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10 MWE SOLAR THERMAL
CENTRAL RECEIVER PILOT PLANT

MARTIN MARIETTA CORPORATION

COLLECTOR SUBSYSTEM
FUNCTIONAL TEST REPORT

DECEMBER 1981

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Approved:

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FOREWORD

This document is submitted in response to the requirements of DOE Contract No. DE-AC03-80SF-10539 dated 12/79, Collector Subsystem Statement of Work, Task E.2.

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1. Introduction	1
2. Applicable Documents	2
3. Test Summary	3
4. CS Functional Test Summary - Procedure 101	5
5. Chronological Summary - Procedure 111	11
5.1 CS Functional Test Summary - Procedure 111, Para. 8.2	13
5.2 CS Functional Test Summary - Procedure 111, Para. 8.3	24
5.3 CS Functional Test Summary - Procedure 111, Para. 8.4	31
5.4 CS Functional Test Summary - Procedure 111, Para. 8.5	38
5.5 CS Functional Test Summary - Procedure 111, Para. 8.6	46
5.6 CS Functional Test Summary - Procedure 111, Para. 8.7	53
5.7 CS Functional Test Summary - Procedure 111, Para. 8.8	60
5.8 CS Functional Test Summary - Procedure 111, Para. 8.9	65
5.9 CS Functional Test Summary - Procedure 111, Para. 8.10	73
5.10 CS Functional Test Summary - Procedure 111, Para. 8.11	80
5.11 CS Functional Test Summary - Procedure 111, Para. 8.12	86
5.12 CS Functional Test Summary - Procedure 111, Para. 8.13.1	92
5.13 CS Functional Test Summary - Procedure 111, Para. 8.13.2	115
5.14 CS Functional Test Summary - Procedure 111, Para. 8.13.3	129
5.15 CS Functional Test Summary - Procedure 111, Para. 8.13.4	143
5.16 CS Functional Test Summary - Procedure 111, Para. 8.13.5	156
5.17 CS Functional Test Summary - Procedure 111, Para. 8.13.6	172
5.18 CS Functional Test Summary - Procedure 111, Para. 8.13.7	183
5.19 CS Functional Test Summary - Procedure 111, Para. 8.13.8	197
5.20 CS Functional Test Summary - Procedure 111, Para. 8.13.9	210
5.21 CS Functional Test Summary - Procedure 111, Para. 8.13.10	224
5.22 CS Functional Test Summary - Procedure 111, Para. 8.13.11	238
5.23 CS Functional Test Summary - Procedure 111, Para. 8.13.12	251
5.24 CS Functional Test Summary - Procedure 111, Para. 8.14	264
5.25 CS Functional Test Summary - Procedure 111, Para. 8.15	281
5.26 CS Functional Test Summary - Procedure 111, Para. 8.16	306
5.27 CS Functional Test Summary - Procedure 111, Para. 8.17	312
5.28 CS Functional Test Summary - Procedure 111, Para. 8.18	317
5.29 CS Functional Test Summary - Procedure 111, Para. 8.19	323

TABLE OF CONTENTS (cont.)

<u>Section</u>	<u>Page</u>
6. Chronological Summary, CS Dual Heliostat Array Controller Test	327
6.1 CS Functional Test Summary - Procedure 106	328
7. Chronological Summary, CS Heliostat Targeting Verification	342
7.1 CS Functional Test Summary - Procedure 116	343

1.0 INTRODUCTION

1.1 Scope

This document presents the results of the Collector Subsystem (CS) Functional Testing.

1.2 Purpose

The Collector Subsystem Functional Testing was performed to demonstrate the systems level operational performance of the CS on a stand-alone basis. The testing involved issuing commands from the Heliostat Array Controllers (HAC's) and verifying responses by visual observation of the heliostat movements in the field and by observation of the readouts on the HAC displays and printer. All tests were completed successfully. Testing was performed from 9 November 1981 through 18 November 1981.

2.0 APPLICABLE DOCUMENTS

2.1 The following documents, of the latest issue, form part of this document to the extent specified herein.

2.1.1 Government Documents

Contract DE-AC03-80SF-10539, "10 MWe Solar Thermal Central Receiver Pilot Plant - Collector Subsystem."

2.1.2 Martin Marietta Documents

MCR-80-1361 Collector Subsystem Functional Test Plan

MCR-80-1341 10 MWe Collector Subsystem Software/Firmware Functional Requirements Specification.

Procedure 101 HelioStat Readiness Test

Procedure 111 Collector System Functional Test

Procedure 106 Dual HelioStat Array Controller Test

Procedure 116 HelioStat Targeting Verification

3.0 TEST SUMMARY

3.1 The Collector Subsystem Acceptance Tests were performed on 9 November 1981 through 18 November 1981. The Collector Subsystem Acceptance Test consisted of the successful completion of the following test procedures.

- a. Procedure 101 - Heliostat Readiness Test
- b. Procedure 111 - Collector System Functional Test
- c. Procedure 106 - Dual Heliostat Array Controller Test
- d. Procedure 116 - Heliostat Targeting Verification

3.2 Test Results

3.2.1 Procedure 101 - The Heliostat Readiness Test was performed prior to each day's test activity as a prerequisite for all testing. There were no failures as a result of this test.

3.2.2 Procedure 111 - The Collector System Functional Test was performed successfully with the following test anomalies:

- a. Paragraph 8.13.6.22 - The system responded to a WASH command, addressing a heliostat, and the BCS targets were not available for further heliostat tracking.

Corrective Action: The corrective action implemented was to disallow a WASH command in the BCS mode. The corrective action was verified by a successful retest.

3.2.3 Procedure 106 - The Dual Heliostat Array Controller test was performed successfully with the following test anomalies:

- a. Paragraph 8.2.27, 8.2.28 - There was no data line switchover with communication loss with two HFC groups on a line.
- b. The Primary HAC did not fail over to the Secondary HAC when a loss of communications with all enabled lines was detected with no power loss.

Corrective Action: The corrective action implemented was a software modification. The corrective action was verified by a successful retest of the Dual Heliostat Array Controller Test, Procedure 106.

3.2.4 Procedure 116 - The Heliostat Targeting Verification Test was performed successfully. There were no failures as a result of this test.

3.3 Presentation of Test Results

The remaining sections of this report present for each of the four test procedures a chronological summary, a test summary, the red-lined as-run section of the procedure and where applicable the procedure history sheet. The only exception to this was that a chronological summary and procedure history sheet were not prepared for the Heliostat Readiness Test, Procedure 101, since this was not an acceptance test per-se but a daily operational check of the readiness of the field prior to starting acceptance test activities. Procedure 101 was performed at the start of each day during the acceptance testing time span.

4.

COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 101

Test Title: Heliostat Readiness Test

Acceptance Criteria: The heliostat field is cleared of all obstacles which could impede or damage heliostats in motion and provisions to prohibit vehicular traffic in the heliostat field is provided. Out of service heliostats have been identified to the HAC operator. Power is applied to heliostat field.

Test Results: The Heliostat Readiness Test was performed prior to each day's test activity. The Collector Subsystem was verified to be ready for planned test activity.

Retest Requirements: No further tests. All heliostat flag items have been cleared and verified operationally.



8.0 PROCEDURE AND DATA COLLECTION

8.1 HelioStat Field Clearance

8.1.1 Position an adequate number of field observers to provide visual coverage for the portions of the heliostat field to be tested.

AK 11-9
Initial Date

8.1.2 Provide a sufficient number of radios to field observers to provide adequate communication coverage.

AK 11-9
Initial Date

8.1.3 Verify communication is established between control console operator and field observers.

AK 11-9
Initial Date

8.1.4 Field observers shall verify that the heliostat field is clear of obstructions and report field condition to the control console operator. All in service heliostats shall be verified to be in stow position.

AK 11-19
Initial Date

8.1.5 The heliostat field or portions to be tested shall be roped off, or other adequate means to prohibit vehicular traffic. The field observers shall monitor for vehicular traffic at all times and stop any traffic in the test area.

AK 11-9
Initial Date

8.2 Reporting Out of Service Heliostats

8.2.1 The test conductor shall provide a list of heliostats which are out of service to the control console (HAC) operator. This list shall be Appendix 10C of this procedure.

AK 11-19
Initial Date

8.3 HelioStat Field Power-up

8.3.1 Energize heliostat field feeder power panel numbers 1 through 14. Verify branch circuit breakers are in the ON position.

AK 11-9

8.3.2 Visually observe the heliostat field for heliostat movement. No heliostat motion should occur.

AK 11-19

8.3.3 Field observers shall report any heliostat movement to the control room operator and remove power by turning off circuit breaker at the pedestal and place the heliostats out of service. Any heliostats which are placed out of service shall be noted on the out of service heliostat list.

AK 11-19

7

9.0 SYSTEM RESTORATION

9.1 Verify all in service heliostats are in the stow mode.

AK I
Initial Date

101
Rev. 0
Page 10 of 14

9.0 SYSTEM RESTORATION

9.1 Verify all in service heliostats are in the stow mode.

Initial AKI Date

APPENDIX 10C

OUT OF SERVICE HELIOSTAT LIST

<u>Heliostat No.</u>	<u>Reason</u>	<u>Initial/Date</u>
1942 2102 2206 1923	Flagged	8.12, 8.13.1
2119 2086 0604 1661	IN Pre Test	11-15-81

1328 1702 1324 1330	Flagged in PRE-TEST	8.19
2127 1332 1322 2301		8.14.1
0521 1011 2702 2717		8.14.2
2427 2537 2319 2029		8.18
1306 1334 2333 1032		8.14.6
0927 0810 2015 1839		8.13.5
1320 2015 2239		8-13-5
The 8 HE ABOVE + HFC 2		

SEU/Field HST's 0438, 0432, 0222, 0748 0838, 1036, 0952, 1460 1856, 1260, 1764, 1962	Cleaning Activities PRO 106	11-14-81
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5. CHRONOLOGICAL SUMMARY

COLLECTOR SUBSYSTEM FUNCTIONAL TEST - PROCEDURE 111

<u>Date</u>	<u>Test Description</u>	<u>Results</u>
11/9/81	Procedure 101 - Heliostat Readiness Test	Passed
11/9/81 11/10/81	Paragraph 8.2 - HAC Control Verification of Legal Commands/Modes of Individual Heliostats	Passed
11/9/81 11/10/81	Paragraph 8.3 - HAC Control Verification of Legal Commands/Modes of Heliostat Field Controller Group	Passed
11/9/81 11/10/81	Paragraph 8.4 - HAC Control Verification of Legal Commands/Modes of an Individual Segment	Passed
11/10/81	Paragraph 8.5 - HAC Control Verification of Legal Commands/Modes of an Individual Wedge	Passed
11/9/81 11/10/81	Paragraph 8.6 - HAC Control Verification of Legal Commands/Modes of an Individual Ring	Passed
11/9/81 11/10/81	Paragraph 8.7 - HAC Control Verification of Legal Commands/Modes of an Individual Arc	Passed
11/11/81	Paragraph 8.8 - HAC Control Verification of Multiple Segment Operational Commands	Passed
11/11/81	Paragraph 8.11 - HAC Control Verification of Arc Operational Commands	Passed
11/11/81	Paragraph 8.10 - HAC Control Verification of Wedge Operational Commands	Passed
11/11/81	Paragraph 8.9 - HAC Control Verification of Multiple Ring Operational Commands	Passed
11/11/81	Paragraph 8.16 - Wire Walk Verification	Passed
11/11/81	Paragraph 8.17 - Heliostat Response Verification to Singularity Condition	Passed
11/12/81	Paragraph 8.13.3 - Illegal Commands Verification in the Offline Mode	Passed
11/12/81	Paragraph 8.13.12 - Illegal Commands Verification in the Stow Mode	Passed
11/12/81	Paragraph 8.13.9 - Illegal Commands Verification in the Mark Mode	Passed
11/12/81	Paragraph 8.13.4 - Illegal Commands Verification in the Directed Position Mode	Passed

5. CHRONOLOGICAL SUMMARY (cont.)

<u>Date</u>	<u>Test Description</u>	<u>Results</u>
11/13/81	Paragraph 8.13.2 - Illegal Commands Verification in the Initialized Mode	Passed
11/13/81	Paragraph 8.13.11 - Illegal Commands Verification in the ALT1 Stow Mode	Passed
11/13/81	Paragraph 8.13.6 - Illegal Commands Verification in the BCS Mode	Passed
11/13/81	Paragraph 8.13.10 - Illegal Commands Verification in the ALT2 Stow Mode	Passed
11/13/81	Paragraph 8.13.7 - Illegal Commands Verification in the Standby Mode	Passed
11/13/81	Paragraph 8.13.8 - Illegal Commands Verification in the Track Mode	Passed
11/14/81	Paragraph 8.15 - Graphics Display Console Segment Display Verification	Passed
11/15/81	Paragraph 8.14 - Emergency Commands Verification	Passed
11/15/81	Paragraph 8.12 - HAC Control Verification of Full Field Operational Commands	Passed
11/15/81	Paragraph 8.13.1 - Illegal Commands Verification in the Transition Mode	Passed
11/15/81	Paragraph 8.19 - 16 Parallel Command Processing Verification	Passed
11/15/81	Paragraph 8.13.5 - Illegal Commands Verification in the Wash Mode	Passed
11/15/81	Paragraph 8.18 - Special Commands Verification	Time allotted for command processing inadequate. Require new command file and retest.
11/16/81	Paragraph 8.18 - Special Commands Verification Command File Retest	Passed

PROCEDURE 111

Test Title: Paragraph 8.2 - HAC Control Verification of Legal Commands/Modes of Individual Heliostats

Acceptance Criteria: An individual heliostat responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Legal Commands/Modes of Individual Heliostats was performed on 9 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Legal Commands/Modes of Individual Heliostats.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.0 PROCEDURE AND DATA COLLECTION

8.1 Verify that the initial conditions have been established.

AK 1 11-19
Initial Date

8.2 HAC Control Verification of Legal Commands/Modes of Individual Heliostats

8.2.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. One heliostat shall be used for this test.

8.2.2 Enter: ¹⁰⁰¹LOAD H 0235 depress RIN

Response: No heliostat motion, HST responding shall display initialization mode from the transition mode.

AK 1 11-9
Initial Date

8.2.3 Enter: ¹⁰⁰¹STOW H 0235 depress RTN

Response: Responding HST shall move to the stow position and display stow mode from the initialized mode.

AK 1 11-9
Initial Date

8.2.4 Enter: ¹⁰⁰¹MARK H 0235 depress RTN

Response: Responding HST shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK 1 11-9
Initial Date

8.2.5 Enter: ¹⁰⁰¹STOW H 0235 depress RTN

Response: Responding HST shall move to the stow position and display stow mode from the mark mode.

AK 1 11-9
Initial Date

CAUTION: For step 8.2.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

8.2.48 Enter: WASH H 0235 ¹⁰⁰¹ depress RTN
Response: Responding HST shall move to the wash position and display the wash mode from the mark mode.

AK 1 11-10
Initial Date

8.2.49 Enter: RELWASH H 0235 ¹⁰⁰¹ depress RTN
Response: No HST motion, HST responding shall display the directed position mode from the wash mode.

AK 1 11-10
Initial Date

8.2.50 Enter: STOW H 0235 ¹⁰⁰¹ depress RTN
Response: HST responding shall move to the stow position and display the stow mode from the directed position mode.

AK 1 11-10
Initial Date

8.2.51 Enter: UNSTOW H 0235 ¹⁰⁰¹ depress RTN
Response: HST responding shall move to track the CLLP, then move upward to track the CULP. When HST is in transition, enter the command of paragraph 8.2.52.

AK 1 11-10
Initial Date

8.2.52 Enter: HOLD H 0235 ¹⁰⁰¹ depress RTN
Response: Responding HST shall maintain current orientation and display the directed position mode from the transition mode.

AK 1 11-10
Initial Date

8.2.53 Enter: POSITION H 0235 ¹⁰⁰¹ 0., -90. depress RTN
Response: Responding HST shall move to the directed AZ and EL positions and display the directed position mode from the directed position mode.

AK 1 11-10
Initial Date

8.2.54 Enter: STOW H 0235 ¹⁰⁰¹ depress RTN
Response: Responding HST shall move to the stow position and display the stow mode from the directed position mode.

AK 1 11-10
Initial Date

8.2.43 Enter: ¹⁰⁰¹ ALT2STOW H 0235 depress RTN
Response: Responding HST move to the ALT2 stow position and display the ALT2 stow mode from the standby mode. The HST(s) shall move to the ALT2 stow elevation position while maintaining the last reported azimuth position.

Initial AKI 11-15 Date

8.2.44 Enter: ¹⁰⁰¹ UNSTOW H 0235 depress RTN
Response: HST responding shall move to track the CLLP, then move upward to track the CULP and display the standby mode from the ALT2 stow mode.

Initial AKI 11-10 Date

3

8.2.45

Enter: ¹⁰⁰¹ TRACK H 0235 depress RTN
Response: The commanded HST beam shall move from the standby point to track the specially assigned track position and display the track mode from the standby mode.

Initial AKI 11-10 Date

8.2.46 Enter: ¹⁰⁰¹ ALT1STOW H 0235 depress RTN
Response: HST responding shall move to the ALT1 stow position and display the ALT1 stow mode from the track mode.

Initial AK 11-10 Date

8.2.47 Enter: ¹⁰⁰¹ STOW H 0235 depress RTN
Response: HST responding shall move to the stow position and display the stow mode from the ALT1 stow mode.

Initial AK 11-15 Date

8.2.48 Enter: ¹⁰⁰¹ MARK H 0235 depress RTN
Response: Responding HST shall move to the AZ and EL mark positions and display the mark mode from the stow mode.

Initial AKI 11-10 Date

8.2.37 Enter: UNSTOW H 0235 ¹⁰⁰¹ depress RTN
Response: HST responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT1 stow mode.

AK 1 11-10
Initial Date

8.2.38 Enter: STOW H 0235 ¹⁰⁰¹ depress RTN
Response: Responding HST shall move down to track the CLLP, then move to the stow position and display the stow mode from the standby mode.

AK 1 11-10
Initial Date

8.2.39 Enter: OFFLINE H 0235 ¹⁰⁰¹ depress RTN
Response: HST responding shall display the offline mode from the stow mode

AK 1 11-10
Initial Date

8.2.40 Enter: ONLINE H 0235 ¹⁰⁰¹ depress RTN
Response: No HST motion, HST responding display directed position mode from the offline mode.

AK 1 11-10
Initial Date

8.2.41 Enter: STOW H 0235 ¹⁰⁰¹ depress RTN
Response: Responding HST drive to the stow position and display the stow mode from the directed position mode.

AK 1 11-10
Initial Date

8.2.42 Enter: UNSTOW H 0235 ¹⁰⁰¹ depress RTN
Response: HST responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

AK 1 11-10
Initial Date

1001
8.2.30 Enter: RETURN H 0235 depress RTN
Response: HST responding shall move to track the CULP and display the standby mode from the BCS track mode.

AKI 11-10
Initial Date

1001
8.2.31 Enter: ALTSTOW H 0235 depress RTN
Response: Responding HST shall move to the ALTI stow position and display the ALTI stow mode from the standby mode.

AKI 11-10
Initial Date

1001
8.2.32 Enter: POSITION H 0235 90., -90. depress RTN
Response: Responding HST shall drive to AZ of 0.0, EL of 0.0 and display the directed position mode from the ALTI stow mode.

AKI 11-10
Initial Date

1001
8.2.33 Enter: ALT1STOW H 0235 depress RTN
Response: Responding HST shall move to the ALTI stow position and display the ALTI stow mode from the directed position mode.

AKI 11-10
Initial Date

1001
8.2.34 Enter: OFFLINE H 0235 depress RTN
Response: No HST motion, responding HST shall display the offline mode from the ALTI stow mode.

AKI 11-10
Initial Date

1001
8.2.35 Enter: ONLINE H 0235 depress RTN
Response: No HST motion, HST responding display directed position mode from the offline mode.

AKI 11-10
Initial Date

1001
8.2.36 Enter: ALT1STOW H 0235 depress RTN
Response: Responding HST shall move to the ALTI stow position and display the ALTI stow mode from the directed position mode.

AKI 11-10
Initial Date

8.2.23 Enter: OFFLINE H ¹⁰⁰¹ 0235 depress RTN
Response: HST responding display offline mode from directed position mode, no HST(s) motion.

AK / 11-9
Initial Date

8.2.24 Enter: ONLINE H ¹⁰⁰¹ 0235 depress RTN
Response: No HST motion, HST responding display directed position mode from offline mode.

AK / 11-9
Initial Date

8.2.25 Enter: STOW H ¹⁰⁰¹ 0235 depress RTN
Response: Responding HST move to stow position and display stow mode from the directed position mode.

AK / 11-9
Initial Date

8.2.26 Enter: POSITION H ¹⁰⁰¹ 0235 -90., 0. depress RTN
Response: HST responding shall drive to AZ of -90, EL of 0.0 and display the directed position mode from the stow mode.

AK / 11-9
Initial Date

8.2.27 Enter: STOW H ¹⁰⁰¹ 0235 depress RTN
Response: HST responding shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-9
Initial Date

8.2.28 Enter: UNSTOW H ¹⁰⁰¹ 0235 depress RTN
Response: HST responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

AK / 11-10
Initial Date

8.2.29 Enter: BCSTRACK H ¹⁰⁰¹ 0235 depress RTN
Response: HST responding shall track the BCS target and display the BCS mode from the standby mode.

AK / 11-10
Initial Date

8.2.17 Enter: ¹⁰⁰¹WASH H 0235 depress RTN
Response: HST responding shall move to the wash position and display the wash mode from the ALT1 stow mode.

AK / 11-9
Initial Date

8.2.18 Enter: ¹⁰⁰¹RELWASH H 0235 depress RTN
Response: No HST motion, HST responding shall display the directed position mode from the wash mode.

AK / 11-9
Initial Date

8.2.19 Enter: ¹⁰⁰¹ALT2STOW H 0235 depress RTN
Response: Responding HST move to the ALT2 stow position and displays the ALT2 stow mode from the directed position mode. (The HST(s) shall move to the ALT2 elevation while maintaining the last reported azimuth position.)

AK / 11-9
Initial Date

8.2.20 Enter: ¹⁰⁰¹WASH H 0235 depress RTN
Response: HST responding shall move to the wash position and display the wash mode from the ALT2 stow mode.

AK / 11-9
Initial Date

8.2.21 Enter: ¹⁰⁰¹RELWASH H 0235 depress RTN
Response: No HST motion, HST responding shall display the directed position mode from the wash mode.

AK / 11-9
Initial Date

8.2.22 Enter: ¹⁰⁰¹POSITION H 0235 0., -90. depress RTN
Response: HST responding move AZ of 0.0 and EL of -90.0 and display directed position mode from directed position mode.

AK / 11-9
Initial Date

8.2.11 Enter: ¹⁰⁰¹ ~~STOW H 0235~~ depress RTN
Response: Responding HST shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-9
Initial Date

8.2.12 Enter: ¹⁰⁰¹ ~~WASH H 0235~~ depress RTN
Response: The commanded HST beam shall move to the wash position and display the wash mode from the stow mode.

AK / 11-9
Initial Date

8.2.13 Enter: ¹⁰⁰¹ ~~RELWASH H 0235~~ depress RTN
Response: No HST motion, HST responding shall display the directed position mode from the wash mode.

AK / 11-9
Initial Date

8.2.14 Enter: ¹⁰⁰¹ ~~WASH H 0235~~ depress RTN
Response: The commanded HST beam shall move to the wash position and display the wash mode from the directed position mode.

AK / 11-9
Initial Date

8.2.15 Enter: ¹⁰⁰¹ ~~RELWASH H 0235~~ depress RTN
Response: No HST motion, HST responding shall display the directed position mode from the wash mode.

AK / 11-9
Initial Date

8.2.16 Enter: ¹⁰⁰¹ ~~ALT1STOW H 0235~~ depress RTN
Response: HST responding shall move to the ALT1 stow position and display the ALT1 mode from the directed position mode.

AK / 11-9
Initial Date

8.2.6

Enter: ¹⁰⁰¹ UNSTOW H 0235 depress RTN

Response: The commanded HST beam shall track the CLLP, then move upward to track the GULP and display standby mode from the stow mode.

AK / 11-9
Initial Date

CAUTION: For step 8.2.7, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special track point and that the beam does not impinge on the tower or receiver.

AK / 11-9
Initial Date

8.2.7

Enter: ¹⁰⁰¹ TRACK H 0235 depress RTN

Response: The commanded HST beam shall track the specially assigned aimpoint tracking array position and display track mode from the standby mode.

AK / 11-9
Initial Date

8.2.8

Enter: ¹⁰⁰¹ STANDBY H 0235 depress RTN

Response: The commanded HST beam shall move from the special track position to track the special standby position and display standby mode from the track mode.

AK / 11-9
Initial Date

8.2.9

Enter: ¹⁰⁰¹ WASH H 0235 depress RTN

Response: The commanded HST beam shall move from the standby position to the wash position and display the wash mode from the standby mode.

AK / 11-9
Initial Date

8.2.10

Enter: ¹⁰⁰¹ RELWASH H 0235 depress RTN

Response: No HST motion, HST responding shall display the directed position mode from the wash mode.

AK / 11-9
Initial Date

PARAGRAPH 8.2

Item	Date	Para.	Entry	Orig	Qual. Accep.
3	11-9	8-2-45	ITEM NO. Added update following No.		11-18-81
6	11-9	-	1916-2111 HST at Standby receiving No Motion ERR		11-18-81
21	11-10	8-2-46	HST loc had Encoder ERR Going Through Mark 2nd Time		11-18-81

PROCEDURE 111 PARA. 8.2 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.

ALL ITEMS ABOVE WILL BE CLEARED.

DR *[Signature]* 11-18-81
Date

TEST CONDUCTOR *[Signature]* 11-18-81
Date

QUALITY *[Signature]* 11-18-81
Date

PROCEDURE 111

Test Title: Paragraph 8.3 - HAC Control Verification of Legal Commands/Modes of Heliostat Field Controller Group.

Acceptance Criteria: A heliostat field controller group of heliostats responded to all control system commands including both legal and illegal commands. A legal command was verified by the appropriate heliostat beams movement and HAC status displays. Illegal commands were verified by the control system displaying the appropriate error message.

Test Results: The HAC Control Verification of Legal Commands/Modes of Heliostat Field Controller Group was performed on 9 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Legal Commands/Modes of Heliostat Field Controller Group.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified operationally. All procedural flags have been incorporated.

8.2.5⁴ End of HAC control verification of legal commands/modes of individual heliostats.

AK / 11-9
Initial Date

8.3 HAC Control Verification of Legal Commands/Modes of Heliostat Field Controller Group

8.3.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Two HFC groups shall be used for this test.

8.3.2 Enter: LOAD F ^{11 03} ~~57,41~~ depress RTN
Response: No heliostat motion, HST(s) responding shall display initialization mode from the transition mode.

AK / 11-9
Initial Date

8.3.3 Enter: STOW F ^{03 11} ~~57,41~~ depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the initialized mode.

AK / 11-9
Initial Date

8.3.4 Enter: MARK F ^{03 11} ~~57,41~~ depress RTN
Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK / 11-9
Initial Date

8.3.5 Enter: STOW F ^{03 11} ~~57,41~~ depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

AK / 11-9
Initial Date

CAUTION: For step 8.3.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

8.3.6 Enter: UNSTOW F ^{03 11}~~57,41~~ depress RTN
Response: The commanded HST beams shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

AK 1 11-9
Initial Date

8.3.7 Enter: TRACK F ^{03 11}~~57,41~~ depress RTN
Response: The commanded HST beams shall track the specially assigned aimpoint tracking array position and display track mode from the standby mode.

AK 1 11-9
Initial Date

8.3.8 Enter: STANDBY F ^{03 11}~~57,41~~ depress RTN
Response: The commanded HST beams shall move from the special track position to track the special standby position and display standby mode from the track mode.

ACK 1 11-9
Initial Date

8.3.9 Enter: ALTISTOW F ^{03 11}~~57,41~~ depress RTN
Response: HST(s) responding shall move to the ALTI stow position and display the ALTI mode from the standby mode.

AK 1 11-9
Initial Date

8.3.10 Enter: UNSTOW F ^{03 11}~~57,41~~ depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALTI stow mode.

AK 1 11-9
Initial Date

8.3.11 Enter: POSITION F ^{03 11}~~57,41~~ 0.,0. depress RTN
Response: Responding HST(s) shall drive to AZ of 0.0, EL of 0.0 and display the directed position mode from the standby mode.

AK 1 11-9
Initial Date



8.3.12 Enter: POSITION F ^{03 11 90'} ~~57,41~~ 5., 5. depress RTN
 Response: HST(s) responding move to AZ of ~~5.0~~ ⁹⁰ and EL of 5.0 and display directed position mode from directed position mode.

AK / 11-9
 Initial Date

8.3.13 Enter: OFFLINE F ^{03 11} ~~57,41~~ depress RTN
 Response: HST(s) responding display offline mode from directed position mode, no HST(s) motion.

AK / 11-9
 Initial Date

8.3.14 Enter: ONLINE F ^{03 11} ~~57,41~~ depress RTN
 Response: No HST motion, HST(s) responding display directed position mode from offline mode.

AK / 11-9
 Initial Date

14 1933
 209c
 AZ/cw

8.3.15 Enter: ALT1STOW F ^{03 11} ~~57,41~~ depress RTN
 Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the directed position mode.

AK / 11-9
 Initial Date

8.3.16 Enter: POSITION F ^{03 11} ~~57,41~~ 0., -90. depress RTN
 Response: HST(s) responding shall drive to AZ of 0.0, EL of -90.0 and display the directed position mode from the ALT1 stow mode.

AK / 11-9
 Initial Date

8.3.17 Enter: STOW F ^{03 11} ~~57,41~~ depress RTN
 Response: HST(s) responding shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-9
 Initial Date

8.3.18 Enter: POSITION F ^{03 11} ~~57,41~~ 0., -90. depress RTN
 Response: Responding HST(s) shall move to the directed AZ and EL positions and display the directed position mode from the stow mode.

8.3.19

Enter: ^{03 11} STOW F ~~57,41~~ depress RTN

Response: Responding HST(s) move to stow position and display stow mode from the directed position mode.

Initial AK / 11-9 Date

8.3.20

Enter: ^{03 11} POSITION F ~~57,41~~ -90., 0. depress RTN

Response: Responding HST(s) shall move to the directed ~~stow~~ positions and display the directed position mode from the offline mode.

Initial AK / 11-9 Date

8.3.21

Enter: ^{03 11} STOW F ~~57,41~~ depress RTN

Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

Initial AK / 11-9 Date

8.3.22

Enter: ^{03 11} ALT1STOW F ~~57,41~~ depress RTN

Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the stow mode.

Initial AK / 11-10 Date

8.3.23

Enter: ^{03 11} OFFLINE F ~~57,41~~ depress RTN

Response: No HST motion, responding HST(s) shall display the offline mode from the ALT1 stow mode.

Initial AK / 11-10 Date

8.3.24

Enter: ^{03 11} ONLINE F ~~57,41~~ depress RTN

Response: No HST motion, HST(s) responding display directed position mode from the offline mode.

Initial AK / 11-10 Date

8.3.25 Enter: STOW F 7.41 depress RIN
Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

Initial AK 1 Date 11-10

8.3.26 Enter: UNSTOW F 7.41 depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

Initial AK 1 Date 11-10

8.3.27 Enter: TRACK F 7.41 depress RTN
Response: The commanded HST beams shall move from the standby point to track the specially assigned track position and display the track mode from the standby mode.

Initial AK 1 Date 11-10

8.3.28 Enter: ALT1STOW F 7.41 depress RTN
Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the track position mode.

Initial AK 1 Date 11-10

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8.3.29 Enter: STOW ALT1 depress RIN
Response: HST(s) responding shall move to the stow position and display the stow mode from the ALT1 stow mode.

Initial AK 1 Date 11-10

8.3.30 End of HAC control verification of legal commands/modes of helio-stat field controller groups.

PARAGRAPH 8.3

Item	Date	Para.	Entry	Orig	Qual. Accep.
8	11-9	8.3.13	PEN. change Posi 90, 5,		3334 11-17-81
14	11-10	8.3.15	1933-209C A2/CW		11-17-81
PROCEDURE 111 PARA. 8.3 WAS TESTED SUCCESSFULLY- NO RETEST REQUIRED.					
ALL ITEMS ABOVE WILL BE CLEARED					

INS *[Signature]* 11-18-81
Date

TEST CONDUCTOR: *[Signature]* 11-13-81
Date

QUALITY *[Signature]* 11-10-81
Date

PROCEDURE 111

Test Title: Paragraph 8.4 - HAC Control Verification of Legal Commands/Modes of an Individual Segment.

Acceptance Criteria: A segment of the field responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Legal Commands/Modes of an Individual Segment was performed on 9 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Legal Commands/Modes of an Individual Segment.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

CONTROL VERIFICATION OF Legal Commands/Modes of an Individual Segment

8.4.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses.

8.4.2 Enter: ²⁰⁷LOAD ALL depress RTN
Response: No heliostat motion, HST(s) responding shall display initialization mode from the transition mode.

AK / 11-9
Initial Date

8.4.3 Enter: ²⁰⁷STOW S 212 depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the initialized mode.

AK / 11-9
Initial Date

8.4.4 Enter: ²⁰⁷MARK S 212 depress RTN
Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK / 11-9
Initial Date

8.4.5 Enter: ²⁰⁷STOW S 212 depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

AK / 11-9
Initial Date

CAUTION: For step 8.4.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

8.4.6 Enter: ²⁰⁷UNSTOW S 212 depress RTN
Response: The commanded HST beams shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

AK / 11-9
Initial Date

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1609
Load Stow
" No Problem
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CAUTION: For step 8.4.7, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special track point and that the beam does not impinge on the tower or receiver.

207
8.4.7 Enter: TRACK S 212 depress RTN

Response: The commanded HST beams shall track the specially assigned aimpoint tracking array position and display track mode from the standby mode.

AK 1 11-9
Initial Date

207
8.4.8 Enter: STANDBY S 212 depress RTN

Response: The commanded HST beams shall move from the special track position to track the special standby position and display standby mode from the track mode.

AK 1 11-9
Initial Date

207
8.4.9 Enter: INCREASE S 212 depress RTN

Response: Responding HST(s) shall track the special track position and display the track mode from the standby mode.

AK 1 11-9
Initial Date

207
8.4.10 Enter: DECREASE S 212 depress RTN

Response: Responding HST(s) shall move from the track position to the standby position and display the standby mode from the track mode.

AK 1 11-9
Initial Date

207
8.4.11 Enter: ALT1STOW S 212 depress RTN

Response: HST(s) responding shall move to the ALT1 stow position and display the ALT1 stow mode from the standby mode.

AK 1 11-9
Initial Date

8.4.12 Enter: UNSTOW S 212 depress RTN

Response: HST(s) responding shall move to track the CLLP, then move upward to track the CULP and display the standby mode from the ALTI stow mode.

Initial AK / 11-9 Date

9

8.4.13 Enter: ALT2STOW S 212 depress RTN

Response: Responding HST(s) move to the ALT2 stow position and display the ALT2 stow mode from the standby mode. The HST(s) shall move to the ALT2 stow elevation position while maintaining the last reported azimuth position.

Initial AK / 11-9 Date

1501
Hung EL 4/5

8.4.14 Enter: UNSTOW S 212 depress RTN

Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT2 stow mode.

Initial AK / 11-9 Date

8.4.15 Enter: POSITION S 212 0., 0. depress RTN

Response: Responding HST(s) shall drive to AZ of 0.0, EL of 0.0 and display the directed position mode from the standby mode.

Initial AK / 11-9 Date

13

8.4.16 Enter: POSITION S 212 0., -90. depress RTN

Response: HST(s) responding move to AZ of 0.0 and EL of -90.0 and display directed position mode from directed position mode.

Initial AK / 11-9 Date

8.4.17 Enter: ALT2STOW S 212 depress RTN

Response: Responding HST(s) move to the ALT2 stow position and display the ALT2 stow mode from the directed position mode. The HST(s) shall move to the ALT2 elevation position while maintaining the last reported azimuth position.)

8.4.18 Enter: ²⁰⁷ POSITION S 211 0., -90. depress RTN

Response: HST(s) responding shall drive to AZ of 0.0, EL of -90.0 and display the directed position mode from the ALT2 stow mode.

Initial AK / 11-10
Date

8.4.19 Enter: ²⁰⁷ OFFLINE S 212 depress RTN

Response: HST(s) responding display offline mode from directed position mode, no HST(s) motion.

Initial AK / 11-10
Date

8.4.20 Enter: ²⁰⁷ ONLINE S 212 depress RTN

Response: No HST motion, HST(s) responding display directed position mode from offline mode.

Initial AK / 11-10
Date

8.4.21 Enter: ²⁰⁷ POSITION S 213 0., -90. depress RTN

Response: Responding HST(s) shall move to the directed AZ and EL positions and display the directed position mode from the offline mode.

Initial AK / 11-10
Date

8.4.22 Enter: ²⁰⁷ STOW S 212 depress RTN

Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

Initial AK / 11-10
Date

207
8.4.23 Enter: POSITION S 212 -90., 0. depress RTN
Response: Responding HST(s) shall move to the directed AZ and EL positions and display the directed position mode from the stow mode.

AK 1 11-10
Initial Date

207
8.4.24 Enter: STOW S 212 depress RTN
Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

AK 1 11-10
Initial Date

207
8.4.25 Enter: OFFLINE S 212 depress RTN
Response: No HST motion, responding HST(s) shall display the off-line mode from the stow mode.

AK 1 11-10
Initial Date

207
8.4.26 Enter: ONLINE S 212 depress RTN
Response: No HST motion, HST(s) responding display directed position mode from the offline mode.

AK 1 11-10
Initial Date

207
8.4.27 Enter: ALT1STOW S 212 depress RTN
Response: Responding HST(s) shall move to the ALT1 stow position and display the ALTI stow mode from the directed position mode.

AK 1 11-10
Initial Date

207
8.4.28 Enter: POSITION S 212 -90., 0. depress RTN
Response: HST(s) responding shall drive to AZ of 0.0, EL of -90.0 and display the directed position mode from the ALTI stow mode.

AK 1 11-10
Initial Date

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B

207
8.4.29 Enter: STOW S 212 depress RTN
Response: Responding HST(s) move to stow position and display stow mode from the directed position mode.

AK 1 11-10
Initial Date

PARAGRAPH 8.4

Item	Date	Para.	Entry	Orig	Qual. Accep.
5	11-9	8.4.6	1009 Removed from SEQ LOAD-STOW (OPERATOR ERR)		3334 11-17-81
9	11-9	8.4.13	1501 stuck EL/LS		3334 11-11-81
13	11-9	8.4.16	REN Change Post 90.4-90.		3334 11-17-81
17	11-10	8.4.29	1211 209C IN TRAN		3334 11-17-81
<p>PROCEDURE 111 PARAGRAPH 8.4 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

CUSTOMER DIG DW [Signature] 11-19-81
Date

TEST CONDUCTOR [Signature] 11-12-81
Date

QUALITY A [Signature] 11-11-81
Date

PROCEDURE 111

Test Title: Paragraph 8.5 - HAC Control Verification of Legal Commands/Modes of an Individual Wedge.

Acceptance Criteria: A wedge responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Legal Commands/Modes of an Individual Wedge was performed on 10 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Legal Commands/Modes of an Individual Wedge.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.4.30 End of HAC control verification of legal commands/modes of an individual segment.

8.5 HAC Control Verification of Legal Commands/Modes of an Individual Wedge

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HAR

8.5.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Wedge 01 shall be used for this test.

8.5.2 Enter: LOAD ALL depress RTN
Response: No heliostat motion, HST(s) responding shall display initialization mode from the transition mode.

Initial AK / 11-9 Date

8.5.3 Enter: STOW ALL depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the initialized mode.

Initial A / 1 Date

8.5.4 Enter: MARK W 07 depress RTN
Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

Initial HW / 11 Date

8.5.5 Enter: STOW ALL depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

Initial HW / 11-10 Date

CAUTION: For step 8.5.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

2301
COMMANDS
MARKED

VODA
2301

8.5.6 Enter: ^{W 07} UNSTOW W 01 depress RTN

Response: The commanded HST beams shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

HW 1 11-10
Initial Date

CAUTION: For step 8.5.7, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special track point and that the beam does not impinge on the tower or receiver.

Change Wedge 1 To 7

22 8.5.7 Enter: ⁰⁷ TRACK W 01 depress RTN

Response: The commanded HST beam shall track the specially assigned aimpoint tracking array position and display track mode from the standby mode.

HW 1 11-10
Initial Date

8.5.8 Enter: ⁰⁷ STANDBY W 01 depress RTN

Response: The commanded HST beam shall move from the special track position to track the special standby position and display standby mode from the track mode.

HW 1 11-10
Initial Date

8.5.9 Enter: ⁰⁷ INCREASE W 01 depress RTN

Response: Responding HST(s) shall track the special track position and display the track mode from the standby mode.

AK 1 11-10
Initial Date

8.5.10 Enter: ⁰⁷ DECREASE W 01 depress RTN

Response: Responding HST(s) shall move from the track position to the standby position from the track mode.

AK 1 11-10
Initial Date

8.5.11 Enter: ALTISTOW W ⁰⁷ ~~01~~ depress RTN
Response: Responding HST(s) shall move to the ALTI stow position and display the ALTI stow mode from the standby mode.

AK 1 11-10
Initial Date

8.5.12 Enter: UNSTOW W ⁰⁷ ~~01~~ depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALTI stow mode.

AK 1 11-10
Initial Date

8.5.13 Enter: POSITION W ⁰⁷ ~~01~~ ¹²⁴ ~~0.~~ ~~0.~~ depress RTN
Response: Responding HST(s) shall drive to AZ of 0.0, EL of 0.0 and display the directed position mode from the standby mode.

AK 1 11-10
Initial Date

8.5.14 Enter: POSITION W ⁰⁷ ~~01~~ ~~0.~~ ~~-90.~~ depress RTN
Response: Responding HST(s) shall drive to AZ of 0.0, and EL of -90.0 and display the directed position mode from the directed position mode.

AK 1 11-10
Initial Date

24 1813
209c
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Stuck AZ L/S

8.5.15 Enter: ALTISTOW W ⁰⁷ ~~01~~ depress RTN
Response: Responding HST(s) shall move to the ALTI stow position and display the ALTI stow mode from the directed position mode.

AK 1 11-10
Initial Date

8.5.16 Enter: POSITION W ⁰⁷ ~~01~~ ~~-90.~~ ~~0.~~ depress RTN
Response: Responding HST(s) shall drive to AZ of -90.0, and EL of 0.0 and display the directed position mode from the ALTI stow mode.

AK 1 11-10
Initial Date

8.5.17 Enter: OFFLINE W 07 depress RTN
Response: HST(s) responding shall display the offline mode from the directed position mode.

AK / 1 11-10
Initial Date

8.5.18 Enter: ONLINE W 07 depress RTN
Response: No HST motion, HST(s) responding display directed position mode from the offline mode.

AK / 1 11-10
Initial Date

8.5.19 Enter: STOW ALL depress RTN
Response: Responding HST(s) drive to the stow position and display the stow mode from the directed position mode.

AK / 1 11-10
Initial Date

8.5.20 Enter: POSITION W 07 -90., 0. depress RTN
Response: Responding HST(s) shall drive to AZ of -90.0, and EL of 0.0 and display the directed position mode from the offline mode.

AK / 1 11-10
Initial Date

8.5.21 Enter: STOW ALL depress RTN
Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

AK / 1 11-10
Initial Date

8.5.22 Enter: POSITION W 07 90., 0. depress RTN
Response: Responding HST(s) drive to AZ 0.0, EL of -90.0 and display the directed position mode from stow mode.

A / 1 11-10
Initial Date

425
1209
209C

8.5.23 Enter: ³⁰⁶ STOW ALL depress RTN
Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-10
Initial Date

8.5.24 Enter: ^{W 07} ALT1STOW ALL depress RTN
Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the stow mode.

AK / 11-10
Initial Date

8.5.25 Enter: ⁰⁷ OFFLINE W 01 depress RTN
Response: HST(s) responding display offline mode from directed ALT1 stow mode, no HST(s) motion.

AK / 11-10
Initial Date

8.5.26 Enter: ⁰⁷ ONLINE W 01 depress RTN
Response: No HST motion, HST(s) responding display directed position mode from offline mode.

AK / 11-10
Initial Date

8.5.27 Enter: ⁰⁷ ALT1STOW W 01 depress RTN
Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the directed position mode.

AK / 11-10
Initial Date

8.5.28 Enter: ⁰⁷ UNSTOW W 01 depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT1 stow mode.

AK / 11-10
Initial Date

8.5.29 Enter: ⁰⁷ INCREASE W 01 depress RTN
Response: Responding HST(s) shall track the special track position and display the track mode from the standby mode.

AK / 11-10
Initial Date

8.5.30 Enter: ALTSTOW depress RTN

Response: Responding HST(s) shall move to the ALTI stow position and display the ALTI stow mode from the track mode.

AK / 11-10
Initial Date

8.5.31 Enter: STOW ALL depress RTN

Response: Responding HST(s) move to stow position and display stow mode from the ALTI stow.

AK / 11-10
Initial Date

8.5.32 End of HST control verification of legal commands/modes of all HSTs.

PARAGRAPH 8.5

Item	Date	Part	Entry	Orig	Qual. Accep.
22	11-10	8.5.7 8.5.29	Change To wedge 7		(M) 3334 11-17-81
23	11-10	8.5.15	2923 stuck A2 L/S		(M) 3334 11-17-81
24	11-10	8.5.15	1813 209C		(M) 3334 11-11-81
25	11-10	8.5.21	1209 209C		(M) 3334 11-17-81
<p>PROCEDURE IN PART. 8.5 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

CUSTOMER [Signature] 11-18-81
Date

TEST CONDUCTOR [Signature] 11-12-81
Date

QUALITY A Knows 11-11-81
Date

PROCEDURE 111

Test Title: Paragraph 8.6 - HAC Control Verification of Legal Commands/Modes of an Individual Ring.

Acceptance Criteria: A ring responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Legal Commands/Modes of an Individual Ring was performed on 9 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Legal Commands/Modes of an Individual Ring.

Retest Requirements: No further tests required all heliostat flag items have been cleared and verified operationally. All procedural flags have been incorporated.

8.6 HAC Control Verification of Legal Commands/Modes of an Individual

8.6.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper helio-stat control. Status commands shall be issued throughout this test at any time for additional verification of command response. One ring, R 5, shall be used for this test.

8.6.2 Enter: LOAD ALL depress RTN

Response: No HST motion, HST(s) responding shall display initialization mode from the transition mode.

AK / 11-9
Initial Date

8.6.3 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move to the stow position and display stow mode from the initialized mode.

AK / 11-9
Initial Date

8.6.4 Enter: MARK R 5 depress RTN

Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK / 11-9
Initial Date

8.6.5 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

AK / 11-9
Initial Date

2843 Did not Mark



CAUTION: For step 8.6.6, the field observer shall monitor the HST movement and verify that the heliostat beam moves to the special standby point and that the beam does not fall on the tower or receiver.

8.6.6 Enter: UNSTOW R 5 depress RTN

Response: The commanded HST beams shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

AK 1 11-9
Initial Date

8.6.7 Enter: TRACK R 5 depress RTN

Response: The commanded HST beams shall track the specially assigned aimpoint tracking array position and display track mode from the standby mode.

AK 1 11-9
Initial Date

8.6.8 Enter: STANDBY R 5 depress RTN

Response: The commanded HST beam shall move from the special track position to track the special standby position and display standby mode from the track mode.

AK 1 11-9
Initial Date

8.6.9 Enter: INCREASE R 5 depress RTN

Response: Responding HST(s) shall track the special track position and display the track mode from the standby mode.

AK 1 11-9
Initial Date

8.6.10 Enter: DECREASE R 5 depress RTN

Response: Responding HST(s) shall move from the track position to the standby position and display the standby mode from the track mode.

AK 1 11-9
Initial Date

8.6.11 Enter: ALT1STOW 10 R 5 depress RTN

Response: HST(s) responding shall move to the ALT1 stow position and display the ALT1 stow mode from the standby mode.

AK 1 11-9
Initial Date

10
2635
Avg EL 45

8.6.12 Enter: UNSTOW R 5 depress RTN

Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT1 stow mode.

AK / 11-9
Initial Date

12

8.6.13 Enter: POSITION R 5 ⁹⁰ 0. depress RTN

Response: Responding HST(s) shall drive to AZ of ⁹⁰ 0.0, EL of 0.0 and display the directed position mode from the standby mode.

AK / 11-9
Initial Date

~~12~~

8.6.14 Enter: ALT1STOW R 5 depress RTN

Response: HST(s) responding shall move to the ALT1 stow position and display the ALT1 stow mode from the directed position mode.

AK / 11-10
Initial Date

8.6.15 Enter: POSITION R 5 -90., 0. depress RTN

Response: HST(s) responding move to AZ of 0.0 and EL of -90.0 and display directed position mode from ALT1 stow mode.

AK / 11-10
Initial Date

8.6.16 Enter: OFFLINE R 5 depress RTN

Response: No HSD motion, responding HST(s) shall display the off-line mode from the directed position mode.

AK / 11-10
Initial Date

8.6.17 Enter: ONLINE R 5 depress RTN

Response: No HST motion, HST(s) responding display directed position mode from the offline mode.

AK / 11-10
Initial Date

8.6.18 Enter: STOW ALL depress RTN

Response: HST(s) responding shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-10
Initial Date

8.6.19 Enter: POSITION R 5 -90.,0. depress RTN

Response: Responding HST(s) shall move to the directed AZ and EL positions and display the directed position mode from the offline mode.

AK / 11-10
Initial Date

8.6.20 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-10
Initial Date

2736
AZ 45 CW
17

8.6.21 Enter: POSITION R 5 -90.,0. depress RTN

Response: Responding HST(s) move to the directed AZ and EL positions and display the directed position mode from the stow mode.

AK / 11-10
Initial Date

8.6.22 Enter: STOW ALL depress RTN

Response: HST(s) responding shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-10
Initial Date

2653
EL 45
18
16
2714
209c

8.6.23 Enter: ALT1STOW R 5 depress RTN

Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the stow mode.

AK / 11-10
Initial Date

8.6.24 Enter: OFFLINE R 5 depress RTN

Response: No HST motion, responding HST(s) shall display the offline mode from the ALT1 stow mode.

AK / 11-10
Initial Date

8.6.25 Enter: ONLINE R 5 depress RTN

Response: No HST motion, HST(s) responding display directed position mode from the offline mode.

AK / 1 11-10
Initial Date

8.6.26 Enter: ALT1STOW R 5 depress RTN

Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the directed position mode.

AK / 1 11-10
Initial Date

8.6.27 Enter: UNSTOW R 5 depress RTN

Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT1 stow mode.

AK / 1 11-10
Initial Date

8.6.28 Enter: INCREASE R 5 depress RTN

Response: Responding HST(s) shall track the special track position and display the track mode from the standby mode.

AK / 1 11-10
Initial Date

8.6.29 Enter: ALT1STOW F 5 depress RTN

Response: HST(s) responding shall move to the ALT1 stow position and display the ALT1 mode from the track mode.

AK / 1 11-10
Initial Date

8.6.30 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move down to track the CLLP, then move to the stow position and display the stow mode from the ALT1 stow mode.

AK / 1 11-10
Initial Date

8.6.31 End of HAC control verification of legal commands/mode of individual ring.

PARAGRAPH 8.6

Item	Date	Para.	Entry	Orig	Qual. Accep.
1	11-9	8.6.4	2843 would not mark status 6064		M 3334 11-11-81
10	11-9	8.6.12	2635 stuck EL/L5		M 3334 11-11-81
12	11-9	8.6.13	PEN change Post 90,-90		M 3334 11-17-81
16	11-10	8.6.23	2714-209 IN TRAN		M 3334 11-11-81
17	11-10	8.6.21	2736 - AZ ^{HUNG} L/S CW		M 3334 11-11-81
18	11-10	8.6.23	2653 stuck EL L/S		M 3334 11-10-81

PROCEDURE 111 PARA 8.6 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.

ALL ITEMS ABOVE WILL BE CLEARED.

CUSTOMER

[Signature]

11-18-81
Date

TEST CONDUCTOR

[Signature]

11-12
Date

QUALITY

[Signature]

11-11-81
Date

PROCEDURE 111

Test Title: Paragraph 8.7 - HAC Control Verification of Legal Commands/
Modes of an Individual Arc.

Acceptance Criteria: An arc responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Legal Commands/Modes of an Individual Arc was performed on 9 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Legal Commands/Modes of an Individual Arc.

Retest Requirements: No further test required, all heliostat flag items have been cleared and verified operationally. All procedure flags have been incorporated.

8.7 HAC Control Verification of Legal Commands/Modes of an Individual Arc

8.7.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. The arc 2902, 2946 shall be used for this test.

2

8.7.2 Enter: LOAD A ~~2902, 2946~~ ^{2102, 215063} depress RTN

Response: No heliostat motion, HST(s) responding shall display initialization mode from the transition mode.

AK / 11-9
Initial Date

8.7.3 Enter: STOW A ~~2902, 2946~~ ^{102, 168} depress RTN

Response: Responding HST(s) shall move to the stow position and display stow mode from the initialized mode.

AK / 11-9
Initial Date

8.7.4 Enter: MARK A ~~2902, 2946~~ ^{62, 168} depress RTN

Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK / 11-9
Initial Date

8.7.5 Enter: STOW A ~~2902, 2946~~ ^{102, 215063} depress RTN

Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

AK / 11-9
Initial Date

CAUTION: For step 8.7.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

4

2127/209C

8.7.6 Enter: UNSTOW A ~~2902, 2946~~ ^{2102, 215063} depress RTN

Response: The commanded HST beam shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

AK / 11-9
Initial Date

2102 2163

8.7.7 Enter: TRACK A ~~2902,2946~~ depress RTN

Response: The commanded HST beam shall track the specially assigned aimpoint tracking array position and display track mode from the standby mode.

AK / 11-9
Initial Date

8.7.8 Enter: STANDBY A ~~2902,2946~~ depress RTN

Response: The commanded HST beam shall move from the special track position to track the special standby position and display standby mode from the track mode.

AK / 11-9
Initial Date

2107-EL 45
Hung up

8.7.9 Enter: ALT1STOW A ~~2902,2946~~ depress RTN

Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the standby mode.

AK / 11-9
Initial Date

8.7.10 Enter: UNSTOW A ~~2902,2946~~ depress RTN

Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT1 stow mode.

AK / 11-9
Initial Date

8.7.11 Enter: ALT2STOW A ~~2902,2946~~ depress RTN

Response: Responding HST(s) move to the ALT2 stow position and display the ALT2 stow mode from the standby mode. The HST(s) shall move to the ALT2 stow elevation position while maintaining the last reported azimuth position.

AK / 11-9
Initial Date

8.7.12 Enter: UNSTOW A ~~2902,2946~~ depress RTN

Response: HST(s) responding shall move to track the CLLP, then move upward to track the CULP and display the standby mode from the ALT2 stow mode.

AK / 11-9
Initial Date

2102 2103

8.7.13 Enter: POSITION A 2902,2946 0., 0. depress RTN

Response: Responding HST(s) shall drive to AZ of 0.0, EL of 0.0 and display the directed position mode from the standby mode.

AK / 11-9
Initial Date

8.7.14 Enter: POSITION A 2902,2946 0., -90. depress RTN

Response: HST(s) responding shall drive to AZ of 0.0, EL of -90.0 and display the directed position mode from the directed position mode.

AK / 11-10
Initial Date

8.7.15 Enter: ALT1STOW A 2902,2946 depress RTN

Response: Responding HST(s) shall move to the ALT1 stow position and display the ALT1 stow mode from the directed position mode.

AK / 11-10
Initial Date

8.7.16 Enter: WASH A 2902,2946 depress RTN

Response: The commanded HST shall move to the wash position and display the wash mode from the ALT1 stow mode.

AK / 11-10
Initial Date

8.7.17 Enter: RELWASH A 2902,2946 depress RTN

Response: No HST motion, HST(s) responding shall display the directed position mode from the wash mode.

AK / 11-10
Initial Date

8.7.18 Enter: WASH A 2902,2946 depress RTN

Response: The commanded HST shall move to the wash position and display the wash mode from the directed position mode.

AK / 11-10
Initial Date

8.7.19 Enter: RELWASH A 2902,2946 depress RTN

Response: No HST motion, HST(s) responding shall display the directed position mode from the wash mode.

AK / 11-10



83 AOK

15
2127
EL/45

2102 2153

8.7.20 Enter: ALT2STOW A 2902,2946 depress RTN

Response: Responding HST(s) move to the ALT2 stow position and displays the ALT2 stow mode from the directed position mode. (The HST(s) shall move to the ALT2 elevation while maintaining the last reported azimuth position.)

Initial AK / 11-10 Date

8.7.21 Enter: WASH A 2902,2946 depress RTN

Response: HST(s) responding shall move to the wash position and display the wash mode from the ALT2 stow mode.

Initial AK / 11-10 Date

8.7.22 Enter: RELWASH A 2902,2946 depress RTN

Response: No HST motion, HST(s) responding shall display the directed position mode from the wash mode.

Initial AK / 11-10 Date

8.7.23 Enter: STOW A 2902,2946 depress RTN

Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

Initial AK / 11-10 Date

8.7.24 Enter: WASH A 2902,2946 depress RTN

Response: HST(s) responding shall move to the wash position and display the wash mode from the stow mode.

Initial AK / 11-10 Date

8.7.25 Enter: RELWASH A 2902,2946 depress RTN

Response: No HST motion, HST(s) responding shall display the directed position mode from the wash mode.

Initial AK / 11-10 Date

8.7.26 Enter: STOW A 2902,2946 depress RTN

Response: Responding HST(s) move to stow position and display stow mode from the directed position mode.

Initial AK / 11-10 Date

2102 2103

8.7.27 Enter: MARK A 2902, 2946 depress RTN
Response: Responding HST(s) shall move to the AZ and EL mark positions and display the mark mode from the stow mode.

AK / 11-10
Initial Date

8.7.28 Enter: WASH A 2902, 2946 depress RTN
Response: Responding HST(s) shall move to the wash position and display the wash mode from the mark mode.

AK / 11-10
Initial Date

8.7.29 Enter: RELWASH A 2902, 2946 depress RTN
Response: No HST(s) motion, HST(s) responding shall display the directed position mode from the wash mode.

AK / 11-10
Initial Date

8.7.30 Enter: STOW A 2902, 2946 depress RTN
Response: HST(s) responding shall move to the stow position and display the stow mode from the directed position mode.

AK / 11-10
Initial Date

20 2127
2090

8.7.31 Enter: UNSTOW A 2902, 2946 depress RTN
Response: HST(s) responding shall move to track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

AK / 11-10
Initial Date

8.7.32 Enter: WASH A 2902, 2946 depress RTN
Response: The commanded HST beam shall move from the standby position to the wash position and display the wash mode from the standby mode.

AK / 11-10
Initial Date

8.7.33 Enter: RELWASH A 2902, 2946 depress RTN
Response: No HST motion, HST(s) responding shall display the directed position mode from the wash mode.

AK / 11-10
Initial Date

PASOGRAPH 8.7

Item	Date	Para.	Entry	Orig	Qual. Accep.
2	11-9	8.7.2 8.7.39	Change Arc to 2102-2153		3334 11-17-81
4	11-9	8.7.6	2127 209C IN TRAN		3334 11-11-81
7	11-9	8.7.9	2107 Stuck EL/LS		3334 11-18-81
11	11-9	8.7.14	Change Post 90; 5.		3334 11-18-81
15	11-10	8.7.18	2127 Stuck EL/LS		3334 11-10-81
20	11-10	8.7.31	2127 209C IN TRAN		3334 11-11-81

PROCEDURE 111 PARA. 8.7 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED

ALL ITEMS ABOVE WILL BE CLEARED.

CUSTOMER DET D. W. Anderson 11-18-81
Date

TEST CONDUCTOR [Signature] 11-12-81
Date

QUALITY A. Kuper 11-11-81
Date

PROCEDURE 111

Test Title: Paragraph 8.8 - HAC Control Verification of Multiple Segment Operational Commands.

Acceptance Criteria: A segment of the field responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Multiple Segment Operational Commands was performed on 11 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Multiple Segment Operational Commands.

Retest Requirements: No further tests required. The flag item has been cleared and incorporated.

8.8 HAC Control Verification of Multiple Segment Operational Commands (5)

8.8.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Five segments will be used for this test.

8.8.2 Enter: ~~LOAD ALL~~ ^{108 207 306} depress RTN *Load Arc, because of other activities in field*
Response: No heliostat motion, HST(s) responding shall display initialization mode from the transition mode.

AK / 11-11-81
Initial Date

26
8.8.3 Enter: ~~STOW S 101,202,303,404,505~~ ^{108 207 306} depress RTN
Response: HST(s) responding shall move to the stow position and display the stow mode from the initialized mode.

AK / 11-11
Initial Date

8.8.4 Enter: ~~MARK S 101,202,303,404,505~~ ^{108 207 306} depress RTN
Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK / 11-11
Initial Date

8.8.5 Enter: ~~STOW S 101,202,303,404,505~~ ^{108 207 306} depress RTN
Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

AK / 11-11
Initial Date

CAUTION: For step 8.8.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

8.8.6 Enter: ~~UNSTOW S 101,202,303,404,505~~ ^{108 207 306} depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

AK / 11-11
Initial Date

CAUTION: For step 8.8.7, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special track point and that the beam does not impinge on the tower or receiver.

8.8.7 Enter: ^{108 207 306} INCREASE S ~~101,202,303~~,404,505 depress RTN
Response: Responding HST(s) shall track the special track position and display the track mode from the standby mode.

AK 1 11-11
Initial Date

8.8.8 Enter: ^{108 207 306} DECREASE S ~~101,202,303~~,404,505 depress RTN
Response: Responding HST(s) shall move from the track position to the standby position and display the standby mode from the track mode.

AK 1 11-11
Initial Date

8.8.9 Enter: ^{108 207 306} ALT2STOW S ~~101,202,303~~,404,505 depress RTN
Response: Responding HST(s) move to the ALT2 stow position and display the ALT2 stow mode from the standby mode. The HST(s) shall move to the ALT2 stow elevation position while maintaining the last reported azimuth position.

AK 1 11-11
Initial Date

8.8.10 Enter: ^{408 207 306} UNSTOW S ~~101,202,303~~,404,505 depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT2 stow mode.

AK 1 11-11
Initial Date

8.8.11 Enter: ^{106 207 306} ALT1STOW S ~~101,202,303~~,404,505 depress RTN
Response: HST(s) responding shall move to the ALT1 stow position and display the ALT1 stow mode from the standby mode.

AK 1 11-11
Initial Date

8.8.12 Enter: ^{108 207 306} STOW S ~~101,202,303,404,505~~ depress RTN
Response: HST(s) responding shall move to the stow position and display the stow mode from the ALT1 stow mode.

AK 1 11-11
Initial Date

8.8.13 Enter: ^{108 207 306} OFFLINE S ~~101,202,303,404,505~~ depress RTN
Response: HST(s) responding display offline mode from stow mode, no HST(s) motion.

AK 1 11-11
Initial Date

8.8.14 Enter: ^{108 207 306} ONLINE S ~~101,202,303,404,505~~ depress RTN
Response: No HST motion, HST(s) responding display directed position mode from offline mode.

AK 1 11-11
Initial Date

8.8.15 Enter: ^{108 207 306} STOW S ~~101,202,303,404,505~~ depress RTN
Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

AK 1 11-11
Initial Date

8.8.16 End of HAC control verification of multiple segment operational commands.

8.9 HAC Control Verification of Multiple Ring Operational Commands

8.9.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Rings 1 through 5 shall be used for this test.

8.9.2 Enter: ^{ALL} LOAD ~~1,2,3,4,5~~ depress RTN
Response: No heliostat motion, HST(s) responding shall display initialization mode from the transition mode.

AK 1 11-14
Initial Date

83

PARAGRAPH 8.8

Item	Date	Para.	Entry	Orig	Qual. Accep.
26	11-11	8.8.3 8.8.15	Change Seg #		M 3334 11-17-81

PROCEDURE 111 PARA. 8.8 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.

ALL ITEMS ABOVE WILL BE CLEARED.

CUSTOMER DW DW Christian 11-18-81
Date

TEST CONDUCTOR Rosen 11-12-81
Date

QUALITY A. Kusan 11-11-81
Date

5.8 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 111

Test Title: Paragraph 8.9 - HAC Control Verification of Multiple Ring Operational Commands.

Acceptance Criteria: A ring responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Multiple Ring Operational Commands was performed on 11 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Multiple Ring Operational Commands.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified to be operational.

8.9 HAC Control Verification of Multiple Ring Operational Commands

8.9.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Rings 1 through 5 shall be used for this test.

8.9.2 Enter: ~~LOAD R 1-5~~ ^{ALL} depress RTN

Response: No heliostat motion, HSI(s) responding shall display initialization mode from the transition mode.

Initials: AK

Date: 1/11-14

111
Rev. 6
Page 48 of 264

8.9.3 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move to the stow position and display stow mode from the initialized mode.

AK 1 11-14
Initial Date

8.9.4 Enter: MARK R 1,2,3,4,5 depress RTN

Response: Responding HST(s) shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK 1 11-14
Initial Date

8.9.5 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move to the stow position and display stow mode from the mark mode.

AK 1 11-14
Initial Date

CAUTION: For step 8.9.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

8.9.6 Enter: UNSTOW R 1,2,3,4,5 depress RTN

Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

AK 1 11-14
Initial Date

CAUTION: For step 8.9.7, the field observer shall monitor heliostats movement and verify that the heliostat beams move to the special track point and that the beams do not impinge on the tower or receiver.

8.9.7 Enter: INCREASE R 5,4 depress RTN

Response: Responding HST(s) beams shall track the special track position and display the track mode from the standby mode.

AK 1 11-14
Initial Date

0913 NO REMOTION
86
2127
87
84 1329 2090

2127
87
2333
88
89
2173
ALL EL L/S



8.9.8 Enter: INCREASE R 3 depress RTN
Response: Responding HST(s) shall track the special track position
display the track mode from the standby mode.

AK 1 11-14
Initial Date

8.9.9 Enter: INCREASE R 2 depress RTN
Response: Responding HST(s) shall track the special track position
and display the track mode from the standby mode.

AK 1 11-14
Initial Date

8.9.10 Enter: INCREASE R 1 depress RTN
Response: Responding HST(s) shall track the special track position
and display the track mode from the standby mode.

AK 1 11-14
Initial Date

8.9.11 Enter: DECREASE R 1,5 depress RTN
Response: Responding HST(s) shall move from the track position to
the standby position and display the standby mode from
the track mode.

AK 1 11-14
Initial Date

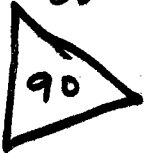
8.9.12 Enter: DECREASE R 2,4 depress RTN
Response: Responding HST(s) shall move from the track position
to the standby position and display the standby mode
from the track mode.

AK 1 11-14
Initial Date

8.9.13 Enter: DECREASE R 3 depress RTN
Response: Responding HST(s) shall move from the track position
to the standby position and display the standby mode
from the track mode.

AK 1 11-14
Initial Date

0811 EL L/S



ONE Per CMD

8.9.14 Enter: BCSTRACK R 0502, 0526, 0951, 1033 depress RTN
Response: HST(s) responding shall track the BCS target and display the BCS mode from the standby mode.

91

AK / 11-14
Initial Date

ONE HST Per CMD

8.9.15 Enter: RETURN R 0502, 0526, 0951, 1033 depress RTN
Response: HST(s) responding shall move to track the CULP and display the standby mode from the BCS track mode.

AK / 11-14
Initial Date

0521 EL 4/5

92

8.9.16 Enter: ALT1STOW R 1,2,3,4,5 depress RTN
Response: HST(s) responding shall move to the ALT1 stow position and display the ALT1 mode from the standby mode.

AK / 11-14
Initial Date

1330 209C

93

8.9.17 Enter: UNSTOW R 1,2,3,4,5 depress RTN
Response: HST(s) responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the ALT1 stow mode.

oscillating AZ/EL
1161 EL 4/5
96
97
2206 EL 4/5
98

AK / 11-14
Initial Date

2514 EL 4/5

95

8.9.18 Enter: STOW ALL depress RTN
Response: Responding HST(s) shall move down to track the CLLP, then move to the stow position and display the stow mode from the standby mode.

AK / 11-14
Initial Date

Did High wind stow

1322 209C
1660 2149
2259 1006
1011 EL 4/5
2086

94

8.9.19 Enter: OFFLINE R 1,2,3,4,5 depress RTN
Response: No HST motion, responding HST(s) shall display the offline mode from the stow mode.

Initial Date

1424 AZ Motor shaft
2092
1324
1332
0809

106
197
128

8.9.20 Enter: ONLINE R 1,2,3,4,5 depress RTN
Response: No HST motion, HST(s) responding display directed position mode from the offline mode.

Initial Date

110

2310 EL Motor shaft

8.9.21 Enter: STOW ALL depress RTN

Response: Responding HST(s) shall move to the stow position and display the stow mode from the directed position mode.

Initial

Date

8.9.22 End of HAC control verification of multiple ring operational commands.

AK 11-14

PARAGRAPH 8.9

Item	Date	Para.	Entry	Orig	Qual. Accep.
83	11-14	8.9.2	Red line Change Load R To Load ALL		M 3334 11-17-81
84	11-14	8.9.4	1328 209C going to MRK		3334 11-17-81
85	11-14	8.9.4	2736 No AZ motion going to MRK		M 3334 11-18-81
86	11-14	8.9.4	0913 "		M 3334 11-17-81
87	11-14	8.9.5	2127 EL L/S Hung		M 3334 11-17-81
88	11-14	8.9.6	2333 " " "		3334 11-17-81
89	11-14	8.9.6	2173 " " "		M 3334 11-17-81
90	11-14	8.9.10	0811 " " "		3334 11-17-81
91	11-14	8.9.14 8.9.15	RED LINE ONE HST PER BCS CMD		M 3334 11-17-81
92	11-14	8.9.16	0521 EL L/S Hung		3334 11-17-81
93	11-14	8.9.17	1330 209C in TRAN		M 3334 11-17-81
94	11-14	8.9.18	1322 209C in TRAN		3334 11-17-81
95	11-14	8.9.18	2514 EL L/S Hung		M 3334 11-17-81
96	11-14	8.9.18	1661 " " "		11-17-81
97	11-14	8.9.18	2909 " " "		M 3334 11-17-81
98	11-14	8.9.18	2206 obscuring AZ+EL		M 3334 11-19-81
99	11-14	8.9.18	1660 EL L/S Hung		M 3334 11-17-81
100	11-14	"	2259 " " "		11-17-81
101	11-14	"	1011 " " "		M 3334 11-17-81
102	11-14	"	2086 " " "		11-17-81

TESTED *DS* *D. D. Chudwin* 11-18-81
Date

TEST CONDUCTED *Joe* 11-14-81
Date

QUALITY *R. Kusow* 11-14-81
Date

PROCEDURE NO. 111
PARAGRAPH 8.9

Item	Date	Para.	Entry	Orig.	Qual. Accep.
103	11-14	8.9.18	EL 4/5 Hung 2149		M 3334 11-17-81
104	11-14	8.9.18	" " " 1006		M 3334 11-17-81
105	11-14	8.9.18	1424 No AZ Motor - shaft		M 3334 11-17-81
106	11-14	8.9.18	1324 209c IN TRAN		M 3334 11-17-81
107	11-14	8.9.18	1332 " " "		M 3334 11-17-81
108	11-14	8.9.18	0809 " " "		11-18-81
109	11-14	8.9.18	2092 AZ motor shaft		M 3334 11-17-81
110	11-14	8.9.18	2310 EL motor shaft		M 3334 11-17-81
111	11-14	8.9.18	2149 AZ No Motion check shaft		M 3334 11-18-81
<p>PROCEDURE 111 PARA 8.9 was tested Successfully. No Re test Required.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

DA D. W. [Signature] 11-18-81

Ron 11-14-81

A. Kucow 11-14-81

PROCEDURE 1.1

Test Title: Paragraph 2.10 - HAC Control Verification of Wedge Operational Commands.

Acceptance Criteria: A wedge responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Wedge Operational Commands was performed on 11 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Wedge Operational Commands.

Retest Requirements: No further test required. All heliostat flag items have been cleared and verified operationally. All procedure flags have been incorporated.

8.10 HAC Control Verification of Wedge Operational Commands

8.10.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be entered throughout this test at any time for additional verification of command responses. Wedges 01 thru 12 shall be used for this test.

8.10.2 Enter: LOAD ALL depress RTN
 Response: No heliostat motion, HSTs responding shall display the initialized mode from the transition mode.

AK 11-11-81

8.10.3 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall move to the stow position and display the stow mode from the initialized mode.

AK 11-11-81

8.10.4 Enter: MARK W 01,02,03,04,05,06 depress RTN
 Response: Responding HSTs shall move to the mark position and display the mark mode from the stow mode.

AK 11-11

8.10.5 Enter: MARK W 07,08,09,10,11,12 depress RTN
 Response: Responding HSTs shall move to the mark position and display the mark mode from the stow mode.

AK 11-11

8.10.6 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall move to the stow position and display the stow mode from the mark mode.

AK 11-11

8.10.7 Enter: UNSTOW W 01,02,03,04,05,06 depress RTN
 Response: Responding HSTs shall display the CLLP,

AK 11-11

27
 2106
 No AZ Motion

28
 2102
 NO EL MARK

29
 2717
 No EL Motion

30
 0104 20%

31
 2206
 (2210)

Initial

Date

8.10.7 Continued:

then move upward to track the CULP and display the standby mode from the stow mode.

* SEE Back of Page

8.10.8 Enter: UNSTOW W 07,08,09,10,11,12 depress RTN

AK

11-11

Response: Responding HSTs shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

8.10.9 Enter: INCREASE W 01,02,03,04,05,06 depress RTN

AK

11-11

Response: Responding HSTs shall move to track the special track position and display the track mode from the standby mode.

8.10.10 Enter: DECREASE W 01,02,03,04,05,06 depress RTN

AK

11-11

Response: Responding HSTs shall move to the standby position and display the standby mode from the track mode.

8.10.11 Enter: ALTISTOW W 07,08,09,10,11,12 depress RTN

AK

11-11

Response: Responding HSTs shall move to the ALTI stow position and display the ALTI stow mode from the standby mode.

8.10.12 Enter: UNSTOW W 07,08,09,10,11,12 depress RTN

AK

11-11

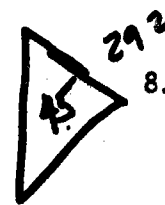
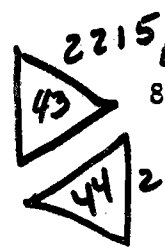
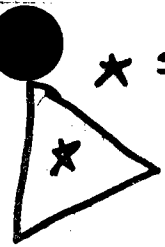
Response: HSTs responding shall move to track the standby position and display the standby mode from the ALTI stow mode.

8.10.13 Enter: STOW ALL depress RTN

AK

11-11

Response: Responding HSTs shall move to the stow position, tracking the assign-



2215 EL 43

2049 EL 44

2923 209C No AZ Motion

0202 209C

1306 EL 45

8.10.13 Continued

and corridors, and display the stow mode from the standby mode.

8.10.14 Enter: OFFLINE W 02,04,06,08,10,12 de-
press RTN

Response: No HST motion, responding HSTs shall display the offline mode from the stow mode.

8.10.15 Enter: ONLINE W 02,04,06,08,10,12 de-
press RTN

Response: No HST motion, responding HSTs shall display the directed position mode from the offline mode.

8.10.16 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode from the directed position mode.

8.10.17 End of HAC control verification of wedge operational commands.

8.11 HAC Control Verification of Arc Operational Commands

8.11.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be entered throughout this test at any time for additional verification of command responses. Four arcs shall be used for this test.

8.11.2 Enter: LOAD A 0502,0524,0602,0626
depress RTN

Response: Responding HSTs shall display the initialized mode from the transition mode. No HST motion shall occur.

AK 11-11

AK 11-11

AK 11-11

AK 11-11

8.10.13 Continued

ned corridors, and display the stow mode from the standby mode.

8.10.14 Enter: OFFLINE W 02,04,06,08,10,12 depress RTN

AK 11-11

Response: No HST motion, responding HSTs shall display the offline mode from the stow mode.

8.10.15 Enter: ONLINE W 02,04,06,08,10,12 depress RTN

AK 11-11

Response: No HST motion, responding HSTs shall display the directed position mode from the offline mode.

8.10.16 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode from the directed position mode.

AK 11-11

8.10.17 End of HAC control verification of wedge operational commands.

PARAGRAPH 8.10



Item	Date	Para.	Entry	Orig	Qual. Accep.
27	11-11	8.10.4	2106 No Az Motion		M 3334 11-18-81
28	11-11	8.10.4	2102 No EL MARK		M 3334 11-17-81
29	11-11	8.10.5	2717 No EL Motion		3334 11-17-81
30			1204 (M 3334)		
30	11-11	8.10.7	0104 209C in TRAN		M 3334 11-17-81
31	11-11	8.10.7	2206 No Motion ERR 2240		M 3334 11-19-81
32	"	8.10.8	1933 209C in TRAN		M 3334 11-17-81
33	"	"	1675 EL L/S		M 3334 11-17-81
34	"	"	2129 EL L/S		3334 11-18-81
35	"	"	0536 STAT "O" IN TRAN		M 3334 11-18-81
36	"	"	0651 Stayed at CLLP		M 3334 11-19-81
37	"	"	2175 OPS Premature Stop		M 3334 11-11-81
38	"	"	2173 AZ Motion stopped at 112	TRIED Load slow stat 960	3334 11-18-81
39	"	"	1523 MARK ERR Received at -13.2u 13:25		M 3334 11-19-81
40	"	"	2245 EL L/S		M 3334 11-17-81
41	"	"	225 EL L/S		3334 11-17-81
42	"	"	2537 EL L/S		3334 11-17-81
43	"	8.10.11	2215 EL L/S		M 3334 11-17-81
44	"	"	2049 EL L/S		M 3334 11-17-81
45	11-11	8.10.12	2923 209C + No AZ Motion		M 3334 11-17-81

CUSTOMER DIT D. W. [Signature] 11-18-81
Date

TEST CONDUCTOR [Signature] 11-12-81
Date

QUALITY A. K. [Signature] 11-11-81
Date

PARAGRAPH 8.10

Item	Date	Para.	Entry	Orig	Qual. Accep.
46	11.11	8.10.13	0202 29C 19 TRAN		 11-17-81
47	11.11	8.10.13	EL 415 1306 No Down Motion		 11-17-81

PROCEDURE 111 PARA 8.10 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.

ALL ITEMS ABOVE WILL BE CLEARED.

CUSTOMER *[Signature]* 11-18-81
Date

TEST CONDUCTOR *[Signature]* 11-12-81
Date

QUALITY *[Signature]* 11-11-81
Date

PROCEDURE 111

Test Title: Paragraph 8.11 - HAC Control Verification of Arc Operational Commands.

Acceptance Criteria: An arc responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Arc Operational Commands was performed on 11 November 1981. All requirements of the procedure was complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Arc Operational Commands.

Retest Requirements: No further tests required. There were no flag items to be cleared.

8.11 HAC Control Verification of Arc Operational
Commands

8.11.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be entered throughout this test at any time for additional verification of command responses. Four arcs shall be used for this test.

8.11.2 Enter: LOAD A 0502,0524,0602,0626
depress RTN

AK 11-11

Response: Responding HSTs shall display the initialized mode from the transition mode. No HST motion shall occur.

	Initial	Date
<p>8.11.3 Enter: <u>LOAD</u> A 0702, 0724 0802, 0826 depress RTN</p> <p>Response: Responding HSTs shall display the initialized mode from the transition mode. No HST motion shall occur.</p>	AK	11-11
<p>8.11.4 Enter: <u>STOW</u> A 0502, 0524 0602, 0626 de- press RTN</p> <p>Response: Responding HSTs shall move to the stow position and display the stow mode from the initialized mode.</p>	AK	11-11
<p>8.11.5 Enter: <u>STOW</u> A 0702, 0724 0802, 0826 de- press RTN</p> <p>Response: Responding HSTs shall move to the stow position and display the stow mode from the initialized mode.</p>	AK	11-11
<p>8.11.6 Enter: <u>MARK</u> A 0502, 0524 0602, 0626 de- press RTN</p> <p>Enter: <u>MARK</u> A 0702, 0724 0802, 0826 de- press RTN</p> <p>Response: Responding HSTs shall move to the mark position and display the mark mode from the stow mode.</p>	AK	11-11
<p>8.11.7 Enter: <u>STOW</u> A 0502, 0524 0602, 0626 de- press RTN</p> <p>Enter: <u>STOW</u> A 0702, 0724 0802, 0826 de- press RTN</p> <p>Response: Responding HSTs shall move to the stow position and display the stow mode from the mark mode.</p>	AK	11-11
<p>8.11.8 Enter: <u>INSTOW</u> A 0502, 0524 0602, 0626 de- press RTN</p> <p>Enter: <u>INSTOW</u> A 0702, 0724 0802, 0826 de- press RTN</p> <p>Response: Responding HSTs shall track the CLLP, then move to track the CULP and display the standby mode from the stow mode.</p>	AK	11-11

	Initial	Date
8.11.9 Enter: <u>TRACK</u> A 0502, 0524 0602, 0626 depress RTN Enter: <u>TRACK</u> A 0702, 0724 0802, 0826 depress RTN Response: Responding HSTs shall move to track the special track position and display the track mode from the standby mode.	AK	11-11
8.11.10 Enter: <u>STANDBY</u> A 0502, 0524 0602, 0626 depress RTN Enter: <u>STANDBY</u> A 0702, 0724 0802, 0826 depress RTN Response: Responding HSTs shall move to the standby position and display the standby mode from the track mode.	AK	11-11
8.11.11 Enter: <u>ALT1STOW</u> A 0502, 0524 depress RTN Response: Responding HSTs shall move to the ALT1 stow position and display the ALT1 stow mode from the standby mode.	AK	11-11
8.11.12 Enter: <u>ALT2STOW</u> A 0802, 0826 depress RTN Response: Responding HSTs shall move to the ALT2 stow position and display the ALT2 stow mode from the standby mode.	AK	11-11
8.11.13 Enter: <u>STOW</u> A 0502, 0524 depress RTN Response: Responding HSTs shall move to the stow position and display the stow mode from the ALT1 stow mode.	AK	11-11
8.11.14 Enter: <u>POSITION</u> A 0802, 0826 -90., 0. depress RTN Response: Responding HSTs shall move to the directed position of -90 degrees AZ and 0 degrees EL and display the directed position mode from the ALT2 stow mode.	AK	11-11

- 8.11.15 Enter: STOW A 0802, 0826 depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the directed position mode.
- 8.11.16 Enter: STOW A 0602, 0626 0702, 0724 depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the standby mode.
- 8.11.17 Enter: OFFLINE A 0502, 0524 depress RTN
Response: No HST motion, responding HSTs shall display the offline mode from the stow mode.
- 8.11.18 Enter: ONLINE A 0502, 0524 depress RTN
Response: No HST motion, responding HSTs shall display the directed position mode from the offline mode.
- 8.11.19 Enter: STOW A 0502, 0524 depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the directed position mode.
- 8.11.20 Enter: WASH A 0802, 0826 depress RTN
Response: Responding HSTs shall move to the wash position and display the wash mode from the stow mode.
- 8.11.21 Enter: RELWASH A 0802, 0826 depress RTN
Response: No HST motion, responding HSTs shall display the directed position mode from the wash mode.
- 8.11.22 Enter: STOW A 0802, 0826 depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the directed position mode.

AK

AK

AK

AK

AK

AK

AK

AK

PROCEDURE 111

Test Title: Paragraph 8.12 - HAC Control Verification of Full Filed Operational Commands.

Acceptance Criteria: The full field responded and attained commanded positions. Command responses were verified visually and by the HAC status displays.

Test Results: The HAC Control Verification of Full Field Operational Commands was performed on 15 November 1981. All procedure requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the HAC Control Verification of Full Field Operational Commands.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

Initial

Date

AK

11-11

8.11.23 End of HAC control verification of Arc operational commands.

8.12 HAC Control Verification of Full Field Operational Commands

8.12.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. All inservice heliostats shall be used for this test.

8.12.2 Enter: LOAD ALL depress RTN

Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

8.12.3 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

8.12.4 Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

8.12.5 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

CAUTION: For step 8.12.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

AK

11-15

8.12.6

▲

112	1328	209C	118	1322	209C
113	1702	NO AZ MOTION	119	2301	EL 45
114	1324	209C	120	0521	11 11
115	1330	209C			

Initial

Date

8.12.6 Enter: UNSTOW ALL depress RTN
 Response: HSTs responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

AK 11-15

8.12.7 Enter: INCREASE R 5 depress RTN
 Response: Responding HSTs shall track the special track position and display the track mode from the standby mode.

AK 11-15

8.12.8 Enter: DECREASE R 5 depress RTN
 Response: Responding HSTs shall move to track the standby position and display the standby mode from the track mode.

AK 11-15

8.12.9 Enter: INCREASE R 4 depress RTN
 Response: Responding HSTs shall move to track the special track position and display the track mode from the standby mode.

AK 11-15

8.12.10 Enter: DECREASE R 4 depress RTN
 Response: Responding HSTs shall move to the standby position and display the standby mode from the track mode.

AK 11-15

8.12.11 Enter: INCREASE R 3 depress RTN
 Response: Responding HSTs shall move to the special track position and display the track mode from the standby mode.

AK 11-15

8.12.12 Enter: DECREASE R 3 depress RTN
 Response: Responding HSTs shall move to the standby position and display the standby mode from the track mode.

AK 11-15

8.12.13 Enter: ALT1 AEL depress RTN
 Response: Responding HSTs shall move to the ALT1 stow position and display mode from the standby

AK 11-15

121
 1011 US

Initial

Date

8.12.14 Enter: UNSTOW ALL depress RTN
Response: Responding HSTs shall move to the standby position and display the standby mode from the ALT1 stow mode.

AK

11-15

8.12.15 Enter: ALT2 ALL depress RTN
Response: Responding HSTs shall move to the ALT2 stow position and display the ALT2 stow mode from the standby mode.

AK

11-15

8.12.16 Enter: UNSTOW ALL depress RTN
Response: Responding HSTs shall move to the standby position and display the standby mode from the ALT2 stow mode.

AK

11-15

8.12.17 Enter: STOW ALL depress RTN
Response: Responding HSTs shall move to the stow position, tracking their assigned corridor walks and display the stow mode from the standby mode.

AK

11-15

8.12.18 End of full field operational commands verification.

AK

11-15

PROCEDURE NO. 111
PARAGRAPH 8.12

Item	Date	Para	Entry	Orig	Qual. Accep.
112	11-15	8.12.6	1329 209C		M 3334 11-17-81
113	"	"	1702 NoAE motion		M 3334 11-18-81
114	"	"	1324 209C		M 3334 11-17-81
115	"	"	1330 209C		M 3334 11-17-81
116	"	"	2127 EL 4/5		M 3334 11-17-81
117	"	"	1332 209C		M 3334 11-17-81
118	"	"	1322 209C		M 3334 11-17-81
119	"	"	2301 EL 4/5		M 3334 11-17-81
120	"	"	0521 EL 4/5		M 3334 11-17-81
121	11-15	8.12.13	1011 EL 4/5		M 3334 11-17-81
122	11-15	8.12.15	2702 EL 4/5		M 3334 11-17-81
123	"	"	2717 EL 4/5		M 3334 11-18-81
124	"	"	2427 EL 4/5		M 3334 11-17-81
125	"	"	2537 Slow Hst		M 3334 11-18-81
126	"	"	2319 EL 4/5		M 3334 11-17-81
127	"	"	2029 EL 4/5		M 3334 11-17-81
128	"	"	1306 EL 4/5		M 3334 11-17-81
128.5	"	"	1334 EL 4/5		M 3334 11-17-81
129	"	"	1032 EL 4/5		M 3334 11-17-81
130	"	"	2333 EL 4/5		M 3334 11-17-81

CUSTOMER VAE Blit 11-18-81
 Date

TEST CONDUCTOR Ron 11-16-81
 Date

QUALITY A. Know 11-15-81
 Date

PARAGRAPH 8.12

Item	Date	Para	Entry	Orig	Qual. Accep.
131	11-15	8.12.15	0927 EL L/S		M 3334 11-17-81
132	11-15	8.12.16	0810 209C		333 11-17-81
PROCEDURE 111 PARA. 8.12 WAS TESTED SUCCESSFULLY. NO RETEST REQUIRED.					
ALL ITEMS ABOVE WILL BE CLEARED					

CUSTOMER AK DuChateau 11-18-81
Date

TEST CONDUCTOR Flora 11-16-81
Date

QUALITY A. Kucera 11-15-81
Date

PROCEDURE III

Test Title: Paragraph 4.13.1 - Illegal Commands Verification in the Transition Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: The Illegal commands verification in the Transition Mode was performed on 15 November 1981. All procedural requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Transition Mode.

Retest Requirements: No further testing required. There were no flag items to be cleared.

- 8.13 HAC Control Verification of Illegal Commands
- 8.13.1 Illegal commands issued in the transition mode. The transition mode is when HSTs are in transition (motion) in response to being commanded or after in service heliostats have power applied and the HAC is booted and prior to HSTs being initialized by a load command. For this test, the transition mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field.
- 8.13.1.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.
- 8.13.1.2 Enter: STOW H 0951
Response: OK O,WM O,OF 1,NI 0
- 8.13.1.3 Enter: STOW F 61
Response: OK O,WM O,OF 6,NI 22
- 8.13.1.4 Enter: STOW S 312
Response: OK O,WM O,OF 9,NI 0
- 8.13.1.5 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.1.6 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.1.7 Enter: STOW A 1059,1069
Response: OK O,WM O,OF 6,NI 0
- 8.13.1.8 Enter: ALTI H 0951
Response: OK O,WM O,OF 1,NI 0
- 8.13.1.9 Enter: ALTI F 61
Response: OK O,WM O,OF 10,NI 22

*5 - Selected CMD's
will be skipped because
of redundancy
This test is run
with AREA 8.12
AK 11-15*

AK 11-15

8.13.1.10 Enter: ALT1 S 312
Response: OK 0,WM 0,OF 9,NI 0

AK / 11-15
Initial Date

8.13.1.11 Enter: ALT1 W 12
Response: OK 0,WM 0,OF 21,NI 0

AK / 11-15
Initial Date

8.13.1.12 Enter: ALT1 R 3
Response: OK 0,WM 0,OF 9,NI 0

AK / 11-15
Initial Date

8.13.1.13 Enter: ALT1 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

AK / 11-15
Initial Date

8.13.1.14 Enter: ALT1 ALL
Response: OK 0,WM 0,OF 0,NI 0

AK / 11-15
Initial Date

8.13.1.15 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0

AK / 11-15
Initial Date

8.13.1.16 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.17 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0

AK / 11-15
Initial Date

✓ 3

8.13.1.18 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED

✓3

Initial Date

8.13.1.19 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED

✓5

Initial Date

8.13.1.20 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

AK 1 11-15

Initial Date

8.13.1.21 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0

AK 1 11-15

Initial Date

8.13.1.22 Enter: UNSTOW E 1059
Response: OK 0,WM 0,OF 1,NI 0

AK 1 11-15

Initial Date

8.13.1.23 Enter: UNSTOW F 61
Response: OK 0,WM 0,OF 10,NI 22

AK 1 11-15

Initial Date

8.13.1.24 Enter: UNSTOW S 312
Response: OK 0,WM 0,OF 9,NI 0

AK 1 11-15

Initial Date

8.13.1.25 Enter: UNSTOW W 12
Response: OK 0,WM 0,OF 21,NI 0

AK 1 11-15

Initial Date

8.13.1.26 Enter: UNSTOW R 3
Response: OK 0,WM 0,OF 9,NI 0

AK 1 11-15

Initial Date

8.13.1.27 Enter: UNSTOW A 1059 1069
Response: OK O,WM O,OF 6,NI O

AK / 11-15
Initial Date

8.13.1.28 Enter: UNSTOW ALL
Response: OK O,WM O,OF O,NI O

AK / 11-15
Initial Date

8.13.1.29 Enter: STAN H 1059
Response: OK O,WM O,OF 1,NI O

AK / 11-15
Initial Date

8.13.1.30 Enter: STAN F 61
Response: OK O,WM O,OF 10,NI 22

AK / 11-15
Initial Date

8.13.1.31 Enter: STAN S 312
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.32 Enter: STAN W 12
Response: OK O,WM O,OF 21,NI O

AK / 11-15
Initial Date

8.13.1.33 Enter: STAN R 3
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.34 Enter: STAN A 1059 1069
Response: OK O,WM O,OF 6,NI O

AK / 11-15
Initial Date

8.13.1.35 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

AK /
Initial Date

✓ 3

8.13.1.36 Enter: TRAC H 1059
Response: OK O,WM O,OF 1,NI O

AK / 11-15
Initial Date

8.13.1.37 Enter: TRAC F 61
Response: OK O,WM O,OF 10,NI 22

AK / 11-15
Initial Date

8.13.1.38 Enter: TRAC S 312
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.39 Enter: TRAC W 12
Response: OK O,WM O,OF 21,NI O

AK / 11-15
Initial Date

8.13.1.40 Enter: TRAC R 3
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.41 Enter: TRAC A 1059 1069
Response: OK O,WM O,OF 6,NI O

AK / 11-15
Initial Date

8.13.1.42 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.43 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.44 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.45 Enter: INCR S 312
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.46 Enter: INCR W 12
Response: OK O,WM O,OF 21,NI O

AK / 11-15
Initial Date

8.13.1.47 Enter: INCR R 3
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.48 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.49 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.50 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.51 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.52 Enter: DECR S 312
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.53 Enter: DECR W 12
Response: OK O,WM O,OF 21,NI O

AK / 11-15
Initial Date

8.13.1.54 Enter: DECK N 3
Response: OK 0,WM 0,OF 9,NI 0

AK 11-15
Initial Date

8.13.1.55 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ 5

1
Initial Date

8.13.1.56 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

1
Initial Date

8.13.1.57 Enter: WASH H 1059
Response: OK 0,WM 0,OF 1,NI 0

AK 11-15
Initial Date

8.13.1.58 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED ✓ 5

1
Initial Date

8.13.1.59 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED ✓ 5

1
Initial Date

8.13.1.60 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED ✓ 5

1
Initial Date

8.13.1.61 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED ✓ 5

1
Initial Date

AK 11-15

8.13.1.62 Enter: WASH A 1059 1069
Response: OK O,WM O,OF 6,NI O

AK / 11-15
Initial Date

8.13.1.63 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.64 Enter: RELW H 1059
Response: OK O,WM O,OF 1,NI O

AK / 11-15
Initial Date

8.13.1.65 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.66 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.67 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.68 Enter: RELW B 3
Response: R ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.69 Enter: RELW A 1059 1069
Response: OK O,WM O,OF 6,NI O

AK / 11-15
Initial Date

8.13.1.70 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

/
Initial Date

8.13.1.71 Enter: BCST H 1059
Response: OK O,WM O,OF 1,NI O

AK / 11-15
Initial / Date

8.13.1.72 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.73 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.74 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.75 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.76 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.77 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.78 Enter: RETU H 1059
Response: OK O,WM O,OF 1,NI O

AK / 11-15
Initial / Date

8.13.1.79 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

/
Initial / Date

8.13.1.80 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.81 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.82 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.83 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.84 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.85 Enter: POSI ALL G. -90.
Response: ALL ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.86 Enter: OFFL H 1059
Response: OK O,WM O,OF 1,NI O

AK / 11-15
_____/_____
Initial Date

8.13.1.87 Enter: OFFL F 61
Response: OK O,WM O,OF 10,NI 22

AK / 11-15
_____/_____
Initial Date

8.13.1.88 Enter: OFFL S 312
Response: OK O,WM O,OF 9,NI O

AK / 11-15
_____/_____
Initial Date

5

8.13.1.89 Enter: OFFL W 12
Response: OK O,WM O,OF 21,NI O

AK / 11-15
Initial Date

8.13.1.90 Enter: OFFL R 3
Response: OK O,WM O,OF 9,NI O

AK / 11-15
Initial Date

8.13.1.91 Enter: OFFL A 1059 1069
Response: OK O,WM O,OF 6,NI O

AK / 11-15
Initial Date

8.13.1.92 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

/
Initial Date

✓ 3

8.13.1.93 Enter: ONLI ALL

Response: ALL ADDRESS NOT ALLOWED

✓ 3

Initial Date

8.13.1.94 Enter: MARK H 1059

Response: OK O,WM O,OF 1,NI O

AK 1-11-15

Initial Date

8.13.1.95 Enter: MARK F 61

Response: OK O,WM O,OF 10,NI 22

AK 1 11-15

Initial Date

8.13.1.96 Enter: MARK S 312

Response: OK O,WM O,OF 9,NI O

AK 1 11-15

Initial Date

8.13.1.97 Enter: MARK W 12

Response: OK O,WM O,OF 21,NI O

AK 1 11-15

Initial Date

8.13.1.98 Enter: MARK R 3

Response: OK O,WM O,OF 9,NI O

AK 1 11-15

Initial Date

8.13.1.99 Enter: MARK A 1059 1069

Response: OK O,WM O,OF 6,NI O

AK 1 11-15

Initial Date

8.13.1.100 Enter: MARK ALL

Response: OK O,WM O,OF O,NI O

AK 1 11-15

Initial Date

8.13.1.101 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.102 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.103 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.104 Enter: RLHI W 12
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.105 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.106 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.107 Enter: RLHI ALL
Response: STHIWIND NOT GIVEN

Initial / Date

8.13.1.108 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

Initial / Date

8.13.1.109 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

Initial / Date

5

8.13.1.110 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

Initial / Date

8.13.1.111 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

Initial / Date

8.13.1.112 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

Initial / Date

8.13.1.113 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN

Initial / Date

8.13.1.114 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN

Initial / Date

8.13.1.115 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED

Initial / Date

8.13.1.116 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED

Initial / Date

8.13.1.117 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED

Initial / Date

8.13.1.118 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED

Initial / Date

8.13.1.119 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED

Initial / Date

8.13.1.120 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED

Initial / Date

8.13.1.121 Enter: SAVE ALL
Response: OK O,WM O,OF O,NI O

Initial / Date

AK, 11-15

8.13.1.122 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED

Initial / Date

8.13.1.123 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED

Initial / Date

8.13.1.124 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED

Initial / Date

8.13.1.125 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED

Initial / Date

8.13.1.126 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED

Initial / Date

8.13.1.127 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED

Initial / Date

8.13.1.128 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.129 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.130 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS

_____/_____
Initial Date

8.13.1.131 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.132 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.133 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED

_____/_____
Initial Date

8.13.1.134 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS

_____/_____
Initial Date

8.13.1.135 Enter: UPAI E 1059
Response: E NUMBER OF CHARACTERS

_____/_____
Initial Date

5

8.13.1.136 Enter: UPAI F 61

Response: F NUMBER OF CHARACTERS

Initial / Date

8.13.1.137 Enter: UPAI S 312

Response: S NUMBER OF CHARACTERS

Initial / Date

8.13.1.138 Enter: UPAI W 12

Response: W NUMBER OF CHARACTERS

Initial / Date

8.13.1.139 Enter: UPAI R 3

Response: R NUMBER OF CHARACTERS

Initial / Date

8.13.1.140 Enter: UPAI A 1059 1069

Response: A NUMBER OF CHARACTERS

Initial / Date

8.13.1.141 Enter: UPAI ALL

Response: ALL NUMBER OF CHARACTERS

Initial / Date

8.13.1.142 Enter: UPBI F 61

Response: F ADDRESS NOT ALLOWED

Initial / Date

8.13.1.143 Enter: UPBI W 12

Response: W ADDRESS NOT ALLOWED

Initial / Date

8.13.1.144 Enter: UPBI S 312

Response: S ADDRESS NOT ALLOWED

Initial / Date

8.13.1.145 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

Initial / Date

8.13.1.146 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

Initial / Date

8.13.1.147 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

Initial / Date

8.13.1.148 Enter: STAT F 61
Response: F INVALID ADDRESS

Initial / Date

8.13.1.149 Enter: STAT S 312
Response: S INVALID ADDRESS

Initial / Date

8.13.1.150 Enter: STAT W 12
Response: W INVALID ADDRESS

Initial / Date

8.13.1.151 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

Initial / Date

8.13.1.152 Enter: SYHI H 1059
Response: H ADDRESS NOT ALLOWED

Initial / Date

5

Initial

Date

8.13.1.153 Enter: STHI F 61
Response: F ADDRESS NOT ALLOWED

8.13.1.154 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.1.155 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.1.156 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.1.157 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.1.158 Enter: STHI ALL
Response: OK O,WM O,OF 7,NI O

8.13.1.159 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.1.160 Enter: DEFO F 61
Response: F ADDRESS NOT ALLOWED

8.13.1.161 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.1.162 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.1.163 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.1.164 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.1.165 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.1.166 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.1.167 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

5

Initial

Date

8.13.1.168 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.1.169 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.1.170 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.1.171 Enter: LCAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.1.172 Enter: LCAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.1.173 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.1.174 Enter: ESTA H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.1.175 Enter: ESTA F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.1.176 Enter: ESTIA S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.1.177 Enter: ESTA W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.1.178 Enter: ESTA R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.1.179 Enter: ESTA A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.1.180 Enter: ESTA ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.1.181 Enter: ESTO H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.1.182 Enter: ESTO F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.1.183 Enter: ESTO S 312
Response: OK 0,WM 0,OF 9,NI 0

S

AK 11-15

8.13.1.184 Enter: ESTO W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.1.185 Enter: ESTO R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.1.186 Enter: ESTO A 1059,1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.1.187 Enter: ESTO ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.1.188 End of illegal commands verification issued in the transition mode.

8.13.2 Illegal commands issued in the initialized mode. The initialized mode is when initialization data is downloaded to the heliostat controller by a load command from the HAC control system. For this test, the initialized mode shall be attained by initializing the HAC (booting) and applying power to the heliostat field and entering the following command:

Enter: LOAD ALL
Response: Responding HSTs shall display the initialized mode, no heliostat motion shall occur.

8.13.2.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper messages.

8.13.2.2 Display full field on the graphics 1999, CRT.

8.13.2.3 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.4 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.5 Enter: ALT1 H 0951
Response: OK 0,WM 0,OF 1,NI 0

AK 11-81

AK 11-13

PROCEDURE 111

Test Title: Paragraph 8.13.2 - Illegal Commands Verification in the Initialized Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the Initialized Mode was performed on 13 November 1981. All procedural requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Initialized Mode.

Retest Requirements: No further testing required. All procedural flag items have been incorporated.

Initial

Date

- 8.13.1.184 Enter: ESTO W 12
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.1.185 Enter: ESTO R 3
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.1.186 Enter: ESTO A 1059,1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.1.187 Enter: ESTO ALL
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.1.188 End of illegal commands verification issued in the transition mode.
- 8.13.2 Illegal commands issued in the initialized mode. The initialized mode is when initialization data is downloaded to the heliostat controller by a load command from the HAC control system. For this test, the initialized mode shall be attained by initializing the HAC (booting) and applying power to the heliostat field and entering the following command:
Enter: LOAD ALL
Response: Responding HSTs shall display the initialized mode, no heliostat motion shall occur.
- 8.13.2.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper messages.
- 8.13.2.2 Display full field on the graphics 1999, CRT.
- 8.13.2.3 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.2.4 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED
- 2.13.2.5 Enter: ALTI H 0951
Response: OK 0,WM 0,OF 1,NI 0

AK 11-81

AK 11-13

Initial

Date

8.13.2.6 Enter: ALT1 F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.2.7 Enter: ALT1 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.8 Enter: ALT1 W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.2.9 Enter: ALT1 R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.10 Enter: ALT1 A 1059,1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.2.11 Enter: ALT1 ALL
Response: OK 0,WM 0,OF 0,NI 0

AK

11-13

8.13.2.12 Enter: ALT2 H 1059
Response: OK O,WM O,OF 1,NI O

8.13.2.13 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.14 Enter: ALT2 S 312
Response: OK O,WM O,OF 9,NI O

8.13.2.15 Enter: Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.16 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.17 Enter: ALT2 A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.2.18 Enter: ALT2 ALL
Response: OK O,WM O,OF 0,NI O

8.13.2.19 Enter: UNSTOW H 1059
Response: OK O,WM O,OF 1,NI O

8.13.2.20 Enter: UNSTOW F 61
Response: OK O,WM O,OF 10,NI 22

8.13.2.21 Enter: UNSTOW S 312
Response: OK O,WM O,OF 9,NI O

8.13.2.22 Enter: UNSTOW W 12
Response: OK O,WM O,OF 2L,NI O

8.13.2.23 Enter: UNSTOW R 3
Response: OK O,WM O,OF 9,NI O

8.13.2.24 Enter: UNSTOW A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.2.25 Enter: UNSTOW ALL
Response: OK O,WM O,OF 0,NI O

8.13.2.26 Enter: STAN H 1059
Response: OK O,WM O,OF 1,NI O

8.13.2.27 Enter: STAN F 61
Response: OK O,WM O,OF 10,NI 22

8.13.2.28 Enter: STAN S 312
Response: OK O,WM O,OF 9,NI O

AK 11-13

Initial

Date

8.13.2.29 Enter: STAN W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.2.30 Enter: STAN R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.31 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.2.32 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.33 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.2.34 Enter: TRAC F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.2.35 Enter: TRAC S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.36 Enter: TRAC W 12
Response: OK 0,WM 0,OF 2L,NI 0

8.13.2.37 Enter: TRAC R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.38 Enter: TRAC A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.2.39 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.40 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.2.41 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.42 Enter: INCR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.43 Enter: INCR W 12
Response: OK 0,EM 0,OF 21,NI 0

8.13.2.44 Enter: INCR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.45 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

AK 11-13

Initial

Date

8.13.2.46 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.47 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.2.48 Enter: DECR F 61
Response: ~~OK 0,WM 0,OF 9,NI 0~~
= Address Not Allowed



8.13.2.49 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.50 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.2.51 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.52 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.53 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.54 Enter: WASH H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.2.55 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.56 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.57 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.58 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.59 Enter: - WASH A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.2.60 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.61 Enter: RELW H 1059
Response: OK 0,WM 0,OF 1,NI 0

AK 11-13

8.13.2.62 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.63 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.64 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.65 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.66 Enter: RELW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.2.67 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.68 Enter: BCST H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.2.69 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.70 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.71 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.72 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.73 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.74 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.75 Enter: RETU H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.2.76 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.77 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

Initial

Date

8.13.2.78 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.79 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.80 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.81 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.82 Enter: PCS: ALL 0. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.2.83 Enter: OFFL H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.2.84 Enter: OFFL F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.2.85 Enter: OFFL S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.86 Enter: OFFL W 12
Response: OK 0,WM 0,OF 2L,NI 0

8.13.2.87 Enter: OFFL R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.2.88 Enter: OFFL A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.2.89 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

AK

1113

Initial

Date

8.13.2.90 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.91 Enter: MARK H 1059
Response: OK O,WM O,OF 1,NI O

8.13.2.92 Enter: MARK F 61
Response: OK O,WM O,OF 10,NI 22

8.13.2.93 Enter: MARK S 312
Response: OK O,WM O,OF 9,NI O

8.13.2.94 Enter: MARK W 12
Response: OK O,WM O,OF 21,NI O

8.13.2.95 Enter: MARK R 3
Response: OK O,WM O,OF 9,NI O

8.13.2.96 Enter: MARK A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.2.97 Enter: MARK ALL
Response: OK O,WM O,OF O,NI O

8.13.2.98 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN

8.13.2.99 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN

8.13.2.100 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN

8.13.2.101 Enter: RLHI W 12
Response: STHIWIND NOT GIVEN

8.13.2.102 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN

8.13.2.103 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN

AK 11-13

Initial

Date

8.13.2.104 Enter: RLHI ALL
Response: STIMULATED NOT GIVEN

8.13.2.105 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

8.13.2.106 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

8.13.2.107 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

8.13.2.108 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

8.13.2.109 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

8.13.2.110 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN

8.13.2.111 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN

8.13.2.112 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED

8.13.2.113 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.114 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.115 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.116 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.117 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.118 Enter: SAVE ALL
Response: OK O.M. O OF O.NI O

8.13.2.119 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED

70

11-13

AK

Initial

Date

8.13.2.120 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.121 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.122 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.123 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.124 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.125 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED

8.13.2.126 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.127 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS

8.13.2.128 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.129 Enter: AIMP R 3
Response: R ADDRESS NOT GIVEN ALLOWED

8.13.2.130 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.131 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS

8.13.2.132 Enter: UPBI ALL
Response: ~~ALL ADDRESS NOT ALLOWED~~

8.13.2.133 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.2.134 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.2.135 Enter: STAT W 12
Response: W INVALID ADDRESS

71

~~Number of char~~

AL 11-13

8.13.2.136 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.2.137 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.2.138 Enter: STHI F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.139 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.140 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.141 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.142 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.143 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.2.144 Enter: DEFO F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.145 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.146 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.147 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.148 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.2.149 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.2.150 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.151 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.152 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

AK

11-13

8.13.2.153 Enter: ~~LOAD S 312~~
Response: A ADDRESS NOT ALLOWED

8.13.2.154 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.2.155 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.2.156 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.2.157 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.2.158 End of illegal commands verification
issued in the initialized mode.

8.13.2.159 Enter: STOW ALL depress RTN

8.13.2.160 Illegal commands issued in the offline mode.
The offline mode directs HSTs to maintain
their current positions and accepts no fur-
ther commands until the online command is
issued. The offline mode, for this test,
shall be attained by initializing (booting)
the HAC and applying power to the heliostat
field and entering the following commands
from the HAC control system:

Enter: LOAD ALL depress RTN

Response: No HST motion, responding HSTs
display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow
mode from the initialized mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the mark
position and display the mark mode.

Enter: STOW ALL depress RTN

Response: ~~Responding HSTs move to the stow posi-~~
tion and display the stow mode.

A/C

AK

AK 11-12

AK 11-12

AK N-12

TEST REPORT 8.13.2

Item	Date	Part	Qty	Orig	Qual. Accep.
69	11-13	8.13.2.48	Red Line	Change Comment	M 3334 11-17-81
70	11-13	8.13.2.118	"	"	M 3334 11-17-81
71	11-13	8.13.2.129	"	"	M 3334 11-17-81
<p>PROCEDURE 111 PARA. 8.13.2 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED</p>					

CUSTOMER *[Signature]* 11-16-81
Date

TEST CONDUCTOR *[Signature]* 11-13-81
Date

QUALITY *[Signature]* 11-13-81
Date

PROCEDURE 111

Test Title: Paragraph 8.13.3 - Illegal Commands Verification in the Offline Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the Offline Mode was performed on 12 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Offline Mode.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified operationally.

8.13.2.153 Enter: HOLD A 1059,1069
 Response: A ADDRESS NOT ALLOWED

8.13.2.154 Enter: HOLD ALL
 Response: ALL ADDRESS NOT ALLOWED

8.13.2.155 Enter: LOAD S 312
 Response: S ADDRESS NOT ALLOWED

8.13.2.156 Enter: LOAD W 12
 Response: W ADDRESS NOT ALLOWED

8.13.2.157 Enter: LOAD R 3
 Response: R ADDRESS NOT ALLOWED

8.13.2.158 End of illegal commands verification
 issued in the initialized mode.

8.13.2.159 Enter: STOW ALL depress RTN

8.13.3 Illegal commands issued in the offline mode.
 The offline mode directs HSTs to maintain
 their current positions and accepts no fur-
 ther commands until the online command is
 issued. The offline mode, for this test,
 shall be attained by initializing (booting)
 the HAC and applying power to the heliostat
 field and entering the following commands
 from the HAC control system:

Enter: LOAD ALL depress RTN
 Response: No HST motion, responding HSTs
 display the initialized mode.

Enter: STOW ALL depress RTN
 Response: Responding HSTs display the stow
 mode from the initialized mode.

Enter: MARK ALL depress RTN
 Response: Responding HSTs move to the mark
 position and display the mark mode.

Enter: STOW ALL depress RTN
 Response: Responding HSTs move to the stow posi-
 tion and display the stow mode.

AK 11-13

AK

AK 11-12

AK 11-12

AK 11-12

8.13.3

Continued:

Enter: OFFL R 1,2,3,4,5 depress RTN

Response: No HST motion, responding HSTs display the offline mode from the stow mode.

AK

11-12

0604/400
55
1660/166
56

8.13.3.1

At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.

8.13.3.2

Enter: STOW H 0951

Response: OK O,WM O,OF 1,NI O

8.13.3.3

Enter: STOW F 61

Response: OK O,WM O,OF 6,NI O

8.13.3.4

Enter: STOW S 312

Response: OK O,WM O,OF 9,NI O

8.13.3.5

Enter: STOW W 12

Response: W ADDRESS NOT ALLOWED

8.13.3.6

Enter: STOW B 3

Response: R ADDRESS NOT ALLOWED

8.13.3.7

Enter: STOW A 1059,1069

Response: OK O,WM O,OF 6,NI O

8.13.3.8

Enter: ALTI H 0951

Response: OK O,WM O,OF 1,NI O

AK

11-12

Initial

Date

8.13.3.9 Enter: ALT1 F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.3.10 Enter: ALT1 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.11 Enter: ALT1 W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.3.12 Enter: ALT1 R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.13 Enter: ALT1 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.3.14 Enter: ALT1 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.3.15 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.3.16 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.17 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.18 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.19 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.20 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.3.21 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.3.22 Enter: UNSTOW H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.3.23 Enter: UNSTOW F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.3.24 Enter: UNSTOW S 312
Response: OK 0,WM 0,OF 9,NI 0

AK 11-12

Initial

Date

8.13.3.25 Enter: UNSTOW W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.3.26 Enter: UNSTOW R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.27 Enter: UNSTOW A 1059 1069
Response: OK 0,WM 0,OF 0,NI 0

8.13.3.28 Enter: UNSTOW ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.3.29 Enter: STAN H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.3.30 Enter: STAN F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.3.31 Enter: STAN S 312
Response: OK 0,WM 0,OF 9,NI 0

9.13.3.32 Enter: STAN W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.3.33 Enter: STAN R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.34 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.3.35 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.36 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.3.37 Enter: TRAC F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.3.38 Enter: TRAC S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.39 Enter: TRAC W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.3.40 Enter: TRAC R 3
Response: OK 0,WM 0,OF 9,NI 0

AL 11.12

Initial

Date

8.13.3.41 Enter: TRAC A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.3.42 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.43 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.3.44 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.45 Enter: INCR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.46 Enter: INCR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.3.47 Enter: INCR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.48 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.49 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.50 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.3.51 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.52 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.53 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.3.54 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.3.55 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.56 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

AK 11-12

8.13.3.57 Enter: WASH H 1059
Response: OK O,WM O,OF 1,NI O

8.13.3.58 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.59 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.3.60 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.61 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.62 Enter: WASH A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.3.63 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.64 Enter: RELW H 1059
Response: OK O,WM O,OF 1,NI O

8.13.3.65 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.66 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.3.67 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.68 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.69 Enter: RELW A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.3.70 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.71 Enter: BCST H 1059
Response: OK O,WM O,OF 1,NI O

8.13.3.72 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

AK 11-12

Initial

Date

8.13.3.73 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.3.74 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.75 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.76 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.77 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.78 Enter: RETU H 1059
Response: OK O,WM O,OF 1,NI O

8.13.3.79 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.80 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

8.13.3.81 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.82 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.83 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.84 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.85 Enter: POSI ALL O. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.3.86 Enter: OFFL H 1059
Response: OK O,WM O,OF 1,NI O

8.13.3.87 Enter: OFFL F 61
Response: OK O,WM O,OF 10,NI 22

8.13.3.88 Enter: OFFL S 312
Response: OK O,WM O,OF 9,NI O

AK 11/12

8.13.3.89 Enter: OFFL W 12
Response: OK O,WM O,OF 21,NI O

8.13.3.90 Enter: OFFL R 3
Response: OK O,WM O,OF 9,NI O

8.13.3.91 Enter: OFFL A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.3.92 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.93 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.94 Enter: MARK H 1059
Response: OK O,WM O,OF 1,NI O

8.13.3.95 Enter: MARK F 61
Response: OK O,WM O,OF 10,NI 22

8.13.3.96 Enter: MARK S 312
Response: OK O,WM O,OF 9,NI O

8.13.3.97 Enter: MARK W 12
Response: OK O,WM O,OF 21,NI O

8.13.3.98 Enter: MARK R 3
Response: OK O,WM O,OF 9,NI O

8.13.3.99 Enter: MARK A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.3.100 Enter: MARK ALL
Response: OK O,WM O,OF O,NI O

8.13.3.101 Enter: RLHI H 1059
Response: STHWIND NOT GIVEN

8.13.3.102 Enter: RLHI F 61
Response: STHWIND NOT GIVEN

8.13.3.103 Enter: RLHI S 312
Response: STHWIND NOT GIVEN

8.13.3.104 Enter: RLHI W 12
Response: STHWIND NOT GIVEN

OK 11-12

Initial

Date

- 8.13.3.105 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN
- 8.13.3.106 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN
- 8.13.3.107 Enter: RLHI ALL
Response: STHIWIND NOT GIVEN
- 8.13.3.108 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN
- 8.13.3.109 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN
- 8.13.3.110 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN
- 8.13.3.111 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN
- 8.13.3.112 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN
- 8.13.3.113 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN
- 8.13.3.114 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN
- 8.13.3.115 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.3.116 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.3.117 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.3.118 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.3.119 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.3.120 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED

AK 11-12

Initial

Date

8.13.3.121 Enter: SAVE ALL
Response: OK O,SM O,OF O,NI O

8.13.3.122 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED

8.13.3.123 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.124 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED

8.13.3.125 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.126 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.127 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.128 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED

8.13.3.129 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.130 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.131 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.132 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.133 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED

8.13.3.134 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

AK

11-12

8.13.3.135 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.136 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.137 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.138 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.3.139 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.3.140 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.3.141 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.3.142 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.3.143 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.3.144 ~~Enter: STHI F 61~~ *9*
Response: F ADDRESS NOT ALLOWED

8.13.3.145 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.3.146 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.3.147 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.3.148 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.3.149 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

Initial

Date

- 8.43.3.150 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED
- 8.13.3.151 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.3.152 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.3.153 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.3.154 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.3.155 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.3.156 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.3.157 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.3.158 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.3.159 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.3.160 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.3.161 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.3.162 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.3.163 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.3.164 End of illegal commands verification issued
in the offline mode.

- 8.13.3.165 Enter: ONLY R 1,2,3,4,5 depress RTN
Response: HSTs responding display the
directed position mode.

AK 11-12

PROCEDURE NO. 111
PARAGRAPH 8.13.3

Item	Date	Para.	Entry	Orig	Qual. Accep.
11-12-81	55	8.13.3	0604 400 while offline		M 3334 11-17-81
11-12-81	56	8.13.3	1660 16C while offline		M 3334 11-19-81
<p>PROCEDURE 111 PARA 8.13.3 WAS VERIFIED SUCCESSFULLY - NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

CUSTOMER DM [Signature] 11-18-81
 Date

TEST CONDUCTOR [Signature] 11-12-81
 Date

QUALITY A Kucera 11-12-81
 Date

PROCEDURE 111

Test Title: Paragraph 8.13.4 - Illegal Commands Verification in the Directed Position Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the Directed Position Mode was performed on 12 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Directed Position Mode.

Retest Requirements: No further testing required. There were no flag items to clear.

8.13.4

Illegal commands issued in the directed position mode. The directed position mode directs HSTs to a command AZEL orientation. Beam safety is operator responsibility. For this test, the directed position mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands from the HAC control system.

Enter: LOAD ALL depress RTN

Response: No HST motion, responding HSTs display initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode from the initialized mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the AZEL mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

Enter: POSI R 1,2,3,4,5 0., -90.

Response: Responding HSTs display the directed position mode.

AK 11-12

- 8.13.4.1 At the HAC control console, the following illegal commands shall be entered and the commands shall be entered and the command responses verified as to proper error messages.
- 8.13.4.2 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.4.3 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.4.4 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.4.5 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.4.6 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.4.7 Enter: UNSTOW H 1059
Response OK 0,WM 0,OF 1,NI 0
- 8.13.4.8 Enter: UNSTOW F 61
Response: OK 0,WM 0,OF 10,NI 22
- 8.13.4.9 Enter: UNSTOW S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.4.10 Enter: UNSTOW W 12
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.4.11 Enter: UNSTOW R 3
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.4.12 Enter: UNSTOW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.3.13 Enter: UNSTOW ALL
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.3.14 Enter: STAN H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.4.15 Enter: STAN F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.4.16 Enter: STAN S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.17 Enter: STAN W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.4.18 Enter: STAN R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.19 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.4.20 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.21 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.4.22 Enter: TRAC F 61
Response: OK 0,WM 0,OF 1,NI 0

8.13.4.23 Enter: TRAC S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.24 Enter: TRAC W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.4.25 Enter: TRAC R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.26 Enter: TRAC A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.4.27 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.28 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.4.29 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.4.30 Enter: INCR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.31 Enter: INCR W 12
Response: OK 0,WM 0,OF 21,NI 0

AK 11-12

Initial

Date

8.13.4.32 Enter: INCR H 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.33 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.34 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.35 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.4.36 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.4.37 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.38 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.4.39 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.40 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.41 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.42 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.4.43 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.4.44 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.45 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.46 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.47 Enter: RELN F 61
Response: F ADDRESS NOT ALLOWED

AK 11-12

		Initial	Date
8.13.4.48	Enter: RELW S 312 Response: S ADDRESS NOT ALLOWED		
8.13.4.49	Enter: RELW W 12 Response: W ADDRESS NOT ALLOWED		
8.13.4.50	Enter: RELW R 3 Response: R ADDRESS NOT ALLOWED		
8.13.4.51	Enter: RELW A 1059 1069 Response: OK 0,MI 0,OF 6,NI 0		
8.13.4.52	Enter: RELW ALL Response: ALL ADDRESS NOT ALLOWED		
8.13.4.53	Enter: BCST H 1059 Response: OK 0,MI 0,OF 1,NI 0		
8.13.4.54	Enter: BCST F 61 Response: F ADDRESS NOT ALLOWED		
8.13.4.55	Enter: BCST S 312 Response: S ADDRESS NOT ALLOWED		
8.13.4.56	Enter: BCST W 12 Response: W ADDRESS NOT ALLOWED		
8.13.4.57	Enter: BCST R 3 Response: R ADDRESS NOT ALLOWED		
8.13.4.58	Enter: BCST A 1059 1069 Response: A ADDRESS NOT ALLOWED		
8.13.4.59	Enter: BCST ALL Response: ALL ADDRESS NOT ALLOWED		
8.13.4.60	Enter: RETU H 1059 Response: OK 0,MI 0,OF 1,NI 0		
8.13.4.61	Enter: RETU F 61 Response: F ADDRESS NOT ALLOWED		
8.13.4.62	Enter: RETU S 312 Response: S ADDRESS NOT ALLOWED		
8.13.4.63	Enter: RETU W 12 Response: W ADDRESS NOT ALLOWED		

AK 11-12

8.13.4.64 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.65 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.66 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.67 Enter: POSI ALL 0. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.4.68 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

X 8.13.4.69 Enter: ONLI H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.4.70 Enter: ONLI F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.4.71 Enter: ONLI S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.72 Enter: ONLI W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.4.73 Enter: ONLI R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.4.74 Enter: ONLI A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.4.75 Enter: ONLI AEL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.76 Enter: MARK H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.4.77 Enter: MARK F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.4.78 Enter: MARK S 312
Response: OK 0,WM 0,OF 9,NI 0

Initial

Date

- 8.13.4.79 Enter: MARK W 12
Response: OK O,WM O,OF 21,NI O
- 8.13.4.80 Enter: MARK R 3
Response: OK O,WM O,OF 9,NI O
- 8.13.4.81 Enter: MARK A 1059 1069
Response: OK O,WM O,OF 6,NI O
- 8.13.4.82 Enter: MARK ALL
Response: OK O,WM O,OF O,NI O
- 8.13.4.83 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN
- 8.13.4.84 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN
- 8.13.4.85 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN
- 8.13.4.86 Enter: RLHI W 12
Response: STHIWIND NOT GIVEN
- 8.13.4.87 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN
- 8.13.4.88 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN
- 8.13.4.89 Enter: RLHI ALL
Response: STHIWIND NOT GIVEN
- 8.13.4.90 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN
- 8.13.4.91 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN
- 8.13.4.92 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN
- 8.13.4.93 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN
- 8.13.4.94 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

AK 11-12

Initial

Date

- 8.13.4.95 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN
- 8.13.4.96 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN
- 8.13.4.97 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.4.98 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.4.99 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.4.100 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.4.101 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.4.102 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.4.103 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.4.104 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.4.105 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.4.106 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.4.107 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.4.108 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.4.109 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.4.110 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.4.111 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS

AK 11-12

8.13.4.112 Enter: ADMP W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.113 Enter: ADMP R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.114 Enter: ADMP A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.115 Enter: UPAI H 1059
Response: H NUMBER OF CHARACTERS

8.13.4.116 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS

8.13.4.117 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED

8.13.4.118 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED

8.13.4.119 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

8.13.4.120 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.121 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.122 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.123 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.124 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.4.125 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.4.126 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.4.127 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

AK 11-12

8.13.4.128 Enter: STRI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.4.129 Enter: STRI F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.4.130 Enter: STRI S 312
Response: S ADDRESS NOT ALLOWED

8.13.4.131 Enter: STRI W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.132 Enter: STRI R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.133 Enter: STRI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.134 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.4.135 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.4.136 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.4.137 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.138 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.139 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.140 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.4.141 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.4.142 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.143 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

AK 11-12

8.13.4.144 Enter: HOLD ALL

Response: A ADDRESS NOT ALLOWED

8.13.4.145 Enter: HOLD ALL

Response: ALL ADDRESS NOT ALLOWED

8.13.4.146 Enter: LOAD S 312

Response: S ADDRESS NOT ALLOWED

8.13.4.147 Enter: LOAD W 12

Response: W ADDRESS NOT ALLOWED

8.13.4.148 Enter: LOAD R 3

Response: R ADDRESS NOT ALLOWED

8.13.4.149 End of illegal commands verification issued in the directec position mode.

8.13.4.150 Enter: STOW ALL depress RTN

8.13.5 Illegal commands issued in the wash mode. The wash mode directs HSTs to their respective wash orientation. This command may be unsafe when the sun is present. For this test, the wash mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands at the HAC console:

Enter: LOAD ALL depress RTN

Response: No HST motion, responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

Enter: WASH A 0101,0133 0102,0134 depress RTN

Enter: WASH A 0201,0235 0202,0236 depress RTN

Enter: WASH A 0301,0335 0302,0336 depress RTN

Enter: WASH A 0401,0437 0402,0438 depress RTN

AK 11-12

5- SKIPPED CMD!
Because of Redundancy
AK

AK 11-15

5.16 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 111

Test Title: Paragraph 4.13.5 - Illegal Commands Verification in the Wash Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: The Illegal Commands Verification in the Wash Mode was performed on 15 November 1981. All procedure requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Wash Mode.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally.

8.13.4.144 Enter: HOLD A 1059, 1069
Response: A ADDRESS NOT ALLOWED

8.13.4.145 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.4.146 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.4.147 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.4.148 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.4.149 End of illegal commands verification issued in the directed position mode.

8.13.4.150 Enter: STOW ALL depress RTN

8.13.5 Illegal commands issued in the wash mode. The wash mode directs HSTs to their respective wash orientation. This command may be unsafe when the sun is present. For this test, the wash mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands at the HAC console:

Enter: LOAD ALL depress RTN
Response: No HST motion, responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN
Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN
Response: Responding HSTs move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN
Response: Responding HSTs move to the stow position and display the stow mode.

Enter: WASH A 0101, 0133 0102, 0134 depress RTN
Enter: WASH A 0201, 0235 0202, 0236 depress RTN
Enter: WASH A 0301, 0335 0302, 0336 depress RTN
Enter: WASH A 0401, 0437 0402, 0438 depress RTN

AK 11-12

5- SKIPPED CMD'S
BECAUSE OF REAL WINDS
AK

AK 11-15

8.13.5

Continued:

Enter: WASH A 0501,0547 0502,0548 depress RTN
 Enter: WASH A 0601,0651 0602,0652 depress RTN
 Enter: WASH A 0701,0749 0702,0750 depress RTN
 Enter: WASH A 0801,0851 0802,0852 depress RTN
 Enter: WASH A 0901,0951 0902,0952 depress RTN
 Enter: WASH A 1001,1069 1002,1070 depress RTN
 Enter: WASH A 1101,1169 1102,1170 depress RTN
 Enter: WASH A 1201,1269 1202,1270 depress RTN
 Enter: WASH A 1301,1367 1302,1368 depress RTN
 Enter: WASH A 1401,1463 1402,1464 depress RTN
 Enter: WASH A 1501,1581 1502,1582 depress RTN
 Enter: WASH A 1601,1679 1602,1680 depress RTN
 Enter: WASH A 1701,1775 1702,1776 depress RTN
 Enter: WASH A 1801,1875 1802,1876 depress RTN
 Enter: WASH A 1901,1973 1902,1974 depress RTN
 Enter: WASH A 2001,2095 2002,2096 depress RTN
 Enter: WASH A 2101,2189 2102,2190 depress RTN
 Enter: WASH A 2201,2275 2201,2276 depress RTN
 Enter: WASH A 2301,2369 2302,2370 depress RTN
 Enter: WASH A 2401,2463 2402,2464 depress RTN
 Enter: WASH A 2501,2559 2502,2560 depress RTN
 Enter: WASH A 2601,2659 2602,2660 depress RTN
 Enter: WASH A 2701,2767 2702,2768 depress RTN
 Enter: WASH A 2801,2859 2802,2860 depress RTN
 Enter: WASH A 2901,2945 2902,2946 depress RTN

Response: Responding HSTs move to the wash position and display the wash mode.

8.13.5.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.

8.13.5.2 Enter: STOW H 0951
 Response: OK 0,IM 0,OF 1,NI 0

8.13.5.3 Enter: STOW F 61
 Response: OK 0,IM 0,OF 6,NI 22

AK

11-15

INITIAL

Date

8.13.5.4 Enter: STOW S 312
Response: OK O,WM O,OF 9,NI O

AK

11-15

8.13.5.5 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED

✓ S

8.13.5.6 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED

✓ S

8.13.5.7 Enter: STOW A 1059,1069
Response: OK O,WM O,OF 6,NI O

AK

11-15

8.13.5.8 Enter: ALTI H 0951
Response: OK O,WM O,OF 1,NI O

AK

11-15

8.13.5.9 Enter: ALTI F 61
Response: OK O,WM O,OF 10,NI 22

AK

11-14

- 8.13.5.10 Enter: ALT1 S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.11 Enter: ALT1 W 12
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.5.12 Enter: ALT1 R 3
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.13 Enter: ALT1 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.5.14 Enter: ALT1 ALL
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.5.15 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.5.16 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED ✓ 5
- 8.13.5.17 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.18 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED ✓ 3
- 8.13.5.19 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED ✓ 5
- 8.13.5.20 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.5.21 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.5.22 Enter: UNSTOW H 1059
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.5.23 Enter: UNSTOW F 61
Response: OK 0,WM 0,OF 10,NI 22
- 8.13.5.24 Enter: UNSTOW S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.25 Enter: UNSTOW W 12
Response: OK 0,WM 0,OF 21,NI 0

AK 11-15

AK

AK 11-15

Initial

Date

AK

11-15

- 8.13.5.26 Enter: UNSTOW R 3
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.27 Enter: UNSTOW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.5.28 Enter: UNSTOW ALL
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.5.29 Enter: STAN H 1059 ✓
Response: JK 0,WM 0,OF 1,NI 0
- 8.13.5.30 Enter: STAN F 61 ✓
Response: OK 0,WM 0,OF 10,NI 22
- 8.13.5.31 Enter: STAN S 312 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.32 Enter: STAN W 12 ✓
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.5.33 Enter: STAN R 3 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.34 Enter: STAN A 1059 1069 ✓
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.5.35 Enter: STAN ALL ✓
Response: ALL ADDRESS NOT ALLOWED ✓ S
- 8.13.5.36 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.5.37 Enter: TRAC F 61 ✓
Response: OK 0,WM 0,OF 10,NI 22
- 8.13.5.38 Enter: TRAC S 312 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.39 Enter: TRAC W 12 ✓
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.5.40 Enter: TRAC R 3 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.41 Enter: TRAC A 1059 1069 ✓
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.5.42 Enter: TRAC ALL ✓
Response: ALL ADDRESS NOT ALLOWED ✓ S

AK

11-15

Initial

Date

8.13.5.59 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.60 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.61 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.62 Enter: WASH A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.5.63 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.5.64 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.5.65 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.66 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.67 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.68 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.5.69 Enter: BCST H 1059 ✓
Response: OK O,WM O,OF 1,NI O

8.13.5.70 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.5.71 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.72 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.73 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.74 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

S

AK

11-15

S

AK

11-15

- 8.13.5.43 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED ✓ S
- 8.13.5.44 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED ✓ S
- 8.13.5.45 Enter: INCR S 312 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.46 Enter: INCR W 12 ✓
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.5.47 Enter: INCR R 3 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.48 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ S
- 8.13.5.49 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED ✓ S
- 8.13.5.50 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED ✓ S
- 8.13.5.51 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED ✓ S
- 8.13.5.52 Enter: DECR S 312 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.53 Enter: DECR W 12 ✓
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.5.54 Enter: DECR R 3 ✓
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.5.55 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ S
- 8.13.5.56 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED ✓ S
- 8.13.5.57 Enter: WASH H 1059 ✓
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.5.58 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED ✓ S

11-15

AK

8.13.5.75 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED ✓ S

8.13.5.76 Enter: RETU H 1059 ✓
Response: OK O,WM O,OF 1,NI O

8.13.5.77 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.5.78 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.79 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.80 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.81 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.5.82 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.5.83 Enter: POSI ALL O. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.5.84 Enter: OFFL H 1059 ✓
Response: OK O,WM O,OF 1,NI O

8.13.5.85 Enter: OFFL F 61 ✓
Response: OK O,WM O,OF 10,NI 22

8.13.5.86 Enter: OFFL S 312 ✓
Response: OK O,WM O,OF 9,NI O

8.13.5.87 Enter: OFFL W 12 ✓
Response: OK O,WM O,OF 21,NI O

8.13.5.88 Enter: OFFL R 3 ✓
Response: OK O,WM O,OF 9,NI O

8.13.5.89 Enter: OFFL A 1059 1069 ✓
Response: OK O,WM O,OF 6,NI O

8.13.5.90 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED ✓ S

8.13.5.91 Enter: ONLI H 1059
Response: OK O,WM O,OF 1,NI O ✓ S

S

AK 11-15

Initial

Date

8.13.5.92 Enter: ONLI F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.5.93 Enter: ONLI S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.5.94 Enter: ONLI W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.5.95 Enter: ONLI R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.5.96 Enter: ONLI A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.5.97 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.5.98 Enter: MARK H 1059 ✓
Response: OK 0,WM 0,OF 1,NI 0

8.13.5.99 Enter: MARK F 61 ✓
Response: OK 0,WM 0,OF 10,NI 22

8.13.5.100 Enter: MARK S 312 ✓
Response: OK 0,WM 0,OF 9,NI 0

8.13.5.101 Enter: MARK W 12 ✓
Response: OK 0,WM 0,OF 21,NI 0

8.13.5.102 Enter: MARK R 3 ✓
Response: OK 0,WM 0,OF 9,NI 0

8.13.5.103 Enter: MARK A 1059 1069 ✓
Response: OK 0,WM 0,OF 6,NI 0

8.13.5.104 Enter: MARK ALL ✓
Response: OK 0,WM 0,OF 0,NI 0

8.13.5.105 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN

8.13.5.106 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN

8.13.5.107 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN

S
S
S

AK 11-15

Initial

Date

8.13.5.108 Enter: RLHI W 12
Response: STRIWD NOT GIVEN

8.13.5.109 Enter: RLHI R 3
Response: STRIWD NOT GIVEN

8.13.5.110 Enter: RLHI A 1059 1069
Response: STRIWD NOT GIVEN

8.13.5.111 Enter: RLHI ALL
Response: STRIWD NOT GIVEN

8.13.5.112 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

8.13.5.113 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

8.13.5.114 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

8.13.5.115 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

8.13.5.116 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

8.13.5.117 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN

8.13.5.118 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN

8.13.5.119 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED

8.13.5.120 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED

8.13.5.121 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.122 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.123 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED

5

AK 11-15

Initial

Date

- 8.13.5.124 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.5.125 Enter: SAVE ALL
Response: OK O,WM O,OF O,NI O
- 8.13.5.126 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.5.127 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.5.128 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.5.129 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.5.130 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.5.131 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.5.132 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.5.133 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.5.134 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS
- 8.13.5.135 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.5.136 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.5.137 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.5.138 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.5.139 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS

✓ S

✓ S

S

AK 11-15

Initial

Date

- 8.13.5.140 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.5.141 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED
- 8.13.5.142 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.5.143 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.5.144 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.5.145 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.5.146 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.5.147 Enter: STAT F 61
Response: F INVALID ADDRESS
- 8.13.5.148 Enter: STAT S 312
Response: S INVALID ADDRESS
- 8.13.5.149 Enter: STAT W 12
Response: W INVALID ADDRESS
- 8.13.5.150 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS
- 8.13.5.151 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.5.152 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED
- 8.13.5.153 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.5.154 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.5.155 Enter: STHI B 3
Response: R ADDRESS NOT ALLOWED

S

AK 11-15

8.13.5.156 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.5.157 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.5.158 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.5.159 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.160 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.161 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.162 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.5.163 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.5.164 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.165 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.166 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.167 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.5.168 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.5.169 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.5.170 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.5.171 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.5.172 End of illegal commands verification

issued in the past not

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AK 11-15

8.13.5.173 Enter: RELW A 0101,0133 0102,0134 depress RTN
 RELW A 0201,0235 0202,0236 depress RTN
 RELW A 0301,0335 0302,0336 depress RTN
 RELW A 0401,0437 0402,0438 depress RTN
 RELW A 0501,0547 0502,0548 depress RTN
 RELW A 0601,0651 0602,0652 depress RTN
 RELW A 0701,0749 0702,0750 depress RTN
 RELW A 0801,0851 0802,0852 depress RTN
 RELW A 0901,0951 0902,0952 depress RTN
 RELW A 1001,1069 1002,1070 depress RTN
 RELW A 1101,1169 1102,1170 depress RTN
 RELW A 1201,1269 1202,1270 depress RTN
 RELW A 1301,1367 1302,1368 depress RTN
 RELW A 1401,1463 1402,1464 depress RTN
 RELW A 1501,1581 1502,1582 depress RTN
 RELW A 1601,1679 1602,1680 depress RTN
 RELW A 1701,1775 1702,1776 depress RTN
 RELW A 1801,1875 1802,1876 depress RTN
 RELW A 1901,1973 1902,1974 depress RTN
 RELW A 2001,2095 2002,2096 depress RTN
 RELW A 2101,2189 2102,2190 depress RTN
 RELW A 2201,2275 2202,2276 depress RTN
 RELW A 2301,2369 2302,2370 depress RTN
 RELW A 2401,2463 2402,2464 depress RTN
 RELW A 2501,2559 2502,2560 depress RTN
 RELW A 2601,2659 2602,2660 depress RTN
 RELW A 2701,2767 2702,2768 depress RTN
 RELW A 2801,2859 2802,2860 depress RTN
 RELW A 2901,2945 2902,2946 depress RTN

Response: Responding HSTs display the directed position mode from the wash mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

AK 11-15

PARAGRAPH 8.13.5

Item	Date	Para	Entry	Orig	Qual. Accep.
139	11-15		1067 ELUS		M 3324 11-18-81
140	11-15		0206 209c		M 3324 11-18-81
<p>PROCEDURE 111 PARA 8.13.5 WAS TESTED SUCCESSFULLY. NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

✓ 102
 CUSTOMER D. H. ... 11-18-81
 Date

TEST CONDUCTOR [Signature] 11-18-81
 Date

QUALITY A. Kisor 11-15-81
 Date

PROCEDURE 111

Test Title: Paragraph 8.13.6 - Illegal Commands Verification in the BCS Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the BCS Mode was performed on 13 November 1981. The Collector System responded to a WASH Command, addressing a heliostat, paragraph 8.13.6.22 and the BCS targets were not available for further heliostat tracking. The corrective action implemented was to disallow a WASH Command in the BCS Mode. The corrective action was verified by retesting paragraph 8.13.6.22 with a heliostat in the BCS Mode. The heliostat did not accept the WASH Command. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the BCS Mode.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.13.6 Illegal commands issued in the BCS mode. The BCS mode directs heliostats to track the BCS target to which it is assigned. For this test, the BCS mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs shall display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the MARK position and display the MARK mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow mode and display the stow mode.

Enter: UNSTOW H 0951,0928,0902,0927 depress RTN

Response: Responding HSTs move to the CLLP, then moves in a wire walk to the CULP, then displays the standby mode.

Enter: BCST H 0951,0928,0902,0927 depress RTN

Response: Responding HSTs track their assigned BCS target and display the BCS track mode.

8.13.6.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.

8.13.6.2 Enter: STOW H 0951,0928,0902,0927 depress RTN

Response: OK O,WM 4,OF O,NI O

8.13.6.3 Enter: STOW W 12 depress RTN

Response: W ADDRESS NOT ALLOWED

8.13.6.4 Enter: STOW R 3 depress RTN

Response: R ADDRESS NOT ALLOWED

8.13.6.5 Enter: ALT1 H 0951,0928,0902,0927

Response: OK O,WM 4,OF O,NI O

8.13.6.6 Enter: ALT2 F 61

Response: F ADDRESS NOT ALLOWED

- 8.13.6.7 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.6.8 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.6.9 Enter: UNSTOW H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O
- 8.13.6.10 Enter: STAN H 0951,0928,0902,0927
Response: OK O,WM O,OF 1,NI O
- 8.13.6.11 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.12 Enter: TRAC H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O
- 8.13.6.13 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.14 Enter: INCR H 0951,0928,0902,0927
Response: H ADDRESS NOT ALLOWED
- 8.13.6.15 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.6.16 Enter: INCR A 1059,1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.17 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.18 Enter: DECR H 0951,0928,0902,0927
Response: H ADDRESS NOT ALLOWED
- 8.13.6.19 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.6.20 Enter: DECR A 1059,1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.21 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.22 Enter: WASH H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O

Remove

11-13

79

AK

80

Hung DES TABLE

8.13.6.23 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.6.24 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.6.25 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.6.26 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.6.27 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

✓ 8.13.6.28 Enter: REL W H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O

8.13.6.29 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.6.30 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.6.31 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.6.32 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.6.33 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.6.34 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.6.35 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.6.36 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.6.37 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

✓ 8.13.6.38 Enter: BCST A 1059,1069
Response: A ADDRESS NOT ALLOWED

*Accepted
by PREVIOUS test
AOK*

SKIP

AK

Initial _____ Date _____

✓ 8.13.6.39 Enter: BCST H 2901
Response: BCSTRACK: Only One HC/Target

AK

8.13.6.40 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.6.41 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

8.13.6.42 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.6.43 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

SKIP

8.13.6.44 Enter: RETU A 1059,1069
Response: A ADDRESS NOT ALLOWED

8.13.6.45 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.6.46 Enter: POSI ALL 0. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.6.47 Enter: OFFL H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O

8.13.6.48 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.6.49 Enter: ONLI H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O

8.13.6.50 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.6.51 Enter: MARK H 0951,0928,0902,0927
Response: OK O,WM 4,OF O,NI O

8.13.6.52 Enter: RLHI H 0951,0928,0902,0927
Response: STHWIND NOT GIVEN

8.13.6.53 Enter: RLHI F 61
Response: STHWIND NOT GIVEN

AK

11-17

8.13.6.54 Enter: RLHI S 312
Response: STHWIND NOT GIVEN

Initial

Date

8.13.6.55 Enter: RLHI W 12
Response: STHI WIND NOT GIVEN

8.13.6.56 Enter: RLHI R 3
Response: STHI WIND NOT GIVEN

8.13.6.57 Enter: RLHI A 1059,1069
Response: STHI WIND NOT GIVEN

8.13.6.58 Enter: RLHI ALL
Response: STHI WIND NOT GIVEN

AKP

AK

11-13

Initial

Date

8.13.6.59 Enter: DEFR H 0951,0928,0902,0927 ✓

Response: DEFOCUS NOT GIVEN

8.13.6.60 Enter: DEFR F 61

Response: DEFOCUS NOT GIVEN

8.13.6.61 Enter: DEFR S 312

Response: DEFOCUS NOT GIVEN

8.13.6.62 Enter: DEFR W 12

Response: DEFOCUS NOT GIVEN

8.13.6.63 Enter: DEFR R 3

Response: DEFOCUS NOT GIVEN

8.13.6.64 Enter: DEFR A 1059 1069

Response: DEFOCUS NOT GIVEN

8.13.6.65 Enter: DEFR ALL

Response: DEFOCUS NOT GIVEN

8.13.6.66 Enter: SAVE H 0951,0928,0927,0902 ✓

Response: H ADDRESS NOT ALLOWED

8.13.6.67 Enter: SAVE F 61

Response: F ADDRESS NOT ALLOWED

8.13.6.68 Enter: SAVE S 312

Response: S ADDRESS NOT ALLOWED

8.13.6.69 Enter: SAVE W 12

Response: W ADDRESS NOT ALLOWED

8.13.6.70 Enter: SAVE R 3

Response: R ADDRESS NOT ALLOWED

8.13.6.71 Enter: SAVE A 1059 1069

Response: A ADDRESS NOT ALLOWED

8.13.6.72 Enter: REST H 0951,0928,0902,0927 ✓

Response: H ADDRESS NOT ALLOWED

8.13.6.73 Enter: REST F 61

Response: F ADDRESS NOT ALLOWED

8.13.6.74 Enter: REST S 312

Response: S ADDRESS NOT ALLOWED

8.13.6.75 Enter: REST W 12

Response: W ADDRESS NOT ALLOWED

SKIP

AK

11-13

SKIP

AK

11-13

SKIP

Initial

Date

8.13.6.76 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED

8.13.6.77 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.6.78 Enter: AIMP H 0951,0928,0902,0927
Response: H ADDRESS NOT ALLOWED

8.13.6.79 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED

8.13.6.80 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS

8.13.6.81 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED

8.13.6.82 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED

8.13.6.83 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.6.84 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS

8.13.6.85 Enter: UPAT H 0951,0928,0902,0927
Response: H NUMBER OF CHARACTERS

8.13.6.86 Enter: UPAT ALL
Response: ALL NUMBER OF CHARACTERS

8.13.6.87 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED

8.13.6.88 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED

8.13.6.89 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

8.13.6.90 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.6.91 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

SKIP

AK

11-13

- 8.13.6.92 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.93 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.94 Enter: STAT F 61
Response: F INVALID ADDRESS
- 8.13.6.95 Enter: STAT S 312
Response: S INVALID ADDRESS
- 8.13.6.96 Enter STAT W 12
Response: W INVALID ADDRESS
- 8.13.6.97 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS
- 8.13.6.98 Enter: STHI H 09 1,0928,0902,0927
Response: H ADDRESS NOT ALLOWED
- 8.13.6.99 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED
- 8.13.6.100 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.6.101 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.6.102 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.6.103 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.104 Enter: DEFO H 0951,0928,0902,0927
Response: H ADDRESS NOT ALLOWED
- 8.13.6.105 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED
- 8.13.6.106 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.6.107 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

SKIP

AK 1-13

- 8.13.6.108 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.5.109 Enter: DEFO A 1059,1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.110 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.6.111 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.6.112 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.6.113 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.6.114 Enter: HOLD A 1059,1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.115 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.116 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.6.117 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.6.118 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.6.119 End of illegal commands verification
issued in the BCS mode.
- 8.13.6.120 Enter: RETU H 0951,0928,0902,0927 depress RTN
Response: Responding HSTs move to the standby
position and display the standby mode.
- 8.13.6.121 Enter: STOW ALL depress RTN
Response: Responding HSTs move to the stow
position and display the stow mode.

SKIP

AIC 11-13

8.13.7 Illegal commands issued in the Standby mode.
The standby mode positions the heliostats to
track the CULP. For this test, the standby

PARAGRAPH - 8.13.6

Item	Date	Para.	Entry	Orig	Qual. Accep.
78	11-13	8.13.6	Red line change BEST CMD To 4 CMD+		M 3334 11-17-81
79	11-13	8.13.6.22	Red line "Remove"		M 3334 11-17-81
80	11-13	8.13.6.22	Accepted wash from BCS, Hung BCS TARGETS		M 3334 11-18-81
81	11-13	8.13.6	Red line "Add 2903"		M 3334 11-17-81
<p>PROCEDURE 111 PARA. 8.13.6 was tested SUCCESSFULLY. - No Retest Required.</p> <p>ALL ITEM ABOVE WILL BE CLEARED.</p> <p>Selective CMD were skipped because of redundancy.</p>					

TEST CONDUCTOR DO McArthur 11-18-81 Date

TEST CONDUCTOR Flora 11-18-81 Date

QUALITY A. Keon 11-13-81 Date

5.18 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 111

Test Title: Paragraph 8.13.7 - Illegal Commands Verification
in the Standby Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the Standby Mode was performed on 13 November 1981. All procedural requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Standby Mode.

Retest Requirements: No further testing required. There were no open flag items to be cleared.

- 8.13.6.108 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.5.109 Enter: DEFO A 1059,1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.110 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.6.111 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.6.112 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.6.113 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.6.114 Enter: HOLD A 1059,1069
Response: A ADDRESS NOT ALLOWED
- 8.13.6.115 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.6.116 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.6.117 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.6.118 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.6.119 End of illegal commands verification
issued in the BCS mode.
- 8.13.6.120 Enter: RETU H 0951,0928,0902,0927 depress RTN
Response: Responding HSTs move to the standby
position and display the standby mode.
- 8.13.6.121 Enter: STOW ALL depress RTN
Response: Responding HSTs move to the stow
position and display the stow mode.
- 8.13.7 Illegal commands issued in the Standby mode.
The standby mode positions the heliostats to
track the CULP. For this test, the standby

KIP

AIC 11-13

8.13.7

Continued:

mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs shall display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

Enter: UNSTOW ALL depress RTN

Response: Responding HSTs shall move to track the CLP, move up their assigned corridor walks to track the CULP and display the standby mode.

8.13.7.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.

8.13.7.2 Enter: STOW W 12

Response: W ADDRESS NOT ALLOWED

*5- SKIP selective
CMD be cause of
Redundancy.*

AK 11-13

8.13.7.3 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED ✓ 5

8.13.7.4 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED ✓ 5

8.13.7.5 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED ✓ 5

8.13.7.6 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED ✓ 5

8.13.7.7 Enter: UNSTOW H 1059
Response: OK O,WM O,OF 1,NI O

8.13.7.8 Enter: UNSTOW F 61
Response: OK O,WM O,OF 10,NI 22

8.13.7.9 Enter: UNSTOW S 312
Response: OK O,WM O,OF 9,NI O

8.13.7.10 Enter: UNSTOW W 12
Response: OK O,WM O,OF 21,NI O

8.13.7.11 Enter: UNSTOW R 3
Response: OK O,WM O,OF 9,NI O

8.13.7.12 Enter: UNSTOW A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.7.13 Enter: UNSTOW ALL
Response: OK O,WM O,OF O,NI O

8.13.7.14 Enter: STAN H 1059
Response: OK O,WM O,OF 1,NI O

8.13.7.15 Enter: STAN F 61
Response: OK O,WM O,OF 10,NI 22

8.13.7.16 Enter: STAN S 312
Response: OK O,WM O,OF 9,NI O

8.13.7.17 Enter: STAN W 12
Response: OK O,WM O,OF 21,NI O

8.13.7.18 Enter: STAN R 3
Response: OK O,WM O,OF 9,NI O

Initial

Date

8.13.7.19 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.7.20 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.21 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.22 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.7.23 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.24 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.25 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.26 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.7.27 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.28 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.7.29 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.7.30 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.7.31 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.32 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.33 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.34 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

S

S

AK

11-13

Initial

Date

8.13.7.35 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.36 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.37 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.38 Enter: RELW H 1059
Response: OK O,WM O,OF 1,NI O

8.13.7.39 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.40 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.41 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.42 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.43 Enter: RELW A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.7.44 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.45 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.46 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.47 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.48 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.49 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.50 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

S

S

S

AK 11-13

8.13.7.51 Enter: RETU H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.7.52 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.53 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.54 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.55 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.56 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.57 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.58 Enter: POSI ALL 0. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.7.59 Enter: OFFL H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.7.60 Enter: OFFL F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.7.61 Enter: OFFL S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.7.62 Enter: OFFL W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.7.63 Enter: OFFL R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.7.64 Enter: OFFL A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.7.65 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.66 Enter: ONLI H 1059
Response: OK 0,WM 0,OF 1,NI 0

Initial

Date

8.13.7.67 Enter: ONLI F 61
Response: OK O,WM O,OF 10,NI 22

8.13.7.68 Enter: ONLI S 312
Response: OK O,WM O,OF 9,NI 0

8.13.7.69 Enter: ONLI W 12
Response: OK O,WM O,OF 21,NI 0

8.13.7.70 Enter: ONLI R 3
Response: OK O,WM O,OF 9,NI 0

8.13.7.71 Enter: ONLI A 1059 1069
Response: OK O,WM O,OF 6,NI 0

8.13.7.72 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.73 Enter: MARK H 1059
Response: OK O,WM O,OF 1,NI 0

8.13.7.74 Enter: MARK F 61
Response: OK O,WM O,OF 10,NI 22

8.13.7.75 Enter: MARK S 312
Response: OK O,WM O,OF 9,NI 0

8.13.7.76 Enter: MARK W 12
Response: OK O,WM O,OF 21,NI 0

8.13.7.77 Enter: MARK R 3
Response: OK O,WM O,OF 9,NI 0

8.13.7.78 Enter: MARK A 1059 1069
Response: OK O,WM O,OF 6,NI 0

8.13.7.79 Enter: MARK ALL
Response: OK O,WM O,OF 0,NI 0

8.13.7.80 Enter: RLHI H 1059
Response: STHWIND NOT GIVEN

8.13.7.81 Enter: RLHI F 61
Response: STHWIND NOT GIVEN

8.13.7.82 Enter: RLHI S 312
Response: STHWIND NOT GIVEN

8.13.7.83 Enter: RLHI W 12
Response: STHWIND NOT GIVEN

3

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5

AK

11-13

- 8.13.7.84 Enter: RLHI 3
Response: STHWIND NOT GIVEN
- 8.13.7.85 Enter: RLHI A 1059 1069
Response: STHWIND NOT GIVEN
- 8.13.7.86 Enter: RLHI ALL
Response: STHWIND NOT GIVEN
- 8.13.7.87 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN
- 8.13.7.88 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN
- 8.13.7.89 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN
- 8.13.7.90 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN
- 8.13.7.91 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN
- 8.13.7.92 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN
- 8.13.7.93 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN
- 8.13.7.94 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.7.95 Enter: SAVE S 312
Response: F ADDRESS NOT ALLOWED
- 8.13.7.96 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.7.97 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.7.98 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.7.99 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED

S

S

AK 11-13

Initial

Date

- 8.13.7.100 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.7.101 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.7.102 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.7.103 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.7.104 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.7.105 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.7.106 Enter: REST ALL
Response: OK O,WM O,OF O,NI O
- 8.13.7.107 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.7.108 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.7.109 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS
- 8.13.7.110 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.7.111 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.7.112 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.7.113 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.7.114 Enter: UPAI H 1059
Response: H NUMBER OF CHARACTERS
- 8.13.7.115 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS

5

OK 11-13

Initial

Date

8.13.7.116 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.117 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED

8.13.7.118 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.119 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.120 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.121 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.122 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.123 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.7.124 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.7.125 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.7.126 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.7.127 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.7.128 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.7.129 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.130 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.131 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.132 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

5

AK 11-13

Initial

Date

8.13.7.133 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.7.134 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.7.135 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.136 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.137 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.138 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.139 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.7.140 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.141 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.142 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.143 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.7.144 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.7.145 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.7.146 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.7.147 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.7.148 End of illegal commands verification issued
in the standby mode.

AK 11-13

8.13.7.149 Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

8.13.8 Illegal commands issued in the track mode. The track mode positions the heliostats to track their assigned aimpoint tracking arrays on the receiver. For this test, the track mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs shall display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

Enter: UNSTOW ALL depress RTN

Response: Responding HSTs shall move to track the CLLP, then move up to track the CULP and display the standby mode.

Enter: INCR R 5,4,3,2,1 depress RTN

Response: Responding HSTs shall move to track the special track coordinates and display the track mode.

*5- selective CMD
skipped because of
redundancy. AOK*

AOK 11-13

PROCEDURE 111

Test Title: Paragraph 8.13.8 - Illegal Commands Verification in the Track Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: The Illegal Commands Verification in the Track Mode was performed on 13 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Track Mode. The Highwind Stow and Defocus commands issued from the Graphics 1999 terminal were verified per memo dated 13 November 1981 from D. Tanner, Sandia.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.13.7.149 Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

8.13.8

Illegal commands issued in the track mode. The track mode positions the heliostats to track their assigned aimpoint tracking arrays on the receiver. For this test, the track mode shall be attained by initializing (booting) the HAC and applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs shall display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

Enter: UNSTOW ALL depress RTN

Response: Responding HSTs shall move to track the CLLP, then move up to track the CULP and display the standby mode.

Enter: INCR R 5,4,3,2,1 depress RTN

Response: Responding HSTs shall move to track the special track coordinates and display the track mode.

*5- Selective CMD
SKIPPED because of
Redundancy. AOK*

AK 11-13

- 8.13.8.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.
- 8.13.8.2 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.3 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.4 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.8.5 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.8.6 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.8.7 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.8 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.9 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.8.10 Enter: ALT2 ALL :
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.8.11 Enter: UNSTOW H 1059
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.8.12 Enter: UNSTOW F 61
Response: OK 0,WM 0,OF 10,NI 22
- 8.13.8.13 Enter: UNSTOW S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.8.14 Enter: UNSTOW W 12
Response: OK 0,WM 0,OF 21,NI 0

5

5

AK 11-13

Initial

Date

8.13.8.15 Enter: UNSTOW R 3

Response: OK 0,WM 0,OF 9,NI 0

8.13.8.16 Enter: UNSTOW A 1059 1069

Response: OK 0,WM 0,OF 6,NI 0

8.13.8.17 Enter: UNSTOW ALL

Response: OK 0,WM 0,OF 0,NI 0

8.13.8.18 Enter: STAN ALL

Response: ALL ADDRESS NOT ALLOWED ✓ 3

8.13.8.19 Enter: TRAC H 1059

Response: OK 0,WM 0,OF 1,NI 0

8.13.8.20 Enter: TRAC F 61

Response: OK 0,WM 0,OF 10,NI 22

8.13.8.21 Enter: TRAC S 312

Response: OK 0,WM 0,OF 9,NI 0

8.13.8.22 Enter: TRAC W 12

Response: OK 0,WM 0,OF 21,NI 0

8.13.8.23 Enter: TRAC R 3

Response: OK 0,WM 0,OF 9,NI 0

8.13.8.24 Enter: TRAC A 1059 1069

Response: OK 0,WM 0,OF 6,NI 0

8.13.8.25 Enter: TRAC ALL

Response: ALL ADDRESS NOT ALLOWED ✓ 3

8.13.8.26 Enter: INCR H 1059

Response: H ADDRESS NOT ALLOWED ✓ 3

8.13.8.27 Enter: INCR F 61

Response: F ADDRESS NOT ALLOWED ✓ 3

8.13.8.28 Enter: INCR S 312

Response: OK 0,WM 0,OF 9,NI 0

8.13.8.29 Enter: INCR W 12

Response: OK 0,WM 0,OF 21,NI 0

8.13.8.30 Enter: INCR R 3

Response: OK 0,WM 0,OF 9,NI 0

11-13

AK

Initial

Date

8.13.8.31 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.8.32 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.33 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.8.34 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.8.35 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.8.36 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.37 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.8.38 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.8.39 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.40 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.41 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.42 Enter: RELW H 1059 *OK*
Response: OK 0,WM 0,OF 1,NI 0

8.13.8.43 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.8.44 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.8.45 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.46 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.47 Enter: RELW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

5

AK

11-13

Initial

Date

8.13.8.48 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED ✓

8.13.8.49 Enter: BCST H 1059
Response: OK O,WM O,OF 1,NI O

8.13.8.50 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.8.51 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.8.52 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.53 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.54 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.8.55 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.56 Enter: RETU H 1059
Response: OK O,WM O,OF 1,NI O

8.13.8.57 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.8.58 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

8.13.8.59 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.60 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.61 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.8.62 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.63 Enter: POSI ALL O. -90.
Response: ALL ADDRESS NOT ALLOWED

S

S

AK

11-13

Initial

Date

8.13.8.64 Enter: OFFL H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.8.65 Enter: OFFL F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.8.66 Enter: OFFL S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.8.67 Enter: OFFL W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.8.68 Enter: OFFL R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.8.69 Enter: OFFL A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.8.70 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.8.71 Enter: ONLI H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.8.72 Enter: ONLI F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.8.73 Enter: ONLI S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.8.74 Enter: ONLI W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.8.75 Enter: ONLI R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.8.76 Enter: ONLI A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.8.77 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.8.78 Enter: MARK H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.8.79 Enter: MARK F 61
Response: OK 0,WM 0,OF 10,NI 22

Handwritten bracket and checkmarks spanning rows 8.13.8.70 to 8.13.8.77.

11-13

AK

Initial

Date

8.13.8.80 Enter: MARK S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.8.81 Enter: MARK W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.8.82 Enter: MARK R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.8.83 Enter: MARK A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.8.84 Enter: MARK ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.8.85 Enter: RLHI H 1059
Response: STHWIND NOT GIVEN

8.13.8.86 Enter: RLHI F 61
Response: STHWIND NOT GIVEN

8.13.8.87 Enter: RLHI S 312
Response: STHWIND NOT GIVEN

8.13.8.88 Enter: RLHI W 12
Response: STHWIND NOT GIVEN

8.13.8.89 Enter: RLHI R 3
Response: STHWIND NOT GIVEN

8.13.8.90 Enter: RLHI A 1059 1069
Response: STHWIND NOT GIVEN

8.13.8.91 Enter: RLHI ALL
Response: STHWIND NOT GIVEN

8.13.8.92 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

8.13.8.93 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

8.13.8.94 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

8.13.8.95 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

8.13.8.96 Enter: DEFR R 3

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5

AF

11-13

Initial

Date

- 8.13.8.97 Enter: DEFR A 1059 1069
Response: DEPOSITS NOT GIVEN
- 8.13.8.98 Enter: DEFR ALL
Response: DEPOSITS NOT GIVEN
- 8.13.8.99 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.8.100 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.8.101 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.8.102 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.103 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.104 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.8.105 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.8.106 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.8.107 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.8.108 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.109 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.110 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.8.111 Enter: REST ALL
Response: OK WITH D.OF C.N.I. O
- 8.13.8.112 Enter: ADD B 039
Response: ADDRESS NOT ALLOWED
- 8.13.8.113 Enter: ...
Response: ... NOT ALLOWED

5

11-13

AK

Initial

Date

- 8.13.8.114 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS
- 8.13.8.115 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.116 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.117 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.8.118 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.8.119 Enter: UFAI H 1059
Response: H NUMBER OF CHARACTERS
- 8.13.8.120 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.8.121 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.8.122 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED
- 8.13.8.123 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.8.124 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.125 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.126 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.8.127 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.8.128 Enter: STAT F 61
Response: F INVALID ADDRESS
- 8.13.8.129 Enter: STAT S 312
Response: S INVALID ADDRESS

5

AK 11-13

Initial

Date

- 8.13.8.130 Enter: STAT W 12
Response: W INVALID ADDRESS
- 8.13.8.131 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS
- 8.13.8.132 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.8.133 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED
- 8.13.8.134 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.8.135 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.136 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.137 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.8.138 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.8.139 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED
- 8.13.8.140 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.8.141 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.8.142 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.8.143 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.8.144 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.8.145 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

5

AK 11-13

8.13.8.146 Enter: HOLD W 1
Response: W ADDRESS NOT ALLOWED

8.13.8.147 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.148 Enter: HOLD A 1059,1069
Response: A ADDRESS NOT ALLOWED

8.13.8.149 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.150 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.8.151 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.152 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.153 End of illegal commands verification issued in the track mode.

8.13.8.154 Enter: DECR R 1,2,3,4,5 depress RTN
Response: Responding HSTs move to track the CULP and display the standby mode.

8.13.8.155 Enter: STOW ALL depress RTN
Response: Responding HSTs move to the stow position, performing corridor walks and display the stow mode.

8.13.9 Illegal commands issued in the mark mode. The mark mode positions the heliostats to encounter the AZEL encoder marks. For this test, the mark mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field and entering the following commands at the HAC control console:

S

INCR Left one HST at Standby

AK 11-13

from the GRAPHICS: DEFR US
DEFR HIGH WIND STOW
Complies AK with
Tanner's Request

AK 11-12

PARAGRAPH 8.13.8

Item	Date	Parag.	Entry	Orig	Qual. Accp.
82	11-13	MOD 8.13.8.154	INCR R 12345 LEFT ONE HST ON STANDBY - 0913 - CMD Jdo + WENT		11-18-81
PROCEDURE 111 PARA. 8.13.8 WAS TESTED SUCCESSFULLY. NO RETEST REQUIRED.					
ALL ITEMS ABOVE WILL BE CLEARED.					
TESTED GRAPHIC DEFOCUS and High Wind Stow as Requested in Memo to RAY weeks Nov 13 1981 FROM D. TANNER.					

CUSTOMER W. Wettschaw 11-18-81
Date

TEST CONDUCTOR Rose 11-13-81
Date

QUALITY A. Kucow 11-13-81
Date

PROCEDURE 111

Test Title: Paragraph 8.13.9 - Illegal Commands Verification in the Mark Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the Mark Mode was performed on 12 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Mark Mode.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedure flag items have been incorporated.

8.13.8.146 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.147 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.148 Enter: HOLD A 1059,1069
Response: A ADDRESS NOT ALLOWED

8.13.8.149 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.8.150 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.8.151 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.8.152 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.8.153 End of illegal commands verification issued
in the track mode.

8.13.8.154 Enter: DECR R 1,2,3,4,5 depress RTN
Response: Responding HSTs move to track
the CULP and display the standby
mode.

8.13.8.155 Enter: STOW ALL depress RTN
Response: Responding HSTs move to the stow
position, performing corridor
walks and display the stow mode.

8.13.9 Illegal commands issued in the mark mode. The
mark mode positions the heliostats to encounter
the AZEL encoder marks. For this test, the
mark mode shall be attained by initializing
(booting) the HAC, applying power to the helio-
stat field and entering the following commands
at the HAC control console:

S
INCR LEFT ONE
HST at standby
AK 11-13
from the GRAPHICS DEPR US
DEFR WITH STOW
HIGH complies AK with
Tanner's Request

AK 11-12

8.13.9

Cont.

Enter: LOAD ALL depress RTN ✓

Response: Responding HSTs shall display the initialized mode. ✓

Enter: STOW ALL depress RTN

Response: Responding HSTs shall display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the mark position and display the mark mode.

AK 11-12

8.13.9.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.

8.13.9.2 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.3 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.4 Enter: ALTI H 0951
Response: OK 0,WM 0,OF 1,NI 0

8.13.9.5 Enter: ALTI F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.9.6 Enter: ALTI S 312
Response: OK 0,WM 0,OF 9,NI 22

AK 11-12

Flags

60 NUMBER CRY 2106 2332, 2717 2102 2259
61 104 2046 going to mark
62 2102 NO MARK A064
63 2106 " NO AZ MOTION
64 2332 " NO AZ MOTION
65 2717 " NO EV MOTION

8.13.9.7 Enter: ALTI W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.9.8 Enter: ALTI R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.9.9 Enter: ALTI A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.9.10 Enter: ALTI ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.9.11 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.9.12 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.13 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.9.14 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.15 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.16 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.9.17 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.9.18 Enter: UNSTOW H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.9.19 Enter: UNSTOW F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.9.20 Enter: UNSTOW S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.9.21 Enter: UNSTOW W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.9.22 Enter: UNSTOW R 3
Response: OK 0,WM 0,OF 9,NI 0

AK

11-12

Initial

Date

8.13.9.39 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.40 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.41 Enter: INCR S 312
Response: OK O,WM O,OF 9,NI O

8.13.9.42 Enter: INCR W 12
Response: OK O,WM O,OF 21,NI O

8.13.9.43 Enter: INCR R 3
Response: OK O,WM O,OF 9,NI O

8.13.9.44 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.45 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.46 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.47 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.48 Enter: DECR S 312
Response: OK O,WM O,OF 9,NI O

8.13.9.49 Enter: DECR W 12
Response: OK O,WM O,OF 21,NI O

8.13.9.50 Enter: DECR R 3
Response: OK O,WM O,OF 9,NI O

8.13.9.51 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.52 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.53 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.54 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

AK

11-12

Initial

Date

8.13.9.55 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.56 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.57 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.58 Enter: RELW H 1059
Response: OK O,WM O,OF 1,NI O

8.13.9.59 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.60 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.61 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.62 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.63 Enter: RELW A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.9.64 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.65 Enter: BCST H 1059
Response: OK O,WM O,OF 1,NI O

8.13.9.66 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.67 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.68 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.69 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.70 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

AK 11-12

Initial

Date

8.13.9.71 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.72 Enter: RETU H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.9.73 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.74 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.75 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.76 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.77 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.78 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.79 Enter: POSI ALL 0. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.9.80 Enter: OFFL H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.9.81 Enter: OFFL F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.9.82 Enter: OFFL S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.9.83 Enter: OFFL W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.9.84 Enter: OFFL R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.9.85 Enter: OFFL A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.9.86 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

AK 11-12

111
Rev. 0

Initial

Date

8.13.9.87 Enter: ONLI H 1059
Response: OK O,WM O,OF 1,NI O

8.13.9.88 Enter: ONLI F 61
Response: OK O,WM O,OF 10,NI 22

8.13.9.89 Enter: ONLI S 312
Response: OK O,WM O,OF 9,NI O

8.13.9.90 Enter: ONLI W 12
Response: OK O,WM O,OF 21,NI O

8.13.9.91 Enter: ONLI R 3
Response: OK O,WM O,OF 9,NI O

8.13.9.92 Enter: ONLI A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.9.93 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.94 Enter: MARK H 1059
Response: OK O,WM O,OF 1,NI O

8.13.9.95 Enter: MARK F 61
Response: OK O,WM O,OF 10,NI 22

8.13.9.96 Enter: MARK S 312
Response: OK O,WM O,OF 9,NI O

8.13.9.97 Enter: MARK W 12
Response: OK O,WM O,OF 21,NI O

8.13.9.98 Enter: MARK R 3
Response: OK O,WM O,OF 9,NI O

8.13.9.99 Enter: MARK A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.9.100 Enter: MARK ALL
Response: OK O,WM O,OF 0,NI O

8.13.9.101 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN

8.13.9.102 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN

8.13.9.103 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN

66 REMOVE

67 1908 went to Mark stat

AK 11/12

8.13.9.104 Enter: RLHI W 12
Response: STHIWIND NOT GIVEN

8.13.9.105 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN

8.13.9.106 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN

8.13.9.107 Enter: RLHI ALL
Response: STHIWIND NOT GIVEN

8.13.9.108 Enter: DFFR H 1059
Response: DEFOCUS NOT GIVEN

8.13.9.109 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

8.13.9.110 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

8.13.9.111 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

8.13.9.112 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

8.13.9.113 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN

8.13.9.114 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN

8.13.9.115 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.116 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.117 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.118 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.119 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.120 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.121 Enter: SAVE ALL
Response: OK O,WM O,OF O,NI O

8.13.9.122 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.123 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.124 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED

3.13.9.125 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.126 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.127 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.128 Enter: REST ALL
Response: OK O,WM O,OF O,NI O

8.13.9.129 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.130 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.131 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS

8.13.9.132 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.133 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.134 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.135 Enter: UPAI H 1059
Response: H NUMBER OF CHARACTERS

68

68

AK 11-12

8.13.9.136 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS

8.13.9.137 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.138 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED

8.13.9.139 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.140 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.141 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.142 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.143 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.144 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.9.145 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.9.146 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.9.147 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.9.148 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.149 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.9.150 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.151 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.152 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

AV 11-12

Initial

Date

8.13.9.153 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.154 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.9.155 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.9.156 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.157 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.158 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.159 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.160 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.9.161 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.162 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.163 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.164 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.9.165 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.9.166 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.9.167 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.9.168 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.9.169 End of illegal commands verification issued
in the mark mode.

AV

11-12

111
Rev. 0

8.13.9.170 Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

8.13.10

Illegal commands issued in the ALT2 stow mode. The ALT2 stow mode positions the heliostats to respective ALT2 stow elevations and their last reported azimuth position. For this test, the ALT2 stow mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LCAD ALL depress RTN

Response: Responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

Enter: UNSTOW ALL depress RTN

Response: Responding HSTs move to track the CLLP, then move up to track the CULP and display the standby mode.

Enter: ALT2STOW ALL depress RTN

Response: Responding HSTs move to their respective Alt2 stow elevation positions while maintaining their last reported AZ position and display the Alt2 stow mode.

AK 11-12

Post then ALT2 because of mirror cleaning in field.

AK 11-13

PARAGRAPH 8.13.9

Item	Date	Para	Entry	Orig	Qual. Accep.
57	11-12	8.13.9	 		
60	11-12	8.13.9	NO MARK first try 2259 2102 HST's 2906, 2332, 2717, 2102		M 3334 11-12-81
61	11-12	8.13.9	0104 209C going to mark		M 3334 11-17-81
62	11-12	8.13.9	2102 stat A064 MARK		M 3334 11-17-81
63	11-12	8.13.9	2106 NO AZ motion MARK		M 3334 11-18-81
64	11-12	8.13.9	2332 NO AZ motion MARK		M 333 11-17-81
65	11-12	8.13.9	2717 NO EL motion MARK		M 333 11-17-81
66	11-12	8.13.9.87 93	Remove OFFLINE CMD's "Red line"		M 3334 11-17-81
67	11-12	8.13.9	1908 "O" (Tried Stew No EL motion) when in MARK.		M 3334 11-17-81
68	11-12	8.13.9.121 128	Red line "Remove"		M 3334 11-17-81
<p>PROCEDURE 111 PARA. 8.13.9 was Verified Successfully - No Retest Required.</p> <p>ALL ITEMS ABOVE will be cleared.</p>					

CUSTOMER DT Dittman 11-18-81
Date

TEST CONDUCTOR Rosa 11-12-81
Date

QUALITY A Kusow 11-12-81
Date

PROCEDURE 111

Test Title: Paragraph 8.13.10 - Illegal Commands Verification in the ALT2 Stow Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the ALT2 Stow Mode was performed on 13 November 1981. All procedural requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the ALT2 Stow Mode.

Retest Requirements: No further testing required. There were no flag items to be cleared.

8.13.9.170 Enter: STOW ALL depress RTN

AK

Response: Responding HSTs move to the stow position and display the stow mode.

8.13.10

Illegal commands issued in the ALT2 stow mode. The ALT2 stow mode positions the heliostats to respective ALT2 stow elevations and their last reported azimuth position. For this test, the ALT2 stow mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LCAD ALL depress RTN

Response: Responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

Enter: UNSTOW ALL depress RTN

Response: Responding HSTs move to track the CLLP, then move up to track the CULP and display the standby mode.

Enter: ALT2STOW ALL depress RTN

Response: Responding HSTs move to their respective Alt2 stow elevation positions while maintaining their last reported AZ position and display the Alt2 stow mode.

POST Then ALT2 Because of mirror cleaning in field.

AK 11-13

- 8.13.10.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.
- 8.13.10.2 Enter: STOW H 0951
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.10.3 Enter: STOW F 61
Response: OK 0,WM 0,OF 6,NI 22
- 8.13.10.4 Enter: STOW S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.10.5 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.10.6 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.10.7 Enter: STOW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.10.8 Enter: ALTI H 0951
Response: OK 0,WM 0,OF 1,NI 0
- 8.13.10.9 Enter: ALTI F 61
Response: OK 0,WM 0,OF 10,NI 22
- 8.13.10.10 Enter: ALTI S 312
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.10.11 Enter: ALTI W 12
Response: OK 0,WM 0,OF 21,NI 0
- 8.13.10.12 Enter: ALTI R 3
Response: OK 0,WM 0,OF 9,NI 0
- 8.13.10.13 Enter: ALTI A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0
- 8.13.10.14 Enter: ALTI ALL
Response: OK 0,WM 0,OF 0,NI 0
- 8.13.10.15 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.10.16 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED ✓ 5

8.13.10.17 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.18 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED ✓ 5

8.13.10.19 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED ✓ 5

8.13.10.20 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.10.21 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.10.22 Enter: STAN H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.10.23 Enter: STAN F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.10.24 Enter: STAN S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.25 Enter: STAN W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.10.26 Enter: STAN R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.27 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.10.28 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.10.29 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.10.30 Enter: TRAC F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.10.31 Enter: TRAC S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.32 Enter: TRAC W 12
Response: OK 0,WM 0,OF 21,NI 0

AK

11-13

Initial

Date

8.13.10.33 Enter: TRAC R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.34 Enter: TRAC A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.10.35 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.10.36 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED ✓ 5

8.13.10.37 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED ✓ 5

8.13.10.38 Enter: INCR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.39 Enter: INCR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.10.40 Enter: INCR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.41 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ 5

8.13.10.42 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.10.43 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED ✓ 5

8.13.10.44 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED ✓ 5

8.13.10.45 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.46 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.10.47 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.10.48 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ 5

8.13.10.49 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

AK 11-13

- 8.13.10.50 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.51 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.52 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.53 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.54 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.55 Enter: RELW H 1059
Response: OK O,WM O,OF 1,NI O
- 8.13.10.56 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.57 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.58 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.59 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.60 Enter: RELW A 1059 1069
Response: OK O,WM O,OF 6,NI O
- 8.13.10.61 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.62 Enter: BCST H 1059
Response: OK O,WM O,OF 1,NI O
- 8.13.10.63 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED ✓ 3
- 8.13.10.64 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED ✓ 3

AK 11-13

Initial

Date

8.13.10.65 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED ✓ 5

8.13.10.66 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED ✓ 3

8.13.10.67 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ 3

8.13.10.68 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.10.69 Enter: RETU H 1059
Response: OK O,WM O,OF 1,NI O

8.13.10.70 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED ✓ 5

8.13.10.71 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED ✓ 3

8.13.10.72 Enter: RETU W 12
Response: W ADDRESS NOT ALLOWED ✓ 5

8.13.10.73 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED ✓ 5

8.13.10.74 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED ✓ 5

8.13.10.75 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 3

8.13.10.76 Enter: POSI ALL O. -90.
Response: ALL ADDRESS NOT ALLOWED ✓ 3

8.13.10.77 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.10.78 Enter: ONLI H 1059
Response: OK O,WM O,OF 1,NI O

8.13.10.79 Enter: ONLI F 61
Response: OK O,WM O,OF 10,NI 22

8.13.10.80 Enter: ONLI S 312
Response: OK O,WM O,OF 9,NI O

AK 11-13

8.13.10.81 Enter: ONLI W 12
Response: OK O,WM O,OF 21,NI O

8.13.10.82 Enter: ONLI R 3
Response: OK O,WM O,OF 9,NI O

8.13.10.83 Enter: ONLI A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.10.84 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED ✓ 5

8.13.10.85 Enter: MARK H 1059
Response: OK O,WM O,OF 1,NI O

8.13.10.86 Enter: MARK F 61
Response: OK O,WM O,OF 10,NI 22

8.13.10.87 Enter: MARK S 312
Response: OK O,WM O,OF 9,NI O

8.13.10.88 Enter: MARK W 12
Response: OK O,WM O,OF 21,NI O

8.13.10.89 Enter: MARK R 3
Response: OK O,WM O,OF 9,NI O

8.13.10.90 Enter: MARK A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.10.91 Enter: MARK ALL
Response: OK O,WM O,OF O,NI O

8.13.10.92 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN ✓ 5

8.13.10.93 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN ✓ 5

8.13.10.94 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN ✓ 5

8.13.10.95 Enter: RLHI W 12
Response: STHIWIND NOT GIVEN ✓ 5

8.13.10.96 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN ✓ 5

8.13.10.97 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN ✓ 5

Initial

Date

8.13.10.98 Enter: RLHI ALL
Response: STHI WIND NOT GIVEN

8.13.10.99 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

8.13.10.100 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

8.13.10.101 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

8.13.10.102 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

8.13.10.103 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

8.13.10.104 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN

8.13.10.105 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN

8.13.10.106 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED

8.13.10.107 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED

8.13.10.108 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED

8.13.10.109 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED

8.13.10.110 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED

8.13.10.111 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.10.112 Enter: SAVE ALL
Response: OK O,WM O,OF O,NI O

8.13.10.113 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED

8.13.10.114 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED

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S

S

11-13

AK

- 8.13.10.115 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.10.116 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.10.117 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.10.118 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.10.119 Enter: REST ALL
Response: OK O,WM O,OF O,NI O
- 8.13.10.120 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.10.121 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.10.122 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS
- 8.13.10.123 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.10.124 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.10.125 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.10.126 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.10.127 Enter: UPAI H 1059
Response: H NUMBER OF CHARACTERS
- 8.13.10.128 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.10.129 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.10.130 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED

5

AK 11-13

8.13.10.131 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

8.13.10.132 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.10.133 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.10.134 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.10.135 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.10.136 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.10.137 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.10.138 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.10.139 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.10.140 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.10.141 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.10.142 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.10.143 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.10.144 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.10.145 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.10.146 Enter: STHI ALL
Response: OK 0,IM 0,OF 7,NI 0

8.13.10.147 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

Initial

Date

5

AK 11-13

111
Rev. 0

Initial

Date

8.13.10.148 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.10.149 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.10.150 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.10.151 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.10.152 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.10.153 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.10.154 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.10.155 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.10.156 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.10.157 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.10.158 Enter: HOLD ALL
Response; ALL ADDRESS NOT ALLOWED

8.13.10.159 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.10.160 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.10.161 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.10.162 End of illegal commands verification issued
in the ALT2 stow mode.

5

AK 11-13

8.13.10.163 Enter: UNSTOW ALL depress RTN
 Response: Responding HSTs move to track the CULP and display the standby mode.

8.13.10.164 Enter: STOW ALL depress RTN
 Response: Responding HSTs move to the stow position, performing corridor walks, and display the stow mode.

8.13.11 Illegal commands issued in the Alt1 stow mode.
 The ALT1 stow mode positions the heliostats in the ALT1 AZ and EL stow positions. For this test, the ALT1 stow mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field, and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

Enter: ALT1STOW ALL depress RTN

Response: Responding HSTs move to their respective AZEL Alt1 stow positions and display the Alt1 stow mode.

72

2128 Trouble
2130 Stowing

73

6833
Run Away

74

HAD RUN AWAY
1633

75

HAD RUN AWAY
2332

76

1430 / 400

AK

11-13

8.13.10.163 Enter: UNSTOW ALL depress RTN
 Response: Responding HSTs move to track the CULP and display the standby mode.

8.13.10.164 Enter: STOW ALL depress RTN
 Response: Responding HSTs move to the stow position, performing corridor walks, and display the stow mode.

8.13.11 Illegal commands issued in the Alt1 stow mode. The ALT1 stow mode positions the heliostats in the ALT1 AZ and EL stow positions. For this test, the ALT1 stow mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field, and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN
 Response: Responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN
 Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN
 Response: Responding HSTs move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN
 Response: Responding HSTs move to the stow position and display the stow mode.

Enter: ALT1STOW ALL depress RTN
 Response: Responding HSTs move to their respective AZEL Alt1 stow positions and display the Alt1 stow mode.

AK

11-13

72

2128 Trouble
2130 Stowing

73

6833
Run Away

74

HAD Run Away
1633

75

HAD Run Away
2332

76

1430/400

AK

11-13

5.22 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 111

Test Title: Paragraph 8.13.11 - Illegal Commands Verification in the ALT1 Stow Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the ALT1 Stow Mode was performed on 13 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the ALT1 Stow Mode.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.13.10.163 Enter: ~~STOW ALL~~ depress RTN

Response: Responding HSTs move to track the CULP and display the standby mode.

8.13.10.164 Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position, performing corridor walks, and display the stow mode.

8.13.11

Illegal commands issued in the Alt1 stow mode.

The ALT1 stow mode positions the heliostats in the ALT1 AZ and EL stow positions. For this test, the ALT1 stow mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field, and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode.

Enter: ALT1STOW ALL depress RTN

Response: Responding HSTs move to their respective AZEL Alt1 stow positions and display the Alt1 stow mode.

AL

11-13

72 2128 Trouble
2130 STOWING

73 6833
RUN AWAY

74 HAD RUN AWAY
1633

75 HAD RUN AWAY
2332

76 1430/400

AL

11-13

8.13.11.1 At the HAC control console, the following
illegal commands shall be entered and the
command responses verified as to proper
error messages.

8.13.11.2 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.3 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.4 Enter: ALT1 H 0951
Response: OK 0,WM 0,OF 1,NI 0

8.13.11.5 Enter: ALT1 F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.11.6 Enter: ALT1 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.7 Enter: ALT1 W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.11.8 Enter: ALT1 R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.9 Enter: ALT1 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.11.10 Enter: ALT1 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.11.11 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.11.12 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.13 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.14 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.15 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED

AK 11-13

8.13.11.16 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.11.17 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.11.18 Enter: STAN H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.11.19 Enter: STAN F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.11.20 Enter: STAN S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.21 Enter: STAN W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.11.22 Enter: STAN R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.23 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.11.24 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.25 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.11.26 Enter: TRAC F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.11.27 Enter: TRAC S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.28 Enter: TRAC W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.11.29 Enter: TRAC R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.30 Enter: TRAC A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.11.31 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

AK 11-13

8.13.11.32 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.11.33 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.34 Enter: INCR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.35 Enter: INCR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.11.36 Enter: INCR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.37 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.11.38 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.39 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.11.40 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.41 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.42 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.11.43 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.44 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.11.45 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.46 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.47 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

AK

11-13

8.13.11.48 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.49 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.50 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.51 Enter: RELW H 1059
Response: OK O,WM O,OF 1,NI O

8.13.11.52 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.53 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.11.54 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.55 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.56 Enter: RELW A 1059 1069
Response: OK O,WM O,OF 6,NI O

8.13.11.57 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.58 Enter: BCST H 1059
Response: OK O,WM O,OF 1,NI O

8.13.11.59 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.60 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.11.61 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.62 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.63 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

AK 11-13

8.13.11.64	Enter: BCST ALL Response: ALL ADDRESS NOT ALLOWED
8.13.11.65	Enter: RETU H 1059 Response: OK O,WM O,OF 1,NI O
8.13.11.66	Enter: RETU F 61 Response: F ADDRESS NOT ALLOWED
8.13.11.67	Enter: RETU S 312 Response: S ADDRESS NOT ALLOWED
8.13.11.68	Enter: RETU W 12 Response: W ADDRESS NOT ALLOWED
8.13.11.69	Enter: RETU R 3 Response: R ADDRESS NOT ALLOWED
8.13.11.70	Enter: RETU A 1059 1069 Response: A ADDRESS NOT ALLOWED
8.13.11.71	Enter: RETU ALL Response: ALL ADDRESS NOT ALLOWED
8.13.11.72	Enter: POSI ALLO. -90. Response: ALL ADDRESS NOT ALLOWED
8.13.11.73	Enter: OFFL ALL Response: ALL ADDRESS NOT ALLOWED
8.13.11.74	Enter: ONLI H 1059 Response: OK O,WM O,OF 1,NI O
8.13.11.75	Enter: ONLI F 61 Response; OK O,WM O,OF 10,NI 22
8.13.11.76	Enter: ONLI S 312 Response: OK O,WM O,OF 9,NI O
8.13.11.77	Enter: ONLI W 12 Response: OK O,WM O,OF 21,NI O
8.13.11.78	Enter: ONLI R 3 Response: OK O,WM O,OF 9,NI O
8.13.11.79	Enter: ONLI A 1059 1069 Response: OK O,WM O,OF 6,NI O

11-13

AK

8.13.11.80 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.81 Enter: MARK H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.11.82 Enter: MARK F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.11.83 Enter: MARK S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.84 Enter: MARK W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.11.85 Enter: MARK R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.11.86 Enter: MARK A 1059 1069
Response: OK 0,WM 0,OF 5,NI 0

8.13.11.87 Enter: MARK ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.11.88 Enter: RLHI H 1059
Response: STEHWIND NOT GIVEN

8.13.11.89 Enter: RLHI F 61
Response: STEHWIND NOT GIVEN

8.13.11.90 Enter: RLHI S 312
Response: STEHWIND NOT GIVEN

8.13.11.91 Enter: RLHI W 12
Response: STEHWIND NOT GIVEN

8.13.11.92 Enter: RLHI R 3
Response: STEHWIND NOT GIVEN

8.13.11.93 Enter: RLHI A 1059 1069
Response: STEHWIND NOT GIVEN

8.13.11.94 Enter: RLHI ALL
Response: STEHWIND NOT GIVEN

8.13.11.95 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

AK

11-13

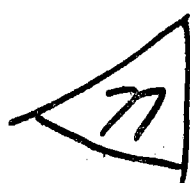
- 8.13.11.96 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN
- 8.13.11.97 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN
- 8.13.11.98 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN
- 8.13.11.99 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN
- 8.13.11.100 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN
- 8.13.11.101 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN
- 8.13.11.102 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.11.103 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.11.104 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.11.105 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.11.106 Enter: SAVE R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.11.107 Enter: SAVE A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.11.108 Enter: SAVE ALL
Response: OK O,WM O,OF O,NI O
- 8.13.11.109 Enter: REST H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.11.110 Enter: REST F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.11.111 Enter: REST S 312
Response: S ADDRESS NOT ALLOWED

77

11-13

AK

- 8.13.11.112 Enter: REST W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.11.113 Enter: REST R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.11.114 Enter: REST A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.11.115 Enter: REST ALL *e*
Response: OK O,WM O,OF O,NI O
- 8.13.11.116 Enter: AIMP H 1059
Response: H ADDRESS NOT ALLOWED
- 8.13.11.117 Enter: AIMP F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.11.118 Enter: AIMP S 312
Response: 312 NUMBER OF CHARACTERS
- 8.13.11.119 Enter: AIMP W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.11.120 Enter: AIMP R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.11.121 Enter: AIMP A 1059 1069
Response: A ADDRESS NOT ALLOWED
- 8.13.11.122 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.11.123 Enter: UPAI H 1059
Response: H NUMBER OF CHARACTERS
- 8.13.11.124 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS
- 8.13.11.125 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED
- 8.13.11.126 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED
- 8.13.11.127 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED



AK
11-13

8.13.11.128 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.129 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.130 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.11.131 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.132 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.11.133 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.11.134 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.11.135 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.11.136 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.11.137 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.11.138 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

8.13.11.139 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.140 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.141 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.11.142 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.11.143 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

AK
11-13

8.13.11.144 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.11.145 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.146 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.147 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.11.148 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.11.149 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.11.150 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.151 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.152 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.11.153 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.11.154 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED

8.13.11.155 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED

8.13.11.156 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED

8.13.11.157 End of illegal commands verification issued
in the ALT1 stow mode.

8.13.11.158 Enter: STOW ALL depress RTN
Response: Responding HSTs move to the
stow position and display the
stow mode.

AK

11-13

PARAGRAPH 8.13.11

Item	Date	Para.	Entry	Orig	Qual. Accep.
72	11-13	8.13.11	STAT EGGY would not accept STOW CMD "STOW ALL" - STOW H for both only 1 took - Another STOW H took The other 2128-2130		M 3334 11-18-81
73	11-13	8.13.11	6833 Run Away CW AZ STAT showed No AZ Motion		M 3334 11-13-81
74	11-13	8.13.11	1633 AT CW AZ LHS had Run Away		M 3334 11-17-81
75	11-13	8.13.11	2332		M 3334 11-17-81
76	11-13	8.13.11	1430 stat 400		M 3334 11-18-81
77	11-13	8.13.11, 11.108	Red line "Remove"		M 3334 11-17-81
<p>PROCEDURE 111 PARA. 8.13.11 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

005 Duet... 11-18-81
Date

TEST CONDUCTOR: Rose 11-13-81
Date

QUALITY: A. Keason 11-13-81
Date

5.23 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 111

Test Title: Paragraph 8.13.12 - Illegal Commands Verification in the Stow Mode.

Acceptance Criteria: Illegal commands were verified by the control system displaying the appropriate error message. A control system command verification matrix (Appendix 10C) shall be used which identifies all software commands and responses.

Test Results: Illegal Commands Verification in the Stow Mode was performed on 12 November 1981. All requirements of the procedure were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Illegal Commands Verification in the Stow Mode.

Retest Requirements: No further tests required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.13.12

Illegal commands issued in the stow mode.
The stow mode positions the heliostats in their normal stow orientation of AZ East and EL horizontal with reflective surfaces facing down. For this test, the stow mode shall be attained by initializing (booting) the HAC, applying power to the heliostat field and entering the following commands at the HAC control console:

Enter: LOAD ALL depress RTN

Response: Responding HSTs shall display the initialized mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall display the stow mode.

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the mark position and display the mark mode.

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

8.13.12.1 At the HAC control console, the following illegal commands shall be entered and the command responses verified as to proper error messages.

AK

11-12

8.13.12.2 Enter: STOW H 0951
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.3 Enter: STOW F 61
Response: OK 0,WM 0,OF 6,NI 22

8.13.12.4 Enter: STOW S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.5 Enter: STOW W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.6 Enter: STOW R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.7 Enter: STOW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.12.8 Enter: ALT2 H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.9 Enter: ALT2 F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.10 Enter: ALT2 S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.11 Enter: ALT2 W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.12 Enter: ALT2 R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.13 Enter: ALT2 A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.12.14 Enter: ALT2 ALL
Response: OK 0,WM 0,OF 0,NI 0

8.13.12.15 Enter: STAN H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.16 Enter: STAN F 61
Response: OK 0,WM 0,OF 10,NI 22

AK

11-12

8.13.12.17 Enter: STAN S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.18 Enter: STAN W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.12.19 Enter: STAN R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.20 Enter: STAN A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.12.21 Enter: STAN ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.22 Enter: TRAC H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.23 Enter: TRAC F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.12.24 Enter: TRAC S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.25 Enter: TRAC W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.12.26 Enter: TRAC R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.27 Enter: TRAC A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.12.28 Enter: TRAC ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.29 Enter: INCR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.12.30 Enter: INCR F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.31 Enter: INCR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.32 Enter: INCR W 12
Response: OK 0,WM 0,OF 21,NI 0

AK 11-12

8.13.12.33 Enter: INCR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.34 Enter: INCR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.12.35 Enter: INCR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.36 Enter: DECR H 1059
Response: H ADDRESS NOT ALLOWED

8.13.12.37 Enter: DECR F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.38 Enter: DECR S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.39 Enter: DECR W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.12.40 Enter: DECR R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.41 Enter: DECR A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.12.42 Enter: DECR ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.43 Enter: WASH F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.44 Enter: WASH S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.45 Enter: WASH W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.46 Enter: WASH R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.47 Enter: WASH ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.48 Enter: RELW H 1059
Response: OK 0,WM 0,OF 1,NI 0

AK

11-12

8.13.12.49 Enter: RELW F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.50 Enter: RELW S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.51 Enter: RELW W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.52 Enter: RELW R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.53 Enter: RELW A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.12.54 Enter: RELW ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.55 Enter: BCST H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.56 Enter: BCST F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.57 Enter: BCST S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.58 Enter: BCST W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.59 Enter: BCST R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.60 Enter: BCST A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.12.61 Enter: BCST ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.62 Enter: RETU H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.63 Enter: RETU F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.64 Enter: RETU S 312
Response: S ADDRESS NOT ALLOWED

AK 11-12

8.13.12.65 Enter: W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.66 Enter: RETU R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.67 Enter: RETU A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.12.68 Enter: RETU ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.69 Enter: POSI ALL 0. -90.
Response: ALL ADDRESS NOT ALLOWED

8.13.12.70 Enter: OFFL ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.71 Enter: ONLI H 1059
Response: OK 0,WM 0,OF 1,NI 0

8.13.12.72 Enter: ONLI F 61
Response: OK 0,WM 0,OF 10,NI 22

8.13.12.73 Enter: ONLI S 312
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.74 Enter: ONLI W 12
Response: OK 0,WM 0,OF 21,NI 0

8.13.12.75 Enter: ONLI R 3
Response: OK 0,WM 0,OF 9,NI 0

8.13.12.76 Enter: ONLI A 1059 1069
Response: OK 0,WM 0,OF 6,NI 0

8.13.12.77 Enter: ONLI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.78 Enter: RLHI H 1059
Response: STHIWIND NOT GIVEN

8.13.12.79 Enter: RLHI F 61
Response: STHIWIND NOT GIVEN

8.13.12.80 Enter: RLHI S 312
Response: STHIWIND NOT GIVEN

57
[Handwritten signature]

AK 11-12

Initial

Date

8.13.12.81 Enter: RLHI W 12
Response: STHIWIND NOT GIVEN

8.13.12.82 Enter: RLHI R 3
Response: STHIWIND NOT GIVEN

8.13.12.83 Enter: RLHI A 1059 1069
Response: STHIWIND NOT GIVEN

8.13.12.84 Enter: RLHI ALL
Response: STHIWIND NOT GIVEN

8.13.12.85 Enter: DEFR H 1059
Response: DEFOCUS NOT GIVEN

8.13.12.86 Enter: DEFR F 61
Response: DEFOCUS NOT GIVEN

8.13.12.87 Enter: DEFR S 312
Response: DEFOCUS NOT GIVEN

8.13.12.88 Enter: DEFR W 12
Response: DEFOCUS NOT GIVEN

8.13.12.89 Enter: DEFR R 3
Response: DEFOCUS NOT GIVEN

8.13.12.90 Enter: DEFR A 1059 1069
Response: DEFOCUS NOT GIVEN

8.13.12.91 Enter: DEFR ALL
Response: DEFOCUS NOT GIVEN

8.13.12.92 Enter: SAVE H 1059
Response: H ADDRESS NOT ALLOWED

8.13.12.93 Enter: SAVE F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.94 Enter: SAVE S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.95 Enter: SAVE W 12
Response: W ADDRESS NOT ALLOWED

AK 11-2

8.13.12.96	Enter: SAVE R 3 Response: R ADDRESS NOT ALLOWED	
8.13.12.97	Enter: SAVE A 1059 1069 Response: A ADDRESS NOT ALLOWED	
8.13.12.98	Enter: SAVE ALL Response: OK O,WM O,OF O,NI O	
8.13.12.99	Enter: REST H 1059 Response: H ADDRESS NOT ALLOWED	
8.13.12.100	Enter: REST F 61 Response: F ADDRESS NOT ALLOWED	
8.13.12.101	Enter: REST S 312 Response: S ADDRESS NOT ALLOWED	
8.13.12.102	Enter: REST W 12 Response: W ADDRESS NOT ALLOWED	
8.13.12.103	Enter: REST R 3 Response: R ADDRESS NOT ALLOWED	
8.13.12.104	Enter: REST A 1059 1069 Response: A ADDRESS NOT ALLOWED	
8.13.12.105	Enter: REST ALL Response: OK O,WM O,OF O,NI O	<i>field went to offline Then back to show</i>
8.13.12.106	Enter: AIMP H 1059 Response: H ADDRESS NOT ALLOWED	
8.13.12.107	Enter: AIMP F 61 Response: F ADDRESS NOT ALLOWED	
8.13.12.108	Enter: AIMP S 312 Response: 312 NUMBER OF CHARACTERS	
8.13.12.109	Enter: AIMP W 12 Response: W ADDRESS NOT ALLOWED	
8.13.12.110	Enter: AIMP R 3 Response: R ADDRESS NOT ALLOWED	
8.13.12.111	Enter: AIMP A 1059 1069 Response: A ADDRESS NOT ALLOWED	

AK 11-12

8.13.12.112 Enter: AIMP ALL
Response: ALL NUMBER OF CHARACTERS

8.13.12.113 Enter: UPAI H 1059
Response: H NUMBER OF CHARACTERS

8.13.12.114 Enter: UPAI ALL
Response: ALL NUMBER OF CHARACTERS

8.13.12.115 Enter: UPBI F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.116 Enter: UPBI W 312
Response: W ADDRESS NOT ALLOWED

8.13.12.117 Enter: UPBI S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.118 Enter: UPBI W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.119 Enter: UPBI R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.120 Enter: UPBI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.12.121 Enter: UPBI ALL
Response: ALL ADDRESS NOT ALLOWED

8.13.12.122 Enter: STAT F 61
Response: F INVALID ADDRESS

8.13.12.123 Enter: STAT S 312
Response: S INVALID ADDRESS

8.13.12.124 Enter: STAT W 12
Response: W INVALID ADDRESS

8.13.12.125 Enter: STAT A 1059 1069
Response: A INVALID ADDRESS

8.13.12.126 Enter: STHI H 1059
Response: H ADDRESS NOT ALLOWED

8.13.12.127 Enter: STHI F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.12.128 Enter: STHI S 312
Response: S ADDRESS NOT ALLOWED

11-12

AK

Initial

Date

8.13.12.129 Enter: STHI W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.130 Enter: STHI R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.131 Enter: STHI A 1059 1069
Response: A ADDRESS NOT ALLOWED

8.13.12.132 Enter: STHI ALL
Response: OK O,WM O,OF 7,NI O

8.13.12.133 Enter: DEFO H 1059
Response: H ADDRESS NOT ALLOWED

8.13.12.134 Enter: DEFO F 61 9
Response: F ADDRESS NOT ALLOWED

8.13.12.135 Enter: DEFO S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.136 Enter: DEFO W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.137 Enter: DEFO R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.138 Enter: DEFO A 1059 1069
Response: A ADDRESS NOT ALLOWED

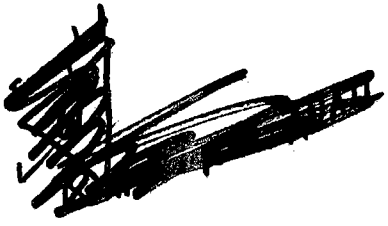
8.13.12.139 Enter: HOLD F 61
Response: F ADDRESS NOT ALLOWED

8.13.12.140 Enter: HOLD S 312
Response: S ADDRESS NOT ALLOWED

8.13.12.141 Enter: HOLD W 12
Response: W ADDRESS NOT ALLOWED

8.13.12.142 Enter: HOLD R 3
Response: R ADDRESS NOT ALLOWED

8.13.12.143 Enter: HOLD A 1059 1069
Response: A ADDRESS NOT ALLOWED



AK 11-12

- 8.13.12.144 Enter: HOLD ALL
Response: ALL ADDRESS NOT ALLOWED
- 8.13.12.145 Enter: LOAD S 312
Response: S ADDRESS NOT ALLOWED
- 8.13.12.146 Enter: LOAD W 12
Response: W ADDRESS NOT ALLOWED
- 8.13.12.147 Enter: LOAD R 3
Response: R ADDRESS NOT ALLOWED
- 8.13.12.148 End of illegal commands verification issued
in the stow mode.

AK 11-12

PROCEDURE III

Test Title: Paragraph 8.14 - Emergency Commands Verification

Acceptance Criteria: Commanded heliostats responded to Emergency commands and externally initiated emergency command signals. 8.14.1, 8.14.3, 8.14.5

Upon loss of communication between the HAC and a single HFC group, the HFC group returned to the stow position. 8.14.6

Test Results: The Emergency Commands Verification was performed on 15 November 1981. Paragraph 8.14.3, Emergency Hold Verification was performed during testing of paragraph 8.9, HAC control verification of Multiple Ring Operational Commands. Paragraph 8.14.6, response verification for HAC communication loss to a single HFC group, was performed during HAC Control Verification of Full Field Operational Commands, paragraph 8.12. The Collector Subsystem is considered to have passed the Emergency Commands Verification.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.14 Emergency Commands Verification

8.14.1 Emergency standby (ESTA) commands verification:

8.14.1.1 At the HAC control console, the following operational commands shall be entered and the emergency command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. The full field of heliostats shall be used for this test.

8.14.1.2 Enter: LOAD ALL depress RTN

Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

8.14.1.3 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

8.14.1.4 Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

8.14.1.5 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

CAUTION: For step 8.14.1.6, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.

8.14.1.6 Enter: UNSTOW ALL depress RTN

Response: The commanded HST beams shall track the CLP, then move upward to track

AK 11-15

8.14.1.6 Continued

the CULP and display standby mode from the stow mode.

8.14.1.7 Enter: INCREASE R5, 4, 3, 2, 1 depress RTN

Response: Responding HSTs shall track the special track position and display the track mode from the standby mode.

8.14.1.8 Activate a simulated field power loss signal with the Computer MDAC, Simulator, P/N TA-26, connected to the power interrupt pin at the HAC and enter the command LOAD ALL.

8.14.1.9 Enter: ESTANDBY H C235 depress RTN

Response: Responding HST moves to the standby position.

8.14.1.10 Enter: ESTANDBY F 57 depress RTN

Response: Responding HSTs move to the standby position.

8.14.1.11 Enter: ESTANDBY S 106 depress RTN

Response: Responding HSTs move to the standby position.

8.14.1.12 Enter: ESTANDBY W 01 depress RTN

Response: Responding HSTs move to the standby position.

8.14.1.13 Enter: ESTANDBY R 1 depress RTN

Response: Responding HSTs move to the standby position.

8.14.1.14 Enter: ESTANDBY A 2065,2095 depress RTN

Response: Responding HSTs move to the standby position.

8.14.1.15 Enter: ESTANDBY ALL depress RTN

Response: Responding HSTs move to the standby position.

8.14.1.16 Remove the simulated power loss signal from the HAC.

AK 11-15
AK 11-15
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AK 11-15
AK 11-15
AK 11-15
AK 11-15
AK 11-15

8.14.1.17 Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display the stow mode. End of Emergency Standby Command Verification.

8.14.2 Emergency stow (ESTOW) commands verification:

8.14.2.1 At the HAC control console, the following operational commands shall be entered and the emergency command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses.

8.14.2.2 The emergency stow (ESTOW) command shall be issued during a simulated power loss while responding HSTs are in corridor walks.

8.14.2.3 Enter: LOAD ALL depress RTN
Response: No HST motion, responding HSTs shall display the initialization mode from the transition mode.

8.14.2.4 Enter: STOW ALL depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the initialized mode.

8.14.2.5 Enter: MARK ALL depress RTN
Response: Responding HSTs move to the mark position and display the mark mode from the stow mode.

8.14.2.6 Enter: STOW ALL depress RTN
Response: Responding HSTs move to the stow position and display the stow mode from the mark mode.

8.14.2.7 The simulated power loss and emergency stow commands shall be performed during the corridor walks sequence of the unstow command.

8.14.2.8 Enter: UNSTOW ALL depress RTN
Response: Responding HSTs shall track the CLLP, then move upward to track the CULP.

AK 11-15

AK 11-15

8.14.2.9 Activate a simulated field power loss signal with the emergency signal simulator connected to the power interrupt pin at the HAC, and enter the command LOAD ALL.

8.14.2.10 Enter: ESTOW H 0235 depress RTN
Response: Responding HST moves to the stow position.

8.14.2.11 Enter: ESTOW F 57 depress RTN
Response: Responding HSTs move to the stow position.

8.14.2.12 Enter: ESTOW S 106 depress RTN
Response: Responding HSTs move to the stow position.

8.14.2.13 Enter: ESTOW W 01 depress RTN
Response: Responding HSTs move to the stow position.

8.14.2.14 Enter: ESTOW R 1 depress RTN
Response: Responding HSTs move to the stow position.

8.14.2.15 Enter: ESTOW A 2065,2095 depress RTN
Response: Responding HSTs move to the stow position.

8.14.2.16 Enter: ESTOW ALL depress RTN
Response: Responding HSTs move to the stow position.

8.14.2.17 Remove the simulated power loss signal from the HAC, end of emergency stow command verification.

8.14.3 Emergency hold command verification:

8.14.3.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses.

AK 11-15
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AK 11-15
AK 11-15
AK 11-15
AK 11-15

Completed
DURNING
PARA 8.9
ADK
AK 11-14

- 8.14.3.2 Enter: MARK ALL depress RTN
 Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.
- 8.14.3.3 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.
- 8.14.3.4 Enter: MARK ALL depress RTN
 Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.
- 8.14.3.5 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.
- 8.14.3.6 Enter: UNSTOW ALL depress RTN
 Response: The commanded HST beam shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.
- 8.14.3.7 During the unstow movements the emergency hold commands shall be issued.
- 8.14.3.8 Enter: HOLD H 0235 depress RTN
 Response: Responding HST shall stop in transition and maintain position.
- 8.14.3.9 Enter: HOLD H 0226 depress RTN
 Response: Responding HST shall stop in transition and maintain position.
- 8.14.3.10 Enter: HOLD H 0810 depress RTN
 Response: Responding HST shall stop in transition and maintain position.
- 8.14.3.11 Enter: HOLD H 1307 depress RTN
 Response: Responding HST shall stop in transition and maintain position.

AK 11-14

8.14.3.12 Enter: HOLD H 1959 depress RTN

Response: Responding HST shall stop in transition and maintain position.

8.14.3.13 Enter: STOW H 0235 depress RTN

Response: Responding HST shall move to the stow position and display the stow mode.

8.14.3.14 Enter: STOW H 0226 depress RTN

Response: Responding HST shall move to the stow position and display the stow mode.

8.14.3.15 Enter: STCW H 0310 depress RTN

Response: Responding HST shall move to the stow position and display the stow mode.

8.14.3.16 Enter: STOW H 1307 depress RTN

Response: Responding HST shall move the stow position and display the stow mode.

8.14.3.17 Enter: STOW H 1959 depress RTN

Response: Responding HST shall move to the stow position and display the stow mode.

8.14.3.18 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode from the standby mode.

8.14.3.19 End of emergency hold command verification.

8.14.4 Emergency defocus (DEFO) command verification:

8.14.4.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses.

AK 11-14

AK 11-14

8.14.4.2 Enter: LOAD ALL depress RTN

Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

8.14.4.3 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

8.14.4.4 Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

8.14.4.5 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

8.14.4.6 Enter: UNSTOW R5, 4 depress RTN

Response: The commanded HST beams shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

8.14.4.7 Enter: INCREASE R 5, 4 depress RTN

Response: Responding HSTs move to track the special track position and display the track mode from the standby mode.

8.14.4.8 A simulated receiver trip signal shall be applied to the HAC using the emergency signal simulator, which will generate a DEFOCUS command.

Response: HST(s) at TRACK will move to standby position.

8.14.4.9 Remove the simulated receiver trip signal from the HAC.

8.14.4.10 Enter: DEFRLSE ALL depress RTN

Response: No HST motion, allows HSTs which were issued a DEFOCUS command to be commanded.

8.14.4.11 Enter: INCREASE R 5,4 depress RTN

Response: Responding HSTs move to track the special track position and display the track mode.

*PARA 8.14.4 Done
in conjunction with
PARA 509 AOK 11-14
Dep CMD from CONSO
For Memo To Ray Week
11-13-81 AOK 11-14-81*

11-14

8.14.4.12 Enter: DEFOCUS depress RTN

Response: HSTs tracking the track position shall move to track the standby position.

8.14.4.13 Enter: DEFRLSE ALL depress RTN

Response: No HST motion, allows HSTs which were issued a DEFOCUS command to be commanded.

8.14.4.14 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode.

8.14.4.15 End of emergency DEFOCUS command verification

8.14.5 Emergency stow hiwind command verification:

8.14.5.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses.

8.14.5.2 Enter: LOAD ALL depress RTN

Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

8.14.5.3 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

8.14.5.4 Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

8.14.5.5 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

8.14.5.6 Enter: ALT1STOW S 106 depress RTN

Response: HSTs responding shall move to the ALT1 stow position and display the ALT1 stow mode from the stow mode.

AK 11-14

PARA 8.14.5
Accepted by Procedure
360 + Hi wind stow
from Console as to
Memo to R. Wack
11-13-81 AK H-10

8.14.5.7 Enter: WASH A 0502,0524 depress RTN

Response: Responding HSTs shall move to the wash position and display the wash mode from the stow mode.

8.14.5.8 Enter: OFFLINE S 107 depress RTN

Response: HSTs responding display offline mode from stow mode, no HSTs motion.

8.14.5.9 Enter: UNSTOW R5 depress RTN

Response: HSTs responding shall track the CLLP, then move upward to track the CULP and display the standby mode from the stow mode.

8.14.5.10 Enter: STHIWIND depress RTN

Response: Responding HSTs in standby, shall move to the stow position from their allowable modes.

8.14.5.11 Enter: RLHIWIND depress RTN

Response: No HST motion, allows HSTs affected by STHIWIND command to commanded again. ✓

8.14.5.12 Enter: RELWASH A 0502,0524 depress RTN

Response: No HST motion, allows HSTs in wash mode to be commanded.

8.14.5.13 Enter: STOW A 0502,0524 depress RTN

Response: Responding HSTs move to the stow position and display stow mode from the directed position mode.

8.14.5.14 Enter: ONLINE S 107 depress RTN

Response: No HST motion, responding heliostats shall display the directed position mode from the offline mode.

14.5.15 Enter: STOW ALL depress RTN

Response: Responding HSTs move to the stow position and display stow.

14.5.16 End of emergency stow hiwind command verification.

- 8.14.6 Response Verification for HAC communication loss to a single HFC group.
- 8.14.6.1 Turn off power at the pedestal circuit breaker box of heliostat 2301.
- 8.14.6.2 Install the HAC/HFC interrupt tool, TA-27, at heliostat 2301.
- 8.14.6.3 Turn on power at the pedestal circuit breaker box of heliostat 2301.
- 8.14.6.4 At the HAC control console, the following operational commands shall be entered and the emergency command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. The full field of heliostats shall be used for this test.
- 8.14.6.5 Enter: LOAD ALL depress RTN
Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.
- 8.14.6.6 Enter: STOW ALL depress RTN
Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.
- 8.14.6.7 Enter: MARK ALL depress RTN
Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.
- 8.14.6.8 Enter: STOW ALL depress RTN
Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.
- CAUTION: For step 8.14.6.9, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the special standby point and that the beam does not impinge on the tower or receiver.
- 8.14.6.9 Enter: UNSTOW F 13 depress RTN
Response: The commanded HST beams shall track the CLIP.

AK 11-15

AK 11-15

THIS PARA WAS
Test with PARA 8.12

AK 11-15

- 8.14.6.9 ~~Continued:~~
then move upward to track the CULP and then display stand-by mode from the stow mode.
- 8.14.6.10 Enter: TRACK F 13 depress RTN
Response: Responding HSTs move to track the special track position and display the track mode.
- 8.14.6.11 At the heliostat 2301, actuate the HAC/HFC interrupt tool, TA-27, to provide HAC/HFC communication loss.
- 8.14.6.12 Verify control console CRT displays an HFC error message.
- 8.14.6.13 Verify HAC failover does not occur.
- 8.14.6.14 Verify data line switchover does not occur.
- 8.14.6.15 Verify that the HFC group moves to standby, then performs a corridor walk to the stow position.
- 8.14.6.16 Remove power from heliostat 2301, re-configure the J1 data line to the HFC and apply power to heliostat 2301.
- 8.14.6.17 End of response verification for HAC communications loss to a single HFC group.

AK

11-15

AK 11-15
LINE ERROR
OK

AK 11-15

AK 11-15

AK 11-15

PROCEDURE HISTORY SHEET

PROCEDURE NO. 111

Page 31 of

PARAGRAPH 8.14.1

Item	Date	Para	Entry	Orig	Qual. Accep.
133	11-15	8.14.1.6	1839 EL L/S		11-18-81
134	11-15	"	1320 2090		11-17-81
135	11-15	"	2015 EL L/S		11-18-81
136	11-15	"	2239 400		11-19-81
<p>PROCEDURE 111 PARA 8.14.1 WAS TESTED SUCCESSFULLY. NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p>					

CUSTOMER

W. H. ...

11-18-81
Date

TEST CONDUCTOR

Alan

11-16-81
Date

QUALITY

A. Kusow

11-15-81
Date

5.25 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 111

Test Title: Paragraph 8.15 - Graphics Display Console Segment Display Verification

Acceptance Criteria: The Graphics Display Console Segment display provided the following graphical and alpha-numeric displays for each field segment:

- a. Heliostat number and mode symbol.
- b. Listing of heliostat numbers, aimpoint, AZ, EL gimbal angles and mode status.
- c. Segment number and assigned aimpoint array number.

Test Results: The Graphics Display Console Segment Display Verification was accepted based on their use during other test activity. The Collector Subsystem is considered to have passed the Graphics Console Display Segment Display Verification, 14 November 1981.

Retest Requirements: No further testing required. There were no open flag items to be cleared.

8.15 Graphics Display Console Segment Display Verification

8.15.1 Power up and initialize the HAC in accordance with the Operations Manual, MCR-81-1708.

8.15.2 The following segment displays shall be commanded at the 1999 Graphics Display Console.

8.15.3 Enter: DEPRESS GREEN KEY (segment display)
Enter: 101 depress RTN

8.15.3.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```

:SEG 101
  16 HELIOSTATS IN SEG # 101
  548 546 544 542 438 436 434 336 334
  332 236 234 232 134 132 130

```

8.15.4 Enter: DEPRESS GREEN KEY (segment display)
Enter: 102 depress RTN

8.15.4.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```

:SEG 102
  25 HELIOSTATS IN SEG # 102
  742 740 738 736 642 640 638 636 540 538
  536 534 432 430 428
  330 328 326 324 230 228 226 128 126 124

```

8.15.5 Enter: DEPRESS GREEN KEY (segment display)
Enter: 103 depress RTN

*Graphics Displays
ARE ACCEPTED BASED
ON THEIR USE DURING
OTHER TEST.*

*AKC
11-14-81*

8:15.5.1

Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 103

30 HELIOSTATE IN SEG # 103

930	932	934	936	828	839	832	834	728	730	732
734	628	630	632	634	526	528	530	532	422	424
426	320	322	220	222	224	120	122			

8.15.6

Enter: DEPRESS GREEN KEY (segment display)

Enter: 104 depress RTN

8.15.6.1

Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 104

34 HELIOSTATS IN SEG # 104

928	926	924	922	920	826	822	820	726	724	722
720	718	626	624	622	620	524	522	520	518	420
418	416	318	316	218	216	214	118	116	1028	1026

8.15.7

Enter: DEPRESS GREEN KEY (segment display)

Enter: 105 depress RTN

8.15.7.1

Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.

8.15.7.1 Continued:

- c. The segment number and aimpoint array number is displayed.

:SEG 105

```

44 HELIOSTATS IN SEG # 105
1034 1022 1020 1018 1016 1014 1012 918 916 914 912
818 816 814 812 810 716 714 712 710 618 616
614 612 610 516 514 512 510 414 412 410 408
314 312 310 308 212 210 208 114 114 110 108

```

8.15.8 Enter: DEPRESS GREEN KEY (segment display)

Enter: 106 depress RTN

8.15.8.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostat are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 106

```

44 HELIOSTATS IN SEG # 106
1102 1104 1106 1108 1110 1112 1002 1004 1006 1008 1010
902 904 906 908 910 802 804 806 808 702 704
706 708 602 604 606 608 502 504 506 508 402
404 406 302 304 306 202 204 206 102 104 106

```

8.15.9 Enter: DEPRESS GREEN KEY (segment display)

Enter: 107 depress RTN

8.15.9.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 107

```

44 HELIOSTATS IN SEG # 107
1101 1103 1105 1107 1109 1111 1001 1003 1005 1007 1009
901 903 905 907 909 801 803 805 807 701 703
705 707 601 603 605 607 501 503 505 507 401
403 405 301 303 305 201 203 205 101 103 105

```

8.15.10 Enter: DEPRESS GREEN KEY (segment display)

Enter: 108 depress RTN

8.15.10.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 108

44 HELIOSTATS IN SEG # 108

1023	1021	1019	1017	1015	1013	1011	917	915	913	911
817	815	813	811	809	715	713	711	709	617	615
613	611	609	515	513	511	509	413	411	409	407
313	311	309	307	211	209	207	113	111	109	107

8.15.11 Enter: DEPRESS GREEN KEY (segment display)

Enter: 109 depress RTN

8.15.11.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 109

34 HELIOSTATS IN SEG # 109

927	925	923	921	919	825	823	821	819	725	723
721	719	717	625	623	621	619	523	621	519	517
419	417	415	317	315	217	215	213	117	115	1027
1025										

8.15.12 Enter: DEPRESS GREEN KEY (segment display)

Enter: 110 depress RTN

8.15.12.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.

8.15.12.1 Continued:

- c. The segment number and aimpoint array number is displayed.

:SEG 110

30 HELIOSTATS IN SEG # 110										
929	931	933	935	827	829	831	833	727	729	731
733	627	629	631	633	525	527	529	531	421	423
425	319	321	219	221	223	119	121			

~~8.15.13~~ Enter: DEPRESS GREEN KEY (segment display)

Enter: 111 depress RTN

8.15.13.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 111

25 HELIOSTATS IN SEG # 111										
741	739	737	735	641	639	637	635	539	537	535
533	431	429	427	329	327	325	323	229	227	225
127	125	123								

8.15.14 Enter: DEPRESS GREEN KEY (segment display)

Enter: 112 depress RTN

8.15.14.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 112

16 HELIOSTATS IN SEG # 112										
547	545	543	541	437	435	433	335	333	331	235
233	231	133	131	129						

8.15.15 Enter: DEPRESS GREEN KEY (segment display)

Enter: 201 depress RTN

- 8.15.15.1 Verify the display provides the following graphical and alpha-numeric information:
- The following heliostats are displayed by number and mode symbol in a segment display.
 - The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
 - The segment number and aimpoint array number is displayed.

:SEG 201

14 HELIOSTATS IN SEG # 201

852	850	848	846	844	750	748	746	744	652	650
648	646	644								

- 8.15.16 Enter: DEPRESS GREEN KEY (segment display)
Enter: 202 depress RTN

- 8.15.16.1 Verify the display provides the following graphical and alpha-numeric information:
- The following heliostats are displayed by number and mode symbol in a segment display.
 - The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
 - The segment number and aimpoint array number is displayed.

:SEG 202

26 HELIOSTATS IN SEG # 202

1258	1256	1254	1252	1250	1248	1158	1156	1154	1152	1150
1148	1058	1056	1054	1052	1050	1048	944	942	940	938
842	840	838	836							

- 8.15.17 Enter: DEPRESS GREEN KEY (segment display)
Enter: 203 depress RTN

- 8.15.17.1 Verify the display provides the following graphical and alpha-numeric information:
- The following heliostats are displayed by number and mode symbol in a segment display.
 - The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
 - The segment number and aimpoint array number is displayed.

8.15.17.1 Continued:

:SEG 203

31 HELIOSTATS IN SEG # 203

1438 1440 1442 1444 1446 1448 1338 1340 1342 1344 1346
 1236 1238 1240 1242 1244 1246 1138 1140 1142 1144 1146
 1036 1038 1040 1042 1044 1046 1550 1552 1554

8.15.18 Enter: DEPRESS GREEN KEY (segment display)

Enter: 204 depress RTN

8.15.18.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 204

34 HELIOSTATS IN SEG # 204

1548 1546 1544 1542 1540 1538 1536 1534 1436 1434 1432
 1430 1428 1426 1336 1334 1332 1330 1328 1326 1234 1232
 1230 1228 1226 1136 1134 1132 1130 1128 1126 1034 1032
 1030

8.15.19 Enter: DEPRESS GREEN KEY (segment display)

Enter: 205 depress RTN

8.15.19.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 205

44 HELIOSTATS IN SEG # 205

1632 1630 1628 1626 1624 1622 1620 1618 1532 1530 1528
 1526 1524 1522 1520 1518 1424 1422 1420 1418 1416 1414
 1324 1322 1320 1318 1316 1314 1224 1222 1220 1218 1216
 1214 1124 1122 1120 1118 1116 1114 1724 1722 1720 1718

8.15.20 Enter: DEPRESS GREEN KEY (segment display)

Enter: 206 depress RTN

8.15.20.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 206

42 HELIOSTATS IN SEG # 206

1702 1704 1706 1708 1710 1712 1714 1716 1602 1604 1606
1608 1610 1612 1614 1616 1502 1504 1506 1508 1510 1512
1514 1516 1402 1404 1406 1408 1410 1412 1302 1304 1306
1308 1310 1312 1202 1204 1206 1208 1210 1212

8.15.21 Enter: DEPRESS GREEN KEY (segment display)

Enter: 207 depress RTN

8.15.21.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 207

42 HELIOSTATS IN SEG # 207

1701 1703 1705 1707 1709 1711 1713 1715 1601 1603 1605
1607 1609 1611 1613 1615 1501 1503 1505 1507 1509 1511
1513 1515 1401 1403 1405 1407 1409 1411 1301 1303 1305
1307 1309 1311 1201 1203 1205 1207 1209 1211

8.15.22 Enter: DEPRESS GREEN KEY (segment display)

Enter: 208 depress RTN

8.15.22.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.

8.15.22.1 Continued:

- c. The segment number and aimpoint array number is displayed.

:SEG 208

44 HELIOSTATS IN SEG # 208
1631 1629 1627 1625 1623 1621 1619 1617 1531 1529 1527
1525 1523 1521 1519 1517 1423 1421 1419 1417 1415 1413
1323 1321 1319 1317 1315 1313 1223 1221 1219 1217 1215
1213 1123 1121 1119 1117 1115 1113 1723 1721 1719 1717

8.15.23 Enter: DEPRESS GREEN KEY (segment display)

Enter: 209 depress RTN

8.15.23.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 209

34 HELIOSTATS IN SEG # 209
1547 1545 1543 1541 1539 1537 1535 1533 1435 1433 1431
1429 1427 1425 1335 1333 1331 1329 1327 1325 1233 1231
1229 1227 1225 1135 1133 1131 1129 1127 1125 1033 1031
1029

8.15.24 Enter: DEPRESS GREEN KEY (segment display)

Enter: 210 depress RTN

8.15.24.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 210

31 HELIOSTATS IN SEG # 210
1437 1439 1441 1443 1445 1447 1337 1339 1341 1343 1345
1235 1237 1239 1241 1243 1245 1137 1139 1141 1143 1145
1035 1037 1039 1041 1043 1045 1549 1551 1553

8.15.25 Enter: DEPRESS GREEN KEY (segment display)

Enter: 211 depress RTN

8.15.25.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```

:SEG 211
  26 HELIOSTATS IN SEG # 211
1257 1255 1253 1251 1249 1247 1157 1155 1153 1149 1147
1057 1055 1053 1051 1049 1047 943 941 939 937 841
839 837 835

```

8.15.26 Enter: DEPRESS GREEN KEY (segment display)

Enter: 212 depress RTN

8.15.26.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```

:SEG 212
  14 HELIOSTATS IN SEG # 212
851 849 847 845 843 749 747 745 743 651 649
647 645 643

```

8.15.27 Enter: DEPRESS GREEN KEY (segment display)

Enter: 301 depress RTN

8.15.27.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.

8.15.27.1 Continued:

- c. The segment number and aimpoint array number is displayed.

:SEG 301

16 HELIOSTATS IN SEG # 301
1170 1168 1166 1164 1162 1160 1070 1068 1066 1064 1062
1060 952 950 948 946

8.15.28 Enter: DEPRESS GREEN KEY (segment display)
Enter: 302 depress RTN

8.15.28.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 302

28 HELIOSTATS IN SEG # 302
1680 1678 1676 1674 1672 1670 1668 1666 1578 1576 1574
1572 1570 1568 1566 1564 1460 1458 1456 1454 1452 1450
1358 1356 1354 1352 1350 1348

8.15.29 Enter: DEPRESS GREEN KEY (segment display)
Enter: 303 depress RTN

8.15.29.1 Verify the display provides the following graphical and alpha-numeric information:

- The following heliostats are displayed by number and mode symbol in a segment display.
- The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- The segment number and aimpoint array number is displayed.

:SEG 303

31 HELIOSTATS IN SEG # 303
1850 1852 1854 1856 1858 1860 1862 1864 1750 1752 1754
1756 1758 1760 1762 1650 1652 1654 1656 1658 1660 1662
1664 1950 1952 1954 1956 1556 1558 1560 1562

8.15.30 Enter: DEPRESS GREEN KEY (segment display)

Enter: 304 depress RTN

15.30.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 304

35 HELIOSTATS IN SEG # 304

1948 1946 1944 1942 1940 1938 1936 1848 1846 1844 1842
1840 1838 1836 1834 1748 1746 1744 1742 1740 1738 1736
1734 1648 1646 1644 1642 1640 1638 1636 1634 2050 2048
2046 2044

8.15.31 Enter: DEPRESS GREEN KEY (segment display)

Enter: 305 depress RTN

8.15.31.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 305

46 HELIOSTATS IN SEG # 305

2144 2142 2140 2138 2136 2134 2132 2130 2128 2126 2124
2042 2040 2038 2036 2034 2032 2030 2028 2026 2024 2022
1934 1932 1930 1928 1926 1924 1922 1920 1832 1830 1828
1826 1824 1822 1820 1818 2228 2226 2224 2222 1732 1730
1728 1726

8.15.32 Enter: DEPRESS GREEN KEY (segment display)

Enter: 306 depress RTN

8.15.32.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.

8.13.32.1 Continued:

- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 306

48 HELIOSTATS IN SEG # 306
2202 2204 2206 2208 2210 2212 2214 2216 2218 2220 2102
2104 2106 2108 2110 2112 2114 2116 2118 2120 2122 2002
2004 2006 2008 2010 2012 2014 2016 2018 2020 1902 1904
1906 1908 1910 1912 1914 1916 1918 1802 1804 1806 1808
1810 1812 1814 1816

8.15.33 Enter: DEPRESS GREEN KEY (segment display)

Enter: 307 depress RTN

8.15.33.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 307

48 HELIOSTATS IN SEG # 307
2201 2203 2205 2207 2209 2211 2213 2215 2217 2219 2101
2103 2105 2107 2109 2111 2113 2115 2117 2119 2121 2001
2003 2005 2007 2009 2011 2013 2015 2017 2019 1901 1903
1905 1907 1909 1911 1913 1915 1917 1801 1803 1805 1807
1809 1811 1813 1815

8.15.34 Enter: DEPRESS GREEN KEY (segment display)

Enter: 308 depress RTN

8.15.34.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

8.15.34.1 Continued:

:SEG 308

46 HELIOSTATS IN SEG # 308

2143 2141 2139 2137 2135 2133 2131 2129 2127 2125 2123
 2041 2039 2037 2035 2033 2031 2029 2027 2025 2023 2021
 1933 1931 1929 1927 1925 1923 1921 1919 1831 1829 1827
 1825 1823 1821 1819 1817 2227 2225 2223 2221 1731 1729
 1727 1725

8.15.35 Enter: DEPRESS GREEN KEY (segment display)

Enter: 309 depress RTN

8.15.35.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 309

35 HELIOSTATS IN SEG # 309

1947 1945 1943 1941 1939 1937 1847 1845 1843 1841 1839
 1837 1835 1833 1747 1745 1743 1741 1739 1737 1735 1733
 1647 1645 1643 1641 1639 1637 1635 1633 2049 2047 2045
 2043

8.15.36 Enter: DEPRESS GREEN KEY (segment display)

Enter: 310 depress RTN

8.15.36.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 310

31 HELIOSTATS IN SEG # 310

1849 1851 1853 1855 1857 1859 1861 1863 1749 1751 1753
 1755 1757 1759 1761 1649 1651 1653 1655 1657 1659 1659
 1661 1663 1949 1951 1953 1955 1555 1557 1559 1561

8.15.37 Enter: DEPRESS GREEN KEY (segment display)

Enter: 311 depress RTN

8.15.37.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 311

28 HELIOSTATS IN SEG # 311

1679 1677 1675 1673 1671 1669 1667 1665 1577 1575 1573
1571 1569 1567 1565 1563 1459 1457 1455 1453 1451 1449
1357 1355 1353 1351 1349 1347

8.15.38 Enter: DEPRESS GREEN KEY (segment display)

Enter: 312 depress RTN

8.15.38.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 312

16 HELIOSTATS IN SEG # 312

1169 1167 1165 1163 1161 1159 1069 1067 1065 1063 1061
1059 951 949 947 945

8.15.39 Enter: DEPRESS GREEN KEY (segment display)

Enter: 401 depress RTN

8.15.39.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.

8.15.39.1 Continued:

- c. The segment number and aimpoint array number is displayed.

```
:SEG 401
  15 HELIOSTATS IN SEG # 401
1270 1268 1266 1264 1262 1260 1363 1366 1364 1362 1360
1464 1462 1582 1580
```

8.15.40 Enter: DEPRESS GREEN KEY (segment display)

Enter: 402 depress RTN

8.15.40.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```
:SEG 402
  27 HELIOSTATS IN SEG # 402
1776 1774 1772 1770 1768 1766 1764 1876 1874 1872 1870
1868 1866 1974 1972 1970 1968 1966 1964 2096 2094 2092
2090 2088 2190 2188 2186
```

8.15.41 Enter: DEPRESS GREEN KEY (segment display)

Enter: 403 depress RTN

8.15.41.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```
:SEG 403
  33 HELIOSTATS IN SEG # 403
2066 2068 2072 2074 2076 2078 2080 2082 2084 2086 2166
2168 2170 2172 2174 2176 2178 2180 2182 2184 2266 2268
2270 2272 2274 2276 1958 1960 1962 2366 2368 2370
```

8.15.42 Enter: DEPRESS GREEN KEY (segment display)

Enter: 404 depress RTN

8.15.42.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 404

35 HELIOSTATS IN SEG # 404

2264 2262 2260 2258 2256 2254 2252 2250 2248 2246 2244
 2164 2162 2160 2158 2156 2154 2152 2150 2158 2146 2358
 2356 2354 2352 2350 2348 2346 2064 2062 2060 2058 2056
 2054 2052

8.15.43 Enter: DEPRESS GREEN KEY (segment display)

Enter: 405 depress RTN

8.15.43.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 405

46 HELIOSTATS IN SEG # 405

2544 2542 2540 2538 2536 2534 2532 2530 2528 2526 2524
 2442 2440 2438 2436 2434 2432 2430 2428 2426 2424 2422
 2344 2342 2340 2338 2336 2334 2332 2330 2328 2326 2324
 2636 2634 2632 2630 2628 2626 2242 2240 2238 2236 2234
 2232 2230

8.15.44 Enter: DEPRESS GREEN KEY (segment display)

Enter: 406 depress RTN

8.15.44.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.

8.15.44.1 Continued:

- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```
:SEG 406
  44 HELIOSTATS IN SEG # 406
2602 2604 2606 2608 2610 2612 2614 2616 2618 2620 2622
2624 2502 2504 2506 2508 2510 2512 2514 2516 2518 2520
2522 2402 2404 2406 2408 2410 2412 2414 2416 2418 2420
2302 2304 2306 2308 2310 2312 2314 2316 2318 2320 2322
```

8.15.45 Enter: DEPRESS GREEN KEY (segment display)
 Enter: 407 depress RTN

8.15.45.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```
:SEG 407
  44 HELIOSTATS IN SEG # 407
2601 2603 2605 2607 2609 2611 2613 2615 2617 2619 2621
2623 2501 2503 2505 2507 2509 2511 2513 2515 2517 2519
2521 2401 2403 2405 2407 2409 2411 2413 2415 2417 2419
2301 2303 2305 2307 2309 2311 2313 2315 2317 2319 2321
```

8.15.46 Enter: DEPRESS GREEN KEY (segment display)
 Enter: 406 depress RTN

8.15.46.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

8.15.46.1 Continued:

```

:SEG 408
 46 HELIOSTATS IN SEG # 408
2543 2541 2539 2537 2535 2533 2531 2529 2527 2525 2523
2441 2439 2437 2435 2433 2431 2429 2427 2425 2423 2421
2343 2341 2339 2337 2335 2333 2331 2329 2327 2325 2323
2635 2633 2631 2629 2627 2625 2241 2239 2237 2235 2233
2231 2229

```

8.15.47 Enter: DEPRESS GREEN KEY (segment display)

Enter: 409 depress RTN

8.15.47.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```

:SEG 409
 35 HELIOSTATS IN SEG # 409
2263 2261 2259 2257 2255 2253 2251 2249 2247 2245 2243
2163 2161 2159 2157 2155 2153 2151 2149 2147 2145 2357
2355 2353 2351 2349 2347 2345 2063 2061 2059 2057 2055
2053 2051

```

8.15.48 Enter: DEPRESS GREEN KEY (segment display)

Enter: 410 depress RTN

8.15.48.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

```

:SEG 410
 33 HELIOSTATS IN SEG # 410
2065 2067 2069 2071 2073 2075 2077 2079 2081 2083 2085
2165 2167 2169 2171 2173 2175 2177 2179 2181 2183 2265
2267 2269 2271 2273 2275 1957 1959 1961 2365 2367 2369

```



8.15.49 Enter: DEPRESS GREEN KEY (segment display)

Enter: 411 depress RTN

8.15.49.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 411

27 HELIOSTATS IN SEG # 411
1775 1773 1771 1769 1767 1765 1763 1875 1873 1871 1869
1867 1865 1973 1971 1969 1967 1965 1963 2095 2093 2091
2089 2087 2189 2187 2185

8.15.50 Enter: DEPRESS GREEN KEY (segment display)

Enter: 412 depress RTN

8.15.50.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 412

15 HELIOSTATS IN SEG # 412
1269 1267 1265 1263 1261 1259 1367 1365 1363 1361 1359
1463 1461 1581 1579

8.15.51 Enter: DEPRESS GREEN KEY (segment display)

Enter: 504 depress RTN

8.15.51.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.

8.15.51.1 Continued:

- c. The segment number and aimpoint array number is displayed.

:SEG 504

35 HELIOSTATS IN SEG # 504

2464 2462 2460 2458 2456 2454 2452 2450 2448 2446 2444 2364
2362 2360 2560 2558 2556 2554 2552 2550 2548 2546 2660 2658
2656 2654 2652 2650 2648 2646 2768 2766 2764 2762 2760

8.15.52 Enter: DEPRESS GREEN KEY (segment display)

Enter: 505 depress RTN

8.15.52.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 505

43 HELIOSTATS IN SEG # 505

2758 2756 2754 2752 2750 2748 2746 2744 2742 2740 2738
2736 2734 2732 2730 2860 2858 2856 2854 2852 2850 2848
2846 2844 2842 2840 2838 2836 2834 2832 2644 2642 2640
2638 2946 2944 2942 2940 2938 2936 2934 2932 2930

8.15.53 Enter: DEPRESS GREEN KEY (segment display)

Enter: 506 depress RTN

8.15.53.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 506

43 HELIOSTATS IN SEG # 506

2702 2704 2706 2708 2710 2712 2714 2716 2718 2720 2722
2724 2726 2728 2802 2804 2806 2808 2810 2812 2814 2816
2818 2820 2822 2824 2826 2828 2830 2902 2904 2906 2908
2910 2912 2914 2916 2918 2920 2922 2924 2926 2928

8.15.54 Enter: DEPRESS GREEN KEY (segment display)

Enter: 507 depress RTN

8.15.54.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 507

43 HELIOSTATS IN SEG # 507

2701 2703 2705 2707 2709 2711 2713 2715 2717 2719 2721
 2723 2725 2727 2801 2803 2805 2807 2809 2811 2813 2815
 2817 2819 2821 2823 2825 2827 2829 2901 2903 2905 2907
 2909 2911 2913 2915 2917 2919 2921 2923 2925 2927

8.15.55 Enter: DEPRESS GREEN KEY (segment display)

Enter: 508 depress RTN

8.15.55.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 508

43 HELIOSTATS IN SEG # 508

2757 2755 2753 2751 2749 2747 2745 2743 2741 2739 2737
 2735 2733 2731 2729 2859 2857 2855 2853 2851 2849 2847
 2845 2843 2841 2839 2837 2835 2833 2831 2643 2641 2639
 2637 2945 2943 2941 2939 2937 2935 2933 2931 2929

8.15.56 Enter: DEPRESS GREEN KEY (segment display)

Enter: 509 depress RTN

8.15.56.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.

8.15.56.1 Continued:

- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gimbal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 509

35 HELIOSTATS IN SEG # 509

2463 2461 2459 2457 2455 2453 2451 2449 2447 2445 2443
2363 2361 2359 2559 2557 2555 2553 2551 2549 2547 2545
2659 2657 2655 2653 2651 2649 2647 2645 2767 2765 2763
2761 2759

8.15.57 Enter: DEPRESS BLUE KEY (full field display)

Enter: depress RTN

Response: The graphics CRT displays the full field.

8.15.58 End of graphics display console segment display verification.

PROCEDURE III

Test Title: Paragraph 8.16 - Wire Walk Verification.

Acceptance Criteria: The full field tracked the assigned wire walk corridors.

Test Results: The Wire Walk Verification Test was performed on 11 November 1981. The paragraphs 8.16.1 through 8.16.16 were verified during the Multiple Wedge Operational Tests, paragraph 8.10. The tests of paragraphs 8.16.17 through 8.16.21 were run to complete the procedural requirements of the Wire Walk Verification Test. The acceptance criteria of paragraph 8.16 was met and the Collector Subsystem is considered to have passed the Wire Walk Verification Test.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. Procedural flag items have been incorporated.

8.16 Wire walk verification

8.16.1 The Collector Field shall meet the wire walk criteria of Appendix 10G (wire walk illustrations are presented on Appendix 10H and 10I).

8.16.2 The special standby and track coordinates shall not be used for this test.

8.16.3 Verify assigned wire walk and standby coordinates are installed in the HAC software.

8.16.4 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. All in-service heliostats shall be used for this test.

8.16.5 Enter: LOAD ALL depress RTN
 Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

8.16.6 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall display stow mode from the initialized mode.

8.16.7 Enter: MARK ALL depress RTN
 Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

8.16.8 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

CAUTION: For step 8.16.9, the field observer shall monitor the heliostat movement and verify that the heliostat beam moves to the standby point and that the beam does not impinge on the tower or receiver.

8.16.9

Enter: UNSTOW W 01,02,03 depress RTN

Response: Responding HSTs in the SW quadrant shall move to track the CLLP, then perform a coordinated wire walk to track the CULP, then display the standby mode.

8.16.9.1 Verify the following wire walk criteria:

- a. The heliostats in the SW quadrant shall move to track the CLLP and exit the ground to move up the wire as specified in Appendix 10G (use ground exit for wire designated based on time of year.)
- b. The heliostats shall track a coordinated wire walk to the CULP in approximately 10 minutes.
- c. With the heliostats in the standby mode, verify that the energy blob tracks the standby position.

8.16.10

Enter: STOW W 01,02,03 depress RTN

Response: Responding HSTs shall perform a coordinated wire walk from the CULP to the CLLP, then return to the stow position.

8.16.11

Enter: UNSTOW W 10,11,12 depress RTN

Response: Responding HSTs in the SE quadrant shall move to track the CLLP, then perform a coordinated wire walk to track the CULP, then display the standby mode.

8.16.11.1 Verify the following wire walk criteria:

- a. The heliostats in the SE quadrant shall move to track the CLLP and exit the ground to move up the wire as specified in Appendix 10G (use ground exit for wire designated based on time of year.)
- b. The heliostats shall track a coordinated wire walk to the CULP in approximately 10 minutes.
- c. With the heliostats in the standby mode, verify that the energy blob tracks the standby position.

8.16.12

Enter: STOW W 10,11,12 depress RTN

Response: Responding HSTs shall perform a coordinated wire walk from the CULP to the CLLP, then return to the stow position.

8.16.13

Enter: UNSTOW W 04,05,06 depress RTN

Response: Responding HSTs in the NW quadrant shall move to track the CLLP, then perform a coordinated wire walk to track the CULP, then display the standby mode.

8.16.13.1 Verify the following wire walk criteria:

- a. The heliostats in the NW quadrant, shall move to track the CLLP and exit the ground to move up the wire as specified in Appendix 10G (use ground exit for wire designated based on time of year.)
- b. The heliostats shall track a coordinated wire walk to the CULP in approximately 10 minutes.
- c. With the heliostats in the standby mode, verify that the energy blob tracks the standby position.

8.16.14

Enter: STOW W 04,05,06 depress RTN

Response: Responding HSTs shall perform a coordinated wire walk from the CULP to the CLLP, then return to the stow position.

8.16.15

Enter: UNSTOW W 07,08,09 depress RTN

Response: Responding HSTs in the NE quadrant, shall move to track the CLLP, then perform a coordinated wire walk to track the CULP, then display the standby mode.

8.16.15.1 Verify the following wire walk criteria:

- a. The heliostats in the NE quadrant shall move to track the CLLP and exit the ground to move up the wire as specified in Appendix 10G (use ground exit for wire designated based on time of year.)
- b. The heliostats shall track a coordinated wire walk to the CULP in approximately 10 minutes.
- c. With the heliostats in the standby mode, verify that the energy blob tracks the standby position.

8.16.16

Enter: STOW W 01,02,03 depress RTN

Response: Responding HSTs shall perform a coordinated wire walk from the CULP to the CLLP, then return to the stow position.

49 PEN

8.16.17 Remove the J3 connector from the HC of heliostat 1239 (do not remove power).

AK 11-11

1005

1001 1033

48 PEN

16.18 Enter: UNSTOW A ~~1239, 1240~~ depress RTN

Response: Responding HSTs shall move to track the CLLP except for heliostat ~~1239~~. In approximately 20 minutes, the heliostats tracking the CLLP shall perform a coordinated wire walk when HST ~~1239~~ is timed out. HST ~~1239~~ will be set in the offline mode. When the responding heliostats start up the wire, enter the following command:

AK 11-11

53 0927 209C

52 PEN

Enter: UNSTOW A ~~1239, 1240~~ OK 0901-0927

AK 11-11

Response: The commanded arc of heliostats shall perform a coordinated wire walk when the previously commanded ARC, ~~1239~~ to ~~1239~~, completes the UNSTOW sequence and display the standby mode.

8.16.19 PEN

With the responding heliostats in the standby mode, enter the following command:

AK 11-11

50

Enter: STOW A ~~1239, 1240~~ ~~1239, 1367~~ 0901-0927

Response: Responding HSTs shall perform the wire walk sequence to the stow position.

51 PEN

8.16.20

Remove power at the pedestal of heliostat ~~1239~~ and replace the J3 connector. Turn on the power at the pedestal.

54 1006 JS PLUS

8.16.21

End of wire walk verification test.

PARAGRAPH 8.16

Item	Date	Para.	Entry	Orig	Qual. Accep.
48	11-11	8.16.18	REN HC 1005 Change Arc 1001-1033		M 3334 11-17-81
49	11-11	8.16.17	REN Change HC To 1005		M 3334 11-17-81
50	11-11	8.16.19	REN Change Arc 1001-1033-0901-0927		M 3334 11-17-81
51	11-11	8.16.20	REN Change TO HC 1005		M 3334 11-17-81
52	11-11	8.16.18	REN Change Arc To 0901-0927		M 3334 11-17-81
53	11-11	8.16.18	927-209K in Tran		M 3334 11-18-81
54	11-11	8.16.20	1005 JB Plug Reconned by ELECT		M 3334 11-15-81
<p>PROCEDURE 111 PARA 8.16 WAS TESTED SUCCESSFULLY - NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED</p>					

CUSTOMER AT Distribution 11-18-81
Date

TEST CONDUCTOR [Signature] 11-12-81
Date

QUALITY A. Kuehn 11-11-81
Date

PROCEDURE 111

Test Title: Paragraph 8.17 - Heliostat Response Verification to Singularity Condition.

Acceptance Criteria: Heliostats recovered to the receiver track position within 15 minutes when in a singularity condition.

Test Results: The Heliostat Response Verification to Singularity Condition was demonstrated successfully by south field singularity responses during the wedge operational Tests of paragraph 8.10. The acceptance criteria was met and the Collector Subsystem is considered to have passed the Heliostat Response Verification to Singularity Conditions.

Retest Requirements: No further tests required. There were no flag items to be cleared.

8.17 Helioostat Response Verification to Singularity Condition

8.17.1 For this test, a helioostat shall be selected based on location and time of year to encounter a singularity condition, or a track aimpoint shall be incorporated in the software to create the singularity condition. Martin Marietta software engineering shall configure the software for this test.

8.17.2 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper helioostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. One helioostat shall be used for this test.

8.17.3 Enter: LOAD H NNNN depress RTN
Response: No helioostat motion, HST responding shall display initialization mode from the transition mode.

8.17.4 Enter: STOW H NNNN depress RTN
Response: Responding HST shall display stow mode from the initialized mode.

8.17.5 Enter: MARK H NNNN depress RTN
Response: Responding HST shall move to the AZ and EL mark positions and display mark mode from the stow mode.

Enter: STOW H NNNN depress RTN
Response: Responding HST shall move to the stow position and display stow mode from the mark mode.

8.17.6 Enter: UNSTOW H NNNN depress RTN
Response: The commanded HST beam shall track the CLLP, then move upward to track the CULP and display standby mode from the stow mode.

8.17.7 Enter: TRACK H NNNN depress RTN
Response: The commanded HST beam shall track the assigned aimpoint tracking position and display track mode from the standby mode.

8.17 WAS NOT RUN. WAS ACCEPTED BY SOUTH FIELD SINGULARITY IN PARA. 8.10

AK 11-13

8.17.8

Monitor the tracking heliostat until the singularity condition is reached. When the heliostat changes from the track mode to the transition mode, enter the following command:

Enter: STAT H NNNN depress RTN

Response: Observe time of day from status display.

Monitor the heliostat transition and when the heliostat achieves the track position and mode, enter the following command:

Enter: STAT H NNNN depress RTN

Response: Observe time of day from status display.

8.17.9

The heliostat shall recover the track position in approximately 15 minutes.

8.17.10

Enter: STANDBY H NNNN depress RTN

Response: The commanded HST beam shall move from the track position to track the standby position and display standby mode from the track mode.

8.17.11

Enter: STOW H NNNN depress RTN


Response: The commanded HST shall perform the wire walk from the CULP to the CLLP, then move to the stow position and display the stow mode.

8.17.12

End of heliostat response verification to singularity condition.

AK 11-13

PARAGRAPH 8.17

Item	Date	Para.	Entry	Orig	Qual. Accep.
	8.17 11/11/81		Singularly Accepted by Verification in Part 8.10		
<p>PROCEDURE 111 PARA 8.17 WAS VERIFIED SUCCESSFULLY BY SIMILARITY TO THE TESTING PERFORMED IN PARA. 8.10. NO RETEST REQUIRED.</p>					

CUSTOMER DW [Signature] 11-18-81
Date

TEST CONDUCTOR [Signature] 11-16
Date

QUALITY [Signature] 11-16
Date

PROCEDURE 111

Test Title: Paragraph 8.18 -- Special Commands Verification

Acceptance Criteria: The special commands, CFSTAR, CFWAIT, CFABORT, HELP, SAVE & RESTORE were verified to control the field of heliostats and command responses were verified.

Test Results: The Special Commands Verification was performed on 15 November 1981. The time allotted for command processing was inadequate and a new command file was built to allow adequate time for command processing. A partial retest, paragraphs 8.18.7 through 8.18.16, was successfully performed on 16 November 1981. All procedure requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Special Commands Verification.

Retest Requirements: No further testing required. All heliostat flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

8.18 Special Commands Verification

8.18.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. All in-service heliostats shall be used for this test.

8.18.2 Enter: HELP depress RTN

Response: HELP IS ON THE PRINTER
LIST OF COMMANDS
TRACK , INCREASE , LOAD , MARK , STANDBY
STOW , POSITION , ONLINE , OFFLINE , DECREASE
BCSTRACK , RETURN , WASH , ALT1STOW , ALT2STOW
RESTORE , UNSTOW , STWIND , DEFOCUS , AIMPOINT
HOLD , SAVE , RELWASH , ESTANDBY , ESTOW
RLHIWIND , DEFRLSE , UPAIM , UPBIAS , STATUS
HELP , CFSTART , CFABORT , CFWAIT , REFRESH
AIMLIST , SAVPOS , TEST , BCSSTART , RGSXTAPE
CFWAIT

AK 11-15

8.18.3 Enter: HELP SAVE depress RTN

Response: SAVE : ADDRESS=ALL SOURCE=FILE CS

AK 11-15

8.18.4 Enter: HELP RESTORE depress RTN

Response: RESTORE : ADDRESS=ALL SOURCE=FILE CS

AK 11-15

8.18.5 Enter: HELP CFSTART depress RTN

Response: CFSTART : ADDRESS= NONE / OTHER SOURCE=FILE CS
ARG. IS 3 DIGIT ASCII FILE NAME

AK 11-15

8.18.6 Enter: HELP CFABORT depress RTN

Response: CFABORT : ADDRESS= NONE / OTHER SOURCE=FILE CS

AK 11-15

8.18.7 Enter: CFSTART C01

Response: COMMAND FILE: C01 0 SECONDS DELAY UNTIL
LOAD ALL

FILE:LOAD ALL
OK 1818,WM 0,OF 0,NI 0

COMMAND FILE: C01 50 SECONDS DELAY UNTIL
STOW ALL

FILE:STOW ALL
OK 1818,WM 0,OF 0,NI 0

COMMAND FILE: C01 30 SECONDS DELAY UNTIL
MARK ALL

FILE:MARK ALL
OK 1818,WM 0,OF 0,NI 0

Retest 11-16
AK 11-15

AK 11-15

AK 11-15

AK 11-15

AK 11-15

AK 11-16

8.18.7 Continued:

COMMAND FILE: C01 30 SECONDS DELAY UNTIL STOW ALL

FILE:STOW ALL
OK 1818,WM 0,OF 0,NI 0

COMMAND FILE: C01 30 SECONDS DELAY UNTIL UNST ALL

FILE:UNST ALL
OK 1818,WM 0,OF 0,NI 0

COMMAND FILE: C01 300 SECONDS DELAY UNTIL INCR 10 R

AK 11-15



TIME SPAN TO SHORT

AK 11-16

8.18.8 Enter: CFWAIT 20 300

Response: CAUSES ADDITIONAL 20 SECOND DELAY PRIOR TO EXECUTING COMMAND FROM FILE.

AK 11-15

8.18.9 Enter: CFABORT

Response: COMMAND TERMINATES COMMAND FILE PROCESSING.

AK 11-16

AK 11-15

8.18.10 Enter: STAT R 1

Response:

MM/DD/YY	HH:MM:SS	SEGMENT STATUS, RING # 1					
SEGMENT NUMBER:		101	102	103	104	105	106
		107	108	109	110	111	112
HCS IN SEGMENT:		16	25	30	34	44	44
		44	44	34	30	25	16
HCS IN TRACK :		0	0	0	0	0	0
		0	0	0	0	0	0
HCS IN STANDBY:		16	25	30	34	44	44
		44	44	34	30	25	16

AK 11-16

8.18.11 Enter: INCREASE R 1,3,5 depress RTN

Response: Commanded HSTs move to track the assigned track position and display the track mode.

INCR A 2908, 2924
AK 11-16

8.18.12 Enter: SAVE ALL depress RTN

Response: OK 1818,WM 0,OF 0,NI 0

AK 11-16

8.18.13 Enter: DECREASE R 1,3,5 depress RTN

Response: Responding HSTs move to the standby position and display the standby mode.

STAN A 2902 2924
AK 11-16

8.18.14 Enter: RESTORE ALL depress RTN

Response: Restores the saved tracking configuration of all HSTs in track and standby. Ring 1, 3, 5 move to track the restored track configuration.

AK 11-16

8.18.15 Enter: STOW ALL depress RTN

Response: HSTs in the track mode move to standby, all HSTs then perform a coordinated wire walk to the stow

AK 11-16

8.18.15

Continued:

position and display the stop mode.

.18.16

End of special commands verification.

AK

11-16

PROCEDURE 111

Test Title: Paragraph 8.19 - 16 Parallel Command Processing Verification.

Acceptance Criteria: The HAC processed 16 parallel commands.

Test Results: The 16 Parallel Command Processing Verification was performed on 15 November 1981. All procedure requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the 16 Parallel Command Processing Verification.

Retest Requirements: No further testing required. There were no helio-stat flag items to be cleared. All procedural flag items have been incorporated.

8.19

16 Parallel Command Processing Verification

8.19.1

At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. All in-service heliostats shall be used for this test.

8.19.2

Enter: LOAD ALL depress RTN

Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

8.19.3

Enter: STOW ALL depress RTN

Response: Responding HSTs shall display stow mode from the initialized mode.

8.19.4

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

8.19.5

Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

8.19.6

The following commands shall be entered as quickly as possible in order to verify 16 parallel command processing capability.

Enter: UNSTOW S 504 depress RTN

Enter: UNSTOW S 505 depress RTN

Enter: UNSTOW S 506 depress RTN

Enter: UNSTOW S 507 depress RTN

Enter: UNSTOW S 508 depress RTN

Enter: UNSTOW S 509 depress RTN

Enter: UNSTOW S 401 depress RTN

Enter: UNSTOW S 402 depress RTN

Enter: UNSTOW S 403 depress RTN

Enter: UNSTOW S 404 depress RTN

137
Remove "10"

Remove 10 from CMD

AK 11-15

8.19.6 Continued:

Enter: UNSTOW 10 S 405 depress RTN
 Enter: UNSTOW 10 S 406 depress RTN
 Enter: UNSTOW 10 S 407 depress RTN
 Enter: UNSTOW 10 S 408 depress RTN
 Enter: UNSTOW 10 S 409 depress RTN
 Enter: UNSTOW 10 S 410 depress RTN
 Enter: UNSTOW 10 S 411 depress RTN

Response: Commanded HSTs shall move to the CLLP, perform coordinated wire walk to the CULP, then display standby mode. The response for the unstow 10 S 411 command shall be:

Command disallowed: only 16 sequences possible.

8.19.7

Enter: STOW 2.5 depress RTN

Response: Responding HSTs shall move from the standby position to the stow position performing coordinated wire walks.

8.19.8

End of 16 parallel command processing verification.

138

stow by SEG

By Seg NO. from 9.19.6

Stow 8.19.7
 WAS completed
 PARA 8.19.1
 AK

AK 11-15

PROCEDURE HISTORY SHEET

PROCEDURE NO. 111

Page 33 of

PARAGRAPH 8.19

Item	Date	Para.	Entry	Orig	Qual. Accep.
137	11-15	8.19.6	RED LINE Remove "10"		M 3334 11-17-81
138	11-15	8.19.7	Red Line Stow by SEC		M 3334 11-17-81
<p>PROCEDURE 111 PARA. 8.19 WAS TESTED SUCCESSFULLY. NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLEARED.</p> <p>The Stow was completed in PARA. 8.14.1 and 8.14.2</p>					

CUSTOMER W. K. Anderson 11-18-81
Date

TEST CONDUCTOR Starn 11-16-81
Date

QUALITY A. Kucow 11-15-81
Date

6. CHRONOLOGICAL SUMMARY

COLLECTOR SUBSYSTEM DUAL HELIOSTAT ARRAY CONTROLLER TEST

<u>Date</u>	<u>Test Description</u>	<u>Results</u>
11/16/81	Dual Heliostat Array Controller Test	Failed
11/18/81	Dual Heliostat Array Controller - Retest	Passed

6.1 COLLECTOR SUBSYSTEM FUNCTIONAL TEST SUMMARY

PROCEDURE 106

Test Title: Procedure 106 - Dual Heliostat Array Controller Test.

Acceptance Criteria: The HAC shall maintain heliostat control when the primary data line fails over to the secondary data line when one of the following conditions exist:

- a. Three consecutive input errors occur on a line.
- b. Three consecutive output errors occur on a line.
- c. Three consecutive input or output errors occur on a line.
- d. Communication loss with two or more HFCs on a line.

Heliostat control shall be maintained when the primary HAC fails over to the secondary HAC. The secondary HAC shall initiate communications with the heliostat field. Heliostat control shall be maintained when the primary HAC does not fail over to the secondary HAC when a loss of communication is detected and a power loss interrupt has occurred.

Test Results: The Dual Heliostat Array Controller Test was performed on 16 November 1981. The test was terminated when the following failure occurred:

- a. No data line failover when loss of communication with two HFC groups on one line.
- b. No HAC failover with loss of communication with the field and no loss of power interrupt.

The above anomalies were corrected by software modifications and the Dual Heliostat Array Controller Test was re-run on 18 November 1981. The retest was successful with no other failures. All procedure requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Dual Heliostat Array Controller Test.

Retest Requirements: No further testing required. All flag items have been cleared and verified operationally. All procedural flag items have been incorporated.

	Initial	Date
8.0		
<u>PROCEDURE AND DATA COLLECTION</u>		
8.1		
<u>Verify Initial Conditions Have Been Satisfied</u>		
8.2		
<u>Primary Data Line Failover To Secondary Data Line</u>		
8.2.1		
At the HAC control console, the following commands shall be entered and the responses verified for proper HST control using full-field and segment 212 ²⁰⁷ .		
8.2.2	AK	11-16
Display full-field on graphics 1999, CRT.		
8.2.3	AK	11-16
Enter: <u>LOAD ALL</u> depress RTN		
Response: Responding HSTs shall indicate initialized mode from the transition mode.		
8.2.4	AK	11-16
Enter: <u>STOW ALL</u> depress RTN		
Response: Responding HSTs shall display the stow mode from the initialized mode.		
8.2.5	AK	11-16
Enter: <u>MARK ALL</u> depress RTN		
Response: Responding HSTs shall move to encounter the AZ and EL mark position and display the mark mode from the stow mode.		
8.2.6	AK	
Display segment 212 ²⁰⁷ on graphics 1999, CRT.		
8.2.7	AK	11-16
Enter: <u>STOW S</u> 212 ²⁰⁷ depress RTN		
Response: Responding HSTs shall move to the stow position and display the stow mode.		
8.2.8	AK	11-16
Enter: <u>UNSTOW H</u> 0843 ¹⁴⁰¹ depress RTN		
Response: Responding HST shall track the CLLP, then move upward to track the CULP, then display the standby mode.		
8.2.9	AK	11-16
Enter: <u>TRACK H</u> 0843 ¹⁴⁰¹ depress RTN		
Response: Responding HST shall move to the special track position and display the track mode. Verify beam is at special track position.		

		Initial/Date
8.2.10	Enter: <u>STOW H</u> ¹⁴⁰¹ 0843 depress RTN Response: Responding HST shall move to the stow position and display the stow mode.	AK 11-16
8.2.11	Enter: <u>UNSTOW S</u> ²⁰⁷ 212 depress RTN Response: Responding HSTs shall track the CLLP, then move upward to track the CULP, then display the standby mode.	AK 11-16
8.2.12	Enter: <u>INCREASE S</u> ²⁰⁷ 212 depress RTN Response: Responding HSTs move to the assigned track position and display the track mode.	AK 11-16
✓ 8.2.13	Disable primary data lines ¹ 7 and ² 8 (remove lines 7 and 8 from the back of HAC A).	AK 11-16
8.2.14	Operators console CRT shall display loss of communication line ¹ 7 and ² 8 .	AK 11-16
8.2.15	Operators console shall display line switchover has occurred.	AK 11-16
8.2.16	HSTs now are commanded on the secondary data lines.	AK 11-16
8.2.17	Enter: STAT M/TRK C depress RTN Response: HSTs responding shall display status on operator console CRT.	AK 11-16
8.2.18	Enter: <u>DECREASE S</u> ²⁰⁷ 212 depress RTN Response: HSTs in the track mode shall move to the standby position and display the standby mode.	AK 11-16
8.2.19	Enter: <u>STOW S</u> ²⁰⁷ 212 depress RTN Response: Responding HSTs in the standby position shall move to the stow position by performing a wire walk and display the stow mode.	AK 11-16

8.2.20 Enter: STOW ALL depress RTN

Response: Responding heliostats shall move to the stow position from the mark mode and display the stow mode.

AK 11-16

8.2.21 Verify HST field is in the stow mode and reconnect the primary data lines ~~7~~² and ~~8~~².

✓ 8.2.22 Reboot both HACs (A and B) and recycle HFC power by recycling the main breaker in each of the ~~14 feeder panels~~^{MAIN Breakers 7-9} in the field.

8.2.23 Display segment ~~212~~²⁰⁷ on Graphics 1999 CRT.

8.2.24 Enter: LOAD ALL depress RTN

Response: No HST motion, HSTs responding shall display the initialization mode from the transition mode.

8.2.25 Enter: STOW ALL depress RTN

Response: Responding HSTs display the stow mode from the initialization mode.

8.2.26 Enter: MARK S ~~212~~^{207 212} depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK 11-16



No Line Switch
8.2.27 At the heliostat pedestal, turn off the power to heliostats 1069 and 1269.

AK 11-16

8.2.28 Operator console CRT shall display HFC input time out error and line switchover has occurred.

8.2.29 At the heliostat pedestal, turn on the power to heliostats 1069 and 1269.

8.2.30 Enter: LOAD F 61, 62 depress RTN

Response: No HST motion, HSTs responding shall display the initialization mode from the transition mode.

AK 11-16

8.2.31 Enter: STOW F 61, 62 depress RTN
Response: Responding HSTs display the stow mode from the initialized mode.

AK 11-16

8.2.32 Enter: STOW S ~~212~~ 212 depress RTN
Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

AK 11-16

8.2.33 End of data line switchover verification.

8.3 Primary HAC Failover to the Secondary HAC Verification Using All HSTs In Service

8.3.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Display full-field on the Graphics 1999, CRT.

8.3.2 Enter: LOAD ALL depress RTN
Response: No HST motion, HSTs responding shall display initialization mode from the transition mode.

AK 11-16

8.3.3 Enter: STOW ALL depress RTN
Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

AK 11-16

8.3.4 Enter: MARK ALL depress RTN
Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK 11-16

8.3.5 Enter: STOW S ~~112, 212, 312, 412~~ 108 208 308 408 508 depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the mark mode.

AK 11-16

8.3.6 Enter: UNSTOW W ~~12~~ 8 depress RTN
Response: Responding HSTs shall track the CLLP, then move upward to track the CULP, then display the standby mode.

AK 11-16



- 8.3.7 Enter: INCREASE W 12 depress RTN
 Response: Responding HSTs move to the assigned track position and display the track mode. AK 11-16
- 8.3.8 Remove the power at the primary HAC interface electronics box, simulating total communications loss with the field. AK 11-16
- 8.3.9 Primary HAC shall display communication loss with field alarm messages. AK 11-16
- 8.3.10 *No HAC FAIL OVER*
 The secondary HAC shall display that switchover to secondary HAC has occurred.
- 8.3.11 Enter the following commands from the secondary HAC.
- 8.3.12 Enter: DECREASE W 12 depress RTN
 Response: HSTs in the track position shall move to the standby position and display the standby mode.
- 8.3.13 Enter: STOW S 112, 212, 312, 412 depress RTN
108 208 308 408 508
 Response: HSTs in the standby position shall move to the stow position by performing a wire walk and display the stow mode.
- 8.3.14 Enter: STOW ALL depress RTN
 Response: Responding HSTs shall move to the stow position and display the stow mode from the mark mode.
- 8.3.15 Plug in the power cord of the primary HAC interface electronics box.
- 8.3.16 End of primary HAC failover to the secondary interface electronics box.
- 8.3.17 Reboot both HACs (A and B) and recycle HFC power by recycling the main breakers in each of the 14 feeder panels in the field prior to step 8.4.
- 8.4 Primary HAC Control with Field Power Loss and Field Communication Loss Verification Using All HSTs in Service
- 8.4.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Display full-field on the graphics 1999, CRT.

COLLECTOR SUBSYSTEM

DUAL HELIOSTAT ARRAY CONTROLLER TEST

OFFICIAL TEST COPY 2
TEST ARTICLE 4005005132700
FORM NO. 2
DATE 11-18-81
P.C.N. ATTACHED

TEST PROCEDURE 106

21 AUGUST 1981

REVISION 0

PARTIAL RETEST PARAGRAPH
8.2.22 TO 9.4

M
3834

M
3834

UNITED STATES DEPARTMENT OF ENERGY/
SOUTHERN CALIFORNIA EDISON COMPANY
10 MWe SOLAR PILOT PLANT
DAGGETT, CALIFORNIA

MARTIN MARIETTA AEROSPACE
DENVER, COLORADO

Author *G.R. Rose*
G.R. Rose
Reviewed by *Jack D. Stiller*
Approved by *A. Weber*
R. D. J.

No HELIO-
OFFLINE FOR TH
TEST. 11-18-81

Initial/Date

- 8.2.20 Enter: STOW ALL depress RTN
Response: Responding heliostats shall move to the stow position from the mark mode and display the stow mode.
- 8.2.21 Verify HST field is in the stow mode and reconnect the primary data lines 7 and 8.
- 8.2.22 Reboot both HACs (A and B) and recycle HFC power by recycling the main breaker in each of the 14 feeder panels in the field.
- 8.2.23 Display segment 212 on Graphics 1999 CRT.
- 8.2.24 Enter: LOAD ALL depress RTN
Response: No HST motion, HSTs responding shall display the initialization mode from the transition mode.
- 8.2.25 Enter: STOW ALL depress RTN
Response: Responding HSTs display the stow mode from the initialization mode.
- 8.2.26 Enter: MARK S 212 depress RTN
Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.
- 8.2.27 At the heliostat pedestal, turn off the power to heliostats 1069 and 1269.
- 8.2.28 Operator console CRT shall display HFC input time out error and line switchover has occurred.
- 8.2.29 At the heliostat pedestal, turn on the power to heliostats 1069 and 1269.
- 8.2.30 Enter: LOAD F 61, 62 depress RTN
Response: No HST motion, HSTs responding shall display the initialization mode from the transition mode.

11-18-81
START RETEST

AK 11-18

AK 11-18

AK 11-18

AK 11-18

AK 11-18

AK 11-18

AK 11-18

AK 11-18

8.2.31 Enter: STOW F 61, 62 depress RTN

Response: Responding HSTs display the stow mode from the initialized mode.

AK 11-18

8.2.32 Enter: STOW S 212 depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the mark mode.

AK 11-18

8.2.33 End of data line switchover verification.

AK 11-18

8.3 Primary HAC Failover to the Secondary HAC Verification Using All HSTs In Service

8.3.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Status commands shall be issued throughout this test at any time for additional verification of command responses. Display full-field on the Graphics 1999, CRT.

8.3.2 Enter: LOAD ALL depress RTN

Response: No HST motion, HSTs responding shall display initialization mode from the transition mode.

ADD: REBOOT TO Configure ALL DATA^{LINES} as Prime

AK 11-18

8.3.3 Enter: STOW ALL depress RTN

Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

AK 11-18

Flag
4. 2119
5. 2024
6. 2073
7. 2359
8. 1169
Dicht MARK

8.3.4 Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK 11-18

2
8.3.5 to 8.3.7 NO Not Required for Retest

8.3.5 Enter: STOW S 112, 212, 312, 412 depress RTN

Response: Responding HSTs shall move to the stow position and display the stow mode from the mark mode.

8.3.6 Enter: UNSTOW W 12 depress RTN

Response: Responding HSTs shall track the CLLP, then move upward to track the CULP, then display the standby mode.

8.3.7 Enter: INCREASE W 12 depress RTN
Response: Responding HSTs move to the assigned track position and display the track mode.

AK 11-18

8.3.8 Remove the power at the primary HAC interface electronics box, simulating total communications loss with the field.

AK 11-18

8.3.9 Primary HAC shall display communication loss with field alarm messages.

8.3.10 The secondary HAC shall display that switchover to secondary HAC has occurred.

AK 11-18

8.3.11 Enter the following commands from the secondary HAC.

8.3.12 Enter: DECREASE W 12 depress RTN
Response: HSTs in the track position shall move to the standby position and display the standby mode.

8.3.13 Enter: STOW S 112, 212, 312, 412 depress RTN
Response: HSTs in the standby position shall move to the stow position by performing a wire walk and display the stow mode.

8.3.14 Enter: STOW ALL depress RTN
Response: Responding HSTs shall move to the stow position and display the stow mode from the mark mode.

AK 11-18

8.3.15 Plug in the power cord of the primary HAC interface electronics box.

8.3.16 End of primary HAC fall over to the secondary interface electronics box.

AK 11-18

8.3.17 Report both HACs (A and B) and remove HAC power by recycling the main breakers in each of the 14 feeder panels in the field prior to step 8.4.

AK 11-18

8.4 Primary HAC Control with Field Power to go and Field Communication Loss Verification Using 211 HSTs in Service

8.4.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper helicopter control. These commands shall be issued throughout this test at any time. For additional verification of command responses, refer to the test graphics 1899, CRT.

AK 11-18

13
8.3.12
- 8.3.13
Not Required for Retest

8.4.2 Enter: LOAD ALL depress RTN

Response: No heliostat motion, HSTs responding shall display initialization mode from the transition mode.

AK 11-18

2031 209c

10

8.4.3 Enter: STOW ALL depress RTN

Response: HSTs responding shall move to the stow position and display the stow mode from the initialized mode.

AK 11-18

Flag 11 1409 } Didn't
12 2620 } MARK
13 1024 } 8.4.4
14 1852 }

Enter: MARK ALL depress RTN

Response: Responding HSTs shall move to the AZ and EL mark positions and display mark mode from the stow mode.

AK 11-18

8.4.5 Simulate a field power loss to the primary HAC power interrupt pin with the computer MDAC Simulator, P/N TA26.

AK 11-18

8.4.6 Unplug the primary HAC interface electronics simulating communication failure with the field.

AK 11-18

8.4.7 Primary HAC display shall provide a field power loss alarm ~~and communication failure with field alarm.~~

AK 11-18

Field Power loss Alarm take Precedence over all other Alarms the Com Failure Alarm will not be displayed.

8.4.8 Repower the primary HAC interface electronics and remove power interrupt signal.

AK 11-18

8.4.9 Recycle HFC power by recycling the main breakers in each of the 14 feeder panels in the field.

8.4.10 At the primary HAC control console, enter the following command:

8.4.11 Enter: LOAD ALL depress RTN

AK 11-18

Response: Responding HSTs shall display the initialized mode.

8.4.12 Enter: STOW ALL depress RTN

AK 11-18

Response: Responding HSTs shall move to the stow position and display stow mode from the initialized mode.

8.4.13 End of primary HAC control with field power loss and field communication loss verification.

AK 11-18

9.0 SYSTEM RESTORATION

9.1 Verify all heliostats are in the stow mode.

NOTE: The heliostats must be in the stow position before beginning HAC power down.

9.2 Power the HAC system down in accordance with the operations manual, MCR-81-1708.

9.3 Remove power from the heliostats used in this test by turning off the applicable circuit breakers in the field power center.

9.4 Remove computer MDAC Simulator tool and reconfigure the interrupt signal line.

AK 11-18

AK 11-18

PROCEDURE HISTORY SHEET

PROCEDURE NO. 106

Page 1 of 1

PARTIAL RETEST PARAGRAPHS 8.2.22 TO 9.4

Item	Date	Para.	Entry	Orig	Qual. Accep.
1	11-18	8.3.1	ADD: Reboot to Configure All Data (Com) Lines Prime		M 3334 11-19-81
2	11-18	8.3.5 To 8.3.7	Red line Not Required for Retest		M 3334 11-19-81
3	11-18	8.3.12 8.3.13	" " " "		M 3334 11-19-81
4	11-18	8.3.4	2119 Did not Mark (Run Away)		M 3334 11-19-81
5	11-18	8.3.4	2024 " " "		M 3334 11-19-81
6	11-18	8.3.4	2073 " " "		M 3334 11-19-81
7	11-18	8.3.4	2359 " " "		M 3334 11-19-81
8	11-18	8.3.4	1169 " " "		M 3334 11-19-81
9	11-18	8.4.7	Red line No Comp Failure Alarm		M 3334 11-19-81
10	11-18	8.4.3	2031 209C		M 3334 11-19-81
11	11-18	8.4.4	1409 Did not Mark		M 3334 11-19-81
12	11-18	8.4.4	2626 " " "		M 3334 11-19-81
13	11-18	8.4.4	1024 " " "		M 3334 11-19-81
14	11-18	8.4.4	1852 " " "		M 3334 11-19-81

PROCEDURE 106 PARA 8.2.22 TO 9.4 WAS
RETESTED SUCCESSFULLY.

NO RETEST REQUIRED.

ALL OPEN ITEMS ABOVE WILL BE CLOSED.

TESTER: G. Harris 11/20/81
Date

TEST CONDUCTOR: R. Wells 11-18-81
Date

QUALITY: A. Keenan 11-18-81
Date

7.

CHRONOLOGICAL SUMMARY

COLLECTOR SUBSYSTEM HELIOSTAT TARGETING VERIFICATION

<u>Date</u>	<u>Test Description</u>	<u>Results</u>
11/16/81	Heliostat Targeting Verification	Passed

PROCEDURE 116

Test Title: Procedure 116 - Heliostat Targeting Verification.

Acceptance Criteria: Individual heliostat beams commanded to track the receiver attained their assigned aimpoint tracking position. The heliostat beam is within 1 meter of the assigned aimpoint, corresponding to acceptance criteria of bias measurement and bias verification systems utilized during installation activity prior to the availability of the BCS system. This activity was a visual measurement and verification prior to BCS activation. The correct aimpoint tracking arrays for the individual heliostats were displayed on the HAC graphics CRT. The HAC did select, control and display up to 20 sets of aimpoint tracking arrays.

Test Results: The Heliostat Targeting Verification was performed on 16 November 1981. All procedural requirements were complied with and the acceptance criteria was met. The Collector Subsystem is considered to have passed the Heliostat Targeting Verification.

Retest Requirements: No further testing required. All heliostat flag items were cleared and verified operationally.

8.0 PROCEDURE AND DATA COLLECTION

8.1 Individual HelioStat Aimpoint Targeting Verification

8.1.1 Verify that the initial conditions have been established.

AK / 11-16
Initial Date

8.1.2 At the HAC control console, the following operational commands shall be entered (defined by ENTER:) and the command responses verified as to proper heliostat (s) control: *

*UPAIM 01
AIMP ALL 01*

LOAD BY HELIOSTATS

8.1.2.1 ENTER: LOAD ALL depress carriage return (RTN).

AK 11-16

RESPONSE: No heliostat motion, HST (s) responding shall attain initialization mode.

8.1.2.2 ENTER: STOW ALL depress RTN.

STOW BY HST AK 11-16

RESPONSE: Responding HST (s) shall move to stow and indicate STOW made.

8.1.2.3 ENTER: MARK ALL depress RTN.

MARK BY HST AK 11-16

RESPONSE: Responding HST (s) shall move to the AZ and EL mark positions and indicate MARK MODE.

8.1.2.4 ENTER: STOW ALL depress RTN.

STOW BY HST AK 11-16

RESPONSE: Responding HST (s) shall move to the stow position and indicate STOW mode.

8.1.2.5 ENTER: UNSTOW H NNNN, NNNN, NNNN, NNNN,
NNNN, NNNN, NNNN, NNNN,
NNNN, NNNN depress RTN*

AK 11-16

ENTER: UNSTOW H NNNN, NNNN, NNNN, NNNN,
NNNN, NNNN, NNNN, NNNN,
NNNN, NNNN depress RTN*

RESPONSE: The commanded HST beams shall track the CLLP, then move upward to track the CULP and display the STANDBY mode on the CRT.

8.1.2.6 ENTER: TRACK H NNNN depress RTN.

RESPONSE: The commanded HST beam shall track the receiver at the assigned aimpoint tracking array position and display the TRACK mode on the CRT.

AK 11-16

8.1.2.6 Continued

RESPONSE: Verify visually that the HST beam position is tracking the assigned aimpoint on the receiver. The beam shall be within 1 meter of the assigned aimpoint. Mark on the receiver tracking - HST Beam Position Data Sheet the following information:

1 0433
2 1435
3 2091
4 2644
} BEAMS MEASURE AND VERIFY

- a. Heliostat number.
- b. Beam position of the assigned aimpoint (north, east, up).
- c. Actual beam position.
- d. Aimpoint Array Number.

Take photograph of beam on receiver. Ensure menu board with correct heliostat number is visible in camera viewfinder.

Verify that the HAC Graphics CRT displays the assigned aimpoint tracking array and the North, East and up coordinates of the heliostat tracking the receiver.

8.1.2.7 Enter: STANDBY H NNNN depress RTN

RESPONSE: The commanded HST beam will move from the TRACK position to track the CULP and display the STANDBY mode on the CRT.

AK 11-16

8.1.2.8 Repeat paragraphs 8.1.2.6 and 8.1.2.7 until the selected individual heliostat (as defined in Appendix 10D) beam positions have been verified to track their assigned aimpoint.

AK 11-16

8.1.2.9 Enter: STOW ALL depress RTN

RESPONSE: The commanded HST(s) shall track from the CULP to the CLLP and return to the stow position. The CRT shall display the STOW mode.

AK 11-16

8.1.2.10 Proceed to step 8.2.

8.2 HAC Control, Display and Selection Demonstration of Aimpoint Tracking Arrays

Init./Date

8.2.1 At the HAC control console, the following operational commands shall be entered and the command responses verified as to proper heliostat control. Display segment 508 on the Chromatics Graphic Terminal.

8.2.1.1 ENTER: UNSTOW H 2945 depress RTN.

AK 11-16

RESPONSE: The commanded heliostat beam shall track the CLLP, then move upward to track the CULP and display the standby mode on the CRT.

8.2.1.2 ENTER: TRACK H 2945 depress RTN.

AK 11-16

RESPONSE: The commanded HST beam shall track the receiver at the assigned aimpoint tracking array position and display the TRACK mode on the CRT. Take photograph.

8.2.1.3 ENTER: UPAIM 20 depress RTN.

RESPONSE: This command will replace the array specified with a new array.

UPAIM WAS DONE IN 8.1

Note: Aimp 1 261.9
Aimp 4 261.9
Aimp 8 261.9

8.2.1.4 ENTER: AIMPOINT S 508 depress RTN.

AK 11-16

RESPONSE: The Chromatics Graphics Terminal shall display the new aimpoint array and new targeting coordinates of the heliostats in that segment. The heliostat tracking the target shall be re-directed to the newly assigned aimpoint. Record on data sheet. Take photograph.

8.2.1.5 ENTER: STANDBY H 2945 depress RTN.

AK 11-16

RESPONSE: The commanded heliostat beam shall move from the track position on the receiver to track the CULP and display the standby mode on the CRT.

8.2.1.6 ENTER: STOW H 2945 depress RTN

RESPONSE: The commanded heliostat beam shall track from the CULP to the CLLP and return to the stow position. The CRT shall display the STOW mode.

AK 11-16

8.2.1.7 End of heliostat targeting verification test.

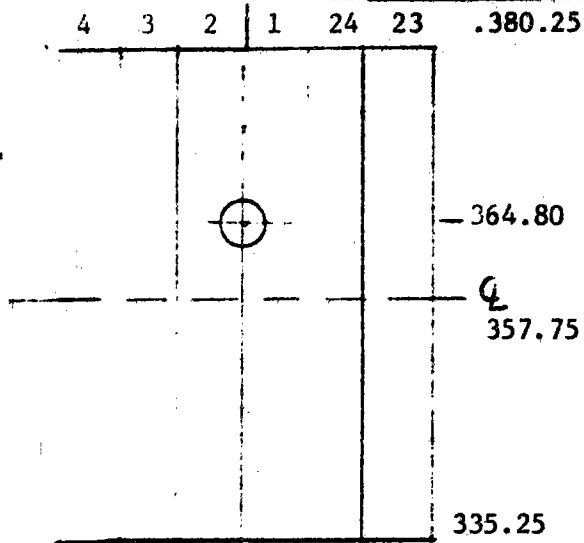
116
Rev. 0
Page 10 of 12

C LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

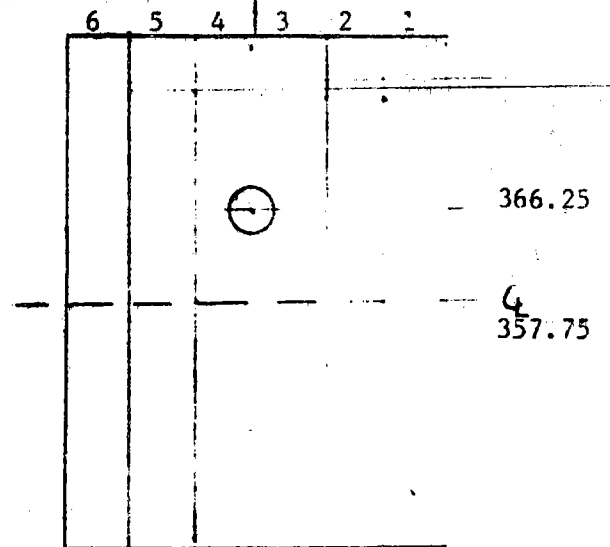
C LRCVR

10C-2



Aimpoint Array No. 01
 HST No. 0438
 Date Not tested

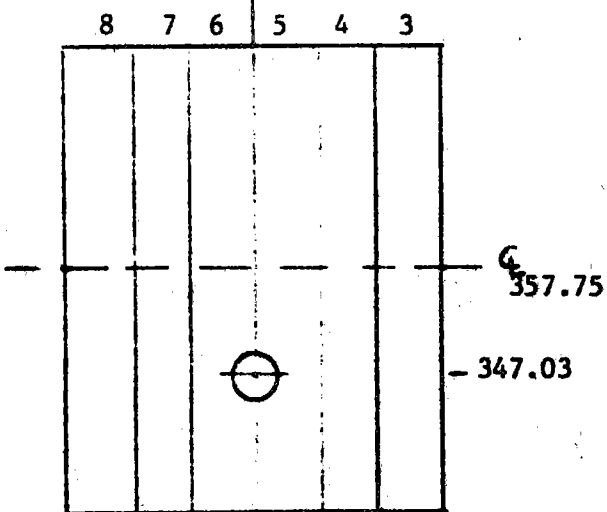
Aimpoint North East Up
 o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 0432
 Date Not tested

Aimpoint North East Up
 o = assigned aimpoint
 x = actual visual observation

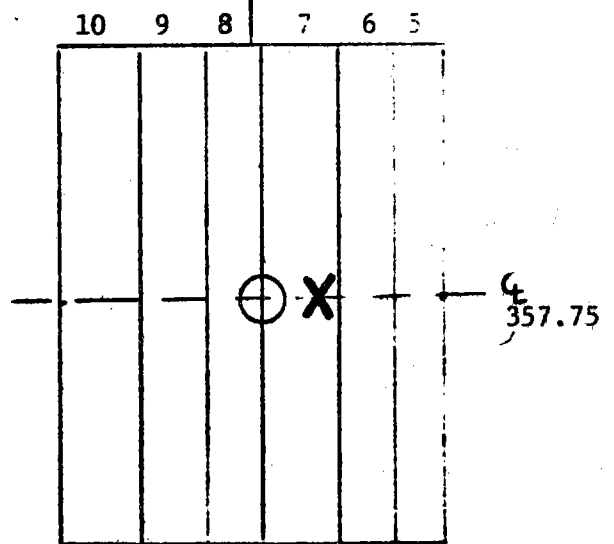
C LRCVR



Aimpoint Array No. 01
 HST No. 0222
 Date Not tested

Aimpoint North East Up

C LRCVR



Aimpoint Array No. 01
 HST No. 0118
 Date 11-16-81

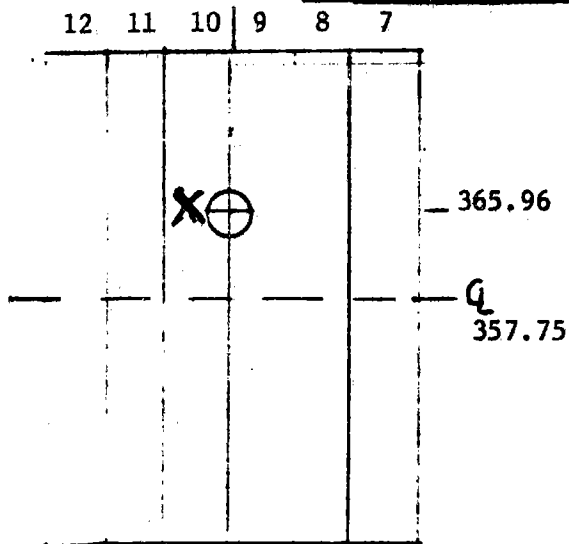
Aimpoint 0 0 272.1
 North East Up

~LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

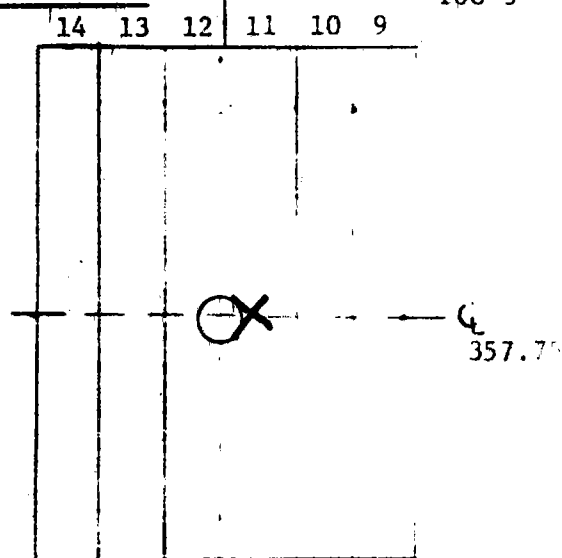
~LRCVR

10C-3



Aimpoint Array No. 01
 HST No. 0310
 Date 11-16-81

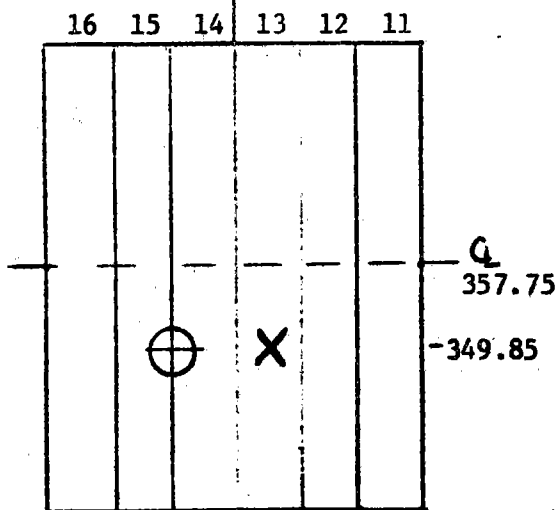
Aimpoint 0 0 278.3
 North East Up
 o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 0506
 Date 11-16-81

Aimpoint 0 0 267.8
 North East Up
 o = assigned aimpoint
 x = actual visual observation

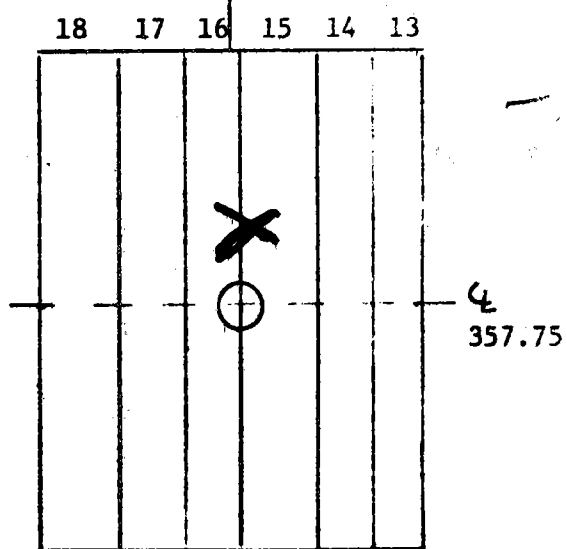
^CLRCVR



Aimpoint Array No. 01
 HST No. 0603
 Date 11-16-81

Aimpoint 0 0 259.0
 North East Up

^CLRCVR

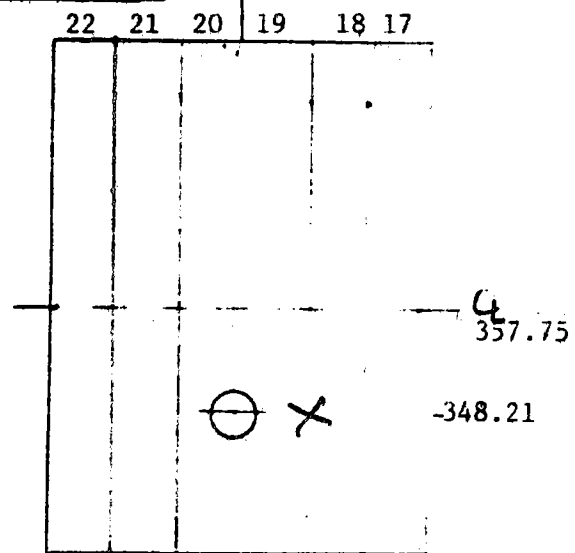
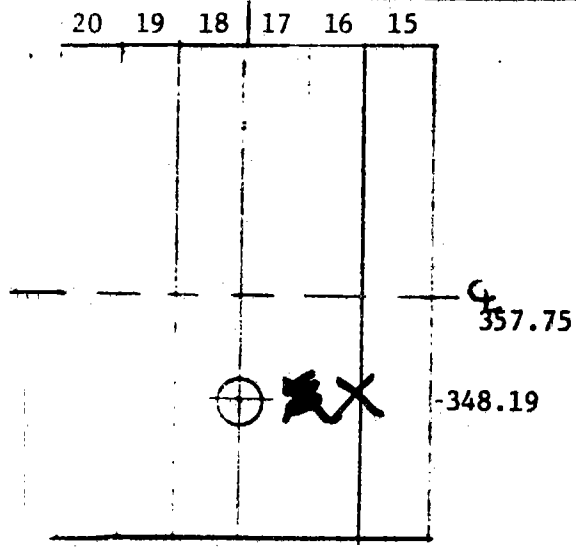


Aimpoint Array No. 01
 HST No. 0611
 Date 11-16-81

Aimpoint 0 0 267.2
 North East Up

LRCVR APP 10C-HST BEAM POSITION DATA SHEET

LRCVR 10C-4



Aimpoint Array No. 01
 HST No. 1027
 Date 11-16-81

Aimpoint Array No. 01
 HST No. 0931
 Date 11-16-81

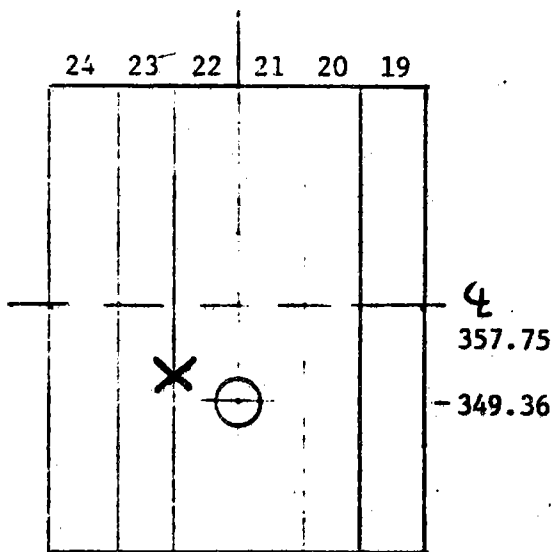
Aimpoint o o 255.7
 North East Up

Aimpoint o o 256.1
 North East Up

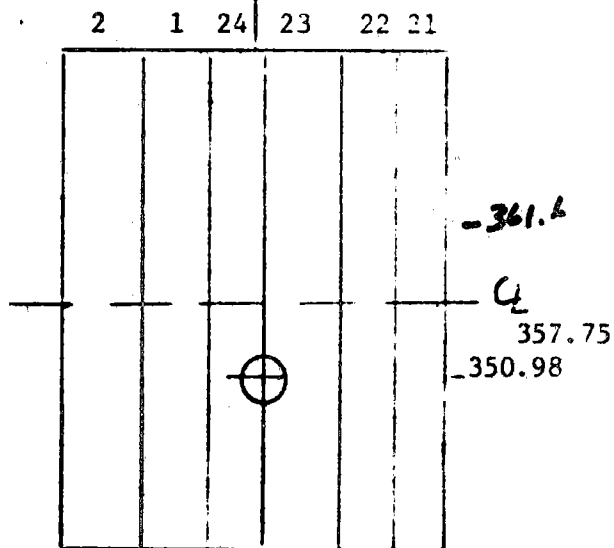
o = assigned aimpoint
 x = actual visual observation

o = assigned aimpoint
 x = actual visual observation

C LRCVR



C LRCVR



Aimpoint Array No. 01
 HST No. 0741
 Date 11-16-81

Aimpoint Array No. 01
 HST No. 0433
 Date 11-16-81

Aimpoint o o 258.0
 North East Up

Aimpoint o o 261.6
 North East Up

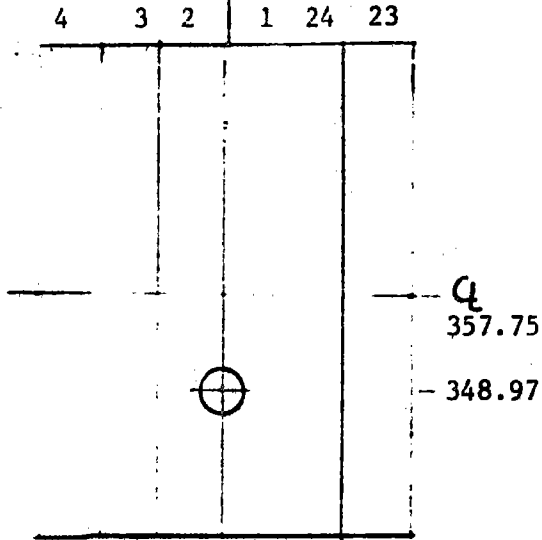
o = assigned aimpoint

LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

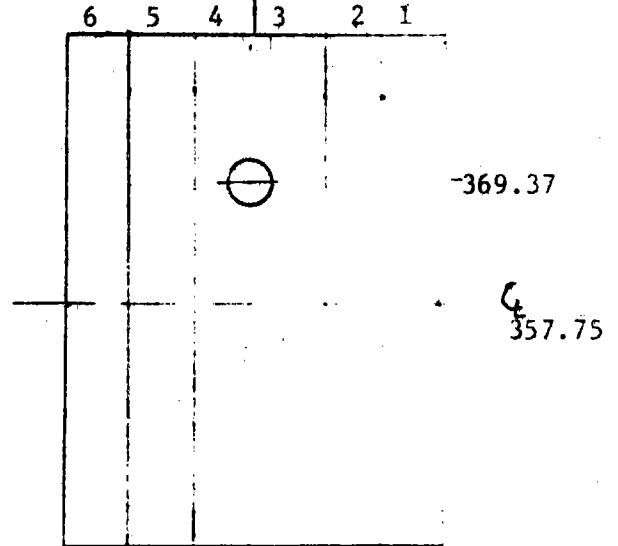
LRCVR

10C-5



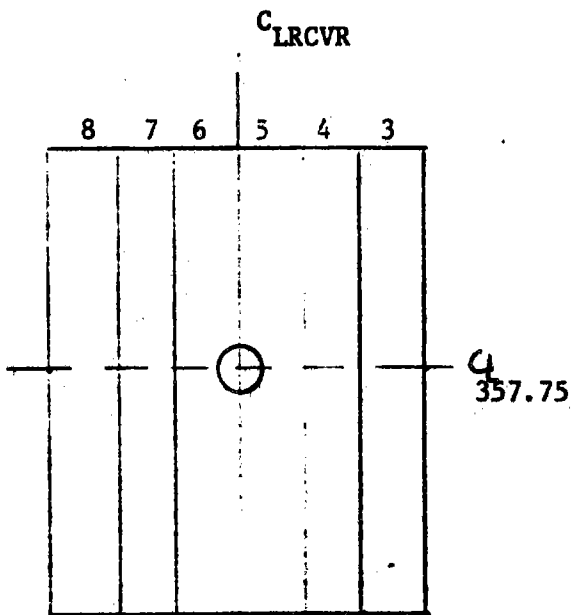
Aimpoint Array No. 01
 HST No. 0748
 Date Not tested

Aimpoint North East Up
 o = assigned aimpoint
 x = actual visual observation



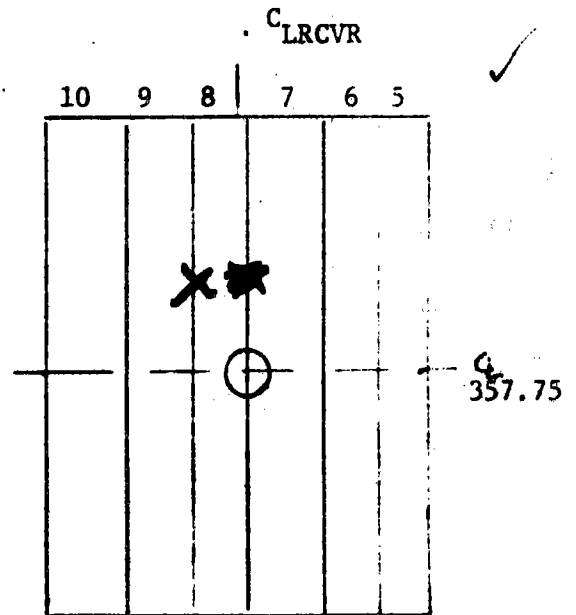
Aimpoint Array No. 01
 HST No. 0838
 Date Not tested

Aimpoint North East Up
 o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 1036
 Date Not tested

Aimpoint North East Up
 o = assigned aimpoint

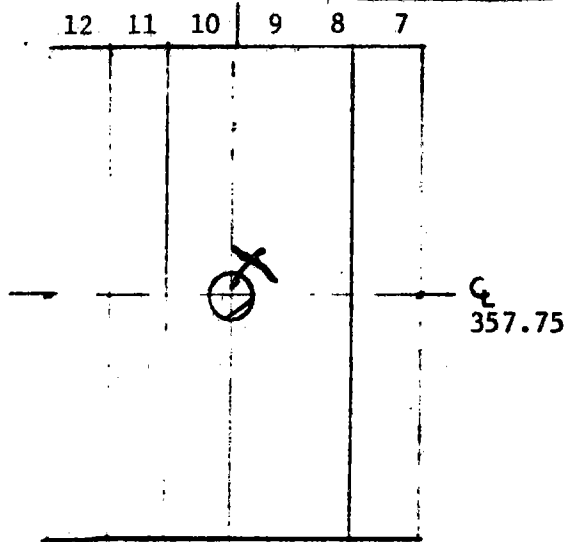


Aimpoint Array No. 01
 HST No. 1030
 Date 11-16-81

Aimpoint 0 0 255.3
North East Up
 o = assigned aimpoint

C LRCVR APP 10C-HST BEAM POSITION DATA SHEET

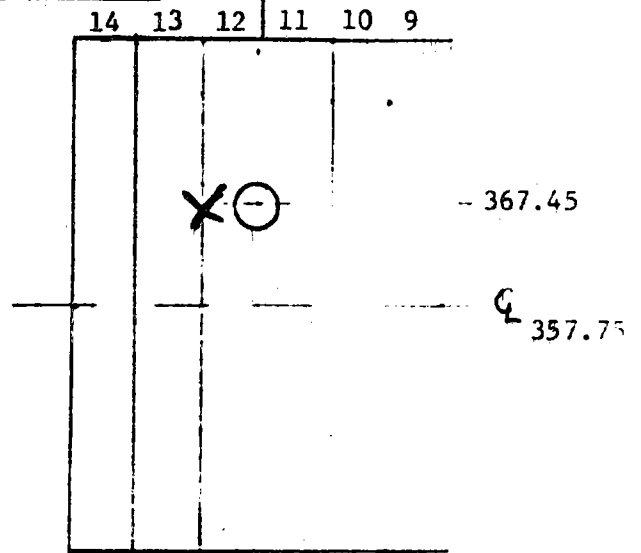
C LRCVR 10C-6



Aimpoint Array No. 01
 HST No. 1118
 Date 11-16-81

Aimpoint o o 265.1
 North East Up

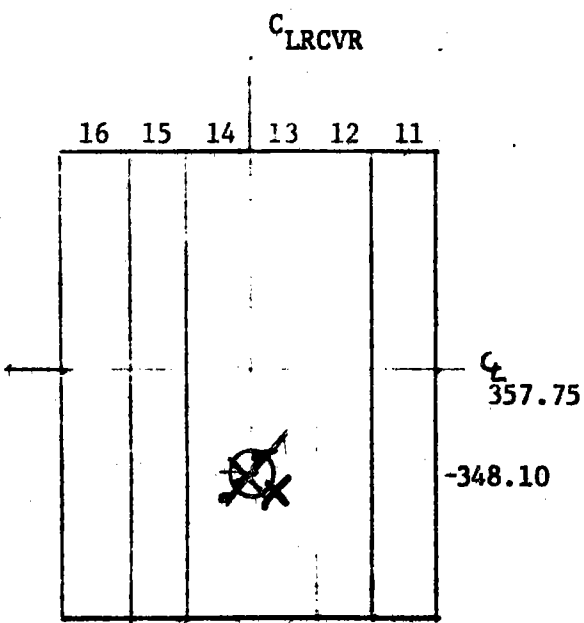
o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 1202
 Date 11-16-81

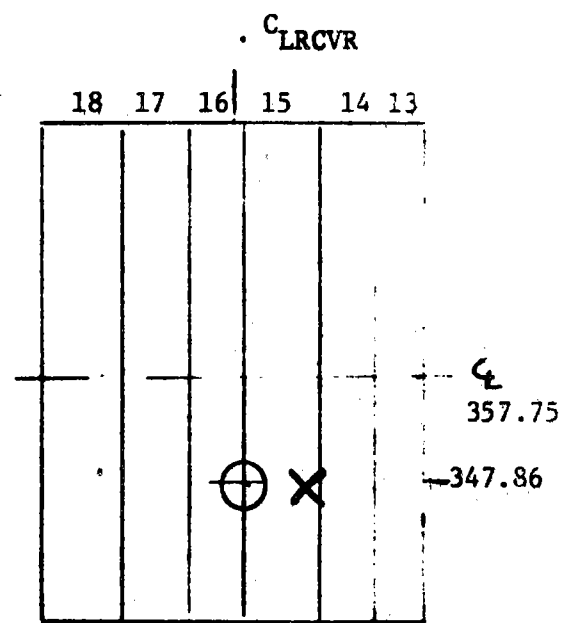
Aimpoint o o 274.8
 North East Up

o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 1307
 Date 11-16-81

Aimpoint o o 254.7
 North East Up



Aimpoint Array No. 01
 HST No. 1415
 Date 11-16-81

Aimpoint o o 254.3
 North East Up

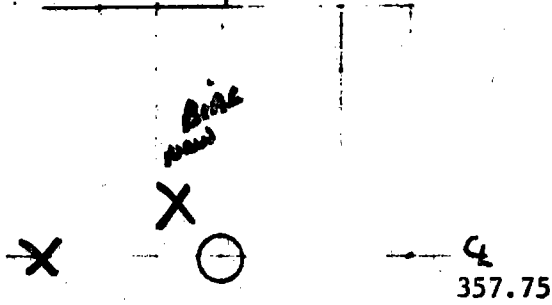
C LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

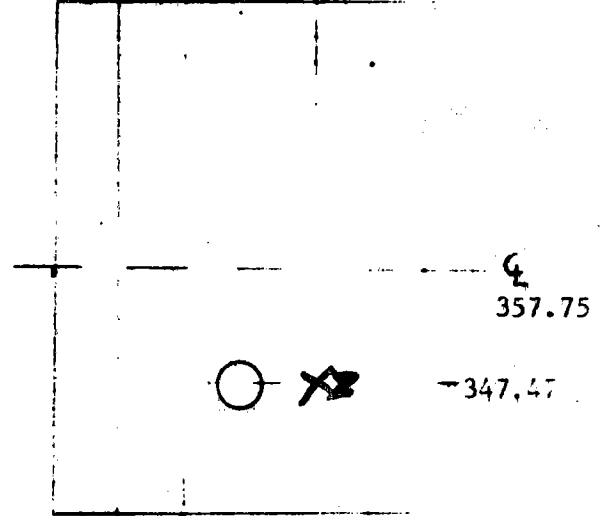
C LRCVR

10C-7

20 19 18 | 17 16 15



22 21 20 | 19 18 17



Aimpoint Array No. 01
 HST No. 1435
 Date 11/16/81

Aimpoint 0 0 264.3
 North East Up

o = assigned aimpoint
 x = actual visual observation

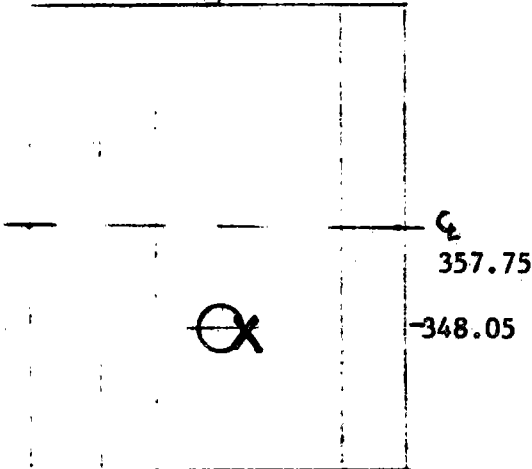
Aimpoint Array No. 01
 HST No. 1337
 Date 11-16-81

Aimpoint 0 0 254.1
 North East Up

o = assigned aimpoint
 x = actual visual observation

C LRCVR

24 23 22 | 21 20 19

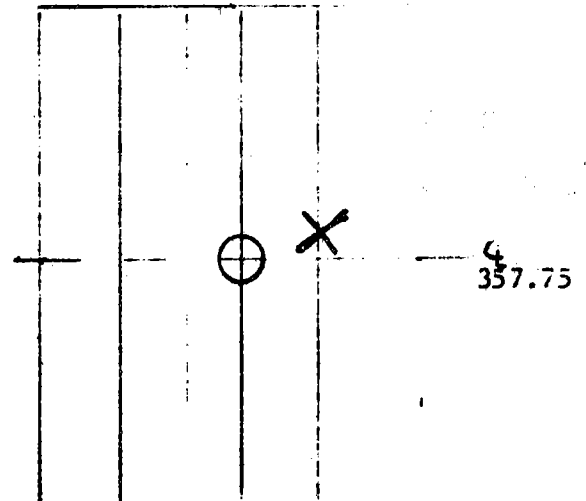


Aimpoint Array No. 01
 HST No. 1255
 Date 11-16-81

Aimpoint 0 0 254.9
 North East Up

C LRCVR

2 1 24 | 23 22 21



Aimpoint Array No. 01
 HST No. 0845
 Date 11-16-81

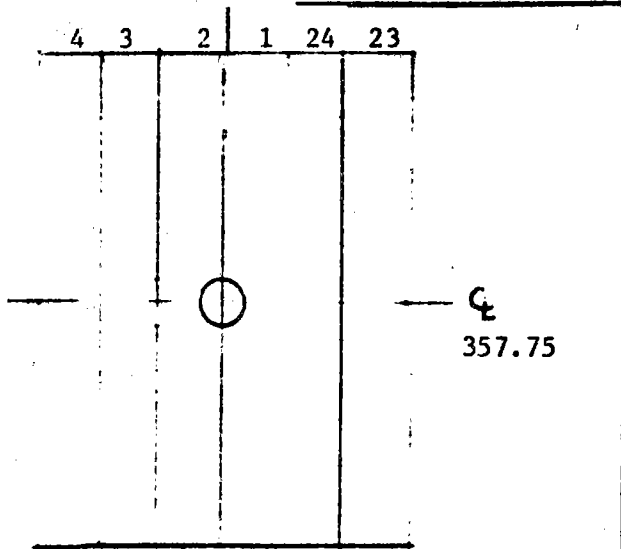
Aimpoint 0 0 244.2
 North East Up

LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

LRCVR

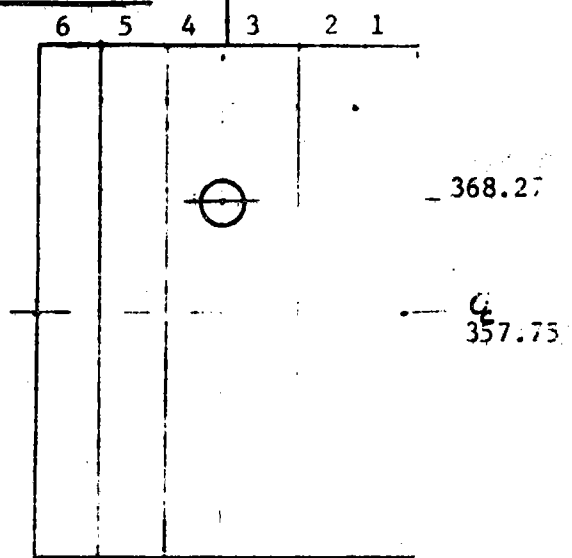
10C-8



Aimpoint Array No. 01
 HST No. 0952
 Date Not tested

Aimpoint North East Up

o = assigned aimpoint
 x = actual visual observation

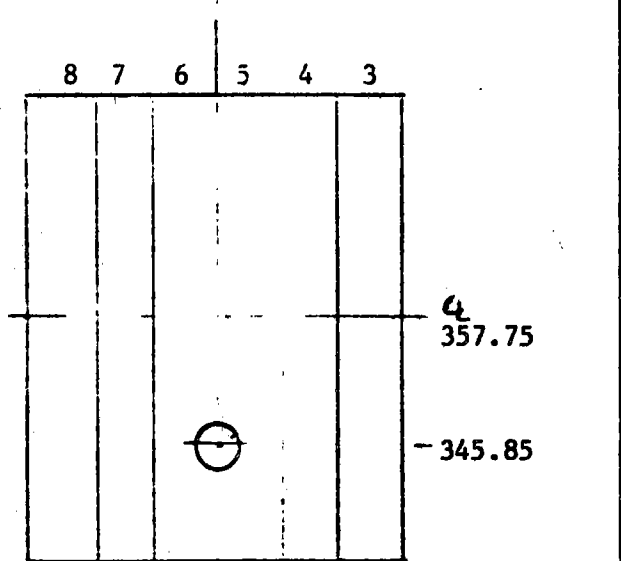


Aimpoint Array No. 01
 HST No. 1460
 Date Not tested

Aimpoint North East Up

o = assigned aimpoint
 x = actual visual observation

C LRCVR

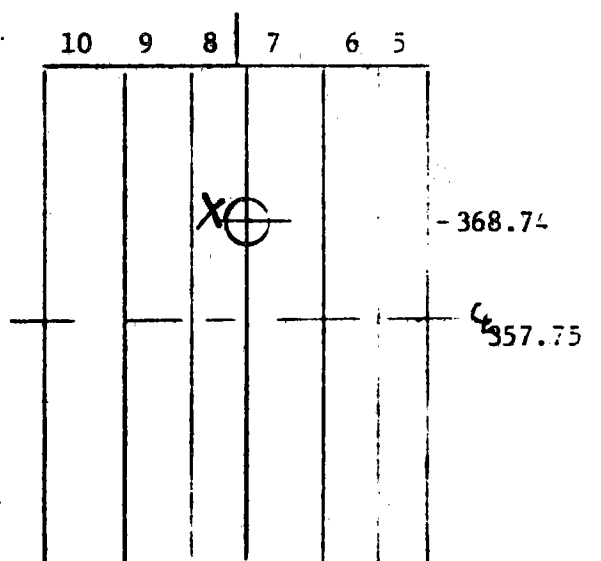


Aimpoint Array No. 01
 HST No. 1856
 Date Not tested

Aimpoint North East Up

o = assigned aimpoint

C LRCVR



Aimpoint Array No. 01
 HST No. 1734
 Date 11-16-

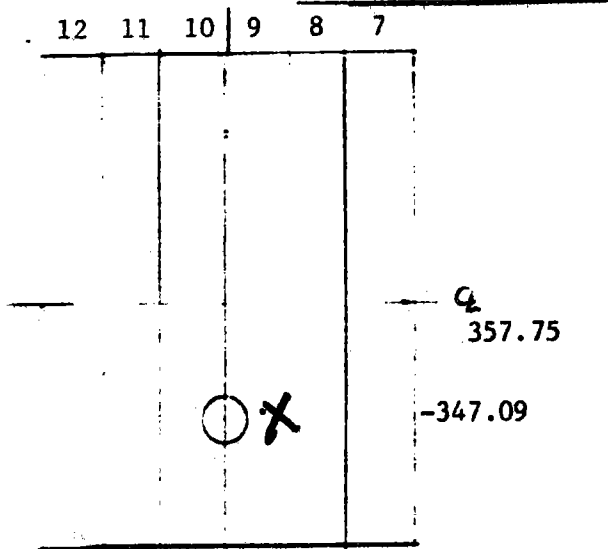
Aimpoint 0 0 274.8
North East Up

C LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

C LRCVR

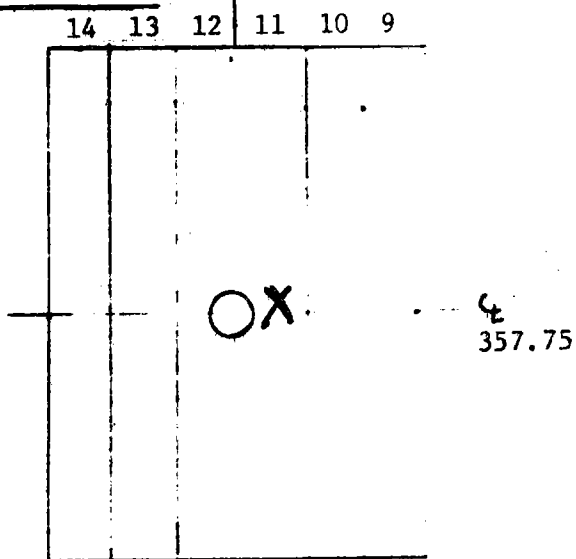
10C-9



Aimpoint Array No. 01
 HST No. 1732
 Date 11-16-81

Aimpoint o North o East 252.8 Up

o = assigned aimpoint
 x = actual visual observation

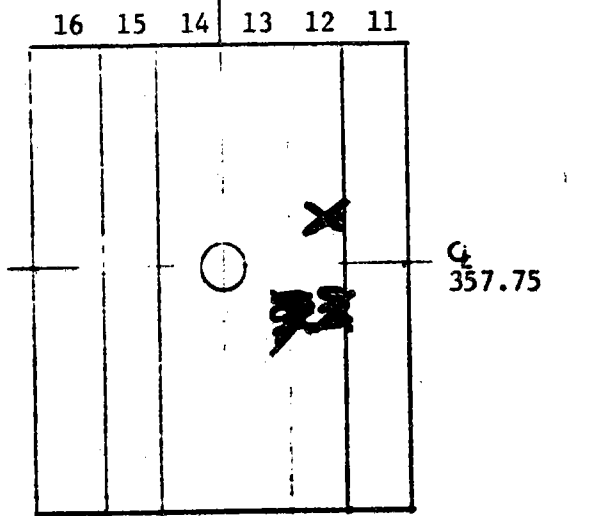


Aimpoint Array No. 01
 HST No. 1806
 Date 11-16-81

Aimpoint o North o East 269.5 Up

o = assigned aimpoint
 x = actual visual observation

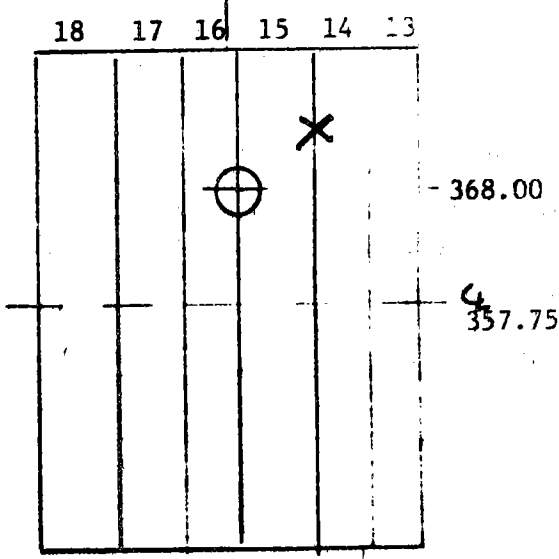
C LRCVR



Aimpoint Array No. 01
 HST No. 1811
 Date 11-16-81

Aimpoint o North o East 213.5 Up

C LRCVR



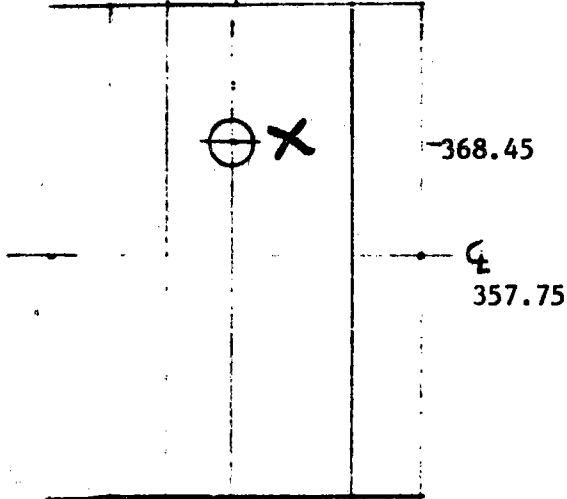
Aimpoint Array No. 01
 HST No. 1819
 Date 11-16-81

Aimpoint o North o East 273.9 Up

C_LR_CV_R APP 10C-HST BEAM POSITION DATA SHEET

C_LR_CV_R 10C-10

20 19 18 | 17 16 15

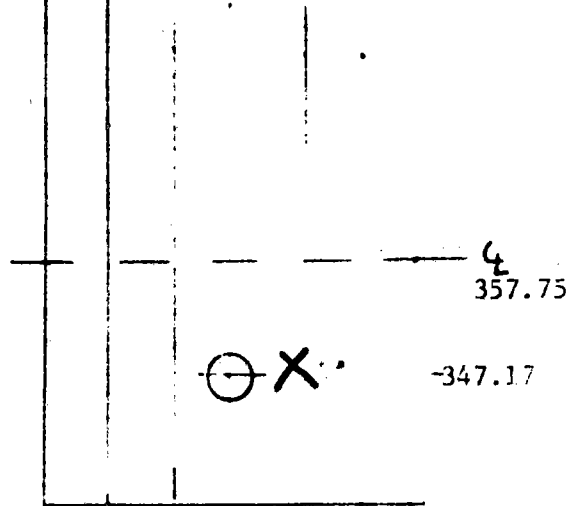


Aimpoint Array No. 01
 HST No. 1939
 Date 11-16

Aimpoint 0 0 274.2
 North East Up

o = assigned aimpoint
 x = actual visual observation

22 21 20 | 19 18 17



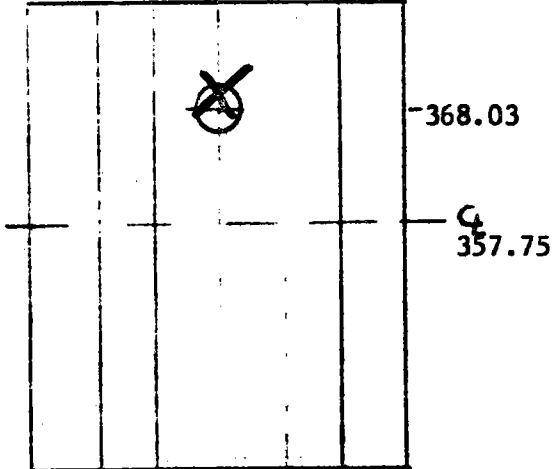
Aimpoint Array No. 01
 HST No. 1759
 Date 11-16-81

Aimpoint 0 0 252.8
 North East Up

o = assigned aimpoint
 x = actual visual observation

C_LR_CV_R

24 23 22 | 21 20 19

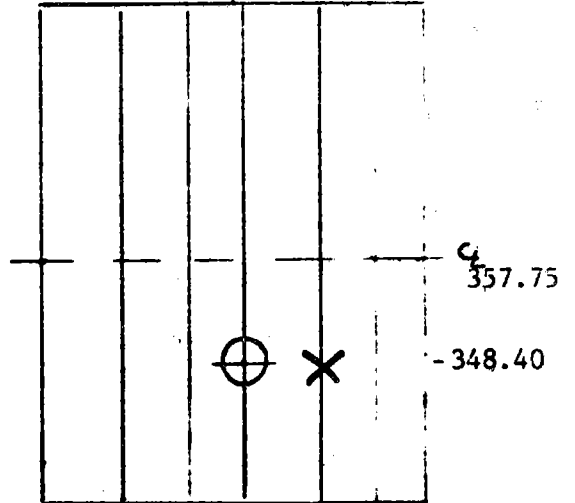


Aimpoint Array No. 01
 HST No. 1671
 Date 11-16-81

Aimpoint 0 0 274.4
 North East Up

C_LR_CV_R

2 1 24 | 23 22 21

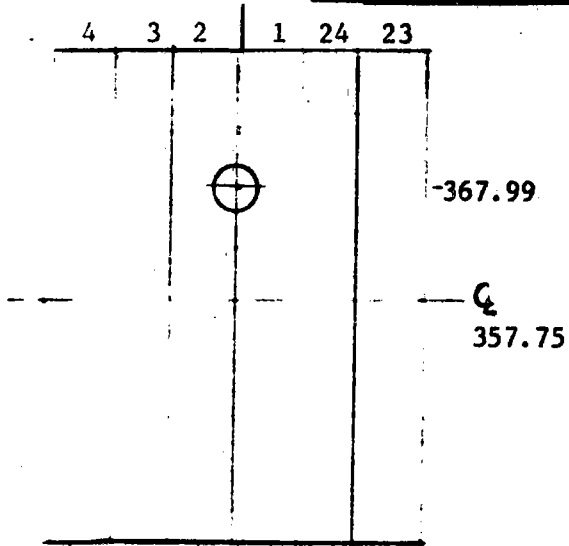


Aimpoint Array No. 01
 HST No. 1165
 Date 11-16-81

Aimpoint 0 0 255.5
 North East Up

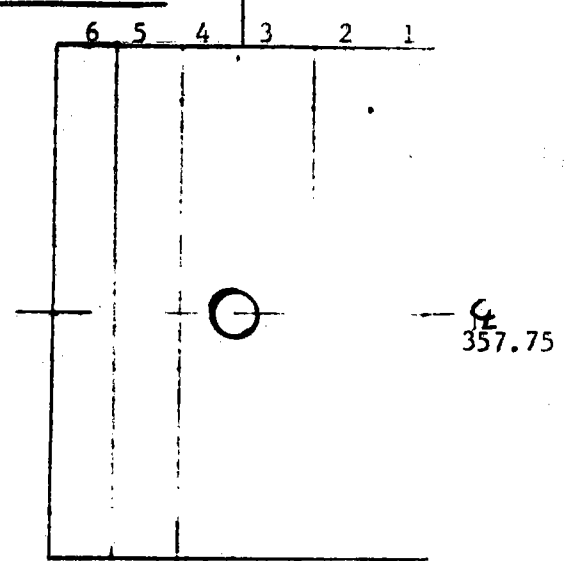
C_LRCVR APP 10C-HST BEAM POSITION DATA SHEET

C_LRCVR 10C-11



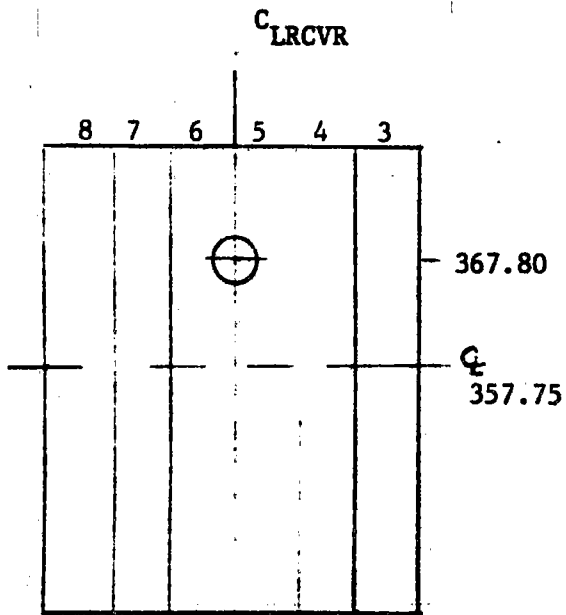
Aimpoint Array No. 01
 HST No. 1260
 Date Not tested

Aimpoint North East Up
 o = assigned aimpoint
 x = actual visual observation



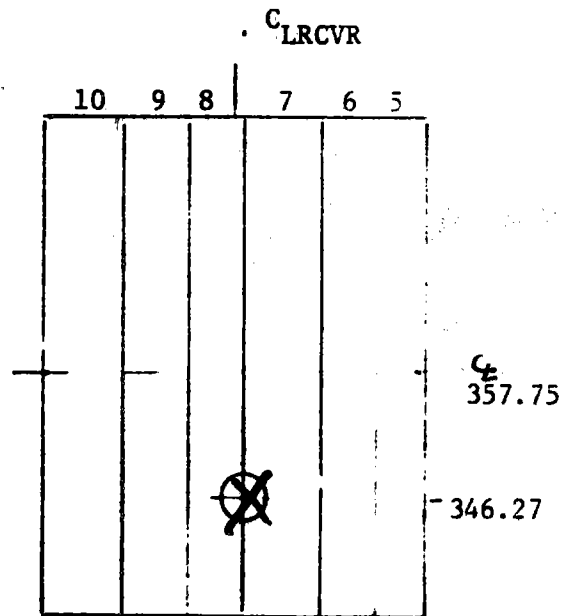
Aimpoint Array No. 01
 HST No. 1764
 Date Not tested

Aimpoint North East Up
 o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 1962
 Date Not tested

Aimpoint North East Up

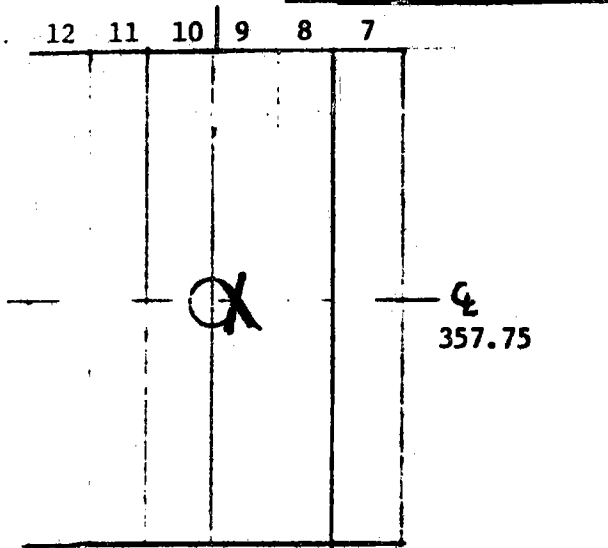


Aimpoint Array No. 01
 HST No. 2062
 Date 11-16-81

Aimpoint 0 0 251.4
 North East Up

C LRCVR APP 10C-HST BEAM POSITION DATA SHEET

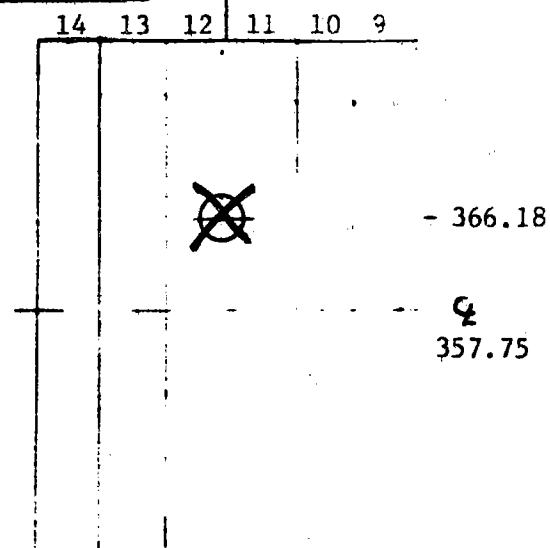
C LRCVR 10C-12



Aimpoint Array No. 01
 HST No. 2236
 Date 11-16-81

Aimpoint 0 0 271.1
 North East Up

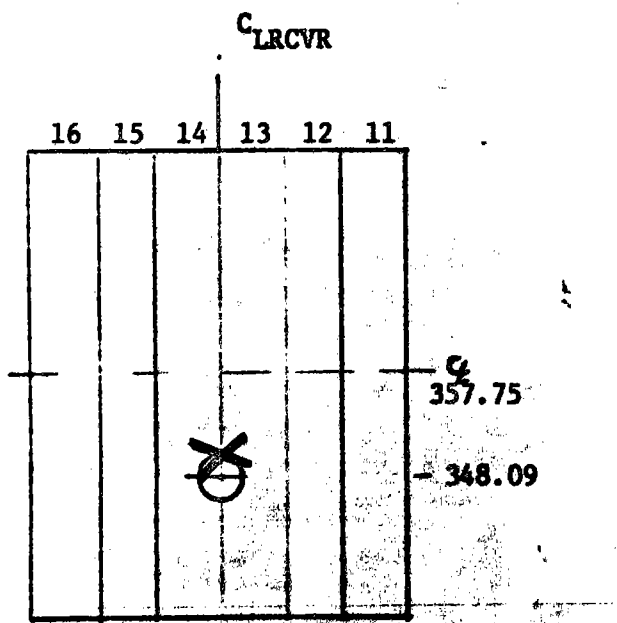
o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 2310
 Date 11-16-81

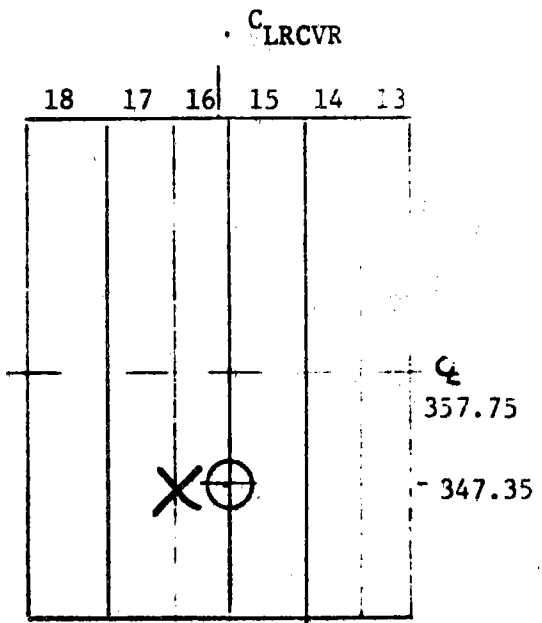
Aimpoint 0 0 271.1
 North East Up

o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. 01
 HST No. 2415
 Date 11-16-81

Aimpoint 0 0 252.0
 North East Up



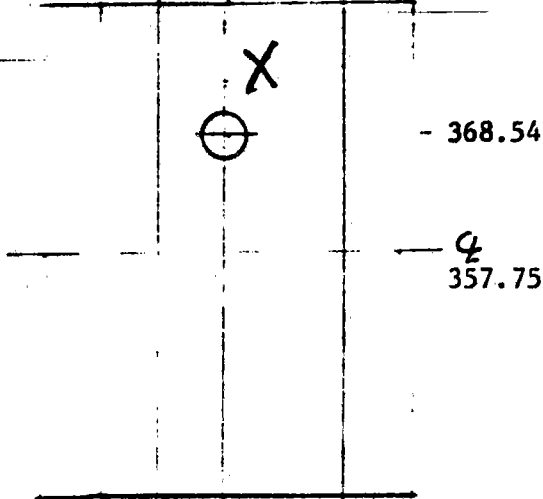
Aimpoint Array No. 01
 HST No. 2433
 Date 11-16-81

Aimpoint 0 0 252.0
 North East Up

LRCVR APP 10C-HST BEAM POSITION DATA SHEET

LRCVR 10C-13

20 19 18 | 17 16 15

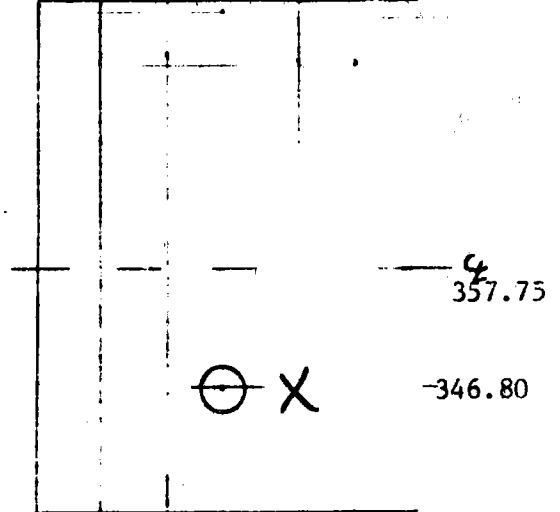


Aimpoint Array No. 01
 HST No. 2349
 Date 11-16-81

Aimpoint 0 0 273.5
 North East Up

o = assigned aimpoint
 x = actual visual observation

22 21 20 | 19 18 17



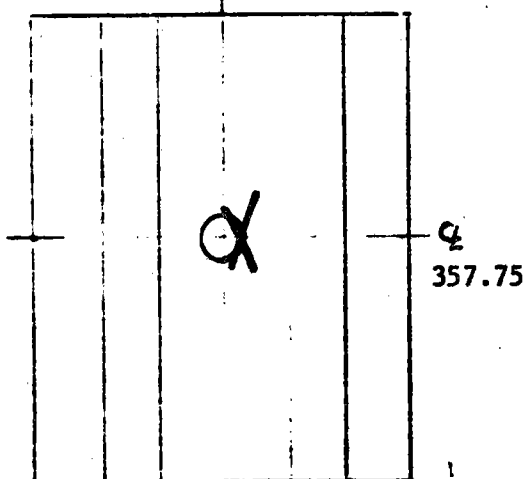
Aimpoint Array No. 01
 HST No. 2267
 Date 11-16-81

Aimpoint 0 0 257.6
 North East Up

o = assigned aimpoint
 x = actual visual observation

C LRCVR

24 23 22 | 21 20 19



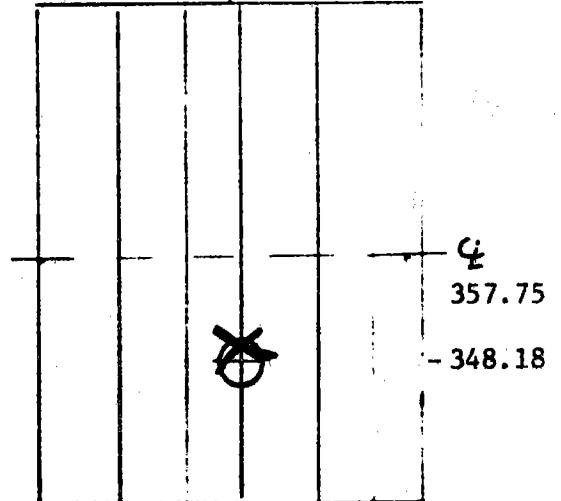
Aimpoint Array No. 01
 HST No. 2091
 Date 11-16-81

Aimpoint 0 0 263.1
 North East Up

o = assigned aimpoint

C LRCVR

2 1 24 | 23 22 21



Aimpoint Array No. 01
 HST No. 1261
 Date 11-16-81

Aimpoint 0 0 255.1
 North East Up

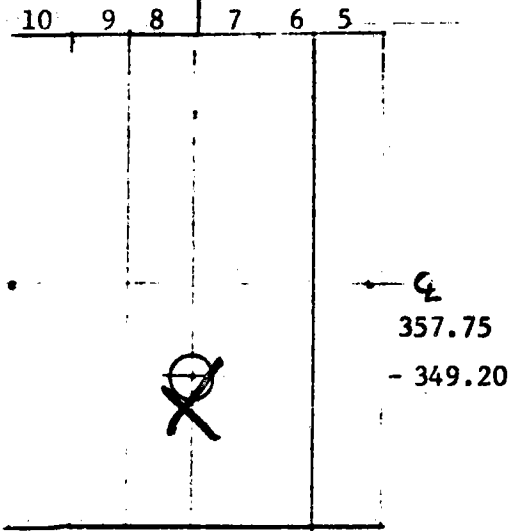
o = assigned aimpoint

C LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

C LRCVR

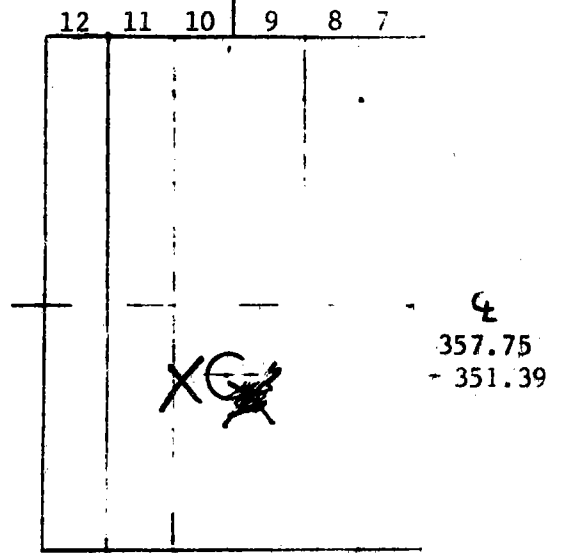
10C-14



Aimpoint Array No. 01
 HST No. 2360
 Date 11-16-81

Aimpoint 0 0 253.9
 North East Up

o = assigned aimpoint
 x = actual visual observation

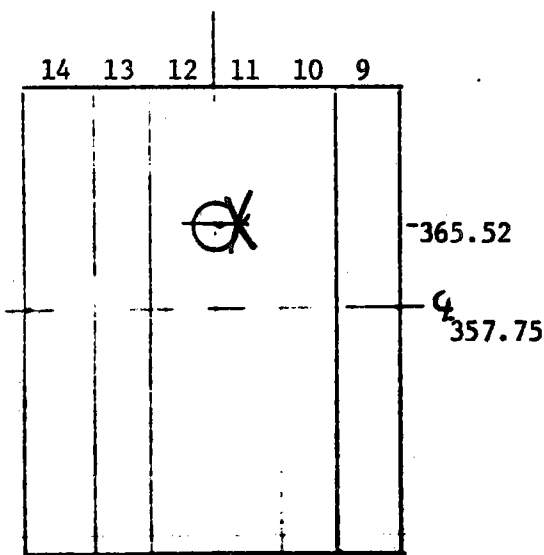


Aimpoint Array No. 01
 HST No. 2644
 Date 11-16-81

Aimpoint 0 0 255.7
 North East Up

o = assigned aimpoint
 x = actual visual observation

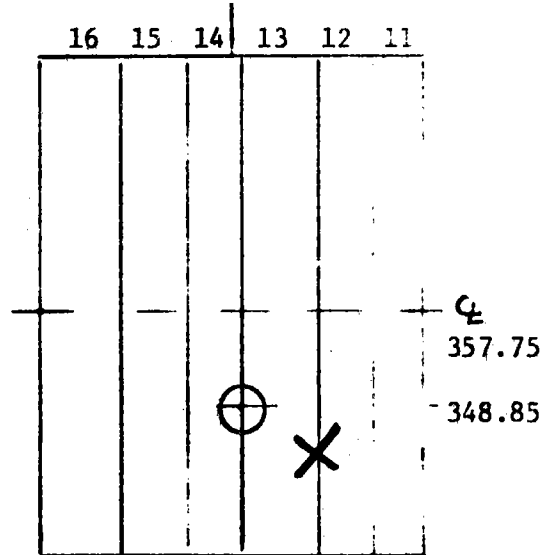
C LRCVR



Aimpoint Array No. 01
 HST No. 2704
 Date 11-16-81

Aimpoint 0 0 269.8
 North East Up

C LRCVR



Aimpoint Array No. 01
 HST No. 2713
 Date 11-16-81

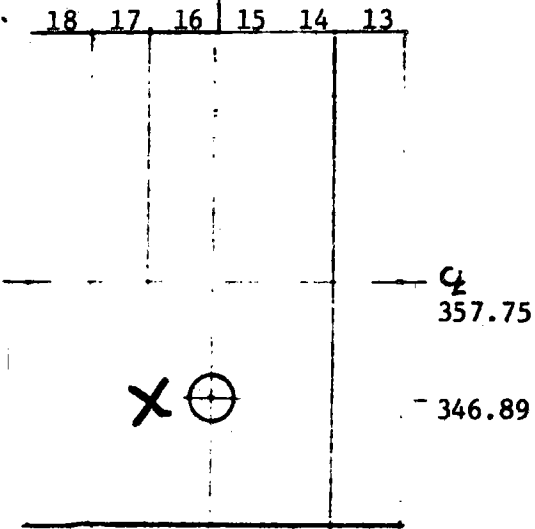
Aimpoint 0 0 253.0
 North East Up

C LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

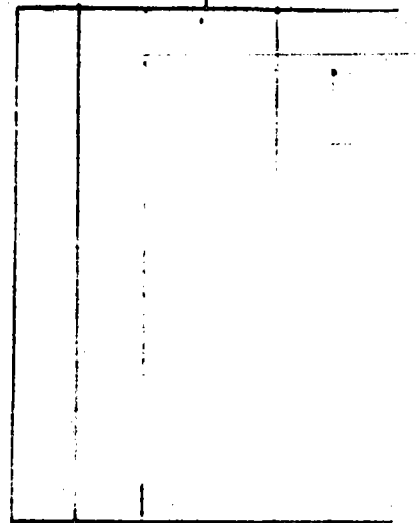
C LRCVR

10C-15



Aimpoint Array No. 01
 HST No. 2655
 Date 11-16-81

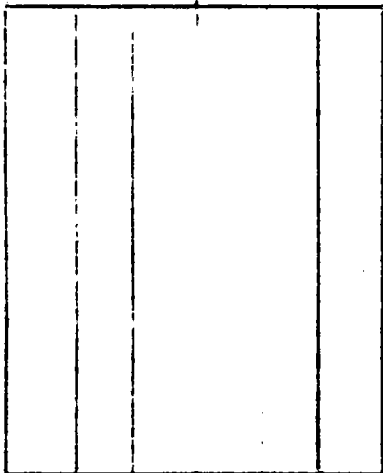
Aimpoint 0 0 251.2
 North East Up
 o = assigned aimpoint
 x = actual visual observation



Aimpoint Array No. _____
 HST No. _____
 Date _____

Aimpoint _____
 North East Up

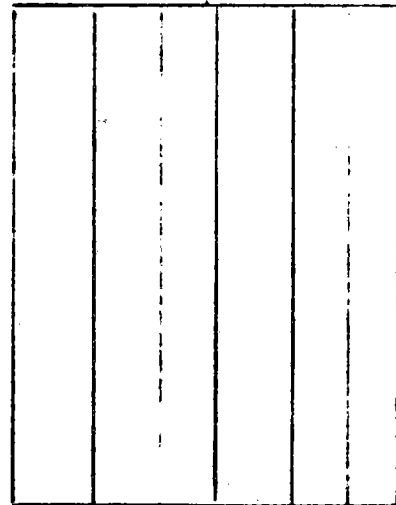
C LRCVR



Aimpoint Array No. _____
 HST No. _____
 Date _____

Aimpoint _____
 North East Up

C LRCVR



Aimpoint Array No. _____
 HST No. _____
 Date _____

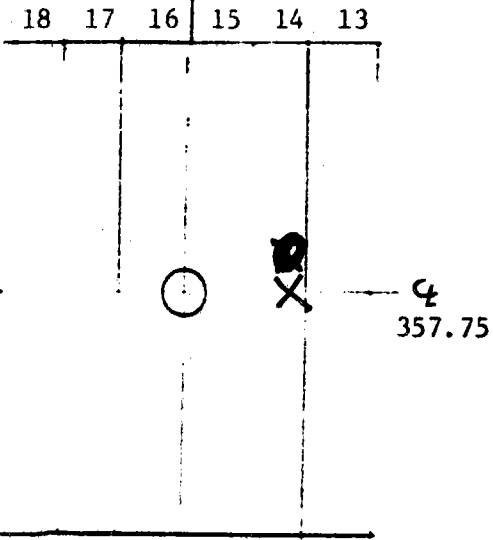
Aimpoint _____
 North East Up

LRCVR

APP 10C-HST BEAM POSITION DATA SHEET

LRCVR

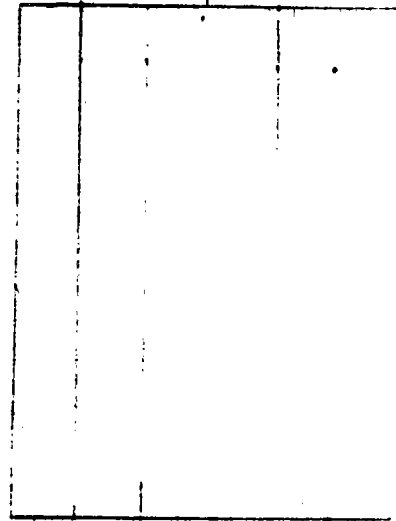
10C-16



Aimpoint Array No. 20
 HST No. 2945
 Date 11-16-81 24.9

Aimpoint 0 0 261.9
 North East Up

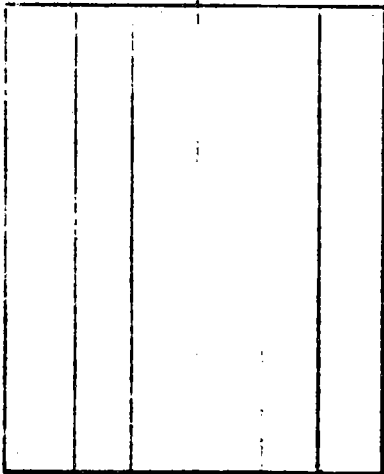
o = original beam position
 x = new beam position for array 04



Aimpoint Array No. _____
 HST No. _____
 Date _____

Aimpoint _____
 North East Up

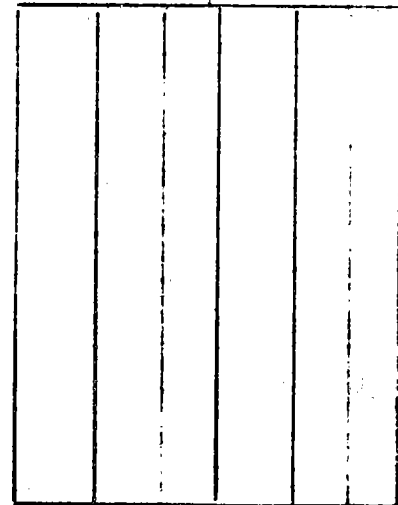
LRCVR



Aimpoint Array No. _____
 HST No. _____
 Date _____

Aimpoint _____
 North East Up

LRCVR



Aimpoint Array No. _____
 HST No. _____
 Date _____

Aimpoint _____
 North East Up

PROCEDURE HISTORY SHEET

PROCEDURE NO. 116

Page 1 of 1

Item	Date	Para	Entry	Orig	Qual. Accep.
11	11-16	8.1.2.6	BIAS MEASUREMENT AND Verification 0433		3334 11-18-81
12	11-16	"	" 1435		3334 11-18-81
13	11-16	"	" 2091		3334 11-18-81
14	11-16	"	" 2644		3334 11-18-81
<p>PROCEDURE 116 WAS TESTED SUCCESSFULLY. NO RETEST REQUIRED.</p> <p>ALL ITEMS ABOVE WILL BE CLOSED.</p>					

CUSTOMER DR D. Heston 11-18-81
Date

TEST CONDUCTOR Stan 11-16-81
Date

QUALITY A. Knows 11-16-81
Date

STMPD-297

MARTIN MARIETTA AEROSPACE

DENVER AEROSPACE
POST OFFICE BOX 179
DENVER, COLORADO 80201
TELEPHONE (303) 977-3000

May 3, 1982

Refer to: DAC-82-389

To: U. S. Department of Energy
P. O. Box 808
Livermore, California 94550

Attn: Roger S. Gaither, Esq.
Assistant Chief for Prosecution
Office of Patent Counsel, L-376

Subj: Contract DE-ACO3-80SF10539

1. Attached is the Patent Certification on the subject contract.
2. If you have any questions, please contact me at (303) 977-6109.

Very truly yours,

MARTIN MARIETTA CORPORATION

Phillip L. DeArment
Phillip L. DeArment
Assistant Patent Counsel

PLD:jes

PATENT CERTIFICATION

DOE CONTRACT NO. DE-ACO3-80SF10539

1. The following is a complete list of technical reports prepared during the course of the work under this contract and the DOE office to which the reports were sent:

See Attachment I

2. Technical data of this contract other than reports (i.e., notebooks, drawings, etc.) are completely listed, as follows:

See Attachment II

3. Each of the above-listed documents under paragraphs 1 and 2 has been examined for invention subject matter by me and/or technical personnel under my direction; to the best of my knowledge and belief, no inventions or discoveries were made or conceived in the course of or under this contract other than the following:

<u>CONTRACTOR NO.</u>	<u>TITLE</u>	<u>DATE REPORTED</u>	<u>DOE NO.</u>
Docket # 80YD41	FASTON TERMINAL INSTALLATION TOOLS	03/09/81	S-55,956, RL-8354
Docket # 81YD19	FASTON TERMINAL EXTRACTION TOOLS	05/03/82	S-59,046, RL-8843

4. There were no subcontracts or purchase orders involving research and development, except as follows:

NONE

5. The completion date of this contract is as follows: February 13, 1982

6. The following period is covered by this certification:

December 3, 1979	to	February 13, 1982
Month Day Year		Month Day Year

Martin Marietta Corporation
Contractor Denver Aerospace
P. O. Box 179
Denver, Colorado 80201
Address

Phillip L. DeArment
Signature Phillip L. DeArment
Assistant Patent Counsel

Title

Submit in duplicate to:

Roger S. Gaither
Assistant Chief for Prosecution
California Patent Group, L-376
U. S. Department of Energy
P. O. Box 808
Livermore, California 94550

Form completed by: M. Frohardt
Date: Feb 23, 1982
M. Frohardt

Date of Certification

February 22, 1982
Attachment I
Patent Certification
DOE Contract No. DE-AC03-80SF10539

1. The following is a complete list of technical reports prepared during the course of the work under this contract and the DOE office to which the reports were sent:

<u>Report Type</u>	<u>Office Mailed</u>
Monthly Submittals	Huntington Beach
Technical Status Report Issue 1 through Issue 25	Huntington Beach
Design and Manufacturing Drawings	Huntington Beach and Canoga Park
Technical Correspondence	Huntington Beach and Canoga Park
Contract Correspondence	Oakland, CA.
Deliverables	Huntington Beach and Canoga Park
Periodic Reports	Huntington Beach and Canoga Park

2. Technical data of this contract other than reports (i.e., notebooks, drawings, etc.) are completely listed, as follows:

All correspondence, reports, etc., mailed to Huntington Beach office.

Monthly submittals, Issue 1 through 25 as follows:

- a. Milestone Schedule and Status Report
- b. Cost Management Report
- c. Project Status Report
- d. Documentation Tab Run
- e. List of active changes/modifications
- f. List of drawing revisions/levels
- g. Indentured Parts List

Minority Business Reports

Updated OPDD Documentation

Controls Hardware Drawings

Software Design Specification

Safety Plan

Hazard Analysis

Preliminary Design Review Package

Preliminary Design Review Package Final

Manufacturing Plan

Quality Assurance Plan

Functional Test Plan

Functional Test Report

C/S Integrated Acceptance Test Plan

February 22, 1982
Attachment II
Patent Certification
DOE Contract No. DE-AC03-80SF10539

Page Two

C/S Integrated Test Report

Supplemental Spares Plan

Two Copies of Drawings with Latest Revisions

Operational and Maintenance Manuals

Collector Subsystem Instrumentation

Maintenance Instructions

Control System Theory of Operations

Software/Firmware Design Specifications

ST 14110-297

MARTIN MARIETTA AEROSPACE

DENVER DIVISION
POST OFFICE BOX 179
DENVER, COLORADO 80201
TELEPHONE (303) 977-3000

10 November 1982

Ms. Mary Jane Holliday
Contract Examiner
Department of Energy
California Patent Group
San Francisco Operations Office
Oakland, California 94612

Re: Final Patent Certification for DOE
Contract DE-ACO3-80SF10539

Dear Ms. Holliday:


Pursuant to your letter of September 7, 1982, addressed to Mr. Cecil W. Duclon, I have made the corrections you requested thereon.

With respect to Invention Disclosures 81YD16, 81YD24 and 81YD25, please see our attached letters dated March 11, 1982 wherein you were notified that these inventions are not reportable. I am also attaching Mr. Carnahan's letter dated March 22, 1982.

If we can be of further assistance, please contact our office. Mr. DeArment may be reached at (303) 977-6109 and I may be reached at (303) 977-6501/6110.

Very truly yours,

MARTIN MARIETTA CORPORATION


(Miss) Josephine E. Salazar
Assistant to Phillip L. DeArment
Assistant Patent Counsel

cc: C. W. Duclon
W. A. Brever
J. T. Weber



STMPD-297

Department of Energy
San Francisco Operations Office
1333 Broadway
Oakland, California 94612

Reply to:
DOE Site Office
P.O. Box 366
Daggett, CA 92327
ATTN: S. D. Elliott, Jr.

Melvin W. Frohardt
Martin Marietta Aerospace
P.O. Box 179
Denver, CO 80201

JUN 25 1983

Subj.: Request for patent clearance and TIC Distribution of Documents from
DOE Contracts ET21007 and SF10539 (Solar One Heliostats, Phases I & II)

Dear Mel:

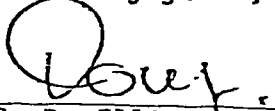
We are about to come out, with the help of EPRI, with a bibliography of key Project documents. To cope with anticipated requests for copies, I would like to arrange for properly cleared documents to be filed with and distributed through the DOE Technical Information Center at Oak Ridge. A check with TIC shows that only MCR-80-1377 has been cleared by them to date. Can you provide me with signed-off Patent Clearance Requests for:

- o The five indicated documents from the Phase I study (ET21007);
- o The twelve indicated documents from Phase II (SF10539);
- o The as-built drawing set provided via Sandia at the end of Phase II;
- o Any other Project documents generated by MMC you think the utility/industry community should have ?

I'd also appreciate a check on the Phase I CDR handout; was it MCR-78-1325?

Your help is greatly appreciated; it will save me (and you) a lot of running about once the bibliography comes out. I will insure that you get a copy; it lists about 500 documents, not including drawings (these we will provide to TIC in aperture card form at a later date, with a full index). Please call me ((619) 254-2672/-2142) if you have any questions or concerns.

Sincerely yours,


S. D. Elliott, Jr.
DOE Project Director



STMP0-297

Department of Energy
San Francisco Operations Office
1333 Broadway
Oakland, California 94612

Reply to:
DOE Site Office
Post Office Box 366
Daggett, CA 92327

Mr. Melvin T. Frohardt
Martin Marietta Aerospace
Post Office Box 179
Denver, CO 80201

DEC 06 1983

Subj.: Closeout Actions on Martin Marietta Contracts with DOE San Francisco Operations Office

Dear Mel:

Nearly six months ago, I requested your assistance in finalizing patent clearance on a number of the documents from the Collector Phase I and Phase II contracts which we wish to enter into the DOE Technical Information Center system. Thus far, I have not had any response to this request. We are about to issue the bibliography developed by Burns & McDonnell under the EPRI-funded "Lessons Learned and Project Documentation" study (I assume you have received a copy of Vol. 1, "Lessons Learned" - if not, let me know and I will send you one), and we and TIC anticipate a substantial number of requests for key documents, including yours.

In addition, SAN Contracts Closeout (Sonia Jackson) advises me that several of the final documents needed to complete closeout (and release final payment of withheld funds), ~~is~~ as yet lacking, not only on the above two contracts, but also on the old Preliminary Design contract. I would greatly appreciate your assistance (or your guidance as to who can assist us) in getting this wrapped up and off both of our desks. To recapitulate (adding the items needed by SAN) for the three contracts:

DE-AC03-76ET20422 (Old Contract -1110), Central Receiver System Prel. Design:

- o A "Final Invoice", to be submitted to Sonia Jackson, with copy to me;
- o "Contractors Assignment of Refunds and Rebates", to Sonia;
- o "Contractors Release", to Sonia;
- o "Contractor Request for Patent Clearance" (send to me, only), for:
 - MCR-77-161, "System Safety Design Criteria for Central Receiver...System",
 - MCR-77-162, "System Safety Program Requirements for Solar Thermal Systems".(These were done under an extension to the Preliminary Design contract, and are valuable background documents.)

DE-AC03-78ET21007 Collector System, Phase I:

- o "Final Invoice", to Sonia, copy to me;
- o "Assignment of Funds and Rebates", to Sonia;

- o "Contractors Release", to Sonia;
- o "Contractor Request for Patent Clearance", to me, for:
 - MCR-78-1323, "10-MWe Solar Thermal Pilot Plant Conceptual Design Review";
 - MTR-78-1330, "10-MWe Solar Thermal Pilot Plant Preliminary Design Review";
 - MCR-79-1302, "10-MWe Solar Thermal Pilot Plant Final Design Review (2 Vols.)";
 - 40-0-500-4P, "10-MWe Solar Thermal Pilot Plant Phase II O&M Equipment";
 - 40-0-500-6P, "10-MWe Solar Thermal Pilot Plant Phase II Planning."

DE-AC03-80SF10539, Collector System Phase II

- o "Final Invoice", to Sonia, copy to me;
- o "Assignment of Funds and Rebates", to Sonia;
- o "Contractors Release", to Sonia;
- o "Contractor Request for Patent Clearance", to me, for:
 - MCR-79-1352B* "Quality Assurance Plan for 10-MWe Phase II Collector..";
 - MCR-80-1304, "10-MWe Solar Pilot Plant Collector Subsystem Safety Plan";
 - MCR-81-1331B, "Hazard Analysis for 10-MWe ...Pilot Plant";
 - 40-0-500-2P, "10-MWe ...Pilot Plant Phase II Mfg. Plan, Rev. 2";
 - MCR-80-1341A, "10-MWe Collector Sybsystem Software/Firmware Functional Req'ts.";
 - MCR-80-1362, "System Description Document, Collector Subsystem...";
 - MCR-80-1376* "Heliostat Stimulator Operators' Manual";
 - MCR-81-1708, "Operation Instructions, Heliostat Field Subsystem...";
 - MCR-81-1709A, "Maintenance Instructions, Heliostat Field Subsystem...";
 - MTR-81-1769, "...Collector Subsystem Functional Test Report";
 - MCR-81-1770, "Supplemental Spares Plan, Heliostat Field...";
 - MCR-80-1377A, "Software/Firmware Design Specifications...";
 - MCR-82-1701, "Control System Theory of Operation";
 - Drawing Set, as Identified in "Drawing Tree 400500 5132701";
 - Source Listing of Code for Heliostat Controller ROM or EPROM*
 - Source Listing of Code for Heliostat Field Controller ROM/EPROM*

Our files do not have current copies of the following other items identified in the Drawing Tree (400500 5132701):

Documents: 40M500-2S, "Foundation Req'ts.", 40M500-1T, "Installation Instructions", 40M500-2M, "Canting Procedures", 40M500-5P, "Acceptance Plan", MCR-80-1361, "Collector System Functional Test Plan", and MCR-81-1715, "Collector System Integrated Acceptance Test Plan."

* Current copies of these four items are lacking from the Project files; your assistance in obtaining at least one copy of each will be most appreciated.

Drawings: 40E500 5132788, "Adapter Plate/Control Arm Heat Tool", 40E500 5132771, "Field Canting Tool", and 40E500 5132776, "Drive Unit Checkout Console".

While these items are not carried in the current version of the Bibliography (none of the Plant as-built drawings have been entered as yet), many, if not all, of them may be expected to be of interest to the solar community. I would appreciate at least one copy of each, again with your release. To save you considerable effort in preparing the Patent Clearance Request forms (I am enclosing several copies of the form), you may combine many of the above by simply clearing the "Drawing Tree", with its contents.

If you need the other closeout forms cited above (your Contract Administration staff should have them in stock), please call Sonia Jackson at FTS 536-4179, or write her at:

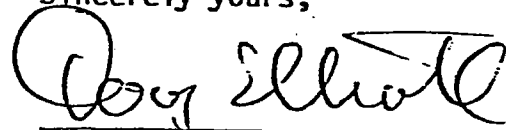
Ms. Sonia Jackson (CM)
Department of Energy
1333 Broadway
Oakland, CA 94612

Finally, since we are required to forward two clean, reproducible copies of each document to DOE/TIC, as well as needing one clean copy for our on-site archives, any "extras" you can turn up around your offices would be greatly appreciated; certainly, rather than throw anything of possible interest out, send it to me.

Mel, I know (believe me!) that this is all a significant amount of work, and I wish I didn't have to ask you (or your staff) to go through it, but it will be to our mutual benefit in the end to get these three contracts all cleaned up, and a comprehensive package of Project documentation (currently, over 550 documents, plus drawings) into the archives. If there is anything further I can do to assist you in this effort, please call on me.

Encl.: DOE Proj. Ofc. ltr. 6/25/83
Patent Clearance Req. Forms

Sincerely yours,



S. D. Elliott, Jr., Director,
DOE Project Office, Barstow

cc: H. C. Wroton, MMC
Sonia Jackson, DOE/SAN (CM)

PS: I keep running across references to a document I can't identify: MCR-78-1325; what was it?

STMPD-297

MARTIN MARIETTA AEROSPACE

DENVER DIVISION
POST OFFICE BOX 179
DENVER, COLORADO 80201
TELEPHONE (303) 977-3000

January 30, 1984

Mr. Doug Elliott
DOE Site Office
Post Office Box 366
Daggett, CA 92327

Subject: Closeout Actions on Martin Marietta Contracts with DOE San Francisco Operations Office

Reference: Letter of December 06, 1983, S.D. Elliott, Jr. to M. Frohardt, Closeout of Contracts

In regard to the referenced letter, following is the status and actions in process to close out these items:

1. Contract Closeout Status

In regard to the closeout of cost type contracts DE-AC03-76ET20422, Central Receiver Test Facility, and DE-AC03-78ET21007, Collector System Phase I, we include the "Contractors Assignment of Refunds and Rebates" and "Contractors Release" with our final invoice package. The final invoices for these two contracts will be submitted upon completion of final settlement negotiations for our 1979 overhead and G&A rates which is currently in progress. In reference to the closeout of contract DE-AC03-80SF10539, Collector System Phase II, please see Attachment 1, the letter to Ms. Joann Littlehales dated January 23, 1984, for the current status.

2. Patent Clearance

The following documents are in the process of being cleared by our Patent office. When this transmittal is available, I will send a copy to you.

- MCR-78-1323, "10-MWe Solar Thermal Pilot Plant Conceptual Design Review"
- MCR-78-1330, "10-MWe Solar Thermal Pilot Plant Preliminary Design Review"
- MCR-79-1302, "10-MWe Solar Thermal Pilot Plant Final Design Review (2 Vols)"
- 40-0-500-4P, "10-MWe Solar Thermal Pilot Plant Phase II O&M Equipment"
- 40-0-500-6P, "10-MWe Solar Thermal Pilot Plant Phase II Planning"

Mr. Doug. Elliott
January 27, 1984
Page 2

The remainder of the documents have been previously cleared by the following letters, copies of which are included in Attachment-2.

Letters from Phillip DeArment to Roger Gaither:

DAC-83-417, dated May 24, 1983
80-Y-15555, dated July 28, 1980
DAC-82-389, dated May 3, 1982
Letter dated March 11, 1982
Letter dated November 10, 1982

3. Documents

You requested copies of some documents and drawings in the referenced letter. Copies of the following drawings and documents are being submitted under Attachment 3.


MCR-78-1330, "Preliminary Design Review Package"
MCR-79-1352B, "Quality Assurance Plan for 10-MWe Phase II
Collector"
MCR-80-1376, "Heliostat Stimulator Operators' Manual"
40M500-2S, "Foundation Requirements"
40M500-2M, "Canting Procedures"
40M500-1T, "Installation Instructions"
40M500-5P, "Acceptance Plan"
MCR-81-1715, "Collector System Integrated Acceptance Test Plan"
MCR-80-1361, "Collector System Functional Test Plan"
40M500 5132788, "Adapter Plate/Control Arm Heat Tool"
40M500 5132771, "Field Canting Tool"
Source Listing of Code for Heliostat Controller ROM or EPROM*
Source Listing of Code for Heliostat Field Controller ROM/EPROM

No drawing exists for 40E500 5132776, "Drive Unit Checkout Console" as this checkout console consisted of a stimulator to operate a production Drive Mechanism Assembly. Also MCR-78-1330 is the correct document number for the Preliminary Design Review Package rather than MCR-78-1325. MCR-78-1325 is the document number assigned to all the Monthly Progress Reports written during the Phase I contract.

Doug, I hope this will help in getting the documentation finalized. I will follow-up with the additional information identified. If you have any questions please call on me.

Sincerely yours,

MARTIN MARIETTA CORPORATION


Melvin W. Frohardt
Solar Programs

Enclosures

cc: H. Wroton
Sonia Jackson

U.S. DEPARTMENT OF ENERGY

memorandum

DATE: **MAY 14 1984**

REPLY TO
ATTN OF

S. D. Elliott, Jr., Director, DOE Solar One Project Office

SUBJECT

Submission of Thirteen Reports Prepared for 10-MWe Pilot Plant ("Solar One") Project by Martin Marietta Corporation under Contract DE-AC03-80SF10539

TO:

Roger S. Gaither, DOE/SAN Office of Patent Counsel
William D. Matheny, DOE/TIC Document Control


Enclosed are thirteen documents prepared by the Martin Marietta Corporation, Denver Aerospace Division, for the Solar Ten-Megawatt Project Office in conjunction with design and fabrication of the Pilot Plant Collector (Heliostat) System, under Contract DE-AC03-80SF10539:

<u>Primary Document No.</u>	<u>Secondary No.</u>	<u>Brief Title</u>
DOE/SF/10539-01	(STMPO-288)	"Quality Assurance Plan..."
DOE/SF/10539-02	(STMPO-289)	"...System Safety Plan"
DOE/SF/10539-03	(STMPO-290)	"Hazard Analysis..."
* DOE/SF/10539-04	(STMPO-291)	"Phase II Manufacturing Plan (Revision 2)"
DOE/SF/10539-05	(STMPO-292)	"Software/Firmware Functional Requirements..."
* DOE/SF/10539-06	(STMPO-293)	"System Description Document..."
DOE/SF/10539-07	(STMPO-294)	"Heliostat Stimulator Operator's Manual"
DOE/SF/10539-08	(STMPO-295)	"Operations Instructions, Heliostat Field..."
* DOE/SF/10539-09	(STMPO-296)	"Maintenance Instructions, Heliostat Field..."
DOE/SF/10539-10	(STMPO-297)	"...Functional Test Report"
DOE/SF/10539-11	(STMPO-298)	"Supplemental Spares Plan..."
* DOE/SF/10539-12	(STMPO-299)	"Software/Firmware Design Specification..."
DOE/SF/10539-13	(STMPO-300)	"Control System Theory of Operation"

One copy of each document, accompanied by a SAN Form 70 prepared by the Project Office (on the basis of Attachment 1, the Contractor's Patent Certification as submitted May 3, 1982), is provided for SAN/OPC review and clearance. The fabrication and maintenance materials indicated in the above list by an asterisk should be reviewed in the light of the two disclosures filed with Attch. 1, as well as the Martin Marietta Dockets 81YD16, -24, and -25, claimed as developed outside the scope of the contract in Attch. 2, MMC letter of November 10, 1982. Please return the "feedback" copies of the Form 70's to this office; the clearance copies of the documents themselves may be returned to Mr. Mike Lopez, SAN/FGS.

Two copies of each document, accompanied by a completed DOE Form RA-426, are submitted for archiving and announcement by the DOE Technical Information Center and for forwarding to the National Technical Information Service.

- Attchs.: 1. Martin Marietta Ltr. 5/3/82
2. Martin Marietta ltr. 11/10/82


S. D. Elliott, Jr., Director,
DOE Solar One Project Office

Encls.: 13 Documents w/transmittal forms

- cc: Mike Lopez, DOE/SAN (FGS)
Don Holz, DOE/SAN (ISEA)
Mary Soderstrum, Burns & McDonnell



DEPARTMENT OF ENERGY
SAN FRANCISCO OPERATIONS OFFICE

CONTRACTOR REQUEST FOR PATENT CLEARANCE
FOR RELEASE OF UNCLASSIFIED DOCUMENT

Prime Contract No. DE-AC03-80SF10539
Subcontract No. (N/A)
Report No. DOE/SF/10539-10 (STMP0-297)
Date of Report December 1981
Name & Phone No. of DOE Technical Representative S. D. Elliott, Jr. (619) 154-2672

O: Roger S. Gaither, Asst. Chief for Prosecution
Office of Patent Counsel/Livermore Office
P.O. Box 808, L-376
Livermore, California 94550

FROM: DOE Solar One Project Office
Post Office Box 366
Daggett, CA 92327

- Document Title: "10 MWe Solar Thermal Central Receiver Pilot Plant: Collector Subsystem Functional Test Report"
- Type of Document: Technical Report, Conference Paper, Journal Article, Abstract or Summary, Copy of Oral Presentation, Other (please specify): _____
- In order to meet a publication schedule or submission deadline, patent clearance by _____ (routine) would be desired.

SENDER IS TO CHECK BOX #4 OR #5 BELOW.

4. I have reviewed (or have had reviewed by technically knowledgeable personnel) this document for possible inventive subject matter (Subject Inventions) and that no inventions or discoveries (Subject Inventions) are deemed to be disclosed in this document except as stated below:
- Attention should be directed to pages _____ of this document.
 - This document describes matter relating to an invention:
 - Contractor Invention Docket No. _____
 - A disclosure of the invention was submitted to DOE on _____ (date)
 - A disclosure of the invention will be submitted shortly _____ (approximate date)
 - A waiver of DOE's patent rights to the contractor:

has been granted, has been applied for; or will be applied for _____ (date)

5. This document is being submitted, but no review has been made ^{by me} of this document for possible inventive subject matter.

6. Remarks: See Martin Marietta letter 5/3/82 for Patent Certification

Reviewing/Submitting Official: Name (Print/Type) S. D. Elliott, Jr., Director
 Title DOE Solar One Project Office
 Signature *S. D. Elliott* Date 12 May, 1984

TO: INITIATOR OF REQUEST

FROM: ASSISTANT CHIEF FOR PROSECUTION
Office of Patent Counsel/Livermore Office

- No patent objection to above-identified release.
- Please defer release until advised by this office.

Signed _____ Date Mailed _____

DOE AND MAJOR CONTRACTOR RECOMMENDATIONS FOR
ANNOUNCEMENT AND DISTRIBUTION OF DOCUMENTS

See Instructions on Reverse Side

1. DOE Report No. DOE/SF/10539-10 (STMP0-297)	2. Contract No. DE-AC03-80SF10539	3. Subject Category No. UC-62
--	--------------------------------------	----------------------------------

4. Title
"10 MWe SOLAR THERMAL CENTRAL RECEIVER PILOT PLANT: COLLECTOR SUBSYSTEM FUNCTION-

5. Type of Document ("x" one)
 a. Scientific and technical report AL TEST REPORT
 b. Conference paper: Title of conference _____

_____ Date of conference _____

Exact location of conference _____ Sponsoring organization _____

c. Other (specify planning, educational, impact, market, social, economic, thesis, translations, journal article manuscript, etc.)

6. Copies Transmitted ("x" one or more)
 a. Copies being transmitted for standard distribution by DOE-TIC.
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 c. Two completely legible, reproducible copies being transmitted to DOE-TIC. (Classified documents, see instructions)
 d. Twenty-seven copies being transmitted to DOE-TIC for TIC processing and NTIS sales.

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 Make available only b. To U.S. Government agencies and their contractors. c. within DOE and to DOE contractors.
 d. within DOE. e. to those listed in item 13 below.
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 Are there any patent-related objections to the release of this information product? No Yes If so, state these objections.
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 b. Document has been sent to responsible DOE patent group for clearance.

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13. Additional Information or Remarks (Continue on separate sheet, if necessary)

14. Submitted by (Name and Position) (Please print or type)
 S. D. Elliott, Jr., Director, DOE Solar One Project Office

Organization _____
 Post Office Box 366, Daggett, CA 92327 (619) 254-2672

Signature S. D. Elliott, Jr. Date MAY 12 1984



DEPARTMENT OF ENERGY
SAN FRANCISCO OPERATIONS OFFICE

CONTRACTOR REQUEST FOR PATENT CLEARANCE
FOR RELEASE OF UNCLASSIFIED DOCUMENT

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 - A disclosure of the invention will be submitted shortly _____ (approximate date)
 - A waiver of DOE's patent rights to the contractor:
 has been granted, has been applied for; or will be applied for _____ (date)

5. This document is being submitted, but no review has been made ^{by me} of this document for possible inventive subject matter.

6. Remarks: See Martin Marietta letter 5/3/82 for Patent Certification

Reviewing/Submitting Official: Name (Print/Type) S. D. Elliott, Jr., Director
 Title DOE Solar One Project Office
 Signature *S. D. Elliott* Date 12 May, 1984

TO: INITIATOR OF REQUEST

FROM: ASSISTANT CHIEF FOR PROSECUTION
Office of Patent Counsel/Livermore Office

M. Lopez, SAN

- No patent objection to above-identified release.
 Please defer release until advised by this office.

REC
5/10/84
Date Mailed 5/21/84

Signed *L. E. Courahan*

8.15.12.1 Continued:

c. The segment number and aimpoint array number is displayed.

:SEG 110

30 HELIOSTATS IN SEG # 110										
929	931	933	935	827	829	831	833	727	729	731
733	627	629	631	633	525	527	529	531	421	423
425	319	321	219	221	223	119	121			

8.15.13 Enter: DEPRESS GREEN KEY (segment display)

Enter: 111 depress RTN

8.15.13.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed in number and mode symbol in a segment display.
- b. The following heliostat status, aimpoint coordinates and AZ, EL gibal angles.
- c. The segment number and aimpoint array number is displayed.

MAY 29 1984

Jim Holt, OSTI

Here are two copies of the missing page from STMPO-297 (DOE/SF/10539-10); I cribbed them from a copy of the checklist used to make up the report, and added the report page number. I thought I was good at details, but spotting a missing page in a 362-page report - WOW! Thanks for calling it to my attention.

S. D. Elliott, Jr.

8.15.14 Ent

Ente.

8.15.14.1 Verify the display provides the following graphical and alpha-numeric information:

- a. The following heliostats are displayed by number and mode symbol in a segment display.
- b. The following heliostats are listed by number, mode status, aimpoint coordinates and AZ, EL gibal angles.
- c. The segment number and aimpoint array number is displayed.

:SEG 112

16 HELIOSTATS IN SEG # 112										
547	545	543	541	437	435	433	335	333	331	235
253	231	133	131	129						

8.15.15 Enter: DEPRESS GREEN KEY (segment display)

Enter: 201 depress RTN