MISSION DEVELOPMENT SIMULATOR

PHASE 0

SYSTEM TEST PROCEDURE

REV_____0_____   MAR 28 1969

DATE__3/20/69_____

BYE___ 5161 .3ō

__/16

BIN   BIF-055-46779-69

INTERNAL SIGN-OFF SHEET

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BIN BIF-055-46779-69

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1.0   SCOPE

This Document is the Test Procedure for demonstration and verification of the Phase 0 capability of the MDS.

2.0   APPLICABLE DOCUMENTS

1)   Mission Development Simulator Performance Design Requirements.

SAFSL Exhibit 34003, 15 August 1968

2)   Phase 0 Configuration Presentation

Made 6/26/68, BIN-50372-96-3

3)   Phase 0 - Simulation Software Requirement Rev 2

October 15, 1968   BIN: BIF-055-1318-20-3-68

4)   Mission Development Simulator Phase 0 Demonstration Requirements.

BIF-055-50372-244-268

5)   Mission Development Simulator Phase 0 System Test Plan Rev C

1/30/69

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3.0   SYSTEM VERIFICATION AND DEMONSTRATION

The overall function characteristics of the Phase 0 will be veri-
fied and demonstrated during a series of System Level Tests,
Anaylsis of Subsystem Data and Visual Inspection of the Hardware.
The Procedures in this Document are categorized as follows:

1)   Verification Tests (Section 4.0. These Tests will be performed
      during Hardware/Software Integration Tests).

      a)   Visual Inspection of Hardware and/or Design Drawings

      b)   Individual measurements made at the System Level but not
            included in the Script of the DOP'S.

      c)   Analysis of Subsystem and System Test Data

      d)   Pre-Test Checkout Program and Procedure

      e)   Demonstration Orbital Passes

2)   Demonstration Tests (Section 5.0. These Tests will be performed
      during the Demonstration Test Period)

      a)   Pre-Test Checkout

      b)   Demonstration Orbital Passes

      c)   Review of Analytical Data

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3.1 Validation of Data

All Data taken for verification of Requirements shall be identified, dated and initialed by the Test Conductor, Quality Assurance, AFQA and AFSO to validate that the Test Procedure was followed.

3.1.1 Deviations from Procedure

Any Deviations from the Test Procedure will be noted in the Test Log Book and in the margin of the Procedure and initialed by the Test Conductor, Quality Assurance, AFQA and AFSO. Data taken during Tests where there are deviations from the Procedures will not be submitted for verification until the deviation is approved by the AFSO.

3.1.2 Classification of Deviations from Procedures

3.1.2.1 For the purpose of this Document, Deviations shall be considered only

1) Difference in the location from which Data is recorded. Most Data will be recorded via Patchcords from the System Junction Box.

2) Difference in the type of Signals recorded.

3) Difference in the method of Interpreting recorded Data.

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3.1.3   Reverification of Requirements

In the event of a Hardware and/or Software change that
could affect Data previously taken, the Test Conductor
shall note the change and Test affected in the Test Log
Book. These Tests will be re-run to verify the affected
Data.

3.1.4   Test Software

Test Software is required for Tests specified in 4.28 and
4.29.

3.1.4.1   Special Program No. 1- This Program is designed
to command the HPA and LPA Elevators and trans-
port and Elevators in Sequence to verify the 1.0
second slide change requirement on the Hardware.

3.1.4.2   Special Program No. 2 - This Program is designed
to command the HPA and LPA Elevators and trans-
ports to skip 5 slides and load the sixth into
the viewing station within 3.0 seconds.

4.0   Verification of Requirements

This Section is the Procedures to be used for verification of requirements
and the Tests specified will be completed during the Hardware/Software
Integration Test Period.

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4.0   Continued

Each major paragraph, Ex 4.1, 4.2 etc., is a complete Procedure

and is not dependent upon any other major paragraph or Procedure.

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4.1 Requirement Title: PERFORMANCE DEMONSTRATIONS

   4.1.1 Requirement Paragraph in the Test Requirements Document

   3.0 (a)

   4.1.2 Requirement

   The overall functional characteristics of the Phase 0

   MDS, its operability characteristics, and certain of

   the specific performance and hardware/software design

   requirements will be demonstrated. General capabilities

   to be demonstrated are:

   a) Pre-test checkout program and procedure.

   4.1.3 Related Paragraph in System Test Plan

   4.1

   4.1.4 Verification Test Procedure

   The Test Procedure is defined in Test Plan/Procedure for

   The Pre-Test Checkout Program. BIN: BIF-055-46753-69.

   Dated

   The Procedure has been separated from this Procedure

   since it will also be used as a Daily Procedure during

   Operations to check simulator Hardware by use of

   appropriate Software.

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4.2   Requirement Title: PERFORMANCE DEMONSTRATION

4.2.1   Requirement Paragraph Test Requirements Document

3.0 (b)

4.2.2   Requirement

All controls and displays on Panels 2C, 2D, 3B and 7B
of the SLM.

4.2.3   Related Paragraph System Test Plan

4.2

4.2.4   Pre-Test Requirements

None

4.2.5   Verification Test Procedure

No Test required. Requirement will be demonstrated
during DOP's.

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4.3   Requirement Title: PERFORMANCE DEMONSTRATION

4.3.1 Requirement Paragraph Test Requirements Document

3.0 (c)

4.3.2 Requirement

All controls and displays on Panels 1A, 1B, 2A, 2B

5A and 5B of the SCC.

4.3.3 Related Paragraph in System Test Plan

4.3

4.3.4 Pre-Test Requirements:

None

4.3.5 Verification Test Procedure

No Test required. Requirement is verified by 4.1

Attach Copy of 4.1 Procedure to these data sheets.

No Test required. All controls and displays are verified

during 4.1. Attach a copy of the data sheets from 4.1

to this data sheet.

4.4   Requirement Title: PERFORMANCE DEMONSTRATION

    4.4.1   Requirement Paragraph in Test Requirements Document

        3.0 (e)

    4.4.2   Requirement

        The single ATS mode and the single MO Mode (peripheral display at 60°)

    4.4.3   Related Paragraph in System Test Plan

        4.4

    4.4.4   Pre-Test Requirements:

        None

    4.4.5   Verification Test Procedure

        No Test required. Requirement will be demonstrated during ATS/MO DOP's

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4.5 Requirement Title: PERFORMANCE DEMONSTRATION

4.5.1 Requirement Paragraph in Test Requirements Document

3.0

4.5.2 Requirement

Test and operations, data collection and reduction

capability.

4.5.3 Related Paragraph in System Test Plan

4.5

4.5.4 Pre-Test Requirements

4.5.4.1 Test Team

Test Conductor_____ Init_____

Technicians _____

_____

_____

Quality Assurance_____ Init_____

AFQA _____ Init_____

Aerospace Observer_____ Init_____

AFSO _____ Init_____

4.5.4.2 Test Equipment Required

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4.5.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test
Equipment has a valid calibration sticker.

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

4.5.4.4   Subsystems Status

The following are required to be active during
this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.5.4.5   Power Turn On

Turn Power on to all Subsystems

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4.5.5   Verification Test Procedure

    4.5.5.1 Load an ATS Only DOP into the SDS 930 Computer.

    4.5.5.2 Select ten (10) functions to be recorded on
strip chart recorders and the performance data
collection tape.

Functions

1) Magnification Control Stick Setting in ATS Range

2) HPA/LPA Select

3) HPA Blanking Command

4) LPA Blanking Command

5) RSS Stick Deflection

6) End Stop Signal

7) LPA X Position Value (On Analog Twice.   Low Scale and High Scale)

8) LPA Y Position Value (On Analog Twice.   Low Scale and High Scale)

9) LPA X Coordinate Rate (Twice on Analog

10) HPA Y Coordinate Rate (Twice on Analog)

11) MO Measured Pitch Angle

    4.5.5.3 Set the recorder chart speed at 20 mm/sec and
turn On the recorders.

    4.5.5.4 Activate the resume switch to start and complete
the DOP run.

    4.5.5.5 After completion of the DOP, process the Per-
formance data collection tape to provide a printed
stripped and merged data list.

4.5.5.6 Compare the printed list to the strip chart
recordings and verify that the same functions
have been collected and reduced.

_____ Verified

4.5.5.7 Attach all data to these data sheets for re-
view to verify the consistency and accuracy
of the reduced data.

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4.6   Requirement Title: PERFORMANCE DEMONSTRATION

4.6.1   Requirement Paragraph in Test Requirements Document

1)   3.0 (i)

2)   3.3.2.1.2

4.6.2   Requirement

1)   Turn around capability (10 & 30 minutes)

2)   AN Automatic Restacking capability is provided

4.6.3   Related Paragraph in System Test Plan

4.6

4.6.4   Pre-Test Requirements

4.6.4.1   Test Team

Test Conductor _____   Init_____

Technicians_____

_____

_____

_____

Quality Assurance_____   Init_____

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4.6.4.1   Continued

AFQA _____ Init_____

Aerospace Observer_____ Init _____

AFSO_____ Init_____

4.6.4.2   Test Equipment Required

1) Stopwatch

4.6.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test
Equipment has a valid calibration Sticker.

Equipment Type	Cal Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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4.6.4.4   Subsystems Status

The following are required to be active dur-

ing this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.6.4.5   Power Turn On

This Test will be performed at the conclusion

of the ATS only DOP. Power will already be

applied to all Subsystems.

4.6.5   Verification Test Procedure

4.6.5.1   The Script contains a restack Flag at

the conclusion of one of the DOP'S. Depress

the Special Interrupt switch at the SCC and

at the same time start the Stopwatch.

4.6.5.2   The following tasks shall be completed:

1)   Automatic restacking by the computer.

4.6.5.2   Continued

1)   Continued - The completion of re-
stacking will be indicated on the CRT
display which will indicate that all
slides have been returned to their
original order.

2)   Manual restacking of the cues. The cue
projector shall be returned to position
1 manually or by use of the remote control
unit.

3)   All switches at the SLM shall be reset
to the positions indicated in the DOP
procedure.

4.6.5.3   When the CRT display indicates that restacking
is completed, stop the stopwatch, stop all
activity on items 2 and 3 and remove the sup-
ply and takeup elevators from each leg of the
SVS. Verify that all slides were returned to
the original order according to the script.

_____Verified

4.6.5.4   Return all magazines and reload the DOP into
the computer.

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4.6.5.5   Stop the Stopwatch and activate the resume
switch. The program shall be allowed to
complete the first target group.

4.6.5.6   Record the elapsed time on the Stopwatch.

_____Min.   Req is 10 minutes or less

4.6.5.7   At the conslusion of the DOP, start the
Stopwatch and verify that the following
tasks are completed.

1)   Remove all magazines from both legs
of the SVS and replace with different
magazines.

2)   Remove the cue casset and replace
with a different casset.

3)   Reload the computer program to run a
different DOP.

4.6.5.8   When the above items have been completed,
activate the resume switch and stop the
Stopwatch. The program shall complete the DOP.

4.6.5.9   Record the elapsed time on the Stopwatch.

_____Min.   Req is 30 minutes or less.

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4.7 Requirement Title: PERFORMANCE DEMONSTRATION

4.7.1 Requirement Paragraph Test Requirements Document

3.0 (j)

4.7.2 Requirement

Operational Scripting capability.

4.7.3 Related Paragraph in System Test Plan

4.7

4.7.4 Pre-Test Requirements

None

4.7.5 Verification Test Procedure

No Test Required. Requirement will be demonstrated by

Running DOP's.

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4.8   Requirement Title: PRIMARY PERFORMANCE CHARACTERISTICS

4.8.1 Requirement Paragraph in Test Requirements Document

1)   3.1.1.1

2)   3.3.3

4.8.2 Requirement

1)   Validate the adherence of the MDS to a mutually agreed

AVE baseline established for Phase 0 on May 1, 1968,

except the SLM Panels 2C and 2D which were established

on June 30, 1968. The software for Phase 0 will be

frozen to the Phase 0 Simulation Software Requirements

Revision 2.

2)   Verify Panels 2C and 2D to insure that these two panels

reflect the AVE configuration as presented on:

    Drawing 711-03063   2 July 1968 for Panel 2C
    Drawing 711-03064   2 July 1968 for Panel 2C

Panels 3B and 7B will also be active. Panels 6C and

3C contain simulation peculiar switches. All other

panels of the SLM will be blank for Phase 0.

4.8.3 Related Paragrapn in System Test Plan

    4.8

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4.8.4 Pre-Test Requirements

   None

4.8.5 Verification Test Procedure

   4.8.5.1 Compare AVE Panel Configuration with Simulator
            Configuration by comparing AVE drawings with the
            actual panels.

                                    AVE Dwg.
            Panel 2C   711-03063
            Panel 2D   711-03064

            _____Verified

   4.8.5.2 The controls on Panels 3B, 7B 3C and 6C have
            been verified by 4.1 (Pre-checkout Program)

   4.8.5.3 Verify by inspection that all other Panels are
            Blank.

            _____Verified

   4.8.5.4 The calibrated test results from the individual
            CPC Tests for Drive Control Response and Position
            Simulation shall be available for Review.

   4.8.5.5 Demonstration Test Procedure

            None

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4.9   Requirement Title: TIMING SUBSYSTEM

    4.9.1   Requirement Paragraph in Test Requirements Document

             3.1.1.1.3.2

    4.9.2   Requirement

             One event timer shall be driven.

    4.9.3   Related Paragraph in System Test Plan

             4.9

    4.9.4   Pre-Test Requirements:

             None

    4.9.5   Verification Test Procedure

             No Test required. Requirement will be demonstrated during DOP's.

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4.10   Requirement Title: IMAGE VELOCITY SENSOR

   4.10.1   Requirement paragraph in test requirements

      document

            3.1.1.1.5.3

   4.10.2   Requirement

      IVS errors to be simulated are random errors.

      Saturation will be simulated in the event of

      clouds (when prescripted) in which case the

      saturate light will be turned on and the IVS

      output will limit.   Normal IVS rate - nulling

      will be simulated in the range of 540u rad/sec

      and when IVS is enabled the rate will be reduced

      to approximately ██████████ .

   4.10.3   Related paragraph in system test Plan

      4.10

   4.10.4   Pre-test Requirements

      None

   4.10.5   Verification Test Procedure

      No test required.   The test results from the

      individual CPC tests verifying this requirement

      shall be attached to these data sheets.

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4.11   Requirement Title: STICK INPUT

4.11.1   Requirement Paragraph in Test Requirements

Document

3.1.1.1.5.4

4.11.2   Requirement:

The stick polarity shall be reversable between

runs. The stick shall allow low rates to be

inserted into the device system. The transfer

function shall be provided by the Drive Connection

Module of the On-Board Software.

4.11.3   Related Paragraph in System Test Plan

4.11

4.11.4   Pre-test Requirements

None

4.11.5   Verification Test Procedure

No test required. The test results from the

individual CPC tests verifying this requirement

shall be attached to these data sheets. Requirement

will also be demonstrated during DOP.

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4.12 Requirement Title: MAGNIFICATION AND REAL FIELD OF VIEW

    4.12.1 Requirement Paragraph in Test Requirement Document

    3.1.1.1.7.1.1

    4.12.2 Requirement

    Demonstrate that the MDS shall follow operator commands
and reach any commanded value within 0.5 second and that
the step from 31.76X $\pm$ 5% to 63.5X $\pm$ 5% shall occur in
1.0 second or less. (See paragraph 3.1.1.1.7.1.5) for
a discussion of presentation rates). Verify that the
simulated real field-of-view is 3.78 degrees at 15.88X,
and 0.945 degree at 63.5X with the field varying inver-
sely with zoom to the higher powers in each range.

    4.12.3 Related Paragraph in System Test Plan

    4.12

    4.12.4 Pre-Test Requirements

        4.12.4.1 Test Team

        Test Conductor _____ Init_____

        Technicians_____ Init

        _____

        _____

        _____

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4.12.4.1 Continued

Quality Assurance_____   Init_____

AFQA   _____   Init_____

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

4.12.4.2 Test Equipment Required

1)   Techniwrite Model TR6460 Event Recorder or

equivalent.

2)   T-Boxes S/N 4605-and S/N 4605-

3)   Eng Test Box SK56179-999

4)   HP 3460B Digital Voltmeter or equivalent

5)   Brush Mark 200B Analog Recorder or equivalent

6)   Graduated Test Slide

4.12.4.3 Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker.

Equipment Type   Cal Date

_____   _____

_____   _____

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4.12.4.3 Continued

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

4.12.4.4 Subsystems Status

The following are required to be active during this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.12.4.5 Power Turn On

4.12.4.5 Install T-Boxes (S/N 4605-   and S/N 4605-
          at the SVS Interface Connectors J1 and J2.
          Turn Power On to all Subsystems.

4.12.5 Verification Test Procedure

4.12.5.1 Install and connect the Engineering Test Box,
          Per SK56179-999

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4.12.5.2 Turn On the HPA Holder Changer, Light Source and Spherical Zoom.

4.12.5.3 Activate the Selector to HPA and Unblank HPA at the Eng. Test Box.

4.12.5.4 Insert the graduated Test Slide into the HPA Viewing Station and verify that the High Power Arm is installed, and that the SVS Reticle is in place.

4.12.5.5 Set the following Drive Voltages at the Engineering Test Box.

<u>Voltage</u>

Spherical Zoom

Determined

K - Rotator

by

Iris Zoom

Eng Analysis

Cyl Zoom 1

Cyl Zoom 2

The X and Y Drives and Filter Modulator will be used to center the Slide and adjust the intensity to a comfortable Level.

4.12.5.6 Center the Test Slide in the FOV using the X and Y Drive and measure the FOV.

_____ Inches

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4.12.5.7   Change the Spherical Zoom Drive Voltage to

_____V and measure the FOV.

_____Inches

4.12.5.8   Remove the High Power Arm and install the Low

Power Arm.

4.12.5.9   Change the Spherical Zoom Drive Voltage to _____V

and measure the FOV.

_____Inches

4.12.5.10 Change the Spherical Zoom Drive Voltage to _____V

and measure the FOV.

_____Inches

4.12.5.11 Attach the Photometer Mount and Photometer to the

Supplemental Eyepiece.

4.12.5.12 Locate the center of the Photometer Spot on the

left hand edge of the FOV, and record the angle

from Normal.

_____Degrees.

4.12.5.13 Locate the Spot on the right hand edge of the FOV

and record the angle from Normal. _____Degrees

The sum of the two Angles should be $60° \pm 1°$

_____ + _____

4.12.5.14 The above Data shall be used to perform the following

Analysis:

The objective here is to verify that the system will

simulate the correct fields of view at the specified

magnifications. In particular, this is a problem of

showing that the zoom and anamorphs will be driven cor-

rectly together to accomplish this objective. Choosing

two cases at opposite extremes (nadir and = 45.87°)

will exercise the optical system sufficiently and

allow calculation of FOV as described below.

This analysis assumes nadir stimulus material for the

present time.

The real field of view (in inches) on the test slide

can be determined by the following equation:

$$X = \frac{72912}{SF} \times h \times \left[\tan \left(\lambda + \frac{1}{2} 0_R \right) - \tan \left(\lambda - \frac{1}{2} 0_R \right) \right]$$

where:

X = real FOV (in inches) at slide

SF = stimulus scale factor

h = altitude in nm.

= aspect angle

$0_R = \frac{0A}{M} = \frac{60}{M}$ = real FOV (in degrees)

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4.12.5.14 Continued

O_A = apparent FOV (in degrees)

M = system magnification

The worst case aspect angles occur at α_{max} = 45.87°
and α_{min} = 0°.

Maximum and minimum X's can be determined for LPA
and HPA yielding a total of four test points to be
verified.

For LPA, maximum X occurs when: h = 85 nm,
SF = 128000:1, M = 15.88X, O_R = 3.78°, α = 45.87°.
Minimum X occurs when: h = 75 nm, SK = 364000:1,
M = 31.76X, O_R = 1.89°, α = 0°.

For HPA, maximum X occurs when: h = 85 nm,
SF = 3200:1, M = 63.5X, O_R = 0.945°, α = 45.87°.
Minimum X occurs when: h = 75 nm, SF = 91000:1,
M = 127X, O_R = 0.472°, α = 0°.

The values of X in both cases are 6.78 in. and
.56 in.

In order to set up the previous four test conditions,
it is necessary to calculate the correct anamorph
lens angles for maximum and minimum aspect angles.

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4.12.5.14 Continued

The following equations are used:

$$\sin\theta = \frac{2}{3}\left(\frac{1}{\sqrt{\cos\alpha}} - \frac{\sqrt{\cos\alpha}}{1}\right)$$

$$\tan\psi = \frac{\sin\theta\,\cos\theta}{1 + \sin^2\theta + \sqrt{16 + 9\sin^2\theta}}$$

$$E_{\frac{1}{2}} = -45° - \psi - \theta/2 + \xi + \Delta$$

$$E_2 = -45° - \psi + \theta/2 + \xi + \Delta$$

Where $E_{\frac{1}{2}}$ is the angle of the 1/2 power anamorph

and E_2 is the angle of the 2 power anamorph. For $\alpha =$

45.87°, $E_{\frac{1}{2}} = -116°$ and $E_2 = -131°$ For $\alpha = 0°$,

$E_{\frac{1}{2}} = E_2 = 45°$.

For the zoom lens magnification, the following

equation is used:

$$\frac{M_o}{M_N} = \frac{h^2_{stim}}{h^2_{sim}}\left(\frac{\cos\alpha\ sim}{\cos\alpha\ stim}\right)^{3/2}$$

Where M_o = Zoom magnification at α
M_N = Zoom magnification at nadir

Assuming M_N = .20X and nadir stimulus, the worst

case zoom magnifications are .09X and .514X. This

includes an additional 2:1 range needed after cal-

culating worst case ranges with the above equation.

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4.12.5.15 Remove the graduated Test Slide, Eng Test Box and leads that selected and unblanked HPA.

4.12.5.16 Set up two Switches at the Beckman 2200 to Supply Step Commands from_____.___V to _____V for HPA and from _____V to _____V for LPA. The HPA Switch shall provide the step on T132 (Signal) and T133 (Return). The LPA shall provide the step on T120 (Signal) and T121 (Return).

4.12.5.17 At the A2 Power Conditioning (SVS interface Connectors J1 and J2) install leads to record the following Signals.

	Channel	Conn
HPA SPH Zoom DR	_____	J1 - f, g
HPA SPH Zoom FB	_____	J1 - BB, CC
LPA SPH Zoom DR	_____	J2 - f, g
LPA SPH Zoom FB	_____	J2 - BB, CC

4.12.5.18 Set the Analog Recorder chart speed at <u>20 mm/Sec</u> and turn On the recorders.

4.12.5.19 Apply Step Voltages at the Beckman 2200. Record the elapsed time from initiation of Command to Settling of Feedback Signal to within $\pm$ 5%, as indicated by the change in Polarity of the Feedback Voltage.

4.12.5.19   Continued

	HPA	LPA
Step	_____Sec	_____Sec

Time requirement for all Steps is 0.5 sec or less.

Remove recordings and attach to these Data Sheets.

4.12.5.20   Load an ATS Only DOP into the SDS 930 and verify

that patchcords are installed at the system junction

box to record the following:

	HPA	LPA
Supply Elevator Lower	28	3
Supply Elevator Busy	27	4
Transport Load	34	12
Transport Busy	35	13
Blanking Cmd	37	15
Blanking FB	38	16
HPA/LPA Select	1	X
Reject	50	Y

4.12.5.21   Verify that the targets are loaded in the HPA and

LPA legs as follows:

Supply Elev.	Target #		
Position 1	1	Low Power	
2	2	Low Power	
			Group 1
3	3	Low Power	
4	4	High Power	
			Group 2
5		Empty	
Position 6		Empty	

4.12.5.21   Continued

Supply Elev.	Target #	
Position 7		Empty
8		Empty
9		Empty
10	5	Low Power
11		Empty
12		Empty
13		Empty
14		Empty
15		Empty
16	6	High Power

4.12.5.22   Set chart speed on the event recorders at 20 MM/Sec
and turn On the recorders.

4.12.5.23   Activate the resume switch. When Slide #1 is in
view, activate the reject switch. (Switch from
target 1 to target 2)

4.12.5.24   When target 2 is in view, activate the reject switch,
(Switch from target 2 to target 3)

4.12.5.25   When target 3 is in view, change magnification from
31.76X to 63.5X (Change from LPA to HPA.)

4.12.5.26   When target 4 is in view, change magnification from
63.5X to 31.76X. (Change from HPA to LPA). The script
will lower the elevator one position so that to complete
the elevator must raise and transport.

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4.12.5.27   When target 3 is in view, activate the reject

switch. (Skip 5 positions and view sixth)

4.12.5.28   When target 5 is in view, change magnification from

31.76X to 63.5X (Skip 5 positions and view sixth)

4.12.5.29   When target 6 is in view, change magnification from

63.5X to 31.76X (Skip 5 positions and view sixth)

4.12.5.30   Activate freeze. Identify the slide change times

on recorder paper. Remove recordings and attach to

these data sheets.

1)   Target 1 to target 2   _____Secs

2)   Target 2 to target 3   _____Secs

3)   Target 3 to target 4   _____Secs

4)   Target 4 to target 3   _____Secs

The requirement for the above changes is 1.0

sec or less. For changes 1 and 2 the elapsed

time is from the initiation of the reject

command to shutter inblank. For changes 3

and 4 the elapsed time is from initiation of

magnification change to shutter unblank.

5)   Target 3 to target 5   _____Sec

6)   Target 5 to target 6   _____Sec

7)   Target 6 to target 5   _____Sec

The requirement for the above changes is 3.0

sec or less. The elapsed time is from initiation

of the reject command to shutter unblank.

4.12.5.31   Repeat paragraphs 4.12.5.23 to 4.12.5.30 for

the LPA Leg.

1)   Target 1 to target 2   _____Sec

2)   Target 2 to target 3   _____Sec

3)   Target 3 to target 4   _____Sec

4)   Target 4 to target 3   _____Sec

5)   Target 3 to target 5   _____Sec

6)   Target 5 to target 6   _____Sec

7)   Target 6 to target 5   _____Sec

4.12.5.32   Change magnification at various rates from 15.88X to

31.76X, 31.76X to 15.88X. Remove the recordings

for Zoom Drive and Feedback and verify that the

HPA & LPA Zoom Servos follow Operator Commands.

Attach the recordings to these Data Sheets.

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4.13 Requirement Title: OTHER CHARACTERISTICS

    4.13.1   Requirement Paragraph in Test Requirement Document

    3.1.1.1.7.1.2.3

    4.13.2   Requirement

    Demonstrate that the headrest is of the same configuration
as the June 30, 1968 AVE baseline with dimensional changes
to adapt it for use with the supplemental eyepiece.

    4.13.3   Related Paragraph in System Test Plan

    4.13

    4.13.4   Pre-Test Requirements

        4.13.4.1   Test Team

            Test Conductor _____Init_____

            Technicians   _____

                          _____

                          _____

                          _____

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4.13.4.1   Continued

Quality Assurance _____ Init_____

AFQA _____ Init_____

Aerospace Observer _____Init _____

AFSO _____ Init_____

4.13.5   Verification Test Procedure

4.13.5.1   Verify by Inspection of Quality Assurance Records
that the Headrest conforms to SK56197-453 and
attach the records to these data sheets.

4.13.6   Demonstration Test Procedure

None

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4.14   Requirement Title: TARGET LOADING AND COORDINATION

    4.14.1   Requirement Paragraph in Test Requirements Document

        3.1.1.1.7.1.5

    4.14.2   Requirement

        Demonstrate target selection logic.

    4.14.3   Related Paragraph in System Test Plan

        4.14

    4.14.4   Pre-Test Requirements

        None

    4.14.5   Verification Test Procedure

        No Test required.   Requirement will be demonstrated during DOP's.

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4.15   Requirement Title: SCENE DYNAMICS

4.15.1   Requirement Paragraph in Test Requirements
Document

3.1.1.1.7.1.6 and 3.1.1.1.8.1.6

4.15.2   Requirement

Tests will be performed to determine the phase

0 Capability.

4.15.3   Related Paragraph in System Test Plan

4.15

4.15.4   Pre-Test Requirements

4.15.4.1   Test Team

Test Conductor_____   Init

Technicians _____

_____

_____

_____

Quality Assurance_____   Init_____

AFQA   _____   Init_____

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

THIS PROCEDURE IS BEING REWRITTEN PER DISCUSSIONS WITH J. BOYAN

T. Johnson 3/19/68

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4.15.4.2 Test Equipment Required

    1) Brush Mark 200B Analog Recorder or Equivalent

    2) T-Box S/N 4605-

4.15.4.3 Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker.

Equipment Type   Cal Date

Equipment Type	Cal Date
_____	_____
_____	_____
_____	_____
_____	_____

4.15.4.4 Subsystem Status

The following are required to be active for

this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.15.4.5 Power Turn On

Turn Power On To all Subsystems

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4.15.5   Verification Test Procedure

4.15.5.1   The DOP for this Procedure will be an ATS
Only DOP, consisting of 26 Groups, 1 Target
per group. The script will contain the fol-
lowing Parameters.

Stimulus Scale   - 364,000:1

Altitude   - 75 NM

Nadir Stimulus

4.15.5.2   For verification of Requirement (Static Position-
ing Accuracy) the following errors will be inputed.

Group	Target	Errors	
1	1	No Errors	
2	2	Latitude .1NM	Target
3	3	Longitude .1NM	Location Errors
4	4	Altitude .1NM	
5	5	Intrack .3NM	
6	6	Crosstrack .1NM	Ephemeris
7	7	Altitude .1NM	Errors
8	8	Roll 2 $\widehat{\text{Min}}$	
9	9	Pitch 2 $\widehat{\text{Min}}$	Attitude
10	10	Yaw 2 $\widehat{\text{Min}}$	Errors

4.15.5.3   Install leads at the A2 Power Conditioning to
record the following:

	Channel	Conn	
HPA X Position Drive	J1-V	J1-W	
HPA Y Position Drive	J1-X	J1-Y	
HPA X FB	J1-v	J1-w	
HPA Y FB	J1-x	J1-y	
HPA Blank FB	J4-E	J4-F	

4.15.5.4   Set Recorder chart speed at 20 MM/Sec. Turn
On Recorders.

4.15.5.5 Activate the Resume Switch at the SCC.

4.15.5.6 When Group 10, Target 10 is in view, activate Freeze and Stop the Recorders.

4.15.5.7 Remove Recordings and attach to these Data Sheets. The Recording of the X and Y Feedback Signals (Output of Servo Positioning Potentiometer) will indicate actual Simulator Position for each error listed in 4.15.5.2. A printout of a computer program which determines actual AVE pointing errors will be compared with the recordings to determine the Static Positioning accuracy.

4.15.5.8 This portion of the Procedure will verify the Dynamic Positioning Accuracy.

4.15.5.9 Install leads at the SVS Pwr Cond. to record the X and Y error signals.

Channel

X Error _____

Y Error _____

4.15.5.10 Activate the resume switch and start the Recorders.

4.15.5.11 Manually point the Positioner during the next 16 targets.

4.15.5.12 When Group 26, Target 26 is in view, stop the recorders and complete the DOP.

4.15.5.13 Remove the recordings and attach to these Data Sheets. The comparison of the Drive Signals, both X and Y, with the error voltage (output of the Servo Summing Amplifier) will indicate the maximum dynamic positioning error.

4.15.5.14 Attach the SVS Acceptance Test Data for minimum Step response to these Data Sheets.

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4.16 Requirement Title: LIGHTING

4.16.1   Requirement Paragraph in Test Requirements Document

3.1.1.1.7.2.1

4.16.2   Requirement

Demonstrate that scene illumination can be varied from
target to target.

4.16.3   Related Paragraph in System Test Plan

4.16

4.16.4   Pre-Test Requirements

None

4.16.5   Verification Test Procedure

No Test required. Requirement will be demonstrated during DOP's.

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4.17   Requirement Title: INITIAL TARGET LOCATION

4.17.1   Requirement Paragraph in Test Requirements

Document

3.1.1.1.7.2.3

4.17.2   Requirement

It must be demonstrated that the simulator will

accept stimulus material from the specified ranges

	LPA	HPA
Scale Range A	128,000:1 to 160,000:1	32,000:1 to 40,000:1
Scale Range B	286,000:1 to 364,000:1	71,500:1 to 91,000:1

taken at obliquities of $\pm\ 15^{o}$ in stereo angle and $\pm\ 45^{o}$

in roll angle. The simulator shall adjust the scale of

the scene along the intrack and crosstrack axes to scales

representative of 75 to 85 nm altitude and initial target

locations of $+\ 45^{o}$ to -40° intrack with roll angles of

$\pm\ 10^{o}$ of the inherent roll angle in the stimulus slide.

It is a further condition that simulated scene roll

angles shall be limited to $\pm\ 40^{o}$, and also that forward

intrack obliquity of up to $+\ 60^{o}$ can be simulated with

stimulus material of $+\ 15^{o}$ or less stereo angle when the

scale of the stimulus is such that the dimensionally

adjusted ground scene is contained in the 9" x 9"

stimulus slide..

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4.17 Requirement Title: INITIAL TARGET LOCATION <u>CONTINUED</u>

4.17.3 Related Paragraph in System Test Plan

4.17

4.17.4 Verification Test Procedure

The three components in the optical system of the
simulator which have limited ranges of operation
are: the anamorphic lenses, zoom lens, and K-rotator.
The anamorphs can move through angles of -105° to
$+105^\circ$. The zoom magnifications can range from .09X
to .56X. The K-rotator can operate from -180° to
$+180^\circ$. This analysis will determine what combinations
of stimulus/simulation conditions constitute worst
cases for each component individually. Then the ana-
morph and K-rotator angles and zoom magnifications will
be calculated for these worst cases, and they will be
compared to hardware limits.

The anamorphic lenses will be exercised to extremes
if the simulated scene is to appear at opposite orien-
tation from the stimulus scene. That is - one of the
worst case anamorph angles will occur when stimulus
angles are $+15^\circ$ stereo, -35° obliquity, and simulation
angles are -40° stereo, -35° obliquity.

4.17.4   Continued

The anamorph angles are determined by the following
set of equations:

$$\emptyset_1 = (\xi + \Delta - 45° - \psi) - \Theta/2$$

$$\emptyset_2 = (\xi + \Delta - 45° - \psi) + \Theta/2$$

Where $\sin \Theta = 2/3 \left(\dfrac{1}{\sqrt{\cos \alpha}} - \dfrac{\sqrt{\cos \alpha}}{1} \right)$

$$\tan \psi = \frac{\sin \Theta \cos \Theta}{4 + \sin^2 \Theta + \sqrt{16 + 9 \sin^2 \Theta}}$$

$$\cos \alpha = \cos \xi \cos \Omega$$

(α is aspect angle, ξ = stereo, Ω = obliquity

ξ and Δ are determined using a computer pro-

gram because of the complexity of calculation)

A ratio of zoom magnifications is calculated by:

$$\frac{M_0}{M_N} = \frac{h^2 \text{ stim}}{h^2 \text{ sim}} \left(\frac{\cos \alpha \text{ sim}}{\cos \alpha \text{ stim}} \right)^{3/2}$$

where M_0 = zoom mag at α sim

M_N = zoom mag at nadir

4.17.4   Continued

The maximum zoom magnification ratio occurs when

h_{stim} = 85 nm, h_{sim} = 75 nm, α_{sim} = 0°, α_{stim} =

17.92° (Σ = +15°, Ω = +10°).   This ratio can be

converted to a zoom mag. range when M_N is defined.

The worst case derotation angle will be determined

by:

$$\phi_D = -(\Delta - 2\psi)$$

when the corresponding values of Δ and Θ are dis-

covered with aid of the computer.

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4.18 Requirement Title: DYNAMIC TARGET LOCATION

4.18.1 Requirement Paragraph in Test Requirements Document

3.1.1.1.7.2.4

4.18.2 Requirement

Demonstrate that the stimulus subsystem (Paragraph 3.3.2)
can simulate the apparent dynamic perspective, orientation,
and slant range of the target, in real time, from the initial
intrack position to 40° aft and that the simulator will ac-
complish the changes in scene appearance for both circular
and elliptical orbits within the 75 to 85 nm band.

4.18.3 Related Paragraph in System Test Plan

4.18

4.18.4 Pre-Test Requirements

None

4.18.5 Verification Test Procedure

No Test required. Requirement will be demonstrated during DOP's.

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4.19 Requirement Title: SCAN AREA

4.19.1 Requirement Paragraph in Test Requirements Document

3.1.1.1.7.2.5

4.19.2 Requirement

Demonstrate that line of sight excursions are limited only
by the stimulus material format size.

4.19.3 Related Paragraph in System Test Plan

4.19

4.19.4 Pre-Test Requirements:

None

4.19.5 Verification Test Procedure

No test required. Test conducted under 4.36 will verify
this Requirement. Requirement will be demonstrated during
DOP.

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4.20   Requirement Title: SCENE STREAMING

4.20.1   Requirement Paragraph in Test Requirements Document

3.1.1.1.7.2.6

4.20.2   Requirement

Demonstrate that the ground scene is blocked from view during periods of ATS slew, and that the field of view is illuminated at an intensity comparable to the scene intensity at these times.

4.20.3   Related Paragraph in System Test Plan

4.20

4.20.4   Pre-Test Requirements

None

4.20.5   Verification Test Procedure

No Test required.   Requirement will be demonstrated during DOP's.

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4.21 Requirement Title: CONTROL STICK AND MAGNIFICATION CONTROL DURING

FREEZE

4.21.1 Requirement Paragraph in Test Requirement Document

3.1.1.1.7.4

4.21.2 Requirement

Demonstrate that, at the option of the SCC operator, the

pilot can scan the stimulus and change magnification during

the freeze mode.

4.21.3 Related Paragraph in System Test Plan

4.21

4.21.4 Pre-Test Requirements

None

4.21.5 Verification Test Procedure

No Test Required. Test conducted under 4.33 will verify

this requirement. Requirement will be demonstrated during

DOP.

4.22 Requirement Title: MAGNIFICATION AND REAL FIELD OF VIEW

4.22.1   Requirement Paragraph in Test Requirements Document

3.1.1.1.8.1.1

4.22.2   Requirement

Demonstrate that the simulator will accomplish simulated
magnification step changes between the values of 125X,
██████████████████ and between the values of
████████████████ Demonstrate that
the real field of view is 0.32 degree $\pm$ 5% at 125X and
that is varies inversely with magnification.

4.22.3   Related Paragraph in System Test Plan

4.22

4.22.4   Pre-Test Requirements

4.22.4.1   Test Team

Test Conductor_____   Init_____

Technicians_____

_____

_____

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4.22.4.1   Continued

Quality Assurance_____   Init_____

AFQA   _____   Init_____

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

4.22.4.2   Test Equipment Required

1) Techniwrite Model TR6460, Event Recorders or

equivalent

2) Brush Mark 200B Analog Recorder or equivalent

4.22.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

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4.22.4.4   Subsystem Status

The following are required to be active during

this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU	X	
Stimulus S/S	X	

4.22.4.5   Power Turn On

1)   Turn Power on to all subsystems

4.22.5   Verification Test Procedure

4.22.5.1   Install Patchcords at the System Junction Box

to record the following:

Channel

MO MAG (125X)   _____

_____

_____

_____

4.22.5.2   Install Leads at the A2

Power Conditioning to record the following.

Channel

LPA Spherical Zoom Drive   _____

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4.22.5.3 An analysis (similar to 4.12) has been performed
q   to relate Stimulus Scale Factor to required

magnifications and determine the required drive

voltage to simulate 125X ███████████████

4.22.5.4 Load an ATS/MO or MO only DOP into the SDS 930

Computer.

4.22.5.5 Turn on all devices for LPA and activate resume.

4.22.5.6 Set the Magnification Stick to MO (125X).

4.22.5.7 Set the Magnification Stick to ███████

4.22.5.8 Set the Magnification Stick to ███████

4.22.5.9 Set the Magnification Stick to ███████

4.22.5.10 Activate Freeze

4.22.5.11 Remove recordings and attach to these data sheets

for review with the analysis and SVS Zoom Calibration

data to verify that the drive voltages specified in

the analysis and SVS data are achieved within $\pm$ 5%.

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4.23 Requirement Title: EYEPIECE PROPERTIES

4.23.1 Requirement Paragraph in Test Requirements Document

3.1.1.1.8.1.2

4.23.2 Requirement

The eyepiece properties will be those for the acquisition
subsystem with the exception that the image will be masked
down to a $40^\circ \pm 1^\circ$ apparent field of view. The apparent
field of view will be demonstrated.

4.23.3 Related Paragraph in System Test Plan

4.23

4.23.4 Pre-Test Requirements

4.23.4.1 Test Team

Test Conductor _____ Init_____

Technicians _____ Init_____

_____ Init_____

_____ Init_____

_____ Init_____

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4.23.4.1   Continued

Quality Assurance _____ Init_____

AFQA _____ Init_____

Aerospace Observer _____ Init_____

AFSO _____ Init_____

4.23.4.2   Test Equipment Required

1)   Spectra Pritchard Photometer - Model 1970 PR

2)   Photometer Mount

4.23.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test Equipment has a valid cablibration sticker.

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

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4.23.4.4   Subsystems Status

The following are required to be active during
this Test

	ON	OFF
SCC	X	
SLM		X
DIU		X
Stimulus S/S	X	
Computer S/S		X

4.23.4.5   Power Turn On

1)   Turn power on to all subsystems except
     the DIU.

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4.23.5 Test Procedure

4.23.5.1 At the SCC Panel 2A, verify that the Servo Test Switch is not activated.

4.23.5.2 Turn on the LPA Light Source and LPA Spherical Zoom. Activate the Selector to LPA and unblank LPA. Insert the 40° mask in the LPA Reticle Plane.

4.23.5.3 Attach the Photometer Mount and Photometer to the supplemental Eyepiece.

4.23.5.4 Locate the center of the Photometer Spot on the Left Hand Edge of the Field of View and record the angle from the Normal.

_____Degrees

4.23.5.5 Locate the Spot at the Right Hand Edge of the FOV and record the Angle from Normal.

_____Degrees

The Sum of the Two Angles should be $40^o \pm 1^o$.

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4.24 Requirement Title: PERIPHERAL DISPLAY

    4.24.1 Requirement Paragraph in Test Requirements Document

    3.1.1.1.8.1.2.1

    4.24.2 Requirement

    The VO peripheral display will be incorporated in the ATS

    pattern. The 32 timer lights will appear on the left

    hand side of the display.

    4.24.3 Related Paragraph in System Test Plan

    4.24

    4.24.4 Pre-Test Requirements:

    None

    4.24.5 Verification Test Procedure

    No Test required. Requirement will be demonstrated during DOP's.

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4.25 Requirement Title: TARGET COORDINATION AND LOADING

4.25.1 Requirement Paragraph in Test Requirements Document

3.1.1.1.8.1.5

4.25.2 Requirement

It will be shown that targets selected by voting logic during the ATS/MO mode demonstration shall be available for viewing through the eyepiece for MO in the appropriate time sequence. The target will appear at a time corresponding to the end of slew and remain in view until the commencement of slew to the next target.

4.25.3 Related Paragraph in System Test Plan

4.25

4.24.4 Pre-Test Requirements:

None

4.25.5 Verification Test Procedure

No Test required. Requirement will be demonstrated during DOP's.

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4.26 Requirement Title: SCENE LIGHTING

4.26.1 Requirement Paragraph in Test Requirement Document

3.1.1.1.8.2.1.2

4.26.2 Requirement

It will be demonstrated that the scene brightness will be variable over a range of 50:1 $\pm$ 10% up to 20 $\pm$ 2 foot lamberts as seen by the operator with no stimulus slide in the optical path.

4.26.3 Related Paragraph in System Test Plan

4.26

4.26.4 Pre-Test Requirements

4.26.4.1 Test Team

Test Conductor _____ Init_____

Technicians _____

_____

_____

_____

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4.26.4.1   Continued

Quality Assurance _____   Init_____

AFQA   _____   Init_____

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

4.26.4.2   Test Equipment Required

1)   Spectra Pritchard Photometer - Model 1970-PR

2)   Photometer Mount

4.26.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test
equipment has a valid calibration sticker.

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

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4.26.4.4   Subsystems Status

The following are required to be active during this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU		X
Stimulus S/S	X	
Computer S/S	X	

4.26.4.5   Power Turn On

1) Turn power on to all subsystems except the DIU.

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4.26.5 Test Procedure

    4.26.5.1 Verify that there is no Slide in the LPA Viewing Station and that the SVS Reticle is not is place.

    4.26.5.2 At the SCC Panel 2A, verify that the Servo Test Switch is activated and select the LPA Filter Modulator Servo Test.

    4.26.5.3 Attach the Photometer Mount and Photometer to the Supplemental Eyepiece.

    4.26.5.4 Turn On the LPA Light Source, activate the Selector to HPA and Unblank LPA. Center the Photometer Spot on the approximate center of the field.

    4.26.5.5 Set the LPA filter modulator servo test control to maximum (+50 V) and measure and record the system brightness.

        _____Foot Lamberts

    4.26.5.6 Set the LPA filter modulator servo test control to minimum (-50 V) and measure and record the system brightness.

        _____Foot Lamberts

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4.26.5.7   Calculate the brightness range

$$\frac{Max}{Min} = \underline{\hspace{3cm}} Ratio$$

4.26.5.8   Calculate the quantity and density of Wrotten

Neutral Density filters required to reduce

the brightness to approximately 0 to 20 foot

lamberts.

4.26.5.9   Insert the required filters and adjust the

fixed filter at the LPA filter modulator

until the brightness is between 18 and 22

foot lamberts.

4.26.5.10   Attach calibration data from SVS Acceptance

to show the relationship between Computer

Commands and Output Brightness to these data

sheets.

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4.27 Requirement Title: TARGET LOCATION RELATIVE TO VEHICLE

    4.27.1 Requirement Paragraph in Test Requirements Document

        3.1.1.1.8.2.3

    4.27.2 Requirement

Show that targets within the envelope of:

    30 degrees forward to 40 degrees aft in track,

    40 degrees left to 40 degrees right crosstrack,

    and 75 to 85 nm altitude

can be simulated. Perspective and slant range associated
with the above envelope are considered to be properties
of the stimulus material and will not be altered by the MDS.

Show that altitudes beyond the range stated are possible if
proper stimulus material is provided with scale factor pro-
portional to the required altitude.

Show that the in-track line on the ground scene is properly
oriented for each target and fixed in time. This orien-
tation shall be determined by the script depending on
the status of the derotation prism, orbit inclination and
target latitude.

4.27.3   Related Paragraph in System Test Plan

4.27

4.27.4   Pre-Test Requirements:

None

4.27.5   Verification Test Procedure

No Test required.   Requirement will be demonstrated during DOP's.

THIS TEST IS NOT REQUIRED. THE TEST PERFORMED UNDER 4.12.5.23 THRU 4.12.5.27 WILL VERIFY THIS REQUIREMENT

4.28   Requirement Title: SOURCE HOLDING AND SELECTION SYSTEM

   4.28.1   Requirement Paragraph in Test Requirement Document

   3.3.2.1.2

   4.28.2   Requirement

      1)   The adjacent slide position to the one in viewing position may be selected and viewed within one second.

      2)   The changer may be commanded to any diapositive, forward or reverse of the present position, and to operate the two elevators independently.

   4.28.3   Related Paragraph in System Test Plan

   4.28

   4.28.4   Pre-Test Requirements

      4.28.4.1   Test Team
                  Test Conductor _____   Init_____
                  Technicians   _____
                                 _____
                                 _____
                                 _____

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4.28.4.1 Continued

Quality Assurance _____ Init_____

AFQA _____ Init_____

Aerospace Observer_____ Init_____

AFSO _____ Init_____

4.28.4.2 Test Equipment Required

1) Techniwrite Model TR6460, Event Recorders
or equivalent.

4.28.4.3 Equipment Confidence Status

The Test Conductor will insure that all Test
Equipment has a valid calibration sticker.

Equipment Type	Cal Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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4.28.4.4   Subsystems Status

The following are required to be active during this Test.

	ON	OFF
SCC	X	
SLM		X
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.28.4.5   Power Turn On

1)   Turn Power On to all Subsystems except the SLM.

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4.28.5   Verification Test Procedure

    4.28.5.1   Turn on the HPA and LPA Holder Changers

    4.28.5.2   Load special Program No. 1 into the SDS 930
Computer.

    4.28.5.3   Install Patchcords at the System Junction Box
to record the following signals (if Patchcords
are installed, verify recorder channels.

	HPA	LPA
Supply Elevator Raise	26	3
Supply Elevator Busy	27	4
Supply Elevator Lower	28	6
Transport Load	34	12
Transport Recall	36	14
Transport Busy	35	13
Takeup Elevator Raise	30	8
Takeup Elevator Lower	32	10
Takeup Elevator Busy	31	9
Blanking Cmd	37	15
Blanking Feedback	38	16

    4.28.5.4   Set the Recorder Chart Speed at 20MM/Sec and
turn On the Recorders.

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4.28.5.5   Activate the Computer Start Switch to initiate

commands to the HPA Supply Elevator Raise and

Transport Load Lines. Record the elapsed

time from initiation of Raise Command to the

Shutter Unblank. As indicated by the change in

Level of the HPA Blanking FB.

_____Sec   Req is 1.0 Sec or Less.

4.28.5.6   Repeat for HPA Supply Elevator Lower and Trans-

port Load Lines.

_____Sec   Req is 1.0 Sec. or Less.

4.28.5.7   Repeat of HPA Takeup Elevator Raise and Trans-

port Recall Lines.

_____Sec   Req is 1.0 Sec. or Less.

4.28.5.8   Repeat for HPA Takeup Elevator Lower and Trans-

port Recall Lines.

_____Sec   Req is 1.0 Sec. or Less.

4.28.5.9   Repeat for LPA Supply Elevator Raise and Trans-

port Load Lines.

_____Sec   Req is 1.0 Sec. or Less.

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4.28.5.10   Repeat for LPA Supply Elevator Lower and

Transport Load Lines.

_____Sec   Req is 1.0 Sec. or less

4.28.5.11   Repeat for LPA Takeup Elevator Raise and

Transport Recall Lines.

_____Sec   Req is 1.0 Sec. or Less.

4.28.5.12   Repeat for LPA Takeup Elevator Lower and

Transport Recall Lines.

_____Sec   Req is 1.0 Sec. or Less.

4.28.5.13   Remove Recordings and Attach to these Data

Sheets.

THIS TEST IN NOT REQUIRED.   THE TEST PERFORMED UNDER 4.12.5.28 AND

4.12.5.29 WILL VERIFY THIS REQUIREMENT.

4.29 Requirement Title: SOURCE HOLDING AND SELECTION SYSTEM

    4.29.1   Requirement Paragraph in Test Requirement Document

        3.3.2.1.2

    4.29.2   Requirement

        It shall be demonstrated that five slide positions can

        be skipped and a slide from the sixth position can be

        viewed in 3 seconds or less.

    4.29.3   Related Paragraph in System Test Plan

        4.29

    4.29.4   Pre-Test Requirements

        4.29.4.1   Test Team

            Test Condutor_____   Init_____

            Technicians _____

                    _____

                    _____

                    _____

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4.29.4.1   Continued

Quality Assurance _____   Init_____

AFQA   _____   Init_____

Aerospace Observer _____   Init_____

AFSO   _____   Init_____

4.29.4.2   Test Equipment Required

1)   Techniwrite Model TR6460, Event Recorders

or equivalent.

4.29.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker.

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

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4.29.4.4 Subsystems Status

The following are required to be active
during this Test.

	ON	OFF
SCC	X	
SLM		X
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.29.4.5 Power Turn On

1) Turn Power On to all Subsystems except
the SLM.

4.29.5 Verification Test Procedure

4.29.5.1 Turn on the HPA and LPA Holder Changer.

4.29.5.2 Load Special Program No. 2 into the SDS 930
Computer.

4.29.5.3 Install Patchcords at the System Junction Box to
to record the following Signals (If Patchcords are
installed, verify recorder channels)

	Channels	
	HPA	LPA
Supply Elevator Lower	28	3
Supply Elevator Busy	27	4
Transport Load	34	12
Transport Busy	35	13
Takeup Elevator Lower	32	10
Takeup Elevator Busy	31	9
Transport Recall	36	14
Blanking CMD	37	15
Blanking Feedback	38	16

4.29.5.4 Set the Recorder Chart Speed at <u>20 MM/Sec</u> and
turn On the Recorders.

4.29.5.5 Activate the Computer Start Switch in Initiate Com-
mands to the HPA Supply Elevator Lower and Trans-
port Load Lines to skip 5 Slide Positions and Load
the sixth. Record the elapsed time from initiation
of Lower Command to Shutter Unblank as indicated
by the change in Level of the Blanking Feedback.

_____Sec   Req is 3.0 Sec or Less

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4.29.5.6 Repeat for HPA Takeup Elevator Lower and

Transport Recall Lines.

_____Sec Req is 3.0 Sec or Less

4.29.5.7 Repeat for LPA Takeup Elevator Lower and

Transport Recall Lines.

_____Sec Req is 3.0 Sec or less

4.29.5.8 Repeat for LPA Supply Elevator Lower and

Transport Load Lines.

_____Sec Req is 3.0 Sec or Less.

4.29.5.9 Remove Recordings and attach to these Data

Sheets.

4.29.6 Demonstration Test Procedure

None

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4.30 Requirement Title: IMAGE INTENSITY

   4.30.1   Requirement Paragraph in Test Requirements Document

   3.3.2.1.3.1

   4.30.2   Requirement

   It will be demonstrated that the color balance of the
   light is between 3000° and 6000° Kelvin.

   It will be demonstrated that:

   1)   The image intensity can be varied through a range
        of 50:1 with the upper level 500 foot lamberts $\pm 10\%$.

   2)   The intensity of the image 5 degrees from the edge
        is no less than 50 percent of the on axis intensity.
        NOTE: These numbers will be measured at the eyepiece
        without diapositives in the holder.

   3)   The color change shall not vary more than $\pm$ 25
        mireds over the intensity range.

   4.30.3   Related Paragraph in System Test Plan

   4.30

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4.30.4   Pre-Test Requirements:

None

4.30.5   Verification Test Procedure   .

No Test required.   The SVS Acceptance Test Data verifying these Requirements shall be attached to these Data Sheets.

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4.31   Requirement Title: MANUAL FILTER WHEEL

4.31.1   Requirement Paragraph in Test Requirement Document:

3.3.2.1.3.2

4.31.2   Requirement

It will be demonstrated that the manual filter wheel insertion simulated the optical path transmittances at 100%, 50% and 25%.

Furthermore, it will be demonstrated that it is readily possible to change these transmittances to other values.

4.31.3   Related Paragraph in System Test Plan:

4.31

4.31.4   Pre-Test Requirements

4.31.4.1   Test Team

Test Conductor_____   Init._____

Technicians   _____

_____

_____

_____

Quality Assurance_____   Init._____

AFQA   _____   Init._____

Aerospace Observer_____   Init._____

AFSO   _____   Init._____

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4.31.4.2 Test Equipment Required

1) Spectra Pritchard Photometer - Model 1970-PR

2) Photometer Mount

4.31.4.3 Equipment Confidence Status

The Test Conductor will insure that all test equipment

has a valid calibration sticker.

Equipment Type	Cal. Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4.31.4.4 Subsystem Status

The following are required to be active during this

test:

	ON	OFF
SCC	X	
SLM	X	
DIU	X	
STIMULUS S/S	X	
COMPUTER S/S	X	

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4.31.4.5 Power Turn On

1) Turn Power On to all Subsystems.

4.31.5 Test Procedure

4.31.5.1 Attach the Photometer Mount and Photometer to the Supplemental Eyepiece and verify that the SVS Reticle is in Place.

4.31.5.2 Remove all Magazines from Both Legs of the SVS.

4.31.5.3 Turn on all Stimulus Subsystem devices except Reticle Light Source, Haze Light Source, and the Wipeout Display, and verify that the Manual Filter Wheel Setting is 1.0.

4.31.5.4 Load the Program into the SDS 930 Computer.

4.31.5.5 Activate the Resume Switch and after the Reticle is in view, activate Freeze.

4.31.5.6 Center the Photometer on the Reticle Center, lock in place and measure and record the system brightness.

_____Foot-Lamberts

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4.31.5.7 Change the Manual Filter Wheel setting to 0.5, activate the Resume Switch and within approximately 2.0 seconds, activate Freeze.

4.31.5.8 Measure and record the system brightness

_____ Foot-Lamberts

The brightness should be 40% to 50% of that measured in 4.31.5.5

4.31.5.9 Change the Manual Filter Wheel setting to 0.25, activate the Resume Switch and within approximately 2.0 seconds, activate Freeze.

4.31.5.10 Measure and record the system brightness.

_____ Foot-Lamberts

The brightness should be 22.5% to 27.5% of that measured in 4.31.5.5

4.31.5.11 The Software Part 2 Specification Sections involving transmittance value changes shall be attached to these Data Sheets.

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4.32   Requirement Title: IMAGE SIZE

> 4.32.1   Requirement Paragraph in Test Requirements Document
>
> 3.3.2.1.3.4

> 4.32.2   Requirement
>
> It will be demonstrated that the angular magnification is by
>
> continuous zoom techniques.
>
> It will be demonstrated that:
>
> 1.   The magnification has a range of 7.2:1
>
> 2.   The field of view subtends an apparent 60 degrees $\pm$ 1 degree
>   at the eye.
>
> 3.   Lowest power the exit pupil is 4 mm $\pm$ 0.2 mm
>
> 4.   Highest power the exit pupil is 2 mm $\pm$ 0.1 mm
>
> 5.   The exit pupil size will vary inversely with magnification
>   within the limits of item 3 and 4 above.
>
> 6.   Manual focus will have $\pm$ 3 diopter adjustment.

> 4.32.3   Related Paragraph in System Test Plan
>
> 4.32

> 4.32.4   Pre-Test Requirement:
>
> None

> 4.32.5   Verification Test Procedure
>
> > 4.32.5.1   No test required. The SVS acceptance test data
> >   verifying the requirements shall be attached to these
> >   data sheets.

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4.33 Requirement Title: RESOLUTION REQUIREMENT

4.33.1 Requirement Paragraph in Test Requirement Document

3.1.2.1.3.5

4.33.2 Requirement

It will be demonstrated that when using a standard white on black bar chart of 2:1 contrast as an input, the device when simulating 127X at nadir from orbit shall provide at least 30 LP/mm for 32K scale stimulus and 67 LP/mm for 72K scale stimulus. This performance shall be provided on axis as viewed through the supplemental eyepiece by the unaided eye, with optical drives operating, the target centered in the FOV and scene drifts nulled by the computer. The resolution variation from the center to the edge of the apparent field shall not vary by more than a factor of 2 from the on axis performance.

The resolution under the above conditions shall not degrade by more than a factor of 2 from the performance at a simulated 127X where the device is configured to simulate a magnification of 63.5X.

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4.33.3   Related Paragraph in System Test Plan

  4.33

4.33.4   Pre-Test Requirements

  4.33.4.1   Test Team

  Test Conductor_____   Init_____

  Technicians   _____

                   _____

                   _____

                   _____

  Quality Assurance_____   Init_____

  AFQA   _____   Init_____

  Aerospace Observer_____   Init_____

  AFSO   _____   Init

  4.33.4.2   Test Equipment Required

  1)   Resolution Slide #141268G3

  2)   Eng. Test Box SK56179-999

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4.33.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker.

Equipment Type   CAL Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

4.33.4.4   Subsystems Status

The   following are required to be active

during this Test.

	ON	OFF
SCC	X	
SLM		X
DIU		X
Stimulus S/S	X	
Computer S/S		X

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4.33.4.5   Power Turn On

    1) Turn Power On to all Subsystems, indicated in
        4.33.4.4

4.33.5   Test Procedure

4.33.5.1   Turn On the HPA and LPA positioners and Spherical
           Zooms.

4.33.5.2   Connect the Eng. Test Box per SK56179-999. Select
           HPA and Unblank HPA.

4.33.5.3   Insert the Resolution Slide in the HPA Viewing
           Station.

4.33.5.4   Set the Spherical Zoom Drive Voltage at ___+33.24___ V
           (127X) and center the Reticle on the ON axis Reso-
           lution Chart. Record the Readings from three
           qualified observers for 127X. For the positions
           indicated on the attached Data Sheets set the
           Spherical Zoom Drive Voltage at ___+0.38___ V (63.5X)
           and center the Reticle on the On Axis Resolution Chart.
           Record the Readings from three qualified observers
           for 63.5X for the positions indicated on the attached
           data sheets.

4.33.5.5   Remove the HPA High Power Arm and insert the Low
           Power Arm and repeat all Readings from 4.33.5.4

                SZ   Voltage   (127X)   +38.88V

                               (63.5X) + 8.59V

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4.33.5.6 Activate the Selector to LPA, Blank HPA

and Unblank LPA. Repeat all Readings from

4.33.5.4

SZ Drive Voltage (127X)   +36.56V

(63.5X)   + 4.85V

4.33.5.7 Remove the LPA High Power Arm and insert the

Low Power Arm and repeat all Readings.

SZ Drive Voltage (127X)   +42.32V

(63.5X) +13.43V

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Resolution Target Position	Arm Magnification	Stick Magnification	Observer 1 Vertical	Observer 2 Vertical	Observer 3 Vertical	Average Vertical	Requirement	Observer #1 Horizontal	Observer #2 Horizontal	Observer #3 Horizontal	Average Horizontal
ON Axis	HI	127X					67				
+X	HI	127X					34				
-X	HI	127X					34				
+Y	HI	127X					34				
-Y	HI	127X					34				
ON Axis	HI	63.5X					34				
+X	HI	63.5X					17				
-X	HI	63.5X					17				
+Y	HI	63.5X					17				
-Y	HI	63.5X					17				
ON Axis	LO	127X					30				
+X	LO	127X					15				
-X	LO	127X					15				
+Y	LO	127X					15				
-Y	LO	127X					15				
ON Axis	LO	63.5X					15				
+X	LO	63.5X					8				
-X	LO	63.5X					8				
+Y	LO	63.5X					8				
-Y	LO	63.5X					8				

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Resolution Target Position	Arm Magnification	Stick Magnification	Observer 1 Vertical	Observer 2 Vertical	Observer 3 Vertical	Average Vertical	Requirement	Observer #1 Horizontal	Observer #2 Horizontal	Observer #3 Horizontal	Average Horizontal
ON Axis	HI	127X					67				
+X	HI	127X					34				
-X	HI	127X					34				
+Y	HI	127X					34				
-Y	HI	127X					34				
ON Axis	HI	63.5X					34				
+X	HI	63.5X					17				
-X	HI	63.5X					17				
+Y	HI	63.5X					17				
-Y	HI	63.5X					17				
ON Axis	LO	127X					30				
+X	LO	127X					15				
-X	LO	127X					15				
+Y	LO	127X					15				
-Y	LO	127X					15				
ON Axis	LO	63.5X					15				
+X	LO	63.5X					8				
-X	LO	63.5X					8				
+Y	LO	63.5X					8				
-Y	LO	63.5X					8				

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4.34   Requirement Title: FIELD CURVATURE

4.34.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.3.6

4.34.2   Requirement

It will be demonstrated that the curvature of the apparent field from center to edge under static conditions at 1:1 anamorph setting using the supplemental eyepiece is no greater than 3.5 diopters.

4.34.3   Related Paragraph in System Test Plan

4.34

4.34.4   Pre-Test Requirements:

None

4.34.5   Verification Test Procedure

4.34.5.1   No Test Required. The SVS Acceptance Test Data verifying this Requirement shall be attached to these Data Sheets.

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4.35   Requirement Title: IMAGE PERSPECTIVE

4.35.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.3.8

4.35.2   Requirement

The anamorphic optics, which provide image perspective by distorting an input to simulate various slant angles of view, will be demonstrated.

4.35.3   Related Paragraph in System Test Plan

4.35

4.35.4   Pre-Test Requirements
None

4.35.5   Verification Test Procedure

4.35.5.1   No Test required.   The SVS Acceptance Test Data verifying this Requirement shall be attached to these Data Sheets.

4.35.6   Demonstration Test Procedure

4.35.6.1   No Test required.   Demonstrated as part of 4.17 and 4.18

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4.36 Requirement Title: OPTICAL CENTER SELECTION

4.36.1 Requirement Paragraph in Test Requirements Document

3.3.2.1.3.9

4.36.2 Requirement

It will be demonstrated that the center of the optical axis can be continuously varied to at least $\pm$ 4 inches in the two orthogonal directions with respect to the center of the diapositives.

4.36.3 Related Paragraph in System Test Plan

4.36

4.36.4 Pre-test Requirements

None

4.36.5 Verification Test Procedure

4.36.5.1 No Test required. The SVS Acceptance Test Data verifying this Requirement shall be attached to these Data Sheets.

4.36.6 Demonstration Test Procedure

None

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4.37   Requirement Title: BRIGHTNESS CONTROL

4.37.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.4.1

4.37.2   It will be demonstrated for the filter modulator that:

1)   Any position within the brightness range can be

set within 1 second.

2)   Control accuracy is within $\pm$ 10 percent of a com-

manded foot lambert setting.

4.37.3   Related Paragraph in System Test Plan

4.37

4.37.4   Pre-Test Requirements

None

4.37.5   Verification Test Procedure

4.37.5.1   No Test required.   The SVS Acceptance Test

Data verifying this Requirement shall be

attached to these Data Sheets.

4.37.6   Demonstration Test Procedure

None

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4.38   Requirement Title: MAGNIFICATION CONTROL

4.38.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.4.2

4.38.2   Requirement

It will be demonstrated that the spherical zoom control

will cause any required 2:1 magnification change within

0.5 seconds and will reset to any position within one

second. Furthermore, it will be demonstrated that the

control is continuous over the operating range as

specified in paragraph (3.3.2.1.3.4).

4.38.3   Related Paragraph in System Test Plan

4.38

4.38.4   Pre-Test Requirements

None

4.38.5   Verification Test Procedure

4.38.5.1   No Test required. The measurements taken in

4.12 and the SVS Acceptance Test Data verify

this Requirement. Attach the SVS Acceptance

Test Data to the Data Sheets.

4.38.6   Demonstration Test Procedure

None

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4.39   Requirement Title: ANAMORPHIC CONTROL

4.39.1   Requirement Paragraph in Test Requirement Document

3.3.2.1.4.3

4.39.2   Requirement

It will be demonstrated that:

1) Anamorphic azimuth is continuously variable from 0 to

360 optical degrees.

2) Positional accuracy is $\pm$ 15 arc minutes.

3) Any position can be accomplished within 1 second.

4.39.3   Related Paragraph in System Test Plan

4.39

4.39.4   Pre-Test Requirements

4.39.4.1   Test Team

Test Conductor_____   Init_____

Technicians _____

_____

_____

_____

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4.39.4.1   Continued

> Quality Assurance_____   Init_____
>
> AFQA   _____   Init_____
>
> Aerospace Observer_____   Init_____
>
> AFSO   _____   Init_____

4.39.4.2   Test Equipment Required

1) Brush Mark 200 B Analog recorder or

equivalent.

4.39.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker.

Equipment Type	Cal Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4.39.4.4   Subsystem Status

The following are required to be active during

this Test.

	ON	OFF
SCC	X	

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4.39.4.4   Continued

	ON	OFF
SLM	X	
DIU	X	
Stimulus S/S	X	
Computer S/S	X	

4.39.4.5   Power Turn On

1)   Turn Power On to all Subsystems.

4.39.5   Verification Test Procedure

4.39.5.1   No Test is required for Requirements 1 and 2.
The SVS Acceptance Test Data verifying these
Requirements shall be attached to these Data
Sheets.

4.39.5.2   Set Up two Switches at the Beckman 2200 to
supply -50 VDC to +50 VDC Step Commands.
One Switch shall provide the Step on T128
(Signal) and T129 (Return). The other shall
provide the Step on T130 (Signal) and T131
(Return).

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4.39.5.3 Install Leads at the A2 Power Conditioning SVS Interface Connector J1 and J2, to record the following:

	Channel		Conn.	
	HPA	LPA	HPA	LPA
Cyl Zoom 1/2X Drive	_____	_____	J1-h,i	J2-h,i
Cyl Zoom 1/2X FB	_____	_____	J1-DD,EE	J2-DD,EE
Cyl Zoom 2X Drive	_____	_____	J1-j,k	J2-j,k
Cyl Zoom 2X FB	_____	_____	J1-FF,GG	J2-FF,GG

4.39.5.4 Turn On HPA and LPA Cyl Zoom 1 and 2. Set Recorder Chart Speed at 20 MM/Sec. Turn On Recorders.

4.39.5.5 Activate both Switches at the Beckman 2200. Record the elapsed time from initiation of Step Command to Settling of the Feedback within $\pm$ 10%, as indicated by the change in Feedback Polarity, for both HPA Cyl Zoom 1 and 2.

_____Sec - HPA Cyl Zoom 1

_____Sec - HPA Cyl Zoom 2

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4.39.5.6   Change the Outputs at the Beckman 2200

From   T128   To T140

T129   T141

T130   T142

T131   T143

4.39.5.7   Repeat 4.39.5.5 for LPA Cyl Zoom 1 and 1

_____ Sec - LPA Cyl Zoom 1

_____ Sec - LPA Cyl Zoom 2

4.39.5.8   Remove recordings and attach to these Data
Sheets.

4.39.6   Demonstration Test Procedure

None

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4.40   Requirement Title: IMAGE ROTATION

4.40.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.4.4

4.40.2   Requirement

It will be demonstrated that:

1)   The image rotation is continuously variable from

0 to 360 degrees.

2)   Any position can be accomplished within 1 second.

3)   Positional accuracy is $\pm$ 30 arc minutes.

4.40.3   Related Paragraph in System Test Plan

4.40

4.40.4   Pre-Test Requirements:

None

4.40.5   Verification Test Procedure

4.40.5.1   No Test required.   The SVS Acceptance Test Data

verifying this Requirement shall be attached

to these Data Sheets.

4.40.6   Demonstration Test Procedure

None

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4.41   Requirement Title: POSITION SELECTION

4.41.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.4.5

4.41.2   Requirement

1) The center of the optics chain has a position accuracy
of _ 0.0059 inches.

2) Any position, within the operating range, has a re-
peatable accuracy of 0.0004 inches.

3) The minimum position change is 0.0004 inches.

4) The position change is capable of a change rate be-
tween 0 and 4.61 inches per second.

5) During position change, position commands may con-
tain accelerations between 0 and 38 inches per
second squared.

4.41.3   Related Paragraph in System Test Plan

4.41

4.41.4   Pre-Test Requirements

None

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4.41.5   Verification Test Procedure

4.41.5.1   No Test required. The SVS Acceptance Test
Data verifying this Requirement shall be
attached to these Data Sheets.

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4.42   Requirement Title: ACQUISITION PERIPHERAL DISPLAY

4.42.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.4.6.1

4.42.2   Requirement

It will be demonstrated that:

1) All peripheral lights are displayed against a dark background in the outer three degrees in the periphery of a 60 degree field of view.

2) All lights subtend one-half degree in the field of view.

3) All lights have the capability of being switched on singly, in any combination or sequence.

4) There are 35 lights in the wipe out display and the design has a capacity for 45 lights.

5) There are 25 lights equally spaced within a 120 degree arc in the left hand field of view 60 degrees above and 60 degrees below the horizontal centerline.

6) There are 5 lights equally spaced and centered in a 30 degree acr centered in the upper right quadrant.

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4.42.2   Requirement   (Continued)

7)   There are 5 lights equally spaced and centered in a
30 degree arc centered in the lower right quadrant.

8)   There is a means provided to color the peripheral
lights individually.

9)   There is sufficient flexibility to simulate a wide
variety of potential AVE configurations.

4.42.3   Related Paragraph in System Test Plan

4.42

4.42.4   Pre-Test Requirements:

None

4.42.5   Verification Test Procedure

4.42.5.1   Requirements 1 and 3 will be verified by 4.43
Paragraph 4.43.5.3

4.42.5.2   Attach Drawings
To these Data Sheets, for a review to verify
Requirements 2, 4, 5, 6, 7, 8, 9

4.42.6   Demonstration Test Procedure

None

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4.43   Requirement Title: ACQUISITION PERIPHERAL DISPLAY

   4.43.1   Requirement Paragraph in Test Requirement Document

   3.3.2.1.4.6.1

   4.43.2   Requirement

   10)   The brightness is variable over a 50:1 $\pm$ 10% range.

   11)   The maximum brightness is 500 foot lamberts $\pm$ 10%.

   4.43.3   Related Paragraph in System Test Plan

   4.43

   4.43.4   Pre-Test Requirements

      4.43.4.1   Test Team

         Test Conductor_____   Init_____

         Technicians   _____

                       _____

                       _____

                       _____

         Quality Assurance_____   Init_____

          AFQA   _____   Init_____

         Aerospace Observer_____   Init_____

         AFSO   _____   Init _____

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4.43.4.2   Test Equipment Required

1) Spectra Pritchard Photometer Model 1970-PR

2) Photometer Mount SK

4.43.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test
Equipment has a valid calibration sticker.

Equipment Type	Cal Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4.43.4.4   Subsystem Status

The following are required to be active during
this Test.

	ON	OFF
SCC	X	
SLM	X	

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4.43.4.4 Continued

	ON	OFF
DIU		X
Stimulus S/S	X	
Computer S/S	X	

4.43.4.5 Power Turn On

1) Turn Power On to all Subsystems except
the DIU.

4.43.5 Test Procedure

4.43.5.1 At the SCC Panel 2A, verify that the Servo
Test Switch is not activated.

4.43.5.2 Attach the Photometer Mount and Photometer
to the Supplemental Eyepiece.

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4.43.5.3   Turn On all Wipeout Lights singly and unblank the

Wipeout Display. Verify that all other Light

sources are Off.

4.43.5.4   Set the Wipeout Brightness Control to maximum,

and center the Photometer spot on one of the

Wipeout Lights. Measure and record the Brightness.

4.43.5.5   Set the Wipeout Brightness Control to minimum.

Measure and record the Brightness.

4.43.5.6   Repeat 4 and 5 for two more Wipeout Lights

_____Max   Ratio_____   Light 1
           Min

_____Max   Ratio_____   Light 2
           Min

_____Max   Ratio_____   Light 3
           Min

Maximum shall be 450 to 550 foot Lamberts. Required

Ratio is 45:1 to 55:1.

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4.44   Requirement Title: HAZE REQUIREMENT

4.44.1   Requirement Paragraph in Test Requirement Document

3.3.2.1.4.6.2

4.44.2   Requirement

The haze brightness (atmospheric luminance) will be
demonstrated to show that:

1)   The brightness is variable over a 50:1 $\pm$ 10% range.

2)   The upper level is 500 foot lamberts $\pm$ 10%.

4.44.3   Related Paragraph in System Test Plan

4.44

4.44.4   Pre-Test Requirements

4.44.4.1   Test Team

Test Conductor _____   Init_____

Technicians   _____

_____

_____

_____

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4.44.4.1   Continued

Quality Assurance _____   Init_____

AFQA   _____   Init_____

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

4.44.4.2   Test Equipment Required

1)   Spectra Pritchard Photometer Model 1970-PR

2)   Photometer Mount SK

4.44.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test
Equipment has a valid calibration sticker.

Equipment Type	Cal Date
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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4.44.4.4   Subsystems Status

The following are required to be active

during this Test

	ON	OFF
SCC	X	
SLM	X	
DIU		X
Stimulus S/S	X	
Computer S/S	X	

4.44.4.5   Power Turn On

1)   Turn Power On to all Subsystems except

the DIU.

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4.44.5   Test Procedure

4.44.5.1   At the SCC Panel 2A, verify that the Servo

Test Switch is activated.

4.44.5.2   Attach the Photometer Mount and Photometer to the

Supplemental Eyepiece.

4.44.5.3   Turn On the HPA Light Source, activate the Selector

to HPA, Unblank HPA and select the Haze Filter Modu-

lator Servo Test. Verify that all other Light

Sources are Off.

4.44.5.4   Center the Photometer Spot on the Reticle Center.

4.44.5.5   Turn On the Haze Light Source and set the Haze

Filter Modulator Servo Test Control at Maximum.

4.44.5.6   Blank HPA and Unblank the Haze Light Source.   Measure

and record the Haze Brightness.

_____   Foot Lamberts

___450 to 550___   Required

4.44.5.7   Set the Haze Filter Modulator Servo Test Control to

Minimum.   Measure and record the Haze Brightness.

_____ Max   Ratio_____
                Min

Required Ratio is 45:1 to 55:1

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4.45   Requirement Title: HAZE REQUIREMENT

4.45.1   Requirement Paragraph in Test Requirements Document

3.3.2.1.4.6.2

4.45.2   Requirement

The scene brightness and haze brightness will give proper

appearance of the overall scene as seen from orbit.

4.45.3   Related Paragraph in System Test Plan

4.45

4.45.4   Pre-Test Requirements

None

4.45.5   Verification Test Procedure

4.45.5.1   No Test required.   Requirement will be

demonstrated during DOP'S.

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4.46   Requirement Title: RETICLE REQUIREMENT

    4.46.1   Requirement Paragraph in Test Requirements Document

        3.3.2.1.4.6.3

    4.46.2   Requirement

        The reticle display will be demonstrated to show that:

        1)   The brightness is variable over a 50:1 range within $\pm 10\%$.

        2)   The upper level is 500 foot lamberts, $\pm$ 10%.

    4.46.3   Related Paragraph in System Test Plan

        4.46

    4.46.4   Pre-Test Requirements

        4.46.4.1   Test Team

            Test Conductor_____   Init_____

            Technicians   _____

                    _____

                    _____

                    _____

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4.46.4.1   Continued

Quality Assurance_____   Init_____

AFQA   _____   Init_____

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

4.46.4.2   Test Equipment Required

1) Sprectra Pritchard Photometer Model 1970-PR

2) Photometer Mount SK

4.46.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

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4.46.4.4 Subsystems Status

The following are required to be active during this Test.

	ON	OFF
SCC	X	
SLM	X	
DIU		X
Stimulus S/S	X	
Computer S/S	X	

4.46.4.5 Power Turn On

1) Turn Power On to all Subsystems except the DIU

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4.46.5   Verification Test Procedure

4.46.5.1   At the SCC Panel 2A, verify that the Servo Test
Switch is not activated.

4.46.5.2   Attach the Photometer Mount and Photometer to
the Supplemental Eyepiece.

4.46.5.3   Turn On the HPA Light Source, activate the Selec-
tor to HPA and Unblank HPA. Verify that all other
Light Sources are Off.

4.46.5.4   Center the Spot in the Photometer on the Reticle Center.

4.46.5.5   Turn On the Reticle Light Source and set the Reticle
Brightness Control to Maximum.

4.46.5.6   Blank HPA and Unblank the Reticle. Measure and
record the Reticle Brightness.

_____Foot Lamberts

 450 to 550   Required

4.46.5.7   Set the Reticle Brightness Control to Minimum.
Measure and Record the Brightness.

_____Max   Ratio_____
          Min

Required Ratio is 45:1 to 55:1

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4.47 Requirement Title: RETICLE REQUIREMENT

4.47.1 Requirement Paragraph in Test Requirements Document

3.3.2.1.4.6.3

4.47.2 Requirement

It will be demonstrated that:

1) The reticle is illuminated.

2) The reticle will grow and contract with change in magnification.

3) The reticle configuration can be changed.

4.47.3 Related Paragraph in System Test Plan

4.47

4.47.4 Pre-Test Requirements

None

4.47.5 Verification Test Procedure

4.47.5.1 No Test Required. Requirement will be demonstrated during DOP'S.

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4.48   Requirement Title: CUE SUBSYSTEM

4.48.1   Requirement Paragraph in Test Requirement Document

3.3.2.1.4.6.4

4.48.2   Requirement

The Cue Subsystem will be presented by rear projection screen display on Panel 2C. Four operating modes shall be simulated in the rear projection display.

1) Manual mode, single step

2) Manual mode, random access

3) Auto-Prepass Mode

4) Auto-During Pass mode

In the manual mode the ability to advance, backup, or random access shall be demonstrated. It shall be demonstrated that consecutive cues can be accessed in one second. Furthermore, it will be demonstrated that any cue in the cue file shall be accessible within 4 seconds.

In the auto-prepass mode it will be demonstrated that the dwell time can be changed manually.

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4.48.2   Requirement (Continued)

Demonstrate that the auto-during pass mode will provide a computer controlled dwell time.

It will be demonstrated that the cue system can provide the capability to present one cue per acquisition target in the during pass mode, and one cue of different content per acquisition target in the pre-pass mode. It will be further demonstrated that the cue film storage system uses 35 mm full frame slides with a holding capacity of 80 slides.

4.48.3   Related Paragraph in System Test Plan

4.48

4.48.4   Pre-Test Requirements

4.48.4.1   Test Team

Test Conductor_____   Init_____

Technicians   _____

_____

_____

_____

Quality Assurance_____   Init_____

AFQA   _____   Init_____

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4.48.4.1   Continued

Aerospace Observer_____   Init_____

AFSO   _____   Init_____

4.48.4.2   Test Equipment Required

1)   Techniwrite Model TR6460 Event Recorders

or equivalent.

4.48.4.3   Equipment Confidence Status

The Test Conductor will insure that all Test

Equipment has a valid calibration sticker.

Equipment Type   Cal Date

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

_____   _____

4.48.4.4   Subsystems Status

The following are required to be active during

This Test.

	ON	OFF
SCC	X	
SLM	X	

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4.48.4.4 Subsystems Status   (Continued)

	ON	OFF
DIU	X	.
Stimulus S/S	X	
Computer S/S	X	

4.48.4.5 Power Turn On

1) Turn Power On to all Subsystems.

4.48.5 Verification Test Procedure

4.48.5.1 Install Patchcords at the System Junction
Box to record the following (If Patchcords
are already installed, verify recorder
channels).

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4.48.5.1   Continued

	Channel
Cue Go Cmd	41
Cue Busy	42
VDP Insert	49

4.48.5.2   Load a DOP Program into the SDS 930 Computer.

4.48.5.3   Verify that the VDP Pwr Switch at Panel 2D is
"ON" and that the Frame Select is selecting
Frame 1 (00001)

4.48.5.4   Turn On the Cue Light Source and Projector.

4.48.5.5   Activate the Resume Switch and Select Frame 2
(00002). Activate the VDP Insert Switch. Acti-
vate the Freeze Switch when the Cue Requested
Display indicates #2.

4.48.5.6   Record the elapsed time from initiation of
VDP insert to the change in Level of the Cue
Busy.

_____ Sec Req is 1.0 Sec.

4.48.5.7   Verify that the Cue Requested and Cue Selected
Displays at the SCC Panel 5B are displaying
Cue #2 Requested and Selected.

_____ Verified

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4.48.5.8   Select Frame (   ), activate the Resume Switch and the activate the VDP Insert Switch. Activate the Freeze Switch when the Cue Requested display indicates #   (Frame 42 is 180° from Frame 2 and will require the longest access time.)

4.48.5.9   Record the elapsed time from initiation of VDP Insert to the change in level of the Cue Busy.

_____Sec   Req is 4.0 Sec

4.48.5.10 Verify that the Cue Requested and Cue Selected display at Panel 5B are displaying Cue # requested and selected.

_____Verified

4.48.5.11 Remove recordings and attach to these Data Sheets.

4.48.5.12 This Procedure verifies only access times. The remainder of the requirement will be demonstrated during DOP.

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5.0 DEMONSTRATION OF REQUIREMENTS

This Section defined the Procedures to be used for conducting the Demonstration Orbital Passes (DOP'S). The script for each DOP will contain Stops before each target and/or Group of targets to allow for the Test Conductor to brief the AF Demonstration Team on the events occuring within the target or group, and to obtain agreement on the Requirements demonstrated by the preceding target or group. The following table lists the Requirements to be demonstrated during or prior to DOP'S and lists the paragraph number and type of DOP where the Requirement is demonstrated.

Paragraph	Pretest Checkout	ATS Only	ATS/MO	MO
4.1	5.1			
4.2	5.1	5.2.7.7.26.1	5.4.6.4.8	5.3.6.2.26.2
4.3	5.1			
4.4		5.2.7.7.26.1		
4.5				
4.6		5.2.7.7.27.1		5.3.6.3.27.1
4.7		5.2.7.7.26.1	5.4.6.4.8	5.3.6.2.26.2
4.8	No	Demonstration	Required	
4.9		5.2.7.5.1		
4.10				5.3.6.3.2.1
4.11				5.3.6.3.26.1
4.12		5.2.7.7.6.1		
4.13	No	Demonstration	Required	
4.14			5.4.6.4.8	

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5.0   CONTINUED

Paragraph	Pretest Checkout	ATS Only	ATS/MO	MO
4.15		5.2.7.7.26.1	5.4.6.4.8	5.3.6.3.26.3
4.16		5.2.7.7.18.1		
4.17		5.2.7.7.10.1		5.3.6.3.26.1
4.18		5.2.7.7.10.1		5.3.6.3.26.1
4.19		5.2.7.7.19.1		
4.20		5.2.7.7.3.1		
4.21		5.2.7.7.1.1		5.3.6.3.3.1
4.22				5.3.6.3.3.1
4.23				
4.24				5.3.6.3.2.1
4.25			5.4.6.4.8	
4.26				5.3.6.3.6.1
4.27				5.3.6.3.26.1
4.28	No	Demonstration	Required	
4.29	No	Demonstration	Required	
4.30		5.2.7.7.18.1		
4.31		5.2.7.7.19.1		
4.32		5.2.7.7.6.1		
4.33		5.2.7.7.19.1		
4.34	No	Demonstration	Required	
4.35	"	"	"	
4.36		5.2.7.7.19.1		
4.37	No	Demonstration	Required	

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5.0 DEMONSTRATION OF REQUIREMENTS (CONTINUED)

Paragraph	Pretest Checkout	ATS Only	ATS/MO	MO
4.38	No	Demonstration	Required	
4.39	"	"	"	
4.40	"	"	"	
4.41	"	"	"	
4.42	"	"	"	
4.43		5.2.7.7.3.1		
4.44		5.2.7.7.14.1		
4.45		5.2.7.7.14.1		
4.46		5.2.7.7.1.1		
4.47		5.2.7.7.6.1		
4.48		5.2.7.7.3.1	5.2.7.5.1	

NOTE: The Demonstration of Requirements during DOP'S will be

visual observations only. No physical measurements (such

as Timing) will be made. All required physical measurements

have been made under ection 4.0 (Verification of Requirements).

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5.1   Pre-Test Checkout Program

The Pre-Test Checkout Program Requirement will be demonstrated

per Test Procedure BIN: BIF-055-46753-69 on the first day of

Demonstration Tests, and at the option of the Test Conductor on

the succeeding days.

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5.2   ATS Only DOP

    5.2.1   General

        The test procedure for this DOP contains the tasks re-
quired to demonstrate specific requirements of the Phase
0 MDS as defined in Section 4.0 of this Document.

    5.2.2   Requirements Demonstrated

        5.2.2.1   The following requirements will be demonstrated
by the ATS only DOP prior to the Payload Pass.

        4.9   Event time operation

        4.48 (Partial) Cue Subsystem

          1)   Manual callup

          2)   Auto-prepass

          3)   Alphanumeric Data

The following requirements will be demonstrated
during the Payload Pass.

Group 1	4.20	Scene Streaming
2	4.21	Control Stick and Magnification
3		Control during Freeze
	4.42	Acquisition Peripheral Display
	4.48	Cue Subsystem (Auto During-Pass and Cue Hold)
	4.46	Reticle Req.

5.2.2.1   Continued

Group 4   4.12   Magnification and Real FOV

5   4.32   Image Size (Continuous Zoom)

6   4.47   Reticle Requirement

Group 7   4.17   Initial Target Location

9   4.18   Dynamic Target Location

Group 11   4.44   Haze Variation

12   4.45   Haze (Haze and Scene Brightness
Combined)

13

14

Group 15   4.30   Image Intensity

16   4.16   Lighting

17

18

Group 19   4.31   Manual Filter

4.33   Resolution

4.36   Optical Center Selection

4.19   Scan Area

Group 20 thru 26

4.11   Stick Input

Group 1-26

4.2   Controls and Displays

4.7   Operations Scripting Capability

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5.2.2.1   Continued

Group 1-26 (Continued)

4.15   Scene Dynamics

4.16   10 Min Turn Around

5.2.3   Scripting

This DOP is scripted for both Primary Trackpath and ATS Track-path #1 containing 26 groups of targets with a total of 58 aiming points. The Primary Trackpath is contained in Trackpath 1 and will be demonstrated. ATS Trackpath 2 will not be scripted or demonstrated.

5.2.4   Stimulus

The stimulus material for this DOP will be slides (LP, HP) num-bered sequentially from 1 to 26, which will contain a grid of indexed intersections spaced on one inch centers across the format of each slide.

Where resolution measurements are to be made, a slide with resolu-tion targets (Tribar charts) will be substituted for the numbered gridwork slide. (These are identified in the Procedure).

The cues for this DOP will be numbered 1 to 26 to correspond with group number. If more than one target is in a group, dupli-cate cue slides will be used. Each cue slide will contain the indexed intersection to be used as that target.

5.2.5   Setup

The MDS will be in an operational configuration as defined in the Pretest Checkout Procedure BIN:BIF-055-46753-69 with all simu-lation software and AVE programs loaded.

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5.2.5 ·Continued

The simulated command messages, stimulus data, and "SCRIPT"

data will be read into the Computer Subsystem. The HP slides

will be loaded in the HP arm of the SVS and the LP slides will

in the LP arm, in accordance with the script slide load tables.

The SLM setup will consist of a panel checklist for Panels 2C

and 2D, contained in the Simulated VDP.

For this DOP, the controls of interest and the positions selected

are:

Trackpath Select	Primary Trackpath No. 1
Magnification Controller	LP Range
VDP	Command
Right Hand Control Stick	Centered

5.2.6 Pre-Payload Pass Functions

For this DOP, several tasks will be performed prior to actual

start of the Payload Pass. These tasks are:

    1. Event Timer Setup

    2. Auto-Prepass Cue Briefing

This will be an abbreviated briefing since the intent is to show

the simulator capability to perform this task and not provide

actual briefing for content. If Manual Single Step Mode is

desired, place VDP Power Switch to "ON" and activate Single

Step Switch.

    3. Manual Cue Callup

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5.2.6   Continued

This will require the crewman to callup and display the panel

checklist for 2C and 2D prior to start of the Payload Pass. The

intent here is to demonstrate the manual capability as well as

provide the instructions for setting up the panels for the Pay-

load Pass.

5.2.7   ATS Only DOP Procedure

5.2.7.1   General

This DOP will commence when the "RESUME" command is

initiated at the SCC. At this point, vehicle time for

this DOP will be 112300 seconds. The MDS will be opera-

ting continuously through the end of the Payload Pass

unless the "FREEZE" interrupt is initiated.

Whenever the FREEZE is initiated the MDS is placed in

a "hold" configuration until the "RESUME" is once more

initiated. Then the MDS resumes operation from the point

in time at which the FREEZE occurred. In order to have

Control Stick and Magnification Control during FREEZE, the

Stick FREEZE Switch at the SCC must be activated.

One second prior to each Group Decision Time (GDT) a

"Scripted Freeze" shall occur to allow time for concur-

rence of accomplished events. A "Resume" shall be

required for continuation of the DOP; however a "Scripted

Freeze" shall not occur if it will interrupt operation

in the ATS Hold Mode.

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5.2.7.2   SCC Initiates DOP

1)   SCC operator activates "RESUME" and monitors

Vehicle Time on SCC CRT.

5.2.7.3   Crewman Sets Event Timer

1)   Timer Power Switch to "Display and Aural"

2)   Timer Mode Switch to "IT Set"

3)   Insert Time "12680"

4)   Timer Mode Switch to "DT Set"

5)   Insert Time "00120"

6)   Timer Mode Switch to "Operate"

7)   Observe Timer Counting Down

5.2.7.4   Crewman Prepares For Prepass Briefing

1)   VDP Power Switch to "ON"

2)   Press "Lamp Test" and observe "Wrong Module"
     Light

3)   VDP Power Switch to "Command"

4)   Await start of Auto-Prepass (112500)

5.2.7.5   Crewman Performs Auto-Prepass Briefing

1)   Observe Cue, Alpha-numerics and Target No.

          1   A1 P X 5 5   011

2)   Adjust Cue "Focus" and "Brightness"

3)   Adjust Alphanumeric "Brightness"

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5.2.7.5   Continued

4)   Press "Reject" on Magnification Controller

5)   Observe Cue, Alphanumerics and Target No.

1   A 3 A X 3 7   012

6)   Press "Reject" on Magnification Controller (Repeat

Steps 5-6 until Prepass complete or terminated

by computer.)

7)   Listen for Timer Alarm(10 Sec before (112670)

end of Prepass and again at the end of Prepass

and verify Timer has reached zero and is now

counting up for Duration Time (DT).

5.2.7.5.1 The preceding operations have demonstrated

requirements 4.9 (Event Timer) and 4.48

(Cue Subsystem Prepass Mode)

AFSO.

5.2.7.6   Crewman Prepares for Payload Pass

1)   VDP Power Switch to "ON"

2)   Set "Frame Select" to 07500 (Panel Checklist)

3)   Press "Insert and verify panel checklist dis-

played

4)   Setup Panels 2C and 2D according to Checklist

5)   VDP Power Switch to "Command"

6)   Await start of Payload Pass. Do not wait more
than 10 minutes.

7)   Listen for Timer Alarm (112800)

8)   Timer Power Switch to "OFF"

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5.2.7.7 Crewman Performs Payload Pass

5.2.7.7.1 Group 1

1) Activate "Cue Hold"

2) Observe Cue, Alphanumeric and Target No.

      1   A1PX55   011

3) Observe "ATS Track" Light ON

4) Release "Cue Hold"

5) Observe Slide "1" in Eyepiece and at TV Monitor

6) (SCC Operator) Activate "Freeze" and "Stick Freeze"

7) Adjust Reticle Brightness

8) Adjust Peripheral Brightness

9) Adjust Cue Focus and Brightness

10) Demonstrate control stick and magnification control by scanning the Scene and changing magnification in LP Range only.

11) Adjust Alphanumeric Brightness

12) (SCC Operator) Deactivate Stick Freeze and activate Resume.

13) Observe Peripherals

    a) Primary Target Ind. on Right Side (4 Green Lights)

    b) Observe Countdown

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5.2.7.7.1 Group 1 Continued

13) Continued

c) Dwell Light at GDT minus 9 (GDT-9) and

(GDT-15)

d) Decision Time Light

14) Observe Eyepiece Blanking at GDT

5.2.7.7.1.1 The preceding Group has demonstrated

the following requirments:

4.21 (Control Stick & Magnification

Control during Freeze)_____
                                    AFSO

4.46 (Reticle Req)   _____
                                    AFSO

5.2.7.7.2 Group 2

1) Activate "Cue Hold"

2) Observe Cue, Alphanumeric and Target No.

2   B6PX55   022

3) Observe "ATS Track" Light ON

4) Release "Cue Hold"

5) Observe Slide "2" in Eyepiece and at TV

Monitor.

6) Observe Peripherals

a) Primary Target Ind. on Right Side
    (4 Green Lights)

b) Observe Countdown

c) Dwell Light at GDT-7

d) Decision Time Light

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5.2.7.7.2   Continued

6)   Observe Eyepiece Blanking at GDT

5.2.7.7.3   Group 3

1)   Observe Cue, Alphanumeric and Target No.

   3   A7PX77   031

2)   Observe "ATS Track" Light ON

3)   Observe Slide "3" in Eyepiece and

    at TV Monitor

4)   Observe Peripherals

   a)   Primary Target Ind. on Right Side
      (4 Green Lights)
   b)   Observe Countdown
   c)   Dwell Time Light
   d)   Decision Time Light

5)   Set ATS Trackpath Select to Trackpath 1

6)   Observe Eyepiece Blanking at GDT

5.2.7.7.3.1   The preceding Groups (1, 2, 3)

have demonstrated the following

requirements:

4.20   (Scene Streaming)

AFSO

4.42   (Acquisition Peripheral

Display)

AFSO

5.2.7.7.3.1   Continued

4.48   (Cue Subsystem-

Auto During-Pass

and Cue Hold)

_____

AFSO

5.2.7.7.4   Group 4

1)   Observe "ATS Track" Light ON

2)   Observe Slide "4" in Eyepiece and at
TV Monitor

3)   Change Magnification between 15.88X and
31.76X and observe Magnification change
in both the Scene and the Reticle.

4)   Change Magnification Stick from 31.76X
to 63.5X and observe Blanking and Slide
Change. (Slide No. Changes color)

5)   Change Magnification between 63.5X and
127X and observe Magnification change
in both the Scene and the Reticle.

6)   Return Mag Stick to 15.88X

7)   Observe Eyepiece Blanking at GDT and
"ATS Track" Light OFF

5.2.7.7.5   Group 5

1)   Observe "ATS Track" Light ON

5.2.7.7.5   Continued

2)   Observe Slide "5" in Eyepiece and at
       TV Monitor

3)   Change Magnification between 15.88X and
       31.76X and observe Magnification change
       in both the Scene and the Reticle.

4)   Change Magnification Stick from 31.76X
       to 63.5X and observe Blanking and Slide
       change.(Slide no. changes color)

5)   Change Magnification between 63.5X and
       127X and observe Magnification change
       in both the Scene and the Reticle.

6)   Return Mag Stick to 15.88X

7)   Observe Eyepiece Blanking at GDT and
       "ATS Track" Light OFF.

5.2.7.7.6   Group 6

1)   Observe "ATS Track" Light ON

2)   Observe Slide "6" in Eyepiece and at
       TV Monitor

3)   Change Magnification between 15.88X and
       31.76X and observe Magnification change
       in both the Scene and the Reticle.

4)   Change Magnification Stick from 31.76X
       to 63.5X and observe Blanking and Slide
       change.

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5.2.7.7.6   Continued

5)   Change Magnification between 63.5X and

127X and observe Magnification change

in both the Scene and the Reticle.

6)   Return Mag Stick to   15.88X

7)   Observe Eyepiece Blanking at GDT and

"ATS Track" Light OFF.

5.2.7.7.6.1   The preceding Groups (4, 5, 6)

have demonstrated the following

requirements:

4.12   (Magnification and

Real FOV)

AFSO

4.32   (Image Size-Continuous Zoom)

AFSO

4.47   (Reticle Requirement)

AFSO

5.2.7.7.7   Group 7

1)   Activate "ATS Hold"

2)   Observe Slide "7" in the Eyepiece

3)   Observe Tracking at approximately $0°$ Roll

4)   Observe Effects of Anamorph Drive to

Simulate Image Aspect in Pitch

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5.2.7.7.7   Continued

    5)   Observe Tracking Past GDT

    6)   Remain in the ATS Hold Mode until tar-
        get is automatically released.

5.2.7.7.8   Group 8

Skipped due to extended tracking of Group 7

Target.

5.2.7.7.9   Group 9

    1)   Activate "ATS Hold"

    2)   Observe Slide "9" in the Eyepiece

    3)   Observe Tracking at approximately 30° Roll

    4)   Observe Effects of Anamorph Drive

    5)   Observe Tracking Past GDT

    6)   "Reject" to Release ATS Hold

5.2.7.7.10   Group 10

Skipped due to extended tracking of Group 9

Target.

5.2.7.7.10.1   The preceding groups (7, 9)
           have demonstrated the following
           requirements:
           4.17 (Initial Target Location)

<div align="right">AFSO</div>

5.2.7.7.10.1   Continued

4.18   (Dynamic Target Location)

AFSO

5.2.7.7.11   Group 11

1)   Observe Slide "11" in Eyepiece

2)   Observe Addition of Haze approximately (25%)

for fixed total brightness and effect on Slide

Contrast

5.2.7.7.12   Group 12

1)   Observe Slide "12" in Eyepiece

2)   Observe Change of Haze Level approximately (50%)

for fixed total brightness and effect on

Slide Contrast.

5.2.7.7.13   Group 13

1)   Observe Slide "13" in Eyepiece

2)   Observe Change of Haze Level approximately (75%)

for fixed total brightness and effect on Slide

Contrast.

5.2.7.7.14   Group 14

1)   Observe Slide "14" in Eyepiece

2)   Observe Change of Haze Level approximately (100%)

for fixed total brightness and effect on Slide

Contrast.

5.2.7.7.14.1   The preceding Groups (11 thru 14) have

demonstrated the following requirements:

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5.2.7.7.14.1 Continued

4.44 (Haze Variation)

_____
                    AFSO

4.45 (Haze Combined with Scene)

_____
                    AFSO

5.2.7.7.15 Group 15

1) Observe Slide "15" in Eyepiece

2) Observe Scene Brightness approximately (25%)

5.2.7.7.16 Group 16

1) Observe Slide "16" in Eyepiece

2) Observe Scene Brightness approximately (50%)

5.2.7.7.17 Group 17

1) Observe Slide "17" in Eyepiece

2) Observe Scene Brightness approximately (75%)

5.2.7.7.18 Group 18

1) Observe Slide "18" in Eyepiece

2) Observe Scene Brightness approximately (100%)
     Variation

5.2.7.7.18.1 The preceding Groups (15 thru

18) have demonstrated the

following requirement:

4.16 (Lighting)   _____
                            AFSO

4.30 (Image Intensity_____
                            AFSO

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5.2.7.7.19 Group 19

1) Observe Resolution Slide in Eyepiece

2) Observe Cue Alphanumeric and Target No.

      19   A7PX55   191

3) Observe "ATS Track" Light ON

4) A Scripted Freeze will occur at (113132).
The SCC operator will activate Stick Freeze.

5) Using the Control Stick move the Image in
both axes and observe ± 4 inch motion
in each axis.

*6) Center the Reticle on the On Axis Resolu-
tion Target. Record the Resolution
readings from three qualified observers
on the attached Data Sheets, setting the
Magnification Control Stick as indicated
on the Data Sheets.

*7) Remove the HPA High Power Arm and insert
the Low Power Arm. Repeat readings as
specified on the Data Sheets.

*8) Activate Resume (SCC Operator).

*9) Activate "Crippen Switch".

*10) A Scripted Freeze will occur at (113135).

*11) Repeat Steps 6 and 7 for LPA.

    * The number of Resolution Readings shall
be that required to satisfy the AF
Demonstration Team that the Verification
Data taken for 4.33 of this Procedure is
valid when Scene Drifts are nulled by
the Computer.

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5.2.7.7.19 Continued

12) Activate Resume (SCC Operator).

13) Change Manual Filter Wheel setting and observe Scene Brightness variation.

14) Observe Eyepiece blanking at GDT.

5.2.7.7.19.1 The preceding Group (19) has demonstrated the following requirements:

4.31 (Manual Filter)

                _____
                        AFSO

4.33 (Resolution)

                _____
                        AFSO

4.36 (Optical Center Selection)

                _____
                        AFSO

4.19 (Scan Area)

                _____
                        AFSO

5.2.7.7.20   Group 20

5.2.7.7.21   Group 21

5.2.7.7.22   Group 22

5.2.7.7.23   Group 23

5.2.7.7.24   Group 24

5.2.7.7.25   Group 25

5.2.7.7.26   Group 26

The remaining Groups will be used to

exercise normal ATS operation as follows:

    1)   Observe Cue, Alphanumeric

       and Target No.

    2)   Observe "ATS Track" Light

       ON

    3)   Observe Peripherals

    4)   Center Target and Vote

5.2.7.7.26.1   The preceding Groups(1 thru 26) have

demonstrated the ATS Only DOP, and

the following requirements:

4.2   (SLM Controls and Displays)

_____
              AFSO

4.7   (Operational Scripting Capability)

_____
              AFSO

4.15 (Scene Dynamics)   _____
                            AFSO

5.2.7.7.27   At the conclusion of this DOP, the same Orbital

Pass will be setup and rerun in accordance with

Paragraph 4.6 of the Procedure.

5.2.7.7.27.1   Completion of 5.2.7.7.27 will have

demonstrated the following requirement:

4.6   (10 Min Turnaround and Restacking)

_____
              AFSO

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5.2.8   Display Tables

The proceding procedure defined a high density ATS only
DOP. The following tables define for each group what
would be observed if a vote were registered for each
Target for both a high and medium density target pass.
These tables allow prediction of what would be observed
if a script were run without following a step by step
procedure of a prescribed DOP.

A table for a low density target pass is not shown
since it would be an abreviated version of either a
high or medium density target pass.

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5.2.8.1   High Density Pass

Group	Target	Cue No.	Intersect #	Primary Target	Alpha - Numeric	Target ID	Peripheral Dwell	Vote
1	1	1	55	*	A1PX55	011	GDT-15	I
	2	1	37		B3AX37	012	GDT- 9	I
	3	1	33		C4AX33	013	GDT	R
2	1	2	33		A2AX33	021	GDT- 7	I
	2	2	55	*	B6PX55	022	GDT	R
3	1	3	77	*	A7PX77	031	GDT-12	I
	2	3	55		B1AX55	032	GDT	A
4	1	4	55		A3AX55	041	GDT- 8	A
	2	4	73	*	B4PX73	042	GDT	A
5	1	5	55		A2AX55	051	GDT- 9	R
	2	5	33	*	B6PX33	052	GDT	R
6	1	6	73		A7AX73	061	GDT-10	R
	2	6	55	*	B5PX55	062	GDT	O
7	1	7	55	*	A5PX55	071	GDT-15	I
	2	7	37		B3AX37	072	GDT- 8	I
	3	7	33		C2AX33	073	GDT	R
8	1	8	33	*	A7PX33	081	GDT-10	A
	2	8	37		B1AX37	082	GDT	I
9	1	9	55	*	A2PX55	091	GDT- 6	I
	2	9	77		B5AX77	092	GDT	R
10	1	10	33	*	A3PX33	101	GDT-13	R
	2	10	73		B4AX73	102	GDT- 7	A
	3	10	77		C4AX77	103	GDT	I
11	1	11	77		A5AX77	111	GDT- 6	I
	2	11	55	*	B2PX55	112	GDT	O
12	1	12	55	*	A1PX55	121	GDT- 7	I
	2	12	37		B6AX37	122	GDT	I
13	1	13	77	*	A7PX77	131	GDT-10	A
	2	13	55		B7AX55	132	GDT	I

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5.2.8.1   High Density Pass   (Continued)

Group	Target	Cue No.	Intersect #	Primary Target	Alpha - Numeric	Target ID	Peripheral Dwell	Vote
14	1	14	77		A3AX77	141	GDT-12	R
	2	14	73	*	B4PX73	142	GDT	A
15	1	15	55	*	A4PX55	151	GDT-11	I
	2	15	33		B1AX33	152	GDT	I
16	1	16	37		A3AX37	161	GDT- 7	I
	2	16	55	*	B1PX55	162	GDT	R
17	1	17	33		A5AX33	171	GDT-12	R
	2	17	37	*	B2PX37	172	GDT	I
18	1	18	55	*	A4PX55	181	GDT-12	I
	2	18	37		B6AX37	182	GDT	I
19	1	19	55	*	A7AX55	191	GDT-15	I
	2	19	37		B2AX37	192	GDT- 8	I
	3	19	33		C1AX33	193	GDT	I
20	1	20	33	*	A2PX33	201	GDT-12	A
	2	20	55		B3AX55	202	GDT	I
21	1	21	77		A1AX77	211	GDT-10	I
	2	21	73	*	B1PX73	212	GDT	I
22	1	22	55	*	A4PX55	221	GDT-15	R
	2	22	33		B5AX33	222	GDT- 8	I
	3	22	37		C7AX37	223	GDT	I
23	1	23	37	*	A6PX37	231	GDT-11	I
	2	23	55		B3AX55	232	GDT	A
24	1	24	55	*	A3PX55	241	GDT- 9	R
	2	24	33		B2AX33	242	GDT	I
25	1	25	77	*	A4PX77	251	GDT-15	I
	2	25	73		B6AX73	252	GDT- 8	I
	3	25	37		C7AX37	253	GDT	A
26	1	26	37		A1AX37	261	GDT- 9	R
	2	26	55	*	B5PX55	262	GDT	I

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5.2.8.2 MEDIUM DENSITY PASS

GROUP	TARGET	CUE NO.	INTERSECT #	PRIMARY TARGET	ALPHA-NUMERIC	TARGET ID	PERIPHERAL DWELL	VOTE
1	1	1	55	*	A1PX55	011	GDT-9	I
	2	1	37		B3AX37	012	GDT	I
2	1	2	33	*	A2PX33	021	GDT	R
3	1	3	77	*	A7PX77	031	GDT-10	I
	2	3	55		B1AX55	032	GDT	R
4	1	4	55	*	A3PX55	041	GDT	A
5	1	5	55	*	A4PX55	051	GDT	I
6	1	6	73		A7AX73	061	GDT-6	I
	2	6	55	*	B5PX55	062	GDT	R
7	1	7	55	*	A5PX55	071	GDT-9	I
	2	7	37		B3AX37	072	CDT	I
8	1	8	33	*	A7PX33	081	GDT-6	R
	2	8	37		B1AX37	082	GDT	O
9	1	9	55	*	A2PX55	091	GDT	I
10	1	10	33	*	A3PX33	101	GDT-8	A
	2	10	73		B4AX73	102	GDT	A
11	1	11	77	*	A5PX77	111	GDT	A
12	1	12	55	*	A1PX55	121	GDT	I
13	1	13	77	*	A7PX77	131	GDT	I
14	1	14	77	*	A3PX77	141	GDT	R
15	1	15	55	*	A4PX55	151	GDT	I
16	1	16	37	*	A3PX37	161	GDT	A
17	1	17	33	*	A5PX33	171	GDT	I
18	1	18	55	*	A4PX55	181	GDT-7	R
	2	18	37		B6AX37	182	GDT	I
19	1	19	55	*	A7PX55	191	GDT-9	I
	2	19	37		B2AX37	192	GDT	R
20	1	20	33	*	A2PX33	201	GDT-9	A
	2	20	55		B3AX55	202	GDT	A

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5.2.8.2 MEDIUM DENSITY PASS (continued)

GROUP	TARGET	CUE NO.	INTERSECT #	PRIMARY TARGET	ALPHA-NUMERIC	TARGET ID	PERIPHERAL DWELL	VOTE
21	1	21	77		A1AX77	211	GDT-7	I
	2	21	73	*	B1PX73	212	GDT	I
22	1	22	55	*	A4PX55	221	GDT-11	R
	2	22	33		B5AX33	222	GDT	A
23	1	23	37	*	A6PX37	231	GDT-6	I
	2	23	55		B3AX55	232	GDT	I
24	1	24	55	*	A3PX55	241	GDT-6	A
	2	24	33		B2AX33	242	GDT	I
25	1	25	55	*	A4PX55	251	GDT-10	I
	2	25	77		B6AX77	252	GDT	O
26	1	26	37		A1AX37	261	GDT-7	I
	2	26	55	*	B5PX55	262	GDT	A

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5.3   MO Only DOP

5.3.1   General

The Test Procedure for this DOP contains the tasks required
to verify specific requirements of the Phase 0 MDS as de-
fined in Section 4.0 of this Document.

5.3.2   Requirements Demonstrated

The following requirements will be demonstrated during the
MO Only DOP.

Target 1 ⎱ 4.10   Image Velocity Sensor
       2 ⎰ 4.24   VO Peripheral Display

Target 3 ⎱ 4.21   Control Stick and Mag Control During Freeze
         ⎰ 4.22   Magnification and Real FOV

Target 4 ⎫
       5 ⎪
         ⎬ 4.26   Scene Lighting
       6 ⎪
       7 ⎭

Target 8 ⎱ 4.11   Stick Input
   thru ⎨ 4.17   Initial Target Location
Target 26⎰ 4.18   Dynamic Target Location
           4.27   Target Location Relative to Vehicle

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Target 1 - 4.2   Controls and Displays
26
4.7   Operational Scripting Capability

4.15 Scene Dynamics

4.6   30 Min. Trunaround

5.3.3 Scripting

This DOP contains 26 Targets for tracking in the Primary Optics.

5.3.4 Stimulus

The stimulus material for this DOP consists of 26 sequentially

numbered slides. Each slide contains a grid of indexed

intersections spaced on one inch centers across the format.

5.3.5 Setup

The MDS will be in an operational configuration as defined in

the Pre-test Checkout Program BIN: BIF-055-46753-69 with all

simulation software and AVE programs loaded. The simulated

command messages, stimulus data and "Script" data will be

read into the Computer Subsystem. The slides will be loaded

into the LP arm of the SVS.

The panel setup in the SLM will be as follows:

1. Magnification Controller at upper limit of HP range.

2. Control Stick centered

3. "Crippen Switch" On

5.3.6 DOP Procedure

5.3.6.1 General

This DOP will commence when the "Resume command is

initiated at the SCC. At this point, vehicle time

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5.3.6.1   General   (Continued)

will be 112800 seconds.

The MDS will be operating continuously through
the end of the Payload Pass unless the "Freeze"
is initiated, the MDS is placed in a "Hold" con-
figuration until the "Resume" is once more initiated.
Then the MDS resumes operation from the point in
time at which the "Freeze" occurred.

5.3.6.2   SCC Initiates DOP

1)   SCC Operator presses "Resume" and monitors
     Vehicle Time on SCC   CRT   (112800)

5.3.6.3   Crewman Performs Payload Pass

5.3.6.3.1   Target 1

1)   Activate "Crippen Switch"

2)   Select "125X" on Mag. Controller

3)   Observe "MO Track" Light ON

4)   Observe Peripherals

     a)   7 Photos scheduled

     b)   Wipeout countdown

5)   Observe IVS Rate Nulling

6)   Observe Eyepiece blanked at end
     of last Photo

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5.3.6.3.2   Target 2

1) Set Mag Controller to "MCSA" detent

2) Observe "MO Track" Light On

3) Observe Peripherals

    a) 6 Photos scheduled

    b) Wipeout countdown

4) Observe Image Rate

5) Set Mag. Controller to "HP Range)

6) Observe IVS Rate nulling

7) Observe Eyepiece blanked at end of

    last Photo

5.3.6.3.2.1 The preceeding targets (1, 2)

             have demonstrated the following

             requirements.

             4.10 (Image Velocity Sensor)

             _____
                      AFSO

             4.24 (VO Peripheral Display)

             _____
                      AFSO

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5.3.6.3.3 Target 3

1) Observe "MO Track" Light On

2) Observe IVS Rate Nulling

3) Activate Freeze (SCC Operator) & Stick Freeze

4) Activate Mag. Controller to following

positions and observe Step Magnification

Change.

125X

Deactivate Stick Freeze & Freeze

5) Activate Resume (SCC Operator)

5.3.6.3.3.1 The preceeding target has dem-

onstrated the following requirements

4.21 (Control Stick and Mag

Control During Freeze)

_____
AFSO

4.22 (Magnification & Real FOV)

_____
AFSO

5.3.6.3.4   Target 4

    1)   Observe Scene Brightness Approximately (25%)

5.3.6.3.5   Target 5

    1)   Observe Scene Brightness Approximately (50%)

5.3.6.3.6   Target 6

    1)   Observe Scene Brightness Approximately (75%)

5.3.6.3.7   Target 7

    1)   Observe Scene Brightness Approximately (100%)

    5.3.6.3.6.1 The Preceeding targets (4, 5, 6,

            7) have demonstrated the following

            requirement:

            4.26   (Scene Lighting)_____
                                    AFSO

5.3.6.3.8   Target 8

    1)   Mag control to "MCSA" detent

    2)   Control stick to center

    3)   Observe "MO TRACK" light on

    4)   View target and null rates manually

    5)   Exposure adjust to "INCREASE"

    6)   Press "X" Format IMC "INHIBIT"

    7)   Observe blanking at end of photo sequence

5.3.6.3.9   Target 9

    1)   Control stick to center

    2)   Observe "MO TRACK" light on

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3) View Target and null rates manually

4) Override photo sequence by placing

camera Select to SECONDARY and Shutter

Mode to MANUAL

5) Press MANUAL SHUTTER

6) Reset Camera Select to "COMMAND"

7) Reset Shutter Mode to "COMMAND"

8) Observe blanking at end of photo sequence.

5.3.6.3.10   Target 10

1) Control stick to center

2) Observe "MO TRACK" light on

3) View target and null rates manually

4) Override photo sequence by placing

Camera Select to SECONDARY and Shutter

Mode to MANUAL

5) Press MANUAL SHUTTER

6) Reset Camera Select to "COMMAND"

7) Reset Shutter Mode to "COMMAND"

8) Observe blanking at end of photo sequence.

5.3.6.3.11   Target 11   The remaining targets
                            will be used to perform
5.3.6.3.12   Target 12   normal MO Operations
                            such as manual rate nulling
5.3.6.3.13   Target 13   as follows:

5.3.6.3.14   Target 14   1) Mag Control in "MCSA" detent
                           2) Control stick to center
5.3.6.3.15   Target 15   3) Observe "MO Track" Light On
                           4) View target and null rates
5.3.6.3.16   Target 16   manually

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5.3.6.3.17	Target 17	The remaining targets will be used to perform normal MO Operations such as manual rate nulling as follows:
5.3.6.3.18	Target 18	
5.3.6.3.19	Target 19	1) Mag. Control in "MCSA" detent
5.3.6.3.20	Target 20	2) Control Stick to center
5.3.6.3.21	Target 21	3) Observe "MO Task" Light On
5.3.6.3.22	Target 22	4) View target and null rates manually.
5.3.6.3.23	Target 23	
5.3.6.3.24	Target 24	
5.3.6.3.25	Target 25	
5.3.6.3.26	Target 26	

5.3.6.3.26.1 The preceeding targets (8 thru 26) have demonstrated the following requirements:

4.11 (Stick Input)_____
                              AFSO

4.17 (Initial target Location)

                           _____
                              AFSO

4.18 (Dynamic target Location

                           _____
                              AFSO

4.27 (Target location relative to

     Vehicle)   _____
                     AFSO

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5.3.6.3.26.2 The preceeding targets (1 thru 26) have demonstrated the MO Only DOP.   And the following Requirements

MO only DOP _____
                              AFSO

4.2 (SLM Controls)
    (and displays) _____
                              AFSO

4.7 (Operational)
    (Scripting   )
    (Capability) _____
                              AFSO

4.15 (Scene Dynamics) _____
                                    AFSO

5.3.6.3.27   At the Conclusion of this DOP the ATS/MODOP will be SETUP in accordance with Paragraph 4.6.5.7 thru 4.6.5.9 of the Procedure and Run in accordance with Paragraph 5.4 of this Procedure.

5.3.6.3.27.1 Completion of 5.3.6.3.27 will have demonstrated the following Requirement

4.6(30 Min Turnaround) _____
                                    AFSO

5.4 ATS/MO DOP

5.4.1 General

The Test Procedure for this DOP contais the tasks required to verify specific requirements of the Phase 0 MDS as defined in Section 4.0 of this Document.

5.4.2 Requirements Demonstrated

The following requirements will be demonstrated by this DOP:

4.14 Target Loading and Coordination

5.4.3 Scripting

This DOP contains 26 groups of targets scripted for ATS Track-path No. 1 and provides the capability to perform either ATS or MO tasks.

5.4.4 Stimulus

The stimulus material for this DOP will be three sets of slides (LP, HP and MO) numbered sequentially from 1 to 26. Each slide will contain a grid of indexed intersections spaced on one inch centers across the format.

The cues for this DOP will be numbered 1 to 26 to correspond with group number. For more than one target in a group, duplicate cue slides will be used. Each cue slide will contain the indexed inter-section to be used as that target.

5.4.5 Setup

The MDS will be in an operational configuration with all simu-
lation software and AVE programs loaded, the simulated command
messages, stimulus data and "Script" data will be read into the
Computer Subsystem.

The LP and HP slides will be loaded into the HP arm of the SVS and
will be restacked to place LP slides in the Supply Elevator and
the HP slides in the Takeup Elevator. The MO slides will be
loaded into the Supply Elevator of the LP arm of the SVS.

The SLM setup will consist of a panel checklist for Panels 2C
and 2D. For this DOP, the controls of interest and the positions
selected are:

>   Trackpath Select to "Trackpath No. 1"
>
>   Magnification Controller to "LP Range"
>
>   VDP to "Command"
>
>   Right Hand Control Stick Centered
>
>   Camera Select to "Primary"
>
>   Shutter Mode to "Command"
>
>   Crippen Switch to "OFF"

5.4.6 DOP Procedure

>   5.4.6.1 General
>
>   This DOP will commence when the "Resume" command
>   is initiated at the SCC.

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5.4.6.1   General (Continued)

At this point, vehicle time will be 112800 seconds.
The MDS will be operating continuously through the
end of the Payload Pass unless the "Freeze" interrupt
is initiated. Then the MDS is placed in a "hold" con-
figuration until the "Resume" is once more initiated
and the MDS continues operation from the Point at which
the "Freeze" is occurred.

5.4.6.2   Crewman Setup of Panels 2C & 2D

1)   Trackpath Select to "Trackpath No. 1"

2)   Magnification Controller to "LP Range"

3)   VDP to "Command"

4)   Right Hand Control Stick "Centered"

5)   "Crippen" Switch to "OFF"

5.4.6.3   SCC Initiates DOP

1)   (SCC Operator) activates "Resume" and monitors
      Vechicle Time (112800) at the CRT.

5.4.6.4   Crewman Performs Payload Pass

5.4.6.4.1   Group 1

1)   Observe Cue, Alpahnumeric & Target No.

          1   A1PX55   011
         (55)

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5.4.6.4.1   Continued

2)   Observe "ATS Track" Light On

3)   Observe Slide "1" in Eyepiece + Centered

on intersection (55)

4)   Observe ATS Peripherals

5)   Vote Inactive

6)   Observe Cue, Alpahnumeric & Target No.

1   B3AX37   012
(37)

7)   Observe "ATS Track" Light On

8)   Slide "1" in Eyepiece + Centered on

intersection (37)

9)   Observe Peripherals   a) No Dominoes
b) First dwell Light
extinquished

10)   Vote Active

11)   Observe Eyepiece Blanking at GDT

5.4.6.4.2   Group 2

1)   Observe Cue, Alphanumeric & Target No.

2   A2PX33   021
(33)

2)   Observe "ATSTrack" Light On

3)   Observe Slide "2" in Eyepiece + Centered

on intersection (33)

4)   Observe Peripherals

5)   Vote Inactive

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5.4.6.4.3   Group 3

1)   Observe Cue, Alphanumeric & Target No.

   3   A7PX74   031
   (74)

   Observe "ATS Track" Light On

3)   Observe Slide "3" in Eyepiece + Centered

   on intersection (74)

4)   Observe Peripherals

5)   Vote Inactive

6)   Observe Cue, Alphanumeric & Target No.

   3   B1AX53   032
   (53)

7)   Observe "ATS Track" Light On

8)   Observe Slide "3" in Eyepiece and Centered

   on intersection (53)

9)   Observe Peripherals

10)   Vote Override

11)   Set Magnification Controller to "MCSA"

   Detent

12)   Observe "MO Track" Light On

13)   Observe MO Peripherals

14)   Observe Slide "3" in Eyepiece (intersec-

   tion (53) will be centered in FOV)

15)   Observe Eyepiece Blanking at end of

   Photo Sequence

16)   Set Magnification Controller to "LP Range"

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5.4.6.4.4   Group 4

1)   Not viewed due to MO Tracking

5.4.6.4.5   Group 5

1)   Observe Cue, Alphanumeric & Target No.

    5   A41AX46   051
    (46)

2)   Observe "ATS Track" Light On

3)   Observe Slide "5" in Eyepiece + Centered on intersection (46)

4)   Set Magnification Controller to "HP Range"

5)   Observe Eyepiece Blank during Slide Change

6)   Observe Slide "5" in Eyepiece + Centered on intersection (46)

7)   Observe Peripherals

8)   Vote Inactive

9)   Set Magnification Controller to "MCSA" Detent

10)   Observe "MO Track" Light On

11)   Observe MO Peripherals

12)   Observe Slide "5" in Eyepiece + Centered on intersection (46)

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5.4.6.4.5 Continued

  13) Observe Eyepiece Blanking at end of Photo Sequence

  14) Set Magnification Controller to "LP Range"

5.4.6.4.6 Group 6

  Not viewed due to MO Tracking

5.4.6.4.7 The remainder of this DOP will be conducted in this manner for the odd-numbered Groups. The only variation to be included will be the insertion of target position errors on several targets. The effect of these inputs will be observed in the Eyepiece and will result in the cued intersection being offset from center. The crewman task is to return the target to center prior to voting.

5.4.6.4.8 Completion of this DOP will have demonstrated requirements.

ATS/MO DOP   _____
              AFSO

4.2 (SLM Controls and)
  (Displays) _____
              AFSO

4.7 (Operational Script-)_____
  (ing Capability)   AFSO

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5.4.6.4.8   Continued

4.14 (Target Loading) _____
     (and Coordination)   AFSO

4.25 (Target Coordin-) _____
     (ation and Loading)   AFSO

4.42 (Acquistion Peri-) _____
     (pheral Display)   AFSO