

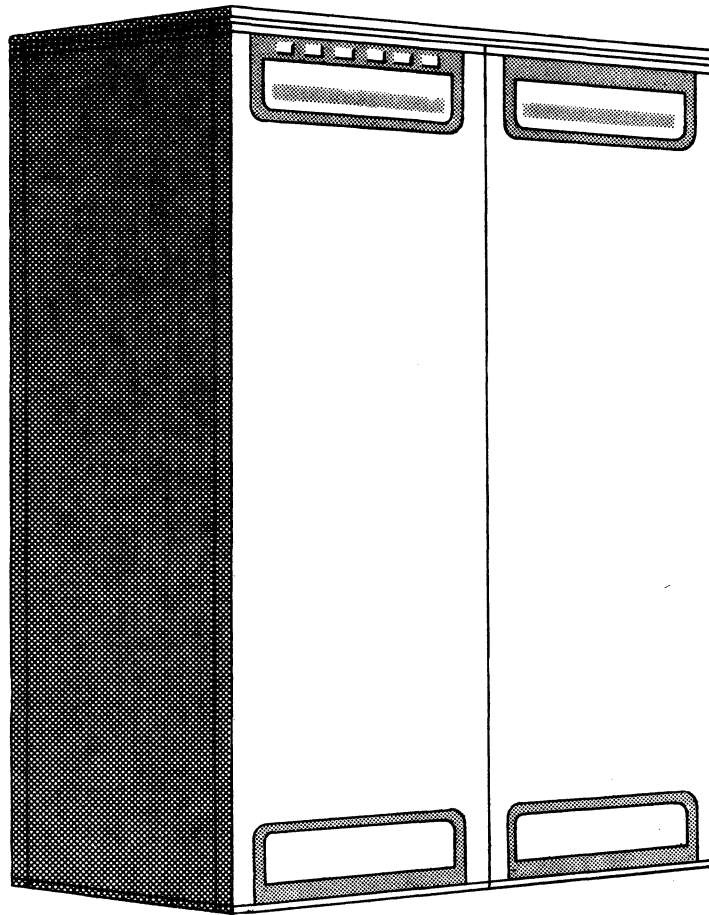
CONTROL DATA
CORPORATION

**CONTROL DATA[®]
FA7A6/FA7A7 DISK CONTROLLER**



MICROPROGRAM MANUAL

**CONTROL DATA®
FA7A6/FA7A7 DISK CONTROLLER**



MICROPROGRAM MANUAL

REVISION RECORD

REVISION	DESCRIPTION
A (12-15-73)	Manual released; applicable to Series Code 02.
B (2-22-74)	Incorporate Engineering Change Order PE32320 applicable to Series Code 02. Changed pages: Revision Record, ii thru vi, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), A004, A040, A050, A070, B010, B065, B080, M010, M075, M100, N055, N060, N070, N090, N120, N130, N160, N195, N250, N260, Q020, Q030, Q040, Q060, Q070, Q080, R010, R020, U002, X070, X108, X116, X120, X122, X222, X900, X902, Y140, Y142, Y160, Y180, Y252, Y260, Y262, Y280, Y3A0, Y3A6, Y3A7, Y3B0, Y3C0, Y3C6, Y3C7, Y3D0, Y300, Y306, Y307, Y310, Y320, Y326, Y327, Y340, Y346, Y347, Y350, Y360, Y366, Y367, Y380, Y386, Y387, Y400, Y406, Y407, Y408, Y410, Y420, Y426, Y427, Y428, Y430, Y440, Y446, Y447, Y448, Y450, Y460, Y466, Y467, Y492, Y500, Y502, Y504, Y505. Deleted pages: U100, U102, U104, U106, U108, U110, U112, U114, U118, V000, V010, V020, V030, V040, V050, V060, and V070.
C (4-1-74)	Incorporate Engineering Change Order PE32355 applicable to Series Code 02. Changed pages: ii, iii, iv, vii/viii, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), A070, B010, B020, B030, B065, B080, C020, E060, S010 thru S050, T020, T030, T050, Z036
D (4-17-74)	Incorporate Engineering Change Order PE32374. Changed pages: ii, iii, iv, ix/x, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), B010, B060, B070, B080, D015, D050, H050, M010, M080, N055, N070, N160, N200, P030, P040, P090, R020, S010, S050.
E (6-7-74)	Incorporate Engineering Change Order PE32383. Changed pages: ii thru viii, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), A040, A050, A070, A080, A100, B010, B020, B040, B050, B065, B080, D025, D040, D060, D065, D080, E040, E060, G020, G030, G040, G050, H030, K020, L010, L020, L060, L070, M030, M075, M080, M100, N055, N090, N150, N160, N165 (added), N180, N195, N200, P010, P020, P050, P070, P110, P120, Q010, Q020, Q030, Q040, Q060, Q070, R020, S010, S020, S030, S040, S070, S090, S100, U002, U004, X108, X200, X202, X220, X232, X234, Y002, Y004, Y006, Y008, Y010, Y012, Y014, Y016, Y102, Y106, Y112, Y114, Y118, Y120, Y122 (added), Y123, Y124, Y128, Y130, Y132, Y134, Y138, Y140, Y142, Y143, Y144, Y146, Y148, Y150, Y152, Y154, Y160, Y161, Y162, Y166, Y168, Y170, Y172, Y176, Y180, Y182, Y202, Y204, Y206, Y207 (added), Y220, Y222, Y224, Y226, Y228, Y229, Y230, Y232, Y238, Y240, Y242, Y243, Y246, Y248, Y250, Y251, Y252, Y253, Y258, Y262, Y265, Y266, Y268, Y274, Y280, Y282, Y283, Y284, Y285, Y286, Y288, Y290, Y292, Y296, Y446, Y448, Y450, Y480, Y482, Y484, Y486, Y488, Y490, Y492, Y494, Y496, Y498, Y499, Y500, Y501, Y502, Y503, Y504, Y505, Y820, Y830, Z012, Z014, Z018, Z022, Z024, Z030, Z032, Z034, Z036, Z060, Z062.
F (7-25-74)	Incorporate Engineering Change Order PE32404. Changed pages: Revision Record, iii thru viii, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), B010, B040, B050, D025, D040, D060, D080, E050, E060, G040, K020, L020, L050, L060, L070, M060, M075, M080, N150, N165, N200, P010, P030, P040, P050, P052, P054, P056, P060, P070, P090, P100, P110, P120, Q020, Q030, Q040, Q070, R020, S010, S020, S030, S040, S050, T050, U000, U002, U004, X070, X086, X116, X200, X202, X220, X222, X230, X234, X900, X902, Y002, Y004, Y006, Y008, Y010, Y012, Y014,
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 Minneapolis MN 55435

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REVISION RECORD (CONT'D)

REVISION	DESCRIPTION
F (Cont'd)	Y100, Y102, Y104, Y106, Y108, Y110, Y112, Y114, Y116, Y118, Y123, Y128, Y130, Y134, Y142, Y144, Y146, Y148, Y150, Y152, Y154, Y156, Y158, Y160, Y161, Y162, Y164, Y166, Y168, Y172, Y174, Y176, Y182, Y202, Y204, Y205, Y206, Y207, Y222, Y224, Y228, Y230, Y232, Y238, Y242, Y243, Y244, Y246, Y248, Y250, Y251, Y252, Y253, Y258, Y259, Y260, Y262, Y263, Y264, Y265, Y266, Y268, Y270, Y272, Y274, Y282, Y284, Y288, Y290, Y292, Y296, Y3A0, Y3A2, Y3A4, Y3A6, Y3A7, Y3C0, Y3C2, Y3C4, Y3C6, Y3C7, Y3E0, Y3E2, Y3E3, Y3E4, Y3E5, Y3E8, Y3F0, Y3F2, Y300, Y302, Y304, Y306, Y307, Y320, Y322, Y324, Y326, Y327, Y330, Y340, Y342, Y344, Y346, Y347, Y360, Y362, Y364, Y366, Y367, Y380, Y382, Y384, Y386, Y387, Y390, Y400, Y402, Y404, Y406, Y407, Y420, Y422, Y424, Y426, Y427, Y430, Y440, Y442, Y444, Y446, Y447, Y448, Y450, Y460, Y462, Y464, Y466, Y467, Y470, Y482, Y486, Y488, Y490, Y492, Y494, Y496, Y498, Y501, Y505, Z012, Z014, Z018, Z024, Z030, Z032, Z034, Z060, Z062, Z114. This edition obsoletes all previous editions.
G (9-11-74)	Incorporate Engineering Change Order PE32417. Manual correction (Y442 added). Changed pages: Front Cover, Title Page, iiA thru viii, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), B010, B040, B080, D015, D050, E030, H020, N050, N160, N165, D040, P070, Q050, Q070, S010, S060, S080, S085, X116, X900, Y150, Y170, Y176, Y226, Y228, Y242, Y243, Y244, Y246, Y248, Y250, Y251, Y258, Y259, Y285, Y296, Y3E2, Y3E3, Y3E4, Y3F0, Y3F2, Y304, Y306, Y307, Y308, Y328, Y380, Y390, Y408, Y410, Y442, Y450, Y460, Y480, Y482, Y484, Y486, Y488, Y490, Y492, Y494, Y496, Y498, Y499, 2012, 2014, 2024, 2030.
H (10-17-74)	Incorporate Engineering Change Order PE32440. Changed pages: Front Cover, Title Page, iiA thru viii, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), B060, B070, B080, C020, D030, D045, L050, L060, M050, P060, T050, X110, Y014, Y100, Y104, Y106, Y110, Y116, Y118, Y122, Y132, Y134, Y150, Y158, Y180, Y202, Y204, Y206, Y207, Y238, Y240, Y243, Y244, Y246, Y248, Y250, Y251, Y253, Y258, Y259, Y260, Y265, Y266, Y268, Y272, Y290, Y292, Y296, Y3A7, Y3C7, Y3F2, Y307, Y327, Y347, Y367, Y387, Y390, Y406, Y407, Y427, Y447, Y467, Y500, Y501, Y502, Y503, Y505, Z010, Z011, Z012, Z014, Z015(added), Z026, Z030, Z032, Z034, Z036, Z038(added), Z060, Z062, Z064.
J (12-10-74)	Incorporate Engineering Change Order PE32468. Changed pages: iiA thru vii, xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 10), A000, A004, A050, A080, B010, B020, B025(added), B040, B050, B060, B080, C010, C020, D010, D015, D030, D040, F030, G010, G040, G050, H020, L060, N060, N080, P010, P040, P050, P070, P110, R010, R020, S010, S040, S100, T000, T010, T020, T030, T050, Y000, Y100, Y104, Y106, Y120, Y132, Y140, Y143, Y152, Y158, Y160, Y161, Y162, Y166, Y168, Y170, Y172, Y174, Y176, Y180, Y200, Y220, Y222, Y224, Y226, Y228, Y229, Y230, Y238, Y252, Y260, Y280, Y3A0, Y3A4, Y3A7, Y3A8, Y3B0, Y3C0, Y3E0, Y300, Y320, Y340, Y360, Y366, Y380, Y386, Y400, Y407, Y410, Y420, Y427, Y440, Y444, Y446, Y447, Y460, Y464, Y466, Y467, Y480, Y500, Y505, Z010, Z012, Z014, Z026, Z030, Z034, Z036, Z038, Z060, Z062.
K (4-30-75)	Incorporate Engineering Change Order PE32541. Changed pages iiA thru xi/xii, Section 1 (001 thru 062), Section 2 (1 thru 11/12), A004, A070, A090, A111(added), A112(added), A113(added), A114(added), A116(added), A118(added), A120(added), B020, B050, B060, B070, B080, C020, D010, D015, D025, D030, D040, D045, D060, G040, H020, L010, L020, P030, P070, P110, S010, S030, S100, T050, X070, X900, X902, Y104, Y126, Y132, Y143, Y148, Y150, Y161, Y164, Y176, Y222, Y224, Y244, Y250, Y251, Y252, Y265, Y266, Y285, Y3A6, Y3C6, Y3C8, Y3D0, Y3E3, Y3E6, Y306, Y326, Y346, Y366, Y386, Y406, Y410, Y420, Y426, Y446, Y466, Y508(added), Y510(added), Y512(added), Y514(added), Z014, Z015, Z030.
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REVISION K 11

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PAGE NUMBER	REV
Cover	-
Title Page	-
ii	J
iiA	K
iii	K
iv	K
v	K
vi	K
vii/viii	K
ix/x	K
xi/xii	K
Section 1	-
001	K*
002	K
003	K
004	K
005	K
006	K
007	K
008	K
009	K
010	K
011	K
012	K
013	K
014	K
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016	K
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021	K

PAGE NUMBER	REV
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023	K
024	K
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028	K
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051	K
052	K
053	K
054	K

PAGE NUMBER	REV
055	K
056	K
057	K
058	K
059	K
060	K
061	K
062	K
Section 2	-
1	K
2	K
3	K
4	K
5	K
6	K
7	K
8	K
9	K
10	K
11/12	K
A000	J
A004	K
A006	A
A010	A
A020	A
A030	A
A040	E
A050	J
A060	J
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A080	J
A090	K
A100	E

PAGE NUMBER	REV
A110	A
A111	K
A112	K
A113	K
A114	K
A116	K
A118	K
A120	K
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B020	K11
B025	K11
B030	K9
B040	K11
B050	K1
B060	K10
B065	E
B070	K3
B080	K11
C010	K7
C020	K7
D010	K
D015	K1
D020	A
D025	K1
D030	K
D040	K1
D045	K
D050	G
D055	A
D060	K7
D065	E
D070	A
D080	K1

*NOTE: Rev. K is Doc. No. 73687809.

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PUBLICATION TITLE FA7A6/FA7A7 MICROPROGRAM

PAGE NUMBER	REV
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F030	J
G010	J
G020	E
G030	E
G040	K
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H070	K9
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L020	K
L030	A
L040	A
L045	A

PAGE NUMBER	REV
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L060	J
L065	K7
L070	F
M010	D
M020	A
M030	E
M040	A
M050	H
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M070	A
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M080	F
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M100	K9
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N110	A
N120	B
N130	B
N140	A
N150	F
N160	K1
N165	K9
N170	K1

PAGE NUMBER	REV
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N195	E
N200	K1
N210	A
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N240	K7
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N260	B
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P020	E
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P040	J
P050	J
P052	F
P054	F
P056	F
P060	H
P070	K
P080	K9
P090	F
P100	F
P110	K
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Q050	G
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PAGE NUMBER	REV
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R020	K10
S010	K
S020	K1
S030	K9
S040	J
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S085	G
S090	E
S100	K1
T000	J
T010	K1
T020	K3
T030	K3
T040	A
T050	K1
U000	F
U002	F
U004	F
U100	*
U102	*
U103	*
U104	*
U106	*
U108	*
U110	*
U112	*
U114	*

S042 K11

NOTE: *These pages deleted at Revision B

MANUAL STATUS CHECK SHEET

PUBLICATION NO. 70631200
 PUBLICATION TITLE FA7A6/FA7A7 MICROPROGRAM

REVISION K

PAGE NUMBER	REV
U118	*
V000	*
V010	*
V020	*
V030	*
V040	*
V050	*
V060	*
V070	*
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X015	A
X020	A
X021	A
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X032	A
X033	A
X040	A
X041	A
X042	A
X043	A
X044	A
X045	A
X046	A
X060	A

PAGE NUMBER	REV
X061	A
X062	A
X063	A
X064	A
X065	A
X066	A
X067	A
X068	A
X070	K
X080	A
X082	A
X084	A
X086	F
X108	E
X110	H
X112	A
X116	G
X118	A
X120	B
X122	B
X124	A
X200	F
X202	F
X220	F
X222	F
X230	F
X232	E
X234	F
X900	K
X902	K
Y000	J
Y002	F
Y004	F

PAGE NUMBER	REV
Y006	F
Y008	F
Y010	F
Y012	F
Y014	H
Y016	E
Y100	J
Y102	F
Y104	K
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Y116	H
Y118	H
Y119	A
Y120	J
Y122	H
Y123	F
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Y128	F
Y130	F
Y132	K
Y134	H
Y138	E
Y140	J
Y142	F
Y143	K
Y144	F
Y146	F
Y148	K

PAGE NUMBER	REV
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Y152	J
Y154	F
Y156	F
Y158	J
Y160	J
Y161	K
Y162	J
Y164	K
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Y170	J
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Y176	K
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Y206	H
Y207	H
Y208	A
Y220	J
Y222	K
Y224	K
Y226	J
Y228	J
Y229	J
Y230	J
Y232	F
Y238	J
Y240	H

NOTE: *These pages deleted at Revision B

MANUAL STATUS CHECK SHEET

PUBLICATION NO. 70631200

REVISION K

PUBLICATION TITLE FA7A6/FA7A7 MICROPROGRAM

PAGE NUMBER	REV
Y242	G
Y243	H
Y244	K
Y246	H
Y248	H
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Y252	K
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Y263	F
Y264	F
Y265	K
Y266	K
Y268	H
Y270	F
Y272	H
Y274	F
Y280	J
Y282	F
Y283	E
Y284	E
Y285	K
Y286	E
Y288	F
Y290	H
Y292	H
Y296	H
Y298	A
Y3A0	J

PAGE NUMBER	REV
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Y3A6	K
Y3A7	J
Y3A8	J
Y3B0	J
Y3C0	J
Y3C2	F
Y3C4	F
Y3C6	K
Y3C7	H
Y3C8	K
Y3D0	K
Y3E0	J
Y3E2	G
Y3E3	K
Y3E4	G
Y3E5	F
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Y3E8	F
Y3F0	G
Y3F2	H
Y3F4	A
Y3F6	A
Y3F8	A
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Y302	F
Y304	G
Y306	K
Y307	H
Y308	G
Y310	B
Y320	J

PAGE NUMBER	REV
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Y328	G
Y330	F
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Y342	F
Y344	F
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PAGE NUMBER	REV
Y410	K
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Y422	F
Y424	F
Y426	K
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Y430	F
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Y460	J
Y462	F
Y464	J
Y466	K
Y467	J
Y468	A
Y470	F
Y480	J
Y482	G
Y484	G
Y486	G
Y488	G
Y490	G
Y492	G
Y494	G
Y496	G
Y498	G
Y499	G

PREFACE

INTRODUCTION

This manual contains technical information on the microprogram used with the CONTROL DATA® FA7A6/FA7A7 Disk Controller.

MANUAL ARRANGEMENT

This manual is divided into two sections. The first section contains the Core Map and Cross Reference Listing. This listing supplies, in hexadecimal format, the instruction data for every memory address. The second section provides a flowchart representation of the microprogram execution sequences. Refer to the Theory of Operation section of the Hardware Reference Manual (Publication Number 70615200) for instructions on reading the core map and flowchart.

MICROPROGRAM CONFIGURATION

Before attempting to use this manual, it is necessary to verify that the configuration of the manual matches the configuration of the microprogram cassette. Refer to the Microprogram Revision Status chart on page xi. Make sure that the part number marked on the cassette itself is identical to the referenced cassette part number listed on the microprogram log (the sticker attached to the controller) and the cassette part number listed on page xi. Also verify that the Core Map Document Number printed on each sheet of the core map agrees with the document number specified on page xi.

MICROPROGRAM CHANGES

Changes to any of the microinstructions will have the following effects:

1. A new cassette is issued with a new part number.
2. The core map will be replaced in its entirety by a core map with a new document number.
3. The revision level of the flowchart will increment (A goes to B; B to C; and so on). The letters I, O, Q, and X are not used. New flowchart sheets are provided only for the individual sheets affected by the change.

In general, the flowchart revision level will be the same as the manual revision level.

OTHER MANUALS

Manuals applicable to this controller are:

Publication No.	Title
70615200	Hardware Reference Manual
70615300	Maintenance Manual, Vol. 1 (Installation and Checkout, Preventive Maintenance, Corrective Maintenance)
83310400	Maintenance Manual, Vol.2 (Diagrams)
83303500	Maintenance Manual, Vol.3 (Wire Lists)
70619000	Subsystem Troubleshooting Manual
70625500	Parts Data Manual
70631200	Microprogram Manual

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Beiliegende Blätter des Nachtrages von Rev. M3 nach Rev. M4 sind wie folgt auszutauschen.

Core Mape

Die Seiten 1-3/1-4, 1-7 bis 1-14 und 1-17/1-18 austauschen.

Cross Reference Listing

Die Seiten 1 bis 4 austauschen.

<u>neue Seite Rev.</u>		<u>alte Seite Rev.</u>
B065	M4	E
D025	M4	L
N060	M4	J
N195	M4	L
Q040	M4	M3
Q050	M4	M1

REF CASSETTE P/N
ADDRESS MICRO CODE

73687711
LOGIC ID

CORE MAP AND CROSS REFERENCE LISTING
MICRO CODE LOGIC ID MICRO CODE

LOGIC ID

MICRO CODE

PAGE 001
LOGIC ID

ADDRESS	MICRO CODE	PAGE	LOGIC ID	MICRO CODE	PAGE	LOGIC ID	MICRO CODE	PAGE	LOGIC ID	MICRO CODE	PAGE	LOGIC ID
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0010	0113C11A	P040	Q5	0313C11A	P040	Q4	00030119	P120	E5	001A8108	P120	C5
0020	07208101	P120	C3	07203100	P120	L3	07100118	P120	E3	2FCC5002	P120	N3
0030	0C008100	P120	C5	C0002000	P120	C1	ED13401A	P120	L4	C000A110	P120	S3
0040	003A1105	P120	E4	041C8102	P120	L5	CD233095	P120	G4	9010F66F	P040	G3
0050	87158118	P120	N4	BR0A6008	P040	L4	94F38006	P080	E1	020R7R02	P080	J7
0060	8904E07A	P090	G4	R00R6102	P090	E2	07FB6004	P090	G3	F00R6102	P090	G2
0070	21F87104	P080	L7	F06A0118	Q060	S5	1C04510A	P080	F0	R0009180	Q060	C6
0080	8F0A6008	P090	E2	C020B110	P090	G5	91C53017	P120	C6	C003E118	P040	C4
0090	1C23901A	Q010	E1	C018D01C	Q010	E2	04A75012	P040	L3	C000R110	P040	J6
00A0	R0003100	P110	L2	8835F018	P110	E3	01E2A03C	P110	J2	0009F118	Q030	C1
00B0	70C8B102	Q020	Q5	A01C411F	P040	G2	80A8E112	Q020	Q6	R02R0F00	Q020	Q7
00C0	DD134018	P020	L5	030DC00A	P020	C4	0500A11A	Q050	N6	80AC3012	P040	Q6
00D0	074FC00A	P020	S6	D802D018	Q010	E3	9704D00A	P020	U2	0F1A8108	P120	E6
00E0	00003A12	P120	Q2	041C2872	P120	C2	7FD0C002	P080	Q6	DF0R3118	Q030	C2
00F0	001A911A	P040	G4	011A911A	P040	G5	021A911A	P040	J4	031A911A	P040	J5
0100	00000000	T040	C0	00000000	T040	C1	000F00F4			000F00F4		
0110	00000000	T040	G0	00000000	T040	G1	00000000	R040	T6	000F00F4		
0120	000F00F4			000F00F4			0000C000	T040	J0	000F00F4		
0130	000F00F4			000F00F4			000F00F4			000F00F4		
0140	000F00F4			000F00F4			000F00F4			000F00F4		
0150	000F00F4			000F00F4			000F00F4			000F00F4		
0160	CC8C7FR0	T040	C3	0140RF90	T040	E3	022UDFA0	T040	G3	0310EER0		J3
0170	0408F7C0	T040	L3	0504FRD0	T040	N3	0602FDE0	T040	Q3	0701EEF0	T040	S3
0180	000F00F4			000F00F4			000F00F4			000F00F4		
0190	000F00F4			000F00F4			000F00F4			000F00F4		
01A0	000F00F4			000F00F4			000F00F4			000F00F4		
01B0	000F00F4			000F00F4			000F00F4			000F00F4		
01C0	000F00F4			000F00F4			000F00F4			000F00F4		
01D0	000F00F4			000F00F4			000F00F4			000F00F4		
01E0	000F00F4			000F00F4			000F00F4			000F00F4		
01F0	000F00F4			000F00F4			00000000	N180	G4	000F00F4		
0200	000F00F4			000F00F4			AC01201A	P060	E5	0000R180	P060	C6
0210	02AA2111	P060	J2	R0493110	P060	G2	000F00F4			001E200E	P060	C4
0220	52DR0117	P060	C5	5011103C	P060	C1	000F00F4			R011303F	P060	G4
0230	C000R110	P060	J5	1021201A	P060	G5	D00R311F	P080	E4	CC01410A	P080	E5
0240	0012560C	Q050	Q4	D018B108	Q050	N4	F018D108	P080	E6	A4057116	Q050	G2
0250	00PR0510C	Q050	Q5	F504710A	P080	J2	27187008	Q050	S6	D00R8008	Q050	E3
0260	7FCR6012	Q020	Q2	0412610E	Q020	Q3	0B1C8008	Q020	Q4	0C445110	P080	J6
0270	040701A	Q050	S7	R412403F	Q050	N3	BF18B108	P080	J3	C51C2108	P070	G3
0280	85000000	T040	C4	80000000	T040	C5	J0C00000	T040	C6	80000000	T040	C7
0290	85000000	T040	E4	80000000	T040	E5	00000000	T040	E6	80000000	T040	E7
02A0	85000000	T040	G4	80000000	T040	G5	00000000	T040	G6	80000000	T040	G7
02B0	85000000	T040	J4	80000000	T040	J5	J0000000	T040	J6	80000000	T040	J7
02C0	85000000	T040	L4	80000000	T040	L5	00000000	T040	L6	80000000	T040	L7
02D0	85000000	T040	N4	80000000	T040	N5	00000000	T040	N6	80000000	T040	N7
02E0	85000000	T040	Q4	80000000	T040	Q5	00000000	T040	Q6	80000000	T040	Q7
02F0	85000000	T040	S4	80000000	T040	S5	J0000000	T040	S6	80000000	T040	S7
0300	000F00F4			000F00F4			000F00F4			000F00F4		
0310	000F00F4			000F00F4			000F00F4			000F00F4		

REF CASSETTE P/N		73687711		CORE MAP AND CROSS		REFERENCE LISTING		PAGE 002				
ADDRESS	MICRO CODE	LOGIC ID		MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID			
		PAGE			PAGE		PAGE		PAGE			
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0350	000F00F4			000F00F4		000F00F4		000F00F4				
0360	000F00F4			000F00F4		000F00F4		000F00F4				
0370	000F00F4			000F00F4		000F00F4		000F00F4				
0380	000F00F4			000F00F4		000F00F4		000F00F4				
0390	000F00F4			000F00F4		000F00F4		000F00F4				
03A0	000F00F4			000F00F4		000F00F4		000F00F4				
03B0	000F00F4			000F00F4		000F00F4		000F00F4				
03C0	000F00F4			000F00F4		000F00F4		000F00F4				
03D0	000F00F4			000F00F4		000F00F4		000F00F4				
03E0	000F00F4			000F00F4		000F00F4		000F00F4				
03F0	000F00F4			000F00F4		000F00F4		000F00F4				
0400	00000000	Z112	N1	000F00F4		000F00F4		0000CF00	Z038 S6			
0410	000F00F4			000F00F4		000F00F4		000F00F4				
0420	000F00F4			000F00F4		000F00F4		000F00F4				
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0440	000F00F4			000F00F4		000F00F4		000F00F4				
0450	000F00F4			000F00F4		000F00F4		000F00F4				
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0470	000F00F4			000F00F4		000F00F4		000F00F4				
0480	000F00F4			000F00F4		000F00F4		000F00F4				
0490	000F00F4			000F00F4		000F00F4		000F00F4				
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04B0	000F00F4			000F00F4		000F00F4		000F00F4				
04C0	000F00F4			000F00F4		000F00F4		000F00F4				
04D0	000F00F4			000F00F4		000F00F4		000F00F4				
04E0	000F00F4			000F00F4		000F00F4		000F00F4				
04F0	000F00F4			000F00F4		000F00F4		000F00F4				
0500	000F00F4			000F00F4		000F00F4		000F00F4				
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0540	000F00F4			000F00F4		000F00F4		000F00F4				
0550	000F00F4			000F00F4		000F00F4		000F00F4				
0560	000F00F4			000F00F4		000F00F4		000F00F4				
0570	000F00F4			000F00F4		000F00F4		000F00F4				
0580	000F00F4			000F00F4		000F00F4		000F00F4				
0590	000F00F4			000F00F4		000F00F4		000F00F4				
05A0	000F00F4			000F00F4		000F00F4		000F00F4				
05B0	000F00F4			000F00F4		000F00F4		000F00F4				
05C0	000F00F4			000F00F4		000F00F4		000F00F4				
05D0	000F00F4			000F00F4		000F00F4		000F00F4				
05E0	000F00F4			000F00F4		000F00F4		000F00F4				
05F0	000F00F4			000F00F4		000F00F4		000F00F4				
0600	000F00F4			000F00F4		000F00F4		000F00F4				
0610	FF14101A	Z110	C5	FF15010A	Z110	C2		FF13100A	Z110	C4		
0620	60002010	Z110	G4	600411F4	Z110	G1		3402111A	Z110	G3		
0630	612430F4	Z110	L2	0FC92102	Z110	G5		62A92110	Z110	G6		
				0001310C	Z110	L3		68F53110	Z110	N4		
											Z110	N5

PUR70631200 PN73687811 BIT LIST (SICO)

REF ADDRESS	CASSETTE MICRO CODE	P/N	73687711 LOGIC ID	CORE MAP AND CROSS MICRO CODE	AND CROSS LOGIC ID	REFERENCE LISTING MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	PAGE 003
			PAGE		PAGE		PAGE		PAGE	
0640	A3F3500F		Z110 N6	000F00F4		000F00F4		602F41F4	Z114	C6
0650	B4F4501F		Z110 S4	84016003	Z112 C1	91005111	Z112 J3	10127302	Z112	J4
0660	F0F271D6		Z112 C2	000F00F4		01111012	Z112 E5	80118109	Z112	C5
0670	20121012		Z112 J5	000F00F4		60001010	Z112 G5	03F18006	Z112	C3
0680	95F25107		Z112 J2	601261D8	Z112 C4	90159005	Z114 C1	000F00F4		
0690	90169015		Z114 C2	90139105	Z114 C3	90149115	Z114 C4	6000A300	Z114	C5
06A0	012BA0F6		Z114 J1	6024A1F4	Z114 J2	600F44F4	Z114 C6	000800F4	Z114	J3
06B0	000F00F4			000F00F4		000F00F4		000F00F4		
06C0	000F00F4			000F00F4		000F00F4		000F00F4		
06D0	000F00F4			000F00F4		000F00F4		000F00F4		
06E0	000F00F4			000F00F4		000F00F4		000F00F4		
06F0	000F00F4			000F00F4		000F00F4		000F00F4		
0700	000F00F4			000F00F4		000F00F4		000F00F4		
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0760	000F00F4			000F00F4		000F00F4		000F00F4		
0770	000F00F4			000F00F4		000F00F4		000F00F4		
0780	000F00F4			000F00F4		000F00F4		000F00F4		
0790	000F00F4			000F00F4		000F00F4		000F00F4		
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07B0	000F00F4			000F00F4		000F00F4		000F00F4		
07C0	000F00F4			000F00F4		000F00F4		000F00F4		
07D0	000F00F4			000F00F4		000F00F4		000F00F4		
07E0	000F00F4			000F00F4		000F00F4		000F00F4		
07F0	000F00F4			000F00F4		000F00F4		000F00F4		
0800	04000000		Z011 C1	00000000	Z011 L1	00000000	Z011 N1	00000000	Z011	Q1
0810	00000000		Z011 S1	0080110E	Z036 C4	9F001111	Z036 C5	3525E0F6	Z036	C6
0820	8C091018		Z036 C3	080D211A	Z036 G1	00000000	Z012 A7	004E630D	Z036	G2
0830	3505D0F6		Z012 A1	0080310C	Z012 C2	80DF3116	Z012 C3	8805B0D8	Z012	C4
0840	8CE96010		Z012 J5	AFC5F002	Z012 J2	F0DC4002	Z012 J4	F72BB0F6	Z012	G2
0850	0040777C		Z014 C1	0040877C	Z014 L1	0040977C	Z015 C1	0040A77C	Z015	L1
0860	901030F4		Z036 L3	0C18F1DA	Z012 J6	081660F5	Z036 G3	0814E009	Z014	E3
0870	C090E11C		Z014 C2	004F611D	Z014 E2	9F0BE008	Z014 G2	9009A0F4	Z014	J2
0880	0000D051		Z014 L2	0041611D	Z014 N2	3E0510F6	Z014 Q2	9009A0F4	Z014	S2
0890	980901F4		Z015 C2	9009A0F4	Z015 E2	980901F4	Z015 G2	9009A0F4	Z015	J2
08A0	980901F4		Z015 L2	980901F4	Z015 N2	9009A0F4	Z015 Q2	9009A0F4	Z015	S2
08B0	480D421B		Z012 G1	901CC10F	Z012 C5	3C0500F6	Z014 C4	C33560C4	P120	N5
08C0	AC148108		Z026 C5	D00AC009	Z026 C4	90009100	Z012 C6	8000C030	Z026	C3
08D0	0090810C		Z014 J3	00009001	Z014 L3	042AC515	Z026 C2	9000A000	Z026	A2
08E0	0080D1DC		Z026 C1	0019A1F4	P110 G1	A0101118	Z030 A6	EF0A8109	Z014	C3
08F0	8F1C4108		Z012 J3	9000A000	Z012 N2	C8A5F311	Z012 L1	0C0D566A	Z012	L2
0900	000080FC		Z011 E1	0080510C	Z015 A4	104D041D	Z015 C3	A8089018	Z015	C4
0910	A008F81A		G020 G5	0080204E	Z015 E4	5018101F	Z015 C7	8D0D400B	Z034	C6
0920	00A0215C		Z015 E5	0042215D	Z015 G5	9000A000	Z015 G6	40100018	Z015	E6
0930	0F1C3019		Z036 Q1	2005909A	Z036 Q2	80003000	Z036 Q4	9D184118	P020	S2
0940	FC12401A		Z034 C7	9FD5017	Z034 L1	5011111F	Z034 C5	880B511A	P020	S3
0950	0FF88012		Z032 N5	A0019008	Z034 L2	9C091108	Z015 C6	0018701E	P020	S4

REF CASSETTE P/N 73687711				CORE MAP AND CROSS REFERENCE LISTING				PAGE 004				
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
PAGE				PAGE				PAGE				
0960	9F18A118	Z026	J4	9F09A118	Z026	L4	9F0AA118	Z026	N4	9F0BA118	Z026	Q4
0970	08A87102	Q020	J6	00440000	P020	S5	801B711F	Q020	L0	D024C1F4	Q020	L1
0980	1010810A	P030	L2	A3D87140	Z032	N6	60C78112	P030	L3	D0002010	P030	J3
0990	00003901	Z036	Q3	1105C1F6	Z036	S3	902891F4	Z034	G1	800241F5	Z034	G2
09A0	910841F7	Z034	C4	7051699C	Z026	L3	011CE102	Z026	S3	0051E10E	Z026	L5
09B0	60538011	Z032	J5	08CDB116	Z032	L5	010D80D2	Z032	L4	0401D0DA	Z032	L6
09C0	FF188109	Z032	E3	DF098109	Z032	G3	0F08B109	Z032	L3	EF0AB109	Z032	J3
09D0	00A1D10E	Z032	N2	B313C551	Z032	E2	0043D11D	Z032	N3	0FD85002	Z032	N4
09E0	0040E01E	Z014	G3	8F2A71F4	Z014	G4	9C29E1F4	Z026	L6	941CA008	Z026	L7
09F0	F0CBF102	Q020	G3	A008711A	Q020	E6	C00B1006	Q020	G4	0AAB7302	Q020	G6
0A00	00000000	Z011	G1	00000000	Z011	J1	0084204D	Z030	E1	C084210D	Z032	C1
0A10	082910F5	Z030	C3	0080110C	Z030	C4	8811E108	Z030	C5	901C013F	Z030	C6
0A20	61053559	Z030	H5	FF0A40F6	Z030	N2	EC0D211B	Z032	C2	880A91F5	Z032	C3
0A30	90009100	Z030	L6	3E05C0F6	Z030	G6	90009100	Z030	J6	AD09A0F4	Z030	E6
0A40	0043401D	Z030	N3	80D84106	Z030	N4	710551D9	Z030	N5	004C600D	Z030	S2
0A50	0090411C	Z030	S1	00805B0E	Z030	Q5	90009100	Z030	N6	FF0B5G12	Z030	Q4
0A60	080A6619	Z030	S3	E09061DE	Z030	U4	8000B100	Z030	U5	3E25C0F6	Z030	S5
0A70	81182008	Z036	C2	9013D018	Z032	C6	6105A1D9	Z032	T2	7105A309	Z032	Q2
0A80	90009100	Z032	U5	7000A001	Z032	S5	600080D1	Z032	S4	60001E00	P010	E6
0A90	020DE01A	Z034	L3	900A51F4	Z015	C5	98FF9115	Z032	C4	0400701A	Z032	C5
0AA0	9000A000	Z032	Q6	1004811A	P010	E5	60DC8106	Z032	S3	00008001	Z032	U3
0AB0	0080700C	Z036	C1	9800B001	Z034	Q6	A001B11F	Z026	C6	010AC002	Z026	G0
0AC0	0080C01E	Z026	G1	101CC16F	Z026	G2	FCC1D002	Z026	L0	0501D102	Z026	S0
0AD0	F001D012	Z026	L1	9F2AA0F4	Z026	L2	0081D11C	Z026	S1	980AA1F4	Z026	S2
0AE0	0421E11C	Z034	L5	011DE00A	Z034	L4	20ADF002	Z034	Q4	0112F012	Z034	L6
0AF0	0310801D	Z034	Q5	9009E805	Z034	L7	00A0F11E	Z030	C1	0040100D	Z030	C2
0B00	00000000	T040	L0	D0002000	P030	E6	6503710A	P030	E2	C903711A	P030	E4
0B10	R412A80E	Q030	J3	80F0211D	P080	Q2	055C100A	Q030	J2	000AE108	Q030	G4
0B20	0F2500F6	Q030	N4	007DE100	P080	Q5	0018F76C	Q050	C1	881D6108	P080	Q3
0B30	1002200A	Q030	N3	000091D0	P040	L2	08050FF5	P110	J3	20582110	P060	G3
0B40	201E300F	Q030	N2	7F14A1DA	Q030	L3	0016910C	Q060	E7	50B0110C	Q040	C4
0B50	00E2501C	P010	L2	C802B118	P010	N2	DE22C018	Q050	N1	9A1C611A	P040	U2
0B60	2D093108	P080	E3	2D25C1F6	P080	C3	9104201A	P080	Q4	C015B118	P040	U3
0B70	7025B0F6	Q040	G3	1028210A	Q030	L5	FE1A001A	P030	E3	FC1A001A	P030	E5
0B80	370520F6	Q040	S1	801C8108	Q040	Q2	8416E19C	Q060	C1	C000A100	Q070	C1
0B90	1AFBA016	Q030	L1	8018C912	Q060	S3	0412818E	Q060	G6	F806410A	Q060	E6
0BA0	B05C1000	Q030	J4	E8E240D6	Q030	L2	007032F4	Q030	J5	C03070F5	Q030	L4
0BB0	B4024113	Q040	C1	302500F6	Q040	G4	0128D102	P080	J4	C0008100	P080	G4
0BC0	E8E2C106	Q040	G1	005C7B10	Q060	S4	401B70DA	Q040	G2	B00AE818	Q060	N4
0BD0	R000C000	Q040	L1	FF09E11A	Q060	N7	20596110	P080	J5	D3CA8000	Q050	J3
0BE0	A406801A	Q040	Q1	7F18D01A	Q060	N6	A016901F	Q060	S2	005C7110	Q060	C5
0BF0	00008000	Q050	C2	20008000	Q050	E2	D4C98000	Q050	G2	B273D118	Q050	J2
0C00	00000000	T040	L1	B01EB00C	P060	C2	DFCD0112	P010	N5	B0C0111E	P010	N6
0C10	02D8F112	P010	J4	A020A0F4	P010	E4	1205F1F6	P070	S3	F0180F00	P010	N7
0C20	C00090A0	P120	E1	0404400A	P070	E4	8C0A201A	P070	J3	C5383998	P070	G4
0C30	05B8A012	P070	G5	07F8A012	P070	L5	07B8A012	P070	J5	03B8A012	P070	N5
0C40	1225F1F6	P070	Q3	C00561D8	P040	N3	362530F6	P040	E3	005C8118	P040	C3
0C50	01E2013C	P010	N4	C005F008	P050	C2	00F0B11E	P100	J2	A80A201A	P070	E3
0C60	91C5B117	P120	N6	2325E0F6	P120	Q5	332531F6	P040	N4	000010A0	P040	Q3
0C70	8B1C7018	Q070	N3	C0808100	P010	E1	C05C7110	Q070	J3	0418C99E	Q070	J4

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Rev.:M4

REF ADDRESS	CASSETTE MICRO CODE	P/N	73687711 LOGIC ID	CORE MAP AND CROSS MICRO CODE	AND LOGIC ID	CROSS LOGIC ID	REFERENCE LISTING MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	PAGE ID		
			PAGE		PAGE			PAGE		PAGE			
OC80	CF1B10D8		P010	J3	A1D88037	P010	J2	B0C0881D	P010	E2	20A08102	P010	C3
OC90	0000E000		P120	Q1	0000E010	P120	E2	F000D100	P070	I6	F80AA118	P090	S6
OCA0	F0027002		Q070	N2	C0009103	P070	N6	A408F01A	Q070	C2	0304B01A	P120	S4
OC80	22B81110		P060	C3	8C0AF10A	P120	S5	20000100	P060	E5	C01950F4	P010	N3
OCC0	8018710A		Q070	J2	B0187108	Q070	L1	B60AC009	Q070	J1	360550F6	Q070	G1
CCD0	C18RD110		P090	S4	C838D030	P090	S3	03DBD013	P090	S2	C5099118	P090	S5
OCF0	183C611A		P070	C2	40B1F102	P030	G2	3FCC4002	P120	S6	40DB4016	P040	N2
OCF0	3B2591F6		P050	E3	B0R0C00C	Q070	C3	D0002000	P030	G3	FE38B116	P010	J5
OD00	00000000		T040	NC	00000000	T040	N1	DF183118	Q030	C5	1025B0F6	Q030	E5
OD10	054D401A		P020	J4	083D100A	P020	N2	E0C8F102	Q010	S1	201D910A	P060	L2
OD20	0A4D401A		P030	J5	A2F02033	P030	J4	DD136008	P030	C3	0230200A	P030	J2
OD30	1025B0F6		Q030	G6	9804210A	P030	C2	00057008	Q030	J6	012DF032	Q030	C3
OD40	A01CD10F		Q010	E5	C0007010	P010	C1	021C5104	P090	U2	0018A10C	Q020	L3
OD50	1CC89012		Q010	L3	030C1102	Q010	S0	603B511A	P090	U3	DE02D10B	P090	U4
OD60	090D401A		P030	C5	40C97996	Q020	E1	1FCAF112	Q020	Q0	0030F0F6	Q030	E4
OD70	94B8F0D0		C020	C2	94A9F0D0	Q020	G2	94AAF0D0	Q020	E2	94B8F0D0	Q020	J2
OD80	0018E51E		Q050	J4	94D8C107	Q010	L1	0304E0F6	Q010	S5	04A88102	Q010	S4
OD90	R018C10C		Q010	L5	61A89002	Q010	L4	0D0D401A	P060	L4	D81481D8	Q010	S3
ODA0	043D100A		P020	L2	C012811C	Q030	U3	0818610D	Q020	L4	04024102	Q030	E6
ODR0	101D910A		P060	N2	081D910A	P060	Q2	0FOAC108	Q050	N5	A1AAC113	Q030	U4
ODC0	302500F6		Q070	N5	29187018	Q050	N2	DC085038	Q010	L2	0412411E	Q020	L2
ODD0	DR0B6018		Q020	C1	9018400F	Q010	E4	8310801D	Q010	E6	041D910A	P060	S2
ODE0	Q018D00C		Q010	S6	1025B0F6	Q050	E5	BF096119	Q030	G5	3125A1F6	Q050	J5
ODE0	800B1118		Q030	G3	4412013E	Q030	C4	03FC9116	Q010	S2	2B086008	Q020	Q1
QEF0	8EEE2000		N010	S1	918DD000	N010	S0	EE55A000	N010	S5	B068E018	Q060	S6
OE10	2C362438		T050	C0	3C00494D	T050	C1	707124F0	T050	C2	AC6884C4	T050	C3
OE20	B309A000		N010	S3	09FC8417	T050	C4	A15F4000	N010	S7	316D7175	T050	C5
OE30	797D39FC		T050	C6	580B09C5	T050	C7	31FC3414	T050	E0	48940C9C	T050	E1
OE40	5432928E		T050	E2	A034FC00	T050	E3	1E10181C	T050	F4	B031FC5C	T050	E5
OE50	175CAC32		T050	E6	8C34A488	T050	E7	A8642010	T050	G0	54241C54	T050	G1
OE60	2818542C		T050	G2	14543CAC	T050	G3	FC54334C	T050	G4	A85004AF	T050	G5
OE70	09C53139		T050	G6	3509FCB0	T050	G7	1F328C98	T050	J0	34FC7411	T050	J1
OE80	AF36A000		N010	S2	5CAC048E	T050	J2	9D8C4000	N010	S6	14FC442A	T050	J3
OE90	00CFD479		T050	J4	51F1F4E3	T050	J5	D900EA8C	T050	J6	F7FC0033	T050	J7
OFA0	F12E6000		N010	S4	0050C018	P020	C2	DF840000	N010	U0	3058A864	T050	L0
OER0	20105424		T050	L1	1C542818	T050	L2	542C1454	T050	L3	3CAC3068	T050	L4
OFC0	R8000000		T050	L5	60281854	T050	L6	5CAC328C	T050	L7	04450080	T050	N0
OED0	A8840425		T050	N1	328C9804	T050	N2	9D2C1454	T050	N3	40328C34	T050	N4
OEE0	FC602D44		T050	N5	30330C9C	T050	N6	30330C9C	T050	N7	C0FCCE2C	T050	Q1
OFF0	R4440453		T050	Q2	4404DD30	T050	Q3	6C707478	T050	Q4	FCCE2800	T050	Q5
OF00	00000000		T040	QC	B01950F4	P010	N1	E11DA018	P020	C1	D05D1008	P020	E1
OF10	Q21D000A		P020	G1	101DD00A	P020	J1	DB15A008	P020	LI	DB111018	P020	N1
OF20	DD131008		P020	Q1	941D3118	P020	S1	051DD108	P020	U1	D9103018	P030	C1
OF30	B03D01A8		P030	E1	C05DE018	P030	G1	DB172118	P030	J1	90008000	P030	L1
OF40	9230F008		P030	N1	911DE108	P030	Q1	8917E008	P030	S1	01C7D016	P040	E1
OF50	00008010		P040	G1	83F83014	P040	L1	C01CE118	P040	N1	0080E11C	P040	S1
OF60	B0455118		P040	U1	C0145318	P050	C1	C0000010	P060	C1	DB191118	P060	L1
OF70	DB09B008		P060	N1	DB0AB018	P060	Q1	DB0BD118	P060	S1	3305B0F6	P060	U1
OF80	C000E000		P070	C1	20004110	P070	G1	3105D1F6	P070	U1	F011C108	P080	J1
OF90	0211C10A		P080	L1	B04D1018	P080	Q1	0310E00A	P080	S1	7FDBE002	P080	U1

REF CASSETTE P/N		73687711		CORE MAP AND CROSS		REFERENCE LISTING				PAGE 006		
ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	PAGE	LOGIC ID	
0FA0	0F186318	P090	E1	5001D11A	P090	J1	A001D13A	P090	L1	F026F108	P090	N1
0F80	C000D100	P090	S1	00004700	P090	U1	380520F6	P100	E1	D815C118	P100	G1
0FC0	C8185108	P100	J1	3A2531F6	P110	Q1	20195018	P080	L2	C0098118	P100	G2
0FD0	D0201000	P020	J2	C01A41D8	P040	E2	0011E03E	P090	L2	0011E00C	P090	J2
0FE0	C0008110	P100	C2	C000B110	P100	A2	D0002000	P030	N3	081DF01A	P040	S2
0FF0	4917E10A	P030	N2	90008100	P040	S3	0A10A10D	P090	N2	8503E018	P110	J1
1000	60B0C11C	S060	G2	00008C12	S050	C0	0110403A	S040	N2	000F00F4		
1010	10160F02	S040	N7	858E9C1F	S050	C4	0D1C1008	S040	N6	21DD1103	S040	S6
1020	0F2500F6	S090	Q4	00008C02	S050	G4	F0169102	S050	C6	003AE0F6	S050	E6
1030	24168102	S060	G5	07185059	S050	Q0	0026EAF6	S050	J6	00168008	S050	L5
1040	400D4R02	S040	Q3	0A0D112A	S040	S3	020DD11A	S040	N3	051E9008	R080	G3
1050	5C08B11A	S050	Q1	3002D04A	S050	S1	390580F6	S050	U3	F016E012	S050	Q4
1060	89F5F0F6	R080	C2	403A60F4	R080	E4	000C4118	R080	E2	881E601A	R080	G4
1070	2016E012	S050	G3	FECFA112	S050	E2	0718F109	S050	J2	0718F109	S050	L2
1080	0026EAF5	S050	L6	F0169102	S050	C1	FECFE012	S060	G6	F2F77A47	S050	E1
1090	403A60F4	B080	E4	000021B2	S050	C5	00001122	S050	Q6	00002111	S050	E5
10A0	0000F000	B080	A4	051E9008	B080	C4	0026A0F4	B080		80AF7002	S050	E3
10B0	F0169102	S050	G5	11051108	Q030	E6	00003142	S050	J5	1802C08A	S050	Q2
10C0	681C8108	S050	S3	300C511A	S050	Q3	0012300E	S060	G4	3C02C10A	S060	G3
10D0	0012520E	S050	S2	00005200	S050	U2	2FC00103	S040	N1	20AD1122	S040	N4
10E0	E81E8008	B080	L0	000691F6	S050	Q5	F026C1F4	B080		1416910A	S050	S5
10F0	B000A011	B080	C3	0000A0D2	B080	A3	00007041	S050	J3	E000E011	S050	L3
1100	8518010A	S090	J3	07132008	S090	Q3	7008011F	S090	G3	R0E8B006	S090	E3
1110	0418C01C	S070	C2	16E4C004	S070	S2	08CCF112	S080	S6	000690F6	S080	N6
1120	E016211F	S070	S0	401EA03C	S070	E0	9012711F	S070	C3	8014101C	S070	S1
1130	EC08D008	S080	G4	A4C8D003	S080	C4	EC08D008	S080	E4	802B0006	S080	J4
1140	12A94010	S070	S4	9414231E	S070	S5	04CE9016	S080	J6	9F008103	S100	C4
1150	43D8E181	S070	E3	100051D0	S070	G3	13C9E110	S070	J3	13CA6000	S070	N5
1160	001E601F	S070	L4	A128611D	S070	N4	100420D8	S070	N6	04D8B012	S070	N5
1170	4016E00A	S090	E1	8005900A	S090	Q1	0010D1F6	S085	C2	A013A11F	S070	C4
1180	30166018	S100	F1	423681F6	S100	C2	8418830E	S100	C5	2008411A	S100	C3
1190	1302001A	S090	Q2	C00091D1	S080	N1	4000D111	S080	N3	4000D111	S080	S2
11A0	0012A10C	S070	E6	60009110	S070	E1	04D5C116	S080	C2	B001201F	S070	C5
11B0	F421E0DE	S090	F4	04F86106	S070	L6	330581F6	S085	G5	5011110F	S080	N5
11C0	94F440D7	S070	S3	18112108	S070	A2	0080831C	S100	C1	B91C35DD	S080	C3
11D0	15094108	S080	J5	0CF5B116	S080	N4	0000F692	S085	C3	0012D01E	S080	S4
11E0	5418025C	S090	E2	96D5C105	S090	E5	380500F6	S070	E4	001EA00E	S070	E5
11F0	8A08705R	S085	C4	0702B10A	S085	G4	332541F6	S085	E4	F01C710F	S085	C1
1200	A0000083	B010	N1	50008003	B010	S1	E011A04C	B010	G1	8006911A	B010	C2
1210	800CD109	B010	S3	08DC9012	B060	N1	BC2A300A	S010	E2	000F00F4		
1220	8000D110	D050	Q5	8000D000	D050	J5	390500F6	B010	G4	F911611A	B025	Q3
1230	6C15603B	S010	L4	180A500A	S010	N2	AB2A403A	S010	L1	0311B016	C020	S4
1240	20003000	S010	L3	BE0A400A	S010	L2	000F00F4	S010		00008012	S100	S5
1250	20293008	S010	Q2	A62A300A	S010	S2	4018900E	S020	E2	350541F6	S030	N1
1260	C018601A	S010	L5	1C28510A	S020	E1	A7F38006	B060	L1	4000F010	B025	Q4
1270	000F00F4			00007C12	B060	H7	000F00F4			0713610F	B060	L0
1280	27D1100F	B010	S2	020DF00A	S100	S6	40104119	S100	S4	620A300A	S010	C2
1290	200F5118	S020	E3	48CF7112	B060	N2	300DE008	B010	S6	200FC018	B010	C3
12A0	8915B13A	B010	G2	0815000A	B010	J2	0FCD8102	S100	S3	5718F008	C020	S6
12B0	CFD3D0D2	R060	L2	0310CB0D	C020	S5	D0142109	B010	G3	00000003	B010	J3

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Rev. M3

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING				PAGE 007		
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	
		PAGE				PAGE				
12C0	2804A118	C020	M6	9702C11B	B010	C4	F000C001	C020	K6	
12D0	500671F4	R060	L3	502620F4	R060	J3	000691F6	B010	S4	
12E0	04EE2112	R025	Q2	30003110	R025	N2	000F00F4			
12F0	011D011B	B010	C1	5718F608	B070	E1	4009501F	P070	S4	
1300	0C0821BA	R020	G1	93F4C015	B020	G4	802E900C	B020	L1	
1310	501C80F5	B035	L6	04EE2012	B020	Q2	96CA3005	B020	N3	
1320	C3B4D111	R030	C1	94F1A107	B020	Q3	3413A218	B020	G2	
1330	96C931E5	B020	L4	9013830F	B030	C6	300C1318	B020	Q1	
1340	001E700C	S100	J1	FFF6E112	S100	S1	B888A00F	S100	N2	
1350	000F00F4			002D51F6	S100	J4	60181118	B040	E2	
1360	27D161DF	B020	C6	E012911F	S100	E3	50005000	B060	A1	
1370	90187015	S100	J2	A013531F	S100	J3	000F00F4			
1380	302CA1F4	B020	J2	80007000	B020	E2	38139108	B030	G2	
1390	36B89010	B020	L2	94D81105	B020	L3	08ACB102	B030	G3	
13A0	38B64110	S100	N3	3F140D18	B020	G3	8000F010	B020	Q4	
13B0	F91D810D	B030	G1	0111D802	B030	G6	FF11D00A	B030	G4	
13C0	300C811A	B020	E5	4000F300	B020	G5	34A98110	B030	C3	
13D0	0313B011	B030	G5	000F00F4			3A05B0F6	B030	L1	
13E0	8008510A	B040	E1	0018E10C	B040	J1	5006D1F4	B040	J2	
13F0	18D76006	B020	C5	000F00F4			4000E003	B020	A6	
1400	B0001003	B050	J4	42D66004	B050	L3	04EE0112	B050	C4	
1410	94DC41D7	B050	Q3	50005110	B050	L6	E02E210C	B050	G1	
1420	92C92515	B050	G3	1008610A	B050	G4	80002001	B050	G2	
1430	0C0F00F4			0118F110	B050	A1	04EED102	B050	E3	
1440	B5A3310F	B050	E2	4812B018	D090	C2	50033058	B050	Q5	
1450	0F15A11A	B050	A4	F011801F	B050	C2	001E00DC	B050	L2	
1460	92D810D5	B050	L5	0F096C1A	B080	C5	20031018	B050	G6	
1470	DB1C8109	D090	E5	081C81D9	D090	C5	98D1A077	D090	J5	
1480	FE387166	D090	G4	3015010F	B050	C3	6000DE00	D090	E6	
1490	FCFCC102	D090	L2	9CF2C112	D090	Q2	70FCC102	D090	N2	
14A0	40009630	D090	L1	FC1CC33A	D090	L3	FB1C50D9	B050	A3	
14B0	5314401D	D090	C1	02D18107	D090	C3	10D170D6	D090	C4	
14C0	F7A68103	D090	L4	9E1CB11A	D090	Q4	F0008101	D090	N4	
14D0	000F00F4			7020D110	B065	L2	2815120A	B050	E4	
14E0	500063F4	B065	E1	120AD31A	B065	G1	0111E1D2	B025	Q6	
14F0	2000E0E0	B025	N1	20EDE1B2	B025	Q5	30110308	B025	U3	
1500	0422213C	B040	N1	5F189108	B040	S1	0F2500F6	B040	N6	
1510	1008710A	B065		1102E004	B040	S5	0078F71E	B065		
1520	041800DE	B040	N3	10C5C016	B060	J4	ACE82006	B040	N2	
1530	2815591A	B060	G1	8815517A	B060	C1	0000E1D1	B070	S5	
1540	9012E01F	B040	J4	1008417A	B060	G3	081E580A	B060	G4	
1550	0A15011A	B060	E5	5E784318	B060	G2	203A70F4	B060	G5	
1560	7030D1F4	B065	C2	8310R60D	B070	N1	80C99516	B065	E2	
1570	9EF3B115	B060	L6	F7CCF012	B060	N6	01F3C016	B060	L4	
1580	3009711A	R065	J4	52CB81D4	B065	E4	6003F71A	B065	E5	
1590	000B700A	B065		10297E1A	B065	E6	D021151E	B040	S4	
15A0	500F6118	B070	N4	5819D038	B070	E4	C000B010	B070	Q4	
15B0	80C6A302	B070	N3	CDFAA1D6	B070	S3	97F88065	B070	S2	
15C0	3008701A	B080	Q6	0218700C	B060	L5	8A10A01D	B070	E3	
15D0	2012651A	B070	J5	D71C6018	B070	E6	9B0D400B	B040	J3	
								1801D11A	B010	C5
								20AD0102	B010	C6
								000F00F4		
								4029300F	P070	Q4
								93F4C0B5	R020	E4
								001420F7	B020	S2
								8D0D801B	B020	C2
								300C1118	B020	S1
								04EE7116	S100	N4
								80004101	S100	J5
								E014E0F7	B020	C7
								042E40DE	S100	N5
								080530F6	B020	E6
								200E400B	S100	E4
								00000003	B020	J3
								A688C111	B030	C4
								98C93011	B030	C5
								A484C10F	B030	C2
								220EA108	S100	S2
								000F00F4		
								001E111C	B050	C5
								FFF85112	B050	C6
								42C35104	B050	L1
								000F00F4		
								04A54102	B050	Q4
								0816400F	B050	E1
								E03051F4	B080	C6
								E0FC8102	D090	G5
								00F0870D	D090	C6
								10F2C112	D090	S2
								05094118	B050	A5
								73A68103	D090	Q5
								721C8109	D090	S4
								20005000	B065	G2
								20EDF102	B025	Q7
								80D8A106	B050	A2
								00206200	B080	C1
								1102010A	B040	N5
								B027210F	B040	Q2
								01AFF112	B070	U5
								2815011A	B060	E4
								5E180118	B060	C3
								05C7D012	B070	J6
								20005010	B060	Q6
								BE1890DB	B065	E5
								52CA80D4	B065	E3
								08D831D6	B070	S4
								4020E030	B065	C1
								E0000100	B070	C3
								9C08200A	B040	J6

REF CASSETTE P/N		73687711		CORE MAP AND CROSS			REFERENCE LISTING			PAGE 008		
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE			PAGE	
15E0	5E180458	B040		B002D11F	B040	J5	80A7E112	B070	U6	4005B008	B070	S6
15F0	0418C1CE	B070	E2	211CF018	B060	M7	0408C1C2	B070	G2	20008170	B065	
1600	40CC5116	C020	C1	0000BA12	C020	G1	681EA0C8	C020	L1	8018E1F5	C020	C4
1610	98005101	C020	G4	B1002C03	C020	Q1	60008E00	E010		A018F00E	B040	E3
1620	FC167002	C020	Q2	20005010	E010	U4	1FC79A02	C020	S2	E006E0F4	C020	U4
1630	7308700B	C020	E6	F4163116	C010	C2	6308700B	C020	G6	228DEB13	C010	C3
1640	3000F151	C010	J4	701A0258	E020	C1	0415F102	C010	L4	70204700	E030	C1
1650	70000410	C040		A0008E10	C010	N5	8FCF3302	C020	G5	041680DA	C020	C2
1660	04160F02	C010	Q1	10DD3012	C010	C1	60150F00	C010	J1	10DD3012	C010	E1
1670	01117406	C010	C7	000F00F4			11116823	C010	J0	DE11F01A	C010	C5
1680	00007002	C020	C3	0816700A	C020	E3	3FDD8112	S070	A1	10001000	S070	C1
1690	202631F4	C020	S3	6000A100	S070	J1	A815211B	C020	U3	0FC09012	S070	G1
16A0	7FCC7002	C020	L2	2325E0F6	C020	N2	6000A110	S070	L1	0A0DC01A	S070	N1
16B0	8000B401	E010	G1	FC167002	C020	G2	1018DE3E	E010	C1	8FCC7002	C020	J2
16C0	12C95004	S070	E2	62D8C004	S070	N2	B919C131	B040	E5	3908E018	B040	E6
16D0	80021108	E010	N3	2446E004	E010	C3	1009201A	E010	C5	1009201A	E010	U3
16E0	04152002	C020	N1	4815711A	C010	C4	70D5700D	C020	C5	4C15711A	C010	E4
16F0	11B9C10F	B040	E4	1018700A	C010	C6	F0007001	C010	J5	F011700A	C010	L5
1700	04DD6116	E020	C2	04DD6116	E020	E2	280500F6	E020	Q2	70006010	E020	L2
1710	6416E10A	E030	J5	68057008	E030	N5	0909C10A	E030	E4	0418300B	E030	N3
1720	B418300B	E020	C4	70006050	E020	J4	B418300B	E020	F4	B0004101	E020	G4
1730	5415103A	E030	N4	A8CCA004	E030	S4	150A120A	E030	E3	70000110	E030	C3
1740	10D83152	E030	C2	8018711E	E050	L3	21FC1116	E030	N2	00B0401C	E050	L2
1750	92CB8005	E050	Q4	E0005101	E050	E2	0F2500F6	E050	E6	94C7A117	E050	C3
1760	4005610A	E020	J5	2D2500F6	E020	L5	202550F6	E020	J6	70002700	E020	C3
1770	80004200	E050	C5	B0B071DC	E050	G4	8018800A	E050	L5	1602510A	E050	G5
1780	9418833E	E050	L6	7018800B	E050	L7	1408A00A	E050	Q7	762A7108	E050	N7
1790	4F08C01A	S040	C1	3705C0F6	E040		7020F001	S040	G2	80004000	E050	J2
17A0	8018A01C	E050	Q1	92C9A105	E050	Q2	92CA5005	E050	Q3	92DB7007	E050	C4
17B0	70004310	E050	L1	0815C00A	S040	E1	020D951A	E050	G1	1702521A	E050	C1
17C0	C2C5F002	S040	E2	C2C5F012	S040	C2	20003000	E030	E5	0416D00A	S040	C4
17D0	2FCDD012	S040	C5	2CEDD106	S040	C6	0000D1D0	S040	C7	52C5E002	S040	J3
17E0	3416D00A	S040	J4	40C5E112	S040	J1	98053018	E030	J6	1416D00A	S040	J2
17F0	751EF108	S040	G3	0038C1F6	S040	C3	4008F01A	S040	G4	76F87014	E050	G3
1800	891D30DD	E040	C4	80C60106	E040	J1	7812B1D8	E040	J2	0F2500F6	E060	
1810	04DD0006	E040	C3	21DD1113	E040	C6	A408100A	E040	C1	8000F110	E040	G5
1820	300C00F4	B020	P6	3000FA00	B020		30000100	B020	R6	3000F100	B020	
1830	00001022	E040	C5	80005000	E040	G1	8016E108	E060	J4	0110011A	E060	G4
1840	18FCB506	E060	J1	8029C018	E030	G1	1B09731A	E060	C1	A032C10F	G030	N1
1850	02025012	E040	G2	00005802	E040	G3	10DD1112	E040	G4	D018F30E	T030	Q1
1860	40AD3142	E060	J3	09D00112	E060	E4	2C2501F6	E060	Q3	80002C10	B020	C4
1870	8FCE710F	B020	E3	1402604A	E060	E2	503561F5	B020	C3	20005010	E060	C2
1880	310570F6	E060	S4	80008001	E060	S3	0310811D	G030	C1	881CB018	G030	C2
1890	08339112	G030	G3	80339112	G030	J3	80139118	G030	L3	8052C110	G030	N3
18A0	0018D00E	G030	G5	FF11E00A	G030	S4	0018D00C	G030	N5	2D05E1F6	G030	U4
18B0	8C026308	E060	J2	0408B11A	G030	C3	000080D2	E060	S2	00D8C00C	G030	C4
18C0	9013431F	G030	C5	80129768	G030	G2	8013911F	G030	N2	B008A30A	G030	N4
18D0	8328D010	G030	N6	824AD100	G030	S1	1049D111	G030	S2	A018A21E	G030	S3
18E0	941C4008	G030	S5	0116EB12	E060	J6	0912E01A	E060	J5	E2D00000	E060	L6
18F0	F0005100	T030	Q2	04112302	B020	Q5	F000B110	T030	S2	0FCD0012	E040	G6

REF CASSETTE P/N		73607711		CORE MAP AND CROSS REFERENCE LISTING				PAGE 009	
ADDRESS	MICRO CODE	LOGIC ID		MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID
		PAGE			PAGE				PAGE
1900	028D0E22	G010	C2	09D04112	G010	G1	190080DA	G010	C3
1910	3816CF03	F010	N5	3CAD1113	F010	N3	29ED1023	F010	N4
1920	B232CROA	F030	F1	048D4002	G050	L3	44C3A002	F030	F4
1930	BE11D00A	G050	F1	70136007	E030	L6	20003111	G050	Q1
1940	91004400	F010	F3	04160F02	F010	E5	111140D3	F010	E4
1950	90009010	G040	G4	000080DF	G040	E5	E5F850D6	G040	E4
1960	29008403	G010	N1	32801112	G040	C1	4001F81A	G010	
1970	98329130	F030	S4	A1DD8101	F030	N4	31DDA011	F030	L4
1980	20005010	G010	G5	DE11400A	G010	J6	6016801A	G010	J5
1990	10C55112	G040	F1	AC136708	G040	G7	BF11742A	F030	L3
19A0	9000A400	F030	F5	202551F6	F030	L5	14BD9103	F030	L1
19B0	9AD89017	G040	D6	90009010	G040	F6	4012D778	G010	S4
19C0	RF09C03R	F030	E2	60532001	F030	E3	20005010	F030	C2
19D0	9000DE20	G050	J1	101A2019	G050	L2	9000D110	G050	J2
19E0	40A50002	G010	C1	0FCF8152	G010	G3	C0000310	G040	N5
19F0	4012D018	G010		30C7F196	G010		1812B12A	G010	
1A00	2D2501F6	G020	E3	1FD11012	G020	L3	10CF9116	G040	G4
1A10	000F00F4			EE111416	G020	J3	4018E119	G020	N5
1A20	198DE013	G020	J5	0310F000	G020	E6	190A231A	G020	E5
1A30	F8C63602	G020	N3	90004000	G020	U2	1811110E	G020	N4
1A40	FDC70002	G020	F1	010741D6	G020	J1	AD1100DF	G020	J2
1A50	801C791A	G040	L2	EF676912	G040	G2	00007112	G040	J2
1A60	91C75607	G040	J1	10A70132	G040	N3	91C75617	G040	N1
1A70	000F00F4			AC136018	G040	L3	000F00F4		
1A80	AD00F100	G020	G4	60007000	G010	K6	7F0A80CA	G020	G3
1A90	2023F0F6	G040	N5	3012910E	G040	S4	110AF01A	G040	S5
1AA0	10DDA012	G050	C1	500FA108	G050	C2	80ACB002	G050	C3
1AB0	230510F6	G050	F1	7307910A	G050	G1	3016810A	G050	G2
1AC0	1000C013	G020	C5	18F25016	G020	C6	00A6C112	G020	S3
1AD0	A8D2C100	G020	G3	A001D11A	G020	C1	98C7C007	G020	C4
1AE0	13F8A116	G050	G3	F811E10A	G020	N1	EFC73002	G020	N2
1AF0	13D8E002	G050	S1	20005000	G040	S6	20005000	G050	S5
1B00	C000A810	G040	M1	91DC8117	G010	U2	800CE17A	D010	G2
1B10	8CF0F002	D060	M5	5000F093	D060	K5	50F36113	D050	S4
1B20	F50A711A	D015	G4	D00CF090	D055	C2	1CB05102	D050	C2
1B30	03C77096	D015	G4	08D28107	D060	L2	D3B38003	D060	G2
1B40	9CFCA0D2	D060	G4	02395116	D060	L5	18F38002	D020	G5
1B50	1083C1D2	D050	L2	0483C103	D050	G2	06024117	D050	C3
1B60	8000F000	D060	E5	08FCF5D2	D060	C5	3225B1F6	D010	S4
1B70	C0000000	D040	G1	1CD20008	D015	C5	F8DC9982	D010	N1
1B80	38F3A113	D060	G3	08D24007	D060	G3	0483E002	D060	L3
1B90	88634812	D050	L4	1CD25006	D050	L1	D0004100	D010	L1
1B00	0080201D	D055	G1	R0005110	D060	G5	322531F6	D010	U4
1BB0	50004013	D050	G6	02392017	D055	C1	320531F6	D010	G4
1BC0	C1D23887	D060	G1	1CD25086	D050	G1	02C7E016	D050	G3
1BD0	0009200A	D015	G3	08A72103	D050	C1	20002090	D050	S4
1BE0	010C1046	D060	L4	R000D100	D050	Q4	98DC6107	D010	S3
1BF0	03115112	D060	K6	B0005110	D060	M6	941C511A	D060	H6
1C00	02R8E102	D040	Q2	6000D000	D040	G6	C000D300	D040	S5
1C10	C000R100	D020	S4	18F98102	D020	J4	18F98102	D020	L4

REF CASSETTE P/N				73687711				CORE MAP AND CROSS				REFERENCE LISTING				PAGE 010			
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	
PAGE				PAGE				PAGE				PAGE							
1C20	70007763	D025	J1	97004011	D020	E6	C0003760	D020	L6	C0006750	D020	S6							
1C30	0109611A	D025	U2	1E1C801A	D025	E1	C0004100	D030	Q2	101CF01A	D030	L2							
1C40	0111E012	D030	G1	0109611A	D025	Q2	0128C00D	D040	N1	0109611A	D025	S2							
1C50	C0000310	D040	G5	1B1CE11A	D040	E4	D0004100	D030	G4	R0009010	D030	J5							
1C60	D0009R00	D025	J5	071C1079	D020	J3	0109611A	D025	N5	20001100	D025	S5							
1C70	1C1C800A	D025	G2	101C810A	D025	L2	1C1C811A	D025	J2	F0001010	D025	N2							
1C80	F813801A	D025	G3	1C09F802	D025	G4	E813801A	D025	L3	F013801A	D025	J3							
1C90	9C005001	D040	G3	94FC5017	D040	E3	98FC5007	D040	J3	901C5005	D040	L3							
1CA0	131C510A	D030	G3	D7129666	D040	H2	9000E100	D040	N3	C0004110	D040	C2							
1CB0	02H851D2	D030	J3	A7F7E006	D070	Q5	98D72677	D020	J5	7019031E	D040	E5							
1CC0	08D8A107	D040	N2	94R8D002	D025	E5	0709611A	D070	Q7	5000B000	D070	N7							
1CD0	D0004100	D040	S6	79136005	D025	E6	70006303	D040	Q6	95F701D7	D040	Q4							
1CE0	C003C108	D070	Q6	04DDA006	D030	G2	01D8D116	D040	Q3	02888112	D070	E5							
1CF0	04D8C012	D025	E4	20R3F112	D030	L3	C0004010	D025	C4	040D8005	D030	L4							
1D00	000F90F4			20005000	D080	S3	40FC0112	D070	G5	40005173	D070	G5							
1D10	61D3R107	D070	C2	33R3930F	D070	Q2	60006003	D070	G2	61D3B117	D070	L2							
1D20	08802012	D070	Q6	98D3A307	D070	S6	54FC5013	D070	J4	94D35007	D070	L4							
1D30	4013C109	D010	E3	91D32007	D070	Q5	62D33B17	D070	Q4	D0008100	D070	U5							
1D40	02D2F107	D080	E1	F81171D2	D080	E4	0209000A	D080	N1	14DD7102	D080	J4							
1D50	04FC5013	D070	L5	F7C7A302	D070	J6	D000A300	D070	E6	F7C7A302	D070	G6							
1D60	92D30117	D070	G3	A810709D	D010	E1	C113981A	D080	J6	6000B100	D080	E6							
1D70	C0009000	D010	C2	02C63007	D010	E2	C7116143	D080	J5	CF116143	D080	E5							
1D80	05C78012	D025	L6	01R8A112	D080	C2	5F0A001A	D080	S2	000F00F4									
1D90	01393136	D070	Q3	63C51100	D080	N6	C0004110	D070	S3	F0719019	D080	J7							
1DA0	F8D88012	D080	C1	800091D0	D010	E7	C0004110	D070	S7	0019430E	D080	C3							
1DB0	44C56112	D080	E3	04D24217	D080	J3	94D30107	D070	C3	800321D6	D070	L3							
1DC0	02AFE043	D055	G4	02AFE042	D055	G4	0003D818	D010	E4	0803081A	D010	G4							
1DD0	152A010A	D080	Q2	0D0AF11A	D010	E6	200030C0	D080	Q3	80A7D012	D010	E5							
1DE0	E000E113	D055	G6	E812E11B	D055	C6	80005110	D055	Q6	80005110	D055	L6							
1DF0	23910092	D055	G3	1D91C052	D055	C3	0C388008	D080	E2	02D8A016	D010	G6							
1E00	201D0019	E070	C1	9C0D2018	E070	C2	AC0A810A	D070	C4	E0A04102	E070	E1							
1E10	E02031F4	E070	G1	80R03012	E070	L1	09D04402	E070	N1	10094E1A	E070	S1							
1E20	000F00F4			0C16410A	E070	C3	7013754F	E080	L3	A000A000	E080	S3							
1E30	01113802	E070	C5	1711300B	E070	L4	04160F02	E070	C5	F231910A	E070	G2							
1E40	0C09411A	E070	N4	E0186009	E070	S3	FF11300A	E070	C4	20005010	E070	N5							
1E50	2816671A	E080	C2	90134009	E080	Q5	011821DA	E080	L2	07C9EA00	B080	C7							
1E60	21FC5206	E080	C1	4411615A	E080	G3	91051308	E080	G4	8205600A	E080	C4							
1E70	80077119	F080	N4	F A11501A	E080	Q4	E0207111	E080	L4	90161018	E080	L5							
1E80	01E9A1D6	B080	N3	7026D1F4	B080	L3	20005000	B070	C5	01319132	E070	G4							
1E90	200611F4	B080	N5	5006C0F4	B080	Q5	308D8112	E070	G3	028D4102	E070	G5							
1EA0	77C70002	N190	N3	06E980D6	B080	L2	090990DA	B080	N4	7026D1F4	B080	L4							
1EB0	08E9A016	B080	L1	0018D10E	S030	J4	FF181118	T030	G6	9CCCB107	T030	G5							
1EC0	800DB11B	T030	G4	0F09C109	T030	L3	090DC11A	T030	L4	C808D00A	T030	L5							
1ED0	8F085118	T030	L6	0F188018	S030	J3	4008D11A	S030	J5	7000E010	S030	J6							
1EF0	0814E01D	S030	C3	10D8E106	S030	C4	1008F0DA	S030	C5	091DF10D	S030	G3							
1FF0	0018E11C	S030	G2	8408D01A	S030	J2	E8AAF110	S030	G4	0018F01E	S030	G5							
1F00	601E5109	T000	E5	0711400A	T020	C1	1028410A	T000	N5	780D800B	T030	C1							
1F10	6018810C	T020	N2	917C2104	D025		500C8008	T020	Q2	010D211A	T030	L1							
1F20	0818E10E	T030	C3	EF0AC008	T030	G3	F8D8C702	D025		E000C010	T030	L2							
1F30	F0003080	B080		00004400	B080		52B33111	T020	S3	C018A50A	T020	S4							

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING						PAGE 011		
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE			PAGE	
1F40	0112501A	T020	C2	F0130018	T010	S2	01AC0112	T000	N6	1020C100	T020	E6
1F50	F020A000	T020	C4	F6D25004	T020	C3	000D611A	T010	C2	A4C3E217	T020	G3
1F60	C011F2DC	T010	G1	80004211	T010	S1	300C510A	T010	C1	0C0E700A	T010	C3
1F70	FFCED040	T010	C4	1008710A	T010	F1	FF037118	T010	E2	E019900F	T010	E3
1F80	00B0204C	T030	C2	000F00F4			80A9D112	T020	N3	000F00F4		
1F90	F0219018	T010	E4	F0169108	T010	E5	4075B109	T010	E6	F0715810	T020	G2
1FA0	F2329110	T020	G1	1802A11A	T020	L1	98CC5105	T020	S5	0F2500F6	T020	L2
1FB0	04D7D106	T020	S1	F4B6F110	T010	J3	F9E16004	T010	N4	091CC01D	T030	S3
1FC0	08E1B106	T010	N3	F811A018	T030	S4	C0006300	2025		F81E3008	B080	
1FD0	080D701A	T010	C5	1008130A	T020	N1	801031D9	T020	S2	0018411E	T020	N4
1FE0	F9E16004	T020	G5	F0004110	T020	E5	0118F11E	T030	C4	F001E0D8	T020	G4
1FF0	B8B4B01F	T010	J2	F8F58000	T010	G2	F3A9F110	T010	L2	A411C00E	T010	N2
2000	FECFE1D2	H070	L5	01CF0006	H070	L4	98DC3807	H010	Q2	109258D6	H010	E2
2010	861C400A	H010	N4	1E2520F6	H050	G5	80204021	H010	J4	8E1C400A	H010	L4
2020	1914910A	H040	Q3	40B02112	H010	Q5	FC08901A	H040	N3	1C120738	H010	Q6
2030	00004000	H010	N3	E011C00A	H050	L2	91C64007	H010	Q3	01BD3012	H050	Q2
2040	0401440A	H010	J5	0000A110	H010	E5	00042318	H010	J6	ECC5E0D2	H050	C3
2050	8428F06B	H010	G3	B4920177	H010	E1	940818DB	H010	J3	4028F01A	H010	E3
2060	3C31D13A	H070	E2	11AC3511	H050	L1	01BD8012	H070	N0	000F00F4		
2070	20B0DB02	H070	E4	8011001A	H070	J4	000F00F4			B000D131	H070	E6
2080	02AE9013	H040	L2	12DD112	H070	N1	0315250A	H040	Q2	E0006703	H070	E1
2090	00159404	H040	G5	5015B00F	H040	L5	161590D1	H040	Q4	F0003000	H070	N4
20A0	00008510	H050	E4	4005101A	H050	G4	0F1B84DA	H050	E2	10DC4116	H050	C2
20B0	0101A122	H050	C1	ACCEA043	H050	G3	BFCC6012	H050	L0	BCCEA043	H050	E3
20C0	031CC408	H050	L3	29050358	H050	L5	1001C519	H050	L4	3A148108	H050	U5
20D0	A011741A	H070	E5	19D08303	H040	G3	06117020	H070	E3	80B09112	H070	N3
20E0	1905E0F6	H050	C4	4000F000	H050	A4	61B03010	H070	L6	19004112	H070	J6
20F0	9E3C402A	H010	G4	80004021	H010	E4	000F00F4			000F00F4		
2100	B2C74067	H020	A1	A0D1780C	H020	S1	4408500A	H020	J1	E019511A	H020	G5
2110	10003110	H020	N5	EFC7C112	H020	U5	10003960	H020	Q5	0103396A	H020	S5
2120	1A0540F6	H020	A3	D901510A	H020	C3	D901510A	H020	G3	D901510A	H020	E3
2130	10003010	H020	S6	0419900A	H020	L6	10003010	H020	Q6	EFC73012	H020	N6
2140	D80320DB	H020	A2	D80329DB	H020	G2	0215711A	H020	J6	B101600A	H020	L3
2150	D403601R	H020	J2	94C66007	H020	J4	92C60117	H020	G4	0515711A	H020	G6
2160	2019410A	H020	J5	9201501A	H020	J3	B101160A	H020	N4	B101160A	H020	S4
2170	A004701F	H020	S2	800361DF	H020	S3	9003411F	H020	L2	6013E11A	H030	C2
2180	02898602	H030	N2	00008602	H030	L2	01898602	H030	S2	02898602	H030	Q2
2190	02839102	H030	G4	40839122	H030	C4	02C3E016	H030	G5	0000A110	H030	C5
21A0	403181DA	H030	S1	403180DA	H030	L1	8011881A	H030	N5	000F00F4		
21B0	0000C902	H030	L3	1000D010	H030	L6	1011C108	H030	S3	10B9D012	H030	S6
21C0	F563A101	H030	L4	0000D010	H040	G2	E063E001	H030	S4	122530F6	H020	U6
21D0	2000C100	K010	L7	FF16C01A	H040	G1	000F00F4			000F00F4		
21E0	1064B110	H030	S5	01C3A0D6	H030	G6	000F00F4			73D3903F	H030	C3
21F0	E000F401	K010	J3	1000F410	K010	L5	1A0AF019	K010	L4	1A0BD009	K010	L6
2200	3A146018	H050	L6	4A14A439	H050	Q6	30001010	H050	N6	4431243C	H050	S6
2210	018C8912	K020	U3	011C8182	K020	S3	878B4A45	K020	Q3	E78A4A45	K020	N3
2220	20002400	K020	N1	20002410	K020	C1	10001553	K020	N2	16233551	K020	C2
2230	F7984A45	K020	C3	D7894A45	K020	E3	878B4A45	K020	J3	E78A4A45	K020	G3
2240	200058D0	K020	C4	20A56392	K020	E4	20A56392	K020	G4	20A56392	K020	J4
2250	24A56372	K020	G5	000F00F4			A4A56372	K020	E5	20A56372	K020	C5

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2260	C431243C		K020 J6	C4D1243C		K020 G6	20002430		K020 C6	20002430		K020 E6
2270	4431243C		H060 S4	44D1243C		H060 Q4	33A76010		H060 J5	43A7A431		H060 L5
2280	120511F6		L015 N5	F7984045		K020 S4	20002400		K020 Q5	2000FA00		K020 U4
2290	02FCE912		K010 N3	1A09F008		K010 J2	279ABA44		K010 E3	279ABA44		K010 C3
22A0	2000A400		K010 N1	2000A410		K010 C1	10009553		K010 N2	16239111		K010 C2
22B0	7A19DBD9		K010 C4	2A19D008		K010 E4	2A19D008		K010 G4	2A19D008		K010 J4
22C0	F918A439		K010 C6	D909A439		K010 E6	C431A43E		K010 J6	E90AA439		K010 G6
22D0	2908C558		K010 J5	000F00F4		K010 J5	5908C559		K010 E5	6908C559		K010 C5
22E0	ACCE8003		L015 N4	279ABA44		K010 N4	120550F6		L015 L4	D000FA01		K010 S4
22F0	3000F010		K020 S5	0509E00A		L015 N3	3C13F248		K020 U5	182AE10A		L015 L3
2300	F004400F		L010 E5	30004010		L010 N5	F004E00F		L010 G5	F004E00F		L010 J5
2310	0F13D00A		H060 E2	0431600C		J020 N5	78DED00F		H060 C2	04D1600C		J020 L5
2320	2D0500F6		L010 N6	0CCE3012		L015 J4	C413501F		J020 S3	30647550		J020 E3
2330	E21C3409		L010 E3	120550F6		L015 J5	1000E111		L010 F4	D0006001		J020 G5
2340	7FCC E002		L010 E6	30004100		L010 Q5	0CCE2002		L010 Q6	000F00F4		
2350	4013300A		L010 N2	30003000		L010 E2	30003000		L010 J2	000F00F4		
2360	B019640F		J020 E1	3A0B6418		J010 E1	16232131		J020 E2	1623A031		J010 E2
2370	F81E6609		J020 E4	901E311F		J020 G4	C91E1219		J020 L4	A01E811F		J020 J4
2380	0431601E		J010 L5	30006010		J010 N5	32DDC302		H050 U6	E0006001		J020 J5
2390	FA186019		J010 E4	DA096019		J010 G4	C0648041		J010 L4	EAOA6019		J010 J4
23A0	D413501B		J010 S3	3A1E9558		J010 E3	30001210		H060 N3	20007070		H060 S3
23B0	3000B400		H060 J1	1914841A		H060 N1	3AD3C210		H060 J2	3905A158		H060 N2
23C0	AFC71003		H060 E1	29057158		H060 J4	B8801203		H060 C1	3A1EC018		H060 J3
23D0	08AFD402		H060 C3	3A0B0418		H060 C5	1A18D019		H060 C4	1018803E		H060 C6
23E0	6421E40B		L020 A1	AC24201A		L015 J3	40003770		L020 A2	600306CF		L010 J4
23F0	20B35702		L010 E1	30005000		L010 N1	000F00F4			6013506A		L010 J1
2400	8A21F10B		L020 Q2	FD16261A		L020 L2	4016C118		L020 A6	7031C00C		L020 G2
2410	1116C103		L020 S5	0916141F		L040 C2	88C73710		L020 E6	18AE8013		L040 C3
2420	40010118		L020 G4	40D39016		L020 J4	A016C11F		L020 C6	40D39066		L020 L4
2430	A408450A		L020 A3	F718612A		L020 E0	821C500B		L020 L0	FB16500A		L020 Q0
2440	80B0481C		L020 C4	8019210F		L020 C5	80D1481C		L020 A4	9019010F		L020 A5
2450	34A60033		L020 Q1	60C7B116		L030 S1	40D37666		L030 J1	40007100		L030 N1
2460	901BC01F		L020 Q4	98FB1005		L020 S4	22A60513		L020 G1	80B0A112		L020 E1
2470	01A681D2		L030 J2	01A71102		L020 E5	01A6E112		L030 N2	01A68102		L030 L2
2480	1011101E		L030 S5	120531F6		H050 A6	DFC6E012		L030 L3	20A6E012		L030 J3
2490	FF39910A		L020 L5	DF3991DA		L020 J5	49C60000		L020 L6	20A60002		L020 J6
24A0	DCC6E012		L030 S3	FCC6E012		L030 Q3	464AD100		L030 A4	0CCEFO12		L020 E2
24B0	4001F14A		L020 Q6	80005040		L040 C4	4401F14A		L020 N6	F5CFA002		L030 S2
24C0	B0D1203E		L020 G3	A019870F		L020 Q5	99EB1005		L020 S6	E018D00C		L030 A1
24D0	0821D01E		L030 A2	492BA100		L030 A3	4049D110		L030 A5	4058E000		L030 A6
24E0	0018588E		L030 E1	5018800F		L030 S4	3FCC2012		L020 E4	4000E010		L030 N3
24F0	BE098018		H050 A5	602FE10A		L020 E3	F011605C		L020 Q3	1011101C		L040 E1
2500	0251F00A		L070 L1	F2FD0003		L070 Q1	0251F00A		L070 G1	0251F00A		L070 C1
2510	1CD24882		L050 U1	1CD28802		L050 G1	1CD28002		L050 A1	12D25163		L050 Q1
2520	02C7F106		L065 F1	183CA029		L065 N3	8314C11D		L065 N1	5000F100		L065 J1
2530	60004100		L050 A3	60004100		L050 E3	9CFC0102		L050 G3	60004100		L050 C3
2540	6000D110		L060 E2	B8C72667		L060 S1	60007660		L060 L1	88FC4003		L060 E1
2550	C4FC7602		L050 J4	1E13069A		L050 N6	E0FCF012		L050 S2	60FCF012		L050 Q2
2560	1CD25012		L050 N3	08FC5082		L050 J3	8000A110		L050 C6	18007611		L050 G6
2570	7FCC5012		L050 J5	8FDC60D2		L050 G7	40FC5012		L050 L5	500060D0		L050 E7

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ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	
2580	50003660	L050	A2	80B0177C	L045	G5	8CFC3102	L050	G2	
2590	2613000A	L065	K6	2813069A	L065	M6	1E13000A	L065	P6	
25A0	1CD28002	L065	N4	52008001	L065	Q4	60007010	L070	Q4	
25B0	01CF81D6	L065	N5	000F00F4			50009000	L065	L5	
25C0	3100C401	L070	C3	1D0AA15A	L070	N3	1611D0D1	L070	C4	
25D0	4018C02A	L070	C5	9900E353	L070	E5	10CFD116	L050	G4	
25E0	5311C028	L070	G6	1D11C02A	L070	E6	08055018	L070	L6	
25F0	FF16C00A	L070	C2	4E13069A	L050	Q3	60005160	L065	J2	
2600	6E080018	N055	N2	B401010A	N055	N3	A0086118	N055	N4	
2610	70003400	M050	N4	FECF81D2	L070	N5	5000A020	L060	Q5	
2620	0011271C	M050	N2	4001100A	M050	N3	67092018	M050	L2	
2630	0918401A	L060	N4	0818600A	L060	L4	EFC66012	L060	L6	
2640	1905E0F6	L065	J5	EFC76002	L060	N5	91CF6117	L060	Q1	
2650	1CD230D2	L060	L3	60007100	L060	J3	9A1C400A	L065	J4	
2660	1415310B	L060	L5	160500F6	L060	J6	50006000	L060	E6	
2670	00135006	L060	L2	01CF1216	L070	N4	8CFCD112	L060	G4	
2680	04168016	N120	G2	A216EB07	N120	G3	80003010	L070	L4	
2690	A031B3DC	N130	G4	63005000	L060	Q3	A0D183DC	N130	G4	
26A0	F2085118	N230	C5	FCC1F012	N130	G1	F20A5118	N230	G5	
26B0	F9E98210	N130	C5	F9F88210	N130	C5	F9EBB210	N130	J5	
26C0	30DCD0D6	N120	C5	01D69206	N130	G3	E2937109	N130	C1	
26D0	AB498708	N120	L1	81168007	N120	G1	8601A019	N130	G0	
26E0	0012FBDC	N120	G4	00B0A55C	N230	C4	AB498708	N120	S4	
26F0	F9F8C000	N120	J5	92D6C017	N130	G2	0BD9C112	N120	G5	
2700	3405F0F6	M030	C0	80BD7112	M040	E2	7FD0C112	M040	J2	
2710	9436B001	M050	C1	681A2508	M050	N1	40AEA772	M060	C1	
2720	8A1E310D	M080	L1	00008012	M080	Q1	781A8118	M080	U1	
2730	FF113406	M010	Q2	2C12341A	M070	Q5	1413482B	M010	Q3	
2740	73120F00	M010	N4	900080C0	M010	L4	01113002	M010	Q4	
2750	F914540A	M070	Q1	00005412	M070	J6	171A6019	M070	Q2	
2760	581230DA	M070	Q4	01146002	M070	Q3	1415300A	M080	Q5	
2770	780C701B	M050	L5	1918340A	M050	L6	1A01923B	M050	C5	
2780	7000A100	M060	C3	01DFF116	M080	Q2	770A3408	M060	E3	
2790	83137068	M050	C6	2013706A	M050	G6	40BC9002	M050	E6	
27A0	83129110	M060	G2	0BC78502	M060	E2	DFCA3402	M060	C4	
27B0	FF14A11A	M050	C2	FC11300A	M080	C5	90006010	M060	Q1	
27C0	70003000	M080	S4	F01C61D9	M080	Q4	000F00F4			
27D0	7A0B5018	M070	J5	80008913	M080	E4	1FCE5002	M070	Q0	
27E0	20AE8912	M080	G3	20AEF0C2	M080	C2	0812B912	M080	J2	
27F0	6000DA11	M080	C3	40BC8912	M080	G3	000F00F4			
2800	DDDF0406	M010	C2	90A5A1D2	M010	C5	40C519D2	M010	C3	
2810	C0DF0016	M010	C2	34800113	M020	C1	A001200A	M020	G1	
2820	0011240C	M020	C6	83012418	M070	E1	14120118	M020	E3	
2830	70123008	M020	C6	C011341E	M020	L3	07B83012	M020	L2	
2840	D018BE18	L040	N1	10DD4112	M090	S4	D018BE08	L040	L1	
2850	E2D35403	L040	E5	98FB5115	L040	C5	80084504	L040	E6	
2860	60005000	M100	Q6	3000E010	M100	Q5	3FCC7002	M100	S6	
2870	77C76112	M100	Q3	90008110	M010	E6	9436C071	M070	C4	
2880	701A901F	M060	L4	000F00F4			871A9018	M060	J4	
2890	A00B940F	M060	Q6	1011911E	M060	L5	FE0D8502	M060	L3	
								8011177E	L045	J5
								2013009A	L065	R6
								120550F6	L070	S4
								40BC91D2	L065	Q5
								92C42017	L065	N2
								A0056100	L050	S5
								88050008	L070	J6
								60004100	L065	E3
								000F00F4		
								4000F000	L070	Q5
								4401100A	M050	Q3
								FFF8C806	N110	N6
								0011E01E	N230	C3
								5000F110	L065	J3
								81A69313	L060	Q2
								00135096	L060	J2
								0000A110	L070	N6
								1E1C110A	L060	Q4
								F2095118	N230	E3
								F9EAB210	N130	C5
								F9E7B100	N120	G6
								10006101	L060	E5
								F9F48100	N120	N4
								F9E8C000	N120	L5
								FE14300A	M040	N2
								901AB10F	M060	Q0
								901A0878	M090	C0
								340510F6	M070	Q6
								900080C0	M010	J4
								101AE949	M080	C1
								1315300A	M080	S5
								FE11300A	M040	E2
								1FCE3002	M080	U3
								000F00F4		
								94557101	M050	C3
								F511300A	M080	G5
								F811300A	M040	J3
								A000B913	M080	C4
								0812F0C2	M080	E2
								08DFC0D6	M080	Q3
								80118878	M020	C4
								A001200A	M020	E1
								1000D361	M070	E2
								1316A068	M020	L4
								122550F6	M090	Q4
								96EB5005	L040	C6
								800060C0	M100	Q4
								70004110	M070	E4
								A0003110	N130	N7
								80182018	M060	L6

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28A0	70003000	M020	N5	3425A0F6	M020	L5	122551F6	M010	C6	FF0A701A	M010	E5
28B0	C0153909	M020	C5	D0153909	M020	E5	C0153909	M020	G5	C0153909	M020	J5
28C0	94552411	M070	E5	8A092418	M070	C5	0105E556	N240	C4	000F00F4		
28D0	871AF038	M070	J3	871AF038	M070	G3	871A7129	M070	C3	871A7129	M070	E3
28E0	F2CB71D4	N240	C5	A014C10C	N240	C3	F2CA71D4	N240	G5	F2C971D4	N240	E5
28F0	7A0B0508	M070	J4	8A2A2018	M070	G5	FEC68412	N430	E6	FEC68412	N430	G6
2900	00002E52	M090	J1	A0D1000E	M090	G1	08FC1002	M090	E1	00D1100E	M090	C1
2910	DB11140A	M090	C2	EFDC1112	M090	C4	10321019	M090	C3	70003000	M090	C5
2920	98C74047	M090	J3	85095109	M090	Q2	81095108	M090	S2	81095108	M090	U2
2930	90003130	M090	J7	FBD44012	M010	L6	08D06606	M100	C1	201DF218	M090	L6
2940	1D0A412A	M090	J4	1205A61A	M090	G4	00008102	M090	J5	3FCC8112	M090	L5
2950	1D0A411A	M090	L4	120550F6	M090	N6	80004610	M090	Q3	A01A801F	M060	Q4
2960	F8DD7172	M100	J2	018D6412	M060	Q2	F7D070D2	M100	C2	1A185119	M060	Q3
2970	80009003	M100	C3	0206900B	M100	E3	4006920A	M100	J3	4606920A	M100	G3
2980	1FCE5002	M100	J5	1FCE3012	M100	L5	EFC73302	M090	J6	FBDD5012	M090	N5
2990	E131931A	M100	C4	40C5B602	M100	S1	122530F6	M100	J4	390550F6	M100	N1
29A0	80006100	M100	S5	F8DDA102	M090	G5	122551F6	M090	G6	93A5A100	M090	E5
29B0	228DB102	M100	S2	80009000	M060	Q5	BC12B139	M100	S3	6023A00F	M100	S4
29C0	B2160109	N110	N3	D3029018	N190	U1	9809D118	N260	S3	00B0F55C	N260	E7
29D0	0411C11E	N260	E6	800BE00F	N260	L3	DE762110	N110	N4	0812F00D	N260	S4
29E0	0411C01E	N260	L4	0813C10D	N260	S2	9018E008	N260	Q2	0014D01C	N260	L2
29F0	0411E55E	N260	L1	0414E01C	N260	S1	0418F00D	N260	L0	8404F01A	N260	S0
2A00	40DF1116	N050	L3	210A110A	N050	C5	BFC60002	N050	L2	80000000	N080	C1
2A10	9B02610A	N050	L5	D019E118	N050	Q5	120530F6	N050	C6	DFCD10D2	N050	L4
2A20	42B14803	N055	E3	51814103	N055	C3	40004101	N055	G3	40004101	N055	J3
2A30	B8436118	N090	L2	B214300D	N090	L1	A077B110	N070	C3	C0312779	N055	E2
2A40	03814102	N055	E4	DB197008	N055	C0	A4817043	N055	J4	C00620D8	N140	G4
2A50	670A0008	N055	N1	4CAF5502	N055	J6	E5815003	N055	N6	08C6A0D6	N060	E5
2A60	0829001A	N050	C4	3FCC0102	N050	L0	0F2500F6	N050	L6	0511901E	N055	N5
2A70	91CF5013	N055	J5	C8C6A007	N060	J3	8011C03C	N070	C1	A76A8004	N060	E4
2A80	B801710A	N060	E5	38DC5116	N060	E1	250AA14A	N060	L5	00B0F11C	N060	Q5
2A90	C4C74117	N140	G3	B0D1831C	N055	N6	9653911A	N100	L4	B0006000	N100	L5
2AA0	901281DF	N060	L4	AE6B7514	N060	E3	C30AA11A	N060	J6	A000F010	N060	L6
2AB0	A0003010	N130	S5	0011011E	N060	S6	8000F170	N130	Q5	A8F4C100	N070	C4
2AC0	A07E3150	N070	C2	98C7E607	N070	J1	9018C11F	N070	C5	A009D01F	N070	C6
2AD0	B60AF0DA	N070	J4	A00AD118	N070	E5	250AF0DA	N070	L4	F011500E	N070	E6
2AE0	19F40306	N070	J3	1C01E11A	N070	Q3	0108E00A	N070	J2	B011F10E	N070	Q4
2AF0	A0003110	N070	J5	D109E019	N070	Q2	01AF3012	N070	Q5	1C01B01A	N060	Q6
2B00	B214001D	N080	C2	88581549	N080	C3	F00080D0	N080	C5	B0387108	N090	E5
2B10	93DC1017	N080	G1	81093308	N080	G2	D1F80107	N080	C4	0011811E	N090	E6
2B20	B80340D9	N080	G6	0CF82006	N080	G5	40AF7202	N090	G3	44AF7202	N090	J3
2B30	1DF82096	N080	G4	0401671A	N090	C2	8FC73003	N080	G3	800061D0	N090	E2
2B40	D4CF5047	N090	C0	120531F6	N080	L4	40A6A012	N100	G3	981351DA	N100	E3
2B50	04053216	N090	C1	18CF21D2	N090	G2	80F9A012	N100	E5	10195102	N100	E4
2B60	8FC6A012	N100	L6	0A21701C	N090	C3	C20F0118	N090	F4	3018710F	N090	C5
2B70	08AF7102	N090	J4	0011611E	N090	C4	2401111A	N090	C6	C0009011	N100	L2
2B80	B0004100	N100	G2	F02390D6	N100	G0	02C341D6	N100	E2	03E38036	N100	C1
2B90	01C38E06	N100	G1	A0199108	N100	L3	B00F7119	N100	L1	442F711A	N100	N1
2BA0	80004011	N100	Q1	10CFA106	N190	C2	C000E0D0	N190	C3	C01D8018	N150	N1
2BB0	9C02D00A	N250	J4	00D0B14C	N250	L1	8411C15E	N250	L3	0030B10C	N250	L2

REF ESS	CASSETTE MICRO CODE	P/N	LOGIC	73687711 ID	CORE MAP AND CROSS MICRO CODE	LOGIC	REFERENCE LISTING MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	PAGE 015 ID	
			PAGE			PAGE		PAGE			PAGE		
0	C011F00C	N260	C1		E0F8D016	N250	L5	0214F01D	N260	E1	511EC01D	N250	L4
0	0F2500F6	N250	J5		98C7E0D7	N250	L6	98C6E107	N250	S1	182541F6	N250	S3
0	180581F6	N250	Q3		8000D101	N250	S0	00B0D11C	N250	S2	E918F109	N250	N2
0	9B18D008	N260	C2		D80B0108	N260	E2	0411C00E	N250	N3	0801B062	N250	E5
0	8B0A010A	N160	U2		A80A010A	N160	S2	1B29101A	N160	S3	DC18C008	N140	E1
0	C000E010	N150	J5		120530F6	N160	S4	932A111A	N160	Q5	120550F6	N160	Q6
0	FBC73102	N140	L2		2001410A	N140	S0	C05830D0	N140	N0	1A29501A	N140	S4
0	0011310E	N140	N2		D0003001	N140	N1	A001400A	N140	N3	0011401E	N140	N5
0	0B11311C	N140	N4		9433E01A	N140	N6	8011411C	N140	S1	10F85006	N140	S2
0	C80021D0	N140	S3		120531F6	N140	S5	9A02E1DA	N190	J0	850F703B	N150	E1
0	40AA6012	N160	N2		02D8C116	N160	L2	08A6F112	N150	E6	C0001300	N150	J4
0	08C77106	N150	E3		04A67002	N150	E2	98C661D7	N150	E4	810F700B	N150	J1
0	D8147018	N190	J2		03C78106	N150	N2	DFCDD0D2	N150	N3	0011900C	N150	N5
0	9014910F	N150	N6		C0002000	N150	S5	360500F6	N165	G1	B04AA0DF	N160	G1
0	EDDAD106	N160	J2		B00AD10F	N160	G3	BFC6F002	N160	L5	B4CF9117	N160	G0
0	80AAB012	N160	J4		A012A10E	N160	L4	8011110E	N160	Q4	0000B101	N160	N4
0	98C660D7	N160	L1		7CC7A312	N165	N4	1231D11A	N160	G5	5002B3DA	N160	L3
0	A001811A	N150	N4		07A79012	N150	S4	81D8CB07	N160	G4	1A0521F6	N160	G6
0	FDC7F112	N190	C4		C01DF018	N190	E4	0F2500F6	N195	E4	00F0800D	N190	J1
0	380571F6	N160	L6		DFCDF112	N190	E5	D0008110	N195	E1	04CF5106	N190	E6
0	1205101A	N170	C2		1005101A	N170	G2	090AF149	N260	E3	8005101A	N150	C1
0	98C62507	N170	L1		09D01102	N170	C3	80B01112	N170	C4	122551F6	N170	C5
0	370500F6	N170	S0		4C0F330A	N170	L3	94C52017	N170	L2	67783118	N110	N5
0	F801401A	N170	S5		801155DC	N180	C1	040AE01A	N170	L4	94F38016	N210	C1
0	2002413A	N180	C3		04CE3016	N170	S6	0011411E	N180	C4	0012610C	N180	C5
0	D04A4000	N180	E2		D8584008	N180	C2	D04B4000	N180	J2	D0494000	N180	C2
0	330561F6	N195	G2		C812E108	N195	E3	330500F6	N180	C6	C00000D0	L045	E5
0	3015F00F	N055	C1		09D08502	N190	J3	42CFA0D7	N190	J5	1E05A0F6	N190	N2
0	10CF7106	N190	J4		F005D1D8	N210	C2	02143110	N210	E1	091D60DD	N195	E2
0	D0006000	N190	Q2		40C68116	N190	S2	19F4E006	L045	C1	E000C110	L040	L3
0	FF1C711A	N190	N1		D30290D8	N190	Q1	E005F108	L045	C3	2401D31A	L045	E3
0	EA184008	L040	Q2		68B09103	L040	S2	61099118	L040	N2	6109911B	L040	L2
0	5009C01F	N140	E2		4C01C10A	N140	E3	0011C11E	N140	E4	A00F9008	N140	G2
0	000F00F4				501A8518	L045	G4	000F00F4			08C66116	L045	E4
0	4CCEA1D3	L045	C2		C0001110	N170	L5	9008010F	N260	G2	A01B2778	N050	Q6
0	A0002770	N055	C2		9409D008	N260	E5	00D4F01D	N260	E4	D018F018	N260	G4
0	003723F6	N020	C5		A801311A	N020	S0	C03823F5	N020	S4	E3338100	N030	C2
0	8612101F	N020	L3		E6F21101	N020	L4	A8D21112	N020	L5	86C151D1	N020	S2
0	E01370D2	N030	C6		C000D111	N030	Q1	FECF4112	N050	G5	00E1301C	N020	G1
0	7431210B	N050	C2		E32A3100	N020	G3	9E5E801F	N020	G4	5911600A	N020	S1
0	9B13B118	N010	C2		6011900E	N010	C4	A01D60D8	N050	G7	10C64106	N050	G6
0	1611911A	N010	E5		7831210B	N050	E2	2002C006	N020	N3	919101D3	N020	S3
0	8016100F	N020	L2		C7576111	N030	C4	919100D3	N020	C4	00132036	N030	C5
0	A03761F5	N030	C7		01C8E306	N030	G1	03D37112	N130	C2	6316D100	N130	C3
0	3006901F	N050	G3		E8578110	N020	G5	8E5E6011	N030	C3	A013913F	N020	J3
0	3FCCA012	N010	C5		400F210F	N050	G4	00E0301C	N020	J1	81C86507	N020	L1
0	B801A40A	N030	Q3		8017F019	N010	E2	8CCEA513	N030	Q4	FA3EF112	N010	J2
0	6011FB0E	N010	J4		6011F30E	N010	L4	40A1500A	N010	E4	4801401A	N010	C3
0	1E09C1DA	N020	Q3		122550F6	N020	Q6	1F09C11A	N020	Q4	CCCEC012	N020	Q5
0	D9187009	N030	J6		FF577002	N030	G6	F909E019	N030	L4	19CAA001	N030	Q2

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING							PAGE 01	
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE		PAGE			PAGE			PAGE		
2FE0	E013E1DA	N030	G2	FC0A700A	N030	L6	9E13D55B	N030	J3	FF3ED012	N030	G5
2FF0	D0B0A01C	N010	J5	E07EB308	N010	E3	80318009	N050	G2	9077R0D1	N010	J3
2F00	AC0111DA	N210	J5	A80111DA	N210	L5	90086115	N220	Q4	F2AAF110	N220	L4
2F10	FE387316	N240	J2	F0001100	N240	N2	C018410A	N250	E1	1424230A	N220	C1
2F20	B011305C	N220	C2	F82B8116	N220	C5	1001401A	N220	L2	C0288116	N220	E5
2F30	F04B2510	N220	C3	F0498100	N220	G3	01A6B102	N110	E4	0812B00A	N110	C3
2F40	FE388116	N220	G5	8011013C	N220	L3	5C01411A	N250	E2	D011500E	N250	E3
2F50	B801F118	N250	E4	0011510E	N240	S3	E018410A	N240	S4	0014110E	N230	C6
2F60	FC096108	N240	S1	00B0511C	N230	L5	F20B5018	N240	S2	0128700D	N240	C1
2F70	8815E018	N240	C2	0014711E	N240	J3	011810D2	N240	J1	0011603C	N240	J5
2F80	EFD18012	N080	C6	B803970A	N110	C1	F0584000	N220	G4	0011210E	N220	C6
2F90	R402317B	N110	C2	0112F01D	N210	J3	B412E10B	N110	G2	4402B10A	N110	G4
2FA0	AB18 B308	N130	Q4	9819C008	N110	N2	0113A01C	N110	N1	DFC6B102	N110	C5
2FB0	02A6A112	N110	C4	8031B10E	N130	E6	BBE3C016	N130	L1	80D1B10E	N130	C6
2FC0	0012B10E	N120	J6	1919C1DA	N130	L2	907ED001	N130	L3	99F4A305	N130	Q3
2FD0	9077C111	N130	L4	600B4118	N230	C2	D11CF709	N210	C3	1A1CE00A	N210	E3
2FE0	091DE11D	N210	J1	F000E001	N210	C6	04A69112	N110	G3	F8129018	N210	J2
2FF0	91F8E077	N210	C5	F8D20064	N210	J4	7000F001	N210	C4	F009D018	N230	C1
3000	00C0001E			300C010A			840B011A			1018100F		
3010	2009101F			500A110F			D01B111E			8801410A		
3020	3018411F			EA184009			F118F019			C5183119		
3030	070A3018			090BF008			0F09F008			06093008		
3040	0B094018			0C0A8118			EE183109			4009500F		
3050	600A501F			700B510F			D411511E			8018600F		
3060	D009601F			E00A610F			F00B611F			0411850E		
3070										032480F6		
3080	0001A10A			94F1A00E			C0C0611C			0D0BF008		
3090												
30A0	0024A3F6			1F0500F6			8011711C			0000A100		
30B0												
30C0												
30D0												
30E0												
30F0	0411255E			0209F108			030AF118			040BF008		
3100	00000000	R020	QU	01000300	R020	Q1	88035609	R010	J1	091CT10D	R010	C3
3110	811R3000	R020	C1	08151A1A	R020	J4	1803911A	R020	N4	00CCE133	R020	L5
3120	80000000	R020	Q2	00000600	R020	Q3	1000C100	R020	H5	0000C112	R020	F5
3130	2BFC4136	R020	C2	000A511A	Q080	G3	010931D2	R020	J1	011C5012	R020	J2
3140	00020000	R020	Q4	00100000	R020	Q5	40D8D0D6	R020	C3	80D8D0D6	R020	E3
3150	3D1C811A	R010	Q2	01031062	R020	J3	03037112	R010	J2	0008611A	Q080	E4
3160	C0080000	R020	Q6	00500000	R020	Q7	9CCA9107	R010	Q6	0062A100	Q080	E5
3170	C11C701D	R010	C1	0835018A	R010	C2	A8110108	R010	C4	2B3CF01A	R010	J3
3180	05000000	R020	S0	00400000	R020	S1	8025B0F7	P070	U4	B013900C	R010	Q3
3190	57C99017	R010	Q4	94D86107	R010	Q5	02AAF312	R010	Q7	C013E11E	R020	N5
31A0	00000200	R020	S2	00000300	R020	S3	FD09310A	R020	J0	8E03800B	R010	S1
31B0	281C811A	R010	S2	181CB108	Q070	S0	1618B118	Q070	S1	0C161018	Q070	S2
31C0	0C000000	R020	S4	00C00000	R020	S5	2000B100	R020	E6	2000B500	R020	C5
31D0	0013C1DC	R020	C4	0A1E21DD	R020	E4	A015D11F	P070	U2	1FD58102	P070	U3
31E0	08000000	R020	S6	80100000	R020	S7	100B1108	R020	N3	1705C0F6	R020	L6
31F0	011DB01D	Q070	N7	40AC1002	R010	L6	000F00F4			B013F01E	R010	N6

REF ADDRESS	CASSETTE MICRO CODE	P/N MICRO CODE	73687711 LOGIC ID	CORE MAP AND CROSS MICRO CODE	AND LOGIC ID	CROSS LOGIC ID	REFERENCE LISTING MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE
3200	92FCB017		D045 E3	101C171A		D045 N2	01111702	D045 J2		081C270A	D045 S2	
3210	90FC2102		D045 J3	01117012		D045 N3	A8FC7012	D045 L3		01112002	D045 Q3	
3220	40A73072		D045 Q5	000071D2		D015 Q5	40A77012	D045 J4		F8C69112	D065 Q4	
3230	1B05C0F6		D045 L6	1B25C0F6		D045 J6	08B8F002	D045 L0		08B8A112	D010 U5	
3240	03DC6702		D015 G2	03DC6712		D015 E2	03DCC712	D015 L2		03DC5792	D015 S2	
3250	97EA8015		D015 Q0	901C5105		D015 U3	0111E302	D015 S5		02B80102	D015 S3	
3260	1B0530F6		D015 J3	0239F016		D065 C1	0439D006	D015 G3		0C8C3002	D015 E3	
3270	7FC7D0D2		D015 Q3	20A73072		D045 J5	1C8C3012	D015 N6		5C8C3012	D015 Q6	
3280	8000C020		D065 L0	10A60112		D015 N0	5C8CA002	D065 G6		000F00F4		
3290	BCBCF102		D065 J5	58F38103		D065 G5	0C8390D2	D065 G4		1B2551F6	D065 Q5	
32A0	00039119		D065 L6	011C4662		D015 L1	08B82112	D065 Q3		0111B112	D010 U6	
32B0	101EA108		R020 C6	20A76102		D045 E4	181EA108	R020 E7		F8B9A012	D010 S5	
32C0	20027006		D015 Q2	01117102		D015 N5	FECFE102	D015 U5		048C3072	D015 L5	
32D0	208C8002		D015 G4	00122016		D015 Q4	40007010	D020 A1		01AFC302	D015 Q1	
32E0	108C3012		D015 S6	000F00F4			1C0530F6	D015 U6		000F00F4		
32F0	9FC70662		D045 L1	3CD29106		D065 E4	F8C6A002	D065 L5		08C3A102	D065 Q2	
3300	10E90016		N180 N1	010910D2		N180 N2	2B0541F6	N180 N5		2C2311F6	N180 S4	
3310	C012010E		N180 N4	A70A011A		N180 S3	0A12111C	N195 G4		04CE2006	N195 G5	
3320	001221DE		N195 G6	0518F1DD		P090 C1	20ACE012	N195 G7		10ACE012	N195 J7	
3330	98F32016		P090 A1	4015E0D8		N195 N2	40083016	N195 N1		2018400F	N195 C1	
3340	5802401A		N195 C2	0012410E		N195 C3	2B0591F6	N195 C4		40C67106	N200 C2	
3350	301C7118		P090 C4	10CF6006		N195 J1	112570F6	N200 E4		0F2500F6	N200 C4	
3360	920261DA		N195 J2	30055008		P090 C3	9C02110A	N195 G3		0F2500F6	N195 J3	
3370	181E701A		N200 G5	301A90F4		N200 L5	930251DA	N200 C3		0C2561F6	P090 C5	
3380	51F79116		N200 N0	98E19015		N200 G3	831C81BD	N200 G1		0815F00A	N200 J2	
3390	30009C00		N200 L6	081E70DA		N200 G4	300683F4	N200 L7		0109A0DA	N200 N1	
33A0	50001100		N200 Q2	170591F6		N200 N2	000F00F4			000F00F4		
33B0	3B17E118		P060 U2	3000C300		P100 N5	98CAC0D7	P100 L3		9CCA8017	P100 Q3	
33C0	0C2581F6		P100 L6	9FCAB017		P100 N4	080551F6	P100 N6		0C2581F6	P090 A3	
33D0	4C01D01A		N140 U1	0011D10C		N140 U2	3802D118	N140 U3		9005E00F	N140 U4	
33E0	180560F6		N140 U5	0A10310D		N195 N0	07E98106	P100 L2		0C2581F6	P060 K3	
33F0	27C1801F		N200 G2	000F00F4			38026018	P090 C2		D902C11A	P090 A2	
3400	60001011		M075 C3	408C1112		M075 G3	648C1013	M075 E3		408C1112	M075 J3	
3410	0A1E110D		M075 C1	3FCC1412		M075 C4	081A0AC9	M075 C2		01DFD016	M075 C6	
3420	1415900A		M075 N3	1315900A		M075 Q3	7FDC9002	M075 L2		F01C20D9	M075 N2	
3430	120540F6		M095 N5	7ECFE112		N195 N5	000F00F4			000F00F4		
3440	00D1440C		M030 G1	808C4412		M030 C2	10095805	M030 G2		1816A068	M030 C3	
3450	8016671F		M030 N1	808C5412		M030 Q3	801660DF	M030 L1		F111700A	M030 Q4	
3460	9016800F		M030 L2	A015610F		M030 N2	46858015	M030 N3		0416501A	M030 Q2	
3470	1812C013		M030 L6	43E47106		D020 A2	83E480D6	D020 A3		000F00F4		
3480	40158408		M030 L3	F7DC81D2		M030 N4	FF11700A	M030 L5		5116810B	M030 N5	
3490	272521F6		M075 L4	1C08C10A		N195 Q4	000F00F4			000F00F4		
34A0	80D0A116		M030 C4	BFDC8002		M030 E4	170590F6	N195 S4		4000C0D0	M030 C5	
34B0	0111B1D2		D020 A4	1D0541F6		D020 C4	20005100	D020 A5		1D0541F6	D020 C5	
34C0	290531F6		M030 C6	270530F0		M030 E6	0018C11C	N195 Q5		257C30D0	N195 Q6	
34D0	000F00F4			88DF21D7		M075 L1	000F00F4			000F00F4		
34E0	4F09E10A		N195 N3	01CF9016		N195 Q1	5F2A301A	N195 N4		120530F6	N195 N6	
34F0	43014078		M030 C1	0C1EF1DA		N195 Q2	7ECF9012	N195 Q3		01AFA102	N195 S3	
3500	000F00F4			000F00F4			000F00F4			000F00F4		
3510	500F8118		N200 P6	30008100		N200 R6	0FD71112	N200 Q3		08F78106	N200 Q4	

REF CASSETTE P/N				CORE MAP AND CROSS REFERENCE LISTING				PAGE 018				
ADDRESS	MICRO CODE	LOGIC ID	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	
73687711												
PAGE				PAGE				PAGE				
3520	01116102	S030	Q2	37CC6012	S030	Q4	50113108	S030	S0	3FCC3112	S030	Q0
3530	50003130	S030	S4	50496110	S030	S2	032A3A12	S030	S1	C831200A	S030	Q1
3540	FD11523A	S030	Q5	1705C0F6	S030	N6	00B0411C	S030	N2	40CC6006	S030	N3
3550	3FC07112	S030	L0	2D0510F6	S030	Q6	2C2551F6	S030	S6	2B2591F6	S030	U6
3560	500B21DF	S030	N4	8005400F	S030	S5	041620DA	S030	Q3	50583000	S030	S3
3570	30007021	S030	L4	F8DD4012	S030	L5	04DD80D6	S030	L2	2CED7106	S030	L1
3580	51C54010	S030	L6	51C570D0	S030	L3	1C2A10DA	N200	Q5	120530F6	N200	P7
3590	FOBA418	Q080		AFOA4019	Q080		3F18A019	Q080		8F09A019	Q080	
35A0	322DA01B	Q080		010DA102	Q080		50029330	Q080		502FA1F4	Q080	
35B0	000F00F4			000F00F4			000F00F4			000F00F4		
35C0	000F00F4			000F00F4			000F00F4			000F00F4		
35D0	2806D01A	Z012	A2	E018D10F	Z012	A3	0086D11E	Z012	A4	0F0DE00A	Z012	A5
35E0	082530F6	Z012	A6	DFC0E102	Z036	E1	0288E11D	Z036	E2	580EF008	Z036	E3
35F0	082520F6	Z036	E4	000F00F4			000F00F4			000F00F4		
3600	A033001F	N165	G2	80D001AC	N165	G3	6512100A	N165	G4	C912101A	N165	J4
3610	01F81106	N165	G5	03F81116	N165	J5	FE3820D6	N165	G6	FC3820D6	N165	J6
3620	91C72137	N165	N2	6229200A	N165	N1	2C25C0F6	N165	N3	802F3008	N165	Q3
3630	0C2551F6	N165	Q4	8002310A	P040	E4	0012311C	P040	E5	F8D84002	P040	E6
3640	0012410E	P040	E7	000F00F4			2C2571F6	P040	G6	000F00F4		
3650	F808700A	Q070	G2	001860DC	Q070	G4	0018511E	Q070	L5	0C0530F6	Q070	L6
3660	0018610A	Q070	G5	000A611A	Q070	J5	0009510A	Q070	G6	000B510A	Q070	J6
3670	04EE5016	Q070	G3	000F00F4			000F00F4			000F00F4		
3680	000F00F4			000F00F4			000F00F4			000F00F4		
3690	000F00F4			000F00F4			000F00F4			000F00F4		
36A0	000F00F4			000F00F4			000F00F4			000F00F4		
36B0	000F00F4			000F00F4			000F00F4			000F00F4		
36C0	000F00F4			000F00F4			000F00F4			000F00F4		
36D0	000F00F4			000F00F4			000F00F4			000F00F4		
36E0	000F00F4			000F00F4			000F00F4			000F00F4		
36F0	000F00F4			000F00F4			000F00F4			000F00F4		
3700	BFDC0012	N170	S1	1DFC0106	N170	S2	440F10DA	N170	S3	000F00F4		
3710	2D0530F6	N170	S4	2D0531F6	N170	Q4	000F00F4			000F00F4		
3720	E018201A	Q040	S2	0009210A	Q040	S3	D40A211A	Q040	S4	F008300A	Q040	S5
3730	0412411E	Q040	S6	000F00F4			F338311A	Q040	U2	0412410E	Q040	U3
3740	8412403E	Q040	U5	102580F6	Q040	U6	00B0400C	Q040	U4	00B0310C	Q040	U1
3750	000F00F4			000F00F4			000F00F4			000F00F4		
3760	000F00F4			000F00F4			000F00F4			000F00F4		
3770	000F00F4			000F00F4			000F00F4			000F00F4		
3780	000F00F4			000F00F4			000F00F4			000F00F4		
3790	000F00F4			000F00F4			000F00F4			000F00F4		
37A0	000F00F4			000F00F4			000F00F4			000F00F4		
37B0	000F00F4			000F00F4			000F00F4			000F00F4		
37C0	3F18C018	E040		0A0D310A	E040		3A1EC11D	E040		1725F1F6	E040	
37D0	20B8E0D2	E040		7000E0D0	E040		43D8E112	E040		80D6E106	E040	
37E0	40B8E0A2	E040		7816C108	E040		40D6D0D6	E040		2F16D118	E040	
37F0	000F00F4			000F00F4			000F00F4			000F00F4		
3800	82CB0014	S085	L1	20AD10D2	S085	L2	DFC01112	S085	L4	40B11102	S085	L5
3810	1125E1F6	S085	J3	001E010E	S085	L3	811D3008	S085	L6	88112018	P100	E3
3820	C91C111D	P100	E2	001E210C	P100	E4	A0000110	P100	E5	000F00F4		
3830	030D301A	S085	Q1	50B0321C	S085	Q2	000F00F4			42AD5003	S085	Q3

REF RESS	CASSETTE MICRO CODE	P/N	73687711 LOGIC ID	CORE MAP AND CROSS MICRO CODE LOGIC ID	REFERENCE LISTING MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE
40	1105A0F6		S085 Q6	000F00F4	000F00F4			000F00F4		
50	50B0520C		S085 Q4	000F00F4	DFCD4002	S085	Q5	000F00F4		
60	000F00F4			000F00F4	000F00F4			000F00F4		
70	000F00F4			000F00F4	000F00F4			000F00F4		
80	94E9 8015	N160		93EA 8105	9502 800A	N160		000F00F4	N160	
90	A3CB1010	R010	G2	172580F6	0B09A30A	R010	G1	000F00F4		
A0	132A 811A	N160		000F00F4	827390D8			000F00F4		
B0	000F00F4			000F00F4	2C05F1F6	N160		000F00F4		
C0	2803 F198			000F00F4	000F00F4			000F00F4		
D0	000F00F4	D065	L1	000F00F4	F3DD C002			000F00F4		
E0	000F00F4			000F00F4	000F00F4			000F00F4		
F0	000F00F4			000F00F4	000F00F4			000F00F4		
00	00B0001C	B025	C1	C01C010F	000F00F4	B025	C2	000F00F4		
10	D909280A	B025	C4	000F00F4	94131008	B025	C3	00491112	B025	G2
20	1325A0F6	B025	C5	132521F6	000F00F4	B025	G0	900040B0	B025	G3
30	90004100	B025	G5	902C2118	000C41F6	B025		1325A0F6	B025	J6
40	90003030	B025	G4	0C28201A	000F00F4			000F00F4		
50	0310501D	M100	N2	03F85106	01380112	B025	G1	130580F6	B038	F6
60	991C706A	M100	L5	D7C75112	400660DA	M100	N4	292590F6	M100	N6
70	1905E0F6	M100	L6	091C700A	000F00F4			000F00F4		
80	00B0A10C	S052	C1	013881D2	000F00F4			000F00F4		
90	0FD28015	S052	G1	100550F6	B0009013	S052	L3	0049A002	S052	G3
A0	004AA012	S052	G4	90009B00	04A78102	S052	G6	503C41F5	B038	E5
B0	8FDEB011	B030	S6	918EF130	F40A900A	S052	C2	900081D0	B038	E3
C0	001EC01C	B038	L2	92AAC100	20AC9112	B038	E4	10AC9112	B038	G4
D0	8036E1F6	B038	E1	00B0C11C	001ED01E	B038	L4	90052108	B038	J2
E0	04EEF002	B035	C3	A0007010	C00D001	B038	G1	04EEC002	B038	L1
F0	041CF01A	B035	C4	AFDC6100	A01D5008	P110	N1	04EEA112	B038	E2
00	82CB9104	R010	G0	A2AB0110	04EEE012	B035	G2	940FE007	B035	C2
10	8815 600A	B030	S5	40B11102	001E007C	R010	C5	80B11102	R010	E2
20	0F2500F6	R010	E5	860B3107	001E111E	R010	E3	1202200A	R010	E4
30	0A1B430A	P110	U3	A2154018	98CC30D5	P110	S1	0C2581F6	P110	Q5
40	01025012	P110	U4	081B430A	20DB21D6	P110	Q4	9015E108	P110	Q2
50	3118201A	P110	N2	FED02112	04024112	P110	S4	A0175018	P110	S5
60	0A0DB01A	B030	Q4	801E901C	B0B0513C	B035	Q4	20ADD112	B035	Q5
70	A010E338	B035	L1	9000D580	FC3C7506	B035	C6	030D800A	B035	E3
80	70B0804C	B035	E4	62ADD003	61106118	B035	E2	DFCD81D2	B035	J3
90	9012601F	B030	L6	92D8F015	A0107108	B035	J4	511DC11B	B035	J5
A0	DFCDC0D2	B030	U3	DFCD6002	9000B000	B030	Q6	02C9A355	B030	Q2
B0	11B9B10F	B030	L2	F81E910A	DFCD6002	B030	Q3	DFCD6002	B030	N3
C0	F000 1001	B030	S4	D11DC009	B919B131	B030	L3	A908C108	B030	L4
D0	70B0D24C	B035	E6	20DF7116	0018900C	B030	L5	0A0D800A	B035	J6
E0	03C57012	B035	L2	03C57012	DFCD7002	B035	L0	130500F6	B035	Q6
F0	020D510A	B035	Q3	A019 F11F	01C5F502	B035	Q2	02C5F0D2	B035	S2
00	52DA01D3	P050	E5	02DA01D3	A0006000	B035	N3	99A9 911F	B030	
10	B4CA1017	P050	L0	901911DF	7AA51001	P050	E6	BAA51000	P050	C6
20	9D794251	P050	J3	9D792751	F50A2549	P050	L2	B50A2548	P050	N2
30	80AA3012	P050	Q4	9D794251	9D79A251	P050	N3	20843002	P050	Q3
40	B0006130	P052	C1	80B46032	9504311A	P050	S2	BD099108	P050	S3
50	40AA6132	P052	Q2	12B46102	40AA5332	P052	L1	10B45002	P052	Q1
					12B46102	P052	J2	10B46102	P052	L2

REF ADDRESS	CASSETTE P/N MICRO CODE	73687711 LOGIC ID	CORE MAP AND CROSS MICRO CODE LOGIC ID	REFERENCE LISTING MICRO CODE	LOGIC ID	LOGIC ID	MICRO CODE	LOGIC ID	PAGE 020			
		PAGE	PAGE									
3B60	R0003100	P052	G2	02B43102	P052	E2	0999310F	P052	Q3	80B43102	P052	N3
3B70	R0008130	P054	C1	04B48032	P054	G1	40AA9002	P054	L1	40AA9012	P054	Q1
3B80	80B43102	P054	J2	82B43102	P054	G2	82B43102	P054	Q3	84B43102	P054	N3
3B90	10B48032	P054	L2	10B48132	P054	Q2	0C25B1F6	P050	S4	01DAD006	P050	C3
3BA0	80AAC332	P056	C1	80AAB332	P056	G1	COAAD332	P056	L1	COAAB002	P056	Q1
3BR0	10B4C332	P056	Q2	22B4C002	P056	J2	22B4C002	P056	E2	20B4C002	P056	G2
3BC0	0999310F	P056	J5	24B4C002	P056	G4	24B4C002	P056	C4	22B4C002	P056	E4
3BD0	80CA00D6	P050	C4	36B4C102	P056	N3	36B4C102	P056	J3	34B4C102	P056	L3
3BE0	000F00F4			000F00F4			000F00F4			000F00F4		
3BF0	000F00F4			000F00F4			000F00F4			000F00F4		
3C00	0F2D111A	Z016	C1	C0001500	Z016	G1	C000F010	Z024	J2	08081508	Z016	L1
3C10	0909110A	Z016	L2	91DFF117	Z016	C3	C0692000	Z016	G3	802910F5	Z016	C2
3C20	D090201E	Z016	G4	73CA2137	Z018	C1	C20A01F7	Z018	G2	948A30D6	Z018	C2
3C30	040A01F7	Z018	C6	B0113B0F	Z018	E4	A191D1DF	Z018	L1	000F00F4		
3C40	F72B40F6	Z018	S2	A00B500F	Z018	Q3	C12B40F4	Z018	Q1	040B5012	Z018	L4
3C50	C090510E	Z018	Q4	0090511E	Z018	L5	090591F6	Z018	Q5	CC157108	Z020	C1
3C60	A016711A	Z020	G1	C51CD008	Z022	L4	C01C6118	Z020	C4	C0026008	Z020	C5
3C70	40DF9016	Z020	L5	01338032	Z020	L1	050B61F6	Z020	C3	C731701A	Z020	G2
3C80	C052B110	Z020	L2	030A90F6	Z020	S2	C00060D0	Z022	L3	C05170D0	Z020	L4
3C90	0905A0F6	Z020	S3	C00091D0	Z020	L6	C51CE118	Z020	Q4	C00E80F4	Z022	C1
3CA0	B018711F	Z022	C5	B009711F	Z022	E5	B00A711F	Z022	G5	011CC662	Z022	J5
3CB0	C00B8018	Z022	C2	C000B100	Z022	C3	04160F02	Z022	C4	20DF8116	Z020	L3
3CC0	0442600E	Z022	S2	0452600E	Z022	Q2	0462600E	Z022	N2	0472810E	Z022	L2
3CD0	0040F10D	Z024	C1	D8110008	Z024	C2	01B148D2	Z018	L2	C0004000	Z018	S0
3CE0	5000E111	Z024	C6	0DA5F0D2	Z024	G4	F0DC0F06	Z024	C5	090591F6	Z024	L6
3CF0	C0005101	Z024	G6	0905A0F6	Z024	J6	C829D0F4	Z024	E2	012A03F6	Z016	C4
3D00	0092A01D	Z024	C3	4018600F	U002	C1	A01D304F	U002	J1	072500F6	U002	U6
3D10	0078611D	U002	E1	B00D013F	U002	E6	0474811C	U002	E4	000F00F4		
3D20	01B04012	U002	Q1	031D2009	U002	L3	061D2009	U002	L4	051D2009	U002	L5
3D30	00002551	U002	L2	041D2009	U002	J2	000F00F4			000F00F4		
3D40	00000211	U002	U1	40004812	U002	Q2	070D900A	U004	J1	20AD5002	U002	Q3
3D50	400D5B02	U002	Q4	0F1B5119	U002	Q6	003050F5	U002	Q5	000070F5	U002	S6
3D60	080B601A	U002	C2	007B110E	U002	C3	000F00F4			08041109	U002	E3
3D70	6CED7016	U004	C1	000071D1	U004	C2	DFCD4E02	U004	E3	00008301	U004	C3
3D80	DFCD4002	U004	E6	070510F6	U004	N6	00004001	U004	C6	08051019	U002	E5
3D90	400D9B02	U004	J2	101880DA	U004	N2	0F009111	U004	J3	0043A1DD	U004	J4
3DA0	000F00F4			C1F8E104	Z024	C4	01D89016	U004	N1	00008001	U004	J5
3DB0	000F00F4			000F00F4			000F00F4			000F00F4		
3DC0	03100400	Z064	S0	04000000	Z064	S1	0C000100	Z064	S2	0D100300	Z064	S3
3DD0	0D200200	Z064	S4	05080000	Z064	S5	05020100	Z064	S6	05100300	Z064	S7
3DE0	05040200	Z064	UC	05010000	Z064	U1	0D400100	Z064	U2	0D080300	Z064	U3
3DF0	0D040200	Z064	U4	000F00F4			000F00F4			000F00F4		
3E00	00000000	Z064	Q0	000F00F4			000F00F4			000F00F4		
3E10	0406110A	Z062	C1	00E0300C	Z062	S1	00A6B00C	Z062	C2	8004B01A	Z062	E1
3E20	082A20F5	Z062	S6	70042106	Z062	U1	0FC44802	Z062	U2	00E0401E	Z062	U5
3E30	80183012	Z062	S2	080931F5	Z062	S3	08043119	Z062	S4	01E4200C	Z062	S5
3E40	4018211F	Z062	U4	002441F5	Z062	U6	00044009	Z062	U3	0905A0F6	Z062	U7
3E50	FB186119	Z062	N5	DB096119	Z062	L5	CB086109	Z062	G5	EB0A6119	Z062	J5
3E60	0F01A016	Z062	N2	04D1A11C	Z062	J1	04E4601E	Z062	G6	00E4601E	Z062	J6
3E70	R2AD7033	Z062	L2	9F3073F7	Z062	L3	DFCD6042	Z062	N1	0F1B7109	Z062	L4

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING						PAGE 021		
ADDRESS	MICRO CODE	LOGIC ID	ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	
		PAGE			PAGE		PAGE		PAGE		PAGE	
3F80	0C000000	Z064	Q1	00000000	Z064	Q2	00000000	Z064	Q3	00000000	Z064	Q4
3F90	00103009	Z062	Q6	080D9109	Z062	J3	A005911F	Z062	J4	01B07002	Z062	L1
3FA0	00005551	Z062	N4	00E4A80C	Z062	N3	0105B119	Z062	Q4	9010901F	Z062	J2
3FR0	032414F6	Z062	C3	1C01B10B	Z062	E2	5011610F	Z062	F3	00189009	Z062	Q5
3FC0	780AC1F5	Z030	G7	0DA5C102	Z030	S6	0080C11C	Z030	S7	00E9D106	Z030	L1
3ED0	0A05A0F6	Z030	F3	090591F6	Z030	K3	E000D0D0	Z030	L2	000F00F4		
3EE0	C00F00F4			000F00F4			000F00F4			000F00F4		
3FF0	000F00F4			000F00F4			000F00F4			000F00F4		
3F00	003F61F6	Y800	C1	0014811A	Y830	L3	0F11300F	Y830	L4	0914811A	Y830	J3
3F10	1015E01F	Y800	J2	030490F6	Y800	L2	4003C00A	Y800	Q2	13A4A01F	Y800	S2
3F20	01094009	Y810	N4	0108A109	Y810	Q4	010A4009	Y810	J4	01184009	Y810	L4
3F30	0111C011	Y830	J5	00004332	Y830	N1	0C2AD0F5	Y840	G3	0000C102	Y830	S1
3F40	030DC11B	Y830	E2	0901C10A	Y830	Q3	J801C10A	Y830	N3	00008112	Y830	S3
3F50	4003C00A	Y810	S3	13B1298F	Y810	Q3	00007102	Y830	E5	0F055159	Y830	F4
3F60	0313R011	Y820	J3	001C701A	Y800	E3	00030F02	Y820	J5	AC06601A	Y800	F2
3F70	0108E1F6	Y830	C6	0102E012	Y800	F4	0F057259	Y830	F6	0E00051A	Y830	J2
3F80	011C1992	Y800	J1	00080F02	Y830	N7	F001B106	Y830	N5	00003102	Y830	S5
3F90	A003C00A	Y800	L3	0FC99102	Y800	N3	03A99111	Y800	N4	00F6E01E	Y800	N5
3FA0	00F6901C	Y800	N2	B008400A	Y800	S3	F524A1F4	Y810	Q5	0004000E	Y810	Q6
3FR0	011C5052	Y810	Q2	F0006R00	Y820	J4	00008B12	Y830	N6	F0000100	Y830	J4
3FC0	1013E00F	Y820	J1	01013RD2	Y830	J6	1401814F	Y830	N4	FF01511A	Y830	E3
3FD0	000F00F4			500CD10F	Y840	G4	0F0DD11F	Y840	G5	F00F00F4	Y840	G6
3FE0	10R36002	Y820	J2	8008400A	Y800	E6	F024E1F4	Y840	S1	F008F0F4	Y840	S2
3FF0	000500F4	Y840	S3	000F00F4			F7F3F6F8			F7F7F1F1		

PUB70631200 PN73687811 BIT LIST (SIC0)

REF ADDRESS	CASSETTE MICRO CODE	P/N	LOGIC	73687711 ID	CORE MAP MICRO CODE	AND CROSS LOGIC	REFERENCE LISTING MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	PAGE	022 ID
				PAGE					PAGE			PAGE	
8000	300CF110		X020	C1	000F00F4		000F00F4			FF 71203A	X023	N6	
8010	100F01F4		X024	E5	FF11111A	X024	000F00F4	X021	G4	00915002	X024	L2	
8020	100F01F4		X024	F1	00712138	X024	00913038	X024	C2	100F01F4	X024	E2	
8030	80003133		X024	C3	100F01F4	X024	FF91F01A	X024	C4	100F01F4	X024	F4	
8040	000F00F4		X020	G6	000F00F4	X021	000F00F4	X021	G2	000F00F4	X021	G3	
8050	00115012		X024	L3	FF915102	X024	55115112	X024	L5	55116002	X024	L6	
8060	55916012		X024	Q1	55916102	X024	000070D2	X024	Q3	FFD1710A	X025	C2	
8070	100F01F4		X024	S4	FF12611A	X025	FFD280D2	X025	C3	00D181D8	X025	C5	
8080	100F01F4		X025	G4	01127116	X025	100F01F4	X025	G6	00D29000	X025	C6	
8090	100F01F4		X025	Q1	FF8191DA	X025	100F01F4	X025	Q2	0111A006	X025	L2	
80A0	00R2A1D8		X025	L3	000081D0	X025	100F01F4	X025	Q4	00B180D2	X025	L4	
80B0	100F01F4		X025	Q5	0111A016	X025	100F01F4	X026	G1	FFB1C002	X026	C1	
80C0	0111C016		X026	C2	FFF1C1DA	X026	100F01F4	X026	G4	0111D006	X026	C4	
80D0	00F2D1DA		X026	C5	0000E1D0	X026	100F01F4	X026	G6	00F1E0F0	X026	C6	
80E0	100F01F4		X026	Q1	0111D016	X026	100F01F4	X026	Q3	FFF1F002	X026	L3	
80F0	200011D0		X026	L4	00001030	X026	000F00F4	X026	C5	000F00F4	X026	G0	
8100	10C00010		X020	C4	00004002	X020	8011011B	X022	C1	9011630B	X022	C2	
8110	00710118		X023	N5	100F01F4	X023	102120FA	X021	C4	00005002	X021	L3	
8120	000F00F4		X021	G5	100130F4	X021	FF51601A	X023	N1	100F01F4	X023	Q1	
8130	FF1C311A		X021	L1	000F00F4	X021	8112A333	X022	G5	FF05111A	X021	L2	
8140	00004013		X020	C6	00004101	X021	0000411F	X021	C2	0000110C	X021	C3	
8150	00000102		X021	L4	000F00F4	X021	000F00F4	X021	N4	01318B32	X023	C2	
8160	A01173D8		X022	G0	1051D038	X023	100F01F4	X022	J0	R0002133	X023	C6	
8170	100F01F4		X022	J1	9F118038	X022	100F01F4	X022	N1	100F01F4	X022	L1	
8180	101293D8		X022	G2	100F01F4	X022	100F01F4	X023	E5	01116112	X023	C5	
8190	100F01F4		X022	J3	100F01F4	X022	8111A10B	X022	G3	100F01F4	X022	L3	
81A0	100F01F4		X022	J6	FF31511A	X023	91313101	X022	G4	100F01F4	X022	L6	
81B0	FF11C83A		X023	C3	100F01F4	X023	100F01F4	X023	G3	100F01F4	X023	J3	
81C0	100F01F4		X023	J4	100F01F4	X023	100F01F4	X023	F4	A0008133	X023	C4	
81D0	100F01F4		X023	Q3	FF51D13A	X023	80001033	X023	N4	100F01F4	X023	Q4	
81E0	40000118		X032	N5	80DFE116	X032	80DFE116	X029	Q4	300121D8	X029	Q5	
81F0	1010E0D8		X032	N4	000F00F4		000F00F4			000F00F4	X020	J0	
8200	10000000		X020	C3	000F00F4	X020	000F00F4	X020	Q3	000F00F4	X020	J3	
8210	000F00F4		X020	S3	01182012	X027	100F01F4	X026	Q5	30119008	X027	C1	
8220	000F00F4		X020	G4	210A2108	X027	020A2112	X027	C5	21083008	X027	C6	
8230	030B3012		X027	G1	21013108	X027	04013112	X027	G3	21024018	X027	G4	
8240	000F00F4		X020	J4	05024102	X027	21124118	X027	G6	06125002	X027	L1	
8250	01115012		X027	L2	28F15104	X027	011160D2	X027	L4	01116102	X027	L6	
8260	202F11F4		X027	Q5	21EA5114	X027	202F11F4	X028	G1	21EB7004	X028	C1	
8270	011171D2		X028	C2	011181D2	X028	202F11F4	X028	G3	21E17014	X028	C3	
8280	000F00F4		X020	L4	210991D8	X028	202F11F4	X028	G5	21E28014	X028	C5	
8290	22E99014		X028	L2	0691A0D2	X028	202F11F4	X028	Q1	01099002	X028	L1	
82A0	202F11F4		X028	Q4	300090D0	X028	F9318036	X033	C6	80DFC016	X033	C4	
82B0	040RC0F6		X033	J1	4A0RC0F6	X033	3000D010	X033	J6	800FD006	X033	J4	
82C0	2000C110		X033	J2	FC31A1D6	X033	200FC1F4	X033	N2	2000B110	X033	J3	
82D0	2000B1D0		X033	J5	C402D10A	X030	8032D11C	X030	C3	94F8E107	X030	C4	
82E0	32A96300		X030	G5	0FC9F102	X030	9EEAF017	X030	G1	000F00F4			
82F0	000F00F4		X020	L3	9EEBE017	X030	91E9E007	X030	G4	000F00F4	X020	L0	
8300	000F00F4		X020	G3	000F00F4		000F00F4			000F00F4	X020	G1	
8310	30524010		X029	G2	8F0D410B	X029	0031C10C	X029	C2	4012301A	X029	Q2	

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING						PAGE 023		
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE			PAGE	
8320	40000110	X029	C6	01211032	X029	G1	300F21F4	X029	Q6	2024D0F4	X030	C1
8330	1C0CF01R	X032	N2	1000E100	X029	Q3	300E2118	X032	J2	10123302	X032	J1
8340	4491209B	X029	C5	30512010	X029	G3	30114118	X029	L2	980E5007	X029	L3
8350	38DF030E	X029	L4	30025118	X030	L2	800070D1	X031	E3	200F6016	X031	F1
8360	0032501F	X030	L1	40DF51D6	X031	E2	300F61F4	X030	G6	300R4108	X031	F5
8370	98DF9107	X031	A4	302E61F4	X031	E4	022B80F6	X033	C1	000F00F4	X020	Q1
8380	0102A0D2	X031	J5	010281D2	X031	N5	8009511F	X031	N6	R018511F	X031	Q6
8390	21181018	X027	C2	C401110A	X029	C1	80007301	X031	A5	000F00F4		
83A0	C032C116	X032	C1	800A511F	X031	L6	3000A110	X031	E6	02C2R006	X031	J3
83B0	01C28096	X031	J4	0111R102	X033	C2	2000A110	X033	C3	000F00F4	X020	N1
83C0	0124C0F6	X032	E3	0401F00E	X032	C4	F0C94006	X029	C4	8000C031	X032	C2
83D0	300F00F4	X029	L6	102B11F6	X029	Q1	3000D0D0	X029	L5	000F00F4	X020	L1
83E0	93F231D7	X032	J0	000F00F4			000F00F4			000F00F4	X020	J1
83F0	000F00F4	X020	N0	000F00F4	X020	Q0	000F00F4	X020	S0	20000000	X020	C2
8400	000F00F4			000F00F4			000F00F4			0011100A	X040	C1
8410	410211C8	X040	C2	80000000	X046	L4	01021112	X040	C3	41032008	X040	C4
8420	02032012	X040	C5	41042108	X040	C6	03042112	X040	G1	41053008	X040	G2
8430	C4054002	X040	G3	0C0F3102	X041	C1	41123118	X041	C2	0D127112	X041	C3
8440	41084018	X040	G4	05084102	X040	G5	41074118	X040	G6	06075002	X040	L1
8450	41065018	X040	L2	07065102	X040	L3	41095118	X040	L4	08096002	X040	L5
8460	410A6018	X040	L6	090A6102	X040	Q1	410B6118	X040	Q2	0A0R7002	X040	Q3
8470	400F7018	X040	Q4	000F710A	X040	Q5	410F3018	X040	Q6	41138008	X041	C4
8480	0EF138012	X041	C5	41148108	X041	C6	0F148112	X041	G1	41159008	X041	G2
8490	10159012	X041	G3	41169108	X041	G4	11169112	X041	G5	4117A008	X041	G6
84A0	1217A012	X041	L1	4118A108	X041	L2	1318A112	X041	L3	4119B008	X041	L4
84B0	1419B012	X041	L5	411AB108	X041	L6	151AB112	X041	Q1	411RC008	X041	Q2
84C0	161RC012	X041	Q3	411CC108	X041	Q4	171CC112	X041	Q5	411DD008	X041	Q6
84D0	181DD012	X042	C1	511E0008	X042	C2	000F00F4			000F00F4		
84E0	0C0F00F4			000F00F4			000F00F4			000F00F4		
84F0	000F00F4			000F00F4			000F00F4			000F00F4		
8500	191E0012	X042	C3	01110102	X042	C4	21E0011F	X042	C5	011110F2	X042	C6
8510	402F01F4	X042	J1	31E0200F	X042	G2	402F01F4	X042	J4	41E0201F	X042	G5
8520	011111D2	X042	G3	011121D2	X042	G6	402F01F4	X042	Q1	51E0310F	X042	N2
8530	402F01F4	X042	Q4	81E0311F	X042	N5	011130D2	X042	N3	011140D2	X042	N6
8540	402F01F4	X043	E1	71E0410F	X043	C2	011150D2	X043	C3	011151D2	X043	C6
8550	402F01F4	X043	F4	61F0411F	X043	C5	402F01F4	X043	L1	91E0600F	X043	J2
8560	011161D2	X043	J3	011170D2	X043	J6	402F01F4	X043	L4	A1E0601F	X043	J5
8570	402F01F4	X043	S1	81E0710F	X043	Q2	011180D2	X043	Q3	011181D2	X043	Q6
8580	402F01F4	X043	S4	000E711F	X043	Q5	402F01F4	X044	F1	F1F0910F	X044	C2
8590	402F01F4	X044	F4	01019112	X044	C5	510190D8	X044	C3	12F0A10F	X044	C6
85A0	402F01F4	X044	L2	13E0A11F	X044	J3	0101A0D2	X044	J1	0101R0D2	X044	J4
85B0	402F01F4	X044	L5	14E0B10F	X044	J6	0101C0D2	X044	Q1	0101C1D2	X044	Q4
85C0	402F01F4	X044	S2	15F0B11F	X044	Q3	402F01F4	X044	S5	60000000	X044	Q5
85D0	0R0DD01A	X220	C1	FF13D10A	X220	C2	FE14F00A	X220	C3	E064E00C	X220	C5
85E0	0464E01F	X220	C6	5031F0F4	X220	C7	602371F4	X220	F3	0464E10E	X220	E2
85F0	7004D11A	X220	C4	FECBE112	X220	F1	6000C000	X220	N2	000F00F4		
8600	16F0001F	X044	Q6	010101D2	X045	C1	402F01F4	X045	F2	17E0110F	X045	C3
8610	402F01F4	X045	F5	18E0111F	X045	C6	010110D2	X045	C4	010120D2	X045	J1
8620	402F01F4	X045	L2	19E0210F	X045	J3	010130D2	X045	J4	010131D2	X045	Q1
8630	402F01F4	X045	L5	1AF0211F	X045	J6	402F01F4	X045	S2	1RF0410F	X045	Q3

REF CASSETTE P/N 73687711				CORE MAP AND CROSS REFERENCE LISTING				PAGE 024				
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE			PAGE	
8640	402F01F4	X045	S5	1CE0411F	X045	Q6	010140D2	X045	Q4	010150D2	X046	C1
8650	402F01F4	X046	E2	1DE0510F	X046	C3	010160D2	X046	C4	089161D2	X046	J1
8660	402F01F4	X046	E5	1EE0511F	X046	C6	402F01F4	X046	Q2	400010D0	X046	J3
8670	FFFFFFF	X220	Q1	00000000	X220	Q2	00000000	X220	Q3	0064801E	X220	E4
8680	93F89115	X220	E7	000F00F4	X220		8464800C	X220	E6	0102B002	X220	G7
8690	93E8A015	X220	G3	94E8A015	X220	J3	93E8A055	X220	G2	93E99105	X220	G1
86A0	01E58152	X220	G6	6000A300	X220	G4	1729A1F6	X220	J5	600FA0F4	X220	J6
86B0	5000F800	X220	L1	7404810A	X220	E5	000F00F4	X222	C4	000F00F4	X222	C5
86C0	E404C01A	X222	C1	FF13E00A	X222	C2	6039C1F4	X222	E1	8000D00C	X222	E2
86D0	9800D011	X222	C6	93F9D105	X222	C7	93EAD115	X222	E6	93EBF005	X222	E2
86E0	00D4C10C	X222	C3	0102F012	X222	E4	C0004000	X222	FE6	6109F1F4	X222	G4
86F0	2511E31A	X222	E3	680AEBF4	X222	E5	602FE0F4	X222	G5	00000000	X222	J1
8700	DF0D001B	X080	C1	F0150109	X080	C2	6C2B80F6	X080	C3	70121008	X080	G2
8710	70011018	X080	G3	040B11F6	X080	G4	702411F4	X080	N1	D802200A	X080	N2
8720	0072201C	X080	N3	70002100	X080	N4	0FC92112	X080	N5	72A93000	X080	N6
8730	C072301E	X080	S1	E12440F5	X080	S2	40DF4006	X082	E2	70085008	X082	E5
8740	700041D0	X082	E3	20DF3106	X082	E1	01158002	X082	A4	702E31F4	X082	E4
8750	70005010	X082	E6	0105C552	X082	J5	000F00F4	X084	N4	9100D1D1	X084	C2
8760	F0F261D6	X084	G1	000F00F4	X084		70001100	X084	N4	03F170D6	X084	G2
8770	10121102	X084	L4	701271D8	X084	G3	01111102	X084	J4	60110018	X084	G4
8780	70058018	X086	C1	70008100	X086	C2	70009010	X086	C3	700090D0	X086	C5
8790	0105A552	X086	C6	80DF8116	X086	C4	70008030	X086	L3	702F91F4	X086	N2
87A0	022B80F6	X086	G0	F9358106	X086	L0	082B80F6	X086	Q0	70110118	X080	G1
87B0	782B81F6	X086	L4	FE2B80F6	X086	N4	FC359136	X086	L1	00008012	X086	L5
87C0	B018401F	X082	Q6	B009401F	X082	N6	B00A401F	X082	L6	87F25117	X084	C1
87D0	04016002	X084	G0	000F00F4	X084		0401600E	X084	C4	7000D300	X084	C3
87E0	000F00F4	X060		000F00F4	X060		000F00F4	X060		000F00F4	X060	
87F0	000F00F4	X060		000F00F4	X060		000F00F4	X060		000F00F4	X060	
8800	FF1C011A	X060	C1	000F00F4	X060		000F00F4	X060		FF05100A	X060	C2
8810	20001013	X060	C3	FE1C112A	X060	C4	FD05209A	X060	E5	800F00F4	X060	C6
8820	FB1C350A	X060	J2	800F00F4	X060	L1	EF1C341A	X060	J6	800F00F4	X060	L5
8830	F705218A	X060	J4	DF05507A	X060	Q6	800F00F4	X060	L3	F705401A	X060	Q2
8840	80003010	X060	Q5	80004400	X060	Q3	800F00F4	X060	S4	FD1C705A	X061	C5
8850	BF1C630A	X061	C1	800F00F4	X061	G1	FF1C621A	X061	C3	800F00F4	X061	G3
8860	7F05516A	X061	C2	FE05411A	X061	C4	800F00F4	X061	G2	800F00F4	X061	G4
8870	FR05890A	X061	C6	800F00F4	X061	G6	80009710	X061	L4	800F00F4	X061	Q4
8880	F71CF04A	X061	L1	000F00F4	X061		800F00F4	X061	Q1	000F00F4	X061	
8890	DF1C713A	X061	L3	7F1CA00A	X061	L5	800F00F4	X061	Q3	800F00F4	X061	Q5
88A0	80058608	X061	L6	0205A19A	X062	C2	800F00F4	X062	G3	041CB51A	X062	C3
88B0	011CA01A	X062	C1	800F00F4	X062	G4	800F00F4	X062	G1	8005C08A	X062	C4
88C0	800F00F4	X062	G5	101CD40A	X062	C5	800F00F4	X062	Q1	401CD31A	X062	L1
88D0	800F00F4	X062	G6	800F00F4	X062	Q2	2005C17A	X062	C6	8005E06A	X062	L2
88E0	800F00F4	X062	Q3	901C0208	X062	L3	000F00F4	X062		000F00F4	X062	
88F0	FF05980A	X061	L2	800F00F4	X061	Q2	000F00F4	X062	L4	000F00F4	X063	C6
8900	800F00F4	X062	Q4	021C105A	X062	L5	0105001A	X067	C1	A005D608	X067	C2
8910	800F00F4	X062	Q6	0405290A	X062	L6	902411F4	X063	C1	6001500A	X063	C2
8920	800F00F4	X063	G1	800F00F4	X063	G3	081C304A	X063	C1	201C313A	X063	C3
8930	800F00F4	X063	G2	1005281A	X063	C2	800F00F4	X063	G4	00004702	X063	C4
8940	800F00F4	X063	G5	10064812	X070	E2	801C011A	X063	C5	01DFE106	X070	C2
8950	0091501C	X067	C3	FF18601A	X067	C4	FFFF00FF	X067	Q4	FFFFFFF	X067	Q1

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING				PAGE 025				
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE			PAGE	
8960	00000000	X067	Q6	03AC610D	X067	C5	98006110	X067	C6	90097004	X067	C7
8970	900F11F4	X067	L1	900A71D4	X067	G1	900F11F4	X067	L2	900R8004	X067	G2
8980	900F11F4	X067	L3	059C81D0	X067	G3	900F11F4	X067	L4	FFF89106	X067	G4
8990	900F11F4	X067	L6	98009110	X067	G6	0A9590DD	X067	G5	0590R0DD	X068	C1
89A0	059AB1DD	X068	C3	FF00FFFF	X067	Q3	059EC0DD	X068	C5	0CA3C1DD	X068	L1
89B0	900F11F4	X068	G2	FFF8A006	X068	C2	900F11F4	X068	G4	9800A100	X068	C4
89C0	900F11F4	X068	G6	FFF8A116	X068	C6	900F11F4	X068	Q2	9800D100	X068	L2
89D0	900F11F4	X068	Q4	FFF8D116	X068	L4	059FD0DD	X068	L3	9000F0DD	X068	L5
89E0	70000000	X070	C5	900FE0F4	X070	E4	9010E0D8	X070	C3	000F00F4		
89F0	900F11F4	X068	Q6	5002D008	X068	L6	0B0D401A	X070	C1	000F00F4		
8A00	R1180008	X064	C3	0411101A	X064	G1	0811101A	X064	G2	000F00F4		
8A10	1011101A	X064	G3	80004000	X064	N2	000F00F4			000F00F4		
8A20	2011101A	X064	J1	000F00F4			000F00F4			000F00F4		
8A30	000F00F4			000F00F4			000F00F4			000F00F4	X067	Q2
8A40	4011101A	X064	J2	000F00F4			000F00F4			000F00F4		
8A50	000F00F4			000F00F4			000F00F4			000F00F4		
8A60	000F00F4			000F00F4			000F00F4			000F00F4		
8A70	C00F00F4			000F00F4			000F00F4			000F00F4		
8A80	8011101A	X064	J3	000F00F4			000F00F4			000F00F4		
8A90	000F00F4			000F00F4			000F00F4			000F00F4		
8AA0	000F00F4			000F00F4			000F00F4			000F00F4		
8AB0	000F00F4			000F00F4			000F00F4			000F00F4		
8AC0	FFFFFFFF00	X067	Q5	000F00F4			000F00F4			000F00F4		
8AD0	800F00F4	X063	G6	000F00F4			FC11F11A	X064	C1	000F00F4		
8AE0	000F00F4			000F00F4			000F00F4			000F00F4		
8AF0	C00F00F4			000F00F4			000F00F4			A0000F00	X064	C2
8P00	R0180F10	X064	C4	2493511B	X066	S1	3413510B	X066	C1	4893511B	X066	S2
8R10	5813510B	X066	C2	6493601B	X066	S3	7413600B	X066	C3	8293511B	X066	S4
8R20	9213510B	X066	C4	A193511B	X066	S5	B113510B	X066	C5	C293601B	X066	S6
8R30	D213600B	X066	C6	E193601B	X066	S7	F113600B	X066	C7	FFF4C102	X065	G3
8R40	A00FD1F4	X064	N5	FFF44106	X066	G2	000050D2	X066	G3	B00080D0	X066	G6
8R50	F7DCD002	X066	J4	R413D008	X066	G4	501C401F	X066	J1	FF136102	X066	L1
8R60	501C401F	X066	G1	FF136102	X066	N1	501C611F	X066	L2	B0147004	X066	L3
8R70	0000D0D2	X066	L4	000F00F4			000F00F4			7C11400A	X064	J5
8R80	R00FA0F4	X066	L6	R405A118	X065	C4	000F00F4			000F00F4		
8R90	90001100	X065	L4	R0009000	X065	L3	B0009410	X065	L2	R00FA0F4	X065	N3
8RA0	R014C008	X065	C1	10009403	X065	G6	J412801A	X065	C3	01118002	X065	C5
8RB0	04120F02	X065	C6	000F00F4			000F00F4			PC11400A	X064	J4
8RC0	0111A10A	X065	C2	1000A013	X065	G5	FF14C0DA	X065	G4	000F00F4		
8RD0	RCF34114	X066	G5	F7DC5012	X066	L5	000F00F4			DC11400A	X064	J6
8RE0	000F00F4			000F00F4			000F00F4			EC11400A	X064	G6
8RF0	C00F00F4			F411400A	X064	G5	F811400A	X064	G4	R000A000	X064	C5
8C00	018222F0	X112	J1	8048DA23	X112	J2	00000100	X112	J3	87C80420	X112	J4
8C10	CC18FF8R	X112	J5	017EE4DF	X112	L1	87F9C1F1	X112	L2	AARF01FC	X112	L3
8C20	41E70392	X112	L4	D7CA553F	X112	L5	000F00F4			000F00F4		
8C30	000F00F4			000F00F4			000F00F4			000F00F4		
8C40	0005401F	X108	C1	000F410F	X108	C2	00D0411C	X108	C3	9002501F	X108	C4
8C50	000F4109	X110	G6	001D5109	X108	C5	0C00600A	X108	G1	000F00F4		
8C60	0040601E	X108	G2	20AD6102	X108	G3	E812700A	X108	G4	8110810A	X108	L3
8C70	011270D2	X108	G5	001A7109	X108	G6	041D711A	X108	L1	E1C2611C	X108	L2

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73687711
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8C80	111280D3	X108	L5	F932841A	X108	L6	CF12800A	X108	L4	140E900B	X108	Q1
8C90	081A9109	X108	Q2	C01AA008	X108	Q6	01C2A00C	X108	Q3	FF02B102	X110	C1
8CA0	0111A43B	X108	Q4	FA12A43A	X108	S4	11329051	X108	Q5	103AB059	X108	S5
8CB0	F60E901B	X108	S6	E00E911A	X108	U5	C01DB118	X110	C2	CC11C10A	X110	C3
8CC0	0017DBF5	X110	C5	0102F012	X110	L3	F801C00A	X110	C4	09F8D015	X110	G2
8CD0	0111C002	X110	C6	C000E0D0	X110	G3	00C2C11C	X110	G1	F911C0DA	X110	J2
8CE0	500F50F7	X110	G4	0101D112	X110	J1	CG1050F4	X110	N6	98E8FE05	X110	L5
8CF0	D0001300	X110	Q3	01C2E11C	X110	L4	500FE1F7	X110	N5	D0191018	X110	Q5
8D00	00000000	X112	N1	01F2A00C	X118	J2	C0004110	X112	E6	0000010E	X112	E5
8D10	C00EF118	X110	E4	00D0111C	X112	C1	502FB0F7	X110	S4	28E22106	X112	C2
8D20	2009011F	X112	E4	D0092118	X112	C5	000020D0	X112	C3	0000300E	X112	C6
8D30	40183019	X116	C1	3C01310A	X116	C2	00F1311E	X116	C3	00F1400C	X116	C4
8D40	08024019	X116	C5	00104109	X116	C6	000E4119	X116	G1	0C00510A	X116	G2
8D50	011250D2	X116	G6	001A6019	X116	L1	D0005110	X116	G3	20AD6002	X116	G4
8D60	E812500A	X116	G5	041D610A	X116	L2	01F2611C	X116	L3	8110810A	X116	L4
8D70	681A7019	X118	C1	01F2C00C	X118	C2	000F00F4	X118	E6	120E7008	X116	S3
8D80	111280D3	X116	L6	F931841A	X116	S1	CF12800A	X116	L5	3FC07112	X116	S2
8D90	00009401	X118	G6	00009411	X118	E7	1E0E901B	X118	E6	FF02B002	X118	J0
8DA0	E8F91104	X118	J3	F0017008	X900	C5	000F00F4	X118	E6	000F00F4	X118	J0
8DB0	F811001A	X118	J1	C0005000	X110	S5	000F00F4	X118	E6	A00E900A	X118	E5
8DC0	0112C43A	X118	C3	0000C431	X118	E3	12317001	X118	C4	101AB119	X118	E4
8DD0	0F36D10A	X900	C2	000F00F4	X118	E3	0111D11A	X900	C3	E012A019	X900	C4
8DE0	00000000	X900	U1	FFFFF000	X900	U2	00000000	X900	U3	01000000	X900	U4
8DF0	CC0F00F4	X900	C1	000F00F4	X900	U2	000F00F4	X900	U3	000F00F4	X900	U4
8E00	D015D008	X900	C1	E00E01D8	X122	J4	C0004100	X122	J6	9006F108	X122	L5
8E10	E02FE0F4	X122	Q4	F912280A	X118	L5	011110D2	X118	J4	70004201	X118	Q2
8E20	F0372BF4	X118	L6	01122002	X118	L7	A00E304A	X118	Q0	D0000010	X118	L1
8E30	F631F11A	X118	Q1	0620B10A	X122	C1	94E93111	X120	C7	001863F5	X120	F6
8E40	80F2411C	X120	C1	0E11910A	X118	S4	EA13401A	X118	S3	8014503F	X120	C2
8E50	94F85101	X120	C3	94F85111	X120	J0	003763F5	X120	C4	001773F5	X120	J1
8E60	01314002	X120	E7	00F2F10C	X120	C5	E000E100	X122	J1	E000E100	X122	L1
8E70	00F2F00C	X120	G2	00F2F01C	X120	J5	E000E100	X122	N1	E000E100	X122	Q1
8E80	94EA8011	X120	J3	003873F5	X120	J4	04E88111	X120	J6	F63390DA	X120	J7
8E90	E000E100	X122	S1	1911910A	X120	L0	9832911A	X120	N1	0018ABF5	X120	N2
8EA0	01318002	X120	L3	0113A102	X120	N4	0037ABF5	X120	N3	F902B012	X120	Q4
8EB0	00529112	X120	L4	D0009000	X120	Q5	0402C002	X122	C2	3CE2C1D6	X122	C5
8EC0	8000C031	X122	C3	6FD0F817	X122	C4	E02FE0F4	X122	C6	28E2D0D6	X122	G3
8ED0	0000D1D1	X122	G2	010F0012	X122	J3	2018E00F	X122	G4	5000D101	X122	G1
8EE0	00F1E11E	X122	G5	D03031F4	X122	N6	E02FE0F4	X122	L4	D03031F4	X122	G6
8EF0	8014800F	X120	G3	8014810F	X120	L6	8014310F	X120	C6	00001111	X118	S1
8F00	018222F0	X124	E1	8048DA23	X124	E2	00000000	X124	E3	00000000	X124	E4
8F10	00000000	X124	E5	018222F0	X124	G1	8048DA22	X124	G2	00002004	X124	G3
8F20	C040C080	X124	G4	02FEFDCD	X124	G5	01A8492F	X124	J1	4198587D	X124	J2
8F30	FFFFFFF0	X124	J3	FFFFFFF0	X124	J4	00000000	X124	J5	00000000	X124	L1
8F40	C404800A	X902	C1	01158102	X900	J3	01315132	X902	Q3	10168002	X900	Q4
8F50	03D15012	X902	S6	F00F70F4	X902	S7	03D17002	X902	Q5	01115002	X902	S5
8F60	0FC9B112	X902	C3	08F4610C	X902	G2	00F4911E	X902	G3	E404801A	X902	J2
8F70	F5F17114	X900	G1	04F1810E	X900	L5	F52470F4	X900	L4	FD354006	X900	G2
8F80	00F4600C	X902	C2	10C5A102	X902	C6	F124FBF4	X900	L6	F4F4805E	X902	C5
8F90	01E9C002	X902	G6	01E8C002	X902	J6	00009051	X902	G5	F01191F4	X902	G4

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ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	REFERENCE MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	PAGE		
8FA0	0000A141	X902	L6	1012D102	X902	Q1	E004651A	X902	G1	0401D012	X902	N1
8FB0	F60540F4	X900	O6	04F4610C	X902	J3	000F00F4	X902	G1	02A98111	X902	C4
8FC0	0124C0F5	X902	L1	0001C10E	X902	L2	0001C11C	X902	L3	0504F0F5	X902	L4
8FD0	0105A002	X902	L5	6000A0D1	X902	N2	03D54B02	X902	Q2	000F00F4	X902	L4
8FE0	00000000	X900	S1	FFFFFFF	X900	S2	00000000	X900	S3	000F00F4	X900	Q3
8FF0	0003D0F5	X902	J4	00F1710C	X900	L3	000F00F4	X900	S3	F52441F4	X900	Q3
9000	00000000	X200	U1	04000000	X200	U2	0D005000	X200	G7	10060018	X200	Q6
9010	012410F6	X200	C1	C0163009	X200	C2	0000111C	X200	C5	08113109	X200	C6
9020	06141109	X200	C4	0056F101	X202	L6	C0552111	X202	L3	F835F016	X202	L4
9030	F0152009	X200	C3	000F10F4	X202	Q3	9012311F	X200	C7	A001400F	X200	G1
9040	03D14012	X200	G2	F0D24102	X200	Q3	FCC1C112	X200	G4	851D0109	X200	G6
9050	7404600A	X200	J1	00535101	X200	J3	FF1D0102	X200	J4	0FC96102	X200	L3
9060	03333011	X200	J2	0094511C	X200	L2	02A97111	X200	L4	010475F5	X200	L6
9070	03188009	X200	N1	0001011E	X200	N5	8001911C	X200	Q1	0404631E	X200	L5
9080	83098019	X200	N2	030A8109	X200	N3	030B7019	X200	N4	93F89005	X200	Q2
9090	93F99015	X200	Q3	93FA9105	X200	Q4	93EB0115	X200	Q5	0104A3F6	X202	C1
90A0	0401F002	X202	E3	0000A000	X202	E3	8109D1F5	X202	G2	002FA0F4	X202	E2
90B0	FC31C106	X202	C4	0111E112	X202	C6	1032B112	X202	C4	0000B030	X202	C5
90C0	91F8D005	X202	E4	D0002501	X202	J2	8004C03C	X202	E4	04134119	X200	G5
90D0	92E9D015	X202	E7	1018F11F	X202	E7	022AA6F5	X202	G3	R000C311	X202	G5
90E0	0000R000	X202	S2	2012R002	X202	U3	0000E0D0	X202	S2	01F1E106	X202	S1
90F0	0404RR0A	X202	C3	07D52032	X202	L5	00003030	X202	N2	98FAD115	X202	G4
9100	00000000	X207	U4	0C0D010A	X205	A1	012401F6	X205	A2	4010200E	X205	A3
9110	012A11F5	X205	Q2	0000110C	X205	Q5	00009110	X205	Q6	002F30F6	X205	Q3
9120	011A2019	X205	A4	01142102	X205	A5	0F1B2119	X205	A6	800230DA	X205	E0
9130	001231DC	X205	E1	1A111018	X205	Q4	0BEA4015	X205	E2	102971F4	X205	S1
9140	082951F5	X205	G6	0BFB41D5	X205	E3	040250D2	X205	F4	900F400F	X205	G4
9150	000230C7	X205	E5	900F400F	X205	G5	0003610C	X205	L1	7803510A	X205	G7
9160	010670D2	X205	L4	51116211	X205	L6	C0C97002	X205	L2	6181710F	X205	L7
9170	C00960D2	X205	L3	00006012	X205	L5	F1B1100F	X205	Q1	102A11F4	X205	S2
9180	88A0C1C1	X207	C1	B7A0A5A1	X207	C1	B6A09195	X207	C2	B5A08389	X207	C3
9190	B4A0C4CC	X207	C4	B3A0C2CA	X207	C5	B2A0D0D0	X207	C6	B1A0E0F0	X207	G0
91A0	B8B06161	X207	G1	R7R06868	X207	G2	B6B0C464	X207	G3	F5R072E2	X207	G4
91B0	B4B03331	X207	G5	R3R0B2B0	X207	G6	B2B03838	X207	L0	B1R03434	X207	L1
91C0	B8C01A1A	X207	L2	B7C01919	X207	L3	B6C09898	X207	L4	B5C05858	X207	L5
91D0	B4C0AC2C	X207	L6	B3C01C1C	X207	Q0	B2C00E0E	X207	Q1	B1C040D0	X207	Q2
91E0	B8D0R686	X207	Q3	B7D04646	X207	Q4	B6D02626	X207	Q5	B5D01616	X207	Q6
91F0	B4D02R0P	X207	U0	B3D00707	X207	U1	B2D08383	X207	U2	B1D05343	X207	U3
9200	000F00F4	X200	S6	000F00F4	X200	S6	000F00F4	X200	S6	000F00F4	X200	S6
9210	0R0D200A	X230	S5	0C04D00R	X230	C1	00131119	X230	C3	00142109	X230	C4
9220	C12410F6	X230	S6	000F00F4	X230	C1	00112119	X230	C5	001C4009	X230	C6
9230	0115410A	X230	E2	04043102	X234	Q4	E0E43116	X234	Q5	2000D0D0	X234	Q6
9240	000F4019	X230	C7	F007300A	X230	E1	202341F4	X230	F3	0034500C	X230	E4
9250	C8175019	X230	E5	9019510F	X230	F6	A01A511F	X230	E7	R01B600F	X230	G1
9260	01186019	X230	G2	02096109	X230	G3	030A6119	X230	G4	040B7009	X230	G5
9270	0030701F	X230	G6	201180F4	X230	G7	000F00F4	X230	G4	000F00F4	X230	G5
9280	0R0DA99A	X230	J1	302330F4	X232	L1	0115811A	X232	G4	011C9002	X232	G5
9290	FPDC8082	X232	G6	2000R100	X230	L3	2000C1D0	X230	Q3	000F00F4	X230	Q2
92A0	C5D8B115	X230	J2	05DA9015	X230	L2	05D9C115	X230	N2	05D79105	X230	Q2
92B0	35EB1000	X230	J4	30003000	X230	J6	35EA1000	X230	L4	2000B0D0	X230	J3

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ADDRESS	MICRO CODE	LOGIC ID	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	
		PAGE	PAGE									
92C0	35E91000	X230	N4	30003000	X230	N6	35F81000	X230	Q4	2000C0D0	X230	N3
92D0	00121109	X230	C2	3F1C9118	X234	S1	000F00F4			000F00F4		
92E0	000F00F4			000F00F4			000F00F4			000F00F4		
92F0	000F00F4			000F00F4			000F00F4			000F00F4		
9300	00000000	X232	Q3	000F00F4			000F00F4			000F00F4		
9310	0030101F	X232	C1	8030110C	X232	C2	94EB1115	X232	C3	93EA2005	X232	C4
9320	92E92015	X232	C5	91F82105	X232	C6	4016330F	X232	E1	20008800	X232	E3
9330	35152110	X232	E2	E002311A	X232	L2	360A41F4	X232	J2	011D411A	X232	L3
9340	200360F4	X232	J4	300F40F4	X232	G3	40DFA106	X232	J3	00055009	X232	L4
9350	04345011	X234	C1	03535111	X234	C2	012F9012	X234	N1	02526111	X234	C3
9360	CB387001	X234	C7	F0006001	X234	E6	E0006031	X234	C5	01516101	X234	C4
9370	0A5A7011	X234	G1	09597101	X234	G2	07577111	X234	G3	30008800	X234	G4
9380	C1028002	X234	J5	01148002	X234	J4	0D058011	X234	J0	20003030	X234	N3
9390	001D9109	X234	J2	00478111	X234	N2	30008050	X234	J3	3000A060	X234	S2
93A0	302FA0F4	X234	S3	20001010	X234	U3	300040D0	X232	G2	000F00F4		
93B0	00005B01	X234	J6	30009500	X234	J1	000F00F4			000F00F4		
93C0	FF042082	X232	00	8FF01041	X232	S0	41FF0820	X232	U0	220FF410	X232	Q1
93D0	1042FF08	X232	S1	08210FF4	X232	U1	041082FF	X232	Q2	F088410F	X232	S2
93E0	000F00F4			000F00F4			000F00F4			000F00F4		
93F0	000F00F4			000F00F4			000F00F4			000F00F4		
9400	94FA1000	Z038	E0	001C1049	Y262	C1	000B1115	Y262	E4	9800CFFC	Z038	E1
9410	E804810A	Y262	C2	F001110A	Y262	E2	0051010C	Y262	E3	600A80D4	Y262	E5
9420	0050201E	Y262	L5	C004810A	Y262	L6	10862112	Y265	N1	D404D70A	Y265	N2
9430	80R6D002	Y265	N5	DFDC3002	Y265	N4	A01521DF	Y265	L6	00A0400C	Y262	Q1
9440	901C401F	Y262	Q2	40180F00	Y262	Q4	E050F07C	Y263	E1	00A0600E	Y272	J2
9450	40008100	Y265	J6	0481411E	Y272	J1	08D86106	Y265	C1	E404810A	Y262	F1
9460	0050601C	Y272	J3	0081611E	Y272	L4	20DB80D6	Y265	C2	00A0700C	Y272	L5
9470	01187019	Y272	J5	A000F100	Y272	J6	70001010	Y265	E6	000F00F4		
9480	000F00F4			000F00F4			3D2500F6	Y262	C6	0050A01C	Y265	L1
9490	000F00F4			000F00F4			000F00F4			000F30F4		
94A0	000F00F4			80C9A116	Y265	L2	000F00F4			0016C1D9	Y265	L3
94B0	82D381D6	Y265	E3	2018710A	Y265	C3	3018710A	Y265	E4	0000C0D1	Y265	G4
94C0	FC048102	Y265	G5	400A0F00	Y265	J5	2016C11A	Y265	L4	40C93106	Y265	L5
94D0	08138109	Y265	N6	5C11D11A	Y265	S1	FBDC3082	Y265	N3	70051108	Y265	S2
94E0	000F00F4			60007000	Y263	S1	50001000	Y266	A1	000F00F4		
94F0	4000F160	Y263	E2	60056608	Y270	J1	50001000	Y263	E3	70000000	Y263	C3
9500	00000000	Y260	J3	01D00103	Y266	C4	80801112	Y266	C5	000F00F4		
9510	4006101A	Y266	C1	201D1109	Y266	C2	CC0D0018	Y266	C3	FC11200A	Y266	E5
9520	01112R03	Y266	E6	00058009	Y268	E2	04060F02	Y266	F7	011D3108	Y266	L2
9530	01316R03	Y266	J3	E0121119	Y266	G2	E611200A	Y266	L3	200E6119	Y266	N2
9540	0EAD3013	Y266	G1	301060F5	Y266	J1	202021F5	Y266	L1	228D3112	Y266	N1
9550	01D06013	Y266	Q1	01D05112	Y266	S1	8050E0DC	Y268	N4	120E700B	Y266	S2
9560	00523021	Y266	J2	34801113	Y266	Q2	5018900A	Y266	J4	6911200A	Y266	N3
9570	F322742A	Y268	C1	00007111	Y268	C2	018D2012	Y268	E1	6018900A	Y268	C3
9580	191B840A	Y268	E3	701890DA	Y268	E5	18FA8015	Y268	E4	000F00F4		
9590	70005000	Y268	S6	0000A001	Y268	G6	101D9119	Y268	L6	DFCDCE02	Y268	N1
95A0	0000A431	Y268	G1	80AFA002	Y268	J2	1000B551	Y268	G2	1000C011	Y268	L2
95B0	FA11B119	Y268	G3	DA12B119	Y268	G4	000F00F4			0122A002	Y268	G5
95C0	00085105	Y268	N3	0F18C419	Y268	L4	8018900A	Y268	N2	10DD9102	Y268	L5
95D0	0050E10C	Y268	U3	92E9D115	Y268	S1	A018900A	Y268	S3	00000302	Y268	S2

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ADDRESS	MICRO CODE	LOGIC ID		MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID		
		PAGE			PAGE		PAGE		PAGE		
95F0	9018900A	Y268	N5	91F8D015	Y268	N6	4000F010	Y268	U6	000F00F4	
95F0	000100FF	Y260	Q3	000F00F4			000F00F4			000F00F4	
96C0	CC0F00F4			000F00F4			000F00F4			400C8110	Y270 G7
9610	40182008	Y262	L4	A811110F	Y270	C2	9012480F	Y270	C3	A011801F	Y270 L2
9620	000F00F4			000F00F4			000F00F4			000F00F4	
9630	C209A119	Y270	G5	000F00F4			9011900F	Y270	U1	000F00F4	
9640	6000FB10	Y270	C5	80505R1F	Y270	U4	40124002	Y270	C4	000F00F4	
9650	6531FR06	Y270	C7	F404800A	Y270	S5	C931FR06	Y270	F7	C0C96002	Y270 U5
9660	9CC91717	Y270	F1	000F00F4			01093102	Y270	U0	000F00F4	
9670	0051701D	Y263	S2	4809710A	Y263	S3	08147119	Y263	S4	302530F6	Y263 S5
9680	400C8100	Y270	S6	91980011	Y270	L3	C0125006	Y270	C6	40125106	Y270 E6
9690	3FD19012	Y270	U2	FF114016	Y270	U3	400A911F	Y272	G5	4R085018	Y272 G6
96AC	70007010	Y270	N6	0050A10F	Y270	N4	04RCA002	Y270	N5	0050011F	Y270 G6
96R0	40RCA102	Y262	F6	0300R1D1	Y262	J2	10RCA112	Y262	J3	900AC01F	Y262 J4
96C0	08091009	Y262	L3	ED18C116	Y262	J5	80BC1002	Y262	N3	0009C809	Y262 L2
96D0	0C29D103	Y270	L5	0000DB01	Y270	L4	0000A311	Y270	N3	000F00F4	
96E0	000F00F4			000F00F4			000F00F4			000F00F4	
96F0	01183009	Y270	G4	600081A0	Y270	E5	0000F832	Y270	G3	20FC6002	Y270 C1
9700	C0C971A6	Y264	F1	40090F00	Y262	S1	000F00F4			01F89006	Y264 L3
9710	1018111A	Y272	C1	1411410A	Y272	L1	0401210A	Y272	G3	1411F00A	Y272 C2
9720	8PF89816	Y264	G3	09F83R16	Y264	C4	6CC9910F	Y272	G4	0718F106	Y264 E4
9730	8C111110A	Y272	F2	0718F106	Y264	C5	F5182B16	Y264	C3	7000F110	Y264 E5
9740	761820J6	Y264	G2	0E1831D6	Y264	C2	1405110A	Y272	L2	0081501D	Y272 N1
9750	08124119	Y272	Q1	F0D85102	Y272	N2	C0F85116	Y272	N3	A0F860D6	Y272 N4
9760	C00061D1	Y272	N5	F811700A	Y272	S5	1411700A	Y272	N6	4811700A	Y272 Q6
9770	02184109	Y272	S6	0405300A	Y272	E1	080040D1	Y264	G1	80C9A0D6	Y264 L1
9780	FC1821D6	Y264	U3	1C189106	Y264	Q3	16F8RRC6	Y264	U4	70009000	Y264 S4
9790	12F8A106	Y264	L4	7000A110	Y264	J4	0000RR11	Y264	Q4	6C18F1D6	Y264 G4
97A0	40C980J6	Y264	Q2	08000111	Y264	L2	E818F1D6	Y264	L5	7000F110	Y264 J5
97B0	7000F110	Y264	S5	7300F110	Y264	Q5	0918F1D6	Y264	U5	0F18F106	Y264 N5
97C0	00001003	Y274	C1	0000030A	Y274	E1	80585004	Y274	G1	0000080A	Y274 J1
97D0	80585004	Y274	L1	01000006	Y274	C2	03000005	Y274	F2	02000007	Y274 G2
97E0	90D4100A	Y274	J2	90E40008	Y274	L2	00001003	Y274	C3	80583C04	Y274 E3
97F0	100F110A	Y272	C3	4000F010	Y264	N7	7000F810	Y264	N6	50001000	Y264 S6
9800	98F50400	Z038	G0	0404114A	Y100	E1	000F00F4			A400CFFC	Z038 G1
9810	40001710	Y100	F3	0004200A	Y100	E4	901C100F	Y100	F2	0C1CA01A	Y100 G4
9820	0474201C	Y102	C1	9005211F	Y102	C2	00180F02	Y102	L7	800D404F	Y102 C3
9830	A010413F	Y102	C5	031D4109	Y102	E5	061D4109	Y102	G5	051D4109	Y102 J5
9840	40003550	Y102	C4	041D4109	Y102	G1	01B05002	Y102	G2	40105008	Y102 C7
9850	400D5802	Y102	G3	400D5812	Y102	L1	20AD5012	Y102	L0	4010A0F4	Y102 L2
9860	40002200	Y102	L6	F02061F5	Y102	L4	5000R010	Y102	N6	DFCD6E02	Y102 L5
9870	820R90D6	Y104	C2	08DR7006	Y104	C1	000F00F4			000F00F4	
9880	3018F00A	Y104	F6	01D02002	Y104	G6	5000C100	Y104	J3	601D2118	Y104 L3
9890	20DR9106	Y104	C3	2018E00A	Y104	G3	FC042002	Y104	C6	000080D1	Y104 F4
98A0	4F185018	Y102	L3	0009E109	Y100	G5	F7DC8802	Y104	J1	000F00F4	
98B0	40128198	Y104	J7	018CD082	Y106	C1	F404200A	Y104	L2	00R0D10C	Y106 J1
98C0	98CAC185	Y104	N1	4005F108	Y104	N3	E000C311	Y104	N2	FR0C2002	Y104 Q3
98D0	40002000	Y106	C2	0005F119	Y106	E2	0804D11A	Y106	J2	F084D01E	Y106 J3
98E0	70002000	Y104	S2	0069F001	Y106	G3	0070200E	Y100	G6	0070E01C	Y106 E3
98F0	0078F011	Y106	E4	A070F1DE	Y106	E5	AC09F108	Y106	F6	7000F101	Y106 G6

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ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE
9900	0251061C	Y108	C2	20D82006	Y108	C4	F001000A	Y108	C1	0051110C	Y108	C3
9910	F404900A	Y108	C6	08141119	Y108	G1	8009001F	Y108	A4	9013201F	Y108	G2
9920	80FC10D2	Y108	C5	0801210A	Y108	G3	0081211C	Y108	G4	A018300F	Y108	G5
9930	R009301F	Y108	G6	0408310F	Y108	L1	DFCB4102	Y108	L2	80284116	Y108	G4
9940	8081401F	Y108	L4	94CR3117	Y108	Q3	030A400F	Y108	L3	1FD45332	Y108	Q5
9950	R015910B	Y108	L6	2015910A	Y108	N6	B115910B	Y108	Q6	3015910A	Y108	S6
9960	000F00F4			000F00F4			000F00F4			000F00F4		
9970	8CD17113	Y110	C3	R171E11F	Y110	C5	04BC8102	Y110	Q5	C0CB7012	Y110	C4
9980	EC04710A	Y110	Q4	96D581D7	Y110	Q2	40002000	Y110	S6	50008300	Y110	Q3
9990	40002000	Y108	E6	80318006	Y110	G3	9011911F	Y110	C1	A876700F	Y110	C2
99A0	86008011	Y110	Q1	0485A002	Y110	G6	0285A002	Y110	J6	0685A002	Y110	L6
99B0	500CA330	Y110	G4	0043D00D	Y106	N2	000F00F4			000F00F4		
99C0	5000C150	Y106	N5	70002110	Y106	S5	70008000	Y106	N6	40006000	Y106	Q6
99D0	64D8D017	Y106	N3	1818C0DA	Y106	N4	0676D119	Y110	L2	0171E109	Y110	L3
99E0	R8R5D103	Y110	L1	000F00F4			94D19017	Y110	G2	C0D1E102	Y110	C6
99F0	0000529A	Y100	C3	000F00F4			000F00F4			000F00F4		
9A00	20AD6002	Y112	E1	701040F4	Y112	G1	602Q30F4	Y112	J1	228D4012	Y112	L1
9A10	34R03103	Y112	N1	11D05001	Y112	Q1	000F00F4			000F00F4		
9A20	3C22201R	Y112	C3	1C0DE01B	Y112	C4	00052009	Y112	C2	20042109	Y112	C1
9A30	C00F00F4			101D310A	Y112	J2	E611311A	Y112	J3	FEFC4002	Y112	J4
9A40	01114B03	Y112	C6	200E4119	Y112	L2	04040F02	Y112	C7	3DD05102	Y112	L3
9A50	R20E7403	Y112	N2	70002000	Y112	S4	6911400A	Y112	L4	000F00F4		
9A60	70004010	Y112	E2	1C04A01B	Y112	N4	001D7019	Y114	L5	70008E08	Y114	L7
9A70	6018502A	Y112	Q3	0084611F	Y114	L6	00006011	Y112	N3	000F00F4		
9A80	80AFA002	Y114	L2	FF1B843A	Y114	C1	00008001	Y114	N2	1B229551	Y114	C2
9A90	0A188019	Y114	C3	DA0A8019	Y114	E3	CA098019	Y114	J3	FA0B8019	Y114	C3
9AA0	0F1BA409	Y114	L3	191BA41A	Y112	N5	10DD6102	Y114	L4	9BFAC115	Y112	N6
9AB0	91E8R015	Y116	C5	93EAD115	Y116	G1	8084B00C	Y116	C4	R011R10F	Y116	C3
9AC0	F0008011	Y112	Q6	A013B11F	Y116	C2	7018501A	Y112	Q4	1000C301	Y112	N7
9AD0	F004D01A	Y116	L3	4000A100	Y116	L4	A018501A	Y116	G3	0000D302	Y116	G2
9AE0	000F00F4			FC11400A	Y112	C5	000F00F4			000F00F4		
9AF0	000F00F4			000F00F4			000F00F4			0484C01C	Y116	C1
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9B10	000F00F4			000F00F4			000F00F4			000F00F4		
9B20	728C3003	Y118	D1	000F00F4			AC09F108	Y118	C7	628C3003	Y118	B1
9B30	0C096019	Y118	C2	500R411F	Y118	C4	6000E010	Y112	E4	000F00F4		
9B40	0131AB02	Y112	G3	02B03102	Y112	E3	000F00F4			0404600A	Y118	C5
9B50	000F00F4			000F00F4			000F00F4			000F00F4		
9B60	R0R4210E	Y118	C6	400A301F	Y118	C3	000F00F4			000F00F4		
9B70	000F00F4			000F00F4			000F00F4			000F00F4		
9B80	70098014	Y114	Q2	080490DA	Y114	Q3	40006100	Y114	S2	000F00F4		
9B90	9018200A	Y114	Q4	6000F110	Y114	S4	000F00F4			000F00F4		
9BA0	00524021	Y112	G2	000F00F4			5018200A	Y112	G4	000F00F4		
9BB0	000F00F4			000F00F4			000F00F4			000F00F4		
9BC0	000F00F4			000F00F4			000F00F4			000F00F4		
9BD0	C0908402	Y102	Q0	00001003	Y102	Q1	74800004	Y102	Q2	A880030A	Y102	Q3
9BE0	00010006	Y102	Q4	00020009	Y102	Q5	00030007	Y102	Q6	P4840008	Y102	Q7
9BF0	D480100A	Y102	S0	8C80080A	Y102	S1	000F00F4			000F00F4		
9C00	9CF90000	Z038	J0	60DC1042	Y142	C1	000F00F4			A420CFF8	Z038	J1
9C10	R8F82106	Y142	C2	B818201A	Y142	E2	2004111A	Y142	C6	3D2500F6	Y142	G6

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9C20	0070110F	Y142	C5	0C092009	Y142	E4	000020D1	Y142	C3	300510F6	Y142	N6
9C30	8R13701A	Y154	N3	1613610A	Y154	S3	0913711A	Y154	Q3	1213611A	Y154	U3
9C40	000F00F4			000F00F4			000F00F4			000F00F4		
9C50	50009010	Y154	G4	01025102	Y154	J3	F3E25116	Y154	J4	400060D0	Y154	J5
9C60	50008110	Y154	J6	40007600	Y154	L1	3615801A	Y154	S4	8615801A	Y154	U4
9C70	50005100	Y154	L2	1215800A	Y154	N4	08FC38A2	Y154	N2	8215800A	Y154	Q4
9C80	8216C10A	Y154	Q5	0416C10A	Y154	S5	50009100	Y143	Q5	FFF89106	Y146	C2
9C90	0054911C	Y146	C5	80RC9002	Y146	E4	F00490DA	Y146	C3	1FCRA002	Y146	C6
9CA0	ED08A106	Y146	G0	EFDCR002	Y146	G2	10BCAB12	Y146	G1	0000B001	Y146	J2
9CB0	0054901E	Y146	G3	2C04111A	Y146	G4	0F54811D	Y146	C1	0015C109	Y146	N4
9CC0	0819C011	Y146	L5	0815C109	Y146	L6	3004111A	Y146	N6	50009110	Y143	N6
9CD0	000F00F4			000F00F4			5000D100	Y143	Q6	50006100	Y143	N5
9CE0	50007100	Y144	N3	ED09E11A	Y144	L3	0018E009	Y144	N2	0809F005	Y144	L4
9CF0	AF13F90A	Y144	N1	000F00F4			000F00F4			000F00F4		
9D00	000F00F4			0070010D	Y143	C1	98F80116	Y143	C2	000020D1	Y143	C3
9D10	7070101C	Y143	G1	0811F109	Y143	G2	7000A100	Y143	L6	40110F00	Y143	N4
9D20	2804201A	Y143	C4	40001110	Y143	C5	8014211F	Y143	G4	0808F106	Y143	G5
9D30	02DR3106	Y143	L1	2018401A	Y143	J1	3018401A	Y143	L2	901C11DF	Y143	N2
9D40	08111110A	Y143	Q1	B811D00A	Y143	J3	FD15411A	Y144	C1	01345802	Y144	C2
9D50	00535011	Y144	C3	00554111	Y144	C4	DC11609A	Y144	E4	7000A100	Y144	E6
9D60	01PC6102	Y144	C5	FENC5112	Y144	E5	F002811A	Y144	J1	440480FA	Y144	J4
9D70	0F53900D	Y144	L1	00537101	Y144	S4	01347B12	Y144	S3	08149019	Y144	N4
9D80	48131118	Y144	J5	5000C110	Y144	L6	FFF86116	Y144	J3	0052810C	Y144	J2
9D90	4C00F010	Y144	L2	4C04800A	Y144	N5	FBDCR002	Y144	Q1	0043A060	Y154	C1
9DA0	5000R100	Y154	C2	0000R181	Y154	E2	000F00F4			000F00F4		
9DB0	60004000	Y144	Q2	9013E11F	Y146	L3	0000C072	Y154	C3	70006010	Y154	E3
9DC0	40005010	Y154	Q2	0114C102	Y154	G1	13F4C116	Y154	G2	400050D0	Y154	G3
9DD0	70007010	Y143	J6	0054801C	Y146	L2	F404061A	Y146	L1	0913F0AA	Y146	N2
9DE0	4316R118	Y146	N3	0213F001	Y146	Q3	20CB30D6	Y143	G6	4316C008	Y146	L4
9DF0	000FBEFF	Y142	Q26	FF008CC	Y142	Q7	A002210F	Y143	G3	000F00F4		
9E00	01D05102	Y148	E1	20AD6002	Y148	G1	603060F4	Y148	J1	22A87102	Y148	L1
9E10	220E711R	Y148	N1	31D09101	Y148	Q1	F115C11A	Y152	C1	60001010	Y152	E1
9E20	0F56C10D	Y152	G1	60001010	Y152	J1	600DEE09	Y152	L1	42F06112	Y148	N3
9E30	0F57301D	Y152	G3	08161009	Y152	G4	02B05002	Y150	Q5	000F00F4		
9E40	600F4012	Y148	C1	80R04102	Y148	C2	0111500A	Y148	C3	011150D2	Y148	C6
9E50	11004111	Y148	E2	040F0F02	Y148	C7	701D5119	Y148	E2	0C0D600A	Y148	F3
9E60	FF11500A	Y148	E4	200061F5	Y148	J2	10BD6112	Y148	J3	F31150CA	Y148	J4
9E70	01358R02	Y148	L3	R531801A	Y148	L5	300E7009	Y148	L2	02R02112	Y148	N2
9E80	50517021	Y148	L4	F515811A	Y148	L6	5018911A	Y148	N4	20765009	Y148	L7
9E90	7000E430	Y148	Q2	70587000	Y148	Q5	1911900A	Y148	S2	70007000	Y148	N5
9EA0	7018A10A	Y150	E2	0000A411	Y150	E2	70006100	Y150	C3	1A07R009	Y150	E3
9EB0	0000R401	Y150	E4	1056R111	Y150	J3	1AC6C0C9	Y150	E5	0000C031	Y150	J4
9EC0	00C0C401	Y150	J1	70005000	Y150	J5	0135R012	Y150	J2	FF16100A	Y152	C2
9ED0	7000610R	Y150	N4	C811310A	Y150	Q4	08153009	Y152	G2	1100A0D1	Y150	C1
9EE0	FF18F00A	Y152	L2	8018F11A	Y152	N3	CC11E01A	Y152	N2	70007010	Y152	N4
9EF0	0406FC1A	Y152	L3	00R6F10E	Y152	L4	CC11F11A	Y152	L5	7000A100	Y152	L6
9F00	00000000	Y142	Q1	50090F00	Y142	J6	000F00F4			000F00F4		
9F10	1018C01A	Y142	L1	60009000	Y148	S4	0084111D	Y158	G2	080AA0F5	Y158	G3
9F20	80041003	Y142	S0	0000030A	Y142	S1	80100004	Y142	S2	8040080A	Y142	S3
9F30	01000006	Y142	S4	02000009	Y142	S5	03000007	Y142	S6	0000010R	Y142	S7

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9F40	8048100A	Y142	U0	01000009	Y142	U1	8070200A	Y142	U2	84980008	Y142	U3	
9F50	80AE5402	Y150	J6	00085415	Y150	N2	1938501B	Y150	N1	600ED0D8	Y150	N3	
9F60	70007700	Y156	C2	8811A10A	Y156	G2	048C6062	Y156	C1	AC09F108	Y158	J6	
9F70	B811701A	Y156	CC3	400B711F	Y158	C1	782AB1F4	Y156	E3	0404800A	Y158	C2	
9F80	BC098019	Y158	CC3	500A810F	Y158	C4	0484811E	Y158	C5	78189008	Y158	C6	
9F90	00099019	Y158	FF1	D00A910F	Y158	E2	F00B911F	Y158	E3	0084A00E	Y158	E4	
9FA0	7118A018	Y158	FF5	200AA11F	Y158	E6	00051109	Y158	G1	74086118	Y158	J5	
9FB0	000F00F4			000F00F4			000F00F4			5000C070	Y156	E6	
9FC0	CC0F00F4			2C11C10A	Y142	L3	60007011	Y142	L4	50006100	Y142	J5	
9FD0	000F00F4			000F00F4			000F00F4			000F00F4			
9FE0	6018E01A	Y148	Q3	60009020	Y148	Q4	10711015	Y148	S3	61FAD114	Y148	U3	
9FF0	000F00F4			000F00F4			000F00F4			000F00F4			
A000	A0FD6084	Z038	L0	D004100A	Y180	C1	000F00F4			0064CF00	Z038	L1	
A010	0050111C	Y180	C2	000F00F4			0405800A	Y180	S1	06095002	Y180	C3	
A020	1018201A	Y182	L4	48098008	Y182	L5	000F00F4			9005701F	Y182	C2	
A030	10DR3016	Y180	L1	FFD431D6	Y180	L2	81F440D6	Y180	L3	E404600A	Y180	N3	
A040	FE1441D2	Y180	J4	BF14410A	Y180	L4	D804600A	Y180	L5	40006000	Y180	J5	
A050	0050FB0E	Y180	C4	000F00F4			08DB5116	Y180	E1	201860DA	Y180	E2	
A060	0444211C	Y182	C1	1405611A	Y180	G3	40180F00	Y182	J3	48098008	Y180	G4	
A070	000F00F4			800D714F	Y182	C3	A01DA11F	Y182	C4	041DA119	Y182	E4	
A080	400D8802	Y182	C6	400D8812	Y182	G1	20AD8012	Y182	C7	403091F4	Y182	G2	
A090	00006202	Y182	J2	000F00F4			1005200A	Y182	L3	4F1BA058	Y182	G3	
A0A0	4020A0F4	Y182	G4	DFC09E02	Y182	J1	000F00F4			01808002	Y182	C5	
A0B0	0401B01A	Y180	S3	0081B10E	Y180	S4	A000F100	Y180	S5	000F00F4			
A0C0	000F00F4			000F00F4			000F00F4			000F00F4			
A0D0	00011003	Y182	UC	58810004	Y182	U1	0000010A	Y182	U2	00040009	Y182	U3	
A0E0	0000200A	Y182	U4	30800004	Y182	U5	1880010B	Y182	U6	000F00F4			
A0F0	40058008	Y180	A5	000F00F4			3E14600A	Y180	C5	000F00F4			
A100	000F00F4			000F00F4			000F00F4			000F00F4			
A110	000F00F4			000F00F4			000F00F4			000F00F4			
A120	000F00F4			000F00F4			000F00F4			000F00F4			
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A140	000F00F4			000F00F4			000F00F4			000F00F4			
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A160	000F00F4			000F00F4			000F00F4			000F00F4			
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A230	000F00F4			000F00F4			000F00F4			000F00F4			
A240	000F00F4			000F00F4			000F00F4			000F00F4			
A250	000F00F4			000F00F4			000F00F4			000F00F4			

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A260	000F00F4			000F00F4		000F00F4		000F00F4					
A270	000F00F4			000F00F4		000F00F4		000F00F4					
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A2A0	000F00F4			000F00F4		000F00F4		000F00F4					
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A3E0	000F00F4			000F00F4		000F00F4		000F00F4					
A3F0	000F00F4			000F00F4		000F00F4		000F00F4					
A400	A4F90400	Z038	N0	40005140	Y160	N1		000F00F4		A800CFFD Z038 N1			
A410	F001101A	Y160	R1	0051811C	Y160	R2		0809201A	Y160	S5 1509201A Y160 U5			
A420	0C70800E	Y160	Q5	40142008	Y160	T6		401811A8	Y160	T4 08087016 Y161 C1			
A430	82CR3106	Y161	E3	2018501A	Y161	C3		3018501A	Y161	E4 0801C0DA Y161 J2			
A440	A015911F	Y160	J4	011C6992	Y161	L4		450AD018	Y176	L6 001C700A Y160 N4			
A450	9013400F	Y160	J3	70007000	Y161	C5		B01C500F	Y160	J2 60159118 Y160 N2			
A460	00008001	Y161	L5	00008001	Y161	N5		60000010	Y161	Q5 50000010 Y161 S5			
A470	DC04800A	Y160	N5	20DB3006	Y161	C2		0C0F00F4			000F00F4		
A480	3D2500F6	Y162	C1	00090F01	Y162	E2		000F00F4			000F00F4		
A490	000F00F4			000F00F4				000F00F4			48147008	Y160	J5
A4A0	000F00F4			000F00F4				000F00F4			000F00F4		
A4B0	000F00F4			000F00F4				000F00F4			ED0AC116	Y160	R3
A4C0	70057118	Y161	J4	7FDC4012	Y161	L3		7B070F00	Y172	N5	A0142B0F	Y160	R4
A4D0	000F00F4			A418F108	Y176	L7		000F00F4			000F00F4		
A4E0	6186E01C	Y172	N1	1018E41A	Y172	N2		7000E011	Y166	S5	181AF039	Y172	N3
A4F0	R000C101	Y172	N4	FF22E042	Y172	Q5		000F00F4			000F00F4		
A500	00005101	Y164	G2	03180169	Y164	C1		43BCR112	Y164	F2	04098009	Y164	C2
A510	40A91012	Y164	G6	02D20006	Y164	G1		02081009	Y164	C5	01D21106	Y164	C4
A520	0C80201C	Y164	G6	03182109	Y164	L1		040A3009	Y164	L2	00R0301C	Y164	L4
A530	0481211F	Y164	L3	080A310A	Y164	L5		0081601E	Y164	L6	09F341A6	Y164	Q1
A540	091350AA	Y164	Q3	70007000	Y164	U3		FE1840DA	Y164	Q2	12F34106	Y164	S1
A550	F404810A	Y164	Q4	1213500A	Y164	S3		80A95112	Y164	G3	0481200E	Y164	G5
A560	000F00F4			8004610A	Y166	C6		201D6119	Y166	E1	80R07112	Y166	E2
A570	01117802	Y166	E5	FC11700A	Y166	E4		04040F02	Y166	E6	0C0D701A	Y166	F3

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A580	20AD9002	Y166	G1	502090F4	Y166	J1	3FD09112	Y166	L1	70009000	Y166	L7
A590	503070F4	Y166	G2	10BD9102	Y166	J2	E611700A	Y166	J3	E001A00A	Y166	L2
A5A0	3000A021	Y166	L3	048DA102	Y166	L4	201AA119	Y166	L5	800E8119	Y166	L6
A5R0	200A111F	Y164	C3	400C8000	Y164	S6	F2DC8112	Y164	Q5	E404801A	Y164	Q6
A5C0	0E31F136	Y174	G2	7631F116	Y174	E2	000F00F4			F531C056	Y174	E1
A5D0	7C003010	Y174	E4	70003010	Y174	G4	70006110	Y174	L4	6C310106	Y174	J4
A5E0	57061400	Y166	NO	2B0A1400	Y166	Q0	2B071500	Y166	S0	000F00F4		
A5F0	0000FF00	Y160	J1	000F00F4			70006000	Y174	G3	0731DB56	Y174	E3
A600	00000000	Y170	Q0	4004510A	Y168	C1	7011E10A	Y168	S4	B802C019	Y168	U4
A610	10BD1012	Y168	G3	E611200A	Y168	G4	3DD01112	Y168	L4	40B01012	Y168	L5
A620	11112R03	Y168	C6	201070F5	Y168	E3	04040F02	Y168	C7	9R11301A	Y168	J3
A630	191R340A	Y168	Q4	F003200A	Y168	J4	1BFA3115	Y168	Q5	016301DC	Y168	S3
A640	20AD2012	Y168	E2	200010F5	Y168	G2	22BD2112	Y168	J2	200EF119	Y168	L2
A650	3FD06412	Y168	N2	6011E10A	Y168	N4	001D5119	Y168	C2	0C0D701A	Y168	C3
A660	30517021	Y168	E4	320E502B	Y168	N3	5011E10A	Y168	E6	10003001	Y168	Q3
A670	01326R02	Y168	E5	FC31200A	Y168	C5	6822C030	Y172	C4	1802A1D9	Y170	L2
A680	DFCD8012	Y170	C5	A163A01C	Y170	L0	50003110	Y170	E5	DFCDE102	Y170	G5
A690	0000A101	Y170	J2	000F00F4			FF02B112	Y170	L4	40134118	Y160	N3
A6A0	5004411A	Y170	L6	F6E37116	Y170	L1	00009401	Y170	L3	DFC0C102	Y170	N3
A6R0	8011R40A	Y170	Q1	70001010	Y170	C6	1060EE0E	Y170	C2	1000A01	Y170	L5
A6C0	00AE800A	Y172	E5	FF18C41A	Y172	C1	70007010	Y170	N4	1000D551	Y172	C2
A6D0	FA187109	Y172	C3	DA097109	Y172	E3	J0007101	Y172	J3	FA0A7109	Y172	G3
A6E0	0000E011	Y170	C3	FF08E416	Y170	A4	71187E08	Y170	J5	90118R4A	Y170	C4
A6F0	0R260F26	Y170	S0	0D000000	Y170	U0	1011E10A	Y162	G2	02801102	Y168	L3
A700	00000000	Y160	U1	40008010	Y162	E1	000F00F4			000F00F4		
A710	6000F100	Y162	Q1	A002110F	Y174	C2	0070111C	Y174	C3	08122109	Y174	C4
A720	5000C110	Y174	E0	1C315556	Y174	L1	9011311F	Y174	C5	41138008	Y174	S6
A730	70007000	Y174	N6	DC04411A	Y174	Q5	43094108	Y176	G7	020520A9	Y174	C6
A740	09316R16	Y174	S3	041830DA	Y174	N5	480EE008	Y166	Q6	0215F119	Y174	Q6
A750	ER316116	Y174	L2	0F316136	Y174	N2	70003010	Y174	Q2	EC114006	Y174	S2
A760	04C24016	Y174	N4	70003010	Y174	Q4	70003010	Y174	Q3	70006030	Y174	N3
A770	1405711A	Y176	J1	0405711A	Y176	E1	1005711A	Y176	G1	0R098009	Y176	G2
A780	400A801F	Y176	G3	0C0B8109	Y176	G4	0404811A	Y176	G5	0084310E	Y176	G6
A790	A007910A	Y166	N2	0000C021	Y166	U4	1451A01C	Y166	N3	4018E018	Y166	N6
A7A0	191A801A	Y166	Q2	0802A419	Y166	N4	9002410F	Y166	Q5	A005911F	Y166	N5
A7B0	22AE8103	Y166	S2	6418B418	Y166	Q3	0502C11A	Y166	S3	1806A108	Y166	Q4
A7C0	300EC409	Y166	U2	600D0018	Y166	U5	101A9059	Y166	U3	4018E108	Y166	S4
A7D0	80101003	Y162	L1	802C0004	Y162	N1	0000030A	Y162	Q1	0000080A	Y162	S1
A7E0	802C0004	Y162	L3	01000006	Y162	N3	04000008	Y162	Q3	01000009	Y162	S3
A7F0	03000007	Y162	L5	0000100A	Y162	N5	802C0004	Y162	Q5	02152111	Y174	S5
A800	8F51400	Z038	QC	00001041	Y282	E1	081C2009	Y282	L3	F400CFFF	Z038	Q1
A810	FC04110A	Y282	E2	C004110A	Y282	G2	3D2500F6	Y282	E6	50001000	Y282	N6
A820	840C2012	Y282	L4	00R0210C	Y282	N4	6050111E	Y282	N5	0050361C	Y282	Q2
A830	0F50010D	Y282	L2	E004110A	Y282	S3	000F00F4			70006000	Y288	C1
A840	00A0401C	Y283	C1	901C410F	Y283	C2	40180F00	Y283	C3	2C18500A	Y283	G1
A850	70054008	Y283	G2	8003710A	Y283	J1	0405609A	Y283	L1	6013A10A	Y283	N3
A860	50051008	Y283	L6	FEDC5112	Y283	N2	000F00F4			000F00F4		
A870	08DR7016	Y285	C1	20DB80D6	Y285	C2	60000010	Y283	J2	000F00F4		
A880	82DR8106	Y285	E3	2003911A	Y285	C3	3003911A	Y285	E4	000090D1	Y285	G4
A890	FC041102	Y285	G5	000A0F01	Y285	J5	000F00F4			4000A000	Y285	C6

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A8A0	1413A01A	Y296	C1	1405A10A	Y296	C2	3018A11F	Y296	J1	0C09B009	Y296	J2
A8B0	400AB01F	Y296	J3	0B08B109	Y296	J4	0404B11A	Y296	J5	0484C00E	Y296	J6
A8C0	0060C10C	Y296	L1	0070C11C	Y296	L3	0484C01E	Y296	L2	010AD009	Y296	L4
A8D0	720R2108	Y296	L5	000F00F4			000F00F4			000F00F4		
A8E0	000F00F4			000F00F4			000F00F4			000F00F4		
A8F0	000F00F4			000F00F4			000F00F4			000F00F4		
A900	00000000	Y280	N1	0060010C	Y284	E4	08110119	Y284	E5	9012200F	Y284	E6
A910	0050114C	Y284	C1	02187009	Y284	C3	080A8009	Y284	E1	03091019	Y284	C2
A920	A002201F	Y284	E7	040A2102	Y284	G1	01003802	Y284	G2	01003032	Y284	J4
A930	03084002	Y284	G3	FD183002	Y284	J5	10292112	Y284	J3	4801500A	Y284	G6
A940	0060311E	Y284	G5	018C4002	Y284	G4	0002411C	Y284	L5	002460F5	Y284	L6
A950	0051501C	Y284	G7	0FC95102	Y284	L1	02A95111	Y284	L2	0051600E	Y284	L3
A960	010441F5	Y284	L4	A01261AF	Y284	Q1	71028013	Y284	Q2	73D28113	Y284	S2
A970	B050C01E	Y284	C4	000F00F4			000F00F4			000F00F4		
A980	900R810F	Y284	E2	6509D0D6	Y284	Q3	0050001E	Y284	E3	03F2E116	Y284	S3
A990	B373901F	Y286	C1	A275910F	Y286	C2	B8168B0B	Y286	C3	0575B11F	Y286	C5
A9A0	0070R01E	Y286	G3	01D2A116	Y286	G5	0309A009	Y286	G2	08R6C1D1	Y286	L1
A9B0	0373911F	Y286	C4	0518A011	Y286	G4	0518A109	Y286	G1	0016R109	Y286	C6
A9C0	CC04F1DA	Y286	L4	03149009	Y284	C5	10B6C112	Y286	L2	02D2C006	Y286	L3
A9D0	0000DB11	Y284	Q4	0000E001	Y284	Q6	000F00F4			000F00F4		
A9E0	9013100F	Y284	S7	0000E001	Y284	S5	FED2E002	Y284	S6	C909E0D6	Y284	S4
A9F0	800J0000	Y280	G1	000F00F4			20B6F112	Y286	L5	40001100	Y286	L6
AA00	00000000	Y280	Q1	2006018A	Y290	C1	201D3109	Y290	C2	40005100	Y290	A3
AA10	000F00F4			FC11601A	Y290	E4	011D111B	Y290	L2	F611601A	Y290	L3
AA20	02AD5013	Y290	G1	001060F5	Y290	J1	200011F5	Y290	L1	22RD4112	Y290	N1
AA30	31D04103	Y290	Q1	01D05112	Y290	S1	CC0D400B	Y290	C3	4000A000	Y292	S6
AA40	01D04013	Y290	C4	80R01012	Y290	C5	04B01013	Y290	Q2	200E5109	Y290	N2
AA50	01316803	Y290	J3	E0121019	Y290	G2	6911601A	Y290	N3	120E700B	Y290	S2
AA60	30525021	Y290	J2	01116613	Y290	E5	40A33112	Y290	J4	04060F02	Y290	E6
AA70	F322742A	Y292	C1	00007111	Y292	C2	1005E009	Y292	E2	20A33112	Y292	C3
AA80	00008432	Y292	G1	80AE8002	Y292	J2	1000A551	Y292	G2	1000R011	Y292	L2
AA90	0000D002	Y292	E5	0000E313	Y292	U4	01B29112	Y292	U2	98F29015	Y292	U3
AAA0	FA11A119	Y292	G3	DA12A119	Y292	G4	DFCDBE02	Y292	N1	01228002	Y292	G5
AAB0	A008D105	Y292	N3	0F18B419	Y292	L4	08A3B002	Y292	N2	10DDF112	Y292	L5
AAC0	CON2F002	Y292	S1	03D291D2	Y292	U1	04A3C112	Y292	N5	91E9D115	Y292	N6
AAD0	10A33112	Y292	E6	00008001	Y292	G6	8050C1DC	Y292	N4	80D2C006	Y292	Q1
AAE0	191RE40A	Y292	E3	40001100	Y292	U5	18FA9005	Y292	F4	02A33112	Y292	S5
AAF0	02R2F012	Y292	S2	40D2C016	Y292	S3	000F00F4			101DA109	Y292	L6
AB00	00000000	Y280	S1	40090F00	Y282	J2	000F00F4			1005101A	Y282	U3
AB10	1003011A	Y282	U2	1013110A	Y282	U4	4000A100	Y282	U5	000F00F4		
AB20	00094105	Y288	G1	02D890D6	Y288	L1	0084211E	Y296	L6	08C33106	Y296	N1
AB30	1418311A	Y296	N3	03184009	Y296	Q3	000030D1	Y296	N2	1005400A	Y296	N4
AB40	AC09F108	Y296	N5	000F00F4			76098106	Y288	G2	0F0961D6	Y288	C2
AB50	000F00F4			40005100	Y288	N7	70005B10	Y288	N6	40003010	Y288	S6
AB60	03D82046	Y288	F1	070951D6	Y288	C5	F5097806	Y288	C3	70005110	Y288	E5
AB70	09E96816	Y288	C4	01E980D6	Y288	L3	07095106	Y288	F4	0000B002	Y288	Q4
AB80	12E991D6	Y288	L4	70009110	Y288	J4	8BE98816	Y288	G3	6C0951D6	Y288	G4
AB90	01D9A0D6	Y288	Q2	00097015	Y288	L2	EB0951D6	Y288	L5	70005110	Y288	J5
ABA0	1309A1D6	Y288	U3	1C097116	Y288	Q3	16E98B06	Y288	U4	7000R000	Y288	S4
ABB0	70005110	Y288	S5	70005110	Y288	Q5	D90951D6	Y288	U5	0F095106	Y288	N5

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ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE
ABCO	00001003	Y298	C1	0000080A	Y298	E1	80703004	Y298	G1	04000006	Y298	J1
ABDO	01000009	Y298	L1	02000007	Y298	N1	804C100A	Y298	Q1	000F00F4		
ARFO	80540108	Y298	G3	80541208	Y298	J3	10580000	Y298	L3	00001003	Y298	N3
ARFO	80704004	Y298	Q3	000F00F4			000F00F4			000F00F4		
AC00	ACFA2000	Z038	S0	40001040	Y122	E1	081C1109	Y122	G3	000148FE	Z038	S1
AC10	7404601A	Y122	E2	0F50010D	Y122	G2	900C1112	Y122	G4	1004601A	Y122	G5
AC20	00A0201C	Y122	J1	901C210F	Y122	J2	A004211F	Y122	J3	B016300F	Y122	J4
AC30	40180F00	Y122	J5	000F00F4			F006311A	Y123	C1	8056400C	Y123	E1
AC40	92D84107	Y123	E2	400080D0	Y123	E4	0FD84316	Y123	E3	F80AB10A	Y123	G4
AC50	01185102	Y124	E3	401071F4	Y124	E5	20AD50D2	Y124	E4	00185009	Y124	E2
AC60	8000A10F	Y124	C2	0474600C	Y124	C1	01805112	Y124	E1	50090F00	Y124	C6
AC70	000085F5	Y124	J1	00006211	Y124	J3	0F1BA039	Y124	E6	1411907A	Y124	N3
AC80	DFCD7F12	Y124	J2	000F00F4			DFCD7012	Y124	L2	000F00F4		
AC90	70008000	Y124	N6	40007010	Y124	Q4	2C04601A	Y122	Q1	A01D615F	Y124	C4
ACA0	1012700A	Y124	J0	0474A10C	Y124	L6	08059119	Y124	C3	000F00F4		
ACB0	FC0AB10A	Y123	G5	F40AB10A	Y123	E5	004AD0AC	Y123	J1	0056F00C	Y123	J4
ACC0	00006011	Y122	L1	0050C10C	Y122	N1	6000D100	Y122	N2	50005100	Y126	S1
ACD0	0811D109	Y123	J2	A011D11F	Y123	L2	9012B11F	Y123	J3	B012B11F	Y123	L3
ACE0	010AE019	Y123	J5	020BE109	Y123	J6	0056601E	Y123	L6	000F00F4		
ACF0	000F00F4			00040008	Y123	Q1	00F512EB	Y123	Q2	12903620	Y123	Q3
AD00	00000000	Y120	S1	08080106	Y126	C1	200B10D6	Y126	C2	1411300A	Y126	C5
AD10	02DB11D6	Y126	E3	2012011A	Y126	C3	3012011A	Y126	E4	A00020D0	Y126	G4
AD20	FC043012	Y126	G5	00002101	Y126	J4	400A0F00	Y126	J5	40006010	Y126	L5
AD30	70008000	Y126	C6	6411900A	Y126	G6	005A311C	Y126	N1	481D6108	Y126	N2
AD40	80DB4016	Y128	C1	983141DA	Y128	C2	7000C110	Y128	C3	70007110	Y128	E3
AD50	0050610C	Y128	E1	0050601C	Y128	G1	00B0660C	Y128	J1	0050710E	Y128	L1
AD60	2C04411A	Y128	G4	08096109	Y128	G2	000B6119	Y128	J3	000A7009	Y128	J4
AD70	04RC7012	Y128	J5	2016511A	Y128	J6	3404411A	Y128	L2	7804411A	Y128	U1
AD80	0050818C	Y128	S1	20DB9102	Y128	U3	0CFBB001	Y128	S2	D8DC8012	Y128	U2
AD90	0401A00A	Y134	C1	6000A100	Y132	N1	6BBC0110	Y128	U4	0060600E	Y132	L3
ADA0	7005D008	Y134	C2	000F00F4			000F00F4			000F00F4		
ADB0	20DBB012	Y130	C3	600001D0	Y130	C4	000F00F4			000F00F4		
ADC0	40003100	Y123	A1	0474C10C	Y124	S1	4000A100	Y124	S2	000F00F4		
ADD0	FC18E00A	Y134	N1	0048E001	Y134	N3	000F00F4	Y134	Q4	0118E102	Y134	Q3
ADE0	012ADR12	Y134	N2	40006010	Y134	Q5	0000E0D1	Y134	Q4	40002000	Y126	Q1
ADF0	8F000000	Y122	U1	00000000	Y122	U2	000F00F4			000F00F4		
AE00	000F00F4			000F00F4			01F63106	Y130	C5	20CB2006	Y130	E1
AE10	000011D1	Y130	E3	060BB001	Y130	J3	FE0A801A	Y130	E4	80ABR002	Y130	G4
AE20	80CR10D6	Y130	E2	0F51210D	Y132	J3	0809D019	Y132	J4	40006010	Y132	J6
AF30	068R3111	Y130	L2	8FCB50D2	Y130	Q2	40CB30D6	Y130	L1	F911400A	Y130	L3
AF40	06364011	Y130	L4	01114112	Y130	L5	0608B001	Y130	N1	00564801	Y130	L6
AF50	R011511F	Y130	S0	800A510F	Y130	Q3	4008D00A	Y130	Q4	A1F2610F	Y130	S1
AF60	028A811F	Y132	C5	40CA8106	Y132	G3	80126116	Y130	S2	7FD17802	Y132	C1
AF70	010A6011	Y132	G2	40CA7116	Y132	C3	A192701F	Y132	C2	020A60D9	Y132	C4
AF80	FF0A801A	Y132	G5	0050900E	Y132	J1	000080D1	Y132	G4	80EA6012	Y132	C6
AF90	6804261A	Y132	J2	50009110	Y132	L2	FE0AA116	Y132	N3	01099102	Y132	N2
AFA0	7FCAB1A2	Y132	Q1	FE12E11A	Y132	N5	0050961C	Y132	L1	C411A0DA	Y132	N4
AFB0	50005110	Y130	G5	0000C801	Y132	Q3	F30AB016	Y132	Q2	EF0AB016	Y132	S2
AFC0	0050D10F	Y132	Q4	50006100	Y132	S5	A012E11F	Y132	Q5	FF12F00A	Y132	U5
AFD0	50007000	Y130	Q5	0050211E	Y132	J5	ED09D116	Y132	S3	1411CB1A	Y132	S4

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AFF0	CC0F00F4	Y132	U6		000F00F4				000F00F4			
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AF00	000F00F4				000F00F4				000F00F4			
AF10	80C01003	Y138	C1		00000ROA	Y138	E1		80040004	Y138	J1	
AF20	0138F309	Y138	L1		0138F207	Y138	N1		807C100A	Y138	Q1	
AF30	80540405	Y138	E2		01380309	Y138	G2		000020CA	Y138	J2	
AF40	80040004	Y138	N2		000D010A	Y138	Q2		0000400E	Y138	C3	
AF50	1200330C	Y138	G3		1200320C	Y138	J3		0200000C	Y138	L3	
AF60	01D0C000	Y138	Q3		8280000C	Y138	S3		01380206	Y138	C4	
AF70	01940000	Y138	G4		80EC1003	Y138	J4		8004CC0A	Y138	L4	
AF80	FEEA8016	Y128	E5		005081DC	Y128	E6		A002E01F	Y128	N1	
AF90	F3029106	Y128	M3		EF029106	Y128	P3		0000EB01	Y128	N4	
AFA0	0C09A019	Y134	E2		400AA10F	Y134	E3		0608C109	Y134	E4	
AFO0	1405B01A	Y134	J1		0050810C	Y134	J2		0218B119	Y134	J3	
AFCO	0481A00E	Y134	J5		0105B01A	Y134	L1		0081A11E	Y134	E5	
AFDO	0050D01C	Y134	C4		A018B11F	Y134	C5		A012D11F	Y128	C5	
AFF0	70129118	Y128	M5		7FC290A2	Y128	N2		A012911F	Y128	P5	
AFFO	1405F01A	Y134	G1		0050F10C	Y134	G2		FF098102	Y134	G3	
RO00	80FA007F	Z038	C2		68051049	Y300	C1		000F00F4			
RO10	0C16F01F	Y300	C3		DF50110D	Y300	G2		4C161118	Y300	G3	
RO20	000F00F4				F018C0DF	Y302	S5		R006301F	Y302	G5	
RO30	520R018	Y307	A2		1013800F	Y302	G6		40008100	Y304	C2	
RO40	0071600C	Y300	Q1		480FR018	Y300	L4		50002510	Y304	N4	
RO50	20090F03	Y304	L2		9001210F	Y302	G1		A015A00F	Y302	S1	
RO60	483F7108	Y300	Q2		000F00F4				000F00F4			
RO70	50005600	Y306	C1		E0005883	Y302	C5		60007013	Y302	C1	
RO80	A3E0R1DF	Y302	J4		516F421C	Y300	L5		018680D2	Y302	J5	
RO90	40269R02	Y302	N3		40069008	Y302	N2		0F12510F	Y302	N4	
ROA0	02C9C101	Y302	S3		7002R009	Y304	Q4		000F00F4			
ROB0	EE0A00F6	Y307	N1		000F00F4				800FR11F	Y304	C4	
ROC0	40003700	Y302	S6		0000R112	Y302	Q6		45E92014	Y302	S4	
ROD0	50005010	Y307	N2		A007R11F	Y304	J4		40004013	Y300	L3	
ROE0	2018D10F	Y300	L2		C102E003	Y300	L1		000F00F4			
ROF0	0FC93112	Y300	G5		9002E00F	Y300	C5		000F00F4			
R100	000F00F4				000F00F4				000F00F4			
R110	F086101F	Y307	A4		561C1108	Y307	E2		50002700	Y307	F3	
R120	00003062	Y307	E4		4010F018	Y304	N5		F011A01F	Y307	C3	
R130	FC0R701F	Y307	J1		0002E602	Y307	E5		5018E00F	Y307	J4	
R140	0010401A	Y307	S2		A003F108	Y307	S3		50068008	Y306	C5	
R150	A02DC07F	Y306	C3		2009310F	Y307	J3		0010500A	Y306	C2	
R160	28066R02	Y306	Q2		20007001	Y306	G7		003051F7	Y306	G3	
R170	DFC08062	Y306	L1		1405501A	Y307	J2		50006110	Y306	E5	
R180	R118E1B	Y306	L2		C0R08102	Y306	N5		40008110	Y306	N6	
R190	10069R02	Y306	J3		0806911A	Y306	J5		5F0A9018	Y306	J4	
R1A0	40003000	Y306	L6		50001110	Y307	C4		000F00F4			
R1B0	28066R02	Y306	C6		0406100A	Y307	A3		20AD4112	Y306	C7	
R1C0	01R04102	Y306	C4		50007100	Y306	E4		8009C11F	Y306	J1	
R1D0	000F00F4				000F00F4				000F00F4			
R1E0	501040F4	Y307	S1		A018C10F	Y306	G6		E82A50F5	Y307	E6	
R1F0	000F00F4				000F00F4				000F00F4			

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		PAGE		PAGE		PAGE		PAGE		PAGE		
B200	0C0C142F	Y308	C0	5C737979	Y308	C1	79797979	Y308	C2	0004080C	Y308	C3
B210	10141820	Y308	F4	24282C30	Y308	C5	34303830	Y308	C6	3C304030	Y308	C7
B220	44304830	Y308	E0	4C305030	Y308	E1	5430585C	Y308	E2	24302024	Y308	E3
B230	58606458	Y308	F4	6864586C	Y308	E5	64587064	Y308	E6	58746458	Y308	E7
B240	7864587C	Y308	GC	64588064	Y308	G1	58846458	Y308	G2	8864588C	Y308	G3
B250	64589064	Y308	G4	58946458	Y308	G5	98645820	Y308	G6	2458A4A8	Y308	G7
B260	ACB0B4B8	Y308	J0	8CC0C4C8	Y308	J1	CCDD4D8	Y308	J2	DCE09CA0	Y308	J3
B270	E4E82024	Y308	J4	58F01458	Y308	J5	20ECFFFF	Y308	J6	000F00F4		
B280	000F00F4			000F00F4			000F00F4			000F00F4		
B290	000F00F4			000F00F4			000F00F4			000F00F4		
B2A0	000F00F4			000F00F4			000F00F4			000F00F4		
B2B0	000F00F4			000F00F4			000F00F4			000F00F4		
B2C0	000F00F4			000F00F4			000F00F4			000F00F4		
B2D0	000F00F4			000F00F4			000F00F4			000F00F4		
B2E0	000F00F4			000F00F4			000F00F4			000F00F4		
B2F0	000F00F4			000F00F4			000F00F4			000F00F4		
B300	902C0200	Y310	C1	183F0000	Y310	C2	402C0500	Y310	C3	1C808000	Y310	C4
B310	1C404000	Y310	C5	1C080800	Y310	C6	1C200000	Y310	C7	1C080000	Y310	E1
B320	00480000	Y310	E2	402C0310	Y310	E3	1C800000	Y310	E4	402C0500	Y310	E5
B330	1C200000	Y310	E6	402C0580	Y310	E7	402C0540	Y310	G1	402C0520	Y310	G2
B340	402C0510	Y310	G3	402C0508	Y310	G4	402C0504	Y310	G5	402C0502	Y310	G6
B350	402C0501	Y310	G7	402C05FF	Y310	J1	402C0A02	Y310	J2	402C0340	Y310	J3
B360	402C0100	Y310	J4	1C400000	Y310	J5	402C0200	Y310	J6	402C0400	Y310	J7
B370	402C0500	Y310	L1	402C0600	Y310	L2	402C0700	Y310	L3	402C0800	Y310	L4
B380	402C0900	Y310	L5	402C0A00	Y310	L6	402C0800	Y310	L7	402C0C00	Y310	N1
B390	402C0D00	Y310	N2	402C0E00	Y310	N3	402C0F00	Y310	N4	402C0F00	Y310	N5
B3A0	18FF0000	Y310	N6	402C0F80	Y310	N7	18808000	Y310	Q1	402C0F40	Y310	Q2
B3B0	18040000	Y310	Q3	402C0F20	Y310	Q4	18202000	Y310	Q5	402C0F10	Y310	Q6
B3C0	18101000	Y310	Q7	402C0F08	Y310	S1	18080800	Y310	S2	402C0F04	Y310	S3
B3D0	18040400	Y310	S4	402C0F02	Y310	S5	18020200	Y310	S6	402C0F01	Y310	S7
B3E0	18010100	Y310	U1	402C0FFF	Y310	U2	18FFFF00	Y310	U3	00A40000	Y310	U4
B3F0	402C0E88	Y310	U5	000F00F4			000F00F4			000F00F4		
B400	B4FA007F	Z038	E2	68051049	Y320	C1	000F00F4			B80041FF	Z038	E3
B410	0C16F01F	Y320	C3	DF50110D	Y320	G2	4C16111F	Y320	G3	1809F009	Y320	G4
B420	483C7108	Y320	Q2	F018C0DF	Y322	S5	B006301F	Y322	G5	B01D700F	Y324	L4
B430	520R8018	Y327	A2	1013800F	Y322	G6	4000B100	Y324	C2	9002E00F	Y320	G6
B440	000F00F4			180F8019	Y320	L4	50002510	Y324	N4	48016418	Y320	L6
B450	20090F03	Y324	L2	9001210F	Y322	G1	A015A00F	Y322	S1	070D901A	Y322	N1
B460	08A5F1A2	Y322	A3	0071200C	Y320	Q1	1000E103	Y322	C3	0051200C	Y320	S1
B470	50005600	Y326	C1	000F00F4			6000E193	Y322	A1	000F00F4		
B480	A3F0810F	Y322	J4	516F421C	Y320	L5	018680D2	Y322	J5	01012103	Y322	G3
B490	40269R02	Y322	N3	40069008	Y322	N2	0F12510F	Y322	N4	A1E0A11F	Y324	G5
B4A0	02C9C101	Y322	S3	7002B009	Y324	Q4	000F00F4			01078102	Y324	G6
B4B0	FF0A00F6	Y327	N1	000F00F4			800FB11F	Y324	C4	50008013	Y324	C5
B4C0	40003700	Y322	S6	0000B112	Y322	Q6	45E92014	Y322	S4	10008013	Y322	A5
B4D0	50005010	Y327	N2	A007B11F	Y324	J4	40004013	Y320	L3	7011911F	Y324	G4
B4E0	2018N10F	Y320	L2	C102E003	Y320	L1	4000F110	Y322	C4	40006400	Y322	A2
B4F0	0FC93112	Y320	G5	9002E00F	Y320	C5	EC0FC11A	Y322	A4	E0005883	Y322	C5
B500	18202000	Y330	U2	402C0508	Y330	U3	402C0700	Y330	U4	18FF0000	Y330	U5
B510	F086101F	Y327	A4	561C1108	Y327	E2	50002700	Y327	E3	412A80F4	Y327	C5

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R520	00003062	Y327	F4	4000E010	Y324	N5	F011A01F	Y327	C3	06F55012	Y327	L2
R530	F00R701F	Y327	J1	0002F602	Y327	E5	5018E00F	Y327	J4	402C0704	Y330	U6
R540	F0004012	Y327	S2	A000F100	Y327	S3	5006R008	Y326	C5	50066008	Y326	G1
R550	A02D007F	Y326	C3	2009310F	Y327	J3	0010500A	Y326	C2	0F12R11F	Y326	G4
R560	2PC66R02	Y326	G2	18FF0400	Y330	U7	003051F7	Y326	G3	402C0900	Y328	S5
R570	D0C08052	Y326	L1	1405501A	Y327	J2	402C0B02	Y328	S6	18020200	Y328	S7
R580	B11R8F1R	Y326	L2	00008102	Y326	N5	4000B110	Y326	N6	7FDCA002	Y326	L5
R590	10069R02	Y326	J3	0806911A	Y326	J5	5F0A9018	Y326	J4	0086C01F	Y326	J6
R5A0	40005110	Y326	L6	50001110	Y327	C4	1804J000	Y328	U0	402C0510	Y328	U1
R5B0	2PC66R02	Y326	C6	0406100A	Y327	A3	20AD4112	Y326	C7	0020F0F7	Y326	G5
R5C0	01R04102	Y326	C4	20007001	Y326	G7	R009C11F	Y326	J1	0700900A	Y326	J2
R5D0	18FFFF00	Y328	U2	402C0R10	Y328	U3	18040400	Y328	U4	402C060F	Y328	U5
R5E0	501C40F4	Y327	S1	A018C10F	Y326	G6	E82A50F5	Y327	F6	417C0A03	Y328	U6
R5F0	000F00F4			000F00F4			000F00F4			000F00F4		
R600	0C0C428R	Y328	C0	R9EFFFFF	Y328	C1	EFEEEEFF	Y328	C2	0004R430	Y328	C3
R610	3488C07C	Y328	C4	R8C07CC4	Y328	C5	C80CCCBC	Y328	C6	C0CC64D0	Y328	C7
R620	10R8C080	Y328	F0	C4C814C0	Y328	E1	8418C088	Y328	F2	1CC08C20	Y328	E3
R630	C09024C0	Y328	F4	9428C098	Y328	E5	2CC05C08	Y328	F6	R0C07CC4	Y328	F7
R640	00F00000	Y328	G0	B43088R0	Y328	G1	547C08DC	Y328	G2	7CC4E0A8	Y328	G3
R650	AC58CCF4	Y328	G4	DCCC04E8	Y328	G5	D8C4E05C	Y328	G6	DC8060DC	Y328	G7
R660	R464D0C8	Y328	J0	68DC8C6C	Y328	J1	DC9070DC	Y328	J2	9474DC98	Y328	J3
R670	78DC9CC4	Y328	J4	E054DC7C	Y328	J5	E4E8C4E8	Y328	J6	DC7CE0DC	Y328	J7
R680	58C4F80C	Y328	L0	DCCC04E8	Y328	L1	04R4F000	Y328	L2	04R43034	Y328	L3
R690	8838A4F8	Y328	L4	A43CA0F8	Y328	L5	A040F88C	Y328	L6	44F89048	Y328	L7
R6A0	F8944CF8	Y328	N0	9850F89C	Y328	N1	3CA0F8A0	Y328	N2	FCF8A43C	Y328	N3
R6B0	A0F8A008	Y328	N4	F8A404R4	Y328	N5	F0000484	Y328	N6	3088R0A8	Y328	N7
R6C0	ACD97CC4	Y328	Q0	7CD40004	Y328	Q1	00080C04	Y328	Q2	0C3C6404	Y328	Q3
R6D0	646C3C78	Y328	Q4	047CA8AC	Y328	Q5	D0086C74	Y328	Q6	047C08AC	Y328	Q7
R6E0	D0086C7C	Y328	S0	047CD8AC	Y328	S1	D0E0B434	Y328	S2	7C04F0F4	Y328	S3
R6F0	000F00F4			000F00F4			J00F00F4			000F00F4		
R700	402C0310	Y330	A1	402C0A03	Y330	A2	402C0600	Y330	A3	402C06FF	Y330	A4
R710	402C0680	Y330	A6	402C0640	Y330	A6	402C0620	Y330	A7	402C0610	Y330	C1
R720	402C0678	Y330	C2	402C0604	Y330	C3	402C0602	Y330	C4	402C0601	Y330	C5
R730	402C0F20	Y330	E6	402C0D20	Y330	C7	402C0800	Y330	E1	402C081F	Y330	E2
R740	402C0810	Y330	E3	402C0808	Y330	E4	402C0804	Y330	F5	402C0802	Y330	F6
R750	402C0801	Y330	E7	402C0900	Y330	G1	402C09FF	Y330	G2	402C0980	Y330	G3
R760	402C0940	Y330	G4	402C0920	Y330	G5	402C0910	Y330	G6	402C0908	Y330	G7
R770	402C0904	Y330	J1	402C0902	Y330	J2	402C0901	Y330	J3	18FF0000	Y330	J4
R780	18FF8000	Y330	J5	18FF4000	Y330	J6	18FF2000	Y330	J7	18FF1000	Y330	L1
R790	18FFC800	Y330	L2	18FF0400	Y330	L3	18FF0200	Y330	L4	18FF0100	Y330	L5
R7A0	181F1F00	Y330	L6	181F0000	Y330	L7	402C0406	Y330	N1	84001EFF	Y330	N2
R7B0	402C0472	Y330	N3	187F0000	Y330	N4	402C0700	Y330	N5	402C0710	Y330	N6
R7C0	402C0502	Y330	N7	402C0508	Y330	Q1	18100000	Y330	Q2	18FFFF00	Y330	Q3
R7D0	18101000	Y330	Q4	412C0720	Y330	Q5	402C0700	Y330	Q6	402C0510	Y330	Q7
R7E0	18020000	Y330	S1	402C0702	Y330	S2	18020000	Y330	S3	402C0810	Y330	S4
R7F0	00480000	Y330	S5	00A40000	Y330	S6	402C0504	Y330	S7	402C0A04	Y330	U1
R800	R8FA007F	Z038	G2	68051049	Y340	C1	000F00F4			RC0041FF	Z038	G3
R810	0C16F01F	Y340	C3	DF50110D	Y340	G2	4C161118	Y340	C3	4809F008	Y340	G4
R820	000F00F4			F018C0DF	Y342	S5	B006301F	Y342	G5	R010700F	Y344	L4
R830	520RR01R	Y347	A2	1013800F	Y342	G6	4000R10C	Y344	C2	9002F00F	Y340	G6

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R840	0071600C	Y340	Q1	480F8018	Y340	L4	50002510	Y344	N4	48014008	Y340	L6
R850	20090F03	Y344	L2	9001210F	Y342	G1	A015A00F	Y342	S1	070D901A	Y342	N1
R860	483C7108	Y340	Q2	000F00F4			000F00F4			000F00F4		
R870	50005600	Y346	C1	E0005883	Y342	C5	60007013	Y342	C1	000F00F4		
R880	A3E0810F	Y342	J4	516F421C	Y340	L5	018680D2	Y342	J5	01012103	Y342	G3
R890	40269802	Y342	N3	40069008	Y342	N2	0F12510F	Y342	N4	A1E0A11F	Y344	G5
R8A0	02C9C101	Y342	S3	7002B009	Y344	Q4	000F00F4			0107B1D2	Y344	G6
R8B0	FF0AD0F6	Y347	N1	000F00F4			B00FB11F	Y344	C4	50008013	Y344	C5
R8C0	40003700	Y342	S6	00008112	Y342	Q6	45E92014	Y342	S4	000F00F4		
R8D0	50005010	Y347	N2	A007B11F	Y344	J4	40004013	Y340	L3	7011911F	Y344	G4
R8E0	2018D10F	Y340	L2	C102E003	Y340	L1	000F00F4			000F00F4		
R8F0	0FC93112	Y340	G5	9002E00F	Y340	C5	000F00F4			000F00F4		
R900	000F00F4			000F00F4			000F00F4			000F00F4		
R910	F086101E	Y347	A4	561C1108	Y347	E2	50002700	Y347	E3	412A80F4	Y347	C5
R920	00003062	Y347	E4	4000E010	Y344	N5	F011A01F	Y347	C3	06E55012	Y347	L2
R930	F00R701F	Y347	J1	0002E602	Y347	E5	5018E00F	Y347	J4	000F00F4		
R940	FED04012	Y347	S2	A000F100	Y347	S3	50068008	Y346	C5	50066008	Y346	G1
R950	A020C07F	Y346	C3	2009310F	Y347	J3	0010500A	Y346	C2	0F12R11F	Y346	G4
R960	01066802	Y346	G2	000F00F4			003051F7	Y346	G3	000F00F4		
R970	DFCD8062	Y346	L1	1405501A	Y347	J2	000F00F4			000F00F4		
R980	B1188E1R	Y346	L2	C0B08102	Y346	N5	4000B110	Y346	N6	7FDCA002	Y346	L5
R990	10069802	Y346	J3	0806911A	Y346	J5	5F0A9018	Y346	J4	0086C01F	Y346	J6
R9A0	40005110	Y346	L6	50001110	Y347	C4	000F00F4			000F00F4		
R9B0	28068802	Y346	C6	0406100A	Y347	A3	20AD4112	Y346	C7	0020E0F7	Y346	G5
R9C0	01R04102	Y346	C4	20007001	Y346	G7	B009C11F	Y346	J1	070D900A	Y346	J2
R9D0	000F00F4			000F00F4			000F00F4			000F00F4		
R9E0	501040F4	Y347	S1	A018C10F	Y346	G6	E82A50F5	Y347	E6	000F00F4		
R9F0	000F00F4			000F00F4			000F00F4			000F00F4		
RA00	0C0C284F	Y348	C1	62699ERR	Y348	C2	BBBBBBBB	Y348	C3	0004080C	Y348	C4
RA10	1014181C	Y348	C5	201C241C	Y348	C6	281C2C1C	Y348	C7	301C341C	Y348	E1
RA20	381C3C1C	Y348	E2	401C0444	Y348	E3	0004080C	Y348	E4	10141818	Y348	E5
RA30	484C20A8	Y348	E6	4C24484C	Y348	E7	28484C2C	Y348	G1	484C3048	Y348	G2
RA40	4C34484C	Y348	G3	38484C3C	Y348	G4	484C4048	Y348	G5	4C044400	Y348	G6
RA50	5054585C	Y348	G7	6008105C	Y348	J1	645C48E4	Y348	J2	68E870EC	Y348	J3
RA60	C4440004	Y348	J4	7478047C	Y348	J5	44000408	Y348	J6	0F101480	Y348	J7
RA70	A45CA8C4	Y348	L1	84A45CA8	Y348	L2	B088A45C	Y348	L3	A8148CA4	Y348	L4
RA80	5CA8R490	Y348	L5	A45CA868	Y348	L6	94A45CA8	Y348	L7	8898A45C	Y348	L8
PA90	A8RC9CA4	Y348	N2	5CA8C0A0	Y348	N3	A45CA808	Y348	N4	04440054	Y348	N5
BA00	C85CCC10	Y348	N6	B0F00C10	Y348	N7	14F00D10	Y348	Q1	R4F0D410	Y348	N2
BA10	R8F0D910	Y348	Q3	BCF0DC10	Y348	Q4	C00444E0	Y348	Q5	000F00F4		
BA20	000F00F4			000F00F4			000F00F4			000F00F4		
BA30	000F00F4			000F00F4			000F00F4			000F00F4		
BA40	000F00F4			000F00F4			000F00F4			000F00F4		
BA50	000F00F4			000F00F4			000F00F4			000F00F4		
BA60	000F00F4			000F00F4			000F00F4			000F00F4		
BA70	402C0310	Y350	A0	402C0A03	Y350	A1	187F0000	Y350	A2	402C0E20	Y350	A3
BA80	402C0D20	Y350	A4	18FF2000	Y350	A5	402C0600	Y350	A6	1C080000	Y350	A7
BA90	402C0680	Y350	C0	402C0640	Y350	C1	402C0620	Y350	C2	402C0610	Y350	C3
BB00	402C0608	Y350	C4	402C0604	Y350	C5	402C0602	Y350	C6	402C0601	Y350	C7
BB10	402C06FF	Y350	E0	00480000	Y350	E1	402C0D08	Y350	E2	18080000	Y350	E3
BB20	1CFF0000	Y350	E4	402C0A02	Y350	E5	402C0D00	Y350	E6	18FF0000	Y350	E7

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RR60 402C0400	Y350 G0	402C0D10	Y350 G1	402C0D04	Y350 G2	18FE0000	Y350 G3
RR70 402C0040	Y350 G4	402C0D02	Y350 G5	1C202000	Y350 G6	1C200000	Y350 G7
RR80 402C017F	Y350 J0	402C0140	Y350 J1	402C0120	Y350 J2	402C0110	Y350 J3
RR90 402C0108	Y350 J4	402C0104	Y350 J5	402C0102	Y350 J6	402C0101	Y350 J7
RRAU 402C0100	Y350 LC	402C0500	Y350 L1	402C0501	Y350 L2	18FFR000	Y350 L3
RRP0 18FF4000	Y350 L4	18FF1000	Y350 L5	18FF0400	Y350 L6	18FF0200	Y350 L7
RRP00 18FF0100	Y350 N0	187F7F00	Y350 N1	402C0D20	Y350 N2	402C0E40	Y350 N3
RRFC0 402C0E10	Y350 N4	402C0F04	Y350 N5	402C0E02	Y350 N6	402C0F01	Y350 N7
RRFC00 00A40000	Y350 Q0	18020200	Y350 Q1	18FF0300	Y350 Q2	18000000	Y350 Q5
RRFF0 402C0A02	Y350 Q6	000F00F4		000F00F4		000F00F4	
RC00 0CFA007F	Z038 J2	68051049	Y360 C1	000F00F4		C000CF00	Z038 J3
RC10 0C16F01F	Y360 C3	DF50110D	Y360 G2	4C161118	Y360 G3	4809F008	Y360 G4
RC20 000F00F4		F018C0DF	Y362 S5	8006301F	Y362 G5	R01D700F	Y364 L4
RC30 5203P018	Y367 A2	1013800F	Y362 G6	40008100	Y364 C2	9002F0DF	Y360 G6
RC40 0071600C	Y360 Q1	480F8018	Y360 L4	50002510	Y364 N4	48014008	Y360 L6
RC50 20090F03	Y364 L2	9001210F	Y362 G1	A015AC0F	Y362 S1	070D901A	Y367 N1
RC60 483C7108	Y360 Q2	000F00F4		000FC0F4		000F00F4	
RC70 50005600	Y366 C1	F0005883	Y362 C5	60007013	Y362 C1	000F00F4	
RC80 A3F0810F	Y362 J4	516F421C	Y360 L5	01868002	Y362 J5	01012103	Y362 G3
RC90 40265802	Y362 N3	40069008	Y362 N2	0F12510F	Y362 N4	A1E0A11F	Y364 G5
RCA0 02C9C101	Y362 S3	7002R009	Y364 Q4	000F00F4		0107B1D2	Y364 G6
RCB0 F0A00F6	Y367 N1	000F00F4		800F811F	Y364 C4	5000R013	Y364 C5
RC000 40003700	Y362 S6	0000R112	Y362 Q6	45E92014	Y362 S4	000F00F4	
RC00C 50005010	Y367 N2	A007R11F	Y364 J4	40004013	Y360 L3	7011911F	Y364 G4
RC00C0 2018D10F	Y360 L2	C102E003	Y360 L1	000F00F4		000F00F4	
RC0F0 0FC93112	Y360 G5	9002E00F	Y360 C5	000F00F4		000F00F4	
RD00 000F00F4		000F00F4		000F00F4		000F00F4	
RD10 FC86101F	Y367 A4	561C1108	Y367 E2	500027C0	Y367 E3	412A80F4	Y367 C5
RD20 00003062	Y367 E4	4000F010	Y364 N5	F011A01F	Y367 C3	06F55012	Y367 L2
RD30 F00701F	Y367 J1	0002F602	Y367 E5	5018E00F	Y367 J4	000F00F4	
RD40 FFD04012	Y367 S2	AJ00F100	Y367 S3	5006R008	Y366 C5	50066008	Y366 G1
RD50 A020C07F	Y366 C3	2009310F	Y367 J3	0010500A	Y366 C2	0F12R11F	Y366 G4
RD60 06066R02	Y366 G2	000F00F4		003051F7	Y366 G3	000F00F4	
RD70 DFCD8062	Y366 L1	1405501A	Y367 J2	000F00F4		000F00F4	
RD80 R1188E1R	Y366 L2	C0R08102	Y366 N5	4000B110	Y366 N6	7FDCA002	Y366 L5
RD90 30065R02	Y366 J3	0806911A	Y366 J5	5F0A9018	Y366 J4	0086C01E	Y366 J6
RDAA 40005110	Y366 L6	50001110	Y367 C4	000F00F4		000F00F4	
RDAB 28068R02	Y366 C6	0406100A	Y367 A3	20AD4112	Y366 C7	0020E0F7	Y366 G5
RDAC 01R04102	Y366 C4	20007001	Y366 G7	8009C11F	Y366 J1	070D900A	Y366 J2
RDAD 000F00F4		000F00F4		000F00F4		000F00F4	
RDDE 501040F4	Y367 S1	A018C10F	Y366 G6	E82A50F5	Y367 E6	000F00F4	
RDDE0 000F00F4		000F00F4		000F00F4		000F00F4	
RDDE00 0C0C5858	Y368 C0	58585858	Y368 C1	58585858	Y368 C2	0004080C	Y368 C3
RDDE000 1014181C	Y368 C4	2024282C	Y368 C5	3024383C	Y368 C6	AC443C48	Y368 C7
RDDE0000 404C7498	Y368 EC	50542458	Y368 E1	2C5C6064	Y368 E2	9C5C686C	Y368 E3
RDDE00000 705C4838	Y368 F4	74A8787C	Y368 E5	A8808424	Y368 F6	282C3038	Y368 E7
RDDE000000 3C6C705C	Y368 G0	483C886C	Y368 G1	7444745C	Y368 G2	9044403C	Y368 G3
RDDE0000000 6C28649C	Y368 G4	30946410	Y368 G5	A4FFFFF	Y368 C6	000F00F4	
RDDE00000000 000F00F4		000F00F4		000F00F4		000F00F4	
RDDE000000000 000F00F4		000F00F4		000F00F4		000F00F4	

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		PAGE		PAGE		PAGE		PAGE	
RE80	000F00F4		000F00F4		000F00F4		000F00F4		
RE90	000F00F4		000F00F4		000F00F4		000F00F4		
BEA0	000F00F4		000F00F4		000F00F4		000F00F4		
BF80	000F00F4		000F00F4		000F00F4		000F00F4		
BF00	000F00F4		000F00F4		000F00F4		000F00F4		
BF00	000F00F4		000F00F4		000F00F4		000F00F4		
BF00	000F00F4		000F00F4		000F00F4		000F00F4		
BF00	000F00F4		000F00F4		000F00F4		000F00F4		
BF00	000F00F4		000F00F4		000F00F4		000F00F4		
BF00	402C0310	Y370	402C0A02	Y370	402C0D08	Y370	18400000	Y370	C4
BF10	18200000	Y370	402C0E20	Y370	402C0402	Y370	402C0900	Y370	E1
BF20	402C0700	Y370	402C0510	Y370	18FF0000	Y370	402C0508	Y370	E5
BF30	18020000	Y370	402C0406	Y370	402C0D40	Y370	18080800	Y370	G2
BF40	18101000	Y370	402C0A00	Y370	18040400	Y370	402C0A01	Y370	G6
BF50	402C09FF	Y370	402C0702	Y370	18FFF000	Y370	18202000	Y370	J3
BF60	402C0A10	Y370	402C0D20	Y370	402C0416	Y370	402C0D10	Y370	J7
BF70	18010100	Y370	18100000	Y370	402C0B02	Y370	400CFE36	Y370	L4
BF80	402C0B02	Y370	40DCFF39	Y370	840001FF	Y370	18080000	Y370	N1
BF90	840018FF	Y370	402C0A03	Y370	18040000	Y370	18202000	Y370	N5
BF00	00480000	Y370	00A40000	Y370	00D40000	Y370	8400FFFF	Y370	Q2
BF00	000F00F4		000F00F4		000F00F4		000F00F4		
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BF00	000F00F4		000F00F4		000F00F4		000F00F4		
CO00	C0FA007F	Z038	68051049	Y380	000F00F4		C400CF00	Z038	L3
CO10	0C16F01F	Y380	DF50110D	Y380	4C161118	Y380	4809F008	Y380	G4
CO20	0C0F00F4		F018C0DF	Y382	8006301F	Y382	801D700F	Y384	L4
CO30	5208R018	Y387	1013800F	Y382	4000B100	Y384	9002E0DF	Y380	G6
CO40	0071600C	Y380	480F8018	Y380	50002510	Y384	48014008	Y380	L6
CO50	20090F03	Y384	9001210F	Y382	A015A00F	Y382	070D901A	Y382	N1
CO60	483C7108	Y380	000F00F4		000F00F4		000F00F4		
CO70	5000560C	Y386	E0005883	Y382	60007013	Y382	000F00F4		
CO80	A3E0810F	Y382	516F421C	Y380	01868002	Y382	01012103	Y382	G3
CO90	40269802	Y382	40069008	Y382	0F12510F	Y382	A1E0A11F	Y384	G5
COA0	02C9C101	Y382	7002B009	Y384	000F00F4		01078102	Y384	G6
COB0	FF0AD0F6	Y387	000F00F4		800FB11F	Y384	50008013	Y384	C5
CO00	40003700	Y382	0000R112	Y382	45E92014	Y382	000F00F4		
CO00	50005010	Y387	A007B11F	Y384	40004013	Y380	7011911F	Y384	G4
COF0	2018D10F	Y380	C102E003	Y380	000F00F4		000F00F4		
COF0	0FC93112	Y380	9002E00F	Y380	000F00F4		000F00F4		
C100	000F00F4		000F00F4		000F00F4		000F00F4		
C110	F086101F	Y387	561C1108	Y387	50002700	Y387	412A80F4	Y387	C5
C120	00003062	Y387	4000E010	Y384	F011A01F	Y387	06F55012	Y387	L2
C130	F00R701F	Y387	0002F602	Y387	5018E00F	Y387	000F00F4		
C140	FED04012	Y387	A000F100	Y387	50068008	Y386	50066008	Y386	G1
C150	A02PC07F	Y386	2009310F	Y387	0010500A	Y386	0F12B11F	Y386	G4
C160	06066B02	Y386	000F00F4		003051F7	Y386	000F00F4		
C170	DFCD8062	Y386	1405501A	Y387	000F00F4		000F00F4		
C180	B1188E1B	Y386	C0808102	Y386	40008110	Y386	7FDCA002	Y386	L5
C190	30069802	Y386	0806911A	Y386	5F0A9018	Y386	0086C01E	Y386	J6

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C1A0	400C5110	Y386	L6	50001110	Y387	C4	000F00F4			000F00F4			
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C1C0	01R04102	Y386	C4	20007001	Y386	G7	3009C11F	Y386	J1	070D900A	Y386	J2	
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C1E0	501040F4	Y387	S1	A018C10F	Y386	G6	E82A50F5	Y387	E6	000F00F4			
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C210	10141830	Y388	C4	2024282C	Y388	C5	4034484C	Y388	C6	C4C84C3C	Y388	C7	
C220	38505458	Y388	E0	5C606460	Y388	E1	6884CC70	Y388	E2	7478847C	Y388	E3	
C230	28802884	Y388	E4	40541830	Y388	E5	888C906C	Y388	E6	8894984C	Y388	E7	
C240	6C904C3C	Y388	G0	6C88549C	Y388	G1	784C6C98	Y388	G2	4C6C9038	Y388	G3	
C250	9C4CA078	Y388	G4	4C6CA44C	Y388	G5	6CA84C6C	Y388	G6	909CAC34	Y388	G7	
C260	4C6C90AC	Y388	J0	9C809028	Y388	J1	344C4050	Y388	J2	4C545804	Y388	J3	
C270	8FFF00FF	Y388	J4	000F00F4			000F00F4			000F00F4			
C280	000F00F4			000F00F4			000F00F4			000F00F4			
C290	000F00F4			000F00F4			000F00F4			000F00F4			
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C310	18400000	Y390	C5	18200000	Y390	C6	402C0E20	Y390	C7	18FF2000	Y390	E1	
C320	402C0402	Y390	E2	402C0900	Y390	E3	18FF0000	Y390	E4	402C0700	Y390	E5	
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C340	18020000	Y390	G3	18FF1C00	Y390	G4	402C0D40	Y390	G5	18080800	Y390	G6	
C350	402C0A01	Y390	G7	18100000	Y390	J1	18040000	Y390	J2	402C06FF	Y390	J3	
C360	18FFF000	Y390	J4	402C09FF	Y390	J5	402C0712	Y390	J6	18020200	Y390	J7	
C370	402C0A98	Y390	L1	402C0416	Y390	L2	402C041E	Y390	L3	402C0510	Y390	L4	
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C400	C4FA007F	Z038	N2	68051049	Y3A0	C1	000F00F4			C800CF00	Z038	N3	
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C430	520RBC18	Y3A7	A2	1013800F	Y3A2	G6	4000B100	Y3A4	C2	9002E0DF	Y3A0	G6	
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C460	00003002	Y3A2	L6	0000B112	Y3A2	N6	0000B112	Y3A2	Q6	00003102	Y3A2	S6	
C470	50005600	Y3A6	C1	E0005883	Y3A2	C5	60007013	Y3A2	C1	000F00F4			
C480	A3E0810F	Y3A2	J4	516F421C	Y3A0	L5	018680C2	Y3A2	J5	01012103	Y3A2	G3	
C490	40269B02	Y3A2	N3	40069008	Y3A2	N2	0F12510F	Y3A2	N4	A1F0A11F	Y3A4	G5	
C4A0	02C9C101	Y3A2	S3	70028009	Y3A4	Q4	000F00F4			01078102	Y3A4	G6	
C4B0	FF0AD0F6	Y3A7	N1	000F00F4			800FB11F	Y3A4	C4	50008013	Y3A4	C5	

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C4E0	2018D10F	Y3A0	L2	C102F003	Y3A0	L1	000F00F4		
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C510	F086101E	Y3A7	A4	561C1108	Y3A7	E2	50002700	Y3A7	E3
C520	00003062	Y3A7	E4	50055018	Y3A4	N5	F011A01F	Y3A7	C3
C530	F00R701F	Y3A7	J1	0002E602	Y3A7	E5	5018E00F	Y3A7	J4
C540	FED04012	Y3A7	S2	A000F100	Y3A7	S3	5006B008	Y3A6	C5
C550	A02DC07F	Y3A6	C3	2009310F	Y3A7	J3	0010500A	Y3A6	C2
C560	40066802	Y3A6	G2	000F00F4			003051F7	Y3A6	G3
C570	DFC08062	Y3A6	L1	1405501A	Y3A7	J2	000F00F4		
C580	R1188E1B	Y3A6	L2	C0B08102	Y3A6	N5	4000B110	Y3A6	N6
C590	10069B02	Y3A6	J3	0806911A	Y3A6	J5	5F0A9018	Y3A6	J4
C5A0	40005110	Y3A6	L6	50001110	Y3A7	C4	000F00F4		
C5B0	2806BB02	Y3A6	C6	0406100A	Y3A7	A3	20AD4112	Y3A6	C7
C5C0	01R04102	Y3A6	C4	20007001	Y3A6	G7	B009C11F	Y3A6	J1
C5D0	000F00F4			000F00F4			000F00F4		
C5E0	501040F4	Y3A7	S1	A018C10F	Y3A6	G6	E82A50F5	Y3A7	E6
C5F0	000F00F4			000F00F4			000F00F4		
C600	0C0C238C	Y3A8	C0	8C8C8C8C	Y3A8	C1	8C8C8C8C	Y3A8	C2
C610	14CCD818	Y3A8	C4	1C1C1C1C	Y3A8	C5	1C1C1C1C	Y3A8	C6
C620	240C1018	Y3A8	E0	282C0C30	Y3A8	E1	34383C40	Y3A8	E2
C630	5C54181C	Y3A8	E4	1C0C585C	Y3A8	E5	0C604014	Y3A8	E6
C640	1C406468	Y3A8	G0	403C0C0C	Y3A8	G1	406C1870	Y3A8	G2
C650	F8187040	Y3A8	G4	7C808488	Y3A8	G5	84444030	Y3A8	G6
C660	70889498	Y3A8	JC	889C08D8	Y3A8	J1	D8D8D8D8	Y3A8	J2
C670	A84C843C	Y3A8	J4	1090349C	Y3A8	J5	40083854	Y3A8	J6
C680	50R45410	Y3A8	L0	8808BCC0	Y3A8	L1	C408E0E4	Y3A8	L2
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C710	18020000	Y3B0	A4	28020023	Y3B0	A5	00D40000	Y3B0	A6
C720	28020023	Y3B0	C0	40DC0F14	Y3B0	C1	8400FAFF	Y3B0	C2
C730	18202000	Y3B0	C4	18400000	Y3B0	C5	402C0D20	Y3B0	C6
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C750	18100000	Y3B0	F4	18040000	Y3B0	E5	2840403A	Y3B0	E6
C760	18404000	Y3B0	G0	28040446	Y3B0	G1	40DCED3F	Y3B0	G2
C770	840028FF	Y3B0	G4	28020051	Y3B0	G5	40DCFF48	Y3B0	G6
C780	400CFA52	Y3B0	J0	18101000	Y3B0	J1	402C0D40	Y3B0	J2
C790	18080800	Y3B0	J4	28010066	Y3B0	J5	40DCFA60	Y3B0	J6
C7A0	284040A8	Y3B0	L0	40DCFA6A	Y3B0	L1	8400A0FF	Y3B0	L2
C7B0	18200000	Y3B0	L4	18080000	Y3B0	L5	402C0502	Y3B0	L6
C7C0	181F0000	Y3B0	N0	402C0510	Y3B0	N1	402C0508	Y3B0	N2
C7D0	00A40000	Y3B0	N4	187F0000	Y3B0	N5	18000000	Y3B0	N6

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C800	C8FA007F	Z038	Q2	68051049	Y3C0	C1	000F00F4			CC00C800	Z038	Q3
C810	0C16F01F	Y3C0	C3	0F50110D	Y3C0	G2	4C161118	Y3C0	G3	4809F008	Y3C0	G4
C820	483C7108	Y3C0	Q2	F018670F	Y3C2	S5	8006301F	Y3C2	G5	R01D700F	Y3C4	L4
C830	52078C18	Y3C7	A2	1013800F	Y3C2	G6	40008100	Y3C4	C2	9002E00F	Y3C0	G6
C840	0071200C	Y3C0	Q1	480F8018	Y3C0	L4	50002510	Y3C4	N4	48014008	Y3C0	L6
C850	20090F03	Y3C4	L2	9001210F	Y3C2	G1	A015A00F	Y3C2	S1	070D901A	Y3C2	N1
C860	00003002	Y3C2	L6	0000B112	Y3C2	N6	0000B112	Y3C2	Q6	00003102	Y3C2	S6
C870	50005600	Y3C6	C1	F0005883	Y3C2	C5	60007013	Y3C2	C1	000F00F4		
C880	A3E0810F	Y3C2	J4	516F421C	Y3C0	L5	01968002	Y3C2	J5	01012103	Y3C2	G3
C890	40269802	Y3C2	N3	40069008	Y3C2	N2	0F12510F	Y3C2	N4	A1E0A11F	Y3C4	G5
C8A0	02C9C101	Y3C2	S3	70028009	Y3C4	Q4	000F00F4			010781D2	Y3C4	G6
C8B0	FF0AD0F6	Y3C7	N1	000F00F4			800FB11F	Y3C4	C4	50008013	Y3C4	C5
C8C0	000F00F4			000F00F4			45E92014	Y3C2	S4	000F00F4		
C8D0	50005010	Y3C7	N2	A007B11F	Y3C4	J4	40004013	Y3C0	L3	7011911F	Y3C4	G4
C8E0	2013D10F	Y3C0	L2	C102E003	Y3C0	L1	000F00F4			000F00F4		
C8F0	0FC93112	Y3C0	G5	9002E00F	Y3C0	C5	000F00F4			000F00F4		
C900	000F00F4			000F00F4			000F00F4			000F00F4		
C910	F086101F	Y3C7	A4	561C1108	Y3C7	E2	50002700	Y3C7	E3	412A80F4	Y3C7	C5
C920	00003062	Y3C7	E4	4000E010	Y3C4	N5	F011A01F	Y3C7	C3	06E55012	Y3C7	L2
C930	FC0R701F	Y3C7	J1	0002E602	Y3C7	E5	5C18E00F	Y3C7	J4	000F00F4		
C940	FED04012	Y3C7	S2	A000F100	Y3C7	S3	5006B008	Y3C6	C5	50066008	Y3C6	G1
C950	A020C07F	Y3C6	C3	2009310F	Y3C7	J3	0010500A	Y3C6	C2	0F12R11F	Y3C6	G4
C960	40056802	Y3C6	G2	000F00F4			003051F7	Y3C6	G3	000F00F4		
C970	DFC08062	Y3C6	L1	1405501A	Y3C7	J2	000F00F4			000F00F4		
C980	R1188F1R	Y3C6	L2	C0B08102	Y3C6	N5	4000B110	Y3C6	N6	7FDCA002	Y3C6	L5
C990	10069802	Y3C6	J3	0806911A	Y3C6	J5	5F0A901B	Y3C6	J4	0086C01E	Y3C6	J6
CA00	40005110	Y3C6	L6	50001110	Y3C7	C4	0C0F00F4			000F00F4		
CA10	28068B02	Y3C6	C6	0406100A	Y3C7	A3	20AD4112	Y3C6	C7	0020E0F7	Y3C6	G5
CA20	01R04102	Y3C6	C4	20007001	Y3C6	G7	8009C11F	Y3C6	J1	070D900A	Y3C6	J2
CA30	000F00F4			000F00F4			000F00F4			000F00F4		
CA40	501040F4	Y3C7	S1	A018C10F	Y3C6	G6	E82A50F5	Y3C7	E6	000F00F4		
CA50	000F00F4			000F00F4			000F00F4			000F00F4		
CA60	0C0F5C5C	Y3C8	C0	5C5C5C5C	Y3C8	C1	5C5C5C5C	Y3C8	C2	0004880C	Y3C8	C3
CA70	1014182C	Y3C8	C4	1C202428	Y3C8	C5	2C0C3034	Y3C8	C6	383C4044	Y3C8	C7
CA80	1C343824	Y3C8	E0	484C2024	Y3C8	E1	28183438	Y3C8	E2	24585C7C	Y3C8	E3
CA90	3C60208C	Y3C8	F4	24886C2C	Y3C8	E5	1C3C200C	Y3C8	E6	30743C7C	Y3C8	F7
CAA0	786C7C20	Y3C8	GC	80R470C0	Y3C8	G1	3C882480	Y3C8	G2	8C847084	Y3C8	G3
CAB0	90R09498	Y3C8	G4	9CB0A02C	Y3C8	G5	8004C4C8	Y3C8	G6	ABFFFFFF	Y3C8	G7
CAC0	000F00F4			000F00F4			000F00F4			000F00F4		
CAE0	000F00F4			000F00F4			000F00F4			000F00F4		
CAF0	000F00F4			000F00F4			000F00F4			000F00F4		

REF CASSETTE P/N		73687711		CORE MAP AND CROSS		REFERENCE LISTING				PAGE 046			
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	
		PAGE		PAGE		PAGE		PAGE		PAGE		PAGE	
CR00	402C0310	Y3D0	A0	402C0A03	Y3D0	A1	18FF0800	Y3D0	A2	402C0D08	Y3D0	A3	
CR10	18EF6000	Y3D0	A4	402C0A08	Y3D0	A5	18020200	Y3D0	A6	18040000	Y3D0	A7	
CR20	18080800	Y3D0	C0	402C0010	Y3D0	C1	18010100	Y3D0	C2	18100000	Y3D0	C3	
CR30	18404000	Y3D0	C4	00D40000	Y3D0	C5	84000AFF	Y3D0	C6	402C0D40	Y3D0	C7	
CR40	28040021	Y3D0	E0	40DCFF1C	Y3D0	E1	28080827	Y3D0	E2	40DCFF22	Y3D0	E3	
CR50	18010000	Y3D0	E4	18101000	Y3D0	E5	28101030	Y3D0	E6	40DCFF28	Y3D0	E7	
CR60	18202000	Y3D0	G0	18040400	Y3D0	G1	18080000	Y3D0	G2	402C0400	Y3D0	G3	
CR70	18400000	Y3D0	G4	840070FF	Y3D0	G5	8400FFFF	Y3D0	G6	18101000	Y3D0	G7	
CR80	18020000	Y3D0	J0	18800000	Y3D0	J1	18101000	Y3D0	J2	402C0D04	Y3D0	J3	
CR90	402C0502	Y3D0	J4	402C0504	Y3D0	J5	181F0000	Y3D0	J6	402C0510	Y3D0	J7	
CRA0	402C0508	Y3D0	L4	00480000	Y3D0	L1	00A40000	Y3D0	L2	18FF0800	Y3D0	L3	
CRB0	18FF0000	Y3D0	L4	18200000	Y3D0	L5	181F0000	Y3D0	L6	18000000	Y3D0	L7	
CRB0	18010000	Y3D0	N0	187F0800	Y3D0	N1	8400A0FF	Y3D0	N2	000F00F4			
CRD0	000F00F4			000F00F4			000F00F4			000F00F4			
CRE0	000F00F4			000F00F4			000F00F4			000F00F4			
CRF0	000F00F4			000F00F4			000F00F4			000F00F4			
CC00	CCFE007F	Z038	S2	48055108	Y3E0	G2	1C0BC01A	Y3E2	C5	D000CF00	Z038	S3	
CC10	A010F108	Y3E3	L6	80C98016	Y3E4	U1	000F00F4			FED0B112	Y3E3	U3	
CC20	DFCD5E12	Y3E2	Q4	DFCD5012	Y3E2	L4	50009000	Y3E3	J5	5030C2F7	Y3E2	G4	
CC30	000080F6	Y3E2	L1	A00DD00F	Y3E2	G2	012A3132	Y3E4	N6	6FC91011	Y3F4	Q6	
CC40	R0006013	Y3E2	C1	20AD8012	Y3E2	G6	00090F02	Y3E2	L6	4048A100	Y3E3	A5	
CC50	0F02209F	Y3E2	L3	01C54602	Y3E2	L5	0005650A	Y3E0	G3	0138901A	Y3E3	Q1	
CC60	C0B0F112	Y3E0	G4	DFCDF112	Y3F2	C2	60005100	Y3E3	L1	000070D2	Y3E3	F4	
CC70	0818910A	Y3F3	E5	4D15A008	Y3E3	A2	5018100F	Y3E3	L5	000F00F4			
CC80	07005072	Y3E2	L2	A0003033	Y3E2	L0	28C2F002	Y3E3	E1	000F00F4			
CC90	28019802	Y3E3	N3	070D911A	Y3E3	N1	4F09A118	Y3E3	Q3	40019008	Y3E3	N2	
CCA0	002AF10A	Y3E3	A3	000F00F4			0000F132	Y3E3	A6	0407810A	Y3E3	Q4	
CCB0	65091119	Y3E3	U2	502AA0D8	Y3E4	U2	D087710E	Y3E3	Q5	20EDA112	Y3E3	U4	
CCC0	DFCD0012	Y3E2	C4	R010301F	Y3E2	C6	5000A100	Y3F3	G5	01B04012	Y3E2	G5	
CCD0	481C2118	Y3E2	G3	FED00102	Y3E2	A5	000F00F4			000F00F4			
CCF0	000F00F4			000F00F4			CD2A310B	Y3E4	N5	000F00F4			
CCF0	08E26116	Y3E3	E3	000F00F4			012A4112	Y3E3	A4	4456C03C	Y3E2	C3	
CD00	01000310	Y3E6	C1	01000A03	Y3E6	C2	01000801	Y3F6	C3	80880400	Y3E6	C4	
CD10	90C80C00	Y3E6	C5	01000600	Y3F6	C6	807409E0	Y3E6	G1	80A00A20	Y3F6	G2	
CD20	90C80C00	Y3F6	G3	80740960	Y3E6	G4	90C80C00	Y3F6	G5	80A00B01	Y3F6	G6	
CD30	00000E40	Y3E6	L1	81A00608	Y3E6	L2	90280C01	Y3E6	L3	81A00A03	Y3E6	L4	
CD40	80680A03	Y3E6	L5	000F00F4			000F00F4			000F00F4			
CD50	5951C116	Y3F5	L3	40004000	Y3E5	L5	5951C106	Y3F5	G5	0718800A	Y3E5	N5	
CD60	40004000	Y3F4	C4	80DF9136	Y3E4	C1	0030D1F6	Y3E4	G2	30007033	Y3E4	G0	
CD70	212A6123	Y3F4	G1	0218800A	Y3E4	J1	004AC023	Y3F4	G4	0000CF6	Y3E4	G6	
CD80	004A8122	Y3F4	N2	4F09E108	Y3E4	N4	01288032	Y3E4	N3	0418800A	Y3F4	Q3	
CD90	C22A601A	Y3F3	J6	000F00F4			012A60D2	Y3F4	C3	0918800A	Y3F4	E3	
CDA0	0518B00A	Y3F4	U3	2028E109	Y3E5	C1	FA2A611A	Y3F4	E1	932B5106	Y3F5	G3	
CDR0	40008000	Y3E3	U1	0109BB12	Y3E5	G1	000F00F4			D02AA518	Y3E5	G2	
CDC0	01287132	Y3F4	G5	0318B00A	Y3E4	J5	202A800B	Y3E4	N1	510A5818	Y3E5	L4	
CDQ0	F529B01A	Y3E5	C5	000F00F4			E62B5036	Y3E5	L1	202A710B	Y3E4	G3	
CRD0	004AE122	Y3E5	C3	0618B00A	Y3E5	E3	3128E033	Y3E5	C2	A011D00F	Y3E5	C4	
CRD0	000F00F4			000F00F4			000F00F4			000F00F4			
CE00	80000031	Y3F0	J1	01807102	Y3F0	J2	B1AA0001	Y3F0	J0	6F149078	Y3F0	N2	
CE10	0000C1D2	Y3F4	N2	DFCD6012	Y3F4	J5	FF2A11F6	Y3F2	N5	A010F108	Y3F2	Q6	

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CF20	0011F01A	Y3E8	G3	28022R12	Y3F0	U3	01C53112	Y3F2	N2	7F29D118	Y3F0	U4
CF30	102A501F	Y3F0	J5	A0005033	Y3F0	J7	5018110F	Y3F2	N4	70003103	Y3F2	N3
CE40	F007711A	Y3ER	L2	60022018	Y3F0	U2	061DE10F	Y3F2	C2	98F1A005	Y3F2	G2
CF50	7030D0F4	Y3F0	NC	9015301F	Y3F0	J6	0006200A	Y3F8	G2	1009306F	Y3F0	J4
CF60	R01CD11F	Y3F0	C3	0476600C	Y3F0	C2	25EA8705	Y3F0	N6	1010E10A	Y3F2	A4
CF70	A0009E13	Y3F0	S3	FED06112	Y3F2	A3	20AD5912	Y3F0	J3	0077910C	Y3F8	L3
CF80	FF0P10D2	Y3F4	J1	0009210A	Y3F2	N1	312AC813	Y3F4	E1	DFCD6012	Y3F0	C1
CE90	6F14F198	Y3F0	N3	64056600	Y3F0	N5	A016D10F	Y3E8	L5	0138R00A	Y3F0	S4
CEA0	0000A312	Y3F2	G3	011DE10A	Y3F2	G4	1806E10A	Y3F2	L4	0000E102	Y3F2	J4
CFE0	R000R033	Y3F0	S5	070D401A	Y3F0	S6	00F1B116	Y3F2	J2	0111A1D2	Y3F2	J3
CF00	681DE188	Y3F0	C5	00498122	Y3F4	E2	9015901F	Y3F4	S3	DFCD0012	Y3F4	N3
CFD0	DFCD7012	Y3F2	A2	71080008	Y3F4	N4	8001811F	Y3E8	L6	A000C00F	Y3F0	C4
CFE0	011DE10F	Y3F2	E2	A0005013	Y3F0	L6	A476080C	Y3F0	F6	80090F03	Y3F0	C6
CFE0	5018111F	Y3F2	S7	C0804002	Y3E8	G4	DFCD70C2	Y3F0	S2	DFCD9012	Y3F0	N4
CF00	00000305	Y3F6	C1	03000A01	Y3F6	C2	00000480	Y3F6	C3	102R0801	Y3F6	C4
CF10	00000C00	Y3F6	C5	14000000	Y3F6	C6	00E00104	Y3F6	C7	01000588	Y3F6	G1
CF20	187F0001	Y3F6	G2	00000100	Y3F6	G3	01000C00	Y3F6	G4	01000588	Y3F6	G5
CF30	1C7F0001	Y3F6	G4	01000580	Y3F6	G7	20800001	Y3F6	L1	00000480	Y3F6	L2
CF40	24010101	Y3F6	L3	00480286	Y3F6	L4	28000001	Y3F6	L5	01000A00	Y3F6	L6
CF50	01000580	Y3F6	L7	2C7F0001	Y3F6	Q1	00000480	Y3F6	Q2	30010001	Y3F6	Q3
CF60	004C0104	Y3F6	Q4	004802C6	Y3F6	Q5	34000001	Y3F6	Q6	7F4C0104	Y3F6	Q7
CF70	004802C6	Y3F8	C1	38000001	Y3F8	C2	01000C00	Y3F8	C3	01000588	Y3F8	C4
CF80	3C7F0001	Y3F8	C5	01000580	Y3F8	C6	40808001	Y3F8	C7	00E00104	Y3F8	G1
CF90	004802D6	Y3F8	G2	44808052	Y3F8	G3	03880A04	Y3F8	G4	00000305	Y3F8	G5
CEA0	03000A01	Y3F8	G6	00000C80	Y3F8	G7	48000000	Y3F8	L1	01000B00	Y3F8	L2
CFR0	7F000100	Y3E8	L3	00000C80	Y3F8	L4	4C000000	Y3F8	L5	004802C6	Y3F8	L6
CF00	50000001	Y3F8	L7	03000A00	Y3F8	Q1	00840004	Y3F8	Q2	6000F000	Y3F2	S6
CFD0	7509E008	Y3F4	N5	602001F4	Y3F0	N1	7D0BE008	Y3F2	S2	000AD10F	Y3F2	S1
CFE0	0407E01A	Y3F2	S3	D087E10E	Y3F2	S4	1405C11A	Y3F2	S5	000F00F4		
CFE0	00000490	Y3E8	U3	00000000	Y3E8	U4	00000000	Y3E8	U5	00000000	Y3E8	U6
D000	D0FA007F	Z038	C4	0050C00C	Y400	E0	000F00F4			D400CF00	Z038	C5
D010	0C16F01F	Y400	C3	DF50110D	Y400	G2	4C161118	Y400	G3	4809F008	Y400	G4
D020	483C710F	Y400	Q2	F01867DF	Y402	S5	B006301F	Y402	C5	R01D700F	Y404	L4
D030	5209R018	Y407	A2	1013800F	Y402	G6	4000B100	Y404	C2	9002E00F	Y400	G6
D040	0071200C	Y400	Q1	480F8018	Y400	L4	50002510	Y404	N4	48014008	Y400	L6
D050	20090F03	Y404	L2	9001210F	Y402	G1	A015A00F	Y402	S1	0700901A	Y402	N1
D060	00003002	Y402	L6	0000B112	Y402	N6	0000B112	Y402	Q6	00003102	Y402	S6
D070	50005600	Y406	C1	F0005883	Y402	C5	60007013	Y402	C1	000F00F4		
D080	A3F0810F	Y402	J4	516F421C	Y400	L5	018680C2	Y402	J5	01012103	Y402	G3
D090	40269802	Y402	N3	40069008	Y402	N2	0F12510F	Y402	N4	A1E0A11F	Y404	G5
D0A0	02C9C101	Y402	S3	7002R009	Y404	Q4	000F00F4			0107B1D2	Y404	G6
D0B0	FF0AD0F6	Y407	N1	0050CR1E	Y400	C0	800FB11F	Y404	C4	50008013	Y404	C5
D0C0	0209R012	Y400	E1	50055018	Y400	C6	45E92014	Y402	S4	60001011	Y400	C1
D0D0	50005010	Y407	N2	A007B11F	Y404	J4	40004013	Y400	L3	7011911F	Y404	G4
D0E0	2018D10F	Y400	L2	C102E003	Y400	L1	000F00F4			000F00F4		
D0F0	0FC93112	Y400	G5	0102F00A	Y400	C5	0C0F00F4			000F00F4		
D100	00FF0000	Y400	S5	000F00F4			000F00F4			000F00F4		
D110	F086101E	Y407	A4	561C1108	Y407	E2	50002700	Y407	E3	412A80F4	Y407	C5
D120	00C03062	Y407	E4	4000E010	Y404	N5	F011A01F	Y407	C3	06E55012	Y407	L2
D130	F00R701F	Y407	J1	0002F602	Y407	E5	5018E00F	Y407	J4	000F00F4		

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D140	FED04012	Y407	S2	A000F100	Y407	S3	50068008	Y406	C5	50066008	Y406	G1
D150	A020C07F	Y406	C3	2009310F	Y407	J3	0010500A	Y406	C2	0F12811F	Y406	G4
D160	28066802	Y406	G2	40003000	Y406	S6	003051F7	Y406	G3	40005110	Y406	L6
D170	DFCD6012	Y406	S5	1405501A	Y407	J2	DFCD8012	Y406	O5	04DFD806	Y406	Q3
D180	B1188E1R	Y406	L2	C080E012	Y406	N5	4000B110	Y406	N6	7FDC6112	Y406	L5
D190	DFC08062	Y406	L1	000F00F4			50007110	Y406	O1	000F00F4		
D1A0	0806A10A	Y406	J5	50001110	Y407	C4	0086810E	Y406	J6	000F00F4		
D1B0	28068802	Y406	C6	0406100A	Y407	A3	20AD4112	Y406	C7	0020C0F7	Y406	G5
D1C0	01R04102	Y406	C4	20009901	Y406	G7	8009C11F	Y406	J1	070DD01A	Y406	J2
D1D0	02067102	Y406	Q4	10060812	Y406	J3	F018700F	Y406	S4	5F0AA008	Y406	J4
D1E0	501040F4	Y407	S1	A018C10F	Y406	J0	E82A50F5	Y407	E6	000F00F4		
D1F0	000F00F4			000F00F4			000F00F4			000F00F4		
D200	0C0C4848	Y408	C0	48484848	Y408	C1	48484848	Y408	C2	0004080C	Y408	C3
D210	24F8BCF4	Y408	C4	0834B810	Y408	C5	20244C08	Y408	C6	2C300834	Y408	C7
D220	B86C7074	Y408	E0	EC248CC0	Y408	E1	EC248CC4	Y408	E2	187884C8	Y408	E3
D230	E8D0248C	Y408	E4	F4845888	Y408	E5	24BCFC84	Y408	E6	8C0850F8	Y408	E7
D240	248C9408	Y408	G0	989C04FC	Y408	G1	84FFFFFF	Y408	G2	000F00F4		
D250	000F00F4			000F00F4			000F00F4			000F00F4		
D260	000F00F4			000F00F4			000F00F4			000F00F4		
D270	000F00F4			000F00F4			000F00F4			000F00F4		
D280	000F00F4			000F00F4			000F00F4			000F00F4		
D290	000F00F4			000F00F4			000F00F4			000F00F4		
D2A0	000F00F4			000F00F4			000F00F4			000F00F4		
D2B0	000F00F4			000F00F4			000F00F4			000F00F4		
D2C0	000F00F4			000F00F4			000F00F4			000F00F4		
D2D0	000F00F4			000F00F4			000F00F4			000F00F4		
D2E0	000F00F4			000F00F4			000F00F4			000F00F4		
D2F0	000F00F4			000F00F4			000F00F4			000F00F4		
D300	402C0310	Y410	C0	402C0A03	Y410	C1	402C0400	Y410	C2	18FF0800	Y410	C3
D310	402C0964	Y410	C4	402C0700	Y410	C5	402C0D40	Y410	C6	18101000	Y410	C7
D320	402C0A10	Y410	E0	00D40000	Y410	E1	7884C8E8	Y410	E2	28181820	Y410	E3
D330	400CFF1A	Y410	F4	18181800	Y410	E5	402C0D40	Y410	E6	18101000	Y410	F7
D340	402C0664	Y410	G0	402C0508	Y410	G1	18646400	Y410	G2	84002FF	Y410	G3
D350	18202000	Y410	G4	40DC8222	Y410	G5	18020200	Y410	G6	28404028	Y410	G7
D360	400CFF26	Y410	JC	18040400	Y410	J1	840016FF	Y410	J2	402C0E20	Y410	J3
D370	402C0402	Y410	J4	84000AFF	Y410	J5	18000000	Y410	J6	40DC3234	Y410	J7
D380	40DC6439	Y410	L0	402C0D04	Y410	L1	402C0A02	Y410	L2	18020000	Y410	L3
D390	18404000	Y410	L4	40DC1641	Y410	L5	18101000	Y410	L6	18080800	Y410	L7
D3A0	402C0D10	Y410	N0	2801013D	Y410	N1	40DCFF28	Y410	N2	18080800	Y410	N3
D3B0	00480000	Y410	N4	00A40000	Y410	N5	402C0A01	Y410	N6	8400F0FF	Y410	N7
D3C0	40DC0426	Y410	Q0	40DC082A	Y410	Q1	18404000	Y410	Q2	18020200	Y410	Q3
D3D0	183C0000	Y410	Q4	402C0A02	Y410	Q5	840001FF	Y410	Q6	840014FF	Y410	Q7
D3E0	18010100	Y410	SC	40DC1212	Y410	S1	18808000	Y410	S2	422C0D40	Y410	S3
D3F0	187F0A00	Y410	S4	40DC2633	Y410	S5	402C0A08	Y410	S6	40DC2039	Y410	S7
D400	D4FA007F	Z038	E4	0050C00C	Y420	E0	000F00F4			D800CF00	Z038	E5
D410	0C16F01F	Y420	C3	DF50110D	Y420	G2	4C161118	Y420	G3	4809F008	Y420	G4
D420	483C7118	Y420	Q2	F018670F	Y422	S5	B006301F	Y422	G5	B01D790F	Y424	L4
D430	5209B018	Y427	A2	1013800F	Y422	G6	4000B100	Y424	C2	9002E00F	Y420	G6
D440	0071200C	Y420	Q1	480F801F	Y420	L4	50002510	Y424	N4	48014008	Y420	L6
D450	20090F03	Y424	L2	9001210F	Y422	G1	A015A00F	Y422	S1	070D901A	Y422	N1

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ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE
D460	00003002	Y422	L6	0000R112	Y422	N6	0000B112	Y422	Q6	00003102	Y422	S6
D470	50005600	Y426	C1	3610700A	Y424	L5	000070A2	Y424	L5	6000A103	Y422	C1
D480	A3E0810F	Y422	J4	516F471C	Y420	L5	01868002	Y422	J5	01012103	Y422	G3
D490	40269B02	Y422	N3	40069008	Y422	N2	0F12510F	Y422	N4	A1E0A11F	Y424	G5
D4A0	02C9C101	Y422	S3	7002R009	Y424	Q4	E0005883	Y422	C5	010781D2	Y424	G5
D4B0	FF0AD0F6	Y427	N1	0050C81F	Y420	C0	800FB11F	Y424	C4	50008013	Y424	C5
D4C0	0709B012	Y420	F1	50055018	Y420	C6	45E92014	Y422	S4	60001011	Y420	C1
D4D0	50005010	Y427	N2	A007B11F	Y424	J4	40004013	Y420	L3	7011911F	Y424	G4
D4E0	2918D10F	Y420	L2	C102E003	Y420	L1	000F00F4			000F00F4		
D4F0	0FC93112	Y420	G5	0102E00A	Y420	C5	000FC0F4			000F00F4		
D500	00FF0000	Y420	S5	000F00F4			000FC0F4			000F00F4		
D510	F086101E	Y427	A4	561C1108	Y427	E2	50002700	Y427	E3	412A80F4	Y427	C5
D520	00003062	Y427	E4	4000E010	Y424	N5	F011A01F	Y427	C3	06555012	Y427	L2
D530	F00R701F	Y427	J1	0002F602	Y427	E5	5018E00F	Y427	J4	000F00F4		
D540	FEN04012	Y427	S2	A000F100	Y427	S3	5006B008	Y426	C5	5006A008	Y426	G1
D550	A02DC07F	Y426	C3	2009310F	Y427	J3	0010500A	Y426	C2	0F12B11F	Y426	G4
D560	25066B02	Y426	G2	000F00F4			003051F7	Y426	G3	000F00F4		
D570	DFC08062	Y426	L1	1405501A	Y427	J2	000F00F4			000F00F4		
D580	R1188E1R	Y426	L2	C0R08102	Y426	N5	4000B110	Y426	N6	7FDCA002	Y426	L5
D590	10069R02	Y426	J3	0806911A	Y426	J5	5F0A9018	Y426	J4	0086C01E	Y426	J6
D5A0	40005110	Y426	L6	50001110	Y427	C4	000F00F4			000F00F4		
D5B0	28068B02	Y426	C6	0406100A	Y427	A3	20AD4112	Y426	C7	0020E0F7	Y426	G5
D5C0	01R04102	Y426	C4	20007001	Y426	G7	B009C11F	Y426	J1	070D900A	Y426	J2
D5D0	000F00F4			000F00F4			000F00F4			000F00F4		
D5E0	501040F4	Y427	S1	A018C10F	Y426	G6	E82A50F5	Y427	E6	000F00F4		
D5F0	000F00F4			000F00F4			000F00F4			000F00F4		
D600	0C0C4747	Y428	C0	47474747	Y428	C1	47474747	Y428	C2	0004080C	Y428	C3
D610	1014181C	Y428	C4	202428D0	Y428	C5	38343C40	Y428	C6	44484C50	Y428	C7
D620	5458D05C	Y428	E0	F0E8646C	Y428	E1	7C74787C	Y428	E2	8084888C	Y428	E3
D630	9C94D440	Y428	E4	D888B0B4	Y428	E5	88DC8860	Y428	F6	F4F4D00C	Y428	F7
D640	40E02C90	Y428	G0	E40408CC	Y428	G1	000F00F4			000F00F4		
D650	000F00F4			000F00F4			000F00F4			000F00F4		
D660	000F00F4			000F00F4			000F00F4			000F00F4		
D670	000F00F4			000F00F4			000F00F4			000F00F4		
D680	000F00F4			000F00F4			000F00F4			000F00F4		
D690	000F00F4			000F00F4			000F00F4			000F00F4		
D6A0	000F00F4			000F00F4			000F00F4			000F00F4		
D6B0	000F00F4			000F00F4			000F00F4			000F00F4		
D6C0	000F00F4			000F00F4			000F00F4			000F00F4		
D6D0	000F00F4			000F00F4			000F00F4			000F00F4		
D6E0	000F00F4			000F00F4			000F00F4			000F00F4		
D6F0	000F00F4			000F00F4			000F00F4			000F00F4		
D700	402C0310	Y430	C0	402C0A03	Y430	C1	18FF0800	Y430	C2	402C0A08	Y430	C3
D710	00D40000	Y430	C4	840014FF	Y430	C5	402C0400	Y430	C6	28181817	Y430	C7
D720	40DCFF11	Y430	E0	402C0400	Y430	E1	18181800	Y430	E2	40DC1041	Y430	E3
D730	18101000	Y430	E4	402C0706	Y430	E5	422C099A	Y430	E6	402C0A10	Y430	E7
D740	00D40000	Y430	G0	840014FF	Y430	G1	402C0400	Y430	G2	28181822	Y430	G3
D750	40DCFF1C	Y430	G4	402C0400	Y430	G5	18181800	Y430	G6	402C0508	Y430	G7
D760	18101000	Y430	JC	402C0601	Y430	J1	189A9A00	Y430	J2	402C0901	Y430	J3
D770	402C0A10	Y430	J4	00D40000	Y430	J5	840001FF	Y430	J6	402C0D40	Y430	J7

ADDRESS	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE	MICRO CODE	LOGIC ID	PAGE
D780	28111130	Y430	L0	40DCFF2A	Y430	L1	402C0040	Y430	L2	18111100	Y430	L3
D790	402C0400	Y430	L4	18202000	Y430	L5	840001FF	Y430	L6	402C0400	Y430	L7
D7A0	18080000	Y430	N0	40DC9132	Y430	N1	840001FF	Y430	N2	402C0400	Y430	N3
D7B0	2802003A	Y430	N4	40DCFF34	Y430	N5	402C0400	Y430	N6	18080800	Y430	N7
D7C0	402C0040	Y430	QC	18101000	Y430	Q1	00480000	Y430	Q2	00A40000	Y430	Q3
D7D0	402C0A01	Y430	Q4	8400FFFF	Y430	Q5	34006464	Y430	Q6	18020200	Y430	Q7
D7E0	8400FFFF	Y430	S0	18181800	Y430	S1	402C0510	Y430	S2	18FF0000	Y430	S3
D7F0	18020000	Y430	S4	18000000	Y430	S5	000F00F4			000F00F4		
D800	DBFA007F	Z038	G4	68051049	Y440	C1	000F00F4			DC00CFFF	Z038	G5
D810	0C16F01F	Y440	C3	DF50110D	Y440	G2	4C161118	Y440	G3	4809F008	Y440	G4
D820	483C7108	Y440	Q2	F01867DF	Y442	S5	B006301F	Y442	G5	B010700F	Y444	L4
D830	520RR018	Y447	A2	1013800F	Y442	G6	40008100	Y444	C2	9002E0DF	Y440	G6
D840	0071200C	Y440	Q1	480F8018	Y440	L4	50002510	Y444	N4	48014008	Y440	L6
D850	20090F03	Y444	L2	9001210F	Y442	G1	A015C91F	Y442	S1	070D901A	Y442	N1
D860	00003002	Y442	L6	0000B112	Y442	N6	0000B112	Y442	Q6	00003102	Y442	S6
D870	50005600	Y446	C1	E0005883	Y442	C5	60007013	Y442	C1	000F00F4		
D880	A3E081DF	Y442	J4	516F421C	Y440	L5	018680D2	Y442	J5	01012103	Y442	G3
D890	40269802	Y442	N3	40069008	Y442	N2	0F12510F	Y442	N4	A1E0A11F	Y444	G5
D8A0	000F00F4			7002B009	Y444	Q4	000F00F4			0107B1D2	Y444	G6
D8B0	FF0AD0F6	Y447	N1	000F00F4			800FB11F	Y444	C4	50008013	Y444	C5
D8C0	40006010	Y442	Q3	02C9C101	Y442	S3	45E92014	Y442	S4	4000C0A0	Y442	Q2
D8D0	50005010	Y447	N2	A007B11F	Y444	J4	40004013	Y440	L3	7011911F	Y444	G4
D8E0	2018D10F	Y440	L2	C102E003	Y440	L1	000F00F4			000F00F4		
D8F0	0FC93112	Y440	G5	9002E00F	Y440	C5	000F00F4			000F00F4		
D900	0020C0F7	Y446	G5	F7DDC012	Y446	E5	000F00F4			000F00F4		
D910	F086101E	Y447	A4	561C1108	Y447	E2	50002700	Y447	E3	412A80F4	Y447	C5
D920	00003062	Y447	E4	50057108	Y444	N5	F011A01F	Y447	C3	06E55012	Y447	L2
D930	F008701F	Y447	J1	0002E602	Y447	E5	5018E00F	Y447	J4	000F00F4		
D940	FED04012	Y447	S2	A000F100	Y447	S3	5006B008	Y446	C5	50066098	Y446	G0
D950	A020C07F	Y446	C3	2009310F	Y447	J3	0010500A	Y446	C2	0F12009F	Y446	G4
D960	40066802	Y446	G2	08806002	Y446	G1	003051F7	Y446	G3	000F00F4		
D970	DFC78062	Y446	L1	1405501A	Y447	J2	01025012	Y444	N6	000F00F4		
D980	B1188E18	Y446	L2	0000E012	Y446	N5	4000B110	Y446	N6	7FDCA002	Y446	L5
D990	10069B02	Y446	J3	0806911A	Y446	J5	5F0A9018	Y446	J4	0086810E	Y446	J6
D9A0	40005110	Y446	L6	50001110	Y447	C4	000F00F4			000F00F4		
D9B0	28068B02	Y446	C6	0406100A	Y447	A3	20AD4112	Y446	C7	000F00F4		
D9C0	01804102	Y446	C4	20007001	Y446	G7	B009C11F	Y446	J1	070D900A	Y446	J2
D9D0	000F00F4			000F00F4			000F00F4			000F00F4		
D9E0	501040F4	Y447	S1	A018C10F	Y446	J0	E82A50F5	Y447	E6	000F00F4		
D9F0	000F00F4			000F00F4			000F00F4			000F00F4		
DA00	0C0C6B77	Y448	C0	84919FAE	Y448	C1	8BC6C6C6	Y448	C2	0004080C	Y448	C3
DA10	4044C8C4	Y448	C4	CCD01040	Y448	C5	44C8C4CC	Y448	C6	D0144044	Y448	C7
DA20	C8C4CCD0	Y448	E0	184044C8	Y448	E1	C4CCD01C	Y448	E2	4044C8C4	Y448	E3
DA30	CCD02040	Y448	E4	44C8C4CC	Y448	E5	D0244044	Y448	E6	C8C4CCD0	Y448	E7
DA40	284044C8	Y448	G0	C4CCD02C	Y448	G1	4044C8C4	Y448	G2	CCD03040	Y448	G3
DA50	44C8C4CC	Y448	G4	D0344044	Y448	G5	C8C4CCD0	Y448	G6	384044C8	Y448	G7
DA60	C4CCD03C	Y448	J0	4044C8C4	Y448	J1	CC044800	Y448	J2	044C4050	Y448	J3
DA70	54504058	Y448	J4	5C044800	Y448	J5	04084C40	Y448	J6	60646040	Y448	J7
DA80	585C0448	Y448	L0	0004084C	Y448	L1	40686C68	Y448	L2	40585C04	Y448	L3
DA90	48000408	Y448	L4	400C70CC	Y448	L5	C8C45044	Y448	L6	0448007C	Y448	L7

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ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE			PAGE	
DA00	8084888C	Y448	N0	907C9404	Y448	N1	08A00858	Y448	N2	08480004	Y448	N3
DA70	0898E49C	Y448	N4	A0A4A844	Y448	N5	E8044800	Y448	N6	0408R098	Y448	N7
DAC0	R4E0888C	Y448	QC	0448C0FF	Y448	Q1	000F00F4			000F00F4		
DAD0	000F00F4			000F00F4			000F00F4			000F00F4		
DAF0	000F00F4			000F00F4			000F00F4			000F00F4		
DAF0	000F00F4			000F00F4			000F00F4			000F00F4		
DR0C	402C0310	Y450	C0	402C0A03	Y450	C1	18FFC800	Y450	C2	402C0813	Y450	C3
DR10	402C0814	Y450	C4	402C0815	Y450	C5	402C0816	Y450	C6	402C0817	Y450	C7
DR20	402C0818	Y450	E0	402C0819	Y450	E1	402C081A	Y450	E2	402C081B	Y450	E3
DR30	402C081C	Y450	E4	402C081D	Y450	E5	402C081E	Y450	E6	402C081F	Y450	E7
DR40	402C0C10	Y450	G0	18020200	Y450	G1	00480000	Y450	G2	402C0A04	Y450	G3
DR50	402C0C10	Y450	G4	412C0C10	Y450	G5	402C0504	Y450	G6	18010000	Y450	G7
DR60	402C0C05	Y450	J0	412C0C04	Y450	J1	402CCC02	Y450	J2	412C0C02	Y450	J3
DR70	402C0C08	Y450	J4	1CFF2000	Y450	J5	18FF1300	Y450	J6	402C0400	Y450	J7
DR80	282000A1	Y450	L0	402C0A08	Y450	L1	0CD40100	Y450	L2	840014FF	Y450	L3
DR90	400C40A3	Y450	L4	18FF1800	Y450	L5	402C0900	Y450	L6	402C0810	Y450	L7
DRAD	402C0510	Y450	N0	18FFFF00	Y450	N1	402C0508	Y450	N2	18202000	Y450	N3
DRBD	402C0600	Y450	N4	402C0800	Y450	N5	402C0D40	Y450	N6	18101000	Y450	N7
DRCD	00A40000	Y450	QC	18000000	Y450	Q1	402C0D08	Y450	Q2	18000000	Y450	Q3
DRD0	402C0A02	Y450	Q4	402C0502	Y450	Q5	18FF0000	Y450	Q6	402C0C10	Y450	Q7
DRFD	402C0700	Y450	S0	402C0700	Y450	S1	1A04040C	Y450	S2	000F00F4		
DRFO	000F00F4			000F00F4			000F00F4			000F00F4		
DC00	DCFA007F	Z038	J4	68051049	Y460	C1	000F00F4			0000CFFF	Z038	J5
DC10	0C16F01F	Y460	C3	DF50110D	Y460	G2	4C161118	Y460	G3	4809F008	Y460	G4
DC20	483C7108	Y460	Q2	F01867DF	Y462	S5	B006301F	Y462	G5	R01D700F	Y464	L4
DC30	5208A018	Y467	A2	1013800F	Y462	G6	4000B100	Y464	C2	9002E0DF	Y460	G6
DC40	0071200C	Y460	Q1	480F8018	Y460	L4	50002510	Y464	N4	48014008	Y460	L6
DC50	20090F03	Y464	L2	9001210F	Y462	G1	A015A00F	Y462	S1	070D901A	Y462	N1
DC60	00003002	Y462	L6	0000B112	Y462	N6	0000B112	Y462	Q6	00003102	Y462	S6
DC70	50005600	Y466	C1	E0005883	Y462	C5	60007013	Y462	C1	000F00F4		
DC80	A3E0810F	Y462	J4	516F421C	Y460	L5	018680D2	Y462	J5	01012103	Y462	G3
DC90	40269802	Y462	N3	40069008	Y462	N2	0F12510F	Y462	N4	A1F0A11F	Y464	C5
DCAD	02C9C101	Y462	S3	7002R009	Y464	Q4	000F00F4			0107R102	Y464	C6
DCBD	FF0AD0F6	Y467	N1	000F00F4			B00FB11F	Y464	C4	5000R013	Y464	C5
DCCD	000F00F4			000F00F4			45E92014	Y462	S4	000F00F4		
DCD0	50005010	Y467	N2	A007R11F	Y464	J4	4C004013	Y460	L3	7011911F	Y464	G4
DCD0	2018D10F	Y460	L2	C102E003	Y460	L1	000F00F4			000F00F4		
DCD0	0FC93112	Y460	G5	9002F00F	Y460	C5	000F00F4			000F00F4		
DD00	000F00F4			000F00F4			000F00F4			000F00F4		
DD10	FC86101F	Y467	A4	561C1108	Y467	E2	50002700	Y467	E3	412A80F4	Y467	C5
DD20	00003062	Y467	F4	50057108	Y464	N5	F011A01F	Y467	C3	06E55012	Y467	L2
DD30	F008701F	Y467	J1	0002F602	Y467	E5	5C18E00F	Y467	J4	000F00F4		
DD40	FED04012	Y467	S2	A000F100	Y467	S3	5006B008	Y466	C5	50066008	Y466	G1
DD50	A020C07F	Y466	C3	2009310F	Y467	J3	0010500A	Y466	C2	0F12R11F	Y466	G4
DD60	40066802	Y466	G2	000F00F4			003051F7	Y466	G3	000F00F4		
DD70	DFCD8062	Y466	L1	1405501A	Y467	J2	01025012	Y464	N6	000F00F4		
DD80	B1188F1F	Y466	L2	00008102	Y466	N5	4000B110	Y466	N6	7FDCA002	Y466	L5
DD90	10069802	Y466	J3	0806911A	Y466	J5	5F0A501B	Y466	J4	0086C01F	Y466	J6
DDAD	40005110	Y466	L6	50001110	Y467	C4	000F00F4			000F00F4		
DDBD	28068B02	Y466	C6	0406100A	Y467	A3	20AD4112	Y466	C7	0020E0F7	Y466	G5

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING						PAGE 052				
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID		
		PAGE				PAGE				PAGE				
DDC0	01R04102	Y466	C4	20007001	Y466	G7	B009C11F	Y466	J1	070D900A	Y466	J2		
DDF0	000F00F4			000F00F4			000F00F4			000F00F4				
DDE0	501040F4	Y467	S1	A018C10F	Y466	G6	E82A50F5	Y467	E6	000F00F4				
DDF0	000F00F4			000F00F4			000F00F4			000F00F4				
DF00	0C0C2138	Y468	C0	5B646464	Y468	C1	64646464	Y468	C2	0004080C	Y468	C3		
DF10	1014181C	Y468	C4	2024282C	Y468	C5	302C342C	Y468	C6	383C4044	Y468	C7		
DF20	48000408	Y468	E0	4C505458	Y468	E1	5C606468	Y468	E2	046C7074	Y468	E3		
DE30	04786C70	Y468	E4	7C040848	Y468	E5	0004083C	Y468	E6	40448084	Y468	E7		
DE40	888C9094	Y468	G0	9888A0A4	Y468	G1	949C88A8	Y468	G2	AC888090	Y468	G3		
DF50	949888R4	Y468	G4	A4949C88	Y468	G5	B8044800	Y468	G6	0408BCC0	Y468	G7		
DF60	C4C80448	Y468	J0	CCFFFFF4	Y468	J1	000F00F4			000F00F4				
DF70	000F00F4			000F00F4			000F00F4			000F00F4				
DF80	000F00F4			000F00F4			000F00F4			000F00F4				
DF90	000F00F4			000F00F4			000F00F4			000F00F4				
DEA0	000F00F4			000F00F4			000F00F4			000F00F4				
DER0	000F00F4			000F00F4			000F00F4			000F00F4				
DFC0	000F00F4			000F00F4			000F00F4			000F00F4				
DFD0	000F00F4			000F00F4			000F00F4			000F00F4				
DDE0	000F00F4			000F00F4			000F00F4			000F00F4				
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DF10	402C080F	Y470	C4	402C090F	Y470	C5	402C0E10	Y470	C6	402C06F0	Y470	C7		
DF20	402C0810	Y470	E0	402C09F0	Y470	E1	402C0502	Y470	E2	18FF0F00	Y470	E3		
DF30	402C0504	Y470	E4	402C0510	Y470	E5	402COA02	Y470	E6	402C0600	Y470	E7		
DF40	402C0800	Y470	G0	402C0900	Y470	G1	00480000	Y470	G2	402C0600	Y470	G3		
DF50	402C0F20	Y470	G4	402C0B20	Y470	G5	18202000	Y470	G6	402C0808	Y470	G7		
DF60	402C0C10	Y470	J0	402C0D04	Y470	J1	18010100	Y470	J2	00D40100	Y470	J3		
DF70	8400FEFF	Y470	J4	40DC032E	Y470	J5	402C0A08	Y470	J6	40DC0333	Y470	J7		
DF80	402C0A20	Y470	L0	840005FF	Y470	L1	402C0400	Y470	L2	18FF4A00	Y470	L3		
DF90	840064FF	Y470	L4	402C0204	Y470	L5	18808000	Y470	L6	18800000	Y470	L7		
DEA0	18FF5800	Y470	N0	402C0A01	Y470	N1	18FF4800	Y470	N2	402C0801	Y470	N3		
DFB0	18FF0A00	Y470	N4	18FF1800	Y470	N5	18FF0800	Y470	N6	402C0C02	Y470	N7		
DFC0	402C0D08	Y470	Q0	18040400	Y470	Q1	1CFF2000	Y470	Q2	00A40000	Y470	Q3		
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DDE0	000F00F4			000F00F4			000F00F4			000F00F4				
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F010	101D110A	Y500	C3	01B03012	Y500	G7	01B02002	Y500	C4	090DF0AA	Y501	C2		
F020	28072B02	Y500	G1	28072B12	Y500	G3	20AD2012	Y500	G2	20ED3002	Y500	G4		
F030	0A0D310A	Y500	G5	28073R12	Y500	L1	031D101A	Y500	G6	20AD4002	Y500	L2		
F040	28074B02	Y500	L3	000F00F4			0807411A	Y500	L4	FFE75105	Y500	L5		
F050	5000F000	Y505	Q1	060DC11A	Y500	Q1	DFCD50D2	Y500	L6	0106A112	Y501	S3		
F060	28076B02	Y501	C5	27076B12	Y501	N4	20AD7002	Y501	C6	0A0D811A	Y501	N5		
F070	28077B02	Y501	G1	28077R12	Y501	G3	20ED7012	Y501	G2	070D805A	Y501	G4		
F080	021DD1AA	Y501	G5	821DF1AA	Y501	L5	01B06002	Y501	C4	101DD01A	Y501	N6		
F090	28079B02	Y501	N0	25079B12	Y501	N2	20AD9012	Y501	N1	20ED6012	Y501	N3		
F0A0	2707AB02	Y501	S1	0070D00E	Y505	L6	72AD5113	Y501	S2	60008010	Y501	S6		
F0B0	40071118	Y501	C1	EE18R11A	Y500	U6	000F00F4			5000C100	Y505	S2		
F0C0	000F00F4			000F00F4			FF07E00A	Y505	G2	601D1018	Y500	Q2		
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E0F0	8A10810A	Y501	C3	361D810A	Y501	A3	01B09002	Y501	J7	861DF10A	Y501	L6
E100	01872002	Y502	L7	01010102	Y502	L1	5F070118	Y502	L2	18F71106	Y502	L3
F110	FA0720DA	Y502	L5	20F0E002	Y502	Q6	FFE11006	Y502	L4	4002E118	Y505	G0
E120	0C000002	Y502	L6	5000F110	Y505	U1	592B2110	Y503	C2	004A30C2	Y503	C3
E130	0070301F	Y503	C4	5002D118	Y503	Q0	000140DA	Y503	C6	F0006003	Y503	C3
F140	50004150	Y503	C1	A070511C	Y504	C2	50003110	Y503	C6	50005010	Y503	L2
E150	60007040	Y504	J0	E0006003	Y503	L3	01016102	Y504	C5	FF0A6016	Y504	C3
E160	40008000	Y503	J4	EC2B5802	Y504	C4	006A6012	Y504	C6	8C877012	Y504	G2
E170	1016800F	Y504	L4	00007B02	Y504	G3	7001711F	Y504	G4	80A18112	Y504	G5
E180	8C07801A	Y504	L5	7681810F	Y504	L6	7FC18112	Y504	L7	0E0DA00A	Y504	Q1
E190	28079R02	Y504	Q4	28079R12	Y504	Q6	20AD9012	Y504	Q5	DFCDA102	Y505	C1
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F420	4407401A	Y486	E6	F006710A	Y480	L2	400320CA	Y486	E3	0C02311A	Y486	G3
F430	48A93014	Y488	C1	000050D1	Y488	C2	F407401A	Y486	G5	5003310A	Y486	G4
F440	40003000	Y488	E1	0052000C	Y486	N3	4802510A	Y484	C1	60000110	Y482	C4
F450	50008000	Y488	N3	000AELA5	Y488	C3	0472810C	Y484	E2	55075018	Y484	E4
F460	03D841D2	Y482	C3	E056D01E	Y482	S1	10E5C032	Y482	J4	B10BC1AB	Y482	L4
F470	900BF30F	Y482	G2	03F8F016	Y482	N1	0056111C	Y480	L3	980A70A9	Y482	G1
F480	45488110	Y486	C3	0118E03A	Y482	S3	0C15511A	Y484	E3	444AD110	Y486	C4
F490	34EB9106	Y486	E1	040291DA	Y486	C6	080221DA	Y486	E2	3003200A	Y486	E5
F4A0	012BA012	Y488	C6	R04A6011	Y488	L6	0A2BA012	Y488	E6	0000A801	Y488	C5
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F4F0	022RA012	Y488	G6	902EB0DF	Y482	N2	142BA012	Y488	J6	0000E801	Y488	G5
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F520	5A6R2014	Y484	S1	566A2104	Y484	S2	50004130	Y484	S3	000F00F4		
F530	0407301A	Y488	S4	7087310E	Y488	S5	A000F100	Y488	S6	000F00F4		
F540	B056A00C	Y488	S3	00000000	Y490	G2	40002010	Y484	S4	50007100	Y484	U4
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F560	760AA108	Y496	Q4	000F00F4			10E56002	Y496	S4	000F00F4		
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F580	A0B0900C	Y488	N4	566A5004	Y496	Q2	000F00F4			000F00F4		
F590	7056310F	Y488	N5	15567002	Y484	J5	7C3A9012	Y484	J3	000F00F4		
F5A0	3018300F	Y488	U4	000F00F4			E002A11A	Y490	L2	4006C00A	Y490	L3
F5B0	546RR014	Y486	S3	566AB104	Y486	S4	5369B114	Y486	S5	52782104	Y486	S6
F5C0	4872C01C	Y490	L4	2476C10E	Y490	L5	00B0C11C	Y490	L6	0456F01F	Y490	N1
F5D0	9013D01F	Y486	N5	A016D10F	Y486	N6	B014D11F	Y486	S1	0057R00C	Y486	S2
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F610	F006101A	Y482	E1	0056110C	Y482	E2	83084103	Y482	E3	604R0101	Y492	L5
F620	06561111F	Y492	L4	DFCDA102	Y492	N4	40000010	Y492	Q6	000F00F4		
F630	1C18301A	Y492	C2	070D401A	Y492	C3	E8583119	Y492	U2	6076510E	Y492	U3
F640	A00DF61F	Y499	J4	400D4R12	Y492	C4	DFCD5012	Y482	E4	6F098119	Y492	C5
F650	D158F106	Y492	Q3	40057118	Y482	E5	7006800A	Y492	U4	20295006	Y492	Q2
F660	104000310	Y499	C2	00000A03	Y499	C3	00000A08	Y499	C4	08400400	Y499	C5
F670	00800600	Y499	E2	00900900	Y499	E3	00A00700	Y499	E4	F0700A10	Y499	E5
F680	400D8R02	Y499	N2	6F02800R	Y482	S6	0110D00A	Y499	N3	0406900A	Y492	G2
F690	B086910E	Y492	G3	64293102	Y492	U1	DFCD0002	Y492	G4	1018210A	Y492	Q5
F6A0	0C3A20D2	Y492	L3	7F098119	Y492	G1	4006514A	Y492	Q1	00070F02	Y499	U6
F6B0	DFC0C102	Y499	J1	0807A119	Y499	U5	000F00F4			0016EE09	Y499	S3
F6C0	0076A10C	Y498	G3	000F00F4			A466E01C	Y499	J2	000F00F4		
F6D0	400DD802	Y499	N4	400DD812	Y499	N6	20ADD012	Y499	N5	0030E1F5	Y499	S1
F6E0	061AB06A	Y499	S4	901C400F	Y499	J3	DFCD3002	Y492	C1	0020B1F5	Y499	S2
F6F0	70007010	Y494	C1	R01D800F	Y499	N1	10009811	Y492	Q4	70007010	Y499	J5
F700	A013401F	Y494	J1	6000F010	Y494	N4	03080019	Y494	Q1	18FF1016	Y494	S1
F710	000021D1	Y494	J4	765630D8	Y494	S2	70007010	Y494	G1	0F18711A	Y494	S4

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E740	0F3C0000	Y490	G1	A313205F	Y494	J2	0000F000	Y490	G3	00000000	Y490	G4
E750	0000F000	Y490	G5	00000000	Y490	G6	4476C21E	Y496	G6	4406C213	Y496	S6
E760	20B36012	Y494	L5	70000010	Y494	L6	000060C1	Y494	L4	5A6B8014	Y496	Q1
E770	4406800A	Y496	E1	4052077C	Y494	E2	400F915A	Y496	G1	6000A010	Y494	S5
E780	0056801C	Y496	C2	BA2B810F	Y496	C3	764A8110	Y496	C4	7049D010	Y496	C5
E790	5056720E	Y496	C7	F406800A	Y496	C1	4806C11A	Y496	G2	5006C11A	Y496	J2
E7A0	000F00F4			000F00F4			7A0B5138	Y496	G5	000F00F4		
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E7C0	000F00F4			0105B102	Y498	C1	4006BB0A	Y498	C6	0076611C	Y496	J3
E7D0	000F00F4			78589008	Y496	C6	7658C1C0	Y498	C5	000F00F4		
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E7F0	0000F000	Y490	S5	00000000	Y490	S6	000F00F4			000F00F4		
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EAA0	000F00F4			000F00F4		000F00F4		000F00F4		
EAB0	000F00F4			000F00F4		000F00F4		000F00F4		
EAC0	000F00F4			000F00F4		000F00F4		000F00F4		
EAD0	000F00F4			000F00F4		000F00F4		000F00F4		
EAE0	000F00F4			000F00F4		000F00F4		000F00F4		
EAF0	000F00F4			000F00F4		000F00F4		000F00F4		
EAG0	000F00F4			000F00F4		000F00F4		000F00F4		
EAH0	000F00F4			000F00F4		000F00F4		000F00F4		
EAI0	000F00F4			000F00F4		000F00F4		000F00F4		
EAJ0	000F00F4			000F00F4		000F00F4		000F00F4		
EAK0	000F00F4			000F00F4		000F00F4		000F00F4		
EAL0	000F00F4			000F00F4		000F00F4		000F00F4		
EAM0	000F00F4			000F00F4		000F00F4		000F00F4		
EAN0	000F00F4			000F00F4		000F00F4		000F00F4		
EAO0	000F00F4			000F00F4		000F00F4		000F00F4		
EAP0	000F00F4			000F00F4		000F00F4		000F00F4		
EAQ0	000F00F4			000F00F4		000F00F4		000F00F4		
EAR0	000F00F4			000F00F4		000F00F4		000F00F4		
EAS0	000F00F4			000F00F4		000F00F4		000F00F4		
EAT0	000F00F4			000F00F4		000F00F4		000F00F4		
EAU0	000F00F4			000F00F4		000F00F4		000F00F4		
EAV0	000F00F4			000F00F4		000F00F4		000F00F4		
EAW0	000F00F4			000F00F4		000F00F4		000F00F4		
EAX0	000F00F4			000F00F4		000F00F4		000F00F4		
EAY0	000F00F4			000F00F4		000F00F4		000F00F4		
EAZ0	000F00F4			000F00F4		000F00F4		000F00F4		
EBA0	000F00F4			000F00F4		000F00F4		000F00F4		
EBC0	000F00F4			000F00F4		000F00F4		000F00F4		
EBD0	000F00F4			000F00F4		000F00F4		000F00F4		
EBE0	000F00F4			000F00F4		000F00F4		000F00F4		
EBF0	000F00F4			000F00F4		000F00F4		000F00F4		
EC00	ECFA007F	Y510	G6	0F50010D	Y510	480F6118	Y510	0000CFFF	Y510	G7
EC10	00090F02	Y512	C1	900D301F	Y510	A015201F	Y510	070D300A	Y510	G1
EC20	40001880	Y510	G0	42C92100	Y510	45E95014	Y510	R01D401F	Y512	Q2
EC30	400D3802	Y510	G2	400D3812	Y510	0F121109	Y510	0F12C10F	Y510	Q3
EC40	40106118	Y512	C2	A00D801F	Y512	00005162	Y512	00R2E106	Y510	Q5
EC50	40006110	Y510	Q7	F01861DF	Y510	3818700A	Y512	AA18700A	Y512	E3
EC60	42096018	Y514	C2	D00AA10F	Y514	400F7008	Y510	016FE01C	Y510	C3
EC70	1405600A	Y514	C1	000F00F4		0071711C	Y510	481C2008	Y510	C6
EC80	0FC0RE02	Y512	S4	0110900A	Y512	4F128118	Y512	000080F6	Y512	S3
EC90	400D9R02	Y512	Q5	400D9R12	Y512	20AD9012	Y512	001081F6	Y512	S1
ECA0	0056B11F	Y514	G2	0405C00A	Y512	400BA118	Y514	0086C01E	Y514	C5
ECB0	00006112	Y512	S5	F018A00F	Y514	100560CA	Y512	A000F100	Y514	G3
ECC0	FF18700A	Y512	L3	F006R01A	Y514	3FD24112	Y510	000F00F4		
ECD0	000F00F4			000F00F4		000F00F4		000F00F4		
ECE0	000F00F4			48017108	Y510	000050D2	Y510	000F00F4		
ECF0	000F00F4			000F00F4		000F00F4		000F00F4		
ECG0	000F00F4			000F00F4		000F00F4		000F00F4		
ED00	000F00F4			000F00F4		000F00F4		000F00F4		
ED10	000F00F4			000F00F4		000F00F4		000F00F4		
ED20	000F00F4			000F00F4		000F00F4		000F00F4		
ED30	000F00F4			000F00F4		000F00F4		000F00F4		
ED40	000F00F4			000F00F4		000F00F4		000F00F4		
ED50	000F00F4			000F00F4		000F00F4		000F00F4		

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING				PAGE 058	
ADDRESS	MICRO CODE	LCGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
		PAGE			PAGE			PAGE	
F080	03043101	Y202	J3	40138008	Y202	L5	400080D0	Y202	L4
F090	0084300D	Y204	U4	0305910A	Y204	U1	0C098119	Y204	U2
F0A0	0614A119	Y204	J2	06367111	Y204	G1	9112A013	Y204	G3
F0B0	0042B01C	Y204	J4	0FC98102	Y204	J5	06A9B111	Y204	J6
F0C0	A004710F	Y202		0404C1F5	Y204	L3	0004C11C	Y204	L4
F0D0	03042001	Y204	N3	4013D008	Y204	Q2	401D D0 D8	Y204	N2
F0E0	0F115089	Y202	G6	60134408	Y204	Q6	9CF82715	Y202	E5
F0F0	208CF112	Y204	L6	4009F1F4	Y206	S1	0013901A	Y206	S2
F100	06369111	Y205	J1	0454010C	Y206	C1	900D100F	Y206	C2
F110	A01D411F	Y206	C3	8005200F	Y206	C4	0105111A	N205	N6
F120	400D2B02	Y206	C5	400D2B12	Y206	G1	20AD2012	Y206	C6
F130	0F184109	Y206	G3	0F094109	Y206	J3	0F0A4109	Y206	L3
F140	0071600E	Y206	N4	DFCD0212	Y206	N6	0071900E	Y206	L4
F150	B004001A	Y205	C2	F004800A	Y205	E2	0FC95112	Y205	L1
F160	0481401E	Y206	N5	0052610E	Y205	L3	0054611C	Y205	L4
F170	4000F010	Y206	Q6	900A710F	Y205	L6	0809711F	Y205	N1
F180	9454801C	Y205	E3	E802810A	Y205	E4	FD12811A	Y205	E5
F190	0081401E	Y206	L5	A006000F	Y205	G1	000F00F4		
F1A0	0614A019	Y205	J4	F0D6A112	Y205	J5	91120003	Y205	J3
F1B0	00031000	Y208	C1	00040001	Y208	E1	000D2002	Y208	G1
F1C0	000D0800	Y208	L1	000D0401	Y208	N1	000C0002	Y208	Q1
F1D0	00050800	Y208	C3	00050201	Y208	E3	00051002	Y208	G3
F1E0	000A0381	Y208	L3	0404E1F5	Y205	N3	0006E11E	Y205	N4
F1F0	0105F01A			A000F100			000F00F4		
F200	01133002	Y207	C2	01132112	Y207	G2	040110DA	Y207	E3
F210	1306011F	Y207	E5	040A3102	Y207	E4	032911F5	Y207	L1
F220	0081201E	Y207	L3	40009010	Y207	L4	0052511C	Y207	
F230	0CF34116	Y207	C3	03F30106	Y207	G3	DFDC40D2	Y207	
F240	0052100E	Y207		01094002	Y207		0081211E	Y207	
F250	A31D F108	Y204		000F00F4			A31D F100	Y204	
F260	60001000	Y207		60131008	Y207		000F00F4		
F270	000F00F4			000F00F4			000F00F4		
F280	000F00F4			000F00F4			000F00F4		
F290	000F00F4			000F00F4			000F00F4		
F2A0	000F00F4			000F00F4			000F00F4		
F2B0	000F00F4			000F00F4			000F00F4		
F2C0	000F00F4			000F00F4			000F00F4		
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F2E0	000F00F4			000F00F4			000F00F4		
F2F0	000F00F4			000F00F4			000F00F4		
F300	000F00F4			000F00F4			000F00F4		
F310	000F00F4			000F00F4			000F00F4		
F320	000F00F4			000F00F4			000F00F4		
F330	000F00F4			000F00F4			000F00F4		
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F380	000F00F4			000F00F4			000F00F4		
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REF CASSETTE P/N		73687711		CORE MAP AND CROSS		REFERENCE LISTING				PAGE 059		
ADDRESS	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID	MICRO CODE	LOGIC	ID
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F3C0	000F00F4			000F00F4			000F00F4			000F00F4		
F3D0	000F00F4			000F00F4			000F00F4			000F00F4		
F3E0	000F00F4			000F00F4			000F00F4			000F00F4		
F3F0	000F00F4			000F00F4			000F00F4			000F00F4		
F400	F4FD1400	Z038	E6	00001041	Y242	C1	0C59401C	Y242	C3	FC0048F7	Z038	E7
F410	F804601A	Y242	N1	F009010A	Y242	C2	07DC1112	Y242	C5	FD0A3016	Y242	C6
F420	F3182816	Y242	E2	00503R0E	Y242	E3	000A4009	Y242	J2	000B3119	Y242	G3
F430	8C04900A	Y242	E4	F80R2R06	Y242	E1	0118410A	Y242	L5	80RC2002	Y242	G4
F440	40RC3012	Y242	J3	901C110F	Y242	C4	70001100	Y242	L6	00A0500C	Y244	J1
F450	901CC11F	Y244	J2	50000010	Y243	L3	0050901C	Y246	C1	FB76600C	Y252	S3
F460	6000F110	Y252	S4	3D2500F6	Y244	C1	20DB70D6	Y244	L2	0052810D	Y243	C2
F470	02DR7106	Y244	L3	2018410A	Y244	S3	3018410A	Y244	L4	081180D9	Y244	N4
F480	70051108	Y244	N5	40180F00	Y243	J1	081DD119	Y243	C3	0100F002	Y252	N4
F490	CRRC6012	Y242	E5	A014910F	Y246	C2	8013911F	Y246	C3	FC138106	Y246	C4
F4A0	00156019	Y246	C6	0A13A002	Y246	E6	7713E012	Y246	E1	0113E112	Y246	G1
F4B0	70058078	Y248	E3	08DR6106	Y244	L1	0B13ABA2	Y246	C5	50001010	Y243	E2
F4C0	700C7110	Y243	A2	8A16D01A	Y252	S1	1054F119	Y252	N6	A007D00F	Y244	J3
F4D0	B004B01F	Y244	J4	7006511A	Y252	S2	9804601A	Y242	S1	3D0520F6	Y243	C4
F4E0	800FC109	Y252	N5	1215601A	Y246	E2	6000D110	Y246	S1	3E15601A	Y246	C2
F4F0	A600E401	Y252	Q3	65755018	Y252	Q5	1416F0D1	Y252	Q4	04RDF002	Y252	Q2
F500	00000000	Y240	N5	1007010A	Y250	C1	01D00112	Y250	C2	80R01002	Y250	C3
F510	804R10A	Y250	C4	20182009	Y250	G1	10BD1112	Y250	J4	FF15311A	Y250	J5
F520	312A2133	Y250	C2	F316A01A	Y250	J2	30582021	Y250	G3	5018R11A	Y250	E3
F530	402D3032	Y250	L5	F20F500R	Y250	L6	FF121112	Y250	G6	229DF102	Y250	J6
F540	40R03002	Y250	L4	302F4009	Y250	L3	7018R01A	Y250	G5	0005E05A	Y250	N5
F550	01D05422	Y250	N1	00005111	Y250	Q2	10006001	Y250	N2	6018R01A	Y250	S2
F560	19FA4406	Y250	N3	00557001	Y251	C7	10004101	Y250	N4	70150008	Y251	G6
F570	D912743A	Y251	C1	80AE7002	Y251	G2	1A0B8559	Y251	C2	10009003	Y251	G3
F580	FA138139	Y251	C3	DA148109	Y251	C4	01366012	Y251	C6	FA0A8109	Y251	C5
F590	0416940A	Y251	G4	00439110	Y251	J1	80R06112	Y251	G5	0FD8AE06	Y251	J2
F5A0	FF289006	Y251	J3	7B12110A	Y250	J3	6818R0CB	Y251	N4	7118C018	Y258	C5
F5B0	66270F00	Y251	L6	70001040	Y251	N5	40006010	Y250	C6	70000110	Y250	F4
F5C0	FR0CC182	Y246	Q2	FEDCC112	Y246	N3	FDDCC912	Y246	N2	60000110	Y246	Q3
F5D0	7918903R	Y251	J4	400RD10F	Y258	E5	0401D11A	Y258	E6	0481A11E	Y258	C4
F5E0	00007002	Y250	N6	0956700F	Y250	R6	FF12E102	Y250	L1	21D04013	Y250	L2
F5F0	1C07FFFF	Y240	Q5	FB6DB6DR	Y240	S5	84000000	Y240	U5	000F00F4		
F600	1FD430D2	Y252	G3	0050010C	Y252	E2	C0140116	Y252	E3	0R0R2BA2	Y252	E4
F610	EE36F11A	Y252	C1	0R36001A	Y252	E1	3315480A	Y252	L1	701DF118	Y246	Q1
F620	03ER0005	Y252	E6	0A0R2002	Y252	A5	770B2002	Y252	C5	010R2002	Y252	F5
F630	3118310A	Y252	G4	04FA4015	Y252	J4	70000110	Y252	G6	04071102	Y252	J6
F640	4000C010	Y252	L2	323831DA	Y252	J5	10DD4112	Y252	N2	401A8118	Y252	N3
F650	400F6018	Y246	Q6	9036510A	Y253	C1	F421511A	Y253	C2	1051600C	Y253	C3
F660	8014601F	Y253	C4	9012610F	Y253	C5	A013611F	Y253	C6	18117009	Y253	E1
F670	1918740A	Y253	E3	402F8002	Y253	E6	181A7119	Y253	E4	B0057039	Y253	E5
F680	0118843A	Y253	J1	00008411	Y253	L2	18369551	Y253	J2	1616411R	Y253	N3
F690	F11AA019	Y253	J3	021AA019	Y253	J4	C41AA019	Y253	J6	F31AA019	Y253	J5
F6A0	0600A401	Y253	N5	00558201	Y253	J7	LQ1AB009	Y253	N6	20AEA002	Y253	N4
F6B0	FF16A002	Y253	N7	200E8109	Y253	S1	3C1AB129	Y253	S2	FPDDC112	Y253	S3

REF CASSETTE P/N		73687711		CORE MAP AND CROSS REFERENCE LISTING				PAGE 060	
ADDRESS	MICRO CODE	LOGIC ID		MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID	MICRO CODE	LOGIC ID
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F6C0	6013D118	Y253	S6	DFDCDF02	Y253	S5	5000A100	Y253	Q6
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F6E0	0813F919	Y246	G4	F7DC5002	Y246	G6	0F51F10D	Y246	L4
F6F0	088CF012	Y246	L6	08FC5001	Y246	Q5	07D8F002	Y246	L5
F700	7806311A	Y251	F2	4009F000	Y243	C1	000F00F4		
F710	1005111A	Y258	E1	08126009	Y258	G1	7C09D008	Y258	E3
F720	F9284616	Y248	S2	010A3032	Y248	N2	EE2A2066	Y248	Q1
F730	0050801F	Y248	N4	000A2009	Y248	N3	E076211C	Y251	E4
F740	0050410E	Y248	S5	702B1109	Y248	S4	4000D100	Y248	S6
F750	70001010	Y246	U5	5000C000	Y246	S5	10BC5112	Y258	J5
F760	0081601D	Y258	G2	08056109	Y258	G3	02186119	Y258	G4
F770	1A088551	Y246	A1	E811110A	Y258	L5	1A088559	Y246	A2
F780	A050210C	Y248	L1	50000010	Y248	E6	50009010	Y251	E6
F790	0000030A	Y259	E1	80C06404	Y259	G1	0000080A	Y259	J1
F7A0	01000006	Y259	Q2	01000009	Y259	F2	03000007	Y259	G2
F7B0	0000100A	Y259	L2	80C05404	Y259	N2	106C0008	Y259	C3
F7C0	5000D010	Y258	G5	A00DF108	Y258	C6	000F00F4		
F7D0	700AC00F	Y258	E4	01000009	Y259	C4	0000200A	Y259	E4
F7E0	0000010R	Y259	L4	80C0R004	Y259	N4	00001003	Y259	C5
F7F0	1405510A	Y258	J4	991850DA	Y246	U4	1405701A	Y258	L4
F800	F8000400	Z038	G6	0401911A	Y002	C1	000F00F4		
F810	1004900A	Y002	C4	02DR2016	Y002	G1	FC049002	Y002	G3
F820	0C0D300A	Y002	L5	08061109	Y002	G2	70000010	Y002	N5
F830	0050F16C	Y002	Q2	080A4009	Y002	Q4	5014100F	Y002	C3
F840	4F0RA008	Y002	Q5	R01D500F	Y004	C4	A00D421F	Y004	C3
F850	400D5B02	Y004	C5	400D5B12	Y004	E1	20AD5012	Y004	C6
F860	20DF8106	Y004	N1	DFCD7042	Y004	J1	0474211C	Y004	C1
F870	00007E11	Y004	J2	00006151	Y004	L3	0050600C	Y004	J5
F880	1C04610A	Y004	N3	70000010	Y004	Q3	CC1180DA	Y004	N2
F890	0110610A	Y004	S1	0F189109	Y004	E3	002063F5	Y004	E4
F8A0	0050F00E	Y006	C1	08C8A1D6	Y006	G1	0A11E01A	Y006	G2
F8B0	2804B10A	Y006	J3	2C04B1DA	Y006	L3	40009000	Y006	L5
F8C0	0131D802	Y006	Q5	10R0D112	Y006	S5	21D0C113	Y006	Q1
F8D0	0052C021	Y006	Q4	3012D009	Y006	Q3	5011E10A	Y006	Q6
F8E0	70000000	Y002	U1	51EA0014	Y006	G3	70000010	Y006	C6
F8F0	0CFAA016	Y006	E1	4000F800	Y002	S4	0F50301D	Y002	Q3
F900	00000000	Y016	C4	240471DA	Y012	C1	0518401A	Y012	C2
F910	200R700A	Y012	G6	0074110E	Y012	C4	40005000	Y012	C5
F920	3404210A	Y012	F4	10CB30D6	Y012	G4	010B611A	Y012	E5
F930	3804100A	Y012	G5	08CB31D6	Y012	J5	7004411A	Y012	J6
F940	4404410A	Y012	L6	F009101A	Y012	C3	100B211A	Y012	J1
F950	0F51501D	Y012	Q2	481D5108	Y012	Q3	0F52600D	Y012	S2
F960	40006011	Y012	S3	6809501A	Y012	S4	000F00F4		
F970	0A0A211A	Y012	N1	500001D0	Y012	A3	0REA7016	Y012	A2
F980	000F00F4			000F00F4			000F00F4		
F990	000F00F4			000F00F4			000F00F4		
F9A0	000F00F4			000F00F4			000F00F4		
F9B0	000F00F4			000F00F4			000F00F4		
F9C0	000F00F4			000F00F4			000F00F4		
F9D0	000F00F4			000F00F4			000F00F4		

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73687711

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ADDRESS	MICRO CODE	LOGIC	ID	PAGE	MICRO CODE	LOGIC	ID	PAGE	MICRO CODE	LOGIC	ID	PAGE	MICRO CODE	LOGIC	ID	PAGE
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FA10	01001102	Y008	C5		FE11211A	Y008	E2		F012101A	Y008	E1		F000A011	Y010	G1	
FA20	23003401	Y008	E4		71180008	Y008	E6		94EB4056	Y008	J4		F513280A	Y008	E3	
FA30	011320D2	Y008	E5		10512111	Y008	G6		01323012	Y008	G5		00055109	Y008	N4	
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Q060	A	B	--	--	E	--	--	--	--	--	--	--
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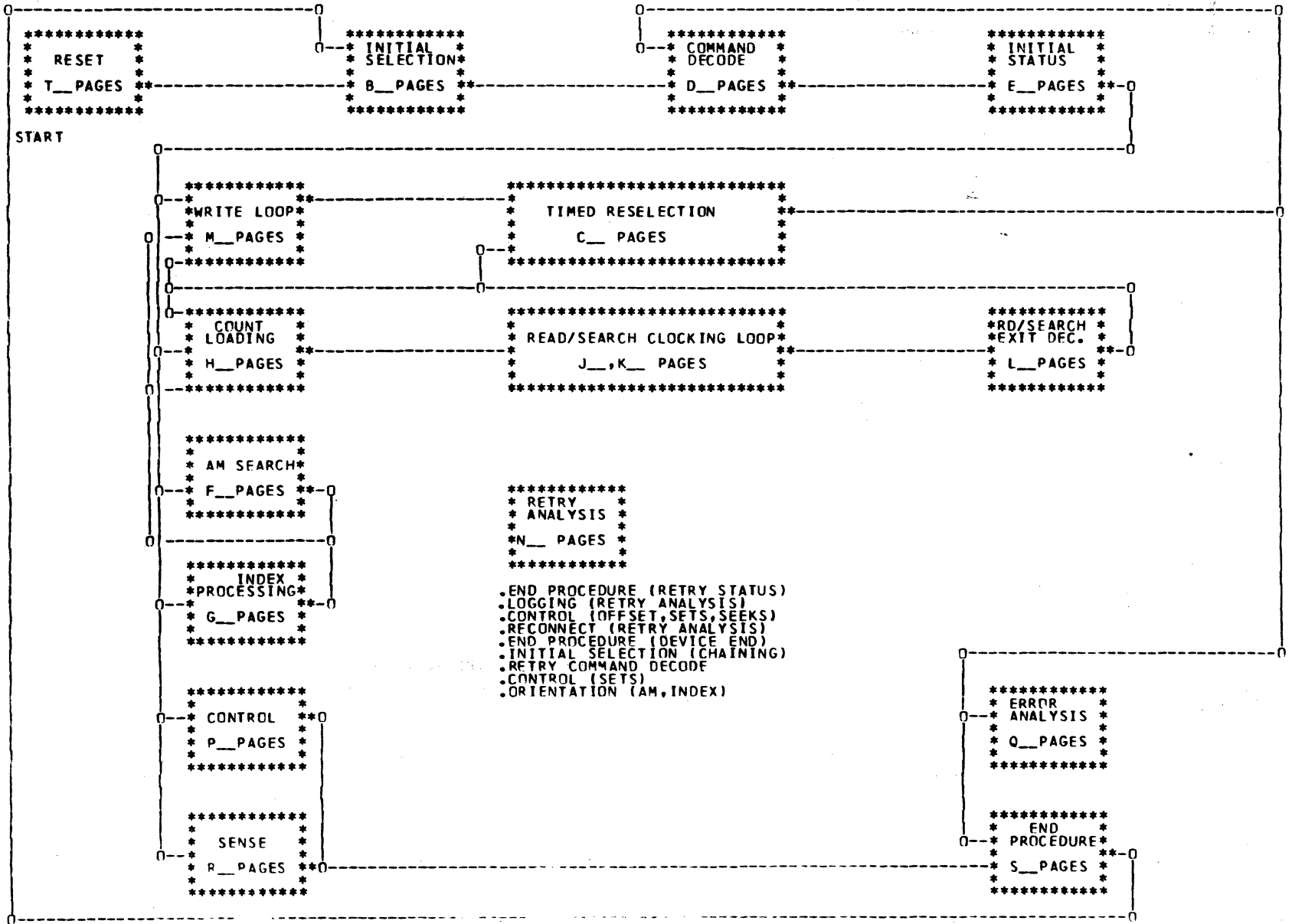
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Y467	A	B	--	--	F	F	--	H	J	--	--	--
Y468	A	--	--	--	F	F	--	--	J	--	--	--
Y470	A	--	--	--	F	F	G	--	J	--	--	--
Y480	A	--	--	--	F	F	G	--	J	--	--	--
Y482	A	--	--	--	F	F	G	--	J	--	--	--
Y484	A	--	--	--	F	F	G	--	J	--	--	--
Y486	A	--	--	--	F	F	G	--	J	--	--	--
Y488	A	--	--	--	F	F	G	--	J	--	--	--
Y490	A	--	--	--	F	F	G	--	J	--	--	--
Y492	A	B	--	--	F	F	G	--	J	--	--	--
Y494	A	--	--	--	F	F	G	--	J	--	--	--
Y496	A	--	--	--	F	F	G	--	J	--	--	--
Y498	A	--	--	--	F	F	G	--	J	--	--	--
Y499	A	--	--	--	F	F	G	--	J	--	--	--

MPSS CROSS REFERENCE REVISION SUMMARY LISTING

REVS FPD CL	A 1	B 2	C 3	D 4	E 5	F 6	G 7	H 8	J 9	K 10	L 11	M 12
PAGE												
Y500	A	B	--	--	E	--	--	H	J	--	--	M1
Y501	A	--	--	--	E	F	--	H	J	--	--	M1
Y502	A	B	--	--	E	--	--	H	J	--	--	--
Y503	A	--	--	--	E	F	--	H	J	--	--	--
Y504	A	B	--	--	E	F	--	H	J	--	--	M1
Y505	A	B	--	--	E	F	--	H	J	--	--	M1
Y508	--	--	--	--	--	--	--	--	--	K	--	--
Y510	--	--	--	--	--	--	--	--	--	K	--	--
Y512	--	--	--	--	--	--	--	--	--	K	--	--
Y514	--	--	--	--	--	--	--	--	--	K	--	--
Y800	A	--	--	--	--	--	--	--	--	--	--	--
Y810	A	--	--	--	--	--	--	--	--	--	--	--
Y820	A	--	--	--	E	--	--	--	--	--	--	--
Y830	A	--	--	--	E	--	--	--	--	--	--	--
Y840	A	--	--	--	--	--	--	--	--	--	--	--
Z010	A	--	--	--	--	--	--	H	J	--	--	M
Z011	A	--	--	--	--	--	--	H	J	--	--	--
Z012	A	--	--	--	E	F	G	H	J	--	--	--
Z014	A	--	--	--	E	F	G	H	J	K	--	M1
Z015	--	--	--	--	--	--	--	H	J	K	--	M
Z016	A	--	--	--	--	--	--	--	--	--	--	--
Z018	A	--	--	--	E	F	--	--	--	--	--	--
Z020	A	--	--	--	--	--	--	--	--	--	--	--
Z022	A	--	--	--	E	F	--	--	--	--	--	--
Z024	A	--	--	--	E	F	G	--	--	--	--	--
Z026	A	--	--	--	--	--	G	H	J	--	--	--
Z030	A	--	--	--	E	F	G	H	J	K	--	M1
Z032	A	--	--	--	E	F	--	H	J	--	L	--
Z034	A	--	--	--	E	F	--	H	J	--	L	--
Z036	A	--	C	--	E	F	--	H	J	--	L	--
Z038	--	--	--	--	--	--	--	H	J	--	L	M1
Z062	A	--	--	--	E	F	--	H	J	--	L	--
Z064	A	--	--	--	--	--	--	H	J	--	--	--
Z065	A	--	--	--	--	--	--	--	--	--	--	--
Z110	A	--	--	--	--	--	--	--	--	--	--	--
Z112	A	--	--	--	--	F	--	--	--	--	--	--
Z114	A	--	--	--	--	F	--	--	--	--	--	M3

Z032 3414-3, 3414-4 Rev. 2

SIEMENS SYSTEM 4004
DCU 4004/581 MICRO PROGRAM



A004 REFERENCE
FUNCTIONAL FLOW CHART

 * HARDCORE DIAGNOSTICS *

* PAGE *	** MAINLINE **
X020	IAR + IAR GATING TEST
X022	ALU TESTS
X027	REGISTER TEST PART 1
X040	REGISTER TEST PART 2
X060	BRANCH TEST
X064	A=IAR TEST
X065	CS DECODE TEST
X067	MA REGISTER ASSEMBLER TEST
X108	ECC WRITE TEST
X116	ECC READ TEST
* PAGE *	** OPTIONAL **
X200	MEMORY TEST
X230	MEMORY ECC TEST
X900	MEMORY QUALIFIER

 * INLINES *

* PAGE-NO *	** EXERCISER + UTILITY **
Y000	TAG EXERCISER
Y100	CYLINDER SEEK
Y120	HEAD ALLIGNMENT
Y140	READ ROUTINE
Y160	WRITE HOME ADDRESS
Y180	OFFSET SCOPE LOOP
Y200	SENSE LOG DISPLAY
Y220	ADDRESS MARK TEST
Y240	WRITE ROUTINE
Y260	INCREMENTAL SEEK
Y280	RANDOM SEEK
* PAGE-NO*	** INLINE DIAGNOSTIC **
Y300	INTERFACE +CONTROL I
Y320	INTERFACE +CONTROL II
Y340	INTERFACE +CONTROL III
Y360	STATIC SEEK
Y380	STATIC RTZS
Y3A0	DYNAMIC POWER UP
Y3C0	DYNAMIC RTZS
Y3E0	INDEX + SECTOR
Y400	SIMULATED LOSS OF D1 BITS
Y420	FORWARD EOT DETECT
Y440	INTERFACE + CONTROL IV
Y460	INTERFACE + CONTROL V

 * STAND ALONE TEST *

Y480	VIBRATION TEST
Y500	VELOCITY GAIN + ADJUST

DATA STORAGE MAP

100 SIP CHANNEL A
 1 PCH
 2 ATT. INT. NOT SERVED
 3 RESV
 104 SIP CHANNEL B
 5 PCH
 6 ATT. INT. NOT SERVED
 7 RESV
 108
 9 A
 B
 10C
 D
 E
 F
 110 - I SCR
 1 FMT/MSG - "
 2 CNTP RSDA - "
 3 LOG RSDA - "
 114 LOG CNTR -ELCB
 5 CORR RSDA - "
 6 RETRY " - "
 7 SEEK " - "
 118 LAST ADDRESS
 9 LAST STATUS
 A
 B
 - CONT CONN FLAG
 11C SMS/LOG PTR-SCB
 D FMT/MSG - "
 E SNS CODE - "
 F -
 120 SEEK RETRY CTR
 1 OVRN RETRY CTR
 2
 3
 124 D-CHK RETRY CTR
 5
 6
 7
 128 OCC
 9
 A RIP
 B
 12C OVRN RETRY CTR
 D
 E
 F
 130 LAST CHAN CMD
 1
 2
 3
 134 CER
 5
 6
 7
 138
 9
 A
 B
 13C RETRY RESD (RDA)
 D RETRY RESD (RSDA)
 E RETRY RESD (NOTRSDA)
 F RETRY READ (STRG PTR)

14C COUNT PHY CYL
 1
 2
 3 COUNT PHY HD
 144 HA PHY CYL
 5
 6
 7 HA PHY HD
 148 SOURCE PHY ID
 9
 A
 B
 14C MACRO BEFORE RETRY
 D ST BEFORE RETRY
 E
 F
 150
 1 RETRY CYL
 2 RETRY HD
 3
 154
 5
 6
 7
 158
 9
 A
 B
 15C SENSE POINTER
 D
 E
 F
 160 X00 TABLE
 1 X80 "
 2 X7F "
 3 X80 "
 164 X01 "
 5 X40 "
 6 XRF "
 7 X90 "
 168 X02 "
 9 X20 "
 A XDF "
 B XA0 "
 16C X03 "
 D X10 "
 E XEF "
 F X80 "
 170 X04 "
 1 X08 "
 2 XF7 "
 3 XCO "
 174 X05 "
 5 X04 "
 6 XFR "
 7 X00 "
 178 X06 "
 9 X02 "
 A XFD "
 B XE0 "
 17C X07 "
 D X01 "
 E XFE "
 F XFO "

180 CB4
 184
 5
 6
 7
 188
 9
 A
 B
 18C
 D
 E
 F
 190
 1
 2
 3
 194
 5
 6
 7
 198
 9
 A
 B
 19C RDA CURRENT
 D RSDA "
 E NOT BSDA "
 F STRG PTR "
 1A0 FM "
 1 CYL "
 2 HD "
 3 CR1 "
 144 BYTES READ "
 5
 6
 7
 1A8 CORR D-CHK "
 9
 A RTRY D-CHK "
 B
 1AC SK MOTIONS "
 D
 E PHY ID "
 F SK ERRORS "
 180 - RESTART DISP
 1 R1 "
 2 R2 "
 3 R3 "
 184 - ERROR DISP
 5
 6 HIGH "
 7 LOW "
 188 P1 ORIG PATTERN
 9 P2 "
 A P3 "
 B -
 18C P1 MOD PATTERN
 D P2 "
 E P3 "
 F -

100 SENSE BYTE 1
 1 2
 2 3
 3 4
 104 5 5
 5 6
 6 7
 7 8
 8 9
 9 10
 A 11
 B 12
 10C 13
 D 14
 E 15
 F 16
 100 17
 1 18
 2 19
 3 20
 104 5 21
 5 22
 6 23
 7 24
 8
 9 10
 A 11
 B 12
 10C 13
 D 14
 E 15
 F 16
 100 17
 1 18
 2 19
 3 20
 104 5 21
 5 22
 6 23
 7 24
 108
 9
 A
 B
 10C
 D
 E
 F
 100 LOG BYTE 1
 1 2
 2 3
 3 4
 104 5 5
 5 6
 6 7
 7 8
 8 9
 9 10
 A 11
 B 12
 10C 13
 D 14
 E 15
 F 16
 100 17
 1 18
 2 19
 3 20
 104 5 21
 5 22
 6 23
 7 24
 108
 9
 A
 B
 10C
 D
 E
 F
 100
 9
 A
 B
 10C
 D
 E
 F

DATA STORAGE MAP

300 KEY FIELD BUFFER
THRU
3FF

400 IN-LINE TRANSIENT AREA
THRU
7FF

- 400 INLINE CONTROL WORD
- 404 INLINE ENTRY WORD
- 40C INLINE CONTROL WORD
- 800
- 900
- A00

800 4 BYTES OF ZEROS
C00 TRANSIENT USE
D00 CCHHRKDD
EXX ECC CONSTANTS (SEE N010)
F00 SECTOR

DURING WAIT LOOP
200 SIP OR RESV CHANNEL A
1 PCH
2
3
-
204 SIP OR RESV CHANNEL B
5 PCH
6
7

218 CONTROL SWITCHES

DURING READ LOOP
-
PRE-UPDATED BYTES READ

280 FM DEV 0
1 CYL
2 HD
3 CBI
284 BYTES READ
5
6
7
288 CORR D-CHKS
9
A RTRY D-CHKS
28C SK MOTIONS
D
E PHY ID
F SK ERRORS
290 FM DEV 1
1 CYL
2 HD
3 CBI
294 BYTES READ
5
6
7
298 CORR D-CHKS
9
A RTRY D-CHKS
29C SK MOTIONS
D
E PHY ID
F SK ERRORS
2A0 FM DEV 2
1 CYL
2 HD
3 CBI
2A4 BYTES READ
5
6
7
2A8 CORR D-CHKS
9
A RTRY D-CHKS
2AC SK MOTIONS
D
E PHY ID
F SK ERRORS
2B0 FM DEV 3
1 CYL
2 HD
3 CBI
2B4 BYTES READ
5
6
7
2B8 CORR D-CHKS
9
A RTRY D-CHKS
2BC SK MOTIONS
D
E PHY ID
F SK ERRORS

2C0 FM DEV 4
1 CYL
2 HD
3 CBI
2C4 BYTES READ
5
6
7
2C8 CORR D-CHKS
9
A RTRY D-CHKS
2CC SK MOTIONS
D
E PHY ID
F SK ERRORS
2D0 FM DEV 5
1 CYL
2 HD
3 CBI
2D4 BYTES READ
5
6
7
2D8 CORR D-CHKS
9
A RTRY D-CHKS
2DC SK MOTIONS
D
E PHY ID
F SK ERRORS
2E0 FM DEV 6
1 CYL
2 HD
3 CBI
2E4 BYTES READ
5
6
7
2E8 CORR D-CHKS
9
A RTRY D-CHKS
2EC SK MOTIONS
D
E PHY ID
F SK ERRORS
2F0 FM DEV 7
1 CYL
2 HD
3 CBI
2F4 BYTES READ
5
6
7
2F8 CORR D-CHKS
9
A RTRY D-CHKS
2FC SK MOTIONS
D
E PHY ID
F SK ERRORS

GENERAL MICROPROGRAM CONTROL CODE DEFINITIONS

CEB *** COMMAND EXECUTION BYTE ***

THIS CODE GUIDES THE MICROPROGRAM THRU THE READ, CLOCKING, WRITE AND SEARCH LOOPS. THE CODE IS GENERATED BY COMMAND DECODE AS A FUNCTION OF TRACK ORIENTATION AND THE CHANNEL COMMAND. IF AN INTERIM HA/RO, KEY/DATA, OR DATA FIELD MUST BE Clocked PRIOR TO PROCESSING THE DESIRED RECORD, THE CEB IS STORED AND A CEB IS GENERATED BY INDEX PROC, CNT LOADING, OR RETRY CMD DECODE TO CLOCK THE NECESSARY FIELD(S). IN SUCH CASES, THE ORIGINAL CEB IS RETRIEVED AND EXECUTED AFTER CLOCKING THE SPECIFIED DATA FIELD. CLOCKING OF INTERIM COUNT AND/OR KEY FIELDS WITHIN THE DESIRED RECORD IS AUTOMATICALLY SPECIFIED IN THE ORIGINAL CEB. THE CEB RESIDES IN THE EB REG WHEN ACTIVE.

BIT 0 CLOCKING
 1 TRUNCATION (INDICATES RO IF BIT 0=0)
 2 HA
 3 COUNT
 4 KEY
 5 DATA
 6,7 00= SEARCH
 01= WRITE
 10= READ
 11= SPACE COUNT

01234567 ACTIVE CEB

000001XX PROCESS DATA
 000011XX PROCESS KEY/DATA
 000111XX PROCESS COUNT/KEY/DATA
 000100XX PROCESS COUNT
 000010XX PROCESS KEY
 100001XX CLOCK DATA
 100011XX CLOCK KEY/DATA
 100111XX CLOCK COUNT/KEY/DATA
 100010XX CLOCK COUNT, PROCESS DATA
 100100XX CLOCK COUNT, PROCESS KEY/DATA
 100101XX CLOCK COUNT, PROCESS KEY
 100110XX CLOCK COUNT/KEY, PROCESS DATA
 110001XX TRUNCATE DATA
 110011XX TRUNCATE KEY/DATA
 110111XX TRUNCATE COUNT/KEY/DATA
 110010XX TRUNCATE KEY
 110100XX TRUNCATE COUNT
 111000XX TRUNCATE HA
 1101001 TRUNCATE COUNT/KEY(OVERFLOW)
 1100101 TRUNCATE KEY(OVERFLOW)
 01000101 TRUNCATE WRITE DATA
 001000XX PROCESS HA
 010111XX PROCESS COUNT/KEY/DATA(RO)
 110100XX TRUNCATE COUNT-RO
 101111XX CLOCK HA, PROCESS COUNT RO
 101100XX CLOCK HA, PROCESS COUNT RO
 111100XX CLOCK HA/COUNT, PROCESS KEY/DATA
 111110XX CLOCK HA/COUNT/KEY, PROCESS DATA
 111101XX CLOCK HA/COUNT, PROCESS KEY
 111111XX CLOCK HA/COUNT/KEY/DATA

NEXT CEB

END(SEE NOTE 1)
 PROCESS DATA
 PROCESS KEY/DATA
 END
 END
 PROC STORED CEB
 CLOCK DATA
 CLOCK KEY/DATA
 PROCESS DATA
 PROCESS KEY/DATA
 PROCESS KEY
 CLOCK K, PROC D
 END(SEE NOTE 1)
 TRUNCATE DATA
 TRUNC KEY/DATA
 END
 END
 TRUNC K, WRITE D
 TRUNC WRITE D
 END(SEE NOTE 1)
 END
 PROCESS KEY/DATA
 END
 PROC C/K/D/-RO
 PROCESS COUNT-RO
 CLOCK C, PROC K/D
 CLOCK C/K, PROC D
 CLOCK C, PROC K
 CLOCK C/K/D

NOTE 1: THE OPERATION IS CONTINUED INTO THE NEXT SEGMENT IF OVERFLOW CONTINUE IS SET. A NEW CEB IS GENERATED TO CLOCK COUNT/KEY, PROCESS DATA(R1). IF TRUNCATION HAS OCCURED, THE NEW CEB IS TRUNCATE COUNT/KEY/DATA. INDEX PROCESSING STORES THIS CEB AND GENERATES A CEB TO CLOCK OVER HA AND RO.

CB1 *** CONTROL BYTE 1 ***

THIS CONTROL BYTE RESIDES IN THE ED REG. DURING CHANNEL DISCONNECTIONS, THE CODE IS SAVED IN THE PERMANENT STORAGE AREA FOR THE RESPECTIVE LOGICAL DEVICE(SEEK INC AND ALT TRK STATUS SAVED).

BIT 0 MULTI-TRACK
 1 HIGH SEARCH
 2 EQUAL SEARCH
 3 INDEX PASSED
 4 OVERFLOW CONTINUE
 5 SEEK INCOMPLETE
 6 DEFECTIVE TRACK
 7 ALTERNATE TRACK

CB2 *** CONTROL BYTE 2 ***

THIS CONTROL BYTE RESIDES IN THE EE REG.

BIT 0 FIRST SELECTION
 1 BYPASS CONTROL ROUTINE
 2 WRITE PREREQUISITE SATISFIED
 3 READ TRACK-SUBSEQUENT RECORD
 4 OVERFLOW SEGMENT(2ND OR SUBSEQUENT)
 5 HA BUFFER VALID
 6 COUNT BUFFER VALID
 7 KEY BUFFER VALID

CB3 *** CONTROL BYTE 3 ***

THIS CONTROL BYTE RESIDES IN THE EG REG.

BIT 0 CHAINING ON ENABLE RETRY
 1 RETRY COMMAND DECODE REQUIRED
 2 NORMAL INDEX ORIENTATION REQUIRED
 3 DEFECTIVE/ALTERNATE TRACK RETRY
 4 SECTOR VALID FOR CURRENT RECORD
 5 READ SECTOR REQUIRED
 6 GAP SKIPPING REQUIRED
 7 RETRY STATUS PRESENTED/READ TRACK

CB4 *** CONTROL BYTE 4 ***

THIS CONTROL BYTE RESIDES IN MEM LOC 0180

BIT 0
 1
 2
 3
 4 LAST CMD WAS A WRT HA
 5 LAST CMD WAS A SEEK
 6 ALLOW NO CHAINING
 7 NON-SENSE CMD

A030 REFERENCE---
 CEB/CB1/CB2/CB3/CB4

SPECIAL EXECUTE DEFINITIONS

SP00 ENABLE CUDI CHKS
 SP01 C7 CHECK
 SP02 SET INLINE REPEAT LATCH
 SP03 FNRL MEM ECC CHK
 SP04 LOAD DAR
 SP05 LOAD IAR
 SP06 RESET COMND/WHORU
 SP07 NOT USED
 SP08 RESET INLINE EXECUTE AND REPEAT LATCHES
 SP09 SET ROUTINE REG
 SP10 SET ERROR REG
 SP11 INITIATE CASSETTE ACTION
 B BUS 0 0=FORWARD, 1=REVERSE
 1
 2
 3 NUMBER OF BLOCKS TO SPACE
 4
 5
 6 0=SLOW, 1=FAST(BLOCK SPACING)
 7 0=RESET READY LIGHT, 1=SET READY LIGHT
 SP12 ALLOW CHANNEL SWITCH RETURN TO NEUTRAL
 SP13 ALLOW CHANNEL DISABLE
 SP14 GATE CASSETTE READ DATA
 SP15 PROGRAM STOP
 SP16 RESET CONTROL CHECK
 SP17 INHIB MEM ECC CHK
 SP18 NOT USED
 SP19 NOT USED
 SP20 CLEAR BLOCK SW TO CHL
 SP21 FORCF CHANNEL SWITCH TO X
 SP22 INHIBIT INLIN/BLOCK CHANNEL X
 B BUS 0 0=TEMPORARY INHIBIT, 1=EXTENDED INHIBIT
 1 0=BLOCK CHANNEL FOR 10 MS. X, 1=INLINE BLOCK
 2
 3
 4-7 NUMBER OF 20 MILLI-SEC INLINE BLOCK
 INCREMENTS
 SP23 SHIFT P0,P1,P2,P3
 SP24 SHIFT P1,P2,P3
 SP25 INHIBIT LOAD MB-MD
 SP26 SET READY ON CHL
 SP27 SET END AND SERVICE REQUEST
 SP28 SET INTERRUPT
 SP29 NOT USED
 SP30 NOT USED
 SP31 NOT USED

CHANNEL COMMANDS

	CC	BC	MTCC
ENABLE RETRY	51	00	
SEEK BBCCH	07	06	
SEEK CYLINDER	27	06	
SEEK HEAD	47	06	
SPACE COUNT	97	03	
RESTORE	C7	00	
SET FILE MASK	67	01	
SENSE	SENSE1	01	03
	SENSE2	81	15
	RELEASE	A7	00
	RESERVE	87	00
	READ AND RESET BUF LOG	41	18
READ	READ DATA	A5	AD
	READ KEY/DATA	65	60
	READ COUNT/KEY/DATA	85	80
	READ RO	45	40
	READ COUNT	E5	E0
	READ HA	25	05
	READ IPL	05	20
	READ TRACK	CD	
WRITE	WRITE DATA	A3	
	WRITE KEY/DATA	63	
	WRITE COUNT/KEY/DATA	83	
	WRITE SPEC COUNT/KEY/DATA	03	
	WRITE RO	43	
	WRITE HA	23	05
	WRITE COUNT	E3	12
	ERASE	F7	00
SEARCH	SEARCH HA	33	04
	SEARCH ID EQUAL	U3	05
	SEARCH ID HIGH	V3	05
	SEARCH ID EQUAL OR HIGH	93	05
	SEARCH KEY EQUAL	83	05
	SEARCH KEY HIGH	03	05
	SEARCH KEY EQUAL OR HIGH	T3	05

A040 REFERENCE
 SPEX/CHAN CMDS

SPECIAL REGISTER USAGE

REG BIT FUNCTION

IA 0,1 = 00 CHANNEL RESET
 01 CHANNEL READ
 10 CHANNEL WRITE
 2 = BLOCK SELECTION CH A
 3 = BLOCK SELECTION CH B
 4 = WAIT FOR SEL. AFTER URANG INT.
 5,6 = NOT USED
 7 = SELECTIVE RESET

IB 0-1 CMPAR BRANCH GATE CONTROL ---
 00 GATE INLIN TO CMPAR
 01 NOT USED
 10 GATE ORIENTATION CNTR RANGE TO CMPAR
 11 GATE ORIENTATION HIT TO CMPAR
 2 TAG GATE CUT
 3 NOT USED
 4-7 CUDI TAG BUS/ID SELECTOR

IC 0 GATE PLO TO VFO
 1 GATE DATA TO VFO
 2 SPECIAL DATA SYNC
 3 NOT USED
 4 ERASE
 5 NOT USED
 6 SYNC PLO
 7 UNIT SELECT

ID X UNIT BUS-IN/ID ASSEMBLER
 (SEE PAGE A060)

IE 0-2 ECC CNTRCL---
 000 RESET
 001 READ
 010 WRITE DATA
 011 WRITE BURST CODE
 100 NOT USED
 101 ALLOW LOGOPTREAD
 110 NOT USED
 111 ALLOW DECODE WRITE
 3-4 UNUSED
 5 CHANNEL POINTER---
 0 CHANNEL A
 1 CHANNEL B
 6-7 UNUSED

REG FUNCTION

SA CHANNEL BUS-OUT

SB ECC SPECIAL-IN

SC ECC SPECIAL-IN

SD UNIT READ/WRITE DATA

SE (SPECIAL INPUT NOT USED)

SG HARD CHECK 1 ERRORS SPECIAL-IN

SH HARD CHECK 2 ERRORS SPECIAL-IN

EA CHANNEL BUS-IN

EB BRANCH REG

EC UNIT BUS-OUT

MA-MD MEMORY FETCH/STORE DATA

ID ASSEMBLER

WITH IB BIT 2=1, UNIT BUS-IN IS GATED TO THE ID REG

WITH IB BIT 2=0, SPECIAL CONTROL UNIT CONDITIONS ARE GATED TO ID AS A FUNCTION OF IB 4-7 AS FOLLOWS:

IB4-7	GROUP DESCRIPTION	ID BIT	CONDITION	IB4-7	GROUP DESCRIPTION	ID BIT	CONDITION
0	FAILING ADDR REG -- HIGH			8	HARD CHECK-GROUP 1	0	MEMORY ERROR BYTE 0
1	FAILING ADDR REG -- LOW					1	MEMORY ERROR BYTE 1
2	PHYSICAL ADDRESS	0-1	00 CONTROL UNIT A 01 CONTROL UNIT B			2	MEMORY ERROR BYTE 2
						3	MEMORY ERROR BYTE 3
		2-7	111000 SPINDLE A 110001 SPINDLE R 101010 SPINDLE C 100011 SPINDLE D 011100 SPINDLE E 010101 SPINDLE F 001110 SPINDLE G 000111 SPINDLE H	9	HARD CHECK-GROUP 2	4	CLOCK CHK
						5	DAR CHK
				A	CONTROL UNIT ADDRESS	6	IAR CHK
						7	ALU CHK
3	NOT USED			B	INLINE CONTROL SWITCHES	0	'A' REG CHK
4	CONTROL CHECK-GROUP 1	0	BUFFER INPUT PARITY CHECK			1	'B' REG CHK
		1	NOT USED			2-7	NOT USED
		2	BUFFER ADDRESS CHECK			0-4	CONTROL UNIT ADDRESS
		3	BUFFER OUTPUT PARITY CHECK			5-7	6,7 NOT USED, 5=CHAN DISABLED
		4	INTERFACE CHECK A			0-3	0 ROUTINE
		5	INTERFACE CHECK B				1 PARAMETER
		6-7	NOT USED				2 OPTIONS
5	CONTROL CHECK-GROUP 2	0	NOT USED				5 DISPLAY
		1	WRITE PARITY CHK				8 STOP ON ERROR
		2	READ PARITY CHK	C	INLINE DATA SWITCHES		A CONTINUE ON ERROR
		3	BIT RING CHECK				C RESULT
		4	WRITE COMP CHK	D	CHANNEL SELECTED	4	2 CU FEATURE
		5	PLC INPUT CHECK (MISSING SERV 0)			5	NOT MCS MODE
		6	VFO INPUT CHK			6	EXECUTE LATCH
		7	VFO PHASE CHK			7	NOT CE MODE
6	CONTROL CHECK-GROUP 3	0	FCC-NO INPUT DATA			0-7	DATA SWITCHES
		1	FCC-P0 OR WRITE			0	NOT USED
		2	FCC-P1 OR P3			1	NOT USED
		3	FCC-P2			2	NOT USED
		4-7	NOT USED			3	NOT USED
7	CONTROL CHECK-GROUP 4 (CUDI CHKS)	0	DRV SEL FAILURE			4	NOT USED
		1	TAG INVALID			5	CHANNEL SELECTED
		2	DEVICE CHECK	F	CASSETTE STATUS	0	0 CHANNEL A
		3	NOT USED			1	1 CHANNEL B
		4	CUDI BUS-IN CHK			6	NOT USED
		5-7	NOT USED			7	NOT USED
						0	READY
						1	READ CHK
						2	DATA AVAILABLE
						3	ROT
						4	FOT
						5-7	NOT USED

OPERATIONAL
STATUS
BYTE

	BIT 0	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7
1	RD/WR ERROR	SRNH	SFEK CHECK	XMISSION ERR	TRACK CHECK	AUTO HD SW ERR	END OF FILE	CMD REJECT
2	DATA ERR CNT FLD	OVFL INCOMP	MISSING AM	FILE PROTECT	NOT FOUND	INVALID SEQ	END OF CYL	TRACK END
3	ENV DATA OVFL	EQUIP CHK	----	----	RESD OTHER CHL	CORR DATA FLD ERROR	ADD ERR INFO	PERM R/W ERR

DIAGNOSTIC
STATUS
BYTE

4	CNTRL UNIT IDENT (0-1)	<i>Log. Contr Unit Addr (2-3)</i>		<i>3 of 6 Code (5-7)</i>	
5	REVERSE	CYC 512	CYC 256	DIFF 512	DIFF 256
6	CYC LOW ADDRESS				
7	HEAD ADDRESS (3-7)				
8	FORMAT/MESSAGE (0-3 FORMAT, 4-7 MESSAGE)				

	FORMAT 0	FORMAT 1	FORMAT 3	FORMAT 4	FORMAT 5	FORMAT 6	
9	<i>MICRO PROG. TYPE</i>	MODULE STATUS	FAR HIGH	CYLINDER HIGH	CYLINDER HIGH	BYTES READ	
10	0	MONITOR MODE	FAR LOW	CYLINDER LOW	CYLINDER LOW	BYTES READ	
11	<i>MICRO PROG.</i>	MONITOR STATE	HARD CHK 1	HEAD HIGH	HEAD HIGH	BYTES READ	
12	<i>Revision</i>	CHECK STATUS	HARD CHK 2	HEAD LOW	HEAD LOW	BYTES READ	
13	<i>Level</i>	FAULT	0	RECORD	RECORD	CORR DATA CHKS	
14	0	FILE BUS OUT	0	SECTOR	SECTOR	CORR DATA CHKS	
15	0	FILE BUS IN	0	OFFSET	OFFSET	RTRY DATA CHKS	
16	0	TAG BUS (IB)	0	RETRIES	RSTART DISP-1	RTRY DATA CHKS	
17	0	0	0	DRIVE ID	-2	SEEKS	
18	0	0	0	0	-3	SEEKS	
19	0	CNTRL CHK 1	0	0	ERROR DISP-1	0	
20	0	CNTRL CHK 2	0	0	-2	SEEK ERRORS	
21	0	CNTRL CHK 3		0	PATTERN-1	CMND OVRUN A	
22	0	CNTRL CHK 4		0	PATTERN-2	DATA OVRUN A	
23	0	0		0	-3	CMD OVRN B	0
24	0	0		0	CHAN TRUNC	DATA OVRN B	0

SENSE MESSAGE SUMMARY

MSG FORMAT 0 PROG CHK	FORMAT 1 EQUIP CHK	FORMAT 3 HARD CHK	FORMAT 4 UNCORRBL DATA CHK	FORMAT 5 CORRECTBL DATA CHK	FORMAT 6 ERROR/USAGE STATS
0 NO MESSAGE	NO MESSAGE	NO MESSAGE	HA-ECC	HA	NO MESSAGE
1 INVALID CMD	SECTOR WRAPAROUND	-	COUNT-ECC	COUNT	-
2 INVALID SEQ.			KEY-ECC	KEY	-
3 CCW COUNT TRUNCATED	NO WRT GT AT DRIVE	-	DATA-ECC	DATA	-
4 CCW DATA INCORRECT	NO WR CUR SNS	-	HA- NO SYNC	-	-
5 CCW COUNT TOO LARGE	CYLINDER WRAPAROUND		COUNT- NO SYNC	-	-
6 NOT USED	HIGH CYL/DIFF WRAPAROUND		KEY- NO SYNC	-	-
7 RETRY CMD INCORRECT	HEAD WRAPAROUND	-	DATA- NO SYNC	-	-
8 READ TRACK SUBSEQ REC	DIFFERENCE WRAPAROUND		-	-	-
9 HARD CMD NOT AS EXP	FILE STATUS INCORRECT		AM FAILURE (ON RETRY)	-	-
A INVALID TRACK FORMAT	SEEK ERROR		RESTART CMD =RD DATA ON OVFL INCOMP	RESTART CMD =RD DATA ON OVFL INCOMP	
B IMPROPER ALT TRK POINTER	PHYS ADDR VERIFICATION SEEK CHECK		RESTART CMD =WT DATA ON OVFL INCOM	RESTART CMD =WT DATA ON OVFL INCOMP	
C SERDES ERROR NO ST4S	TIMECUT- NO INTERRUPT	-	-	-	-
D WRCKD/WRSPCKD ON DFF TRACK	WAIT FOR INDEX AND C-CHK				
E INDEX ACTIVE ON KEY OR DATA FIELD P1 OR	P3 ERROR				
F SCTR CNTR/ ORIENTATION CNTR DISAGREE	ECC P2 ERROR	-	RETRY INHIBITED	-	-

THIS FIELD DEFINES THE A AND B BUS SOURCES, THE ALU OPERATION AND THE D BUS DESTINATION (SEE PAGE A110 FOR DECODE ASSIGNMENT TABLE). THE POSSIBLE OPERATIONS ARE:

A+B=D A-B+1=D
 A+B=DC A/B=D
 A+B+C=DC A..R=D
 A-B+C=DC A@B=D

A, B, AND D BUS ARE EXPANDED IN THE DECODE ASSIGNMENT TABLE ON PAGE A110

C (LEFT SIDE OF EQ) INDICATES ALU CARRY-IN DERIVED FROM ST3

1 (LEFT SIDE OF EQ) INDICATES ALU CARRY IN EQUALS ONE.

C (RIGHT SIDE OF EQ) INDICATES THAT THE STATE OF THE ALU CARRY-OUT IS TO BE STORED IN ST3.

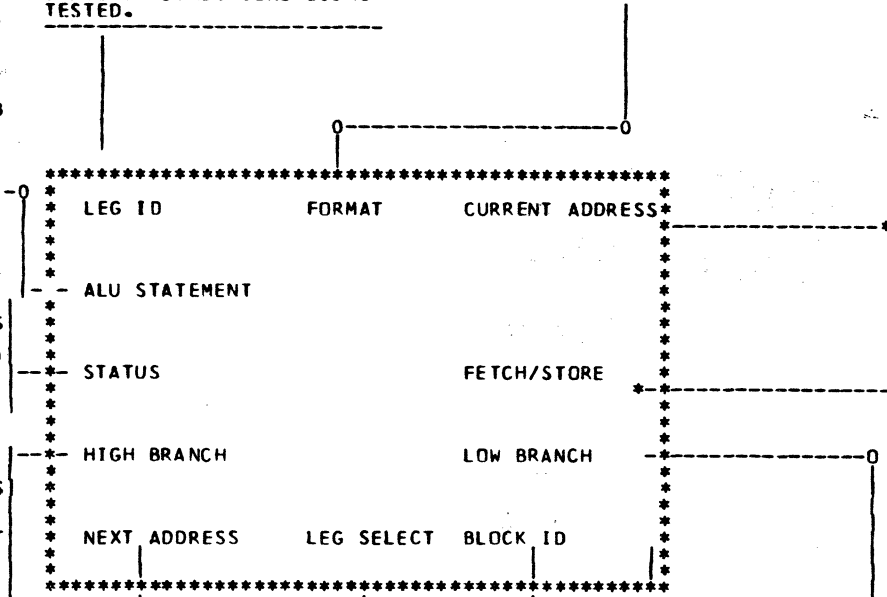
THIS FIELD MAY BE LEFT BLANK OR SPECIFY ONE OF THE MNEMONICS UNDER THE CS COLUMN IN THE DECODE ASSIGNMENT TABLE (PG A110) THE MNEMONIC INDICATES THE SET OR RESET OF THE RESPECTIVE REGISTER BITS

ONE OF THE MNEMONICS UNDER THE COLUMN MARKED CH IN THE DECODE ASSIGNMENT TABLE (PAGE A110) IS VALID FOR THIS POSITION, WHICH SPECIFIES A HIGH ORDER BRANCH CONDITION. IF THE FIELD IS LEFT BLANK, THE INSTRUCTION CH FIELD TO ZERO. IF THE NEXT ADDRESS BIT 12 IS A 0, IF THE NEXT ADDRESS BIT 12 IS A 1 IT IS SET TO A ONE. IF A MNEMONIC IS SPECIFIED, THE INDICATED CONDITION IS TESTED. THE PRESENCE OF THE SPECIFIED CONDITION SETS IAR BIT 12 TO A 1; OTHERWISE BIT 12 IS RESET

SPECIAL: A=IAR ALLOWS A 64 WAY BRANCH FROM A BUS.

THIS IS A 3 BIT FIELD CORRESPONDING TO CURRENT ADDRESS BITS 11, 12, 13. CHARACTERS 0, 1, AND X ARE VALID FOR EACH POSITION (X INDICATES DON'T CARE). THE LEG ID ASSISTS THE READ BY EXPEDITING IDENTIFICATION OF THE PROPER ADDRESS WITHIN A BRANCH SET FOR A GIVEN STATE OF CONDITIONS BEING TESTED.

THIS ONE OR TWO CHARACTER FIELD DEFINES THE INSTRUCTION FORMAT (1, 2, 3, 4, 5, F1, F4, S4, D) SEE PAGE A100 FOR FORMAT DECODE.



--THIS IS A 4 HEX CHARACTER FIELD DEFINING THE CURRENT ADDRESS OF THE INST IN MEMORY

THIS IS A 3 HEX CHARACTER FIELD SPECIFYING THE DAR ADDRESS FOR A FETCH OR STORE OPERATION. IN A 4 BYTE F/S OPERATION, THE FIRST HEX CHARACTER SPECIFIES THE INSTRUCTION CW FIELD (DAR BITS 4-7). THE REMAINING TWO CHARACTERS ARE DUMMY (XX) TERMINATED FROM A BUS. IN A 1 BYTE FETCH, THE 3 HEX CHARACTERS SPECIFY THE INSTRUCTION CW, CV AND CY FIELDS (DAR BITS 4-15).

THIS IS A 4 HEX CHARACTER FIELD DEFINING THE NEXT ADDRESS. IF A BRANCH CONDITION IS SPECIFIED, THE NEXT ADDRESS IS THE LOWEST POSSIBLE BRANCH

THIS IS A 2 CHARACTER ALPHA-NEUMERIC CODE THAT IDENTIFIES THE PHYSICAL LOCATION OF THE MICROBLOCK ON THE FLOWCHART

ONE OF THE MNEMONICS UNDER THE COLUMN MARKED CL IN THE DECODE ASSIGNMENT TABLE (PAGE A110) IS VALID FOR THIS POSITION, WHICH INDICATE A LOW ORDER BRANCH CONDITION. IF THE FIELD IS LEFT BLANK, THE INSTRUCTION CL FIELD IS SET TO 0000 IF NEXT ADDR BIT 13 IS 0, OR 0001 IF NEXT ADDR BIT 13 IS A 1. IF A MNEMONIC IS SPECIFIED, THE INDICATED CONDITION IS TESTED THE PRESENCE OF THE CONDITION SETS IAR BIT 13 TO A 1, OTHERWISE IAR BIT 13 IS RESET.

THIS IS A 3 BIT FIELD REPRESENTING NEXT ADDRESS BITS 11, 12, 13. CHARACTERS 0, 1, X ARE VALID FOR EACH POSITION (X INDICATES DON'T CARE) THE CHARACTER * IS ALSO ALLOWED IN THE SECOND AND THIRD POSITIONS TO INDICATE A BRANCH CONDITION FOR THE RESPECTIVE NEXT ADDRESS BIT POSITION

THIS BLOCK MAY ALSO BE USED FOR SPEX INSTRUCTION (SEE PAGE A040 FOR DECODE)

A090 REFERENCE --- MICRO INSTRUCTION BLOCK

INSTRUCTION FORMATS

	10	314	718	11112	15116	19120	23124	27128	311
FORMAT 1		CK	OP	CA/CD	CN	CH	CL	NAND10	
FORMAT 2		CX	CB	OP	CA/CD	CN	CH	CL	NAND00
FORMAT 3		CS	CK	OP	CA/CD	CN	CH	CL	NAND11
FORMAT 4		CS	CB	OP	CA/CD	CN	CH	CL	NAND01
FORMAT 5		CA	CB	OP	CD	CN	CH	CL	1 1111

FORMAT F1	ONE BYTE FETCH								
		CX	CV	CW	CY	CN	CH	CL	1 1011
FORMAT F4	FOUR BYTE FETCH								
		CS	CK	CW	CA/CD	CN	CH	CL	1 1001
FORMAT S4	FOUR BYTE STORE								
		CS	CK	CW	CA/CD	CN	CH	CL	1 1101

SPECIAL CASES

FORMATS	SPE(X)													
5, F1, F4, S4 INVALID		FMT SPEC		00 CZ		SP(EX)		CN		CH		1111		0 1XX

FORMATS	A=IAR													
5, F1, F4, S4 INVALID		FMT SPEC		OP		CA/CD		0000		1111		0000		ONDXX

	10	314	718	11112	151		
IAR		LTCH		CN		CHCLOO	
IAR		LTCH		CX		CN	CHCLOO
IAR		LTCH		CN		CHCLOO	
IAR		LTCH		CN		CHCLOO	
IAR		LTCH		CN		CHCLOO	

IAR		0		LTCH		CN		CHCLOO	
DAR		0		LTCH		CW		CV	CY
IAR		0		LTCH		CN		CHCLOO	
DAR		0		LTCH		CW		A BUS	0 - 7
IAR		0		LTCH		CN		CHCLOO	
DAR		0		LTCH		CW		A BUS	0 - 7

EX NOT=05	FMT NOT=2								
IAR		0		LTCH		CN		CHC200	
EX NOT=05	FMT =2								
IAR		0		LTCH		CX		CN	CHC200
EX =05	FMT NOT=2								
IAR		0		8 BUS		- 7		CN	CHC200
EX =05	FMT NOT=2								
IAR		0		8 BUS		1 - 7		CN	CHC200
DAR		0		8 BUS				LTCH	
EX =047	FMT NOT=2								
DAR		0		8 BUS				LTCH	
IAR		0		5-7				A BUS	0-5
IAR		0		LTCH				A BUS	0-5
IAR		0		LTCH		CX		A BUS	0-5

NOTES: 1) SPE(X) AND A=IAR ARE MUTUALLY EXCLUSIVE WITH THE EXCEPTION OF SPOS WHICH ALLOWS A 4K-WAY BRANCH.

A100 REFERENCE---
FORMAT DECODE

DECODE	CA/CD	CA	CB	CS	CH	CL	OP
00	-	-	-	-	0	0	A+B=D
01	AH	AH	AA	0=ST4	1	1	A+B=DC
02	AT	AT	AB	0=ST1	ST0	INDEX	A+B+C=DC
03	SG	SG	AC	1=ST1	ST2	ST3	A-B+C=DC
04	SH	SH	AD	0=ST0	ST4	ST5	A-B+1=D
05	ST	ST	AE	1=ST0	ST6	ST7	A/B=D
06	EE	EE	AG	0=ST5	EB0	EB1	A.B=D
07	ED	ED	SA	1=ST5	EB2	EB3	A&B=D
08	SB	SB	MA	0=ST2	EB4	EB5	+ ADD
09	MB	MB	SC	DNST21	EB6	EB7	- 1'S COMPLEMENT
0A	MC	MC	SD	0=ST3	TERMD/INTAC	BYRDY	/ LOGICAL OR
0B	MD	MD	SE	1=ST3	CARRY	SELTD	. LOGICAL AND
0C	IA	IA	EB	0=ST6	COMND/WHORU	DOPAR/QVRUN	@ EXCLUSIVE OR
0D	IB	IB	EC	1=ST6	CMPAR/INLIN	D=0	
0E	IE	IE	EA	0=ST7	C=CHK	CUEND	
0F	EG	EG	ID	1=ST7	A=IAR	SPEX	
10	IC						
11	AA						
12	AB						
13	AC						
14	AD						
15	AE						
16	AG						
17	SA						
18	MA						
19	SC						
1A	SD						
1B	SE						
1C	EB						
1D	EC						
1E	EA						
1F	ID						

A110 REFERENCE---
DECODE ASSIGNMENT

-DCB SCS

	1 TRANS SECTOR	2 POLL DEV	3 TRANS MOD ADDR	4 REQUEST ADDR	5 REQUEST ADDR	6 CYL ADDR	7 HIGH CYL ADDR
0			REVERSE	SIM EVEN DIBIT		128	REV. DIR.
1	64		RELEASE	SIM FOR EOT.		64	
2	32		SERVICE	SIM REV EOT		32	CAR 512 *
3	16			SIM VELOCITY.	READ DIFF	16	CAR 256
4	8			BLANK ON CYL	RD HI CYL/DIFF	8	
5	4	DRIVE (SER)		SIM FINE ENABLE	READ HAR.	4	DIFF 512 *
6	2		2	INHIB UNLD HD	READ CAR.	2	DIFF 256
7	1	DRIVE (0-7)	1	SIMUL HD LOED	READ SECTOR	1	
0	HIGHSIDE		RV THIS CH	INDEX ERR		128	RV DIR.
1	64		RV OTHER CH	OFFST ACT.		64	
2	32		ENGAGED	SK INCOMP		32	CAR 512 *
3	16		200 MB*	SK COMP		16	CAR 256
4	8			ONLINE		8	
5	4			ATTENTION ^G		4	DIFF 512 *
6	2			BUSY		2	DIFF 256
7	1			RECORD SEARCH		1	

DCB IN

	DSU (SERVICE) BUS OUT 5	DSU (0-7) BUS OUT 7	READ DIFF BUS OUT 3	RD HICYL/DIFF BUS OUT 4	READ HAR BUS OUT 5	READ CAR BUS OUT 6	READ SECTOR BUS OUT 7
0	SERVICE	0	128/OFFSET REV	REV DIRECTION		128	HIGH SIDE
1		1	64			64	64
2		2	32	CAR 512 *		32	32
3		3	16	CAR 256	HAR 16	16	16
4		4	8		HAR 8	8	8
5		5	4	DIFF 512 *	HAR 4	4	4
6		6	2	DIFF 256	HAR 2	2	2
7		7	1		HAR 1	1	1

DCB IN

G - INTERRUPT CONDITION
* 200 H BYTE

BUS
OUT

8 TRAN. HD ADDR	9 DIFF/OFFSET	A CONTROL 1	B CONTROL 2	C OPERATE	D REQ DIA SENSE	E MODE & DIAG CONT.
0	128/REVERSE			WRITE ADR MRK		
1	64	METERING		ADR MRK SCH	SERVO POINTS	DIAG 4
2	32 /800UIN*	OFFSET START		NGT SQUELCH	MON MODE + DIAG	DIAG 2
3 16	16 /400UIN*	SEEK START	RESET DIFF	HD SELECT	MON STATE	DIAG 1
4 4	8 /200UIN*	REZERC		HD ADVANCE	CHECK STATUS	BLOCK PARITY
5 8	4 /100 UIN*	RESET HD		WRITE	FAULT TEST	MODE 4
6 2	2 /50 UIN*	CONTROL RESET	DEC DIFF.	READ	LOGIC	MODE 2
7 1	1 /25 UIN*	RESET INT	OFFSET RESET	SAVE SECTOR		MODE 1

BUS
IN

8 TRAN. HD ADDR	9 DIFF/OFFSET	A CONTROL 1	B CONTROL 2	C OPERATE	D REQ DIA SENSE	E MODE & DIAG CONT.
0	128/REVERSE	INDEX ERR		INDEX ERROR		
1	64	OFST ACT		OFFSET ACTIVE	SEE CHART BELOW	DIAG 4
2	32 /800UIN*	SK INCOM		SIGN		DIAG 2
3 16	16 /400U IN*	SK CGMP		WRITE INHBIT		DIAG 1
4 8	8 /200UIN*	ON LINE		RD/WR VALID		
5 4	4 /100UIN*	ATTENTION		INDEX		MODE 4
6 2	2 /50UIN*	BUSY		END OF CYL		MODE 2
7 1	1 /25UIN*	RECORD SEARCH		WRITE SENSE		MODE 1

BUS
IN

	SERVO POINTS BUS OUT 1	MONTMODE 5 DIAG BUS OUT 2	MONITOR STATE BUS OUT 3	CHECK STATUS BUS OUT 3	SAFETY BUS OUT 5
0	VEL > 64		8	CE PROG STOP	DATA FAULT
1		DIAG 4	7	SPEED	SERVO FAULT
2	FINE ANALOG	DIAG 2	6	MOTOR ON	TEMP FAULT
3	DIFF = 0	DIAG 1	5	LOCAL	NEG VOLT FLT
4	FINE MODE		4	INTERFACE CHECK	PCS VOLT FLT
5	DIBITS	MODE 4	3	MCNITOR CK	AIR FLCW FLT
6	CYLINDER	MODE 2	2	INTERLOCKS	HDS NOT LDED
7	END OF TRAVEL	MODE 1	1	CMND REJECT	EVEN SLOPE

FOR 200 MBYTE DIVIDE UIN BY 2

MONITOR
LATCHES

NUMBER	1	2	4	6	7	
NAME	REZERO	SEEK	HEAD LOAD	READ	WRITE	0
SET BY	RTZ COMMAND	GATED SK START	BRUSH CYCLE STAR	READ COMMAND	WRITE COMMAND	BUS IN BIT
RESET BY	SK COMP. STATE 7	SK COMP. STATE 5	SK COMP. STATE 6	NOT READ STATE 5	NOT WRITE. STATE 3	0
1	RTZ FF	SEEK FF	MOTOR START COMMAND	READ GATE	WRITE GATE	7
2	T=0. EVEN CYL	FORWARD/REVERSE DRIVE	SPEED	STATE 1. DATA LEVEL	WRITE DATA PULSE	6
3	REV EOT ENABLE	VELOCITY DET	BRUSH CYCLE COMPLETE	NOT SHORT AGC TIME CONSTANT	WRITE CURRENT	5
4	REVERSE EOT	STATE 3. (NOT) FOR/REV DRIVE	LOAD HEADS COMMAND	STATE 3. AGC LEVEL.	(FAULT COND) WRITE.OFFSET	4
5	LOAD	STATE 4. ON CYLINDER	FOR EOT ENABLE. HEADS LOADED	STATE 4. DATA PULSE	(FAULT COND) NOT AC TRAN- SITIONS. NOT ADDRESS MARK	3
6	STATE 5. CYLINDER PULSE		REVERSE EOT		(FAULT COND) READ.WRITE	2
7	STATE 6. ON CYLINDER	(FAULT COND) SPIKE DETECT	STATE 6. CYL PULSE	(FAULT COND) WRITE. NOT ON CYL.	(FAULT COND) WRITE. NOT ON CYL	1
8			ON CYLINDER	(FAULT COND) MULTIPLE HD + CURRENT.	(FAULT COND) MULTIPLE HD + CURRENT	0

A113-REFERENCE
CUDI MONITOR STATE

NO. *	OSB'S			FMT/MSG	PAGE	SET CONDITIONS
* * 1	* 2	* 3	*	*	*	*
1	01	00	00	01	N200.Q2	RETRY STATUS AND NO ENABLE RETRY COMMAND
2	C1	00	02	01	D025.S5	COMMAND CODE REJECT: A) INVALID COMMAND CODE. B) A WRITE COMMAND SPECIFIES MORE DATA BYTES THAN REQUIRED BY THE KL AND/OR DL VALUE OF THE COUNT FIELD. A WRITE HA COMMAND SPECIFIES MORE THAN FIVE DATA BYTES C) A SEEK COMMAND SPECIFIES LESS THAN SIX DATA BYTES. D) A DEVICE RESERVE OR A DEVICE RELEASE COMMAND IS ATTEMPTED AND NEITHER A TWO-CHAN.-SWITCH FUNCTION NOR A TWO-CONTROLLER FUNCTION IS INSTALLED. E) IF THE UNUSED BITS OF THE FILE MASK DATA BYTE ARE NOT ZEROS. F) CHANNEL RETURNED WITH INCORRECT RETRY COMMAND. G) HARD COMMAND NOT AS EXPECTED
				05	L015.N5	
				03	P120.S6	
				01	D040.N4	
				04	P070.J3	
				07	B070.Q5	
				09	B080.N5	
3	01	10	02	4F	N195.N3	COMMAND CODE REJECT FILE PROTECT, AND RETRY INHIBITED
				00	D080.S3	FILE MASK INHIBITS THE EXECUTION OF SEEK OR WRITE COMMAND
4	01	50	02	00	G020.G3	FILE MASK INHIBITS THE EXECUTION OF THE OVERFLOW OPERATION
5	05	10	02	00	G020.G2	FILE MASK INHIBITS THE EXECUTION OF THE AUTOMATIC HEAD SWITCHING
6	02	00	00	00	H020.U6 L015.L3 M100.J4	EOF-RECORD WAS DETECTED (DL=0 IN THE COUNT FIELD)
7	C8	04	00	0D	D015.C4	EXECUTION OF WR CKD OR WR SPEC CKD ON A FLAGGED DEFECTIVE TRACK
8	C8	40	02	00	N160.Q5	DEFECTIVE OR ALTERNATE TRACK OPERATION ON A SUBSEQUENT OVERFLOW SEGMENT
9	10	00	00	00	L015.J3 B070.C4	TRANSMISSION PARITY ERROR ON THE WAY CPU TO CU

NO	OSB'S	FMT/MSG	PAGE	SET CONDITIONS
*	*	*	*	*
1	2	3		
10	20 00 02	04	P050.C1	SEEK CHECK: A) THE SEEK-ADDRESS IS OUTSIDE THE VALID BOUNDARY 3,4, AND 6 OF THE SEEK-ADDRESS.
		1B	N160.S2	B) THE DEVICE WAS NOT ABLE TO COMPLETE A SEEK OPERATION AFTER SIXTEEN INTERNAL RETRIES; CAUSES: 1. THE PHYSICAL ADDRESS ON THE TRACK DOES NOT COMPARE WITH THE SEEK ADDRESS DURING A READ, A CLOCKING PROCEDURE, UPDATE DATA WRITE, OR SEARCH OPERATION. 2. AFTER AUTOMATIC HEAD SWITCHING; THE HEAD NO. COMPARED IS UNEQUAL.
		04	N165.Q4	C) INVALID SEEK ADDRESS ON DEF./ALT. RETRY OPERATION.
		1A	N140.S4	D) SEEK INCOMPLETE.
11	20 40 02	1B	N160.U2	PHYSICAL ADDRESS DOES NOT COMPARE EQUAL ON SUBSEQUENT OVERFLOW SEGMENT.
12	40 00 00	00	N170.L4	A) DATA OVERRUN ON A FORMAT WRITE OPERATION. B) DATA OVERRUN DURING AN UPDATE WRITE OPERATION ON A SUBSEQUENT OVERFLOW SEGMENT.
13	40 00 03	00	N180.S3	DATA OR COMMAND OVERRUN AFTER SIXTEEN RETRIES.
14	00 00 03	4X	N080.G2	RETRY LIMIT REACHED ON READ ERROR, NO SYNC BYTE FOUND, AM DETECTION FAILURE ON RETRY OR A DRIVE UNSAFE CONDITION HAS BEEN DETECTED AND RETRY SHOULD NOT BE ATTEMPTED.
		CE	L020.E3	INDEX ACTIVE ON KEY OR DATA FIELD
15	00 00 06	53	N195.Q5	CORRECTABLE DATA ERROR IN A DATA FIELD.
16	80 40 02	53	N070.L4	CORRECTABLE DATA ERROR IN A DATA FIELD OF AN OVERFLOW CONTINUE RECORD DATA ERROR IN A HOME ADDRESS ON OVERFLOW DATA ERROR IN A COUNT FIELD ON OVERFLOW DATA ERROR IN A KEY FIELD ON OVERFLOW UNCORRECTABLE DATA ERROR IN A DATA FIELD OF A SUBSEQUENT OVERFLOW SEGMENT
		50		
		51		
		52		
		43		

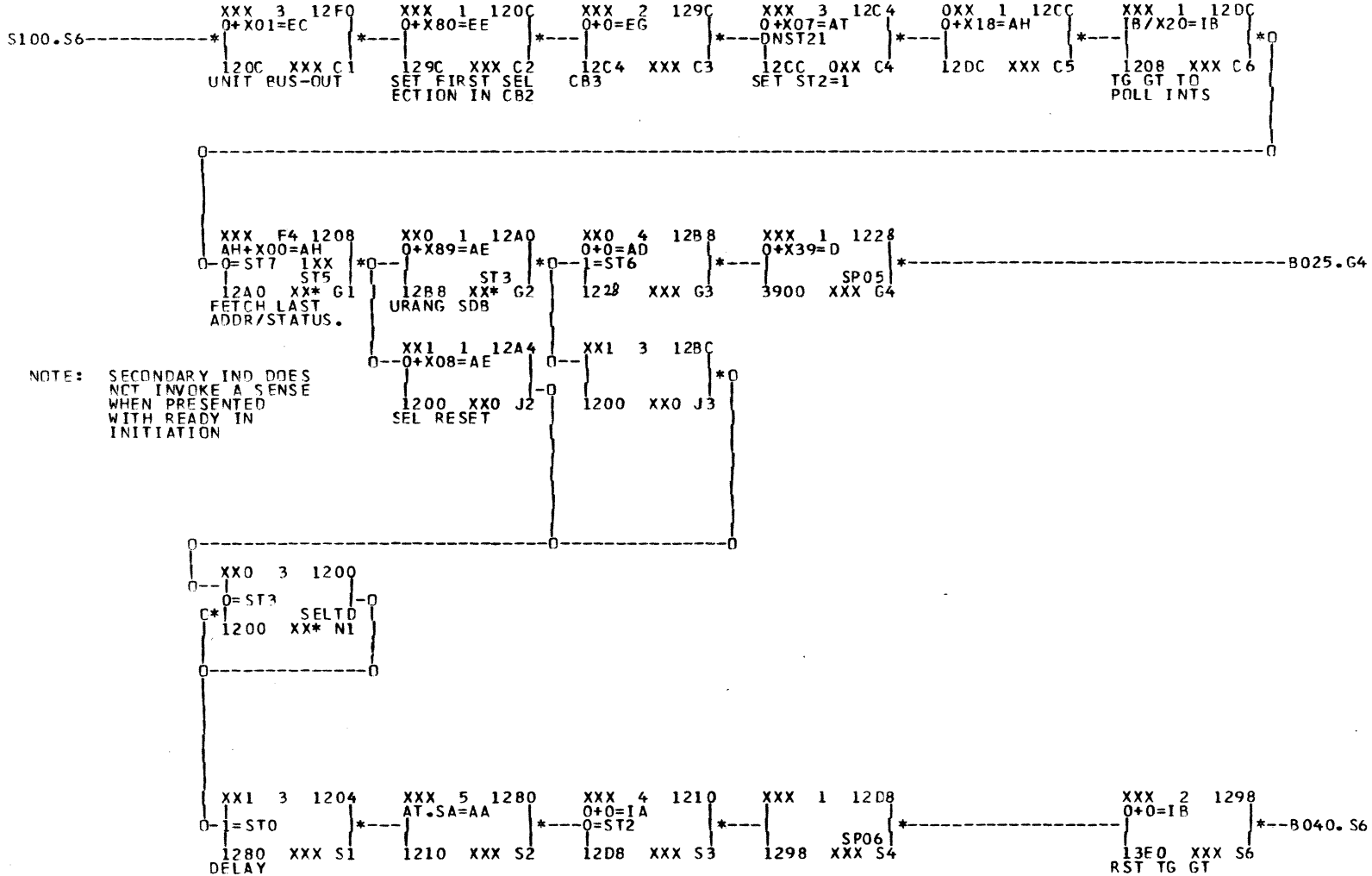
A116 REFERENCE
OSB ERROR TABLE

NO.	* * *	OSB'S 1 * 2 * 3 *	* * *	FMT/MSG	* * *	PAGE	* * *	* * *	SET CONDITIONS	* * *
17		00 01 00		00		M090.L5 L070.N3			END OF TRACK.	
18		00 02 00		00		G020.E5			END OF CYLINDER (EOC) WAS DETECTED DURING READ OPERATION.	
19		00 0A 00		00		G050.S4			EOC WAS DETECTED DURING A SEARCH OPERATION.	
20		00 42 02		00		G020.G6			EOC WAS DETECTED DURING AN OVERFLOW OPERATION.	
21		00 04 00		02		D080.N1 E030.E3			INVALID SEQUENCE (SEE SPECIFICATION TABLE 3). INVALID TRACK FORMAT	
22		24 00 08		00		G040.E2			RECORD NOT FOUND: A) SEARCH OPERATION (WITHOUT AUTOMATIC HEAD SWITCHING) WAS NOT SUCCESSFULL WHEN THE SECOND INDEX POINT WAS DETECTED B) AN ATTEMPT WAS MADE TO READ A NON EXISTING RECORD AND THE END OF THE TRACK IS DETECTED.	
23		00 08 82		60		B065.G5			USAGE/ERROR COUNTER OVERRUN.	
24		00 00 82		60		P090.U3			TRANSFERRED WITH READ-ERROR-LOG-COMMAND.	
25		00 00 08		00		B065.G1			DEVICE RESERVED TO THE OTHER CHANNEL.	
26		80 80 00		08		N050.C4			READ ERROR DURING A READ TRACK COMMAND ON A SUBSEQUENT RECORD.	
27		81 10 02		00		M010.E5			WRITE LOCKOUT IS ACTIVE ON THE DRIVE AND A WRITE OPERATION IN INITIATED.	

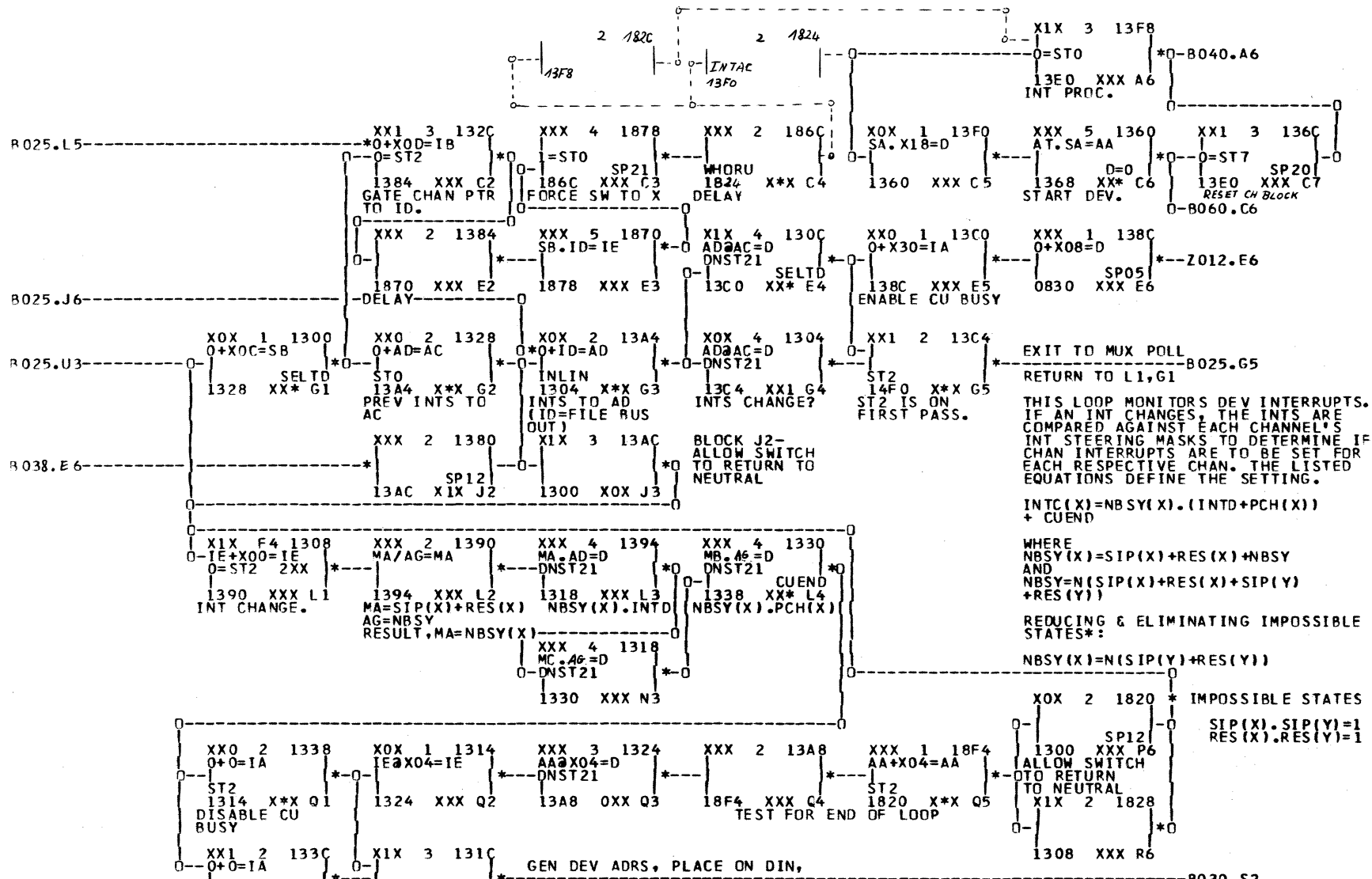
NO	OSB'S	FMT/MSG	PAGE	SET CONDITIONS
* ** * 1 * 2 * 3 *				
28	00 00 42			EQUIPMENT CHECK:
		11 P080.Q4		A)*TRANSMIT TARGET ERROR.
		13 M080.S5		B) NO WRITE GATE AT DRIVE.
		14 M080.Q5		C) NO WRITE CURRENT SENSE.
		15 P050.S2		D)*TRANSMIT CYLINDER ERROR.
		16		E) TRANSMIT HIGH CYLINDER/DIFFERENCE ERROR.
		17 P020.U2		F)*TRANSMIT HEAD ERROR.
		18 P030.C2		G)*TRANSMIT DIFFERENCE (OFFSET) ERROR.
		19 P090.G4		H) FILE STATUS NOT AS EXPECTED.
		1B E060.C4		SEEK INC. ON ORIENTED PTRY
		1C P080.E0		I) NO INTERRUPT FROM DRIVE(RECORD READY INTERRUPT).
		0C E070.N4		J) SERDES MALFUNCTION (NO ST4'S).
		0F G010.G5		K) ORIENTATION COUNTER TIMEOUT OR SECTOR VALUE INCORRECT.
		F030.E2		
		1D G050.J1, G010.C2		C-CHK ON WAITING FOR INDEX.
		1E N020.Q3		L) ECC P1 OR P3 COMPARE ERROR.
		1F N020.Q4		M) ECC P2 COMPARE ERROR
		30 B065.J4		N) EQUIPMENT CHECK (SELECTIVE RESET)
		1R E060.C2		O) SEEK INCCOMPLETE ON RETRY
		10 B065.E6		P) CONTROL CHECK
		E010.U3		
		E010.S3		
		E070.S7		
		L040.L2		
		L040.N2		
		M090.U2		
		M090.S2		
		P010.E5		
				* NOTE WRAP AROUND ERROR ORIGINATE P040.L4
29	09 00 03 0B	N160		IMPROPER ALTERNATE TRACK POINTER
30	8C 00 02 5X	N060.J6		AM SYNC CHECK ON OVERFLOW RECORDS

** CN ENTRY **
 ST3 IS UNIT CHK IN LAST STATUS
 ST6 IS SEL RESET (ALSO ST5)

** ON EXIT **
 ST0 IS START DEVICE
 ST6 IS SEL RESET AND START DEVICE



NOTE: SECONDARY IND DOES
 NOT INVOKE A SENSE
 WHEN PRESENTED
 WITH READY IN
 INITIATION



THIS LOOP MONITORS DEV INTERRUPTS. IF AN INT CHANGES, THE INTS ARE COMPARED AGAINST EACH CHANNEL'S INT STEERING MASKS TO DETERMINE IF CHAN INTERRUPTS ARE TO BE SET FOR EACH RESPECTIVE CHAN. THE LISTED EQUATIONS DEFINE THE SETTING.

INTC(X)=NBSY(X).(INTD+PCH(X)) + CUEND
 WHERE
 NBSY(X)=SIP(X)+RES(X)+NBSY
 AND
 NBSY=N(SIP(X)+RES(X)+SIP(Y) +RES(Y))

REDUCING & ELIMINATING IMPOSSIBLE STATES*:
 NBSY(X)=N(SIP(Y)+RES(Y))

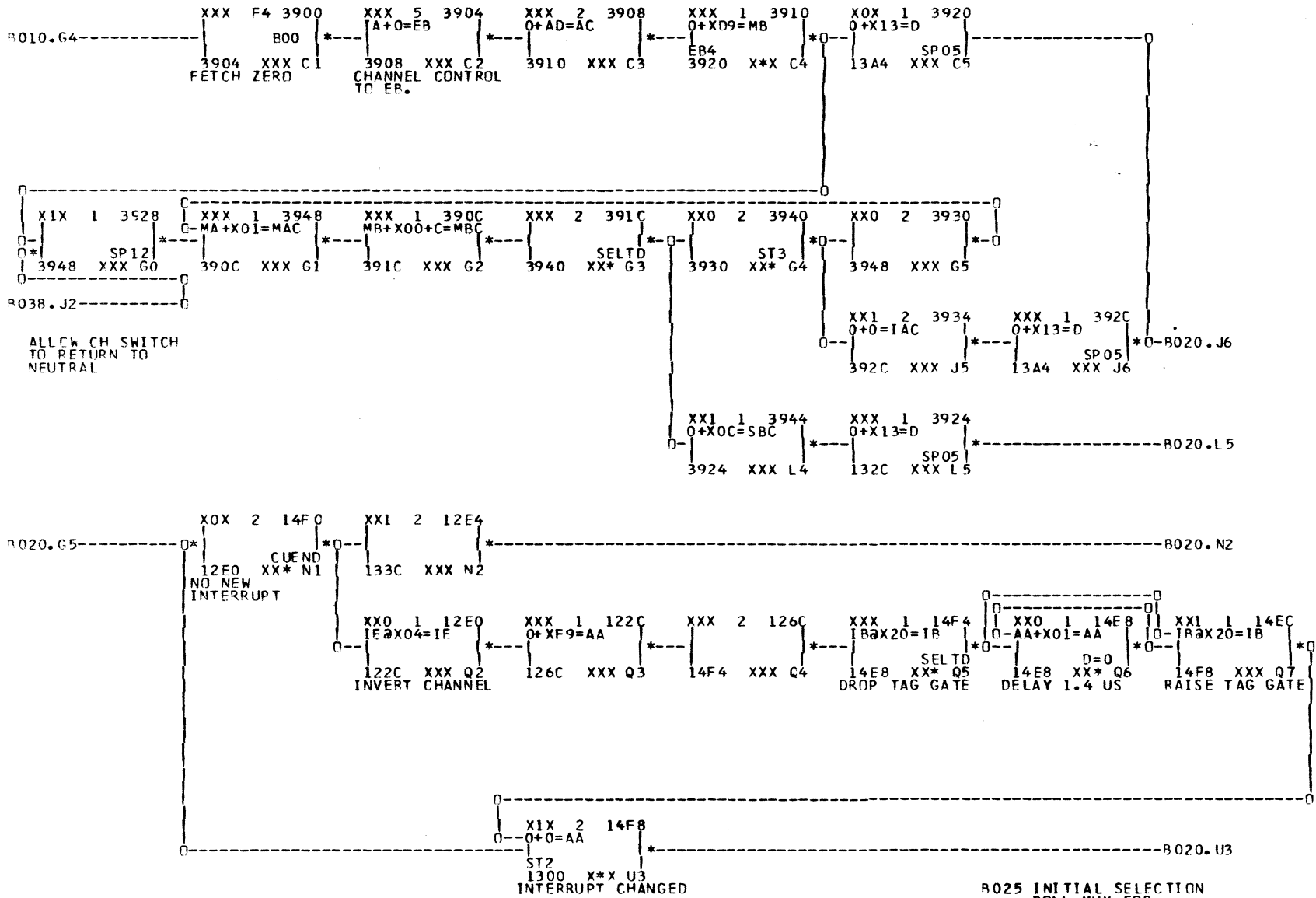
IMPOSSIBLE STATES
 SIP(X).SIP(Y)=1
 RES(X).RES(Y)=1

GEN DEV ADRS, PLACE ON DIN,
 RAISE INT AND RETURN TO J2

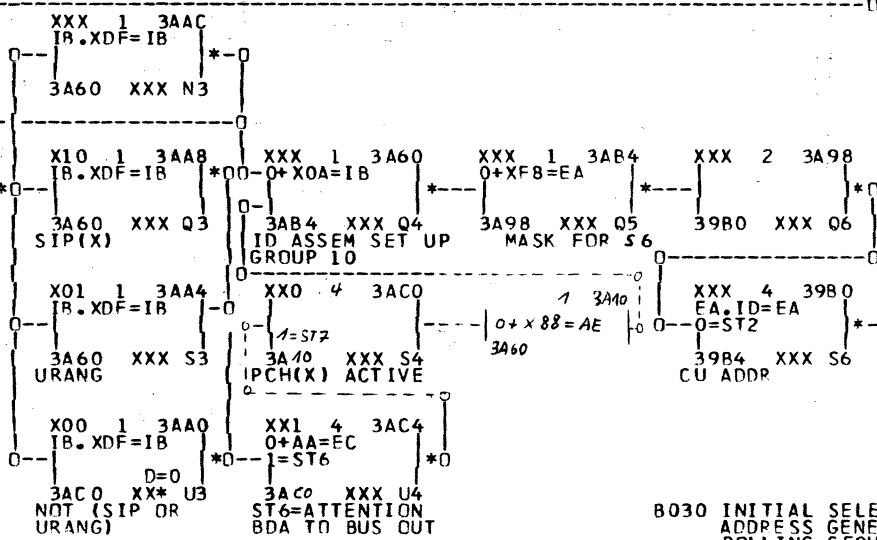
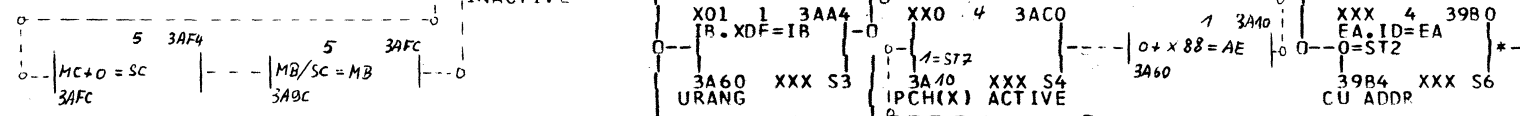
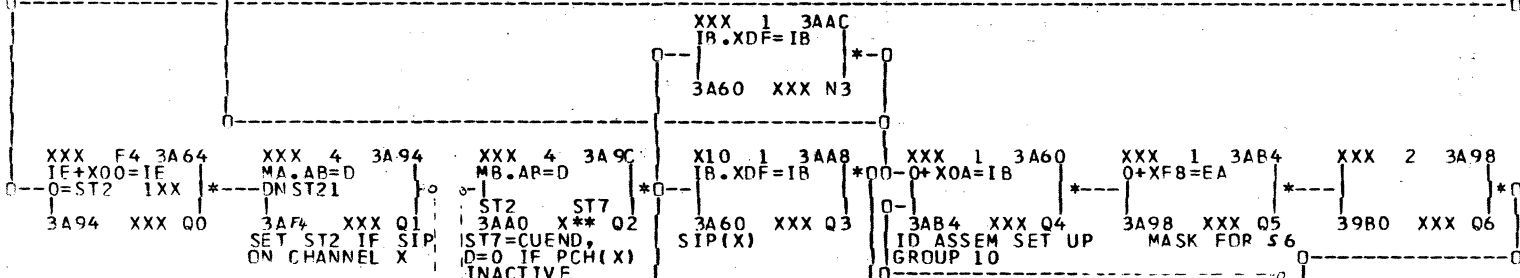
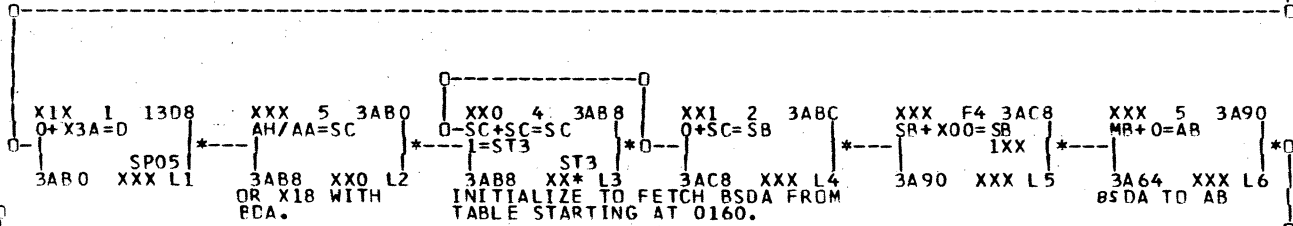
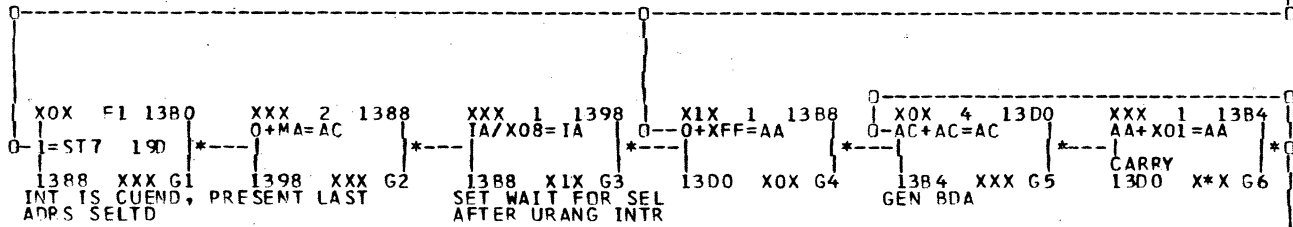
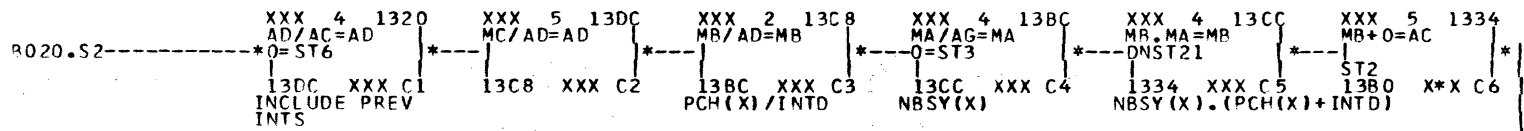
X=CHANNEL SPECIFIED BY IE5 (A+B)
 Y=OTHER CHANNEL

SIP(X)=SEEK IN PROGRESS ON CHANNEL X
 RES(X)=RESERVED ON CHANNEL X
 NBSY=NOT BUSY TO ANY CHANNEL
 NBSY(X)=NOT BUSY "TO" CHANNEL X (NOT DEDICATED TO CHANNEL Y)

INTD=INTERRUPT FROM DRIVE
 INTC=INTERRUPT TO CHANNEL
 PCH(X)=ATT. INTERRUPT OWED CHANNEL X
 (NOT DEDICATED TO CHANNEL Y)

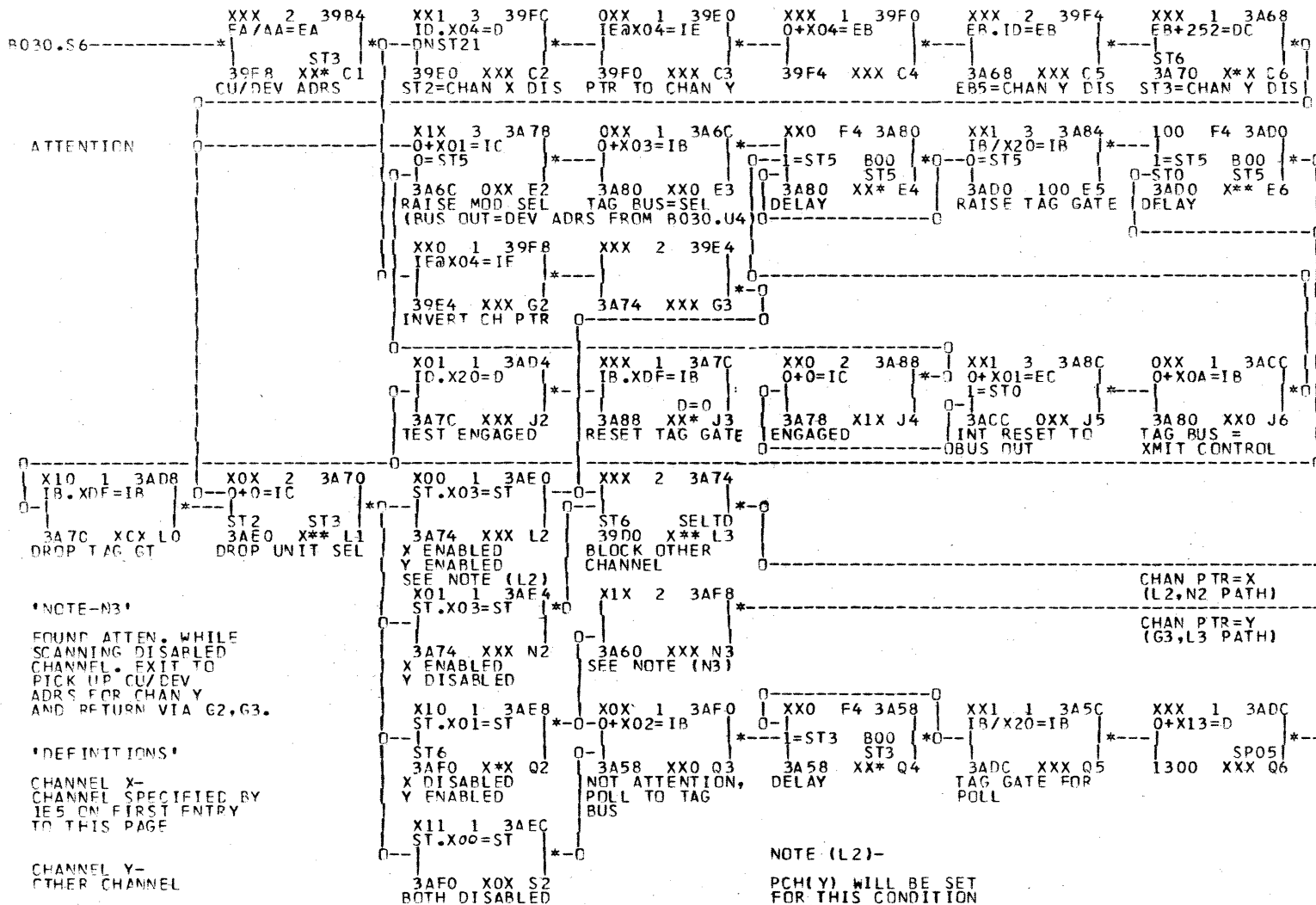






B030 INITIAL SELECTION
ADDRESS GENERATION ON
POLLING SEQUENCE
M1

ST3=1 EXCEPT
FROM N3



NOTE-N3
FOUND ATTN. WHILE
SCANNING DISABLED
CHANNEL. EXIT TO
PICK UP CU/DEV
ADRS FOR CHAN Y
AND RETURN VIA G2,G3.

DEFINITIONS
CHANNEL X-
CHANNEL SPECIFIED BY
IE5 ON FIRST ENTRY
TO THIS PAGE

CHANNEL Y-
OTHER CHANNEL

CHAN PTR=X
(L2,N2 PATH) R038.L3
CHAN PTR=Y
(G3,L3 PATH) R020.N3

NOTE (L2)-
PCH(Y) WILL BE SET
FOR THIS CONDITION
ON S070.

B010.S6
R020.C6

```

XXX 1 13E0      XXX 2 1358      XXX S4 161C      XXX 5 16F0      XX0 4 16C8      XX1 2 16CC
O+X80=SB      O+0=MA      SB+X00=SB      AH/AA=SC      O-SC+SC=SC      O+SC=SB
O=ST3 1XX      O=ST3 1XX      O=ST3 1XX      O=ST3 1XX      O=ST3 1XX      O=ST3 1XX
1358 XXX E1    161C XXX E2    16F0 XXX E3    16C8 XX0 E4    16C8 XX* E5    13E4 XXX E6
RESET CP4 FOR  COMMAND DECODE  'OR' X18 WITH  INITIALIZE TO  FTCH CONSTANTS

```

```

XXX F4 13E4      XXX 2 13E8      XXX 3 15D8      OXX 5 1540      XXX 5 15E4      XXX 1 15DC
SR+X00=SB      O+X08=1B      O+X08=1B      MR+0=AB      MD+0=AT      O+X9C=SB
1XX      DNST21      DNST21      DNST21      DNST21      DNST21
13E8 XXX J1    15D8 XXX J2    1540 OXX J3    15E4 XXX J4    15DC XXX J5    1520 XXX J6
FETCH CUR B04  GT CNTRL SWS  SAVE BSDA    PERM STRG    PTR TO AT
BSDA, STRG PTR

```

INITIALIZE CURRENT AREA

```

XX0 F4 1500      XX0 1 1528      XXX S4 1520
AT+X04=AT      SP@XAC=D      SB+X04=SB
2XX      1XX      1XX
ST3      D=0      D=0
1528 XX* N1    1520 XXX N2    1500 XX* N3
XX1 5 152C
MD+0=EDC
1528 XXX Q2

```

```

X1X 1 151C      XX0 1 1508
O+X11=AT      O+X0F=D
1508 XX0 N5    OF04 XXX N6
MACRO      EXIT TO
PTR TO AT    SEL UNIT.

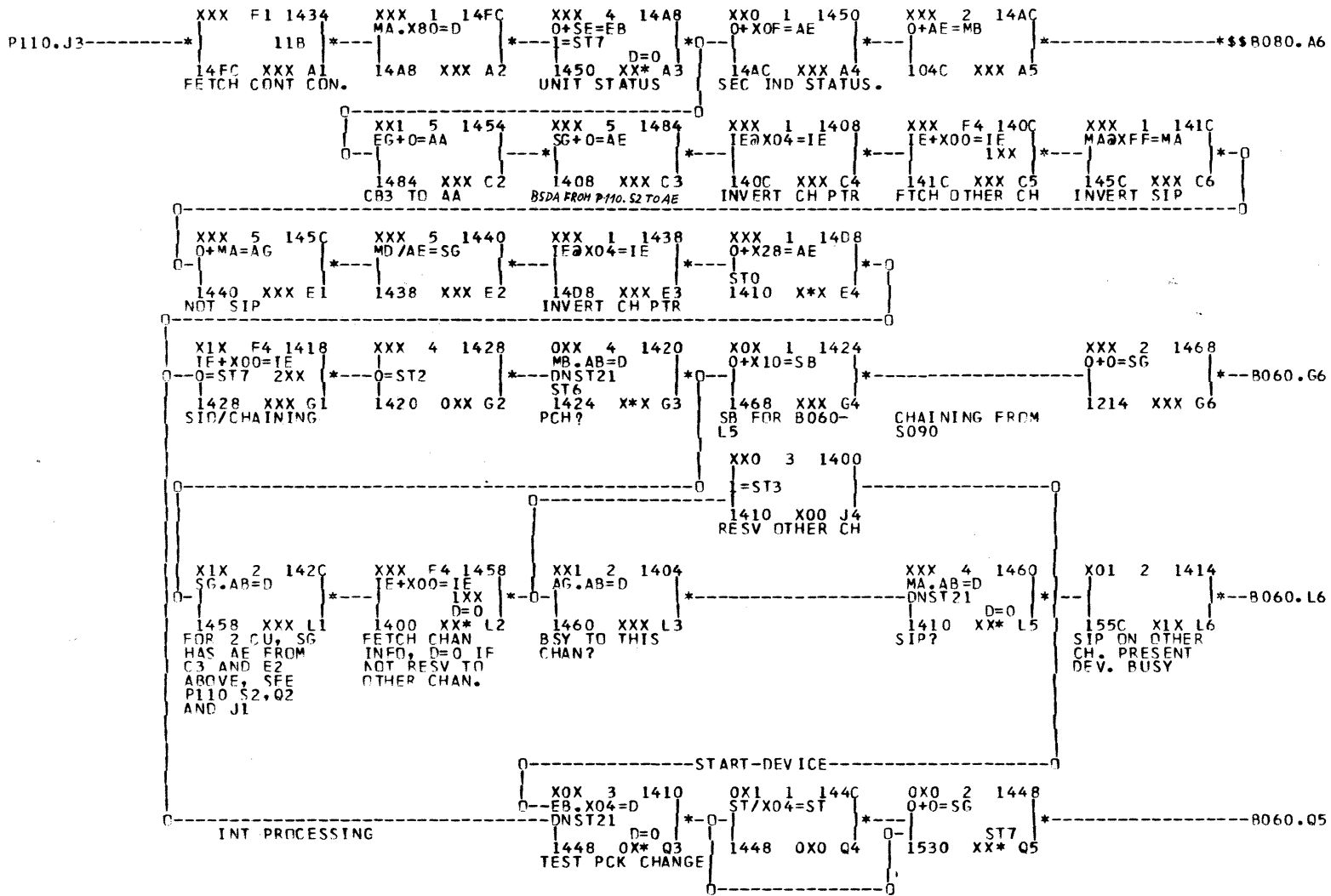
```

```

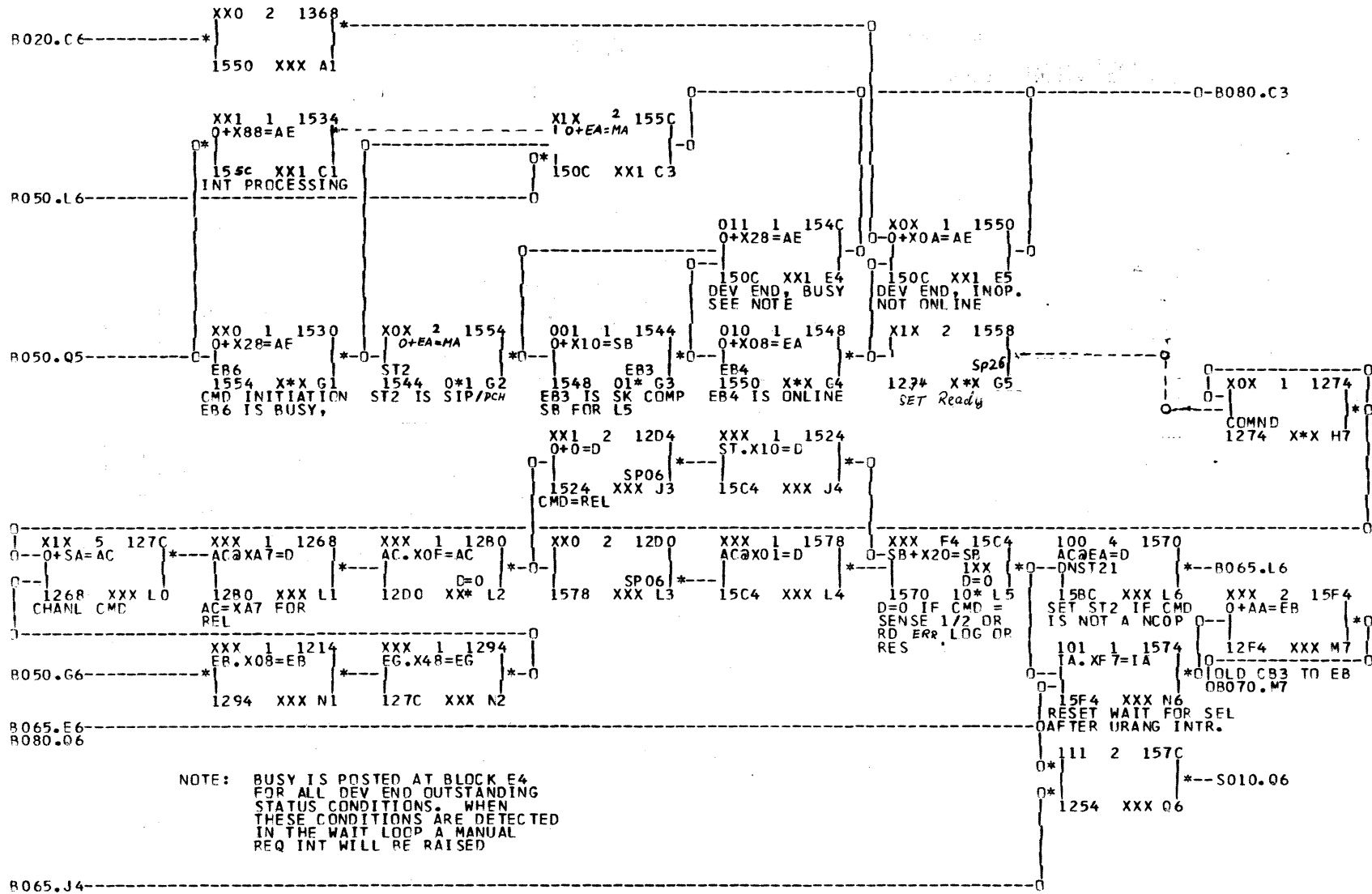
XX1 2 1504      XXX S4 1598      OXX 1 1514      OUTSTANDING
O+ID=MA      AH+X00=AH      O+K11=AT      STATUS-IN-AE
1=ST6 2XX      ST6      15E0 XX* S5    00000000
1514 XXX S4    STORE CNTRL  2 15E0      XXX T6
SWS      O+EA=MA      ST7
1508

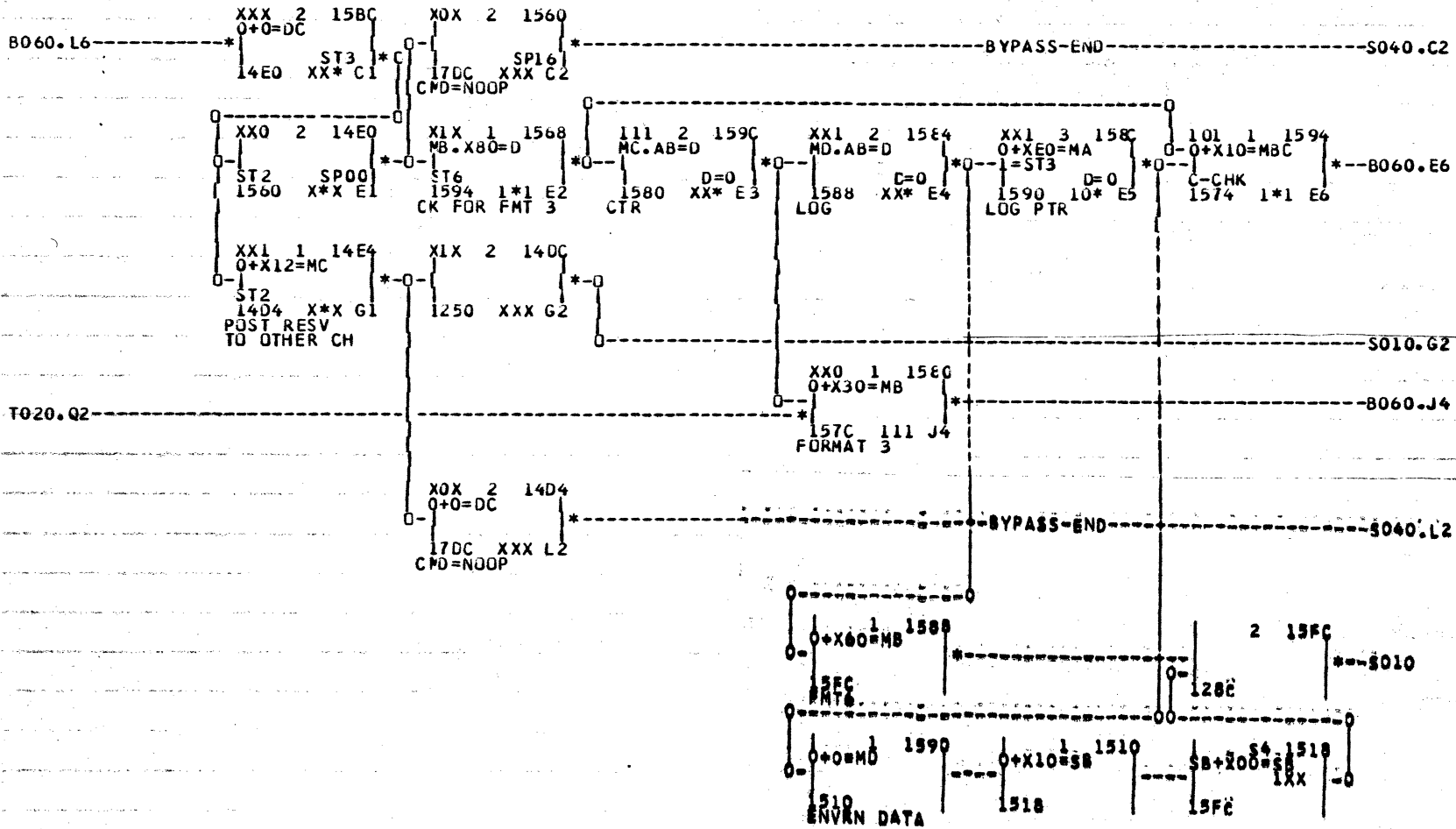
```

B040 - INITIAL SELECTION.
UNIT SELECTION.

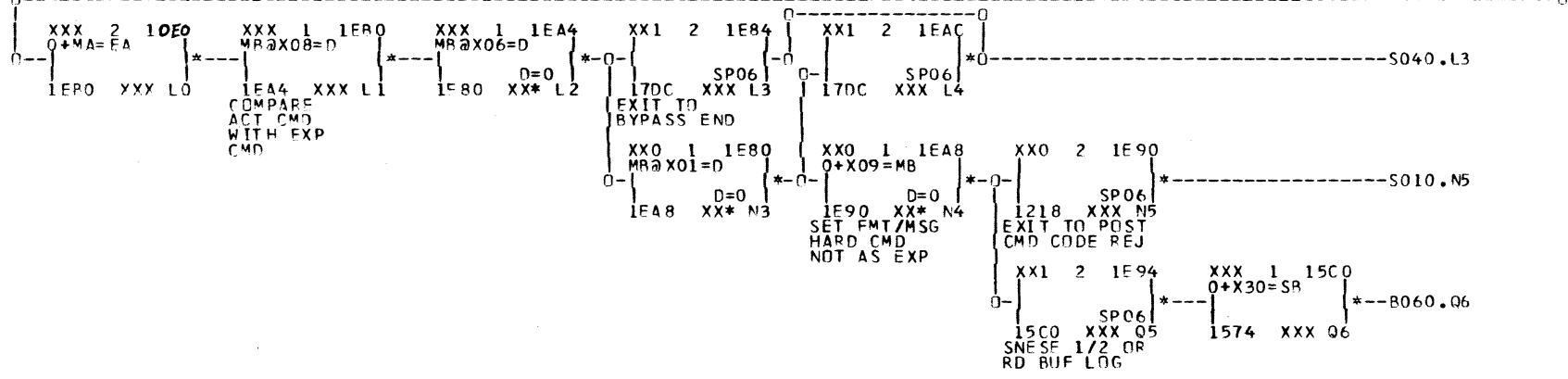
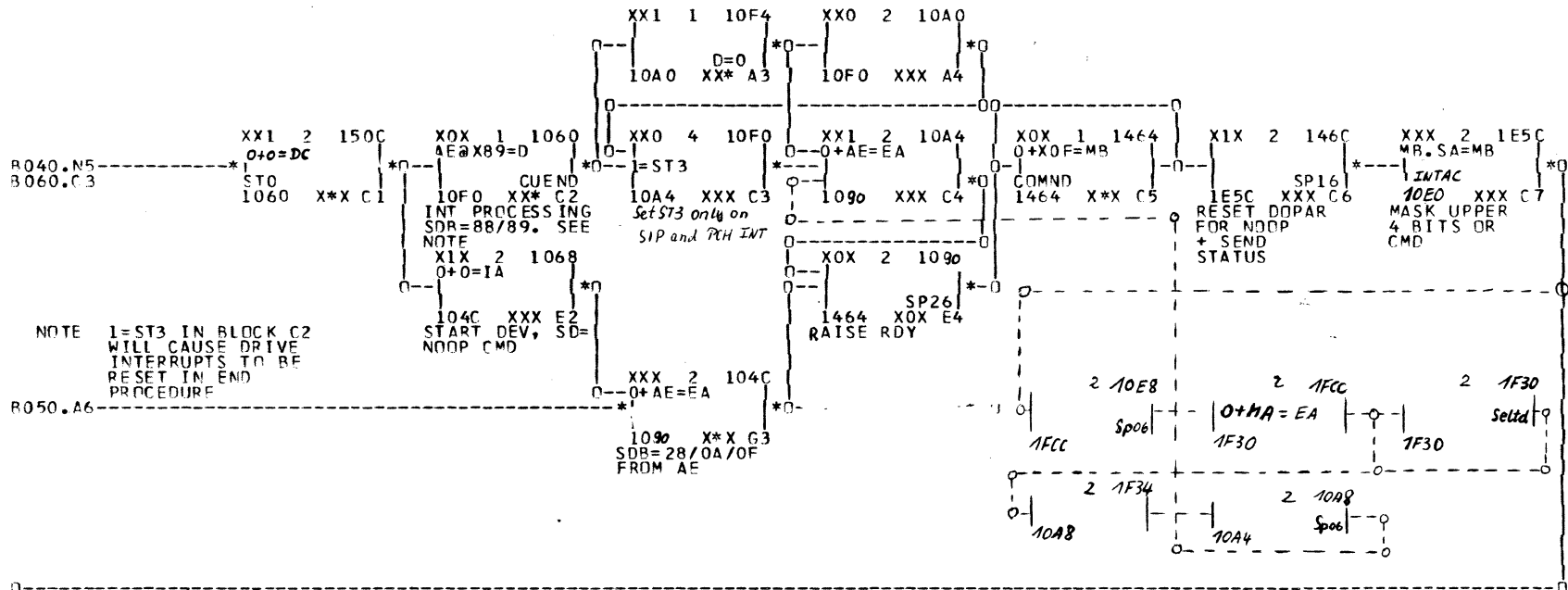


B050 - INITIAL SELECTION.
OP-IN GENERATION.

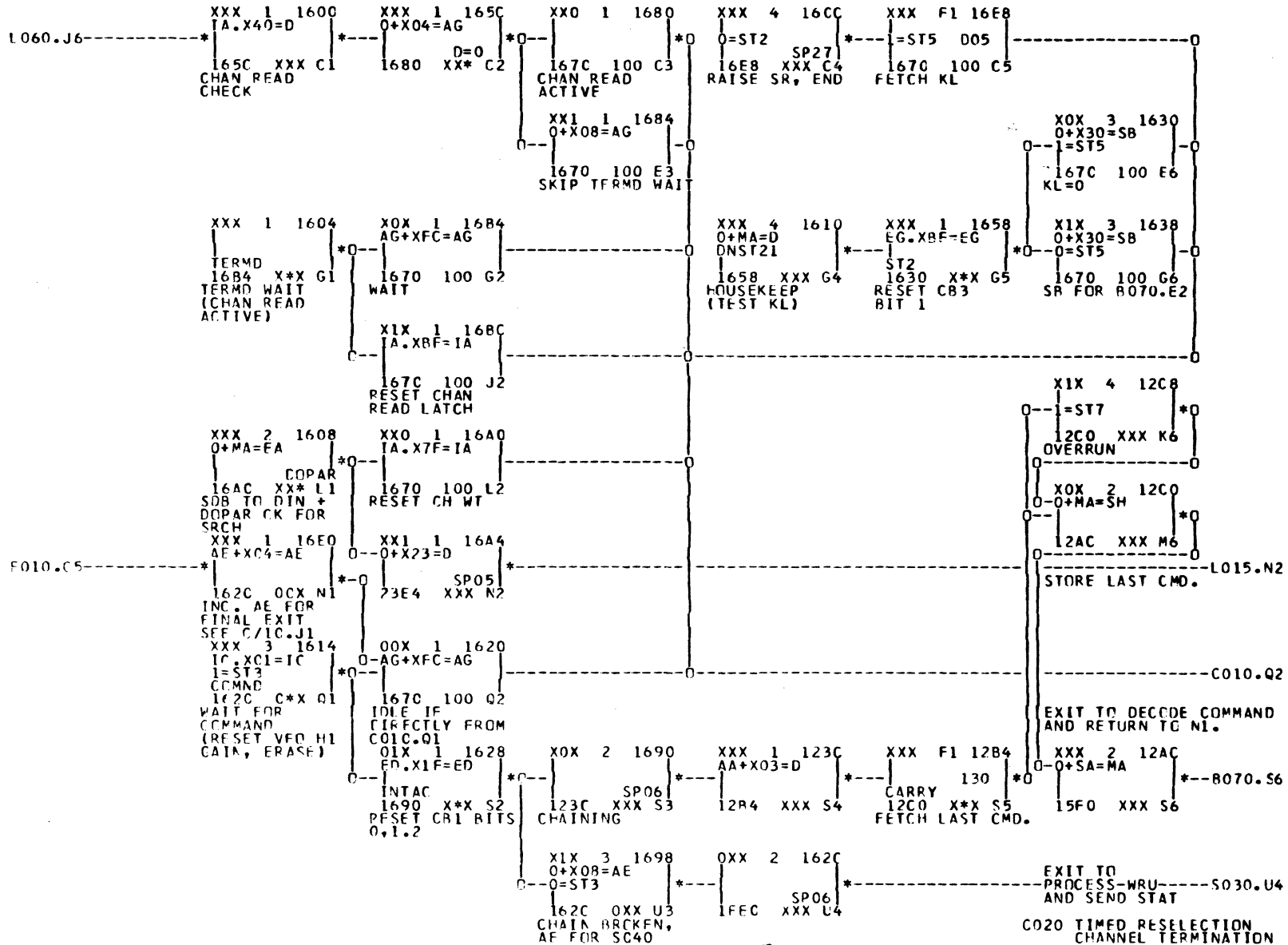


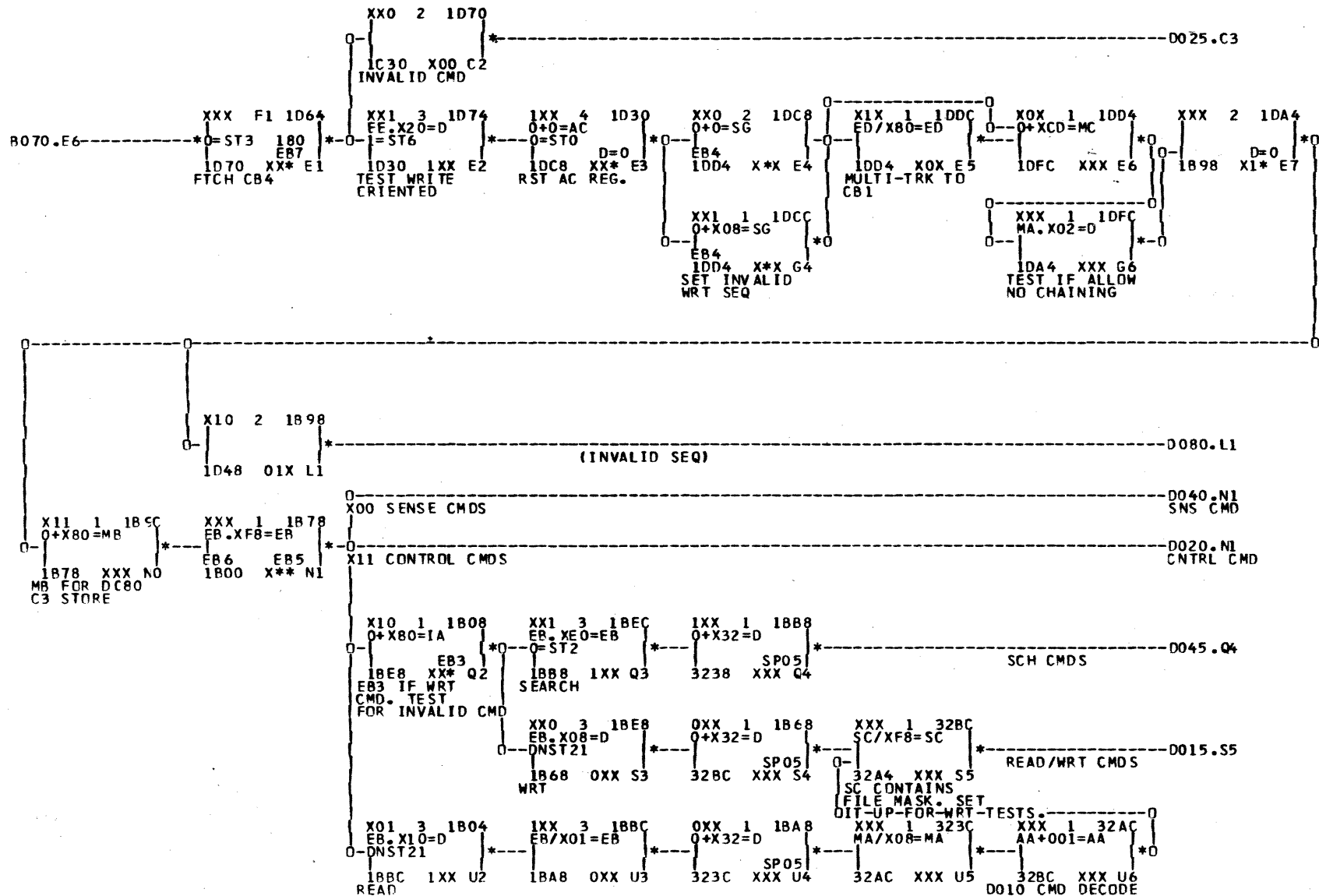


B065 INITIAL SELECTION
ISCB ANALYSIS









0015.J5
0050.S5

EP	0	1	2	READ	WRT
0	0	0	0	IPL	CKD
0	0	1	1	HA	HA
0	1	0	0	RC	RO
0	1	1	1	KD	KD
1	0	0	0	CKD	CKD
1	0	1	1	D	D
1	1	0	0	TRK	INVALID
1	1	1	1	CNT	CNT

XX0 1 1R00
C+X0D=MB
1B20 XXX C3

XXX 1 1B20
0+XF5=PC
1B7C XXX C4
TRK CK + INVLD SEQ

XXX 2 1B7C
1230 XXX C6

*--S010.C6

-----D065.E2

X01 1 3244
ER.X03=EB
ER2
3264 X** E2
RO OR KD

X1X 1 326C
EB/X0C=ER
323C X0 E3
KEY DATA OP

-----D045.E3

0045.E4

X00 1 3240
EB.X03=EB
EB2
3260 X** G2
HA, CKD, IPL
CR SPEC CKD

X1X 1 3268
C*SC+X04=DC
32DC X0 G3
HA OP
TEST FILE MSK

X00 1 3200
ER/X20=EB
3280 XXX G4
PROC HA

-----D065.G4

0060.G1

X0X 1 3260
0--0+X1B=D
1B30 XXX J3

XXX 1 1B30
ED.X03=D
EB7
1B70 X** J4
ORD IPL/WRT
SPEC CKD

XX1 1 1B74
AB.X1C=D
D=0
1B00 X** J5
WRITE SPEC

-----D015.J5

-----D050.J5

-----D040.J4

0010.S5

XXX 1 32A4
ER+X01=EB
EB0 EB1
3240 X** L1

X10 1 3248
ER.X03=EB
ER2
32C4 X*1 L2
CKD OR D OP

X11 1 32CC
ER/X04=EB
EB3
3230 X** L5
DATA

-----D045.L5

XXX 1 3284
FE/X10=FF
32DC XXX N0

X00 4 3250
MC@SA=D
NST21
3284 XXX Q0

XXX 1 32DC
C-FG/X01=EG
ST2
32C0 X** Q1
SET RD TRK IN
CB3

X0X 1 32C0
AR.X20=C
3270 XXX Q2
CHK ORIENTATION

XXX 1 3270
ED.X7F=ED
D=0
32DC X0* Q3

X01 1 32D4
AR+000=D
3224 XXX Q4
HA ORIENTED?

XXX 1 3224
D=0
3278 X** Q5

X01 1 32C4
AA+X01=AA
3278 X0G N5

XX0 1 3278
EB/X1C=EB
3234 XX1 N6
CKD

-----D045.Q5

-----D020.S3

0020.S5

X11 1 324C
EP.X03=EB
EB2 EB7
3250 X** S2
RD TRK OR
CNT OP

X11 1 325C
MA/X02=MA
32D8 X10 S3
WRT CNT CB4

X10 1 3258
AA+X01=AA
ST2
32E0 X** S5

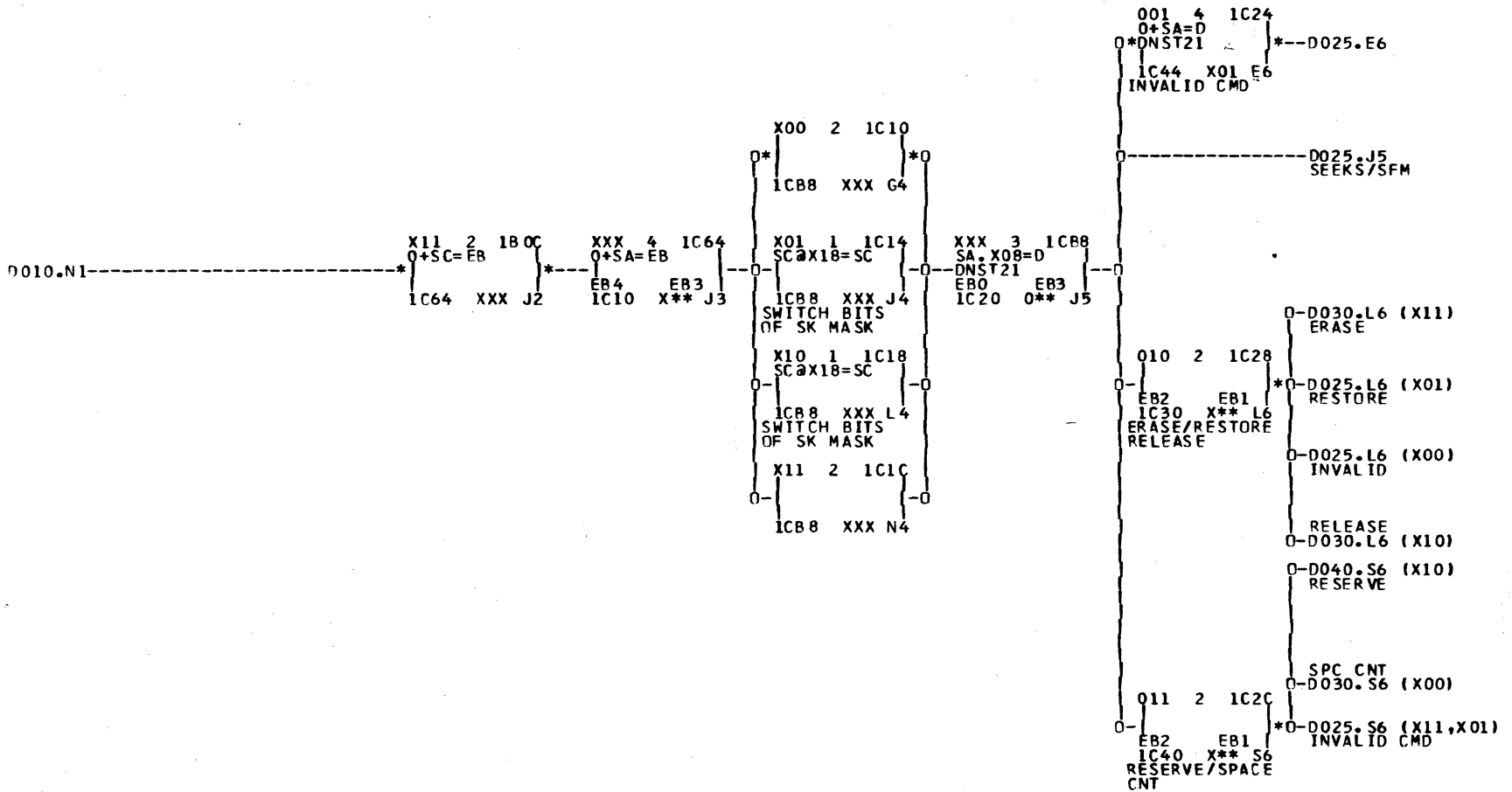
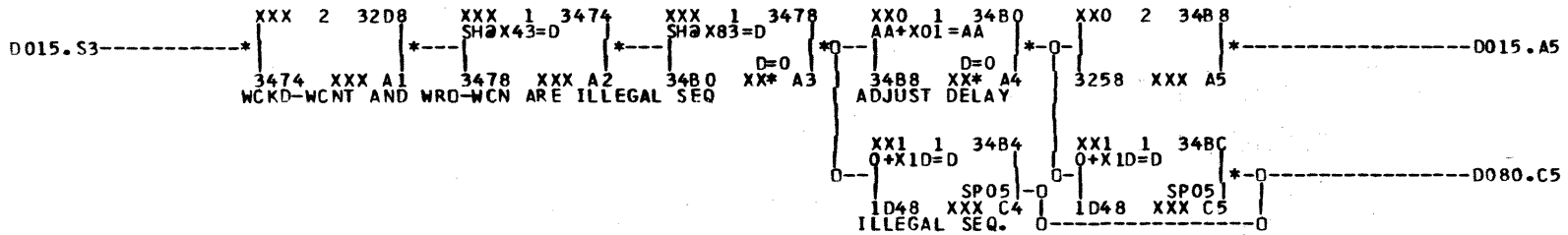
X0X 1 32E0
EB/X10=EB
3234 XX1 S6
PROC CNT CER

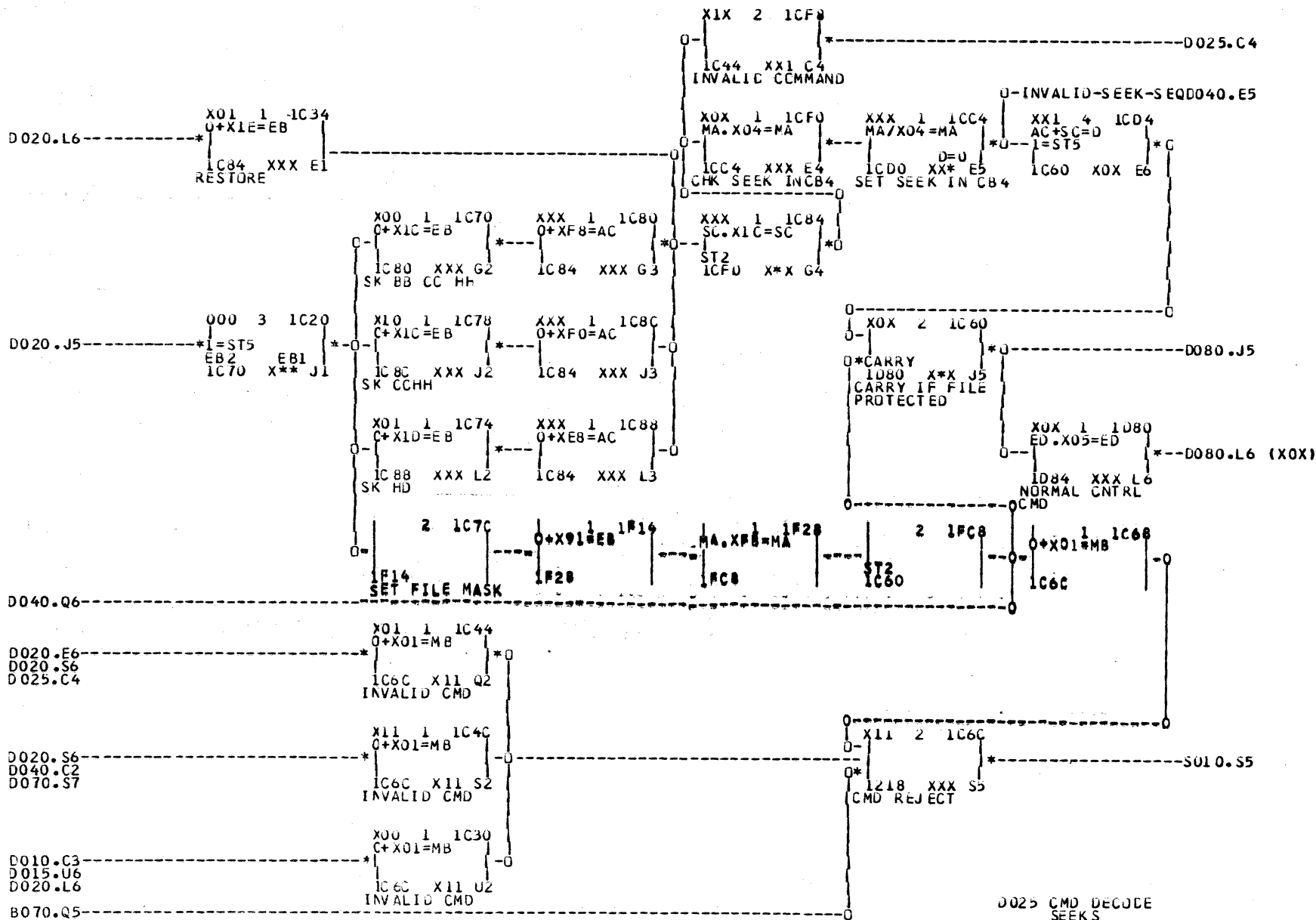
X01 4 3254
FB+0=D
NST21
3258 X10 U3
INVALID

X1X 1 32C8
EG.XFE=FG
32E8 XXX U5

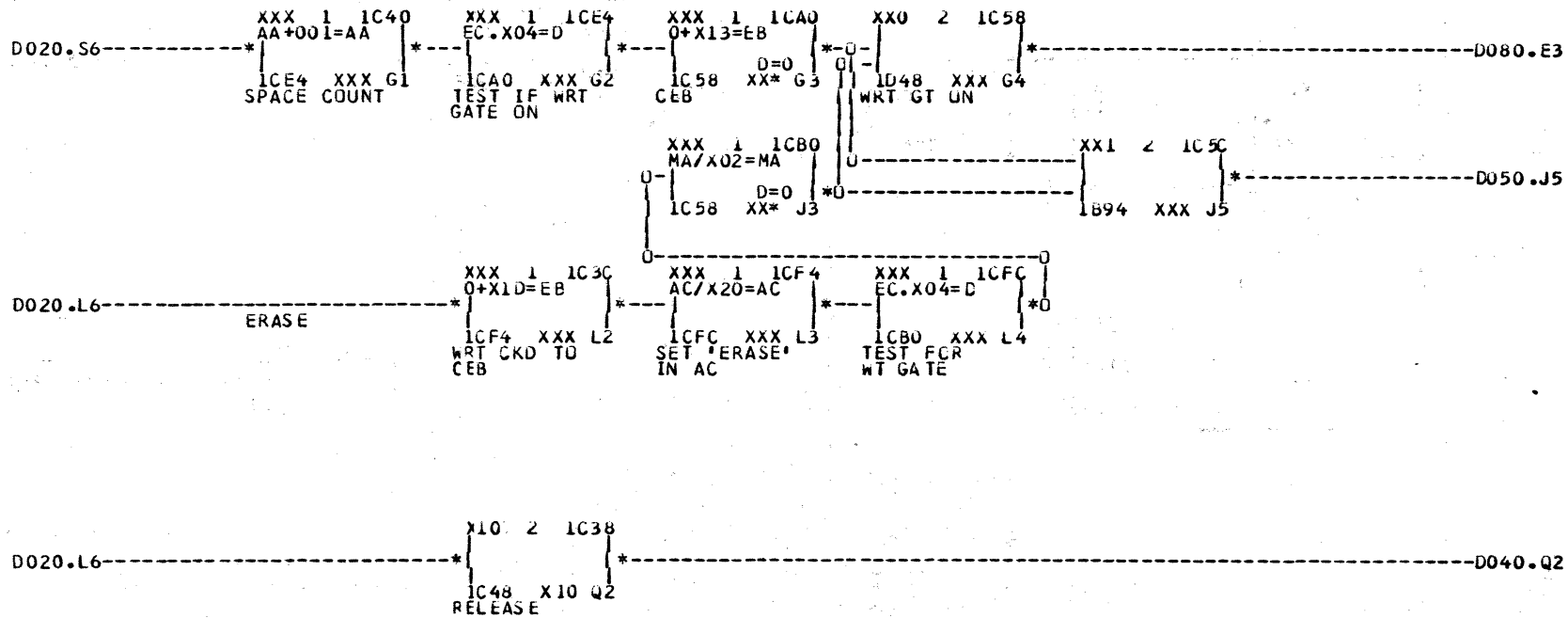
X1X 1 32E8
0+X1C=D
SPO5
IC30 X00 U6
D015 CMD DECODE
RD/WRT CER GFNERATION

-----D025.U6





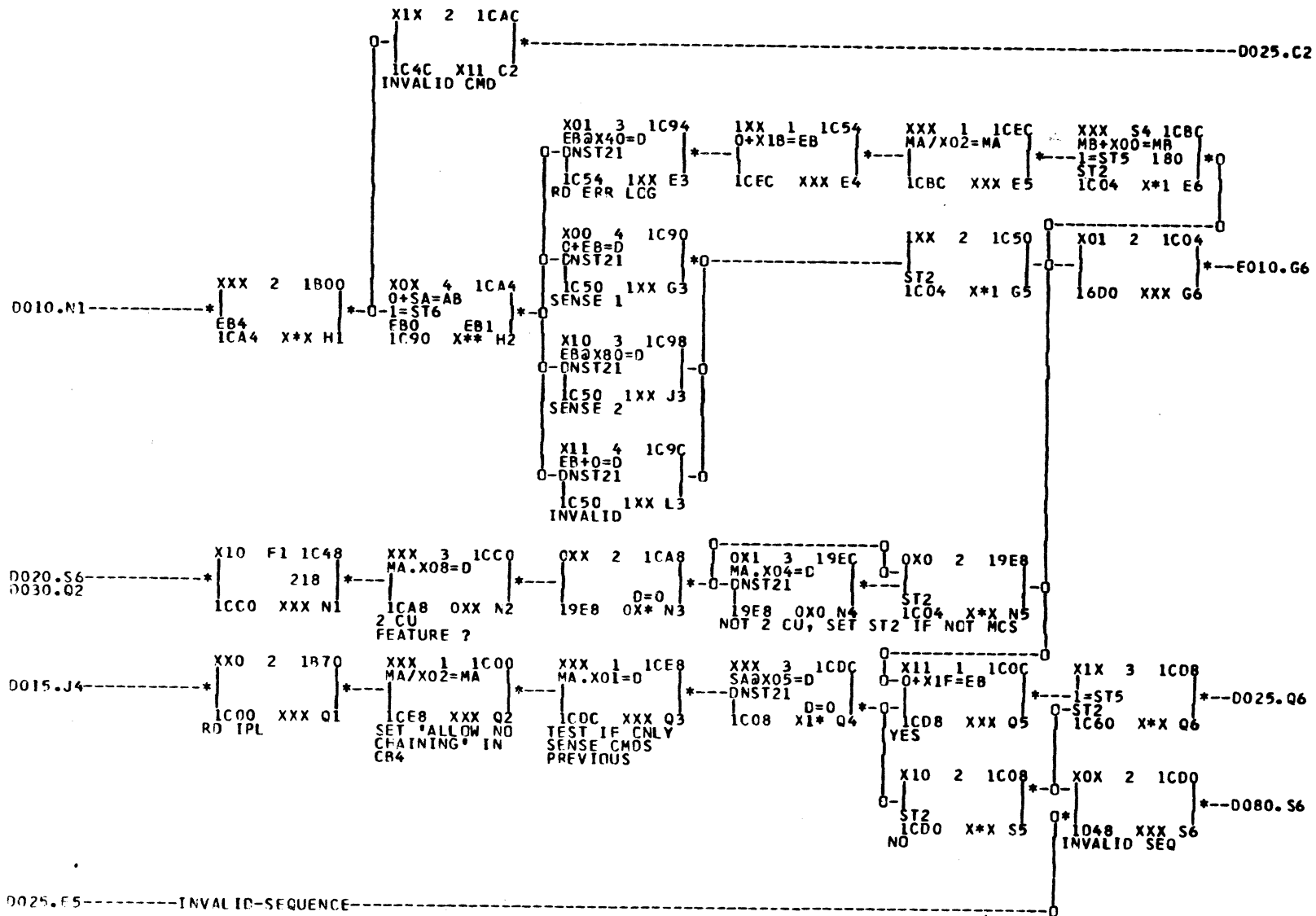
D025 CMD DECODE
SEEKS



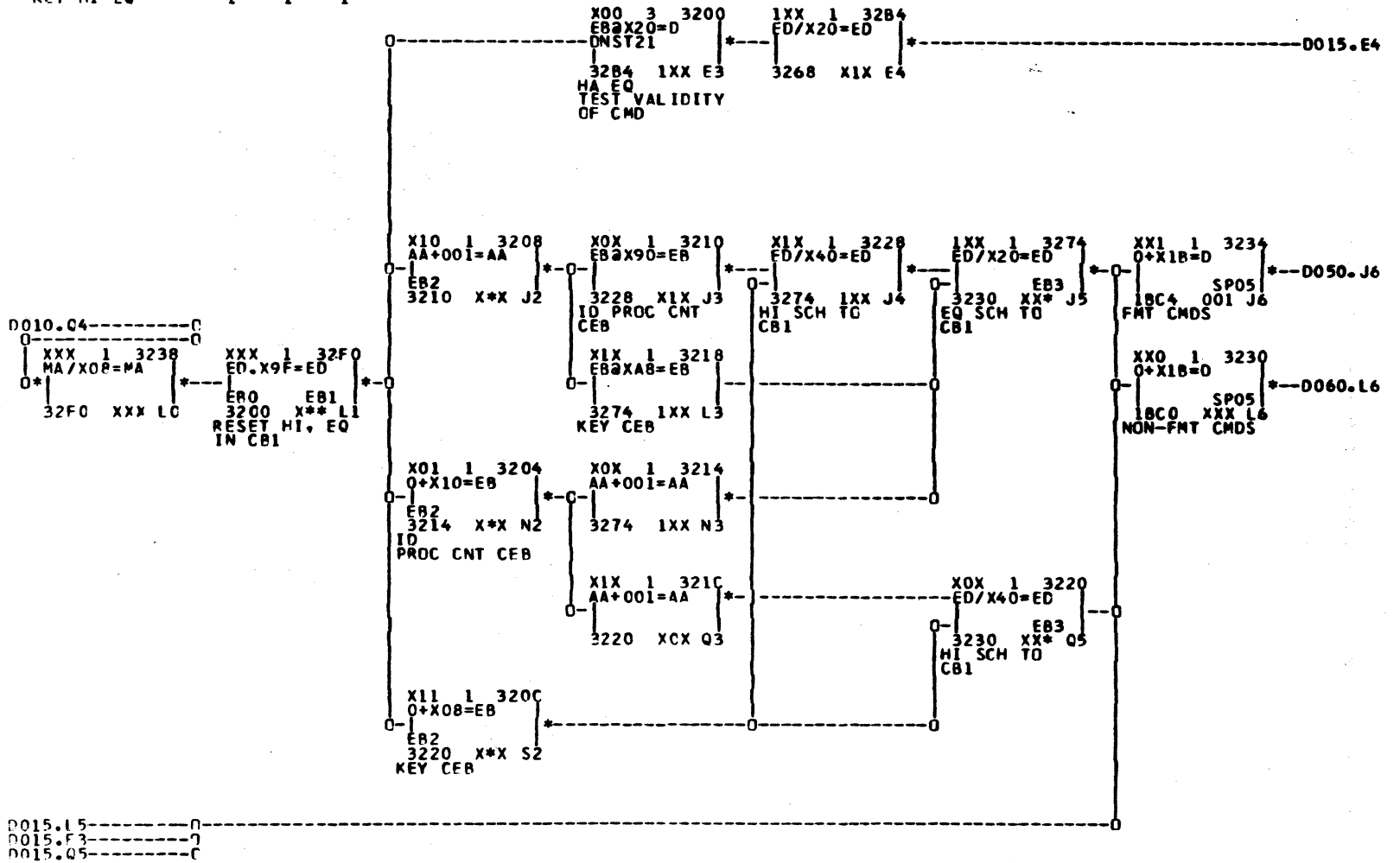
D030 CMD DECODE
SPACE CNT/ERASE

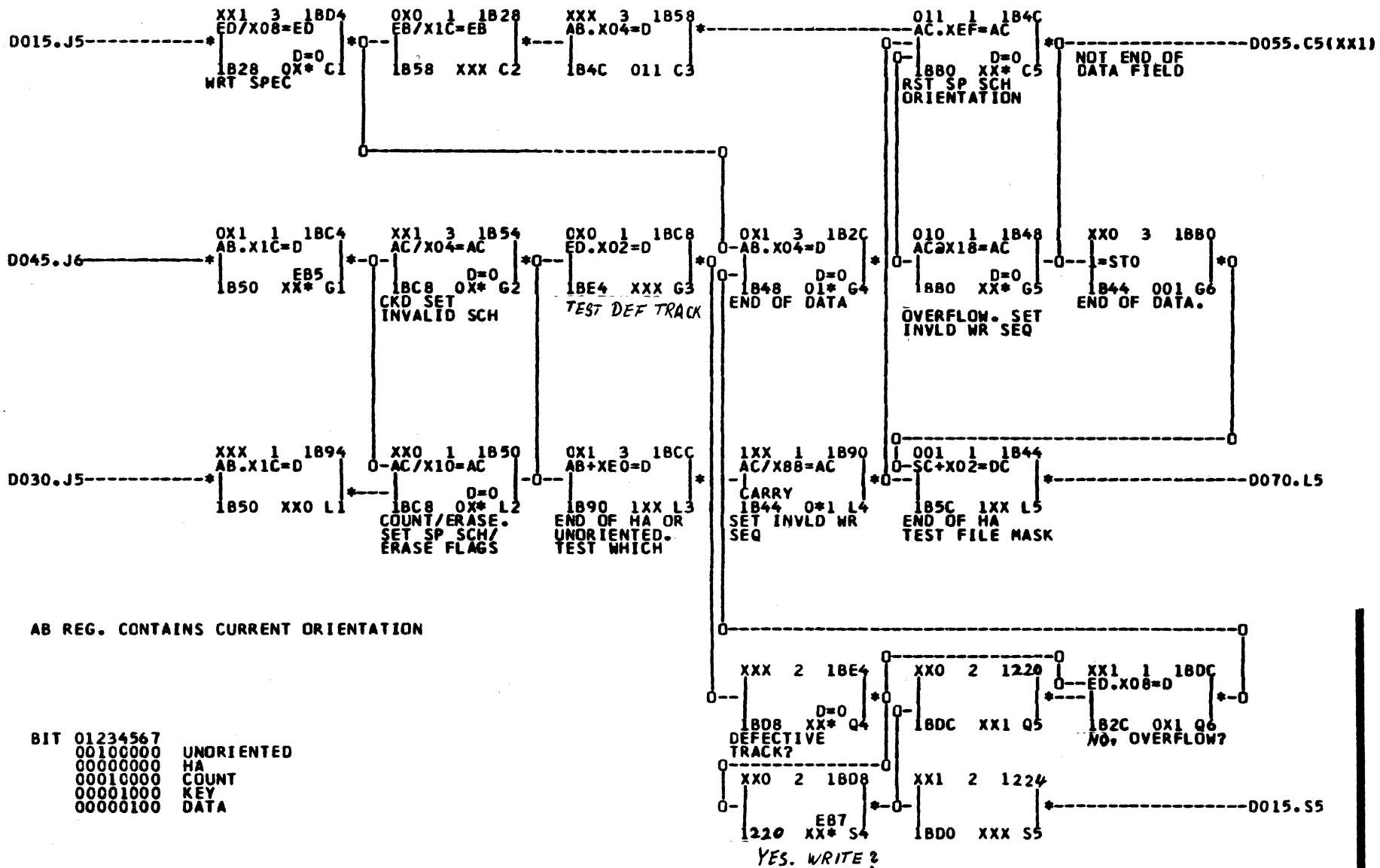
X/02-01-79/SSTEGS

REVISION L

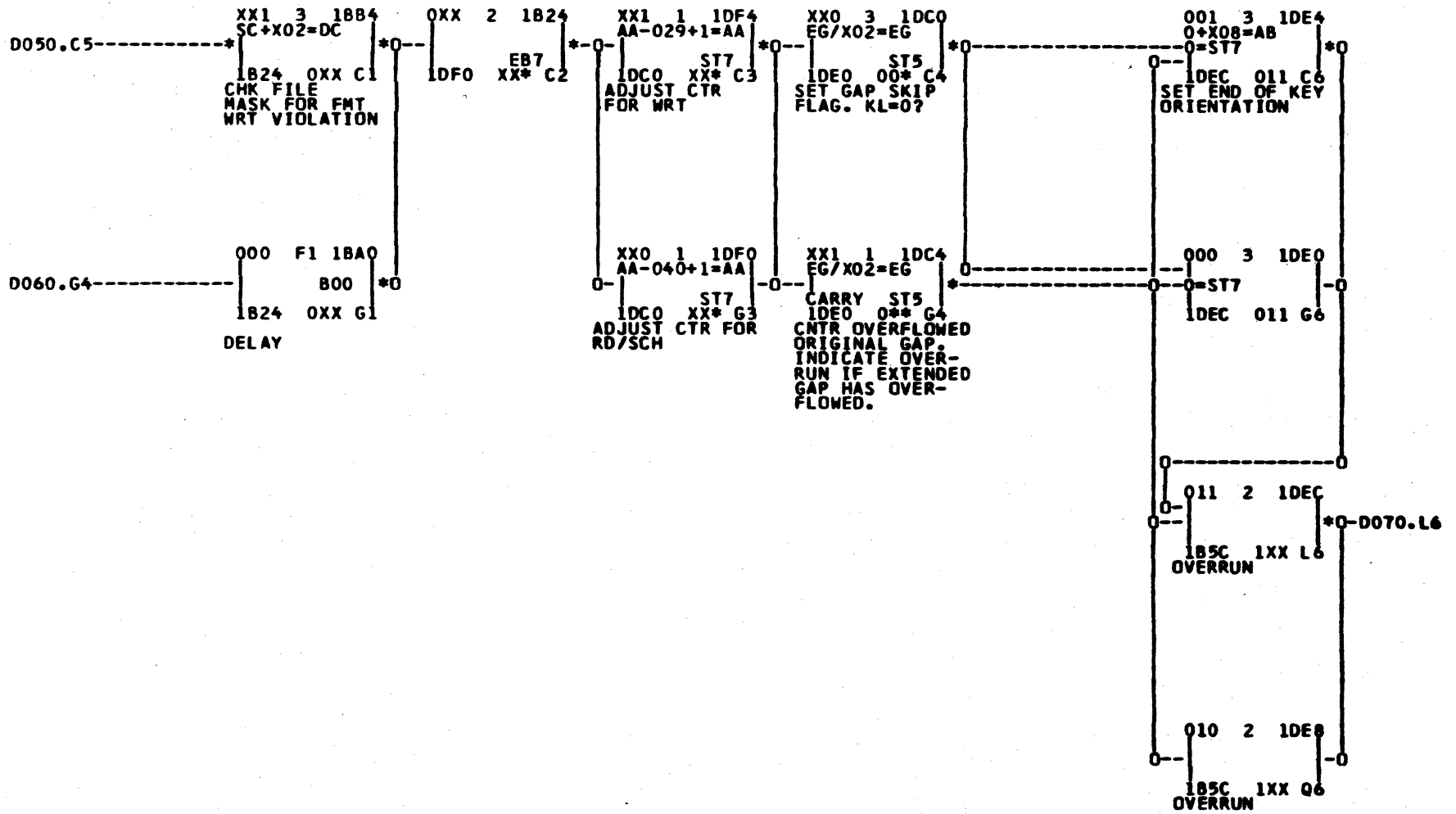


SCH	CMD	EB0	EB1	EB2
HA	EQ	0	0	1
ID	EQ	0	0	0
ID	HI	0	1	0
ID	HI-EC	0	1	0
KEY	EQ	1	0	0
KEY	HI	1	1	0
KEY	HI-EQ	1	1	1

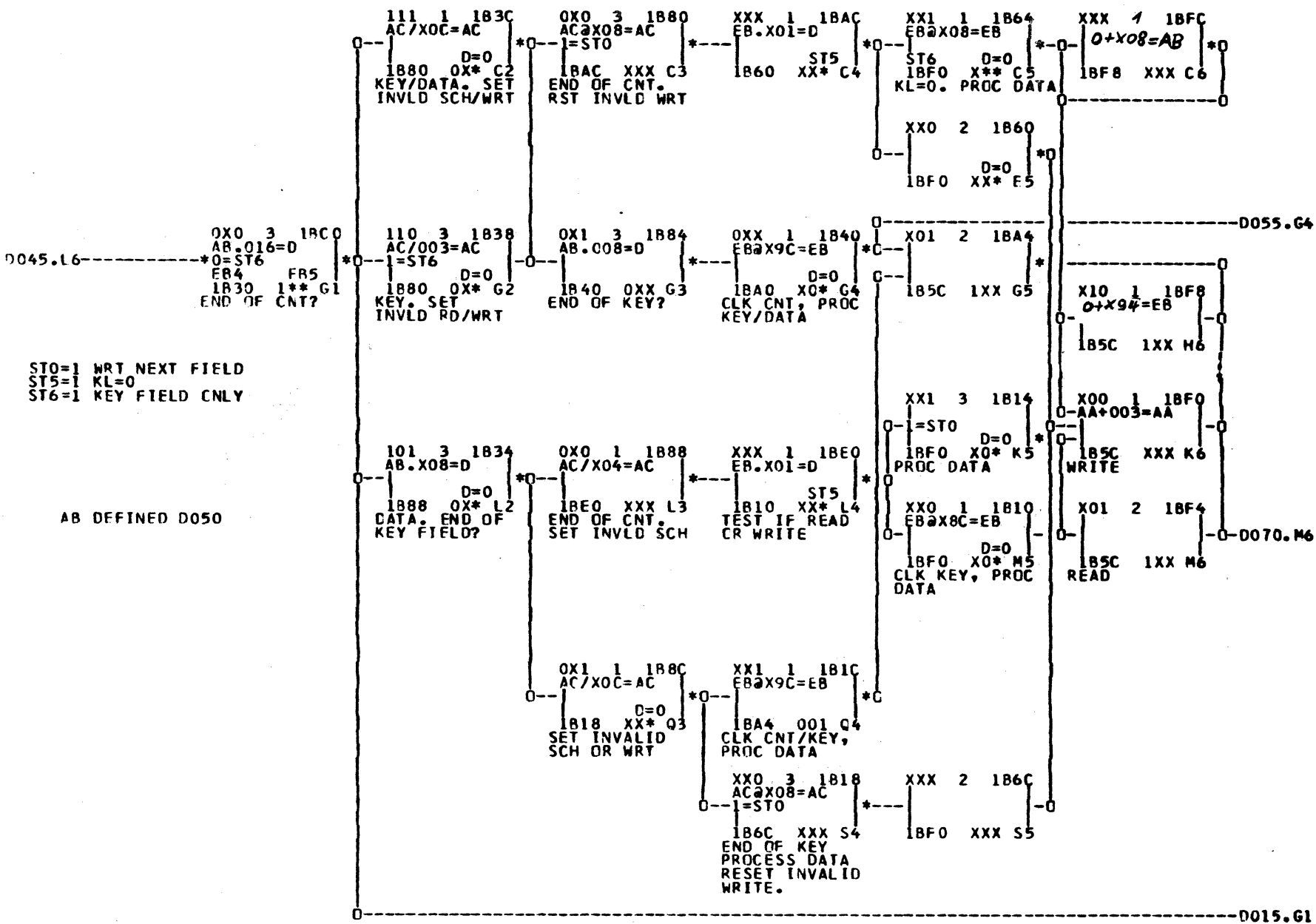




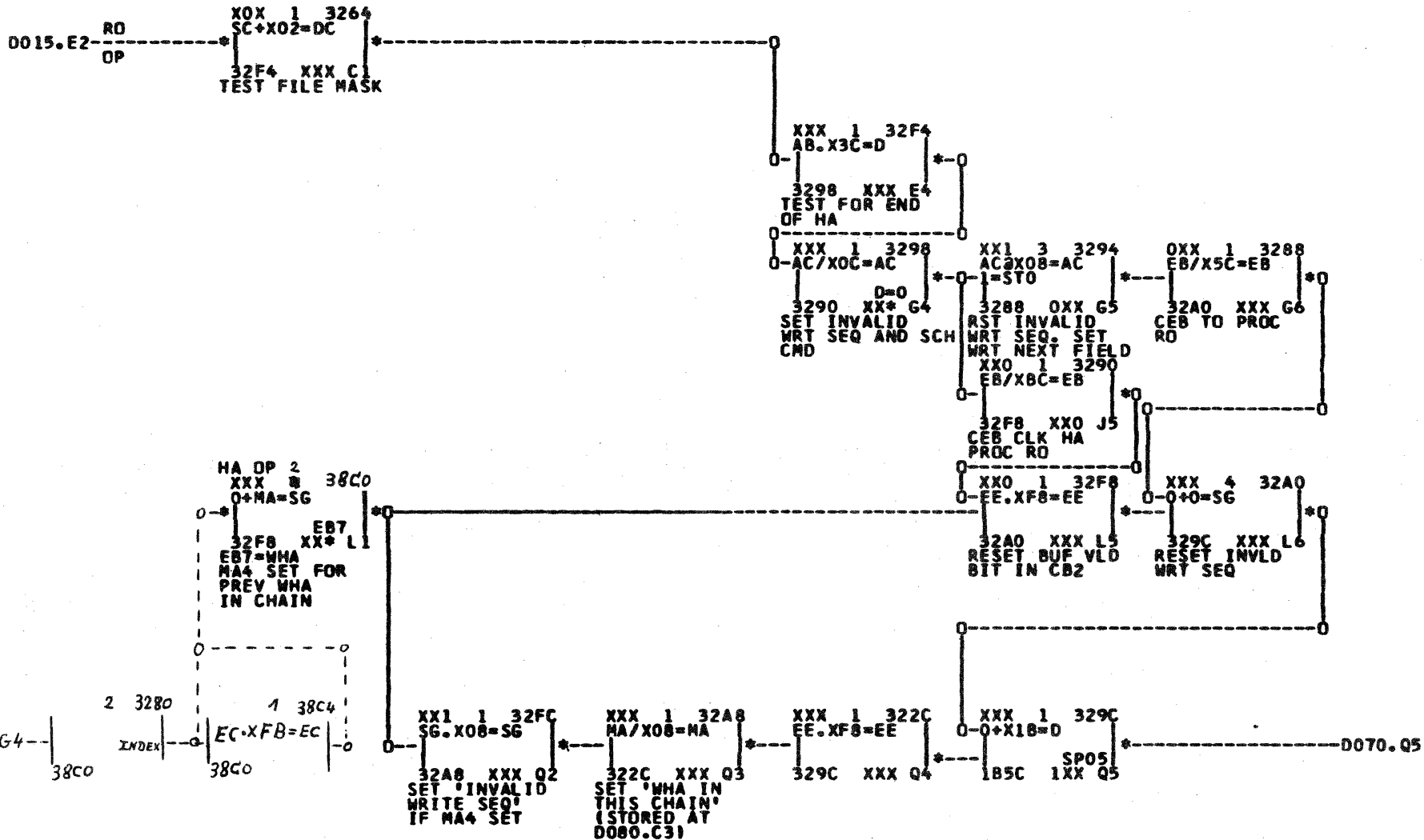
D050 CMD DECODE
 CKD,CNT,AND ERASE CMDS



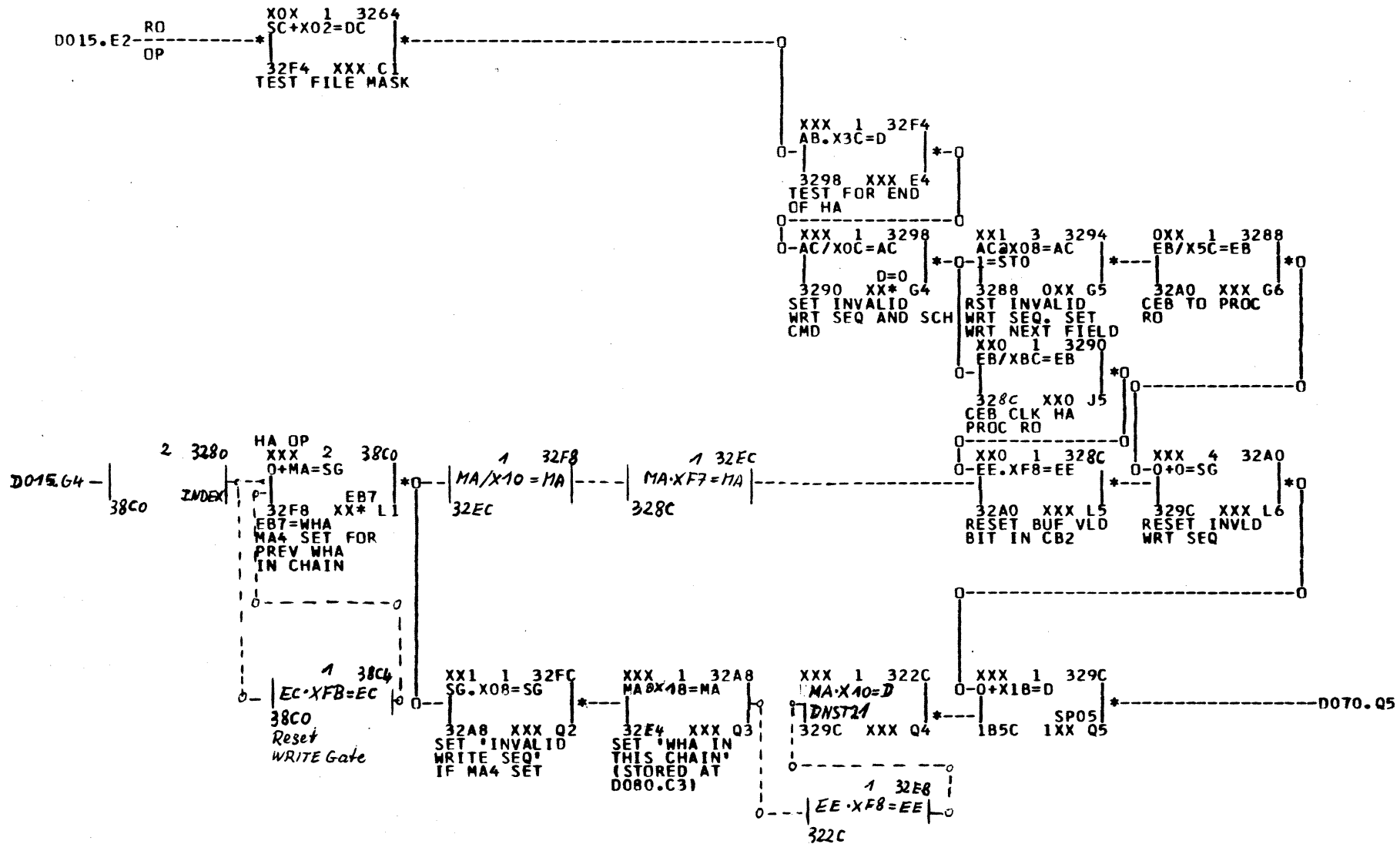
D055 GAP TIMER ADJUSTMENT FOR GAP SPACING



0060 COMMAND DECODE.
NON-FMT CMDS.



D065 CMD DECODE
RO AND HA

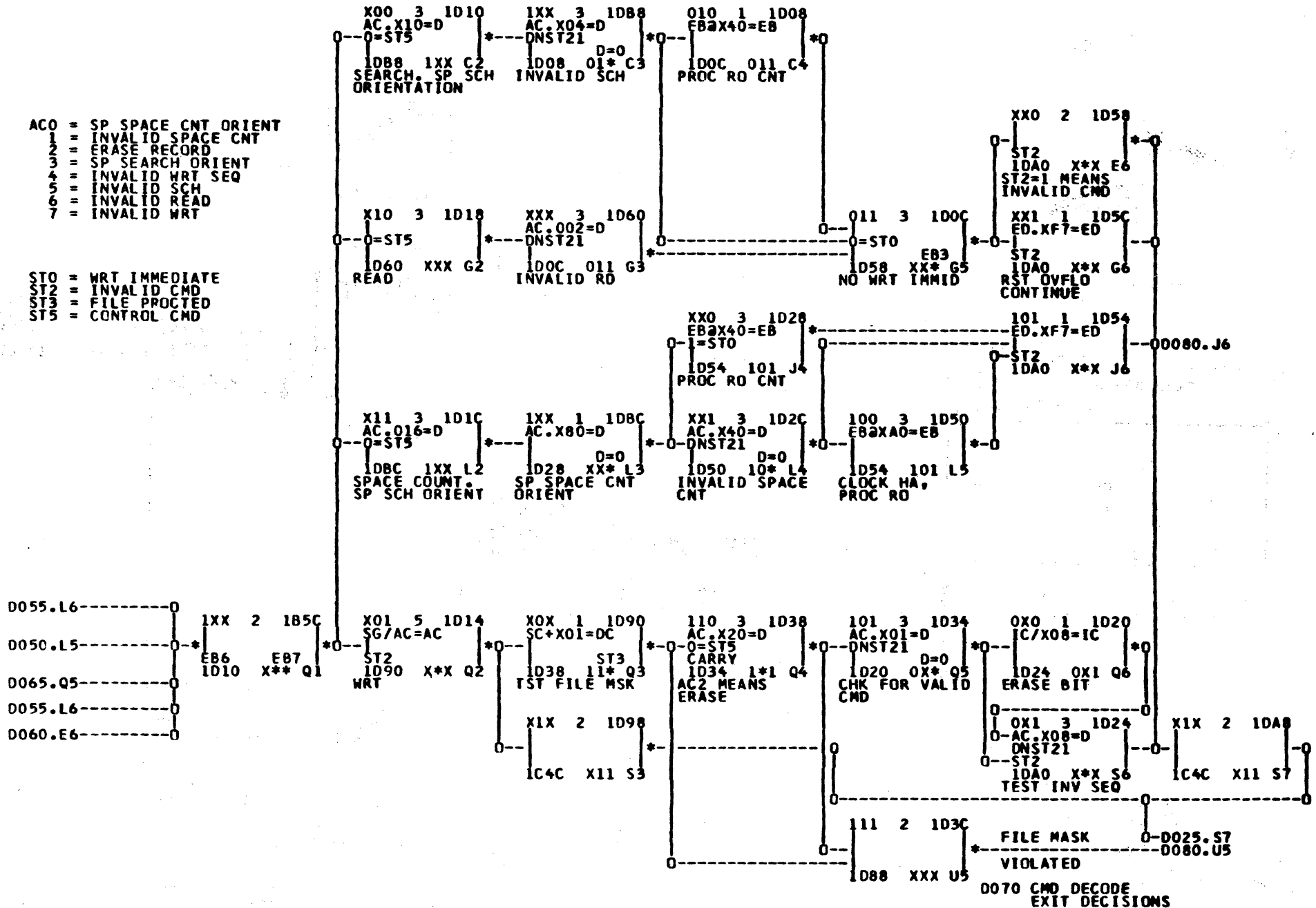


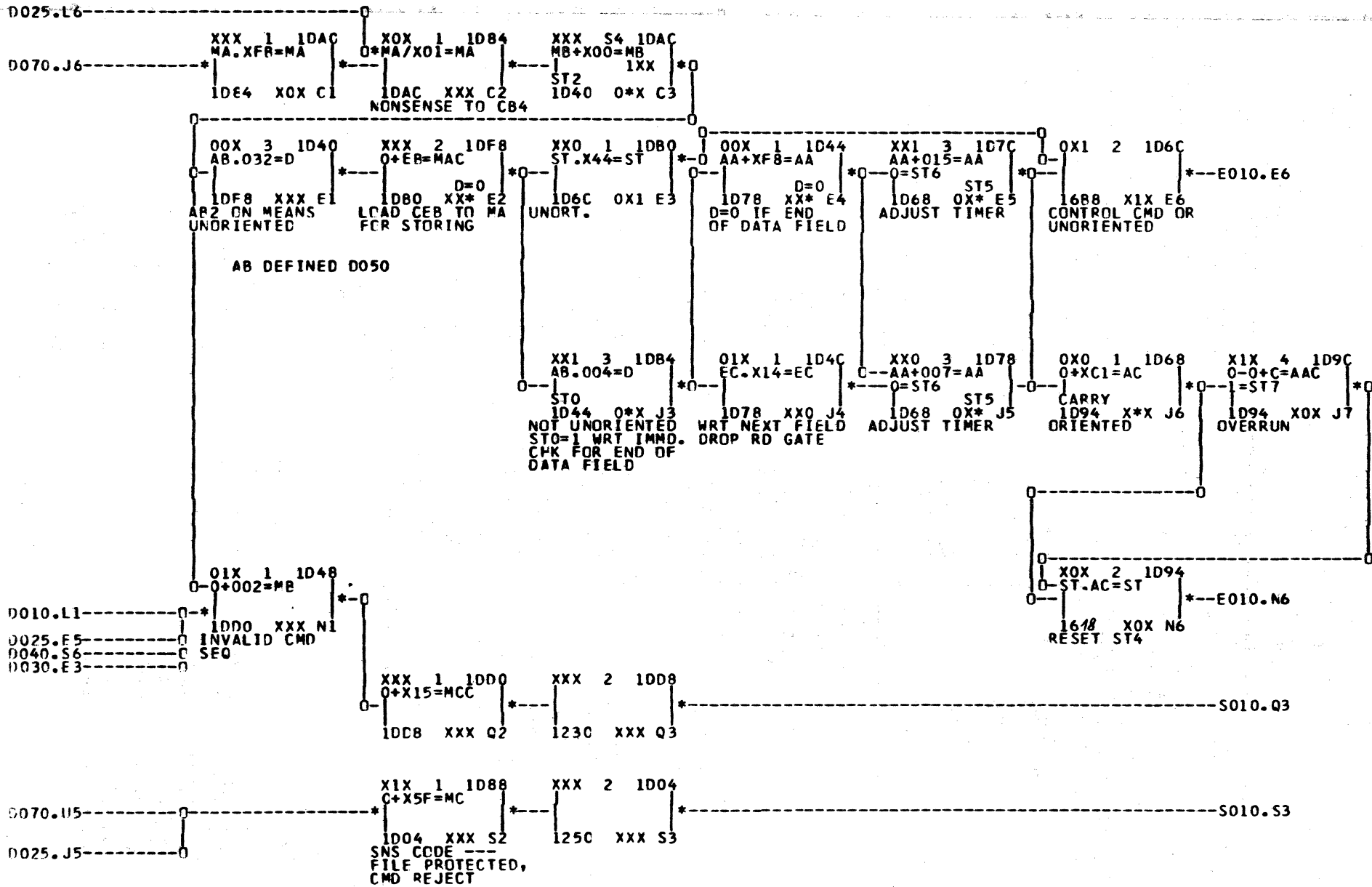
Gilt nur für 3414-3, 3414-4 Rev.3



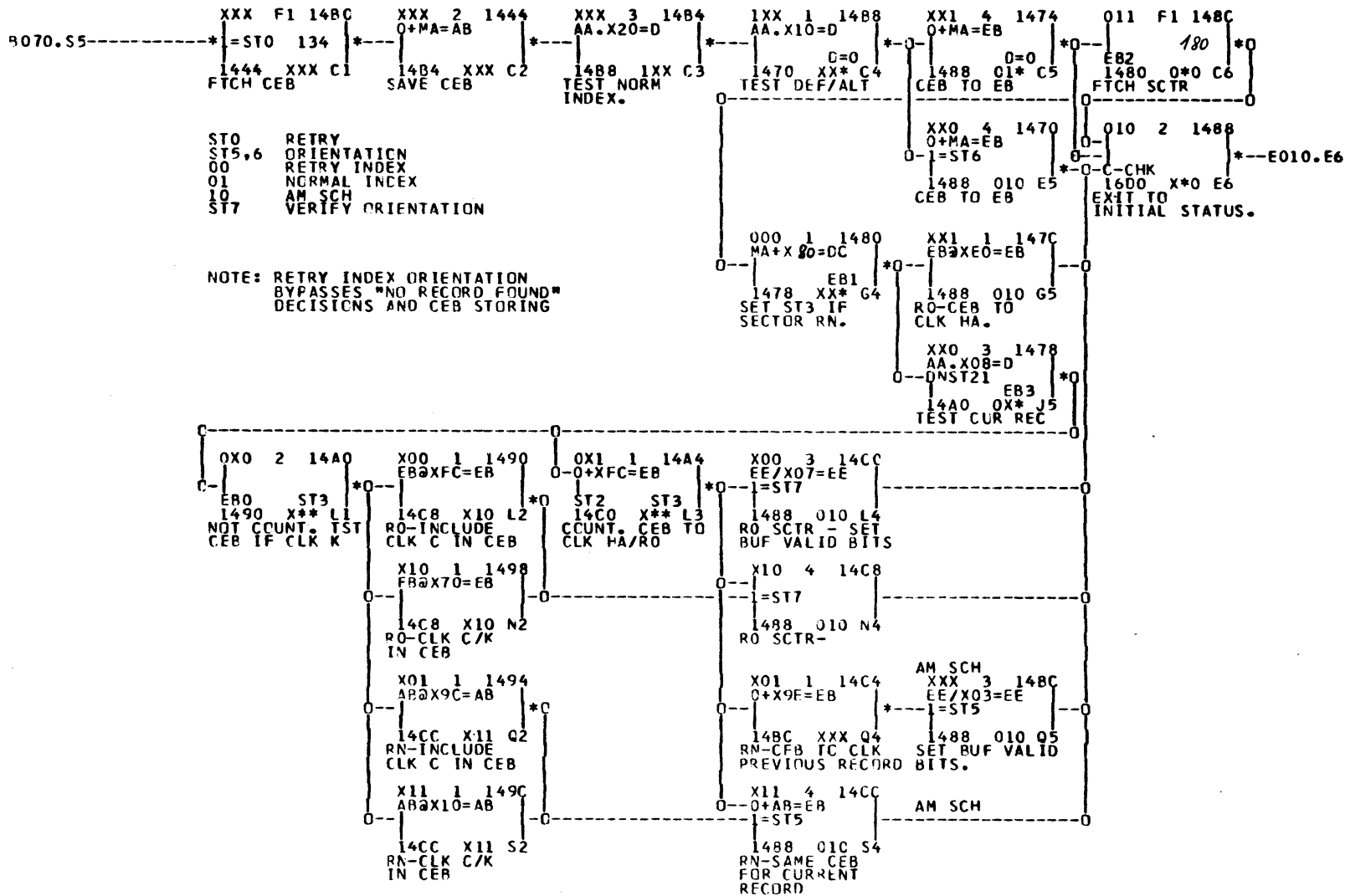
AC0 = SP SPACE CNT ORIENT
 1 = INVALID SPACE CNT
 2 = ERASE RECORD
 3 = SP SEARCH ORIENT
 4 = INVALID WRT SEQ
 5 = INVALID SCH
 6 = INVALID READ
 7 = INVALID WRT

ST0 = WRT IMMEDIATE
 ST2 = INVALID CMD
 ST3 = FILE PROCTED
 ST5 = CONTROL CMD





D080 CMD DECODE EXIT DECISIONS



STO RETRY
 ST5,6 ORIENTATION
 00 RETRY INDEX
 01 NGRMAL INCEX
 10 AM SCH
 ST7 VERIFY ORIENTATION

NOTE: RETRY INDEX ORIENTATION
 BYPASSES "NO RECORD FOUND"
 DECISIONS AND CEB STORING

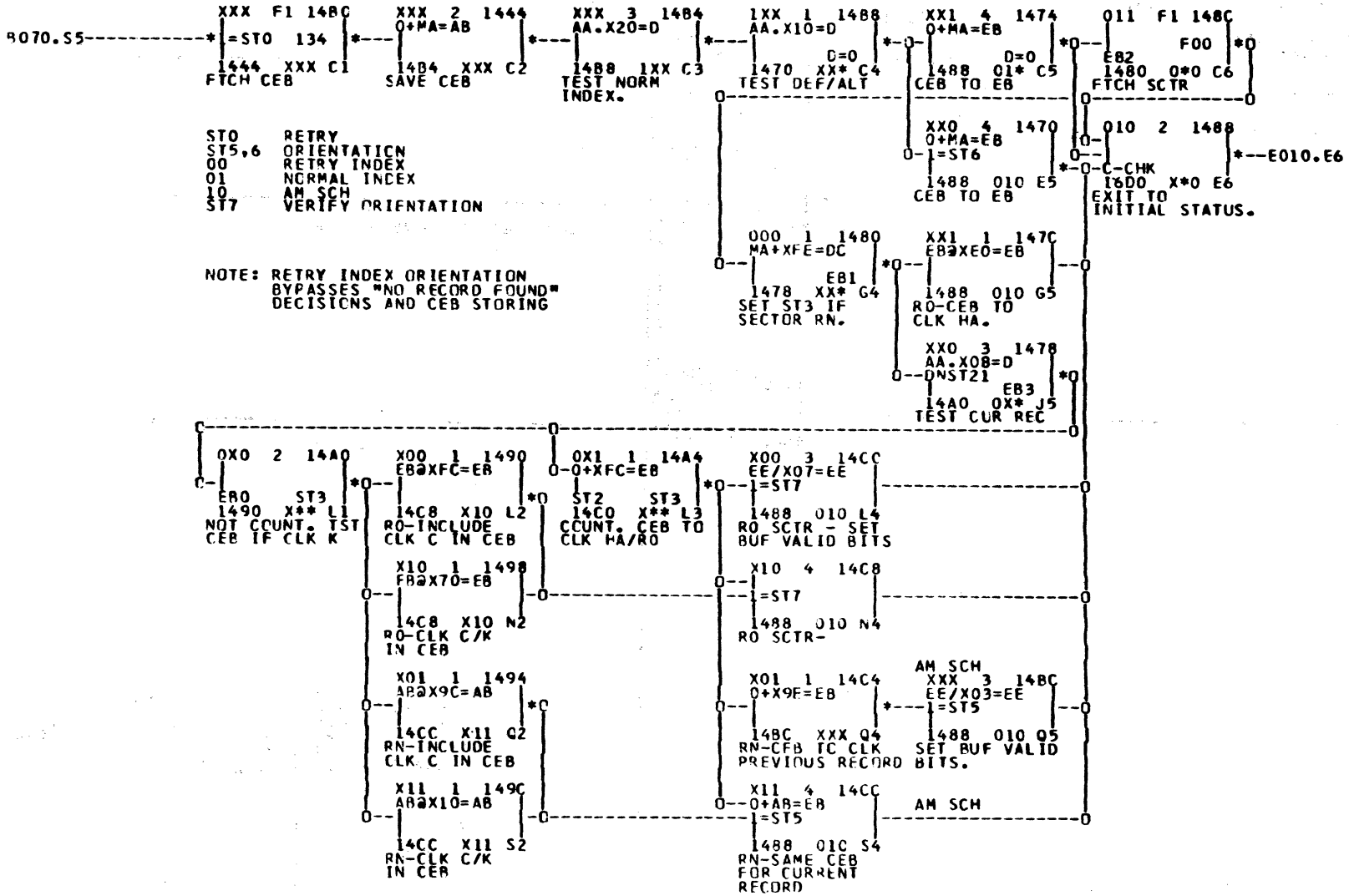
10/10/10

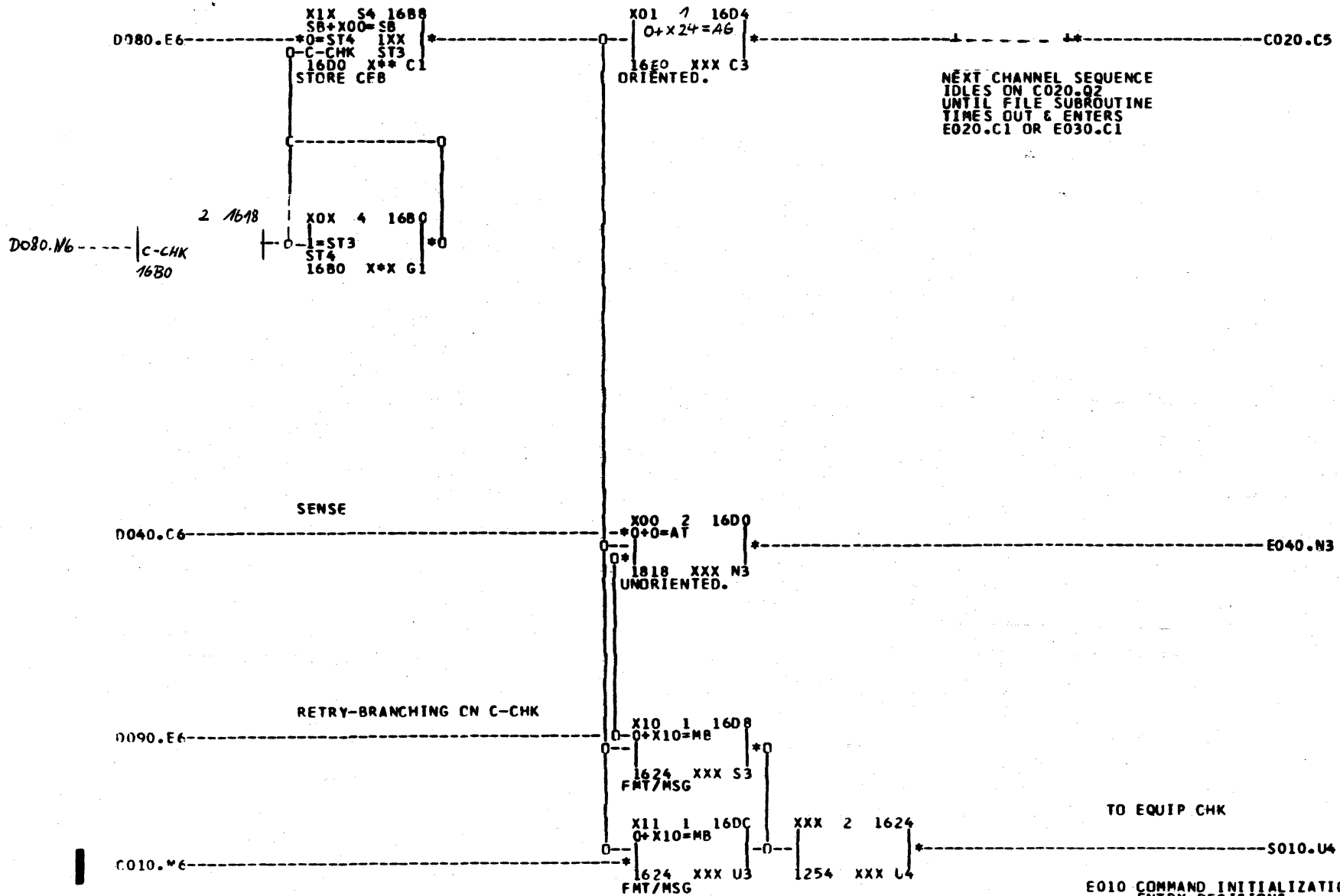
10/10/10

10/10/10

10/10/10







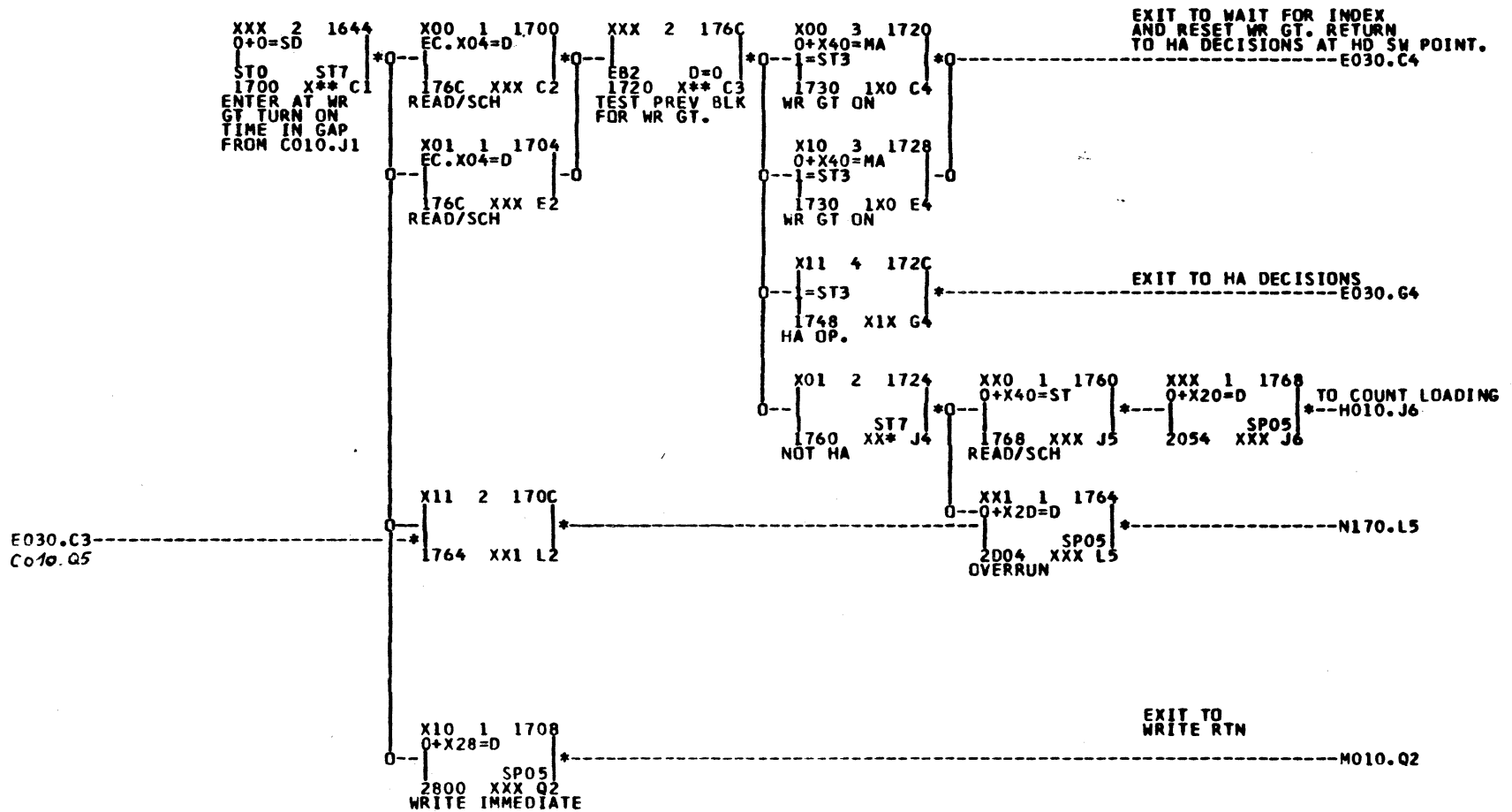
NEXT CHANNEL SEQUENCE
IDLES ON C020.02
UNTIL FILE SUBROUTINE
TIMES OUT & ENTERS
E020.C1 OR E030.C1

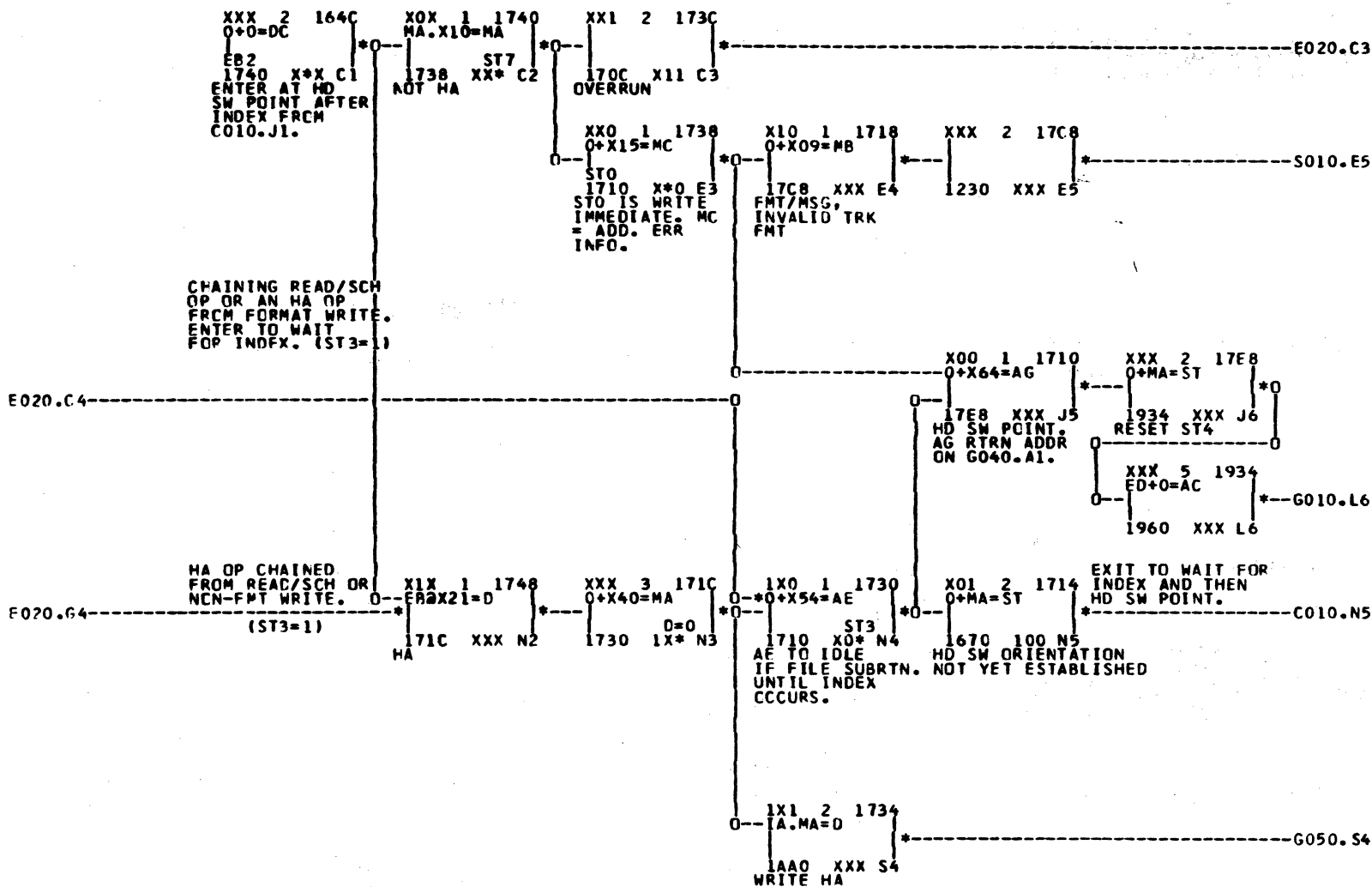
SENSE

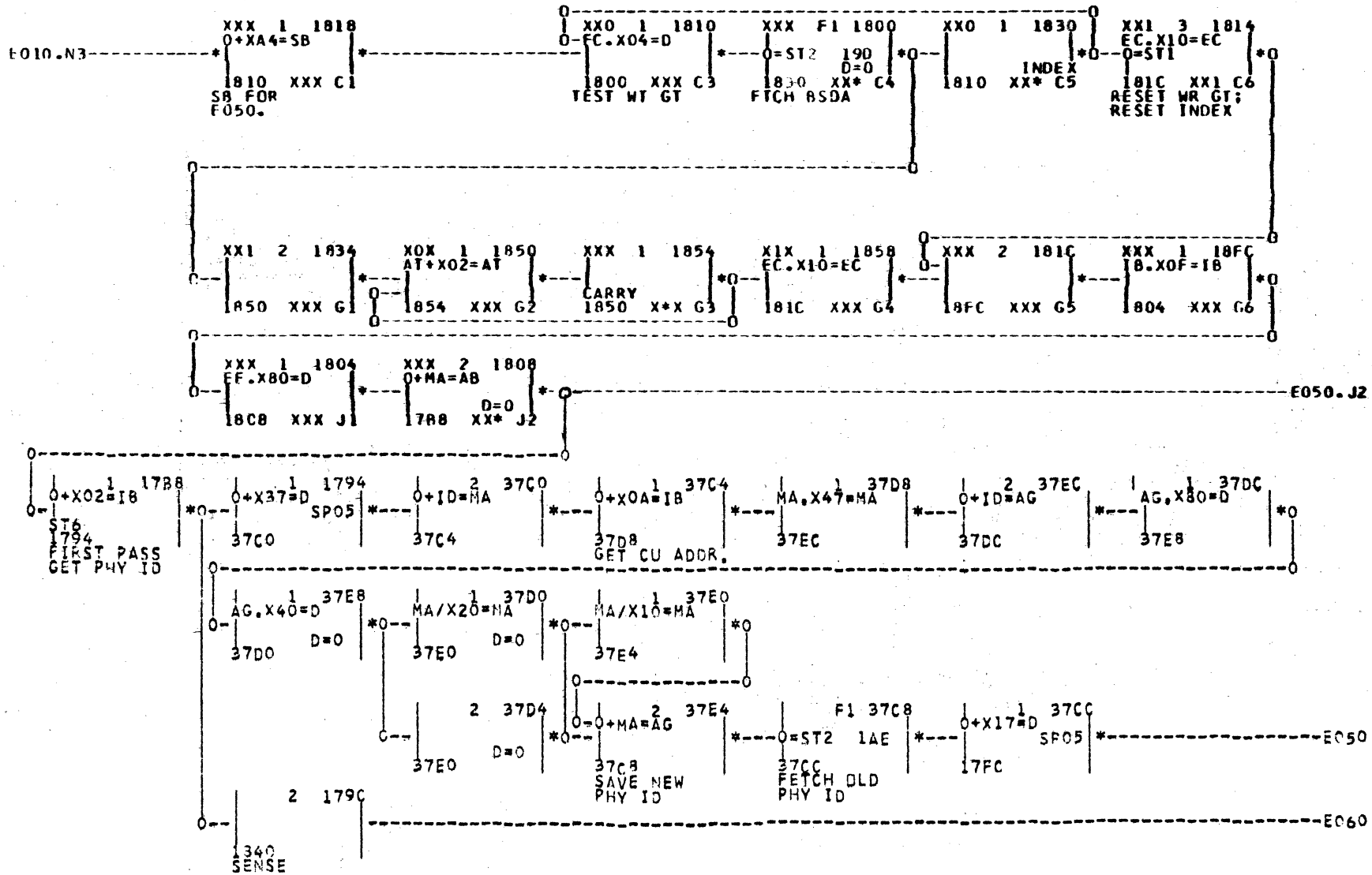
RETRY-BRANCHING CN C-CHK

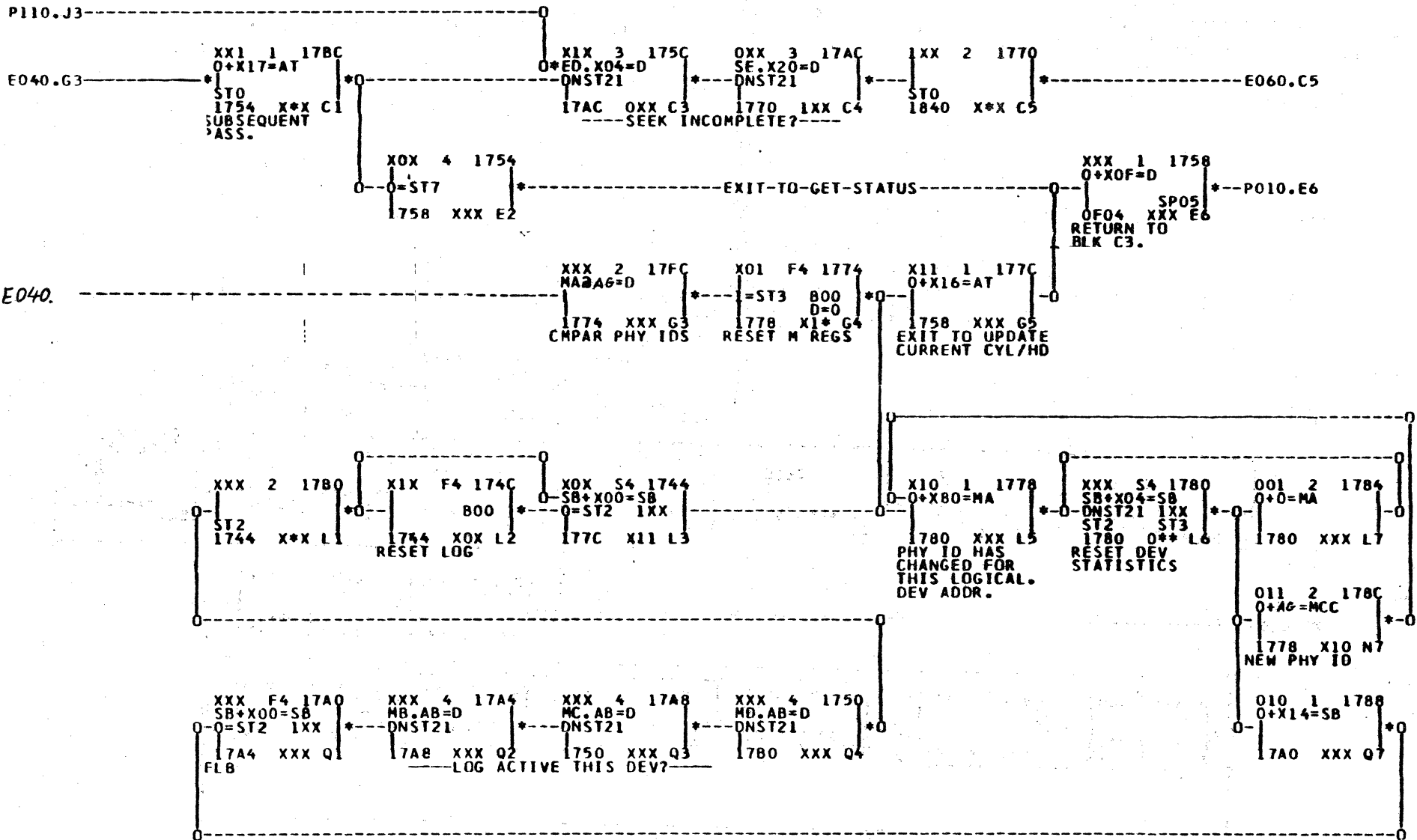
TO EQUIP CHK

E010 COMMAND INITIALIZATION.
ENTRY DECISIONS.

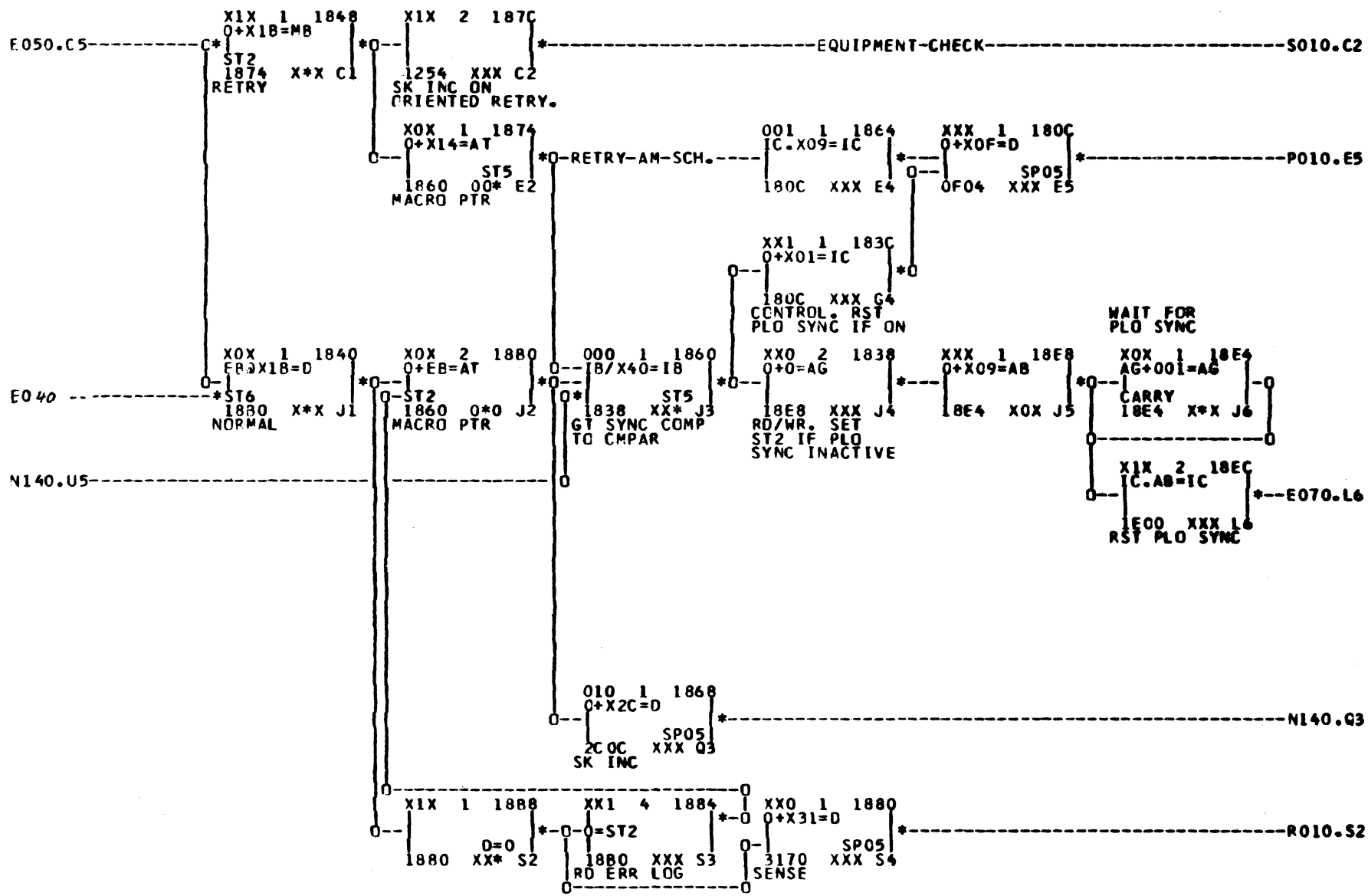


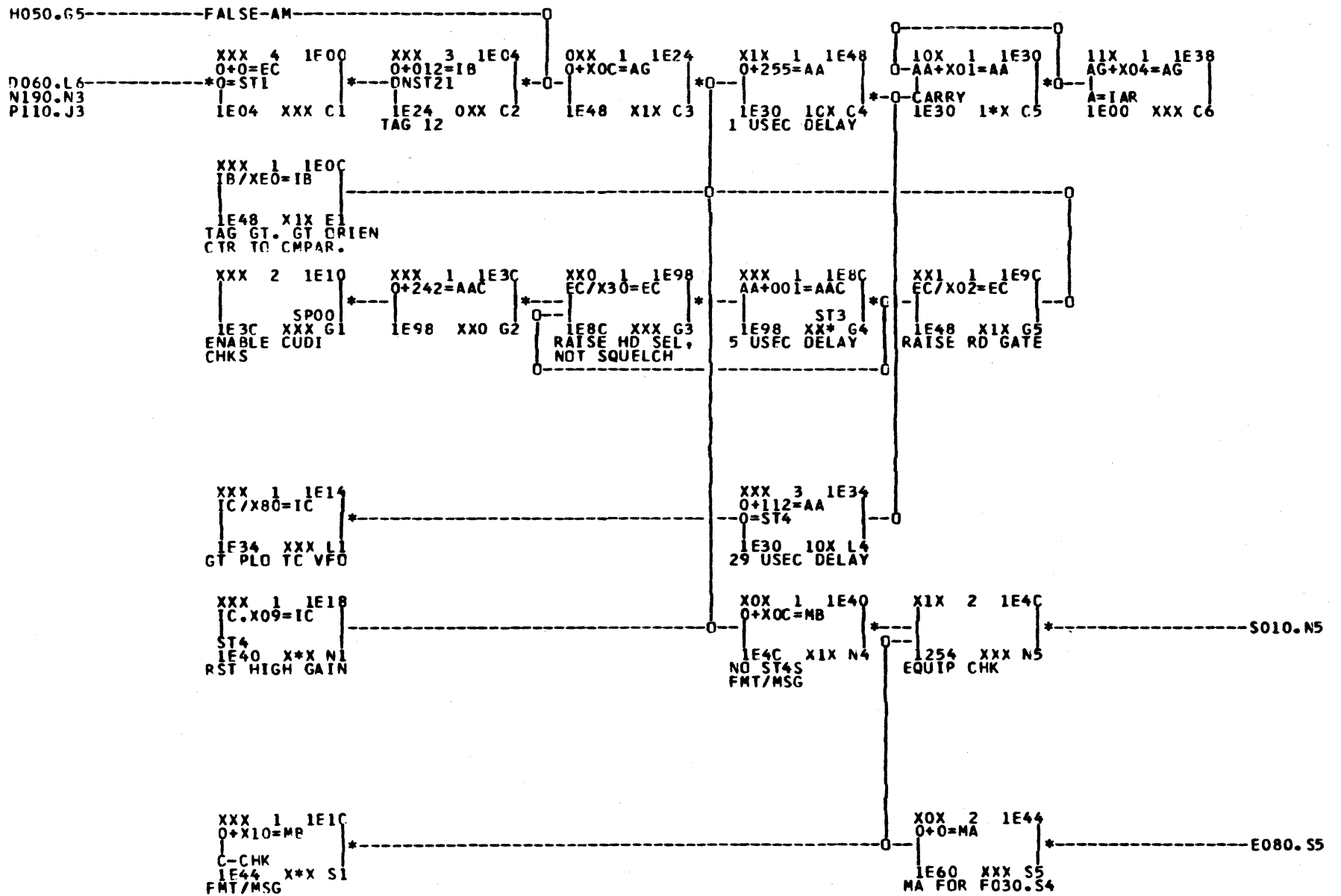






E050 COMMAND INITIALIZATION
FIRST PASS





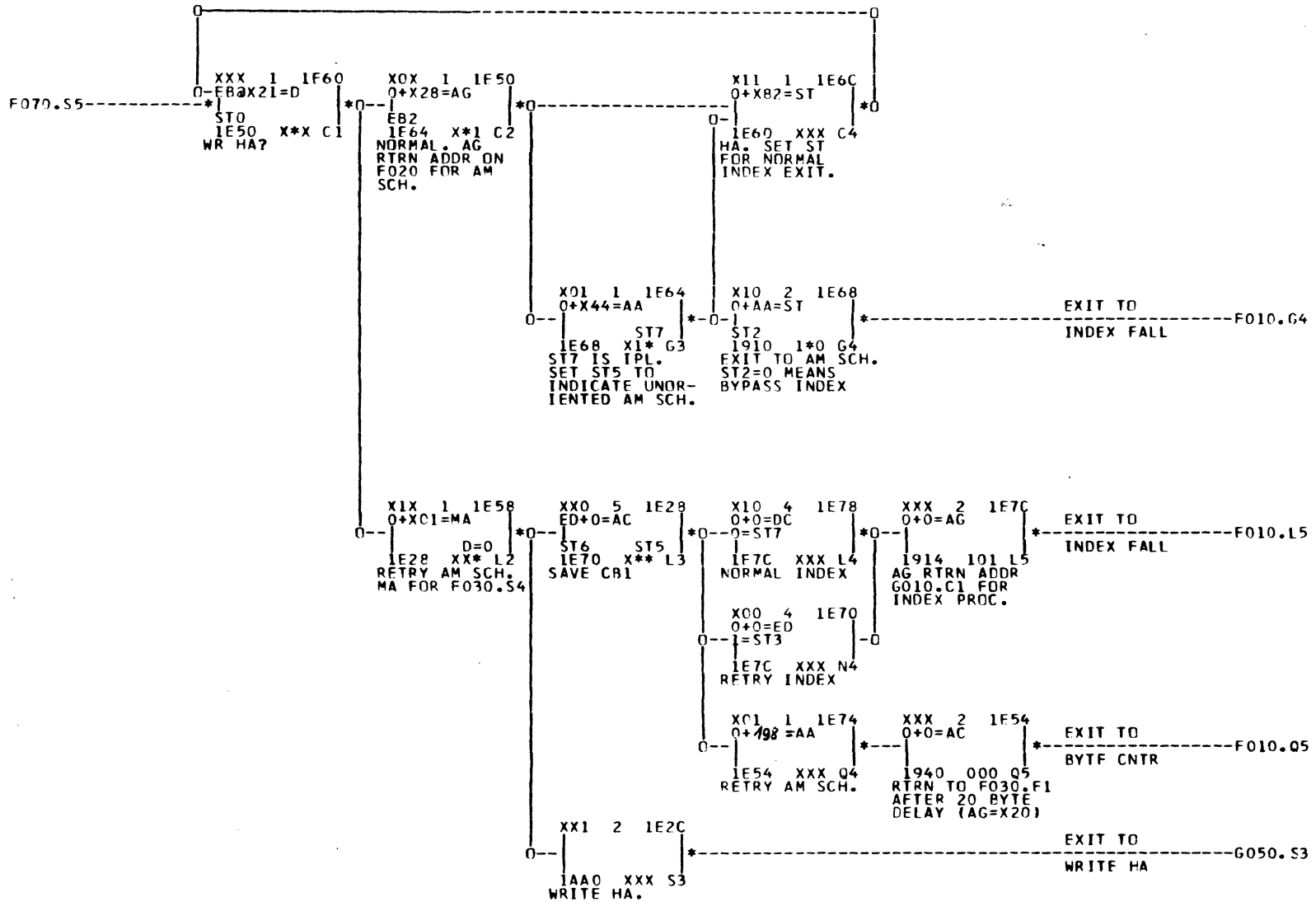
E070 COMMAND INITIALIZATION
READ

PUP NO. 70631200

DOC NO. 73687900

2-56

REVISION L



Gilt nur für 3414-3, 3414-4 Rev.2

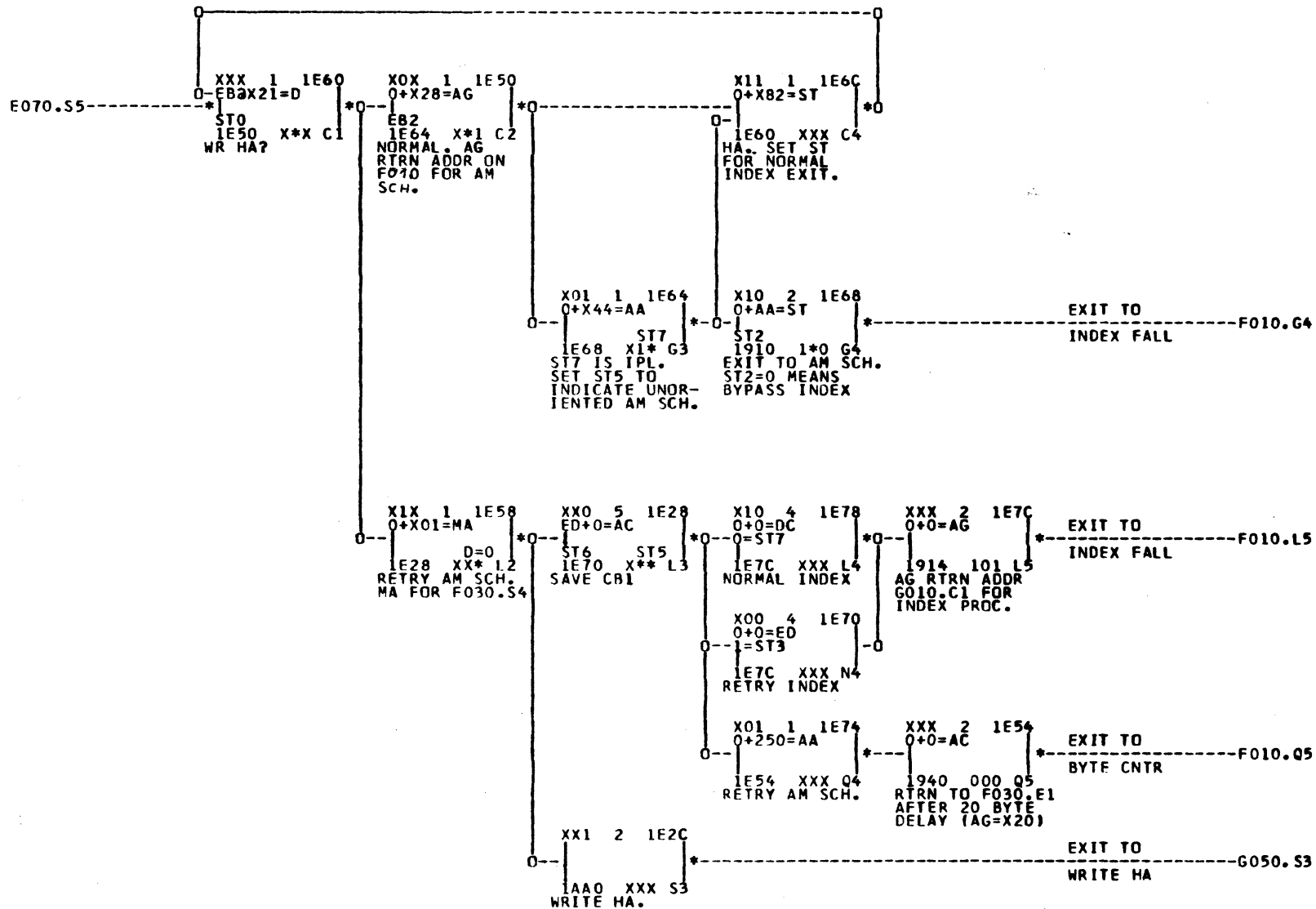
PUB NC. 70631200

DOC NO. 73687900

2.57

E080 COMMAND INITIALIZATION
UNORIENTED RD/WR
CMD BREAKOUT
REVISION A

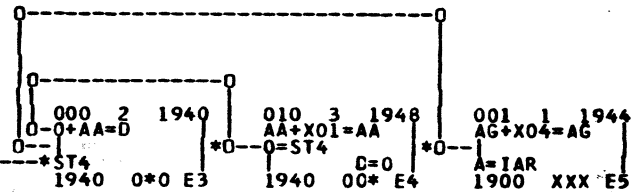




E080 COMMAND INITIALIZATION
UNORIENTED RD/WR
CMD BREAKOUT
A

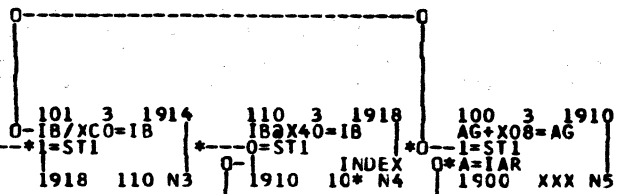
BYTES= 257-AA

E080.Q5
 G010.N4
 G020.U3
 G030.S3
 G020.L2
 G040.C4



ADDR	PAGE	FUNCTION
1920	F030.E1	RETRY REORIENT
1960	G010.N1	HD SW POINT
1964	G040.C1	HD SEL POINT
1990	G040.E1	INDEX PASSED DEC
1938	G050.Q1	WRITE HA

E080.L5
 G050.C3



ADDR	PAGE	FUNCTION
1900	G010.C2	RD/SCH HA
1928	F030.E4	AM SCH
1930	G050.Q1	WRITE HA

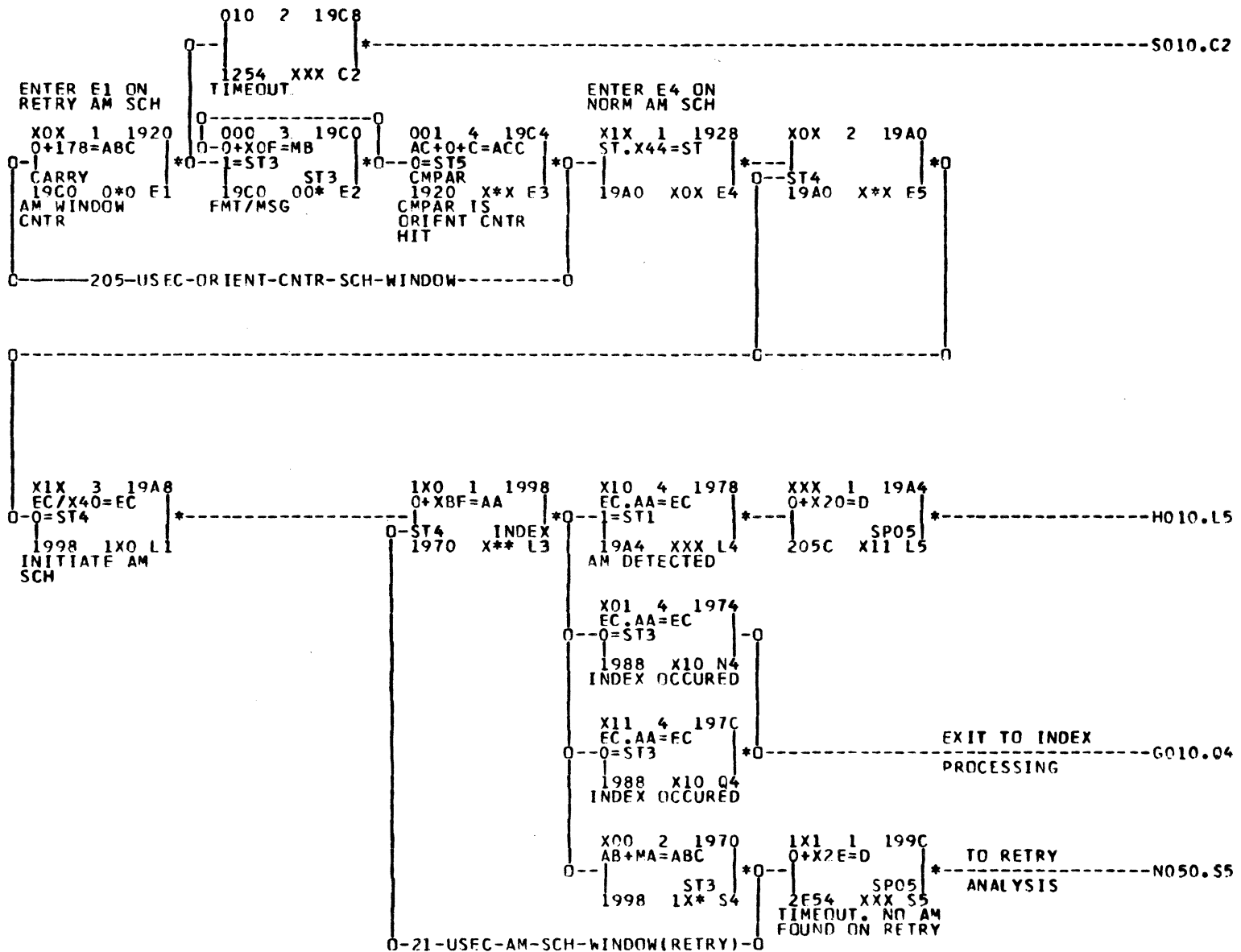
E080.G4

PUR NO. 70631200 DOC NO. 73687900

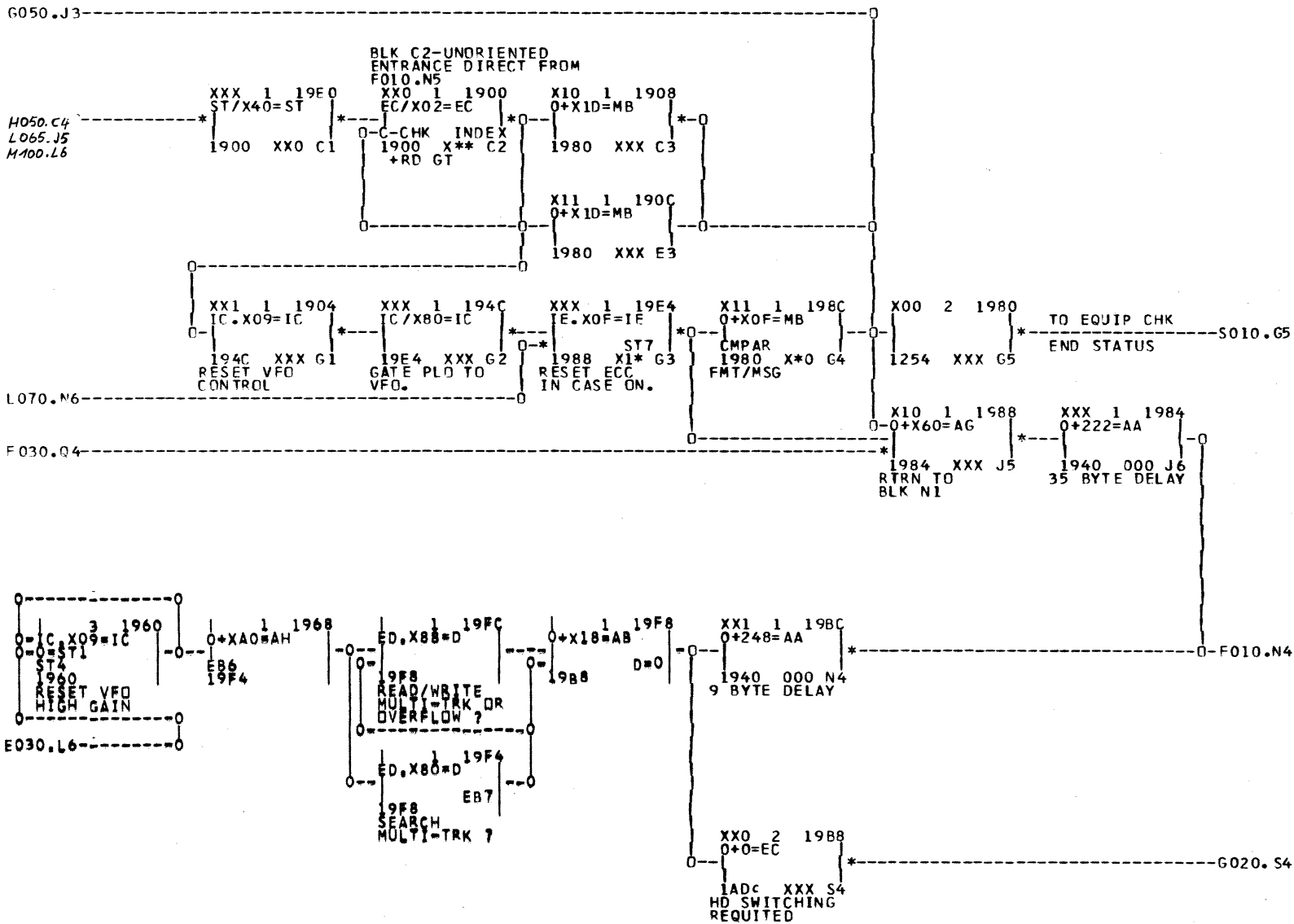
2-58

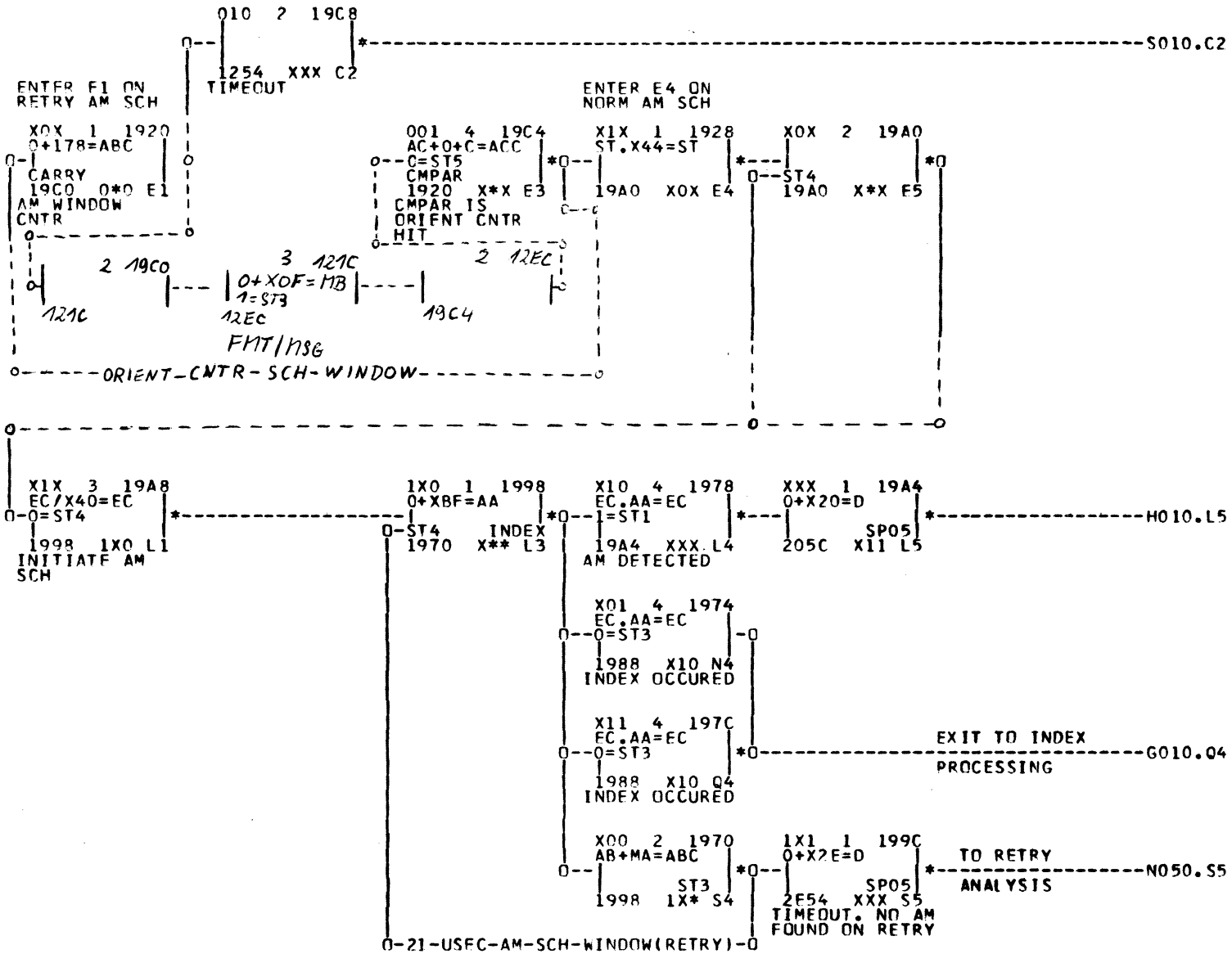
F010 AM SEARCH. BYTE COUNTER
 AND INDEX FALL PROCESSING

REVISION L



F030 AM SEARCH.





H050.C4
L065.J5
M100.L6

BLK C2-UNORIENTED
ENTRANCE DIRECT FROM
FO10.N5

XXX 1 19E0
ST/X40=ST

1900 XX0 C1

XXC 1 1900
EC/X22=EC

C-CHK INDEX
1900 X** C2
+RD GT

X10 1 1908
O+X10=MB

1980 XXX C3

X11 1 190C
O+X10=MB

1980 XXX E3

XX1 1 1904
IC.X09=IC

194C XXX G1
RESET VFO
CTRCL

XXX 1 194C
IC/X80=IC

19E4 XXX G2
GATE PLO TO
VFO.

XXX 1 19E4
IE.X0F=IE

1988 X1* G3
RESET ECC
IN CASE ON.

X11 1 198C
O+X0F=MB

1980 X*0 G4
CMPAR
FMT/MSG

X00 2 1980

1254 XXX G5

TO EQUIP CHK
END STATUS

S010.G5

L070.N6

F030.C4

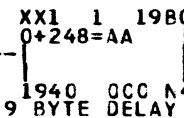
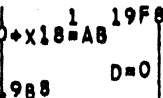
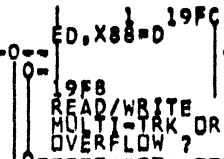
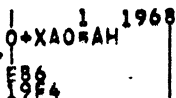
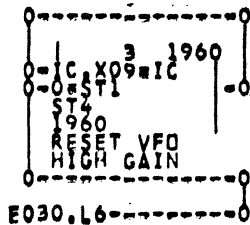
X10 1 1988
O+X60=AG

1984 XXX J5
RTRN TO
BLK N1

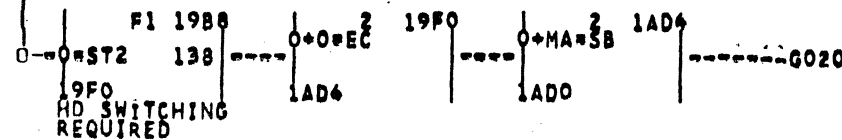
XXX 1 1984
O+222=AA

1940 000 J6
35 BYTE DELAY

-0



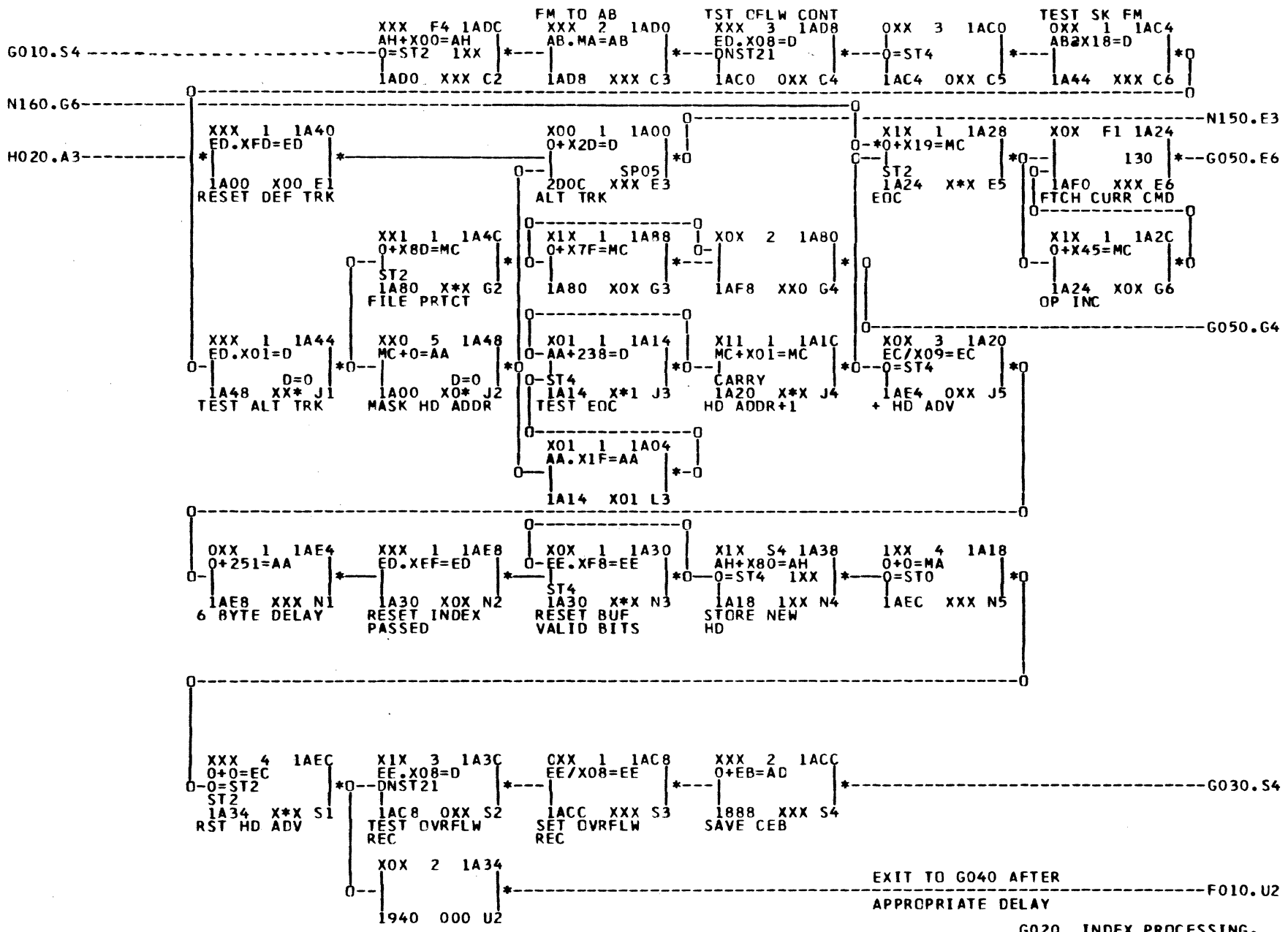
F010.N4



Gilt nur für 3414-3, 3414-4 Rev. 3
PUR NO. 70631200 DOC NO. 73687900

2-60

G010 INDEX PROCESSING.
INDEX DETECTION.
REVISION M3



G020.S4-----0*|XXX F1 1888|*---|XXX 2 188C|*---|XXX 1 18B4|*---|XXX F4 18BC|*---|XXX 5 18C0|*0
 130|O+MA=EB|O+X04=SB|SB+X00=SB|MB+0=AC
 188C XXX C1|18B4 XXX C2|18BC XXX C3|DXX|ST2
 N250.Q3-----0FTCH CMD|1844 X*X C5|KL TO AC

-----0-----0

XOX 2 1844|XXX 2 18C4|X00 1 1890|XOX S4 18A0|*0
 O+0=MBC|O+0=AB|AC+X08=ACC|SB+X00=SB|LXX|*0
 18C4 XXX G1|EB2 EB1|189C X11 G3|18D0 XXX G5|DUMMY CYCLE
 INITIALIZE REST. DISP.|1890 X** G2|CKD|FOR DELAY.

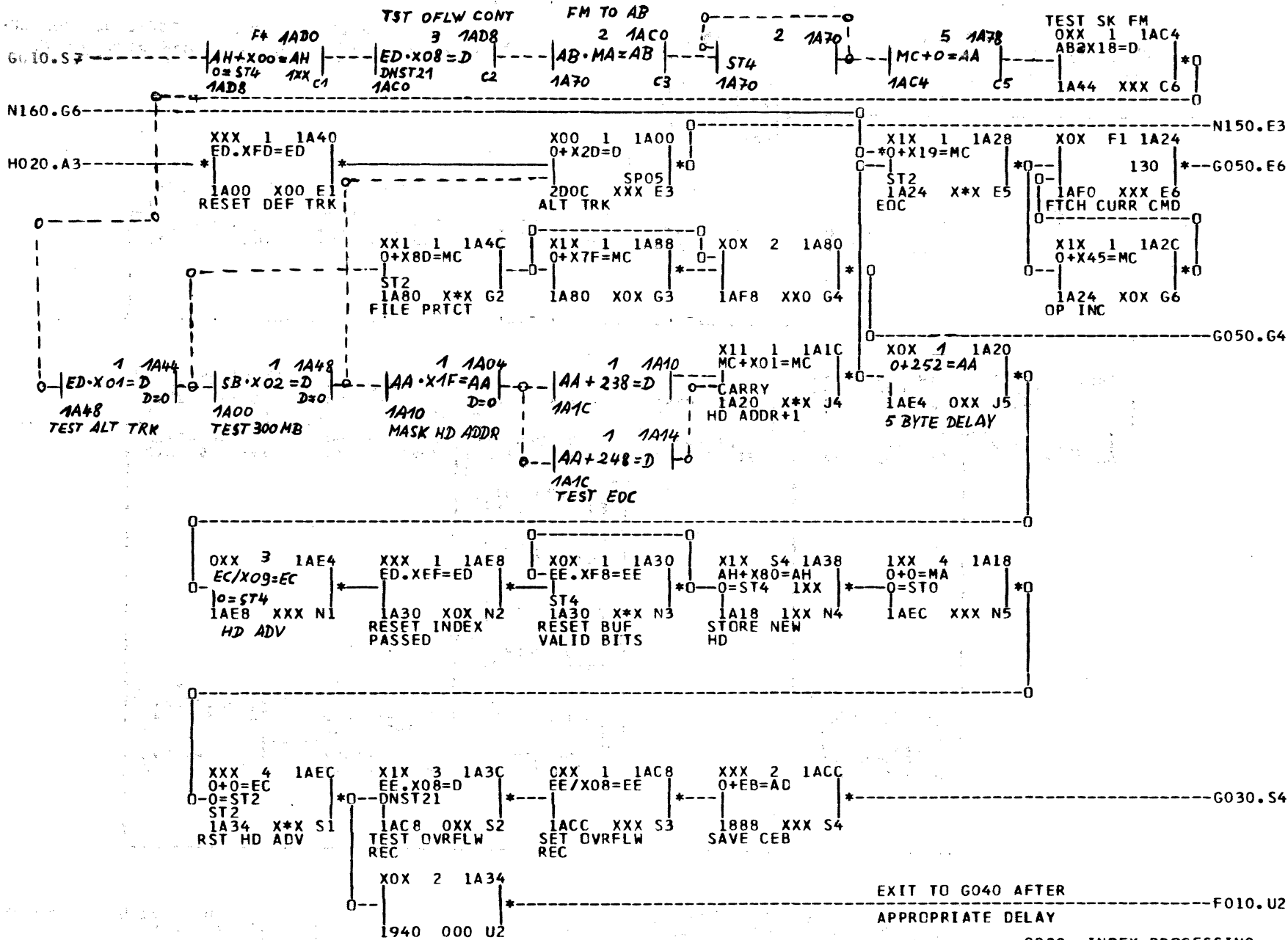
X01 1 1894|X10 2 1898|X11 2 189C|XXX 1 18CC|X1X F4 18A8|XXX 2 18D0|*0
 AC+X08=ACC|O+0=AC|O-AB+0+C=ABC|O+XB0=SB|SB+X00=SB|MD+AC=MDC|*0
 189C X11 J3|189C X11 L3|18CC XXX N3|ST2 18A0 X*X N4|18D0 XXX N5|18D4 XXX N6|*0
 CKD|DATA ONLY|UPDATE REST. DISP. DH TO AB.|FETCH RESTART DISPLACEMENT|UPDATE RESTART DISP.

N250.S3-----0*|X1X 5 184C|*---|XXX 5 18C8|*---|X11 2 189C|*---|XXX 1 18CC|*0|X1X F4 18A8|*0|XXX 2 18D0|*0
 MC+0=ABC|MD+0=AC|O-AB+0+C=ABC|O+XB0=SB|SB+X00=SB|MD+AC=MDC|*0
 18C8 XXX N1|189C X11 N2|18CC XXX N3|ST2 18A0 X*X N4|18D0 XXX N5|18D4 XXX N6|*0
 UPDATE REST. DISP. DH TO AB.|DL TO AC|18CC XXX N3|18A0 X*X N4|18D0 XXX N5|18D4 XXX N6|*0
 FETCH RESTART DISPLACEMENT|UPDATE RESTART DISP.

-----0-----0

XXX 2 18D4|XXX 4 18D8|XXX S4 18DC|XOX 1 18A4|XXX 2 18E0|EXIT TO G040|F010.S5
 MC+AB+C=MCC|MB+0+C=MBC|SB+X00=SB|O+255=AA|O+AD=EB|AFTER DELAY
 18D8 XXX S1|18DC XXX S2|O=ST3 1XX|18E0 XXX S4|1940 000 S5|RESTORE CFB
 STO|2 BYTE DELAY|X1X 1 18AC|N260.U4
 18A4 X*X S3|O+X2D=D|2DE8 XXX U4|SPO5

G030 INDEX PROCESSING.
 RESTART DISPLACEMENT
 HOUSEKEEPING.
 E



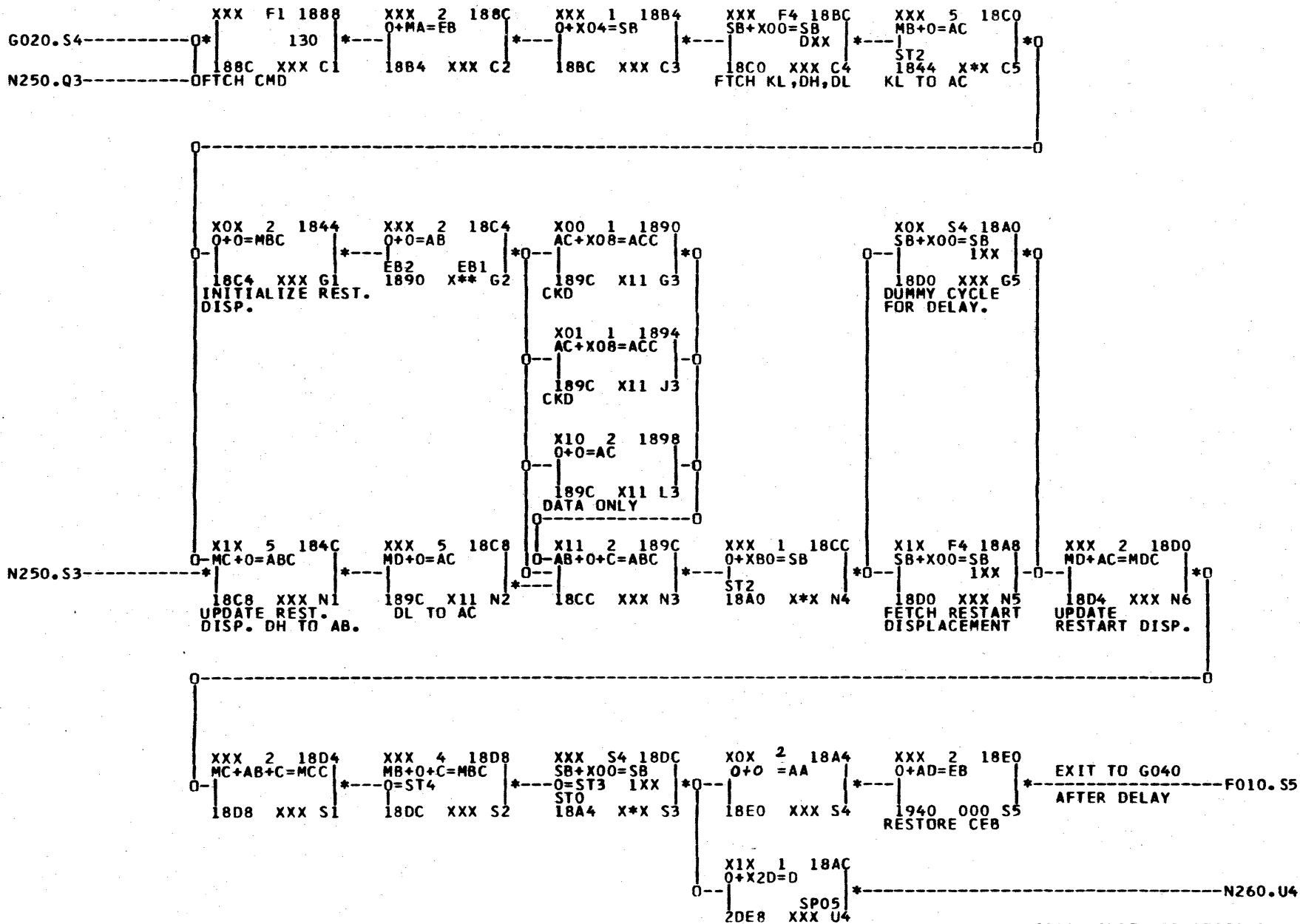
Gilt nur für 3414-3, 3414-4 Rev.2

PUB NO. 70631200

DOC NO. 73687900

2-61

G020 INDEX PROCESSING.
HEAD SWITCHING
REVISION E



Gilt nur für 3414-3, 3414-4 Rev.2

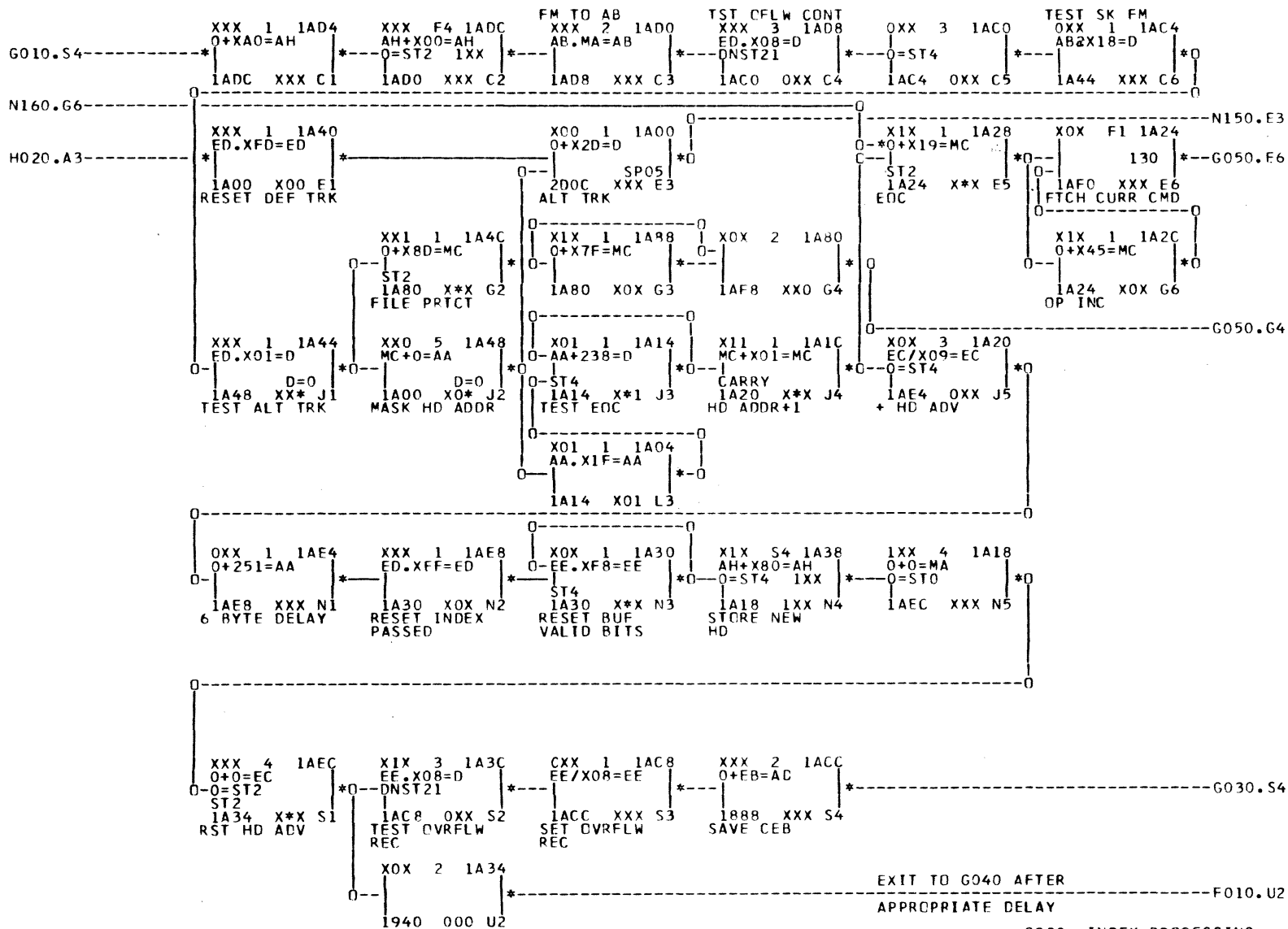
PUB NO. 70631200

DOC NO. 73687900

2-62

REVISION

G030 INDEX PROCESSING.
RESTART DISPLACEMENT
HOUSEKEEPING.
E



G020.S4-----0*
 N250.Q3-----0*
 XXX F1 1888
 130
 188C XXX C1
 OFTCH CMD
 XXX 2 188C
 O+MA=EB
 18B4 XXX C2
 XXX 1 18B4
 O+X04=SB
 18BC XXX C3
 XXX F4 18BC
 SB+X00=SB
 DXX
 18C0 XXX C4
 FTCH KL, DH, DL
 XXX 5 18C0
 MB+0=AC
 ST2
 1844 X** C5
 KL TO AC
 *0

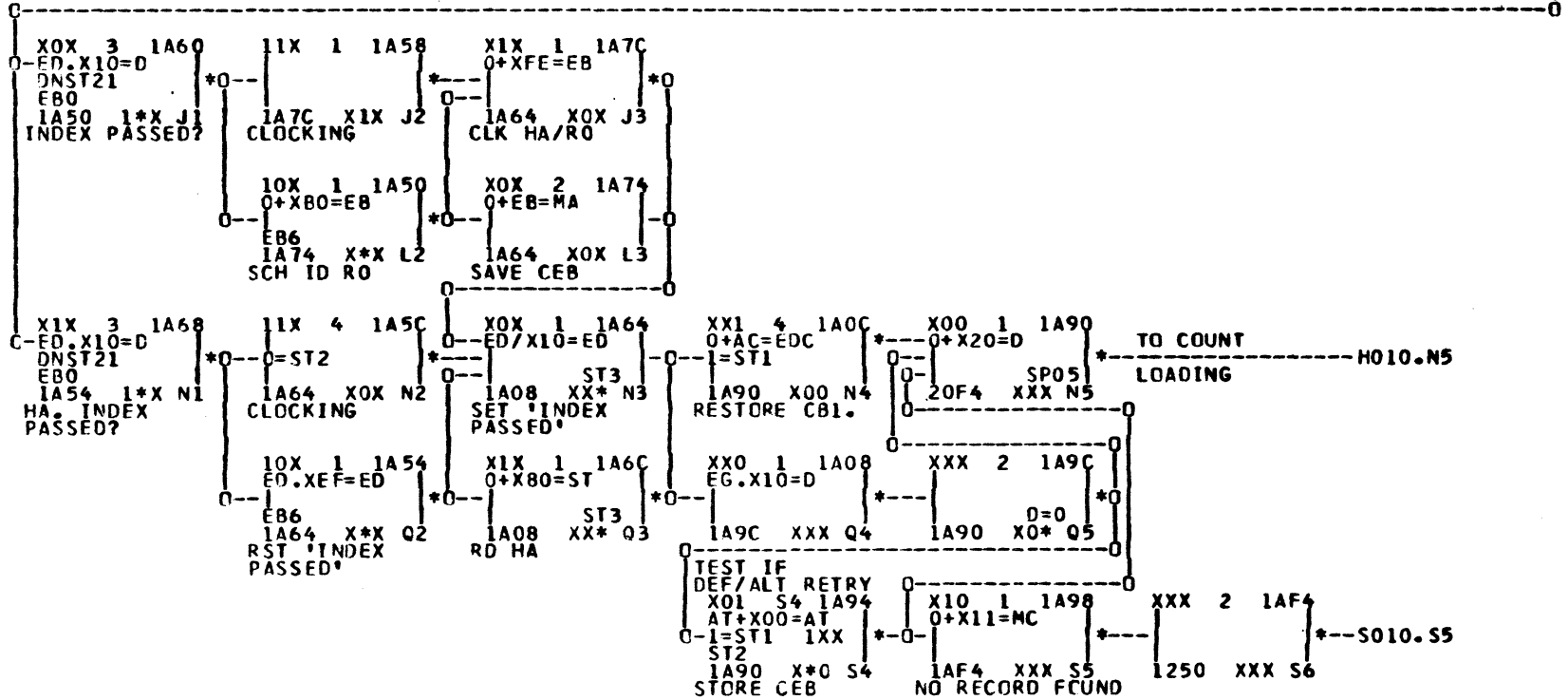
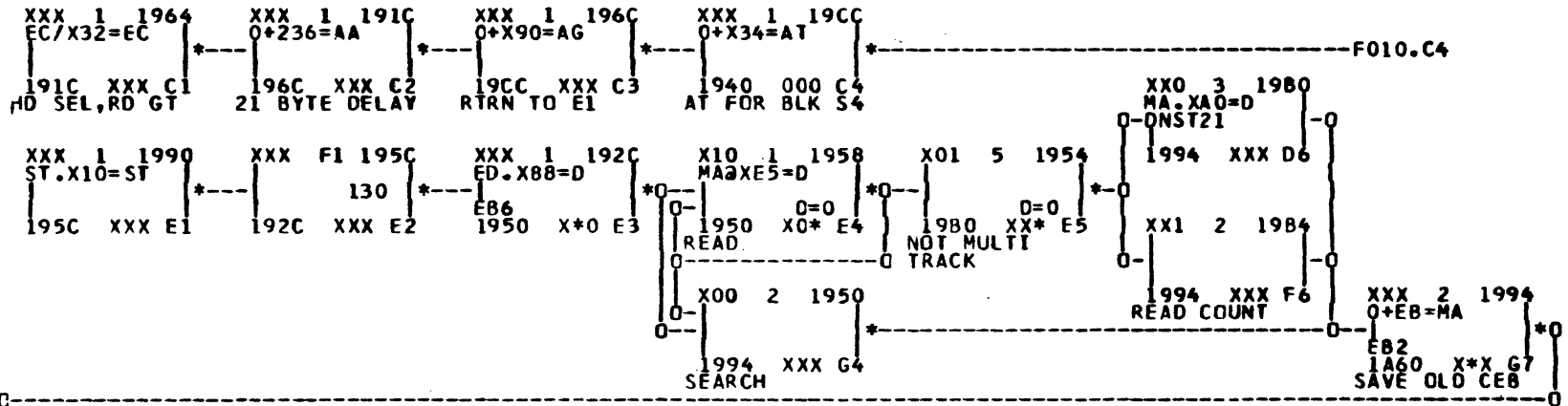
-----0

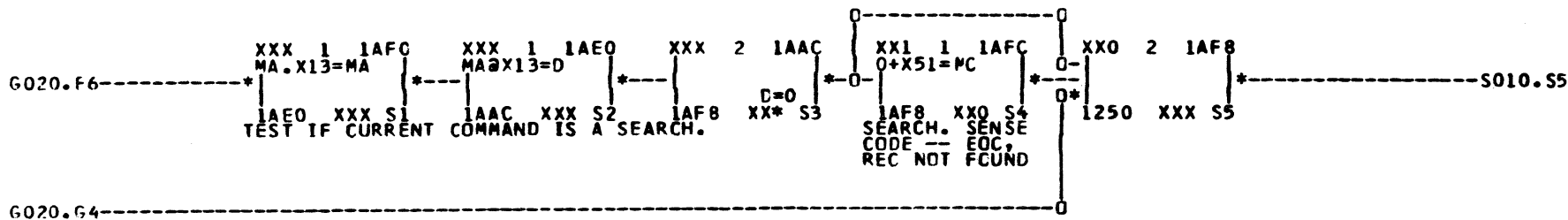
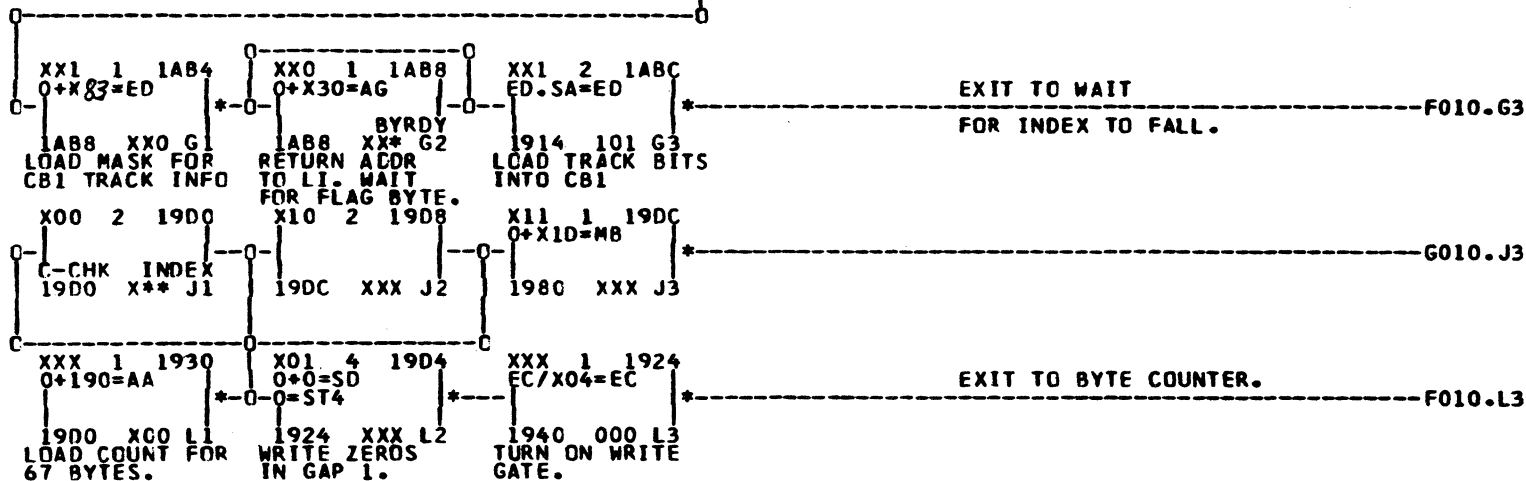
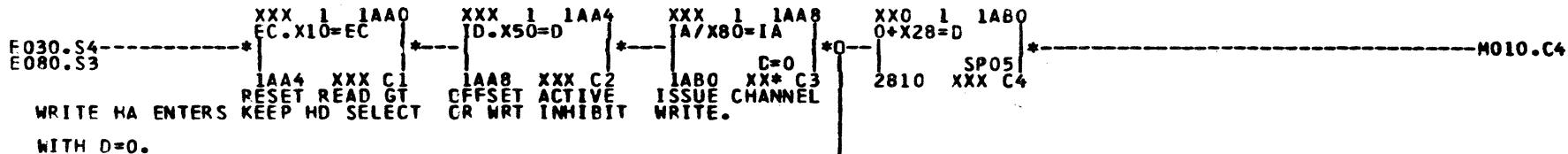
XOX 2 1844
 O+0=MBC
 18C4 XXX G1
 INITIALIZE REST.
 DISP.
 XXX 2 18C4
 O+0=AB
 EB2 EB1
 1890 X** G2
 X00 1 1890
 AC+X08=ACC
 189C X11 G3
 CKD
 X01 1 1894
 AC+X08=ACC
 189C X11 J3
 CKD
 X10 2 1898
 O+0=AC
 189C X11 L3
 DATA ONLY
 XOX S4 18A0
 SB+X00=SB
 1XX
 18D0 XXX G5
 DUMMY CYCLE
 FOR DELAY.
 *0

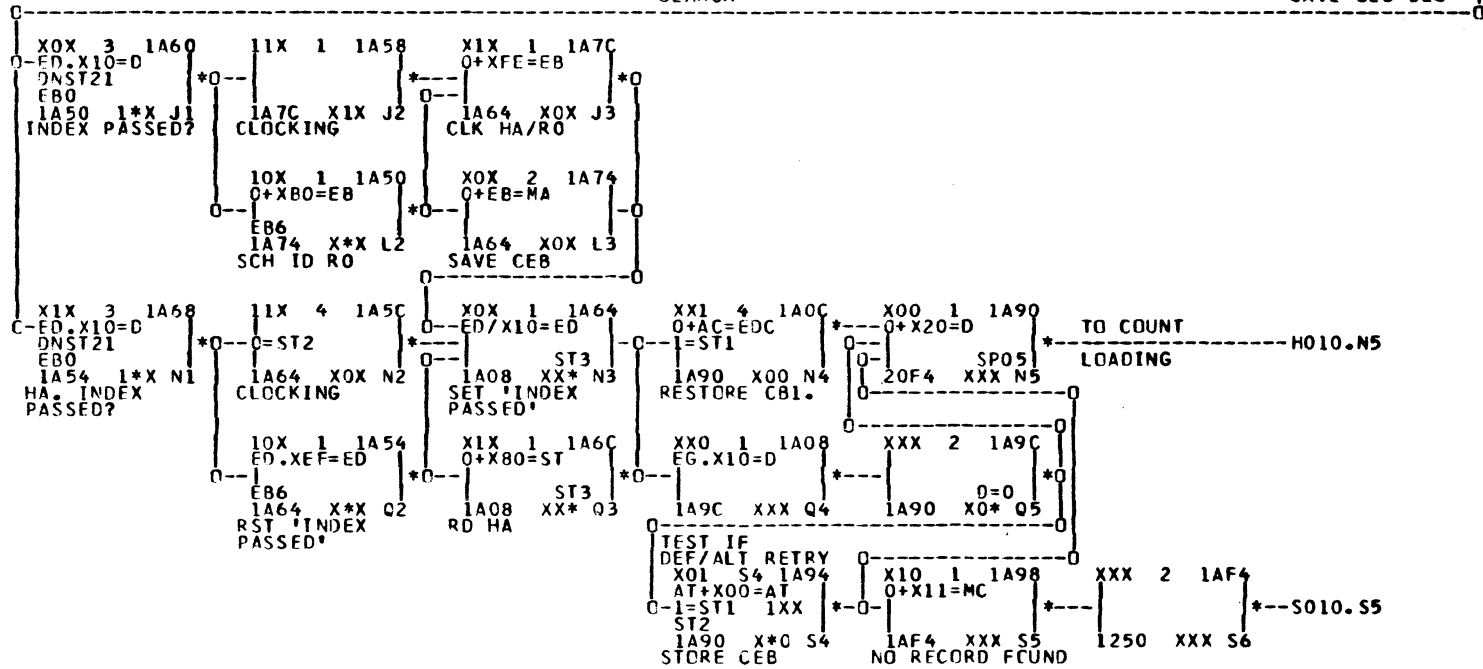
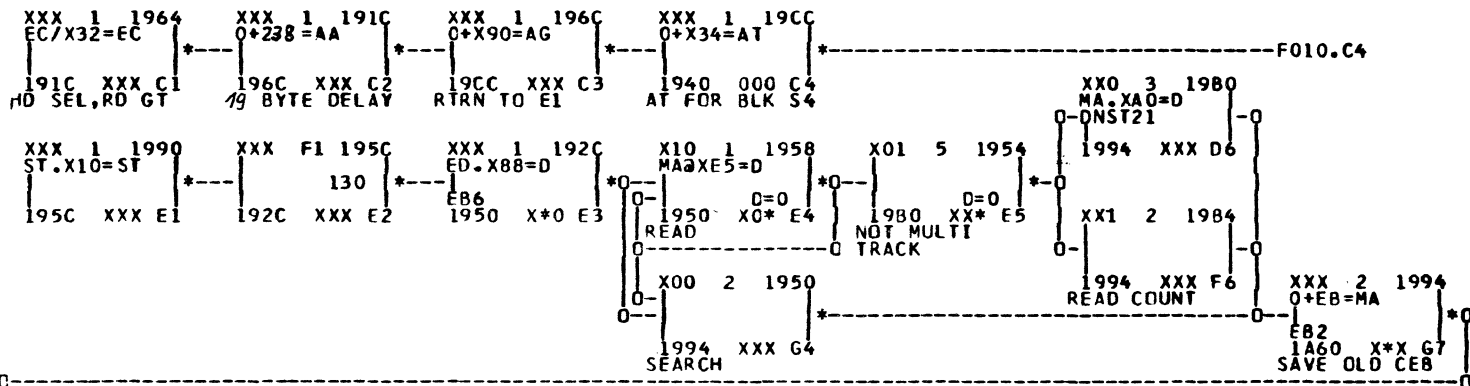
N250.S3-----0*
 X1X 5 184C
 MC+0=ABC
 18C8 XXX N1
 UPDATE REST.
 DISP. DH TO AB.
 XXX 5 18C8
 MD+0=AC
 189C X11 N2
 DL TO AC
 X11 2 189C
 O-AB+0+C=ABC
 18CC XXX N3
 XXX 1 18CC
 O+X80=SB
 ST2
 18A0 X** N4
 X1X F4 18A8
 SB+X00=SB
 1XX
 18D0 XXX N5
 FETCH RESTART
 DISPLACEMENT
 XXX 2 18D0
 MD+AC=MDC
 18D4 XXX N6
 UPDATE
 RESTART DISP.
 *0

-----0

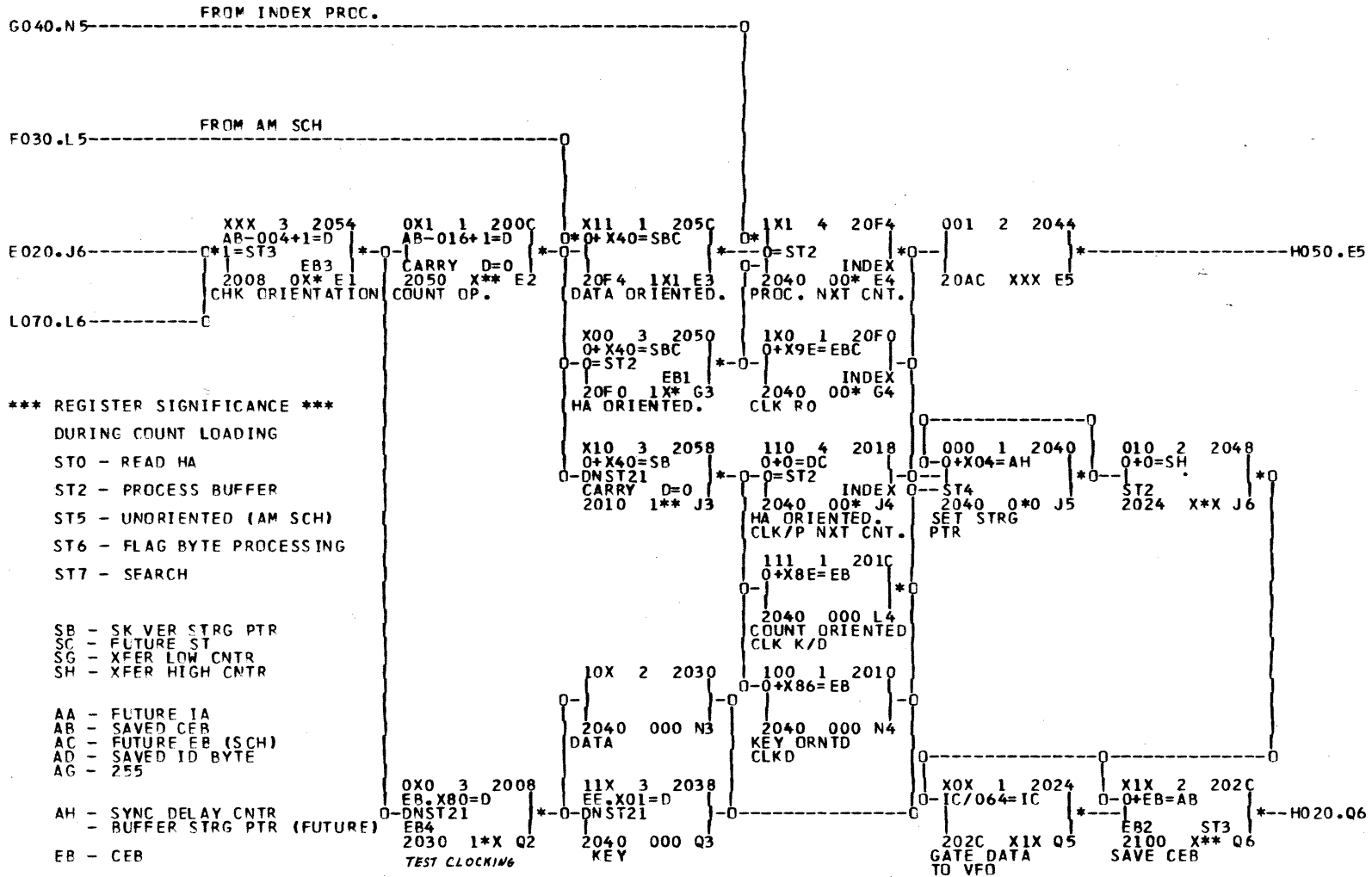
XXX 2 18D4
 MC+AB+C=MCC
 18D8 XXX S1
 XXX 4 18D8
 MB+0+C=MBC
 O=ST4
 18DC XXX S2
 XXX S4 18DC
 SB+X00=SB
 O=ST3 1XX
 STO
 18A4 X** S3
 XOX 1 18A4
 O+255=AA
 18E0 XXX S4
 2 BYTE DELAY
 XXX 2 18E0
 O+AD=EB
 1940 000 S5
 RESTORE CFB
 EXIT TO G040
 AFTER DELAY-----F010.S5
 X1X 1 18AC
 O+X20=D
 2DER SPO5
 XXX U4
 N260.U4

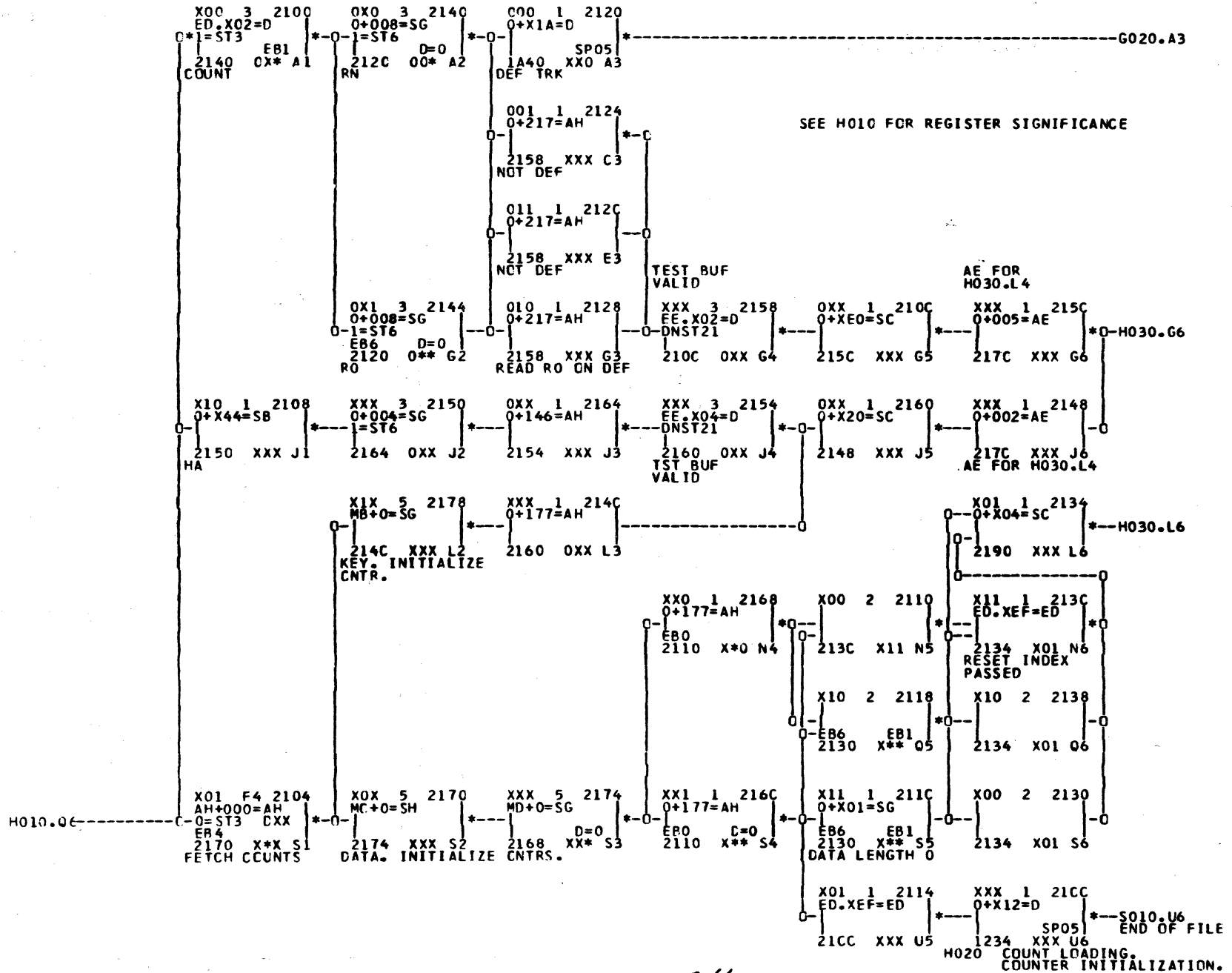


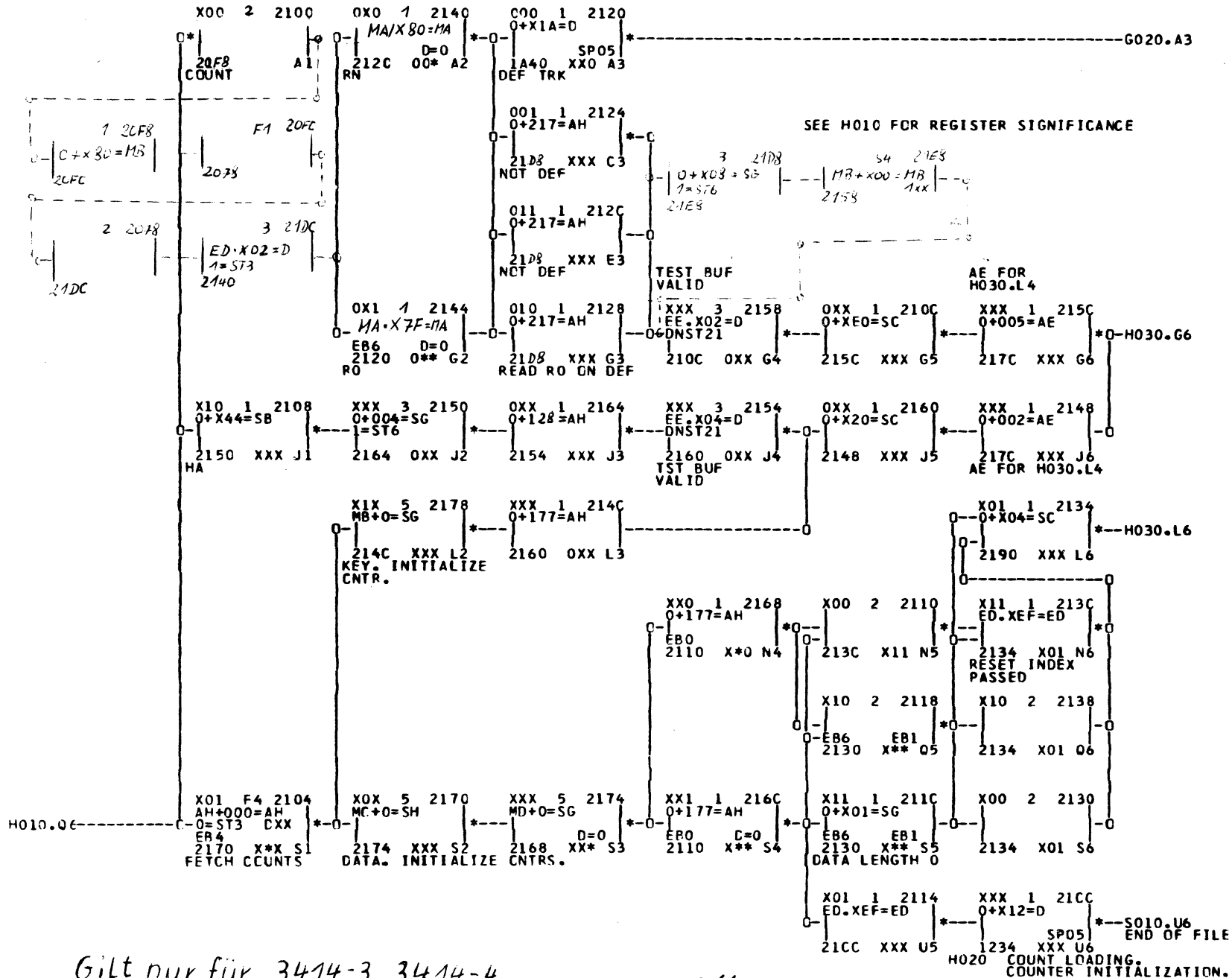








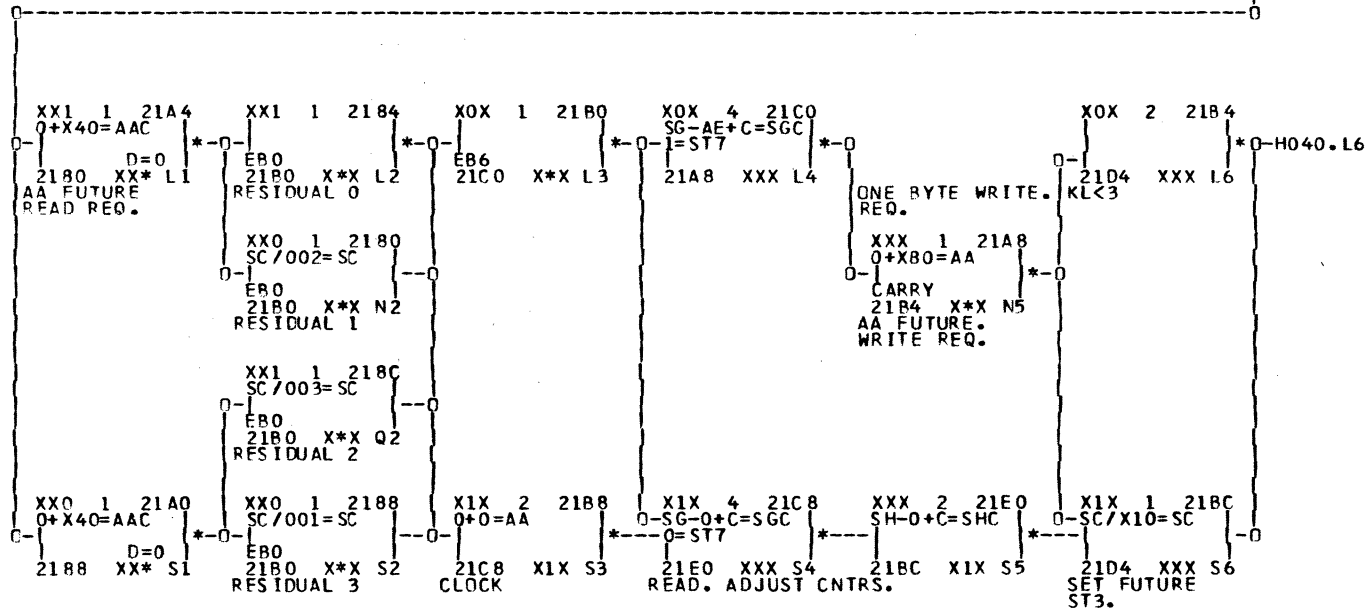
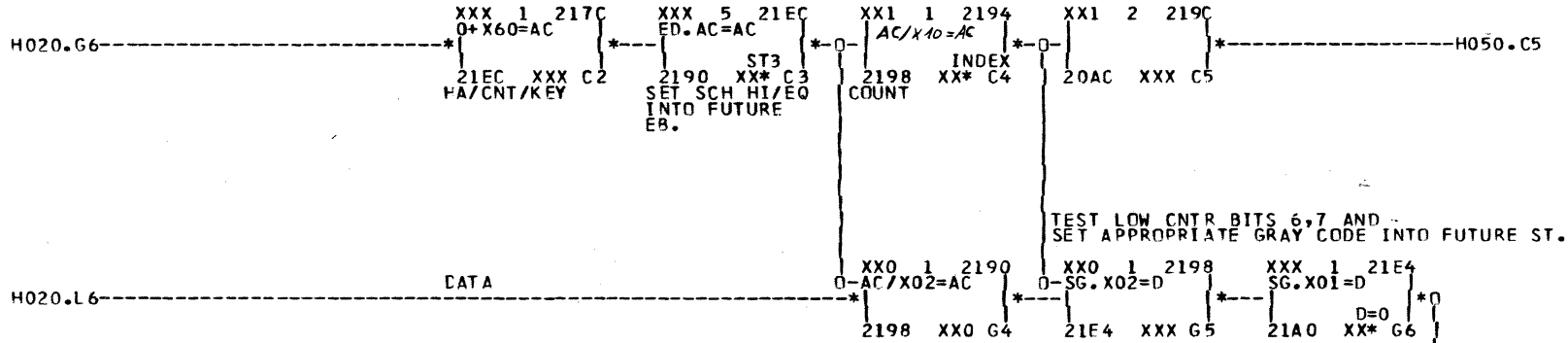




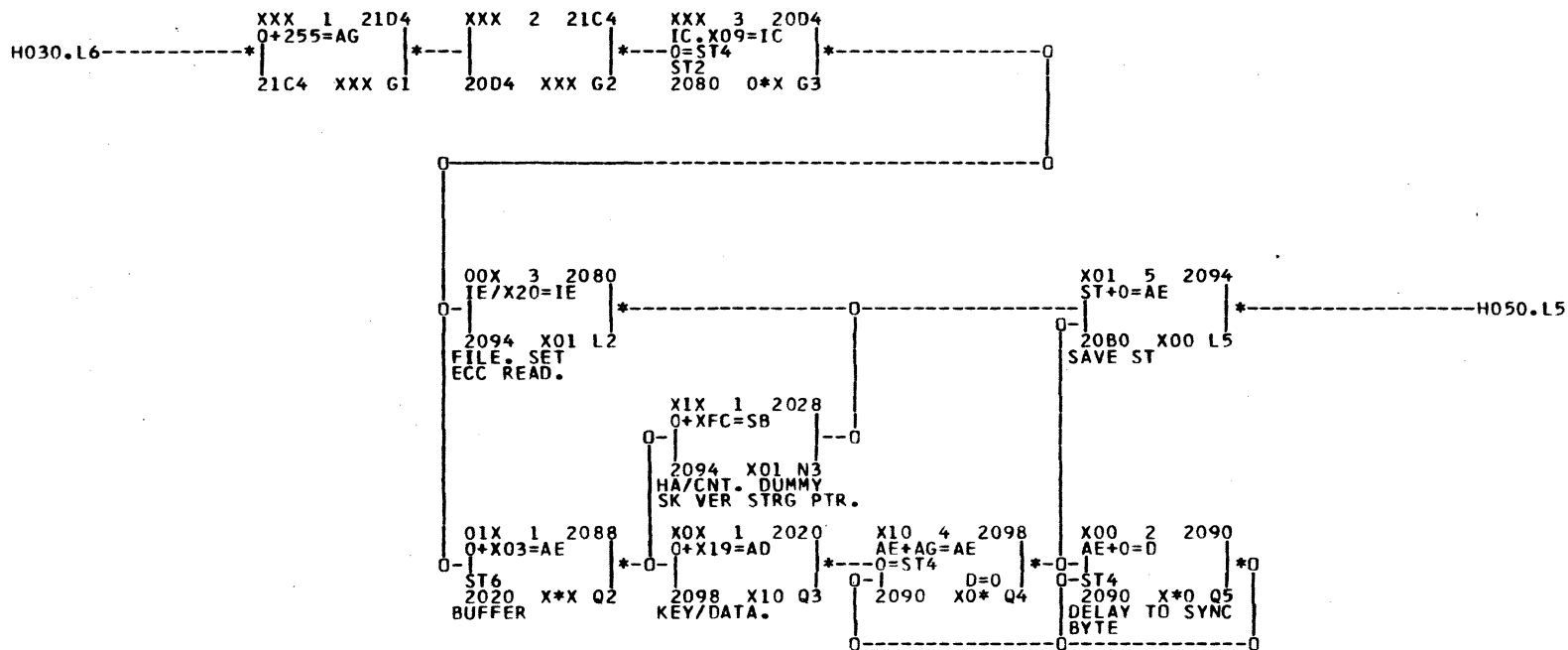
Gilt nur für 3414-3, 3414-4
 PUR NO. 70631200 DOC NO. 73687900



SEE H010 FOR REGISTER SIGNIFICANCE

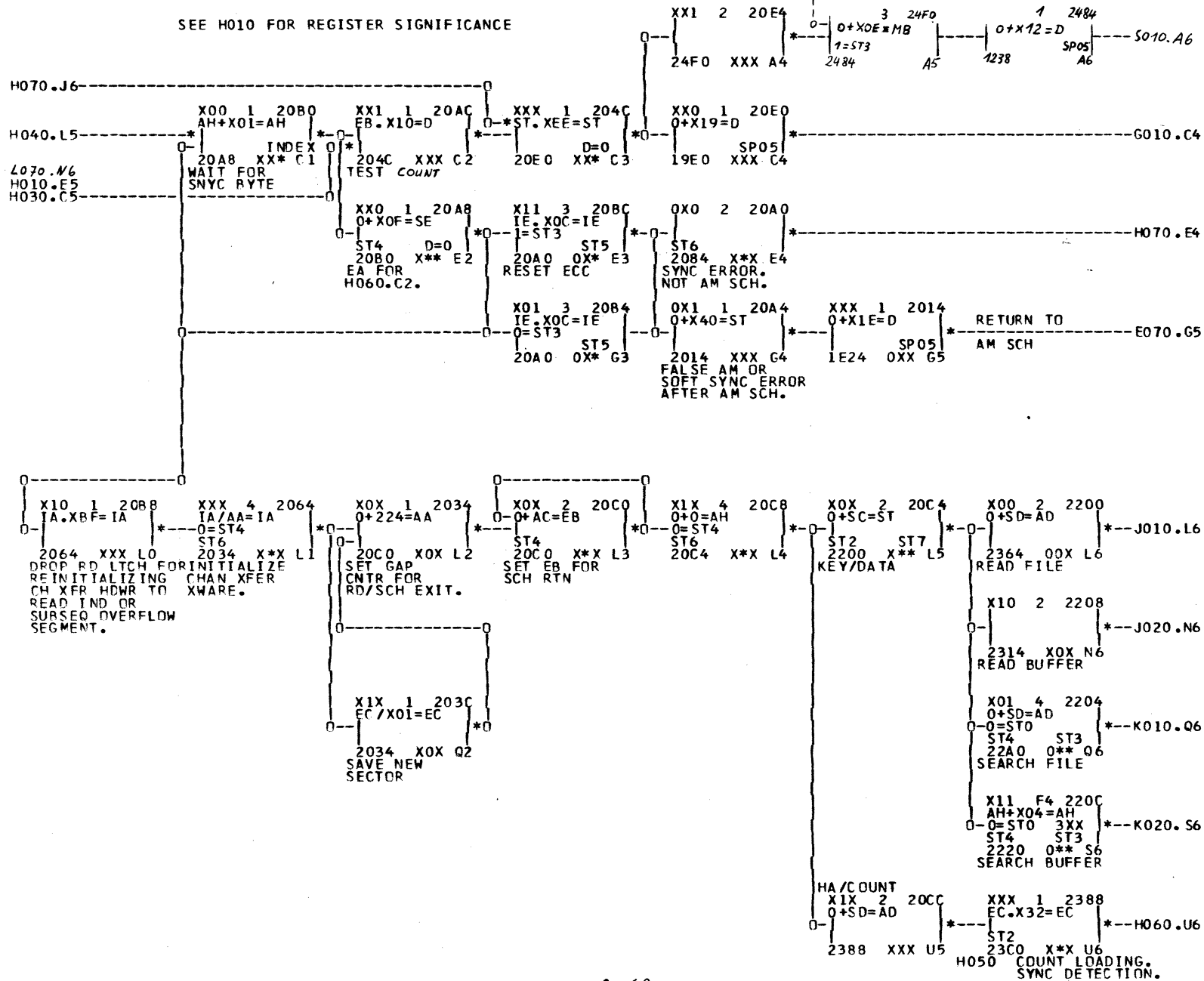


SEE H010 FOR REGISTER SIGNIFICANCE

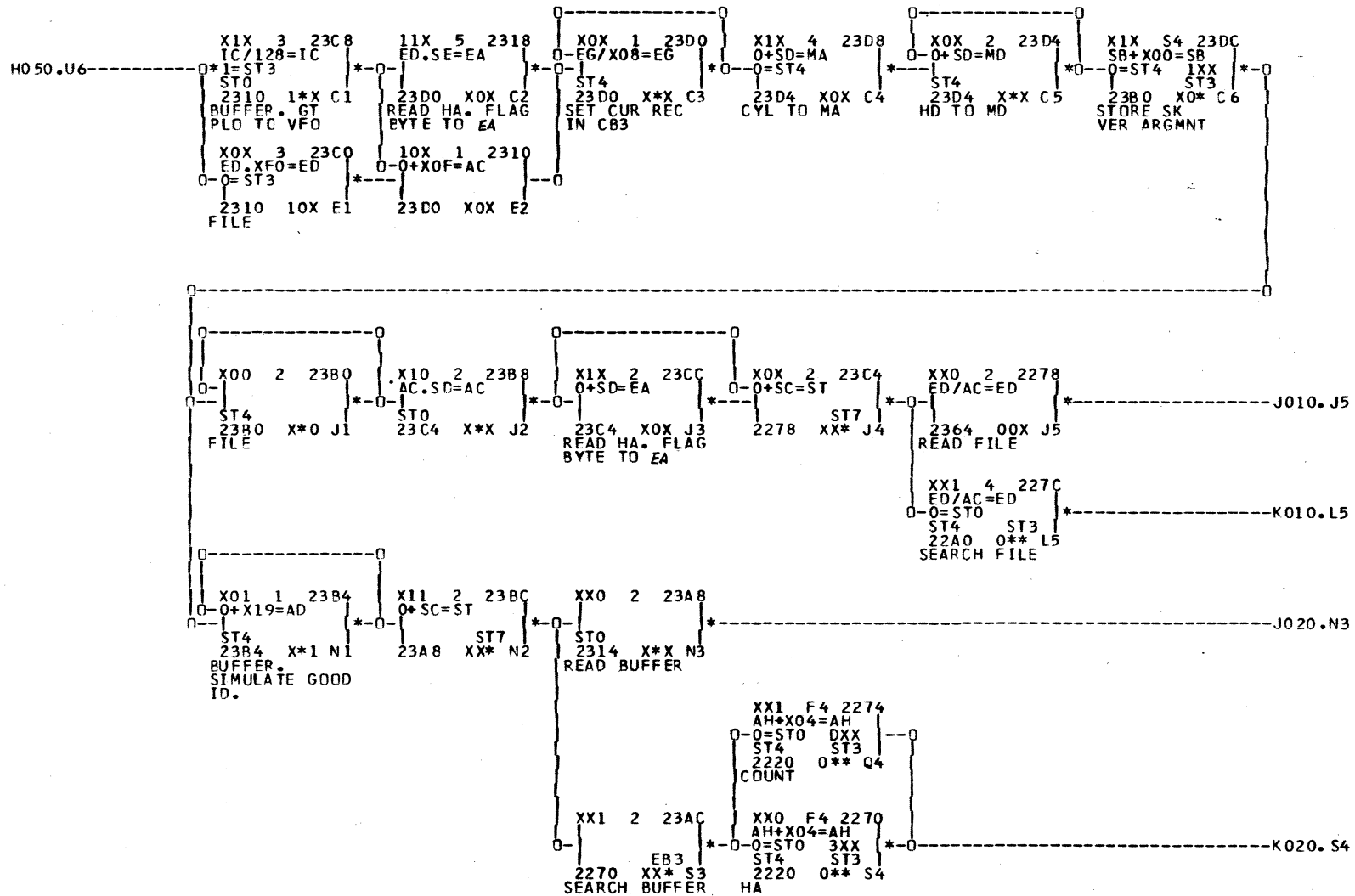


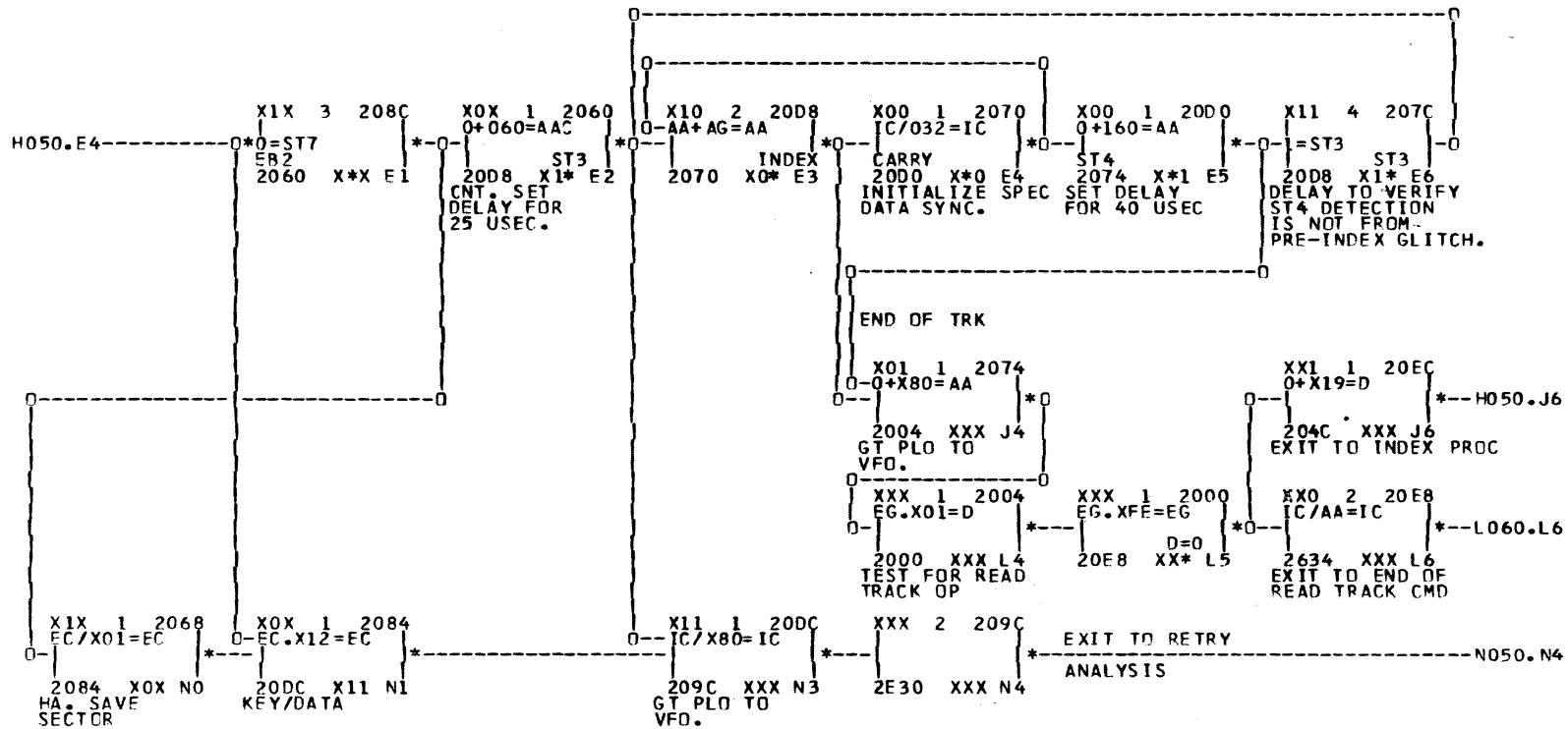
L070.Q5

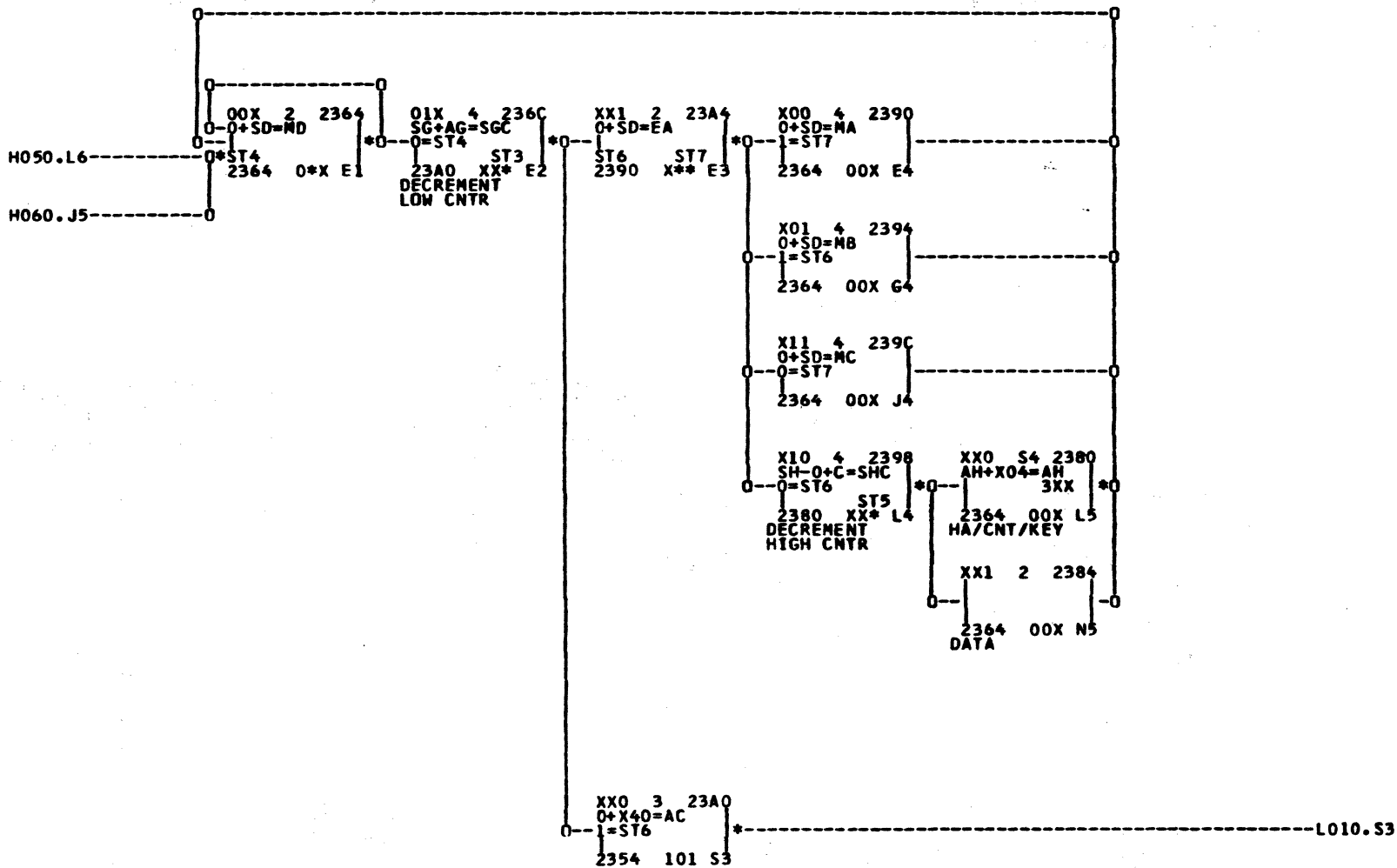
SEE H010 FOR REGISTER SIGNIFICANCE

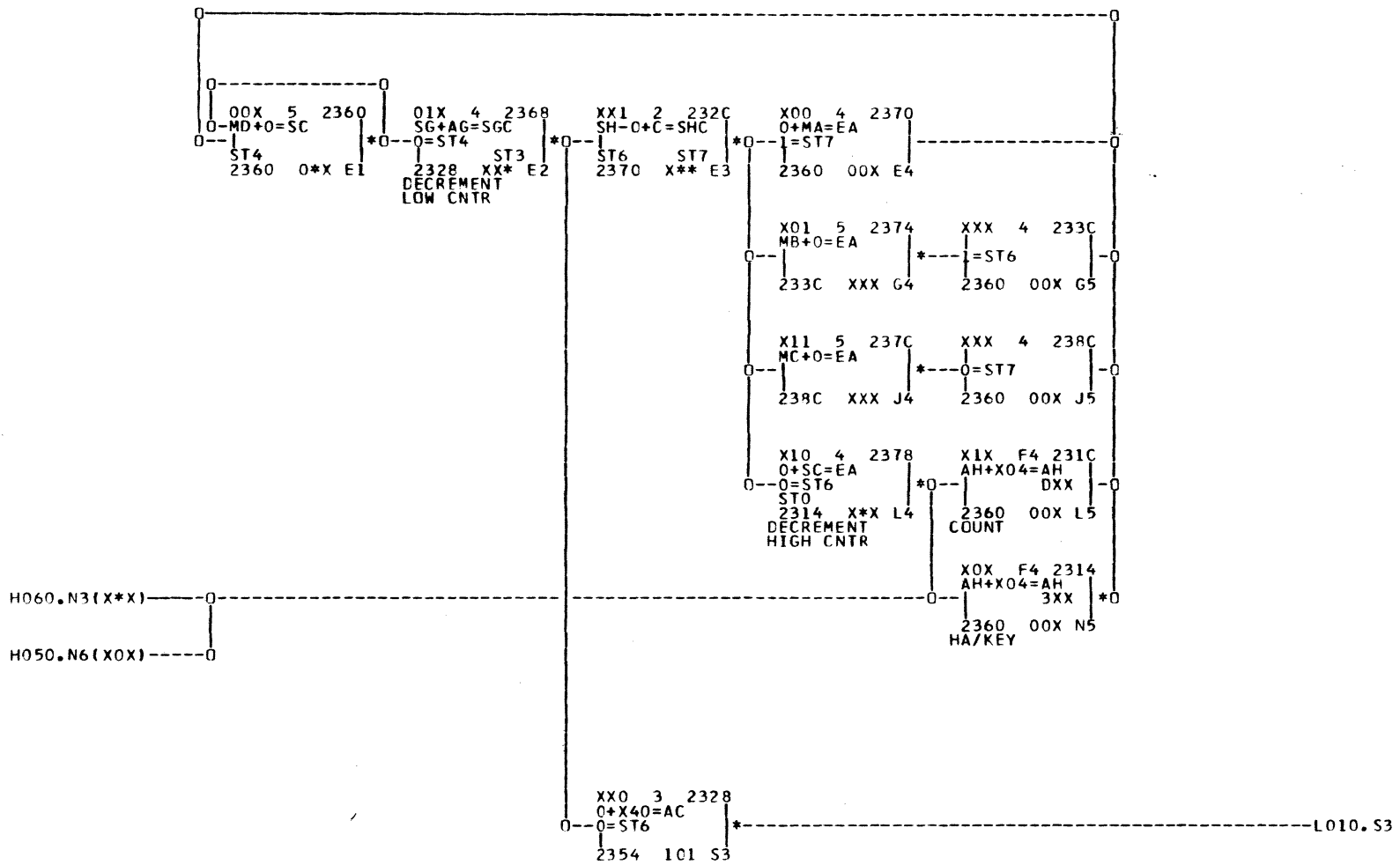


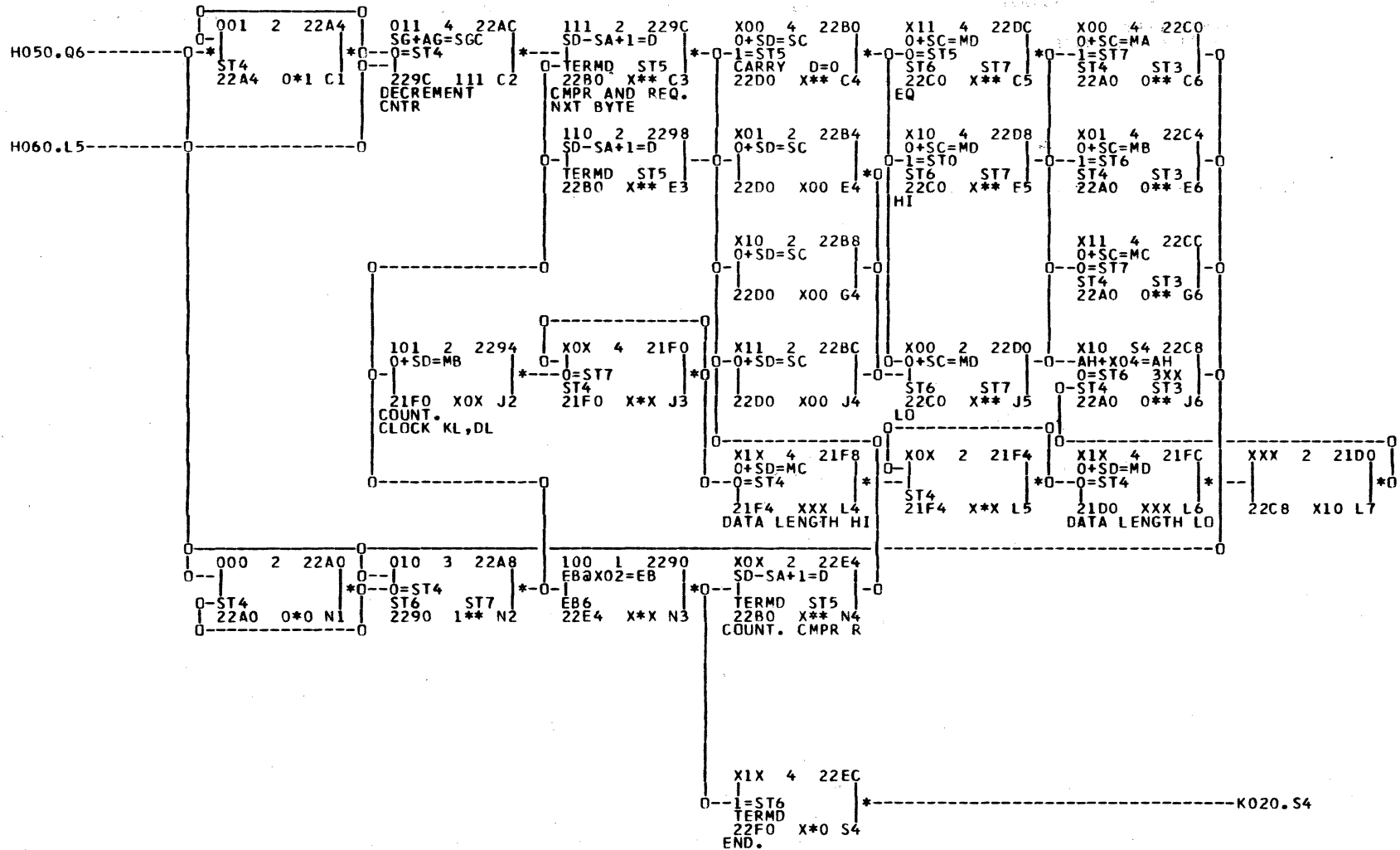
SEE H010 FOR REGISTER SIGNIFICANCE

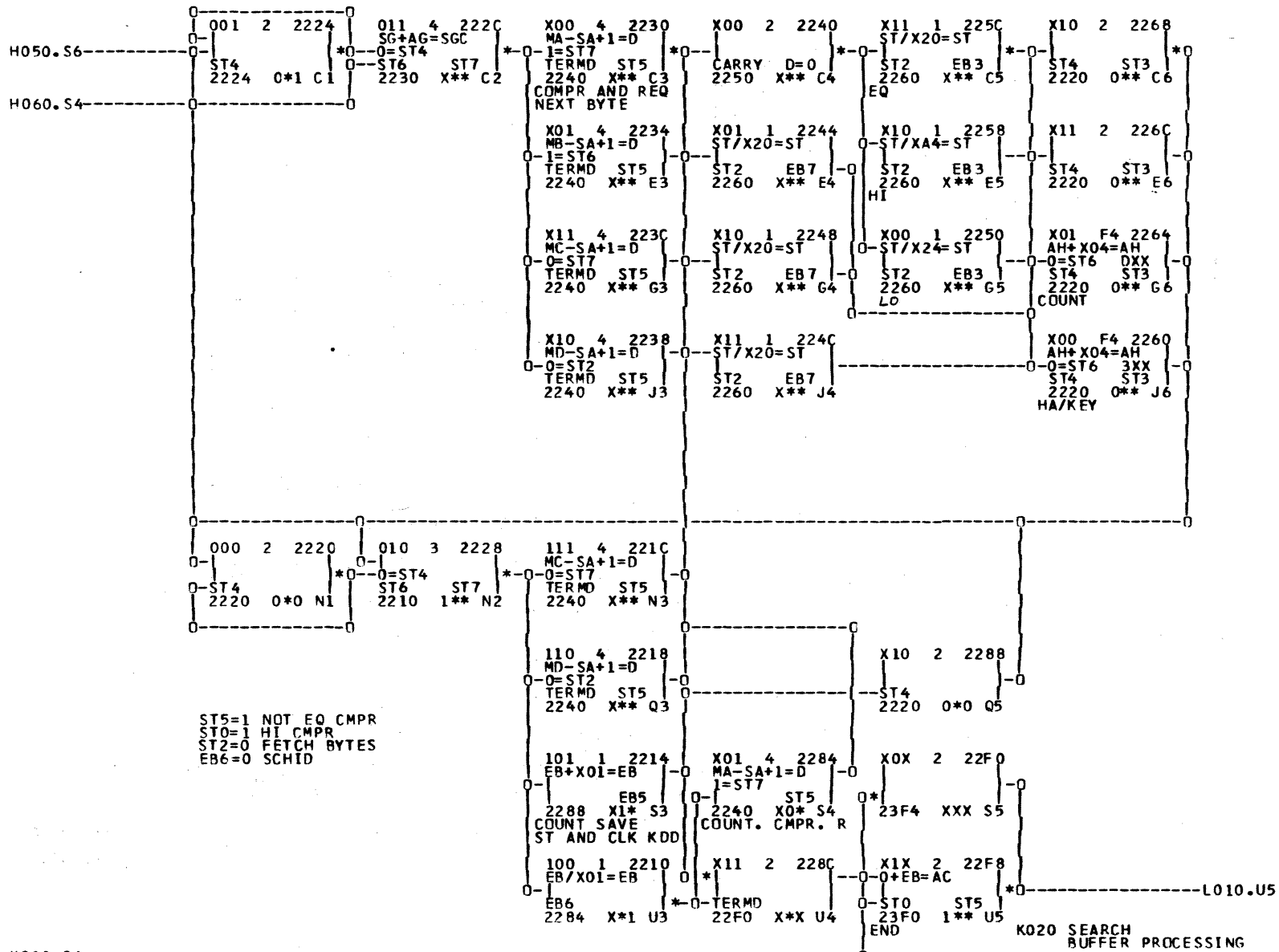




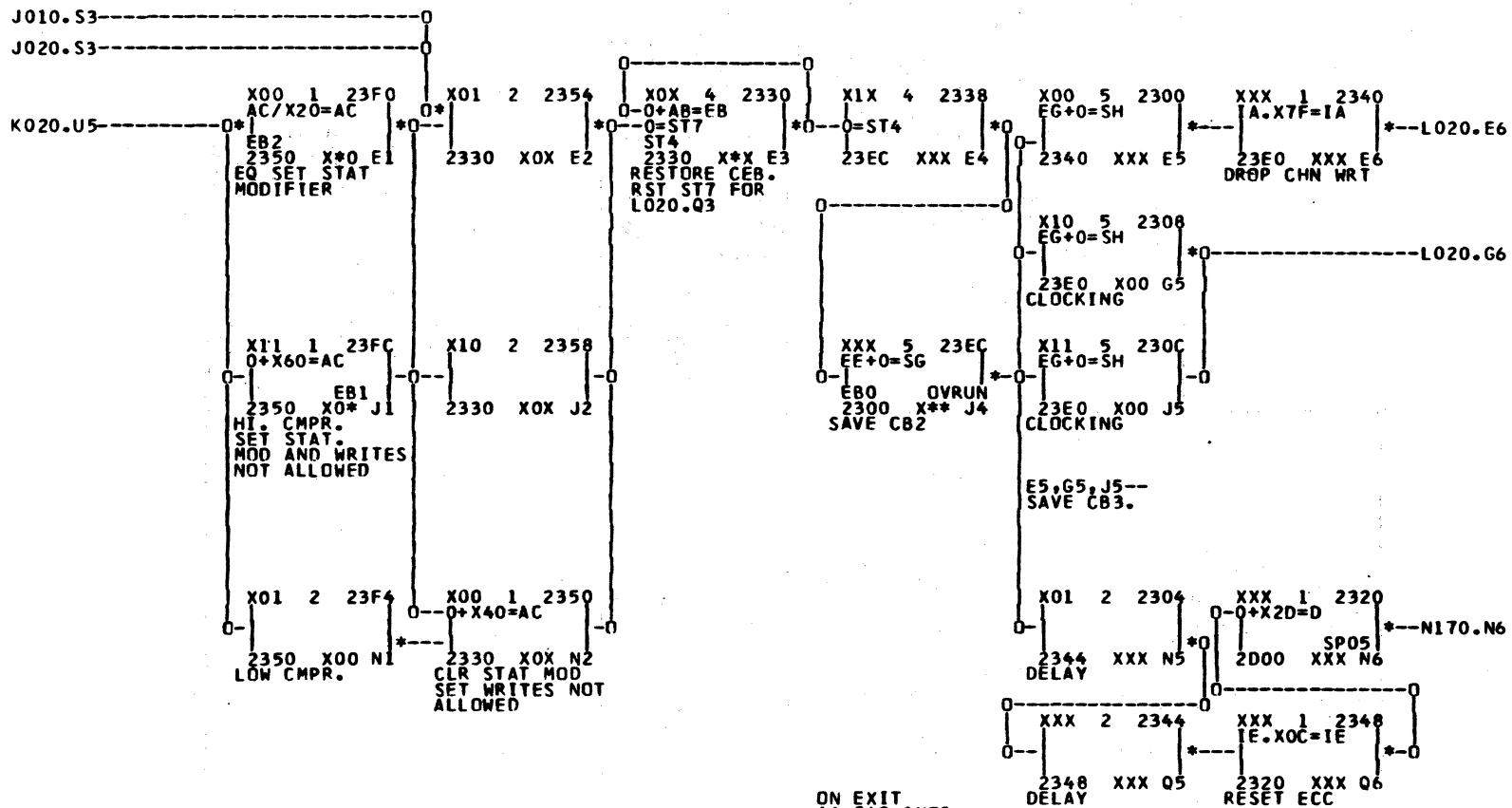






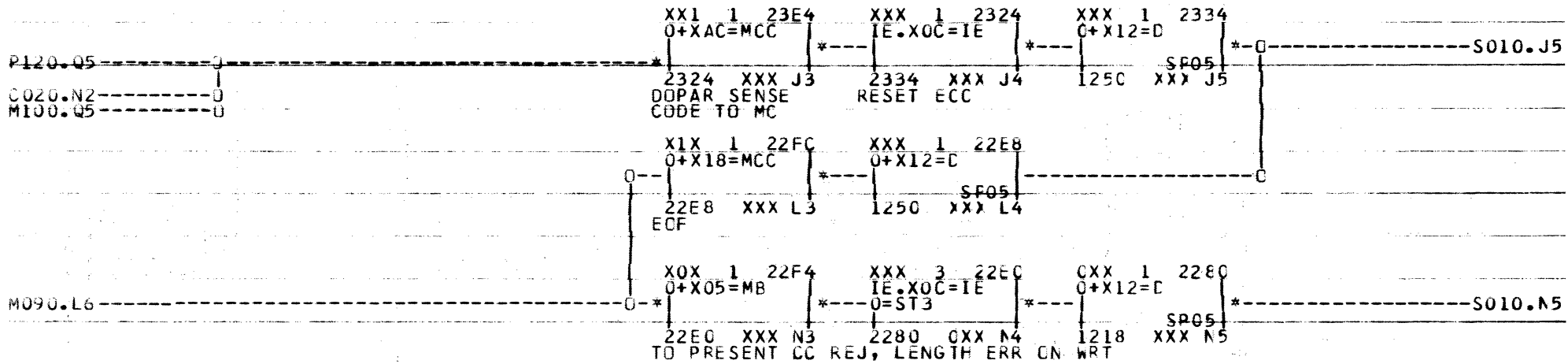


ST5=1 NOT EQ CMPR
 ST0=1 HI CMPR
 ST2=0 FETCH BYTES
 EB6=0 SCHID



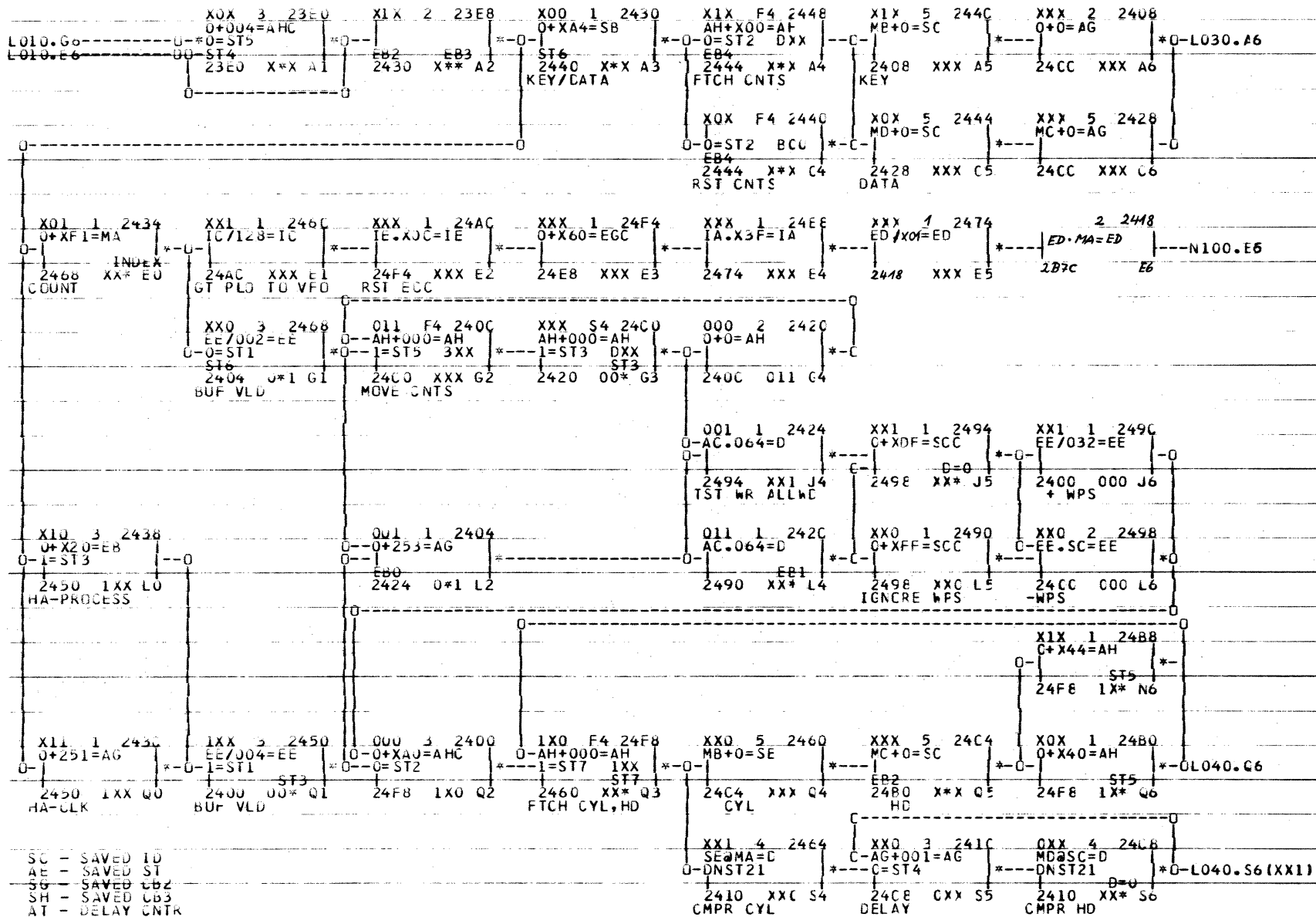
ON EXIT
 AA-GAP CNTR
 AB-ORIENTATION
 AC-STAT MOD/WRITES NOT ALLOWED
 AD- SAVED ID BYTE
 AE- SAVED ST REG
 AG-'255'
 SE-SECTOR
 SG- SAVED CB2
 SH- SAVED CB3
 EB-CB3
 ED,EE,EG,CB1,2,3

L010 READ SEARCH EXIT DECISIONS
OVERRUN/BOPAR CHK



L015 IOPAR CHECK

REVISION M1



L020 READ/SCH EXIT DECISIONS
MOVE COUNTS/SK VERIFICATION

REVISION M2

L020.A6-----*0-ST7 1XX | *---| XXX F4 24CC | SB+000=SB |
 24D0 XXX A1 | 24D4 1XX A2 | *---| XXX S4 24D0 | AH+X80=AH | 2XX |
 FTCH USAGE CTR. | SAVE USAGE | *---| 1XX 2 24D4 | MD+SC=MDC | *---| XXX 2 24A8 | MC+AG+C=MCC | *---| XXX 2 24D8 | MB+D+C=MBC | *---| XXX 2 24DC | MA+D+C=MAC | *0

0-| XXX S4 24E0 | SB+000=SB | *---|
 EB4 1XX |
 2450 X** E1 |
 STR UPDATED |
 USAGE

0-| X10 1 2458 | AC.064=D | *---| X00 1 2470 | EE/001=EE | *---| XX1 1 248C | EE/032=EE |
 EB0 EB1 | D=0 | 24E4 XXX J3 |
 2470 X** J1 | BUF VLD | + WPS

0-| X11 1 247C | EE/001=EE | *---| XX0 1 2488 | EE.XDF=EE |
 2488 XX0 L2 | 24E4 XXX L3 |
 BUF VLD | -WPS

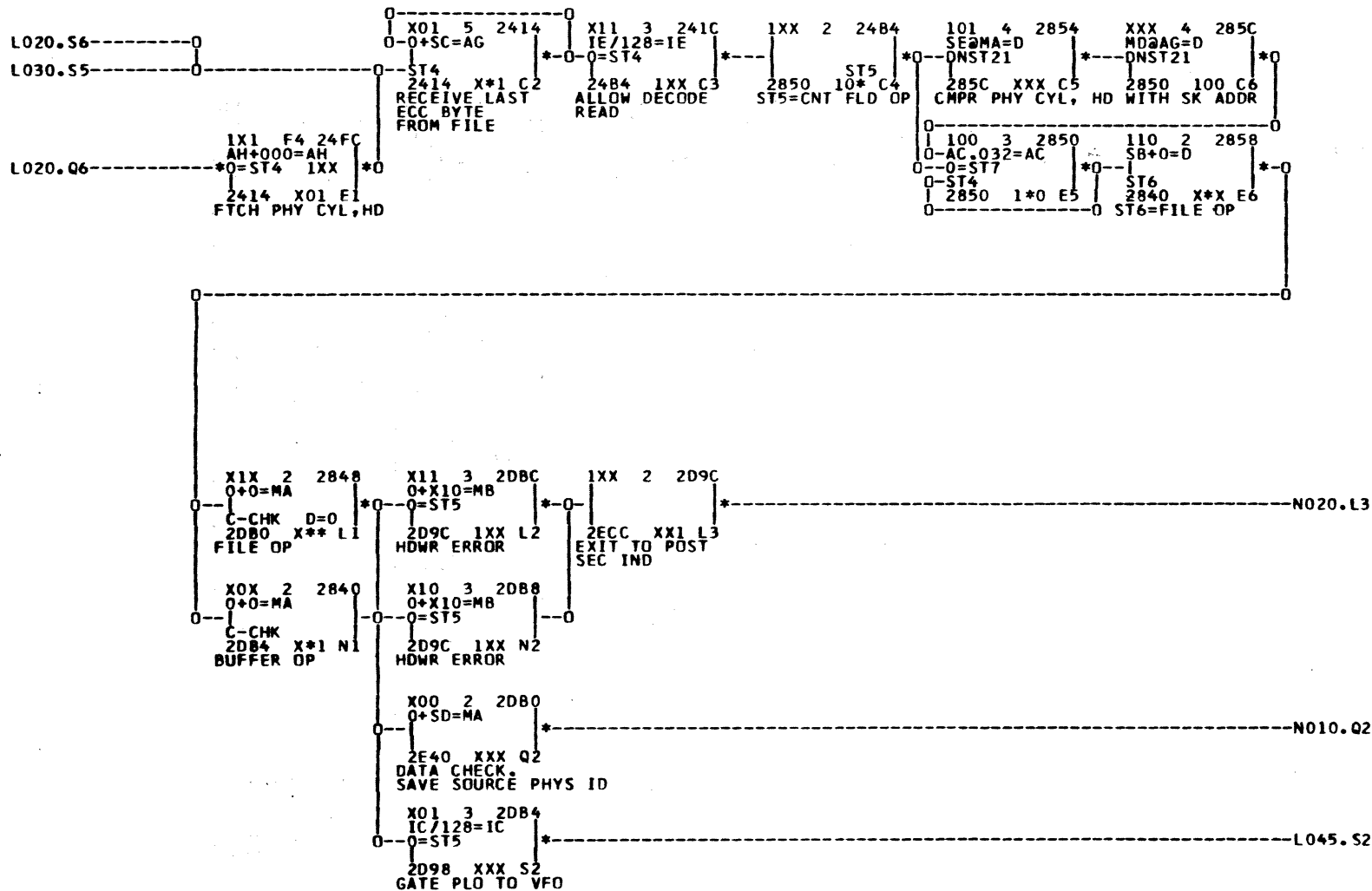
0-| X11 2 245C | EE/001=EE | *---| X10 1 2478 | EE/001=EE | *---| XXX 2 24EC |
 2478 X10 N1 | 24EC XXX N2 | 24E4 XXX N3 |
 KEY-CONTINUE | BUF VLD

0-| XX1 1 24A4 | EE.XFC=EE |
 24E4 XXX Q3 |
 -BUF VLD

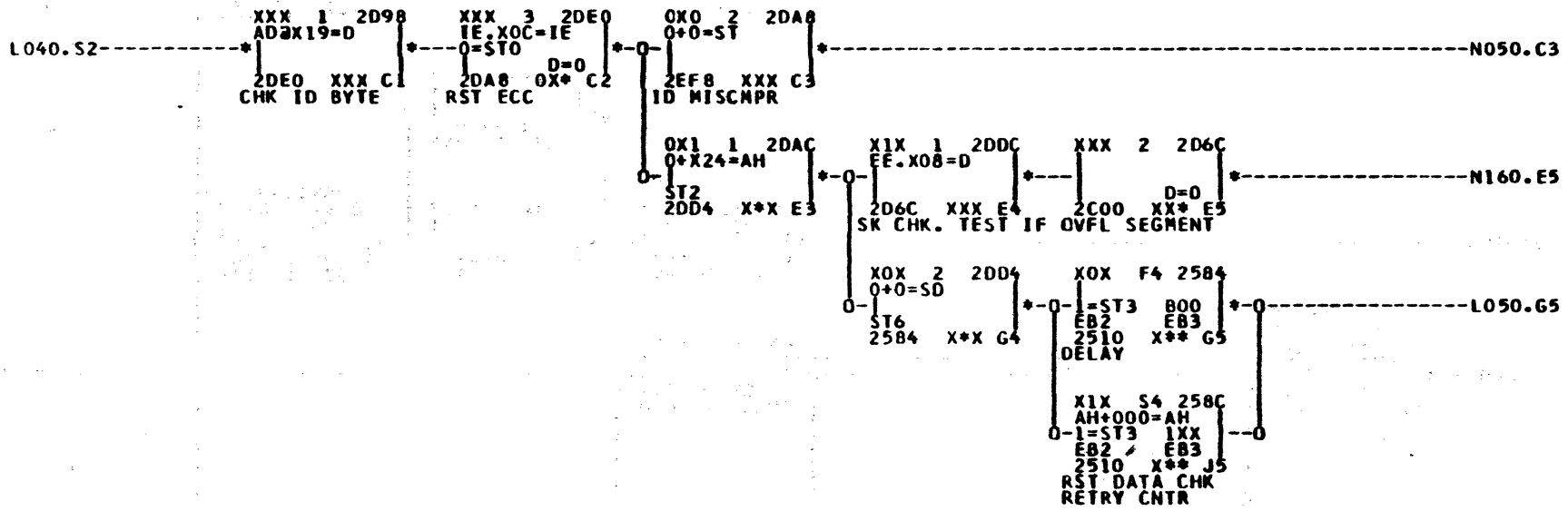
0-| X01 1 2454 | ED.X60=D | *---| XXX 1 24BC | EG.XF5=EG | *---| X00 1 24A0 | EE.XDC=EE | *---| XXX 5 24E4 | ST+0=MA | *---| XXX S4 2480 | AH+X00=AH | *---|
 24BC XXX S1 | D=0 | 24A0 XX* S2 | 24E4 XXX S3 | 2480 XXX S4 | 2414 X01 S5 |
 DATA | -CUR REC, | GAP SPC | -BUF VLD. | DELAY | STORE ST | AT 184 FOR | ISCB CK ON | S030

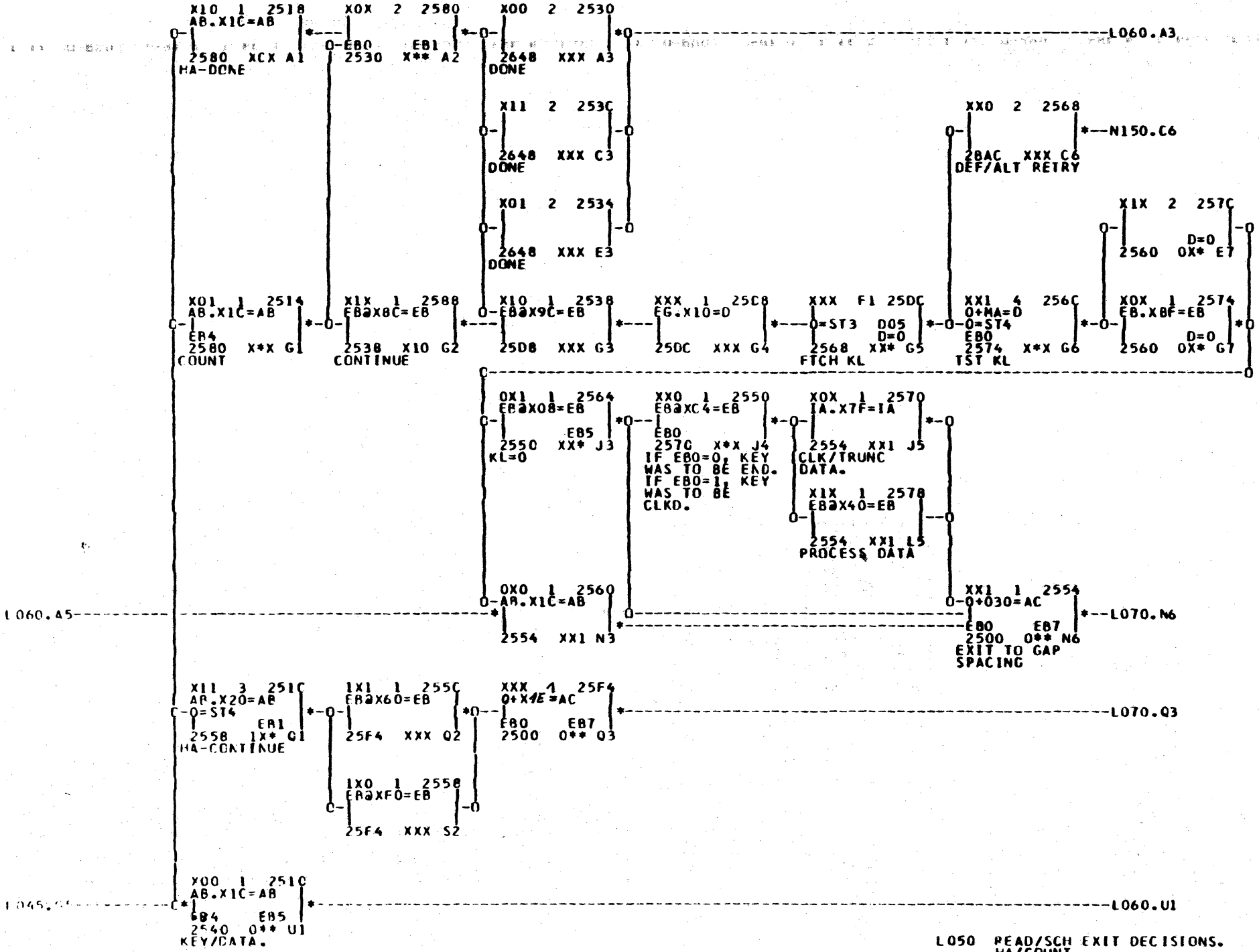
*---| XXX S4 2480 | AH+X00=AH | *---| L040.S5

L030 READ/SCH EXIT DECISIONS.
KEY/DATA USAGE UPDATING.

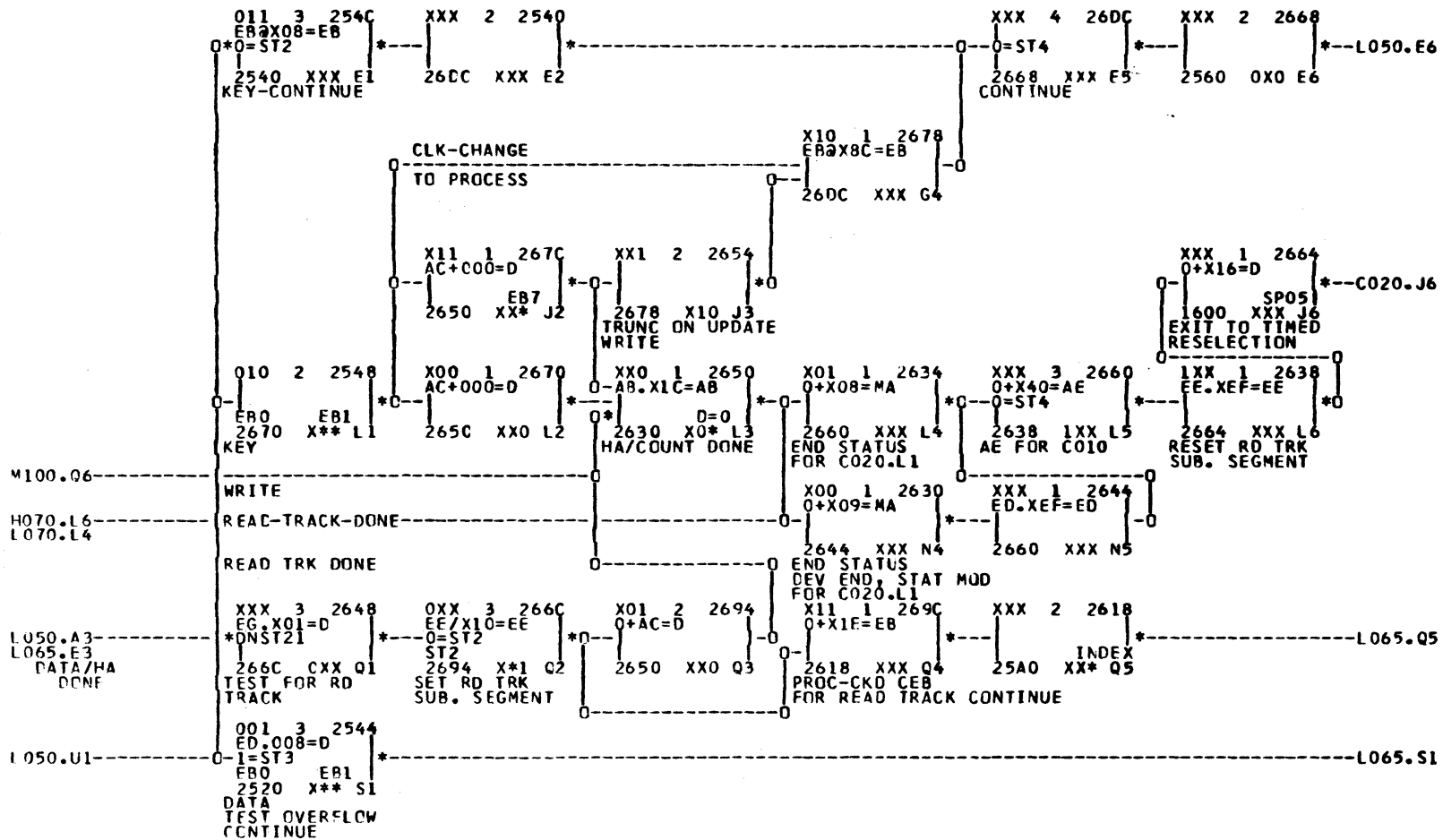


L040 READ/SCH EXIT DECISIONS.
ERROR EXITS.

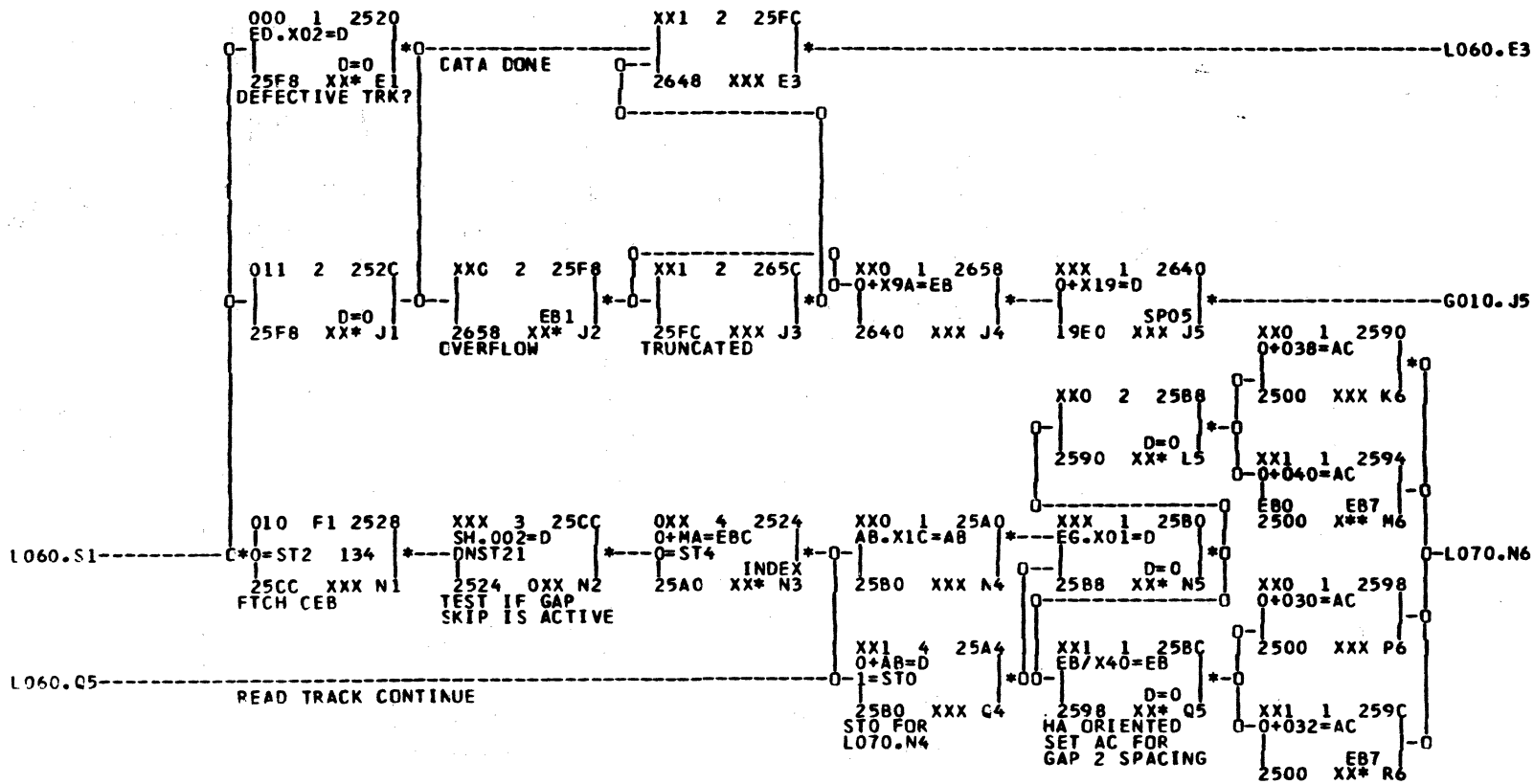




L050 READ/SCH EXIT DECISIONS.
HA/COUNT.



L060 READ/SEARCH EXIT DECISIONS
KEY



L065 READ/SEARCH EXIT DECISIONX
DATA/RD TRACK

PUP NO. 7063120C

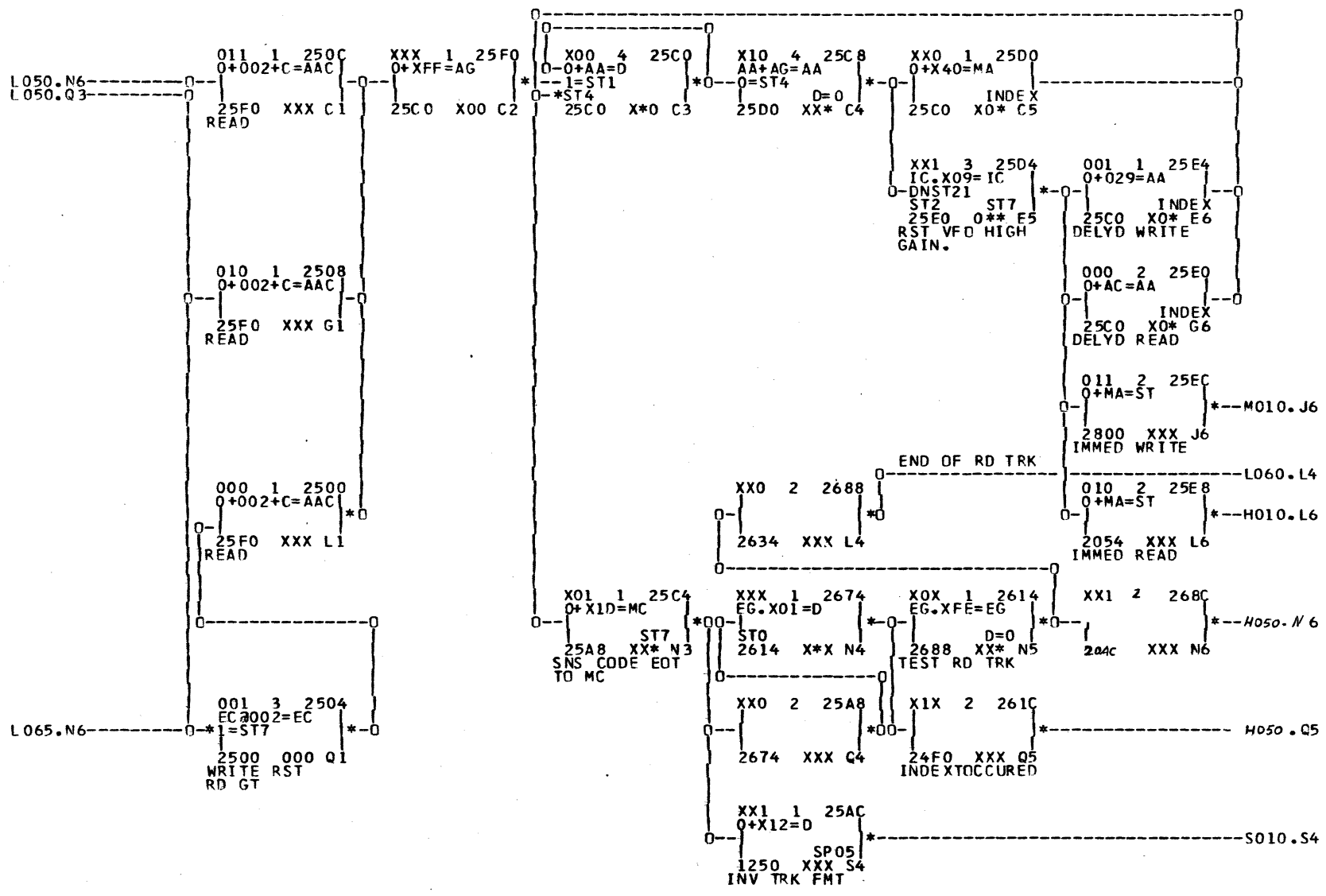
DOC NO. 73687900

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REVISION

L

606

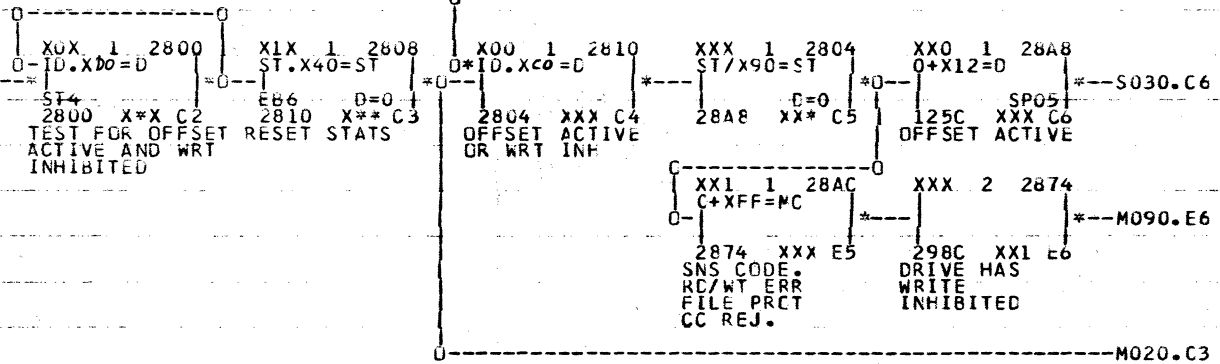


L070 GAP SPACING

G050.F4

E020.Q2
G050.Q2
L070.J6

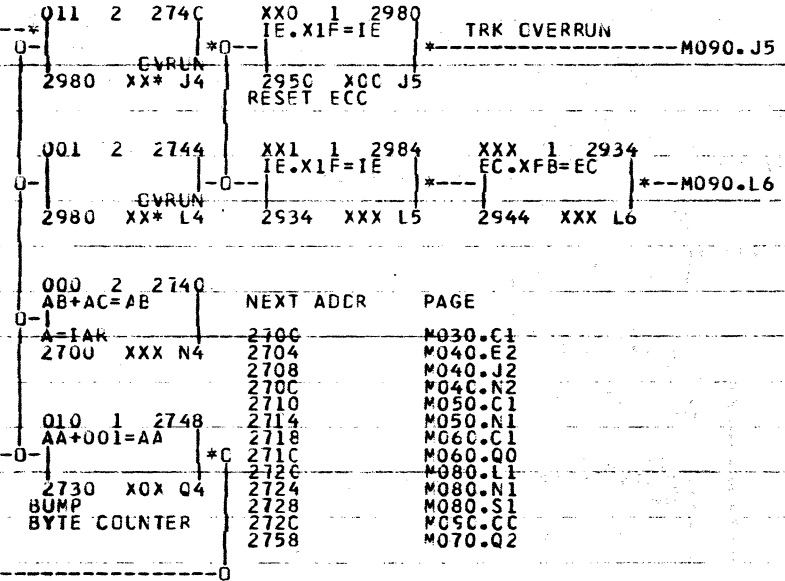
WRITE RTN ENTRY



M070.E4

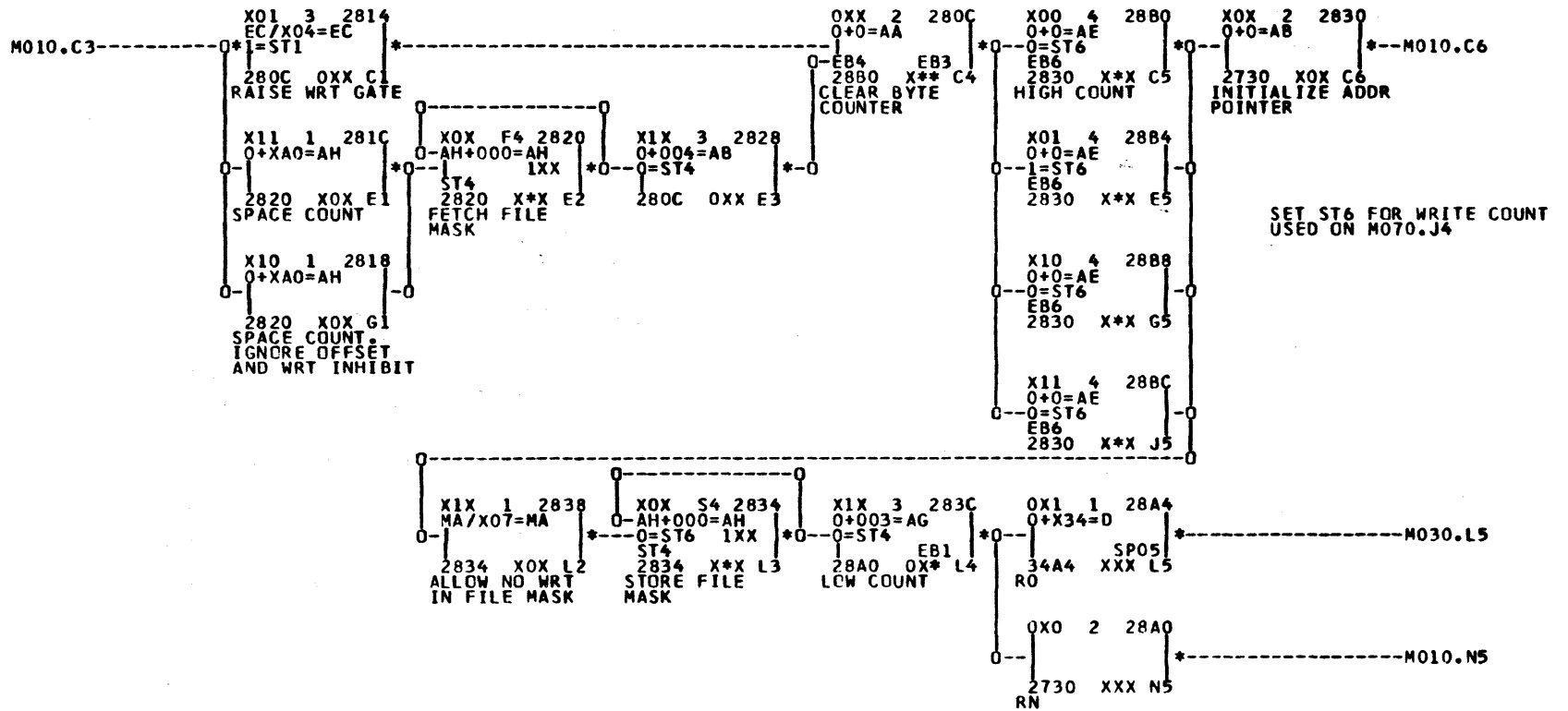
M080.L1
M050.L6
M060.C3
M020.C6
M020.L5
M030.E6
M040.E3
M070.Q4
M080.C5
M090.C5

WRITE BYTE COUNTER



M010 WRITE ENTRY AND
BYTE COUNTER

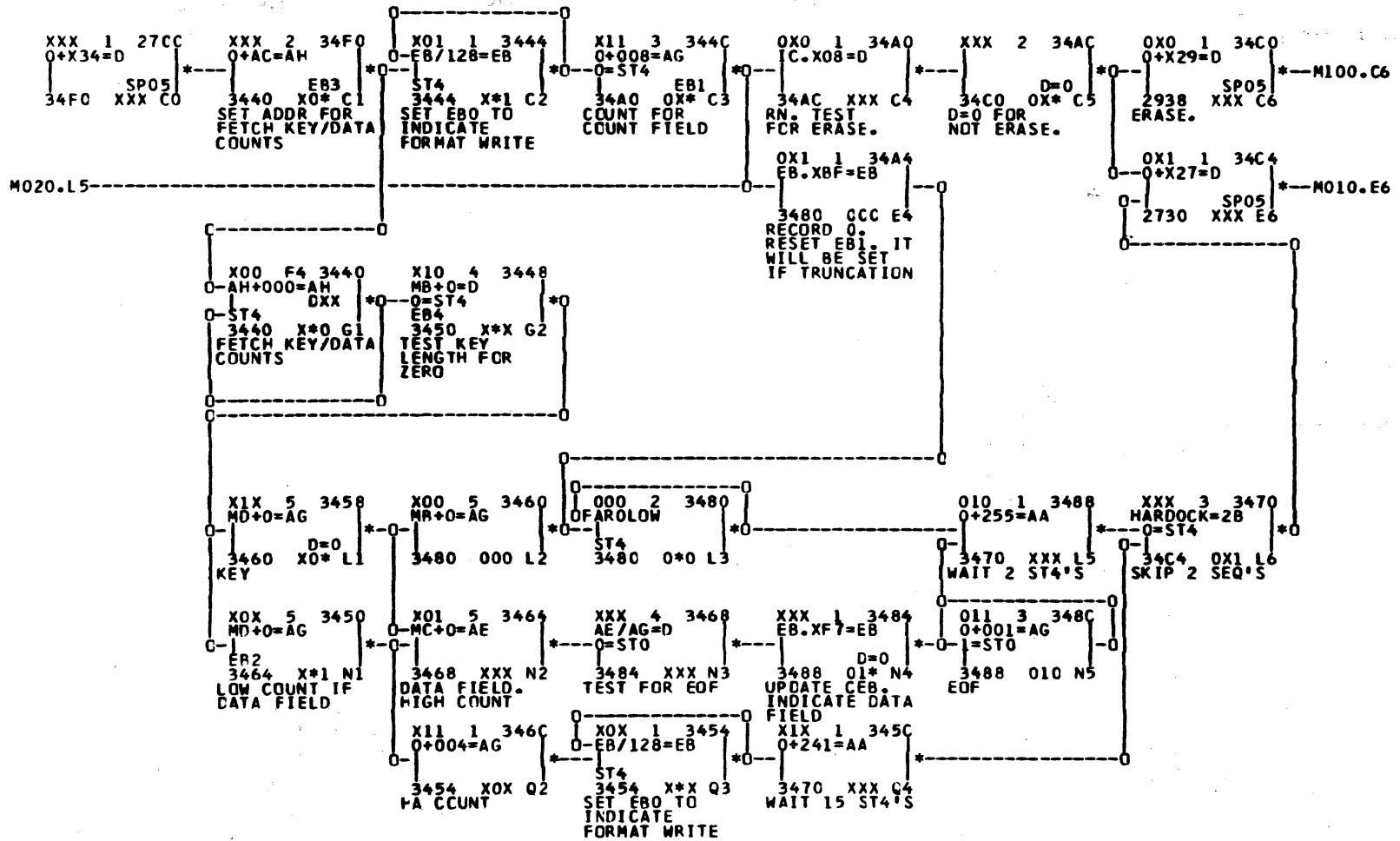
REVISION M2



M020 WRITE GATE TURN-ON

NOTE-

FRCM M010.N4



M030 WRITE LOAD COUNTS

NOTE-
FROM M010.N4

XXX 1 2704 XXX 1 277C
EC/X80=EC 0+254=AA
277C XXX E2 2730 XXX E3
RAISE AM LOAD COUNT
OPERATION. FOR 3 BYTES.

*-0-----M010.E3

NOTE-
FROM M010.N4

XXX 1 2708 XXX 1 27CC
EC.X7F=EC 0+248=AA
27CC XXX J2 2730 XXX J3
DROP AM LOAD COUNT
OPERATION. FOR 9 BYTES.

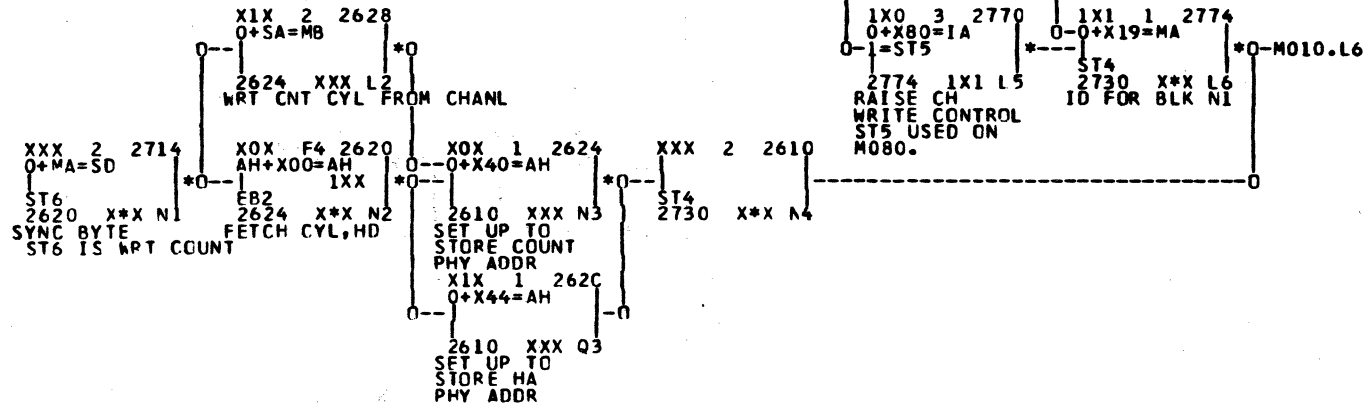
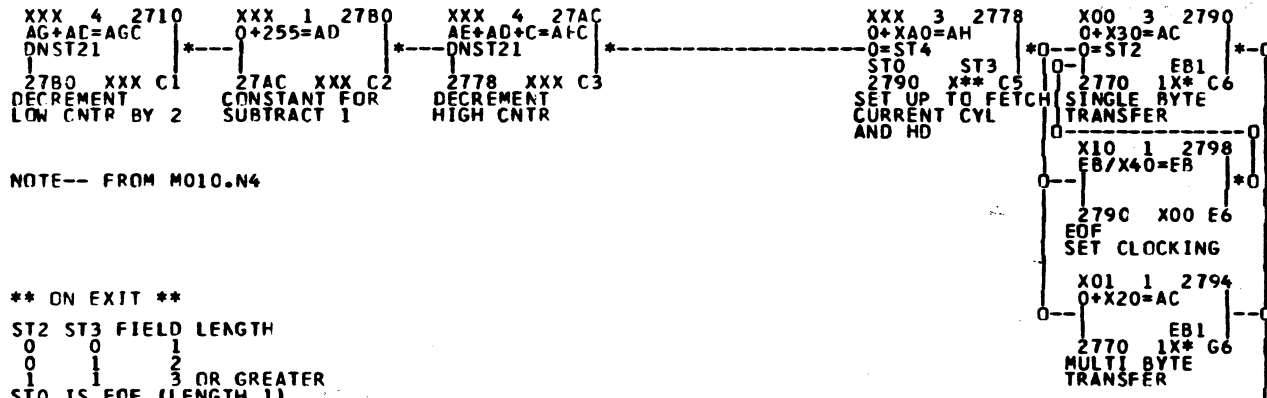
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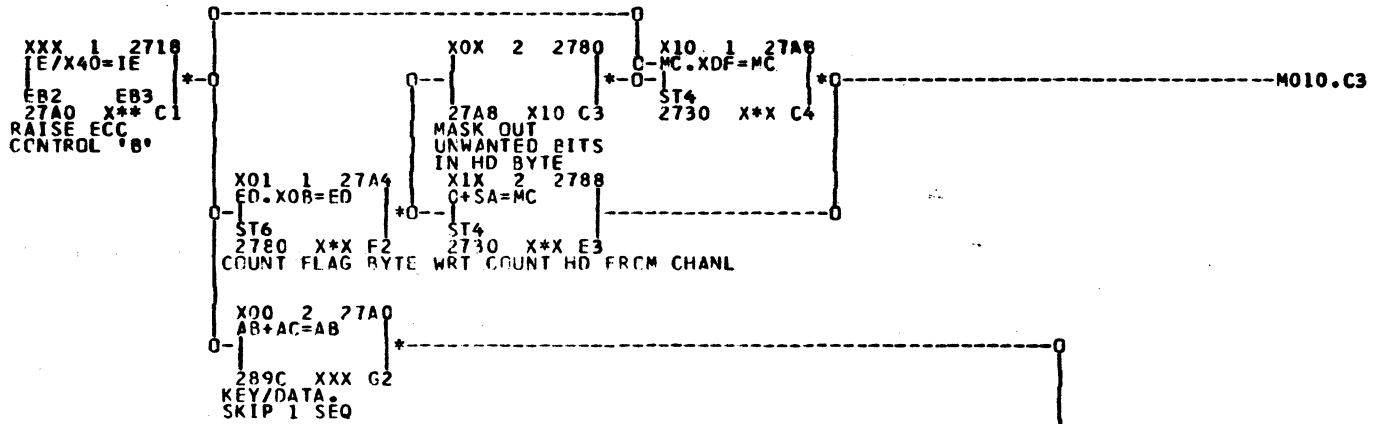
NOTE-
FROM M010.N4

XXX 1 270C
0+254=AD
2730 XXX N2
CONSTANT FOR
SUBTRACT 2.

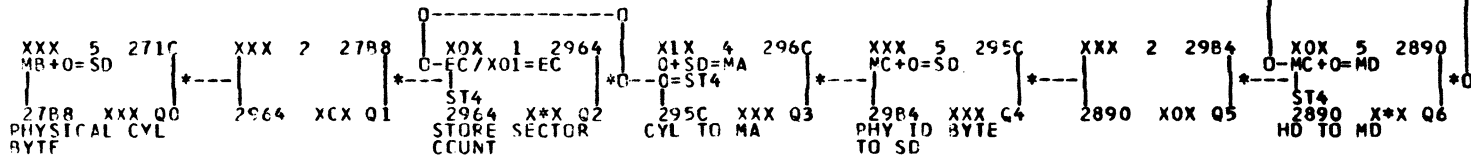
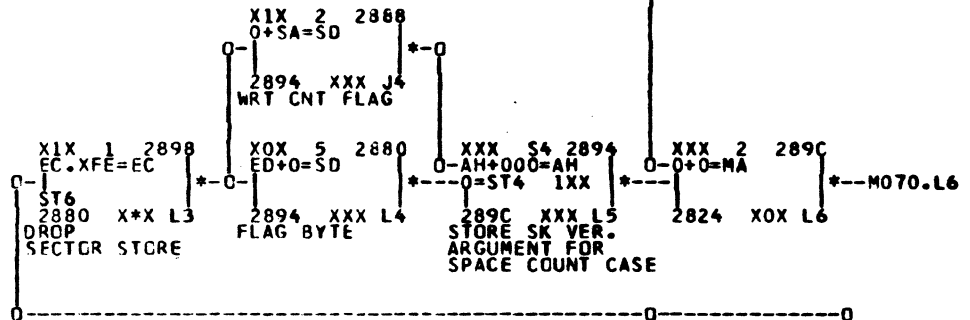
0

M040 WRITE ADDRESS MARK

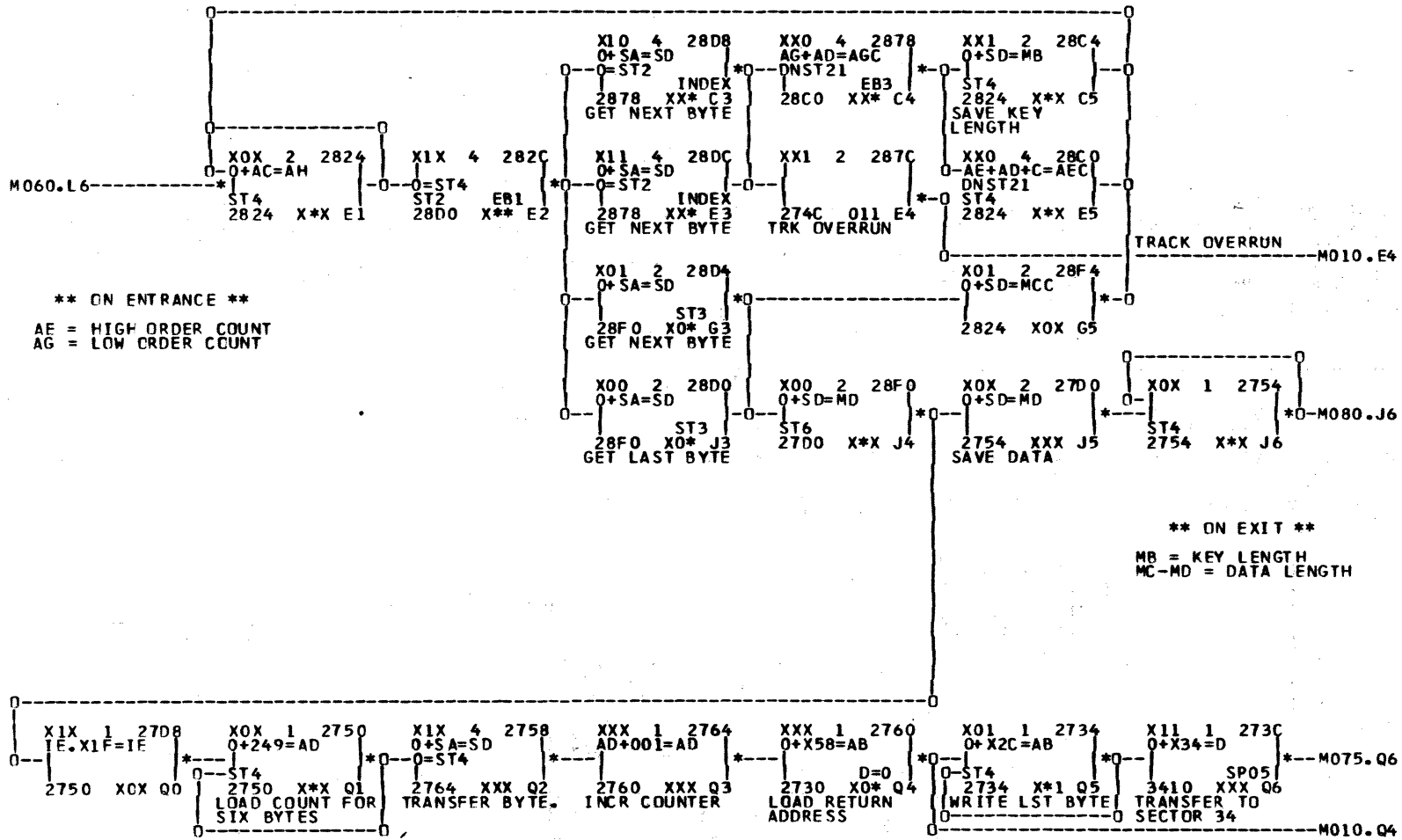




NOTE-- FROM M010.N4

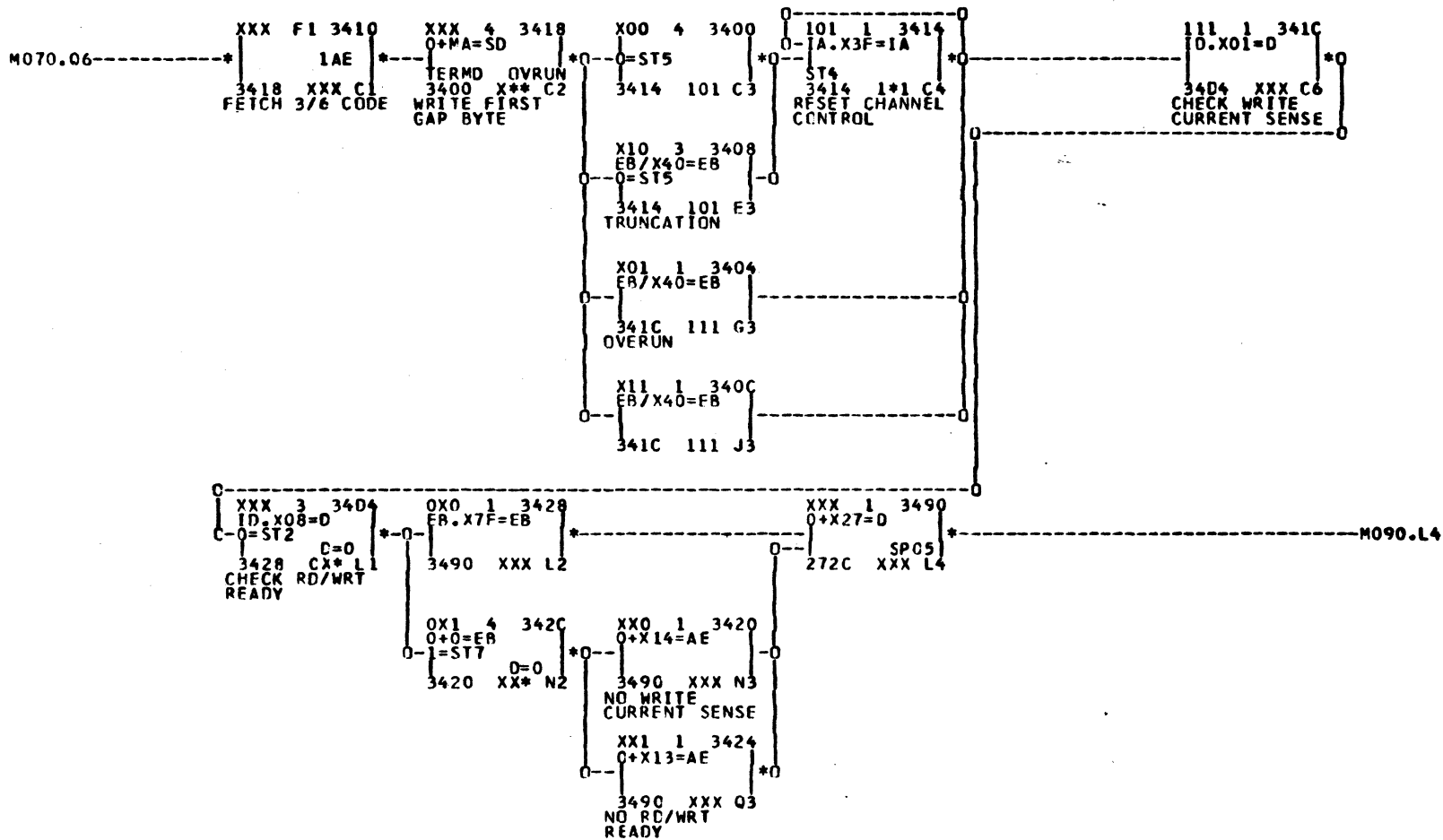


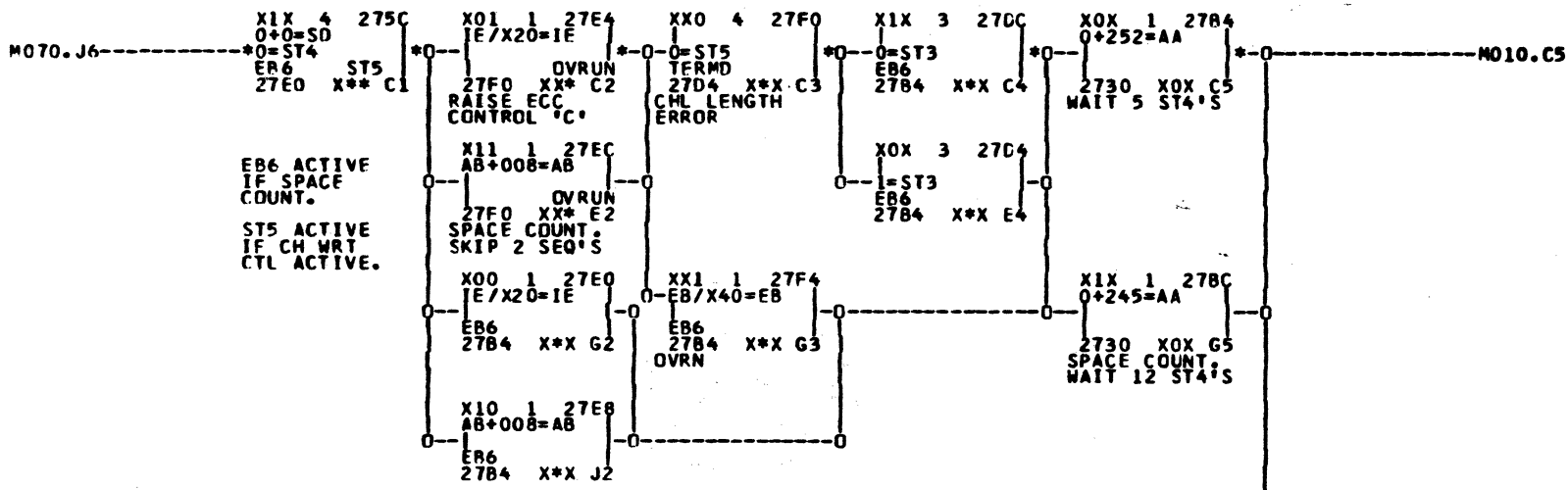
M060 WRITE FLAG BYTE



** ON ENTRANCE **
 AE = HIGH ORDER COUNT
 AG = LOW ORDER COUNT

** ON EXIT **
 MB = KEY LENGTH
 MC-MD = DATA LENGTH

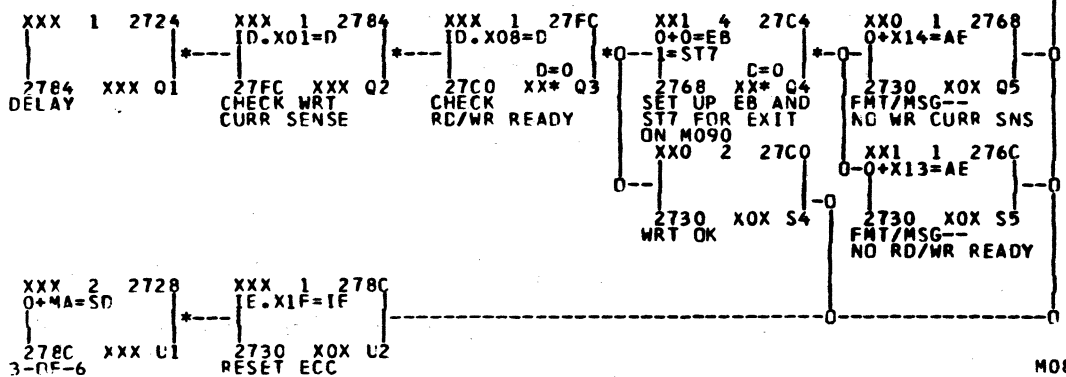


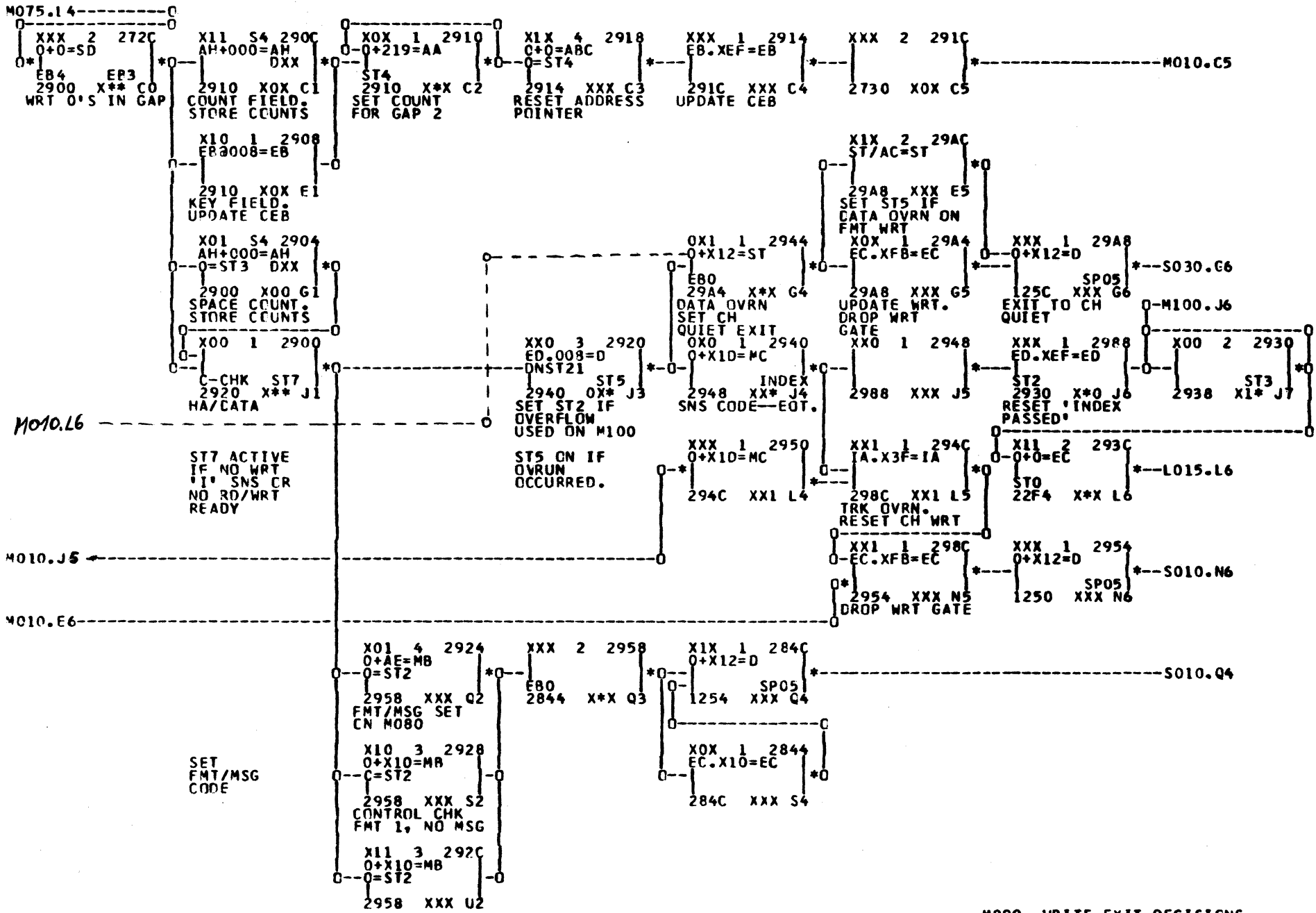


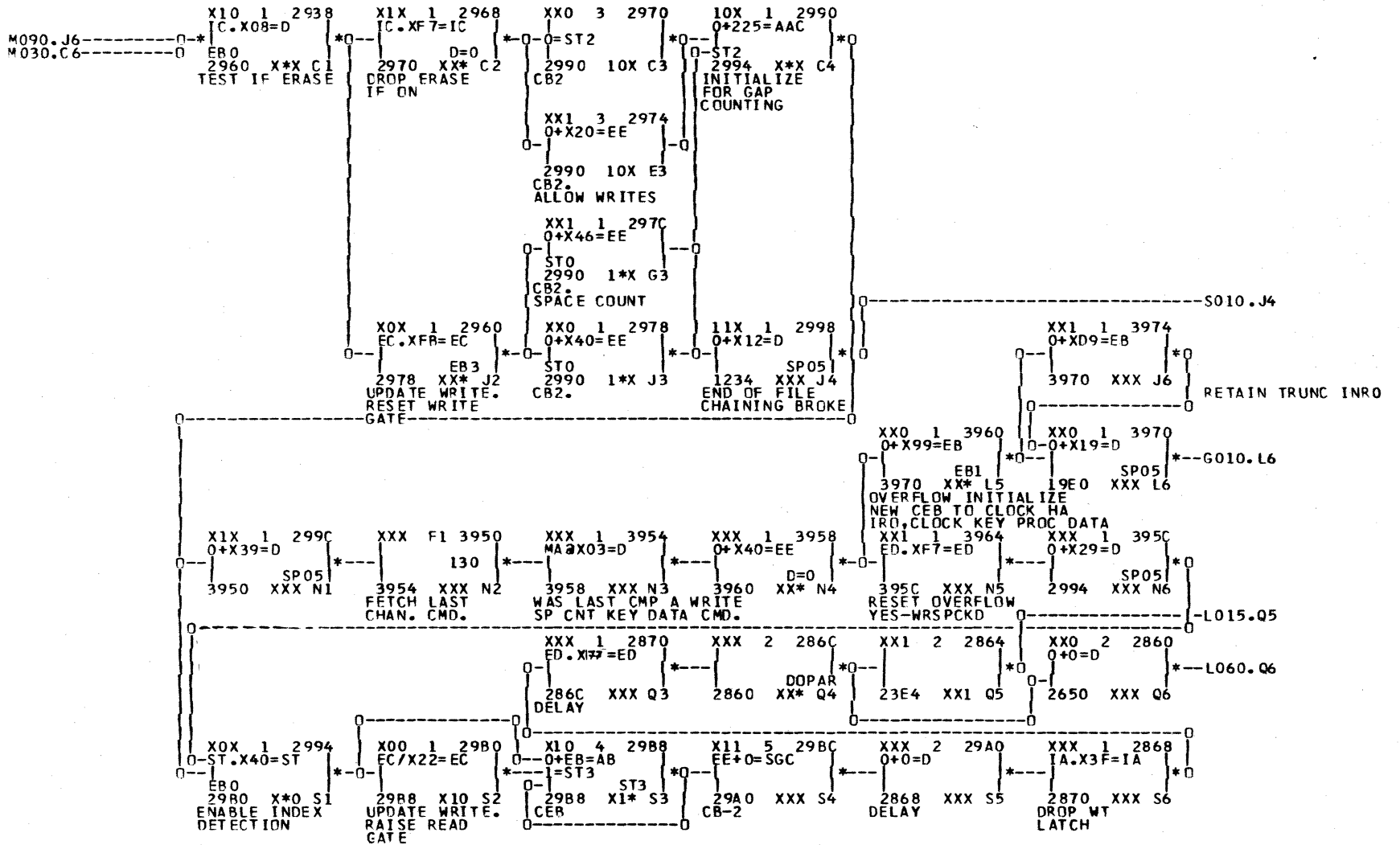
XXX F1 2720
O=ST2 1AE
2738 XIX L1
FETCH 3-OF-6

M010.L1

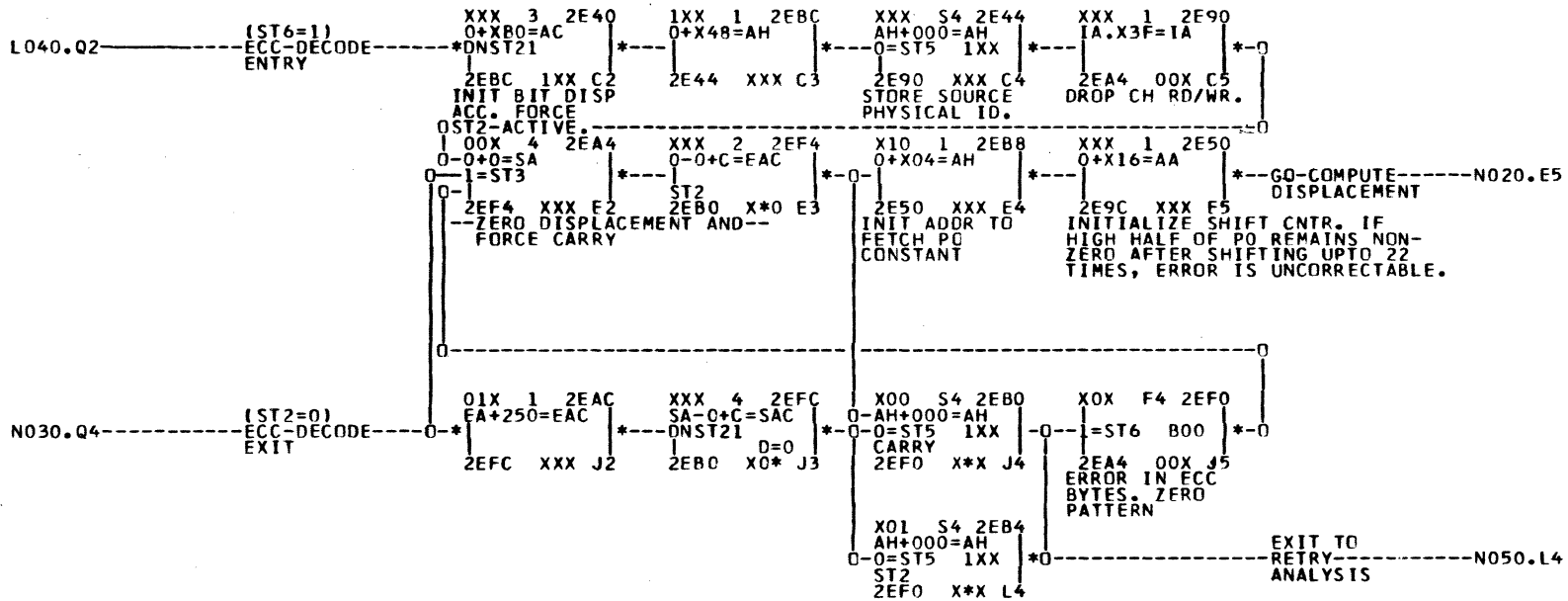
NOTE-- FROM M010.N4







M100 WRITE EXIT DECISIONS



PO CONSTANT
XXX D 0E04
918DD000
XXX S0

MODULUS CONSTANT
XXX D 0E00
8EEE2000
XXX S1

XXX D 0E80
AF36A000
XXX S2

XXX D 0E20
B309A000
XXX S3

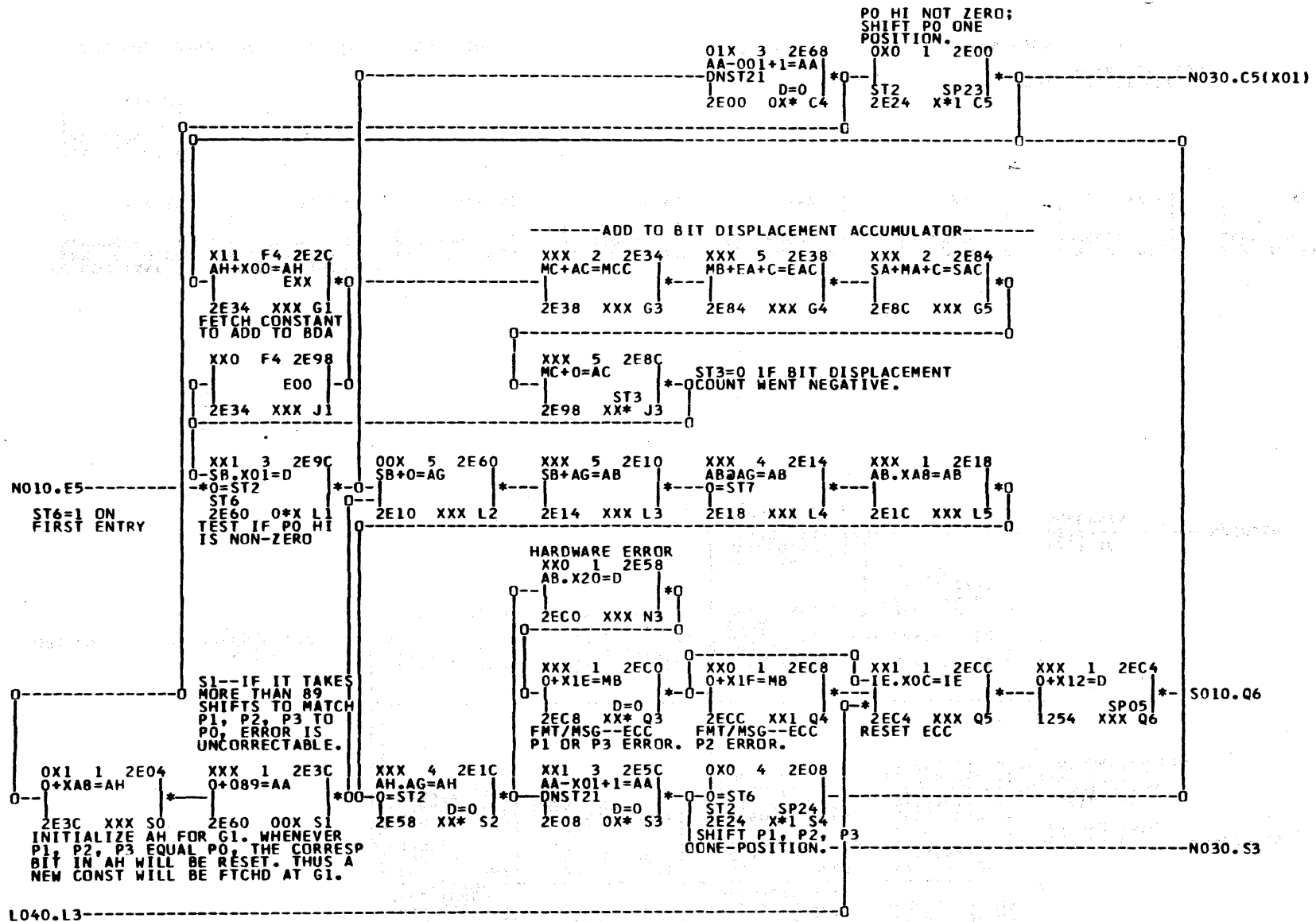
XXX D 0EA0
F12E6000
XXX S4

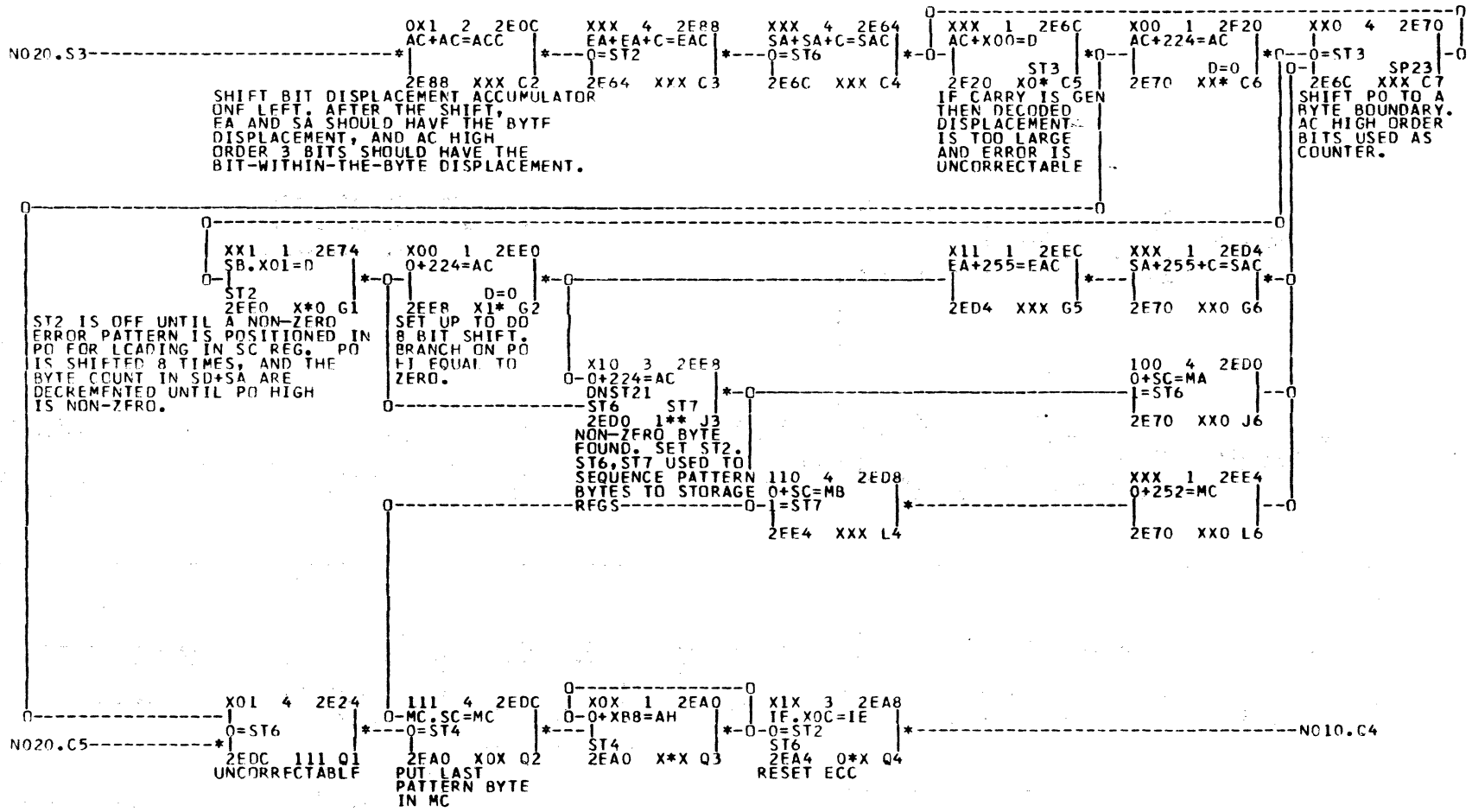
XXX D 0E08
EE55A000
XXX S5

XXX D 0EB8
9D8C4000
XXX S6

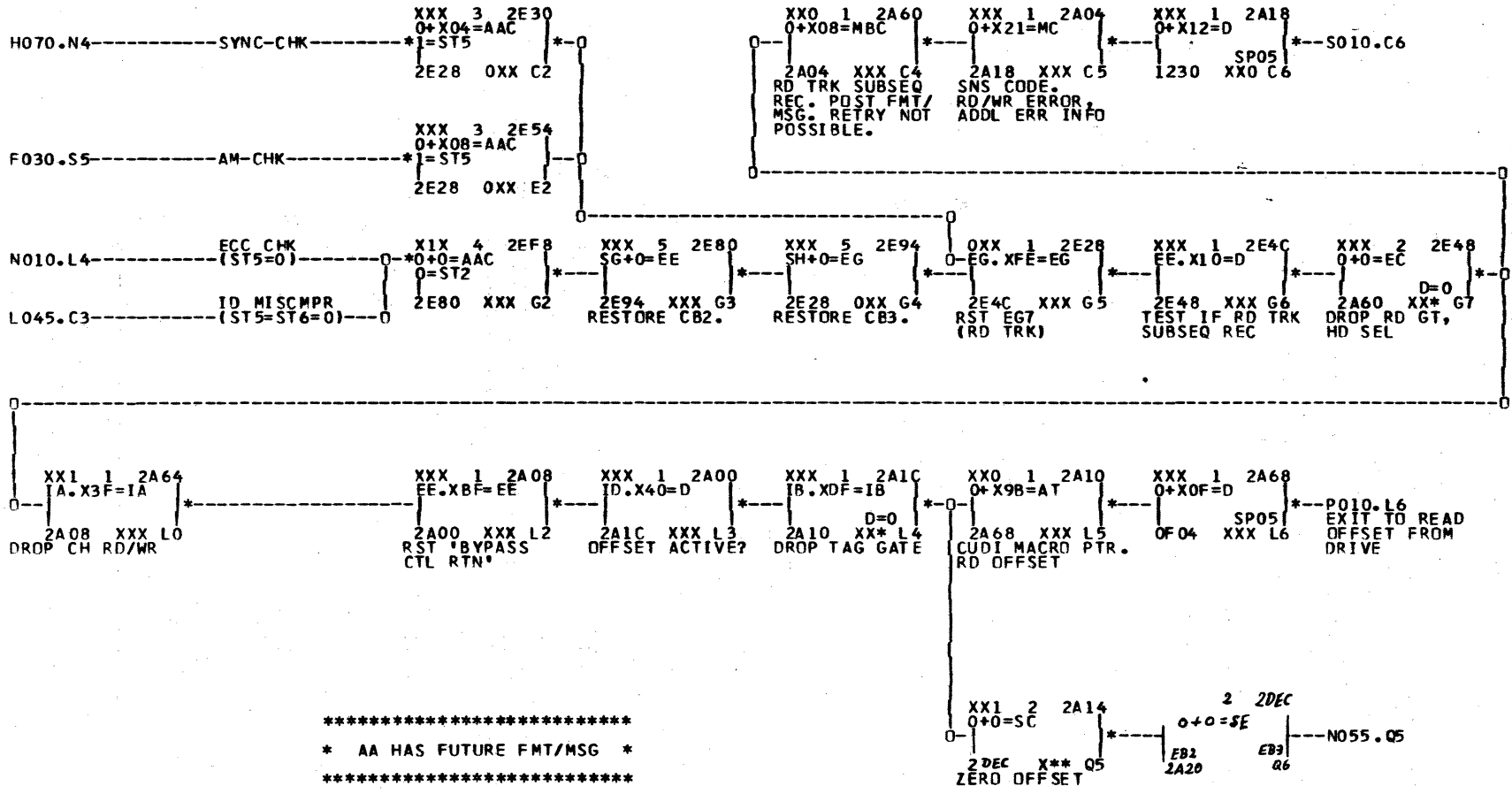
XXX D 0E28
A15F4000
XXX S7

XXX D 0EA8
DF840000
XXX U0

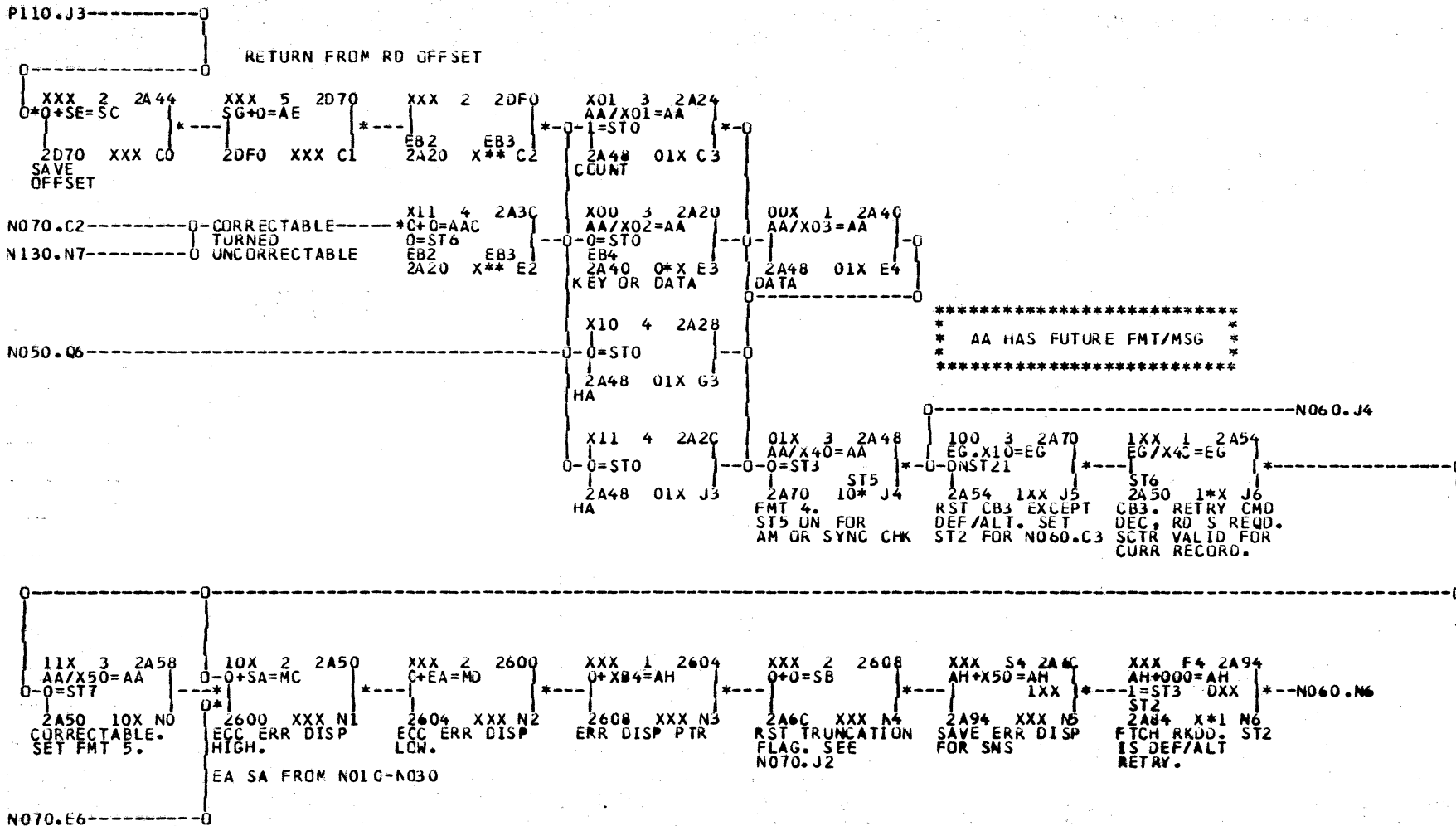




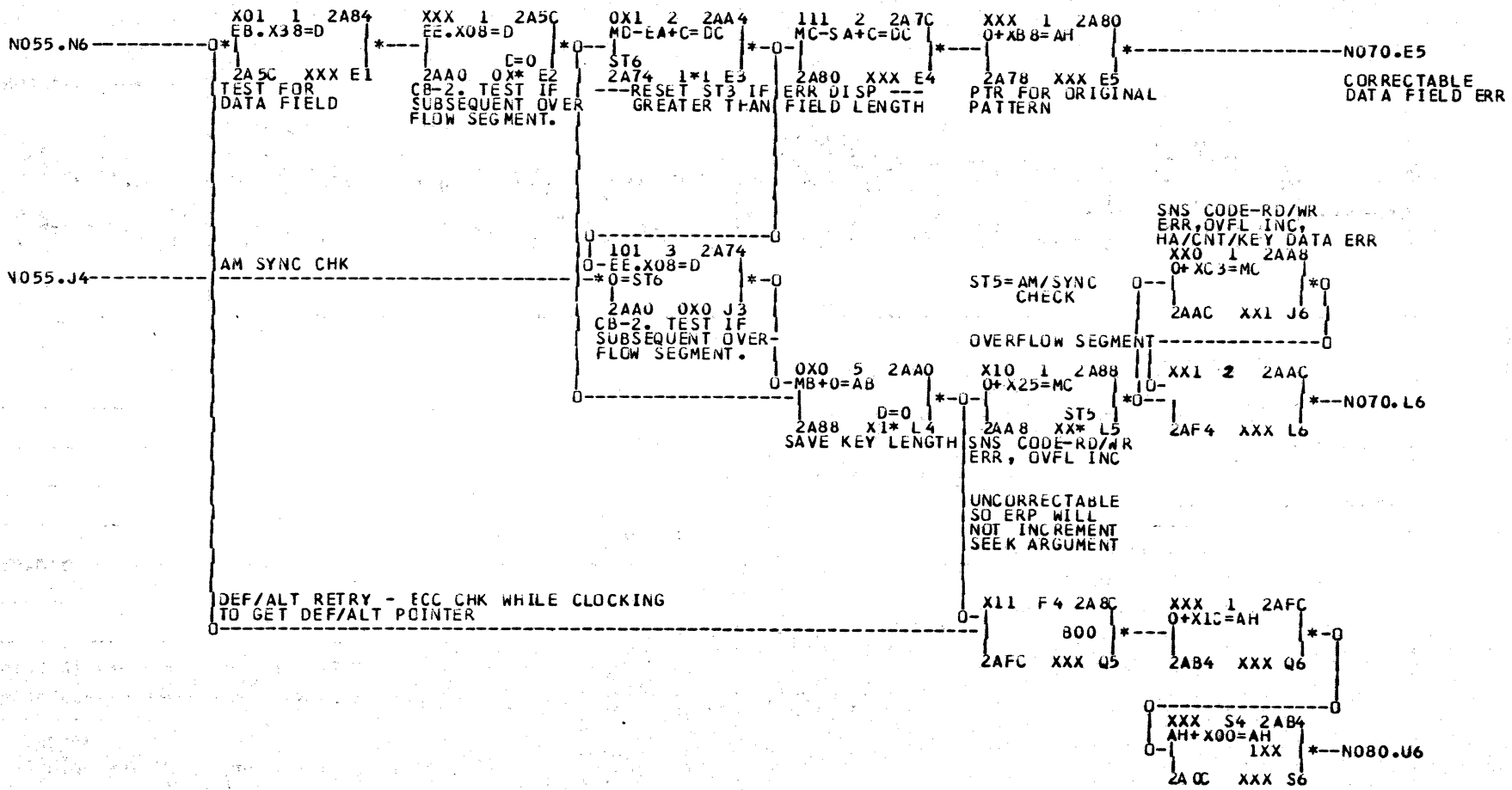
NO30 ECC DECODE,
POSITION PATTERN



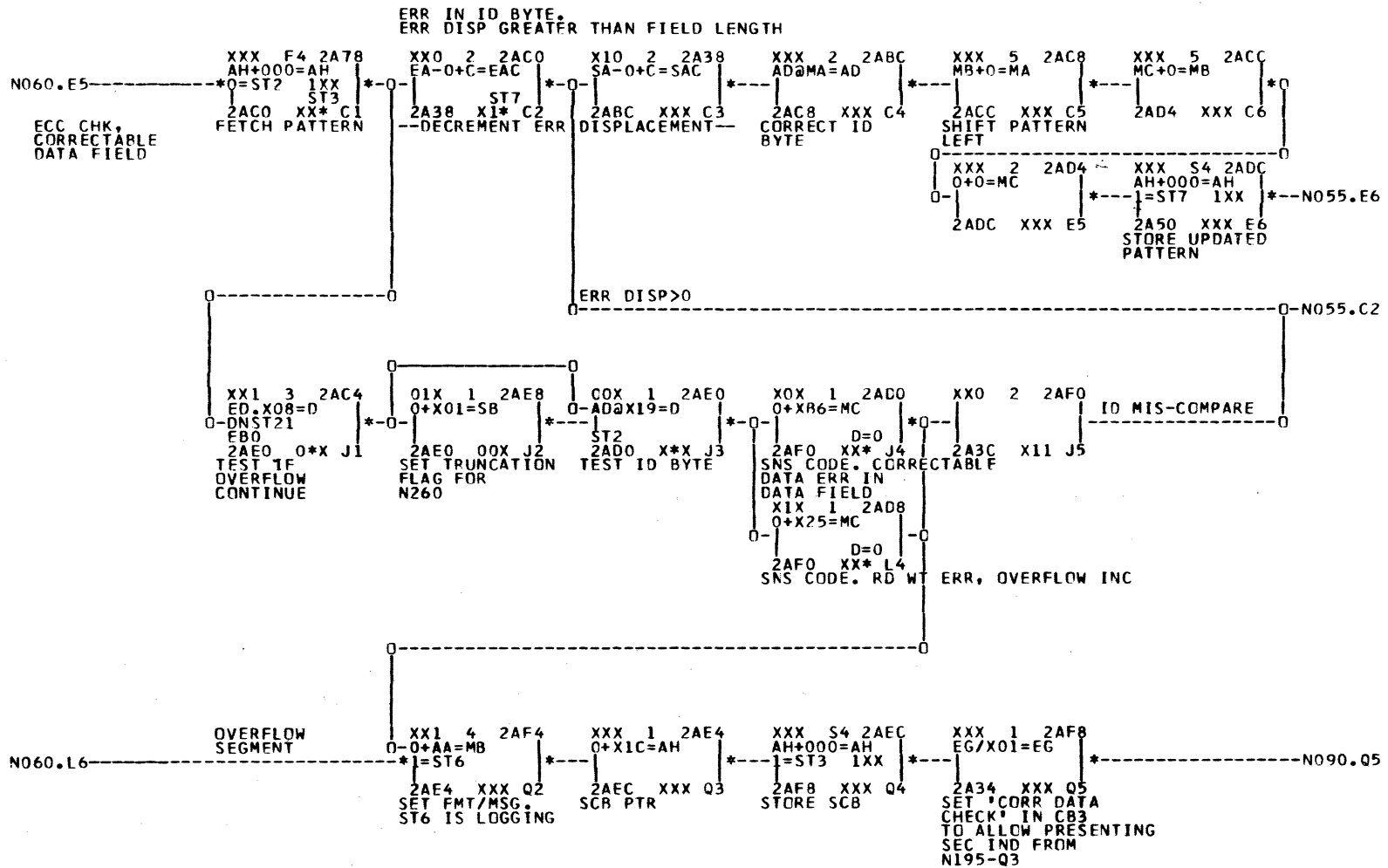
 * AA HAS FUTURE FMT/MSG *



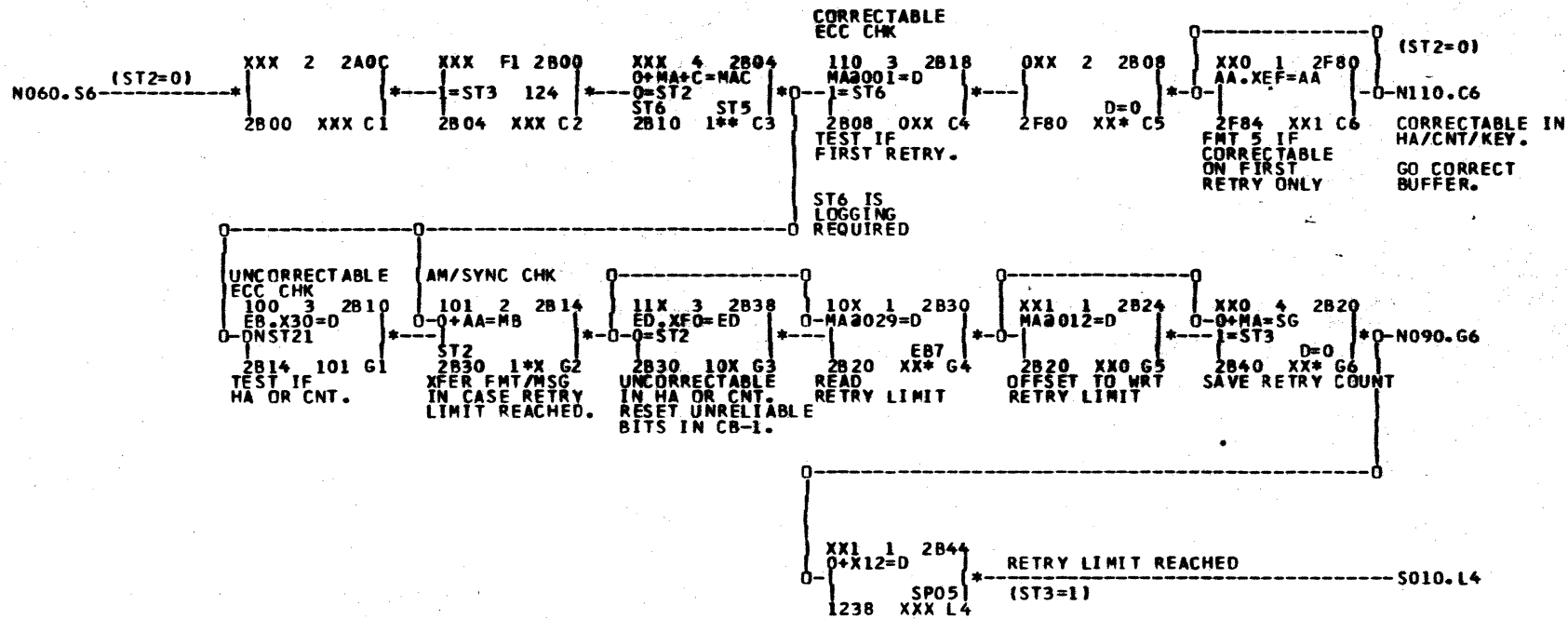
N055 DATA CHECK RETRY - II
 PREPOST FMT/MSG -- CONT INJED

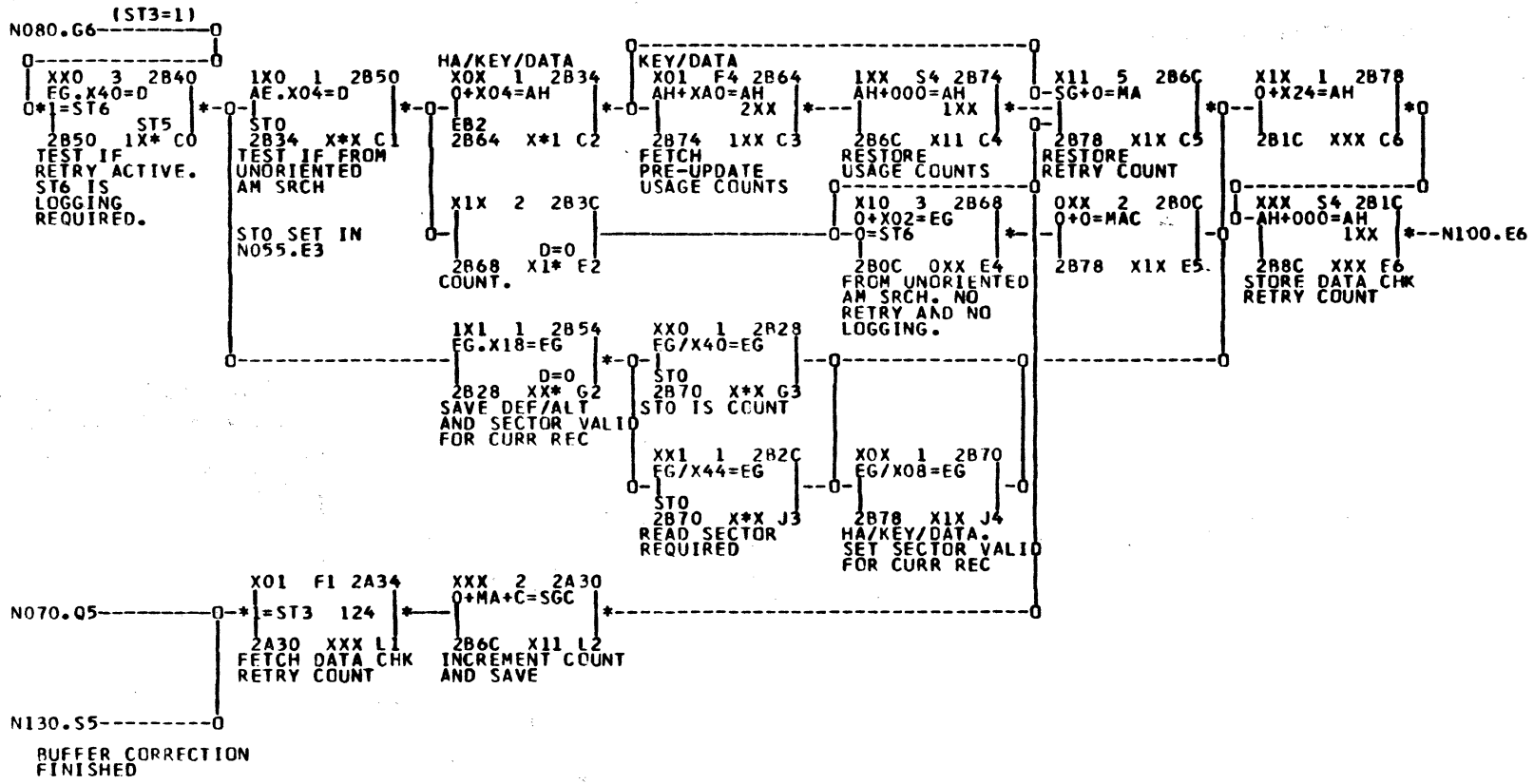


N060 DATA CHK RETRY - III

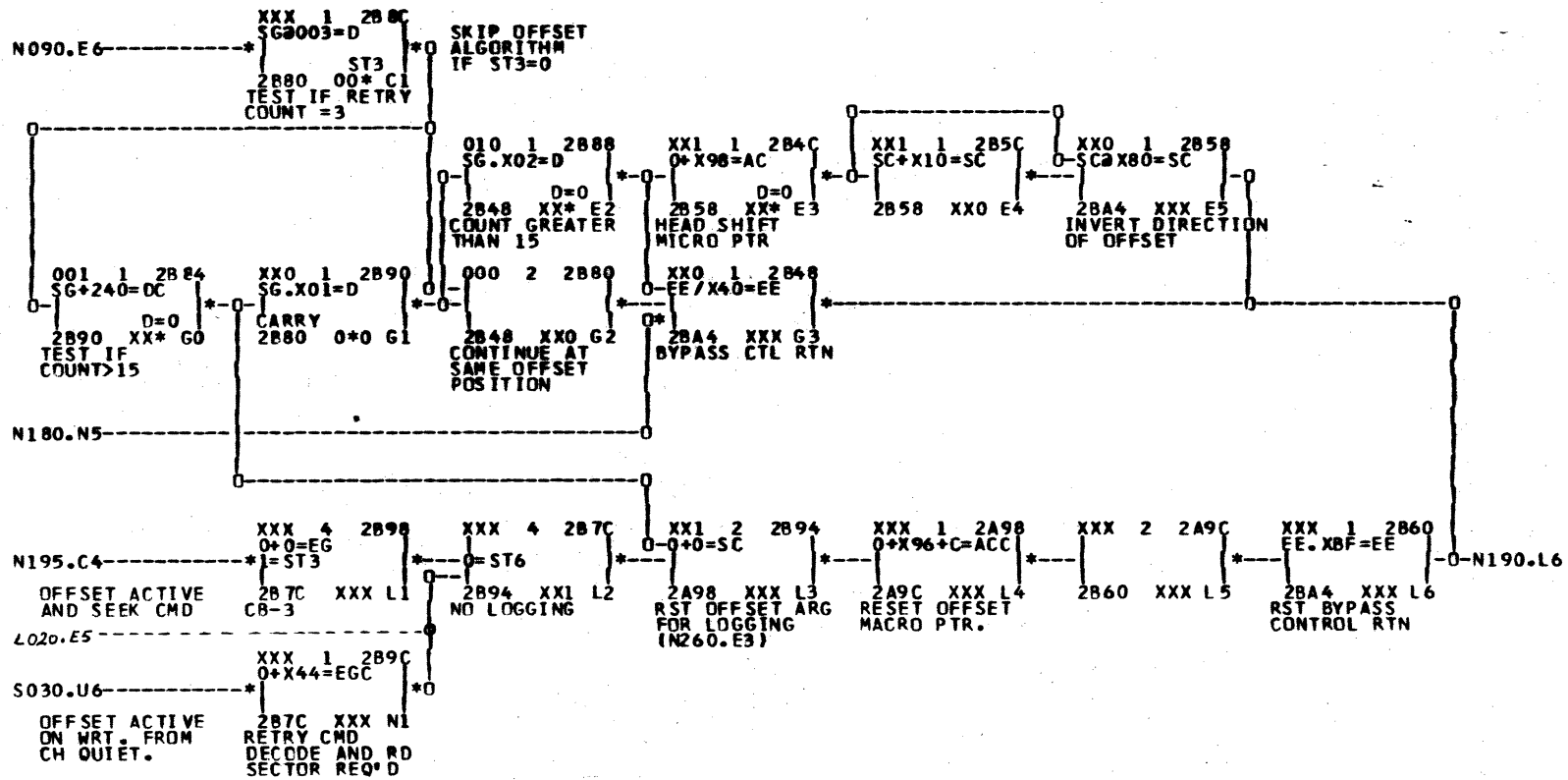


N070 DATA CHK RETRY - IV

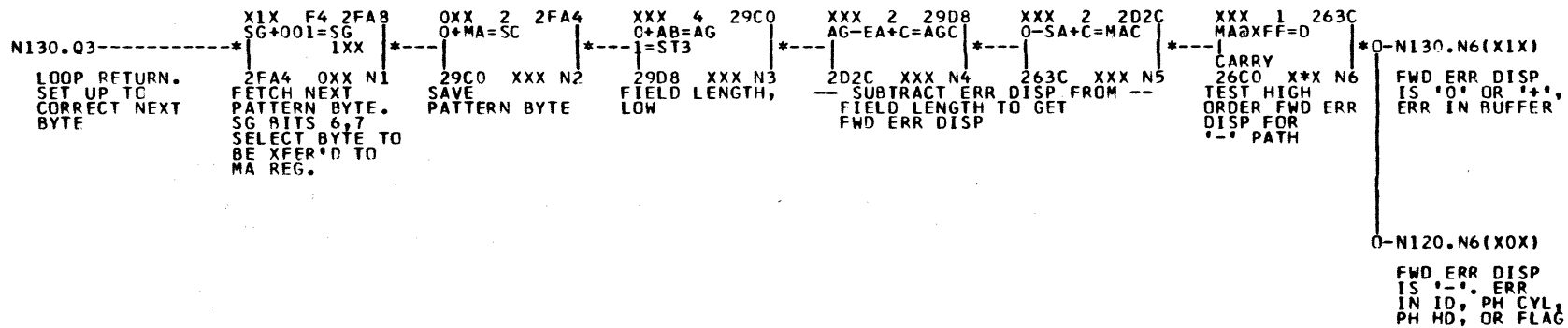
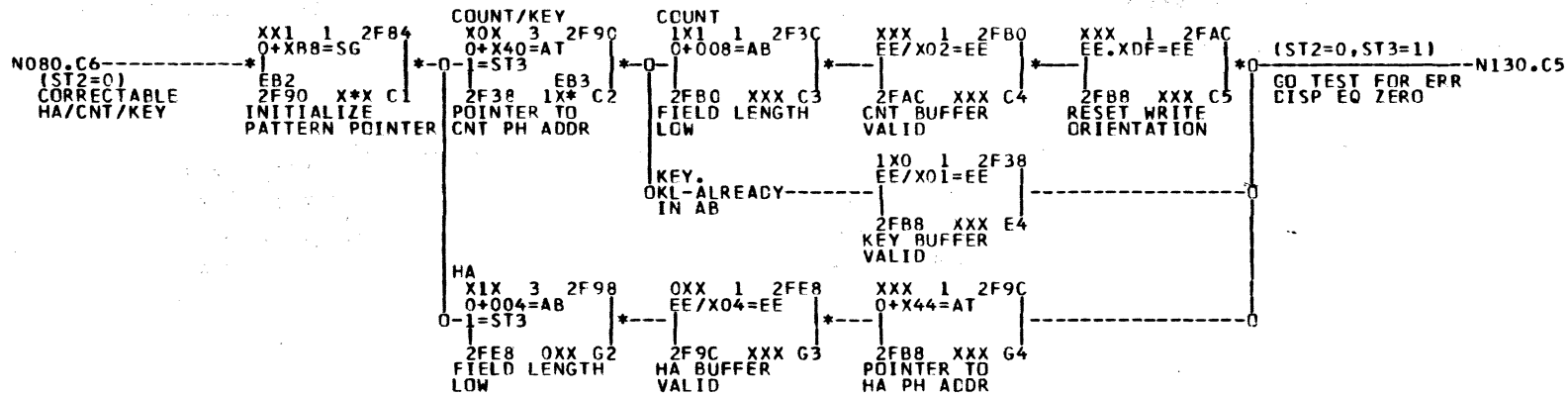




N090 DATA CHK RETRY-
STORE RETRY/USAGE COUNTS

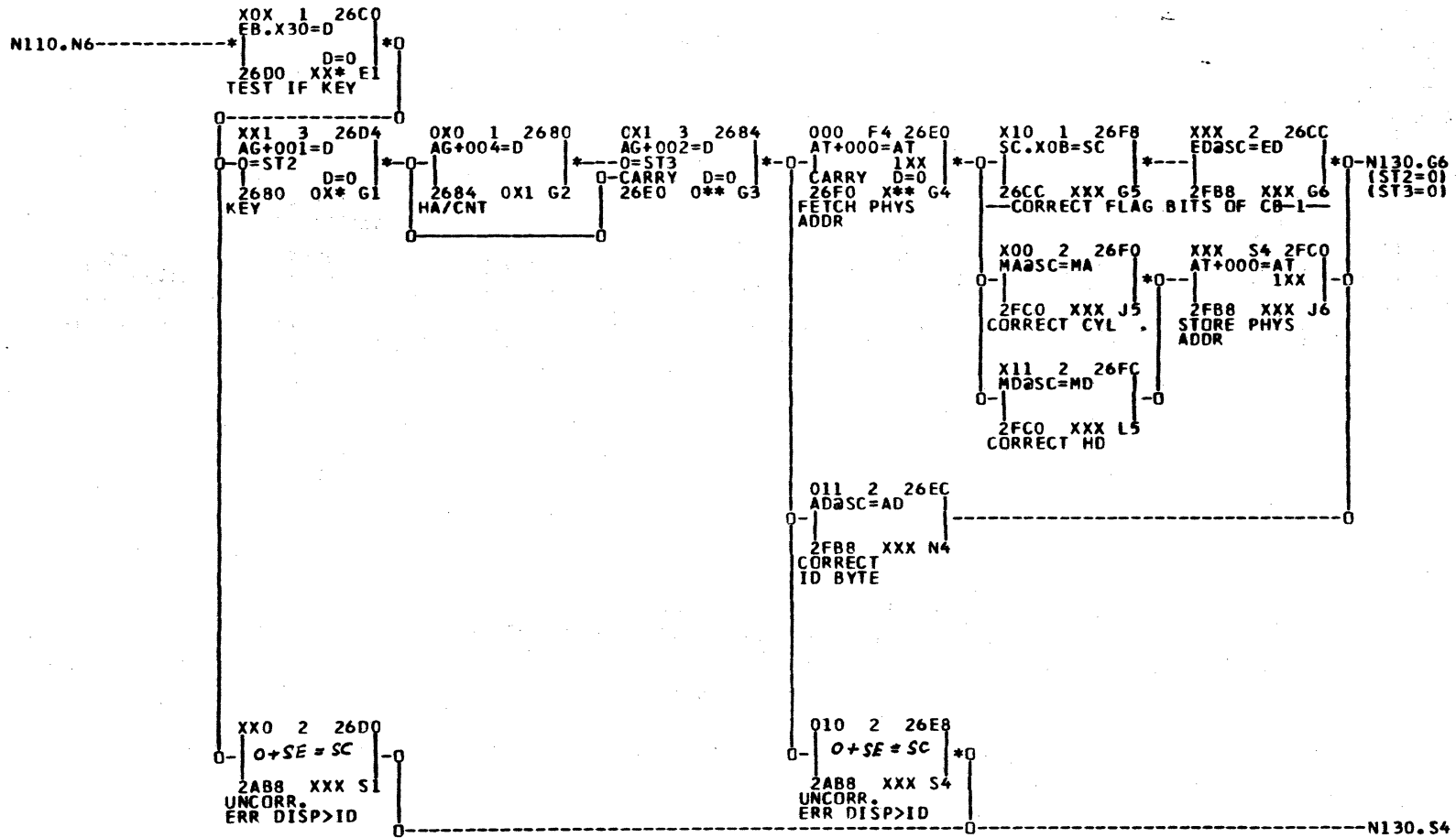


N100 HEAD OFFSET ALGORITHM



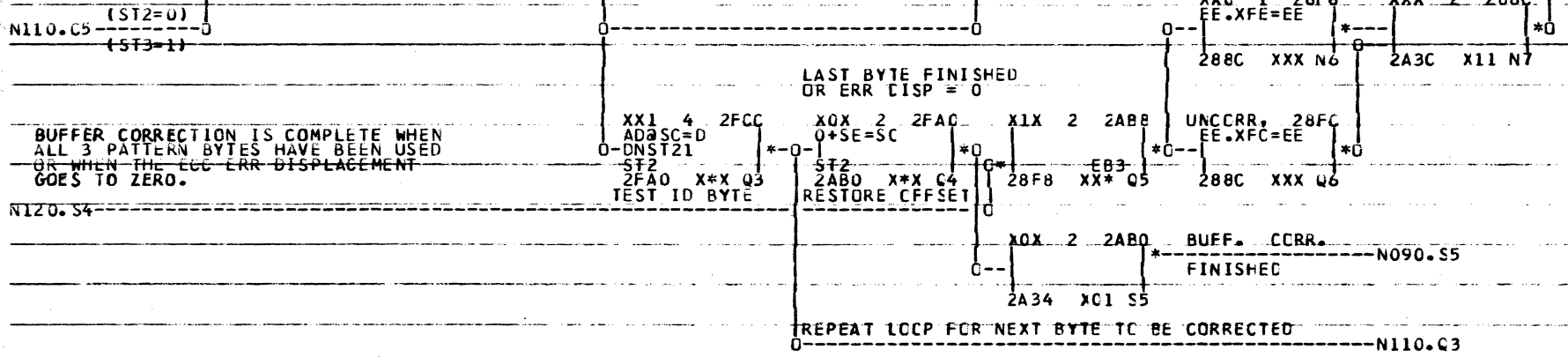
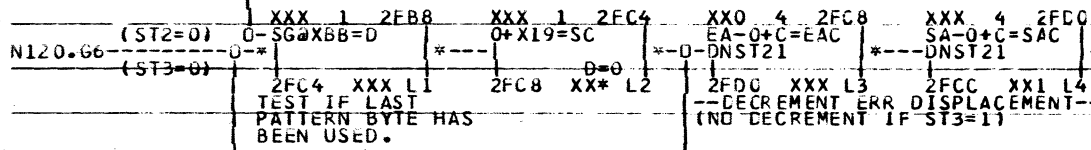
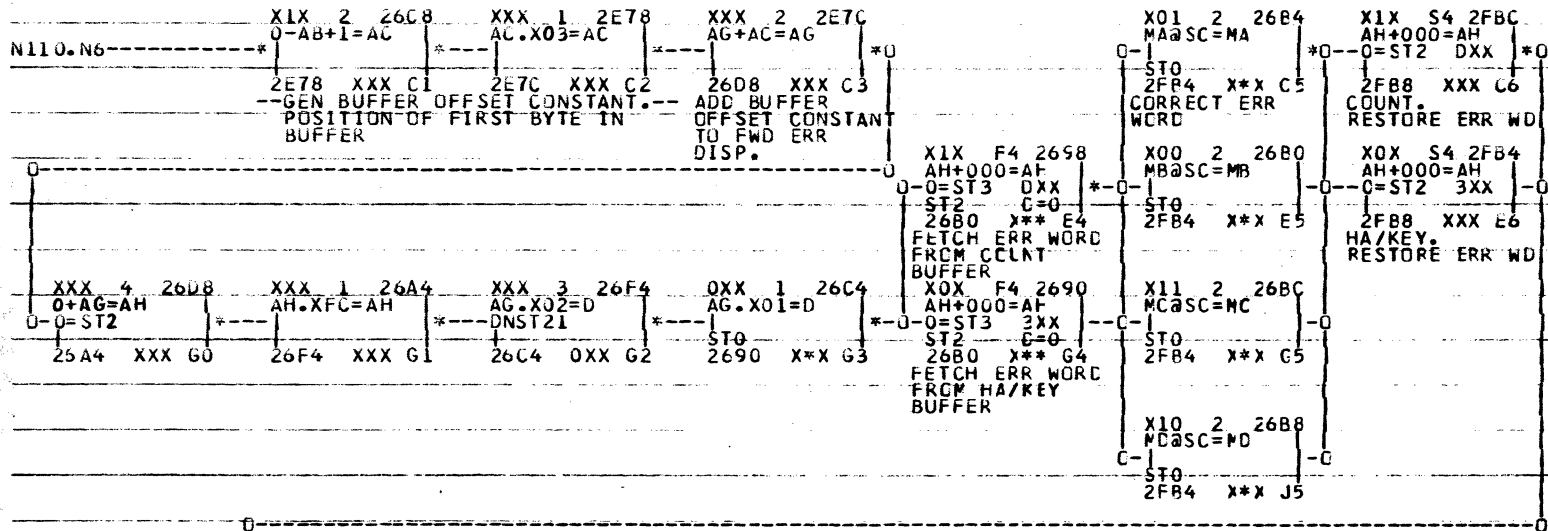
N110 BUFFER CORRECTION - I

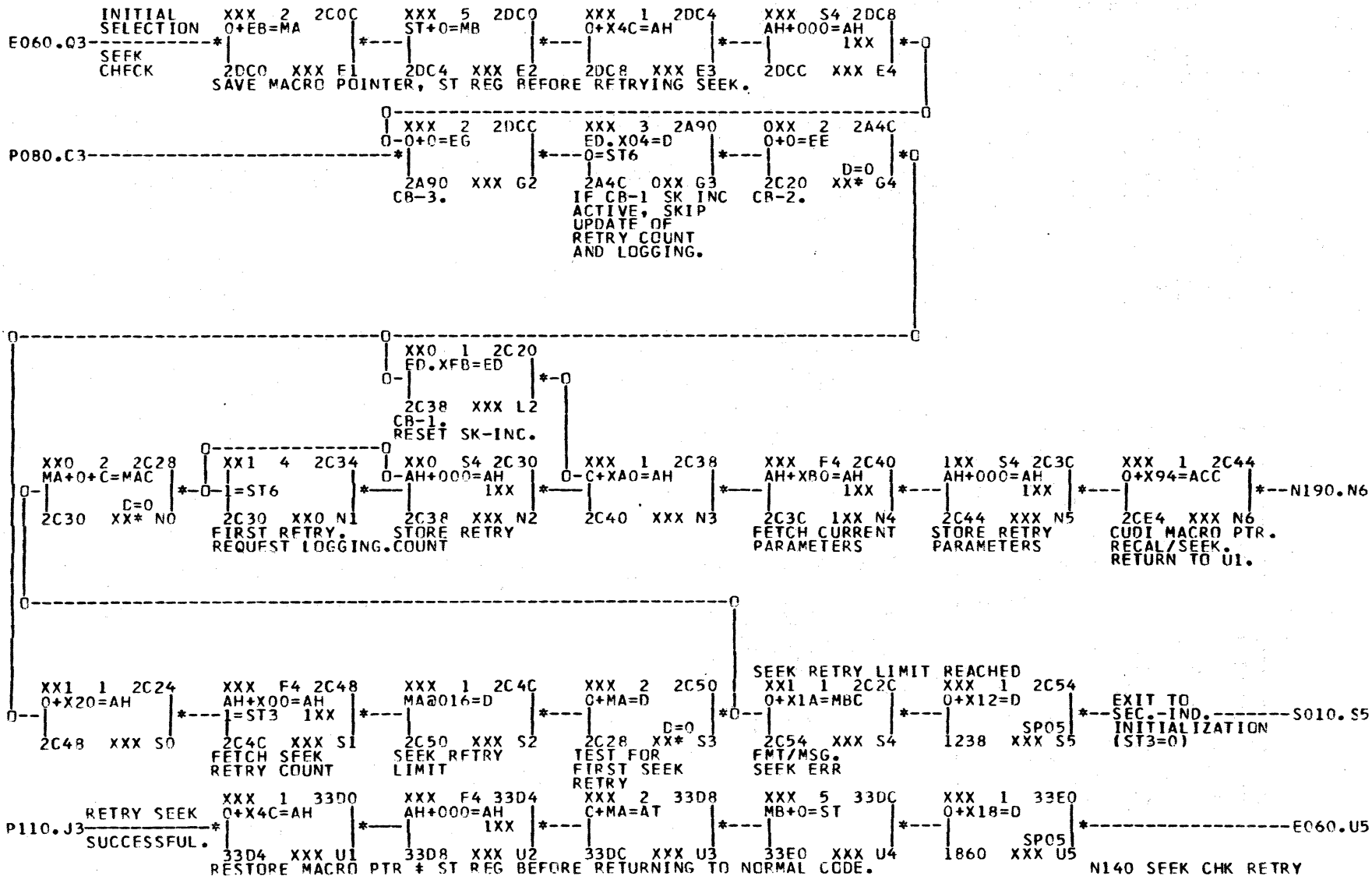
FWD ERR DISP IS '-', ERR IN ID, PHYS CYL, PHYS HD, OR FLAG

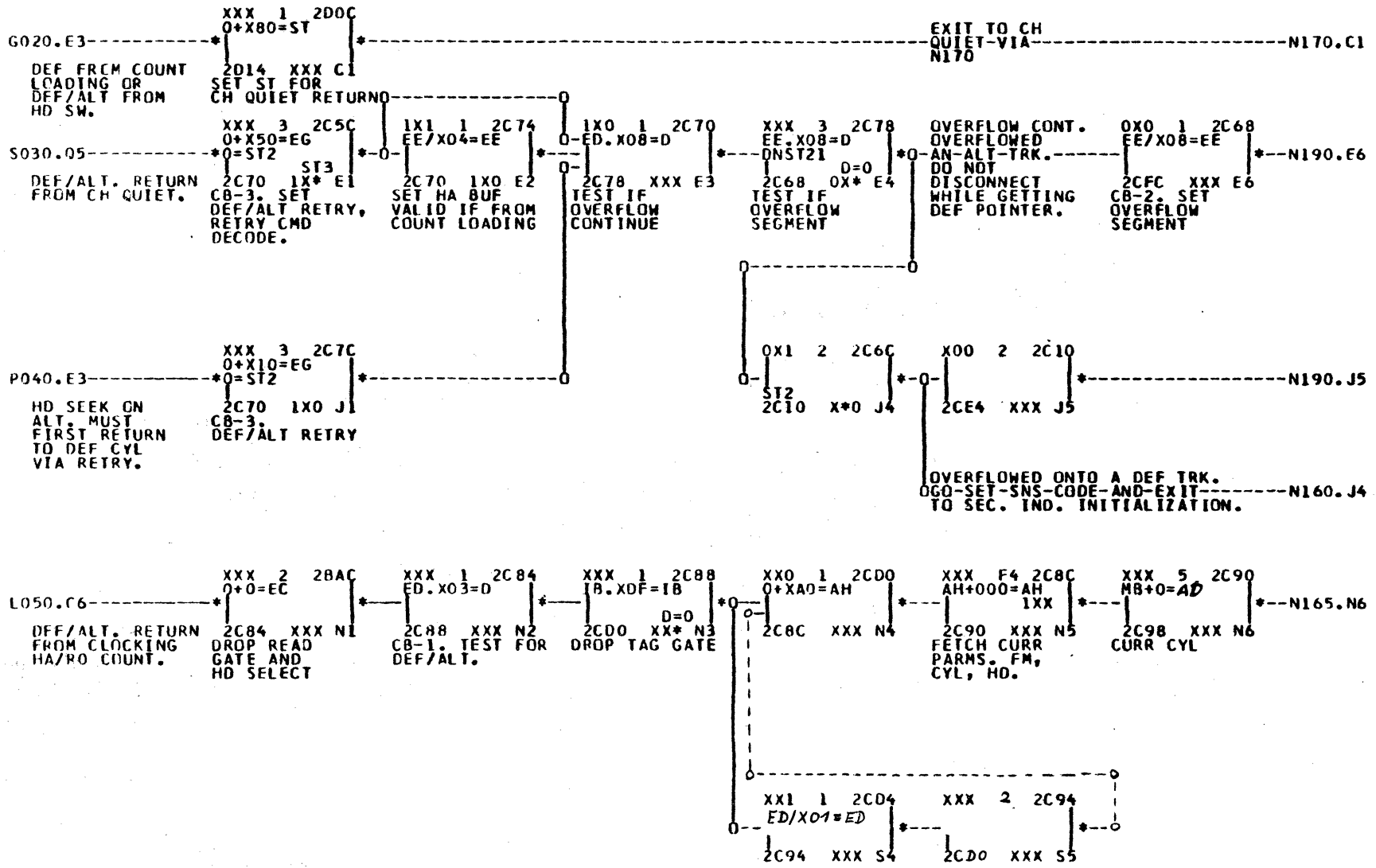


N120 BUFFER CORRECTION -II

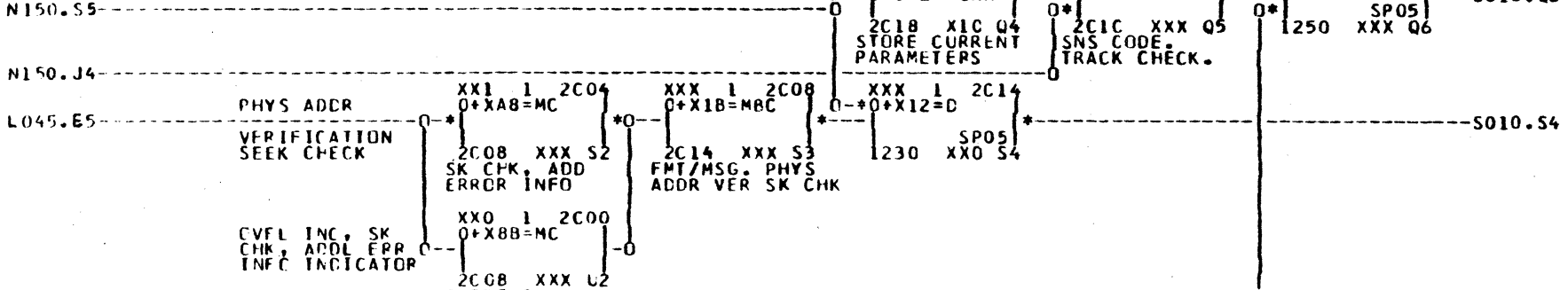
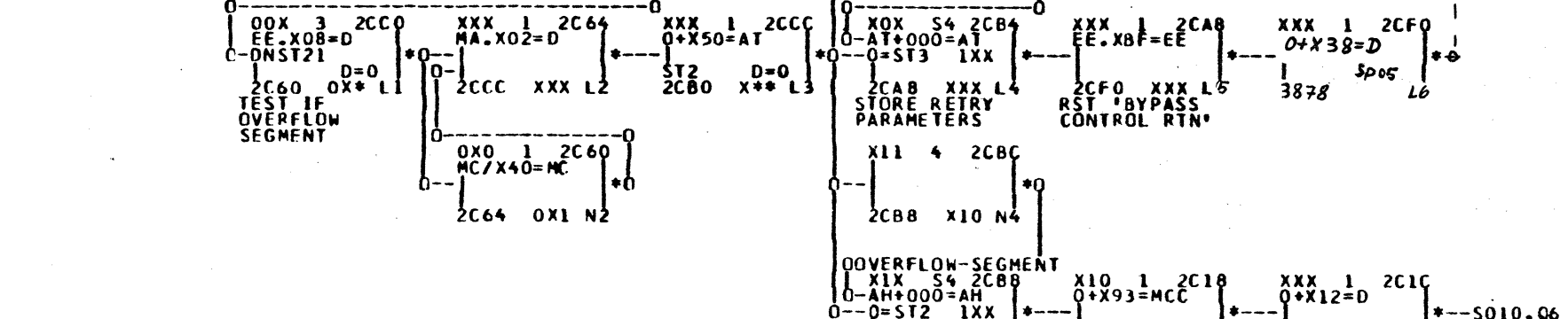
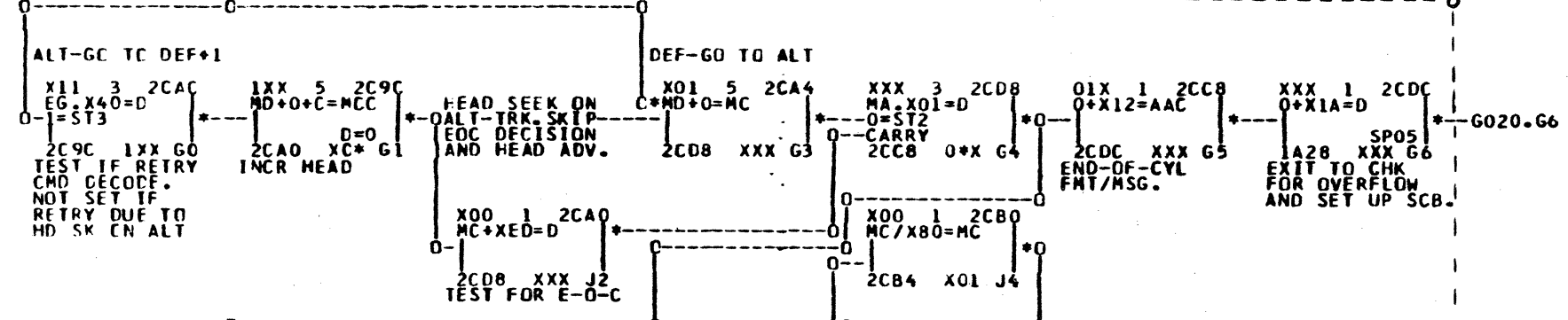
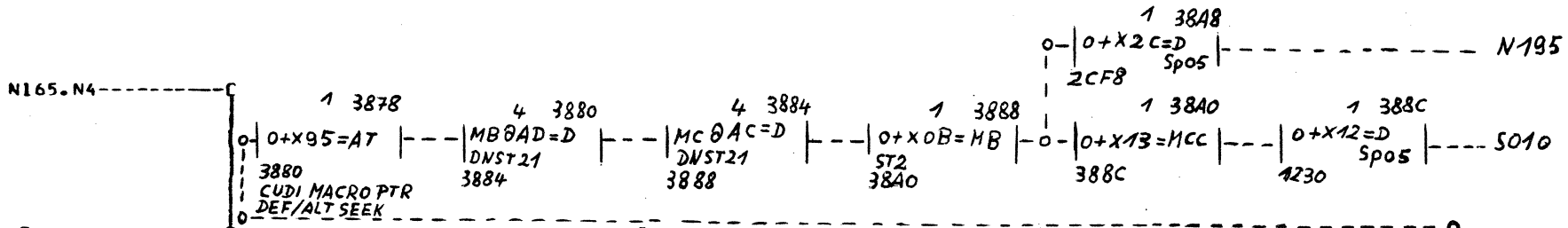
FWD ERR DISP IS '0' OR '+', ERR IN BUFFER

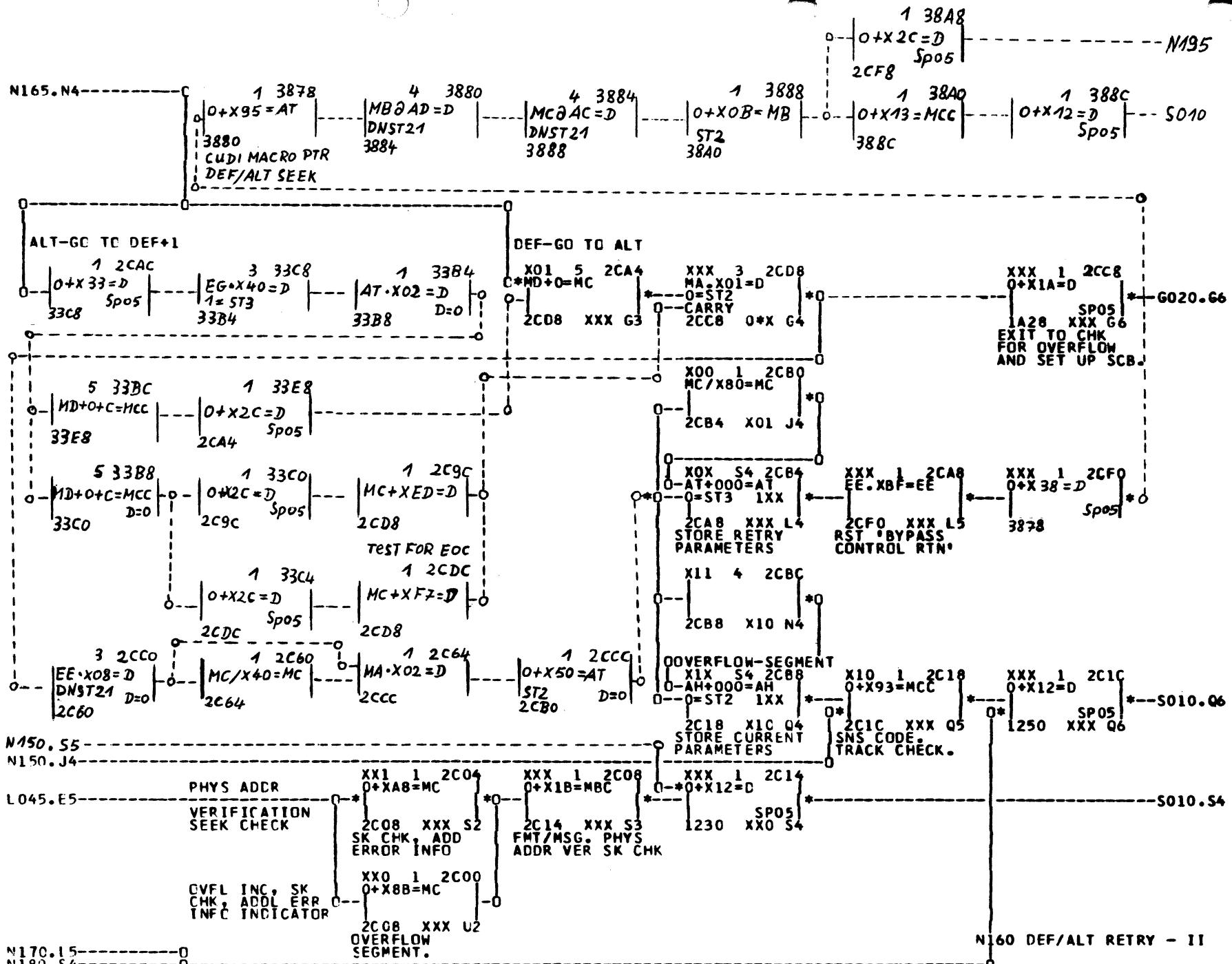






N150 DEF/ALT RETRY - I





Gilt nur für 3414-3, 3414-4 Rev.2

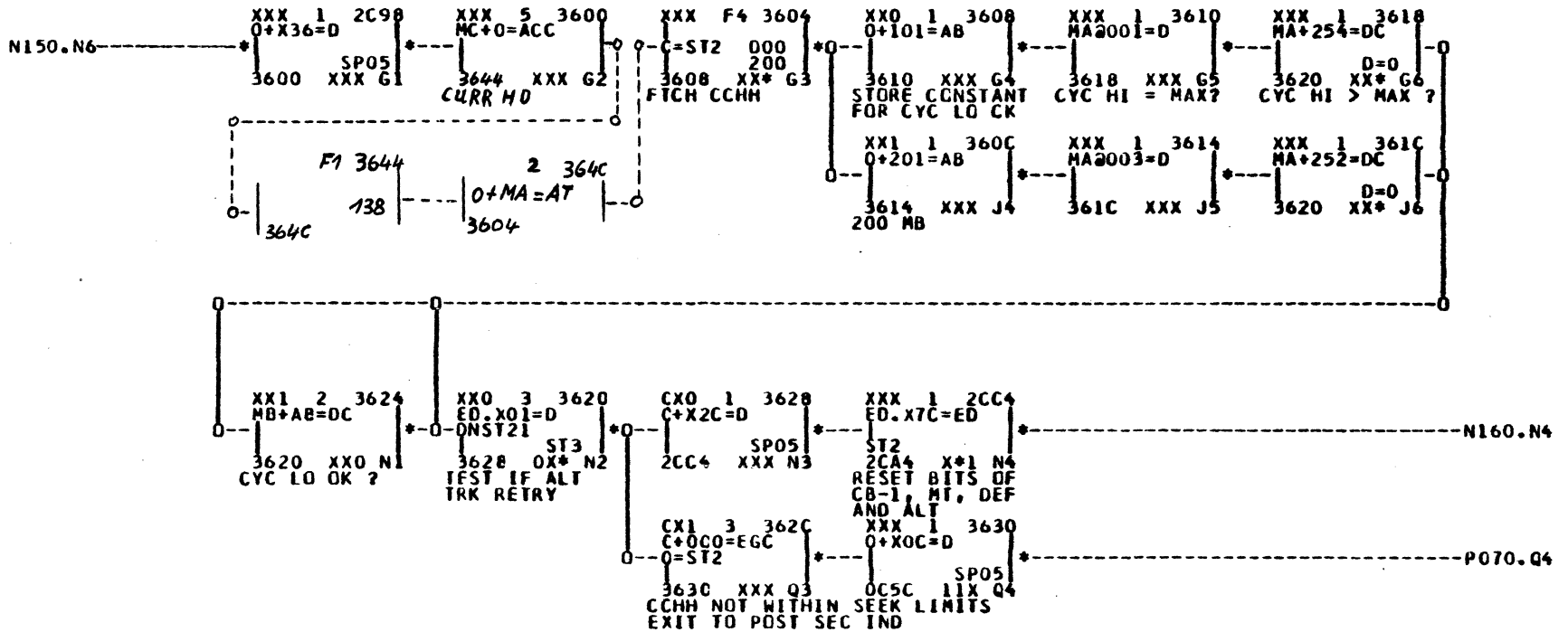


200 CHANGE
G3 BELOW-
ADD CL =200

200 CHANGE
ADD BLOCK J4
ADDRS=360C
ALU=
0+201=AB

200 CHANGE
ADD BLOCK J5
ADDRS=3614
ALU=
MA2003=D

200 CHANGE
ADD BLOCK J6
ADDRS=361C
ALU=
MA+252=DC



Gilt nur für 3414-3, 3414-4 Rev.2

PUB NO. 70631200

CUC NO. 73687900

2-113

N165 DEF/ALT RETRY-II
SEEK LIMITS CHECK

REVISION

G

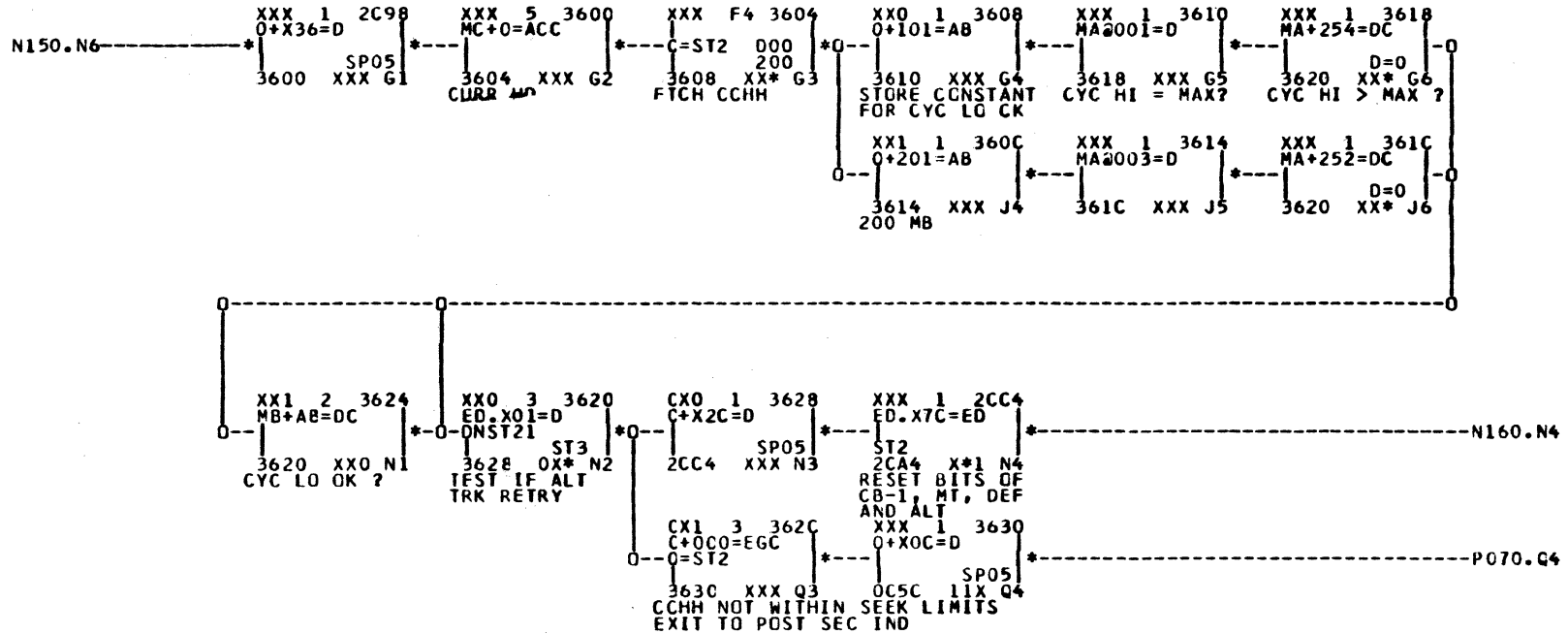


200 CHANGE
G3 BELOW-
ADD CL =200

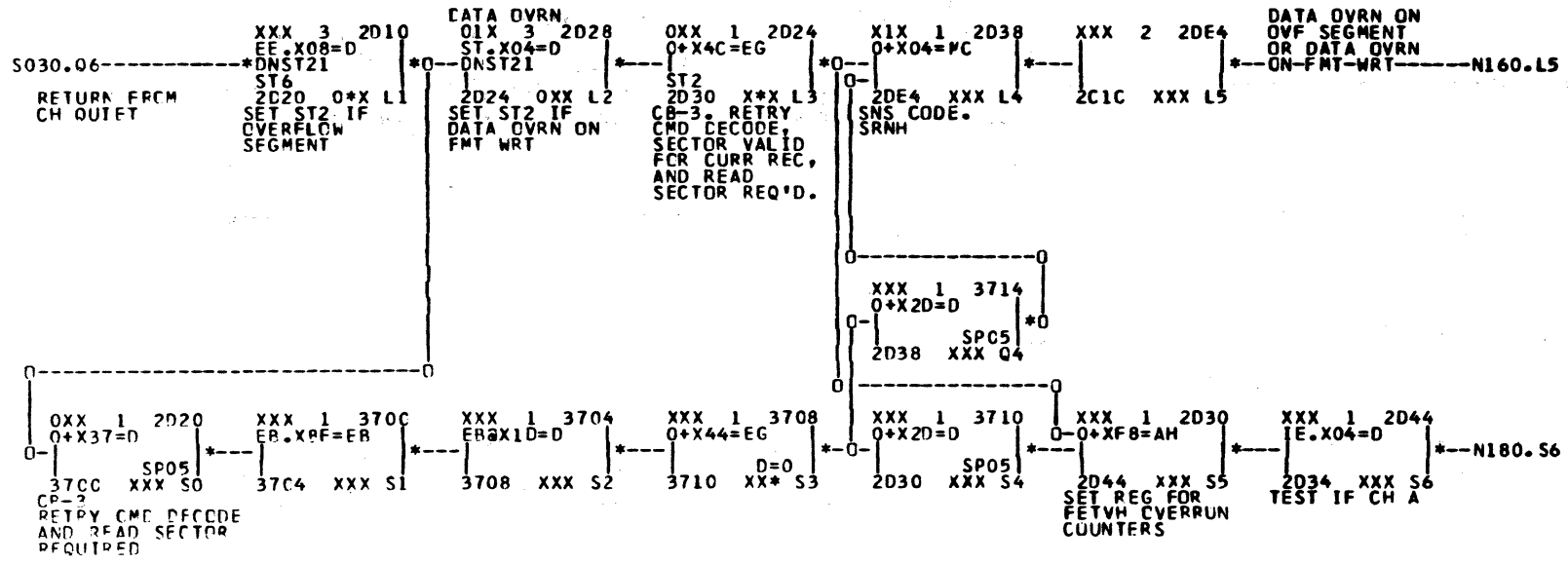
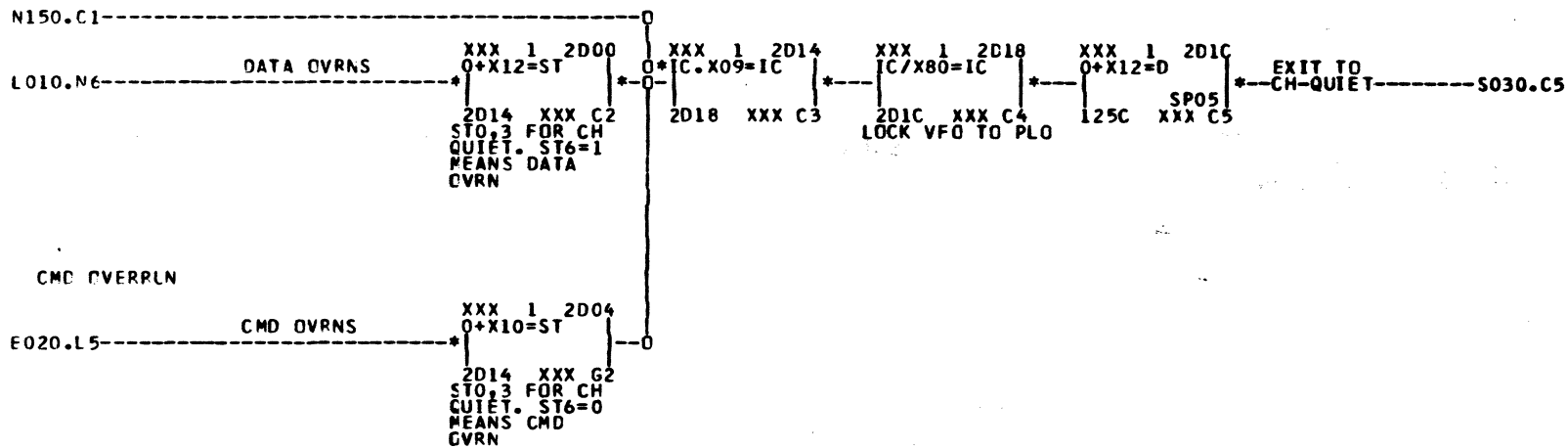
200 CHANGE
ADD BLOCK J4
ADDRS=360C
ALU=
O+201=AB

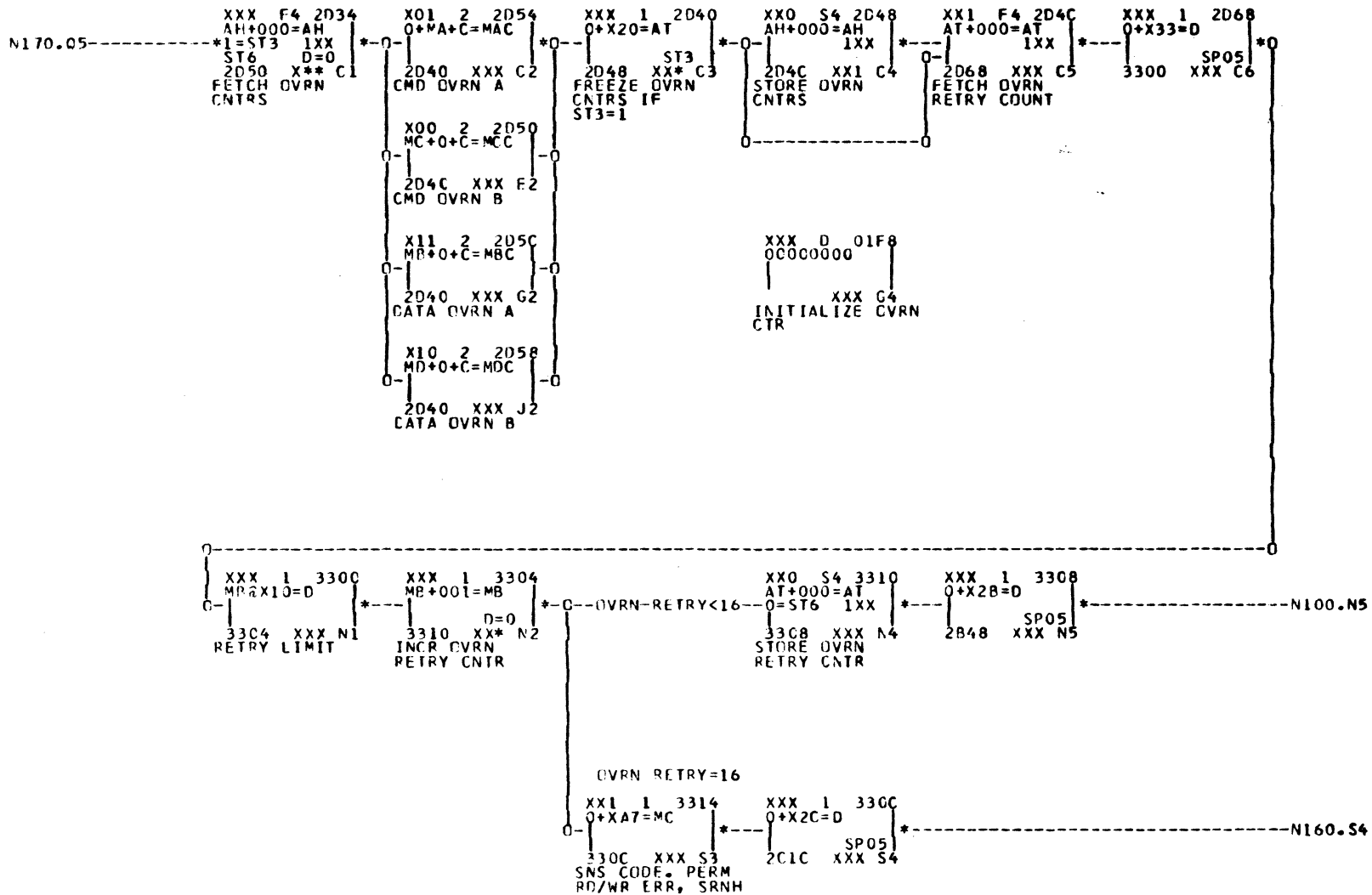
200 CHANGE
ADD BLOCK J5
ADDRS=3614
ALU=
MA2003=D

200 CHANGE
ADD BLOCK J6
ADDRS=361C
ALU=
MA+252=DC

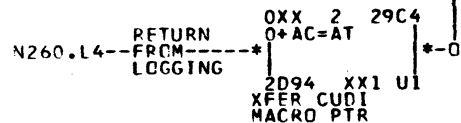
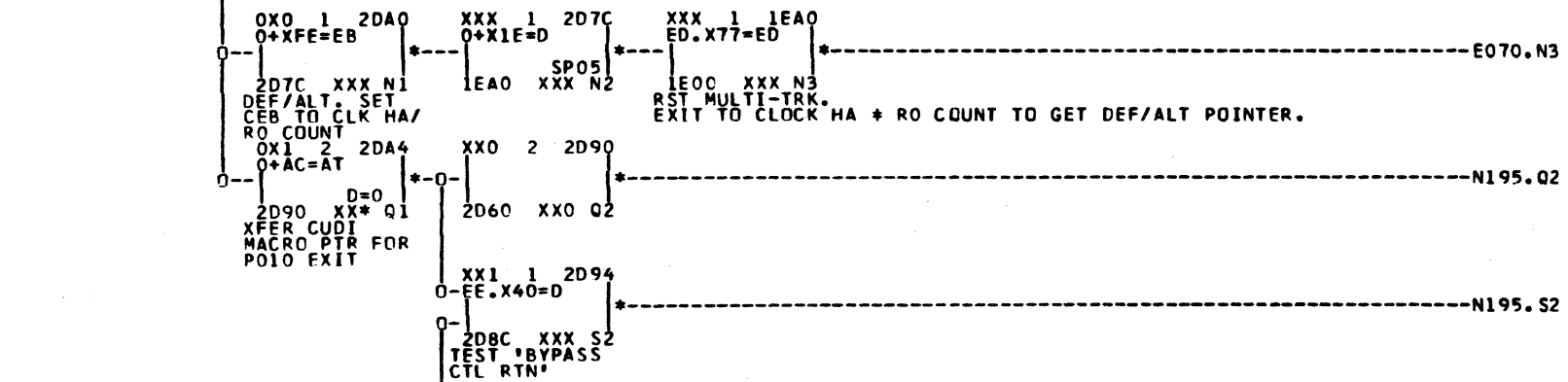
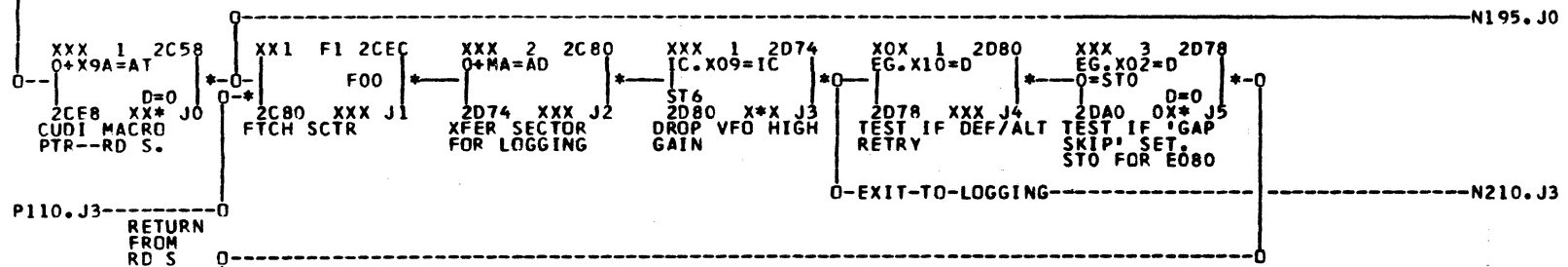
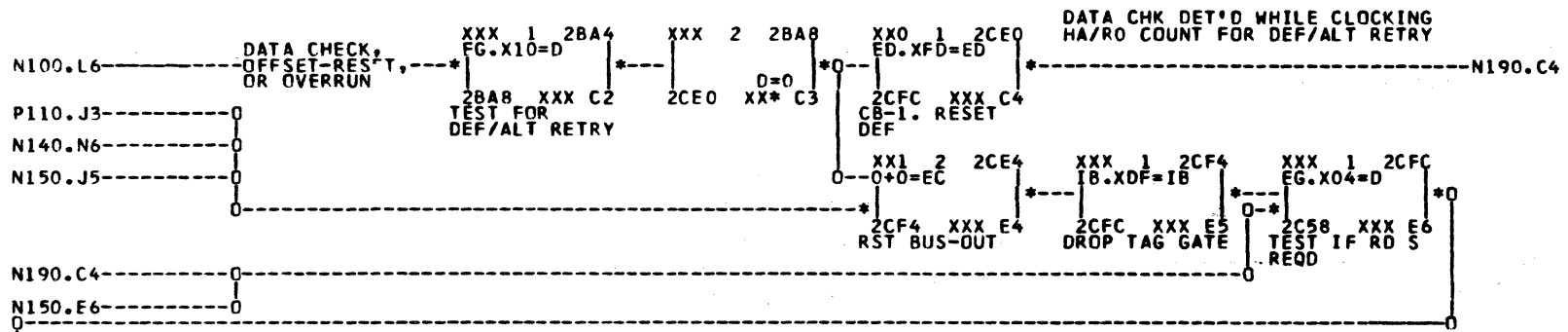


N165 DEF/ALT RETRY-II
SEEK LIMITS CHECK





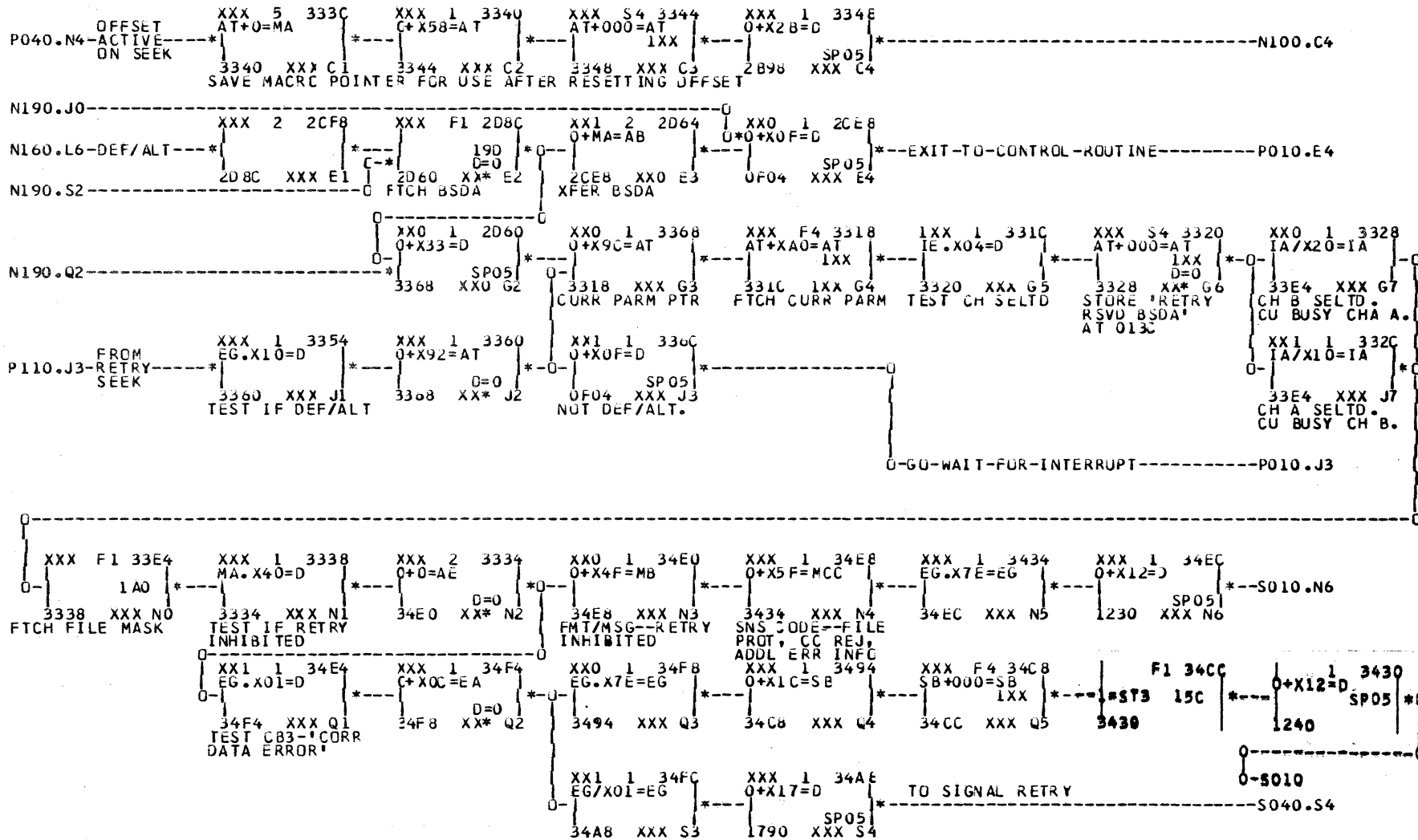
N180 OVRN RETRY - II



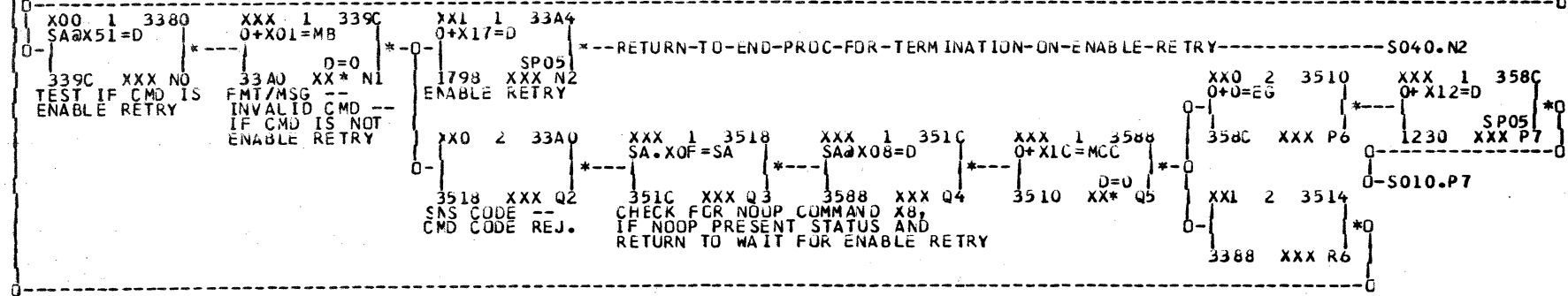
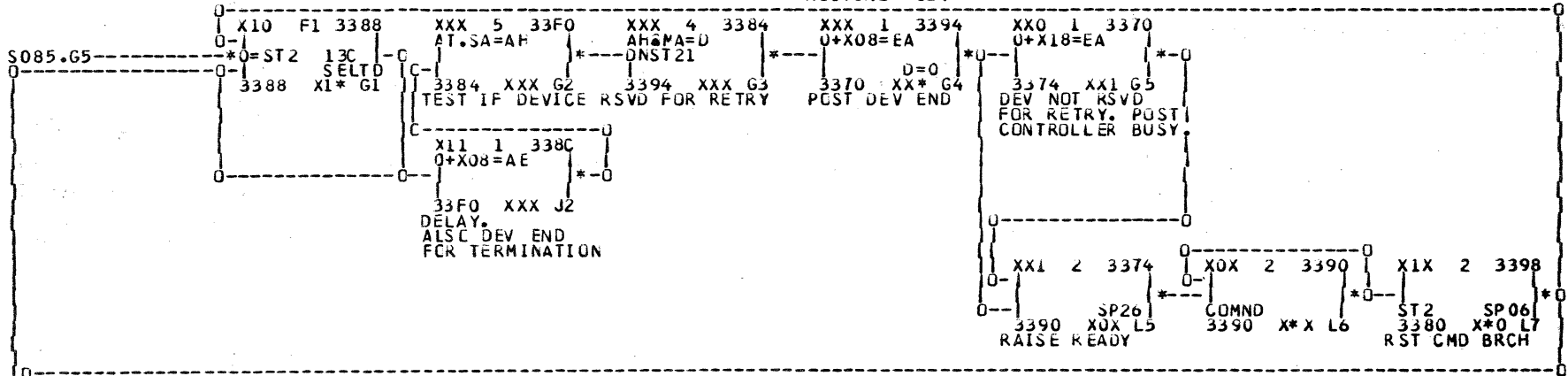
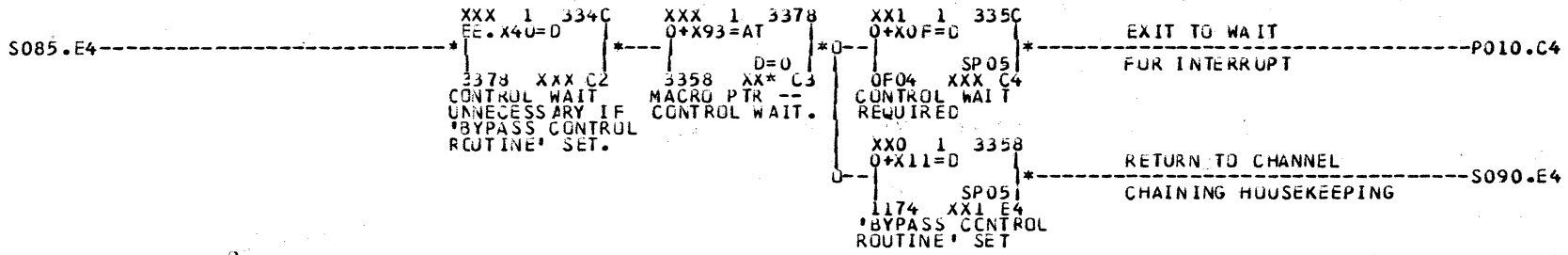
PUB NO. 70631200 DOC NO. 73687900

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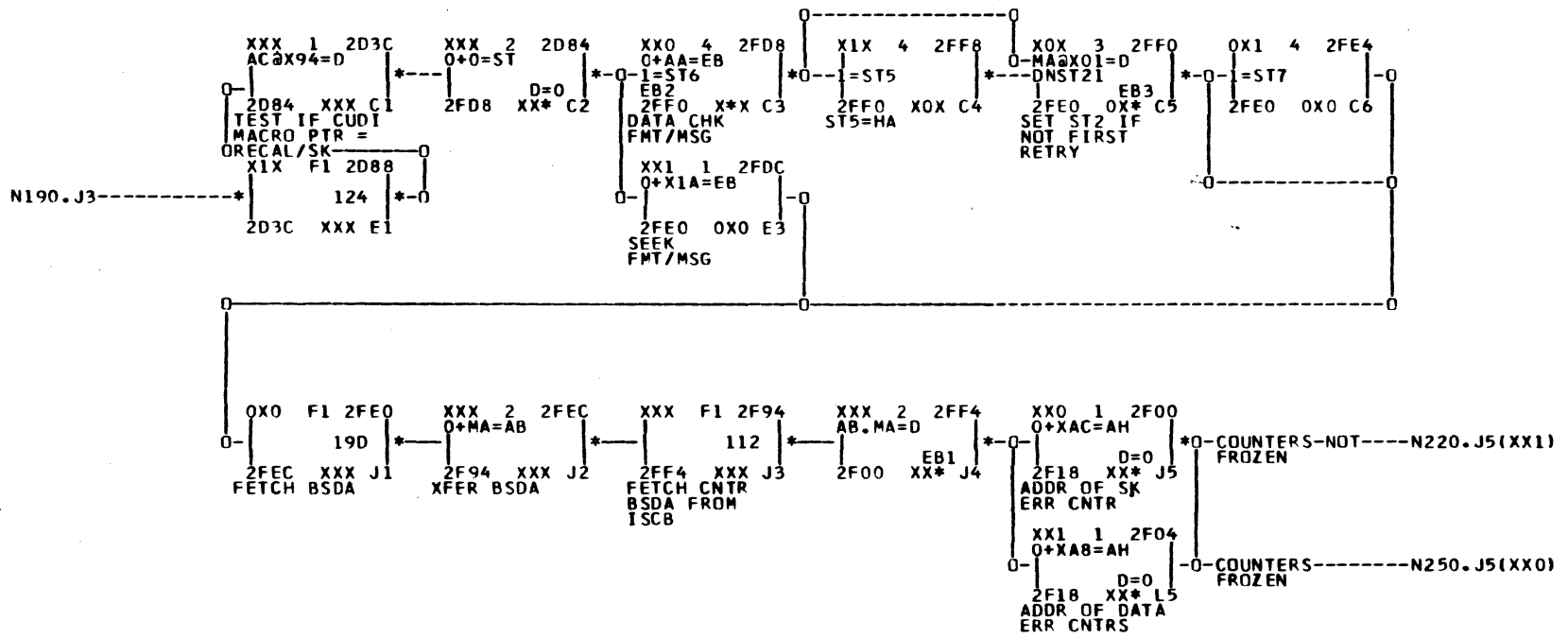
N190 CLOCK HA/RO COUNT, LOGGING,
CONTROL ROUTINE EXIT
DECISIONS
REVISION A



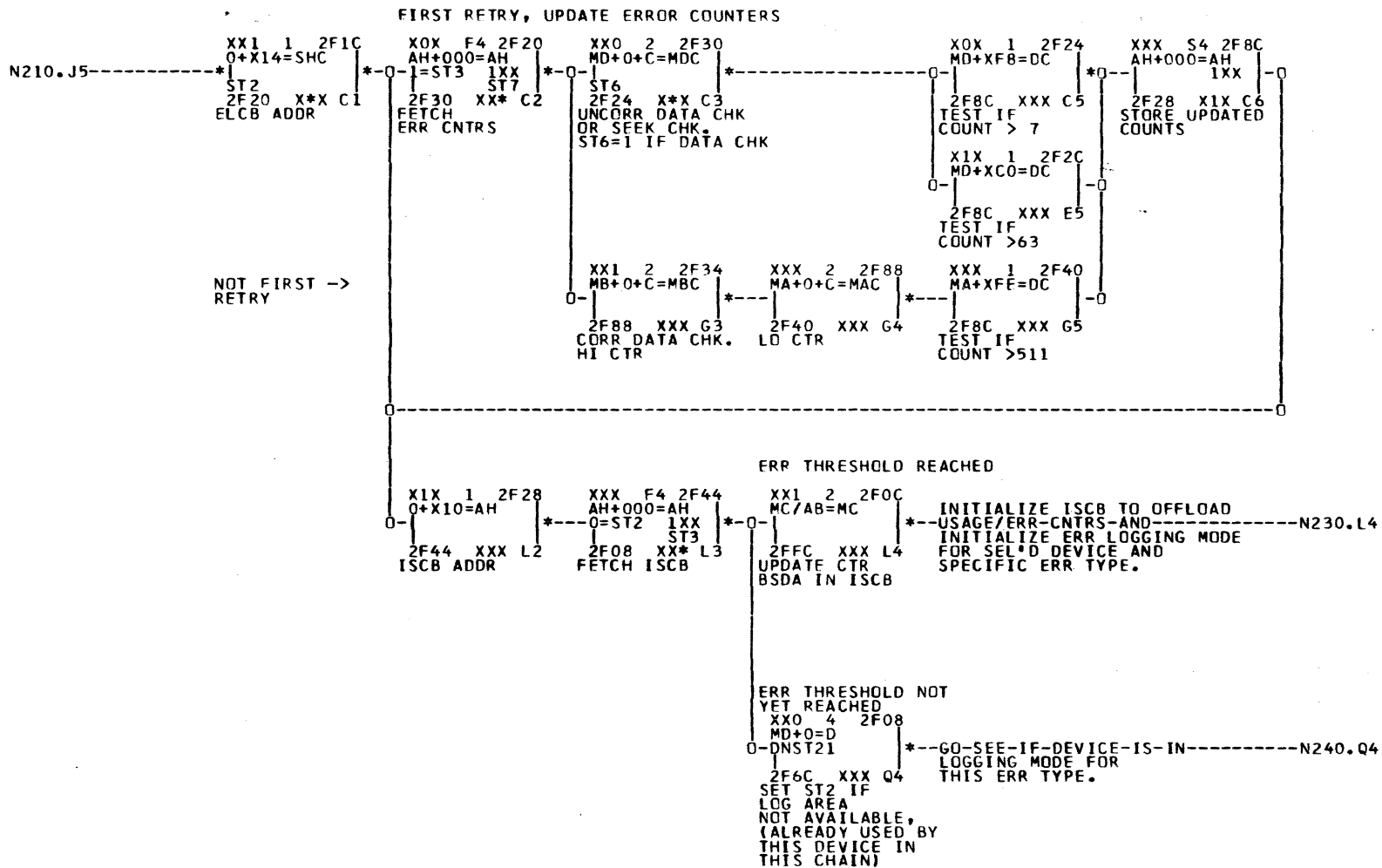
N195 RETRY ANALYSIS--
EXIT TO SIGNAL RETRY

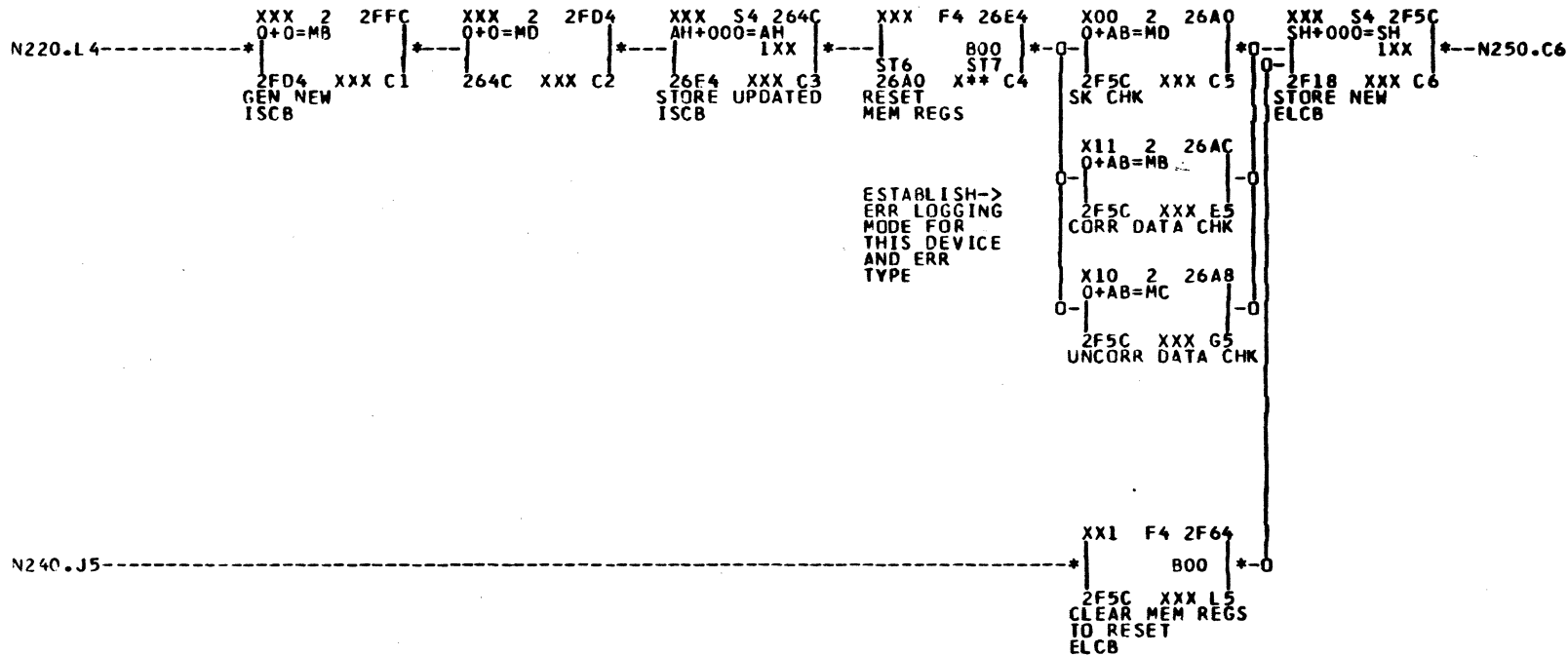


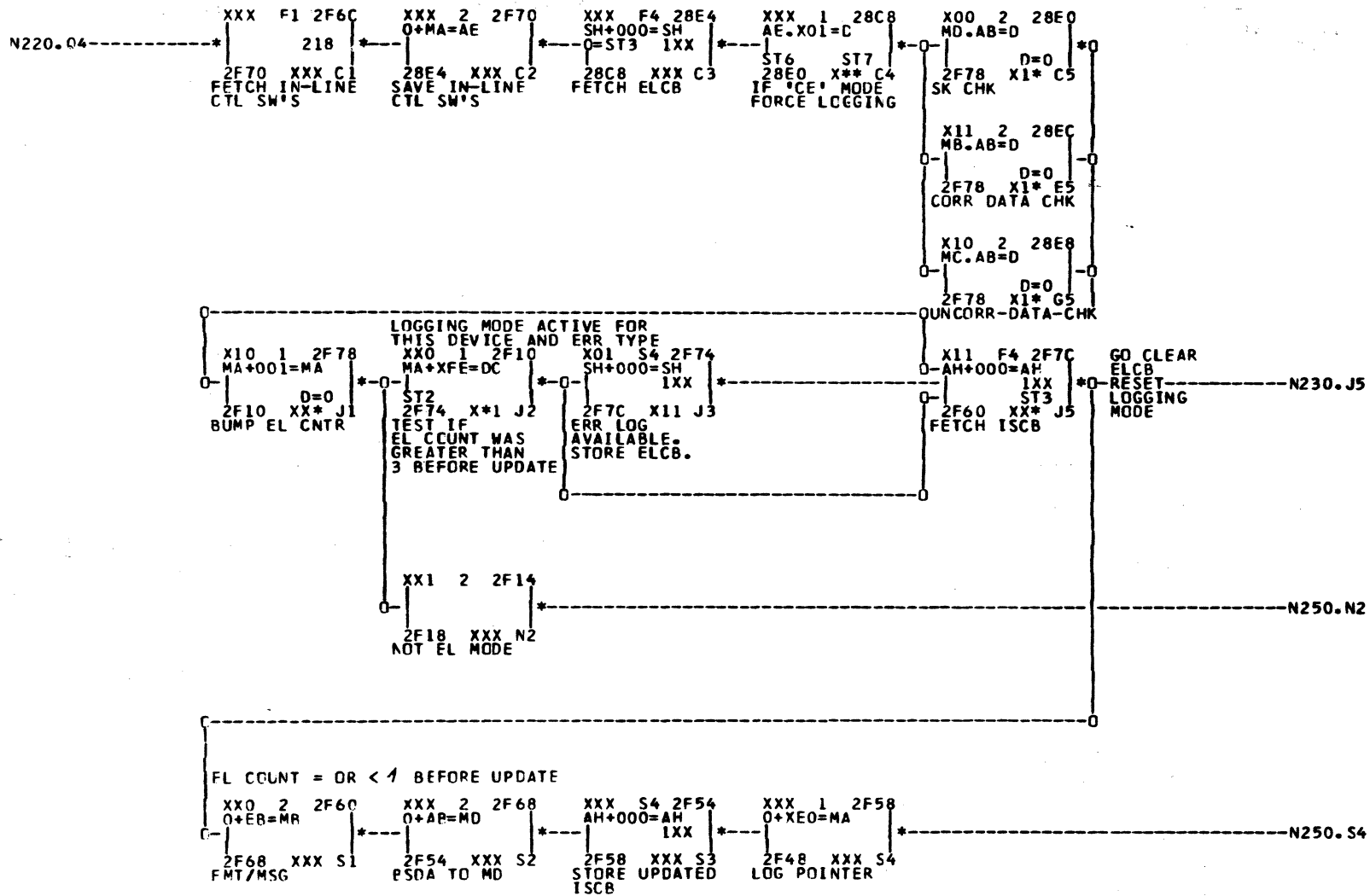
N200 RETRY RECONNECTION AND CONTROL WAIT DECISION.



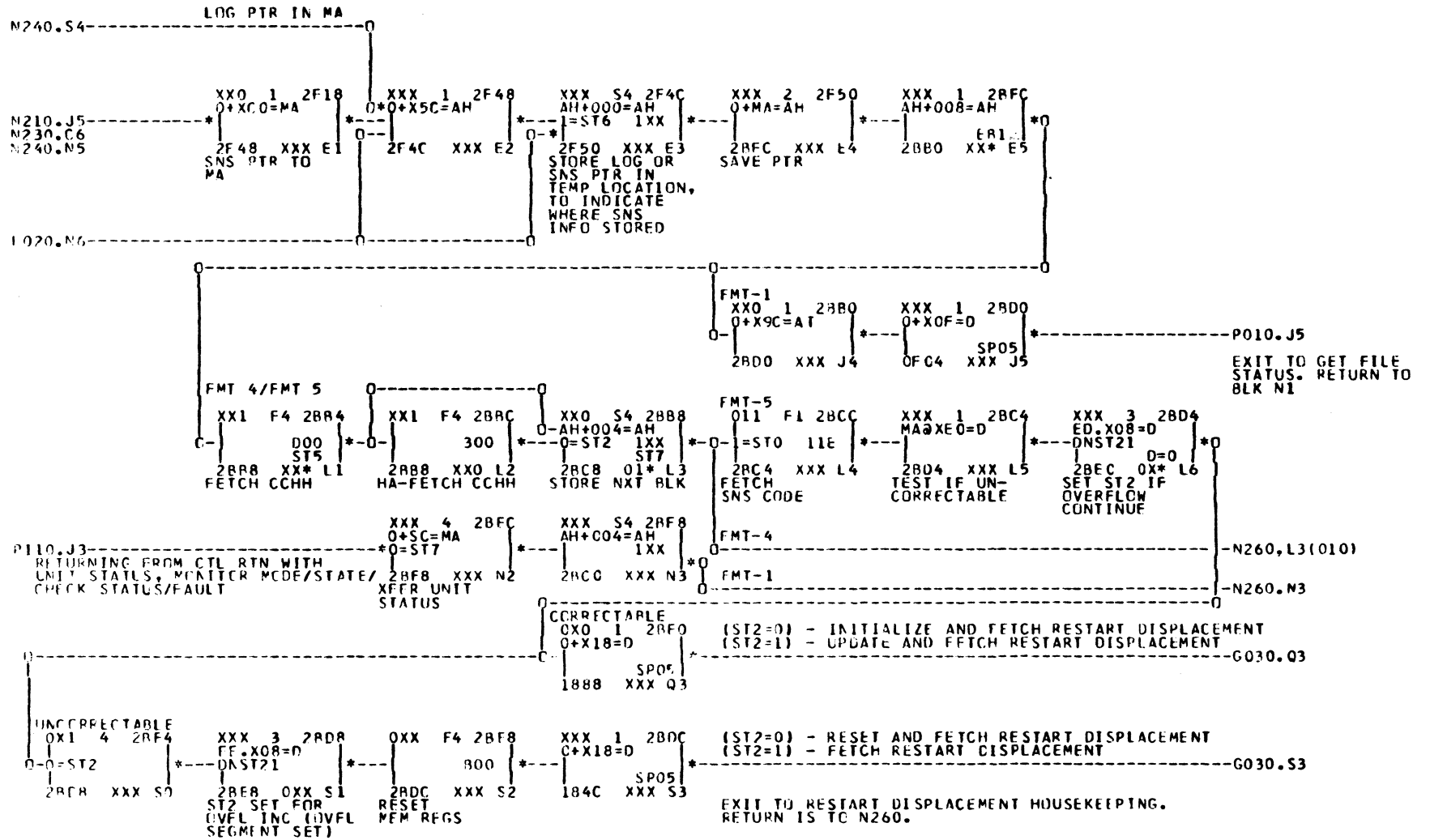
N210 LOGGING INITIALIZATION

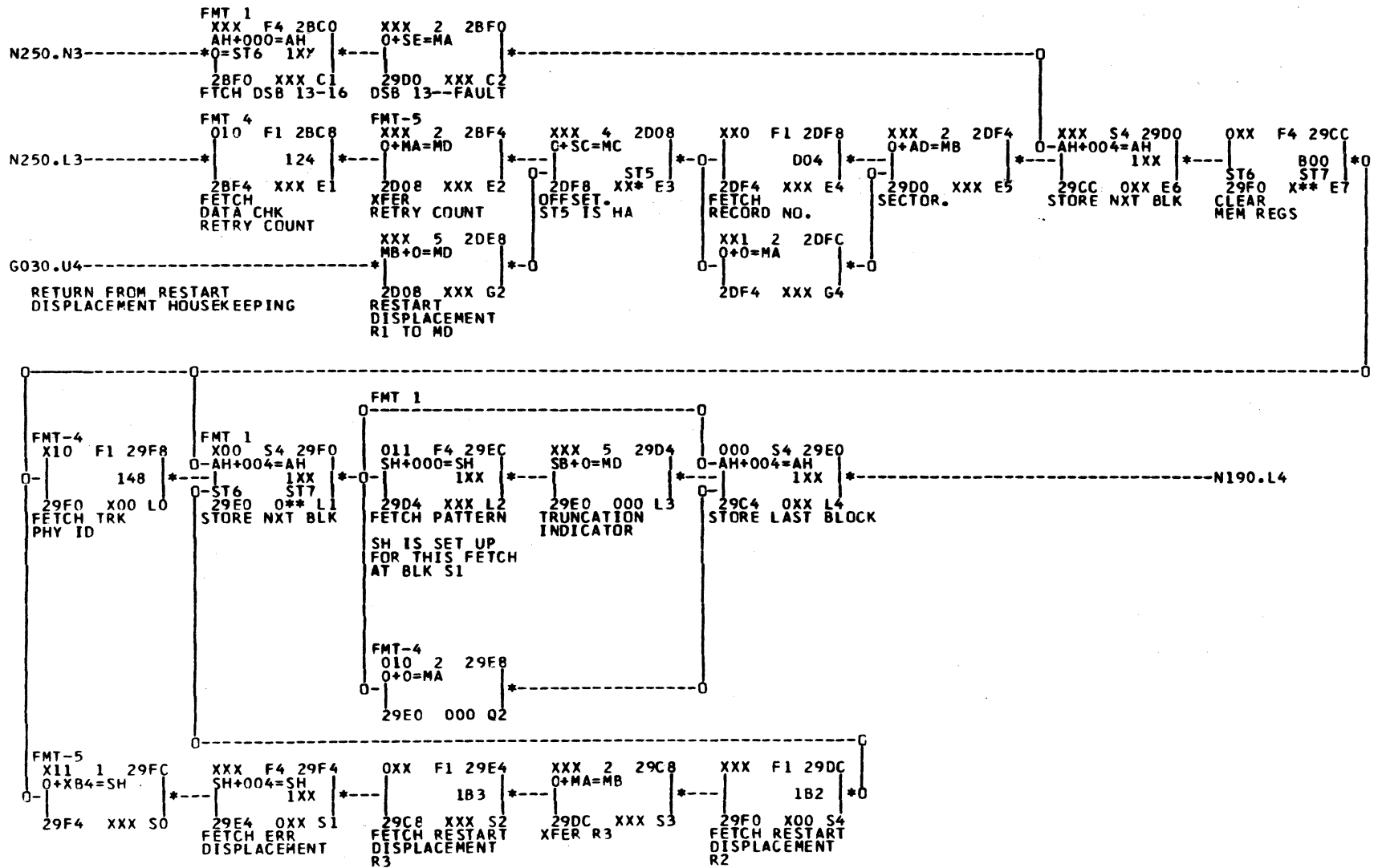


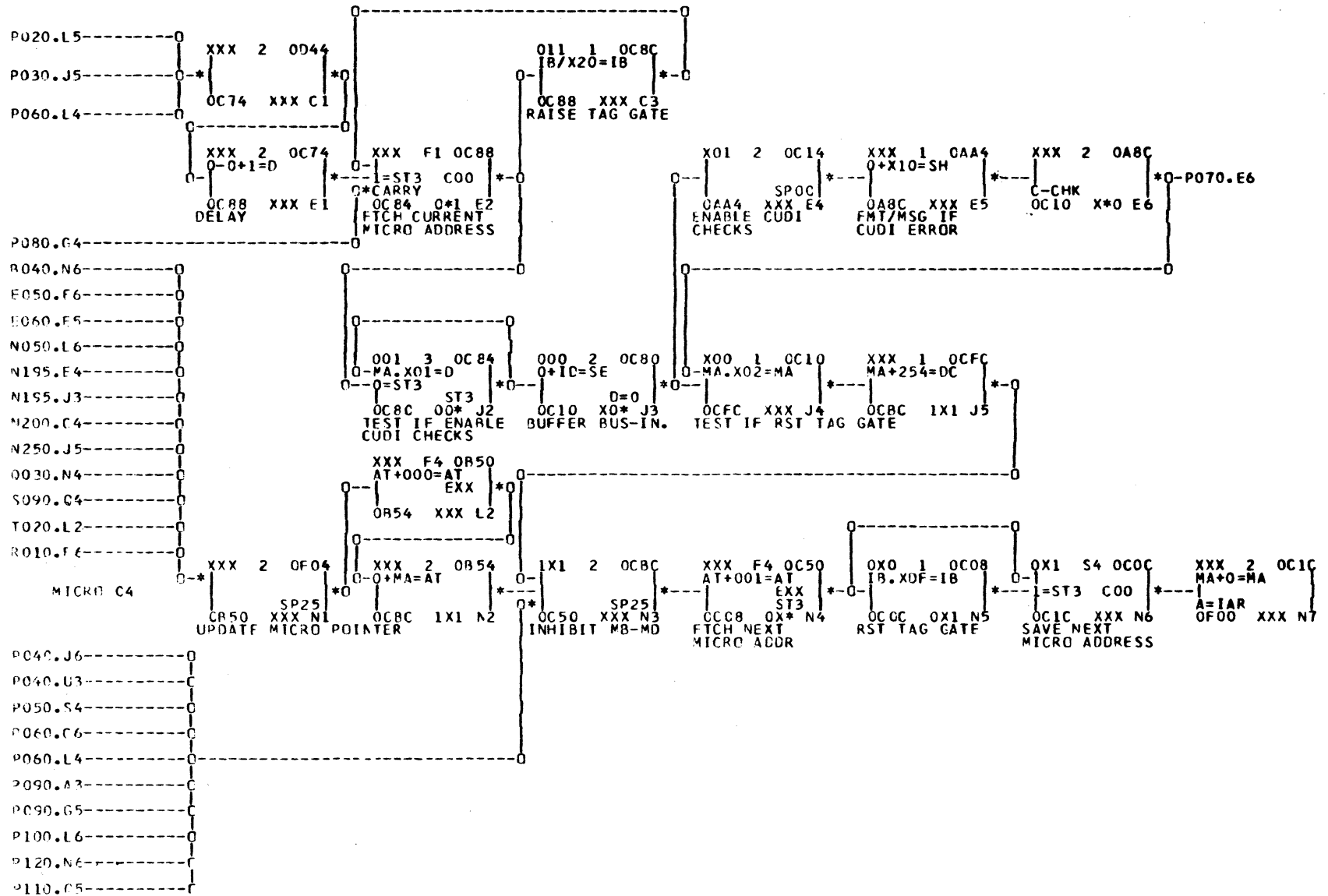




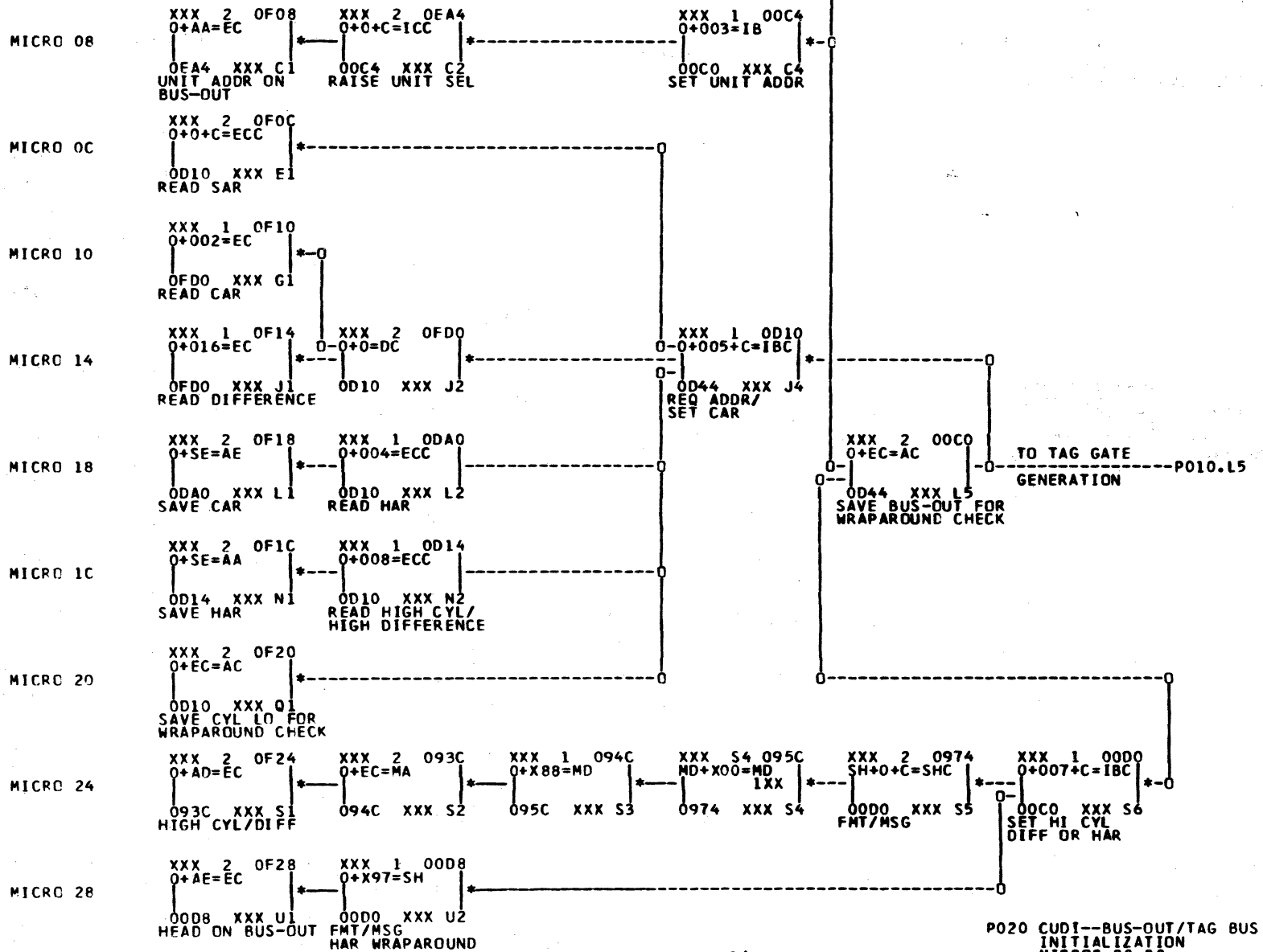
N240 LOGGING MODE DECISIONS

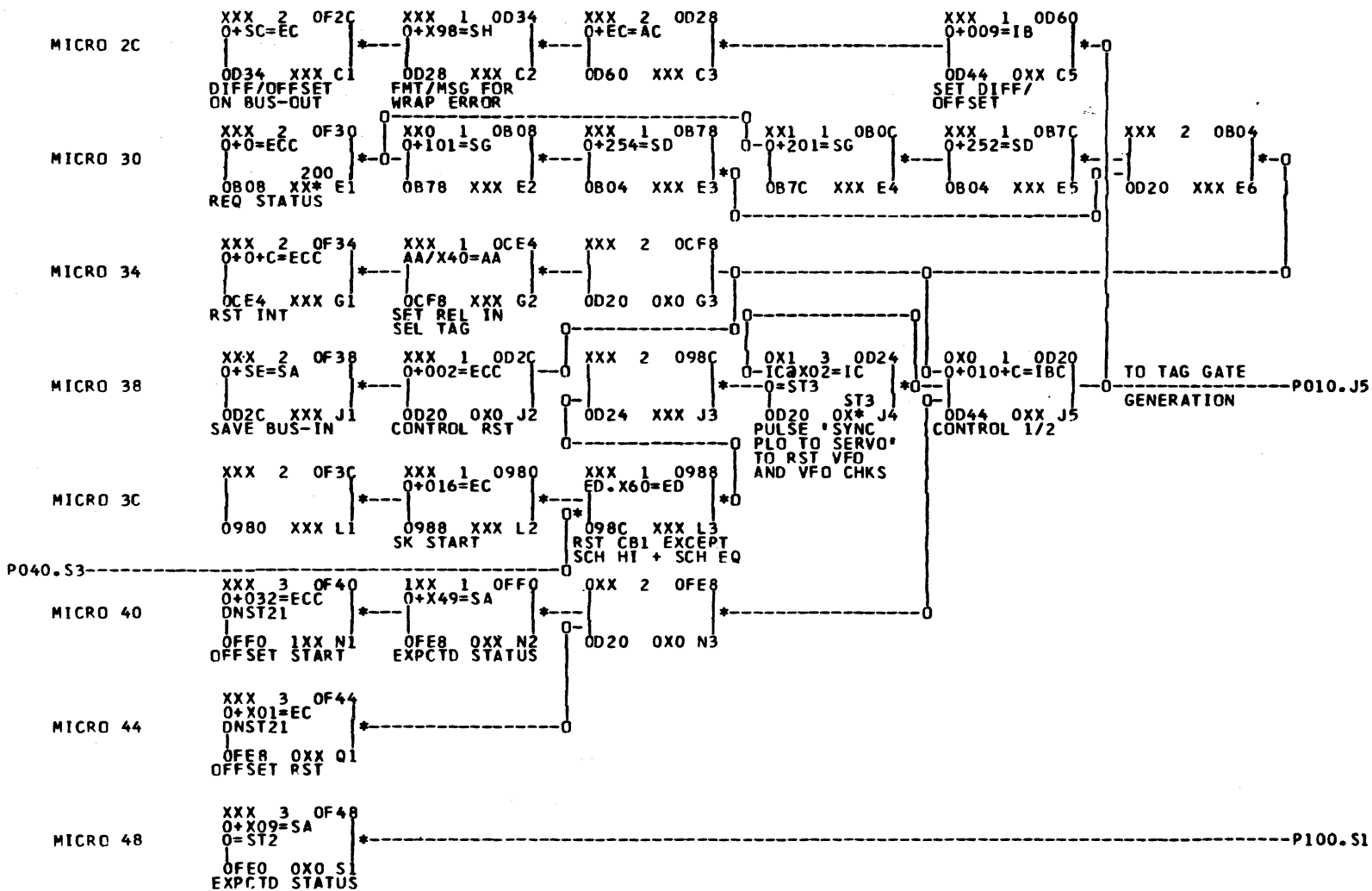


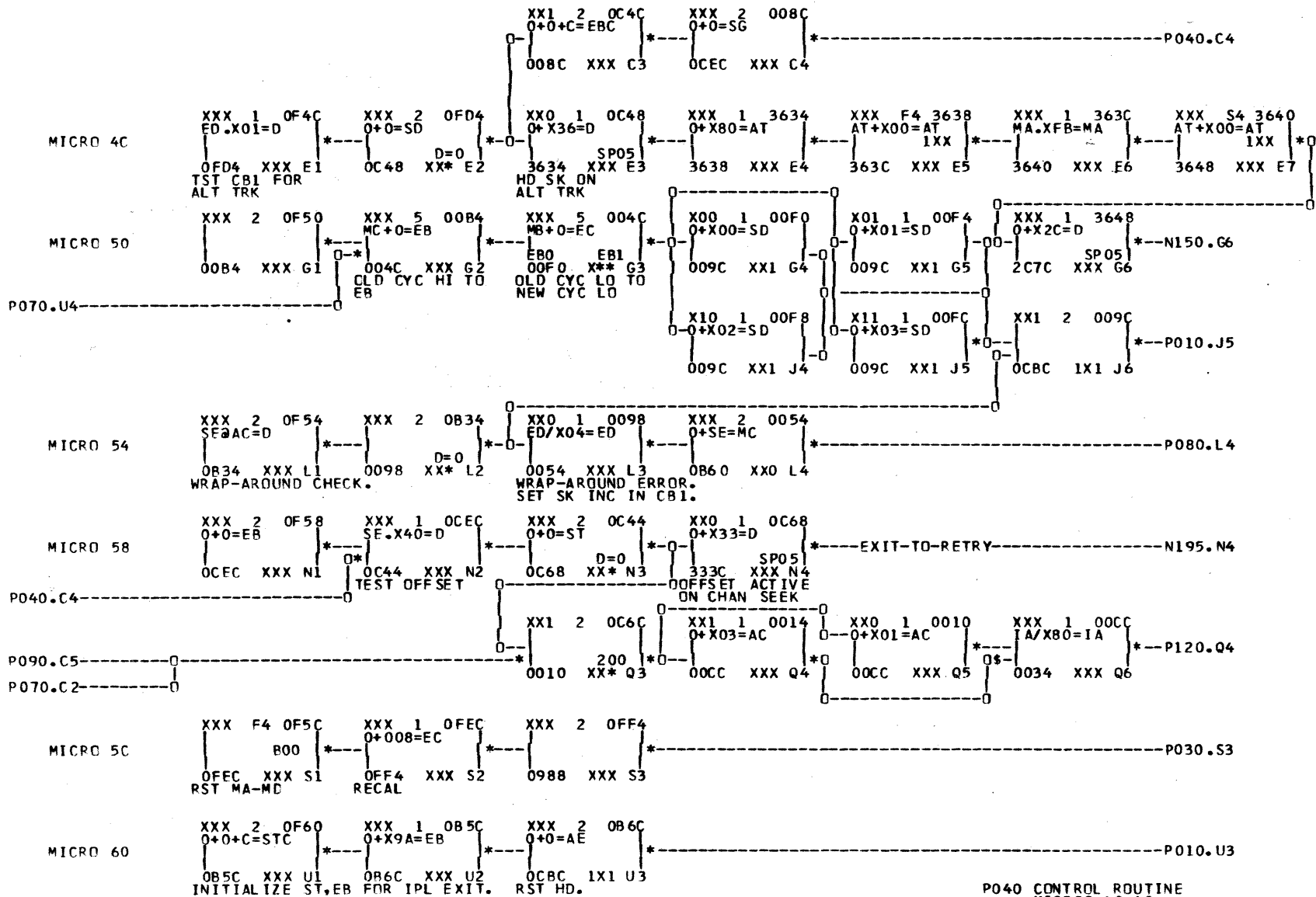


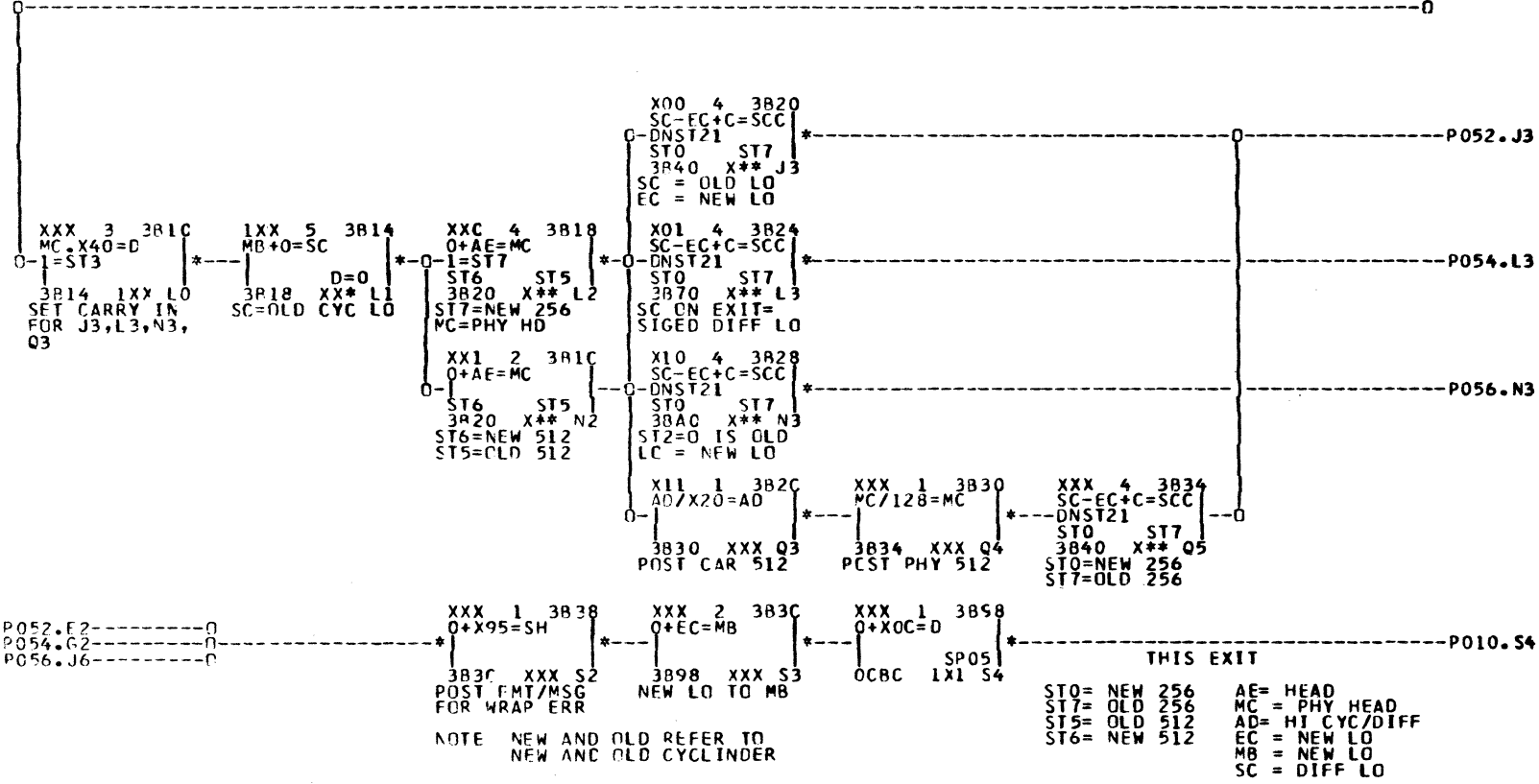
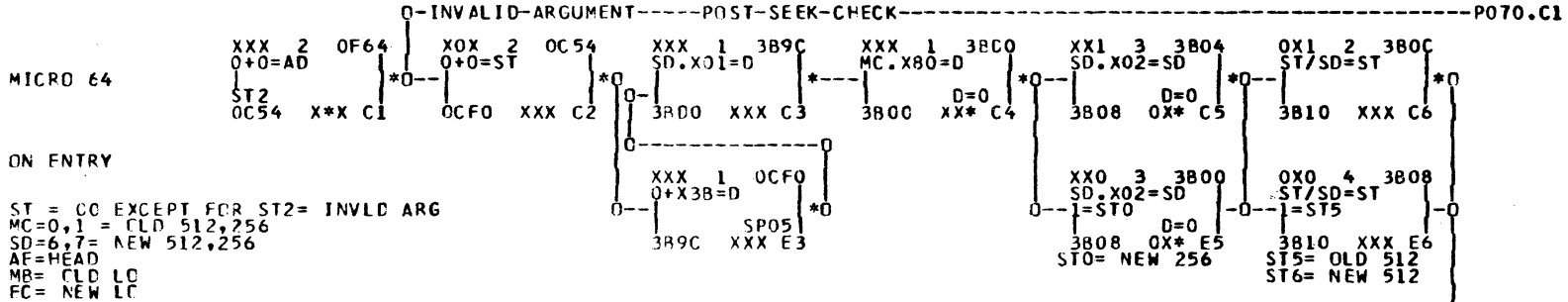


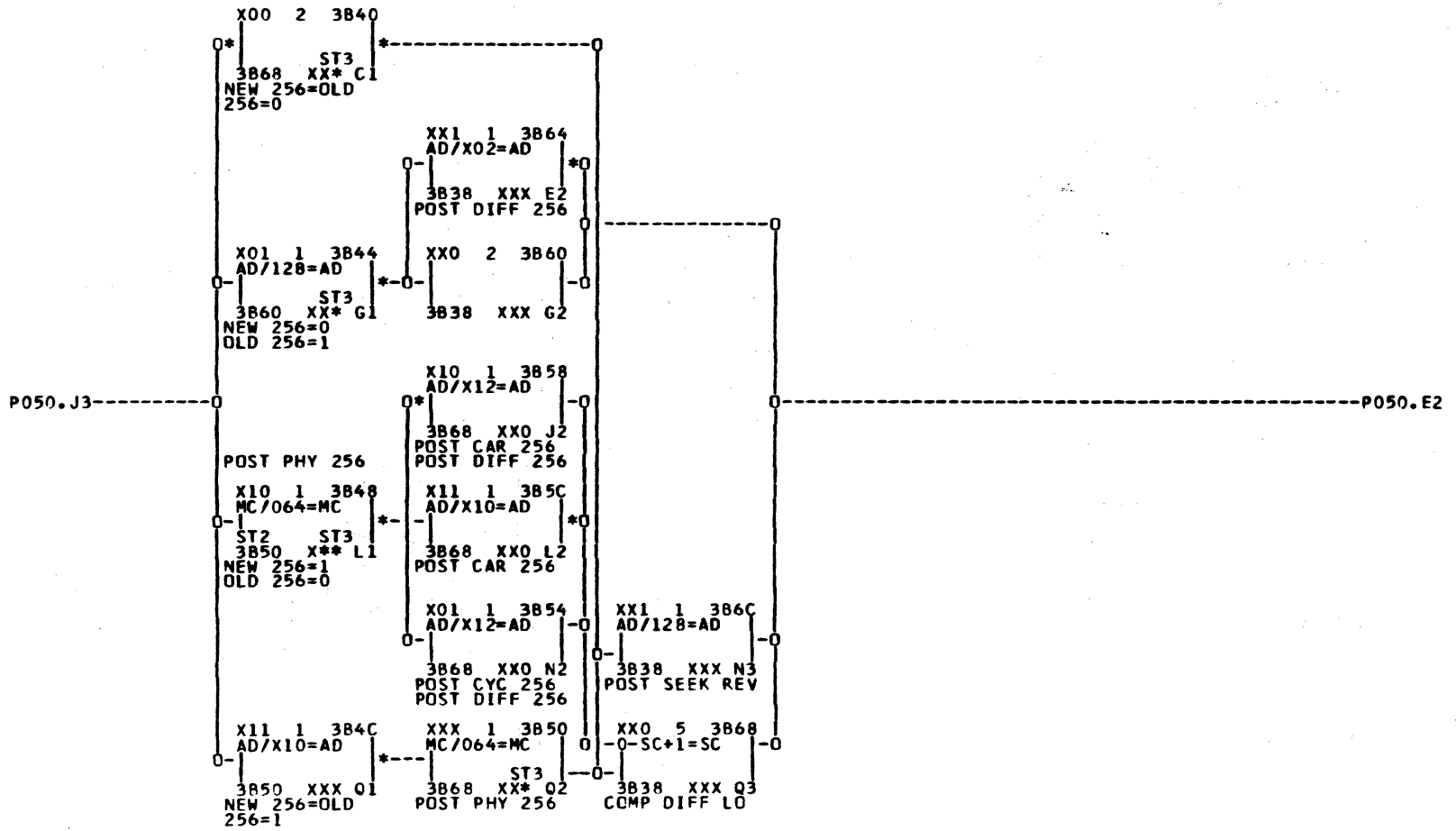
P010 CUDI--TAG GATE GENERATION.
MICRO 04



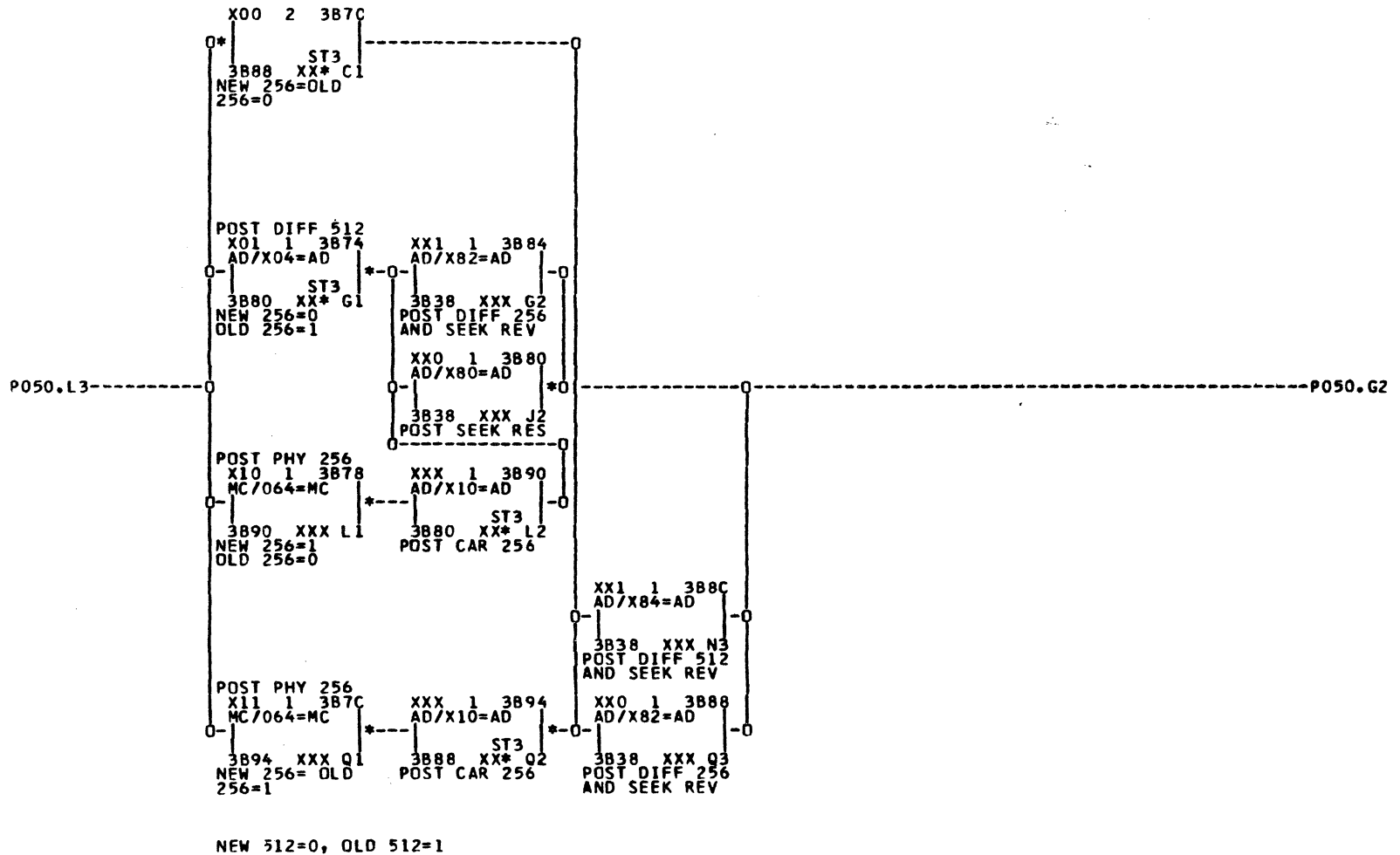


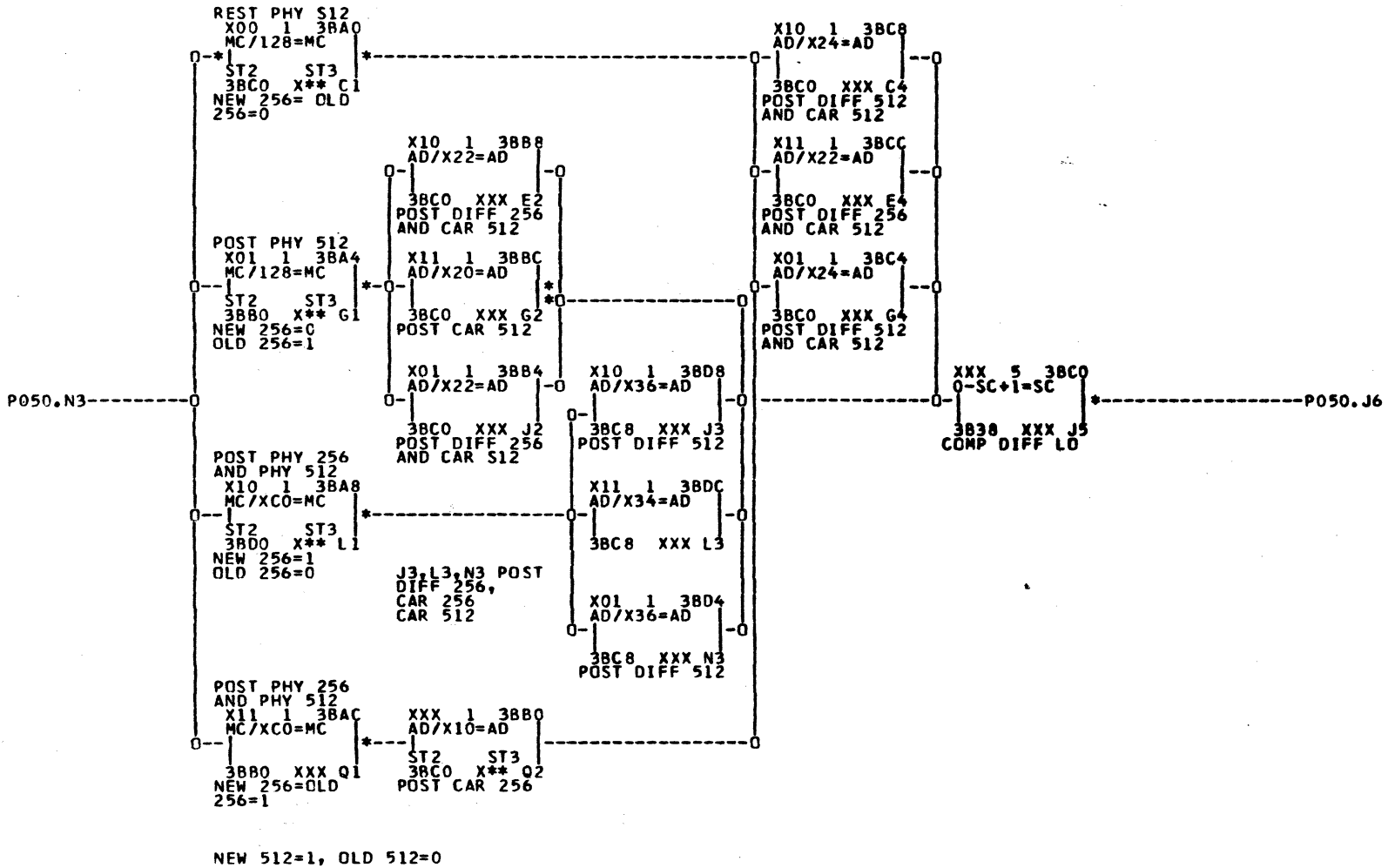


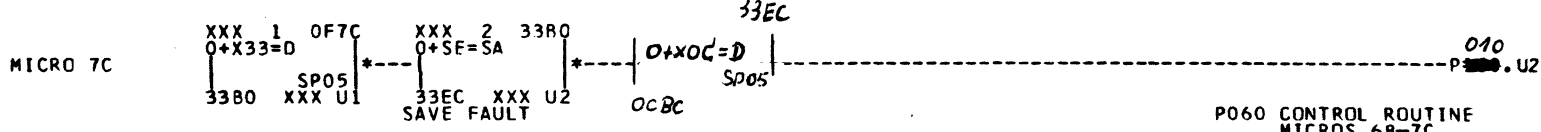
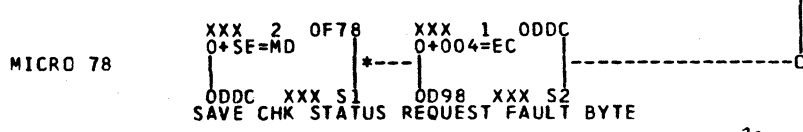
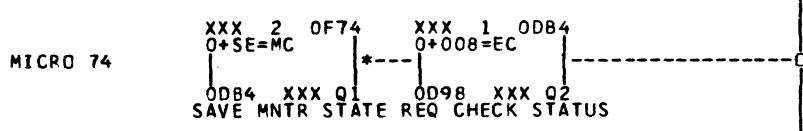
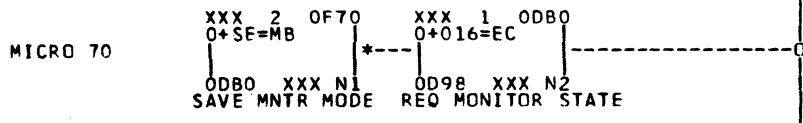
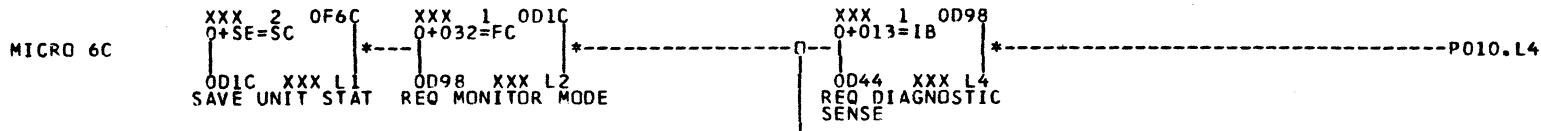
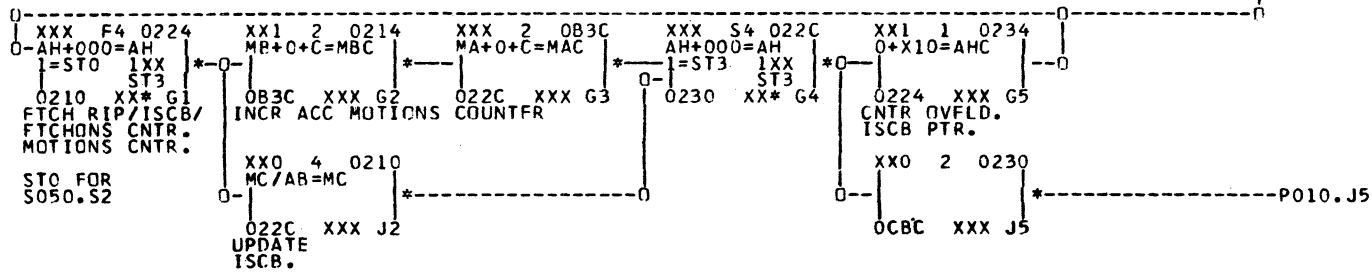
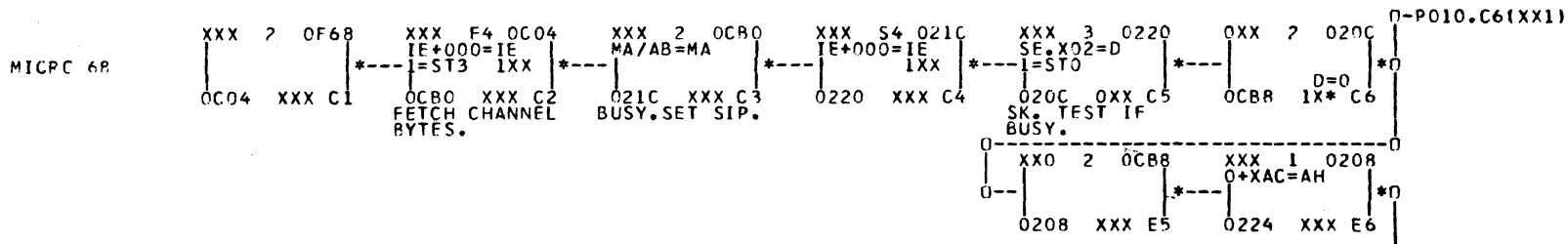




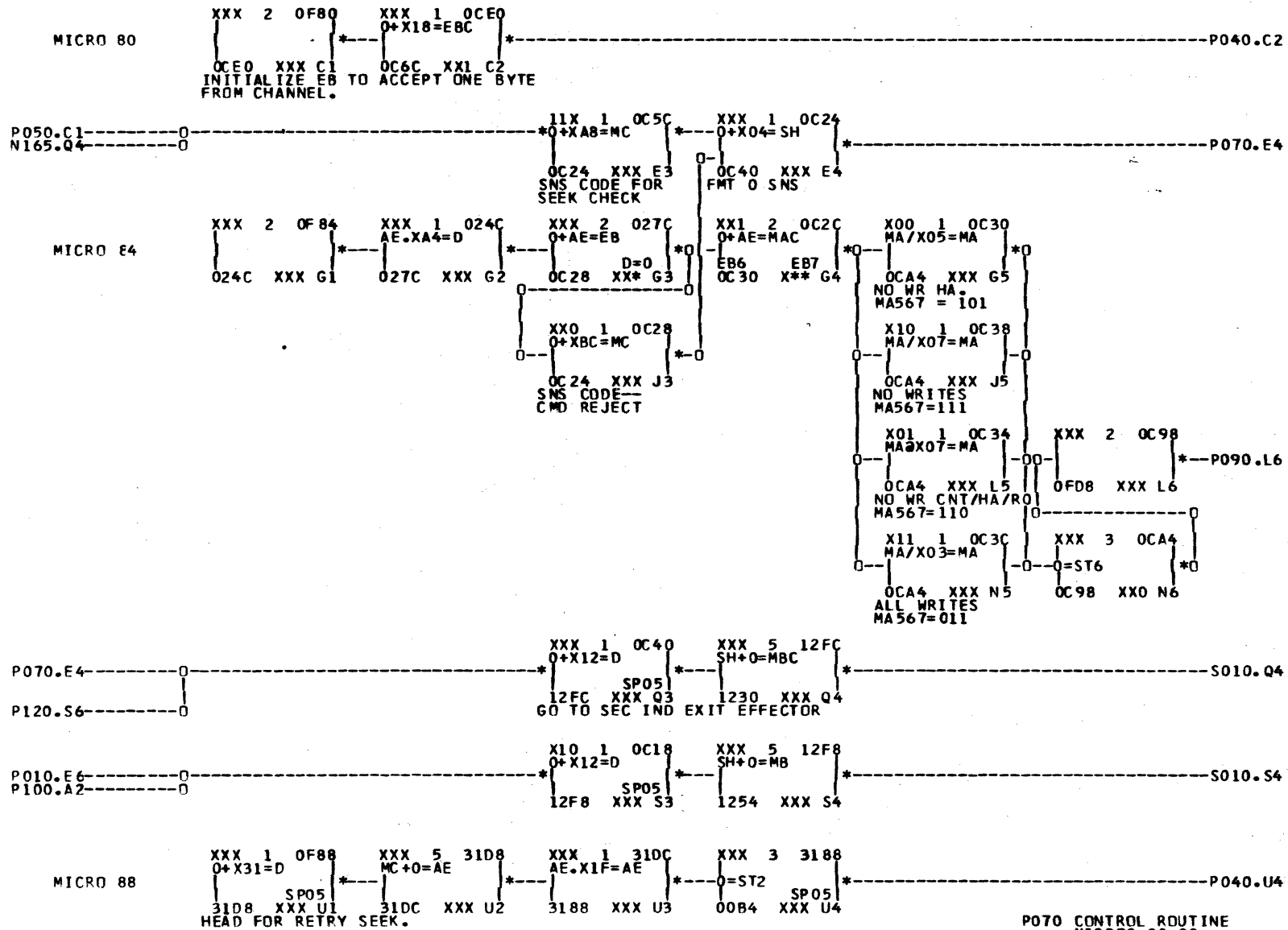
NEW 512=OLD 512=0 FROM P050.J3
 NEW 512=OLD 512=1 FROM P050.Q5

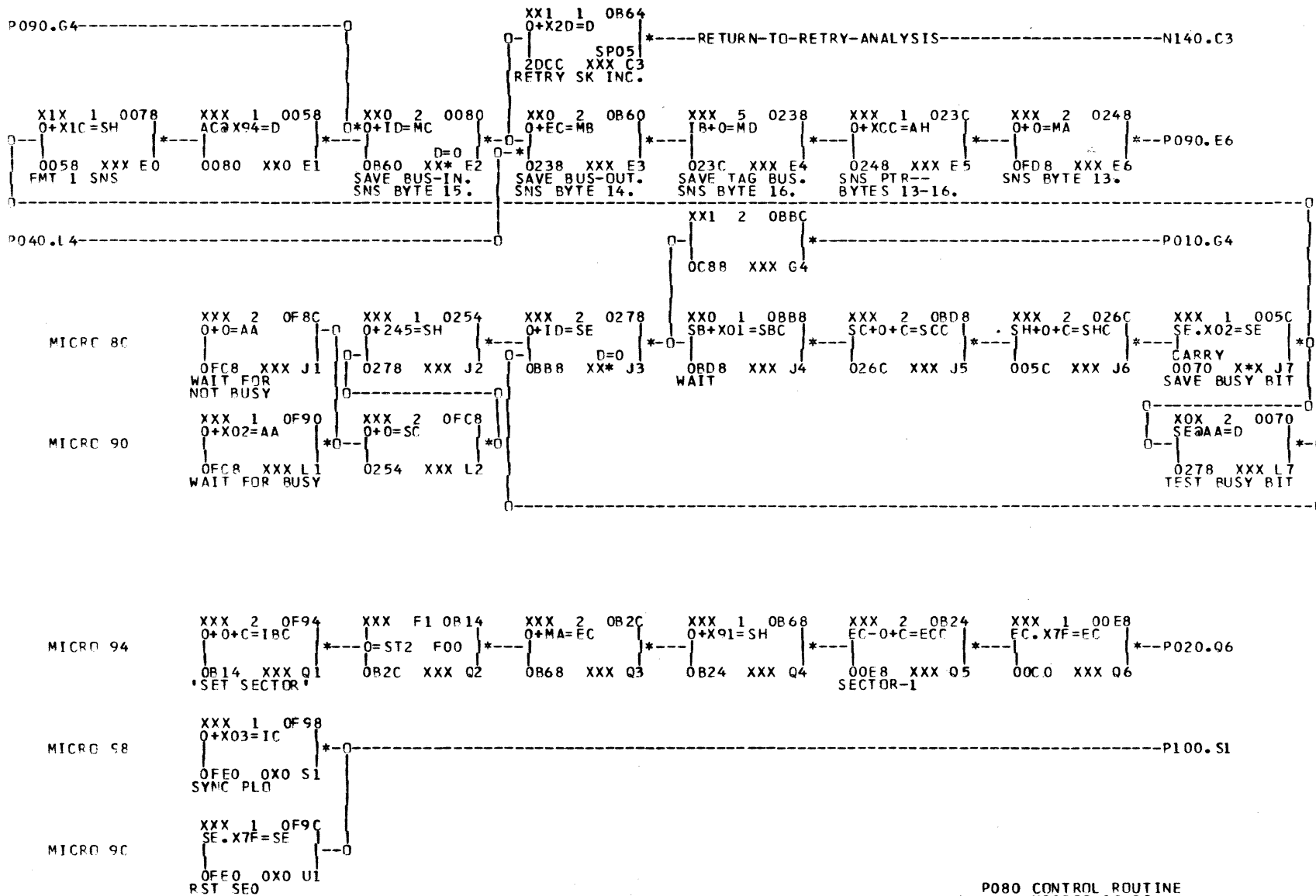


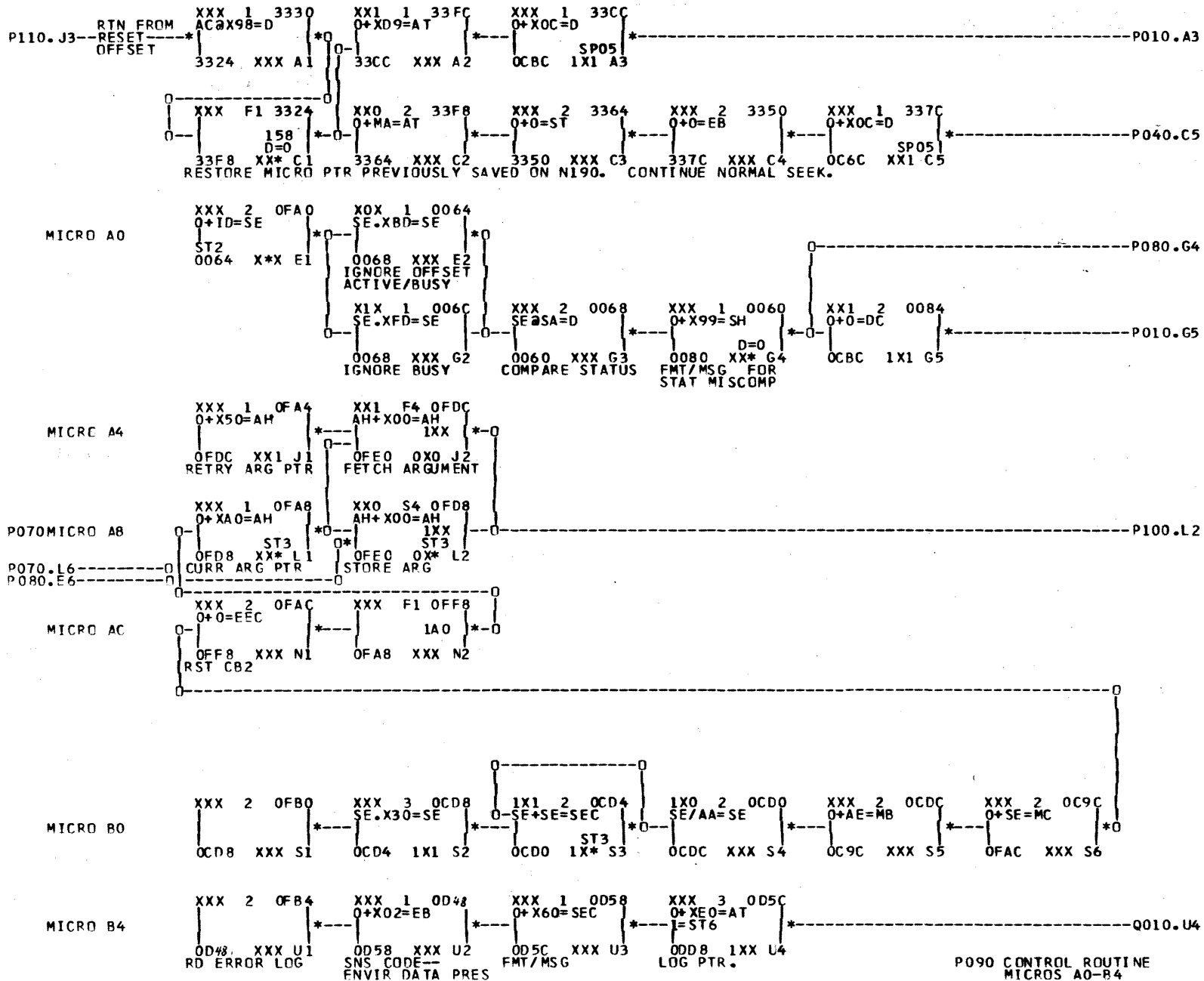


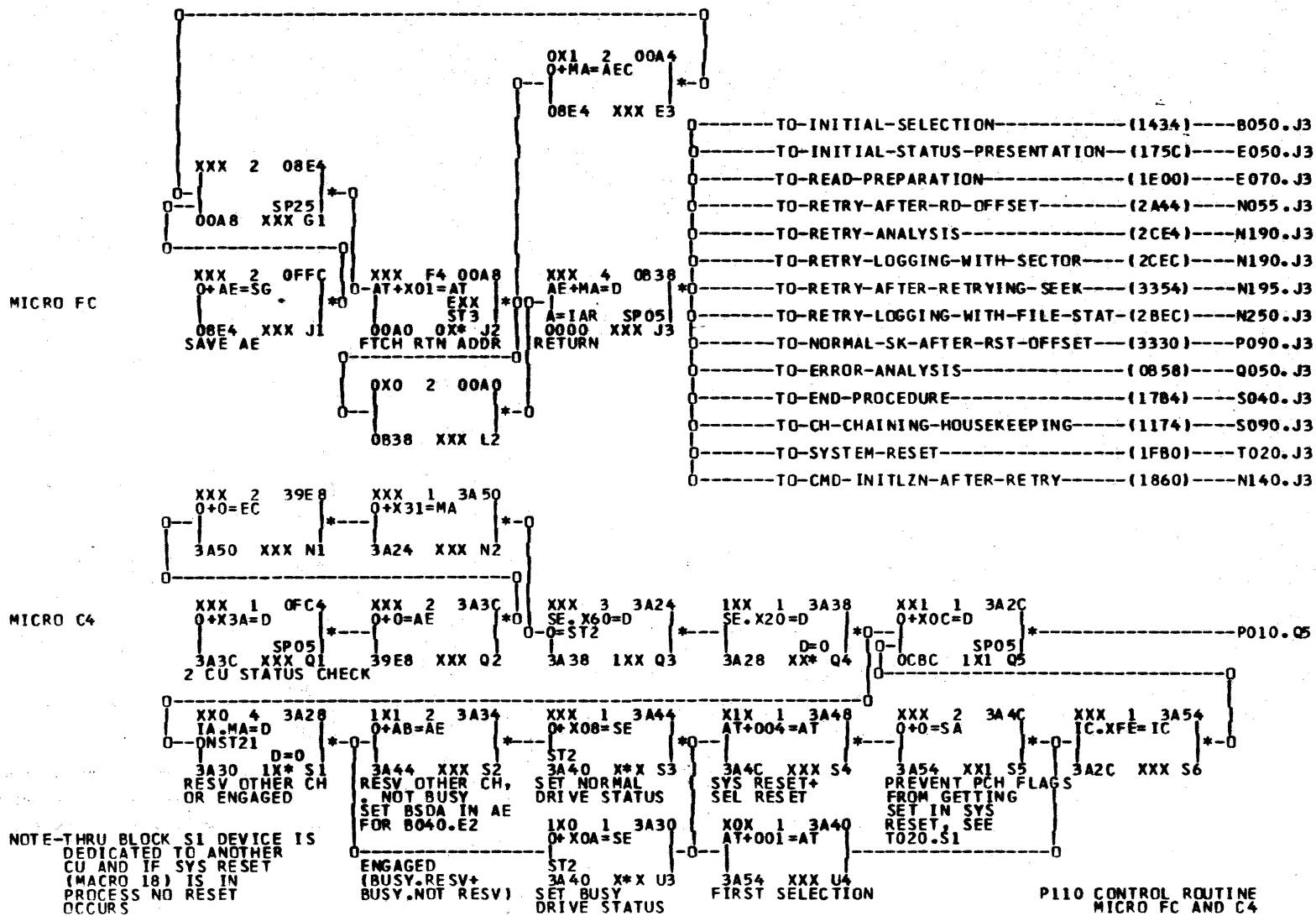


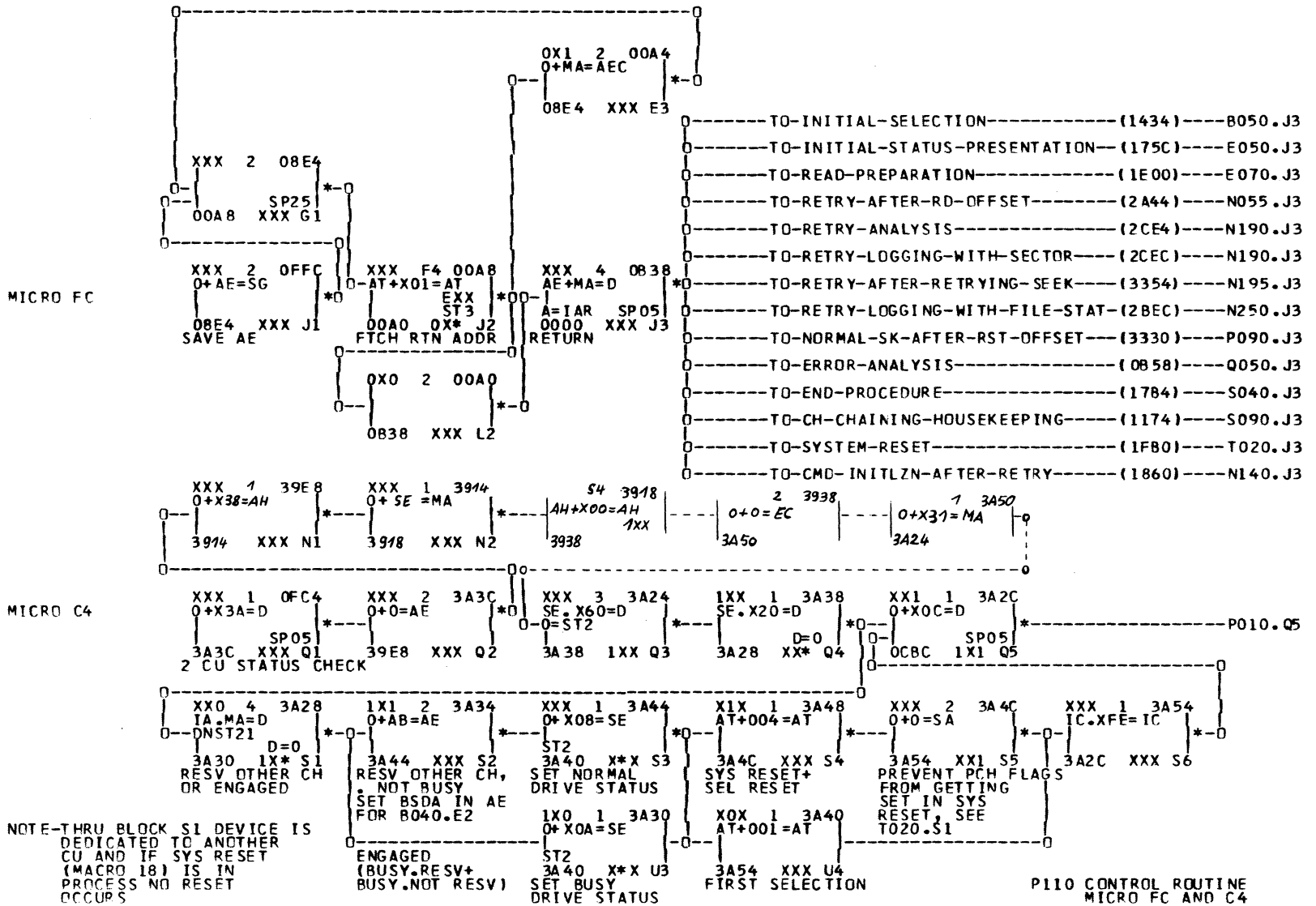
P060 CONTROL ROUTINE
MICROS 68-7C



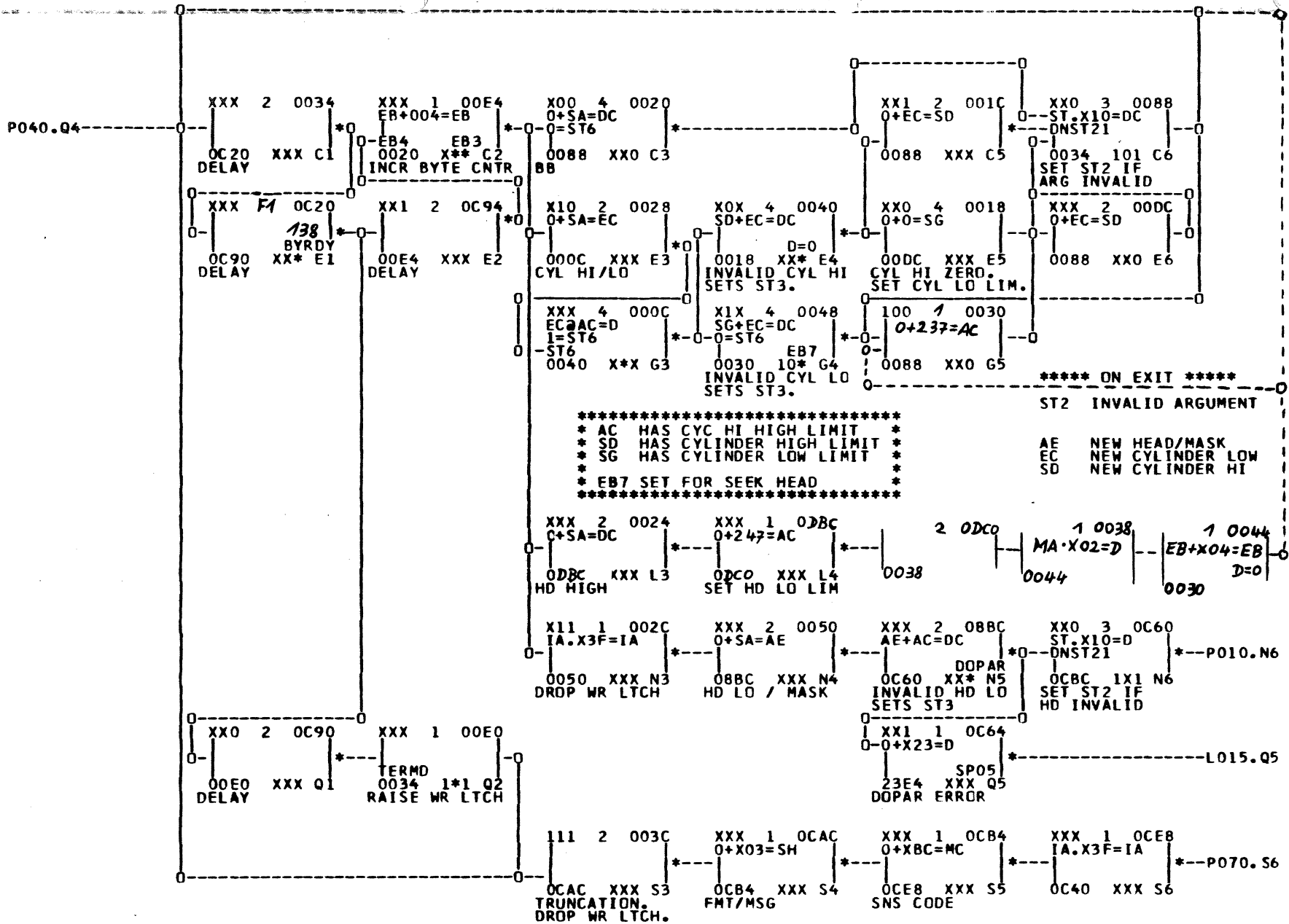




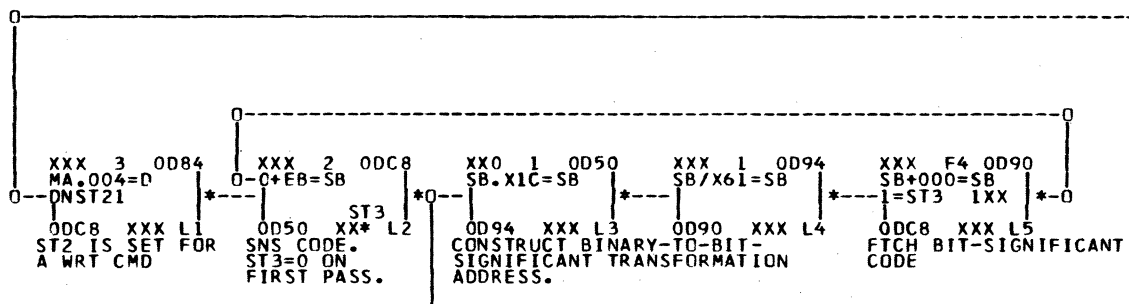
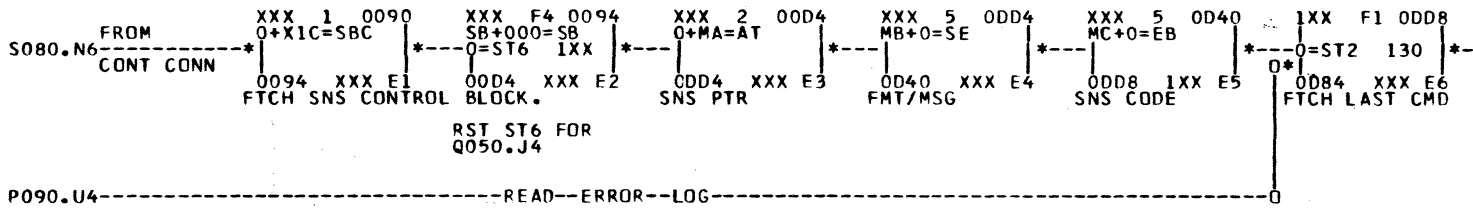




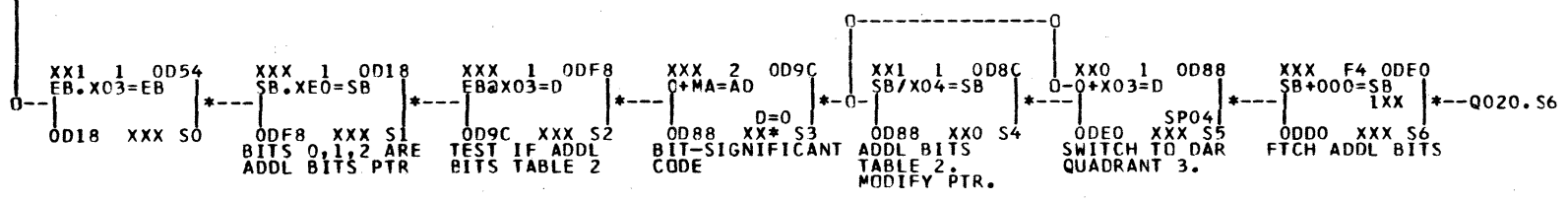


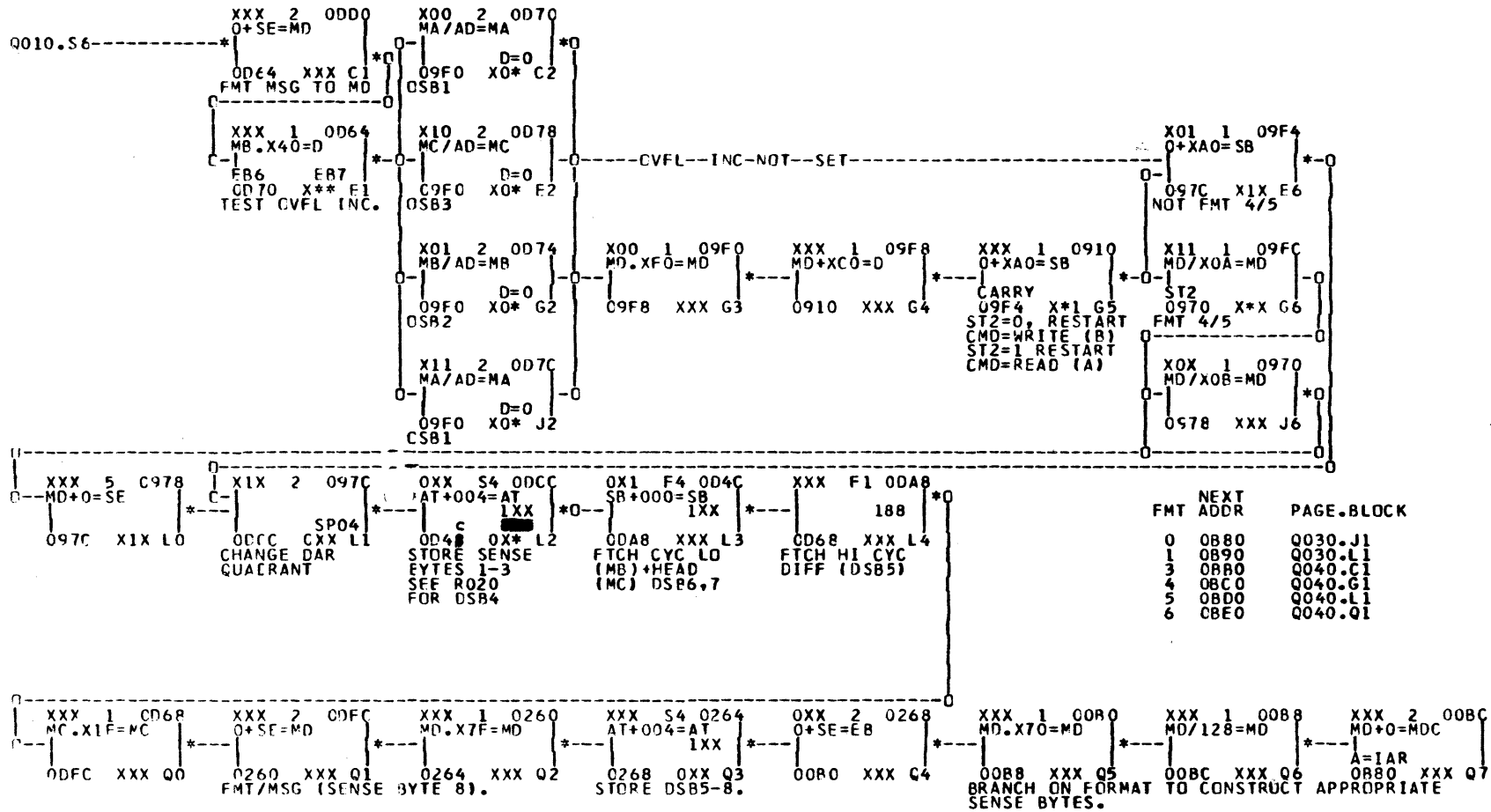




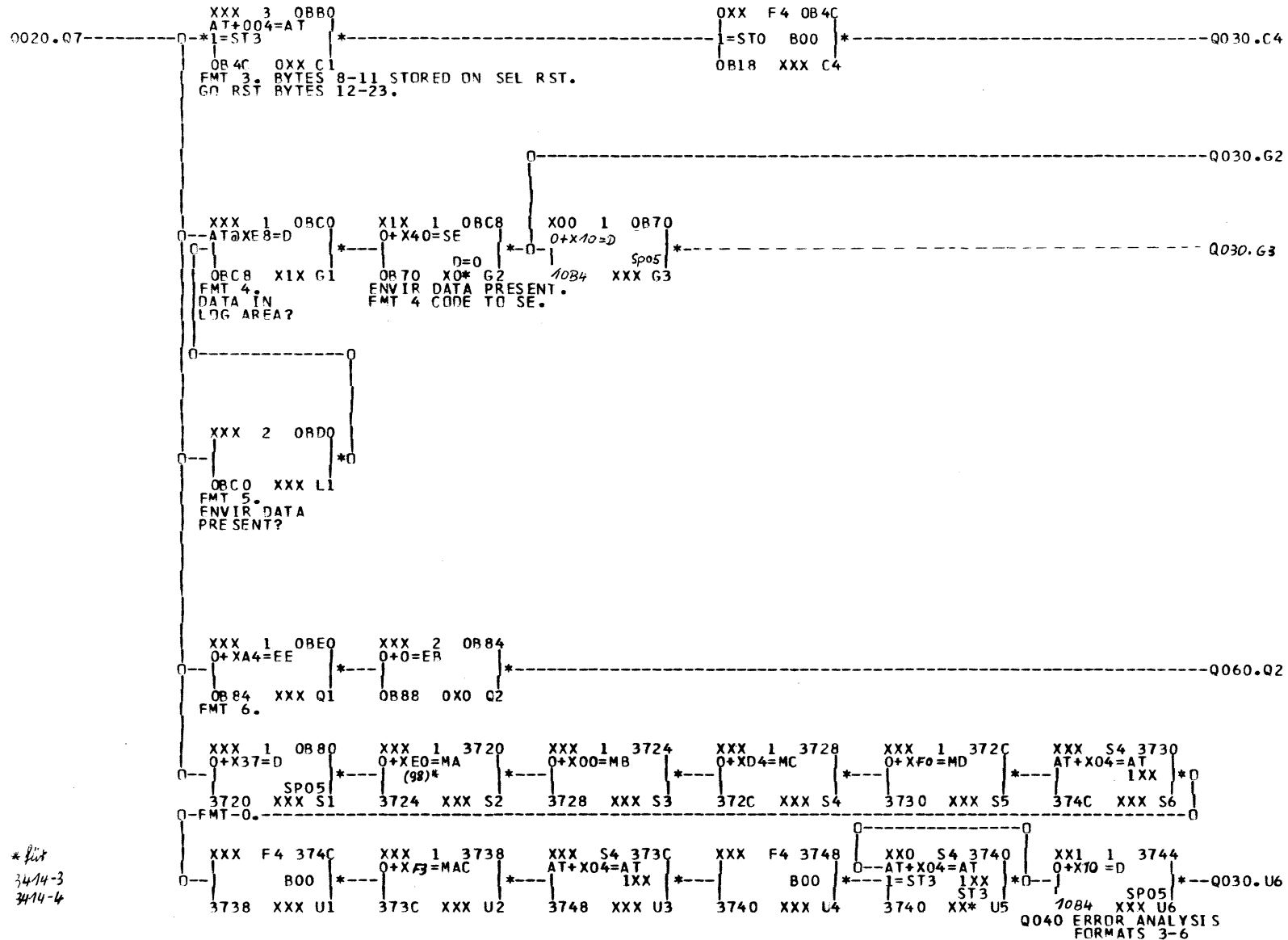


* SEE R020 FOR DATA CONSTANTS *
* FOR OSB GENERATION *

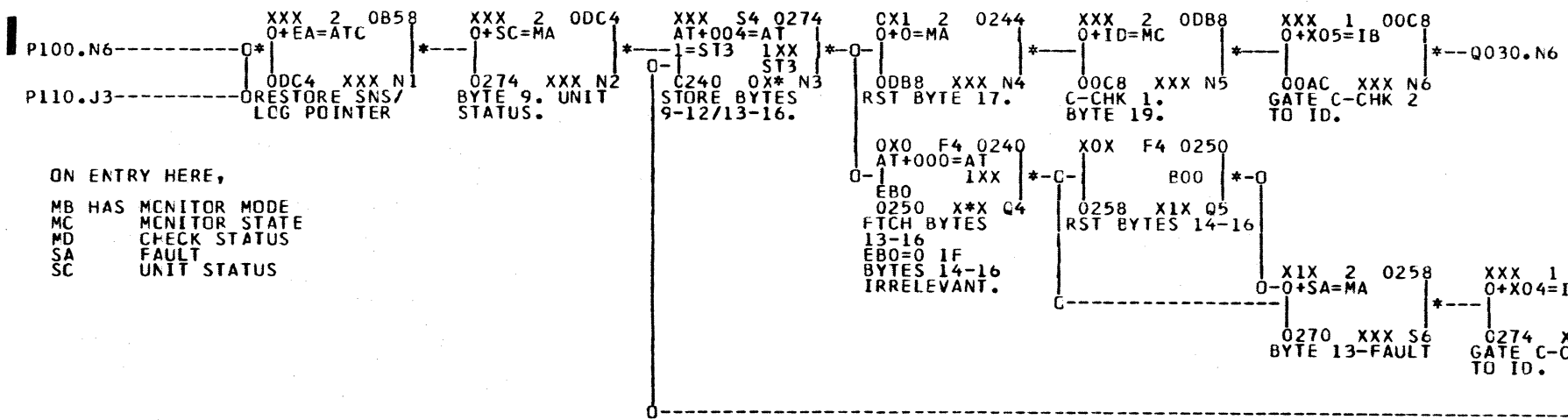
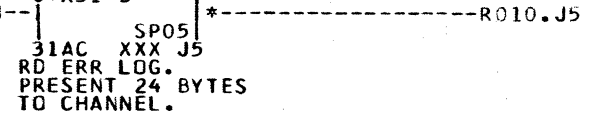
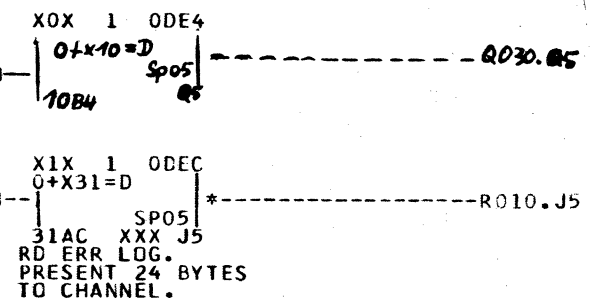
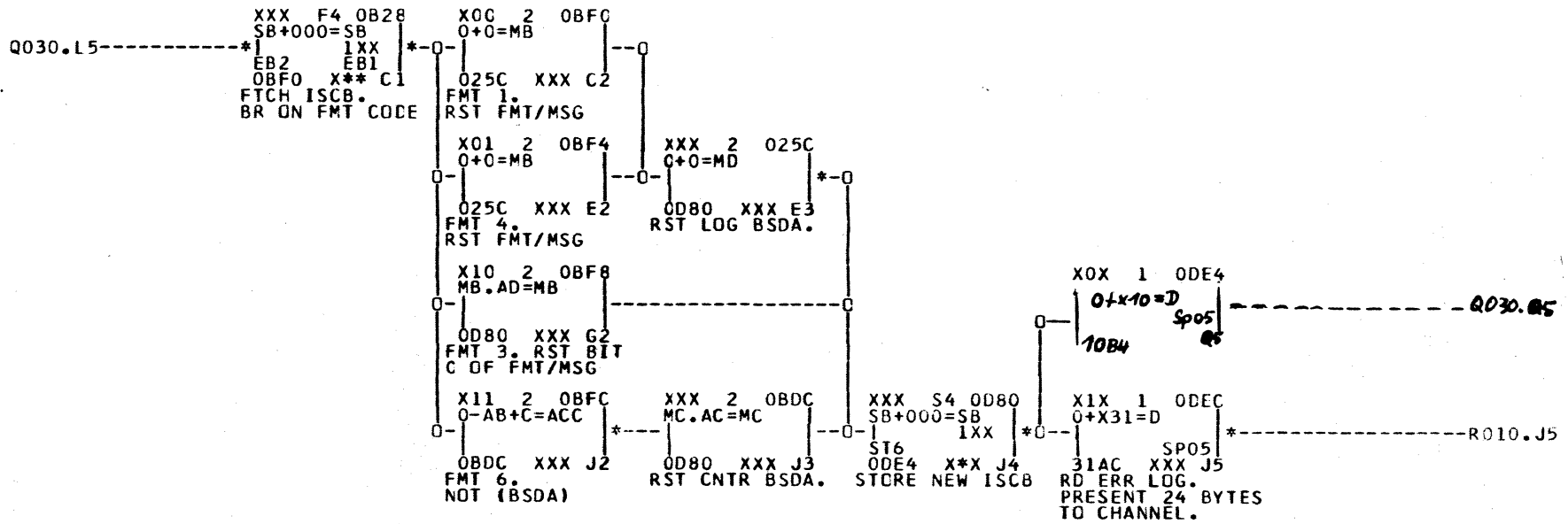


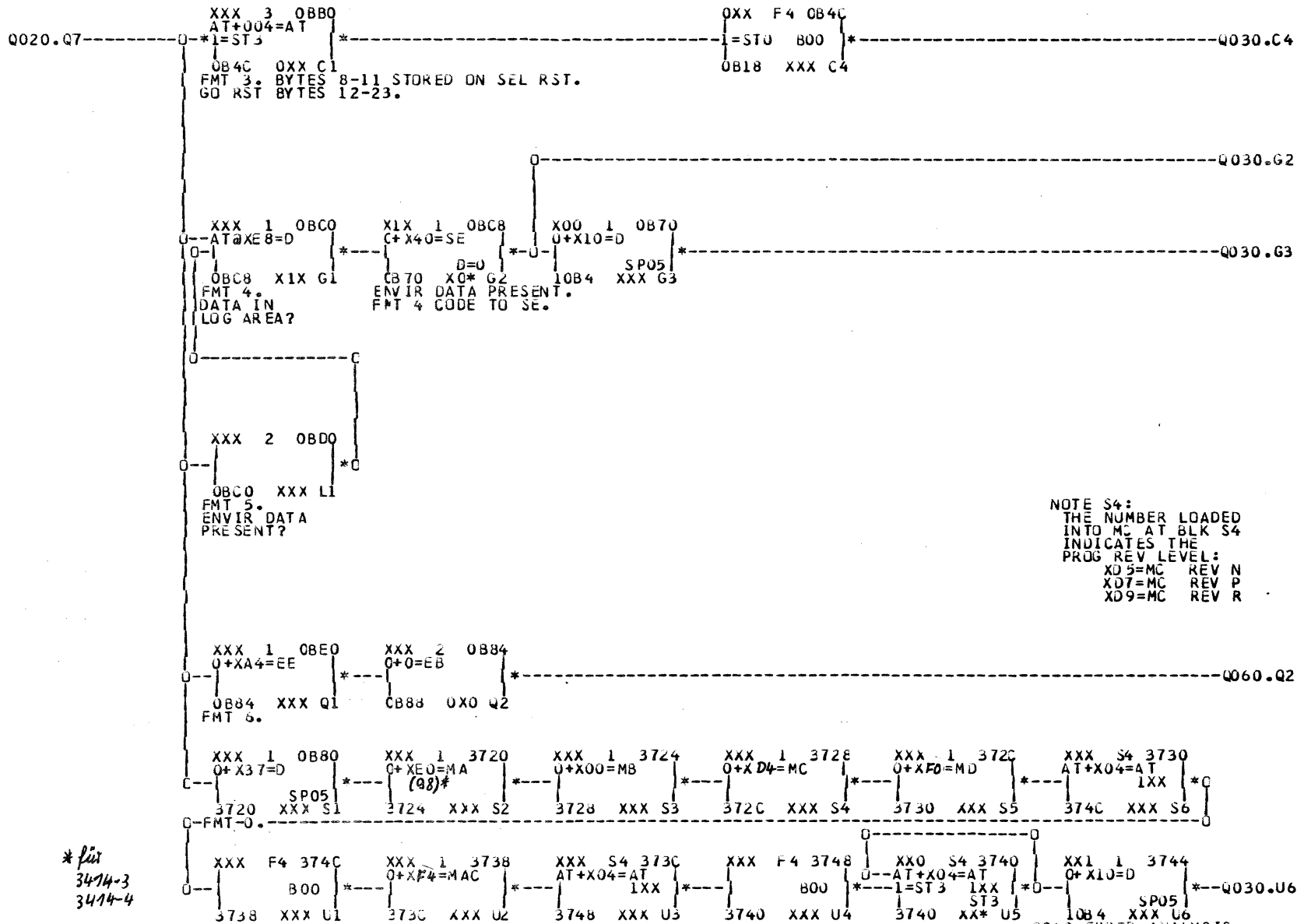


Q020 ERROR ANALYSIS
BRANCH ON FMT



* list
3414-3
3414-4

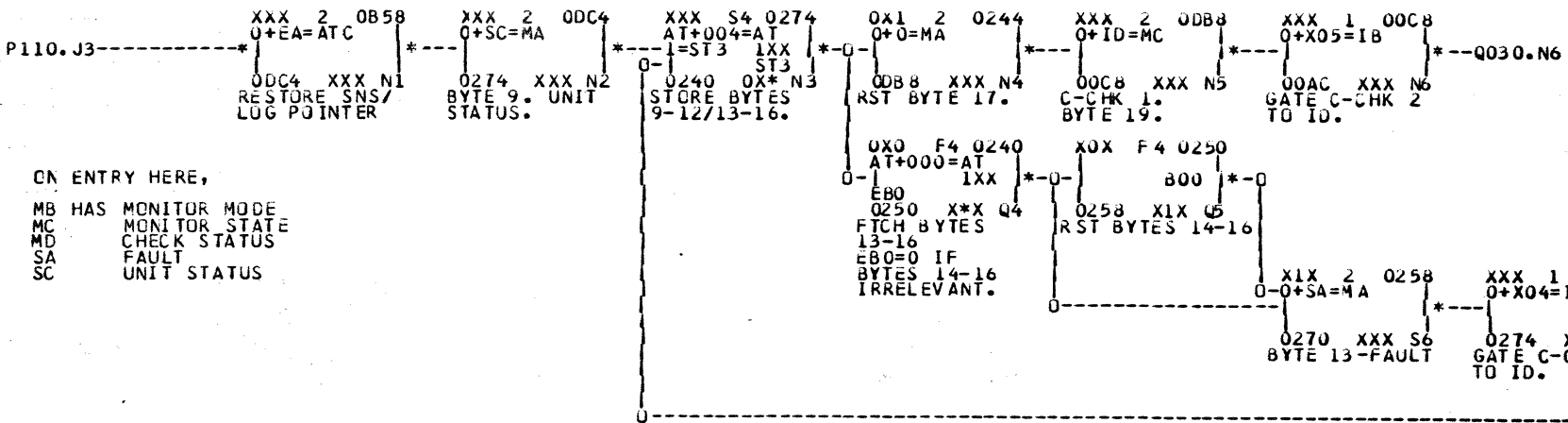
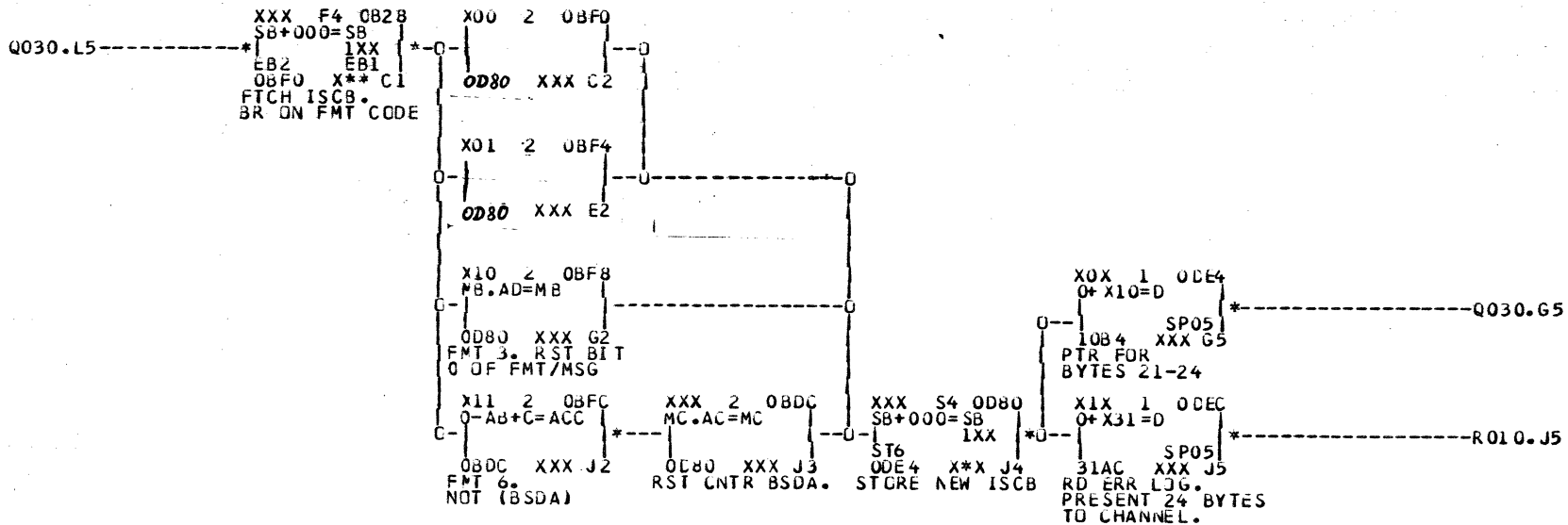




NOTE S4:
 THE NUMBER LOADED
 INTO MC AT BLK S4
 INDICATES THE
 PROG REV LEVEL:
 XD5=MC REV N
 XD7=MC REV P
 XD9=MC REV R

* fix
 3474-3
 3474-4

Q040 ERROR ANALYSIS
 FORMATS 3-6



Q060.S4

Q040.Q2

0X0 F4 0B88
EE+004=EE
*1=ST3 1XX
EB7
0BE8 01+ C1
FTCH CURR
BYTES READ

THIS PAGE CHECKS IF EITHER THE READ USAGE
OR THE ACCESS MOTIONS COUNTER OVERFLOWED,
AND STORES THE SAME BYTES INTO THE SENSE
AREA. IF EITHER COUNTER OVERFLOWED, THE
RESPECTIVE COUNT IS SET TO ITS MAXIMUM
VALUE. AFTER TRANSFER TO THE SENSE
AREA, THE PERMANENT DEVICE AREA IS
INITIALIZED TO ITS INITIAL VALUE.

011 2 0BEC
EB+0+C=EBC
007C 1X1 C5

0* 1X1 2 007C
EB5
0B98 XX* C6

0X1 1 0B9C
0+XF8=EE
0B48 XXX E6
FETCH OVERRUN COUNTERS

XXX F4 0B48
EE+000=EE
1XX
0B98 XX0 E7

0X0 S4 0B98
0-AT+004=AT
1XX
EB5
0B88 0X* G6

*0-Q070.G6

SNS INFO
STORED; GO
INITIALIZE
PERM DEV
AREA

1X1 2 0BCC
0+0=MC
CARRY
0BE4 0*1 N4
CARRY=0 IF ACC
MOTIONS CNTR
OVFLD.

001 1 0BE4
0+127=MA
0BD4 XXX N6
SET CNTR TO MAX
VALUE

XXX 1 0BD4
0+XFF=MB
0BEC 011 N7

010 5 0BE8
MC+0=AG
0B94 XXX S2
PHYS ID

XXX 1 0B94
MA+128=MA
EB6
0BC4 X*X S3

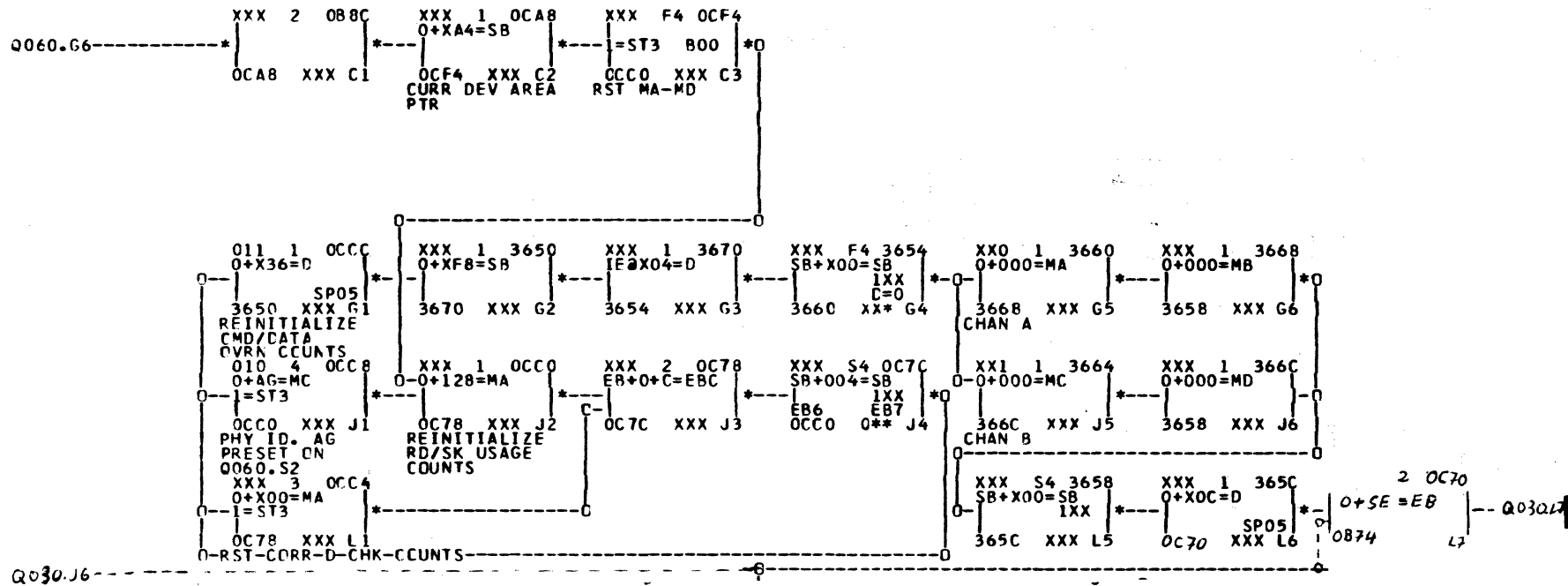
0X0 2 0BC4
EB+0+C=EBC
CARRY
0074 X*X S4
CARRY=0 IF RD
USAGE OVFLD.

0X0 2 0074
0-0+C=MCC
OEOC XXX S5
SET CNTR TO MAX
VALUE

XXX 2 0EOC
0-0+C=MDC
0BE4 001 S6

Q060.S4

Q060 ERROR ANALYSIS.
UPDATE USAGE/MOTIONS CNTRS.

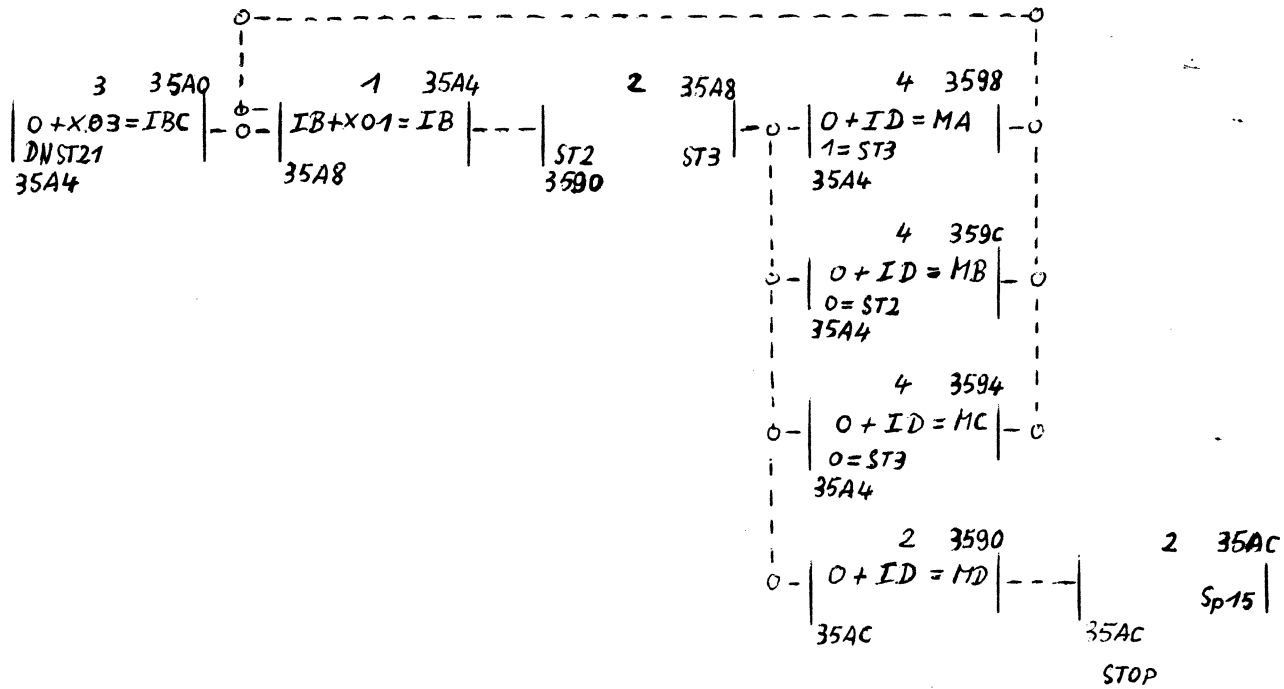


PUP NO. 70631700

DPC NO. 73687900

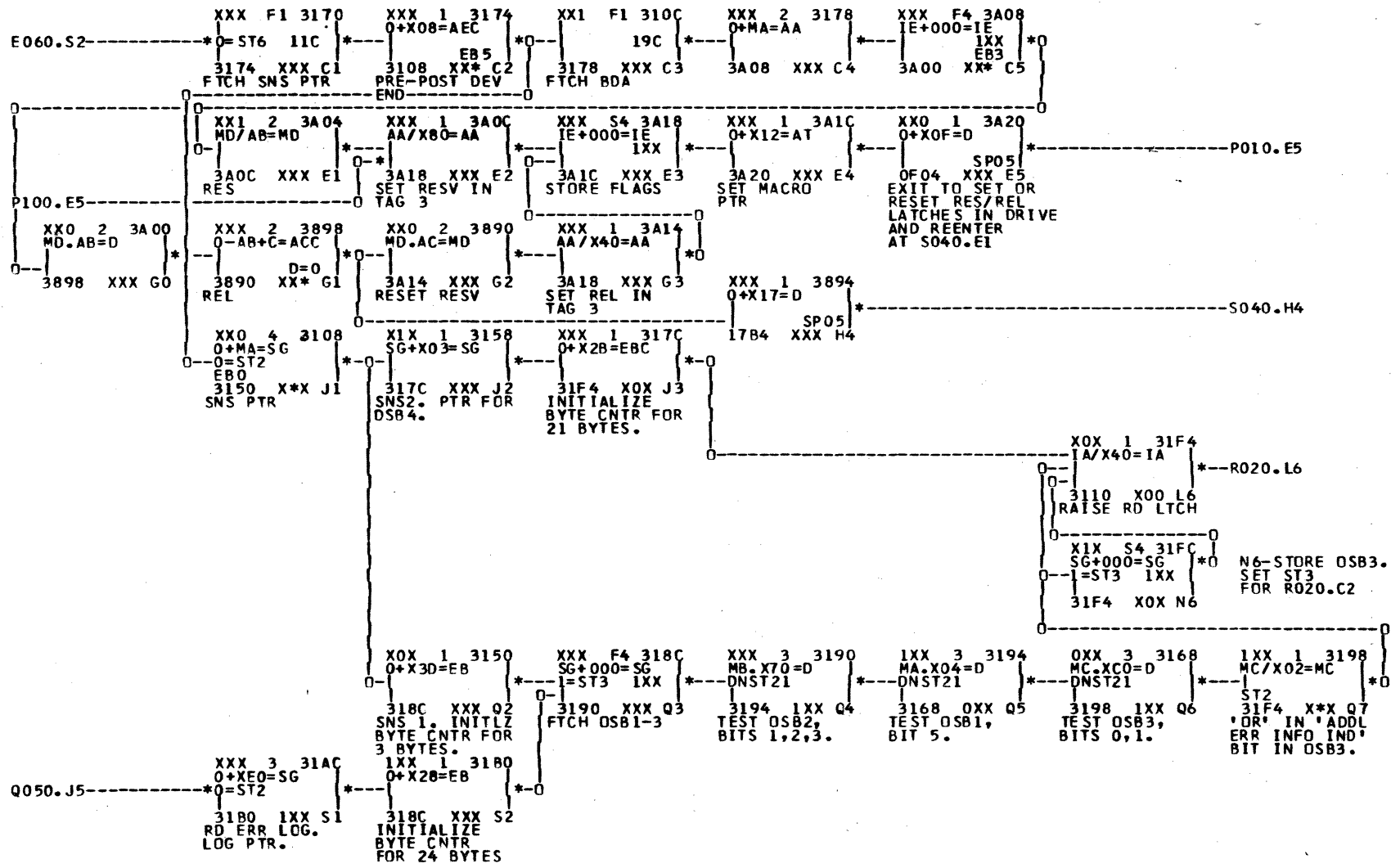
2-146

Q070 ERROR ANALYSIS
REINITIALIZE CURR DEV AREA.
BRANCH TO CONSTRUCT SYMPTCM COD
REVISION L3 M1

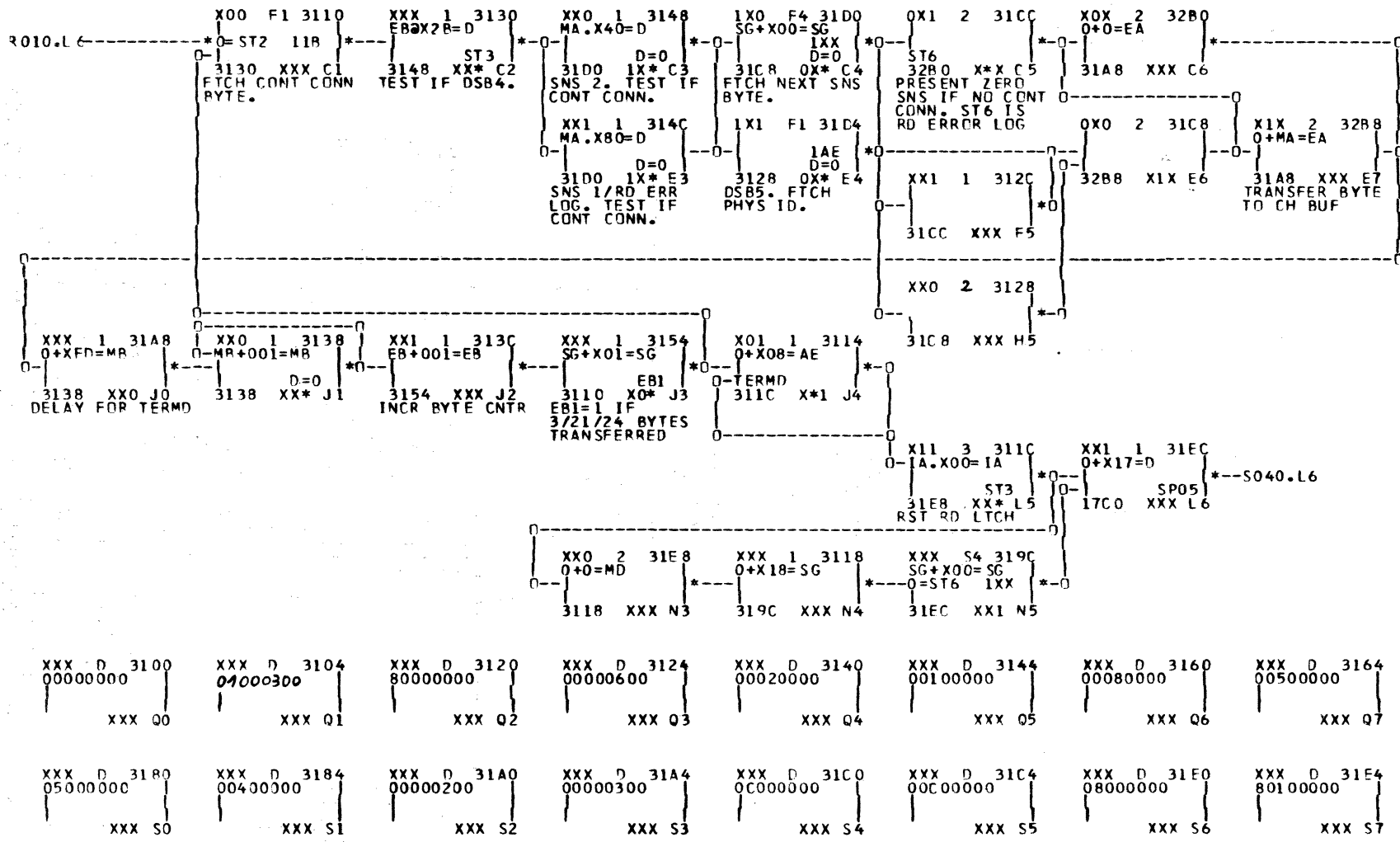


2-147/148/149

Q080 DISPLAY C-CHECKS
ON MA, MB, MC, MD
M1

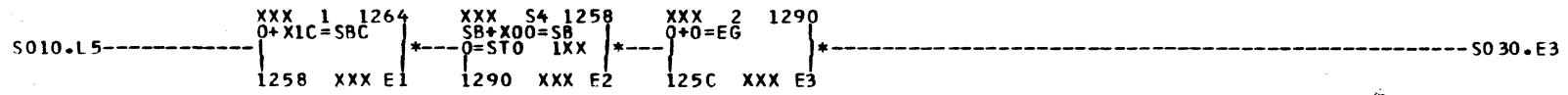


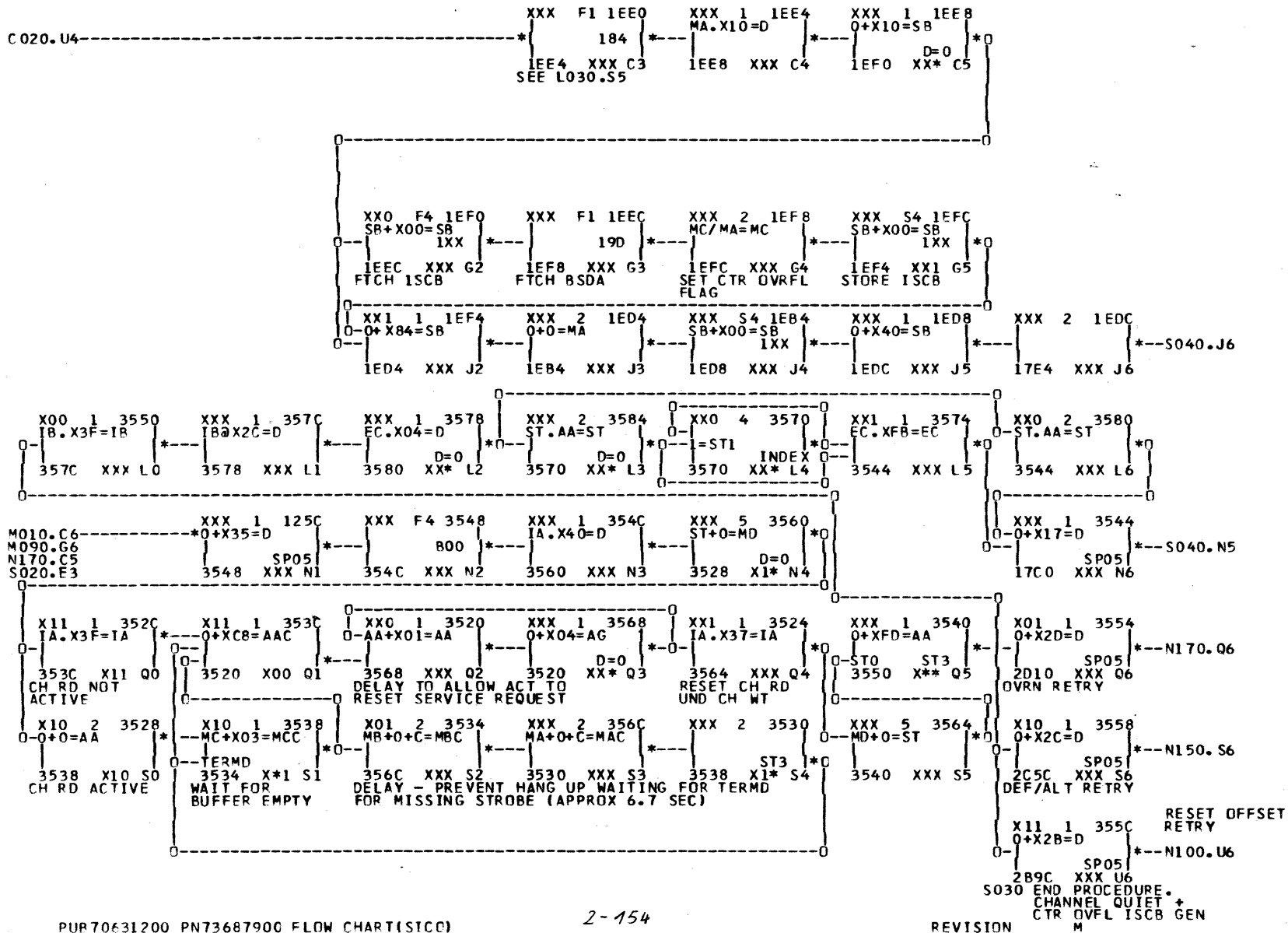
R010 SNS ROUTINE--PREPARE FOR SNS BYTE TRANSFER

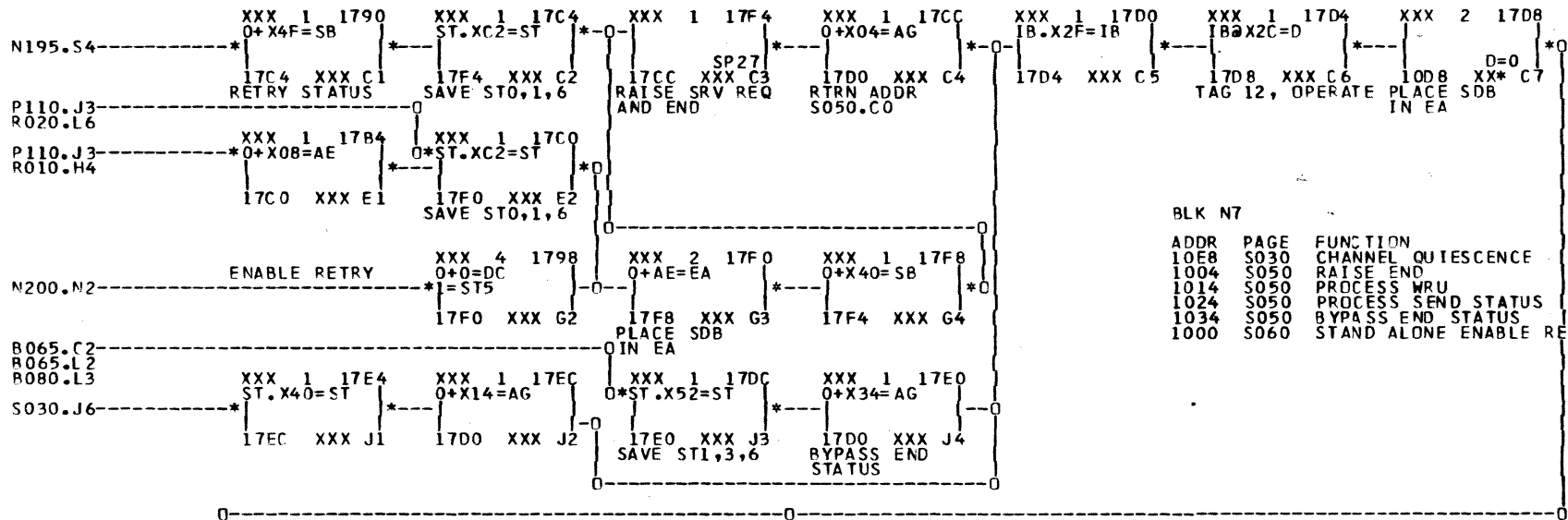


DATA CONSTANTS FOR OSB GENERATION

R020 SNS ROUTINE--PRESENT
SNS BYTES TO CHANNEL

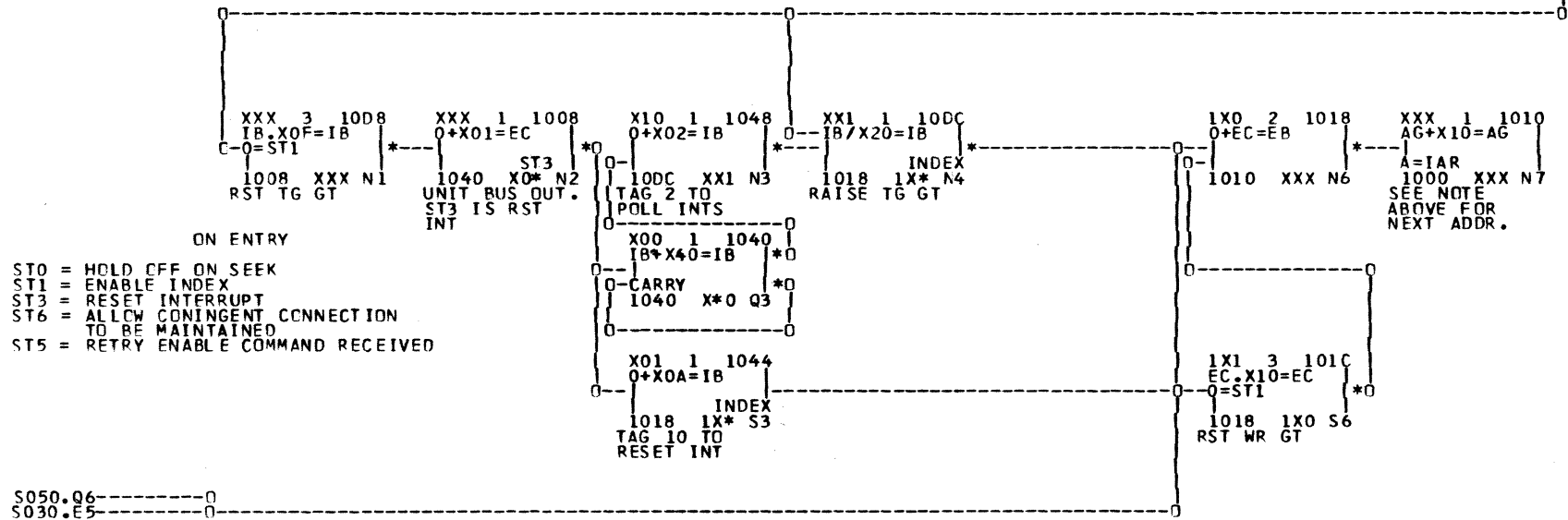






BLK N7

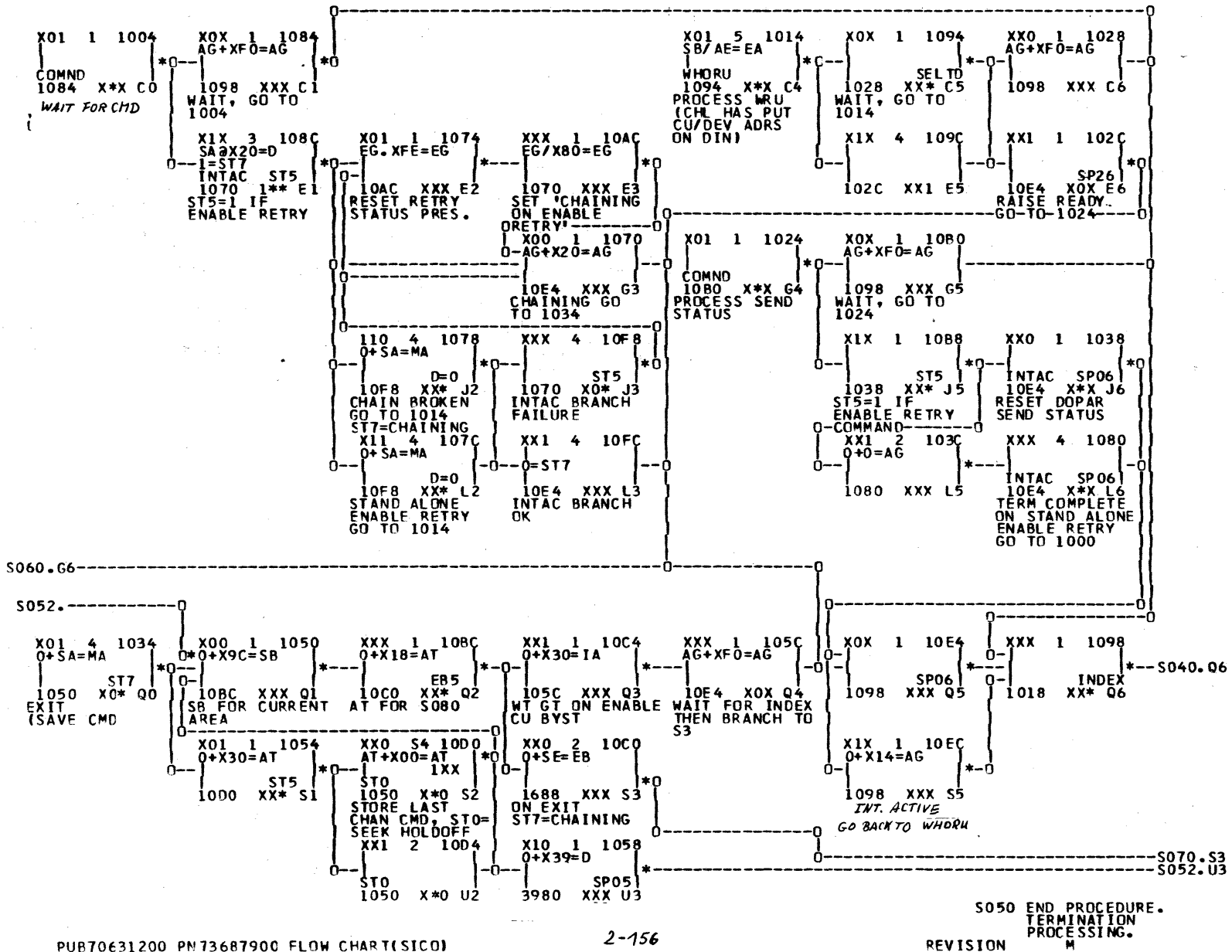
ADDR	PAGE	FUNCTION
10E8	S030	CHANNEL QUIESCENCE
1004	S050	RAISE END
1014	S050	PROCESS WRU
1024	S050	PROCESS SEND STATUS
1034	S050	BYPASS END STATUS
1000	S060	STAND ALONE ENABLE RETRY

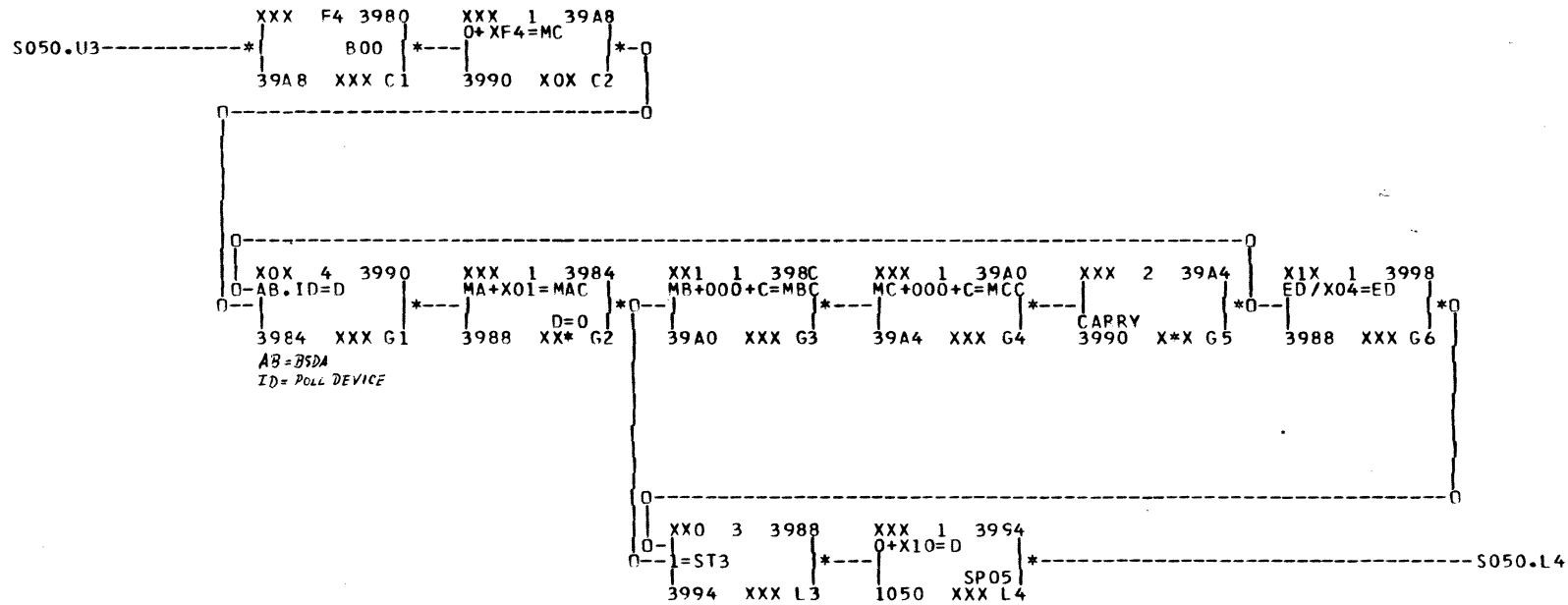


ON ENTRY
 ST0 = HOLD OFF ON SEEK
 ST1 = ENABLE INDEX
 ST3 = RESET INTERRUPT
 ST6 = ALLOW CONINGENT CONNECTION TO BE MAINTAINED
 ST5 = RETRY ENABLE COMMAND RECEIVED

S050.Q6
 S030.E5

S040 END PROCEDURE.
 STATUS TO BUS-IN.

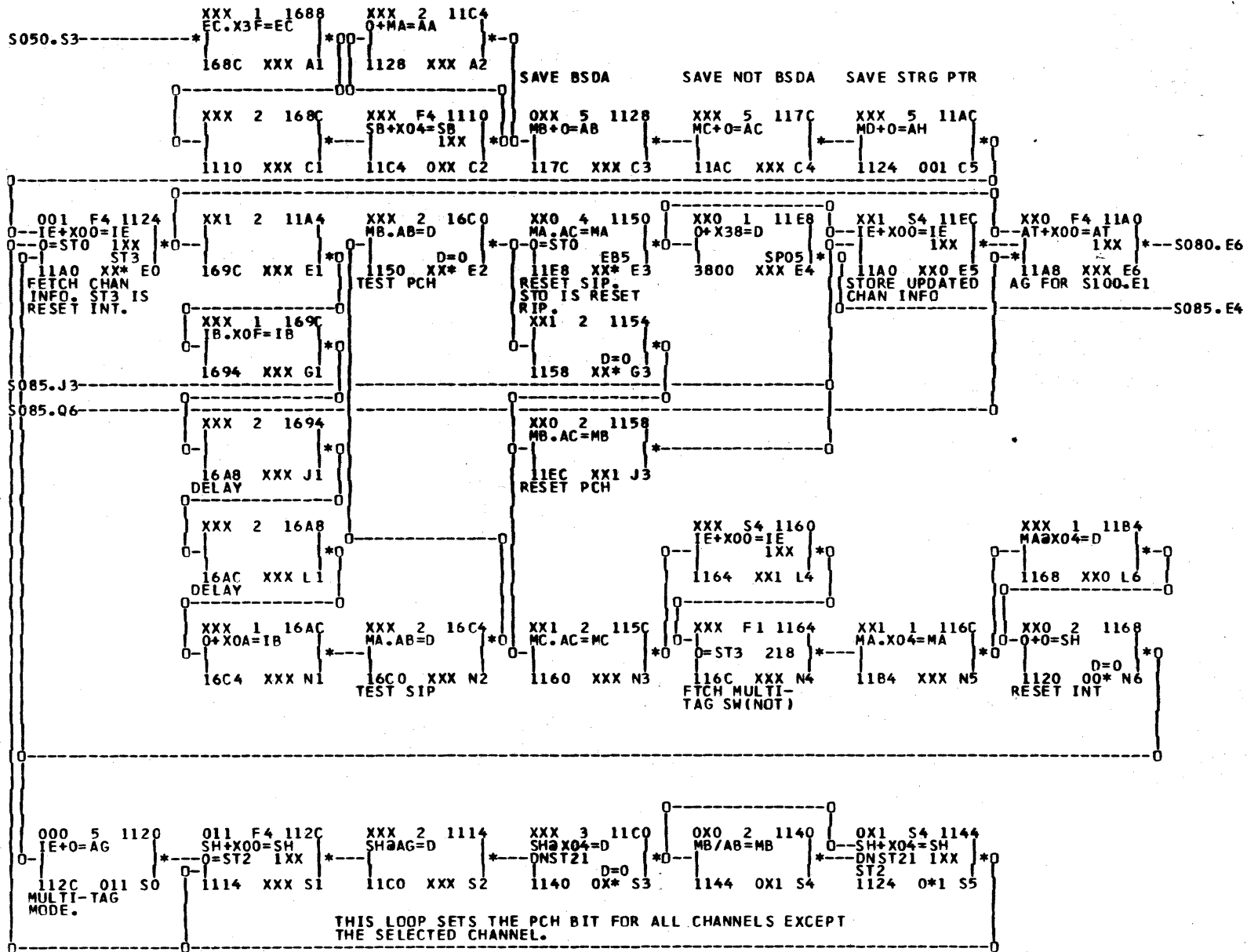


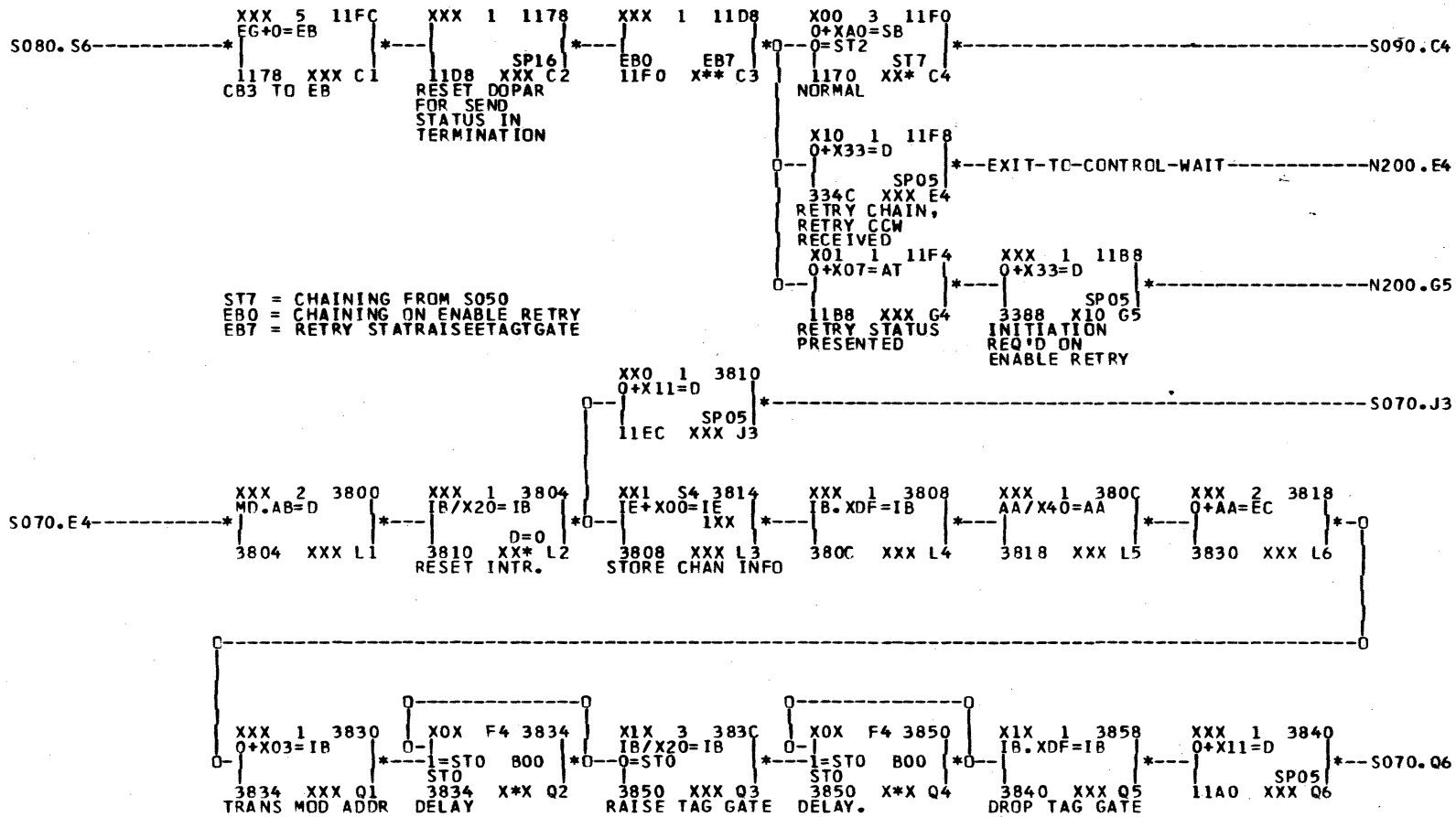




ENTER HERE
FROM S04C.N7

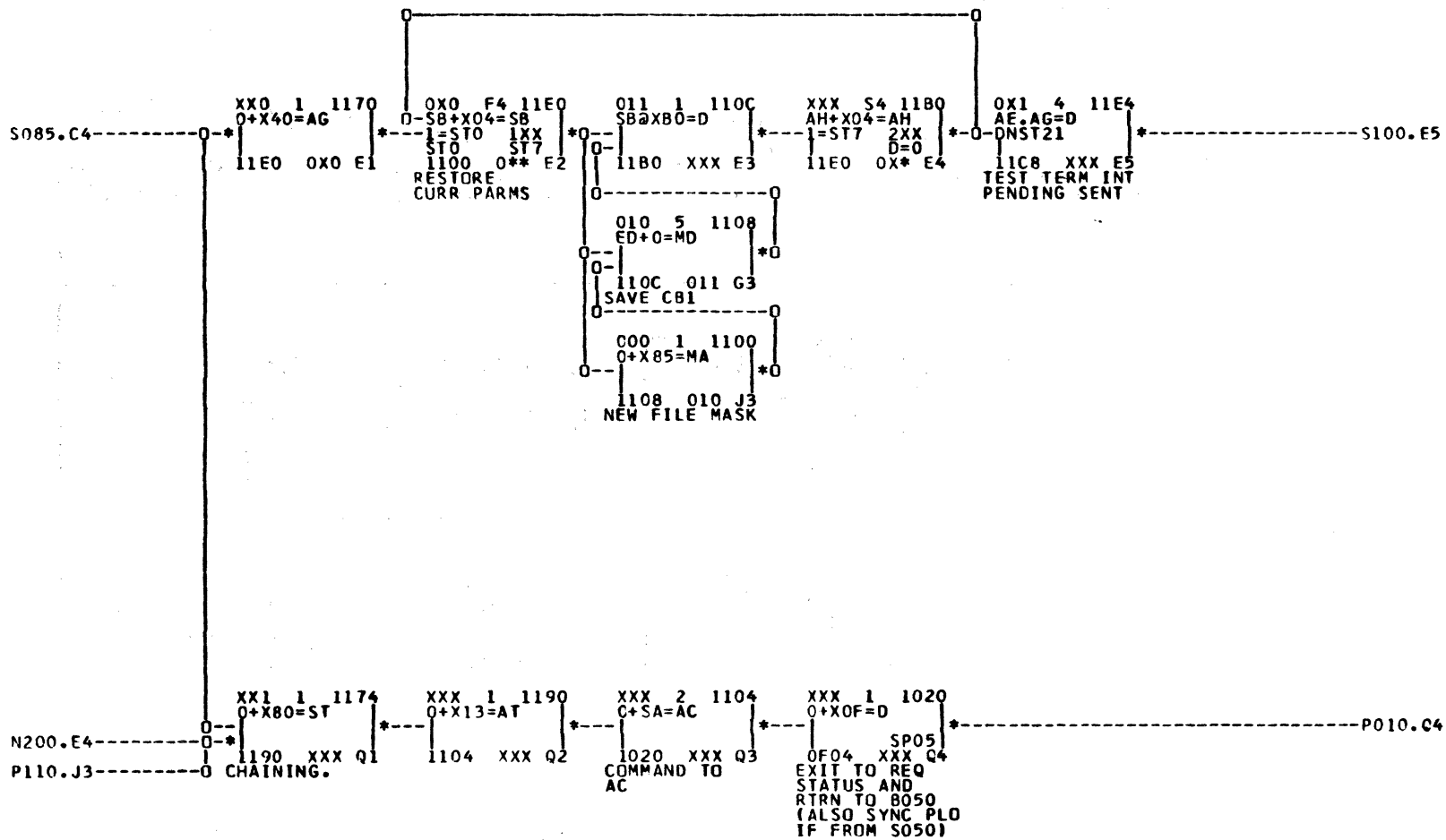
```
XXX F4 1000      XXX 1 10CC      XXX S4 10C8      XXX 1 1030      XXX 1 1088
O=ST5 B00  *--- O+X3C=AT  *--- AT+X00=AT  *--- AG+X24=AG  *--- EG.XFE=EG  *---S050.G6
10CC XXX G2      10C8 XXX G3      1030 XXX G4      1088 XXX G5      10E4 XXX G6
STAND ALONE      RESET RETRY      GO TO 1034      RESET RETRY
ENABLE RETRY      RESV.
```

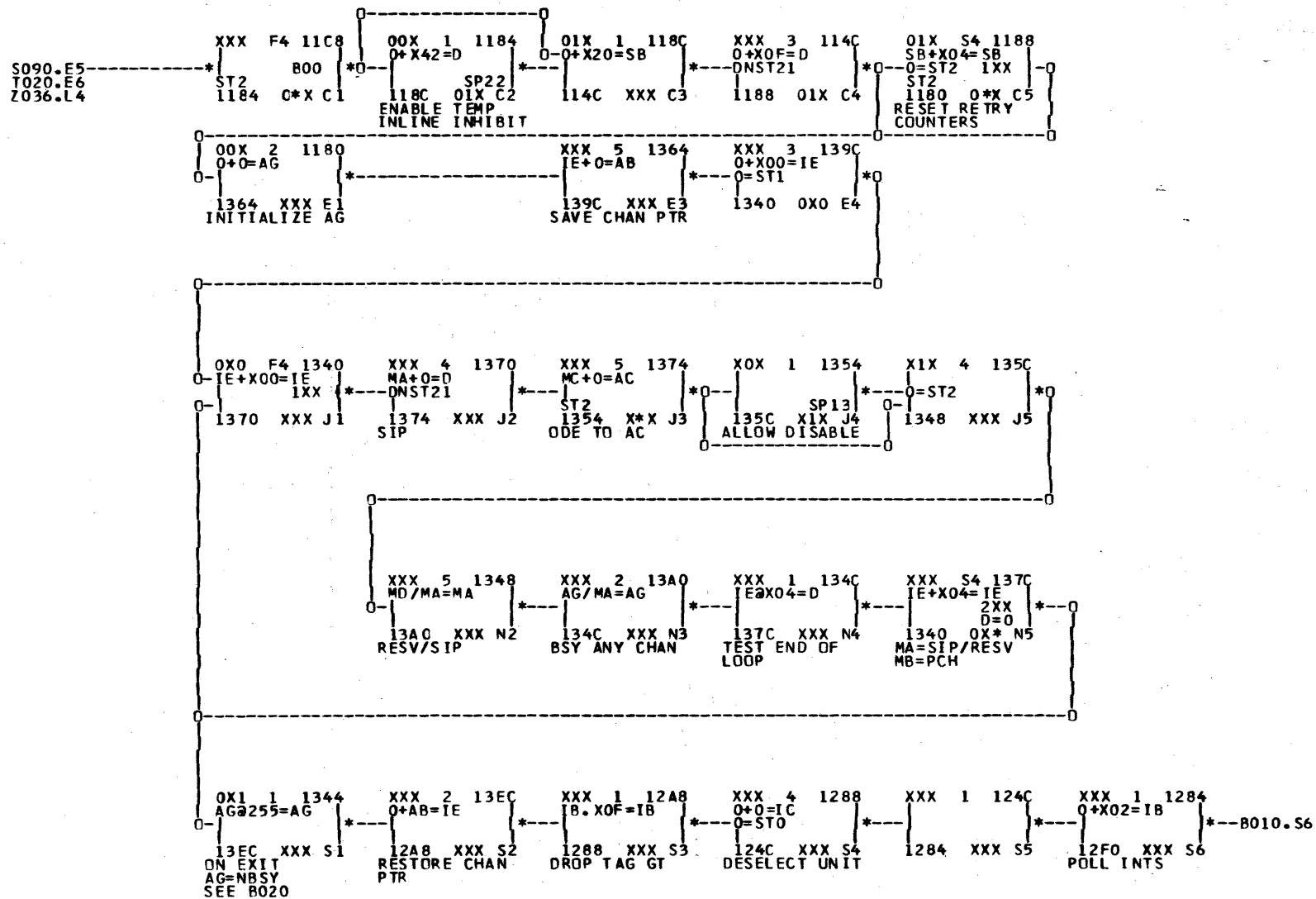




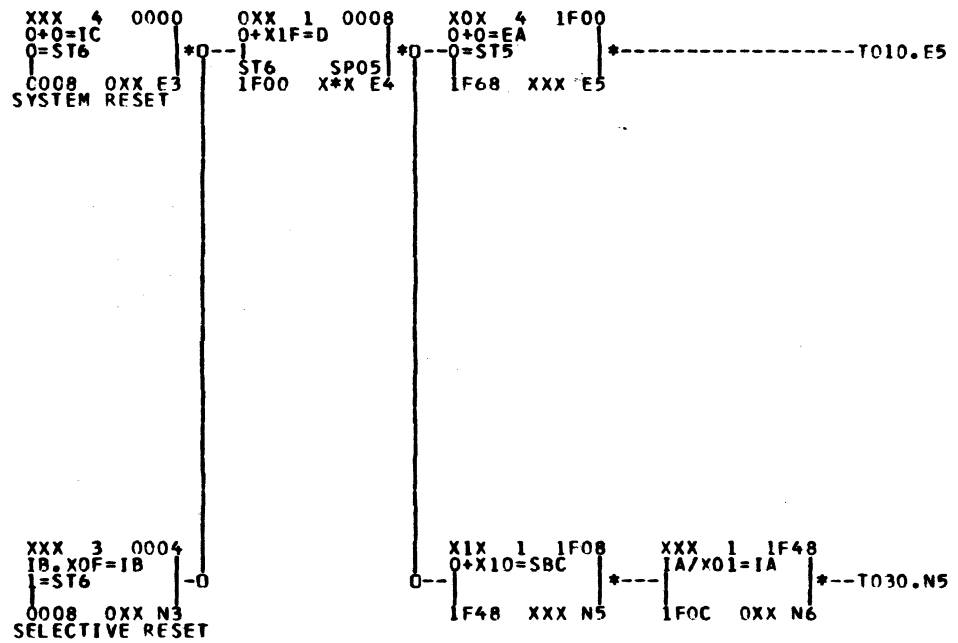
ST7 = CHAINING FROM S050
 EBO = CHAINING ON ENABLE RETRY
 EB7 = RETRY STATRAISEETAGGATE

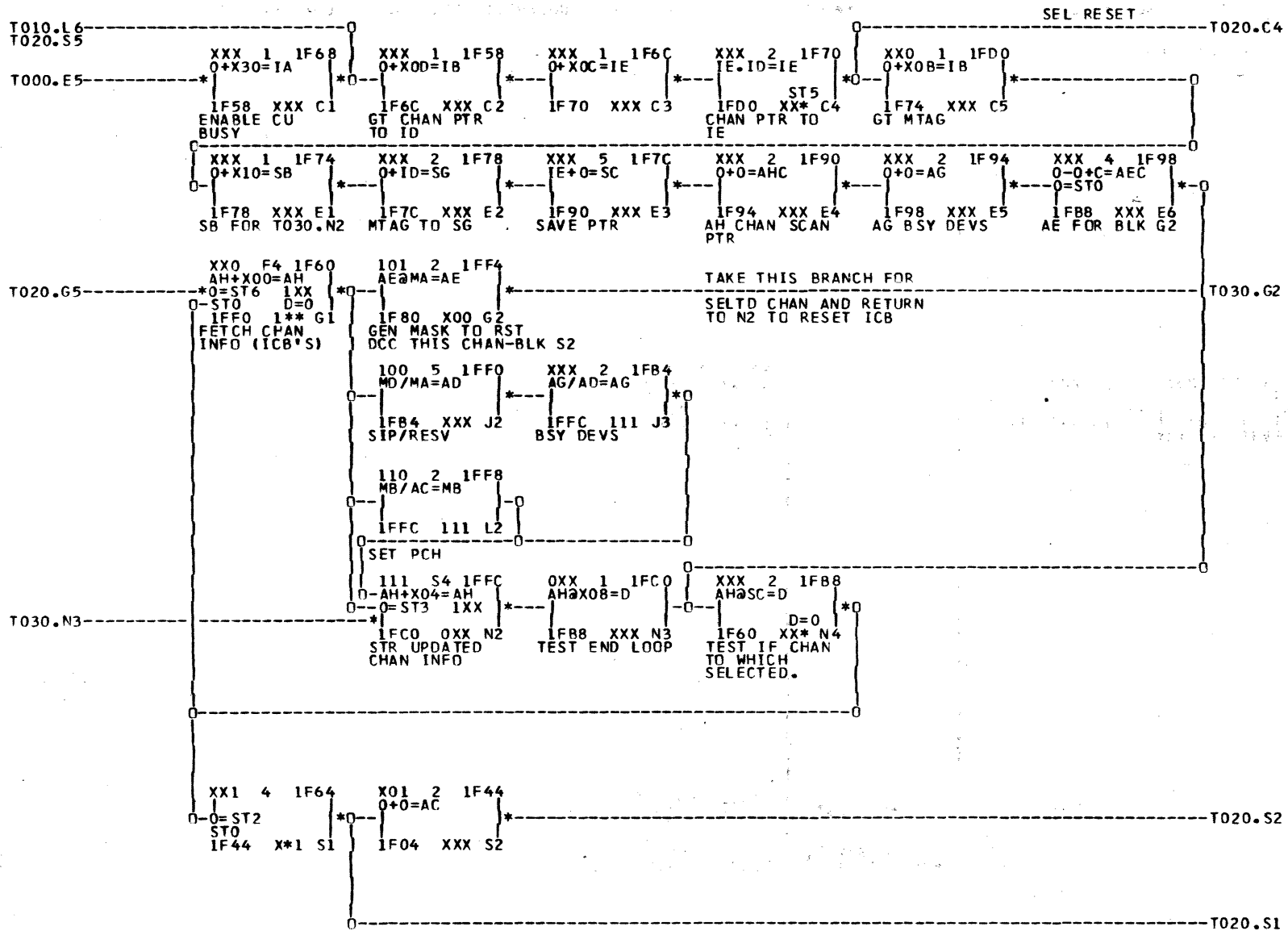
S085 END PROCEDURE
 RETRY DECISIONS





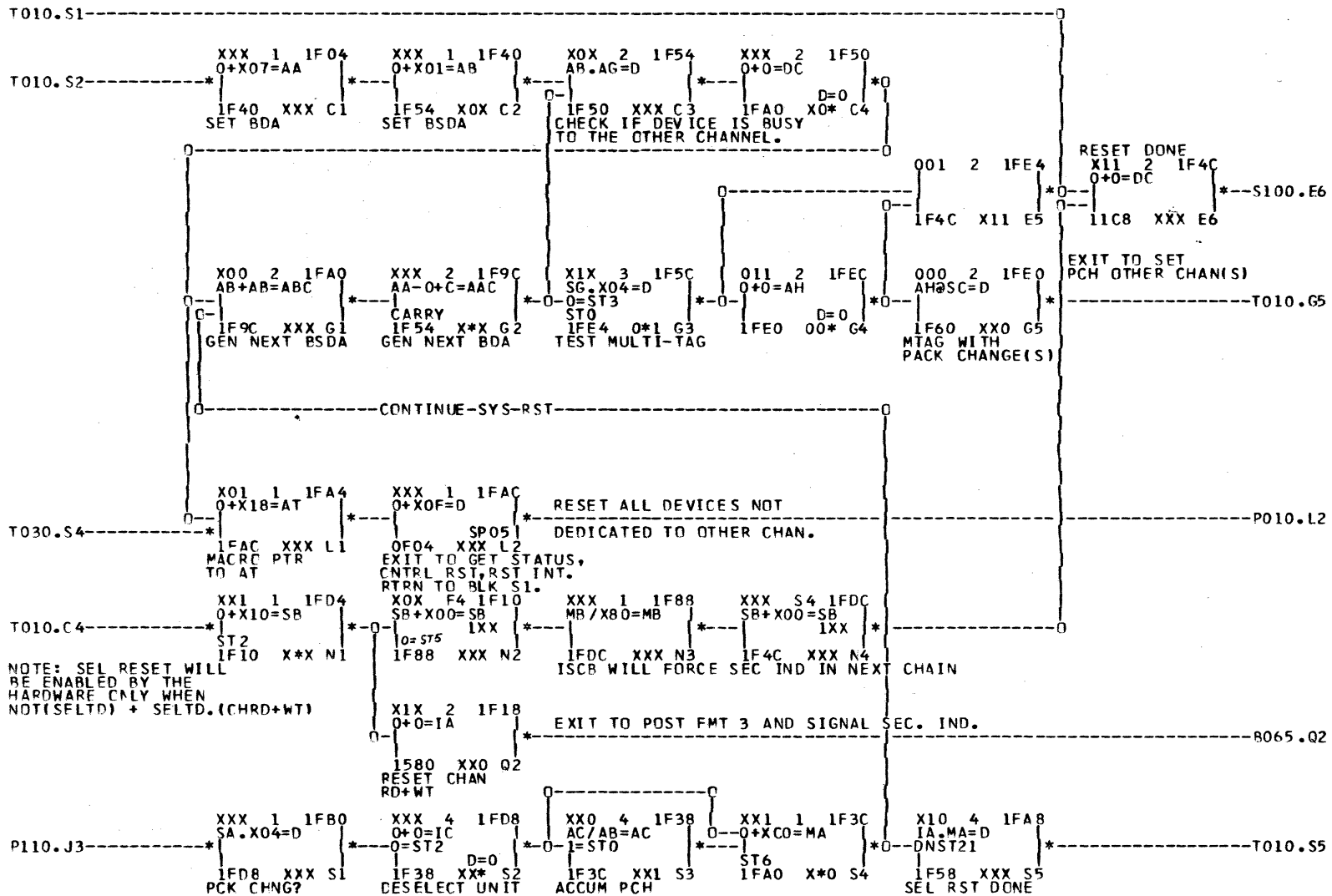
S100 - END PROCEDURE.
CHAIN END HOUSEKEEPING.



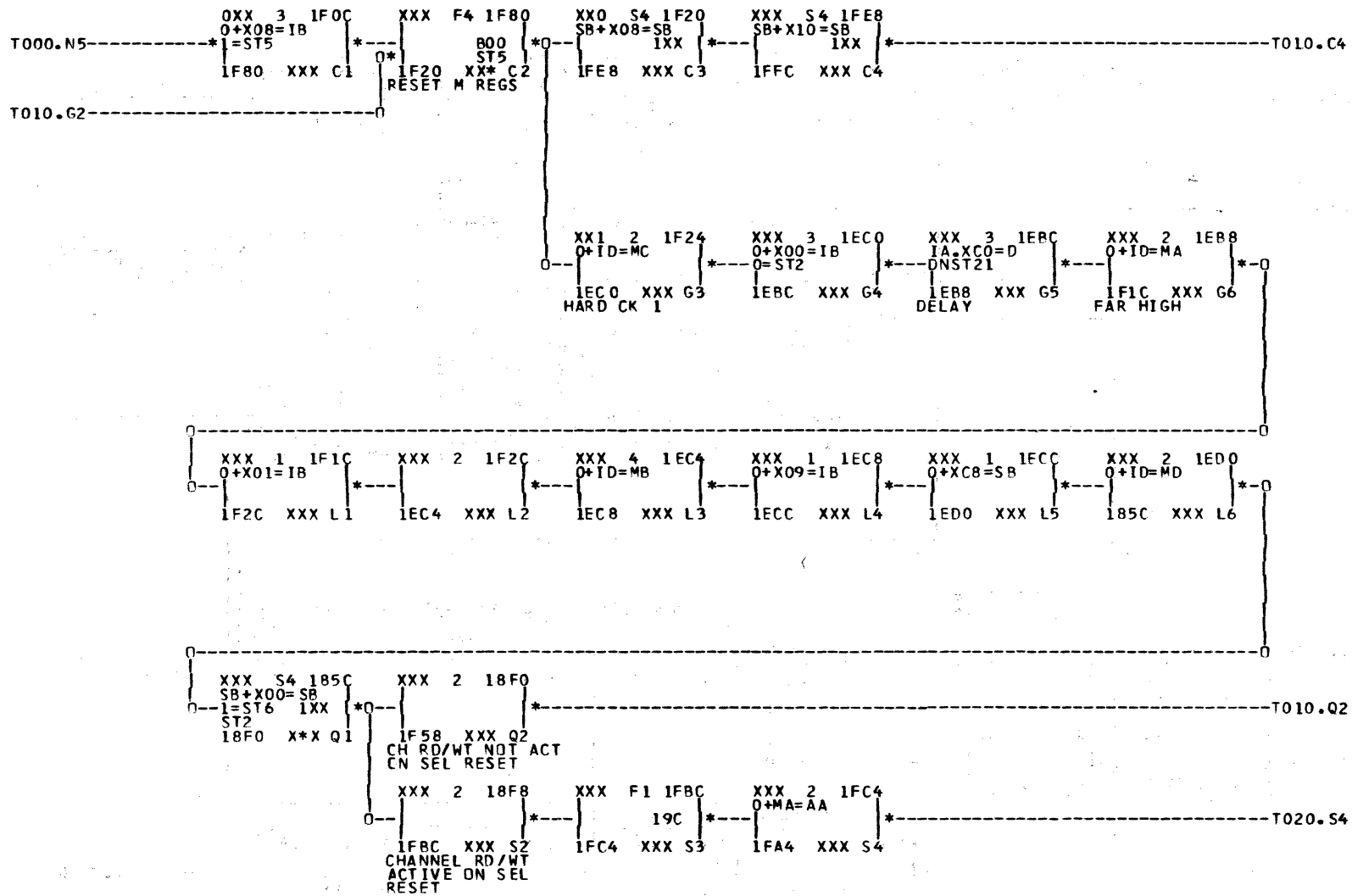


TO10 - SYSTEM RESET,
CLEAR STORAGE

REVISION M



TO20 - SYSTEM RESET.



T030 SELECTIVE RESET

XXX D OE10 2C362438 XXX CO	XXX D OE14 3C00494D XXX CI	XXX D OE18 707124F0 XXX C2	XXX D OE1C AC6884C4 XXX C3	XXX D OE24 09FCB417 XXX C4	XXX D OE2C 316D7175 XXX C5	XXX D OE30 797D39FC XXX C6	XXX D OE34 580B09C5 XXX C7
XXX D OE38 31FC3414 XXX EO	XXX D OE3C 48940C9C XXX E1	XXX D OE40 5432928E XXX E2	XXX D OE44 A034FC00 XXX E3	XXX D OE48 1E10181C XXX E4	XXX D OE4C B031FC5C XXX E5	XXX D OE50 175CAC32 XXX E6	XXX D OE54 8C34A488 XXX E7
XXX D OE58 A8642010 XXX GO	XXX D OE5C 54241C54 XXX G1	XXX D OE60 2818542C XXX G2	XXX D OE64 14543CAC XXX G3	XXX D OE68 FC54334C XXX G4	XXX D OE6C A85004AF XXX G5	XXX D OE70 09C53139 XXX G6	XXX D OE74 3509FCB0 XXX G7
XXX D OE78 1F328C58 XXX JO	XXX D OE7C 34FC7411 XXX J1	XXX D OE84 5CAC04BE XXX J2	XXX D OE8C 14FC442A XXX J3	XXX D OE90 00CFD479 XXX J4	XXX D OE94 51F1F4E3 XXX J5	XXX D OE98 D900EA8C XXX J6	XXX D OE9C F7FC0033 XXX J7
XXX D OEAC 3058A864 XXX LO	XXX D OEBO 20105424 XXX LI	XXX D OEBA 1C542818 XXX L2	XXX D OEBC 542C1454 XXX L3	XXX D OEBC 3CAC3068 XXX L4	XXX D OECO 88000000 XXX L5	XXX D OEC4 60281854 XXX L6	XXX D OEC8 5CAC328C XXX L7
XXX D OECC 04450080 XXX NO	XXX D OEDO 48840425 XXX NI	XXX D OED4 328C9804 XXX N2	XXX D OED8 9D2C1454 XXX N3	XXX D OEDC 40328C34 XXX N4	XXX D OEEO FC602D44 XXX N5	XXX D OEE4 328C34FC XXX N6	XXX D OEE8 30330C9C XXX N7
	XXX D OECC C0FCCE2C XXX Q1	XXX D OEFO 84440453 XXX Q2	XXX D OEF4 4404DD30 XXX Q3	XXX D OEF8 6C707478 XXX Q4	XXX D OEFC FCCEC2B00 XXX Q5		

M	M	III	CCCC	RRRR	R	O	O	O	TTTT	AAA	BBB	L	EEEE		
MM	MM	I	C	RRRR	R	O	O	O	T	A	A	B	B	L	EEE
M	M	I	C	RRRR	R	O	O	O	T	A	A	B	B	L	E
M	M	III	CCCC	R	R	O	O	O	T	A	A	BBB	LLLL	EEEE	

EXECUTES TAG COMMANDS STORED IN THE INLINE ROUTINE AREA 7XX.
INLINE ROUTINE ADDRESSES USED:
708 TEMPORARY STORAGE

ENTRY CONDITIONS

SH-CONTAINS XX OF 7XX ADDRESS FOR TAG COMMAND WORD

TAG COMMAND WORD STRUCTURE

BYTE	USE
0	LOAD IN ST REG. CONTROLS TAG UTILITY
1	IF STO=1, CONTAINS SUBROUTINE ADDRESS
2	BUS OUT VALUE
3	TAG BUS OUT VALUE

ST REG. CONTROL DEFINITION:

ST BIT	USE
0	INDICATES SUBROUTINE
1	NOT USED
2	EXIT WITH TAG UP IF EQ OC
3	PRE-TAG S.R. EXIT
567	BUS OUT SOURCE
1XX	AD REG.
000	MC REG.
001	AC REG.
010	AG REG.
011	AE REG.

C-CHK EXIT CONDITIONS

C-CHKS BYPASSED IF:

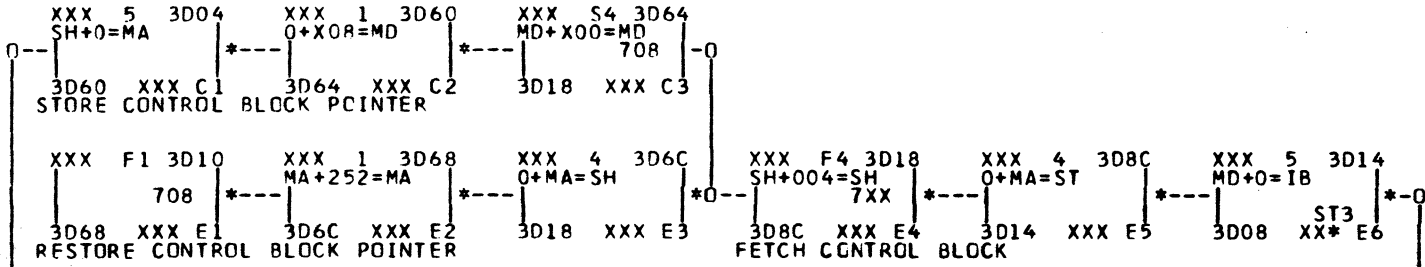
1. TAG = OC
2. GROUP 4 CHKS = 0
3. OPTION BYTE BIT 7=1
4. TAG NEQ OC AND ST2

ENTRY POINTS
INITIAL: 3004
REENTRY: 3D10
BUS : 3D20
EXIT POINTS
STANDARD 704
CUDICLK 710

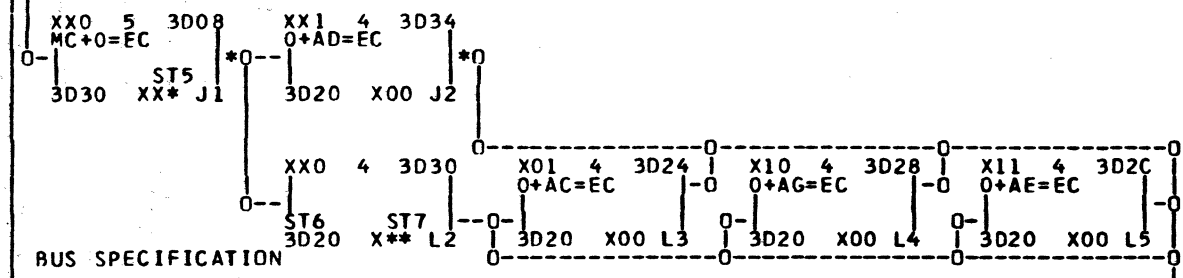
U000 TAG UTILITY

STANDARD
ENTRY POINT

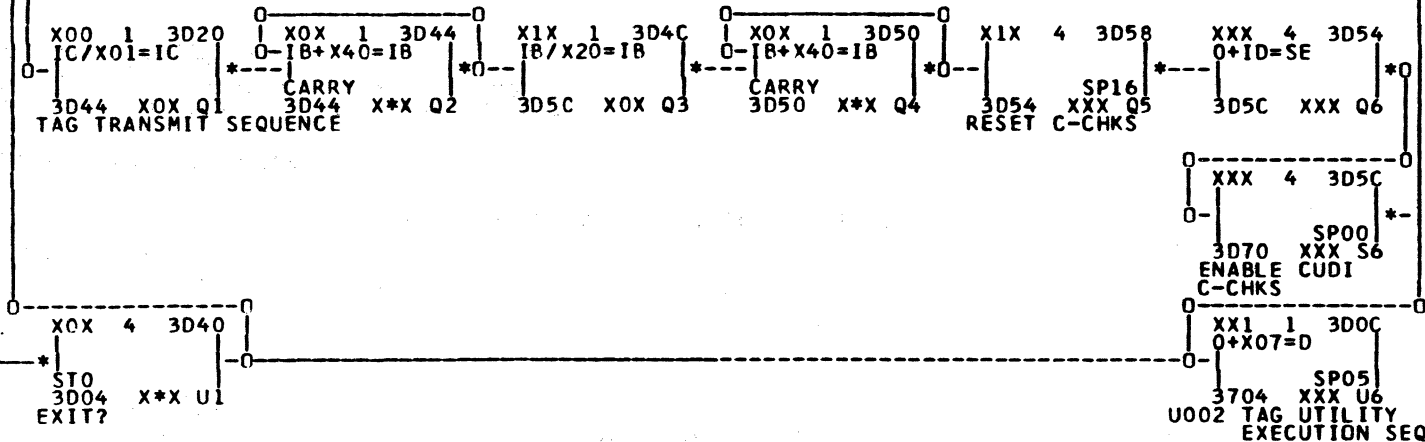
RETRY
ENTRY POINT



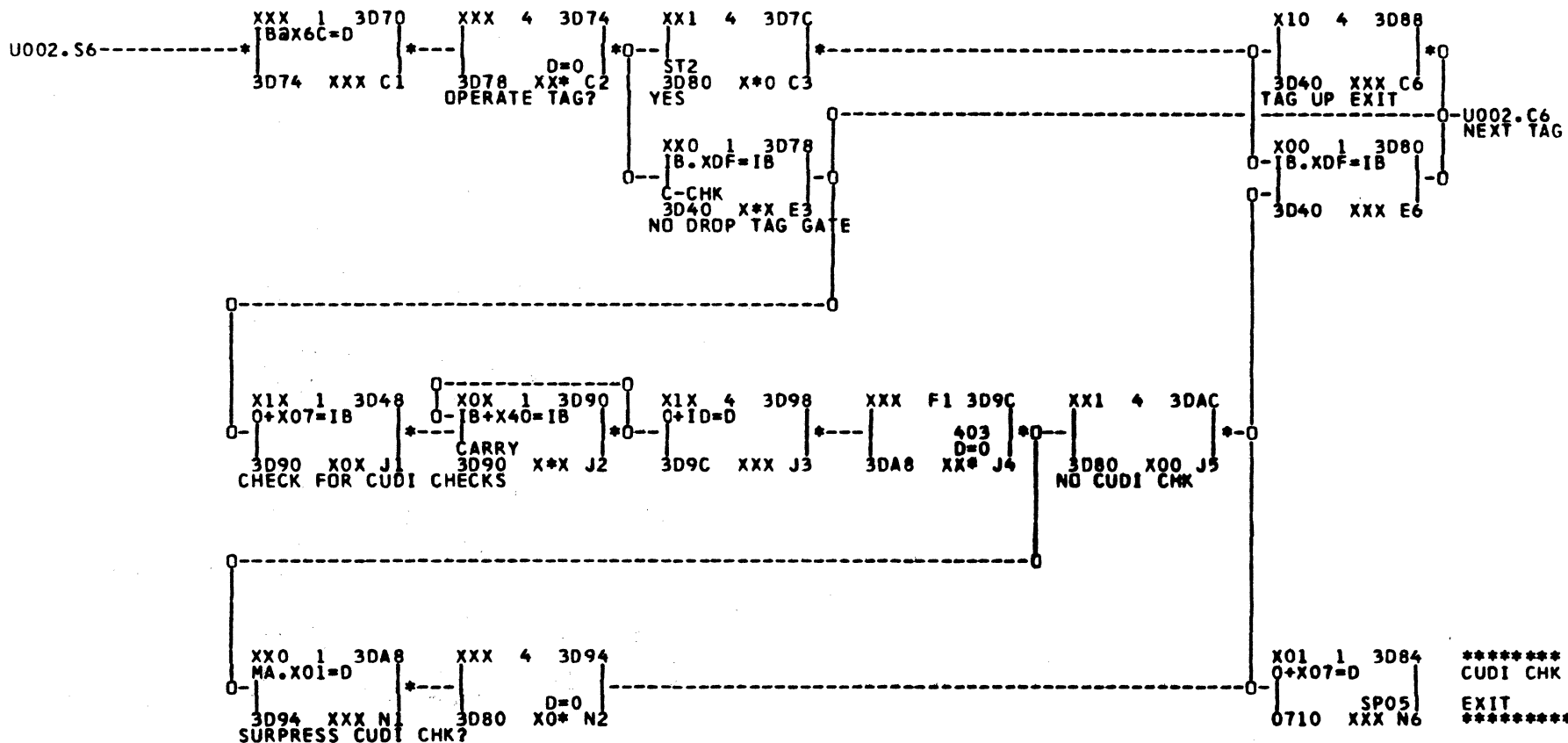
PRE BUS
EXIT



BUS
ENTRY POINT



STANDARD
EXIT



THERE ARE 2 TYPES OF HARDCORE TESTS,
MAINLINE AND OPTIONAL.

MAINLINE TESTS

- X020 IAR AND IAR GATING TEST
TESTS IAR AND GATING OF THE
CX, CN, CH AND CL FIELDS
- X022 ALU TEST
TESTS ALL ALU OP'S, CARRY IN,
CARRY OUT AND ALU LOGICAL
OPERATIONS ('AND', 'OR', 'XOR')
- X027 REGISTER TEST - PART 1
THIS IS A PARTIAL REGISTER TEST.
TESTS ONLY THOSE REGISTERS THAT
ARE NEEDED BY THE BOOTSTRAP
LOADER.
- X040 REGISTER TEST - PART 2
THIS IS THE COMPLETE REGISTER TEST.
TESTS ALL REGISTERS EXCEPT IA, IB,
IC AND ID. IN ADDITION BOTH CA
ASSEMBLERS, THE CB ASSEMBLER AND
THE CD DECODE ARE TESTED.
- X060 BRANCH TEST
TESTS CH AND CL FIELD BRANCHING.
EACH CH AND CL BRANCH IS TESTED
FOR ACTIVE WITH ALL OTHER CH AND
CL CONDITIONS INACTIVE AND VISA
VERSA. THE TEST WILL DETECT CH AND
CL FIELD MULTIPLE DECODE FAILURES
AS WELL AS ABSENSE OF DECODE
- X064 A=IAR TEST
THIS TEST CHECKS FOR PROPER
GATING OF 'A' BUS BITS 0-5 TO
IAR BITS 8-13 DURING THE A=IAR
OPERATION
- X065 CS DECODE TEST
THIS TEST CHECKS THAT EACH CS
DECODE IS EXECUTED PROPERLY AND
DOES NOT INTERACT WITH ANY OTHER
CS DECODE.
- X067 MA REGISTER ASSEMBLER TEST
THIS TEST CHECKS THAT THE
PROPER BYTE IS TRANSFERRED TO
THE 'MA' REGISTER DURING A
1 BYTE FETCH. ALSO CHECKS
GATING OF CV, CY AND CW FIELDS
DURING A 1 BYTE FETCH.
- X108 ECC WRITE TEST
TEST CHECKS ECC WRITE HARDWARE
- X116 FCC READ TEST
TEST CHECKS ECC READ HARDWARE

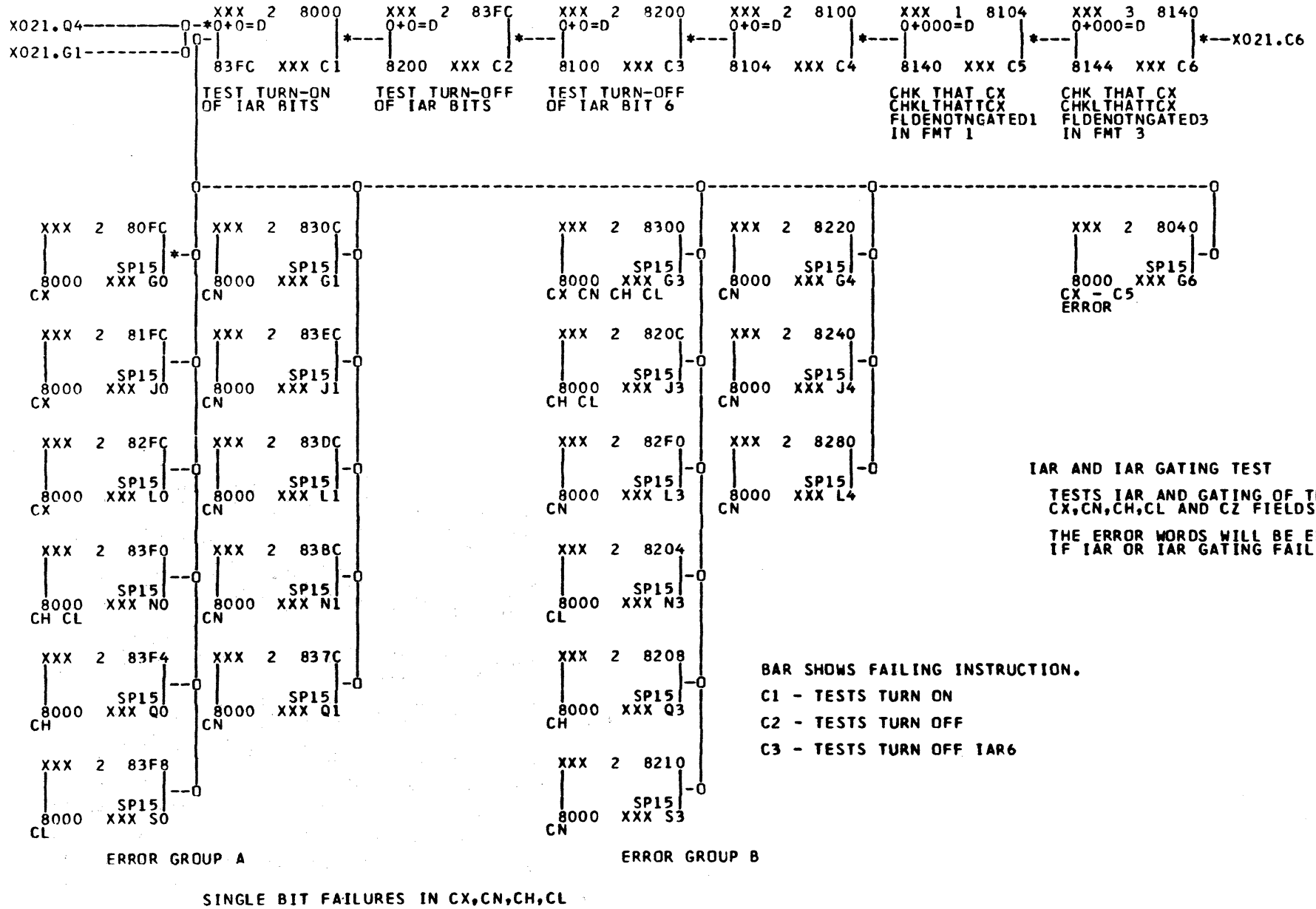
OPTIONAL TESTS

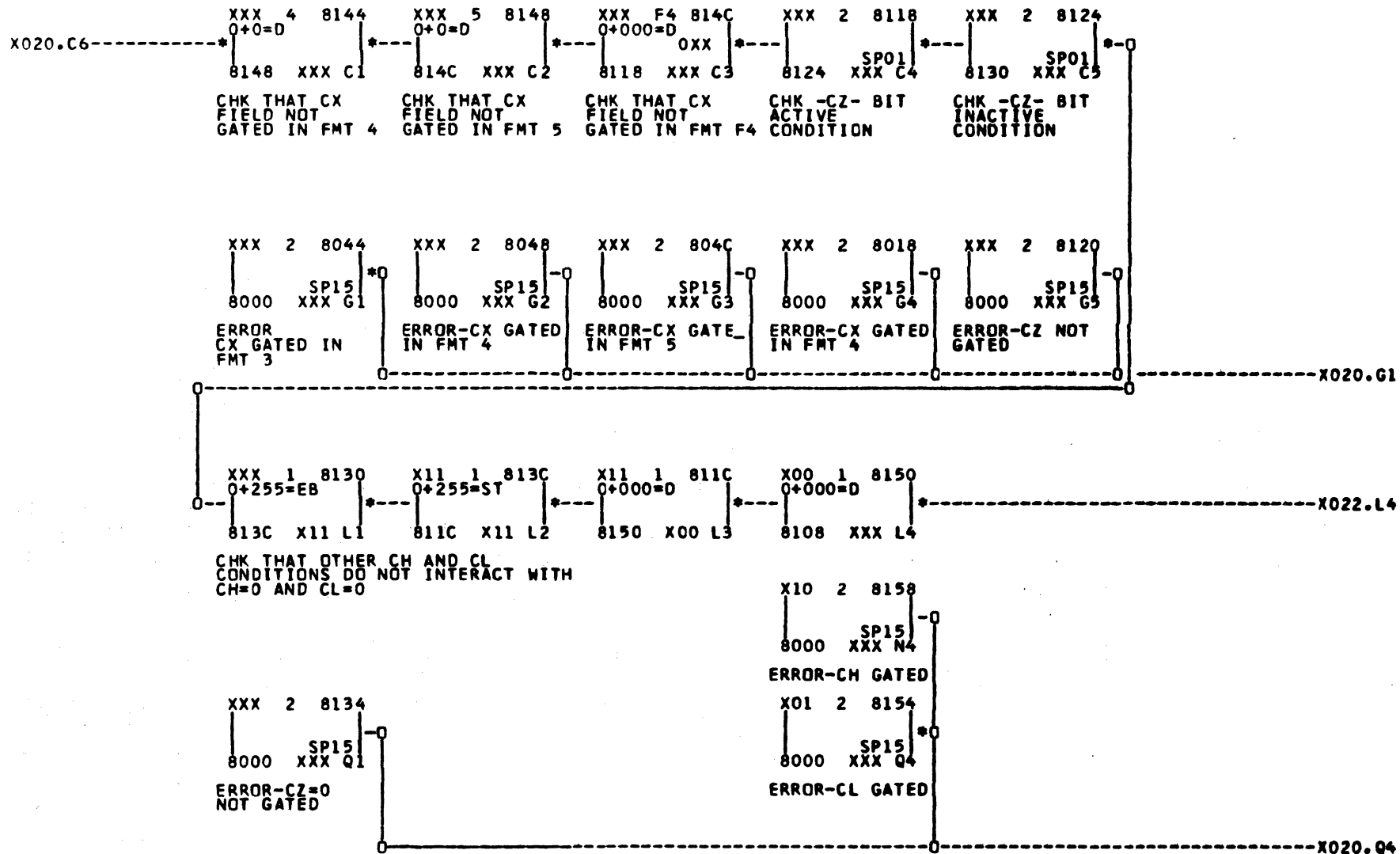
- X200 MEMORY TEST
TEST MEMORY WITH VARYING BIT FREQUENCIES
- X230 MEMORY ECC TEST
TEST MEMORY ECC CIRCUITRY FOR PROPER
OPERATION
- X900 MEMORY QUALIFIER TEST
A TEST OF THE ABILITY OF EACH
MEMORY CELL TO HOLD A 0 OR 1.

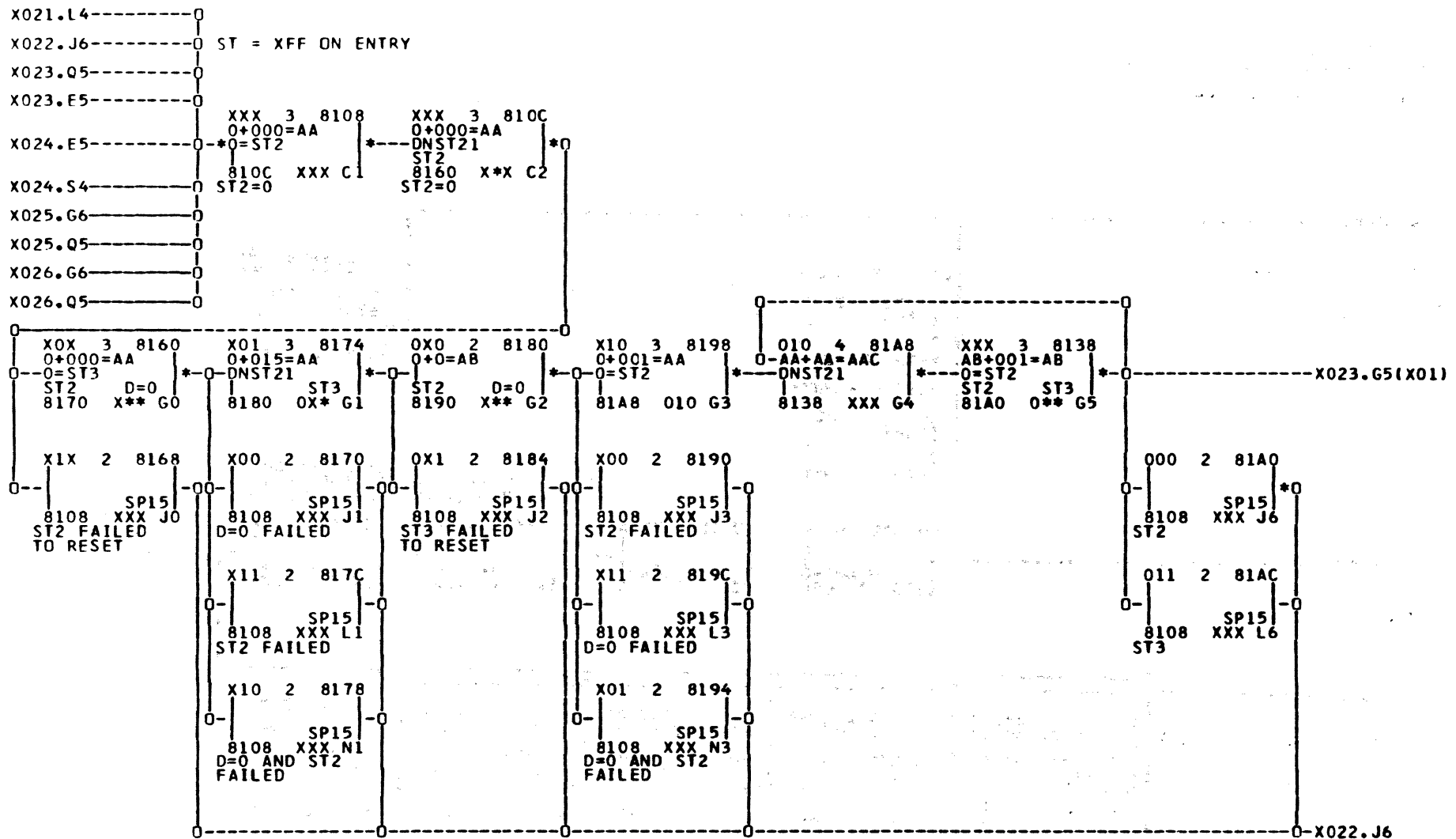
X010 - HARDCORE DIAGNOSTIC INDEX

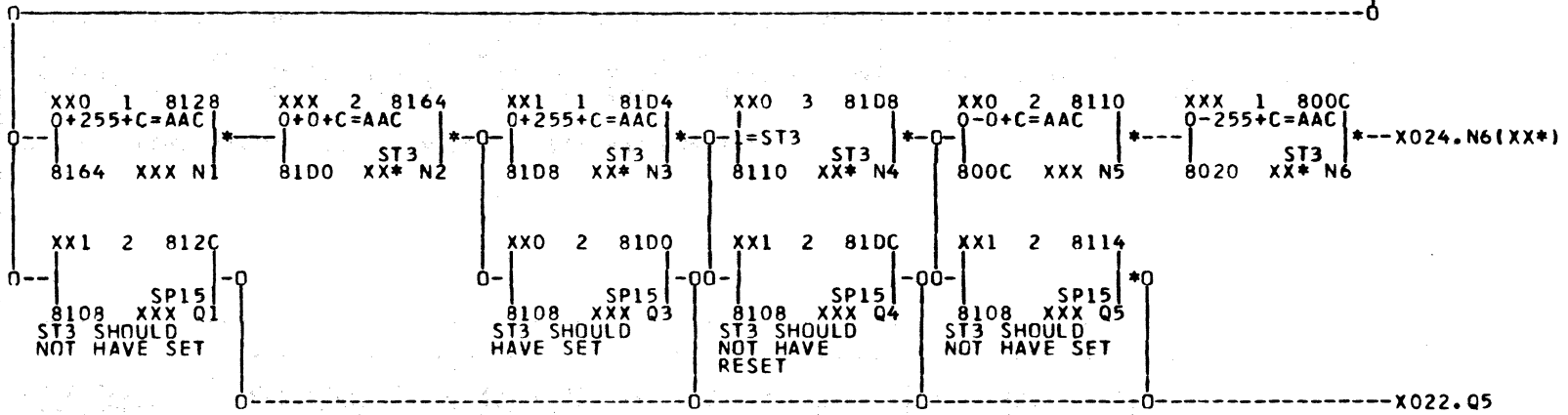
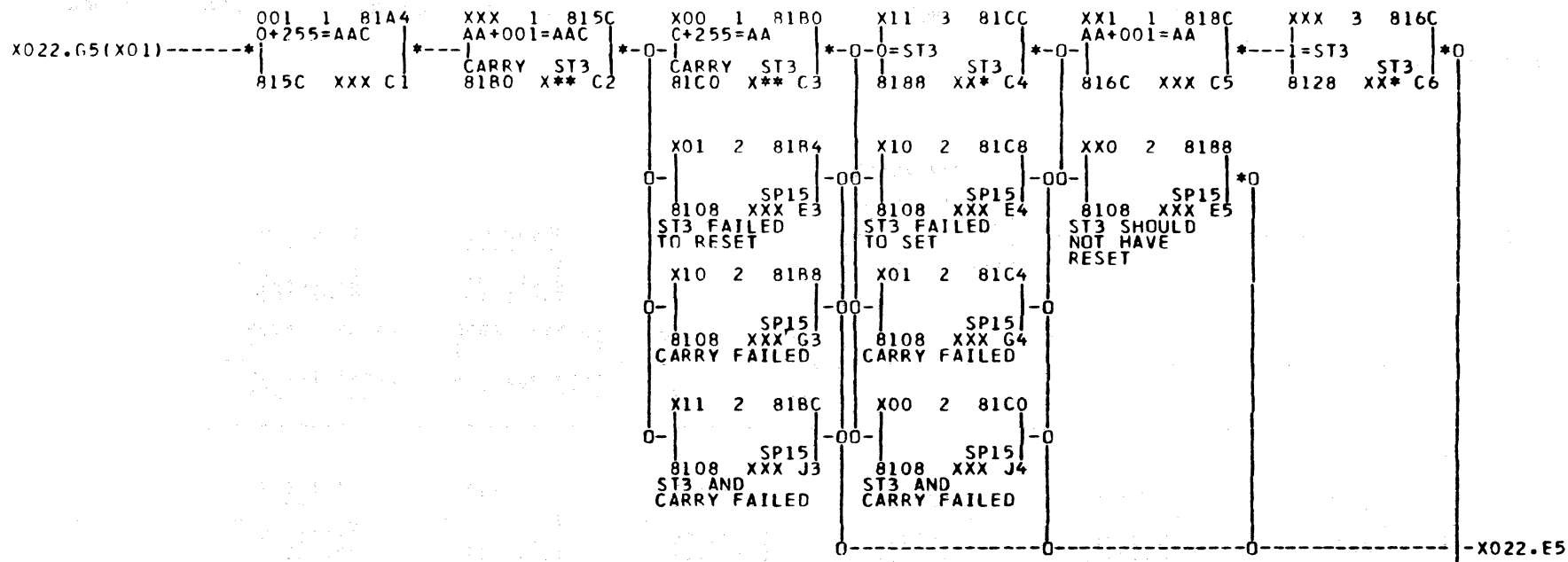
HARDCORE DIAGNOSTIC OPERATING PROCEDURE

1. VARY SUBSYSTEM OFFLINE AT THE OPERATING SYSTEM.
2. PLACE ALL ENABLE/DISABLE SWITCHES TO DISABLE.
3. PLACE FUNCTION SWITCH TO CF POSITION.
4. PLACE OPERATION SWITCH TO CHECK STOP.
5. PLACE DISPL SELECT SWITCH TO BAR POSITION.
6. PLACE MODE SELECT SWITCH TO IMPL POSITION AND DEPRESS EXEC SWITCH
7. THE THREE ROUTINES OF THE HARDCORE TEST WILL NOW BE LOADED FROM THE CASSETTE AND EXECUTED.
8. IF THE HARDCORE TEST EXECUTES WITHOUT ERROR, THE FUNCTIONAL MICROPROGRAM WILL BE LOADED AND CONTROL WILL BE TRANSFERRED TO THE WAIT LOOP.
9. IF AN ERROR IS DETECTED BY THE HARDCORE TEST, THE CONTROL UNIT WILL STOP AND THE MACH STOP LIGHT WILL COME ON. IF THIS IS THE CASE PROCEED TO NEXT STEP.
10. READ AND RECORD THE 4 HEX DIGIT BAR VALUE. USE THE ADDR/PAGE-BLK CROSS REFERENCE TO FIND THE CORRESPONDING PAGE-BLK. FIND THE PAGE-BLK IN THE MICROPROGRAM LOGICS TO DETERMINE ERROR.

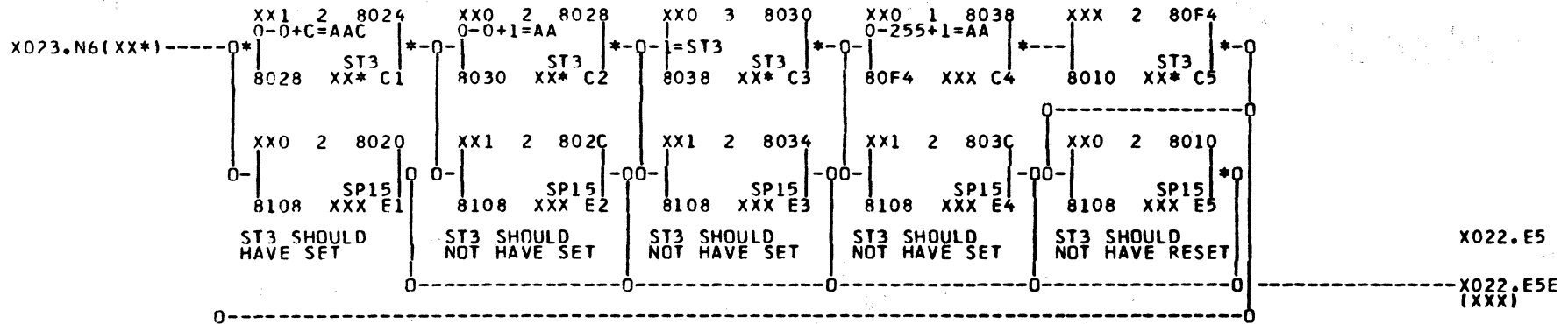




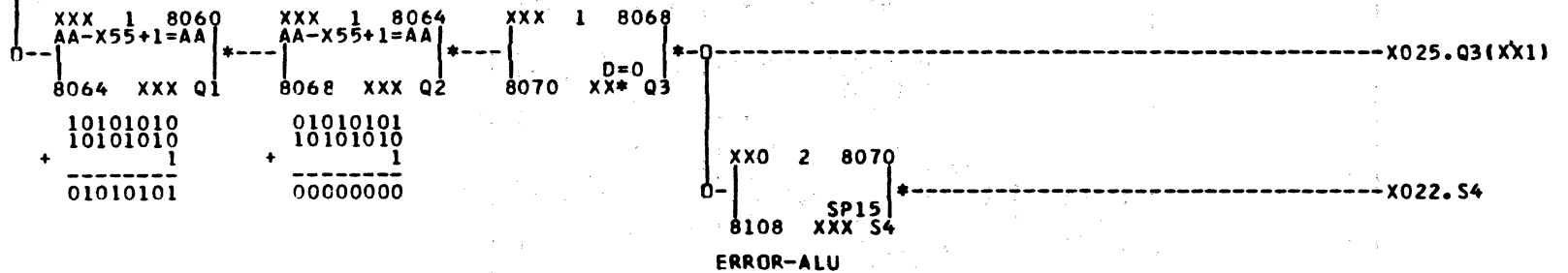
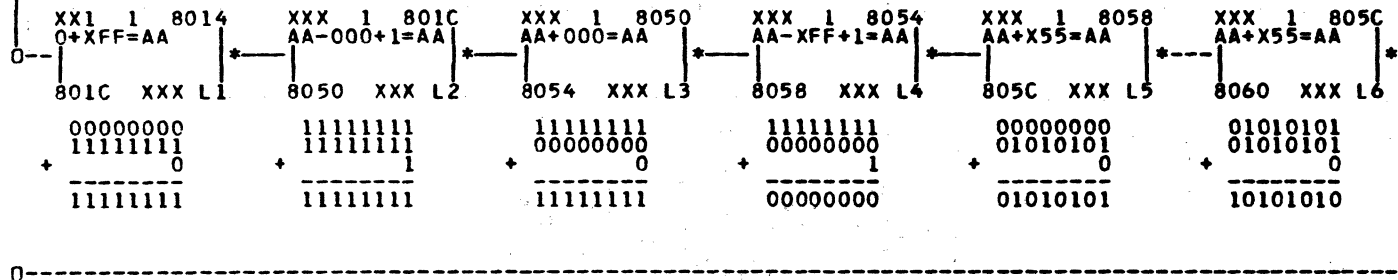




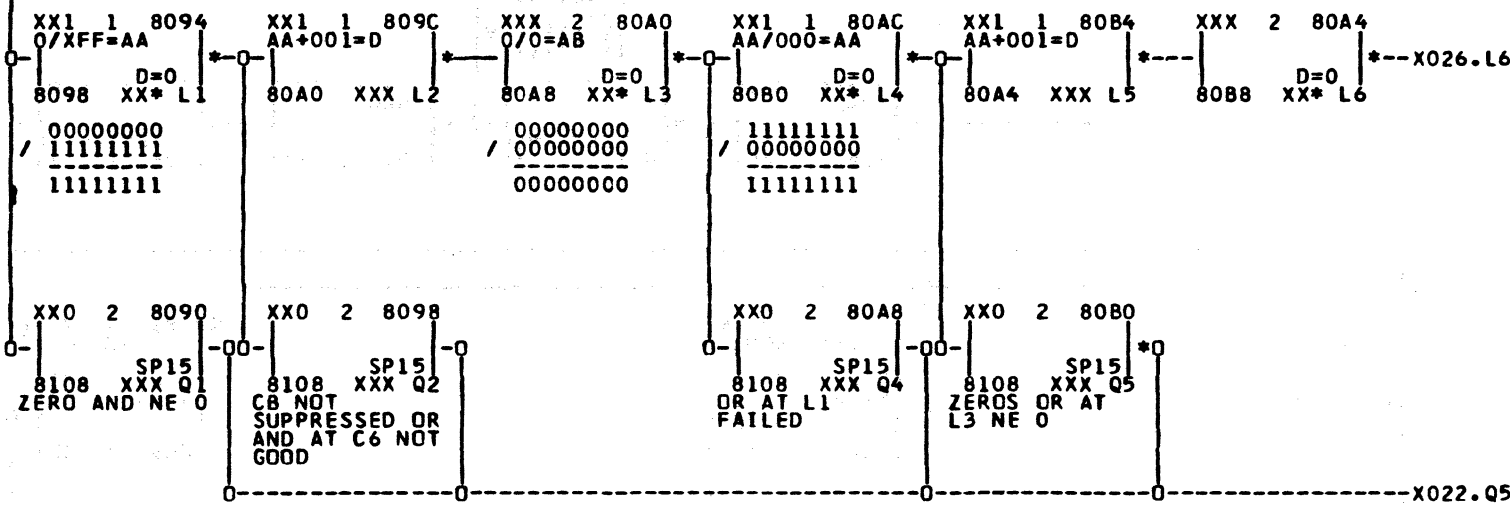
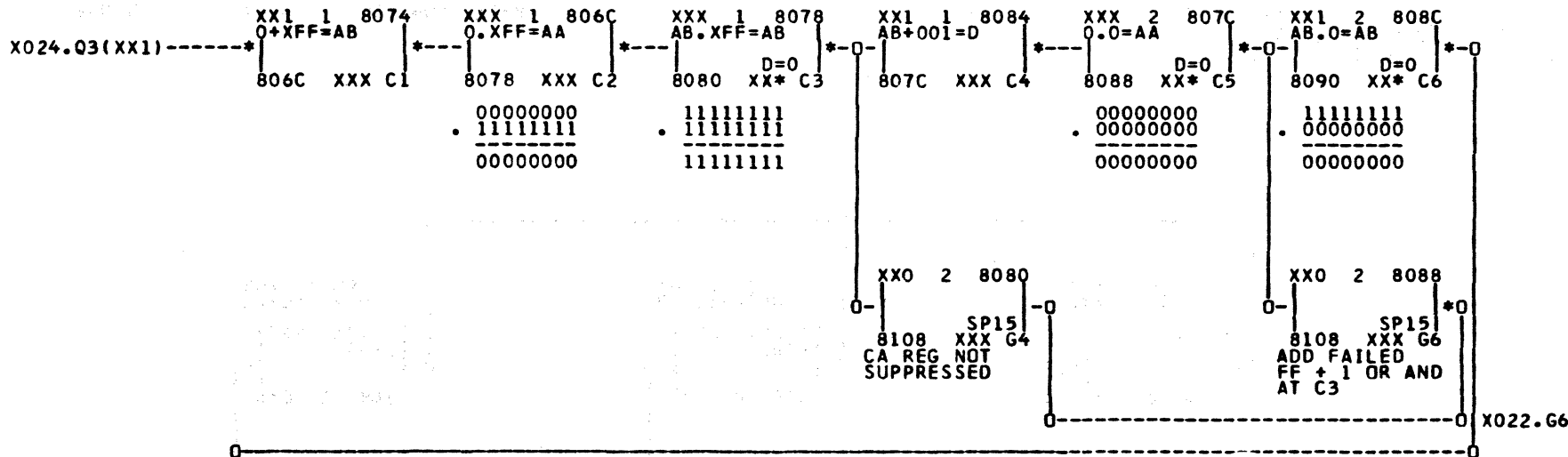
FINISH TESTING CARRY IN AND CARRY OUT OPERATIONS



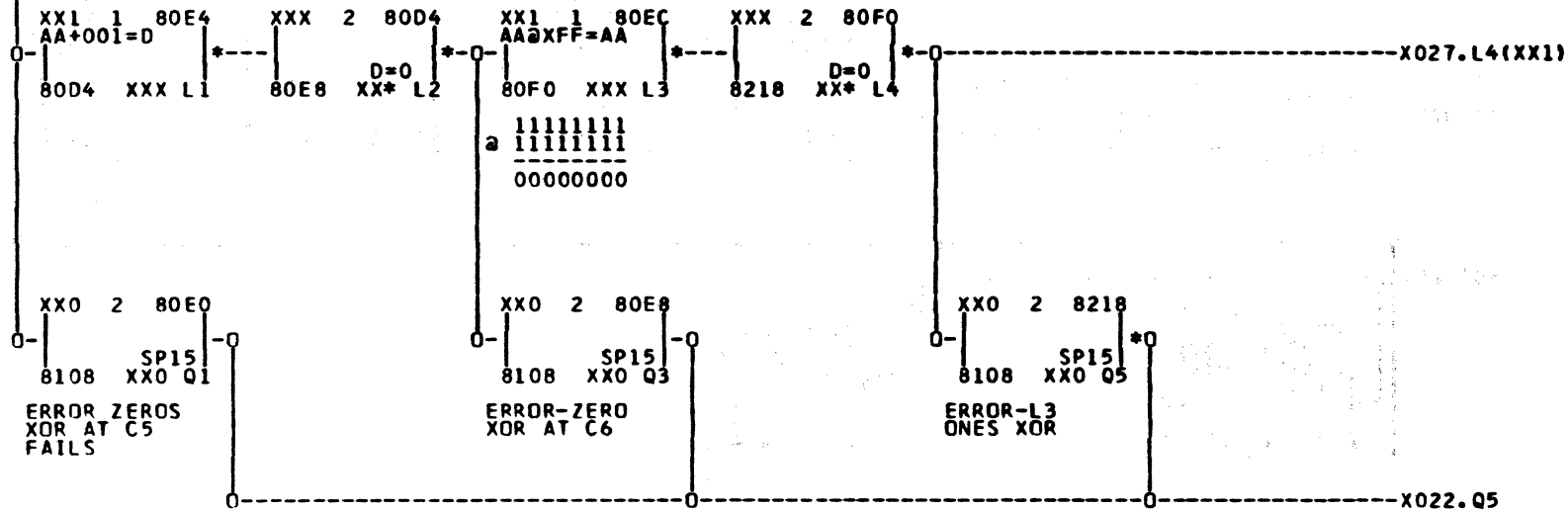
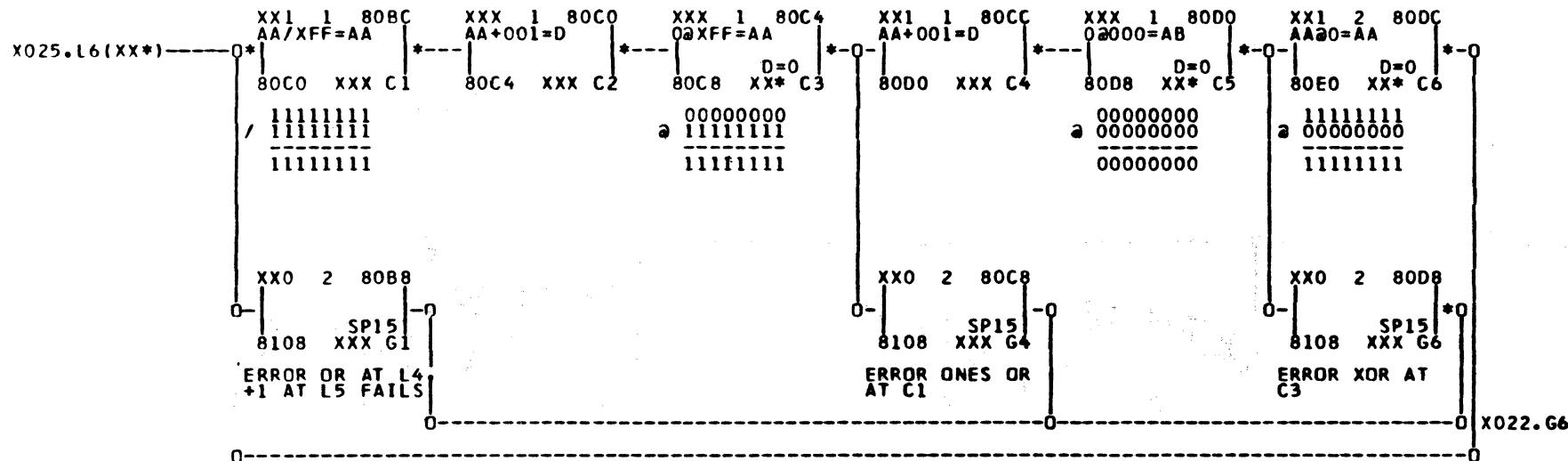
TEST ALL COMBINATIONS OF -A- BIT, -B- BIT AND CARRY IN



X024 - HARDWARE DIAGNOSTIC ALU TEST



/ - LOGICAL -OR-
 : - LOGICAL -AND-
 @ - LOGICAL -EXCLUSIVE OR-



X028.L4(XX0)-----0

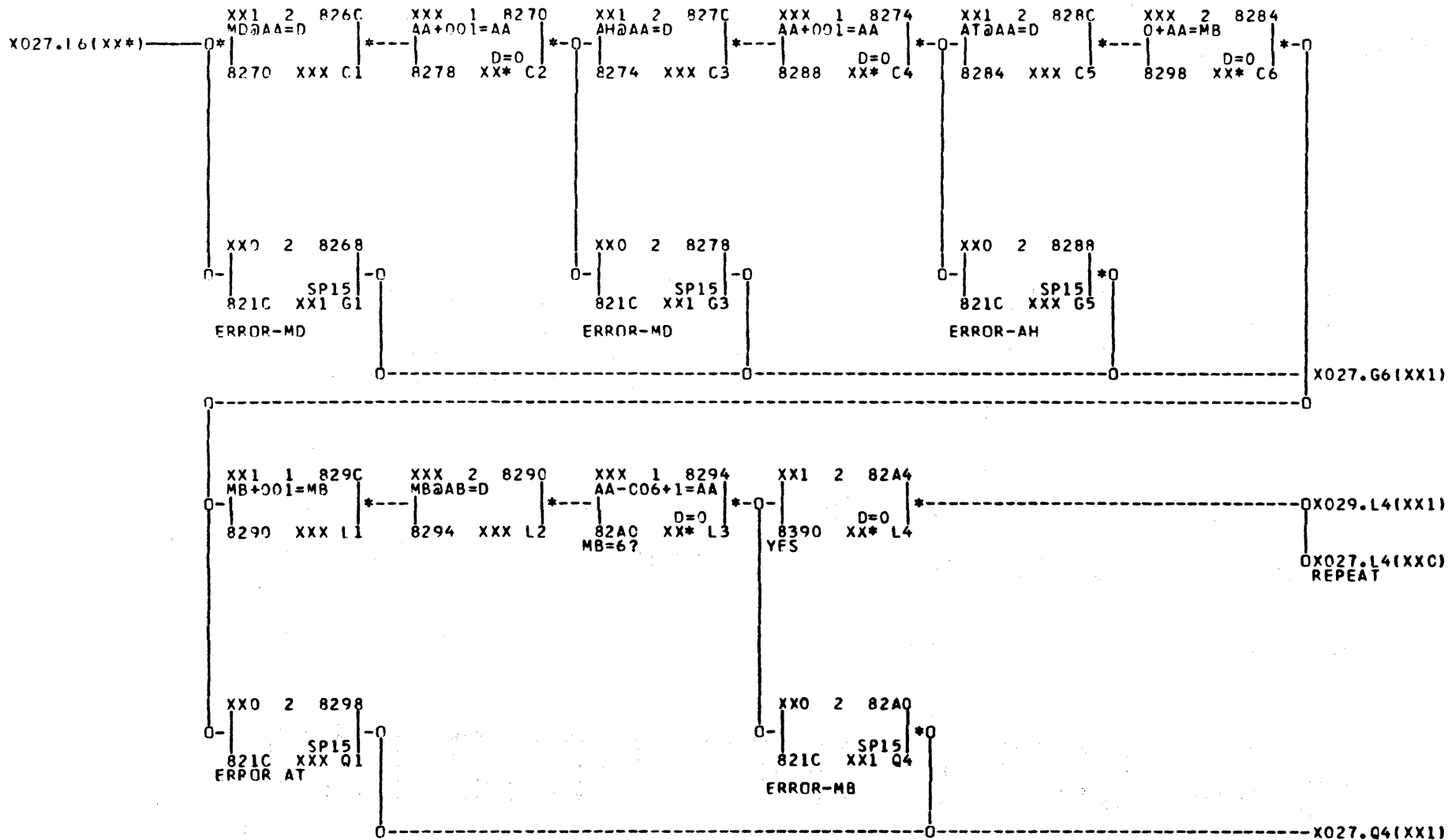
	XX1 2 821C O+J=AA	XX0 2 839C O+AA=MA	XXX 1 8214 MA+001=MA	XXX 2 8224 C+AA=MC	XXX 1 8228 MC+002=MC	XXX 2 822C O+AA=MD
X027.05(XX1)-----0						
X028.G6(XX1)-----0	8390 XXX C1	8214 XXX C2	8224 XXX C3	8228 XXX C4	822C XXX C5	8230 XXX C6
X028.C4(XX1)-----0						
X026.L4(XX1)-----0						

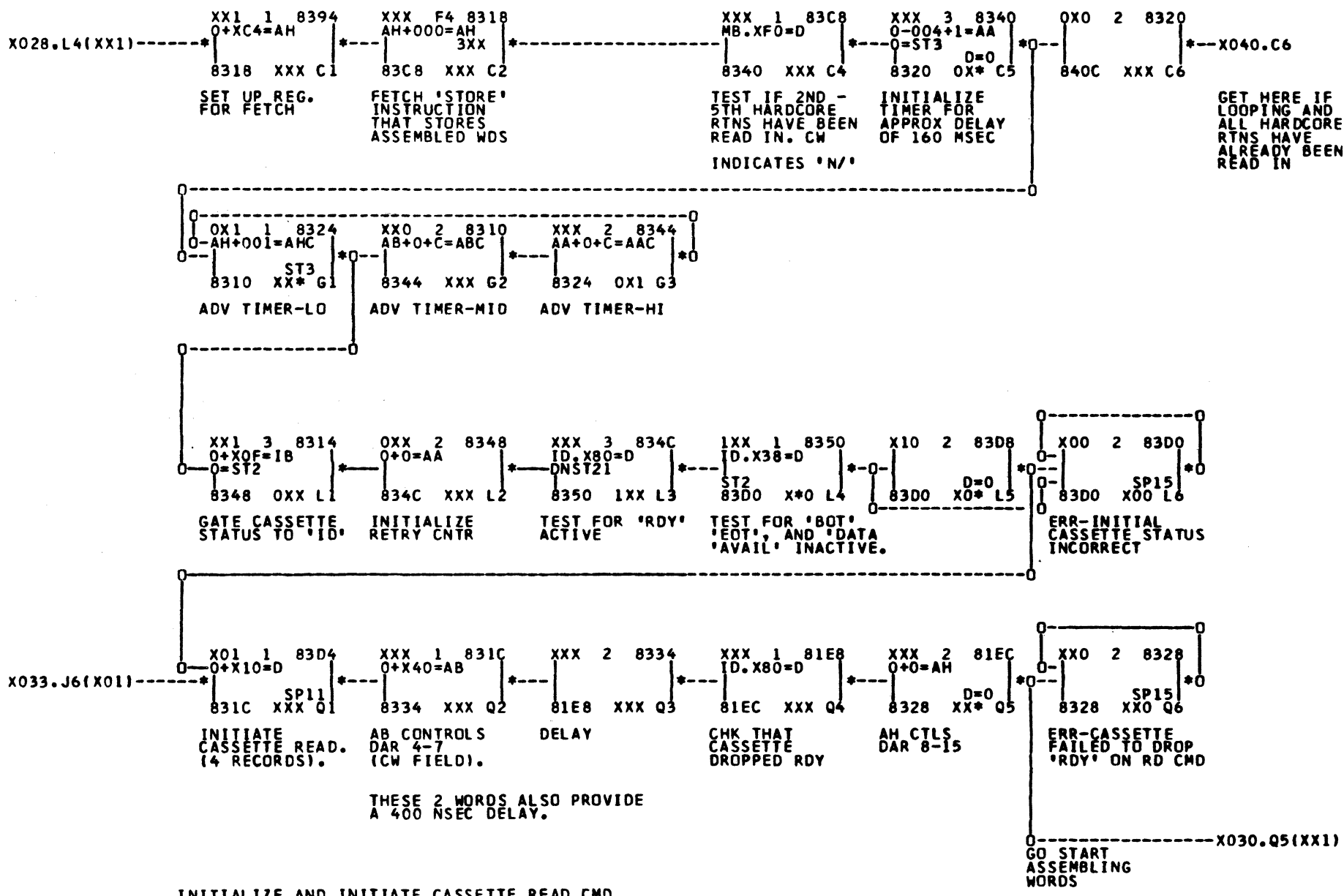
XXX 1 8230 MD+003=MD	XXX 2 8234 O+AA=AH	XXX 1 8238 AH+004=AH	XXX 2 823C O+AA=AT	XXX 1 8244 AT+005=AT	XXX 2 8248 O+AA=AB
8234 XXX G1	8238 XXX G2	823C XXX G3	8244 XXX G4	8248 XXX G5	824C XXX G6

XXX 1 824C AB+006=AB	XXX 1 8250 AA+001=AA	XXX 2 8254 AA@MA=D	XXX 1 8258 AA+001=AA	XX1 2 8264 MC@AA=D	XXX 1 825C AA+001=AA
8250 XXX L1	8254 XXX L2	8258 XXX L3	8260 XX* L4 D=0 TEST MA	825C XXX L5	8268 XX* L6 D=0

REGISTERS, CA/CB ASSEMBLERS AND CD DECODE TEST
 THIS TEST CHKS ONLY THOSE REGS NEEDED FOR LOADING
 HARDWARE DIAGNOSTIC ROUTINES '81' AND '82'.
 A COMPLETE REGISTER TEST IS CONTAINED IN
 HARDWARE DIAGNOSTIC RTN '81'.

XX0 2 8260 ERR-MA	SP15 XX1 05	*-----X027.05(XX1)
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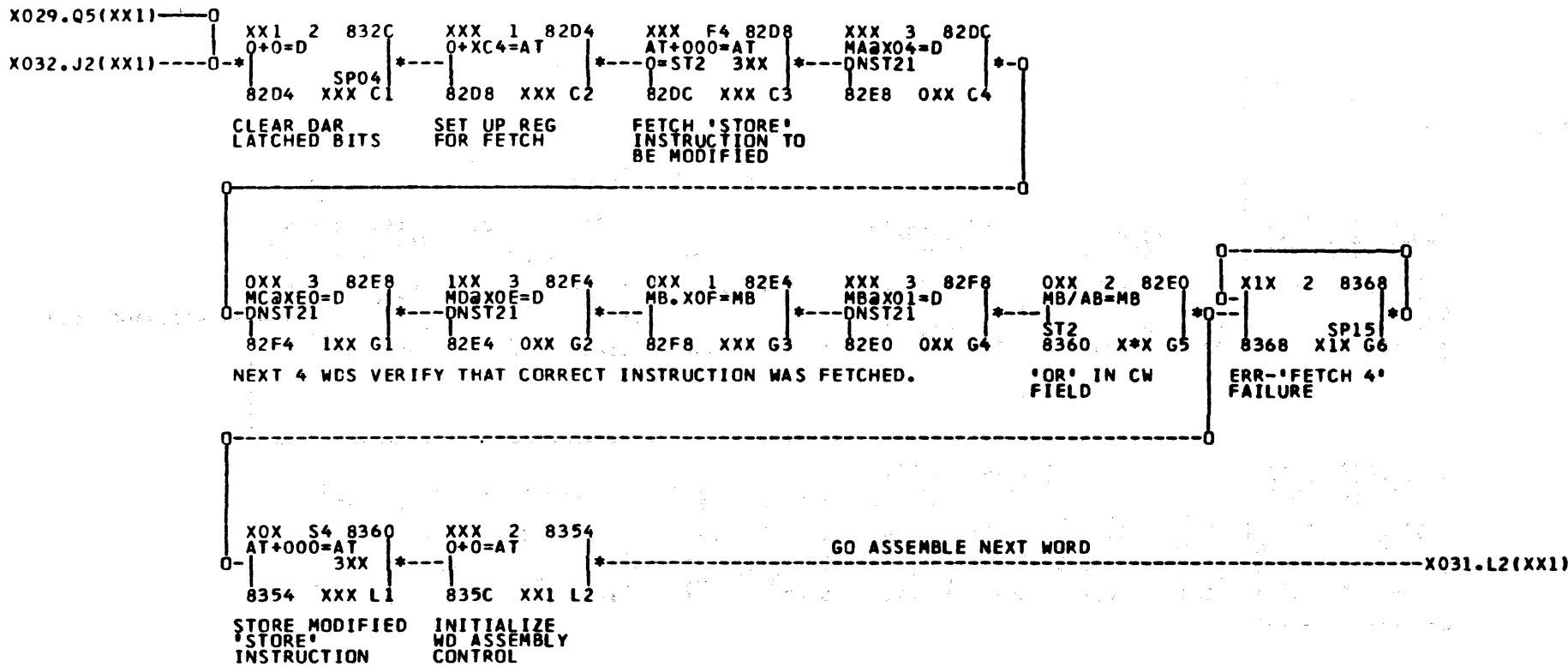




INITIALIZE AND INITIATE CASSETTE READ CMD

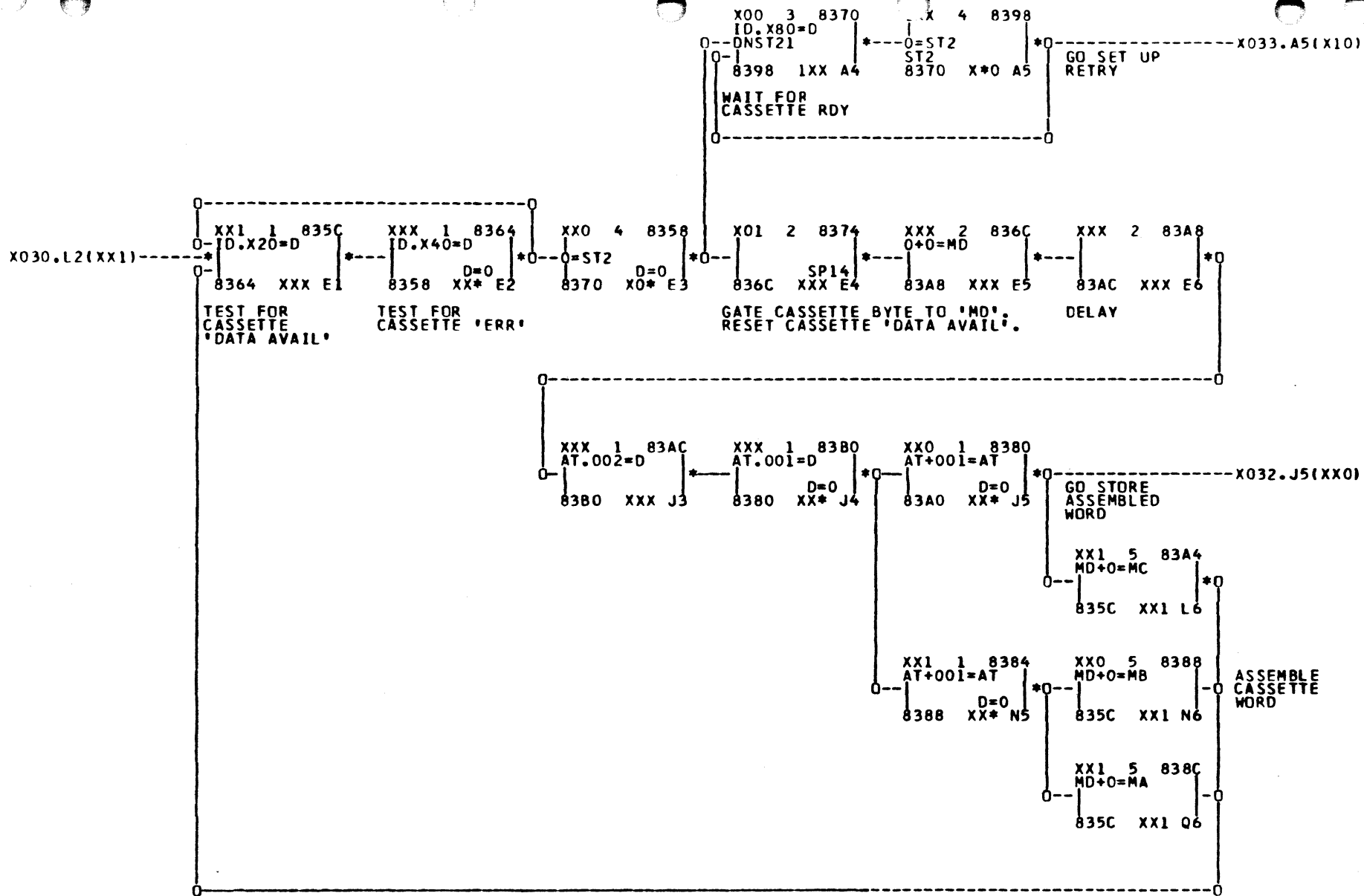
X030.Q5(XX1)
GO START ASSEMBLING WORDS

X029 - BOOTSTRAP LOADER



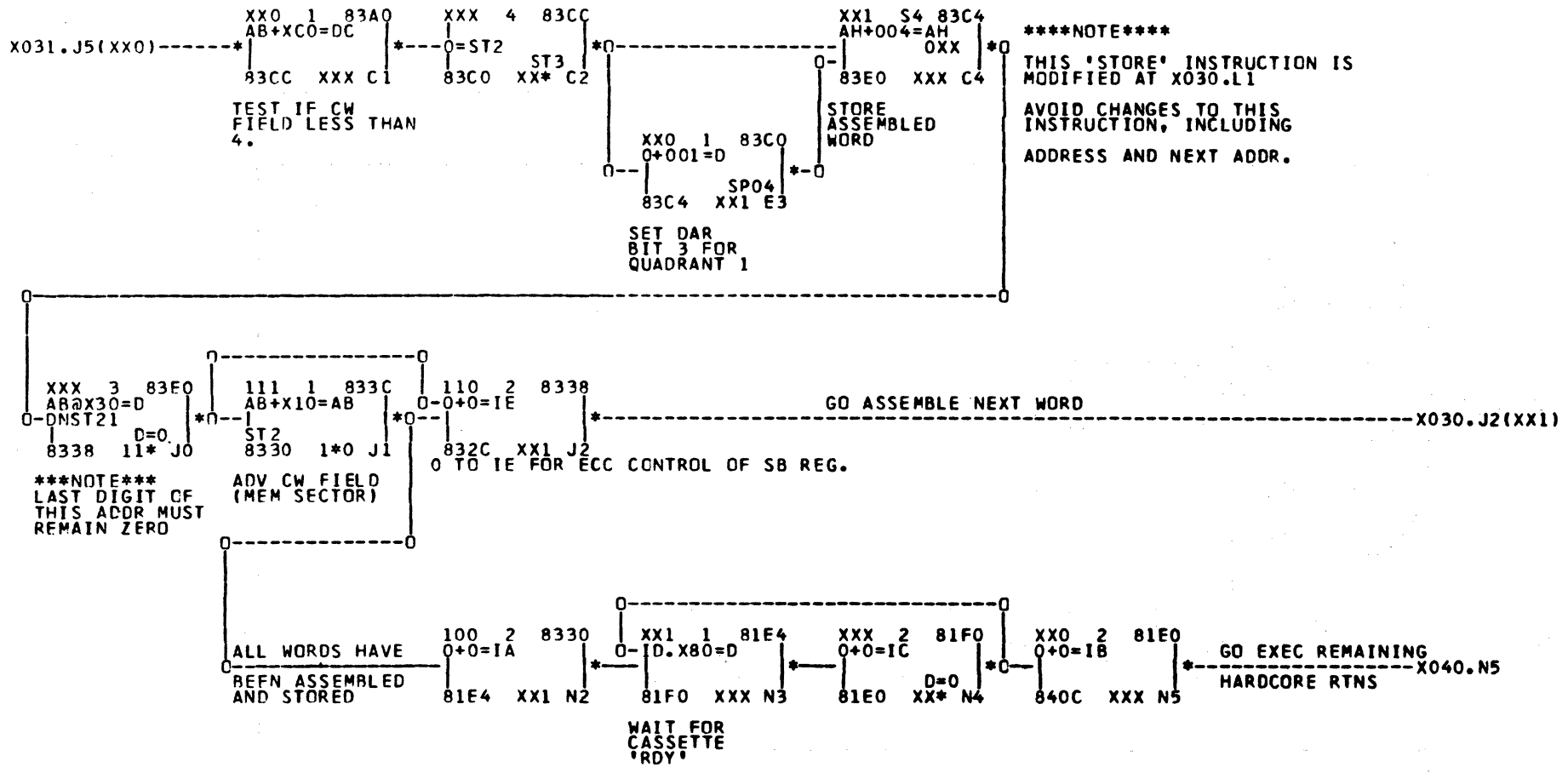
MODIFY CW FIELD OF 'STORE' INSTRUCTION FOR NEXT WORD TO BE ASSEMBLED AND STORED

X030 - BOOTSTRAP LOADER



ASSEMBLE 1 CASSETTE WORD

X031-BOOTSTRAP LOADER



STORE ASSEMBLED WORD, ADVANCE ADDRESS AND TEST FOR LAST WORD

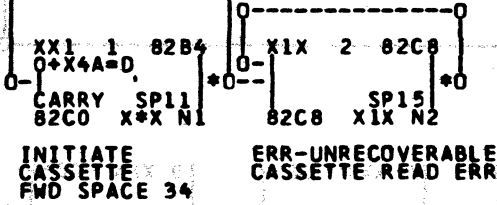
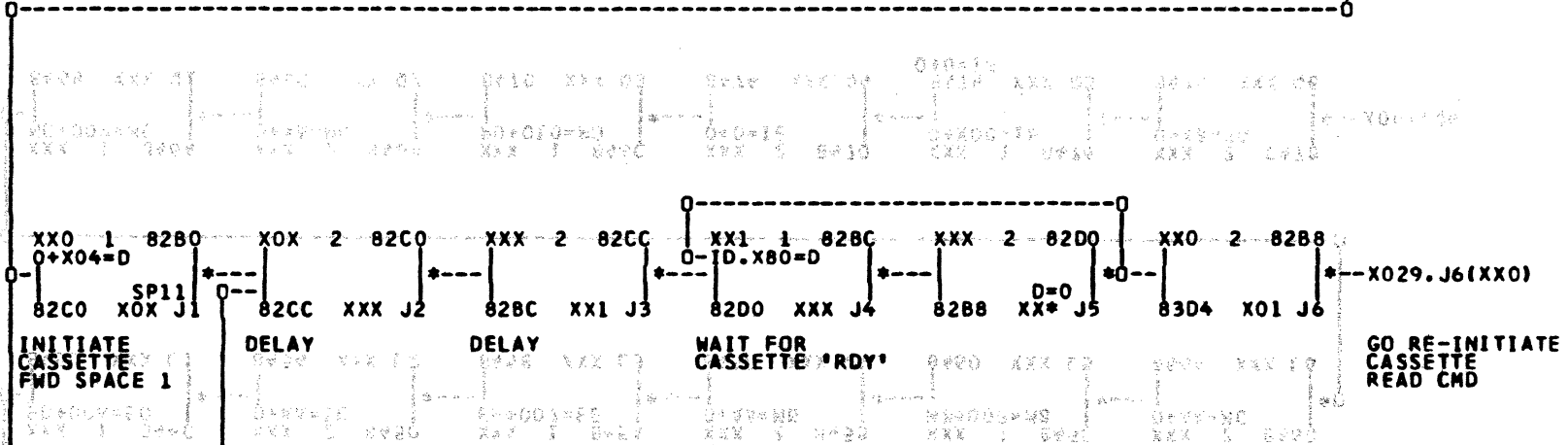
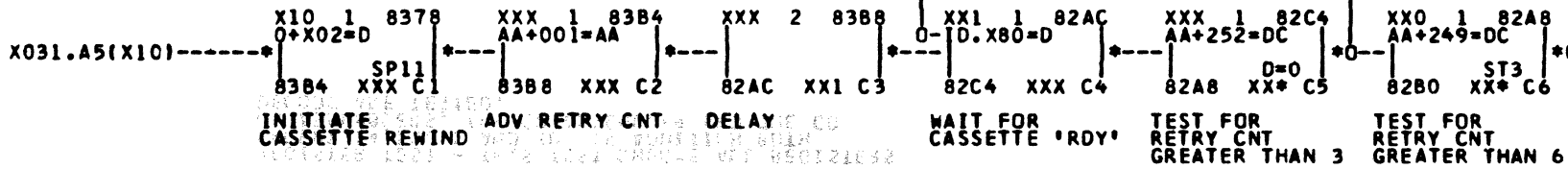
X032-BOOTSTRAP LOADER

PUB NO. 70631200

DOC NO. 73687900

2-186

REVISION A



X033-BOOTSTRAP LOADER



REGISTER TEST - THIS TEST CHECKS ALL REGISTERS
 EXCEPT IA, IB, IC AND ID. IN ADDITION BOTH
 CA ASSEMBLERS, THE CB ASSEMBLER AND THE CD
 DECODE ARE TESTED.

X040.Q6-----*

XXX 1 8434 FG+012=FG	XXX 2 8438 O+AA=AB	XXX 1 843C AB+013=AB	XXX 2 847C O+AA=AC	XXX 1 8480 AC+014=AC	XXX 2 8484 O+AA=AD
8438 XXX C1	843C XXX C2	847C XXX C3	8480 XXX C4	8484 XXX C5	8488 XXX C6

0-----0

XXX 1 8488 AD+015=AD	XXX 2 848C O+AA=AE	XXX 1 8490 AF+016=AE	XXX 2 8494 O+AA=AG	XXX 1 8498 AG+017=AG	XXX 2 849C O+AA=SA
849C XXX G1	8490 XXX G2	8494 XXX G3	8498 XXX G4	849C XXX G5	84A0 XXX G6

0-----0

XXX 1 84A0 SA+018=SA	XXX 2 84A4 O+AA=MA	XXX 1 84AB MA+019=MA	XXX 2 84AC O+AA=SC	XXX 1 84B0 SC+020=SC	XXX 2 84B4 O+AA=SD
84A4 XXX L1	84A8 XXX L2	84AC XXX L3	84B0 XXX L4	84B4 XXX L5	84B8 XXX L6

0-----0-----X042.Q6

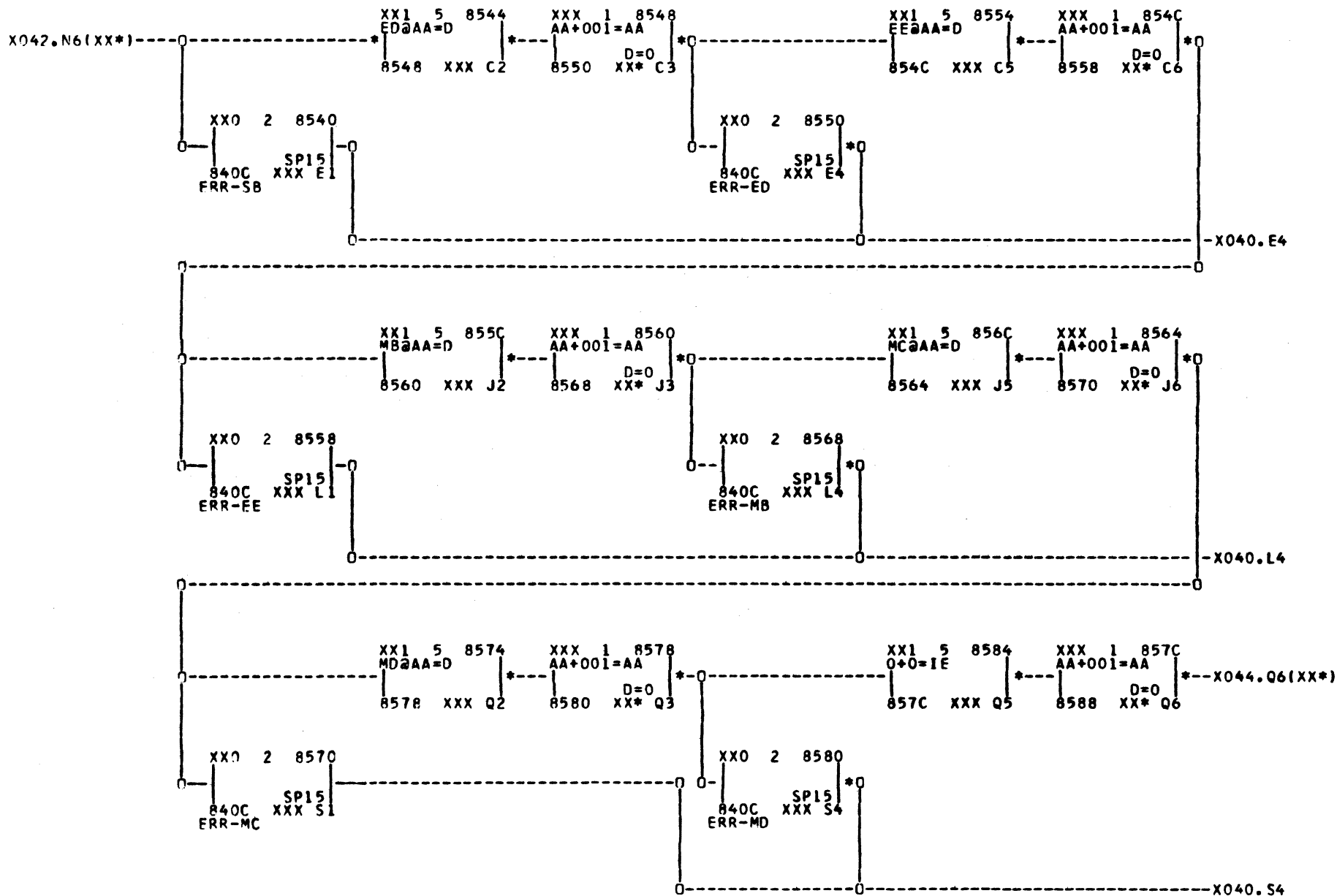
XXX 1 84B8 SD+021=SD	XXX 2 84BC O+AA=SE	XXX 1 84C0 SE+022=SE	XXX 2 84C4 O+AA=EB	XXX 1 84C8 EB+023=EB	XXX 2 84CC O+AA=EC
84BC XXX Q1	84C0 XXX Q2	84C4 XXX Q3	84C8 XXX Q4	84CC XXX Q5	84D0 XXX Q6

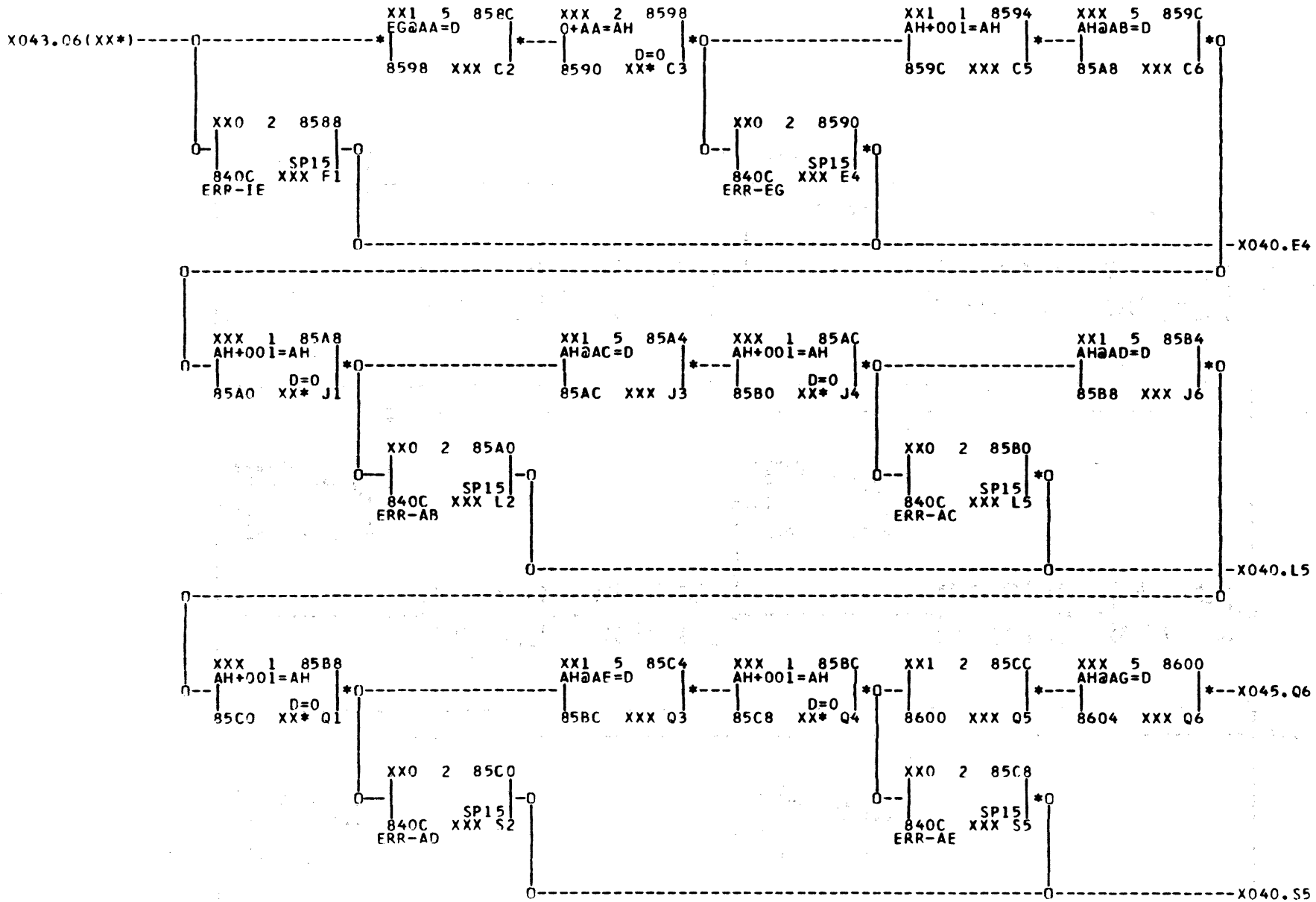
X041.06-----*
 XXX 1 84D0 EC+024=EC *
 XXX 2 84D4 0+AA=EA *
 XXX 1 8500 FA+025=FA *
 XXX 1 8504 AA+001=AA *
 XXX 5 8508 AT@AA=D *
 XXX 1 850C AA+001=AA *
 84D4 XXX C1 8500 XXX C2 8504 XXX C3 8508 XXX C4 850C XXX C5 8510 XX* C6
 D=0

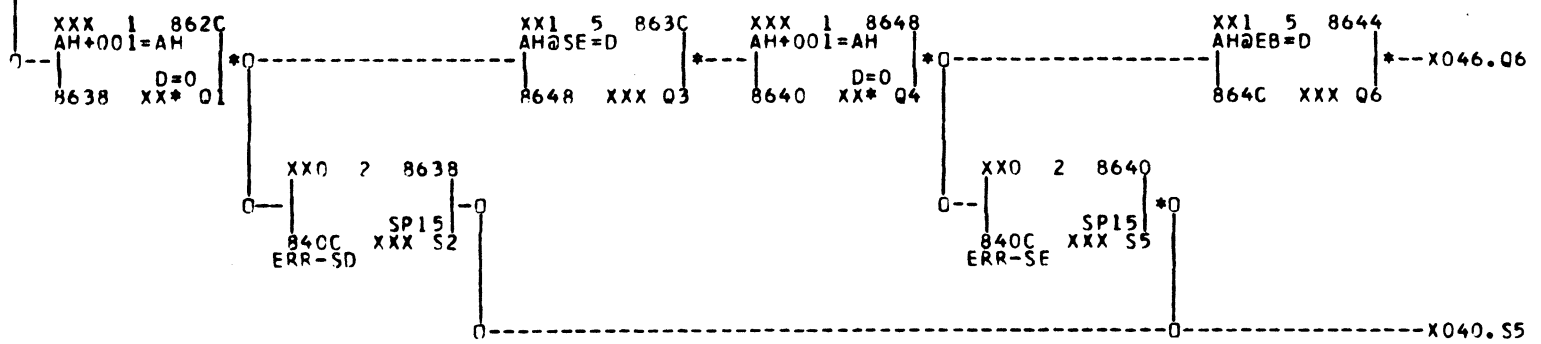
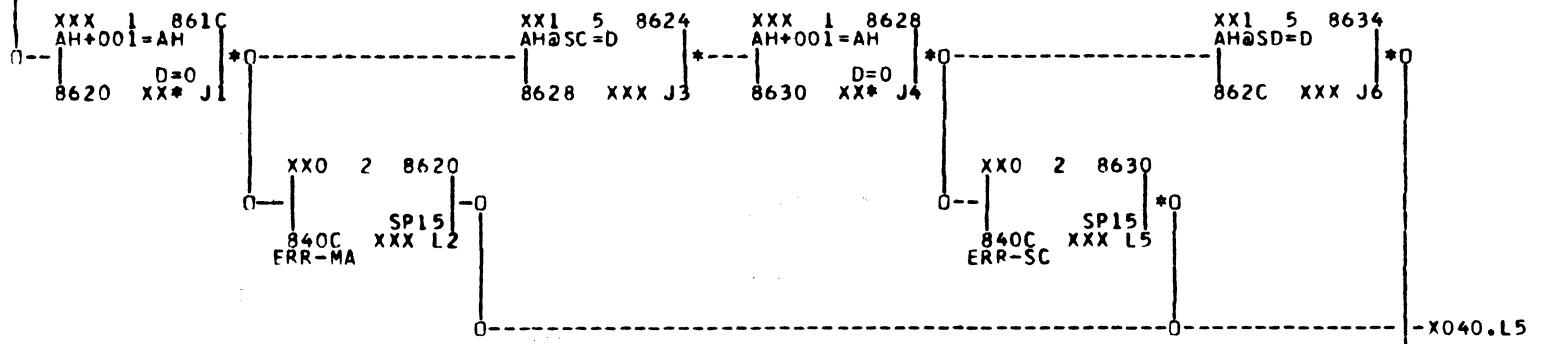
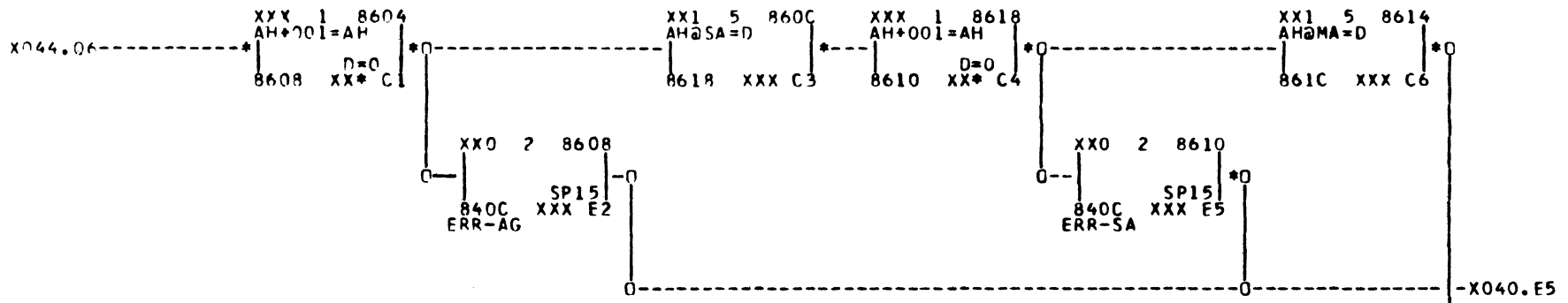
-----0
 0-----
 XX1 5 8514 SG@AA=D *
 XXX 1 8520 AA+001=AA *
 D=0
 8520 XXX G2 8518 XX* G3 *
 XX1 5 851C SH@AA=D *
 XXX 1 8524 AA+001=AA *
 D=0
 8524 XXX G5 8528 XX* G6 *
 XX0 2 8510
 840C SP15
 ERR-AT XXX J1
 XX0 2 8518
 840C SP15
 ERR-SG XXX J4
 -----0
 0-----X040.J4

-----0
 0-----
 XX1 5 852C ST@AA=D *
 XXX 1 8538 AA+001=AA *
 D=0
 8538 XXX N2 8530 XX* N3 *
 XX1 5 8534 SB@AA=D *
 XXX 1 853C AA+001=AA *
 D=0
 853C XXX N5 8540 XX* N6 *
 XX0 2 8528
 840C SP15
 ERR-SH XXX Q1
 XX0 2 8530
 840C SP15
 ERR-ST XXX Q4
 -----0
 0-----X040.Q4

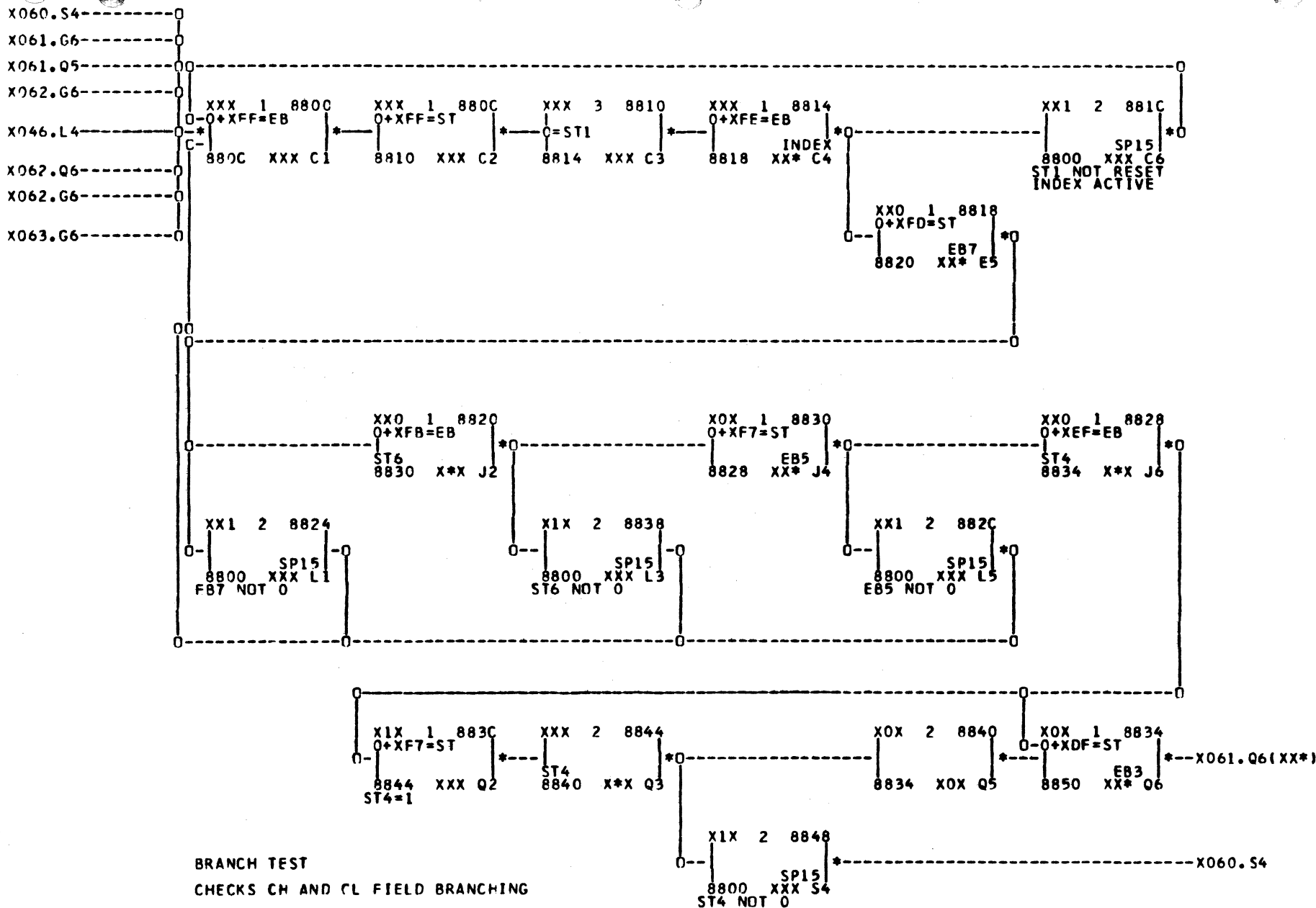
X042 - HARDWARE DIAGNOSTIC
 REGISTERS, CA/CB ASSEMBLERS AND CD
 DECODE TEST - PART 2
 REVISION A







X045 - HARDWARE DIAGNOSTIC
 REGISTERS, CA/CB ASSEMBLERS AND CD
 DECODE TEST - PART 2
 REVISION A



BRANCH TEST

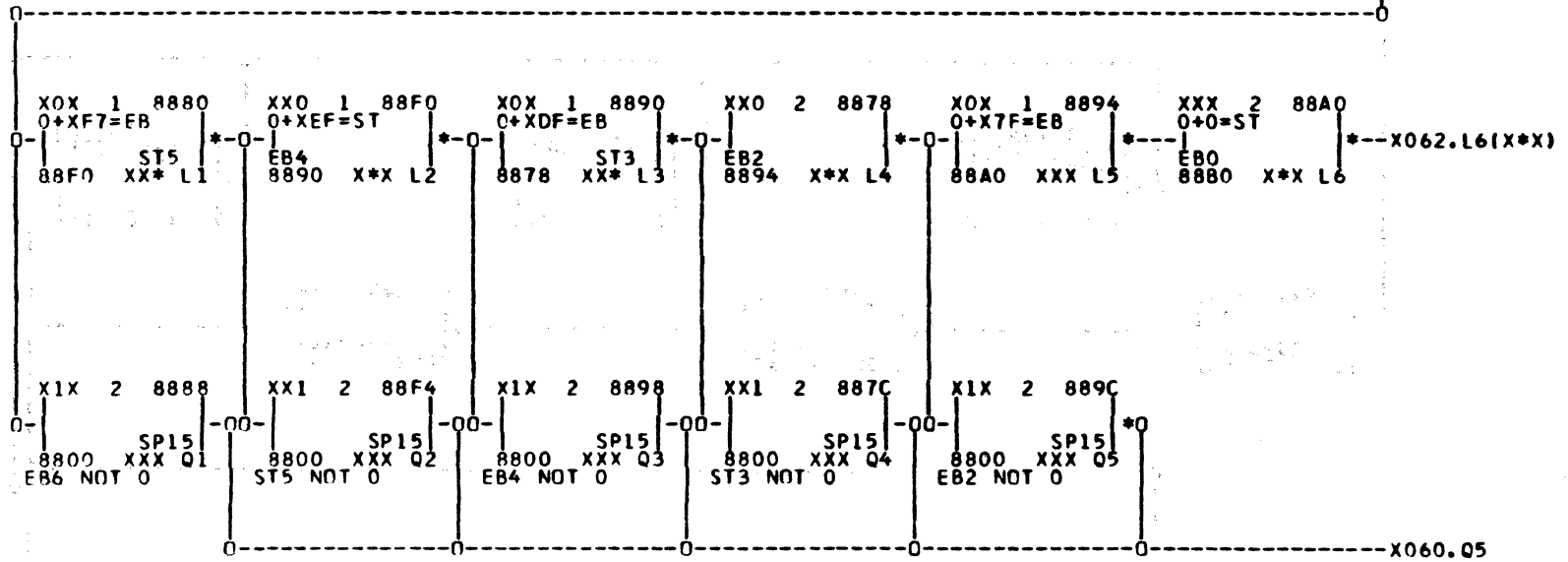
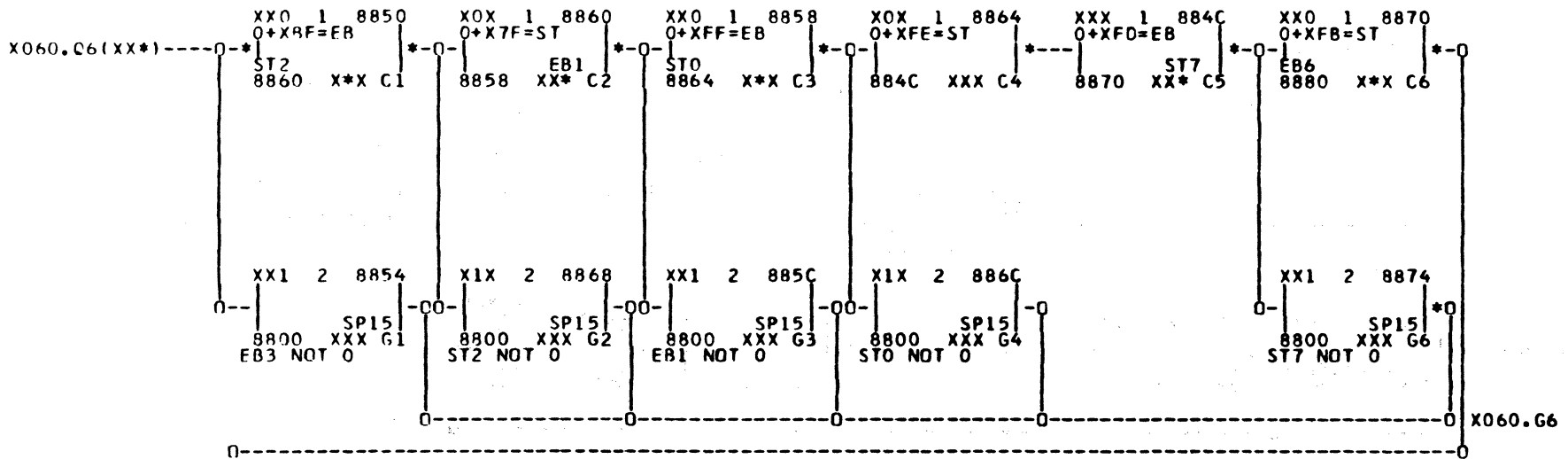
CHECKS CH AND CL FIELD BRANCHING

ST AND EB REGISTERS ARE VERIFIED PRIOR TO THIS TEST

EACH CH AND CL BIT (BRANCH) IS TESTED FOR ACTIVE WHEN ALL OTHER BITS ARE INACTIVE AND VISA VERSA.

THE TEST WILL DETECT CH AND CL FIELD MULTIPLE DECODE FAILURES AS WELL AS ABSENSE OF DECODE.

X060 - BRANCH TEST



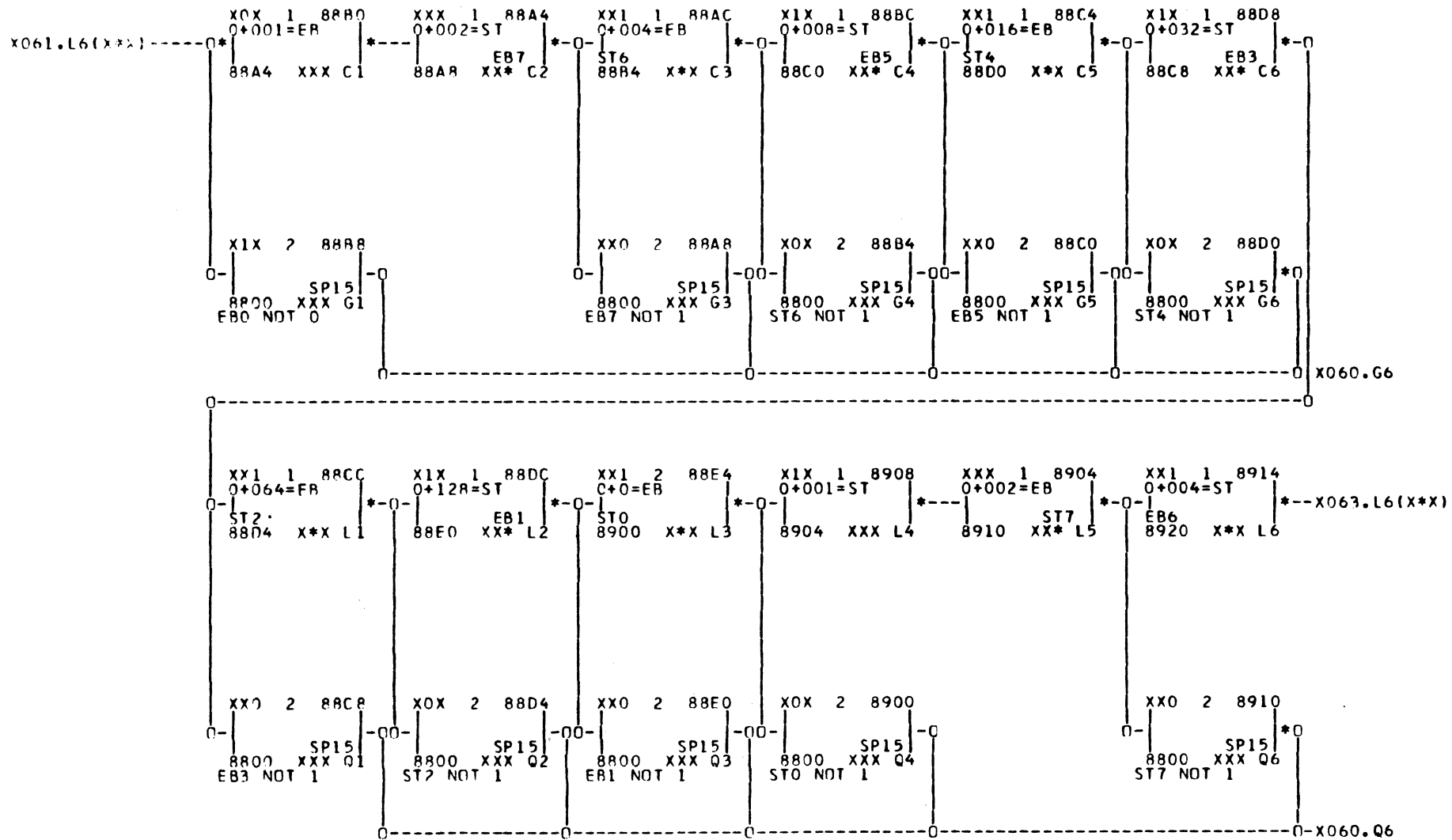
X061 - BRANCH TEST

PUB NO. 70631200

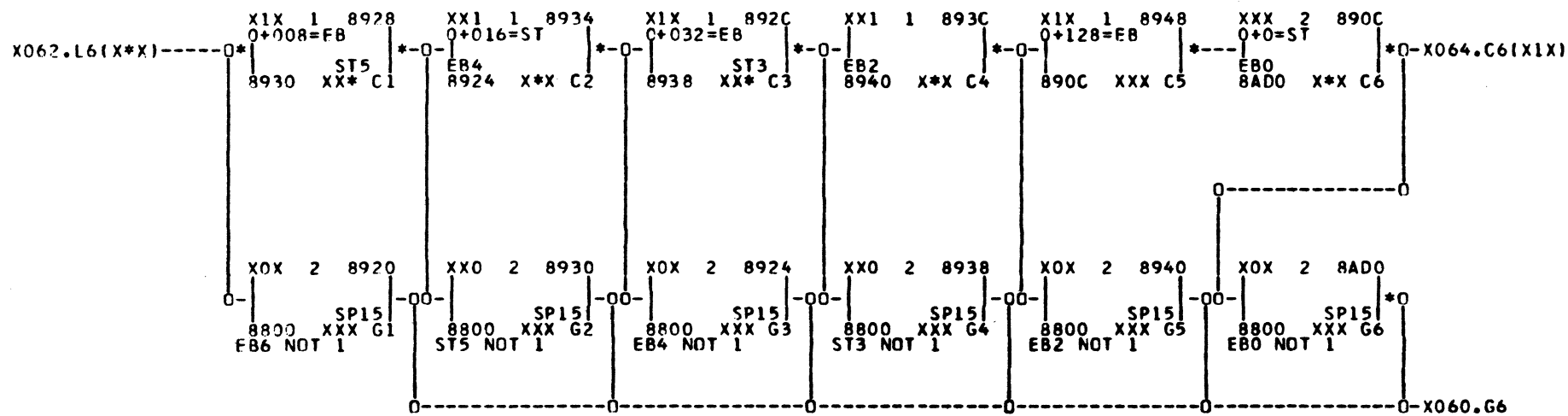
DOC NO. 73687900

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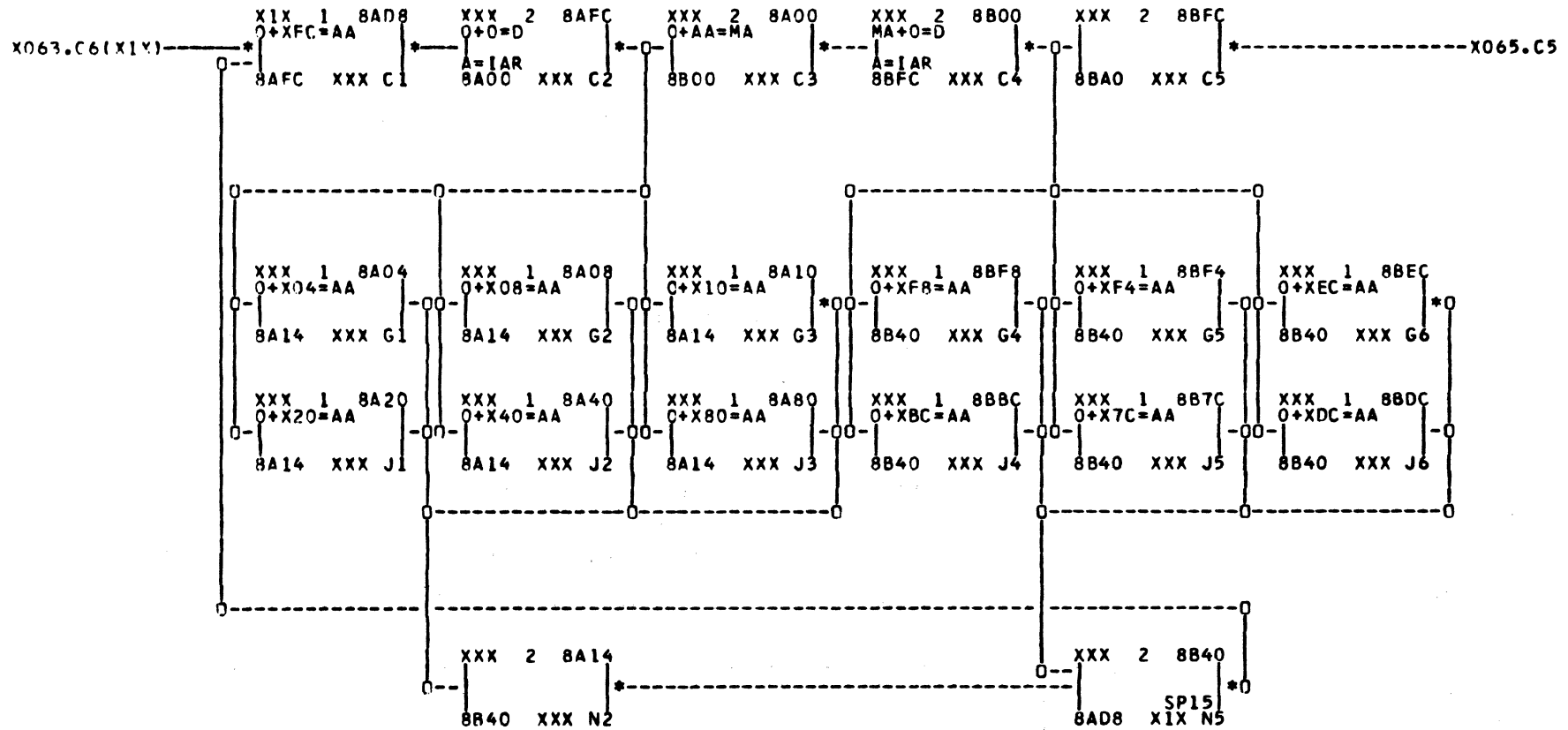
REVISION A



X062 - BRANCH TEST



X063 - BRANCH TEST



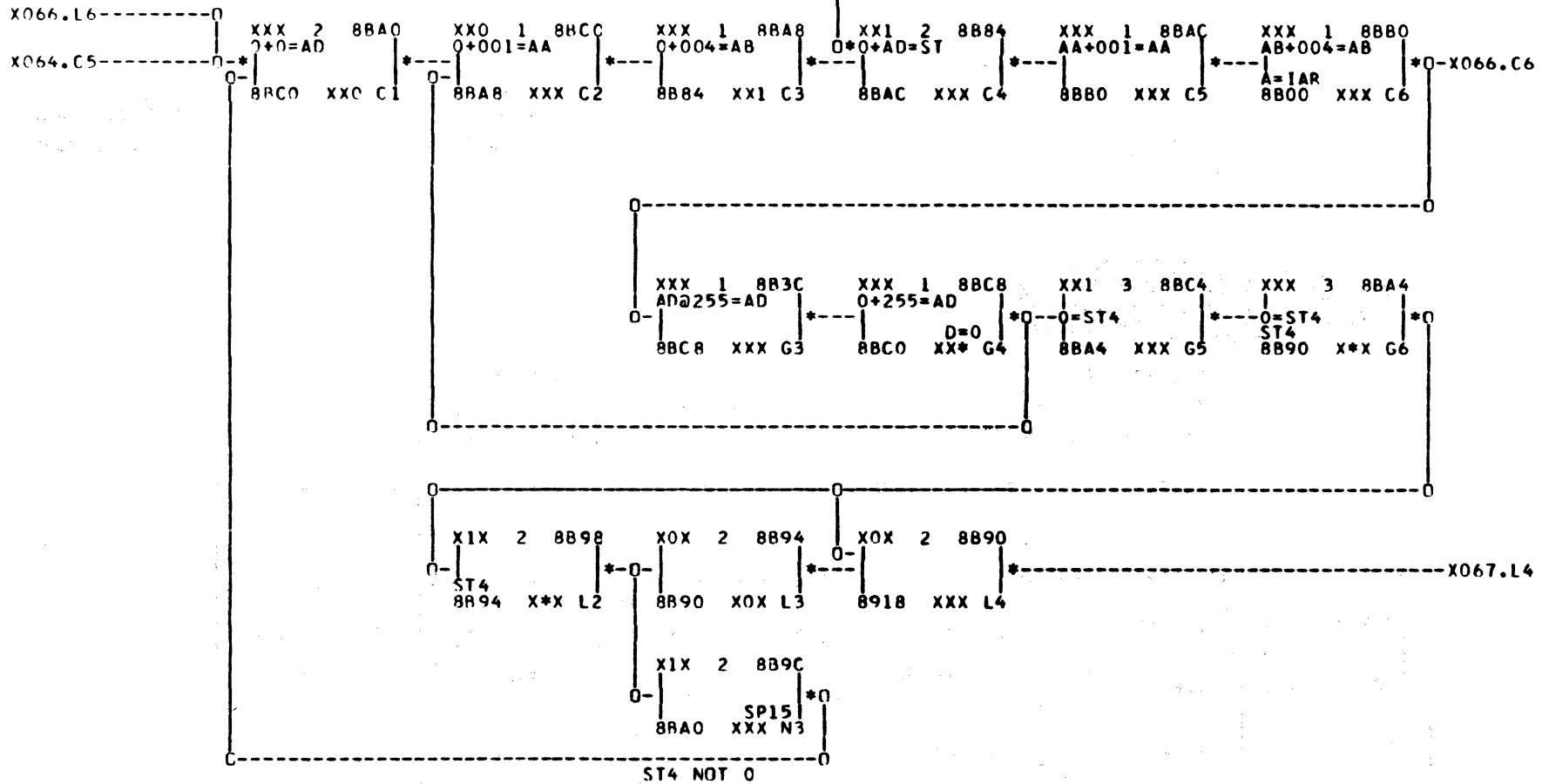
ERROR - A=IAR FAILED TO SET IAR CORRECTLY. MA REG CONTAINS PATTERN THAT SHOULD HAVE BEEN GATED TO IAR. AA REG BITS 0-5 REPRESENT PATTERN ACTUALLY GATED TO IAR BITS 8-13.

U-PGMR NOTE

ANY ADDR CHGS WILL DESTROY LOGIC OF TEST

A=IAR TEST

CHECKS FOR PROPER GATING OF 'A' BUS BITS 0-5 TO IAR BITS 8-13.



X065 - CS DECODE TEST

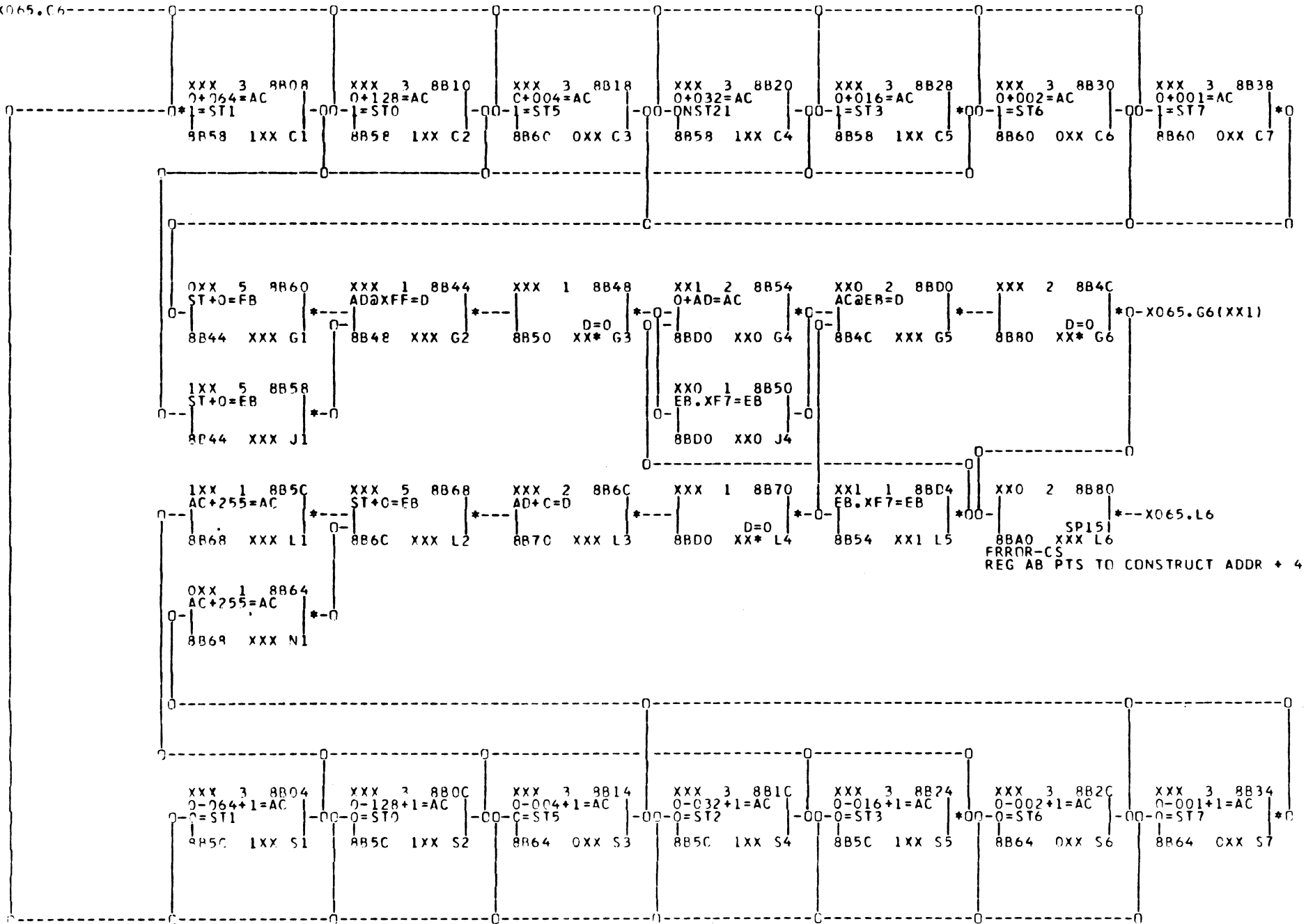
REV. NO. 72641200

DOC. NO. 73687200

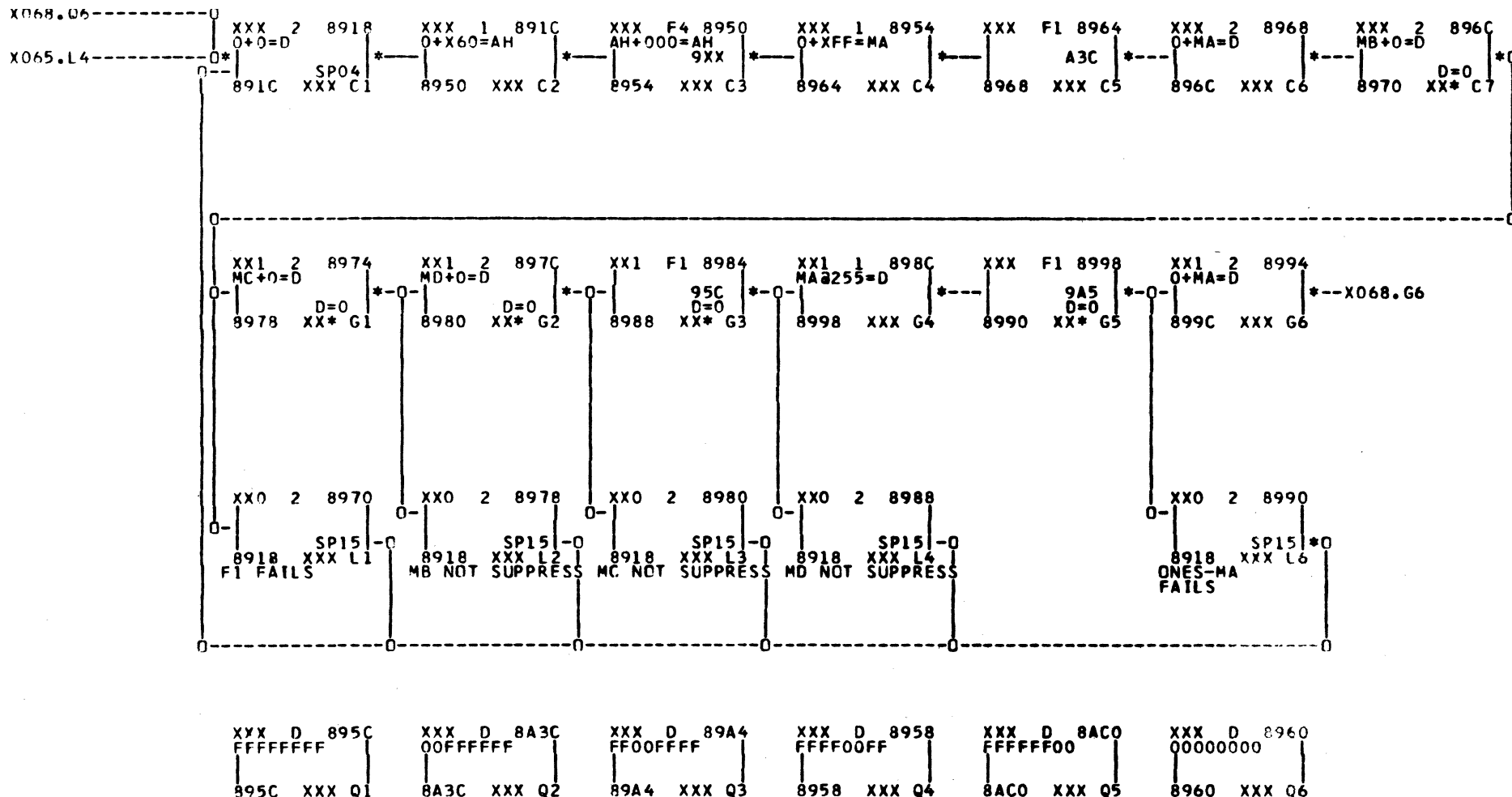
2-100

REVISION A

X065.C6



X066 - CS DFCDF TEST



MA REGISTER ASSEMBLER TEST

TESTS THAT PROPER BYTE IS TRANSFERRED TO 'MA' REGISTER ON A 1 BYTE FETCH. ALSO MAKES SURE THAT REGISTERS 'MB' THRU 'MD' ARE NOT CHANGED BY A 1 BYTE FETCH. IN ADDITION, GATING OF THE CV, CY AND CW FIELDS IS TESTED.

X067 - 'MA' REGISTER ASSEMBLER TEST

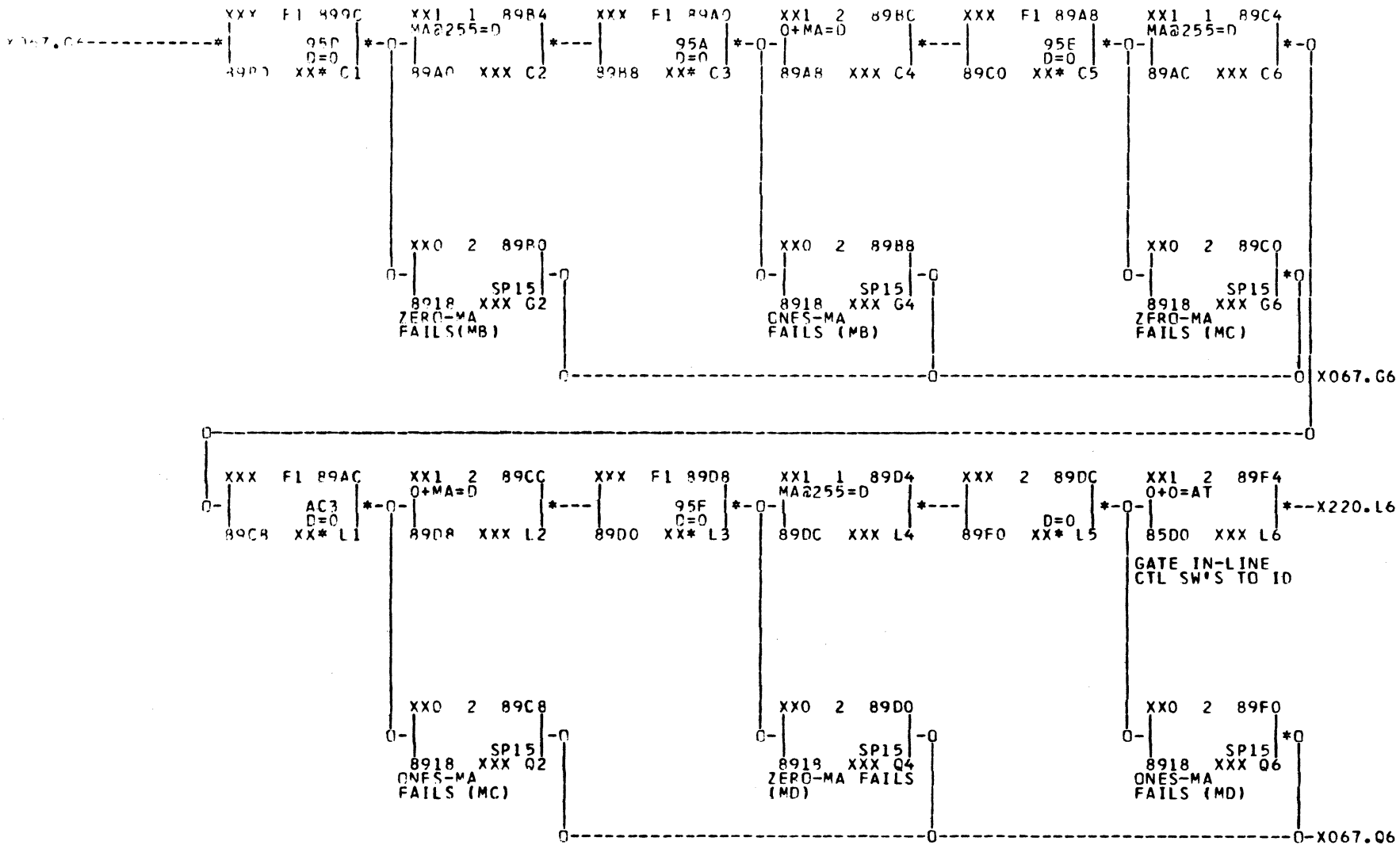
PUH NC. 70631200

DOC NO. 73687900

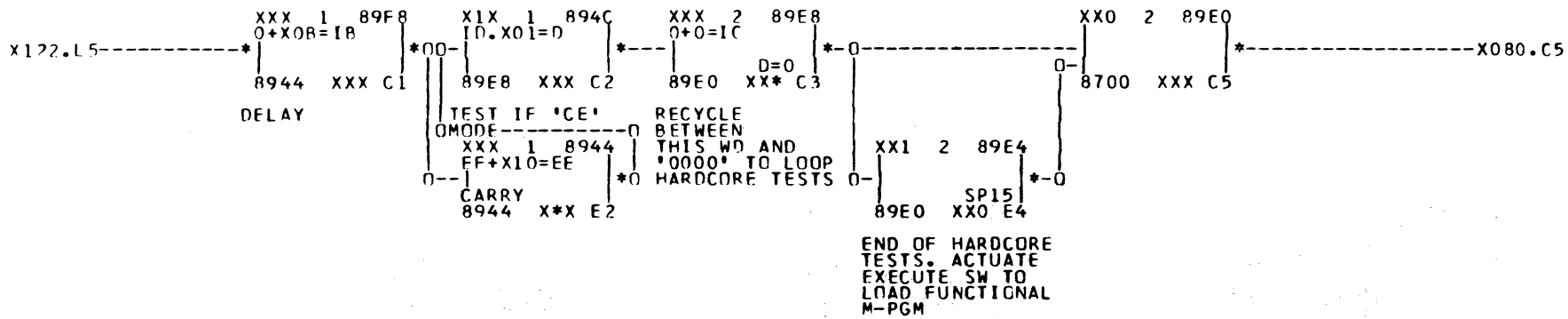
2-1-2

REVISION

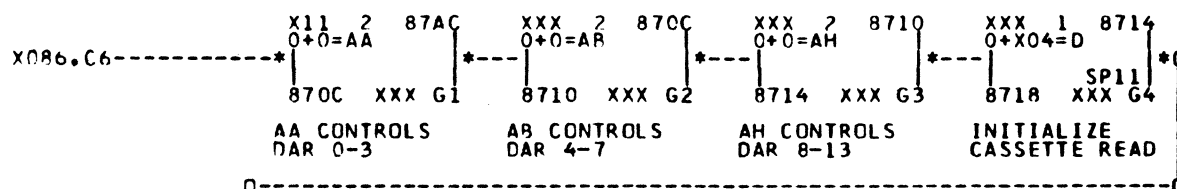
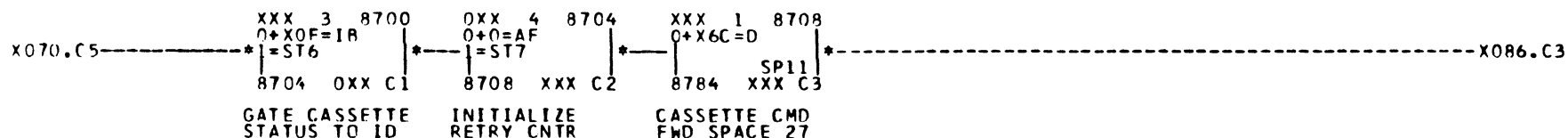
A



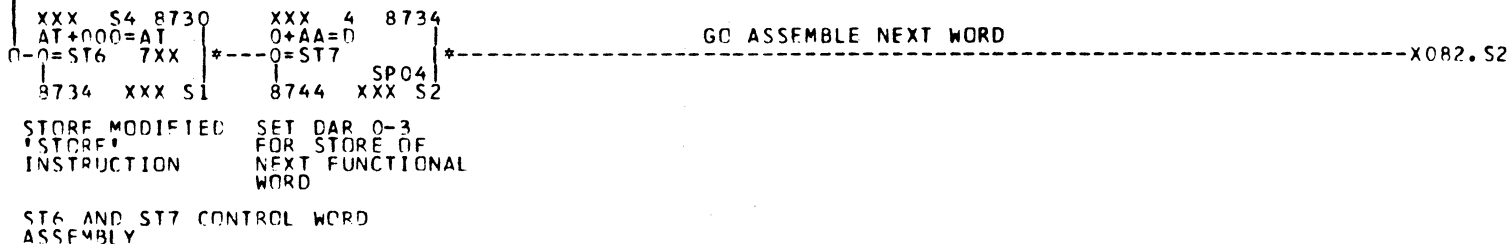
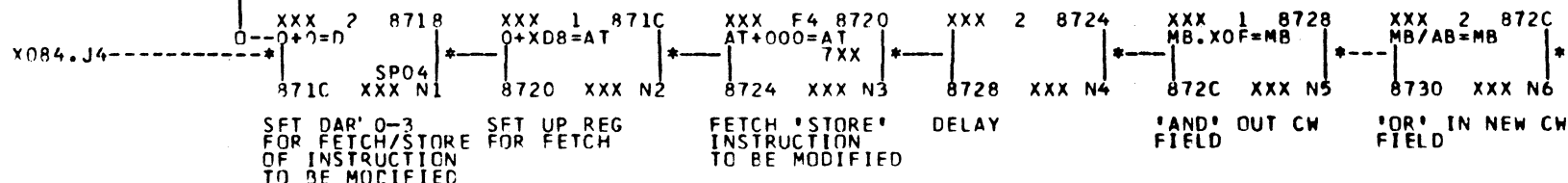
ZERO ONFS PATH TO MA FROM B,C,D POSITIONS OF MEMORY TESTED



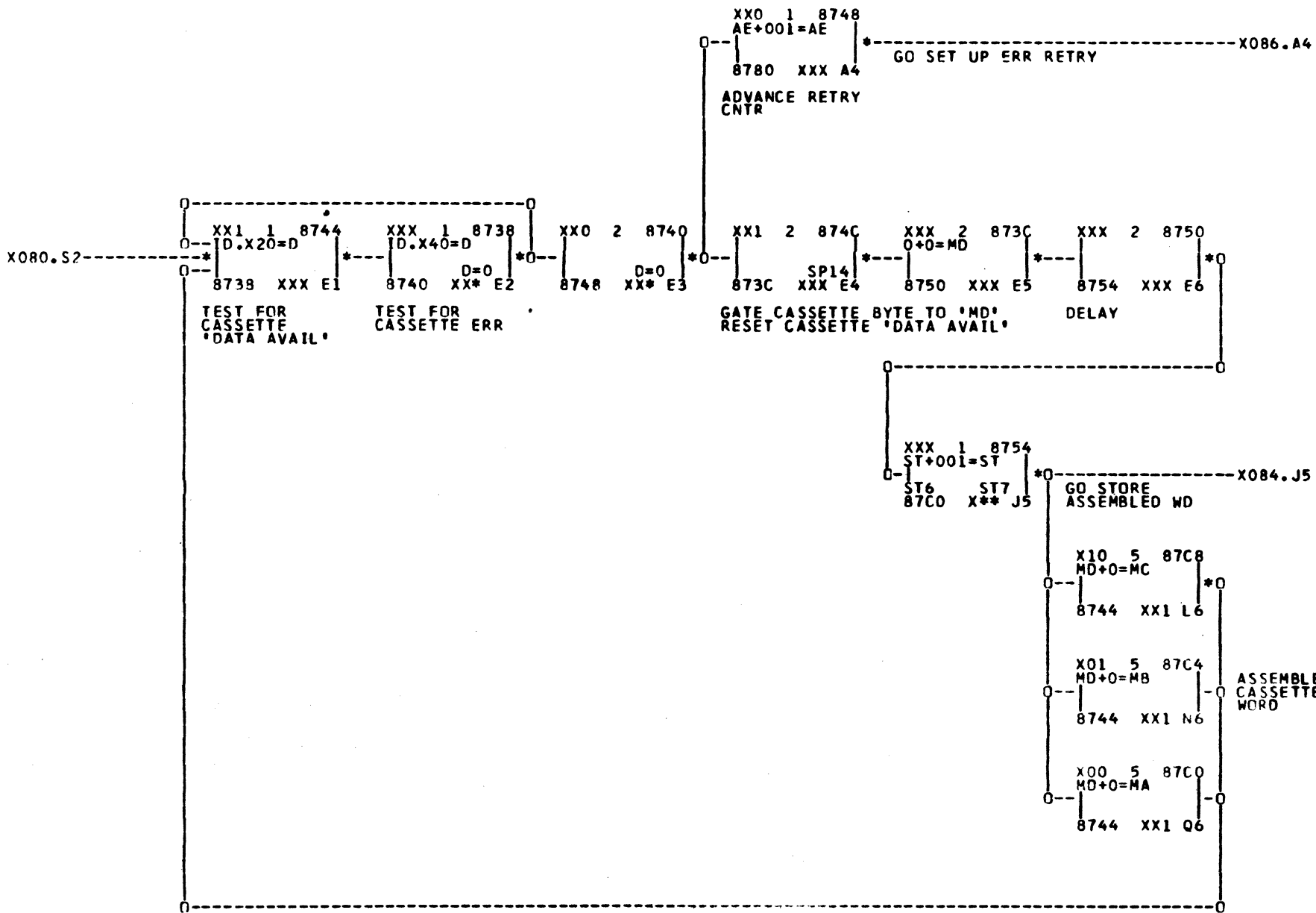
INITIALIZE, SPACE TO FUNCTIONAL CODE, INITIATE READ



MODIFY 'STORE' THAT STORES ALL WDS OF FUNCTIONAL U-PGM.
(GET HERE ONCE FOR EACH FUNCTIONAL U-PGM WORD).

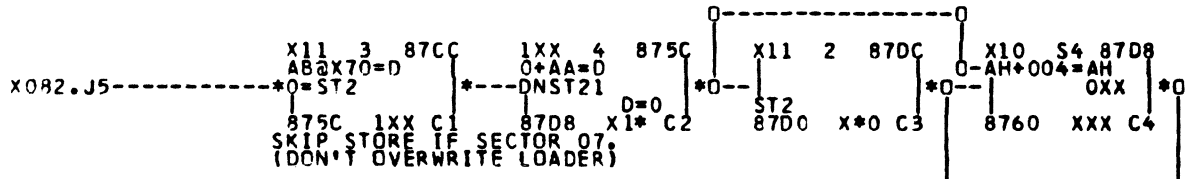


X080 - FUNCTIONAL M-PGM LOADER

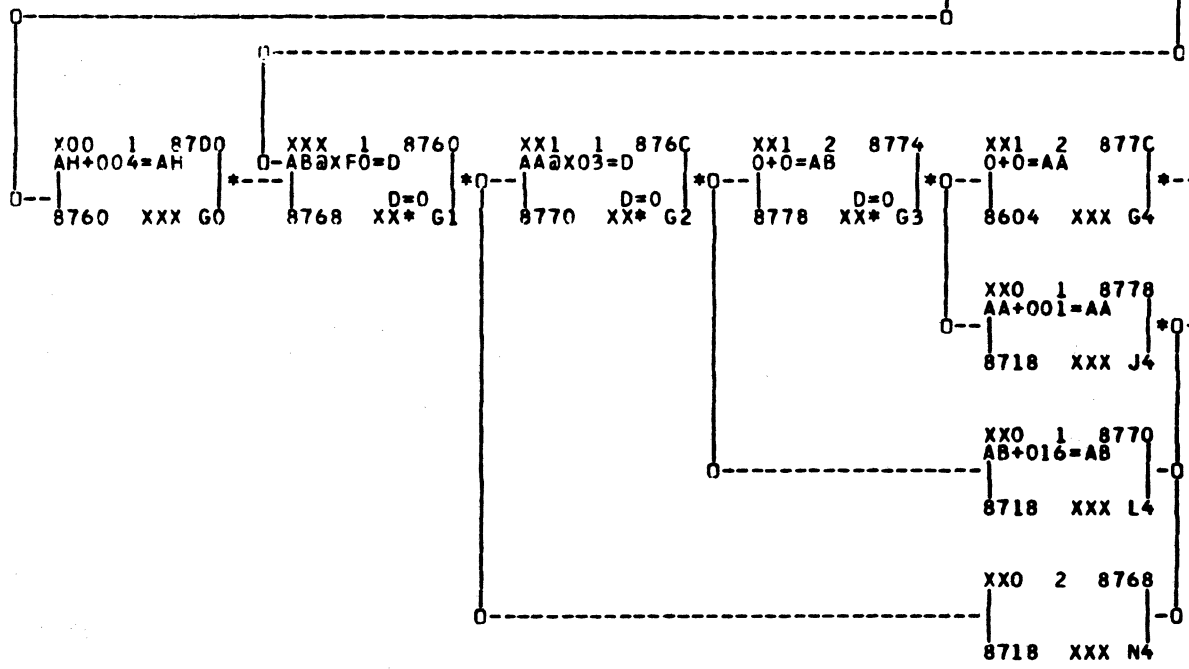


ASSEMBLE 1 FUNCTIONAL M-PGM WORD

X082 - FUNCTIONAL M-PGM LOADER



****NOTE****
 THE CW FIELD OF THIS
 INSTRUCTION IS MODIFIED
 AT X080.N3

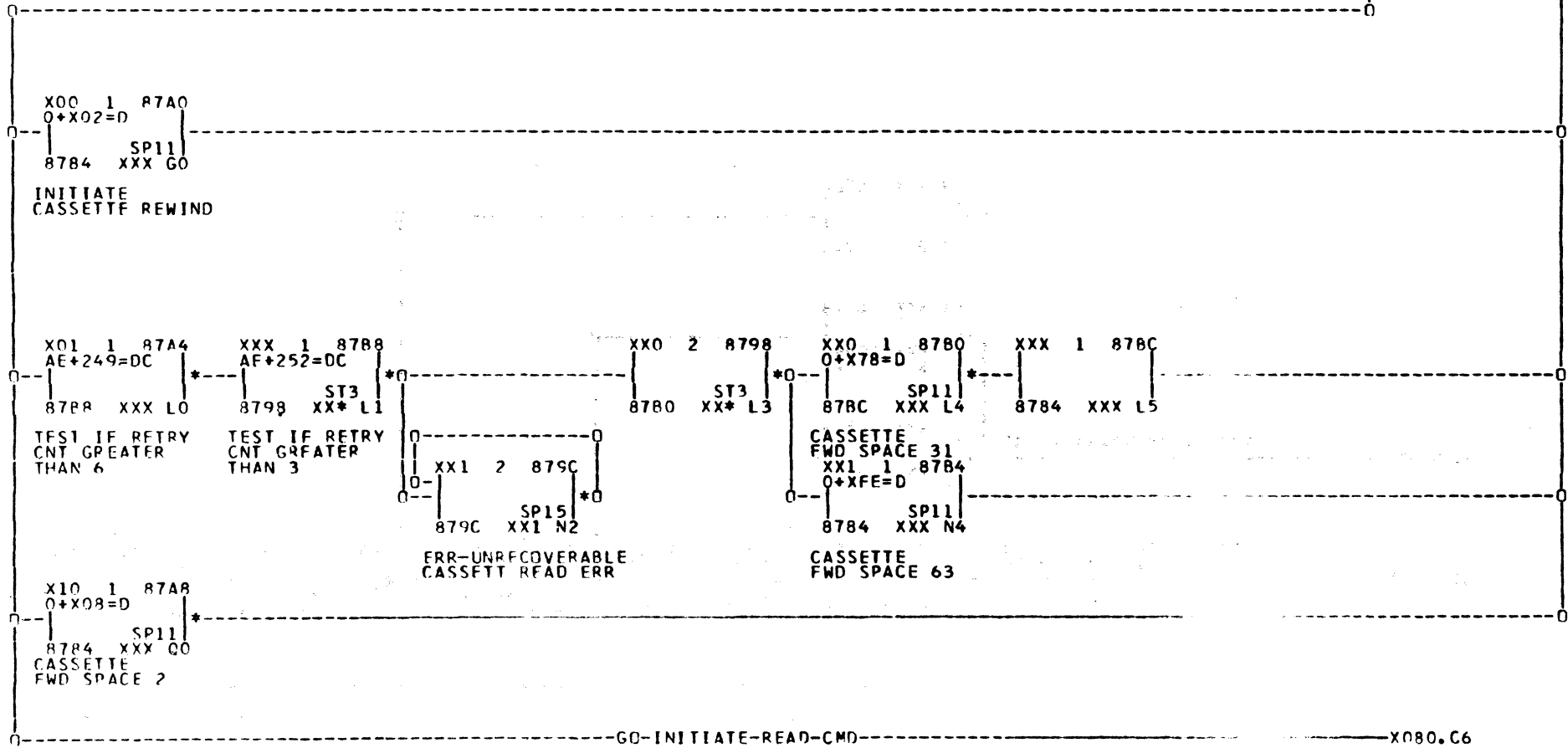
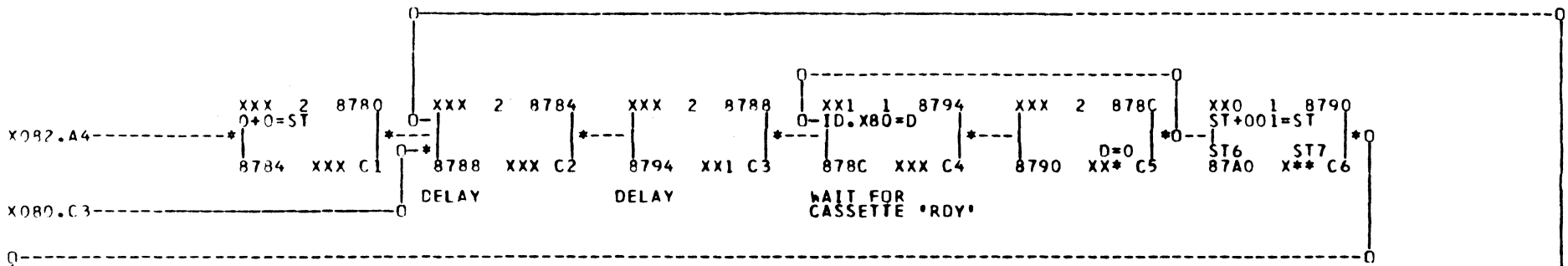


-----Z110.G4
 GO COMPUTE AND TEST CHECK-SUM
 OF FUNCTIONAL U-PGM.

-----X080.J4
 GO ASSEMBLE NEXT WORD

STORE FUNCTIONAL WORD AND ADVANCE ADDRESS.
 SKIP STORE IF ADDRESS IN SECTOR THAT CONTAINS
 FUNCTIONAL M-PGM LOADER

X084 - FUNCTIONAL M-PGM LOADER



X086 - FUNCTIONAL M-PGM LOADER

PUR NO. 70631200

DNC NO. 736R79C0

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REVISION

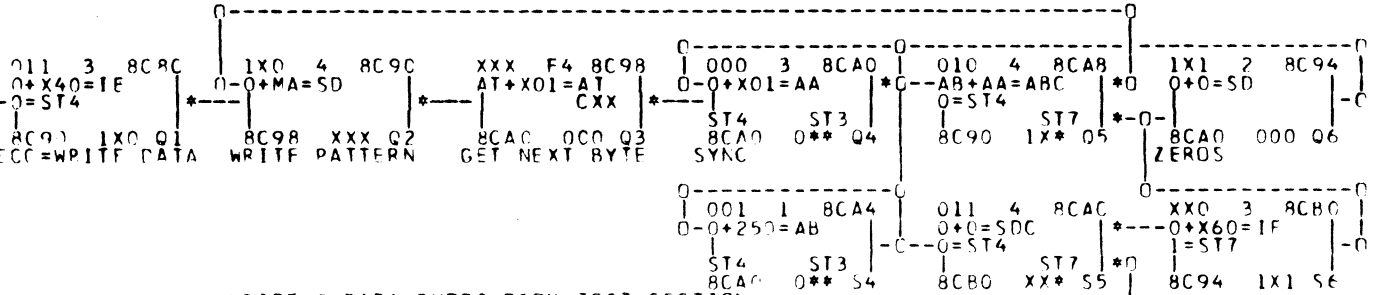
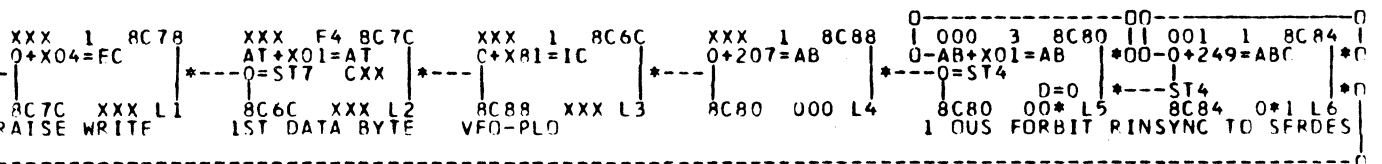
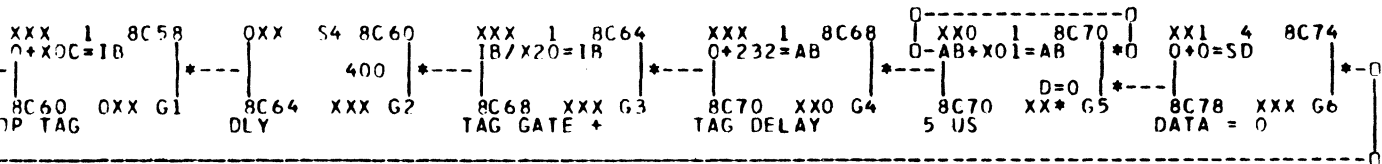
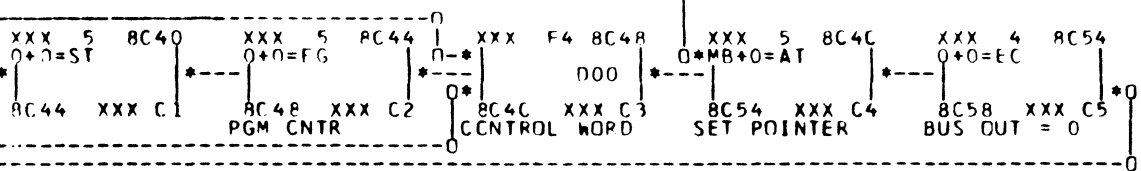
F

X112.F6

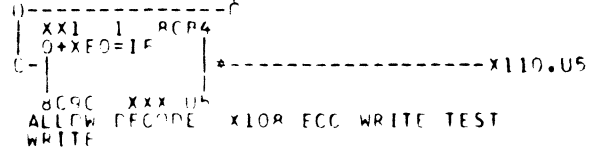
X110.G4

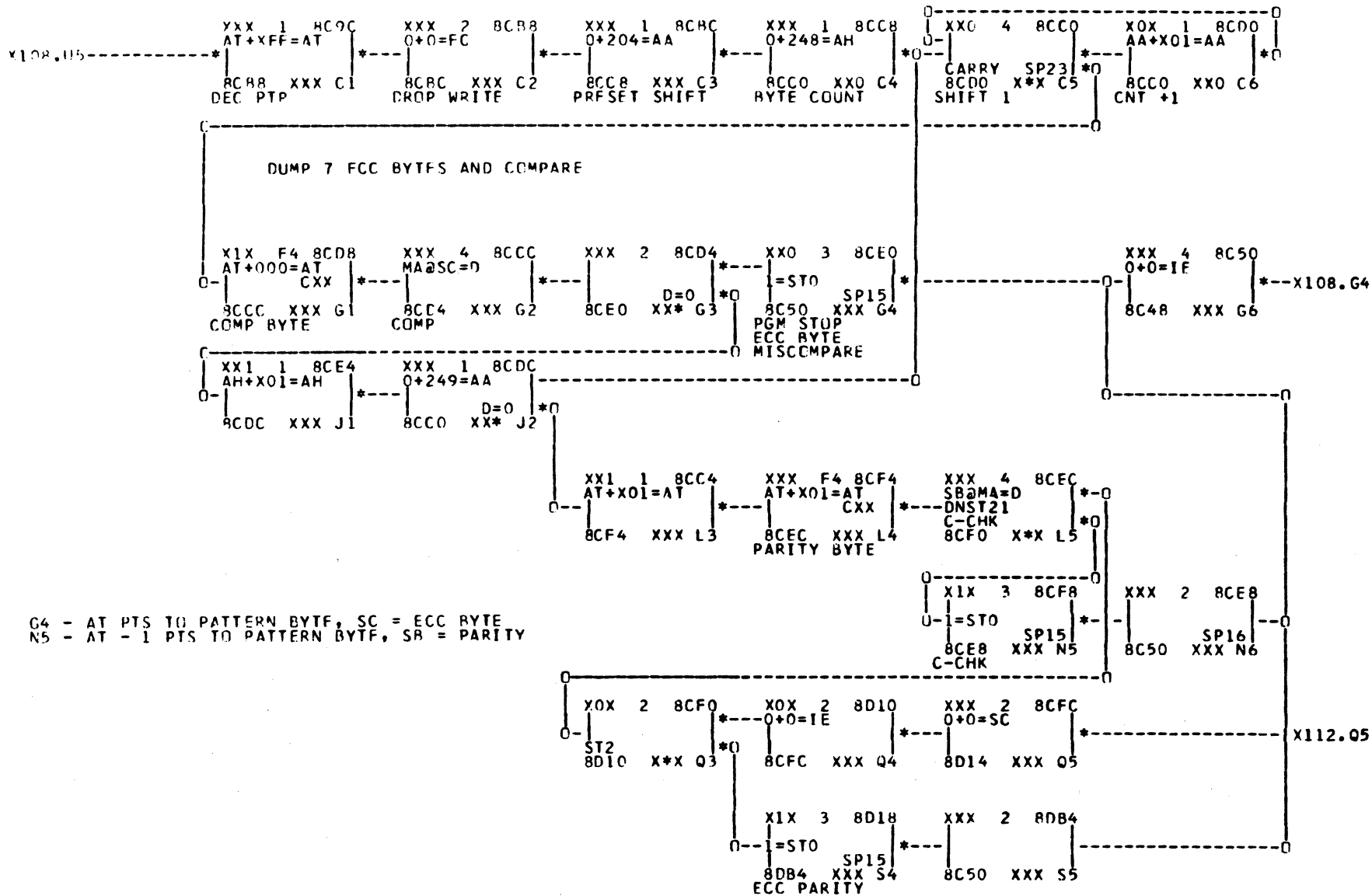
X222.F6
START

X122.J6
FROM READ



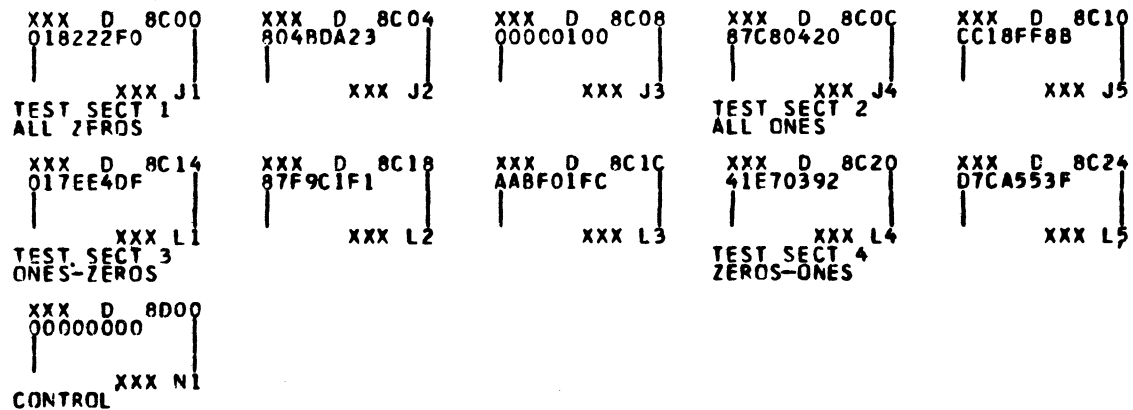
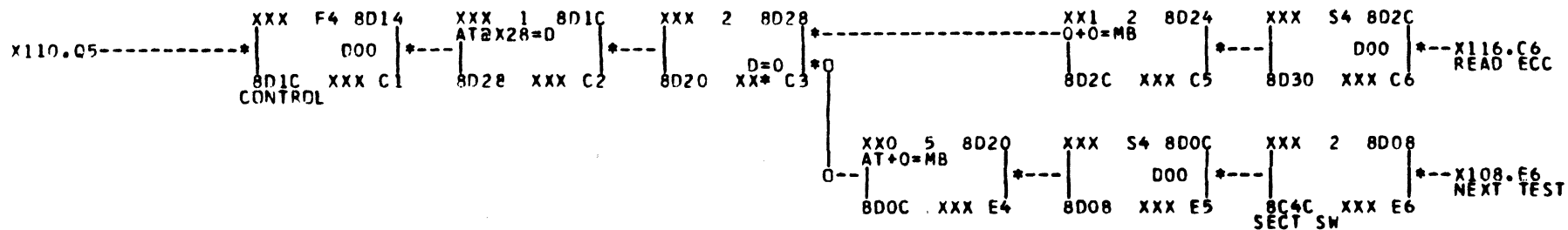
WRITE 8 DATA BYTES FROM TEST SECTION
AT - POINTS TO BYTE





G4 - AT PTS TO PATTERN BYTF, SC = ECC BYTE
 N5 - AT - 1 PTS TO PATTERN BYTF, SB = PARITY

X110 ECC WRITE TEST




```

XXX 4 8D30  XXX 1 8D34  XXX 54 8D38  XXX F4 8D3C  XXX 4 8D40  XXX 4 8D44
O+O=MA      O+X3C=AH  AH+000=AH  AH+000=AH  U+MA=AT      O+O=EC
*O=STC
FRGM WRITE
8D34 XXX C1  8D3E XXX C2  8D3C XXX C3  C* 8D40 XXX C4  8D44 XXX C5  8D48 XXX C6
X112.C6-----|-----|-----|-----|-----|-----|
X122.N6-----|-----|-----|-----|-----|-----|
X122.G6-----|-----|-----|-----|-----|-----|

```

```

XXX 4 8D48  XXX 1 8D4C  XXX 2 8D58  XXX 1 8D5C  XXX 1 8D60  XXX 1 8D50
O+O=IE      O+XGC=1B  DLY          IB/X20=1B  O+232=AB  AB+X01=AB
8D4C XXX G1  8D58 XXX G2  8D5C XXX G3  8D60 XXX G4  8D50 XXX G5  8D50 XX* G6
RESET ECC    OPERATE TAG          TAG +    DELAY FGR TAGS

```

```

XX1 4 8D54  XXX 1 8D64  XXX F4 8D68  XXX 1 8D6C  XXX 1 8D88  XXX 3 8D80
O+O=SD      O+XG4=EC  AT+001=AT  O+X81=IC  O+207=AB  O-AB+X01=AB
8D64 XXX L1  8D68 XXX L2  8D6C XXX L3  8D88 XXX L4  8D80 000 L5  8D80 00* L6
TAG BUS=WRITE 1ST XFT BYTE  VFC-PLU  BIT RING STABLE 10 US DLY

```

NCTE_ SERDES IS OPERATED IN WRITE MODE TO SIMULATE-READ-DATA

```

001 1 8D84  011 1 8D8C  XXX 3 8D7C
O+249=AAC  IH.X3F=1B  C+X20=IE
ST4        O=ST4
8D84 C*1 S1 8D7C XXX S2 8D7C XXX S3
WAIT ST4   DRGP VFO HG  ECC = READ
ST3 = C

```

SECTION 3 IS SPECIAL REDUNDANCY CHECK

STC - 0 SEC 1 CR 2
 - 1 SEC 3
 S15 - C - 1ST PASS CUMP COMPARE
 - 1 - 2ND PASS EXIT FOR CLEANUP
 ST3 - 1 SPEC PATH FCR 12 CF P2

X116 ECC READ TEST

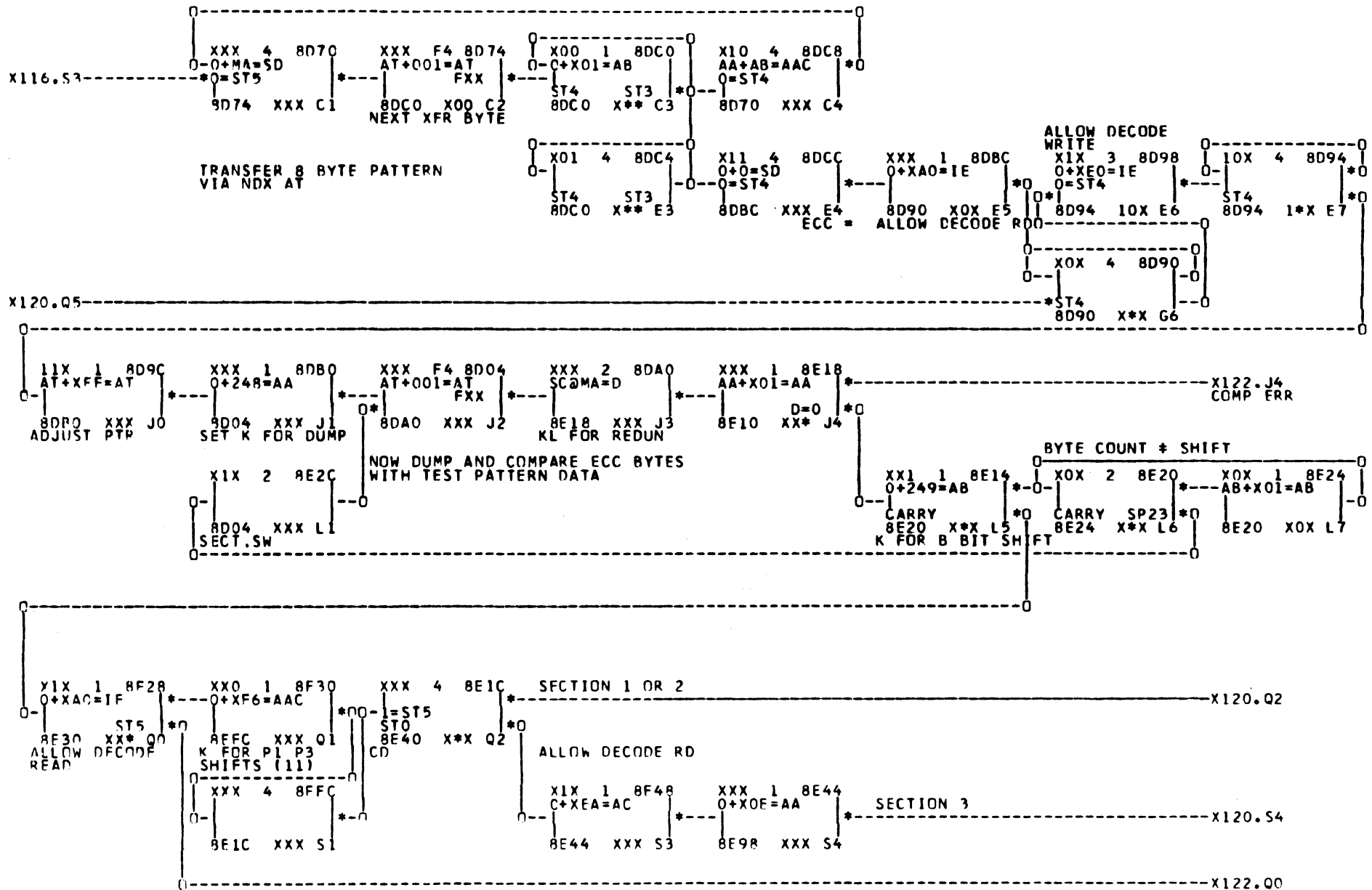
PUB NO. 70531200

DCC NO. 73687900

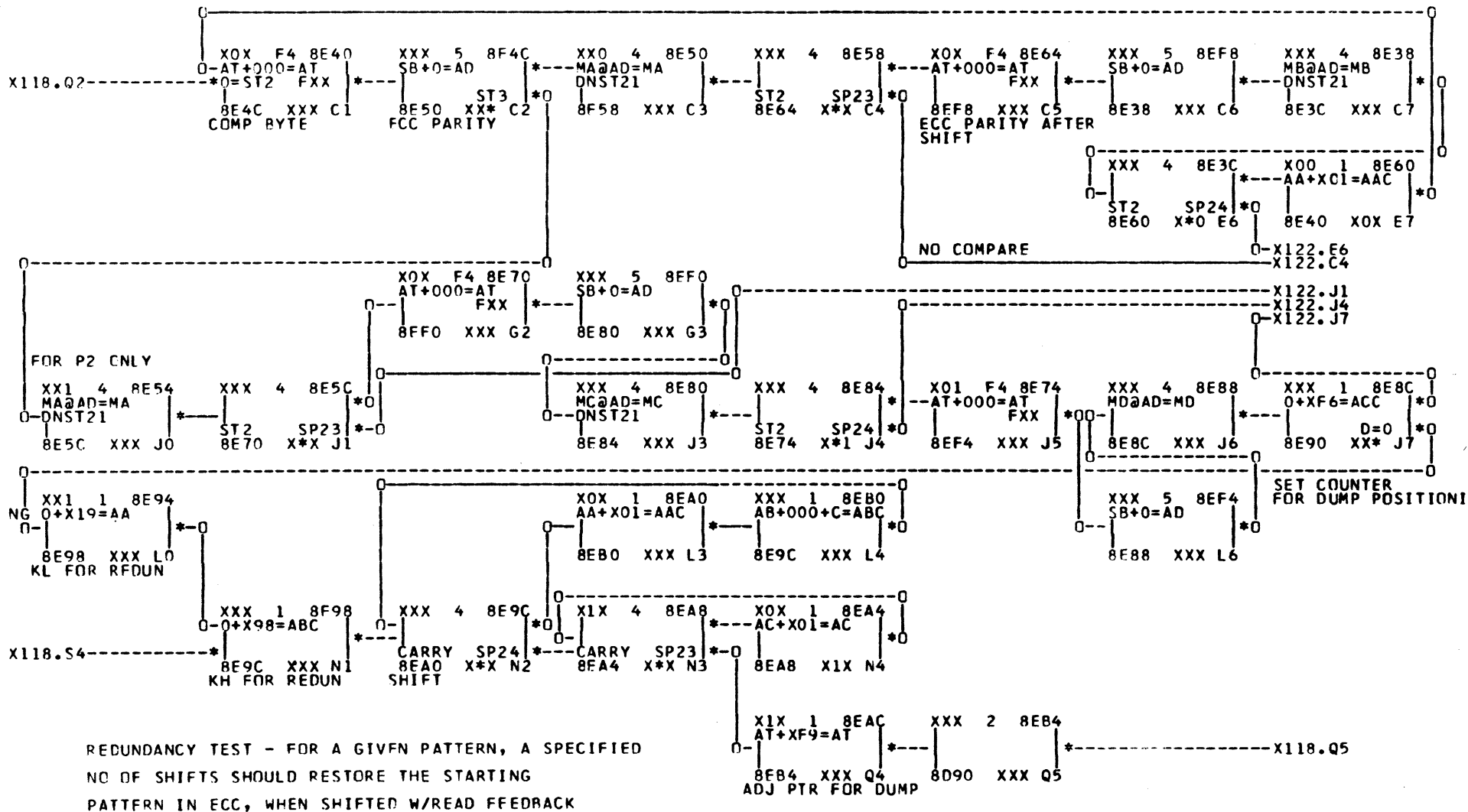
2-212

REVISION

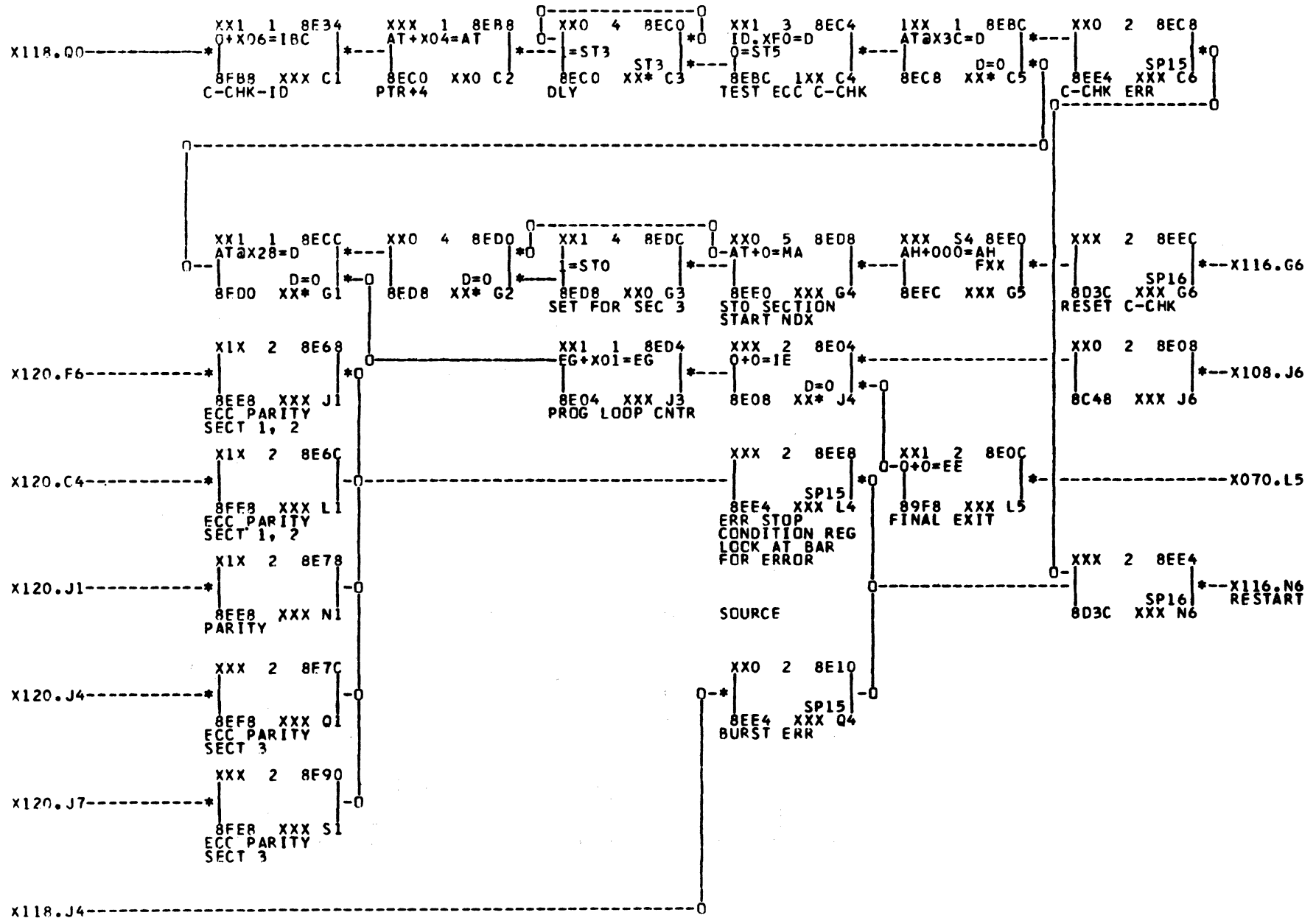
G



X118 FCC READ TEST



X120 ECC READ TEST



X122 ECC READ TEST

XXX D 8F00 018222F0	XXX D 8F04 8048DA23	XXX D 8F08 C0000000	XXX D 8F0C 00000000	XXX D 8F10 00000000
XXX E1	XXX E2	XXX E3	XXX E4	XXX E5
TEST SECTION 1	ZEROS			
XXX D 8F14 018222F0	XXX D 8F18 8048DA22	XXX D 8F1C 00002004	XXX D 8F20 00400800	XXX D 8F24 02FEFDCD
XXX G1	XXX G2	XXX G3	XXX G4	XXX G5
TEST SECTION 2	LOW ORDER BITS=1			
XXX D 8F28 01A8492F	XXX D 8F2C 419B527D	XXX D 8F30 FFFFFFFF	XXX D 8F34 FFFFFFFF	XXX D 8F38 00000000
XXX J1	XXX J2	XXX J3	XXX J4	XXX J5
TEST SECTION 3	ONES			
XXX D 8F3C 00000000				
XXX L1				
CONTROL WC				

BYTES 0-7 READ DATA SENT TO ECC TO SIMULATE FILE DATA
 8-15 ECC CHECK BURST (BYTE 8= BYTE 15)
 16 COMPARE BYTE FOR CONDITIONS (S8) WHEN COMPARE
 17 COMPARE BYTE FOR CASE WHEN POLYNOMS DO NOT COMPARE
 18 SPECIAL CASE FOR P2 OTHERWISE SAME AS 16
 19 SPECIAL CASE FOR P2 OTHERWISE SAME AS 17
 16-19UNUSED IN SECTION 3

X124 ECC READ TEST

PUB NO. 70631200 DPC NO. 73687900

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REVISION A

*** OPERATION **

AFTER LOADING THE MICROPROGRAM
AND EXECUTION THE HARD CORES.
IAR = 09E0

1. LOAD IAR = X1010.
2. INSTALL A TEST JUMPER BETWEEN A1BA-1C23 AND A1AK-2B05.
3. ADJUST DATA/ROUTINE SWITCHES TO X00.
4. EXECUTE
 - A. IF NO ERROR BAR = X1034 TEST IS OVER, REMOVE JUMPER WIRE.
 - B. IF BAR = X1078 PROCEED TO STEP 5.
5. EXAMINE THE SYNDROM REGISTER.
6. PLACE THE CONTENTS OF THE SYNDROM REGISTER IN THE DATA/ROUTINE SWITCHES.
7. REMOVE THE JUMPER WIRE
8. EXECUTE, PROGRAM WILL STOP AT BAR = X111C
9. ADJUST THE DISPLAY BUS SELECT SWITCH TO THE ROUTINE/ERROR POSITION
10. EXAMINE THE ROUTINE/ERROR CODE DISPLAY. THE ROUTINE REGISTER CONTAINS A CODE FOR THE CARD POSITION AND THE ERROR REGISTER CONTAINS THE CHIP NUMBER. IF THE DISPLAY CONTAINS 00 00 THAN AN INVALID SYMPTIM CODE HAS BEEN ENTERED.

CODE FOR ROUTINE REGISTER

XB1= A1BB CARD
XB2= A1BC CARD
XB3= A1BD CARD
XB4= A1BE CARD
XB5= A1BF CARD
XB6= A1BG CARD
XB7= A1BH CARD
XB8= A1BJ CARD

10. CHANGE THE CHIP ON THE CARD INDICATED
11. GO BACK TO STEP 2 AND REPEAT TEST UNTILE NO ERROR OCCURS

D0	C0	B0	A0
D1	C1	B1	A1
D2	C2	B2	A2
D3	C3	B3	A3
D4	C4	B4	A4
D5	C5	B5	A5
D6	C6	B6	A6
D7	C7	B7	A7
D8	C8	B8	A8
D9	C9	B9	A9
D10	C10	B10	A10
D11	C11	B11	A11
D12	C12	B12	A12
D13	C13	B13	A13
D14	C14	B14	A14
D15	C15	B15	A15

CHIP LOCATION REFERENCE



START HERE
 X202.03-----*
 XXX 1 9010 0+X01=D
 9014 XXX C1 SP04
 DAR=QUAD1

XXX 4 9014 0+0=AG
 0=ST6
 9030 XX0 C2
 COUNT START
 ST6 = READ

XX0 4 9030 0+0=AE
 0=ST7
 9020 X00 C3
 SHIFT COUNT

X00 4 9020 0+AG=AD
 9018 XXX C4
 COUNTER

XXX F4 9018 000
 901C XXX C5
 INITIAL ADDR

XXX 4 901C 0+MA=AA
 9038 XXX C6
 QUAD

XXX 5 9038 MB+0=AB
 903C XXX C7
 SECTOR

X202.N2-----0
 X202.L5-----0

XXX 5 903C MC+0=AH
 9040 XXX G1
 ADDR

XXX 1 9040 AA.X03=AA
 9044 XXX G2

XXX 1 9044 AB.XF0=AB
 9048 XXX G3

XXX 1 9048 AH.XFC=AH
 90CC XXX G4

X11 4 90CC 0+AD=AC
 904C XXX G5

XXX 4 904C 0+AE=EC
 0=ST2
 9008 XXX G6

XXX 2 9008 0+EC=D
 9050 XXX G7

X202.G5-----0

XXX 1 9050 0+X74=SH
 9060 X0* J1
 D=0

XX0 4 9060 AC+AC=ACC
 9054 XXX J2
 SHIFT AC

XXX 4 9054 AC+0+C=ACC
 9058 XXX J3

XXX 1 9058 EC+255=EC
 9008 XXX J4

X01 F4 9064 SH+000=SH
 OXX
 905C XXX L2
 FETCH INSTR

XXX 1 905C MB.X0F=MB
 9068 XXX L3

XXX 4 9068 MB/AB=MB
 907C XXX L4
 OR CW

XXX S4 907C SH+004=SH
 DNST21 OXX
 ST2
 9064 X*1 L5
 RESTORE

X1X 4 906C 0+AA=D
 ST6 SP04
 9070 X*X L6
 SET DAR

XXX 4 9070 0+AC=MA
 9080 XXX N1
 WRITE

XXX 4 9080 0+AC=MB
 0=ST2
 9084 XXX N2

XXX 4 9084 0+AC=MC
 9088 XXX N3

XXX 4 9088 0+AC=MD
 9074 XXX N4

XXX S4 9074 AH+000=AH
 OXX
 900C XXX N5
 STO DATA

X1X F4 9078 AH+000=AH
 0=ST2 OXX
 908C XXX Q1
 READ

XXX 4 908C MA@AC=D
 DNST21
 9090 XXX Q2

XXX 4 9090 MA@AC=D
 DNST21
 9094 XXX Q3

XXX 4 9094 MC@AC=D
 DNST21
 9098 XXX Q4

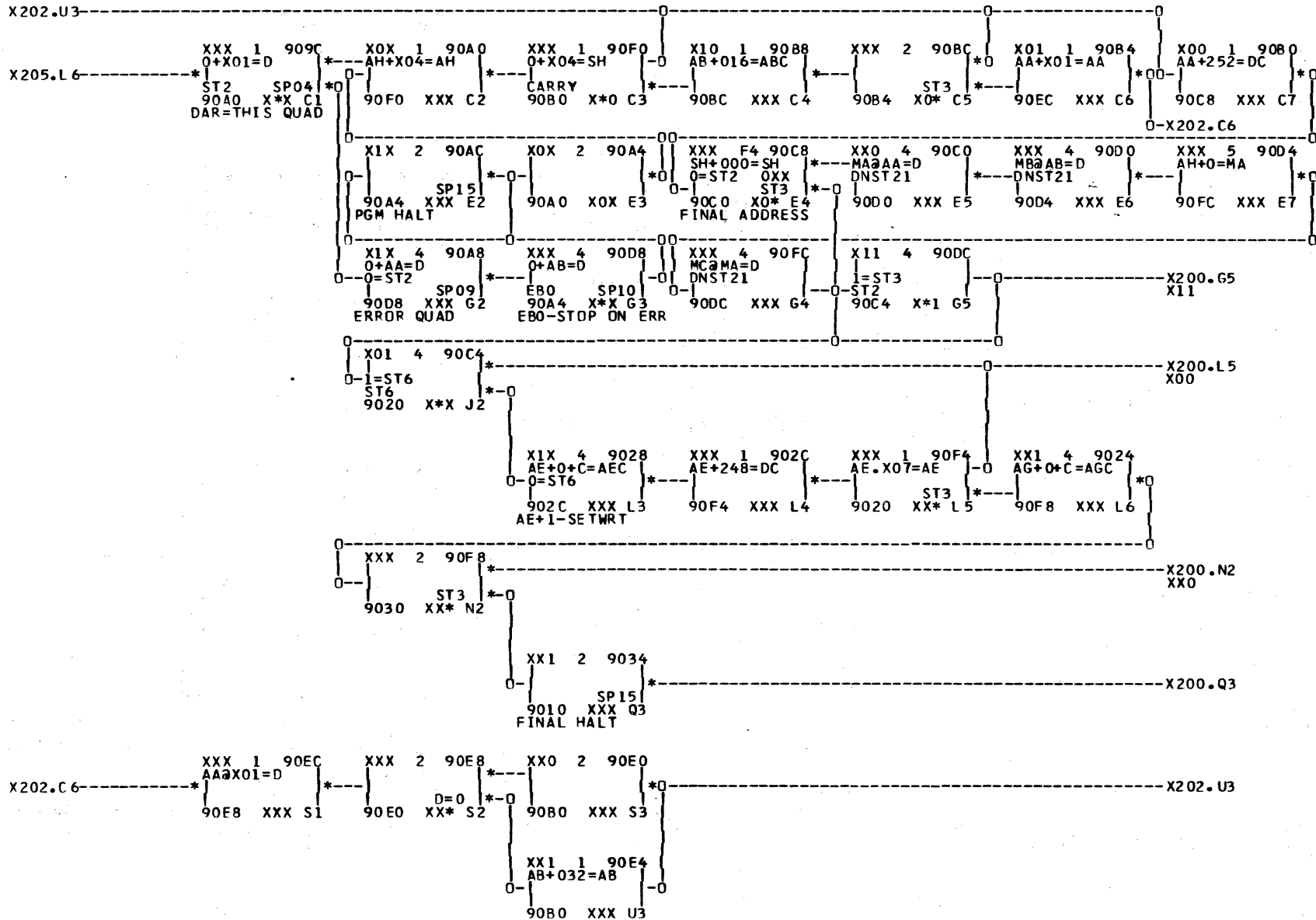
XXX 4 9098 MD@AC=D
 DNST21
 900C XXX Q5

XXX 2 900C 0+0=EE
 *---X205.05
 9104 XXX Q6

XXX D 9000 00000000
 XXX U1
 INITIAL ADDR

XXX D 9004 04000000
 XXX U2
 FINAL ADDR

X200 MEMORY TEST



X202 MEMORY TEST

X200.Q6-----*
 XXX 1 9104 0+XOC=IB
 9108 XXX A1
 XXX 1 9108 0+XO1=D
 910C SP04 XXX A2
 XXX S4 910C 0=STO 100
 9120 XXX A3
 XXX 4 9120 0+AA=SD
 9124 XXX A4
 XXX 1 9124 AD+XO1=AD
 9128 XXX A5
 XXX 4 9128 0+ID=SE
 912C XXX A6

XXX 1 912C 0+X80=AT
 9130 XX* E0
 XX0 F4 9130 AT+X00=AT
 9138 XX* E1
 XX0 4 9138 MC@SE=D
 9144 XXX F2
 XXX 4 9144 MD@SE=D
 9148 XX* E3
 XX0 1 9148 AT+X04=AT
 9150 XX* E4
 XXX 3 9150 AT+X00=D
 9130 XXX E5
 XX1 5 914C MB+0=EG
 9140 XXX G4
 XX1 5 9154 MB+0=EG
 9140 XXX G5
 XXX 4 9140 0+MA=D
 915C SP09 XXX G6
 XXX 1 915C 0+X78=SG
 9158 XXX G7

XXX F4 9158 SG+X00=SG
 9168 XXX L1
 XXX 1 9168 MB.XCO=MB
 917C XXX L2
 XX0 1 9170 MB+XCO=MB
 9160 XX* L3
 XX0 1 9160 EE+X01=EE
 9170 XX* L4
 XX1 1 9174 1=STO
 9164 XXX L5
 XX1 4 9164 AA+AA=AA
 9164 X*X L6
 XXX 5 916C EE/AA=AA
 9178 XXX L7

XXX 5 9178 EG/AA=AA
 9110 XXX Q1
 XXX 4 9110 0+AA=D
 911C SP10 XXX Q2
 XXX 1 911C SP15
 9134 XXX Q3
 XX1 2 9134 0+SD=AA
 9114 XXX Q4
 XXX F4 9114 00
 9118 XXX Q5
 XXX 2 9118 X202.Q6
 909C XXX Q6
 XX1 2 913C 0+0=D
 917C SP09 XXX S1
 XXX 2 917C 0+0=D
 911C SP10 XXX S2

X205 MEMORY TEST

XXX D 9180 B8A0C1C1	XXX D 9184 B7A0A5A1	XXX D 9188 B6A09195	XXX D 918C B5A08389	XXX D 9190 B4A0C4CC	XXX D 9194 B3A0C2CA	XXX D 9198 B2A0D0D0
XXX C0	XXX C1	XXX C2	XXX C3	XXX C4	XXX C5	XXX C6

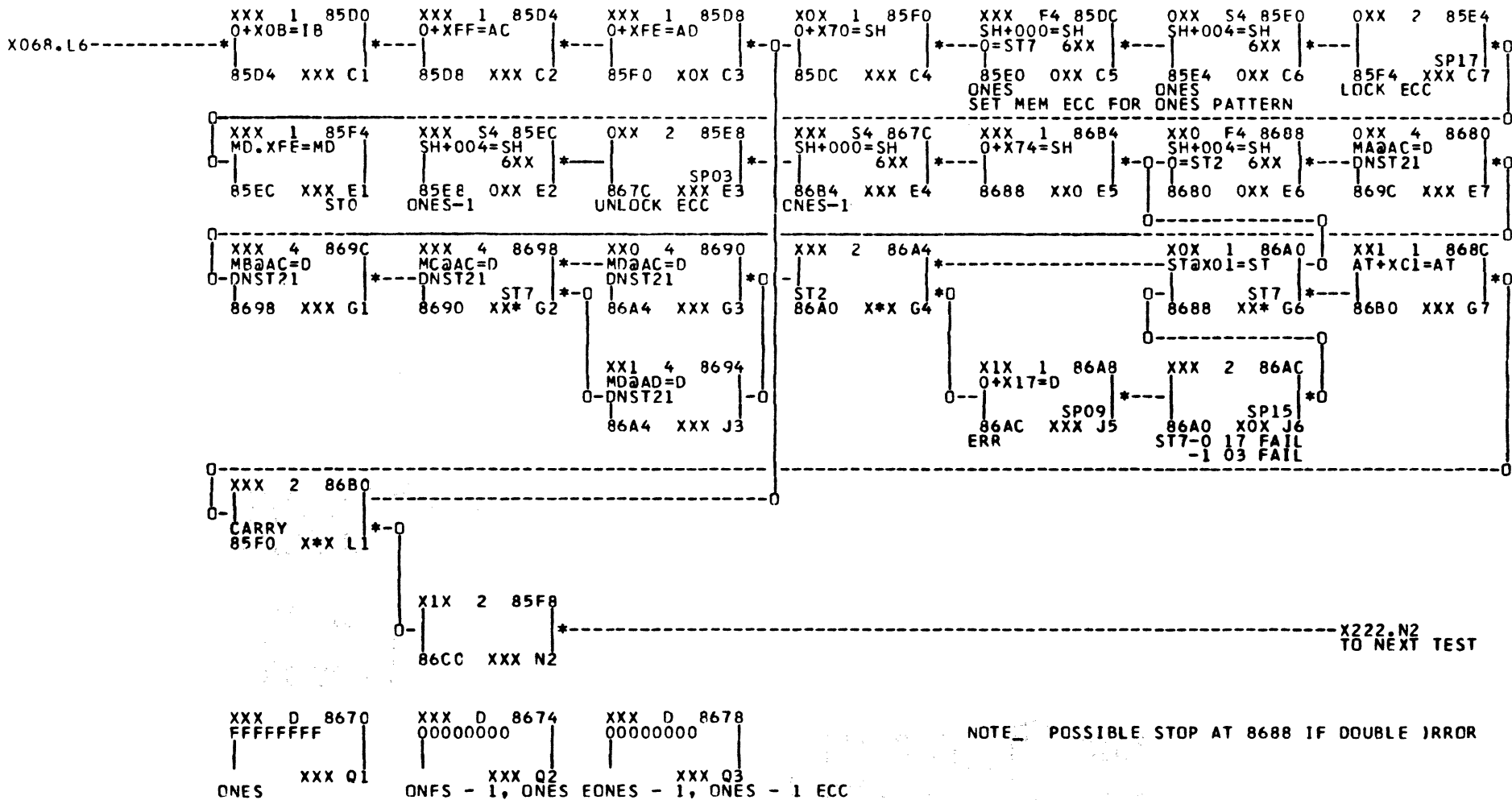
XXX D 919C B1A0E0E0	XXX D 91A0 B8R06161	XXX D 91A4 B7B06868	XXX D 91A8 B6B06464	XXX D 91AC B5B07262	XXX D 91B0 B4B03331	XXX D 91B4 B3B0B2B0
XXX G0	XXX G1	XXX G2	XXX G3	XXX G4	XXX G5	XXX G6

XXX D 91B8 B2B03B3E	XXX D 91BC B1B03434	XXX D 91C0 B8C01A1A	XXX D 91C4 B7C01919	XXX D 91C8 B6C09898	XXX D 91CC B5C05858	XXX D 91D0 B4C0AC2C
XXX L0	XXX L1	XXX L2	XXX L3	XXX L4	XXX L5	XXX L6

XXX D 91D4 B3C01C1C	XXX D 91D8 B2C00E0E	XXX D 91DC B1C04D0D	XXX D 91E0 B8D08686	XXX D 91E4 B7D04646	XXX D 91E8 B6D02626	XXX D 91EC B5D01616
XXX Q0	XXX Q1	XXX Q2	XXX Q3	XXX Q4	XXX Q5	XXX Q6

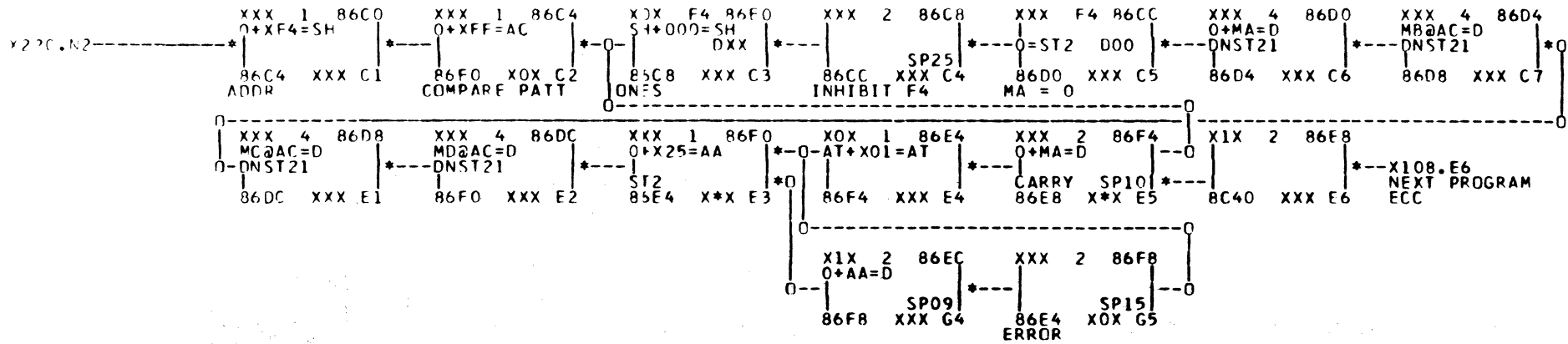
XXX D 91F0 B4D02B0B	XXX D 91F4 B3D00707	XXX D 91F8 B2D08383	XXX D 91FC B1D05343	XXX D 9100 00000000
XXX U0	XXX U1	XXX U2	XXX U3	XXX U4

X207 MEMORY TEST



NOTE POSSIBLE STOP AT 8688 IF DOUBLE ERROR

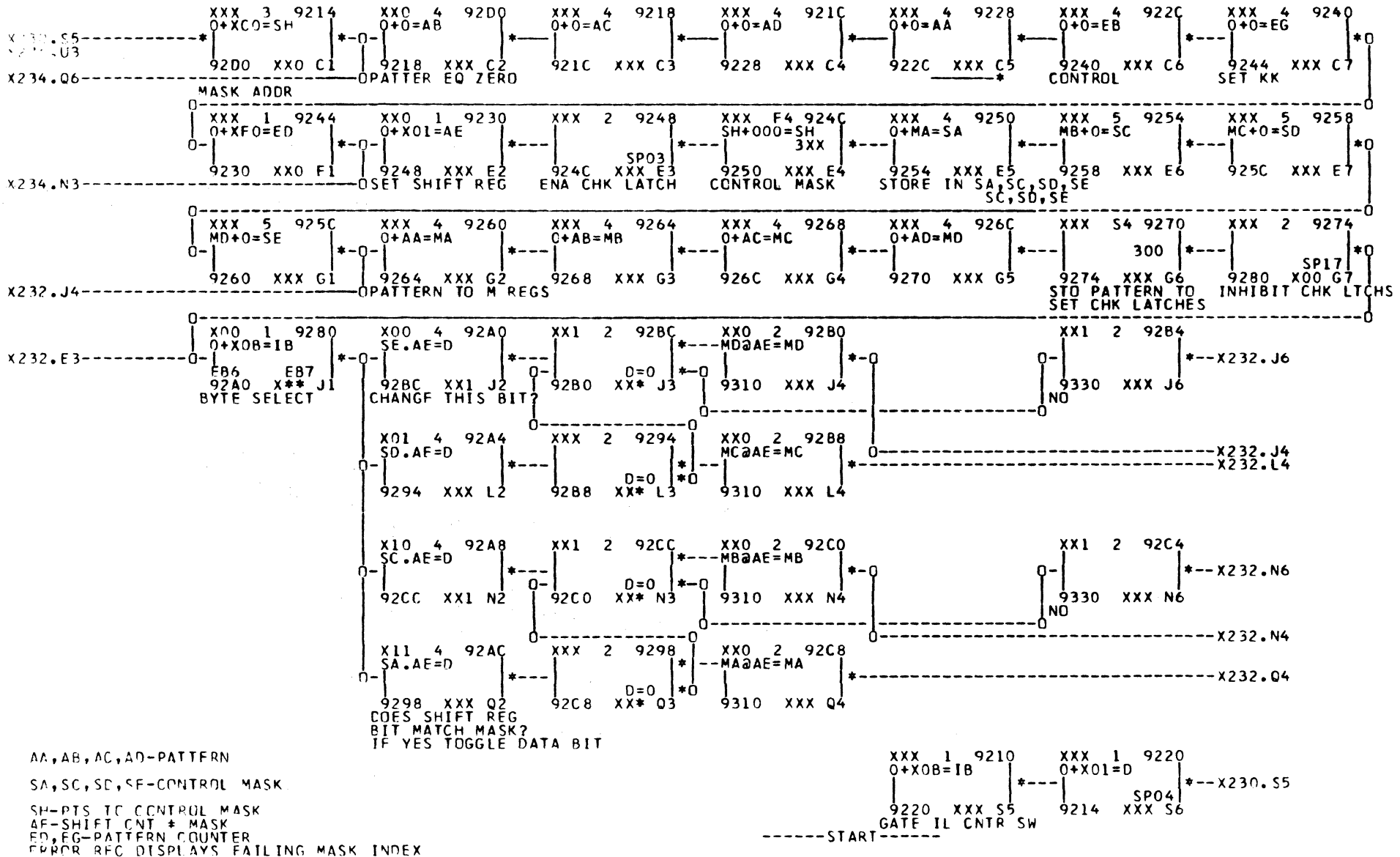
1. STO ONES PATTERN LOCK ECC
2. DROP ONE BIT, STO ONES - 1 W/ONES ECC AT 74
3. UNLOCK ECC, STO ONES - 1 W/ONES - 1 ECC AT 78
4. FETCH 74 TO SEE IF ECC CORRECTS
5. FETCH 78 TO SEE IF ECC WAS UNLOCKED.



XXX D 86FC
00000000
XXX J1
ZEROS

FETCH ONES
INHIBIT F4
FFETCH ZEROS
TEST MA=0 MB,C,D=XFF
STOP. IF NOT EQ.

X222 FETCH 4 INHIBIT
SPEC OP 25



AA,AB,AC,AD-PATTERN

SA,SC,SD,SE-CONTROL MASK

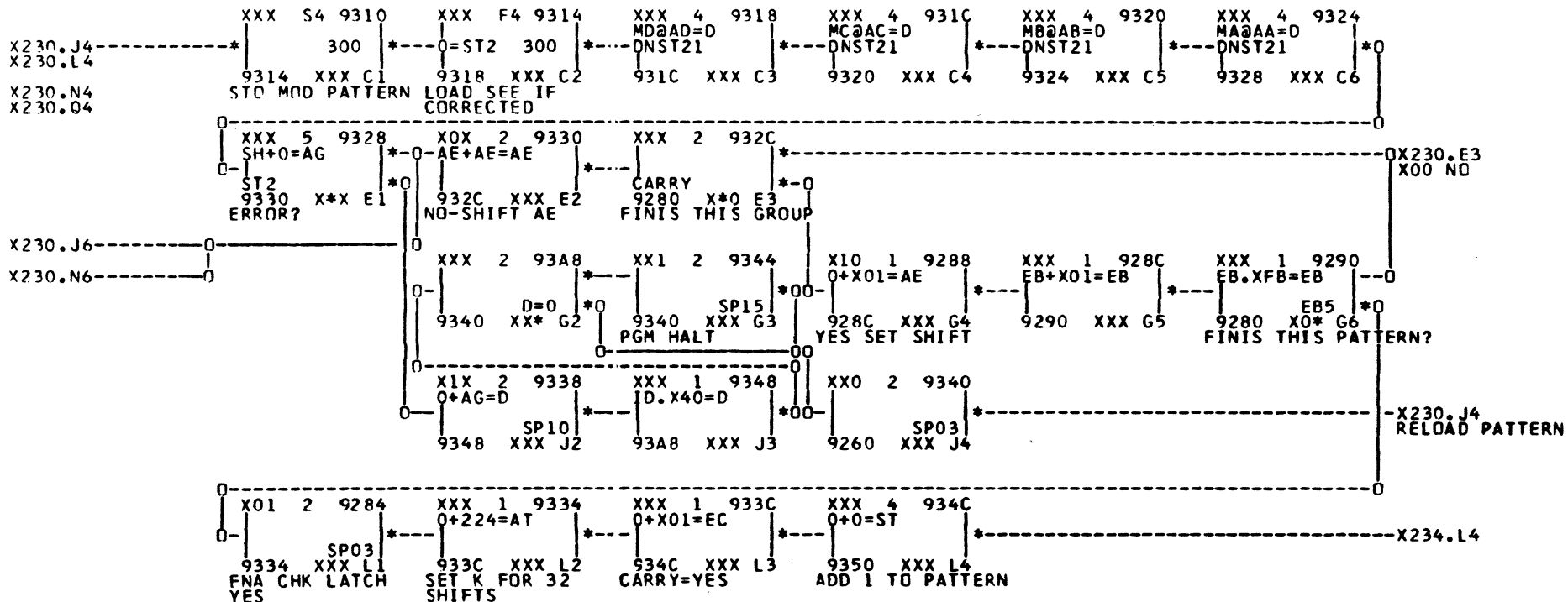
SH-PTS TO CONTROL MASK

AE-SHIFT CNT + MASK

ED,EG-PATTERN COUNTER

ERRR REC DISPLAYS FAILING MASK INDEX

X230 MEMORY ECC 1



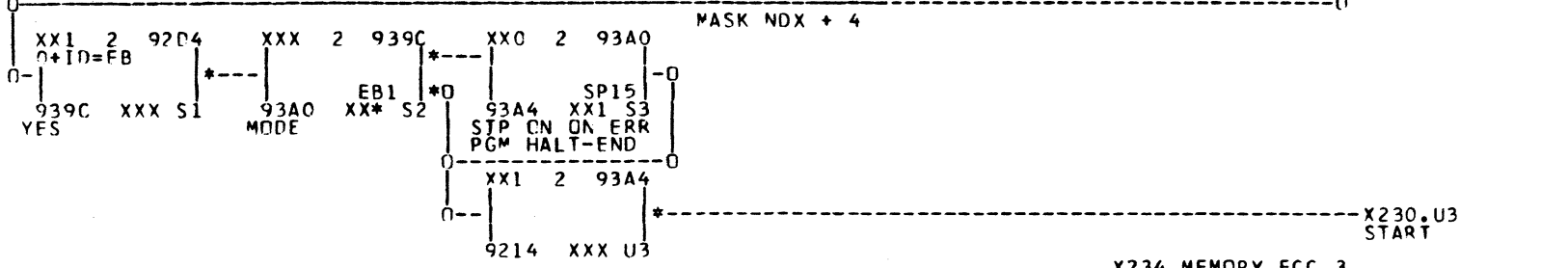
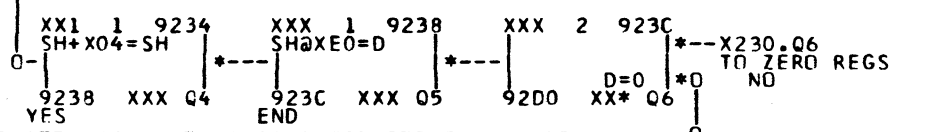
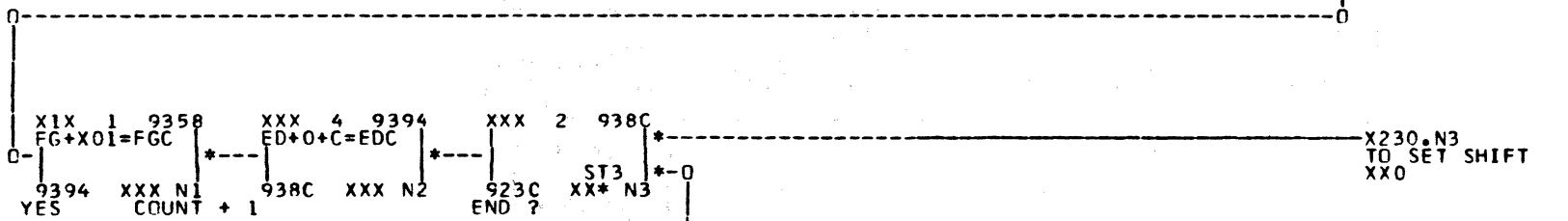
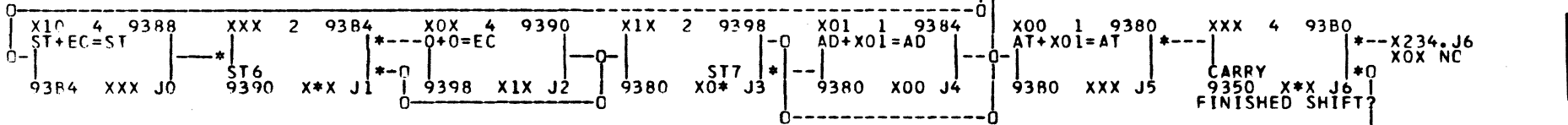
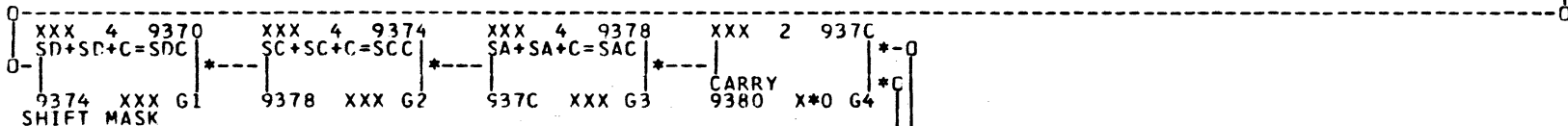
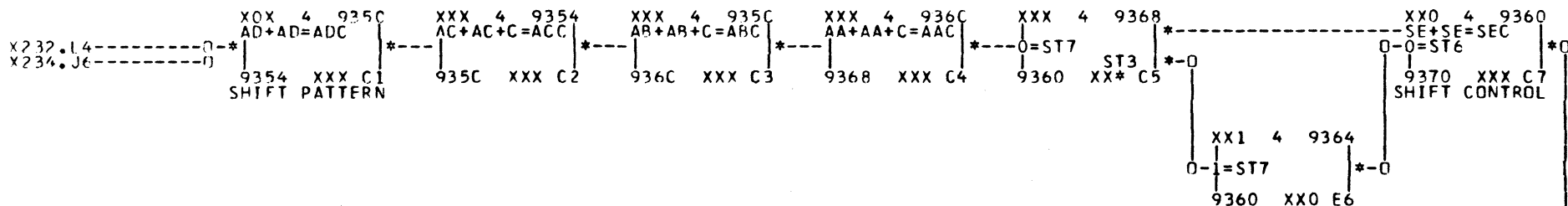
VE

CONTROL WORDS

XXX D 93C0 FF042082 C0 XXX Q0	XXX D 93CC 220FF410 C3 XXX Q1	XXX D 93D8 041082FF C6 XXX Q2	XXX D 9300 00000000 TEMP XXX Q3
XXX D 93C4 8FF01041 C1 XXX S0	XXX D 93D0 1042FF08 C4 XXX S1	XXX D 93DC F088410F C7 XXX S2	
XXX D 93C8 41FF0820 C2 XXX U0	XXX D 93D4 08210FF4 C5 XXX U1		

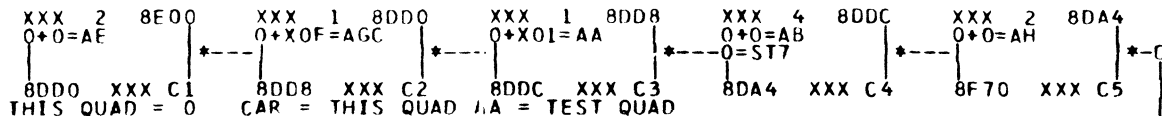
A 12 BIT COUNTER IS MAPPED ONTO 3 OF 8 ECC TRANSLATIONS. SUCCESSFUL BITS ARE ALTERED & STORED WITH ORIGINAL ECC. UPON FETCHING ECC SHOULD MAKE NECESSARY CORRECTION. THIS IS VERIFIED BY COMPARE. ERROR PRODUCES HALT AT 9340 (G3). POSSIBLE HALT AT 9314 (C2) IF DOUBLE BIT ERROR.
 SH POINTS TO ECC TRANSLATION
 AA,AB,AC,AD CONTAIN PATTERN
 MA,MB,MC,MD CONTAIN FETCHED & POSSIBLY ALTERED WORD.
 AE IDENTIFIES BIT CHANGED
 EB6,7 SPECIFY BYTE IN WHICH CHANGE OCCURRED
 ANALYZE SPECIFIC CONDITIONS
 PATTERN IS REPEATED AFTER HALT

X232 MEMORY ECC 2

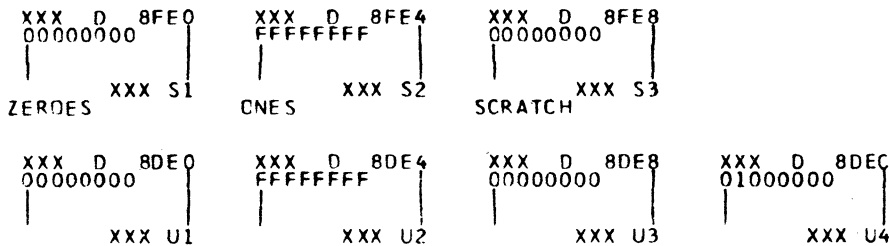
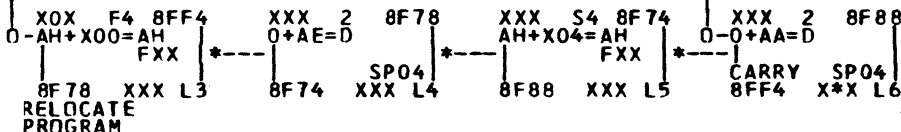
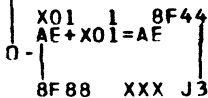
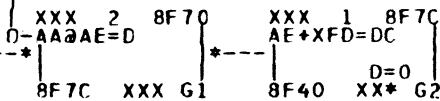


X234 MEMORY ECC 3

START HERE



X902.Q5-----*---CONT INUE-----X902.G2



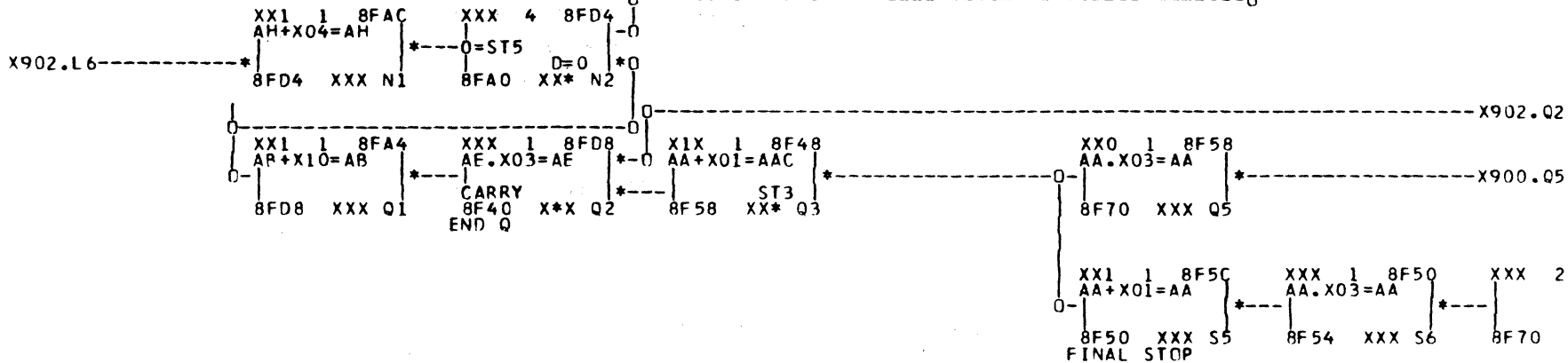
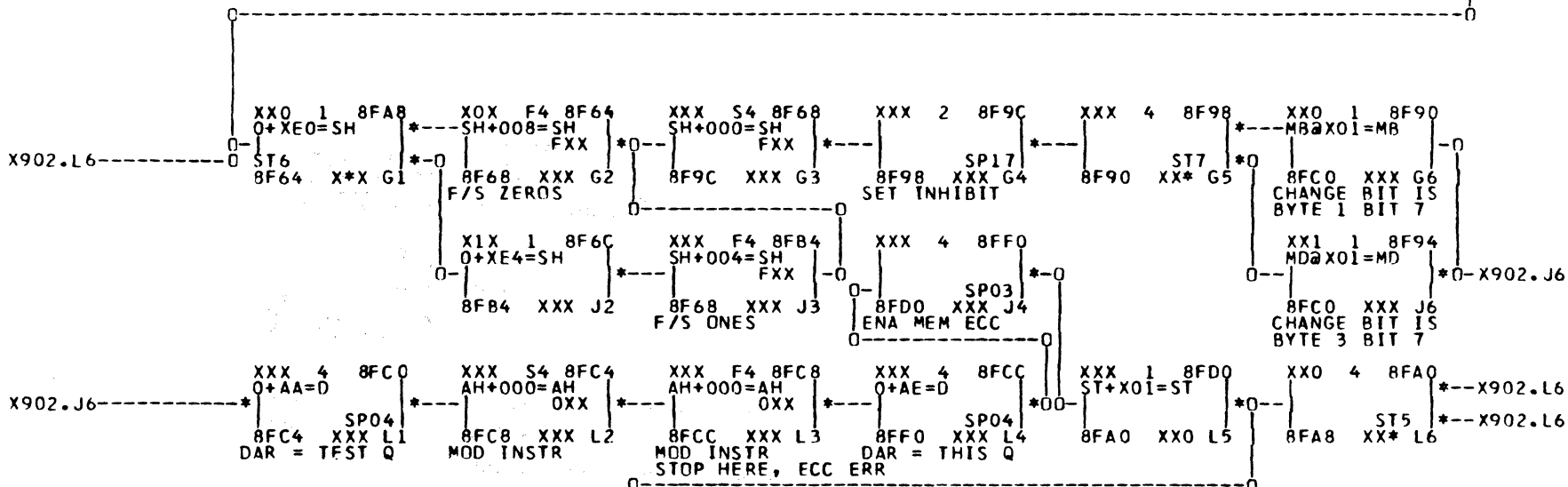
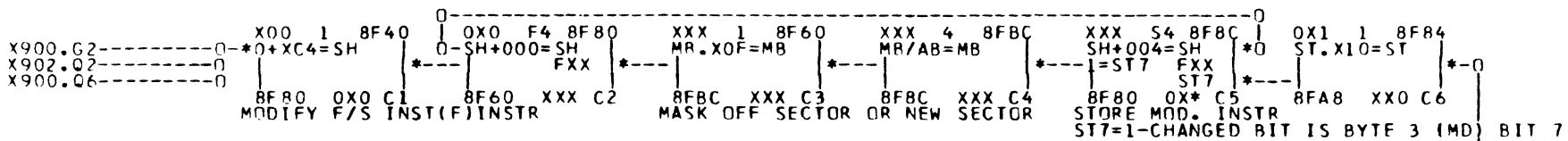
AE = QUADRANT OF PROGRAM REISDENCE
 AA = QUADRANT BEING TESTED
 AB = TEST SECTOR.
 AH = WORD ADDRESS

X900 MEMORY QUALIFIER

PUR NO. 70631200 DOC NO. 73687900

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REVISION K



X902 MEMORY QUALIFIER
OPTIONAL HARDWARE

THIS ROUTINE PERMITS TRANSMISSION OF DRIVE TAGS FROM CE PANEL.
TAG IS ENTERED VIA PARAMETERS. BUS OUT VALUE ENTERED VIA
DATA SWITCHES. NEW PARAMETERS ARE ACKNOWLEDGED ONLY IN
STOP OR ERROR MODE. LOOP ON ERROR CAUSES REPEATED EXECUTION
BUS IN VALUE IS DISPLAYED.
SPECIAL PROGRAMS ARE EXECUTED IF TAG=XOC, SCOPE LOOPS ONLY

ERROR STOPS

F800 AM SPCH OK
F855 AM SPCH FAILS
F8XX BUS IN (OTHER SEQ)

DD50 NO INDEX
DD62 NO ST4'S ON WRITE
DDCC CONTROL CHECK ON SELECT
DDCE MODE IS CONTINUE ON ERROR
DDDC DEVICE CHK
DDOC ILLEGAL FUNCTION TAG=XOC

TAG=XOC PROGRAMS

BUS OUT X PGM
94 WRITE AM
14 WRITE DATA
32 READ
72 AM SRCH

TAG=XOA COMPLEMENT FUNCTIONS

FUNCTION	NEXT FUNCTION
OFFSET START	OFFSET RESET
OFFSET RESET	OFFSET START
SEEK START	REZERO
REZERO	SEEK START

Y000 TAG EXERCISER
DEFINITIONS

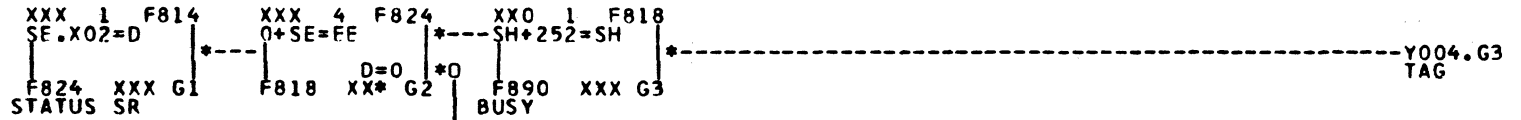
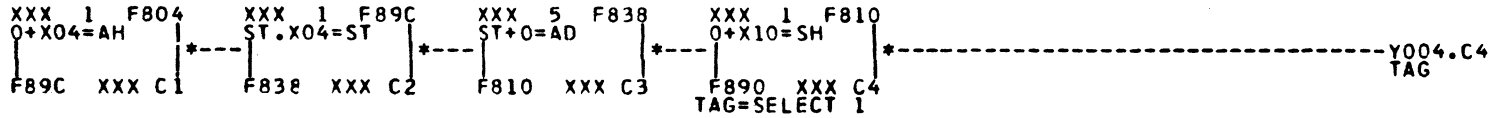
PUP NO. 70631200

DOC NO. 73687900

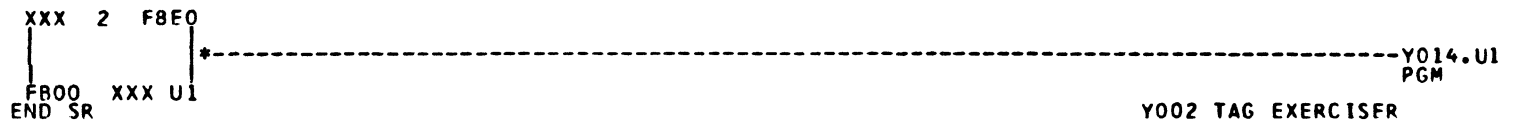
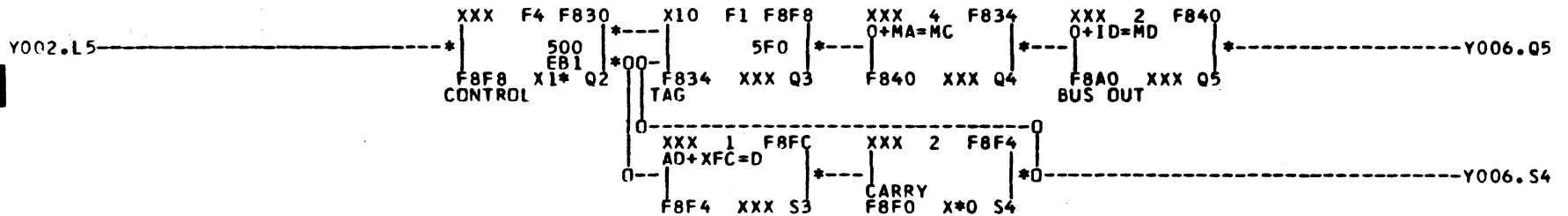
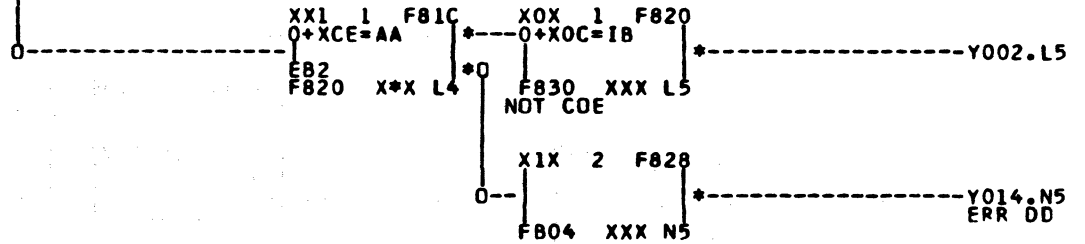
2-226

REVISION J

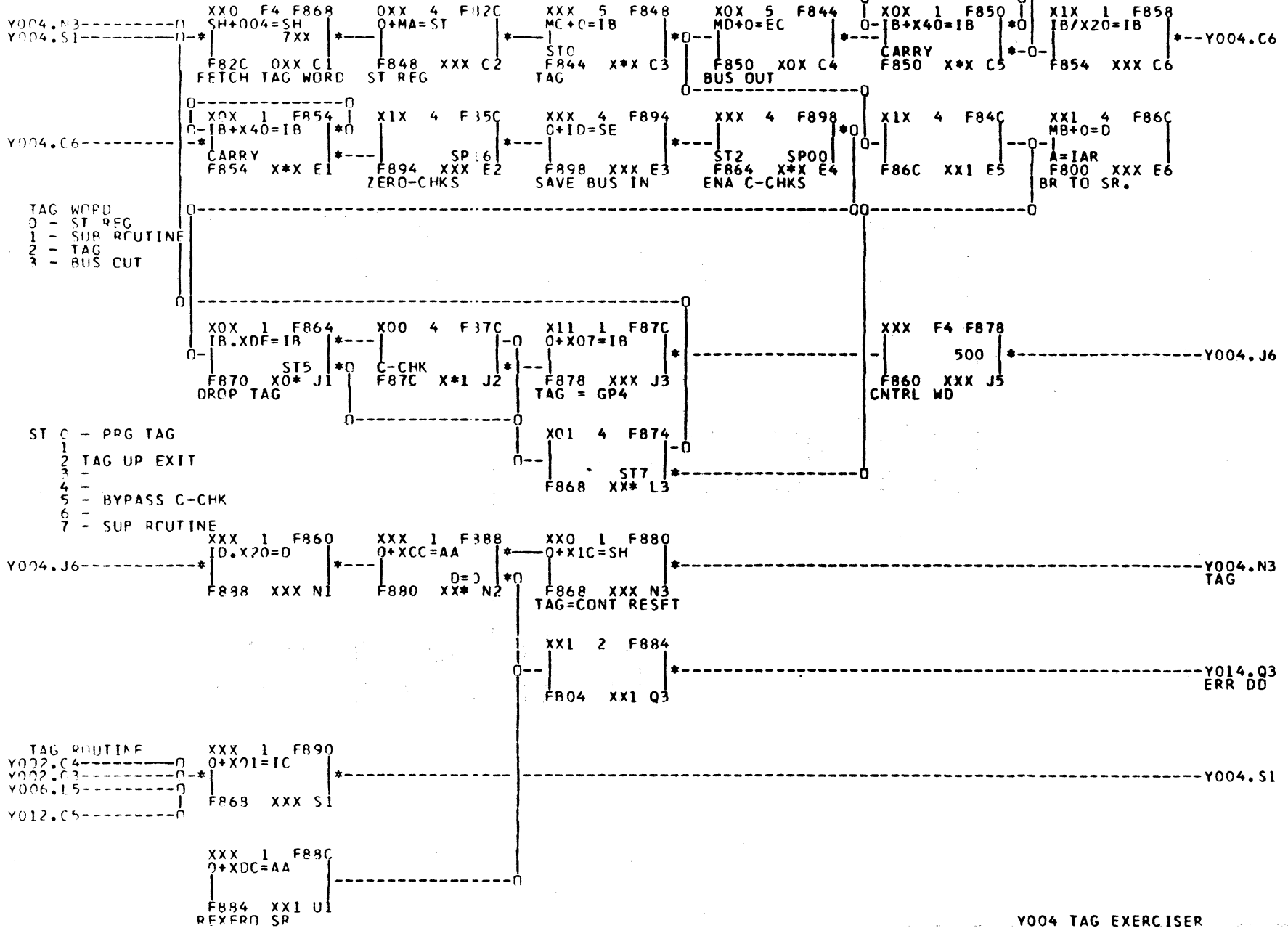
ENTRY
FROM
INLINE
CONTROL



STATUS 1 SR



Y002 TAG EXERCISER
ENTRY

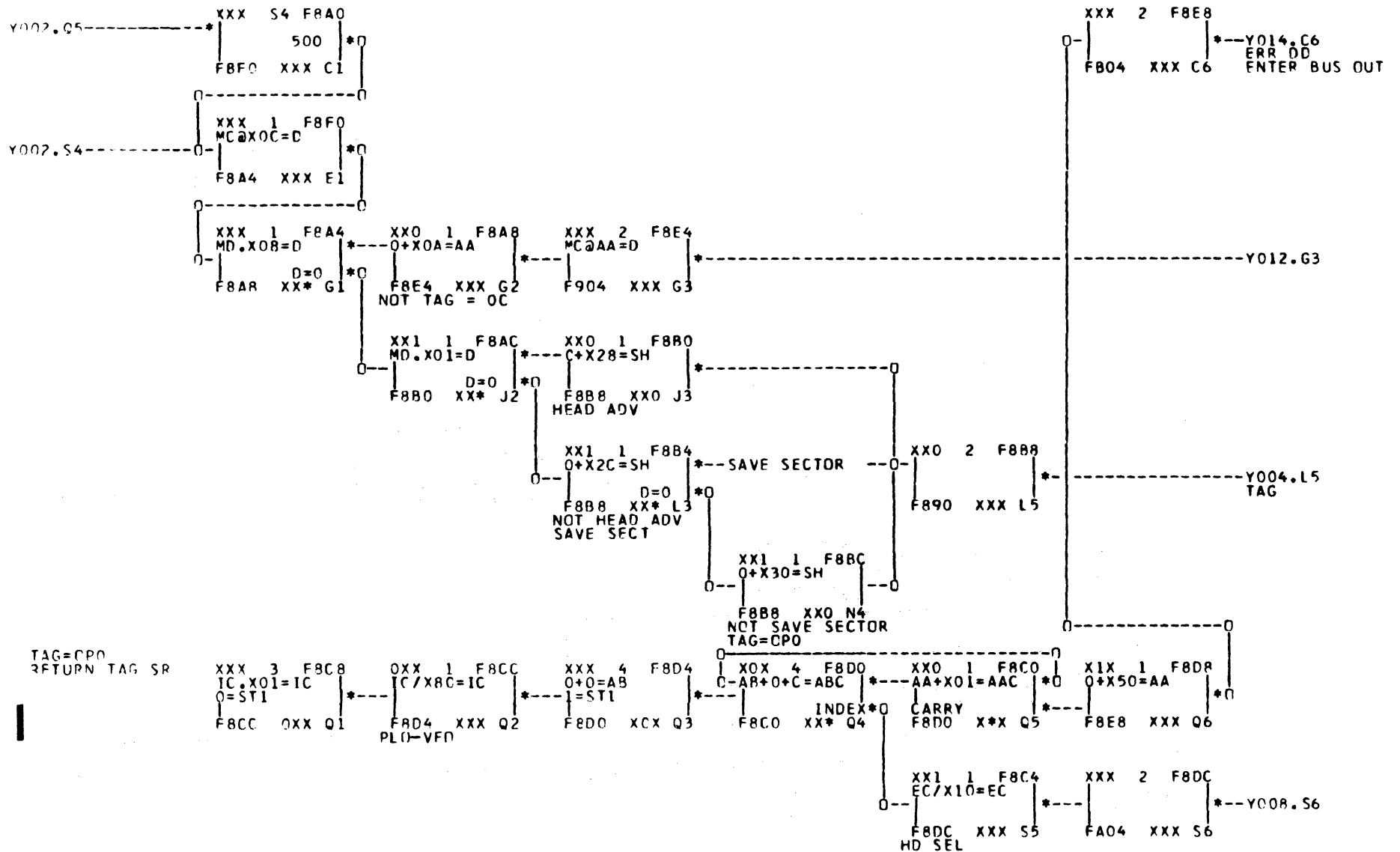


TAG WORD
 0 - ST REG
 1 - SUP ROUTINE
 2 - TAG
 3 - BUS CUT

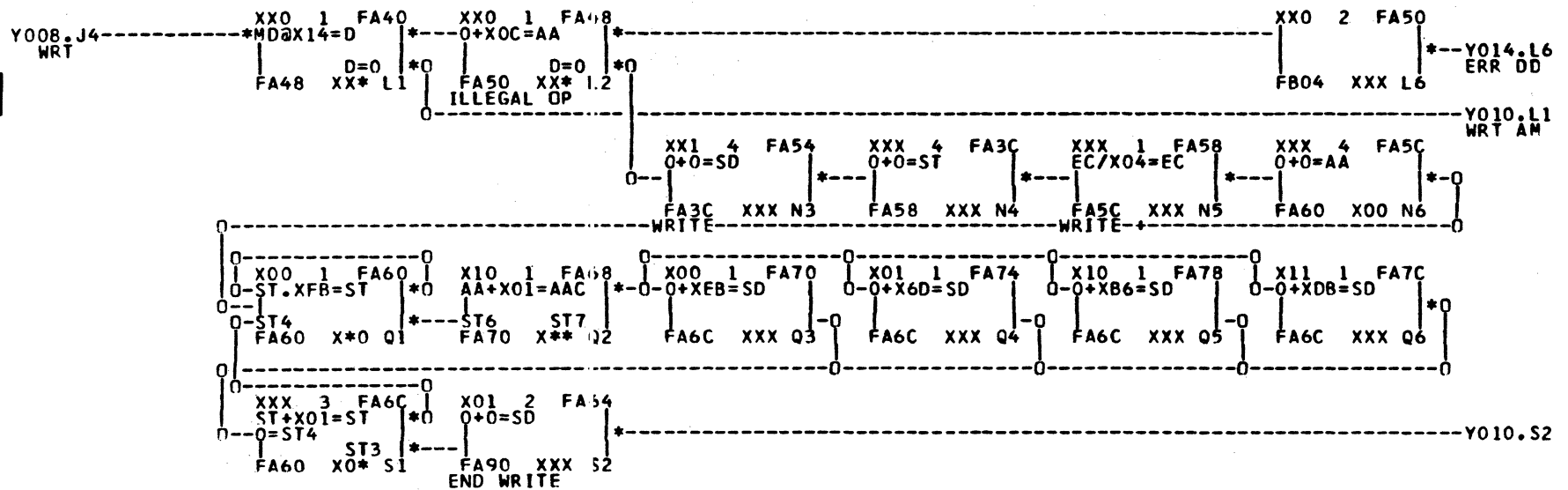
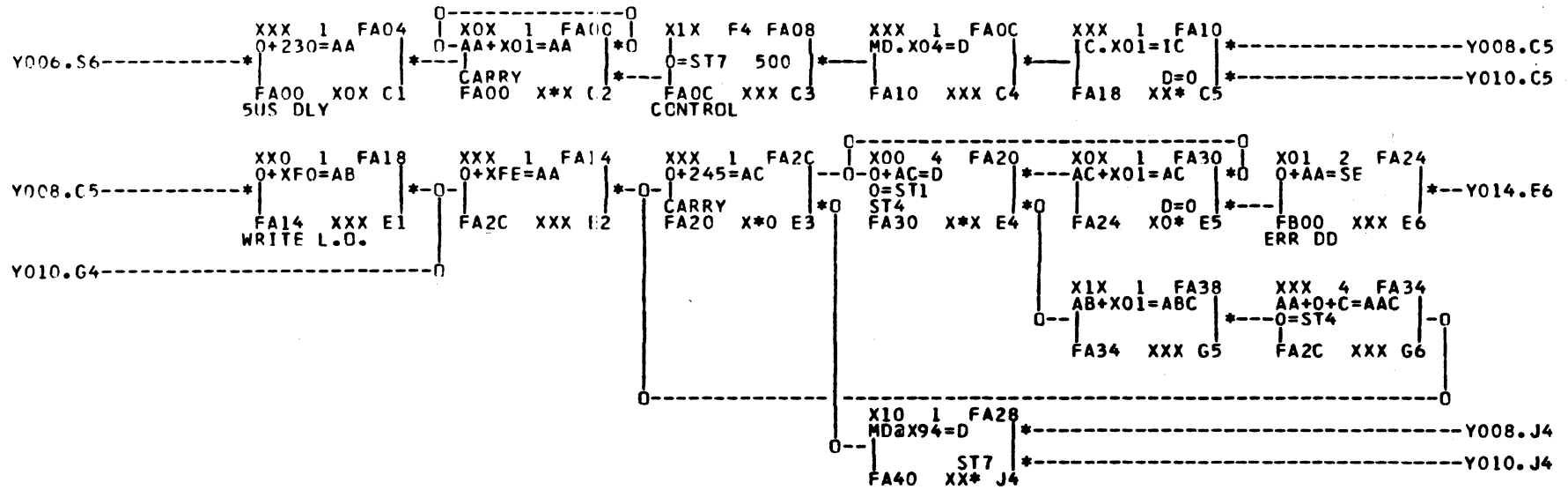
ST 0 - PRG TAG
 1 - TAG UP EXIT
 2 -
 3 -
 4 -
 5 - BYPASS C-CHK
 6 -
 7 - SUP ROUTINE

TAG ROUTINE
 Y002.C4
 Y002.C3
 Y006.L5
 Y012.C5

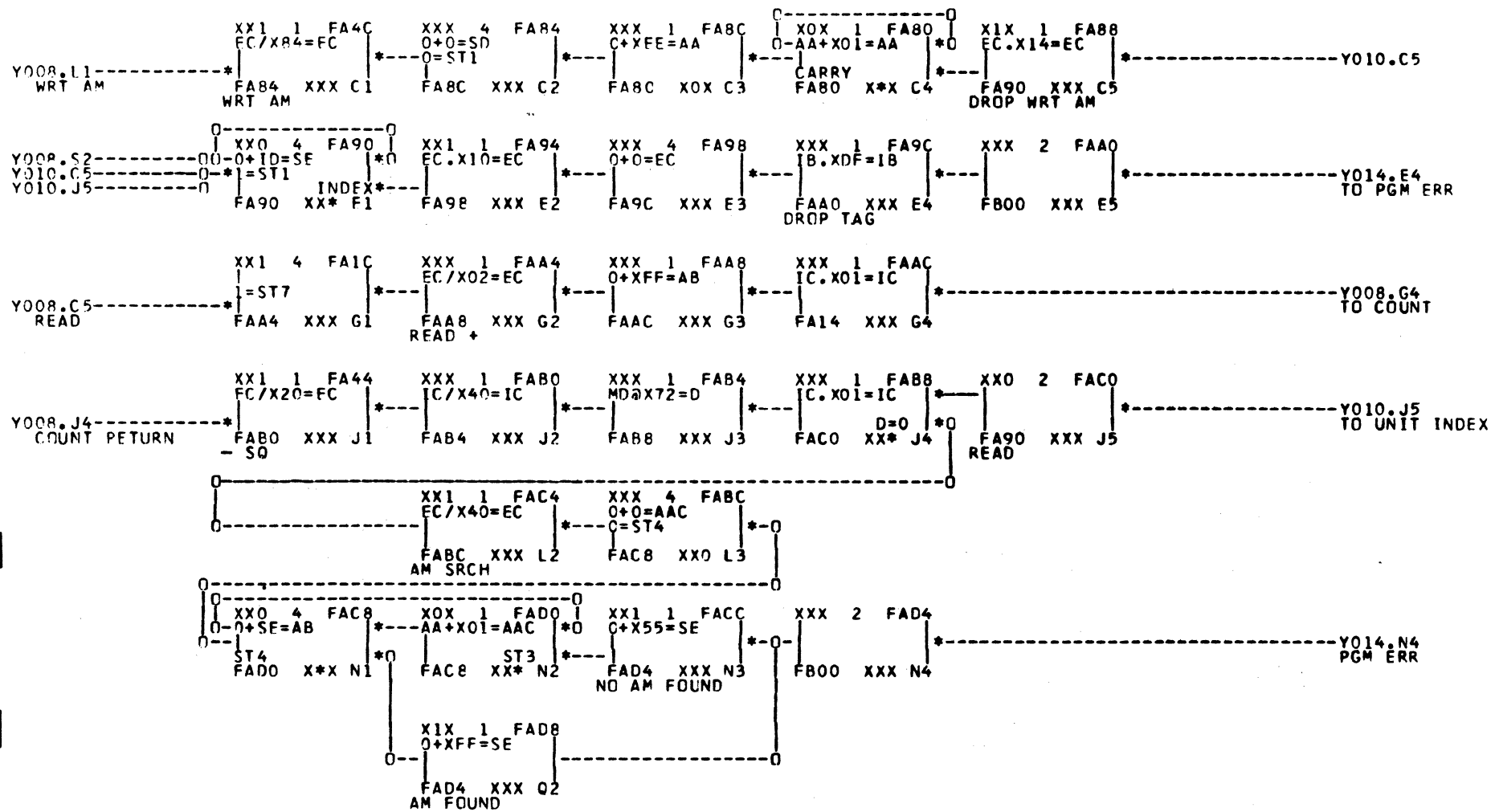
Y004 TAG EXERCISER



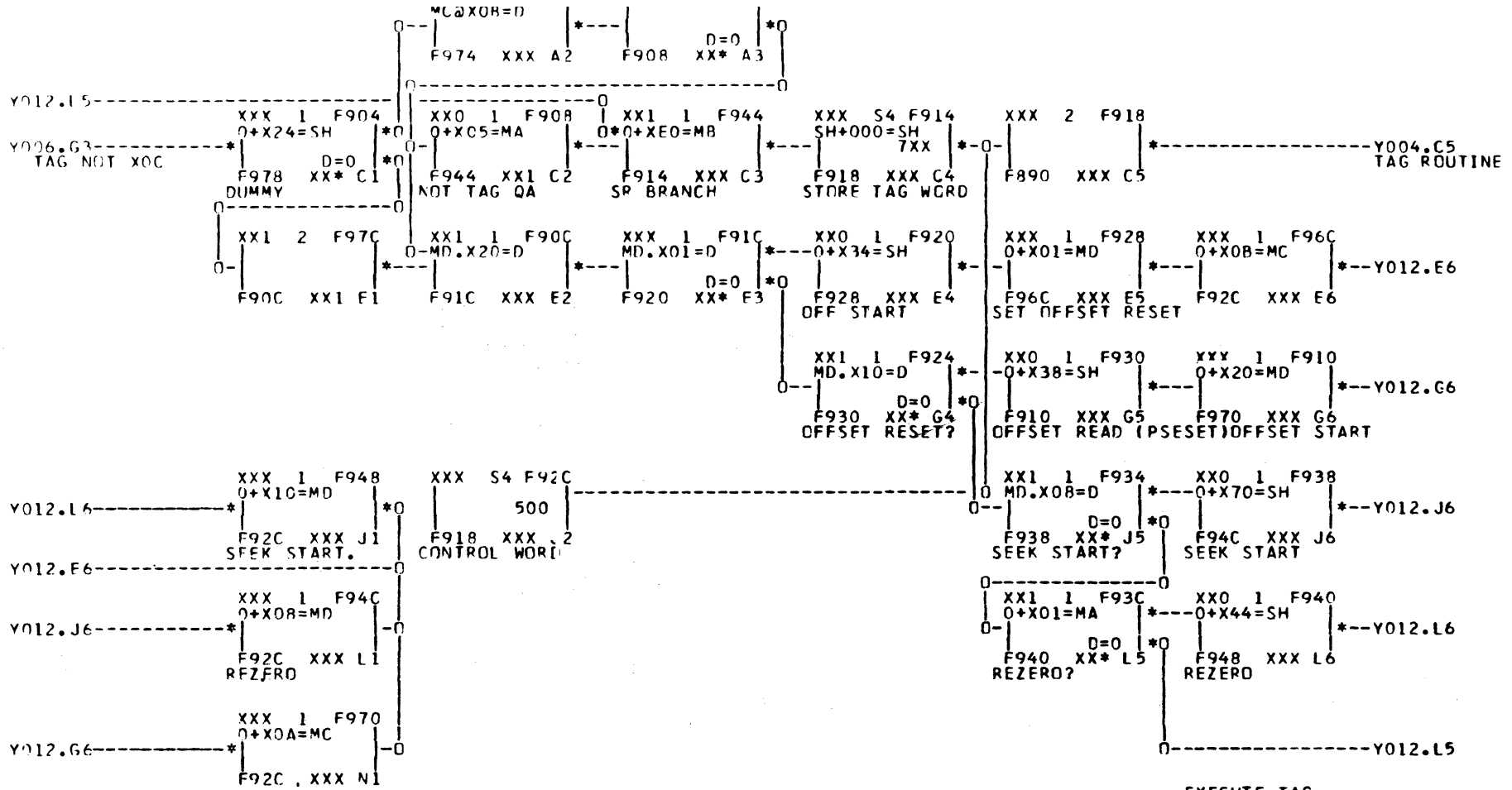
Y006 TAG EXERCISER



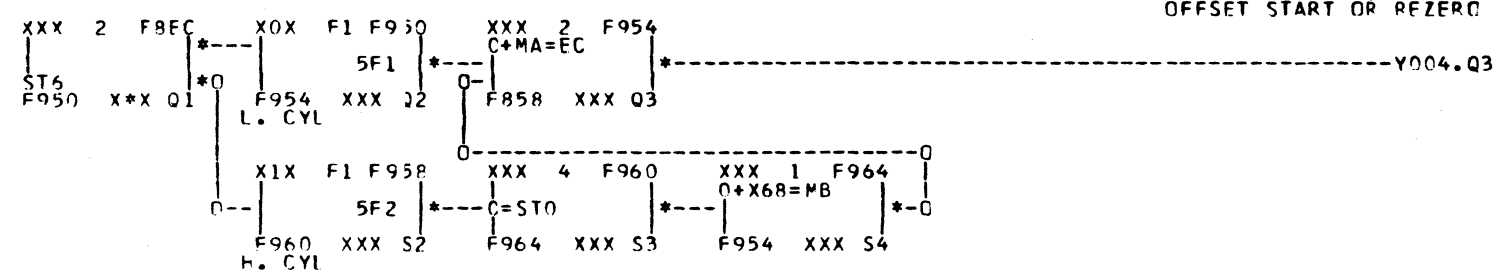
Y008 TAG EXERCISER



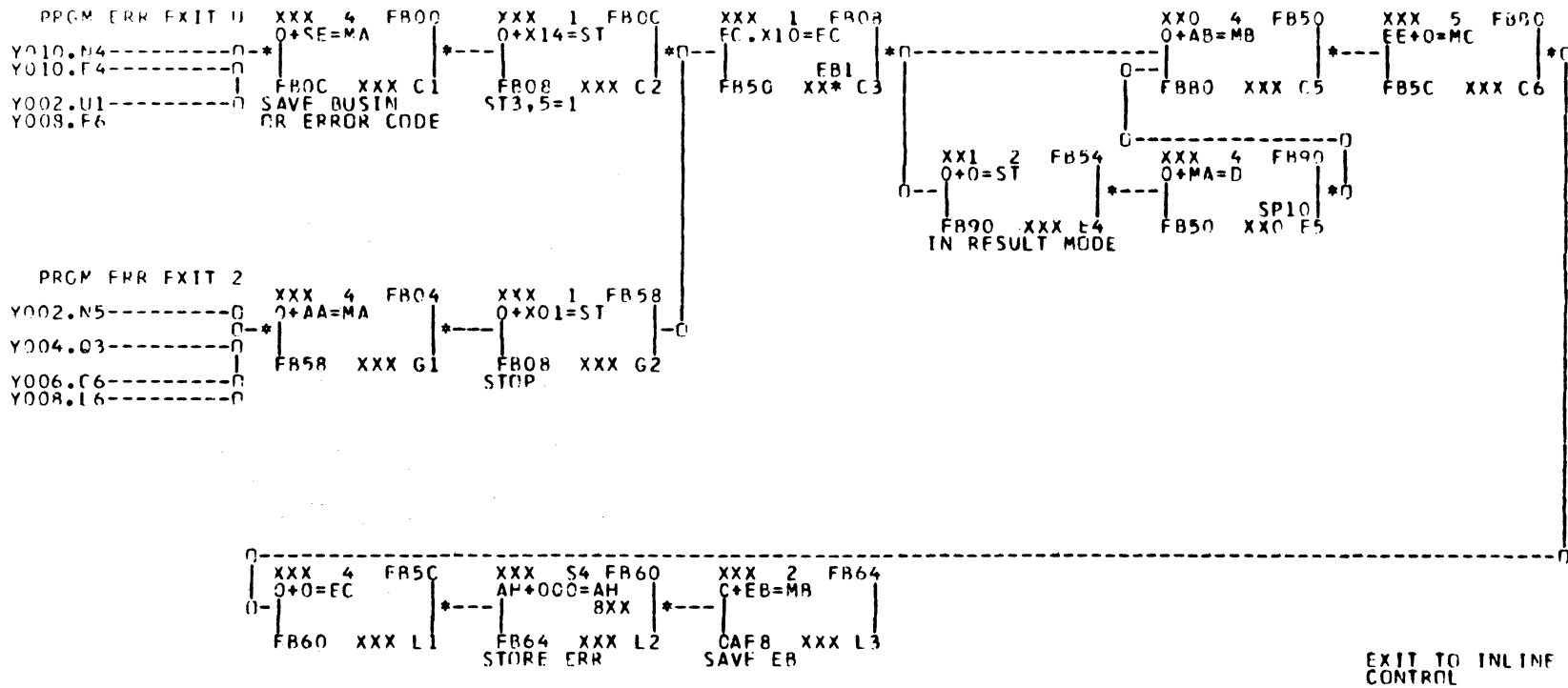
Y010 TAG EXERCISER



EXECUTE TAG
NOT SEEK START, OFFSET RESET,
OFFSET START OR REZERO



Y012 TAG EXERCISER



EXIT TO INLINE CONTROL

0 - ST REG
 1 - SUB ROUTINE
 2 - TAG
 3 - BUS CUT

XXX D FB10
 00000310
 XXX C1
 SELECT 1

XXX D FB34
 05FCCA20
 XXX C2
 OFFSET START

XXX D F900
 00000000
 XXX C4
 CONTROL WORD

XXX D FB14
 05140400
 XXX E1
 STATUS 1

XXX D FB38
 05E00B01
 XXX E2
 OFFSET RESET

XXX D FB1C
 05000A03
 XXX G1
 RESET ALL

XXX D FB20
 058C0A08
 XXX J1
 REZERO

XXX D FB44
 05E00A08
 XXX J2
 REZERO

XXX D FB24
 00000000
 XXX L1
 DUMMY

XXX D FB28
 05E00C08
 XXX N1
 HEAD ADV

XXX D FB70
 80EC0600
 XXX N2
 L. CYL

XXX D FB2C
 05E00C01
 XXX Q1
 READ SECTOR

XXX D FB74
 80EC0900
 XXX Q2
 L. DIFF

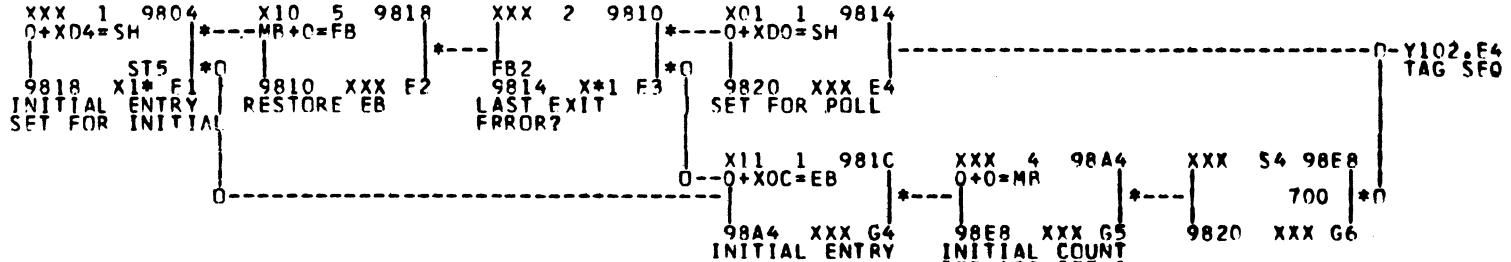
XXX D FB30
 25C80C00
 XXX S1
 OPERATE

XXX D FB78
 82EC0700
 XXX S2
 F. DIFF

XXX D FB7C
 05E00A10
 XXX U2
 SEEK START

XXX D 99F0 0000529A
 XXX D 99F4 00000000
 XXX C3 DEFAULT VALUES
 XXX C4 FOR PARAMETERS

ST5-0 RENTRY
 -1 INITIAL



0 CCRH MHHH
 1 CCCC CCCC
 2 CCRH MHHH
 3 CCCC CCCC

H. CYL/R/HEAD
 L. CYL
 H. CYL/R/HEAD
 L. CYL

EB
 0-SK SELECT
 1-
 2-ERROR
 3
 4- INITIAL ENTRY
 5- INTERRUPT BYPASS
 6-

7-SECTION
 0-1,2
 1-3

R-REZERO

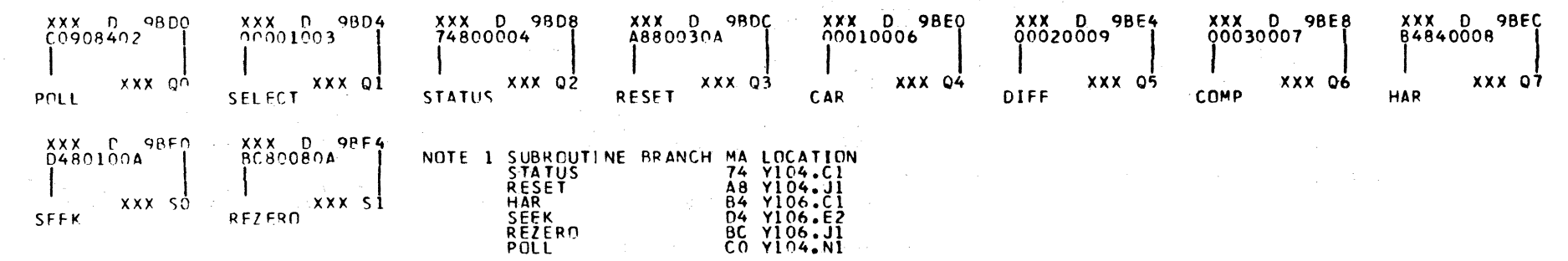
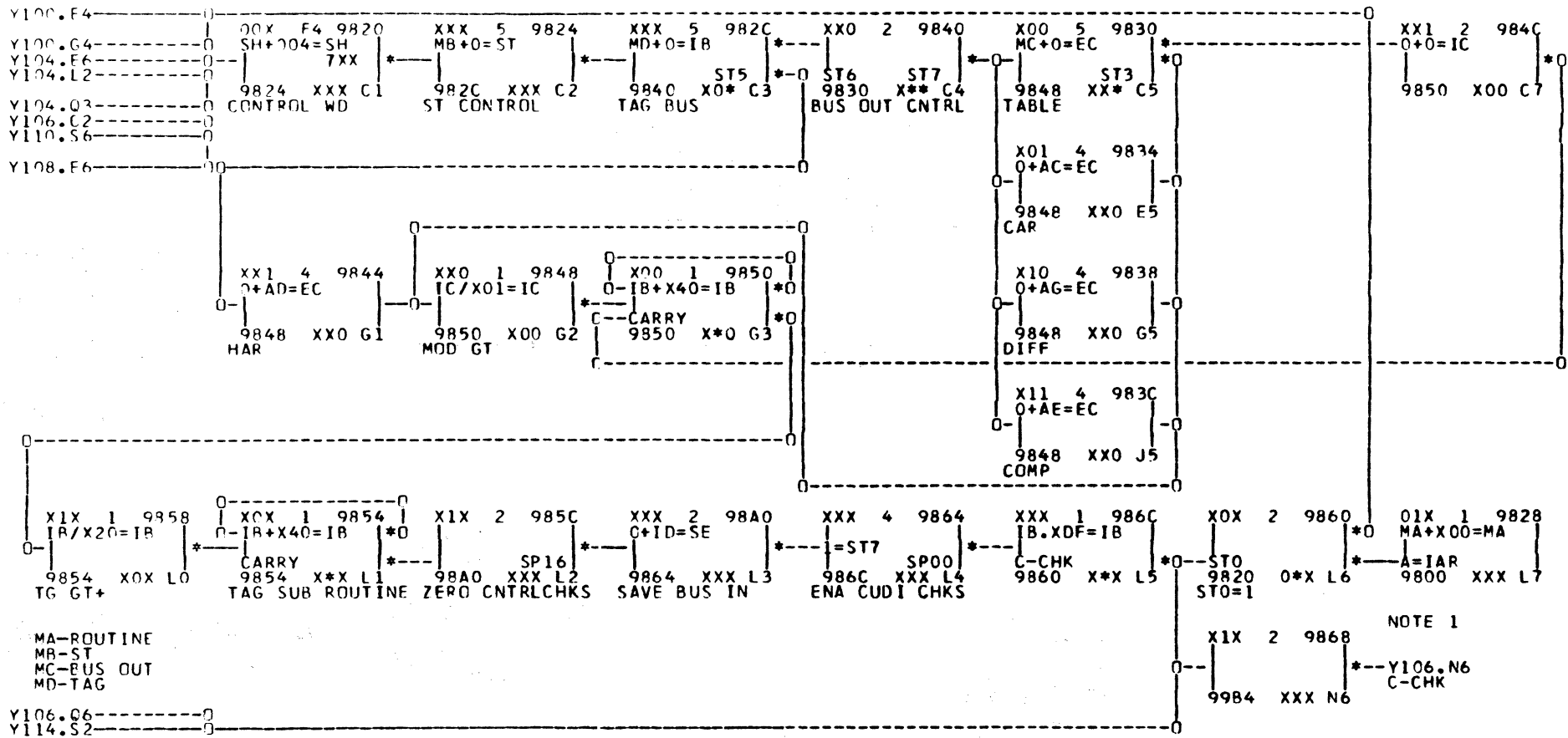
DISPLAY

0 - ERR CODE
 1 - ER
 2 - SH
 3 - ST
 4 - FRCM L. CYL
 5 - H.CYL/H-HEAD
 6 - TO L. CYL
 7 - H.CYL/H-HEAD
 8 NOT USED
 9 FIG
 A PHYS 1: L CYL
 B PHYS 2: CYL/HEAD

OPTION BYTE BIT 1 - SUPPRESS CONTROL CHECKS

ERR CODES

18 Y103.N4 TAG OR READ C-CHK
 20 Y104.G3 NOT ON LINE
 30 Y104.F6 SEFK INC.
 50 Y112.G4 NO INDEX
 60 Y112.Q3 NO SYNC
 70 Y112.Q4 NO ID
 90 Y114.Q4 ECC CHK
 A0 Y116.J5 NO CCMPARE (COUNT)



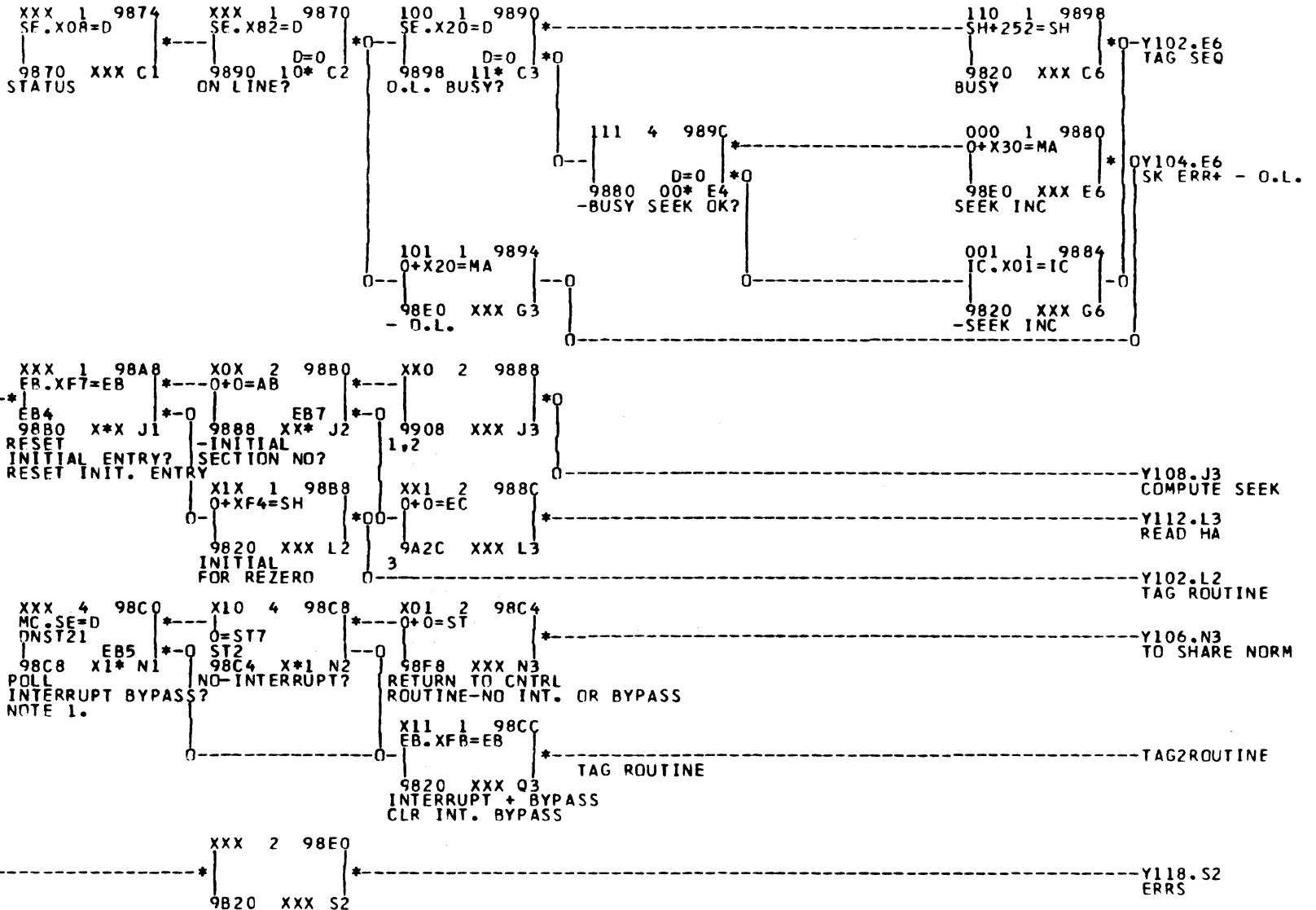
Y102 CYLINDER SEEK ROUTINE
 TAG ROUTINE

PUP NO. 70631200

DOC NO. 73687900

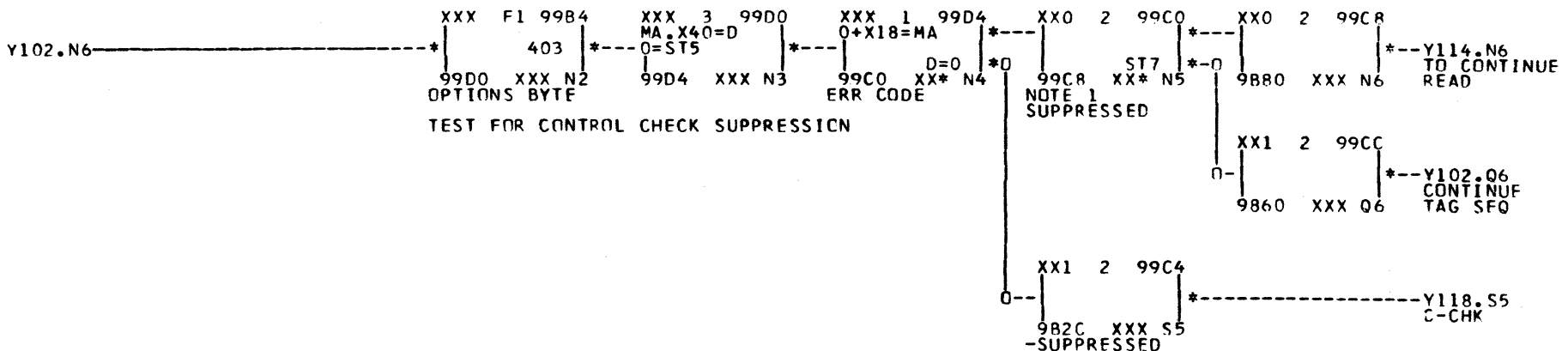
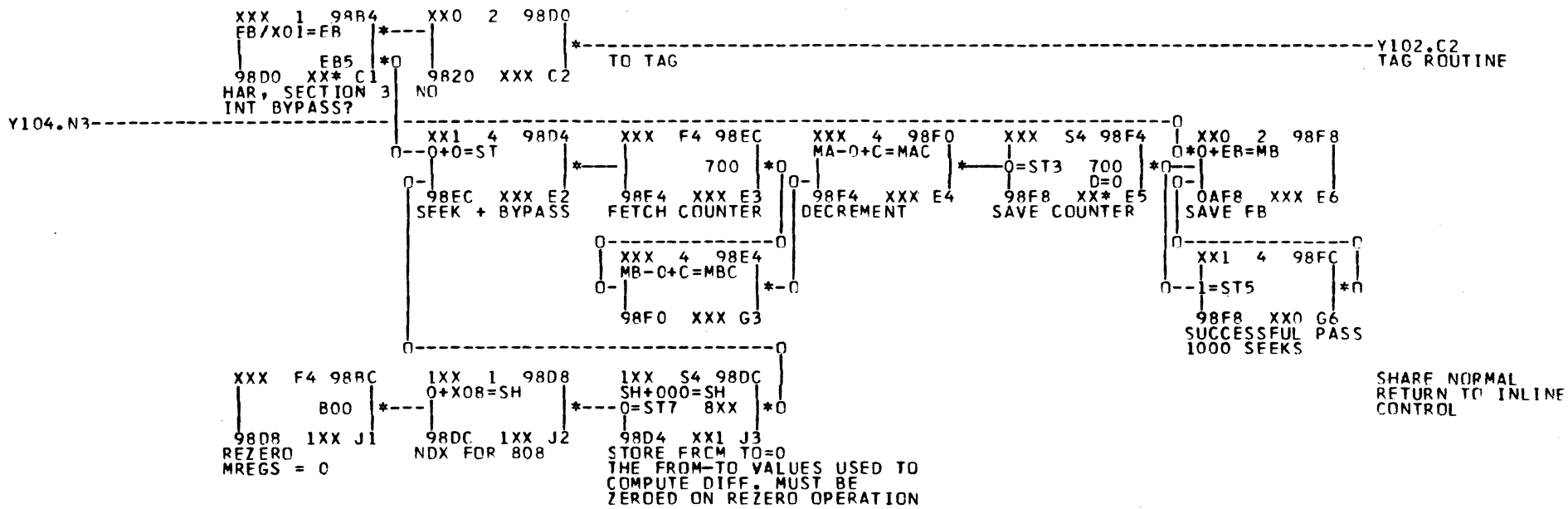
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REVISION F



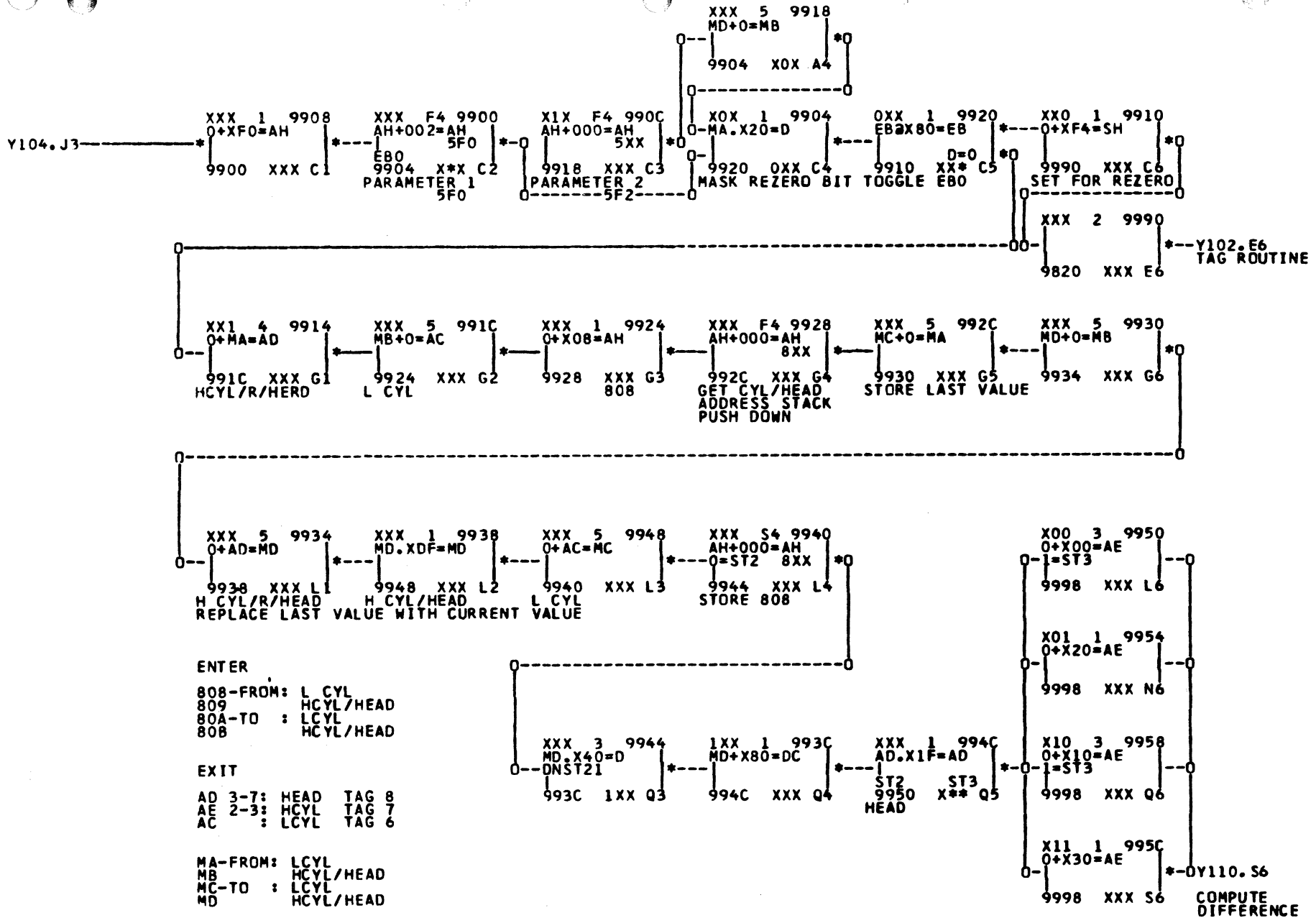
NOTE 1. - THE POLLING OPERATIONS DETECT ONLY INTERRUPTS.WHEN THE ROUTINE EXITS TO SHARE W/THE FUNCTIONAL PGM IF NO INTERRUPT WILL BE GENERATED IT IS NECESSARY TO BYPASS THE POLLING OPERATION ON RETURN.

Y104 CYLINDER SEEK ROUTINE
TAG SUBROUTINE I



NOTE 1 ST7=0 - C-CHK FROM READ
 = 1 - C-CHK FROM TAG ROUTINE

Y106 CYLINDER SFEK ROUTINE
 TAG SUBROUTINE II



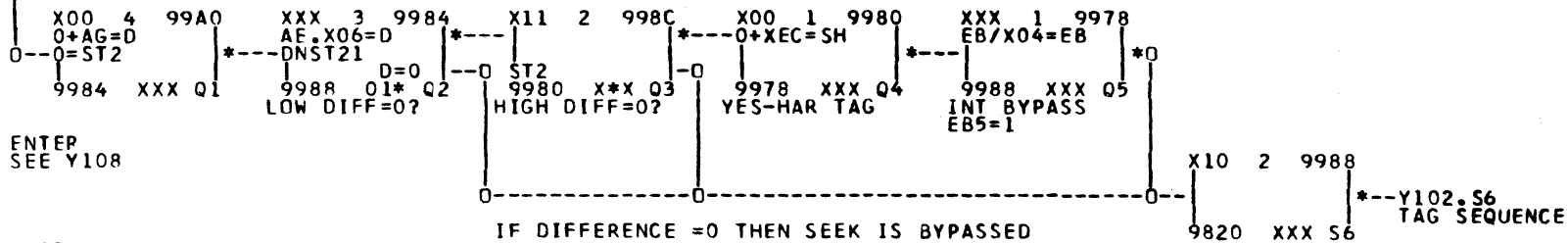
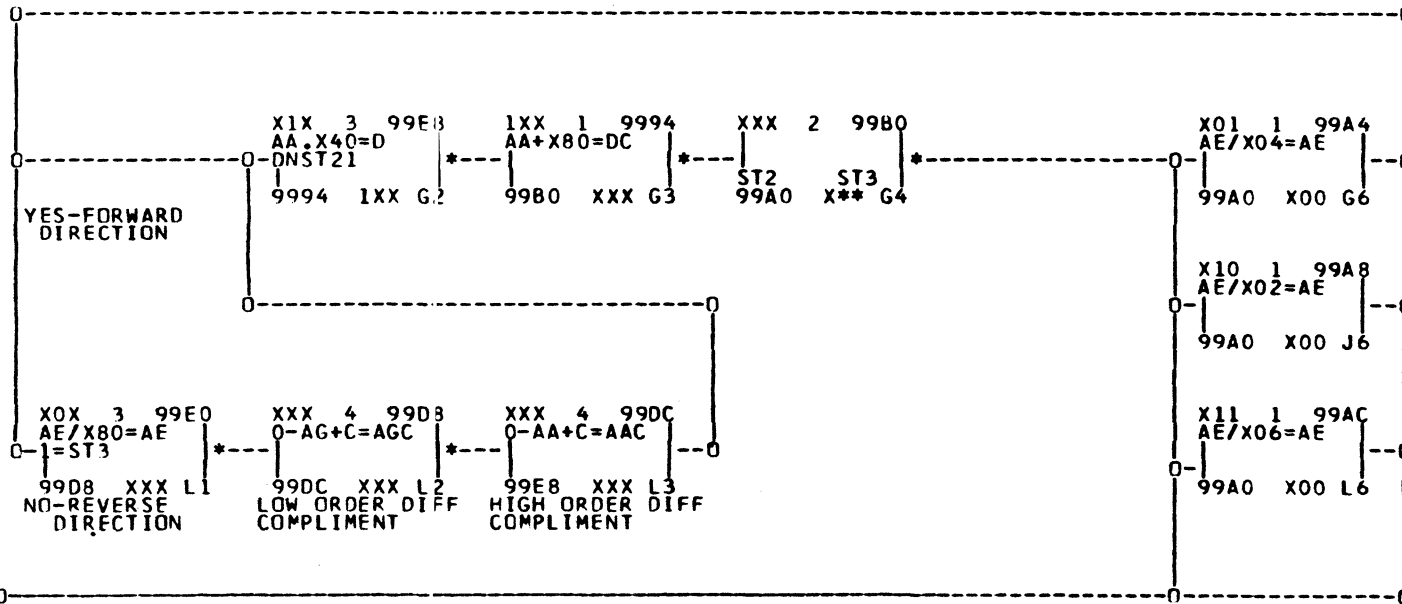
ENTER
 808-FROM: L CYL
 809 HCYL/HEAD
 80A-TO : LCYL
 80B HCYL/HEAD

EXIT
 AD 3-7: HEAD TAG 8
 AE 2-3: HCYL TAG 7
 AC : LCYL TAG 6

MA-FROM: LCYL
 MB HCYL/HEAD
 MC-TO : LCYL
 MD HCYL/HEAD

Y108.S6-----*

XXX 5 9998 MR+0=AA	XXX 5 999C MC-MA+C=AGC	XXX 3 9970 AA.XC0=AA C=ST2	XXX 1 997C MD.XC0=MD	XXX 5 9974 MD-AA+C=AAC	XXX 1 99EC AA.XC0=AA
999C XXX C1	9970 XXX C2 LOW ORDER DIFF	997C XXX C3 MASK HCYL FROM	9974 XXX C4 MASK H CYL TO	99EC XXX C5 HIGH ORDER DIFF	99E0 XXX C6 HIGH ORDER CARRY?

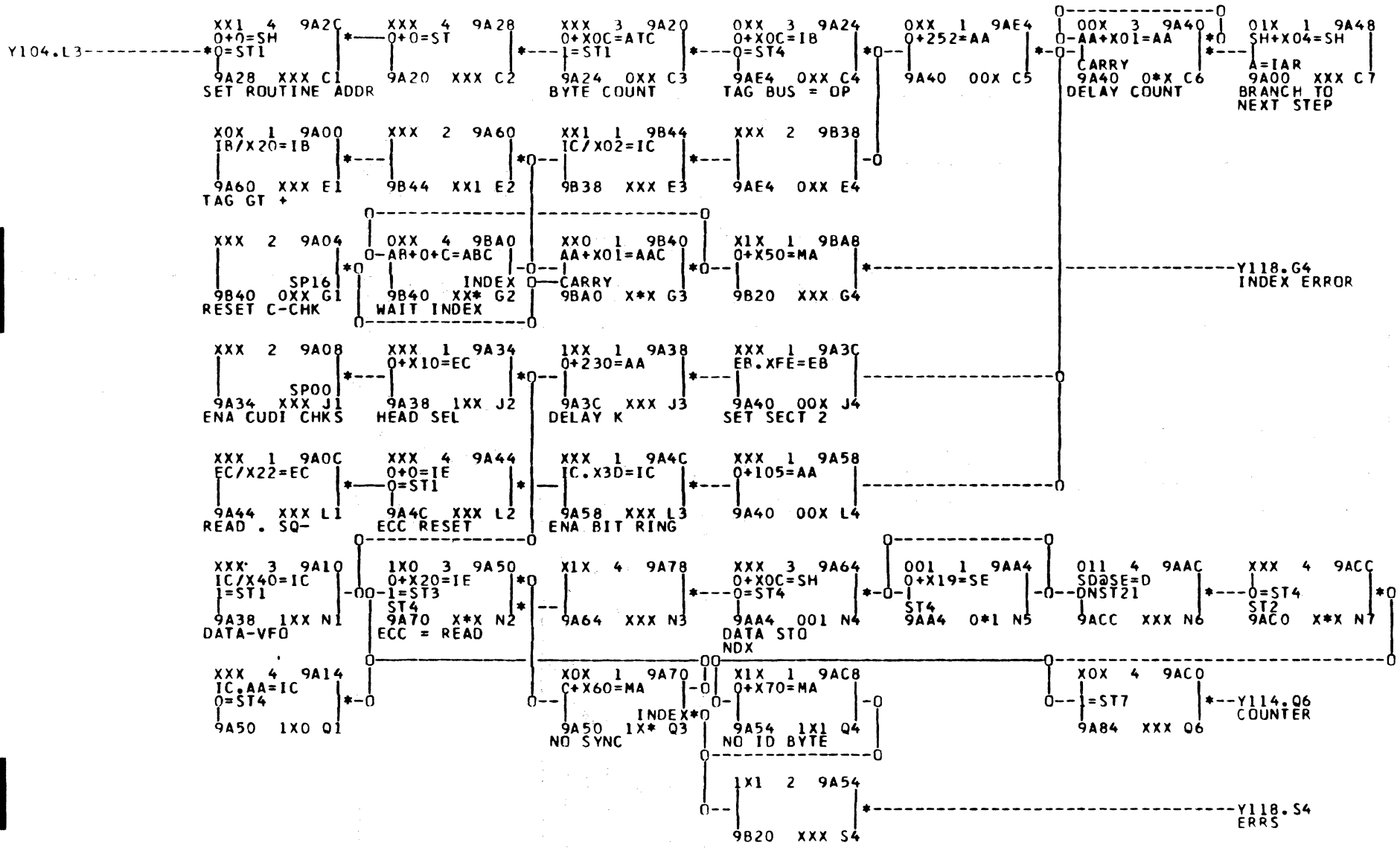


ENTER
SEE Y108

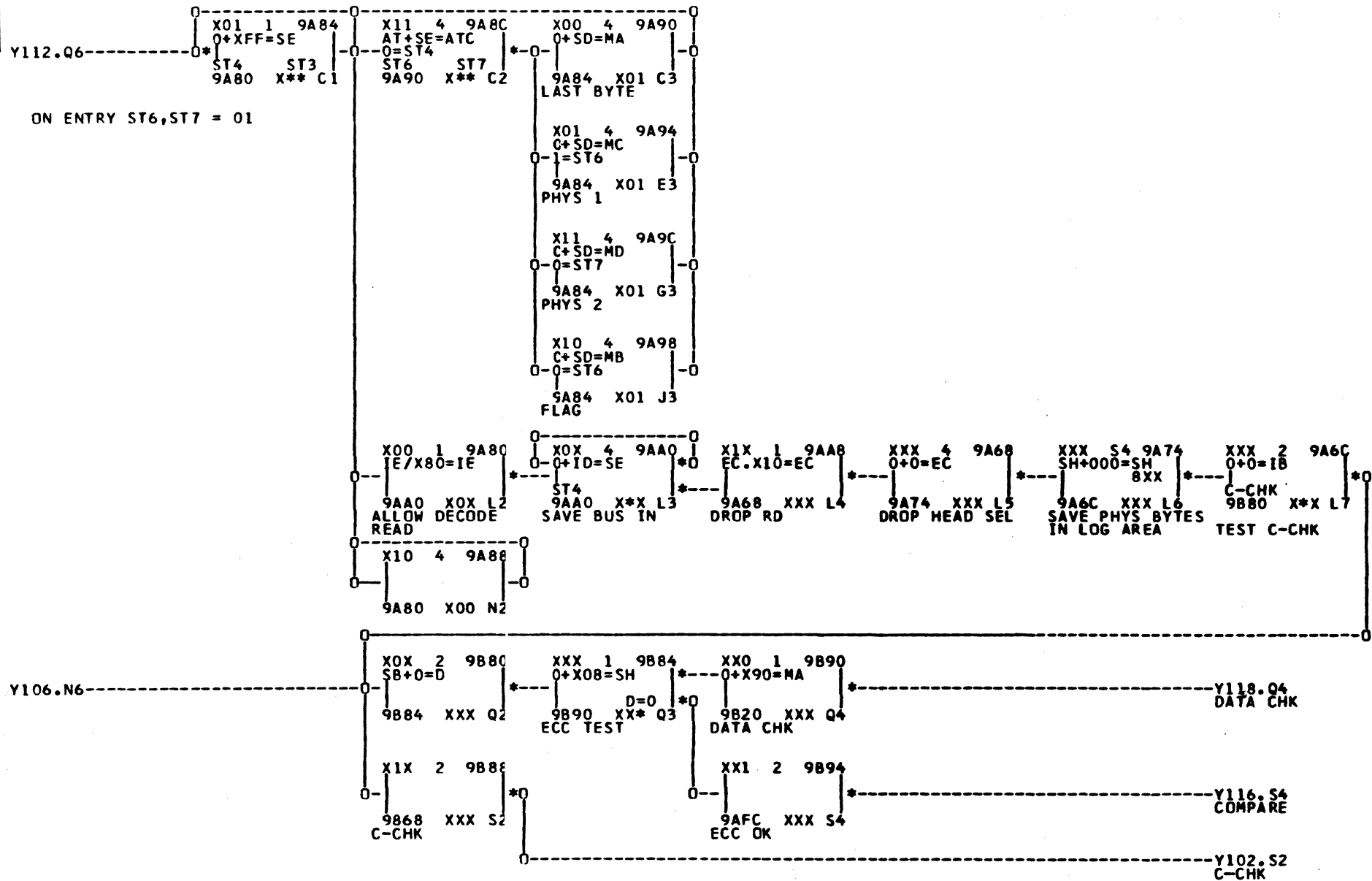
IF DIFFERENCE = 0 THEN SEEK IS BYPASSED

EXIT
AD: TAG8 HEAD
AE: TAG7 R/HCYL/H DIFF
AG: TAG9 LOW DIFF
EB5=1 IF SEEK IS TO RF BYPASSED

Y110 CYLINDER SEEK ROUTINE
COMPUTE DIFFERENCE



Y112 CYLINDER SEEK ROUTINE
READ



ON ENTRY ST6,ST7 = 01

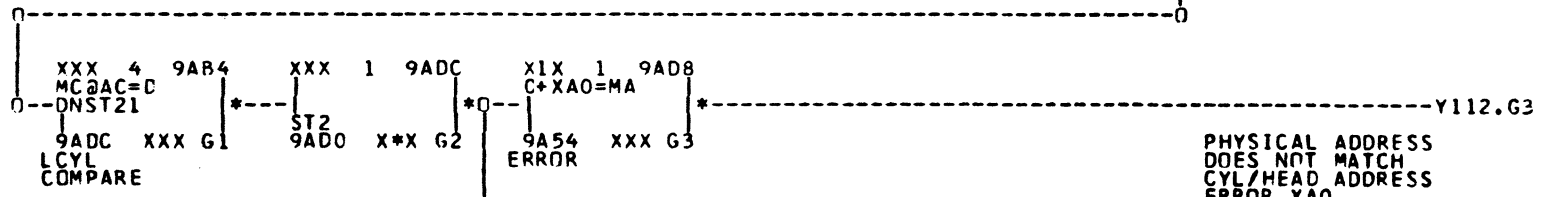
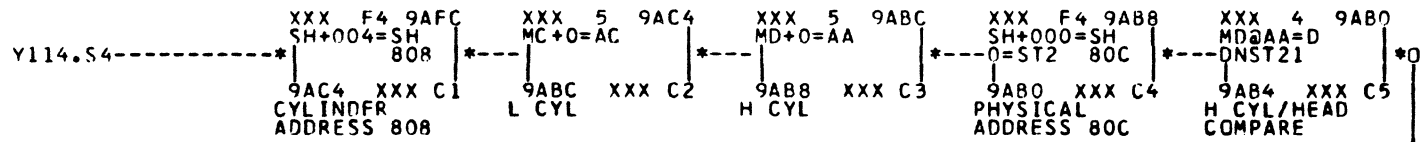
Y106.N6

Y118.Q4
DATA CHK

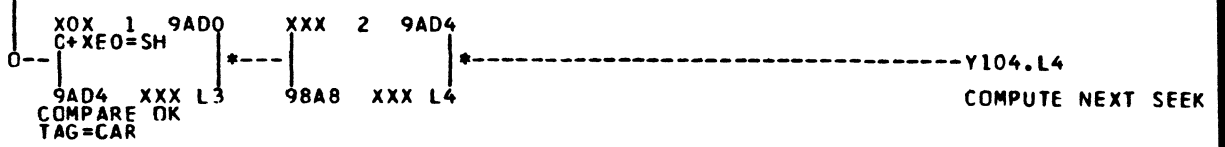
Y116.S4
COMPARE

Y102.S2
C-CHK

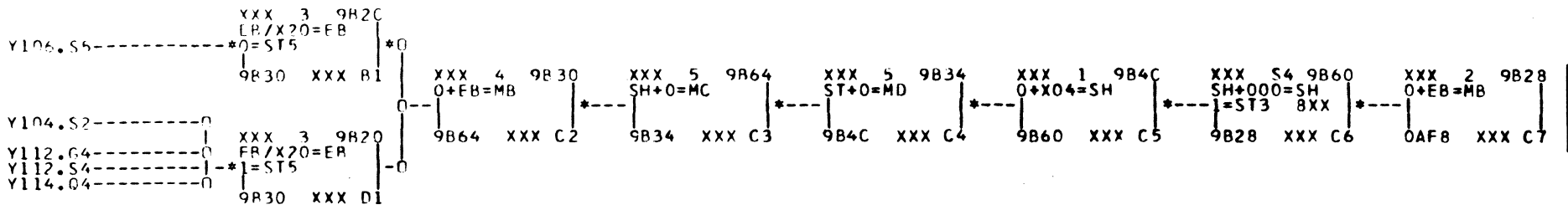
Y114 CYLINDER SEEK ROUTINE
CYLINDER SEEK COUNTER



PHYSICAL ADDRESS
DOES NOT MATCH
CYL/HEAD ADDRESS
ERROR XAO



Y116 CYLINDER SEFK ROUTINE
COMPARE



Y118 CYLINDER SEEK ROUTINE
EXIT PAGE

PIJF NO. 70631200

DOC NO. 73687900

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REVISION H

DISPLAY LOG AREA

BYTE	DEFINITION	EXPLANATION	
0	ERR CODF	SEE Y100	
1	EB REG	USED FOR PROGRAM CONTROL	EB0-0-SECOND GROUP OF SEEK PARAMETERS 1-FIRST GROUP OF SEEK PARAMETERS EB1-REZERO OPERATION EB2-ERROR ON LAST EXIT TO ILC EB3-H. CYL USED IN DIFF CALC EB4-INITIAL ENTRY EB5-INTERRUPT BYPASS EB6- EB7-0 COMPUTING SEEK -1 READING HOME ADDRESS
2	SH REGISTER	TAG INDEX, POINTS TO TAG ADDRESS + 4 (PAGE Y102)	
3	ST REGISTER	CONTROL BUS OUT REGISTER SOURCE (PAGE Y102) ON C-CHK, ST7 = 1 IF ON TAG	
4	FROM	L. CYL	
5		H. CYL	
6	TO	L. CYL	
7		H. CYL	
8	FLAG	BYTE	
9	PHYS	1 BYTE	
A	PHYS	2 BYTE	

THIS ROUTINE SEEKS TO A SPECIFIED CYLINDER/HEAD AND BEGINS
 THE HEAD ALIGNMENT PROCEDURE A CE BOX MAY BE USED.
 TWO MODES ARE AVAILABLE:
 VERIFY-TO TEST FOR HEAD ALIGNMENT WITHIN 150 UIN., ALL HDS
 ADJUST-USED WITH CE BOX TO MAKE ADJUSTMENT
 IN HEAD ALIGNMENT FOR SELECTED HEAD ONLY,
 HEAD SELECTION MAY VIA CE BOX OR PARAMETER

PARAMETERS:

0-OPTIONS
 BIT 0 - VERIFY MODE
 3 - BYPASS CONTROL CHECKS
 4,7- ALIGN CYL '0' OUTER, 'F' MIDDLE, '1' INNER
 1 - HEAD

DEFAULT = VERIFY, HD=0, CYL=245-100 M BYTE
 CYL=491-100 M BYTE

CONTROL REG, EB

0 - VERIFY
 1 -
 2 - SIGN
 3 - BYPASS C CHK
 4 - OFFSET START
 5 - ZERO OFFSET

HEAD UNDERTEST HAR 00XX XXXX
 OFF TRACK ERROR CAR DXXX XXXX
 OFFSET CONTROL DIFF 0PXX XXXX

X-OFF TRACK ERROR, 12.5 UIN.
 D=0, OFF TRACK REVERSE
 D=1, FORWARD

OFFSET VALUE, 25 UIN.
 D=0 OFFSET FORWARD
 1 REVERSE
 D=0 POLARITY, PLUS
 1 MINUS

XXX D ADOO	
00000000	0 -
	1 - HAR
XXX S1	2 - CAR (TRACK ERROR (12.5 UIN))
CONTROL WD	3 - OFFSET (25 UIN)

Y120 HEAD ALIGNMENT
 DEFINITIONS

PJP NO. 70631200

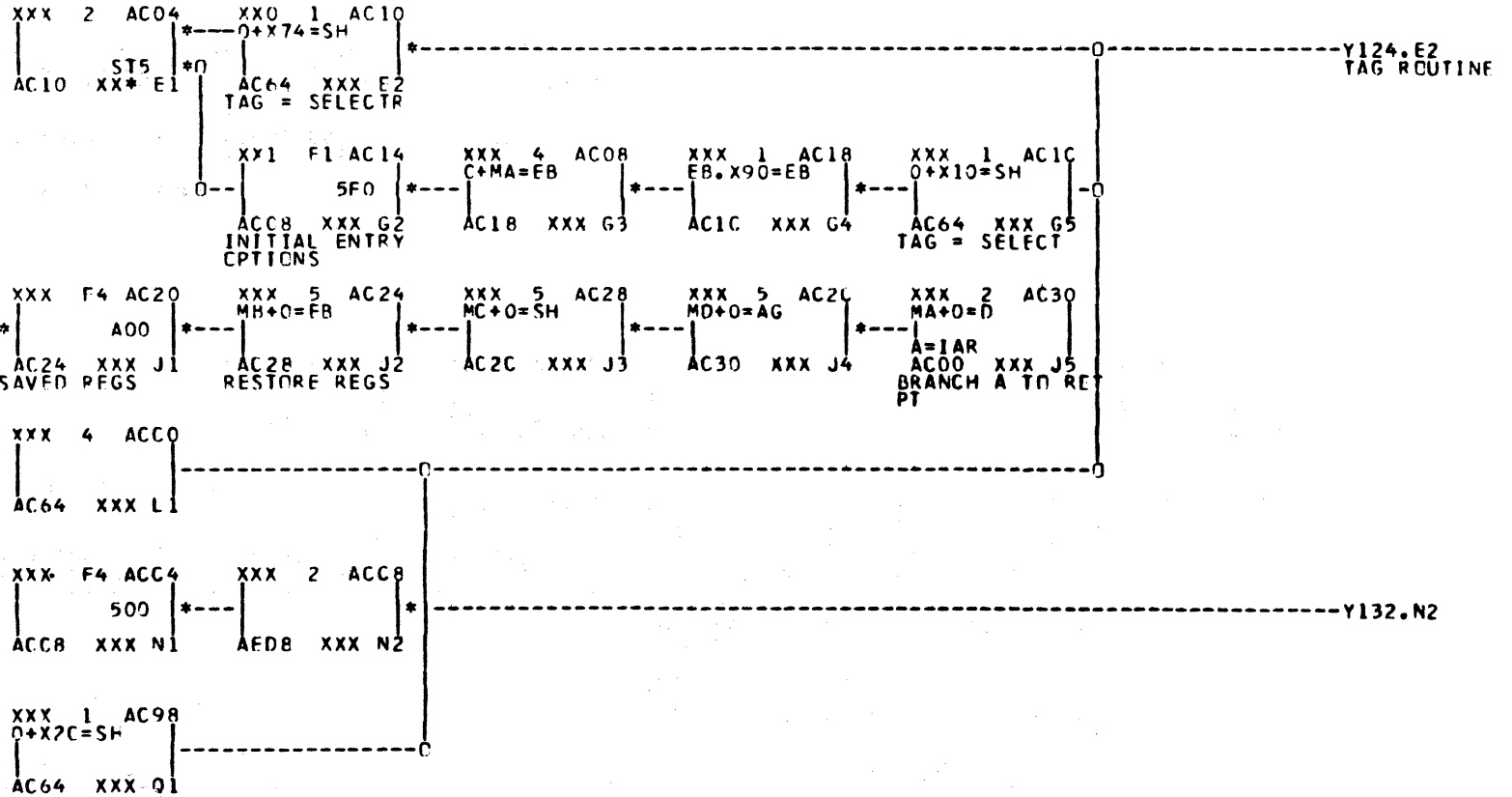
DOC NO. 73687900

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REVISION

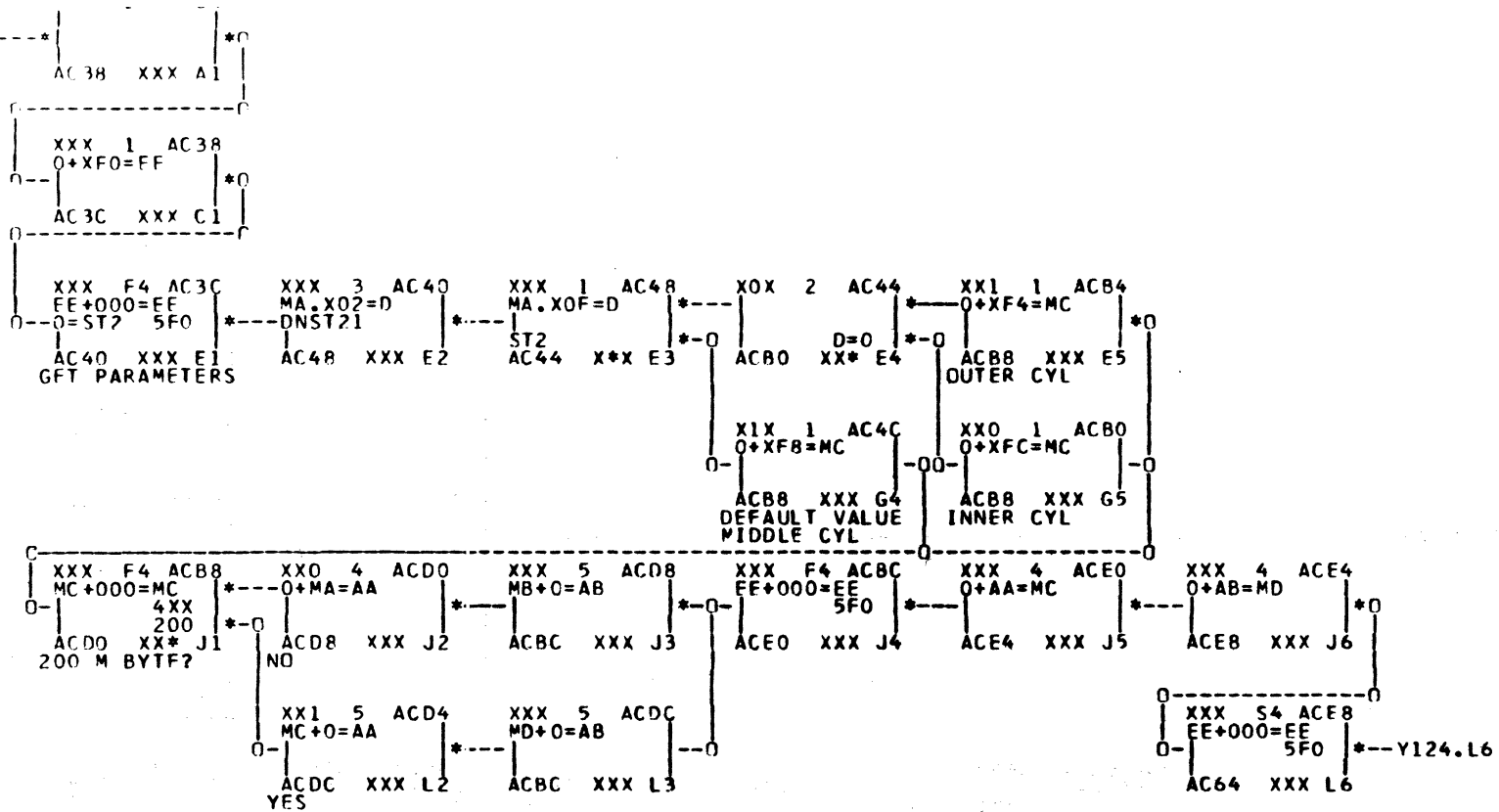
J

EXTERNAL
ENTRY
PT



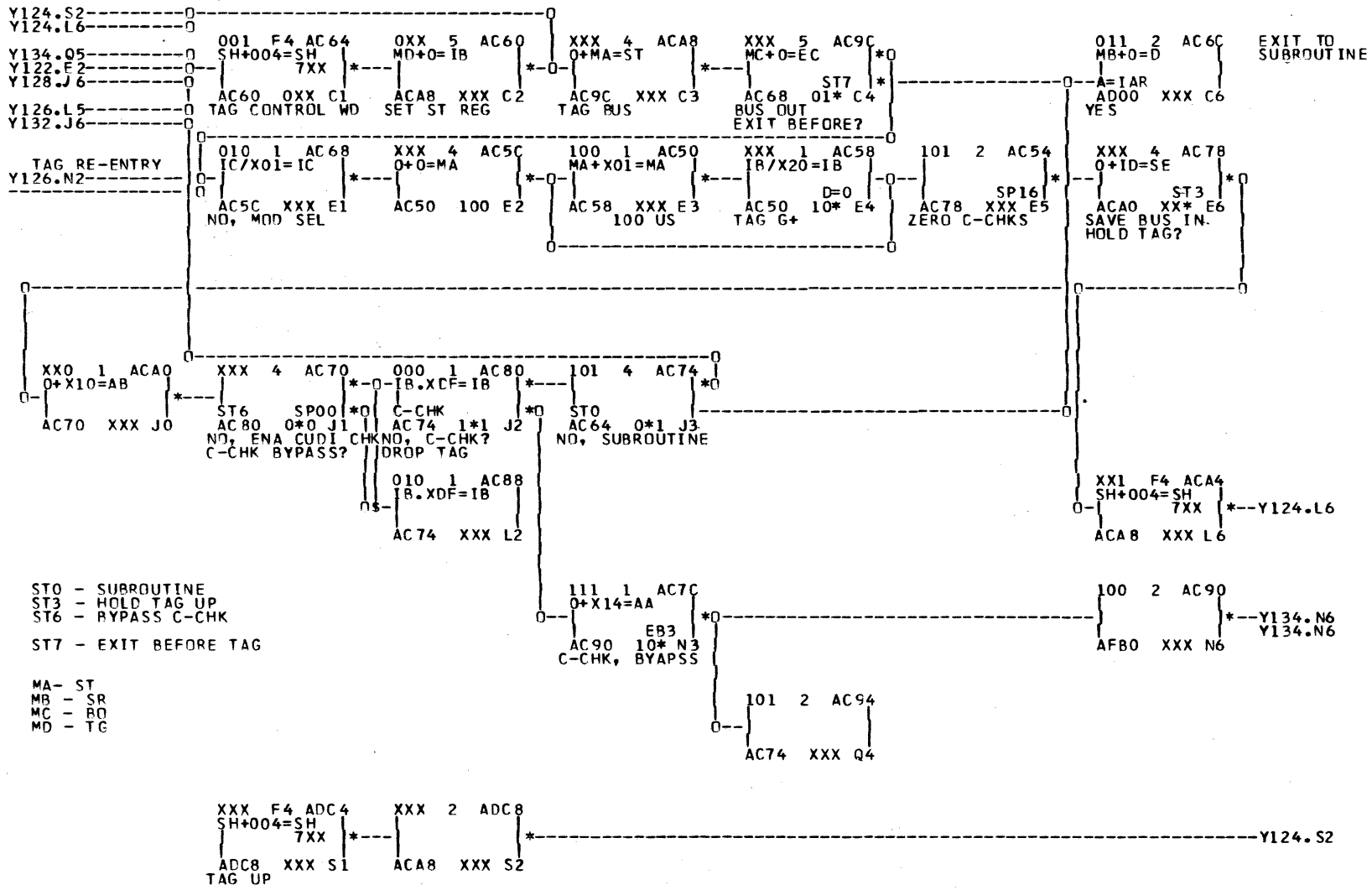
XXX C ADF0 XXX D ADF4
 8F000000 00000000
 XXX U1 XXX U2
 PARAMETERS
 CYL=245 MODE=VERIFY
 =491

Y122 HEAD ALIGNMENT
 ENTRY - P



CYLINDER PARAMETERS

XXX D ACF4 00040008	XXX D ACF8 00F512E8	XXX D ACFC 12903620
XXX Q1 OUTER ALIGN 100:4, 200:8	XXX Q2 MIDDLE ALIGN 100:245, 200:491	XXX Q3 INNER ALIGN 100:400, 200:800

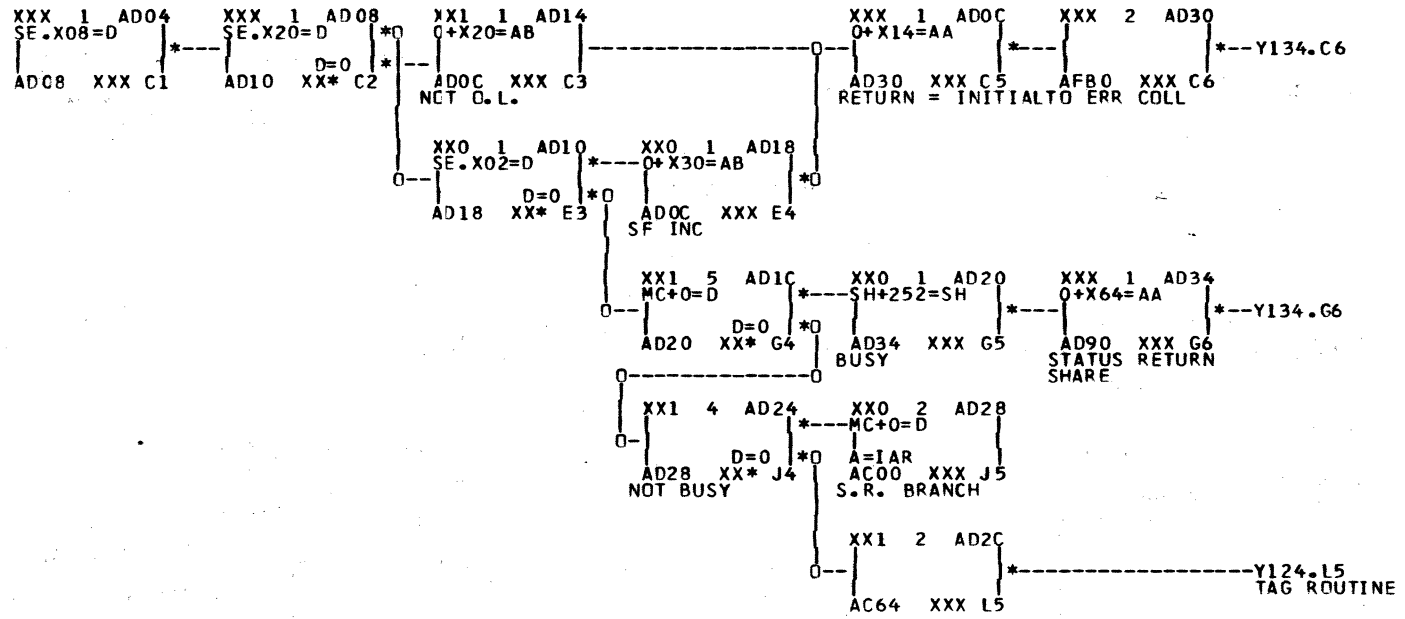


ST0 - SUBROUTINE
 ST3 - HOLD TAG UP
 ST6 - RYPASS C-CHK
 ST7 - EXIT BEFORE TAG

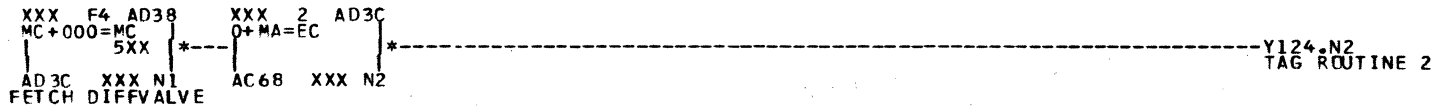
 MA - ST
 MB - SR
 MC - RO
 MD - TC

Y124 HEAD ALIGNMENT TAG CONTROL

STATUS



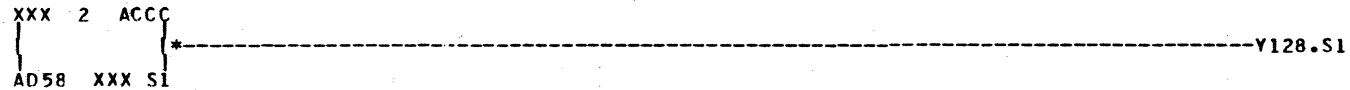
DIFF1
DIFF2
CAR
HAR



SELECT R

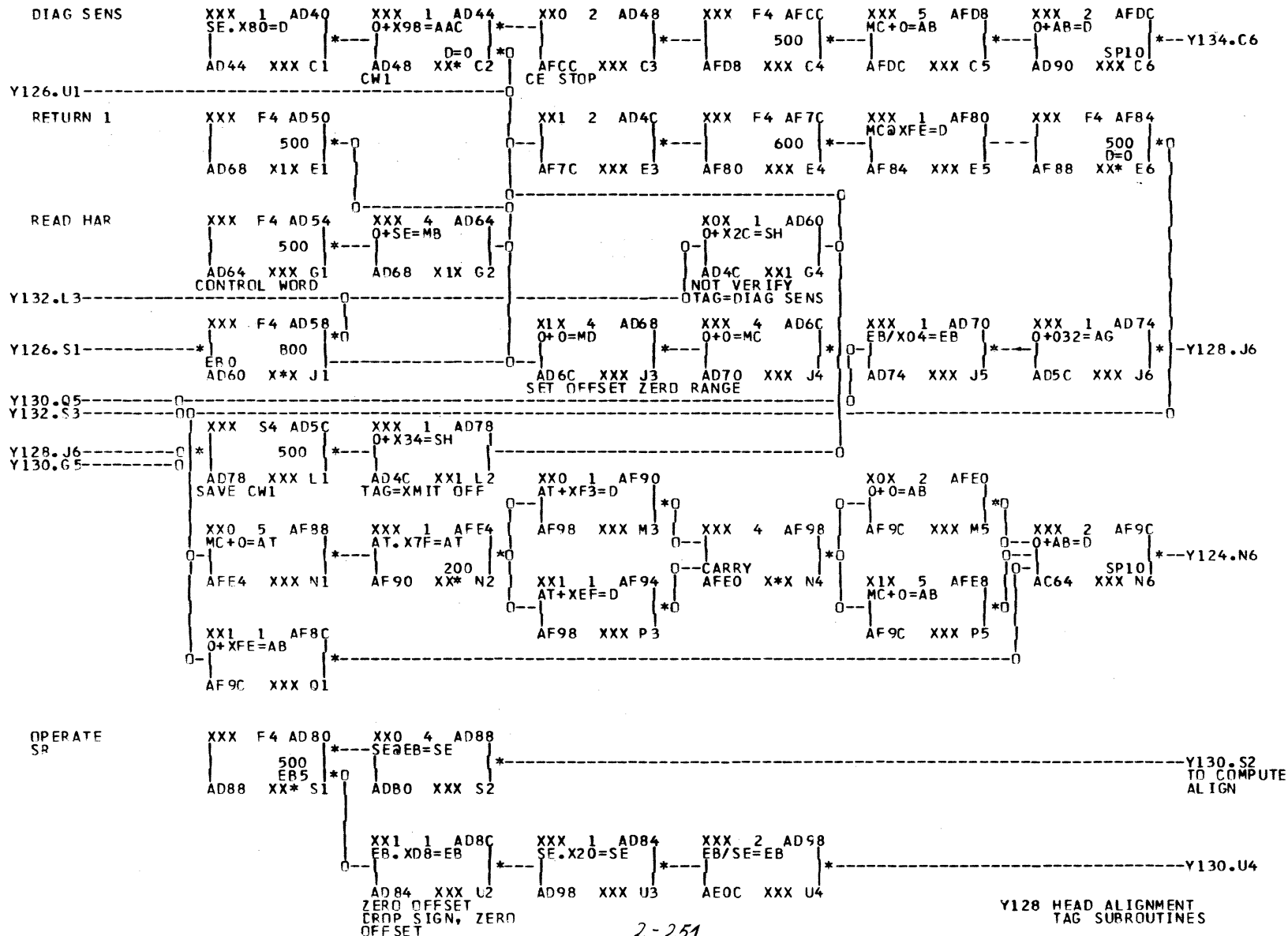


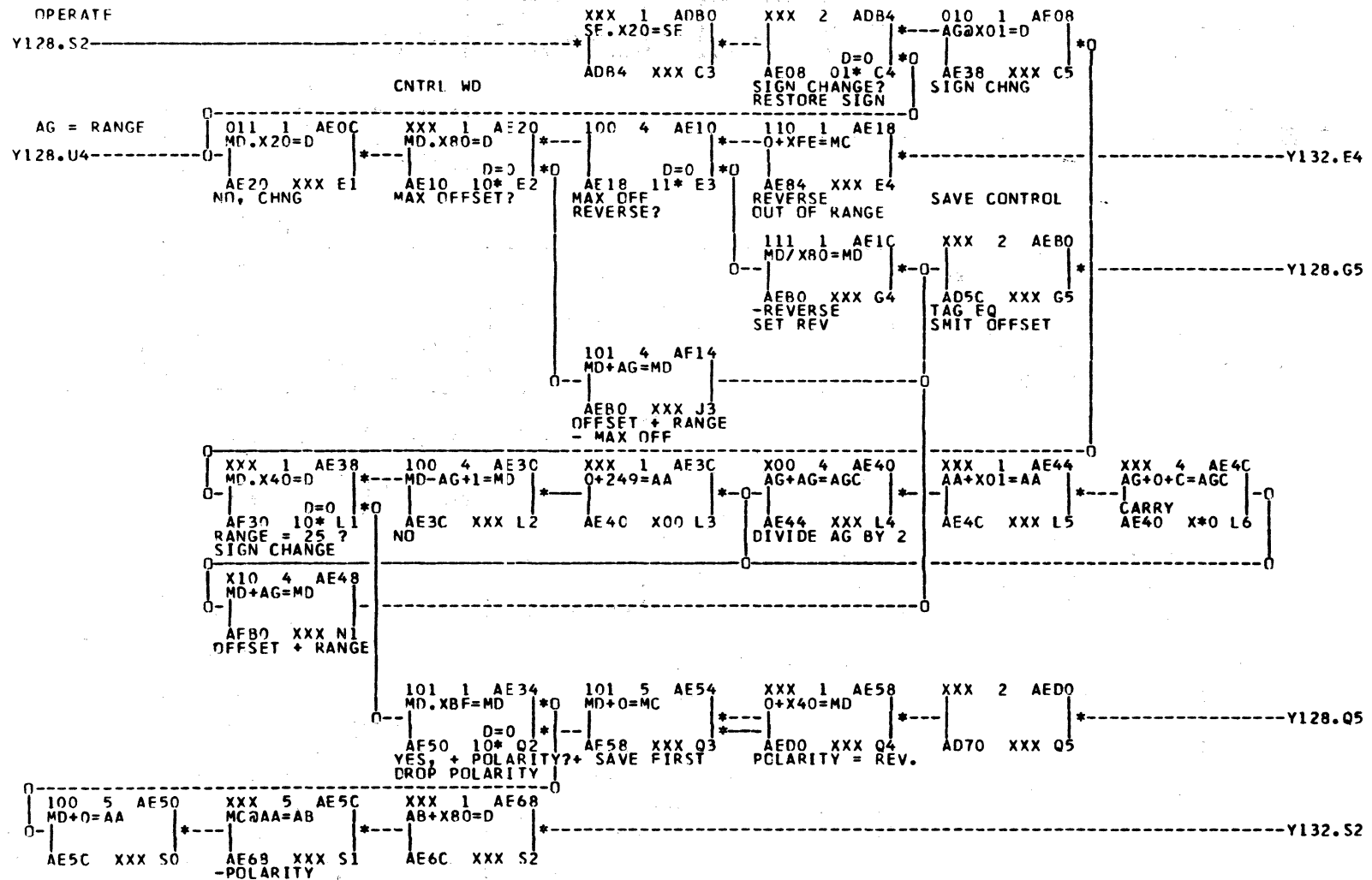
FROM STATUS 2 SR



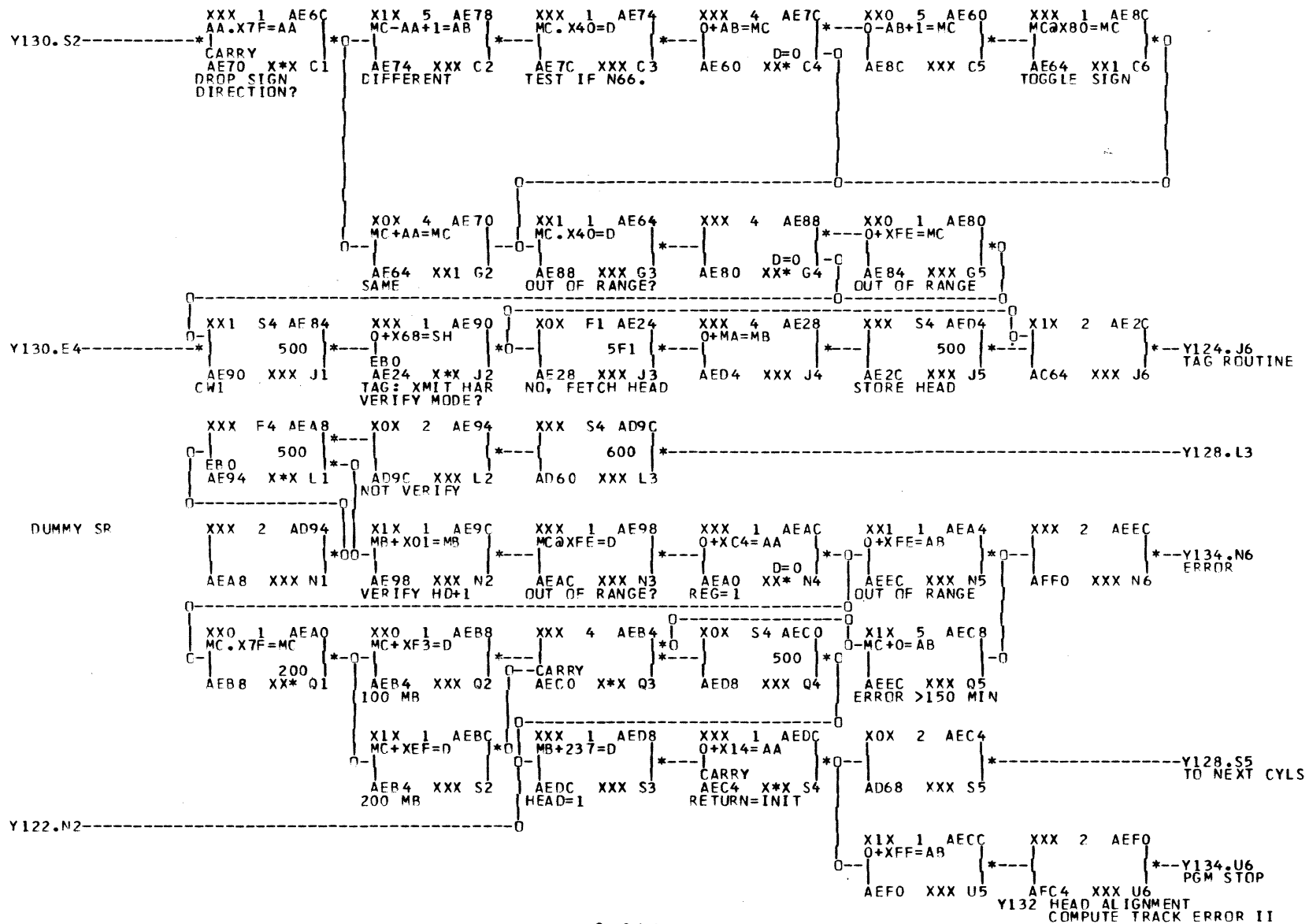
FROM
SEEK







Y130 HEAD ALIGNMENT
COMPUTE TRACK ERROR I



XXX D AF10 80C21003 SFLECT XXX C1	XXX D AF2C 8040080D DIAG SENS XXX C2	XXX D AF48 0000400E DIAG MODE 4 XXX C3	XXX D AF68 01380206 TRANSMIT CAR XXX C4
XXX D AF14 0000080A RESET. REZERO XXX E1	XXX D AF30 80540405 READ HAR XXX F2	XXX D AF4C 1200100C OP. HEAD SEL XXX E3	XXX D AF6C 01380108 TRANSMIT HAR XXX E4
XXX D AF18 80040004 STATUS XXX G1	XXX D AF34 01380309 TRANSMIT XXX G2 OFFSET	XXX D AF50 1200330C OP. HEAD SEL. READ XXX G3 READ SECT	XXX D AF70 01940000 DUMMY XXX G4
XXX D AF1C 0138F306 CYL XXX J1	XXX D AF38 0000200A OFFSET START XXX J2	XXX D AF54 1200320C OP HEAD SEL RD XXX J3	XXX D AF74 80EC1003 SELECT R XXX J4
XXX D AF20 0138F309 DIFF 1 XXX L1	XXX D AF3C 80040004 STATUS XXX L2	XXX D AF58 0200000C OP XXX L3	XXX D AF78 8004CC04 STATUS XXX L4
XXX D AF24 0138F207 DIFF 2 XXX N1	XXX D AF40 80040004 STATUS XMIT HAR XXX N2	XXX D AF5C 0200400E DIAG 4 XXX N3	
XXX D AF28 807C100A SFEK XXX Q1	XXX D AF44 000D010A 0000 RESET INT XXX Q2	XXX D AF60 C1D00000 DELAY XXX Q3	
		XXX D AF64 8280000C OPERATE XXX S3	

Y138 HEAD ALIGNMENT
TAGS

PARAMETERS:

	DEFAULT FORM	
0-OFFSET 1	00 ROXX XXXX	FF = NO GP.
1-OFFSET 2	0E	
2-OFFSET 3	0E	
3-HEAD	FF 000X XXXX	FF = ALL HEADS
4-H. CYL	FF 0000 00XX	FOR
5-L. CYL	00 XXXX XXXX	FF = 1 CYL SEEK
6-PI-COMPLEMENT	00 X-C,1	CY. 9, 395 - 100M BYTE
7-DL	00 R-0-FORWARD OFFSET	CY. 14,790 - 200M BYTE
	1-REVERSE	FOR STANDARD R0 (= 8 BYTES) DL = F4FF

ERR BIT SIGNIFICANCE

ERR - 2 CYL SEEK
 1 - RESULT MODE
 2 - CONTINUE ON ERR
 3 - ALL HEADS
 4 - CYL = 395-100M BYTE, 790-200M BYTE
 5 - LOOP
 6 - CONTROL
 7 - CONTROL

ERROR CODES

50	Y148.N4	INDEX ERROR
70	Y150.C2	ID MISSED
90	Y150.N0	ECC READ ERROR
80	Y152.N3	R/W C-CHK
60	Y148.C3	NO SYNC OR ID

OPTION BYTE

0 - SUPPRESS LOOP COUNT
 1 -
 2 -
 3 - LOOP OPTION
 4 - SUPPRESS GP 4
 5 -
 6 -
 7 -

Y140 READ ROUTINE 9C

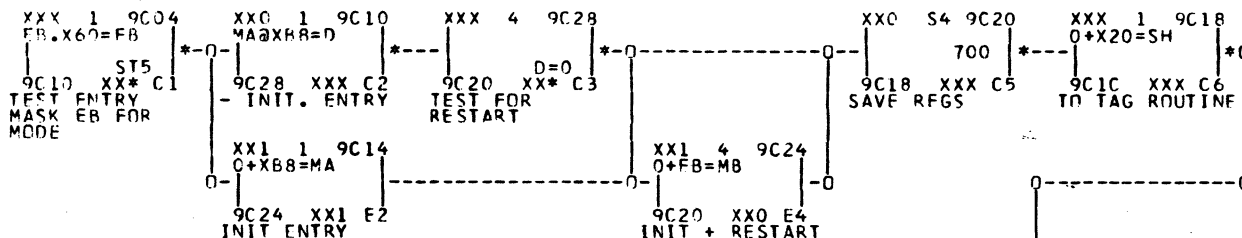
DUP NO. 71631200

DOC NO. 73687900

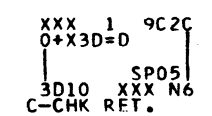
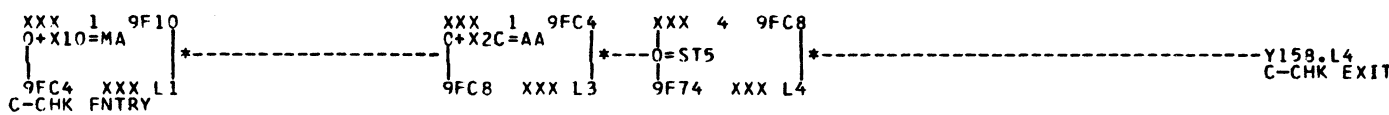
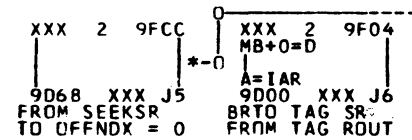
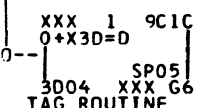
2-256

REVISION J

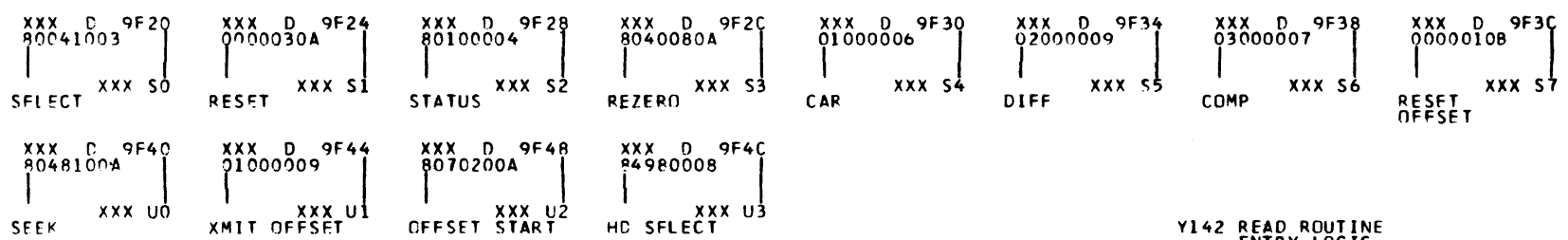
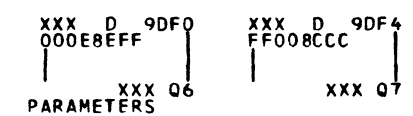
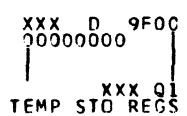
FROM
TLINE CONTROL



Y146.G4-----0
Y143.C5-----0
Y144.J5-----0

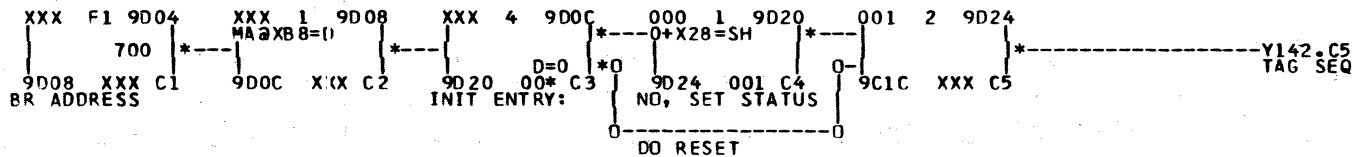


TAGS:
0-ST
1-ROUTINE
2-BUSCUT
3-TAG

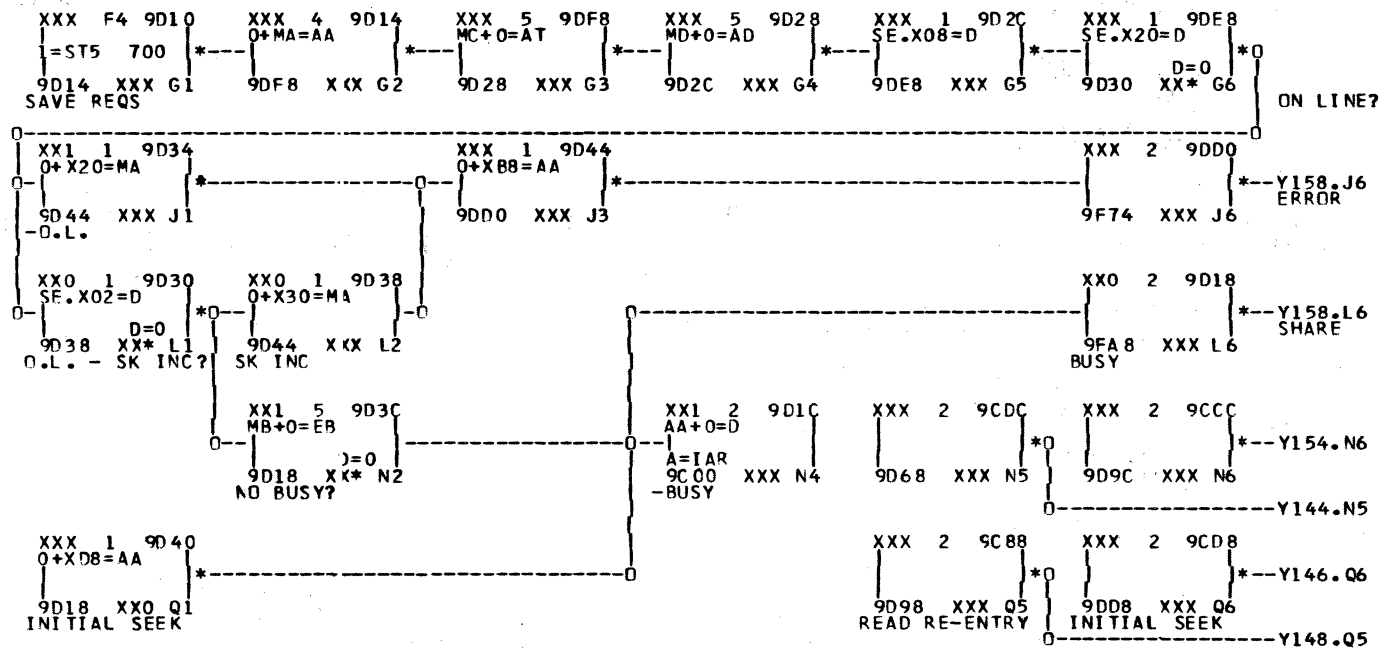


Y142 READ ROUTINE
ENTRY LOGIC

SELECT

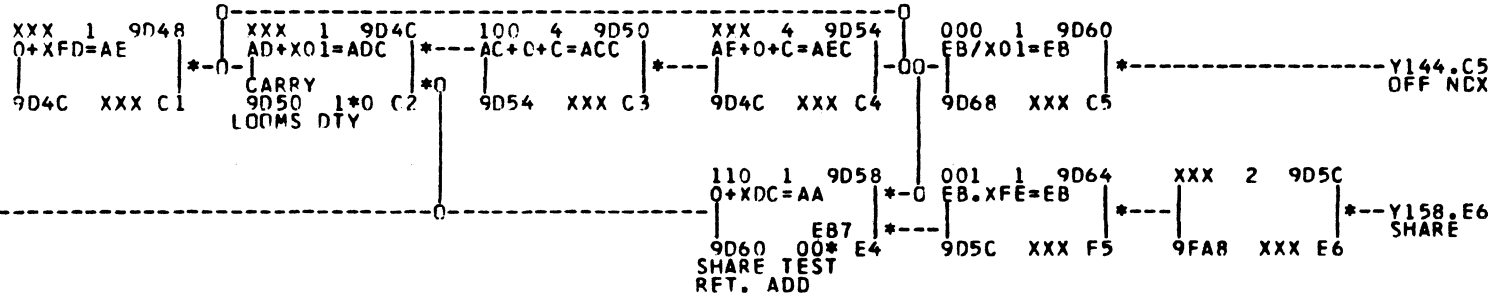


STATUS

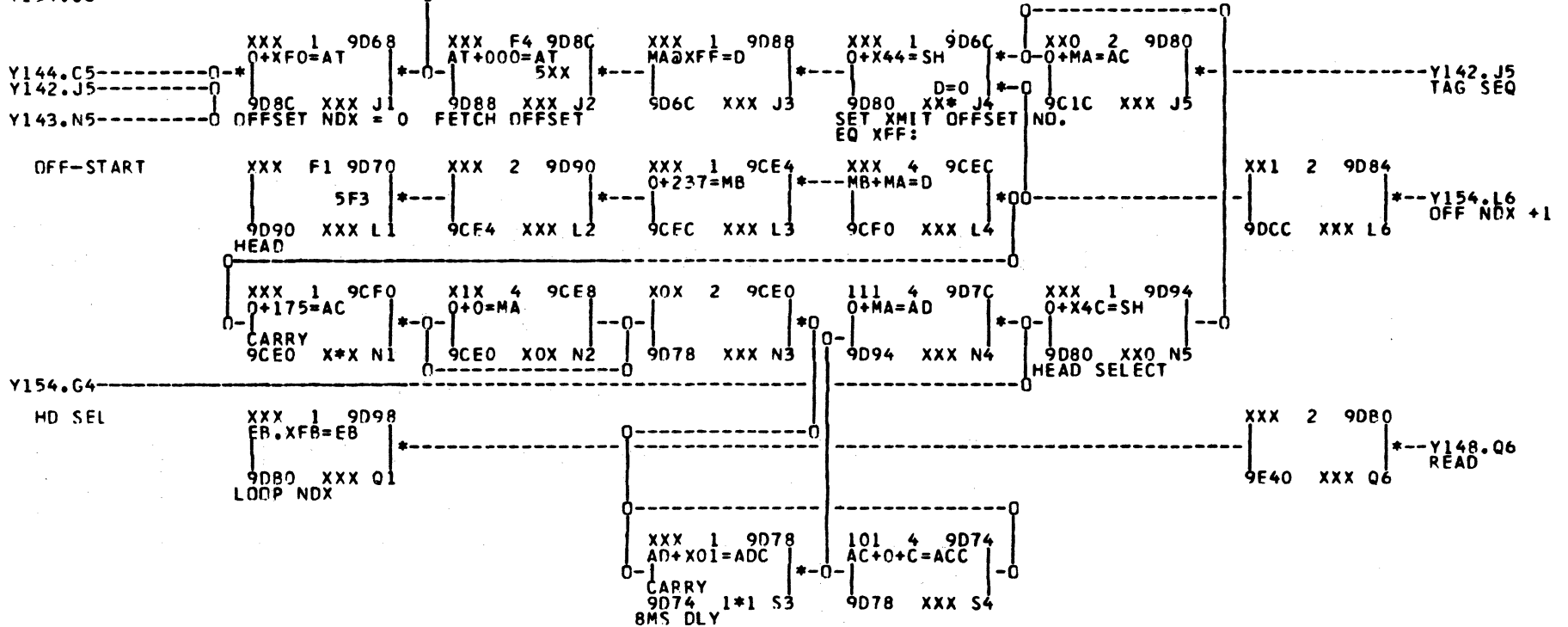


REZERO

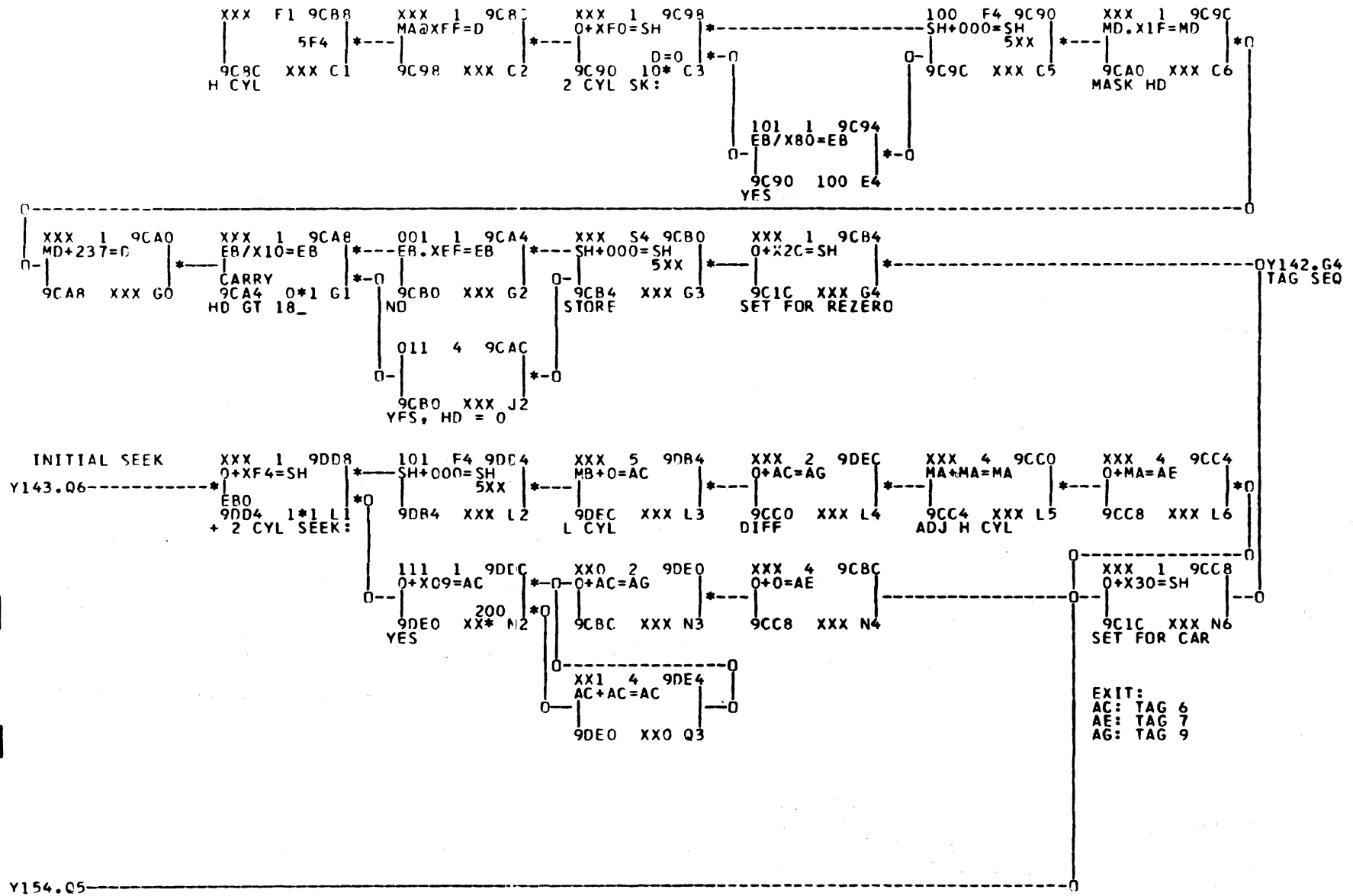
SEEK

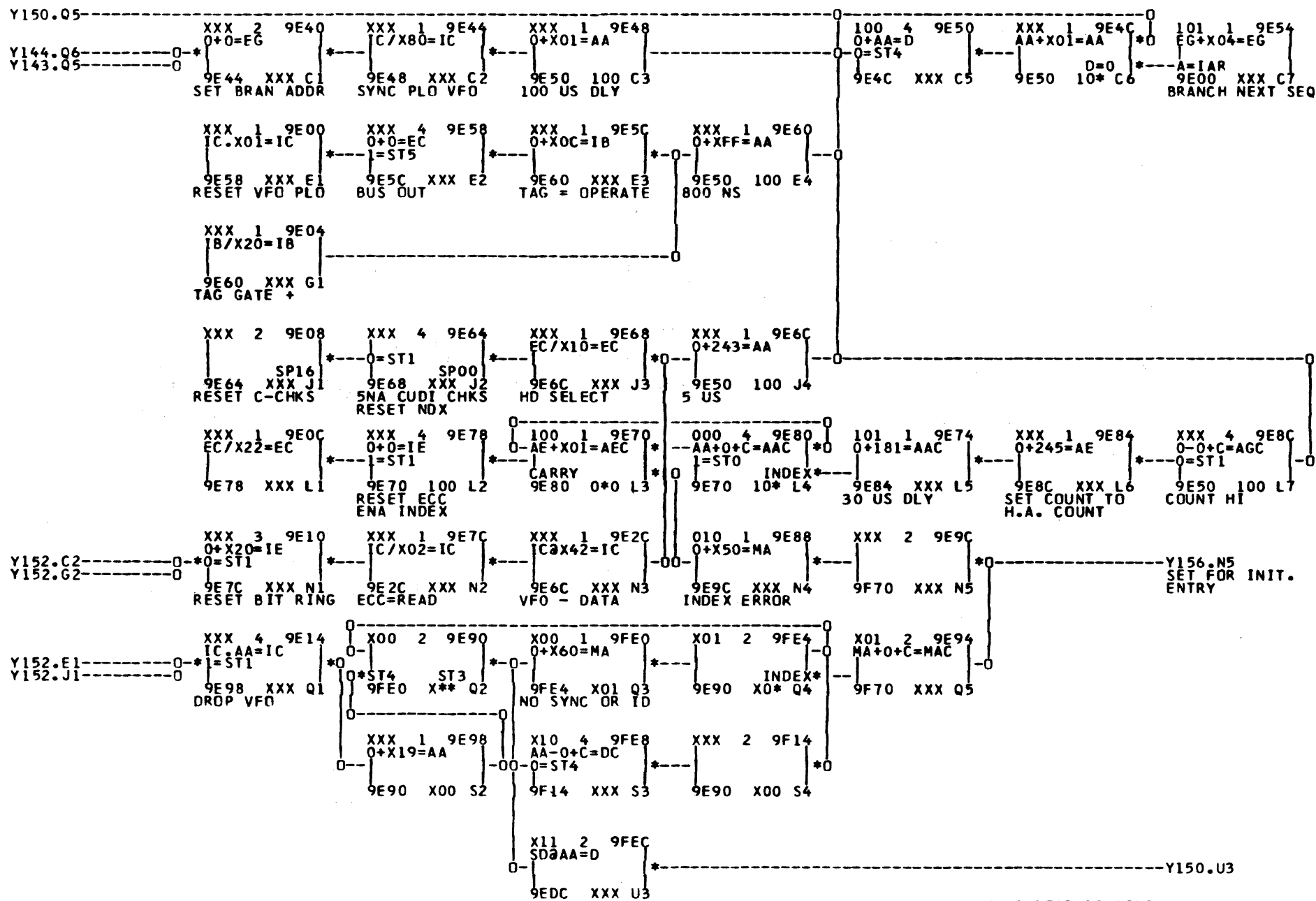


Y154.J6

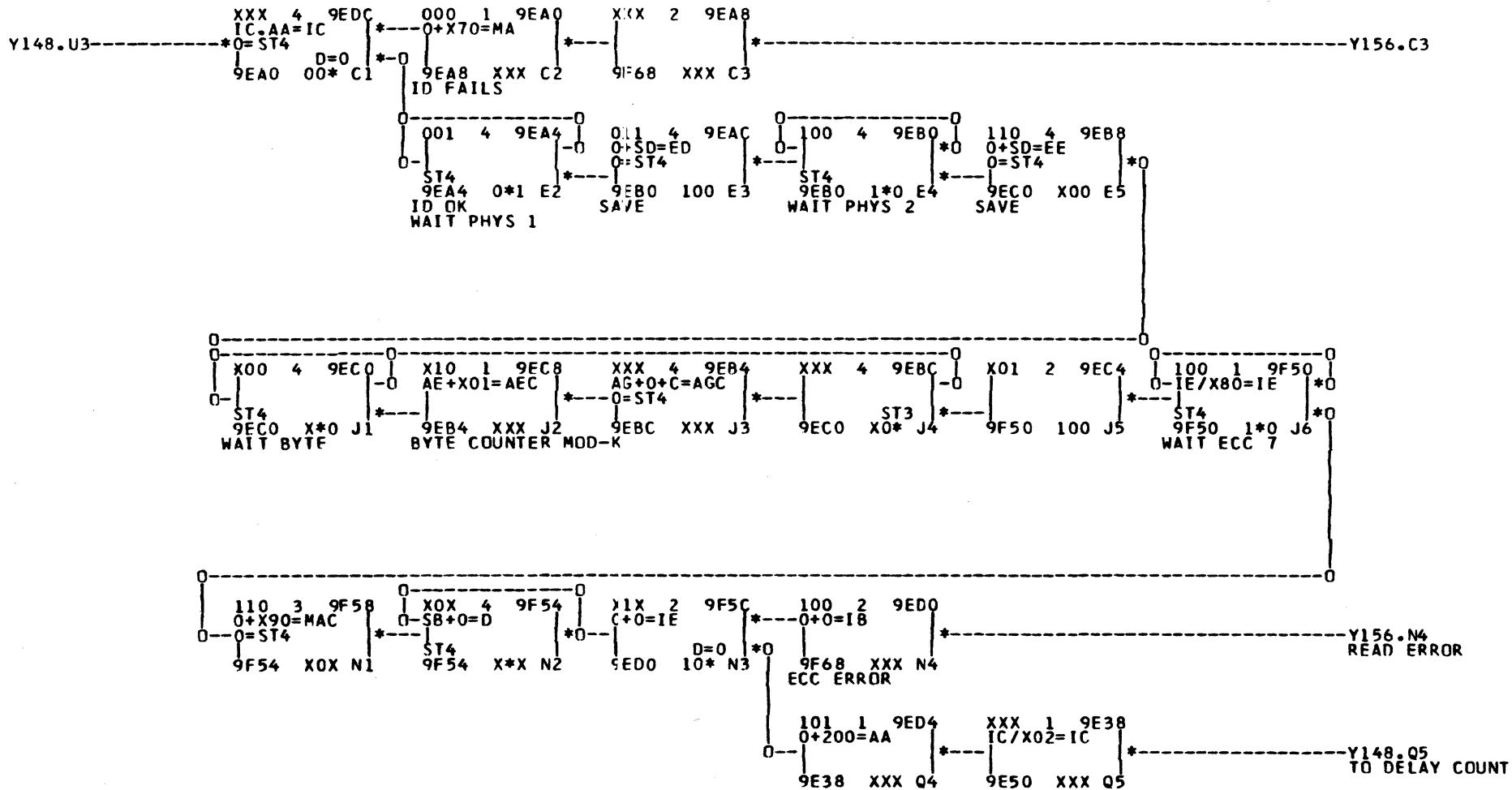


Y144 READ ROUTINE
TAG SUBROUTINES II





Y148 READ ROUTINE
READ 1



Y150 READ ROUTINE
READ 2

PUB NO. 70631200

DOC NO. 73687900

2-262

REVISION K

```

XXX 1 9F19      XXX 1 9ECC
O+241=AF      O+XFF=AG
|             |
|-----*-----*-----Y148.C2
|             |             TO SYNC VFO
9ECC XXX C1   9E10 XXX C2
SET LC COUNT SET FI COUNT
RD COUNT FIELD

XXX 2 9F1C
|             |
|-----*-----Y148.F1
|             |             TO DROP VFO
9F14 XXX F1

```

```

XXX F1 9F20      XXX 4 9ED8      XXX F1 9F30      XXX 4 9E34
|             |             |             |
|             |             |             |
|-----*-----*-----*-----Y148.G2
|             |             |             |             TO SYNC VFO
5F6          C+MA=AE      5F7          O+MA=AG
9ED8 XXX G1   9E30 XXX G2   9E34 XXX G3   9E10 XXX G4
SET LC      SET LC      SET HI
READ RD 13168 BYTES + 6 ECC

XXX 2 9E24
|             |
|-----*-----Y148.J1
|             |             DROP VFO
9F14 XXX J1

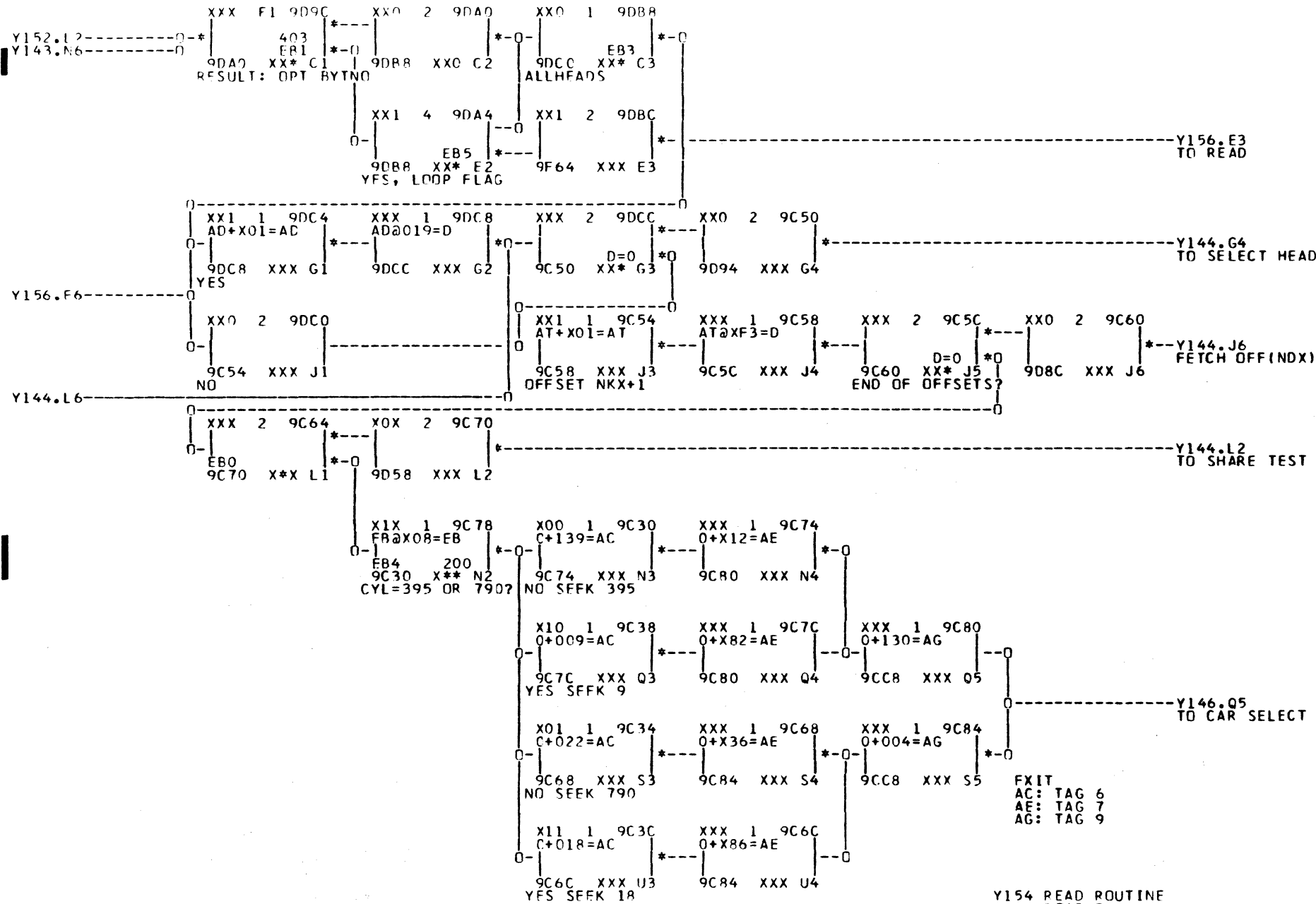
```

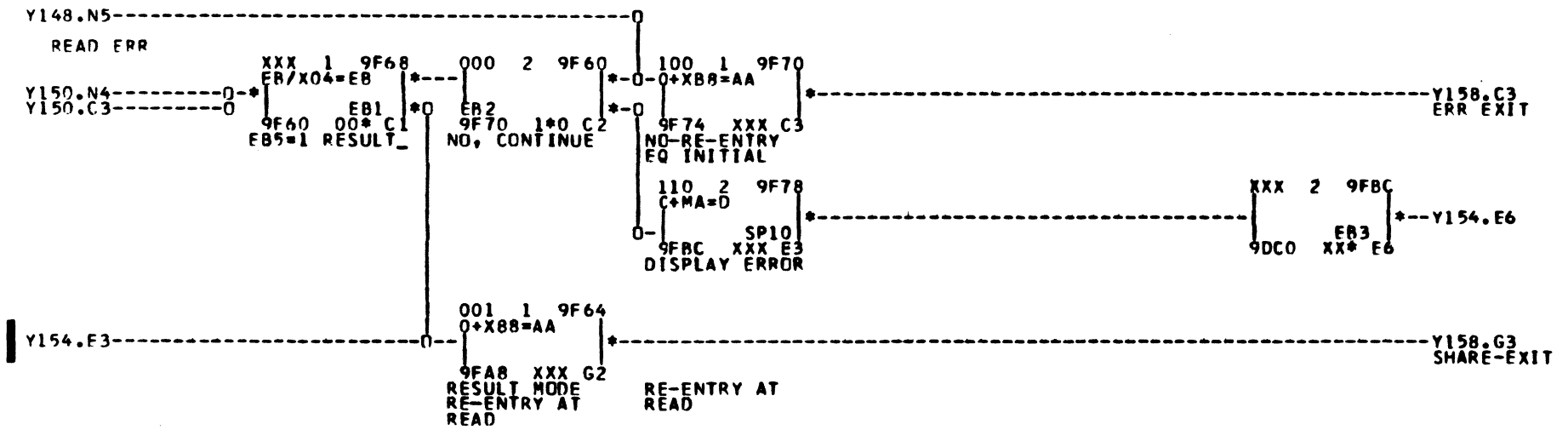
```

XXX 4 9F28      XXX 1 9FF0      XXX 1 9FF0      XXX S4 9EF4      XXX 1 9EF8      XXX 2 9EFC
|             |             |             |             |             |
|             |             |             |             |             |
|-----*-----*-----*-----*-----*-----Y158.L6
|             |             |             |             |             |             TO READ OK
O+O=IR      O+XFF=MA      O+X04=FF      EF+X00=EE      O+XCC=AA
C=ST5      C-CHK      8XX
9FF0 XXX L1   9EFC XXX L2   9FF4 XXX L3   9EF8 XXX L4   9FFC XXX L5   9FAR XXX L6
END READ. OK

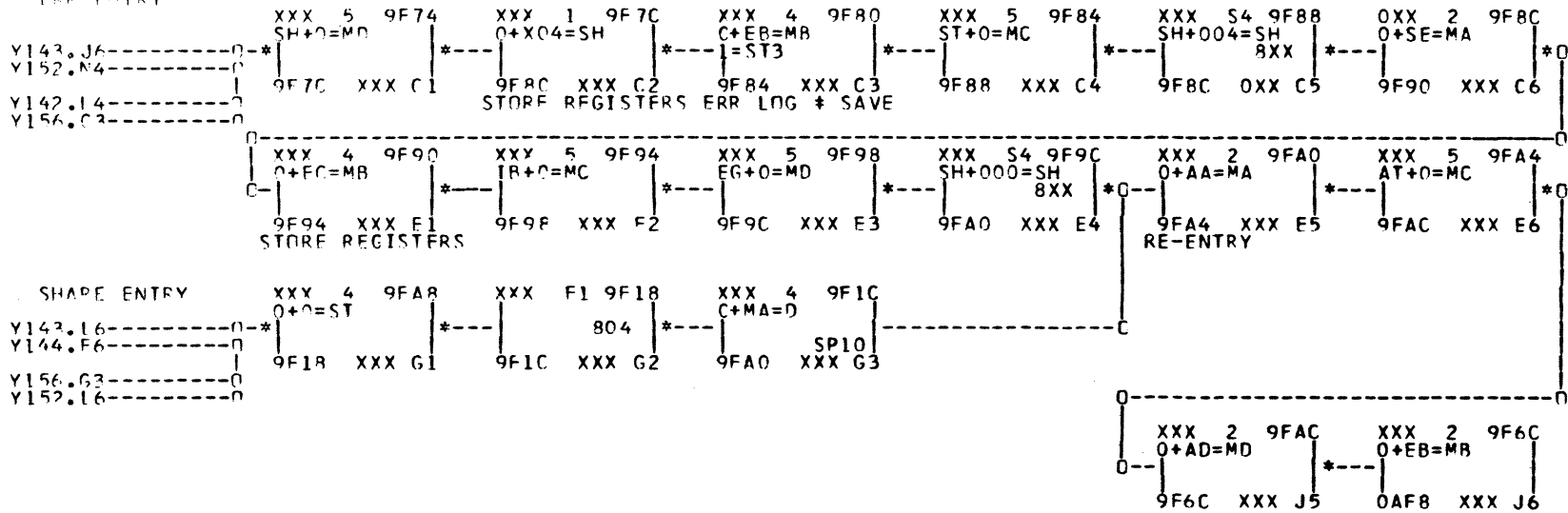
XXX 1 9EFP      XXX 1 9EE4      XXX 2 9EEC
|             |             |
|-----*-----*-----Y159.N4
|             |             |
9FF4 XXX N2   9FEC XXX N3   9F74 XXX N4
C-CHK      FRP CODE
RF-ENTRY = READ OK

```



ERR ENTRY



ERR ENTRY

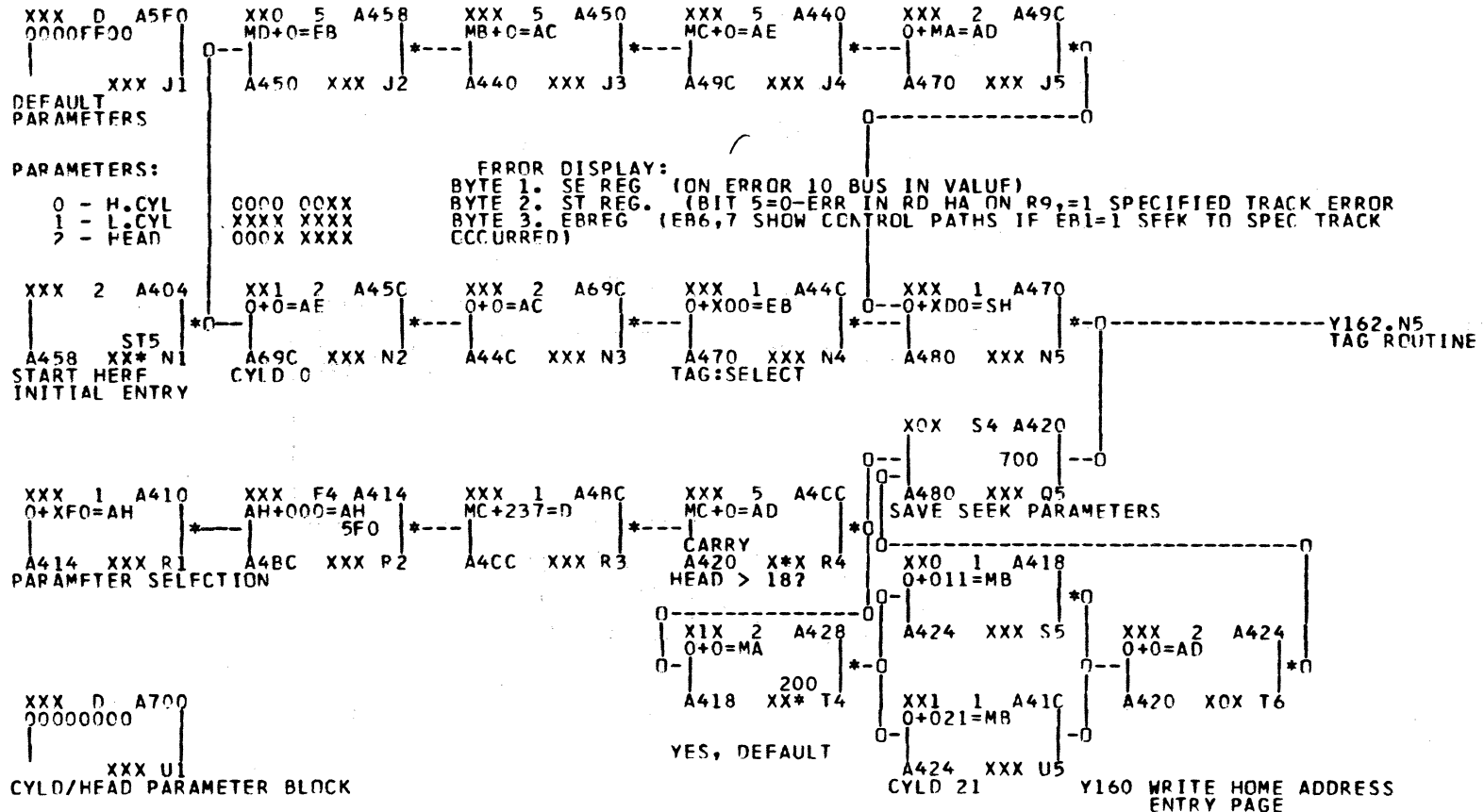
MA=ERR CD
 AA=PE-ENTRY ADDR
 ST5=1 IF PGM ERR

Y158 READ ROUTINE
 ERROR COLLECT + EXIT

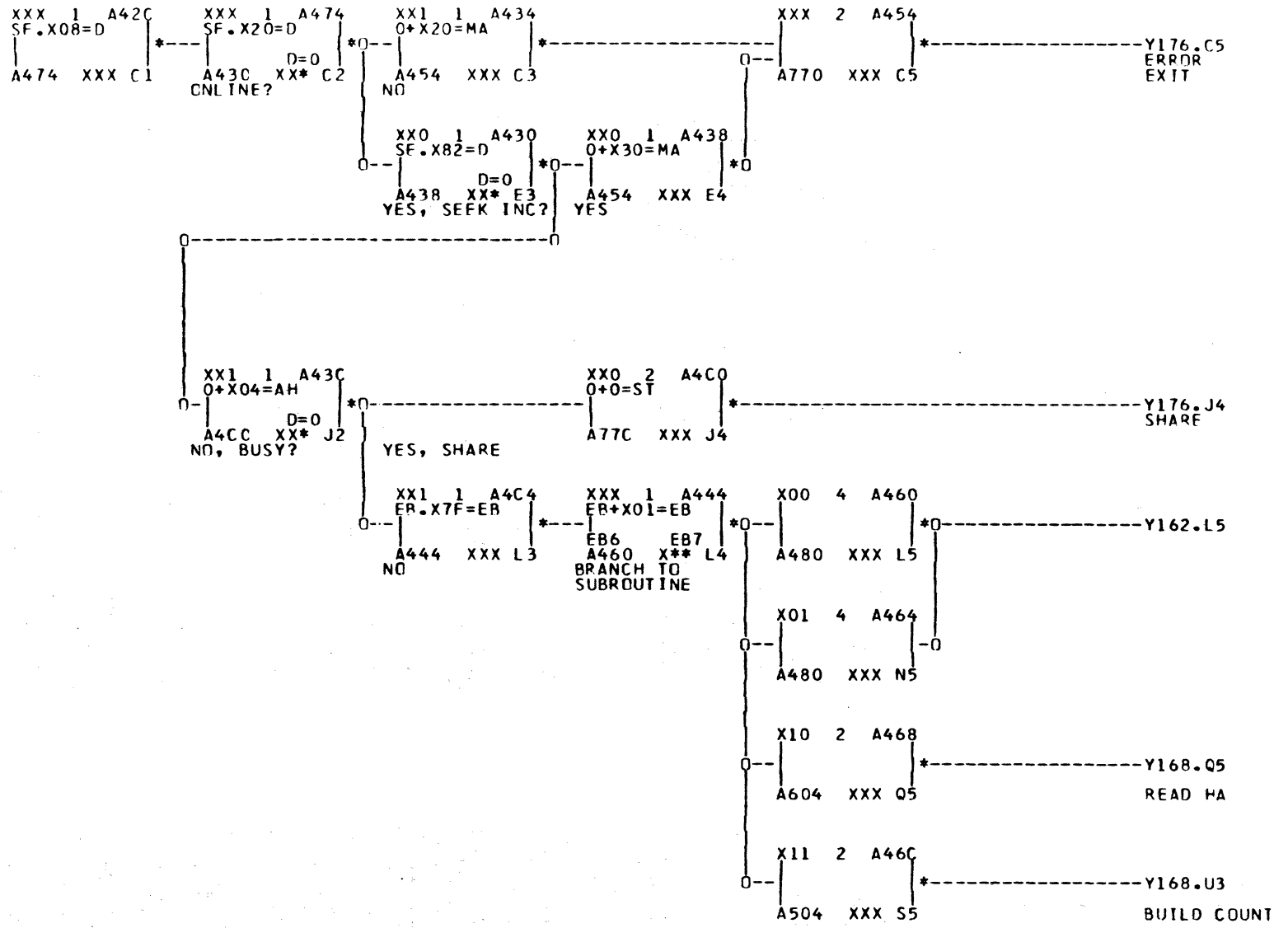
ERROR CODES

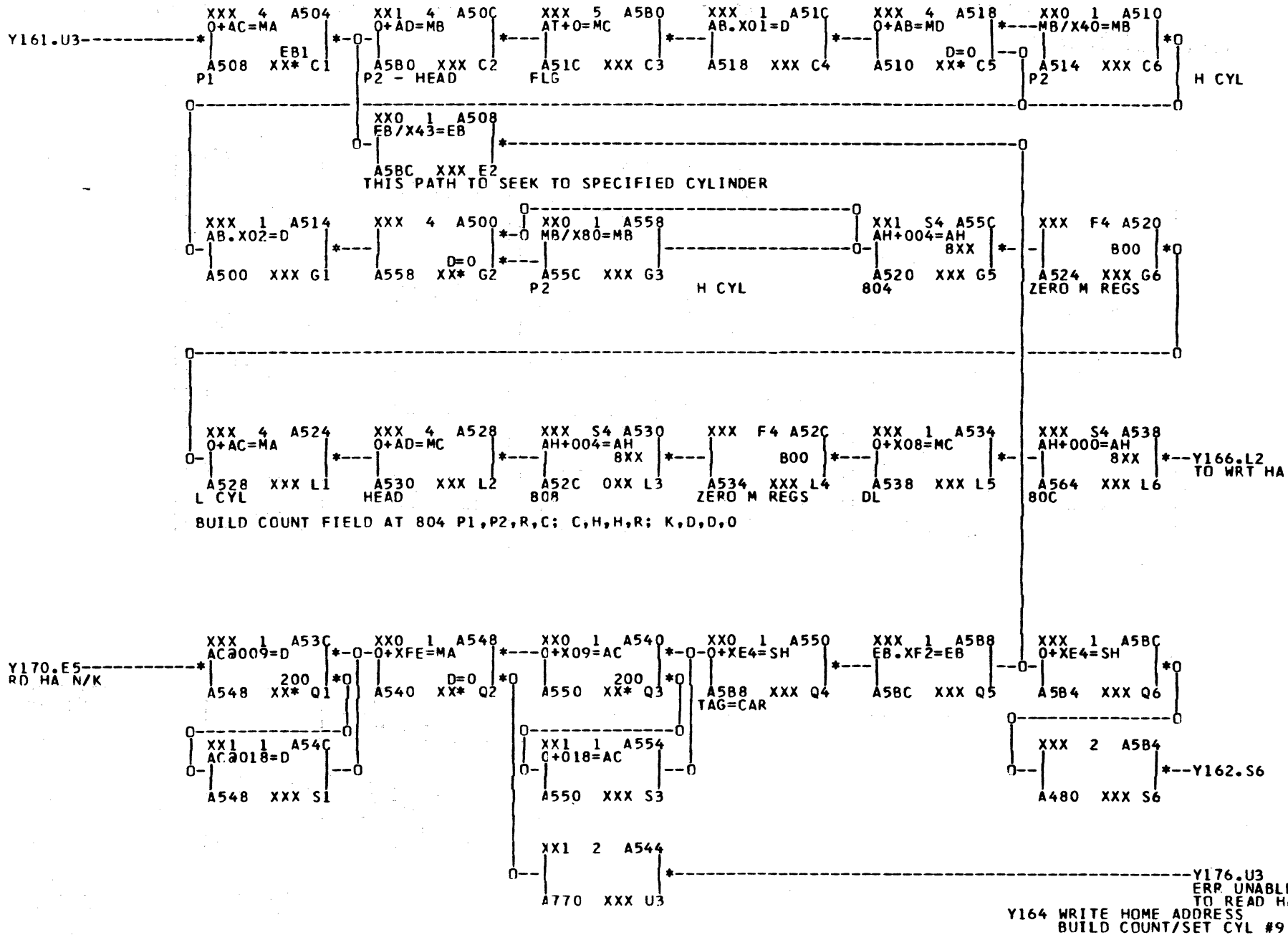
- 01 PARAMETER FAULT (HO>18)
- 04 PAK FAULT
- 10 TAG C-CHK.
- 20 NOT ON LINE
- 30 SEEK INCOMPLETE
- 40 BUSY UP TOO LONG
- 50 NO INDEX IN 1 REV.
- 60 NO SYNC BYTE BEFORE INDEX
- 70 NO ID
- 80 R/WC-CHK.
- 90 ECC ERROR
- =F STOP UNABLE TO RD HA ON 0 OR 9:100 MB
- FF FINAL STOP 18:200 MB

THIS ROUTINE WRITES H.A. RO COUNT AND RO DATA (=8) ON THE TRACK SPECIFIED IN THE PARAMETERS ENTERED. BEFORE WRITING THIS HA, THE ROUTINE MUST SUCCESSFULLY READ H.A. ON CYL=0 OR 100MB-CYL9; 200MB-CYL18 USING THE SPECIFIED HEAD. AFTER WRITING THE TRACK FORMAT IT IS THEN VERIFIED. A STOP WITH ERR REG=0 INDICATES A SUCCESSFUL OPERATION. A CF PAK WILL BE TESTED FOR PARAMETER VIOLATIONS (NOT WRITE CYLINDERS). THE DEFAULT PARAMETERS FOR CF AN ERROR (C1). PARAMETERS MUST BE ENTERED.



STATUS





164.17

XXX 1 A564
O+X80=SH
A568 XXX C6
BRANCH ADDR

XXX 4 A568 O+0=FC C=ST1 A56C XXX E1	XXX 1 A56C IC/X80=IC PLD-VFC A57C XXX F2	XXX 1 A57C O+X0C=IR TAG=CP A574 XXX E3	XXX 1 A574 O+252=AA UIS A570 XOX E4	XOX 1 A570 O-AA+X01=AA CARRY A570 X*X E5	X1X 1 A578 SH+C04=SH A=IAR A500 OXX F6
--	---	---	--	---	---

XXX 1 A58C R/X20=IR A590 XXX G1 TAG GT +1	XXX 2 A590 SP16 A574 XXX G2
--	-----------------------------------

XXX 2 A584 SP00 A594 XXX J1	XXX 1 A594 EC/X10=EC HD SEL A598 XXX J2	XXX 1 A598 C+230=AA A570 XOX J3
-----------------------------------	--	---------------------------------------

XXX 1 A588 IC.X2F=IC A59C XXX I1 DROP H.G.	XXX 1 A59C O+XEO=AH WRITE A5AC X00 L2	X00 4 A5A0 I=ST1 INDEX* A5A0 X*X L3	XX1 1 A5A4 EC/X04=EC CONTROL INDEX A5A8 XXX L4	XXX 4 A5A8 O+0=SD O=ST1 A5AC XXX L5	XXX 4 A5AC O+0=IF I=ST3 SFACT SW A58C XXX L6	XXX 2 A58C A790 X00 L7
---	--	--	---	--	--	---------------------------

XXX 0 A5E0 57061400 XXX NO CNTFR GI-HA

XXX 0 A5F4 280A1400 XXX 0 CNTFR 2 C--COUNT

XXX 0 A5F8 28071500 XXX 50

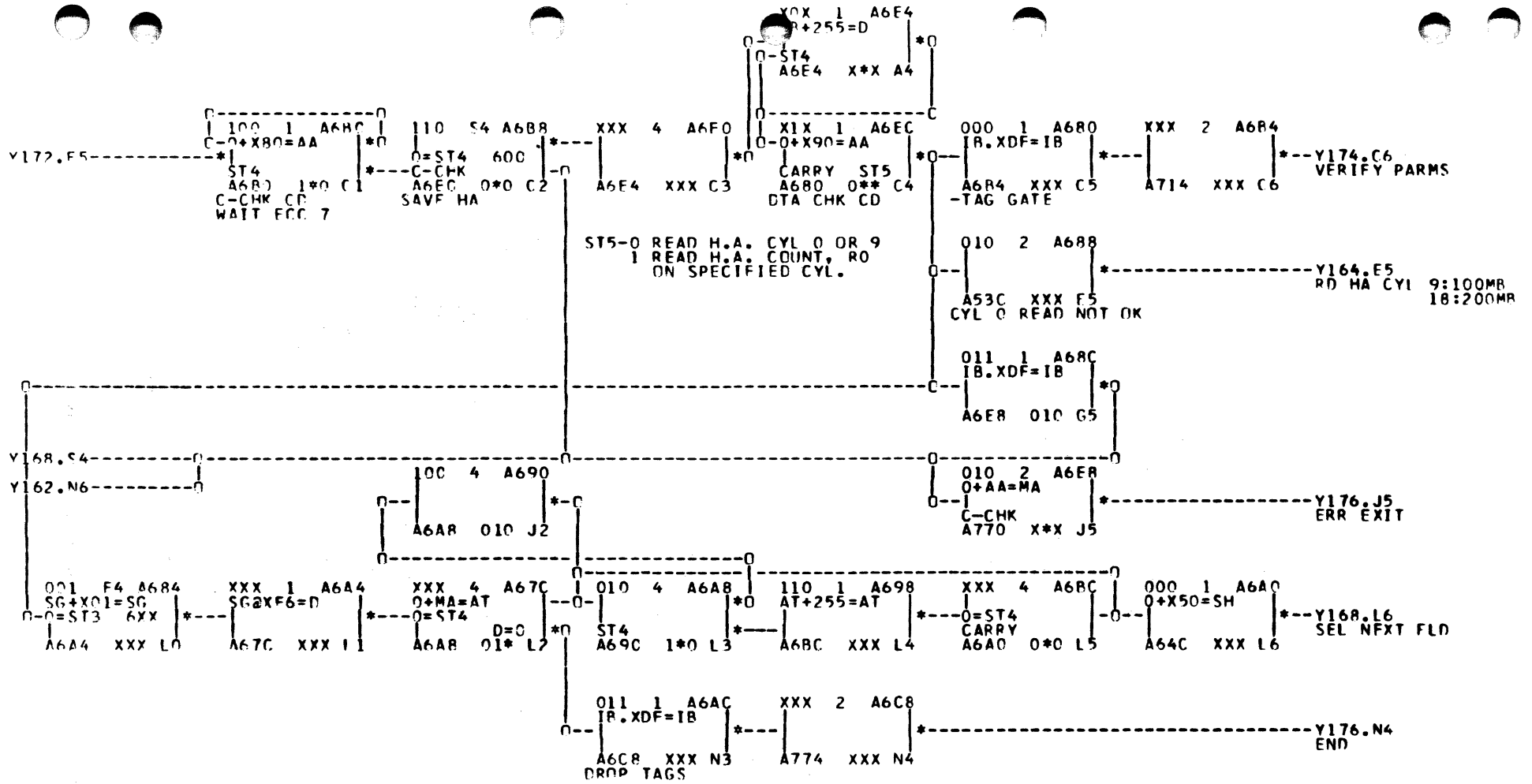
XXC 1 A79C O+XAC=ED A798 XXX N2 COUNTFR BRANCH	XXX F4 A798 AH+004=AH C=ST4 5XX A7A4 00X N3 CNTRL	O0X 4 A7A4 O+0+MA=AT ST4 A7A4 O*X N4	O1X 5 A7AC MC+0=ST A79C XXX N5	XXX 2 A79C O+0=MA A4E4 XXX N6 *--Y172.N6 WRT CNTFR GAP
---	---	---	--------------------------------------	---

XXX 1 A7A0 O+X19=SD A7B4 XOX Q2 FROM W. CNTP	XOX 3 A7B4 C+X40=MA C=ST5 ST4 A7F4 X*X Q3 WRITE	X1X 3 A7BC O+X04=EE O=ST4 A7A8 OXX Q4	OXX 5 A7AB MR+0=AT A748 XXX Q5	XXX 2 A748 O+MA=IE A4E0 XXX Q6 *--Y172.05 W. CNTR DATA
---	--	--	--------------------------------------	---

XXX 3 A780 IF/X20=IF O=ST1 A788 XXX S2	XXX 1 A788 C+X05=AT A7CC XXX S3	XXX 2 A7CC O+0=MA A4F8 XXX S4	XXX 4 A4F8 =ST5 A4E4 XXX S5 *--Y172.S5 W. CNTR ECC
---	---------------------------------------	-------------------------------------	---

X00 4 A7C0 O+0=IF I=ST1 O=ST4 A7CC X*0 U2	X10 4 A7C8 O+0=SD C=ST4 ST7 A790 X*X U3	XX1 4 A794 O=ST4 INDEX* A7C4 X0* U4	X01 2 A7C4 O+C=IB A604 XXX U5 *--Y168.U5 TO READ Y166 WRITE HOME ADDRESS WRITE ROUTINE
---	---	--	--

MA-CAP
MR-DATA
MC-ST

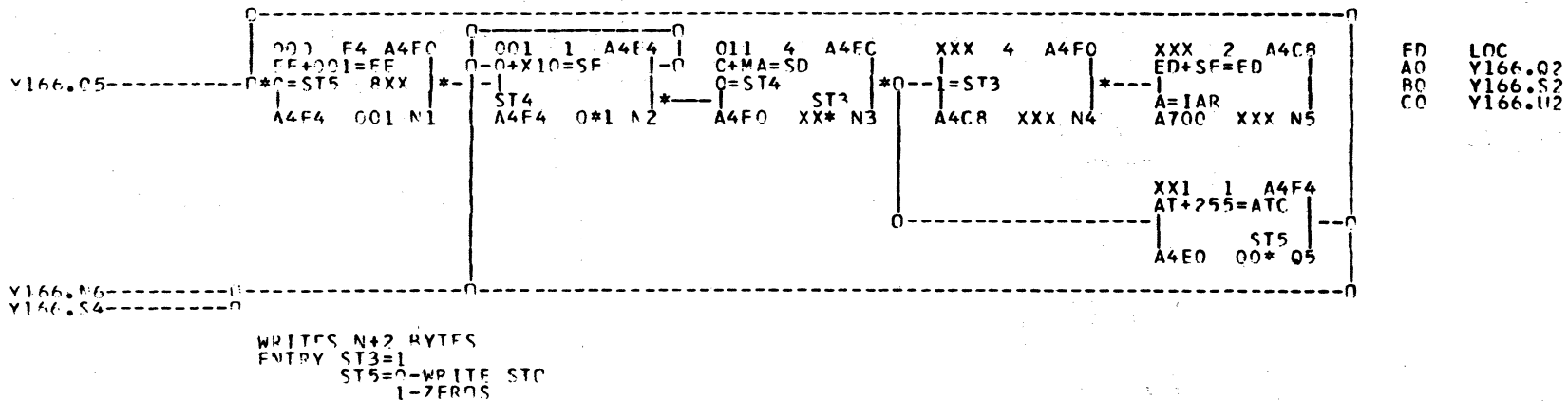
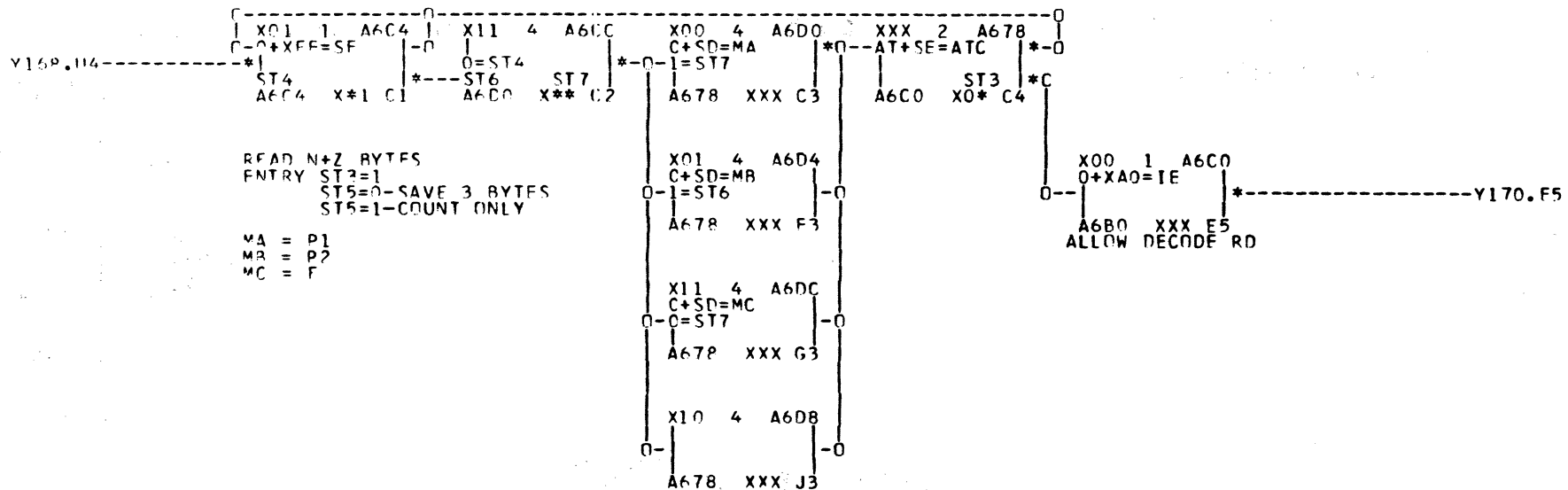


XXX D A600
00000000
XXX 00

XXX D A6F0 0-HA
0R260F26 1-G1
XXX S0 2-COUNT
COUNT CNTPI 3-G2

XXX D A6F4 4-RO
00000000
XXX 00
COUNT CNTPL

Y170 WRITE HOME ADDRESS
READ ?



Y170.C6-----*
 XXX 5 A714 MC+O=AT *---
 XXX F4 A718 700 *---
 XXX 4 A71C O+MA=AB *---
 XXX 5 A728 MR+O=AA *---
 XXX 4 A73C O+AR=ST *---
 A718 XXX C2 A71C XXX C3 A728 XXX C4 A73C XXX C5 A72C XXX C6
 SAVE FLAG H CYL L CYL 200 MB? 200 MB?

XX0 2 A720 A5CC XXX E0 NO
 XXX 1 A5CC AA+245=DC ST7 XX* F1
 XX1 1 A5C4 AA+118=DC A5FC XXX F2 YES, 256-410 CHKY
 XX1 1 A5FC AA+C07=DC CARRY ST7 A5D0 X** E3 S>393? S>241?
 X00 2 A5D0 A734 XXX E4 11-241
 XX0 1 A5C0 AA+C14=DC A5FC XXX F2 YES, 256-410 CHKY
 XX0 2 A5F8 A76C XXX G3 NO, C-255 CHKS NC, C-10 S>10?
 X01 2 A5D4 A734 XXX G4 256-393
 X11 1 A5DC AA+108=DC A5D8 XXX J4 >393

CF PACK CYLINDERS WT/AVAILABLE
 100MB 200 MB
 011-241 021-483
 249-393 407-787
 404-410 807-822

XX1 1 A724 AA+028=DC ST6 ST7 A750 X** L1
 X0C 1 A750 AA+235=DC A76C XXX L2 0-255 CHSK
 X01 1 A754 AA+C15=DC A768 X1* N2 256-511 CHSK
 X10 2 A758 A734 XXX Q2 512-767 CHKS
 X11 1 A75C AA+236=D A740 XXX S2 768-822 CHKS
 X11 2 A76C A76C X0* N3
 X10 2 A768 A734 XXX Q3
 XXX 1 A740 AA+217=DC CARRY A764 X*1 S3
 X00 1 A760 AT.X04=D A744 XXX N4
 X01 2 A764 A734 XXX Q4
 XXX 1 A744 O+X04=MA A730 XX* N5 CE PACK?
 XXX 4 A74C O+AB=AF A74C XXX Q5 NO, SET FOR RE ZERO
 XXX 2 A72C O+AA=AC A72C XXX S5 A480 XXX S6

XXX 1 A744 O+X04=MA A730 XX* N5 CE PACK?
 XXX 4 A74C O+AB=AF A74C XXX Q5 NO, SET FOR RE ZERO
 XXX 2 A72C O+AA=AC A72C XXX S5 A480 XXX S6
 Y176.N6 ERROR X04
 YES, CE PACK ERROR
 Y162.S7 TAG SEQUENC

Y174 WRITE HOME ADDRESS
 PARAMETER TEST

CNTRL
ENTRY

XXX 1 A004
0+X00=SH

XXX F4 A010
500

XXX 1 A01C
MB+X06=MB

XXX S4 A050
CARRY 500

X1X 1 A0F8
0+X3F=AD

A010 XXX C1

A01C XXX C2
1550 OFFSET

A050 XXX C3

A0F0 X*X C4

A060 XXX C5

STATUS 1
ENTRY

XXX 1 A050
SF.XCR=D

XXX 1 A05C
0+X20=MA

A050 XXX F1

A060 X0* E2

X01 1 A064
0+X14=ST

XXX 2 A06C
0+SE=MB

A06C XXX G3
NOT ON LINE
AFTER SELECTION

A0B0 XXX G4

STATUS 2
ENTRY

XXX 1 A030
SF.X10=D

XXX 1 A034
AD.XFF=D

XXX 1 A038
AD.X81=D

XX0 1 A040
AD+XFE=AD

XX1 2 A04C

A034 XXX L1

A038 XX* L2
D=0

A040 XX* L3
SFFK COMPLETE
(OFFSET START)

A048 XX* J4
D=0
OFFSET-2

A048 XXX J5

A048 XX0 L4
1575 OFFSET

XX0 1 A048
0+XD8=SH

A060 XXX L5
SET SH FOR
XMIT OFFSET

XX1 1 A03C
0+XE4=SH

A060 XXX N3
NOT SEEK COMPLETE
(OFFSET START)
SET SH FOR
STATUS 2

Y182.N3
TAG SEQ

Y182.15

OFFSET
RESET
ENTRY

XXX 1 A018
0+X74=ST

XXX 1 A0B0
0+X04=AH

XXX S4 A0B4
AH+000=AH
8XX

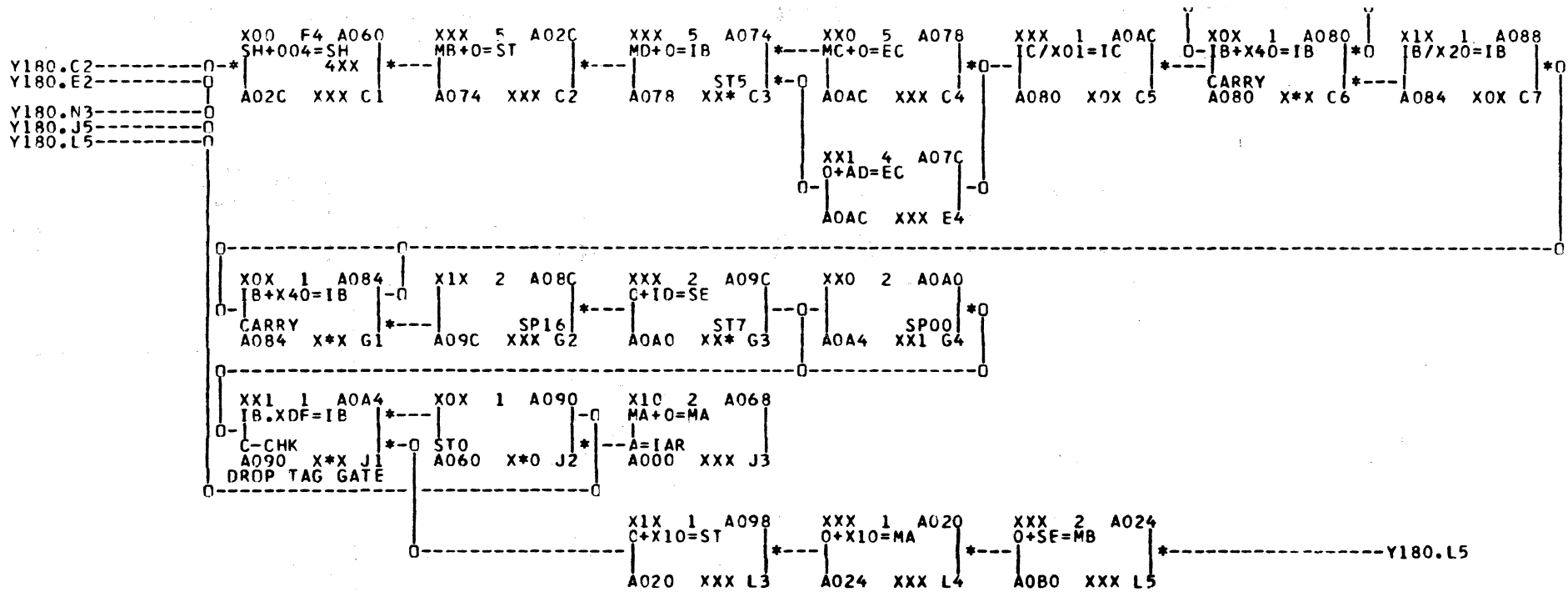
XXX 2 A0B8

A0B0 XXX S1
SUCCESSFUL OFFSET
SEQUENCE

A0B4 XXX S3

A0B8 XXX S4

0AF8 XXX S5



SR-ST-H.C.-TAG
 XXX D A0D0
 00011003

XXX D A0D4
 58810004

XXX D A0D8
 0000010A

XXX D A0DC
 00040009

XXX D A0E0
 0000200A

XXX D A0F4
 30800004

XXX D A0E8
 1880010B

SELECT XXX U0

STATUS 1 XXX U1

RESFT XXX U2

SMIT. OFFSET XXX U3

OFFSFT START XXX U4

STATUS 2 XXX U5

Y182FSET RESET XXX U6

TAG SEQ
 OFFSET SCOPE LOOP
 F

PUB NC. 70631200

DNC NO. 73687900

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REVISION

THIS ROUTINE WILL DISPLAY:
1. SENSE BYTES 24
2. LOG BYTES 24
3. DRIVE STATISTICS 16
4. SPECIFIC LOCATIONS
5. DRIVE STATUS

PARAMETERS: USE E_DATA TO DISPLAY RESULTS

0 - FUNCTION
00 - SENSE BYTES
01 - LOG BYTES
02 - DRIVE STATISTICS
03 - SPECIFIC
04 - DRIVE STATUS

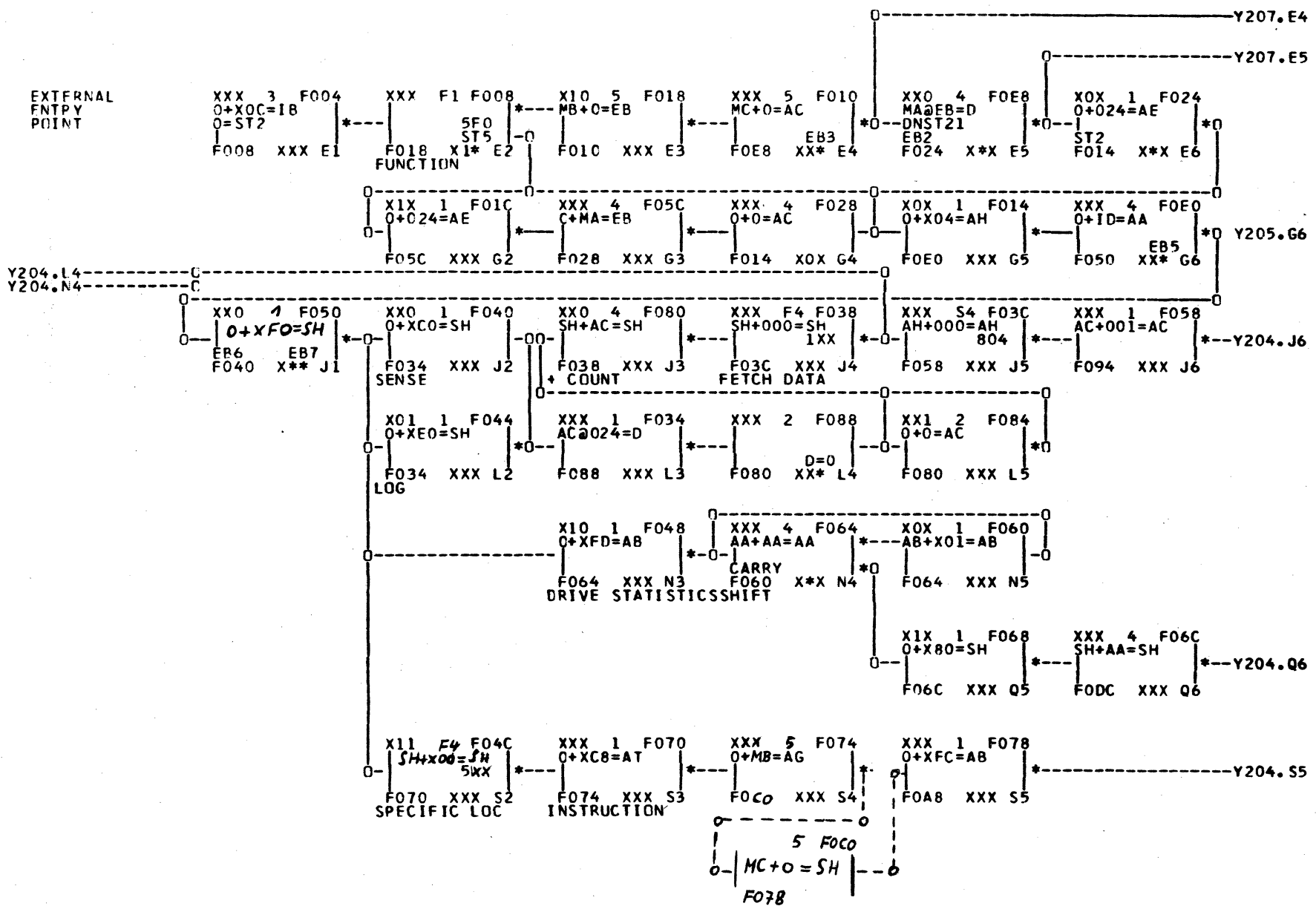
1 - SPECIFIC LOCATION

05
QUADRANT-SECTOR

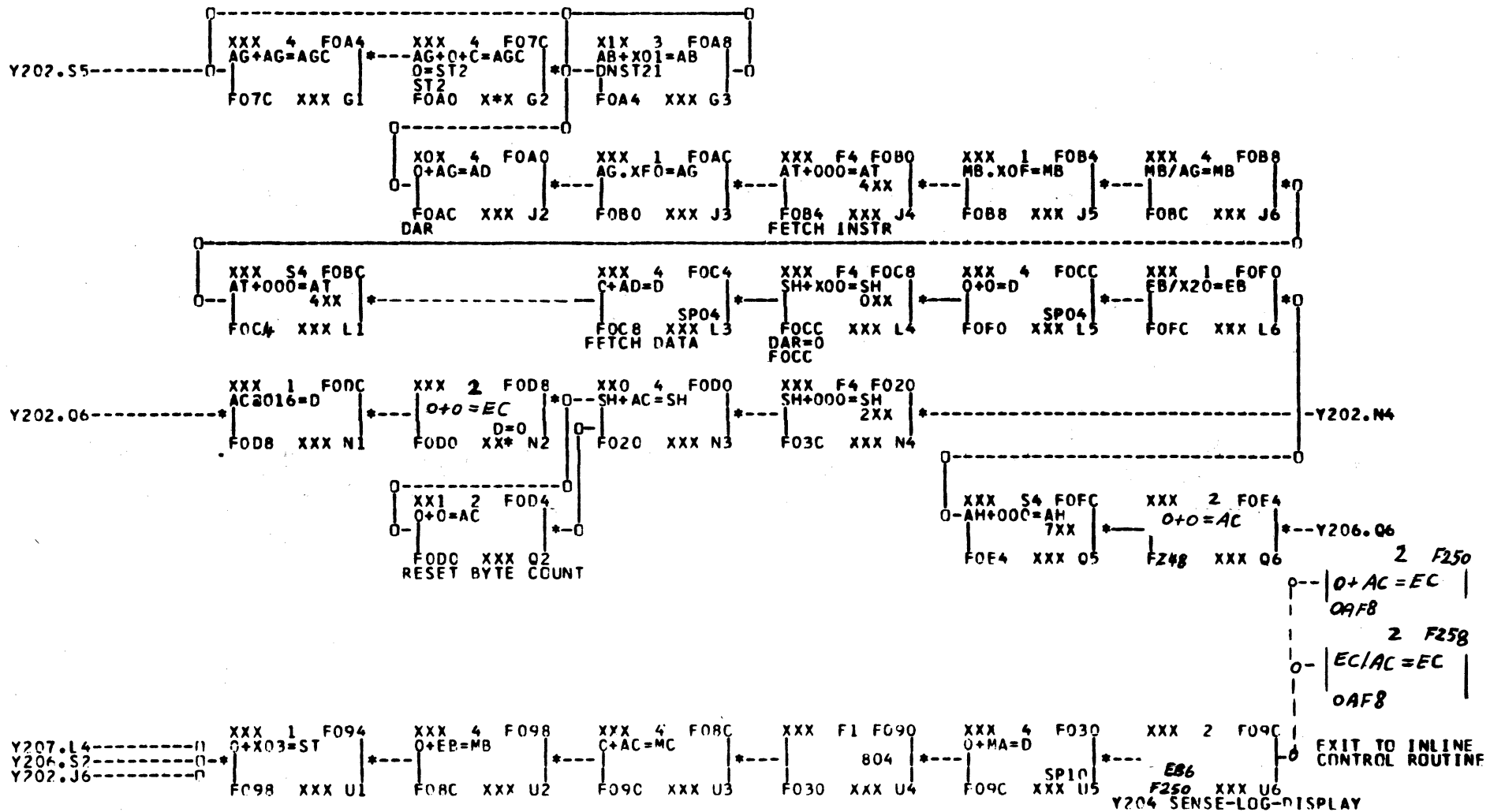
DATA SWITCH PROVIDES BYTE SELECT

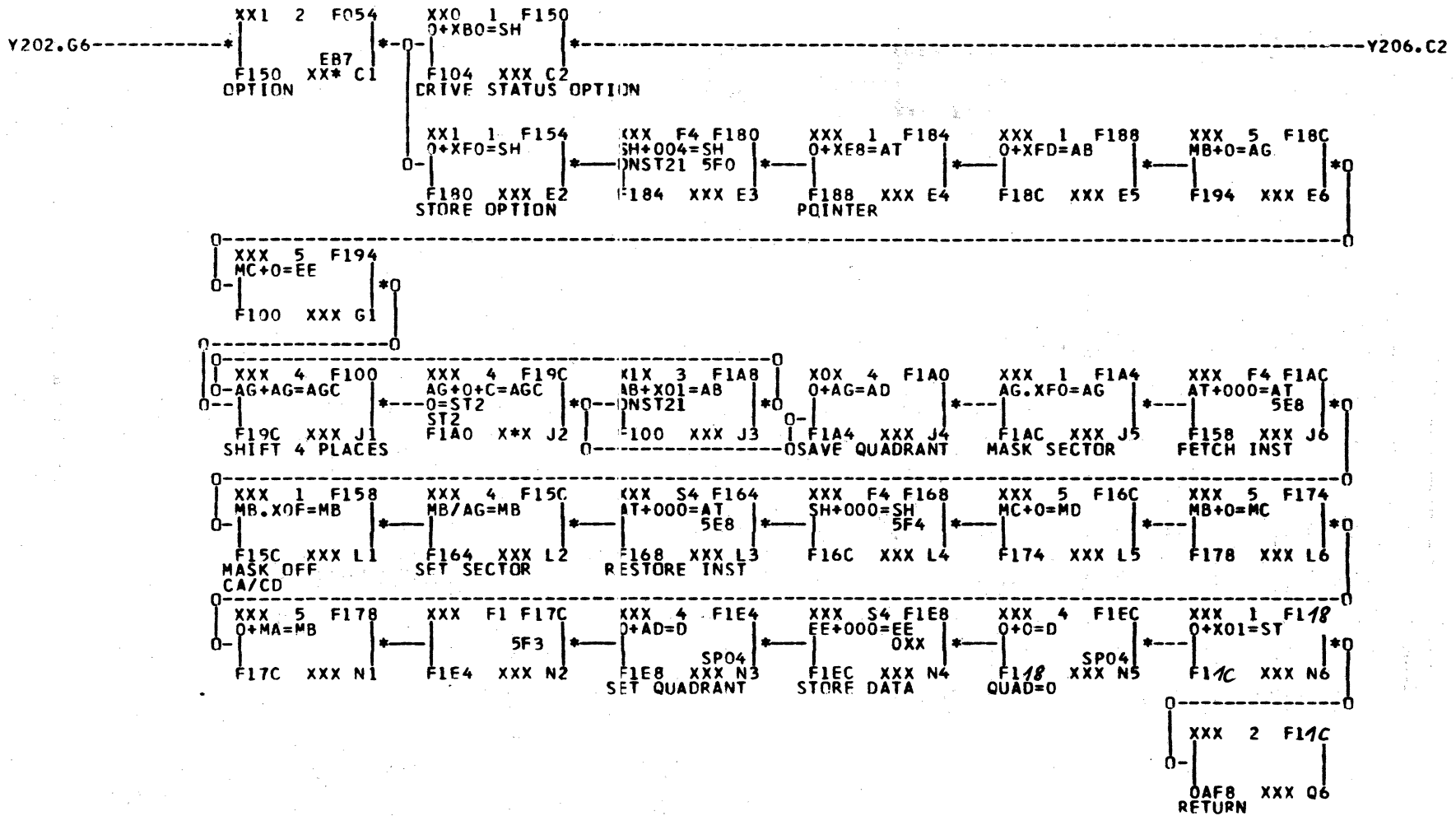
REGISTERS

FR - FUNCTION
AC - COUNT

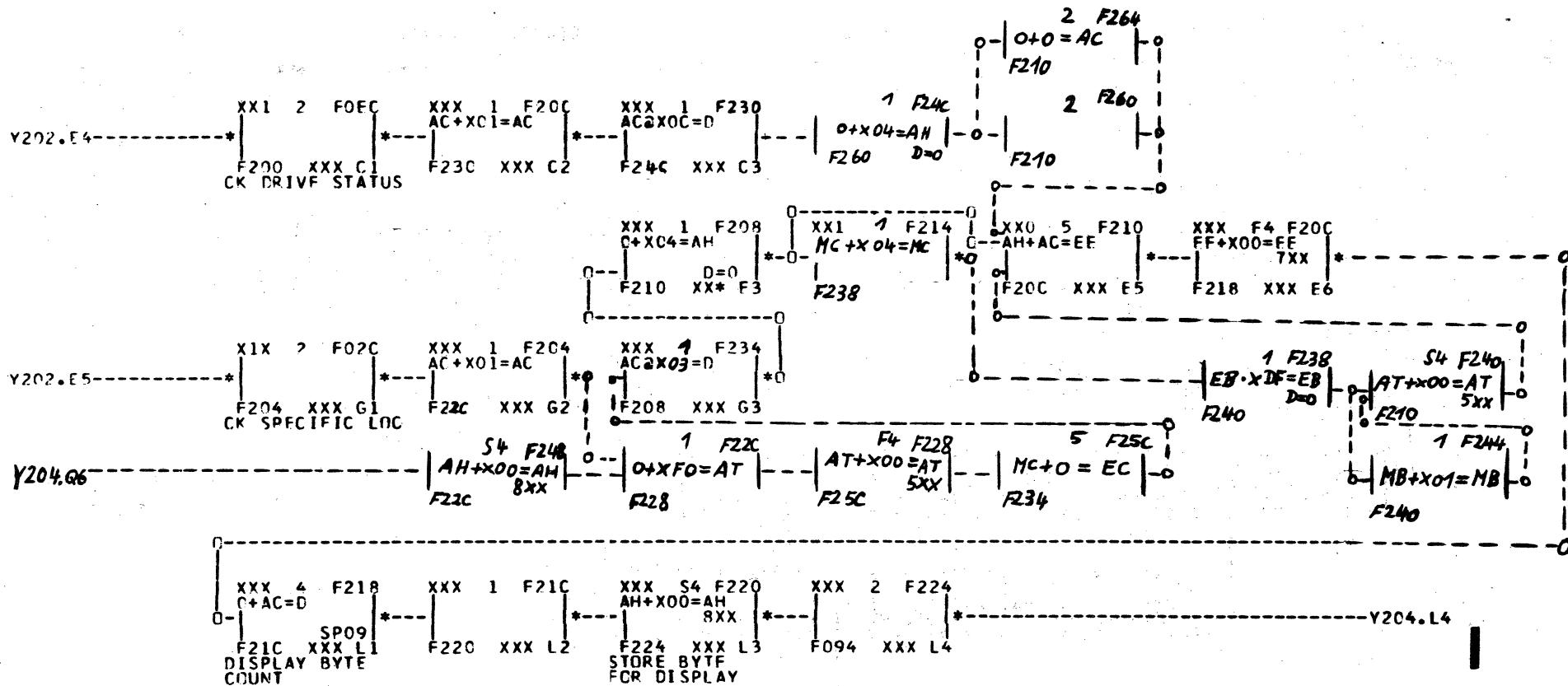


Y202 SENSE-LOG-DISPLAY
 OPTIONS 0,1,2, AND 3





Y205 SENSE-LOG-DISPLAY
OPTIONS 4 AND 5



Y207 SENSE-LOG DISPLAY

PARAMETERS

- 0 - XXXX XXXX L. CYL
- 1 - CCOX XXXX H. CYL HD
- 2 - XXXX XXWR CONTROL

ONLY CYL = 11 OR 390 VALID ON CE PAK-100 MB
 = 21 OR 784 VALID ON CE PAK-200 MB

ERROR CODES

- 01 - INVALID PARAMETERS
- 04 - WRONG PARAMETERS FOR CE PAK
- 10 - C-CHK ON TAG
- 20 - NOT ON LINE
- 30 - SEEK INC
- 35 - PHYS ADDR NFO PARAMETERS
- 50 - NO INDEX
- 60 - NO SYNC
- 70 - NO ID
- 80 - R/W C-CHK
- 90 - FCC ERR
- 0A - AM NOT DETECTED

XXX D FDF0
 COFF0300
 XXX L3
 DEFAULT
 PARAMETER

TAGS:

- 0 - ST
- 1 - S.P.
- 2 - B.B.
- 3 - TG

XXX D FFC0 80R01003 SELECT XXX Q0	XXX D FFC4 20000B0A RESET. RZFR0 XXX Q1	XXX D FFC8 80240004 STATUS 1 XXX Q2	XXX D FFCC 80280004 STATUS 2 XXX Q3	XXX D FFD0 00000004 XXX Q4	XXX D FFD4 01000006 CAR XXX Q5
XXX D FFDR 04000008 HAR XXX S0	XXX D FFDC 01000009 DIFF XXX S1	XXX D FFE0 03000007 COMP XXX S2	XXX D FFE4 0000100A SEEK XXX S3	XXX D FFEB 00001003 SELECT XXX S4	XXX D FFEC 802C0004 STATUS 3 XXX S5

- ST:
- 0 - SUBROUTINE
 - 2 - TAG UP
 - 3 - PRF TAG S.R.
 - 567 - BUS OUT REG.
 - 1XX - AD - HEAD
 - 000 - MC - TAG VALUE
 - 001 - AC L. CYL DIFF
 - 010 - AG
 - 011 - AE H. CYL. DIFF

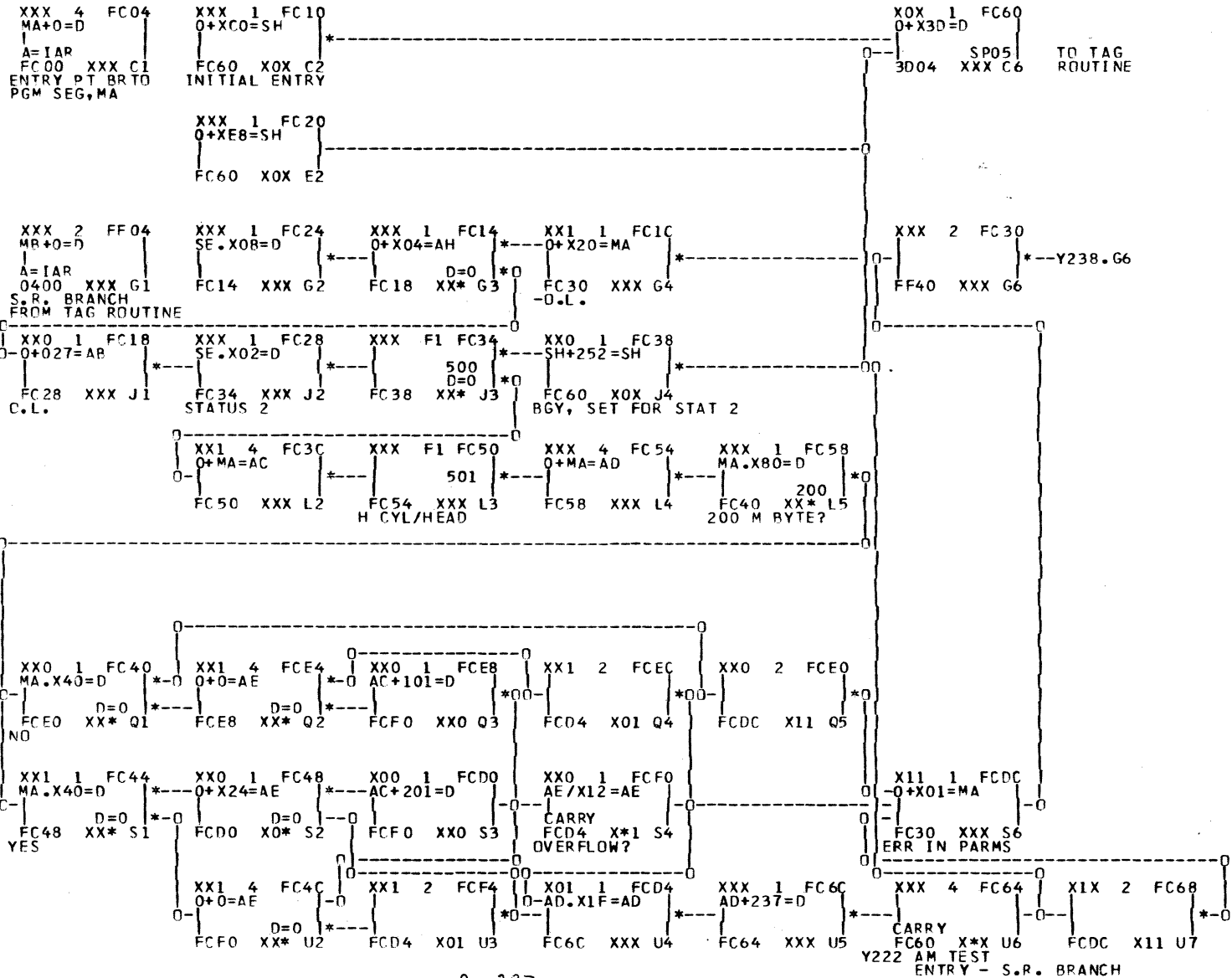
PUP NO. 72631200

DOC NO. 73687900

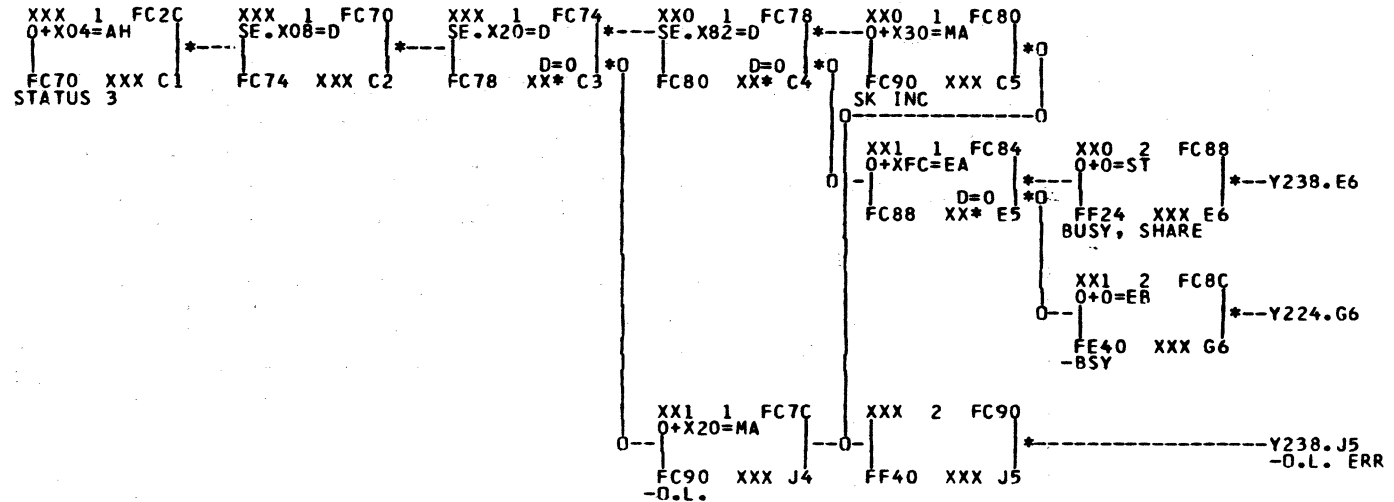
2-286

Y220 AM TEST FC

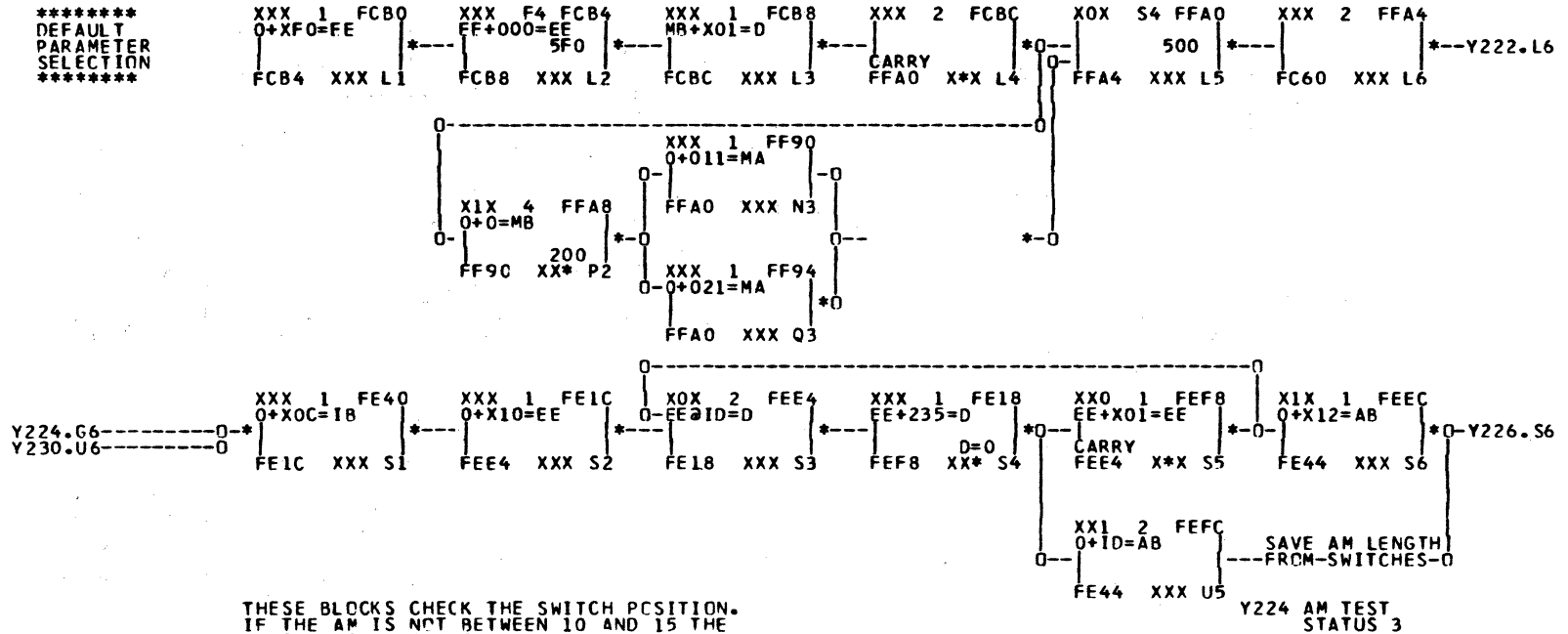
REVISION J



 STATUS



 DEFAULT
 PARAMETER
 SELECTION

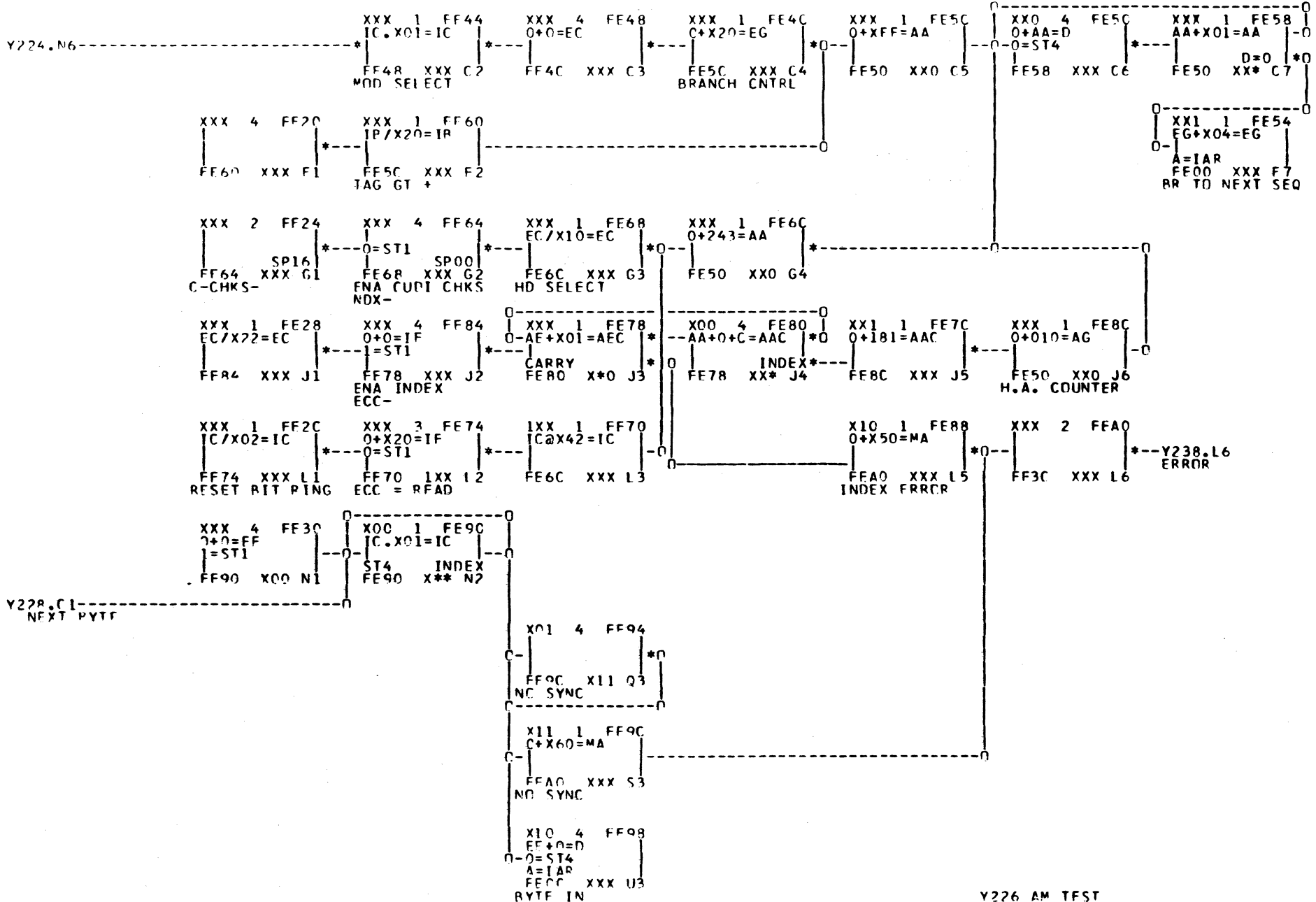


THESE BLOCKS CHECK THE SWITCH POSITION.
 IF THE AM IS NOT BETWEEN 10 AND 15 THE
 AM IS DEFAULTED TO 12.

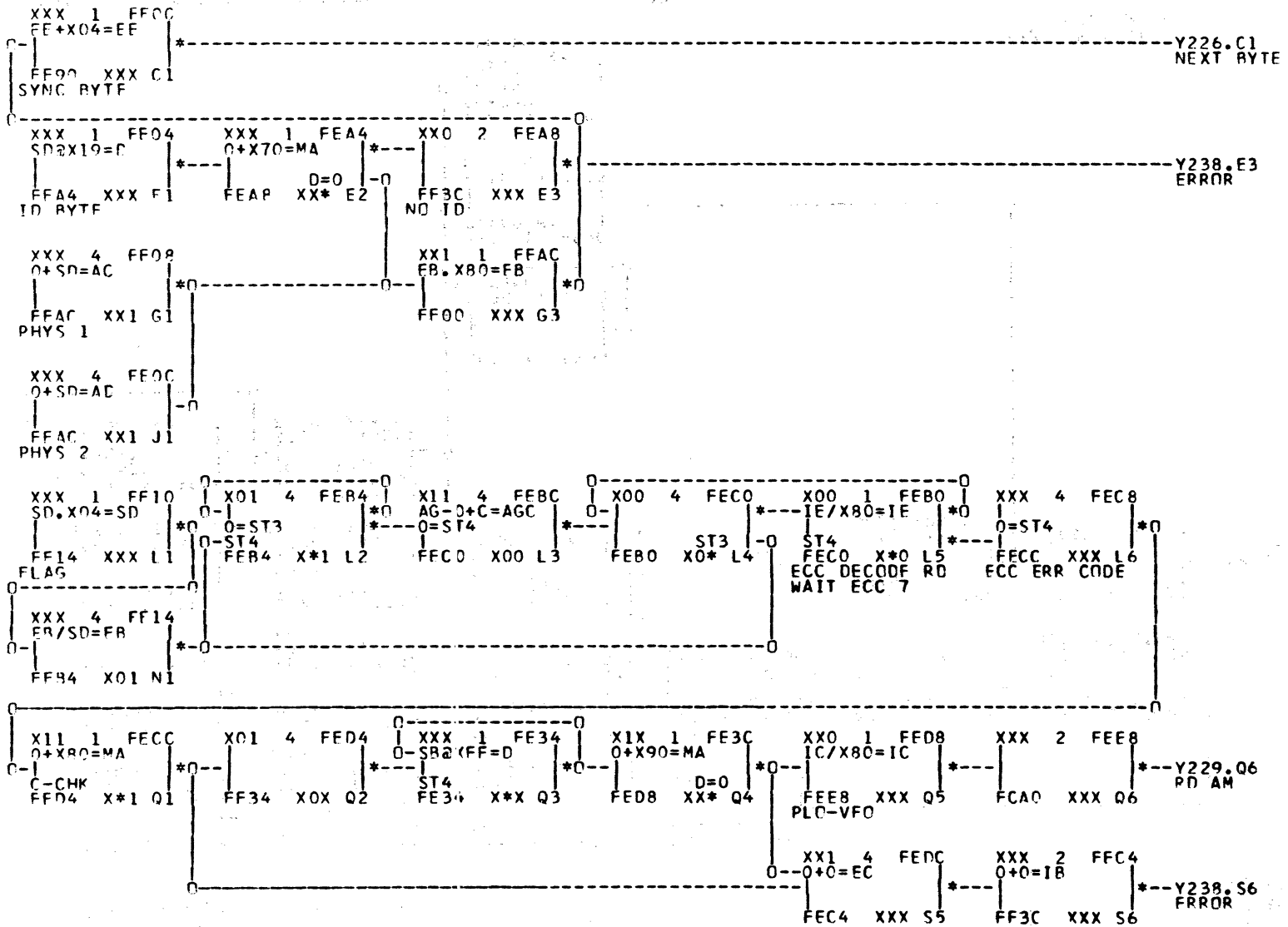
PUB NO. 70631200 DNC NO. 73687900

2.288

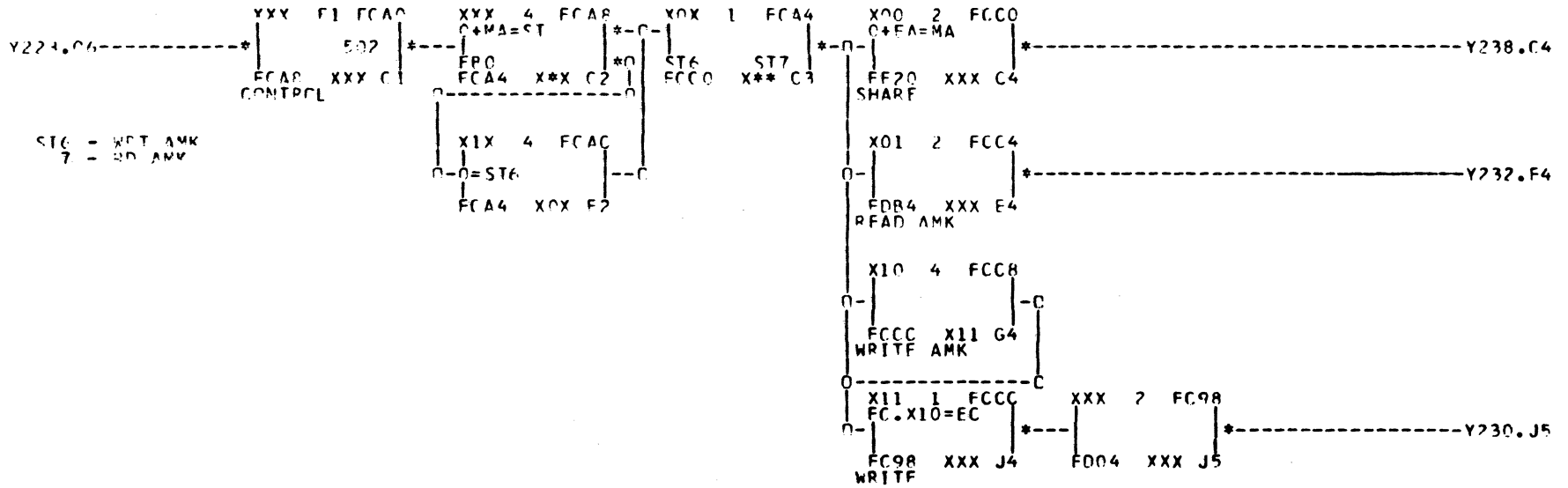
REVISION K

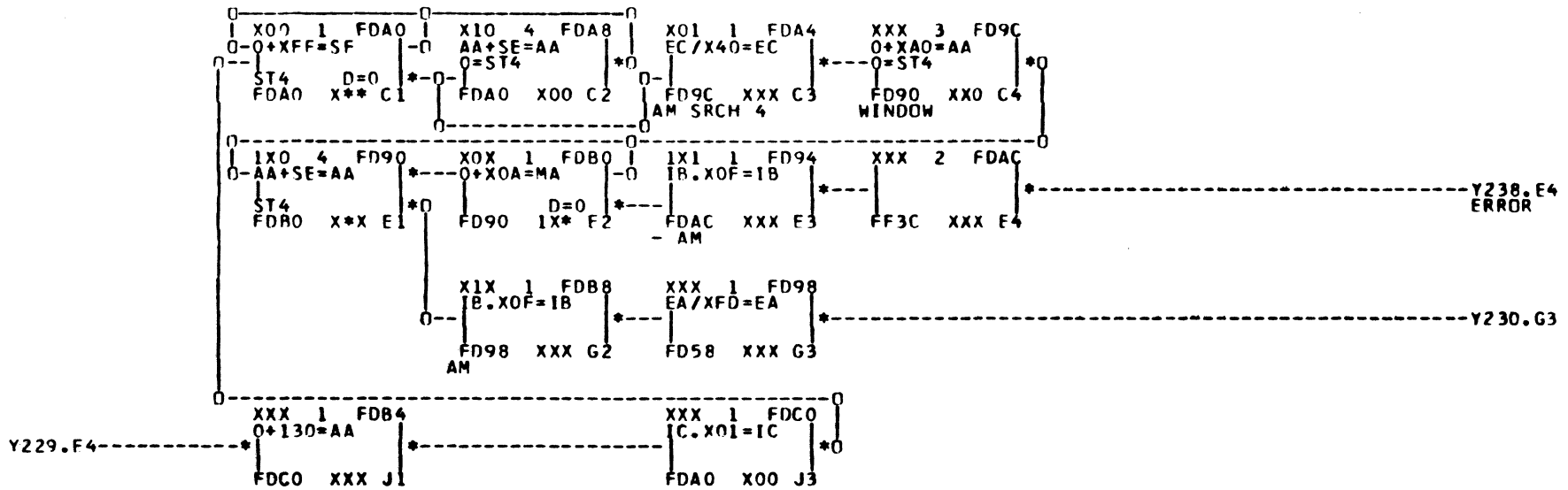


Y226 AM TFST
READ HA 1



Y228 AM TFST
READ HA II





Y224.F6-----
 Y229.F4-----
 Y231.S6-----

XXX 1 FF20
 0+X04=ST
 FF24 XXX C1
 SUCCESS

XXX S4 FF24
 AH+000=AH
 BXX
 ST7
 FF28 XX* C2

XXC 1 FF2R
 0+X20=MA
 FF3R XXX C5
 RE-ENTRY 2

XXX 2 FF3R
 OAF8 XXX C6
 EXIT TO INLINE
 CONTROL

Y232.F4-----
 Y236.L6-----
 Y238.F3-----
 Y230.F6-----
 Y238.S6-----

XXX 1 FF3C
 0+X14=ST
 FF24 XXX E1
 FRROR

Y227.G6-----
 Y224.J5-----

XXX 1 FF40
 0+X01=ST
 FF24 XXX G1
 STOP

XX1 1 FF2C
 C+X10=MA
 FF3R XXX G3
 RE-ENTRY 1

XXX 1 FF10
 0+X10=MA
 FF14 XXX I1
 TAG C-CHK
 FROM TAG ROUTINE

XXX 1 FF14
 0+X10=ST
 FF24 XXX L2

THIS PROGRAM WRITES A SPECIFIED DATA PATTERN INTO THE RO DATA POSITION OF THE SELECTED TRACKS. DATA LENGTH = 13, 168 BYTES. RO DATA IS THEN READ USING THE SPECIFIED OFFSET VALUES AND VERIFIED VIA ECC. H.A. AND RO COUNT ARE VERIFIED, CYL, HD VALUES ARE COMPARED TO COUNT FIELD DATA.

PARAMETERS:		DEFAULT VALUES (HEX)
0	- OFFSET VALUE	1C
1	- OFFSET CONTROL	07
2	- HEAD	FF
3	- CYLINDER	FF
4	- PATTERN	EB
5	-	23
6	-	B6
7	-	DB
8	- CHECK SUM	

CONTROL REGISTER, EB

0	- ALL CYL
1	- ALL HEADS
2	-
3	- LOOP
4	- WRITE BR
5	- 0 OFFSET
6	- - OFFSET
7	- + OFFSET

OFFSET VALUE MUST BE LTE 700 UI (X1C)
 OFFSET CONTROL BIT USE

5	ZERO OFFSET
6	MINUS OFFSET
7	PLUS OFFSET

HEAD: IF > 18 ALL HEADS TESTED

CYLINDER: IF > 7 ALL 8 WRITE CYLINDERS USED

VALUE	ABSOLUTE CYL	100MB	200MB
0	11	21	
1	12	22	
2	13	23	
3	14	24	
4	390	784	
5	391	785	
6	392	786	
7	393	787	

XXX D F500	0 - OFFSET
00000000	4 -
	2 - HEAD
	3 - CYLINDER
XXX N5	

CONTROL WORD

XXX D F5F0
1C07FFFF

XXX O5
PARAMETERS

XXX D F5F4
EB6DB6DB

XXX S5

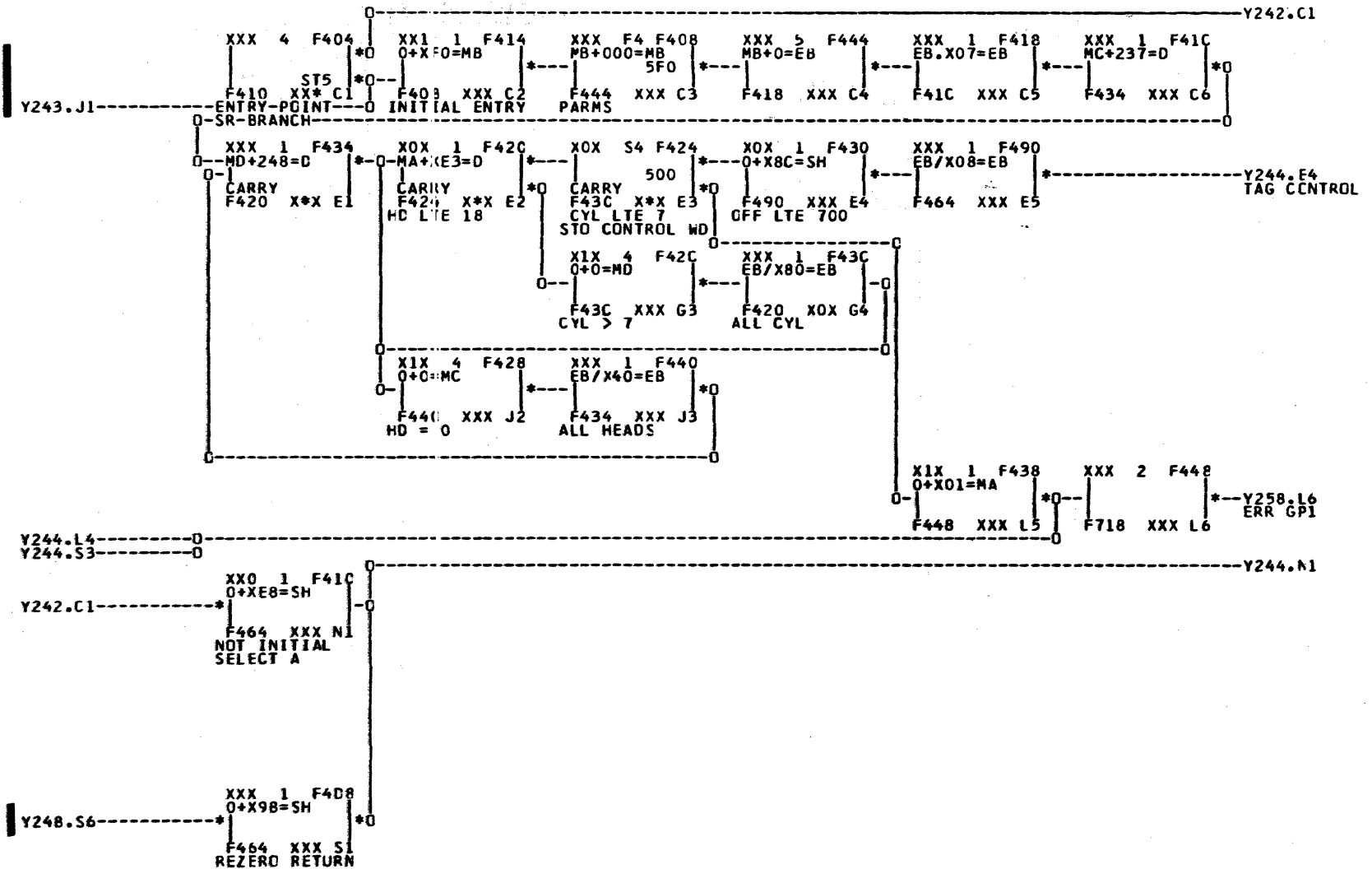
XXX D F5F8
B4000000

XXX U5

Y240 WRITE ROUTINE DEFINITIONS

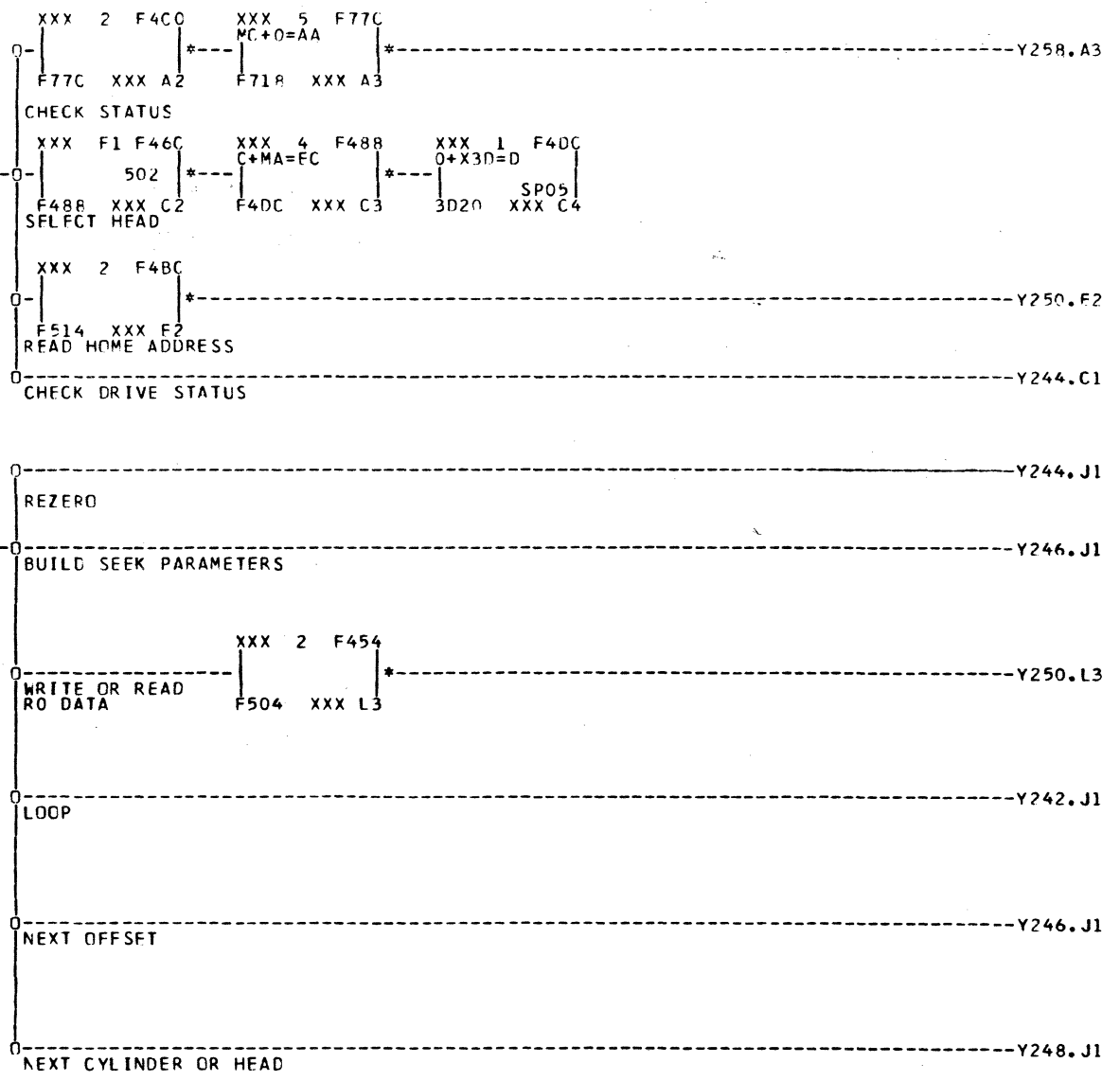
ERROR CODES	GROUP	MEANING
01	1	OFFSET > 700 MIN
10	2	TAC CONTROL CHECK
20	1	NOT ON LINE
30	1	SEEK INC.
31	1	SEEK POS. ERR
50	1	NO INDEX
60	3	NO SYNC
70	3	NO ID
80	3	R/W C-CHK
90	3	ECC NOT ZERO
99	1	ECC IS CORRECT BUT THERE IS A CHECK SUM ERROR

GROUP 1 - RESTART PROGRAM
 2 - TRY LAST OP AGAIN
 3 - EXAMINE MODE
 CONTINUE - BYPASS ERRORS
 LOOP ON ERR - SET LOOP ON CURRENT VALUES
 STOP ON ERR - TRY LAST OP AGAIN



 TAG
 UTILITY
 RETURN

XXX 2 F704
 MB+0=D
 A=IAR
 F400 XXX C1



Y244.N4
 XXX 2 F484
 MA+0=D
 A=IAR
 F400 XXX J1

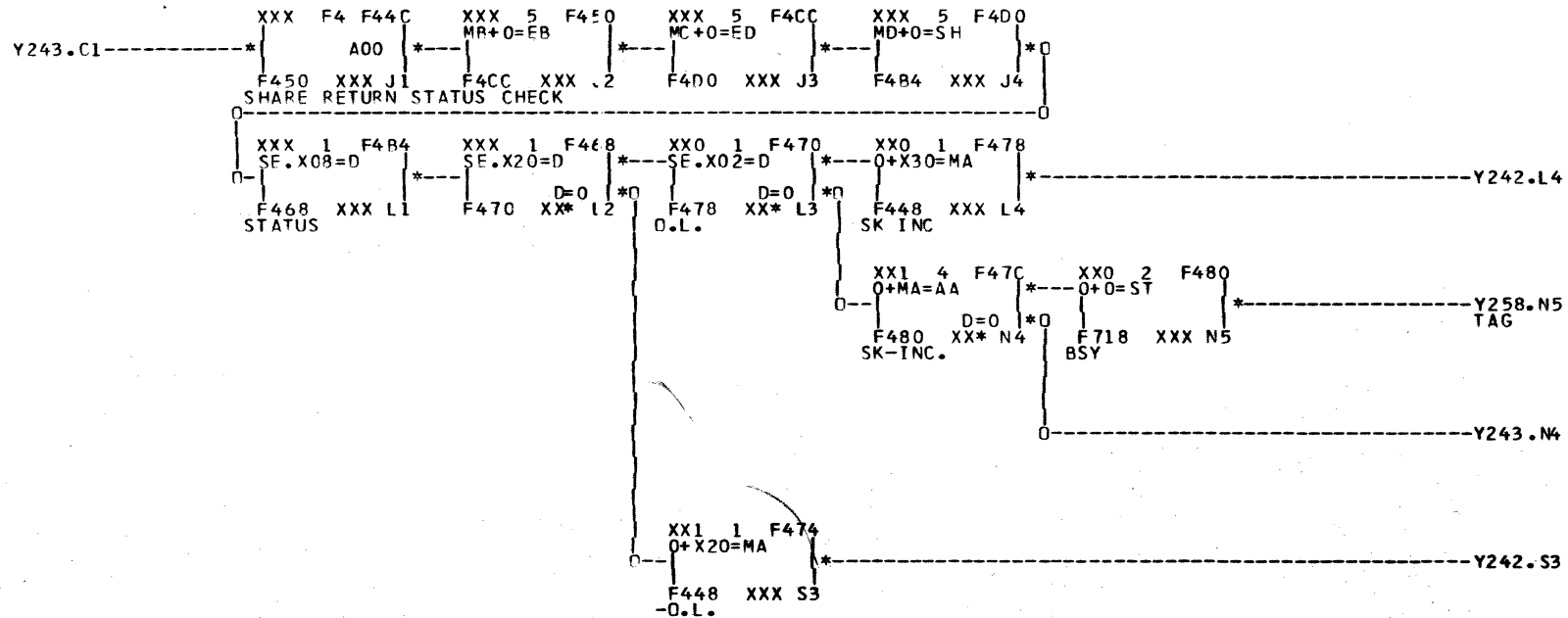
```

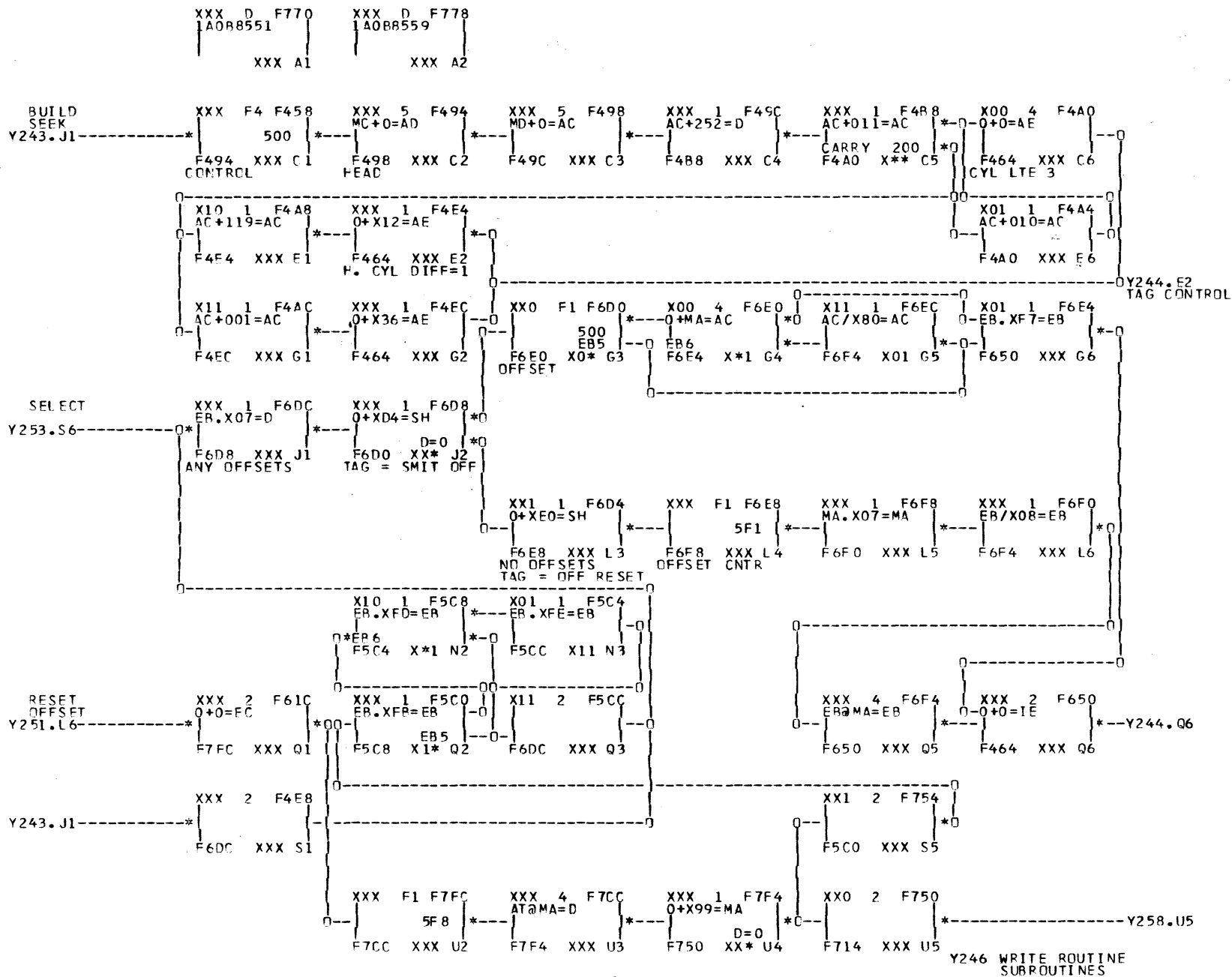
    XXX 1 F464
    0+X3D=D
Y242.E4-----0-*
Y242.N1-----0
    3D04 SP05
    TAG ROUTINE
Y246.E2-----0
Y250.C6-----0

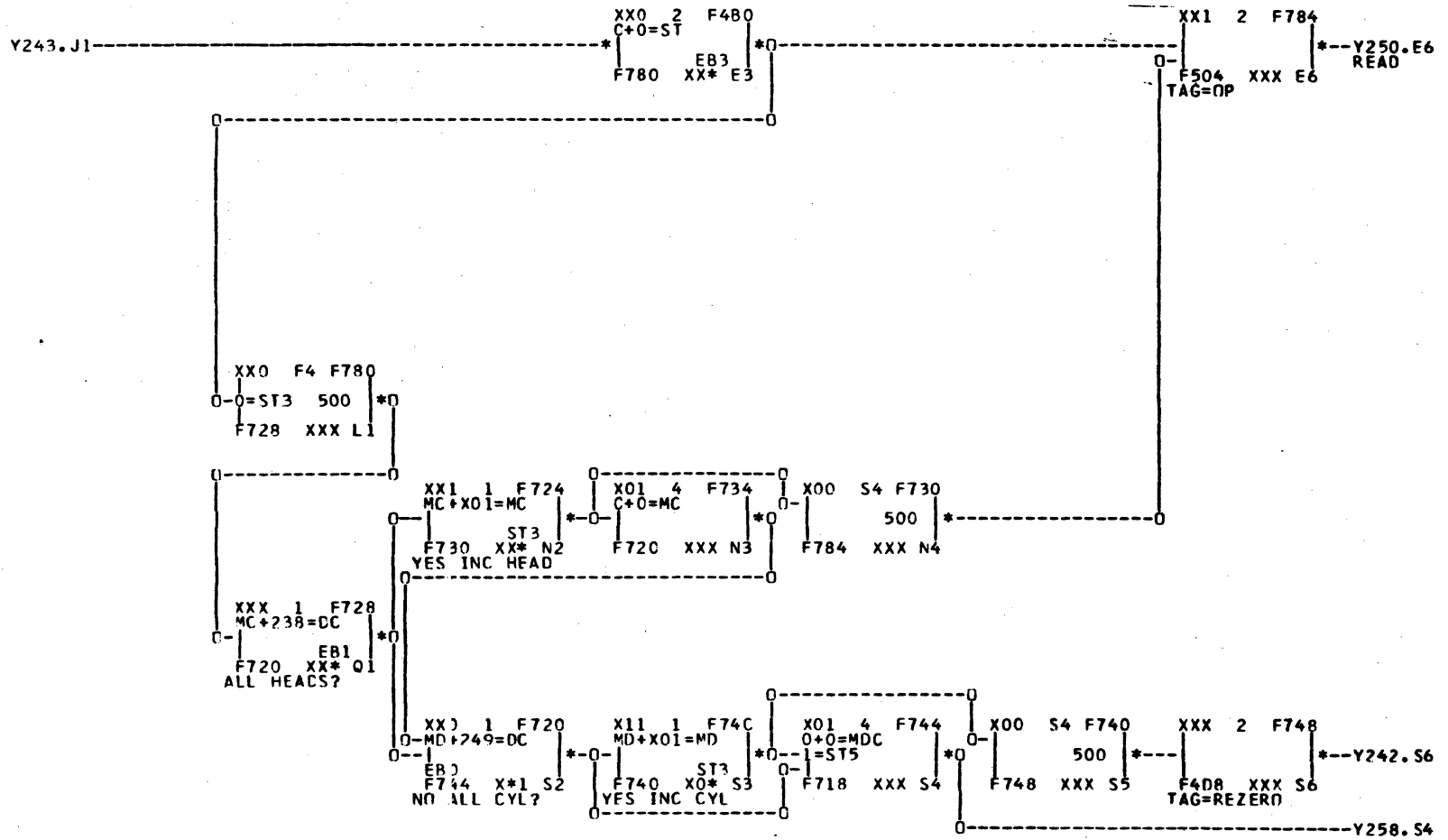
Y243.J1-----0

```

TAG ROUTINE
RETURN ON PAGE
Y243.C1







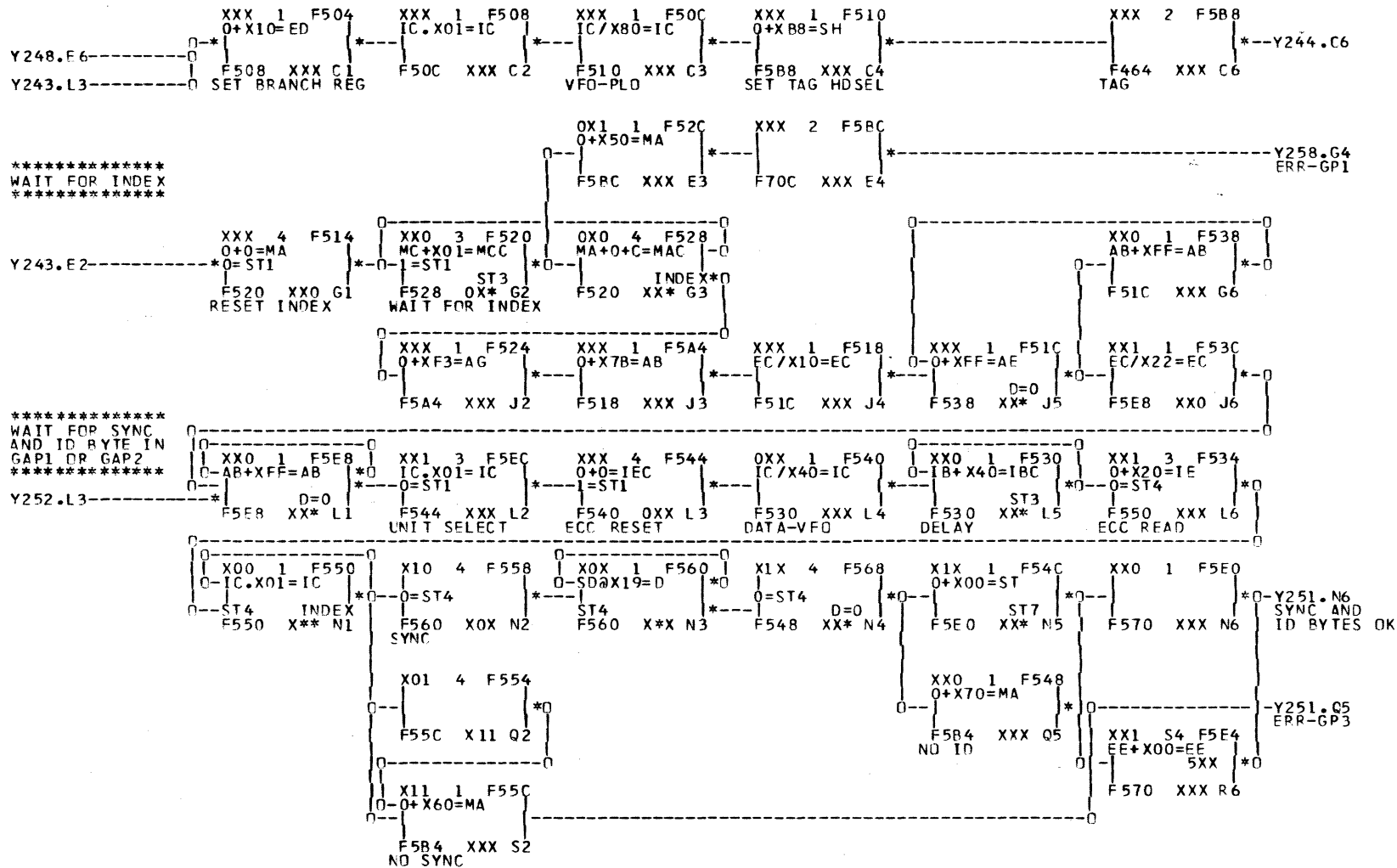
Y248 WRITE ROUTINE
EXIT DECISIONS

PUB AC. 70631200

DOC NO. 73687900

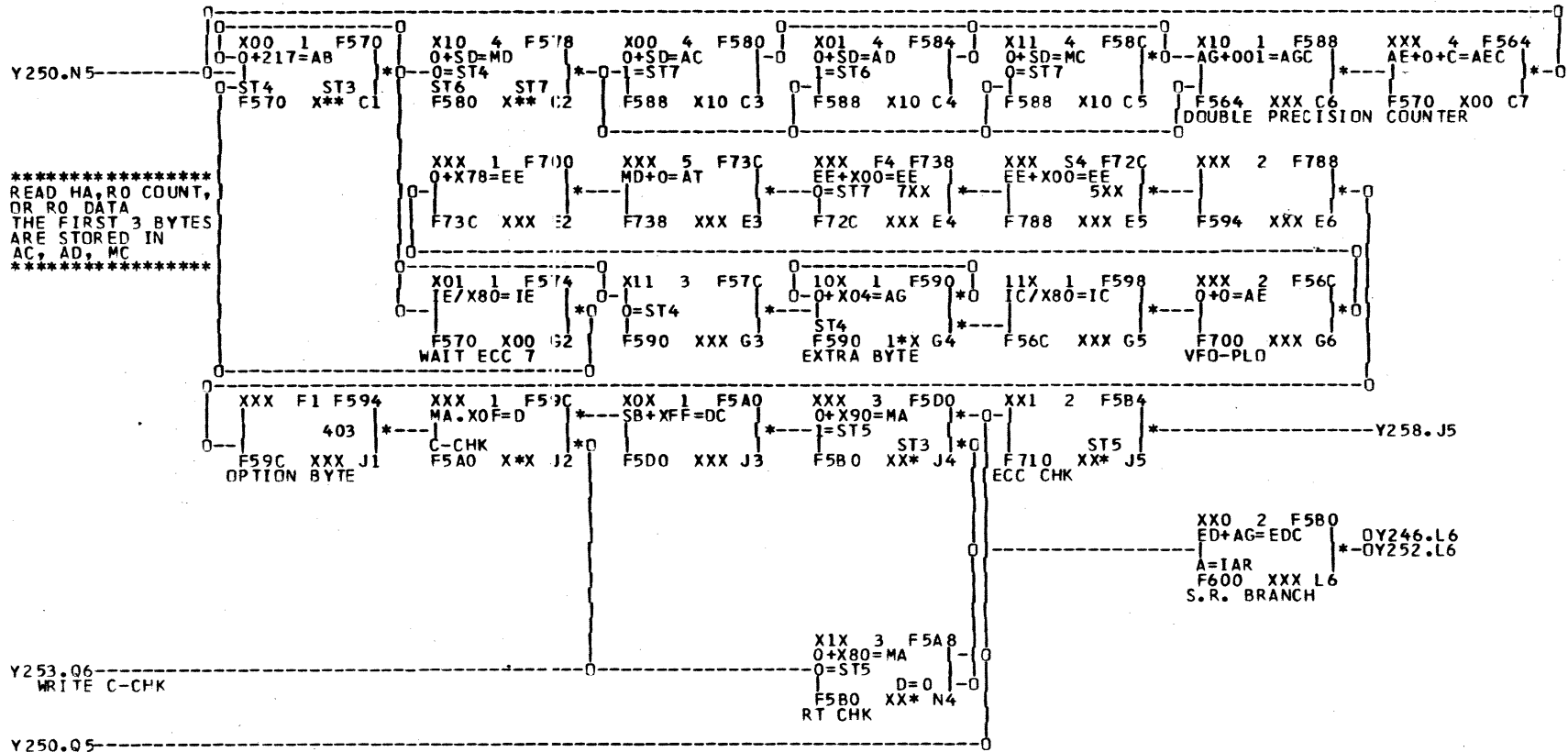
2-300

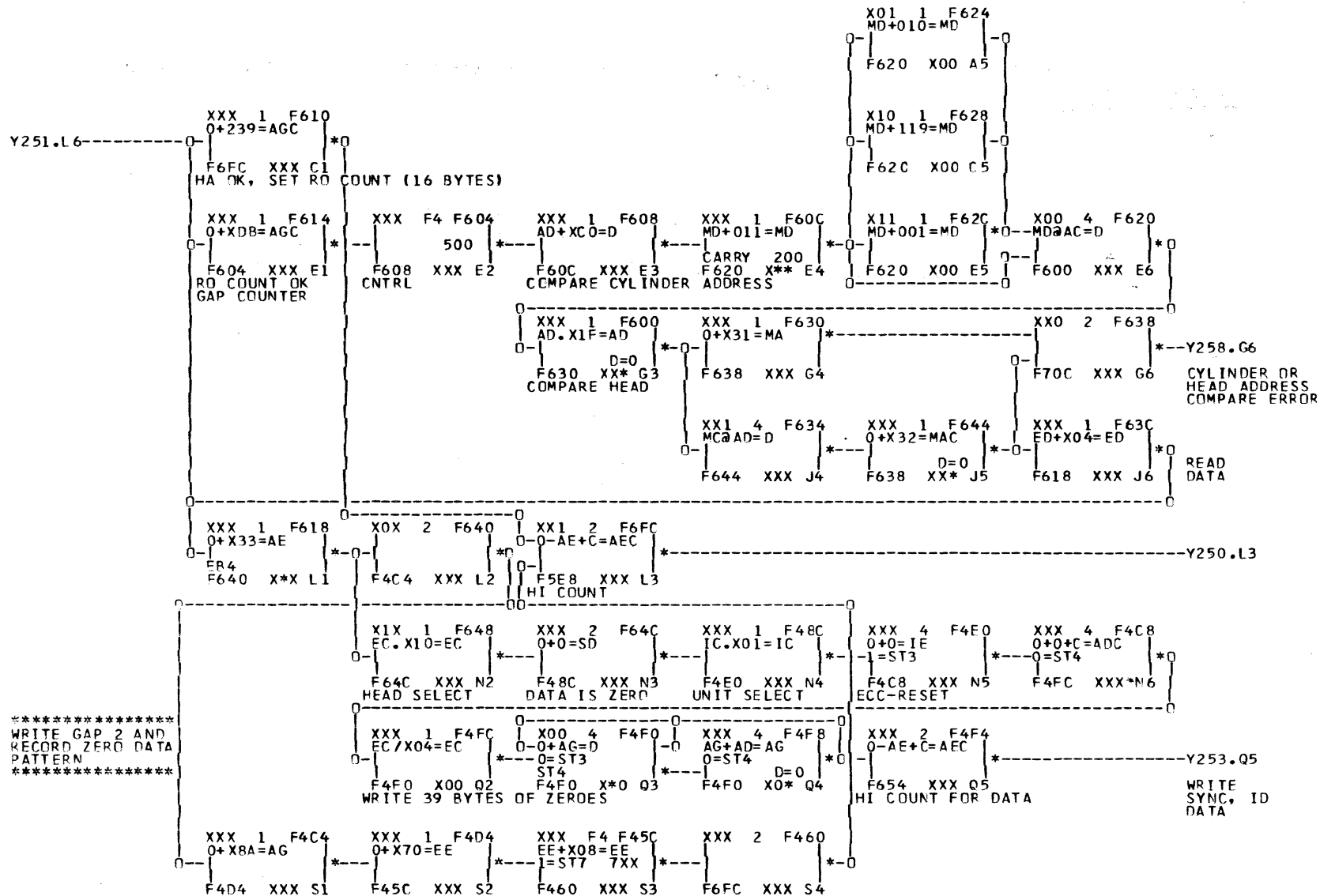
REVISION H



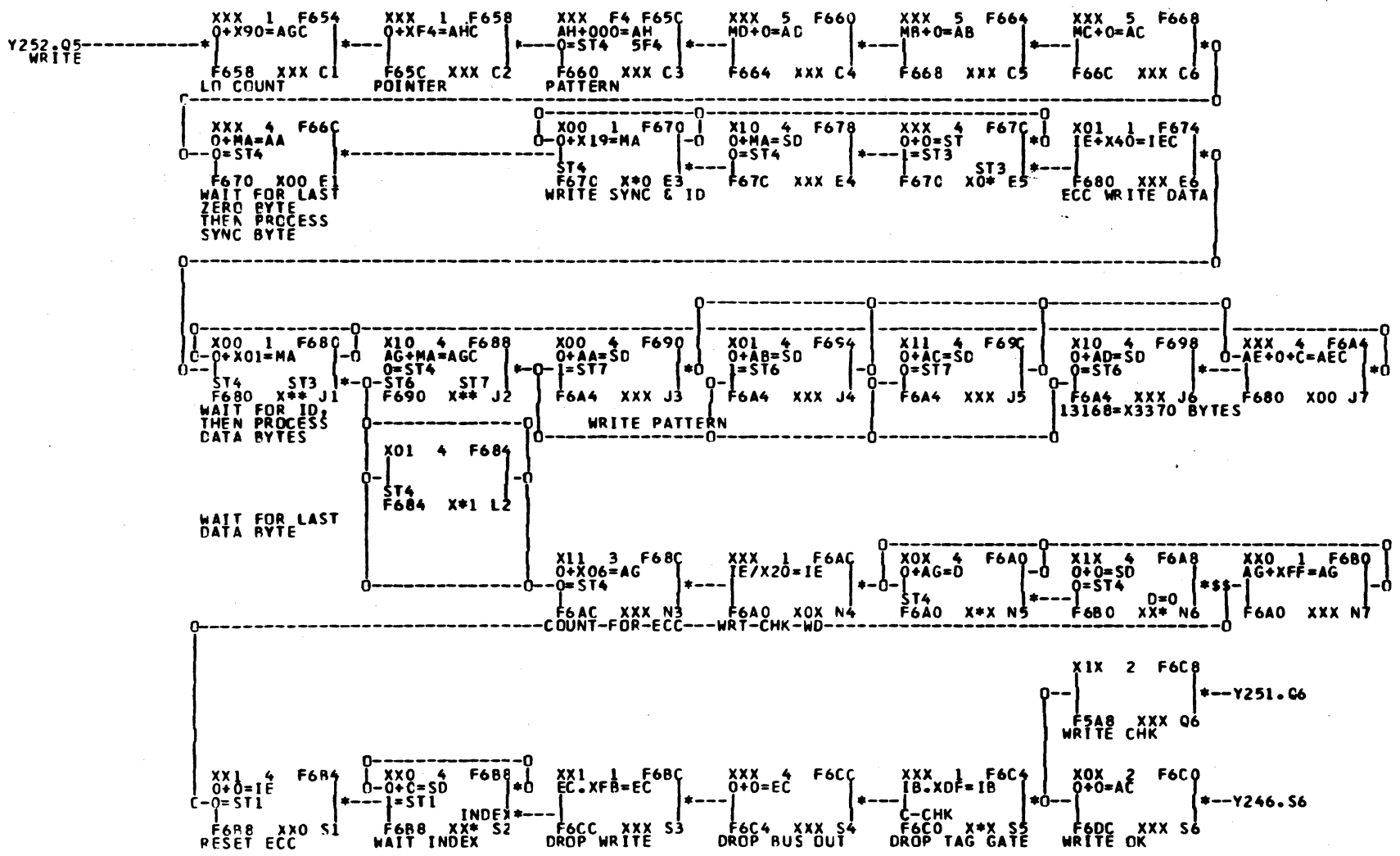
Y250 WRITE ROUTINE
READ

REVISION M





Y252 WRITE ROUTINE
READ SUB-SEQUENCES



XXX D F78C 00001003 SELECT XXX C1	XXX D F7A0 01000006 CAP XXX C2	XXX D F7B8 106C0008 SELECT HEAD XXX C3	XXX D F7D4 01000009 TRANSMIT CFFSET XXX C4	XXX D F7FB 00001003 SELECT A XXX C5
XXX D F79C 0000030A RESET XXX E1	XXX D F7A4 01000009 DIFF XXX F2	XXX D F7BC A0BC000C OP + HD SEL XXX E3	XXX D F7U8 0000200A CFFSET START XXX E4	XXX D F7FC 804C0004 STATUS = RESTORE XXX E5
XXX D F794 80C06404 STATUS XXX G1	XXX D F7A8 03000007 H. CYL/DIFF XXX G2		XXX D F7DC 80C05404 STATUS SET-WRT XXX G4	
XXX D F798 0000080A REFZERO XXX J1	XXX D F7AC 04000008 HD SFL XXX J2			
XXX D F79C 80C05404 STATUS-BUILD XXX L1	XXX D F7BC 0000100A SFFK XXX L2		XXX D F7EC 0000010B CFFSET RESET XXX L4	
	XXX D F7B4 80C05404 STATUS XXX N2		XXX D F7E4 80C0B004 STATUS XXX N4	

TAG DEFINITION
 0 - ST REG
 1 - S.R.
 2 - BUS OUT
 3 - TAG

THIS ROUTINE SEEKS IN SPECIFIED INCREMENTS FROM CYL = 0 TO 410 (100MB) OR 820 (200MB) AT EACH CYLINDER THE HOME ADDRESS ON EACH SPECIFIED TRACK IS READ AND VERIFIED VIA ECC. POSITION IS ALSO VERIFIED BY COMPARING PHYSICAL ADDRESS BYTES WITH SEEK PARAMETERS. AT EACH CYLINDER EITHER ALL HEADS OR ONE SPECIFIC HEAD IS USED DEPENDING UPON PARAMETER CHOICE. ON A CE PACK ALL READING IS SKIPPED FOR THE HEAD ALIGNMENT AND DEFRASED CYLINDERS. ALL READING MAY BE BYPASSED BY PARAMETER CHOICE.

PARAMETERS	DEFAULT VALUE	CONTROL REGISTER, EB
0 - HEAD	FF ALL HEADS	0 - ALL HEADS
1 - INCREMENT	01 1 CYLINDER	1 - CE PACK
2 - READ BY-PASS	00 NO BYPASS	2 - SIGN (0=+)
3 - CE PACK	FF CE PAK	3 - BYPASS READ

HEAD >X12 READ ON ALL HEADS
 READ BYPASS IF VALUE = 0
 CE PACK IF VALUE NEO 0

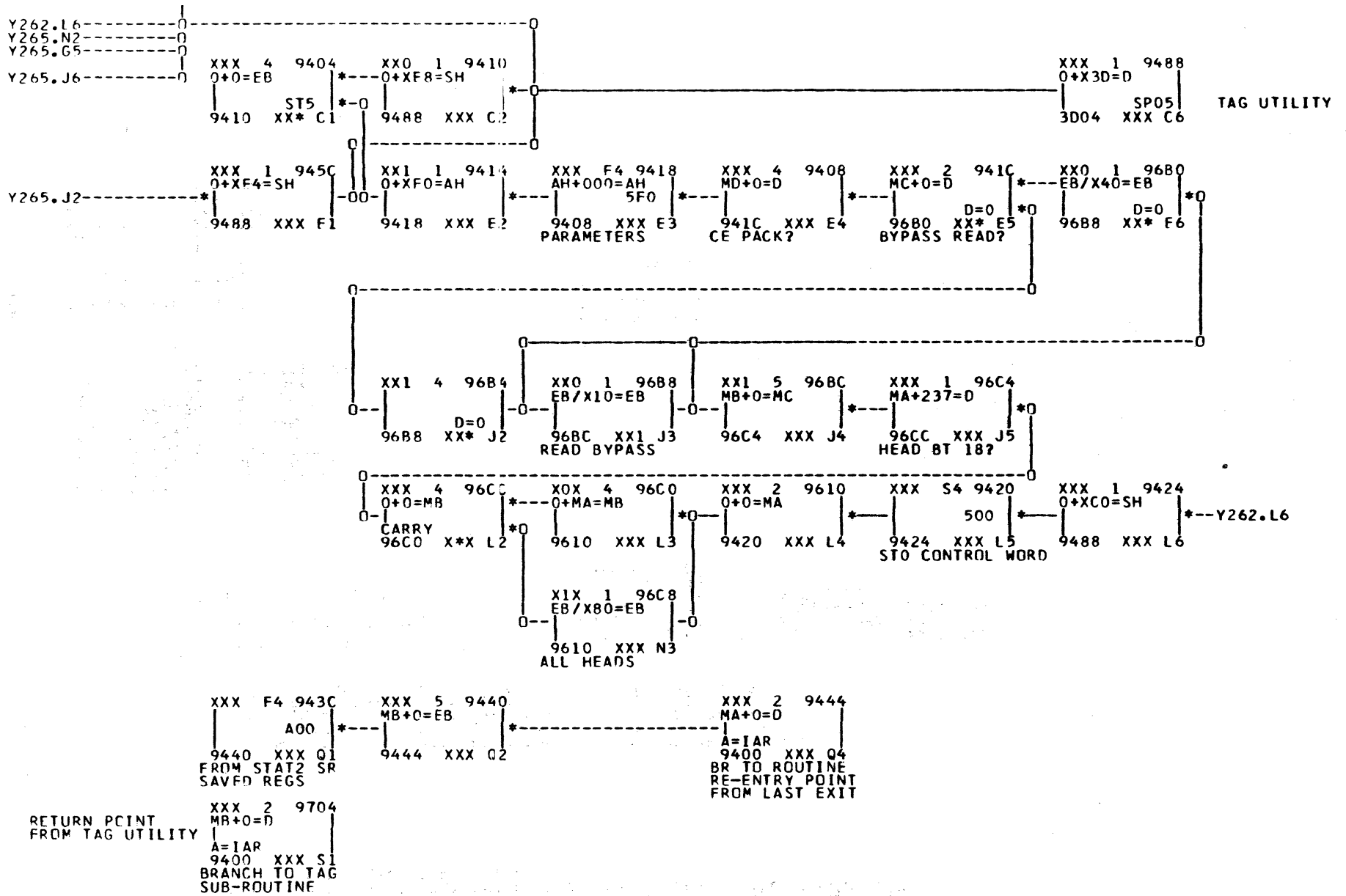
xxx D 9500	0 - L. CYL	xxxx xxxx
00000000	1 - H. CYL/HEAD	xxox xxxx
	2 - INCREMENT	xxxx xxxx
	3 - NOT USED	
xxx J3		
CONTROL WORD		

ERROR CODES		TAG CHECK
10 Y272.F1		NOT ON LINE
20 Y265.C3		SEEK INC
30 Y265.F4		NO INDEX
50 Y266.J4		NO SYNC
60 Y268.C3		NO ID
70 Y268.E5		R/W C-CHK
80 Y268.U2		ECC ERROR
90 Y268.N4		COMPARE ERR
A0 Y269.C6		

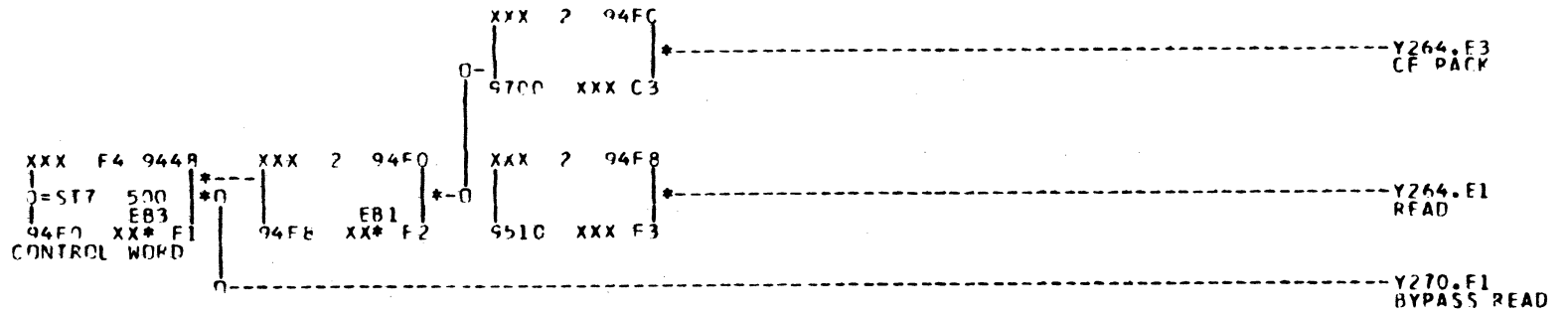
CE PACK READS CYLS

100 MB	200MB
0	0
?	1
11-241	18
249-393	21-482
395	497-787
404-410	700
	807-822

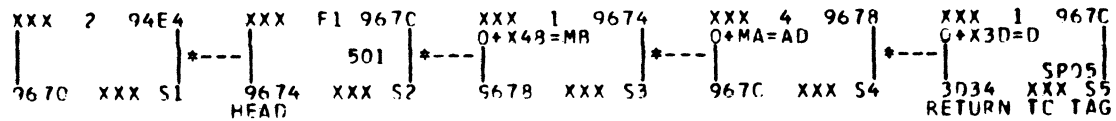
xxx D 95F0	
C00100FF	
	xxx 03



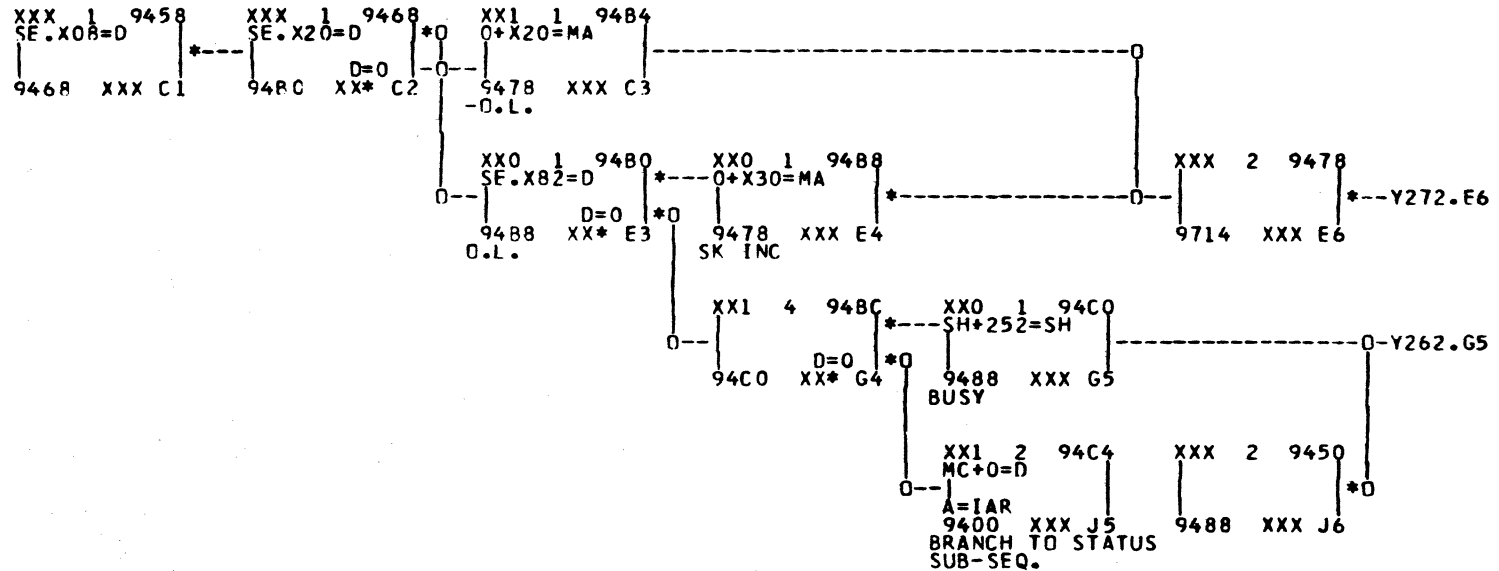
HAR 2 SH



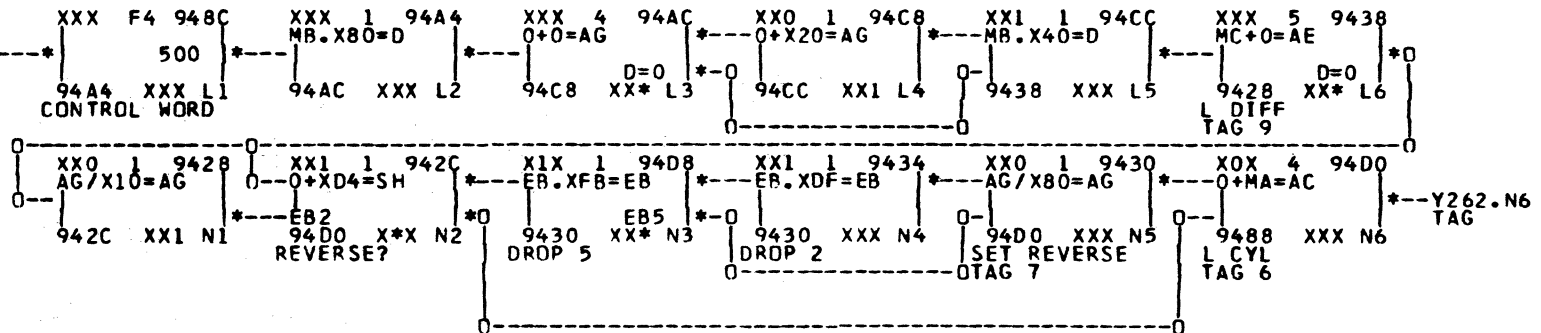
HAR 1



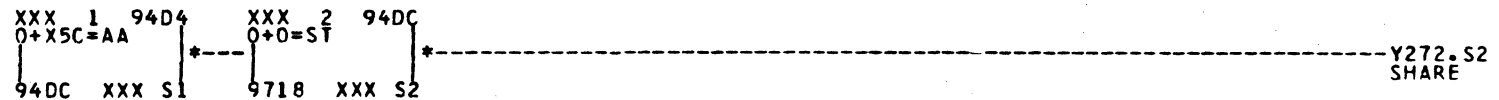
STATUS



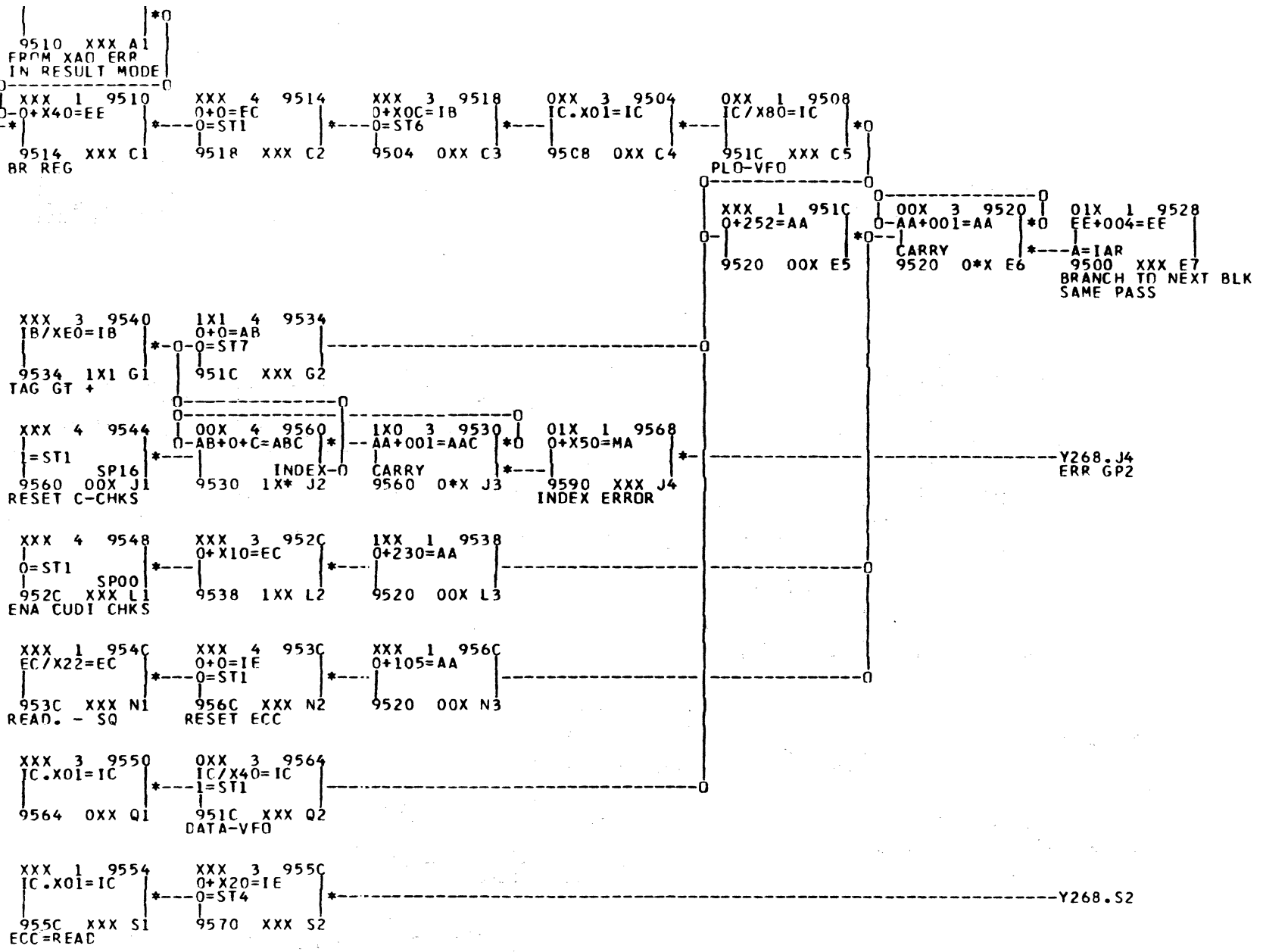
Y270.G7
BUILD SEEK
TAGS



SEEK SHARE



Y264.S6



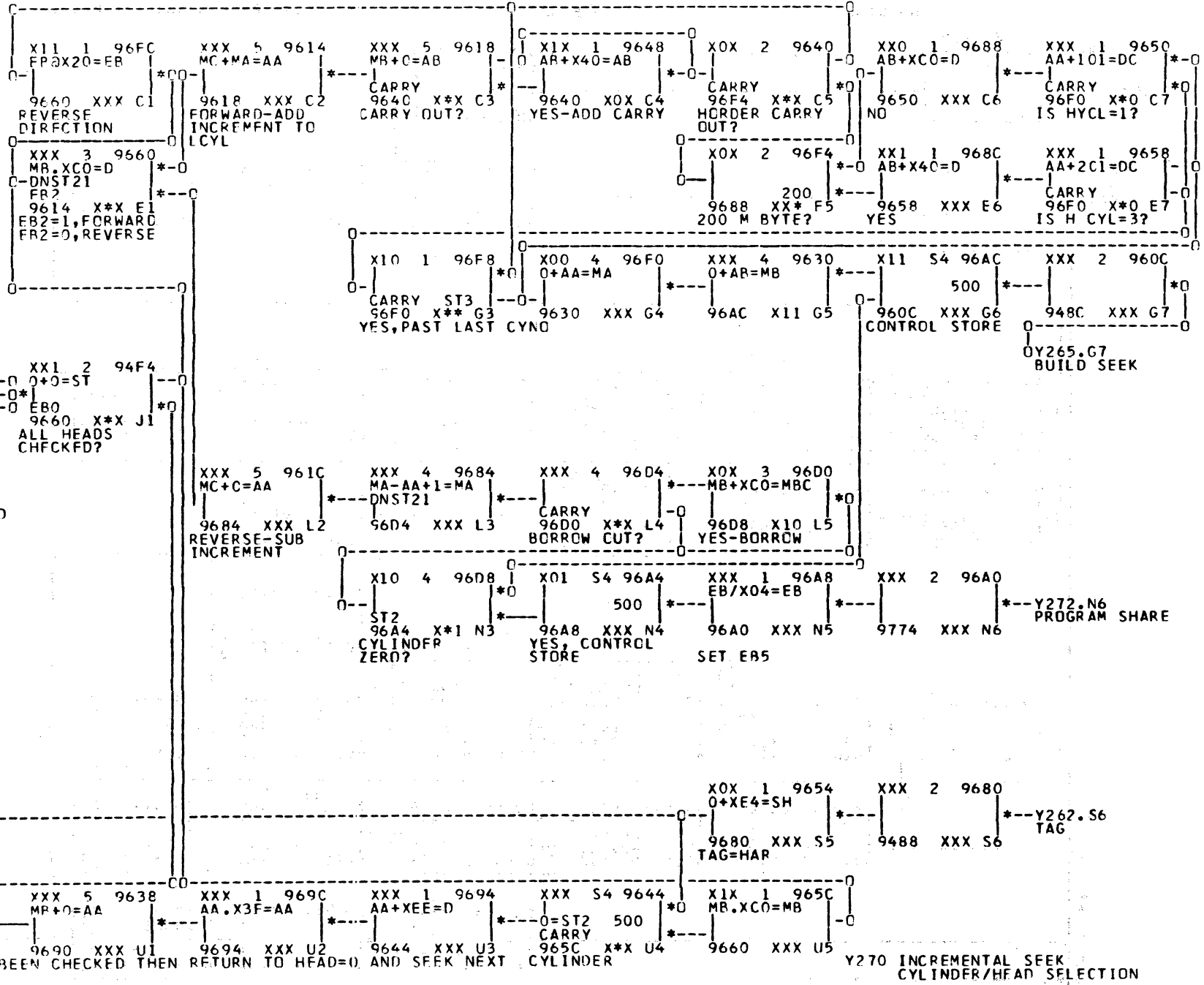
Y266 INCREMENTAL SEEK READ 1

PUB NO. 70631200

DOC NO. 73687900

2-312

REVISION K



CYLINDER
SELECTION

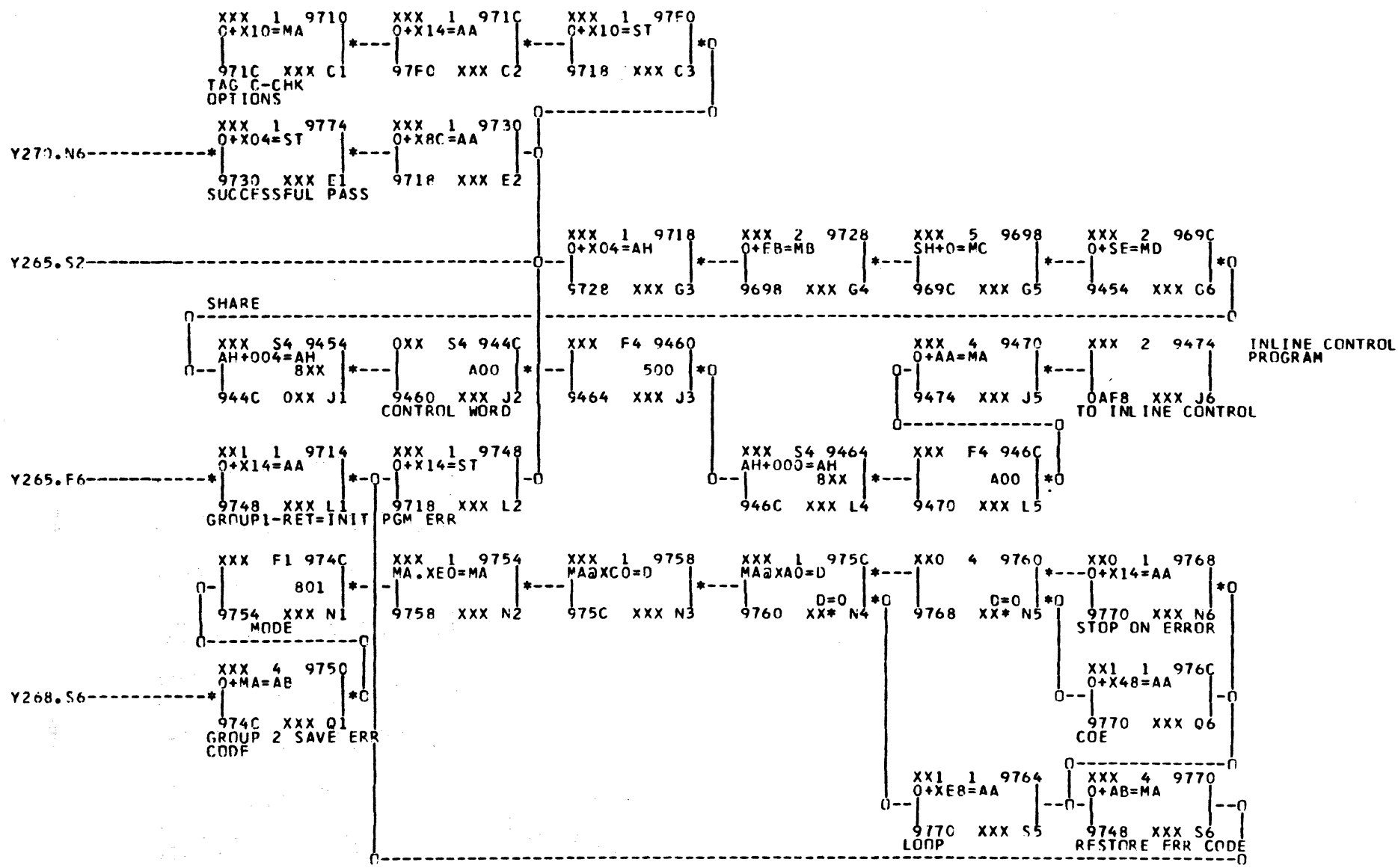
Y264.N7-----
Y268.U6-----
Y263.F1-----
XX1 2 94F4
0+0=ST
EBO
9660 XX J1
ALL HEADS
CHKCKFD?

MA = L CYL
MB = H CYL/HEAD
MC = INCRMENT

HEAD
SELECTION

SFFK RETURN

XXX 1 9668 MB+X01=MB
XXX 5 9638 MP+0=AA
XXX 1 969C AA.X3F=AA
XXX 1 9694 AA+XEE=D
XXX S4 9644 0=ST2 500
CARRY
965C XX U4
9660 XXX U5
9638 XXX U0
9690 XXX U1
9694 XXX U2
9644 XXX U3
9660 XXX U5
XOX 1 9654 0+XE4=SH
9680 XXX S5
TAG=HAR
XXX 2 9680
9488 XXX S6
Y270 INCREMENTAL SEEK
CYLINDER/HEAD SELECTION



XXX D 97C0
00001003
|
XXX C1
SELECT 1

XXX D 97D4
01000006
|
XXX C2
CYL

XXX D 97E8
00001003
|
XXX C3
SELECT 2

XXX D 97C4
0000030A
|
XXX F1
RESFT

XXX D 97D8
03000009
|
XXX E2
DIFF

XXX D 97EC
80583C04
|
XXX E3
STATUS 2

XXX D 97C8
80585004
|
XXX G1
STATUS

XXX D 97DC
02000007
|
XXX G2
COMP

XXX D 97CC
0000080A
|
XXX J1
REZERO

XXX D 97E0
80D4100A
|
XXX J2
SEEK

XXX D 97D0
80585C04
|
XXX L1
STATUS

XXX D 97E4
90F40008
|
XXX L2
HAR

- 0 - ST REGISTER
- 1 - ROUTINE BRANCH ADDR
- 2 - BUS OUT
- 3 - TAG OUT

Y274 INCREMENTAL SEEK
TAGS

REVISION F

THIS ROUTINE GENERATES RANDOM SEEKS. AT EACH LOCATION
H.A. IS READ AND VERIFIED. WHEN USING A CF PACK SOME CYLINDERS
CANNOT BE USED. THESE ARE AUTOMATICALLY BYPASSED. CYLINDER
POSITION IS VERIFIED BY COMPARING PROGRAM VALUES VERSUS
PHYSICAL 10 BYTES READ. PROGRAM RESTARTS ON ANY ERROR.

CF PACK	READS	CYLS
100MB	200MB	
0	0	
9	1	
11-241	18	
242-393	21-432	
395	497-787	
404-410	790	
	R07-R22	

DEFAULT PARAMETERS: CF PACK, READ

XXX D A9F0		C-0 CF PACK
00000000		
		5 READ SUPPRESS
XXX G1		

EB REGISTER

0	-	CF PACK
1	-	
2	-	
3	-	
4	-	
5	-	READ SUPPRESS
6	-	
7	-	END PGM FLAG

XXX D A900		0 - TO H.O.	0000 00XX
00000000			
		1 - L.O.	XXXX XXXX
		2 - FROM H.O.	0C00 00XX
XXX N1		3 - L.O.	XXXX XXXX
TO FROM			

ERROR CODES

10	Y282.U2	TAG CONTROL CK
20	Y285.C3	NOT ON LINE
30	Y285.F4	SEEK INC.
80-FF		READER OR VERIFY ER.

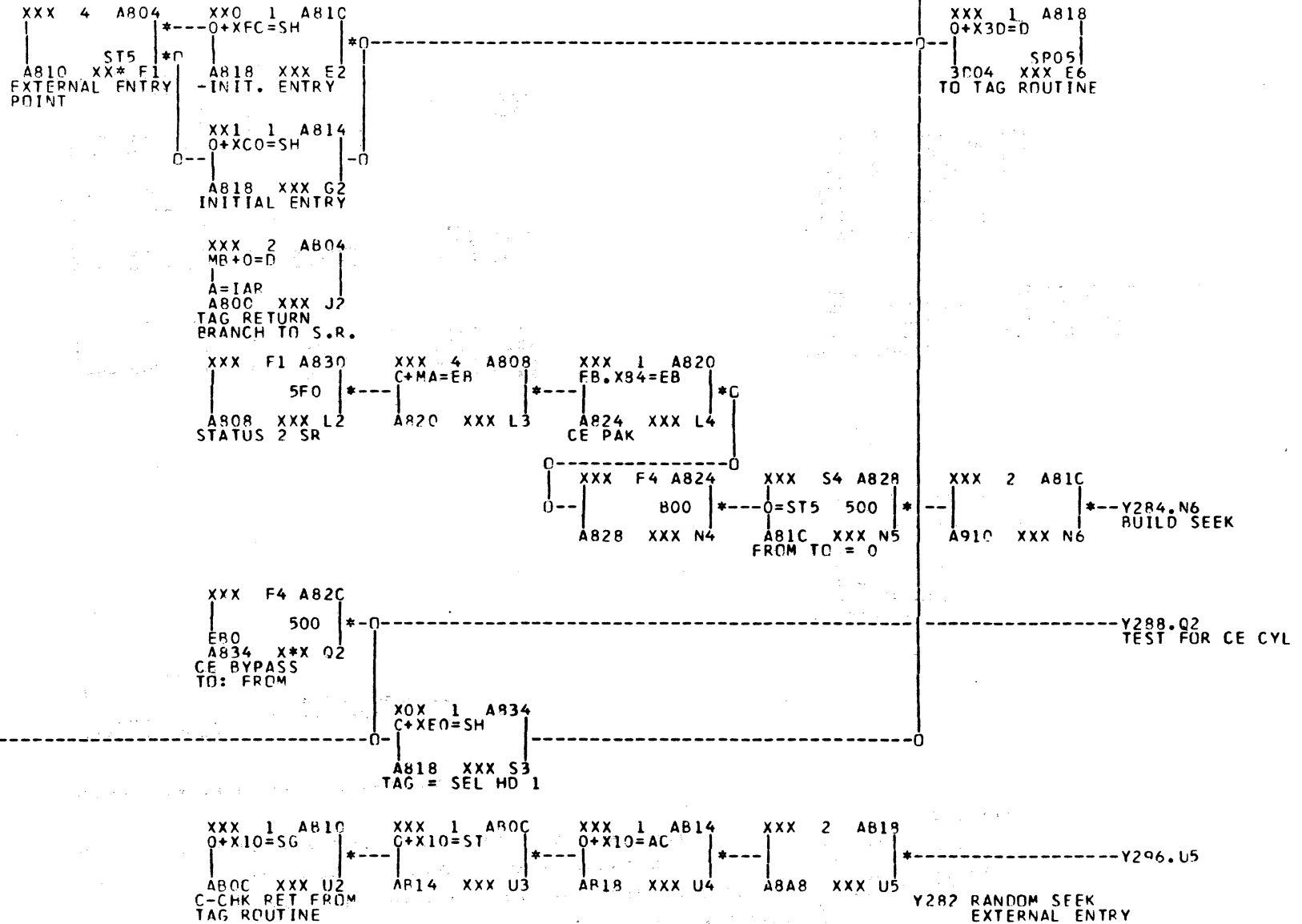
XXX D AA00		0 - QUADRANT	0C00 0XXX
00000000			
		1 - SECTOR	XXXX 0000
		2 - WORD	XXXX XX00
XXX Q1		3 -	
INDEX WORD			

1 XXX	XXXX
BIT 1	NO INDEX
BIT 2	NO SYNC
BIT 3	NO ID
BIT 4	READ CHK
BIT 5	FCC C-CHK
BIT 6	COMPARE FRP
BIT 7	DON'T CARE

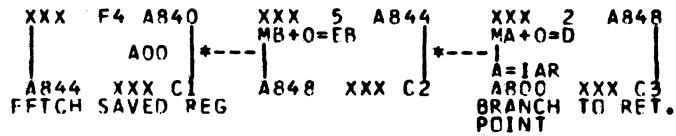
XXX D AF00		0 - F. DIFF	0C00 00X1
00000000			
		1 - L. DIFF	XXXX XXXX
		2 -	
		3 -	
XXX S1			
DIFFERENCE			

Y280 RANDOM SEEK AP
DEFINITIONS

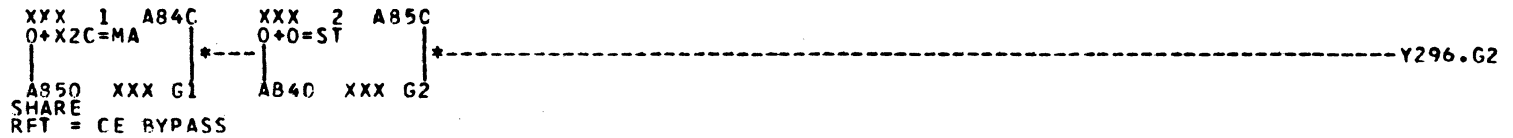
Y292.U6-----0
 Y285.G5-----0
 Y286.L6-----0



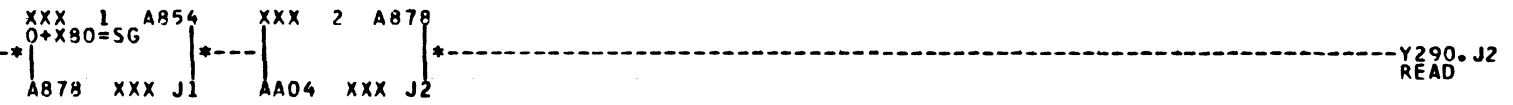
STATUS 3 SR



SFEK SR



SELECT HD18

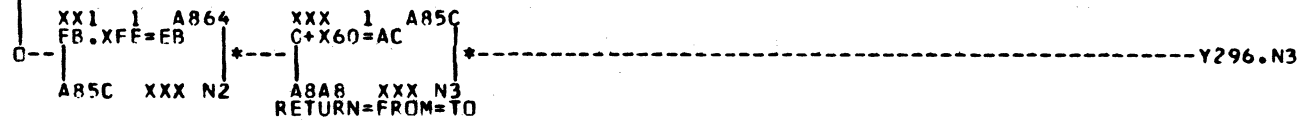
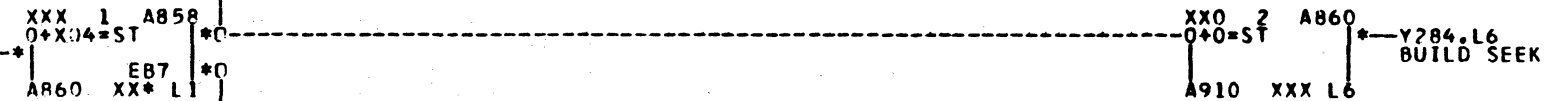


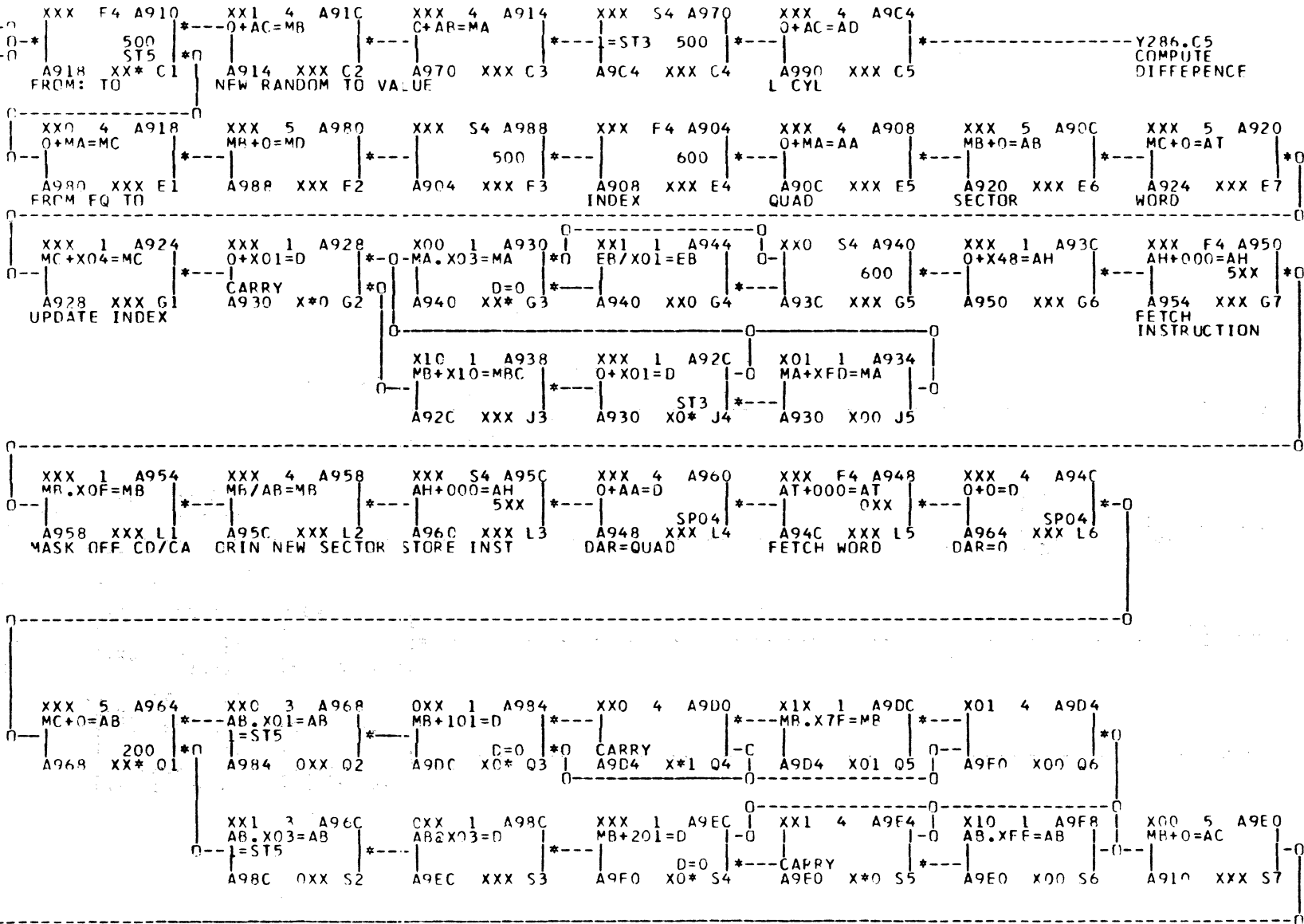
PGMEND

-RET

DUMMY

Y288.N7
Y290.A3





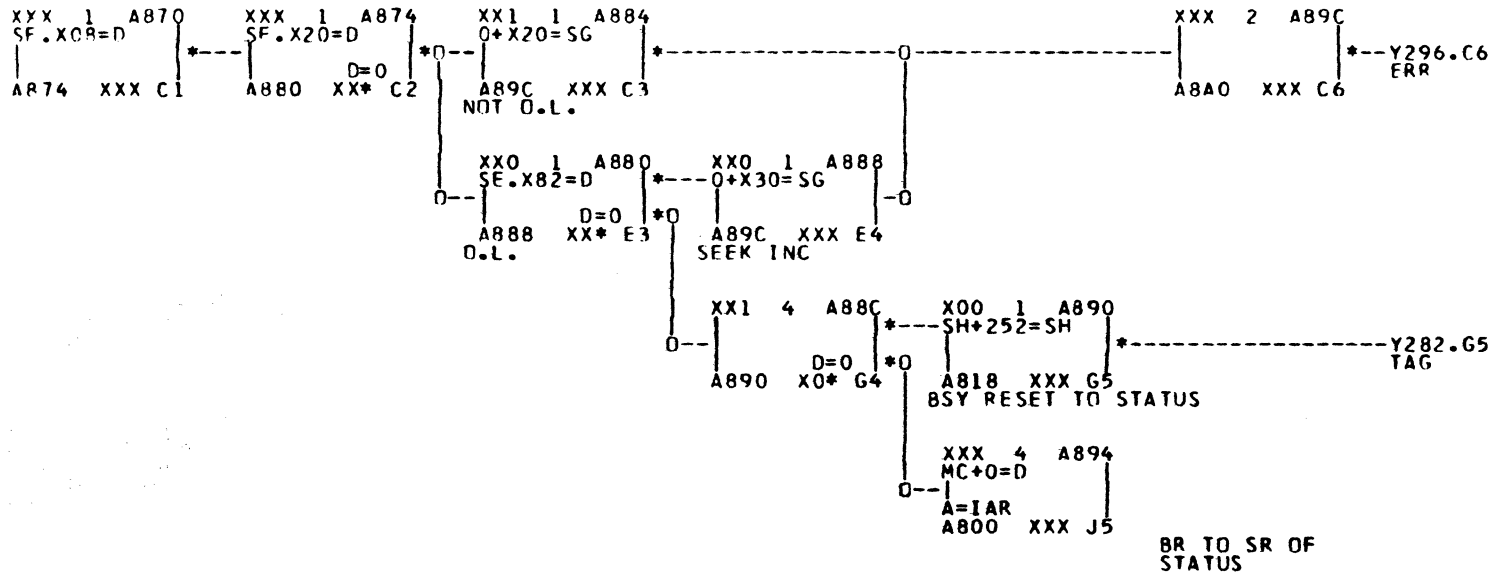
Y2R6.C5
COMPUTE
DIFFERENCE

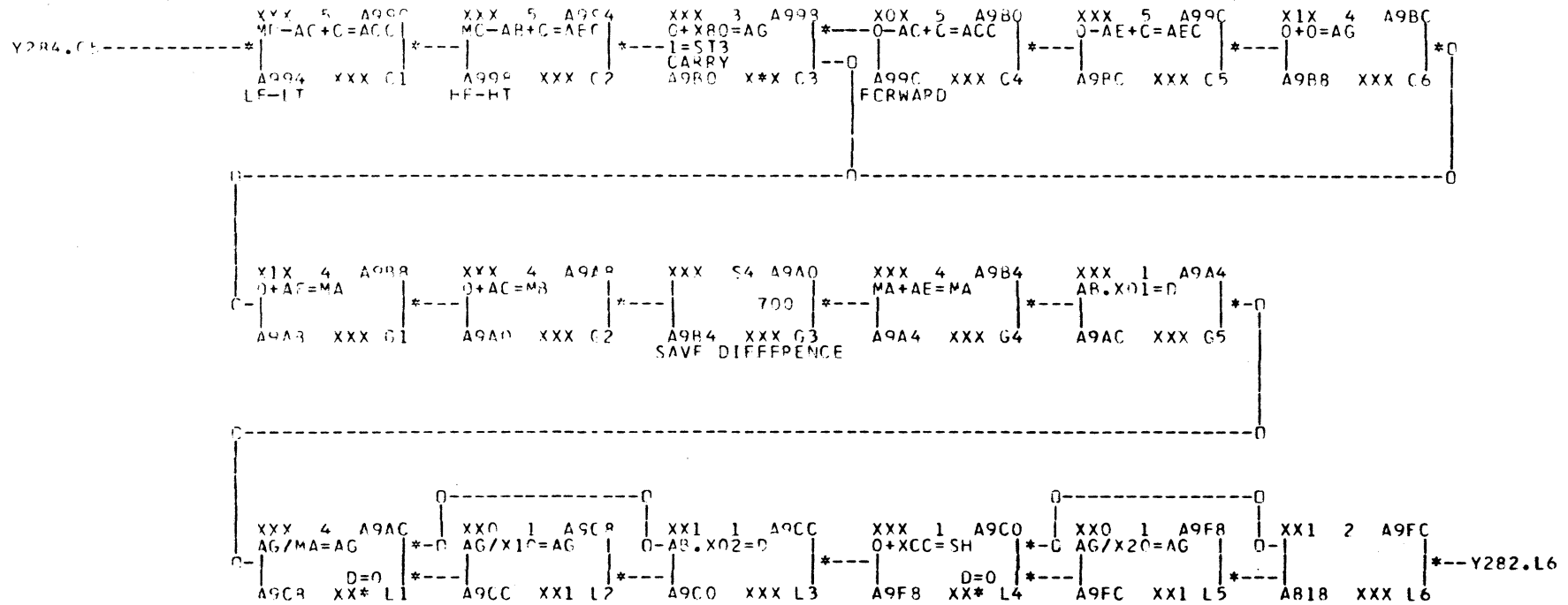
INDEX WORD
 0-0000 00XX QUAD
 1-XXXX 0000 SECTOR
 2-XXXX XX00 WORD

EXIT
 AD: TAG 6 LCYL
 AC: TO LCYL
 AB: HCYL

Y2R4 RANDOM SEFK
COMPUTE RANDOM CYLINDER

STATUS SP





ENTER
 A3: TO: HCYL
 AC: LCYL
 MC: FROM: HCYL
 MD: LCYL

EXIT
 AD: TAG 6 LCYL
 AG: TAG 7 R/HCYL/HDIFF
 AC: TAG 9 L DIFF

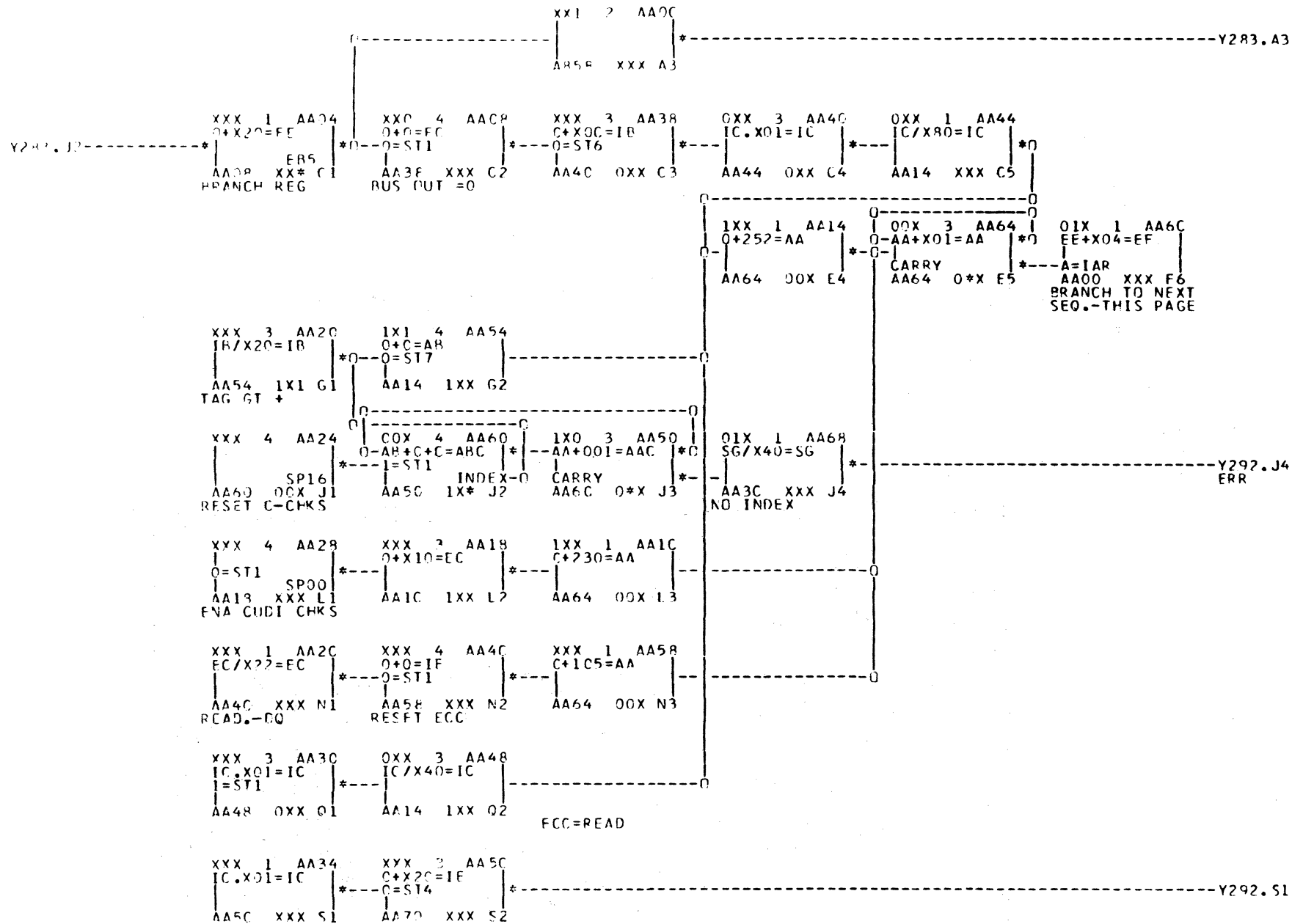
PUR NO. 73631200

CDC NO. 73687200

2-322

Y286 RANDOM SEEK
COMPUTE DIFFERENCE

REVISION E

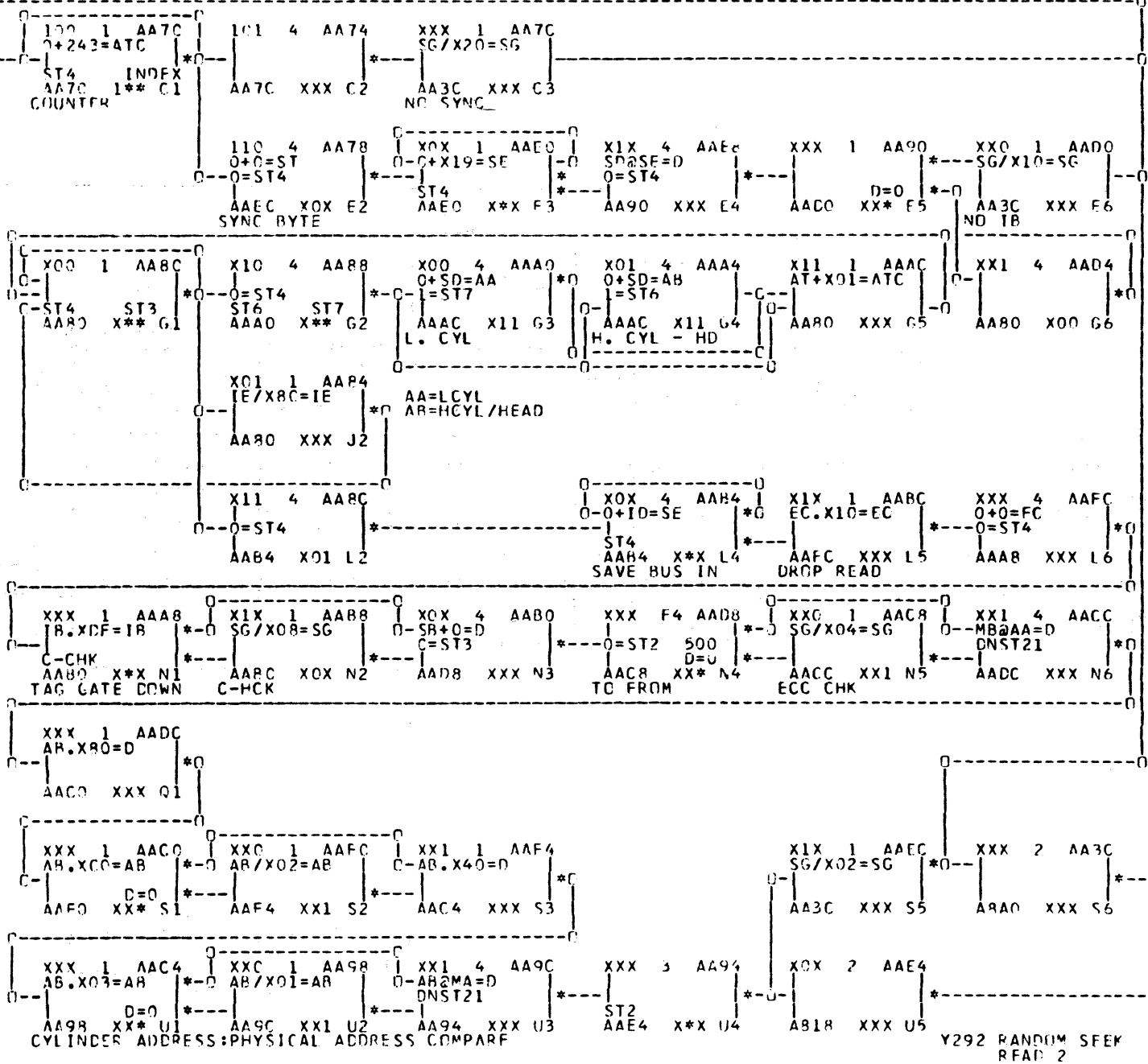


Y290 RANDOM SFFK
READ 1

REVISION H

Y290.J4

Y290.S1



Y292.S6-----n
 Y295.C6-----n
 XXX 1 ABA0
 O+X14=AC
 ABA4 XXX C1
 PGM ERR INITIAL
 XXX 1 ABA4
 O+X14=ST
 ABAE XXX C2

Y283.N3-----n
 Y282.U5-----n
 XXX 5 ABA8
 SG+0=MA
 ABA8 XXX J1
 XXX 4 ABAC
 O+FB=MB
 ABAC XXX J2
 XXX 5 ABD0
 SH+0=MC
 ABD4 XXX J3
 XXX 4 ABH4
 O+SF=MD
 ABH8 XXX J4
 XXX 1 ABR8
 O+X04=SH
 ABC XXX J5
 XXX S4 ABBC
 SH+004=SH
 804
 ABC0 XXX J6

XXX F4 ARC0
 600
 ABC8 XXX L1
 XXX S4 ARC8
 SH+004=SH
 809
 ABC4 XXX L2
 XXX F4 ABC4
 700
 ABCC XXX L3
 XXX 4 ABCC
 O+AA=MC
 ABD0 XXX L4
 XXX 2 ABD0
 O+AR=MD
 AB28 XXX L5
 XXX S4 AB28
 SH+000=SH
 80C
 AB2C XXX L6

XXX 1 AB2C
 SG.X08=D
 AB38 XXX N1
 C-CHK ERROR?
 XXX 4 AB38
 n=0
 AB30 xx* N2
 XXX 1 AB3C
 C+X14=MA
 AB3C XXX N3
 XXX 1 AB3C
 O+X10=ST
 AB40 XXX N4
 XXX 2 AB40
 O+EB=MB
 OAF8 XXX N5

XX1 4 AB34
 C+AC=MA
 AB40 XXX Q3
 NC

Y293.G2-----n

Y296 RANDOM SEEK
 ERROR COLLECTION

XXX D ABC0
00001003
|
XXX C1
SFLECT 1

XXX D ABC4
00000B0A
|
XXX E1
RFSET, REZFR0

XXX D ABC8
80703004
|
XXX G1
STATUS 1

XXX D ABCC
04000006
|
XXX J1
L. CYL

XXX D ABD0
01000009
|
XXX L1
L. DIFF

XXX D ABD4
02000007
|
XXX N1
COMP.

XXX D ABD8
804C100A
|
XXX Q1
SFEK

XXX D ABE0
80540108
|
XXX G3
SELECT HD 1

XXX D ABF4
80541208
|
XXX J3
SELECT HD 18

XXX D ABE8
10580000
|
XXX L3
DUMMY

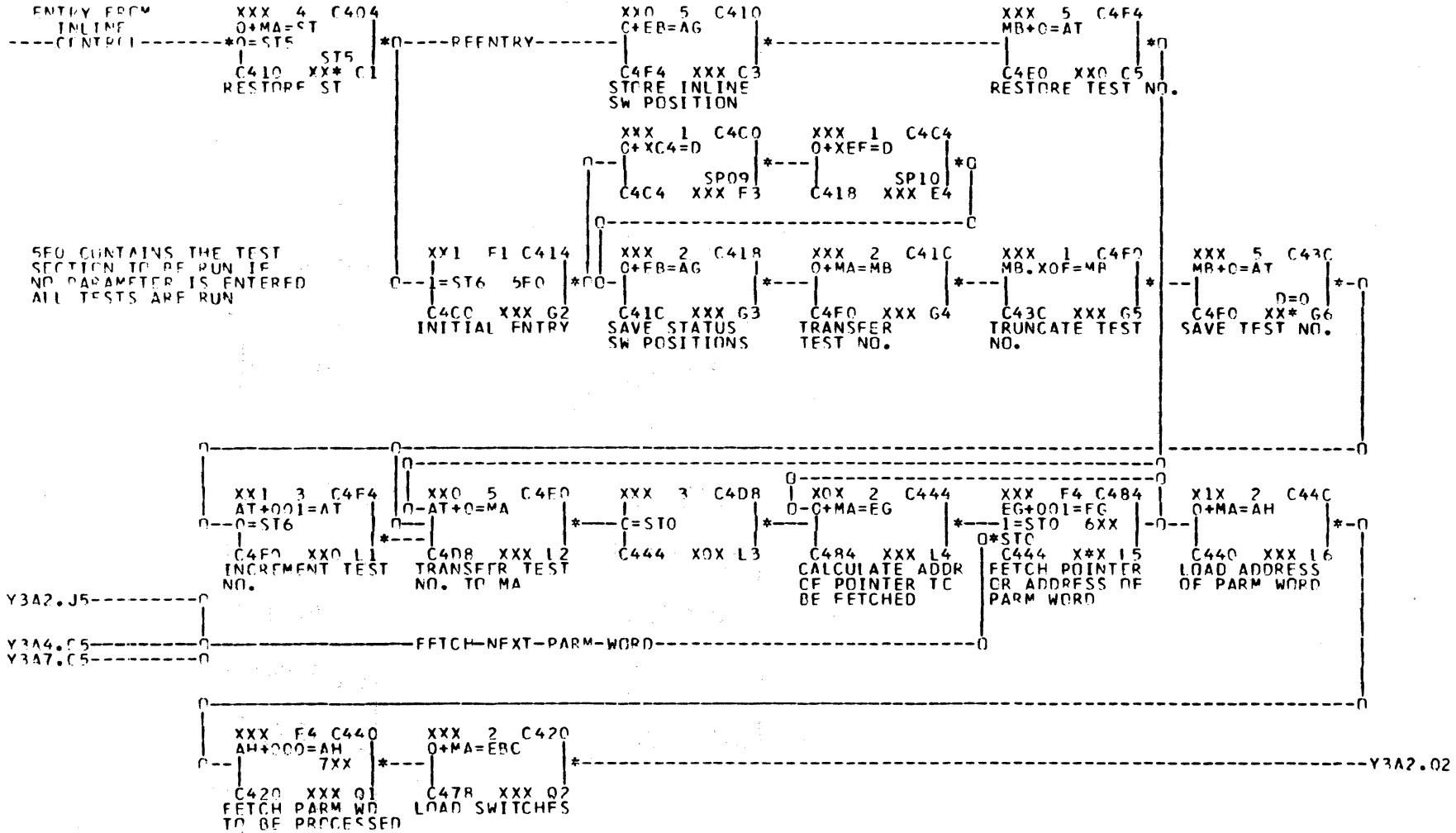
XXX D ABEC
C0001003
|
XXX N3
SELECT 2

XXX D ABF0
80704004
|
XXX Q3
STATUS 3

TAG DEFINITION
0 - ST REG
1 - SUB ROUTINE
2 - BUS OUT
3 - TAG OUT

ST5=1 ON INITIAL ENTRY
ST5=0 ON REENTRY

FR BIT 0123
0100 - CHAIN
1000 - STOP ON ERROR
1010 - CONTINUE ON ERROR
1100 - RESULT OR LOOP

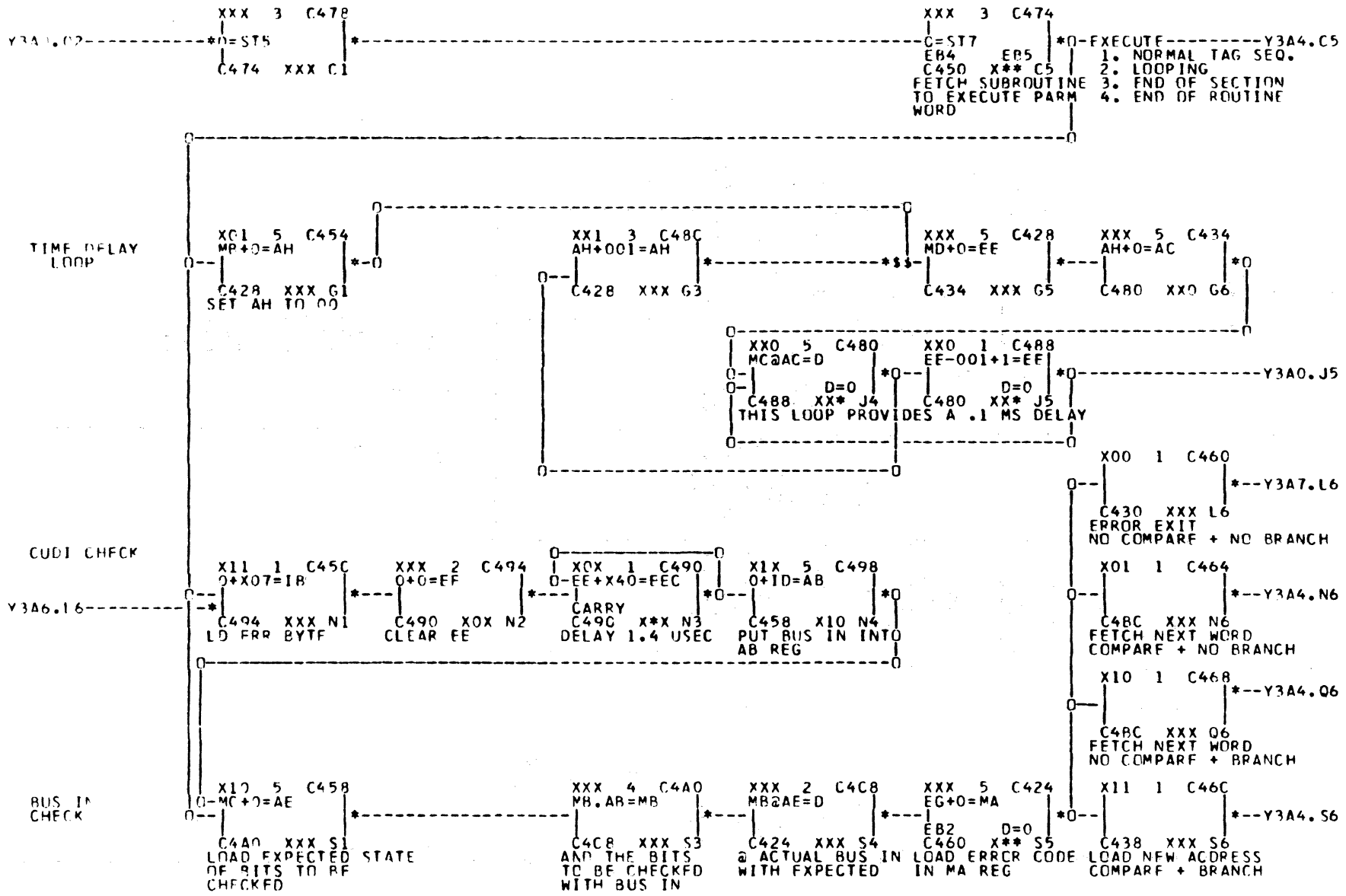


5F0 CONTAINS THE TEST SECTION TO BE RUN IF NO PARAMETER IS ENTERED ALL TESTS ARE RUN

THE FIRST 2 HEX DIGITS OF PARAM WORD CONTAIN THAT SUBROUTINE TO BE EXECUTED FOR THAT PARTICULAR PARAM WORD

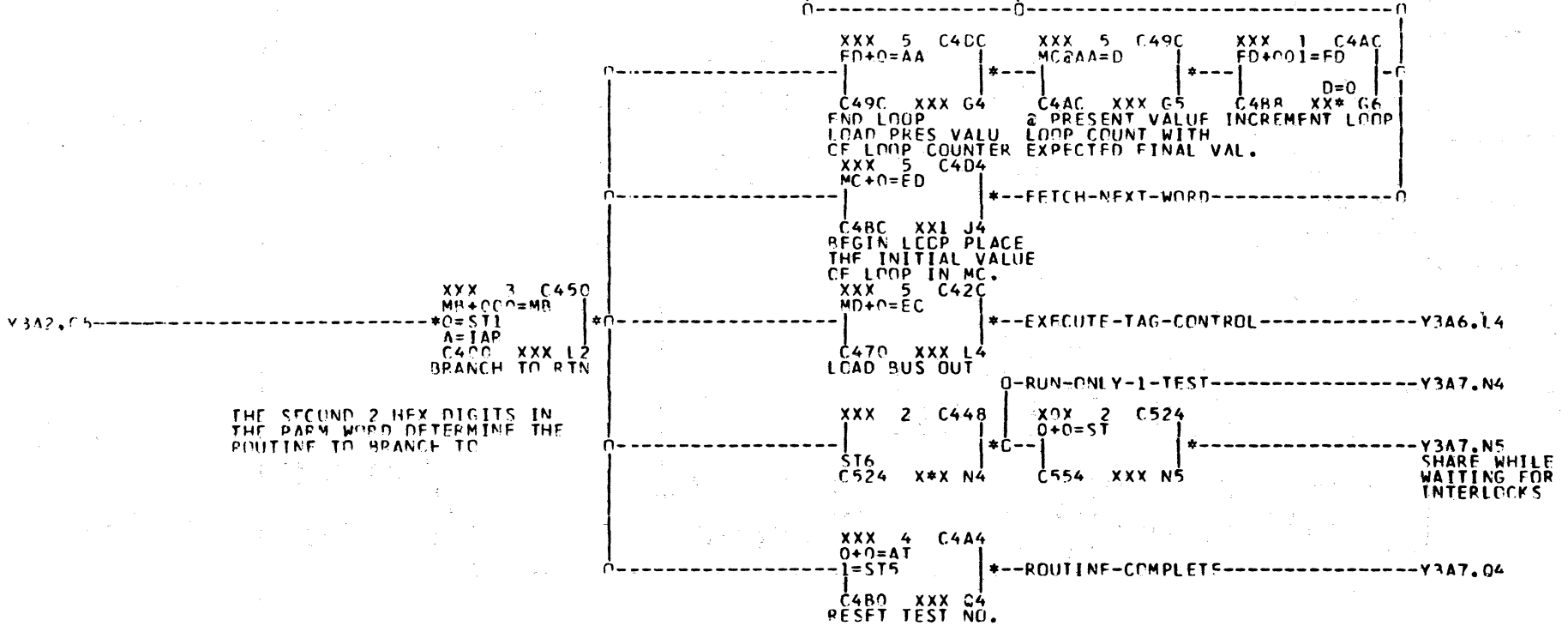
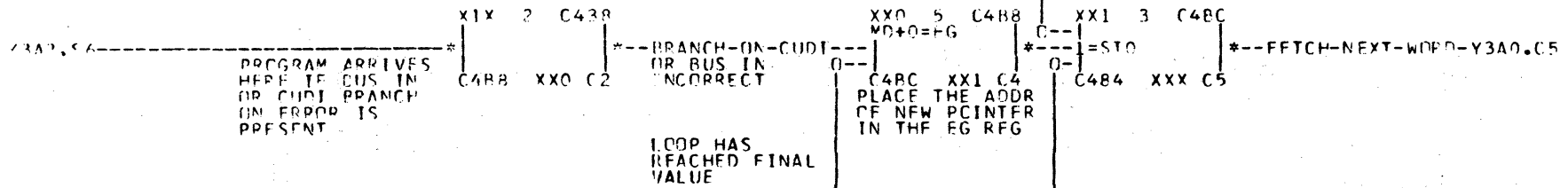
EX: 40 TAG BUS SEQUENCE
 18 BUS IN CHECK
 1C CUDI CHECK
 84 WAIT LOOP
 00 END SECTION ROUTINE OR START LOOP
 2C CONDITIONAL BRANCH IF CUDI IS NOT IN EXPECTED STATE
 2R CONDITIONAL BRANCH IF BUS IN IS NOT IN EXPECTED STATE.

Y3A0 DYNAMIC POWER UP TEST CONTROL ENTRY



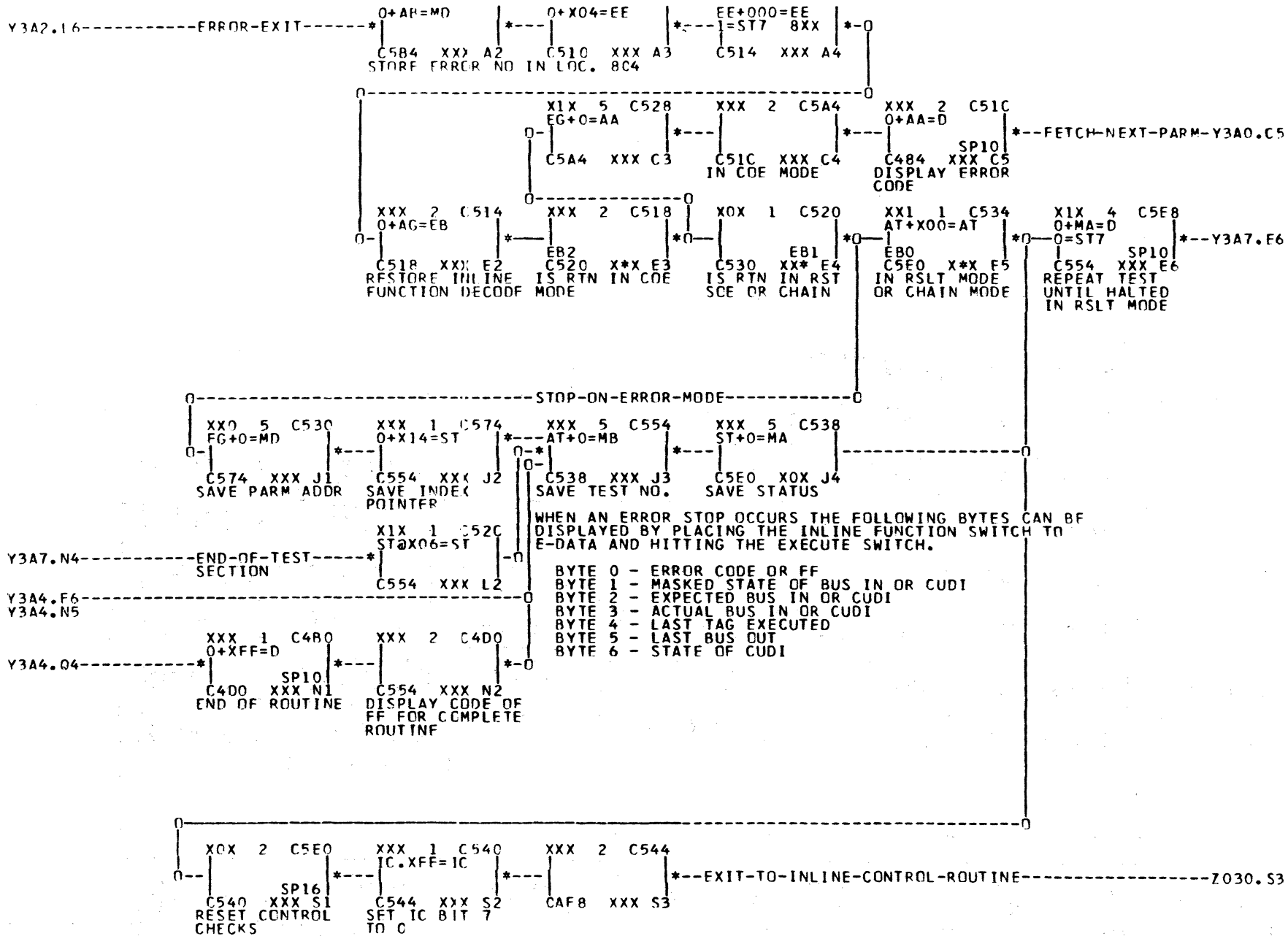
Y3A2 DYNAMIC POWER UP TEST
PROCESS PARM WORD

Y3A2.N6
Y3A2.O6
Y3A2.N6



THE SECOND 2 HEX DIGITS IN THE PARAM WORD DETERMINE THE ROUTINE TO BRANCH TO

Y3A4 DYNAMIC POWER UP TEST LOOPING + BRANCHING



WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO E-DATA AND HITTING THE EXECUTE SWITCH.

- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN OR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN OR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI

Y3A7 DYNAMIC POWER UP TEST
ERROR ≠ NORMAL EXITS

XXX D C600
00002290
XXX G0

XXX D C604
90909090
XXX F1

XXX D C608
80808080
XXX C2

XXX D C60C
0004040C
XXX C3

XXX D C610
14000818
XXX C4

XXX D C614
1010101C
XXX C5

XXX D C618
1010101C
XXX C6

XXX D C61C
10100020
XXX C7

XXX D C620
2400101P
XXX F0

XXX D C624
28200030
XXX F1

XXX D C628
343P3C40
XXX E2

XXX D C62C
4448144C
XXX E3

XXX D C630
5054181C
XXX F4

XXX D C634
1000585C
XXX F5

XXX D C638
00604014
XXX F6

XXX D C63C
4814181C
XXX F7

XXX D C640
1040644P
XXX G0

XXX D C644
403000DC
XXX G1

XXX D C648
40601870
XXX G2

XXX D C64C
48747848
XXX G3

XXX D C650
F8187040
XXX G4

XXX D C654
70808488
XXX G5

XXX D C658
84444030
XXX G6

XXX D C65C
88903018
XXX G7

XXX D C660
70808498
XXX J0

XXX D C664
88908808
XXX J1

XXX D C668
08080808
XXX J2

XXX D C66C
08080808
XXX J3

XXX D C670
A840843C
XXX J4

XXX D C674
1090349C
XXX J5

XXX D C678
40083854
XXX J6

XXX D C67C
48AC3480
XXX J7

XXX D C680
50844410
XXX I0

XXX D C684
880880CC
XXX L1

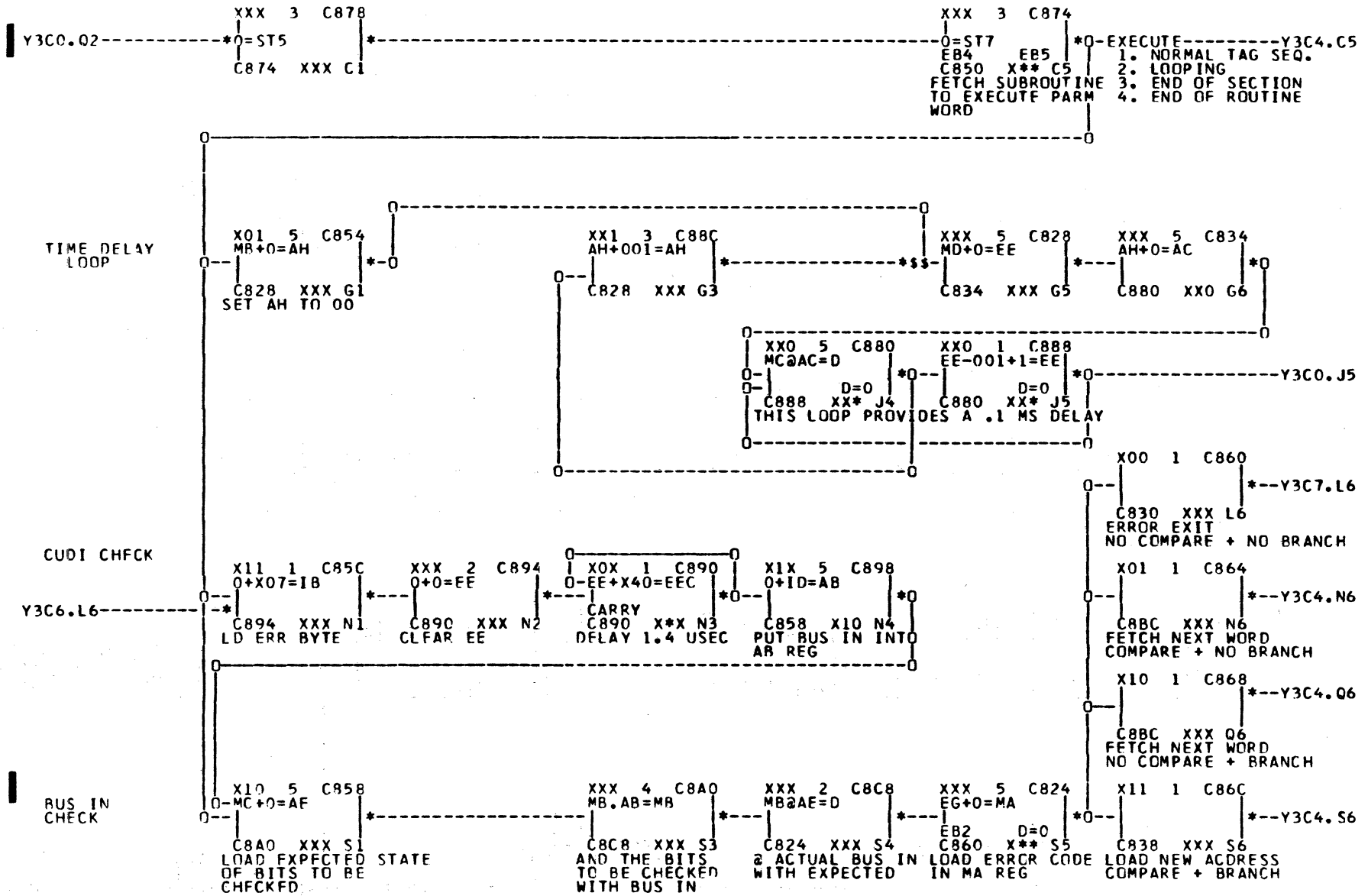
XXX D C688
C4080E4
XXX L2

XXX D C68C
00FFFFFF
XXX L3

Y3AR DYNAMIC POWER UP

XXX D C700 402C0310	XXX D C704 402C0A03	XXX D C708 18FF0000	XXX D C70C 402C0008	XXX D C710 18020000	XXX D C714 28020023	XXX D C718 00D40000	XXX D C71C 8400FFFF
XXX A0 SELECT SPARE	XXX A1 CONTROL RESET	XXX A2 ALL ZEROES?	XXX A3 CHECK STATUS	XXX A4 BIT 6 OFF ?	XXX A5 BIT 6 ON?	XXX A6 INDEX =00	XXX A7 WAIT 25.5 MS
XXX D C720 28020023	XXX D C724 40DC0014	XXX D C728 8400FAFF	XXX D C72C 40DC0024	XXX D C730 18202000	XXX D C734 18400000	XXX D C738 402C0020	XXX D C73C 18040400
XXX C0 IF BUS IN 6 AND JUMP LOOP	XXX C1 LOOP TO BEGIN TILL INDEX = F	XXX C2 25 MS DELAY	XXX C3 1 SEC LOOP	XXX C4 BIT 2 ON?	XXX C5 BIT 1 OFF?	XXX C6 MONITOR MODE	XXX C7 BIT 5 ON ?
XXX D C740 402C0010	XXX D C744 18010100	XXX D C748 402C0004	XXX D C74C 402C0400	XXX D C750 18100000	XXX D C754 18040000	XXX D C758 2840403A	XXX D C75C 40DC5533
XXX E0 MONITOR STATE	XXX E1 BIT 7 ON?	XXX E2 FAULT CHECK	XXX E3 REQUEST STATUS	XXX E4 BIT 3 OFF ?	XXX E5 BIT 5 OFF ?	XXX E6 IF SPEED JUMP LOOP	XXX E7 LOOP 10 SEC
XXX D C760 18404000	XXX D C764 28340446	XXX D C768 40DC003F	XXX D C76C 18380800	XXX D C770 840028FF	XXX D C774 28020051	XXX D C778 40DCFF4R	XXX D C77C 28101057
XXX G0 BIT 1 ON ?	XXX G1 IF BUSH CYCLE JUMP LOOP	XXX G2 LOOP 12 SEC	XXX G3 BIT 4 ON ?	XXX G4 DELAY 4 MS	XXX G5 IF HD LOADED JUMP LOOP	XXX G6 LOOP FOR 1 SEC	XXX G7 IF END FOT FM JUMP LOOP
XXX D C780 40DCFA52	XXX D C784 18101000	XXX D C788 402C0040	XXX D C78C 18340400	XXX D C790 18080800	XXX D C794 28010066	XXX D C798 40DCFA60	XXX D C79C 18010000
XXX J0 LOOP 1 SEC	XXX J1 BIT 3 ON ?	XXX J2 SERVO POINTS	XXX J3 BIT 5 ON ?	XXX J4 BIT 4 ON ?	XXX J5 IF FOT NOT JUMP LOOP	XXX J6 LOOP FOR 1 SE	XXX J7 BIT 7 OFF
XXX D C7A0 2840404R	XXX D C7A4 40DCFA6A	XXX D C7A8 8400ACFF	XXX D C7AC 18300000	XXX D C7B0 18200000	XXX D C7B4 18080000	XXX D C7B8 402C0502	XXX D C7BC 402C0504
XXX L0 IF CYL PULSE JUMP LOOP	XXX L1 LOOP FOR 1 SEC	XXX L2 WAIT 2.2 MS	XXX L3 BIT C OFF ?	XXX L4 BIT 2 OFF ?	XXX L5 BIT 4 OFF	XXX L6 READ CAR	XXX L7 READ HAR
XXX D C7C0 181F0000	XXX D C7C4 402C0510	XXX D C7C8 402C0508	XXX D C7CC 00480000	XXX D C7D0 00A40000	XXX D C7D4 187F0000	XXX D C7D8 18000000	XXX D C7DC 18606000
XXX N0 BIT 3-7 OFF ?	XXX N1 READ DIFF	XXX N2 READ HI DIFF/CY	XXX N3 END OF SECTION	XXX N4 END OF ROUTINE	XXX N5	XXX N6	XXX N7
XXX D C7E0 402C0A03	XXX D C7E4 187F0800	XXX D C7E8 18C2000C					
XXX O0	XXX O1	XXX O2					

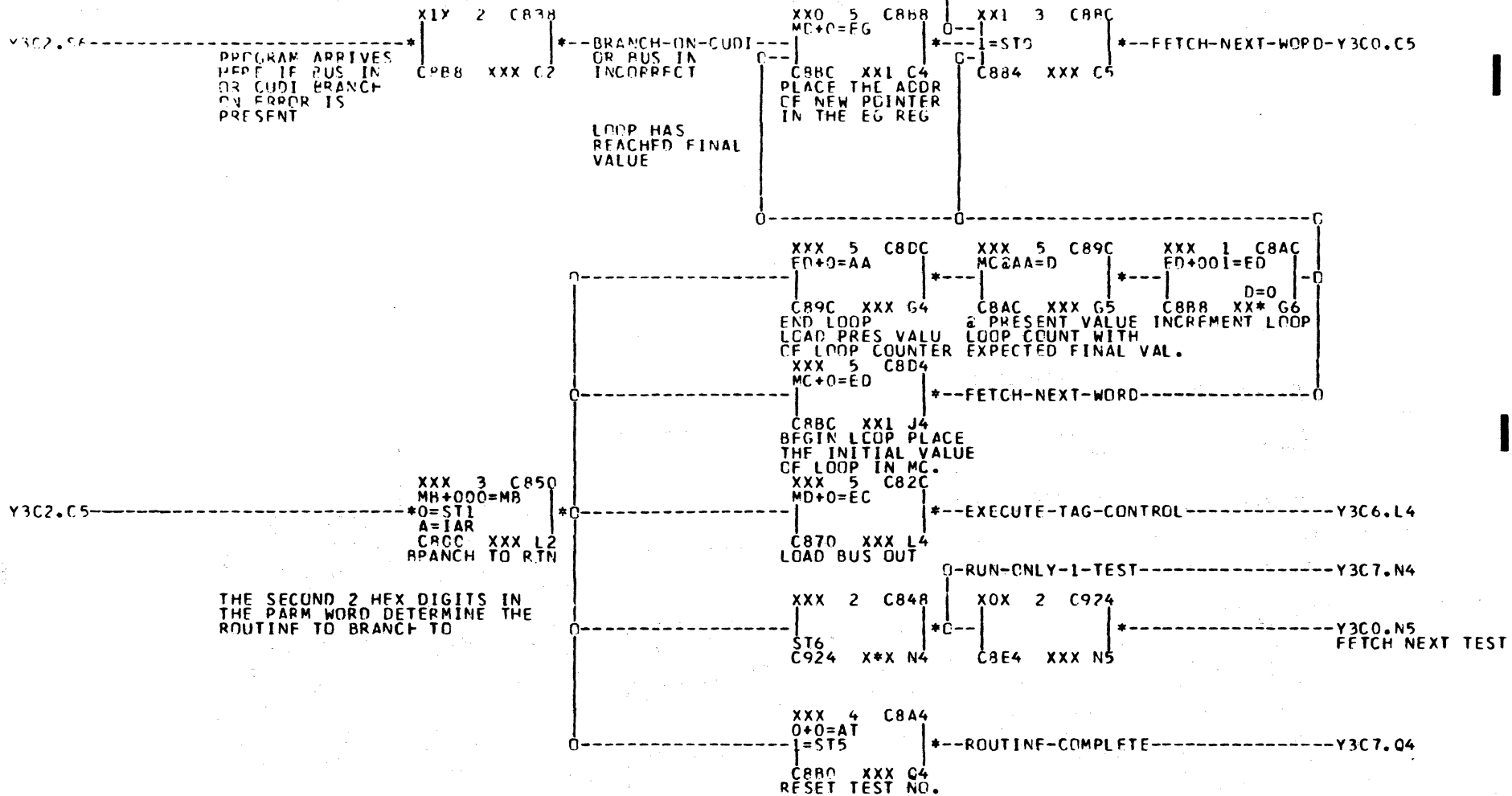
Y3R0 DYNAMIC POWER UP



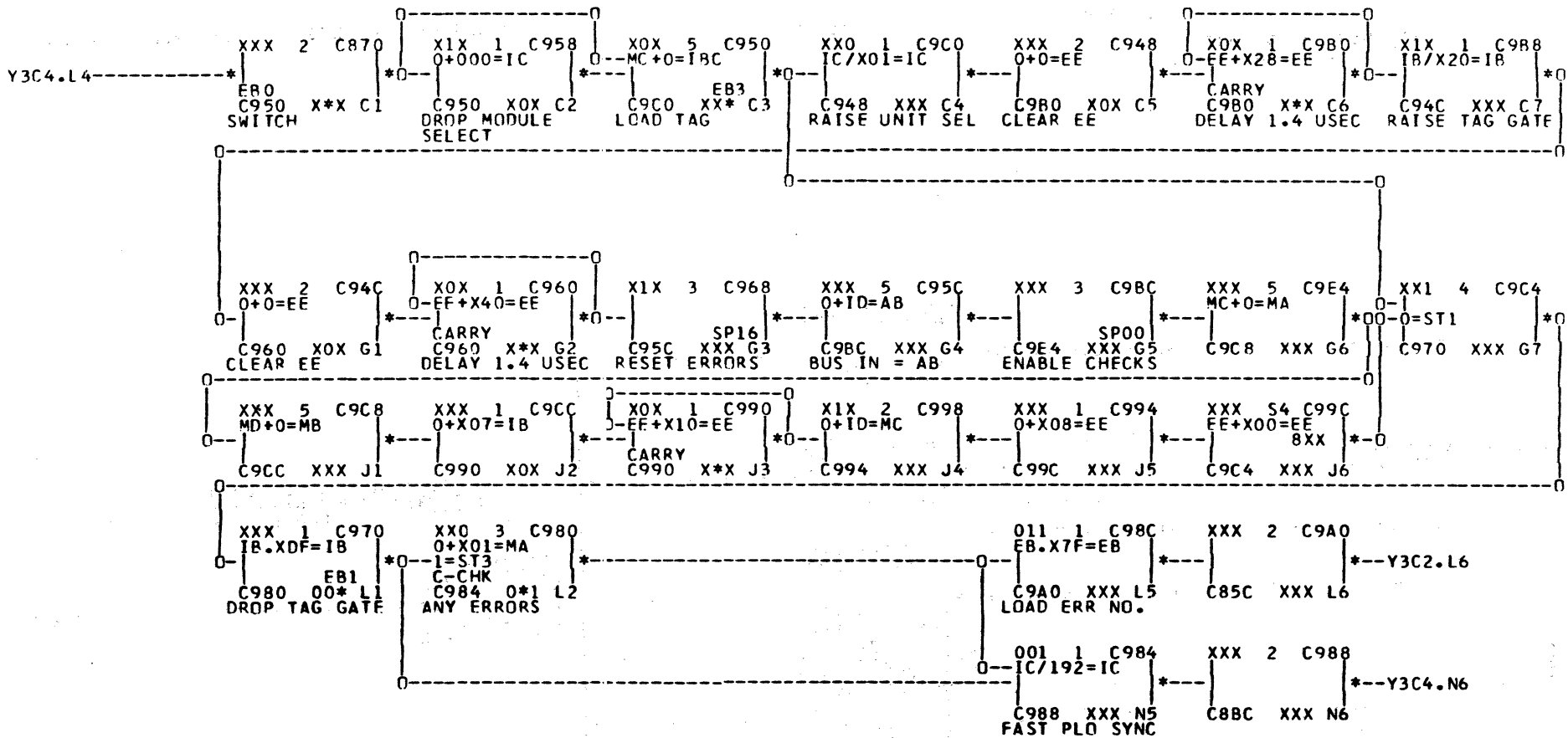
Y3C7.S3

Y3C2 DYNAMIC RTZS TEST
PROCESS PARM WORD

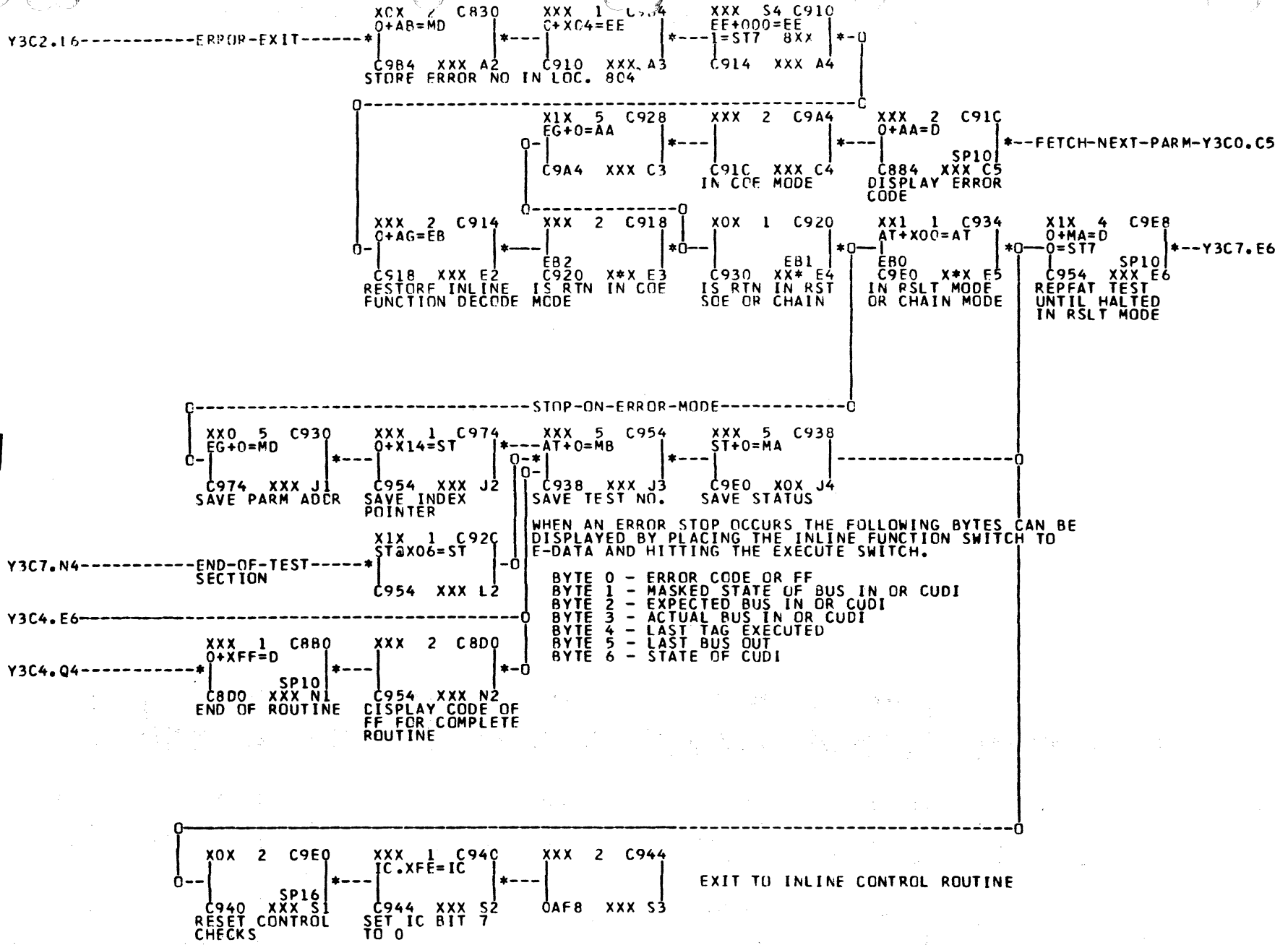
Y3C2.NA
Y3C6.N6



Y3C4 DYNAMIC RTZS TEST
LOOPING + BRANCHING



Y3C6 DYNAMIC RTZS TEST
PARAMETER PROCESSING



WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO E-DATA AND HITTING THE EXECUTE SWITCH.

- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN OR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN OR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI

XXX D CA00 0C0C5C5C XXX CO	XXX D CA04 5C5C5C5C XXX CI	XXX D CA08 5C5C5C5C XXX C2	XXX D CA0C 0004080C XXX C3	XXX D CA10 1014182C XXX C4	XXX D CA14 1C202428 XXX C5	XXX D CA18 2C0C3034 XXX C6	XXX D CA1C 383C4044 XXX C7
XXX D CA20 1C343824 XXX E0	XXX D CA24 484C2024 XXX E1	XXX D CA28 28183438 XXX E2	XXX D CA2C 24585C7C XXX E3	XXX D CA30 3C6020BC XXX E4	XXX D CA34 24B86C2C XXX E5	XXX D CA38 1C3C200C XXX E6	XXX D CA3C 30743C7C XXX E7
XXX D CA40 786C7C20 XXX G0	XXX D CA44 808470C0 XXX G1	XXX D CA48 3C8824B0 XXX G2	XXX D CA4C 8C8470B4 XXX G3	XXX D CA50 90809498 XXX G4	XXX D CA54 9C80A02C XXX G5	XXX D CA58 8004C4C8 XXX G6	XXX D CA5C ABFFFFFF XXX G7

Y3C8 DYNAMIC RTZS

PUB. NO. 70631200

DOC NO. 73687900

2-340

REVISION K

XXX D CB00
402C0310

XXX A0
SELECT SPARE

XXX D CB20
18080800

XXX C0
BIT 4 ON ?

XXX D CB40
28040021

XXX E0
IF NOT DIBITS
GO TO

XXX D CB60
18202000

XXX G0
BIT 2 ON?

XXX D CB80
18020000

XXX J0
BIT 6 OFF

XXX D CBA0
402C0508

XXX L0
READ HI DIF/CY

XXX D CBC0
18010000

XXX N0

XXX D CB04
402C0A03

XXX A1
CONTROL RESET
RESET INTERRUPT

XXX D CB24
402C0D10

XXX C1
MONITOR STATE

XXX D CB44
40DCFF1C

XXX E1
LOOP TO
TILL INDEX=FF

XXX D CB64
18040400

XXX G1
BIT 5 ON

XXX D CB84
18800000

XXX J1
BIT 0 OFF

XXX D CBA4
00480000

XXX L1
END OF SECTION

XXX D CBC4
187FC800

XXX N1

XXX D CB08
18FF0800

XXX A2
ALL BITS OFF ?

XXX D CB28
18010100

XXX C2
BIT 7 ON ?

XXX D CB48
28080827

XXX E2
IF REV EQT
JUMP LOOP

XXX D CB68
18080000

XXX G2
BIT 4 OFF

XXX D CB88
18101000

XXX J2
BIT 3 ON

XXX D CBA8
00A40000

XXX L2
END OF ROUTINE

XXX D CBC8
8400A0FF

XXX N2

XXX D CB0C
402C0D08

XXX A3
CHECK STATUS

XXX D CB2C
18100000

XXX C3
BIT 3 OFF ?

XXX D CB4C
40DCFF22

XXX E3
LOOP TO BEGIN

XXX D CB6C
402C0400

XXX G3
REQUEST STATU>

XXX D CB8C
402C0D04

XXX J3
SAFETY CHECK

XXX D CBAC
18FF0800

XXX L3

XXX D CBCC
187FC800

XXX N3

XXX D CB10
18EF6000

XXX A4
BIT 2 OFF ?

XXX D CB30
18404000

XXX C4
BIT 1 ON ?

XXX D CB50
18010000

XXX E4
BIT 7 OFF

XXX D CB70
18400000

XXX G4
BIT 1 OFF ?

XXX D CB90
402C0502

XXX J4
READ CAR

XXX D CB80
18FF0000

XXX L4

XXX D CBC4
187FC800

XXX N4

XXX D CB14
402C0A08

XXX A5
COMMAND RTZ

XXX D CB34
00D40000

XXX C5
BEGIN INDEX

XXX D CB54
18101000

XXX E5
BIT 3 ON

XXX D CB74
840070FF

XXX G5
DELAY 1.75 MS

XXX D CB94
402C0504

XXX J5
READ HAR

XXX D CBB4
18200000

XXX L5

XXX D CBC8
187FC800

XXX N5

XXX D CB18
18020200

XXX A6
BIT 6 ON ?

XXX D CB38
84000AFF

XXX C6
WAIT 1 MSEC

XXX D CB58
28101030

XXX E6
IF NOT LOAD
JUMP LOOP

XXX D CB78
8400FFFF

XXX G6
WAIT 2.2 MS

XXX D CB98
181F0000

XXX J6
BIT 3-7 OFF

XXX D CBB8
181F1F00

XXX L6

XXX D CBCC
18000000

XXX N6

XXX D CB1C
18040000

XXX A7
BIT 5 OFF ?

XXX D CB3C
402C0D40

XXX C7
SERVO POINTS

XXX D CB5C
40DCFF2B

XXX E7
LOOP TO BEGIN

XXX D CB7C
18101000

XXX G7
BIT 3 ON

XXX D CB9C
402C0510

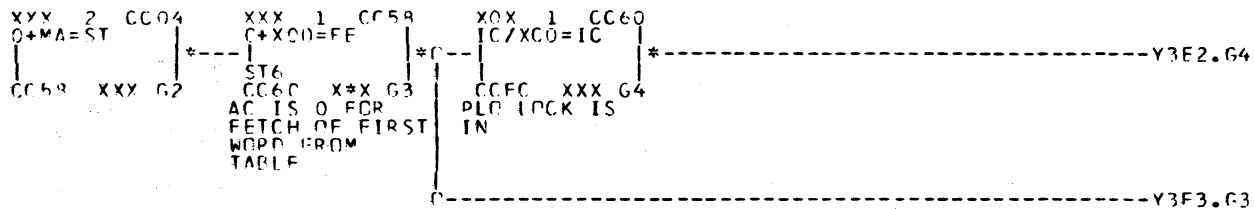
XXX J7
READ DIFF

XXX D CBB8
18000000

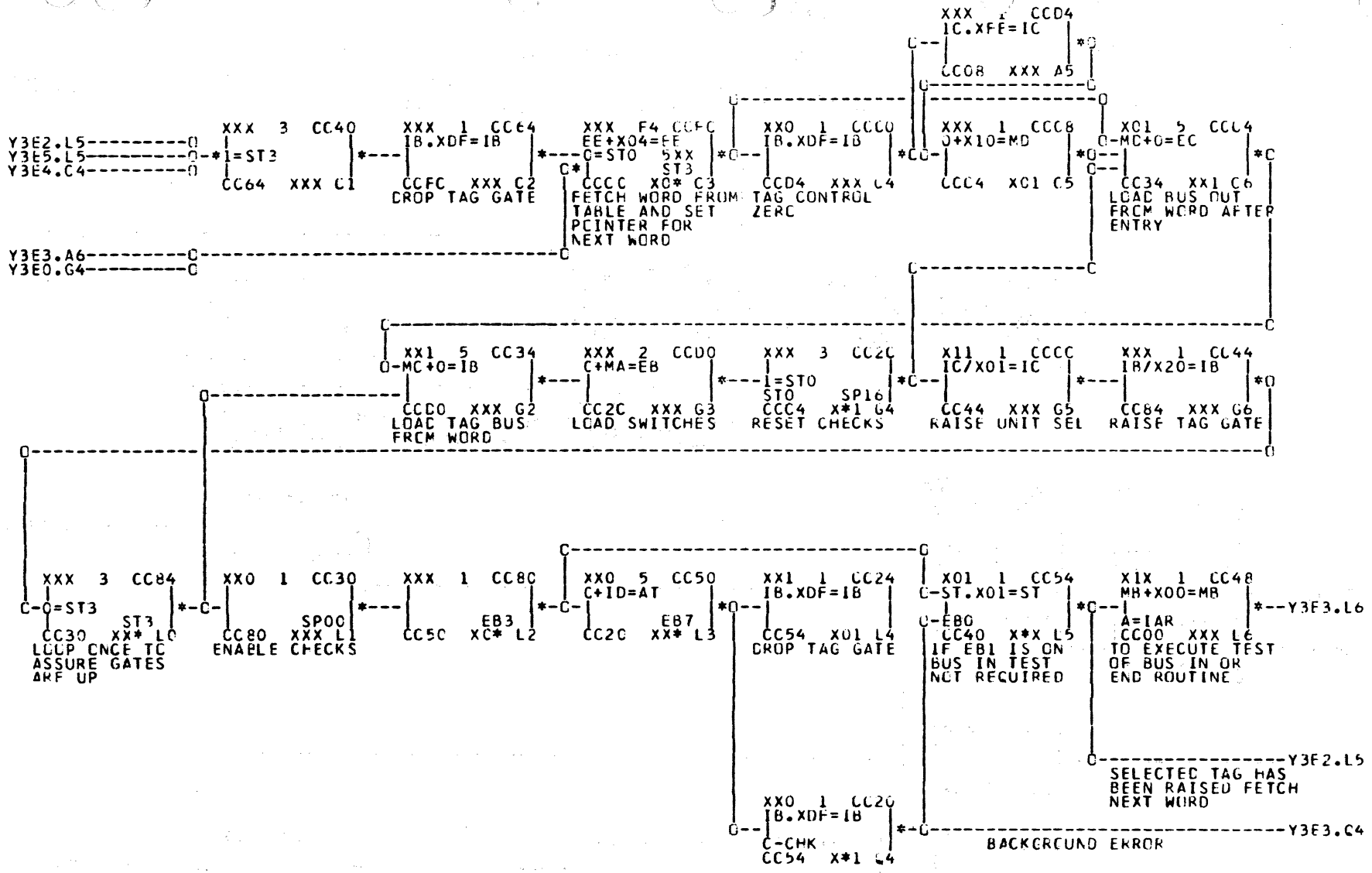
XXX L7

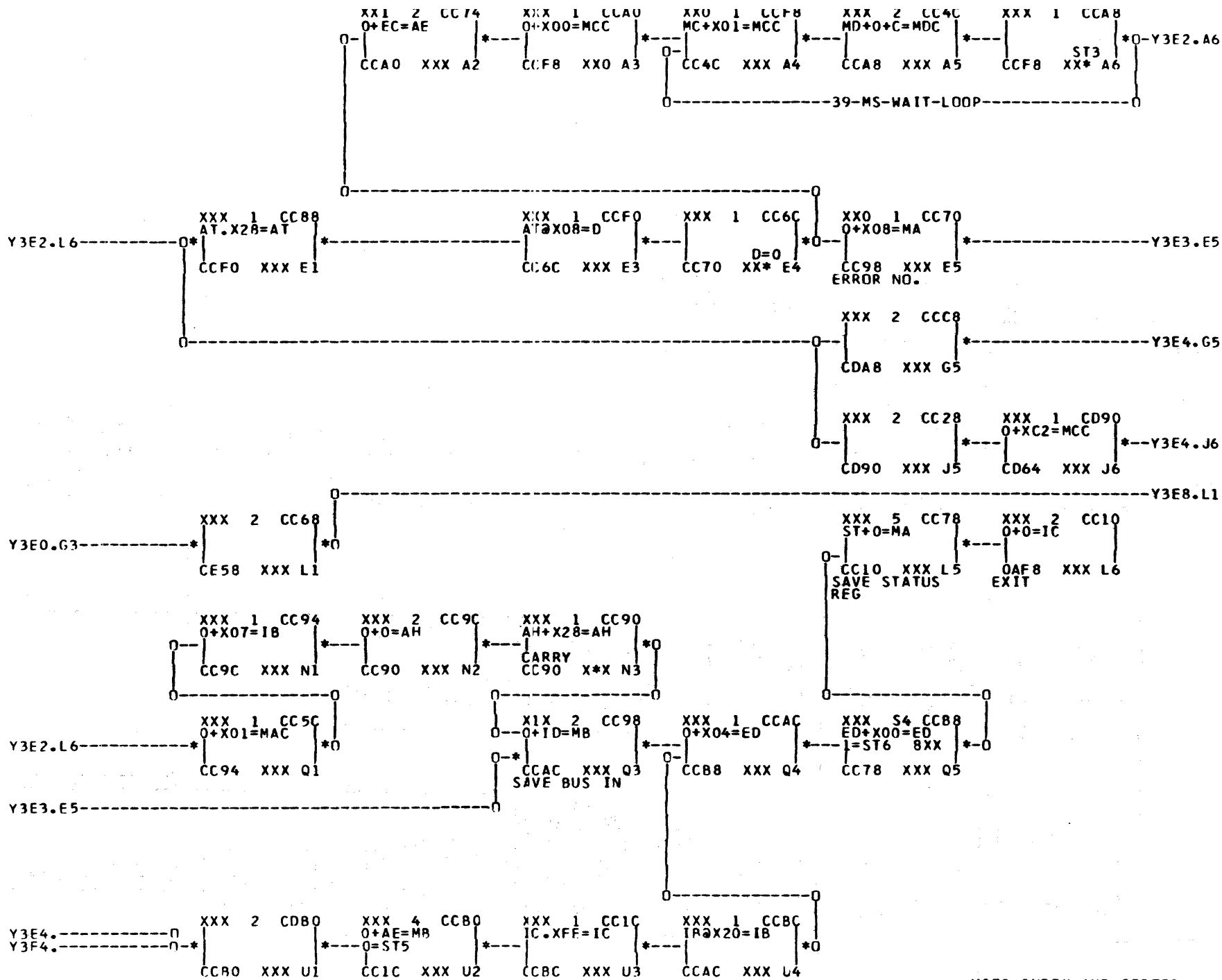
XXX D CBCC
18000000

XXX N7

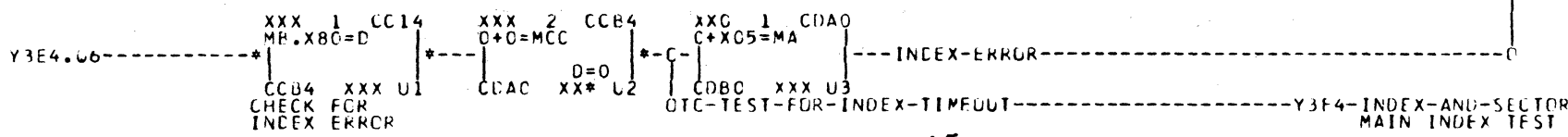
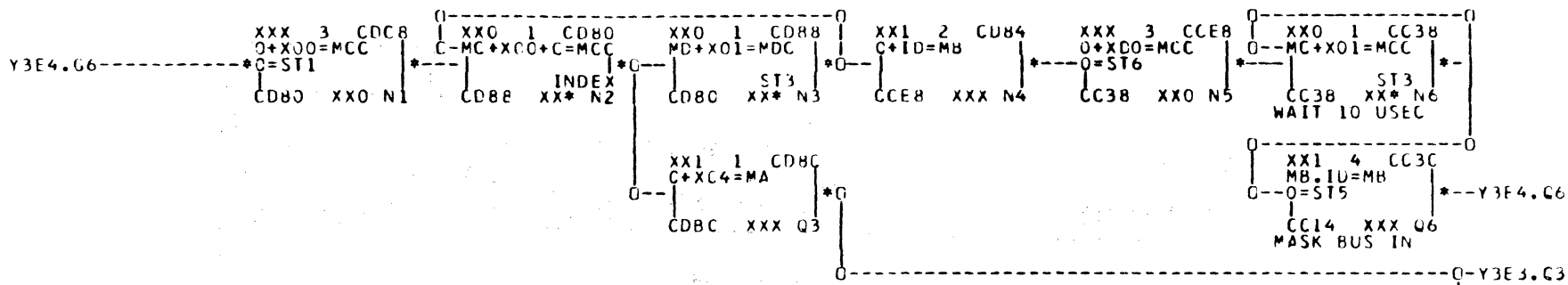
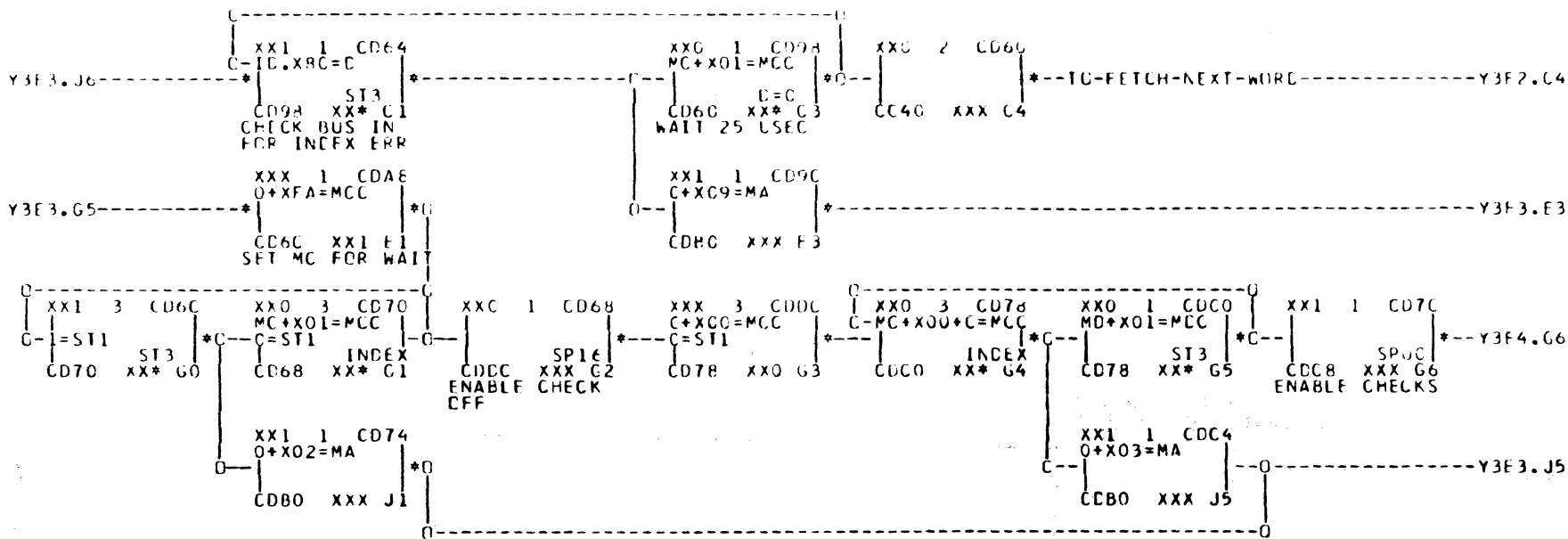


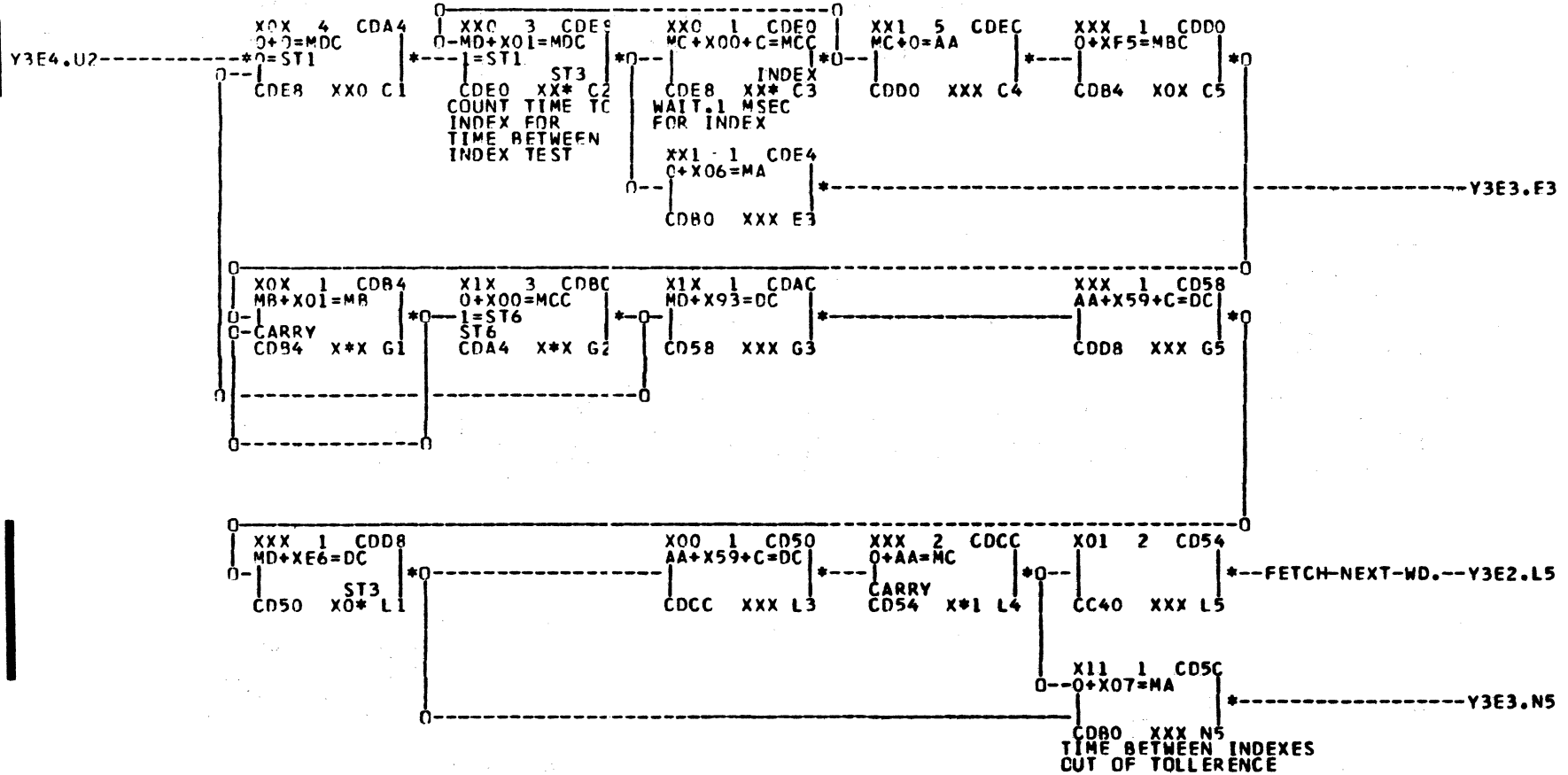
Y3F0 INDEX AND SECTOR
ENTRY.





Y3E3 INDEX AND SECTOR
EXIT FUNCTION





Y3E5 INDEX AND SECTOR
MAIN INDEX TEST

PUR NC. 70631200

DOC NO. 73687900

2-346

REVISION F

XXX D CD00
010C0310
|
XXX C1
SFLECT SPARE

XXX D CD04
01000A03
|
XXX C2
RESET DRIVE

XXX D CD08
01000B01
|
XXX C3
OFFSET RESET

XXX D CD0C
80880400
|
XXX C4
CHECK STATUS

XXX D CD10
90C80C00
|
XXX C5
OPERATE UP
INDEX CHECKS

XXX D CD14
01000600
|
XXX C6
CAR TO ZERO

XXX D CD18
807409E0
|
XXX G1
DIFF TO 224
AND WAIT

XXX D CD1C
80A00A20
|
XXX G2
OFFSET START
AND WAIT

XXX D CD20
90C80C00
|
XXX G3
OPERATE UP AND
INDEX CHECKS

XXX D CD24
80740960
|
XXX G4
DIFF TO 96
AND WAIT

XXX D CD28
90C80C00
|
XXX G5
OPERATE UP
AND INDEX CHECK

XXX D CD2C
80A00B01
|
XXX G6
OFFSET RESET
AND WAIT

XXX D CD30
00000E40
|
XXX L1
DIAG 4 UP.

XXX D CD34
81A00608
|
XXX L2
CAR TO 08
AND WAIT

XXX D CD38
90280C01
|
XXX L3
READ SECTOR

XXX D CD3C
81A00A03
|
XXX L4
RESET + WAIT

XXX D CD40
80680A03
|
XXX L5
RESET + END

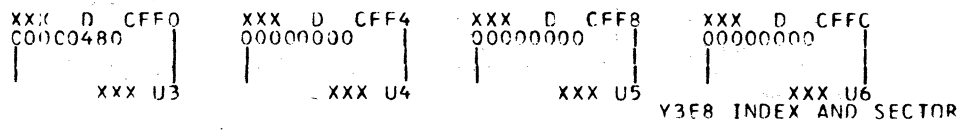
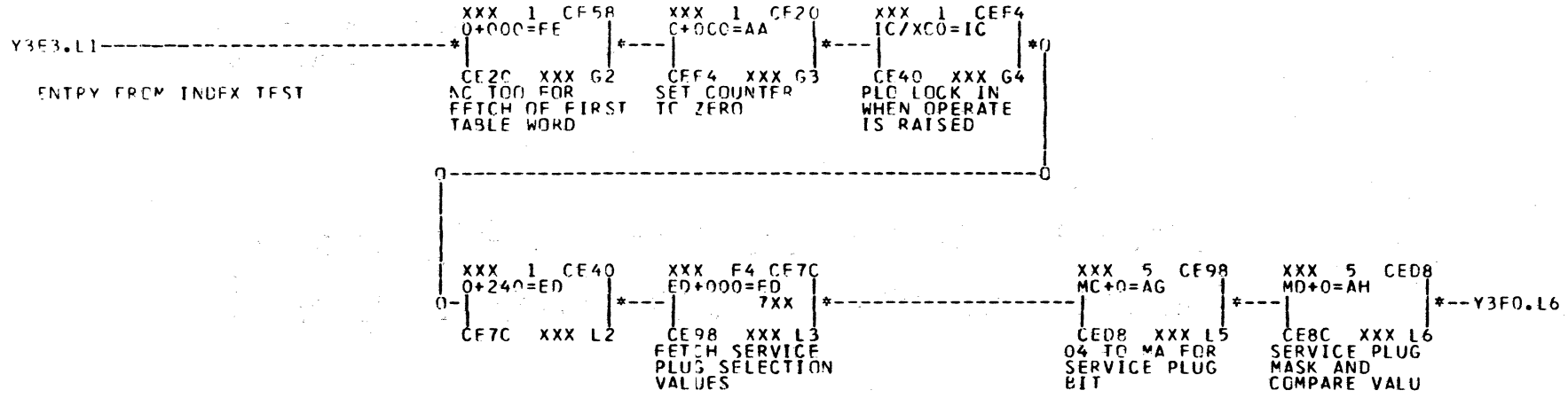
WORD FORMAT:

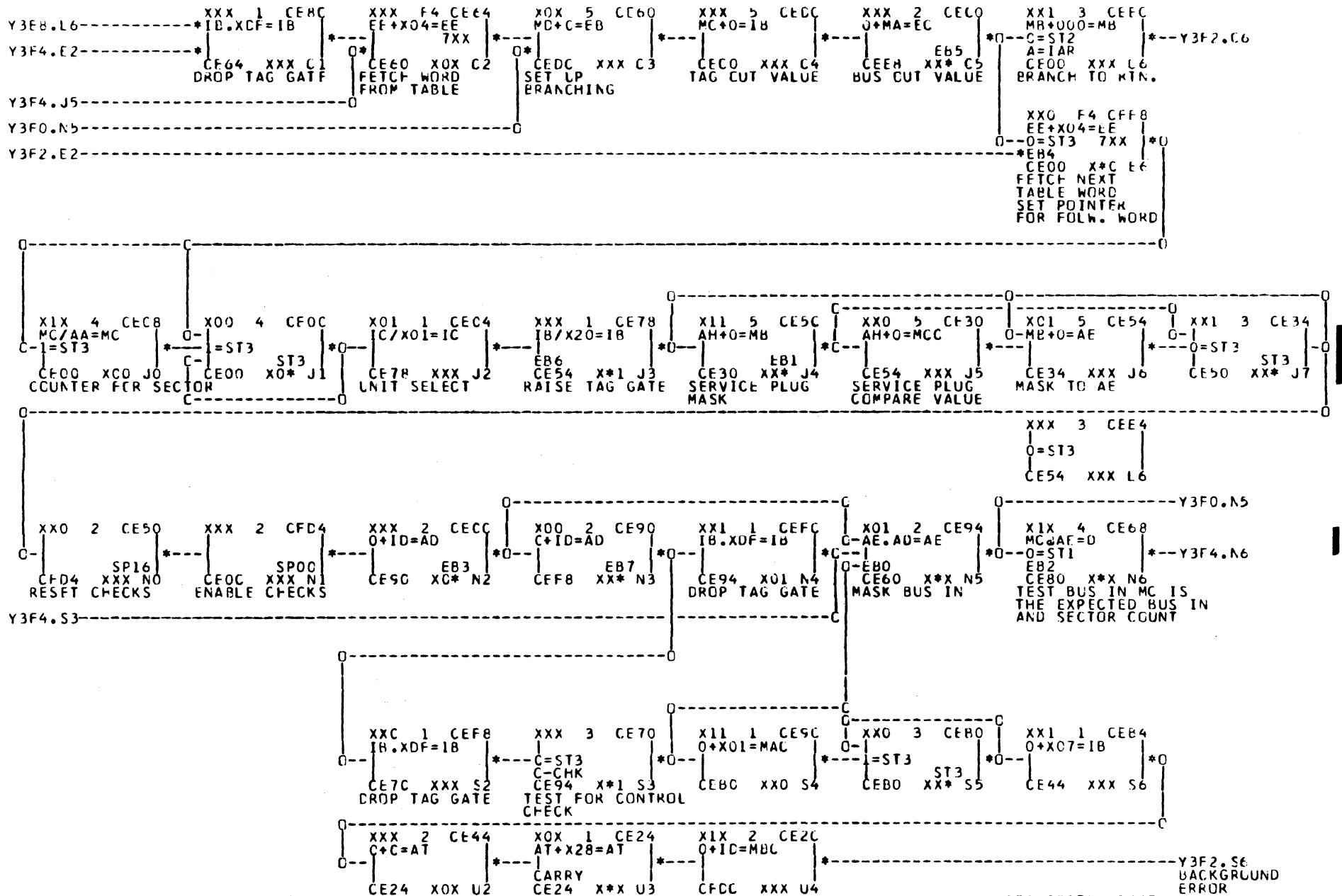
BYTE 0 - EB REGISTER

BYTE 1 - IAR ADDRESS

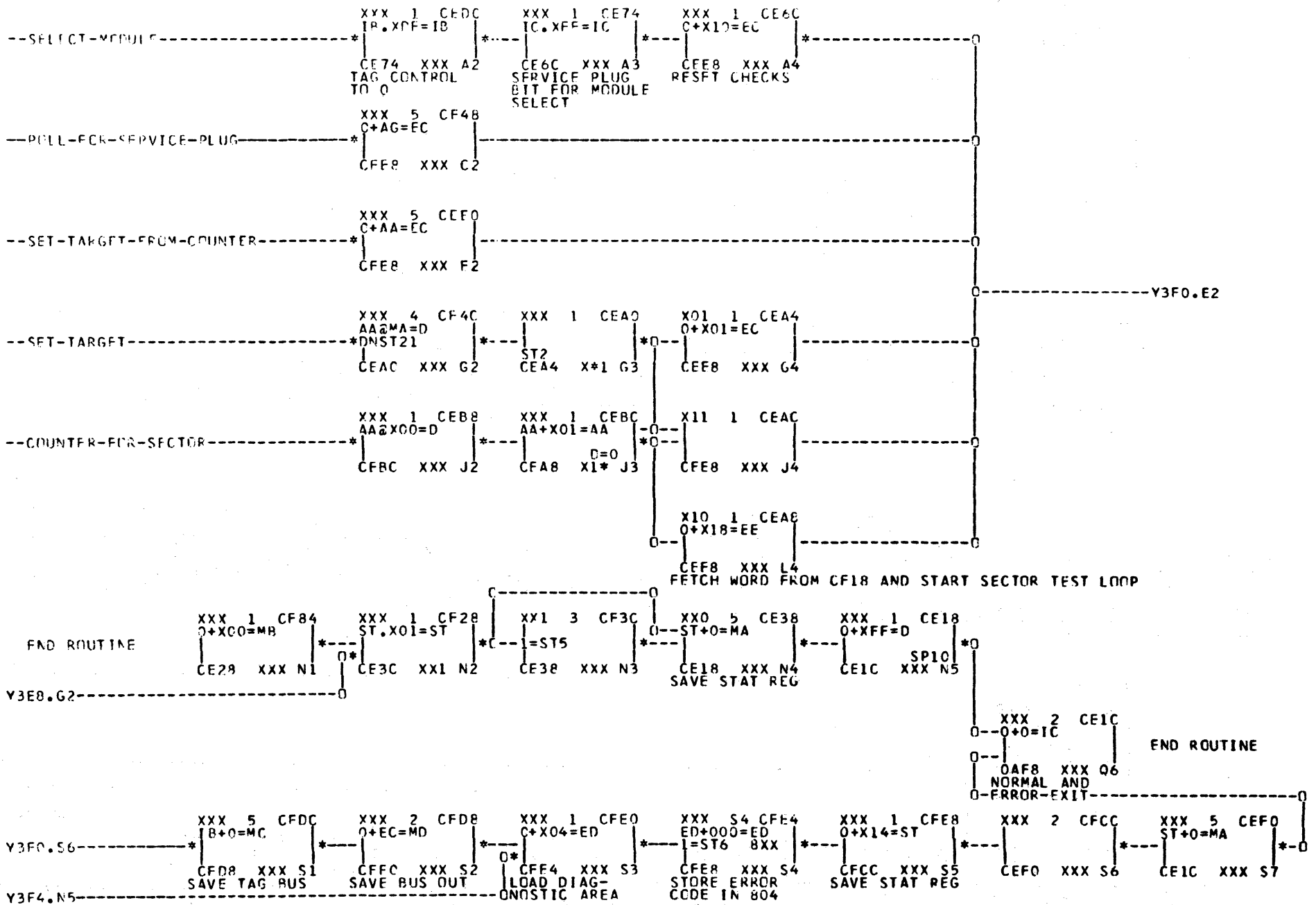
BYTE 2 - TAG TO BE TAISE

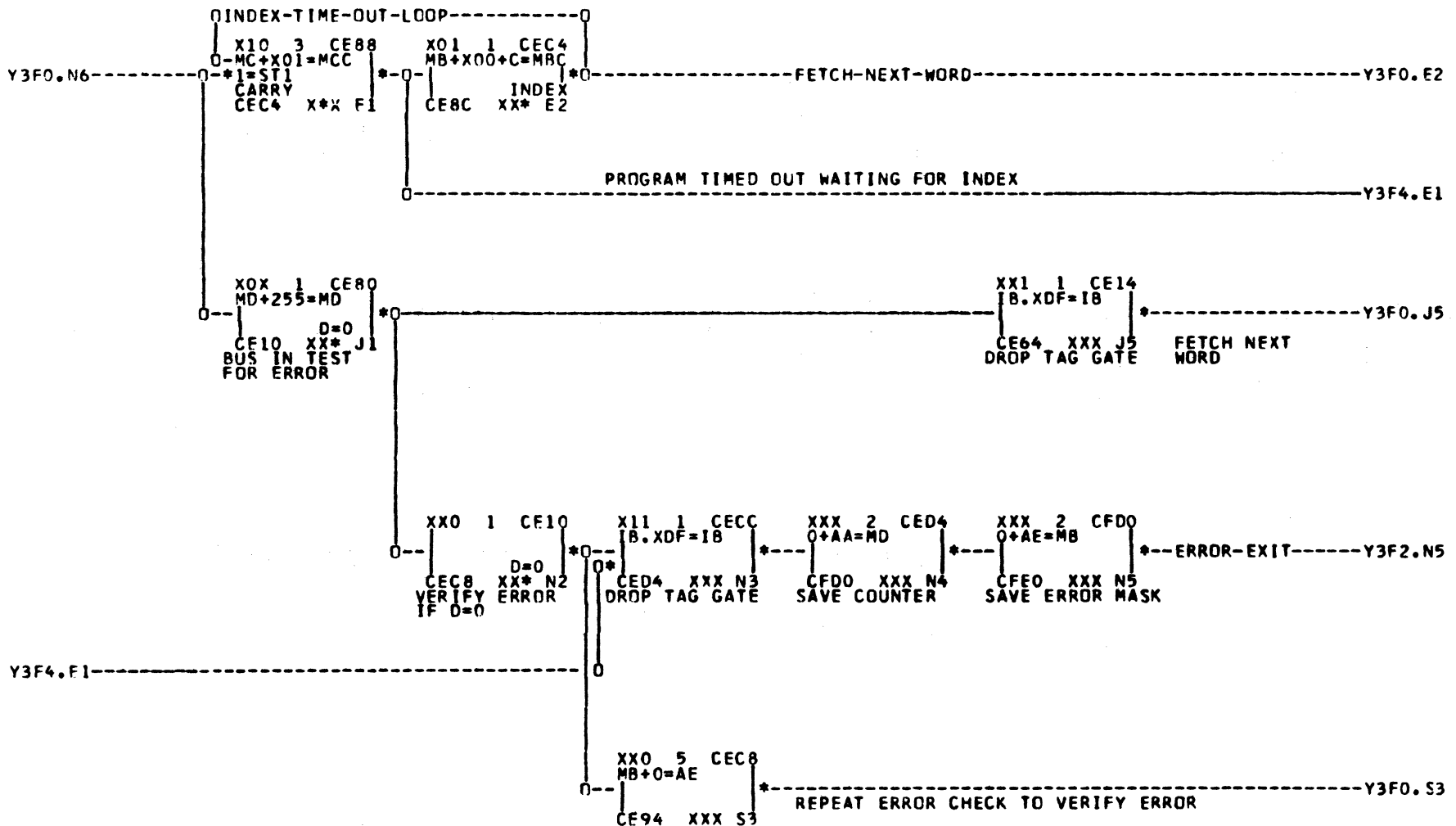
BYTE 3 - BUS OUT VALUE





Y3F0 SECTOR TEST TAG SEQUENCING





Y3F4 INDEX AND SECTOR
EXIT FUNCTION

XXX D CF00 00000305	XXX D CF04 03000A01	XXX D CF08 C0000480	XXX D CF0C 10280801	XXX D CF10 00000CB0	XXX D CF14 14000000	XXX D CF18 00E00104
XXX C1 SELFCY SERVICE MODULE EB 5-7 ON	XXX C2 CONTROL RESET RESEY INTRDS EB7 ON	XXX C3 CHECK STATUS E80 - ON	XXX C4 ERROR NO. 10	XXX C5 OPERATE UP	XXX C6 ERROR NO. 14	XXX C7 START LOOP SET TARGET FROM COUNTER EB5 ON

XXX D CF1C 01000588	XXX D CF20 187F0001	XXX D CF24 00C00100	XXX D CF28 01000C00	XXX D CF2C 01000588	XXX D CF30 1C7F0001	XXX D CF34 01000580
XXX G1 CHECK TARGET EB 0-4 ON	XXX G2 ERROR NO. 18	XXX G3 SET TARGET EQUAL 0	XXX G4 OPERATE UP WHT READ SECTOR	XXX G5 CHECK TARGET EB 0-4 ON	XXX G6 ERROR NO. 1C	XXX G7 CHECK TARGET E80 ON

XXX D CF38 20800001	XXX D CF3C 00000480	XXX D CF40 24010101	XXX D CF44 00480286	XXX D CF48 28000001	XXX D CF4C 01000A00	XXX D CF50 01000580
XXX L1 ERROR NO. 20	XXX L2 CHECK STATUS EB0 ON	XXX L3 ERROR NO. 24	XXX L4 POLL FOR SER- VICE PLUG. EB0-5-6 ON	XXX L5 ERROR NO. 28	XXX L6 RESET INTRPS	XXX L7 CHECK TARGET EB0 - ON

XXX D CF54 2C7F0001	XXX D CF58 00000480	XXX D CF5C 30010001	XXX D CF60 004C0104	XXX D CF64 004802C6	XXX D CF68 34000001	XXX D CF6C 7F4C0104
XXX Q1 ERROR NO. 2C	XXX Q2 CHECK STATUS EB0 ON	XXX Q3 ERROR NO. 30	XXX C4 TARGET = 0 EB5 ON	XXX Q5 POLL FOR SERVICE EB 0-1-5-6	XXX Q6 ERROR NO. 36	XXX Q7 SET TAR = 1 EB 5 CN

WORD FORMAT

BYTE 0	=	BUS OUT	OR	ERROR NO.
BYTE 1	=	IAR	OR	ERROR MASK
BYTE 2	=	TAG	OR	COMPR VALUE
BYTE 3	=	EB	OR	VERIFY ERROR BIT

Y3F6 INDEX AND SECTOR
TAG TABLE PG. 1

70631200

DNC NO. 7368790

2-352

REVISION

A

XXX D CF70
004802C6
|
XXX C1
POLL FOR SERVICE ERROR NO. 38
EBO-1-5-6

XXX D CF74
38000001
|
XXX C2
POLL FOR SERVICE ERROR NO. 38

XXX D CF78
C1CC0C00
|
XXX C3
OPERATE UP
WITH READ
SECTOR

XXX D CF7C
01000588
|
XXX C4
CHECK TARGET
EBO-4

XXX D CF80
3C7F0001
|
XXX C5
CHECK TARGET
EBO - ON

XXX D CF84
01000580
|
XXX C6

XXX D CF88
40808001
|
XXX C7
ERROR NO. 40

XXX D CF8C
00E00104
|
XXX G1
SET TARGET
TO COUNTER

XXX D CF90
004802D6
|
XXX G2
POLL FOR SERVICE ERROR NO. 44
EBO-1-3-5-6

XXX D CF94
44808052
|
XXX G3

XXX D CF98
03880A04
|
XXX G4
CONTROL RESET
LOOP TO CF18
127 TIMES

XXX D CF9C
00D00305
|
XXX G5
SEL MODULE
EB 5-7

XXX D CFA0
03000A01
|
XXX G6
CONTROL RESET
EB7

XXX D CFA4
0C000C80
|
XXX G7
OPERATE UP
EB 0-2-3

XXX D CFA8
48000000
|
XXX L1
ERROR NO. 48

XXX D CFAC
01000R00
|
XXX L2
OFFSET RESET

XXX D CFB0
7F000100
|
XXX L3
SET TARGET
EQ. 127

XXX D CFB4
00000C80
|
XXX L4
OPERATE UP
EB 0-2-3

XXX D CFB8
4C000000
|
XXX L5
ERROR NO. 4C

XXX D CFB C
004802C6
|
XXX L6
POLL FOR SERVICE ERROR NO. 50
EBO-1-5-6

XXX D CFC0
50000001
|
XXX L7

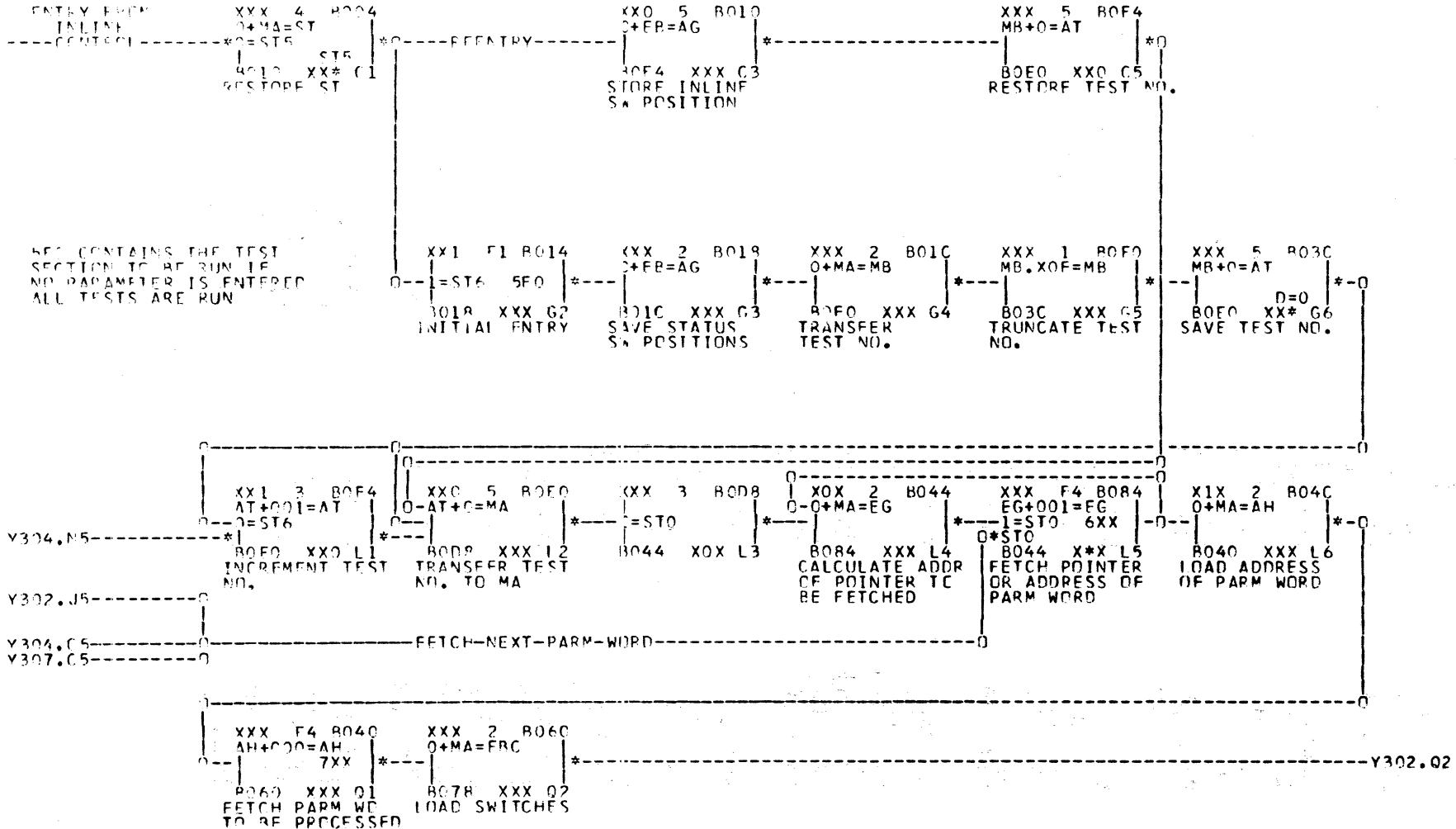
XXX D CFC4
03000A00
|
XXX Q1
CONTROL RESET
END ROUTINE

XXX D CFC8
0G840004
|
XXX Q2

Y3F8 INDEX AND SECTOR
TAG TABLE PG. 2

STEP 1 ON INITIAL ENTRY
STEP 0 ON REENTRY

EXIT BIT 0123
0100 - CHAIN
1000 - STOP ON ERROR
1010 - CONTINUE ON ERROR
1100 - RESULT OR LOOP

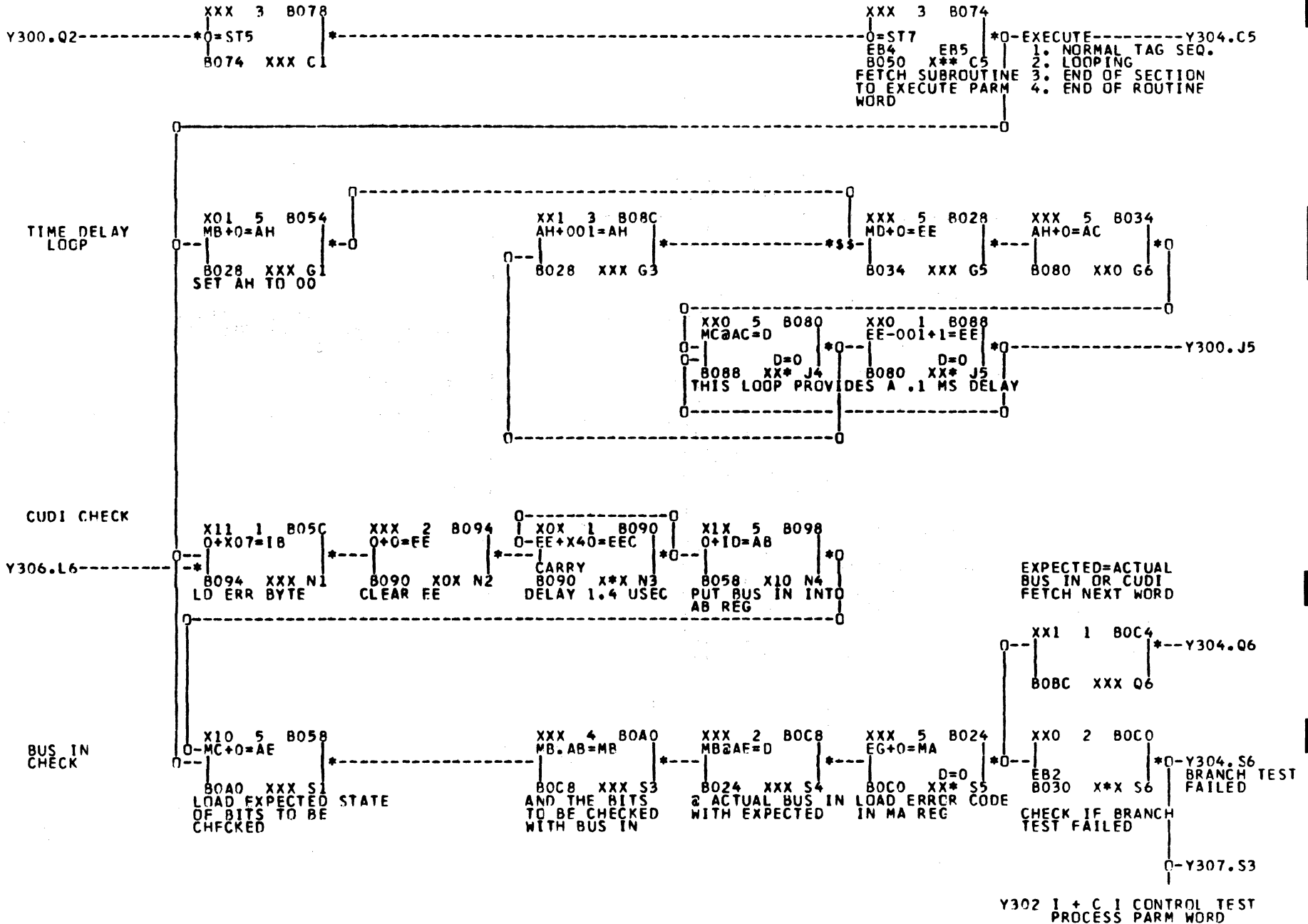


HEX CONTAINS THE TEST SECTION TO BE RUN IF NO PARAMETER IS ENTERED ALL TESTS ARE RUN

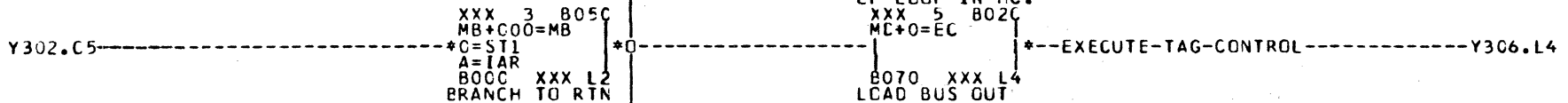
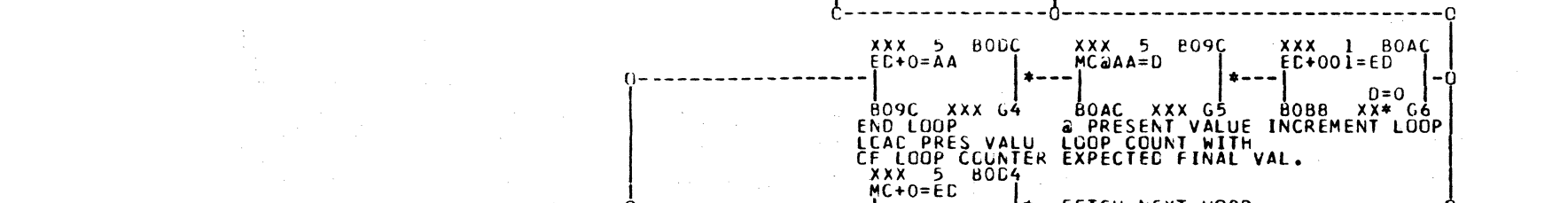
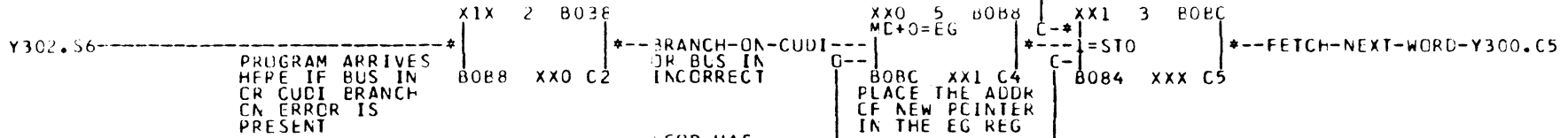
THE FIRST 2 HEX DIGITS OF PARM WORD CONTAIN THAT SUBROUTINE TO BE EXECUTED FOR THAT PARTICULAR PARM WORD

- FX:
- 40 TAG BUS SEQUENCE
 - 18 BUS IN CHECK
 - 1C CUDI CHECK
 - 84 WAIT LOOP
 - 00 END SECTION ROUTINE OR START LOOP
 - 2C CONDITIONAL BRANCH IF CUDI IS NOT IN EXPECTED STATE
 - 28 CONDITIONAL BRANCH IF BUS IN IS NOT IN EXPECTED STATE.

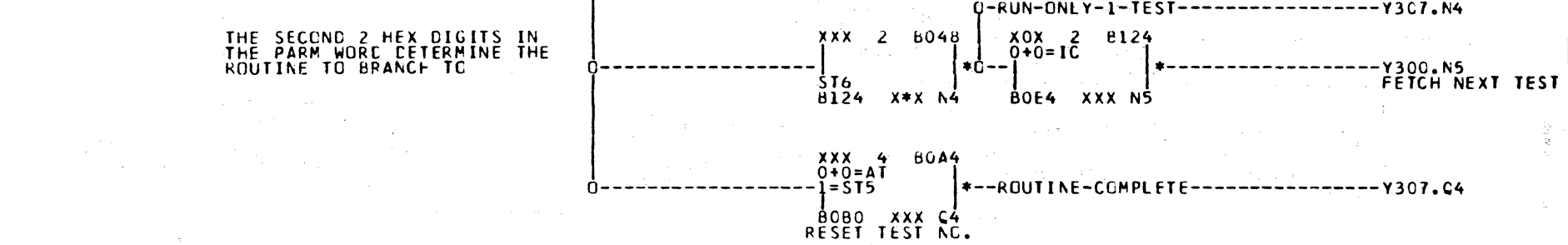
Y300 I + C I TEST CONTROL ENTRY



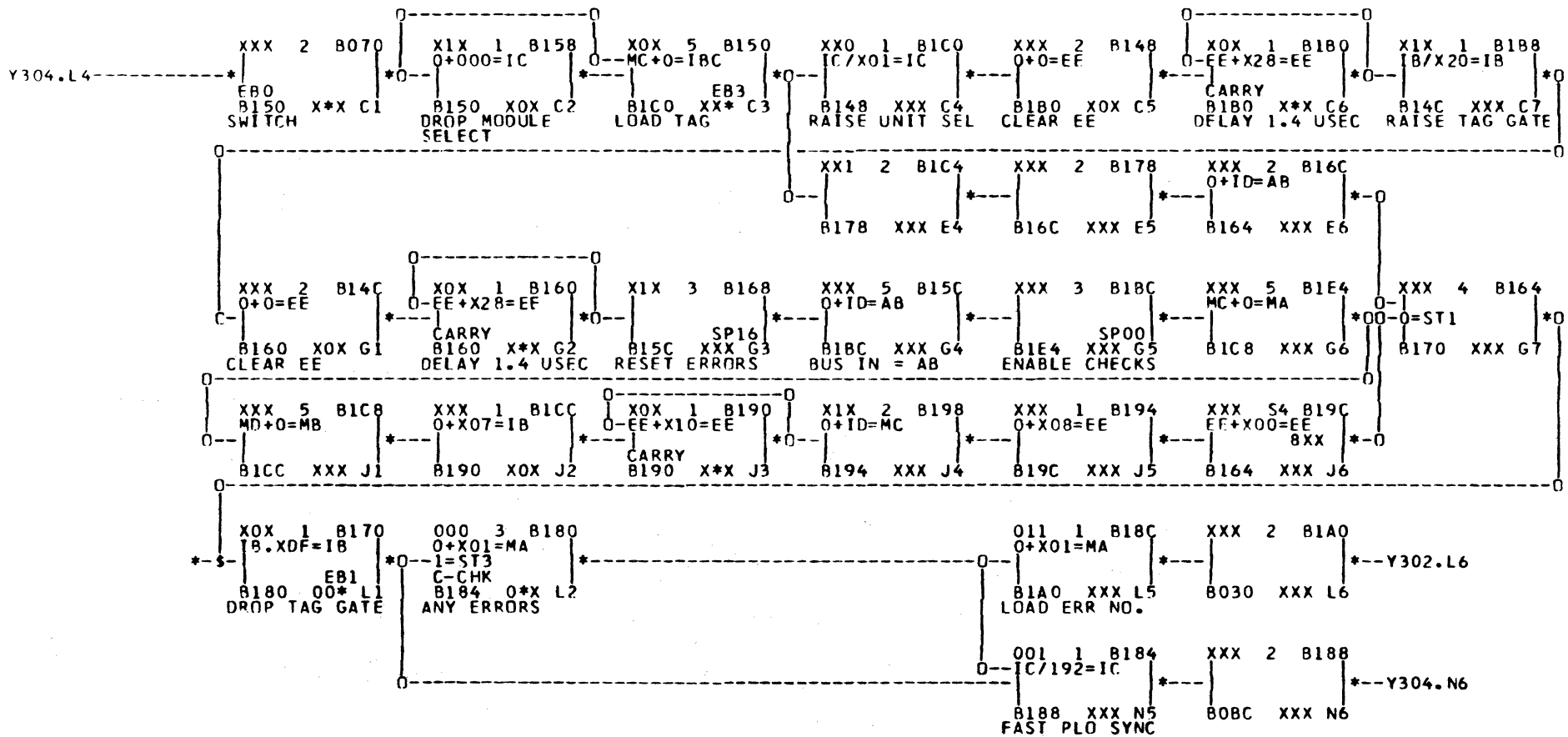
Y302.L6-----0
 Y306.N6-----0



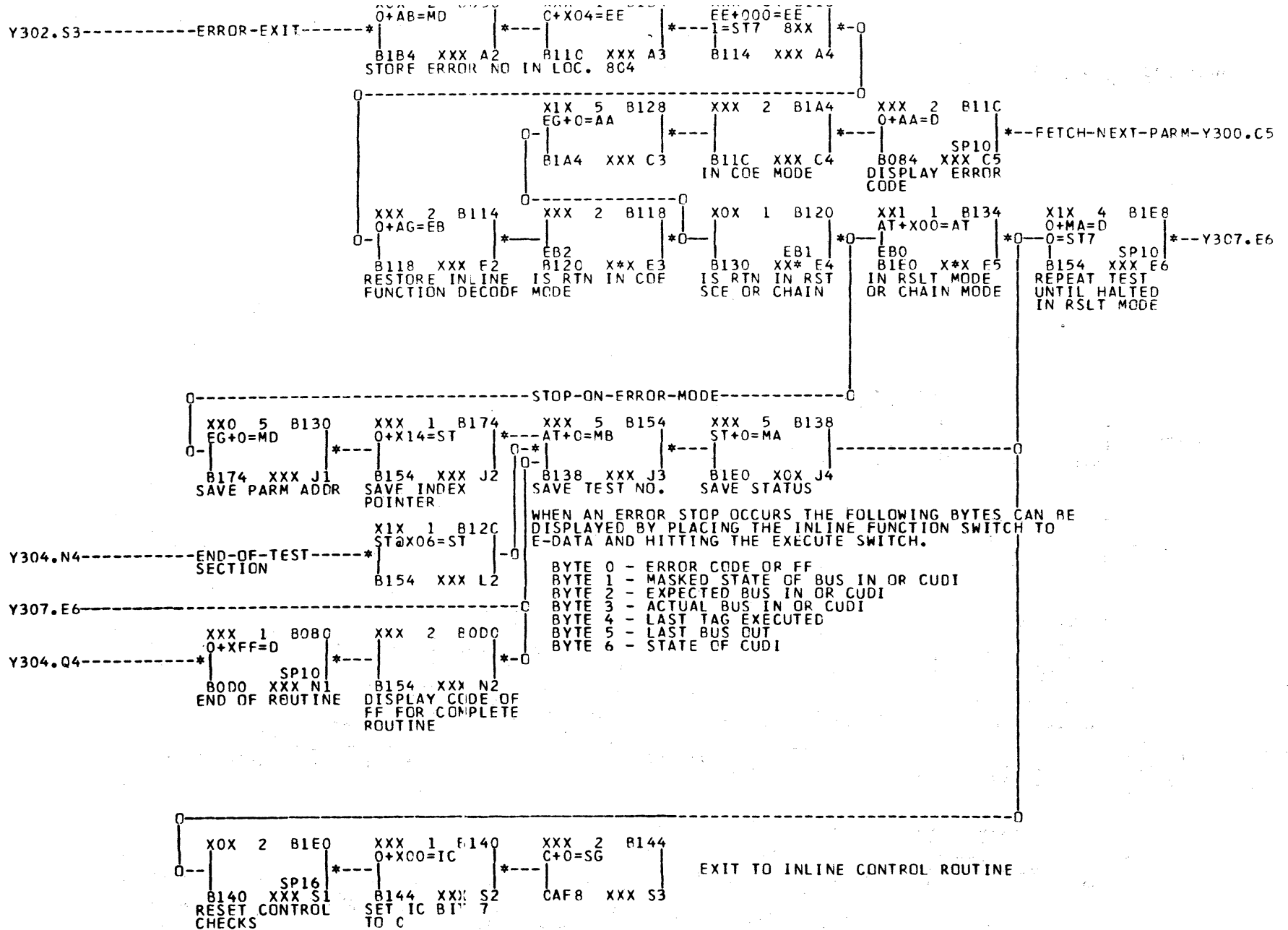
THE SECOND 2 HEX DIGITS IN THE PARAM WORD DETERMINE THE ROUTINE TO BRANCH TO



Y304 I + C I TEST
 LOOPING + BRANCHING



Y306 I + C I CONTROL TEST
PARAMETER PROCESSING



Y307 I + C I CONTROL TEST
ERROR ≠ NORMAL EXITS

XXX C B200
OCOC142F
XXX CC

XXX D B204
5C737979
XXX C1

XXX D B208
79757979
XXX C2

XXX D B20C
C004080C
XXX C3

XXX D B210
10141820
XXX C4

XXX D B214
24282C30
XXX C5

XXX D B218
34303830
XXX C6

XXX D B21C
3C304030
XXX C7

XXX D B220
443C483C
XXX E0

XXX D B224
4C305030
XXX E1

XXX D B228
5430585C
XXX E2

XXX D B22C
24302024
XXX E3

XXX D B230
58606458
XXX E4

XXX D B234
6864586C
XXX E5

XXX D B238
64587064
XXX E6

XXX D B23C
58746458
XXX E7

XXX C B240
7864587C
XXX G0

XXX D B244
64588064
XXX G1

XXX D B248
58846458
XXX G2

XXX D B24C
8864588C
XXX G3

XXX D B250
64589064
XXX G4

XXX D B254
58946458
XXX G5

XXX D B258
98645820
XXX G6

XXX D B25C
2458A4A8
XXX G7

XXX C B260
ACBOB4H8
XXX J0

XXX D B264
8CCOC4C8
XXX J1

XXX D B268
CCOD0408
XXX J2

XXX D B26C
CCE09CAC
XXX J3

XXX D B270
E4E82024
XXX J4

XXX D B274
58F01458
XXX J5

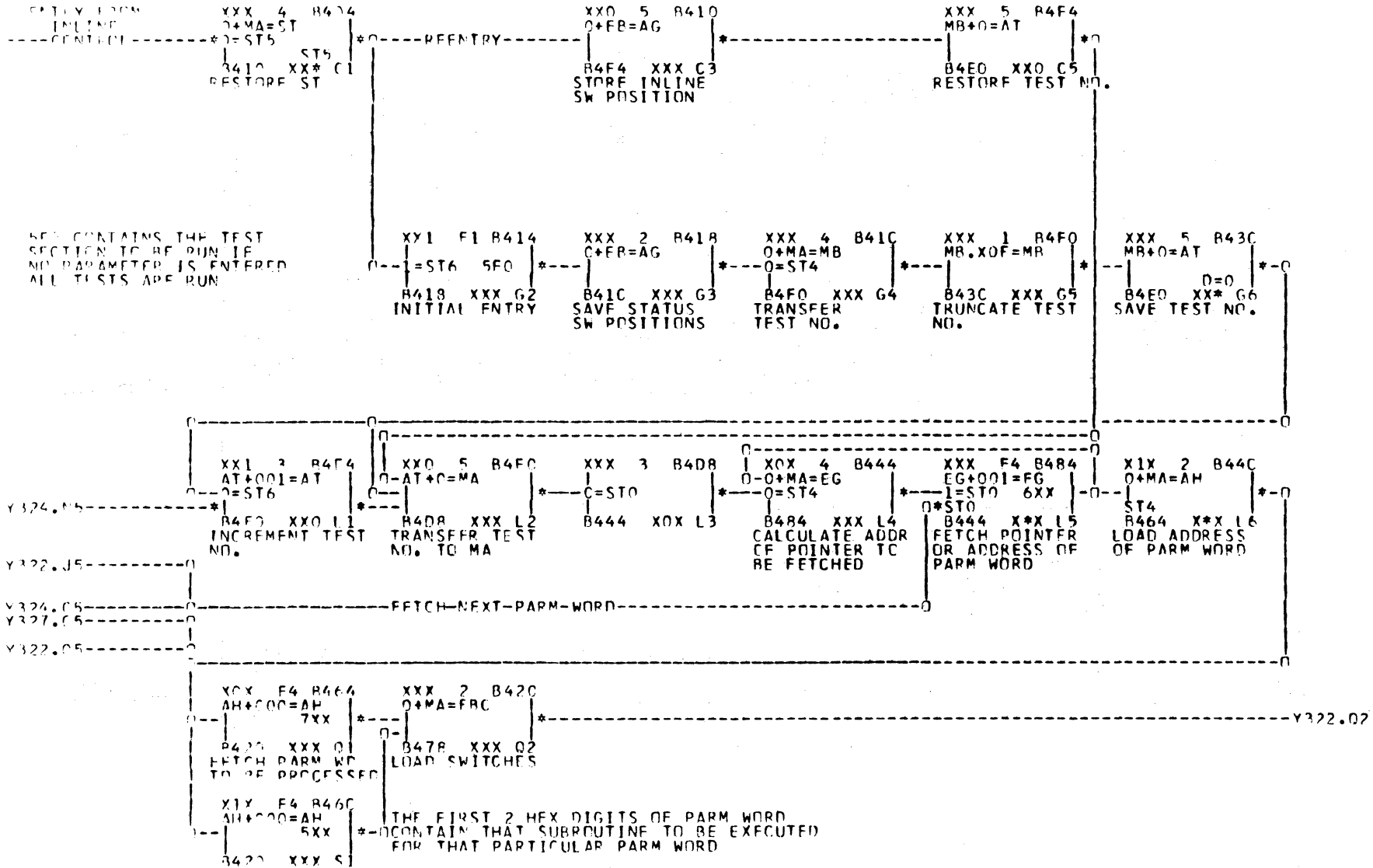
XXX D B278
20ECFFFF
XXX J6

PARAMETERS_

XXX D B300 902C0200 XXX C1 3-6 TO BUS IN	XXX D B304 183F0000 XXX C2 CHFK 3 OF 6	XXX D B308 402C0500 XXX C3 RAISE TAG 5	XXX D B30C 1C808000 XXX C4 DRV SEL FAIL	XXX C B310 1C404000 XXX C5 TAG INVALID	XXX D B314 1C080800 XXX C6 CUDI BUS IN	XXX D B318 1C200000 XXX C7 DEV CHK OFF
XXX D B31C 1C080000 XXX E1 PARITY CHECK	XXX D B320 00480000 XXX E2 END OF SECTION	XXX D B324 402C0310 XXX E3 SEL SPARE	XXX D B328 1C800000 XXX E4 CHK FOR DRV SEL	XXX D B32C 402C0500 XXX E5 ALLZER0ES	XXX D B330 1C200000 XXX E6 BAD	XXX D B334 402C0580 XXX E7 TRANS 0
XXX D B338 402C0540 XXX G1 TRANS 1 BAD	XXX D B33C 402C0520 XXX G2 TRANS 2 BAD	XXX D B340 402C0510 XXX G3 TRANS 3 BAD	XXX D B344 402C0508 XXX G4 TRANS 4 BAD	XXX D B348 402C0504 XXX G5 TRANS 5 BAD	XXX D B34C 402C0502 XXX G6 TRANS 6 BAD	XXX D B350 402C0501 XXX G7 TRANS 7 BAD
XXX D B354 402C05FF XXX J1 ALL ONES	XXX D B358 402C0A02 XXX J2 RESFT CU	XXX D B35C 402C0340 XXX J3 DR0P MOD SEL	XXX D B360 402C0100 XXX J4 TAG 1 BAD	XXX D B364 1C400000 XXX J5 TAG VALID	XXX D B368 402C0200 XXX J6 TAG 2 BAD	XXX D B36C 402C0400 XXX J7 TAG 4 BAD
XXX D B370 402C0500 XXX L1 TAG 5 BAD	XXX D B374 402C0600 XXX L2 TAG 6 BAD	XXX D B378 402C0700 XXX L3 TAG 7 BAD	XXX D B37C 402C0800 XXX L4 TAG 8 BAD	XXX D B380 402C0900 XXX L5 TAG 9 BAD	XXX D B384 402C0A00 XXX L6 TAG 10 BAD	XXX D B388 402C0B00 XXX L7 TAG 11 BAD
XXX D B38C 402C0C00 XXX N1 TAG 12 BAD	XXX D B390 402C0D00 XXX N2 TAG 13 BAD	XXX D B394 402C0E00 XXX N3 TAG 14 BAD	XXX D B398 402C0F00 XXX N4 TAG 15 BAD	XXX D B39C 402C0F00 XXX N5 BUS IN = 00	XXX D B3A0 18FF0000 XXX N6 CHECK	XXX D B3A4 402C0F80 XXX N7 BUS 0
XXX D B3A8 18808000 XXX Q1 REC 0 BAD	XXX D B3AC 402C0F40 XXX Q2 BUS 1	XXX D B3B0 18404000 XXX Q3 REC 1 BAD	XXX D B3B4 402C0F20 XXX Q4 BUS 2	XXX C B3B8 18202000 XXX Q5 REC 2 BAD	XXX D B3BC 402C0F10 XXX Q6 BUS 3 B	XXX D B3C0 18101000 XXX Q7 REC 3 BAD
XXX D B3C4 402C0F08 XXX S1 BUS 4	XXX D B3C8 18080800 XXX S2 REC 4 BAD	XXX D B3CC 402C0F04 XXX S3 BUS 5	XXX D B3D0 18040400 XXX S4 REC 5 BAD	XXX D B3D4 402C0F02 XXX S5 BUS 6	XXX D B3D8 18020200 XXX S6 REC 6 BAD	XXX D B3DC 402C0F01 XXX S7 BUS 7
XXX D B3E0 18010100 XXX U1 REC 7 BAD	XXX D B3E4 402C0FFF XXX U2 ALL ONES	XXX D B3E8 18FFFF00 XXX U3 CHECK	XXX D B3EC 00A40000 XXX U4 END ROUTINE	XXX D B3F0 402C0F88 XXX U5 BLOCK PARITY	Y310 I+C I	

ST5=1 ON INITIAL ENTRY
ST5=0 ON REENTRY

FB BIT 0122
010 - CONTINUE ON ERROR
100 - STOP ON ERROR
1010 - CONTINUE ON ERROR
1100 - RESULT OR LOOP

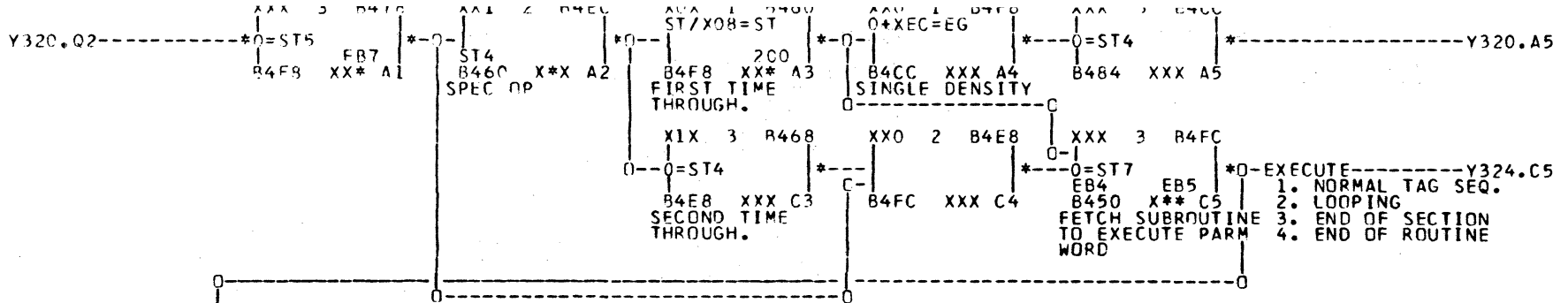


THE FIRST 2 HEX DIGITS OF PARM WORD
CONTAIN THAT SUBROUTINE TO BE EXECUTED
FOR THAT PARTICULAR PARM WORD

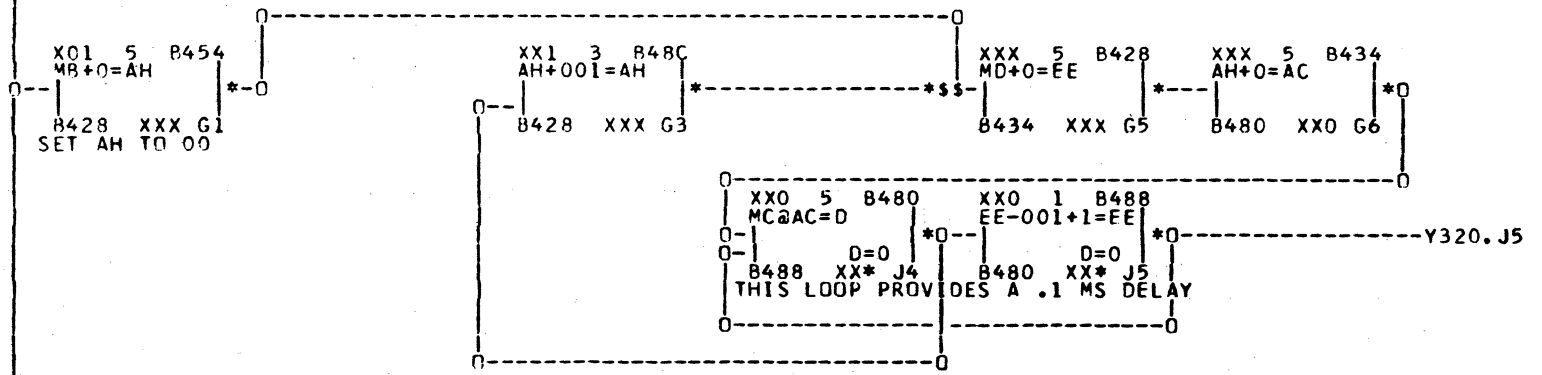
FX:

- 40 TAG BUS SEQUENCE
- 18 BUS IN CHECK
- 1C CUDI CHECK
- 84 WAIT LOOP
- 00 END SECTION ROUTINE
OR START LOOP
- 2C CONDITIONAL BRANCH IF CUDI IS
NOT IN EXPECTED STATE
- 28 CONDITIONAL BRANCH IF BUS IN
IS NOT IN EXPECTED STATE.

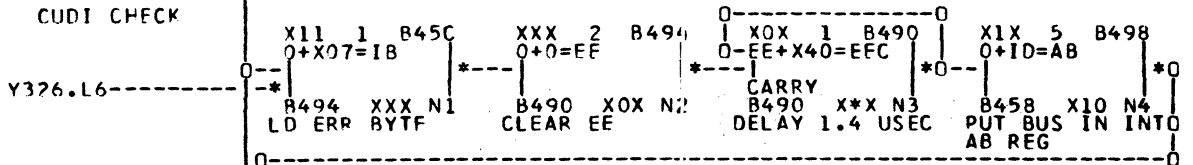
Y320 I + C II TEST
CONTROL ENTRY



TIME DELAY LOOP

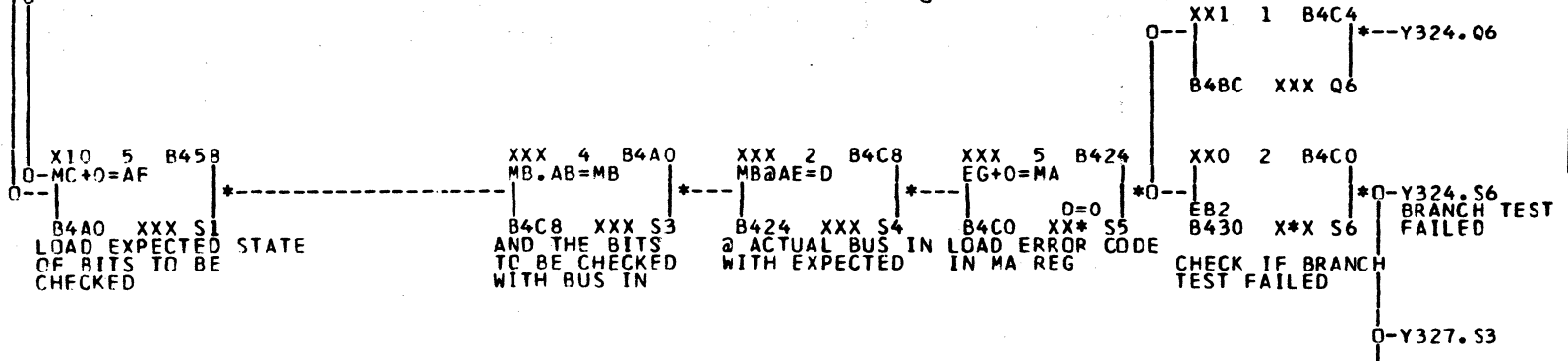


CUDI CHECK



EXPECTED=ACTUAL
 BUS IN OR CUDI
 FETCH NEXT WORD

BUS IN CHECK



Y322 I + C II TFST
 PROCESS PARM WORD

Y322.Q6-----0
Y326.N6-----0

Y322.S6-----*
X1X 2 B438
B488 XX0 C2
PROGRAM ARRIVES
HERE IF BUS IN
OR CUDI BRANCH
ON ERROR IS
PRESENT

*--BRANCH-ON-CUDI
OR BUS IN
INCORRECT

XX0 5 B488
MD+0=EG

XX1 3 B4BC
=ST0

*--FETCH-NEXT-WORD-Y320.C5
B484 XXX C5

LOOP HAS
REACHED FINAL
VALUE

B4BC XX1 C4
PLACE THE ADDR
OF NEW POINTER
IN THE EG REG

XXX 5 B4DC
ED+0=AA

XXX 5 B49C
MC@AA=D

XXX 1 B4AC
ED+001=ED

B49C XXX G4
END LOOP

B4AC XXX G5
@ PRESENT VALUE

B488 XX* G6
INCREMENT LOOP

XXX 5 B4D4
MC+0=ED

LOAD PRES VALU
OF LOOP COUNTER
EXPECTED FINAL VAL.

B48C XX1 J4
BEGIN LOOP PLACE
THE INITIAL VALUE
OF LOOP IN MC.

XXX 5 B42C
MD+0=EC

B470 XXX L4
LOAD BUS OUT

XXX 2 B448
ST6

B524 X*X N4

XXX 4 B4A4
O+0=AT

=ST5
B4B0 XXX G4
RESET TEST NO.

Y322.C5-----*
XXX 3 B450
MB+000=MB
*O=ST1
A=IAR
B40C XXX L2
BRANCH TO RTN

THE SECOND 2 HEX DIGITS IN
THE PARM WORD DETERMINE THE
ROUTINE TO BRANCH TO

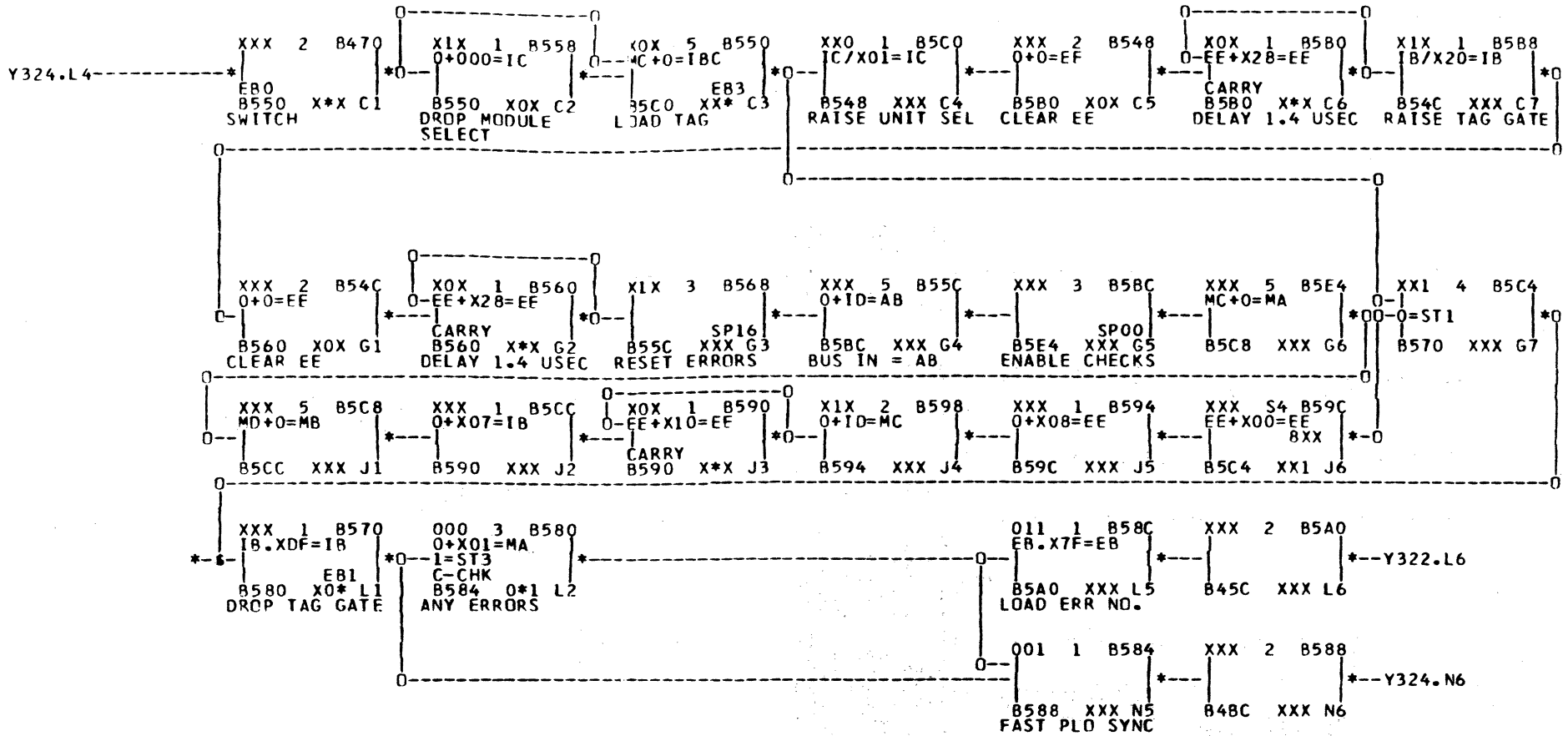
*--FETCH-NEXT-WORD-----0

*--EXECUTE-TAG-CONTROL-----Y326.L4

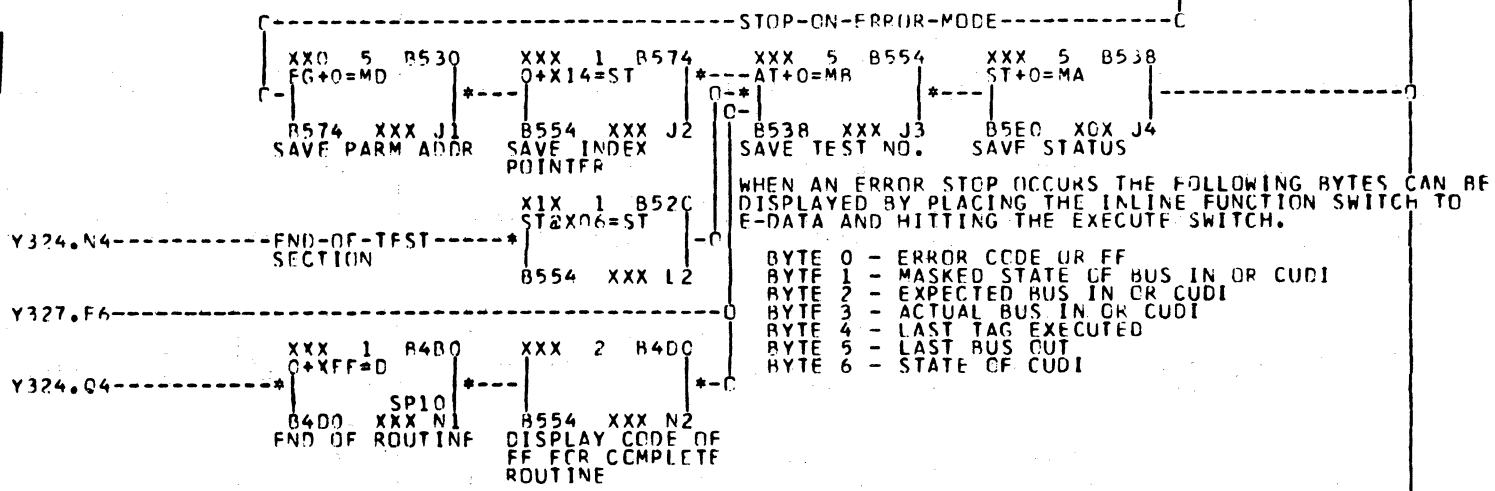
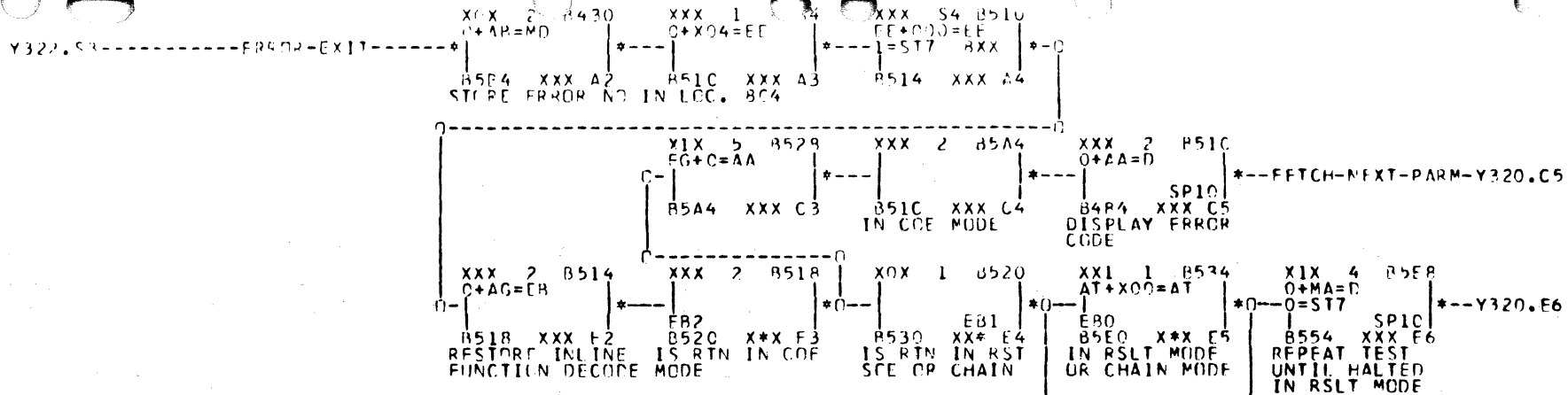
0--RUN-ONLY-1-TEST-----Y327.N4

*--Y320.N5
FETCH NEXT TEST

*--ROUTINE-COMLETE-----Y327.O4



Y326 I + C II TEST
PARAMETER PROCESSING



XXX C B60C CCCC428B XXX CO	XXX D B6C4 E9EFEFEF XXX C1	XXX D B6C8 EFEFEFEF XXX C2	XXX D B60C C004B43C XXX C3	XXX D B610 3488087C XXX C4	XXX D B614 B8C07CC4 XXX C5	XXX C B618 C80CCCBC XXX C6	XXX D B61C C0CCCC4D0 XXX C7
XXX C B62C 10B8C080 XXX FO	XXX D B624 C4C814C0 XXX E1	XXX D B628 8418C088 XXX E2	XXX D B62C 1CC08C20 XXX E3	XXX D B630 C09024C0 XXX E4	XXX D B634 9428C098 XXX E5	XXX D B638 2CC09C08 XXX E6	XXX D B63C BCC07CC4 XXX E7
XXX C B640 D0F00004 XXX CO	XXX D B644 B43388B0 XXX G1	XXX D B648 547CD8DC XXX G2	XXX D B64C 7CC4E0A8 XXX G3	XXX D B650 AC58CCE4 XXX G4	XXX D B654 DCCCC4E8 XXX G5	XXX D B658 D8C4E05C XXX G6	XXX D B65C DC8060DC XXX G7
XXX C B660 8464DC88 XXX JO	XXX D B664 68CC8C6C XXX J1	XXX D B668 DC9070DC XXX J2	XXX D B66C 5474DC98 XXX J3	XXX D B670 78DC9CC4 XXX J4	XXX D B674 E054DC7C XXX J5	XXX D B678 E4E8C4E8 XXX J6	XXX D B67C DC7CECDC XXX J7
XXX C B680 58C4E80C XXX LO	XXX D B684 DCCCC4E8 XXX L1	XXX D B688 04B4F000 XXX L2	XXX D B68C 04B43034 XXX L3	XXX D B690 8838A4F8 XXX L4	XXX D B694 A43CA0F8 XXX L5	XXX D B698 A040F88C XXX L6	XXX D B69C 44F85048 XXX L7
XXX C B6A0 F8944CF8 XXX NO	XXX D B6A4 9850F89C XXX N1	XXX D B6A8 3CA0F8A0 XXX N2	XXX D B6AC FCF8A43C XXX N3	XXX D B6B0 A0F8A008 XXX N4	XXX D B6B4 F8A404B4 XXX N5	XXX D B6B8 F00004B4 XXX N6	XXX D B6BC 3088B0A8 XXX N7
XXX C B6C0 ACD87CC4 XXX Q0	XXX D B6C4 7CD40004 XXX Q1	XXX D B6C8 0080C04 XXX Q2	XXX D B6CC 0C3C6404 XXX Q3	XXX D B6C0 646C3C78 XXX Q4	XXX D B6C4 047CA8AC XXX Q5	XXX D B6D8 D0086CD4 XXX Q6	XXX D B6DC 047CD8AC XXX Q7
XXX C B6E0 D0086CDD XXX S0	XXX D B6E4 047CD8AC XXX S1	XXX D B6E8 D0ECB434 XXX S2	XXX D B6EC 7CC4F0F4 XXX S3	XXX D B56C 402C0900 XXX S5	XXX D B578 402C0B02 XXX S6	XXX D B57C 1802C200 XXX S7	
XXX D B5A8 1804000C XXX U0	XXX D B5AC 402C0510 XXX U1	XXX D B5DC 18FFFF00 XXX U2	XXX D B5D4 402C0B1C XXX U3	XXX D B5D8 18040400 XXX U4	XXX D B5DC 402C060F XXX U5	XXX D B5EC 412C0A03 XXX U6	

Y328 I+C II

PARAMETERS

XXX D B700 402C0310 XXX A1 SELECT SPARE	XXX D B701 402C0A03 XXX A2 CONTROL RSET	XXX D B708 402C0600 XXX A3 CYL ADD=0	XXX D B70C 402C06FF XXX A4 CAR=FF	XXX D B710 402C0680 XXX A5 CAR BIT0 ON	XXX D B714 402C0640 XXX A6 CAR BIT1 ON	XXX D B718 402C0620 XXX A7 CAR BIT2 ON
XXX D B71C 402C0610 XXX C1 CAR BIT3 ON	XXX D B720 402C0608 XXX C2 CAR BIT 4 ON	XXX D B724 402C0604 XXX C3 CAR BIT5 ON	XXX D B728 402C0602 XXX C4 CAR BIT6 ON	XXX D B72C 402C0601 XXX C5 CAR BIT 7 ON	XXX D B730 402C0E20 XXX C6 DIAG 2	XXX D B734 402C0D20 XXX C7 MONITOR MODE AND DIAGNOSTIC.
XXX D B738 402C0800 XXX E1 HD ADD = 00	XXX D B73C 402C081F XXX E2 HD ADD = BIT 3-7 ON	XXX D B740 402C0810 XXX E3 HD ADD = BIT 3	XXX D B744 402C0808 XXX E4 HD ADD = BIT 4	XXX D B748 402C0804 XXX E5 HD ADD = BIT 5	XXX D B74C 402C0802 XXX E6 HD ADD = BIT 6	XXX D B750 402C0801 XXX E7 HD ADD = BIT 7
XXX D B754 402C0900 XXX G1 DIFF = 0	XXX D B758 402C09FF XXX G2 DIFF = FF	XXX D B75C 402C0980 XXX G3 DIFF BIT 0	XXX D B760 402C0940 XXX G4 DIFF BIT 1	XXX D B764 402C0920 XXX G5 DIFF BIT 2	XXX D B768 402C0910 XXX G6 DIFF BIT 3	XXX D B76C 402C0908 XXX G7 DIFF BIT 4
XXX D B770 402C0904 XXX J1 DIFF BIT 5	XXX D B774 402C0902 XXX J2 DIFF BIT 6	XXX D B778 402C0901 XXX J3 DIFF BIT 7	XXX D B77C 18FF0000 XXX J4 ALL BITS OFF	XXX D B780 18FF8000 XXX J5 BIT 0 ON?	XXX D B784 18FF4000 XXX J6 BIT 1 ON?	XXX D B788 18FF2000 XXX J7 BIT 2 ON?
XXX D B78C 18FF1000 XXX L1 BIT 3 ON?	XXX D B790 18FF0800 XXX L2 BIT 4 ON?	XXX D B794 18FF0400 XXX L3 BIT 5 ON?	XXX D B798 18FF0200 XXX L4 BIT 6 ON?	XXX D B79C 18FF0100 XXX L5 BIT 7 ON?	XXX D B7A0 181F1F00 XXX L6 BIT 3-7 ON	XXX D B7A4 181F0000 XXX L7 BIT 3-7 OFF
XXX D B7A8 402C0406 XXX N1 IMULATE FINF	XXX D B7AC 84001EFF XXX N2 DELAY 5MS	XXX D B7B0 402C0402 XXX N3 SIM HDS LOADED	XXX D B7B4 187F0000 XXX N4 0-3, 5-7 OFF	XXX D B7B8 402C0700 XXX N5 HI CYL = 0	XXX D B7BC 402C0710 XXX N6 HIGH CYL	XXX D B7C0 402C0502 XXX N7 REQUEST CAR
XXX D B7C4 402C0508 XXX O1 REQUEST HIGH C1FF/CYL	XXX D B7C8 18100000 XXX O2 BIT 3 OFF	XXX D B7CC 18FFFF00 XXX Q3 ALL BITS ON	XXX D B7D0 18101000 XXX Q4 BIT 4 ON	XXX D B7D4 412C0720 XXX Q5	XXX D B7D8 402C0700 XXX Q6 HI DIFF = 0	XXX D B7DC 402C0510 XXX Q7 READ DIFF
XXX D B7E0 18020000 XXX S1 BIT 6 OFF?	XXX D B7E4 402C0702 XXX S2 HIGH DIFF ON	XXX D B7E8 18020200 XXX S3 BIT 6 ON?	XXX D B7EC 402C0B10 XXX S4 RESET DIFF	XXX D B7F0 00480000 XXX S5 END SECTION	XXX D B7F4 00A40000 XXX S6 END ROUTINE	XXX D B7F8 402C0504 XXX S7 READ HAR
XXX D B7FC 402C0A04 XXX U1 RFSFT HAR	XXX D B500 18202000 XXX U2	XXX D B504 402C0508 XXX U3	XXX D B508 402C0700 XXX U4	XXX D B50C 18FF0000 XXX U5	XXX D B53C 402C0704 XXX U6 Y330 I+C II	XXX D B564 18FF0400 XXX U7 CHECK CAR, DIFF, HAR BUS IN BUS OUT PARITY.

ST5=1 ON INITIAL ENTRY
ST5=0 ON REENTRY

FP BIT 0124
0100 - CHAIN
1000 - STCP ON ERROR
1010 - CONTINUE ON ERRCK
1100 - RESULT OR LOOP

ENTRY FROM
INLINE
CONTROL

XXX 4 B804
O+MA=ST
O=ST5
B810 XX* C1
RESTORE ST

XX0 5 B810
C+FB=AG
B8F4 XXX C3
STORE INLINE
SW POSITION

XX1 5 B8F4
MB+O=AT
B8E0 XX0 C5
RESTORE TEST NO.

5F0 CONTAINS THE TEST
SECTION TO BE RUN IF
NO PARAMETER IS ENTERED
ALL TESTS ARE RUN

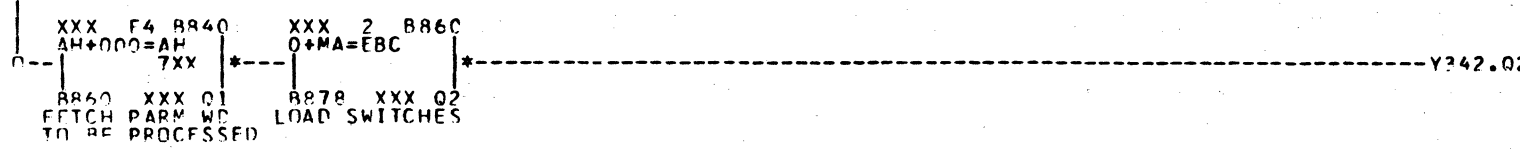
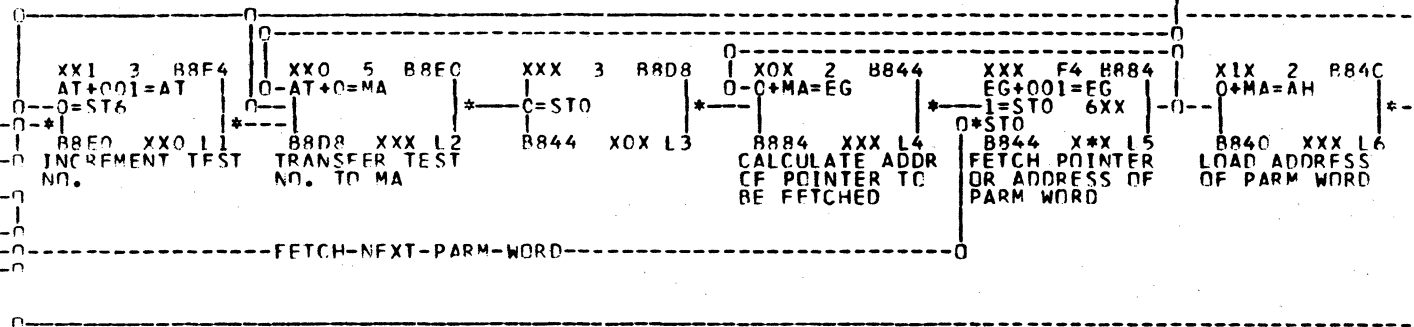
XX1 F1 B814
=ST6 5F0
B818 XXX G2
INITIAL ENTRY

XXX 2 B818
C+EB=AG
B81C XXX G3
SAVE STATUS
SW POSITIONS

XXX 2 B81C
O+MA=MB
B8F0 XXX G4
TRANSFER
TEST NO.

XXX 1 B8F0
MB.XOF=MB
B83C XXX G5
TRUNCATE TEST
NO.

XXX 5 B83C
MB+O=AT
D=0
B8E0 XX* G6
SAVE TEST NO.



THE FIRST 2 HEX DIGITS OF PARM WORD
CONTAIN THAT SUBROUTINE TO BE EXECUTED
FOR THAT PARTICULAR PARM WORD

- FX: 40 TAG BUS SEQUENCE
- 18 BUS IN CHECK
- 1C CUDI CHECK
- 84 WAIT LOOP
- 00 END SECTION ROUTINE
OR START LOOP
- 2C CONDITIONAL BRANCH IF CUDI IS
NOT IN EXPECTED STATE
- 2R CONDITIONAL BRANCH IF BUS IN
IS NOT IN EXPECTED STATE.

Y340 I +C III TEST
CONTROL ENTRY

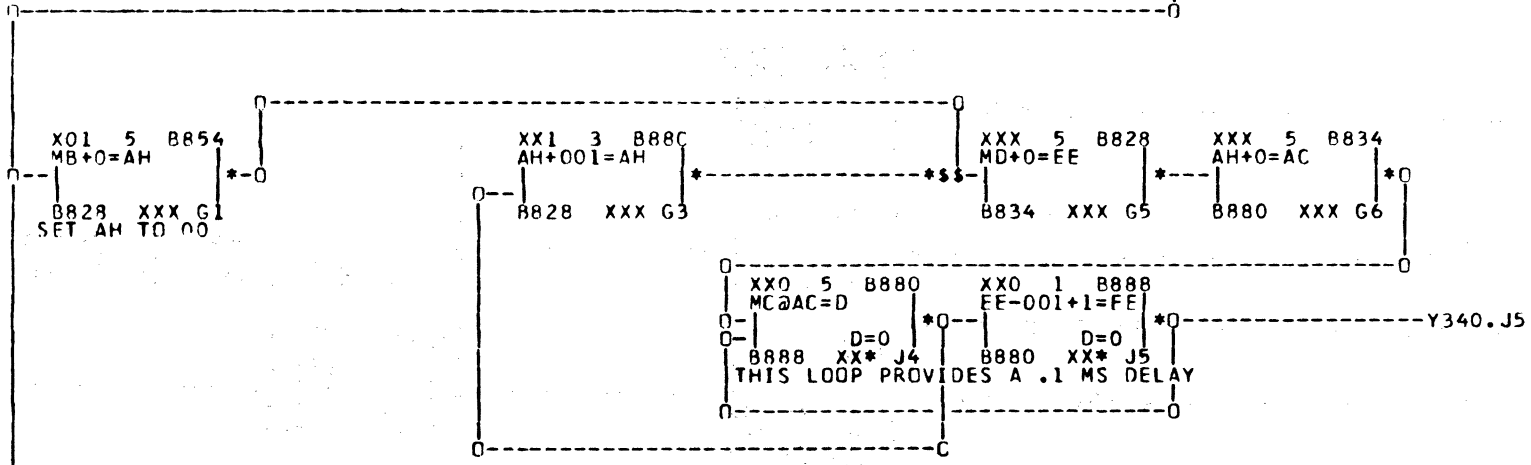
Y340.Q2-----*O=ST5
 RR74 XXX C1

XXX 3 RR7A

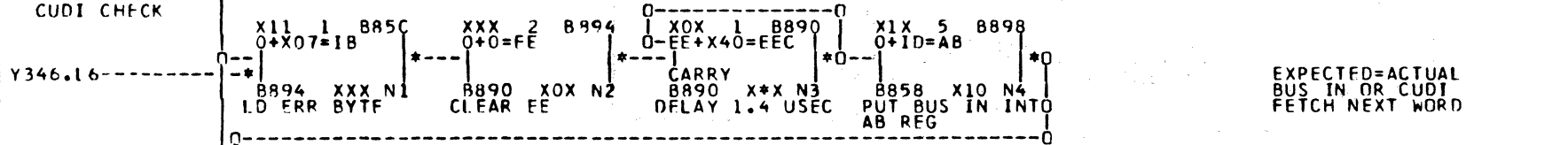
XXX 3 RR74
 O=ST7
 ER4 EB5
 B850 *** C5
 FETCH SUBROUTINE
 TO EXECUTE PARM
 WORD

*O-EXECUTE-----Y344.C5
 1. NORMAL TAG SEQ.
 2. LOOPING
 3. END OF SECTION
 4. END OF ROUTINE

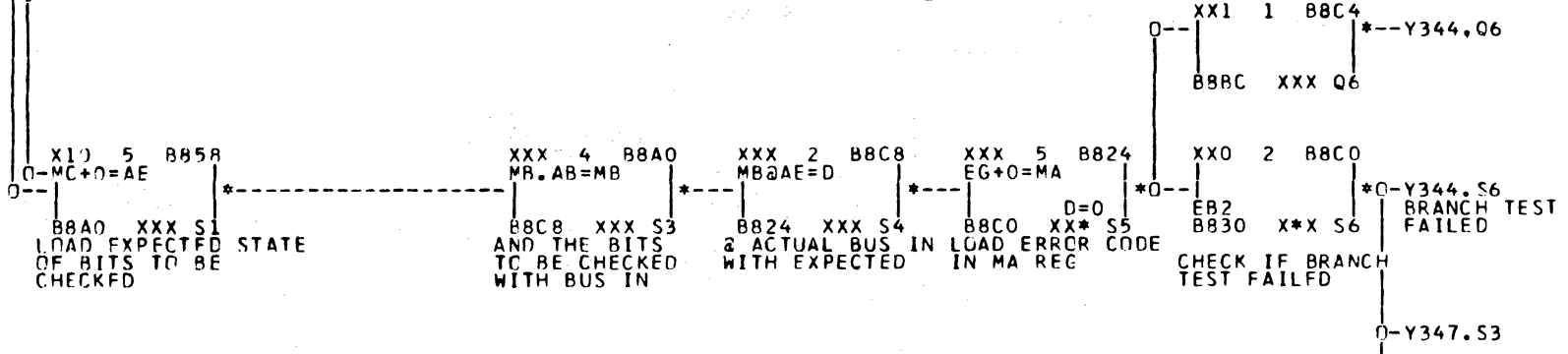
TIME DELAY LOOP



CUDI CHECK

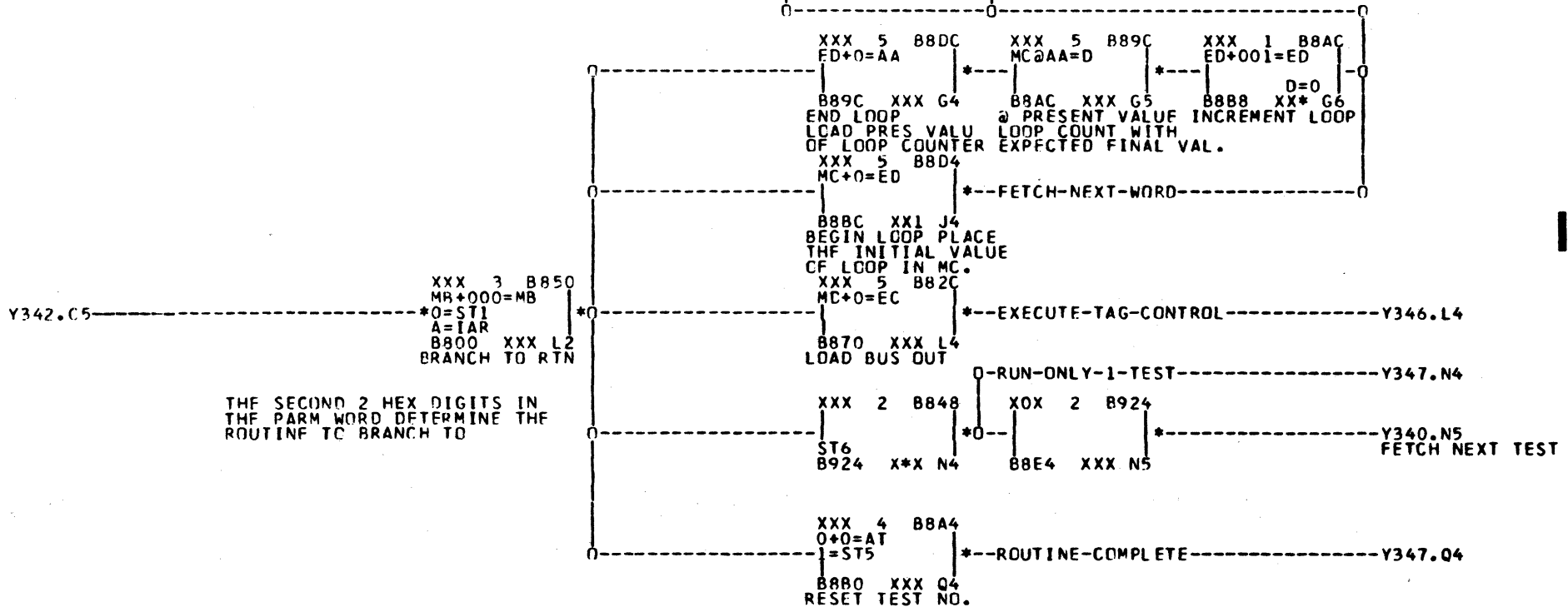
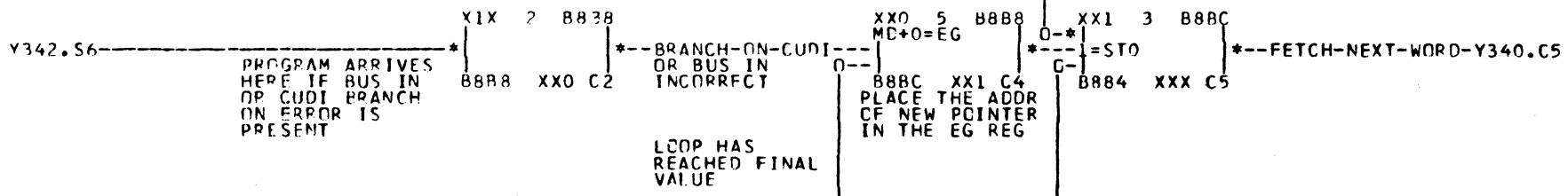


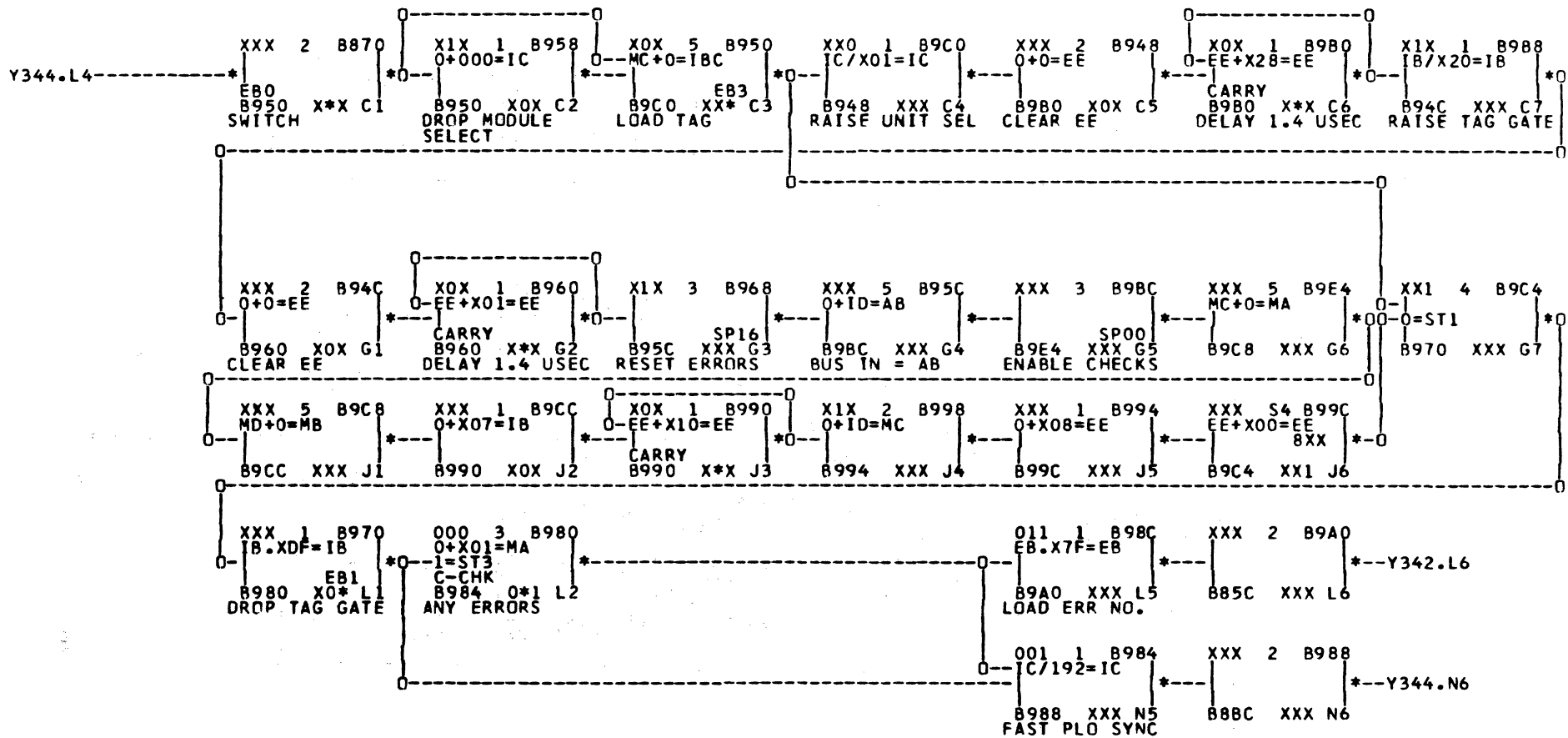
BUS IN CHECK

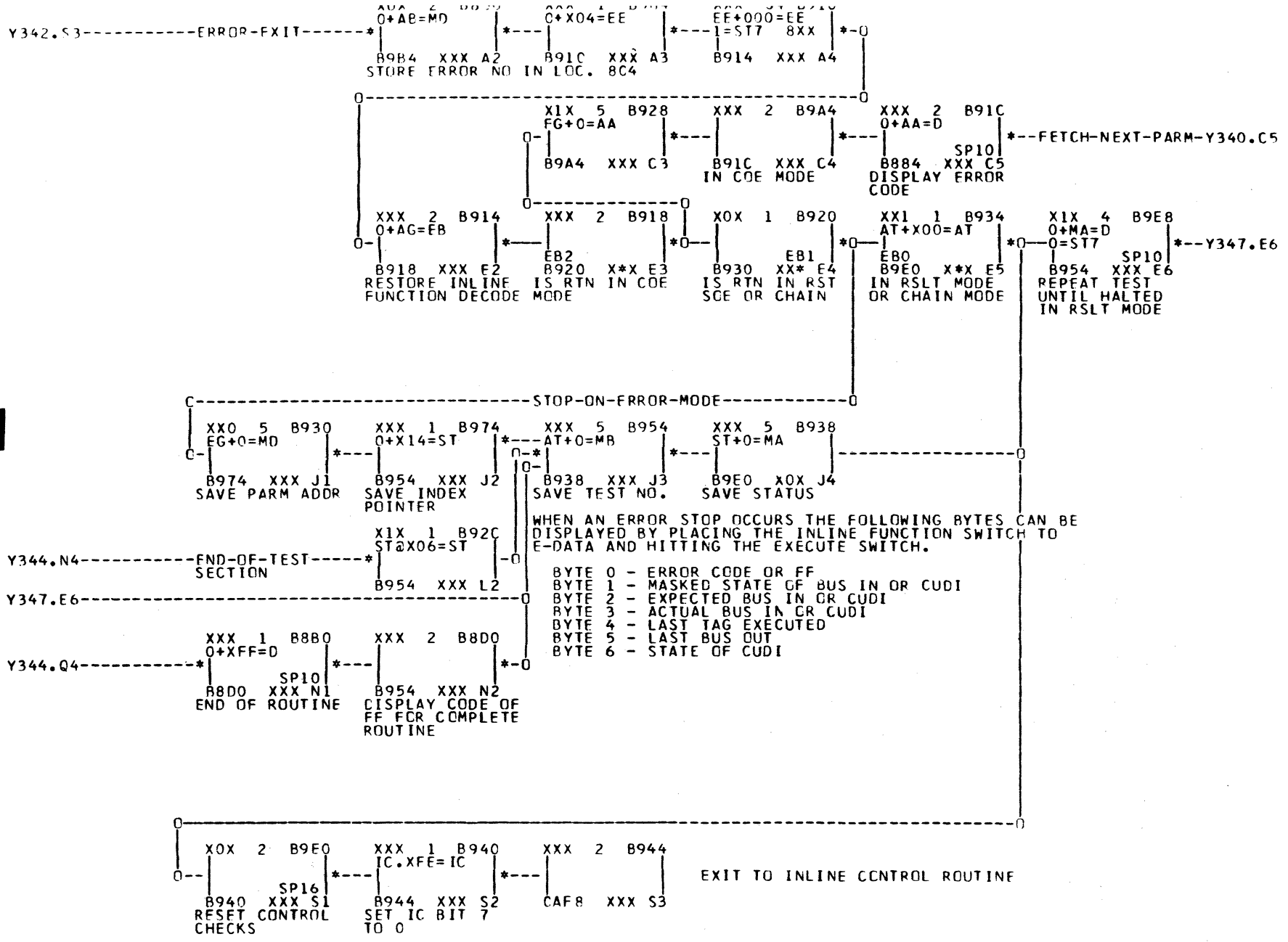


Y342 I +C III TEST
 PROCESS PARM WORD

Y342.06-----
Y346.A6-----







Y347 I +C III TEST
ERROR + NORMAL EXITS

XXX D BA00 000C2R4F XXX C1	XXX D BA04 62694ERN XXX C2	XXX D BA08 BBBRRRRB XXX C3	XXX D BA0C 0004080C TEST 1 = 0C XXX C4	XXX D BA10 1014181C XXX C5	XXX D BA14 201C241C XXX C6	XXX D BA18 281C2C1C XXX C7
XXX D BA1C 301C341C XXX F1	XXX D BA20 381C3C1C XXX F2	XXX D BA24 401C0444 XXX F3	XXX D BA28 0004080C TEST 2 = 28 XXX E4	XXX D BA2C 10141818 XXX F5	XXX D BA3C 484C2048 XXX F6	XXX D BA34 4C24484C XXX E7
XXX D BA38 28494C2C XXX G1	XXX D BA3C 484C3048 XXX G2	XXX D BA40 4C34484C XXX G3	XXX D BA44 38484C3C XXX G4	XXX D BA48 484C4048 XXX G5	XXX D BA4C 4C044400 TEST 3 = 4C XXX G6	XXX D BA50 5054585C XXX G7
XXX D BA54 6008105C XXX J1	XXX D BA58 645C48E4 XXX J2	XXX D BA5C 6E870EC TEST 4 = 5E XXX J3	XXX D BA60 04440004 XXX J4	XXX D BA64 7478047C TEST 5 = 65 XXX J5	XXX D BA68 44000408 XXX J6	XXX D BA6C 0C101480 XXX J7
XXX D BA70 A45CA8C4 XXX L1	XXX D BA74 84A45CA8 XXX L2	XXX D BA78 8088A45C XXX L3	XXX D BA7C A8148CA4 XXX L4	XXX D BA80 5CA8B490 XXX L5	XXX D BA84 A45CA868 XXX L6	XXX D BA88 94A45CA8 XXX L7
XXX D BA8C 8898A45C XXX N1	XXX D BA9C A8BC9CA4 XXX N2	XXX D BA94 5C8RCOA0 XXX N3	XXX D BA98 A45CA808 TEST 6 = 9A XXX N4	XXX D BA9C 04440054 XXX N5	XXX D BAA0 C85CCC10 XXX N6	XXX D BAA4 80F0CC10 XXX N7
XXX D BAA8 14F0D010 XXX Q1	XXX D BAAC 84FC0410 XXX Q2	XXX D BA80 88F0D81C XXX Q3	XXX D BAB4 BCF0DC10 XXX Q4	XXX D BAB8 C00444E0 XXX Q5		

Y348 I+C III POINTERS

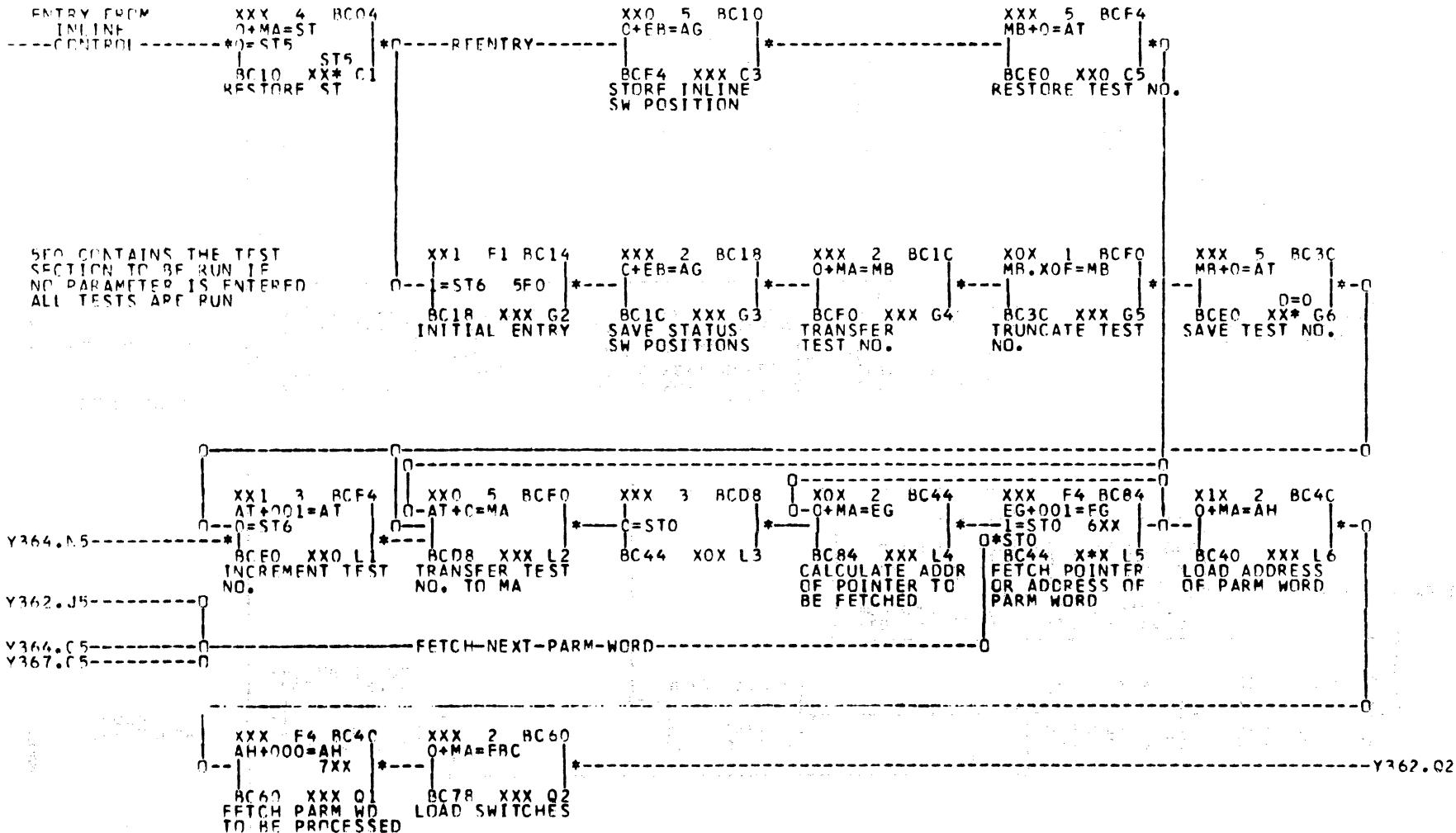
XXX C PB00 402C0310	XXX D RB04 402C0A03	XXX D BBC8 187F0000	XXX D BB0C 402C0F20	XXX D BB10 402C0D20	XXX D BB14 18FF2000	XXX D BB18 402C0600	XXX D BB1C 1C080000
SELECT SPARE	CONTROL RESET RFSET INTRPTS	BIT 4 ON	DIAG 2	MONITOR + DIAG	BIT 2 ON	CYL ADD = 00	CUDI 4 OFF
XXX C BR20 402C0680	XXX D BR24 402C0640	XXX D BB28 402C0620	XXX D BB2C 402C0610	XXX D BB30 402C0608	XXX D BR34 402C0604	XXX D BB38 402C0602	XXX D BB3C 402C0601
CYL = 128	CYL = 64	CYL = 32	CYL = 16	CYL = 8	CYL = 4	CYL = 2	CYL = 1
XXX C RB40 402C06FF	XXX D RB44 00480000	XXX D BB48 402C0D08	XXX D RB4C 18080000	XXX D BB50 1CFF0000	XXX D BB54 402C0A02	XXX D BB58 402C0D00	XXX D BB5C 18FF0000
CYL = 255	END OF SECTION	CHECK STATUS	BIT 4 OFF	ALL CUDI OFF	CONTROL RESFT	DIAG SENSE	ALL BITS OFF
XXX C RB60 402C0400	XXX D RB64 402C0D10	XXX D BB68 402C0D04	XXX D BB6C 18FE0000	XXX D BB70 402C0D40	XXX D RB74 402C0D02	XXX D BB78 1C202000	XXX D BB7C 1C200000
STATUS	MONITOR STATE	SAFETY	BIT 0-6 OFF	SERVO POINTS	TEST LOGIC	DEVICE CK	DEV CK OFF
XXX D BB80 402C017F	XXX D RB84 402C0140	XXX D BBR8 402C0120	XXX D BB8C 402C0110	XXX D BB90 402C0108	XXX D RB94 402C0104	XXX D BB98 402C0102	XXX D BB9C 402C0101
SECTOR = 127	SECTOR = 64	SECTOR = 32	SECTOR = 16	SECTOR = 8	SECTOR = 4	SECTOR = 2	SECTOR = 1
XXX D RBA0 402C0100	XXX D RBA4 402C0500	XXX D BBA8 402C0501	XXX D BHAC 18FF8000	XXX D BB80 18FF4000	XXX D BBB4 18FF1000	XXX D BBB8 18FF0400	XXX D BBBC 18FF0200
SECTOR = 0	RFQ ADDR.	REQ SEC ADDR.	BIT 0 ON	BIT 1 ON	BIT 3 ON	BIT 5 ON	BIT 6 ON
XXX D BBC0 18FF0100	XXX D BBC4 187F7F00	XXX D BRC8 402C0D20	XXX D BBCC 402C0E40	XXX D BBDO 402C0E10	XXX D BBD4 402C0E04	XXX D BBD8 402C0E02	XXX D BBDC 402C0E01
BIT 7 ON	ALL BITS ON	MONITOR MODE	DIAG 4	DIAG 1	MODE 4	MODE 2	MODE 1
XXX D BBEO 00A40000	XXX D BBE4 18020200	XXX D BBE8 18FF0300	TESTS PERFORMED		XXX D BBEC 18000000	XXX D BBFO 402C0A02	
END OF ROUTINE	XXX Q1	XXX Q2			XXX Q5	XXX Q6	

1. BUS IN PARITY TEST
2. BUS OUT PARITY TEST
3. VERIFY RESET FUNCTION
4. FORCE AND RESET DEVICE CHECK
5. SECTOR REGISTER TEST
6. SET MONITOR AND DIAG MODES

Y350 I +C III

ST5=1 ON INITIAL ENTRY
ST5=0 ON RENTRY

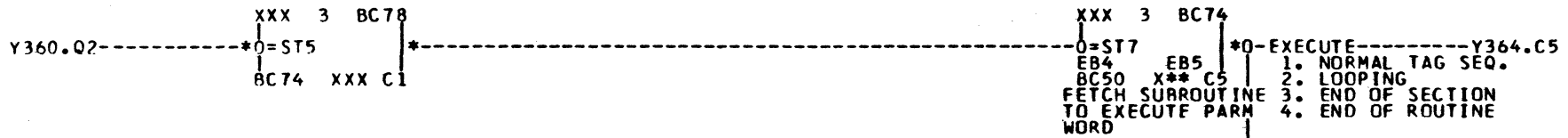
FB BIT 0123
0100 - CHAIN
1000 - STCP ON ERROR
1010 - CONTINUE ON ERROR
1100 - RESULT OR LOOP



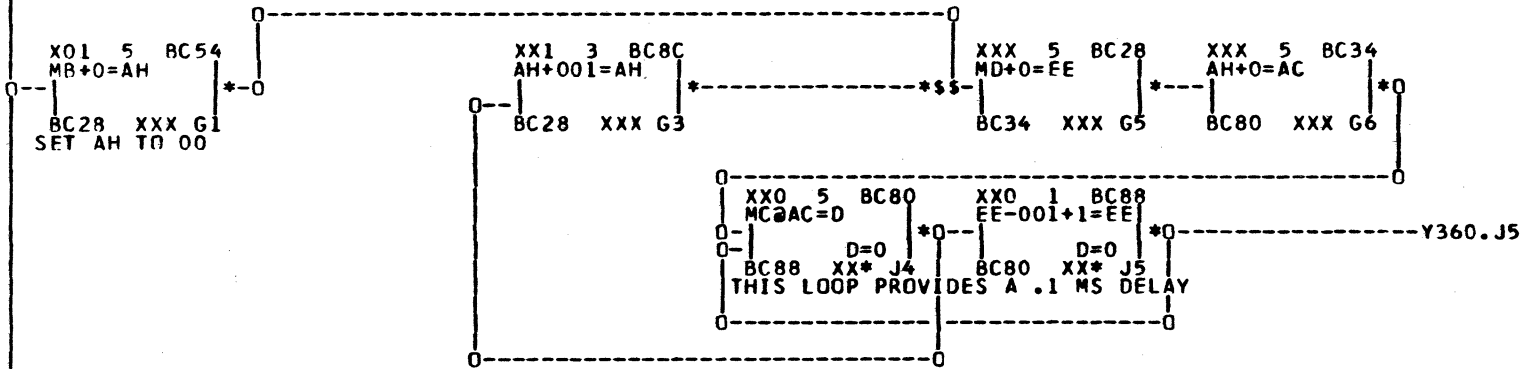
THE FIRST 2 HEX DIGITS OF PARAM WORD
CONTAIN THAT SUBROUTINE TO BE EXECUTED
FOR THAT PARTICULAR PARAM WORD

FX: 40 TAG BUS SEQUENCE
18 BUS IN CHECK
1C CUDI CHECK
84 WAIT LOOP
00 END SECTION ROUTINE
OR START LOOP
2C CONDITIONAL BRANCH IF CUDI IS
NOT IN EXPECTED STATE
2R CONDITIONAL BRANCH IF BUS IN
IS NOT IN EXPECTED STATE.

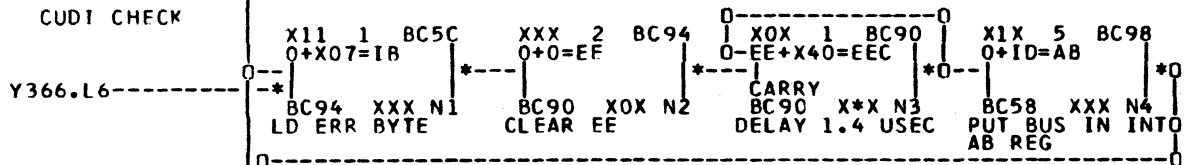
Y360 STATIC SEEK TEST
CONTROL ENTRY



TIME DELAY LOOP

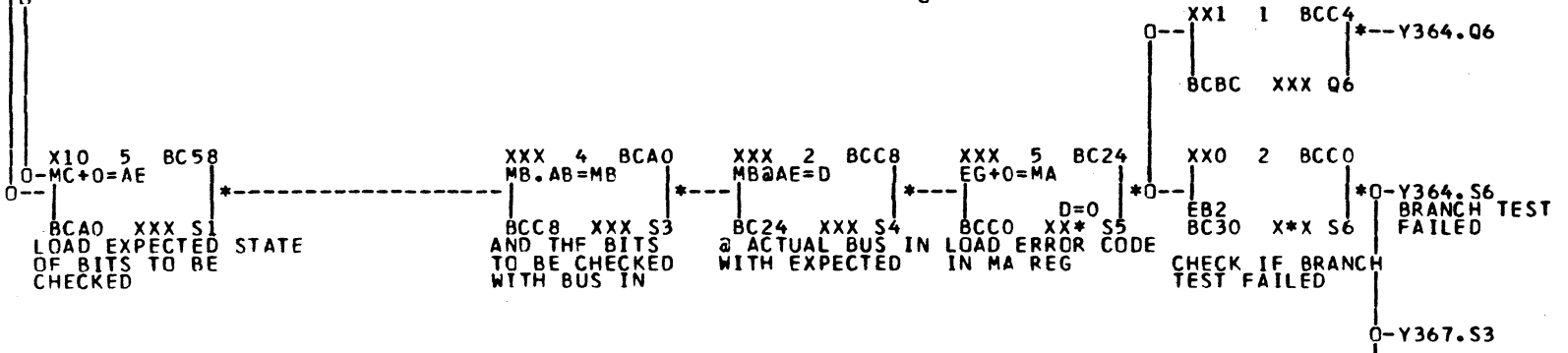


CUDI CHECK



EXPECTED=ACTUAL
BUS IN OR CUDI
FETCH NEXT WORD

BUS IN CHECK



Y362 STATIC SEEK TEST
PROCESS PARM WORD

PROGRAM ARRIVES
HERE IF BUS IN
OR CUII BRANCH
ON ERROR IS
PRESENT

BRANCH-ON-CUII
OR BUS IN
INCORRECT

LOOP HAS
REACHED FINAL
VALUE

MC*FE0

PLACE THE ADDR
OF NEW POINTER
IN THE EG REG

*--FETCH-NEXT-WORD--Y367.05

xxx 5 BC00 ED+0=AA
xxx 5 BC9C MC&AA=D
xxx 1 BCAC ED+0C1=ED
D=0
BC9C xxx G4 BCAC xxx G5 BCPB xx* G6
END LOOP @ PRESENT VALUE INCREMENT LOOP
LOAD PRES VALU @ LOOP COUNT WITH
OF LOOP-COUNTER EXPECTED FINAL VAL.
xxx 5 BC04 MC+0=ED

BCBC xx1 J4
BEGIN LOOP PLACE
THE INITIAL VALUE
OF LOOP IN MC.

xxx 3 BC5C MR+000=MR
*0=ST1
A=IAR
BC0C xxx L2
BRANCH TO RTN

xxx 5 BC2C ME+0=EL

BC7C xxx L4
LOAD BUS OUT

THE SECOND 2 HEX DIGITS IN
THE PARM WORD DETERMINE THE
ROUTINE TO BRANCH TO

xxx 2 BC48 ST6
RD24 xxx N4
xxx 2 B024 B014 xxx N5

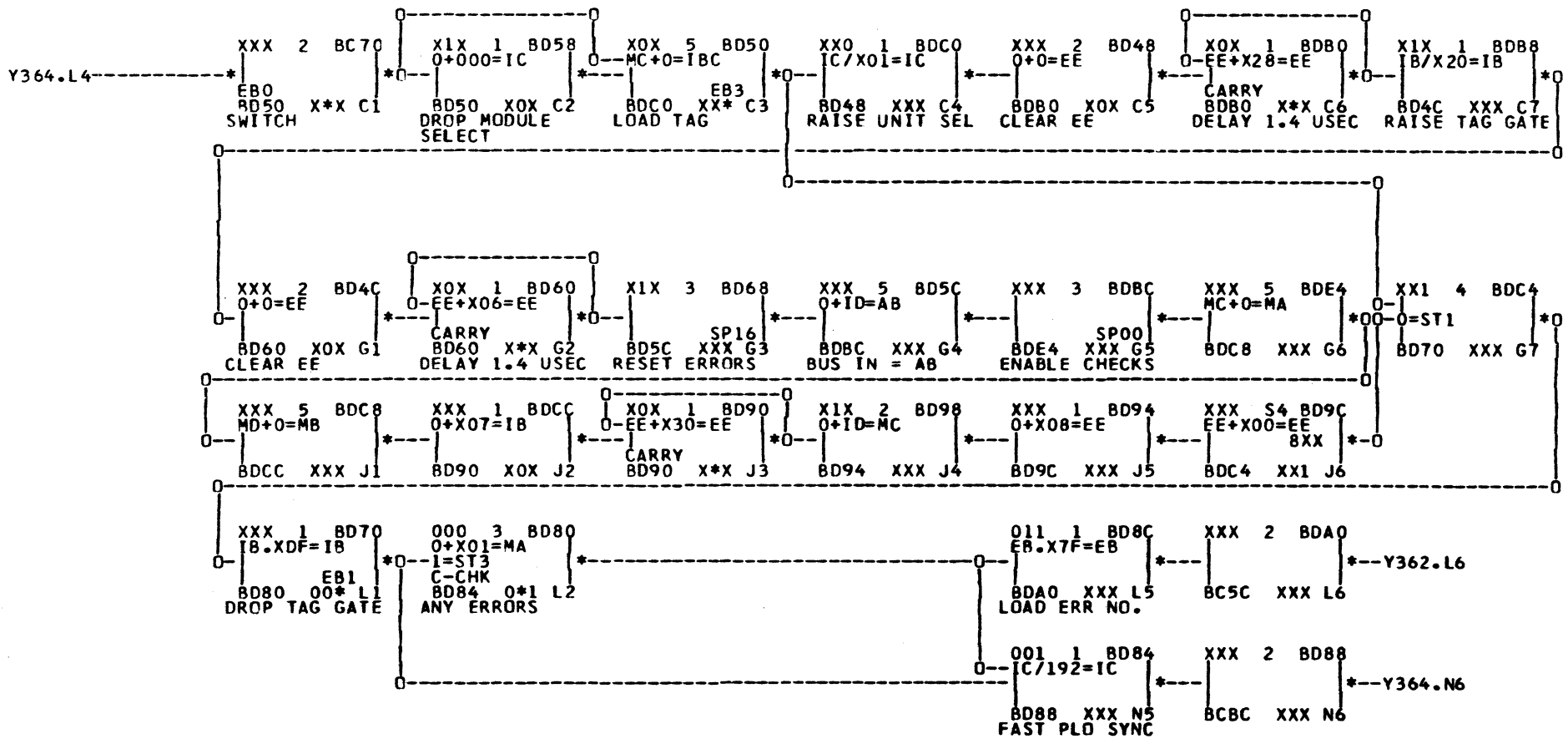
xxx 4 BC44 O+0=AT
I=ST5
BCBC xxx N5
RESET TEST NO.

*--EXECUTE-TAG-CONTROL--Y367.L4

(I-RUN-ONLY-1-TEST--Y367.N4

*--Y367.N5
FETCH NEXT TEST

*--ROUTINE-COMPLETION--Y367.04



Y366 STATIC SEEK TEST
PARAMETER PROCESSING

PUB NC. 70631200

DOC NO. 73687900

2-378

REVISION K

Y367.S3-----FPROR-EXIT-----*

XCX 2 BC3C
O+AR=MD
XXX 1 BD84
C+X04=EE
XXX S4 BD10
EE+C00=EE
=ST7 8XX
BD14 XXX A4

BD84 XXX A2
STOPF FRROR NO IN LOC. 8C4
BD1C XXX A3
BD14 XXX A4

X1X 5 BD28
EG+0=AA
XXX 2 BDA4
BD1C XXX C4
IN COE MODE
XXX 2 BD1C
O+AA=5
BC84 SPI0
XXX C5
DISPLAY ERROR
CODE
*---FETCH-NEXT-PARM-Y360.C5

XXX 2 BD14
C+AG=EB
BD18 XXX E2
RESTORF INLINE
FUNCTION DECODE
XXX 2 BD18
FB2
BD2C XXX E3
IS RTN IN COE
MCOE
XCX 1 BD20
EB1
BD30 XX* E4
IS RTN IN RST
SGE OR CHAIN
XX1 1 BD34
AT+X00=AT
EBO
BDE0 XXX E5
IN RSLT MODE
OR CHAIN MODE
X1X 4 BDE8
O+MA=D
=ST7
BD54 XXX E6
REPEAT TFST
UNTIL HALTED
IN RSLT MODE
*---Y367.E6

-----STOP-ON-ERROR-MODE-----

XCX 5 BD30
EG+0=MD
XXX 1 BD74
O+X14=ST
XXX 5 BD54
AT+0=MB
XXX 5 BD38
ST+0=MA
BD74 XXX J1
SAVE PARM ADDR
BD54 XXX J2
SAVE INDEX
POINTER
BD38 XXX J3
SAVE TEST NO.
BDE0 XCX J4
SAVE STATUS

WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE
DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO
F-DATA AND HITTING THE EXECUTE SWITCH.

- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN CR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN CR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI

Y364.N4-----END-OF-TEST-SECTION-----*

X1X 1 BD2C
ST+X06=ST
BC54 XXX L2

Y367.F6-----*

XXX 1 BC80
O+XFF=D
BCD0 SPI0
XXX N1
END OF ROUTINE
XXX 2 BC00
BD54 XXX N2
DISPLAY CODE OF
FF FOR COMPLETE
ROUTINE

Y364.04-----*

XCX 2 BDF0
C.XFE=IC
XXX 1 BD40
CAF8 XXX S3
XXX 2 BD44
BD40 XXX S1
RFSFT CONTROL
CHECKS
BD44 XXX S2
SFT IC BIT 7
TO 0
EXIT TO INLINE CONTROL ROUTINE

XXX D BF00 0C0C5858 XXX C0	XXX D BF04 58585858 XXX C1	XXX D BF08 58585858 XXX C2	XXX D BE0C 0004080C XXX C3	XXX D BE10 1014181C XXX C4	XXX D BE14 2024282C XXX C5	XXX D BE18 3034383C XXX C6	XXX D BE1C AC443C48 XXX C7
XXX D BE20 404C7498 XXX E0	XXX D BE24 50542458 XXX E1	XXX D BE28 2C5C6064 XXX E2	XXX D BE2C 9C5C686C XXX F3	XXX D BE30 705C4838 XXX E4	XXX D BE34 74A8787C XXX E5	XXX D BE38 A8808424 XXX E6	XXX D BE3C 282C3038 XXX E7
XXX D BF40 3C6C705C XXX G0	XXX D BE44 483C886C XXX G1	XXX D BE48 7444745C XXX G2	XXX D BE4C 9044403C XXX G3	XXX D BE50 6C28649C XXX G4	XXX D BE54 30946410 XXX G5	XXX D BE58 A4FFFFFF XXX G6	

Y368 STATIC SEEK

PUR NO. 70631200

DOC NO. 73687900

2-380

REVISION A

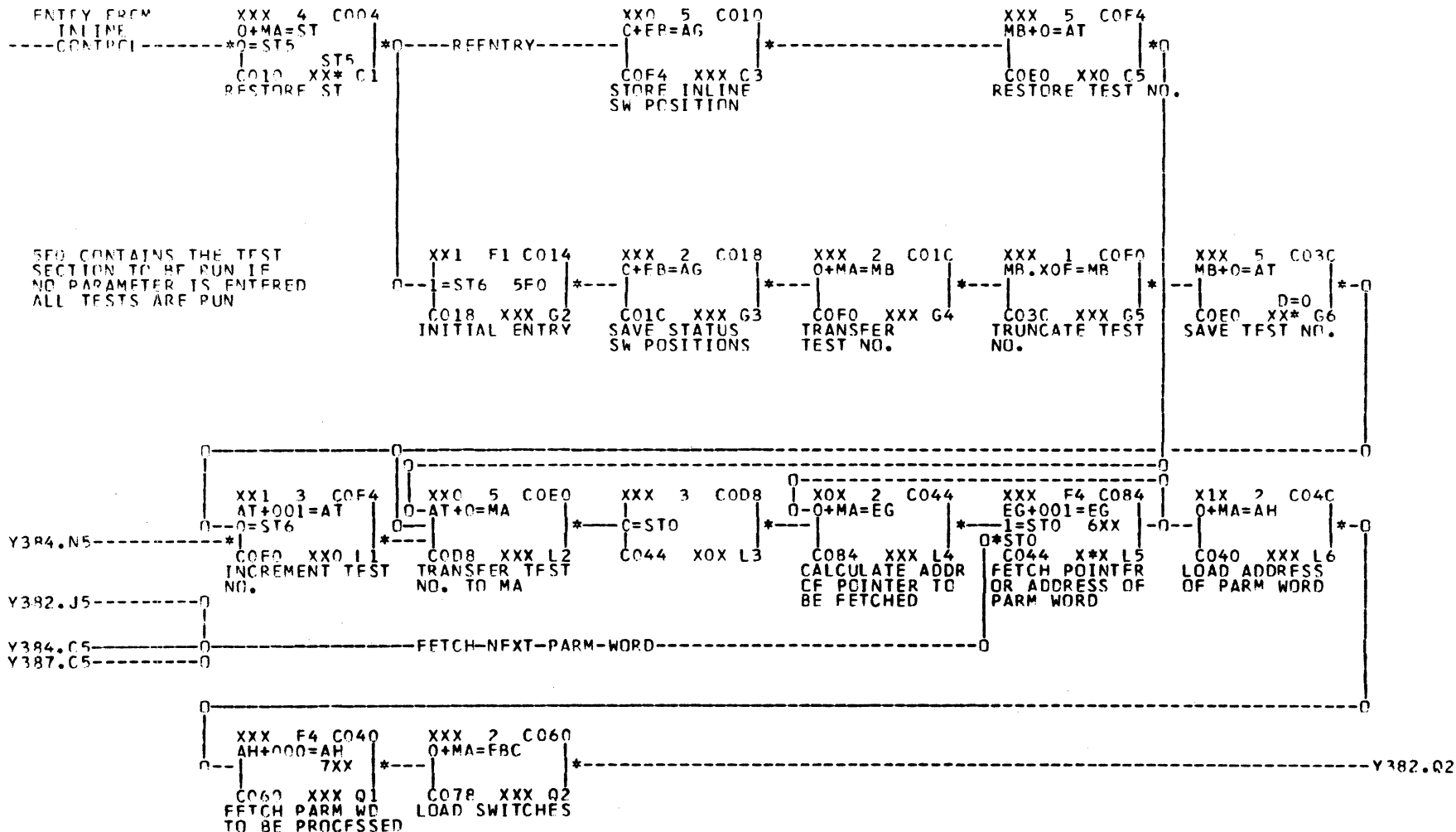
PARAMETERS_

XXX D BF00 402C0310 XXX C1 SEI FCT SPARE	XXX D BF04 402C0A02 XXX C2 CONTROL RESET	XXX D BF08 402C0D08 XXX C3 CHECK STATUS	XXX D BF0C 18400000 XXX C4 MOTOR ON?	XXX D BF10 18200000 XXX C5 BUS IN 2 OFF?	XXX D BF14 402C0E20 XXX C6 DIAG MODE 2	XXX D BF18 402C0402 XXX C7 INHIBIT HL.
XXX D BF1C 402C0900 XXX E1 RESET DIFF	XXX D BF20 402C0700 XXX E2 RESET HI DIFF	XXX D BF24 402C0510 XXX E3 VERIFY	XXX D BF28 18FF0000 XXX E4 DIFF CNT = 00?	XXX D BF2C 402C0508 XXX E5 VERIFY	XXX D BF30 18020000 XXX E6 DIFF CNT HI =	XXX D BF34 402C0406 XXX E7 SIMULATE FINE
XXX D BF38 402C0D40 XXX G1 VERIFY 13/1	XXX D BF3C 18080800 XXX G2 BUS IN 4 - ON	XXX D BF40 181C1000 XXX G3 BUS IN 3 - ON	XXX D BF44 402C0A00 XXX G4 VERIFY 10/-	XXX D BF48 18040400 XXX G5 BUS IN 5 - ON	XXX D BF4C 402C0A01 XXX G6	XXX D BF50 402C09FF XXX G7 SET DIFF = FF
XXX D BF54 402C0702 XXX J1	XXX D BF58 18FFFF00 XXX J2 VERIFY	XXX D BF5C 18020200 XXX J3 BUS IN 6 - ON	XXX D BF60 402C0A10 XXX J4 SEEK START	XXX D BF64 402C0D20 XXX J5 VERIFY	XXX D BF68 402C0416 XXX J6 SIMULATE VEL	XXX D BF6C 402C0D10 XXX J7 MONITOR STATE
XXX D BF70 18010100 XXX L1 BUS IN 7 - ON	XXX D BF74 18100000 XXX L2 BUS IN 3 - OFF	XXX D BF78 402C0B02 XXX L3 DEC DIFF	XXX D BF7C 40DCFF36 XXX L4 LOOP 255	XXX D BF80 402C0B02 XXX L5 DEC DIFF	XXX D BF84 40DCFE39 XXX L6 LOOP 255	XXX D BF88 8400C1FF XXX L7 1.4 MS DELAY
XXX D BF8C 18080000 XXX N1 BUS IN 4 - OFF	XXX D BF90 840018FF XXX N2 .7 DELAY	XXX D BF94 402C0A03 XXX N3 RESET	XXX D BF98 18040000 XXX N4 BIT 5 - OFF	XXX C BF9C 18202000 XXX N5 BIT 2 - ON	XXX D BFA0 00480000 XXX N6	XXX D BFA4 00A40000 XXX N7
XXX D BFA8 00D40000 XXX Q1	XXX D BFAC 8400FFFF XXX Q2					

Y370 STATIC SEEK

ST5=1 ON INITIAL ENTRY
ST5=0 ON REENTRY

EB BIT 0123
0100 - CHAIN
1000 - STOP ON ERROR
1010 - CONTINUE ON ERROR
1100 - RESULT OR LOOP



THE FIRST 2 HEX DIGITS OF PARM WORD
CONTAIN THAT SUBROUTINE TO BE EXECUTED
FOR THAT PARTICULAR PARM WORD

EX: 40 TAG BUS SEQUENCE
18 BUS IN CHECK
1C CUDI CHECK
84 WAIT LOOP
00 END SECTION ROUTINE
OR START LOOP
2C CONDITIONAL BRANCH IF CUDI IS
NOT IN EXPECTED STATE
28 CONDITIONAL BRANCH IF BUS IN
IS NOT IN EXPECTED STATE.

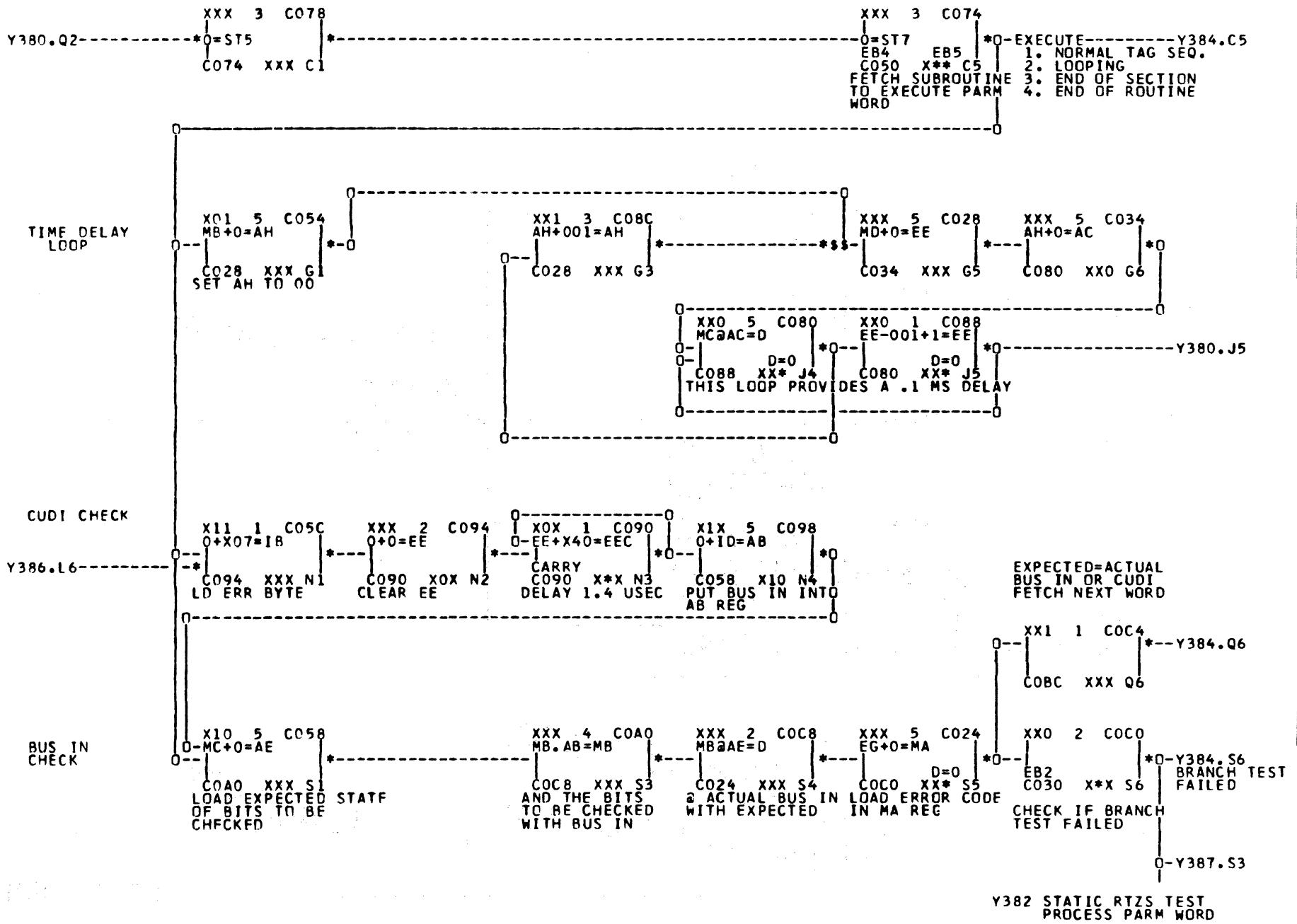
Y380 STATIC RTZS TEST
CONTROL ENTRY

PIP NO. 70631200

DOC NO. 73687900

2.382

REVISION J



Y382.Q6-----0
Y386.N6-----0

Y382.S6-----*
X1X 2 C038
COB8 XX0 C2
PROGRAM ARRIVES
HERE IF BUS IN
OR CUDI BRANCH
ON ERROR IS
PRESENT
*---BRANCH-ON-CUDI
OR BUS IN
INCORRECT
XX0 5 COB8
MD+0=EG
*---=STO
XX1 3 COBC
COB4 XXX C5
*---FETCH-NEXT-WORD-Y380.C5
COBC XXX C4
PLACE THE ADDR
OF NEW POINTER
IN THE EG REG

LOOP HAS
REACHED FINAL
VALUE

XXX 5 CODC
ED+0=AA
XXX 5 C09C
MC@AA=D
XXX 1 COAC
ED+001=ED
D=0
COB8 XX* G6
CO9C XXX G4
END LOOP
LOAD PRES VALU
OF LOOP COUNTER
XXX 5 COD4
MC+0=ED
COAC XXX G5
PRESENT VALUE INCREMENT LOOP
COUNT WITH
EXPECTED FINAL VAL.
*---FETCH-NEXT-WORD---

Y382.C5-----*
XXX 3 C050
MB+000=MB
*0=ST1
A=IAR
CO00 XXX L2
BRANCH TO RTN

COBC XX1 J4
BEGIN LGOP PLACE
THE INITIAL VALUE
OF LOOP IN MC.
XXX 5 C02C
MD+0=EC
*---EXECUTE-TAG-CONTROL-----Y386.L4

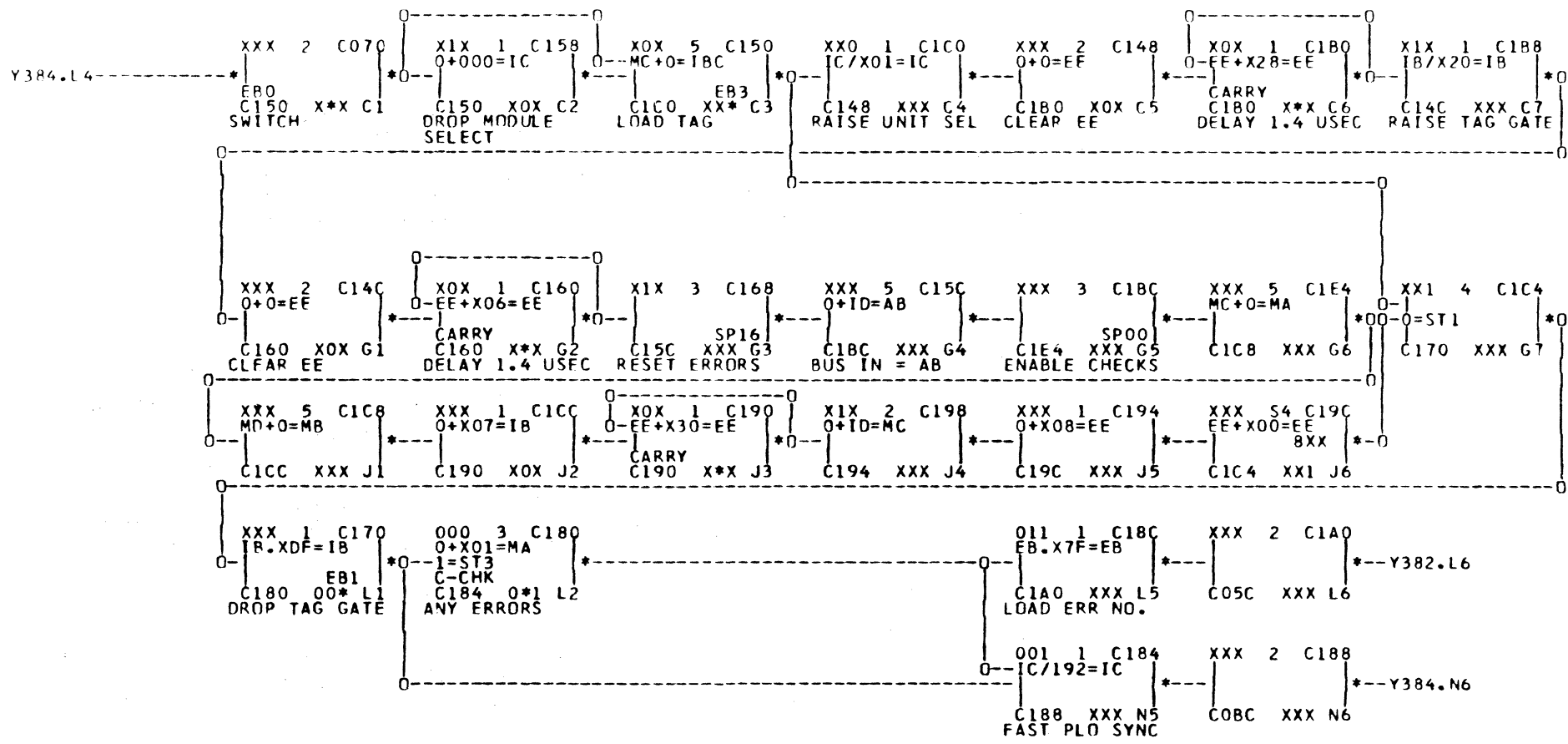
THE SECOND 2 HEX DIGITS IN
THE PARM WORD DETERMINE THE
ROUTINE TO BRANCH TO

C070 XXX L4
LOAD BUS OUT
*---RUN-ONLY-1-TEST-----Y387.N4

XXX 2 C048
ST6
C124 *X*X N4
*---Y380.N5
XOX 2 C124
COE4 XXX N5
FETCH NEXT TEST

XXX 4 COA4
0+0=AT
1=ST5
*---ROUTINE-COMPLETE-----Y387.Q4
COB0 XXX Q4
RESET TEST NO.

Y384 STATIC RTZS TEST
LOOPING & BRANCHING



XXX D C200 0C0C0C0C XXX C0	XXX D C204 0C0C0C0C XXX C1	XXX D C208 0C0C0C0C XXX C2	XXX D C20C 0004080C XXX C3	XXX D C210 10141830 XXX C4	XXX D C214 2024282C XXX C5	XXX D C218 4034484C XXX C6	XXX D C21C C4C84C3C XXX C7
XXX D C220 3850545R XXX E0	XXX D C224 5C606460 XXX E1	XXX D C228 6884CC70 XXX E2	XXX D C22C 7478B47C XXX E3	XXX D C230 28802884 XXX E4	XXX D C234 40541830 XXX E5	XXX D C238 888C906C XXX E6	XXX D C23C 8894984C XXX E7
XXX D C240 6C904C3C XXX G0	XXX D C244 6C88549C XXX G1	XXX D C248 784C6C98 XXX G2	XXX D C24C 4C6C9038 XXX G3	XXX D C250 9C4CA078 XXX G4	XXX D C254 4C6CA44C XXX G5	XXX D C258 6CA84C6C XXX G6	XXX D C25C 909CAC34 XXX G7
XXX D C260 4C6C90AC XXX J0	XXX D C264 9CB09028 XXX J1	XXX D C268 344C4050 XXX J2	XXX D C26C 4C545804 XXX J3	XXX D C270 88FFFFFF XXX J4			

Y388 STATIC RT

CONTROL
WORDS

XXX D C300 402C0310 XXX C1 SELECT SPARE	XXX D C304 402C0A03 XXX C2 CONTROL RESET	XXX D C308 187F0000 XXX C3 ALL BITS OFF?	XXX D C30C 402C0D08 XXX C4 CHECK STATUS	XXX D C310 18400000 XXX C5 BIT 1 OFF?	XXX D C314 18200000 XXX C6 BIT 2 OFF?	XXX D C318 402C0E20 XXX C7 DIAG MODE 2
XXX D C31C 18FF2000 XXX E1 BIT 2 ON - ONL	XXX D C320 402C0402 XXX E2 INHIBIT UNL HD AND HDS LOAD	XXX D C324 402C0900 XXX E3 RESET DIFF	XXX D C328 18FF0000 XXX E4 ALL BITS OFF?	XXX D C32C 402C0700 XXX E5 RESET HI DIFF	XXX D C330 18202000 XXX F6 BIT 2 ON?	XXX D C334 402C0406 XXX E7 4/5,6
XXX D C338 18101000 XXX G1 BIT 3 ON?	XXX D C33C 18040400 XXX G2 BIT 5 ON?	XXX D C340 18020000 XXX G3 BIT 6 OFF?	XXX D C344 18FF1C00 XXX G4 3,4,5 - ON 0,1,2,6,7 - OF	XXX D C348 402C0D40 XXX G5 SERVO POINTS	XXX D C34C 18080800 XXX G6 BIT 4 ON?	XXX D C350 402C0A01 XXX G7 RESET INTERRUPT
XXX D C354 18100000 XXX J1 BIT 3 OFF?	XXX D C358 18040000 XXX J2 BIT 5 OFF?	XXX D C35C 402C06FF XXX J3 CYL ADD = 255	XXX D C360 18FFFF00 XXX J4 ALL BITS ON?	XXX D C364 402C09FF XXX J5 TRANS DIFF 255	XXX D C368 402C0712 XXX J6 HI DIFF + CYL 7/6,3	XXX D C36C 18020200 XXX J7 BIT 6 ON?
XXX D C370 402C0A08 XXX L1 10/4 RTZ	XXX D C374 402C0416 XXX L2 SIMULATE VFL	XXX D C378 402C041F XXX L3 4/3,4,5,6	XXX D C37C 402C0510 XXX L4 REQUEST DIFF	XXX D C380 402C0502 XXX L5 REQUEST CAR	XXX D C384 402C0508 XXX L6 REG HI DIFF	XXX D C388 18010100 XXX L7 BIT 7 ON?
XXX D C38C 18FF2100 XXX N1 2,7 ON? 0,1,2,3,4,5,6	XXX D C39C 402C0D10 XXX N2 MONITOR STATE	XXX D C394 18FC0000 XXX N3 0,1,2,3,4,5 OF	XXX D C398 402C043E XXX N4 4/2,3,4,5,6	XXX D C39C 18F00000 XXX N5 BIT 0,1,2 OFF	XXX D C3A0 18070700 XXX N6 BIT 5,6,7 ON	XXX D C3A4 402C045E XXX N7 4/1,3,4,5,6
XXX D C3A8 402C04DE XXX Q1 4/0,1,3,4,5,6	XXX D C3AC 181F1F00 XXX Q2 BITS 3,4,5 6,7 ON?	XXX D C3B0 840060FF XXX Q3 2.1 MSEC WAIT	XXX D C3B4 180A0A00 XXX Q4 HITS 4,6 ON	XXX D C3B8 00A40000 XXX Q5 END ROUTINE	XXX D C3BC 402C0D20 XXX Q6	XXX D C3C0 18000000 XXX Q7
XXX D C3C4 8400FFFF XXX S1	XXX D C3C8 402C0A00 XXX S2	XXX D C3CC 18121200 XXX S3				

Y390 STATIC RTZS

PUR. NO. 70431200

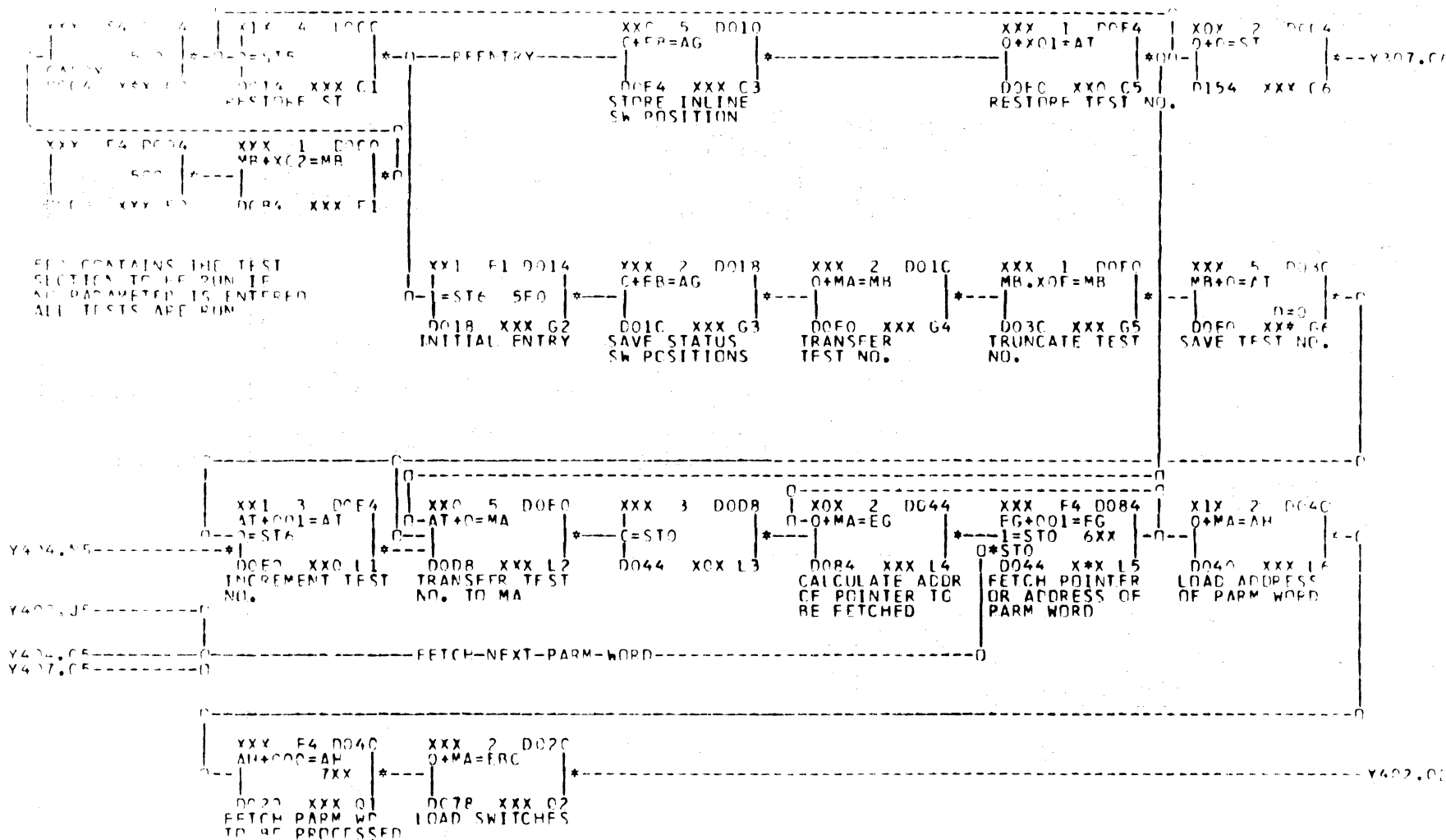
DWG. NO. 73687900

2-388

REVISION H

TEST IN INITIAL ENTRY
 TEST IN REENTRY

ERR BIT 0124
 0166 - CHAIN
 1000 - STOP ON ERROR
 1010 - CONTINUE ON ERROR
 1100 - RESULT OR LOOP



FE1 CONTAINS THE TEST SECTION TO BE RUN IF NO PARAMETER IS ENTERED ALL TESTS ARE RUN

Y404.A5
 Y405.J5
 Y406.C5
 Y407.C5

THE FIRST 2 HEX DIGITS OF PARM WORD CONTAIN THAT SUBROUTINE TO BE EXECUTED FOR THAT PARTICULAR PARM WORD

- FX: 40 TAG BUS SEQUENCE
- 18 BUS IN CHECK
- 10 CUDI CHECK
- 84 WAIT LOOP
- 00 END SECTION ROUTINE OR START LOOP
- 20 CONDITIONAL BRANCH IF CUDI IS NOT IN EXPECTED STATE
- 28 CONDITIONAL BRANCH IF BUS IN IS NOT IN EXPECTED STATE.

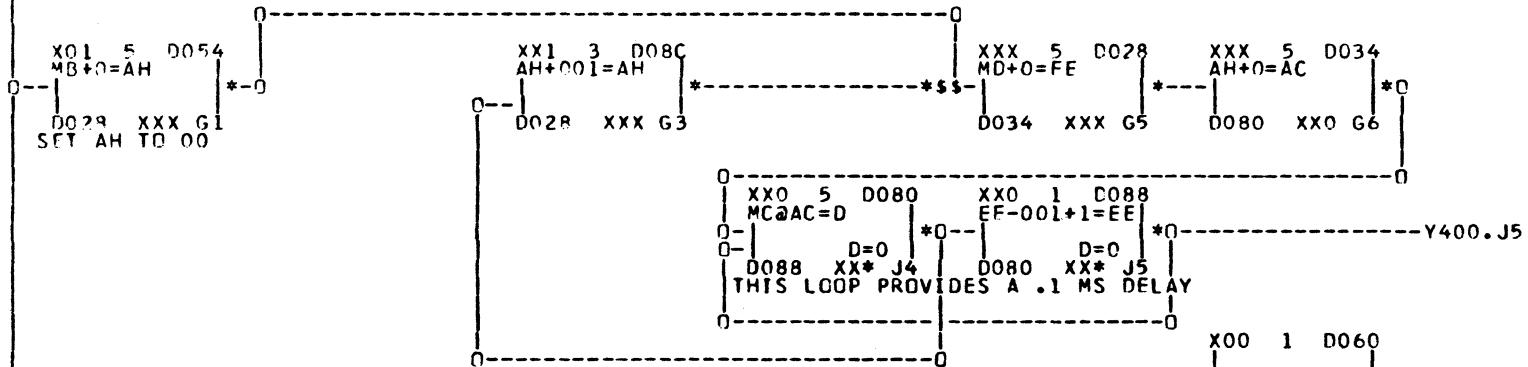
XXX 0 D100
 O0FF0000
 XXX 55

Y400 SIMULATED LOSS OF DIGITS CONTROL ENTRY

Y400.Q2-----*0=ST5
 XXX 3 D078
 D074 XXX C1

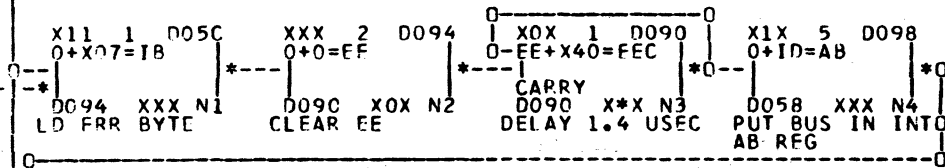
XXX 3 D074
 0=ST7
 EB4 EB5
 D050 X** C5
 *0=EXECUTE-----Y404.C5
 1. NORMAL TAG SEQ.
 2. LOOPING
 3. END OF SECTION
 4. END OF ROUTINE
 FETCH SUBROUTINE TO EXECUTE PARM WORD

TIME DELAY LOOP

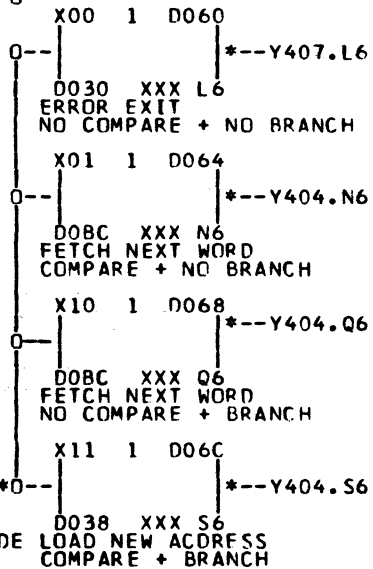
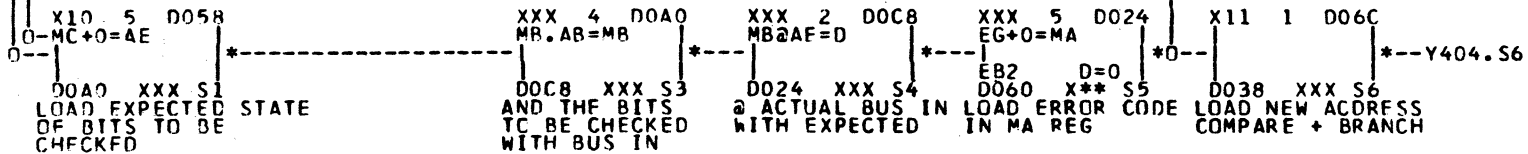


CUDI CHECK

Y406.L6-----*



BUS IN CHECK



Y407.S3

Y402 SIMULATED LOSS OF DIBITS
 PROCESS PARM WORD

Y402.N5
 Y402.N6
 Y402.N6

Y402.S1
 PROGRAM ARRIVES
 HERE IF BUS IN
 OR CUDI BRANCH
 IN ERROR IS
 PRESENT

X1X 2 D038
 D038 XX0 C2

*--BRANCH-ON-CUDI
 CP BUS IN
 INCORRECT

XX0 5 D088
 MD+0=EG

XX1 3 D08C
 =ST0

*--FETCH-NEXT-WORD-Y400.C5

D08C XXX C4
 PLACE THE ADDR
 OF NEW PCINTER
 IN THE EG REG

D084 XXX C5

LOOP HAS
 REACHED FINAL
 VALUE

Y402.C5
 XXX 3 D050
 MH+000=MB
 *O=ST1
 A=IAR
 D000 XXX L2
 BRANCH TO RTN

THE SECOND 2 HEX DIGITS IN
 THE PARM WORD DETERMINE THE
 ROUTINE TO BRANCH TO

XXX 5 D0DC
 ED+0=AA

XXX 5 D09C
 MC@AA=D

XXX 1 D0AC
 FD+001=ED

D09C XXX G4
 FND LOOP
 LCAD PRES VALU
 CF LOOP COUNTER

DOAC XXX G5
 @ PRESENT VALUE
 LOOP COUNT WITH
 EXPECTED FINAL VAL.

DOBB XX* G6
 D=0

XXX 5 D0D4
 MC+0=ED

*--FETCH-NEXT-WORD--

D08C XX1 J4
 BEGIN LOOP PLACE
 THE INITIAL VALUE
 CF LOOP IN MC.

XXX 5 D02C
 MD+0=EC

*--EXECUTE-TAG-CONTROL--

D070 XXX L4
 LOAD BUS OUT

XXX 2 D048
 ST6
 D124

XXX N4

*--RUN-ONLY-1-TEST--

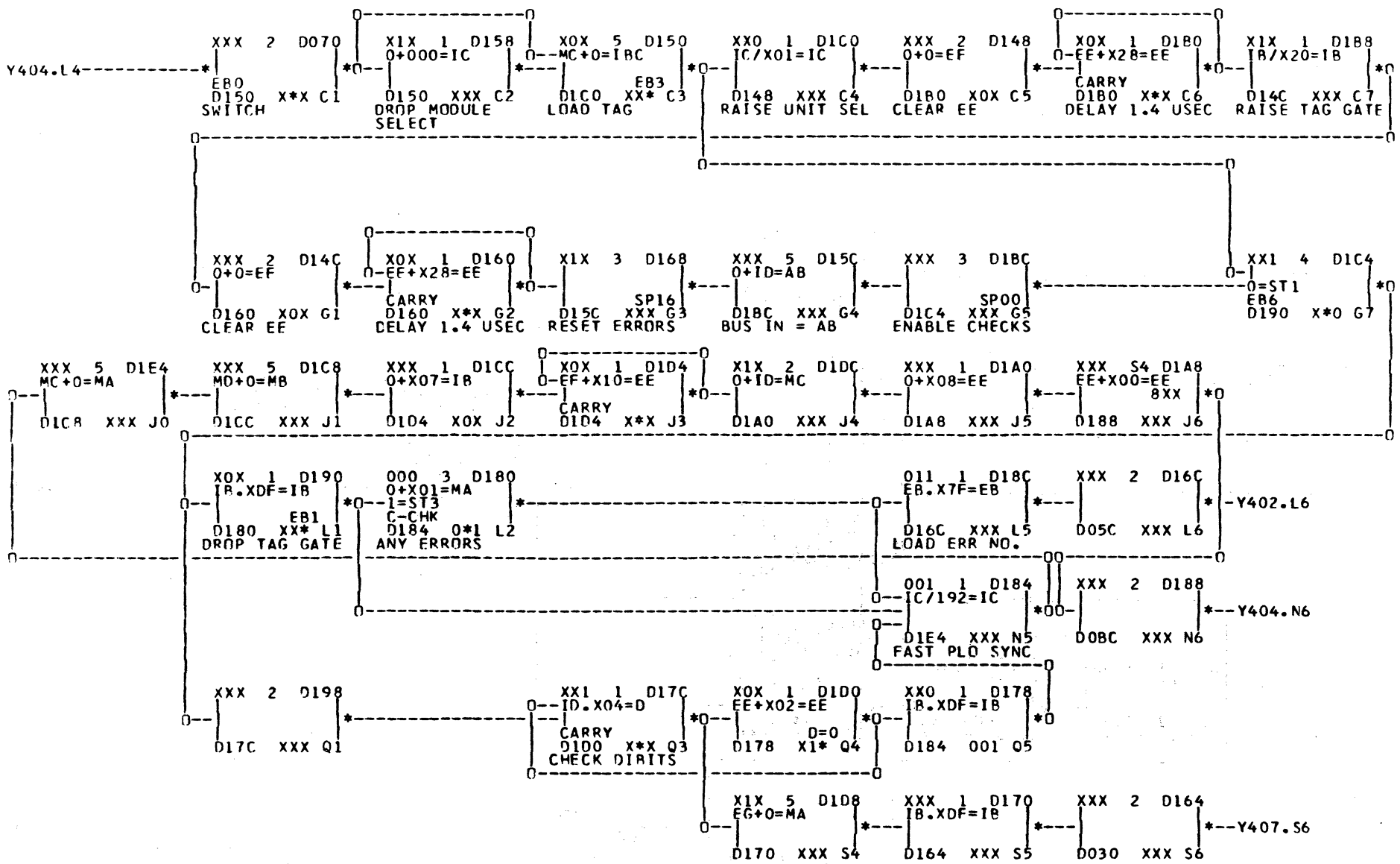
XXX 2 D124
 DOE4
 XXX N5

Y400.N5
 FETCH NEXT TEST

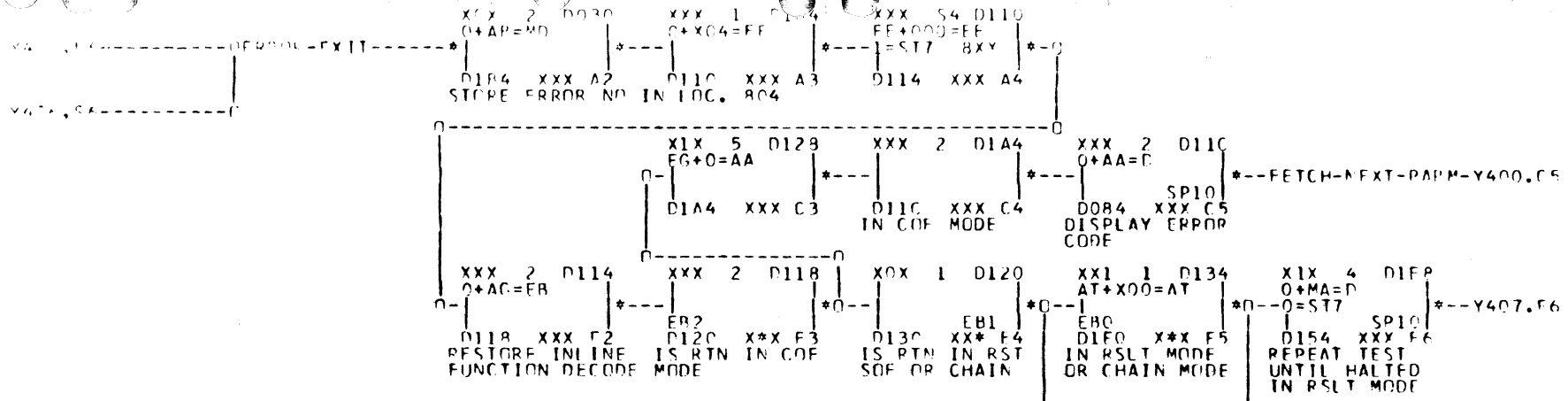
XXX 4 D0A4
 O+0=AT
 =ST5

D0B0 XXX C4
 RESET TEST NO.

*--ROUTINE-COMPLETE--



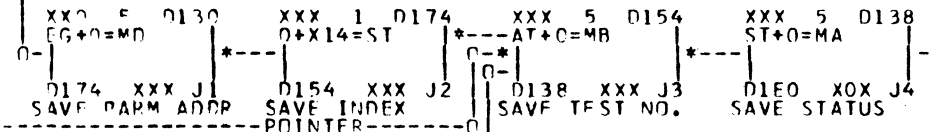
Y406 SIMULATED LOSS OF DIBITS
PARAMETER PROCESSING



*--FETCH-NEXT-PARM-Y400.C5

*--Y407.F6

STOP-ON-ERROR-MODE



Y400.C6

WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO F-DATA AND HITTING THE EXECUTE SWITCH.

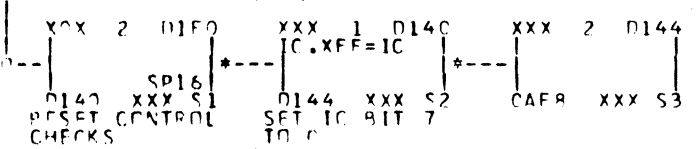
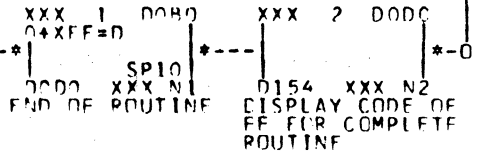
- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN OR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN OR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI

Y404.M4

END-OF-TEST SECTION

Y407.F6

Y404.C4



EXIT TO INLINE CONTROL ROUTINE

XXX E D200
0C0C484d

XXX C0

XXX D D204
4848484d

XXX C1

XXX D D208
48484848

XXX C2

XXX D D20C
C004080C

XXX C3

XXX D D210
24F8BCE4

XXX C4

XXX D D214
08348810

XXX C5

XXX D D218
20244CC8

XXX C6

XXX D D21C
2C30C834

XXX C7

XXX E D220
686C7074

XXX E0

XXX D D224
EC248CC0

XXX E1

XXX D D228
EC24BCC4

XXX E2

XXX D D22C
187884C8

XXX E3

XXX D D230
E8D0248C

XXX E4

XXX D D234
F4845888

XXX E5

XXX D D238
248CFC84

XXX E6

XXX D D23C
8C0850F8

XXX E7

XXX C D240
248C94C8

XXX G0

XXX C D244
989C040C

XXX G1

XXX D D248
B4FFFFFF

XXX G2

Y408



7063120C

DGC NO. 736879C0



REVISION

G

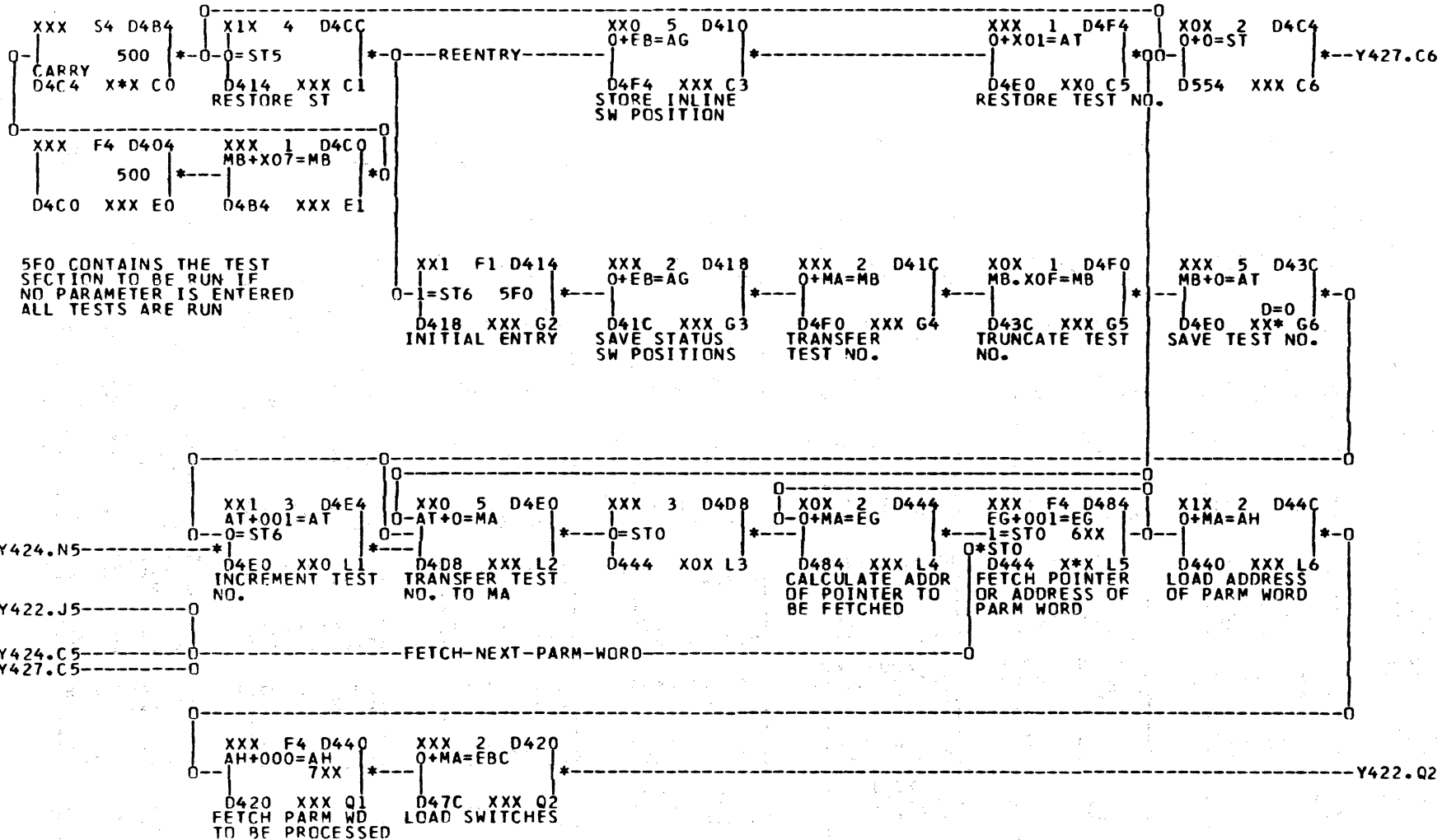


XXX D D300 402C0310 XXX CO SELECT SPARE	XXX D D304 402C0A03 XXX C1 CONTROL RESET RESET INTERPT	XXX D D308 402C0400 XXX C2 REQUEST STATUS	XXX D D30C 18FF0800 XXX C3 ON LINE ?	XXX D D310 402C0964 XXX C4 RESET LO DIFF	XXX D D314 402C0700 XXX C5 RESET HI DIFF	XXX D D318 402C0D40 XXX C6 SERVO POINTS	XXX D D31C 18101000 XXX C7 DIFF = 0
XXX D D320 402C0A10 XXX EO SEEK START	XXX D D324 00D40000 XXX E1 INDEX = 00	XXX D D328 7884C8E8 XXX E2 DELAY 2 MS	XXX D D32C 28181820 XXX E3 IF ON LINE JUMP LOOP	XXX D D330 40DCFF1A XXX E4 LOOP TO BEGIN TILL INDX = FF	XXX D D334 18181800 XXX E5 ON LINE?	XXX D D338 402C0D40 XXX E6 SERVO POINTS	XXX D D33C 18101000 XXX E7 DIFF = 0
XXX D D340 402C0664 XXX GO CAR = 100	XXX D D344 402C0508 XXX G1 READ HI DIFF	XXX D D348 18646400 XXX G2 BITS 1,2,5 ON	XXX D D34C 840002FF XXX G3 DELAY .1 MS	XXX D D350 18202000 XXX G4 IF CYL PULSE JUMP LOOP	XXX D D354 40DCC822 XXX G5 LOOP TO BEGIN TILL INDX = 200	XXX D D358 18020200 XXX G6 CYL PULSE?	XXX D D35C 2840402B XXX G7 IF ON CYL JUMP LOOP
XXX D D360 40DCFF26 XXX JO LOOP TO BEGIN TILL INDX = FF	XXX D D364 18040400 XXX J1 ON CYL?	XXX D D368 840016FF XXX J2 DELAY 2.2 MS	XXX D D36C 402C0E20 XXX J3 DIAG 2	XXX D D370 402C0402 XXX J4 INHIBIT LD HD	XXX D D374 84000AFF XXX J5 1MS DELAY	XXX D D378 18000000 XXX J6 DIBITS ?	XXX D D37C 40DC3234 XXX J7 LOOP TO BEGIN TILL INDX =
XXX D D380 40DC6439 XXX LO LOOP TO BEGIN TILL INDX = 64	XXX D D384 402C0D04 XXX L1 REG FAULT	XXX D D388 402C0A02 XXX L2 HDSNOT LDED	XXX D D38C 18020000 XXX L3 CLEAR DIAG 2	XXX D D390 18404000 XXX L4 REZER0	XXX D D394 40DC1641 XXX L5 IF CYL PLS JUMP LOOP	XXX D D398 18101000 XXX L6 LOOP TO BEGIN TILL INDX = C8	XXX D D39C 18080800 XXX L7 CYL PLS?
XXX D D3A0 402C0D10 XXX NO MONITOR STATE	XXX D D3A4 2801013D XXX N1 IF REV EOT JUMP LOOP	XXX D D3A8 40DCFF28 XXX N2 LOOP TO BEGIN TILL INDX = FF	XXX D D3AC 18080800 XXX N3 REV EOT?	XXX D D3B0 00480000 XXX N4 END OF SEC	XXX D D3B4 00A40000 XXX N5 END OF RTN	XXX D D3B8 402C0A01 XXX N6	XXX D D3BC 8400FOFF XXX N7
XXX D D3C0 40DC0426 XXX Q0	XXX D D3C4 40DC082A XXX Q1	XXX D D3C8 18404000 XXX Q2	XXX D D3CC 18020200 XXX Q3	XXX D D3D0 183E0000 XXX Q4	XXX D D3D4 402C0A02 XXX Q5	XXX D D3D8 840001FF XXX Q6	XXX D D3DC 840014FF XXX Q7
XXX D D3E0 18010100 XXX SO	XXX D D3E4 40DC1212 XXX S1	XXX D D3E8 18808000 XXX S2	XXX D D3EC 422C0D40 XXX S3	XXX D D3F0 187FOA00 XXX S4	XXX D D3F4 40DC2633 XXX S5	XXX D D3F8 402C0A08 XXX S6	XXX D D3FC 40DC2039 XXX S7

Y410 SIMULATED LOSS OF DIBITS

ST5=1 UN INITIAL ENTRY
ST5=0 ON REENTRY

EB BIT 0123
0100 - CHAIN
1000 - STOP ON ERROR
1010 - CONTINUE ON ERROR
1100 - RESULT OR LOOP

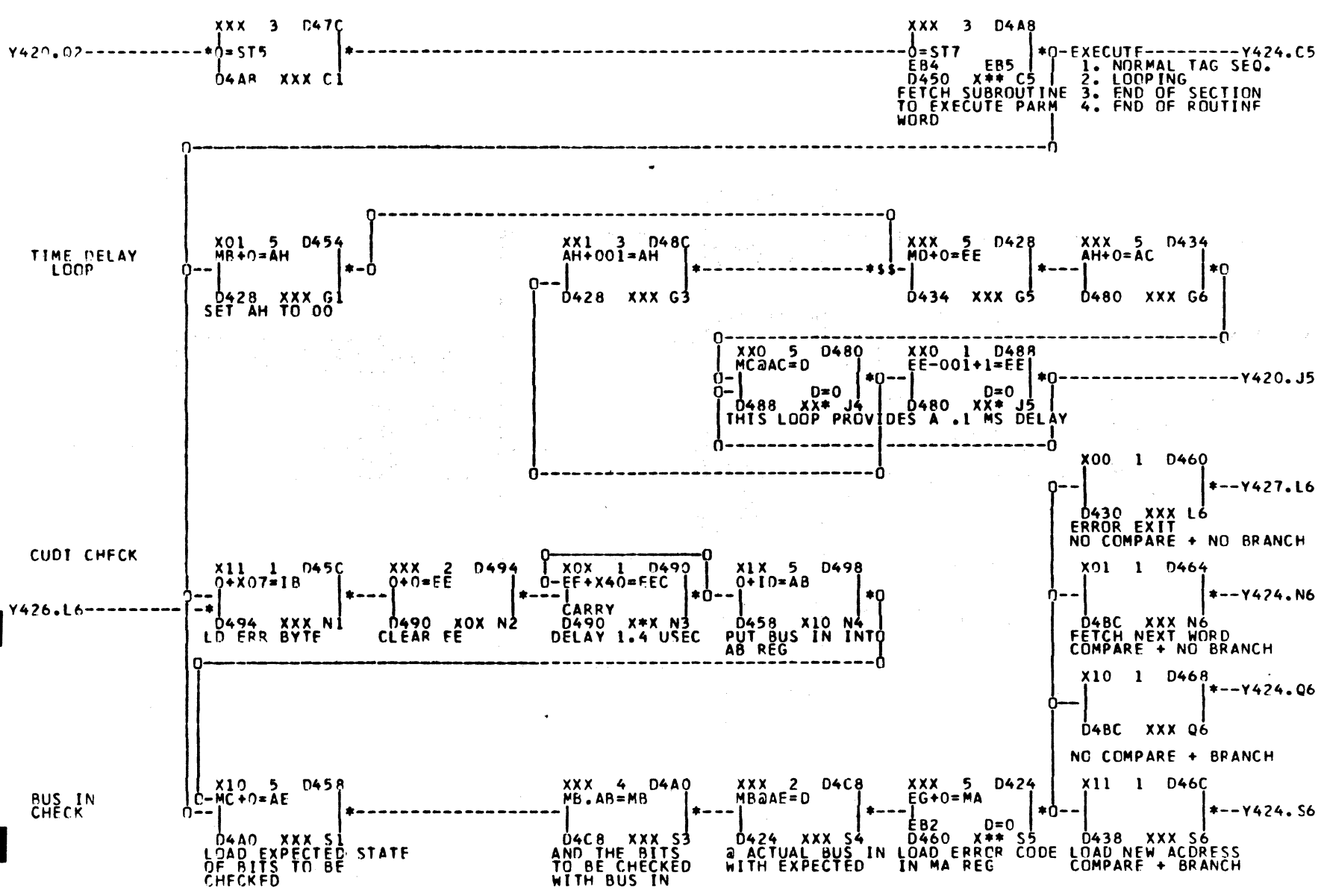


5F0 CONTAINS THE TEST SECTION TO BE RUN IF NO PARAMETER IS ENTERED ALL TESTS ARE RUN

THE FIRST 2 HEX DIGITS OF PARM WORD CONTAIN THAT SUBROUTINE TO BE EXECUTED FOR THAT PARTICULAR PARM WORD

- EX:
- 40 TAG BUS SEQUENCE
 - 18 BUS IN CHECK
 - 1C CUDI CHECK
 - 84 WAIT LOOP
 - 00 END SECTION ROUTINE OR START LOOP
 - 2C CONDITIONAL BRANCH IF CUDI IS NOT IN EXPECTED STATE
 - 28 CONDITIONAL BRANCH IF BUS IN IS NOT IN EXPECTED STATE.

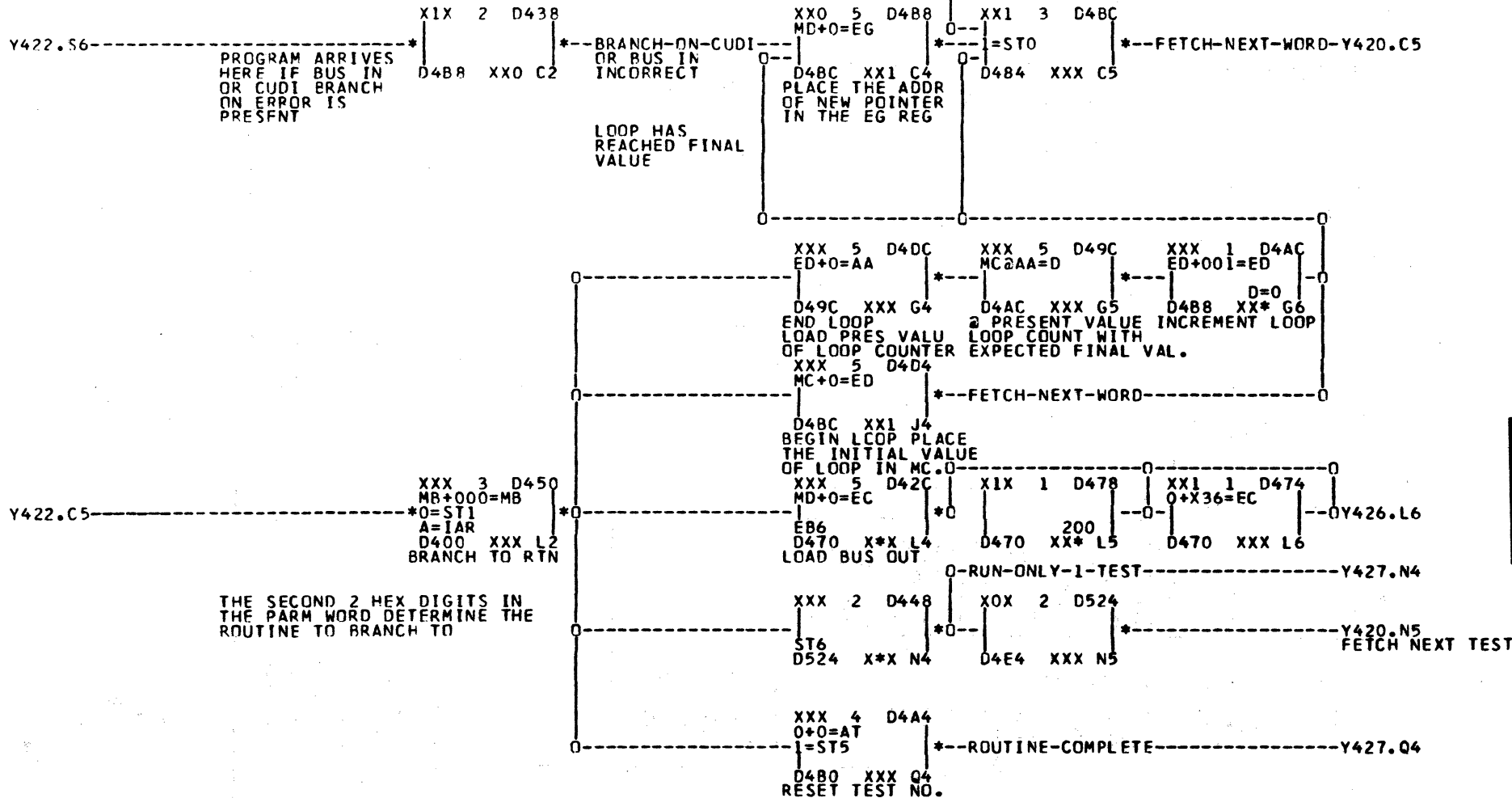
Y420 FORWARD EOT DETECT TEST CONTROL ENTRY



Y427.S3

Y422 FORWARD EOT DETECT TEST
PROCESS PARM WORD

Y402.N6
Y422.Q6
Y426.N6



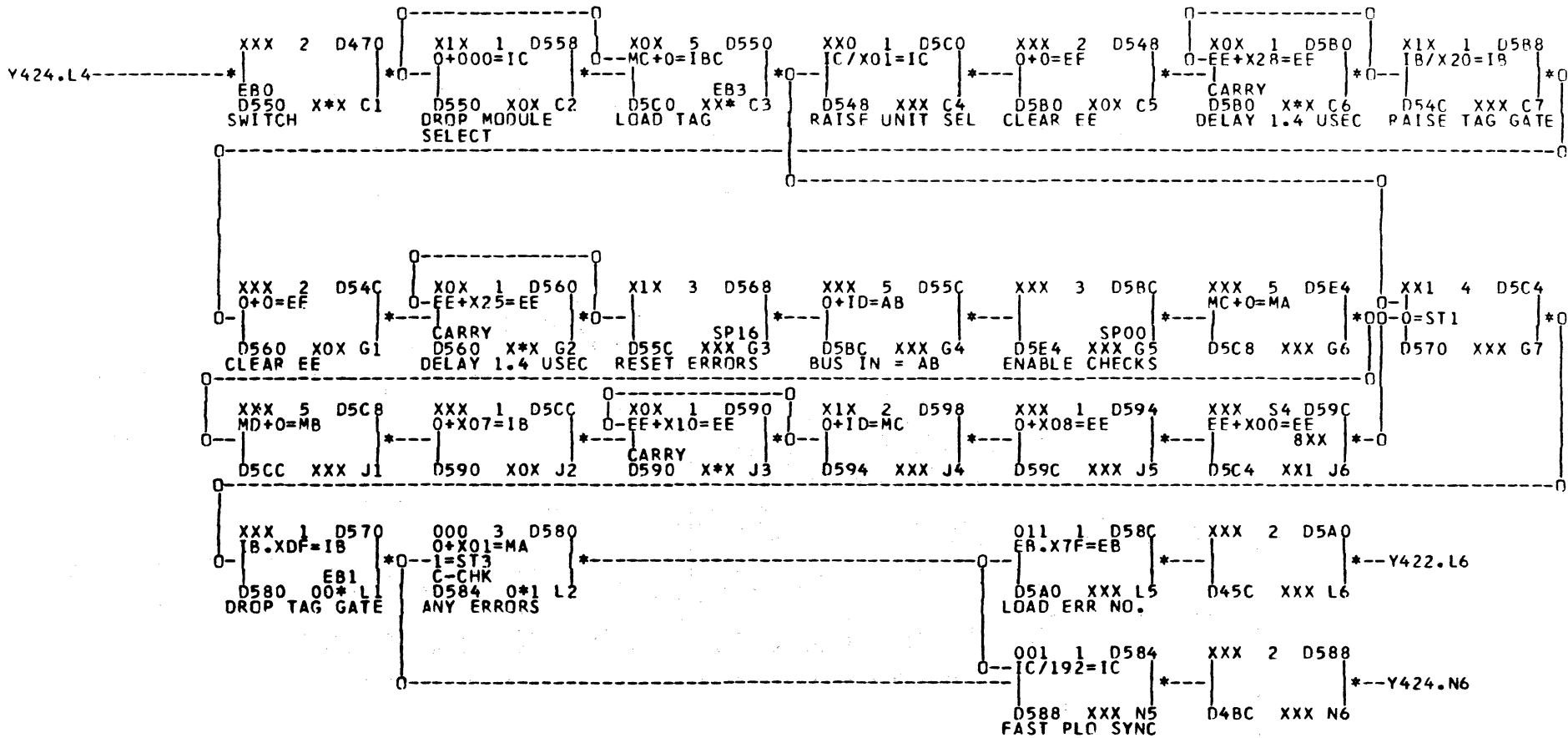
Y424 FORWARD EOT DETECT TEST
LOOPING & BRANCHING

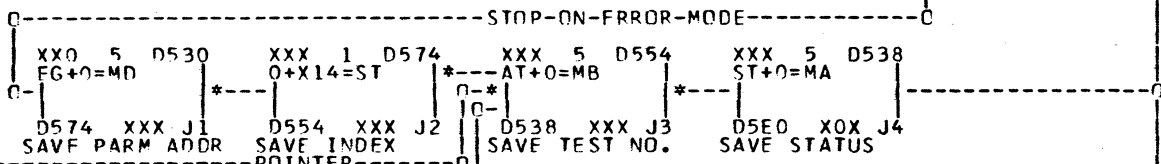
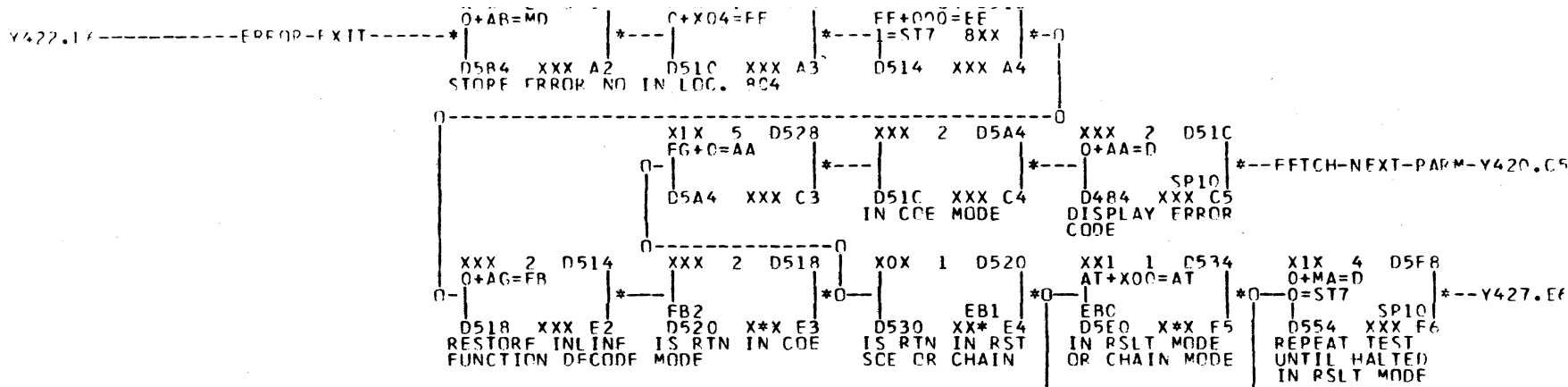
PUR NO. 70631200

DOC NO. 73687900

2-398

REVISION F





Y420.C6

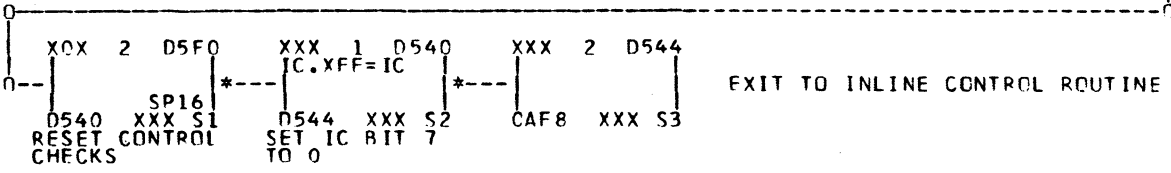
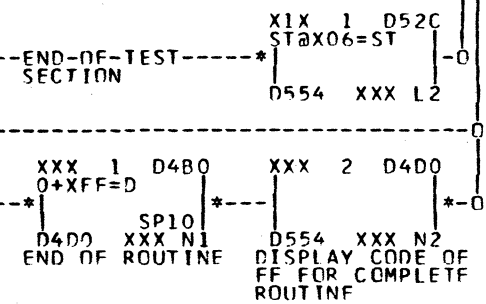
Y424.N4

Y427.F6

Y424.O4

WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO E-DATA AND HITTING THE EXECUTE SWITCH.

- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN OR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN OR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI



Y427 FORWARD EOT DETECT TEST ERROR ≠ NORMAL EXITS

XXX D D600
0C0C4747
XXX C0

XXX D D604
47474747
XXX C1

XXX D D608
47474747
XXX C2

XXX D D60C
C004080C
XXX C3

XXX D D610
1014181C
XXX C4

XXX D D614
20242800
XXX C5

XXX D D618
38343C40
XXX C6

XXX D D61C
44484C50
XXX C7

XXX D D620
5458005C
XXX E0

XXX D D624
FOE8646C
XXX E1

XXX D D628
7074787C
XXX E2

XXX D D62C
8084888C
XXX E3

XXX D D630
9094D440
XXX E4

XXX D D634
D888B084
XXX E5

XXX D D638
88DC8860
XXX E6

XXX D D63C
F4F4D00C
XXX E7

XXX D D640
40FC2C90
XXX G0

XXX D D644
F40408CC
XXX G1

XXX D D700 402C0310 XXX C0 SELECT SPARE	XXX D D704 402C0A03 XXX C1 CONTROL RESET RESET INTRPTS	XXX D D708 18FF0800 XXX C2 ON LINE ONLY	XXX D D70C 402C0A08 XXX C3 REZERO	XXX D D710 00D40000 XXX C4 INDEX = 0	XXX D D714 840014FF XXX C5 2MS DELAY	XXX D D718 402C0400 XXX C6 REQUEST STATUS	XXX D D71C 28181817 XXX C7 IF ON LINE JUMP LOOP
XXX C D720 40DCFF11 XXX F0 LOOP TO BEGIN TILL INDX = FF	XXX D D724 402C0400 XXX E1 REQUEST STATUS	XXX D D728 18181800 XXX E2 ON LINE?	XXX D D72C 40DC1041 XXX E3 SERVO POINTS	XXX D D730 18101000 XXX E4 DIFF = 0	XXX D D734 402C0706 XXX E5 DIFF = 256	XXX D D738 422C099A XXX E6 DIFF = 154	XXX D D73C 402C0A10 XXX E7 SEEK START
XXX C D740 00D40000 XXX G0 INDEX = 0	XXX D D744 840014FF XXX G1 DELAY 2 MS	XXX D D748 402C0400 XXX G2 REQUEST STATUS	XXX D D74C 28181822 XXX G3 IF ON LINE JUMP LOOP	XXX D D750 40DCFF1C XXX G4 LOOP TO BEGIN TILL INDX = FF	XXX D D754 402C0400 XXX G5 REQUEST STATUS	XXX D D758 18181800 XXX G6 ON LINE?	XXX D D75C 402C0508 XXX G7 READ HI CAR.
XXX D D760 18101000 XXX J0 BIT 3 ON?	XXX D D764 402C0601 XXX J1 READ CAR	XXX D D768 189A9A00 XXX J2 ALL BITS ON	XXX D D76C 402C0901 XXX J3 DIFF = 1	XXX D D770 402C0A10 XXX J4 SEEK START	XXX D D774 00D40000 XXX J5 INDEX = 00	XXX D D778 840001FF XXX J6 .1MS DELAY	XXX D D77C 402C0D40 XXX J7 SERVO POINTS
XXX D D780 28111130 XXX L0 IF EOT JUMP LOOP	XXX D D784 40DCFF2A XXX L1 LOOP TO BEGIN TILL INDEX = 64	XXX D D788 402C0D40 XXX L2 SERVO POINTS	XXX D D78C 18111100 XXX L3 CHECK EOT	XXX D D790 402C0400 XXX L4 REQUEST STAT	XXX D D794 18202000 XXX L5 SK INCOMPLETE	XXX D D798 840001FF XXX L6 DELAY .1 MS	XXX D D79C 402C0400 XXX L7 REQUEST STAT
XXX D D7A0 18C80000 XXX N0 ONLINE OFF.	XXX D D7A4 40DC9132 XXX N1 LOOP TO BEGIN TILL INDX = 91	XXX D D7A8 840001FF XXX N2 DELAY .1MS	XXX D D7AC 402C0400 XXX N3 REQUEST STATUS	XXX D D7B0 2802003A XXX N4 IF ON LINE JUMP LOOP	XXX D D7B4 40DCFF34 XXX N5 LOOP TO BEGIN TILL INDEX = FA	XXX D D7B8 402C0400 XXX N6 REQUEST STAT	XXX D D7BC 18080800 XXX N7 ON LINE
XXX D D7C0 402C0D40 XXX Q0 SERVO POINTS	XXX D D7C4 18101000 XXX Q1 DIFF = 0	XXX D D7C8 00480000 XXX Q2 END OF SECT	XXX D D7CC 00A40000 XXX Q3 END OF ROUTINE	XXX D D7D0 402C0A01 XXX Q4 RESET INTERRUPTS	XXX D D7D4 8400FFFF XXX Q5 DELAY 10 MSEC	XXX D D7D8 84006464 XXX Q6 DELAY .01MS	XXX D D7DC 18020200 XXX Q7 CYL PULSE
XXX C D7E0 8400FFFF XXX S0	XXX D D7E4 18181800 XXX S1	XXX D D7E8 402C0510 XXX S2	XXX D D7EC 18FF0000 XXX S3	XXX D D7F0 18020000 XXX S4	XXX D D7F4 18000000 XXX S5		

Y430 FORWARD EOT DETECT
PARAMETERS

PUB NO. 70631200

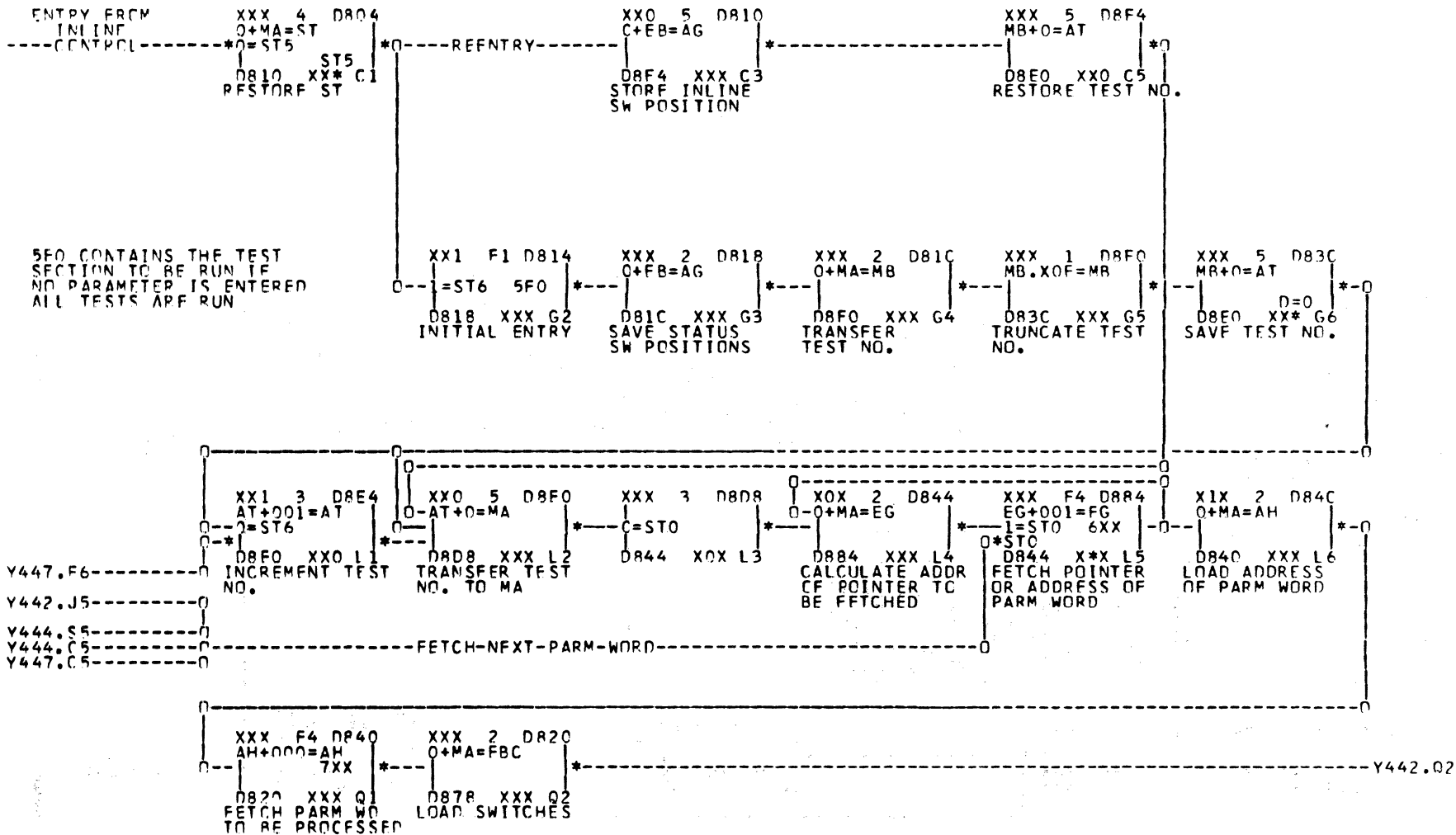
DOC NO. 73687900

2-402

REVISION F

ST5=1 ON INITIAL ENTRY
ST5=0 ON RENTRY

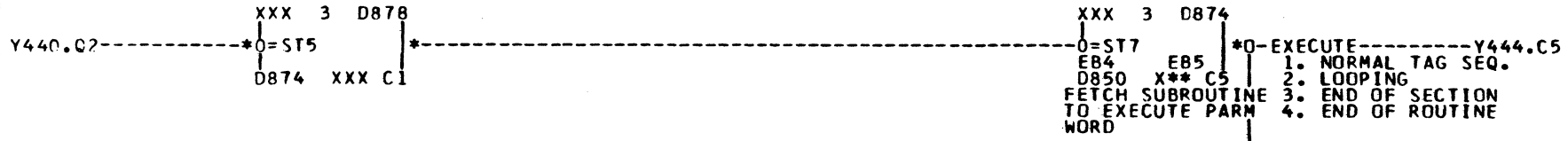
FB BIT 0123
0100 - CHAIN
1000 - STCP ON ERROR
1010 - CONTINUE ON ERRCR
1100 - RESULT OR LOOP



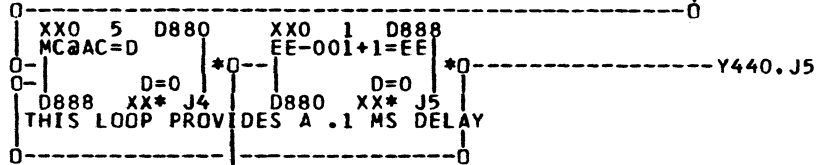
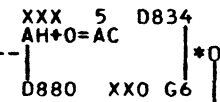
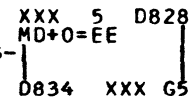
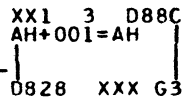
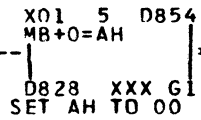
THE FIRST 2 HEX DIGITS OF PARM WORD
CONTAIN THAT SUBROUTINE TO BE EXECUTED
FOR THAT PARTICULAR PARM WORD

FX: 40 TAG BUS SEQUENCE
18 BUS IN CHECK
1C CUDI CHECK
84 WAIT LOOP
00 END SECTION ROUTINE
OR START LOOP
2C CONDITIONAL BRANCH IF CUDI IS
NOT IN EXPECTED STATE
28 CONDITIONAL BRANCH IF BUS IN
IS NOT IN EXPECTED STATE.

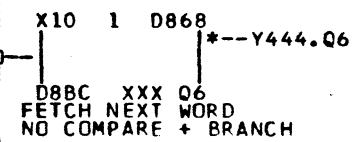
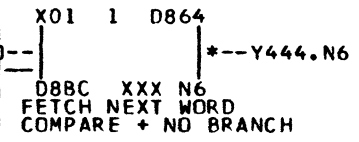
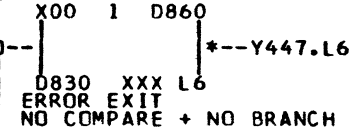
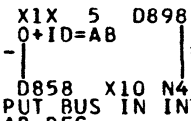
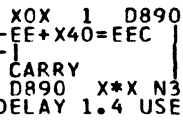
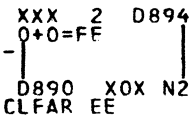
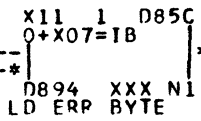
Y440 I + C IV TEST
CONTROL ENTRY



TIME DELAY LOOP

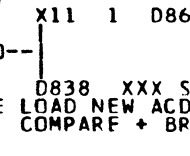
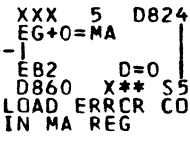
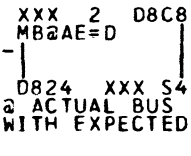
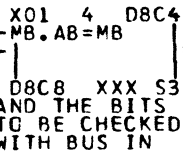
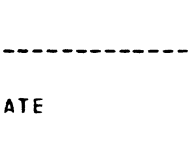
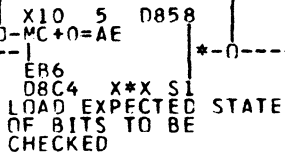


CUDI CHFK



Y446.L6

BUS IN CHECK



Y442 I + C IV TEST
 PROCESS PARM WORD

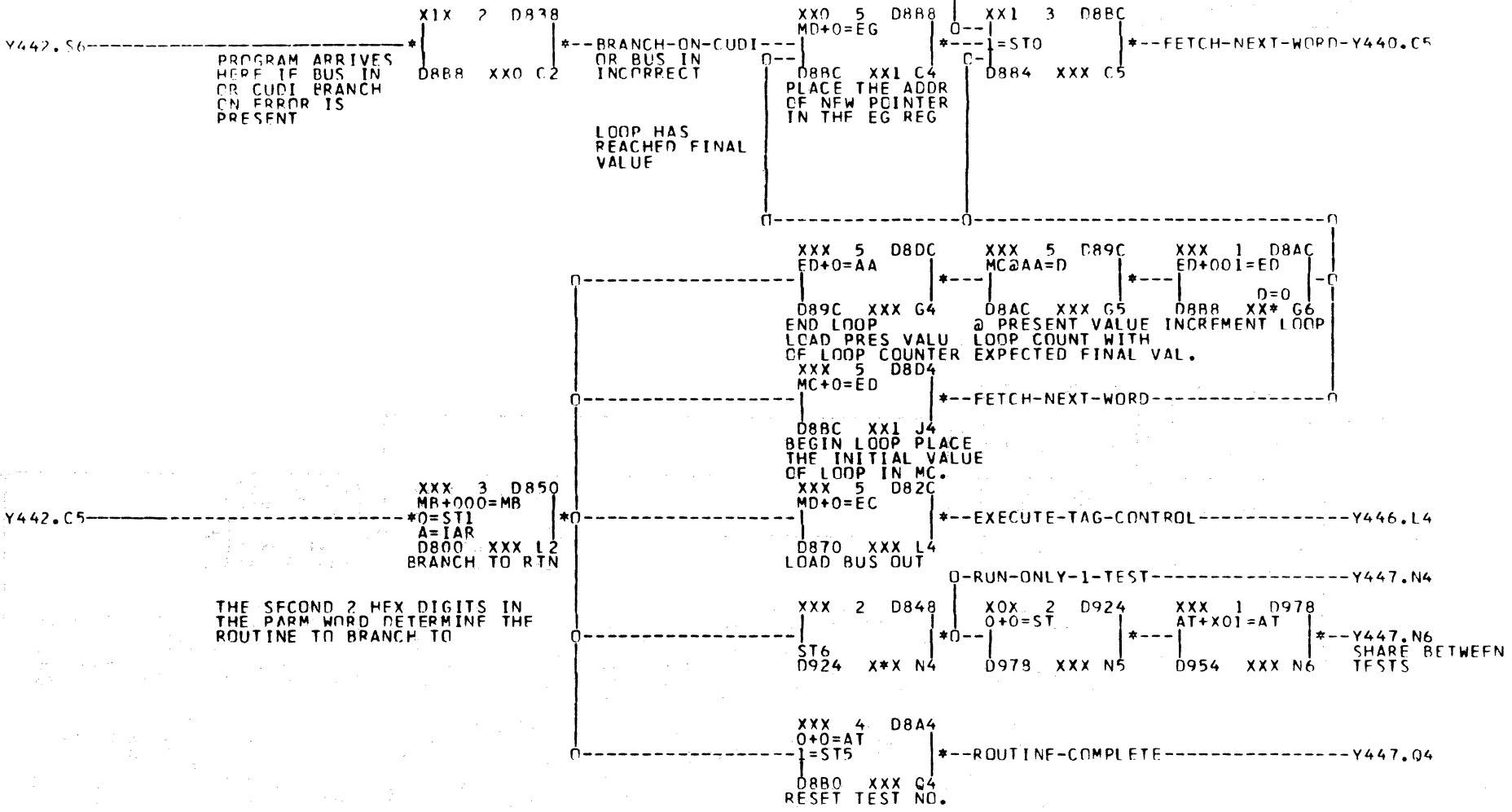
PUR NC. 70631200

DOC NO. 73687900

2404

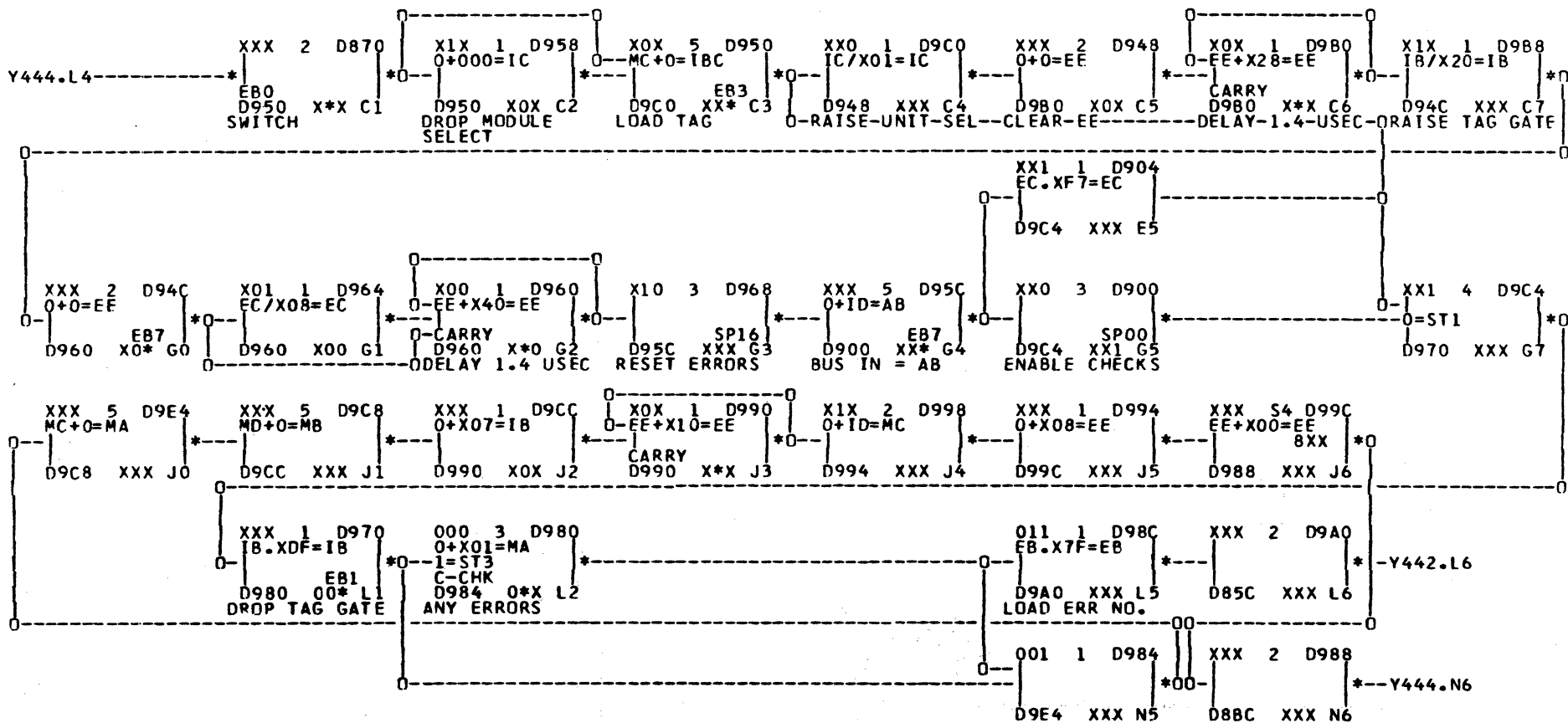
REVISION F

Y442.N6
 Y442.N6
 Y442.N6



THE SECOND 2 HEX DIGITS IN THE PARM WORD DETERMINE THE ROUTINE TO BRANCH TO

Y444 I + C IV TEST
 LOOPING + BRANCHING



Y446 I + C IV TEST
PARAMETER PROCESSING

PUB NO. 70631200

DOC NO. 73687900

2-406

REVISION K

Y442.16-----ERRPR-FXIT

X0X 0+AB=MD D830
D9B4 XXX A2
STORE ERROR NO IN LOC. 804

XXX 0+X04=EE 9B4
D910 XXX A3

XXX S4 D910
EE+000=EE
=ST7 8XX
D914 XXX A4

X1X 5 D928
EG+0=AA
D9A4 XXX C3

XXX 2 D9A4
D91C XXX C4
IN CPE MODE

XXX 2 D91C
O+AA=D
D884 XXX C5
DISPLAY ERROR
CODE

*--FETCH-NEXT-PARM-Y440.C5

XXX 2 D914
C+AG=EB
D918 XXX E2
RESTORE INLINE
FUNCTION DECCDF

XXX 2 D918
ER2
D920 XXX E3
IS RTN IN CPE
MODE

X0X 1 D920
EB1
D930 XX* E4
IS RTN IN RST
SOF OR CHAIN

XX1 1 D934
AT+X00=AT
ERO
D9E0 XXX E5
IN RSLT MODE
OR CHAIN MODE

X1X 4 D9F8
O+MA=D
O=ST7
D954 XXX F6
REPEAT TEST
UNTIL HALTED
IN RSLT MODE

*--Y447.E6

-----STOP-ON-FRROR-MODE-----

X0X 5 D930
EG+0=MD
D974 XXX J1
SAVF PARM ADDR

XXX 1 D974
O+X14=ST
D954 XXX J2
SAVE INDEX
POINTER

XXX 5 D954
AT+0=MB
D938 XXX J3
SAVE TEST NO.

XXX 5 D938
ST+0=MA
D9E0 X0X J4
SAVE STATUS

WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO E-DATA AND HITTING THE EXECUTE SWITCH.

- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN OR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN OR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI

Y444.N4-----END-OF-TEST-SECTION

X1X 1 D92C
ST@X06=ST
D954 XXX I2

Y447.F6
Y444.N6

XXX 1 D8B0
O+XFF=D
D8D0 XXX N1
END OF ROUTINE

XXX 2 D8D0
D954 XXX N2
DISPLAY CODE OF
FF FOR COMPLETE
ROUTINE

Y444.04

EXIT TO INLINE CONTROL ROUTINE

X0X 2 D9E0
SP16
D940 XXX S1
RESET CONTROL
CHECKS

XXX 1 D940
IC.XFF=IC
D944 XXX S2
SET IC BIT 7
TO 0

XXX 2 D944
OAF8 XXX S3

XXX D DA00 0C0C6B77 XXX CO	XXX D DA04 84919EAE XXX C1	XXX D DA08 BBC6C6C6 XXX C2	XXX D DA0C 0004080C XXX C3	XXX D DA10 4044C8C4 XXX C4	XXX D DA14 CCD01040 XXX C5	XXX D DA18 44C8C4CC XXX C6	XXX D DA1C D0144044 XXX C7
XXX D DA20 CPC4CCD0 XXX E0	XXX D DA24 184744C8 XXX E1	XXX D DA28 C4CCD01C XXX E2	XXX D DA2C 4044C8C4 XXX E3	XXX D DA30 CCD02040 XXX E4	XXX D DA34 44C8C4CC XXX E5	XXX D DA38 D0244044 XXX E6	XXX D DA3C C8C4CCD0 XXX E7
XXX D DA40 284044C8 XXX G0	XXX D DA44 C4CCD02C XXX G1	XXX D DA48 4044C8C4 XXX G2	XXX D DA4C CCD03040 XXX G3	XXX D DA50 44C8C4CC XXX G4	XXX D DA54 D0344044 XXX G5	XXX D DA58 C8C4CCD0 XXX G6	XXX D DA5C 384044C8 XXX G7
XXX D DA60 C4CCD03C XXX J0	XXX D DA64 4044C8C4 XXX J1	XXX D DA68 CC044800 XXX J2	XXX D DA6C 044C4050 XXX J3	XXX D DA70 54504058 XXX J4	XXX D DA74 5C044800 XXX J5	XXX D DA78 04084C40 XXX J6	XXX D DA7C 60646040 XXX J7
XXX D DA80 585C0448 XXX L0	XXX D DA84 0004084C XXX L1	XXX D DA88 40686C68 XXX L2	XXX D DA8C 40585C04 XXX L3	XXX D DA90 48000408 XXX L4	XXX D DA94 400C70CC XXX L5	XXX D DA98 C8C45044 XXX L6	XXX D DA9C 0448007C XXX L7
XXX D DAA0 8084888C XXX N0	XXX D DAA4 907C94D4 XXX N1	XXX D DAA8 D8A0D858 XXX N2	XXX D DAAC DB480004 XXX N3	XXX D DAB0 0898E49C XXX N4	XXX D DAB4 AOA4A844 XXX N5	XXX D DAB8 E8044800 XXX N6	XXX D DABC 0408B098 XXX N7
XXX D DAC0 B4E0B88C XXX Q0	XXX D DAC4 0448C0FF XXX Q1						

Y448 I + C IV POINTERS

PUR NO. 70631200

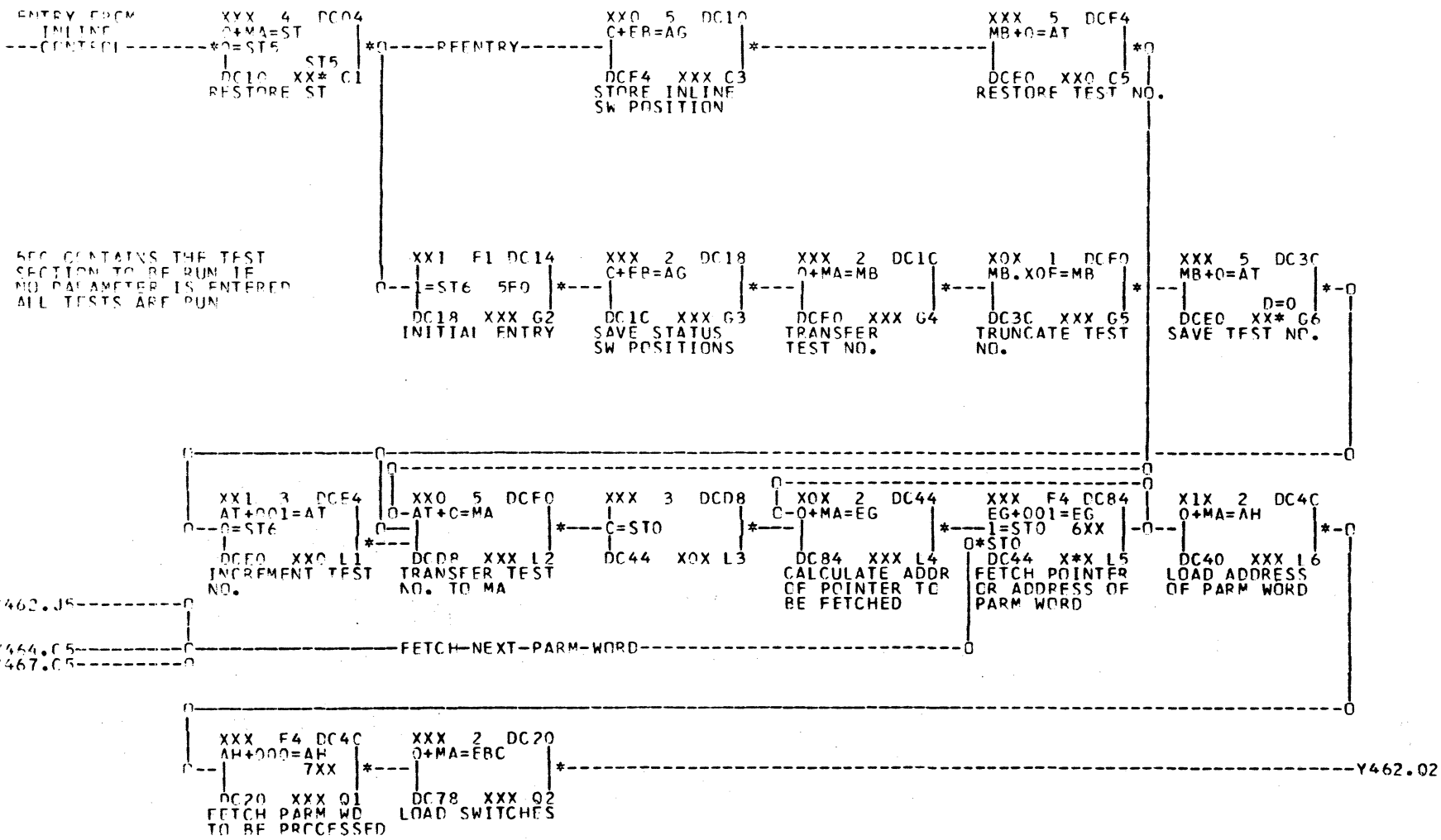
DOC NO. 73687900

2-408

REVISION F

XXX C CB0C 402C0310 XXX CO SELECT SPARE	XXX D DB04 402C0A03 XXX C1 CONTROL RESET RESET INTRPT.	XXX D DB08 18FF0800 XXX C2 BIT 4 ON?	XXX C DB0C 402C0813 XXX C3 HAR = 19	XXX D DB10 402C0814 XXX C4 HAR = 20	XXX D CB14 402C0815 XXX C5 HAR = 21	XXX D CB18 402C0816 XXX C6 HAR = 22	XXX D CB1C 402CC817 XXX C7 HAR = 23
XXX C CB20 402C0818 XXX E0 HAR = 24	XXX D DB24 402C0819 XXX E1 HAR = 25	XXX D DB28 402C081A XXX E2 HAR = 26	XXX D DB2C 402C0818 XXX E3 HAR = 27	XXX D DB30 402C081C XXX E4 HAR = 28	XXX C CB34 402C081D XXX E5 HAR = 29	XXX D DB38 402C081E XXX F6 HAR = 30	XXX D DB3C 402CC81F XXX E7 HAR = 31
XXX C CB40 402C0C10 XXX G0 RAISE CPERATE	XXX D CB44 18020200 XXX G1 BIT 6 ON?	XXX D DB48 00480000 XXX G2 END OF SECTION	XXX D DB4C 402C0A04 XXX G3 RESET HAR	XXX D DB50 402C0C10 XXX G4 HD SEL	XXX D CB54 412C0C10 XXX G5 HD SEL + ADV	XXX C DB58 402C0504 XXX G6 READ HAR	XXX D DB5C 180100C0 XXX G7 BIT 7 OFF
XXX C DB6C 402C0C05 XXX J0 WRITE	XXX D DB64 412C0C04 XXX J1 HD ADV + WRITE	XXX D DB6E 402C0C02 XXX J2 READ	XXX D DB6C 412C0C02 XXX J3 READ + HC ADV	XXX D DB70 402C0C08 XXX J4 HD ADV	XXX C CB74 1CFF2000 XXX J5 CUDI 2 ON	XXX D DB78 18FF1300 XXX J6 BIT 3,6,7 UN BIT 4,5 OFF	XXX D DB7C 402C0400 XXX J7 STATUS
XXX C DB80 28200CA1 XXX L0 IF SK INCCMPLETEREZERO GO TC 70	XXX D DB84 402C0A08 XXX L1	XXX C DB88 C0D40100 XXX L2 INDEX = 01	XXX D DB8C 840C14FF XXX L3 DELAY 25.5 MSEC	XXX D DB90 40DC40A3 XXX L4 LCOP FOR 1 SEC	XXX D DB94 18FF1800 XXX L5 BIT 3,4 ON	XXX D DB98 402C0900 XXX L6 DIFFERENCE = 0	XXX D DB9C 402C0B10 XXX L7 RESET DIFF
XXX C DBA0 402C0510 XXX N0 REQ DIFF ALDR	XXX C DBA4 18FFFF0C XXX N1 ALL BITS ON	XXX D DBA8 402C0508 XXX N2 REQ HI DIFF	XXX D DBAC 182C2000 XXX N3 BIT 2 ON	XXX D DBB0 402C060C XXX N4 CAR = 00	XXX C DBB4 402C0800 XXX N5 HAR = 0	XXX D DBB8 402C0D40 XXX N6 SERVC POINTS	XXX D DBBC 181C1000 XXX N7 BIT 3 ON
XXX C DBCC 00A40000 XXX O0 END OF ROUTINE	XXX D DBC4 180C0000 XXX Q1 BIT 7 ONLY	XXX C DBC8 402C0D08 XXX Q2 CHECK STATUS	XXX D DBCC 180C0000 XXX Q3 DEVICE CHECK	XXX C DBD0 402C0A02 XXX Q4 CONTROL RESET	XXX D DBD4 402C0502 XXX Q5 READ CAR.	XXX C DBD8 18FF0000 XXX Q6 ALL BITS OFF	XXX D DBDC 402C0C10 XXX Q7 HEAD SELECT
XXX C DBEC 402CC7CC XXX S0	XXX C DBE4 402C07CC XXX S1	XXX C DBE8 1AC40400 XXX S2					

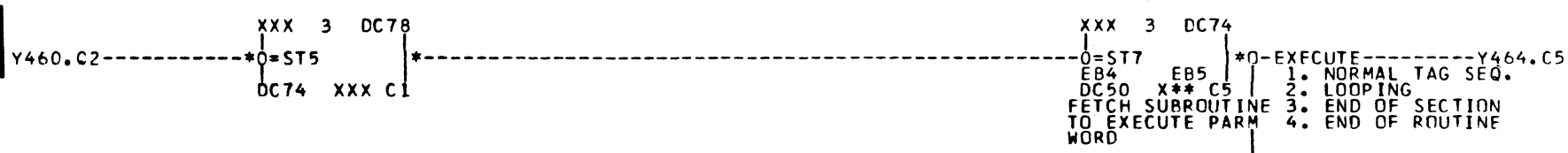
Y450 I+C IV
PARAMETERS



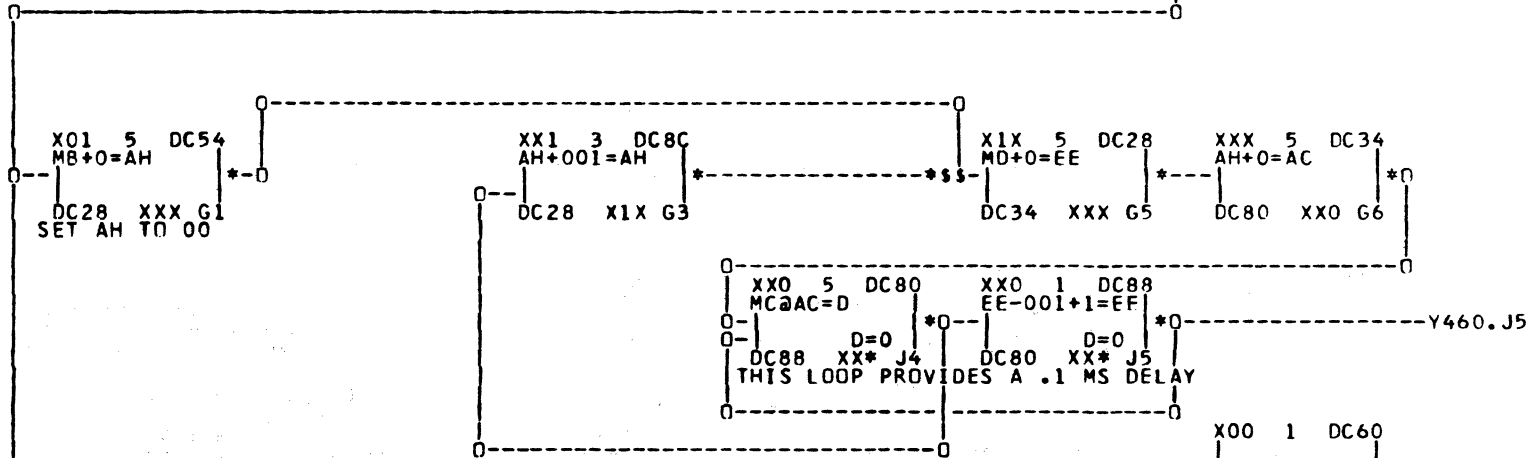
THE FIRST 2 HEX DIGITS OF PARM WORD
 CONTAIN THAT SUBROUTINE TO BE EXECUTED
 FOR THAT PARTICULAR PARM WORD

- EX:
- 40 TAG BUS SEQUENCE
 - 18 BUS IN CHECK
 - 1C CUDI CHECK
 - 84 WAIT LOOP
 - 00 END SECTION ROUTINE
OR START LOOP
 - 2C CONDITIONAL BRANCH IF CUDI IS
NOT IN EXPECTED STATE
 - 2R CONDITIONAL BRANCH IF BUS IN
IS NOT IN EXPECTED STATE.

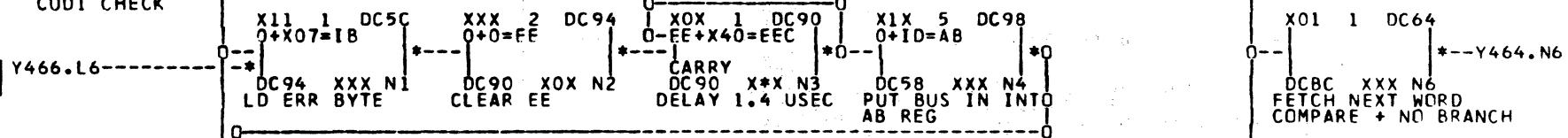
Y460 I + C V TEST
 CONTROL ENTRY



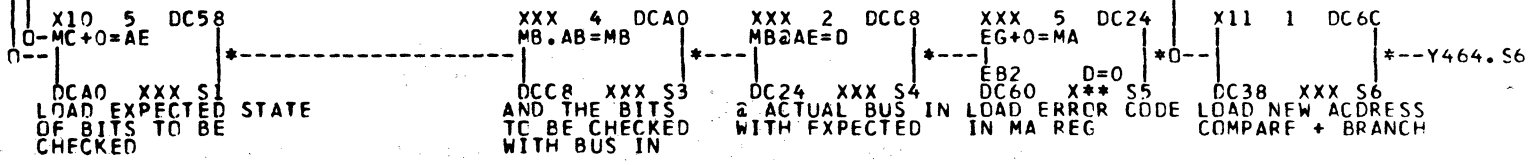
TIME DELAY LOOP



CUDI CHECK

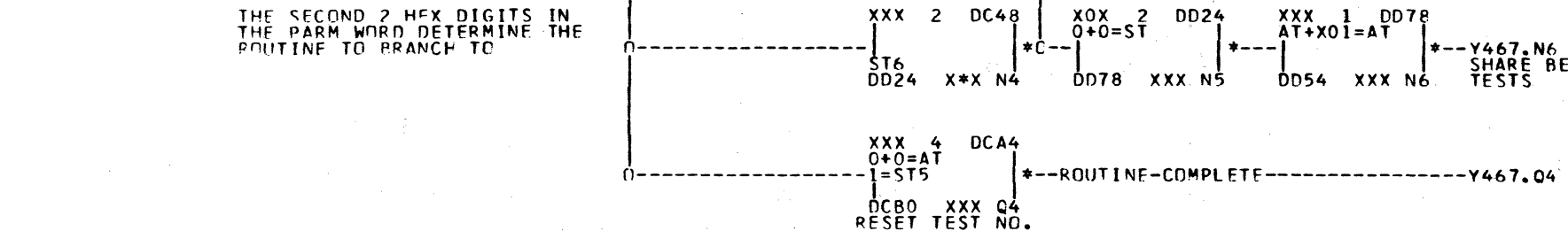
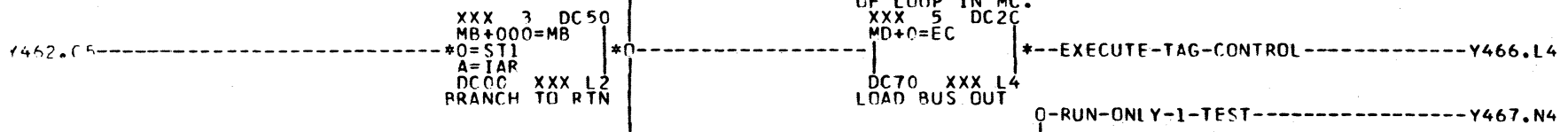
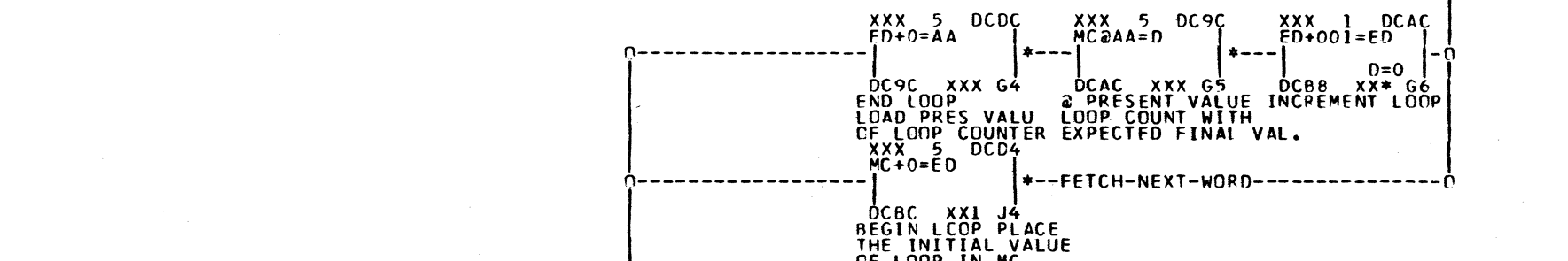
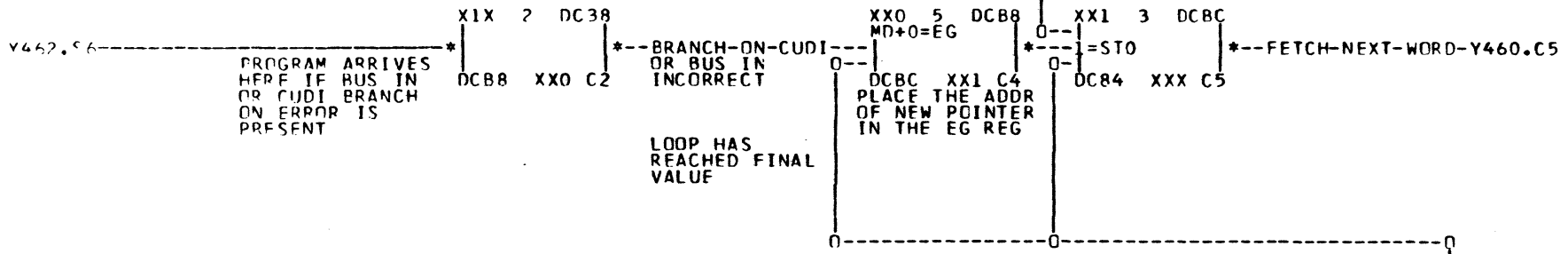


BUS IN CHECK



Y467.S3

Y462.N6
Y466.N6



THE SECOND 2 HEX DIGITS IN THE PARM WORD DETERMINE THE ROUTINE TO BRANCH TO

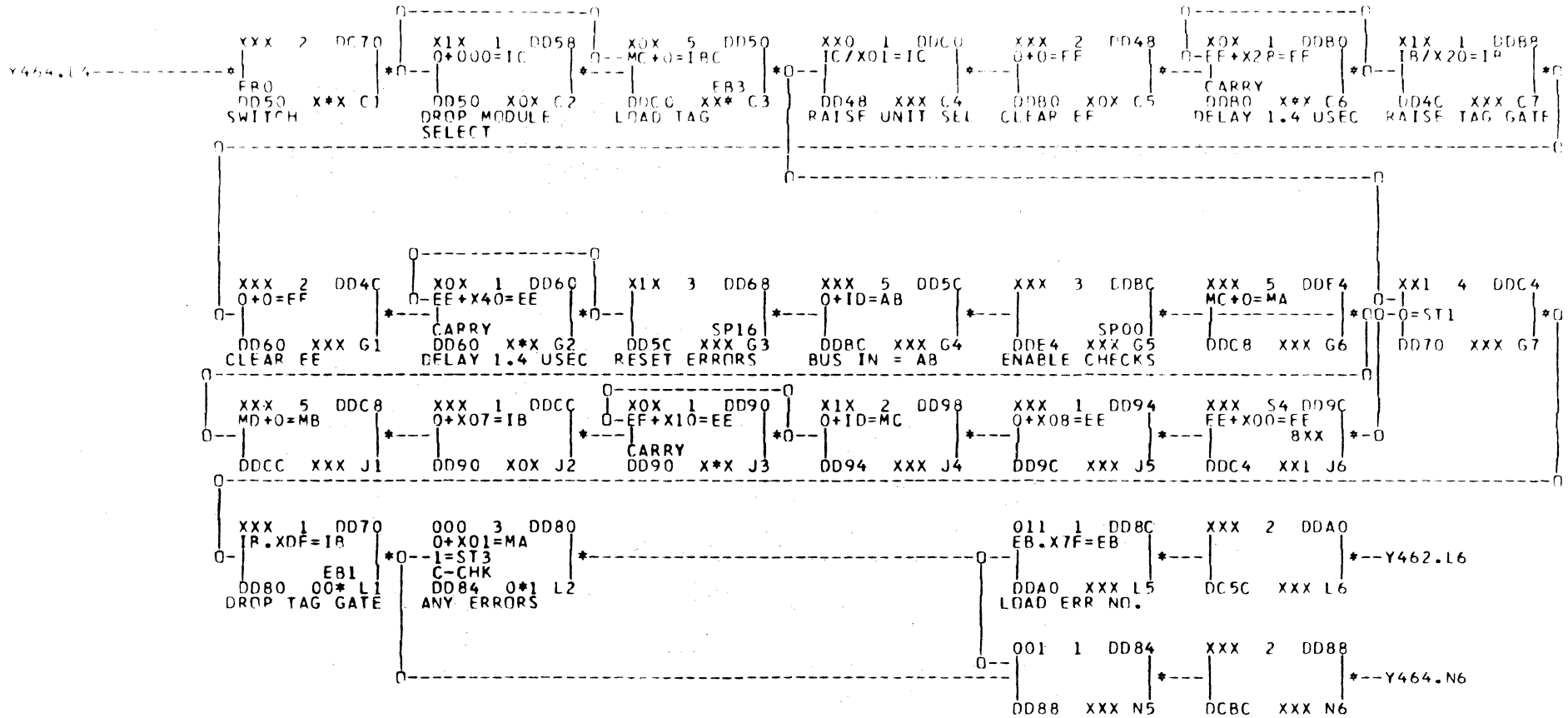
Y464 I + C V TEST
LOOPING + BRANCHING

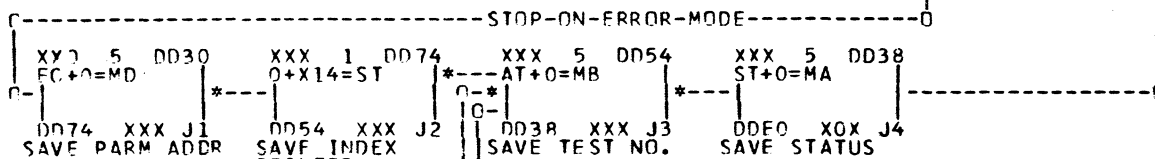
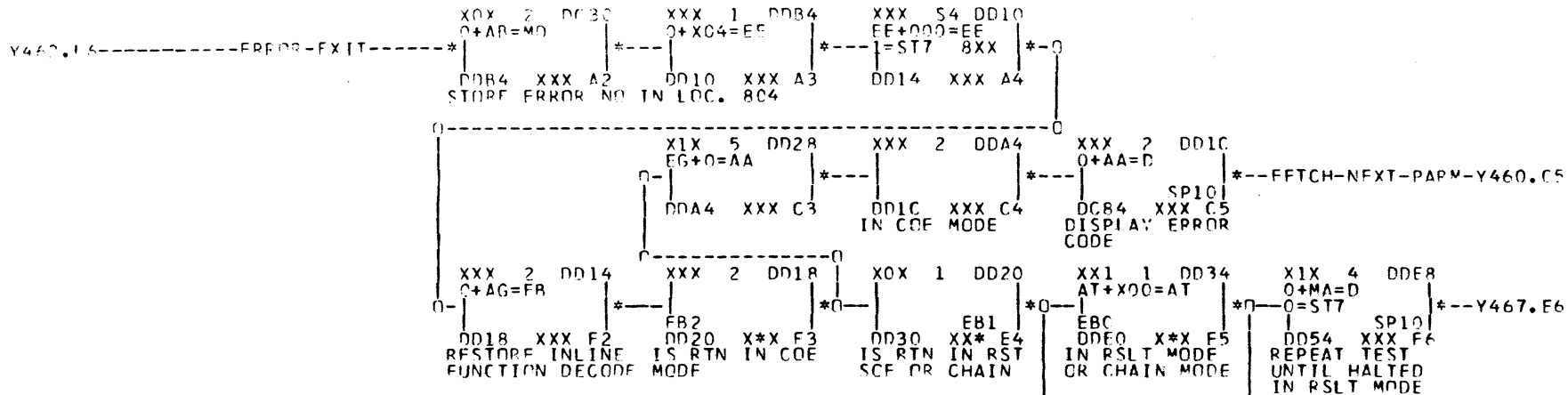
PHS NO. 70631200

DOC NO. 73687900

2-412

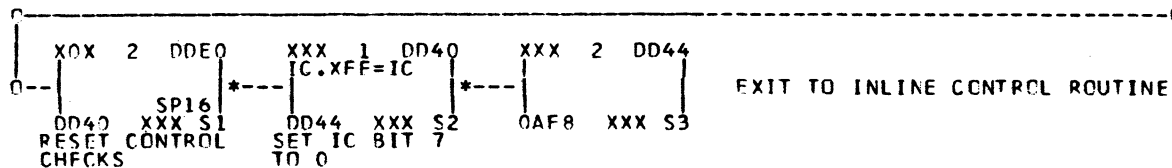
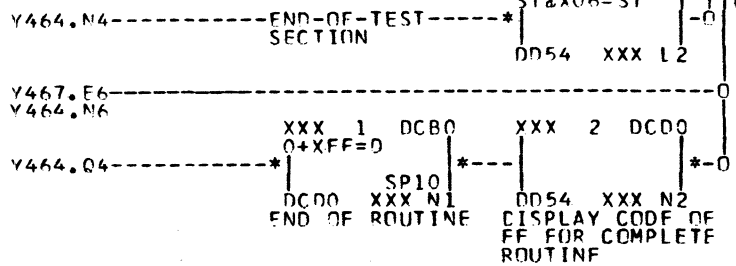
REVISION J





WHEN AN ERROR STOP OCCURS THE FOLLOWING BYTES CAN BE DISPLAYED BY PLACING THE INLINE FUNCTION SWITCH TO E-DATA AND HITTING THE EXECUTE SWITCH.

- BYTE 0 - ERROR CODE OR FF
- BYTE 1 - MASKED STATE OF BUS IN OR CUDI
- BYTE 2 - EXPECTED BUS IN OR CUDI
- BYTE 3 - ACTUAL BUS IN OR CUDI
- BYTE 4 - LAST TAG EXECUTED
- BYTE 5 - LAST BUS OUT
- BYTE 6 - STATE OF CUDI



Y467 I + C V TEST
ERROR * NORMAL EXITS

XXX D DE00
0C0C2138
|
XXX CO

XXX D DE04
5B646464
|
XXX C1

XXX D DE08
64646464
|
XXX C2

XXX D DE0C
0004080C
|
XXX C3

XXX D DE10
1014181C
|
XXX C4

XXX D DE14
2024282C
|
XXX C5

XXX D DE18
302C342C
|
XXX C6

XXX D DE1C
383C4044
|
XXX C7

XXX D DE20
48000408
|
XXX E0

XXX D DE24
4C505458
|
XXX E1

XXX D DE28
5C606468
|
XXX E2

XXX D DE2C
046C7074
|
XXX E3

XXX D DE30
04786C70
|
XXX E4

XXX D DE34
7C040848
|
XXX E5

XXX D DE38
0004083C
|
XXX E6

XXX D DE3C
40448084
|
XXX E7

XXX D DE40
888C9094
|
XXX G0

XXX D DE44
9888A0A4
|
XXX G1

XXX D DE48
949C88A8
|
XXX G2

XXX D DE4C
AC88B090
|
XXX G3

XXX D DE50
949888B4
|
XXX G4

XXX D DE54
A4949C88
|
XXX G5

XXX D DE58
B8044800
|
XXX G6

XXX D DE5C
0408BCC0
|
XXX G7

XXX D DE60
C4C80448
|
XXX J0

XXX D DE64
CCFFFFFF
|
XXX J1

XXX D DF00 402C0310 SELECT XXX C0 SPARE	XXX D DF04 402C0A03 CONTROL RESET RESET INTRPT XXX C1	XXX D DF08 18FF0800 CHECK 4 ON XXX C2	XXX D DF0C 402C060F CAR = 15 XXX C3	XXX D DF10 402C080F HAR = 15 XXX C4	XXX D DF14 402C090F DIFF = 15 XXX C5	XXX D DF18 402C0E10 DIAG 1 XXX C6	XXX D DF1C 402C06F0 CAR = 240 XXX C7
XXX D DF20 402C0810 HAR = 16 XXX E0	XXX D DF24 402C09F0 DIFF = 240 XXX E1	XXX D DF28 402C0502 READ CAR XXX E2	XXX D DF2C 18FF0F00 4,5,6,7 ON XXX E3	XXX D DF30 402C0504 READ HAR XXX E4	XXX D DF34 402C0510 READ DIFF XXX E5	XXX D DF38 402C0A02 CONTROL RESET XXX E6	XXX D DF3C 402C0600 CAR = 0 XXX E7
XXX D DF40 402C0800 HAR = 0 XXX G0	XXX D DF44 402C0900 DIFF = 0 XXX G1	XXX D DF48 00480000 END OF SECTION XXX G2	XXX D DF4C 402C0600 CAR = 0 XXX G3	XXX D DF50 402C0E20 DIAG 2 XXX G4	XXX D DF54 402C0D20 MONITOR MODE AND DIAG XXX G5	XXX D DF58 18202000 BIS 2 ON XXX G6	XXX D DF5C 402C0808 HAR = 8 XXX G7
XXX D DF60 402C0C10 HEAD SEL XXX JO	XXX D DF64 402C0D04 RAISE SAFETY XXX J1	XXX D DF68 18010100 XXX J2	XXX D DF6C 00D40100 INDEX = 00 XXX J3	XXX D DF70 8400FEFF WAIT 25.5 MS XXX J4	XXX D DF74 40DC032E LOOP TO E470 TILL INDX = 41 XXX J5	XXX D DF78 402C0A08 REZERO XXX J6	XXX D DF7C 40DC0333 LOOP TO Z470 TILL INDX = 41 XXX J7
XXX D DF80 402C0A20 OFFSET START XXX LO	XXX D DF84 84000AFF WAIT 1 MSEC XXX LI	XXX D DF88 402C0400 REQ STATUS XXX L2	XXX D DF8C 18FF4A00 1,4,6 ON XXX L3	XXX D DF90 840064FF WAIT 10 MSEC XXX L4	XXX D DF94 402C0204 POLL DEVICES XXX L5	XXX D DF98 18808000 BIT 0 ON XXX L6	XXX D DF9C 18800000 BIT 0 OFF XXX L7
XXX D DFA0 18FF5800 1,3,4 ON XXX NO	XXX D DFA4 402C0A01 RESET INTERRUPTS XXX NI	XXX D DFA8 18FF4800 1,4 ON XXX N2	XXX D DFAC 402C0B01 OFFSET RESET XXX N3	XXX D DFBO 18FF0A00 BIT 4,6 ON XXX N4	XXX D DF84 18FF1800 BIT 3,4 XXX N5	XXX D DF88 18FF0800 ONLINE XXX N6	XXX D DFBC 402C0C02 READ XXX N7
XXX D DF00 402C0D08 CHECK STATUS XXX Q0	XXX D DFC4 18040400 BIT 5 ON XXX Q1	XXX D DFC8 1CFF2000 CUDI 2 ON XXX Q2	XXX D DFCC 00A40000 END ROUTINE XXX Q3				

Y470 I+C V

PUB. NO. 70631200

DOC NO. 73687900

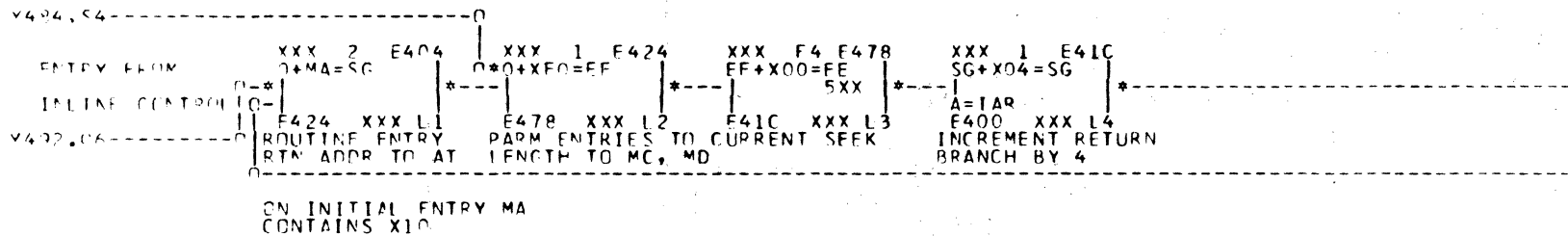
2416

REVISION F

EXECUTION

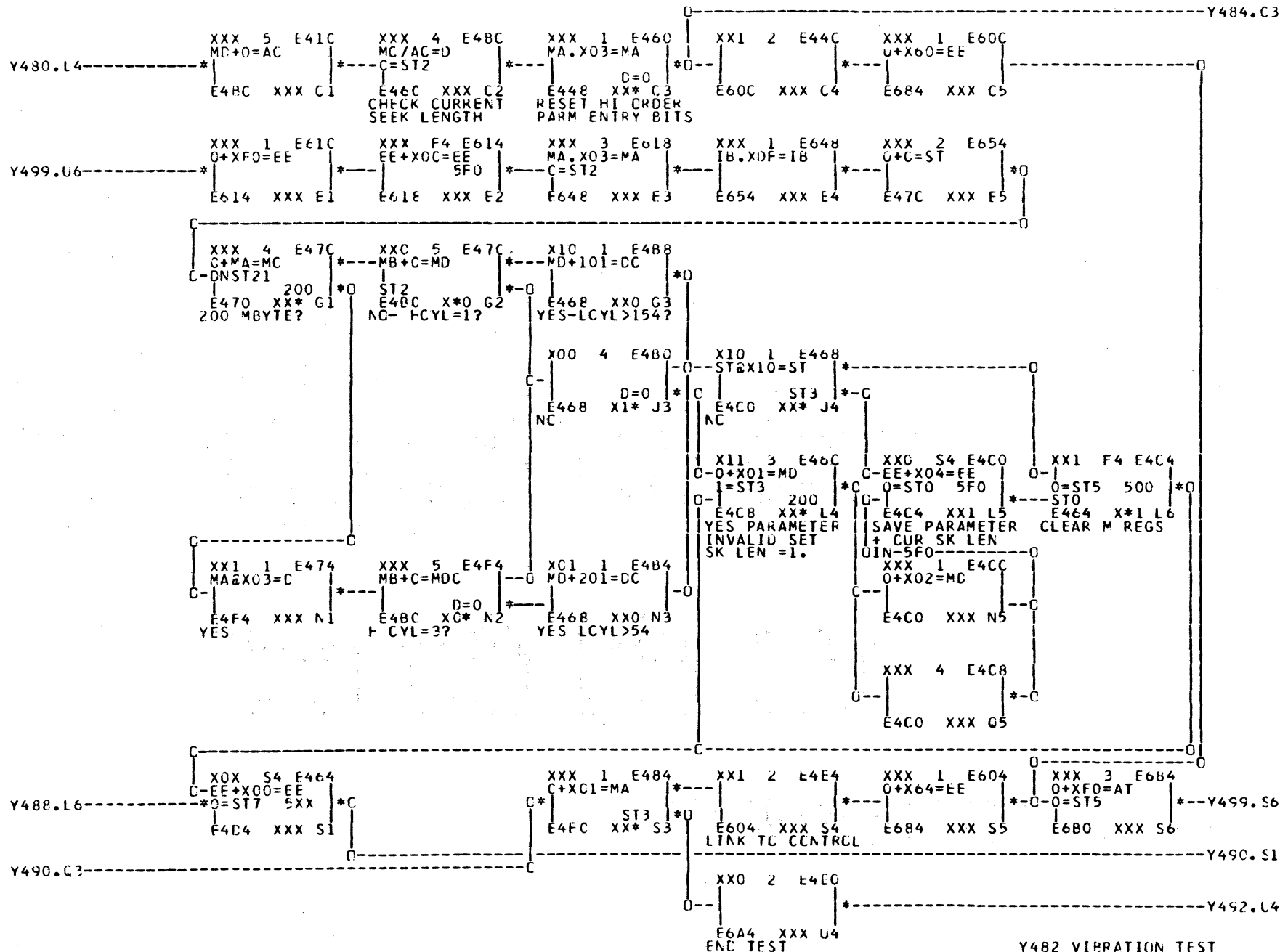
1. LOAD ROUTINE E4.
2. MUST BE RUN IN STANDALONE MODE
3. TO SPECIFY A SINGLE SEEK LENGTH ENTER THE DESIRED SEEK LENGTH FROM 0001 TO 0336 IF AN INVALID PARAMETER IS ENTERED PROGRAM WILL REVERT TO DEFAULT PARAMETERS.
4. ROUTINE IS ALWAYS RUN ON STOP ON ERROR MODE

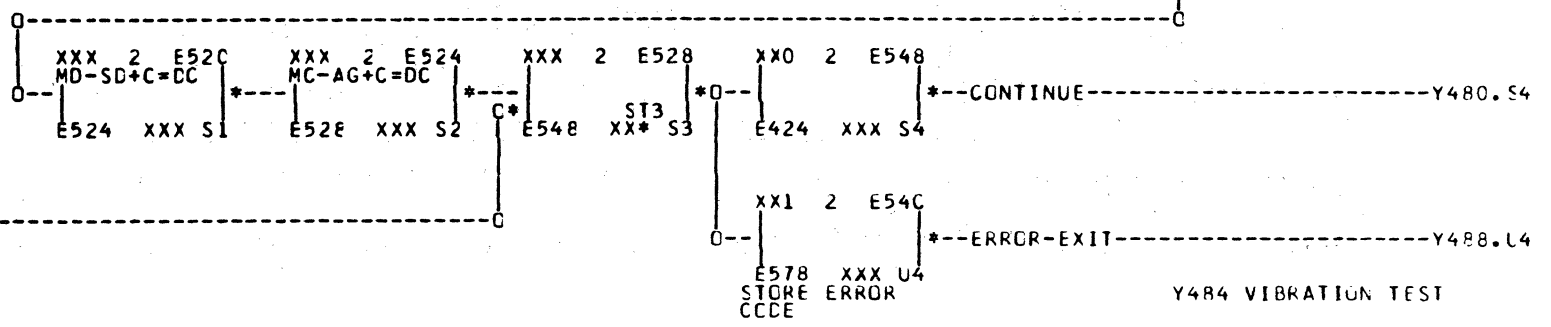
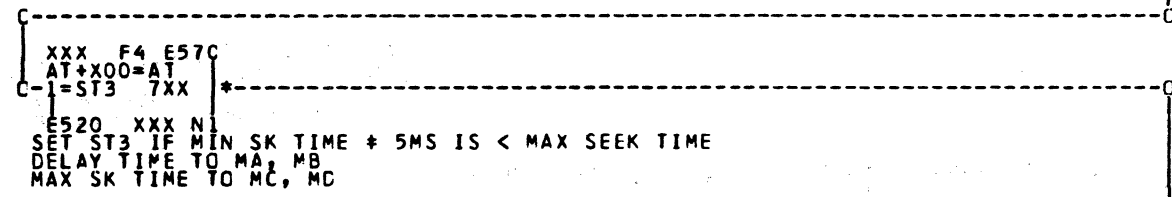
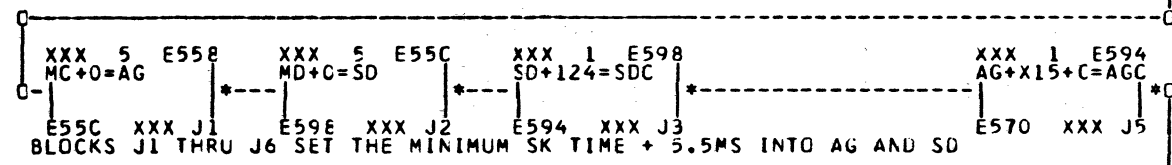
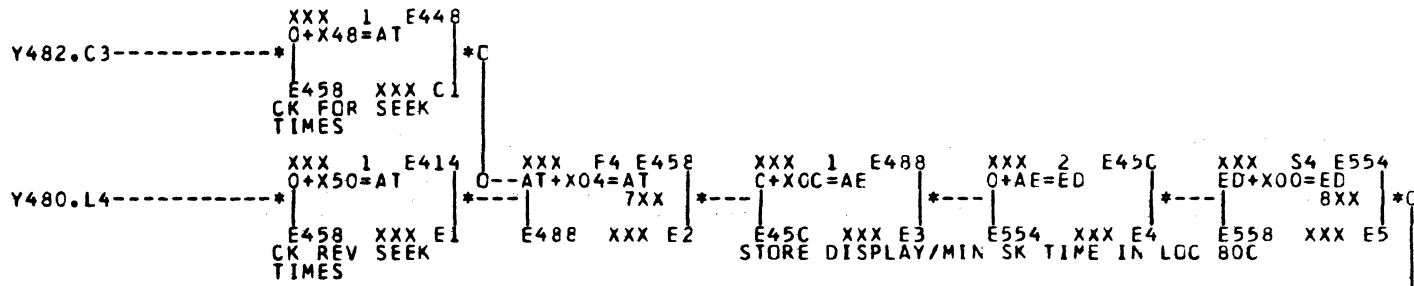
XXX D E500 00000000	XXX D E504 00278000	XXX D E508 01100000	XXX D E50C 1FFFF000
XXX G1 USED TO CLEAR M REGS	XXX G2 MAX SEEK TIME FOR 1 CYL SEEK	XXX G3 MAX GROUP SK TIME FOR 400 CYL SEEKS	XXX G4 MAX TO TAL SEEK TIME

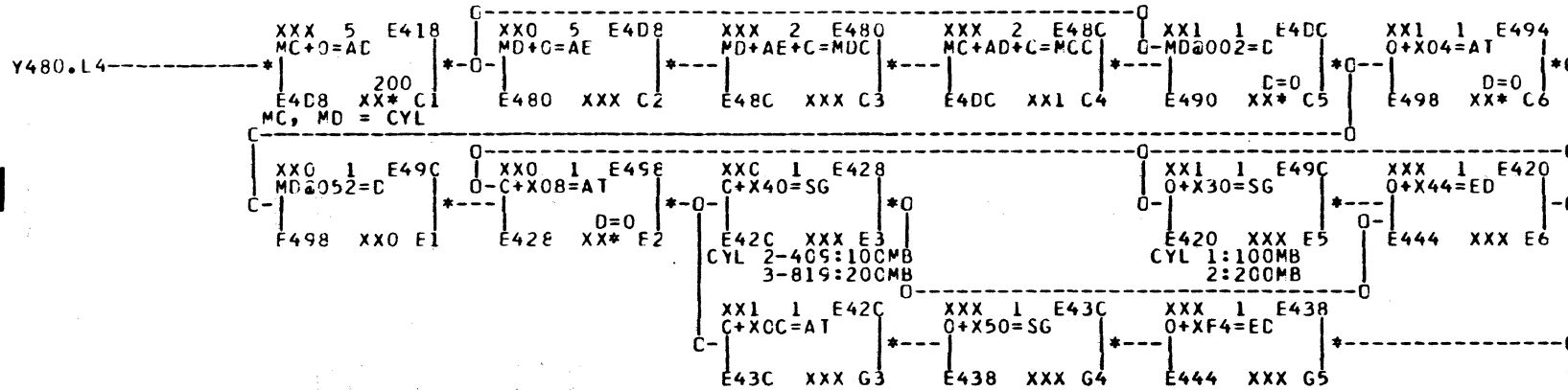


THE VIBRATION TEST DETERMINES IF EXCESSIVE VARIATIONS IN ACCESS TIME OCCUR WITH VARIATIONS IN THE REPETITION RATE OF SUCCESSIVE SEEKS BETWEEN TWO FIXED CYLINDERS. THE PROGRAM ALSO PERFORMS A TEST OF AVERAGE SEEK TIME. IN NORMAL OPERATION (DEFAULT PARAMETERS) THE PROGRAM EXECUTES 50 GROUPS OF 324 FIXED LENGTH SEEKS EACH, WITH A DIFFERENT SEEK LENGTH BEING USED FOR EACH GROUP. OPTIONAL PARAMETER ENTRIES MAY BE USED TO LIMIT TESTING TO A SINGLE GROUP OF 324 SEEKS OF ANY FIXED LENGTH. WHEN EXECUTING A GROUP OF SEEKS, THE PROGRAM ALTERNATELY SEEKS BETWEEN CYLINDER 0 AND WHICHEVER CYLINDER IS REQUIRED TO OBTAIN SEEKS OF THE DESIRED LENGTH. THE TIME BETWEEN EACH SEEK COMPLETE AND SEEK START IS CONTROLLED TO PRODUCE A GRADUALLY INCREASING SEEK REPETITION RATE. THE TIME BETWEEN SEEK START AND SEEK COMPLETE IS CHECKED FOR EXCESSIVE SEEK TIME VARIATION OR EXCESSIVE AVERAGE SEEK LENGTH.

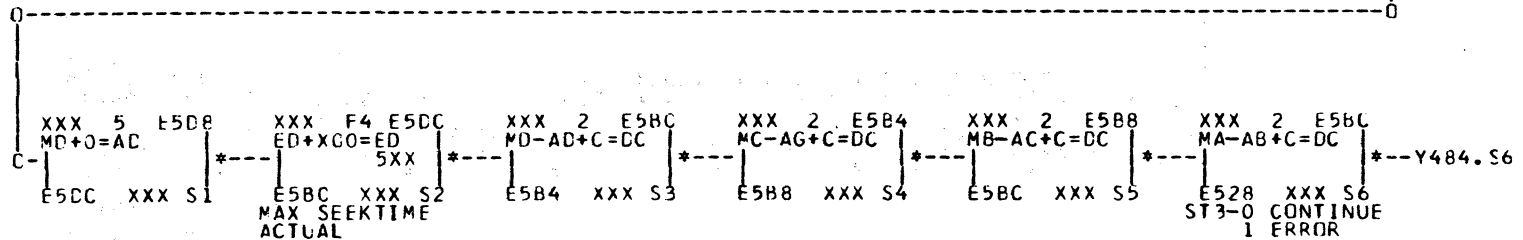
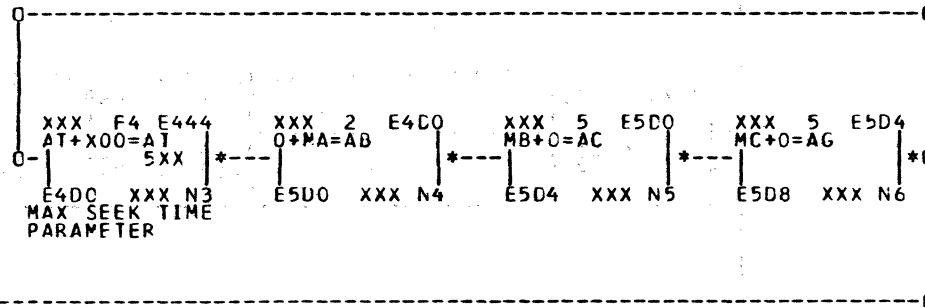
C-Y482.L4
|
C-Y484.L4
C-Y486.L4
C-Y488.L4



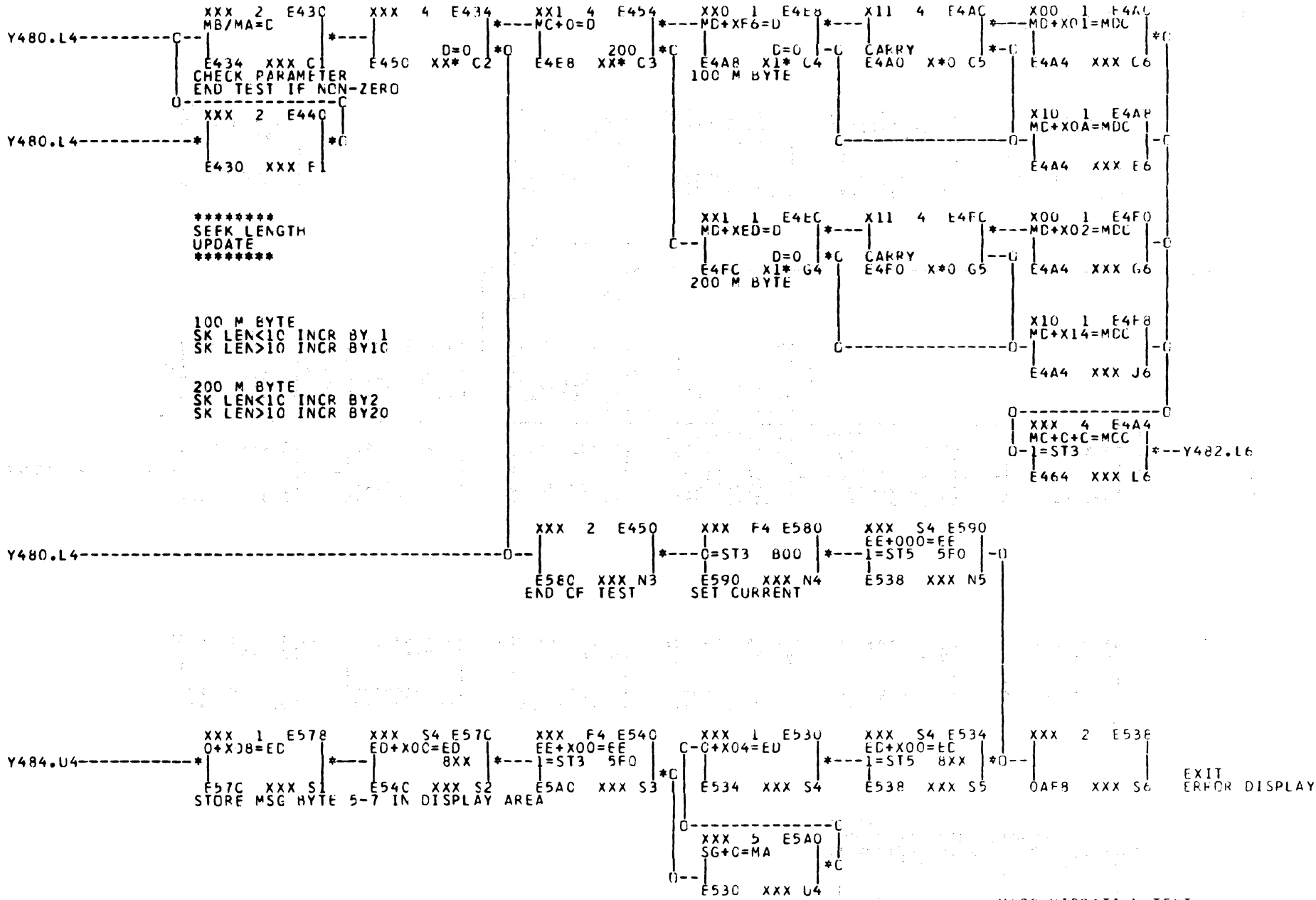




SK LENGTH		SK TIME
100MB	200MB	
1. 1	2	<2.592 GROUP
2. 2-409	3-819	<16.2 GROUP
3. 41C	820	<497.316 TOTAL

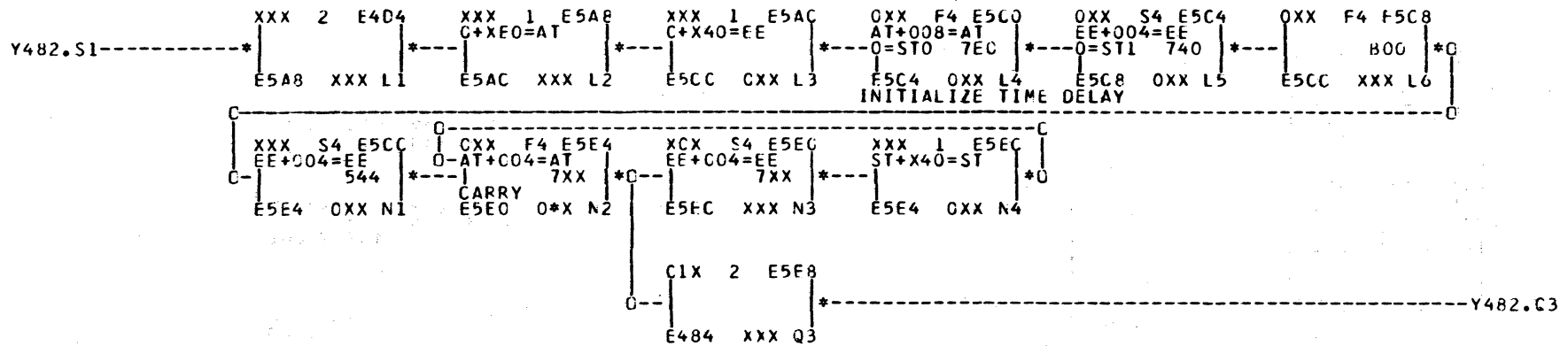


Y486 VIBRATION TEST
CHECK SEEK TIME AVERAGES



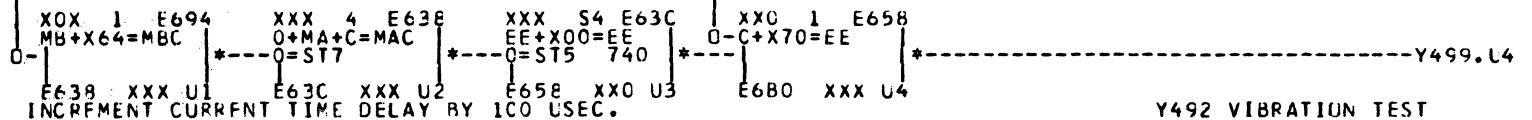
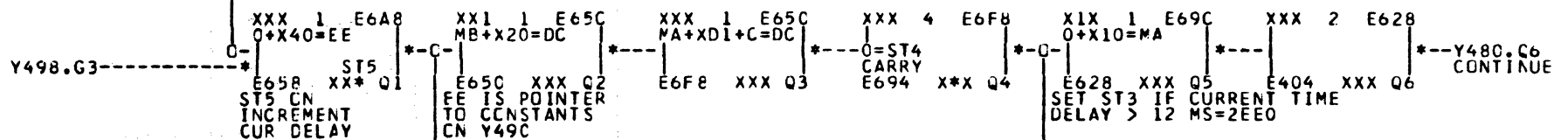
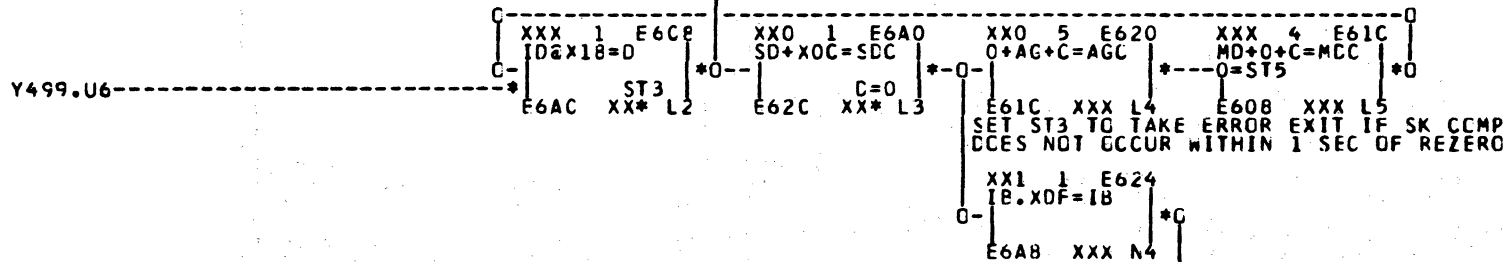
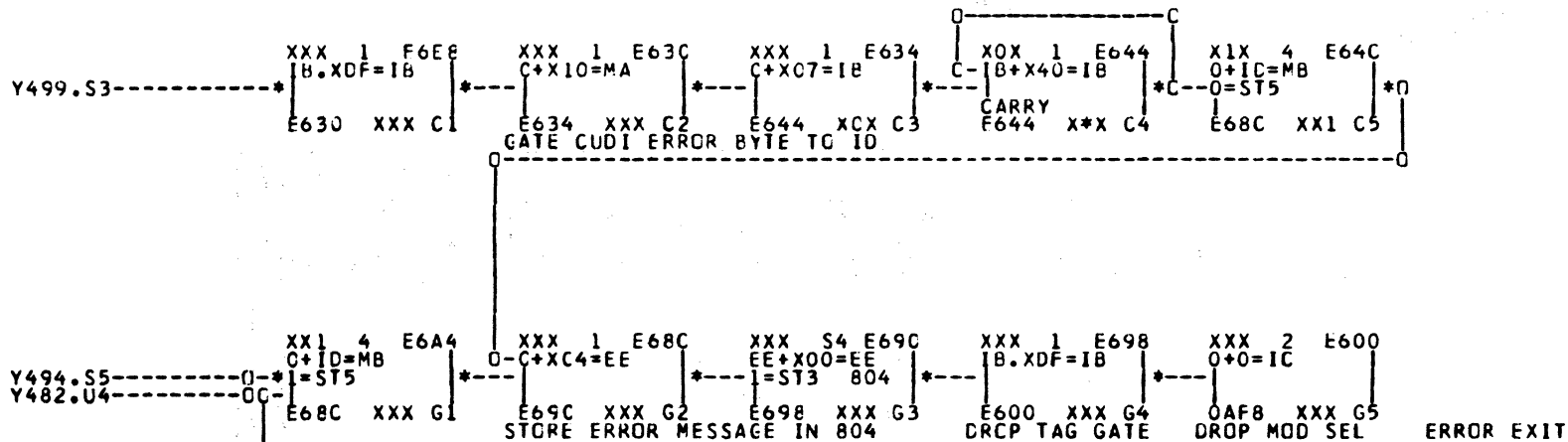
XXX D E5F0
 00000000
 XXX D E5F4
 00000000
 XXX C5
 PARAMETER ENTRY
 + CURRENT SEEK
 LENGTH
 XXX C6
 TOTAL SEEK TIME
 STORAGE

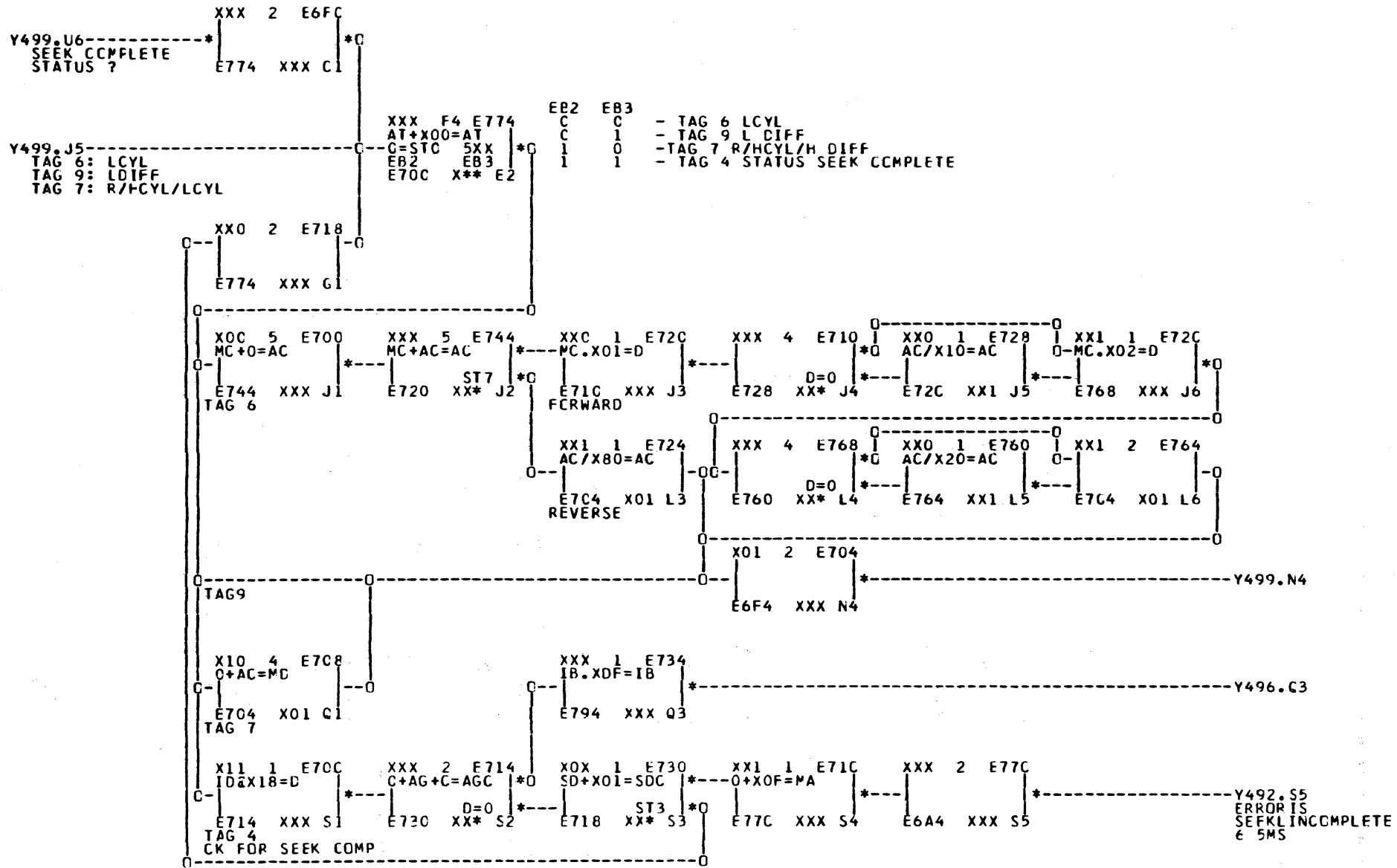
XXX D E74C
 0F3C0000
 XXX G1
 CURRENT TIME
 XXX D E544
 CCC000C
 XXX G2
 DLYGRP SEEK TIME
 XXX D E748
 C000E000
 XXX G3
 MIN FWD SK TME
 XXX D E74C
 00000000
 XXX G4
 MAX FWD SK TME
 XXX D E750
 0000E000
 XXX G5
 MIN REV SK TME
 XXX D E754
 00000000
 XXX G6
 MAX REV SK TME

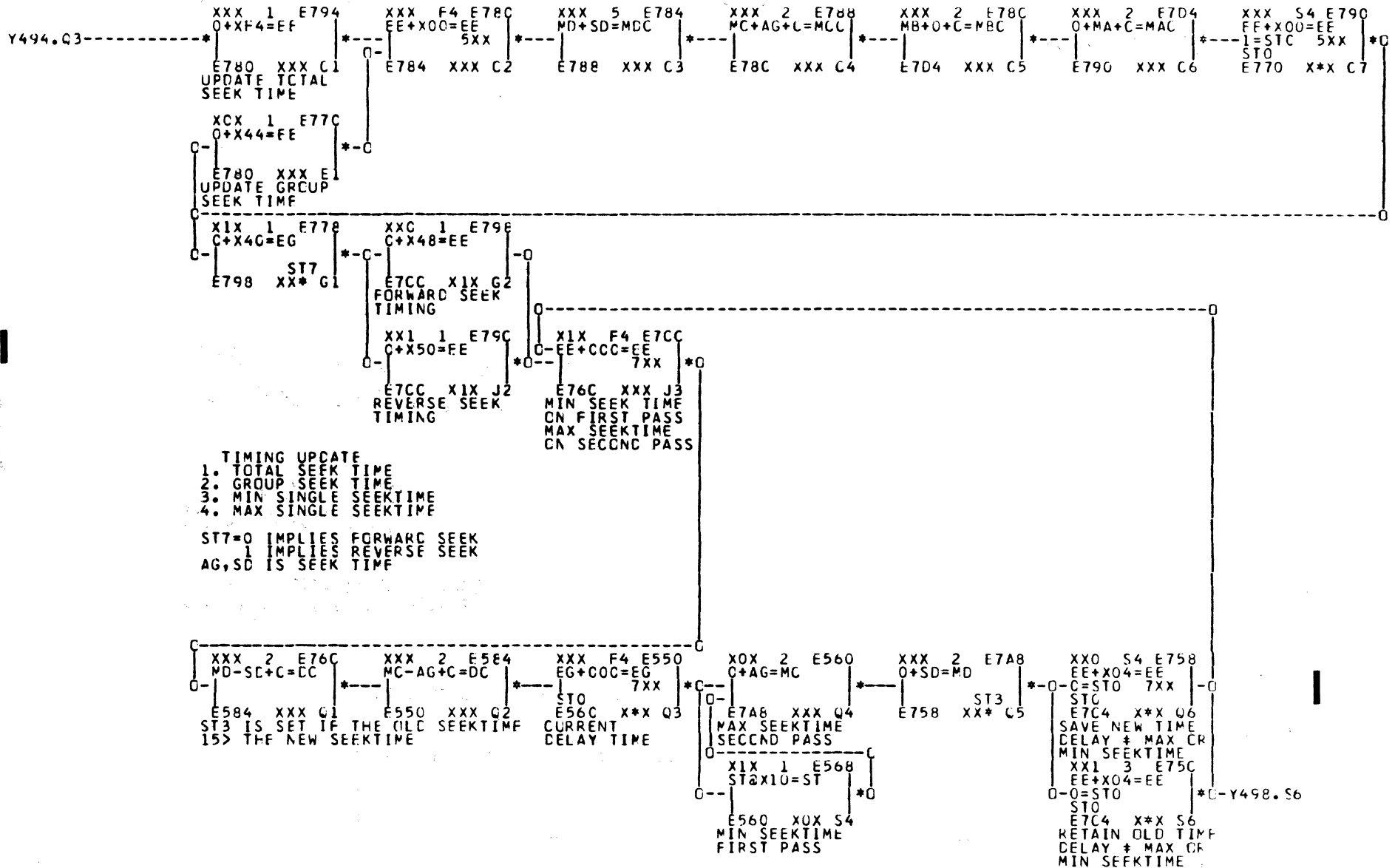


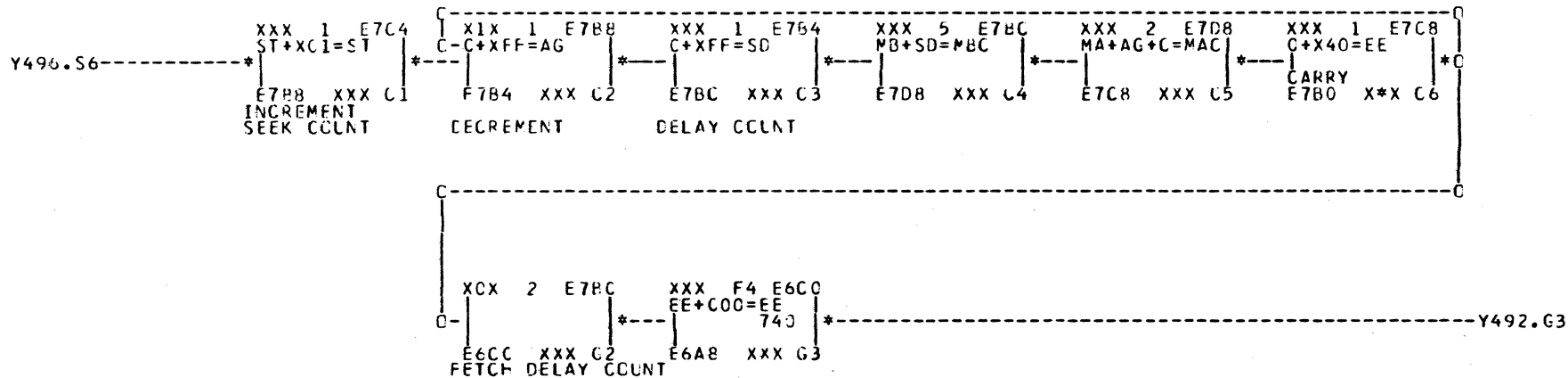
XXX D E7FC
 0F3C0000
 XXX S1
 INITIAL TIME
 DELAY
 XXX D E7E8
 CCCCE0CC
 XXX S3
 INITIAL MIN
 FWD SEEK TIME
 XXX D E7EC
 00000000
 XXX S4
 INITIAL MAX
 FWD SEEK TIME
 XXX D E7F0
 0000E000
 XXX S5
 INITIAL MIN
 REV SEEK TIME
 XXX D E7F4
 CCC000C
 XXX S6
 INITIAL MAX
 REV SEEK TIME

Y490 VIBRATION TEST
PARAMETER INITIALIZATION









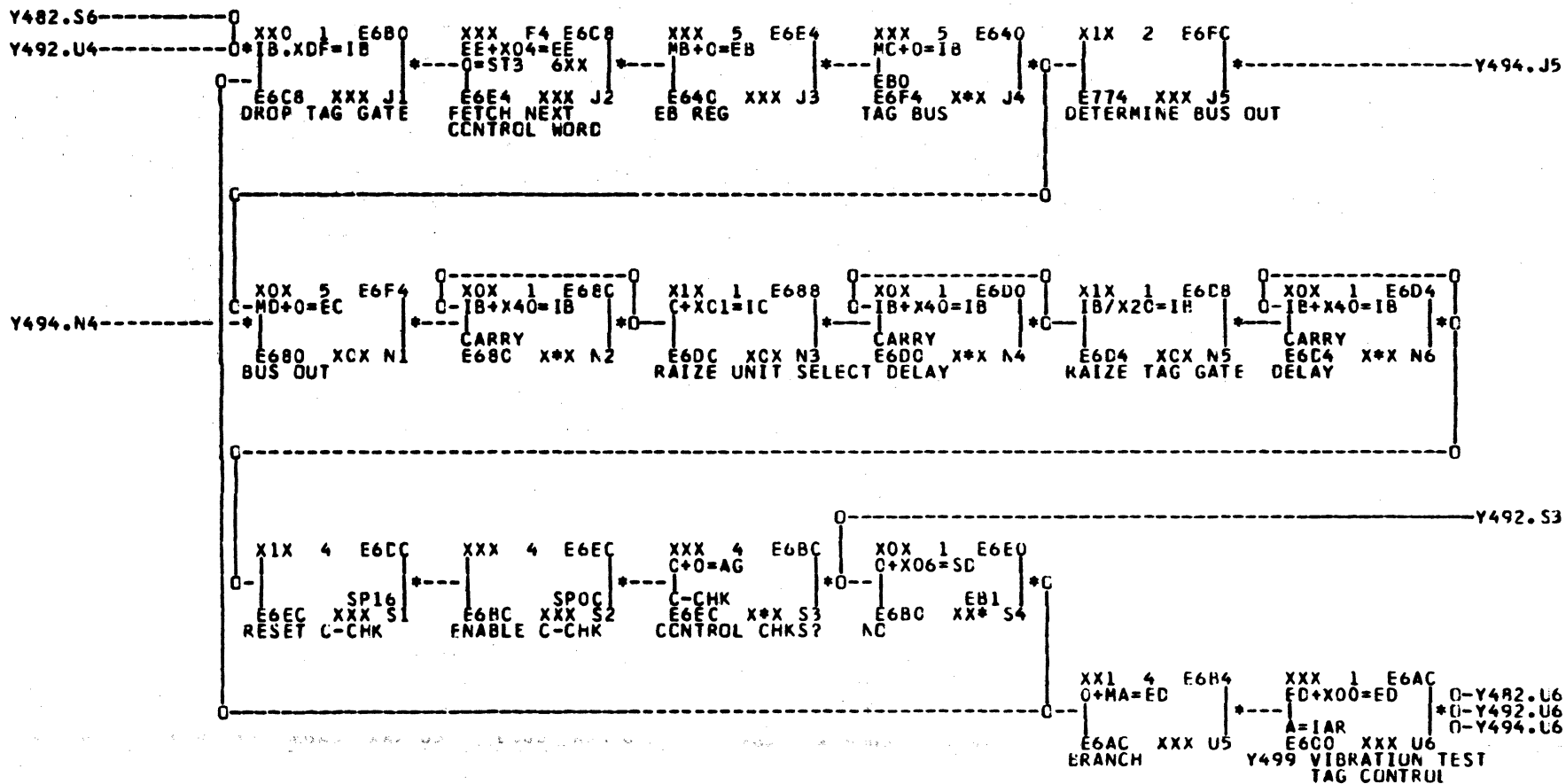
ST 4-7 IS USED TO CCLNT SEEKS

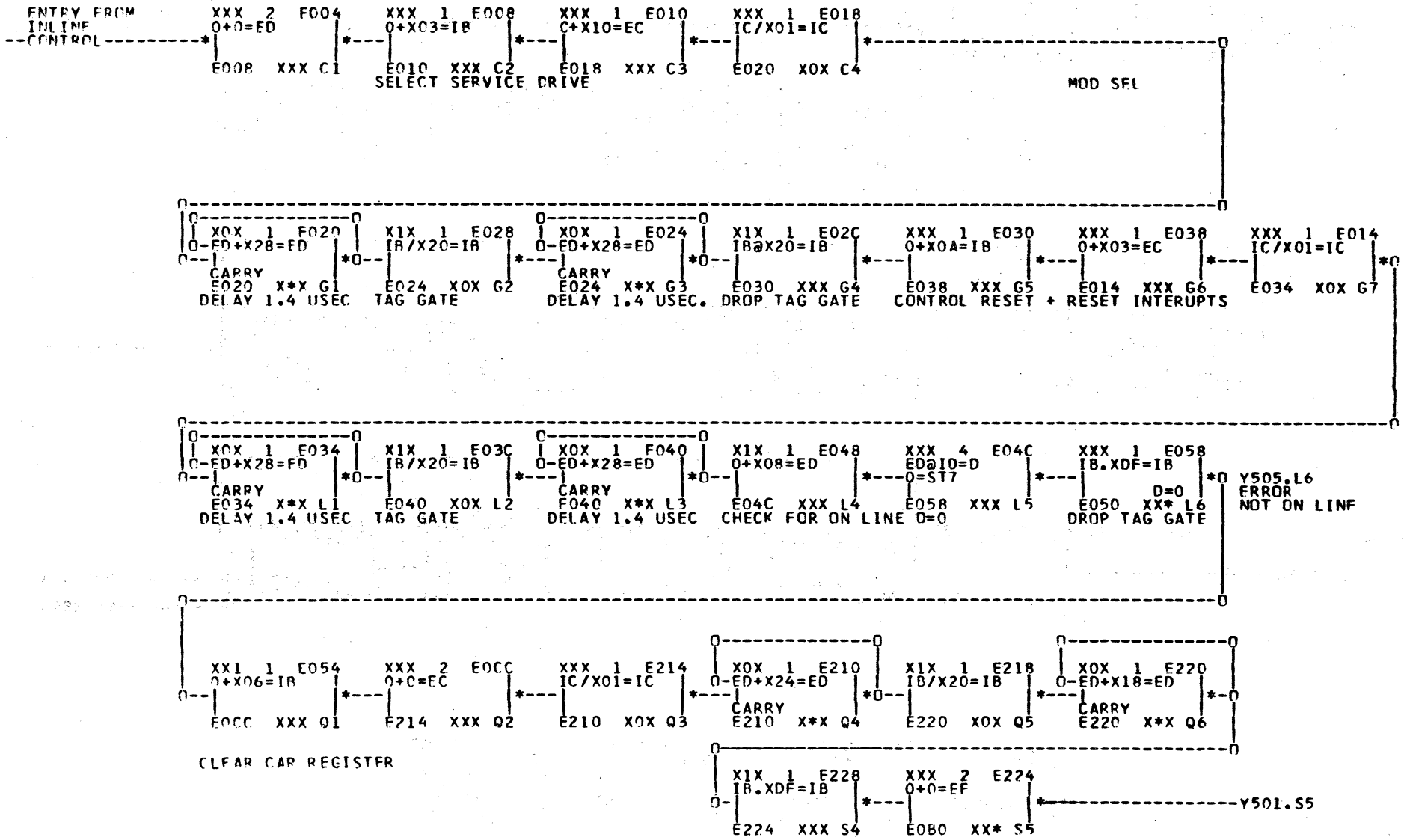
0=FIRST SEEK FORWARD
1=FIRST SEEK REVERSE
2=SECCND SEEK FORWARD
3=SECCND SEEK REVERSE

ST5=1 CAUSES THE DELAY COUNTER
TO BE INCREMENTED BY 100 MICRO SEC
THE DELAY COUNT AFTER 324 SEEKS
IS EQUAL TO 12 MILLISECONDS

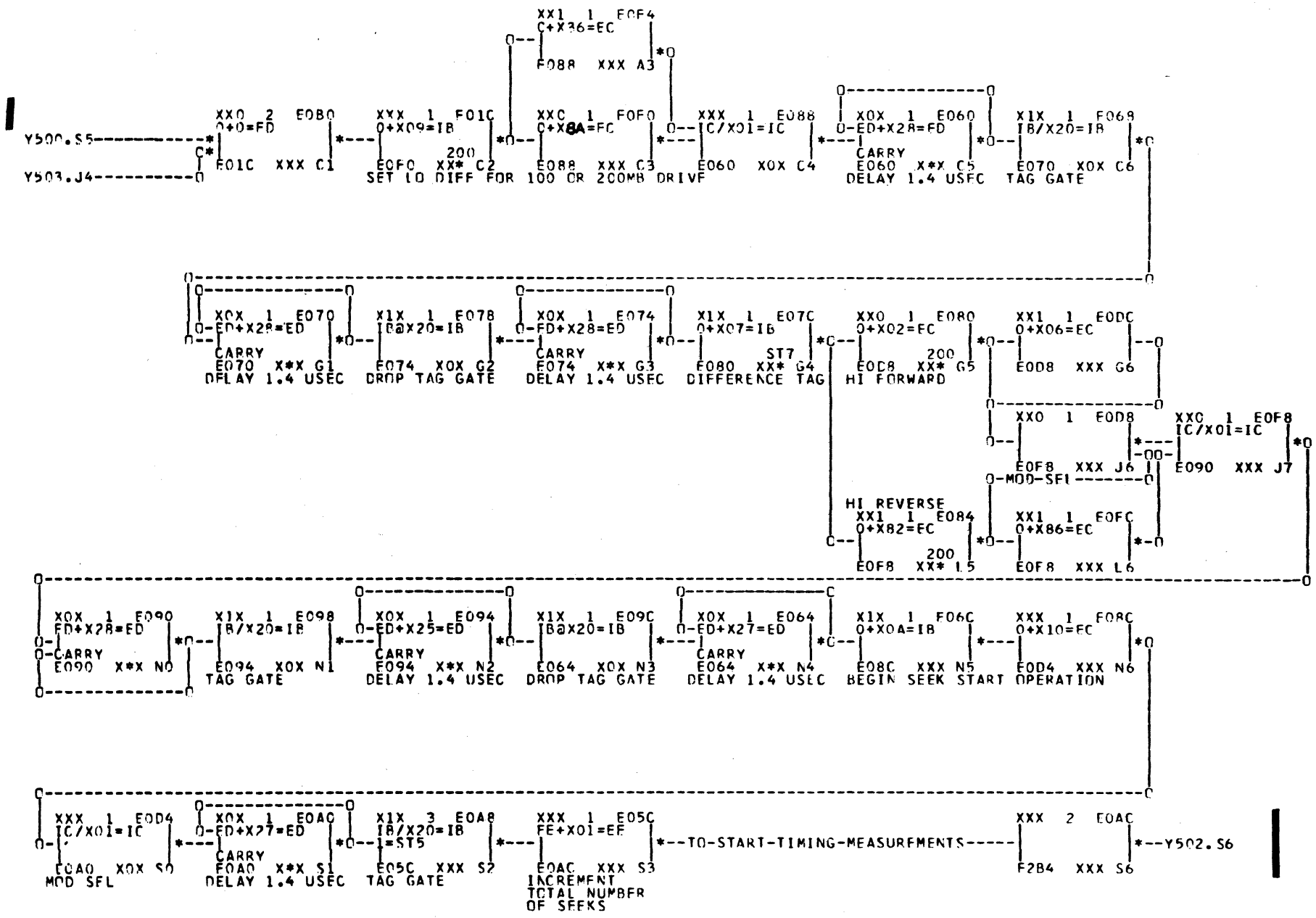
MA - RCUTINE
 MB - EB REG
 MC - TAGCUT
 MD - BUSOUT

XXX D E66C 104C0310 XXX C2 SELECT DRIVE	XXX D E664 C0000A03 XXX C3 CCNTROL RESET	XXX D E668 00000A08 XXX C4 REZERO START	XXX D E66C 08400400 XXX C5 STATUS
XXX D E67C 00800600 XXX E2 LCW CYL	XXX D E674 C09C090C XXX E3 LCW DIFF	XXX D E678 00A00700 XXX E4 R/H CYL/H DIFF	XXX C E67C F07C0A10 XXX E5 SEEK START

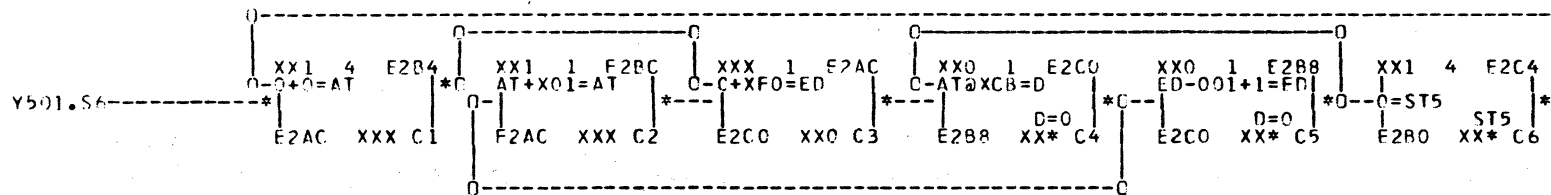




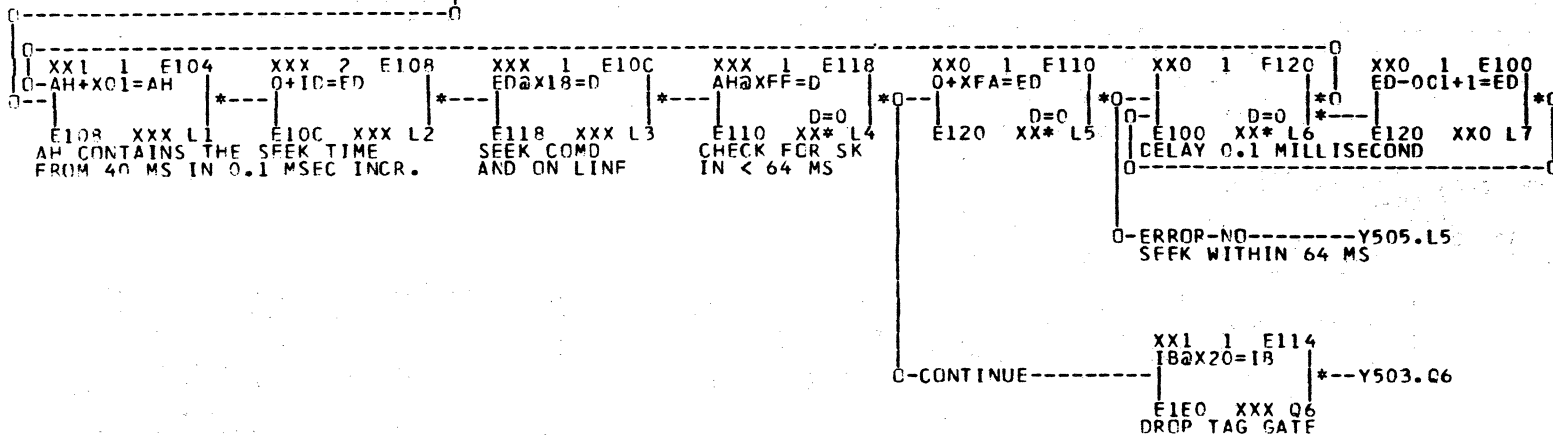
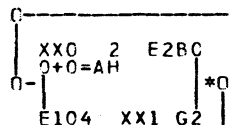
Y500 VELOCITY GAIN + ADJUST
ENTRY FROM INLINE CONTROL



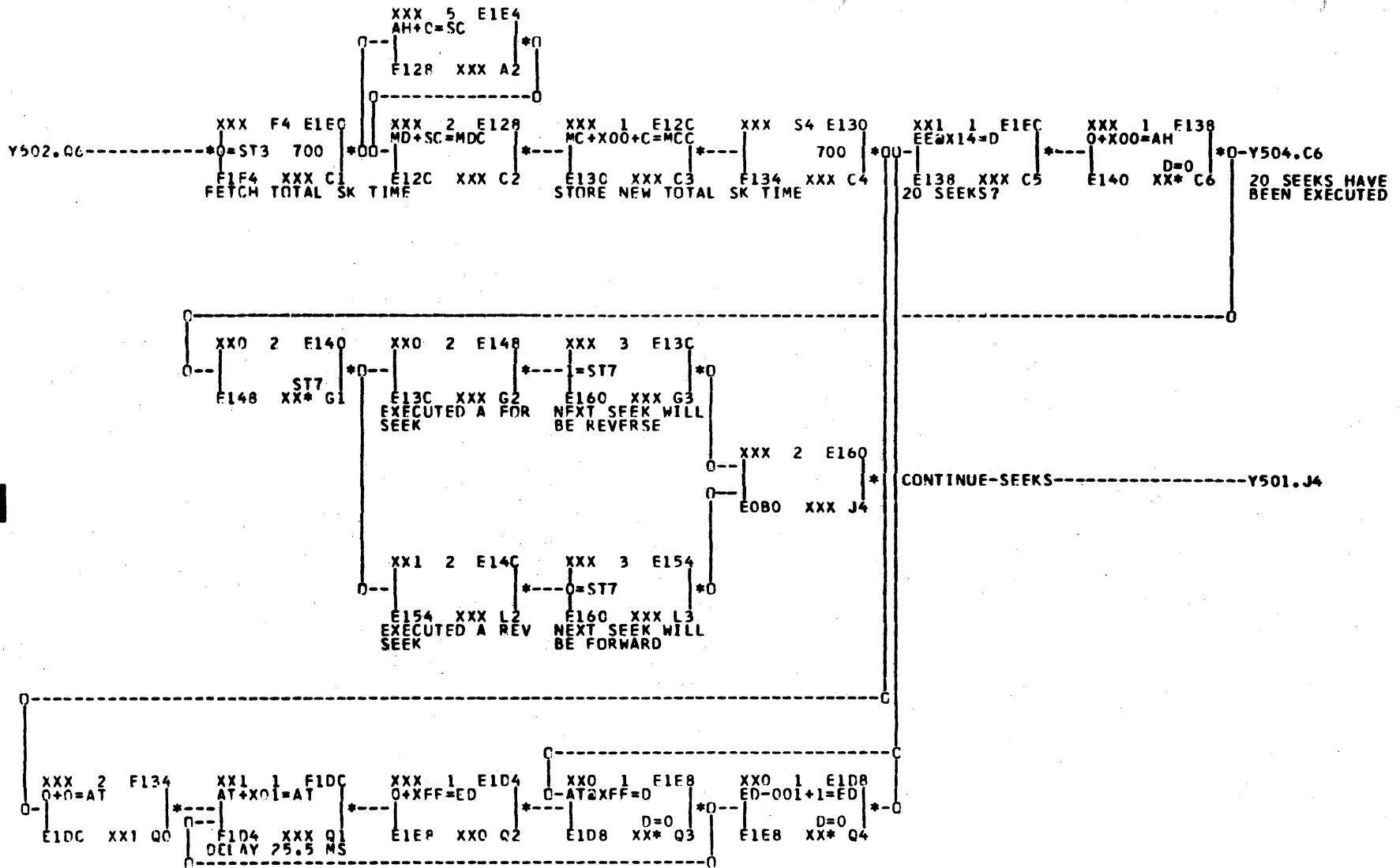
Y501 VELOCITY GAIN AND ADJUST
SET DIFF AND DIR

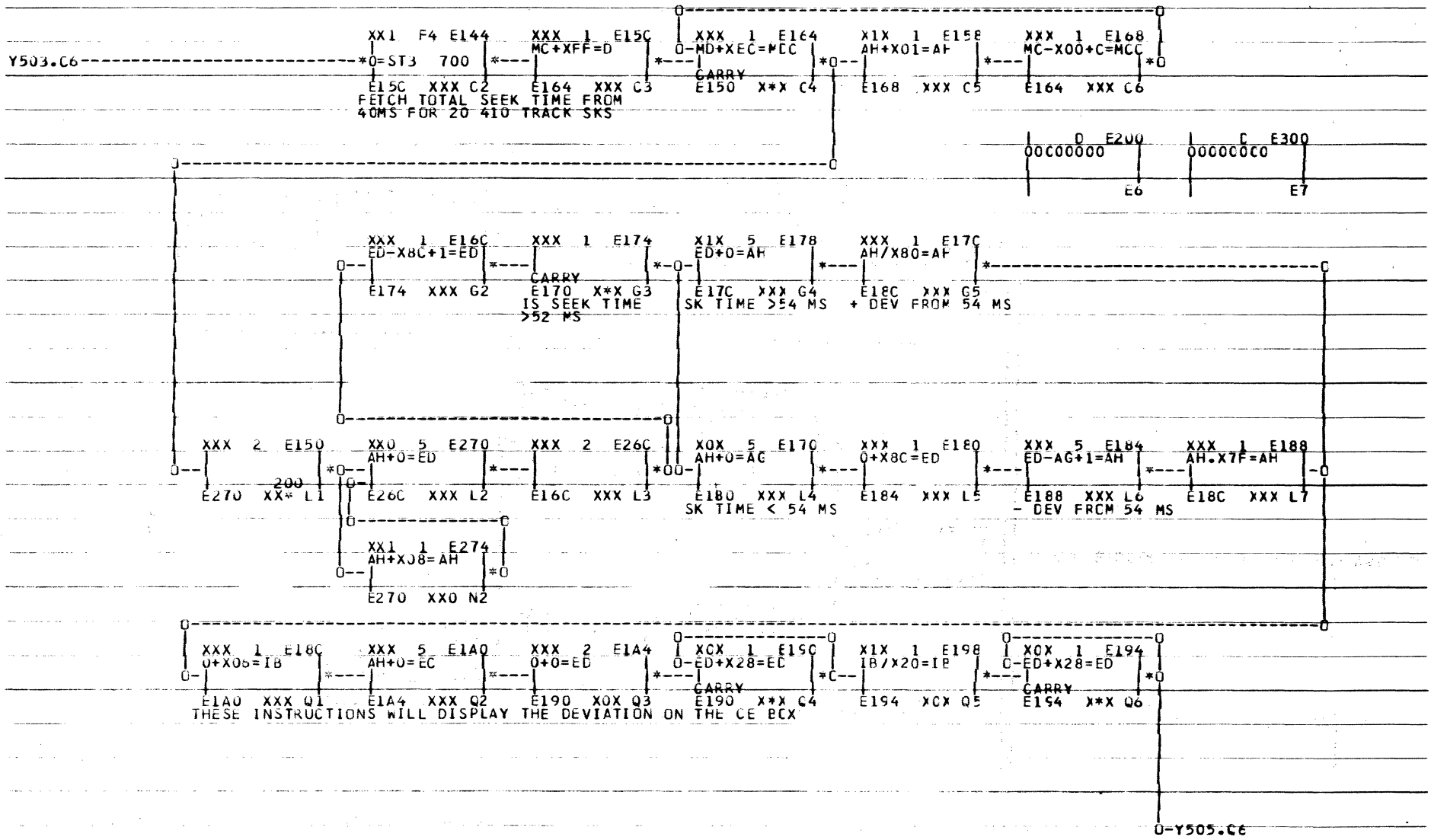


THESE INSTRUCTIONS DELAY 40 MS BEFORE THE SFEK TIMER IS STARTED



Y502 VELOCITY GAIN AND ADJUST
TIMING MEASUREMENTS





Y504 VELOCITY GAIN AND ADJUST AVERAGE VARIATION OF SK TIME

Y504.Q6-----*| XXX 1 E19C | XXX 1 E1A8 | XXX 1 E1AC | XXX 2 E1B4 | X1X 1 E1B8 | XXX 1 E1D0 | *--Y505.C6
 IB.XDF=IB | AH.X7F=AH | AH-X14+1=AH | O+EC=MA | O+X00=ST | O+XFO=MA
 E1A8 XXX C1 | E1AC XXX C2 | E1B4 XXX C3 | CARRY SPIG | E1C0 XXX C5 | E1BC XXX C6
 THESE BLOCKS CHECK IF DEVIATION IS WITHIN TOLLERANCE | E1B0 XXX C4 | ERROR SEEK TIME NOT WITHIN
 + OR - 2 MS OF 54 MS

XXX 2 E11C | XX1 1 E0EC | XXX 1 E0C8 | XX0 1 E0E0 | XX0 1 E0EB | X0X 4 E1B0
 O+U=AT | O-AI+X01=AT | O+XFF=ED | ATXFF=D | ED-001+1=ED | O+EC=MA
 E0EC XX1 G0 | E0C8 XXX G1 | E0E0 XX0 G2 | E0EB XX* G3 | E0E0 XX* G4 | E1B0 XXX G5
 E1BC XXX G5

Y505.C6-----*| XXX 4 E1BC | X10 1 E1C8 | X11 3 E1CC | XX1 F4 E0E4 | XXX S4 E0A4 | XXX 2 E0DC
 E00 E01 | O+X14=ST | O+X00=EE | C=ST7 6CC | 700 | O+EC=C
 E1C0 X** L1 | E1C0 X00 L2 | E11C XXX L3 | CLEAR SEEK ERROR | STORAGE FOR RESULT MODE
 CHECK FOR CONTINUE

X01 1 E1C4
 E1C0 X00 N2

Y500.L6-----*| XXX 2 E050 | XXX 1 E1F0 | XXX 2 E1C0 | XXX 1 E25C | XXX 2 E264 | XXX S4 E1F4 | XXX 2 E1F8
 O+XF1=MA | O+X04=EE | O+EC=MB | O+X00=EE | EE+X00=EE | O+X00=EE
 E1F0 XXX Q1 | E1C8 X10 Q2 | E25C XXX Q3 | E264 XXX Q4 | E1F4 XXX Q5 | E1F8 XXX Q6 | E250 XXX Q7
 NOT ON LINE

Y500.U6-----*| XXX 2 E0BC | XXX 2 E250 | XXX S4 E254 | XXX 2 E25B
 E1C8 XXX S2 | O+O=MD | 700 | TO INLINE CONTROL
 E254 XXX S4 | E25E XXX S5 | CAF8 XXX S6

Y502.L5-----*| XX1 2 E124 | XXX 1 E1FC
 O+XFB=MA
 E1FC XXX U1 | E1C8 X10 U2
 NO SEEK WITHIN 64 MS

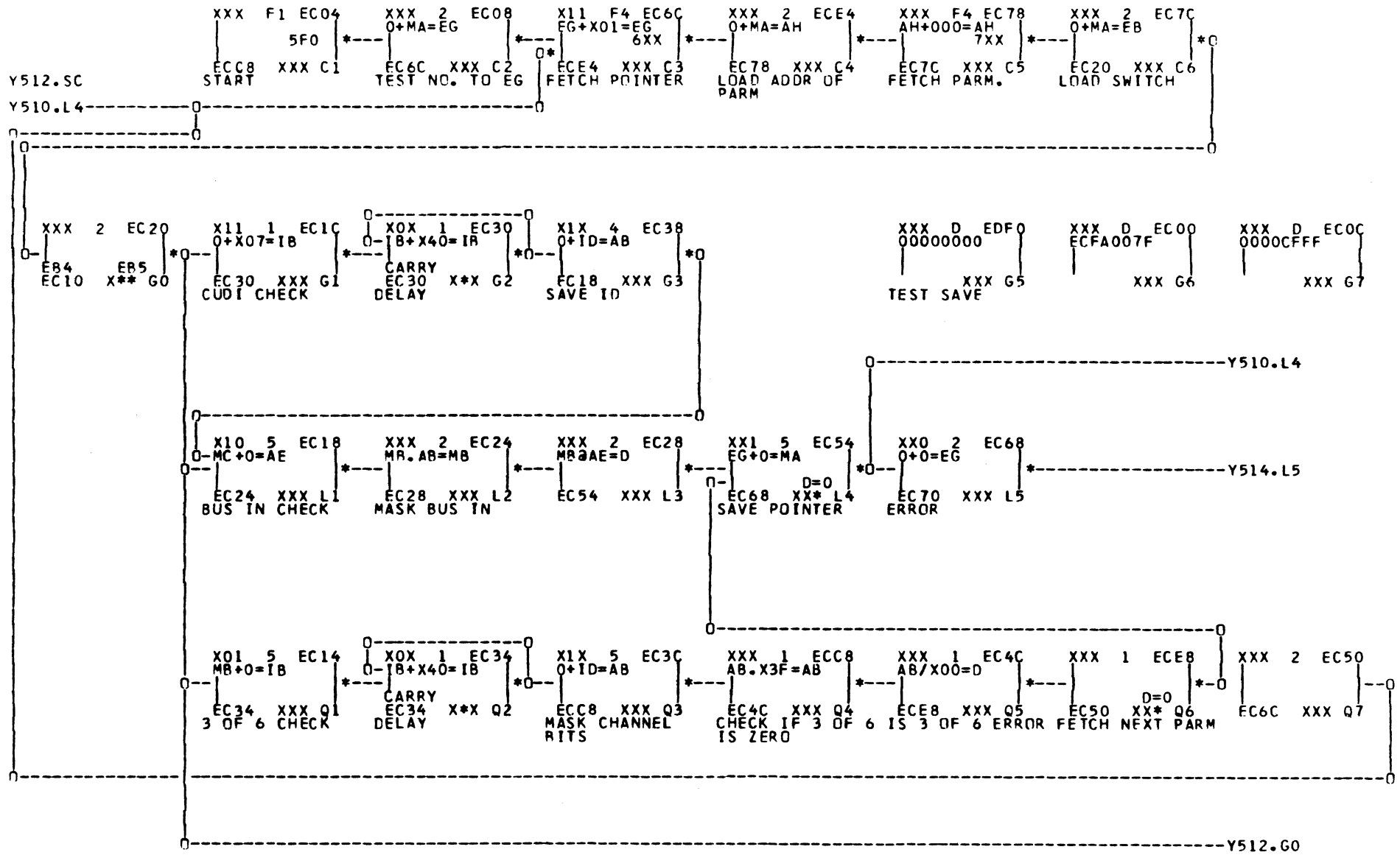
Y505 VELOCITY GAIN AND ADJUST
 EXIT + DISPLAY

ROUTINE EC - DUAL ACCESS FEATURE RESERVE/RELEASE

THIS ROUTINE CHECKS THE RESERVE/RELEASE CAPABILITY OF THE BR3B2/BR3B3 DISK STORAGE UNIT EQUIPPED WITH THE DUAL ACCESS FEATURE OPTION. FOR THE PURPOSE OF THIS DESCRIPTION CONTROL UNIT A IS DEFINED AS THE UNIT WHICH INITIATES THE ROUTINE. THE ROUTINE MUST BE EXECUTED TWICE TO ALLOW BOTH CONTROLLERS TO FUNCTION AS CONTROL UNIT A.

OPERATION.:

1. TO BEGIN THE ROUTINE LOAD CONTROL UNIT A WITH PARAMETER O EQUAL TO O AND EXECUTE.
2. IF SUCCESSFULL CONTROL UNIT A WILL HAVE AN ERROR CODE OF ECBB. AFTER THIS ERROR CODE LOAD CONTROL UNIT B WITH PARAMETER O EQUAL TO XX AND EXECUTE.
3. IF CONTROL UNIT B IS SUCCESSFULL AND ERROR CODE OF EC AA WILL POINT YOU BACK TO CONTROL UNIT A WHERE THE OPERATOR WILL BIT EXECUTE.
4. AT THE END OF EACH EXECUTION THE ERROR CODE (IF AA OR BB) WILL POINT TO THE CONTROLLER THAT WILL BE EXECUTED NEXT. IF AN ERROR CODE OTHER THEN AA OR BB APPEARS REFER TO THE ERROR CODE DICTIONARY AND TAKE CORRECTIVE ACTION.
5. WHEN THE LAST TEST IS RUN ON CONTROLLER B AN ERROR CODE OF ECFF WILL BE PRESENTED, INDICATING A FINAL EXECUTION ON CONTROLLER A. AFTER THE ERROR CODE FF APPEARS ON CONTROLLER A THE TEST IS COMPLETE.



Y510 DUAL ACCESS INLINE ENTRY

Y510.G0-----*
 XXX 1 EC10
 MR+000=MB
 A=IAR
 EC40 XXX C1

XXX 2 EC40
 0+0=IC
 EC6C XXX C2
 DROP MOD SEL

-----Y510.C2

XX1 1 EC5C
 0+XAA=MA

EC70 XXX F3
 RUN TEST ON A

XXX 1 EC48
 EB1
 EC58 XX* G2
 FORCE ERROR

XX0 1 EC5B
 0+XBB=MA

EC70 XXX G3
 RUN TEST ON B

-----Y514.G3

XXX 1 ECA4
 0+X04=ST

ECC0 XXX L2
 END ROUTINE

XXX 1 ECC0
 0+XFF=MA

EC70 XXX L3

XXX 5 EC2C
 MD+0=EC

EC44 XXX Q2
 BUS OUT

XXX 5 EC44
 MC+0=IB

EC84 XXX Q3
 TAG

XXX 1 EC84
 0+X01=IC

EC90 XXX Q4
 MOD SEL

XOX 1 EC90
 0-IB+X40=IB

CARRY
 EC90
 DELAY

X1X 1 EC98
 IB/X20=IB

EC94 XXX Q6
 TAG GATE

XOX 1 EC94
 0-IB+X40=IB

CARRY
 EC94
 DELAY

X1X 1 EC9C
 SP16
 EC8B XXX S1
 CLEAR C-CHK

XXX 2 EC88
 0+ID=AB

EC8C XXX S2
 SAVE BUS IN

XXX 1 EC8C
 SPO0

EC80 XXX S3
 ENABLE C-CHK

XXX 1 EC80
 IB.XDF=IB

C-CHK
 EC80
 DROP TAG GATE

XOX 1 EC80

EC6C XXX S5
 FETCH NEXT PARM

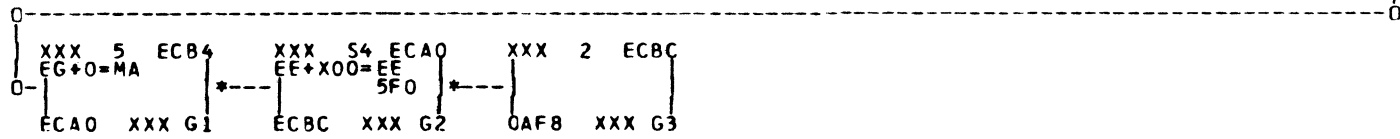
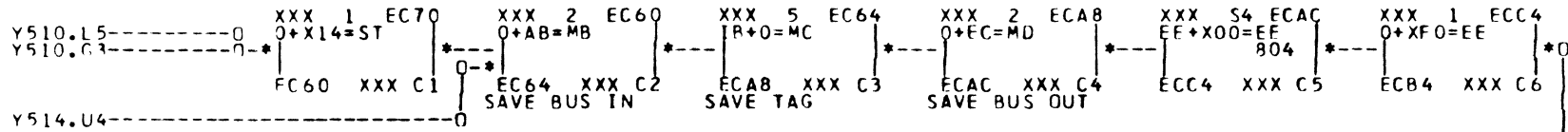
-----Y510.S5

X1X 1 ECB8
 0+X10=ST

EC60 XXX U5
 C-CHK ERROR

Y512 DUAL ACCESS INLINE

-----Y514.U4



Y514 DUAL ACCESS INLINE
 EXIT

REGISTER ASSIGNMENT

XXX 1 3F00
 SP31 *-0
 3F6C XXX C1
 STARTING ADDR
 RESET WORD CNT.
 FEED

COLUMN CNT
 BINARY CHARACTER
 ADDRESS BITS 8-15
 CONVRT RETURN
 SHIFT RETURN
 DAR 1-3

FB
 AH
 SH
 SB
 EG
 AE

SHIFTED CHAR
 ADDR OF STRG INST.
 WORD CNT

AC
 EE
 AT

XXX 1 3F6C
 0+XAC=EE
 3F64 XXX E2

XXX 1 3F64
 0+000=EB
 3F74 XXX E3
 RESET COL.
 CCUNT

XXX 1 3F74
 AT+X01=AT
 3FE4 XXX E4
 INC. WORD
 CCUNT FGR
 ERR. RTN.

XXX 1 3FE4
 0+X80=SB
 3F40 X00 E6
 SET RETURN ADDRESS
 FOR CONVERT RTN.

Y810.Q6-----0
 READ NEXT MEM. UPDATE

XXX 1 3F80
 FB+X01=EB
 EB6 EB7
 3F10 X** J1
 INC. COL. CNT.

X00 5 3F10
 AH+0=AE
 3FE4 XXX J2
 SAVE DAR
 BITS 1-3

X01 1 3F14
 0+X03=D
 SP04
 3F90 XXX L2
 SET DAR FOR
 BLOCK Q2

XXX 1 3F90
 0+XA0=SG
 3FC0 XXX L3
 RETURN ADDRESS FGR SHIFT
 RETURN TO N2 AFTER SHIFT

DAR 4-7

XXX F4 3FA0
 EE+X00=EE
 FXX
 3F94 XXX N2
 FETCH INST TO
 BE MODIFIED

XXX 1 3F94
 MB.X0F=MB
 3F98 XXX N3

XXX 4 3F98
 MB/AC=MB
 3F9C XXX N4
 SET NFW CW

XXX S4 3F9C
 EE+X00=EE
 FXX

3FE4 XXX N5

Y820.J5-----0
 RETURN FROM SHIFTING
 SECOND DIGIT OF
 ADDRESS

X10 1 3F18
 0+X40=SG
 3FC0 XXX Q2
 SET SHIFT RETURN
 ADDRESS TO CONVERT RTN.

SHIFT DIGIT UPPER A REG. FOR DAR 8-11

DAR 8-11

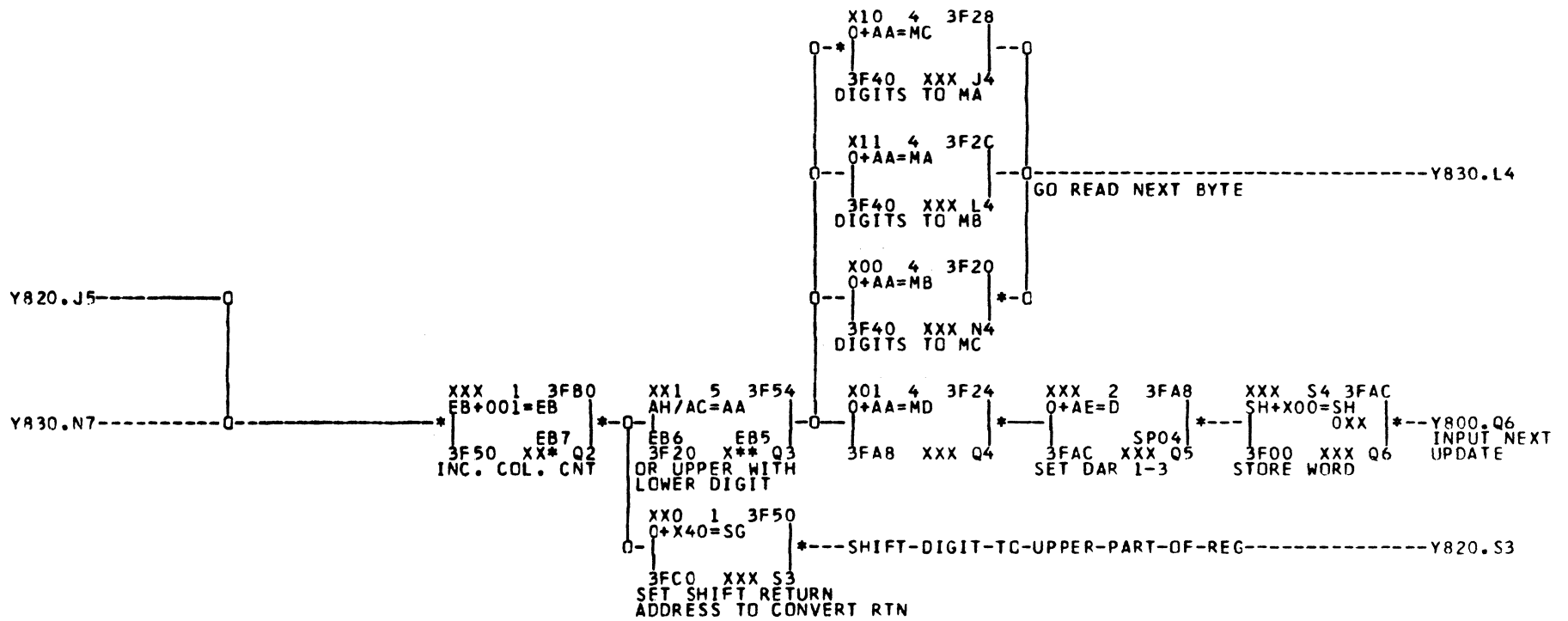
X11 5 3F1C
 AH/AC=SH
 3FA4 XXX S2
 EOR DAR 8-11
 WITH 12-15 AND SAVE

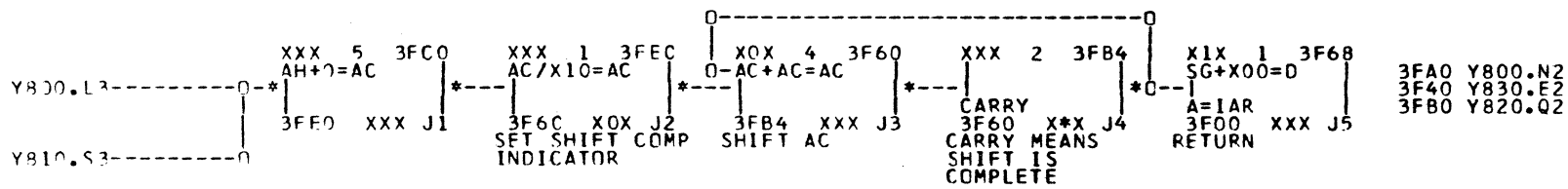
XXX 1 3FA4
 C+X80=SB
 3F40 XXX S3
 DIRECT CONVERT ROUTINE TO GO TO WORD INPUT RTN

INPUT-CONTENTS-OF-LOC-TO-BE-CHANGED-----0

DAR 12-15

Y800 MEMORY UPDATA FROM CARDS
 ADDRESS ASSEMBLER





THIS ROUTINE SHIFTS THE CONTENTS
OF AC 4 PLACES TO THE LEFT

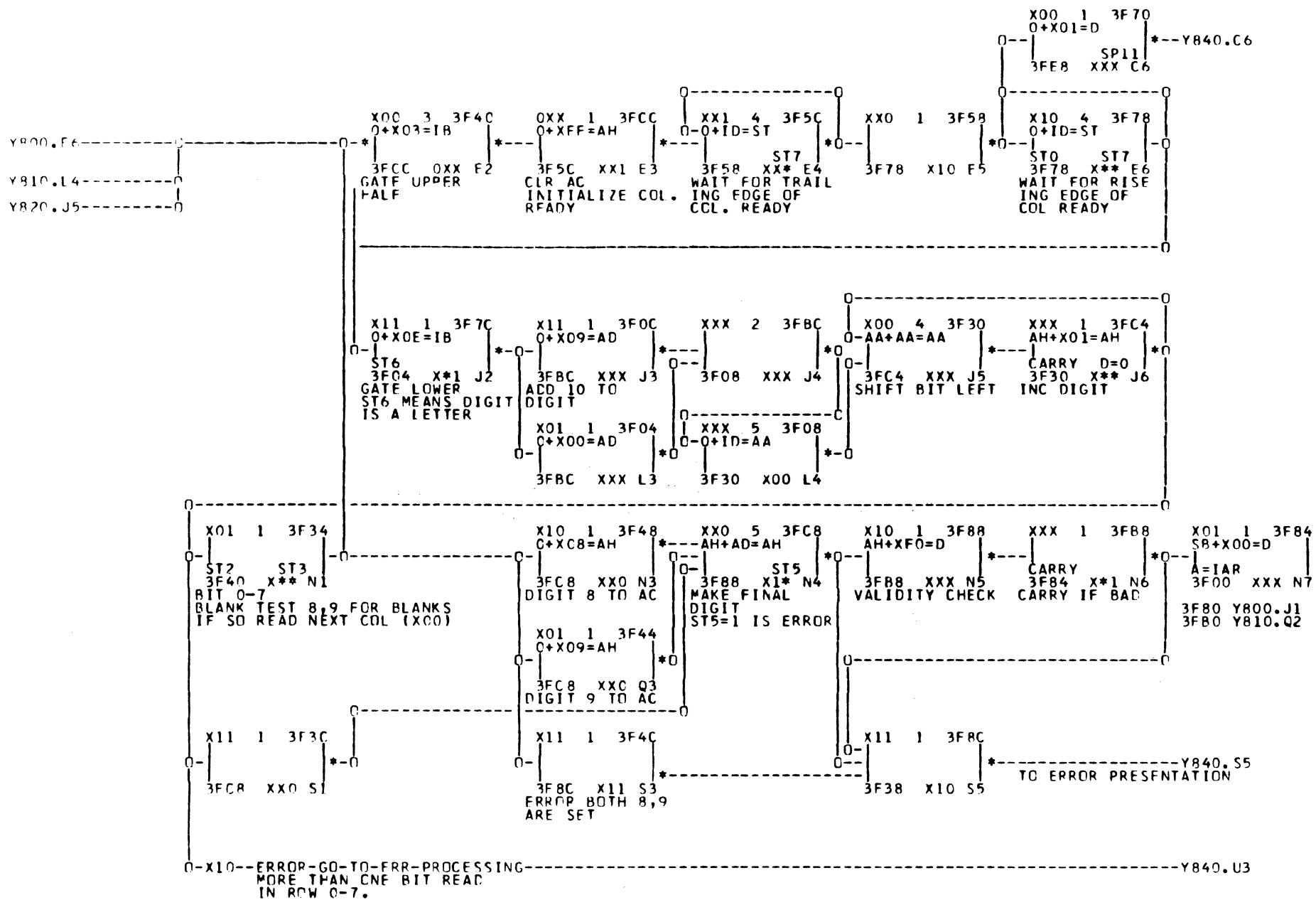
Y820 MEMORY UPDATE FROM CARDS
SHIFT ROUTINE

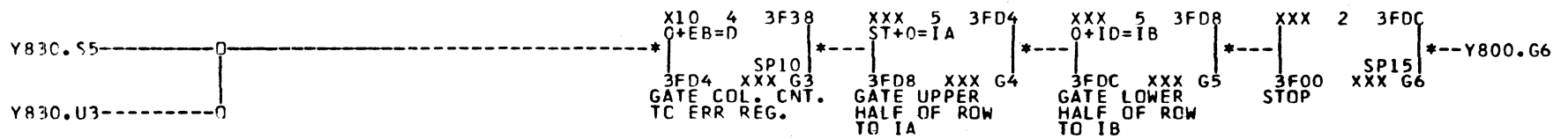
PUR. NO. 70631200

DCC NO. 73687900

2-436

REVISION F



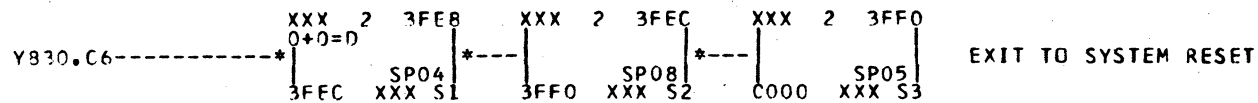


WHEN AN INVALID CHARACTER IS READ, THIS ROUTINE DISPLAYS

- WORD COUNT (NUMBER OF WORD THAT IS BAD) IN RTN REG
- COLUMN COUNT (BAD COLUMN OF WORD) IN ERR REGISTER
- BITS 0-7 OF BAD WORD IN IB REGISTER

IA REG WILL CONTAIN BIT

- 0 CARD READER READY
- 1 NOT USED
- 2 BIT 08 OF CARD COL.
- 3 BIT 09 OF CARD COL.
- 4 NOT USED
- 5 BIT 11 OF CARD COL.
- 6 BIT 12 OF CARD COL.
- 7 CCL. READY



XXX D 0800
04000000
|
XXX C1
INLINE CONTROL

XXX D 0900
000080FC
|
XXX E1
CASSETTE CONTROL

XXX D 0A00
00000000
|
XXX G1
M REG STORAGE

XXX D 0A04
00000000
|
XXX J1
C-CHK STORAGE

XXX D 0804
00000000
|
XXX L1
DIAGNOSTIC LOG

XXX D 0808
00000000
|
XXX N1
DIAGNOSTIC LOG

XXX D 080C
00000000
|
XXX Q1
DIAGNOSTIC LOG

XXX D 0810
00000000
|
XXX S1
DIAGNOSTIC LOG

0-INLINE CONTROL ST REG
1-INLINE CONTROL EB REG
2-PARAMETER/DISPLAY COUNTER
3-CURRENT LOOP COUNTER

0
1-RETRY COUNTER- # OF ATTEMPTS TO READ INLINE
2-REQUESTED ROUTINE
3-TAPE POSITION- # OF ROUTINE IN FRONT OF TAPE HEAD

0-PA UPON EXIT FROM INLINE
1-PB UPON EXIT FROM INLINE
2-MC UPON EXIT FROM INLINE
3-MD UPON EXIT FROM INLINE

0-CONTROL CHECKS GROUP 1
1-CONTROL CHECKS GROUP 2
2-CONTROL CHECKS GROUP 3
3-CONTROL CHECKS GROUP 4

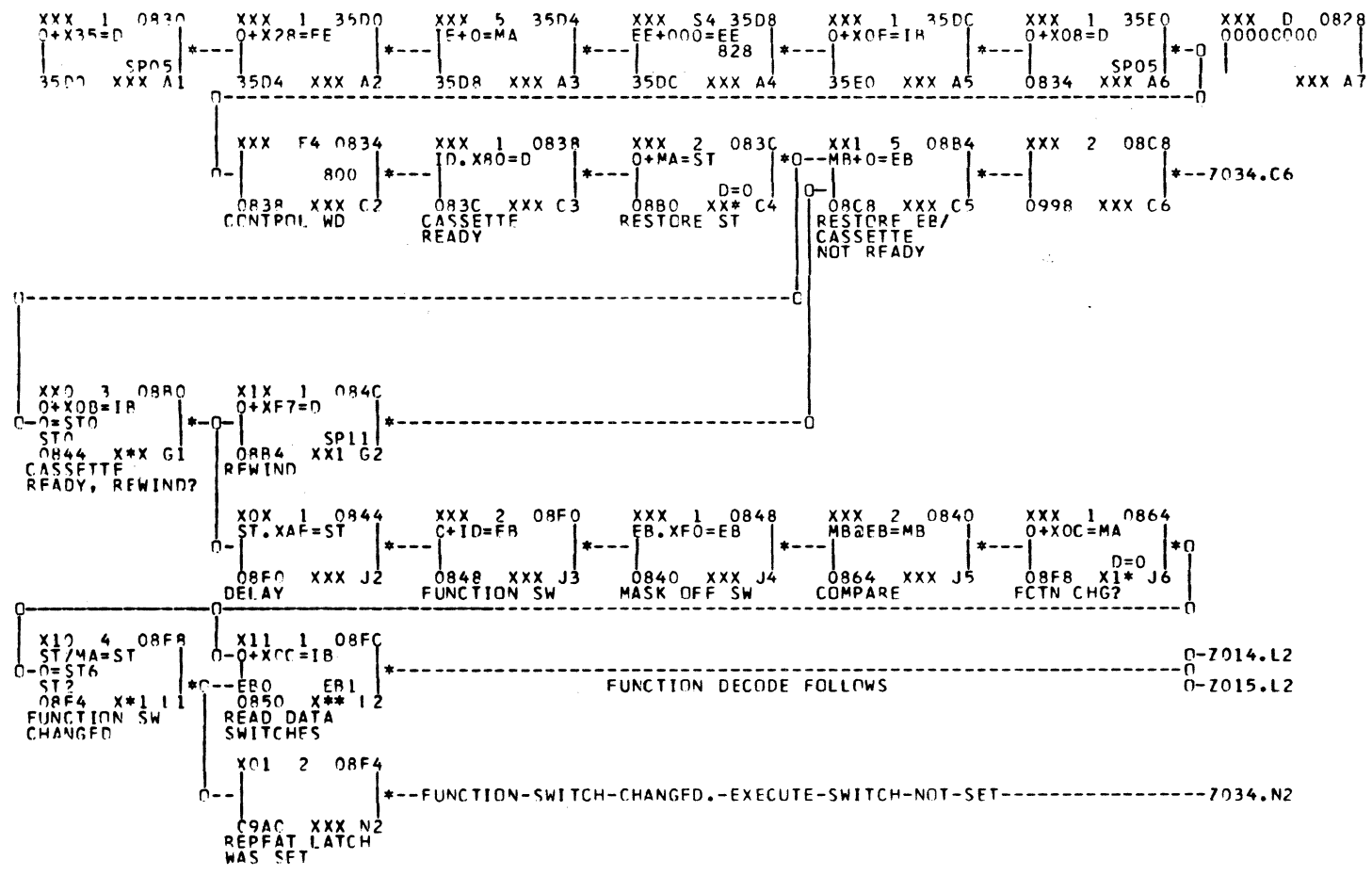
0-ERROR CODE
1-ADDITIONAL ERROR DATA
2-ADDITIONAL ERROR DATA
3-ADDITIONAL ERROR DATA

4-ADDITIONAL ERROR DATA
5-ADDITIONAL ERROR DATA
6-ADDITIONAL ERROR DATA
7-ADDITIONAL ERROR DATA

8-ADDITIONAL ERROR DATA
9-ADDITIONAL ERROR DATA
A-ADDITIONAL ERROR DATA
B-ADDITIONAL ERROR DATA

C-ADDITIONAL ERROR DATA
D-ADDITIONAL ERROR DATA
E-ADDITIONAL ERROR DATA
F-ADDITIONAL ERROR DATA

 ENTRY
 FROM
 FUNCTIONAL



2012 INLINE CONTROL
 ENTRY FROM FUNCTIONAL

Z012.L2

LOAD
ROUTINE

X00 F4 0850 XXX F4 0870 XXX 4 08EC X10 1 08B8
EB2 400 0-ST6 900 0+ID=MC 0+X3C=D
EB3 0870 X** C1 08EC XXX C2 0-ST7 3C00 SP05
FUNCTIONS ROUTINE ROUTINE NO TO LOADER
0-3 FROM DATA SWITCHES XXX C4

-----Z016.C4

PARAMETER

X01 F1 0874 40F XXX 4 086C
086C XXX E2 08E0 XXX E3
PARAMETER

-----Z026.E3

OPTION

X10 2 0878 XXX S4 09E0 XXX 2 09E4
0+ID=MD 400 0+ID=D
09E0 XXX G2 09E4 XXX G3 SP10
OPTION STORE OP BYTE XXX G4

CHAIN

X01 F4 0854 X00 4 0880 XX1 4 08D4
EB2 400 08D0 ST7 0890 XXX L3
EB3 CHAIN XX* L2
0880 X** L1 0888 XXX J3
FUNCTIONS ROUTINE LOAD
4-7 PARAMETERS

-----Z015.L3

ERROR
DATA

X01 F1 0884 401
086C XXX N2
ERROR DATA

STATUS

X10 1 0888 SP05
0+X3E=D 3E1C XXX Q2
STATUS
X11 2 088C SP09
0+0=D 09A0 XXX S2

-----Z062.Q2

-----Z034.S2

Z014 INLINE CONTROL
FUNCTION OFCODE 0-7

Z014.L3
Z012.L2

STOP
ON
ERROR

X10 F4 0858
EP 2 400
0890 ER3
X** C1
FUNCTIONS
8-11

X00 2 0890
O+MA=D
SP09
0908 XXX C2
STOP ON ERROR

XXX F1 0908
O=ST4 40D
ST4
0904 X** C3
FTCH LOOP COUNT

X0X F4 0904
800
0958 XXX A4

X1X 2 090C
O+MA=MD
0A94 XXX C4
SAVE LOOP COUNT
ON INITIAL PASS

XXX 2 0A94
O+O=D
SP10
0958 XXX C5
CLEAR DSPY

XXX 2 0958
O+ER=MB
0918 XXX C6
SAVE SW POS

XXX 5 0918
ST+O=MA
0914 XXX C7
SAVE ST

X01 2 0894
O+O=D
SP09
09A0 XXX E2

XXX S4 0914
800
ST5
0920 X** E4

XX0 F4 0920
A00
ST7
0928 X** E5
REENTRY

XX1 2 092C
O+O=IC
0404 XXX E6

ONLY EXIT
TO INLINE
ROUTINES

CONTINUE
ON
ERROR

X10 2 0898
O+MA=D
SP09
0908 XXX G2
CONTINUE ON
ERROR

XX1 F1 0924
402
ST7
0928 X** G5
INITIAL
ENTRY

XX0 2 0928
09A0 XXX G6

X11 2 089C
O+O=D
SP09
09A0 XXX J2

LOOP
ON
ERROR

X11 F4 085C
EP 2 400
08A0 ER3
X** L1
FUNCTIONS
12-15

X00 2 08A0
O+MA=D
SP09
0908 XXX L2
LOOP ON
ERROR

RUN
CONTIN-
UOUSLY

X01 2 08A4
O+MA=D
SP09
0908 XXX N2

X10 2 08A8
O+O=D
SP09
09A0 XXX O2

X11 2 08AC
O+O=D
SP09
09AC XXX S2

-----Z034.S2

Z015 INLINE CONTROL
FUNCTION DECODE 8-15



2014.G6-----*
 XXX 1 3C00 0+XOF=IBC
 3C1C XXX C1
 GATE CASSETTE
 STATUS TO ID
 RESET ST3

 XXX 4 3C1C 0+0=D
 0=ST2
 SPO9
 3C14 XXX C2
 CLEAR RTN REG

 YXX 3 3C14 IO.X10=D
 ONST21
 3CFC 1XX C3
 TEST FOR
 BEGINNING
 OF TAPE

 1XX 1 3CFC 0+001=D
 ST2 SP10
 3C04 XXX C4
 DISPLAY RTN
 LOADING CODE
 '0001'
 *0

NOT 'BOT'
 0-----0
 XOX 2 3C04
 ST6
 3C10 XXX G1
 ST6=CNTR VALID

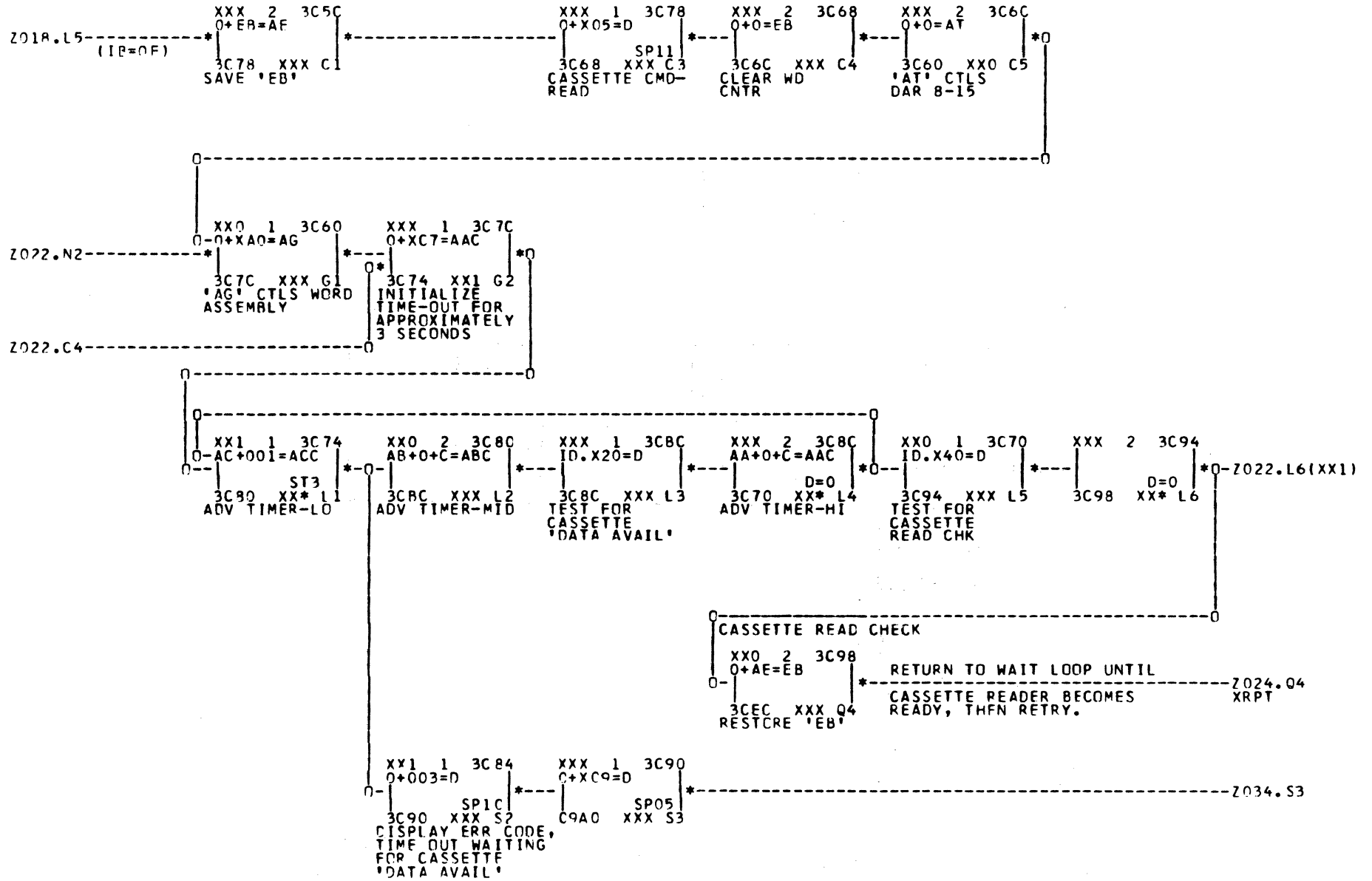
 X1X 2 3C18 MB-0+C=MBC
 3C20 XXX G3
 DECREMENT
 RETRY CNTR

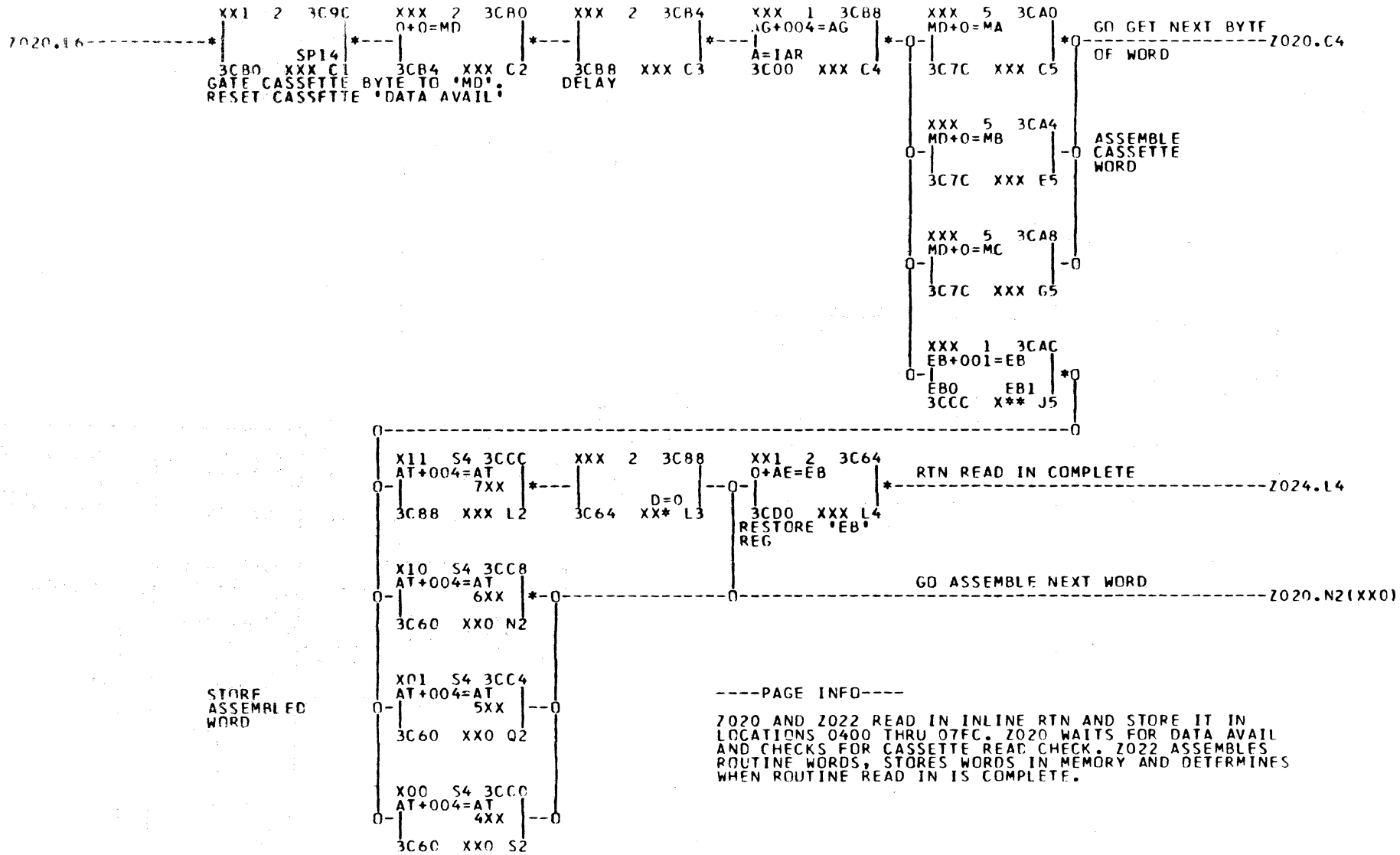
 XXX 54 3C20
 =ST6 900
 3C24 XXX G4
 STORE RETRY CNTR,
 REQD-RTN AND
 TAPE-POS
 ----- 2018.G4
 RETRY COUNTER IS DECREMENTED
 ON THE REWIND, SPACE FWD,
 AND READ. THEREFORE RETRY COUNTER
 IS INITIALIZED TO 9 TO GET 3
 READ TRIES (2 RETRIES).
 BOT
 X1X 3 3C0C 0+X80=MD
 ST6
 3C10 XXX L1
 INIT TAPE-POS
 FOR BEGINNING
 OF TAPE.
 XOX 1 3C10 0+009=MB
 3C18 X1X L2
 INITIALIZE
 RETRY CNTR
 ST6=CNTR VALID

ERR REG CODES
 1-LOADING ROUTINE
 2-CASS. RD CHK
 3-TIME OUT WAITING FOR DATA
 4-INVALID ROUTINE

-----PAGE INFO-----
 PREPARE TO LOAD OR FINISH
 LOADING IN-LINE ROUTINE.
 UPDATE OR INITIALIZE RETRY
 COUNTER.

START READ IN OF INLINE ROUTINE





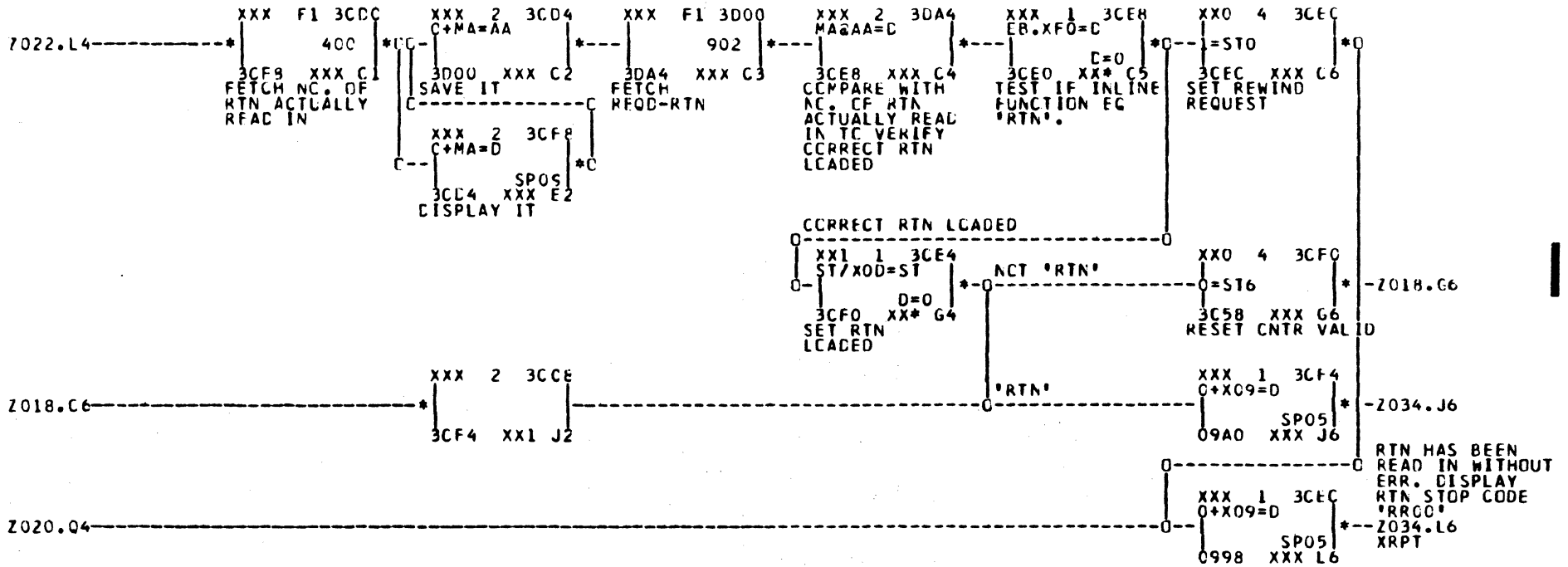
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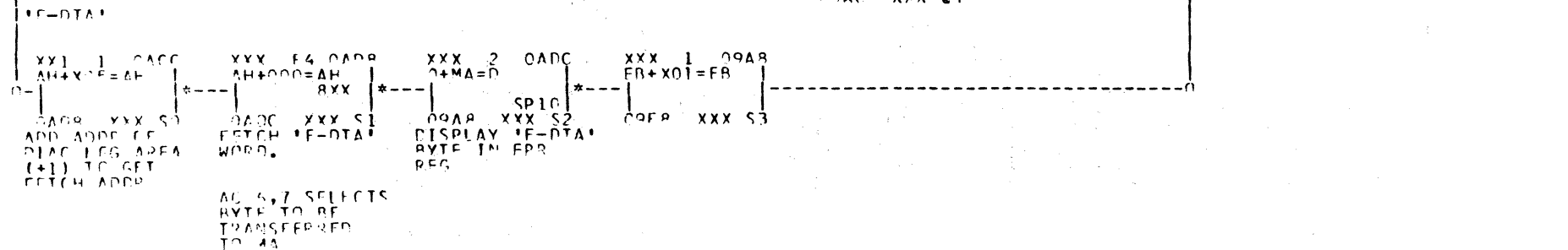
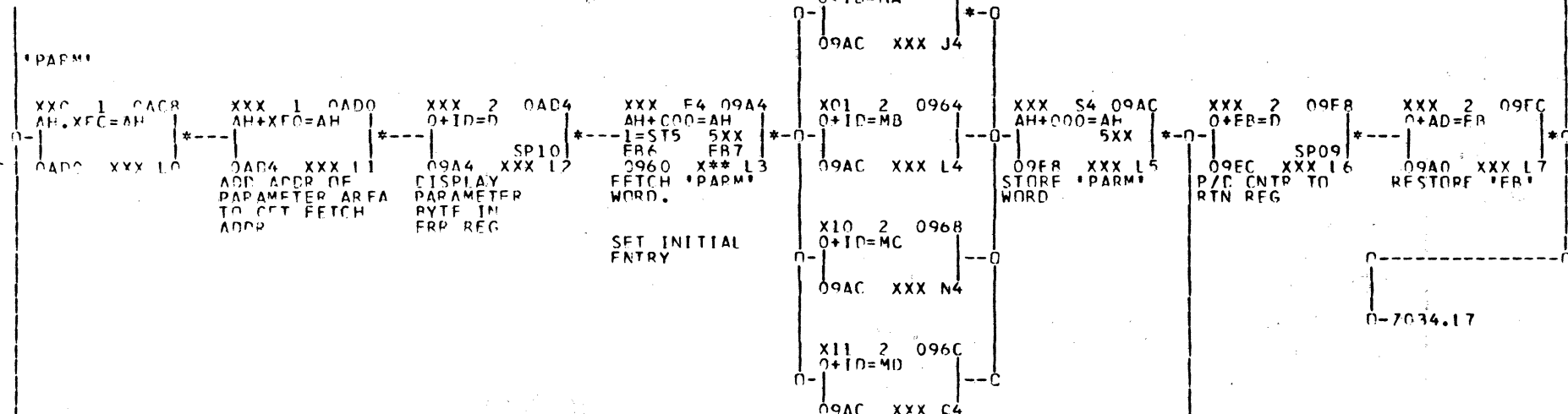
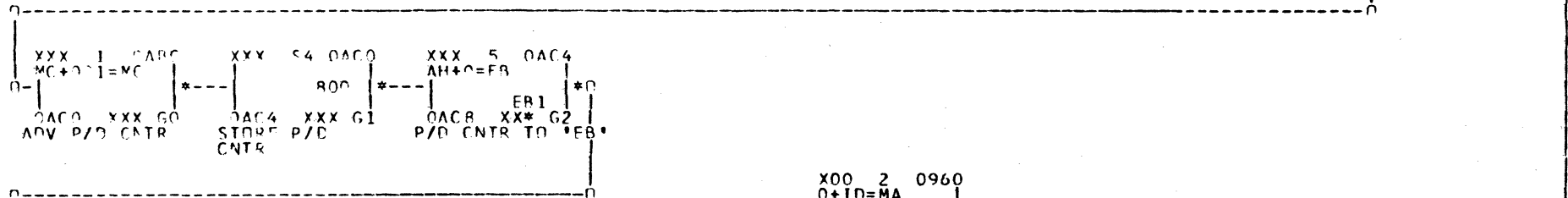
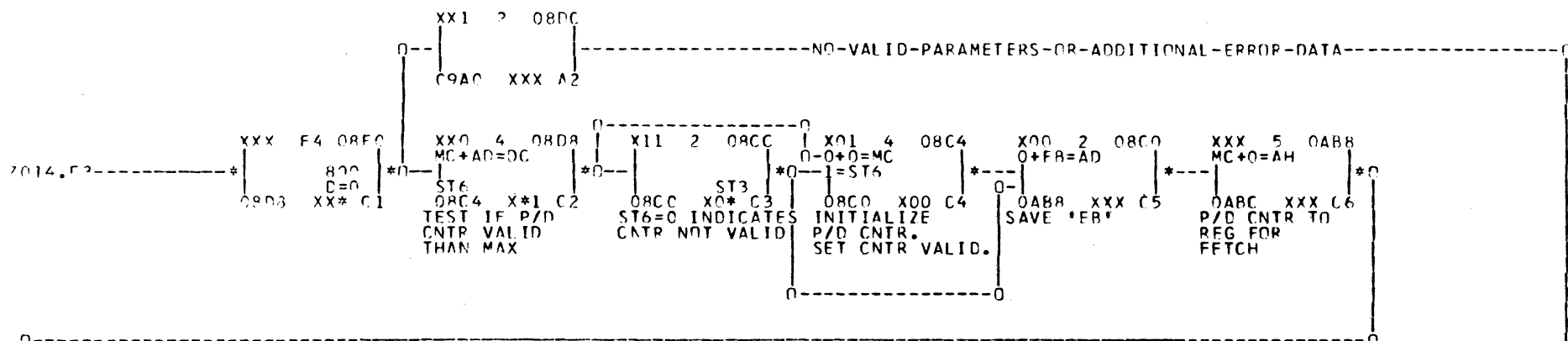
2020 AND 2022 READ IN INLINE RTN AND STORE IT IN LOCATIONS 0400 THRU 07FC. 2020 WAITS FOR DATA AVAIL AND CHECKS FOR CASSETTE READ CHECK. 2022 ASSEMBLES ROUTINE WORDS, STORES WORDS IN MEMORY AND DETERMINES WHEN ROUTINE READ IN IS COMPLETE.

Z022 INLINE CONTROL - READ IN IN-LINE ROUTINE

GET HERE IF INLINE RTN HAS BEEN
READ IN WITHOUT ERROR

INCORRECT
RTN LOADED

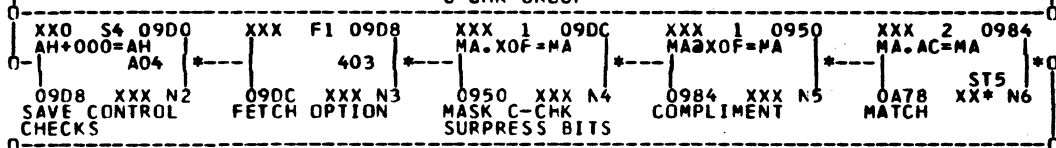
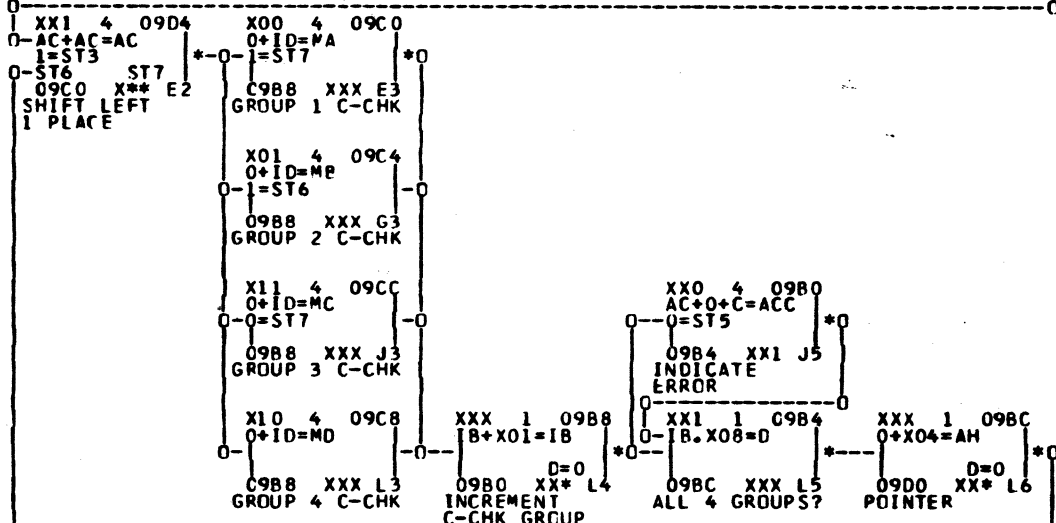
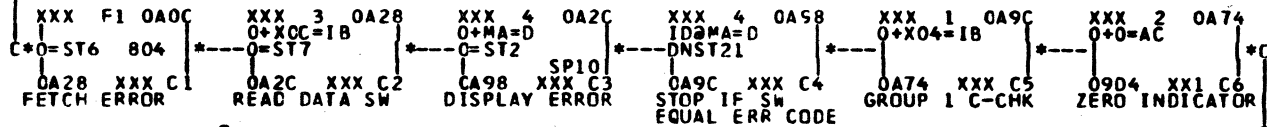




0-7034.17

7026 IN LINE CONTROL -
ACCEPT PARAMETERS OR
DISPLAY ERROR DATA
J

Z030.C6

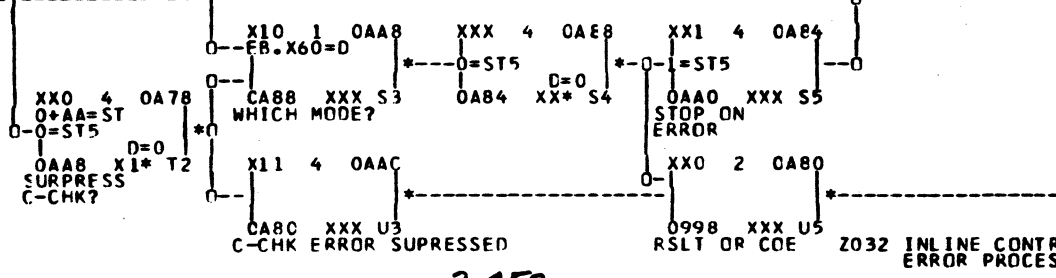


 INLINE
 ERROR EXIT

Z030.S5

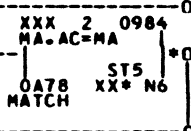
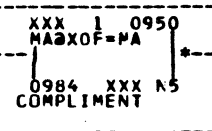
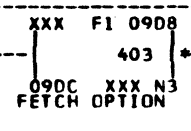
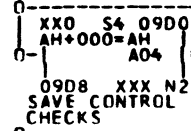
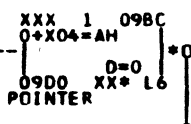
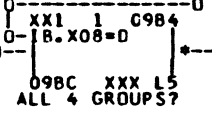
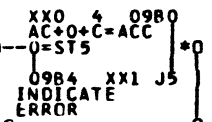
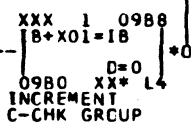
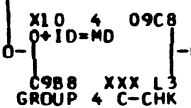
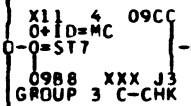
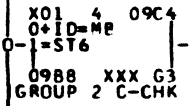
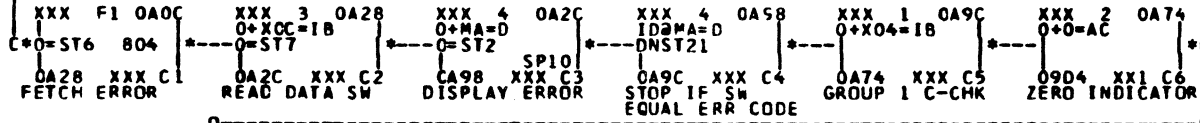


 CONTROL
 CHECK EXIT



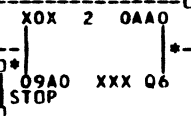
2-450

Z030.C6

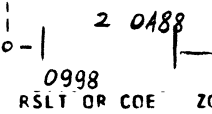
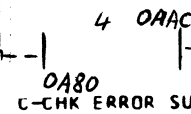
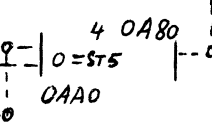
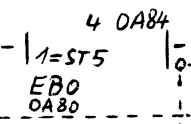
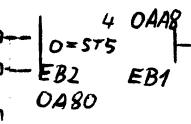
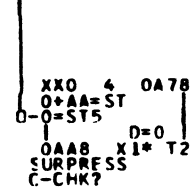


 IFLINE
 ERROR EXIT

Z030.S5



Z034.06



Z034.U5

C-CHK ERROR SUPPRESSED

RESULT OR COE

Z032 INLINE CONTROL ERROR PROCESSING

Gilt nur für 3414-3, 3414-4 Rev. 2



7014.S2-----0
 7020.S2-----0
 7024.J6-----0
 7026.L7-----0
 7032.06-----0 STOP

XXX 3 09A0 XXX 5 0948 XXX 3 091C OXX 1 0940
 0+X01=D ST+0=AA 0+X0D=1R 0+252=AH
 *DNST21 * * *
 0948 SP08 091C XXX C5 0940 OXX C6 0944 XXX C7
 RESET 'EXEC' AND GATE CU END STATUS TO ID
 'REPEAT' LATCHES

7012.06-----0
 7018.05-----0
 7024.L6-----0
 7030.N6-----0
 7032.U5-----0
 XXX 2 099A XXX 4 099C
 * * *
 SP08 SP02
 099C XXX C1 094R XXX C2
 RESET 'EXEC' SET REPEAT
 AND 'REPEAT' LATCH TO GAIN
 LATCHES RE-ENTRY TO INLINE ROUTINE

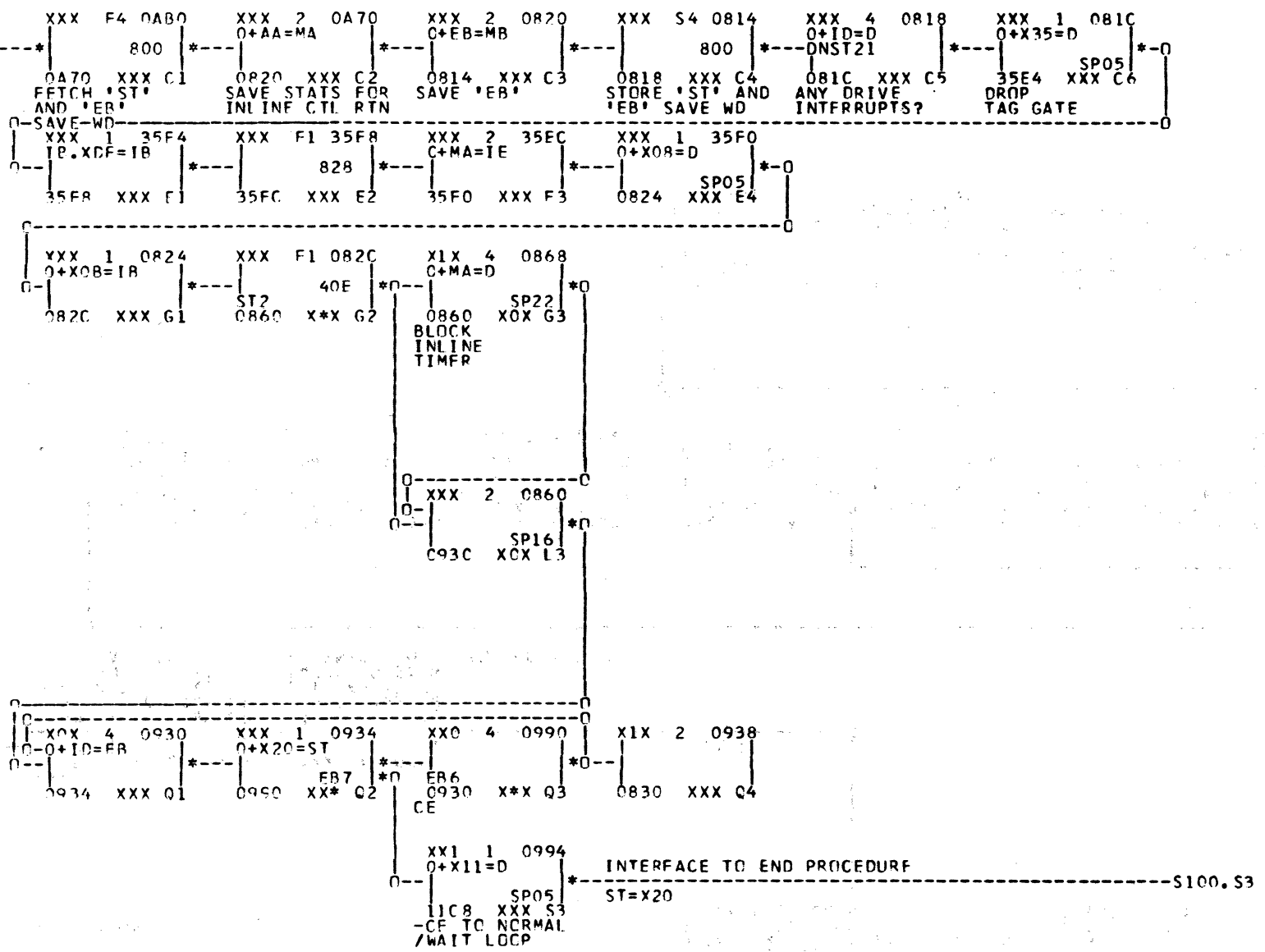
REPEAT

XXX 3 0944 IXX 2 0954 XXX 1 0A90 OXX 1 0AE4 OXX F4 0AE0 OXX 1 0AEC XXX 4 0AF4
 ID.XF0=D 0+0=AH 0+X02=1B 0+X01=EC 0-AH+004=AH AR+001=AR MR+0=D
 0-DNST21 * * * * * *
 0954 IXX L1 0A90 XXX L2 0AF4 OXX L3 0AF0 OXX L4 0AEC OXX L5 0AF4 XXX L6 0AF0 OXX L7
 ANY CU-END TAG 2 FOR POLL DEVICES POLL DEVICES 0-7 ANY OUTSTANDING
 STATUS? POLL DEVICES

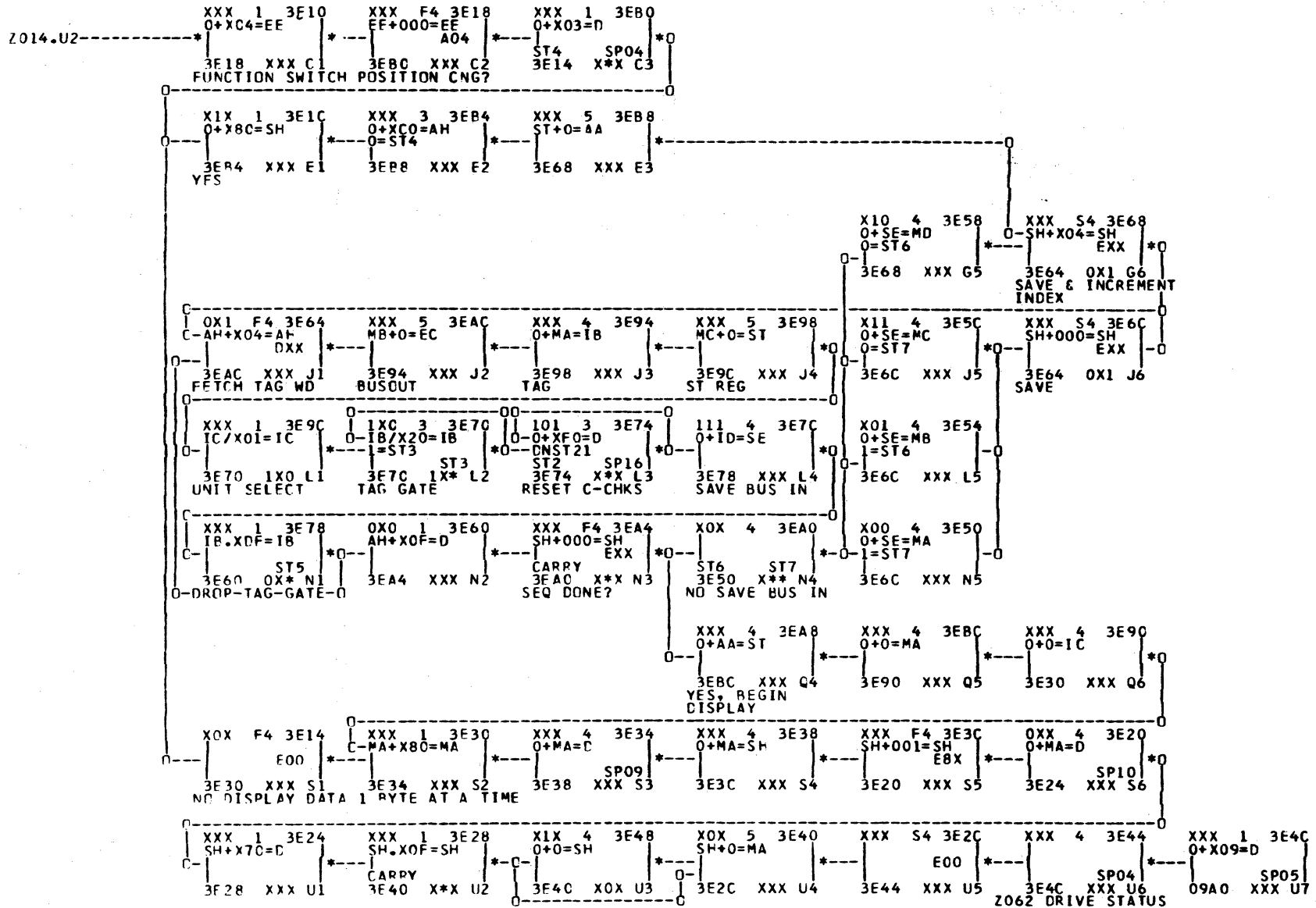
IXX 1 0AF8 XXX F1 0AFO XXX 4 0AB4
 0R/X20=1B 130 0+MA=D
 * * *
 0AF0 XXX C4 0AB4 XXX Q5 0AB0 XXX Q6
 RAISE FETCH SFT ANY RIP?
 TAG GATE SECTOR BYTE

7034 INLINE CONTROL -
 EXIT DECISIONS

7034.06



0 - ROUTINE ID # - CURRENT	1 - ADDITIONAL ERROR DATA COUNT	2 - INITIAL ENTRY ADDRESS	3 - OPTION BYTE	XXX D B000	XXX D B00C	XXX D D000	XXX D D00C	XXX D F000	XXX D F00C
C - ROUTINE ID # - CHAIN TO	D - LOOP COUNT	E - INHIBIT CONSTANT	F - PARAMETER COUNT	BOFA007F	B40041FF	DOFA007F	D400CF00	F0000000	F00048F9
				XXX C2	XXX C3	XXX C4	XXX C5	XXX C6	XXX C7
				BO I + C I TEST		DO SIMULATED LOSS OF DIBITS		FO SENSE/LOG DISPLAY	
XXX D 9400	XXX D 940C	XXX D B400	XXX D B40C	XXX D D400	XXX D D40C	XXX D F400	XXX D F40C		
94FA1000	9800CFFC	B4FA007F	B80041FF	D4FA007F	D800CF00	F4FD1400	FC0048F7		
XXX E0	XXX E1	XXX E2	XXX E3	XXX E4	XXX E5	XXX E6	XXX E7		
94 INCREMENTAL SEEK		B4 I+C II TEST		D4 FORWARD EOT DETECT		F4 WRITE ROUTINE			
XXX D 9800	XXX D 980C	XXX D B800	XXX D B80C	XXX D D800	XXX D D80C	XXX D F800	XXX D F80C		
98F5040C	A400CFFC	B8FA007F	BC0041FF	D8FA007F	DC00CFFF	F8000400	000048FD		
XXX G0	XXX G1	XXX G2	XXX G3	XXX G4	XXX G5	XXX G6	XXX G7		
98 CYLINDER SEEK		B8 I + C III TEST		D8 I + C IV TEST		F8 TAG EXERCISER			
XXX D 9C00	XXX D 9C0C	XXX D BC00	XXX D BC0C	XXX D DC00	XXX D DC0C	XXX D FC00	XXX D FC0C		
9CF90000	A420CFF8	BCFA007F	C000CF00	DCFA007F	0000CFFF	FCFD1000	000048FD		
XXX J0	XXX J1	XXX J2	XXX J3	XXX J4	XXX J5	XXX J6	XXX J7		
9C READ ROUTINE		RC STATIC SEEK TEST		DC I + C V TEST		FC AM TEST			
XXX D A000	XXX D A00C	XXX D C000	XXX D C00C	XXX D E000	XXX D E00C				
A0FD6084	0064CF00	C0FA007F	C400CF00	E0FF007F	0000CF00				
XXX L0	XXX L1	XXX L2	XXX L3	XXX L4	XXX L5				
A0 OFFSET SCOPE LOOP		C0 STATIC RTZS TEST		E0 VELOCITY GAIN + ADJUST					
XXX D A400	XXX D A40C	XXX D C400	XXX D C40C	XXX D E400	XXX D E40C				
A4F90400	A800CFE0	C4FA007F	C800CF00	E4F5100C	0000CFFC				
XXX N0	XXX N1	XXX N2	XXX N3	XXX N4	XXX N5				
A4 WRITE HOME ADDRESS		C4 DYNAMIC POWER UP TEST		E4 VIBRATION TEST					
XXX D A800	XXX D A80C	XXX D C800	XXX D C80C	XXX D E800	XXX D E80C				
A8F51400	F400CFFF	C8FA007F	CC00C800	E8F90000	000041FD				
XXX Q0	XXX Q1	XXX Q2	XXX Q3	XXX Q4	XXX Q5				
A8 RANDOM SEEK		C8 DYNAMIC RTZS TEST		E8 READ TRACK TEST					
XXX D AC00	XXX D AC0C	XXX D CC00	XXX D CC0C			XXX D 040C			
ACFA2000	000148FE	CCFE007F	D000CF00			0000CF00			
XXX S0	XXX S1	XXX S2	XXX S3				XXX S6		
AC HEAD ALIGNMENT		CC INDEX AND SECTOR TEST							



7014.012

XXX 1 3E10 O+X03=D	XXX 1 3E18 O+X80=SH	X0X F4 3E14 E00	XXX 1 3E30 MA+X80=MA	XXX 4 3E34 O+MA=D	XXX 4 3E38 O+MA=SH
3F18 XXX C1 DAP = 3	ST4 3F14 X*X C2 STO ADDR=INIT FUNCTION CHANGE?	3E30 XXX C3 NO-GET COUNT	3E34 XXX C4	SP09 3E38 XXX C5 R. REG = COUNT	3FAC XXX C6 INDEX FOR FETCH

*--Z062.C6

X1X 4 3F1C O+O=MA O-O=ST4	XXX S4 3E04 E00	XXX 1 3E08 C+X80=D	XXX 1 3E54 O+X00=AH	XXX 5 3E78 ST+O=AA	XXX 4 3E2C SP04
3F04 XXX G1	3E08 XXX G2 COUNT = 0	3E54 XXX G3 ROUTINE = 80	3E28 XXX G4 TAG INDEX	3E2C XXX G5	3E20 XXX G6

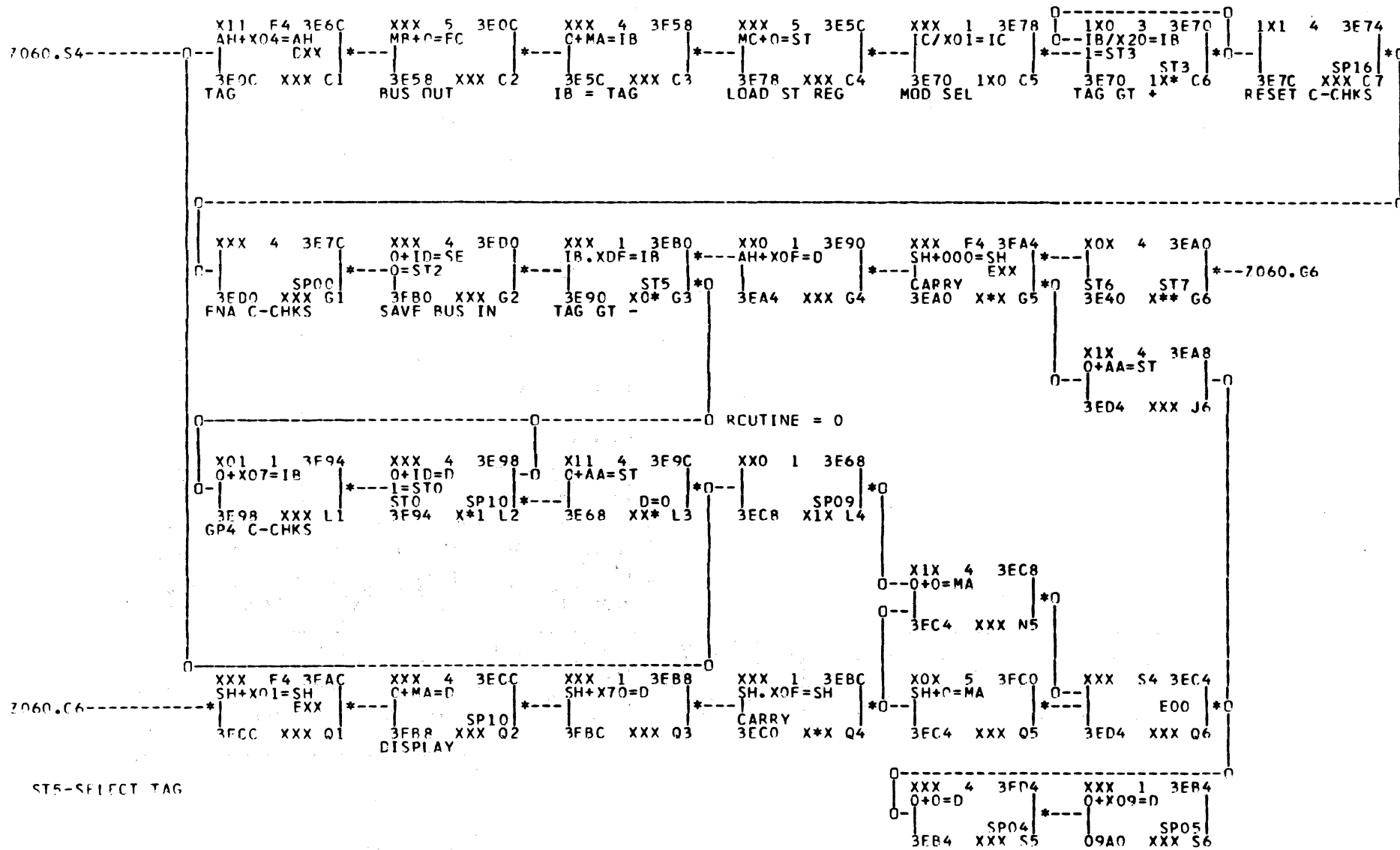
XXX 1 3F20 O+X04=EE	XXX F4 3F24 FF+000=EE A04	XXX 1 3E3C O+X03=D
3F24 XXX J1	3F3C XXX J2	3E50 XXX J3 SP04

7062.G6

X00 4 3F40 C+SE=MA *1=ST7	X01 4 3F44 C+SE=MB 1=ST6	X11 4 3E4C C+SE=MC O=ST7	XXX S4 3F50 SH+X04=SH EXX	XXX S4 3E60 SH+000=SH EXX
3F60 XXX L3	3E60 XXX N3	3E60 XXX Q3	3F6C OXX S3	3F6C OXX S4

*--Z062.S4
X1X TO TAG SEQ

Z060 STATUS



7062 STATUS

FOR TAG CONTROL
 MA-TAG CUT
 MR-RUS CUT
 MC-ST REG

XXX D 3E00 00000000 XXX C0 CONTROL COUNT	XXX D 3E80 00000000 XXX Q1 LOG AREA	XXX D 3F84 00000000 XXX Q2	XXX D 3E88 00000000 XXX Q3	XXX D 3E8C 00000000 XXX Q4
XXX D 3DCC 03100400 XXX S0 SFLCT	XXX D 3DC4 04C00000 XXX S1 STATUS	XXX D 3DC8 0CCC0100 XXX S2 OPFRATE	XXX D 3DCC 0D100300 XXX S3 MCNITOR STATE	XXX D 3DD0 0D200200 XXX S4 MODE
XXX D 3DEC 05040200 XXX U0 HEAD	XXX D 3DE4 05010000 XXX U1 SECTOR	XXX D 3DE8 0D4C0100 XXX U2 SERVO	XXX D 3DEC 0D080300 XXX U3 CHK STATUS	XXX D 3DF0 0D040200 XXX U4 SAFETY

XXX D 3DD4 05080000 XXX S5 H.CYL/H. DIFF	XXX D 3DD8 05020100 XXX S6 CYL	XXX D 3DDC 05100300 XXX S7 DIFF
--	--	---

Z064 STATUS

ROUTINE RFG	ERROR RFG	BIT FORM
80	C-CHK GROUP 1	0123 4567
81		X00X 0X0C
82		0XX0 X0XX
83		XXXX 0000
		XXXX X000
84	STATUS	XXXX XXXX
85	OPERATE	XXXX XXXX
86	MONITOR STATE	XXXX XXXX
87	MODE	0XXX 0XXX
88	HIGH CYL/DIFF	XCOX 00X0
89	LOW CYL	XXXX XXXX
8A	LOW DIFF	XXXX XXXX
8B	HEAD	0COX XXXX
8C	SECTOR	XXXX XXXX
8D	SERVO POINTS	XXXX XXXX
8F	CHECK STATUS	XXXX XXXX
8F	FAULT RYTE	XXXX XXXX

87 - MODE
 1 - DIAGNOSTIC MODE 4
 2 - 2
 3 - 1
 4 - MONITOR MODE 4
 5 - 4
 6 - 2
 7 - 1

8D - SERVO POINTS
 0 - VD GT 64
 1 - VD GT 32
 2 - FINE ANALOG
 3 - DIFF=0
 4 - FINE MODE
 5 - DIRBITS
 6 - CYLINDER PULSE
 7 - END OF TRAVEL

80 - C-CHK GP1
 0 - READ BUFFER PARITY
 3 - DATA TRANSFER CHECK
 5 - PLO INPUT CHECK

81 - C-CHK GP2
 1 - WRITE PARITY CHK
 2 - READ PARITY CHK
 4 - WRITE COMPENSATION CHK
 6 - VFO INPUT CHK
 7 - VFO PHASE CHK

82 - C-CHK GP2
 0 - NO INPUT DATA TO ECC
 1 - ECC ERR PC OR WRITE
 2 - P1 OR P3
 3 - P2

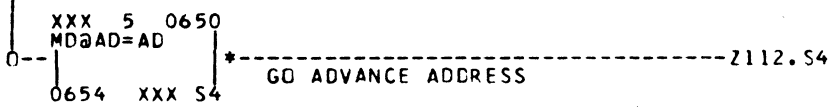
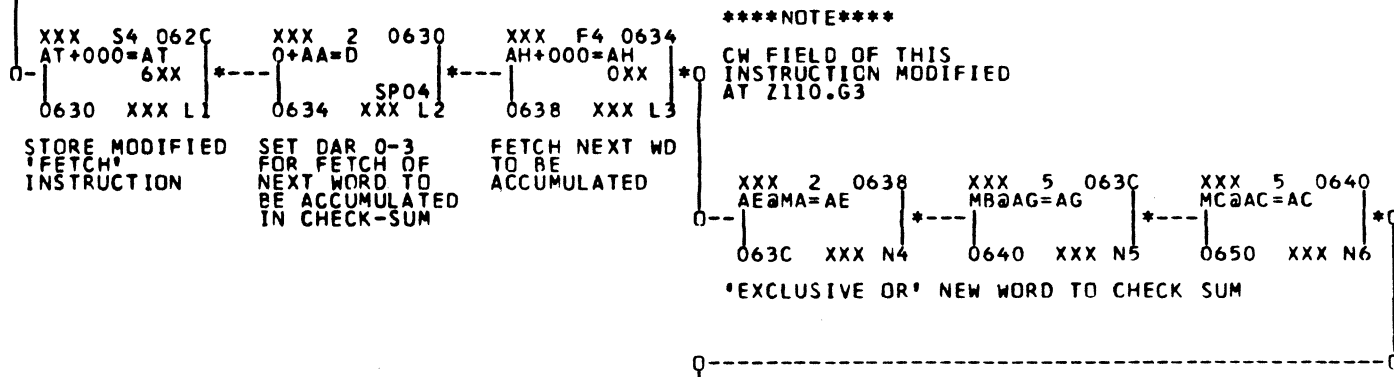
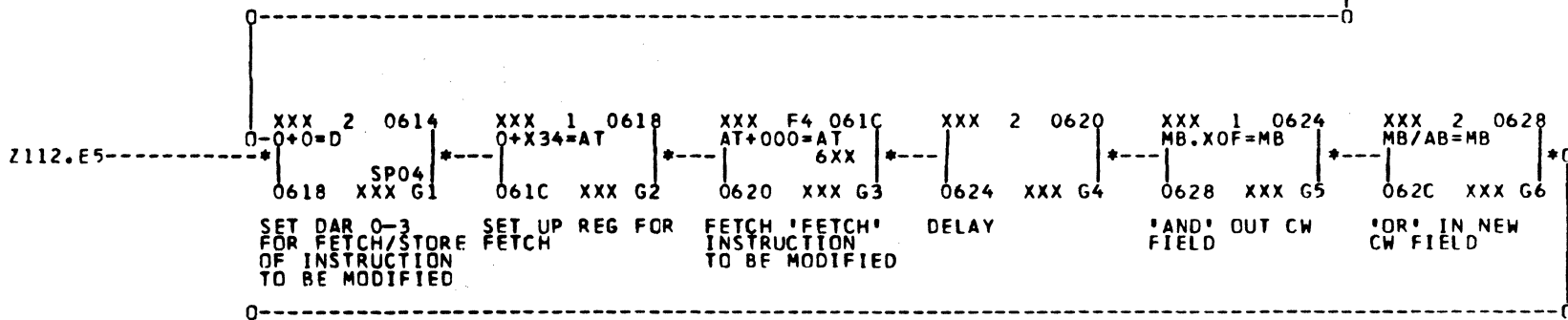
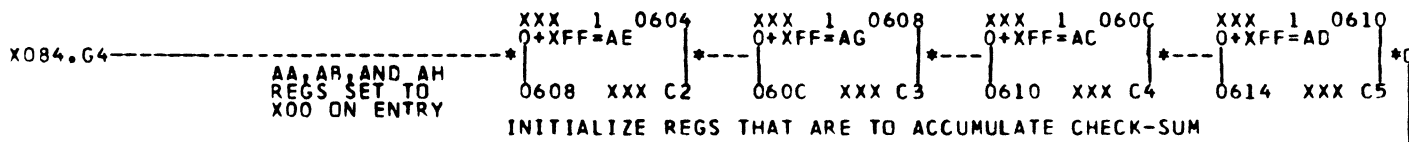
83 - C-CHK GP3
 0 - CRIVE SFLECT FAILURE (3/6)
 1 - TAG INVALID
 2 - DEVICE CHK
 4 - CUDI BUS IN CHK

84 - STATUS
 0 - INDEX ERROR
 1 - OFFSET ACTIVE
 2 - SEEK INCOMPLETE
 3 - SEEK COMPLETE
 4 - ON LINE
 5 - ATTENTION
 6 - BUSY
 7 - SEARCH IN PROGRESS

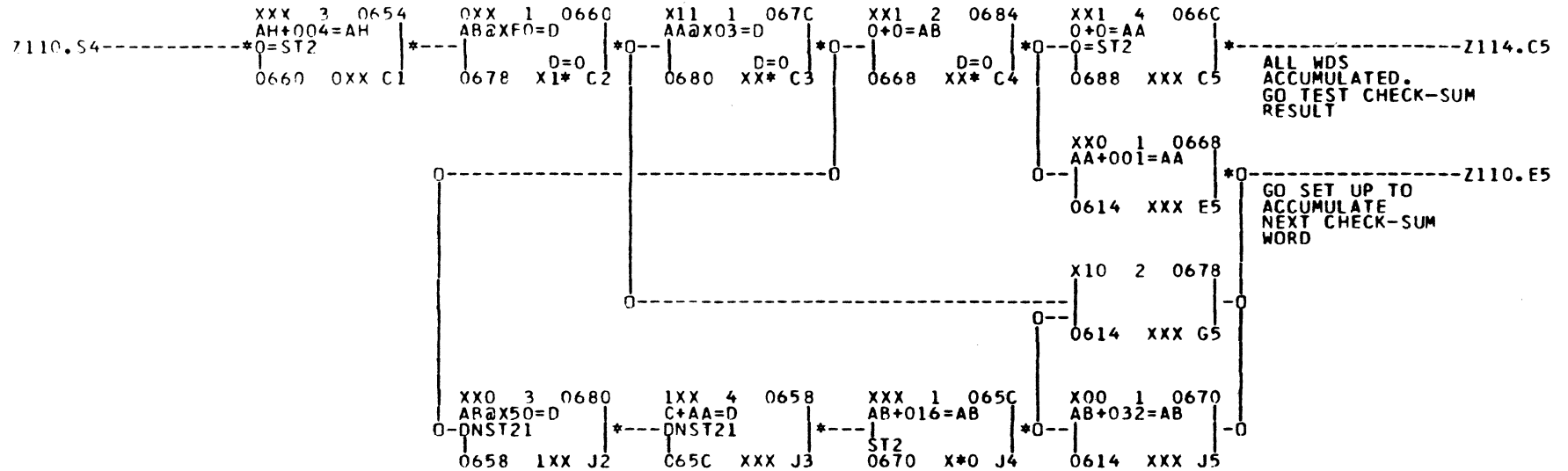
8E - CHECK STATUS
 0 - CE PGM STOP
 1 - SPEED
 2 - MOTOR ON
 3 - LOCAL
 4 - INTERFACE CHK
 5 - MONITOR CHK
 6 - INTERLOCK NOT COMPLETE
 7 - COMMAND REJECT

85 - OPERATE
 0 - INDEX ERROR
 1 - OFFSET ACTIVE
 2 - SIGN
 3 - WRITE INHIBITED
 4 - READ/WRITE VALID
 5 - INDEX
 6 - END OF CYLINDER
 7 - WRITE SENSE

8F - FAULT BYTES
 0 - SELECT LOCK
 1 - NO SERVO TRACK
 2 - TEMP. HIGH
 3 - NEGATIVE VOLTAGE FAULT
 4 - POSITIVE VOLTAGE FAULT
 5 - AIR FLOW FAULT
 6 - HEADS NOT LOADED
 7 - EVEN SLOPE



ADVANCE ADDRESS TO NEXT WORD TO BE ACCUMULATED
IN CHECK-SUM ACCUMULATION



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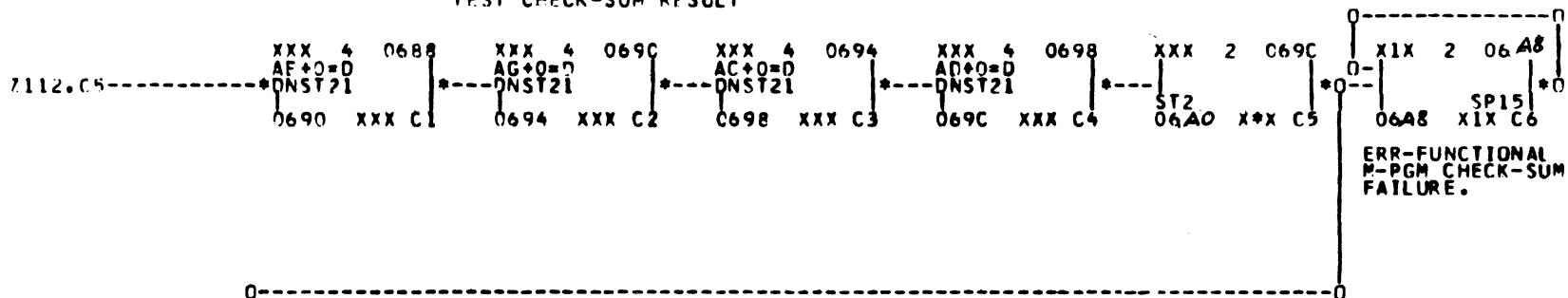
    XXX D 0400
    00000000
    |
    0400 XXX N1
  
```

CHECK-SUM WORD

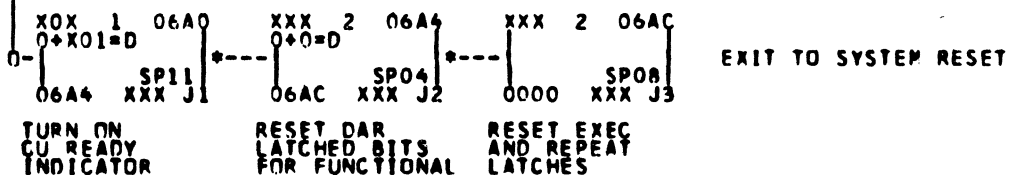
THE CASSETTE WRITE PROGRAM
PLACES A CONSTANT IN THIS
WORD, SUCH THAT, WHEN ALL
WORDS OF CONTROL STORAGE
(EXCEPT SECTOR 07) ARE
EXCLUSIVE OR'D, THE RESULT
IS 'FFFFFFF'.

Z112 - IMPL CHECK-SUM ROUTINE

TEST CHECK-SUM RESULT



INITIALIZE FOR ENTRY TO FUNCTIONAL U-PGM





▶▶ CUT OUT FOR USE AS LOOSE-LEAF BINDER TITLE TAB

CONTROL DATA
CORPORATION

8100 34th AVE. SO., MINNEAPOLIS, MINN. 55440