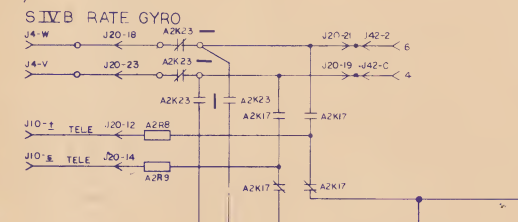


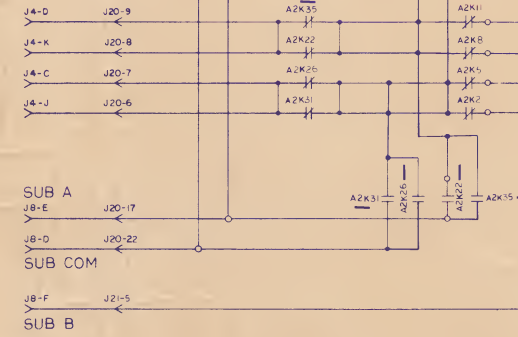
FLIGHT CONTROL COMPUTER SIB
SYSTEM SCHEMATICS FOR
PRODUCTION #2 through#5

GATTIS IP-ASTR-NFE

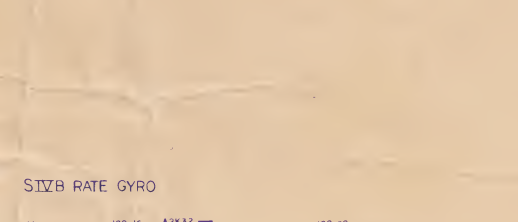
Ø YAW
SIVB RATE GYRO



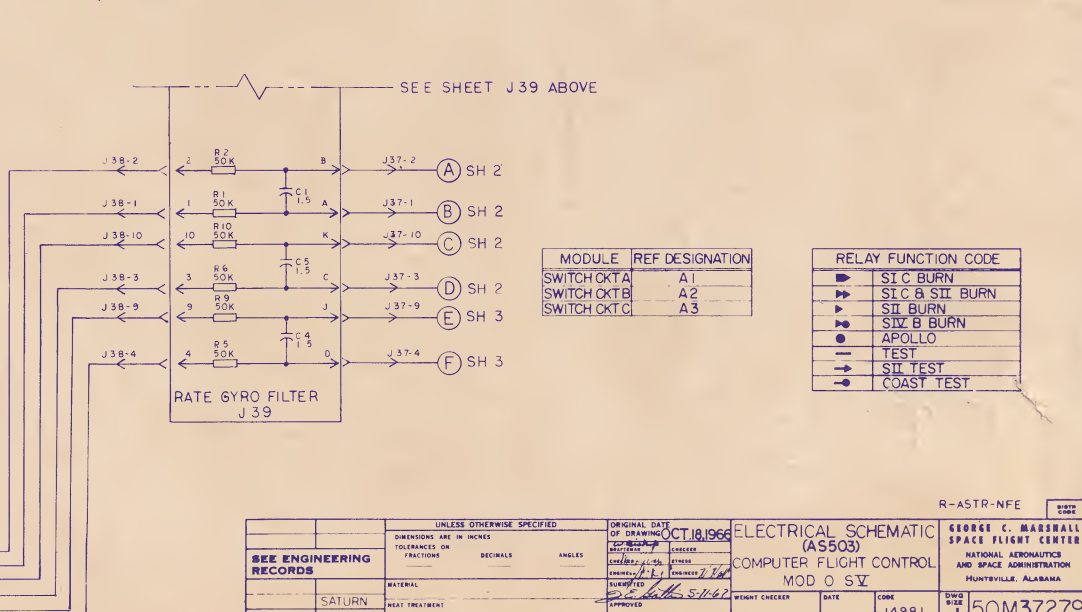
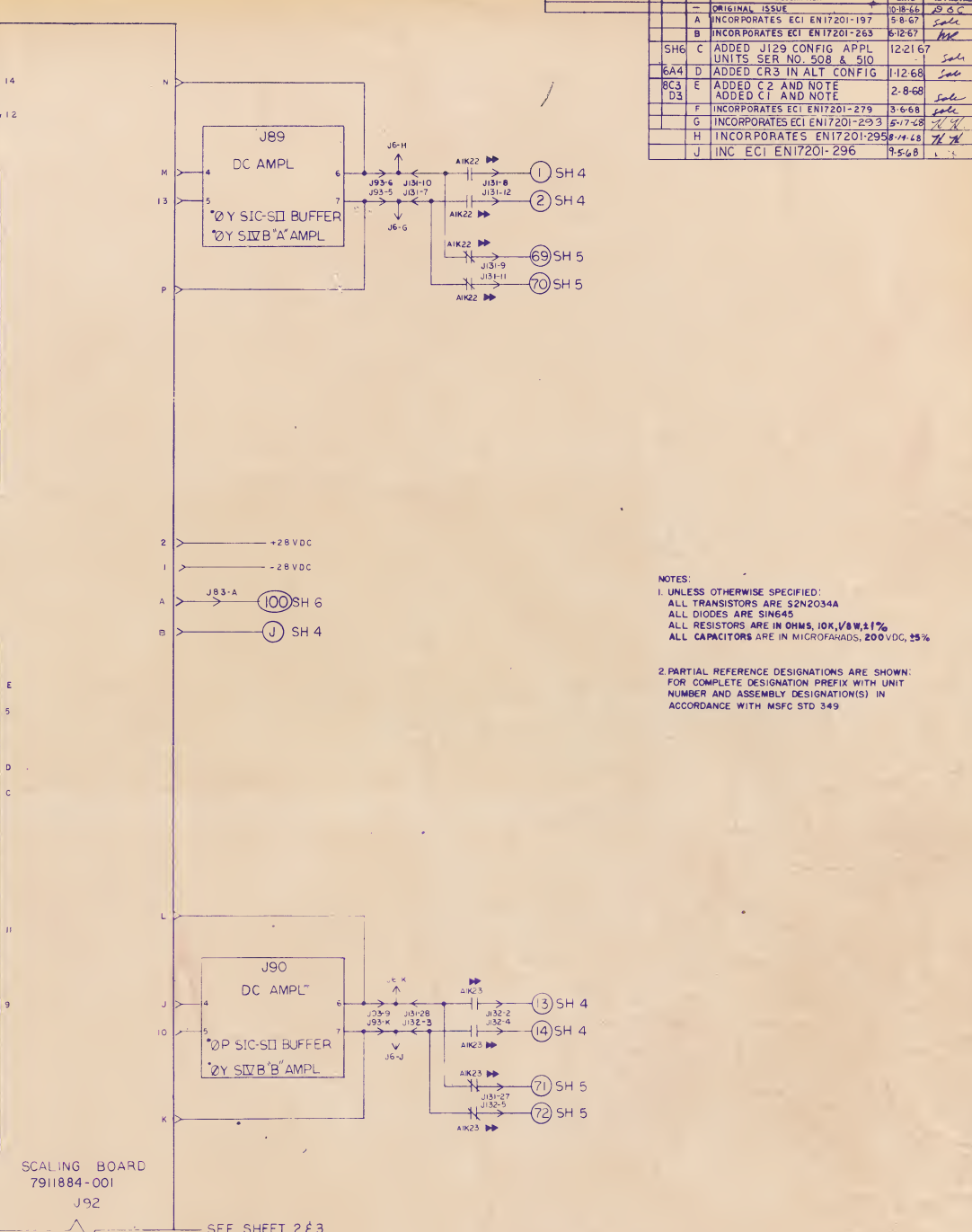
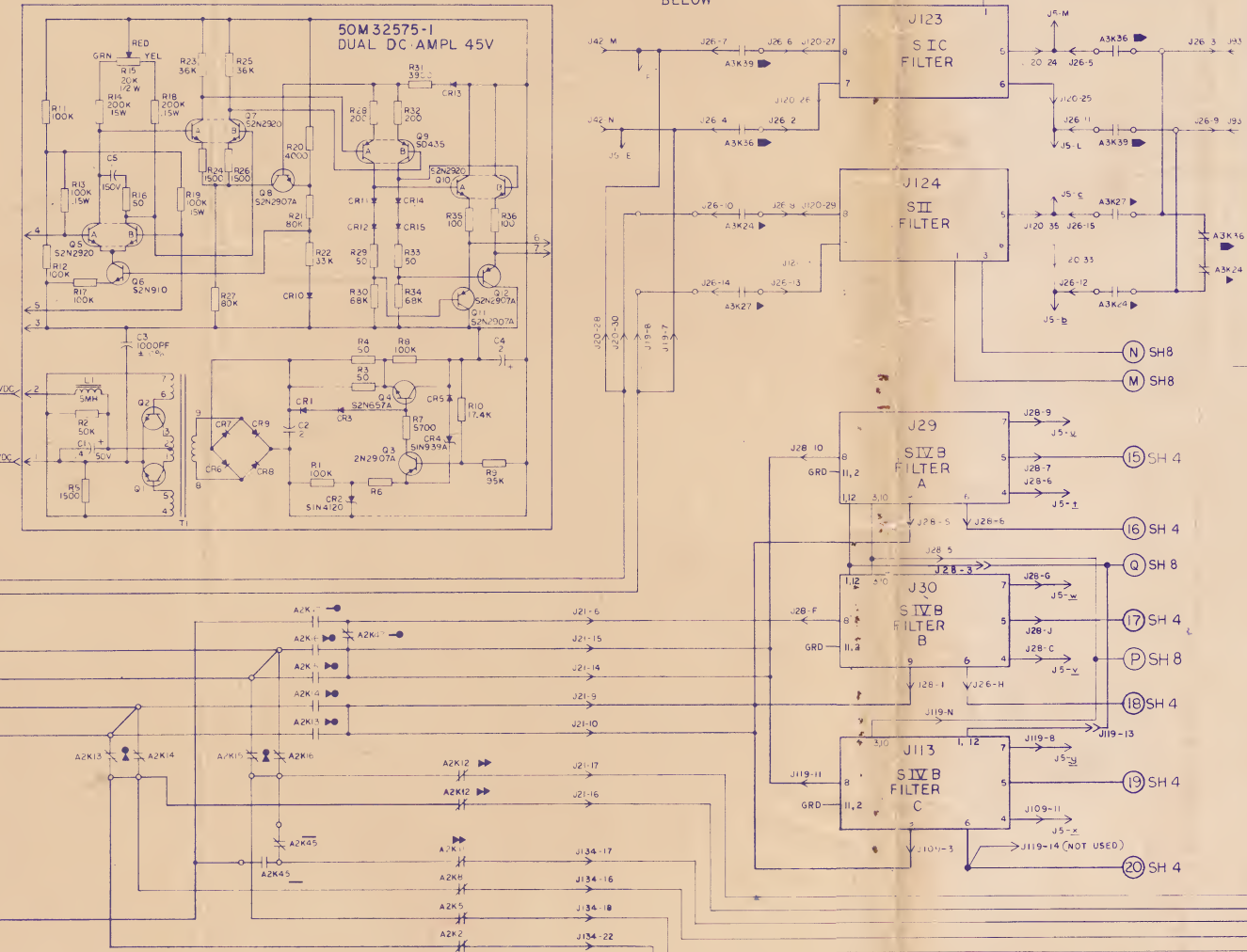
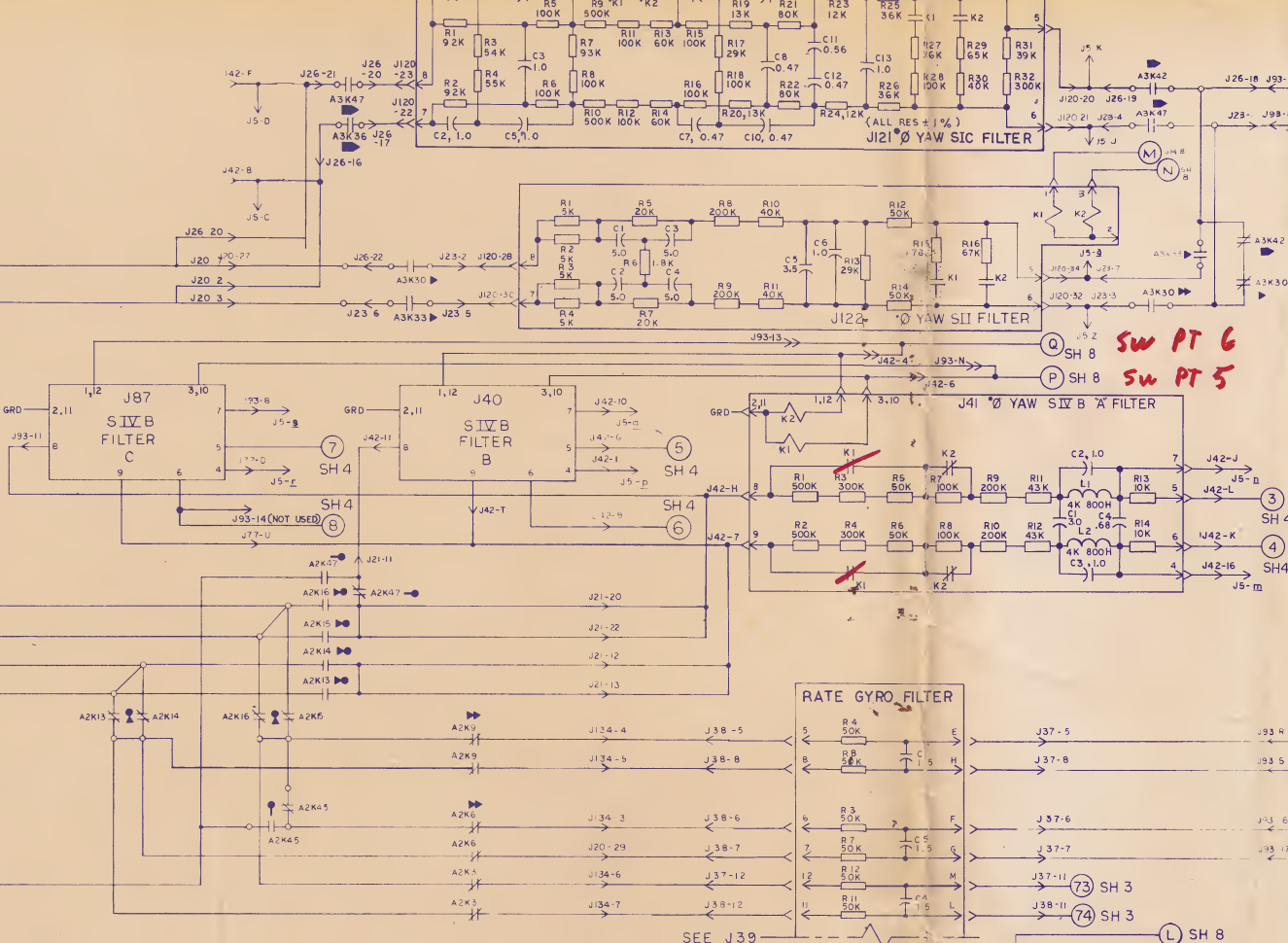
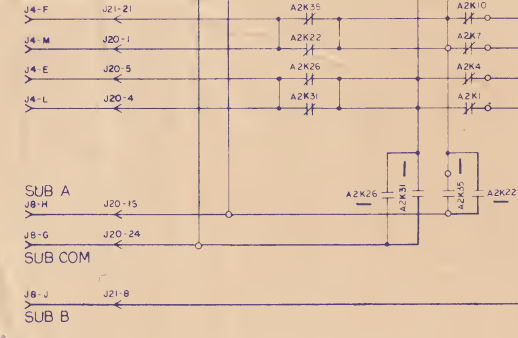
IU RATE GYRO



Ø PITCH



IU RATE GYRO



REV	DATE	DESCRIPTION	BY	CHKD
A	5-8-68	INCORPORATES ECI EN17201-197	W.S.	
B	5-8-67	INCORPORATES ECI EN17201-263	W.S.	
C	12-21-67	ADDED J129 CONFIG APPL UNITS SER NO. 508 & 510	W.S.	
D	1-12-68	ADDED CR3 IN ALT CONFIG	W.S.	
E	2-8-68	ADDED C2 AND NOTE ADDED C1 AND NOTE	W.S.	
F	3-6-68	INCORPORATES ECI EN17201-279	W.S.	
G	5-17-68	INCORPORATES ECI EN17201-293	W.S.	
H	8-19-68	INCORPORATES EN17201-295	W.S.	
J	9-5-68	INC ECI EN17201-296	W.S.	

NOTES:
1. UNLESS OTHERWISE SPECIFIED:
ALL TRANSISTORS ARE 52N2034A
ALL DIODES ARE 51G45
ALL RESISTORS ARE IN OHMS, 10K, 100K, 1M%
ALL CAPACITORS ARE IN MICROFARADS, 200VDC, 25%

2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC STD 349

MODULE	REF DESIGNATION
SWITCH OXTA	A1
SWITCH OXTB	A2
SWITCH OXTC	A3

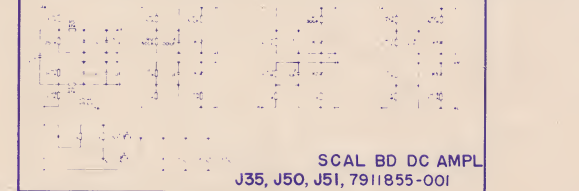
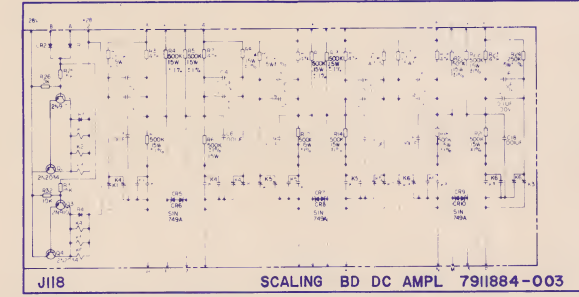
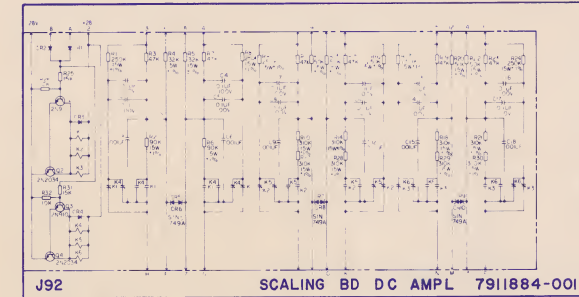
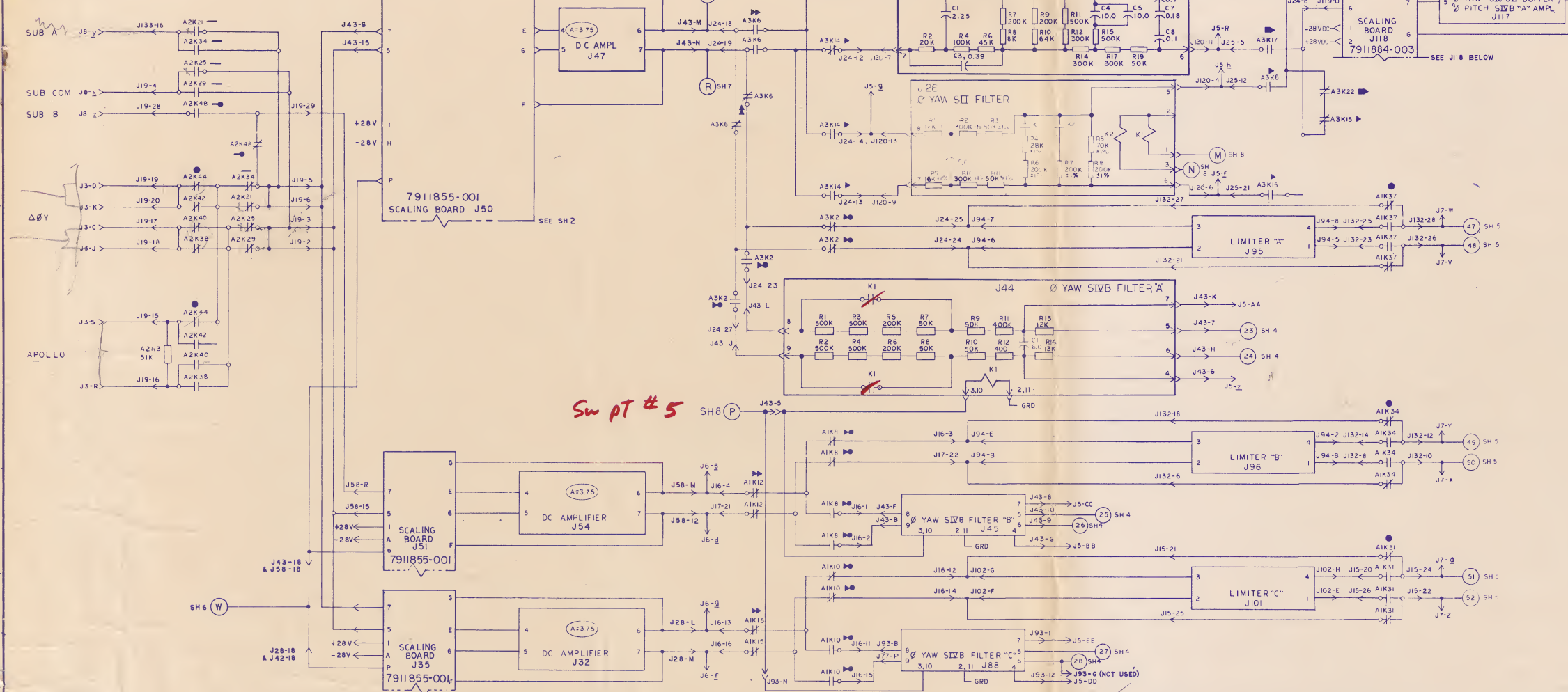
RELAY FUNCTION CODE	
▶	SIC BURN
▶▶	SIC B SII BURN
▶▶▶	SII BURN
▶▶▶▶	SIVB BURN
●	APOLLO
→	TEST
→→	SIT TEST
→→→	COAST TEST

UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING: OCT 18 1966	ELECTRICAL SCHEMATIC (AS503)		GEORGE C. MARSHALL SPACE FLIGHT CENTER
DIMENSIONS ARE IN INCHES		DESIGNED BY: [Signature]	COMPUTER FLIGHT CONTROL MOD 0 SVZ		NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
TOLERANCES ON FRACTIONS		CHECKED BY: [Signature]	DRAWN BY: [Signature]		MURFREESVILLE, ALABAMA
DECIMALS		APPROVED BY: [Signature]	DATE: 14981		SIZE: J 50M37279
ANGLES		DATE: 5-14-62	FOURTH CHECKER: [Signature]		SHEET 1 OF 8
MATERIAL		SCALE: NONE	UNIT WEIGHT		
HEAT TREATMENT		DIRECTOR		R-ASTR-NFE	
NEXT ASBY USED ON		APPLICATION		FINAL PROTECTIVE FINISH	

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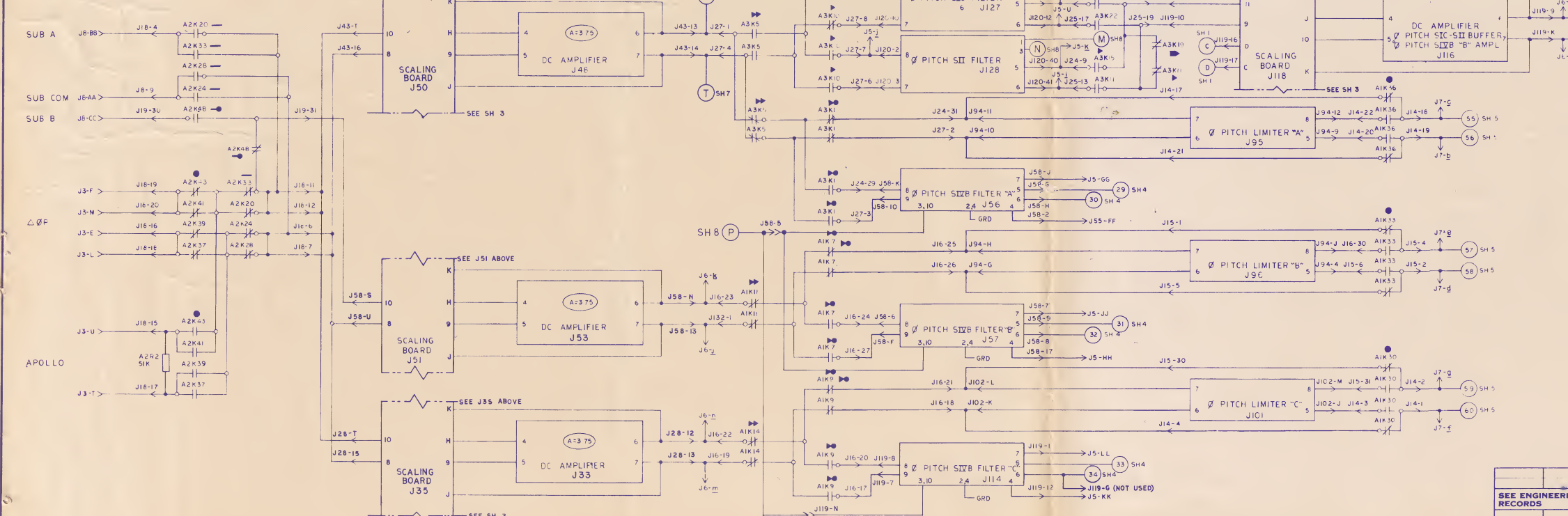
REV	DATE	DESCRIPTION	APPROVAL
1	5-8-67	SEE SHEET I	...
2	5-8-67	SEE SHEET I	...
3	5-8-67	SEE SHEET I	...
4	12-21-67	SEE SHEET I	...
5	1-12-68	SEE SHEET I	...
6	2-8-68	SEE SHEET I	...
7	3-6-68	SEE SHEET I	...
8	5-17-68	SEE SHEET I	...
9	8-14-68	SEE SHEET I	...
10	9-5-68	SEE SHEET I	...

Ø YAW



Sw pt # 5

Ø PITCH

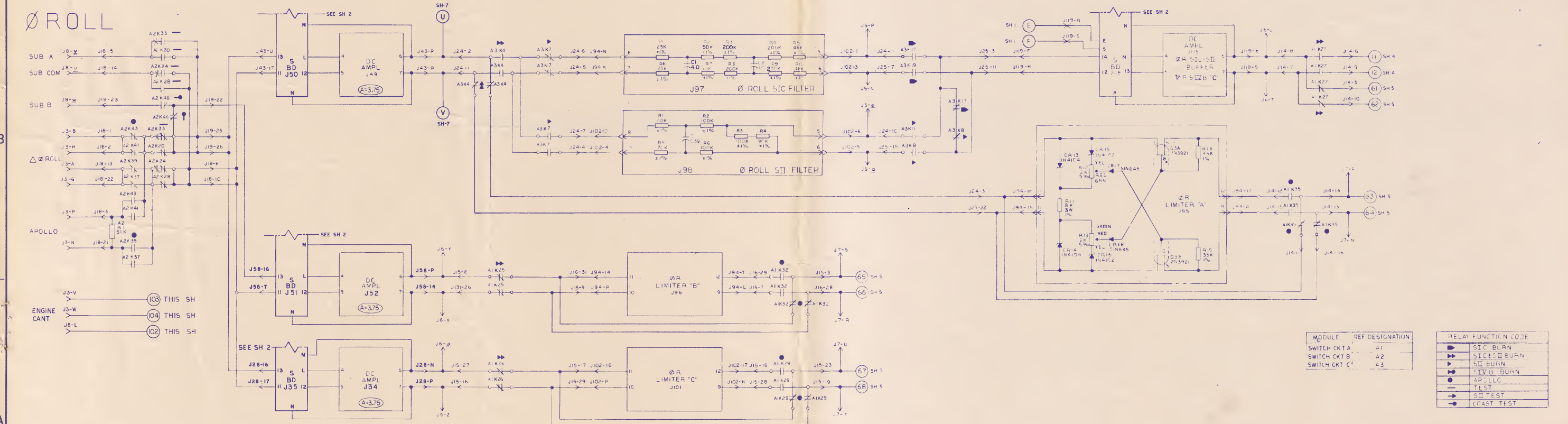
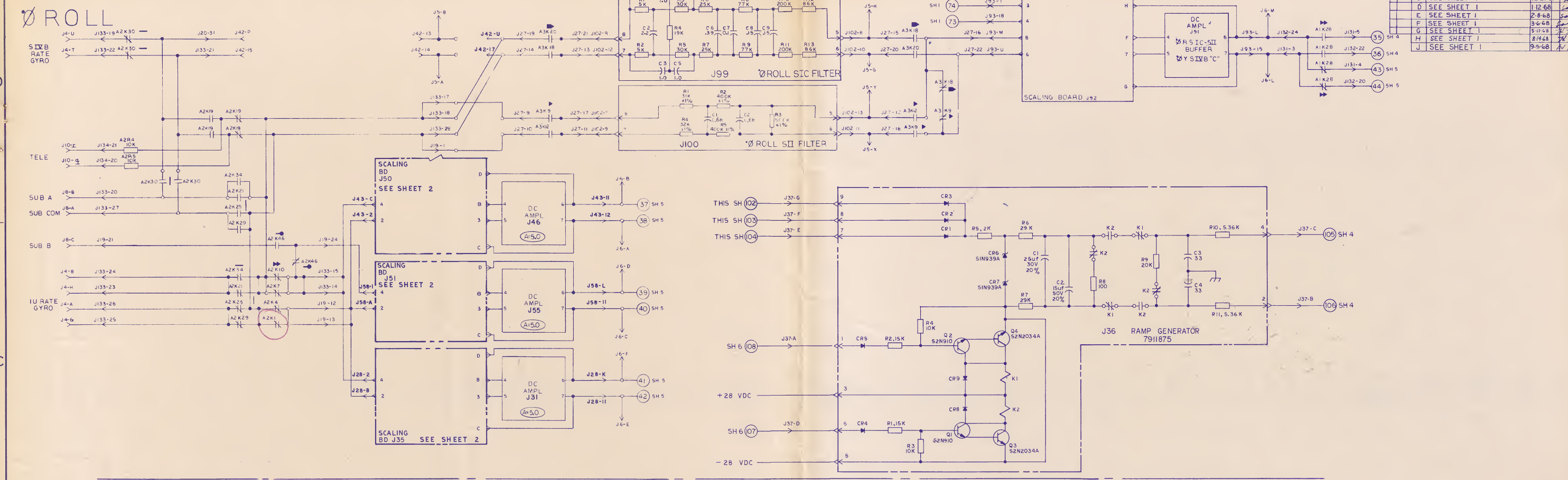


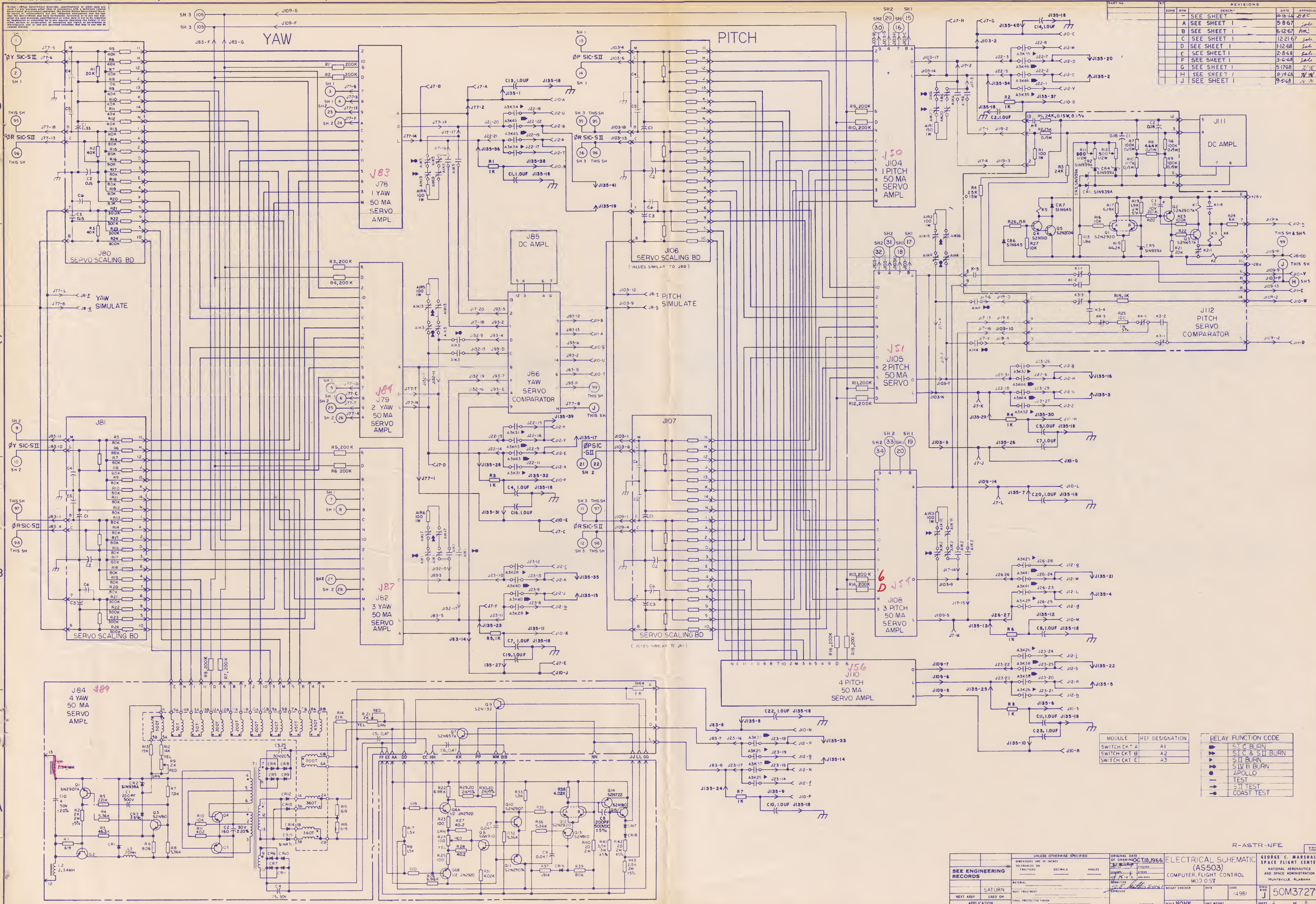
MODULE	REF DESIGNATION	RELAY FUNCTION CODE
SWITCH CRT A	A1	SIC BURN
SWITCH CRT B	A2	SIC & SII BURN
SWITCH CRT C	A3	SII BURN
		APOLLO
		TEST
		SII TEST
		COAST TEST

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING	10/18/1966	ELECTRICAL SCHEMATIC (AS 503)	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SATURN	DIMENSIONS ARE IN INCHES	DATE	10/18/1966	COMPUTER FLIGHT CONTROL	R-ASTR-NFE
NEXT ASST USED ON	TOLERANCES ON FRACTIONS	DESIGNED BY	...	M. I. O. S. V.	FORM 1000
APPLICATION	DECIMALS	CHECKED BY	...	DATE	14981
	ANGLES	APPROVED BY	...	SCALE	NONE
				UNIT WEIGHT	
				SHEET	2 OF 8

REVISIONS

REV	BY	DESCRIPTION	DATE	APPROVAL
—	—	SEE SHEET 1	0-8-66	WJC
A	—	SEE SHEET 1	5-8-67	WJC
B	—	SEE SHEET 1	6-12-67	WJC
C	—	SEE SHEET 1	12-21-67	WJC
D	—	SEE SHEET 1	1-12-68	WJC
E	—	SEE SHEET 1	2-8-68	WJC
F	—	SEE SHEET 1	3-6-68	WJC
G	—	SEE SHEET 1	5-11-68	WJC
H	—	SEE SHEET 1	8-14-68	WJC
J	—	SEE SHEET 1	9-5-68	WJC





REV	DATE	APPROVAL
A	5-8-67	SMC
B	6-12-67	SMC
C	12-21-67	SMC
D	1-12-68	SMC
E	2-8-68	SMC
F	3-6-68	SMC
G	5-17-68	SMC
H	8-14-68	SMC
J	9-5-68	SMC

MODULE	REF DESIGNATION
SWITCH CKT A	A1
SWITCH CKT B	A2
SWITCH CKT C	A3

RELAY FUNCTION CODE	
▶	ST C BURN
▶	ST C & ST BURN
▶	ST BURN
▶	ST V BURN
▶	TEST
▶	ST TEST
▶	COAST TEST

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ON FRACTIONS ON DECIMALS ANGLES

ORIGINAL DATE OF DRAWING: OCT 18, 1966

ELECTRICAL SCHEMATIC (AS503)
COMPUTER FLIGHT CONTROL MOD 05V

GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

SCALE: NONE

DATE: 14981

WEIGHT CHECKER: []

DATE: []

LOG: []

SIZE: J

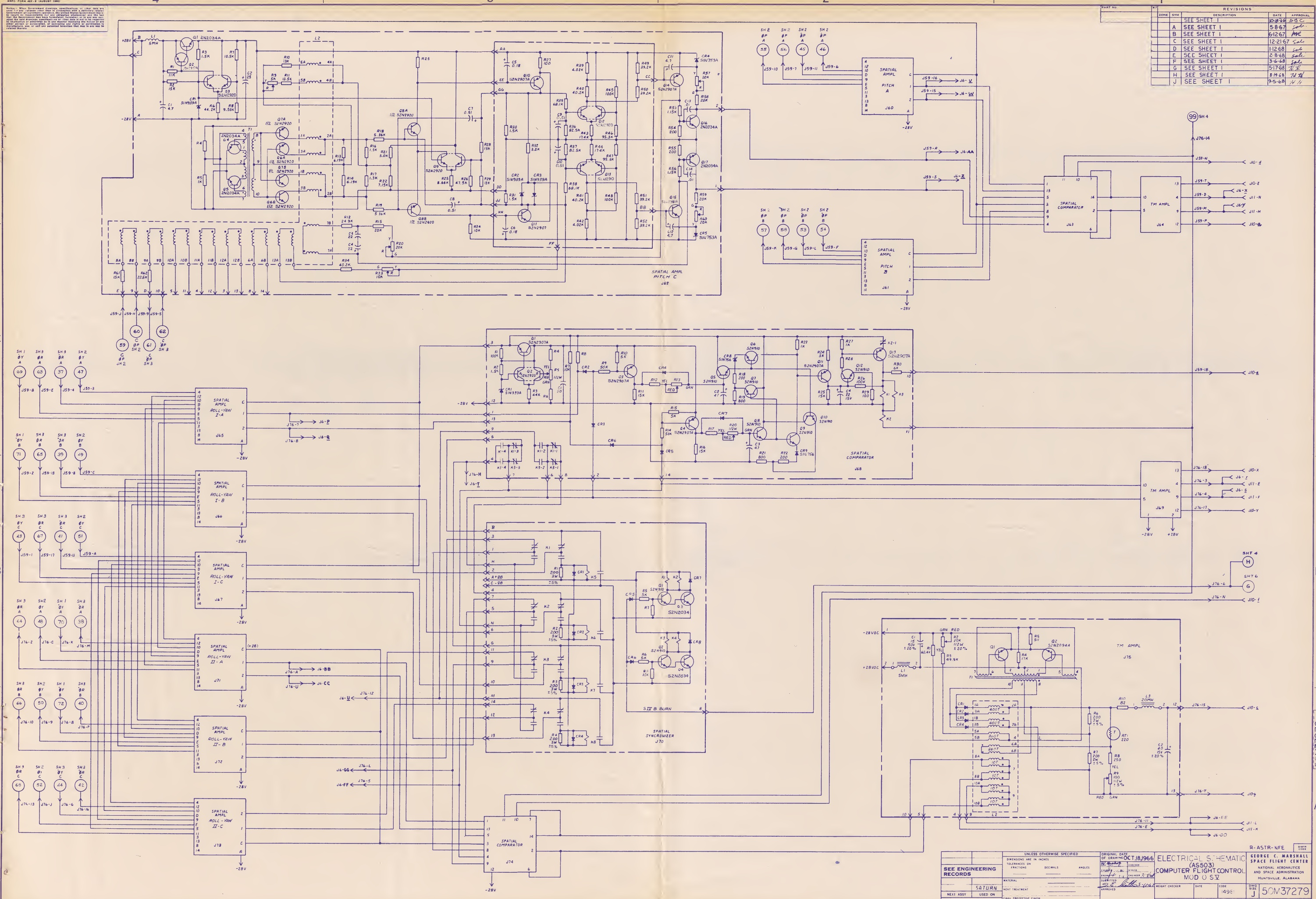
SHEET: 1 OF 5

50M37279

R-ASTR-NFE

FORM 482 (AUGUST 1960)
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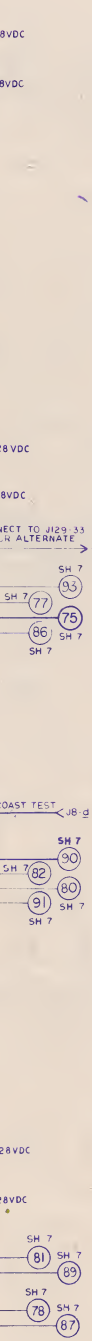
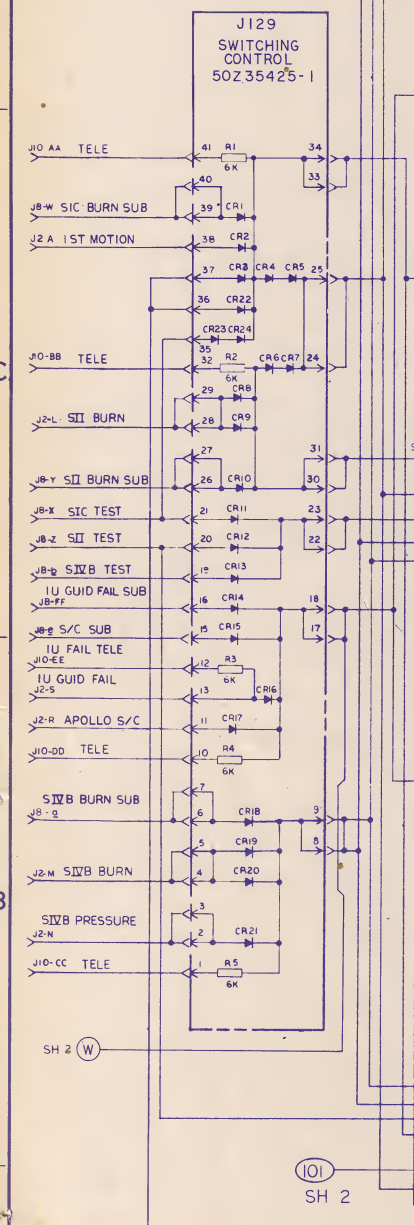
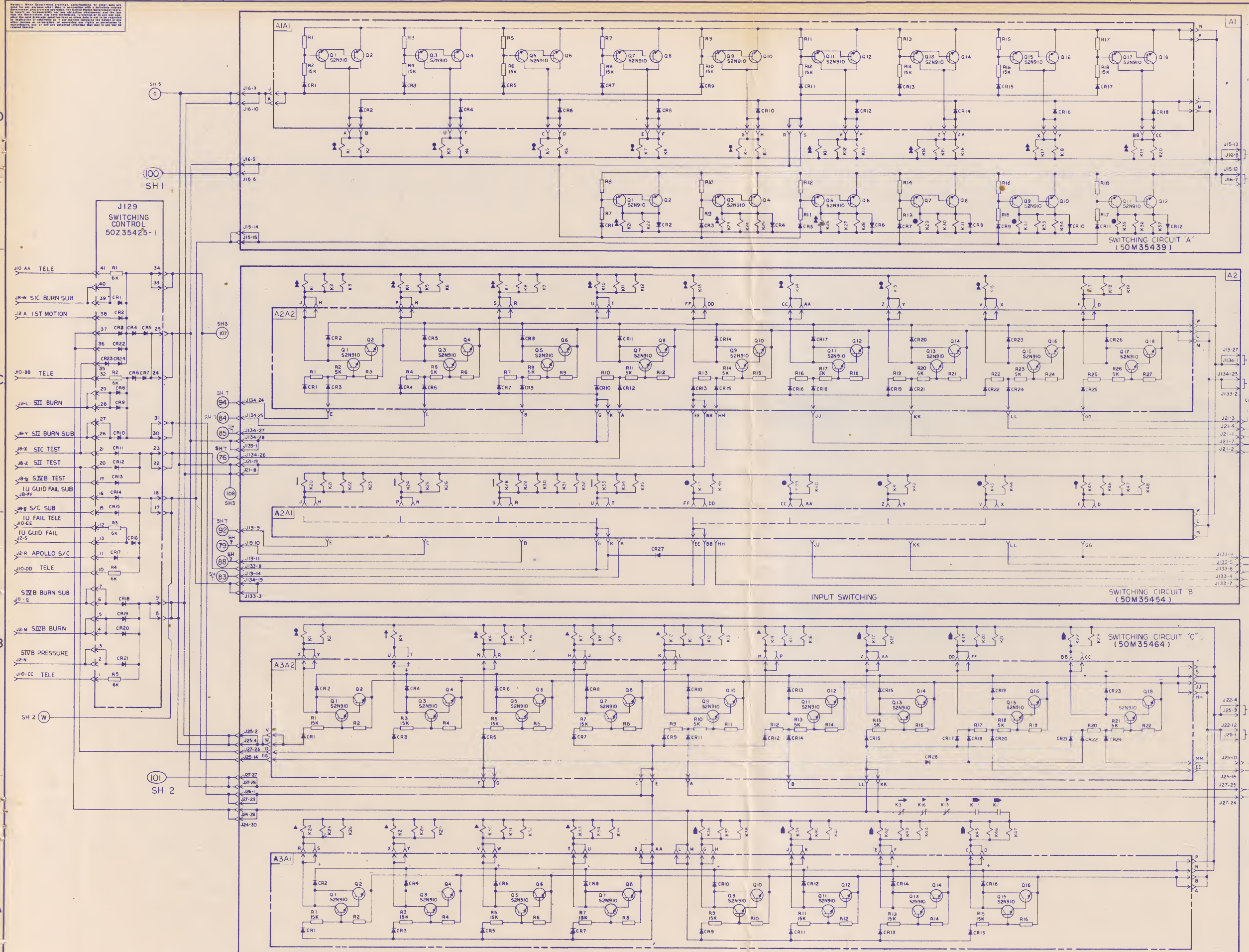
REVISONS		DATE	APPROVAL
1	SEE SHEET I	10-24-64	AS C
2	SEE SHEET I	5-8-67	SA
3	SEE SHEET I	8-12-67	MC
4	SEE SHEET I	12-21-67	SA
5	SEE SHEET I	11-2-68	SA
6	SEE SHEET I	2-8-68	SA
7	SEE SHEET I	3-6-68	SA
8	SEE SHEET I	5-17-68	SA
9	SEE SHEET I	8-14-68	SA
10	SEE SHEET I	9-5-68	SA



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING	OCT 18 1966	ELECTRICAL SCHEMATIC (AS503) COMPUTER FLIGHT CONTROL MOD 0 SV	R-ASTR-NFE	DRAWN 5002			
	TOLERANCES ON FRACTIONS	DECIMALS	ANGLES						
	MATERIAL	WEIGHT CHECKER	DATE				CODE	DWG. NO.	50M37279
	HEAT TREATMENT	APPROVED	SCALE				NONE	SHEET	5 OF 5
APPLICATION	FINAL PROTECTIVE FINISH	DIRECTOR							

Notes: When Government drawings, specifications, or other data are used in connection with this drawing, the attention is directed to the fact that the Government does not assume any liability for the use of such data for purposes other than those for which they were prepared and for which they were specifically intended.

REV.	SYMBOL	DESCRIPTION	DATE	APPROVAL
1		SEE SHEET I	5-8-67	SPC
2		SEE SHEET I	5-12-67	mm
3		SEE SHEET I	12-21-67	spc
4		SEE SHEET I	1-12-68	spc
5		SEE SHEET I	2-6-68	spc
6		SEE SHEET I	3-6-68	spc
7		SEE SHEET I	5-11-68	spc
8		SEE SHEET I	8-14-68	spc
9		SEE SHEET I	9-5-68	spc



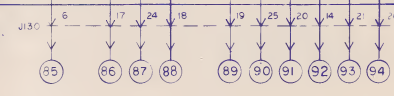
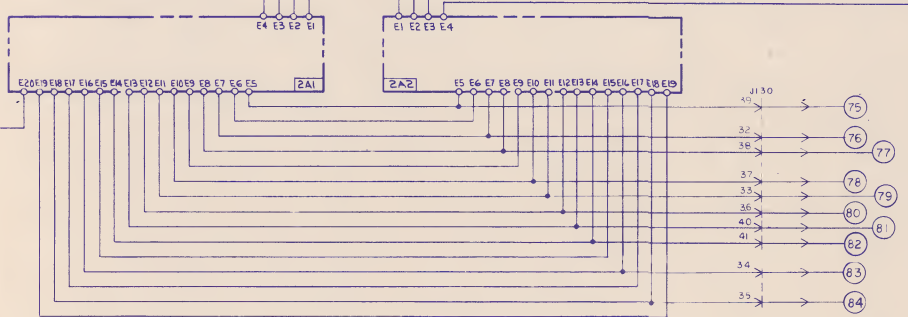
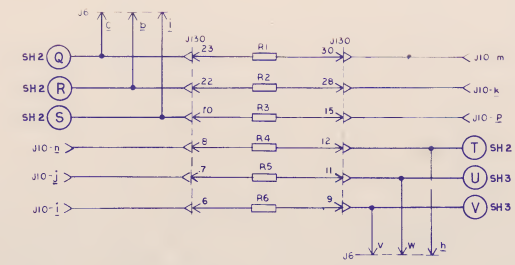
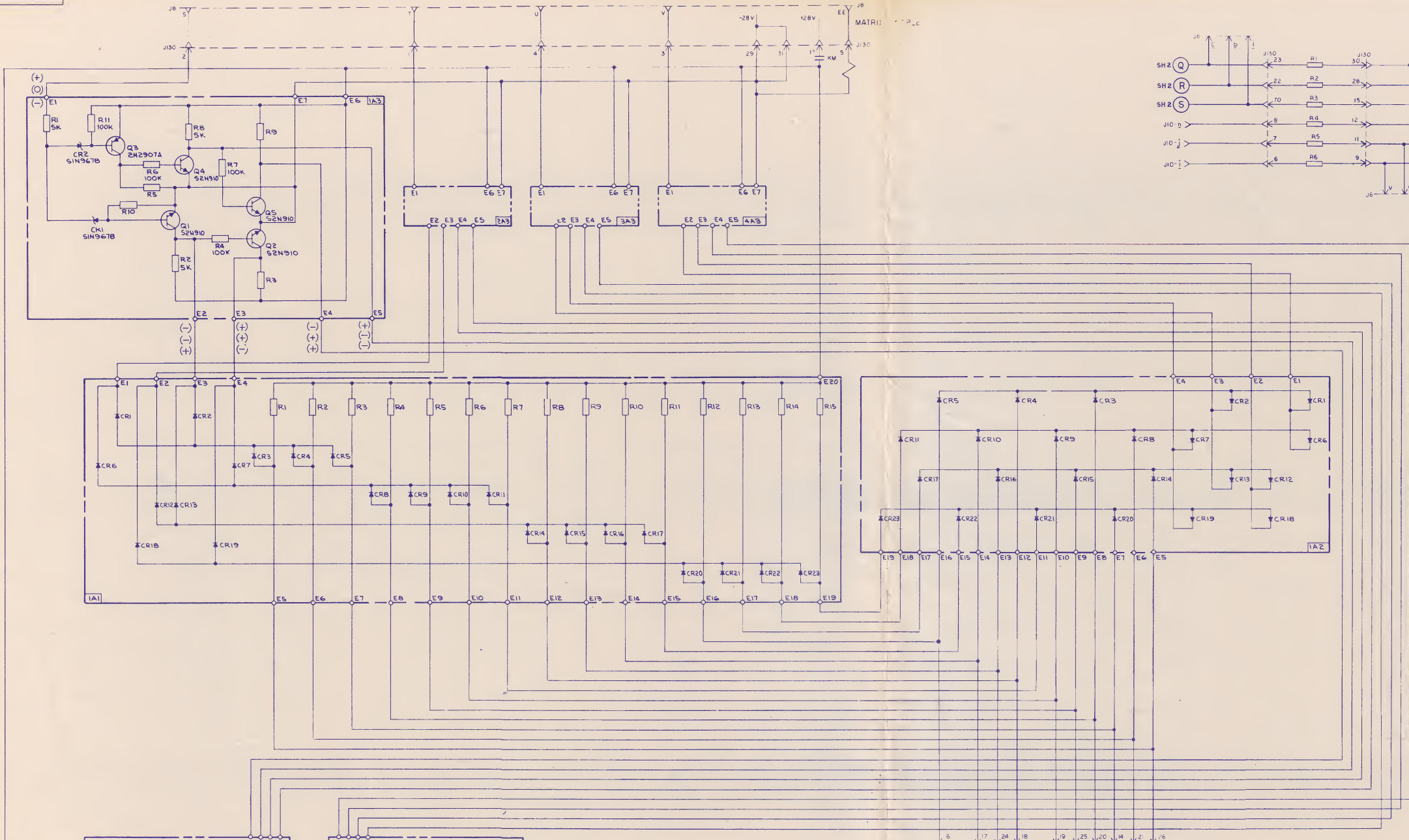
MODULE	REF DESIGNATION
SWITCH CRT A	A1
SWITCH CRT B	A2
SWITCH CRT C	A3

RELAY FUNCTION CODE	
▶	SIC BURN
▶▶	SIC B SII BURN
▶▶▶	SII BURN
▶▶▶▶	SIV B BURN
▶▶▶▶▶	APOLLO
▶▶▶▶▶▶	TEST
▶▶▶▶▶▶▶	SII TEST
▶▶▶▶▶▶▶▶	COAST TEST

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING	10/18/66	ELECTRICAL SCHEMATIC (A503)	GEORGE C. MARSHALL SPACE FLIGHT CENTER
SEE ENGINEERING RECORDS	TOLERANCES ON DIMENSIONS	DECIMALS	COMPUTER FLIGHT CONTROL MOD. 57	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
SATURN	MATERIAL	HEAT TREATMENT	WEIGHT CHECKER	MUNTSVILLE, ALABAMA
NEXT ASST	FINAL PROTECTIVE FINISH	APPROVED	DATE	14981
APPLICATION	DIRECTOR	SCALE	NONE	UNIT WEIGHT
				SHEET 5 OF 8

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
 TOLERANCES ON FRACTIONS DECIMALS ANGLES
 SEE ENGINEERING RECORDS
 MATERIAL SATURN
 HEAT TREATMENT USED ON
 NEXT ASSY
 APPLICATION

REVISIONS		DATE	APPROVAL
A	SEE SHEET I	10-18-66	ABC
B	SEE SHEET I	5-8-67	sol
C	SEE SHEET I	12-21-67	MC
D	SEE SHEET I	1-12-68	sol
E	SEE SHEET I	2-8-68	sol
F	SEE SHEET I	3-6-68	sol
G	SEE SHEET I	3-17-68	sol
H	SEE SHEET I	8-14-68	sol
J	SEE SHEET I	9-5-68	sol

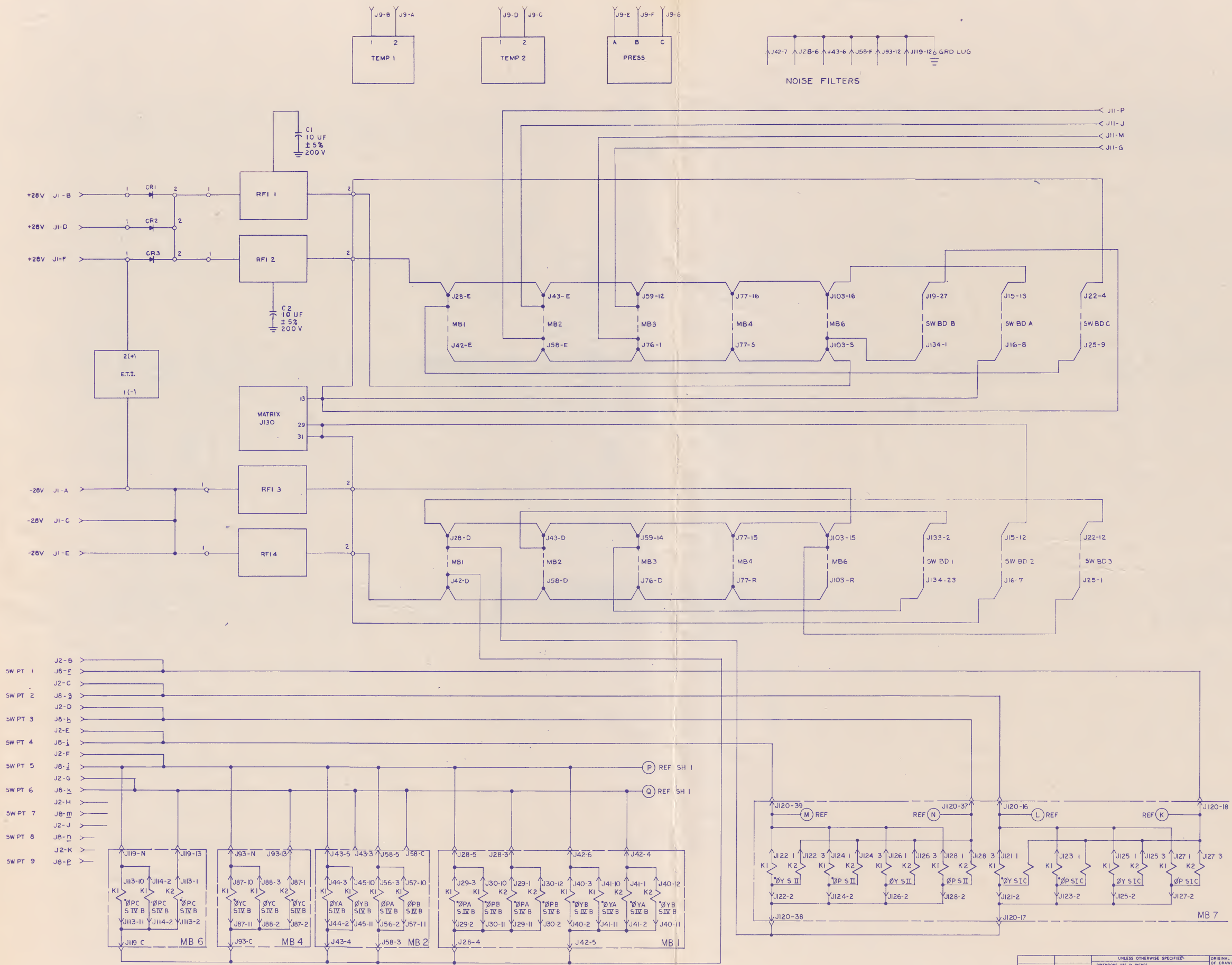


+28 OUTPUT	MATRIX CODE			
BUBBLE	J8-S	T	U	V
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76	0	0	-	-
77	-	0	0	0
78	-	0	-	-
79	-	0	-	-
80	0	-	0	0
81	0	-	0	-
82	0	-	-	0
83	-	-	0	0
84	-	-	-	0
85	+	+	0	0
86	0	+	+	0
87	0	+	0	+
88	0	+	0	0
89	+	0	+	0
90	+	0	0	+
91	+	0	0	0
92	0	0	+	+
93	0	0	+	0
94	0	0	0	+

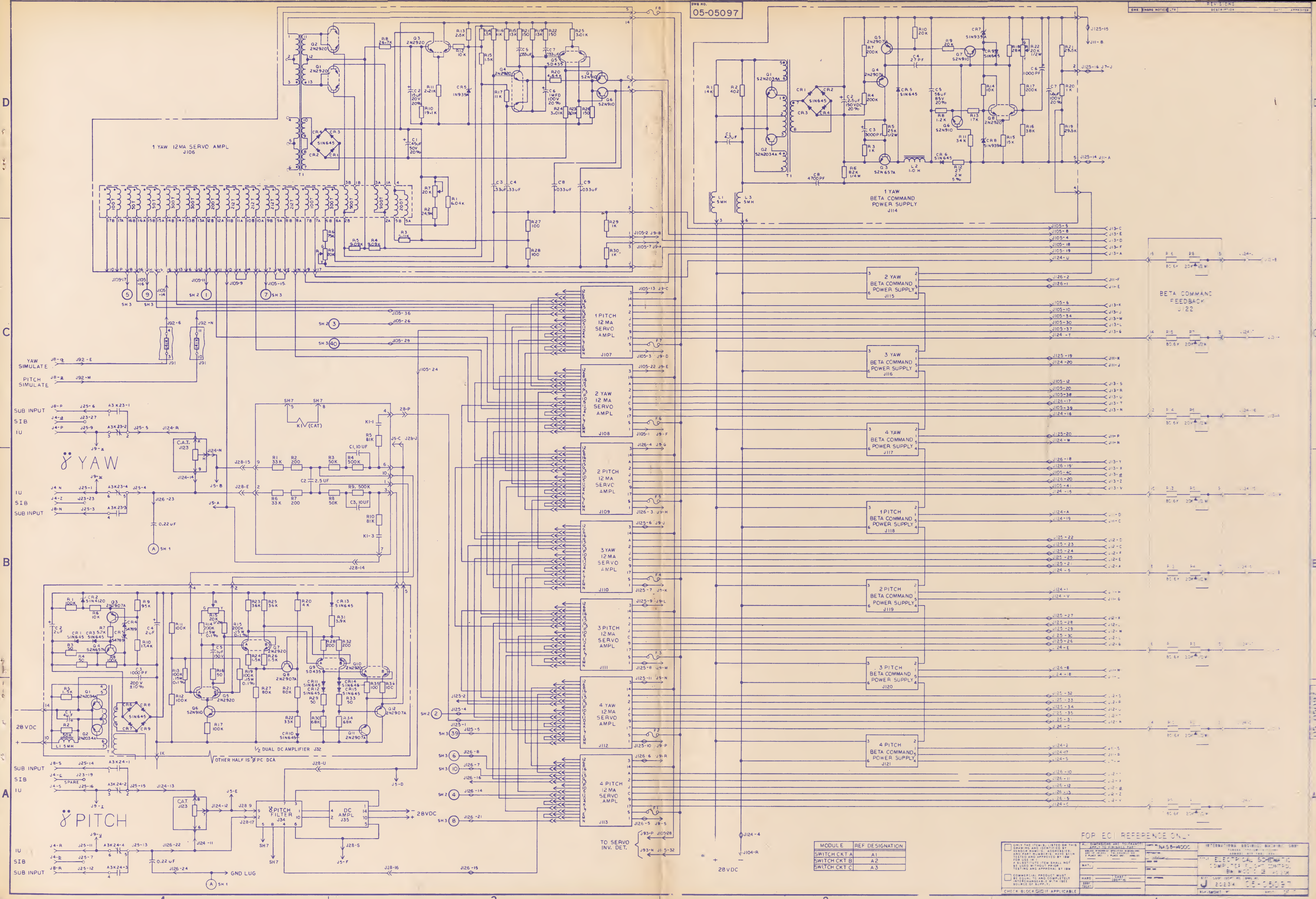
+ = +28 VOLTS
 - = -28 VOLT GRD
 0 = NO CONNECTION

UNLESS OTHERWISE SPECIFIED	ORIGINAL DATE OF DRAWING	ELECTRICAL SCHEMATIC (AS 503)		DATE	CODE	DRY FILE
DIMENSIONS ARE IN INCHES	OCT 18 1966	COMPUTER FLIGHT CONTROL		14 9 61	J	50M37279
TOLERANCES ON FRACTIONS DECIMALS ANGLES	APPROVED	MOD 0 SV		SCALE NONE	UNIT WEIGHT NONE	SHEET 7 OF 8
SEE ENGINEERING RECORDS	DIRECTOR	R-ASTR-NFE		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA		

REV	ZONE	SYN	DESCRIPTION	DATE	APPROVAL
-	-	-	SEE SHY	10-18-66	EDC
A	-	-	SEE SHEET I	8-8-67	Sal
B	-	-	SEE SHEET I	6-12-67	Mc
C	-	-	SEE SHEET I	12-21-67	Sal
D	-	-	SEE SHEET I	1-12-68	Sal
E	-	-	SEE SHEET I	2-8-68	Sal
F	-	-	SEE SHEET I	3-4-68	Sal
G	-	-	SEE SHEET I	5-17-68	Sal
H	-	-	SEE SHEET I	8-14-68	Sal
J	-	-	SEE SHEET I	9-5-68	Sal



UNLESS OTHERWISE SPECIFIED:		ORIGINAL DATE OF DRAWING: OCT 18, 1966	ELECTRICAL SCHEMATIC (AS 503)	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
SEE ENGINEERING RECORDS	DIMENSIONS ARE IN INCHES TOLERANCES ON DECIMALS ANGLES	APPROVED: <i>[Signature]</i>		
SATURN	MATERIAL	DATE	WEIGHT CHECKER	DATE
NEAT TREATMENT	FINAL PROTECTIVE FINISH	APPROVED: <i>[Signature]</i>	SCALE: NONE	UNIT WEIGHT
APPLICATION		DIRECTOR	SHEET	50M37279

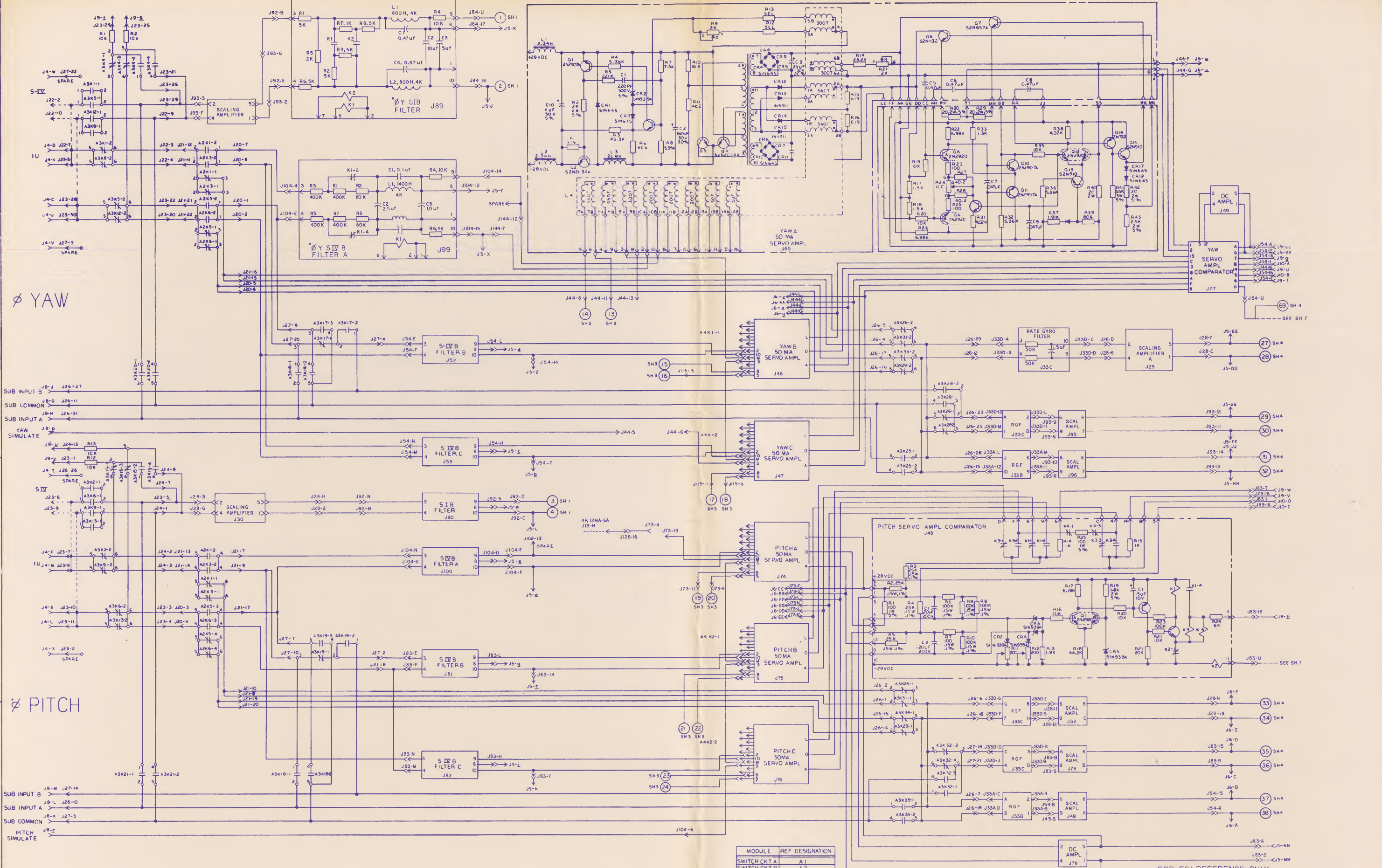


MODULE	REF DESIGNATION
SWITCH CKT A	A1
SWITCH CKT B	A2
SWITCH CKT C	A3

FOR EC1 REFERENCE ONLY

ONLY THE ITEMS LISTED ON THIS DRAWING AND IDENTIFIED BY A DESIGN RANGE AND SERIAL NUMBER SHOULD BE USED FOR TESTING AND APPROVED BY THE AUTHORITY.

INTERNATIONAL BUSINESS MACHINES CORPORATION
 ELECTRONIC SCHEMATIC COMPILER PROGRAM CONTROL
 MODEL 20234 05-05097



YAW

PITCH

MODULE	REF DESIGNATION
SWITCH CKT A	A 1
SWITCH CKT B	A 2
SWITCH CKT C	A 3
MOTHER BD	A 4

FOR ECI REFERENCE ONLY

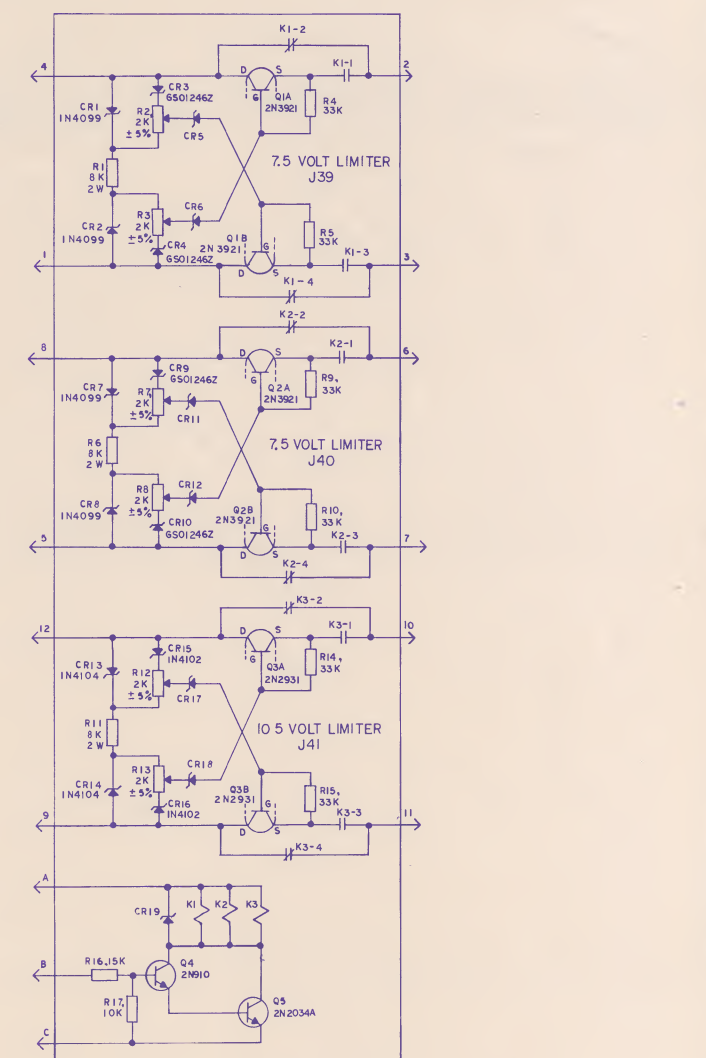
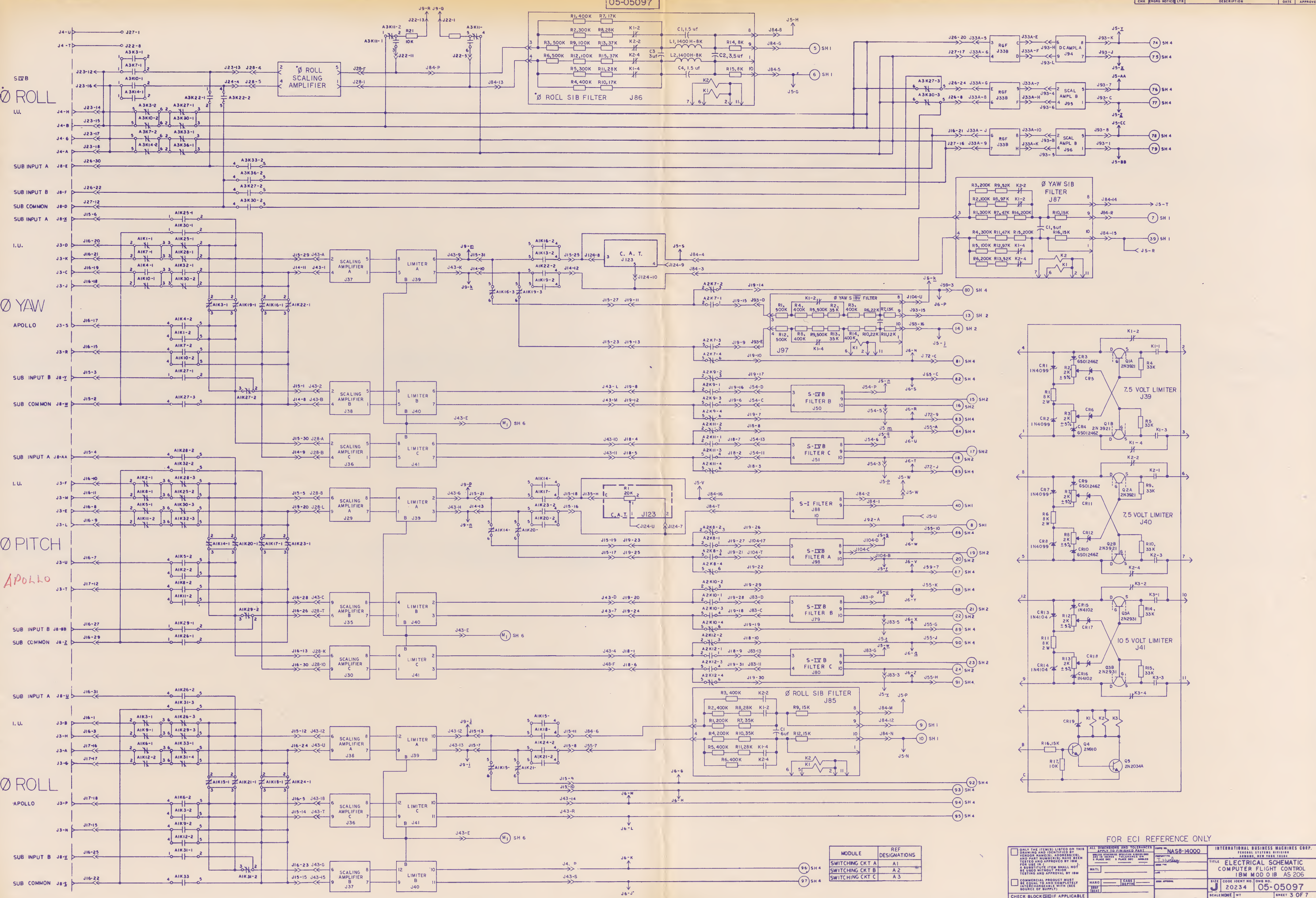
ONLY THE ITEMS LISTED ON THIS DRAWING AND IDENTIFIED BY THE PART NUMBERED PARTS ARE TO BE USED WITHOUT PRIOR TESTING AND APPROVAL BY IBM.

COMMERCIAL PRODUCT MUST BE EQUAL TO OR COMPLETELY SUPERIOR TO THE ORIGINAL SOURCE OF SUPPLY WITH THE SAME QUALITY AND PERFORMANCE.

IBM 20234 05-05097

SCALE NONE WT

SHEET 2 OF 7



MODULE	REF DESIGNATIONS
SWITCHING CKT A	A1
SWITCHING CKT B	A2
SWITCHING CKT C	A3

FOR ECI REFERENCE ONLY

ONLY THE ITEM(S) LISTED ON THIS DRAWING AND IDENTIFIED BY DRAWING NUMBER(S) HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN THIS SYSTEM. A SUBSTITUTE ITEM SHALL NOT BE USED WITHOUT PRICE TESTING AND APPROVAL BY IBM.

COMMERCIAL PRODUCT MUST BE USED TO AND COMPLETELY INTERCHANGEABLE WITH THE SOURCE OF BUY (1).

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PART UNLESS OTHERWISE SPECIFIED.

THIS IS A TECHNICAL DRAWING AND PART NUMBER(S) SHALL BE USED TO IDENTIFY THE PART.

DATE: 05-05097

SCALE: NONE

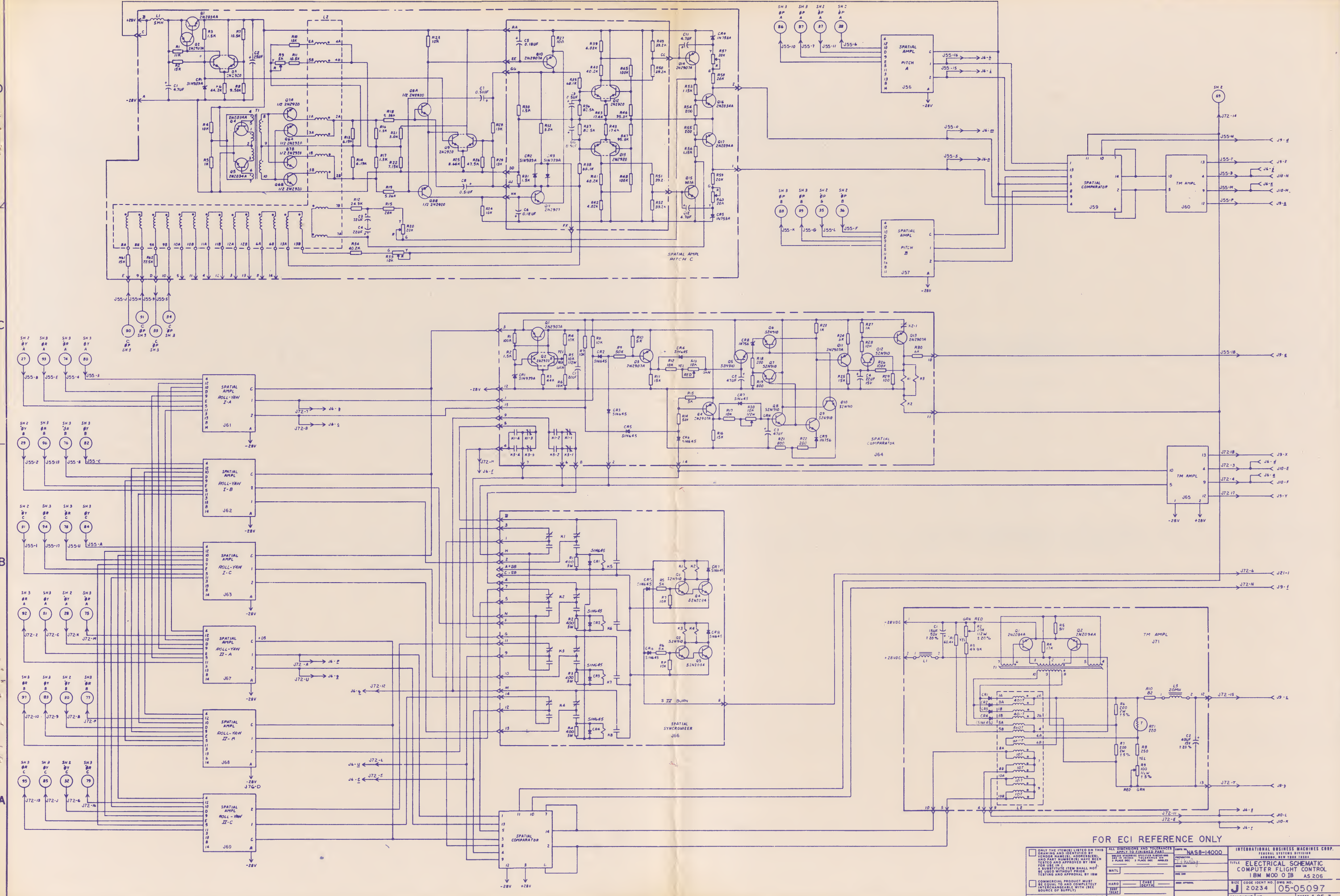
INTERNATIONAL BUSINESS MACHINES CORP. FEDERAL SYSTEMS DIVISION

TITLE: ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL IBM MOD 01B AS 206

SIZE: CODE IDENT NO. 20234

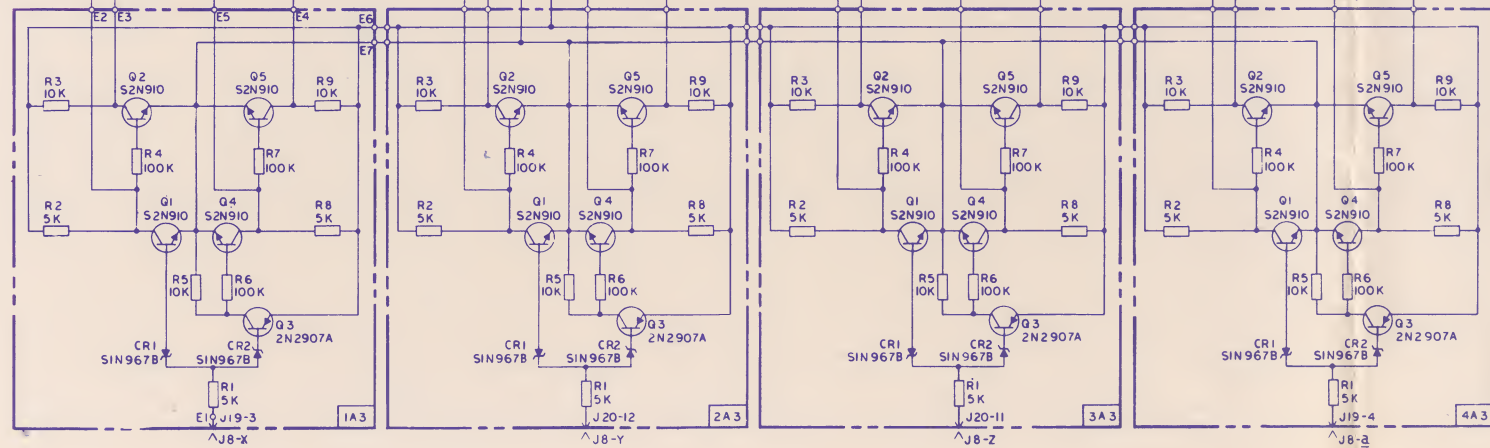
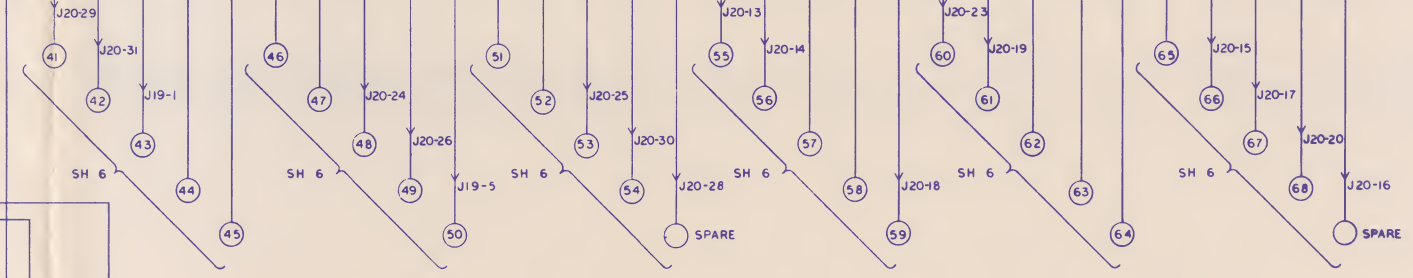
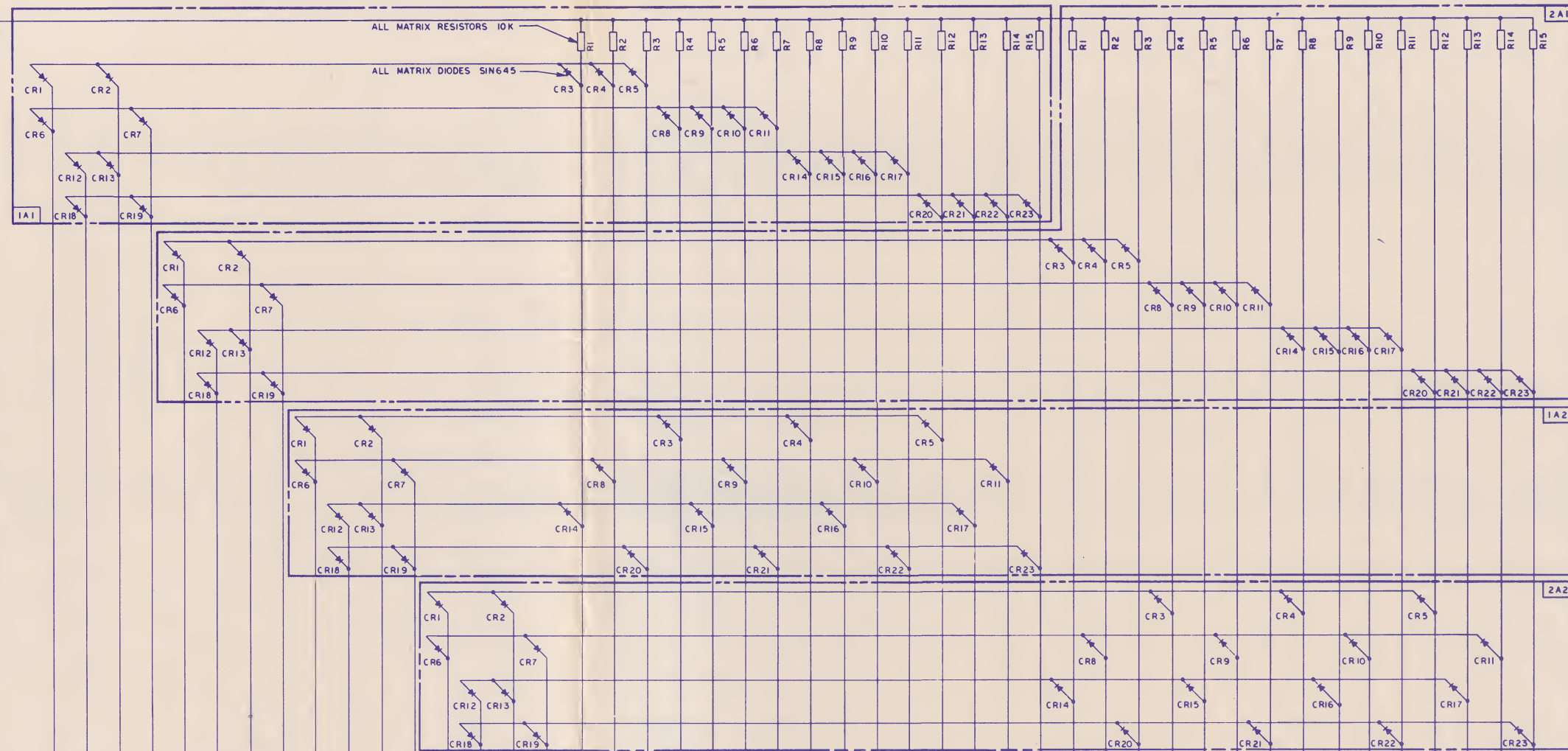
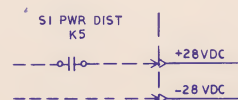
DWG NO.: 05-05097

SHEET 3 OF 7



FOR ECI REFERENCE ONLY

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--	--	---	--



MATRIX CODE	+28V OUTPUT	RELAYS ENERGIZED
JBX Y Z	BUBBLE	A K K K K
0 0 0 +	41	3 1 2 3 4
0 0 0 0	42	3 4 5 6 7
0 0 0 +	43	1 1 2 3
+ 0 0 0	44	2 1 2 3
+ 0 0 0	45	2 3 4
+ 0 0 0	46	2 1 2
+ 0 0 +	47	3 31 32 33
0 + 0 0	48	1 4 5 6
0 + 0 +	49	1 25 26 27
C + + C	50	1 30 31
0 + 0 +	51	3 34 35 36
+ + 0 0	52	2 5
+ + 0 +	53	1 16 17 18
+ + + 0	54	1 13 14 15
+ + + +	SPARE	
0 0 0 -	55	1 19 20 21
0 0 0 -	56	1 22 23 24
0 0 0 -	57	2 6
- 0 0 0	58	3 28 29 30
- 0 0 -	59	1 32 33
- 0 0 -	60	1 28 29
- 0 - -	61	1 10 11 12
0 - 0 -	62	3 25 26 27
0 - 0 -	63	2 2 4
0 - - 0	64	2 6
0 - - 0	65	2 5
- 0 0 0	66	1 7 8 9
- 0 0 0	67	3 13 14 15
- 0 0 0	68	3 8 9 10 11
- - - -	SPARE	

DRIVER				
INPUT SYMBOL	E2	E3	E4	E5
0	+	-	-	+
+(+28)	-	+	-	+
-(GRB)	+	-	+	-

FOR ECI REFERENCE ONLY

ONLY THE ITEMS LISTED ON THIS DRAWING AND IDENTIFIED BY SYMBOL NUMBER, QUANTITIES, AND PART NUMBERS HAVE BEEN TESTED AND APPROVED BY IBM FOR USE IN THIS PRODUCT. SUBSTITUTION OF ITEMS SHALL NOT BE MADE WITHOUT PRIOR TESTING AND APPROVAL BY IBM.

COMMERCIAL PRODUCT MUST BE EQUAL TO AND COMPLETELY INTERCHANGEABLE WITH THE SOURCE OF SUPPLY.

ALL DIMENSIONS AND TOLERANCES APPLY TO FINISHED PARTS UNLESS OTHERWISE SPECIFIED.

IBM CORPORATION, FEDERAL BUSINESS MACHINES DIVISION, 900 N. YORK ST., ARMONK, N.Y. 10504

DATE: 2/15/64

SCALE: NONE

INTERNATIONAL BUSINESS MACHINES CORP. FEDERAL BUSINESS MACHINES DIVISION, 900 N. YORK ST., ARMONK, N.Y. 10504

TITLE: ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL IBM MOD 0 JB AS206

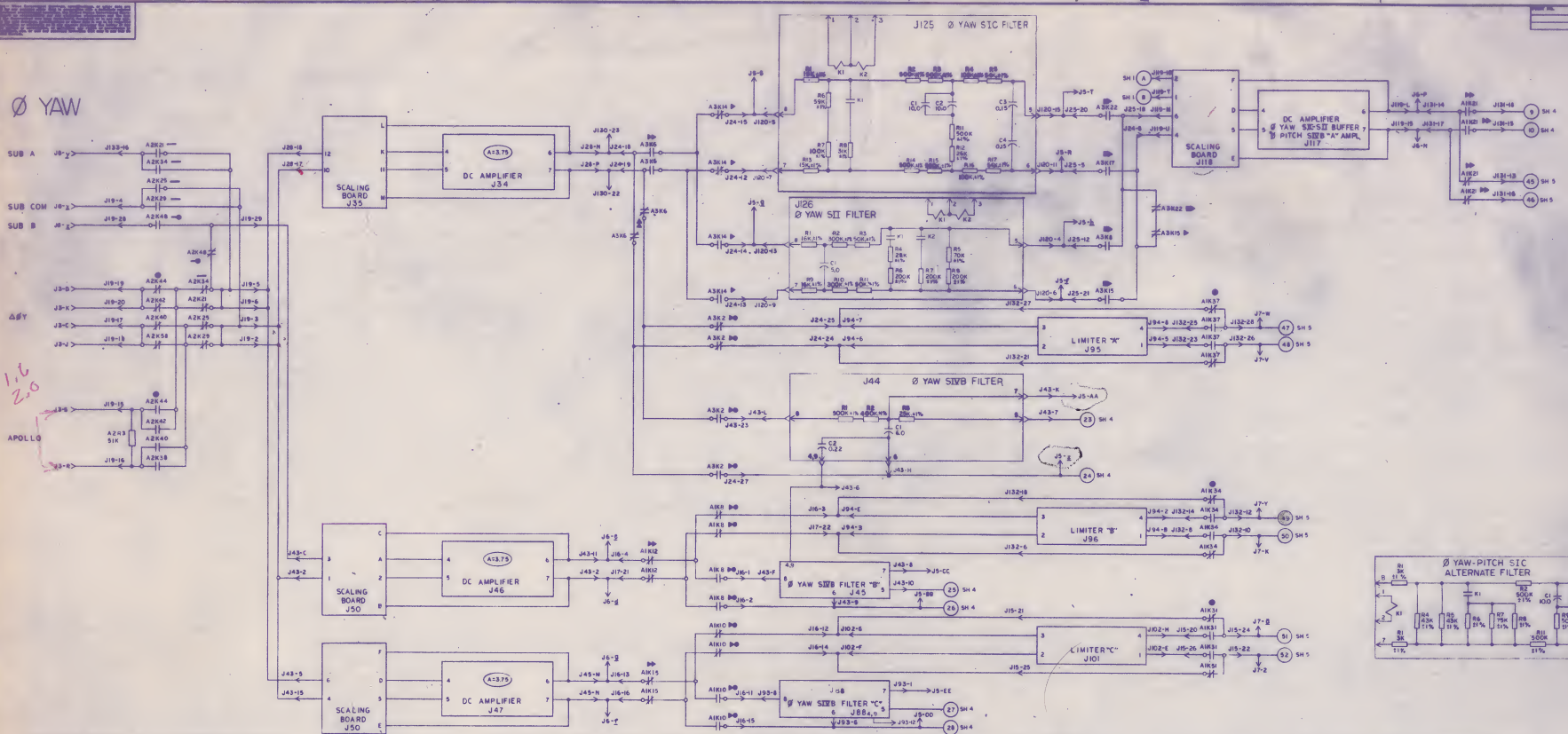
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IBM PART NO. 05-05097

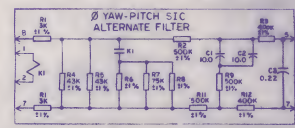
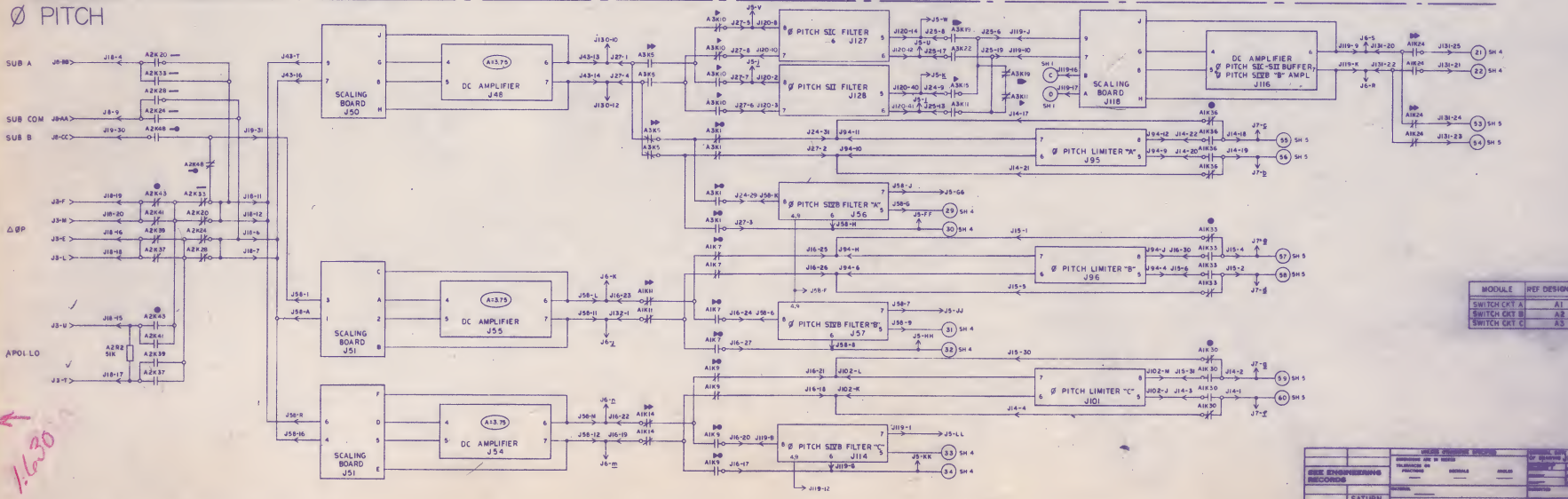
CHECK BLOCK OFF IF APPLICABLE

SHEET 5 OF 7

Ø YAW



Ø PITCH



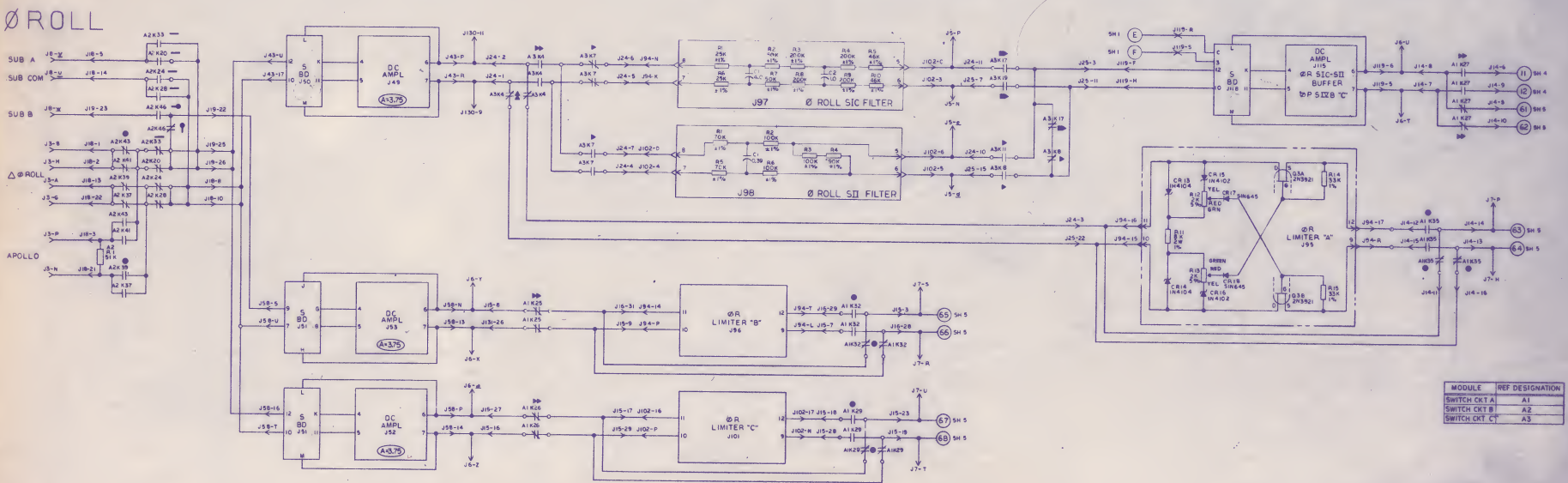
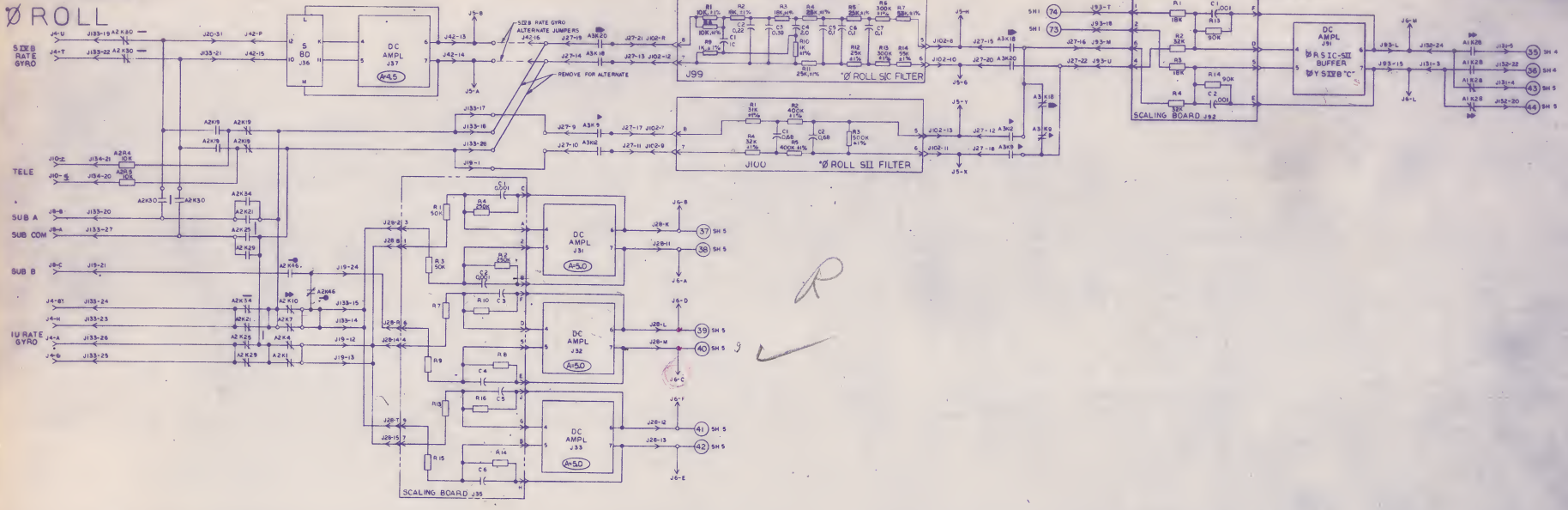
MODULE	REF DESIGNATION	RELAY FUNCTION CODE
SWITCH CXT A	A1	Ø SIC BURN
SWITCH CXT B	A2	Ø PITCH SIC BURN
SWITCH CXT C	A3	Ø SIC BURN
		Ø SIC BURN
		Ø TEST
		Ø SIC TEST
		Ø COMB TEST

DESIGN APPROVED	DATE	BY	REVISION
DESIGNED BY	DATE	BY	REVISION
CHECKED BY	DATE	BY	REVISION
APPROVED BY	DATE	BY	REVISION

ELECTRICAL SCHEMATIC (AS02)
COMPUTER FLIGHT CONTROL
MOD 0.5.2

1.6
2.0

1.620

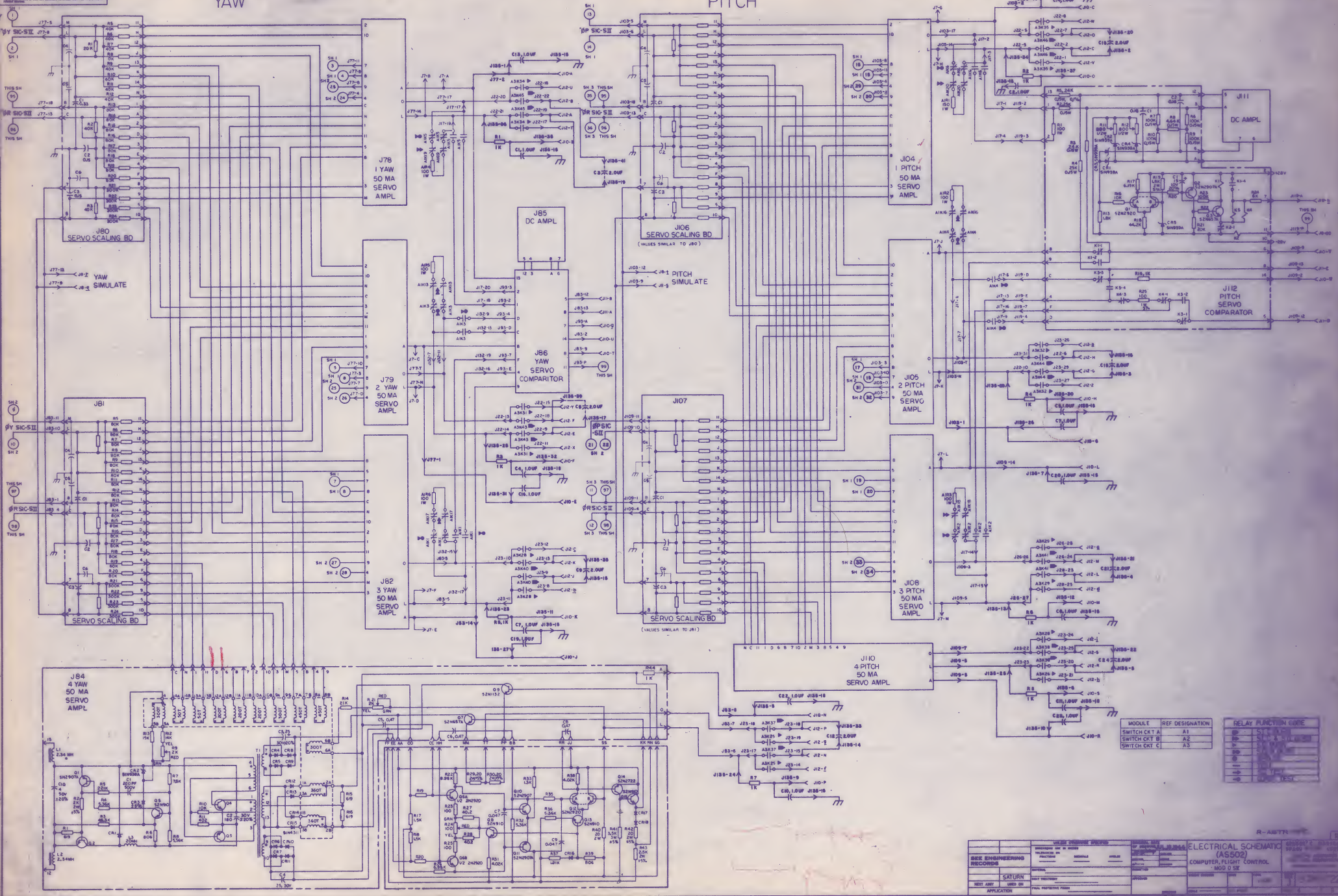


MODULE	REF DESIGNATION
DC AMPL	J31
Ø R SIC-SII	J32
Ø R SIC-SII	J33
Ø R SIC-SII	J49
Ø R SIC-SII	J53
Ø R SIC-SII	J54
Ø R SIC-SII	J95
Ø R SIC-SII	J96
Ø R SIC-SII	J97
Ø R SIC-SII	J98
Ø R SIC-SII	J101
SCALING BOARD	J35
SCALING BOARD	J32

RELAY	FUNCTION
A1	SWITCH CKT A
A2	SWITCH CKT B
A3	SWITCH CKT C

YAW

PITCH



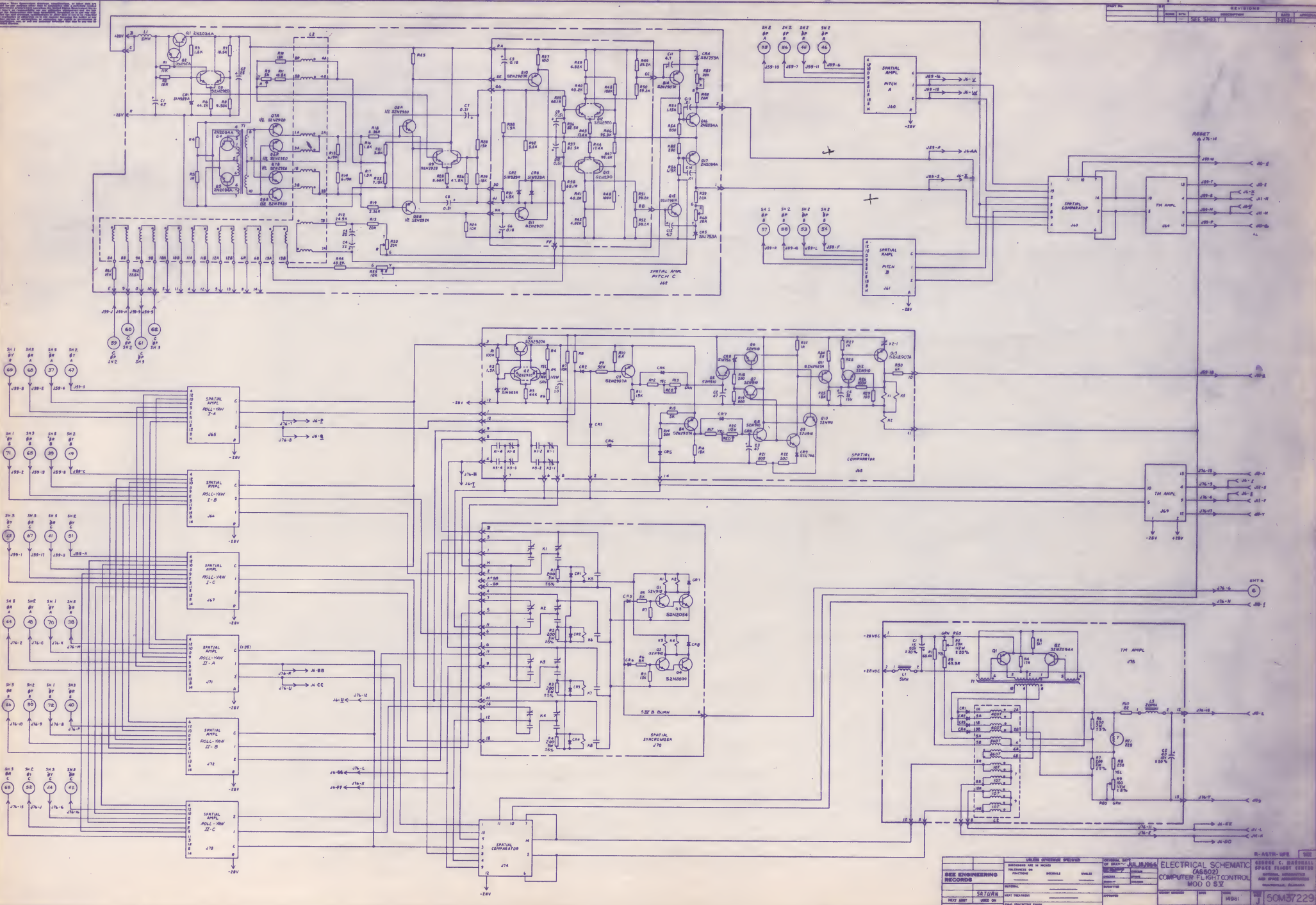
REVISIONS	
NO.	DESCRIPTION
1	SEE SH 1

MODULE	REF DESIGNATION	RELAY FUNCTION CODE
SWITCH CKT A	A1	SWITCH
SWITCH CKT B	A2	SWITCH
SWITCH CKT C	A3	SWITCH

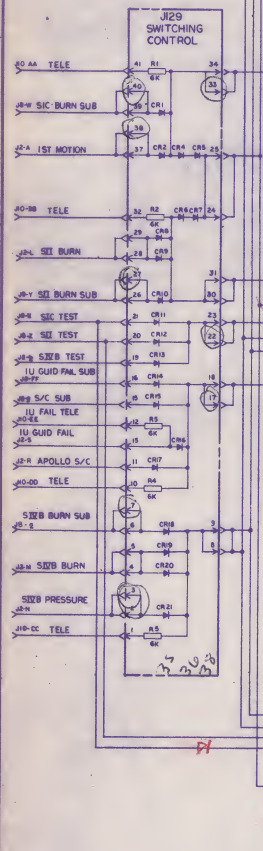
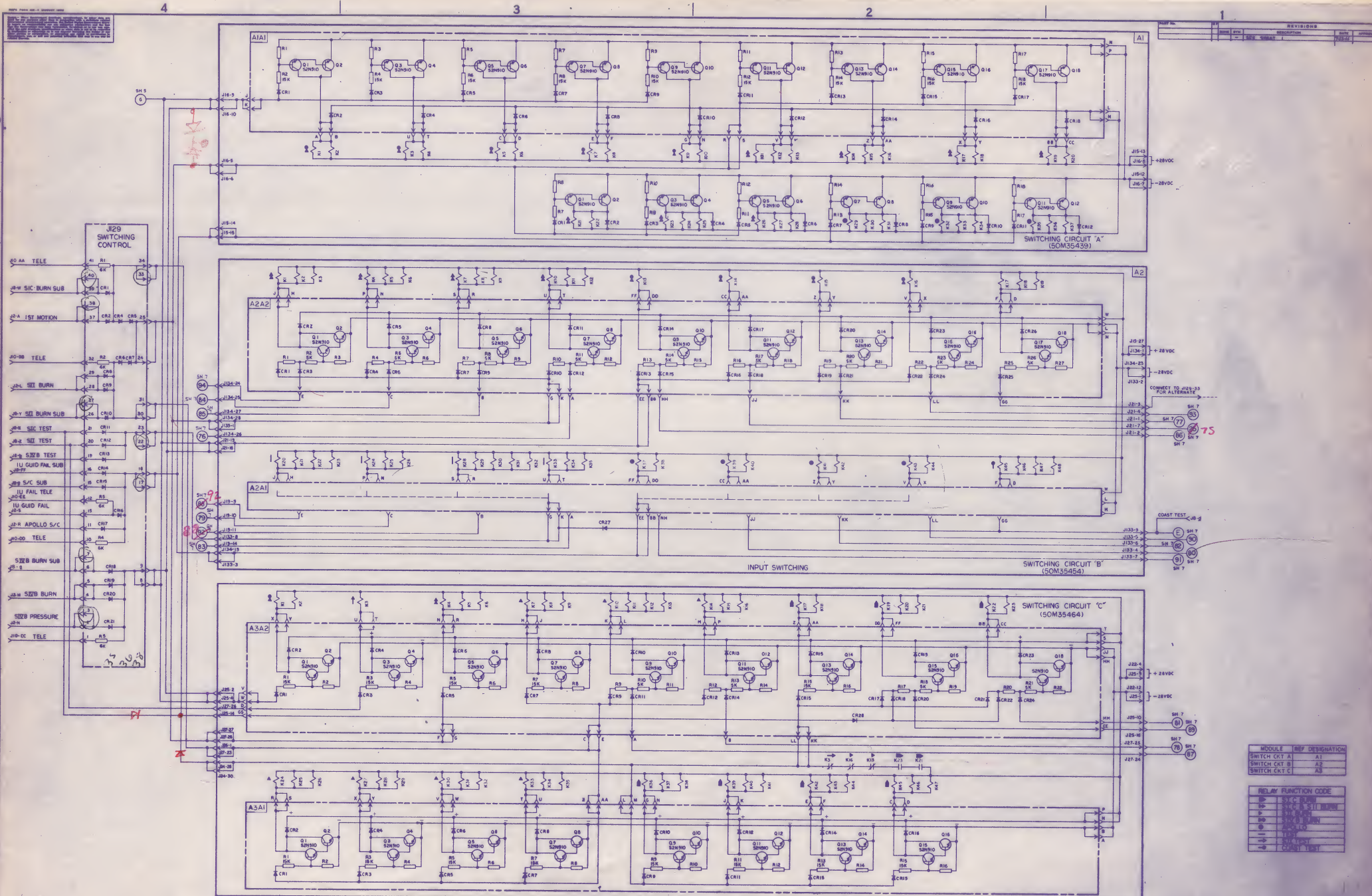
DESIGN APPROVALS		DATE	
DESIGNED BY	DATE	APPROVED BY	DATE
CHECKED BY	DATE	TESTED BY	DATE
ISSUED BY	DATE	REVISIONS	DATE

ELECTRICAL SCHEMATIC
(ASS02)
COMPUTER FLIGHT CONTROL
MOD 0 SE

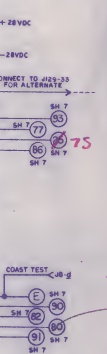
REVISED		REVISIONS	
NO.	DATE	BY	REASON
1			
2			
3			
4			



SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED	DESIGNED BY	APPROVED BY	ELECTRICAL SCHEMATIC (ASB02)	DRAWN BY	CHECKED BY	DATE	ISSUED BY	ISSUE NO.	REVISIONS	APPROVED BY	DATE	ISSUED BY	ISSUE NO.
	RESISTANCE UNLESS OTHERWISE SPECIFIED	DATE	DATE											
RESISTANCE UNLESS OTHERWISE SPECIFIED				COMPUTER FLIGHT CONTROL MOD 0 5 3										
RESISTANCE UNLESS OTHERWISE SPECIFIED														



REV.	DESCRIPTION	DATE
1	ISSUED	11/22/67
2	REVISED	11/22/67

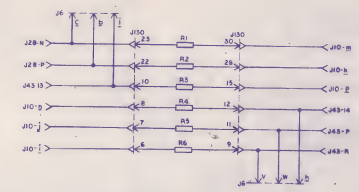
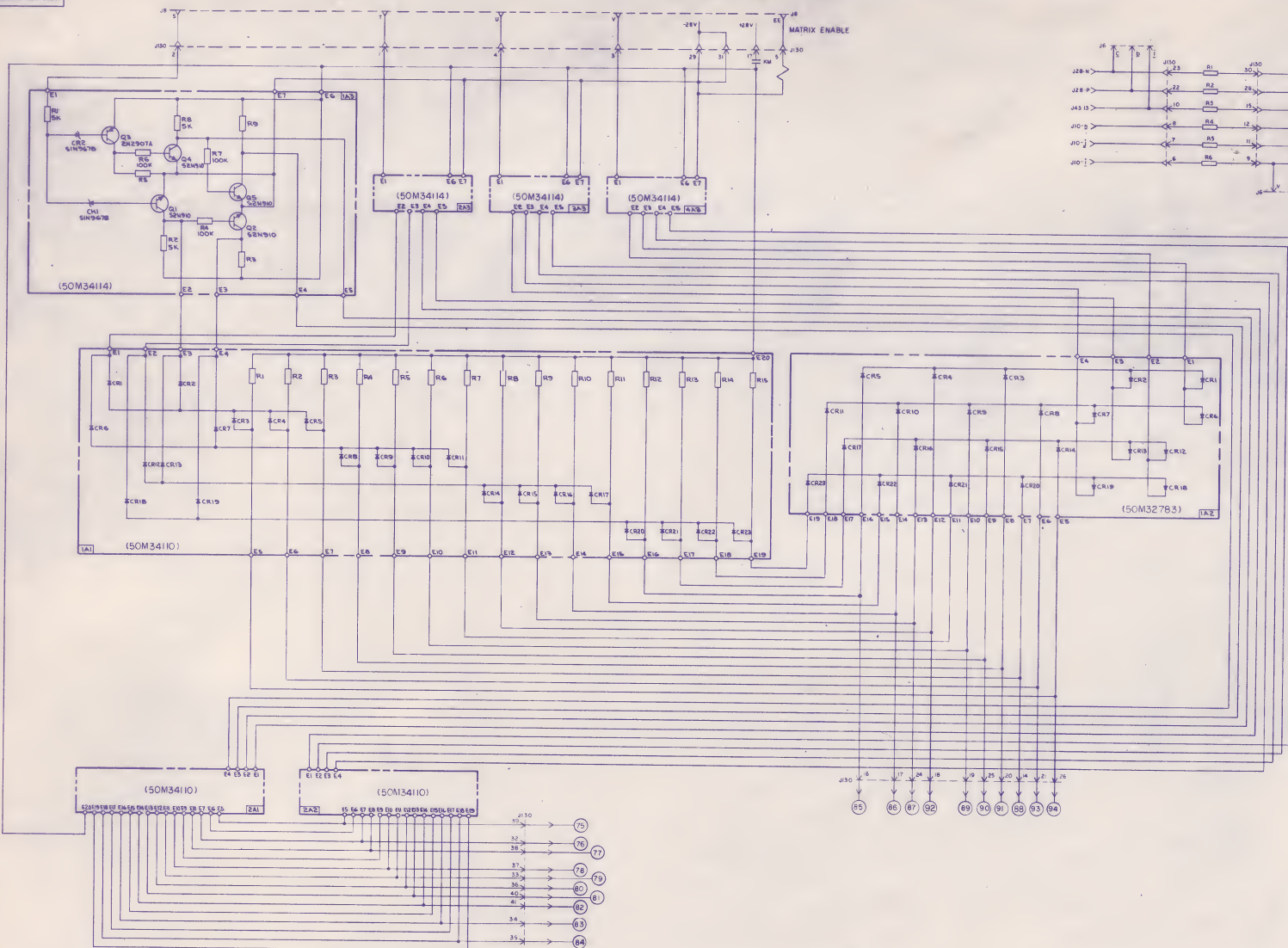


MODULE	REF. DESIGNATION
SWITCH CKT. A	A1
SWITCH CKT. B	A2
SWITCH CKT. C	A3

RELAY FUNCTION CODE	
⊖	NOV. C. BURN
⊖	NOV. C. S11 BURN
⊖	NOV. C. S12 BURN
⊖	NOV. C. S13 BURN
⊖	NOV. C. S14 BURN
⊖	NOV. C. S15 BURN
⊖	NOV. C. S16 BURN
⊖	NOV. C. S17 BURN
⊖	NOV. C. S18 BURN
⊖	NOV. C. S19 BURN
⊖	NOV. C. S20 BURN
⊖	NOV. C. S21 BURN
⊖	NOV. C. S22 BURN
⊖	NOV. C. S23 BURN
⊖	NOV. C. S24 BURN
⊖	NOV. C. S25 BURN
⊖	NOV. C. S26 BURN
⊖	NOV. C. S27 BURN
⊖	NOV. C. S28 BURN
⊖	NOV. C. S29 BURN
⊖	NOV. C. S30 BURN
⊖	NOV. C. S31 BURN
⊖	NOV. C. S32 BURN
⊖	NOV. C. S33 BURN
⊖	NOV. C. S34 BURN
⊖	NOV. C. S35 BURN
⊖	NOV. C. S36 BURN
⊖	NOV. C. S37 BURN
⊖	NOV. C. S38 BURN
⊖	NOV. C. S39 BURN
⊖	NOV. C. S40 BURN
⊖	NOV. C. S41 BURN
⊖	NOV. C. S42 BURN
⊖	NOV. C. S43 BURN
⊖	NOV. C. S44 BURN
⊖	NOV. C. S45 BURN
⊖	NOV. C. S46 BURN
⊖	NOV. C. S47 BURN
⊖	NOV. C. S48 BURN
⊖	NOV. C. S49 BURN
⊖	NOV. C. S50 BURN
⊖	NOV. C. S51 BURN
⊖	NOV. C. S52 BURN
⊖	NOV. C. S53 BURN
⊖	NOV. C. S54 BURN
⊖	NOV. C. S55 BURN
⊖	NOV. C. S56 BURN
⊖	NOV. C. S57 BURN
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⊖	NOV. C. S60 BURN
⊖	NOV. C. S61 BURN
⊖	NOV. C. S62 BURN
⊖	NOV. C. S63 BURN
⊖	NOV. C. S64 BURN
⊖	NOV. C. S65 BURN
⊖	NOV. C. S66 BURN
⊖	NOV. C. S67 BURN
⊖	NOV. C. S68 BURN
⊖	NOV. C. S69 BURN
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⊖	NOV. C. S71 BURN
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⊖	NOV. C. S74 BURN
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⊖	NOV. C. S76 BURN
⊖	NOV. C. S77 BURN
⊖	NOV. C. S78 BURN
⊖	NOV. C. S79 BURN
⊖	NOV. C. S80 BURN
⊖	NOV. C. S81 BURN
⊖	NOV. C. S82 BURN
⊖	NOV. C. S83 BURN
⊖	NOV. C. S84 BURN
⊖	NOV. C. S85 BURN
⊖	NOV. C. S86 BURN
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⊖	NOV. C. S88 BURN
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⊖	NOV. C. S92 BURN
⊖	NOV. C. S93 BURN
⊖	NOV. C. S94 BURN
⊖	NOV. C. S95 BURN
⊖	NOV. C. S96 BURN
⊖	NOV. C. S97 BURN
⊖	NOV. C. S98 BURN
⊖	NOV. C. S99 BURN
⊖	NOV. C. S100 BURN

DESIGNATION SWITCH CKT. A SWITCH CKT. B SWITCH CKT. C	REF. DESIGNATION A1 A2 A3	ELECTRICAL SCHEMATIC (AS BUILT) COMPUTER FLIGHT CONTROL MOD. 0.5.1X	DATE 11/22/67
--	------------------------------------	--	------------------

REVISED		REVISIONS	
NO.	DATE	DESCRIPTION	BY
1	11-20-66	ISSUED FOR FABRICATION	J. J. B.



BUBBLE	JB-5	T	U	V
75	0	0	0	-
76	0	0	-	-
77	0	0	0	0
78	-	0	-	0
79	-	0	-	-
80	0	-	0	0
81	0	-	0	-
82	0	-	-	0
83	-	-	0	0
84	-	-	0	0
85	+	+	0	0
86	0	+	+	0
87	0	+	0	+
88	0	+	0	0
89	+	0	+	+
90	+	0	0	+
91	+	0	0	0
92	0	0	+	+
93	0	0	+	0
94	0	0	0	+

+ = +28 VOLTS
 - = 28 VOLT GRD
 0 = NO CONNECTION

SEE ENGINEERING RECORDS	DESIGNED BY: J. J. B.	CHECKED BY: J. J. B.	DATE: 11-20-66
SATURN	PROJECT: AS-500	MOD: O/S	REV: 1
APPLICATION: COMPUTER FLIGHT CONTROL	DATE: 14-9-81	REV: 1	BY: J. J. B.

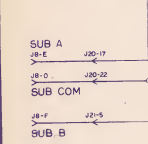
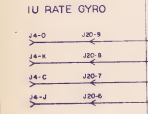
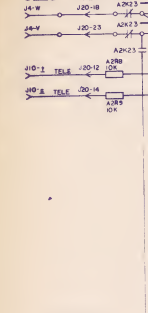
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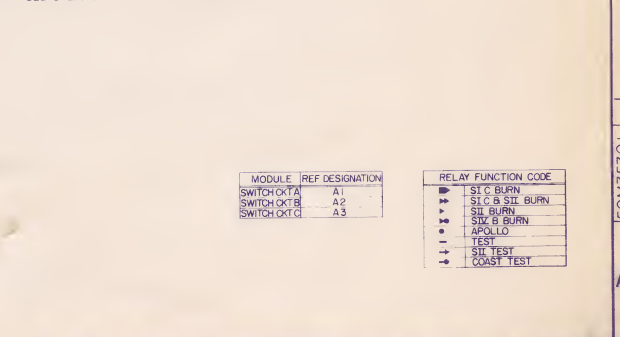
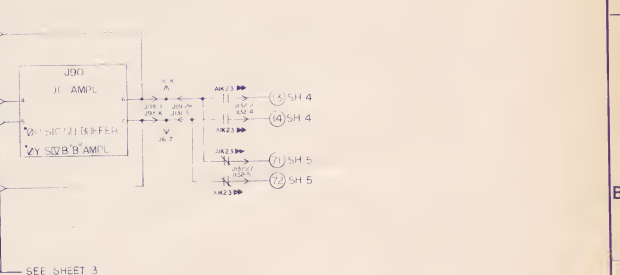
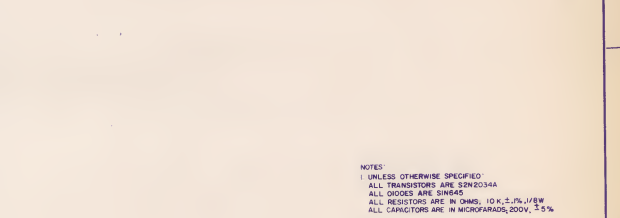
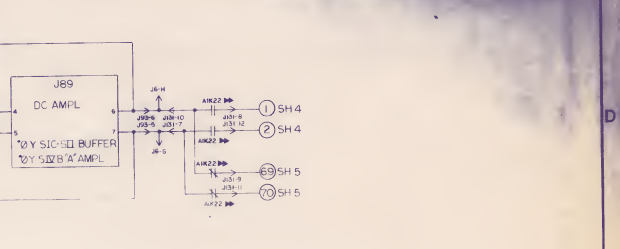
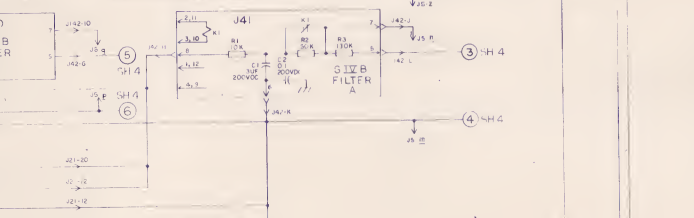
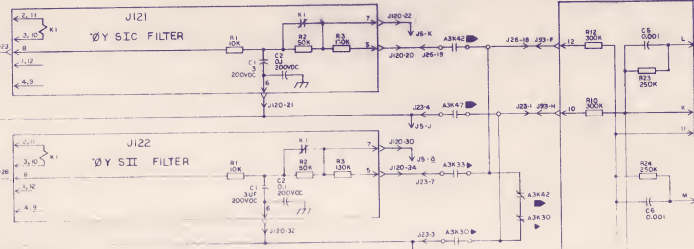
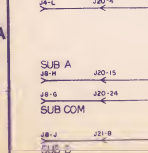
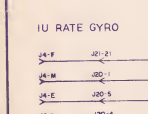
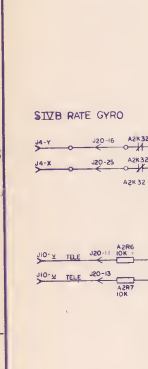
2

REV. NO.	DATE	REVISION

Ø YAW
SIVB RATE GYRO



Ø PITCH
SIVB RATE GYRO



NOTES:
1. UNLESS OTHERWISE SPECIFIED:
ALL TRANSISTORS ARE 2N2204A
ALL DIODES ARE 1N4001
ALL RESISTORS ARE IN OHMS, 10K, 100K, 1M, 100M
ALL CAPACITORS ARE IN MICROFARADS, 200V, 5%
2. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH NERC STD 349

MODULE	REF DESIGNATION
SWITCH OCT A	A1
SWITCH OCT B	A2
SWITCH OCT C	A3

RELAY FUNCTION CODE	
■	SIC BURN
■	SIC B SIV BURN
■	SIV BURN
■	SIC B BURN
■	APOLLO
■	TEST
■	SIV TEST
■	COAST TEST

UNLESS OTHERWISE SPECIFIED	DESIGNED BY	DATE	1981
FORWARDED FOR APPROVAL	APPROVED BY	DATE	1981
SEE ENGINEERING RECORDS	PROJECT NO.	150M35301	
FOR APPROVAL	PROJECT TITLE	ELECTRICAL SCHEMATIC	
FOR APPROVAL	MOD. NO.	05X	
FOR APPROVAL	DATE	1981	
FOR APPROVAL	DATE	1981	
FOR APPROVAL	DATE	1981	

150M35301

R-ASTR-NFE

REVISIONS		DATE	APPROVAL
1	SEC SHEET 1		

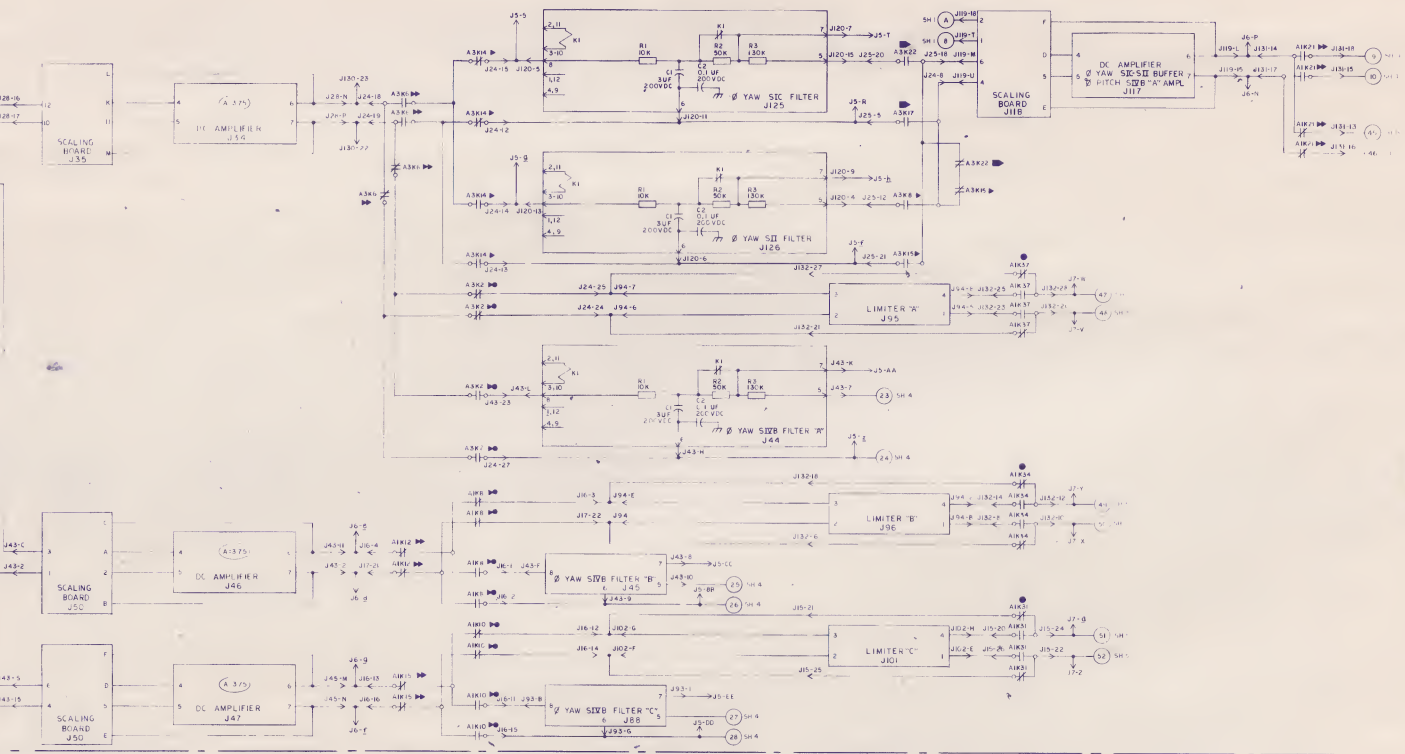
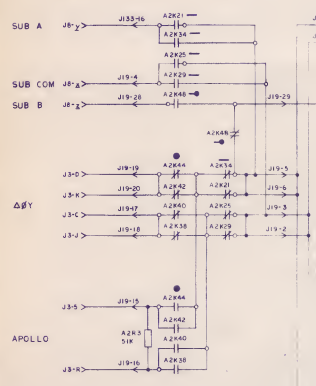
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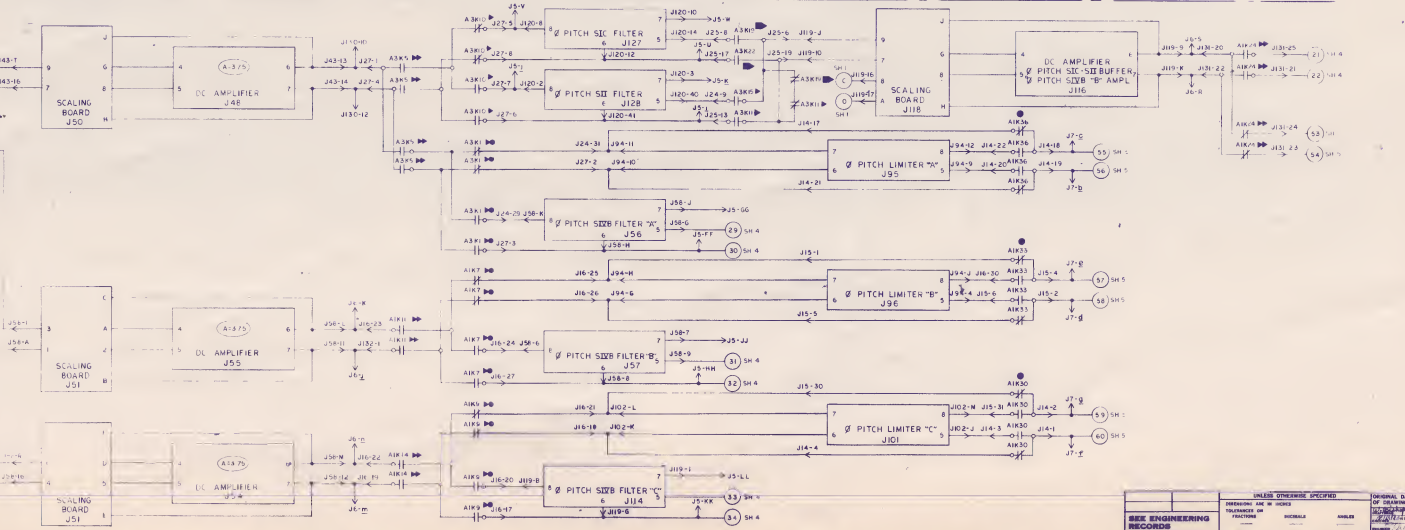
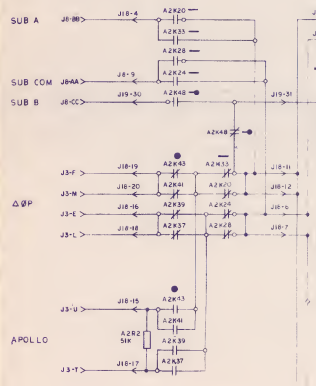
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1

Ø YAW



Ø PITCH



RELAY FUNCTION CODE

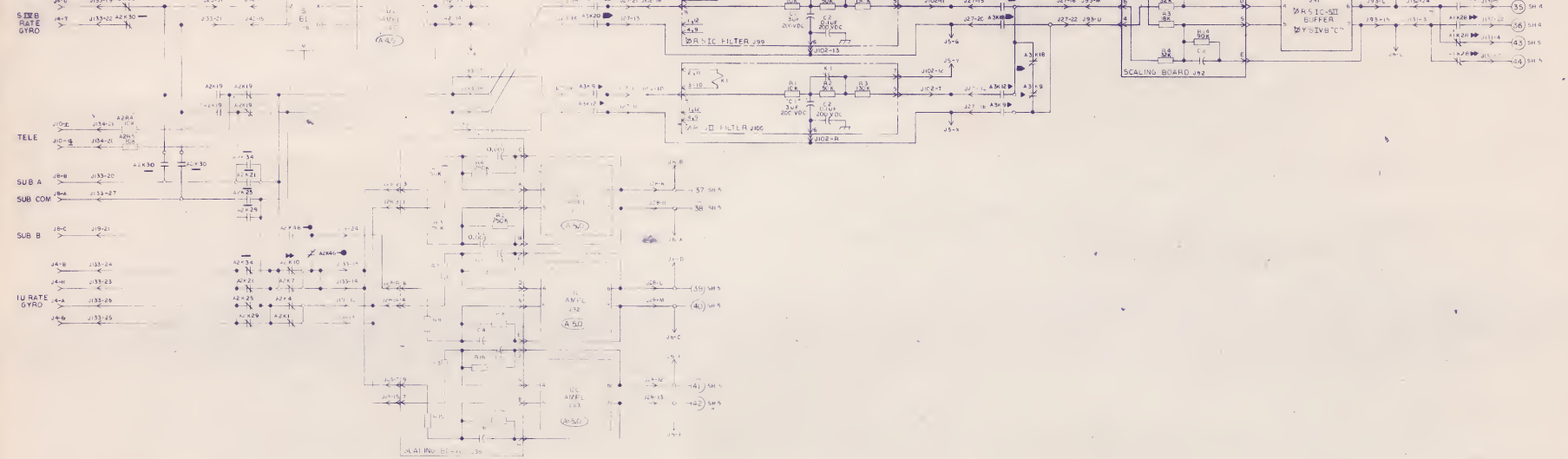
- ⬇ SIC BURN
- ⬇ SIC & SID BURN
- ⬇ SID BURN
- ⬇ SID BURN
- ⬇ PARALLEL
- ⬇ TEST
- ⬇ SID TEST
- ⬇ COAST TEST

BEE ENGINEERING RECORDS 50M35300 SATURN BEST COPY AVAILABLE	ORIGINAL DATE JAN 1965 DATE OF DRAWING 1965 DRAWN BY [blank] CHECKED BY [blank] APPROVED BY [blank]	ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL MOD 0 S2	R-ASTR-NFE GEORGE G. MARSHALL SPACE FLIGHT CENTER HUNTSVILLE, ALABAMA
---	---	---	---

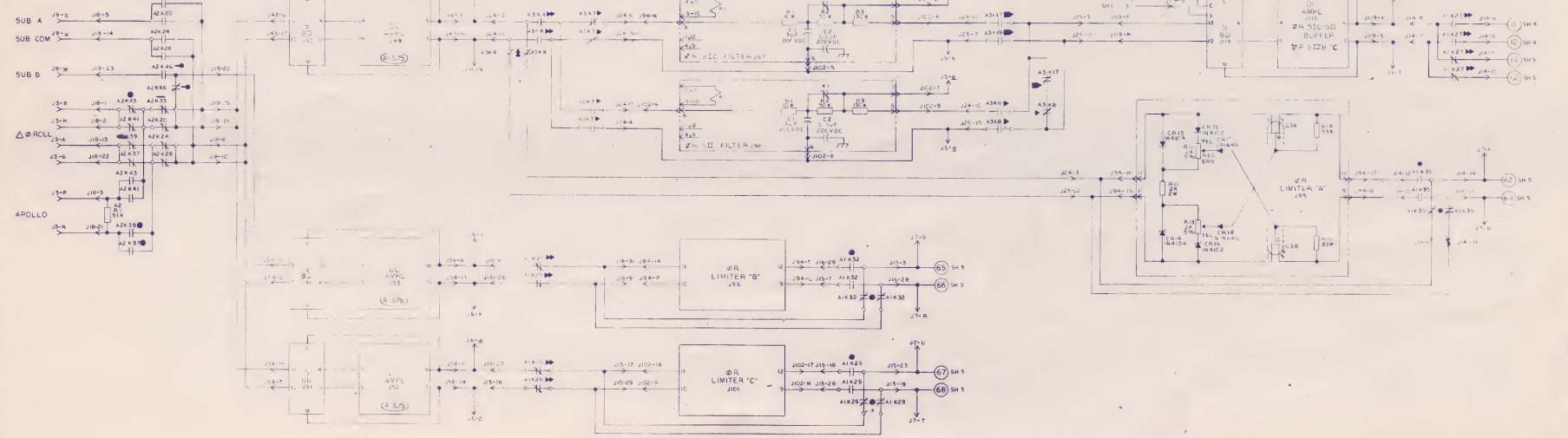
50M35300

REV. NO.	DATE	BY	REVISIONS
1			SEE SHEET

Ø ROLL



Ø ROLL



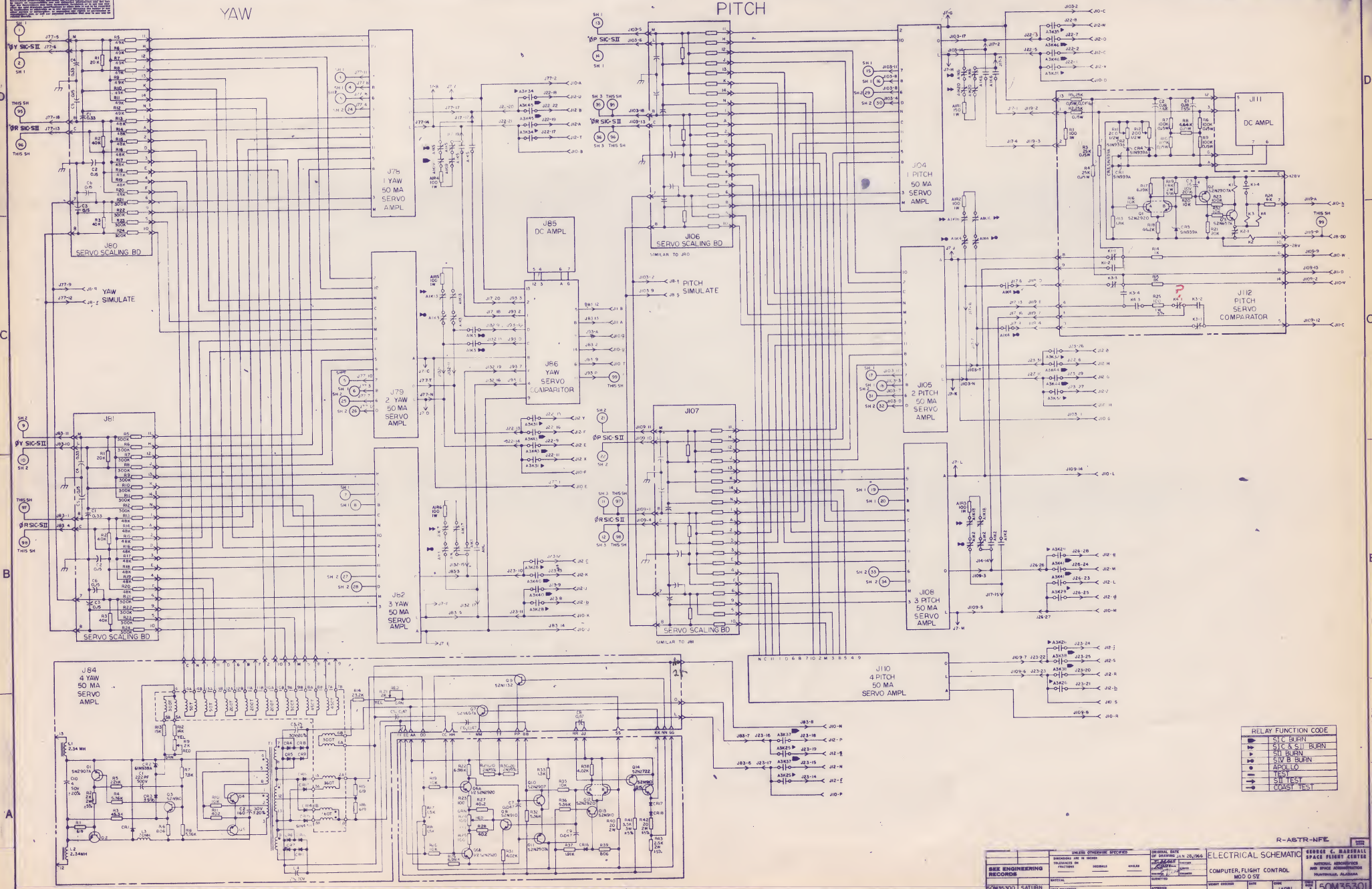
REV. NO.	DATE	BY	REVISIONS
1			SEE SHEET

- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN
- TEST SWRN

DESIGN	DATE	BY	REVISIONS
50M35300	14861		

ELECTRICAL SCHEMATIC
 COMPUTER FLIGHT CONTROL
 MOD 0 5 5

50M35301



RELAY FUNCTION CODE

STC BURN
STC S.I. BURN
STV BURN
STV B BURN
APV LLO
TEST
SH TEST
COAST TEST

FORM 3530-1 (REV. 11-64)
 THIS FORM IS THE PROPERTY OF THE AIR FORCE. IT IS TO BE USED ONLY FOR THE PURPOSES AUTHORIZED BY THE AIR FORCE. IT IS TO BE RETURNED TO THE AIR FORCE WHEN NO LONGER REQUIRED.

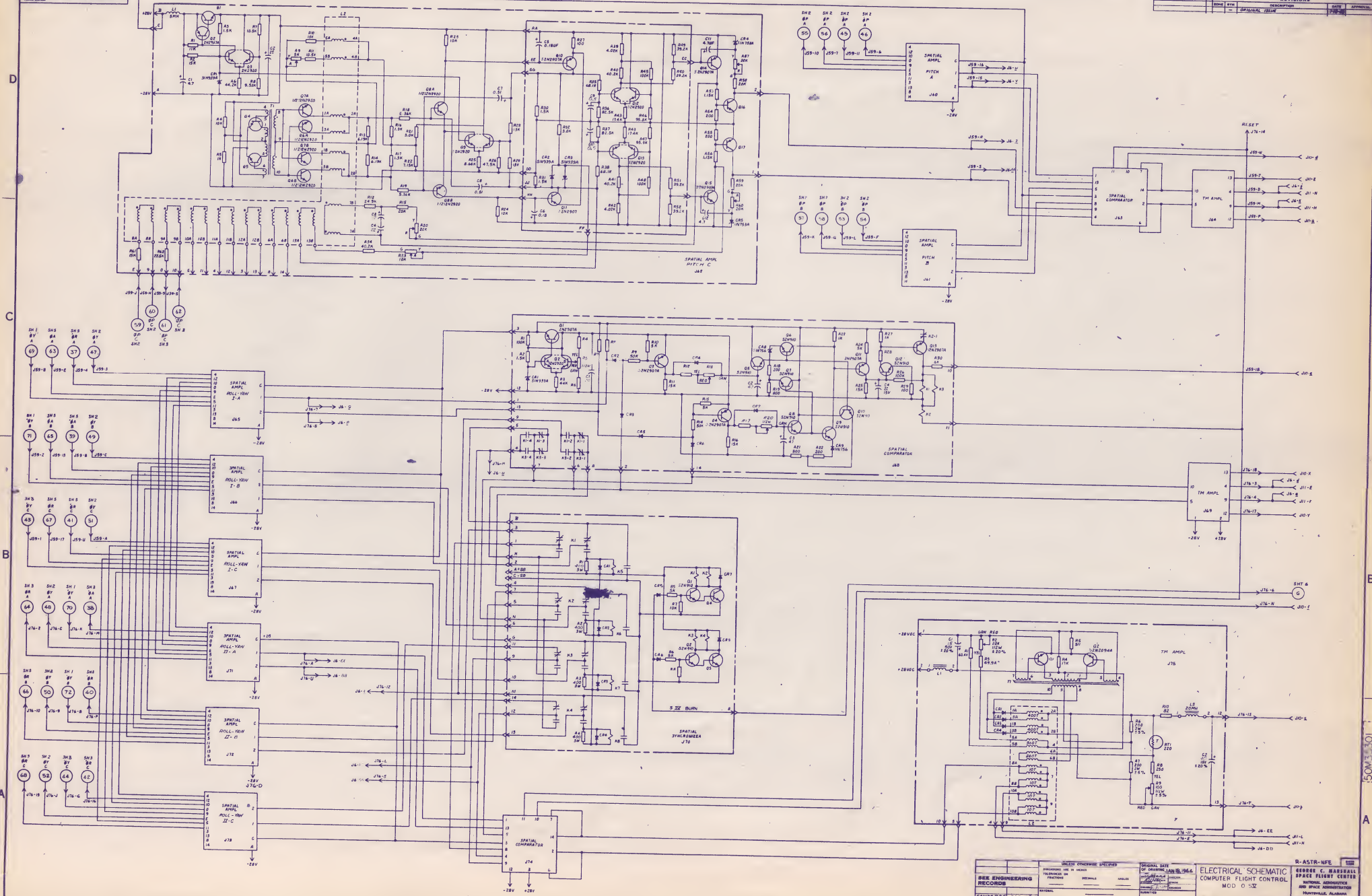
4

3

2

1

REVISIONS		DATE	APPROVAL
1	ORIGINAL DESIGN		



SEE ENGINEERING RECORDS	DESIGN CHECKED	DESIGNED BY	DATE	ELECTRICAL SCHEMATIC	R-ASTR-NFE
	APPROVED BY	BY	14981		
FORM 3530 SATURN	PROJECT	COMPUTER FLIGHT CONTROL	MDG 0 52	REVISIONS	
DATE	APPROVED	DATE	DATE	DESCRIPTION	
1964		1964	1964	MDG 0 52	
APPLICATION	SCALE	DATE	DATE	DRAWN BY	
				CHECKED BY	
				APPROVED BY	

4

3

2

FORM 3530-1

A

B

C

D



REVISIONS		DATE	APPROVAL
1	SEE SHEET		

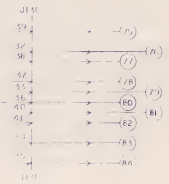
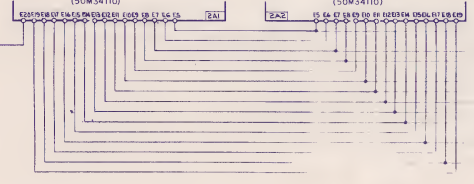
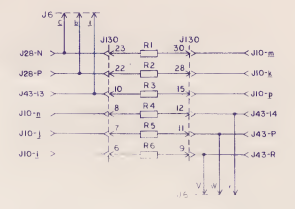
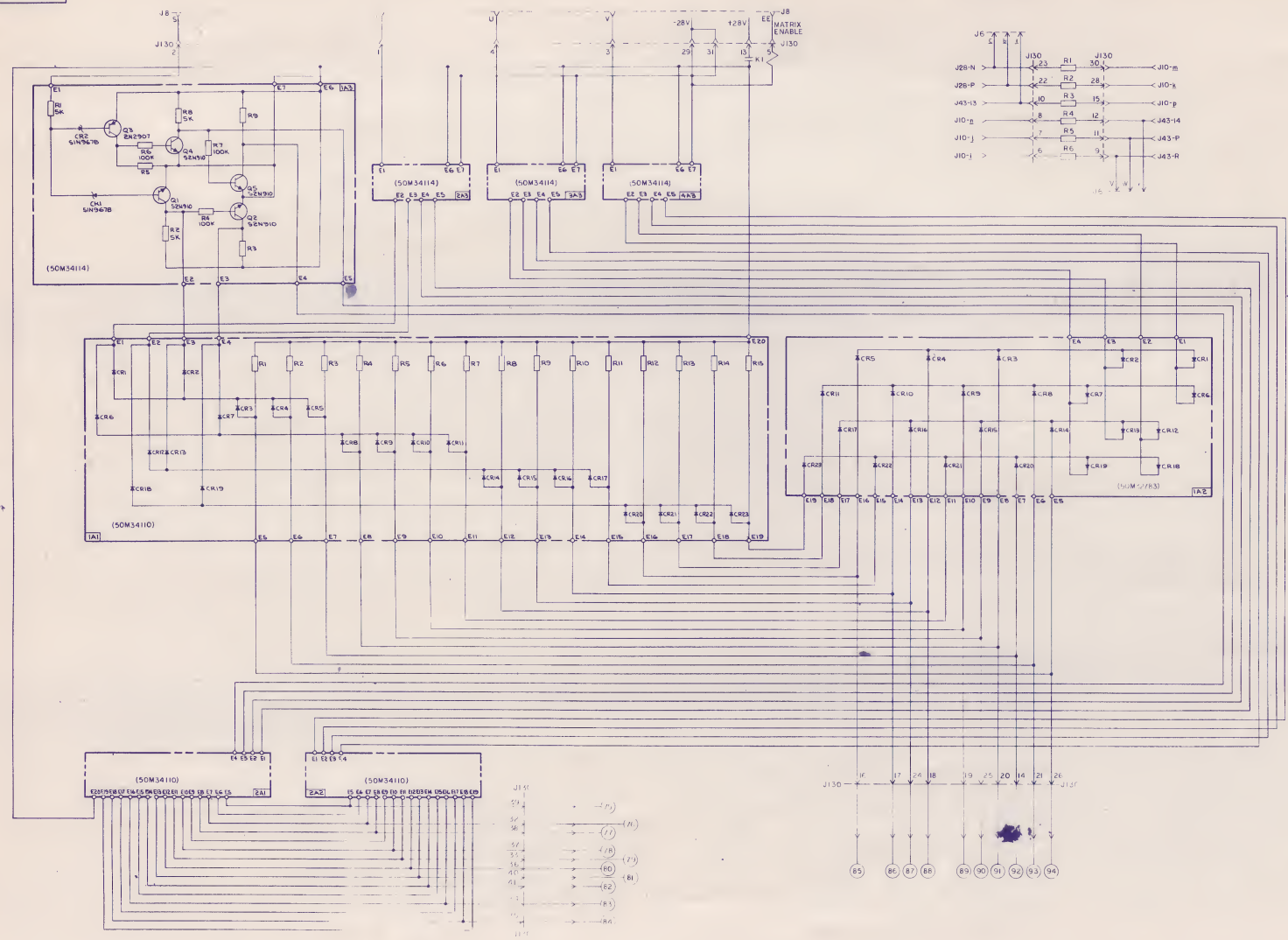
- J21-3 +28VDC
- J21-4 -28VDC
- J21-5 NOT USED SH 7
- J21-6 SH 7 (77)
- J21-7 SH 7 (75)
- J21-8 SH 7 (86)
- J21-9 SH 7
- J23-3 COAST TEST SH 0
- J23-4 SH 7 (81)
- J23-5 SH 7 (82)
- J23-6 SH 7 (80)
- J23-7 SH 7 (80)

RELAY FUNCTION CODE	
CR	S/C BURN
SR	S/C B S/TI BURN
SH	SH BURN
SB	S/V E BURN
AP	APOLLO
TEST	TEST
SH TEST	SH TEST
COAST TEST	COAST TEST

SEE ENGINEERING RECORDS	DESIGNED BY	APPROVED BY	DATE	ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL MOD 0 SZ	488041 E. BARRELL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Huntsville, Alabama
	DATE	DATE	DATE		
50M35300 SATURN	REV. 1	REV. 1	REV. 1	50M35301	5. OF 8

REV. NO.	REVISIONS	
	DATE	DESCRIPTION
1	SEE SHEET 1	

4 3 2 1



28V OUTPUT	FUZZLE	J8-S	T	U	V
75	0	0	0	-	-
76	0	0	0	-	-
77	0	0	0	0	0
78	-	0	0	0	0
79	-	0	-	-	-
80	0	-	0	0	0
81	0	-	0	0	0
82	-	-	-	-	-
83	-	-	-	-	-
84	-	-	-	-	-
85	+	+	0	0	0
86	+	+	0	0	0
87	+	+	0	0	0
88	0	+	0	0	0
89	+	0	+	0	0
90	+	0	0	+	0
91	+	0	0	0	0
92	0	0	+	+	0
93	0	0	+	0	0
94	0	0	0	0	+

+ = +28 VOLTS
 - = 28 VOLT GRD
 0 = NO CONNECTION

DESIGNED BY: _____ CHECKED BY: _____ DATE: _____ DRAWN BY: _____ DATE: _____ TITLE: _____	ORIGINAL DATE: _____ OF REVISIONS: _____ REVISIONS: _____ REVISIONS: _____ REVISIONS: _____ REVISIONS: _____	ELECTRICAL SCHEMATIC- COMPUTER FLIGHT CONTROL, MOD 0 S 2 SHEET 7 OF 8	D-ASTR-INTL GEORGE S. BARRETT SPACE FLIGHT CENTER SYSTEMS OPERATIONS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
--	---	---	--

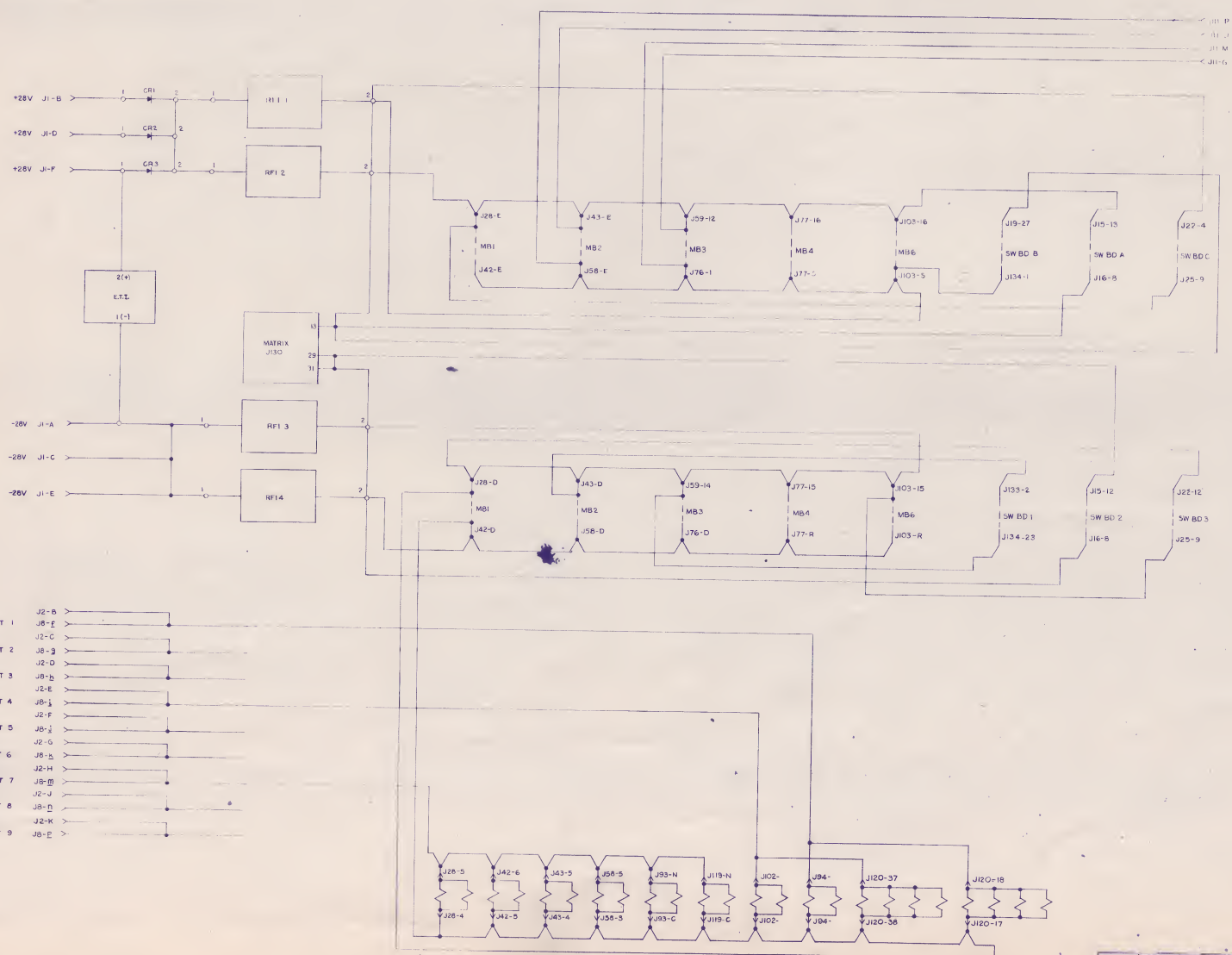
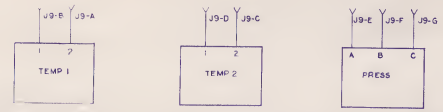
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2

1

PART NO.	REV.	REVISIONS		DATE	APPROVAL
		DESCRIPTION	BY		
	1	SEP 511		1964	



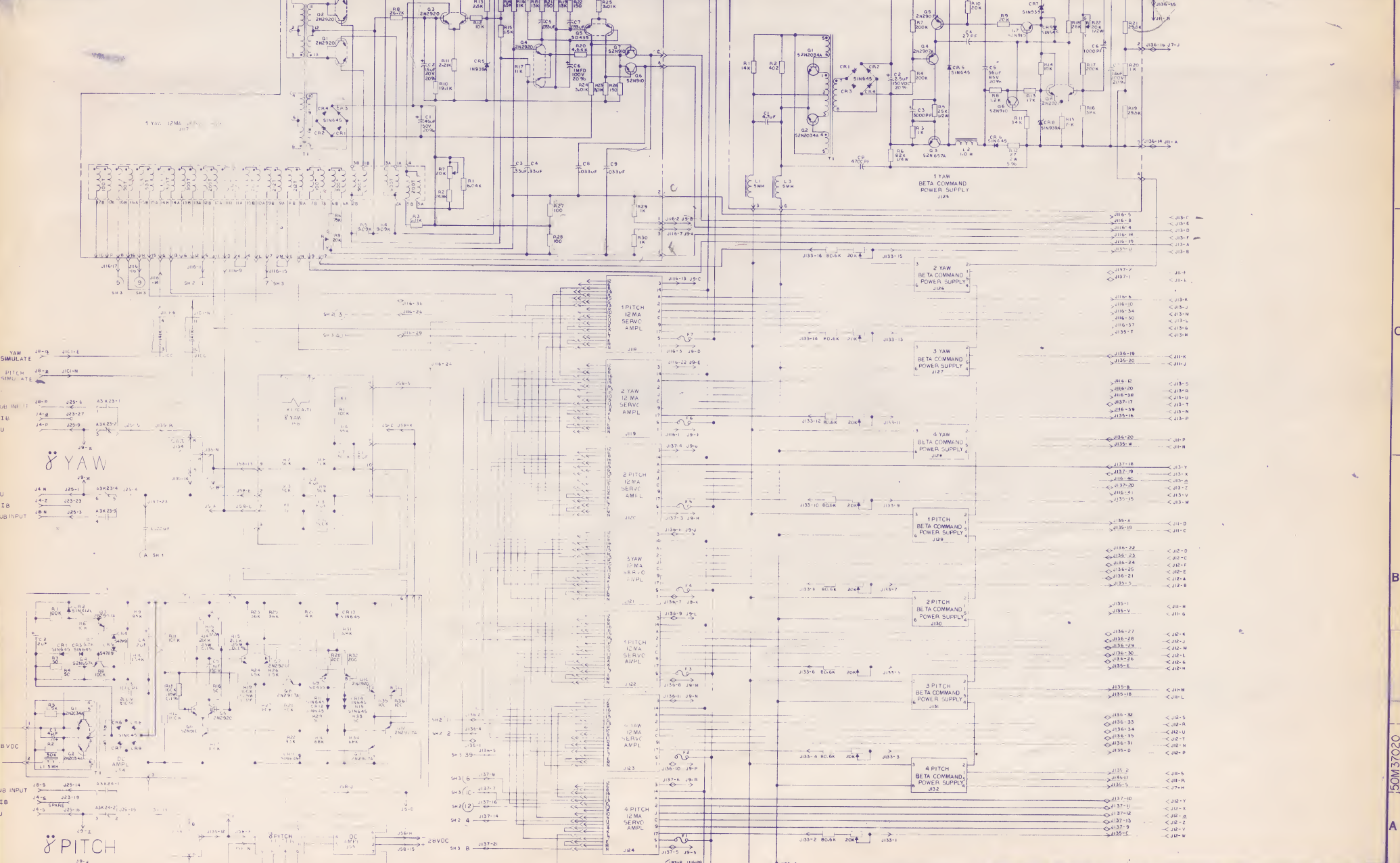
- SW PT 1 J2-B
- SW PT 1 J8-E
- SW PT 2 J2-C
- SW PT 2 J8-G
- SW PT 3 J2-D
- SW PT 3 J8-H
- SW PT 4 J2-E
- SW PT 4 J8-I
- SW PT 5 J2-F
- SW PT 5 J8-J
- SW PT 6 J2-G
- SW PT 6 J8-K
- SW PT 7 J2-H
- SW PT 7 J8-L
- SW PT 8 J2-I
- SW PT 8 J8-M
- SW PT 9 J2-K
- SW PT 9 J8-N

SEE ENGINEERING RECORDS REVISIONS IN RECORD: _____ DATE: _____		ORIGINAL DATE OF DRAWING: _____ DRAWN BY: _____ CHECKED BY: _____ APPROVED BY: _____	
FEDERAL AERONAUTICAL ADMINISTRATION WASHINGTON, D.C.		ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL MODULE	
GEORGE C. MARSHALL SPACE FLIGHT CENTER NASA MONTGOMERY, ALABAMA		150M35301	

150M35301

REV. NO.	DESCRIPTION	DATE	APPROVAL
1	ORIGINAL ISSUE	2/27/66	

1. YAW 12 MA SERVO AMPL. (317)
 2. PITCH 12 MA SERVO AMPL. (318)
 3. YAW 12 MA SERVO AMPL. (319)
 4. PITCH 12 MA SERVO AMPL. (320)

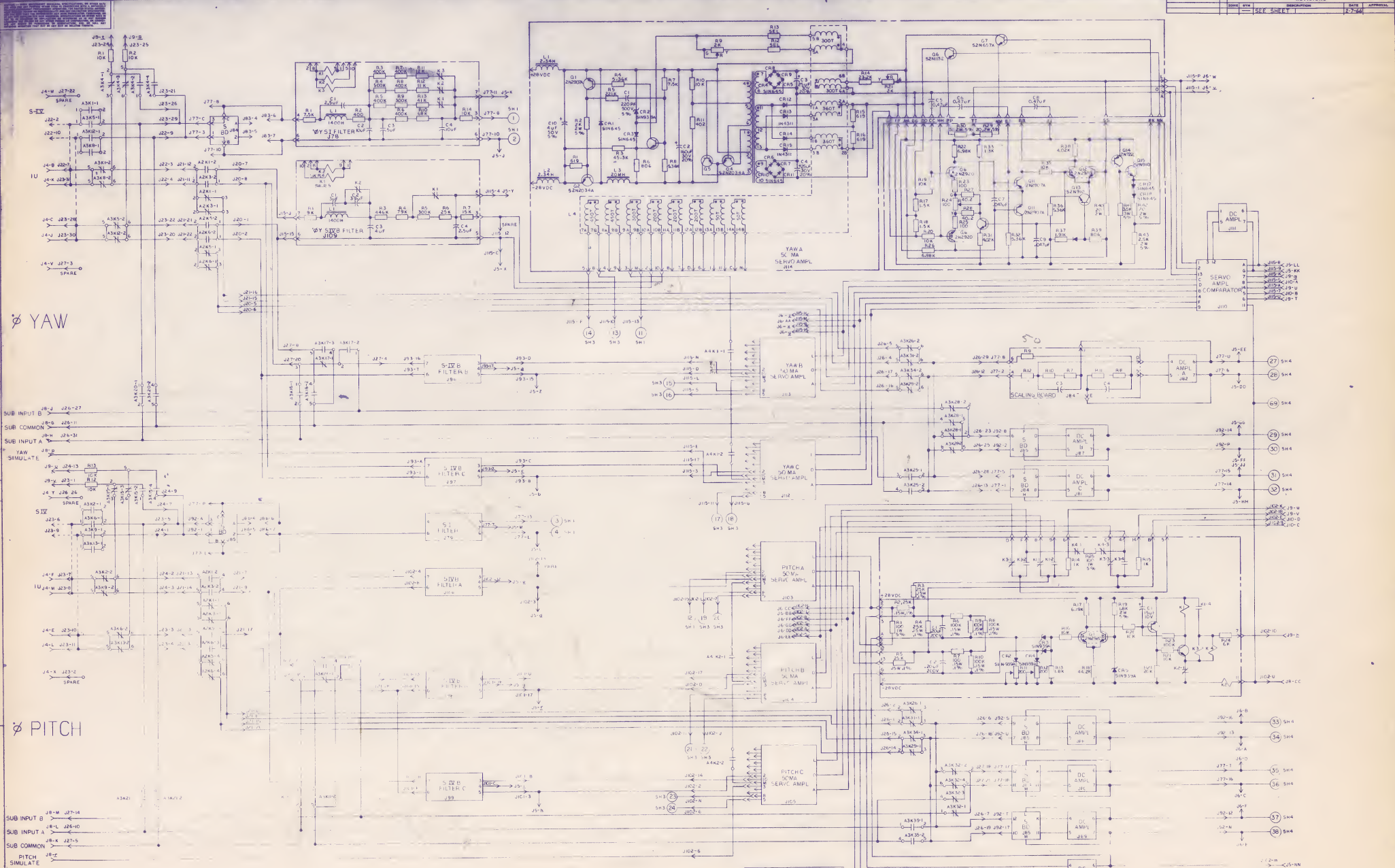


MODULE	REF DESIGNATION
SWITCH CRT A	A1
SWITCH CRT B	A2
SWITCH CRT C	A3

SEE ENGINEERING RECORDS 50M3350 RETURN NEXT UNIT USED ON APPLICATION	ORIGINAL OPERATOR SPECIFIED MANUFACTURE PARTIAL DATE PREPARED DATE PROTECTIVE PAPER	REVISED BY DATE REVISIONS 1 JAN 25 1966 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL MOD O 1B (SA204)	R-ASTR-NFE GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA 50M337020
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1. YAW 12 MA SERVO AMPL. (317)
 2. PITCH 12 MA SERVO AMPL. (318)
 3. YAW 12 MA SERVO AMPL. (319)
 4. PITCH 12 MA SERVO AMPL. (320)

REVISIONS		DATE	APPROVAL
REV	NO	DESCRIPTION	
	1	REF SHEET	



YAW

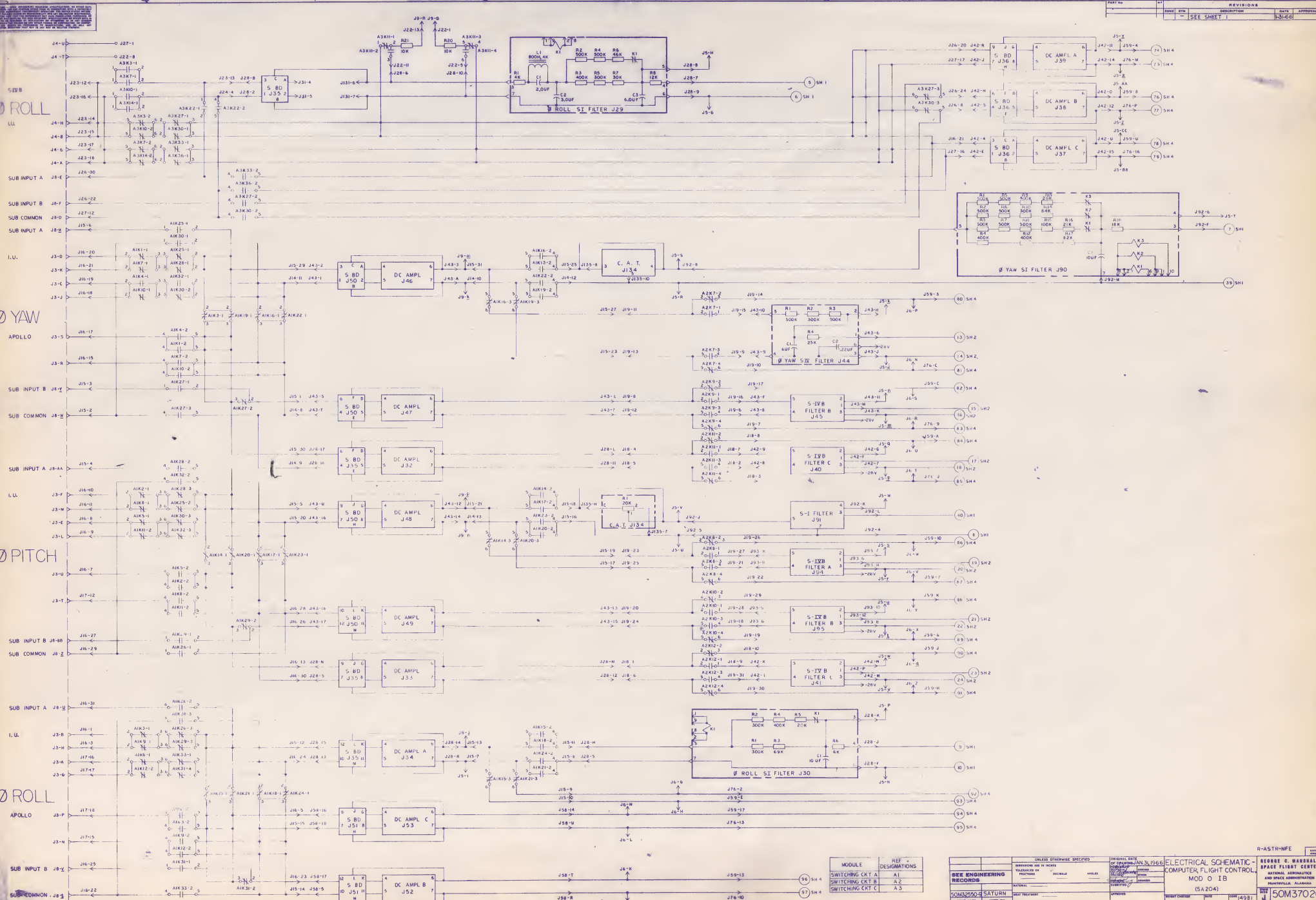
PITCH

MODULE	REF DESIGNATION
SWITCH CKT A	A.1
SWITCH CKT B	A.2
SWITCH CKT C	A.3
MOTHER BOARD	A.4

SEE ENGINEERING RECORDS	DESIGNED BY	DR. G. B. Z. 1/56	ELECTRICAL SCHEMATIC	GEORGE E. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION MONTEVALLE, ALABAMA
	DATE	1/56		
50M37020-8 SATURN	REV. 1	1/56	MOD. 01B (S-204)	50M37020
APP. 1	APP. 1	APP. 1	APP. 1	1/56

50M37020

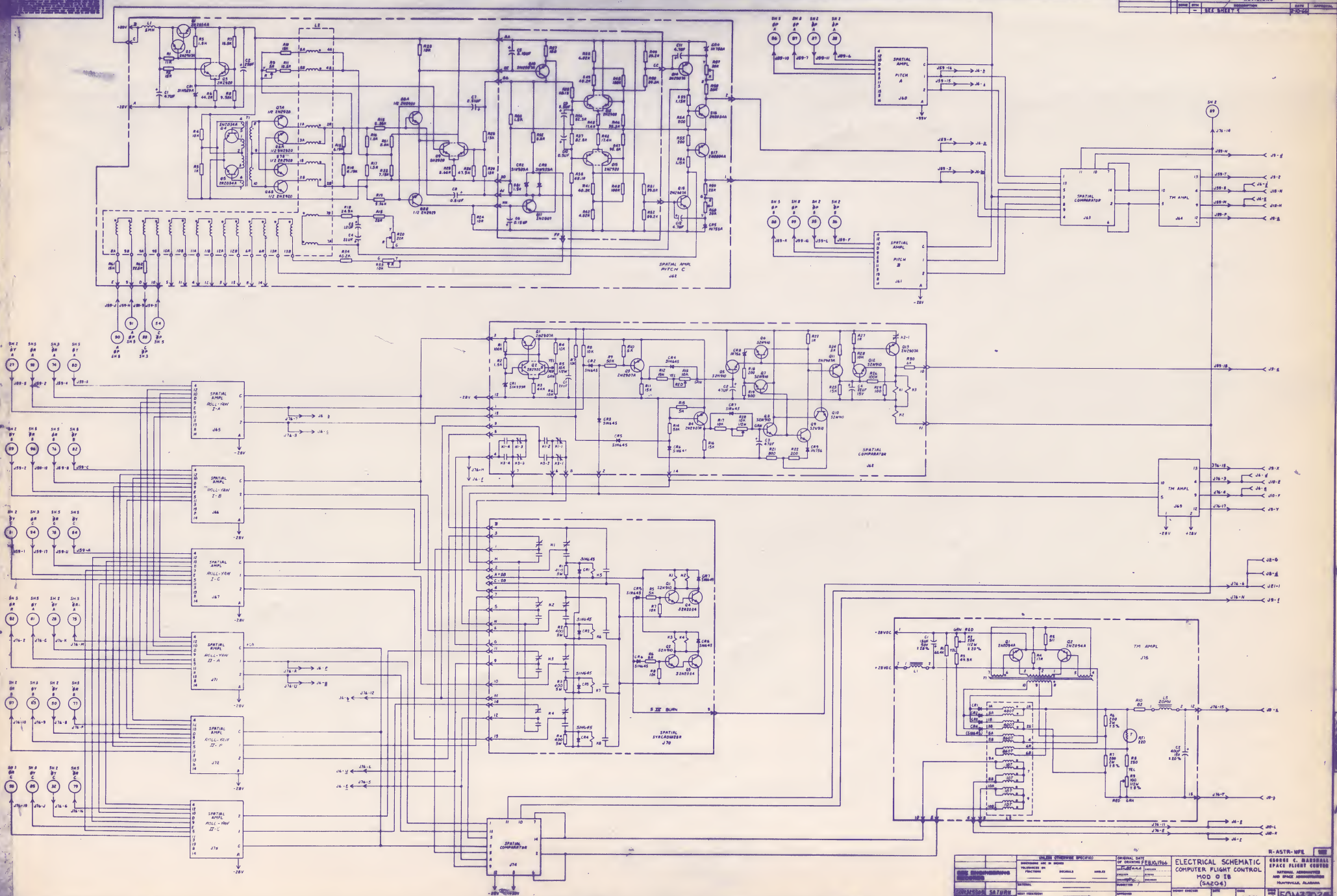
REV	DATE	DESCRIPTION	BY	APP'D
1	11-16-66	ISSUE FOR PRODUCTION	SEE SHRY 1	



MODULE	IEEE DESIGNATIONS
SWITCHING CRT A	A1
SWITCHING CRT B	A2
SWITCHING CRT C	A3

R-ASTR-NFE
 SHEET NO. 4981
 OF 7
 DATE: 11-16-66
 DRAWN BY: J. W. NOLAN
 CHECKED BY: J. W. NOLAN
 APPROVED BY: J. W. NOLAN
 TITLE: ELECTRICAL SCHEMATIC
 COMPUTER FLIGHT CONTROL
 MOD 0 1B
 (SA204)
 50M37020

REVISIONS	
NO.	DESCRIPTION
1	REV. 10/1/54



DESIGN SYMBOLS SPECIFIED		ORIGINAL DATE		ELECTRICAL SCHEMATIC		R-ASTR-MFE	
SYMBOL	DESCRIPTION	DATE	BY	NO.	NO.	NO.	NO.
SA/100	SA/100	10/1/54	SA/100	10/1/54	10/1/54	10/1/54	10/1/54

GEORGE C. MARSHALL SPACE FLIGHT CENTER
 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 MOD 0 5B (CASC)

14991
 50M7026

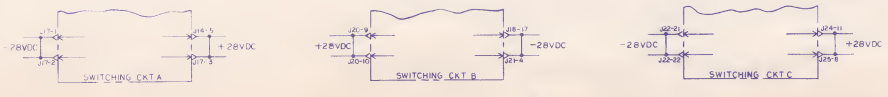
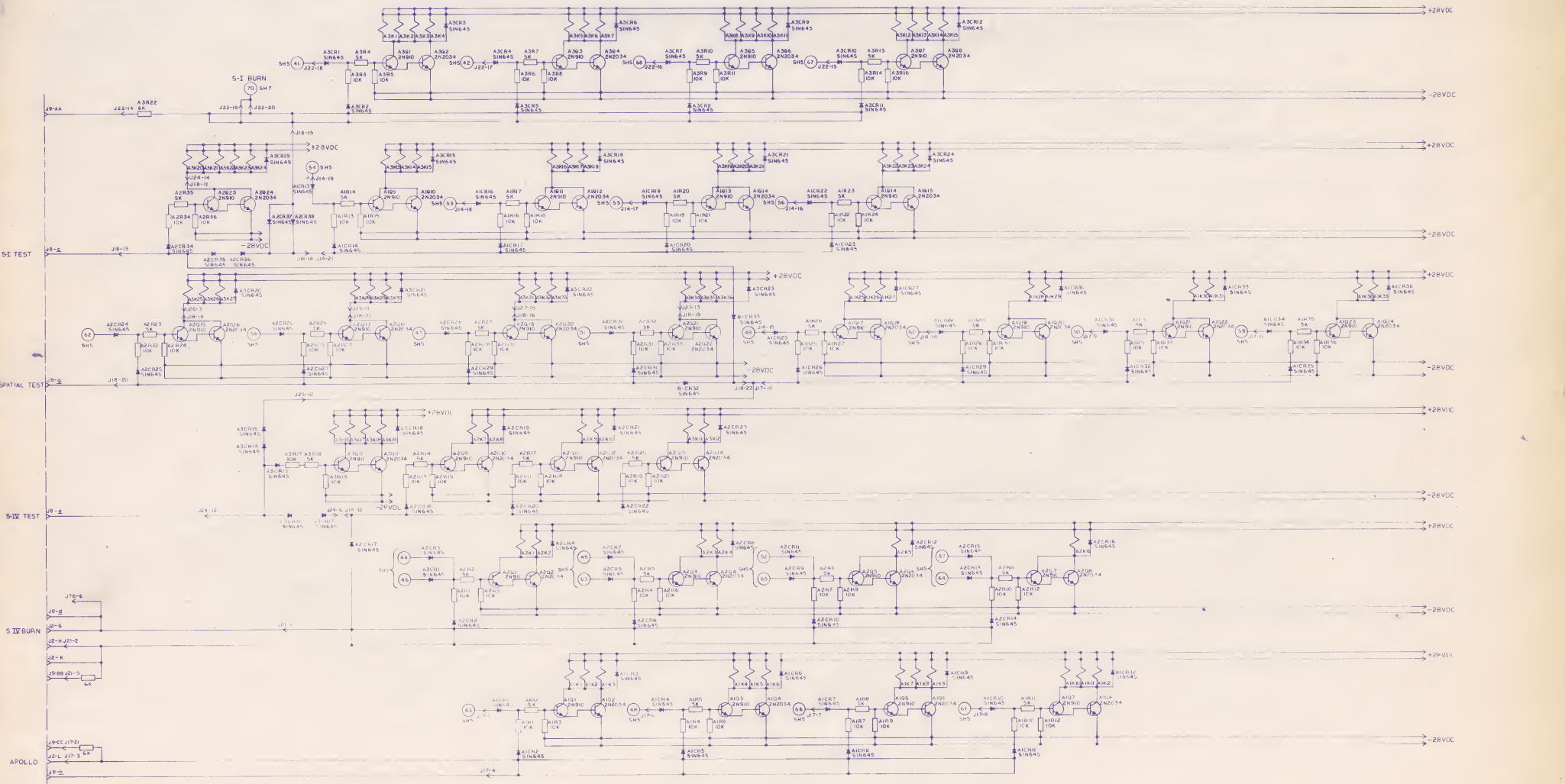
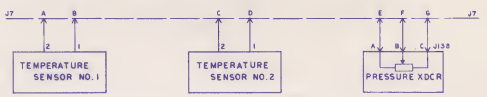
REV. NO.	REVISION	DATE	APPROVAL
1	SEE SHEET 1	2-3-66	

4

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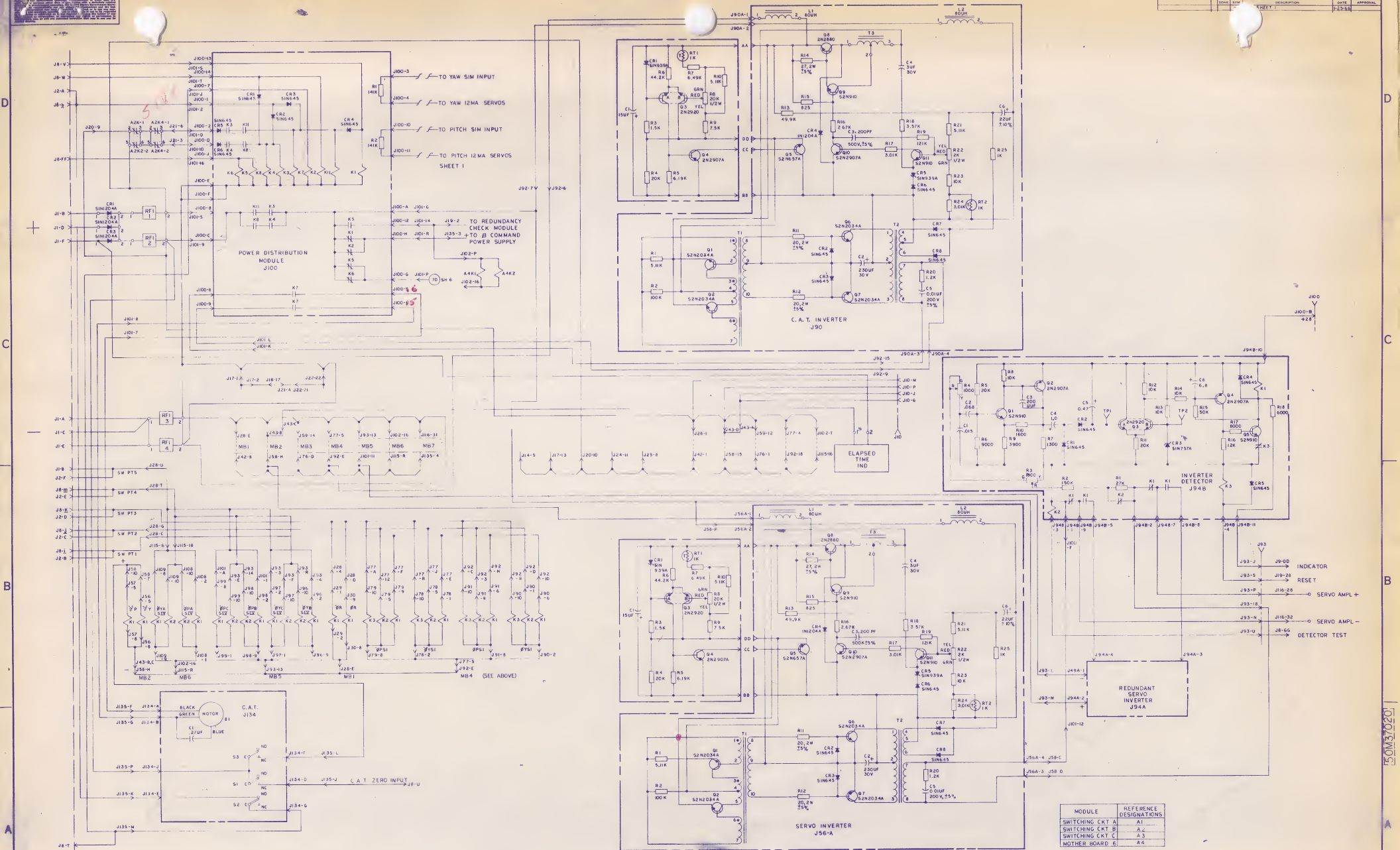
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MODULE	REF DESIGNATION
SWITCHING CRT A	A.1
SWITCHING CRT B	A.2
SWITCHING CRT C	A.3

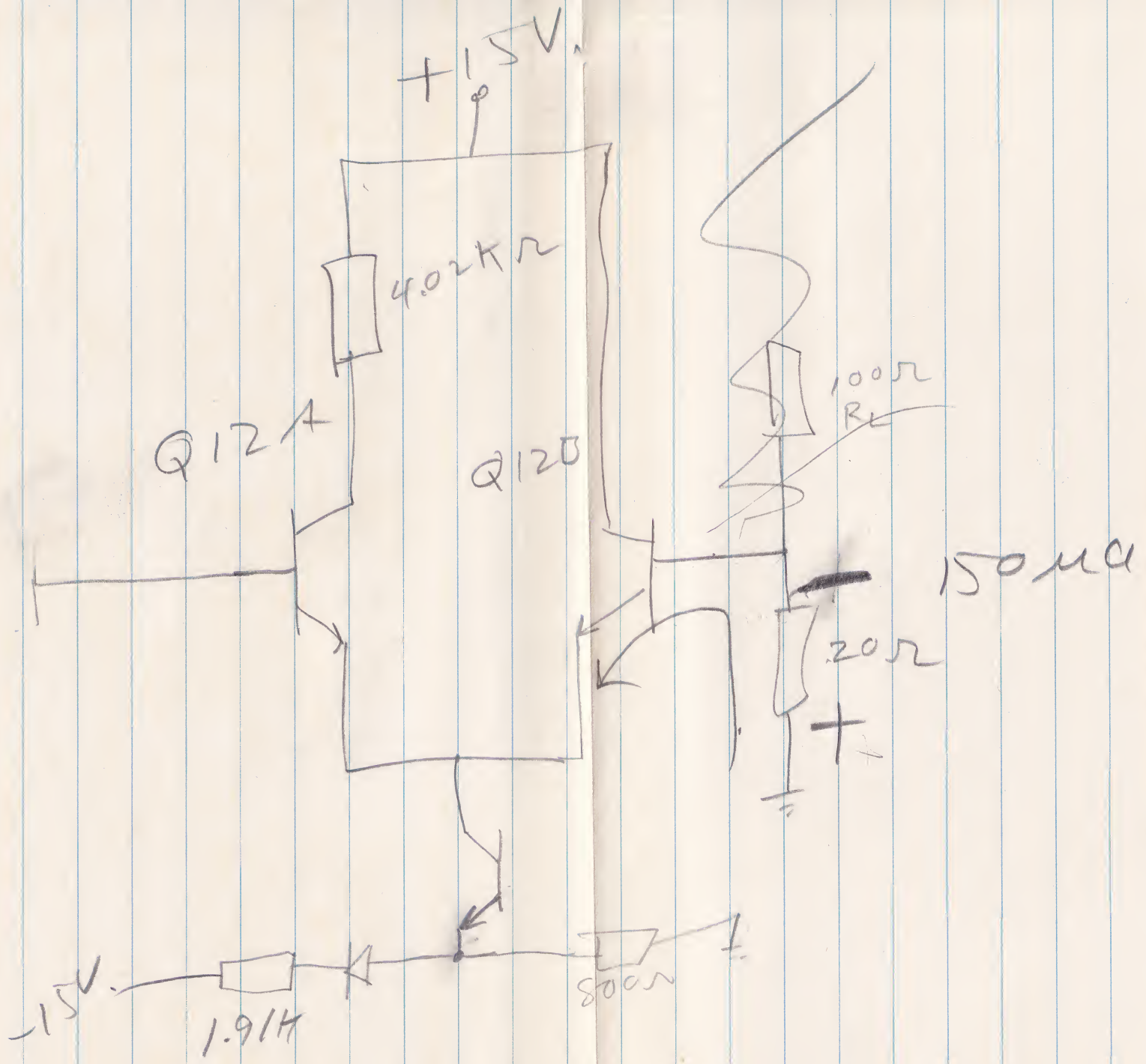
SEE ENGINEERING RECORDS 50M33500 SATURN NEXT REV. USED ON APPLICATION	DESIGNER: [Signature] CHECKED: [Signature] DATE: [Date]	ORIGINAL DATE OF WORK: FEB. 1966 PROJECT: [Project Name] DRAWING NO.: [Drawing No.]	ELECTRICAL SCHEMATIC COMPUTER FLIGHT CONTROL MOD 0 IB (S204)	R-ASTA-NFE 68000 C. HASSALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
	TITLE: SWITCHING CRT A, B, C PART: [Part No.] QUANTITY: [Quantity]	WEIGHT CHECKED: [Weight] DATE: [Date]	NIGHT CHECKED: [Night Check] DATE: [Date]	DRAWN: [Drawn] DATE: [Date]	50M37020 6 OF 7
	MATERIAL: [Material] FINISH: [Finish]	APPROVED: [Signature] DATE: [Date]	INCHES UNLESS OTHERWISE SPECIFIED	CHECKED: [Checked] DATE: [Date]	50M37020
	APPLICATION: [Application]	DIRECTOR: [Director]	NONE NONE	DATE: [Date]	50M37020

50M37020

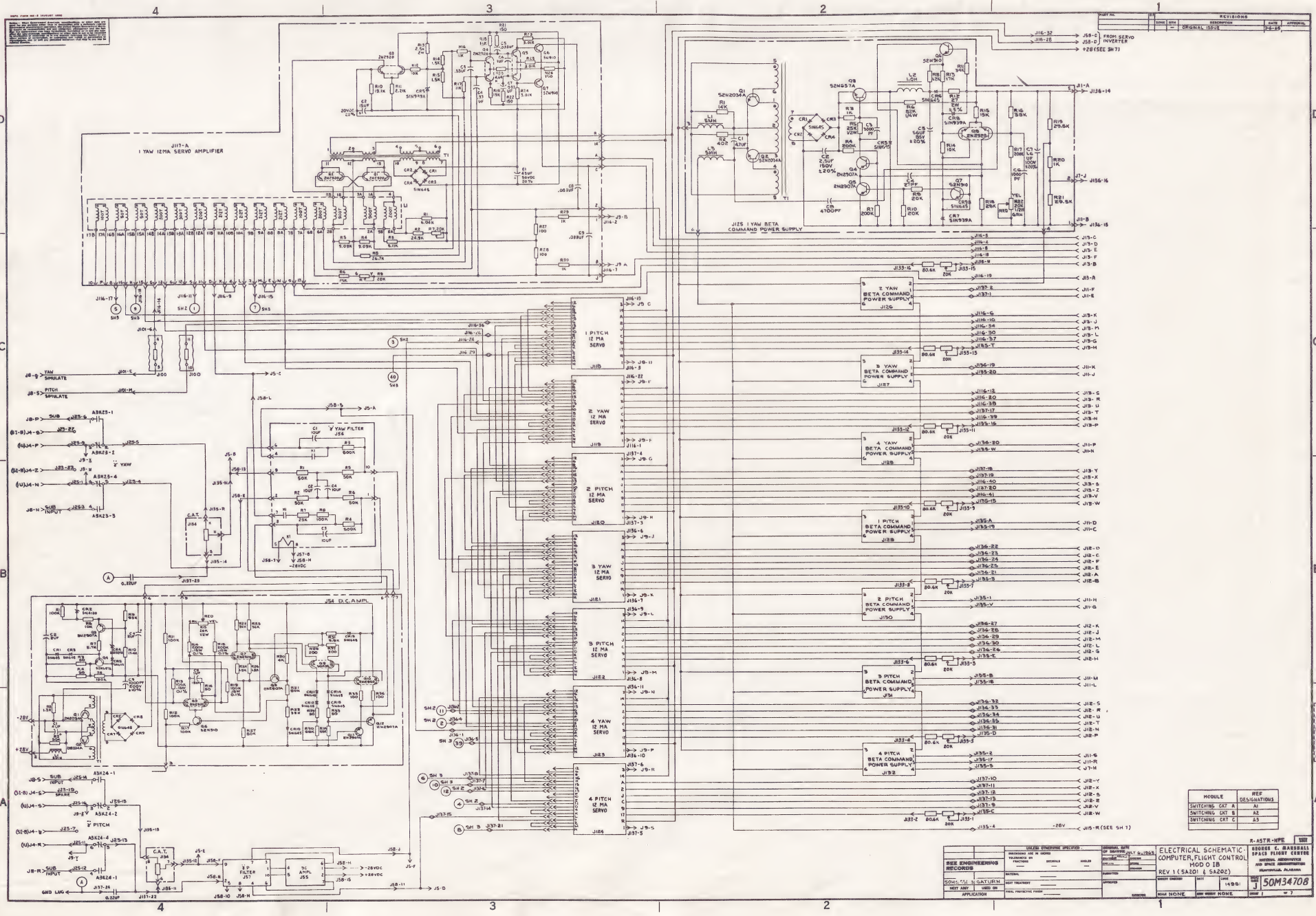


MODULE	REFERENCE DESIGNATIONS
SWITCHING CKT A	A1
SWITCHING CKT B	A2
SWITCHING CKT C	A3
MOTHER BOARD	A4

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED				REVISION DATE	ELECTRICAL SCHEMATIC	68001 C. HARRISBALL
	APPROVED BY	DESIGNED BY	CHECKED BY	DATE			
50M37020	SA 204	SA 204	SA 204	14981	MOD 0 IB	SA 204	MULTIPLY, ALABAMA
APPLICATION	DESCRIPTION	QUANTITY	DATE	BY	ISSUE	DATE	BY



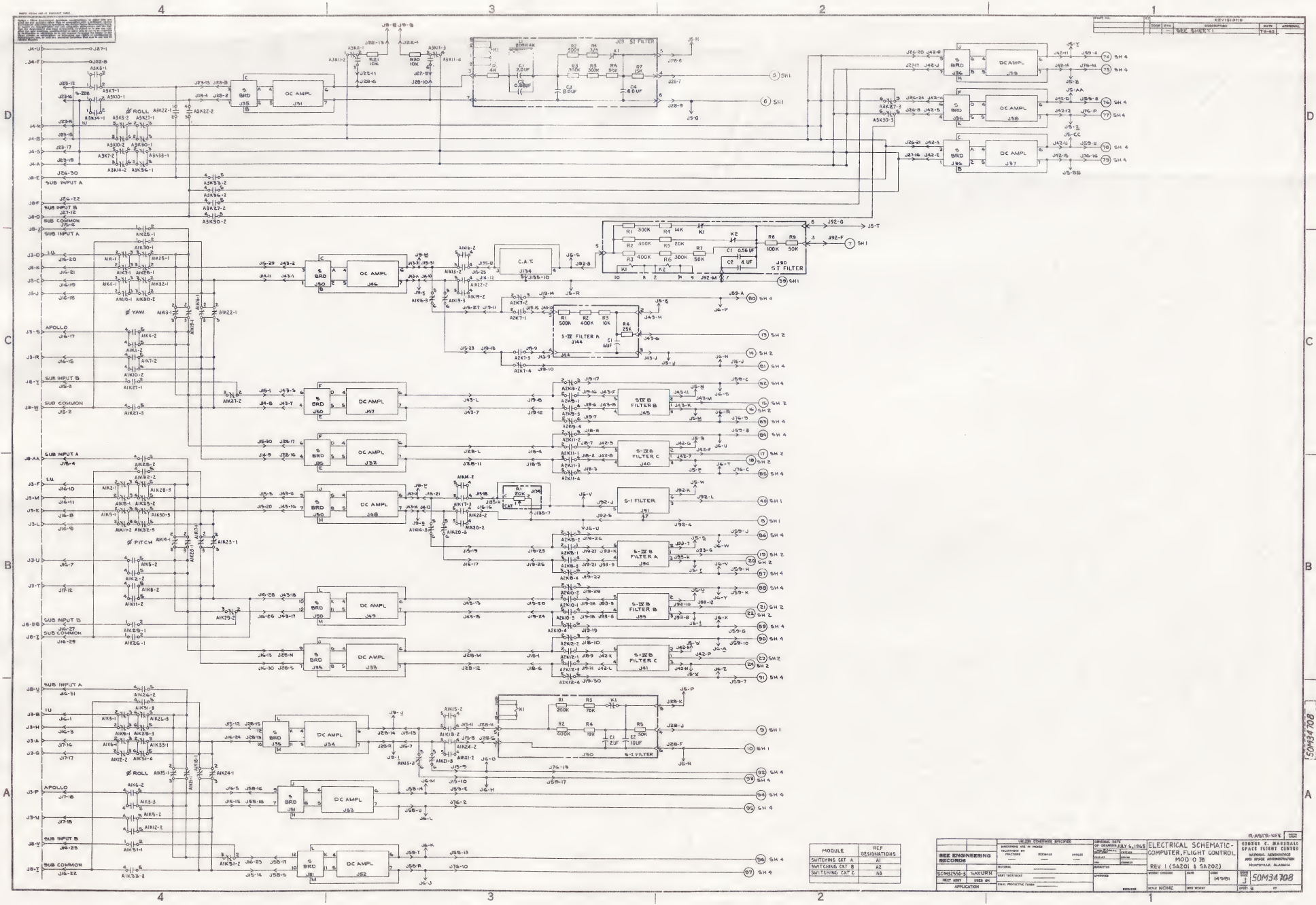
Bill Miller 3-7-69



MODULE	REF
SWITCHING CAT A	A1
SWITCHING CAT B	A2
SWITCHING CAT C	A3

R-ASTR-NPE
 ROBERT T. BARSBALL
 SPACE FLIGHT CENTER
 NATIONAL AERONAUTICS
 AND SPACE ADMINISTRATION
 HUNTSVILLE, ALABAMA
 50M34708
 REV 1 (5A201 & 5A202)
 149B1
 7

50M34708



MODULE	REF. DESIGNATIONS
SWITCHING EXT A	A1
SWITCHING EXT B	A2
SWITCHING EXT C	A3

DESIGN CHANGES		REVISIONS		REVISIONS		REVISIONS	
NO.	DESCRIPTION	DATE	BY	NO.	DESCRIPTION	DATE	BY
1	REVISED			1	REVISED		
2	REVISED			2	REVISED		
3	REVISED			3	REVISED		

ELECTRICAL SCHEMATIC
 COMPUTER FLIGHT CONTROL
 MOD 0 1B
 REV 1 (SALON & SA202)
 14 9 61
 50M34708

50M34708

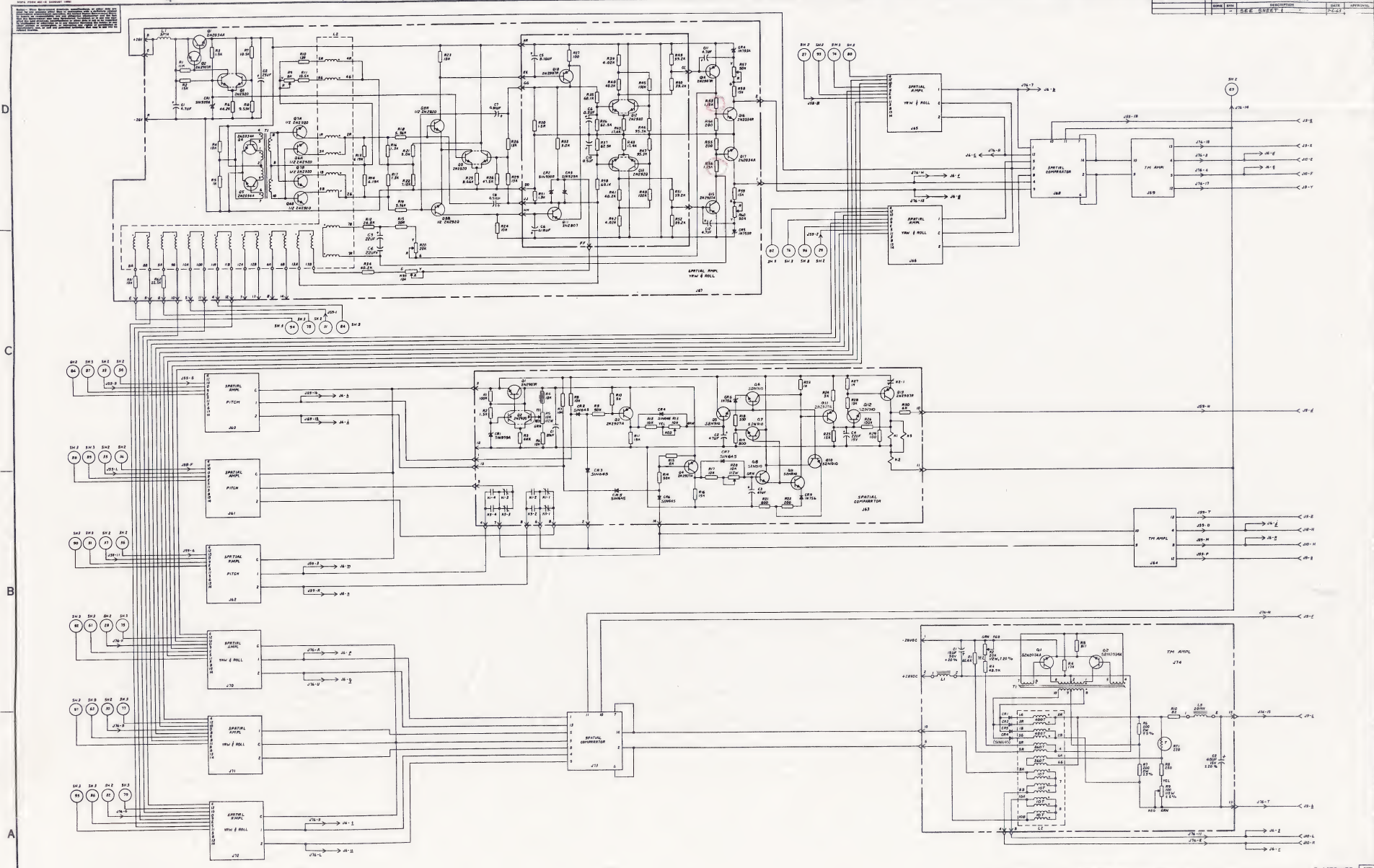
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3

2

1

REV	DATE	DESCRIPTION	BY	CHKD
1		SEE SHEET 1		



4

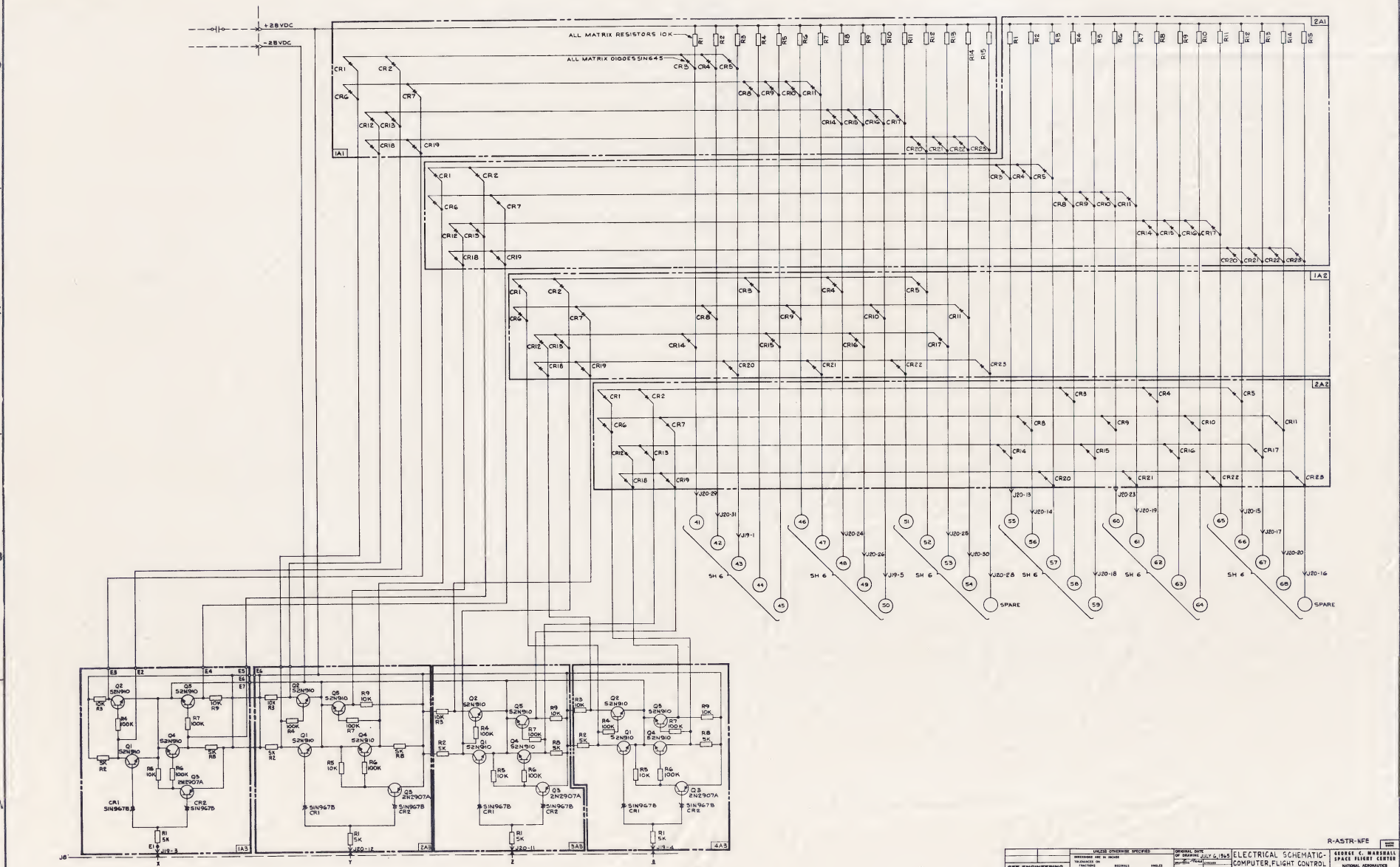
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2

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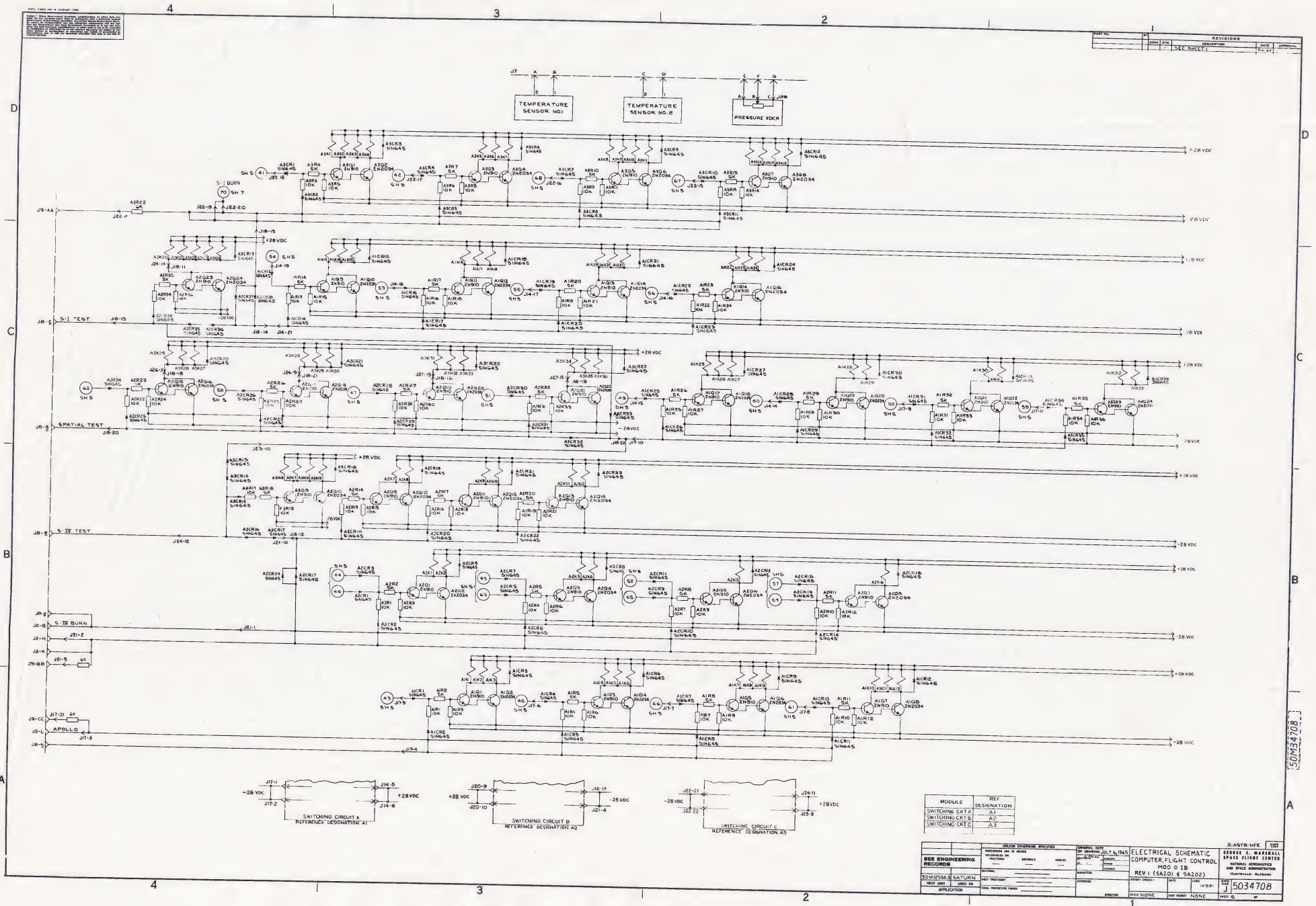
SEE ENGINEERING RECORDS S0412550-3 SATURN TITLE: SEE SHEET 1 APPLICATION:		DESIGNER: [] CHECKED: [] DATE: [] SCALE: [] SHEET NO.: [] TOTAL SHEETS: []		APPROVED: [] DATE: [] SCALE: [] SHEET NO.: [] TOTAL SHEETS: []		REVISIONS: 1. [] 2. [] 3. [] 4. [] 5. [] 6. [] 7. [] 8. [] 9. [] 10. []		R-ASTR-NFE 002 HERBERT C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION MONTELEONE, ALABAMA 15-501 50M34708	
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50M34708



UNLESS OTHERWISE SPECIFIED		ISSUE DATE	REVISION	DATE	APPROVED
DESIGNED BY	REVISION	JULY 4, 1963			
DRAWN BY	REVISION				
CHECKED BY	REVISION				
APPROVED BY	REVISION				
APPLICATION	REVISION				

ELECTRICAL SCHEMATIC- COMPUTER FLIGHT CONTROL MOD 0 10 REV 1 (5A201 & 5A202)	SECRET & UNCLASSIFIED SPACE FLIGHT CERTS NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
50M1550 SATURN 50M34708	50M34708



REV.	DATE	DESCRIPTION	BY	APP.
1		SEE ASSET 1		

MODULE	REF.
SWITCHING CRT A	A1
SWITCHING CRT B	A2
SWITCHING CRT C	A3

REVISIONS				DATE		APPROVAL	
REV. 1	SA201	SA202					

REVISIONS	DATE	BY	APP.	REVISIONS	DATE	BY	APP.
REV. 1	SA201	SA202					

PROJECT TITLE	PROJECT NO.	DATE	REV. 1
COMPUTER FLIGHT CONTROL	MOD 01B	JULY 6, 1965	
DESIGNED BY	SA201	SA202	
CHECKED BY			
APPROVED BY			

ENGINEER	SA201	SA202
DATE		
REV. 1		
APP.		

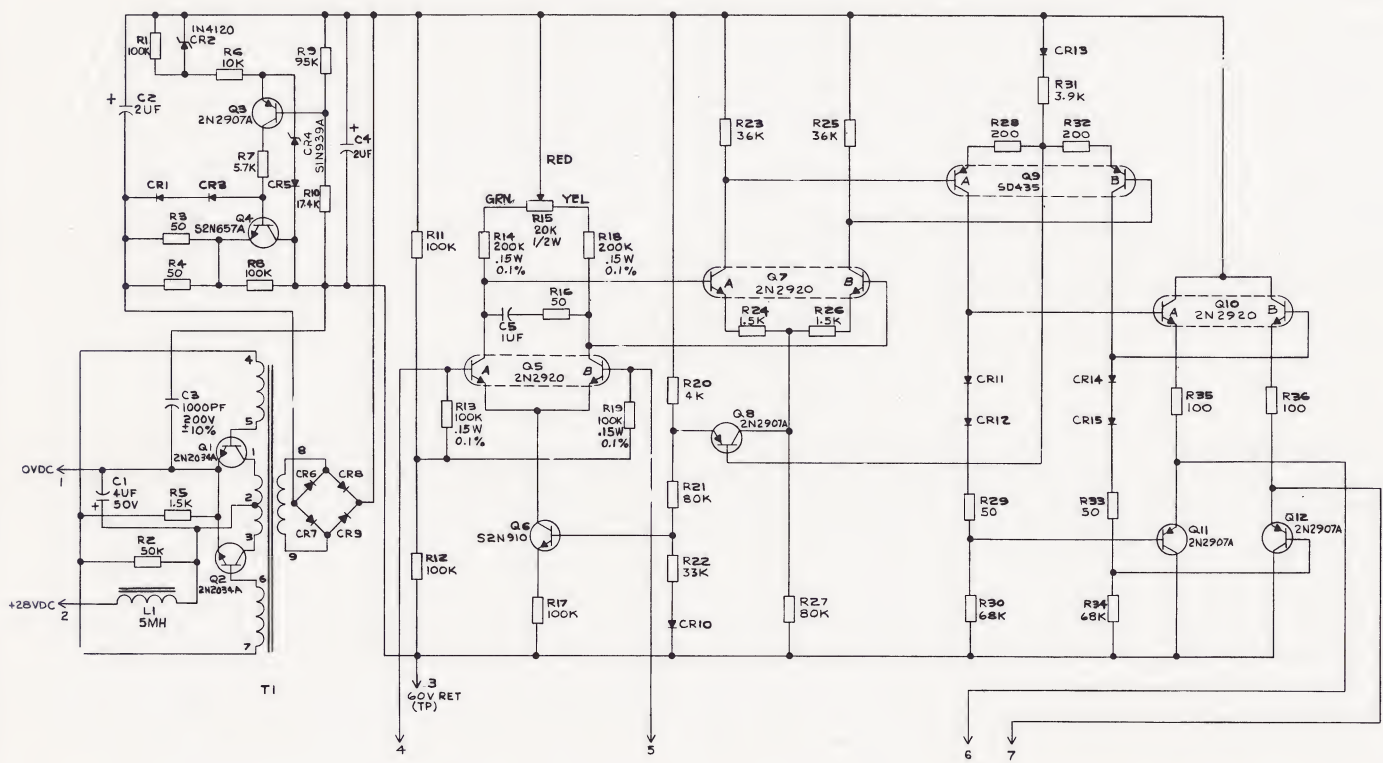
8076205

A

Notes — When Government drawings, specifications, or other data are used for any purpose other than to reproduce with a substantial degree of accuracy the original drawing, specification, or other data, the contractor shall include a notice stating that the reproduction may have been made, and the date and place of reproduction, and the name of the contractor.

ENR16854

PART NO.	ZONE	SYM	REVISIONS	
			DESCRIPTION	DATE
			ORIGINAL ISSUE	10-20-64
	A		REMOVED SCALING CIRCUIT.	11-5-64
	B		ADDED PIN NO'S.	11-23-64
	C		R28 & R32 WERE 2K OHMS, R35 & R36 WERE 1K OHMS, ADDED VALUES TO Q2, Q6, Q9 & C4.	12-9-64
	D		REACTOR WAS L1, C1 WAS 4UF75V, C3 WAS 1000 PF 200V, Q4 WAS 2N657, C2 & C4 WAS 1UF 100V, CR4 WAS S4705, Q6 WAS 2N910, R13 & R19 WAS 100K, R14 & R18 WAS 200K, ADDED TO R15 20K 1/2W, ADDED A & B TO Q5, Q7, Q9 & Q10, ADDED CAP NOTE TO NOTE 1. NOTE 1-DIODE NOTE WAS ALL DIODES ARE 1N645. ADDED NOTE 4 CR2, CR4 - ZENER DIODE SYMBOL WAS ∇ C5 WAS 1UF 150V + ADDED TO C1, C2 & C4.	2-17-65

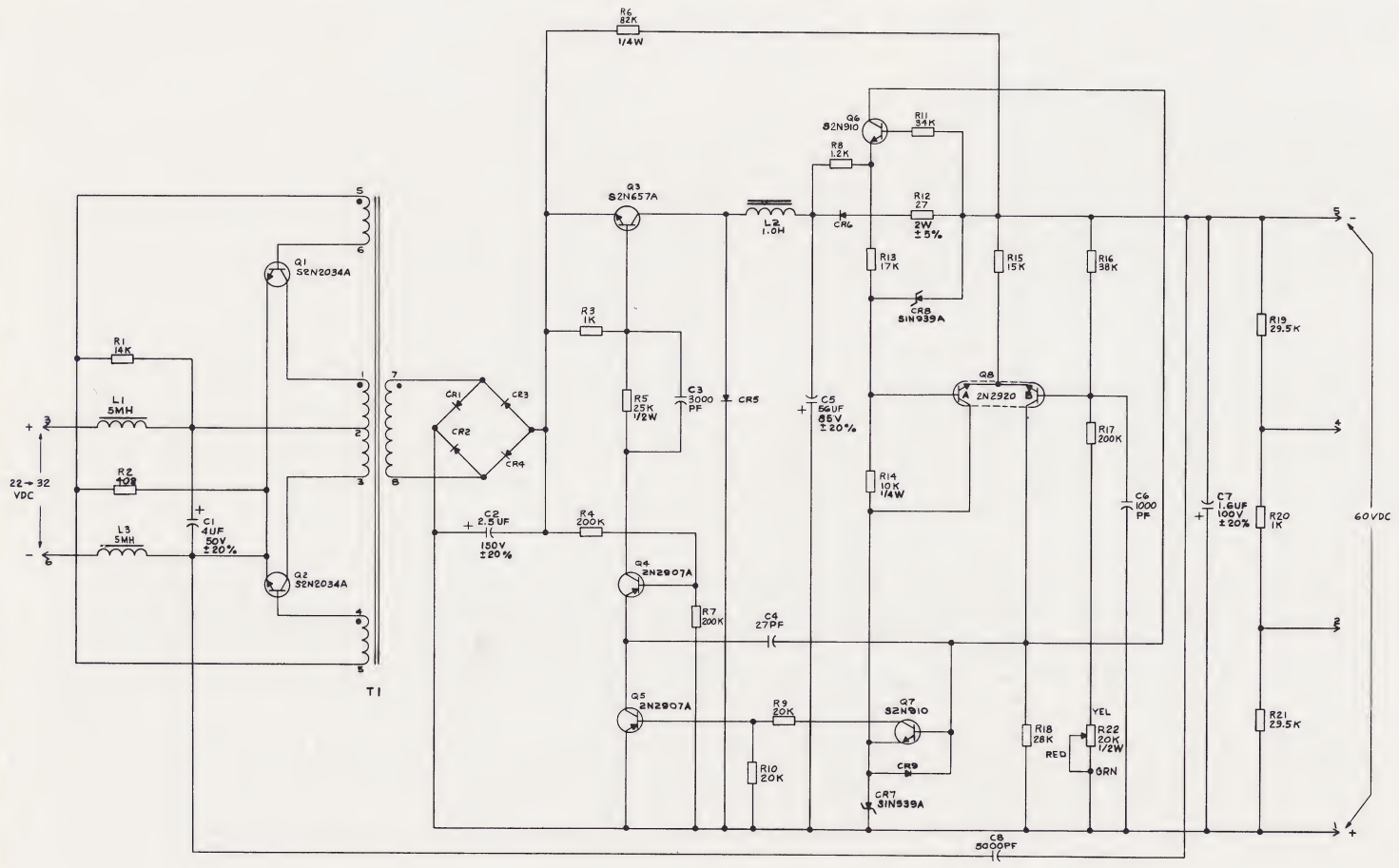


- NOTES:
- UNLESS OTHERWISE SPECIFIED ALL DIODES ARE 1N645 ALL RESISTORS ARE $\pm 1\%$, 1/6W ALL CAP. ARE $\pm 20\%$, 100 WVDC.
 - PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC-STD-349.
 - REFERENCE DRAWINGS:
PRINTED WIRING ASSEMBLY F50M32575
PRINTED WIRING SUBASSEMBLY C50M32576
PRINTED WIRING BOARD D50M32577
PRINTED WIRING MASTER F50M32578
 - T1 IS TRANSFORMER A4C50M32609

NO REQD PER ASSY		ZONE	FILE NO.	REV. NO.	PART OR STOCK NO.	REV. DATE	REV. BY	REV. CHECK	REV. DATE	REV. BY	REV. CHECK	REV. DATE	REV. BY	REV. CHECK	REV. DATE	REV. BY	REV. CHECK	REV. DATE	REV. BY	REV. CHECK	
ASY DASH NO																					
SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED										LIST OF MATERIAL		ORIGINAL DATE OF DRAWING		ELECTRICAL SCHEMATIC - DC AMPLIFIER 45V DUAL INPUT COMPUTER, FLIGHT CONTROL		MOD 0 IB		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
SOM32575 SATURN NEXT ASSY USED ON APPLICATION		DIMENSIONS ARE IN INCHES TOLERANCES ON FRACTIONS DECIMALS ANGLES										APPROVED		OCT 20, 1964		DATE		CODE 14981		D 50M32579	
		MATERIAL										HEAT TREATMENT		APPROVED		DATE		SCALE NONE		SHEET 1 OF 1	

Notes - When dimensional drawings, specifications, or other data are used in the design of this assembly, the designer shall be responsible for obtaining the latest revision of such data and for insuring that the design is based on the latest revision of such data. The designer shall also be responsible for insuring that the design is based on the latest revision of such data. The designer shall also be responsible for insuring that the design is based on the latest revision of such data.

ENR 1454



PART NO.	REV	REVISIONS		
		ZONE	DATE	APPROVAL
	A		10-17-64	[Signature]
	B		12-8-64	[Signature]
	C		5-10-65	[Signature]

ORIGINAL ISSUE

ADDED PIN NUMBERS; ADDED COLOR CODING TO VARIABLE POT.

L1 5MH WAS L1-50M32631 P-18-65
 RE 402 WAS RE-400, C1 4UF 30V ± 20% WAS C1-4 7UF, Q1 6X4-52N2034A WAS Q1-62-52N2034A, C2-2.5UF 150V120V WAS C2-1.27UF 03-52N657A WAS Q3-2N657A, Q4 & Q5-2N2907A WAS Q4 & Q5-2N2907A, R3-25K 1/2W WAS R3-25K 1/2W, R4 WAS R4-10K 1/4W, R5-3000PF WAS C3-3000UF, C4-27UF WAS C4-27UF, C5-56UF 55V ± 20% WAS C5-70UF, L2-1.0H WAS L2-50M32631, C6 & C7-5000PF, Q14-WAS Q6-607-50N910, Q14-WAS 1/4W WAS R14-10K, CR7-SIN939A WAS CR7-W3930, C8-4700PF WAS C8-5000PF, ADDED 1/2W TO R22 10K, C6-1000PF WAS C6-1000UF, CR8-SIN939A WAS CR8-W3930, R18-27 2W ± 5% WAS R18-27, C6-1000PF WAS C6-1000UF, C7-1.6UF 100V ± 20% WAS C7-1.0UF, Q8-ADDED A18, NOTE 1 - ALL DIODES ARE SIN645, ADDED ALL DIODES ARE SIN645, ADDED ALL CAPS ARE 5% ± 500VDC, ADDED NOTE 4, L4 TO R4, L4 RET. DNG'S, ADDED L3, C1 WAS TO PIN 3, R1 14K WAS 17K

ADDED POLARITY MARKING TO C1-C2, C3 & C7, C8 WAS 4700PF

- NOTES:
- UNLESS OTHERWISE SPECIFIED: ALL DIODES ARE SIN645 ALL RESISTORS ARE ± 1%, 1/8W ALL CAP ARE 5%, 500VDC
 - PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC-STD-349.
 - REFERENCE DRAWINGS: PRINTED WIRING ASSEMBLY F50M32630 PRINTED WIRING SUBASSEMBLY C50M32631 PRINTED WIRING BOARD C50M32632 PRINTED WIRING MASTER F50M32633
 - TI IS A TRANSFORMER (50M32630-1)

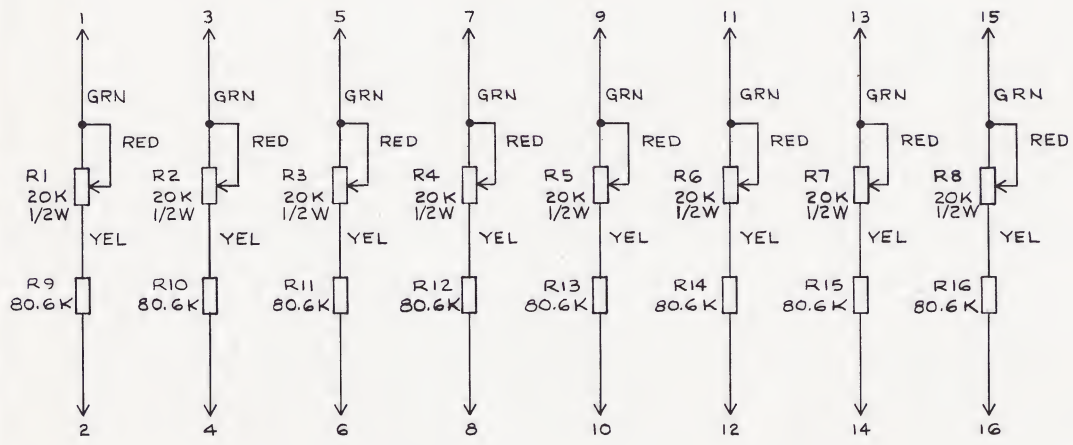
SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING: OCT 17, 1964		ELECTRICAL SCHEMATIC - BETA COMMAND POWER SUPPLY COMPUTER FLIGHT CONTROL, MOD 0 1B		RASTR-NFE	
SOM32630 SATURN		MATERIAL		APPROVED: [Signature]		CHECKED: [Signature]		DATE: 08/19/81	
NEXT ASST		HEAT TREATMENT		APPROVED: [Signature]		CHECKED: [Signature]		DATE: 08/19/81	
APPLICATION		FINAL PROTECTIVE FINISH		APPROVED: [Signature]		CHECKED: [Signature]		DATE: 08/19/81	

50M32634

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PART No.	MP	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
			A	R1 THRU R8 ADDED 1/2W & COLOR CALL OUT TO WIRE DESIGNATIONS. UPDATED SCHEMATIC TO NASA DRAWING MANUAL.	11-5-64	<i>[Signature]</i>

-51



NOTES:

- UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE 1/8W, ±1%.
- REFERENCE DRAWINGS:
 PRINTED WIRING ASSEMBLY D50M32675
 PRINTED WIRING SUBASSY C50M32676
 PRINTED WIRING BOARD C50M32677
 PRINTED WIRING MASTER F50M32678

50M32679

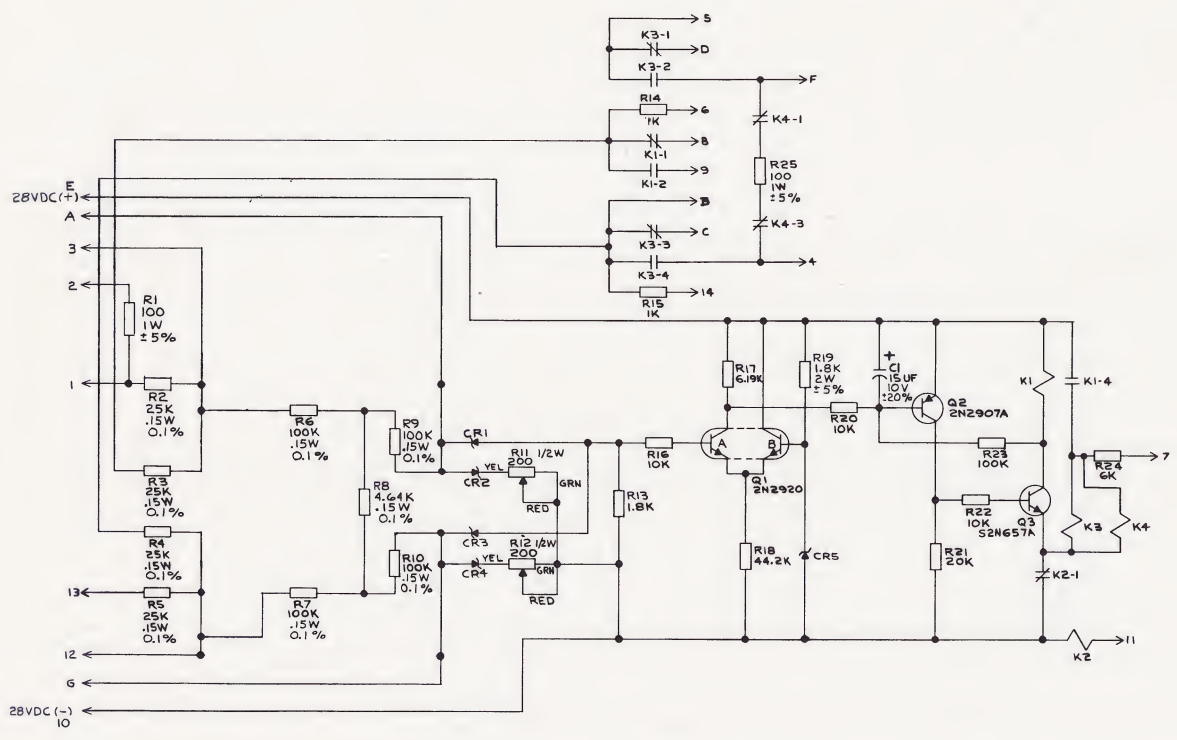
50M32679-1 SHOWN R-ASTR-NFE

SEE ENGINEERING RECORDS	UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING	ELECTRICAL SCHEMATIC - BETA FEED BACK, COMPUTER, FLIGHT CONTROL, MOD 0 IB	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
	DIMENSIONS ARE IN INCHES		NOV 5, 1964		
	TOLERANCES ON FRACTIONS DECIMALS ANGLES		CHECKER		
	MATERIAL		ENGINEER		
50M32675 SATURN	HEAT TREATMENT	APPROVED	DATE	CODE 14981	DWG SIZE C 50M32679
NEXT ASSY USED ON	FINAL PROTECTIVE FINISH	DIRECTOR	SCALE NONE	UNIT WEIGHT NONE	SHEET 1 OF 1
APPLICATION					

NOTICE - WHEN GOVERNMENT SPECIFICATIONS OR OTHER DATA ARE USED FOR ANY PORTION OF THIS DRAWING, THE UNITED STATES GOVERNMENT ASSUMES NO LIABILITY FOR ANY ERRORS OR OMISSIONS AND THE FACT THAT THE GOVERNMENT HAS REVIEWED THIS DRAWING DOES NOT CONSTITUTE AN ENDORSEMENT OR RECOMMENDATION OF ANY PRODUCT OR BRAND NAME, NOR DOES IT CONSTITUTE AN ENDORSEMENT OF THE QUALITY OF ANY PRODUCT OR BRAND NAME. THE USER OF THIS DRAWING SHALL BE RESPONSIBLE FOR THE PROPER INTERPRETATION AND APPLICATION OF THE DATA HEREON. THE USER SHALL BE RESPONSIBLE FOR THE PROPER INTERPRETATION AND APPLICATION OF THE DATA HEREON. THE USER SHALL BE RESPONSIBLE FOR THE PROPER INTERPRETATION AND APPLICATION OF THE DATA HEREON.

ENG 16764

PART NO.	REV.	REVISIONS		
		DATE	DESCRIPTION	APPROVAL
	B	11-11-64	REVISED & REDRAWN	[Signature]
	C	11-23-64	ADDED PIN NOS.	[Signature]
	D	12-8-64	CR1 THRU CR5 WERE IN 9398	[Signature]
	E	2-1-65	R2 THRU R5 WERE 1/8W.	[Signature]
	F	2-18-65	ADDED 5% TO R1 & R25; ADDED .15W, 0.1% TO R2 THRU R10; ADDED 1/2W TO R11 & R12; R19 WAS 1.75K; 2W ADDED "A" 4"8" TO Q1; ADDED 10V, 320% TO C1; Q3 WAS 2N657A NOTE 1 WAS "ALL DIODES ARE 54789"; ADDED PREFIX LTRS TO REF DRAWINGS; DELETED REF TO DC AMPLIFIER 50M32579 & RELOCATED CIRCUITRY FOR PINS "A", "3", "12" & "14"; PIN 1 WAS 2.4 PIN & WAS 1.	[Signature]



- NOTES:
- UNLESS OTHERWISE SPECIFIED:
ALL DIODES ARE S1N39A
ALL RESISTORS ARE 1%, 1/8W
 - PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC-STD-349.
 - REFERENCE DRAWINGS:
PRINTED WIRING ASSEMBLY 50M32640
PRINTED WIRING SUBASSEMBLY 50M32641
PRINTED WIRING BOARD 50M32642
PRINTED WIRING MASTER 50M32643

FOR PRODUCTION SERIAL NO. -001 ONLY

R-ASTR-NFE

NO REQD PER ASSY		PART OR STOCK NO		SPECIFICATION, STANDARD OR REMARKS	
ASSY DASH NO	ZONE	REV	REV	REV	REV
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED		ORIGINAL DATE OF DRAWING		OCT 19 1964	
DIMENSIONS ARE IN INCHES		TOLERANCES ON		FRACTIONS DECIMALS ANGLES	
SEE ENGINEERING RECORDS		MATERIAL		APPROVED	
50M32640 SATURN		NEXT TREATMENT		USED ON	
APPLICATION		FINAL PROTECTIVE FINISH		DIRECTOR	
WEIGHT CHECKED		DATE		CODE	
SCALE NONE		UNIT WEIGHT		SHEET 1 of 1	
ELECTRICAL SCHEMATIC-50 MA SERVO AMPLIFIER, COMPARISON CIRCUIT, COMPUTER FLIGHT CONTROL, MOD 0 1B		GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA		DWG NO 50M32644	

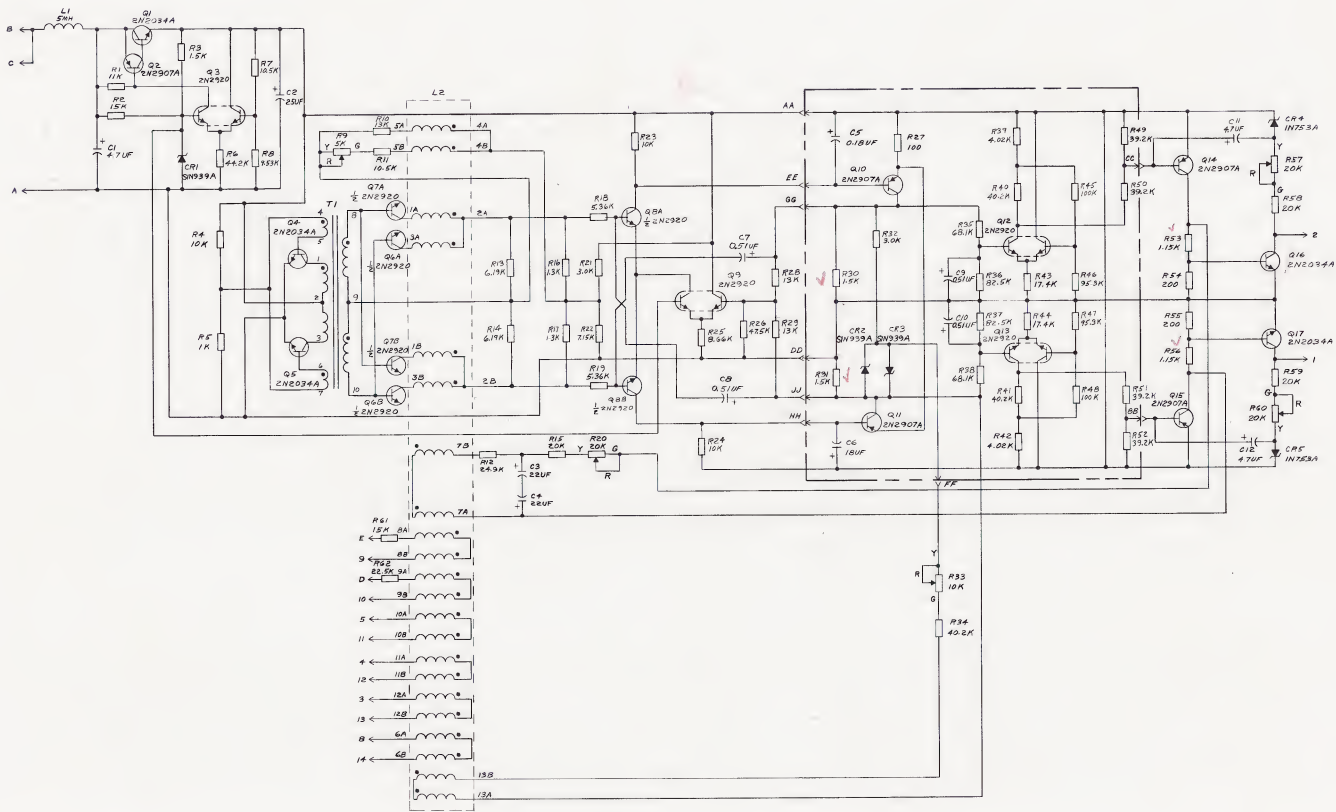
50M32644

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2

REVISED		REVISIONS	DATE	APPROVAL
0	ISSUED	REVISIONS	1958	
1	REVISED	REVISIONS	1958	
2	REVISED	REVISIONS	1958	
3	REVISED	REVISIONS	1958	
4	REVISED	REVISIONS	1958	



- NOTES:
- UNLESS OTHERWISE SPECIFIED:
 - ALL RESISTORS ARE 1/4 W
 - PARTIAL REFERENCE DESIGNATIONS ARE SHOWN FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MIL-STD-349.
 - REFERENCE DRAWINGS:
 - PRINTED WIRING ASSEMBLY J50M34120
 - PRINTED WIRING SUBASSEMBLY D50M34121
 - PRINTED WIRING BOARD D50M34122
 - PRINTED WIRING BOARD D50M34123
 - PRINTED WIRING BOARD D50M34124
 - PRINTED WIRING BOARD D50M34125
 - PRINTED WIRING BOARD D50M34126
 - PRINTED WIRING BOARD D50M34127
 - PRINTED WIRING BOARD D50M34128
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 - PRINTED WIRING BOARD D50M34141
 - PRINTED WIRING BOARD D50M34142
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 - PRINTED WIRING BOARD D50M34145
 - PRINTED WIRING BOARD D50M34146
 - PRINTED WIRING BOARD D50M34147
 - PRINTED WIRING BOARD D50M34148
 - PRINTED WIRING BOARD D50M34149
 - PRINTED WIRING BOARD D50M34150
 - PRINTED WIRING BOARD D50M34151
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 - PRINTED WIRING BOARD D50M34162
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 - PRINTED WIRING BOARD D50M34191
 - PRINTED WIRING BOARD D50M34192
 - PRINTED WIRING BOARD D50M34193
 - PRINTED WIRING BOARD D50M34194
 - PRINTED WIRING BOARD D50M34195
 - PRINTED WIRING BOARD D50M34196
 - PRINTED WIRING BOARD D50M34197
 - PRINTED WIRING BOARD D50M34198
 - PRINTED WIRING BOARD D50M34199
 - PRINTED WIRING BOARD D50M34200
 - L1 IS A SATURABLE REACTOR (E0135566-1)
 - T1 IS A TRANSFORMER (E0135568-1)

UNLESS OTHERWISE SPECIFIED		DATE	BY	APPROVAL
DESIGNED BY	SAFETY	1958	J	
CHECKED BY	SAFETY	1958	J	
APPROVED BY	SAFETY	1958	J	
DATE	1958			
BY	J			
APPROVAL				

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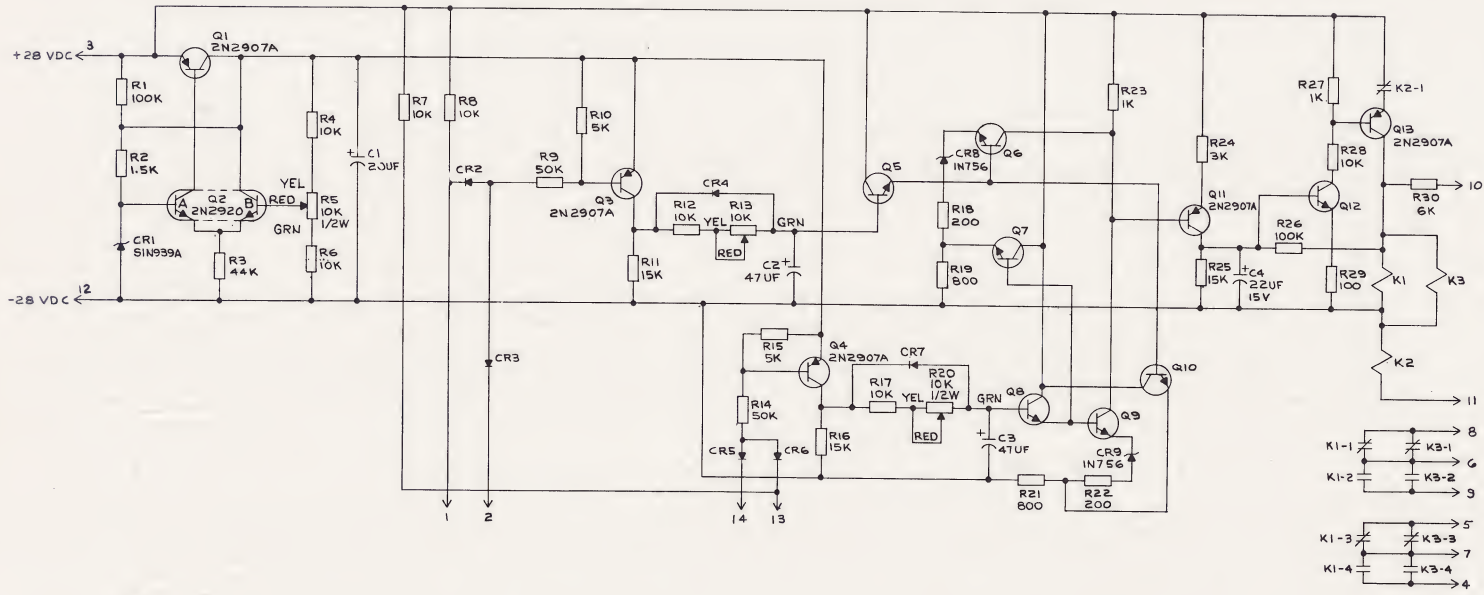
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50M32829

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED, THE USER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE RIGHTS OF THE ORIGINAL DEVELOPER. THE USER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE RIGHTS OF THE ORIGINAL DEVELOPER. THE USER SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE RIGHTS OF THE ORIGINAL DEVELOPER.

ENR16854

ZONE	SYM	REVISIONS		
		DESCRIPTION	DATE	APPROVAL
A		ORIGINAL ISSUE	12-3-64	<i>[Signature]</i>
B		R7 WAS TO CR3; R7 & R8 WERE 1K 2W.	12-22-64	<i>[Signature]</i>
		NOTE 1, TRANSISTORS WERE 2N2910, DIODES WERE 1N445, CAPACITORS WERE 30WVDC. CRT WAS S4T89, DELETED. 30V FROM C1 & 35V FROM C2. ADDED YEL GRN TO R5 R13 & R30, ADDED 1/2W TO R5 R13 & R20, ADDED A&B TO Q2.	2-17-65	<i>[Signature]</i>

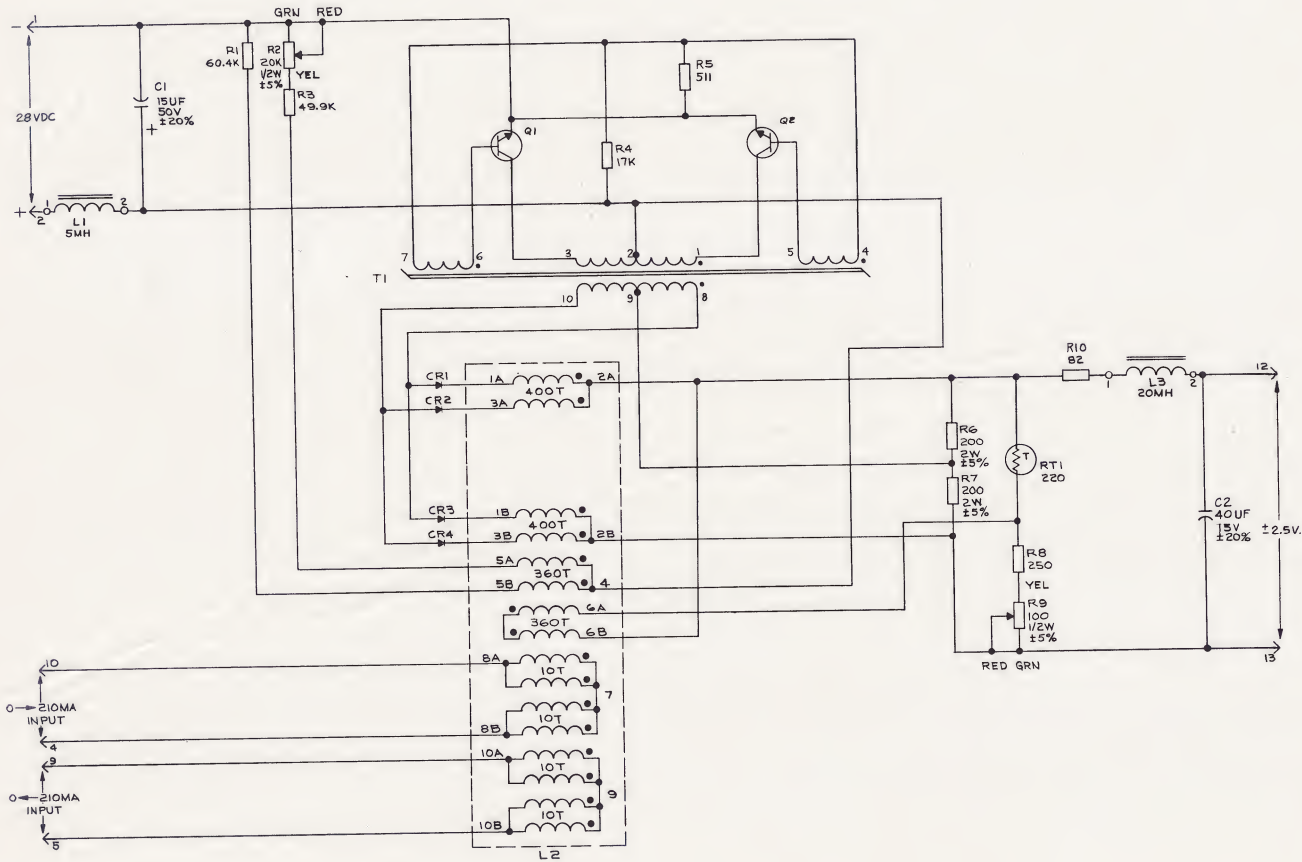


- NOTES:
- UNLESS OTHERWISE SPECIFIED: ALL TRANSISTORS ARE S2N910 ALL DIODES ARE S1N445 ALL RESISTORS ARE ±1%, 1/8W ALL CAPACITORS ARE ±20%, 30WVDC
 - PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC-STD-349.
 - REFERENCE DRAWINGS: PRINTED WIRING ASSEMBLY 50M32635 PRINTED WIRING SUBASSEMBLY 50M32636 PRINTED WIRING BOARD 50M32637 PRINTED WIRING MASTER 50M32638
 - ALL 1N756 DIODES ARE IN PAIRS MATCHED TO 2%.

50M32639

NO REQ PER ASSY		SPECIFICATION, STANDARD OR REMARKS		R-ASTR-NFE	
ASSY DASH NO	ZONE	PART OR STOCK NO	DESCRIPTION	STOCK SIZE	MATL SPEC
LIST OF MATERIAL					
UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING DEC 3 1964	ELECTRICAL SCHEMATIC-SPATIAL COMPARISON CIRCUIT, COMPUTER, FLIGHT CONTROL, MOD 0 IB	
DIMENSIONS ARE IN INCHES			TOLERANCES ON FRACTIONS	GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA	
MATERIAL			APPROVED	D 50M32639	
NEXT ASSY USED ON			DATE	14981	
APPLICATION			SCALE NONE	UNIT WEIGHT NONE	

MSFC FORM 483-3A (AUGUST 1960)
 NOTICE - WHEN DRAWING BY OTHERS, SPECIFICATIONS OR OTHER DATA ARE USED FOR THE PURPOSE OF IDENTIFYING THE PARTS OF THIS DRAWING, THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED. THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED. THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED. THE USER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED.



PART NO.	REV.	ZONE	SYM.	DESCRIPTION	DATE	APPROVAL
				ORIGINAL ISSUE	10-17-64	[Signature]
	A			ADDED PIN NUMBERS; L3, L4, L6 & L7 COMBINED INTO L2; L3 WAS L5; ±2.5V WAS 2.0V; RT1 WAS RB; RB WAS R9; R9 WAS R10.	12-14-64	[Signature]
	B			NOTE 1 TRANSISTORS WERE 2N2034A, DIODES WERE 1N645; NOTE 3 ADDED LTR1 TO ASSY; MASTER DWG NOS.; NOTE 5 ADDED C1 WAS 50UF 100V, ALSO ADDED POLARITY SIGN. L1 ADDED TERMINAL POINTS 5MH; L3 ADDED TERMINAL POINTS 20MH; RT1 ADDED 220; C2 WAS 40UF 25V; R7 & R9 ADDED RED, YEL, GRN. R2, R6, RT1, R9 ADDED ±5%.		[Signature]

- NOTES:
- UNLESS OTHERWISE SPECIFIED:
 ALL TRANSISTORS ARE 2N2034A
 ALL DIODES ARE 1N645
 ALL RESISTORS ARE ±1%, 1/8W
 - PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC-STD-349
 - REFERENCE DRAWINGS:
 PRINTED WIRING ASSEMBLY F50M32645
 PRINTED WIRING SUBASSEMBLY C50M32646
 PRINTED WIRING BOARD C50M32647
 PRINTED WIRING MASTER F50M32648
 - L2 IS A SATURABLE REACTOR (50M32564-1)
 - T1 IS A TRANSFORMER (50M32692-1)

NO REQ. PER ASSY		ZONE	REV.	PART OR STOCK NO.	SPECIFICATION, STANDARD OR REMARKS	STOCK SIZE	MAT'L SPEC.	PRINT.	UNIT WT.	QTY.
SEE ENGINEERING RECORDS										
50M32645 SATURN										
NEXT ASSY USED ON										
APPLICATION										

LIST OF MATERIAL		ORIGINAL DATE	DESCRIPTION	QTY.	UNIT
UNLESS OTHERWISE SPECIFIED		OCT 17, 1964	ELECTRICAL SCHEMATIC - SPATIAL RELAY		
DIMENSIONS ARE IN INCHES			TELEMETERING AMPLIFIER, COMPUTER FLIGHT CONTROL, MOD 01B		
TOLERANCES ON FRACTIONS					
DECIMALS					
ANGLES					
MATERIAL					
HEAT TREATMENT					
APPROVED					
WEIGHT CHECKER					
DATE					
CODE					
SCALE					
UNIT WEIGHT					
NONE					
SHEET					
1					
OF					
1					

R-ASTR-NFE
 GEORGE C. MARSHALL SPACE FLIGHT CENTER
 NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 HUNTSVILLE, ALABAMA
 DWG NO. 50M32649
 SHEET 1 OF 1

50M32649

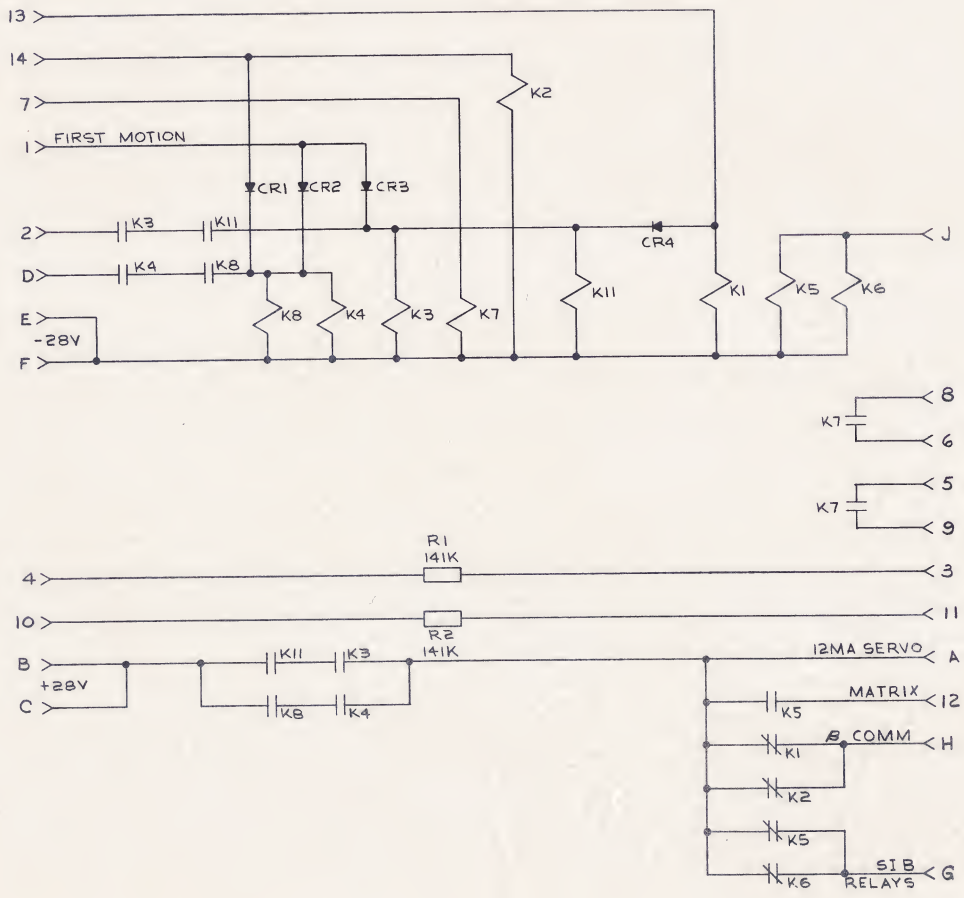
ENX 16854

MSFC FORM 422-2A (AUGUST 1960)

NOTICE - WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN IN CONNECTION WITH A DEFINITELY RELATED GOVERNMENT PROCUREMENT OPERATION, THE UNITED STATES GOVERNMENT THEREBY INCURS NO RESPONSIBILITY NOR ANY OBLIGATION WHATSOEVER, AND THE FACT THAT THE GOVERNMENT MAY HAVE FORMULATED, FURNISHED, OR IN ANY WAY SUPPLIED THE SAID DRAWINGS, SPECIFICATIONS, OR OTHER DATA IS NOT TO BE REGARDED BY IMPLICATION OR OTHERWISE AS IN ANY MANNER LICENSING THE HOLDER OR ANY OTHER PERSON OR CORPORATION OR CONVEYING ANY RIGHTS OR PERMISSION TO MANUFACTURE, USE, OR SELL ANY PATENTED INVENTION THAT MAY IN ANY WAY BE RELATED THERETO.

PART No.	M/P	REVISIONS				
		ZONE	SYM	DESCRIPTION	DATE	APPROVAL
				ORIGINAL ISSUE	12-15-64	<i>[Signature]</i>
		A		K5 (MATRIX I2) WAS K1	3-29-65	<i>[Signature]</i>

75



NOTES:

- UNLESS OTHERWISE SPECIFIED:
ALL DIODES ARE SING45
ALL RESISTORS ARE ±1%, 1/8W
- PARTIAL REFERENCE DESIGNATIONS ARE SHOWN: FOR COMPLETE DESIGNATION PREFIX WITH UNIT NUMBER AND ASSEMBLY DESIGNATION(S) IN ACCORDANCE WITH MSFC-STD-349.
- REFERENCE DRAWINGS:
PRINTED WIRING ASSEMBLY F50M32655
PRINTED WIRING SUBASSEMBLY D50M32656
PRINTED WIRING BOARD D50M32657
PRINTED WIRING MASTER F50M32658

SEE ENGINEERING RECORDS		UNLESS OTHERWISE SPECIFIED			ORIGINAL DATE OF DRAWING DEC 15, 1964		ELECTRICAL SCHEMATIC - SI POWER DISTRIBUTION, COMPUTER, FLIGHT CONTROL, MOD O IB		R-ASTR-NFE		DISTR CODE	
		DIMENSIONS ARE IN INCHES			TOLERANCES ON FRACTIONS				CHECKER		GEORGE C. MARSHALL SPACE FLIGHT CENTER	
50M32655 SATURN		MATERIAL			SUBMITTED 7/31/65		ENGINEER		DWG SIZE C		50M32659	
NEXT ASSY USED ON		HEAT TREATMENT			APPROVED		DIRECTOR		WEIGHT CHECKER		DATE	
APPLICATION		FINAL PROTECTIVE FINISH			SCALE NONE		UNTY WEIGHT NONE		CODE 14981		SHEET 1 OF 1	

