

IBM Field Engineering Education
Instructional Diagrams

360/30

MAINTENANCE DIAGRAM MANUAL

R25-5103-1
8/65

MAINTENANCE DIAGRAM MANUAL

I. ORGANIZATION

THE MAINTENANCE DIAGRAM MANUAL PROVIDES INFORMATION AT THE SYSTEM DATA FLOW, UNIT DATA AND CONTROL, AND THE SIMPLIFIED LOGIC LEVELS.

THE UNIT DATA AND CONTROL DIAGRAM PROVIDES INFORMATION ON DATA FLOW AND ITS ROS CONTROL AND INDICATION POINTS. IT ALSO PROVIDES A COMMUNICATION LINK TO THE FUNCTIONAL MAINTENANCE DIAGRAM THROUGH THE MATRIX PAGE NUMBERING SYSTEM. NOTE THAT THE VERTICAL COLUMNS OF THE UDCD RUN FROM O1 THROUGH I4 AND THE HORIZONTAL ROWS FROM A THROUGH D. EACH SECTION WILL THEN BE IDENTIFIED BY TWO NUMERIC AND ONE ALPHABETIC CHARACTERS (O1A, O2D, O5C, ETC.).

THESE SAME THREE CHARACTERS ARE USED AS THE LAST THREE CHARACTERS OF THE PAGE NUMBERS FOR THE SIMPLIFIED LOGIC PAGES AND ARE PRECEDED BY A 5-- ONLY TO INDICATE THE DIAGRAM SECTION OF PAGES. (ALL SIMPLIFIED LOGIC PAGES ARE IN SECTION 5.)

THE CONTENT OF THE FOUR MAJOR ROWS, A THROUGH D, IS GENERALLY CONSISTENT AS FOLLOWS:

- ROW A - INDICATION, CHECKING, STATUS, AND PRIORITY
- ROW B - STORAGE ADDRESSING AND ARITHMETIC
- ROW C - GENERAL DATA FLOW REGISTERS
- ROW D - INPUT/OUTPUT COMMUNICATION AND STORAGE

II. SYMBOLOGY

THE SYMBOLOGY USED IN THE 2030 MAINTENANCE DIAGRAM MANUAL FOLLOWS THE STANDARD 1046-3 AND OR EXTENSIONS THEREOF.

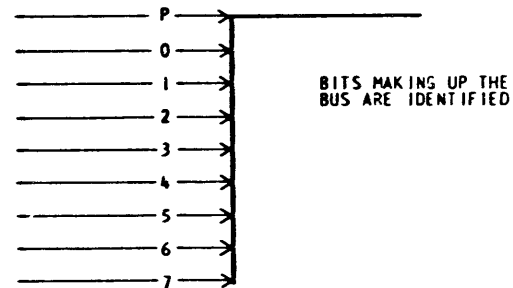
EXAMPLES OF THESE EXTENSIONS ARE SHOWN IN THE FOLLOWING PAGES.

A. BUSES

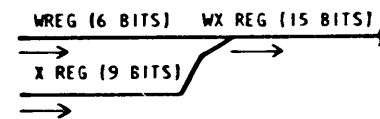
1. BUSES ARE DRAWN WITH HEAVY LINES AND ARE USED FOR BOTH DATA BITS AND CONTROL BITS. LINE WEIGHTS GENERALLY PROVIDE SOME INDICATION OF THE NUMBER OF BITS IN A BUS.

2. BUSES ARE BUILT BY:

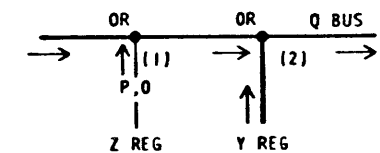
- A) INDIVIDUAL BIT LINES MERGING



B) BUSES MERGING

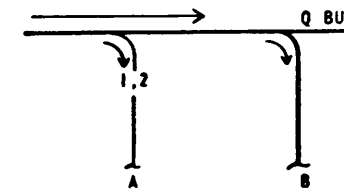


C) BUSES CONNECTING (DOT OR)



- (1) THE P BIT OF THE Z REG IS DOT ORED WITH THE P BIT OF THE Q BUS AND THE O BIT OF THE Z REG IS DOT ORED WITH THE O BIT OF THE Q BUS.
- (2) EACH BIT OF THE Y REG IS DOT ORED WITH CORRESPONDING BITS OF THE Q BUS.

3. BUSES MAY BE TAPPED OR DELETED BY A BUS OR ANY NUMBER OF BITS.



- A. THE Q BUS 1, AND 2 BITS ARE TAPPED FROM THE BUS FOR USAGE.
- B. THE ENTIRE Q BUS IS USED.

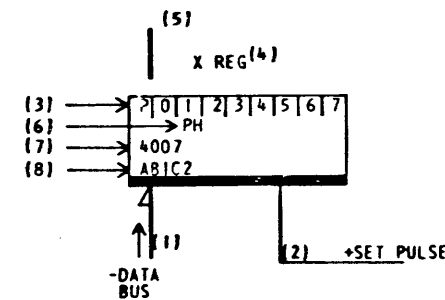
4. BUSES MAY CARRY BOTH + AND - LOGIC LEVELS. THESE LEVELS WILL BE IDENTIFIED IN THE BUS NAME OR IMPLIED BY THE OUTPUT SYMBOL OF THE LOGIC BLOCK(S) FEEDING THE BUS.

B. BUS FUNCTIONS

FUNCTIONS OF DATA OR CONTROL BITS IN MANY CASES ARE IDENTICAL FOR ALL BITS OF A BUS. CIRCUIT PACKAGES TAKE ADVANTAGE OF THIS FACT AND ALSO THE DIAGRAM REPRESENTS FUNCTIONS OF THE PACKAGE. EXAMPLES ARE SHOWN BELOW.

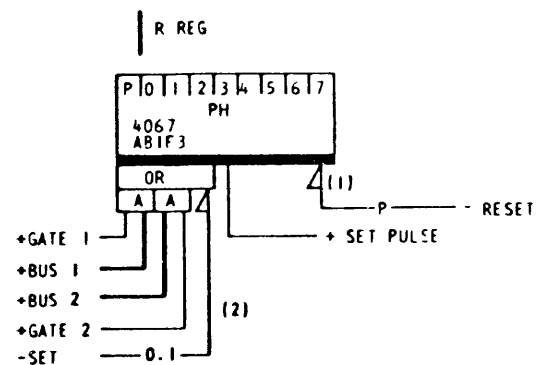
1. A REGISTER PACKAGE WITH CAPABILITIES OF STORING (REGISTERING) 9 BITS OF INFORMATION ON A BUS. THE SET INPUTS OF ALL REGISTERS WILL ALWAYS BE SHOWN IN THE LOWER LEFT CORNER AND THE RESETS WILL BE SHOWN IN THE LOWER RIGHT CORNER OF REGISTER SYMBOLS AS SHOWN IN (A). IF THE SYMBOL SHOULD BE SHOWN ROTATED, THE INPUT AND OUTPUT POSITIONS WOULD ROTATE WITH THE REGISTER SYMBOL.

A. EXCLUSIVE OR "LATCHES" (PH)



THOSE BITS OF A DATA BUS (1) IDENTIFIED (3) WITHIN THE REGISTER SYMBOL, THAT ARE AT THE MINUS LEVEL, WILL BE STORED (REGISTERED) IN THE X REG (4) WITH THE + SET PULSE (2), SUCH THAT THEY PROVIDE PLUS OUTPUTS FROM THE REGISTER. THOSE BIT LINES THAT ARE AT A PLUS LEVEL ON THE INPUT DATA BUS WILL BE STORED AT THIS SAME TIME AND WILL PROVIDE MINUS OUTPUTS. THE PH (6) INDICATES THAT THIS IS THE "EXCLUSIVE OR" TYPE LATCH REGISTER. THE PART NUMBER OF THE CIRCUIT CARD IS 0580 4007 (7) AND IS LOCATED IN THIS MACHINE AT O1A - BIC2.

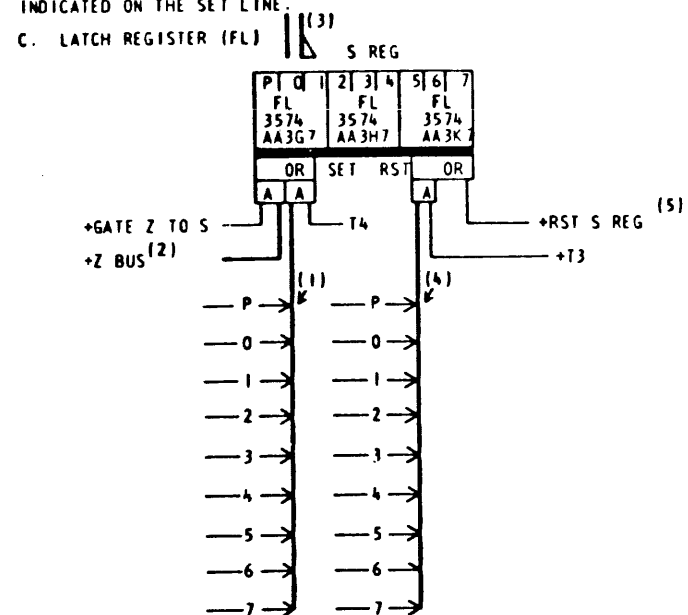
B. "EXCLUSIVE OR" LATCHES (PH) WITH BUS SELECTION INPUT



THIS PACKAGE IS AN EXTENSION OF THE PREVIOUS PACKAGE. PLUS BITS ON EITHER BUS 1 OR BUS 2 CAN BE SELECTED TO SET INTO THE R REGISTER AND PROVIDE PLUS OUTPUTS.

AN EXTERNAL (PULL OVER) RESET (1) MAY BE APPLIED TO EITHER PACKAGE A OR B, IF THE ENTIRE REGISTER IS AFFECTED, NO BITS WILL BE INDICATED ON THE LINE. IF SELECTED BITS ARE AFFECTED, THEY WILL BE INDICATED. THE USAGE SHOWN INDICATES THAT WHEN THE MINUS RESET LINE IS PRESENT THE P BIT POSITION WILL BE RESET TO PROVIDE A MINUS OUTPUT.

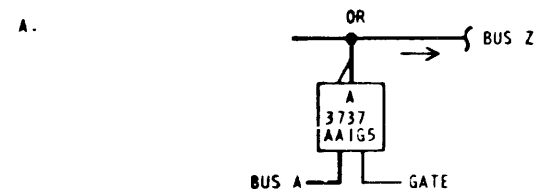
SELECTED BITS MAY ALSO BE SET INTO THE REGISTER. THESE WOULD BE DIAGRAMED ON THE SET OR DATA INPUT SIDE OF THE BLOCK. (2) THE BIT POSITIONS AFFECTED WOULD BE INDICATED ON THE SET LINE.



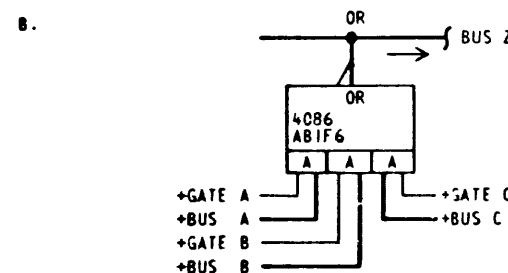
THE S REG IS MADE UP OF THREE CARDS OF THE FL TYPE AND WILL TURN ON AND PROVIDE OUTPUTS (3) FOR THE BITS THAT WERE PLUS ON BUS (1) AT T4 TIME OR THE BITS THAT WERE PLUS ON THE Z BUS (2) IF THE COMMON GATE (+GATE Z BUS TO S) WAS PLUS. THE REGISTER CAN BE RESET WITH +RST S REG (5) OR AT T4 TIME, BITS WITHIN THE REGISTER CAN BE RESET BY THE CORRESPONDING BITS BEING PLUS ON BUS (4).

2. BUS SELECTORS (ASSEMBLERS)

GATING OF BUSES ARE SHOWN IN THE FOLLOWING MANNER:

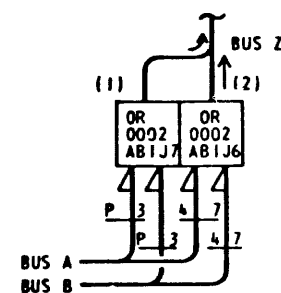


THOSE BITS THAT ARE PLUS AT INPUT BUS A, WHEN THE COMMON GATE IS PLUS, WILL APPEAR AT THE MINUS LOGICAL LEVEL ON BUS Z.



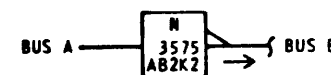
THOSE BITS THAT ARE PLUS AT INPUT BUS A WHEN THE COMMON GATE A IS PLUS OR AT INPUT BUS B WHEN THE COMMON GATE B IS PLUS OR AT INPUT BUS C WHEN THE COMMON GATE C IS PLUS WILL APPEAR AT THE MINUS LOGICAL LEVEL ON BUS Z.

3. BUS CONNECTORS



THE MINUS BITS OF BUS A OR CORRESPONDING MINUS BITS OF BUS B PROVIDE PLUS BITS ON BUS Z. THE BIT POSITIONS HANDLED BY THE DIFFERENT PACKAGES ARE INDICATED AS P, 0, 1, 2, 3 FOR PACKAGE (1) AND 4, 5, 6, 7 FOR PACKAGE (2).

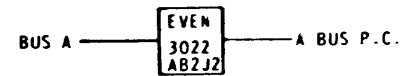
4. BUS INVERTERS



ALL BITS IN BUS A ARE INVERTED ON BUS B. (PLUS BITS ON BUS A WILL BE MINUS ON BUS B).

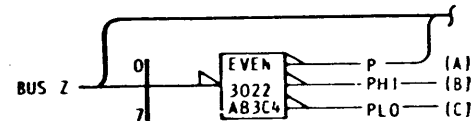
5. PARITY CHECK OR PARITY GENERATE

A.



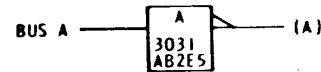
IF AN EVEN NUMBER OF PLUS BITS IS CONTAINED IN BUS A THE OUTPUT (A BUS P.C.) WILL BE PLUS.

B.



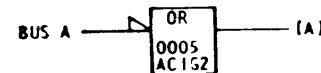
IF AN EVEN NUMBER OF MINUS BITS IS CONTAINED IN BUS Z, A MINUS OUTPUT (A) IS PROVIDED. THIS OUTPUT WILL MERGE WITH THE INPUT BUS TO MAKE UP A CHECKABLE BUS. ADDITIONAL OUTPUTS ARE AVAILABLE (B,C). OUTPUT (B) IS A GENERATED P BIT FOR 4 BITS (0-3) ONLY. OUTPUT (C) IS A GENERATED P BIT FOR 4 BITS (4-7) ONLY.

6. BUS AND



ALL BITS ON BUS A AND ANDED, AND MUST BE PLUS TO PROVIDE A MINUS OUTPUT (A).

7. BUS OR



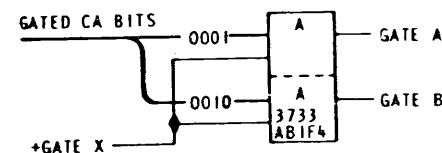
ANY BIT ON BUS A BEING MINUS WILL PROVIDE A PLUS OUTPUT (A).

8. SPECIAL FUNCTION CARDS

THOSE CARDS THAT PERFORM COMPLEX BUS FUNCTIONS ARE SHOWN AS SPECIAL (SPEC) FUNCTION BLOCKS. THE CONTROL LOGIC IS SHOWN AND THE CARD FUNCTION AND OR LOCATION USUALLY WILL BE IN THE FORM OF A NOTE OR TABLE NEAR THE BLOCK. CARDS OF THIS TYPE ARE THE ALU, TRUE-COMPLEMENT AND GATING DECIMAL CORRECTOR, A REG STRAIGHT-CROSS AND GATING, AND TRANSLATOR CARDS.

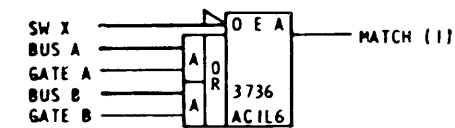
9. DECODERS

DECODERS, BEING NOTHING MORE THAN "AND" LOGIC ARE DRAWN COMBINING BUS "ANDING" AND UNIT LOGIC "AND" FUNCTION.



THE DECODER CARD LOCATED AT AB1F4 CONTAINS 2 DECODING CIRCUITS. GATE A WILL BE AT A PLUS LEVEL WHEN GATE X IS PLUS AND THE GATED CA BITS ARE PRESENT IN THE 0001 COMBINATION (BIT 3 PRESENT, NO BIT 0,1,2). GATE B WILL BE AT A PLUS LEVEL WHEN GATE X IS PLUS AND THE GATED CA BITS ARE PRESENT IN THE 0010 COMBINATION (BIT 2 PRESENT, NO BIT 0,1,3).

10. MATCH OR COMPARING



PLUS BITS FROM BUS A IF GATE A IS PLUS, OR PLUS BITS FROM BUS B IF GATE B IS PLUS WILL BE "EXCLUSIVE ORED" WITH CORRESPONDING MINUS BITS FROM SW X BUS. THESE OUTPUTS ARE "ANDED" TO PROVIDE A PLUS MATCH SIGNAL (I).

C. CARD REFERENCING

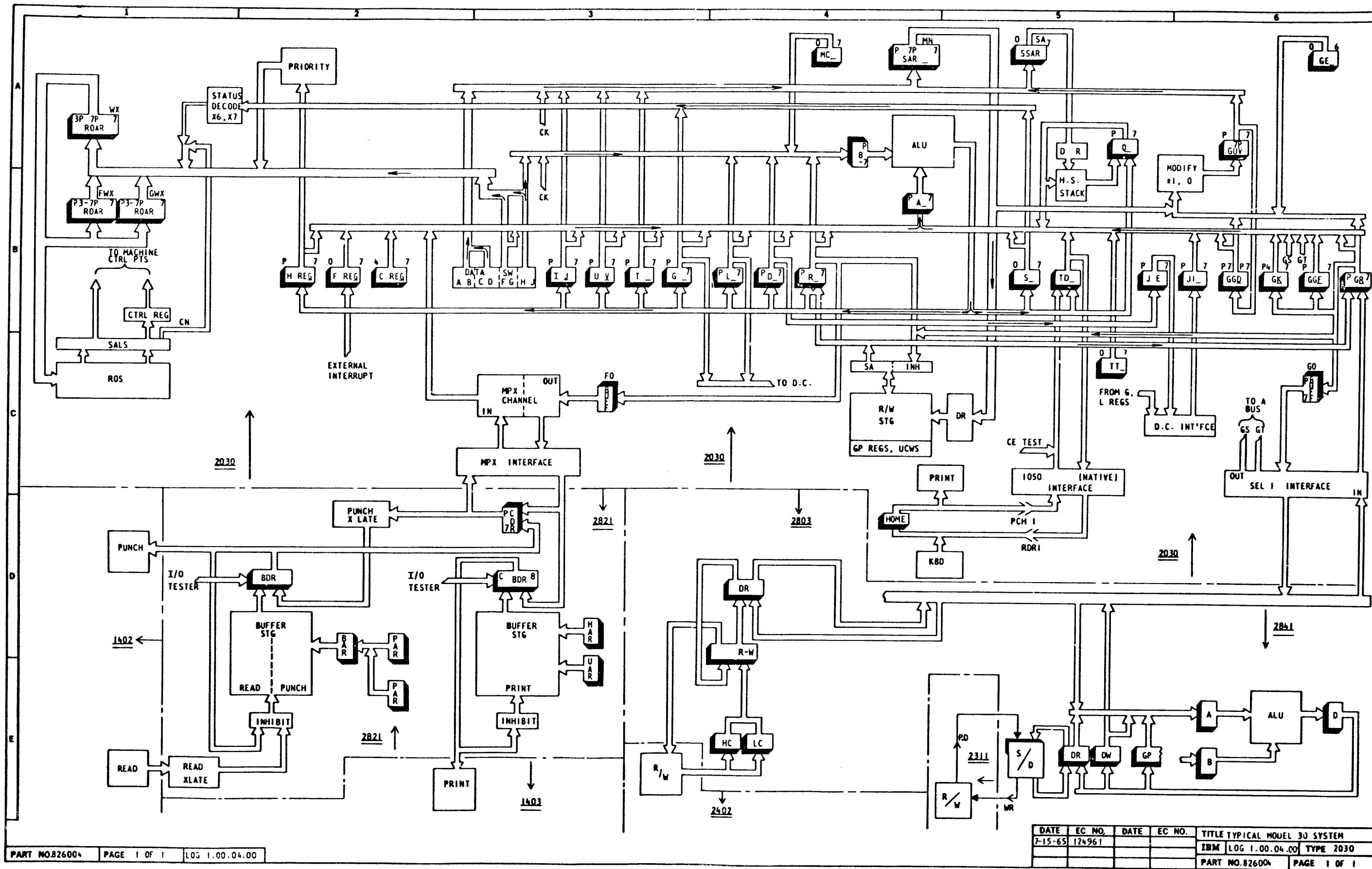
1. CARD TYPE AND LOCATION

THE LAST FOUR DIGITS OF THE CARD PART NUMBER AND CARD LOCATION IS PROVIDED WITHIN THE LOGIC SYMBOL. IF MORE THAN ONE LOGIC FUNCTION IS PERFORMED BY A CARD AND THESE FUNCTIONS ARE DIAGRAMMED TOGETHER, THE PART NUMBER AND LOCATION WILL BE SHOWN ONLY ONCE (AS IN ITEM B-9).

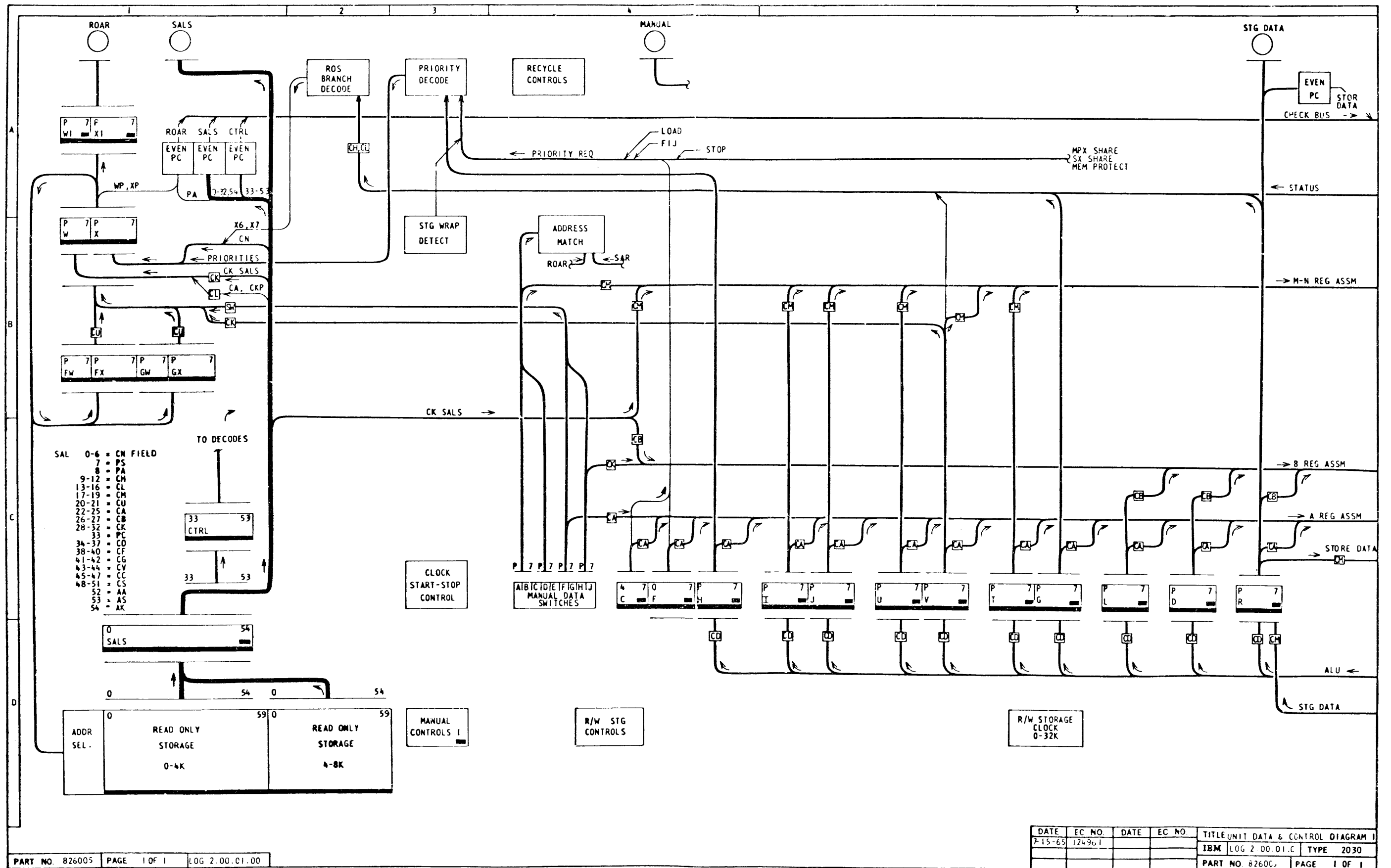
2. ALD REFERENCING IS INDICATED NEAR AND OUTSIDE OF THE SYMBOL WHEN IT IS REQUIRED.

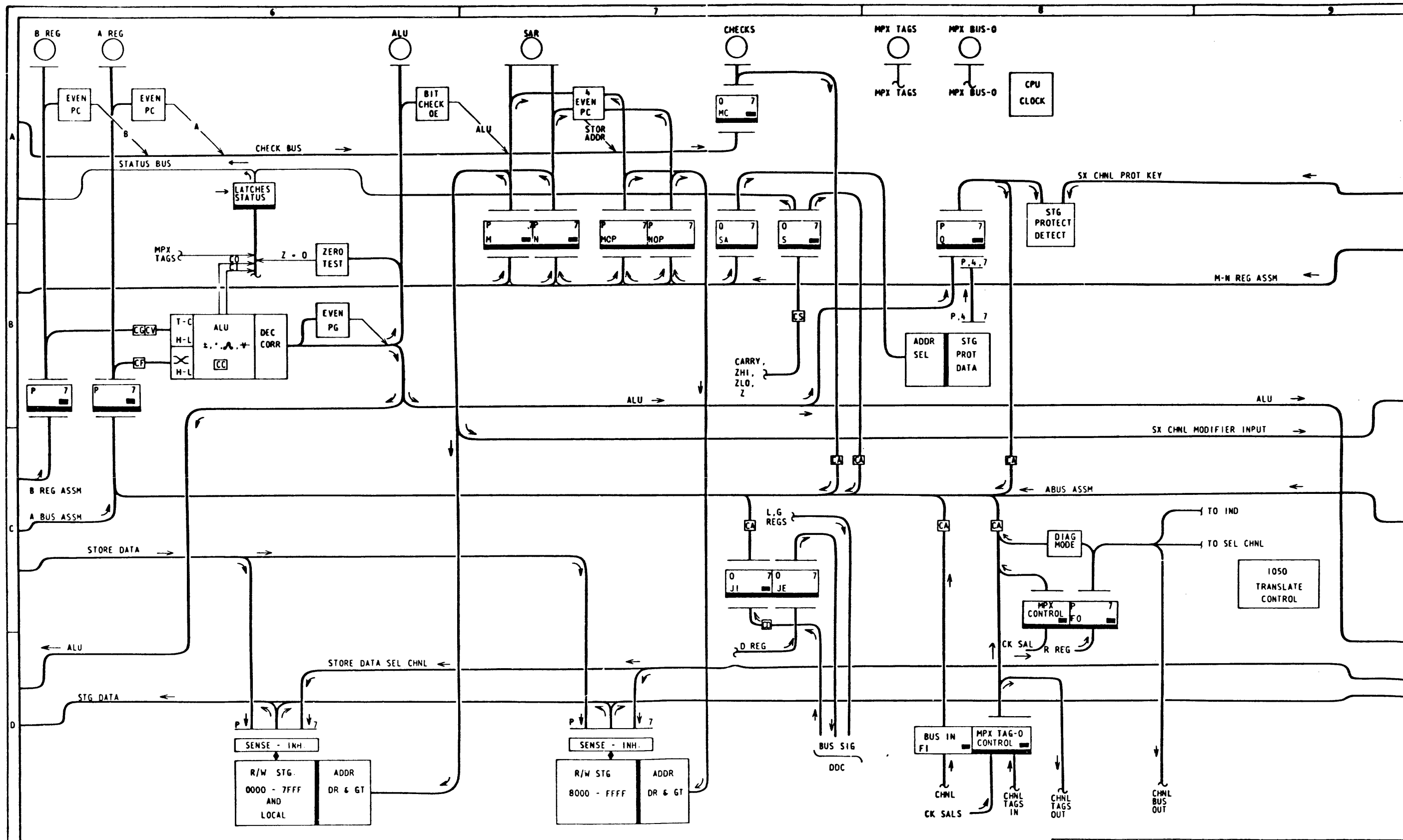
3. LOGIC LINES AND BUSES GOING FROM ONE PAGE TO ANOTHER ARE CROSS-REFERENCED USING THE PAGE NUMBER AND SECTION WITHIN THE PAGE.

4. INPUT OR OUTPUT REFERENCES DESIGNATED AS EXAMPLE ---C6 MEANS LOCATION IS WITHIN THAT PAGE. THE XXXX MEANS LOGIC IS IN DRAWINGS BUT AS YET NOT USED. THE OBCXX AS EXAMPLE MEANS THUR OUT PAGE HAS TOO MANY REFERENCES, OR IS TIED INTO A BUS.

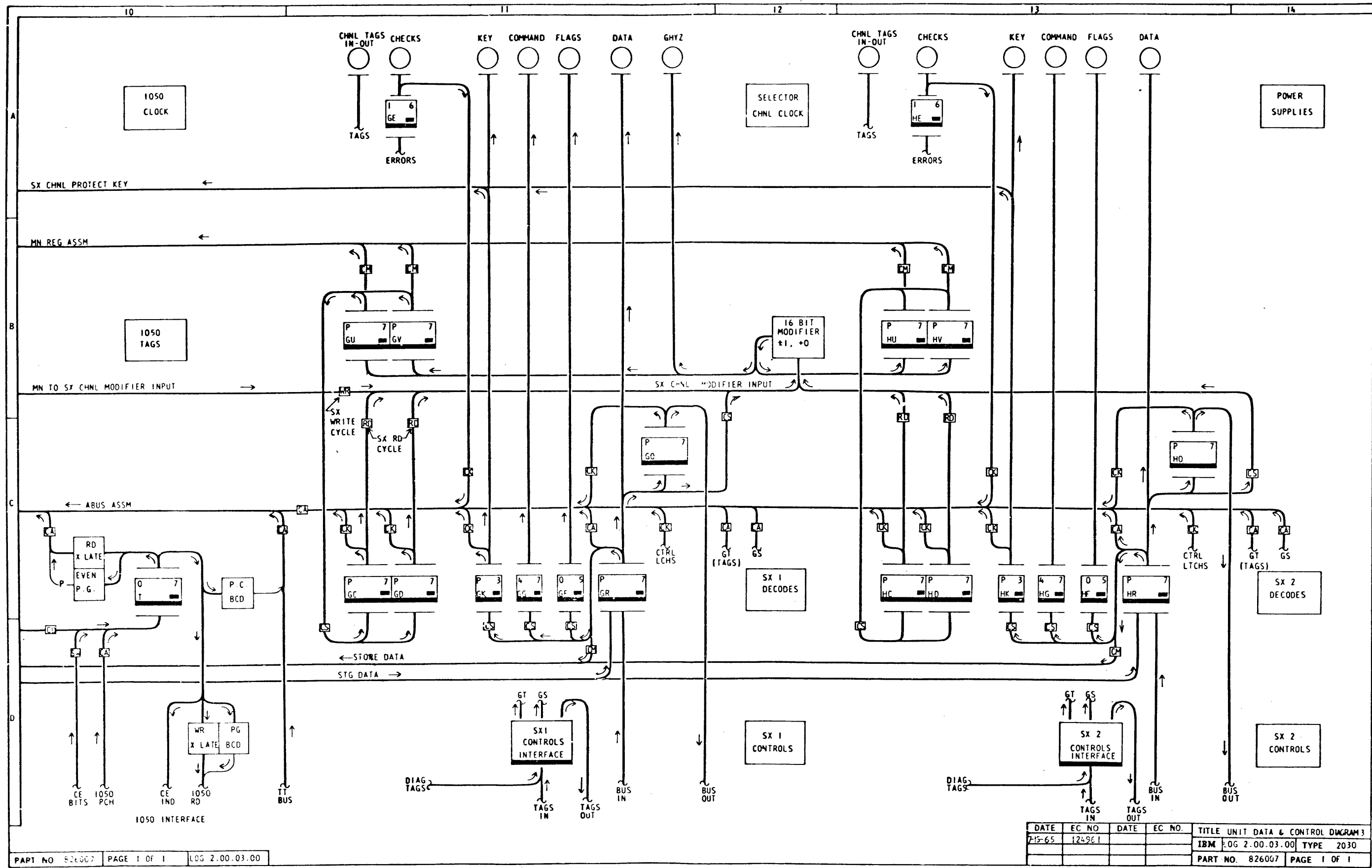


| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | TYPICAL MODEL 30 SYSTEM |
| | | | | IBM LOG 1.00.04.00 TYPE 2030 |
| | | | | PART NO.826004 PAGE 1 OF 1 |





| DATE | EC NO | DATE | EC NO | TITLE |
|---------|--------|------|-------|-------------------------------|
| 7-15-65 | 124961 | | | UNIT DATA & CONTROL DIAGRAM 2 |
| | | | | IBM LOG 2.00.02.00 TYPE 2030 |
| | | | | PART NO. 826006 PAGE 1 OF 1 |



| DATE | EC NO | DATE | EC NO. | TITLE |
|---------|--------|------|--------|-------------------------------|
| 7-15-65 | 124961 | | | UNIT DATA & CONTROL DIAGRAM 3 |
| | | | | IBM LOG 2.00.03.00 TYPE 2030 |
| | | | | PART NO. 826007 PAGE 1 OF 1 |



IBM SYSTEM 360

MODEL 2030

FUNCTIONAL MAINTENANCE

DIAGRAMS

| DATE | EC NO | DATE | EC NO | TITLE | TITLE |
|---------|--------|------|-------|----------------|--------------------------|
| 7-15-65 | 124961 | | | IBM | LOG 5.00.01.00 TYPE 2030 |
| | | | | PART NO 826002 | PAGE 1 OF 2 |

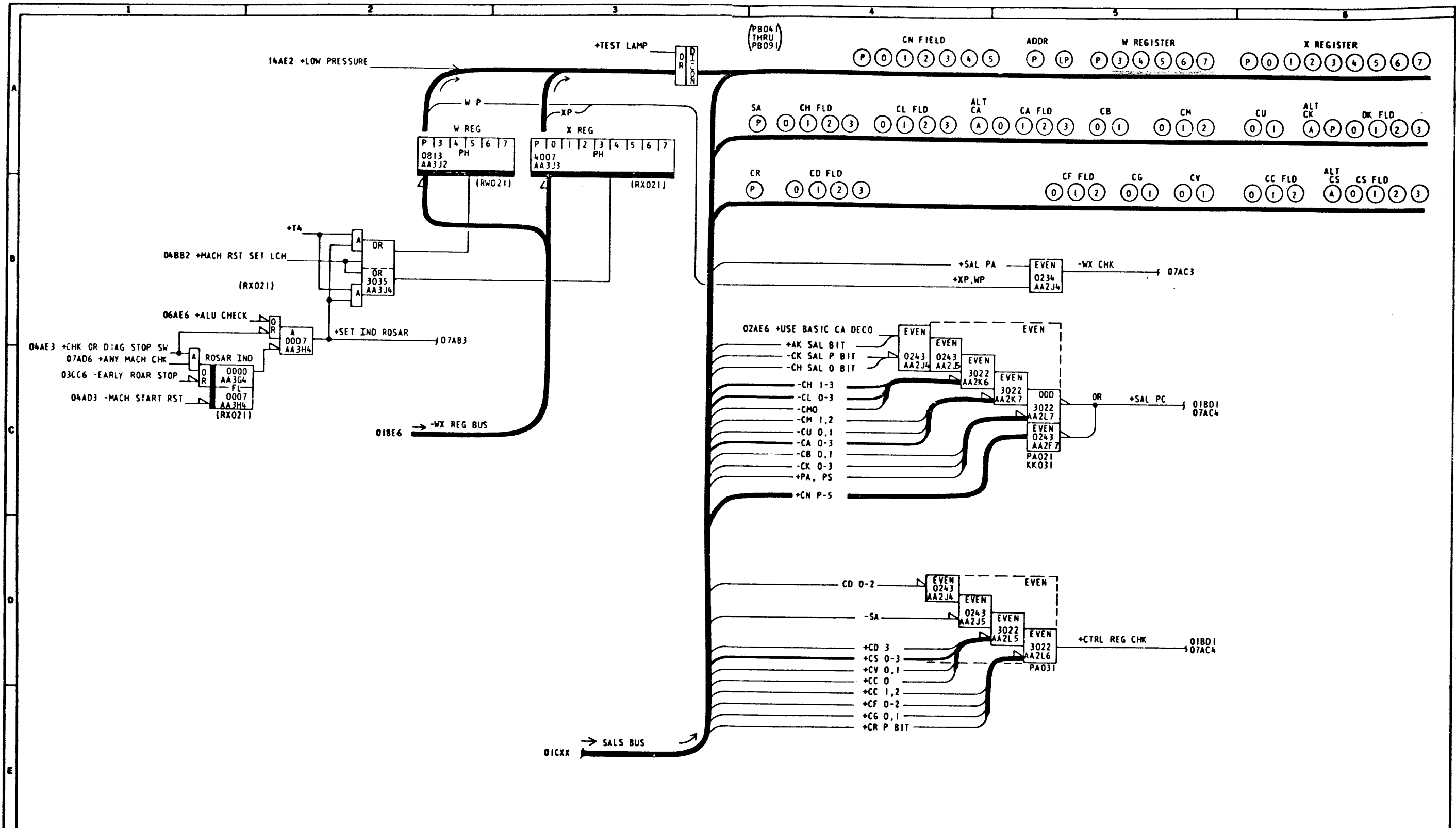


FIG 5-01A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | ROS IND & CHK |
| | | | | IBM LOG 5.00.01.00 TYPE 2030 |
| | | | | PART NO. 826008 PAGE 2 OF 2 |

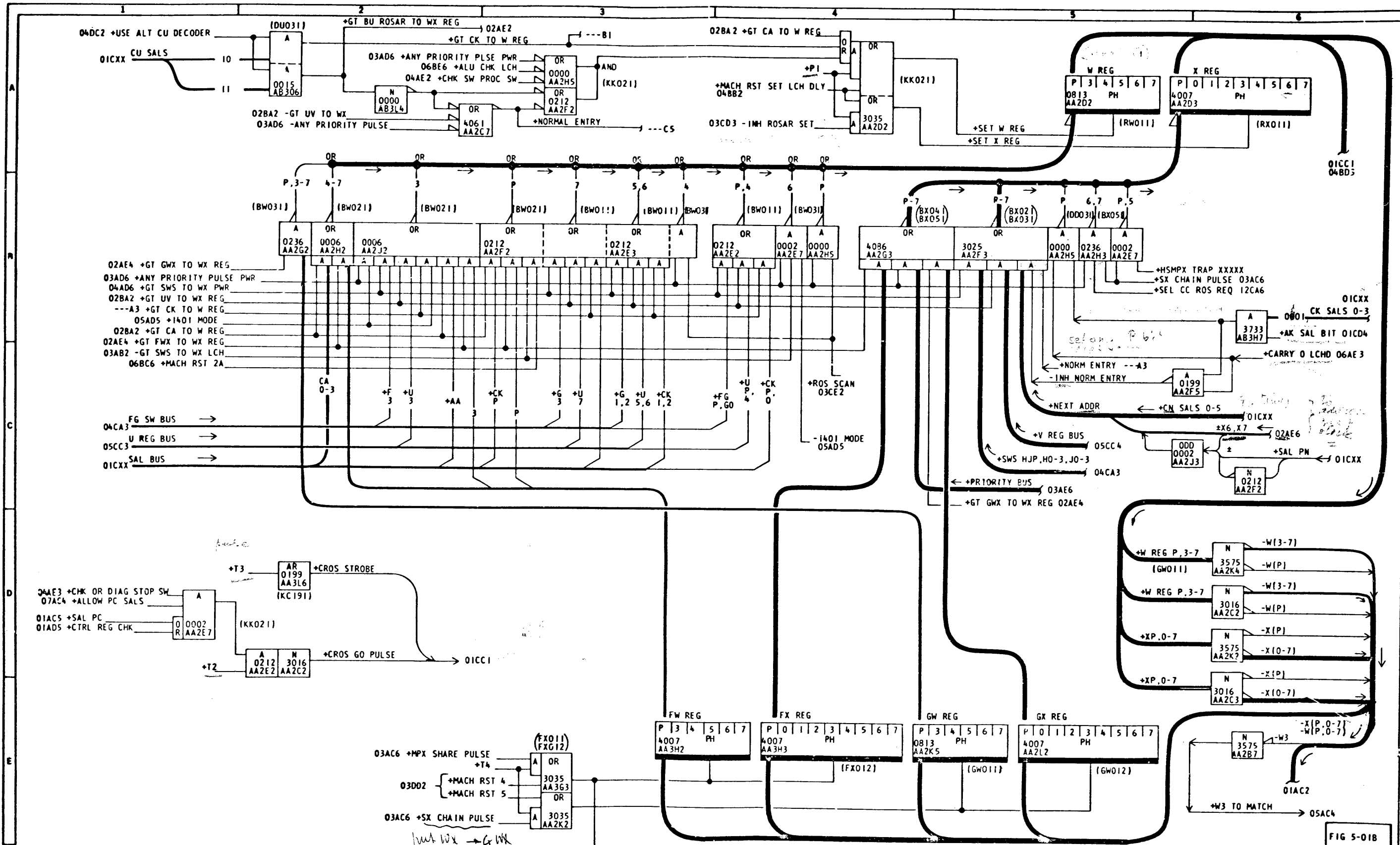


FIG 5-01B

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | ROSAR BACKUP & ASSM |
| | | | | IBM LOG 5.00.01.10 TYPE 2030 |
| | | | | PART NO. 826009 PAGE 1 OF 2 |

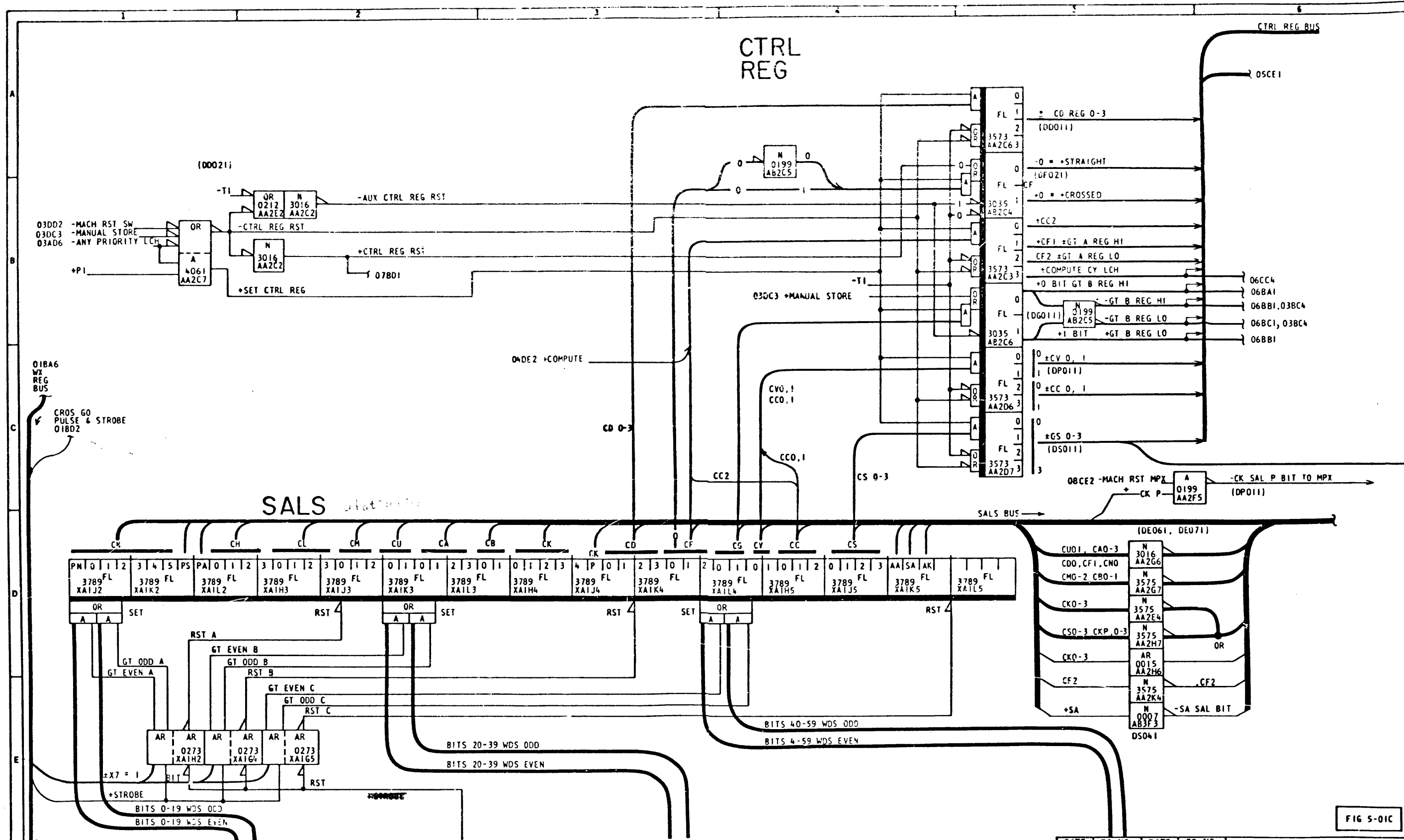


FIG 5-01C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SALS & CTRL REG |
| | | | | IBM LOG 5.00.01.10 TYPE 2030 |
| | | | | PART NO. 826009 PAGE 2 OF 2 |

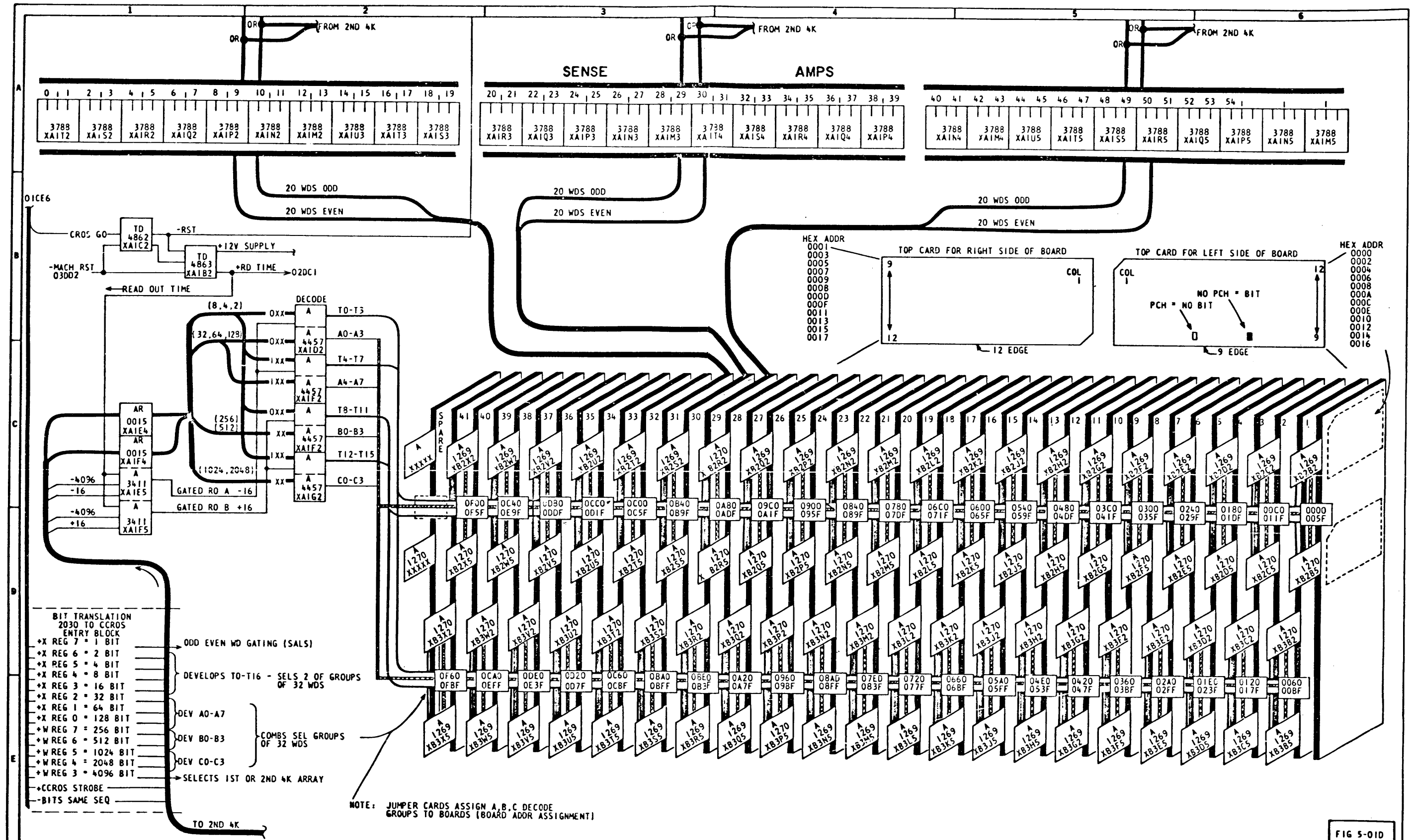


FIG 5-01D

| DATE | EC NO. | DATE | EC NO. | TITLE | READ ONLY | STG | 1-4K |
|---------|--------|------|--------|--------------------|-----------|-----|-------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.01.20 | | | TYPE 2030 |
| | | | | PART NO. 826010 | | | PAGE 1 OF 2 |

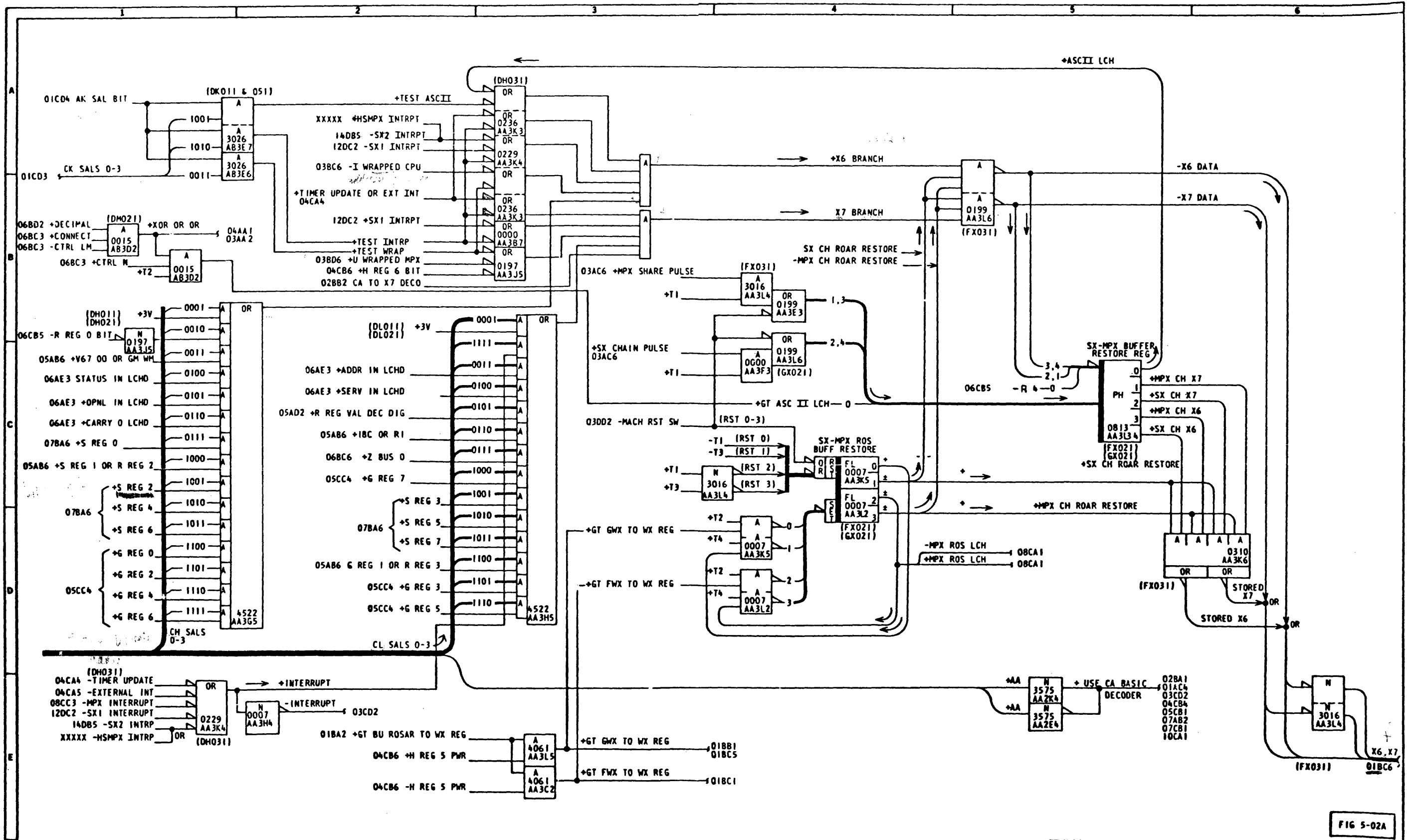


FIG 5-02A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|--------|--------|------|--------|------------------------------|
| 7-5-65 | 124961 | | | X6, X7 GENERATION |
| | | | | IBM LOG 5.00.01.20 TYPE 2030 |
| | | | | PART NO. 826010 PAGE 2 OF 2 |

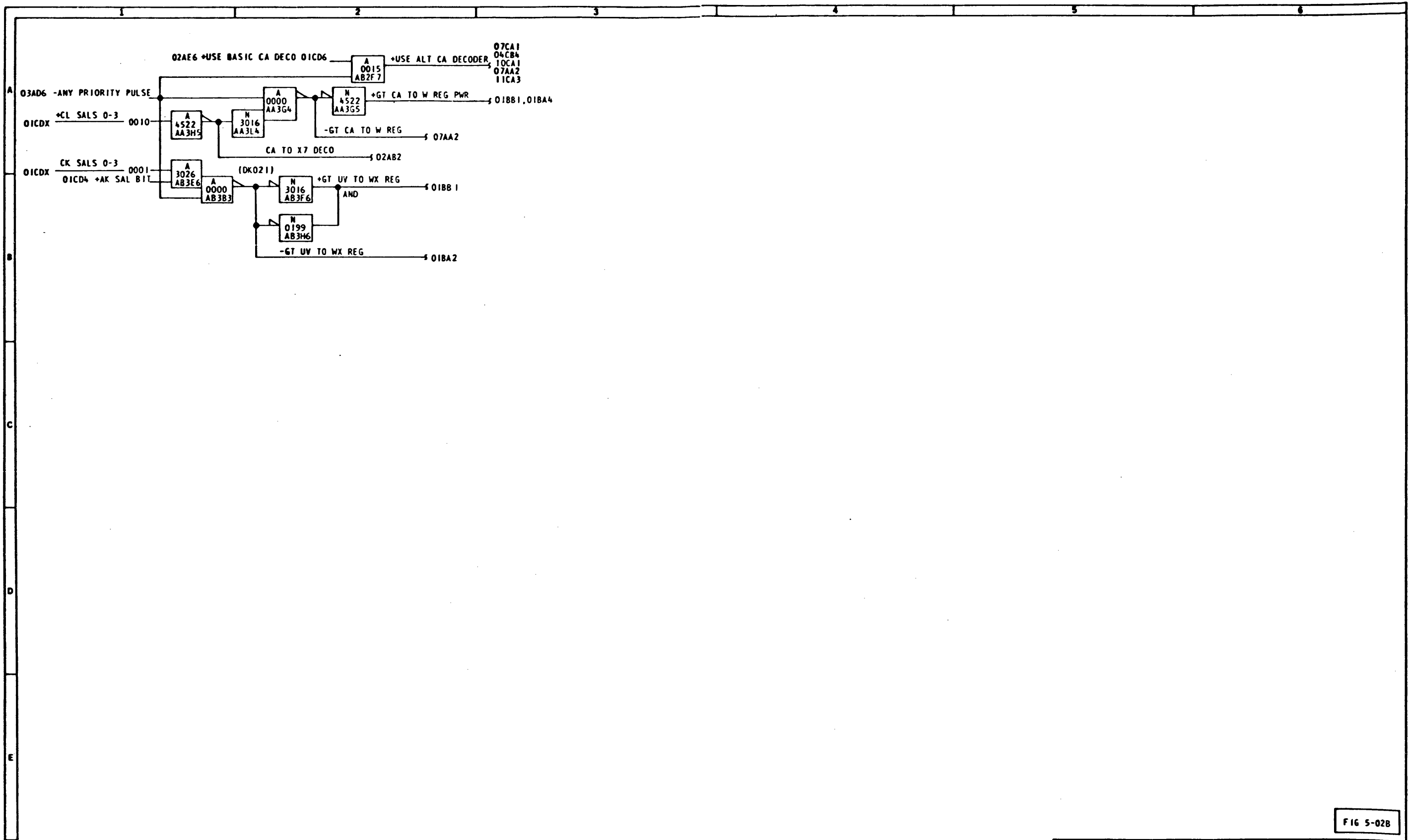
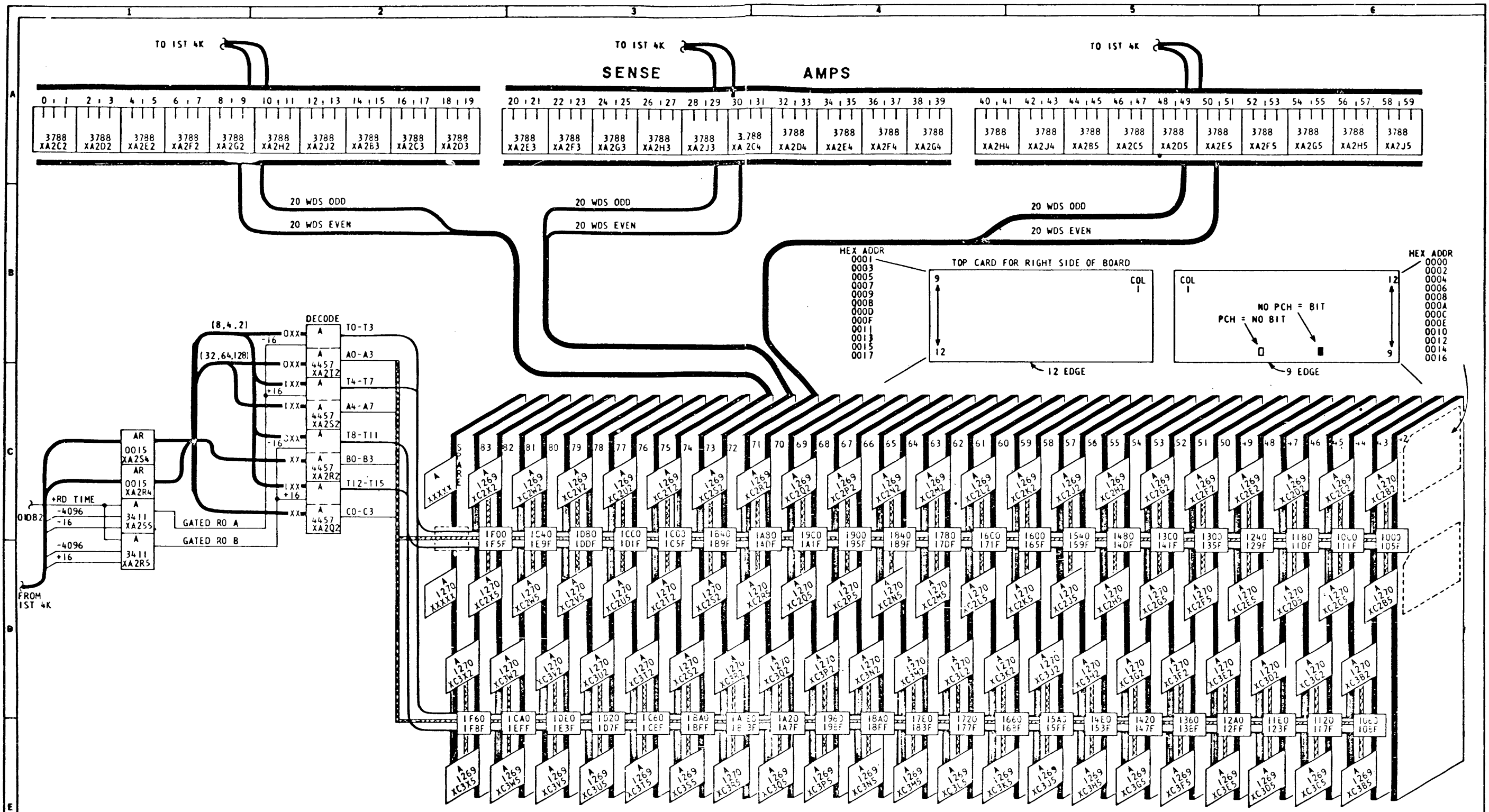


FIG 5-02B

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | W-X REG GATING |
| | | | | IBM LOG 5.00.02.10 TYPE 2030 |
| | | | | PART NO. 826011 PAGE 1 OF 2 |



NOTE: JUMPER CARDS ASSIGN A, B, C DECODE GROUPS TO BOARDS (BOARD ADDR ASSIGNMENT)

FIG 5-020

| | | | | |
|-------|--------|------|-------|------------------------------|
| DATE | EC NO | DATE | EC NO | TITLE READ ONLY STG 4-8K |
| 15-65 | 124961 | | | IBM LOG 5.00.02.20 TYPE 2030 |
| | | | | PART NO. 826012 PAGE 1 OF 2 |

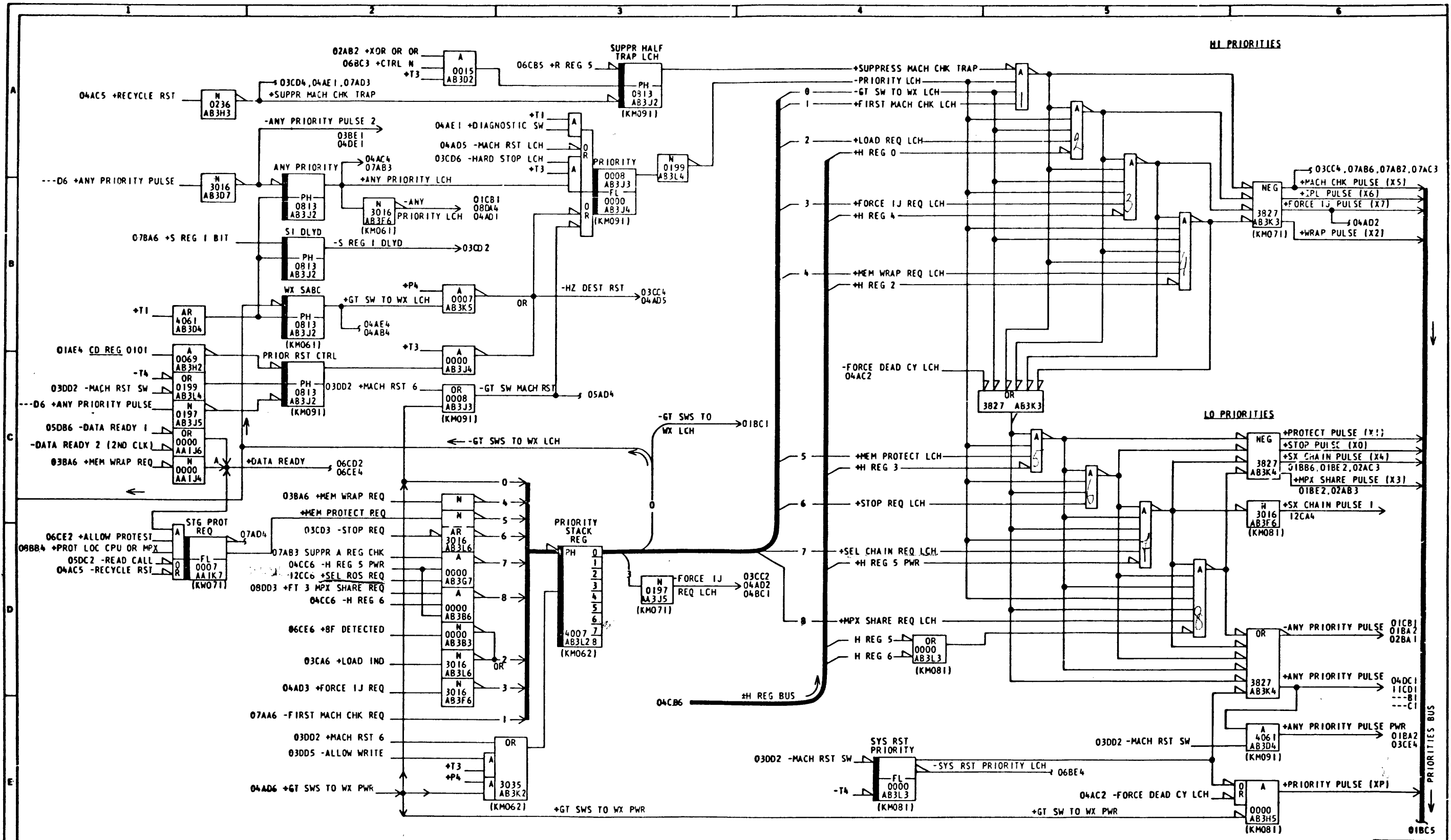


Fig 5-02A

| DATE | EC NO | DATE | EC NO | TITLE |
|---------|--------|------|-------|------------------------------|
| 7-15-65 | 124961 | | | PRIORITY CONTROLS |
| | | | | IBM LOG 5.00.02.20 TYPE 2030 |
| | | | | PART NO. 826012 PAGE 2 OF 2 |

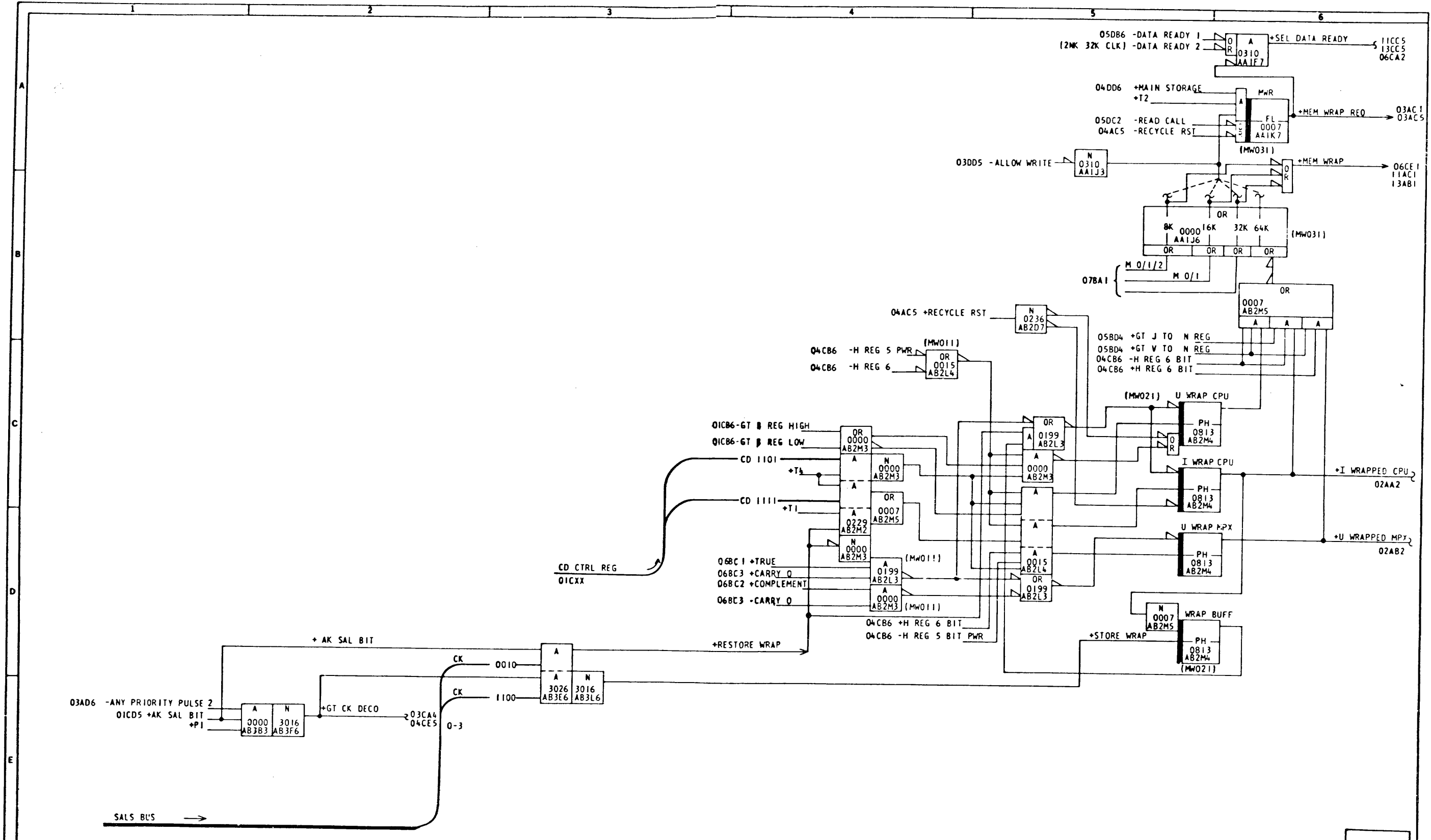


FIG 5-03B

| DATE | EC NO. | DATE | EC NO. | TITLE | STG WRAP |
|--------|--------|------|--------|--------------------|-------------|
| 7-5-65 | 124951 | | | IBM LOG 5.00.03.10 | TYPE 2030 |
| | | | | PART NO. 826013 | PAGE 1 OF 2 |

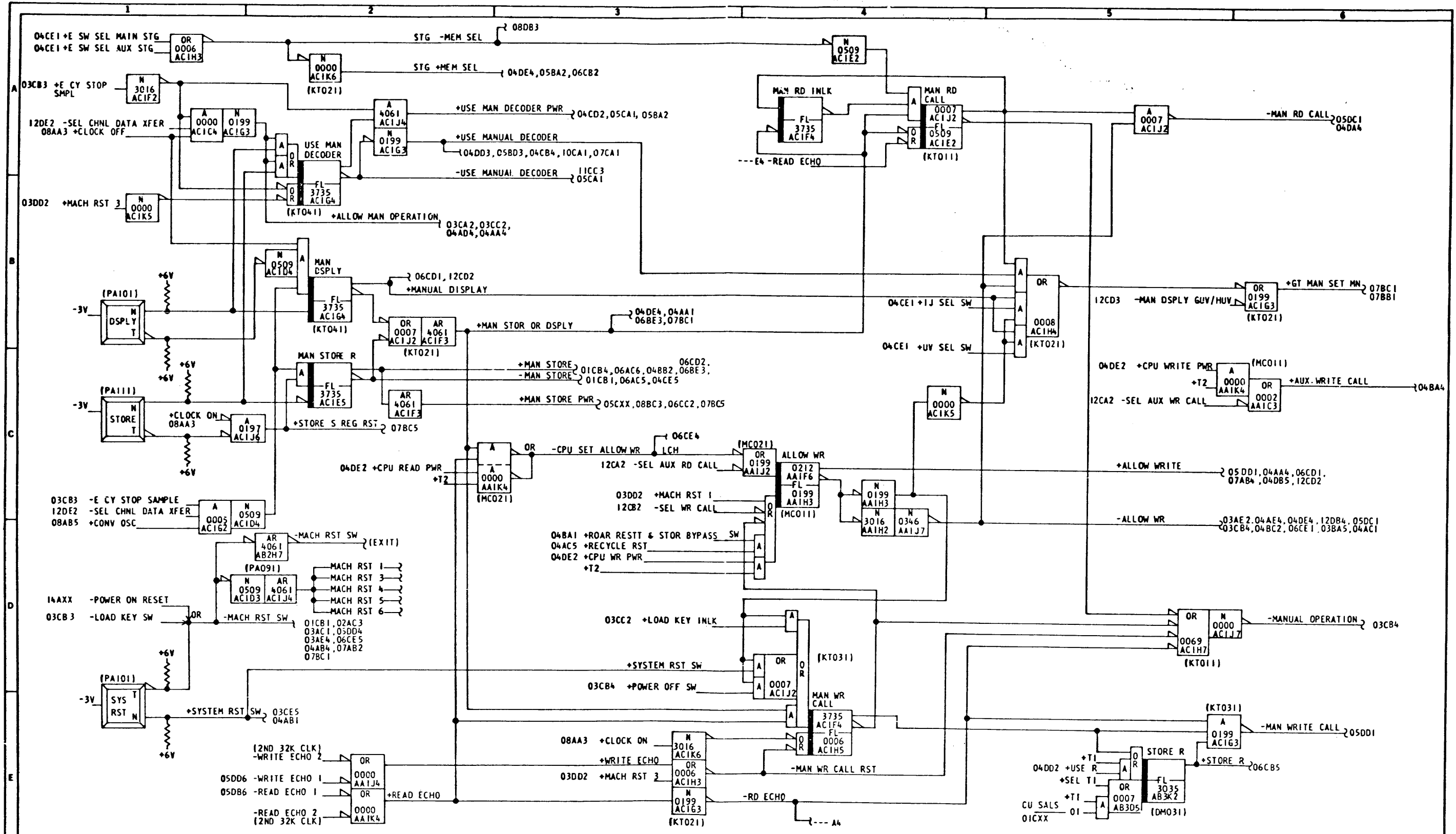


FIG 5-03D

| DATE | EC NO. | DATE | EC NO. | TITLE | MANUAL CONTROLS |
|---------|--------|------|--------|-----------------|--------------------------|
| 7-15-65 | 124961 | | | IBM | LOG 5.00.03.20 TYPE 2030 |
| | | | | PART NO. 826014 | PAGE 1 OF 2 |

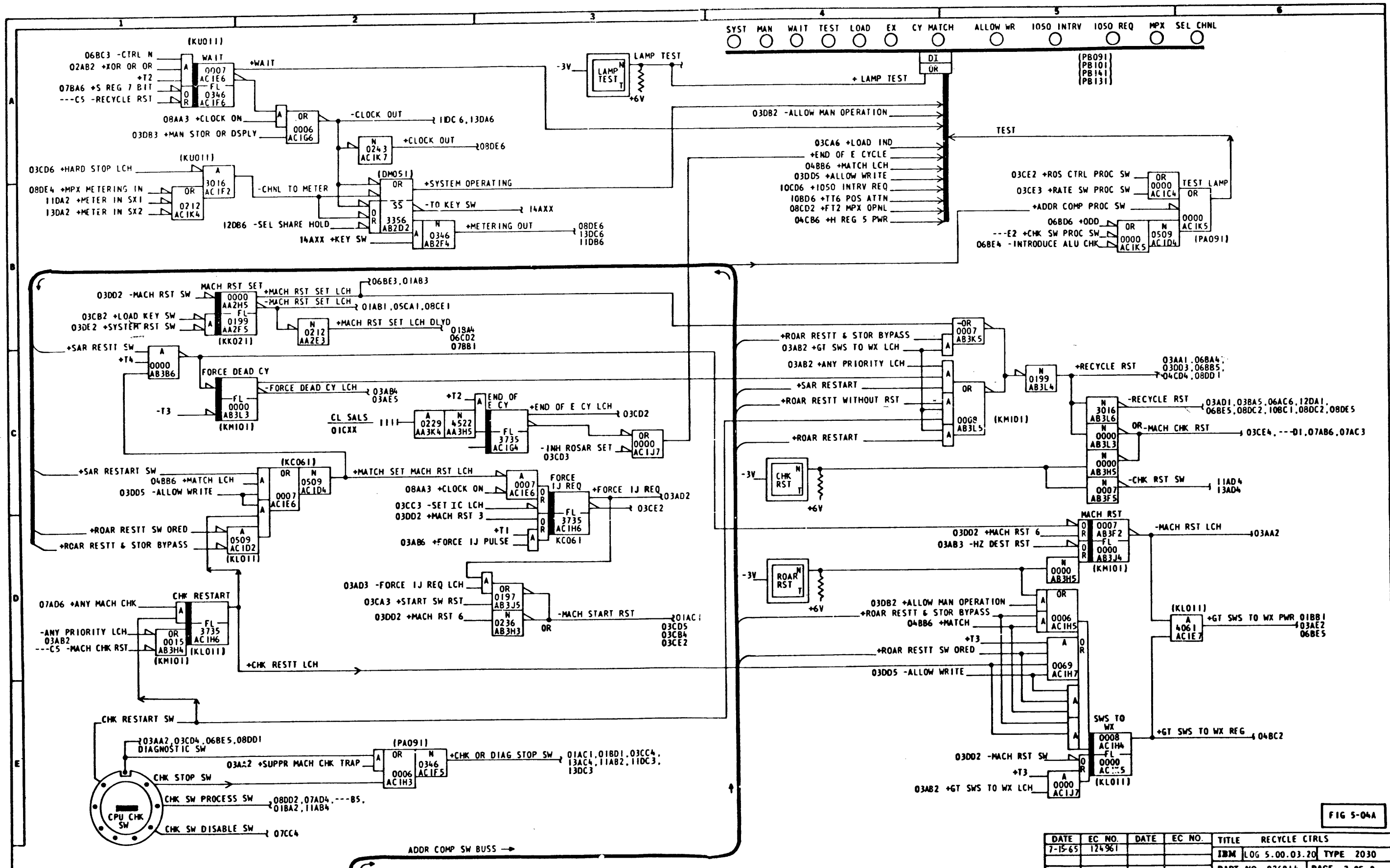


FIG 5-04A

| DATE | EC NO. | DATE | EC NO. | TITLE | RECYCLE CTRLS |
|---------|--------|------|--------|--------------------|---------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.03.20 | TYPE 2030 |
| | | | | PART NO. 826014 | PAGE 2 OF 2 |

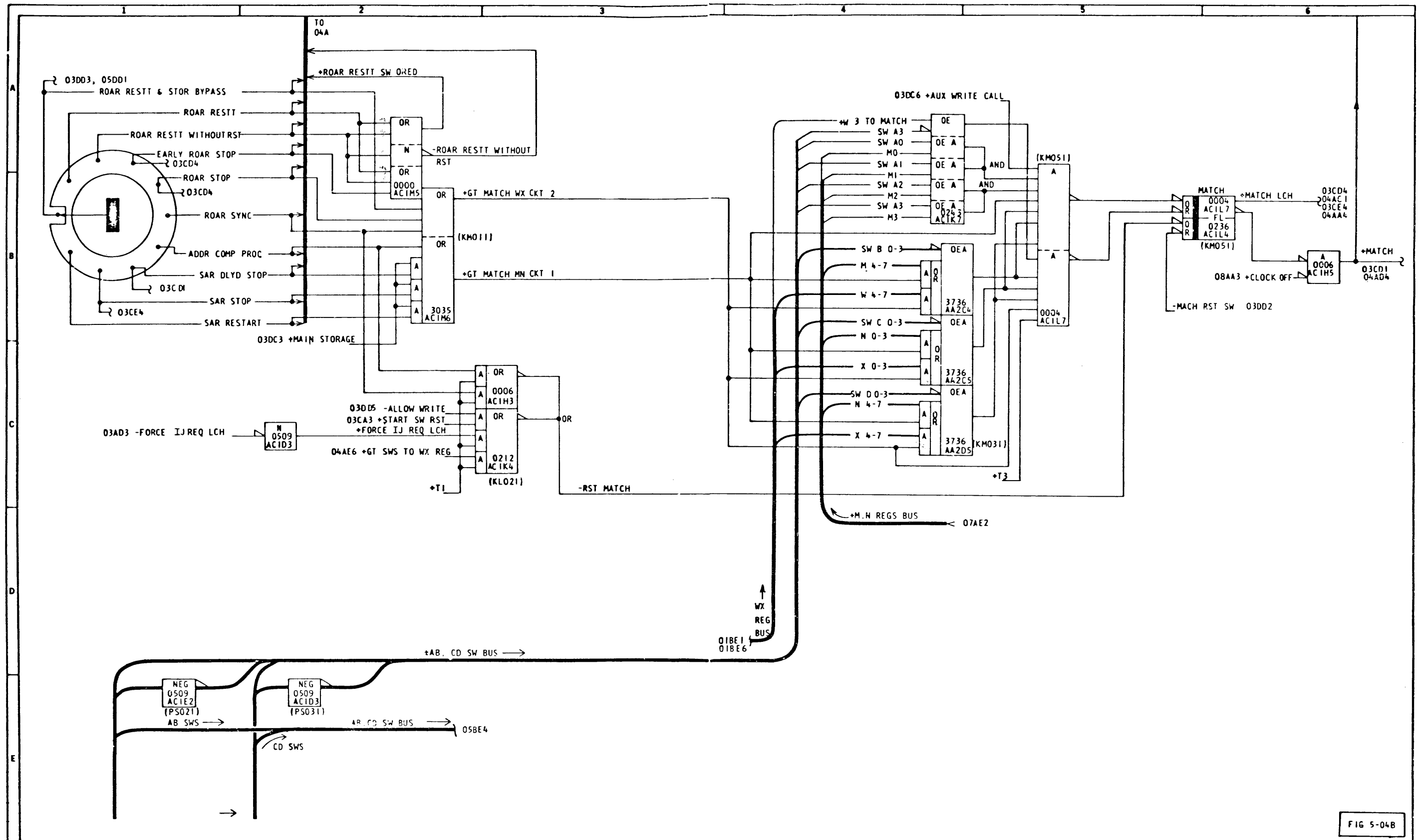


FIG 5-04B

| DATE | EC NO. | DATE | EC NO. | TITLE | ADDRESS MATCH |
|---------|--------|------|--------|-----------------|----------------|
| 7-15-65 | 124961 | | | IBM | LOG 5.00.04.10 |
| | | | | PART NO. 826015 | PAGE 1 OF 2 |

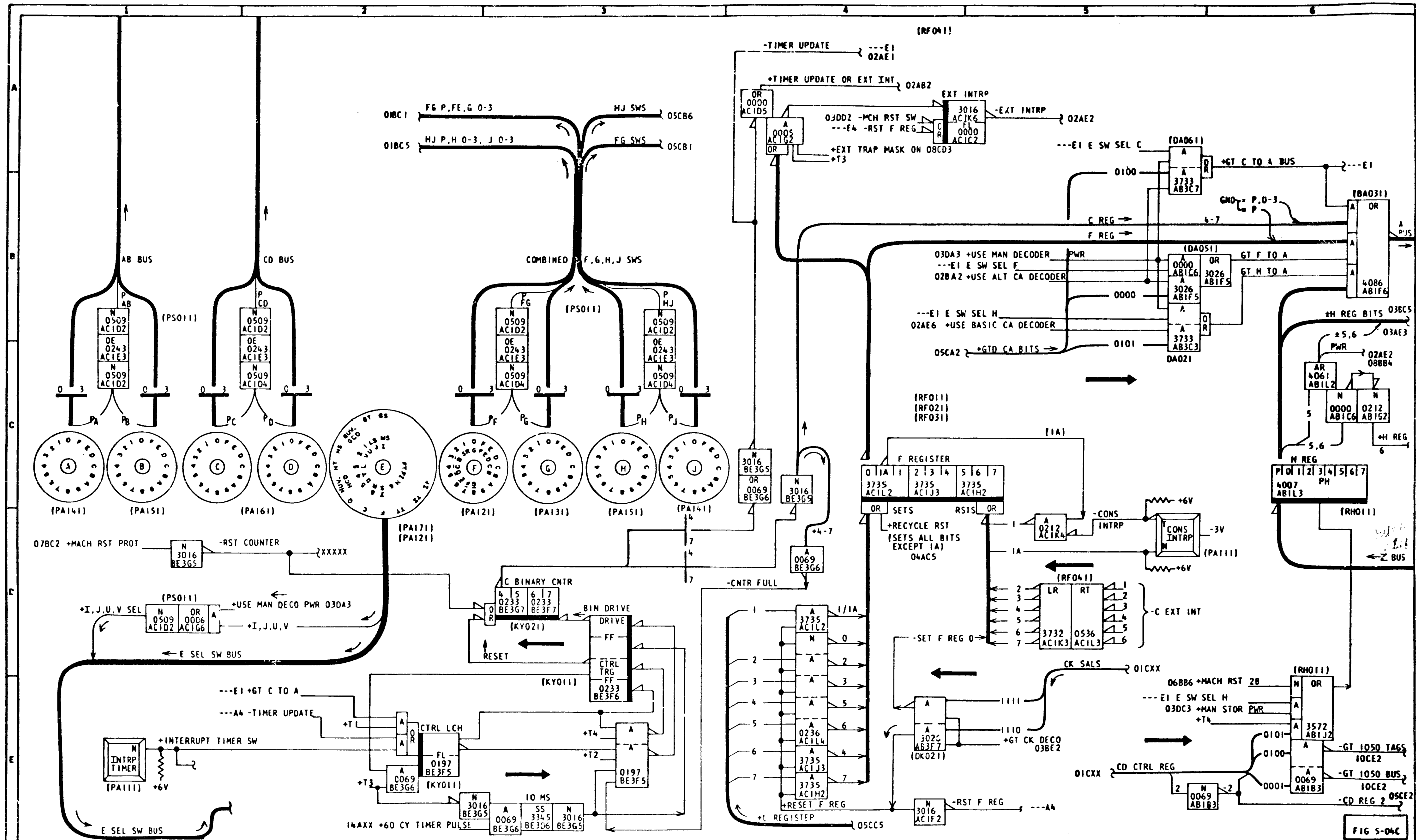


FIG 5-04C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | MANUAL DATA - C,F,H REGS |
| | | | | IBM LOG 5.00.04.10 TYPE 2030 |
| | | | | PART NO. 826015 PAGE 2 OF 2 |

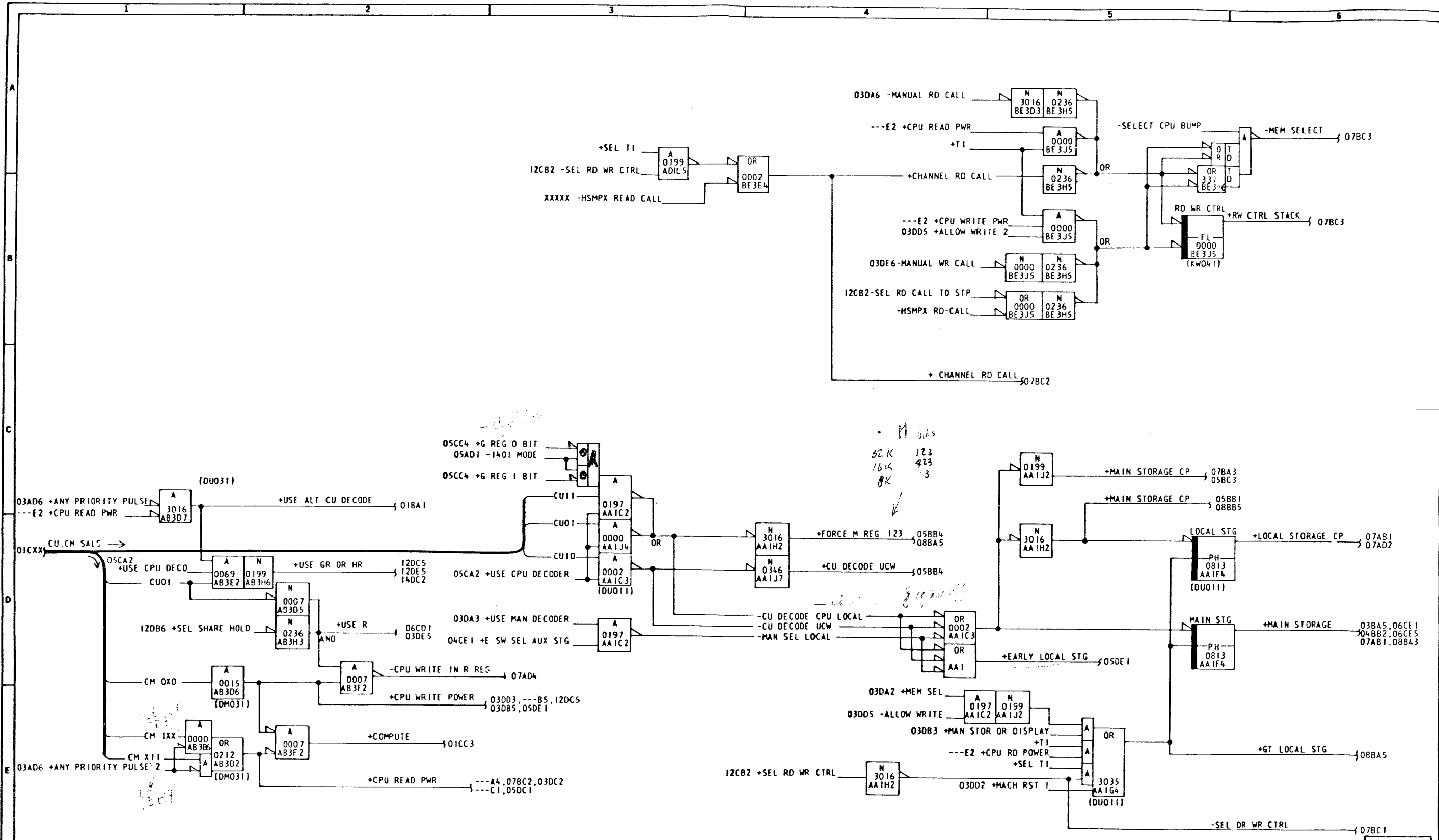


FIG 5-04D

| DATE | EC NO. | DATE | EC NO. | TITLE | R/W | STG | CONTROLS |
|---------|--------|------|--------|--------------------|-----|-----|-------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.04.20 | | | TYPE 2030 |
| | | | | PART NO. 826016 | | | PAGE 1 OF 2 |

MAIN STORAGE DATA REGISTER
 (7) (6) (5) (4) (3) (2) (1) (0) (P)

DI
OR
(P8021)

+TEST LAMP 04AA4

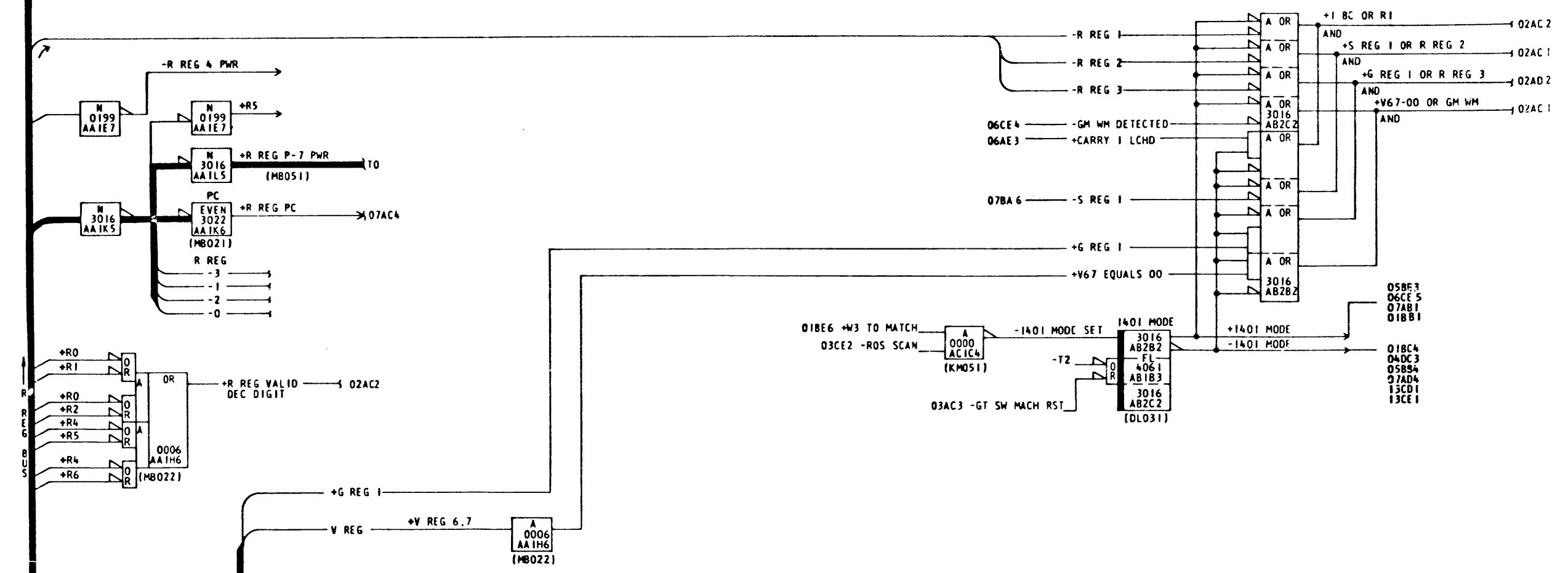


FIG 5-05A

| DATE | EC NO. | DATE | EC NO. | TITLE R REG IND & CHKS-1401 STATS |
|---------|--------|------|--------|-----------------------------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.04.20 TYPE 2030 |
| | | | | PART NO. 826016 PAGE 2 OF 2 |

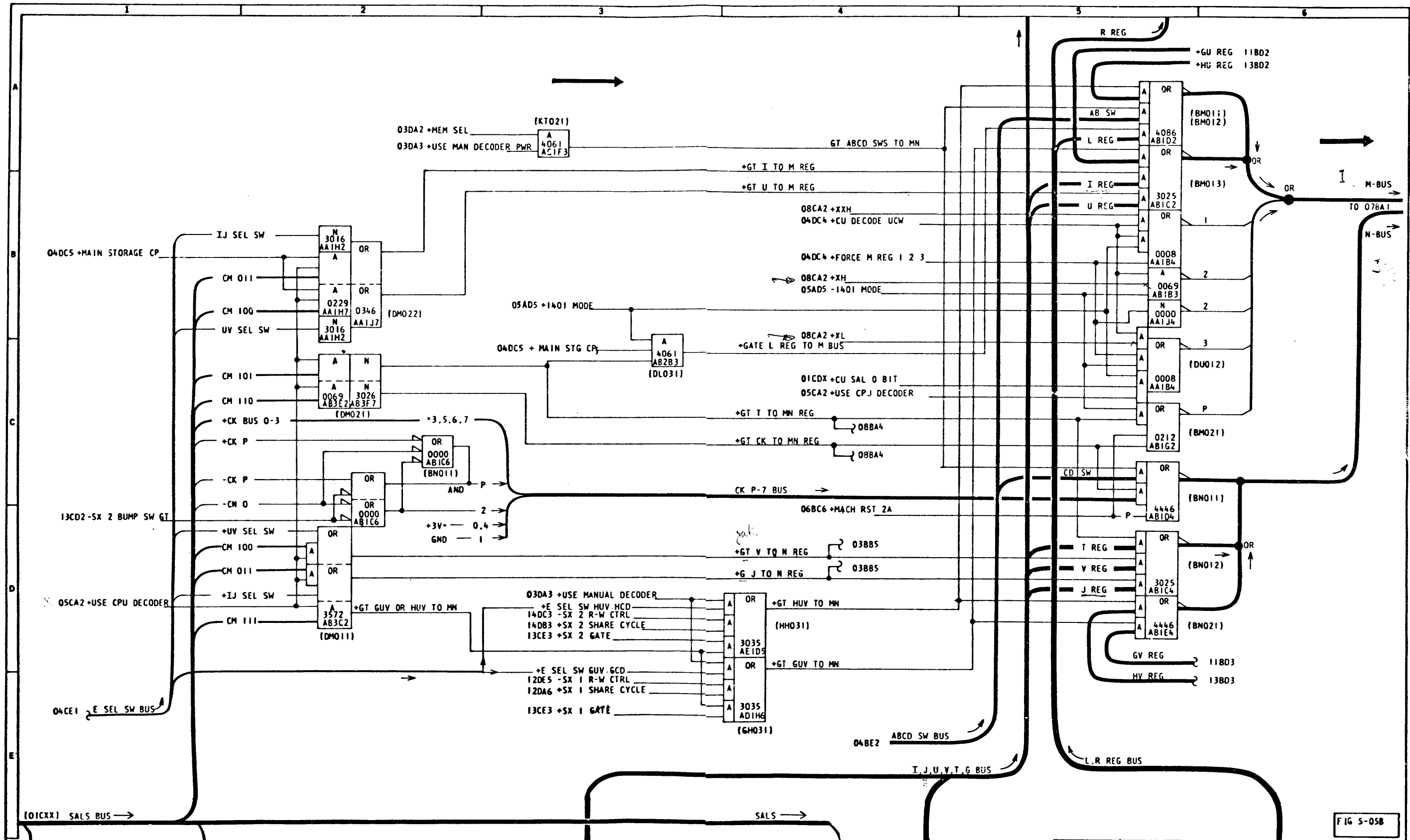


FIG 5-05B

| DATE | EC NO. | DATE | EC NO. | TITLE | M-N ASSEM |
|---------|--------|------|--------|--------------------|-------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.05.10 | TYPE 2030 |
| | | | | PART NO. 826017 | PAGE 1 OF 2 |

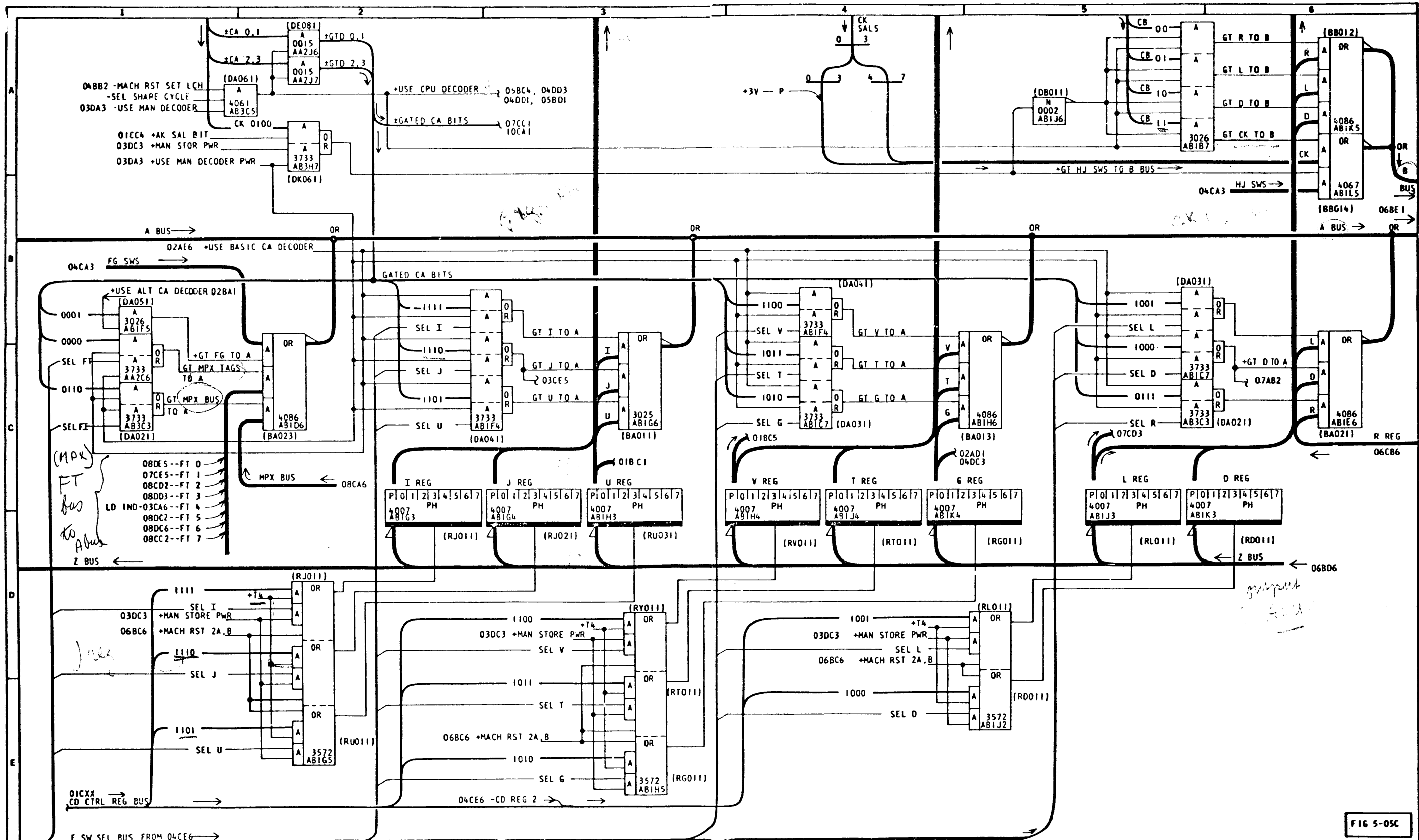


FIG 5-05C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | REGS & A, B ASSM |
| | | | | IBM LOG 5.00.05.10 TYPE 2030 |
| | | | | PART NO. 826017 PAGE 2 OF 2 |

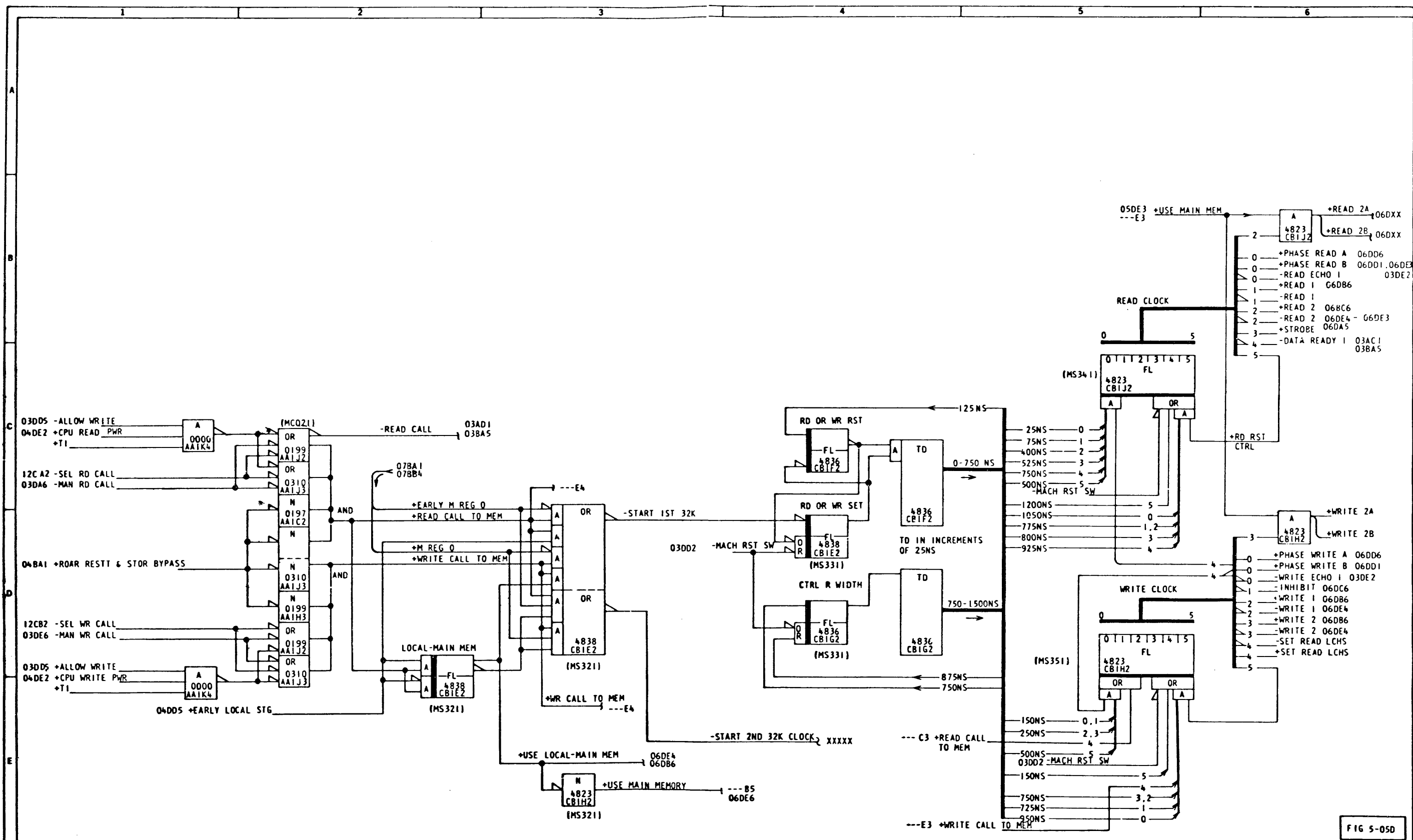


FIG 5-05D

| DATE | EC NO. | DATE | EC NO. | TITLE | R/W | STG | CLOCK | 1ST 32K |
|---------|--------|------|--------|--------------------|-----|-----|-------|-------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.05.20 | | | | TYPE 2030 |
| | | | | PART NO. 826018 | | | | PAGE 1 OF 2 |

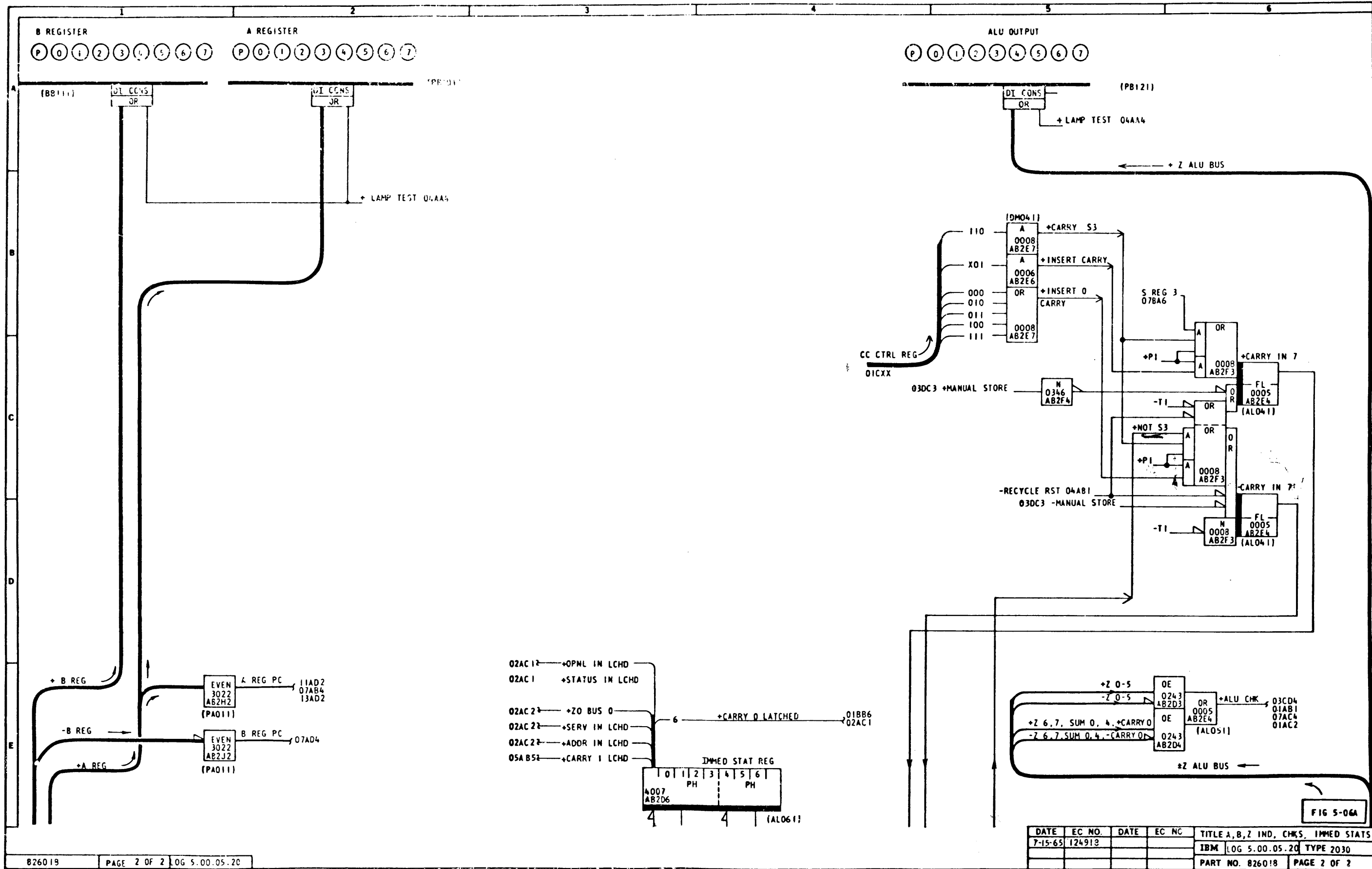


FIG 5-06A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|--------------------------------|
| 7-15-65 | 124913 | | | A, B, Z IND, CHKS, IMMED STATS |
| | | | | IBM LOG 5.00.05.20 TYPE 2030 |
| | | | | PART NO. 826018 PAGE 2 OF 2 |

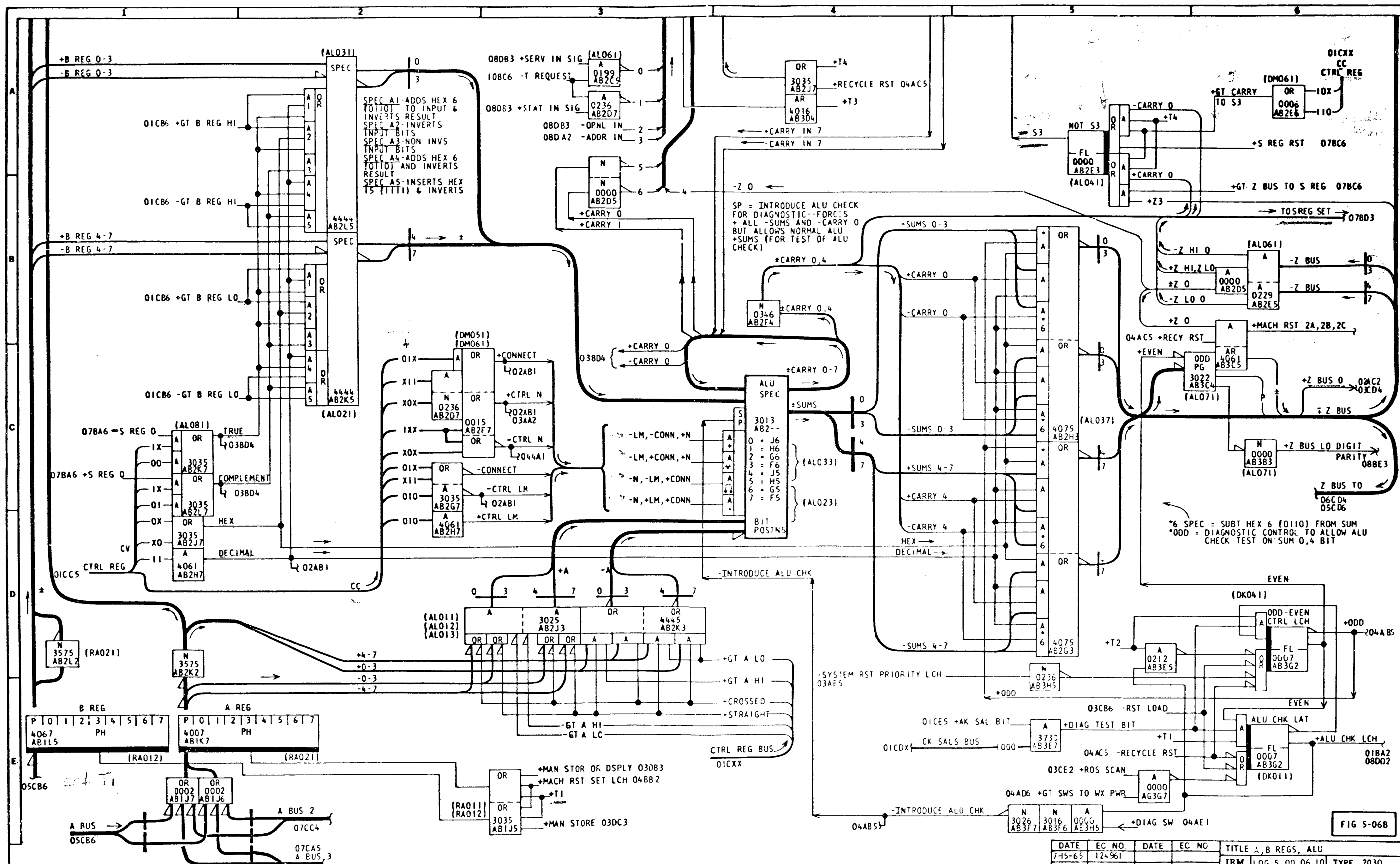


FIG 5-06B

| DATE | EC NO | DATE | EC NO | TITLE |
|---------|--------|------|-------|------------------------------|
| 7-15-65 | 124961 | | | A, B REGS, ALU |
| | | | | IBM LOG 5.00.06.10 TYPE 2030 |
| | | | | PART NO. 826019 PAGE 1 OF 2 |

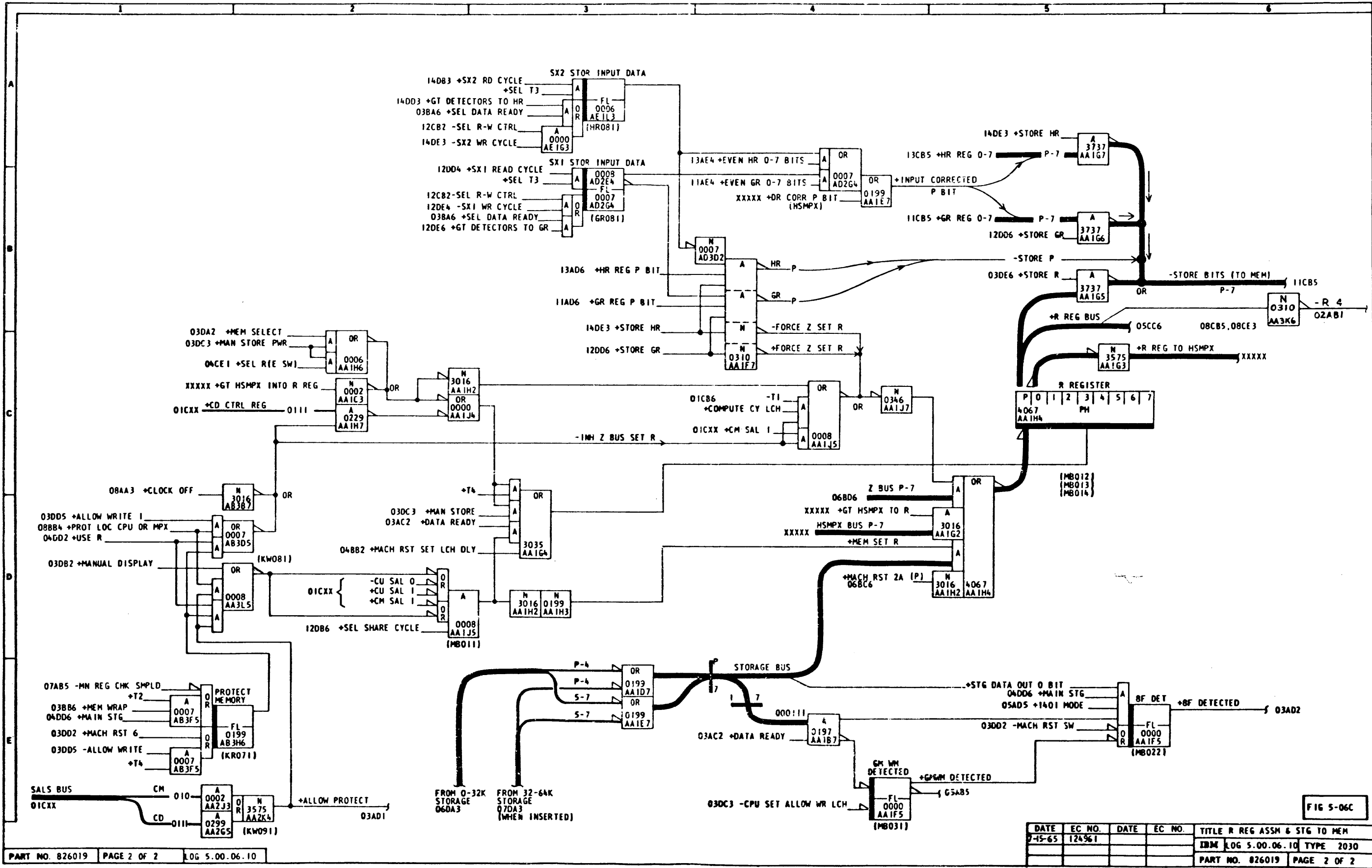


FIG 5-06C

| DATE | EC NO. | DATE | EC NO. | TITLE R REG ASSM & STG TO MEM |
|---------|--------|------|--------|-------------------------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.06.10 TYPE 2030 |
| | | | | PART NO. 826019 PAGE 2 OF 2 |

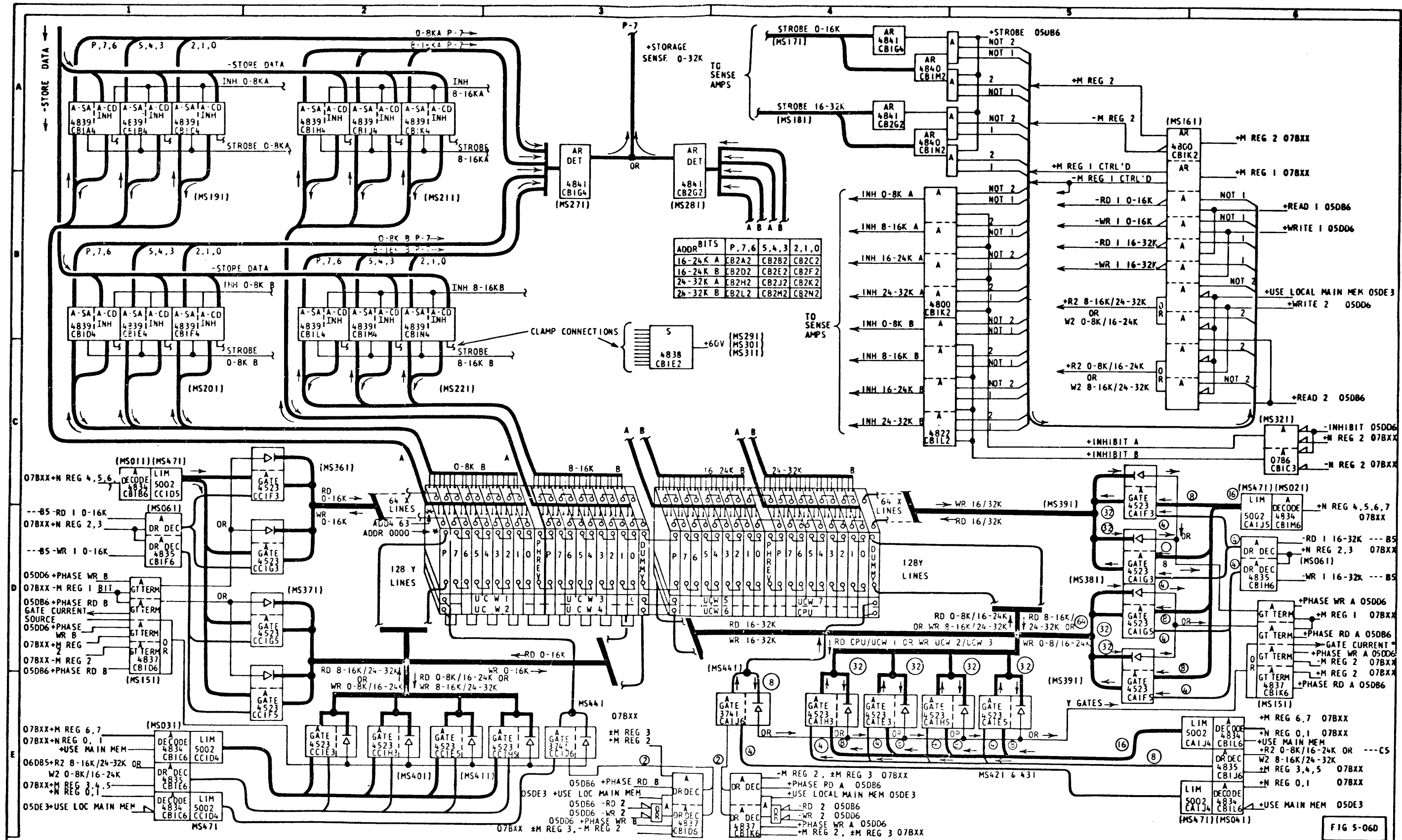


FIG 5-06D

| DATE | EC NO. | DATE | EC NO. | TITLE | R/W | STG | 0-32K |
|---------|--------|------|--------|--------------------|-----|-----|-------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.06.20 | | | TYPE 2030 |
| | | | | PART NO. 826020 | | | PAGE 1 OF 2 |

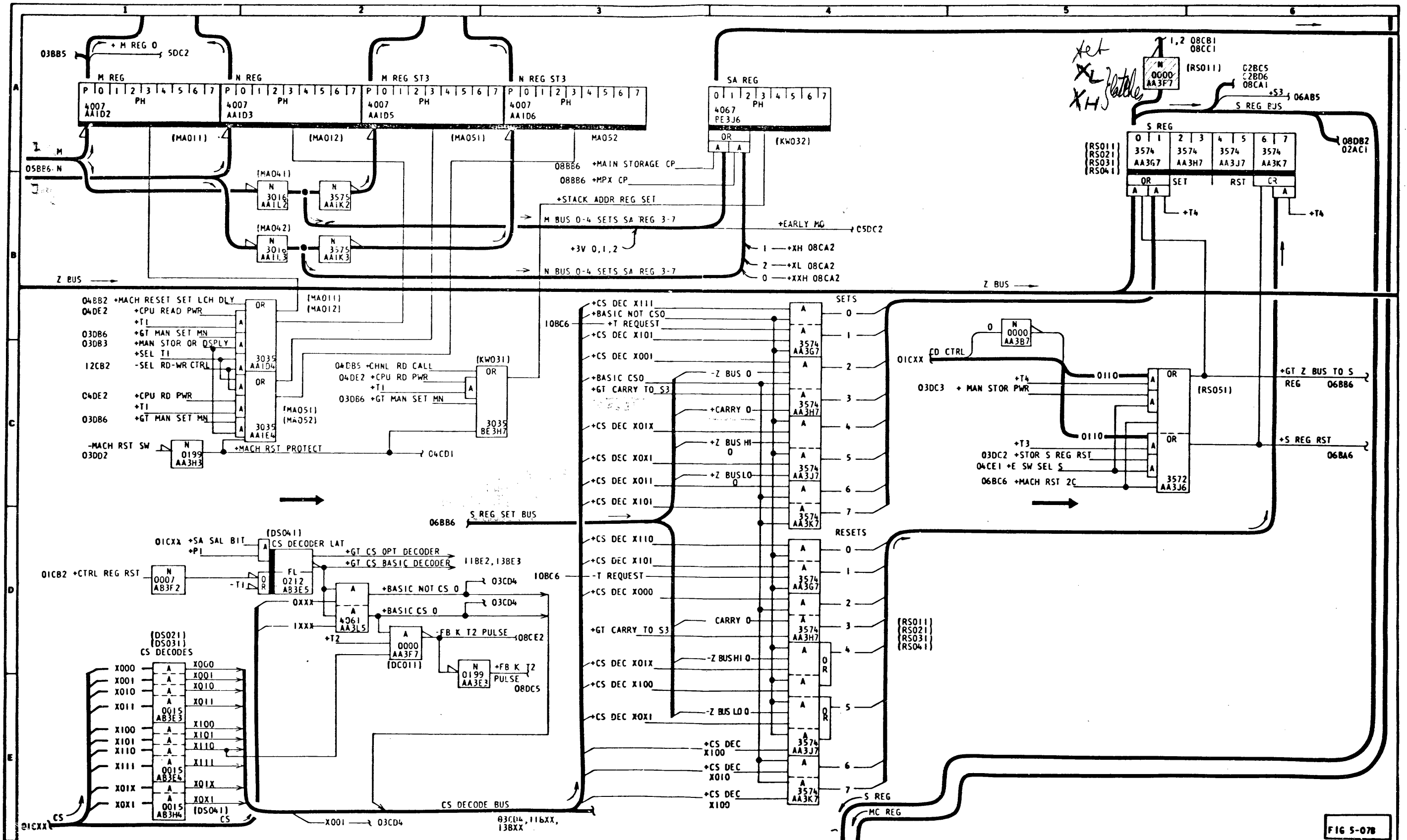


FIG 5-078

| DATE | EC NO. | DATE | EC NO. | TITLE | SAR & S REG |
|---------|--------|------|--------|--------------------|-------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.07.10 | TYPE 2030 |
| | | | | PART NO. 826021 | PAGE 1 OF 2 |

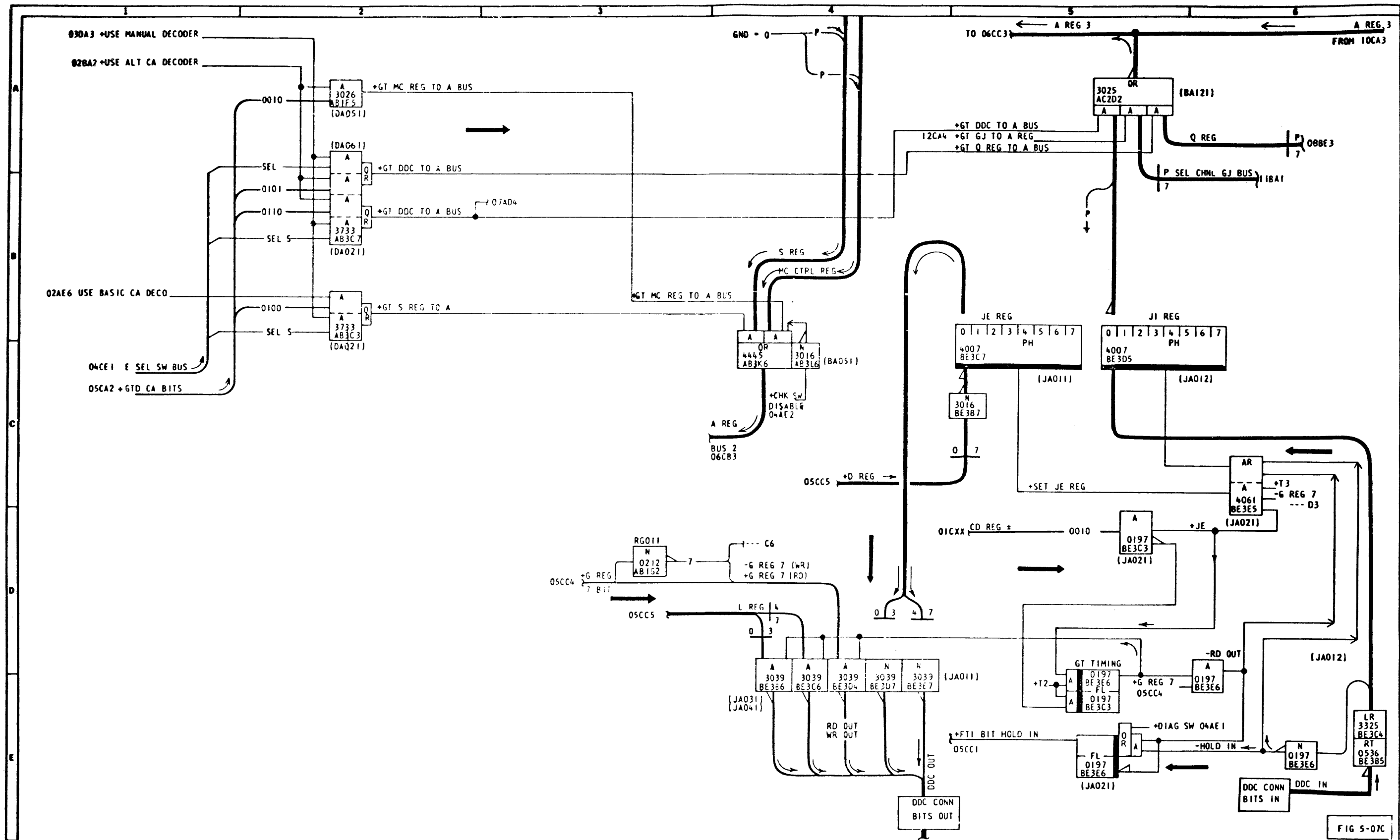


FIG 5-07C

| DATE | EC NO. | DATE | EC NO. | TITLE | DIRECT CONTROL |
|---------|--------|------|--------|--------------------|----------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.07.10 | TYPE 2030 |
| | | | | PART NO. 826021 | PAGE 2 OF 2 |

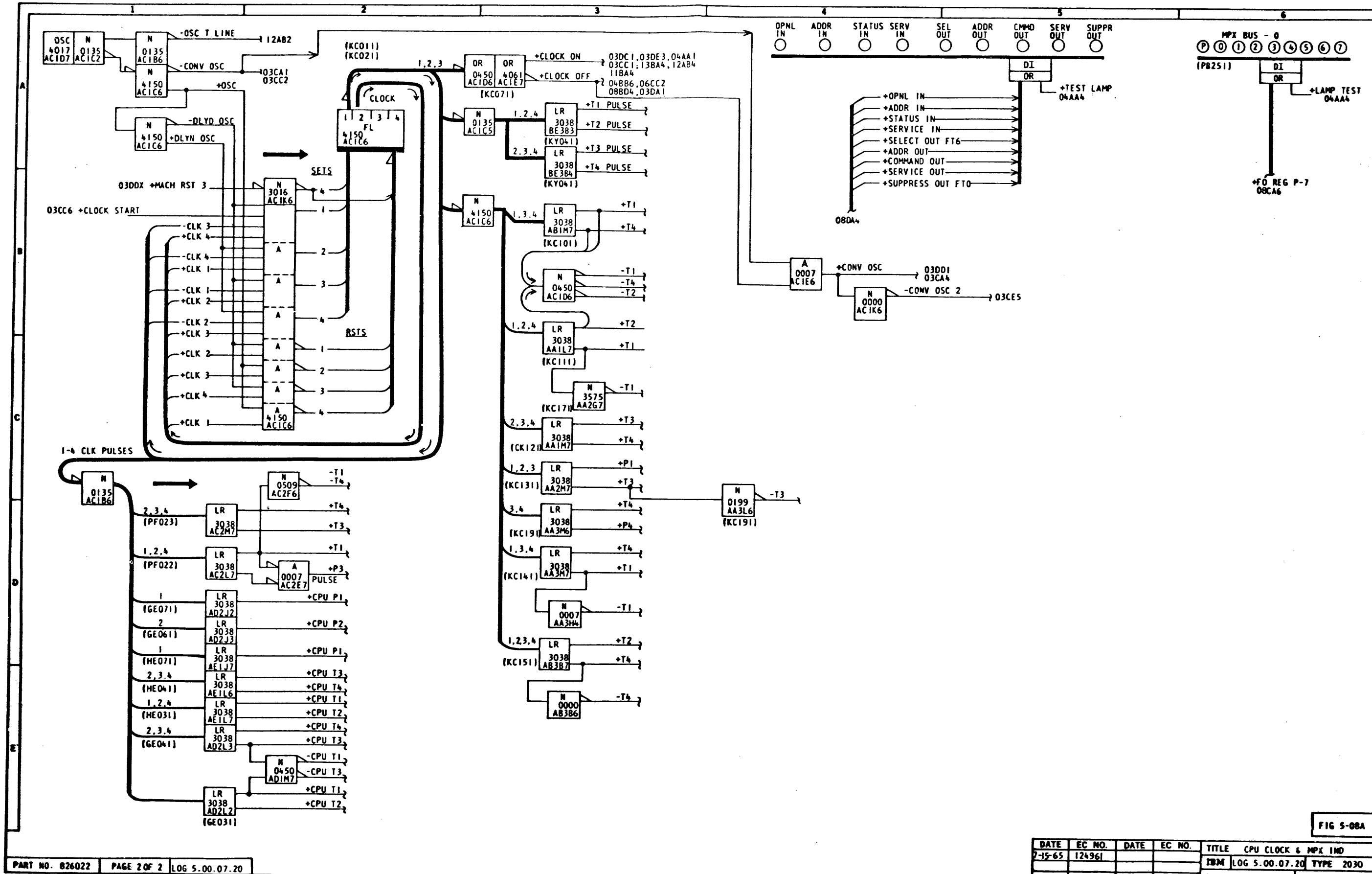


FIG 5-08A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | CPU CLOCK & MPX IND |
| | | | | IBM LOG 5.00.07.20 TYPE 2030 |
| | | | | PART NO. 826022 PAGE 2 OF 2 |

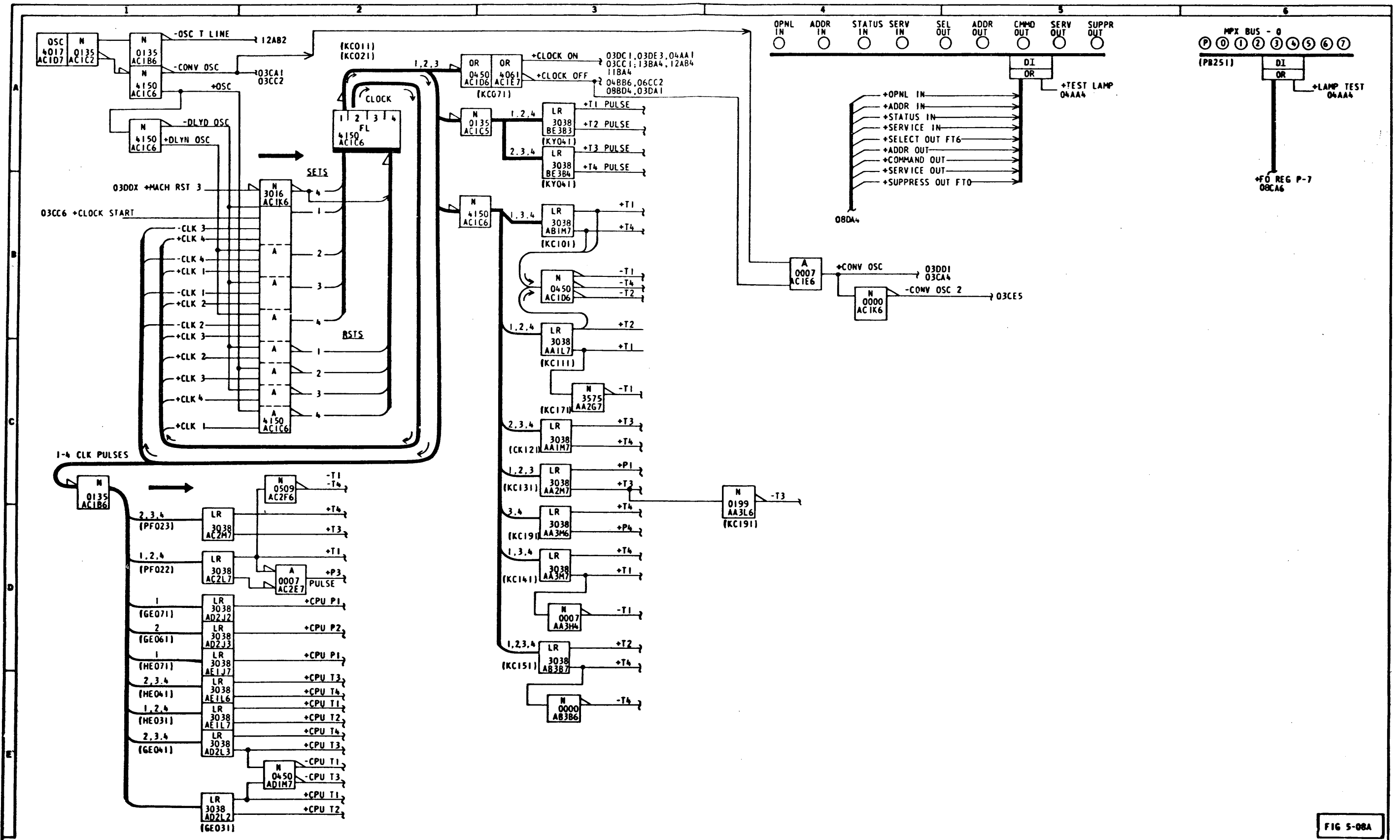


FIG 5-08A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | CPU CLOCK & MPX IND |
| | | | | TBM LOG 5.00.07.20 TYPE 2030 |
| | | | | PART NO. 826022 PAGE 2 OF 2 |

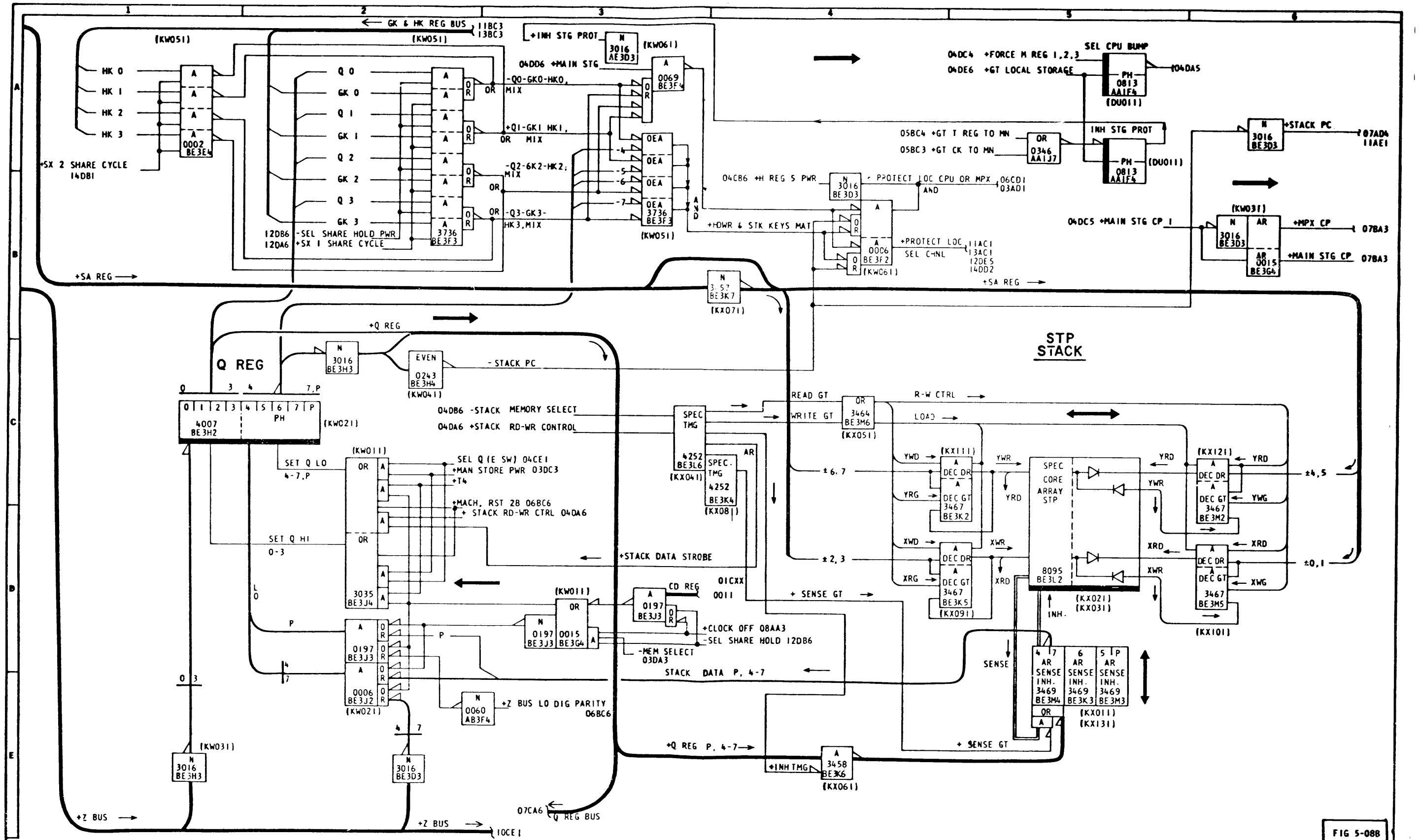


FIG 5-08B

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | Q REG & STG PROTECT |
| | | | | IBM LOG 5.00.08.10 TYPE 2030 |
| | | | | PART NO. 826023 PAGE 1 OF 2 |

FB REGISTER

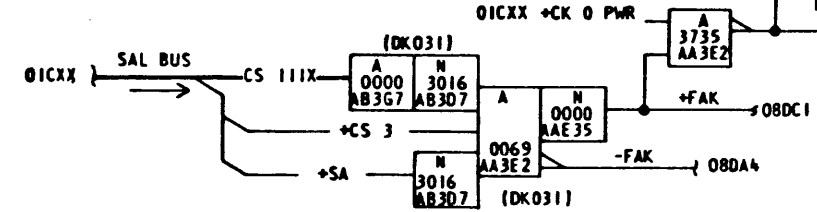
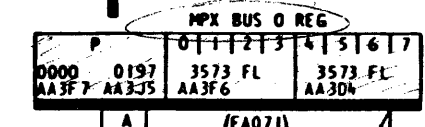
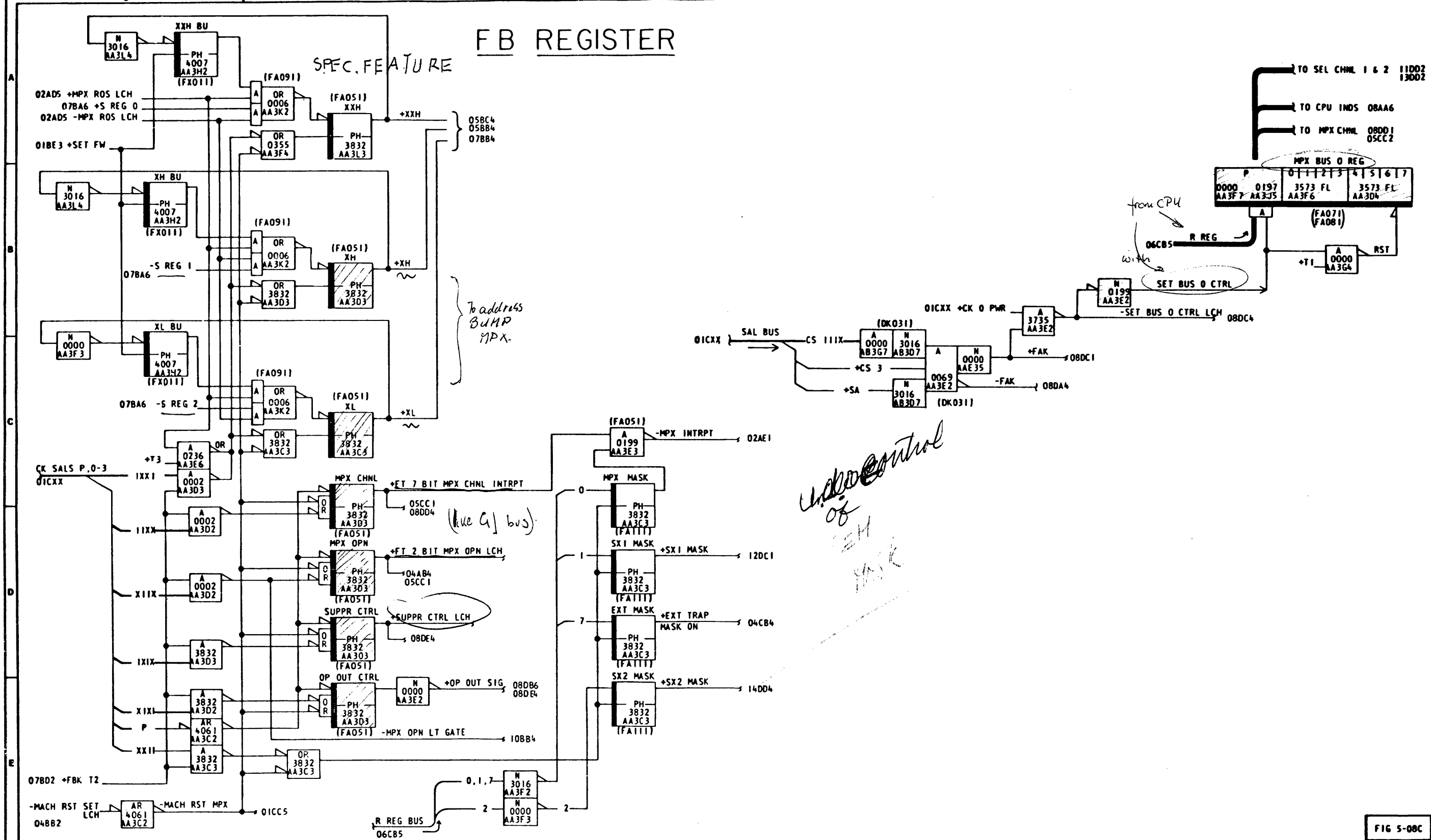
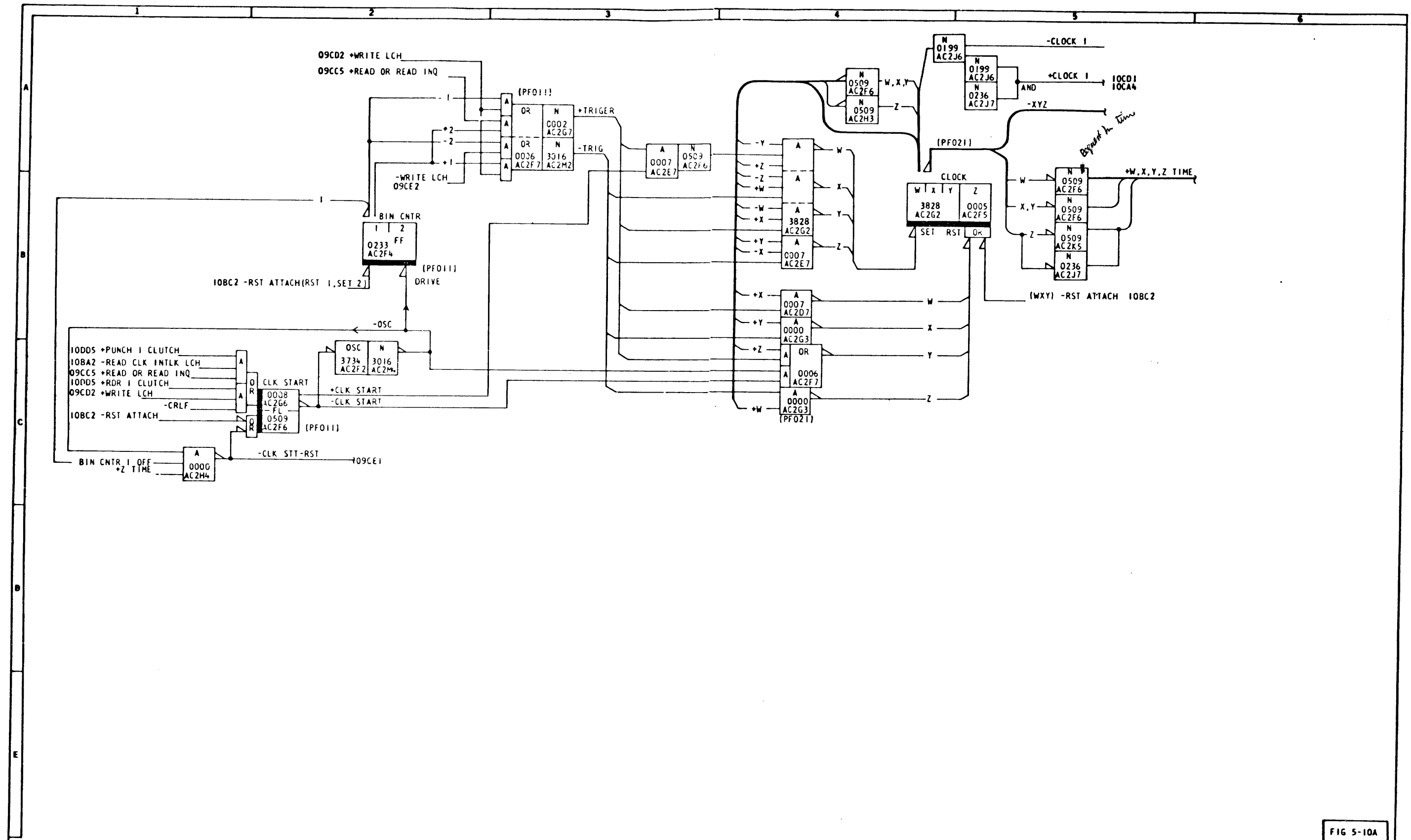


FIG 5-08C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|---------|------|--------|------------------------------|
| 7-15-65 | 12496.1 | | | MPX CHANNEL FO & FB REGS |
| | | | | IBM LOG 5.G0.08.10 TYPE 2030 |
| | | | | PART NO. 826023 PAGE 2 OF 2 |



| DATE | FC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 24961 | | | 1050 CLOCK |
| | | | | IBM LOG 5.00.09.20 TYPE 2030 |
| | | | | PART NO. 826026 PAGE 2 OF 2 |

FIG 5-10A

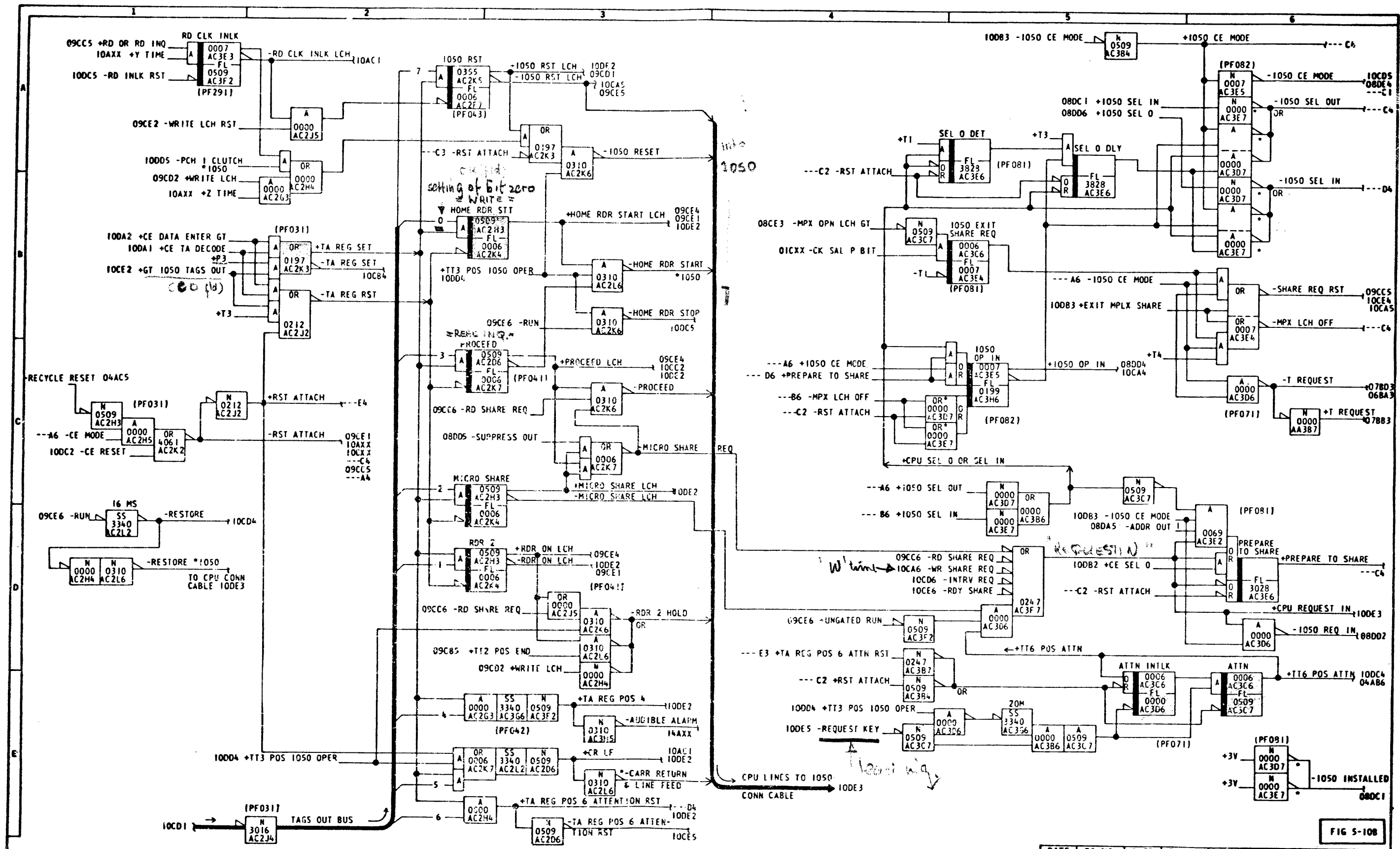


FIG 5-108

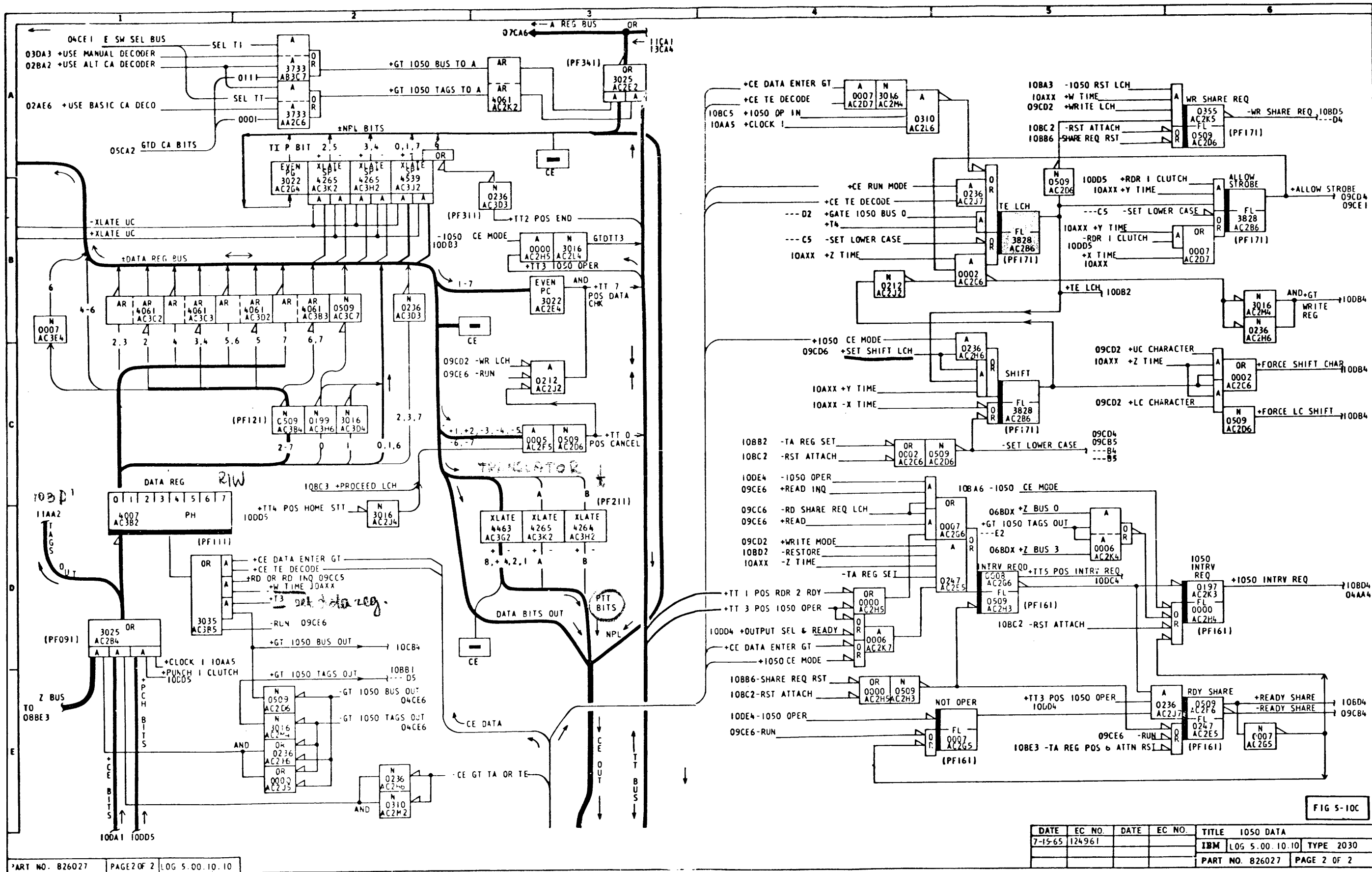
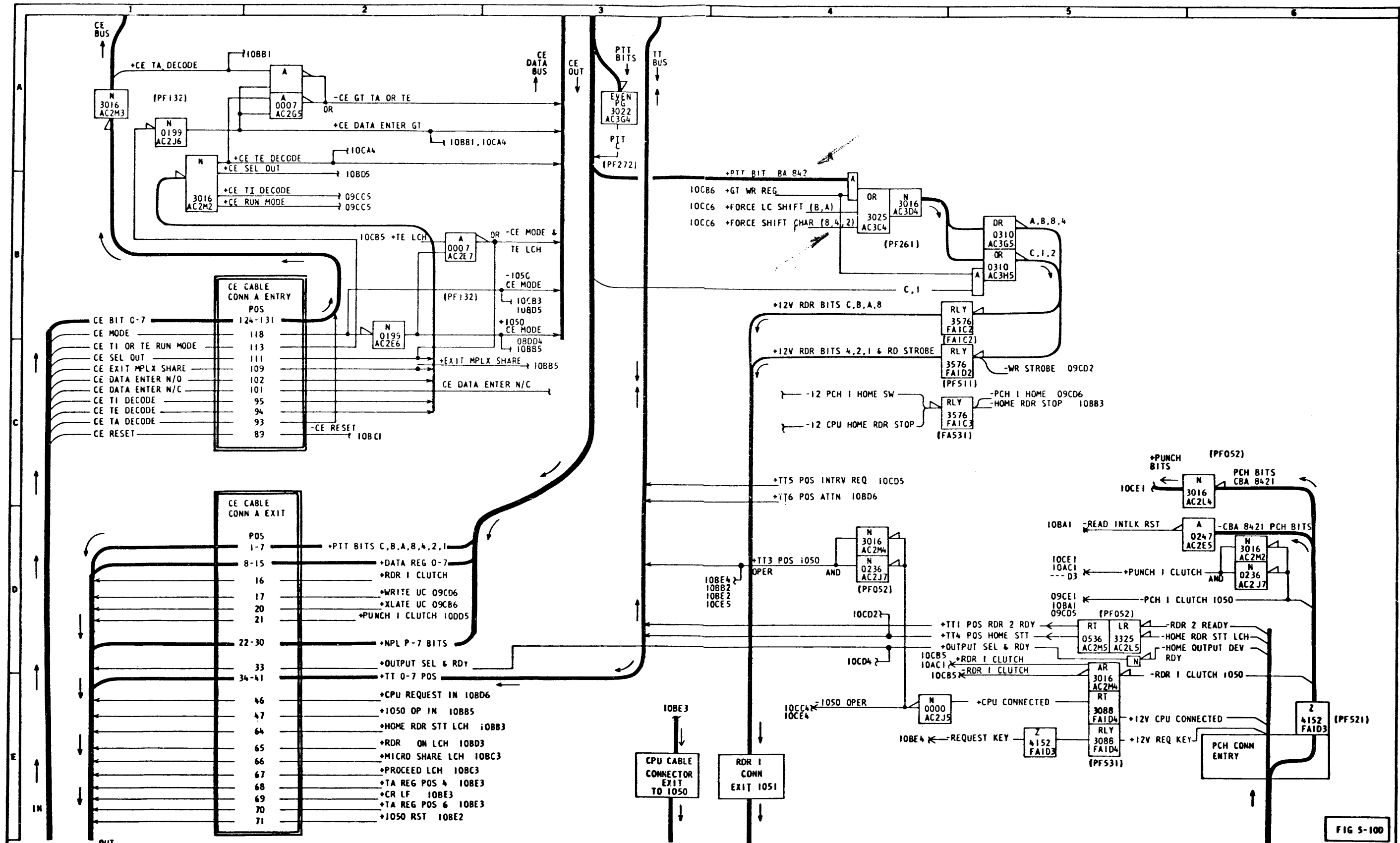


FIG 5-10C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | 1050 DATA |
| | | | | IBM LOG 5.00.10.10 TYPE 2030 |
| | | | | PART NO. 826027 PAGE 2 OF 2 |



CE CABLE CONN A ENTRY

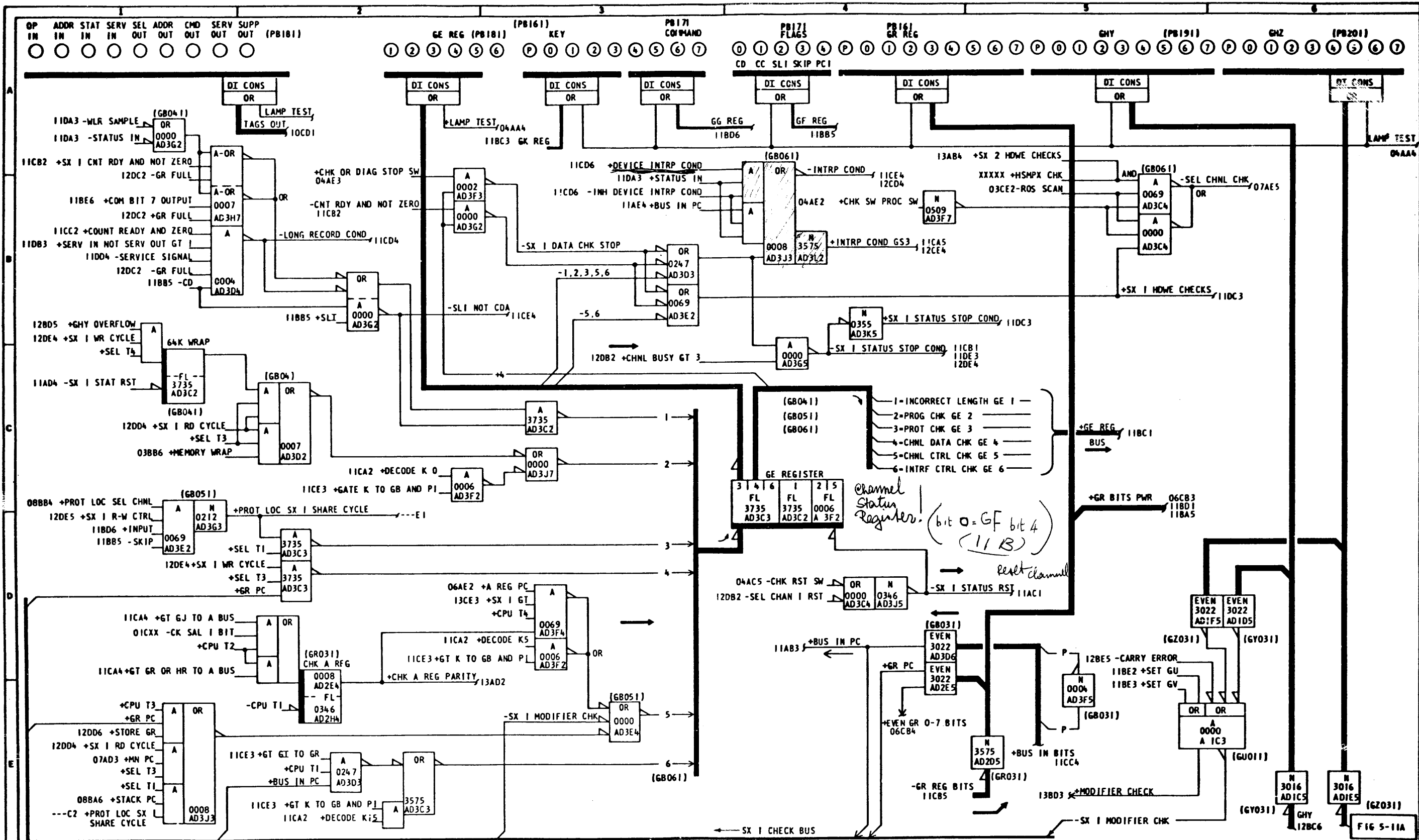
| POS | 124-131 |
|----------------------|---------|
| CE BIT C-7 | 124-131 |
| CE MODE | 118 |
| CE TI OR TE RUN MODE | 113 |
| CE SEL OUT | 111 |
| CE EXIT MPLX SHARE | 109 |
| CE DATA ENTER N/O | 102 |
| CE DATA ENTER N/C | 101 |
| CE TI DECODE | 95 |
| CE TE DECODE | 94 |
| CE TA DECODE | 93 |
| CE RESET | 83 |

CE CABLE CONN A EXIT

| POS | 1-7 |
|-------------------------|-------|
| +PTT BITS C,B,A,8,4,2,1 | 1-7 |
| +DATA REG 0-7 | 8-15 |
| +RDR I CLUTCH | 16 |
| +WRITE UC 09CD6 | 17 |
| +XLATE UC 09CB6 | 20 |
| +PUNCH I CLUTCH 10DD5 | 21 |
| +NPL P-7 BITS | 22-30 |
| +OUTPUT SEL & RDY | 33 |
| +TT 0-7 POS | 34-41 |
| +CPU REQUEST IN 10BD6 | 46 |
| +I050 OP IN 10BB5 | 47 |
| +HOME RDR STT LCH 10BB3 | 64 |
| +RDR ON LCH 10BD3 | 65 |
| +MICRO SHARE LCH 10BC3 | 66 |
| +PROCEED LCH 10BC3 | 67 |
| +TA REG POS 4 10BE3 | 68 |
| +CR LF 10BE3 | 69 |
| +TA REG POS 6 10BE3 | 70 |
| +I050 RST 10BE2 | 71 |

FIG 5-100

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | 1050 ATTACH IN & OUT |
| | | | | IBM LOG 5.00.10.20 TYPE 2030 |
| | | | | PART NO. 826028 PAGE 1 OF 2 |



| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX I CHECKS, IND |
| | | | | IBM LOG 5.00.10.20 TYPE 2030 |
| | | | | PART NO. 826028 PAGE 2 OF 2 |

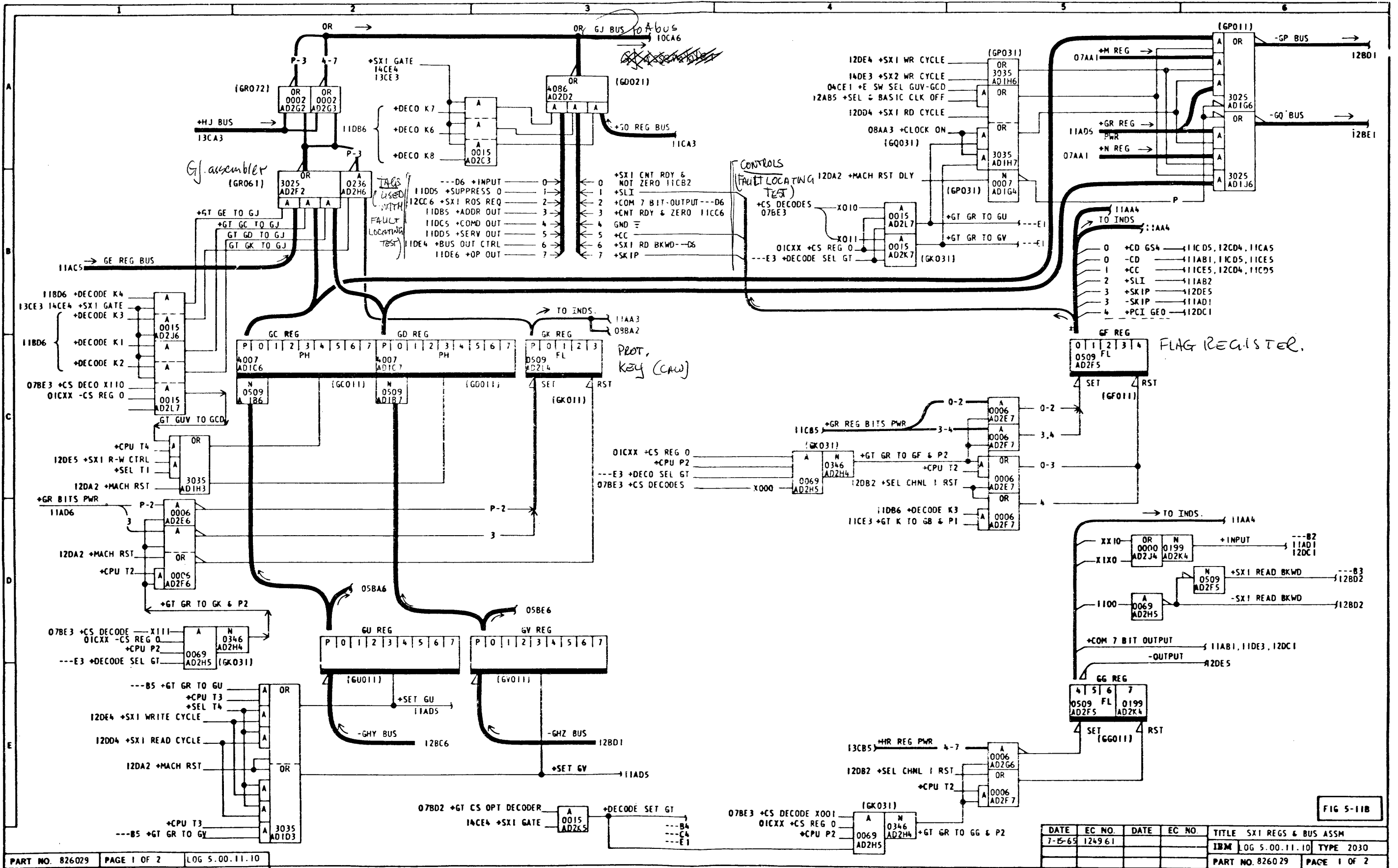


FIG 5-11B

| DATE | EC NO. | DATE | EC NO. | TITLE | SX1 REGS & BUS ASSM |
|---------|--------|------|--------|--------------------|---------------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.11.10 | TYPE 2030 |
| | | | | PART NO. 826029 | PAGE 1 OF 2 |

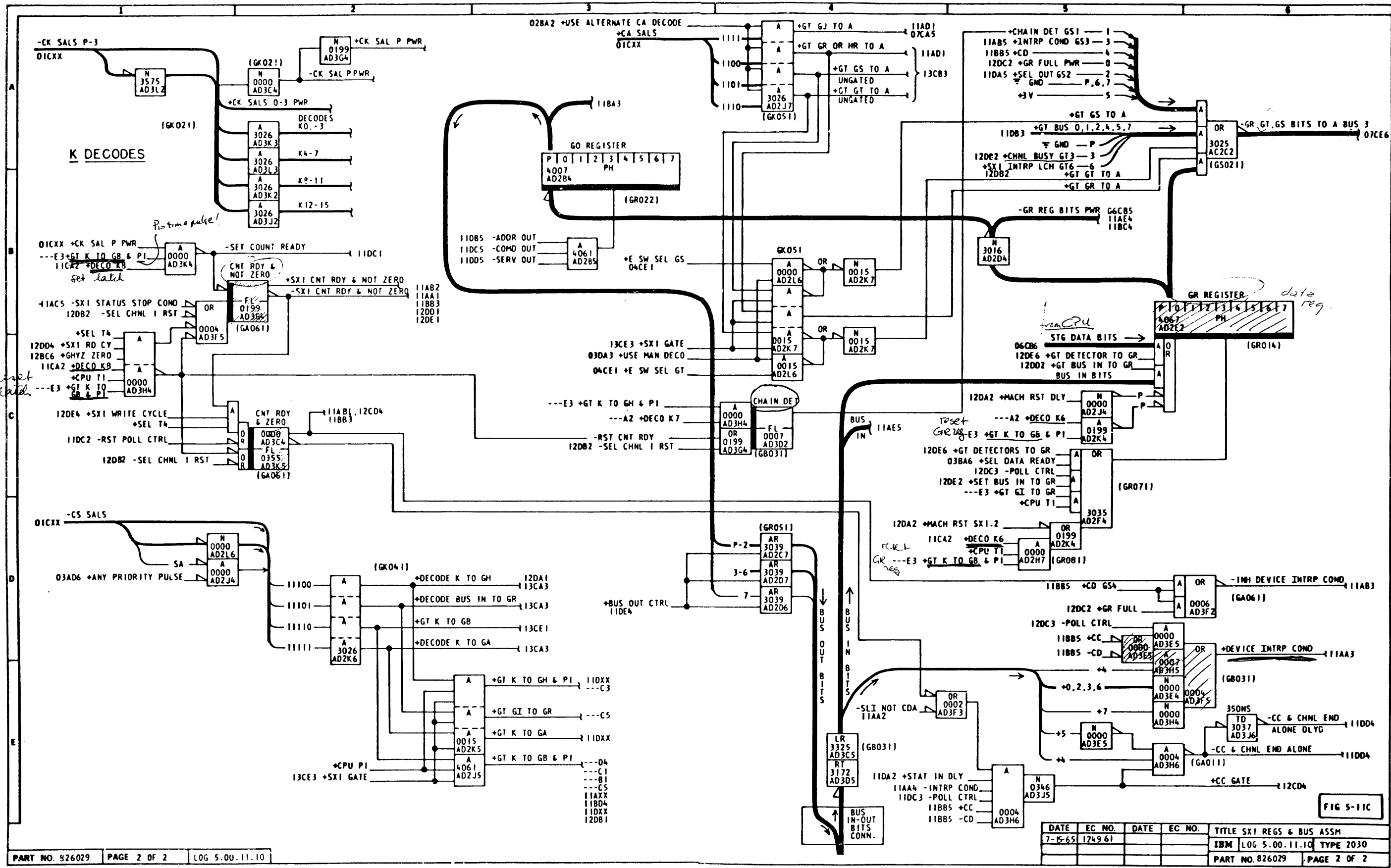


FIG 5-11C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX1 REGS & BUS ASSM |
| | | | | IBM LOG 5.00.11.10 TYPE 2030 |
| | | | | PART NO. 826029 PAGE 2 OF 2 |

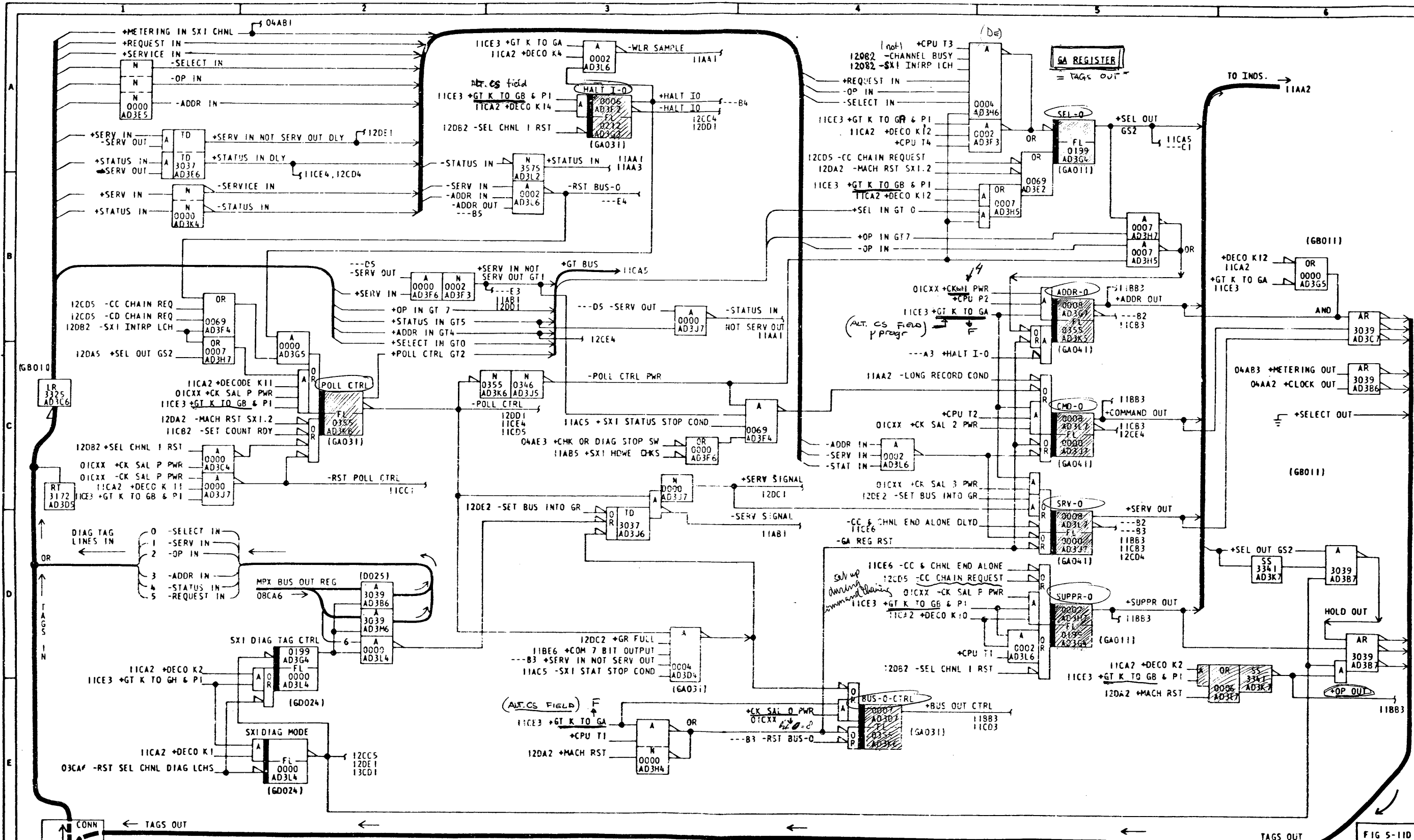


FIG 5-11D

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SXI TAGS & INTRP |
| | | | | IBM LOG 5.00.11.20 TYPE 2030 |
| | | | | PART NO. 826030 PAGE 1 OF 2 |

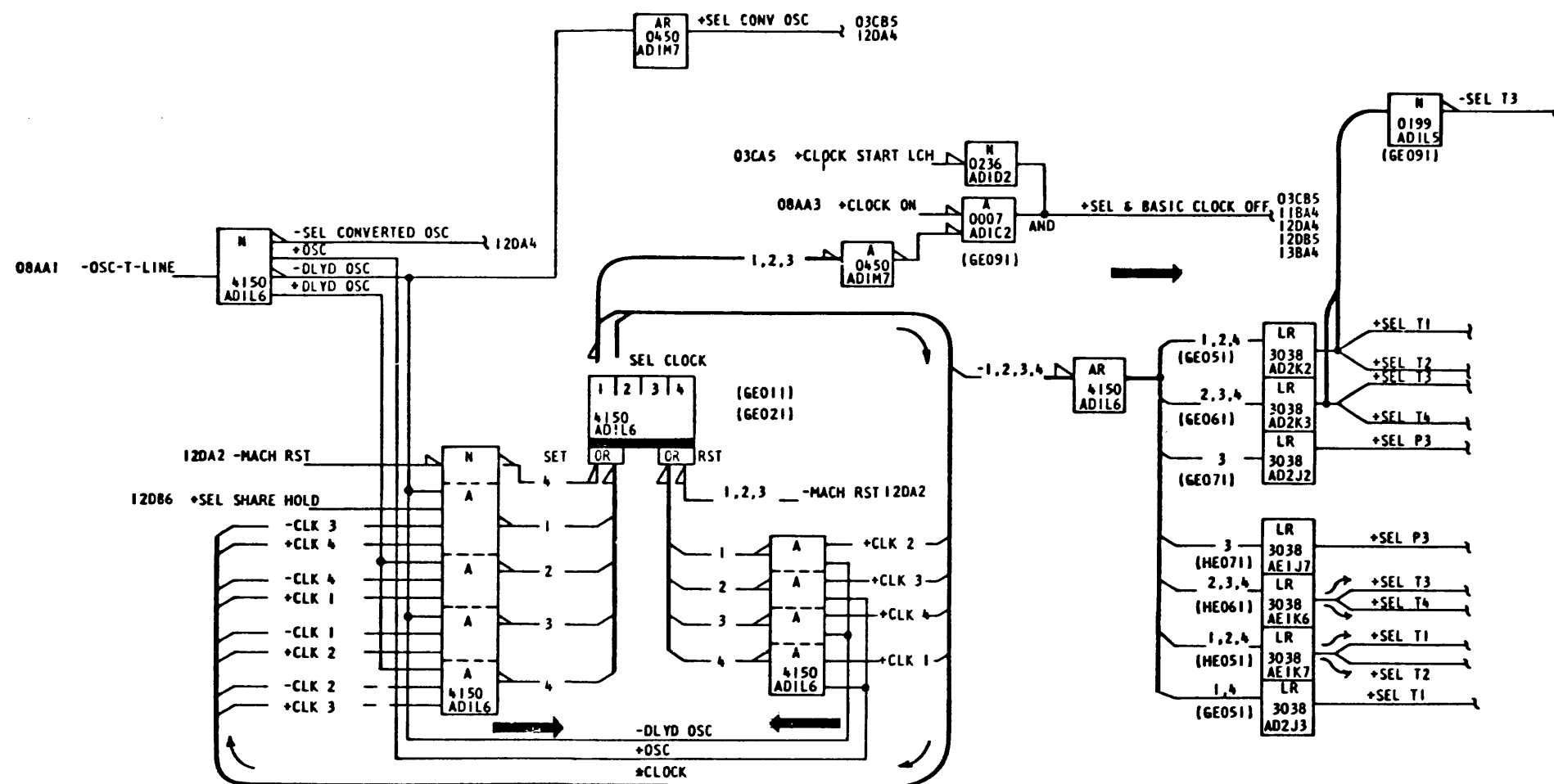
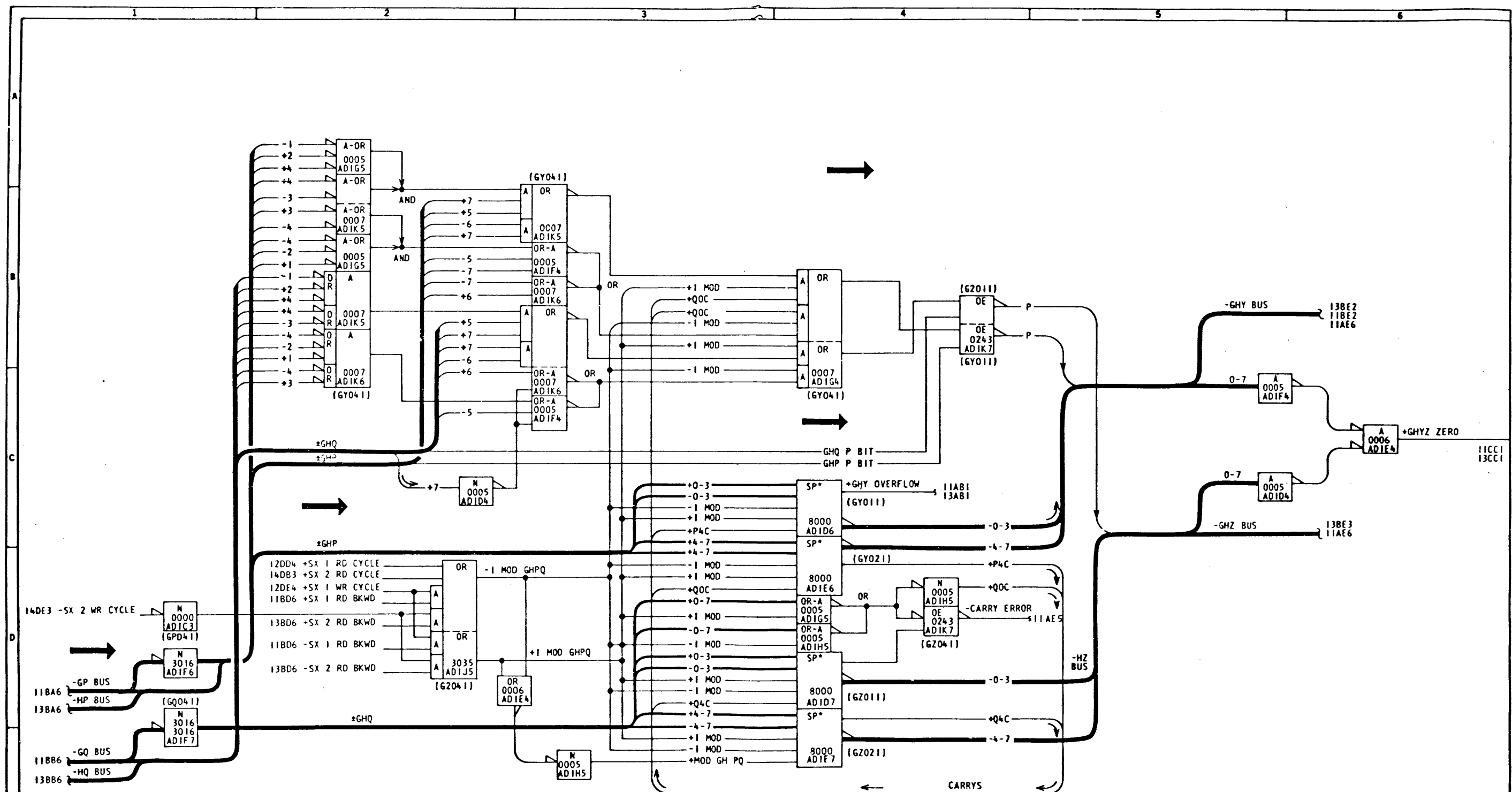


FIG 5-12A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX CLOCK & DISTR |
| | | | | IBM LOG S.OO.11.20 TYPE 2030 |
| | | | | PART NO. 826030 PAGE 2 OF 2 |



*MODIFIER CARD
± 1 OR 0 MODIFY

FIG 5-12B

| DATE | EC NO. | DATE | EC NO. | TITLE SX MODIFIER |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.12.10 TYPE 2030 |
| | | | | PART NO. 826031 PAGE 1 OF 2 |

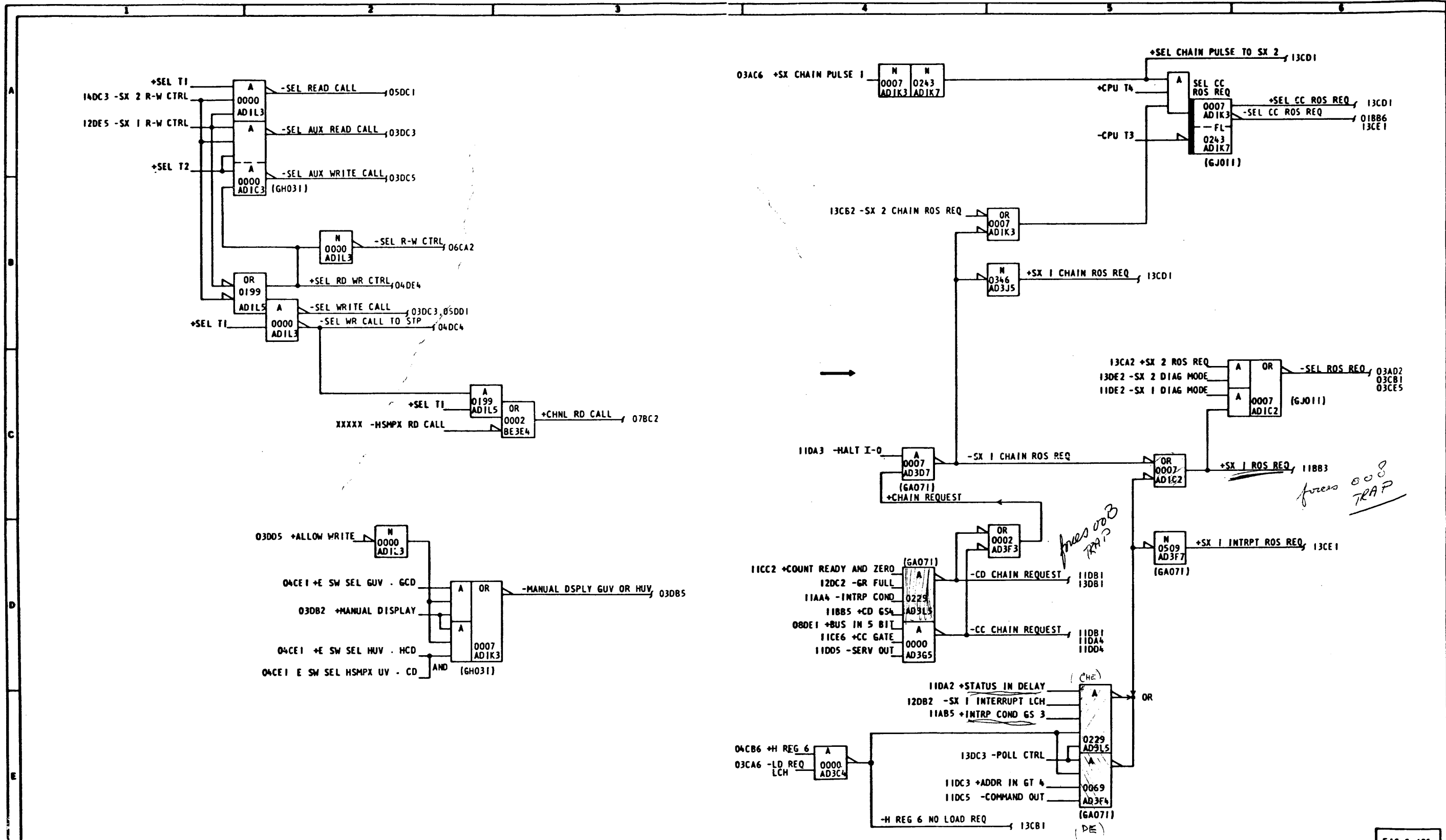


FIG 5-12C

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-69 | 124961 | | | CHNL & SEL ROS REQ |
| | | | | IBM LOG 5.00.12.10 TYPE 2030 |
| | | | | PART NO. 826031 PAGE 2 OF 2 |

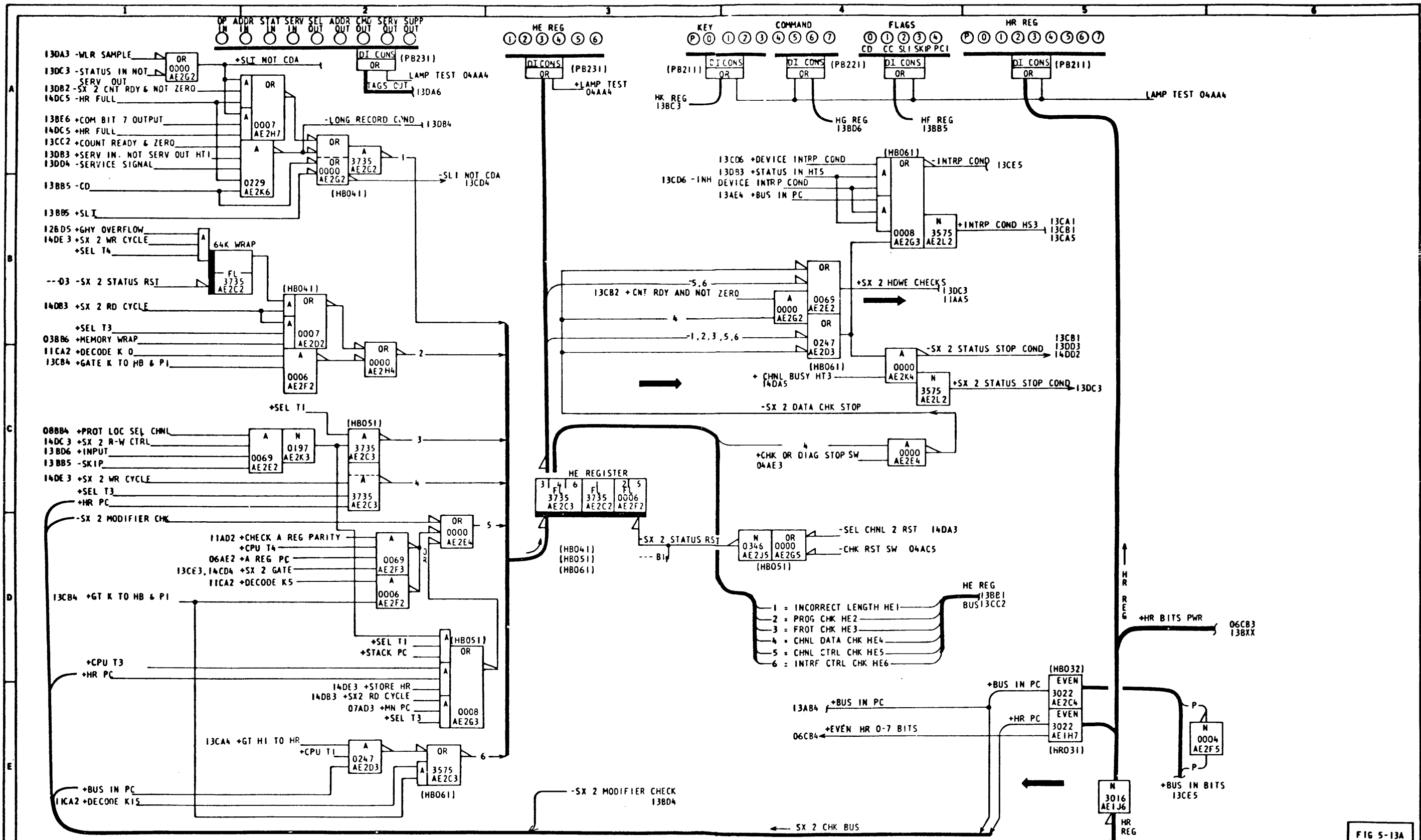


FIG 5-13A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX 2 CHECK, IND |
| | | | | IBM LOG 5.00.12.20 TYPE 2030 |
| | | | | PART NO. 826032 PAGE 2 OF 2 |

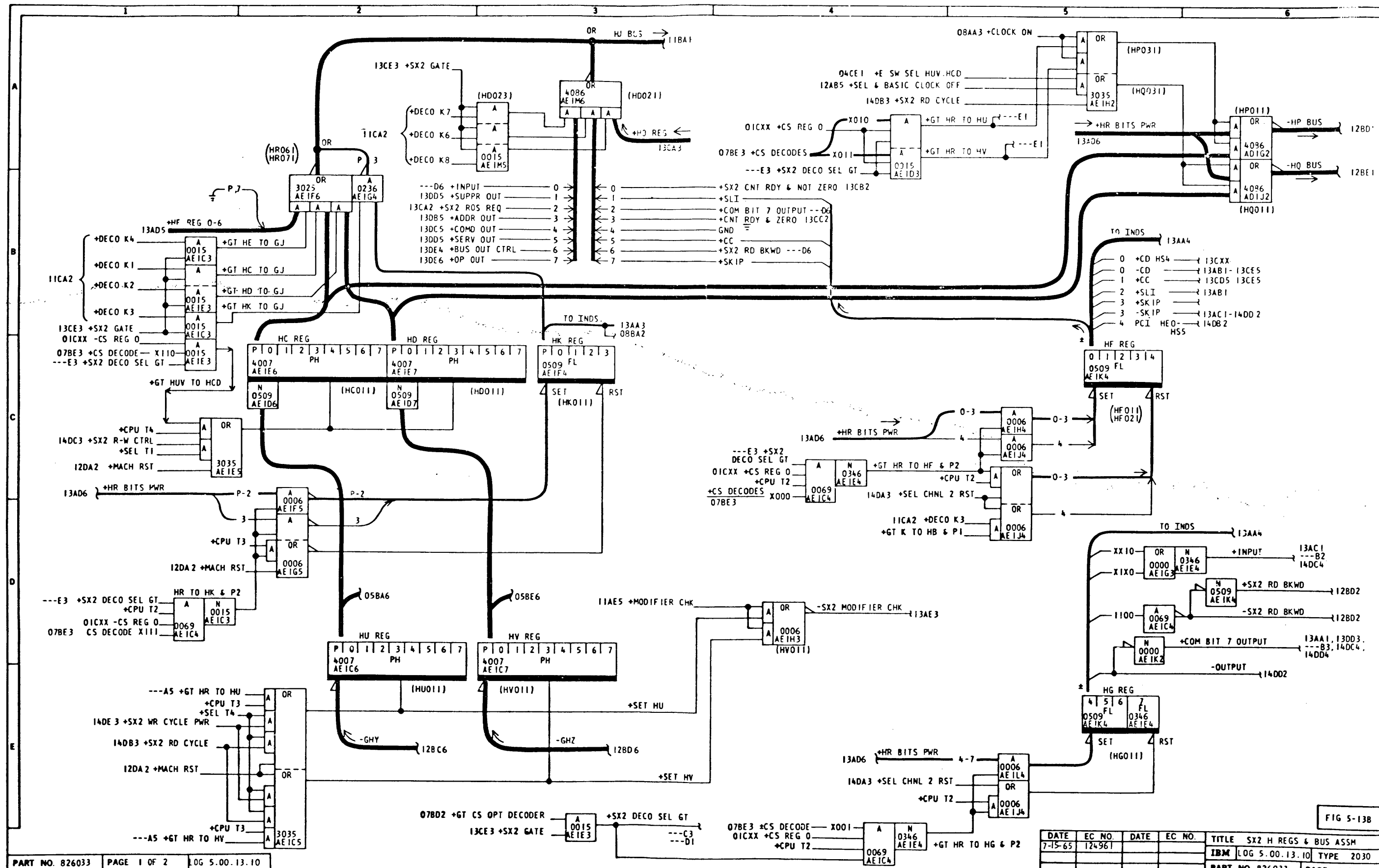
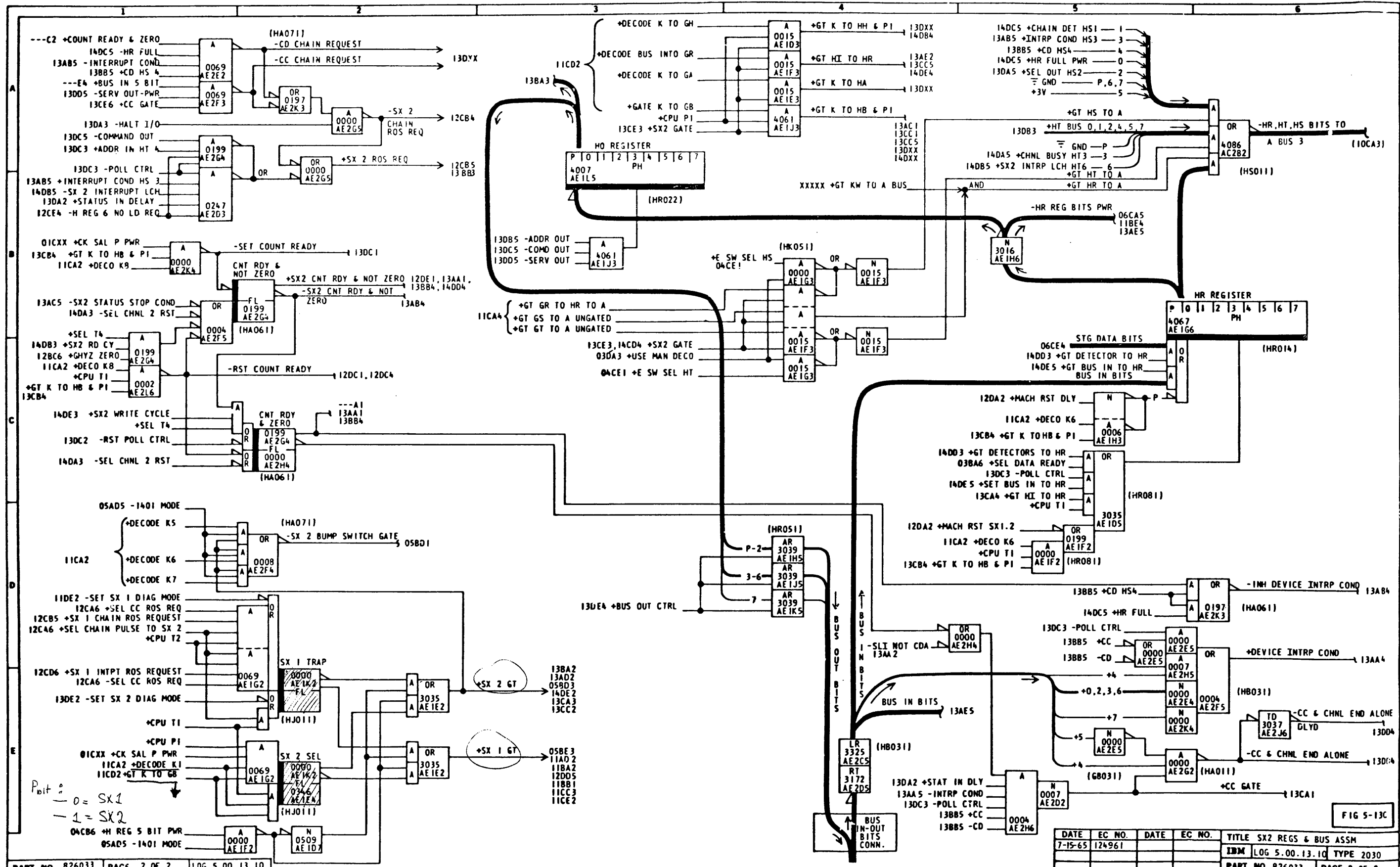


FIG 5-13B

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX2 H REGS & BUS ASSM |
| | | | | IBM LOG 5.00.13.10 TYPE 2030 |
| | | | | PART NO. 826033 PAGE 1 OF 2 |



| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX2 REGS & BUS ASSM |
| | | | | IBM LOG 5.00.13.10 TYPE 2030 |
| | | | | PART NO. 826033 PAGE 2 OF 2 |

FIG 5-13C

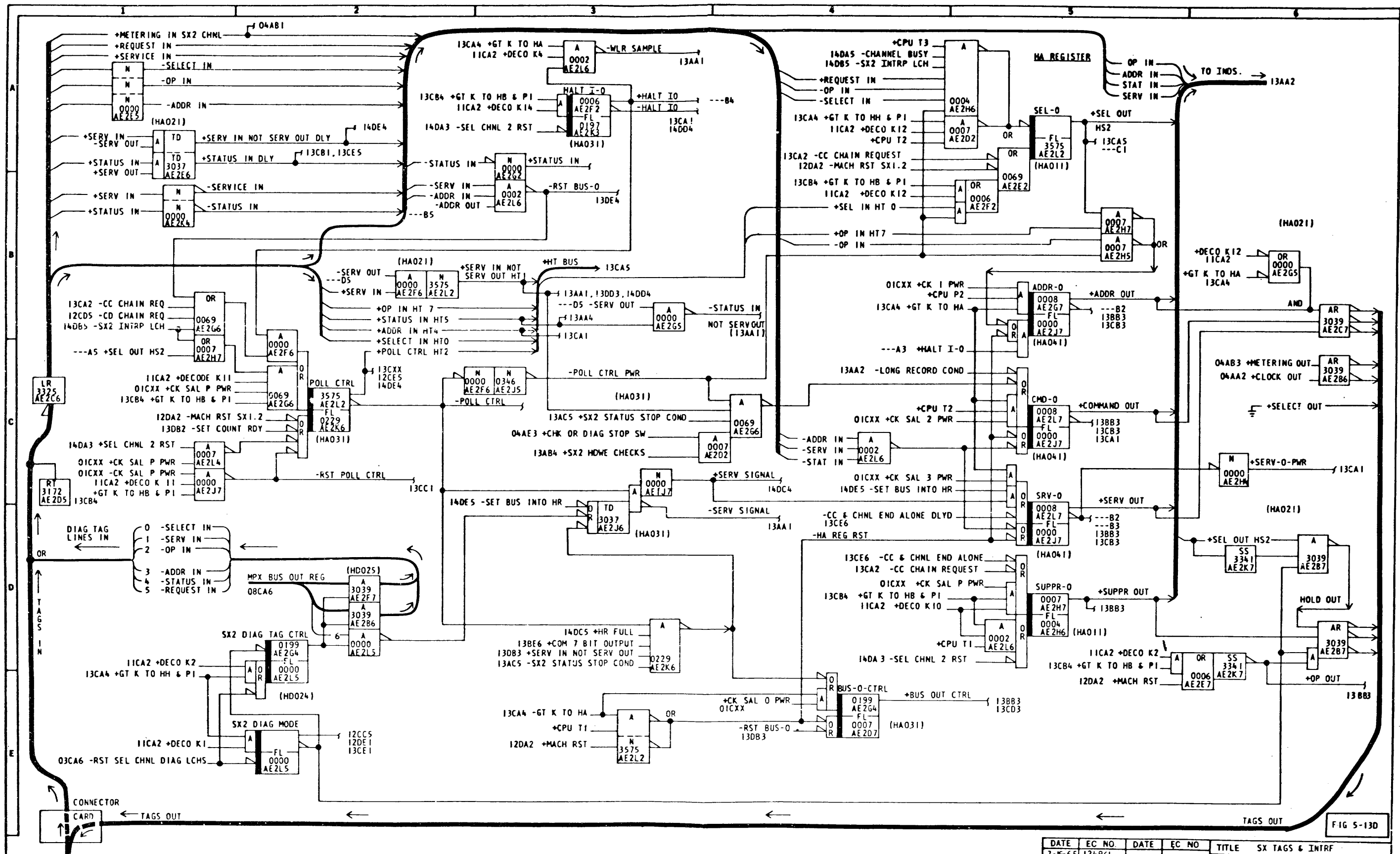


FIG 5-13D

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | SX TAGS & INTRF |
| | | | | IBM LOG 5.00.13.20 TYPE 2030 |
| | | | | PART NO. 826034 PAGE 1 OF 2 |

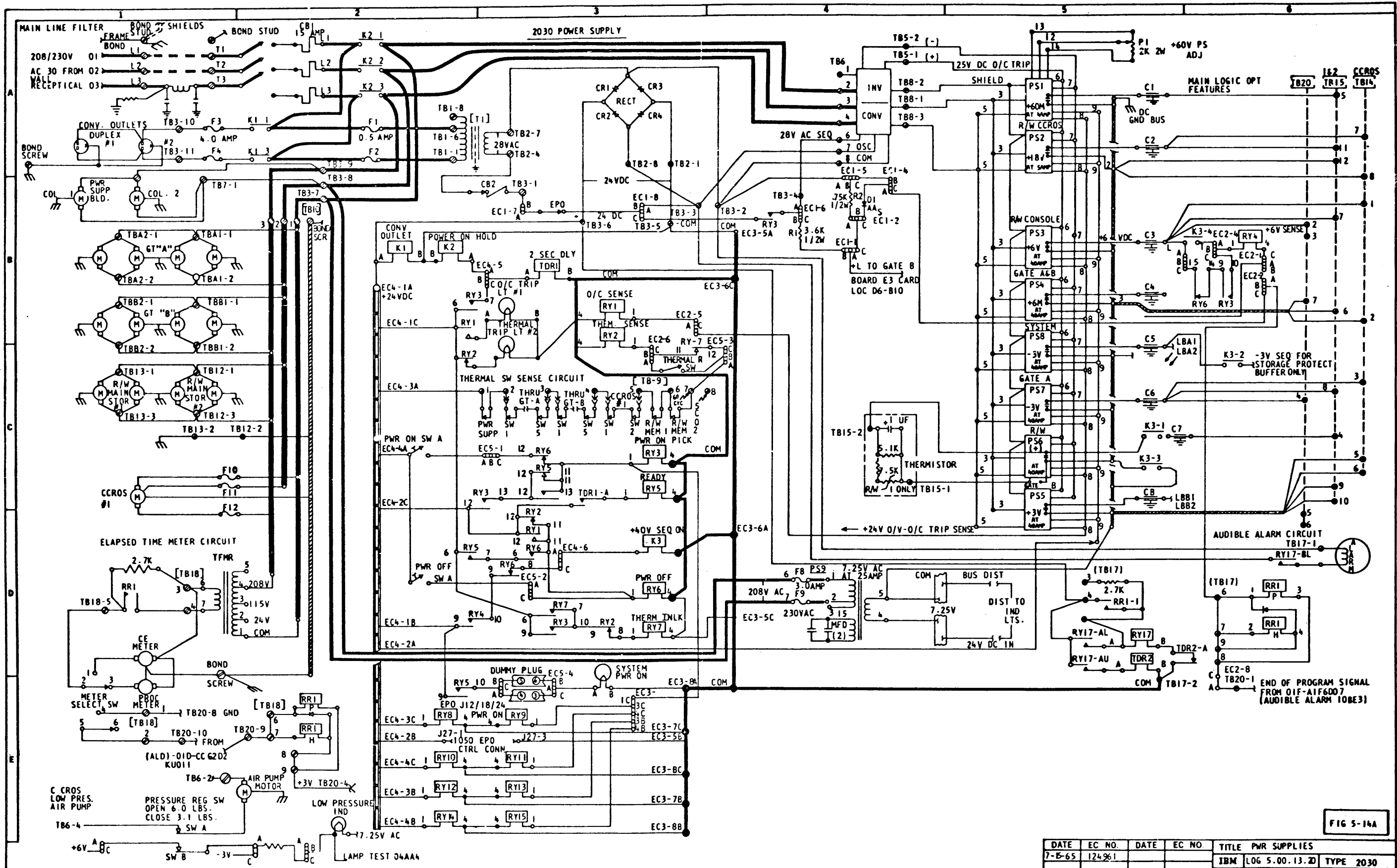


FIG 5-14A

| DATE | EC NO. | DATE | EC NO. | TITLE |
|--------|--------|------|--------|------------------------------|
| 7-5-65 | 124961 | | | PWR SUPPLIES |
| | | | | IBM LOG 5.00.13.20 TYPE 2030 |
| | | | | PART NO. 826034 PAGE 2 OF 2 |

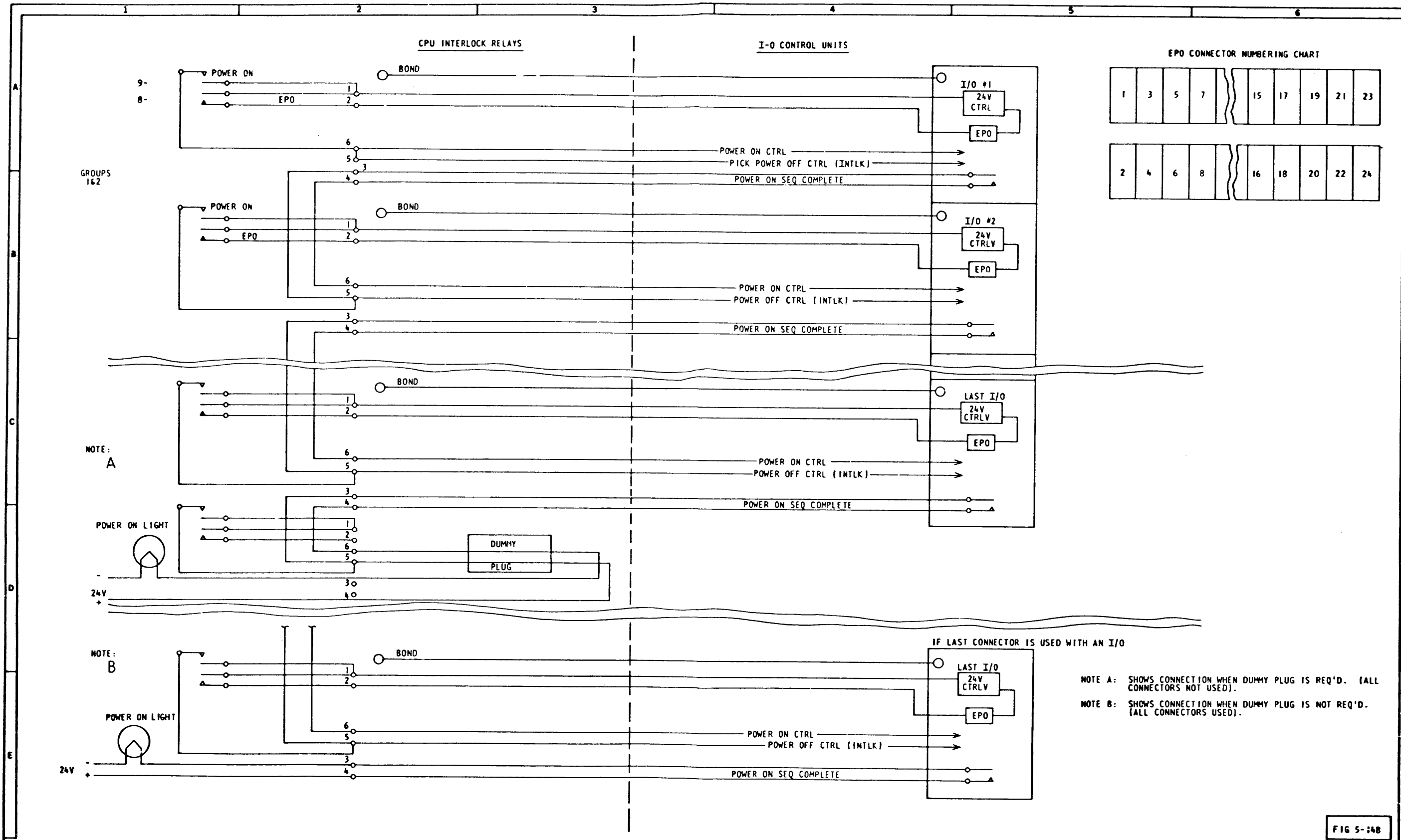


FIG 5-14B

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | TYPICAL EPO, POWER CONTROL |
| | | | | IBM LOG 5.00.14.10 TYPE 2030 |
| | | | | PART NO. 826035 PAGE 1 OF 2 |

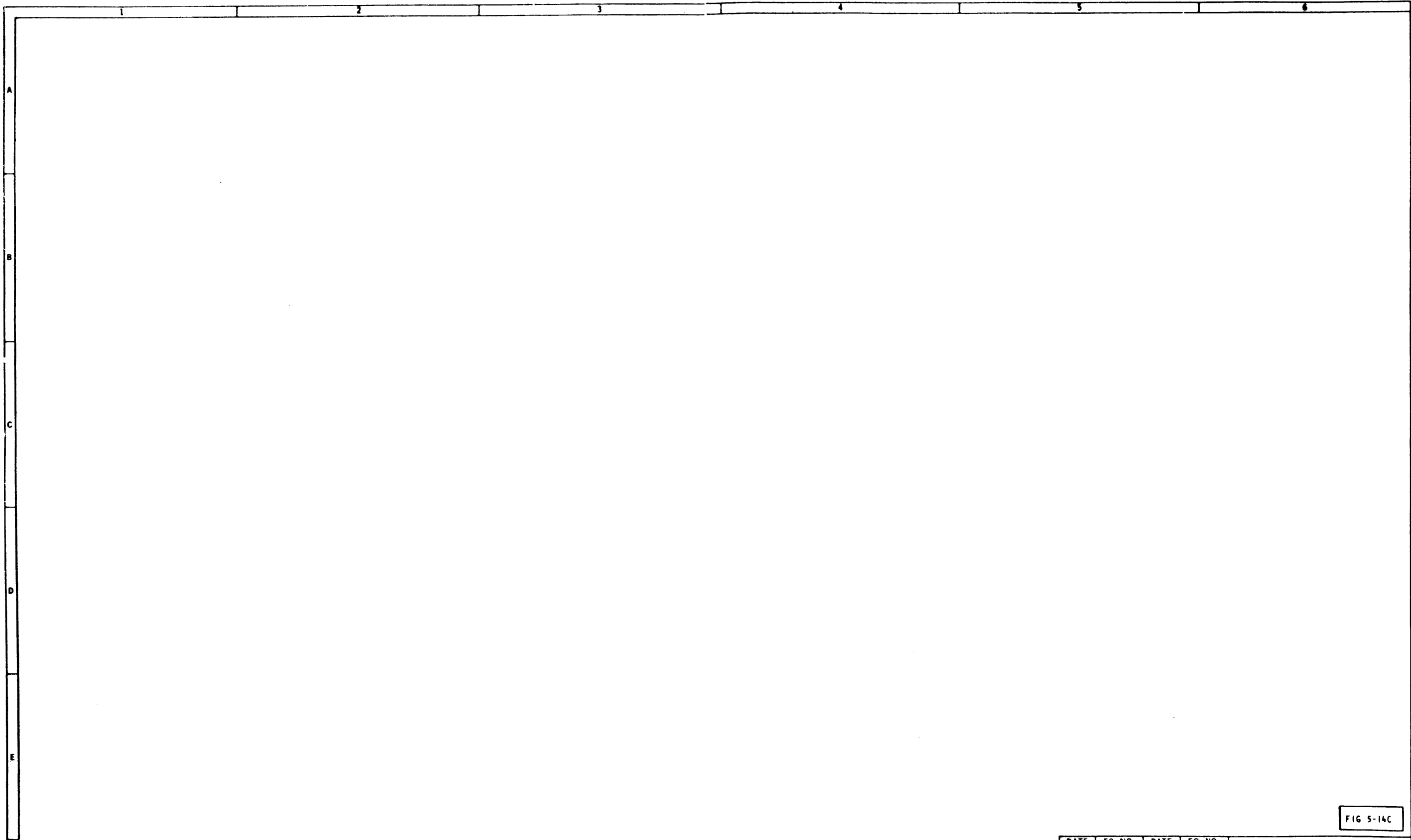
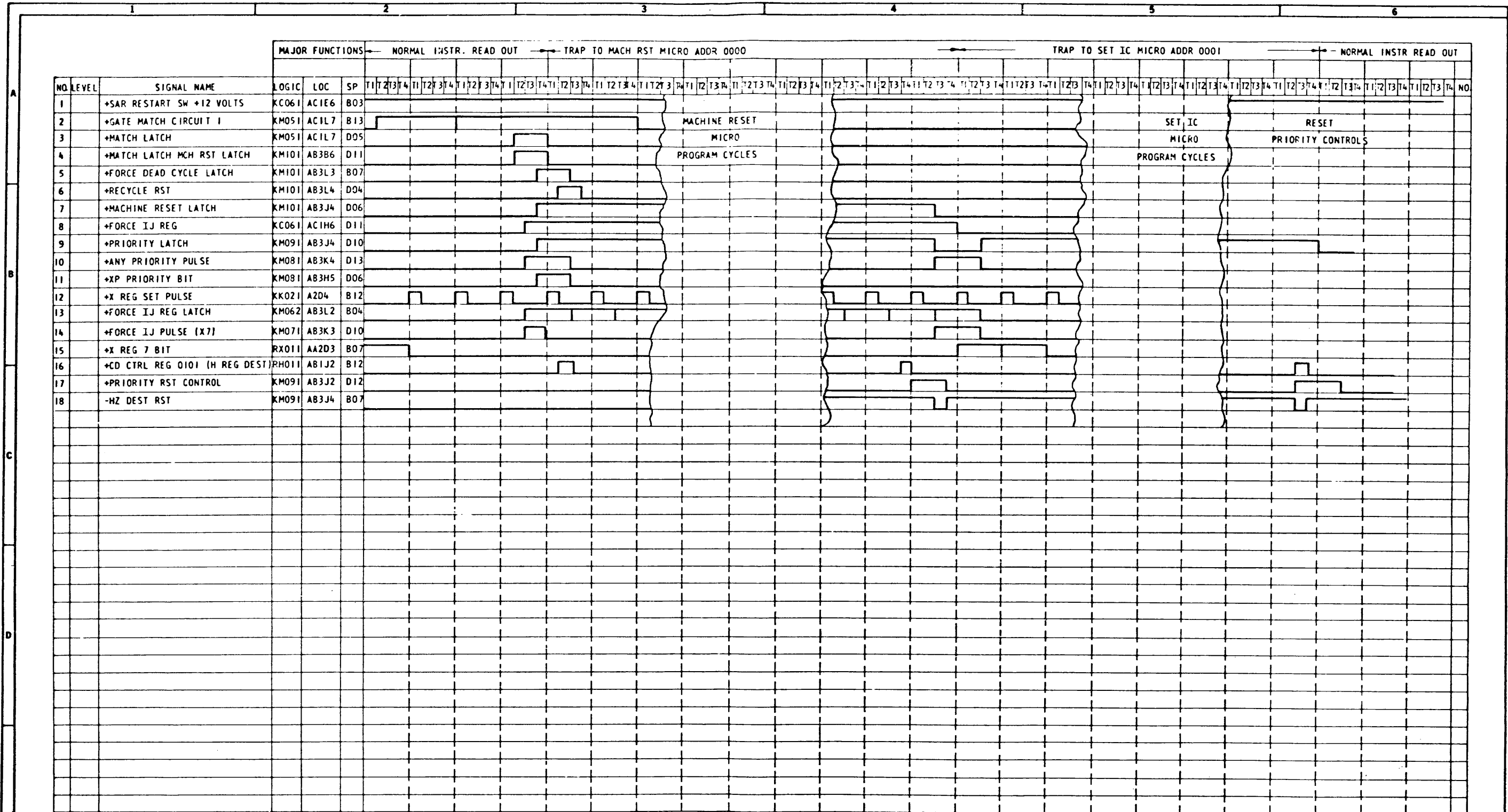


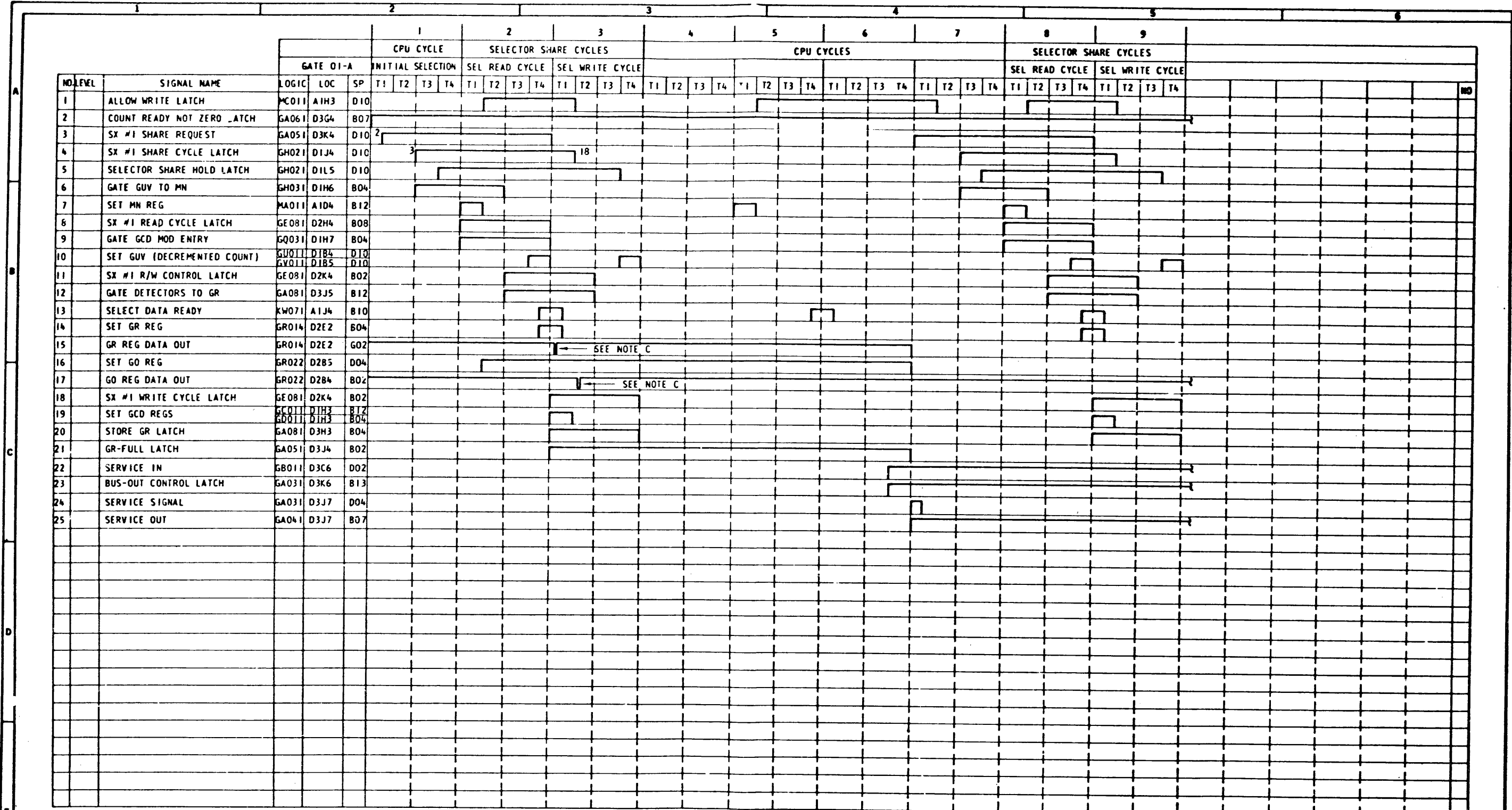
FIG 5-14C

| DATE | EC NO. | DATE | EC NO. | TITLE RESERVED |
|---------|--------|------|--------|------------------------------|
| 7-15-65 | 124961 | | | IBM LOG 5.00.14.10 TYPE 2030 |
| | | | | PART NO. 826035 PAGE 2 OF 2 |

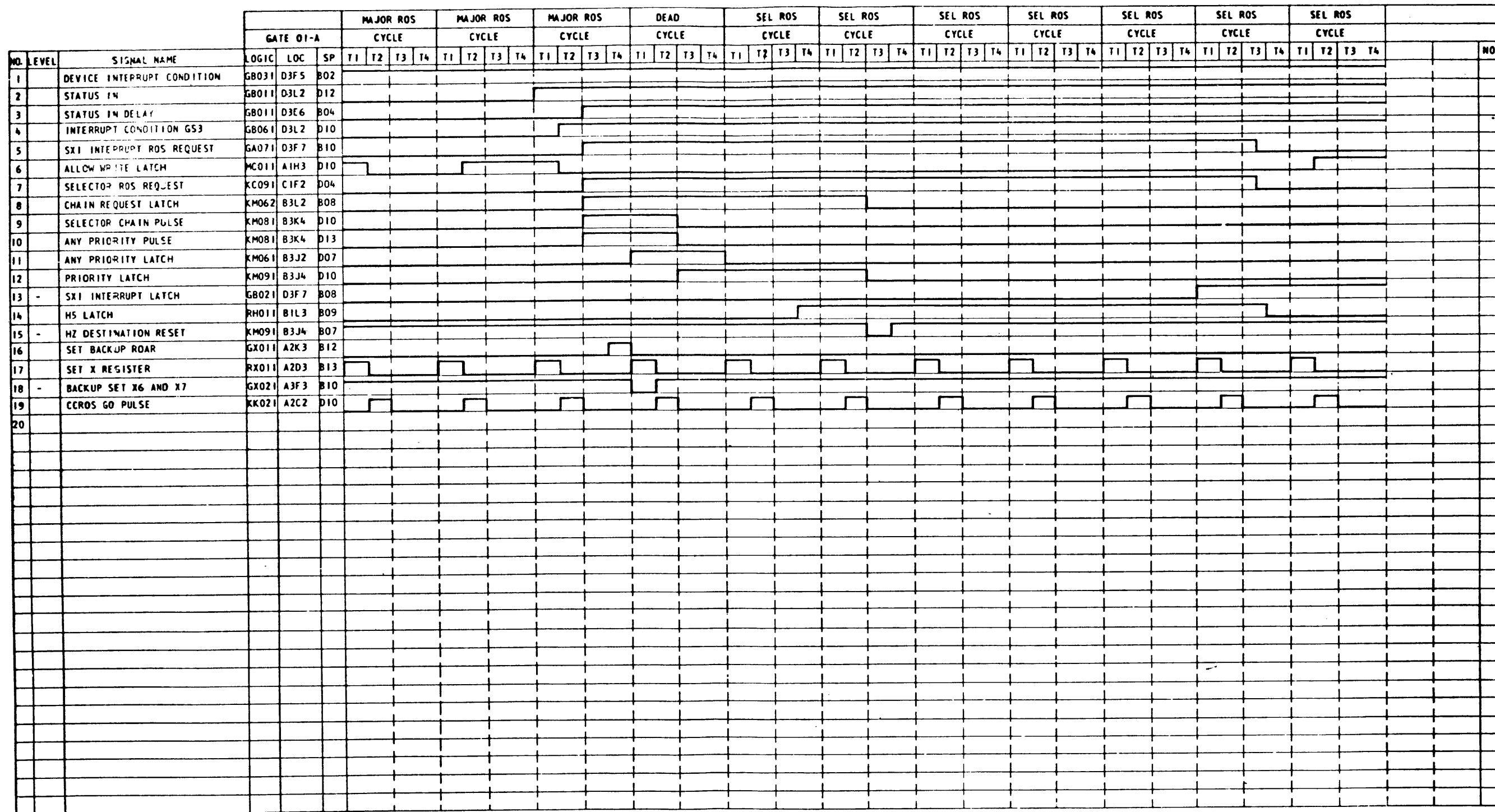


METHOD OF CHART DEVELOPMENT:
 1. LOAD ADDRESS 0400, 0401 AND 0402 WITH 07 (HEX)
 2. SET COMPARE SWITCHES TO 0401
 3. SET INSTRUCTION ADDRESS SWITCHES TO 0400
 4. SET ADDRESS COMPARE SWITCH TO SAR RESTART
 5. SYNC ON +GATE MATCH CIRCUIT 1 A-CIL7 PIN B13

| DATE | EC NO. | DATE | EC NO. | TITLE | SAR RESTART |
|---------|--------|------|--------|--------------------|-------------|
| 7-15-65 | 124961 | | | IBM LOG 7.00.02.00 | TYPE 2030 |
| | | | | PART NO. 826038 | PAGE 1 OF 1 |



NOTES
A. SYNC POINT USED-01-A-D3-F5-D06
B. SYSTEM OPERATION USED FOR TIME CHART-
1. THREE CARD HEX LOADER
2. I/O EXERCISER
3. 1443 PRINTER (ONLY PARITY BIT PRINTING BLANK)
C. THESE SPIKES ON SCOPE TRACE DUE TO PH LATCHES
D. USING SELECTOR CHANNEL #1



NOTES:
1. SYNC POINT-01-A-C1-F2-D04 (SELECTOR ROS REQUEST) DELAYED SWEEP 50 MICRO SEC., TIME/DIV .5 MICRO SEC.
2. TIMING CHART DEVELOPED USING FOLLOWING:
A. SELECTOR CHANNEL #1, ANY I/O
B. THREE CARD HEX LOADER
C. I/O EXERCISER
1. CARD (ADDRESS 1000), 1 CCW WITH SENSE COMMAND AND 1 BYTE IN COUNT FIELD (SLI BIT ON)
2. CARD (ADDRESS 0500) CHANGE TO 1 CCW IN COUNT FIELD
3. CARD (ADDRESS 0508) CHANGE DATA FIELDS TO SHOW TAPE UNIT (USED FOR THIS CHART) AND SEL. CHAN. ADDRESS.

| DATE | EC NO. | DATE | EC NO. | TITLE |
|---------|--------|------|--------|-------------------------------|
| 7-15-65 | 124961 | | | SELECTOR CHAN. INTERRUPT TRAP |
| | | | | IBM LOG 7.00.07.00 TYPE 2030 |
| | | | | PART NO. 826043 PAGE 1 OF 1 |

| LATCH AND TRIGGER INDEX | | | LATCH AND TRIGGER INDEX | | | LATCH AND TRIGGER INDEX | | | LATCH AND TRIGGER INDEX | | |
|-------------------------|----------|----------|-------------------------|----------|----------|-------------------------|----------|----------|-------------------------|----------|----------|
| LATCH NAME | FMD PAGE | ALD PAGE | LATCH NAME | FMD PAGE | ALD PAGE | LATCH NAME | FMD PAGE | ALD PAGE | LATCH NAME | FMD PAGE | ALD PAGE |
| IAOI MODE | 5-05A05 | D1031 | DIAG MODE SX2 | 5-13DE1 | H0024 | NOT CARRY | 5-05AC6 | AL041 | SHARE CYCLE SX2 | 5-14DB2 | HH021 |
| SP DETECTED | 5-06CE6 | MEO22 | DIAG TAG CTRL SX1 | 5-110D1 | G0024 | NOT OPER 1050 | 5-13CE5 | PF161 | SHIFT 1050 | 5-10CC5 | PF171 |
| ADDR-0 SX1 | 5-11DB5 | GA041 | DIAG TAG SX2 | 5-13DE2 | H0024 | NOT S3 | 5-05BA5 | AL041 | STACK RD/WR CTRL | 5-04DA5 | KW041 |
| ADDR-0 SX2 | 5-13DB5 | HAC41 | E CY STOP SAMPLE | 5-03CA3 | KT011 | ODD EVEN | 5-05BD6 | OK041 | START KEY INLK | 5-03CA2 | KC051 |
| ADDR OUT 1 MPX | 5-03DA5 | FA011 | END OF E CYCLE | 5-03CC3 | KC081 | OP IN 1050 | 5-12BB5 | PF082 | START RST | 5-03CA3 | KC051 |
| ADDR OUT 2 MPX | 5-03DA6 | FA011 | EXT INTRP MASK | 5-08CD3 | FA111 | OP OUT CTRL | 5-03CE2 | FA051 | START SEL OUT MPX | 5-08DC5 | FA121 |
| ALLOW A REG CHK | 5-07AA4 | KF021 | EXIT SHR REQ 1050 | 5-10BB5 | PF081 | POLL CTRL SX1 | 5-11DC2 | GA031 | STORE GR SX1 | 5-12DD6 | GA081 |
| ALLOW PC SALS | 5-07AB3 | KF041 | EXTERNAL INTRP | 5-04CB5 | RF041 | POLL CTRL SX2 | 5-13DC2 | HA031 | STORE HR SX2 | 5-14DE2 | HA081 |
| ALLOW STROBE 1050 | 5-10CB6 | PF171 | FORCE DEAD CYCLE | 5-04AC2 | KH101 | POWER OFF | 5-03CB4 | KT031 | STORE R | 5-03DE5 | DM031 |
| ALL CHECK | 5-06BE6 | DK011 | FORCE IJ REQ | 5-03CD3 | KC061 | PREFIX 1050 | 5-09CC3 | PF191 | STG PROT REQ | 5-03AD1 | KW071 |
| ALLOW WRITE | 5-03DC4 | MC011 | FT I HOLD IN | 5-07CE5 | JA021 | PREP TO SHR 1050 | 5-12BD6 | PF081 | SUPPR CTRL | 5-08CD2 | FA051 |
| ANY PRIORITY | 5-03AB2 | KM061 | GATE TIMING | 5-07CE5 | JA021 | PRIORITY | 5-03AA3 | KM091 | SUPPR MALF CHK | 5-03AA3 | KM091 |
| ATTN 1050 | 5-10BE5 | PF071 | GMM DETECTED | 5-06CE4 | MB031 | PRIORITY RST CTRL | 5-03AC2 | KM091 | SUPPR-0 SX1 | 5-11DD5 | GA011 |
| ATTN INTLK 1050 | 5-10BE5 | PF071 | GR FULL SX1 | 5-12CC2 | GA051 | PROCEED 1050 | 5-12BB2 | PF041 | SUPPR-0 SX2 | 5-13DD5 | HA011 |
| ASCII | 5-02AC5 | DI-031 | HALT I-0 SX1 | 5-11DA3 | GA031 | PROCESS STOP | 5-03CD2 | KC081 | SUPR A REG CHK | 5-07AB3 | KR011 |
| BLOCK SHIFT 1050 | 5-09CC3 | PF191 | HALT I-0 SX2 | 5-13DA3 | HA031 | PROTECT MEM | 5-06CE1 | KR071 | SWITCHES TO WX | 5-04AE5 | KL011 |
| BUS OUT CTRL MPX | 5-03DC4 | FA021 | HARD STOP | 2-03CD5 | KR061 | PRT IN UC 1050 | 5-09CD5 | PF201 | SX BUFF RESTORE | 5-02AC4 | BX021 |
| BUS-0 CTRL SX1 | 5-11DE4 | GA031 | HOME RDR STT 1050 | 5-10BR2 | PF041 | R-W CTRL SX1 | 5-12DD4 | GE081 | SX RESTORE | 5-02AC4 | GX021 |
| BUS-0 CTRL SX2 | 5-13DE4 | HA031 | HR FULL SX2 | 5-14DC5 | HA051 | R-W CTRL SX2 | 5-14DC2 | HE081 | SX X6 BUFF | 5-02AC5 | GX021 |
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