AUXILIARY MULTIFREQUENCY SUPPLY AND DISTRIBUTION CIRCUIT SD-1C450-01 TESTS AND ALARM ROUTINE

1. GENERAL

1.01 This section describes a method of testing the auxiliary multifrequency supply and distribution circuit, J1C011, SD-1C450-01. Procedures to be followed when responding to an alarm at the equipment are also included.

1.02 When this section is reissued, the reason for reissue will be listed in this paragraph. The Equipment Test List is affected.

1.03 The following tests are covered:

1.04 All tests should be performed during a light load period and, preferably, when the test circuits using the multifrequency tones are not being used.

1.05 ***Lettered Steps:*** A letter (a, b, c, etc) added to a step number in Part 4 of this section indicates an action which may or may not be required, depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

1.06 The required record of these tests should be entered on the proper form.

2. ALARM ROUTINE

2.01 A failure of a single supply is indicated by a lighted ALM A FAIL lamp for supply MFA or a lighted ALM B FAIL lamp for supply MFB. If both of these lamps and the ALM DET FAIL lamp are lighted, a double failure has occurred.

2.02 The office alarm may be cut off by operating the ALM MJCO key. This key must be reset after the trouble has been cleared.

Resetting A Failure on Supply MFA

2.03 Operate the SUP ON A key.

2.04 Operate each T_ key one at a time and observe the ALM DET FAIL lamp while the T_ key is depressed. A flashing ALM DET FAIL lamp indicates that the oscillator is functioning. If the ALM DET FAIL lamp lights steadily when a T_ key is depressed, that tone is not functioning. Determine and remove any troubles.

2.05 If all tones in supply MFA are functioning, operate the ALM A FAIL RST key to place the MFA supply on-line.

Resetting A Failure on Supply MFB

2.06 Operate the SUP ON B key.

2.07 Operate each T_ key as described in paragraph 2.04.

2.08 If all tones in supply MFB are functioning, operate the ALM B FAIL RST key to place the MFB supply on-line.

Resetting A Double Failure

2.09 A double failure indicates that trouble has occurred in both tone sources or in some circuitry common to both sources. Supply MFB is on-line. Troubleshoot per SD-1C450-01 and correct the trouble.

2.10 After the cause of trouble has been corrected, the circuit can be reset to normal by operating both ALM A FAIL RST and ALM B FAIL RST keys.

3. APPARATUS

3.01 The following apparatus is required for each test.

Test A and B

3.02 Two 1W13B test cords, (893 cord, 6 feet long, equipped with two 360A tools), one 624B tool and one KS-6278 connecting clip.

Test A

3.03 Load resistor, 19LM or equivalent, 275 ohms ±1 percent.

3.04 Electron tube voltmeter, RCA WV-98C Senior Voltohmyst.

Test B

3.05 Load resistor, 19SE or equivalent,1110 ohms ±1 percent.

3.06 One 2W3A test cord (P2AA cord, 3 feet long, equipped with one 241A plug), two 360A tools, and two KS-627A connecting clips.

3.07 Hewlett Packard 5221B counter, 72A frequency meter, J64072A (SD-59373-01), or equivalent.

4. METHOD

STEP	ACTION	VERIFICATION
A. Output Power and Supply Transfer Test		
1	Operate the SUP ON A key.	SUP ON A lamp lighted, if not previously lighted.
2a	If SUP ON B lamp is not lighted—Operate the SUP-MTFR key.	SUP ON B lamp lighted.
3	Using a 1W13B cord, connect the KS-6278 connecting clip to one terminal of the 275-ohm resistor and connect the 624B tool to punching 11 of the MFB terminal strip.	
4	Set voltmeter to read ac volts in accordance with the approved procedure for the meter.	
5	Connect the alligator clip of the voltmeter test cord to punching 11 of the MFB terminal strip.	
6	Using the other 1W13B cord, connect the KS-6278 connecting clip to the other terminal	

STEP	ACTION	VERIFICATION
	of the 275-ohm resistor and connect the 624B tool to the probe of the voltmeter test cord.	
7	Using the probe of the voltmeter test cord, touch the output of each oscillator of the MFA signal generator at punchings 14, 24, 34, 15, 25 and 35, in turn, of the MFA terminal strip.	Voltmeter indicates 1.5 volts, ±0.25 volts at each of the six MF-punchings. ***Note:*** If reading of any output does not meet requirement, refer to SD-1C450-01-D1, circuit note 104(B), for adjustment procedure.
8b	If the SUP-MTFR key was operated in Step 2a— Restore the SUP-MTFR key.	SUP ON B lamp extinguished.
9	Restore the SUP ON A key.	SUP ON A lamp remained lighted. ***Note:*** If the lamp does not remain lighted, the SUP ON B lamp should be lighted.
10c	If the SUP ON A lamp is not lighted— Operate the SUP ON A key.	SUP ON A lamp lighted.
11d	If the SUP ON B lamp is lighted— Operate the SUP-MTFR key.	SUP ON B lamp is extinguished.
12	Operate the SUP ON B key.	SUP ON B lamp lighted.
13	Repeat Step 7, testing punchings at the MFB terminal strip.	
14	Remove both 1W13B cords from the MFB terminal strip, the 275-ohm resistor, and the probe of the voltmeter test cord.	
15	Remove the voltmeter test cord connection at the MFB terminal strip.	
16e	If the SUP-MTFR key was operated in Step 11d— Restore the SUP-MTFR key.	SUP ON B lamp extinguished.
17	Restore the SUP ON B and SUP ON A (if operated) keys.	Either the SUP ON A or SUP ON B lamp will remain lighted.
B. Frequency Test		
1	Operate the SUP ON A key.	SUP ON A lamp lighted, if not previously lighted.
2a	If SUP ON B lamp is not lighted— Operate the SUP-MTFR key.	SUP ON B lamp lighted.

STEP	ACTION	VERIFICATION
3	Using a 1W13B cord, connect the KS-6278 connecting clip to one terminal of the 1100-ohm resistor and connect the 624B tool to punching 11 of the MFB terminal strip.	
4b	If using a 72A frequency meter or equivalent—Insert the plug of the 2W3A cord into the BRDG IN jack of the meter.	
5c	If using other than a 72A frequency meter—Connect a suitable cord to the meter input jack.	
6	Connect one lead of the frequency meter 2W3A test cord to punching 11 of the MFB terminal strip.	
7	Using the other 1W13B cord, connect the KS-6278 connecting clip to the other terminal of the 1100-ohm resistor and connect the 624-B tool to the other lead of the frequency meter test cord. ***Note:*** This lead from the frequency meter will be referred to as the test lead in subsequent steps.	
8	Using the frequency meter test lead—Touch the output of each oscillator of the MFA signal generator at punchings listed in Table A.	Readings are within the specifications shown in Table A. ***Note:*** If any frequency exceeds the maximum variation, refer to SD-1C450-01-01, circuit notes 104 and 105, for adjustment procedure.

TABLE A

MFA/MFB TERMINAL STRIP PUNCHINGS	OSCILLATOR OUTPUT FREQUENCY	MAXIMUM VARIATION IN Hz + 1 PERCENT
14	700	693-707
24	900	891-909
34	1100	1089-1111
15	1300	1287-1313
25	1500	1485-1515
35	1700	1683-1717

9d	If the SUP-MTFR key was operated in Step 2a—Restore the SUP-MTFR key.	SUP ON B lamp extinguished.
10	Restore the SUP ON A key.	SUP ON A lamp remained lighted.

STEP	ACTION	VERIFICATION
		Note: If the lamp does not remain lighted, the SUP ON B lamp should be lighted.
11e	If the SUP ON A lamp is not lighted— Operate the SUP ON A key.	SUP ON A lamp lighted.
12f	If the SUP ON B lamp is lighted— Operate the SUP-MTFR key.	SUP ON B lamp is extinguished.
13	Operate the SUP ON B key.	SUP ON B lamp lighted.
14	Repeat Step 8 using punchings on the MFB terminal strip shown in Table A.	Same as Step 8.
15	Remove connections of both 1W13B cords between the terminals of the 1100-ohm resistor, punching 11 of the MFB terminal strip, and the frequency meter test cord.	
16	Remove the frequency meter test cord from punching 11 of the MFB terminal strip.	
17g	If the SUP-MTFR key was operated in Step 12f— Restore the SUP-MTFR key.	SUP-ON B lamp extinguished.
18	Restore the SUP-ON B, and the SUP-ON A (if operated) keys.	Either the SUP-ON A or SUP-ON B lamp will remain lighted.
C. Alarms Test		
	Note: This test should be performed when the office is in a light load condition.	
1a	If SUP ON A lamp is lighted— Operate the PWR OFF A key.	SUP ON A lamp extinguished. PWR OFF A lamp lighted. Major office alarm activates.
2b	If SUP ON B lamp is lighted— Operate the PWR OFF B key.	SUP ON B lamp extinguished. PWR OFF B lamp lighted. Major office alarm activates.
3	Operate ALM MJCO key.	ALM MJCO lamp lighted Major office alarm silenced.
4c	If SUP ON A lamp is extinguished— Release the PWR OFF A key.	PWR OFF A lamp extinguished. SUP ON A lamp lighted.
5d	If SUP ON B lamp is extinguished— Release the PWR OFF B key.	PWR OFF B lamp extinguished. SUP ON B lamp lighted.
6	Release the ALM MJCO key.	ALM MJCO lamp extinguished.

STEP	ACTION	VERIFICATION
7	Operate the PWR OFF DET key.	PWR OFF DET lamp lighted. Major office alarm activated.
8	Operate the ALM MJCO key.	Major office alarm silenced. ALM MJCO lamp lighted.
9	Restore PWR OFF DET key to normal position.	PWR OFF DET lamp extinguished.
10	Release ALM MJCO key.	ALM MJCO lamp extinguished.