

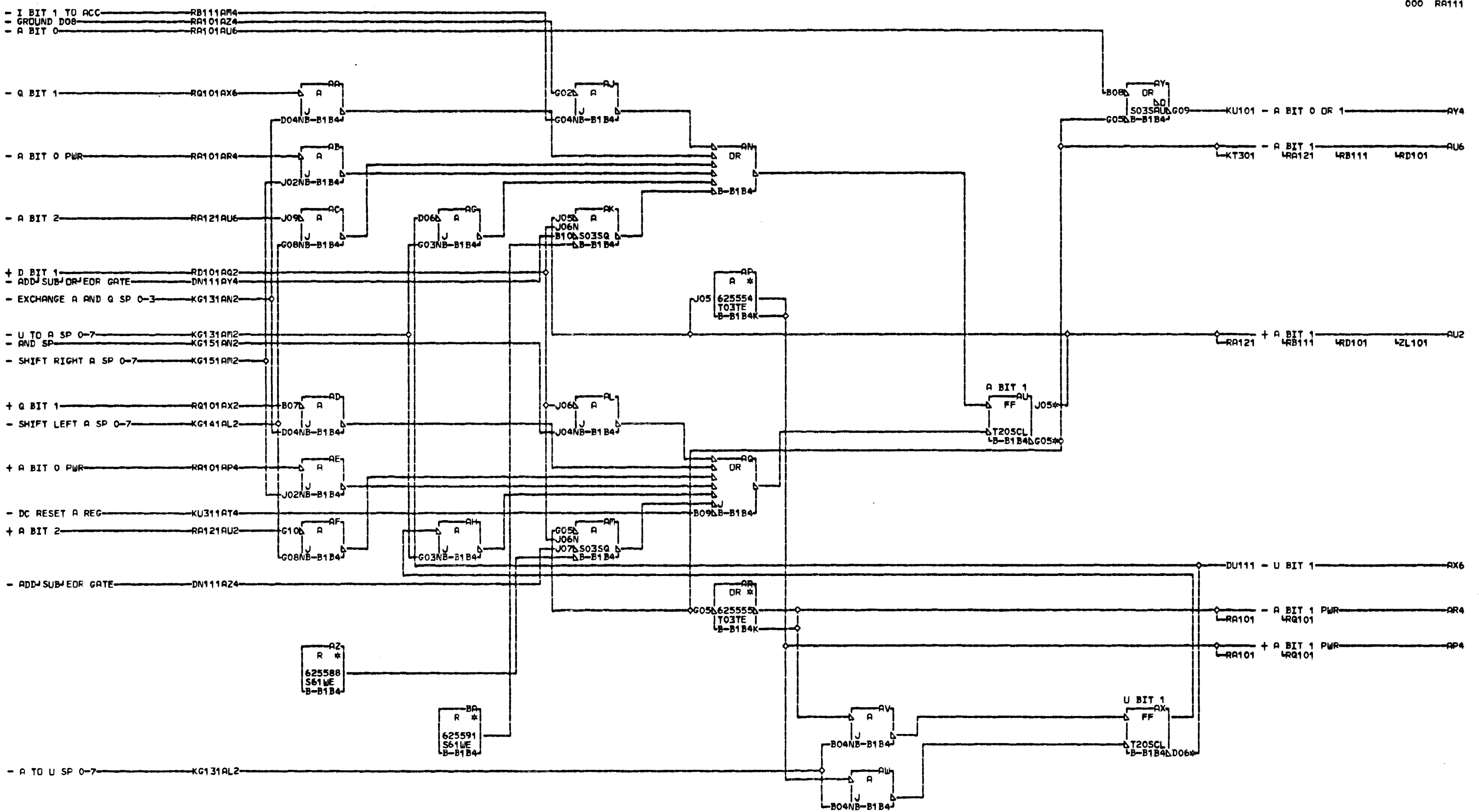
RA101

- AU2 B-B1M2B10
- 01B-B1A5B06
- 01B-A1N5B06
- AX6 B-A1N5B10
- 01B-B1A5B10
- 01A-C1N3B02
- 01B-B1B8A04
- 01B-B1ABE06
- 01A-C1N3D03

LOC. TYPE B-B1B4 6255

| A AND U REGISTERS |             |
|-------------------|-------------|
| BIT 0             |             |
| -E-C-HISTORY      | MACH-1131-C |
| DATE              | LAST EC     |
| 02-09-71          | 571150      |
| FRAME             | 01          |
| IBM CORP. GPD     |             |
| P.N.              | 5889255     |

RA101



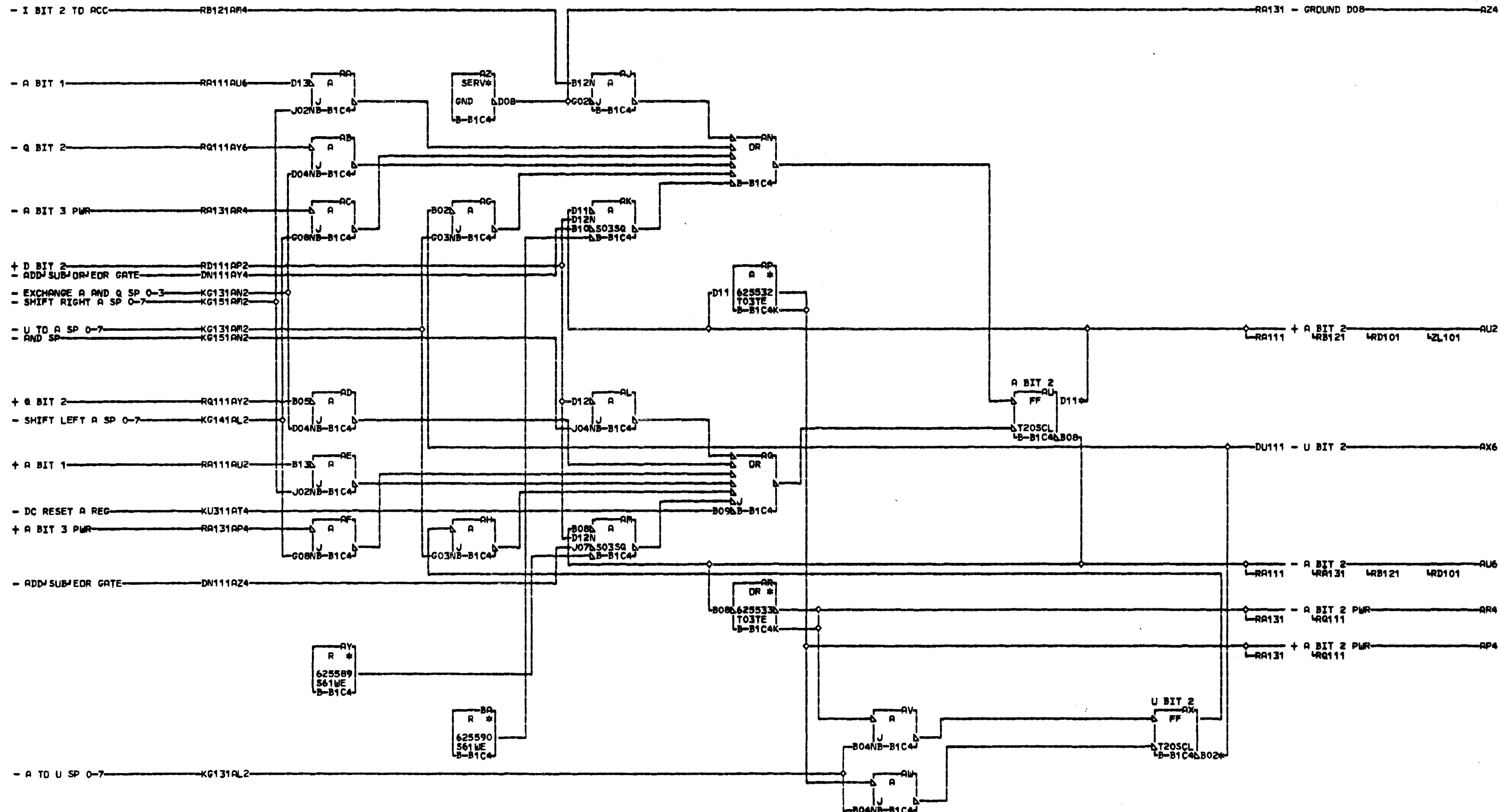
AU2 B-B1M2D11  
 AU6 B-B1A5D07  
 O1B-A1N5D07  
 AX6 B-B1A8E04  
 O1A-C1N3D02

LOC. TYPE  
 B-B1B4 6255

| A AND U REGISTER |         | BIT 1         |    |
|------------------|---------|---------------|----|
| E.C. HISTORY     | FRAME   | MACH-1131-C   | 01 |
| DATE             | LAST EC | IBM CORP. GSD |    |
| 02-09-71         | 571150  | P.No. 5889256 |    |

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AU2 B-B1M2B12  
 AX6 B-B1B8A06  
 01A-C1N3B03

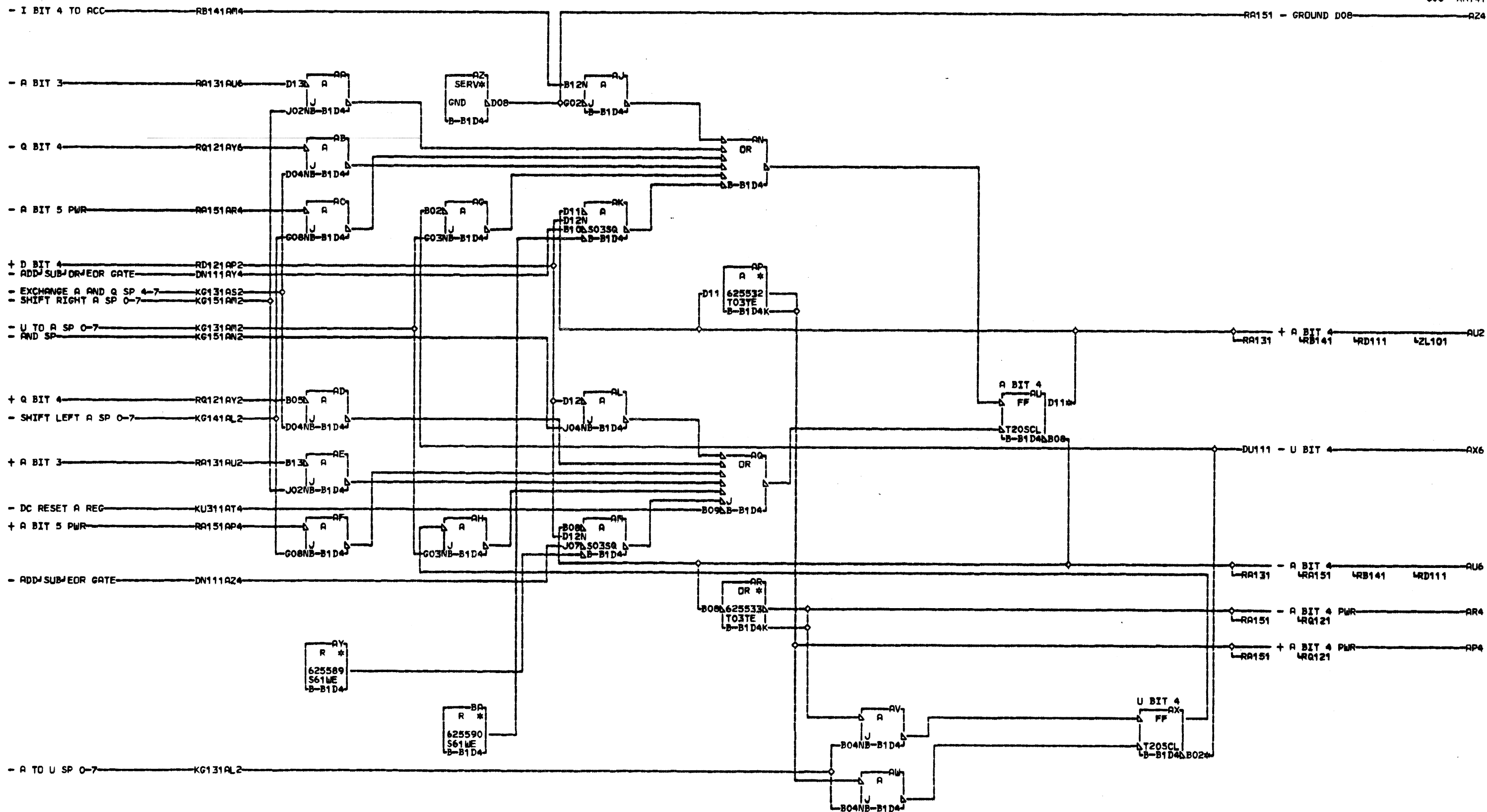
LOC. TYPE  
 B-B1C4 6255

|                   |             |               |    |
|-------------------|-------------|---------------|----|
| A AND U REGISTERS |             | BIT 2         |    |
| E-C-HISTORY       | MACH-1131-C | FRAME         | 01 |
| DATE              | LAST EC     | IBM CORP. GSD |    |
| 02-09-71          | 571150      | PaNo 5889257  |    |

RA121  
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RA121  
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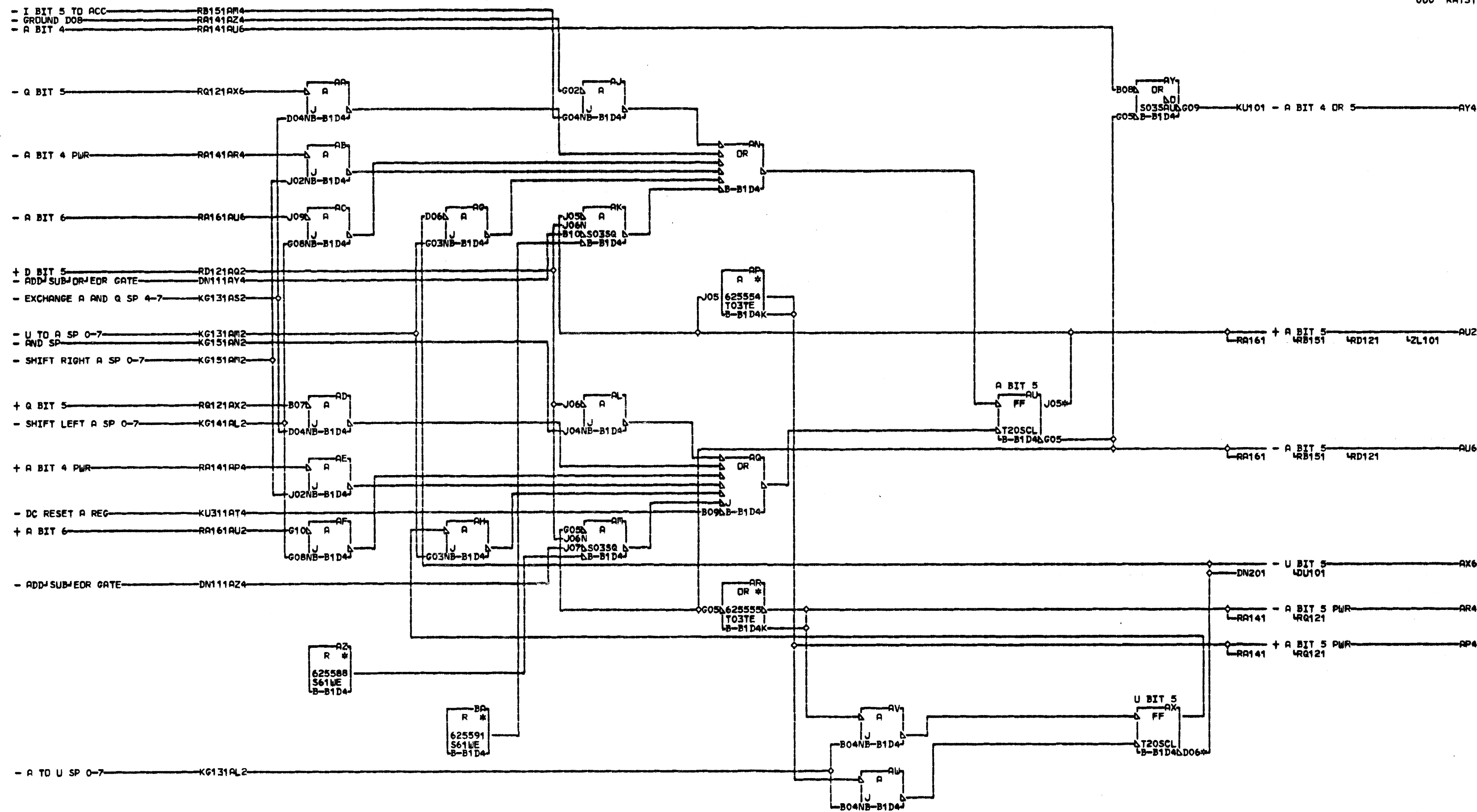
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AU2 B-B1N2B10  
AX6 B-B1B8B06  
01A-C1N3B04

LDC. TYPE  
B-B1D4 6255

| A AND U REGISTERS |             |
|-------------------|-------------|
| BIT 4             |             |
| -E-C-HISTORY      | MACH-1131-C |
| DATE              | LAST EC     |
| 02-09-71          | 571150      |
| FRAME             | 01          |
| IBM CORP. GPD     |             |
| PeNo              | 5889259     |

R  
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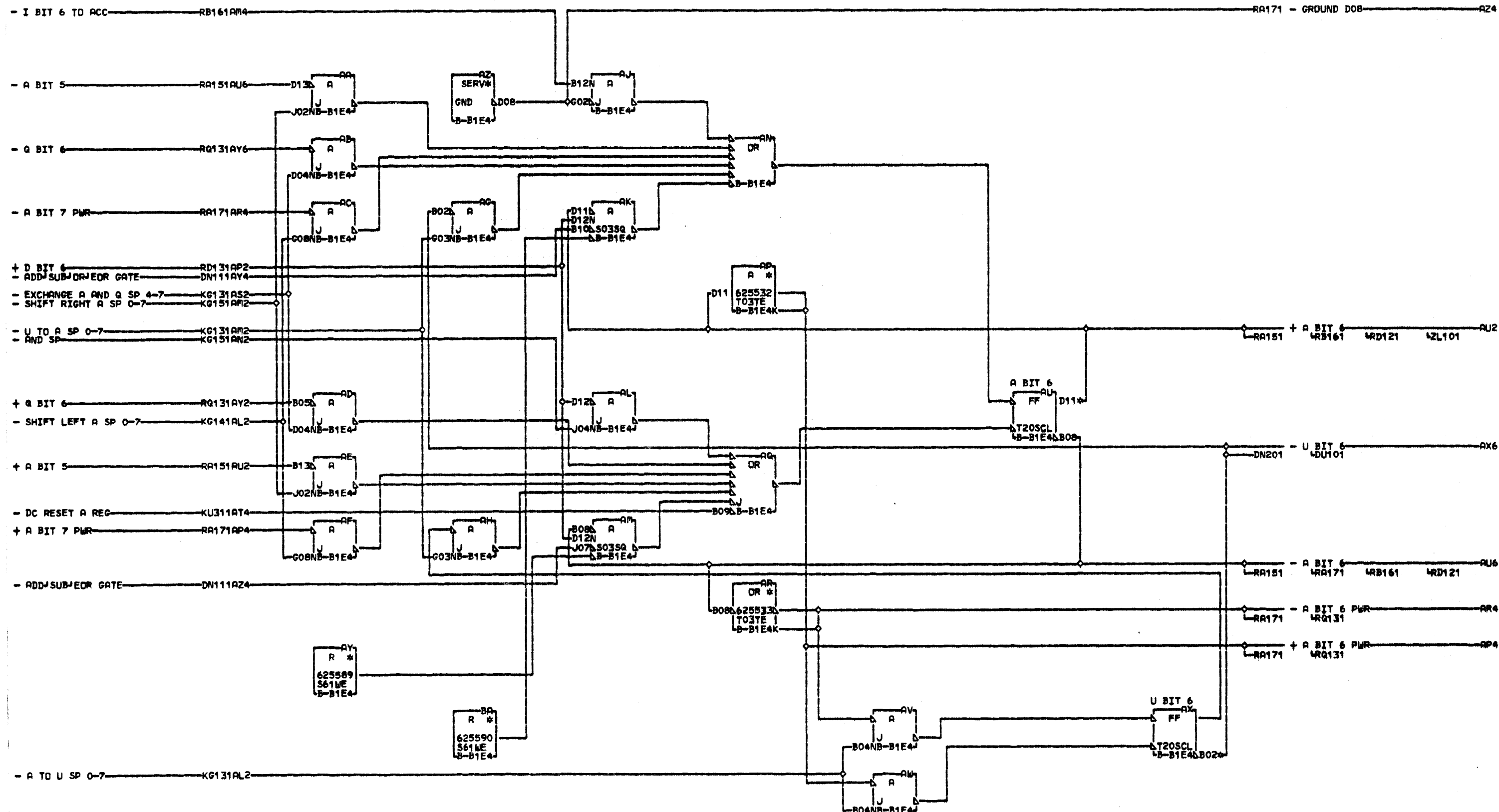
RA151  
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AU2 B-B1N2D11  
 AX6 B-A1N5B13  
 01B-B1A5B13  
 01B-B1B8C04  
 01A-C1N3D05

LOC. TYPE  
 B-B1D4 6255

| A AND U REGISTER BIT 5 |               |
|------------------------|---------------|
| E.C. HISTORY           | MACH. 1131-C  |
| DATE LAST EC           | FRAME 01      |
| 02-09-71 571150        | IBM CORP. GPD |
|                        | P.No. 5889260 |

RA151  
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AU2 B-B1N2B12  
 AX6 B-B1B8C06  
 O1A-C1N3B05

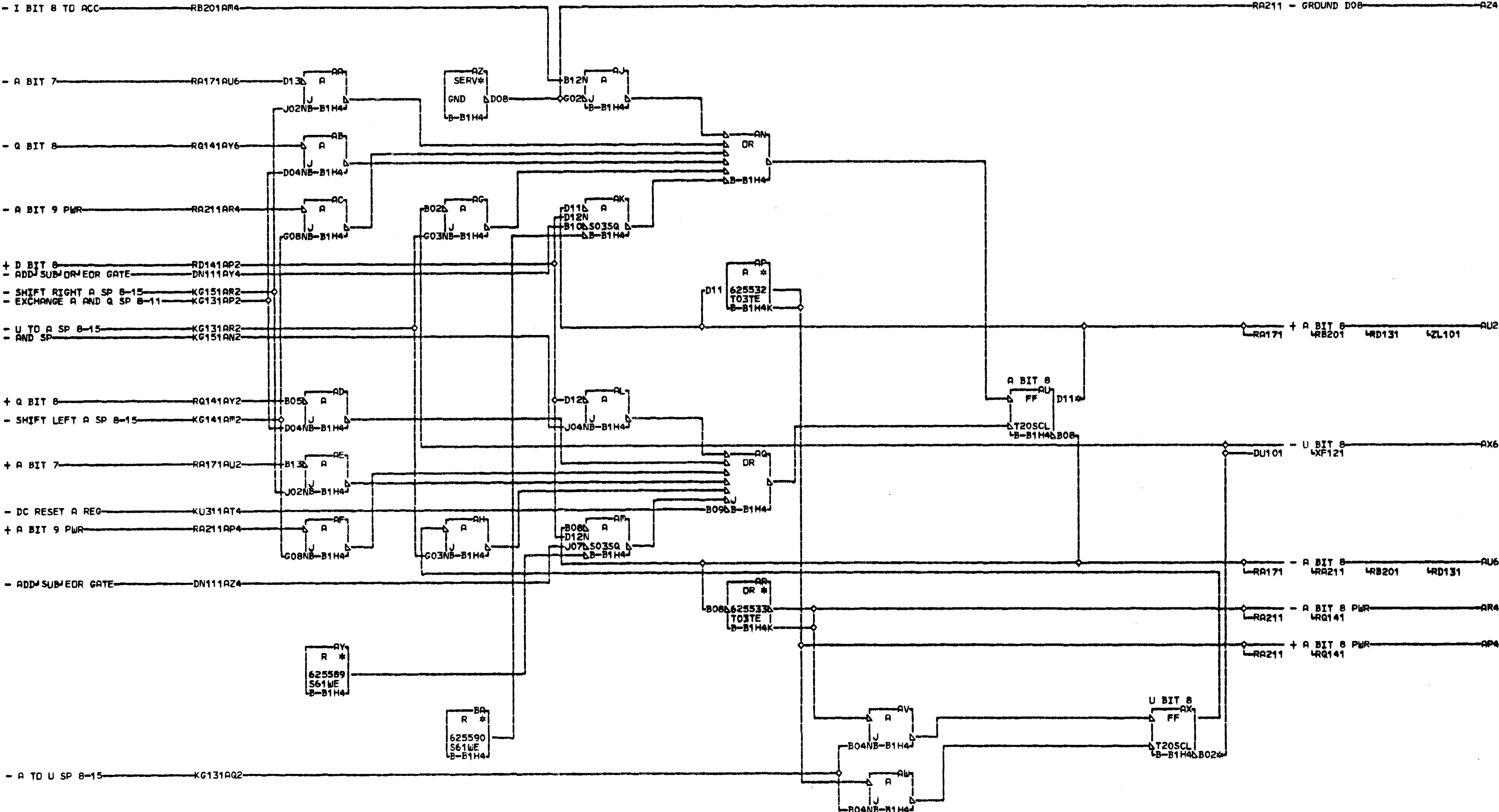
LOC. TYPE  
 B-B1E4 6255

| A AND U REGISTERS |                | R<br>A<br>1<br>6<br>1 |
|-------------------|----------------|-----------------------|
| BIT 6             |                |                       |
| E-C-HISTORY       | MACH-1131-C    | 000                   |
| FRAME             | 01             |                       |
| DATE              | IBM CORP. GPD  |                       |
| 02-09-71          | LAST EC 571150 |                       |
|                   | P.No. 5889261  |                       |

1-6-DR  
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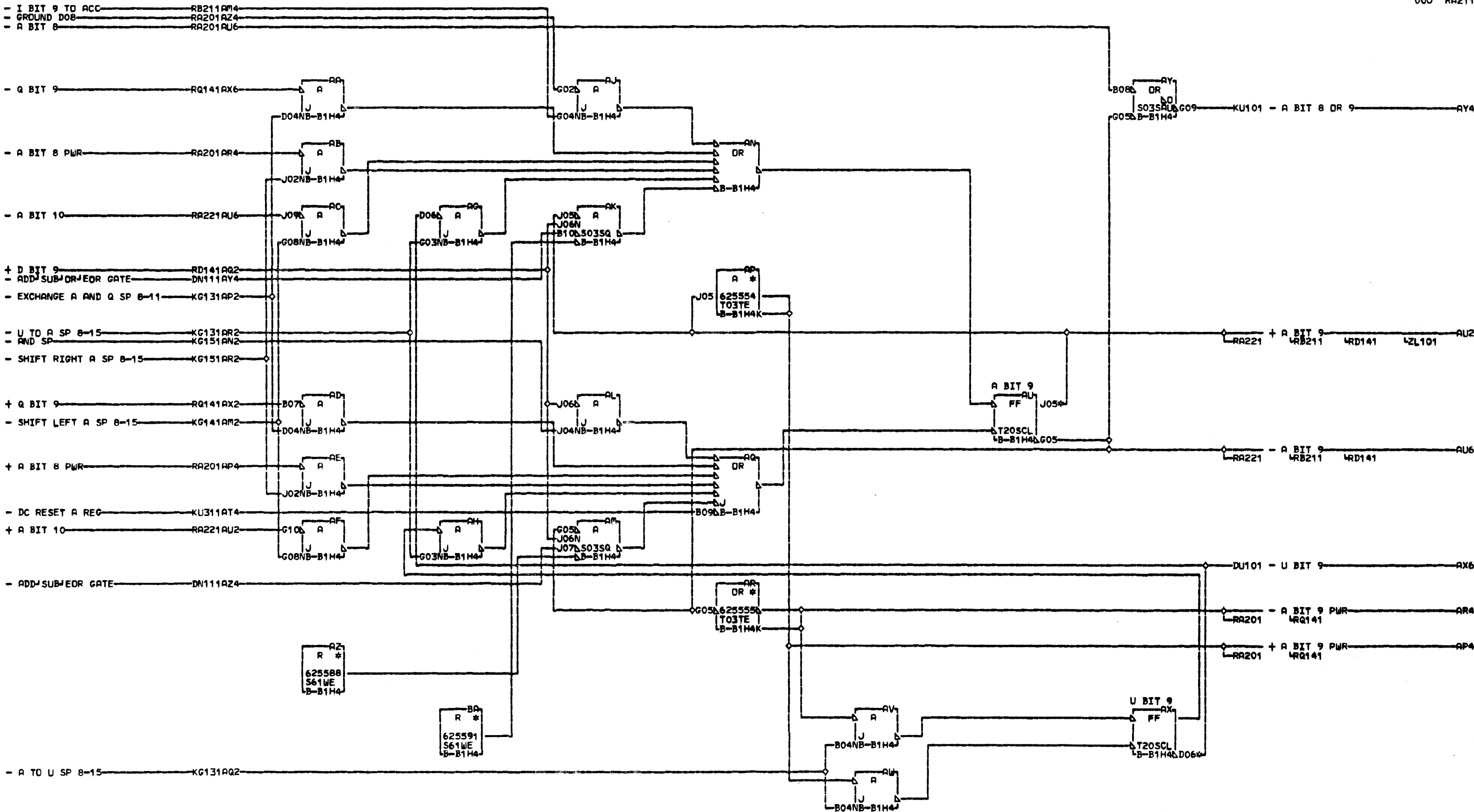
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AU2 B-B1M3B12  
AX6 B-B1B8E06  
01A-C1N3B07

LOC. TYPE  
B-B1H4 6255

|                   |               |
|-------------------|---------------|
| A AND U REGISTERS |               |
| BIT 8             |               |
| -E.C.-HISTORY     | MACH-1131-C   |
| DATE              | FRAME 01      |
| LAST EC           | IBM CORP. GPD |
| 02-09-71 571150   | P.N. 5889263  |

RA201  
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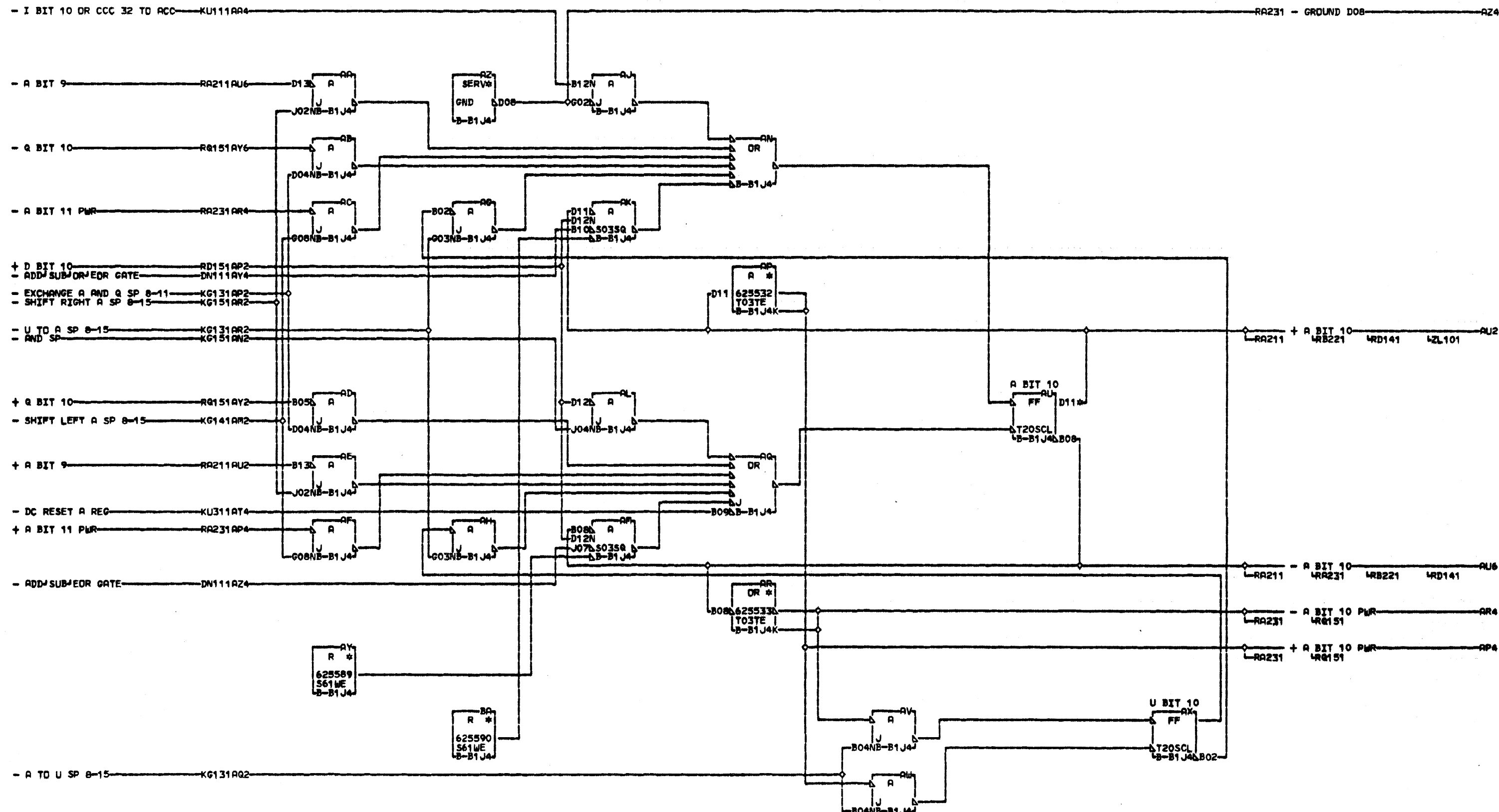
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 AX6 B-B1B8E04  
 01A-C1N3D07

LOC. TYPE  
 B-B1H4 6255

|                           |                |
|---------------------------|----------------|
| A AND U REGISTER<br>BIT 9 |                |
| -E.C.-HISTORY-            | MACH-1131-C    |
|                           | FRAME 01       |
|                           | IBM CORP. GPD  |
| DATE 02-09-71             | LAST EC 571150 |
|                           | PaN. 5889264   |

RA211  
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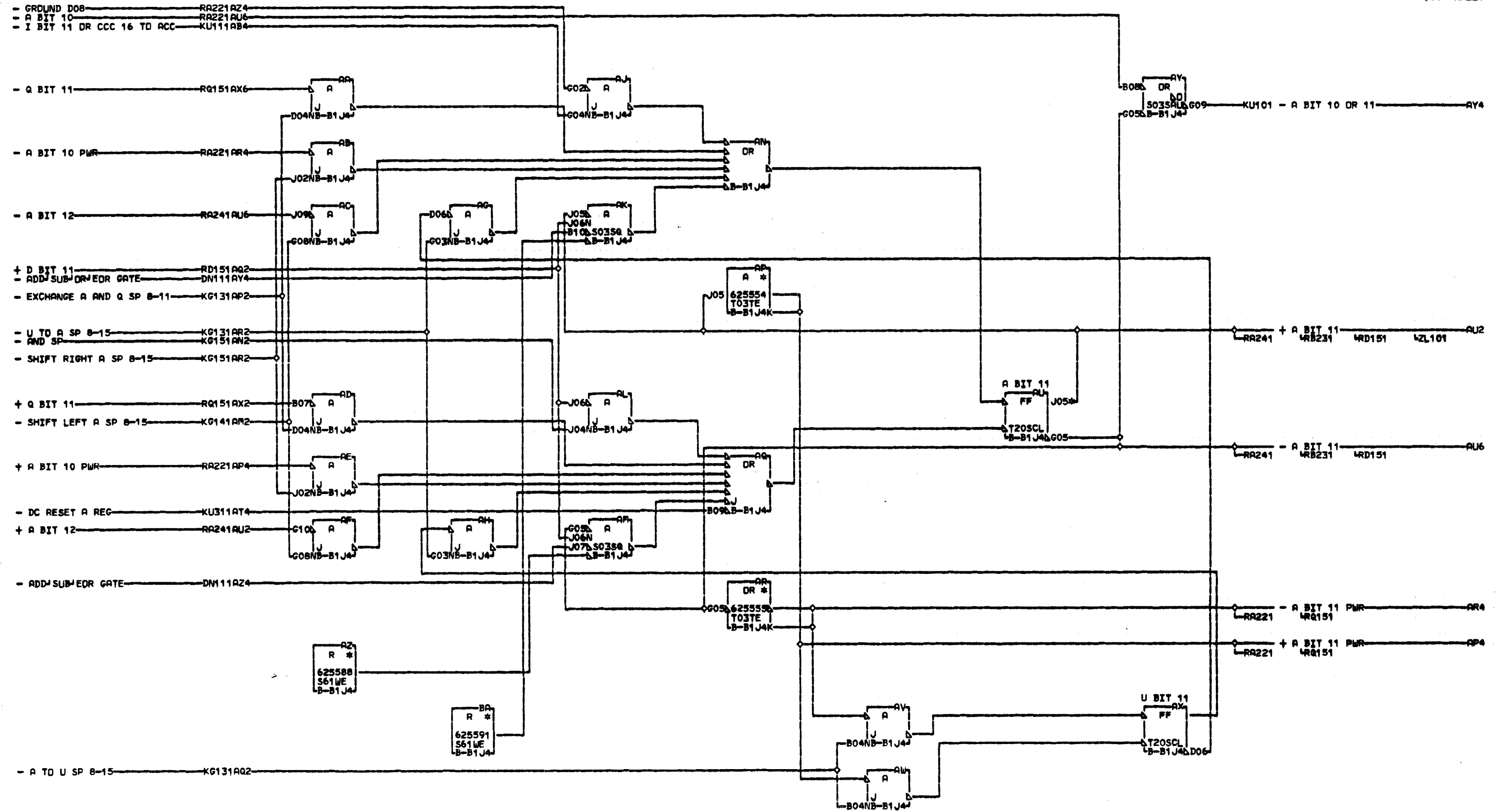
AU2 B-B1M3B13

LDC TYPE B-B1J4 6255

| A AND U REGISTERS BIT 10 |             |
|--------------------------|-------------|
| -E.C.-HISTORY            | MACH-1131-C |
| DATE                     | LAST EC     |
| 02-09-71                 | 571150      |
| FRAME                    | 01          |
| IBM CORP.                | GSD         |
| PoN                      | 5889265     |

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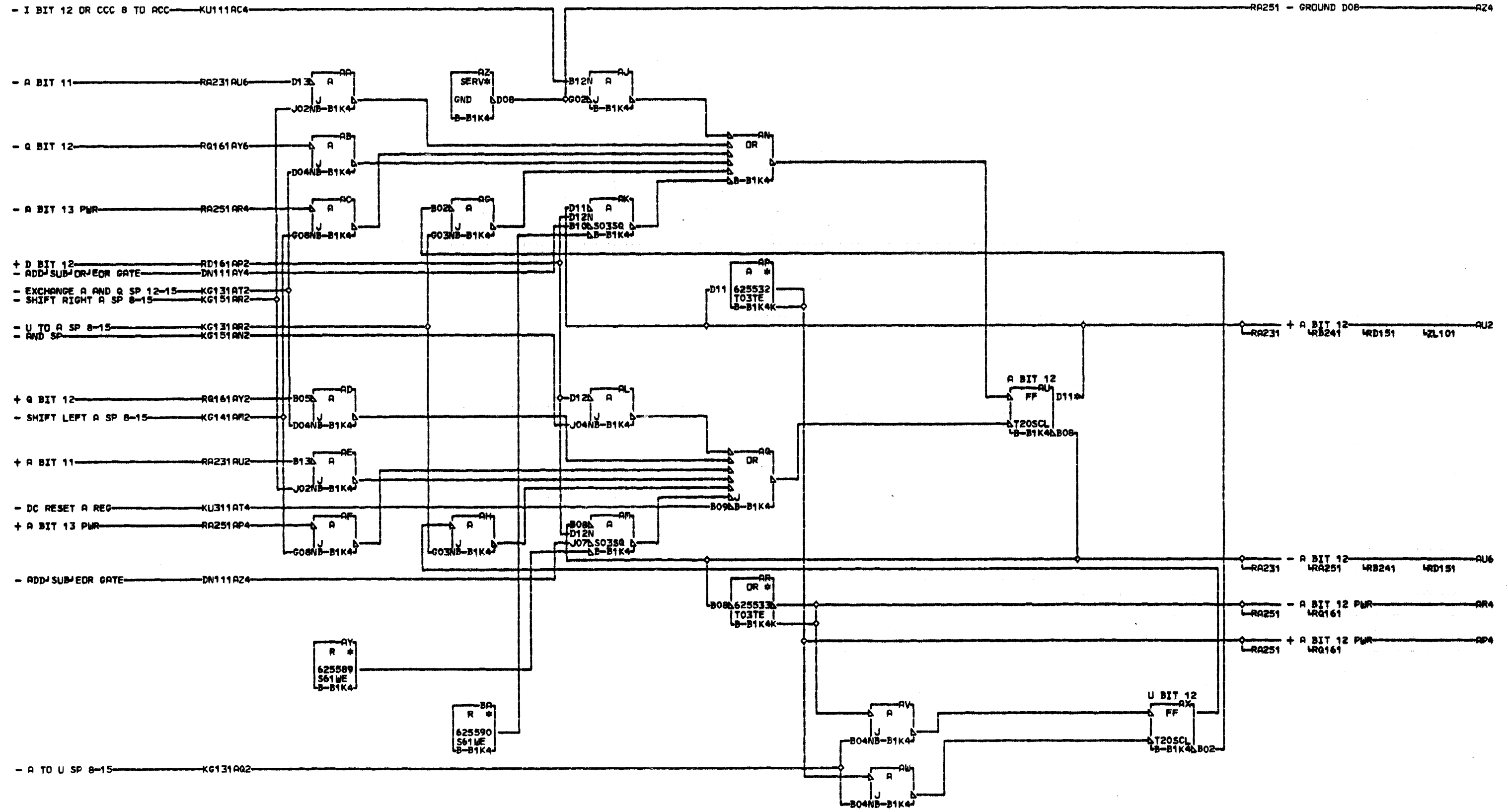
AU2 B-B1M3D13

LOC. TYPE  
B-B1J4 6255

|                            |                |
|----------------------------|----------------|
| A AND U REGISTER<br>BIT 11 |                |
| -E.C.-HISTORY              | FRAMES 1131-C  |
|                            | FRAME 01       |
|                            | IBR CORP. GSD  |
| DATE 02-09-71              | LAST EC 571150 |
|                            | P.N. 5889266   |

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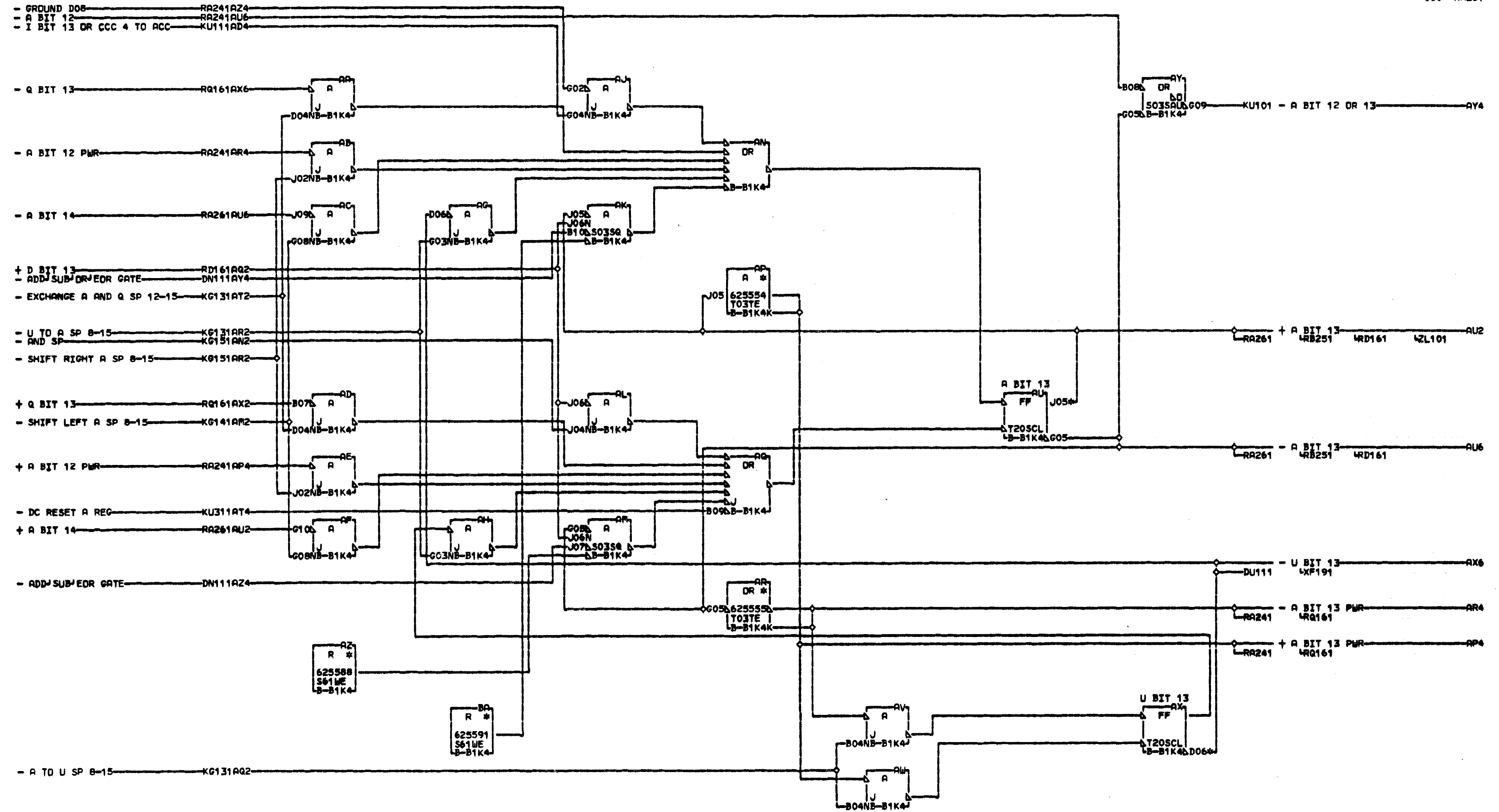
AU2 B-B1N3B12

LOC. TYPE  
B-B1K4 6255

| A AND U REGISTERS |               |
|-------------------|---------------|
| BIT 12            |               |
| -E-C-HISTORY      | FRAME 01      |
| DATE LAST EC      | IBM CORP. GSD |
| 02-09-71 571150   | P.No. 5889267 |

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AU2 B-B1N3D12  
 AX6 B-B1C8C04  
 O1A-C1N3D10

LOC. TYPE  
 B-B1K4 6255

|                  |               |
|------------------|---------------|
| A AND U REGISTER |               |
| BIT 13           |               |
| E-C-HISTORY      | RACH-1131-C   |
| DATE             | FRAME 01      |
| LAST EC          | IBM CORP. GPD |
| 02-09-71 571150  | P.No. 5889268 |

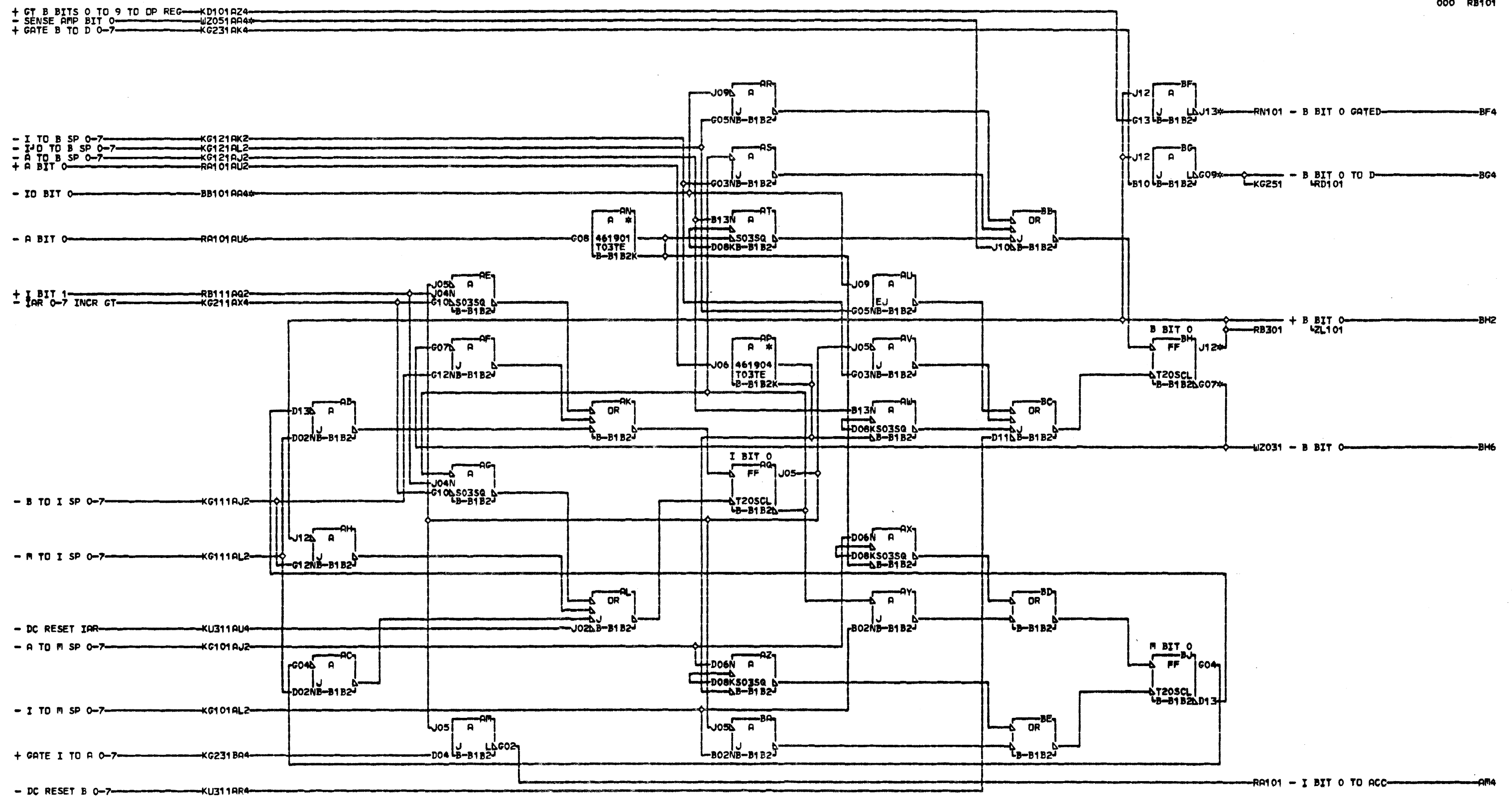
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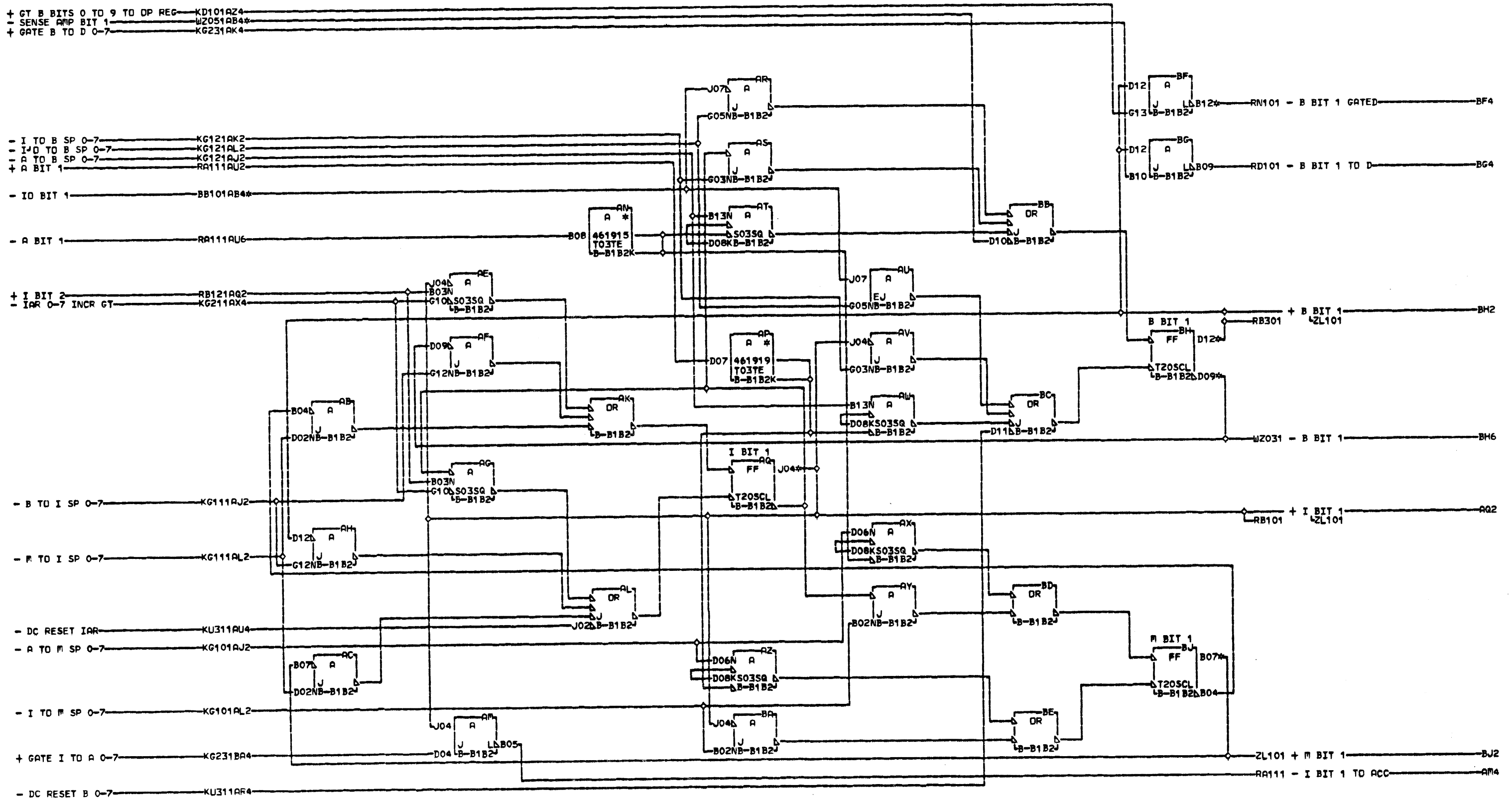


RB101  
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|          |          |           |           |
|----------|----------|-----------|-----------|
| BB101AA4 | RESISTOR | BH2       | B-B1M3B02 |
| WZ051AA4 | RESISTOR | B-B1B2J09 | RESISTOR  |
| BF4      | RESISTOR | B-B1B2J10 | RESISTOR  |
| BG4      | RESISTOR | B-B1A2B09 | RESISTOR  |
|          |          | B-B1A1E09 | RESISTOR  |
|          |          | B-B1A2B09 | RESISTOR  |
|          |          | B-B1A4B03 | RESISTOR  |
|          |          | BH6       | B-B1B1A09 |
|          |          |           | B-B1A1E09 |
|          |          |           | B-B1A1E09 |
|          |          |           | B-B1A1A09 |

LOC. TYPE  
B-B1B2 4619

|                     |             |                              |
|---------------------|-------------|------------------------------|
| I B AND M REGISTERS |             | R<br>B<br>1<br>0<br>1<br>000 |
| BIT 0               |             |                              |
| -E-C-HISTORY        | MACH-1131-C |                              |
| DATE                | LAST EC     | FRAME 01                     |
| 02-09-71            | 571150      | IBM CORP. GSD                |
|                     |             | PeN. 5889271                 |



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BB101AB4 RESISTOR B-B1B2J07  
 WZ051AB4 RESISTOR B-B1B2D12  
 RESISTOR B-B1B2D10  
 AQ2 B-B1N4D13  
 BF4 B-B1A2B10  
 01B-A1N2B10

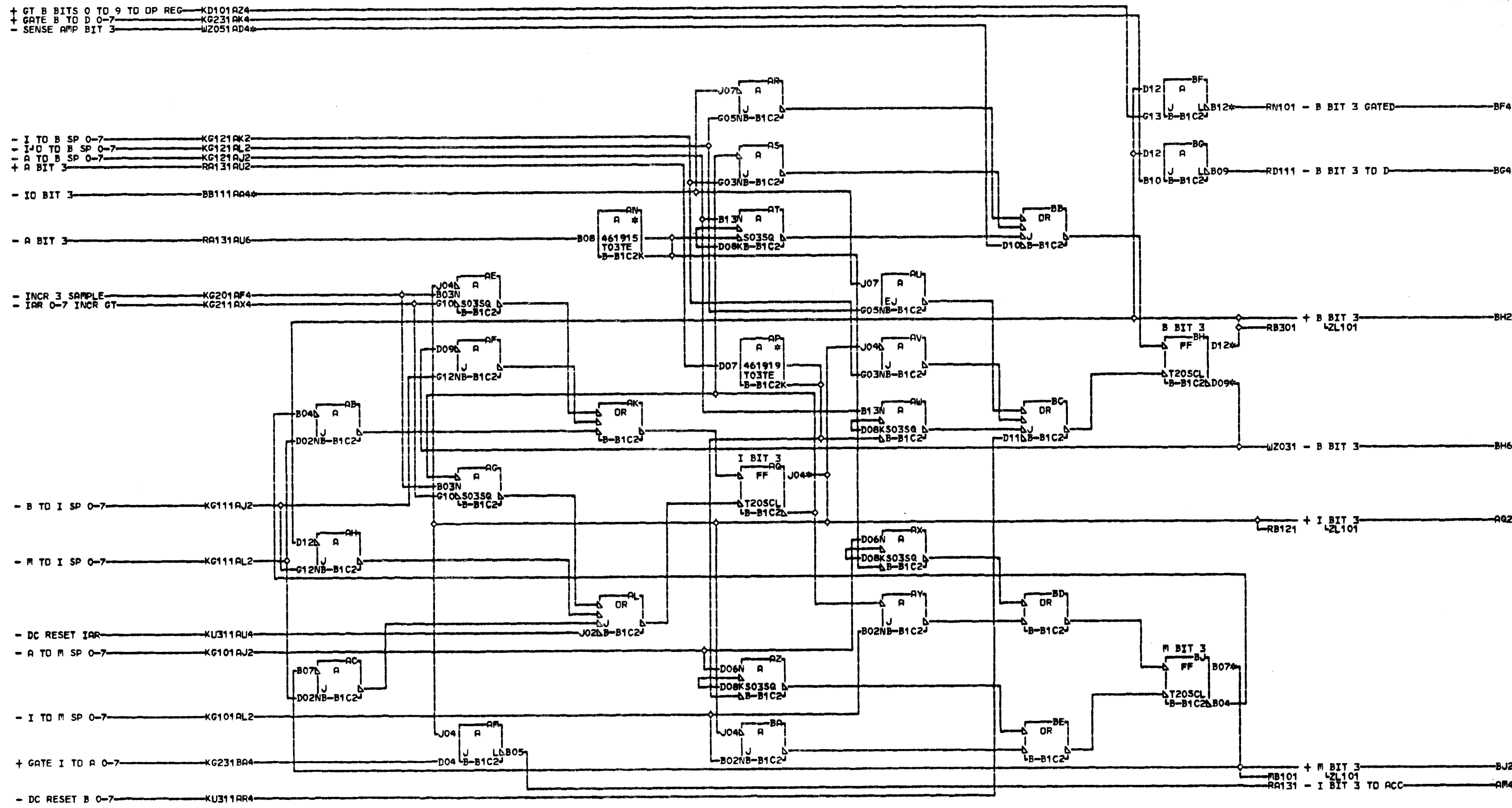
BH2 B-B1M3D02 RESISTOR B-B1B2D12  
 BH6 B-B1B1B09  
 01B-C1B1B09  
 BJ2 E-B1N4B13

LDC TYPE  
B-B1B2 4619

| I B AND M REGISTERS |       |
|---------------------|-------|
| E·C·HISTORY         | BIT 1 |
| MACH·1131-C         |       |
| FRAME               | 01    |
| IBM CORP. GSD       |       |
| DATE LAST EC        |       |
| 02-09-71 571150     |       |
| P·N· 5889272        |       |

R  
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RB131

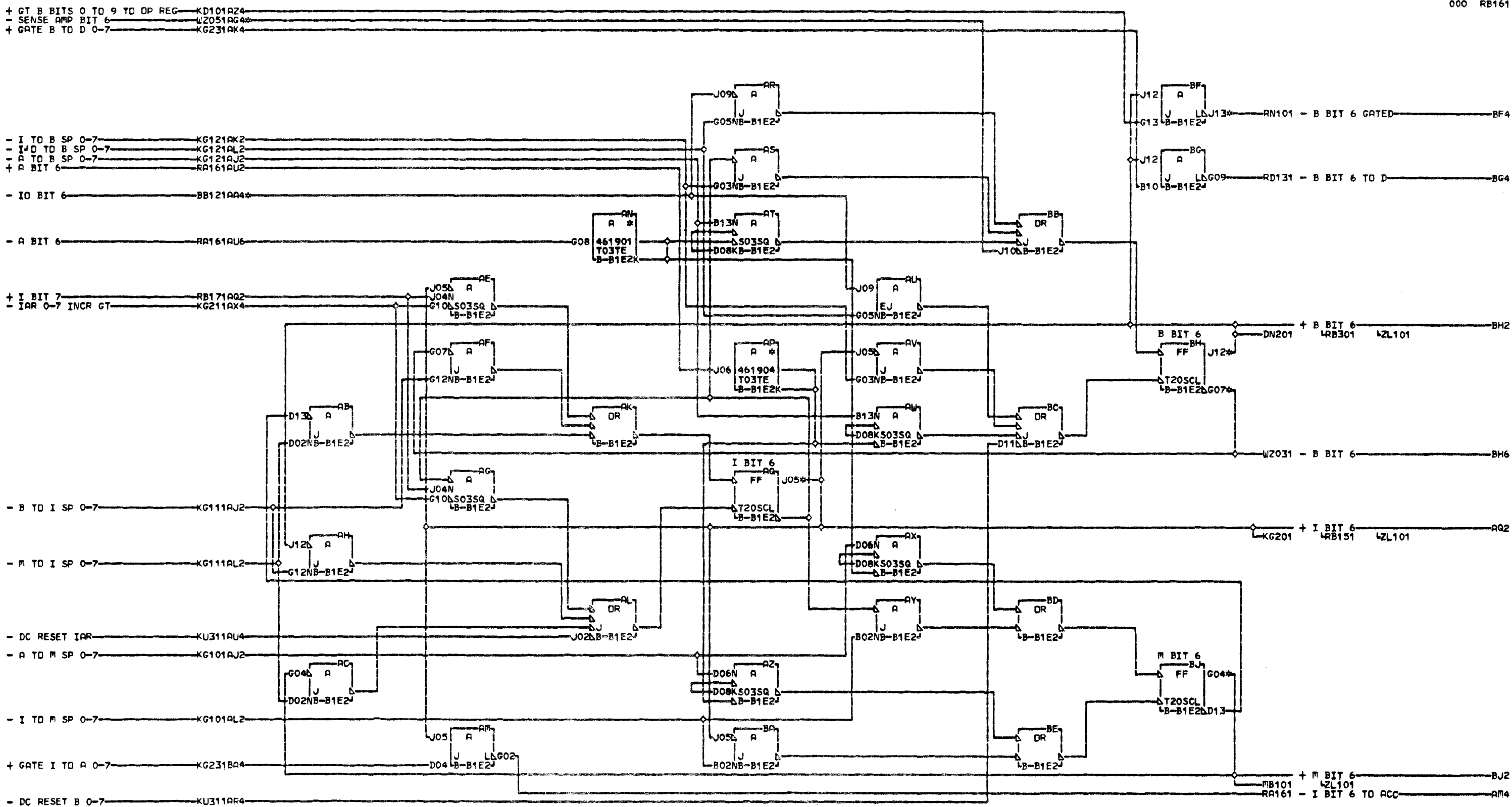
- BB111AA4 RESISTOR
- BH2 B-B1M3D04 RESISTOR
- B-B1C2J07 RESISTOR
- BH6 B-B1B1D09 RESISTOR
- WZ051AD4 RESISTOR
- O1B-C1B1D09 RESISTOR
- B-B1C2D10 RESISTOR
- BJ2 B-B1M2D02 RESISTOR
- AQ2 B-B1N2D02 RESISTOR
- BF4 B-B1A2B12 RESISTOR
- O1B-A1N2B12 RESISTOR

LOC. TYPE  
B-B1C2 4619

|                     |               |                       |
|---------------------|---------------|-----------------------|
| I B AND M REGISTERS |               | R<br>B<br>1<br>3<br>1 |
| BIT 3               |               |                       |
| E-C-HISTORY         | MACH-1131-C   | 000                   |
| DATE                | FRAME 01      |                       |
| LAST EC             | IBM CORP. GSD |                       |
| 02-09-71            | P.No. 5889274 |                       |





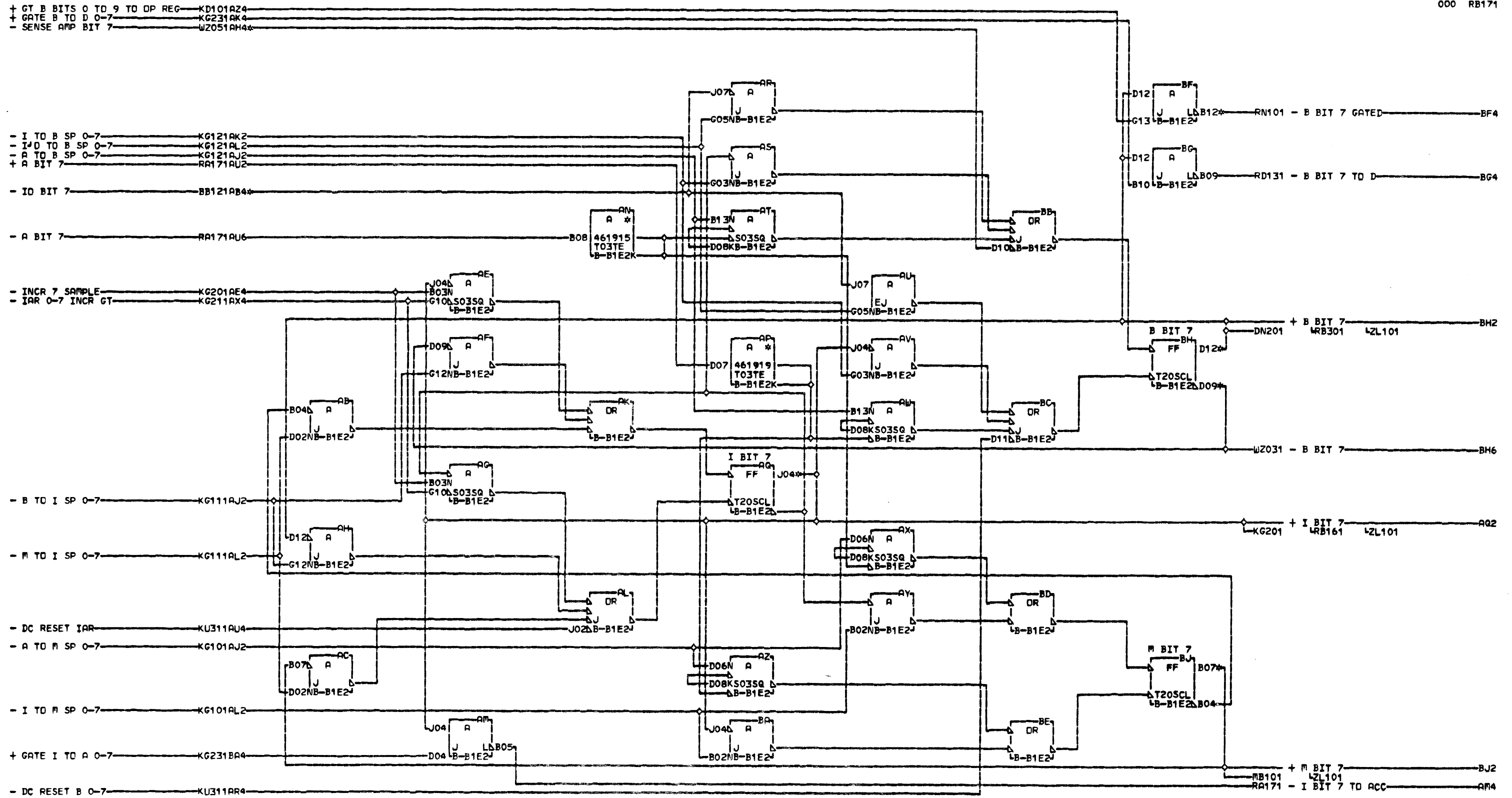


R  
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000

BB121AA4 RESISTOR 01B-B1A5B11  
 W2051AG4 RESISTOR B-B1E2J09  
 RESISTOR B-B1E2J12  
 BH2 B-B1F3B05  
 BH6 B-B1C1C09  
 AQ2 B-B1N2B04 01B-C1C1C09  
 BJ2 B-B1M2B04  
 01B-A1N2D10

LOC. TYPE  
B-B1E2 4619

| I B AND M REGISTERS |                | R<br>B<br>1<br>6<br>1<br>000 |
|---------------------|----------------|------------------------------|
| BIT 6               |                |                              |
| E-C-HISTORY         | MACH.1131-C    |                              |
|                     | FRAME 01       |                              |
|                     | IBM CORP. GSD  |                              |
| DATE 02-09-71       | LAST EC 571150 |                              |
|                     | P.No. 5889277  |                              |



R  
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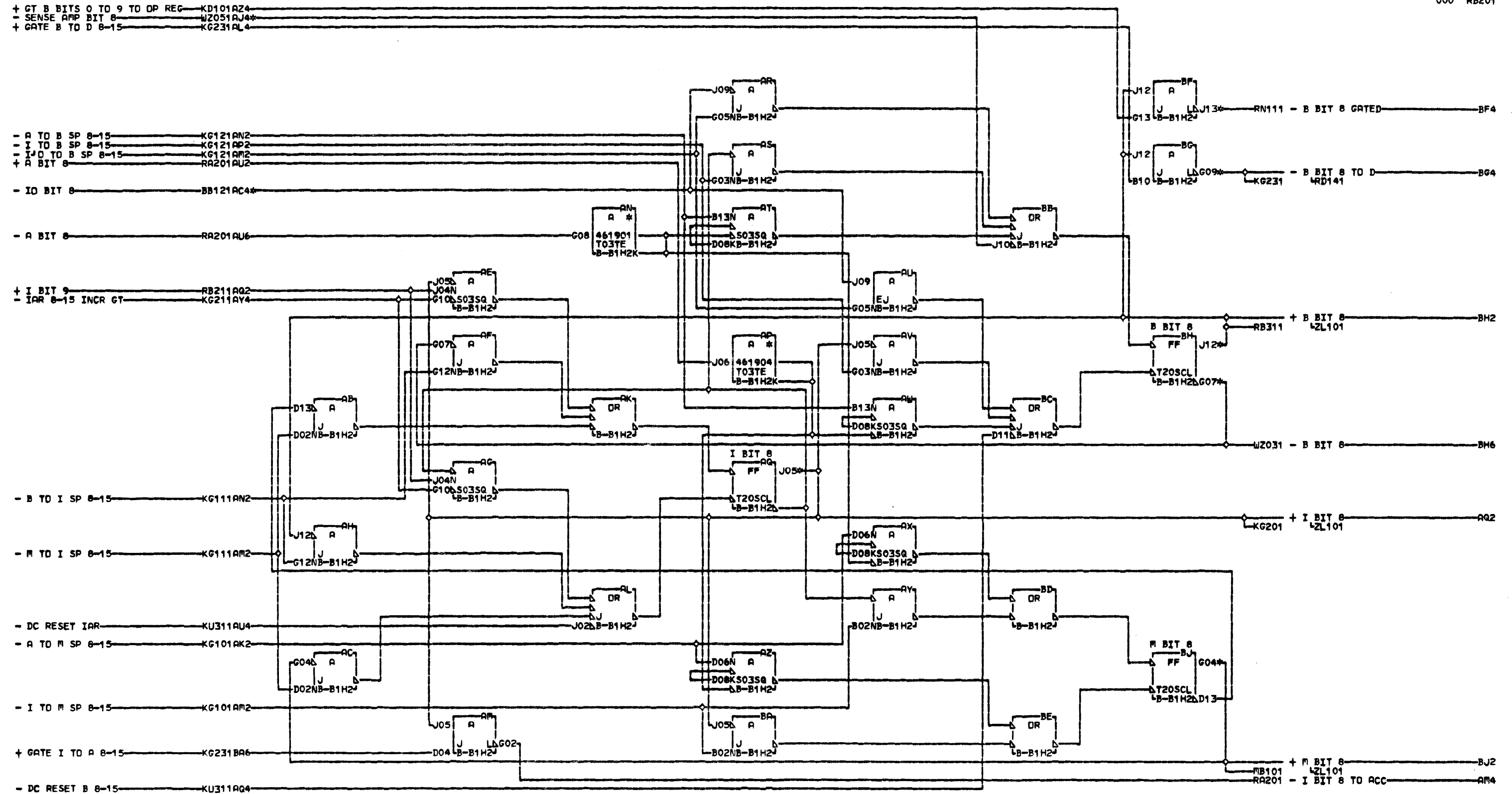
BB121AB4    BH2 B-B1M3D06  
 RESISTOR    01B-B1A5D11  
 B-B1E2J07    01B-A1N5D11  
 W2051AH4    RESISTOR  
 RESISTOR    B-B1E2D12  
 B-B1E2D10    BH6 B-B1C1D09  
 AQ2 B-B1N2D05    01B-C1C1D09  
 B-B1A2D11    BJ2 B-B1M2D05  
 01B-A1N2D11

LOC. TYPE  
B-B1E2 4619

| I B AND M REGISTERS |          |
|---------------------|----------|
| E-C-HISTORY         | BIT 7    |
| MACH-1131-C         | FRAME 01 |
| DATE                | LAST EC  |
| 02-09-71            | 571150   |
| P.No.               | 5889278  |

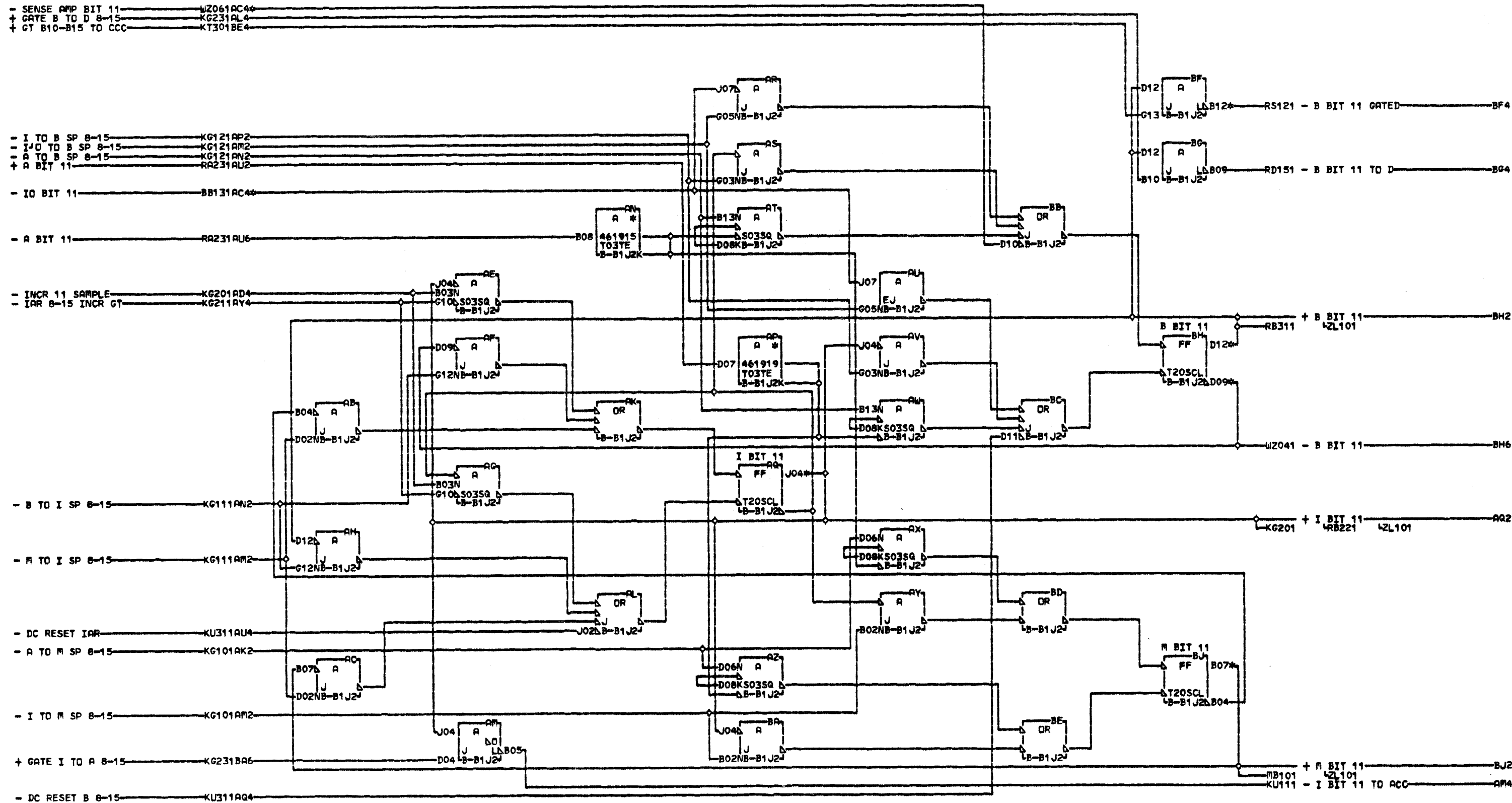
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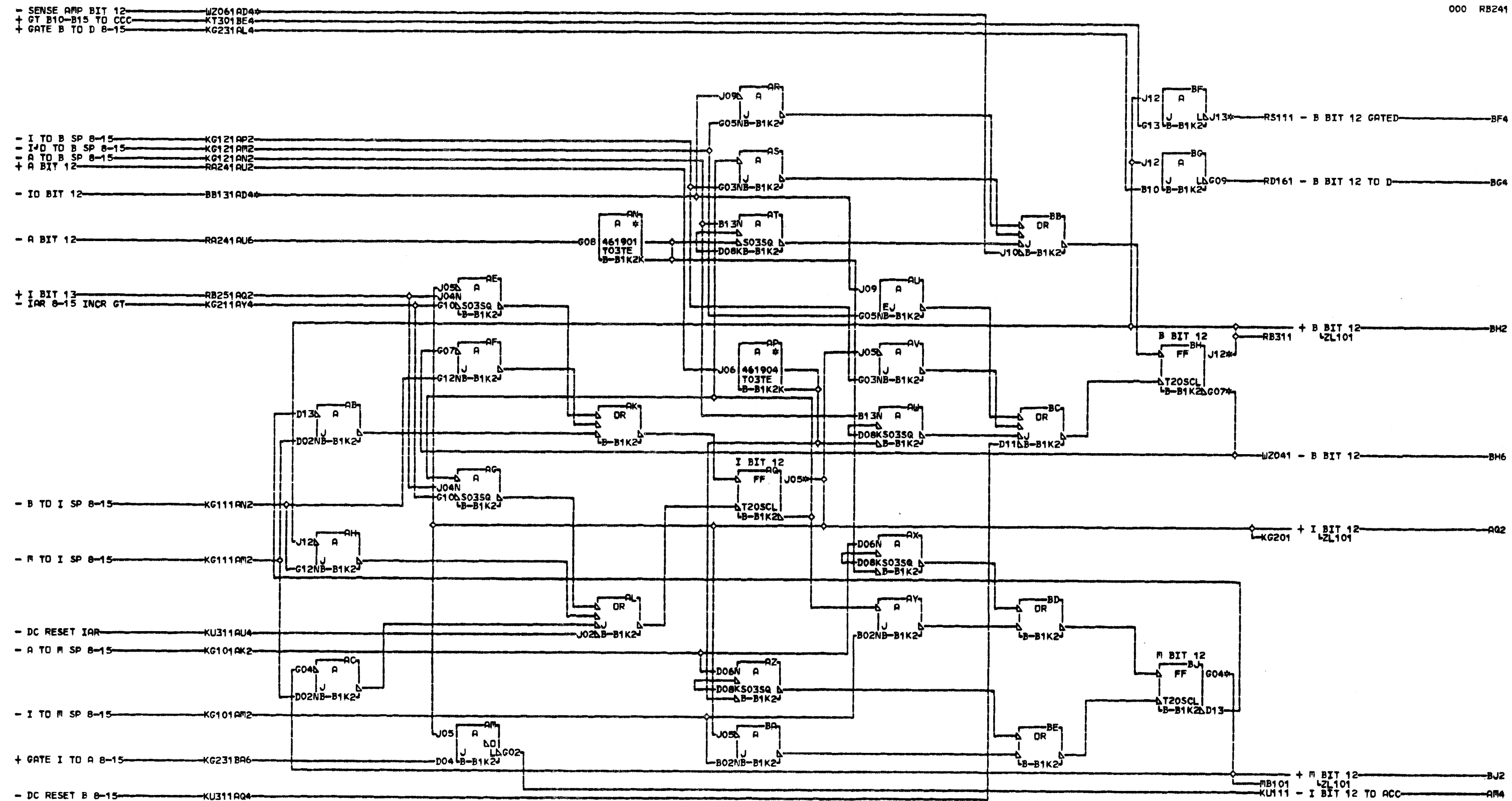
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- BB131AC4 RESISTOR
- B-B1J2J07 RESISTOR
- WZ061AC4 RESISTOR
- AQ2 B-B1N2D07
- BF4 B-B1M8C04
- O1B-A1M8C04
- BH2 B-B1M3D09 RESISTOR
- B-B1J2D12 RESISTOR
- BH6 B-B1L1B09
- O1B-C1L1B09
- BJ2 B-B1M2D07

LOC. TYPE  
B-B1J2 4619

|                               |               |
|-------------------------------|---------------|
| I B AND M REGISTERS<br>BIT 11 |               |
| E-C-HISTORY                   | MACH.1131-C   |
| DATE                          | FRAME 01      |
| LAST EC                       | IBM CORP. GSD |
| 02-09-71 571150               | P.N. 5889282  |

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- BB131AD4
- RESISTOR
- B-B1K2J09
- WZ061AD4
- RESISTOR
- B-B1K2J10
- AQ2 B-B1N2B08
- BF4 B-B1E1B09
- O1B-A1E1B09
- BH2 B-B1M3B09
- RESISTOR
- B-B1K2J12
- BH6 B-B1L1C09
- O1B-C1L1C09
- BJ2 B-B1M2B08

LOC. TYPE  
B-B1K2 4619

|                     |             |
|---------------------|-------------|
| I B AND M REGISTERS |             |
| BIT 12              |             |
| E.C.-HISTORY        | MACH.1131-C |
| DATE                | LAST EC     |
| 02-09-71            | 571150      |
| FRAME               | O1          |
| IBM CORP. GSD       |             |
| PeNo. 5889283       |             |

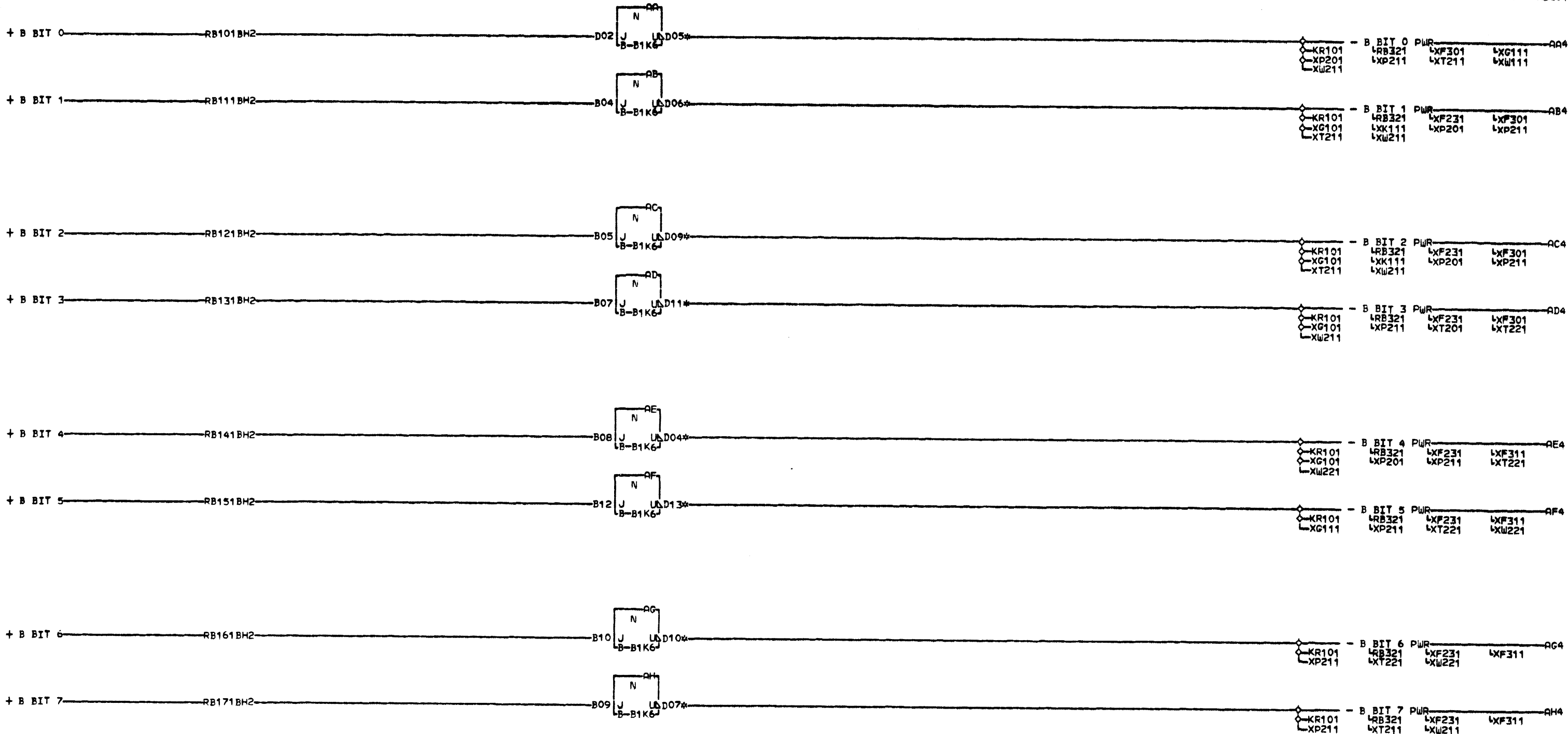
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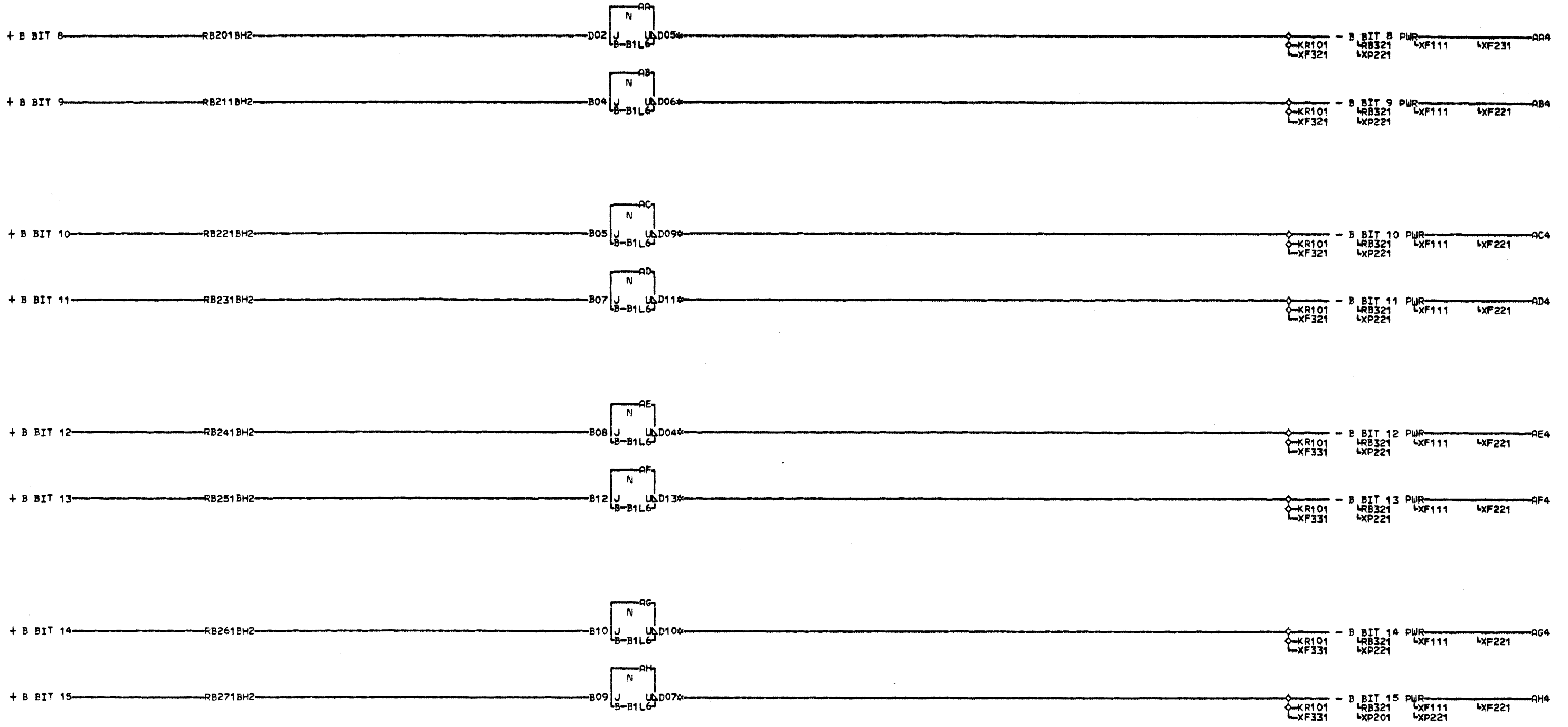


R  
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SIM TD PN 5889287 EC 571150

|               |               |               |               |
|---------------|---------------|---------------|---------------|
| AA4 B-B1N6B02 | 01A-C1B6B03   | 01A-C1A6B05   | 01A-B1N6B06   |
| 01A-C1B6B02   | 01A-C1A6B04   | 01A-B1N6B05   | AH4 B-B1N6D06 |
| 01A-C1A6B03   | 01A-B1N6B04   | AF4 B-B1N6D05 | 01A-C1B6D06   |
| 01A-B1N6B03   | AD4 B-B1N6D04 | 01A-C1B6D05   | 01A-C1A6D05   |
| ABA B-B1N6D02 | 01A-C1B6D04   | 01A-C1A6D04   | 01A-B1N6D05   |
| 01A-C1B6D02   | 01A-C1A6D03   | 01A-B1N6D04   |               |
| 01A-C1A6D02   | 01A-B1N6D03   | AG4 B-B1N6B05 |               |
| 01A-B1N6D02   | AE4 B-B1N6B04 | 01A-C1B6B05   |               |
| AC4 B-B1N6B03 | 01A-C1B6B04   | 01A-C1A6B06   |               |

LOC. TYPE  
B-B1K6 3024

|                                 |               |                              |
|---------------------------------|---------------|------------------------------|
| B REGISTER POWERING<br>BITS 0-7 |               | R<br>B<br>3<br>0<br>1<br>004 |
| E=C=HISTORY                     | MACH. 1131-C  |                              |
|                                 | FRAME 01      |                              |
|                                 | IBM CORP. GSD |                              |
| DATE LAST EC                    | PoN. 5889470  |                              |
| 03-14-72 571155                 |               |                              |



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004 SIM TO PN 5889288 EC 571150

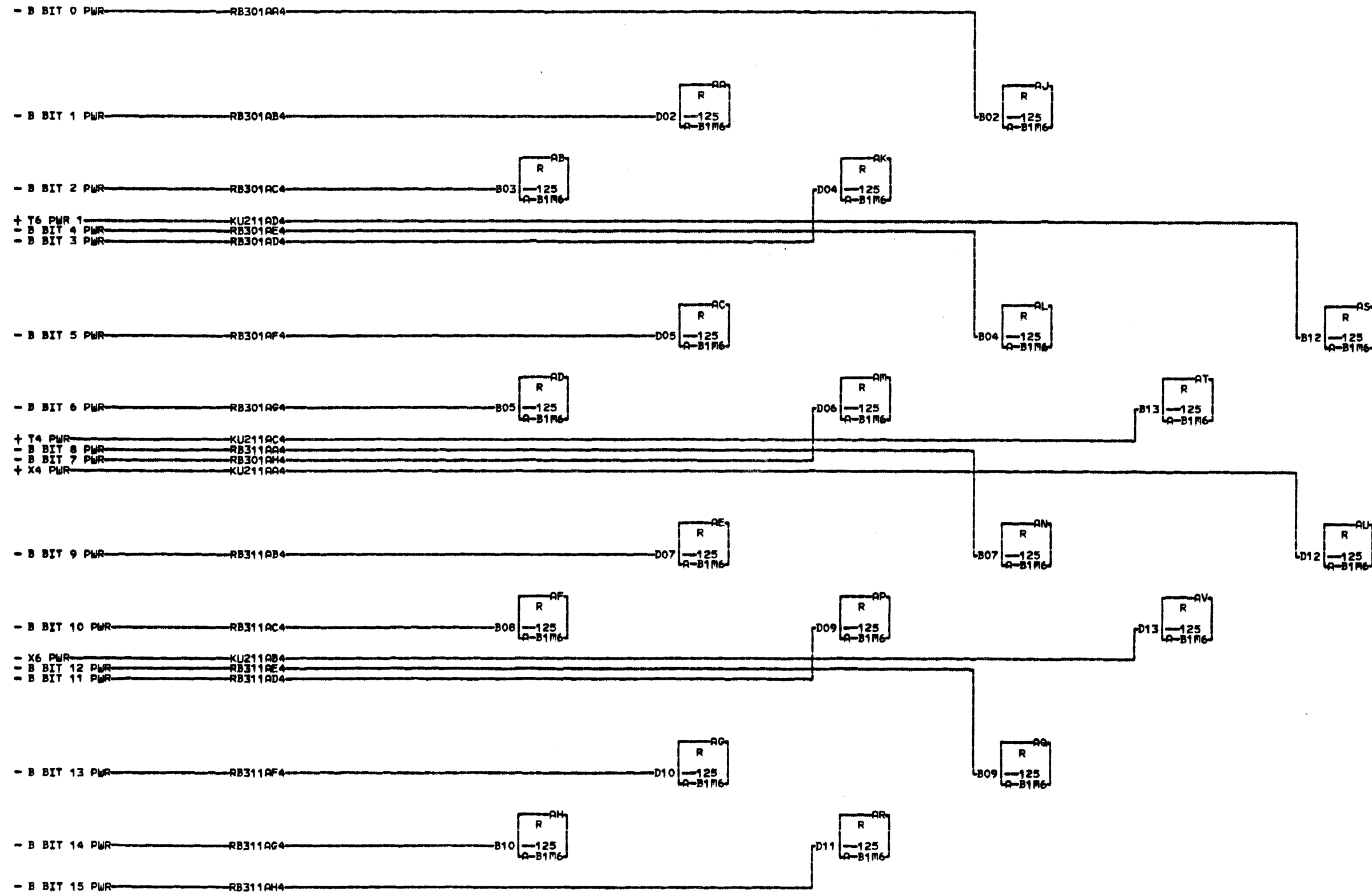
|               |               |               |               |
|---------------|---------------|---------------|---------------|
| AA4 B-B1N6B07 | 01A-C1B6B08   | 01A-C1A6B09   | 01A-B1N6B10   |
| 01A-C1B6B07   | 01A-C1A6B08   | 01A-B1N6B09   | AH4 B-B1N6D11 |
| 01A-C1A6B07   | 01A-B1N6B08   | AF4 B-B1N6D10 | 01A-C1B6D11   |
| 01A-B1N6B07   | AD4 B-B1N6D09 | 01A-C1B6D10   | 01A-C1A6D10   |
| AB4 B-B1N6D07 | 01A-C1B6D09   | 01A-C1A6D09   | 01A-B1N6D10   |
| 01A-C1B6D07   | 01A-C1A6D07   | 01A-B1N6D09   |               |
| 01A-C1A6D06   | 01A-B1N6D07   | AG4 B-B1N6B10 |               |
| 01A-B1N6D06   | AE4 B-B1N6B09 | 01A-C1B6B10   |               |
| AC4 B-B1N6B08 | 01A-C1B6B09   | 01A-C1A6B10   |               |

LCC TYPE  
B-B1L6 3024

|                                  |                  |
|----------------------------------|------------------|
| B REGISTER POWERING<br>BITS 8-15 |                  |
| -E-Co-HISTORY                    | MACH.1131-C      |
|                                  | FRAME 01         |
|                                  | IBM CORP. GSD    |
| DATE 03-14-72                    | LAST EC 571155   |
|                                  | Part No. 5889471 |

R  
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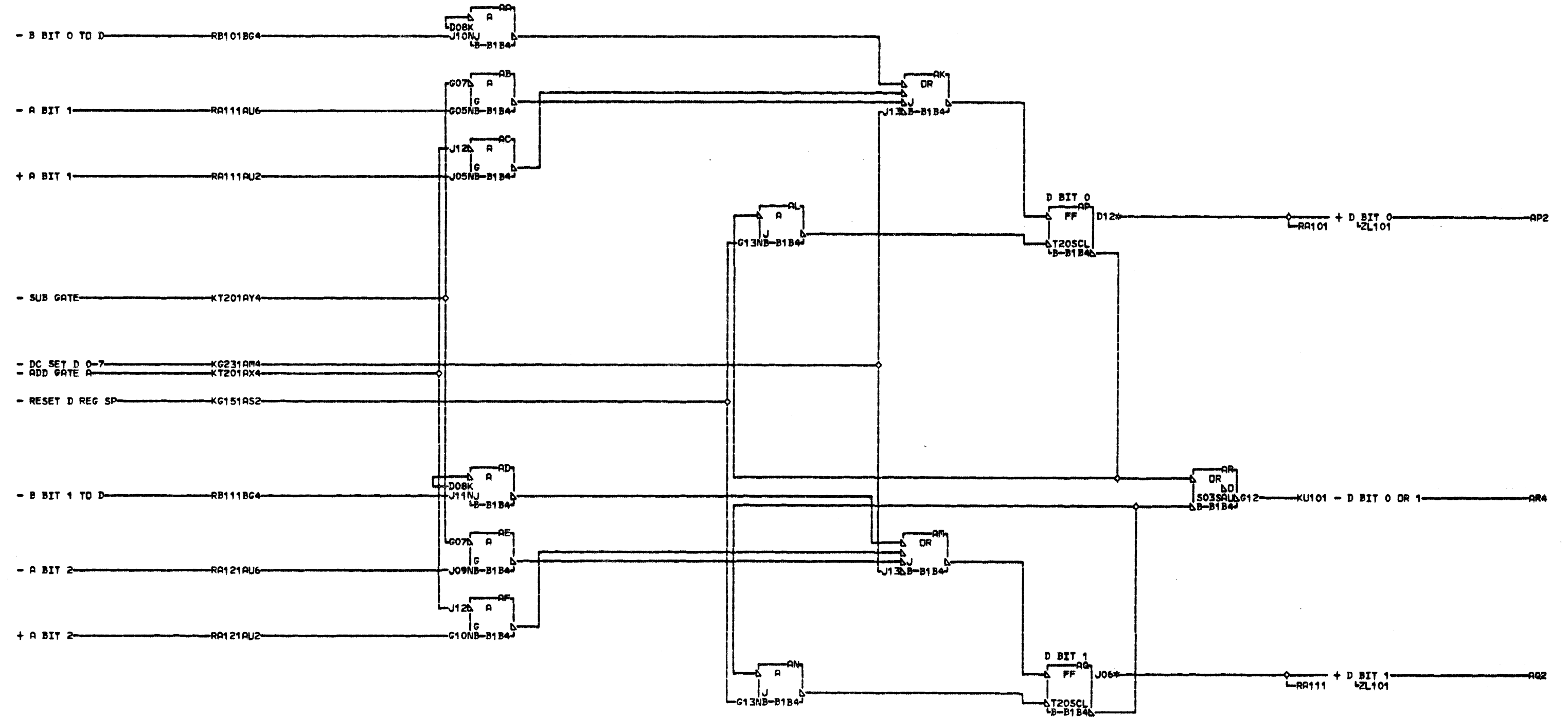


LOC. TYPE  
A-B1M6 0410

| -B POWER TERMINATORS |               |
|----------------------|---------------|
| E.C.-HISTORY         | MACH.1131-C   |
| DATE                 | FRAME 01      |
| LAST EC              | IBM CORP. GSD |
| 02-09-71 571150      | P.N. 5889289  |

RB321  
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NUMBER  
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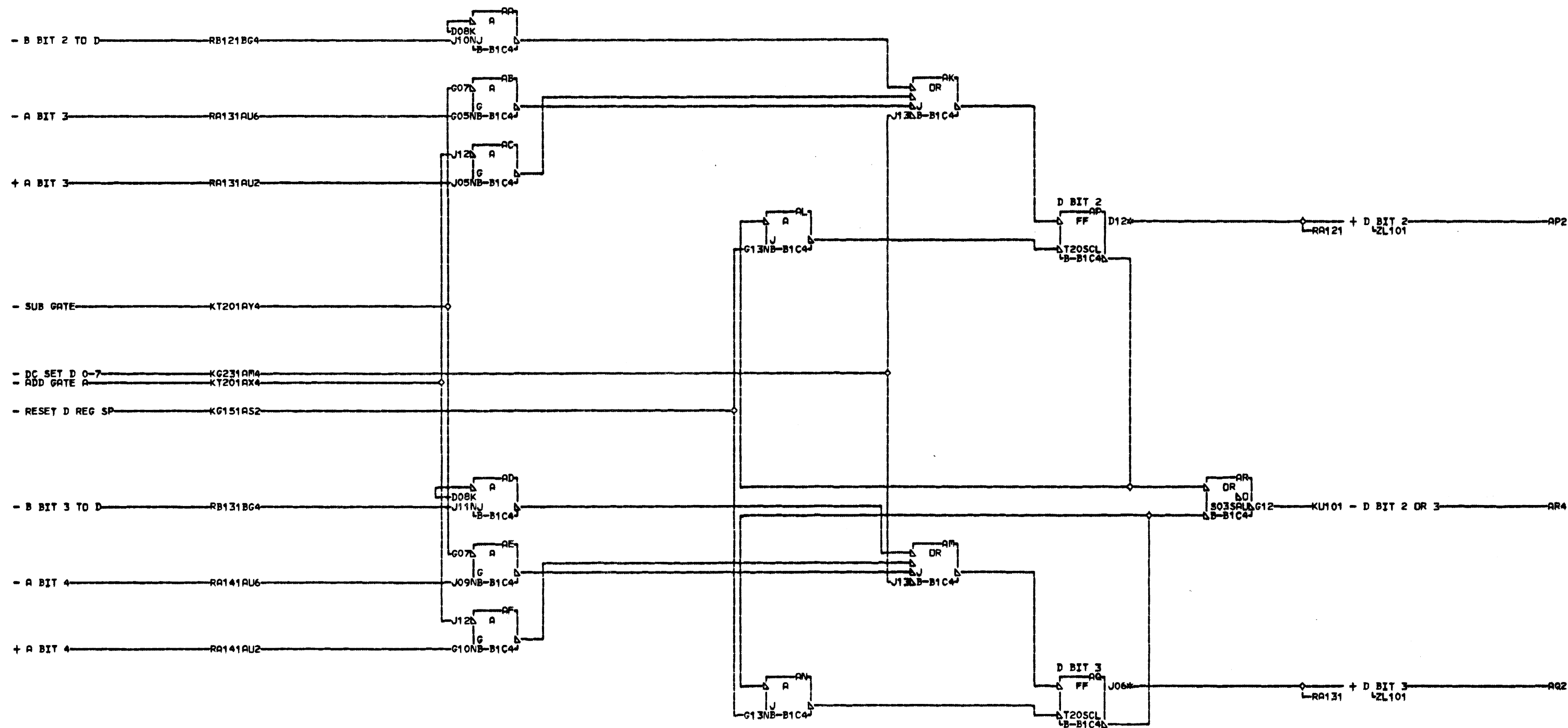
AP2 B-B1N4B02  
AQ2 B-B1N4D02

LDC. TYPE  
B-B1B4 6255

|                            |               |
|----------------------------|---------------|
| D REGISTER<br>BITS 0 AND 1 |               |
| -E-C-HISTORY               | MACH-1131-C   |
| DATE LAST EC               | FRAME 01      |
| 02-09-71 571150            | IBM CORP. GPD |
|                            | P.N. 5889290  |

RD 101

RD 101



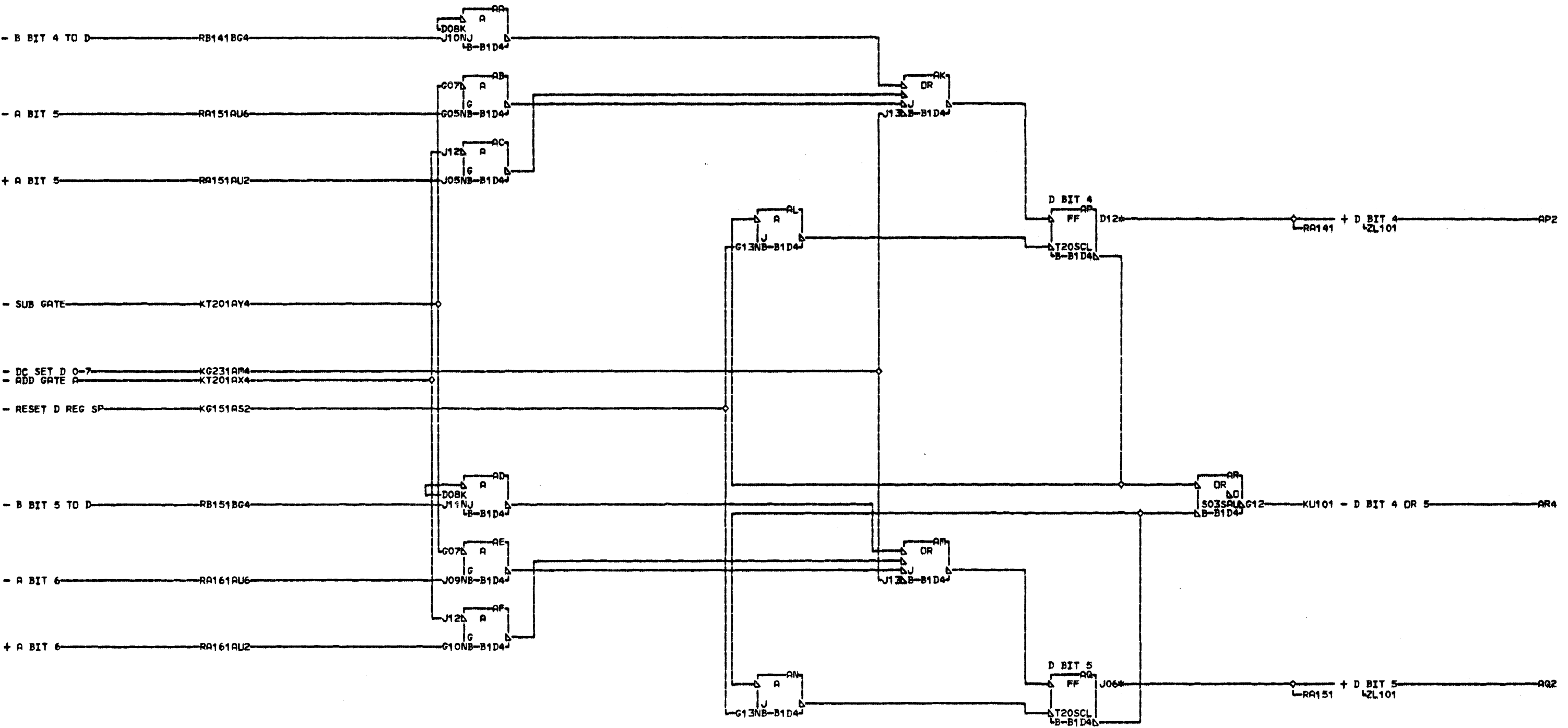
AP2 B-B1N4B03  
AQ2 B-B1N4D04

LOC. TYPE  
B-B1C4 6255

|                            |              |
|----------------------------|--------------|
| D REGISTER<br>BITS 2 AND 3 |              |
| E.C. HISTORY               | MACH. 1131-C |
| DATE                       | LAST EC      |
| 02-09-71                   | 571150       |
| FRAME                      | 01           |
| IBM CORP.                  | GPD          |
| Po. No.                    | 5889291      |

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1  
1  
1  
000

R  
D  
1  
1  
1  
000



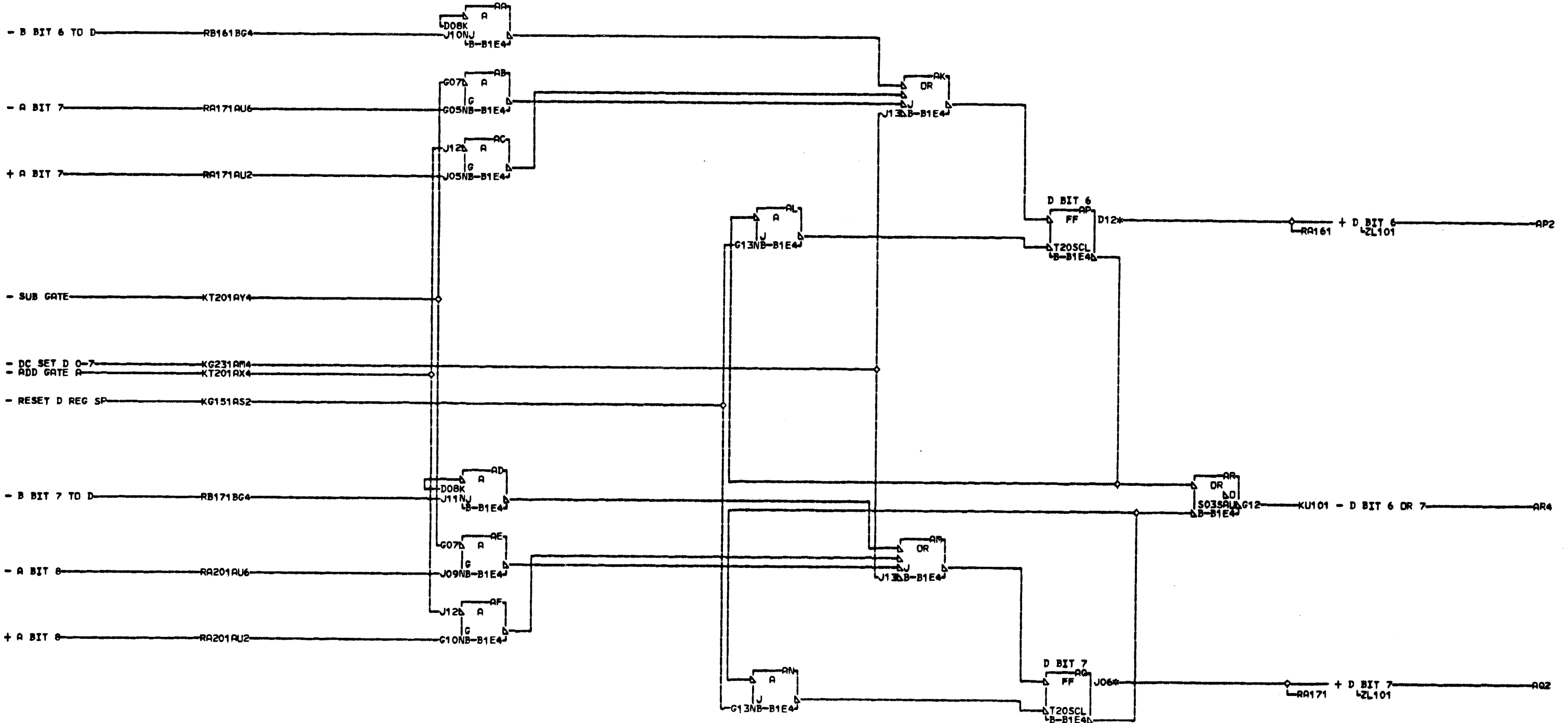
AP2 B-B1N4B04  
AQ2 B-B1N4D05

LOC. TYPE  
B-B1D4 6255

|                            |         |               |                   |
|----------------------------|---------|---------------|-------------------|
| D REGISTER<br>BITS 4 AND 5 |         | MACH#1131-C   | RD<br>1<br>2<br>1 |
| -E.C.-HISTORY              |         |               |                   |
| DATE                       | LAST EC | FRAME         | 01                |
| 02-09-71                   | 571150  | IBM CORP. GPD | 000               |
|                            |         | P.N. 5889292  |                   |

RD  
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000



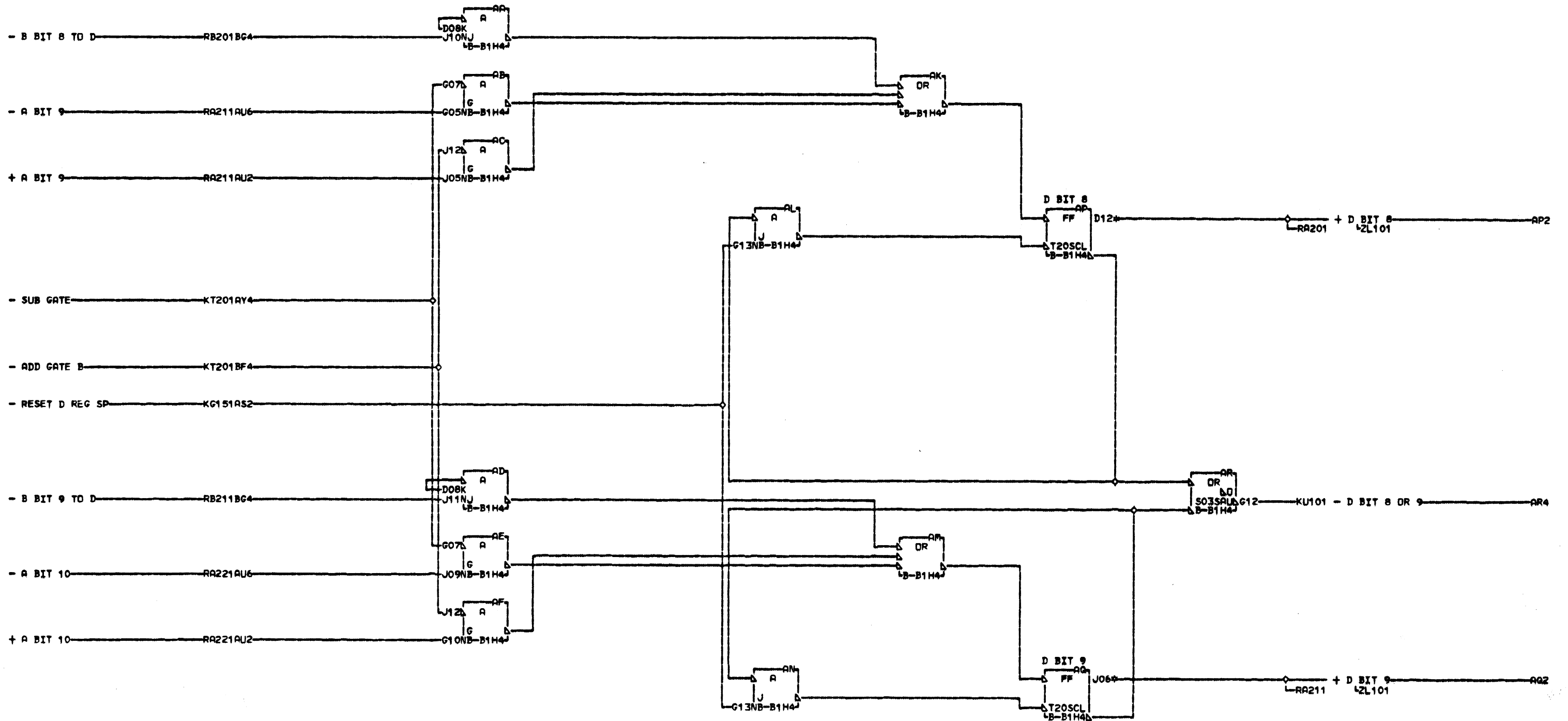
AP2 B-B1N4B05  
AQ2 B-B1N4D06

LOC. TYPE  
B-B1E4 6255

|                            |             |
|----------------------------|-------------|
| D REGISTER<br>BITS 6 AND 7 |             |
| E-Co-HISTORY               | MACH.1131-C |
| DATE                       | LAST EC     |
| 02-09-71                   | 571150      |
| FRAME                      | 01          |
| IBM CORP. GPD              |             |
| P.No.                      | 5889293     |

RD  
131  
000

RD  
131  
000

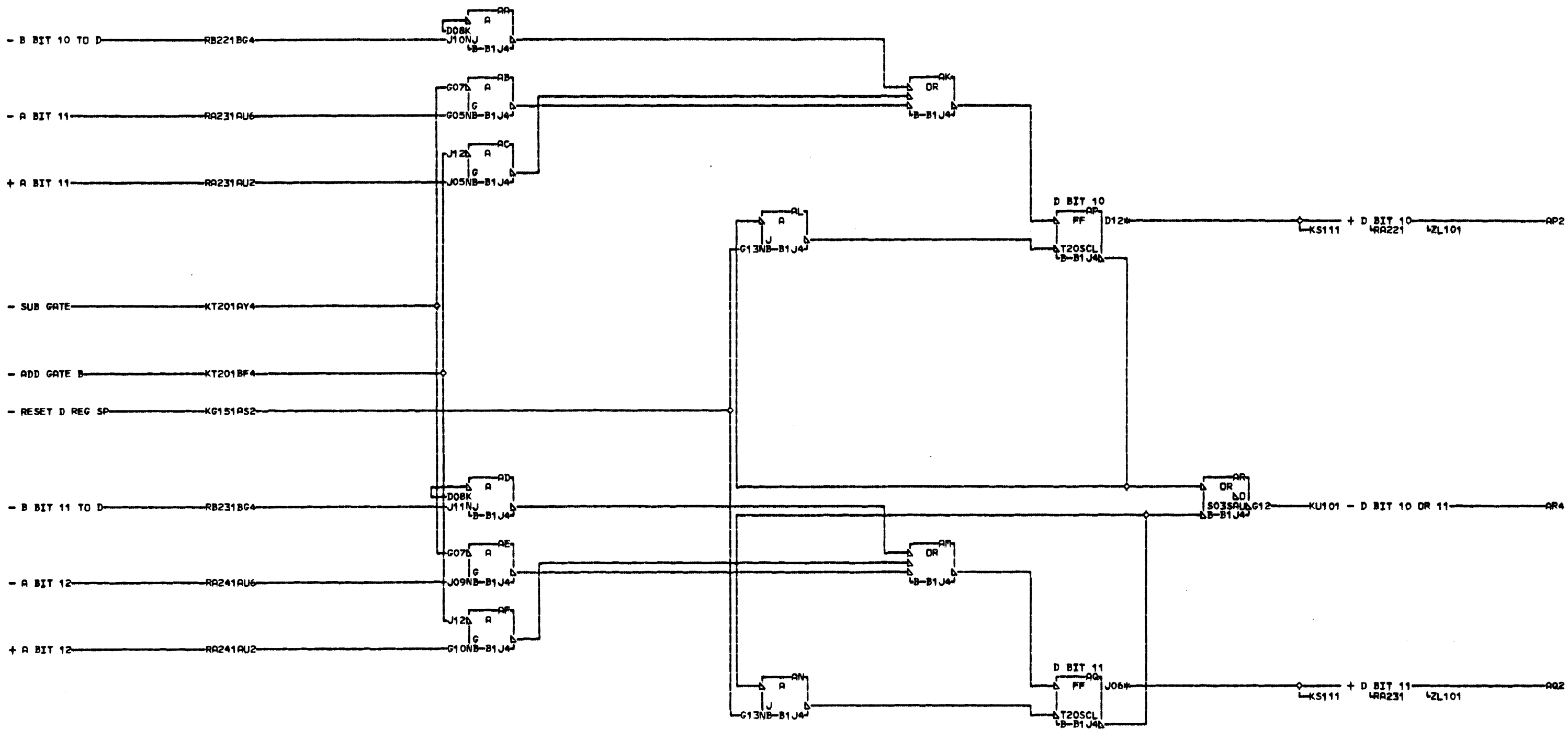


AP2 B-B1N4B07  
AQ2 B-B1N4D07

LOC. TYPE  
B-B1H4 6255

|                            |             |                       |
|----------------------------|-------------|-----------------------|
| D REGISTER<br>BITS 8 AND 9 |             | R<br>D<br>1<br>4<br>1 |
| E.C.-HISTORY               | FRCH=1131-C |                       |
| DATE                       | LAST EC     | FRAME 01              |
| 02-09-71                   | 571150      | IBM CORP. GPD         |
|                            |             | P.No. 5889294         |





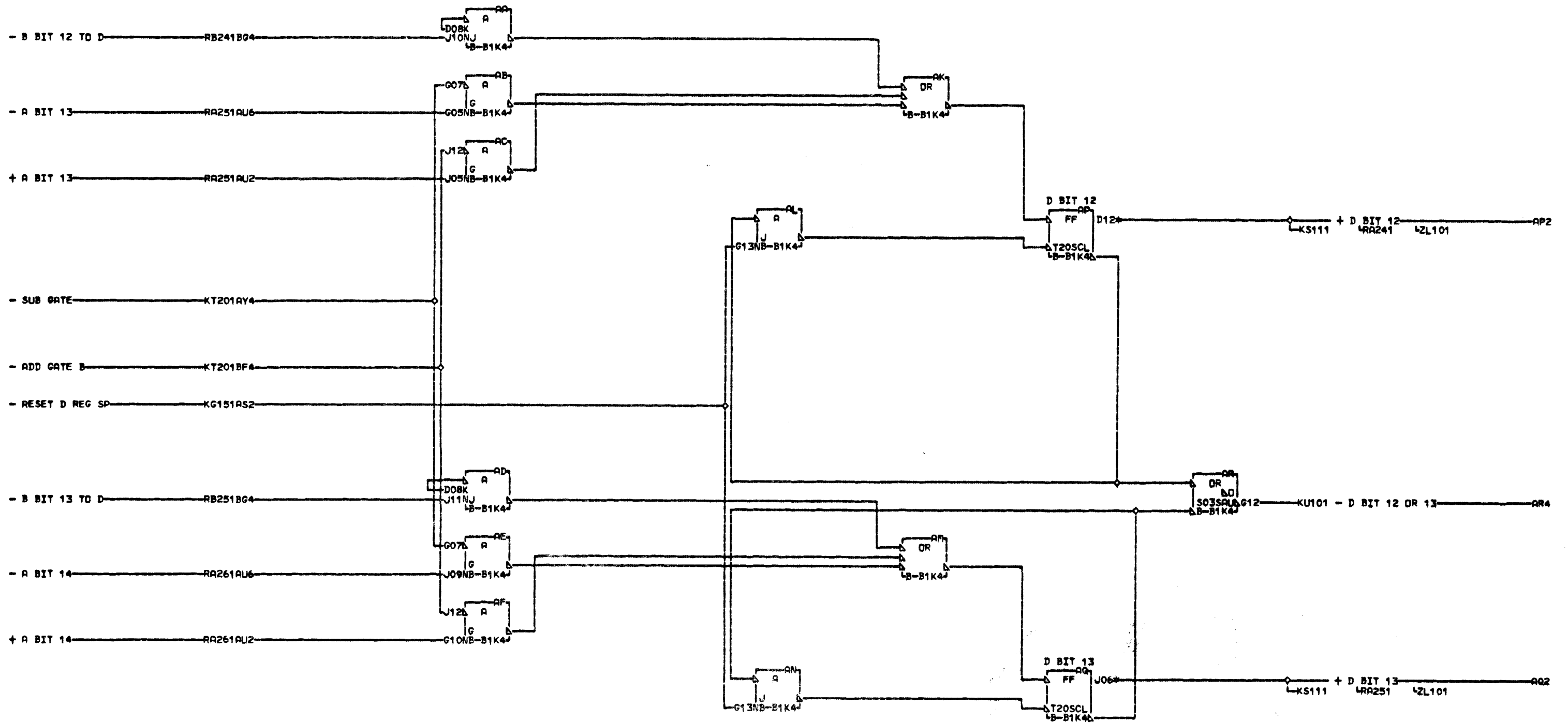
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D  
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5  
1

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AP2 B-B1N4B08  
 O1B-B1A5B03  
 O1B-A1N5B03  
 AQ2 B-B1N4D09  
 O1B-B1A5D03  
 O1B-A1N5D03

LDC. TYPE  
 B-B1J4 6255

|                |               |     |
|----------------|---------------|-----|
| D REGISTER     |               | R   |
| BITS 10 AND 11 |               | D   |
| -E-C-HISTORY-  | MACH-1131-C   | 1   |
|                | FRAME 01      | 5   |
|                | IBM CORP. GPD | 1   |
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|                | P.No. 5889295 | 000 |



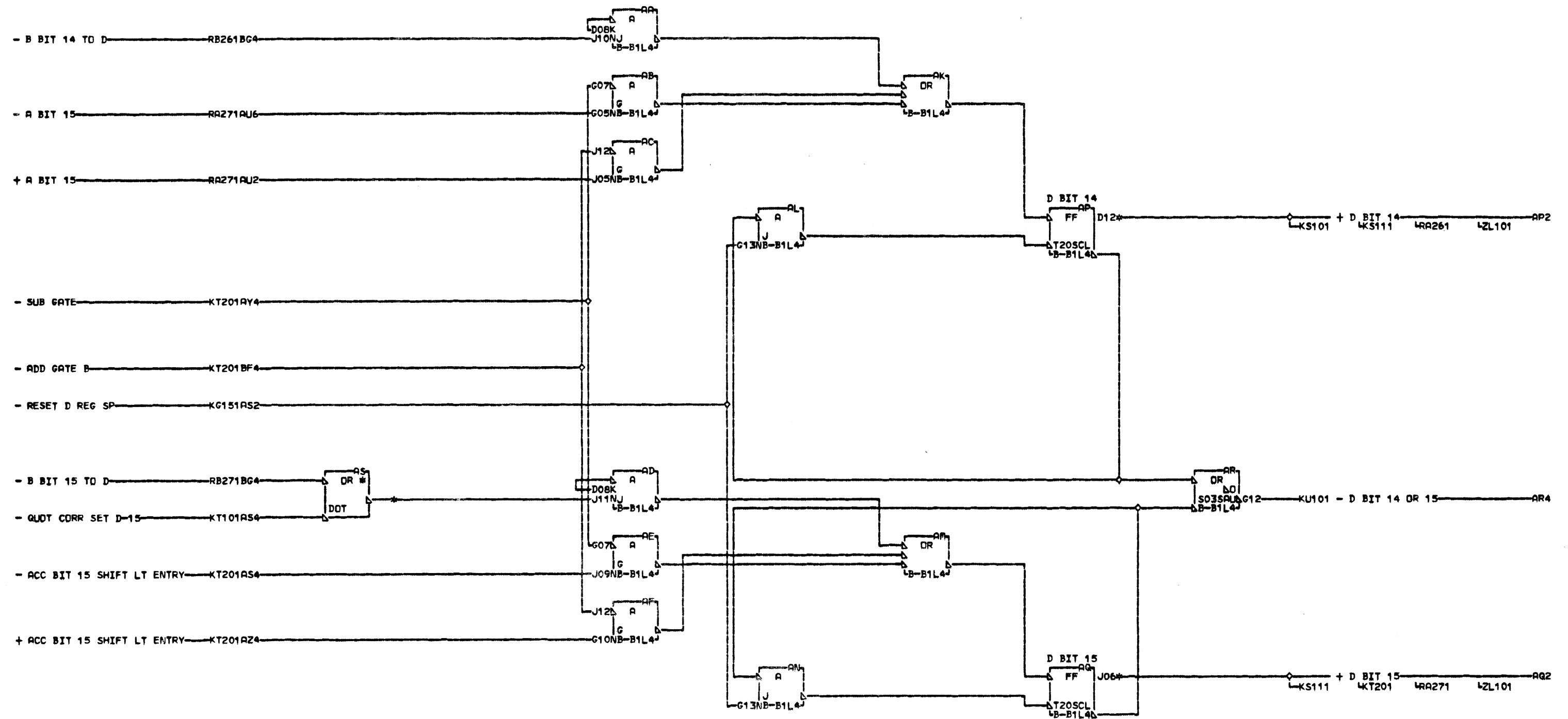
RD  
161

AP2 B-B1N4B09  
 01B-B1A5B04  
 01B-A1N5B04  
 AQ2 B-B1N4D10  
 01B-B1A5D04  
 01B-A1N5D04

LOC. TYPE  
 B-B1K4 6255

|                              |               |
|------------------------------|---------------|
| D REGISTER<br>BITS 12 AND 13 |               |
| -E.C.-HISTORY                | MACH#1131-C   |
| DATE                         | FRAME 01      |
| LAST EC                      | IBM CORP. GPD |
| 02-09-71 571150              | P.No. 5889296 |

RD  
161

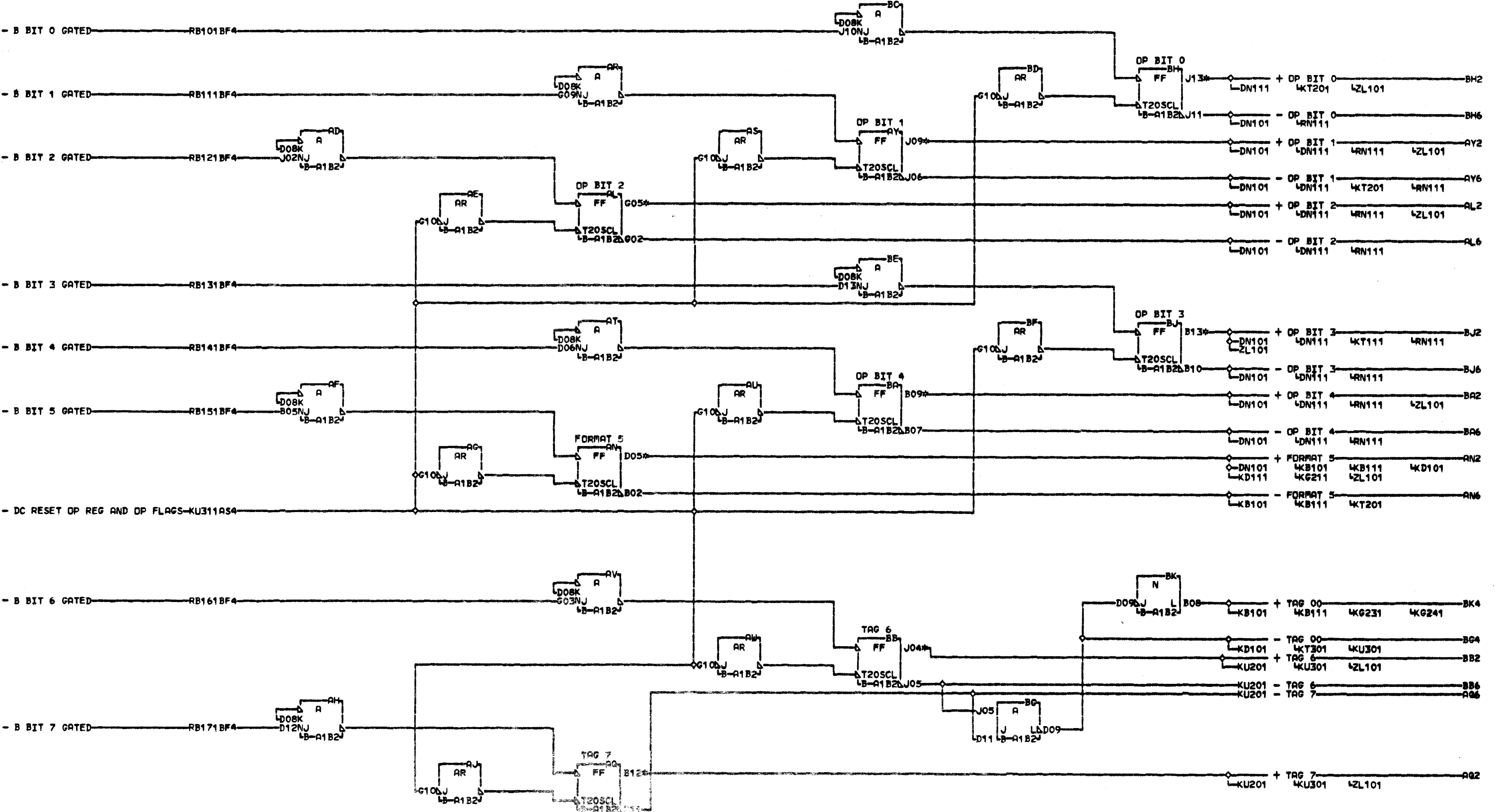


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D  
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7  
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 O1B-B1A5B05  
 O1B-A1N5B05  
 AQ2 B-B1N4D11  
 O1B-B1A5D05  
 O1B-A1N5D05  
 AS4 B-B1E1C11  
 O1B-A1E1C11

LOC. TYPE  
 B-B1L4 6255

|                              |               |     |
|------------------------------|---------------|-----|
| D REGISTER<br>BITS 14 AND 15 |               | R   |
| -E.C.-HISTORY-               | MACH#1131-C   | D   |
|                              | FRAME         | 01  |
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| 02-09-71 571150              |               |     |



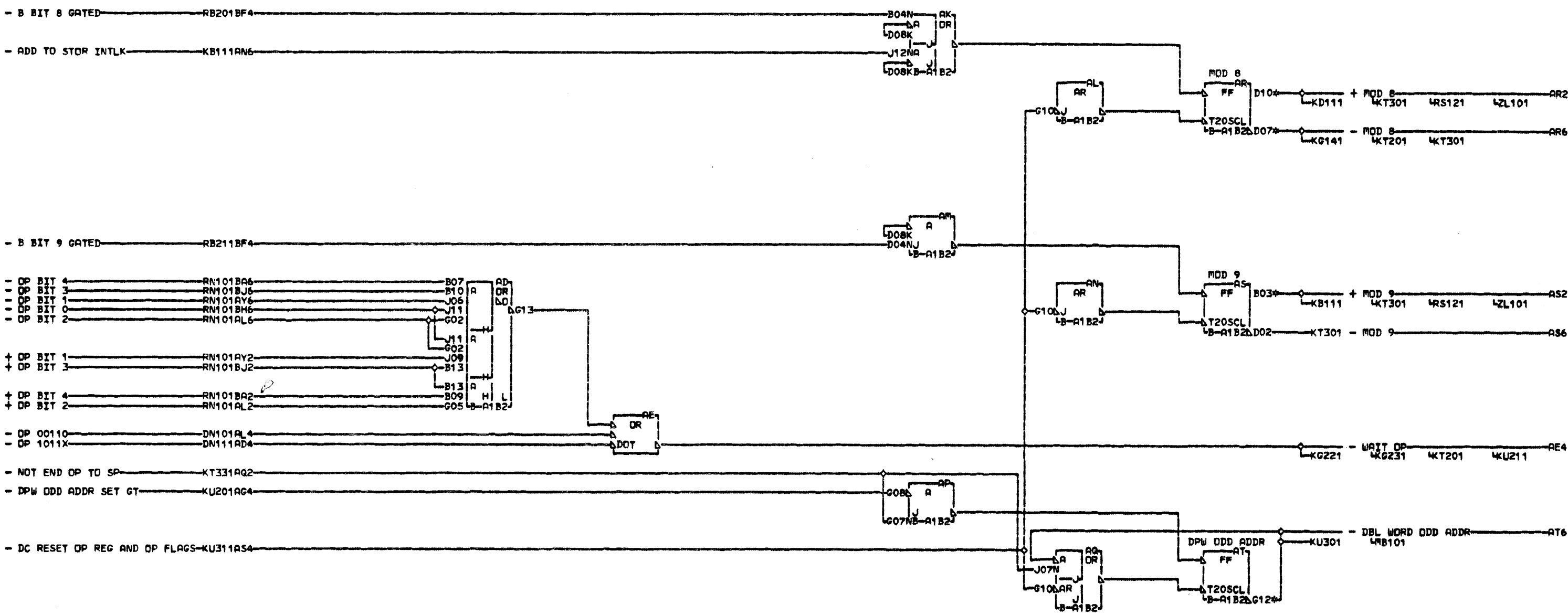
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- AL2 B-A1A2B04
- AN2 B-A1A2D02
- AQ2 B-A1A2D05
- AY2 B-A1A2B03
- BA2 B-A1A2B07
- BB2 B-A1A2D04
- BH2 B-A1A2B02
- BJ2 B-A1A2B05

LDC. TYPE  
B-A1B2 4664

| OP-FORMAT-TAG REGISTER |               |
|------------------------|---------------|
| -E-C-HISTORY-          | MACH-1131-C   |
|                        | FRAME 01      |
|                        | IBM CORP. GSD |
| DATE LAST EC           | P.No. 5889298 |
| 02-09-71 571150        |               |

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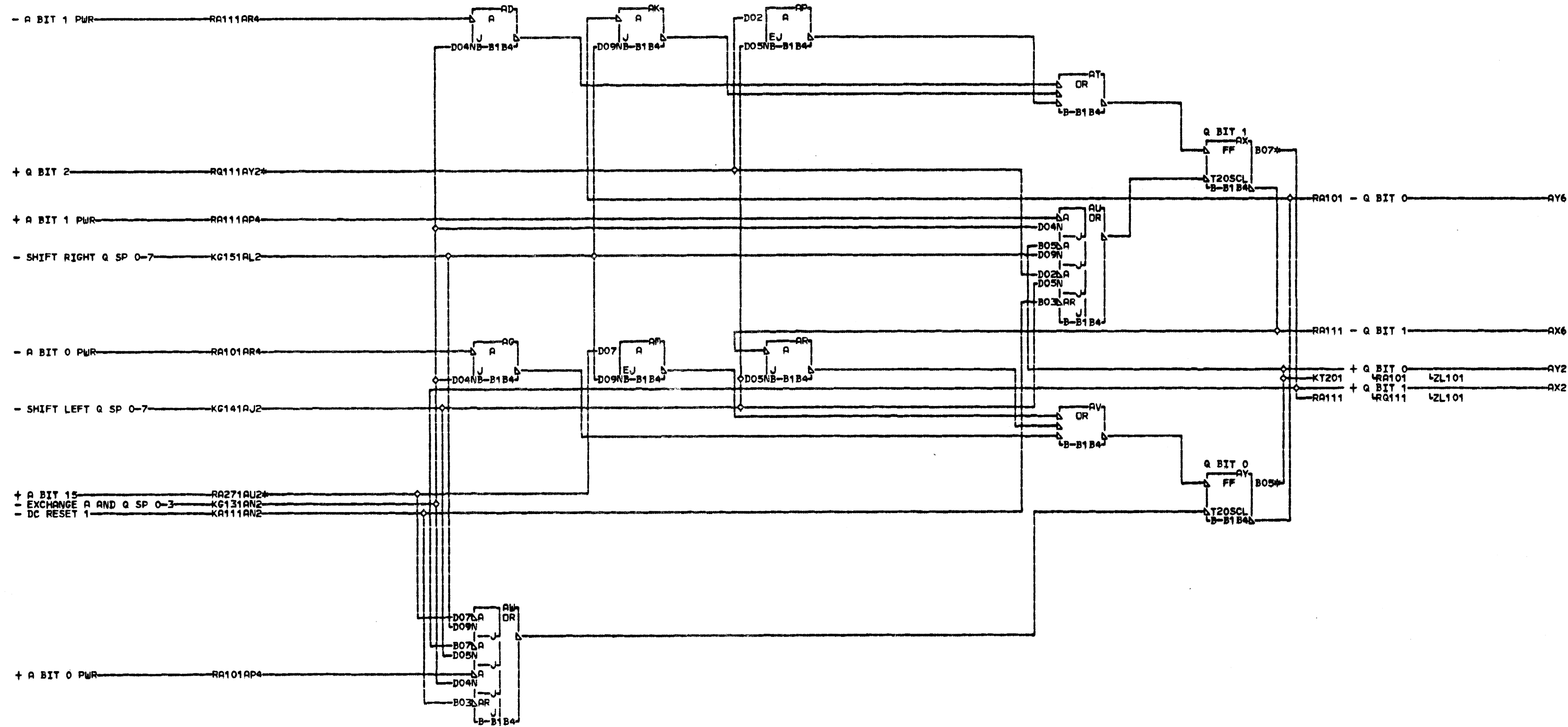
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AR2 B-A1A2D06  
AR6 B-A1N3B09  
O1 B-B1A3B09  
AS2 B-A1A2D07  
AT6 B-A1M8B06  
O1 B-B1M8B06

LOC. TYPE  
B-A1B2 4664

|                   |       |                 |
|-------------------|-------|-----------------|
| MOD 8             | MOD 9 | WAIT OP         |
| DBL WORD ODD ADDR |       |                 |
| E.C. HISTORY      |       | MACH. 1131-C    |
| FRAME             |       | 01              |
| DATE LAST EC      |       | 02-09-71 571150 |
| P.N.              |       | 5889299         |

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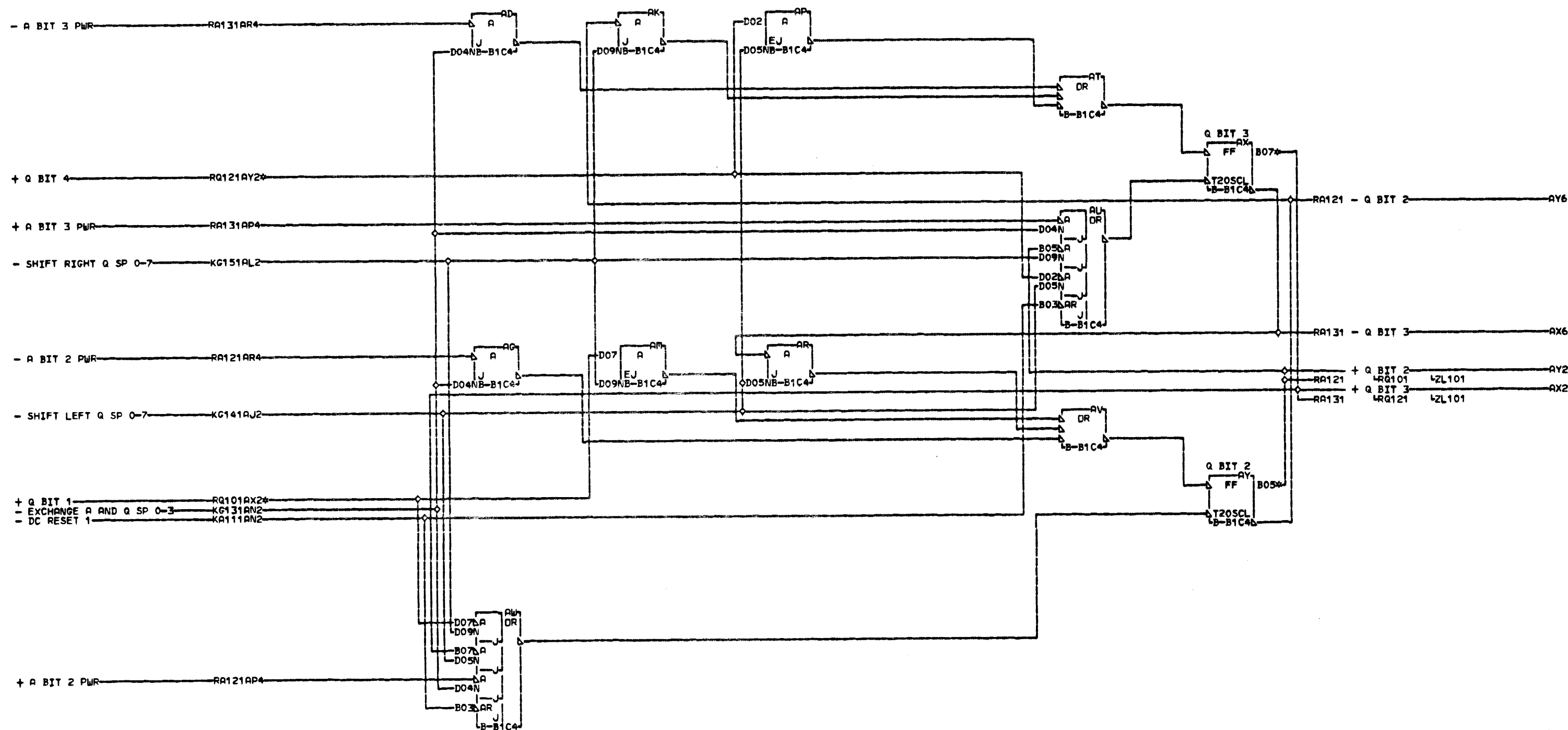


R  
Q  
1  
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1

RA271AU2 01B-A1N5B08  
RESISTOR  
B-B1B4D07  
RQ111AY2  
RESISTOR  
B-B1B4D02  
AX2 B-B1N3D02  
AY2 B-B1N3B02  
01B-B1A5B08

LOC. TYPE  
B-B1B4 6255

|                 |               |     |
|-----------------|---------------|-----|
| Q REGISTER      |               | R   |
| BITS 0 AND 1    |               | Q   |
| -E.C.=HISTORY   | MACH.1131-C   | 1   |
| FRAME           | 01            | 0   |
| DATE LAST EC    | IBM CORP. GPD | 1   |
| 02-09-71 571150 | P.No. 5889300 | 000 |

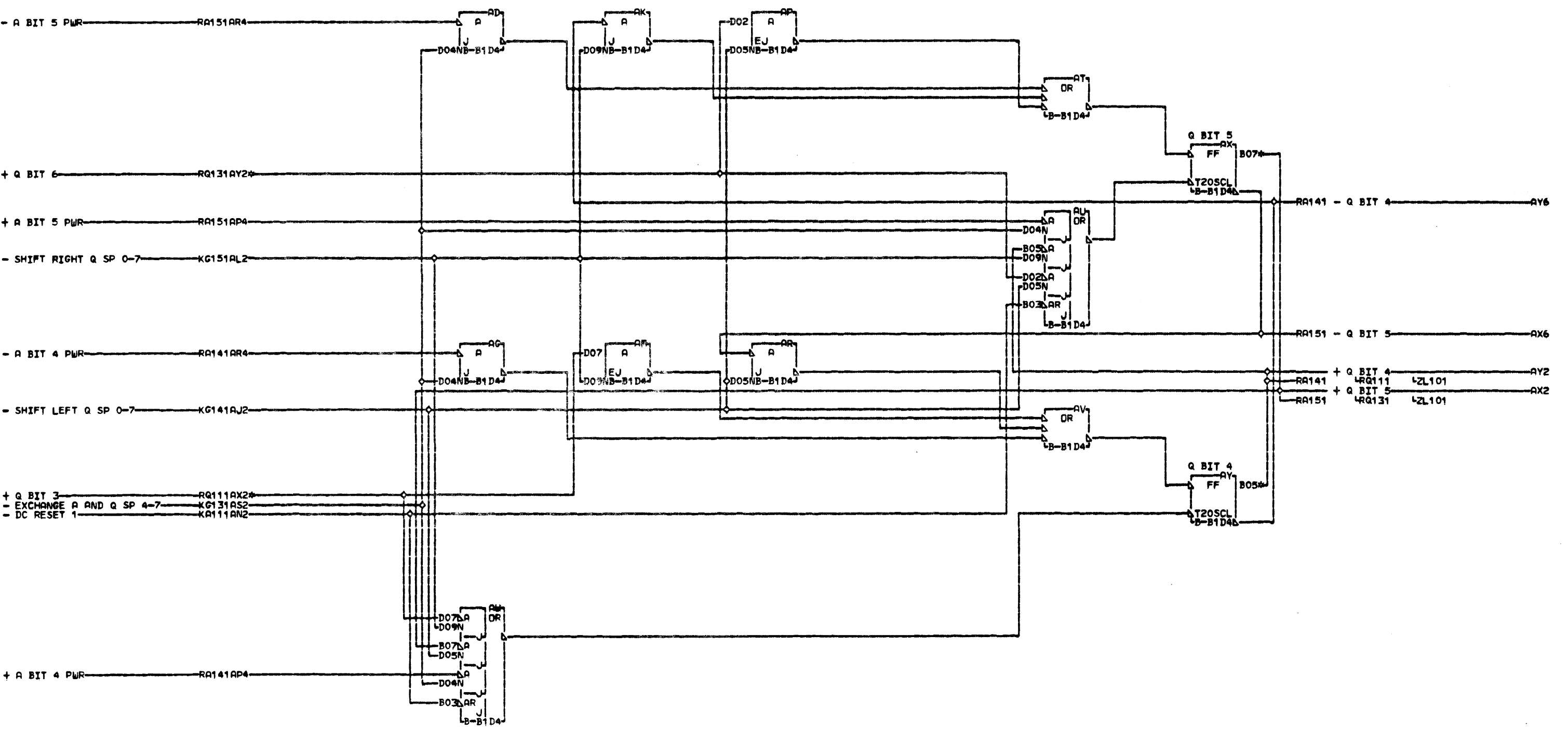


R  
Q  
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1  
1  
000

RQ101AX2  
RESISTOR  
B-B1C4D07  
RQ121AY2  
RESISTOR  
B-B1C4D02  
AX2 B-B1N3D04  
AY2 B-B1N3B03

LOC. TYPE  
B-B1C4 6255

|                            |             |                              |
|----------------------------|-------------|------------------------------|
| Q REGISTER<br>BITS 2 AND 3 |             | R<br>Q<br>1<br>1<br>1<br>000 |
| -E.C.-HISTORY-             | MACH.1131-C |                              |
|                            |             | FRAME 01                     |
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| 02-09-71                   | 571150      |                              |



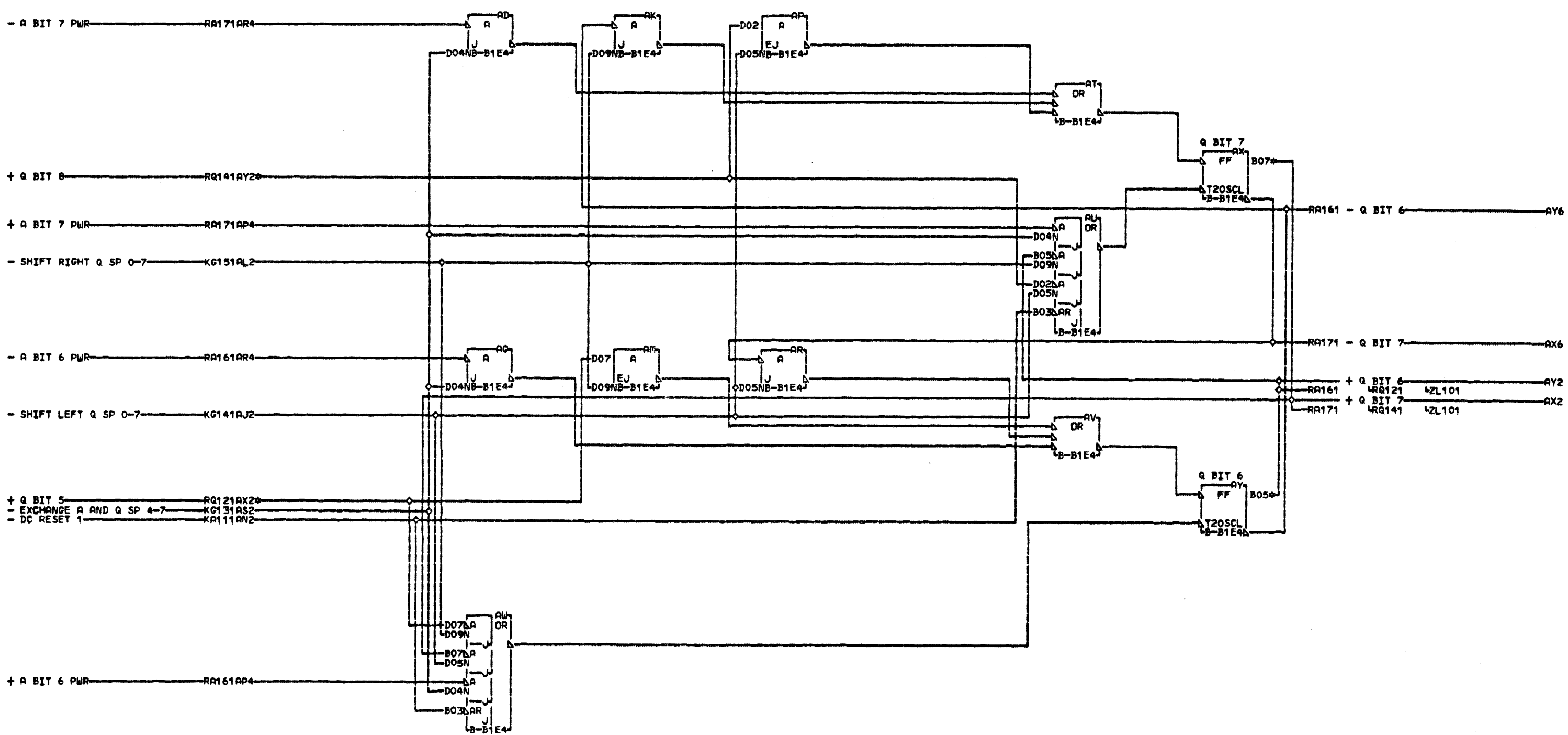
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Q  
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2  
1  
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RQ111AX2  
RESISTOR  
B-B1D4D07  
RQ131AY2  
RESISTOR  
B-B1D4D02  
AX2 B-B1N3D05  
AY2 B-B1N3B04

LCC TYPE  
B-B1D4 6255

|                            |               |                       |
|----------------------------|---------------|-----------------------|
| Q REGISTER<br>BITS 4 AND 5 |               | R<br>Q<br>1<br>2<br>1 |
| -E.C.-HISTORY-             | MACH.1131-C   | 1                     |
|                            | FRAME 01      | 1                     |
|                            | IBM CORP. GPD | 000                   |
| DATE                       | LAST EC       |                       |
| 02-09-71                   | 571150        |                       |
|                            | P.N. 5889302  |                       |





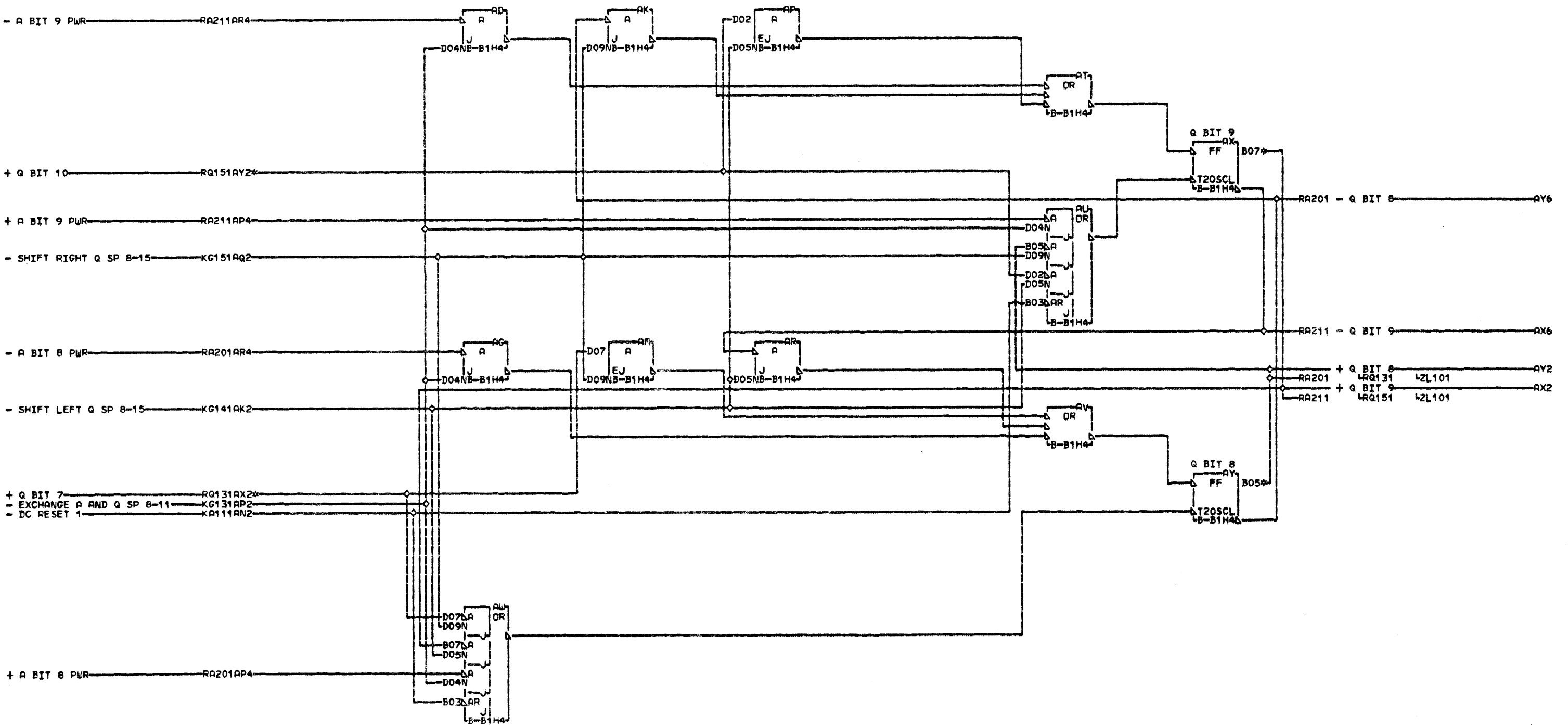
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RQ121AX2  
RESISTOR  
B-B1E4D07  
RQ141AY2  
RESISTOR  
B-B1E4D02  
AX2 B-B1N3D06  
AY2 B-B1N3B05

LOC. TYPE  
B-B1E4 6255

|                            |         |               |              |
|----------------------------|---------|---------------|--------------|
| Q REGISTER<br>BITS 6 AND 7 |         | MACH. 1131-C  | FRAME 01     |
| -E.C.-HISTORY-             |         |               |              |
| DATE                       | LAST EC | IBM CORP. GPD | P.N. 5889303 |
| 02-09-71                   | 571150  |               |              |

R  
Q  
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3  
1  
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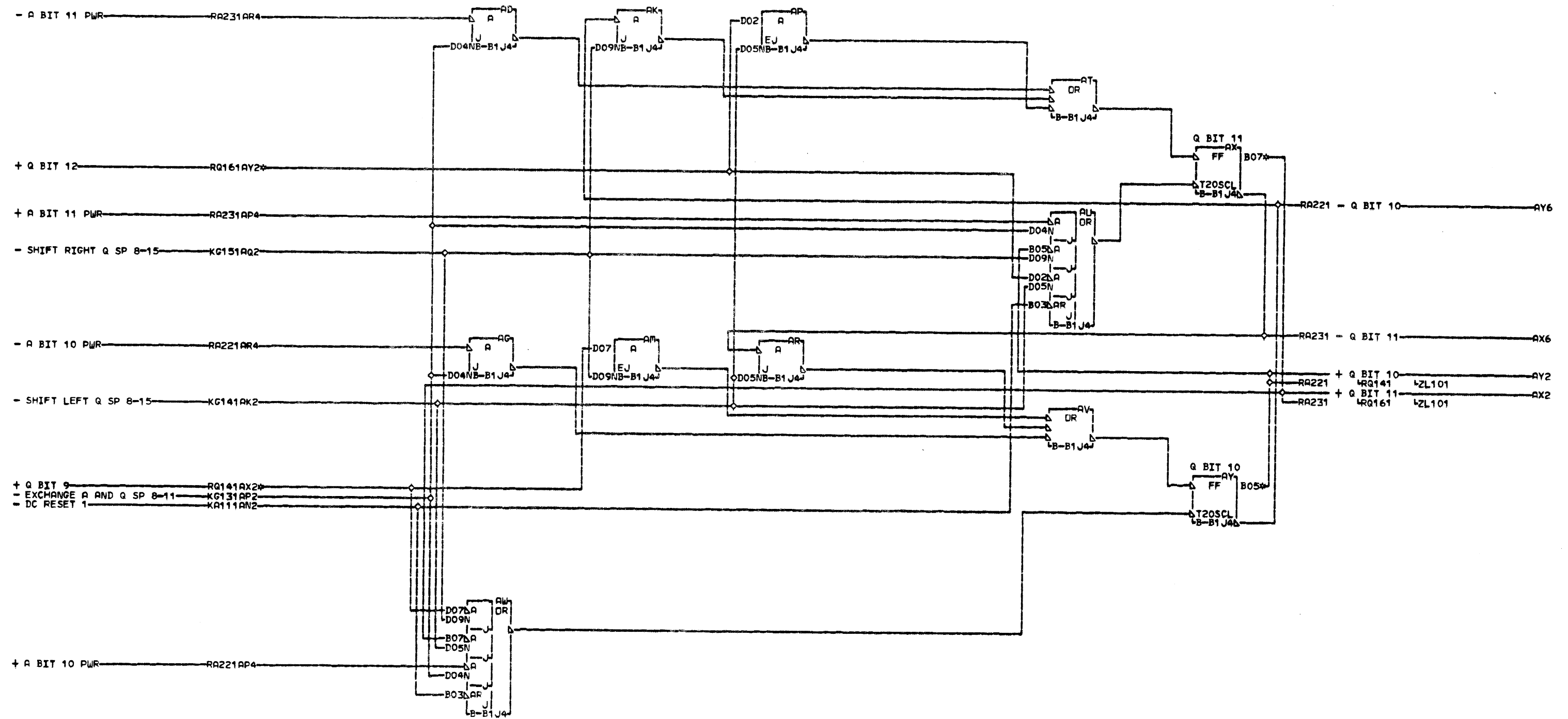
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RQ131AX2  
RESISTOR  
B-B1H4D07  
RQ151AY2  
RESISTOR  
B-B1H4D02  
AX2 B-B1N3D07  
AY2 B-B1N3B07

LOC. TYPE  
B-B1H4 6255

|                                 |                                |
|---------------------------------|--------------------------------|
| Q REGISTER<br>BITS 8 AND 9      |                                |
| E.C.-HISTORY                    | FRAME 01                       |
| DATE LAST EC<br>02-09-71 571150 | IBM CORP. GPD<br>P.No. 5889304 |

R  
Q  
1  
4  
1  
000



RQ141AX2  
RESISTOR  
B-B1J4D07  
RQ161AY2  
RESISTOR  
B-B1J4D02  
AX2 B-B1N3D09  
AY2 B-B1N3B08

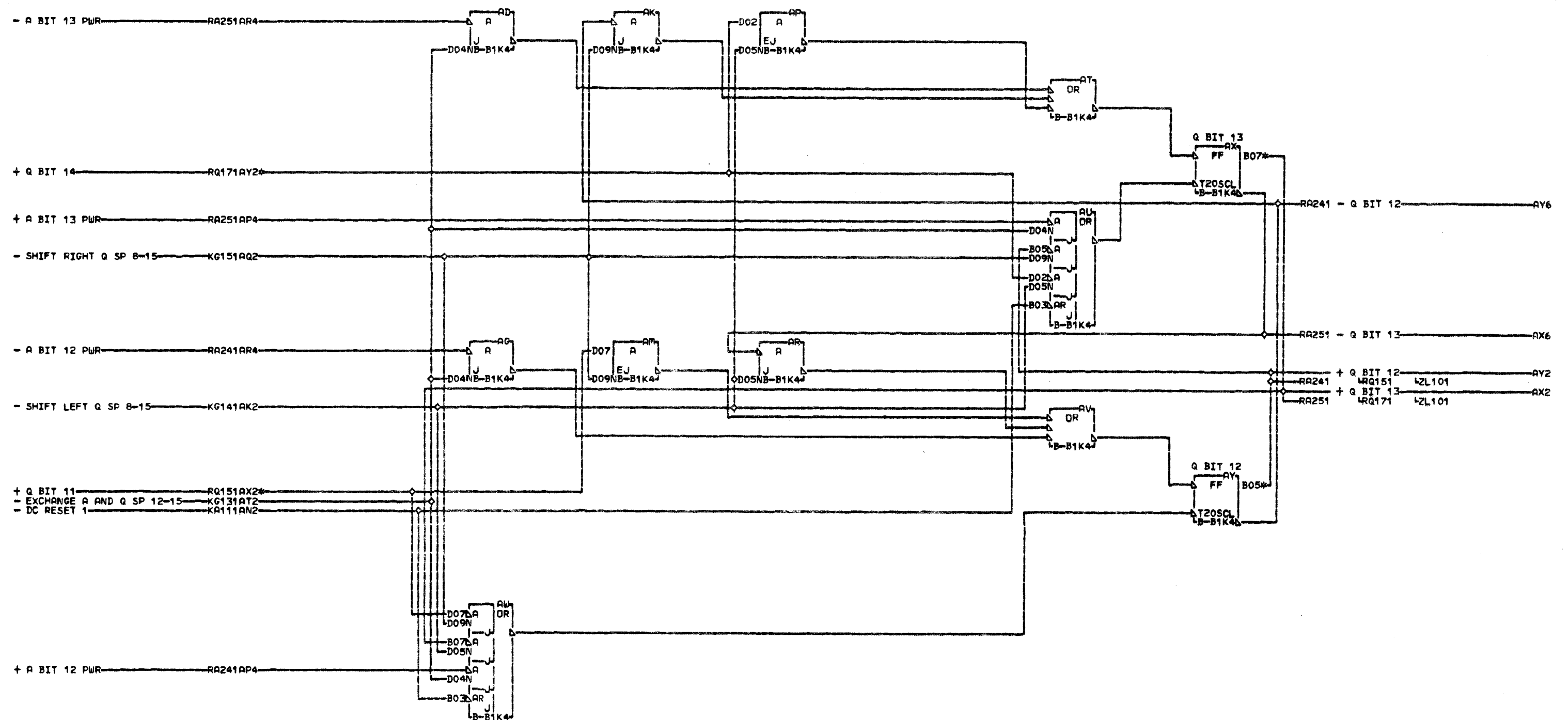
LOC. TYPE  
B-B1J4 6255

|                 |               |
|-----------------|---------------|
| Q REGISTER      |               |
| BITS 10 AND 11  |               |
| -E.C.-HISTORY   | MACH.1131-C   |
| FRAME           | 01            |
| IBM CORP. GPD   |               |
| DATE LAST EC    | P.No. 5889305 |
| 02-09-71 571150 |               |

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Q  
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1

000

R  
Q  
1  
5  
1  
000



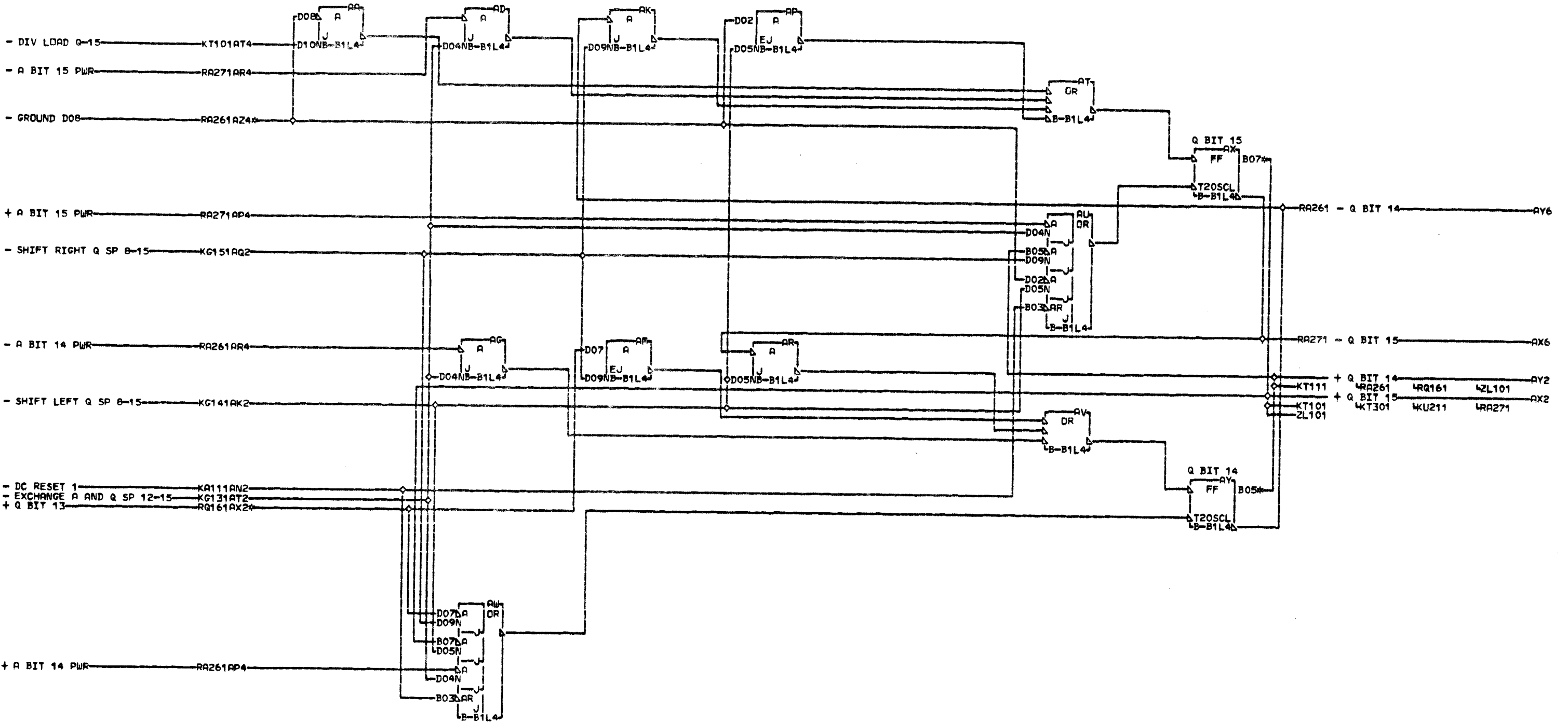
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6  
1  
  
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RQ151AX2  
RESISTOR  
B-B1K4D07  
RQ171AY2  
RESISTOR  
B-B1K4D02  
AX2 B-B1N3D10  
AY2 B-B1N3B09

LDC. TYPE  
B-B1K4 6255

|                              |               |
|------------------------------|---------------|
| Q REGISTER<br>BITS 12 AND 13 |               |
| E.C.-HISTORY                 | MACH.1131-C   |
| DATE LAST EC                 | FRAME 01      |
| 02-09-71 571150              | IBM CORP. GPD |
|                              | P.No. 5889306 |

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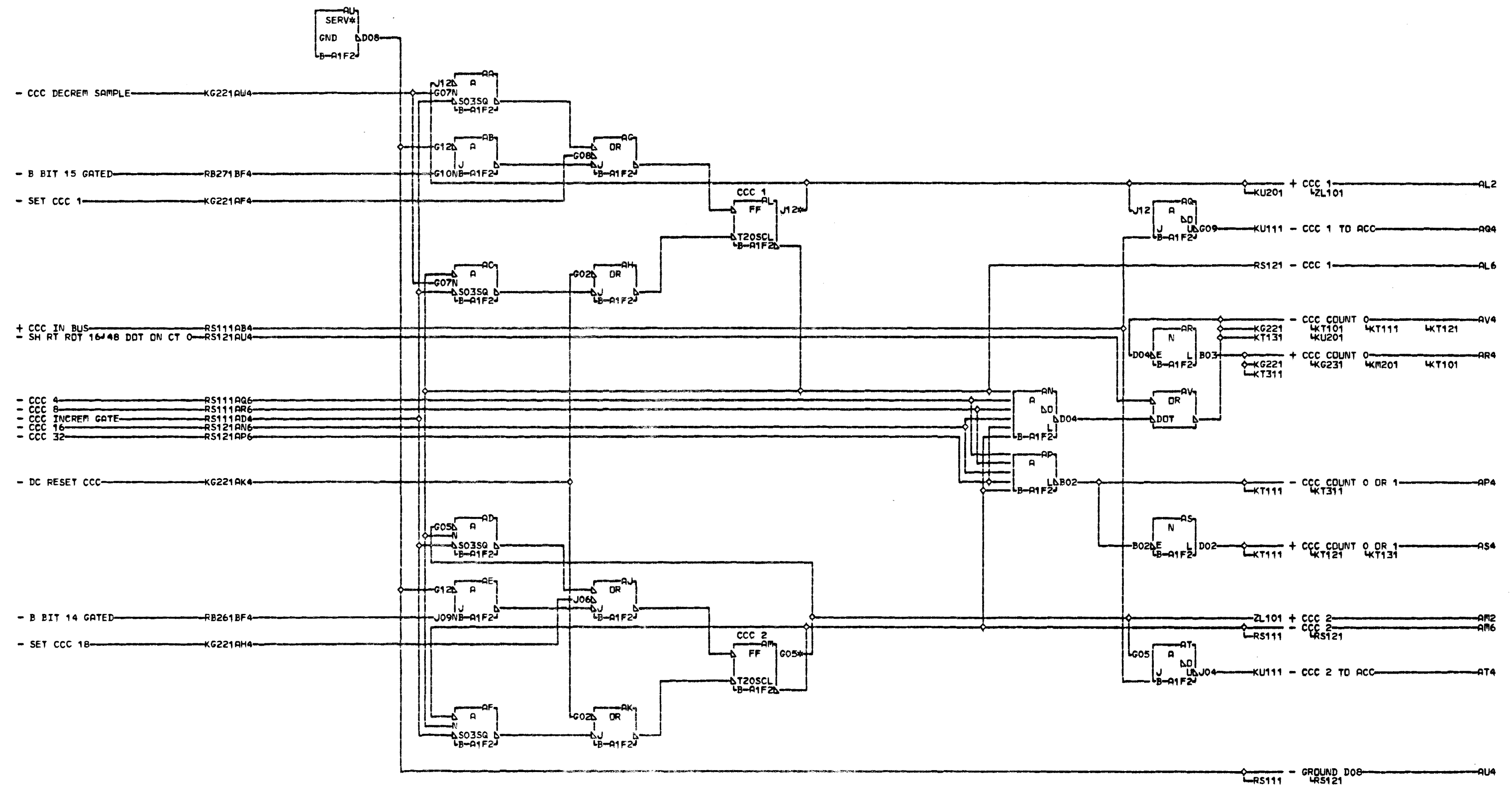
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RA261A24 RESISTOR B-1L4D02  
 RQ161AX2 RESISTOR B-1L4D07  
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 AY2 B-1N3B10 01B-B1A5B09 01B-A1N5B09

LOC. TYPE  
 B-B1L4 6255

|                 |               |
|-----------------|---------------|
| Q REGISTER      |               |
| BITS 14 AND 15  |               |
| -E-C-HISTORY-   | MACH-11131-C  |
| DATE            | FRAME 01      |
| LAST EC         | IBM CORP. GPD |
| 02-09-71 571150 | P.N. 5889307  |

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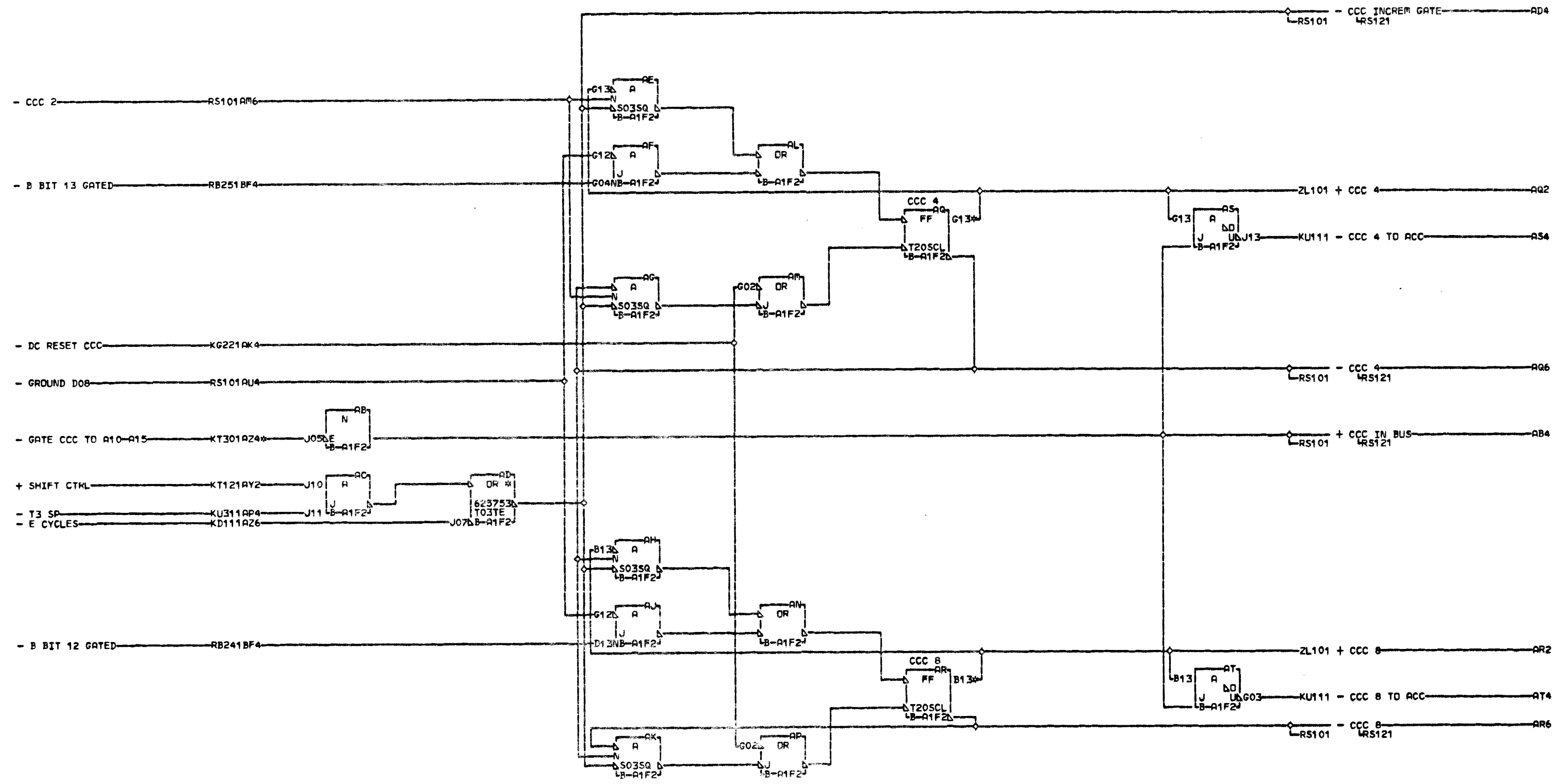
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AM2 B-A1A2B09

LOC. TYPE  
B-A1F2 6257

|                             |               |
|-----------------------------|---------------|
| CYCLE CONTROL COUNTER 1 - 2 |               |
| -EoC-HISTORY-               | MACH#1131-C   |
|                             | FRAME 01      |
|                             | IBM CORP. GPD |
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| 02-09-71 571150             |               |

RS101  
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RS101  
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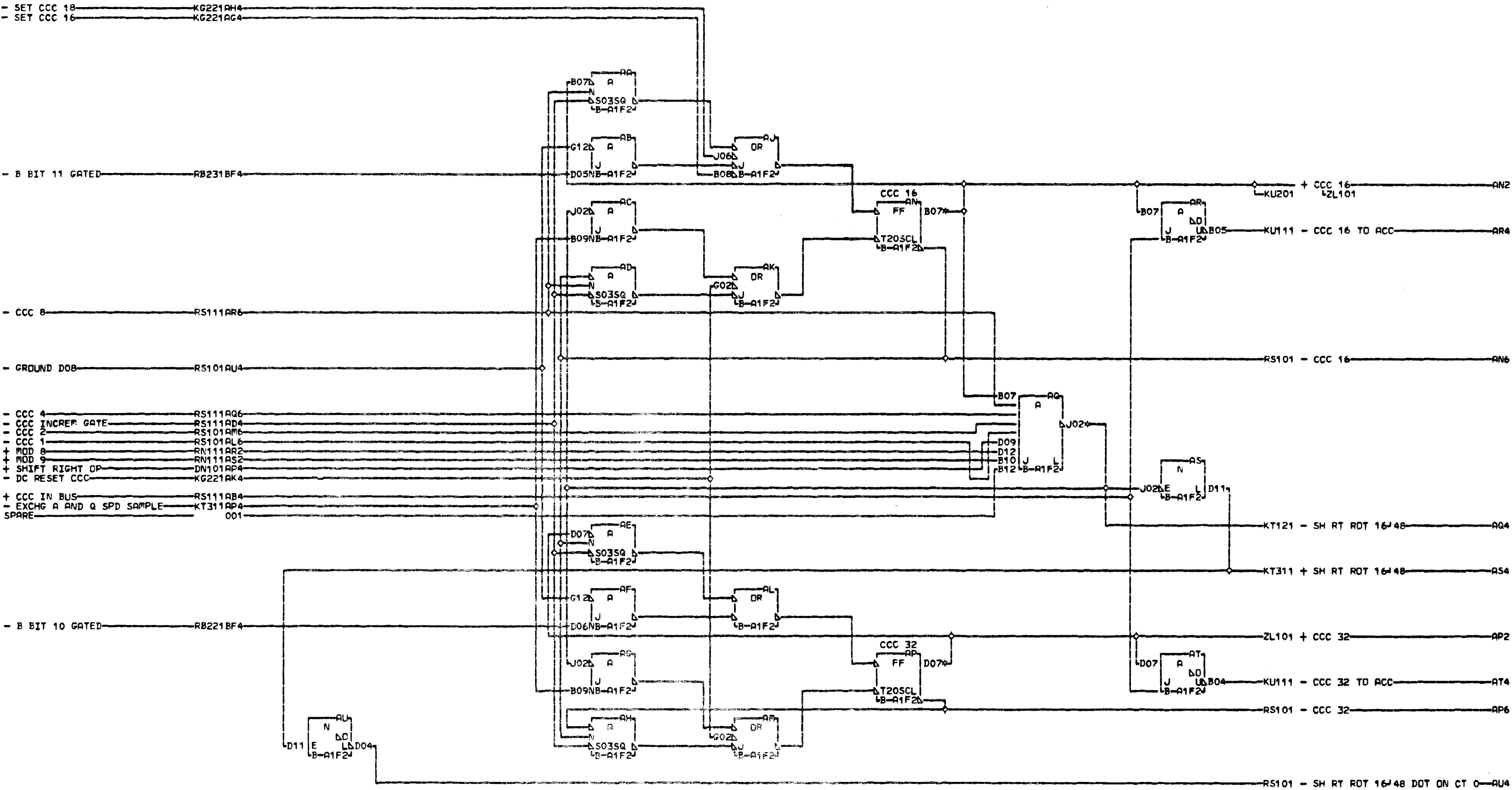
RS111

KT301A24  
 RESISTOR  
 B-A1F2J05  
 AQ2 B-A1A2B10  
 AR2 B-A1A2D09

LDC TYPE  
 B-A1F2 6257

|                             |               |
|-----------------------------|---------------|
| CYCLE CONTROL COUNTER 4 - 8 |               |
| E.C.-HISTORY                | MACH.1131-C   |
| FRAME                       | 01            |
| DATE LAST EC                | IBM CORP. GPD |
| 02-09-71 571150             | P.No. 5889309 |

RS111



RS121

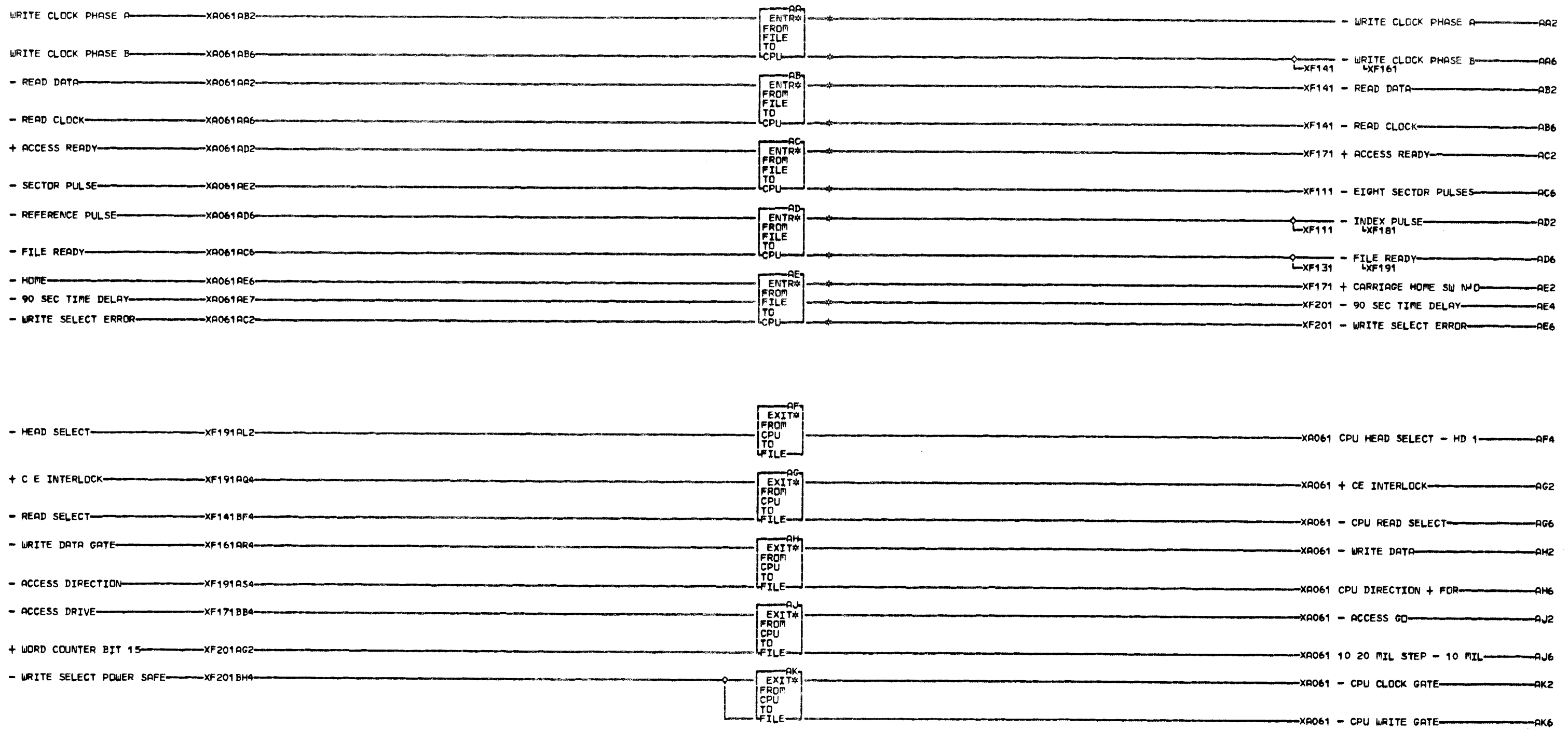
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 AP2 B-A1A2D11  
 AQ4 RESISTOR  
 B-A1F2J02

LDC TYPE  
 B-A1F2 6257

|                               |               |
|-------------------------------|---------------|
| CYCLE CONTROL COUNTER 16 - 32 |               |
| E.C. HISTORY                  | MACH. 1131-C  |
| DATE                          | FRAME 01      |
| LAST EC                       | IBM CORP. GPD |
| 02-09-71 571150               | P.N. 5889310  |

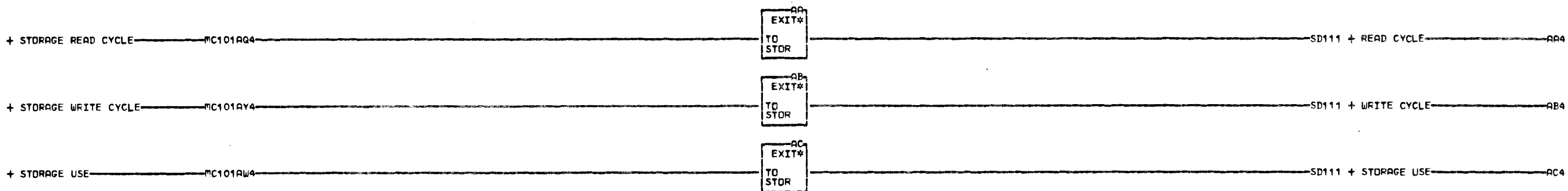
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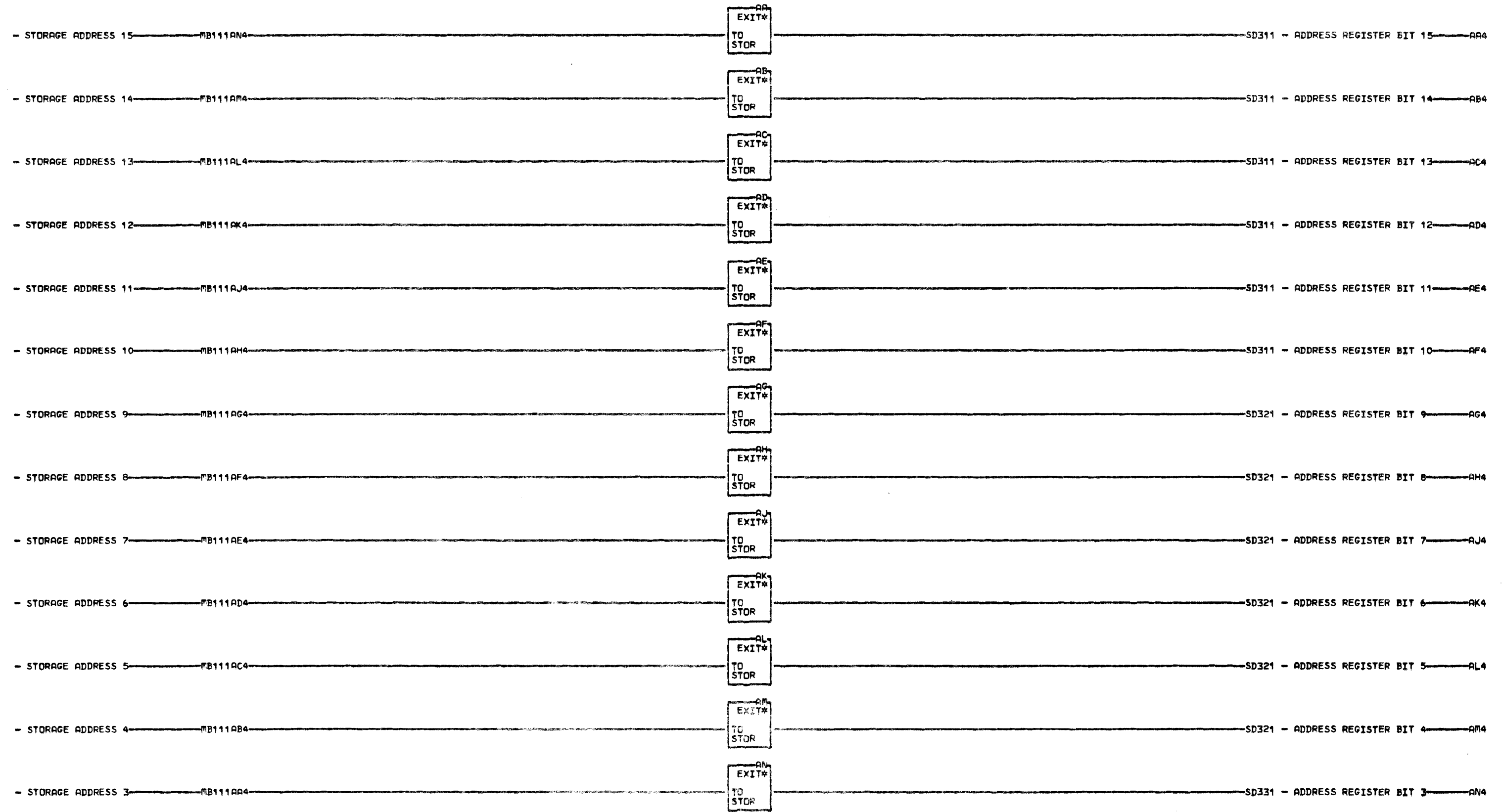


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 AA6 A-C1N7B05 AE6 A-C1N7B08  
 AB2 A-C1N7B03  
 AB6 A-C1N7D02  
 AC2 A-C1N7B07  
 AC6 A-C1N7D06  
 AD2 A-C1N7B12  
 AD6 A-C1N7D13  
 AE2 A-C1N7B02

|                            |               |
|----------------------------|---------------|
| FILE - PROCESSOR INTERFACE |               |
| EoC-HISTORY                | MACH.1131-C   |
| DATE                       | FRAME 01      |
| LAST EC                    | IBM CORP. GPD |
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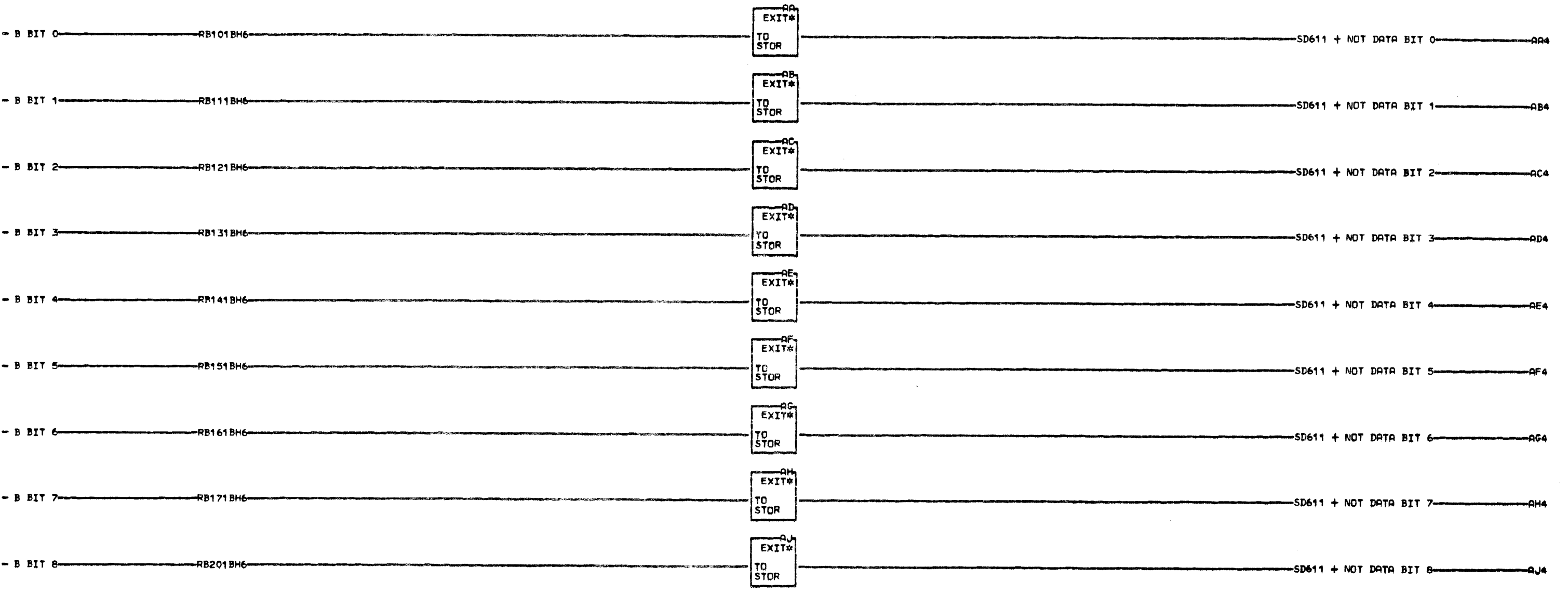
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| SJ-4 STORAGE INTERFACE |                |
| E.C.—HISTORY           | MACH.1131-C    |
|                        | FRAME 01       |
|                        | IBM CORP. GSD  |
| DATE 02-26-71          | LAST EC 571150 |
|                        | P.No. 5889312  |



1-NONE  
000

|                        |               |
|------------------------|---------------|
| SJ-4 STORAGE INTERFACE |               |
| E.C.-HISTORY           | MACH.1131-C   |
| DATE                   | FRAME 01      |
| LAST EC                | IBM CORP. GSD |
| 02-26-71 571150        | P.N. 5889313  |

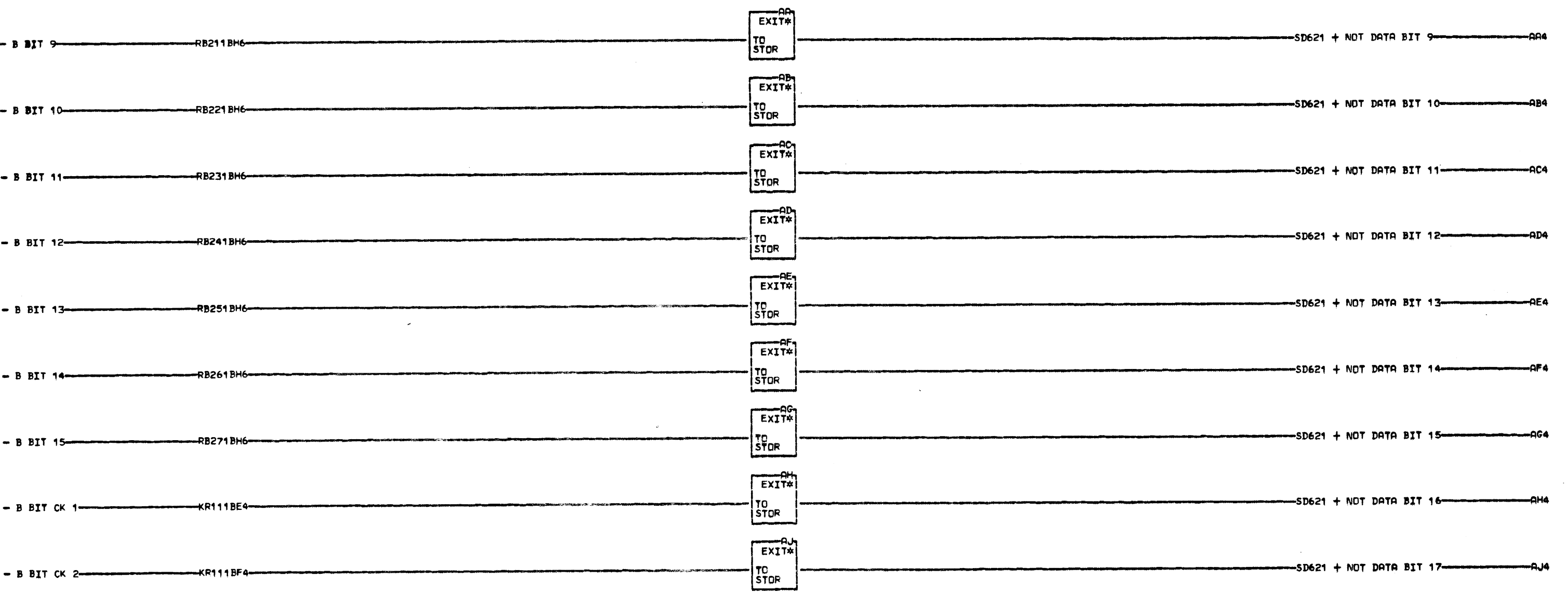
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SJ-4 STORAGE INTERFACE  
 E.C. HISTORY MACH. 1131-C  
 FRAME 01  
 IBM CORP. GSD  
 P.N. 5889314  
 DATE LAST EC  
 02-26-71 571150

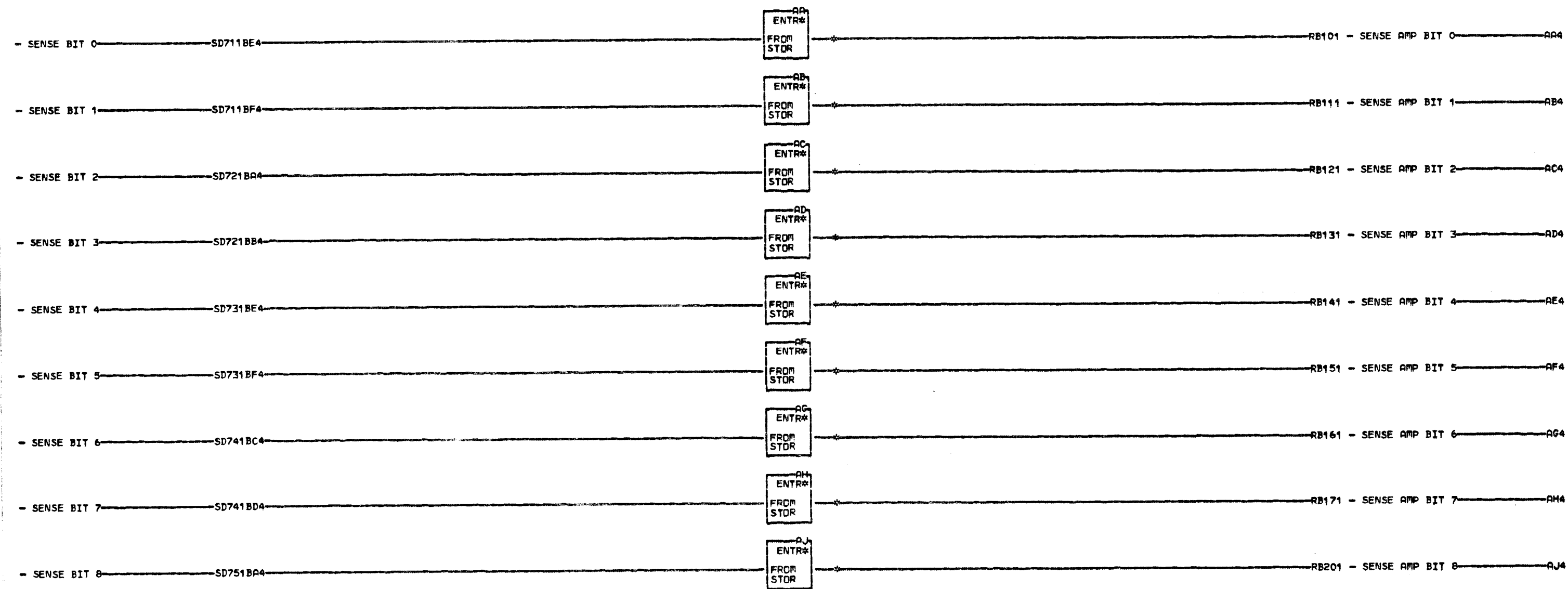
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| SJ-4 STORAGE INTERFACE |                |
|------------------------|----------------|
| -E.C.-HISTORY-         | MACH.1131-C    |
|                        | FRAME 01       |
|                        | IBM CORP. GSD  |
| DATE 02-26-71          | LAST EC 571150 |
|                        | P.N. 5889315   |

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1 UONE

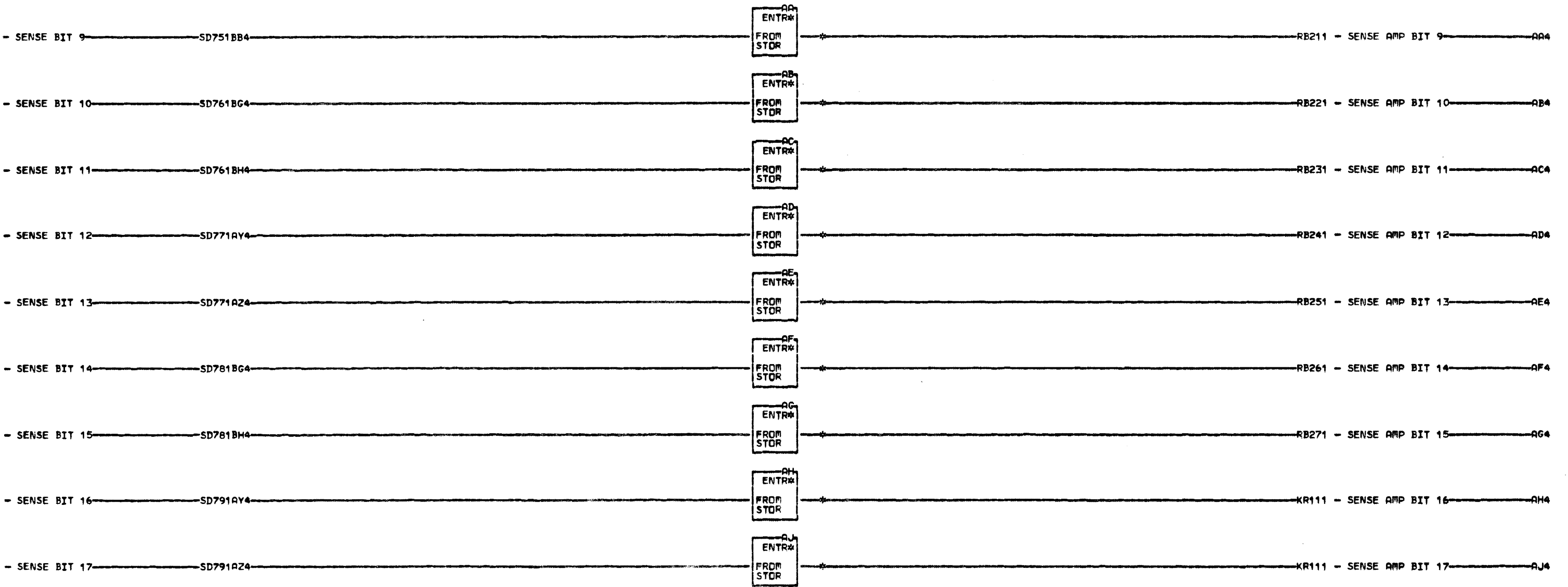
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|               |               |               |
|---------------|---------------|---------------|
| AA4 B-C1B1A11 | 01B-B1B1D11   | 01B-B1C1A11   |
| 01B-B1B1A11   | AE4 B-C1B1E11 | 01B-B1C1D11   |
| AB4 B-C1B1B11 | 01B-B1B1E11   | AJ4 B-C1C1E11 |
| 01B-B1B1B11   | AF4 B-C1C1B11 | 01B-B1C1E11   |
| AC4 B-C1B1C11 | 01B-B1C1B11   |               |
| 01B-B1B1C11   | AG4 B-C1C1C11 |               |
| AD4 B-C1B1D11 | 01B-B1C1C11   |               |
| 01B-C1A1E11   | AH4 B-C1C1D11 |               |
| 01B-B1A1E11   | 01B-C1C1A11   |               |

| SJ-4 STORAGE INTERFACE |             |
|------------------------|-------------|
| E-C-HISTORY            | MACH.1131-C |
| DATE                   | LAST EC     |
| 02-26-71               | 571150      |
| FRAME                  | 01          |
| IBM CORP. GSD          |             |
| P.No. 5889316          |             |

1 UONE

000



000  
1 6 ONE

|               |               |               |             |
|---------------|---------------|---------------|-------------|
| AA4 B-C1D1A11 | 01B-C1K1E11   | 01B-B1F1C11   | 01B-A1LBA04 |
| 01B-B1D1A11   | 01B-B1K1E11   | 01B-A1F1C11   |             |
| AB4 B-C1L1A11 | 01B-B1L1D11   | AJ4 B-C1M1D11 |             |
| 01B-B1L1A11   | AF4 B-C1L1E11 | 01B-C1M1A11   |             |
| AC4 B-C1L1B11 | 01B-B1L1E11   | 01B-B1M1A11   |             |
| 01B-B1L1B11   | AG4 B-C1M1B11 | 01B-B1M1D11   |             |
| AD4 B-C1L1C11 | 01B-B1M1B11   | 01B-B1K8E06   |             |
| 01B-B1L1C11   | AH4 B-C1M1C11 | 01B-B1LBA04   |             |
| AE4 B-C1L1D11 | 01B-B1M1C11   | 01B-A1K8E06   |             |

|                        |                |
|------------------------|----------------|
| SJ-4 STORAGE INTERFACE |                |
| -E.C.-HISTORY          | MACH. 1131-C   |
|                        | FRAME 01       |
|                        | IBM CORP. GSD  |
| DATE 02-26-71          | LAST EC 571150 |
|                        | P.N. 5889317   |

000  
1 6 ONE

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| 3.2.2 ROUTINE SELECTION - FUNCTION 1     |      |
| 3.2.3 PROGRAM OPTIONS                    |      |
| 3.3 PROGRAM HALTS                        |      |
| 3.3.1 NORMAL HALTS                       |      |
| 3.3.2 ERROR HALTS                        |      |
| 3.4 PROGRAM TERMINATION                  |      |
| 3.5 RESTART                              |      |
| 4. PRINTOUTS . . . . .                   |      |
| 4.1 STATUS MESSAGES                      |      |
| 4.2 ERROR MESSAGES                       |      |
| 5. COMMENTS . . . . .                    |      |
| 5.1 TEST NO. 1 (PUNCH TEST)              |      |
| 5.2 TEST NO. 2 (READER TEST)             |      |
| 5.3 TEST NO. 3 (PUNCH/READ/COMPARE TEST) |      |
| 5.4 TEST NO. 4 (REPRODUCE-TAPES TEST)    |      |
| 5.5 TEST NO. 5 ( PUNCH BIT SWS TEST )    |      |
| 6. APPENDIX . . . . .                    |      |
| 6.1 SAMPLE TAPE                          |      |

1. PURPOSE

THE FUNCTION TEST IS DESIGNED (1) TO TEST FOR PROPER OPERATION OF THE PAPER-TAPE STATUS INDICATORS AND (2) TO TEST FOR ACCURATE DATA HANDLING BY THE PAPER-TAPE READER AND PAPER-TAPE PUNCH WHEN OVERLAPPED WITH OTHER ELEMENTS OF THE 1130 SYSTEM. THIS TEST MAY ALSO BE USED TO REPRODUCE TAPES.

2. PREREQUISITES

2.1\*\*\* PROGRAM PREREQUISITES

1130 DIAGNOSTIC MONITOR II

2.2\*\*\* EQUIPMENT PREREQUISITES

1. 1131 CPU WITH PROGRAM LOAD FROM EITHER CARD OR PAPER TAPE READER
2. 1134 PAPER TAPE READER AND/OR 1055 PAPER TAPE PUNCH.
3. AT LEAST 750 WORDS OF AVAILABLE CORE STORAGE.

3. OPERATING PROCEDURE

THESE OPERATING PROCEDURES APPLY TO SINGLE PROGRAM OPERATION ONLY. FOR OVERLAP OPERATION, REFER TO SECTION 3.2.3 OF THE 1130 DIAGNOSTIC MONITOR II DOCUMENTATION.

3.1\*\*\* PROGRAM LOADING

FOR THE CONVENIENCE OF 'READER ONLY' SYSTEMS, THE TEST PATTERN HAS BEEN INCLUDED ON THE END OF THE PAPER TAPE PROGRAM TAPE AND MAY BE IDENTIFIED BY COMPARING WITH THE SAMPLE TAPE. SECTION 6.1.

STANDARD MONITOR LOADING PROCEDURES APPLY

THESE PROCEDURES ARE SUMMARIZED HERE. SEE DM USE PROCEDURE FOR DETAILS.

1. SET FIRST TYPEWRITER TAB 20 CHARACTERS FROM LEFT MARGIN.
2. SET BIT SWITCH 15 OFF - LOAD AND GO  
     ON - TO HALT AFTER LOADING

IF HALT AFTER LOADING, SELECT PROGRAM OPTIONS THEN TURN OFF HALT SWITCH OR FOLLOW NORMAL RESTART PROCEDURE (SECTION 3.5).

3. LOAD DIAGNOSTIC MONITOR AND THIS PROGRAM.
4. SELECT PROGRAM OPTIONS, IF DESIRED.

\*\*\*\*\*

3.2\*\*\* PROGRAM OPERATION.

3.2.1 PROGRAM CONTROL - FUNCTION 0

1. SET SWITCHES 0-7 TO 01.
2. SET SWITCHES 8-15 AS DESIRED.

| SW | FUNCTION              |
|----|-----------------------|
| 8  | RESTART               |
| 9  | ROUTINE START MESSAGE |
| 10 | LOCK ON FUNCTION      |
| 11 | LOOP PROGRAM          |
| 12 | LOOP ON ERROR         |
| 13 | BYPASS ERROR PRINTOUT |
| 14 | HALT ON ERROR         |
| 15 | HALT                  |

3. PRESS INT REQ KEY ON CONSOLE.

\*\*



3.2.2 ROUTINE SELECTION - FUNCTION 1

THE SELECTED ROUTINE WILL LOOP UNTIL A NEW ROUTINE IS SELECTED OR ROUTINE SELECTION IS RESET.

1. TO SET ROUTINE SELECTION

- A. SET SWITCHES 0-7 TO 41.
- B. SET ROUTINE NUMBER IN SWITCHES 12-15.

| RTN | DESCRIPTION              |   |
|-----|--------------------------|---|
| 1   | PUNCH PATTERN            | . NORMAL ROUTINES-<br>. THE PROGRAM STARTS WITH<br>. ROUTINE 1, RUNS EACH<br>. ROUTINE IN SEQUENCE<br>. THEN TERMINATES AFTER<br>. ROUTINE 3. |
| 2   | READ PATTERN             |   |
| 3   | PUNCH AND READ PATTERN   |   |
| 4 * | REPRODUCE TAPE           | . OPTIONAL ROUTINES<br>. THESE ROUTINES RUN<br>. ONLY IF SELECTED.  |
| 5 * | PUNCH BIT SWITCH SETTING |   |

\* = REFER TO SECTION 3.2.3 FOR SPECIAL INSTRUCTIONS.

C. PRESS INT REQ KEY ON CONSOLE.

2. TO RESET ROUTINE SELECTION, SET AS IF SELECTING ROUTINE ZERO  
 \*\*

3.2.3 PROGRAM OPTIONS

1. PUNCH FROM BIT SWITCHES

ROUTINE 5 PUNCHES ALTERNATELY FROM SWITCHES 0-7 AND SWITCHES 8-15. AFTER THE ROUTINE IS SELECTED, SET THE DESIRED PATTERN IN THESE SWITCHES.

2. RE ALIGN PAPER TAPE

TO REALIGN THE PAPER TAPE AT ANY TIME DURING RUNNING OF THE PROGRAM -

- A. SET SWITCHES TO 8180
- B. PRESS INT REG. KEY.

\*\*\*\*\*

3.3\*\*\* PROGRAM HALTS

3.3.1 NORMAL HALTS

| HALT NO.<br>(B REG) | DESCRIPTION                  | RESTART<br>ACTION                                   |
|---------------------|------------------------------|---|
| 3001                | PROGRAM STOP OR ADDRESS STOP | PRESS START   |
| 3002                | HALT ON ERROR                | DISPLAY MODE PRESS START.<br>RUN MODE - PRESS START |

\*\*

3.3.2 ERROR HALTS

| HALT NO.<br>(B REG) | DESCRIPTION   | RESTART<br>ACTION   |
|---------------------|---|---|
| 30F1                | CHECK SUM ERROR ON FIRST CARD OF LOADER                     | RELOAD  |
| 30F2                | READER DSW ERROR WHEN LOADING LOADER                        | RELOAD  |
| 30F3                | CARD 2 OF LOADER DID NOT LOAD                               | RELOAD  |
| 30F4                | CAN NOT CLEAR CORE - DUE TO ERROR IN ADDRESSING UPPER CORE. |   |
| 30F5                | READER CHECK WHEN LOADING MONITOR OR TEST PROGRAM           | NPRO THEN PLACE CARDS RUN OUT IN FRONT OF REMAINING DECK AND PRESS START. |
| 30F6                | MONITOR DID NOT LOAD  | RELOAD  |
| 30F7                | CHECK SUM WHEN LOADING MONITOR                              | RELOAD  |
| 30F8                | READER NOT READY  | MAKE READER READY   |
| 30F9                | INVALID INTERRUPT WHICH WILL NOT RESET                      | PRESS RESET AND START   |
| 30FA                | CONSOLE PRINTER HANG UP - BUSY WILL NOT GO OFF              | FIX THE CONSOLE PRINTER OR NCP THIS WAIT                                  |

\*\*\*\*\*

3.4\*\*\* PROGRAM TERMINATION

IF LOOP PROGRAM HAS NOT BEEN SPECIFIED THE PROGRAM WILL TERMINATE AT THE END OF ROUTINE 3. ROUTINE 4 AND 5 WILL ONLY RUN IF SELECTED.

IF ANY ROUTINE IS SELECTED THAT ROUTINE WILL LOOP AND WILL NOT TERMINATE.

\*\*\*\*\*

3.5\*\*\* RESTART

- 1. SET SWITCHES 0-7 TO 01.
- 2. TURN ON SWITCH 8.
- 3. SET DESIRED CONTROL IN SWITCHES 9-14.
- 4. PRESS INTERRUPT REQUEST KEY.

\*\*\*\*\*

4. PRINTOUTS

ALL PRINTOUTS ARE IN THE STANDARD FORMAT.

APPNN OORR AAAA (MESSAGE)  
OR  
EPPNN OORR AAAA (MESSAGE)

WHERE A IDENTIFIES STATUS MESSAGES  
E IDENTIFIES ERROR MESSAGES  
PP IS THE PID OF THE PROGRAM CAUSING THE MESSAGE  
THIS WILL BE EITHER 00 FOR MESSAGES  
ORIGINATED BY THE MONITOR OR  
0B FOR MESSAGES ORIGINATED BY  
THIS PROGRAM.  
NN IS THE MESSAGE SEQUENCE NUMBER  
RR IS THE ROUTINE NUMBER  
AAAA IS THE ADDRESS OF THE ROUTINE  
MESSAGE IS ANY VARIABLE INFORMATION

4.1\*\*\* STATUS MESSAGES

A0000 NUM PID ADRS RELF LD  
XXXX XXXX XXXX XXXX

THIS MESSAGE IS PRINTED FOLLOWING THE LOADING OF ANY PROGRAM  
(EXCEPT MONITOR), THE MESSAGE GIVES THE LOAD SEQUENCE NUMBER,  
THE PROGRAM ID, THE ADDRESS INTO WHICH THE PROGRAM WAS LOADED,  
AND THE RELOCATION FACTOR.

A0001 SWS PID  
XXXX XXXX

THIS MESSAGE IS PRINTED EACH TIME A VALID SWITCH ENTRY IS READ  
BY THE MONITOR. THE MESSAGE CONTAINS THE SWITCH SETTING READ  
TOGETHER WITH THE PROGRAM ID OF THE PROGRAM INTO WHICH THE  
CONTENTS OF SWITCHES 8-15 WERE STORED. IF THE SWITCH ENTRY  
CALLED FOR HALT OF ANY PROGRAM, THE WORD HALT WILL FOLLOW THE  
MESSAGE.

A0B00 OORR AAAA

ROUTINE START MESSAGE - IF SWITCH 9, FUNCTION 0, IS TURNED ON,  
THIS MESSAGE WILL BE PRINTED BEFORE THE START OF EACH ROUTINE.  
R IS THE NUMBER OF THE NEXT ROUTINE AND AAAA IS THE STARTING  
ADDRESS.

A0B01 OORR AAAA TAPE ALIGNED

THE PAPER TAPE TEST RECORD IS ASSUMED TO BE PROPERLY ALIGNED IN THE  
READER AT THIS TIME. THIS MESSAGE IS RECEIVED ONLY AFTER OPERATOR  
SPECIFICATION OF REALIGN TAPE OPTION.

4.2\*\*\* ERROR MESSAGES

THE DSW IS CHECKED FOR ABSOLUTE CORRECTNESS AT ALL TIMES. IF AN  
ERROR IS DETECTED ONE OF THE MESSAGES BELOW WILL INDICATE THE  
PROBLEM. IT IS LEFT TO THE OPERATOR TO ANALYZE THE DSW FOR THE  
SPECIFIC PROBLEM AREA.

```
*****  
* THE PAPER TAPE DSW  
*-----*  
* BIT  
* 0 PARITY ERROR  
* 1 READER SERVICE  
* 2 NOT USED  
* 3 PUNCH SERVICE  
* 4 READER BUSY  
* 5 READER NOT READY  
* 6 PUNCH BUSY  
* 7 PUNCH NOT READY  
* 8 NOT USED  
* 9 NOT USED  
* 10 NOT USED  
* 11 NOT USED  
* 12 NOT USED  
* 13 NOT USED  
* 14 NOT USED  
* 15 NOT USED  
*  
*****
```

E0001 SWS INVLD  
XXXX

THE SETTING OF SWITCHES 4-7 DID NOT EQUAL THE LOAD SEQUENCE  
NUMBER OF ANY PROGRAM IN CORE.

E0003 OVR CORE

THE PROGRAM WHICH THE LOADER WAS ATTEMPTING TO LOAD  
EXCEEDED AVAILABLE CORE. LOADING WAS TERMINATED.

E0004 CKSUM

A CHECK SUM ERROR WAS DETECTED WHILE LOADING A TEST PROGRAM.  
THIS ERROR OCCURS UNDER ANY OF THE FOLLOWING CONDITIONS.

1. A CARD IS MISSING OR IS OUT OF SEQUENCE.
2. THERE IS AN EXTRA CARD IN THE DECK.
3. THE PUNCHED INFORMATION ON THE CARD IS NOT CORRECT.
4. DATA WAS LOST OR PICKED UP DUE TO A MACHINE MALFUNCTION.
5. DUE TO A CPU MALFUNCTION, THE CHECK SUM WAS NOT  
CORRECTLY CALCULATED.

WHEN THIS ERROR OCCURS ATTEMPT TO RELOAD THE PROGRAM.

E0005 000N XXXX

THIS ERROR WILL OCCUR IS AN INTERRUPT OCCURS, BUT THE ILSW  
WAS NOT CORRECT. N IS THE INTERRUPT LEVEL AND XXXX IS THE  
ILSW. THIS PRINTOUT WILL ONLY OCCUR IF THE INTERRUPT IS RESET  
BY A BOSI. NO ATTEMPT IS MADE BY THE ERROR ROUTINE TO RESET  
THE REQUEST BIT.

E0B01 OORR AAAA XXXX 0X00

DSW ERROR AFTER READER-CONTROL COMMAND

EOB02 00RR AAAA XXXX 0X00  
DSW ERROR AFTER PUNCH COMMAND  
-----

EOB03 00RR AAAA XXXX 0F00  
DSW ERROR AFTER READER-CONTROL AND PUNCH COMMANDS  
-----

EOB04 00RR AAAA XXXX 0X00  
DSW ERROR WHEN CHECKING FOR READER-READY  
-----

EOB05 00RR AAAA XXXX 0X00  
DSW ERROR WHEN CHECKING FOR PUNCH-READY  
-----

EOB06 00RR AAAA XXXX 4000  
READER SERVICE-REQUEST DSW ERROR  
-----

EOB07 00RR AAAA XXXX 1000  
PUNCH SERVICE-REQUEST DSW ERROR  
-----

EOB08 00RR AAAA XXXX 5000  
DSW ERROR WHEN PUNCH AND READER INTERRUPTS RECEIVED AT SAME TIME  
-----

EOB09 00RR AAAA XXXX X000  
DSW ERROR WHEN FIRST INTERRUPT WAS RECEIVED. AT THIS TIME BOTH THE READER AND THE PUNCH ARE BEING RUN UNDER RACE CONDITIONS. THE DSW FOR THE DEVICE THAT INTERRUPTS FIRST IS ANALYZED FIRST. ANY ERROR WILL BE PRINTED AS AN EOB09. SIMILARLY FOR THE SECOND INTERRUPT, AN ERROR WILL BE PRINTED AS EOB10.  
-----

EOB10 00RR AAAA XXXX X000  
DSW ERROR WHEN FIRST INTERRUPT WAS RECEIVED. AT THIS TIME BOTH THE READER AND THE PUNCH ARE BEING RUN UNDER RACE CONDITIONS. THE DSW FOR THE DEVICE THAT INTERRUPTS FIRST IS ANALYZED FIRST. ANY ERROR WILL BE PRINTED AS AN EOB09. SIMILARLY FOR THE SECOND INTERRUPT, AN ERROR WILL BE PRINTED AS EOB10.  
-----

EOB11 00RR AAAA XXXX 0X00  
NO READER INTERRUPT RECEIVED. ( XXXX IS THE LAST DSW SENSED IMMEDIATELY AFTER THE READER-CONTROL COMMAND.  
-----

EOB12 00RR AAAA XXXX 0X00  
NO PUNCH INTERRUPT RECEIVED (XXXX IS THE LAST DSW SENSED IMMEDIATELY AFTER THE READER-CONTROL COMMAND )  
-----

EOB13 00RR AAAA XXXX 0F00  
NO PUNCH OR READER INTERRUPT (XXXX IS THE LAST DSW SENSED IMMEDIATELY AFTER THE READER-CONTROL AND PUNCH COMMANDS)  
-----

EOB14 00RR AAAA DATA ERR  
XX00 XX00  
READ/COMPARE ERROR (RDR BUFFER CHANGED)  
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-1 RESPECTIVELY  
-----

EOB15 00RR AAAA DATA ERR  
XX00 XX00  
READ/COMPARE ERROR ( RDR BUFFER UNCHANGED)  
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-1 RESPECTIVELY  
-----

EOB16 00RR AAAA XXXX C0G0 XX00  
READER-DSW READ ERROR WHEN REPRODUCING TAPES. IF TAPE STOPPED, THE FIRST CHARACTER BEYOND THE READ STATION WAS PERHAPS IMPROPERLY READ. THIS CHARACTER HAS NOT AS YET BEEN PUNCHED. BACK THE READER UP ONE CHARACTER AND PRESS START ON THE P-C.  
DATA (XX00) PRINTED AS ENTERED IN CORE - CHANNELS 8-0 RESPECTIVELY.  
-----

EOB18 00RR AAAA READ READ  
1ST 2ND  
XX00 XX00  
CONSECUTIVE READ ERROR DATA (XX00) SHOULD AGREE.  
-----

EOB19 00RR AAAA XX00 YY00  
THE PROGRAM COULD NOT ALIGN THE TAPE IN THE READER IN THE LAST 500 CHARACTERS.  
THE PROBLEM IS,  
A. OPEN DATA CHANNEL(S). XX00 SHOULD BE FF00, WHICH IS THE CHARACTER THAT WOULD BE PLACED IN CORE BY READING AN ALL-BITS CHARACTER. ANY MISSING BIT(S) INDICATE THE OPEN DATA CHANNEL(S).  
B. SHORTED DATA CHANNEL(S). YY00 SHOULD BE 0000, WHICH IS THE CHARACTER THAT WOULD BE PLACED IN CORE BY READING A NO-BITS CHARACTER. ANY BIT(S) PRESENT INDICATE THE SHORTED CHANNEL(S).  
C. IF BOTH XX00 AND YY00 ARE CORRECT,  
1. THE TAPE IS NOT IN THE READER CORRECTLY, OR  
2. THE READER CANNOT READ THE FIRST 8 CHARACTERS PROPERLY. IF SO, TRY ONE OF THESE,  
A. TRY RUNNING THE REPRODUCE TAPE ROUTINE (ROUTINE 4).  
B. TRY MANUALLY ALIGNING THE TAPE IN THE READER. THEN SPECIFY THE MANUAL TAPE ALIGNMENT OPTION (TABLE 0) AND RESTART THE PROGRAM.  
-----

EOB20 00RR AAAA XXXX  
A SPURIOUS OR NON-RESETABLE INTERRUPT HAS BEEN RECEIVED.  
-----

5. COMMENTS

THE FUNCTION TEST CONSISTS OF THREE NORMAL ROUTINES AND TWO OPTIONAL ROUTINES. NORMALLY, ROUTINES ONE THROUGH THREE ARE RUN IN ORDER. ALL ROUTINES ARE DESCRIBED IN PARAGRAPHS 5.1 THROUGH 5.5. THE FUNCTION TEST,

- A. CHECKS DSW FOR PROPER BITS BEFORE ISSUING WRITE (PUNCH) OR CONTROL (READER) COMMANDS.
- B. CHECKS DSW FOR CORRECTNESS AFTER XIO INSTRUCTION.
- C. CHECKS FOR INTERRUPT FROM DEVICE WITHIN SPECIFIED TIME LIMIT.
- D. CHECKS DSW AFTER INTERRUPT IS RECEIVED.

5.1\*\*\* ROUTINE NO. 1 (PUNCH TEST)

TEST NO. 1 CHECKS THE OPERATION OF THE PAPER-TAPE PUNCH WHILE PUNCHING TWO TEST RECORDS. THE RECORD INCLUDES A RIPPLE PATTERN AND AN ALL-CHARACTER PATTERN. (REFER FIGURE 1).

5.2\*\*\* ROUTINE NO. 2 (READER TEST)

THIS TEST CHECKS THE OPERATION OF THE PAPER TAPE READER WHILE READING ONE RECORD PRODUCED BY THE PUNCH TEST. THE TAPE IS NORMALLY AUTOMATICALLY ALIGNED IN THE READER BY READING EIGHT CONSECUTIVE CHARACTERS CORRECTLY. A MESSAGE IS PRINTED WHEN THE TAPE IS PROPERLY ALIGNED. IF DESIRED, THE OPERATOR CAN MANUALLY PLACE THE TAPE IN THE READER ON THE FIRST CHARACTER OF THE RIPPLE PATTERN AND SPECIFY THE MANUAL ALIGNMENT OPTION AS IN TABLE O. THE TAPE MAY ALSO BE REALIGNED IN THE READER AT ANY TIME.

EACH CHARACTER READ IS COMPARED WITH A WORD IN STORAGE. AN UNEQUAL COMPARE WILL CAUSE AN ERROR TYPEOUT. SEE 4.2. THERE WILL BE ONE ERROR TYPEOUT FOR EACH READ/COMPARE ERROR.

THESE ERROR PRINTOUTS MAY INDICATE THE TAPE IS NOT IN THE PROPER POSITION IN THE READER. THE TAPE MAY BE MANUALLY ADJUSTED IN THE READER OR THE OPERATOR MAY SELECT REALIGN TAPE. (TABLE O)

5.3\*\*\* ROUTINE NO. 3 (PUNCH/READ/COMPARE TEST)

THIS TEST CHECKS THE FUNCTION AND RELIABILITY OF THE PAPER TAPE READER AND PUNCH WHEN OPERATED TOGETHER. BOTH DEVICES ARE OPERATED AT THE SAME SPEED. THE DATA READ IS COMPARED WITH THE DATA PUNCHED IN A NEW TAPE. THIS TEST ALSO HAS THE TAPE ALIGNMENT FEATURE OF TEST NO. 2. THE TEST IS COMPLETE AFTER ONE RECORD HAS BEEN PROCESSED.

5.4\*\*\* ROUTINE NO. 4 (REPRODUCE-TAPES TEST)

THE OPERATOR HAS THE OPTION OF REPRODUCING ANY TAPE. THE OPERATOR MUST SPECIFY HALT ON ERROR OPTION IN MONITOR CONTROL TABLE O. AGAIN, ALL DEVICE STATUS CHECKING DONE IN TESTS NOS. 1 AND 2 IS INCLUDED IN THIS TEST. ALSO, A DSW ERROR WHEN READING THE TAPE WILL CAUSE A DELAY OF THE PROGRAM UNTIL THE OPERATOR CAN INTERVENE. OTHER THAN E016 IS PRINTED PRESS START AND THEN VERIFY THAT THE PROPER PUNCHES ARE OBTAINED. SEE SPECIFIC ERROR MESSAGE FOR AID IN INSTRUCTIONS.

5.5\*\*\* ROUTINE NO. 5 (PUNCH BIT SWITCH IMAGE)

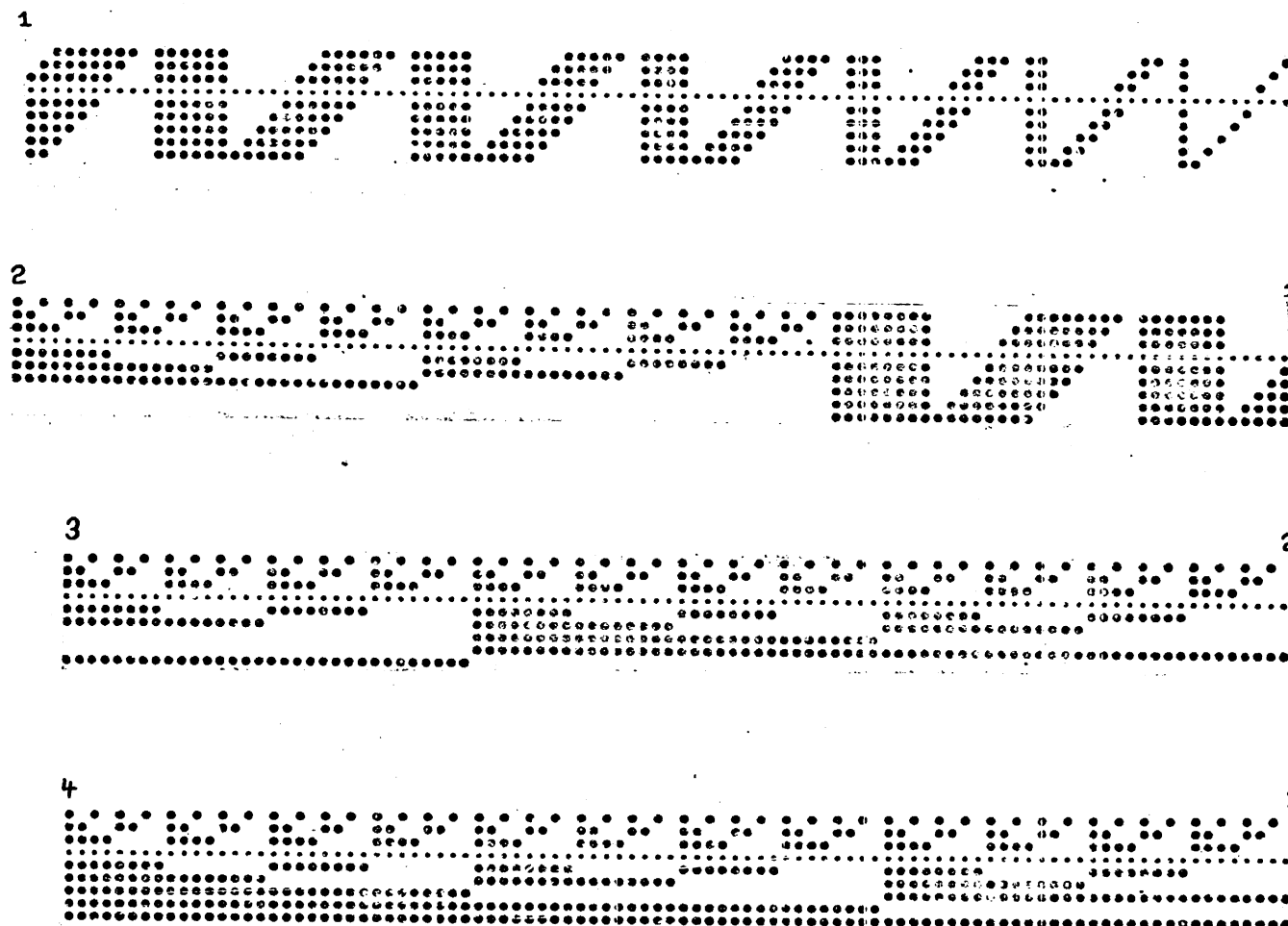
THIS ROUTINE PUNCHES THE DATA ENTERED IN THE BIT SWITCHES. THE ROUTINE WILL ALTERNATELY PUNCH FROM SWITCHES 0-7 THEN SWITCHES 8-15.

PAPER TAPE READER/PUNCH FUNCTION TEST

6. APPENDIX

6.1 SAMPLE TAPE

FIGURE 1 SHOWS AN EXAMPLE OF A PAPER TAPE RECORD.



```

*****
*           EQUATE TABLE
*****
* THIS TABLE EQUATES TEST PROGRAM LABELS
* TO THEIR EQUIVALENT DIAGNOSTIC MONITOR
* ADDRESSES.
*
0160 BEGIN EQU      /160      BEGIN ROUTINE
0161 START EQU     BEGIN&1  SUPERVISOR ROUTINE
0162 ERROR EQU     START&1  ERROR LOG ROUTINE
0163 LOG EQU       ERROR&1  STATUS LOG ROUTINE
0164 END EQU       LOG&1    END ROUTINE
*-----*
* MONITOR CONTROL WORD ADDRESSES
*
0165 RTNSW EQU     END&1    ROUTINE START SWITCH
0166 ERLCK EQU     END&2    LOCK ON ERROR CONTROL
0167 LOGBY EQU     END&3    I/O BUSY SW ADR
0168 RLCF EQU      END&4    RELOCATION FACTOR ADR
*-----*
* INTERRUPT TRANSFER VECTOR ADDRESSES
*
017A ILO EQU      /17A     INTERRUPT LEVEL ZERO
018A IL1 EQU      ILO&16  INTERRUPT LEVEL ONE
019A IL2 EQU      IL1&16  INTERRUPT LEVEL TWO
01AA IL3 EQU      IL2&16  INTERRUPT LEVEL THREE
01BA IL4 EQU      IL3&16  INTERRUPT LEVEL FOUR
01BB RQTY EQU      IL4&1    TYPR SVC REQUEST INTERPT
01BC RQKB EQU      RQTY&1  KEYBOARD REQUEST INTERPT
01BD SVKB EQU      RQKB&1  KEYBOARD SERVICE INTERPT
*****
0000 ORG          *&1500
*****
*
*****
*           DIAGNOSTIC MONITOR
* CONTROLLED
* 1130 PAPER TAPE TEST
*****
*
*           PROGRAM STATUS TABLE
*
050C 0 030B PID DC /030B PROGRAM ID NUMBER
050D 0 0000 RID DC /0000 ROUTINE NUMBER
050E 0 0000 RAD DC /0000 ROUTINE ADDRESS
050F 0 0000 SWO DC /0000 FCN 0 - CONTROL
05E0 0 0000 SW1 DC /0000 FCN 1 - INITIAL RTN
05E1 0 0000 SW2 DC NOT USED
05E2 0 0000 SW3 DC /0000 PUNCH SWS WORD
05E3 1 0647 DC LOOP LOOP PROGRAM ADDRESS
05E4 1 0634 DC RESRT INITIALIZATION ADDR
05E5 0 0000 MLSCF DC /0000 MAIN LINE SEQ CNTL
05E6 1 0634 DC RESRT
05E7 0 0000 DC COUNTER ENTRY
05E8 0 FFFF TERM DC /FFFF TERMINATOR
*****
*
*
*           INTERRUPT ROUTINE
*
05E9 0 0000 POINT DC /0000
05EA 1 0C00 0740 XIO L XIOSD SENSE DSW
05EC 0 D036 STO DSWIT
05ED 1 6780 062E LDX I3 INTEX
05EF 1 4F80 0625 BSC I3 HANDL-1 BR TO PROPER CHECK
*
05F1 1 F700 062B SINT EDR L3 INTEX-3 CHECK SINGLE INTRPT

```

```

05F3 1 E780 062E AND I3 INTEX
05F5 1 4C18 061C BSC L PINT3,&- BR IF DSW OK
05F7 1 6700 075F LDX L3 NIPES SVC REQ ERROR
05F9 0 7024 MDX PINT1
*
05FA 0 F030 DINT EDR INTED CK DSW FOR 2 SVC REQ
05FB 0 4C00 0000 BSC L /0000 BR IF 2ND DOUBLE INT
05FD 0 D02B DINT1 STO DSWDI CK FIRST INTERPT DSW
05FE 0 E02C AND INTED
05FF 0 D02A STO DSWID
0600 1 4C20 0610 BSC L DINT4,Z EXIT IF ONLY ONE REC
0602 0 C026 LD DSWDI
0603 1 4C18 061C BSC L PINT3,&- BR IF DSW OK
0605 1 6700 0769 LDX L3 DINE1 PRINT DSW ERROR NEXT
0607 0 7016 MDX PINT1
*
0608 0 E821 DINT2 OR DSWID CHECK SECOND INTRPT DSW
0609 0 D019 STO DSWIT
060A 0 F020 EOR INTED
*
060B 1 4C18 061C BSC L PINT3,&- BR IF DSW OK
060D 1 6700 076E LDX L3 DINE2
060F 0 700E MDX PINT1
*
0610 0 1340 DINT4 SLCA 3 0
0611 0 1001 SLA 1
0612 0 D011 STO BUMRQ ZERO IF NO IEQ BIT
0613 1 6700 0608 LDX L3 DINT2 SET SECOND INT SW
0615 0 6BE6 STX 3 DINT1-1
0616 0 700A MDX XIT
*
0617 1 6700 0755 EINT LDX L3 SPUR SPURIOUS OR NON-
0619 1 6F00 05E5 STX L3 MLSCF RESETABLE INTERRUPT
0618 0 7005 MDX XIT
*
061C 1 6700 077D PINT3 LDX L3 DINE6 DSW OK - RET TO MLINE
061E 0 6BC7 PINT1 STX 3 MLSCF&1
*
061F 0 6300 LDX 3 0 RESET INTRPT EXPECTED
0620 0 6B0D STX 3 INTEX
*
0621 1 4C80 05E9 XIT BSC I POINT BUG OUT
*****
*
0623 0 0000 DSWIT DC /0000 LAST INTERRUPT DSW
0624 0 0000 BUMRQ DC /0000
0625 1 0617 DC EINT
*
0626 1 05F1 HANDL DC SINT INTERRUPT BR ADRS
0627 1 05F1 DC SINT PUNCH INTR CK ADRS
0628 1 05FA DC DINT RDR INTER CK ADRS
0629 0 0000 DSWDI DC /0000 RDR-PUNCH INT CK
062A 0 0000 DSWID DC /0000 IDENTIFY INT YET EXP
*
062B 0 5000 INTED DC /5000 RDR-PCH SVC REQ EXP
062C 0 4000 DC /4000 RDR SVC REQ
062D 0 1000 DC /1000 PCH SVC REQ
062E 0 0000 INTEX DC /0000 INTERRUPT EXPECTED
*
* 1 # READER
* 2 # PUNCH
* 3 # BOTH
*
062F 1 0748 DC RMASK READER
0630 1 0749 DC XMASK PUNCH
*****
*
0631 0 4480 0160 PTBGN BSI I BEGIN CALL MONITOR

```

PER TAPE READER/PUNCH FUNCTION TEST

PAPER TAPE READER/PUNCH FUNCTION TEST

```

0633 1 05DC          DC      PID      ADDR OF PID NO  *
*****
*                    INITIAL PROGRAM ENTRY POINT
*
0634 0 62F8        RESRT LDX  2 -8      RESET TAPE ALIGN WORDS
0635 1 6E00 07E7    STX  L2 CORCT
0637 1 C400 05E1    LD   L SW2
0639 0 1810        SRA   16
063A 1 D400 07E8    STO  L N1ST
*
063C 0 6103        LDX  1 3      RESTORE ERROR WD CNT
063D 1 6D00 0819    STX  L1 EMESG&2
*
063F 0 6500 030E    LDX  L1 782     RESTORE FOR 2 PU RCDS
0641 1 6D00 0685    STX  L1 RTN1I&1
0643 1 6500 05E9    LDX  L1 POINT   SET INTERRUPT TRAP
0645 0 6D00 01BA    STX  L1 IL4     VECTOR
*****
*
*                    ROUTINE CONTROLLER
*
* THIS ROUTINE CHECKS SWITCHES AND CONTROLS
* SEQUENCE IN WHICH TEST ROUTINES ARE RUN.
*
0647 0 1010        LOOP  SLA   16      RESET ROUTINE NUMBER
0648 0 D094        STO   RID
*
0649 1 C400 05E0    CNTRL LD  L SW1
0648 0 D037        STO   SWCMP
064C 1 4C08 0658    BSC  L CN20,&   BR IF NO RTN SELECTD
*
064E 1 D400 05DD    CN10  STO  L RID   SAVE NEW RTN NUMBER
0650 0 902C        S      RIDCK
0651 1 4C08 065F    BSC  L CN25,&   BR IF VALID RTN
0653 0 1810        SRA   16
0654 1 D400 05E0    STO  L SW1     IF INVALID RTN GO
0656 1 D400 05DD    STO  L RID
*
0658 1 7401 05DD    CN20  MDX  L RID,1 ADV TO NEXT RTN
065A 0 C021        LD   RTNOM
065B 1 9400 05DD    S     L RID
*
*
065D 0 4488 0164    BSI  I END,&    END PROGRAM
*
065F 1 6580 05DD    CN25  LDX  I1 RID
0661 1 C500 067D    LD   L1 RTTBL-1 SET ROUTINE ADDRESS
*
0663 1 D400 05DE    STO  L RAD
0665 1 6700 066E    LDX  L3 CN30   SET MLSCF ENTRY
0667 1 6F00 05E5    STX  L3 MLSCF  *
0669 0 6F00 0165    STX  L3 RTNSW  SET RTN SWITCH
066B 0 6903        STX  1 CN30&1  SAVE IX 1
066C 0 4480 0161    BSI  I START   GO TO MONITOR
066E 0 6500 0000    CN30  LDX  L1 0  RESTORE IX 1
0670 0 6300        LDX  3 0       RESTORE CHAR RTN
0671 1 6F00 0847    STX  L3 DULP&1
0673 0 6301        LDX  3 1
0674 1 6F00 0845    STX  L3 DULP-1
*
0676 0 6700 0187    LDX  L3 391    SET RECORD LENGTH
0678 1 6F00 06A3    STX  L3 WRECK
*
067A 1 4D80 067D    BSC  I1 RTTBL-1 BR TO ROUTINE
*****

```

```

30801380
30801390
30801400
30801410
30801420
30801430
30801440
30801450
30801460
30801470
30801480
30801490
30801500
30801510
30801520
30801530
30801540
30801550
30801560
30801570
30801580
30801590
30801600
30801610
30801620
30801630
30801640
30801650
30801660
30801670
30801680
30801690
30801700
30801710
30801720
30801730
30801740
30801750
30801760
30801770
30801780
30801790
30801800
30801810
30801820
30801830
30801840
30801850
30801860
30801870
30801880
30801890
30801900
30801910
30801920
30801930
30801940
30801950
30801960
30801970
30801980
30801990
30802000
30802010
30802020
30802030
30802040
30802050

```

```

067C 0 0004
067D 0 0005
*
067E 1 0684
067F 1 0691
0680 1 0699
*
0681 1 06A4
0682 1 06C2
*
0683 0 0000
*
0684 0 6500 030E
0686 0 691C
0687 0 6500 0187
0689 0 69FB
068A 1 4400 083F
068C 0 4053
068D 1 4C00 072F
*
068F 0 4048
*
0690 0 70F9
*
0691 1 4400 083F
0693 0 4062
0694 0 7077
0695 1 4400 079B
0697 0 4040
0698 0 70F8
*
0699 1 4400 083F
069B 0 4044
069C 0 4059
069D 1 4C00 071B
069F 1 4400 079B
06A1 0 4036
06A2 0 70F6
*
06A3 0 0000
*
06A4 0 4051
06A5 0 7066

```

```

*
*
RTNOM DC      NRTN-RTTBL&2
RIDCK DC      LRTN-RTTBL&1
*
*                    ROUTINE ADDRESS TABLE
*
*                    NORMAL ROUTINES
*
RTTBL DC      RTN1I      PUNCH ROUTINE
DC           RTN2      READER RTN
NRTN DC      RTN3      PCH & RDR CHECK
*
*                    OPTIONAL ROUTINES
*
DC           RTN4I      REPRODUCE TAPE
LRTN DC      RTN5A      PCH BIT SW DATA RTN
*
SWCMP DC      /0000     SW1 COMPARE WORD
*****
*
*                    MAINLINE ROUTINES
*
*
*                    ROUTINE 1 - PUNCH TEST
*
RTN1I LDX  L1 782     SET FOR 2 RECORDS
STX  1 WRECK
LDX  L1 391     ONE RECORD NEXT TIME
STX  1 RTN1I&1
RTN1  BSI  L MARK     BUILD NEXT CHARACTER
BSI  XKRDY     PUNCH READY
BSC  L PUNH     PUNCH ONE CHARACTER
*****
RTN1A BSI  CRASH     CK IF END ROUTINE
*****
MDX  RTN1      NO - RETURN
*
*                    ROUTINE 2 - READER TEST
*
RTN2  BSI  L MARK     BUILD NEXT CHARACTER
BSI  RRDY     READER READY
MDX  FEED     CONTROL READER
RTN2A BSI  L RDIT     READ AND COMPARE
BSI  CRASH     CK IF END ROUTINE
MDX  RTN2      NO - RETURN
*
*                    ROUTINE 3 - PCH-RD & COMPARE
*
RTN3  BSI  L MARK     BUILD NEXT CHARACTER
BSI  XKRDY     PUNCH READY
BSI  RRDY     READER READY
BSC  L XFEED     PUNCH & CONTROL RDR
RTN3A BSI  L RDIT     READ AND COMPARE
BSI  CRASH     CK IF END OF ROUTINE
MDX  RTN3      NO - RETURN
*
WRECK DC      /0000     RECORD LENGTH COUNTER
*****
*
*                    ROUTINE 4 - REPRO PAPER TAPE
*
RTN4I BSI  RRDY
MDX  FEED

```

```

30802060
30802070
30802080
30802090
30802100
30802110
30802120
30802130
30802140
30802150
30802160
30802170
30802180
30802190
30802200
30802210
30802220
30802230
30802240
30802250
30802260
30802270
30802280
30802290
30802300
30802310
30802320
30802330
30802340
30802350
30802360
30802370
30802380
30802390
30802400
30802410
30802420
30802430
30802440
30802450
30802460
30802470
30802480
30802490
30802500
30802510
30802520
30802530
30802540
30802550
30802560
30802570
30802580
30802590
30802600
30802610
30802620
30802630
30802640
30802650
30802660
30802670
30802680
30802690
30802700
30802710
30802720
30802730

```

PAPER TAPE READER/PUNCH FUNCTION TEST

```

06A6 1 C400 05E0 RTN4 LD L SW1
06A8 0 F0DA EOR SWCMP
06A9 1 4C20 0647 BSC L LOOP,Z BR IF END THIS RTN
06AB 0 4034 BSI XKRDY PUNCH READY
06AC 0 4049 BSI RRDY READER READY
06AD 1 4C00 071B BSC L XFEED PUNCH & CONTROL RDR
*
06AF 1 0C00 0744 RTN4A XIO L XIORR READ RDR BUFFER
06B1 1 C400 081E LD L CARED PLACE CHAR READ IN
06B3 1 D400 081F STO L XCHAR OUTPUT AREA
06B5 0 10A0 SLT 32
06B6 1 0C00 0740 XIO L XIOSD SENSE DSW
06B8 1 4C10 06A6 BSC L RTN4,- BR IF NO DSW ERRORS
*
06BA 0 6116 LDX 1 /0016 PRINT RDR ERROR
06BB 0 6207 LDX 2 7
06BC 1 4400 0809 BSI L PRDSW PRINT THE ERROR
06BE 1 6E00 0819 STX L2 EMESG&2
*
06C0 0 4035 BSI RRDY READER READY
06C1 0 704A MDX FEED CONTROL READER
MDX RTN4
*****
*
* ROUTINE 5 - PUNCH FROM BIT SWITCHES
*
06C2 0 6700 0000 RTN5A LDX L3 /0000
06C4 1 0C00 0746 RTN5B XIO L RDBS READ THE BIT SWITCHES
06C6 1 C400 0754 LD L BITSW
06C8 0 1300 SLA 3 0
06C9 1 D400 081F STO L XCHAR SAVE NEXT PCH CHAR
06CB 0 C0F7 LD RTN5A&1
06CC 0 4830 BSC -Z
06CD 0 6300 LDX 3 0
06CE 0 4808 BSC &
06CF 0 6308 LDX 3 8
06D0 0 6BF2 RTN5D STX 3 RTN5A&1
06D1 1 C400 05E0 LD L SW1
06D3 0 FOAF EOR SWCMP
06D4 1 4C20 0647 BSC L LOOP,Z BR IF END THIS RTN
06D6 0 4009 BSI XKRDY CHECK PUNCH READY
06D7 0 7057 MDX PUNH PUNCH THE CHARACTER
MDX RTN5A
*****
*
* COUNT CHARACTERS SUBROUTINE
*
06D8 0 0000 CRASH DC /0000 IS RTN COMPLETE
06D9 1 74FF 06A3 MDX L WRECK,-1 DECREMENT CHSR CNTR
06DB 0 7002 MDX RASH
*
06DC 1 4C00 0649 BSC L CNTRL BR - END OF RECORD
*
06DE 1 4C80 06D8 RASH BSC I CRASH RET IF RCD NOT CMPLT
*
*****
*
* PUNCH READY SUBROUTINE
*
06E0 0 0000 XKRDY DC /0000
06E1 0 085E XIO XIOSD SENSE AND SAVE DSW
06E2 0 0070 STO DSWAS

```

```

30B02740
30B02750
30B02760
30B02770
30B02780
30B02790
30B02800
30B02810
30B02820
30B02830
30B02840
30B02850
30B02860
30B02870
30B02880
30B02890
30B02900
30B02910
30B02920
30B02930
30B02940
30B02950
30B02960
30B02970
30B02980
30B02990
30B03000
30B03010
30B03020
30B03030
30B03040
30B03050
30B03060
30B03070
30B03080
30B03090
30B03100
30B03110
30B03120
30B03130
30B03140
30B03150
30B03160
30B03170
30B03180
30B03190
30B03200
30B03210
30B03220
30B03230
30B03240
30B03250
30B03260
30B03270
30B03280
30B03290
30B03300
30B03310
30B03320
30B03330
30B03340
30B03350
30B03360
30B03370
30B03380
30B03390
30B03400
30B03410

```

PAPER TAPE READER/PUNCH FUNCTION TEST

```

06E3 0 E065 AND XMASK REMOVE RDR NRDY BIT
*
06E4 1 4C98 06E0 BSC I XKRDY,&- BR IF DSW OKAY
*
06E6 0 1007 SLA 7 DSW ERROR
06E7 1 4C10 06ED BSC L XKR2,- BR IF PUNCH READY
06E9 1 CC00 0888 LDD L PNRDY SET PUNCH NOT READY
06EB 1 DC00 081A STD L EMESG&3
*
06ED 0 6105 XKR2 LDX 1 5 ERROR - 5
06EE 0 C864 LDD DSWAS
06EF 0 E05F AND POFF
06F0 0 18D0 RTE 16
06F1 1 4400 0809 BSI L PRDSW PRINT THE ERROR
*
06F3 1 4400 0830 BSI L TIME PAUSE BEFORE RECHECK
06F5 0 70EB MDX XKR2Y&1
*****
*
* READER READY SUBROUTINE
*
RRDY DC /0000
XIO XIOSD SENSE AND SAVE DSW
STO DSWAS
*
06F9 0 E04E AND RMASK REMOVE PCH NRDY BIT
*
06FA 1 4C98 06F6 BSC I RRDY,&- BR IF DSW OKAY
*
06FC 0 1005 SLA 5 DSW ERROR
06FD 1 4C10 0703 BSC L RRDY2,- BR IF READER READY
06FF 1 CC00 0886 LDD L RNRDY SET NOT READY MSG
0701 1 DC00 081A STD L EMESG&3
RRDY2 LDX 1 4 ERROR - 4
0704 0 C84E LDD DSWAS
0705 0 E048 AND ROFF
0706 0 18D0 RTE 16
0707 1 4400 0809 BSI L PRDSW PRINT THE ERROR
*
0709 1 4400 0830 BSI L TIME PAUSE BEFORE RECHECK
070B 0 70EB MDX RRDY&1
*****
*
* CONTROL READER SUBROUTINE
*
FEED LDX 1 1 SET READER INTRPT
STX L1 INTX EXPECTED
*
070F 0 0832 XIO XIOFD FEED READER
*
0710 0 082F XIO XIOSD SAVE BUSY DSW
0711 0 D03F STO DSWBY
0712 1 4400 0788 BSI L BSYES CHECK BUSY DSW
*
0714 1 4400 0830 BSI L TIME PAUSE FOR INTRPT
NO READ INTERPT
*
0716 0 6111 LDX 1 /0011 ERROR - 11
0717 0 C839 LDD DSWBY
0718 0 E035 AND ROFF
0719 0 E831 OR DSWR2
071A 0 705F MDX DINES GO PRINT THE ERROR
*****
*
* PUNCH AND CONTROL READER
SUBROUTINE
*
071B 1 6500 05FD XFEED LDX L1 DINT1 RESTURE DOUBLE INT

```

```

30B03420
30B03430
30B03440
30B03450
30B03460
30B03470
30B03480
30B03490
30B03500
30B03510
30B03520
30B03530
30B03540
30B03550
30B03560
30B03570
30B03580
30B03590
30B03600
30B03610
30B03620
30B03630
30B03640
30B03650
30B03660
30B03670
30B03680
30B03690
30B03700
30B03710
30B03720
30B03730
30B03740
30B03750
30B03760
30B03770
30B03780
30B03790
30B03800
30B03810
30B03820
30B03830
30B03840
30B03850
30B03860
30B03870
30B03880
30B03890
30B03900
30B03910
30B03920
30B03930
30B03940
30B03950
30B03960
30B03970
30B03980
30B03990
30B04000
30B04010
30B04020
30B04030
30B04040
30B04050
30B04060
30B04070
30B04080
30B04090

```





PAPER TAPE READER/PUNCH FUNCTION TEST

PAPER TAPE READER/PUNCH FUNCTION TEST

```

0797 0 18D0      RTE    16
0798 0 4070      BSI    PRDSW    PRINT THE ERROR
*
*
*
0799 1 4C80 0788 XBSYX BSC I BSYES    EXIT TO USER
*
*****
*
*          READ AND COMPARE SUBROUTINE
*
* THIS ROUTINE READS THE READER BUFFER TWICE
* TO ENSURE THE SAME DATA IS READ. THEN IT
* COMPARES THE DATA READ WITH WHAT SHOULD HAVE
* BEEN READ. IF AN ERROR IS FOUND THIS ROUTINE
* WILL REALIGN THE TAPE IN THE READER BEFORE
* RETURNING TO MAINLINE ROUTINE IF THAT OPTION
* WAS SPECIFIED. OTHERWISE ONE ERROR IS PRINTED
* FOR EACH NON-COMPARE.
*
* AN ERROR WILL ALSO BE PRINTED IF THE ROUTINE
* CANNOT REALIGN THE TAPE IN 100 CHARACTERS.
*
*
RDIT  DC    /0000
READ  LD  L  CARED    SAVE LAST CHAR READ
      STO L  LREAD
      XIO  XIORR    READ CHARACTER
*
      LD  L  CARED    SAVE CHARACTER READ
      STO  SAVIT
*
      XIO  XIORR    READ
      LD  SAVIT    CHECK IF SAME CHAR
      EOR  CARED
      BSC L  RDIT1,Z  BR IF ERR IN READ
*
RDITO LD  L  XCHAR    DO CHARACTERS
      EOR  CARED    COMPARE
      SRA  8
      BSC L  RDIT2,Z  BR IF NON COMPARE
      MDX L  CORCT,1
      MDX  RDITE    EXIT
*
      STX  O N1ST
      LDX L1 /A001    PRINT TAPE ALIGNED
      LDD L  TEAL
      BSI  PTLOG    PRINT THE MESSAGE
      LD  L  SW2    TURN OFF REALIGN SW
      SLA  9
      SRA  9
      STO L  SW2
      SRA  16    RESET BITLINE CHECK
      RDITD SRA 16
      STO  BTLNE
      LD  KFF00
      STO  NOLNE
      LDX 1 100
      STX 1 100
      MDX 1 100
      MDX 1 100
*
RDIT1 LD  SAVIT    CONSECUTIVE READ ERROR
      RTE  16
      LD  CARED
      LDX 1 /18
      BSI L  PRDSW    ERROR - 18
      MDX  RDITO    PRINT THE ERROR
  
```

```

30805460
30805470
30805480
30805490
30805500
30805510
30805520
30805530
30805540
30805550
30805560
30805570
30805580
30805590
30805600
30805610
30805620
30805630
30805640
30805650
30805660
30805670
30805680
30805690
30805700
30805710
30805720
30805730
30805740
30805750
30805760
30805770
30805780
30805790
30805800
30805810
30805820
30805830
30805840
30805850
30805860
30805870
30805880
30805890
30805900
30805910
30805920
30805930
30805940
30805950
30805960
30805970
30805980
30805990
30806000
30806010
30806020
30806030
30806040
30806050
30806060
30806070
30806080
30806090
30806100
30806110
30806120
30806130
  
```

```

07CC 0 C01B
07CD 1 4C20 07EE
*
07CF 0 C01B
07D0 0 E84D
07D1 0 D019
*
07D2 0 C017
07D3 0 E04A
07D4 0 D015
*
07D5 1 74FF 07EC
07D7 0 7007
*
07D8 0 C011
07D9 0 6119
07DA 0 18D0
07DB 0 C00F
07DC 1 4400 0809
*
07DE 0 70DF
*
07DF 0 61F8
07E0 0 6906
07E1 1 4400 06F6
07E3 0 6802
07E4 1 4C00 070C
*
07E6 0 0000
07E7 0 0000
07E8 0 0000
07E9 0 0000
07EA 0 FF00
07EB 0 0000
07EC 0 0064
07ED 0 FF00
*
07EE 1 C400 05E1
07F0 0 1008
07F1 1 4C10 07F6
07F3 0 1008
07F4 0 D0F3
07F5 0 70E9
*
07F6 0 6114
07F7 1 CC00 0884
07F9 0 D820
07FA 0 C025
07FB 0 F023
07FC 1 4C18 0802
07FE 0 C01F
07FF 0 F021
0800 0 4818
0801 0 6115
0802 0 C01C
0803 0 1898
0804 0 1088
0805 0 C018
0806 0 4002
*
0807 1 4C80 0798
*
0809 0 0000
  
```

```

*
RDIT2 LD  N1ST
      BSC L  RDIT4,Z  BR IF TAPE ALIGNED
*
      LD  BTLNE    BIT LINE OPEN CK
      OR  CARED
      STO  BTLNE
*
      LD  NOLNE    BIT LINE SHORT CK
      AND  CARED
      STO  NOLNE
*
      MDX L  TRIAL,-1  COUNT DOWN 100 MAX
      MDX  RDIT3
*
      LD  NOLNE    NO ALIGNMENT ERROR
      LDX 1 /0019  ERROR - 19
      RTE  16
      LD  BTLNE
      BSI L  PRDSW    PRINT THE ERROR
*
      MDX  RDITO
*
RDIT3 LDX 1 -8
      STX 1 CORCT
      BSI 1 RRDY    READER READY
      STX 0 ERRET
      BSC L  FEED    CONTROL READER
*
ERRET DC  /0000    RET TO CMPRE IF SET
CORCT DC  /0000    TAPE ALIGNMENT
N1ST DC  /0000    WORK AREAS
SAVIT DC  /0000    SAVED CHARACTER
NOLNE DC  /FF00    SOLID LINE CHECK
BTLNE DC  /0000    OPEN LINE CHECK
TRIAL DC  100     100 TRIALS MAXIMUM
KFF00 DC  /FF00
*
RDIT4 LD  L  SW2
      SLA  8
      BSC L  RDIT6,-  BR IF NO REALIGN
      SLA  8
      STO  N1ST
      MDX  RDIT3
*
RDIT6 LDX 1 /0014    DATA READ ERROR
      LDD L  WASSB    SET ALPHA MESSAGE
      STD  EMESG&3
      LD  LCHAR
      EOR  XCHAR
      BSC L  RDIT5,&-  BR IF BUF S/NB CNGD
      LD  CARED
      EOR  LREAD
      BSC  &-
      LD  &-
      LDX 1 /0015
      RDIT5 LD  XCHAR    BUILD ERROR MESSAGE
      SRT  24
      SLT  8
      LD  CARED
      BSI  PRDSW    PRINT THE ERROR
*
RDITE BSC I RDIT
*****
*
*          PRINT ERROR SUBROUTINE
*
PRDSW DC  /0000    PRINT ERROR RTN
  
```

```

30806140
30806150
30806160
30806170
30806180
30806190
30806200
30806210
30806220
30806230
30806240
30806250
30806260
30806270
30806280
30806290
30806300
30806310
30806320
30806330
30806340
30806350
30806360
30806370
30806380
30806390
30806400
30806410
30806420
30806430
30806440
30806450
30806460
30806470
30806480
30806490
30806500
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30806570
30806580
30806590
30806600
30806610
30806620
30806630
30806640
30806650
30806660
30806670
30806680
30806690
30806700
30806710
30806720
30806730
30806740
30806750
30806760
30806770
30806780
30806790
30806800
30806810
  
```



```
087C 0 00FF          DC      /00FF
*
087D 0 0000          COUNX DC    /0000      WORK AREAS
087E 0 0000          KOUNX DC    /0000
*****
*
*                   ADDRESSES FOR RETURN TO
*                   MAINLINE AFTER INTRPT
*
087F 1 068F          SORTS DC     RTN1A     ROUTINE 1
0880 1 0695          DC         RTN2A     ROUTINE 2
0881 1 069F          DC         RTN3A     ROUTINE 3
0882 1 06AF          DC         RTN4A     ROUTINE 4
0883 1 06C2          DC         RTN5A     ROUTINE 5
*****
*
*                   ALPHABETIC MESSAGE
*                   STORAGE AREAS
*
0884 0000            BSS  E
0884 1 0899          WASSB DC     AWAS
0885 1 089C          DC         ASB
0886 1 088C          RNRDY DC     ARDR
0887 1 08A5          DC         ANRDY
0888 1 088F          PNRDY DC     APCH
0889 1 08A5          DC         ANRDY
088A 0 0000          TEAL  DC     0
088B 1 0892          DC         ATAPE
*
088C 0 6232          ARDR  DC     /6232      RDR ERROR
088D 0 6200          DC         /6200
088E 0 FFFF          DC         /FFFF
*
088F 0 561E          APCH  DC     /561E      PCH
0890 0 2600          DC         /2600
0891 0 FFFF          DC         /FFFF
*
0892 0 9C3C          ATAPE DC     /9C3C      TAPE ALIGNED
0893 0 5434          DC         /5434
0894 0 213C          DC         /213C
0895 0 5C20          DC         /5C20
0896 0 1474          DC         /1474
0897 0 3430          DC         /3430
0898 0 FFFF          DC         /FFFF
*
0899 0 923E          AWAS  DC     /923E      WAS
089A 0 9A00          DC         /9A00
089B 0 FFFF          DC         /FFFF
*
089C 0 219A          ASB   DC     /219A      S/B - DATA ERROR
089D 0 BC1A          DC         /BC1A
089E 0 2184          DC         /2184
089F 0 2132          DC         /2132
08A0 0 3E9E          DC         /3E9E
08A1 0 3E21          DC         /3E21
08A2 0 3662          DC         /3662
08A3 0 6200          DC         /6200
08A4 0 FFFF          DC         /FFFF
08A5 0 7662          ANRDY DC     /7662      NRDY
08A6 0 32A6          DC         /32A6
08A7 0 FFFF          DC         /FFFF
*
08A8 0631            END    PTBGN
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

30B08180  
30B08190  
30B08200  
30B08210  
30B08220  
30B08230  
30B08240  
30B08250  
30B08260  
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30B08360  
30B08370  
30B08380  
30B08390  
30B08400  
30B08410  
30B08420  
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30B08470  
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30B08490  
30B08500  
30B08510  
30B08520  
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30B08540  
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30B08570  
30B08580  
30B08590  
30B08600  
30B08610  
30B08620  
30B08630  
30B08640  
30B08650  
30B08660  
30B08670  
30B08680  
30B08690  
30B08700  
30B08710  
30B08720  
30B08730  
30B08740  
30B08750  
30B08760  
30B08770  
30B08780  
30B08790  
30B08800  
30B08810

```
C R O S S   R E F E R E N C E
NAME  VALUE REFERENCES
ALLBX 0864 0873
ANKDY 08A5 0887,0889
APCH  088F 0888
ARDR  088C 0886
ASB   089C 0885
ATAPE 0892 0888
AWAS  0899 0884
BARX  0858 0872
BEGIN 0160 0631
BITSW 0754 06C6,0746
BITSX 0874 084A,0855
BSYES 0788 0712,0726,0735,0790,0799
BTLNE 07EB 07BF,07CF,07D1,07DB
BUMRQ 0624 0612,0771
CARED 081E 06B1,0744,079C,07A1,07A6,07AB,07C7,07D0,07D3,07FE,0805
CNTRL 0649 06DC
CN10  064E
CN20  0658 064C
CN25  065F 0651
CN30  066E 0665,066B
CORCT 07E7 0635,07AF,07E0
COUNX 087D 0857,0858,0864,0867
CRASH 06D8 068F,0697,06A1,06DE
DINE1 0769 0605
DINE2 076E 060D
DINE3 0777 0773
DINE4 0778 076D,0776
DINE5 077A 071A,072E,073D,0768
DINE6 077D 061C
DINT  05FA 0628
DINT1 05FD 0615,071B,071D
DINT2 0608 0613
DINT4 0610 0600
DSWAS 0753 06E2,06EE,06F8,0704
DSWBY 0751 0711,0717,0725,072A,0734,0739,0788,0792
DSWDI 0629 05FD,0602
DSWID 062A 05FF,0608
DSWIT 0623 05EC,0609,0759,0761,0769,076E
DSWRX 074D 072D
DSWR2 074B 0719,078E,0795
DSWX2 074C 073C
DULP  0846 0671,0674,086C,086D
EINT  0617 0625
EMESG 0817 063D,068E,06EB,0701,0756,07F9,080A,080B,080E,0811,0813
END    0164 065D
ENRIX 0862 0860
ERLCK 0166
ERRET 07E6 0782,0786,07E3
ERROR 0162 080C
EXITX 086C 084E,0853,085A,0861,0863,0868
FEED  070C 0694,06A5,06C1,07E4
HANDL 0626 05EF
ILO    017A
IL1    018A
IL2    019A
IL3    01AA
IL4    01BA 0645
INTED 062B 05FA,05FE,060A,0778
INTEX 062E 05ED,05F1,05F3,0620,070D,0720,0730,0765
KFF00 07ED 07C0
KOUNX 087E 085D,085E
LCHAR 0820 07FA,0843
LGMS  082B 0823,0824,0827
LOG    0163 0825
LOGBY 0167
LOOP  0647 05E3,06A9,06D4
```

PAPER TAPE READER/PUNCH FUNCTION TEST

LREAD 0821 079E,07FF  
 LRTN 0682 067D  
 MARK 083F 068A,0691,0699,086E  
 MLSCF 05E5 0619,061E,0667,077E,083B  
 NIPES 075F 05F7,0789  
 NOLNE 07EA 07C1,07D2,07D4,07D8  
 NRIPX 084A 0870  
 NRTN 0680 067C  
 NIST 07E8 063A,07B2,07CC,07F4  
 ONEEX 0875 0866  
 PDSWX 083B  
 PID 05DC 0633  
 PINT1 061E 05F9,0607,060F  
 PINT3 061C 05F5,0603,060B  
 PNRDY 0888 06E9  
 POFF 074F 06EF,073B  
 POINT 05E9 0621,0643  
 PRDSW 0809 06BC,06F1,0707,075B,077B,0798,07C9,07DC,0806,0814  
 PTBGN 0631 08A8  
 PTLOG 0822 07B7,0828  
 PUNH 072F 068D,06D7  
 RAD 05DE 0663  
 RASH 06DE 06DB  
 RDBS 0746 06C4  
 RDIT 079B 0695,069F,0807  
 RDITD 07BE 07DE  
 RDITE 0807 07B1,07C4  
 RDIT0 07A9 07CB  
 RDIT1 07C5 07A7  
 RDIT2 07CC 07AD  
 RDIT3 07DF 07D7,07F5  
 RDIT4 07EE 07CD  
 RDIT5 0802 07FC  
 RDIT6 07F6 07F1  
 READ 079C 0787  
 RESRT 0634 05E4,05E6  
 RIQ 05DD 0648,064E,0656,0658,065B,065F,0780  
 RIDCK 067D 0650  
 RLCM 0168  
 RMASK 0748 062F,06F9,078C  
 RNRDY 0886 06FF  
 ROFF 074E 0705,0718,0763,0793  
 RQKB 01BC  
 RQTY 01BB  
 RRDY 06F6 0693,069C,06A4,06AC,06C0,06FA,070B,07E1  
 RRDY2 0703 06FD  
 RTNOM 067C 065A  
 RTNSW 0165 0669  
 RTN1 068A 0690  
 RTN1A 068F 087F  
 RTN1I 0684 0641,067E,0689  
 RTN2 0691 067F,0698  
 RTN2A 0695 0880  
 RTN3 0699 0680,06A2  
 RTN3A 069F 0881  
 RTN4 06A6 06B8  
 RTN4A 06AF 0882  
 RTN4I 06A4 0681  
 RTN5A 06C2 0682,06CB,06D0,0883  
 RTN5B 06C4  
 RTN5D 06D0  
 RTTBL 067E 0661,067A,067C,067D  
 SAVIT 07E9 07A3,07A5,07C5  
 SINT 05F1 0626,0627  
 SORTS 087F 0783  
 SPUR 0755 0617  
 SRIPX 084F 0871  
 START 0161 066C,075D,083D

PAPER TAPE READER/PUNCH FUNCTION TEST

SVKB 01BD  
 SWCMP 0683 064B,06A8,06D3  
 SWO 05DF  
 SW1 05E0 0649,0654,06A6,06D1  
 SW2 05E1 0637,07B8,07BC,07EE  
 SW3 05E2  
 TEAL 088A 07B5  
 TERM 05E8  
 TIME 0830 06F3,0709,0714,0728,0737,0837,0839  
 TIMEX 0816 0833,0834  
 TIME1 0839 0836  
 TRIAL 07EC 07C3,07D5  
 WASSB 0884 07F7  
 WHAT 0870 0848  
 WRECK 06A3 0678,0686,06D9  
 XBSYX 0799  
 XCHAR 081F 06B3,06C9,073E,07A9,07FB,0802,0840,084C,084F,0851,0856,0865  
 XFEED 071B 069D,06AD  
 XIOFD 0742 070F,0723  
 XIORR 0744 06AF,07A0,07A4  
 XIOSD 0740 05EA,06B6,06E1,06F7,0710,0724,0733  
 XIOXX 073E 0722,0732  
 XIT 0621 0616,061B  
 XKRDY 06E0 068C,069B,06AB,06D6,06E4,06F5  
 XKRD2 06ED 06E7  
 XMASK 0749 0630,06E3

END OF ASSEMBLY

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1. PURPOSE

THE 1130 RELOCATING DIAGNOSTIC LOADER IS USED TO LOAD THE DIAGNOSTIC MONITOR AND PROGRAMS WHICH RUN UNDER CONTROL OF THE MONITOR. THE LOADER ALSO LOADS NON-MONITOR PROGRAMS WHOSE TAPES ARE IN THE PROPER FORMAT. (THE 1130 RELOCATING DIAGNOSTIC LOADER WILL NOT LOAD PROGRAMS WHOSE OBJECT IS COMPATIBLE WITH THE 1130 BASIC DIAGNOSTIC LOADER).

2. PREREQUISITES

2.1 PROGRAM PREREQUISITES.

THIS LOADER USES THE FIRST 340 WORDS OF STORAGE.

2.2 EQUIPMENT PREREQUISITES

- A. 1130 CPU
- B. 1134 TAPE READER

3. USE PROCEDURE

3.1\*\*\* LOADING AND OPERATING

THE 1130 RELOCATING LOADER, TAPE VERSION, IS SUPPLIED AS ONE IPL RECORD AT THE FRONT OF THE TAPE VERSION MONITOR, AND AS A SEPARATE IPL TAPE. THIS LOADER WILL LOAD ANY TAPE PRODUCED IN THE SAME FORMAT AS THE MONITOR TAPE.

3.1.1 TO LOAD THE MONITOR.

- A. PLACE THE MONITOR TAPE WITH LOADER IN THE TAPE READER.
- B. PRESS RESET, PROGRAM LOAD. WHEN THE LOADER IS IN CORE A WAIT /30F6 WILL OCCUR.
- C. PRESS START.
- D. MONITOR WILL LOAD AND LOOP IN IT'S SUPERVISOR ROUTINE

TO LOAD A MONITOR PROGRAM.

- A. PLACE PROGRAM TAPE IN THE READER.
- B. SET CONSOLE SWITCHES TO 8080 (FUNCTION 2 LOAD CALL. SEE MONITOR DOCUMENTATION)
- C. PRESS INTERRUPT REQUEST KEY.
- D. PROGRAM WILL LOAD.

SUBSEQUENT PROGRAMS MAY BE LOADED IN SIMILAR FASHION. FOR OVERLAP LOADING, USE SWITCH SETTING 80C0.

3.1.2 TO LOAD A NON-MONITOR OR STANDALONE PROGRAM.

- A. PLACE THE LOADER IN THE READER AND MAKE READY.
- B. PRESS RESET, PROGRAM LOAD. WHEN THE LOADER IS IN CORE A WAIT /30F6 WILL OCCUR.
- C. AT WAIT /30F6 PLACE THE DESIRED PROGRAM IN THE READER AND MAKE READY.
- D. PRESS START.

3.2\*\*\* WAITS

| HALT NO.<br>(B REG) | DESCRIPTION  | RESTART<br>ACTION                                    |
|---------------------|--|--|
| 30F1                | CHECK SUM ERROR ON LOADER.                                 | RELOAD OR TO IGNORE<br>PUSH START.                   |
| 30F2                | READER DSW ERROR WHEN LOADING LOADER                       | RELOAD   |
| 30F4                | CANNOT CLEAR CORE - DUE TO ERROR IN ADDRESSING UPPER CORE. |  |
| 30F6                | LOADER IS NOW IN CORE                                      | LOAD DIAGNOSTIC PROGRAM<br>IN READER AND MAKE READY. |
| 30F7                | CHECK SUM WHEN LOADING PROGRAM.                            | RELOAD   |
| 30F8                | READER NOT READY   | MAKE READER READY                                    |
| 30F9                | INVALID INTERRUPT WHICH WILL NOT RESET                     | PRESS RESET AND START                                |

4. PRINTOUTS (NONE)

5. COMMENTS

5.1\*\*\* THE FOLLOWING ARE THE MAJOR ELEMENTS OF THE 1130 RELOCATABLE DIAGNOSTIC LOADER-

- 5.1.1 READ ROUTINE -- CHECKS READER FOR PROPER STATUS, READS A CARD IMAGE INTO LOCATION /0028 THROUGH /0078, CHECKS FOR SATISFACTORY COMPLETION OF THE READ OPERATION, AND DETERMINES WHETHER THE CARD READ IS A BINARY CARD OR A HEXADECIMAL (CORRECTION CARD).
- 5.1.2 BINARY PACK ROUTINE -- TAKES DATA FOUND IN LOCATIONS /0028 THROUGH /0078 (12 BITS PER CORE WORD) AND PACKS IT INTO LOCATION /0028 THROUGH /0050 (16 BITS PER CORE WORD).
- 5.1.3 CHECKSUM ROUTINE -- COMPUTES CHECKSUM OF A BINARY CARD IMAGE WAITS IF CHECKSUM IS IN ERROR.
- 5.1.4 MOVE ROUTINE -- MOVES DATA FROM /0028 THROUGH /0050 TO PROPER CORE LOCATION. CHECKS FOR EXCEEDING CORE SIZE. ADDS IN RELOCATION FACTOR WHEN REQUIRED.
- 5.1.5 RELOCATABLE HEADER ROUTINE -- ENTERED WHEN A RELOCATABLE HEADER CARD IMAGE IS FOUND. COMPUTES A RELOCATION FACTOR FOR PROGRAM THAT FOLLOWS.
- 5.1.6 ABSOLUTE HEADER ROUTINE -- ENTERED WHEN AN ABSOLUTE HEADER CARD IMAGE IS FOUND. SETS RELOCATION FACTOR TO ZERO.
- 5.1.7 TRANSFER ROUTINE -- ENTERED WHEN A TRANSFER CARD IMAGE IS FOUND. COMPUTES THE NEXT LOCATION AVAILABLE FOR LOADING IF ANOTHER PROGRAM FOLLOWS. TRANSFERS CONTROL TO THE LOCATION SPECIFIED ON THE TRANSFER CARD.
- 5.1.8 HEX TO BINARY CONVERSION ROUTINE -- CONVERTS A HEXADECIMAL CARD IMAGE TO BINARY. ADDS IN RELOCATION FACTOR IF REQUIRED.

5.2\*\*\* CARD RECOGNITION

THE FOLLOWING ARE CARD IMAGES WHICH CAN BE LOADED BY THE 1130 RELOCATABLE DIAGNOSTIC LOADER.

- 5.2.1 ABSOLUTE HEADER CARD HAVE A 1 PUNCH IN COLUMN 4.
- 5.2.2 RELOCATABLE HEADER CARD HAVE A 0 (ZERO) PUNCH IN COLUMN 4.
- 5.2.3 NORMAL DATA CARDS HAVE NO PUNCHES IN ROW 12 IN COLUMN 1. AN ADDRESS IN ROWS 11 THROUGH 9 IN COLUMN 1 AND ROWS 12 THROUGH 1 IN COLUMN 2. A CHECKSUM IN ROWS 2 THROUGH 9 OF COLUMN 2 AND ROWS 12 THROUGH 5 OF COLUMN 3. A 12, 0 PUNCH IN COLUMN 4, A WORD COUNT IN ROWS 4 THROUGH 9 OF COLUMN 4. A RELOCATION FIELD (WHICH MAY BE BLANK) IN COLUMN 5 THROUGH 12. DATA IN COLUMNS 13 THROUGH 72. A SEQUENCE NUMBER IN COLUMNS 73-80.
- 5.2.4 BINARY TRANSFER CARDS HAVE 12, 11, 0, 1 PUNCHES IN COLUMN 4 AND A WORD COUNT OF ZERO (NO PUNCHES IN ROWS 4 THROUGH 9 IN COLUMN 4).
- 5.2.5 HEXADECIMAL TRANSFER CARDS HAVE A 12 PUNCH IN COLUMN 1, A TRANSFER ADDRESS IN COLUMN 2 THROUGH 5 AND NO PUNCHES IN COLUMNS 6 AND 7.
- 5.2.6 HEXADECIMAL CORRECTION CARDS HAVE A 12 PUNCH IN COLUMN 1. AN ADDRESS IN COLUMN 2 THROUGH 5. DATA IN COLUMNS 6 THROUGH 80. DATA IS GROUPED 5 COLUMNS TO ONE CORE WORD. THE FIRST COLUMN OF EACH GROUP SPECIFIES WHETHER OR NOT THE GROUP REQUIRES A RELOCATION FACTOR. IF THE FIRST COLUMN OF A GROUP IS BLANK A RELOCATION FACTOR WILL NOT BE ADDED. IF THE FIRST COLUMN OF A GROUP CONTAINS AN R (11,9 PUNCH) A RELOCATION FACTOR WILL BE ADDED TO THE FIELD. LOADING OF THE CARD IS TERMINATED BY TWO SEQUENTIAL BLANK COLUMNS.

6. APPENDIX (NONE)

----- LAST PAGE -----

```

0000          ABS          3AC00020
          ORG          0          3AC00030
          *          3AC00040
0000 0 7011          MDX      STRT          3AC00050
0001 0 0160          DC        /0160          LAST ADDR. OF LOADER 3AC00060
0002 0 0000          DC        0          3AC00070
0003 0 0000          DC        0          3AC00080
0004 0 0000          DC        0          3AC00090
0005 0 0000          DC        0          3AC00100
0006 0 0000          DC        0          3AC00110
0007 0 0000          DC        0          3AC00120
0008 0 0000          DC        0          3AC00130
0009 0 0000          DC        0          3AC00140
000A 0 0000          DC        0          3AC00150
000B 0 0000          DC        0          3AC00160
000C 0 00B1          DC        INTE          3AC00170
000D 0 0000          DC        0          3AC00180
000E 0 0000          DC        0          3AC00190
000F 0 0000          DC        0          3AC00200
0010 0 0000          DC        0          3AC00210
0011 0 0000          DC        0          3AC00220
0012 0 1010          STRT  SLA      16          CLEAR ACC.          3AC00230
0013 0 8100          CSADD A      1 0          ADD DATA WORD      3AC00240
0014 0 71FF          MDX      1 -1          DEC ADDRESSER       3AC00250
0015 0 70FD          MDX      CSADD          RETURN ADDRESS NOT ZERO 3AC00260
          *          3AC00270
0016 0 8100          A          1 0          ADD LAST WORD TO CKSUM 3AC00280
0017 0 4C18 0028          BSC  L  CORE,+-          BR IF CHECK SUM=0    3AC00290
          *          3AC00300
0019 0 30F1          WAIT      -15          CHECK SUM ERROR WAIT 3AC00310
001A 0 700D          MDX      CORE          CONTINUE          3AC00320
          *          3AC00330
001B 0 F82D          CHKSM DC        /F82D          INITIAL CHECK SUM    3AC00340
          *          3AC00350
001C 0 0000          DC        0          3AC00360
001D 0 0000          DC        0          3AC00370
001E 0 0000          DC        0          3AC00380
001F 0 0000          DC        0          3AC00390
0020 0 0000          DC        0          3AC00400
0021 0 0000          DC        0          3AC00410
0022 0 0000          DC        0          3AC00420
0023 0 0000          DC        0          3AC00430
0024 0 0000          DC        0          3AC00440
0025 0 0000          DC        0          3AC00450
0026 0 0000          DC        0          3AC00460
0027 0 0000          DC        0          3AC00470
          *          3AC00480
0028 0 6C00 7FFF          CORE  STX  L  /7FFF          3AC00490
002A 0 6500 00B1          LDX  L1  INTE          INTERRUPT TR VECTOR 3AC00500
002C 0 6D00 000C          STX  L1  /C          3AC00510
002E 0 6700 015C          LDX  L3  NLDC          SET CLEAR CORE INDEXER 3AC00520
0030 0 7302          CORE2 MDX  3  2          3AC00530
0031 0 10A0          SLT   32          3AC00540
0032 0 DB02          STD   3  2          3AC00550
0033 0 7400 0000          MDX  L  /0000,0          SKIP IF ZERO CLEARED 3AC00560
0035 0 70FA          MDX  CORE2          3AC00570
0036 0 C400 7FFF          LD   L  /7FFF          CK IF LAST ADR CLEARED 3AC00580
0038 0 4C18 003F          BSC  L  CORE3,&-          BR IF CLEARED       3AC00590
003A 0 6F00 015F          STX  L3  ULIM          FETCH THE LAST ADR  3AC00600
003C 0 C400 015F          LD   L  ULIM          A # BIT THAT FAILED 3AC00610
003E 0 30F4          W30F4 WAIT -12          CAN NOT CLEAR CORE  3AC00620
          *          3AC00630
003F 0 6F00 015F          CORE3 STX  L3  ULIM          ADDRESSING BIT FAILED 3AC00640
0041 0 30F6          WAIT -10          SET THE CORE SIZE   3AC00650
          *          3AC00660
0042 0 703B          MDX  RDCD          * IN READER         3AC00670
0043 0 0000          DC        0          GO LOAD PROGRAM     3AC00680
0044 0 0000          DC        0          3AC00690
  
```

```

0045 0 0000          DC        0          3AC00700
0046 0 0000          DC        0          3AC00710
0047 0 0000          DC        0          3AC00720
0048 0 0000          DC        0          3AC00730
0049 0 0000          DC        0          3AC00740
004A 0 0000          DC        0          3AC00750
004B 0 0000          DC        0          3AC00760
004C 0 0000          DC        0          3AC00770
004D 0 0000          DC        0          3AC00780
004E 0 0000          DC        0          3AC00790
004F 0 0000          DC        0          3AC00800
0050 0 0000          DC        0          3AC00810
0051 0 0000          DC        0          3AC00820
0052 0 0000          DC        0          3AC00830
0053 0 0000          DC        0          3AC00840
0054 0 0000          DC        0          3AC00850
0055 0 0000          DC        0          3AC00860
0056 0 0000          DC        0          3AC00870
0057 0 0000          DC        0          3AC00880
0058 0 0000          DC        0          3AC00890
0059 0 0000          DC        0          3AC00900
005A 0 0000          DC        0          3AC00910
005B 0 0000          DC        0          3AC00920
005C 0 0000          DC        0          3AC00930
005D 0 0000          DC        0          3AC00940
005E 0 0000          DC        0          3AC00950
005F 0 0000          DC        0          3AC00960
0060 0 0000          DC        0          3AC00970
0061 0 0000          DC        0          3AC00980
0062 0 0000          DC        0          3AC00990
0063 0 0000          DC        0          3AC01000
0064 0 0000          DC        0          3AC01010
0065 0 0000          DC        0          3AC01020
0066 0 0000          DC        0          3AC01030
0067 0 0000          DC        0          3AC01040
0068 0 0000          DC        0          3AC01050
0069 0 0000          DC        0          3AC01060
006A 0 0000          DC        0          3AC01070
006B 0 0000          DC        0          3AC01080
006C 0 0000          DC        0          3AC01090
006D 0 0000          DC        0          3AC01100
006E 0 0000          DC        0          3AC01110
006F 0 0000          DC        0          3AC01120
0070 0 0000          DC        0          3AC01130
0071 0 0000          DC        0          3AC01140
0072 0 0000          DC        0          3AC01150
0073 0 0000          DC        0          3AC01160
0074 0 0000          DC        0          3AC01170
0075 0 0000          DC        0          3AC01180
0076 0 0000          DC        0          3AC01190
0077 0 0000          DC        0          3AC01200
          *          3AC01210
0028          INPUT EQU      /0028          SET INPUT ADDRESS    3AC01220
          *          3AC01230
          *****          3AC01240
          *          3AC01250
          *          PAPER TAPE LOADER          3AC01260
          *          3AC01270
0078 0 0827          LOAD  XI0          SENS R-1          SENSE DSW          3AC01280
0079 0 E02E          AND   K0400          CHECK FOR READY    3AC01290
007A 0 4C20 0156          BSC  L  MLC D,Z          BR IF NOT READY    3AC01300
007C 0 C02E          LD   INTAD          3AC01310
007D 0 D340          STO   3  /40          INTERRUPT TR TABLE 3AC01320
          *          3AC01330
          *          READ TAPE RECORD AND PACK INTO          3AC01340
          *          LOCATIONS /0028 TO /0050          3AC01350
          *          3AC01360
007E 0 6128          RDCD  LDX  1  /28          3AC01370
  
```

THESE DC STATEMENTS  
 ARE USED TO CLEAR CORE  
 FOR CHFK SUM TOTAL

```
007F 0 6918          *      STX      1 STORE&1          3AC01380
0080 0 6136          *      LDX      1 54              3AC01390
0081 0 1010          *      SLA      16              3AC01400
0082 0 D127          LDR01 STD      1 /27          CLEAR INPUT AREA 3AC01410
0083 0 71FF          *      MDX      1 -1              3AC01420
0084 0 70FD          *      MDX      LDR01          3AC01430
0085 0 081A          *      XIO      SENSr-1          SENSE DSW          3AC01440
0086 0 E021          *      AND      K0400          CHECK FOR READY    3AC01450
0087 0 4C20 00AF    *      BSC      L NRDY,Z          BR IF NOT READY    3AC01460
0089 0 402A          *      LDR03 BSI      RDRLP          GO READ A CHAR     3AC01470
008A 0 C021          *      LD        CHAR          LOAD CHAR READ     3AC01480
008B 0 F018          *      EOR      K7F00          CHACK FOR DELETE   3AC01490
008C 0 4C18 0089    *      BSC      L LDR03,&-        BR IF DELETE        3AC01500
008E 0 C01D          *      LD        CHAR          FIRST CHAR         3AC01510
008F 0 1808          *      SRA      8              3AC01520
0090 0 D01C          *      STO      WDCNT          WORD COUNT         3AC01530
0091 0 4022          *      LDR04 BSI      RDRLP          READ A CHAR        3AC01540
0092 0 C019          *      LD        CHAR          LOAD THE CHAR RAAD 3AC01550
0093 0 1898          *      SRT      24              SHIFT TO LOW ORDER Q 3AC01560
0094 0 401F          *      BSI      RDRLP          READ SECOND HALF-WORD 3AC01570
0095 0 C016          *      LD        CHAR          LOAD SECOND HALF    3AC01580
0096 0 18C8          *      RTE      8              SHIFT TO COMBINE HALVES 3AC01590
0097 0 D400 0000    *      STORE STD L *--          STORE PACKED WORD  3AC01600
0099 0 7401 0098    *      MDX      L STORE&1,1      INCRE STORE ADDRESS 3AC01610
009B 0 74FF 00AD    *      MDX      L WDCNT,-1      SKIP WHEN FINISHED  3AC01620
009D 0 70F3          *      MDX      LDR04          3AC01630
009E 0 6100          *      LDX      1 0              CLEAR XR1          3AC01640
009F 0 701F          *      MDX      CHHDR          BR TO CHECK HEADER  3AC01650
00A0 0 ECF0          *      KEFCO DC      /ECFO          SENSE RESET        3AC01660
00A1 0 1F01          *      SENSR DC      /1F01          SENSE RESET        3AC01670
00A2 0 0C00          *      KOC00 DC      /0C00          SENSE RESET        3AC01680
00A3 0 1C10          *      STRDR DC      /1C10          START READER        3AC01690
00A4 0 7F00          *      K7F00 DC      /7F00          START READER        3AC01700
00A5 0 1F00          *      SENSE DC      /1F00          SENSE RESET        3AC01710
00A6 0 00AC          *      RDIN DC      CHAR          READ A CHAR        3AC01720
00A7 0 1A00          *      DC        /1A00          READ A CHAR        3AC01730
00A8 0 0400          *      K0400 DC      /0400          SENSE RESET        3AC01740
00A9 0 0001          *      ONE2 DC      /0001          SENSE RESET        3AC01750
00AA 0 0028          *      ADRS DC      INPUT          SENSE RESET        3AC01760
00AB 0 00B1          *      INTAD DC      INTE          SENSE RESET        3AC01770
00AC 0 0000          *      CHAR DC      *--          SENSE RESET        3AC01780
00AD 0 0000          *      WDCNT DC      *--          WORD COUNT         3AC01790
00AE 0 0000          *      DATA DC      *--          WORD COUNT         3AC01800
00AF 0 30F8          *      NRDY WAIT -8            READER NOT READY   3AC01810
00B0 0 70CD          *      MDX      RDCLD          TRY AGIN           3AC01820
00B1 0 0000          *      DC        *--          TRY AGIN           3AC01830
00B2 0 08ED          *      XIO      SENSr-1          SENSE RESET        3AC01840
00B3 0 7007          *      MDX      RDRL1          SENSE RESET        3AC01850
00B4 0 0000          *      RDRLP DC      *--          SENSE RESET        3AC01860
00B5 0 08EC          *      XIO      STRDR-1          START READER        3AC01870
00B6 0 08ED          *      XIO      SENSE-1          SENSE DSW          3AC01880
00B7 0 E0E8          *      AND      KEFCO          MASK PUNCH BITS    3AC01890
00B8 0 F0E9          *      EOR      KOC00          CHECK FOR BUSY,NR DY 3AC01900
00B9 0 4818          *      BSC      &-            SKIP IF ANY CHANGE 3AC01910
00BA 0 70FB          *      MDX      RDRLP&2        LOOP UNTIL CHANGES 3AC01920
00BB 0 08EA          *      RDRL1 XIO      RDIN          READ A CHAR        3AC01930
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00BC 0 08E3          *      XIO      SENSr-1          3AC02060
00BD 0 4CC0 00B4    *      BOSC I RDRLP          3AC02070
00BF 0 C12A          *      LD        1 INPUT&2          CK FOR HDR CARDS   3AC02080
00C0 0 4C18 0156    *      BSC      L MLC0,&-        BR TO USER - BLANK CD 3AC02090
00C2 0 E03F          *      AND      LB20          3AC02100
00C3 0 903F          *      S          LB25          3AC02110
00C4 0 4C18 0106    *      BSC      L ABHED,&-        BCH IF ABSOL HEAD CARD 3AC02120
00C6 0 903C          *      S          LB25          3AC02130
00C7 0 4C18 0104    *      BSC      L RLHED,&-        BCH IF RELOC HEAD CARD 3AC02140
00C9 0 C129          *      LD        1 INPUT&1          LD CHECK SUM        3AC02150
00CA 0 4C18 00D8    *      BSC      L CKEOP,&-        SKIP CKSUM IF ZERO  3AC02160
00CC 0 C034          *      LD        CDCT          3AC02170
00CD 0 62CA          *      LDX      2 -54          3AC02180
00CE 0 825E          *      CKSM1 A      2 INPUT&54      ADD WORDS 1 TO 54   3AC02190
00CF 0 4802          *      BSC      C              3AC02200
00D0 0 80D8          *      A          ONE2          3AC02210
00D1 0 7201          *      MDX      2 1              3AC02220
00D2 0 70FB          *      MDX      CKSM1          3AC02230
00D3 0 80D5          *      A          ONE2          3AC02240
00D4 0 4C20 0158    *      BSC      L CKSUM,Z          BR IF CK SUM ERR    3AC02250
00D6 0 7401 0101    *      MDX      L CDCT,1          ADD 1 TO CARD CT    3AC02260
00D8 0 C12A          *      CKEOP LD      1 INPUT&2          GET WORD COUNT      3AC02270
00D9 0 1008          *      SLA      8              CLEAR CARD CODE     3AC02280
00DA 0 1808          *      SRA      8              CLEAR CARD CODE     3AC02290
00DB 0 D12A          *      STO      1 INPUT&2          SAVE WORD COUNT     3AC02300
00DC 0 4C18 010A    *      BSC      L EOP,&-          EOP IF WC # ZERO    3AC02310
```

```
*****
*      CHECK HEADER
*****
*      THIS RT DETERMINES WHETHER THE DATA CARD IS
*      1= ABSOLUTE HDR CARD 2= RELOCATABLE HDR CARD
*-----
CHHDR LD      1 INPUT&2          CK FOR HDR CARDS   3AC02320
      BSC      L MLC0,&-        BR TO USER - BLANK CD 3AC02330
      AND      LB20          3AC02340
      S          LB25          3AC02350
      BSC      L ABHED,&-        BCH IF ABSOL HEAD CARD 3AC02360
      S          LB25          3AC02370
      BSC      L RLHED,&-        BCH IF RELOC HEAD CARD 3AC02380
*****
*      CHECK SUM
*****
*      THIS ROUTINE ADDS COLUMNS 0 - 72
*      TO CHECK THAT THIS SUM PLUS THE CARD
*      SEQUENCE NUMBER EQUALS ZERO .
*-----
      LD        1 INPUT&1          LD CHECK SUM        3AC02390
      BSC      L CKEOP,&-        SKIP CKSUM IF ZERO  3AC02400
      LD        CDCT          3AC02410
      LDX      2 -54          3AC02420
      CKSM1 A      2 INPUT&54      ADD WORDS 1 TO 54   3AC02430
      BSC      C              3AC02440
      A          ONE2          3AC02450
      MDX      2 1              3AC02460
      MDX      CKSM1          3AC02470
      A          ONE2          3AC02480
      BSC      L CKSUM,Z          BR IF CK SUM ERR    3AC02490
      MDX      L CDCT,1          ADD 1 TO CARD CT    3AC02500
*-----
*      CHECK FOR END OF PROGRAM CARD
*-----
      CKEOP LD      1 INPUT&2          GET WORD COUNT      3AC02510
      SLA      8              CLEAR CARD CODE     3AC02520
      SRA      8              CLEAR CARD CODE     3AC02530
      STO      1 INPUT&2          SAVE WORD COUNT     3AC02540
      BSC      L EOP,&-          EOP IF WC # ZERO    3AC02550
*-----
*      CHECK FOR OVER CORE
*-----
      A          1 INPUT          SUM WC&STO ADDR&RELOC 3AC02560
      A          L UPPER          3AC02570
      S          L ULIM          3AC02580
      BSC      L OVCR,-          BR IF OVER CORE    3AC02590
*****
*      RELOCATE AND STORE
*****
*      THIS RT PLACES DATA FIELDS INTO THE CORRECT
*      CORE LOCATIONS AND ADDS IN A RELOCATION 3AC02600
3AC02610
3AC02620
3AC02630
3AC02640
3AC02650
3AC02660
3AC02670
3AC02680
3AC02690
3AC02700
3AC02710
3AC02720
3AC02730
```



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* FACTOR IF REQUIRED.
*-----*
00E5 0 C128 LD 1 INPUT LD STORE ADDR 3AC02740
00E6 0 8400 015D A L UPPER RELOCATE STORE ADDR 3AC02750
00E8 0 D00B STO STOR4&1 3AC02760
00E9 0 6600 002B LDX L2 INPUT&3 XR2 # RELOCATION CODE ADDR 3AC02770
* 3AC02780
00EB 0 63F8 STOR1 LDX 3 -8 XR3# REL BIT CNT 3AC02790
* 3AC02800
00EC 0 C200 LD 2 0 LD NEXT RELOCATION CODE 3AC02810
00ED 0 18D0 RTE 16 STO IN EXT REG 3AC02820
00EE 0 1082 STOR2 SLT 2 BRING IN NEXT REL BIT 3AC02830
00EF 0 4C04 00FE BSC L STOR6,E BR IF RELOCATE 3AC02840
* 3AC02850
00F1 0 1810 SRA 16 3AC02860
00F2 0 8131 STOR3 A 1 INPUT&9 ADD NEXT WORD 3AC02870
00F3 0 D500 0000 STOR4 STO L1 *-* STO IN PROGRAM 3AC02880
00F5 0 74FF 002A MDX L INPUT&2,-1 DECR WORD CNT 3AC02890
00F7 0 7001 MDX STOR5 SKIP WHEN WC # 0 3AC02900
00F8 0 607E LDX RDCD FINISHED 3AC02910
* 3AC02920
00F9 0 7101 STOR5 MDX 1 1 ADV WORD AND STO ADRS 3AC02930
00FA 0 7301 MDX 3 1 ADV REL BIT CNT 3AC02940
00FB 0 70F2 MDX STOR2 3AC02950
00FC 0 7201 MDX 2 1 ADV TO NXT RELOC WD 3AC02960
00FD 0 70ED MDX STOR1 3AC02970
* 3AC02980
00FE 0 C400 015D STOR6 LD L UPPER LD RELOC FACTOR 3AC02990
0100 0 70F1 MDX STOR3 GO RELOC ADDR 3AC03000
* 3AC03010
0101 0 0000 CDCT DC *-* 3AC03020
0102 0 0FC0 LB20 DC /0F00 3AC03030
0103 0 0100 LB25 DC /0100 3AC03040
* 3AC03050
***** 3AC03060
* HEADER AND EOP CARDS 3AC03070
***** 3AC03080
* 3AC03090
*-----* 3AC03100
* THIS RT. HANDLES RELOCATABLE HDR CARDS. 3AC03110
*-----* 3AC03120
0104 0 C057 RLHED LD NLOC COMPUTE RELOC FACTOR 3AC03130
0105 0 9058 S RLBA 3AC03140
* 3AC03150
*-----* 3AC03160
* THIS RT. HANDLES ABSOLUTE HDR CARDS. 3AC03170
*-----* 3AC03180
0106 0 D056 ABHED STO UPPER RELOC STO ADDR 3AC03190
0107 0 7101 MDX 1 1 INITIALIZE CARD COUNT 3AC03200
0108 0 69F8 STX 1 CDCT 3AC03210
0109 0 607E LDX RDCD 3AC03220
* 3AC03230
*-----* 3AC03240
* THIS ROUTINE HANDLES END OF PROGRAM CARDS 3AC03250
*-----* 3AC03260
EOP LD 1 INPUT LD TRANSFER ADDR 3AC03270
010A 0 C128 A UPPER 3AC03280
010B 0 8051 STO NLOC SET NEXT AVAIL LOC 3AC03290
010C 0 D04F LD 1 INPUT&3 3AC03300
010D 0 C12B A UPPER 3AC03310
010E 0 804E STO EOP1&1 3AC03320
010F 0 D001 EOP1 BSC L *-* TRANSFER TO PROGRAM 3AC03330
0110 0 4C00 0000 * 3AC03340
***** 3AC03350
* HEX DATA ROUTINE 3AC03360
***** 3AC03370
* 3AC03380
* 3AC03390
* 3AC03400
* 3AC03410

```

```

*****
* THIS ROUTINE CONVERTS HEX CORRECTION
* DATA TO BINARY AND STORES THE DATA.
*-----*
0112 0 D036 HEX STO HE22&1 CLEAR STORE ADDR 3AC03420
0113 0 C400 00AA LD L ADRS 3AC03430
0115 0 D400 00AE STO L DATA 3AC03440
0117 0 C480 00AE HEX1 LD I DATA LOAD RELOCATION BIT 3AC03450
0119 0 D038 STO RLREQ STO RELOCATION BIT 3AC03460
011A 0 7401 00AE MDX L DATA,1 ADV TO NXT WORD 3AC03470
* 3AC03480
*-----* 3AC03490
* CONVERT HEX TO BINARY 3AC03500
*-----* 3AC03510
011C 0 C031 HE10 LD FOUR 3AC03520
011D 0 D032 STO INDX1 3AC03530
011E 0 1810 SRA 16 3AC03540
011F 0 1004 HE11 SLA 4 3AC03550
0120 0 D02C STO TEMP 3AC03560
0121 0 1810 SRA 16 3AC03570
0122 0 D02E STO INDX2 3AC03580
0123 0 C480 00AE LD I DATA CK FOR BLANK COLUMN 3AC03590
0125 0 4C18 007E BSC L RDCD,&- FINISHED - LOAD NEXT CARD 3AC03600
* 3AC03610
0127 0 4C10 012B BSC L HE11A,- BR IF NOT A-F 3AC03620
0129 0 7409 0151 MDX L INDX2,9 ADD 9 FOR ALPHA 3AC03630
* 3AC03640
HE11A SLA 3 ELIMINATE ZONE BITS 3AC03650
BSC L HE14,&- XF&R IF HEX CHAR # 0 3AC03660
MDX L INDX2,1 3AC03670
HE12 BSC L HE13,&Z XFER IF BIT IS FOUND 3AC03680
SLA 1 PREPARE TO LK AT NEXT BIT 3AC03690
MDX HE12-2 3AC03700
* 3AC03710
HE13 LD INDX2 LOAD BINARY BITS 3AC03720
HE14 OR TEMP ADD TO PREVIOUS CHARS 3AC03730
MDX L DATA,1 3AC03740
MDX L INDX1,-1 3AC03750
MDX HE11 3AC03760
* 3AC03770
*-----* 3AC03780
* FINISHED - CONVERTED WORD IN ACCUMULATOR 3AC03790
* 3AC03800
0138 0 7400 0149 MDX L HE22&1,0 SKIP IF STO ADRS 3AC03810
013D 0 7007 MDX HE21 BR IF DATA 3AC03820
* 3AC03830
013E 0 801E A UPPER RELOC STO ADDR 3AC03840
013F 0 D009 STO HE22&1 3AC03850
0140 0 C400 002E LD L INPUT&6 LD NXT WORD 3AC03860
0142 0 4C98 0149 BSC I HE22&1,&- BR TO ADRS IF BLANK 3AC03870
0144 0 70D2 MDX HEX1 CONV NXT WORD 3AC03880
* 3AC03890
HE21 MDX L RLREQ,C SKIP IF NO RELOCATE 3AC03900
A UPPER 3AC03910
HE22 STO L *-* STORE DATA 3AC03920
MDX L HE22&1,1 ADV STO ADRS 3AC03930
MDX HEX1 CONV NXT WORD 3AC03940
* 3AC03950
* 3AC03960
TEMP DC *-* TEMP STORAGE 3AC03970
FOUR DC 4 3AC03980
FDCD DC /1402 FEED CARD 3AC03990
INDX1 DC *-* 3AC04000
INDX2 DC *-* 3AC04010
RLREQ DC *-* HEX RELOCATION BITS 3AC04020
NOP 3AC04030
3AC04040
3AC04050
3AC04060
3AC04070
3AC04080
3AC04090

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0154 0 1000      NOP
0155 0 FFFF      DC      /FFFF      TAPE LOADER SWITCH
*
*
*****
*      MONITOR/LOADER INTERFACE
*****
* THE FOLLOWING MUST BE LOCATED IN CORE
* LOCATIONS /0156-/015F.
*-----*
0156 0 30F6      MLCD  WAIT  -10      PROGRAM SHOULD PLACE HERE
0157 0 70FE      MDX    MLCD    A XFER ON BLANK CARD
0158 0 30F7      CKSUM  WAIT  -9      CHECK SUM ERROR
0159 0 70FE      MDX    CKSUM
015A 0 3000      OVCR  WAIT
015B 0 70FE      MDX    OVCR    EXCEEDED CORE SIZE
015C 0 0160      NLOC  DC    /160      NEXT AVAILABLE STORAGE LOC
015D 0 0000      UPPER DC  *-*      RELOCATION FACTOR
015E 0 0000      RLBA  DC    0000      BASE ADDRESS
015F 0 0000      ULIM  DC  *-*      CORE SIZE
*****
0160 0012      END    STRT
NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY

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3AC04100
3AC04110
3AC04120
3AC04130
3AC04140
3AC04150
3AC04160
3AC04170
3AC04180
3AC04190
3AC04200
3AC04210
3AC04220
3AC04230
3AC04240
3AC04250
3AC04260
3AC04270
3AC04280
3AC04290
3AC04300
3AC04310
3AC04320
3AC04330

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AB HED 0106 00C 4
A DRS 00AA 0113
C DCT 0101 00C C 00D6 0108
C HAR 00AC 008A 008E 0092 0095 00A6
C HHDR 00BF 009F
C HKSM 001B
C K EOP 00D8 00CA
C K S M1 00CE 00D2
C K S U M 0158 00D4 0159
C O R E 0028 0017 001A
C O R E 2 0030 0035
C O R E 3 003F 0038
C S A D D 0013 0015
D A T A 00AE 0115 0117 011A 0123 0136
E O P 010A 00DC
E O P 1 0110 010F
F D C D 014F
F O U R 014E 011C
H E X 0112
H E X 1 0117 0144 014C
H E 1 0 011C
H E 1 1 011F 013A
H E 1 1 A 012B 0127
H E 1 2 0130 0133
H E 1 3 0134 0130
H E 1 4 0135 012C
H E 2 1 0145 013D
H E 2 2 0148 0112 013B 013F 0142 014A
I N D X 1 0150 011D 0138
I N D X 2 0151 0122 0129 012E 0134
I N P U T 0028 00AA 00BF 00C9 00CE 00D8 00DB 00DE 00E5 00E9 00F2 00F5 010A 010D
0140
I N T A D 00AB 007C
I N T E 00B1 000C 002A 00AB
K E C F 0 00A0 00B7
K O C 0 0 00A2 00B8
K O 4 0 0 00A8 0079 0086
K 7 F 0 0 00A4 008B
L B 2 0 0102 00C 2
L B 2 5 0103 00C 3 00C 6
L D R 0 1 0082 0084
L D R 0 3 0089 008C
L D R 0 4 0091 009D
L O A D 0078
M L C D 0156 007A 00C0 0157
N L O C 015C 002E 0104 010C
N R D Y 00AF 0087
O N E 2 00A9 00D0 00D3
O V C R 015A 00E3 015B
R D C D 007E 0042 00B0 00F8 0109 0125
R D I N 00A6 00BB
R D R L P 00B4 0089 0091 0094 00BA 00BD
R D R L 1 00BB 00B3
R L B A 015E 0105
R L H E D 0104 00C 7
R L R E Q 0152 0119 0145
S E N S E 00A5 00B 6
S E N S R 00A1 0078 0085 00B2 00BC
S T O R E 0097 007F 0099
S T O R 1 00EB 00FD
S T O R 2 00EE 00FB
S T O R 3 00F2 0100
S T O R 4 00F3 00E8
S T O R 5 00F9 00F7
S T O R 6 00FE 00EF
S T R D R 00A3 00B5
S T R T 0012 0000 0160
T E M P 014D 0120 0135

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IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1130 SYSTEM  
PAPER TAPE RELOCATABLE LOADER

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ULIM 015F 003A 003C 003F 00E1  
UPPER 015D 00DF 00E6 00FE 0106 010B 010E 013E 0147  
WDCNT 00AD 0090 009B  
W30F4 003E  
END OF ASSEMBLY

----- LAST PAGE -----

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