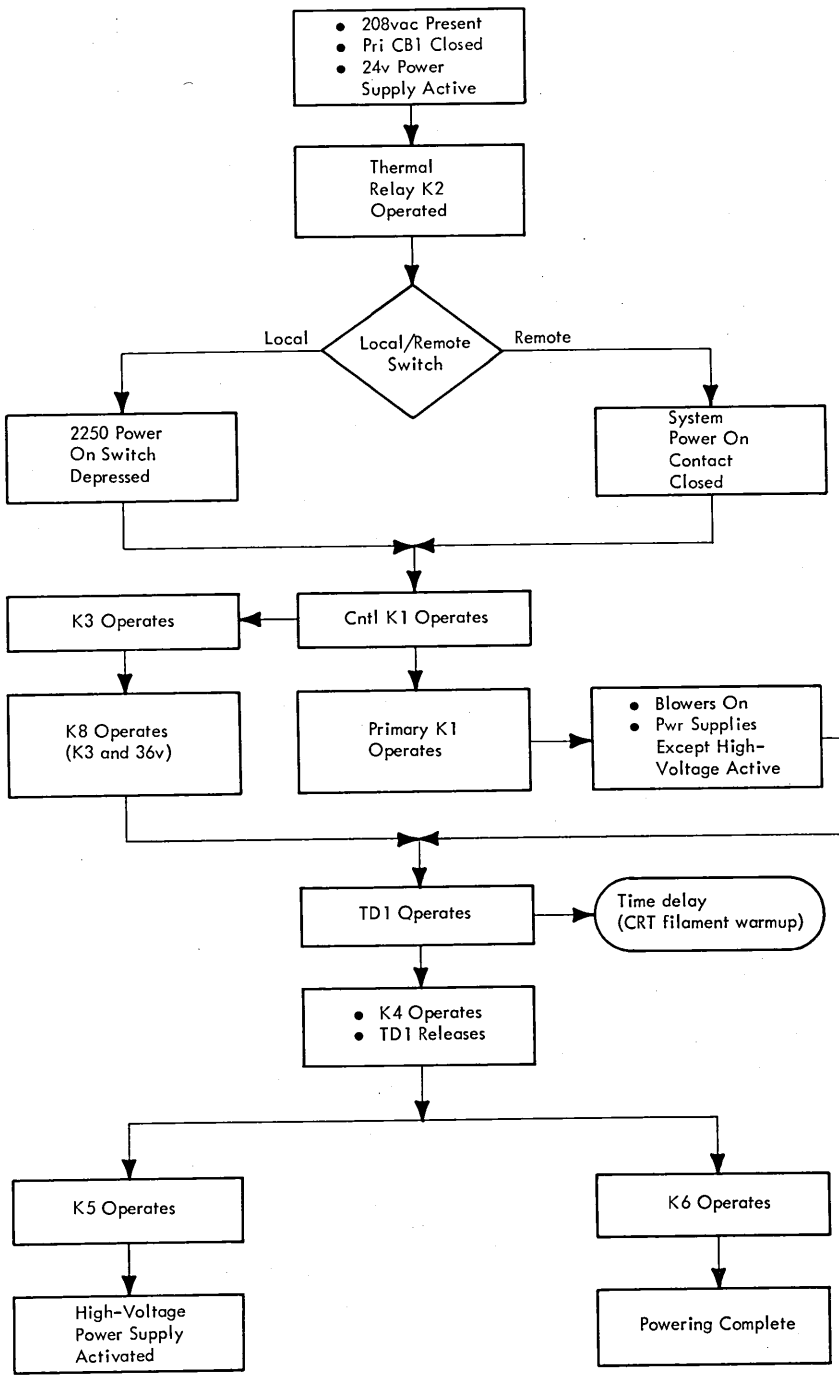


Figure 6029. Power On Sequence

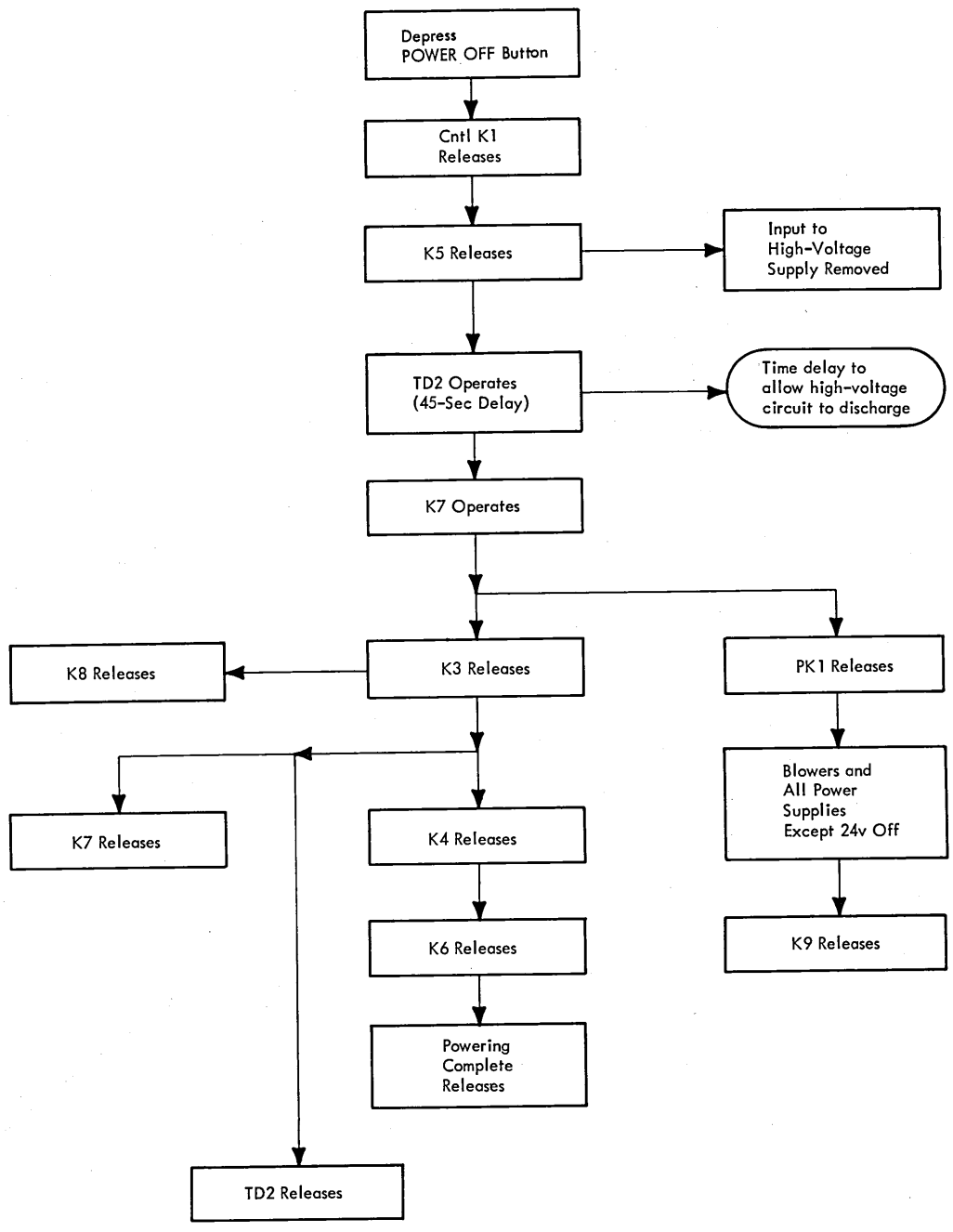


Figure 6030. Power Off Sequence

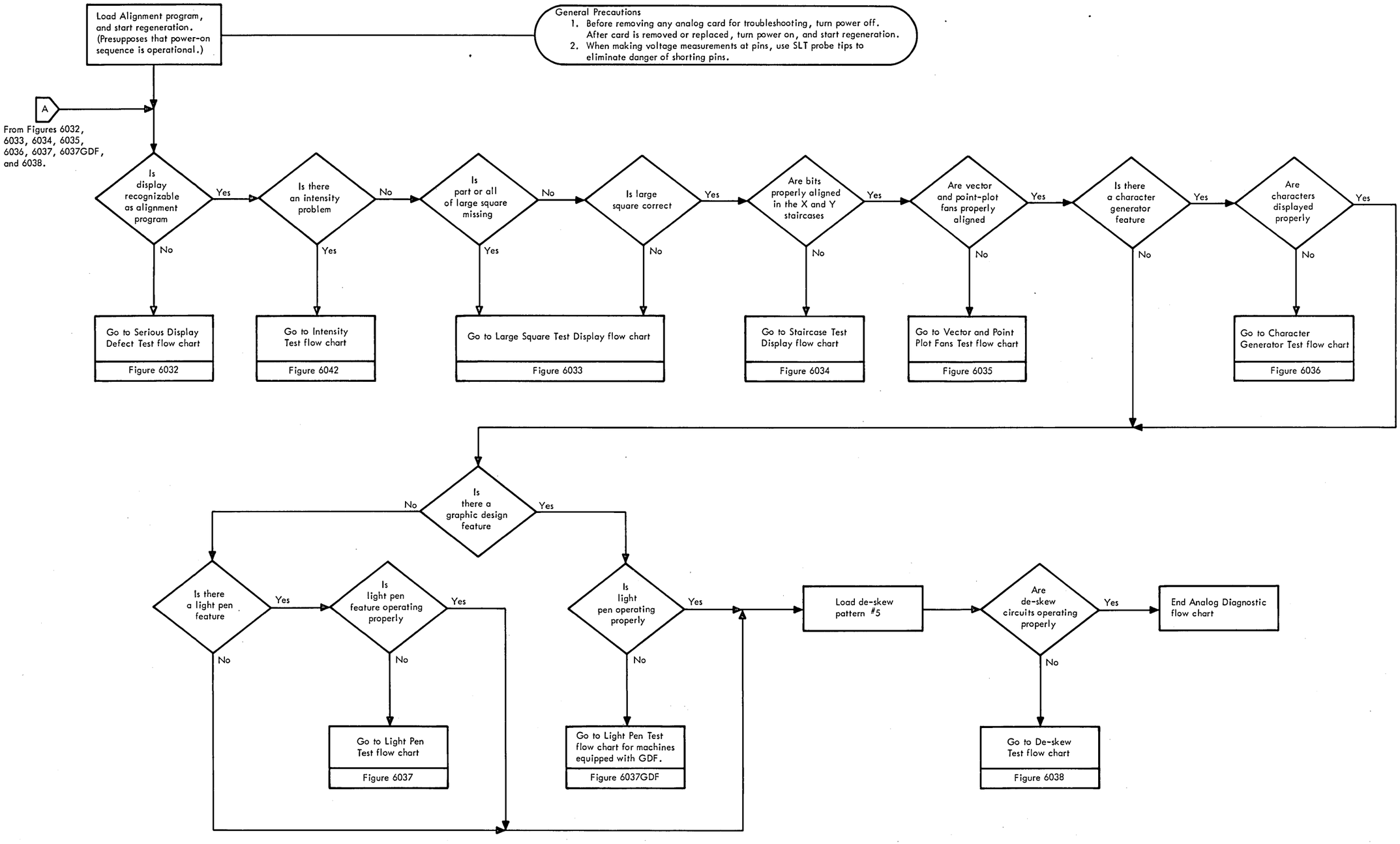


Figure 6031. Analog Diagnostic Master Flow Chart

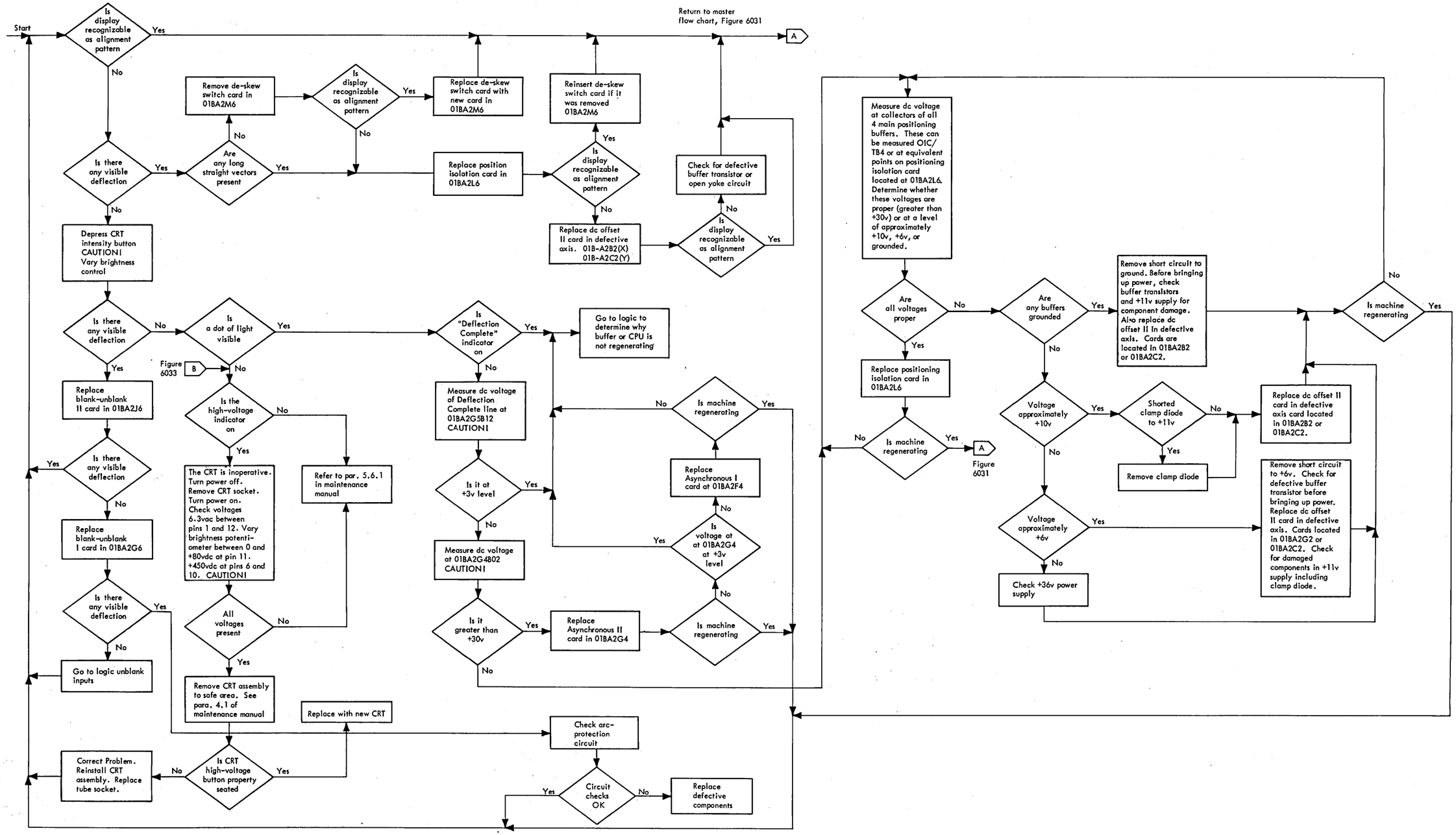


Figure 6032. Serious Display Defect Test Flow Charts

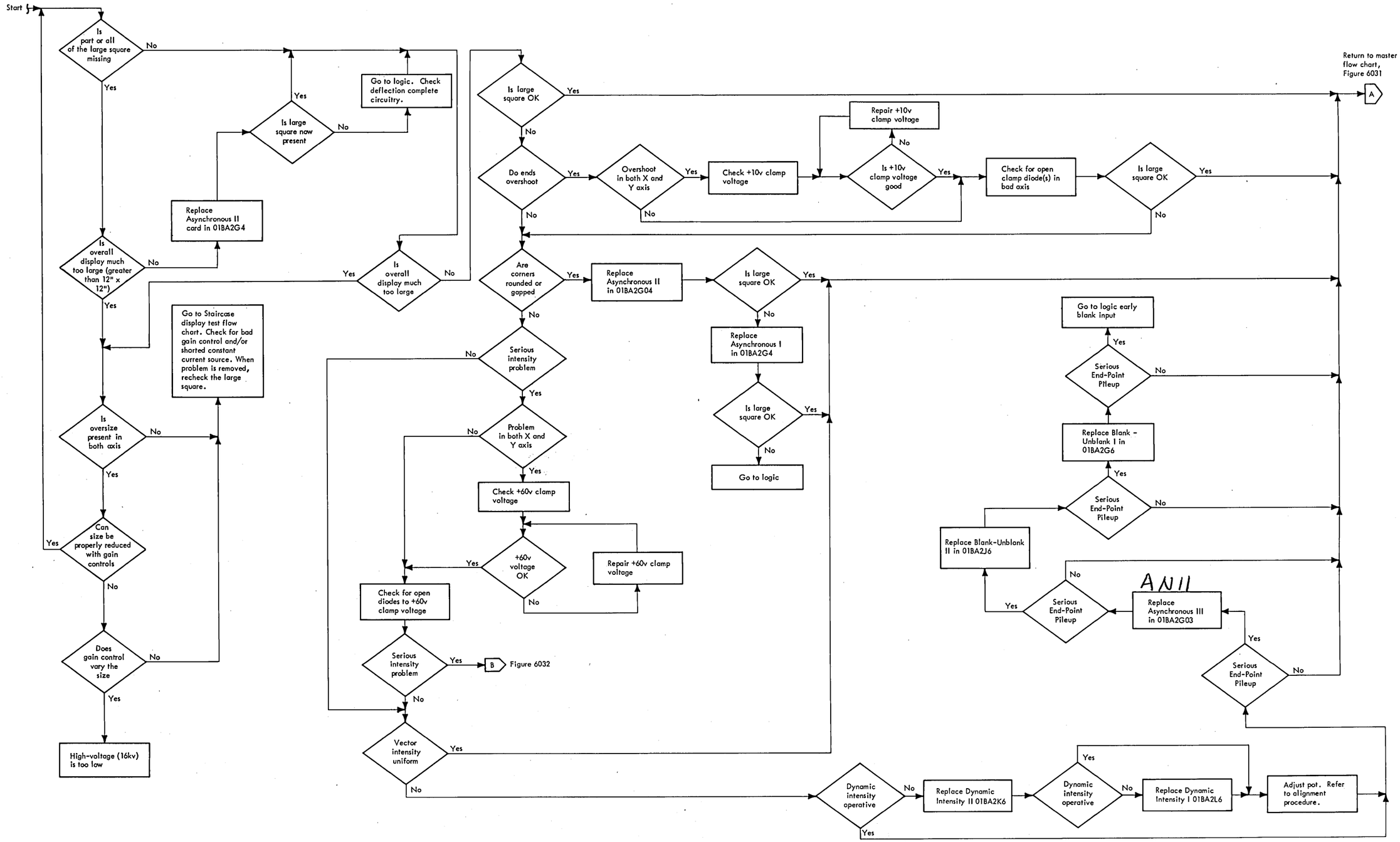


Figure 6033. Large Square Test Display Flow Chart

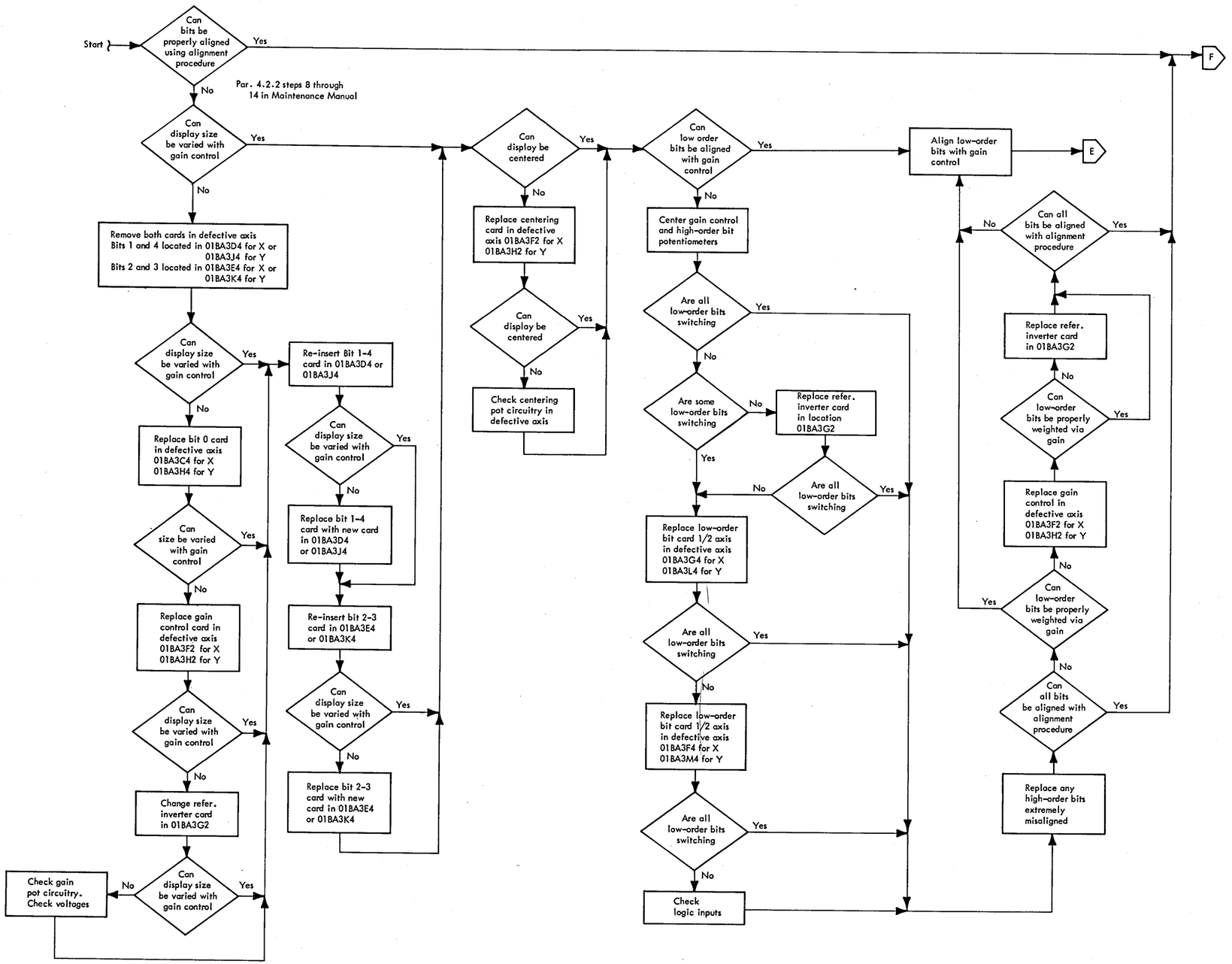


Figure 6034. Staircase Test Display Flow Chart (Sheet 1 of 2)

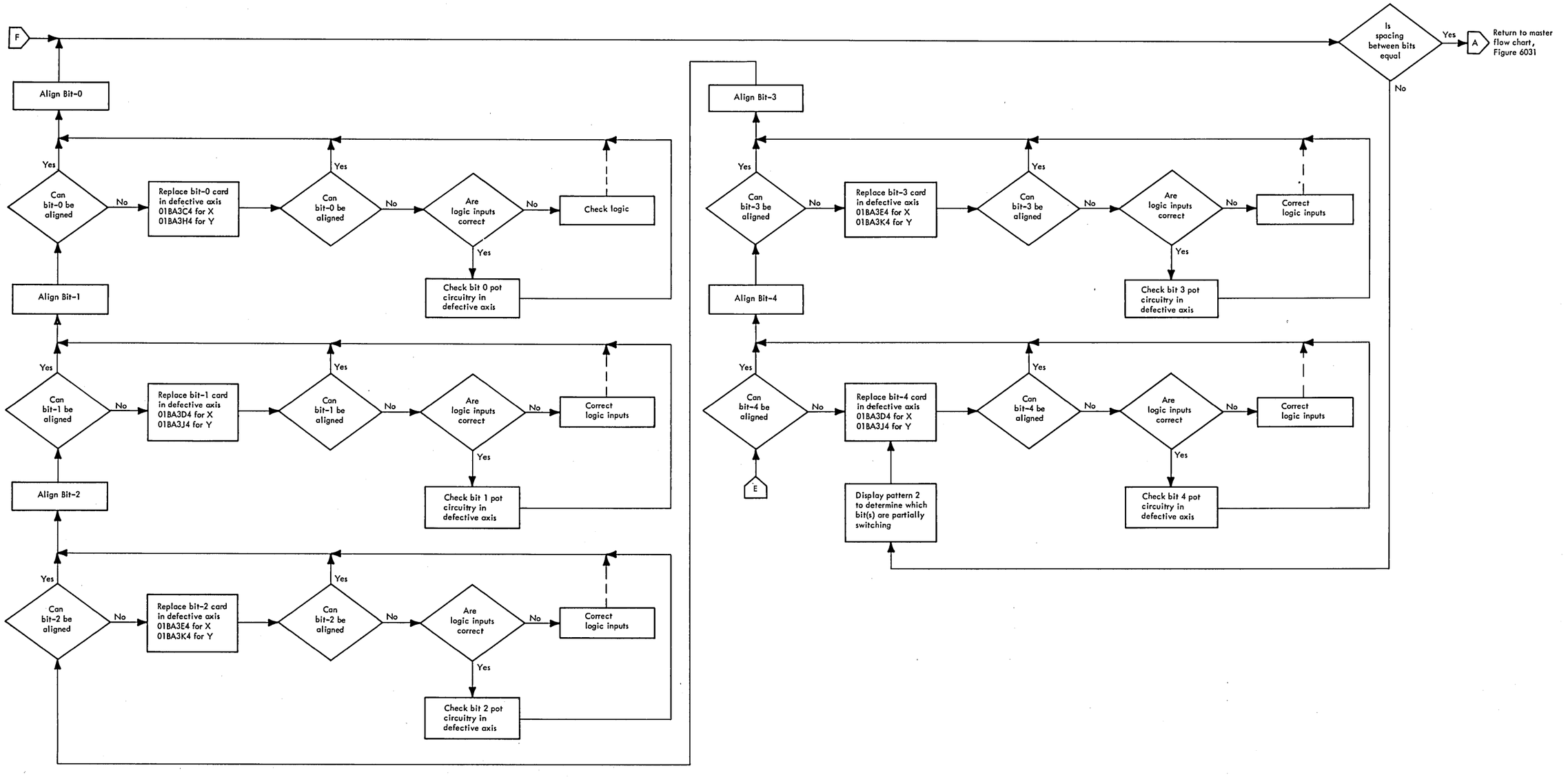


Figure 6034. Staircase Test Display Flow Chart (Sheet 2 of 2)

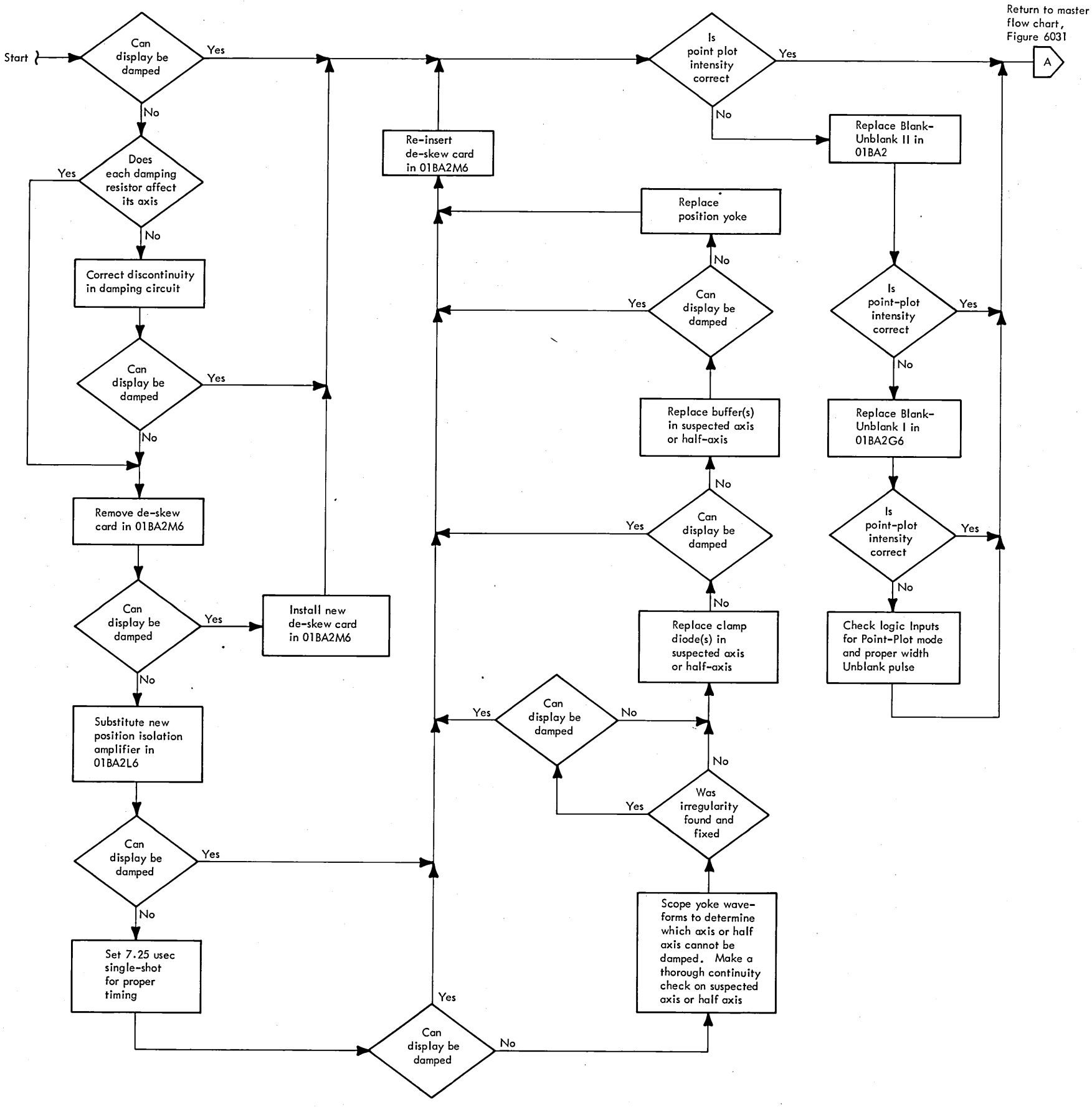


Figure 6035. Vector and Point Plot Fans Test Display Flow Chart

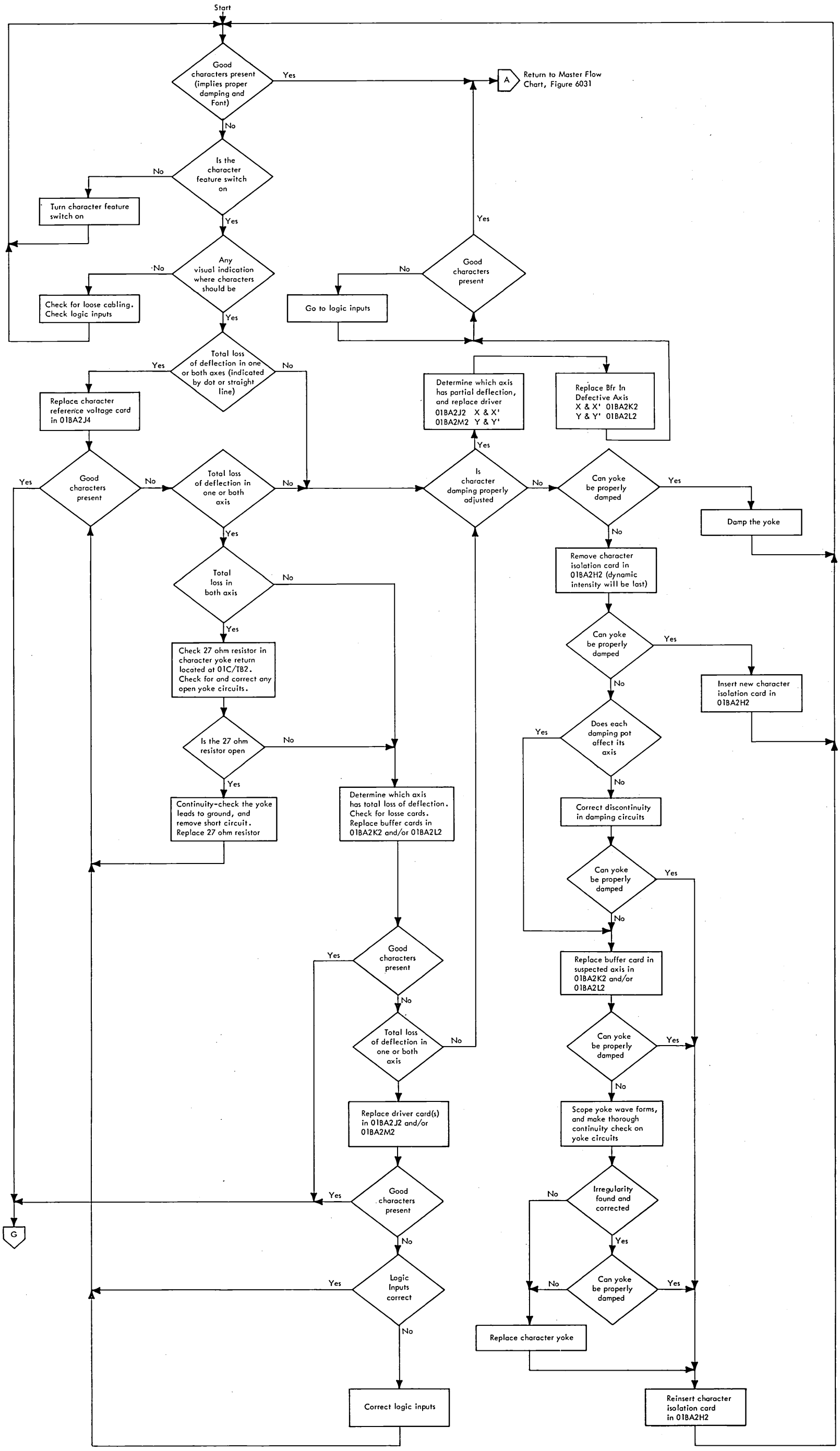


Figure 6036. Character Generator Test Flow Chart (Sheet 1 of 2)

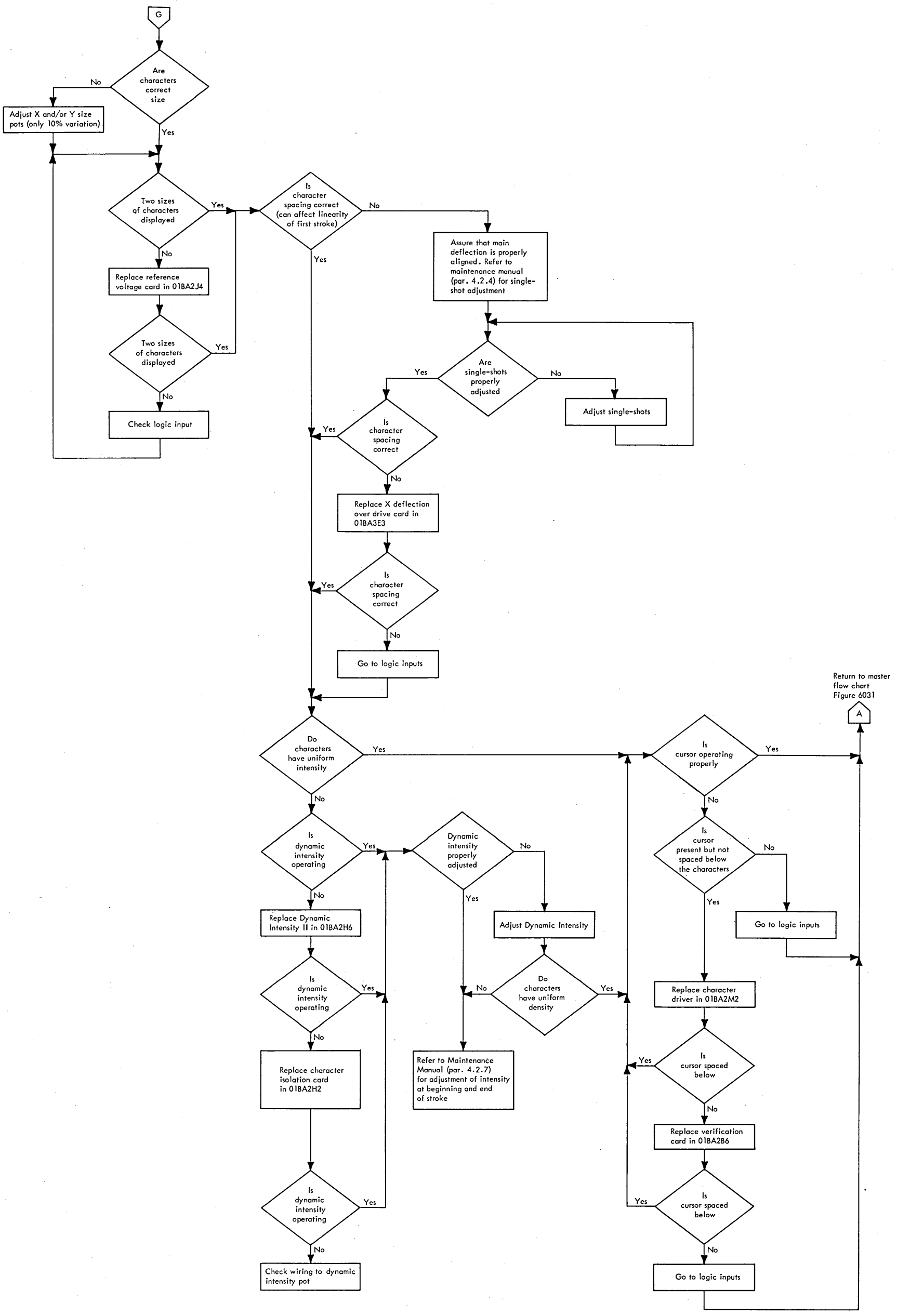


Figure 6036. Character Generator Test Flow Chart (Sheet 2 of 2)

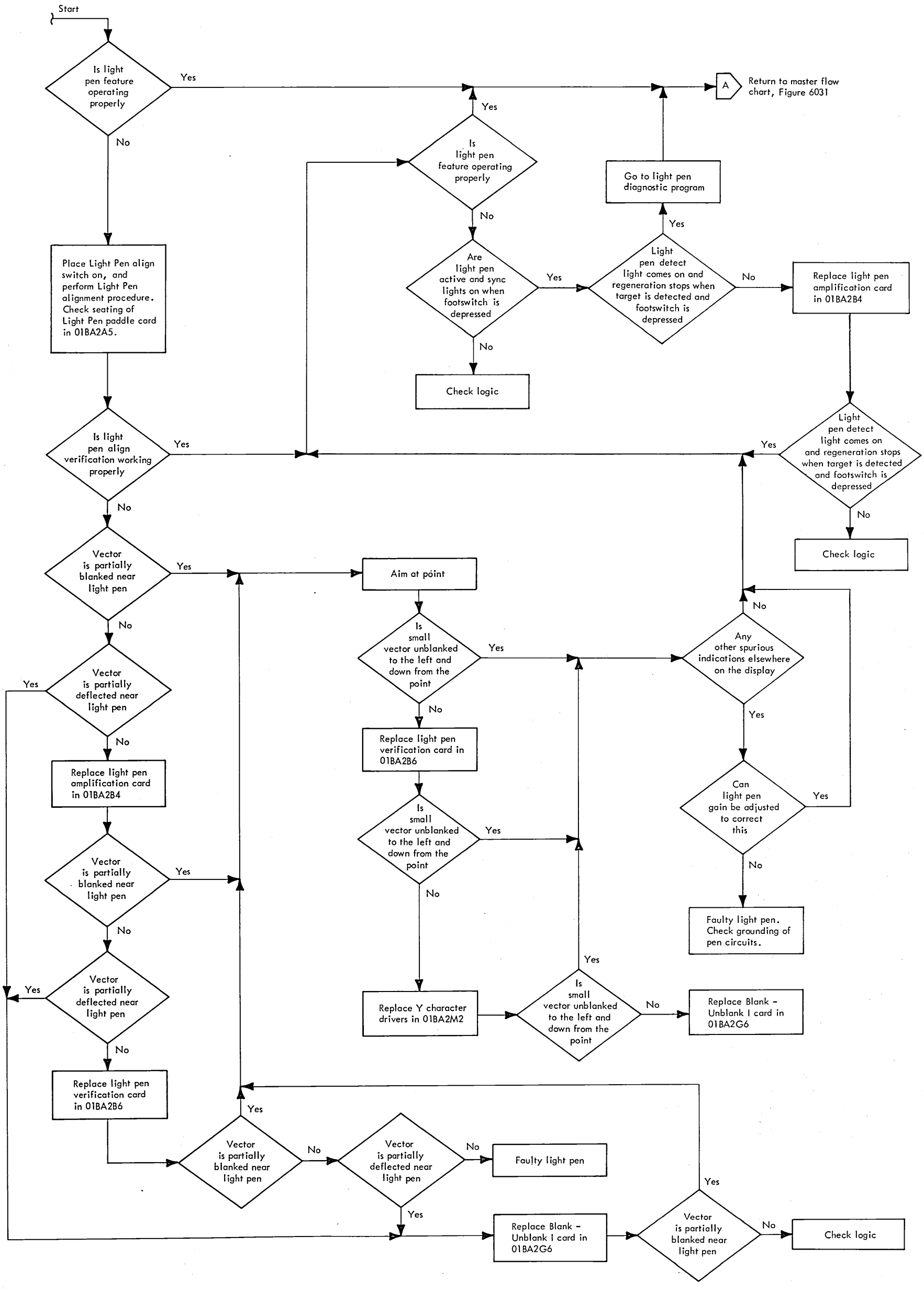


Figure 6037. Light Pen Test Flow Chart

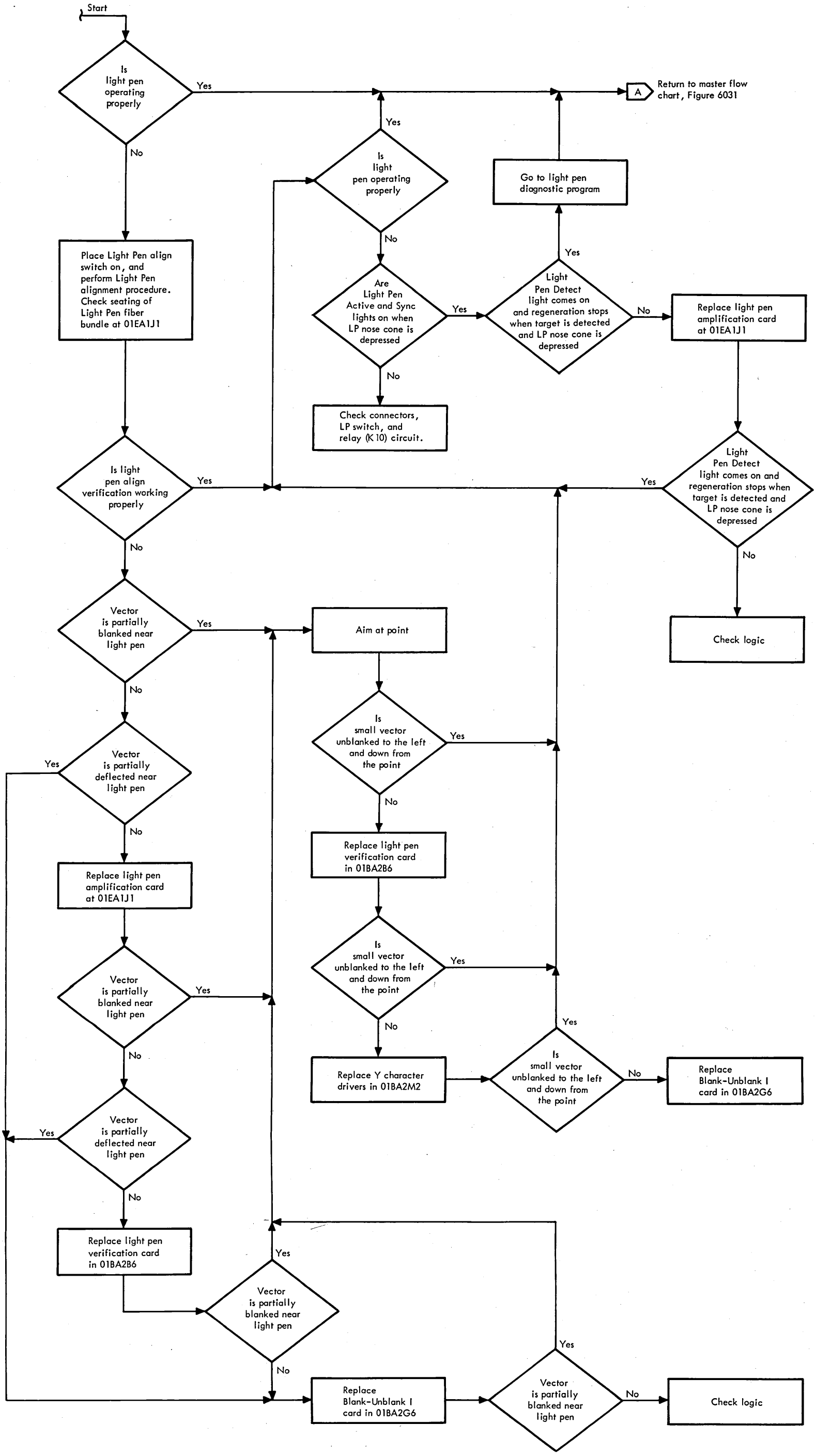


Figure 6037GDF. Light Pen Test Flow Chart (for GDF Machines)

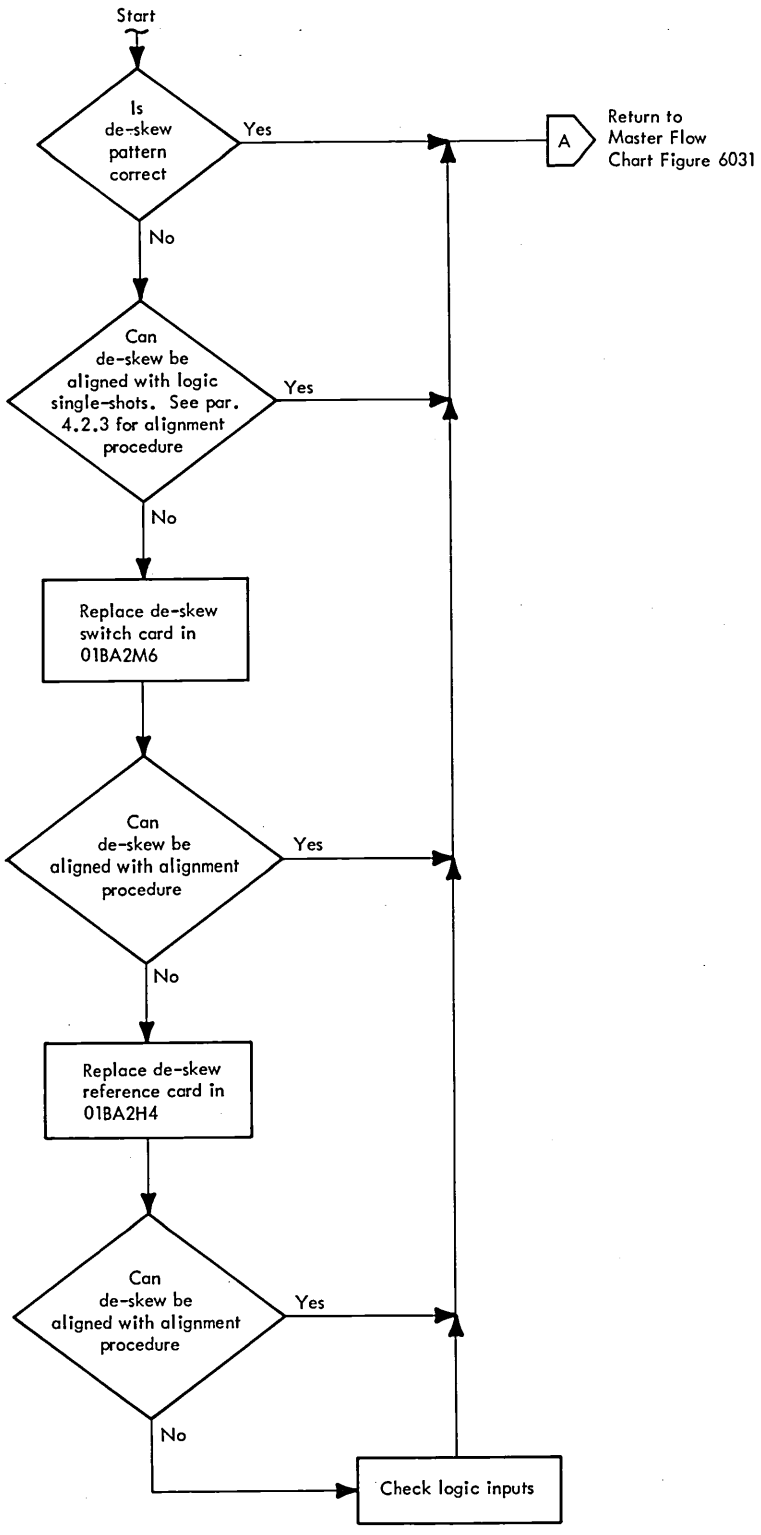


Figure 6038. De-Skew Test Flow Chart

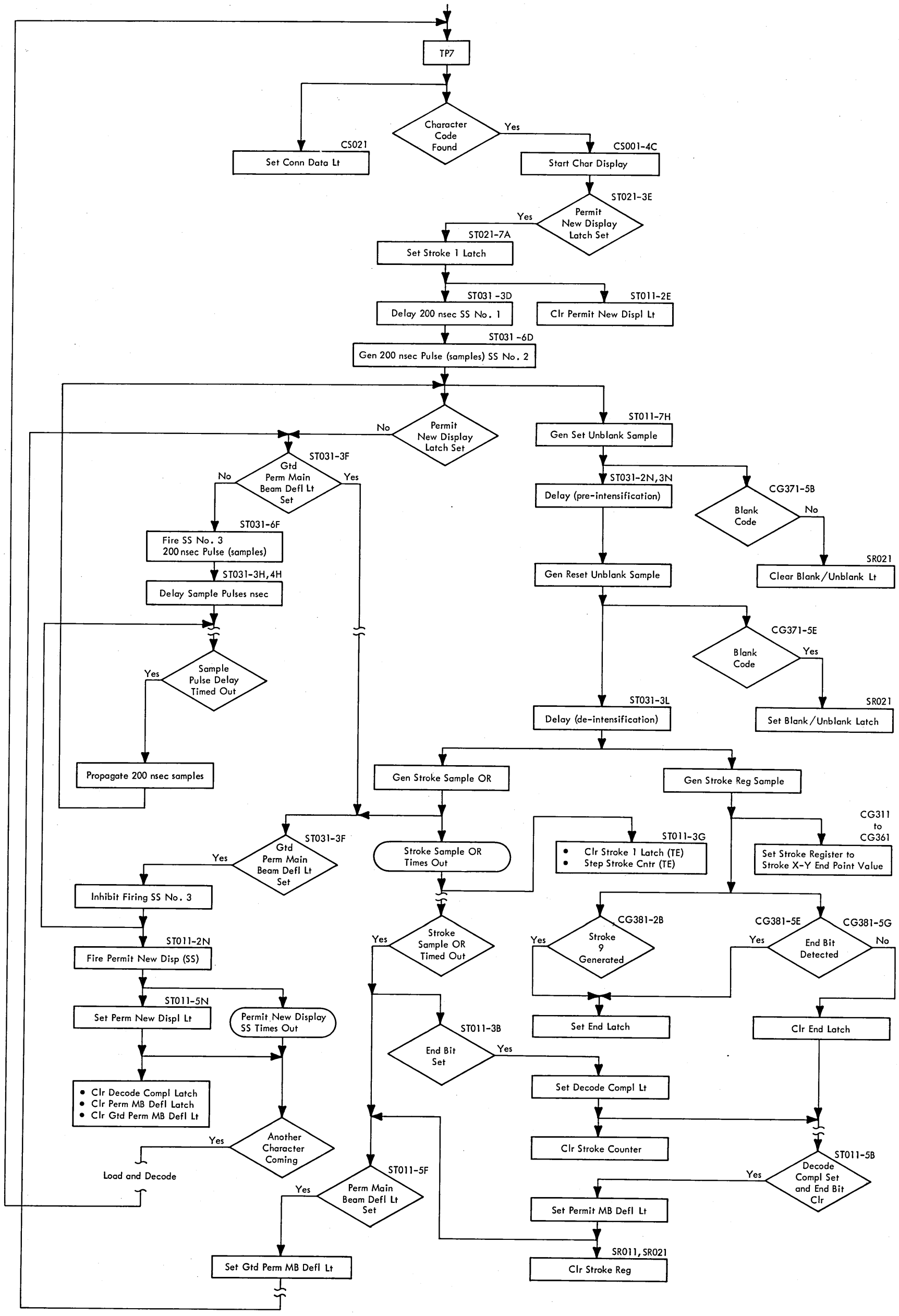


Figure 6039. Character Stroke Control, Flow Chart

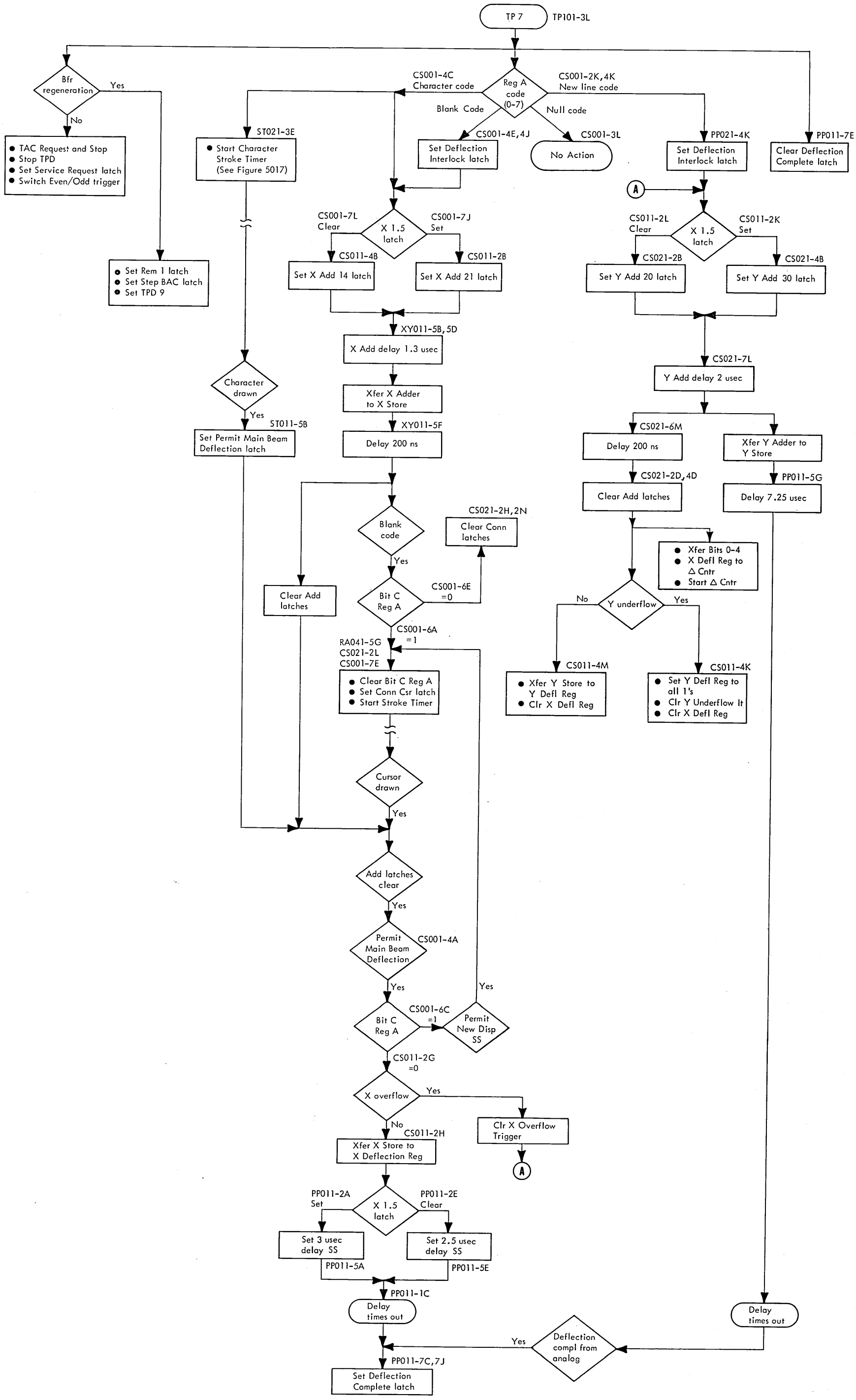
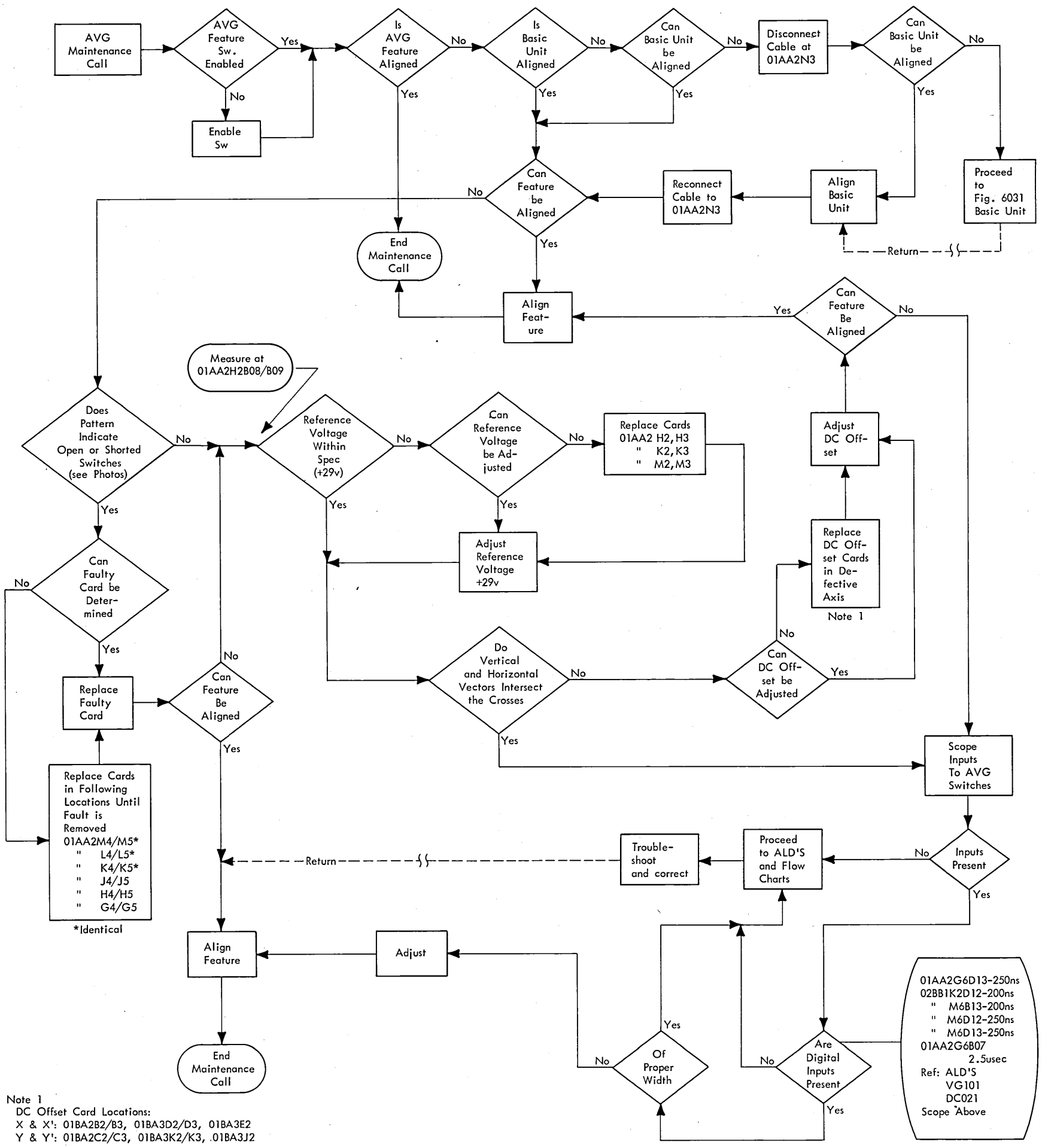


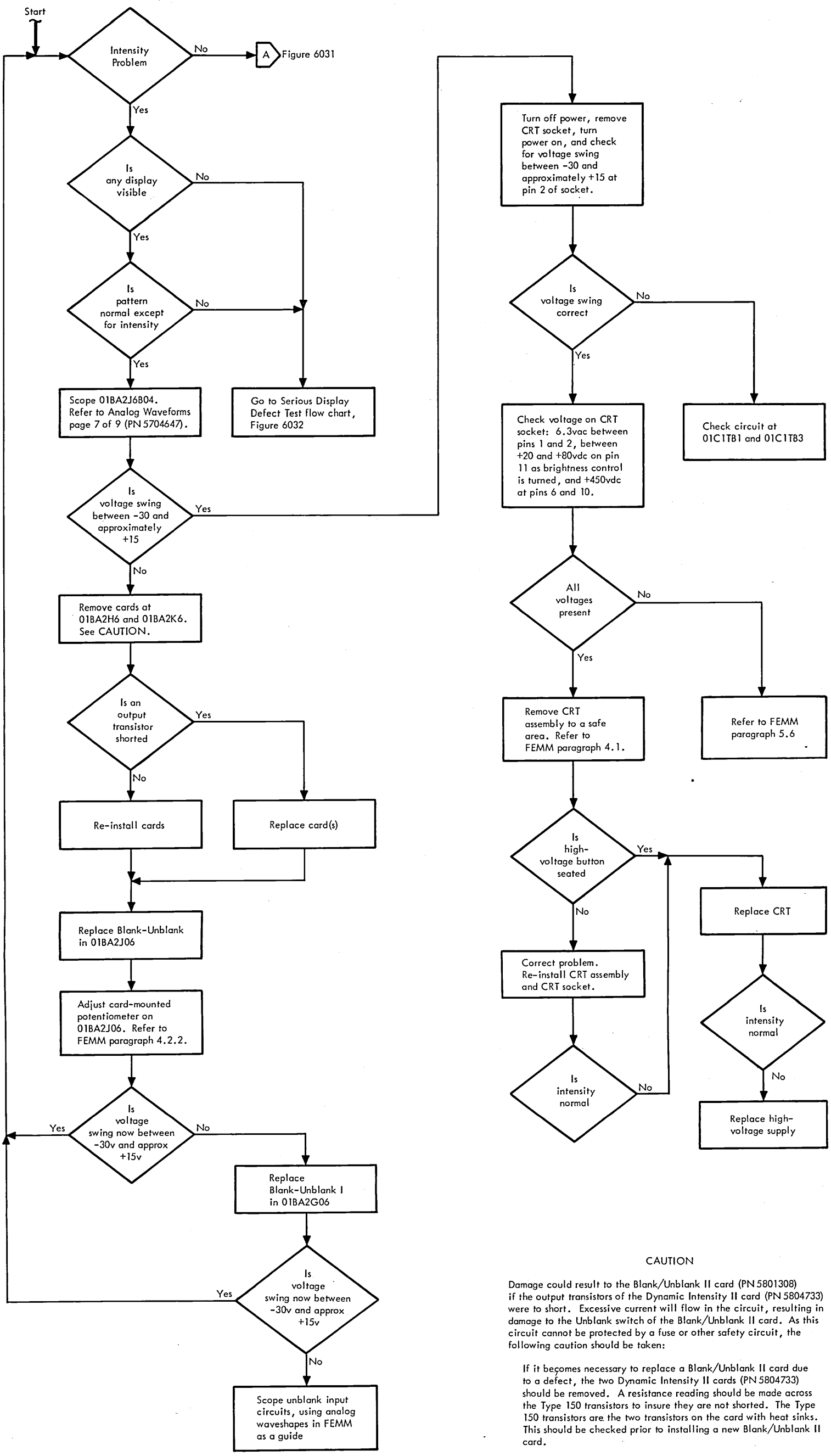
Figure 6040. Character Sequencer, Flow Chart

CAUTION: TURN DC POWER OFF BEFORE REPLACING CARDS.



Note 1
DC Offset Card Locations:
X & X': 01BA2B2/B3, 01BA3D2/D3, 01BA3E2
Y & Y': 01BA2C2/C3, 01BA3K2/K3, .01BA3J2

Figure 6041. Absolute Vector Graphics Diagnostic Test Flow Chart



CAUTION

Damage could result to the Blank/Unblank II card (PN 5801308) if the output transistors of the Dynamic Intensity II card (PN 5804733) were to short. Excessive current will flow in the circuit, resulting in damage to the Unblank switch of the Blank/Unblank II card. As this circuit cannot be protected by a fuse or other safety circuit, the following caution should be taken:

If it becomes necessary to replace a Blank/Unblank II card due to a defect, the two Dynamic Intensity II cards (PN 5804733) should be removed. A resistance reading should be made across the Type 150 transistors to insure they are not shorted. The Type 150 transistors are the two transistors on the card with heat sinks. This should be checked prior to installing a new Blank/Unblank II card.

Figure 6042. Intensity Test Flow Chart

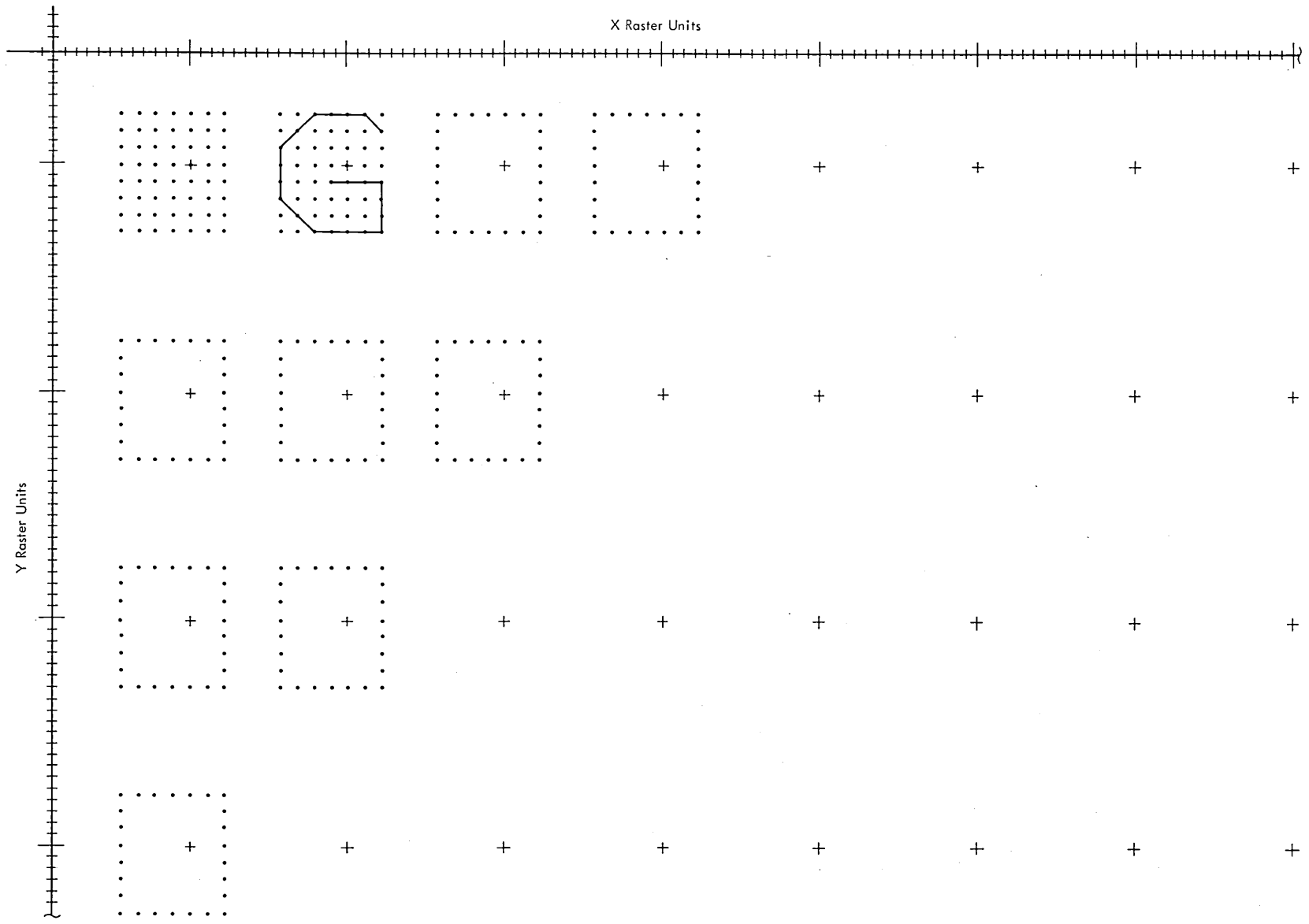


Figure 9000. Size A Characters, Display Distribution

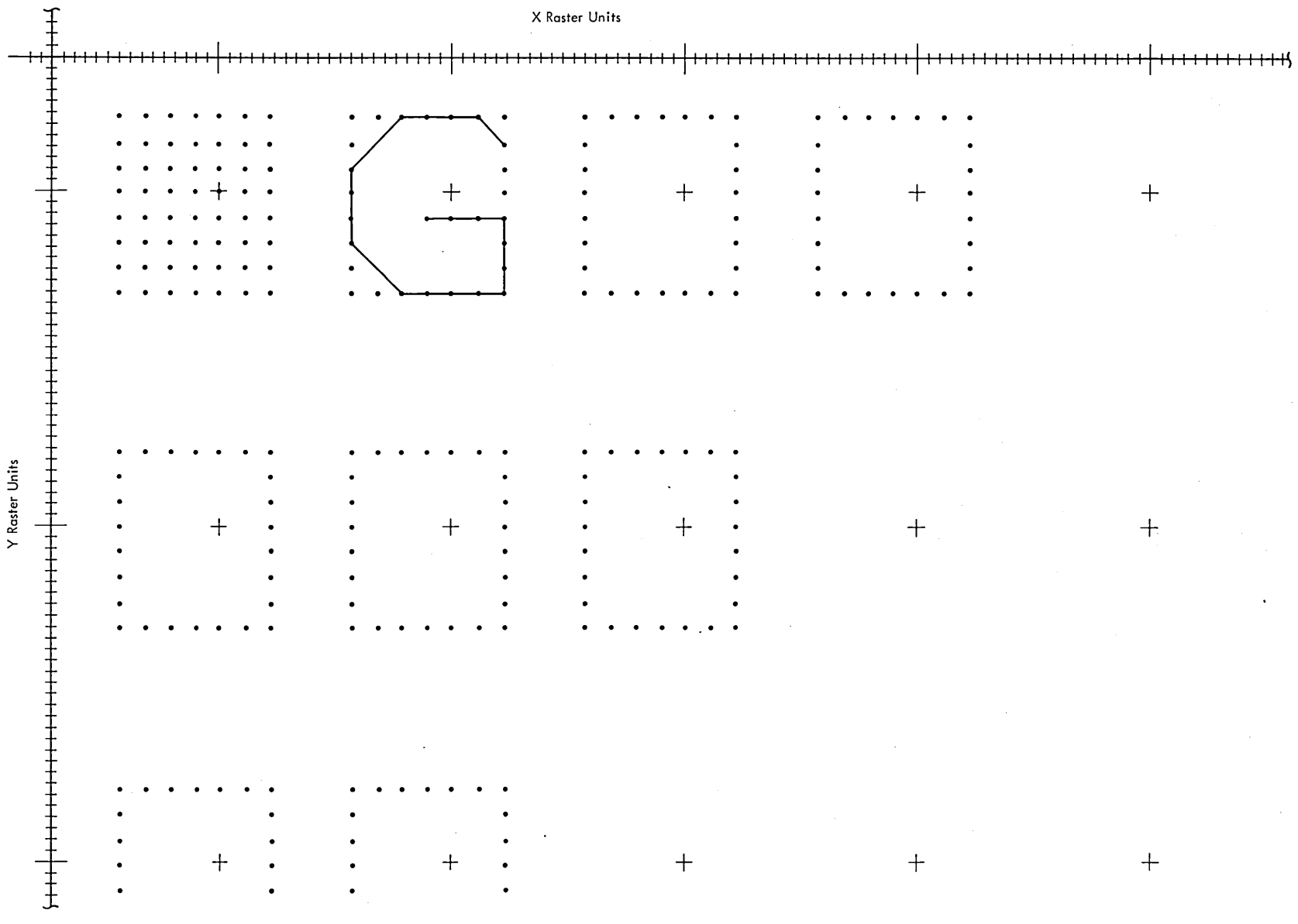


Figure 9001. Size B Characters, Display Distribution

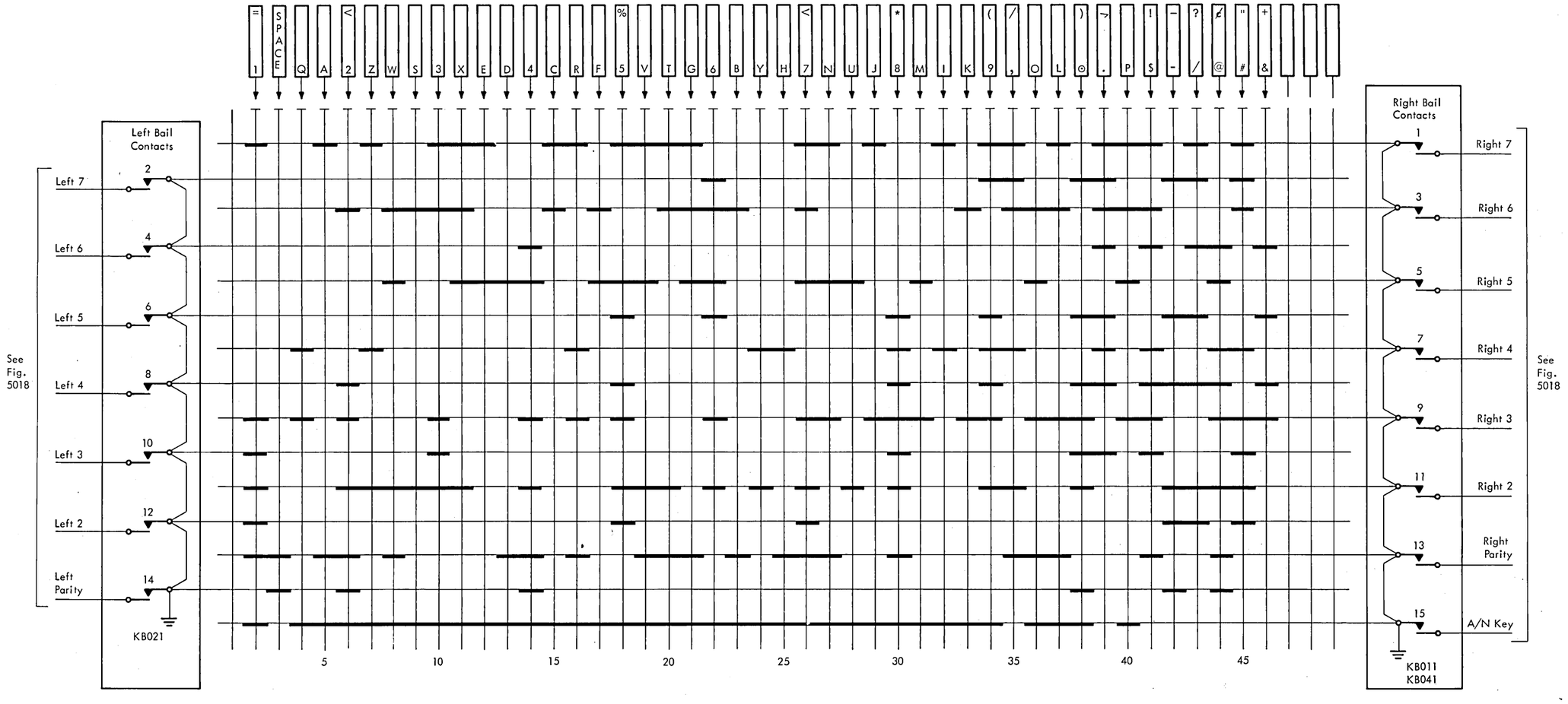
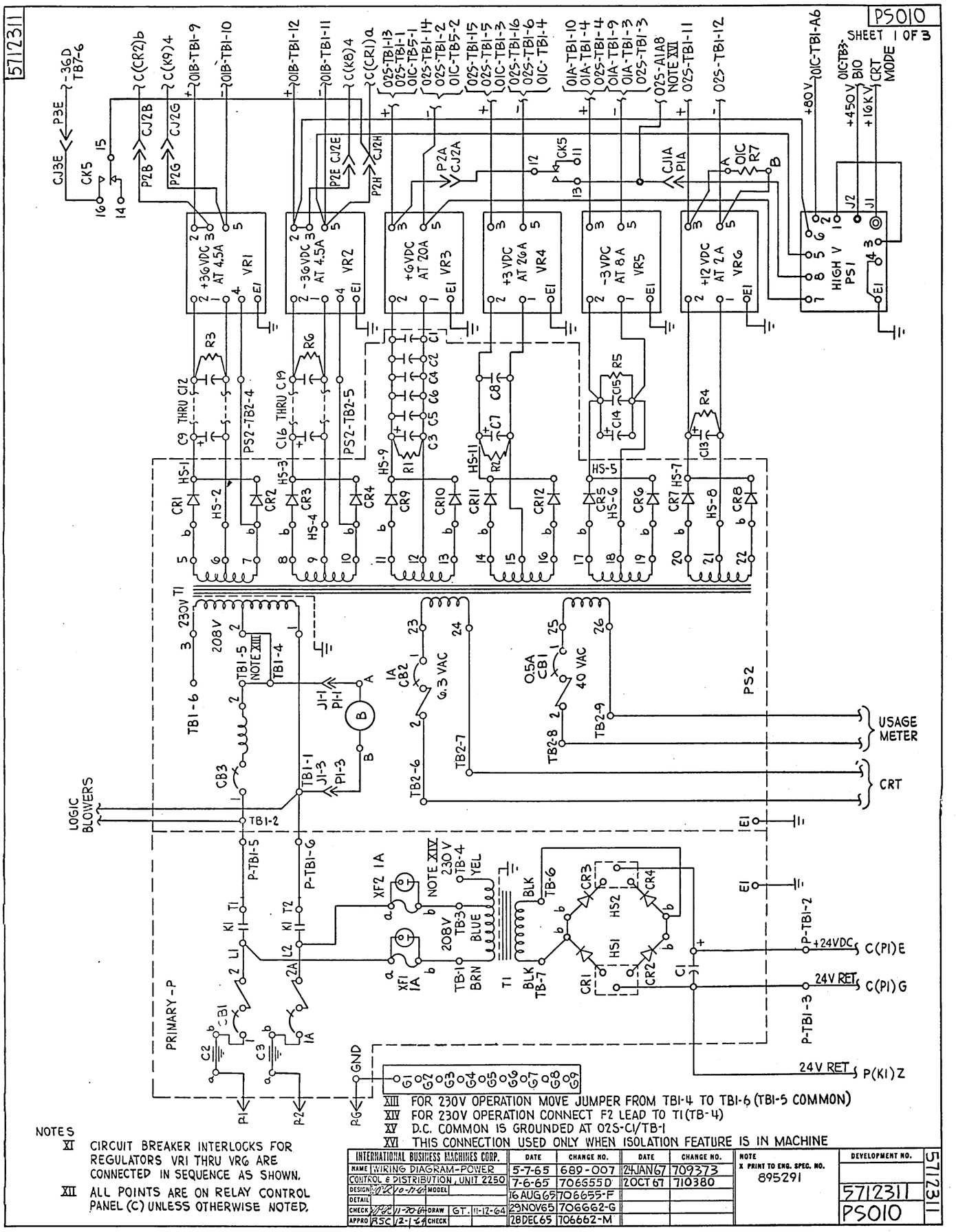
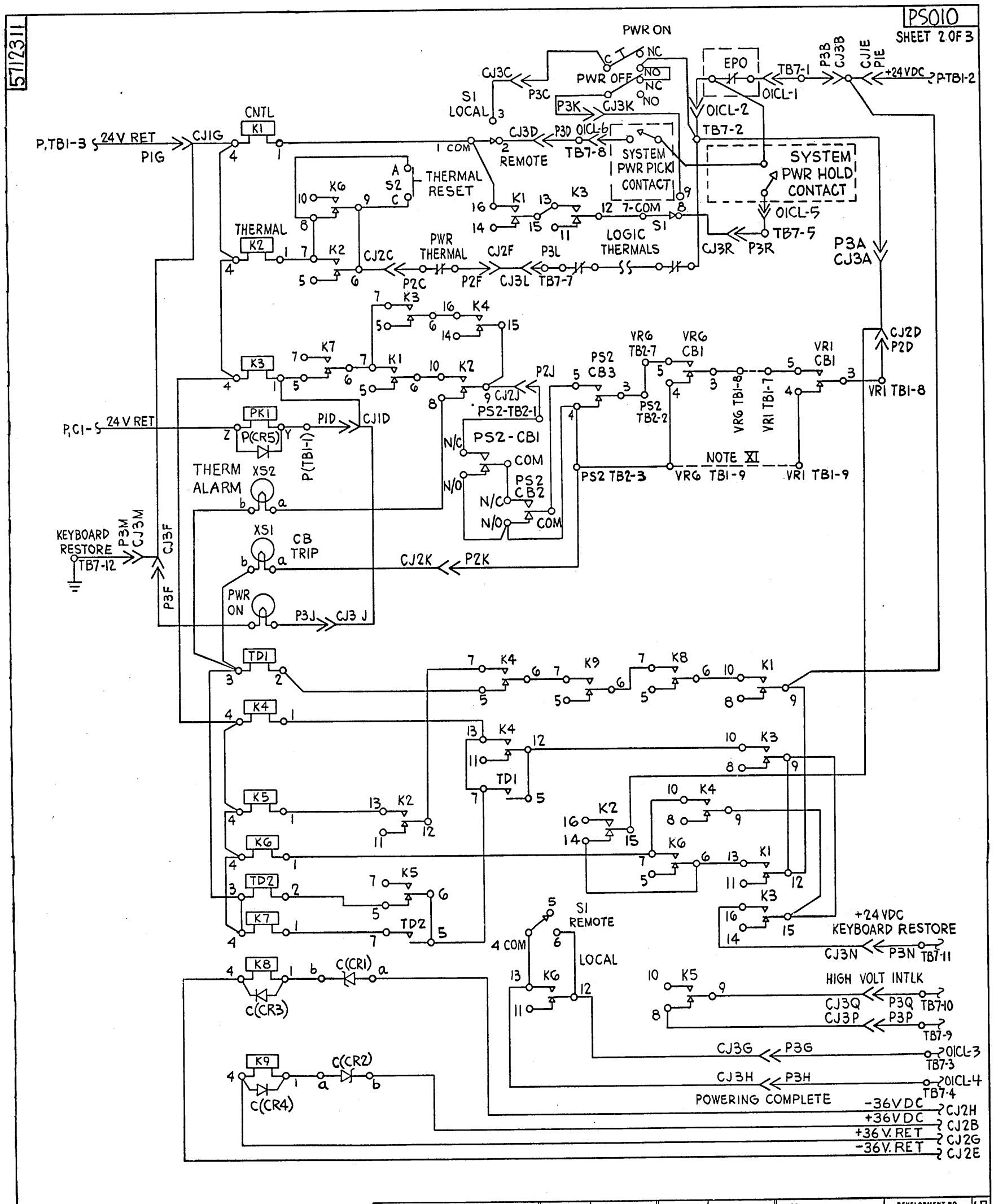


Figure 9002. A/N Keyboard, Encoding Chart



●Figure 9003. Power Control and Distribution Wiring Diagram (Sheet 1 of 3)



INTERNATIONAL BUSINESS MACHINES CORP.					DATE	CHANGE NO.	DATE	CHANGE NO.	NOTE	DEVELOPMENT NO.	5712311
NAME	WIRING DIAGRAM - POWER				5-7-65	689-007	24JAN67	709373	X PRINT TO ENG. SPEC. NO. 895291		
CONTROL & DISTRIBUTION, UNIT 2250					7-6-65	706655 D	20CT 67	710380		5712311	
DESIGN	[illegible] 10-19-67	MODEL			16AUG65	706655-F				PS010	
DETAIL					30NOV65	706662G					
CHECK	[illegible] 11-20-67	DRAW	GT	11-12-64	28DEC65	706662-M					
APPRO	RSC 11-20-67	CHECK									

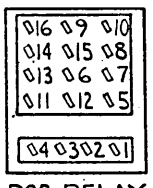
•Figure 9003. Power Control and Distribution Wiring Diagram (Sheet 2 of 3)

5712311

PS010
SHEET 3 OF 3

COMPONENT CHART

CODE	PART NO.	DESCRIPTION
P,CB1	5719456	CIRCUIT BREAKER 15A
P, K1	5276701	CONTACTOR
P, T1	5712337	TFMR 24VDC
P, C1	208245	CAPACITOR 2.5KMFD
P,C2&C3	5214060	CAPACITOR, FEED THRU
P,CR1&CR2	598355	DIODE
P,CR3&CR4	598353	DIODE
P,F1&F2	6325	FUSE
PS2-B	5313850	BLOWER
PS2,T1	5712373	TFMR
PS2,CB1	535290	CIRCUIT BREAKER 0.5A
PS2,CB2	535292	CIRCUIT BREAKER 1.0A
PS2,CB3	889995	CIRCUIT BREAKER 10A
PS2,CR1-8	598479	DIODE
PS2,CR9-12	127324	DIODE
PS2,C1-C6	5261057	CAPACITOR 17KMFD
PS2,C7&C8	5213162	CAPACITOR 74KMFD
C9-12,C16-19	208232	CAPACITOR 3.5KMFD
C13	5261077	CAPACITOR 8.9KMFD
C14,C15	5261067	CAPACITOR 24KMFD
PS2, R1	5261899	RESISTOR 100Ω 5W, ASM
PS2, R2	5712377	RESISTOR 70Ω 5W, ASM
R3, R6	5712378	RESISTOR 600Ω 10W, ASM
R4	5261077	RESISTOR 1.1KΩ 2W, ASM
R5	5261935	RESISTOR 330Ω 2W, ASM
PS1	5712339	H.V. PWR SUPPLY (WD 5712340)
VR1 & 2	5239250	VOLT REG 36V-4A (WD 5239251)
VR3	5712359	VOLT REG 6V-20A (WD 5712372)
VR4	5712360	VOLT REG 3V-26A (WD 5712361)
VR5	5712363	VOLT REG 3V-8A (WD 5712364)
VR6	5712365	VOLT REG 12V-2A (WD 5712371)
K1-K7	5318968	RELAY 24VDC
TD1	5712326	TIME DELAY RELAY 25 SEC
S1	5213522	ROTARY SWITCH
S2	215679	PUSH BUTTON SWITCH
XS1&XS2	5372847	LAMP
C(CR1&CR2)	369129	ZENER DIODE 30V
P(CR5)	599917	AM DIODE ASM
C(CR3&CR4)	2111232	AM DIODE
PWR THRML	594986	THERMAL SWITCH
TD2	5712399	TIME DELAY RELAY 10 SEC
K8& K9	5318969	RELAY 6VDC

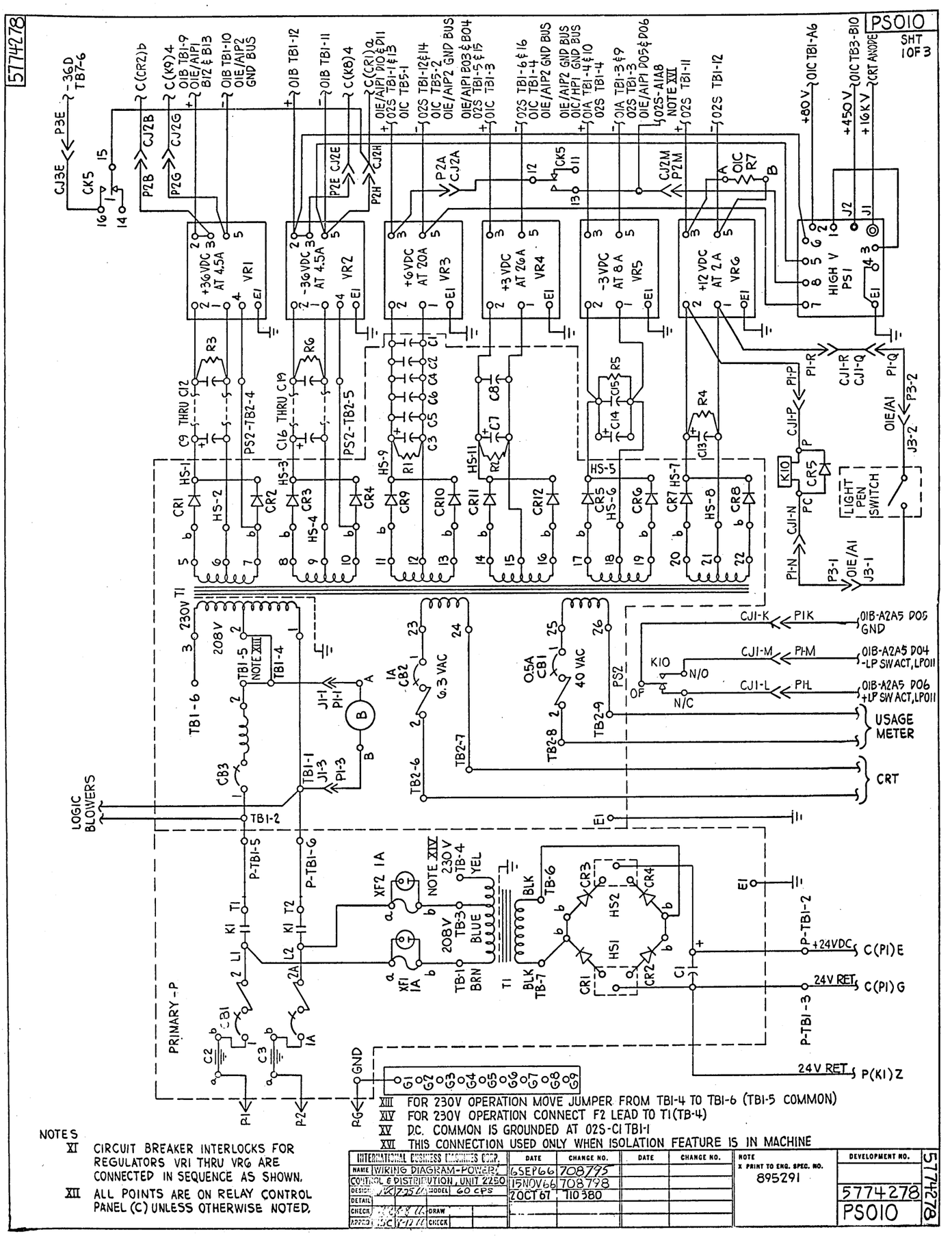


4 POS RELAY
WIRING SIDE
K1 - K9

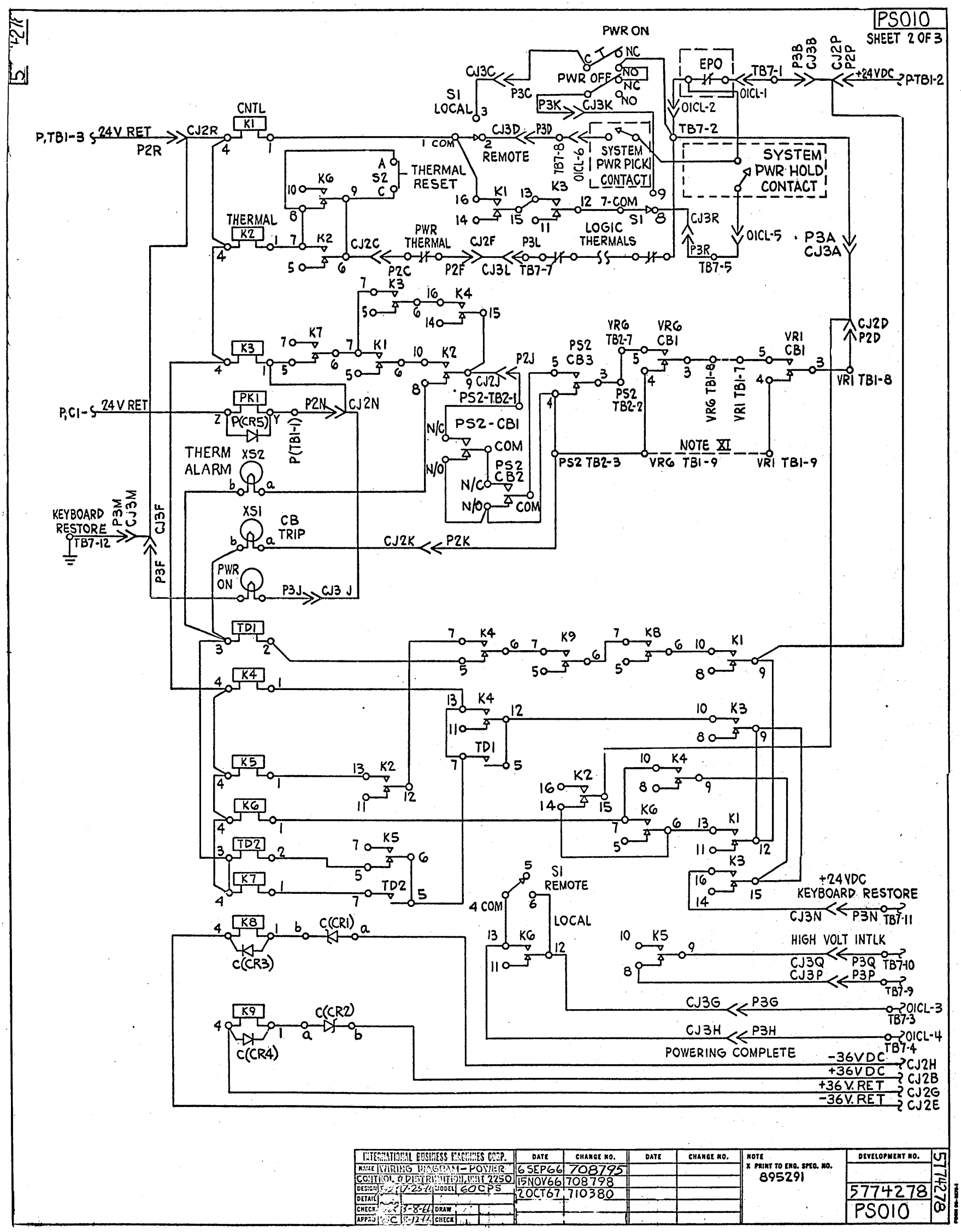
INTERNATIONAL BUSINESS MACHINES CORP.					DATE	CHANGE NO.	DATE	CHANGE NO.	NOTE	DEVELOPMENT NO.
NAME	WIRING DIAGRAM-PWR CONTROL & DISTRIBUTION				5-7-65	689-007	24JAN67	709373	X PRINT TO ENG. SPEC. NO. 895291	
DESIGN	[illegible]	10-12-64	MODEL		7-6-65	706655D	20CT67	710380		5712311
DETAIL					16AUG65	706655-F				PS010
CHECK	[illegible]	11-20-64	DRAW		22NOV65	706662-G				
APPRO	RSC	12-1-64	CHECK		28DEC65	706662-M				

5712311

•Figure 9003. Power Control and Distribution Wiring Diagram (Sheet 3 of 3)



•Figure 9003GDF. Power Control and Distribution Wiring Diagram (for GDF Machines) (Sheet 1 of 3)



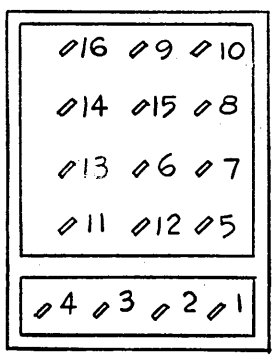
•Figure 9003GDF. Power Control and Distribution Wiring Diagram (for GDF Machines) (Sheet 2 of 3)

E 12-1

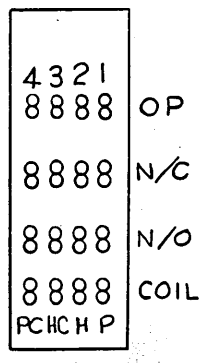
PS010
SHEET 3 OF 3

COMPONENT CHART

CODE	PART NO.	DESCRIPTION
P,CB1	5719456	CIRCUIT BREAKER 15A
P, K1	5276701	CONTACTOR
P, T1	5712337	TFMR 24VDC
P, C1	208245	CAPACITOR 2.5KMFD
P,C2&C3	5214060	CAPACITOR, FEED THRU
P,CR1&CR2	598355	DIODE
P,CR3&CR4	598353	DIODE
P,F1&F2	6325	FUSE
PS2-B	5313850	BLOWER
PS2,T1	5712373	TFMR
PS2,CB1	535290	CIRCUIT BREAKER 0.5A
PS2,CB2	535292	CIRCUIT BREAKER 1.0A
PS2,CB3	599995	CIRCUIT BREAKER 10A
PS2,CR1-8	598479	DIODE
PS2,CR9-12	127324	DIODE
PS2,C1-C6	5261057	CAPACITOR 17KMFD
PS2,C7&C8	5213162	CAPACITOR 74KMFD
C9-12,C16-19	208232	CAPACITOR 3.5KMFD
C13	5261077	CAPACITOR 8.9KMFD
C14,C15	5261067	CAPACITOR 24KMFD
PS2,R1	5261099	RESISTOR 100Ω 5W,ASM
PS2,R2	5712377	RESISTOR 70Ω 5W,ASM
R3,R6	5712378	RESISTOR 600Ω 10W,ASM
R4	5261077	RESISTOR 1.1KΩ 2W,ASM
R5	5261935	RESISTOR 330Ω 2W,ASM
PS1	5712339	H.V. PWR SUPPLY(WD5712340)
VR1&2	5239250	VOLT REG 36V-4A (WD 5239251)
VR3	5712359	VOLT REG 6V-20A(WD 5712372)
VR4	5712360	VOLT REG 3V-26A(WD 5712361)
VR5	5712363	VOLT REG 3V-8A(WD 5712364)
VR6	5712365	VOLT REG 12V-2A (WD 5712371)
K1-K7	5318963	RELAY 24VDC
TD1	5712326	TIME DELAY RELAY 25 SEC
S1	5213522	ROTARY SWITCH
S2	215679	PUSH BUTTON SWITCH
XS1&XS2	5372847	LAMP
C(CR1&CR2)	369129	ZENER DIODE 30V
P(CR5)	5368217	AM DIODE ASM
C(CR6&CR7)	2111282	AM DIODE
PWR THML	594906	THERMAL SWITCH
TD2	5712399	TIME DELAY RELAY 10 SEC
K8&K9	5318969	RELAY 6VDC
K10	769095	WIRE CONTACT RELAY
C(CR5)	5368225	DD DIODE ASM



4 POS. RELAY
WIRING SIDE
K1 - K9

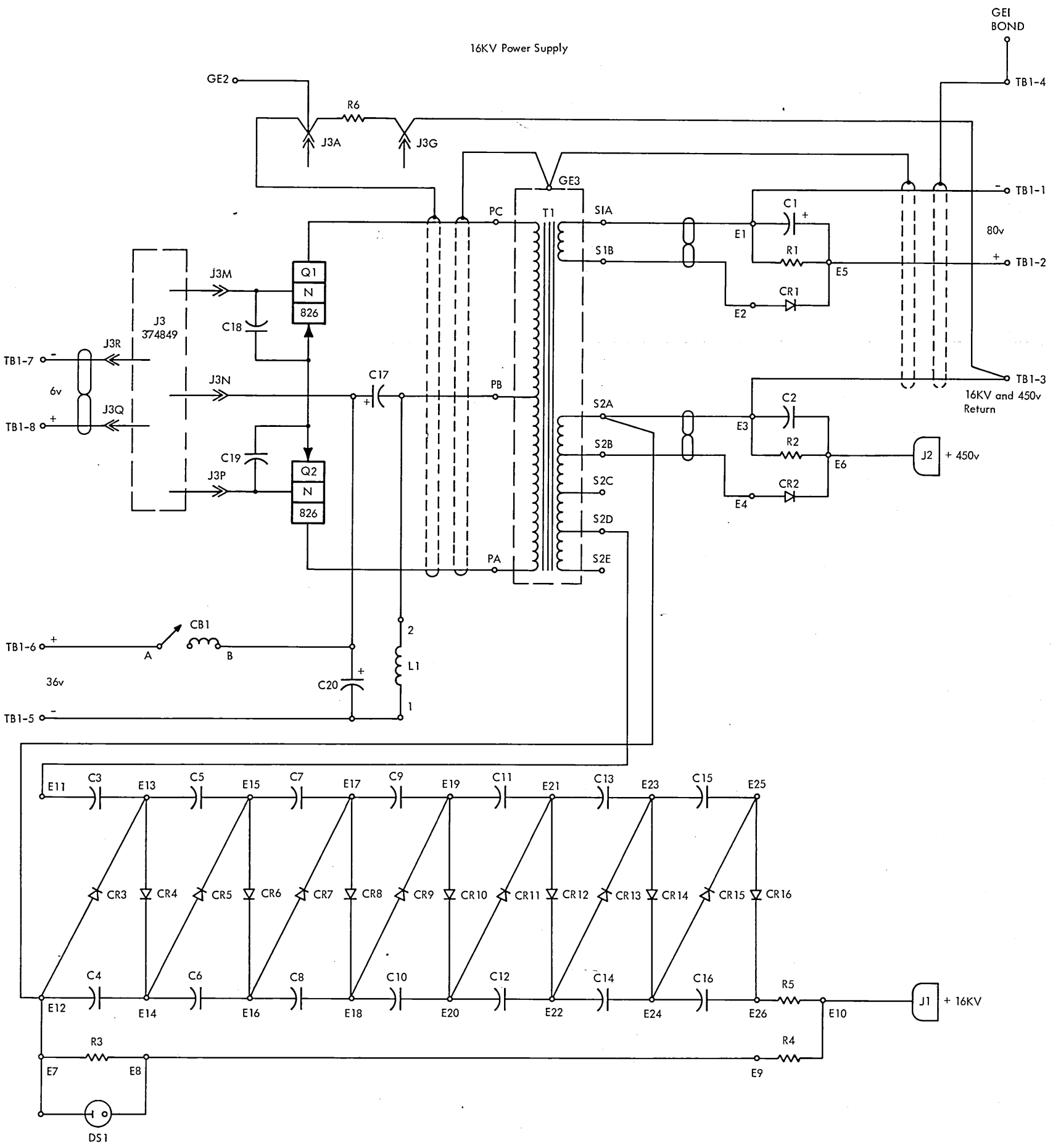


WIRING SIDE
K10

INTERNATIONAL BUSINESS MACHINES CORP.	DATE	CHANGE NO.	DATE	CHANGE NO.	NOTE	DEVELOPMENT NO.
NAME WIRING DIAGRAM-PWR CONTROL & DISTRIBUTION	6SEP66	708795			X PRINT TO ENG. SPEC. NO. 895291	
DESIGN 7-25-66 MODEL	15NOV66	708798				5774278
DETAIL	20CT67	710380				PS010
CHECK 8-8-66 DRAW						
APPRO 8-12-66 CHECK						

5774278

●Figure 9003GDF. Power Control and Distribution Wiring Diagram (for GDF Machines)(Sheet 3 of 3)



Component Chart		
Ref Des	Part Number	Description
C1	482148	Capacitor 5mf
C2	5213609	0.05mf
C3-C16	5213619	0.01mf
C17	369849	50mf
C18, C19	5213577	1mf
C20	526332	Capacitor 450mf
CB1	526663	Circuit Breaker
CR1	341622	Diode
CR2-CR16	5213417	Rectifier Silicon
R1	323989	Resistor 47K 1W
R2	132699	8.2 meg 1/2W
R3	5213463	3.3 meg 2W
R4	5213583	100 meg 5W
R5	317047	220K 1W
R6	317026	Resistor 9.1K 1/2W
J3	374849	Card, Oscillator
T1	5712353	Transformer
Q1, Q2	5261889	Transistor 826
L1	5712376	Inductor
DS1	194587	Neon Lamp

Figure 9004. High Voltage Power Supply Wiring Diagram

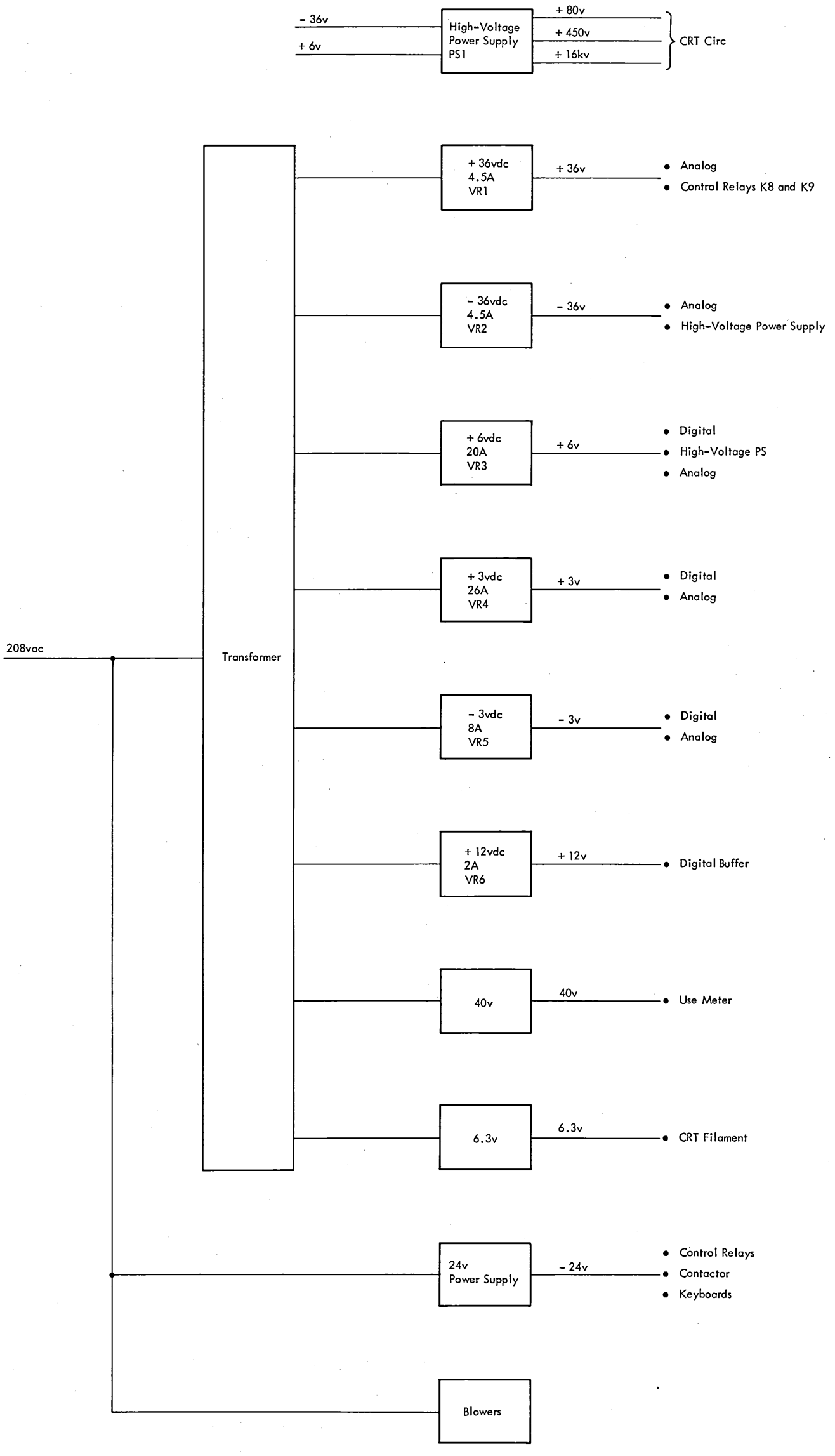
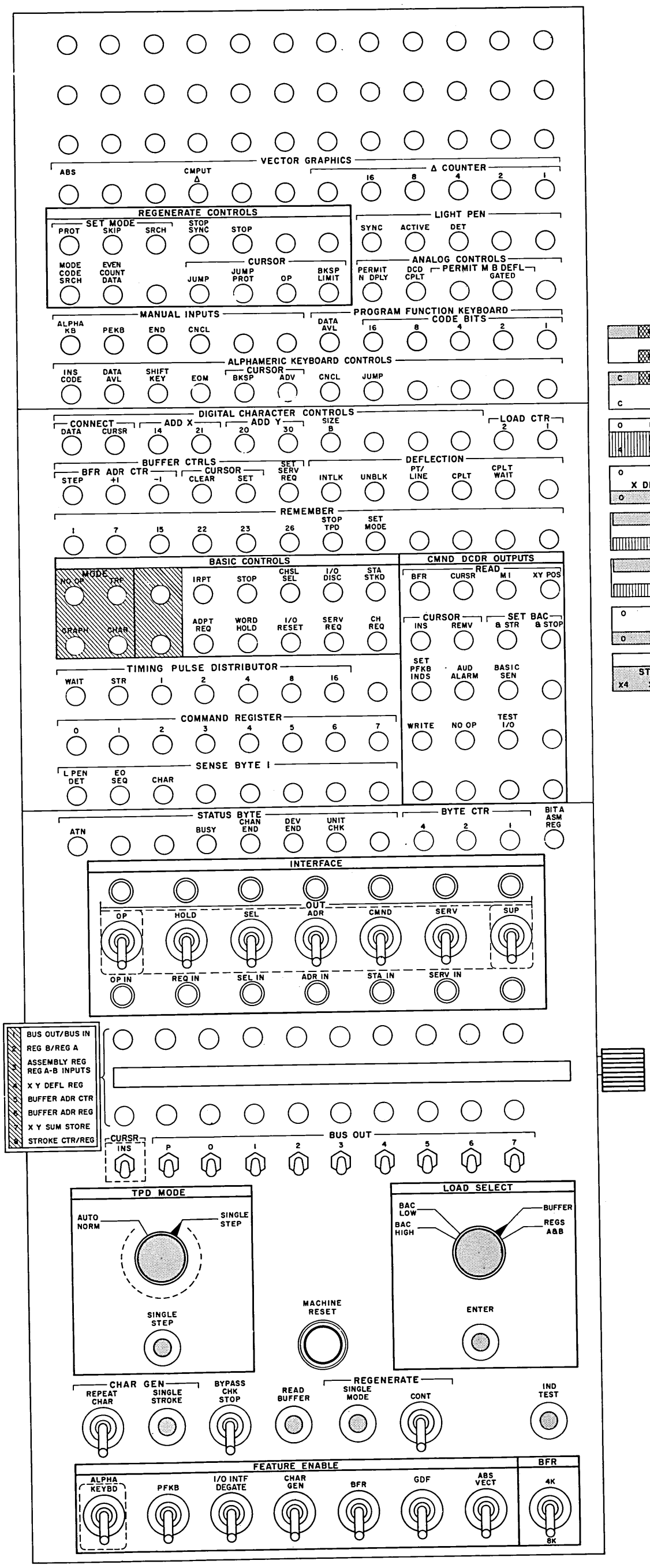
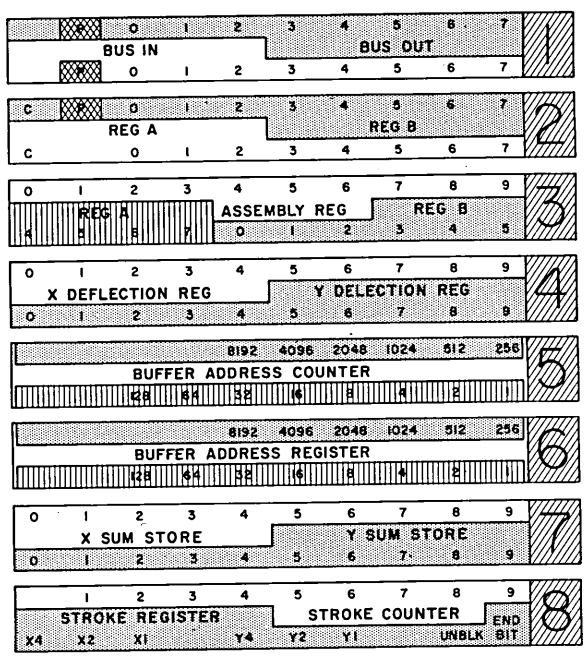


Figure 9005. Power Distribution



DETAIL A



•Figure 9006. 2250 CE Panel

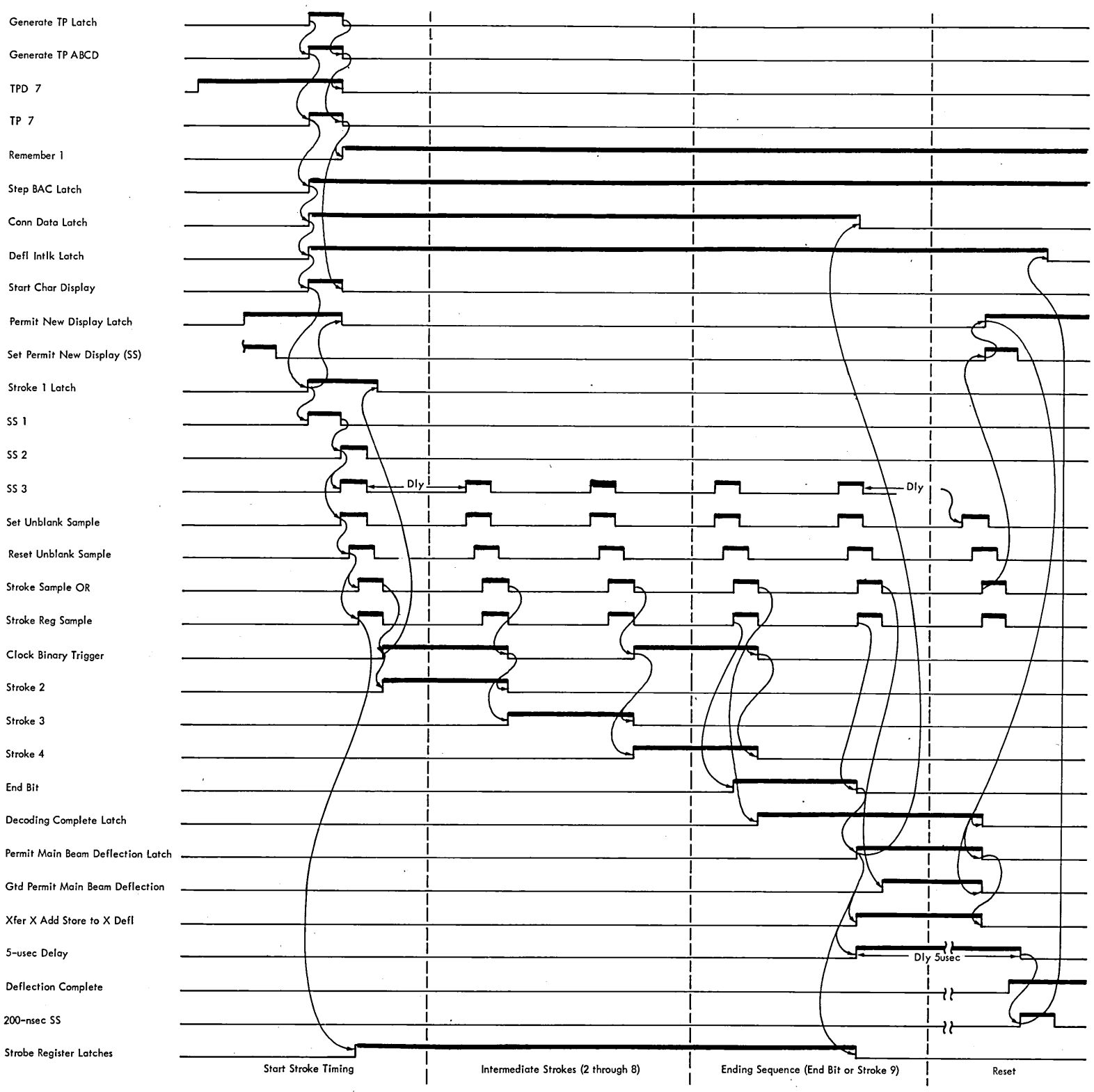


Figure 9007. Character Stroke, Timing Chart

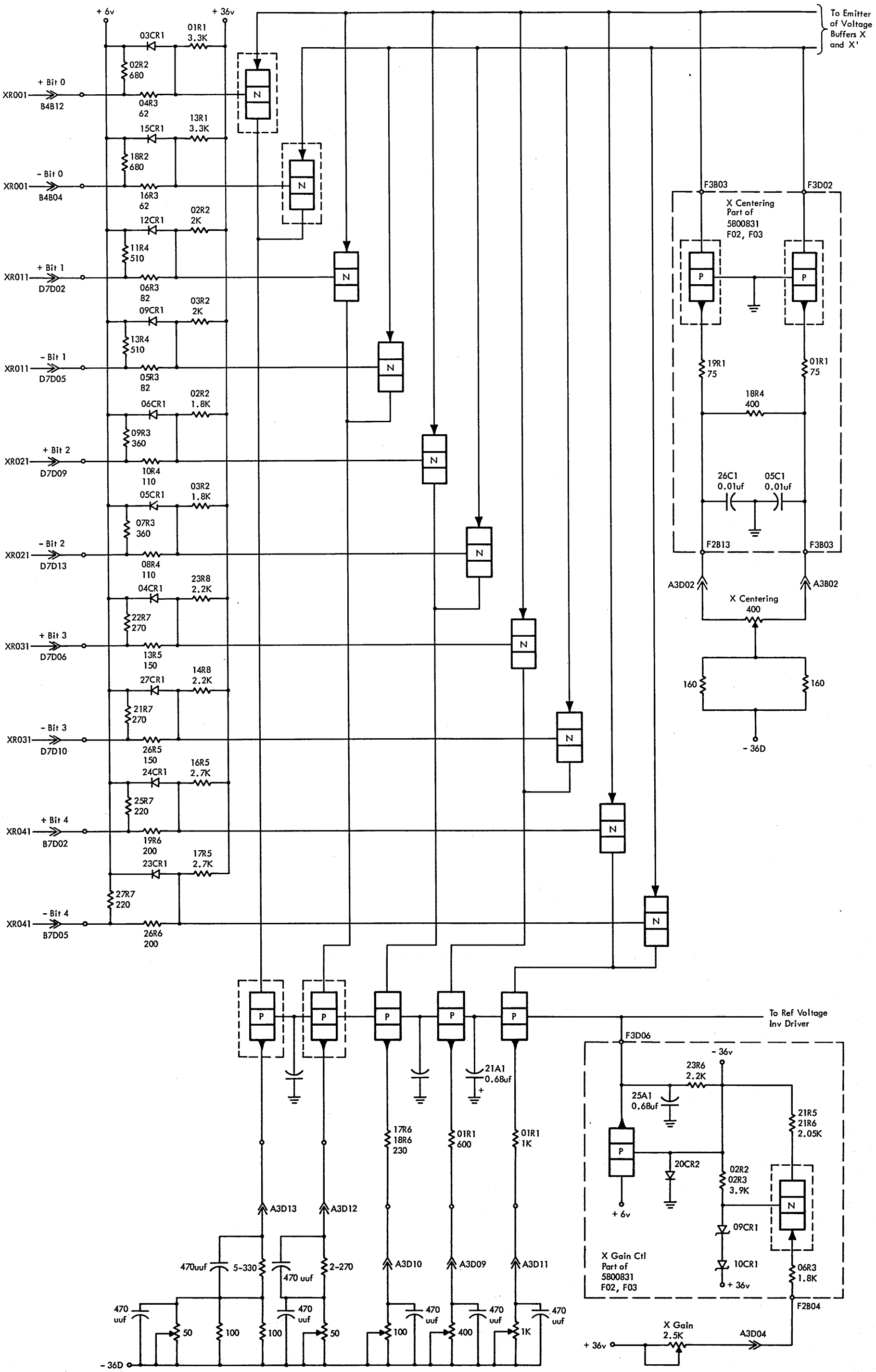


Figure 9008. Main Deflection, High-Order Decoding and Control, Wiring Diagram

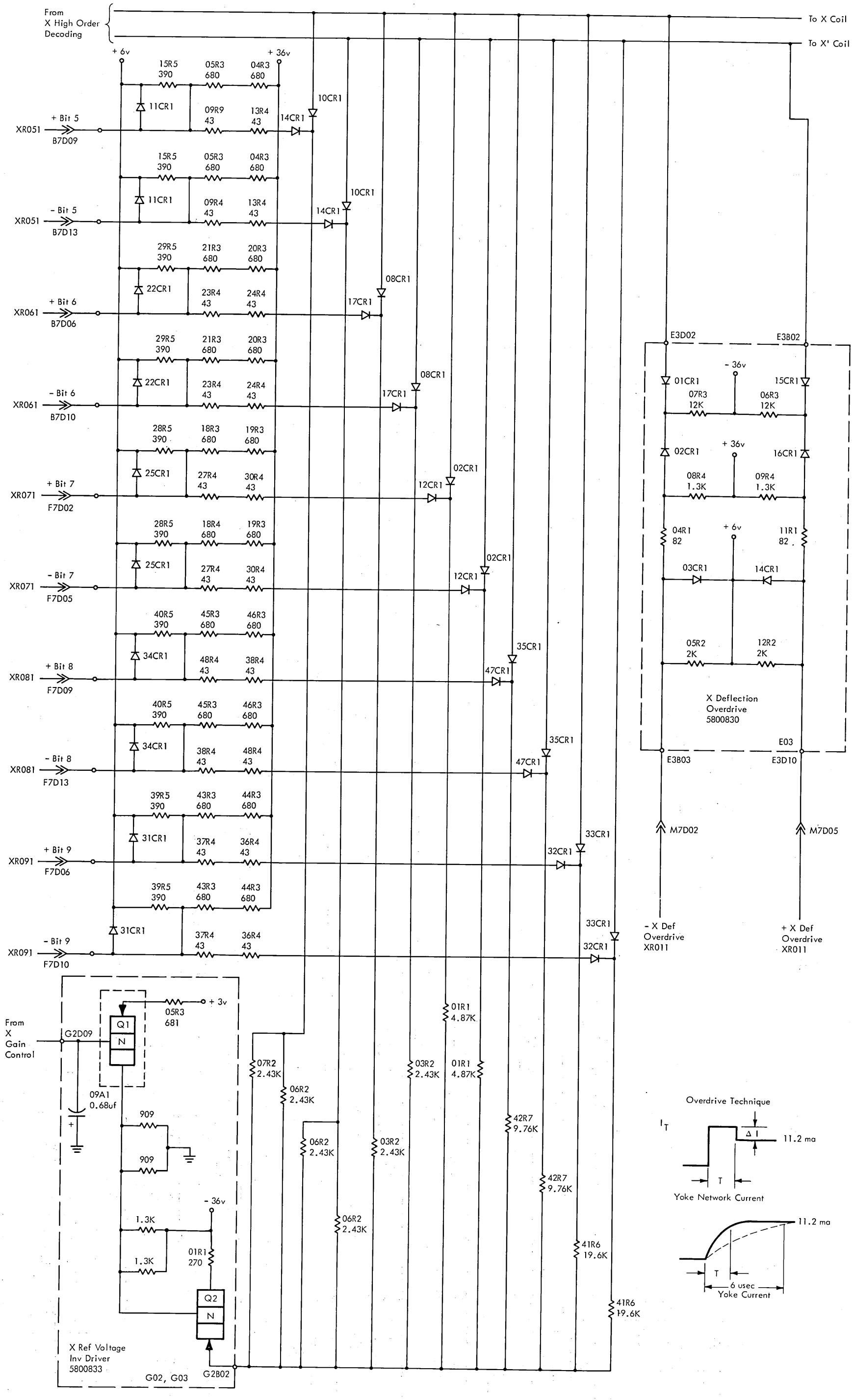


Figure 9009. Main Deflection, Low-Order Decoding and Control, Wiring Diagram

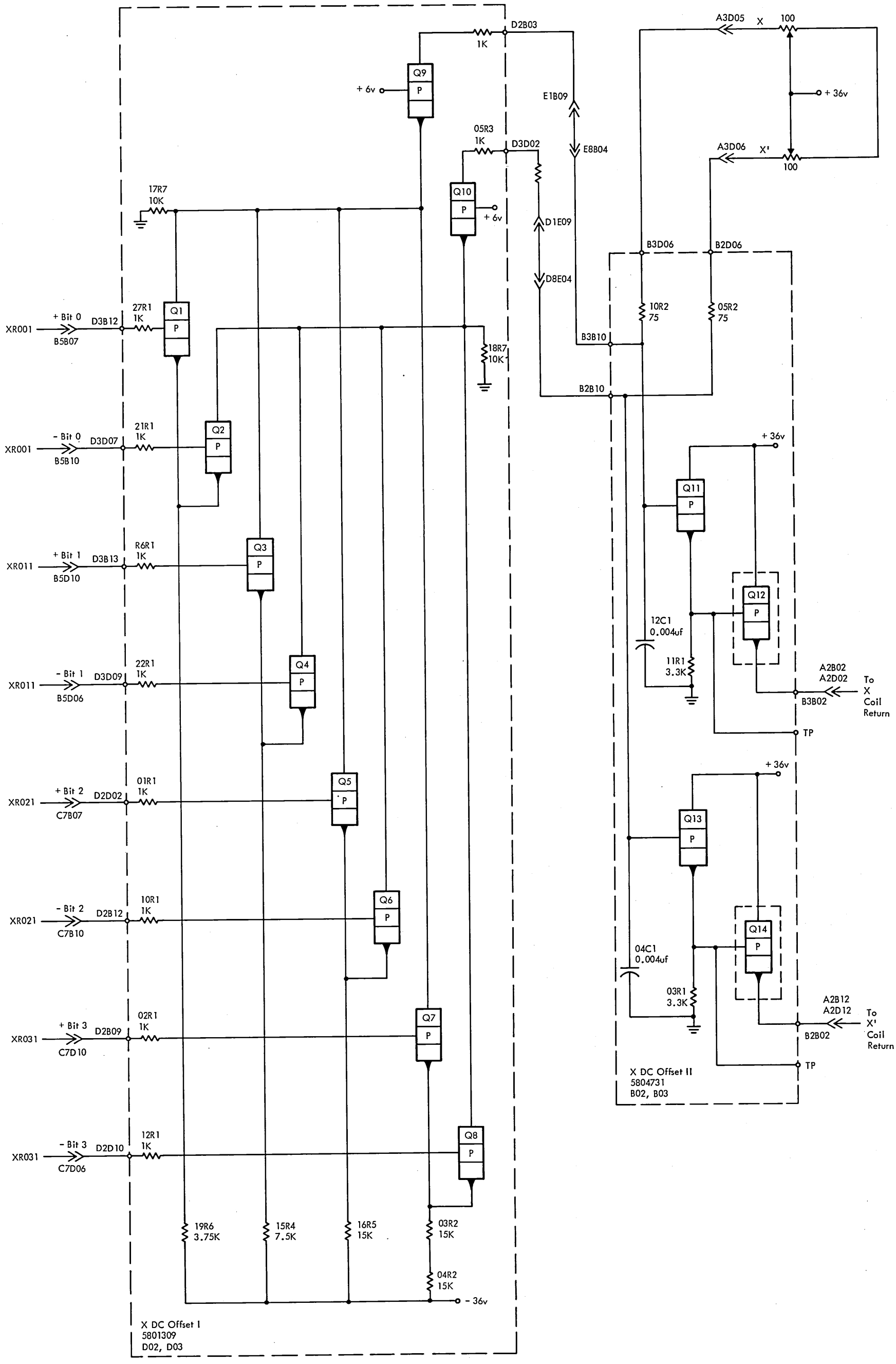


Figure 9010. Main Deflection, DC Offset Control, Wiring Diagram

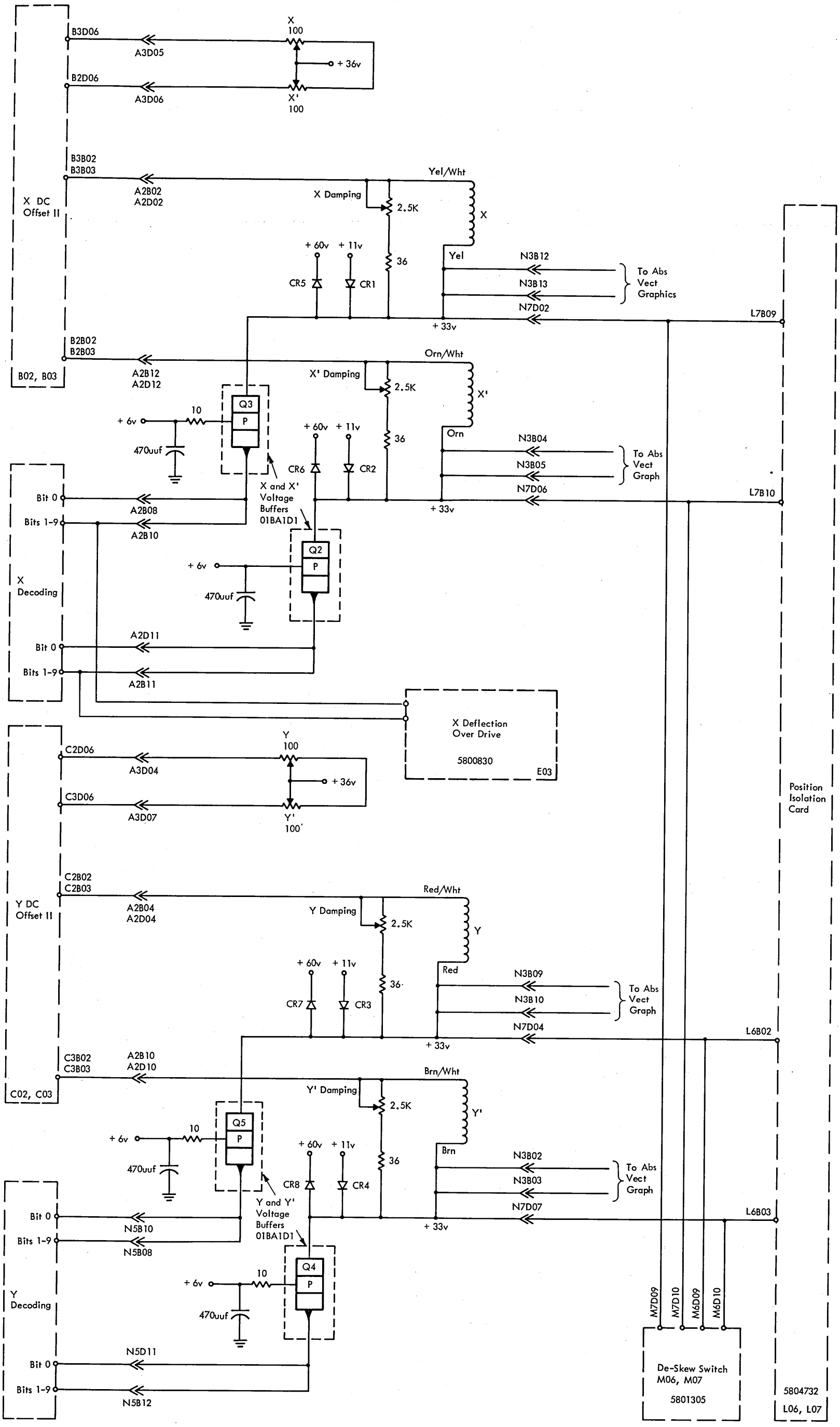


Figure 9011. Main Deflection, Yoke Control Circuits, Wiring Diagram

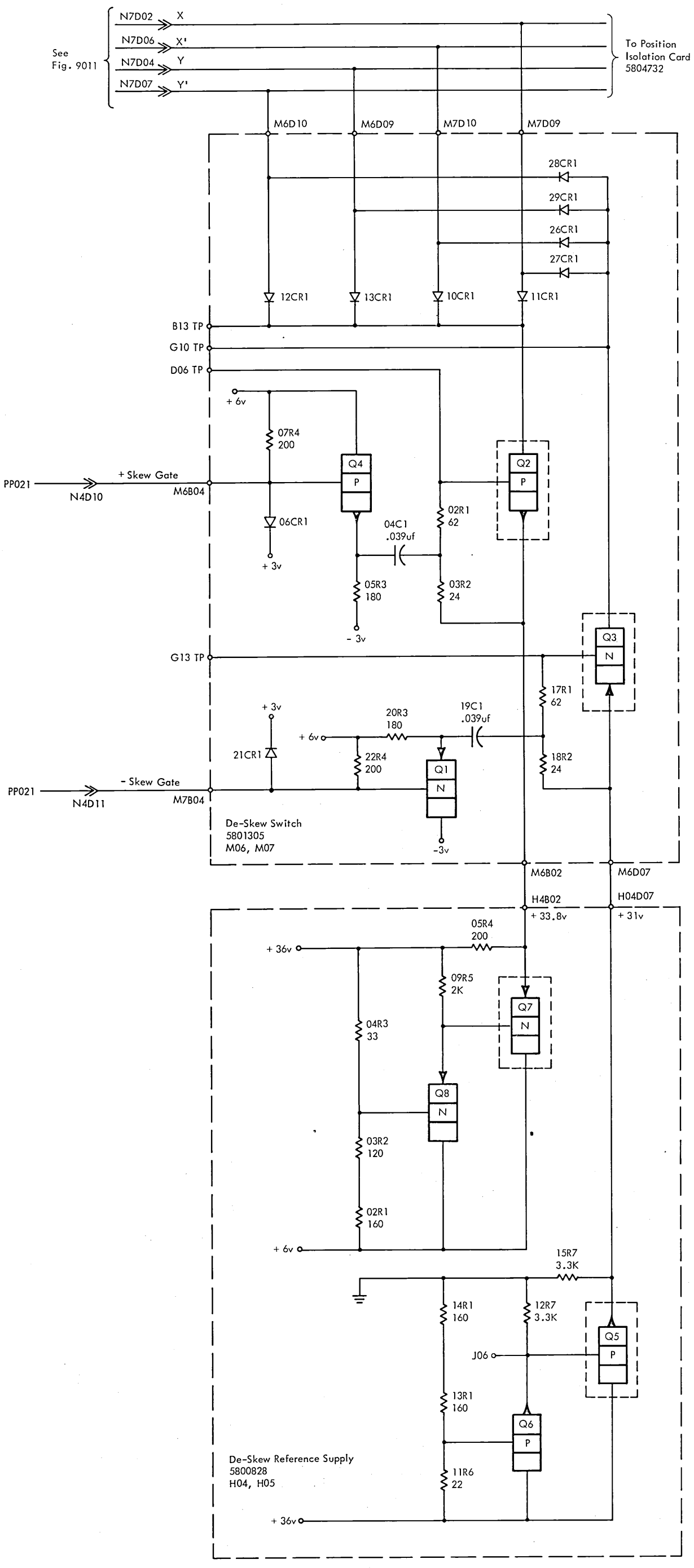


Figure 9012. Main Deflection, De-Skew Control Circuits, Wiring Diagram

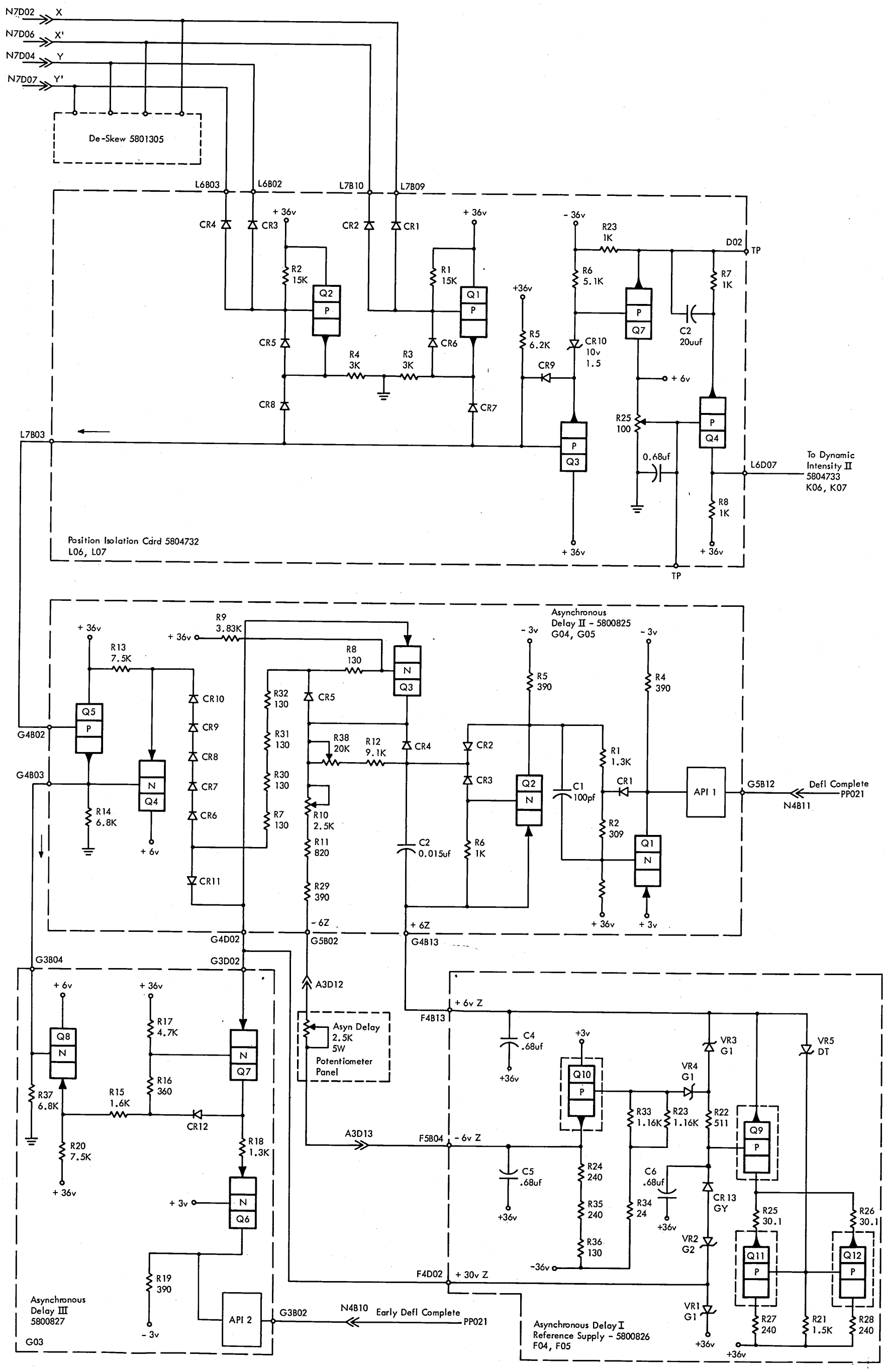


Figure 9013. Main Deflection, Position Isolation and Asynchronous Delay Circuits, Wiring Diagram

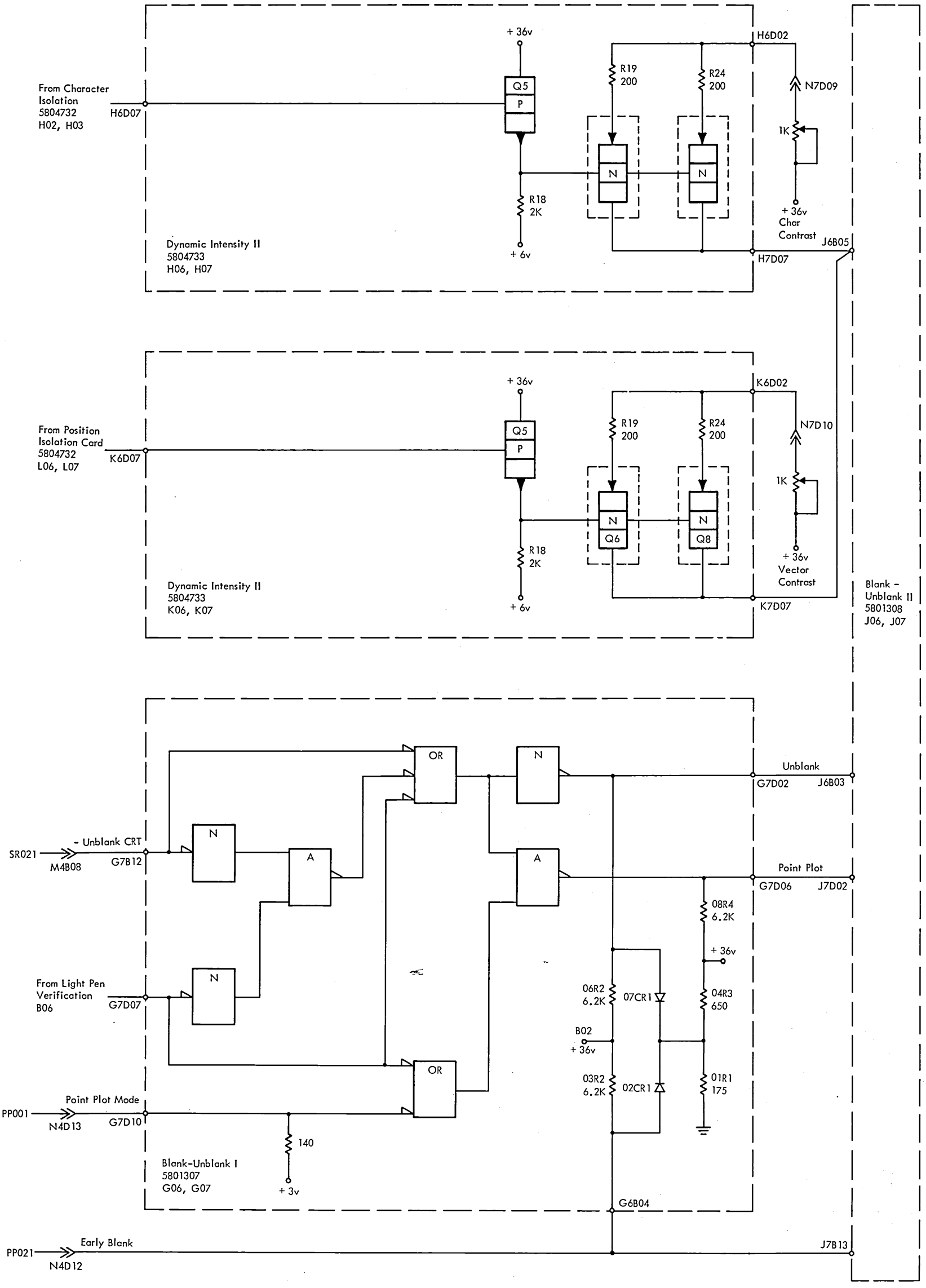


Figure 9014. Dynamic Intensity I and Blank-Unblank I Circuits, Wiring Diagram

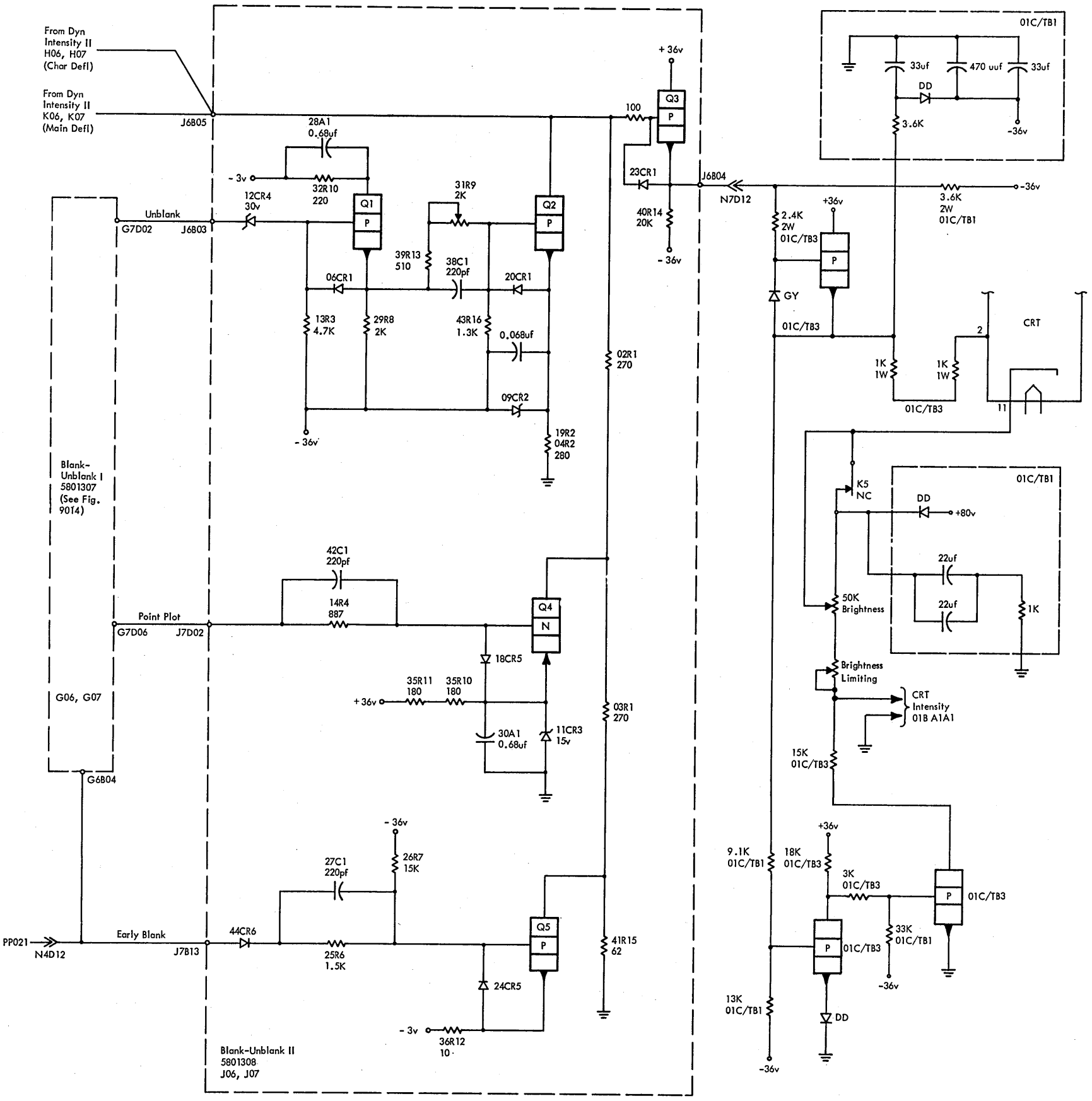


Figure 9015. Dynamic Intensity Blank-Unblank II Circuits, Wiring Diagrams

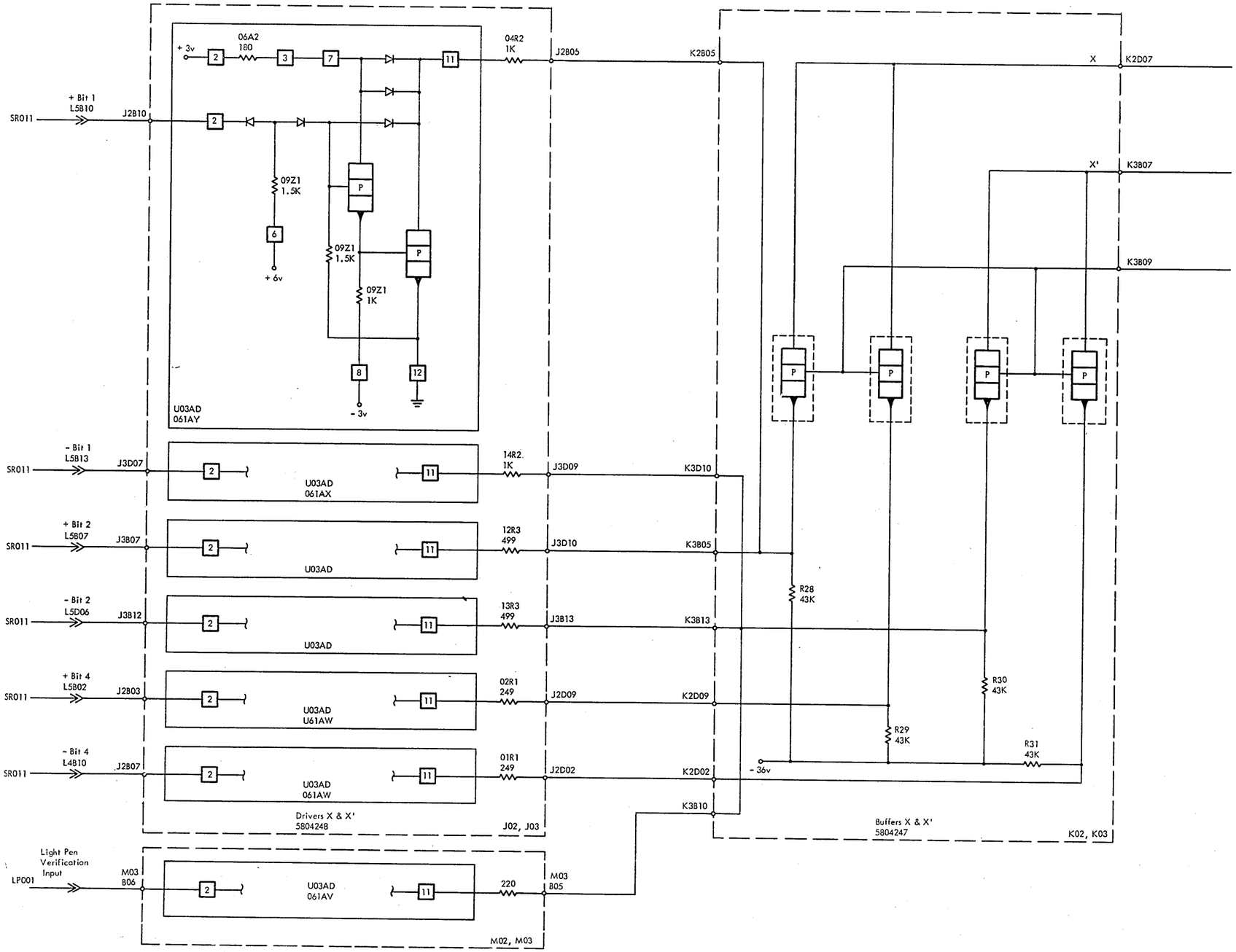


Figure 9016. Character Deflection, Decode Circuits, Wiring Diagrams

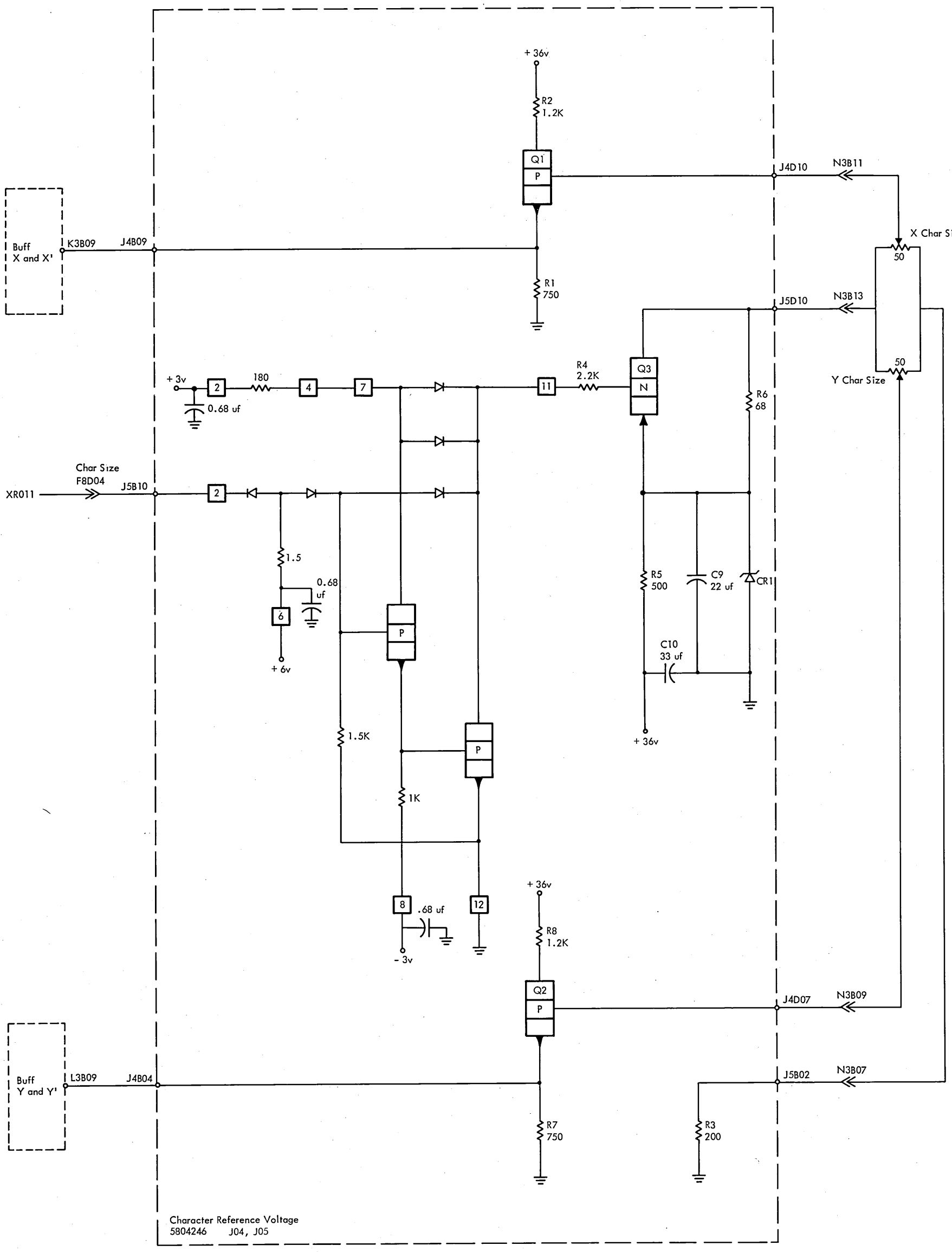


Figure 9017. Character Deflection, Reference Voltage Supply, Wiring Diagram

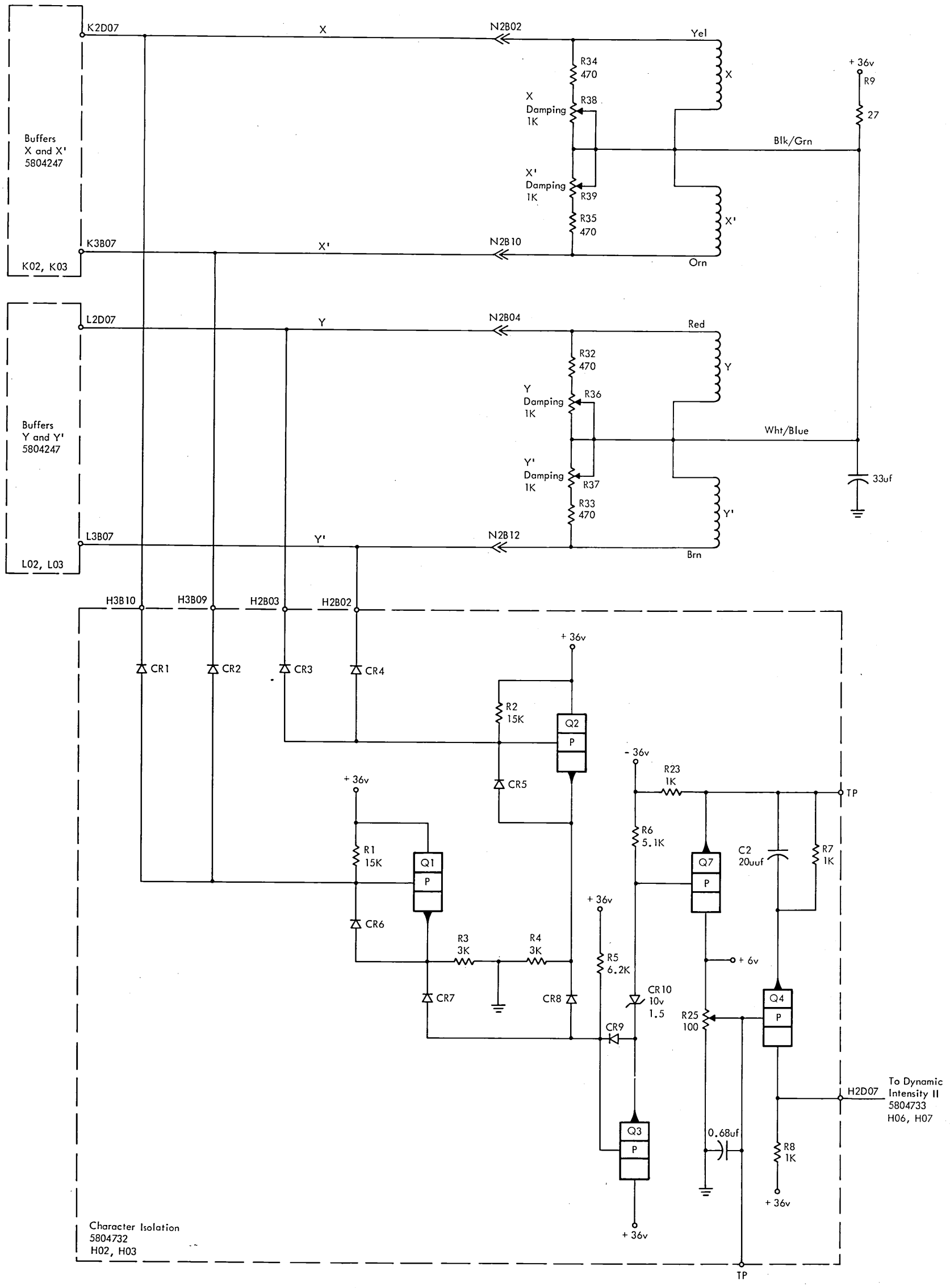
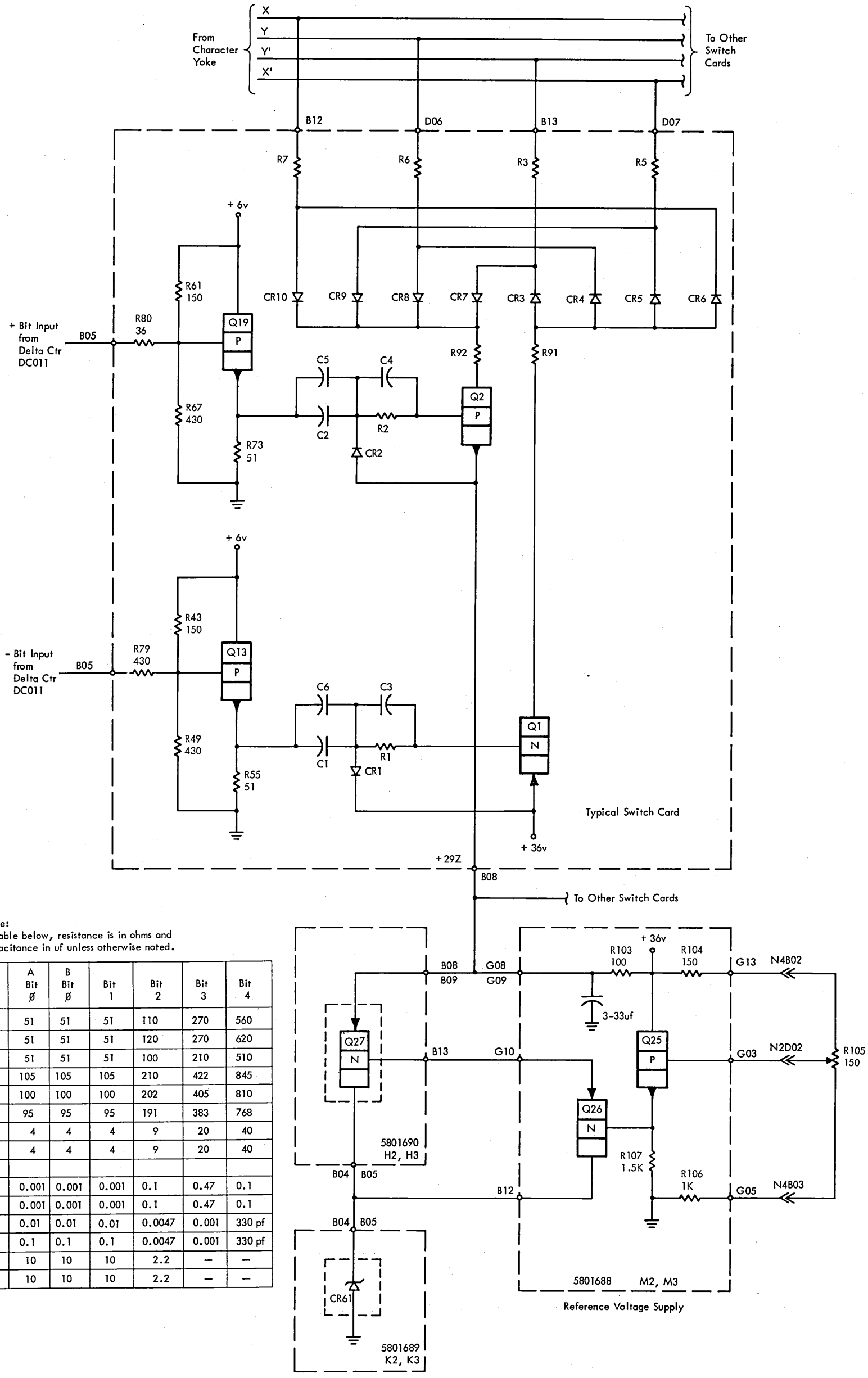


Figure 9018. Character Deflection, Yoke Control and Character Isolation Circuits, Wiring Diagram



Note:
In table below, resistance is in ohms and capacitance in uf unless otherwise noted.

	A Bit Ø	B Bit Ø	Bit 1	Bit 2	Bit 3	Bit 4
R1	51	51	51	110	270	560
R2	51	51	51	120	270	620
R3	51	51	51	100	210	510
R5	105	105	105	210	422	845
R6	100	100	100	202	405	810
R7	95	95	95	191	383	768
R91	4	4	4	9	20	40
R92	4	4	4	9	20	40
C1	0.001	0.001	0.001	0.1	0.47	0.1
C2	0.001	0.001	0.001	0.1	0.47	0.1
C3	0.01	0.01	0.01	0.0047	0.001	330 pf
C4	0.1	0.1	0.1	0.0047	0.001	330 pf
C5	10	10	10	2.2	—	—
C6	10	10	10	2.2	—	—

Figure 9019. Absolute Vector Graphics Deflection Control, Typical Switch and Reference Voltage Circuits

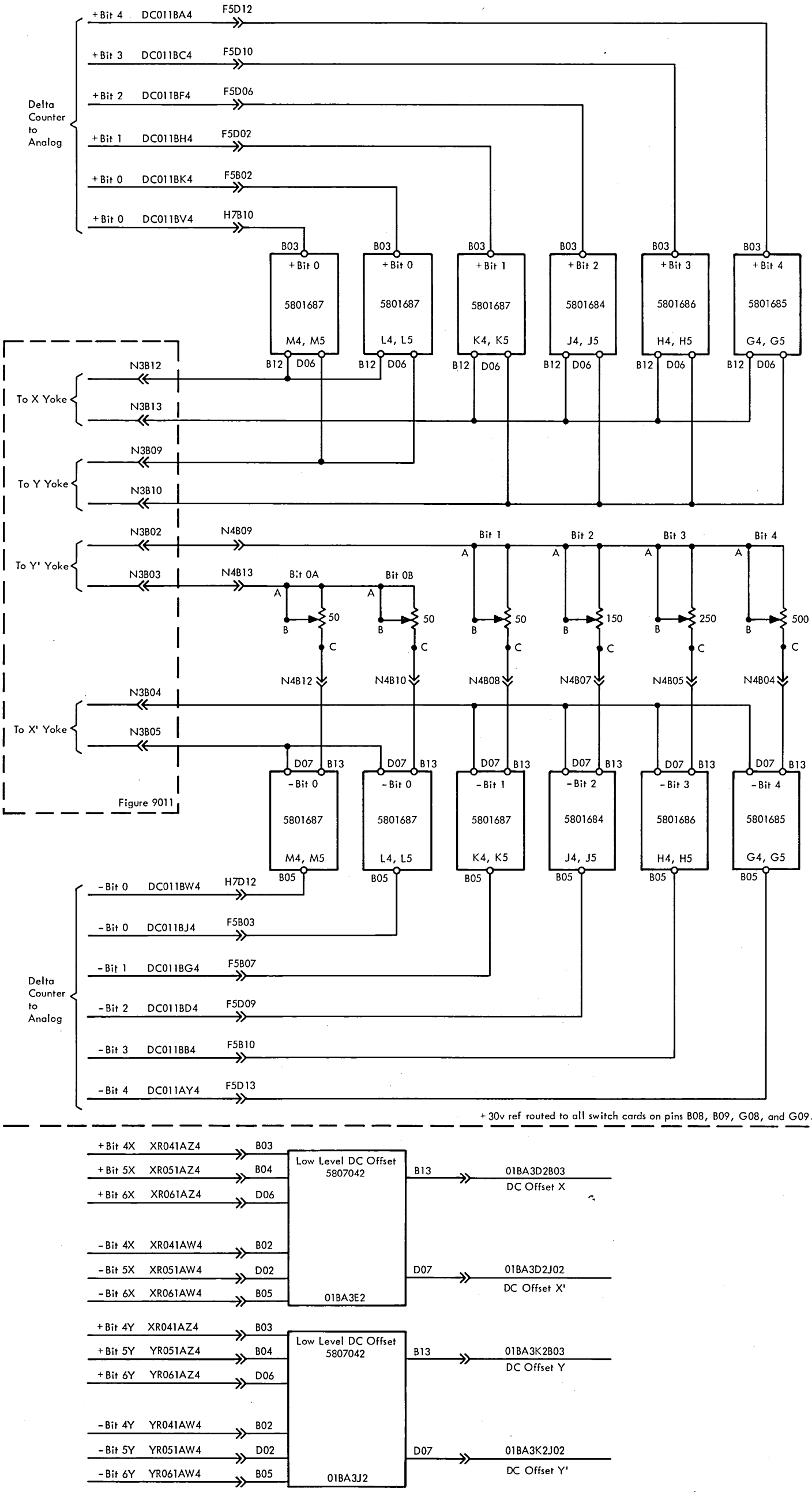
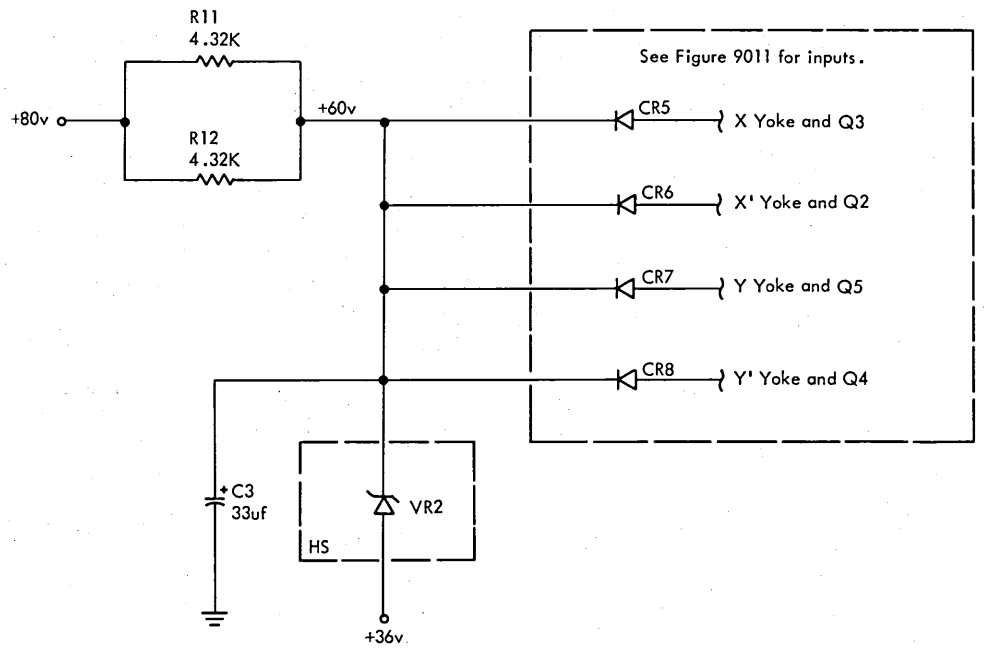
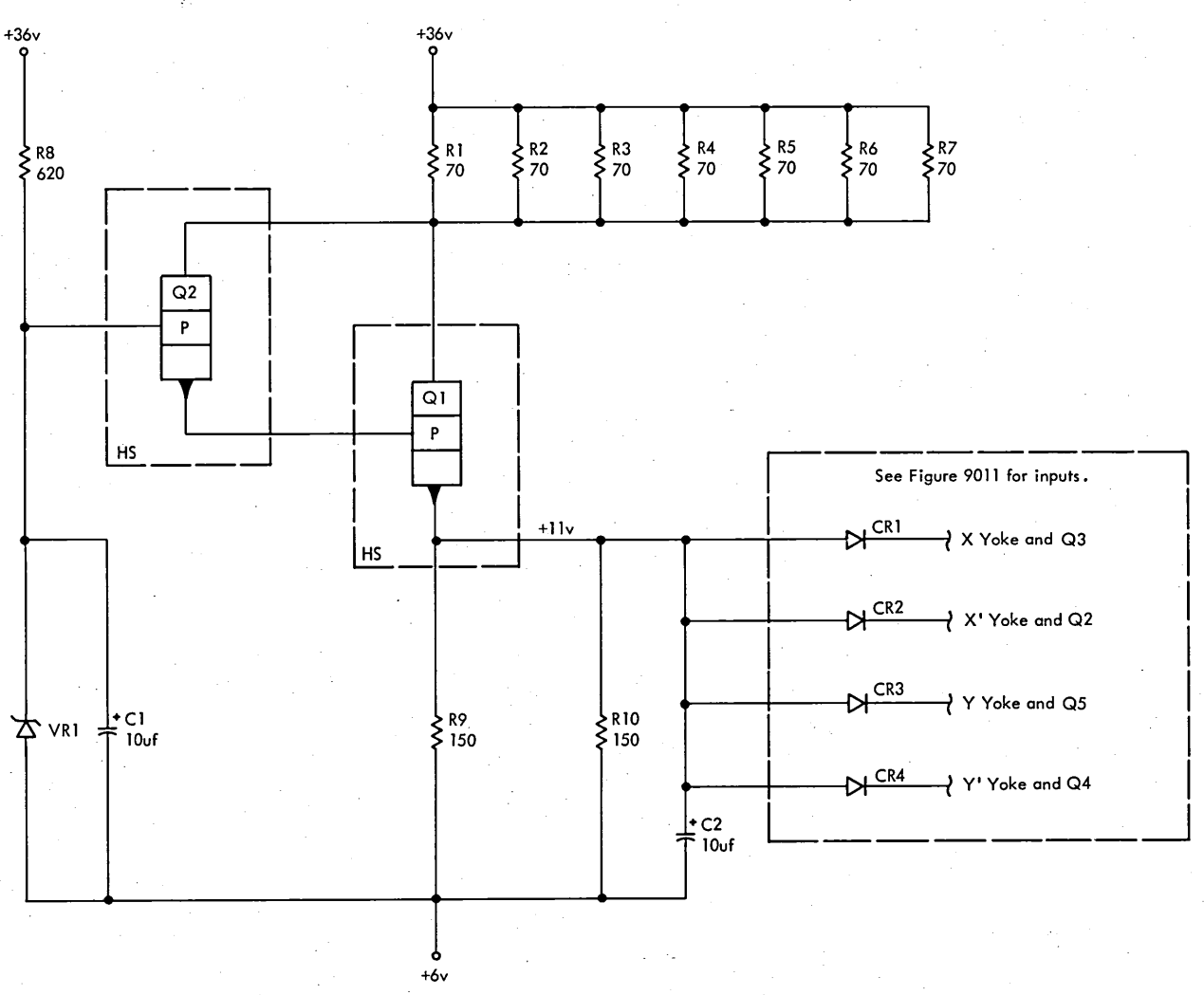


Figure 9020. Absolute Vector Graphics Deflection Control, Delta Counter Switching Circuits



Up Level Yoke Clamp Circuit



Down Level Yoke Clamp Circuit

Figure 9021. Yoke Clamp Circuits

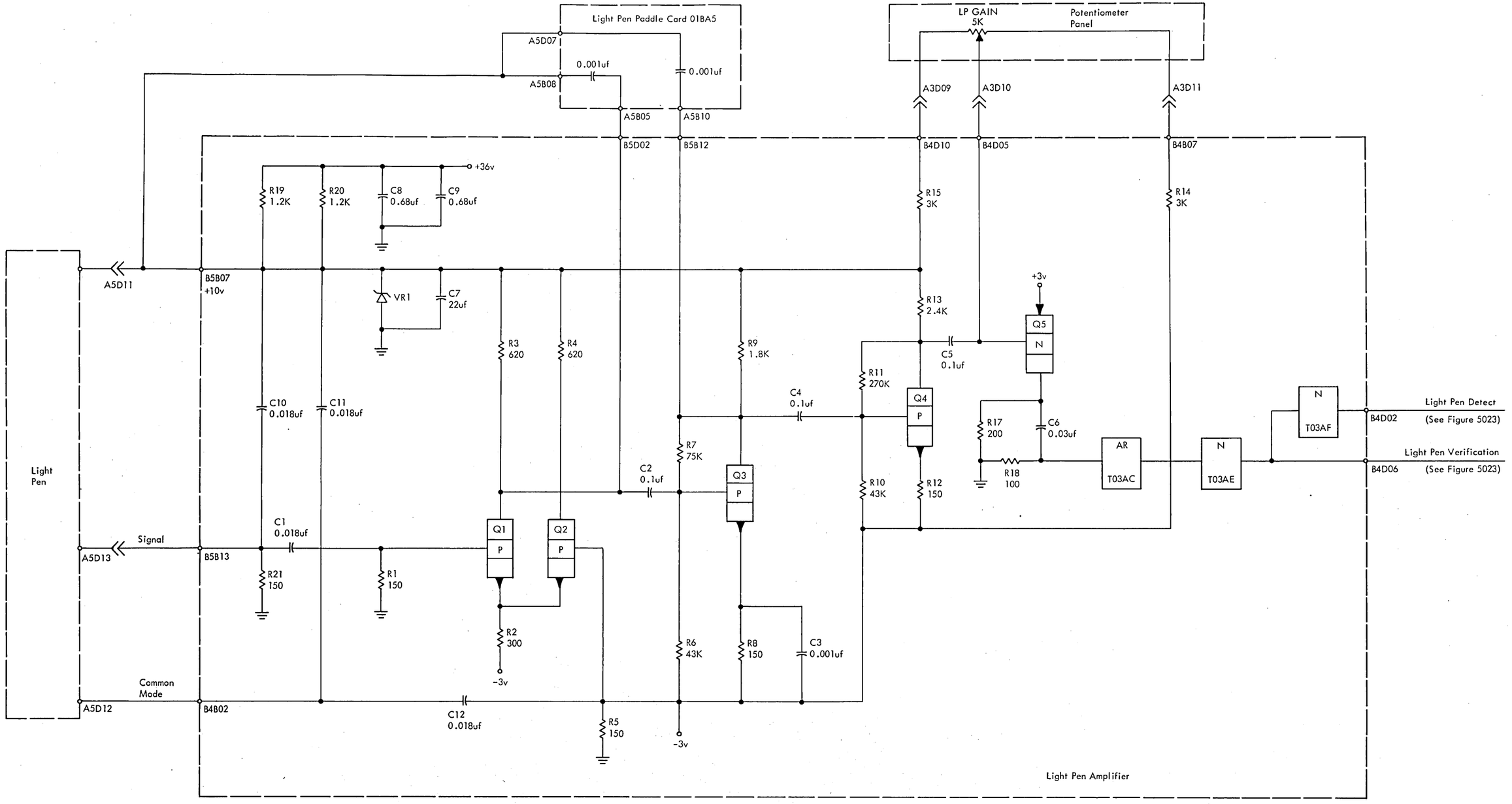


Figure 9022. Light Pen Amplifier Wiring Diagram

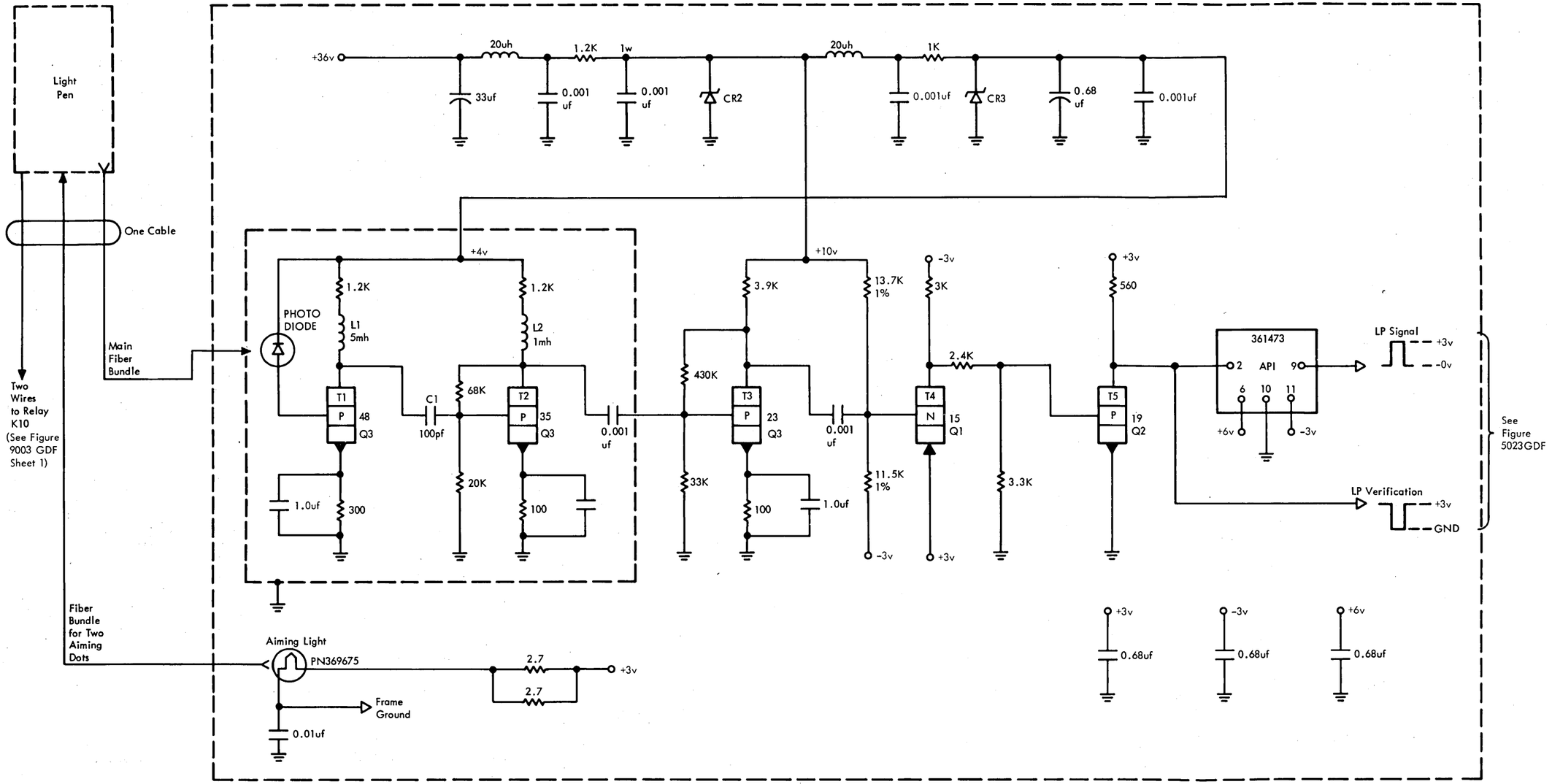


Figure 9022GDF. Light Pen Amplifier Wiring Diagram (for GDF Machines)

Form Y27-2044-1
FES Y27-2177

AMERICAN PROJECTION

STANDARDS CODE			TECH SERVICES APPRO		SYM	DATE	CHANGE NO	TECH APPRO	SYM	DATE	CHANGE NO	TECH APPRO	DEVELOPMENT NO	Q/M
			ELEC			10-5-65	2	MB		22JUN67	708866			
RELEASED FOR ASM	QTY		MET			21DEC66	706663	MB						
			PLASTIC			8ARR66	707888							
			FINISH			5JAN67	708867-A						5704665	

5704665

REFERENCE DRAWING

SHEET 1 OF 2

DRIVERS X & X' 5804248 J02 J03

DRIVERS Y & Y' 5804249 M02 M03

BUFF X & X' 5804247 K02 K03

BUFF Y & Y' 5804247 L02 L03

CHAR REF V 5804246 J04 J05

CHAR ISOL 5804732 H02 H03

DYNAMIC INTENSITY II 5804733 H6 H7

BLANK-UNBLANK I 5801307 G06,G07

BLANK-UNBLANK II 5801308 J06,J07

DYNAMIC INTENSITY II 5804733 K06,K07

POS ISOL CARD 5804732 L06,L07

ASYN III 5800827 G03

ASYN II 5800825 G04,G05

ASYN I 5800826 F04,F05

DE-SKEW SWITCH 5801305 M06 M07

DC OFFSET II 5804731 B02 B03

DE-SKEW SWITCH 5801305 M06 M07

DC OFFSET II 5804731 C02 C03

DE-SKEW REF PNP / DE-SKEW REF NPN 5800828 H04,H05

DC OFFSET I 5801309 D02 D03

X BIT 0 5800832 C04 C05

X BIT 1 BIT 4 5800829 D04 D05

X BIT 2 BIT 3 5801304 E04 E05

X' BIT 5-9 5801303 F04 F05

REF VOLTAGE INV DRIVER 5800833 G02 G03

X DEFLECTION OVERDRIVE 5800830 E03

X BITS 5-9 5801303 G04,G05

Y BIT 5-9 5801303 L04 L05

Y BIT 3 BIT 2 5801304 K04 K05

Y BIT 4 BIT 1 5800829 J04 J05

Y BIT 0 5800832 H04 H05

Y GAIN CNTL 5800831

CENTERING

X GAIN CNTL 5800831

DC OFFSET I 5801309 K02 K03

LIGHT PEN VERIFICATION 5800450

LIGHT PEN AMP

LIGHT PEN PADDLE CARD

CRT GROUNDING

I6KV

OPERATOR'S BRIGHTNESS LIMIT

VECTOR CONTRAST

CRT INTENSIFY

FOCUS

ANODE

HEAT SINK

TRANSISTOR NO. 266 2414952 0IB-AICI

CABLE TO FOOT SW

5K LP GAIN

OUTPUT LP011 AP4

TO M3B04 (Y CHAR DRIVER)

TO M3B03 (Y CHAR DRIVER)

TO G7D07 (BLANK-UNBLANK I)

CHAR CONTRAST

CHAR SIZE

LIGHT PEN +6

-PLOT POINT MODE

EARLY BLANK

-UNBLANK CRT

+EARLY DEF COMPLETE G3B02

+DEF COMPLETE G5B12

ASYN DELAY

2.5K 4W

FROM VERIFICATION CRD B6B07

TO VERIFICATION CRD B6D09 B6B10

FROM 0IBA3

PP021 BG4 -GATE

PP021 BA4 N4D11 +GATE N4D10

TO DE-SKEW CRD M7B04

TO DE-SKEW CRD M6B04

DE-SKEW REF PNP NPN 5800828 H04,H05

TO DE-SKEW CRD M6D07+31V

TO DE-SKEW CRD M6B02+33.8V

REF SUPPLY PNP+31V

REF SUPPLY NPN+33.8V

X POS YOKE

X' POS YOKE

Y POS YOKE

Y' POS YOKE

X DAMPING 2.5K

X' DAMPING 2.5K

Y DAMPING 2.5K

Y' DAMPING 2.5K

TO AVG

TO X GAIN CNTL

TO Y GAIN CNTL

TO GAIN CNTL

GAIN CNTL OUTPUT

X CENTERING

X GAIN

Y GAIN

+X DEF OVERDRIVE

-X DEF OVERDRIVE

NOTE:
ANALOG 0IBA2 / ANALOG 0IBA3 MAX CURRENT BIT = BIT 4 FOR CHARACTER DEFLECTION

NOTES:

X MAX CURRENT BIT = BIT 0 FOR POSITION DEFLECTION.

XI RELAY K5 LOCATED IN POWER SEQUENCING PANEL.

XII VECTOR CONTRAST, CHARACTER CONTRAST AND BRIGHTNESS POTS ARE OPERATOR CONTROL; ALL OTHER POTS ARE LOCATED ON 0IBAI AI AND 0IBAI BI.

XIII −36D = −36 DELAYED.

XIV THIS SCHEMATIC APPLIES TO MACHINES USING TERMINAL BOARDS AT LOCATION 0IC-TBI AND 0IC-TB3; SHEET 2 APPLIES TO SMS PACKAGE IN LOCATION 0IC M

XV CIRCLED NUMBERS (Ⓧ) INDICATE TERMINAL BOARD LOCATIONS

IBM MATERIAL	NO
CASE DEPTH	
HARDNESS	
SURFACE TREATMENT	

5704665 E

TOLERANCE UNLESS OTHERWISE NOTED: LINEAR DIMENSION ±; ANGLES ±; CORNERS AND/OR EDGES BROKEN: OUTSIDE MAX, INSIDE MAX; RADII UNLESS OTHERWISE NOTED

MUST CONFORM TO ENG SPEC 890350

ALIGNMENT WITHIN	NOTE I	
CONC TO DU WITHIN	TIR NOTE II	
FLAT WITHIN	NOTE III	
PARALLEL TO DU WITHIN	NOTE IV	
STRAIGHT WITHIN	NOTE V	
SQUARE TO DU WITHIN	NOTE VI	

INTERNATIONAL BUSINESS MACHINES CORP

NAME	ANALOG PORTION 2250				
AN101					
DESIGN	MB 10-5-65	TYPE			
DETAIL	MB 10-5-65	SCALE	NONE		
CHECK	MB 10-5-65	DRAW	NIS 7SEP65		
APPRO	MB 10-5-65	CHECK			

SHEET 1 OF 2

•Figure 9023. Display Unit Analog Control Block Diagram (Sheet 1 of 2)

AMERICAN PROJECTION

STANDARDS CODE	RELEASED FOR ASM	QTY

TECH SERVICES APPRO	SYM	DATE	CHANGE NO	TECH APPRO
ELEC		2JUN67	708866	MB
MET				
PLASTIC				
FINISH				

5704665

REFERENCE DRAWING 5704665

SHEET 2 OF 2

DRIVERS X & X' 5804248 J02 J03

DRIVERS Y & Y' 5804249 M02 M03

BUFF X & X' 5804247 K02 K03

BUFF Y & Y' 5804247 L02 L03

CHAR REF V 5804246 J04 J05

CHAR ISOL 5804732 H02 H03

5704665

CRT GROUNDING

16KV

LIGHT PEN PADDLE CARD

LIGHT PEN ONE CABLE

CABLE TO FOOT SW

LIGHT PEN AMP 5801306

LIGHT PEN VERIFICATION 5800450

TO M3B04 (Y CHAR DRIVER)

TO M3B03 (Y CHAR DRIVER)

TO +80V PWR SUPPLY

INTENSITY CONTROL 373013 (DOUBLE SMS CARD)

* SOLDERLESS CONNECTOR

TO G7D07 (BLANK-UNBLANK I)

HEAT SINK

2391107 24V, 50W TYPE HS

VR1 479228 2-4.32K 1/2W, 1% REG = 2.16K

474820 33UF 75V

BLANK-UNBLANK I 5801307

BLANK-UNBLANK II 5801308

DYNAMIC INTENSITY II 5804733

VECTOR CONTRAST

POS ISOL CARD 5804732

DE-SKEW SWITCH 5801305

DC OFFSET II 5804731

REF SUPPLY PNP+31V

REF SUPPLY NPN+33.8V

ASYN III 5800827

ASYN II 5800825

ASYN I 5800826

ASYN DELAY

TO DE-SKEW CRD M7B04

TO DE-SKEW CRD M6B04

DE-SKEW REF PNP

DE-SKEW REF NPN 5800828

TO DE-SKEW CRD M6D07+31V

TO DE-SKEW CRD M6B02+33.8V

NOTE:
ANALOG OIBA2 MAX CURRENT BIT = BIT 4 FOR CHARACTER DEFLECTION
ANALOG OIBA3

GAIN CNTL OUTPUT

CENTERING 5800831

X GAIN CNTL F02 F03

X BIT 0 5800832 C04 C05

X BIT 1 BIT 4 5800829 D04 D05

X BIT 2 BIT 3 5801304 E04 E05

X' BIT 5-9 5801303 F04 F05

REF VOLTAGE INV DRIVER 5800833 G02 G03

X DEFLECTION OVERDRIVE 5800830 E03

Y BIT 5-9 5801303 L04 L05

Y BIT 3 BIT 2 5801304 K04 K05

Y BIT 4 BIT 1 5800829 J04 J05

Y BIT 0 5800832 H04 H05

Y GAIN CNTL 5800831

X BITS 5-9 5801303 G04,G05

Y' BITS 5-9 5801303 M04,M05

DC OFFSET I 5801309

NOTES:

X MAX CURRENT BIT = BIT 0 FOR POSITION DEFLECTION.

XI RELAY K5 LOCATED IN POWER SEQUENCING PANEL.

XII VECTOR CONTRAST, CHARACTER CONTRAST AND BRIGHTNESS POTS ARE OPERATOR CONTROL; ALL OTHER POTS ARE LOCATED ON OIBAI AI AND OIBAI BI.

XIII – 36D = – 36 DELAYED.

XIV THIS SCHEMATIC APPLIES TO MACHINES HAVING DOUBLE SMS CARD AT LOCATION OIC/M (BY CRT NECK)

XV CIRCLED NUMBERS (Ⓧ) INDICATE TERM BOARD LOCATIONS

IBM MATERIAL	NO
CASE DEPTH	
HARDNESS	
SURFACE TREATMENT	

5704665 E

TOLERANCE UNLESS OTHERWISE NOTED: LINEAR DIMENSION ±, ANGLES ±

CORNERS AND/OR EDGES BROKEN: OUTSIDE MAX, INSIDE MAX

RADII UNLESS OTHERWISE NOTED

MUST CONFORM TO ENG SPEC 890350		
ALIGNMENT WITHIN	NOTE I	
CONC TO DU WITHIN	TIR NOTE II	
FLAT WITHIN	NOTE III	
PARALLEL TO DU WITHIN	NOTE IV	
STRAIGHT WITHIN	NOTE V	
SQUARE TO DU WITHIN	NOTE VI	

INTERNATIONAL BUSINESS MACHINES CORP

NAME ANALOG PORTION 2250 I

ANIOI

DESIGN	MB	5-15-67	TYPE		
DETAIL	MB	5-15-67	SCALE	NONE	
CHECK	MB	5-15-67	DRAW	NHS 7SEP65	
APPRO	MB	5-15-67	CHECK		

SHEET 2 OF 2 5704665

•Figure 9023. Display Unit Analog Control Block Diagram (Sheet 2 of 2)

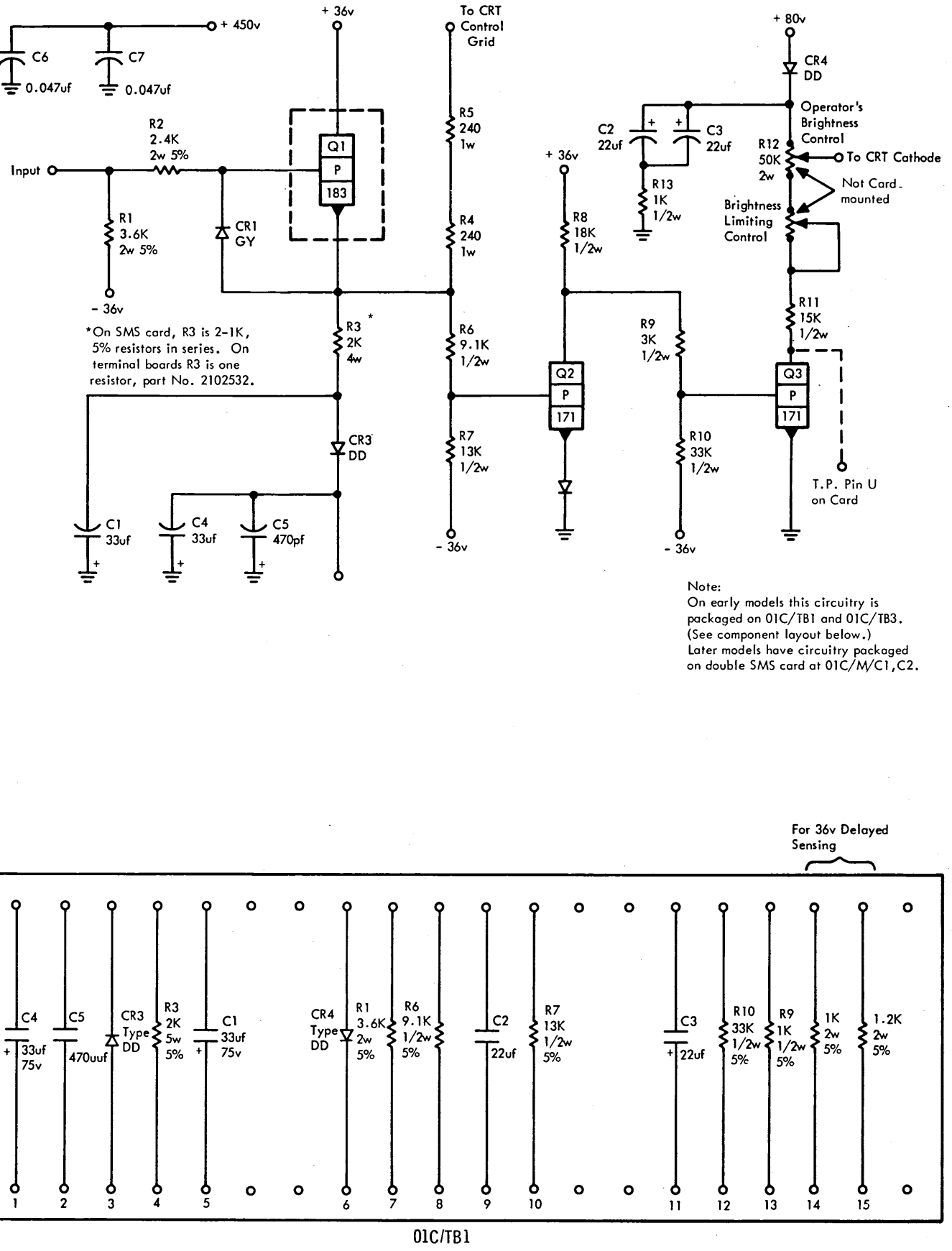


Figure 9024. Arc Protection Circuit and Component Location

IBM **FE Supplement**

System/Unit	2250-1
Re: Form No.	Y27-2044-1
This Supplement No.	Y27-2177
Date	January 1968
Previous Supplement Nos.	None

This supplement revises and updates the IBM 2250 Display Unit Model 1, FE Diagram Manual, Form Y27-2044-1. The updated information includes changes to incorporate the Isolation Feature.

Incorporate this supplement in the original manual by substituting the attached pages for corresponding pages in the manual and by adding new pages provided.

Replace i and ii.
Replace 1000.
Replace 2000, 2001, 2005 through 2013, 2016 and 2017.
Replace 5000 and 5001.
Replace 6006, 6007, 6008GDF, 6009, 6011 through 6013, 6013GDF, 6014, 6015, 6022, and 6023.
Replace 9003 (3 Sheets), 9003GDF (3 Sheets), 9006, 9007, and 9023 (2 Sheets).

File this cover letter at the back of the publication. It will then serve as a record of the changes received and incorporated.

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