T.O. 1F-106A-2-27-1

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TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE

F-106 AWCIS CONDENSED MAINTENANCE GUIDE

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F-106 AWCIS CONDENSED MAINTENANCE GUIDE

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CHAPTER 1

GENERAL

1-1. DESCRIPTION AND PURPOSE

a. This manual contains information for use in performing selected check and adjustment procedures of the MA-1 and AN/ASQ-25 systems. These are the procedures which require minimum test equipment. The technical orders listed below are used in conjunction with this manual to accomplish maintenance of the MA-1 and AN/ASQ-25 systems on the flightline.

T.O. 1F-106A-2-27-2	F106 AWCIS Check and Adjustment Procedures
T.O. 1F-106A-2-27-3	F106 AWCIS Fault Isolation Procedures
T.O. 1F-106A-2-27-5	F106 AWCIS Theory and Functional Diagrams
T.O. 1F-106A-2-27-6	F106 AWCIS Flightline Classified Information
T.O. 1F-106A-2-27-9	F-106 AWCIS Data Analysis Manual

b. The instructions in this manual are intended for use by highly skilled maintenance personnel only.

1-2. PRELIMINARY SWITCH SETTINGS

Refer to table 1-1 for a list of preliminary switch settings used for all procedures in this

manual. All test switches are assumed to be in the off or normal position.

1-3. LIST OF SPECIAL ABBREVIATIONS

Refer to T.O. 1F-106A-2-27-2 for a list of abbreviations used in this manual.

1-4. LIST OF COMMON NAMES

Refer to T.O. 1F-106A-2-27-2 for a list of common names used in this manual.

1-5. DESCRIPTION AND USE OF PROCEDURES

a. The paragraphs, tables, and figures in this manual are numbered exactly as they appear in T.O. 1F-106A-2-27-2. If a paragraph, table, or figure does not appear in T.O. 1F-106A-2-27-2, the paragraph, table, or figure number assigned in this manual is the next higher number after the last used in T.O. 1F-106A-2-27-2.

b. Each procedure contains the test equipment and hookup required, in parenthesis, directly under the paragraph title.

c. Each procedure contains the probable faulty units under the right side of the paragraph title.

d. Unless otherwise stated, each step of the check and adjustment procedures is numbered exactly as it appears in T.O.1F-106A-2-27-2.

e. Before performing each procedure, all switches must be set as instructed in table 1-1.

Table 1-1. Initial Switch Settings

Location	Item	Setting
796	SELECTOR TEST	OFF
905	POWER	OFF
C-6280	MASTER	OFF
C-6280	IDENT-MIC	OUT
C-6280	RAD TEST-OUT-MON	OUT
C-6280	M1	OUT
C-6280	M2	OUT
C-6280	M3/A	OUT
C-6280	M-C	OUT
C-6280	MODE 4	OUT

Table 1-1. Initial Switch Settings (cont)

Location	Item	Setting
C-6280	MODE 1	73
C-6280	MODE 3/A	0077
505	VOL	As required
505	Function switch	MAN
505	Power switch	OFF
505	Manual frequency selectors	MART UHF frequency
ACP	ARM-SAFE	SAFE
ACP	LOCK-UNLOCK	LOCK
ACP	Selector	VIS IDENT
LH console	AIR-2A	Out (off)
LH console	ALTITUDE BAND SELECTOR	OFF
755	CHANNEL SELECTOR	MART ILS channel
755	VOL	Fully ccw
855	IR THRESHOLD VIDEO	Fully ccw

Table 1-1. Initial Switch Settings (cont)

Location	Item	Setting
855	IR THRESHOLD TONE	Mid-position
855	IR VOLUME	Fully ccw
855	EL SCAN	NORM
855	LOBE FREQ	3
855	AZ SCAN	B
080	ERASE INTENSITY	Approx 10 o'clock
080	ATTACK INTENSITY	Fully cw
080	DIMMER	Fully ccw
080	IF GAIN	Fully cw
080	VIDEO GAIN	Fully cw
163	ALT HOLD	OFF
163	HDG HOLD	OFF
163	FLT MODE	DIR MAN
163	DISP/AUTO MODE	DL MIN TIME
Inst panel	HDG SEL	NORM
463	BRG SEL	NORM

Table 1-1. Initial Switch Settings (cont)

Location	Item	Setting
□ AVVI	BARO	29.92
○ 259	BARO. SET	29.92
305	NOSE-TAIL	NOSE
305	RDR	NORM
305	CHAFF	OFF
305	IR	STOW
305	TUNE	NORM
305	RANGE	16SP
181	MODE	AUTO
181	LAMP	1
181	RED FILTER	OUT
181	RADIUS MILES	50
181	OFF-BRT	OFF
083	ANT ELEV	Detent
083	LOCK-UNLOCK	UNLOCK
083	Boresight switch	NORM/TRACK

Table 1-1. Initial Switch Settings (cont)

Location	Item	Setting
405	VOL	Fully ccw
405	MODE	X
405	RANGE	300
405	MAN	As required
405	PRESET	As required
405	Function switch	OFF
RH console	DATA LINK ANT	NORM
○ RH console	TACAN RANGE-COMMAND ALTITUDE	COMMAND ALTITUDE
955	HOMING POINT SELECTOR	A
019	VOLUME	OFF
019	Display switch	DISPLAY OFF
019	MANUAL FREQ	As required
019	ADDRESS SELECT	As required
□ Compass con-troller	DG - SLAVED	DG

Table 1-1. Initial Switch Settings (cont)

Location	Item	Setting
○Compass controller	DG - MAG.	MAG.
Radar compt	IR COOL'G INTLK	Closed
Radar compt	IR AZ&EL INTLK	Closed
Computer compt	IR MANUAL VALVE	FLIGHT
596	NOSE-TAIL	TAIL
596	PURSUIT-LEAD COLL	LEAD COLL
596	A-NORMAL	NORMAL
596	A'-NORMAL	NORMAL
596	B-NORMAL	NORMAL
596	C-NORMAL	NORMAL
596	D-NORMAL	NORMAL
596	E-NORMAL	NORMAL
596	FWD	OFF

Table 1-1. Initial Switch Settings (cont)

Location	Item	Setting
596	AFT	OFF
596	TIMING PROG	NORMAL
596	TEST SELECTOR	OPEN LOOP
596	FWD TEST MISFIRE	Down (off)
596	AFT TEST MISFIRE	Down (off)

CHAPTER 2

MA-1 AND AN/ASQ-25 SYSTEM

2-5. PREPARATION FOR SSGC

(None) Refer to T.O. 27-3

NOTE

Perform switch settings iaw, Table 1-1, set 181 RADIUS MILES to 200, 181 MODE to AUTO ([]) or ADF CMD (O), GRID REFERENCE to 045, 905 ON and set HSI ([]) or CI (O) to 45° heading.

1. Press CELL COOL DOWN - adjust 281 ZERO ADJUST = 281 meter zeroed
2. 181 1st detent from OFF = Screen comes on
3. 305 to all ranges = 080 range lamps on
4. 305 TUNE NORM-RDR NORM-CHAFF OFF-NOSE-RDR SCAN = Head extends - mode lamp 2 on
5. Radar dom = 017 and 767 sweep ±53°
6. IR VOLUME as required-IR THRESHOLD TONE fully cw, then ccw = Aural tone null
7. 855 C - 2 BAR = B-sweep ±30° - 2 bar
8. 855 L = B-sweep +6° to -53°
9. 855 R = B-sweep -6° to +53°

10. 855 B = B-sweep $\pm 53^{o}$

11. 855 1 BAR = El marker stationary

12. 855 NORM - ANT ELEV detent = El marker 4 bar

13. ANT ELEV UP, DN, then detent = El marker follows ANT ELEV - search limits narrow

14. Supersearch = B-sweep $\pm 16.5^{o}$ - el marker stationary - erase sweep disappears

15. Move hand control in az = B-sweep center point follows hand control

16. Hand control = B-sweep centered - range gate at 30 miles

17. Move hand control forward and back = Range gate follows hand control with constant intensity

18. Move hand control in az = B-sweep follows hand control

19. Track - 16SP - hand control - move hand control forward and back = Range gate appears and disappears

20. Track - 4SP - hand control - move hand control forward and back = Range gate appears and disappears

21. Track - 40SP - press action switch 1st detent = Range gate at 30 miles

22. Search - adjust 080 controls = Optimum display

23. HOR ADJ - PRESS TO ERECT = Artificial horizon centered and level

24. 855 3 - 1BAR = Ground target appears - el marker stationary

25. ANT ELEV = Optimum target

26. 855 CADJ and release = Video level decreases, then returns to normal

27. 305 HOM = Video level does not degrade

28. F MAX = Video level does not degrade

29. 40LP = Video level does not degrade

30. F MIN = Video level does not degrade

31. 40SP = Video level does not degrade

32. 305 RDR NORM = Video level does not degrade

33. 305 TUNE NORM = Video level does not degrade

34. 16SP - lock on = B-sweep jizzled - normal VI display appears - VI WARN off

35. MISSILES ALL = ACP NO - normal lead collision display appears

36. Search = B-sweep searches - attack display disappears

37. VIS IDENT = ACP blank

38. Hand control - antenna for min target = No display changes

39. Search = B-sweep searches

40. 855 NORM = E1 marker 4 bar

41. Press 281 CELL COOL DOWN = 281 meter 7 to 70 μa

42. RDR SLVD - MISSILES ALL - IR dom = Az-el dot 4 bar $+53^{o}$ - IR range marker appears - 866 PARAMP ON on

43. Lock on = Expanded C-scan replaced by B-sweep in approx 8.5 sec - 2.8 in. firing bar - FIR marker at top left of MMST

44. Press RDR IR EXP = C-scan reappears

45. Release RDR IR EXP = B-sweep reappears

46. RDR SCAN= B-sweep $\pm 53^{o}$

47. Search - ANT ELEV detent = C-scan $\pm 53^{o}$

48. Radar dom = B-sweep $\pm 53^{o}$

NOTE

Perform steps 49 thru 55 in F-106B. To transfer flight control functions, both 163 FLT MODE and DISP/AUTO MODE switches must be in the same position. Front cockpit is abbreviated by FCP and rear cockpit by RCP.

49. DIR MAN - 505 MAN (both) - MART uhf frequency - press and release RADAR POWER (RCP) = RADAR POWER (RCP) comes on .

50. Press and release AFCS ILS AUTO NAV TRANS (RCP) = AFCS ILS AUTO NAV TRANS (RCP) comes on

51. Press and release UHF COMM TACAN (RCP) = UHF COMM TACAN (RCP) comes on - 780 (RCP) to MART uhf frequency

52. Press and release RADAR POWER (FCP) = RADAR POWER (FCP) comes on

53. Press and release AFCS ILS AUTO NAV TRANS (FCP) = AFCS ILS AUTO NAV TRANS (FCP) comes on

54. Press and release UHF COMM TACAN (FCP) = UHF COMM TACAN (FCP) comes on

55. 505 OFF (both)

2-6. SSGC 1 PROCEDURE

CAUTION

If hydraulic pressure is applied, remove HYDRAULIC PRESS WARN fuse.

NOTE

If SSGC 1 is being performed separately, set all switches iaw Table 1-1.

If SSGC 1 is not desired, set SELECTOR TEST to 2 within 7 seconds.

1. 905 ON - AUTO NAV - 16 SP - MISSILES ALL - SSGC 1 = VI WARN on (if flashing, see table 2-6.1)-796 FLIGHT, TEST, ARM AUX on - 905 TEST - B-sweep oscillates 40° right

1.1 Press and release GND TEST INTER = VI WARN off - PTF off - 796 RADAR on - 796 COMP on - Mach toward 1.8 then min - altitude toward 57K then min - VARI RAMP off, on, then off - MAX MANEUVER off, on, then off - 796 FLT SENS on

2. 40SP - CADJ and hold = B-sweep limit to limit in approx 1 sec

3. Release CADJ = B-sweep oscillates ¼ in. ½ in. from right

4. 200LP - F MAX - HOM = B-sweep moves rapidly with sweeps approx ¼ in. apart

5. 80LP = B-sweep moves rapidly with sweeps approx ½ in. apart

6. 40LP - F MIN = B-sweep moves rapidly on one side

7. Hand control - 305 RDR NORM - SNIFF = B-sweep moves 5°/sec to 40° right, reverses and increases to 20°/sec then decreases to 5°/sec

8. Track - 305 TUNE NORM - ANT ELEV detent - search = El marker 4 bar - 796 FLIGHT, TEST, COMP, RADAR, FLT SENS, and ARM AUX on

9. PITCH DAMP = Remains in PITCH DAMP

10. Press and release EMER MANUAL = DIR MAN - FLIGHT MODE FAIL comes on

11. Press and release MMT = FLIGHT MODE FAIL goes off

2-7. SSGC 2 PROCEDURE

NOTE

If SSGC 2 is being performed separately, set all switches iaw table 1-1.

SSGC 2 will not pass the LQ routine if hydraulic pressure is applied.

If ejection seat is not installed, pins 6 and 7 of the seat plug must be jumpered.

1. 905 ON - PITCH DAMP - HDG HOLD - AUTO NAV - 083 detent - 181 50 - 855 1 BAR - MISSILES ALL - SSGC 2 = VI WARN on (if flashing see table 2-6.1)-receiver test targets appear - 796 FLIGHT off - 796 TEST and ARM AUX on - VARI RAMP comes on - MAX MANEUVER comes on - vertical speed 40K/min, then 0 +50 ft/min - altitude 57K-Mach 1.8 - IAS 412 - MSM 1.76 - COMMAND KNOTS 412 - COMMAND MACH 0.4 - command Mach marker min

1.1 Press and release GND TEST INTER = VI WARN off - steering line moves opposite B-sweep

NOTE

Step 2 must be performed within 10 seconds after 796 GND TEST INTER is pressed.

Step 3 must be performed within 10 seconds after steering dot and reference circle down and right.

2. Track = B-sweep jizzled and centered - el marker centered - B-sweep right 16.4°, left 16.4°, right 16.4°, then centered - el marker up 16.4°, down 16.4°, up 16.4° - steering dot and reference circle up and left - steering dot and reference circle down and right

NOTE

Step 4 must be performed within 10 seconds after steering dot and reference circle center.

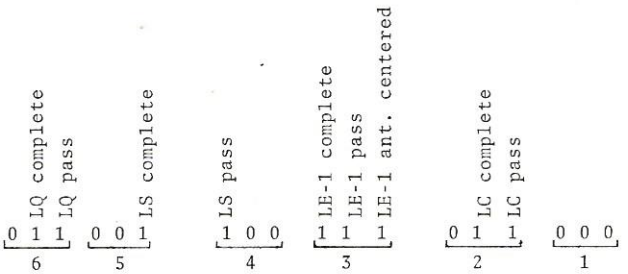
3. AUTO = Steering dot and reference circle center - mode lamp 1 comes on - drops to ASSIST

4. ALT HOLD = ALT HOLD drops to OFF after 10 sec - drops to PITCH DAMP - mode lamp 1 goes off

5. Search = B-sweep searches - el marker 1 bar - artificial horizon precesses and reerects - 796 FLT SENS, RADAR, COMP come on

NOTE

If 796 FLT SENS, RADAR, or COMP is flashing, monitor DRO location 3645. The display should be as shown below. If incorrect additional information is stored in DRO location 3640 (LC routine), 3641 (LQ routine), 3642 (LE-1 routine), 3643 (LS routine), and 3644 (LZ routine).



6. VIS IDENT - 855 NORM = SELECT blank - 796 FLT SENS, COMP, RADAR, TEST, and ARM AUX on - 796 FLIGHT and AFCS off

2-8. SSGC 3 PROCEDURE

NOTE

If SSGC 3 is being performed separately, set all switches iaw table 1-1.

1. Heading 045 - ILS-905 ON -40 SP - SSGC 3 = VI WARN on (if flashing see table 2-6.1)- 796 FLIGHT, AFCS, and COMP off - 796 TEST, FLT SENS, ARM AUX, and RADAR on

2. Press and release GND TEST INTER - DL MIN TIME = PTF off - VI WARN off - B-sweep searches - receiver test targets to 20 miles.

☐ 3. ILS - adjust HSI COURSE SET = 796 COMP on at 75°

☐ 4. Adjust HSI COURSE SET = 796 COMP on at 15°

☐ 5. Adjust HSI COURSE SET = 796 COMP off at 45°

NOTE

For a complete CN&L check, refer to T.O. 27-2, chapter 9.

6. Homing point D - 40SP = Indications as follows:

Display	163 DISP/AUTO MODE position	
	DL MIN TIME	DL MAX RNG
DL Annunciator	DL	DR
Command Mach	0.825 to 0.875 M	1.725 to 1.775 M
Command Altitude	17 to 18 K'	52 to 53 K'
Target Altitude	17 to 18 K'	52 to 53 K'
Command Heading	221 to 229 degrees	41 to 49 degrees
HSI Target Range		
181 - 50 mi	69 to 71 mi	69 to 71 mi
181 - 200 mi	0 mi	279 to 281 mi
181 - 400 mi	568 to 572 mi	568 to 572 mi
HSI Target Heading	89 to 97 degrees	277 to 285 degrees
HSI Course Deviation Bar		
181 - 50 mi	Right of center	N/A
181 - 200 mi	Center	N/A
181 - 400 mi	Left of center	N/A
HSI To-From Arrow		
181 - 50 mi	Down	Down
181 - 200 mi	Center	N/A
181 - 400 mi	Up	N/A

6. (Cont) Homing point D - 40SP = Indications as follows:

Display	163 DISP/AUTO MODE position	
	DL MIN TIME	DL MAX RNG
HSI Target Bearing		
181 - 50 mi	221 to 229 degrees	221 to 229 degrees
181 - 200 mi	N/A	N/A
181 - 400 mi	41 to 49 degrees	221 to 229 degrees
181 TACAN annunciator	DR	DR
Interceptor Bug		
181 - 50 mi	34 to 36 mi at 41 to 49 degrees	34 to 36 mi at 41 to 49 degrees
181 - 200 mi	Center	139 to 141 mi at 41 to 49 degrees
181 - 400 mi	284 to 286 mi at 221 to 229 degrees	283 to 287 mi at 41 to 49 degrees
Bug Heading	41 to 49 degrees	41 to 49 degrees

6. (Cont) Homing point D - 40SP = Indications as follows:

Display	163 DISP/AUTO MODE position	
	DL MIN TIME	DL MAX RNG
Target Bug		
181 - 50 mi	34 to 36 mi at 221 to 229 degrees	34 to 36 mi at 221 to 229 degrees
181 - 200 mi	Center	139 to 141 mi at 221 to 229 degrees
181 - 400 mi	284 to 286 mi at 41 to 49 degrees	283 to 287 mi at 221 to 229 degrees
Bug Heading	89 to 97 degrees	277 to 285 degr degrees
Time-to-Go Circle	Full size to zero, then repeats	(Radar dominant) Target Marker Circle goes to 50° upper left, then 50°R at 7/8, then 30°L at 3/4, then 30°R at 5/8, then 20°1 at 1/2, then 20°R at 3/8, then 10°L at 1/4, then 10°R at 1/8, then center bottom, then repeats

7. MISSILES ALL - BORS - DL MAX RNG = Firing bar from 10 miles to 0 in 2-mile steps.

8. DL MIN TIME = Firing bar from 10 miles to 0 in 2 mile steps and from 3 in. long to 1/2 in. long in 1/2 in. steps.

9. RDR SLVD - NORM/TRACK - IR dom - DL MAX RNG - search = Target marker circle from bottom center to upper left.

10. DL MIN TIME = IR range bar from 40 miles to 0 in 5 mile steps.

11. Deleted

12. Deleted

13. RADIUS MILES 50 - AUTO NAV - 405 to preset channel-radar dom = Interceptor bug moves along true heading 41^{0} to 49^{0} - MILES increases - 796 all lamps except AFCS and COMP on

NOTE

If performing SSGC 3 in an F-106B, transfer controls to rear cockpit and repeat steps 3 thru 13.

2-9. SSGC 4 PROCEDURE

NOTE

If SSGC 4 is being performed separately, set all switches iaw Table 1-1.

1. 905 ON - radar dom - VIS IDENT - 4SP-RDR SLVD - SSGC 4 = VI WARN on (if flashing see table 2-6.1)-796 RADAR, FLT SENS, ARM AUX come on - IR head retracts - 4 mile light on - receiver test targets appear

1.1 Press and release GND TEST INTER = VI WARN goes off - 796 COMP comes on

NOTE

Ensure 019 CHANNEL is at some preset channel.

2. Lock on to 2nd receiver test target = Range circle appears 1.4 in. diameter - R gap O - B-sweep moves left - el marker moves down - steering dot and reference circle drive down and left

3. 019 M and wait 5 sec - search = VI WARN comes on (pass) or flashes (fail)

4. MISSILES ALL - 305 HOM - TAIL = Mode 1amp 3 comes on

5. Track with no lock on = Firing bar 2.8 in. at 4000 yd - range gate disappears - steering dot and reference circle indicate antenna position

6. 16SP = Firing bar at 4000 yd

7. NOSE = Firing bar at 8000 yd - mode lamp 3 off

8. F MIN = Firing bar disappears within 3 sec

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9. 305 TUNE NORM - TAIL = Firing bar 2.8 in. at 4000 yd - mode lamp 3 on

10. Lock on to 12th receiver test target = Time-to-go circle appears 1.4 in. diameter - R gap 0 - B-sweep moves left - el marker moves down - steering dot and reference circle to a fixed position down and left

11. 305 RDR NORM - 40SP = No display change - 796 RADAR, TEST, FLT SENS, ARM AUX, and COMP on

12. 16SP - 305 ALL - lock on to any receiver test target left of center = Mode lamp 4 on - B-sweep oscillates ¼ in. in center

13. Lock on to any receiver test target right of center = B-sweep same as step 12

14. 305 OFF = B-sweep oscillation stops and drives left - steering dot to a fixed position down and left - mode lamp 4 off

15. LOBE FREQ 1, 2, 4, 3 = Steering dot position may change but remains down and left

16. CADJ = B-sweep and steering dot slightly toward center

17. Search = CADJ to NORM - normal radar dom search display

18. IR dom = Antenna centered - IR range marker centered on right - az-el dot 4 bar C-scan $\pm 53^{o}$

19. Hand control and center = Az-el dot centered - IR range bar to upper left

20. Search - 855 2 BAR - 855 L - ANT ELEV toward UP = Aural tone present as function of target return

21. Vary 855 IR VOLUME = Aural tone varies

22. Vary 855 IR THRESHOLD VIDEO = IR target smaller - aural tone remains constant

23. 855 IR THRESHOLD VIDEO fully cw - 855 B - 855 NORM - lock on = Aural tone increases - firing bar appears 2.8 in. long - expanded C-scan for approx 8.5 sec, replaced by B-sweep 45° left - IR range bar upper left for approx 28 sec, then moves to approx 4 miles

24. 4SP = IR range bar moves in 3 to 5 jumps and doubles at approx 2000 yd - 796 COMP on

25. Press RDR IR EXP = C-Scan appears while switch is held

26. Action switch to 1st detent - move hand control forward and back = Range gate appears and disappears

27. RDR SCAN = B-sweep searches $\pm 47.5^{\circ}$

28. 16SP - hand control = · · · bar 1.4 in. long

29. Lock on = Expanded C-scan appears, replaced by searching B-sweep after approx 8.5 sec - firing bar 2.8 in. long

30. Press RDR IR SELECT = No change in display

31. RDR SLVD = B-sweep 45° left

32. Lock on to radar target = Radar dom display appears

33. Search

2-10. SSGC 5 PROCEDURE

NOTE

If SSGC 5 is being performed separately, set all switches iaw table 1-1. Do not attempt to run SSGC 5 with missile simulators or WSEMs loaded. The TACAN system should be operating and 181 TACAN should indicate OK.

1. 905 ON - VIS IDENT - SSGC 5 - RDR SLVD = VI WARN on (if flashing see table 2-6.1) - IR head extends - 796 TEST and FLT SENS come on

1.1 Press and release GND TEST INTER = VI WARN goes off

2. F MIN - NOSE - hand control = 2 to 4 mile noise band at 4 miles

3. Track - MISSILES ALL = Noise band disappears 796 COMP comes on

4. 305 TUNE NORM - ANT ELEV detent - BORS - TAIL for approx 5 sec, then NOSE = Antenna centered in az and -4.5^{0} in el - 796 COMP remains on

5. IR dom = Expanded C-scan appears

6. 083 NORM/TRACK = Steering dot and reference circle appear

7. Search = Normal IR dom display

8. Radar dom = Normal radar dom display

NOTE

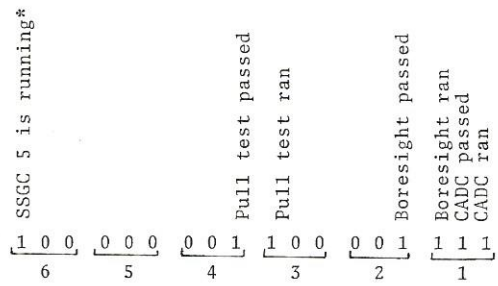
Step 10 must be performed within 10 seconds after countdown begins

9. TAIL - hand control, range gate to approx 15 miles, then track = Time-to-go circle appears and begins to shrink

10. Press trigger = Mode lamp 6 on - jizzle disappears at C-time - 796 RADAR on at C-time - 181 TACAN BV at C-time plus approx 6 sec - "X" appears, replaced by "8" - 796 COMP and ARM AUX on

NOTE

If 796 COMP off, monitor DRO location 3776 for the below indication. Light off indicates a failure.



*Bit 18 is off if ACP selector is set to VIS IDENT after SSGC 5 is completed.

11. Release trigger - search - hand control, range gate to approx 15 miles, then track = Mode lamp 6 off - time-to-go circle appears and begins to shrink - jizzle does not disappear - 181 TACAN OK - "A" appears - 796 RADAR and ARM AUX off

12. 4SP - search - hand control, range gate to approx 4 miles, then track - press trigger = Mode lamp 6 on - time-to-go circle appears and shrinks - "A" appears - "8" appears at 2400 to 4800 yd

13. Release trigger = Mode lamp 6 off

NOTE

Read step 14 prior to performing. An action before an elapsed time interval is involved. Step 15 must be performed within 10 seconds after step 14.

14. 16SP - search - hand control, range gate to approx 6 miles, then track - press LC/PUR and release within 10 sec after "A" appears = Time-to-go circle appears and shrinks - "A" appears - firing bar appears when LC/PUR released

NOTE

Step 16 must be performed within 35 seconds after "X" appears.

15. Press trigger = Firing bar disappears - "X" appears

16. Release trigger - search - press LC/PUR and release = Mode lamp 6 off - B-sweep searches

17. Select homing point <300 miles - AUTO NAV = Command altitude 41K - steering line down and left or right - time-to-offset circle appears

18. RADIUS MILES 400 - select homing point >360 miles = Time-to-offset circle disappears

☐ 19. MAN NAV = Nav display disappears

☐ 20. AUTO NAV = Nav display appears

21. VIS IDENT

2-11. SSGC 6 PROCEDURE

NOTE

If SSGC 6 is being performed separately, set all switches iaw Table 1-1.

1. 905 ON - SPL WPN - SSGC 6 - AUTO NAV - homing point > 360 miles = VI WARN on (if flashing see table 2-6.1) - 796 TEST comes on - Mach 0.77 to 0.80 - airspeed 280 to 284 - MAX MANEUVER off - altitude 32.2 to 33.8K - command altitude 32.2 to 33.8K - 796 FLT SENS and COMP on

1.1 Press and release GND TEST INTER = VI WARN goes off - Steering line centers, deflects 1/2 in. up at 40.5K

2. Hand control, range gate to approx 16 miles, then track - press trigger when time-to-go circle starts to shrink = Mode lamp 6 on - time-to-go circle appears and shrinks - "8" appears - 796 COMP and ARM AUX on

3. Release trigger - VIS IDENT - search

-12. SSGC 7 PROCEDURE

1. SSGC 7 = 796 FLIGHT and AFCS off - 796 RADAR, COMP, TEST, FLT SENS, ARM AUX on - 080 PTF off

2. 796 OFF - MISSILES ALL = 796 FLIGHT on - 796 AFCS, RADAR, COMP, TEST, FLT SENS, ARM AUX off - altitude to local - Mach 0.2 - airspeed 35 to 65

3. IR dom - STOW = IR head retracts and system crossmodes to radar dom

4. 096 6G - hand control, range gate over target = 096 meter does not change

5. Adjust IF GAIN = B-sweep intensity changes - 096 meter changes

6. Search - VIS IDENT - 096 1A - 905 OFF

Table 2-6.1. SSGC Input Error Indications

Command Altitude	Digital Input	
00000	D160	TACAN Data
00700	D161	TACAN Data
01400	D162	TACAN Data
02100	D163	TACAN Data
02800	D106	VI Selected
03500	D114	Manual Pursuit
04200	D122	Armed
04900	D130	Special Weapon Selected
05600	D101	Trigger
06300	D109	AIM-4F Selected
07000	D117	Missiles All Selected
07700	D125	Confirm
08400	D133	Nav Mode 1
09100	D134	Nav Mode 2
09800	D135	Map Scale 1
10500	D136	Map Scale 2
11200	D165	Self Test
11900	D166	Self Test
12600	D167	Self Test
13300	D168	Self Test
14000	D107	System Test A
14700	D115	System Test B
15400	D123	TACAN Valid
16100	D131	Computer Test
16800	D102	Auto Engage
17500	D110	Special Weapon Loaded

Table 2-6.1. SSGC Input Error Indications (cont)

Command Altitude	Digital Input	
18200	D118	Spare
18900	D126	Nose
19600	D137	Data Link Address
20300	D138	Data Link Address
21000	D139	Data Link Address
21700	D140	Data Link Address
22400	D170	Self Test
23100	D171	Self Test
23800	D172	Self Test
24500	D173	Self Test
25200	D108	TACAN Station Select
25900	D116	Homing Point
26600	D124	Data Link Station Select
27300	D132	AFCS Uncage
28000	D103	IR Track
28700	D111	Assist Engage
29400	D119	Altitude Hold/ILS Valid
30100	D127	Heading Hold
30800	D141	AGE Operation Only
31500	D142	Binary/BCD Display
32200	D143	+28 VDC Pressure Delayed
32900	D144	Drum Pressure
33600	D180	Self Test
34300	D181	Self Test
35000	D182	Self Test
35700	D183	Self Test
36400	D176	Homing Point Select
37100	D177	Homing Point Select

Table 2-6.1. SSGC Input Error Indications (cont)

Command Altitude	Digital Input	
37800	D178	Homing Point Select
38500	D175	Homing Point Select
39200	D104	System Test C
39900	D112	Computer Interrogate
40600	D120	Spare
41300	D128	Data Link Address Select
42000	D151	TACAN Station Select
42700	D152	TACAN Station Select
43400	D153	TACAN Station Select
44100	D150	TACAN Station Select
44800	D185	Tanks Installed
45500	D186	Assist OK
46200	D187	Chaff
46900	D188	Spare
47600	D146	Trim Down
48300	D147	Trim Right
49000	D148	Trim Left
49700	D145	Trim Up
50400	D105	Not Search
51100	D113	ROT
51800	D121	DROT
52500	D129	ATOT
53200	D156	Data Link Station Select
53900	D157	Data Link Station Select
54600	D158	Data Link Station Select
55300	D155	Data Link Station Select
64400	A9	Interceptor Angle of Attack
65100	E24	Cosine of Interceptor Heading Angle
65800	E23	Sine of Interceptor Heading Angle
66500	A6N	Sea Level Pressure

Table 2-7.1. SSGC Input Check Status Word Structure

DIGITAL INPUTS SWITCHES	STATUS WORD	BIT NUMBER								
		18	17	16	15	14	13	12	11	10
000	Word 1	0	0	D160	D161	D162	D163	D106	D114	D122
001	Word 2	0	0	D165	D166	D167	D168	D107	D115	D123
002	Word 3	0	0	D170	D171	D172	D173	D108	D116	D124
003	Word 4	0	0	D180	D181	D182	D183	D176	D177	D178
004	Word 5	0	0	D185	D186	D187	D188	D146	D147	D148
005	Word 6	0	0	AI 16	AI 15	AI 14	AI 13	AI 12	AI 11	AI 10

NOTES:
1. Status words 1 through 5 contain failed digital inputs and status word 6 contains failed analog inputs.
2. If bit is on, a failure is indicated.

Table 2-7.1. SSGC Input Check Status Word Structure (Cont)

BIT NUMBER								
9	8	7	6	5	4	3	2	1
D130	D101	D109	D117	D125	D133	D134	D135	D136
D131	D102	D110	D118	D126	D137	D138	D139	D140
D132	D103	D111	D119	D127	D141	D142	D143	D144
D175	D104	D112	D120	D128	D151	D152	D153	D150
D145	D105	D113	D121	D129	D156	D157	D158	D155
AI 9	AI 8	AI 7	AI 6	AI 5	AI 4	AI 3	AI 2	AI 1

NOTES: 3. The current configuration of analog input checks is used only in SSGC 1. The four analog inputs checked are A6N (AI1), E23 (AI2), E24 (AI3), and A9 (AI4).

CHAPTER 3

RADAR SUBSYSTEM

3-4p. 045 COMPRESSOR AND 107 ABSOLUTE VALVE CHECK

(Restrictor plug, 0.029 in. hole in 045 air intake fitting) 045, 107

1. RADAR STBY - press 024 S1 = 024 high side to 41 psia in < 16 minutes
2. Release S1 - 905 OFF - press 024 bleed valves = 024 indicates ambient pressure
3. Release bleed valves - RADAR STBY = 024 low side to 17 psia in ≤ 5 minutes
4. 905 OFF - restrictor plug to dehydrator intake fitting - RADAR STBY - press 024 S1 = 024 high side iaw fig. 3-2
5. Release S1 - 905 OFF - press 024 bleed valves = 024 indicates ambient pressure
6. Release bleed valves - RADAR STBY = 024 low side to 17 psia in ≤ 5 minutes
7. 905 OFF - remove restrictor plug - perform para. 3-4q

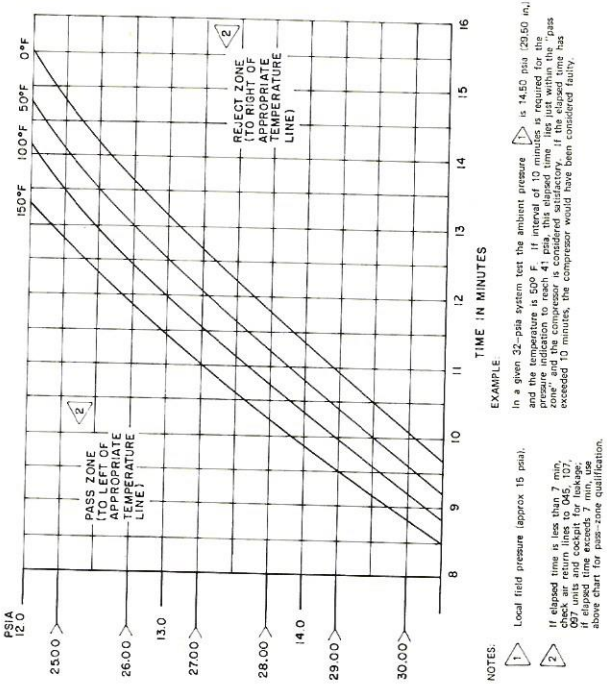


Figure 3-2. Compressor Check Chart

3-4q. RADAR HIGH PRESSURE LEAKAGE AND INTERLOCK CHECK

(None) 017, 065

1. 905 ON = 024 high side 28 to 32 psia - low side 17 psia - relay rack HV ON on
2. Press 024 S1 = 024 high side 47 psia
3. Release S1 = 024 high side leaks < 3 psia/minute - low side leaks < 1 psia/5 minutes
4. Press 024 high side bleed valve = Relay rack HV ON off at 28.5 to 26.0 psia
5. Release bleed valve = Relay rack HV ON on at 26.0 to 28.5 psia
6. 905 OFF

3-5c. 866 AT1 ADJUSTMENT

(Oscilloscope to 866 TP1 +PULSE) 866

1. RADAR STBY - MOD TEST - REC TEST - lock on - 841 MISSILE - 866 A thru F = Record pulse voltage at each position

NOTE

If 866 AT1 is increased, voltage decreases.

2. 866 to highest voltage channel - adjust AT1 = Voltage of 49.5 to 50.5v

3. 866 A thru F = Voltage > 30v

NOTE

Oscilloscope channel A and B to 866 TP5 HI and TP6 LO.

4. 866 A thru F = Both channels 15 ±3v pulse approx 10 μsec at top

5. Search - 4SP - SSGC 4 - track with range gate between 7th and 8th target - 305 HOM = 020 ATOT on

6. 866 A thru F = Both channels 15 ±3v pulse approx 20 μsec at top

NOTE

Oscilloscope channel A to 866 TP1 +PULSE.

7. 866 to highest voltage channel (step 2) = Pulse approx 80v

8. MOD TEST off - REC TEST off - SSGC 7, then OFF - 16SP - 305 NORM - 866 C

3-6b. 017 ANTENNA WAVEGUIDE SHUTTER CHECK

(None) 017

1. RADAR STBY - 096 7F = 096 zero

2. Track - press 095 ON TARGET ADJ switch = 096 5 to 6

3. Release 095 switch - 905 OFF - 096 1A

3-6c. 017 VARIABLE POST CHECK

(None) 017

1. RADAR STBY - 096 7G = 096 zero

2. Track - 855 CADJ = 096 5 to 6

3. Search = 855 drops to NORM

4. 905 OFF - 096 1A

3-6e. 065 TR TUBE KEEP ALIVE VOLTAGE CHECK

(None) Rcvr barrel, TR tube

WARNING

Bleed pressure before removing receiver hat.

1. RADAR STBY - 40SP - S452 9 KEEP ALIVE = M451 1.5 to 4.1

2. 16SP - S452 OFF - perform para. 3-4q

3-7b. 065 AT452 CRYSTAL CURRENT ADJUSTMENT

(Power meter to J64104) Rcvr barrel

1. RADAR STBY - 40SP - MOD TEST - 841 FIXED = Power 0.3 to 1.5 mw over a period of approx 60 sec

2. 841 MAN SLOW (if necessary) - adjust 841 FREQ SET = Power as in step 1

NOTE

Disconnect power meter and connect P64104.

3. 096 3A - 841 MAN SLOW - adjust 841 FREQ SET = 096 max indication (see fig. 3-8)

4. 096 3B = 096 within 2 units of step 3

5. 096 3C = 096 within 2 units of step 3

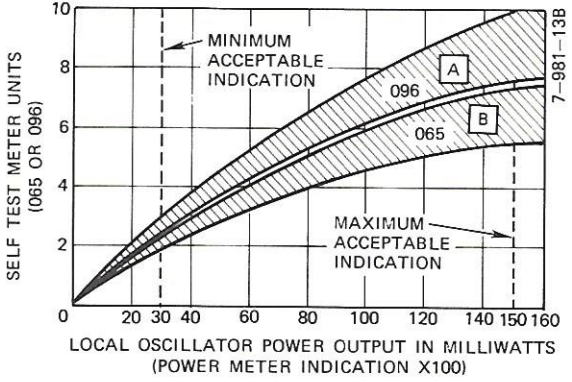


Figure 3-8. Crystal Current Adjustment

6. 096 3D = 096 within 2 units of step 3

7. 096 3A - adjust 841 FREQ SET = 096 min indication

8. 096 3B = 096 within 2 units of step 7

9. 096 3C = 096 within 2 units of step 7

10. 096 3D = 096 within 2 units of step 7

NOTE

If steps 3 thru 10 incorrect, perform 11 thru 14.

WARNING

Bleed pressure before removing receiver hat.

11. 096 1A - S452 1 XTAL CUR NO. 1 - adjust AT452 = Record M451 indication (see fig. 3-8)

12. S452 2 XTAL CUR NO. 2 = M451 within 2 units of step 11

13. S452 3 XTAL CUR NO. 3 = M451 within 2 units of step 11

14. S452 4 XTAL CUR NO. 4 = M451 within 2 units of step 11

15. S452 OFF - 841 OFF - MOD TEST down - 16SP - 905 OFF - if receiver hat was removed, perform para. 3-4q

3-9a. 095 AGC VIDEO GAIN ADJUSTMENT

(Multimeter to 020 AGC VIDEO) 020, 095

1. RADAR STBY - track - press 095 SELF TEST - adjust AGC VIDEO GAIN = +0.5 $\pm$0.03v

2. Release SELF TEST - 905 OFF

3-9b. 020 VIDEO GAIN ADJUSTMENT

(Oscilloscope to 020 AGC VIDEO) 020

1. RADAR STBY - track - MOD TEST - REC TEST - press 020 SELF TEST = Record waveform amplitude

NOTE

Connect oscilloscope to 020 ERROR SIGNAL.

2. Adjust VIDEO GAIN = Waveform 4.4 to 4.6 times step 1

3. Release SELF TEST - REC TEST down - MOD TEST down - 905 OFF

3-9c. 020 NORM REST POTENTIAL ADJUSTMENT

(Multimeter to 020 AGC VOLTAGE, r-f blanket on) 020, 295

1. RADAR STBY - F MIN - 40SP - MOD TEST - adjust NORM REST POTENTIAL = -1.0 ±0.1v

2. MOD TEST down - 305 NORM - 16SP - 905 OFF

3-9d. 295 NORM GAIN AND PARAMP GAIN ADJUSTMENT

(R-f blanket on) 295, rcvr barrel

NOTE

Perform para. 3-9c.

1. RADAR STBY - F MIN - 40SP - MOD TEST - 096 3G - adjust NORM GAIN ADJ = 096 7

2. 40LP = 096 within 1 of step 1

3. 40SP - 305 NORM - adjust PARAMP GAIN ADJ = 096 7

4. 16SP - MOD TEST down - 096 1A - 905 OFF

3-9e. 020 AGC DELAY ADJUSTMENT

(Oscilloscope to 020 AGC VIDEO, VTVM to 841 XMTR REF)
020

NOTE

If VTVM is not available, set 841 FREQ SET to center position.

1. RADAR STBY - MOD TEST - REC TEST - 841 MAN SCRAM - adjust 841 FREQ SET = VTVM 0 ±0.5vdc

2. Lock on to 2nd target - adjust AGC DELAY = 2nd target 6.5 ±0.5v peak

3. MOD TEST down - REC TEST down - 841 OFF - 905 OFF

3-9f. 020 HOM REST POTENTIAL ADJUSTMENT

(Multimeter to 020 ERROR SIGNAL) 020

1. 905 ON - 40SP - hand control - adjust ANT ELEV = Minimum clutter on 080
2. Track = Record multimeter voltage
3. 305 HOM = 020 ATOT off
4. Press 020 SELF TEST = Record multimeter voltage before 020 ATOT on
5. Release SELF TEST - adjust HOM REST POTENTIAL = Multimeter voltage of step 2 if difference between step 2 and 4 > 5v, or 5v less than step 4 if difference between step 2 and step 4 < 5v
6. 16SP - 305 NORM - 905 OFF

3-9g. 095 ON TARGET ADJUSTMENT

(None) 095, 103

1. RADAR STBY - track - press ON TARGET ADJ switch - adjust ON TARGET ADJ control = 095 ON TARGET just comes on.

2. Release ON TARGET ADJ switch = ON TARGET goes off

3. 905 OFF

3-9h. 020 ATOT SENSITIVITY ADJUSTMENT

(None) 020

NOTE

After ATOT is on for 10 sec, perform step 2.

1. RADAR STBY - 305 HOM - 40SP - track - MOD TEST - press 020 SELF TEST = Record time before 020 ATOT comes on

2. Release SELF TEST = ATOT goes off after same time delay as step 1

3. MOD TEST down - 16SP - 305 NORM - 905 OFF

3-9i. 295 SNIFF THRESHOLD ADJUST

(None) 063, 295

1. 905 ON - track with no lock on - 063 S1 ON - adjust SNIFF THRESHOLD ADJ ccw = 295 SNIFF TEST off

2. SNIFF THRESHOLD ADJ cw = SNIFF TEST just comes on

3. Release S1 = SNIFF TEST goes off

4. 905 OFF

3-9j. 195 V6 BIAS ADJUSTMENT

(Multimeter to 195 I_K V6) 195

1. RADAR STBY - 40LP - MOD TEST - REC TEST - adjust V6 BIAS = +0.25 $\pm$0.03v

2. MOD TEST down - REC TEST down - 16SP - 905 OFF

3-9k. 095 EDGE ANGLE DELAY ADJUSTMENT

(VTVM to 095 EDGE ANGLE CONT VOLT) 020,095

NOTE

Perform para. 3-9a thru 3-9h.

1. RADAR STBY - 096 6G - track - record 096 indication - MOD TEST - REC TEST - lock on = 096 indication increases 2 units

2. 095 EDGE ANGLE DELAY fully cw = Approx +7.3v, record

3. Adjust EDGE ANGLE DELAY = 0.2v less than step 2

4. MOD TEST down - REC TEST down - 096 1A - 905 OFF

3-11a. AUTO SEARCH PATTERN CHECK

(None)

241

1. RADAR STBY - 106 TEST - 506 TEST = 4 bar sweep $\pm 53^{o}$
2. 855 2 BAR = 2 bar sweep $\pm 53^{o}$
3. 855 1 BAR = 1 bar sweep $\pm 53^{o}$
4. ANT ELEV UP, DN, detent = El marker up and down - sweep narrows
5. 855 L = Sweep -53^{o} to $+6^{o}$
6. 855 C = Sweep $\pm 30^{o}$
7. 855 R = Sweep -6^{o} to $+53^{o}$
8. 855 B - 855 NORM - 506 NORMAL - 106 NORM - 905 OFF

3-11b. MANUAL SEARCH PATTERN CHECK

(None) 241

1. RADAR STBY - 106 TEST - 506 TEST = 4 bar sweep
2. Hand control and move = Sweep follows hand control
3. ANT ELEV UP, DN, detent = E1 marker follows ANT ELEV
4. ANT ELEV detent - 855 B - 106 NORM - 506 NORMAL - 905 OFF

3-11c. ANTENNA SUPERSEARCH CHECK

(None) 241, 663

1. RADAR STBY - 106 TEST - 506 TEST = Sweep $\pm 53^{o}$
2. Action switch 1st detent = Sweep $\pm 16.5^{o}$ - 10 sweeps in 6.5 to 8.5 sec
3. Move hand control in az = Sweep $\pm 16.5^{o}$ follows hand control
4. ANT ELEV UP, DN, detent = E1 marker follows ANT ELEV
5. Release action switch = Sweep $\pm 53^{o}$
6. 905 OFF

3-11d. ELEVATION SCAN OVERLAP CHECK

(None) 017, 241

1. 905 ON - 855 C - ANT ELEV toward DN = Target on top bar

2. ANT ELEV toward UP = Target on top and 2nd bars

3. ANT ELEV toward UP = Target on 2nd and 3rd bars

4. ANT ELEV toward UP= Target on 3rd and 4th bars

5. ANT ELEV detent - 855 B - 905 OFF

3-12a. 241 EL BAL ADJUSTMENT

Perform LS-1 routine iaw para. 6-28.

3-12b. 241 AZ BAL ADJUSTMENT

(VTVM to 241 TP1 and TP2, jumper wire to 523 TP17 and 241 TP1) 017, 241

1. RADAR STBY - 106 TEST - 506 TEST - hand control - adjust AZ BAL = 0 vdc

2. Remove jumper wire - VTVM to 241 TP2 and gnd = +50.0 $\pm$1.0v

3. Release action switch - 106 NORM - 506 NORMAL - 905 OFF

3-12c. 241 SEARCH WIDTH ADJUSTMENT

(None) 017, 241

1. RADAR STBY - 855 1 BAR - 106 TEST - 506 TEST = Antenna sweeps 1 bar scan

2. ANT ELEV detent - adjust SEARCH WIDTH ADJ = Antenna clears limit ring by approx 1.5 in.

3. 855 NORM - 106 NORM - 506 NORMAL - 905 OFF

3-12d. AZ CONT RATE ADJUSTMENT

(None) 241

1. RADAR STBY - 106 TEST - 506 TEST - adjust AZ CONT RATE = 10 sweeps in 12 $\pm$1 sec

2. 506 NORMAL - 106 NORM - 905 OFF

3-12e. 017 RESOLVER ADJUSTMENT

(ME30A/U Multimeter, jumper wire, oscilloscope) 017

1. Pin antenna - RADAR STBY - track - monitor max residual voltage test points in table 3-2 = Voltage indicated in table 3-2

2. Disconnect multimeter - unpin antenna - ILS = Antenna center and down

3. DL MIN TIME - pin antenna - monitor phase test points in table 3-2 = Phase indicated in table 3-2

4. Disconnect oscilloscope - 905 OFF - unpin antenna - reinstall radome

Table 3-2. Resolver Adjustment

RESOLVER	PIN ANT	NOTE	017 PHASE TEST POINT	017 MAX RESIDUAL VOLTAGE TEST POINT
Elevation computing (B8)	E1	1	TP4 (in)	TP3 (0.20v)
Elevation position (B6)	E1	-	TP9 (in)	TP12 (0.43v)
Azimuth computing (B1)	Az	1	TP2 (in)	TP1 (0.20v)
Azimuth rate resolution (B3)	Az	2	TP13 (in)	TP14 (0.43v)
Elevation rate resolution (B7)	Both	2	TP5 (out)	TP6 (0.43v)
Azimuth position (B2)	Both	-	TP11 (in)	TP10 (0.43v)

1. Computer must not be in test mode or noise will appear to exceed 0.20 volts peak-to-peak.

2. Connect jumper between 241 TP8 and 206 TP12 to check B3 and B7. Remove jumper when check is completed.

3-12f. Deleted.

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3-14a. 103 DRIFT ADJUST

(None) 095, 103

1. 905 ON - VIDEO GAIN fully cw = 096 5A - ANT ELEV for no target return - hand control and slew range gate = 096 4
2. Track = 096 change ≤ 1.2 units/minute
3. Adjust DRIFT ADJUST for min 096 change - slew range gate for 096 4 - track = 096 change ≤ 1.2 units/minute
4. TAIL - slew range gate = 096 4
5. Track = 096 change ≤ 1.2 units/minute
6. Adjust DRIFT ADJUST for min 096 change - slew range gate for 096 4 - track = 096 change ≤ 1.2 units/minute

NOSE - 096 1A - 905 OFF

3-15c. 141 REFERENCE VOLTAGE CHECK

(VTVM to 141 TP11 and TP8 [gnd]) 141

1. RADAR STBY - radar dom - track = 15 to 21 vac
2. Monitor 141 TP12 = 15 to 20 vac
3. 905 OFF

3-15i. 141 75 VOLT POWER SUPPLY CHECK

(None) 141

1. RADAR STBY - 096 9D track = 096 6.0 to 8.25
2. 096 1A - 905 OFF

3-16a. STEERING LOOP ADJUSTMENT

(None) 141

NOTE

Perform para. 3-9b.

1. RADAR STBY - load channel 8 - 140 DIGITAL INPUT SWITCHES - 504 - DIGITAL INPUTS ENTER up - 846 15 - ENTER START ADDRESS - RUN - track - 096 8G - press 141 RDR ERR-ZERO - adjust 141 EL TRACK ERROR R26 = 096 0 $\pm$1

2. 096 8F - adjust AZ TRACK ERROR R36 = 096 0 $\pm$1

3. 523 ON = Steering dot centered

4. Release RDR ERR-ZERO - 523 OFF - 096 1A - 846 NORMAL - START ADDRESS 00 - 140 NORMAL - 000 - DIGITAL INPUTS ENTER down - 905 OFF

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3-16b. TRACKING LOOP ADJUSTMENT

(Multimeter to 041 TP1 and TP2) 017, 041, 106, 206, 506

1. RADAR STBY - MISSILES ALL - load channel 8 - 140 DIGITAL INPUT SWITCHES - 504 - DIGITAL INPUTS ENTER up - 846 15 - ENTER START ADDRESS - RUN - press 346 ANTENNA SERVO ERROR TEST - track - press 141 $\delta E/\delta D$ ZERO - press and release 041 S1 and S2 = A-C voltage varies at a smooth rate in both directions

2. Monitor 041 TP5 - press and release S1 and S2 = Voltage varies at a smooth rate in both directions

3. Press 506 GYRO REF - record multimeter indication - release GYRO REF - press and release S1 and S2 for on scale - adjust AZ ZERO DRIFT R2 = Voltage does not drift

4. Monitor 041 TP2 - press GYRO REF - record multimeter indication - release GYRO REF - press and release S1 and S2 for on scale - adjust EL ZERO DRIFT R4 = Voltage does not drift

5. 106 TEST - 506 TEST - track - press and release GYRO REF - adjust 106 AZ SERVO BAL = Multimeter min deflection when GYRO REF pressed and released

6. Monitor 041 TP5 - press and release GYRO REF - adjust 206 DC EL = Multimeter min deflection when GYRO REF is pressed and released

7. Press and release GYRO REF = B-sweep and el marker do not move

8. Position antenna away from center - track = B-sweep and el marker do not move

CAUTION

Excessive holding of 206 OSC in AZ or EL may cause gear train wear. Do not set 206 AZ STAB or EL STAB below 4.0.

9. Release 346 ANTENNA SERVO ERROR TEST - release 141 δ_E/δ_D ZERO - 846 00 - 846 NORMAL - 140 NORMAL - 000 - DIGITAL INPUTS ENTER down - 096 7A - press 206 KV TEST to AZ - 206 OSC to AZ for >1 sec but <2 sec = 096 >5 with OSC to AZ and <5 with OSC released - if necessary, adjust 206 AZ STAB in 0.5 increments and repeat step

10. 096 7C - press 206 KV TEST to EL - OSC to EL for >1 sec but <2 sec = 906 >5 with OSC to EL and <5 with OSC released - if necessary, adjust 206 EL STAB in 0.5 increments and repeat step

11. 096 1A - 106 NORM - 506 NORMAL - VIS IDENT - 905 OFF - disconnect multimeter

3-16c. 141 MOD CURRENT R52 ADJUSTMENT

(VTVM to 141 TP15 and TP8 [gnd[1]) 141

1. RADAR STBY - track - adjust MOD CURRENT R52 = 4.24 ±0.4 vac, record
2. Monitor 141 TP14 = Same as step 1 ±1%
3. Monitor 141 TP11 and TP12 = 25 to 30 vac
4. 905 OFF

3-16d. 141 LOBING FREQUENCY ADJUSTMENT

(Oscilloscope to 141 TP15, frequency counter) 141

1. RADAR STBY - track - adjust oscilloscope = 6 cm p-p
2. Oscilloscope EXT SWEEP IN to 141 TP15 - adjust oscilloscope = 6 cm horizontal waveform
3. Oscilloscope VERTICAL INPUT to 141 TP15 - EXT SWEEP IN 141 TP14 = Lissajous pattern with $< 3^{o}$ tilt
4. LOBE FREQ to 1, 2, then 4 = Lissajous pattern with $< 3^{o}$ tilt
5. Disconnect EXT SWEEP IN - LOBE FREQ 1 - frequency counter to 141 TP14 = Lobing frequency 1 iaw T.O. 27-6
6. LOBE FREQ 2, 3, then 4 = Lobing frequencies 2, 3, and 4 iaw T.O. 27-6
7. LOBE FREQ 3 - 905 OFF

3-16e. 017 GYRO CROSSTALK ADJUSTMENT

(VTVM to 041 TP3 and TP1 GND) 017, 506

CAUTION

Handle HIG gyros with extreme care.

NOTE

Perform LE-1 routine. If routine passes, do not perform this procedure.

CAUTION

If gyro heat lights do not cycle within 5 minutes, set 905 OFF.

1. Pin antenna in el - WARM = AZ and EL gyro heat lights blink - gyros get warm
2. RADAR STBY - hand control - move antenna in az = Voltage changes polarity as antenna motion changes
3. Adjust gyro B12 = Min voltage change as antenna is moved
4. Tighten B12 - move antenna in az = Voltage changes ≤ step 3

5. Unpin antenna in el and pin in az - monitor 041 TP4 and TP1 GND - move antenna in el = Voltage changes polarity as antenna motion changes

6. Adjust gyro B13 = Min voltage change as antenna is moved

7. Tighten B13 - move antenna in el = Voltage changes ≤ step 6

8 905 OFF - unpin antenna in az - repeat LE-1 routine

3-16g. 141 DITHER FREQ R4 ADJUSTMENT

(Oscilloscope to 141 TP10) 017, 141

1. RADAR STBY - 106 TEST - 506 TEST - track - ground 141 TP9 - adjust DITHER FREQ R4 fully ccw then cw = Antenna just begins to oscillate - sine wave < 50 msec wide
2. Remove ground from TP9 - 106 NORM - 506 NORMAL - 905 OFF

3-16h. 506 AZ AND EL ADJUSTMENTS

(Multimeter to 506 TP13) 017, 141, 506

1. RADAR STBY - track - adjust AZ ADJ = 3 vac
2. Monitor 506 TP12 - adjust EL ADJ = 3 vac
3. 905 OFF

3-16i. 506 OUTPUT ADJUSTMENT

(None) 506

1. Load channel 8 - 905 ON - 305 ALL - lock on - 140 DIGITAL INPUT SWITCHES - 700 - DIGITAL INPUTS ENTER up - 846 15 - ENTER START ADDRESS - RUN = If 063 DS2 PURSUIT and DS1 LEAD COLLISION come on proceed to step 3
2. 096 5E - adjust OUTPUT ADJ = 096 5 - DS2 PURSUIT and DS1 LEAD COLLISION come on
3. 140 NORMAL - 000 - DIGITAL INPUTS ENTER down - 846 00 - 846 NORMAL - 096 1A - 305 OFF - 905 OFF

3-17d. TRACK OPERATIONAL CHECK

(None) 017, 141

1. 905 ON - lock on to small isolated gnd target = B-sweep to center of target - normal VI display with R gap at 0

CAUTION

Do not perform step 2 if missiles or WSEMs are loaded.

2. MISSILES ALL = Normal lead collision display

3. VIS IDENT - 905 OFF

3-18b. 223 TIME CIRCLE SCALE FACTOR ADJUSTMENT

(None) 223

1. RADAR STBY - 223 20-SEC - 523 ON - adjust TIME CIRCLE SCALE FACTOR = Time-to-go circle 2.8 in. diameter

2. 523 OFF- 223 OPERATE - 905 OFF

3-18c. 523 TIME CIRCLE PHASE ADJUSTMENT

(None) 523

1. RADAR STBY - 223 20-SEC - 523 ON - adjust TIME CIRCLE PHASE = Time-to-go circle circular

2. 523 OFF - 223 OPERATE - 905 OFF

3-18d. 523 REF CIRCLE PHASE ADJUSTMENT

(None) 523

1. RADAR STBY - 223 20-SEC - 523 ON - adjust REF CIRCLE PHASE = Reference circle circular

2. 523 OFF - 223 OPERATE - 905 OFF

3-18e. 395 $\dot{R}$ ZERO ADJUSTMENT AND $\dot{R}$ GAP SCALE FACTOR ADJUSTMENT

(None) 395

1. RADAR STBY - 223 ZERO - 223 20-SEC - MISSILES ALL - 523 ON - press 395 S2 = $\dot{R}$ gap 0 $\pm$50

2. Adjust $\dot{R}$ ZERO ADJ = $\dot{R}$ gap 0

3. 223 1200 - adjust $\dot{R}$ SCALE FACTOR ADJ = $\dot{R}$ gap 1175 $\pm$75

4. VIS IDENT - $\dot{R}$ TEST (KNOTS) OPERATE - adjust $\dot{R}$ ZERO ADJ = $\dot{R}$ gap 0

5. Release S2 - 523 OFF - 223 TIME CIRCLE TEST OPERATE - 905 OFF

3-18f. 395 $\dot{R}$ WIDTH ADJUSTMENT

(None) 395

1. RADAR STBY - 223.20-SEC - 523 ON - press 395 S2 - adjust $\dot{R}$ WIDTH ADJ = $\dot{R}$ gap 1/4 $\pm$1/16 in.

2. Release S2 - 523 OFF - 223 OPERATE - 905 OFF

3-18g. 395 HOR AMPL GAIN CONTROL, HOR AMPL CTR CONT, VERT AMPL GAIN CONTROL, AND VERT AMPL CTR CONT ADJUSTMENTS

(None) 395

1. RADAR STBY - 223 20-SEC - 523 ON - SSGC 4 - 4SP - HOM - TAIL - MISSILES ALL - MOD TEST = 8th rcvr test target at top of B-sweep-B-sweep centered vertically

2. Track with no lock on - adjust VERT AMPL CTR CONT = Target elevation marker centered

3. Adjust VERT AMPL GAIN CONTROL = Firing bar on 4th rcvr test target

4. Adjust HOR AMPL CTR CONT = Firing bar centered in az

5. Adjust HOR AMPL GAIN CONTROL = Firing bar 2.8 in. long

NOTE

If adjustments were performed, perform para. 3-18b.

6. MOD TEST down - VIS IDENT - NOSE - 305 NORM - 16SP - SSGC 7, then OFF - 523 OFF - 223 OPERATE - 905 OFF

3-18h. 595 HORIZ ATTACK CENTER, HORIZ ATTACK GAIN, VERT ATTACK DEFLECTION CENTER, AND VERT ATTACK DEFLECTION GAIN ADJUSTMENTS

(None) 595

NOTE

Perform para. 3-20f, if necessary.

1. RADAR STBY - 4SP - TAIL - HOM - 523 ON - 223 20-SEC - SSGC 4 - MISSILES ALL - MOD TEST - track with no lock on - adjust VERT ATTACK DEFLECTION CENTER = Target elevation marker centered

2. Adjust VERT ATTACK DEFLECTION GAIN = Firing bar on 4th rcvr test target

3. Search - adjust HORIZ ATTACK DEFLECTION CENTER = Time-to-go circle centered in az

4. Adjust HORIZ ATTACK DEFLECTION GAIN = Time-to-go circle 2.8 $\pm$0.06 in. diameter

NOTE

If adjustments were performed, perform para. 3-18g.

5. SSGC 7, then OFF - VIS IDENT - 305 NORM - 16SP - NOSE - 523 OFF - 223 OPERATE - MOD TEST down - 905 OFF

3-19a. JIZZLE CHECK

(None) 003,195

1. RADAR STBY = B-sweep a fine line
2. Hand control = B-sweep jizzled
3. Track = B-sweep jizzled
4. Press 195 VIDEO TEST = B-sweep a fine line
5. Release VIDEO TEST - 905 OFF

3-19b. EL MARKER CHECK

(VTVM) 083, 241, 523

1. 905 ON - MISSILES ALL - 855 1 BAR - ANT ELEV detent - press and release LC/PUR = E1 marker straight
2. Press and release LC/PUR = E1 marker straight
3. Track = E1 marker straight

NOTE

Perform step 4 only if step 1, 2, or 3 failed.

4. Monitor 241 TP3 and 523 TP17 = 0 $\pm$1.0 vdc
5. 855 NORM - VIS IDENT - 905 OFF

3-20a. 389 SWEEP CENTERING AND SWEEP LENGTH ADJUSTMENTS

(None) 389

NOTE

Perform para. 3-18c and 3-18g.

1. RADAR STBY - 4SP - 523 ON - 223 20-SEC = B-sweep centered and length of time-to-go circle diameter ±1/16 in.

2. 16SP = B-sweep centered and length of time-to-go circle diameter ±1/4 in.

3. 40SP = B-sweep centered and length of time-to-go circle diameter ±1/4 in.

4. 80LP = B-sweep centered and length of time-to-go circle diameter ±3/8 in.

5. 200LP = B-sweep centered and length of time-to-go circle diameter ±3/8 in.

NOTE

Perform step 6 only if step 1, 2, 3, 4, or 5 failed.

6. 4SP - adjust SWEEP LENGTH and SWEEP CENTERING = B-sweep centered and length as specified in step 1

7. 16SP - 523 OFF - 223 OPERATE - 905 OFF

3-20b. 195 AZ SW CENTER AND AZ SW GAIN ADJUSTMENTS

(None) 195

1. RADAR STBY - press 195 AZ SW CENTER switch - adjust AZ SW CENTER control = B-sweep centered

2. Release AZ SW CENTER switch - ILS = B-sweep centered

3. DL MIN TIME - 106 TEST - 506 TEST - adjust AZ SW GAIN = B-sweep searches $\pm 53^{o}$

4. 106 NORM - 506 NORMAL - 905 OFF

3-20c. 195 RANGE GATE AM. ADJUSTMENT

(Oscilloscope to 195 IND VIDEO) 195

1. RADAR STBY - hand control - move range gate = Range gate appears
2. Move hand control slowly = Range gate amplitude constant
3. Move hand control rapidly = Range gate amplitude increases
4. Adjust RANGE GATE AM. = Range gate clearly defined during fast hand control movement and min smearing during slow hand control movement
5. Track = Range gate clear and stationary
6. REC TEST = Range gate amplitude equal to rcvr test targets at less than 8 miles
7. REC TEST down - 905 OFF

3-20d. 080 UNIT ADJUSTMENTS

(None) 080

NOTE

Perform this procedure on aircraft power. Perform para. 7-4a, 7-4b, 7-6d, and 7-6f iaw T.O. 27-2 and para. 3-18 and 3-20 before proceeding

CAUTION

If main bang intensity is too high, adjust R5 ccw to prevent damage to MMST.

1. 905 ON - 080 ON = MMST on in 25 to 45 sec
2. IF GAIN fully ccw - VIDEO GAIN fully ccw - ERASE INTENSITY 90° cw from fully ccw = Clear erase sweep - visible search square
3. Hand control = B-sweep faint outline
4. Track = B-sweep faint outline
5. IF GAIN fully cw - VIDEO GAIN fully cw - 855 1 BAR - search = Targets store lightly between B-sweep and erase sweep

NOTE

Steps 6 thru 33 are a general check of display quality. Steps 34 thru 51 must be performed in sequence to ensure correct alignment.

6. ERASE INTENSITY thru full range and back to 90° from fully ccw = Clear, sharp targets - peppery background

7. 4SP = No background change

8. 40SP = No background change

9. 40LP = No background change

10. 80LP = No background change

11. 200LP = No background change

12. 4SP - supersearch = Targets do not fade for one sweep - background constant for complete sweep

13. 16SP = No target or background change

14. 40SP = No target or background change

15. 40LP = No target or background change

16. 80LP = No target or background change

17. 200LP = No target or background change

18. 4SP - hand control = Noise noticeable but B-sweep not black

19. 16SP = No B-sweep change

20. 40SP = No B-sweep change

21. 40LP = No B-sweep change

22. 80LP = No B-sweep change
23. 200LP = No B-sweep change
24. Track = B-sweep searches
25. 80 LP = tract - B-sweep same as step 23
26. 40LP = No B-sweep change
27. 40SP = No B-sweep change
28. 16SP = No B-sweep change
29. 4SP = No B-sweep change

CAUTION

If az-el dot intensity is too high, set 080 OFF and perform para. 4-8b.

30. MISSILES ALL- RDR SLVD - IR dom = Az-el dot searches with approx 3 in. tail

WARNING

Ensure canopy jack is installed.

31. 080 OFF - lock canopy latch = Displays appear in 25 to 45 sec
32. Unlock canopy latch = Displays disappear in approx 3 minutes
33. Search - lock canopy latch = MMST on in 25 to 45 sec

NOTE

If any of steps 1 thru 33 were incorrect, perform steps 34 thru 51. Otherwise, perform step 52.

34. 16SP - radar dom - adjust R21 and R26 = Erase sweep approx 1/4 in. above and below B-sweep and centered

35. 4SP - 855 B - search - ATTACK INTENSITY fully ccw - VIDEO GAIN fully ccw - IF GAIN fully ccw - adjust R5 = B-sweep just becomes visible

36. VIDEO GAIN fully cw - IF GAIN fully cw - REC TEST - adjust R23 = Rcvr test targets begin to store black

37. VIDEO GAIN fully ccw - IF GAIN fully ccw - adjust R27 fully cw - adjust VIDEO GAIN and IF GAIN = Rcvr test targets visible with no blooming

38. Adjust R24 = Rcvr test targets clear and sharp

39. VIDEO GAIN fully cw - IF GAIN fully cw = Rcvr test targets partially store between B-sweep and erase sweep

40. IF GAIN fully ccw quickly = Rcvr test targets fully erased after 3 sweeps

41. Adjust R6 = Erase sweep as narrow as possible

42. VIDEO GAIN fully ccw - adjust ERASE INTENSITY = Rcvr test targets not completely erased before next sweep

43. 4SP, 16SP, 40SP, 40LP, 80LP, and 200LP - adjust R2 = B-sweep optimum at all ranges

44. 16SP - supersearch - adjust R4 = B-sweep area slightly darker than rest of MMST

45. 4SP, 40SP, 40LP, 80LP, 200LP, and 16SP = Same as step 44

46. Hand control - adjust R1 fully cw - adjust R3 = B-sweep clearly visible but not black

47. 4SP, 40SP, 40LP, 80LP, 200LP, and 16SP = B-sweep same as step 46

NOTE

R1 cw makes B-sweep darker in 4SP and lighter in all other ranges. R1 should remain fully cw. Repeat steps 43 thru 47 until no adjustments are required.

48. Search - 40SP - IR dom - adjust R7 = Az-el dot sweeps 1 bar before fadeout occurs

49. Supersearch = Same as step 48

50. Search - RADAR STBY - 523 ON - ATTACK INTENSITY for visible display - adjust R25 = Attack display clear and sharp focus

51. Radar dom - 16SP - ERASE INTENSITY for visible erase sweep - adjust R22 = Raster erase pattern approx 3/8 in. beyond artificial horizon

52. Unlock canopy latch - ERASE INTENSITY 10 o'clock - 855 NORM - 905 OFF

3-20e. 595 SEARCH AZIMUTH CENTER AND SEARCH AZIMUTH GAIN ADJUSTMENTS

(None) 595

NOTE

Perform para. 3-20b.

1. RADAR STBY - 106 TEST - 506 TEST - press 195 AZ SW CENTER switch - adjust SEARCH AZIMUTH CENTER = B-sweep centered

2. Release AZ SW CENTER switch - adjust SEARCH AZIMUTH GAIN = B-sweep searches $\pm 53^{o}$

3. 106 NORM - 506 NORMAL - 905 OFF

3-20f. 595 RANGE SWEEP CENTER AND RANGE SWEEP LENGTH ADJUSTMENTS

(None) 595

NOTE

Perform para. 3-20a and 3-18.

Perform step 6 only if steps 1, 2, 3, 4, or 5 fails.

1. RADAR STBY - 4SP - 523 ON - 223 20-SEC = B-sweep centered and length of time-to-go circle diameter ±1/16 in.

2. 16SP = B-sweep centered and length of time-to-go circle diameter ±1/4 in.

3. 40SP = B-sweep centered and length of time-to-go circle diameter ±1/4 in.

4. 80LP = B-sweep centered and length of time-to-go circle diameter ±3/8 in.

5. 200LP = B-sweep centered and length of time-to-go circle diameter ±3/8 in.

6. 4SP - adjust RANGE SWEEP CENTER and RANGE SWEEP LENGTH = B-sweep centered and length as specified in step 1

7. 523 OFF - 223 OPERATE - 16SP - 905 OFF

CHAPTER 4

IR SUBSYSTEM

4-4b. NITROGEN QUANTITY AND SERVICING PROCEDURE

(Nitrogen service unit) 767, Compressor

CAUTION

Ensure that nitrogen service unit disconnects are clean.

1. Open IR COOL'G INTLK - RADAR STBY - close BLEED VALVE - open FILL VALVE = Pressure per temperature (fig. 4-1)

2. Close IR COOL'G INTLK = 0-2 psig within 5 minutes

3. Open IR COOL'G INTLK - disconnect nitrogen service unit - close IR COOL'G INTLK - replace IR fill valve dust cover - 905 OFF

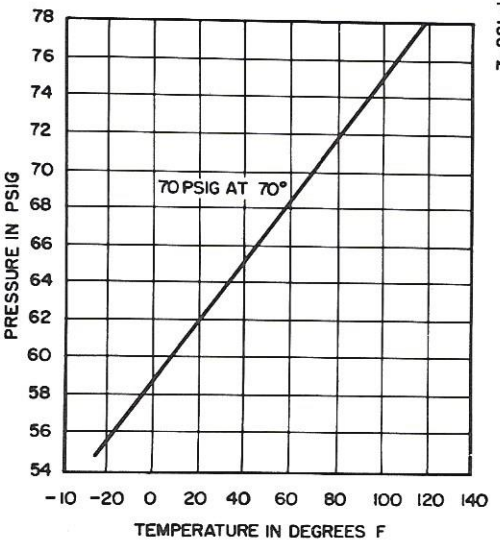


Figure 4-1. System Charging Pressure vs. Ambient Temperature

4-4c. PURGING PROCEDURE

(Nitrogen service unit) 767, Compressor

CAUTION

Ensure that nitrogen service unit disconnects are clean.

1. Open IR COOL'G INTLK - close BLEED VALVE - open FILL VALVE = 80 psig

NOTE

Repeat steps 2 and 3 three times

2. Open BLEED VALVE = Ambient pressure

3. Open FILL VALVE = Pressure per temperature (fig. 4-1)

4. Close IR COOL'G INTLK - disconnect nitrogen service unit - replace IR fill valve dust cover

4-4d. IR HIGH PRESSURE LEAK CHECK

(Nitrogen service unit) 767

CAUTION

Ensure that nitrogen service unit disconnects are clean.

1. Open IR COOL'G INTLK - RADAR STBY - close BLEED VALVE - open FILL VALVE = Pressure per temperature (fig. 4-1)
2. Close IR COOL'G INTLK = 0-2 psig within 5 minutes
3. Open IR COOL'G INTLK - disconnect nitrogen service unit - close IR COOL'G INTLK - replace IR fill valve dust cover - 905 OFF

4-6. 663 TONE NULL AND 040 AURAL TONE BALANCE ADJUSTMENTS

(486138, Headset) 040, 663, 855

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. RADAR STBY - MISSILES ALL - RDR SLVD - 855 2 BAR - 855 C - IR dom - 486138 aperture #4 = 2 bar search pattern with target
2. ANT ELEV up = Target disappears
3. 505 VOL cw - 855 IR THRESHOLD TONE fully cw - IR VOLUME midpoint = High pitched audio tone
4. Adjust IR VOLUME = Volume changes
5. IR THRESHOLD TONE slowly ccw - Audio tone pitch decreases
6. IR THRESHOLD TONE more ccw = Audio tone null
7. IR THRESHOLD TONE midpoint - adjust 663 TONE NULL = Audio tone null
8. Hand control - adjust 040 AURAL TONE BALANCE = Audio tone null

9. Search - ANT ELEV detent = Target appears - IR audio present

10. 855 IR THRESHOLD VIDEO slowly ccw = IR target smaller - audio does not change

11. Radar dom = Audio does not change

12. 855 IR THRESHOLD VIDEO fully ccw - 855 NORM - 855 B - VIS IDENT - STOW - 905 OFF

4-7a. TACHOMETER NULL CHECK

(ME30A/U multimeter to 441 EL TACH GEN and 400 ~ RETURN) 441,767

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR DOM = ≤ 0.026 vac

2. Monitor 441 AZ TACH GEN and 400 ~ RETURN = ≤ 0.026 vac

3. VIS IDENT - STOW - 905 OFF

4-7b. AUTOMATIC SEARCH PATTERN CHECK

(486126) 241, 663, 855

1. RADAR STBY - MISSILES ALL - RDR SLVD - radar dom - ANT ELEV detent - 855 2 BAR - perform roll chart B23 = Indication described on roll chart

2. 486126 1 - IR dom = Az-el dot and 767 unit move in 2 bar C-scan $\pm 53^{o}$

3. ANT ELEV UP = C-scan 1 1/2 in. up and narrows

4. ANT ELEV DN = C-scan 1 1/4 in. down and narrows

5. ANT ELEV detent - 855 NORM - AZ SCAN per table 4-2 = C-scan and 767 unit per table 4-2

6. STOW - 16SP - VIS IDENT - 905 OFF

Table 4-2. IR Search Limit Check

AZ SCAN	ELEVATION C-SCAN	AZIMUTH C-SCAN
B	4 bar	$\pm 53^{o}$
L	4 bar	-53^{o}, $+6^{o}$
C	4 bar	$\pm 30^{o}$
R	4 bar	-6^{o}, $+53^{o}$

4-7c. MANUAL SEARCH CHECK

(Oscilloscope to 441 AZ RES ERROR) 083, 241, 663, 767

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - move hand control in az = Small amplitude sine wave - az-el dot follows hand control 1 1/2 in. on each side of center

2. Monitor 441 EL RES ERROR - center hand control - ANT ELEV UP, then DN = Small amplitude sine wave - az-el dot follows ANT ELEV 1 1/2 in. up and 1 1/4 in. down from center

3. Track - ANT ELEV detent - STOW - VIS IDENT - 905 OFF

4-7d. SEARCH PATTERN STABILIZATION CHECK

(None) 346, 441

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - 855 2 BAR = 2 bar el scan - $\pm 53^{o}$ in az

2. Press 90^{o} ROLL = 2 bar az scan - $\pm 53^{o}$ in el

3. Release 90^{o} ROLL - STOW - 855 NORM - VIS IDENT - 905 OFF

4-7e. SUPERSEARCH CHECK

(None) 241

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - 855 2 BAR - supersearch = One bar scan ±16.5°

2. Move hand control in az = C-scan and IR head follow hand control

3. Move ANT ELEV = C-scan and IR head follow ANT ELEV

4. Search = 2 bar scan ±53°

5. STOW - 855 NORM - VIS IDENT - 905 OFF

4-7f. 767 SEARCH RATE CHECK

(None) 241

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - ANT ELEV detent = IR head makes 10 sweeps in 11.7 ±1.0 sec

2. Hand control centered - supersearch = IR head makes 10 sweeps in 6.3 ±1.0 sec

3. Search - STOW - VIS IDENT - 905 OFF

4-7g. SEARCH PATTERN OVERLAP CHECK

(486138) 663, 767

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. RADAR STBY - MISSILES ALL - RDR SLVD - aperture #4 - 855 C - IR dom - adjust ANT ELEV = IR target on 1st and 2nd bars, then 2nd and 3rd bars, then 3rd and 4th bars

2. ANT ELEV detent - 855 B - STOW - VIS IDENT - 905 OFF

4-8a. 663 EL STEPS ADJ, VERT CENTER, AND ϵ_S GAIN ADJUSTMENTS

(Oscilloscope to 663 ϵ_S DEFL) 663

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - adjust EL STEPS ADJ = +1.11 $\pm$0.22v as IR head moves from bottom bar to top bar

2. 855 2 BAR - ANT ELEV detent - adjust VERT CENTER = C-scan centered in el

3. Radar dom - ANT ELEV UP = El marker 1 1/2 in. up

4. IR dom - adjust ϵ_S GAIN = C-scan 1 1/2 in. up

5. ANT ELEV DN = C-scan 0.6 in. down

6. ANT ELEV detent - STOW - 855 NORM - VIS IDENT - 905 OFF

4-8b. 663 INT ADJUSTMENT

(486138) 663

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. Aperture #4 - 905 ON - MISSILES ALL - RDR SLVD - IR THRESHOLD VIDEO fully cw - VIDEO GAIN and IF GAIN for best contrast - IR dom - adjust INT ADJ = IR target and C-scan have best contrast

2. STOW - VIS IDENT - 905 OFF

4-8c. 663 VIDEO AMP ADJUSTMENT

(486138) 663

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - supersearch - ANT ELEV for max target - adjust VIDEO AMP = 3/4 in. IR target

2. Search - STOW - VIS IDENT - 905 OFF

4-8d. 595 IR GAIN AND IR CENTER ADJUSTMENTS

(None) 595

NOTE

Perform para. 3-20a.

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - adjust IR CENTER = C-scan sweeps 1 bar below center and 2 bars above center
2. 855 2 BAR - adjust IR GAIN = Top bar at same position on both 080 units
3. 855 NORM - STOW - VIS IDENT - 905 OFF

4-11. EXPANDED SWEEP PRESENTATION CHECK

(None) 663

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - track = Expanded C-scan replaced by B-sweep after approx 8.5 sec - repeat step and recall B-sweep prior to 8.5 sec
2. Press RDR IR EXP = Expanded C-scan
3. Release RDR IR EXP = B-sweep
4. STOW - VIS IDENT - 905 OFF

4-12a. 746 COINC ADJUSTMENT

(Multimeter to 746 COINC, oscilloscope to 040 ELEVATION PRE AMP OUT, 486138) 746

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - lock on - aperture #4 = Record oscilloscope waveform
2. Adjust 040 ELEVATION LIN LOG ATT = Waveform 22.5% of step 1
3. Search - COINC ADJ fully cw - lock on - 28v to TJ5-9 - wait 30 sec - adjust 040 ELEVATION LIN LOG ATT = Same waveform as step 1
4. Adjust COINC ADJ slowly = +50 v - range bar steps downward
5. STOW - VIS IDENT - 905 OFF

4-12b. 663 FIR THRESHOLD ADJUSTMENT

(486138, oscilloscope to 040 ELEVATION PRE AMP OUT, Multimeter to 663 28V FIR) 663

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. Aperture #4 - RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - lock on - open IR AZ & EL INTLK = IR attack display appears

2. FIR THRESHOLD fully cw - record peak amplitude of IR pulses - check setting of 040 ELEVATION LIN LOG ATT, then adjust for 440 mv IR pulses - adjust FIR THRESHOLD = +28 v - FIR marker doubles in length

3. ELEVATION LIN LOG ATT to previous setting - close IR AZ & EL INTLK - STOW - VIS IDENT - 905 OFF

4-13a. 040 ELEVATION ERROR BALANCE AND AZIMUTH ERROR BALANCE ADJUSTMENTS

(VTVM to 040 AZIMUTH TRACK ERROR) 040

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - open IR AZ & EL INTLK - 040 AZIMUTH and ELEVATION LIN LOG ATT fully ccw - jumper 441 DC RET to 040 AZ and EL RES ERROR - adjust AZIMUTH ERROR BALANCE = Min vdc

2. Monitor 040 ELEVATION TRACK ERROR - adjust ELEVATION ERROR BALANCE = Min vdc

3. Close IR AZ & EL INTLK - VIS IDENT - STOW - 905 OFF

4-13b. 441 EL AMP PD AND AZ AMP PD ADJUSTMENTS

(None) 441

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - hand control - jumper 040 RETURN to 040 AZIMUTH and ELEVATION TRACK ERROR - jumper 441 DC RET and 441 AZ and EL RES ERROR - adjust AZ AMP PD = 017 and 767 steady in az with no drift

2. Adjust EL AMP PD = 017 and 767 steady in el with no drift

3. Release action switch - remove jumper wires - STOW - VIS IDENT - 905 OFF

4-13c. 441 EL GYRO PD AND AZ GYRO PD ADJUSTMENTS

(None) 441

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - track - jumper 441 DC RET and 040 AZIMUTH and ELEVATION TRACK ERROR - adjust AZ GYRO PD = 767 steady in az with no drift

2. Adjust EL GYRO PD = 767 steady in el with no drift

3. STOW - VIS IDENT - 905 OFF

4-13d. 040 ELEVATION LIN LOG ATT AND AZIMUTH LIN LOG ATT ADJUSTMENTS

(None) 040

1. RADAR STBY - MISSILES ALL - RDR SLVD - IR dom - track - adjust 040 AZIMUTH ERROR BALANCE = 767 steady in az with no drift

2. Adjust 040 ELEVATION ERROR BALANCE = 767 steady in el with no drift

3. Search - adjust AZIMUTH and ELEVATION LIN LOG ATT fully cw = 4 bar pattern

4. STOW - VIS IDENT - 905 OFF

4-13e. 040 ELEVATION PHASE AND AZIMUTH PHASE ADJUSTMENTS

(486138 oscilloscope channel A to 040 AZIMUTH BLOCK OSC and TRIGGER to 040 AZIMUTH AC REF) 040

CAUTION

Computer compt IR MANUAL VALVE: LOCK

1. RADAR STBY - MISSILES ALL - RDR SLVD - aperture #4 - IR dom - lock on - adjust AZIMUTH PHASE =

2. Oscilloscope channel A to 040 ELEVATION BLOCK OSC - EXT SWEEP IN to 040 ELEVATION AC REF - adjust ELEVATION PHASE = Same as step 1

3. STOW - VIS IDENT - 905 OFF

CHAPTER 5
ARMAMENT SUBSYSTEM

5-4b. Armament Safe for Test Check

(Missile simulators on 4 rails, install ATS plug) 264, 464, 496

1. RADAR STBY = 796 TEST on - 596 SAFE FOR TEST on - missile simulators ISOLATION CIRCUITS SAFE, FIL. CONT VOLT., 28V FIRST MOTION, CHANNEL SELECTED F, and AFC HOME come on - all other lights off

2. Press rail 1 missile gone switch = 796 TEST off - 596 SAFE FOR TEST off

3. Release missile gone switch = 796 TEST on - 596 SAFE FOR TEST on

4. Repeat steps 2 and 3 on rail 2, 3, and 4

5. Remove ATS plug = 796 TEST off - 596 SAFE FOR TEST off

6. SSGC 1 = 796 TEST on - 596 SAFE FOR TEST on

7. Close NWW door closed switch - ARM = 796 TEST off - 596 SAFE FOR TEST off

8. SAFE - SSGC 2 thru 7 = 796 TEST and 596 SAFE FOR TEST on in each SSGC

9. 796 OFF = 796 TEST off - 596 SAFE FOR TEST off

10. Release door closed switch - 905 OFF

5-4d. ATS CHECK

(Four missile simulators (MS), ATS plug, all MS to M1)	008, 054, 264, 364, 464, 496

WARNING

Follow all safety precautions in T.O. 1F-106A-2-12 when operating armament bay doors or launchers. Ensure that armament bay area is clear of personnel and post personnel to warn others that doors and launchers are to be operated. Unload armament if loaded.

CAUTION

Ensure that no test cables are positioned so they might be damaged during launcher or door operation.

NOTE

This procedure includes steps from para. 5-4d of T.O. IF-106A-2-27-2 but does not include each step. Only those indications which can be observed from the cockpit or on the missile simulators are included here.

1. 905 WARM - close NWW door closed switch = MS 28V FIRST MOTION, RATE SENSOR/POWER and NORMAL PHASE, and ISOLATION CIRCUITS SAFE/PWR SUP START and FIRE come on

2. Open NWW door closed switch = MS 28V FIRST MOTION on - MS RATE SENSOR/POWER and NORMAL PHASE off

NOTE

Observing WARNINGS and CAUTIONS preceding step 1, raise launchers and close armament bay doors in accordance with T.O. 1F-106A-2-12.

3. Close NWW door closed switch - press and release AMCP INTERVALOMETER RESET = AMCP RESET comes on, then goes off

4. 905 ON - MISSILES ALL - ARM - SSGC 5 = 796 TEST on - VI WARN comes on - Mach 1.775 to 1.825 - MSM 1.73 to 1.79 - altitude 56 to 58K - MAX MANEUVER on

5. Deleted

6. Press and release GND TEST INTER - 305 ALL - 305 TAIL = ACP OK - VI WARN off

7. 596 FWD and AFT TEST MISFIRE up - hand control, range gate to approx 16 miles, then track - press trigger when time-to-go circle starts to shrink = 2.8 in. time-to-go circle appears - R gap 950 to 1200 - time-to-go circle shrinks - jizzle disappears at C-time - 796 RADAR on at C-time - armament bay doors open at C-time - aft launchers extend - "X" appears - ACP NO - MWP MISFIRE on

8. 596 AFT TEST MISFIRE down = MWP MISFIRE off - aft launchers retract - fwd launchers extend - MWP MISFIRE on

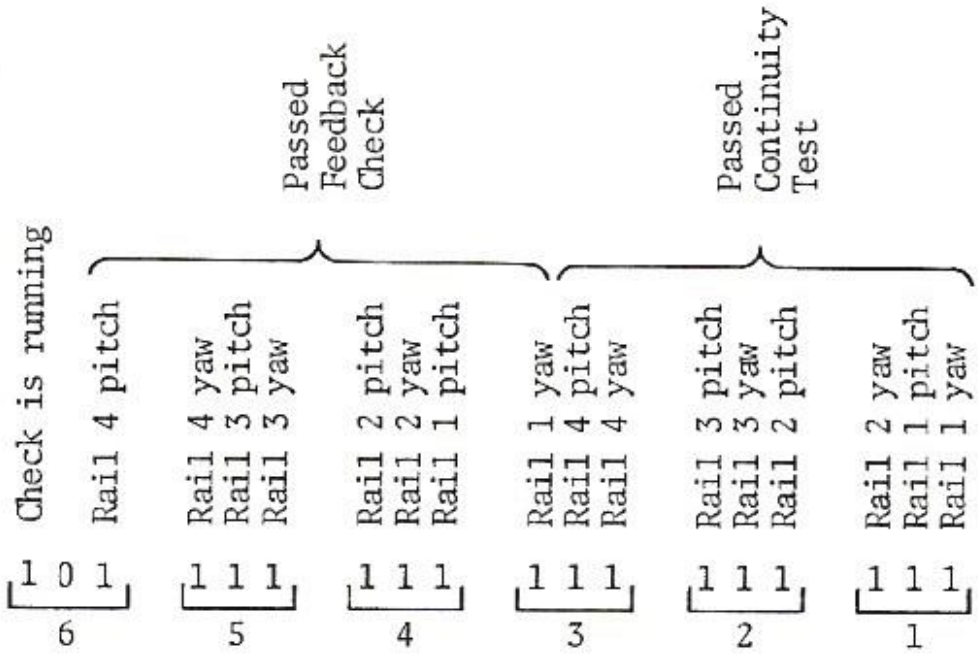
9. 596 FWD TEST MISFIRE down = MWP MISFIRE off - fwd launchers retract - armament bay doors close

10. Release trigger = "X" disappears - "8" appears

11. VIS IDENT - SAFE = ACP blank

12. Open armament bay doors and extend launchers = MS CHANNEL SELECTED A,B,D,E,F, AFC HOME, ANT NULL and PITCH and YAW ANT SATURATION off - all other lights on - CCM-A up - all other circuit breakers down

13. Press and release MS 28V RESET - reset all MS circuit breakers = MS RATE SENSOR/POWER and NORMAL PHASE, CHANNEL SELECTED C, ISOLATION CIRCUITS SAFE/PWR SUP START and FIRE, 28 V FIRST MOTION, and FIL. CONT VOLT on - all other lights off - all circuit breakers remain up



1). Status word is stored in DRO location 1771

Figure 5-1. Continuity and Feedback Test Status Word

14. 305 OFF - SSGC 7, then OFF - 596 OPEN LOOP - 905 OFF - release NWW door closed switch

15. Install flight plug

5-4e. Continuity and Feedback Test

CAUTION

Before placing jumper wires in missile simulator test points, ensure 905 POWER is OFF.

(Four missile simulators (MS), two jumper wires between each MS TP11 and 18 and TP24 and 30)

Wiring between 140 and 054 units

WARNING

Follow all safety precautions in T.O. 1F-106A-2-12 when operating armament bay doors or launchers. Ensure that armament bay area is clear of personnel and post personnel to warn others that doors and launchers are to be operated. Unload armament if loaded.

CAUTION

Ensure that no test cables are positioned so they might be damaged during launcher or door operation.

NOTE

If desired, the launchers can be operated while the routine is running to check for open or shorted wires in the rail harnesses.

1. RADAR STBY - SSGC 5 - load channel 8 - 84615 - 140 DIGITAL INPUT SWITCHES - 443 - DIGITAL INPUTS ENTER up - ENTER START ADDRESS - RUN = DISPLAY REGESTER lights bits 1 thru 16 and 18 on (see fig. 5-1)

2. Retract launchers and repeat step 1 = Same as step 1

CAUTION

Ensure 905 POWER is OFF before removing MS jumper wires.

3. DIGITAL INPUTS ENTER down - 140 NORMAL - 000 - 846 NORMAL - 00 - SSGC 7, then OFF - 905 OFF - remove MS jumper wires

5-5d. MSR CHECK

(MSR, ATS plug) 087, 264, 364, 464, 496

WARNING

Before operating armament bay doors, ensure that area is clear of personnel and post personnel to warn others.

NOTE

Ensure AMCP fuses are installed.

1. 905 ON - 596 AATS - SSGC 6 - SPL WPN - ARM - UNLOCK - close NWW door closed switch = VI WARN comes on - SPL WPN ARMED on

NOTE

Additional MSR times of flight can be checked by performing para. 5-5e.

2. Press and release GND TEST INTER - hand control, range gate to approx 16 miles, then track-press and release GND TEST INTER - press trigger - release trigger and NWW door closed switch after doors close = VI WARN goes off - time-to-go circle replaced by "8" - doors open and close - MSR film 1 thru 12, F1, F2, M_t present - time of flight 90 to 92

3. SAFE - LOCK - VIS IDENT - SSGC 7, then OFF-596 OPEN LOOP - 905 OFF - install flight plug

5-5e. MSR TIME OF FLIGHT CHECK

(MSR, ATS plug) 087, 140, 364, 596

WARNING

Before operating armament bay doors, ensure that area is clear of personnel and post personnel to warn others.

NOTE

Ensure AMCP fuses are installed.

1. 905 ON - SPL WPN - SSGC 6 - hand control = VI WARN comes on (if flashing see table 2-6.1)
2. Press and release GND TEST INTER - 140 DIGITAL INPUT SWITCHES - DIGITAL INPUTS iaw table 5-4 - DIGITAL INPUTS ENTER up (on) = VI WARN goes off - 596 T1 thru T4 iaw table 5-4 (a 1 indicates lamp on)
3. 596 AATS - ARM - UNLOCK - close NWW door closed switch = SPL WPN ARMED on
4. Hand control, range gate to approx 16 miles, then track - press trigger - release trigger and NWW door closed switch after doors close = Time-to-go circle replaced by "8" - doors open and close - MSR film 1 thru 12, F1, F2, M_t present - time of flight iaw table 5-4
5. SAFE - LOCK - VIS IDENT - SSGC 7, then OFF - 596 OPEN LOOP - 905 OFF - install flight plug

Table 5-4. Time of Flight/Tau Parameter Indications

140 DIGITAL INPUTS SWITCHES	MSR TIME OF FLIGHT	596 COMPUTER PARAMETERS T4	T3	T2	T1
760	6 to 8	1	1	1	1
761	16 to 18	1	1	1	0
762	25 to 27	1	1	0	1
763	34 to 36	1	1	0	0
764	43 to 45	1	0	1	1
765	52 to 54	1	0	1	0
766	60 to 62	1	0	0	1
767	68 to 70	1	0	0	0
770	76 to 78	0	1	1	1
771	83 to 85	0	1	1	0
772	90 to 92	0	1	0	1
773	97 to 99	0	1	0	0
774	104 to 106	0	0	1	1
775	111 to 113	0	0	1	0
776	118 to 120	0	0	0	1
777	125 to 127	0	0	0	0

5-6. SALVO CHECK

(None)

WARNING

Before operating armament bay doors, ensure that area is clear of personnel and post personnel to warn others.

1. Close NWW door closed switch - SALVO - press trigger = Doors open - aft and fwd launchers extend and retract - doors close

2. Release trigger - VIS IDENT

CHAPTER 6

COMPUTER SUBSYSTEM

The computer routines are placed in a tabular format to facilitate their use. The paragraph numbers are the same as the the paragraph numbers in T.O. 1F-106A-2-27-2. Load channel 8 to run each routine. Switch settings not contained on the computer units are listed in the remarks column.

6-5. COMPUTER VOLTAGE CHECK

(Digital multimeter to 526 526
DC VOLTAGES RET, oscilloscope, P410 probe)

1. RADAR STBY - monitor 526 +25 = +23.75 to +26.25v
2. Monitor 526 -25 = -23.75 to -26.25v
3. Monitor 526 +16 = +15.2 to +16.8v
4. Monitor 526 -16 = -15.2 to -16.8v
5. Monitor 526 +12 = +11.4 to +12.6v
6. Monitor 526 -12 = -11.4 to -12.6v
7. Monitor 526 +8 = +7.2 to +8.8v
8. Monitor 526 -6 = -5.4 to -6.6v
9. Monitor 526 +5 = +4.5 to +5.5v

NOTE

Digital multimeter ground lead must be removed from 526 DC VOLTAGES RET.

10. Monitor FLOATING +16 and +16 RET = +15.2 to +16.8v

11. Monitor FLOATING +12 and +12 RET = +11.4 to +12.6v

12. Monitor FLOATING +8 and +8 RET = +8.0 to +9.9v

CAUTION

Do not connect 526 FLOATING +7 RET to 526 DC VOLTAGES RET.

13. Monitor FLOATING +7 and +7 RET = +6.3 to +7.7v

NOTE

Disconnect digital multimeter. Connect P410 probe ground lead to 526 DC VOLTAGES RET.

14. Monitor 526 +25 = < 500 mvp-p

15. Monitor 526 -25 = < 500 mvp-p

16. Monitor 526 +16 = < 500 mvp-p

17. Monitor 526 -16 = < 500 mvp-p

18. Monitor 526 +12 = < 500 mvp-p

19. Monitor 526 -12 = < 500 mvp-p

20. Monitor 526 +8 = < 500 mvp-p

21. Monitor 526 -6 = < 500 mvp-p

22. Monitor 526 +5 = < 500 mvp-p

NOTE

P410 probe ground lead must be removed from 526 DC VOLTAGES RET.

23. Monitor FLOATING +16 and +16 RET = < 500 mvp-p

24. Monitor FLOATING +12 and +12 RET = < 750 mvp-p

25. Monitor FLOATING +8 and +8 RET = < 750 mvp-p

CAUTION

Do not connect 526 FLOATING +7 RET to 526 DC VOLTAGES RET.

26. Monitor FLOATING +7 and +7 RET = < 3000 mvp-p

27. 905 OFF

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-9	TR	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	2XX	11
					4XX	
					1XX	

PASS	PROBABLE FAULTY UNIT	REMARKS
Voltage of selected analog input	140, 846, 857	Analog input from table 6-3 or 6-4
Voltage of selected analog output		Analog output from table 6-5, if DIGITAL INPUTS is set to 037 the indication is in BCD or if set to 537 the indication is binary.
Voltage of selected 13 bit or digital input		13-bit or digital input from tables 6-6 or 6-7

Table 6-3. AC Analog Inputs

System Designation	Octal Address	Nomenclature
E15A	51	Sine of Radar Azimuth Angle
*E15N	41	Delta D
*E16A	52	ILS Heading Error/Missile Antenna Driver Test
*E16N	42	Delta E
E17A	53	Sine of Radar Elevation Angle
*E18A	54	Roll Rate
E19	45	Sine of Interceptor Pitch Angle
*E20	46	Lift Acceleration
E21	47	Sine of Interceptor Roll Angle
E22	40	Cosine of Interceptor Roll Angle
E23	43	Sine of Interceptor Heading Angle
E24	44	Cosine of Interceptor Heading Angle
* E25	50	Pitch Rate
* E26	55	Propellant Temperature

*The decimal point is located between bits 9 and 10.

Table 6-3. AC Analog Inputs (cont)

System Designation	Octal Address	Nomenclature & Tolerance
P50	56	115V, 1600 Hz 111.634 to 118.046v
P51	57	115V, 400 Hz 111.450 to 118.290v
P52	60	+300 VDC 293.701 to 305.419v
P53	61	+150 VDC 146.851 to 152.710v
P54	62	-250 VDC -245.361 to -255.127v
P55	63	-140 VDC -137.403 to -142.871v
A27	32	+28 VDC 23.731 to 32.129v
P56	64	+300 VDC Noise Test 299.805 mv
P57	65	+150 VDC Noise 199.219 mv
P58	66	-250 VDC Noise 199.219 mv
P59	67	-140 VDC Noise 199.219 mv

Table 6-4. DC Analog Inputs

System Designation	Octal Address	Nomenclature
A2A	12	Spare
A2N	2	Stable Table Latitude
A3A	13	Missile Potentiometer Excitation
A3N	3	Maximum Safe Mach
A4	26	Missile 2 Position (Pitch)
A5A	15	Space Stabilized Radar Elevation Angle
A6N	10	Sea Level Pressure
A7	27	Missile 2 Position (Yaw)
A8	6	Missile 3 Position (Pitch)
A9	21	Interceptor Angle of Attack
A10	22	Impact Temperature
A11	23	Glide Slope Degrees
A12	0	Differential Pressure (Test)

Table 6-4. DC Analog Inputs (cont)

System Designation	Octal Address	Nomenclature
A13A	31	Space Stabilized Radar Azimuth Angle
A14	7	Missile 3 Position (Yaw)
A15	17	Missile 4 Position (Yaw)
A16	4	Throttle Position
A17	5	SCRG Parameters
A18	11	Spare
A19	30	Spare
A20	20	DVM
A21	24	Left Elevon Position
A22	25	Right Elevon Position
A23	33	Self Test (High Standard)
A24	34	Self Test (Low Standard)
A25	14	Self Test (Analog Output)
A26	16	Missile 4 Position (Pitch)

Table 6-4. DC Analog Inputs (cont)

System Designation	Octal Address	Nomenclature
A27	32	+28 VDC Power Supply Amplitude Test
A28	35	Localizer Degrees
A29	36	Missile 1 Position (Pitch)
A30	37	Missile 1 Position (Yaw)

Table 6-5. Analog Outputs

System Designation	Octal Address	Nomenclature
A51A	3711	Attack Program Sequence
A51N	3701	Sine of Command Heading Error
A52A	3712	Computed Antenna Elevation Rate
A52N	3702	Target Position (Y)
A53A	3713	Time Circle Size
A53N	3703	Target Position (X)
A54A	3714	Computed Antenna Elevation Rate
A54N	3704	Left Elevon Command

Table 6-5. Analog Outputs (cont)

System Designation	Octal Address	Nomenclature
A55A	3715	Computed Antenna Azimuth Rate
A55N	3705	Right Elevon Command
A56A	3740	Horizontal Steering Dot
A56N	3734	Command Altitude
A57	3735	Horizontal Reference Circle
A58	3720	Vertical Reference Circle/Target Bearing
A59A	3731	Estimated Range Rate
A59N	3721	Cosine of Command Heading Error
A60A	3710	Computed Antenna Azimuth Rate
A60N	3700	Interceptor Position (X)
A61	3723	Target Range/Firing Bar Range
A62	3724	Target Elevation Angle
A63N	3725	Target Altitude
A64N	3742	Target Heading
A65N	3743	Command Mach

Table 6-5. Analog Outputs (cont)

System Designation	Octal Address	Nomenclature
A66N	3722	Interceptor Position (Y)
A67	3741	Vertical Steering Dot
A68	3730	Spare
A69	3732	Spare
A70	3733	Missile 1 Drive (Pitch)
A71	3706	Missile 1 Drive (Yaw)
A72	3707	Missile 3 Drive (Pitch)
A73	3736	Missile 3 Drive (Yaw)
A74	3737	Missile 2 Drive (Pitch)
A75	3716	Missile 4 Drive (Yaw)
A76	3717	Missile 4 Drive (Pitch)
A77	3726	Missile 2 Drive (Yaw)
A78	3727	Spare
A79	3746	Spare
A80	3745	Spare
A81	3744	Self-Test

Table 6-6. 13-Bit Digital Inputs

System Designation	Octal Address	Nomenclature
D361 thru D373	56	Mach Digitizer
D381 thru D393	57	Altitude Digitizer

Table 6-7. Digital Inputs

System Designation	Octal Address	Bit	Nomenclature
D101	5	4	Trigger
D102	6	4	Auto Engage
D103	7	4	IR Track
D104	10	4	System Test C
D105	11	4	Not Search
D106	12	4	VI Selected
D107	13	4	System Test A
D108	14	4	TACAN Station Select

Table 6-7. Digital Inputs (cont)

System Designation	Octal Address	Bit	Nomenclature
D109	5	3	AIM-4F Selected
D110	6	3	Special Weapon Loaded
D111	7	3	Assist Engage
D112	10	3	Computer Interrogate
D113	11	3	ROT
D114	12	3	Manual Pursuit
D115	13	3	System Test B
D116	14	3	Destination Select
D117	5	2	Missiles All Selected
D118	6	2	Spare
D119	7	2	Altitude Hold/ILS Valid
D120	10	2	Spare
D121	11	2	DROT
D122	12	2	Armed
D123	13	2	TACAN Reliable
D124	14	2	Data Link Station Select

Table 6-7. Digital Inputs (cont)

System Designation	Octal Address	Bit	Nomenclature
D125	5	1	Confirm
D126	6	1	Nose
D127	7	1	Heading Hold
D128	10	1	Data Link Address Select
D129	11	1	ATOT
D130	12	1	Special Weapon Selected
D131	13	1	Computer Test
D132	14	1	AFCS Uncage
D133	0	4	Navigation Mode 1
D134	0	3	Navigation Mode 2
D135	0	2	Map Scale 1
D136	0	1	Map Scale 2
D137	1	4	Data Link Address Select
D138	1	3	Data Link Address Select
D139	1	2	Data Link Address Select
D140	1	1	Data Link Address Select

Table 6-7. Digital Inputs (cont)

System Designation	Octal Address	Bit	Nomenclature
D141	2	4	AGE Operation Only
D142	2	3	Binary/BCD Display
D143	2	2	+28 VDC Pressure Delayed
D144	2	1	Drum Pressure
D145	16	4	Trim Up
D146	16	3	Trim Down
D147	16	2	Trim Right
D148	16	1	Trim Left
D150	3	1	TACAN Station Select
D151	3	4	TACAN Station Select
D152	3	3	TACAN Station Select
D153	3	2	TACAN Station Select
D155	4	1	Data Link Station Select
D156	4	4	Data Link Station Select
D157	4	3	Data Link Station Select
D158	4	2	Data Link Station Select

Table 6-7. Digital Inputs (cont)

System Designation	Octal Address	Bit	Nomenclature
D160 thru D163	3612 (DRO location)		TACAN Range
D160 thru D163	3613 (DRO location)		TACAN Bearing
D165	20	4	Self-Test (Digital Display Switch)
D166	20	3	Self-Test (Digital Display Switch)
D167	20	2	Self-Test (Digital Display Switch)
D168	20	1	Self-Test (Digital Display Switch)
D170	21	4	Self-Test (Digital Display Switch)
D171	21	3	Self-Test (Digital Display Switch)
D172	21	2	Self-Test (Digital Display Switch)
D173	21	1	Self-Test (Digital Display Switch)

Table 6-7. Digital Inputs (cont)

System Designation	Octal Address	Bit	Nomenclature
D175	15	1	Homing Point Select
D176	15	4	Homing Point Select
D177	15	3	Homing Point Select
D178	15	2	Homing Point Select
D180	22	4	Self-Test (Display Lights On)
D181	22	3	Self-Test (Digital Display Switch)
D182	22	2	Self-Test (Digital Display Switch)
D183	22	1	Self-Test (Digital Display Switch)
D185	23	4	Tanks Installed
D186	23	3	Assist OK
D187	23	2	Chaff
D188	23	1	Spare

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PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
NOTE: Prior to performing TG or TS routine, retrieve LW routine failure data and TR routine A51A and acceleration count data.						
6-10	TG	TEST	NORMAL	PATTERN 1	000	05
6-11	TC	NORMAL	NORMAL	NORMAL	000	01
6-12	TS	NORMAL	NORMAL	NORMAL	000	02
6-13	TM	NORMAL	NORMAL	NORMAL	000	03
6-14	TA	NORMAL	NORMAL	NORMAL	000	04
NOTE: If routine fails, refer to T.O. 1F-106A-2-27-2, paragraph 6-15 for additional information.						
6-15	TP	TEST	DIGITAL INPUT SWITCHES	NORMAL	006	14

PASS	PROBABLE FAULTY UNIT	REMARKS
001334	140, 846, 857	Running time is approx 5 minutes Run LWR, LQ, and LE-3 routines after TG is completed
Lights flash every 1.3 sec	140, 846, 857	. . .
One sec dynamic pattern, then bits 13-18 are 64, then bit 11 is high	846, 857	Run LWR, LQ, and LE-3 routines after TS is completed
Bits 13-18 are 76, other bits are dynamic pattern, bit 12 is low for 4 sec then high for 1.5 sec	857	When bit 12 goes low after 5.5 sec, the routine is repeating
Bits 1-9 and 10-18 count up until all bits bits are high	140, 846, 857	Takes approx 12 sec
Bits 10-17 count up, then 9-17 count down, then bit 10 is high	140	Takes approx 28 sec, jumper wires installed in missile simulators will cause erroneous fail halts

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-16	TL	NORMAL	NORMAL	PATTERN 1 or PATTERN 2	000	06

PASS	PROBABLE FAULTY UNIT	REMARKS
Bits 17-1 come on for PATTERN 1, bits 17-1 go off for PATTERN 2	846	. . .

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-17	TD	NORMAL	NORMAL	NORMAL	000	07
			DIGITAL OUTPUT GROUPS 1			
			DIGITAL OUTPUT GROUPS 2			
			DIGITAL OUTPUT GROUPS 3			
			DIGITAL OUTPUT GROUPS 4			
			DIGITAL OUTPUT GROUPS 5			
			DIGITAL INPUTS		Up (on) in sequence	

PASS	PROBABLE FAULTY UNIT	REMARKS
Bits 10-1 on and off	140, 846, 857	Pass repeats after approx 30 sec
Bits 10-1 on and off		Refer to tables 6-9 and 6-10 for digital outputs
Bits 10-1 on and off		
Bits 9-1 on and off		Bit 9 is on twice as long as 8-1
Bits 10-1 on and off		
Bits 10-8 and 2 on and off, bits 7-3 and 1 are off, then 000175 for approx 30 sec		
Bits 10-1 come on in sequence		

Table 6-9. TD Routine Displays

DIGITAL DISPLAY SWITCH POSITION	DISPLAY REGISTER BIT NUMBER									
	10	9	8	7	6	5	4	3	2	1
NORMAL	D225N SCRG	D224N SCRG	D215A VI	D226A ANT LEFT	D218A D	D202 A	D216A B	D208 NOSE	D221A ABORT	D201 A'
1	DP206* COM	DP204* ANT>	D227A TEST A	D217A C	D210 ATTACK	D209 TRACK	D225A PTF	D207 NAV	D205 ALT HOLD	D203 TEST
2	D223A LC	D219A E	D218N ***	D217N TACAN	D216N HSI	D200 AFCS	D215N AUTO	D214 ILS	D213 ****	D212 PURSUIT
3	NONE	DP211* ANT<	DM254* r	DM253* r	DM252* r	DM251* r	DM244* TAU	DM243* TAU	DM242* TAU	DM241* TAU
4	D229A TEST B	D228A TEST C	DM234* RHO	DM233* RHO	DM232* RHO	DM231* RHO	D229N DL	D228N DR	D227N PASS FAIL	D226N PASS FAIL
5	D262* SHIFT	D261* SHIFT	D260* SHIFT	**	**	**	**	**	D224A* IFF	**
DIGITAL INPUT SWITCHES	D165	D166	D167	D168	D182	D183	D170	D171	D172	D173

*These digital outputs are inverted; i.e., when DP206 is set high, the DISPLAY REGISTER light will be out.
**Spare digital outputs
***Target marker circle display
****Time-to-go circle blank

Table 6-10. Digital Outputs

System Designation	Nomenclature
D200	AFCS OK
D201	A Prime Signal
D202	A Signal
D203	Computer Test
DP204	Antenna Rate Increase
D205	Altitude Hold OK
DP206	CCM Energize
D207	Navigation Mode
D208	Nose
D209	Track
D210	Attack
DP211	Antenna Rate Decrease
D212	Pursuit
D213	Time-to-go circle blank
D214	ILS Approach
D215A	VI Warning

Table 6-10. Digital Outputs (cont)

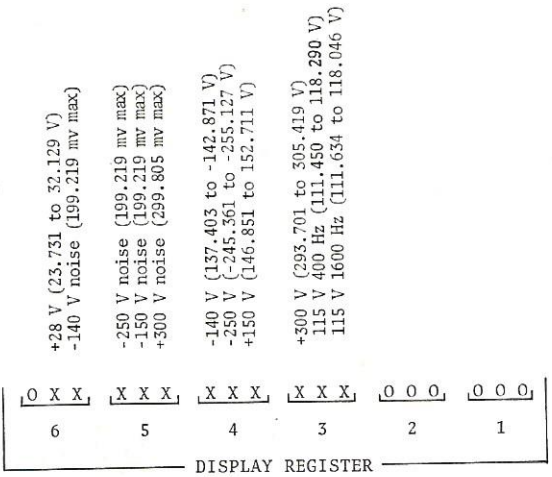
System Designation	Nomenclature
D215N	Automatic Mode (AFCS) OK
D216A	B Signal
D216N	HSI Range Valid
D217A	C Signal
D217N	TACAN Annunciator
D218A	D Signal
D218N	Target Marker Circle Display
D219A	E Signal
D220A	Spare
D220N	Spare
D221A	Abort
D221N	Spare
D222A	Spare
DP222N	Spare
D223A	Lead Collision
D223N	Spare

Table 6-10. Digital Outputs (cont)

System Designation	Nomenclature
D224A	IFF Test
D224N	SCRG Latitude Increase
D225A	PTF Fail
D225N	SCRG Latitude Decrease
D226A	Left Antenna Position
D226N	Pass Fail 1
D227A	System Test A
D227N	Pass Fail 2/High Alpha
D228A	System Test C/Optimum Alpha
D228N	Dead Reckon (MCC valid)
D229A	System Test B/Low Alpha
D229N	Data Link Valid (CC valid)
D230	MART Cart Interrogation
DM231	Rho Parameter 1
DM232	Rho Parameter 2
DM233	Rho Parameter 3

Table 6-10. Digital Outputs (cont)

System Designation	Nomenclature
DM234	Rho Parameter 4
DM241	Tau Parameter 1/Special Weapon Fuse Time
DM242	Tau Parameter 2/Special Weapon Fuse Time
DM243	Tau Parameter 3/Special Weapon Fuse Time
DM244	Tau Parameter 4/Special Weapon Fuse Time
DM251	r Parameter 1
DM252	r Parameter 2
DM253	r Parameter 3
DM254	r Parameter 4
D260	Shift TACAN Bearing
D261	Shift TACAN Range
D262	Shift Clock
D263	Digital Range Test



NOTE: Bit on indicates power form failure.

Figure 6-2. LWD Display

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-18	TN	NORMAL	NORMAL	NORMAL	000	13
6-19	TV	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	002	14
6-25	LW	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	500	15

PASS	PROBABLE FAULTY UNIT	REMARKS
Bits 9-18 cycle for 4 sec, then 001177	140, 846, 857	...
LSB flashes on and off approx every 1 sec	140, 289, 846, 857	...
001764, PTF off	056, 092, 162, 192, 292, 591, 689, 692, 791, 792, 891, 892, 991, 992	905 POWER must be ON

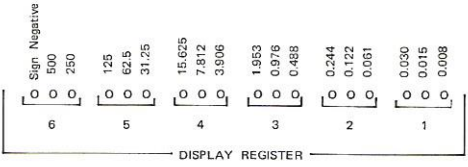
PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-26	LWD	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	505	15
		NOTE Set 140 DIGITAL INPUTS ENTER down				
		NOTE Completion indication is 001375. The next sequentially failed power form can be observed by setting 140 DIGITAL INPUTS ENTER up, then down.				

PASS	PROBABLE FAULTY UNIT	REMARKS
BCD number of times LW routine was entered	Same as para. 6-25	...
Power forms iaw fig. 6-2		If power form fails set DIGITAL INPUTS ENTER up and observe: (1) Two flashes of all lights (2) BCD value of failed power form (3) Two flashes of bits 18 and 17 (4) BCD out of tolerance value of failed power form (5) Two flashes of bits 18-15 (6) BCD no. of times power form failed (7) Two flashes of bits 18-13 (8) BCD ratio of total fails to total times LW ran

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-27	LWR	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	501	15
		NOTE Perform El Marker Check iaw para. 3-19b.				
6-28	LS-1	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	423	15
6-29	LS	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	403	15

PASS	PROBABLE FAULTY UNIT	REMARKS
001766	140, 846, 857	905 POWER must be ON
096 = 5 units, if not adjust 241 EL BAL	017, 241	096 5E- 106 TEST- 506 TEST- ANT ELEV detent - radar dom- BORS
Pass iaw fig. 6-3, if not adjust 241 EL BAL	017, 083, 241, 289	ANT ELEV detent - 905 PRESS TO ERECT-MISSILES ALL- track- SSGC 2-106 TEST-506 TEST. Repeat LS-1 routine if EL BAL adjusted

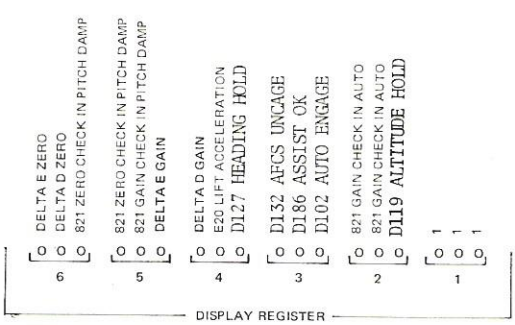
8-323-39A



NOTES:
1. Refer to table below for meaning of display.
2. Do not include the sign bit when determining octal value of group 6.
3. The numbers above the lights indicate milliradians.

	ERROR (MILLIRADIANS)	OCTAL DISPLAY
P		
A	LESS THAN 8.7	LESS THAN 002170
S	8.7 to 17.4	002170 - 004357
S		
	17.4 to 26.1	004357 - 006547
	26.1 to 34.8	006547 - 010736
	34.8 to 43.5	010736 - 013125
F	43.5 to 52.2	013125 - 015314
A	52.2 to 60.9	015314 - 017502
I	60.9 to 69.6	017502 - 021666
L	69.6 to 87.0	021666 - 026240
	GREATER THAN 87.0	GREATER THAN 026240

Figure 6-3. LS Display



NOTES: 1. 846 DISPLAY REGISTER light on indicates pass, off indicates failure

2. If bits 5,6,14,15, or 16 is off, ensure 083 flight control stick is centered.

Figure 6-4. LQ Display

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-30	LQ	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	601	15
		NOTE Set 163 to AUTO and ALT HOLD				
		NOTE Set 140 DIGITAL INPUTS ENTER down and 846 to STOP, then RUN.				

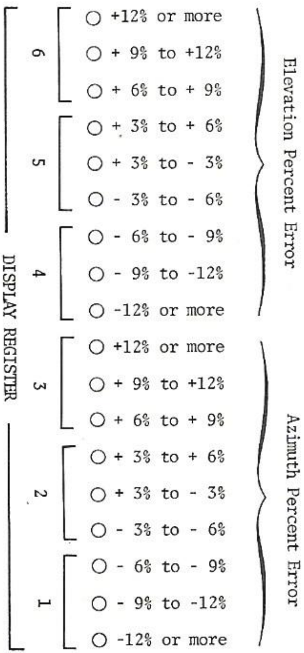
PASS	PROBABLE FAULTY UNIT	REMARKS
063 DS1 on, steering dot and reference circle up and left for approx 23 sec, down and right 15 sec	141, 821	MISSILES ALL-SSGC2-PITCH DAMP-track-HDG HOLD See fig. 6-4 for fail indications
Mode lamp 1 on, steering dot and reference circle center, ASSIST, 001760, PITCH DAMP, ALT HOLD off, mode lamp 1 off		...
777777		

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-31	LE-1	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	400	15
			NOTE Set 140 DIGITAL INPUTS ENTER down and 846 to STOP, then RUN.			
6-31.1	LE-2	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	420	15
			NOTE Set 140 DIGITAL INPUTS ENTER down and 846 to STOP, then RUN.			
			NOTE Set 140 DIGITAL INPUTS ENTER up. **NOTE** Set 140 DIGITAL INPUTS ENTER down.			

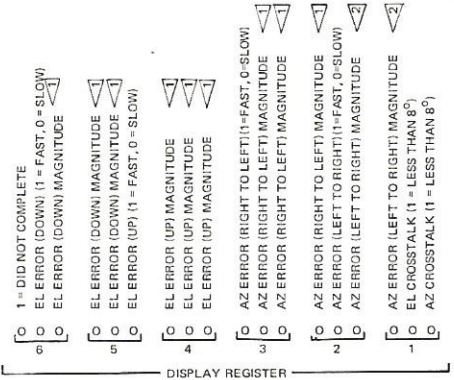
PASS	PROBABLE FAULTY UNIT	REMARKS
Antenna moves ±16.4° in az and el, 001772	017, 041, 106, 140, 206, 506	106 TEST-506 TEST-SSGC 2-MISSILES ALL-track
Refer to fig. 6-5		
Same as LE-1	Same as LE-1	106 TEST - 506 TEST - SSGC 2 - MISSILES ALL - track
Refer to fig. 6-5		
Same as LE-1		
Refer to fig. 6-5		

NOTE:

Pass indication is 9% or less.



☞ Figure 6-4.1. LE-200 Display



NOTES:

1. The error magnitude code and percent error are shown in the table
2. Only two most significant digits of error magnitude code are displayed. See table for pass or fail status.
3. If routine fails, perform tracking loop adjustment iaw para. 3-16b.

	ERROR MAGNITUDE CODE	% ERROR
P	000	LESS THAN 1.56
A	001	1.56 - 3.12
S	010	3.12 - 4.69
S	011	4.69 - 6.25
F	100	6.25 - 7.81
A	101	7.81 - 9.37
I	110	9.37 - 10.94
L	111	GREATER THAN 10.94

Figure 6-5. LE-1 Display

PARA NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-31.2	LE-200	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	440	15

PASS	PROBABLE FAULTY UNIT	REMARKS
Refer to fig. 6-5.1, 001366	017, 041, 106 140, 206, 506	106 TEST-506 TEST-SSGC 2-MISSILES ALL-track

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Table 6-11. LE-3 Failure Data

DRO LOCATION	846 DISPLAY REGISTER LIGHTS	PROBABLE FAULT
3764	037777	Normal display
	Any other	140 unit faulty
3765	000000	Normal display
	Any other	140 unit faulty
3766	023420 ±000012	Normal display
	000000	Modulator sweep trigger missing
	027040 ±000040	Mx PRF not selected
	00XXXX	Radar not in search
	02XXXX	Mx PRF incorrect
	Any other	140 unit faulty

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-32	LE-3	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	401	15
		NOTE Set 846 to STOP, then RUN.				
		NOTE Lock on to 2nd target.				
		NOTE Lock on to 22nd target.				

PASS	PROBABLE FAULTY UNIT	REMARKS
000761, see table 6-11 for fails	103, 140, 641	**CAUTION** Do not hold VIDEO TEST longer than 15 seconds. MISSILES ALL-MOD TEST-press and release VIDEO TEST
VI WARN comes on		
VI WARN goes off, then comes on in 20 sec		4SP-REC TEST
VI WARN goes off, then comes on in 20 sec, 000763, see table 6-12 for fails		16SP

Table 6-12. LE-3 Calibration Failure Data

DRO LOCATION	846 DISPLAY REGISTER LIGHTS	PROBABLE FAULT
3764	200000 ±000101	Normal display
	Any other	140 unit faulty
3765	000024 ±000012	Normal display (System delay, 50 nsec/bit)
	Any other	System delay incorrect (should be less than 1.5 μsec)
3766	001142± 000012	641 unit delay, 10 nsec/bit

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PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-34	LC	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	600	15
			NOTE			
		Set 140 DIGITAL INPUTS ENTER down and 846 to STOP, then RUN.				

PASS	PROBABLE FAULTY UNIT	REMARKS
Artificial horizon precesses, 409 latitude changes, 001762	009, 109, 209, 289, 309, 396, 409	SSGC 2- PRESS TO ERECT-
777777, see table 6-13		

Table 6-13. LC Display

Bit	Signal	Readout Pass	Readout Fail	Probable Faulty Unit
1	- - - - -	1	-	---
2	- - - - -	1	-	---
3	- - - - -	1	-	---
4	- - - - -	1	-	---
5	- - - - -	1	-	---
6	STABLE TABLE RE-ERECTED	1	0	209
7	CHANGE IN AIRCRAFT PITCH GREATER THAN 1^{o}	1	0	289
8	CHANGE IN AIRCRAFT ROLL GREATER THAN 1^{o}	1	0	289
9	AIRCRAFT LATITUDE = ORIGINAL POSITION	1	0	409
10	CHANGE IN AIRCRAFT PITCH = 5.8^{o}	1	0	289
11	CHANGE IN AIRCRAFT ROLL = 14.2^{o}	1	0	289

Table 6-13. LC Display (cont)

Bit	Signal	Readout Pass	Readout Fail	Probable Faulty Unit
12	EARTH ROTATION Cos (AIRCRAFT LATITUDE) Cos (HEADING AND GIMBAL POSITION DIFFERENCE ANGLE)	1	0	309
13	EARTH ROTATION Cos (AIRCRAFT LATITUDE) Sin (HEADING AND GIMBAL POSITION DIFFERENCE ANGLE)	1	0	309
14	AIRCRAFT LATITUDE = 55°	1	0	409
15	AZ GYRO	1	0	289
16	X INTEGRATOR	1	0	◁1
17	AIRCRAFT LATITUDE = 45°	1	0	409
18	Y INTEGRATOR	1	0	◁1

NOTE:

1▷ If 13, 16, and 18 fail replace 009 unit.
If 14, 16, and 18 fail replace 109 unit.
If 15, 16, and 18 fail replace 309 unit.

PARA. NO.	ROUTINE	140 UNIT				846 START ADDRESS
		FEEDBACK TEST	DIGITAL DISPLAY	MACH & LOG P_S	DIGITAL INPUTS	
6-40	LZ	NORMAL	DIGITAL INPUT SWITCHES	NORMAL	502	15
			NOTE			
		Set 140 DIGITAL INPUTS ENTER down and 846 to STOP, then RUN.				

PASS	PROBABLE FAULTY UNIT	REMARKS
001770	CPU-111	SSGC 1
See table 6-19		

Table 6-19. LZ Display

Bit	Signal	Readout Pass	Readout Fail
1	- - - - -	-	-
2	ALTITUDE MAX DIFFERENCE	ALTITUDE MAX DIFFERENCE	
3	ALTITUDE MAX DIFFERENCE	shall not exceed 0011	
4	ALTITUDE MAX DIFFERENCE	reading from left to	
5	ALTITUDE MAX DIFFERENCE	right.	
6	ALTITUDE CONTINUOUS	1	0
7	ALTITUDE RANGE	1	0
8	ALTITUDE INITIAL CONDITIONS	1	0
9	- - - - -	-	-
10	- - - - -	-	-
11	MACH MAX DIFFERENCE	MACH MAX DIFFERENCE	
12	MACH MAX DIFFERENCE	shall not exceed 0011	
13	MACH MAX DIFFERENCE	reading from left to	
14	MACH MAX DIFFERENCE	right.	
15	MACH CONTINUOUS	1	0

Table 6-19. LZ Display (cont)

Bit	Signal	Readout Pass	Fail
16	MACH RANGE	1	0
17	MACH INITIAL CONDITIONS	1	0
18	- - - - -	-	-

CHAPTER 7

POWER SUBSYSTEM

7-5a. TIME-IN SEQUENCE CHECK

(None) 018, 118

1. 096 1A - 905 ON = 096 4.5 to 5.5 approx 180 sec after ON

2. 096 1G = 096 4 to 5 approx 210 sec after ON

3. 096 3E = 096 3 to 3.5 approx 270 sec after ON

4. 096 1A - 905 OFF

7-9. 018 UNIT CIRCUIT BREAKERS. Additional information and voltage signal flow is provided in T.O. 1F-106A-2-27-5, figure 7-6. The 018 unit circuit breakers are CB1 (-140v), CB2 (+150v), and CB3 (+300v).

7-10. 162 UNIT CIRCUIT BREAKERS. Additional information and voltage signal flow is provided in T.O. 1F-106A-2-27-5, figures 7-3, 7-4, and 7-5. The 162 unit circuit breakers and voltages are listed in table 7-2.

7-11. GENERATOR CONTINUITY CHECKS. The generator continuity checks are contained in figure 7-3. All notes for figure 7-3 are on sheet 6.

Table 7-2. 162 Unit Circuit Breakers/Voltages

Circuit Breaker	Voltage	T.O. 27-5 Fig. No.
CB1	+28 v warm	7-3
CB2	+28 v warm delayed 30 sec	7-3
CB3	+28 v on 3	7-3
CB4	+28 v essential	7-3
CB5	+28 v on 1	7-3
CB6	+28 v on 2	7-3
CB7	115 v 400 Hz Ø A warm	7-4
CB8	115 v 400 Hz Ø B warm	7-4
CB9	115 v 400 Hz Ø C warm	7-4
CB10	115 v 400 Hz Ø A warm essential	7-4
CB11	115 v 400 Hz Ø B warm essential	7-4
CB12	115 v 400 Hz Ø C warm essential	7-4
CB13	115 v 1600 Hz on only	7-5
CB14	115 v 1600 Hz on only return	7-5
CB15	115 v 1600 Hz on (delayed)	7-5
CB16	115 v 1600 Hz on (delayed)	7-5
CB17	115 v 1600 Hz on (delayed)	7-5
CB18	115 v 1600 Hz warm	7-5
CB19	115 v 1600 Hz warm return	7-5
CB20	55 v warm/115 v on 1600 Hz (delayed)	7-5
CB21	55 v warm/115 v on 1600 Hz return	7-5
CB22	115 v 1600 Hz on (delayed) return	7-5
CB23	115 v 1600 Hz on (delayed) return	7-5
CB24	115 v 1600 Hz on (delayed) return	7-5

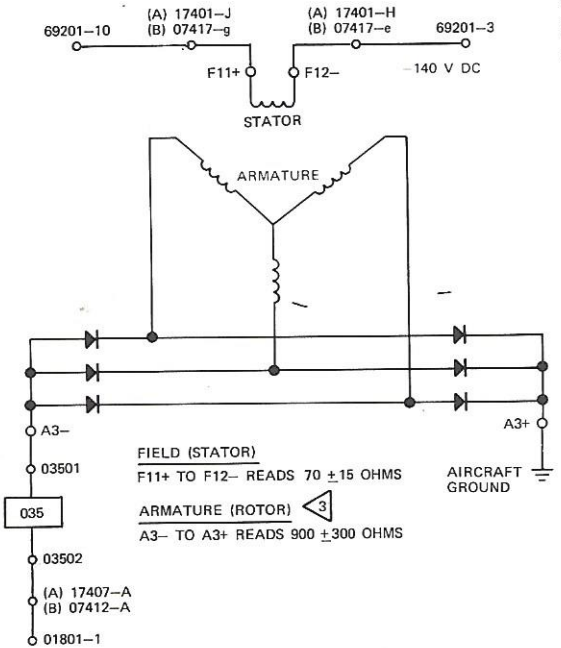


Figure 7-3. Generator Continuity Check (Sheet 1 of 6)

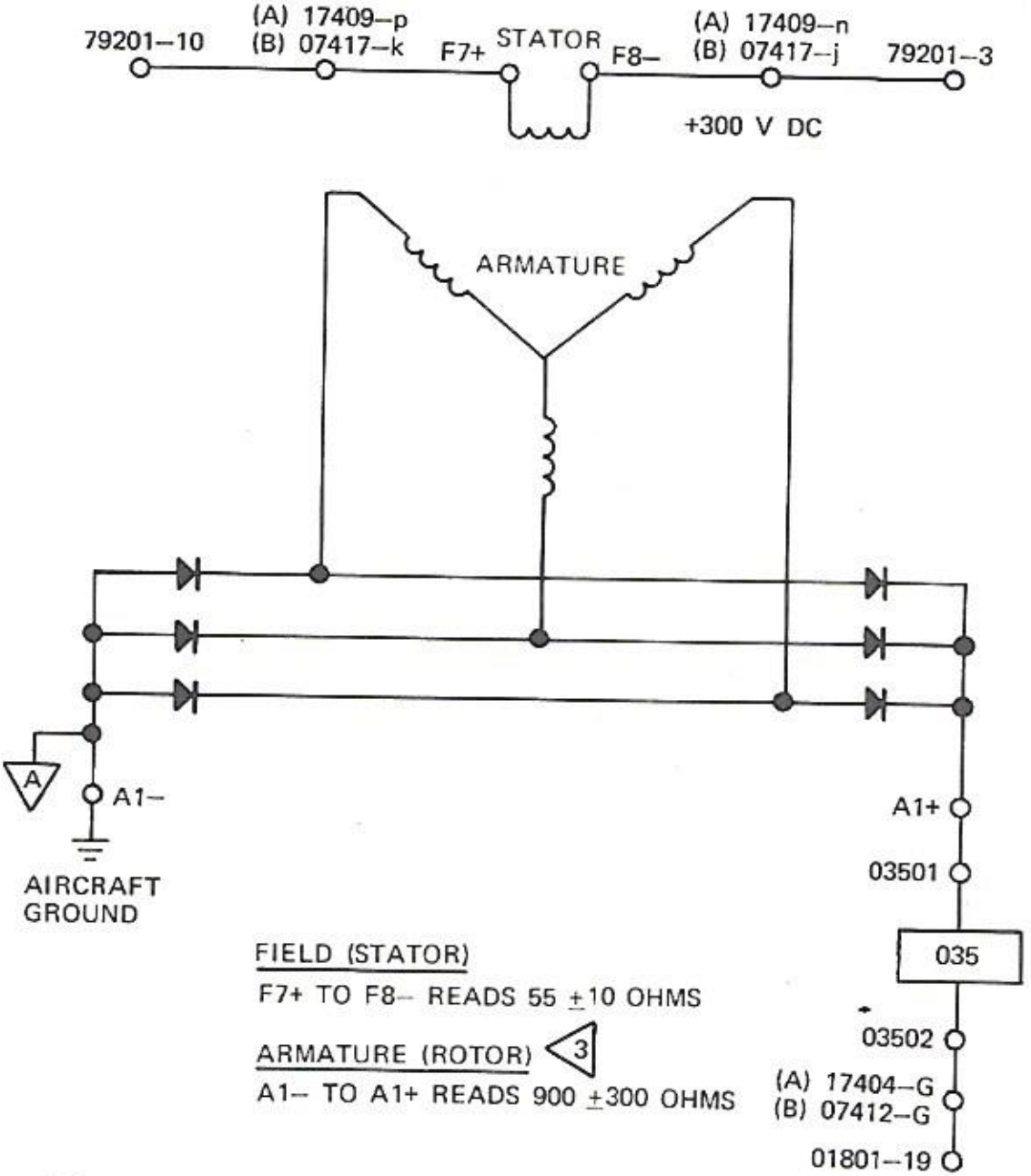


Figure 7-3. Generator Continuity Check (Sheet 2 of 6)

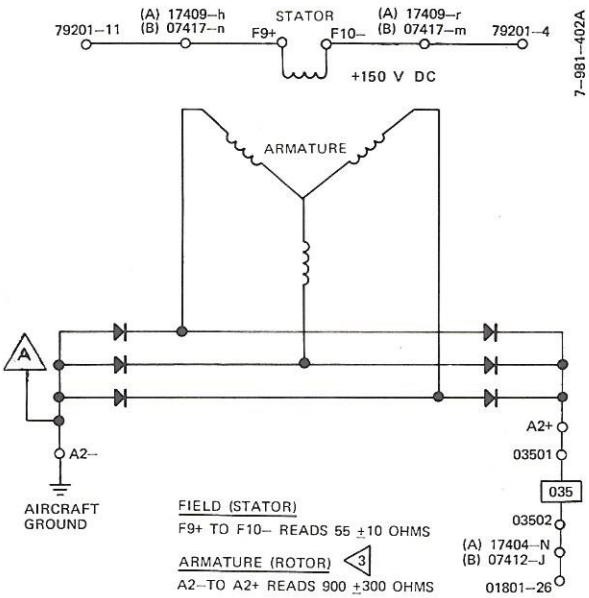


Figure 7-3. Generator Continuity Check (Sheet 3 of 6)

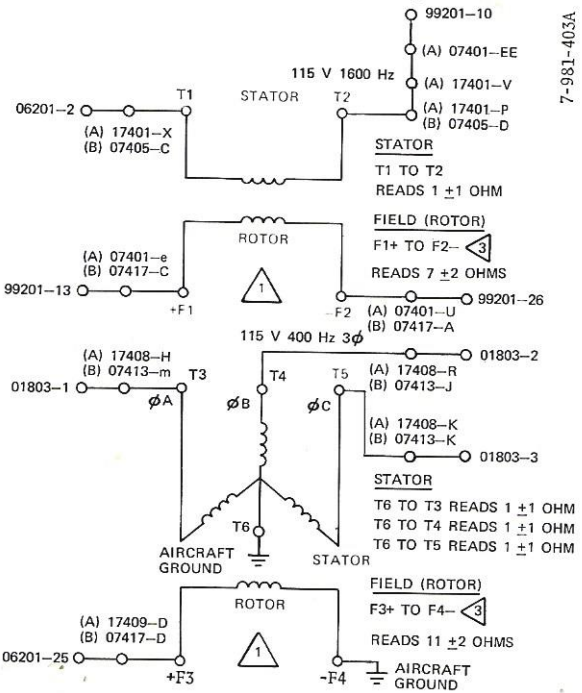
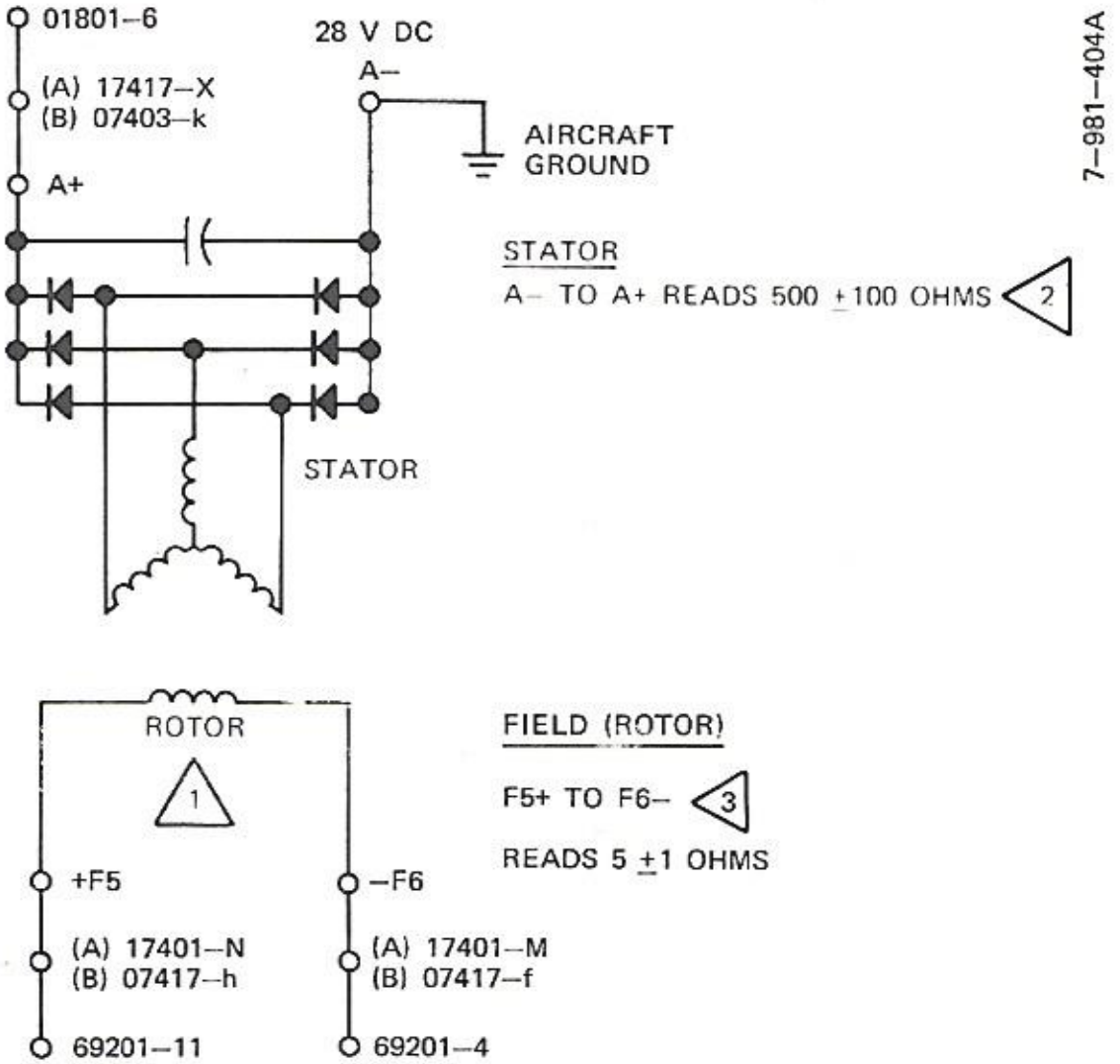


Figure 7-3. Generator Continuity Check (Sheet 4 of 6)



☞Figure 7-3. Generator Continuity Check (Sheet 5 of 6)

NOTES:

1. FIELD ROTATES

2. WIRE MUST BE REMOVED FROM A+ TERMINAL WHILE MAKING RESISTANCE MEASUREMENTS.

3. THE RESISTANCE MEASUREMENTS ON THE GENERATORS DO NOT NECESSARILY DETERMINE IF THE GENERATOR IS TO BE REJECTED, SINCE TEMPERATURE, FILM COATING, POSITION OF ROTOR AND CONTACT RESISTANCE IS NOT BEING CONSIDERED. THE MAIN POINT TO CONSIDER IS WHETHER AN OPEN OR A SHORT CIRCUIT EXISTS. FOR A- TO A+ RESISTANCE MEASUREMENTS USE THE RX10 SCALE ON THE PSM-6.

Figure 7-3. Generator Continuity Check (Sheet 6 of 6)

CHAPTER 8
FC & M SUBSYSTEM

8-6a. OPERATIONAL CHECK. Perform SSGC 1 and 2 iaw para. 2-6 and 2-7.

8-6b. FLIGHT CONTROL SYSTEM CHECK PRELIMINARY

(Hydraulic mule, VTVM) None

WARNING

The aircraft shall be on its landing gear not on jacks. Remove speed brake fuse (NWW) and install speed brake door locks before application of electric or hydraulic power carts. Notify all personnel working on or about the aircraft that flight control system operation are commencing.

CAUTION

Do not operate hydraulic system with HYDRAULIC PRESS WARN fuse installed.

NOTE

In F-106B, ensure control is in the front cockpit. Direct manual rigging shall have been previously checked.

1. Remove RH console HYDRAULIC PRESS WARN fuse - ensure all fuses installed in NWW and MWW - apply hydraulic pressure - RADAR STBY - press T.O. TRIM = TAKEOFF TRIMMED on

2. Release T.O. TRIM = TAKEOFF TRIMMED off - rudder and elevons position to take-off trim

3. Monitor AIL POSN and 140 GRD = 0 $\pm$0.07 vdc

NOTE

If step 3 is incorrect, ensure zero airspeed and repeat steps 2 and 3. If still incorrect, align aileron position pot iaw T.O. 1F-106A-2-7.

4. Move flight control stick left and right = Voltage changes smoothly.

8-6c. RUDDER CHANNEL CHECK

(Hydraulic mule) 821

NOTE

Perform para. 8-6b. 821 PITCH ENGA and YAW ENGA may be used if 163 is set to YAW DAMP once to energize the pitch G limit interlock relay. Do not move flight control stick during 821 RUDDER NULL and GAIN checks. In F-106B, perform this procedure from front cockpit. Check rudder position before performing step 1.

1. YAW DAMP - adjust 821 RUDDER NULL = Rudder position < 0.05 in. from original position
2. Press 821 VALVE GAIN ADJ - adjust 821 RUDDER GAIN = Rudder moves 2.0 to 2.1 in. right of step 1
3. Release VALVE GAIN ADJ = Rudder < 0.05 in. from step 1
4. If adjustment was made, repeat steps 1, 2, and 3 - 905 OFF

8-6d. ELEVON CHANNEL CHECK

(Hydraulic mule) 821

NOTE

Perform para. 8-6b. In F-106B, perform this procedure from rear cockpit. 821 PITCH ENGA and YAW ENGA may be used if 163 is set to YAW DAMP once to energize the pitch G limit interlock relay. Check position of both elevons.

1. PITCH DAMP - adjust RIGHT AND LEFT ELEVON NULL = Elevons position < 0.03 in. from original position.

2. Press 821 VALVE GAIN ADJ - adjust RIGHT and LEFT ELEVON GAIN = Elevons move down 0.43 to 0.47 in.

3. Release VALVE GAIN ADJ = Elevons < 0.02 in. from step 1

4. If adjustment was made, repeat steps 1, 2, and 3 - SSGC 6 - ASSIST = Right elevon moves down 1.65 ± 0.1 in. - left elevon moves up 1.65 ± 0.1 in.

5. SSGC7, then OFF - 905 OFF

8-6e. DELETED

All data on page 8-5 deleted.

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8-6f. DISENGAGE CHECK

(Hydraulic mule) 163, 821

NOTE

Perform para. 8-6b.

1. PITCH DAMP - remove NWW FLT CONT DAMPER fuse = DIR MAN - FLIGHT MODE FAIL on
2. Press and release MMT = FLIGHT MODE FAIL off
3. Replace FLT CONT DAMPER fuse - PITCH DAMP - press and release MMT - remove MWW TURN RATE XMTR Ø A and Ø B fuses = DIR MAN - FLIGHT MODE FAIL on
4. Press and release MMT = FLIGHT MODE FAIL off
5. Replace TURN RATE XMTR Ø A and Ø B fuses - PITCH DAMP - press and release MMT - press and release EMER MANUAL = DIR MAN - FLIGHT MODE FAIL on
6. Press and release MMT = FLIGHT MODE FAIL off

NOTE

In F-106B aircraft, transfer control to rear cockpit and perform steps 7 and 8.

7. PITCH DAMP - press and release EMER MANUAL = DIR MAN - FLIGHT MODE FAIL on

8. Press and release MMT = FLIGHT MODE FAIL off - 905 OFF

8-6g. ASSIST CHECK

(Hydraulic mule) 821

NOTE

Perform para. 8-6b.

1. SSGC 7 - PITCH DAMP = Note elevon position

NOTE

If ejection seat is removed, jumper seat plug pins 6 and 7

CAUTION

Remove jumper before seat is installed.

If elevons move hard over, press EMER MANUAL or MMT.

2. Press MMT - ASSIST - release MMT = Elevon movement < 0.03 in. = HEP valves lock out plungers extend - stays in ASSIST - flight control stick difficult to move

NOTE

Perform step 3 only if step 2 failed.

3. Perform tactical TR routine = E25 and E18A - 0.5 to +0.5v

4. Press and release EMER MANUAL = DIR MAN - MASTER WARNING on - FLIGHT MODE FAIL on

5. ASSIST = HEP valve lockout plungers extend - MASTER WARNING on - FLIGHT MODE FAIL on

6. Press and release MMT = Stays in ASSIST - HEP valve lockout plungers retract - MASTER WARNING off - FLIGHT MODE FAIL off

7. PITCH DAMP - press T.O. TRIM = TAKEOFF TRIMMED on

TRIM Follow-up

8. Release T.O. TRIM - ASSIST - press MMT, position full nose up and release MMT - wait 10 sec - press and hold MMT and allow flight control stick to seek a neutral position then release MMT = Flight control stick moves < 1-1/2 in. nose down

9. PITCH DAMP - press T.O. TRIM = TAKEOFF TRIMMED on

10. Release T.O. TRIM - ASSIST - press MMT, position full nose down and release MMT - wait 10 sec - press and hold MMT and allow flight control stick to seek a neutral position then release MMT = Flight control stick moves < 1-1/2 in. nose up

11. Press and release EMER MANUAL - press T.O. TRIM = TAKEOFF TRIMMED on

12. Release T.O. TRIM - perform tactical TR routine = A21 and A22 +59 to +61 V

NOTE

If indication is incorrect, adjust elevon position pots iaw T.O. 1F-106A-2-7.

13. 796 OFF - 905 OFF

Beep

8-6i. TRIM CHECK

(Hydraulic mule) 140, 821

NOTE

Perform para. 8-6b.

When NOSE UP and NOSE DOWN are released, flight control stick will continue to move.

1. ASSIST - press MMT - position flight control stick to approx takeoff trim position - release MMT - NOSE UP for 2 sec = Flight control stick moves aft at a slow rate
2. Press and release MMT - NOSE DOWN for 2 sec = Flight control stick moves forward at a slow rate
3. RWD for 2 sec = Flight control stick moves right at a slow rate
4. LWD for 2 sec = Flight control stick moves left at a slow rate
5. PITCH DAMP - SSGC 7 - press T.O. TRIM = TAKEOFF TRIMMED on
6. Release T.O. TRIM - ASSIST - HDG HOLD = Flight control stick centered
7. GRID REFERENCE cw = Flight control stick left
8. GRID REFERENCE ccw = Flight control stick right
9. GRID REFERENCE to original position - 796 OFF - DIR MAN - HDG HOLD OFF - 905 OFF

8-6n. ALTITUDE HOLD CHECK

(Hydraulic mule, TTU - 205 B/E) 821, CPU-111

NOTE

Perform para. 8-6b.

1. Simulate 10K altitude = Altitude 10K
2. SSGC 7 - press MMT - ASSIST - release MMT - ALT HOLD = Stays in ALT HOLD - check elevon and flight control stick position
3. Slowly increase altitude to 10.5K = Altitude 10.5K - elevons move down - flight control stick moves forward
4. Slowly decrease altitude to 9.5K = Altitude 9.5K - elevons move up - flight control stick moves aft
5. Slowly increase altitude to 10K = Altitude 10K - elevons and flight control stick return to position in step 2
6. NOSE UP for 2 sec = ALT HOLD OFF
7. ALT HOLD = Stays in ALT HOLD
8. NOSE DOWN for 2 sec = ALT HOLD OFF
9. DIR MAN - 796 OFF - 905 OFF - local altitude

8-6o. AUTOMATIC ATTACK CHECK

(Hydraulic mule) 821

NOTE

Perform para. 8-6b.

1. 905 ON - MISSILES ALL = Firing bar not present
2. Ensure NWW AIR DATA COMPUTER fuse installed - SSGC 2 = Mach 1.77 to 1.83
3. Remove AIR DATA COMPUTER fuse - SSGC 7 - lock on - press MMT - AUTO NAV - AUTO - release MMT = Flight control stick follows steering dot movement
4. Press and release LC/PUR = Flight control stick follows steering dot movement
5. DIR MAN - ▯ MAN NAV - RADAR STBY - press and release LC/PUR - install AIR DATA COMPUTER fuse = Mach min
6. 796 OFF - 905 OFF

CHAPTER 10

REPLACEMENT

The torque values for units of the MA-1 system are as follows:

Unit	Torque Value
Accumulator	40 to 65 in-lbs
Radome	225 to 250 in-lbs
017 unit	660 to 710 in-lbs at 75°F (increase torque 2 in-lbs per degree above 75°F and decrease torque 2 in-lb per degree below 75°F)
065 unit	150 to 160 in-lbs at 75°F (increase torque 0.5 in-lb per degree above 75°F and decrease torque 0.5 in-lb per degree below 75°F)

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