

Vilad

GI4-900708
 REVISION 'D'
 FUNCTIONAL INTEGRATED
 SYSTEM SCHEMATICS
 SPACECRAFT 008 HOUSTON
 MSC SESL
 VOLUME 2

THIS DIAGRAM PARTIALLY REPLACES
 GI4-900708 VOLUME 2 REV 'C'
 DATED 3-31-66

DR BY	T. Sugamura	5-20-66	NORTH AMERICAN AVIATION, INC. SPACE and INFORMATION SYSTEMS DIVISION 12214 LAKEWOOD BLVD., DOWNEY, CALIFORNIA		
CHK BY	380-126 LAD	2814	FUNCTIONAL INTEGRATED SYSTEM SCHEMATICS SC-008 HOUSTON		
APPROVED BY					
D. A. Anderson	<i>d.a.</i> 5/20/66				
			CODE IDENT NO.	SIZE	GI4-900708
			03953	A	
Willard E. Tolles <i>WET</i> 5/20/66			SCALE	REVISION 'D' <i>5/20/66</i>	SHEET 2.1 OF

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2.3	2.2.2	2.2.2	2.2.2B	2.2.2B		
2.4	2.2.3	2.2.3	2.2.3B	2.2.3B		
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2.5.1	2.3.1	2.3	2.3 C	2.3D		
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2.7.2	2.5.2	2.5	2.4.1C	2.4.1C		
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	2.26.3	2.25	2.25 B	2.25B		
	2.27	2.26	2.26 B	2.26B		
	2.28	2.26.1	2.26.1C	2.26.1C		
	2.29	2.27	2.27 B	2.27B		
	2.30	2.27.1	2.27.1B	2.27.1B		
	2.31	2.27.2	2.27.2B	2.27.2B		
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	2.33	2.28	2.28 B	2.28B		
	2.34	2.29	2.29 C	2.29C		
	2.35	2.30	2.30 B	2.30B		
	2.36	2.31	2.31 B	2.31B		
	2.37	2.32	2.32 B	2.32B		
	2.38	2.33	2.33 B	2.33B		
	2.39	2.34	2.34 C	2.34C		
	2.40	2.35	2.35 C	2.35C		
	2.40.1	2.36	2.36 B	2.36B		
	2.41	2.37	2.37 C	2.37C		
	2.42	2.38	2.38 C	2.38C		
	2.43	2.39	2.39 C	2.39C		
	2.44	2.40	2.40 C	2.40C		
	2.45	2.41	2.41 B	2.41B		
	2.46	2.41.1	2.41.1C	2.41.1C		
	2.47	2.42	2.42 B	2.42B		
	2.48	2.43	2.43 B	2.43B		
	2.49	2.44	2.44 B	2.44D		
	2.50	2.45	2.45 B	2.45B		
	2.51	2.46	2.46 B	2.46B		
	2.52	2.47	2.47 B	2.47B		
	2.53	2.47.1	2.47.1B	2.47.1B		
	2.54	2.48	2.48 B	2.48B		
	2.55	2.49	2.49 B	2.49B		
	2.56	2.50	2.50 C	2.50C		
	2.56.1	2.51	2.51 B	2.51B		
		2.52	2.52 B	2.52B		
		2.53	2.53 B	2.53B		
		2.54	2.54 B	2.54B		
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INITIAL RELEASE	REV. "A"	REV. "B"	REV. "C"	REV. "D"		
		2.55	2.55 B	2.55B		
		2.56	2.56 B	2.56B		
		2.57	2.57 C	2.57C		
		2.58	2.58 C	2.58C		
		2.59	2.59 C	2.59C		
		2.60	2.60 C	2.60C		
		2.61	2.61 C	2.61C		
		2.62	2.62 B	2.62B		
		2.62.1	2.62.1B	2.62.1B		
		2.63	2.63 B	2.63B		
		2.63.1	2.63.1C	2.63.1C		
		2.64	2.64 C	2.64C		
		2.64.1	2.64.1C	2.64.1C		
		2.64.2	2.64.2C	2.64.2C		
		2.65	2.65 B	2.65B		
		2.66	2.66 B	2.66B		
		2.67	2.67 B	2.67B		
		2.68	2.68 B	2.68B		
		2.68.1	2.68.1B	2.68.1B		
		2.68.2	2.68.2B	2.68.2B		
		2.68.3	2.68.3B	2.68.3B		
		2.68.4	2.68.4B	2.68.4B		
		2.68.5	2.68.5B	2.68.5B		
		2.68.6	2.68.6C	2.68.6C		
		2.68.7	2.68.7B	2.68.7B		
		2.68.8	2.68.8C	2.68.8C		
		2.69	2.68.9C	2.68.9C		
		2.69.1	2.69 C	2.69C		
		2.70	2.69.1B	2.69.1B		
		2.70.1	2.70 C	2.70C		
		2.71	2.70.1C	2.70.1C		
		2.71.1	2.71 C	2.71C		
		2.72	2.71.1B	2.71.1B		
		2.72.1	2.72 C	2.72C		
		2.72.2	2.72.1C	2.72.1C		
		2.73	2.72.2C	2.72.2C		
		2.73.1	2.73 C	2.73C		
		2.74	2.73.1B	2.73.1B		
			2.74 B	2.74B		
		114	117	118		

TOTAL SHEETS

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	SCALE	REV "D"		

REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
	1. MAY BE REWORKED 3. RECORD CHANGE 2. CANNOT BE REWORKED 4. NOW SHOP PRACTICE 5. PARTS MADE OK	D I S P O S	
A	Completely Revised to Update Document	3	
B	1. Revised Sheet Numbers 2. Updated Title Page, Index, Source Data and Current Sheet List 3. Updated Schematics 4. Added the following new sheets: 2.8, 2.47, 2.47.1, 2.48, 2.50, 2.55, 2.63 through 2.74, 2.46 5. Cross Corr. Numbers: GC9, GC10, GG11 & GG1 was GC11, GC12, GC13 & GG5 Respectively	3 3 3 3 3	<i>2/25/66 N.A.A.</i>
C	1. Sheet 2.7 (GA-1) incorporated MCR-A-1327 2. Sheet 2.8 (GA-2) incorporated MCR-A-1245 3. Sheet 2.11 (GC-3) revised essential bus circuit zone 6, rerouted signal No. CC0208V. 4. Sheet 2.13 (GC-5) added signal No. KC7655 and KC7656 5. Sheet 2.15 (GC-7) incorporated MCR-A-1354 6. Sheet 2.16 (GC-8) added coding to S14A4 7. Sheet 2.18 (GC-10) added caution and warning lamp power to K15 and K16 8. Sheet 2.19 (GC-11) added EPS radiator valve designators corrected pin No.'s on plug P6, added connector and pin No.'s to CM/SM cable. 9. Sheet 2.21.1 (GE-2) added signal No.'s CDO644X, CDO645X, CDO646X and CDO647X.	3 3 3 3 3 3 3 3 3	<i>4/1/66 N.A.A.</i>

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
	1. MAY BE REWORKED 3. RECORD CHANGE 2. CANNOT BE REWORKED 4. NOW SHOP PRACTICE 5. PARTS MADE OK	D I S P O S	
	10. Sheet 2.22 (GE-3) corrected pin No.'s on C14-480	3	<i>4/11/66 ch. ch.</i>
	11. Sheet 2.22.1 (GE-3) corrected pin No.'s on C14-480.	3	
	12. Sheet 2.23 (GE-4) corrected pin No.'s on C14-240.	3	
	13. Sheet 2.26.1 (GF-3) corrected pin No.'s for signal FF 5015P.	3	
	14. Sheet 2.29 (GF-6) corrected nomenclature of signal No. KF7069.	3	
	15. Sheet 2.34 (GG-3) added signal No.'s KG 7009 thru KG 7015 inclusive. Inc. MCR-A-1394	3	
	16. Sheet 2.35 (GG-4) corrected pin No.'s on C14-213	3	
	17. Sheet 2.37 (GH-2) added amplifiers A14A3, A14A4, A18A3 and A18A4	3	
	18. Sheet 2.38 (GH-3) added signal No.'s CH 2400, CH 2401 and CH 2247, also added zones 24 thru 29.	3	
	19. Sheet 2.39 (GH-4) added signal No.'s CH 0014, CH 0401, CH 1401, KH 2403 and KH 0401, also revised zone ref. desig.	3	
	20. Sheet 2.40 (GH-5) added signal No.'s KH 3402, KH 3403 and CH 4019.	3	
	21. Sheet 2.41.1 (GH-6) removed box from CH 3271H	3	
	22. Sheet 2.50 (GR-2) corrected pin No.'s for signal No.'s CR 0031X and CR 1031X.	3	
	23. Sheet 2.57 (GT-2) added details to C281A1, C281A9 and C281A13.	3	
	24. Sheet 2.58 (GT-3) added details to C281A8.	3	
	25. Sheet 2.59 (GT-4) added details to C15A1, C15A5 and C22-2A68.	3	

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
	1. MAY BE REWORKED 3. RECORD CHANGE 2. CANNOT BE REWORKED 4. NOW SHOP PRACTICE 5. PARTS MADE OK	D I S P O S	
	26. Sheet 2.60 (GT-5) in zone 17, C28-1A9A2 was C28-1A9A3.	3	4/1/66 <i>U. A. A.</i>
	27. Sheet 2.63.1 (GT-8) revised nomenclature on signal No.'s SC 2430T, SC 2431T, SC 2432T, SC 2433T and SC 2434T per MCR-A-1236.	3	
	28. Sheet 2.64 (GT-9) revised signal No.'s SF 0092, SF 0093, SF 0094 and SF0095 per MCR-A-1354.	3	
	29. Sheet 2.64.1 (GT-9) added signal No. CF0547P, deleted signal No. CF0534P.	3	
	30. Sheet 2.64.2 (GT-9) revised signal No. CF0162T (Sensing Circuitry).	3	
	31. Sheet 2.68.6 (GT-13) changed nomenclature of signal CA8566T.	3	
	32. Sheet 2.68.8 (GT-13) revised pin No.'s for signal SA8868R.	3	
	33. Sheet 2.68.9 (GT-13) added new sheet.		
	34. Sheet 2.69 (GT-14) added CF0162T to C28A506.	3	
	35. Sheet 2.70 (GV-1) added down-link signal returns.	3	
	36. Sheet 2.71 (GV-2) added down-link signal returns.	3	
	37. Sheet 2.72 (GV-3) added down-link signal returns.	3	
	38. Sheet 2.72.1 (GV-3) added down-link signal returns.	3	
	39. Sheet 2.72.2 (GV-3) added down-link signal returns.	3	
	40. Sheet 2.73 (GV-4) added downlink signal returns.	3	
	41. Sheet 2.61 (GT-6) added internal circuitry to 1A14 & 1A18.	3	
	42. Sheet 2.70.1 (GV-1) added down-link signal returns.	3	4/1/66 <i>U. A. A.</i>

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REVISIONS

SYM	DESCRIPTION	DATE	APPROVED
D	1. MAY BE REWORKED 3. RECORD CHANGE 2. CANNOT BE REWORKED 4. NOW SHOP PRACTICE 5. PARTS MADE OK	D I S P O S	5/20/66 <i>W.A.</i>
	1. Sheet 2.7 (GA1) added Instrumentation cables. 2. Sheet 2.11 (GC3) Circuitry for signals KC7051, KC7052, KC7053, KC7463, KC7464, KC7465, KC7602 and KC7603 expanded to include C14-205 circuits in zone 10 thru 13. 3. Sheet 2.13 (GC5) Circuitry for signals KC7655 and KC7656 expanded to include internal circuitry of the C14-205 unit. 4. Sheet 2.15 (GC7) Revised zones 14 thru 24 to incorporate MCR. 1393 5. Sheet 2.16 (GC8) Completely redrawn to incorporate MCR. 1393 6. Sheet 2.44 (GP3) Corrected wiring of the C29-2A50 and C29-1A24 units in zone 8 and 9.		

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SOURCE DATA

DRAWING NO. AND E.O.'s	REV	TITLE
MCR A 839	1	Provision of Remote Control Capability for S/C 8 Systems.
G14-981117	A	A14-074 Functional Unit Schematic Electrical Load Bank.
G14-981119	NC	A14-087 Functional Unit Schematic.
G14-981122	A	C14-205 Functional Unit Schematic Power Filter & Distribution Unit.
G14-981123	B	Functional Unit Schematic C14-211.
G14-981124	A	Functional Unit Schematic C14-212
G14-981125	A	Functional Integrated Unit Schematic C14-213.
G14-981126	NC	C14-451 Functional Unit Schematic.
G14-981127	A	C14-442 Functional Unit Schematic RF Systems Checkout Equipment.
G14-981128	NC	C14-484 Functional Unit Schematic.
G14-981129	NC	C14-599 Functional Unit System Schematic RF Switch Console.
G14-981131	NC	C14-418 Functional Unit Schematic.
G14-981132	NC	Functional Unit Schematic Water Glycol Service Set.
G14-981133	NC	S14-053 Functional Unit Schematic Water Glycol Trim Control Set.
G14-981138	A	C14-232 Functional Unit Schematic Miniaturized Data Interleaving System.
G14-981225	NC	S14-057 Functional Unit Schematic RCS Oxidizer Servicing Unit.
G14-981226	NC	S14-062 Functional Unit Schematic Helium Ready Storage Container.

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SOURCE DATA

DRAWING NO. AND E.O.'s	REV	TITLE
G14-981139	A	C14-240 Functional Unit Schematic Serricing Equipment ACE - S/C Adapter.
G14-981140	NC	C14-262 Functional Unit Schematic ACE Power Supply - Apollo.
G14-981143	NC	GSE Functional Unit Schematic Helium Transfer Unit S14-009.
G14-981144	NC	S14-022 Functional Unit Schematic Helium Booster Unit.
G14-981148	NC	Functional Integrated Unit Schematic Oxidizer Ready Storage Unit (S14-059).
G14-981152	NC	A14-034 Functional Unit Schematic ECS Pressure Distribution Test Set.
G14-981160	NC	A14-139 Functional Unit Schematic Pyrotechnic Initiators Substitute Unit.
G14-981162	NC	C14-480 Functional Unit Schematic Initiators Stimuli Unit.
G14-981170	NC	C14-200 Functional Unit Schematic Carry-on Recur Baseplate Unit.
G14-981171	NC	C14-201 Functional Unit Schematic Carry-on Baseplate Unit.
G14-981172	NC	C14-210 Function Unit Schematic Carry-on PCM System.
G14-981173	NC	C14-220 Functional Unit Schematic Carry-on Command Stimuli System
G14-981174	NC	C14-231 Functional Unit Schematic External BTCS.
G14-981219	NC	S14-002 Functional Unit Schematic Oxidizer Transfer and Conditioning Unit.
G14-984292	A	Configuration Arrangement Schematic GSE, AFR 8, Unmanned.

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14-900708	VOL 2
	SCALE	REV "C"		SHEET 2.5.1

SOURCE DATA

DRAWING NO. AND E.O.'s	REV	TITLE
G16-824480	A	Adapter Set-Reaction Control System, Assembly of.
G16-824499	NC	Adapter Set Assembly - Reaction Control System.
G16-850483	NC	Patch Board, S/C GRD PWR SUPPLY (C14-418)
G16-850490	NC	Panel Assembly - Patch Board
G16-981035	NC	Schematic Diagram Alter Ground Power Modification (Kit).
G16-981042	NC	Schematic Diagram - Filter, Ground Power.
G16-985091	NC	Schematic Diagram - Pulse Regenerator, Line Driver.
G16-985216 M280933	B	Schematic Diagram - DC Distribution and Control Panel (C14-418).
G16-985218	B	Schematic Diagram - Pwr Control Panel (C14-418).
G16-985230	B	Interconnecting Diagram - S/C GRD PWR Supply (C14-418).
G16-985340 M280912	NC	Schematic Diagram - Filter Ground Power.
G16-985854	NC	Schematic - Control Unit Fluid Distri- bution System.
G17-981505	B	Schematic Diagram Freon Pressuriza- tion Unit.
G17-985409 M301254	A	Schematic Diagram - Electrical, Propulsion Sys. Fluid Checkout Unit.
V14-900108 Vol. 2	A	Functional Integrated System Schematics
V14-900108 Vol. 3	A	Functional Integrated System Schematics.

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14 - 900708	VOL 2
	SCALE	REV "C"		SHEET 2.5.2

SOURCE DATA

DRAWING NO. AND E.O.'s	REV	TITLE
V16-420142	C	Harness Assembly - MCP
V16-942105	A	Wiring Diagram - SCS Crew Compartment.
V16-945010	D	Schematic Diagram RCRB No. 1.
V16-945011	F	Schematic Diagram RCRB No. 2
V17-450321 M209951 M284850	D	Wiring Diagram - PSR Distribution Electrical PWR.
V17-942105	A	Wiring Diagram - Elect Cont.
847317	NC	Schematic - Control Panel (AIResearch).
847346	B	Wiring Diagram - Control Panel (AIResearch)
847514	A	Schematic - Power Panel (AIResearch).
847515	NC	Schematic - Circuit Breaker Panel (AIResearch).
847516	NC	Schematic - Instrument Panel (AIResearch).
847518	NC	Schematic - Control Panel (AIResearch).
847520	A	Schematic - Transformer Assy. (AIResearch)
847544	A	Schematic - Relay Assembly (AIResearch).
66844-401	C	Schematic - Power Supply (Autonetics).
72412-305	B	Schematic - Simulator Group (Autonetics).
1900497	D	Apollo IMU Portable Temperature Con- troller Schematic (MIT).
1900650	B	Schematic Diagram Battery Power Pack (AC Spark Plug).
1902138	B	Schematic Diagram Battery Power Pack (AC Spark Plug).

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14-900708	VOL 2
	SCALE	REV "C"	SHEET 2.5.3	

SOURCE DATA

DRAWING NO. AND E. O.'s	REV	TITLE
1902492	C	Schematic Diagram Electrical Adapter Module, PSA, (Block I, Series 100) (AC Spark Plug).
1902493	D	Schematic Diagram Electrical Adapter Module, PSA (Block I Series 0 & 50) (AC Spark Plug).
GSSK 1645		Interconnecting Diagram - Remote Control Equipment (AiResearch).
GSSK 1690		Block Diagram - W/G Trim Control Set (AiResearch).
8G14-984016	NC	Schematic Diagram - Fluid Distribution System.
8G14-984017	NC	Schematic Diagram - Fluid Distribution System.
8G14-984018	NC	Schematic Diagram - Fluid Distribution System.
8G14-984019	NC	Schematic Diagram - Fluid Distribution System.
G17-982129	B	Interconnecting Diagram - Heater Power Supply
G17-982130	A	Schematic Diagram - Fuel Cell No. 1, 2, 3, Heater Power Supply
G17-982131	NC	Schematic Diagram - Cryogenic Tank, Heater Power Supply
G17-982132	NC	Schematic Diagram - Power Control Panel Heater Power Supply
G14-888085	NC	Distribution Box Assy No.5 F.D.S. (Mod Kit)
G14-888086	NC	Distribution Box Assy No.6 F.D.S. (Mod Kit)

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14 - 900708	VOL 2
	SCALE	REV "C"		SHEET 2.5.4

SOURCE DATA

DRAWING NO. AND E.O.'s	REV	TITLE
G14-984800	NC	Schematic Diagram - Valve Box Assy Pressurization - SPS Engine Valve Actuation System
G14-984911	A	Interconnecting Diagram - F.D.S. MSC
G14-984921	A	Schematic Diagram - Oxidizer Valve Box
G14-984922	A	Schematic Diagram - Fuel Valve Box
G14-984924	NC	Schematic Diagram - Valve Rack Hg Fluid Dist. Sys
G14-984936	A	Schematic Diagram - Junction Box No. 5 L02 F.D.S.
G14-984937	A	Schematic Diagram - Junction Box No. 6 LH2 Fluid Dist. Sys
G14-984938	A	Schematic Diagram - LH2 Valve Box
G14-984939	A	Schematic Diagram - L02 Valve Box
G14-984942	A	Schematic Diagram - Hg Valve Box
G14-984949	A	Schematic Diagram - Liquid Oxygen Valve Box
G14-984950	A	Schematic Diagram - LH2 Valve Box
G14-984959	A	Schematic Diagram - Junction Boxes 1 & 3 C/M Fuel & Oxidizer F.D.S.
G14-984961	A	Schematic Diagram - Junction Boxes 2 & 4 S/M Fuel & Oxidized F.D.S.
G14-984963	NC	Schematic Diagram - Valve Box, RCS S/M Oxidizer & Fuel Cont. Sys

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14 - 900708	VOL 2
	SCALE	REV "C"		SHEET 2.5.5

SOURCE DATA

DRAWING NO. AND E. O. 's	REV	TITLE
G14-984964	NC	Schematic Diagram - Valve Box, RCS S/M Oxidizer & Fuel Cont. Sys
G14-984968	NC	Schematic Diagram - Valve Box, RCS C/M Oxidizer & Fuel Control
G14-984970	A	Schematic Diagram - Valve Box, RCS S/M Oxidizer & Fuel Ullage
G14-984971	A	Schematic Diagram - Valve Box, RCS C/M Oxidizer & Fuel Ullage
G14-985854	NC	Schematic - Control Unit Fluid Distribution Sys
8G14-984055	NC	Electrical Schematic - Temperature Control Cabinet F.D.S.
8G14-984059	NC	Electrical Schematic - Temperature Control System F.D.S.
8G14-984065	NC	Electrical Schematic - Circulation Valve Control Cabinet F.D.S.
8G14-984066	NC	Electrical Schematic - ECS Circulation System F.D.S.
F01-200108	A	Field Site Installation - Fluid Distribution Sys Test Prep Area & Chamber A
F01-200109	A	Field Site Installation - Fluid Distribution Sys Test Prep Area & Chamber A
F01-200110	A	Field Site Installation - Fluid Distribution Sys Test Prep Area & Chamber A
F01-200111	A	Field Site Installation - Fluid Distribution Sys Test Prep Area & Chamber A

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14 - 900708	VOL 2
	SCALE	REV "C"	SHEET 2.5.6	

SOURCE DATA

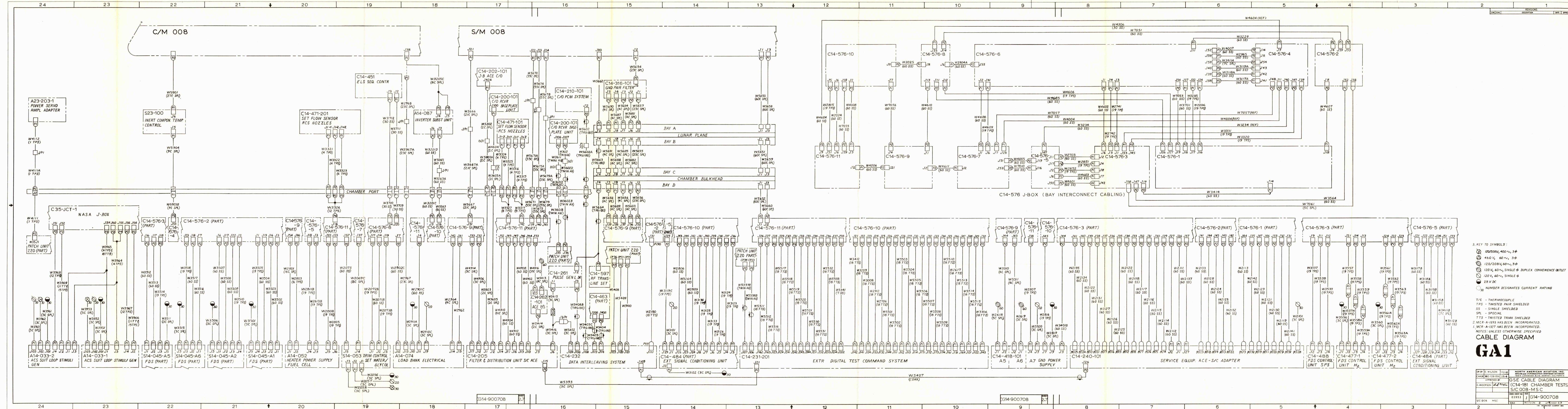
DRAWING NO. AND E.O.'s	REV	TITLE
F01-200127	NC	Field Site Instl - Chamber Below Elevation 0-Chamber Houston, Texas
F01-200130	A	Interconnecting Diagram - Fluid Distribution System
F01-200133	NC	Field Site Installation - Chamber A Thermal Vacuum Test, Permanent Lines
F01-200135	NC	Field Site Installation - Electrical Equipment, F.D.S. Bldg.32 Houston, Texas
V14-975061	NC	Schematic Diagram - Spacecraft 008 R & D Instrumentation, External
V16-975061	C	Schematic Diagram - R&D Instrumentation, CM.
V16-975062	D	Schematic Diagram - R&D Instrumentation, Crew Comp't.
V17-975101	E	Schematic Diagram - R&D Instrumentation, SM.

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14 - 900708	VOL 2
	SCALE	REV "C"		SHEET 2.5.7

NOTES

1. UNDERLINED LETTERS DENOTE LOWER CASE.
2. ALL RELAY CONTACTS ARE SHOWN IN THE DE-ENERGIZED OR UNLATCHED POSITION.
3. DIAGRAMS DEPICT HOUSTON CHECKOUT CONFIGURATION ONLY.
4. THIS DRAWING REQUIRES NO IDENTIFICATION AND TRACEABILITY REQUIREMENTS.
5. ALL SYMBOLOGY UTILIZES MIL-STD-15-1 SUPPLEMENTED BY B14-900005.
6. FOR SCHEMATIC COVERAGE OF OTHER BOILERPLATES AND AIRFRAMES REFER TO G14-900000.

SC-008 HOUSTON	CODE IDENT NO. 03953	SIZE A	G14-900708
	SCALE	REV. "B"	



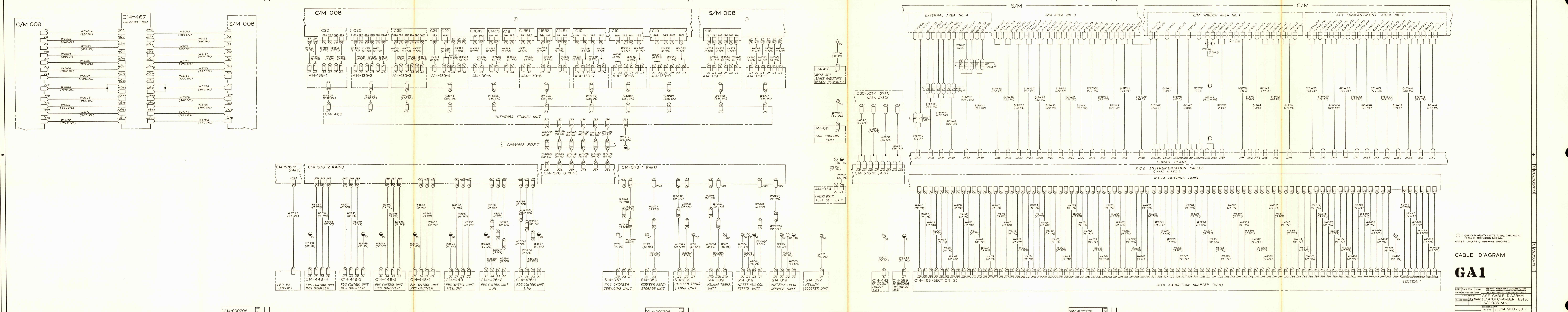
3. KEY TO SYMBOLS:
- ⊗ 20/20BV, 400~3, 3#
 - ⊙ 480 V, 60~3, 3#
 - ⊕ 120 V, 208V, 60~3, 3#
 - ⊕ 120 V, 60~3, SINGLE # DUPLEX CONVENIENCE OUTLET
 - ⊕ 120 V, 60~3, SINGLE #
 - 30 NUMBER DESIGNATES CURRENT RATING

- T/C - THERMOCOUPLE
 T/S - TWISTED PAIR SHIELDED
 SS - SINGLE SHIELDED
 SPL - SPECIAL
 T/S - TWISTED TRIAK SHIELDED
 2 MCR-A-1919 HAS BEEN INCORPORATED.
 1 MCR-A-1327 HAS BEEN INCORPORATED.
 NOTES: UNLESS OTHERWISE SPECIFIED

CABLE DIAGRAM

GA1

DR: E. WILSON	DATE: 12-66	NORTH AMERICAN AVIATION, INC.
CHK: W. WILSON	DATE: 12-66	10000 WILSON AVENUE, GAITHERSBURG, MARYLAND
APPROVED BY: D. ANDERSON		GSE CABLE DIAGRAM
		(C14-181 CHAMBER TESTS)
		S/C 008-MSC
REV: 008	MSC	03953 J G14-900708
		DATE: 12-66

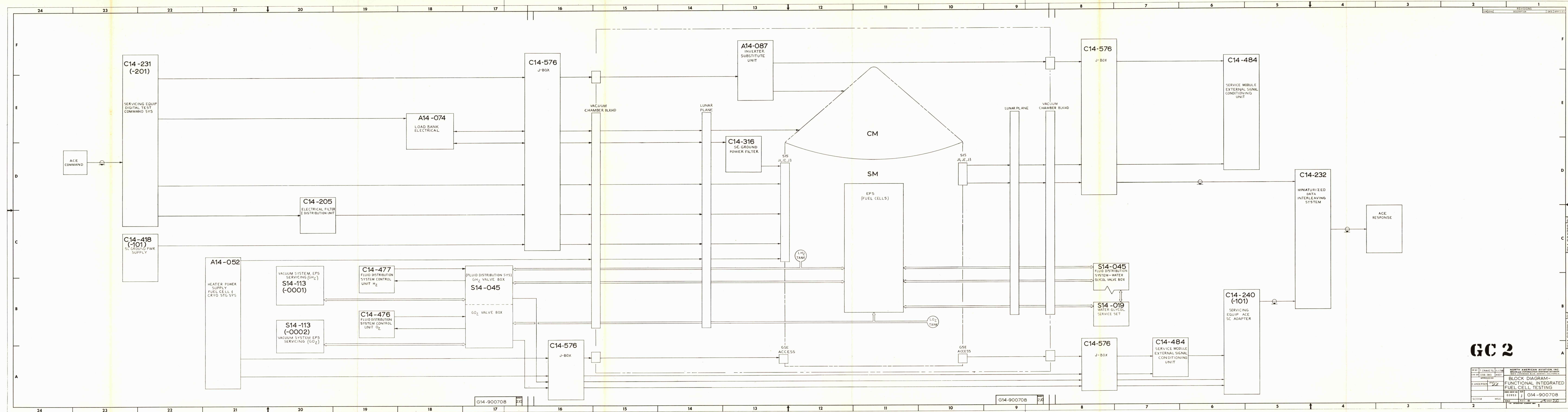


① SEE CABLING CONNECTS TO SVC CABLING IN PLACE OF THE SQUARE SYMBOL.
 NOTES: UNLESS OTHERWISE SPECIFIED.

CABLE DIAGRAM

GA1

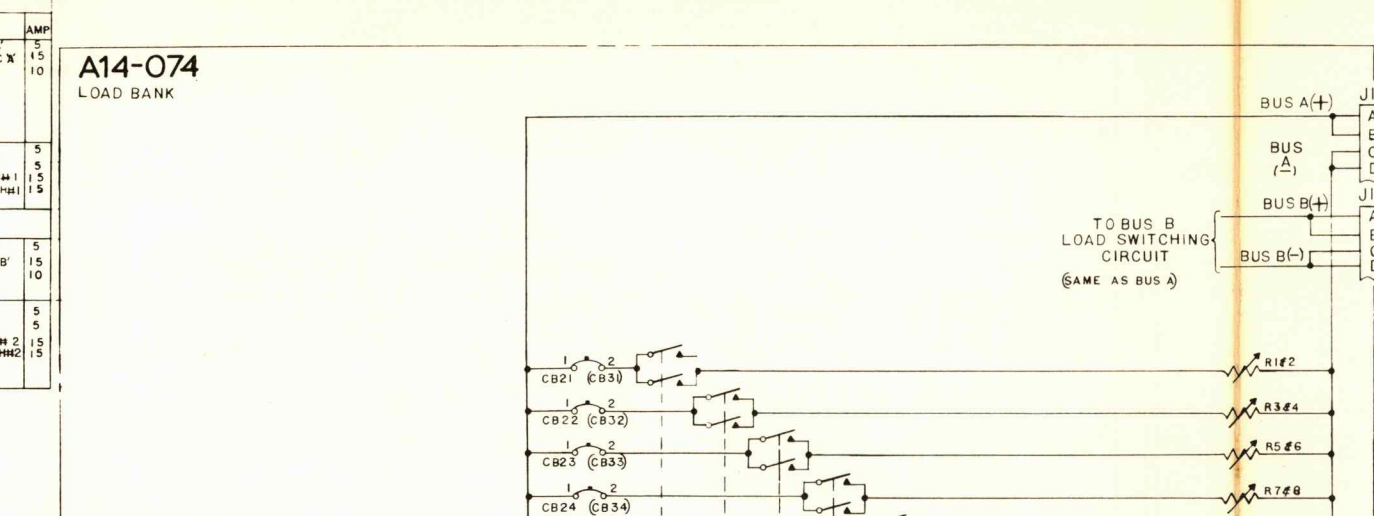
APPROVED BY	DATE	REVISION	DESCRIPTION
W. S. SCH	10-66	1	NORTH AMERICAN AVIATION, INC.
W. S. SCH	10-66	2	REVISION 2
W. S. SCH	10-66	3	REVISION 3
W. S. SCH	10-66	4	REVISION 4
W. S. SCH	10-66	5	REVISION 5
W. S. SCH	10-66	6	REVISION 6
W. S. SCH	10-66	7	REVISION 7
W. S. SCH	10-66	8	REVISION 8
W. S. SCH	10-66	9	REVISION 9
W. S. SCH	10-66	10	REVISION 10
W. S. SCH	10-66	11	REVISION 11
W. S. SCH	10-66	12	REVISION 12
W. S. SCH	10-66	13	REVISION 13
W. S. SCH	10-66	14	REVISION 14
W. S. SCH	10-66	15	REVISION 15
W. S. SCH	10-66	16	REVISION 16
W. S. SCH	10-66	17	REVISION 17
W. S. SCH	10-66	18	REVISION 18
W. S. SCH	10-66	19	REVISION 19
W. S. SCH	10-66	20	REVISION 20
W. S. SCH	10-66	21	REVISION 21
W. S. SCH	10-66	22	REVISION 22
W. S. SCH	10-66	23	REVISION 23
W. S. SCH	10-66	24	REVISION 24
W. S. SCH	10-66	25	REVISION 25
W. S. SCH	10-66	26	REVISION 26
W. S. SCH	10-66	27	REVISION 27
W. S. SCH	10-66	28	REVISION 28
W. S. SCH	10-66	29	REVISION 29
W. S. SCH	10-66	30	REVISION 30
W. S. SCH	10-66	31	REVISION 31
W. S. SCH	10-66	32	REVISION 32
W. S. SCH	10-66	33	REVISION 33
W. S. SCH	10-66	34	REVISION 34
W. S. SCH	10-66	35	REVISION 35
W. S. SCH	10-66	36	REVISION 36
W. S. SCH	10-66	37	REVISION 37
W. S. SCH	10-66	38	REVISION 38
W. S. SCH	10-66	39	REVISION 39
W. S. SCH	10-66	40	REVISION 40
W. S. SCH	10-66	41	REVISION 41
W. S. SCH	10-66	42	REVISION 42
W. S. SCH	10-66	43	REVISION 43
W. S. SCH	10-66	44	REVISION 44
W. S. SCH	10-66	45	REVISION 45
W. S. SCH	10-66	46	REVISION 46
W. S. SCH	10-66	47	REVISION 47
W. S. SCH	10-66	48	REVISION 48
W. S. SCH	10-66	49	REVISION 49
W. S. SCH	10-66	50	REVISION 50
W. S. SCH	10-66	51	REVISION 51
W. S. SCH	10-66	52	REVISION 52
W. S. SCH	10-66	53	REVISION 53



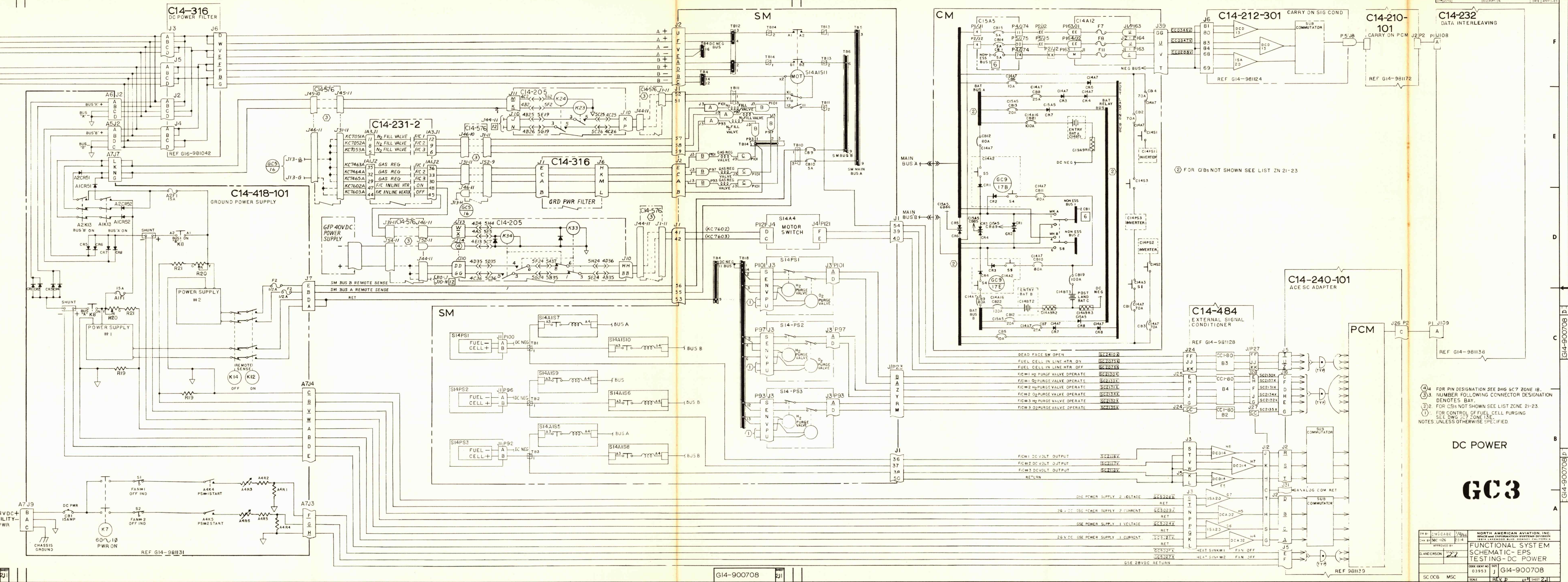
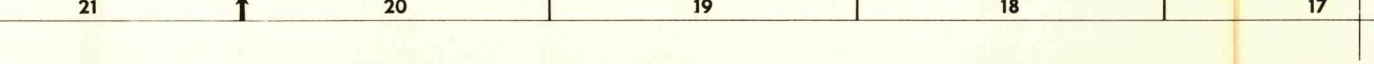
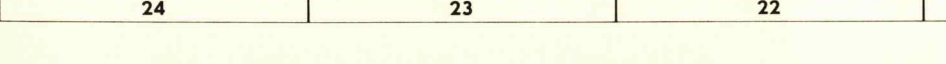
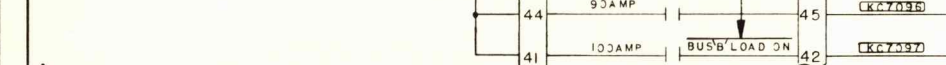
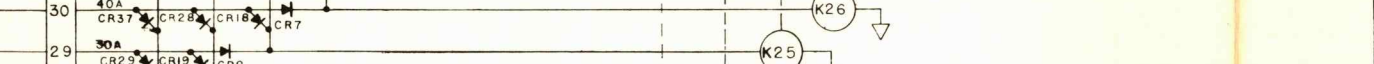
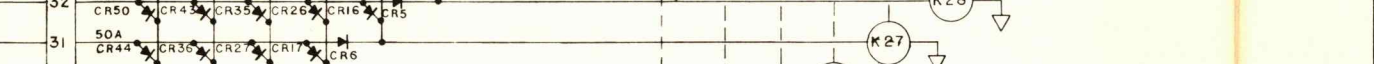
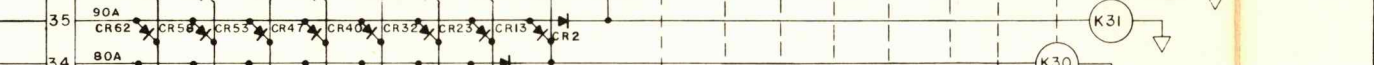
GC 2

DRN	T. CRAVEY	DATE	11/18/64	NORTH AMERICAN AVIATION, INC. SPACE AND AERONAUTICS DIVISION 1000 AVIATION BLVD. WILSON, CALIF.	
CHKD BY	C. D. 380	4801			
APPROVED BY	D. ANDERSON	DATE	11/24/64	BLOCK DIAGRAM - FUNCTIONAL INTEGRATED FUEL CELL TESTING	
DRN	03953	J	G14-900708		
SCALE	1:1	REV.	B	DATE	11/24/64

MAIN BUS 'X'		MAIN BUS 'Y'		BATTERY RELAY BUS		BATTERY BUS 'X'		
NO.	NOMENCLATURE	AMP.	NO.	NOMENCLATURE	AMP.	NO.	NOMENCLATURE	
1	ESS POS. HO. HTR	5	1	INVERTER CONT. #3	10	1	MA EVENT SEC. CONT. ARM 'W'	5
2	CRYSYS HO. TANK HTR	5	2	INVERTER CONT. #2	10	2	MA EVENT SEC. CONT. LOGIC 'W'	5
3	ESS NEG. HO. HTR	5	3	INVERTER CONT. #1	10	3	BATT. CHARGE	5
4	CRYSYS HO. TANK HTR	5	4	INVERTER CONT. #1	10	4		
5	ESS NEG. HO. HTR	5	5	ESS PRESS. REDUCER	10	5		
6	CRYSYS HO. TANK HTR	5	6	ESS PRESS. REDUCER	10	6		
7	ESS POS. HO. HTR	5	7	ESS PRESS. REDUCER	10	7		
8	CRYSYS HO. TANK HTR	5	8	ESS PRESS. REDUCER	10	8		
9	ESS NEG. HO. HTR	5	9	ESS PRESS. REDUCER	10	9		
10	CRYSYS HO. TANK HTR	5	10	ESS PRESS. REDUCER	10	10		
11	ESS POS. HO. HTR	5	11	ESS PRESS. REDUCER	10	11		
12	CRYSYS HO. TANK HTR	5	12	ESS PRESS. REDUCER	10	12		
13	ESS NEG. HO. HTR	5	13	ESS PRESS. REDUCER	10	13		
14	CRYSYS HO. TANK HTR	5	14	ESS PRESS. REDUCER	10	14		
15	ESS POS. HO. HTR	5	15	ESS PRESS. REDUCER	10	15		
16	CRYSYS HO. TANK HTR	5	16	ESS PRESS. REDUCER	10	16		
17	ESS NEG. HO. HTR	5	17	ESS PRESS. REDUCER	10	17		
18	CRYSYS HO. TANK HTR	5	18	ESS PRESS. REDUCER	10	18		
19	ESS POS. HO. HTR	5	19	ESS PRESS. REDUCER	10	19		
20	CRYSYS HO. TANK HTR	5	20	ESS PRESS. REDUCER	10	20		
21	ESS NEG. HO. HTR	5	21	ESS PRESS. REDUCER	10	21		
22	CRYSYS HO. TANK HTR	5	22	ESS PRESS. REDUCER	10	22		
23	ESS POS. HO. HTR	5	23	ESS PRESS. REDUCER	10	23		
24	CRYSYS HO. TANK HTR	5	24	ESS PRESS. REDUCER	10	24		



C/B'S COMMON TO BOTH MAIN BUS 'X' AND 'Y'	
NO.	NOMENCLATURE
1	ESS POS. HO. HTR
2	CRYSYS HO. TANK HTR
3	ESS NEG. HO. HTR
4	CRYSYS HO. TANK HTR
5	ESS POS. HO. HTR
6	CRYSYS HO. TANK HTR
7	ESS NEG. HO. HTR
8	CRYSYS HO. TANK HTR
9	ESS POS. HO. HTR
10	CRYSYS HO. TANK HTR
11	ESS NEG. HO. HTR
12	CRYSYS HO. TANK HTR
13	ESS POS. HO. HTR
14	CRYSYS HO. TANK HTR
15	ESS NEG. HO. HTR
16	CRYSYS HO. TANK HTR
17	ESS POS. HO. HTR
18	CRYSYS HO. TANK HTR
19	ESS NEG. HO. HTR
20	CRYSYS HO. TANK HTR
21	ESS POS. HO. HTR
22	CRYSYS HO. TANK HTR
23	ESS NEG. HO. HTR
24	CRYSYS HO. TANK HTR



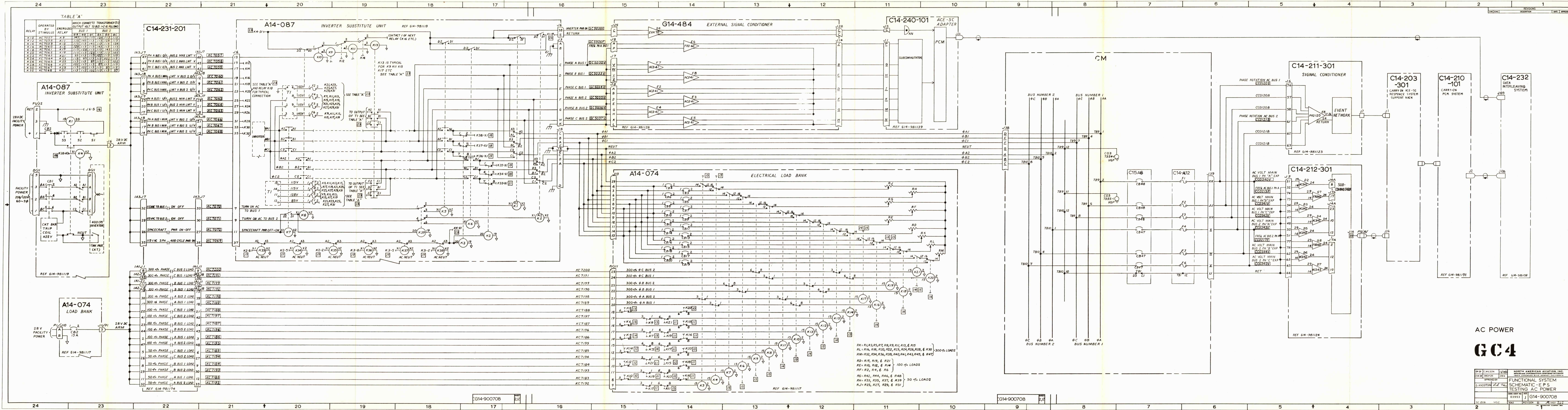
④4 FOR PIN DESIGNATION SEE DWG 6C7 ZONE 1B.
 ③3 NUMBER FOLLOWING CONNECTOR DESIGNATION DENOTES BAY.
 ②2 FOR CBS NOT SHOWN SEE LIST ZN 21-23.
 ①1 FOR CONTROL OF FUEL CELL PURGING SEE DWG 7 ZONE 1B.
 NOTES: UNLESS OTHERWISE SPECIFIED.

DC POWER

GC3

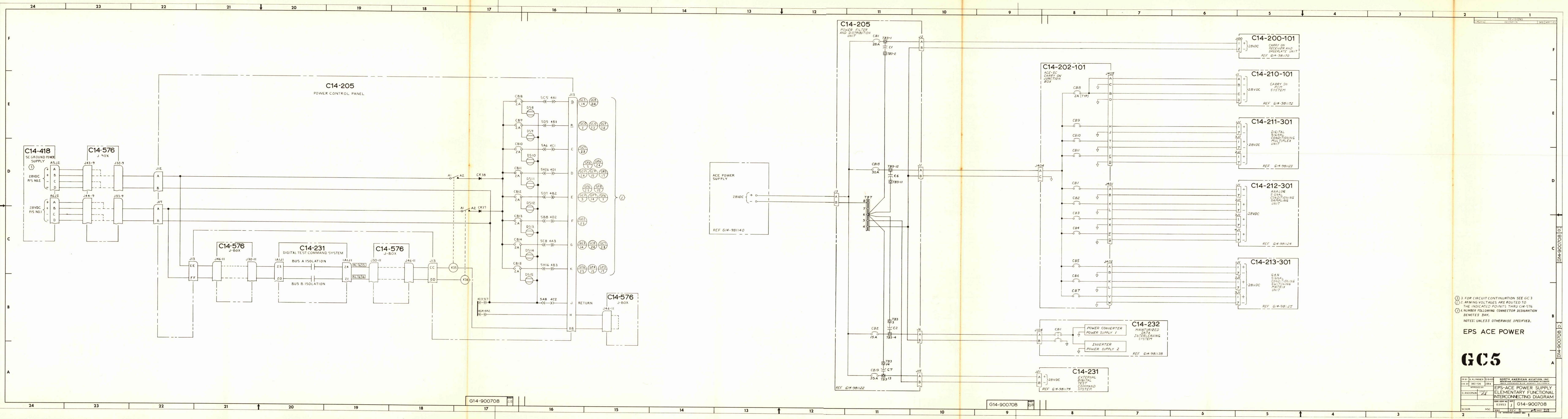
26VDC	1.5A	DC POWER SUPPLY 1 VOLTAGE	6630237
26VDC	1.5A	DC POWER SUPPLY 1 CURRENT	6630237
26VDC	1.5A	DC POWER SUPPLY 2 VOLTAGE	6630237
26VDC	1.5A	DC POWER SUPPLY 2 CURRENT	6630237
26VDC	1.5A	DC POWER SUPPLY 3 VOLTAGE	6630237
26VDC	1.5A	DC POWER SUPPLY 3 CURRENT	6630237
26VDC	1.5A	DC POWER SUPPLY 4 VOLTAGE	6630237
26VDC	1.5A	DC POWER SUPPLY 4 CURRENT	6630237

REV. D 241



AC POWER
GC4

DATE: 10/15/54
DRAWN: J. J. JONES
CHECKED: J. J. JONES
APPROVED: J. J. JONES
D. ANDERSON
NORTH AMERICAN AVIATION, INC.
COMMUNICATIONS DIVISION
MEMPHIS, TENNESSEE
FUNCTIONAL SYSTEM
SCHEMATIC - E P S
TESTING AC POWER
03953 J G14-90070B
REV. 1



③ 3. FOR CIRCUIT CONTINUATION SEE GC 3
 ② 2. ARMING VOLTAGES ARE ROUTED TO THE INDICATED POINTS THRU C14-576
 ① 1. NUMBER FOLLOWING CONNECTOR DESIGNATION DENOTES BAY.
 NOTES: UNLESS OTHERWISE SPECIFIED.

EPS ACE POWER

GC5

DR BY	K. KLUNKER	23-40	NORTH AMERICAN AVIATION, INC.
CHK BY	380-126	23-4	WORLD WIDE COMMUNICATIONS DIVISION
DESIGNED BY			EPS-ACE POWER SUPPLY
DESIGNED BY	D. ANDERSON	7/77	ELEMENTARY FUNCTIONAL INTERCONNECTING DIAGRAM
DATE	03/93	J	G14-900708
SCALE			REV. D
NO. SHEETS			2/3

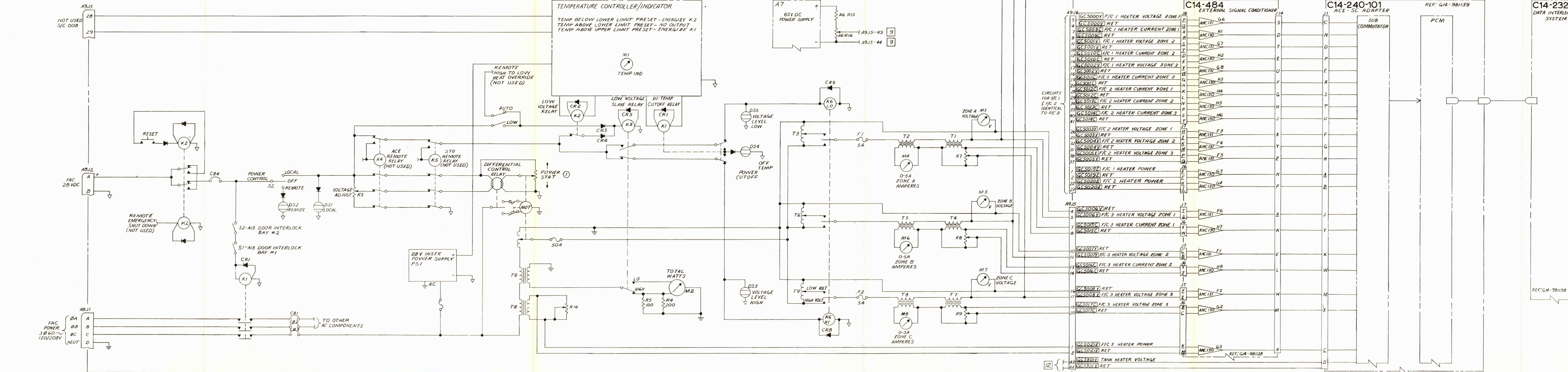
G14-900708

G14-900708

G14-900708 D

A14-052
HEATER POWER SUPPLY
FUEL CELL-CRY STG SYS

TEMPERATURE CONTROLLER/INDICATOR
TEMP BELOW LOWER LIMIT PRESET - ENERGIZE K2
TEMP ABOVE LOWER LIMIT PRESET - NO OUTPUT
TEMP ABOVE UPPER LIMIT PRESET - ENERGIZE K1



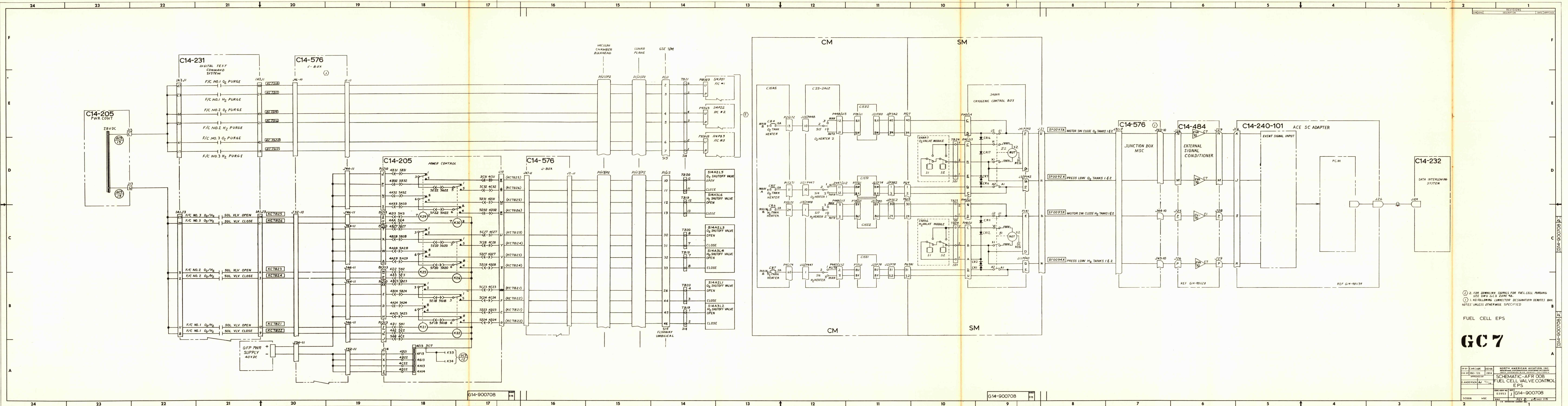
(1) VOLTAGE CONTROL SYSTEM-ADJUSTMENT OF R3 CONTROLS. DIFFERENTIAL CONTROL RELAY ACTUATES AND DRIVES TRANSFORMER CONTROL MOTOR WHEN CONTROL RESISTANCE DOES NOT MATCH POWERSTAT RESISTANCE. TRANSFORMER CONTROL MOTOR VARIES OUTPUT VOLTAGE AND CHANGES POWERSTAT RESISTANCE UNTIL DIFFERENTIAL CONTROL RELAY NULLS. OVERRUN IS PREVENTED BY TRANSFORMER CONTROL MOTOR LIMIT SWITCHES.
NOTES: UNLESS OTHERWISE SPECIFIED.

FUEL CELL TESTING

GC6

REV	DATE	BY	APP'D	DESCRIPTION
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

SCHEMATIC DIAGRAM - FUEL CELL TESTING



② Z FOR DOWNLINK SIGNALS FOR FUEL CELL PURGING
 SEE DWG. G14-2496-90.
 ① L NO FOLLOWING CONNECTOR DESIGNATION DENOTES BAY.
 NOTES: UNLESS OTHERWISE SPECIFIED

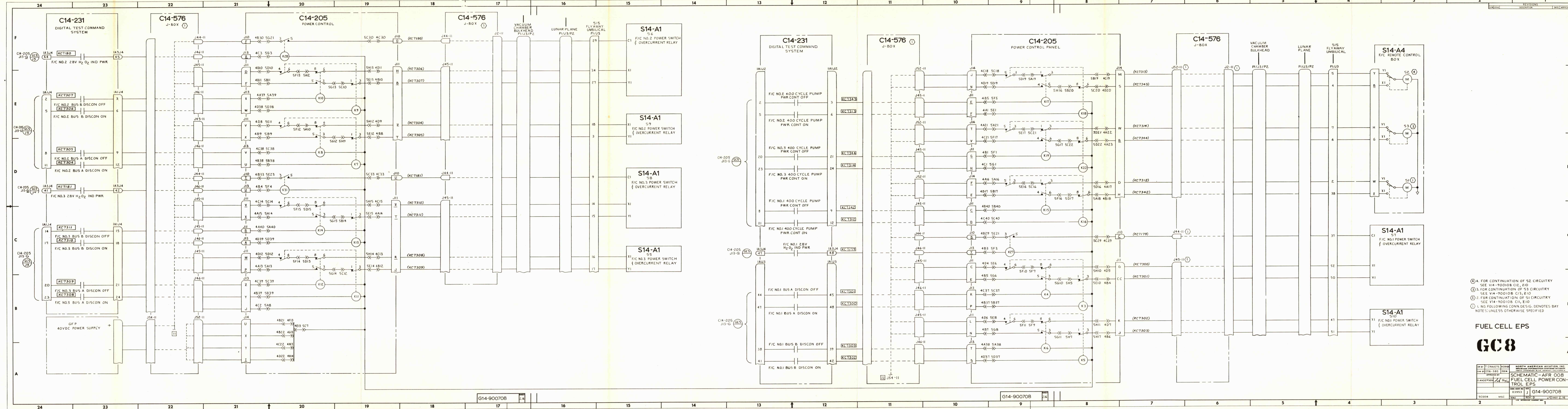
FUEL CELL EFS

GC 7

DRN BY	JMCARE	DRG NO.	030166
CHK BY	WJUN	REV	030166
APPROVED BY	D. ANDERSON	DATE	11/1/68
SCHEMATIC-AFR OOB FUEL CELL VALVE CONTROL EFS			
DATE CHG. NO.	03953	REV	J
SCALE	1:1	DATE	11/1/68
SCOOP	MSC	FILE NO.	G14-900708
14-00000-01			

G14-900708

G14-900708



④ FOR CONTINUATION OF 52 CIRCUITRY
SEE V14-900108 C12, E10
③ FOR CONTINUATION OF 53 CIRCUITRY
SEE V14-900108 C13, E10
② FOR CONTINUATION OF 51 CIRCUITRY
SEE V14-900108 C11, E10
① I. NO. FOLLOWING CONN. DESIG. DENOTES BAY
NOTE: UNLESS OTHERWISE SPECIFIED

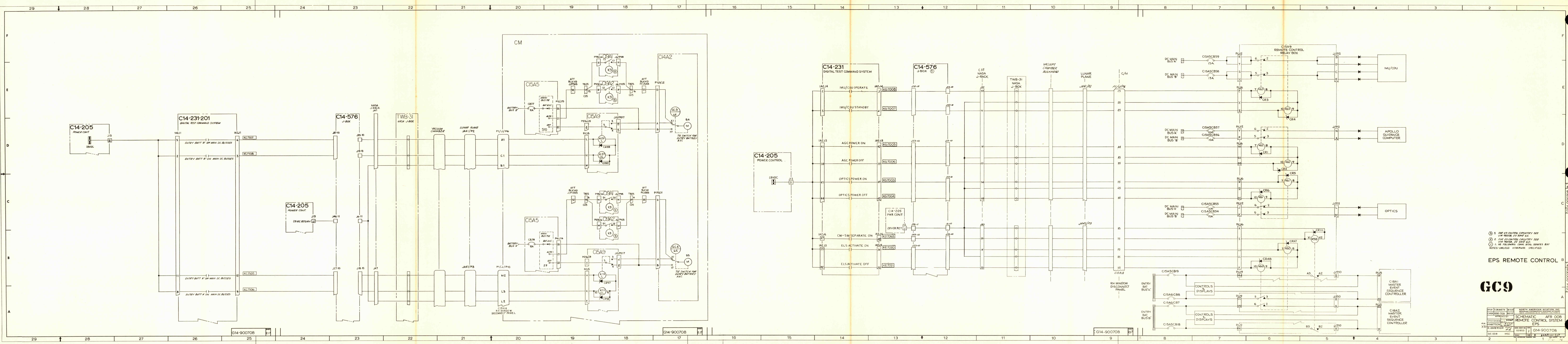
FUEL CELL EPS
GC8

DATE: 11/14/68	BY: T. CRAVETS	NO. 1	REV. 1	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 2	REV. 2	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 3	REV. 3	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 4	REV. 4	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 5	REV. 5	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 6	REV. 6	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 7	REV. 7	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 8	REV. 8	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 9	REV. 9	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 10	REV. 10	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 11	REV. 11	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 12	REV. 12	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 13	REV. 13	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 14	REV. 14	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 15	REV. 15	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 16	REV. 16	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 17	REV. 17	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 18	REV. 18	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 19	REV. 19	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 20	REV. 20	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 21	REV. 21	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 22	REV. 22	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 23	REV. 23	DATE: 11/14/68
DATE: 11/14/68	BY: T. CRAVETS	NO. 24	REV. 24	DATE: 11/14/68

G14-900708

G14-900708

G14-900708

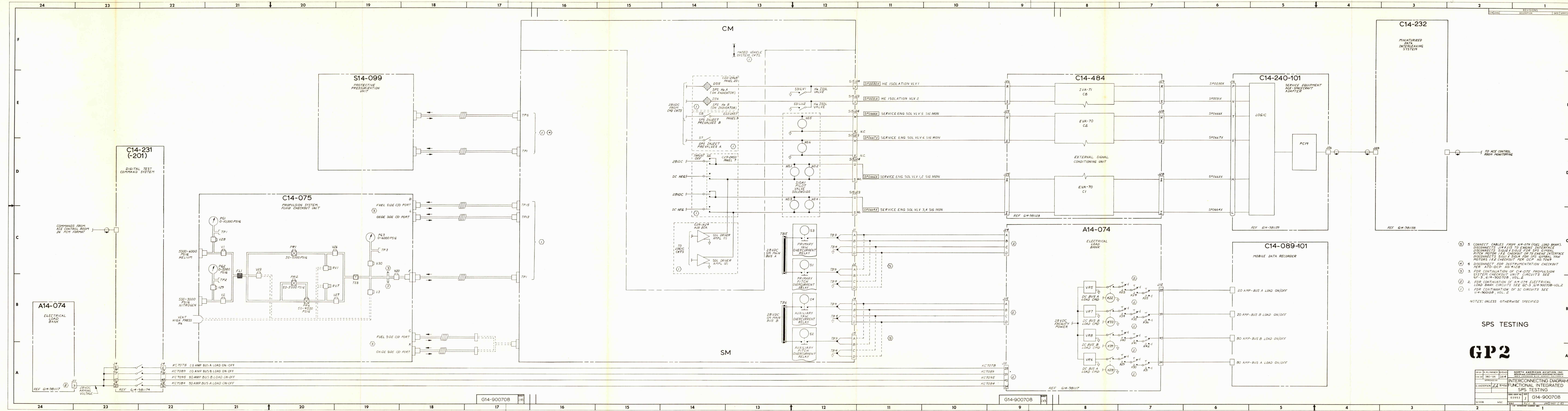


- ① FOR #3 CONTROL CIRCUITRY SEE V14-70008, 23 SIDE 44.
- ② FOR #3 CONTROL CIRCUITRY SEE V14-70008, 22 SIDE 60.
- ③ I. NO FOLLOWING CONNECTION DENOTES BAY NOTES UNLESS OTHERWISE SPECIFIED.

EPS REMOTE CONTROL

GC9

DRY	TERRAKETS	B-84	NORTH AMERICAN AVIATION, INC.
DRY	CHAMBERLAIN	B-84	12000 WEST 14TH AVENUE, DENVER, COLORADO 80202
DRY	STEVENS	B-84	12000 WEST 14TH AVENUE, DENVER, COLORADO 80202
DRY	HAMPTON	B-84	12000 WEST 14TH AVENUE, DENVER, COLORADO 80202
DRY	ANDERSON	B-84	12000 WEST 14TH AVENUE, DENVER, COLORADO 80202
SIC 008	MSC	105	REV B
G14-900708			11
G14-900708			2

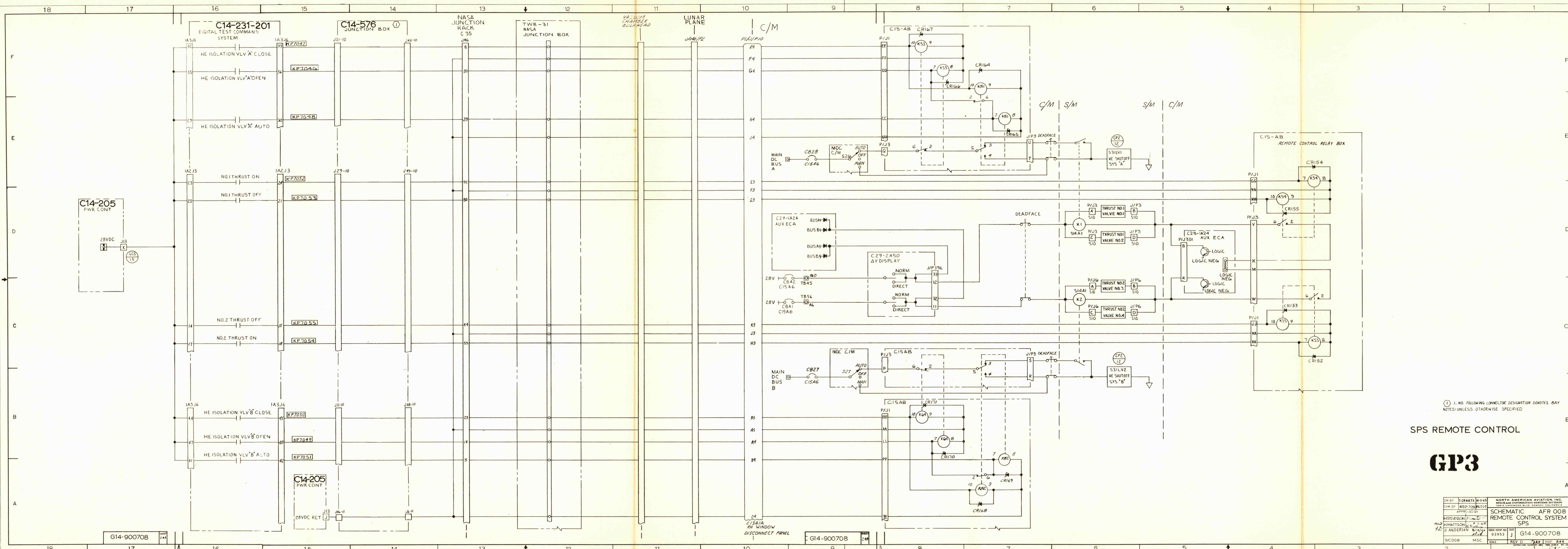


- 5. CONNECT CABLES FROM A14-074 (ELECTRICAL LOAD BANK). DISCONNECTS J14-115 TO ENGINE INTERFACE. DISCONNECTS S10A1 FSDS FOR SPS GIMBAL PITCH MOTOR 1 & 2 CHECKOUT OR TO ENGINE INTERFACE. DISCONNECTS S10A1 FSDS FOR SPS GIMBAL YAW MOTORS 1 & 2 CHECKOUT PER OCP-407049.
- 4. DISCONNECT FOR INSTRUMENTATION CHECKOUT PER ATO-OCP-407049.
- 3. FOR CONTINUATION OF C14-075 PROPULSION SYSTEM CHECKOUT UNIT CIRCUITS SEE SF-3 G14-900708, VOL. 2.
- 2. FOR CONTINUATION OF A14-074 ELECTRICAL LOAD BANK CIRCUITS SEE GC-3 G14-900708-VOL. 2.
- 1. FOR CONTINUATION OF SC CIRCUITS SEE V14-900108, VOL. 2.

NOTES: UNLESS OTHERWISE SPECIFIED

SPS TESTING
GP2

REV. 1	KLINBERG	2814	2814
REV. 2	ANDERSON	2814	2814
REV. 3	ANDERSON	2814	2814
REV. 4	ANDERSON	2814	2814
REV. 5	ANDERSON	2814	2814
REV. 6	ANDERSON	2814	2814
REV. 7	ANDERSON	2814	2814
REV. 8	ANDERSON	2814	2814
REV. 9	ANDERSON	2814	2814
REV. 10	ANDERSON	2814	2814
REV. 11	ANDERSON	2814	2814
REV. 12	ANDERSON	2814	2814
REV. 13	ANDERSON	2814	2814
REV. 14	ANDERSON	2814	2814
REV. 15	ANDERSON	2814	2814
REV. 16	ANDERSON	2814	2814
REV. 17	ANDERSON	2814	2814
REV. 18	ANDERSON	2814	2814
REV. 19	ANDERSON	2814	2814
REV. 20	ANDERSON	2814	2814
REV. 21	ANDERSON	2814	2814
REV. 22	ANDERSON	2814	2814
REV. 23	ANDERSON	2814	2814
REV. 24	ANDERSON	2814	2814
REV. 25	ANDERSON	2814	2814
REV. 26	ANDERSON	2814	2814
REV. 27	ANDERSON	2814	2814
REV. 28	ANDERSON	2814	2814
REV. 29	ANDERSON	2814	2814
REV. 30	ANDERSON	2814	2814
REV. 31	ANDERSON	2814	2814
REV. 32	ANDERSON	2814	2814
REV. 33	ANDERSON	2814	2814
REV. 34	ANDERSON	2814	2814
REV. 35	ANDERSON	2814	2814
REV. 36	ANDERSON	2814	2814
REV. 37	ANDERSON	2814	2814
REV. 38	ANDERSON	2814	2814
REV. 39	ANDERSON	2814	2814
REV. 40	ANDERSON	2814	2814
REV. 41	ANDERSON	2814	2814
REV. 42	ANDERSON	2814	2814
REV. 43	ANDERSON	2814	2814
REV. 44	ANDERSON	2814	2814
REV. 45	ANDERSON	2814	2814
REV. 46	ANDERSON	2814	2814
REV. 47	ANDERSON	2814	2814
REV. 48	ANDERSON	2814	2814
REV. 49	ANDERSON	2814	2814
REV. 50	ANDERSON	2814	2814



SPS REMOTE CONTROL
GP3

①, NO. FOLLOWING CONNECTOR DESIGNATION DONOTES BAY
 NOTES: UNLESS OTHERWISE SPECIFIED.

DESIGNED BY	DRIBBLE	DATE	11-14-68	NORTH AMERICAN AVIATION, INC.
CHECKED BY	WILSON	DATE	11-14-68	SPACE AND INFORMATION SYSTEMS DIVISION
APPROVED BY	WILSON	DATE	11-14-68	RESEARCH AND DEVELOPMENT CENTER
REVISIONS	1. SCHEMATIC AFR 008 2. REMOTE CONTROL SYSTEM 3. SPS			
DATE	11-14-68	REV. NO.	1	03953
SCALE	MSC	REV. D	1	244
G14-900708				

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