Photo/TV Checklist

STS-118

Mission Operations Directorate
Operations Division

Final
April 25, 2007
List of Implemented Change Requests (482s):

P/TV_FSP-0092
P/TV_FSP-0093

Incorporate the following:

1. Replace iii thru viii
2. Replace 1-31 thru 1-34, 1-67 and 1-68
3. Replace 4-35 and 4-36
4. Replace 14-5 and 14-6
5. Replace 16-3 and 16-4
6. Replace CC 23-7 and CC 23-8, CC 23-15 thru CC 23-18

File this PCN immediately behind the front cover as a permanent record
PCN-1 (June 22, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

P/TV_FSP-0091

Incorporate the following:

1. Replace iii thru viii
2. Replace 1-3 thru 1-6, 1-9 thru 1-12, 1-17 thru 1-20, 1-27 thru 1-30, 1-35 and 1-36, 1-45 and 1-46, 1-57 thru 1-62, 1-65 thru 1-68
3. Replace section 4 (40 pages)
4. Replace 7-1 thru 7-18
   After 7-18, delete 7-19 and 7-20
5. Replace 8-3 thru 8-6
6. Replace 12-3 and 12-4
7. Replace 14-3 and 14-4
8. Replace 15-3 thru 15-8
9. Replace 21-15 thru 21-18
    Delete 23-27 and 23-28
    After CC 23-26, add CC 23-27 thru 23-30 (4 pages)

Prepared by:  

Mission Lead

Publication Manager

Approved by:  

Lead, Shuttle Photo/TV Group

Manager, Shuttle Procedures Management

Accepted by:  

FDF Manager

Encl:  128 pages

File this PCN immediately behind the front cover as a permanent record
MISSION OPERATIONS DIRECTORATE

STS-118 PHOTO/TV CHECKLIST

FINAL
April 25, 2007

PREPARED BY:

D. Williams
Mission Lead

C. Pierce
Publication Manager

APPROVED BY:

D. Williams
Technical Lead, Shuttle Photo/TV Group

K. Johnson
Manager, Shuttle Procedures Management

ACCEPTED BY:

Michael T. Hurt
FDF Manager

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted via FDF Workflow Crew Procedure Change Request (CR) to DO3/FDF Manager.

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P/TV01 VIDEO SETUP (Concluded)

**SCENE SYNOPSIS**

Scene contains procedures for documenting Video Setup

**NOTE**

Steps 1-9 minimum rqmt for FD2 OBSS TPS Inspection

**SETUP**

1. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
2. Perform SETUP (DTV)
3. Perform V10 FROM MON 1 (SONY V10)
4. Perform V10 FROM MON 2 (SONY V10)
5. √RSC Video Cable connected between R12/OPP-RSC Video and R12/VPU-CCTV PL3
6. Perform SSV NOMINAL SETUP (SSV)
7. Perform ANALOG PAO CC (SONY PD100) for PAO CC (O19) Flight Deck

**NOTE**

For inspection, AVIU must be pwr'd prior to WLES A31p startup

8. LCS Video cable connection
   - Install MD PAO CC AVIU
   - HI-Z/75 – 75
   - Middeck: Connect end of LCS Video Cable to MD PAO CC AVIU J1
   - Flt Deck: Connect other end of LCS Video Cable (A31p Video Adapter) to WLES A31p Video Out port
9. Connect OPP-LCC Cable to RJ45 Connector on WLES A31p
10. Perform ANALOG PAO CC (SONY PD100) for PAO CC (MO58F) Middeck
11. Perform IN-CABIN MINI-CAM (MINI-CAM) from MD PAO CC AVIU
12. Perform WVS INITIAL SETUP w/o ERCAs (WVS)
13. Unstow, set up BPSMU w/BPSMU to CCU Adapter Cable at CDR CCU
SCENE SYNOPSIS

Scene contains procedures for obtaining video, still photos of ISS rndz,docking

QUICK CHECK

<table>
<thead>
<tr>
<th>V10 (two)</th>
<th>PAO CC</th>
<th>C/L Camr</th>
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<tr>
<td>O19 \TV PWR – ON</td>
<td>O19 \TV PWR – ON</td>
<td>C/L Camr \SSF/STS sw – STS</td>
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<td>R12 (VPU) \PU PWR – ON (LED on)</td>
<td>CC PWR – CAMERA</td>
<td>R12 (VPU) \Green Jumper – SEC C/L</td>
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<tr>
<td>V10 PWR – ON</td>
<td>Tape – Install</td>
<td>\SEC C/L Cap installed</td>
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<tr>
<td>DISPLAY pb – Toggle to display tape counter</td>
<td>Viewfinder (LCD) displays STBY</td>
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<td>L12 (SSP 2) \C/L CAM PWR – SEC ON</td>
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<td>DTV</td>
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<td>L10 (MUX) \VTR/CC PWR – on (LED on)</td>
<td>Lens – 400mm(80-200mm)</td>
<td>Lens – 28-70mm</td>
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<td>Exp Mode – S</td>
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<td>(VIP) PWR – on (LED on)</td>
<td>SS – 500</td>
<td>Flash – ON, TTL, Matrix</td>
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<td>(VTR) \ON/STANDBY LED – green</td>
<td>Meter – Spot(Matrix)</td>
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<td>\Tape installed</td>
<td>Flash – Remove</td>
<td></td>
</tr>
<tr>
<td>O19 \TV PWR – ON</td>
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<tr>
<td>V10 PWR – ON</td>
<td></td>
<td></td>
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</tbody>
</table>
P/TV02  DOCK (Continued)

**SETUP**

1. √V10 FROM MON 1 *(SONY V10)* performed
2. √V10 FROM MON 2 *(SONY V10)* performed
3. √SETUP *(DTV)* performed
4. Perform ACTIVATION,OPERATION *(Cue Card, TV)* as reqd
5. Perform CCTV CONFIG FOR DOCKING/UNDOCKING *(RNDZ, RNDZ TOOLS)*
6. √ANALOG PAO CC *(SONY PD100)* performed
7. √C/L CAMR INSTALL *(CENTERLINE CAMR)* performed
8. Perform 760 PROGRAM w/FLASH *(DCS 760)*
9. Perform 760 SHUTTER PRIORITY *(DCS 760)*
### Still Imagery Video

<table>
<thead>
<tr>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
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<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>760 28-70mm If exterior: Flash ON/OFF – OFF</td>
<td>As desired</td>
<td>PD100 Tape installed</td>
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<tr>
<td>13A.1-1</td>
<td>Rendezvous • Overall • Closeup • Damage • Deterioration</td>
<td>760 (Shutter) 400mm(80-200mm) Flash ON/OFF – OFF</td>
<td>A(B,C,D), ELB</td>
<td>PD100 As desired</td>
<td>Map ISS surfaces w/10% overlap</td>
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<tr>
<td>13A.1-2</td>
<td>Approach, Dock • Docking Target • Mating Surfaces • TCS Planar Retro Reflectors</td>
<td>760 (Shutter) 400mm(80-200mm) Flash ON/OFF – OFF</td>
<td>C/L Per RNDZ A(D) Per RNDZ</td>
<td>PD100 As desired</td>
<td>Rcd video thru hard dock Continually (\sqrt{\text{focus sharpness}})</td>
</tr>
</tbody>
</table>
P/TV02  DOCK (Continued)

OPS (Continued)

APPROACH/Docking RQMTS

Mapping of ISS Module Surfaces

PMA2 APDS Area

C/L Camr

Cmr A(D)

NOTE
Spot metering when ISS modules < 1/2 frame

MON 1 & Repeater
PGSC

MON 2

DCS 760 Camr w/400mm Lens (Shutter)

DCS 760 Camr w/80-200mm Lens (Shutter)

Docking View

Range Ruler

500 ft 400 ft 200 ft 170 ft 30 ft ~7 ft Dock
P/TV02   DOCK (Concluded)

OPS (Concluded)

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

DEACTIVATION

1. DCS 760
   √Exp Mode – P
   Film Adv – S
   Pwr – OFF
   Flash ON/OFF – ON
   Start batt recharge as reqd

2. TV System
   R12 (VPU)
   √Green Jumper – SEC C/L
   √SEC C/L Cap installed
   √VPU PWR – ON (LED on)
   √A7 VID OUT MON 1 pb – push
     IN PL2(VPU) pb – push
   CAMR CMD IRIS – CL
   L12 (SSP 2)
   C/L CAM PWR – OFF

ODS     Remove, stow C/L camr, Harness Assy, Bridge
Go to DEACTIVATION (Cue Card, TV) as reqd
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H/W SUMMARY

- Digital CC Vid/Pwr Cable (15 ft)
- RCA Barrel Adapter
- A/V Adapter Cable
- Wide Conversion Lens
- Monitor to AVIU Cable
- Monitor to AVIU Cable (10 ft)
- RCA-RCA Video Cable
- Video MON 1
- RCA-CC Video Cable
- A/V (DTV MON) TV Pwr Cable (10 ft)
- MON 1 Balanced Video Cable
- MON 2 Balanced Video Cable
- Digital CC Vid/Pwr Cable (15 ft)
- Video MON 2
- RCA Barrel Adapter
- RCA-CC Video Cable
- A/VIU Video Cable (12 ft)
- AVIU-CC Video Cable
- DTV Audio Cable
- DTV Audio Cable
- World Map A31p Video Adapter
- Monitor to AVIU Cable
- Monitor to AVIU Cable
- RCA Barrel Adapter
- RCA Barrel Adapter
- RCA-CC Video Cable
- A/V Adapter Cable
- Wide Conversion Lens
- Digital CC Vid/Pwr Cable (15 ft)
- RCA Barrel Adapter
- RCA Barrel Adapter
- RCA-CC Video Cable
- A/V Adapter Cable
- Wide Conversion Lens
- Digital CC Vid/Pwr Cable (15 ft)
- RCA Barrel Adapter
- RCA Barrel Adapter
- RCA-CC Video Cable
P/TV03 UNDOCK (Continued)

**SCENE SYNOPSIS**

Scene contains procedures for obtaining video, still photos of ISS undocking, flyaround.

**QUICK CHECK**

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<th>V10 (two)</th>
<th>PAO CC</th>
<th>C/L Camr</th>
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<td>O19 √TV PWR – ON</td>
<td>O19 √TV PWR – ON</td>
<td>C/L Camr √SSF/STS sw – STS</td>
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<tr>
<td>R12 (VPU) √VPU PWR – ON (LED on)</td>
<td>CC PWR – CAMERA</td>
<td>R12 (VPU) √Green Jumper – SEC C/L</td>
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<tr>
<td>V10</td>
<td>DISPLAY pb – Toggle to display tape counter</td>
<td>R12 (VPU) √SEC C/L Cap installed</td>
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<td></td>
<td>√Viewfinder (LCD) displays STBY Camr Settings</td>
<td>√VPU PWR – ON (LED on)</td>
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<td></td>
<td>AUTO LOCK – AUTO LOCK</td>
<td>L12 (SSP 2) C/L CAM PWR – SEC ON</td>
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<td>FOCUS – AUTO</td>
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<td>Scene composition, focus</td>
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<td>DTV</td>
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<td>In-Cabin 760</td>
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<tr>
<td>L10 (MUX)</td>
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<tr>
<td>(VIP)</td>
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<td>(VTR)</td>
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<td></td>
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<tr>
<td>O19 √TV PWR – ON</td>
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<tr>
<td>V10</td>
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</table>

DTV Exterior 760

L10 (MUX) √VTR/CC PWR – on (LED on)
If dnlk, MUX/VTR/CC PWR – on (LED on)

Lens – 80-200mm(400mm)
Exp Mode – S
SS – 500
Meter – Matrix(Spot)
Flash – Remove

L10 (VIP) PWR – on (LED on)

Lens – 28-70mm
Exp Mode – P
Flash – ON, TTL, Matrix

L10 (VTR) √ON/STANDBY LED – green
√Tape installed

Flash – Remove

Lens – 28-70mm
P/TV03  UNDOCK (Continued)

SETUP

1. √V10 FROM MON 1 (SONY V10) performed
2. √V10 FROM MON 2 (SONY V10) performed
3. √SETUP (DTV) performed
4. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
5. Perform CCTV CONFIG FOR DOCKING/UNDOCKING (RNDZ, RNDZ TOOLS)
6. √ANALOG PAO CC (SONY PD100) performed
7. √C/L CAMR INSTALL (CENTERLINE CAMR), steps 1,2 performed
8. Perform 760 PROGRAM w/FLASH (DCS 760)
9. Perform 760 SHUTTER PRIORITY (DCS 760)
### P/TV03 UNDOCK (Continued)

**OPS**

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<th>Track #</th>
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<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
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<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>760 28-70mm</td>
<td>As desired</td>
<td>LIVE (if avail)</td>
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<td></td>
<td></td>
<td></td>
<td>Plb</td>
<td>PD100 Tape installed</td>
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<td>CC</td>
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<td>Dnld</td>
<td>Notes</td>
<td>Plan for end of day crew choice video, DCS</td>
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<td>2.</td>
<td>13A.1-3</td>
<td>Undock and Flyaround</td>
<td>760 (Shutter)</td>
<td>A(D)</td>
<td>LIVE (if avail)</td>
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<td>80-200mm(400mm)</td>
<td>Per RNDZ</td>
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<td>TCS Planar Retro Reflectors</td>
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<td>Surfaces</td>
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<td>Docking tgt and PAO view</td>
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<td>Handrails</td>
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<td>SM Thrusters on Zenith, near aft end</td>
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<td>Trusses including rads/ baseplates and SAWs (in/outboard SABB insulation degradation)</td>
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<td>Plasma arcing on anodized surfaces in velocity vector</td>
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</tbody>
</table>

1. 13A.1-6 PAO Coverage 760 28-70mm
   If exterior: Flash ON/OFF – OFF
   As desired PD100 Tape installed LIVE (if avail) Plan for end of day crew choice video, DCS

2. 13A.1-3 Undock and Flyaround
   Docking Tgt/Mating Surfaces
   TCS Planar Retro Reflectors
   Surfaces
   Solar Panels
   Handrails
   SM Thrusters on Zenith, near aft end
   Trusses including rads/baseplates and SAWs (in/outboard SABB insulation degradation)
   Plasma arcing on anodized surfaces in velocity vector
   760 (Shutter) 80-200mm(400mm) Flash ON/OFF – OFF A(D) Per RNDZ
   C/L Docking tgt and PAO view LIVE (if avail) Map ISS surfaces w/10% overlap
UNDOCKING/FLYAROUND RQMTS

PMA2 APDS Area

Mapping of ISS Module Surfaces

C/L Camr

Cmr C

Cmr A(D) (flyaround at 400 ft)

(At 400 ft only)

Cmr A(D)

NOTE
Spot metering when ISS modules < 1/2 frame

DCS 760 Camr w/80-200mm Lens (Shutter)

DCS 760 Camr w/400mm Lens (Shutter)

MON 1 & Repeater PGSC

DCS 760 Camr w/400mm Lens (Shutter)

MON 2

DTV

MON 1 & Repeater PGSC

DCS 760 Camr w/80-200mm Lens (Shutter)

UNDOCKING/FLYAROUND RQMTS

PMA2 APDS Area

Mapping of ISS Module Surfaces

C/L Camr

Cmr C

Cmr A(D) (flyaround at 400 ft)

(At 400 ft only)

Cmr A(D)
P/TV03 UNDOCK (Concluded)

**OPS (Concluded)**

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

**DEACTIVATION**

1. **DCS 760**
   - EXP Mode – P
   - Film Adv – S
   - Pwr – OFF
   - Flash ON/OFF – ON
   - Start batt recharge as reqd

2. **TV System**
   - R12 (VPU)
     - Green Jumper – SEC C/L
     - SEC C/L Cap installed
     - VPU PWR – ON (LED ON)
   - A7U
     - VID OUT MON 1 pb – push
     - IN PL2(VPU) pb – push
     - CAMR CMD IRIS – CL
   - L12 (SSP 2)
     - C/L CAM PWR – OFF

**ODS**
Remove, stow C/L Camr, Harness Assy
Mark first MON 2 tape as “Radiators and SAWs During Undock”
Go to DEACTIVATION (Cue Card, TV) as reqd
INGRESS TV CONFIG

Batt  CC  A/V
Wide Conversion Lens

VIDEO PROCESSING UNIT

(jsc48037_004.cnv)
P/TV04 INGRESS/EGRESS (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ISS ingress/egress w/video and still photos

QUICK CHECK

<table>
<thead>
<tr>
<th>INGRESS CC</th>
<th>ISS CC VIEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batt installed</td>
<td>R12 (VPU)</td>
</tr>
<tr>
<td>PWR – CAMERA</td>
<td>Green Jumper – ISS</td>
</tr>
<tr>
<td>Tape – Install</td>
<td>VPU PWR – ON (LED on)</td>
</tr>
<tr>
<td>Viewfinder (LCD) displays STBY</td>
<td></td>
</tr>
<tr>
<td>Camr Settings</td>
<td></td>
</tr>
<tr>
<td>AUTO LOCK – AUTO LOCK</td>
<td></td>
</tr>
<tr>
<td>FOCUS – AUTO</td>
<td></td>
</tr>
<tr>
<td>Scene composition, focus</td>
<td></td>
</tr>
</tbody>
</table>

SETUP

1. Config ISS Video
   Perform ACTIVATION (Cue Card, TV) for DNLK OPS of ISS signal as reqd
   R12 (VPU) Green Jumper – ISS
   VPU PWR – ON
   A7 VID OUT DNLK pb – push
   IN PL2(VPU) pb – push

2. Perform Ingress CC Setup
   A17 Acquire two batts, one for CC and one spare
   CC Batt Install
   PWR – CAMERA
   Tape – Install
   Viewfinder (LCD) displays STBY
   Camr Settings
   AUTO LOCK – AUTO LOCK
   FOCUS – AUTO
   Audio Muting Plug removed

3. Perform 760 PROGRAM w/FLASH (DCS 760)
P/TV04 INGRESS/EGRESS (Concluded)

**OPS**

<table>
<thead>
<tr>
<th>√</th>
<th>Item # Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13A.1-6</td>
<td>Hatch Opening, Ingress, Hatch Close, Egress</td>
<td>760 28-70mm</td>
<td>PD100</td>
<td>LIVE (if avail)</td>
</tr>
</tbody>
</table>

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION

**DEACTIVATION**

1. DCS 760
   Pwr – OFF
   Start batt recharge as reqd

2. TV System
   Go to DEACTIVATION (Cue Card, TV) as reqd
ISS INTERNAL OPS (Continued)

SCENE SYNOPSIS
Scene contains procedures for documenting ISS internal ops (surveys, PAO events, logistics, transfers, closeouts) w/video, still photos

QUICK CHECK

<table>
<thead>
<tr>
<th>PAO Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
</tr>
<tr>
<td>R12 (VPU)</td>
</tr>
<tr>
<td>A7</td>
</tr>
<tr>
<td>ISS Camcorder – Set up</td>
</tr>
<tr>
<td>Green Jumper – ISS</td>
</tr>
<tr>
<td>VPU PWR – ON (LED on)</td>
</tr>
<tr>
<td>VID OUT DNLK pb – push</td>
</tr>
<tr>
<td>IN PL2(VPU) pb – push</td>
</tr>
</tbody>
</table>

SETUP

WARNING
Locate QDs at hatches for ease in locating, disconnecting during hatch closure. Route, restrain cables to prevent loose cable lengths which could entrap crew.

BPSMU
1. Perform BPSMU AUDIO ONLY (BPSMU) for Lab audio
2. Config QDs per dwg, 1-28
3. SPACEHAB BPSMU AUDIO ONLY (BPSMU) performed
4. BPSMU reconnected to CDR CCU

RWS
1. Perform RWS V10(A31p) FROM WVS (SONY V10)
2. Config QDs per dwg, 1-28
3. For DTV Drag-Thru:
   Disconnect RWS 2 Cable from WVS
   Connect Drag-Thru Cable to RWS 2 BNC Vid Cable [Perform RWS VIDEO CABLE SETUP FOR ESP3 UNBERTH, INSTALL (SONY V10)]
PAO EVENT

1. Config VPU
   R12 (VPU)
   Green Jumper – ISS
   \( \sqrt{\text{VPU PWR – ON (LED on)}} \)

2. Config Shuttle Video
   A7
   VID OUT DNLK pb – push
   IN PL2(VPU) pb – push

3. Perform BPSMU AUDIO ONLY w/ISS CABLES (BPSMU)

STILL CAMR

1. Perform 760 PROGRAM w/FLASH (DCS 760)

OPS

<table>
<thead>
<tr>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 1      | 13A.1-6 | General ISS IVA Activity
        |       | 760 28-70mm
        |       | ISS PD100 |
|        |         | PAO Scenes of Interest
        |       | (if avail) |
|        |         | Crew Photo |
|        |         | (SETUP, |
|        |         | DCS 760) |

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION

DEACTIVATION

1. DCS 760
   Pwr – OFF
   Start batt recharge as reqd

2. TV System
   Go to DEACTIVATION (Cue Card, TV) as reqd
**P/TV06  S5 UNBERTH (Continued)**

**SCENE SYNOPSIS**

Scene contains procedures for documenting S5 unberth and handoff w/video

**QUICK CHECK**

<table>
<thead>
<tr>
<th>V10 (two)</th>
<th>DTV</th>
<th>PAO CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>O19</td>
<td>L10 (MUX)</td>
<td>O19</td>
</tr>
<tr>
<td>TV PWR – ON</td>
<td>√VTR/CC PWR – on (LED on)</td>
<td>TV PWR – ON</td>
</tr>
<tr>
<td></td>
<td>If dnlk, MUX/VTR/CC PWR – on (LED on)</td>
<td></td>
</tr>
<tr>
<td>R12 (VPU)</td>
<td>L10 (VIP)</td>
<td>CC</td>
</tr>
<tr>
<td>Green Jumper – ISS</td>
<td>PWR – on (LED on)</td>
<td>PWR – CAMERA</td>
</tr>
<tr>
<td>VPU PWR – ON (LED on)</td>
<td>(VTR)</td>
<td>Tape – Install</td>
</tr>
<tr>
<td>V10</td>
<td>L10 (VTR)</td>
<td>Viewfinder (LCD) displays STBY</td>
</tr>
<tr>
<td>PWR – ON</td>
<td>√ON/STANDBY LED – green</td>
<td>Camr Settings</td>
</tr>
<tr>
<td>Tape – Install</td>
<td>√Tape installed</td>
<td>√AUTO LOCK – AUTO LOCK</td>
</tr>
<tr>
<td>DISPLAY pb – Toggle to display tape counter</td>
<td>O19</td>
<td>√FOCUS – AUTO</td>
</tr>
<tr>
<td></td>
<td>TV PWR – ON</td>
<td>Scene composition, focus</td>
</tr>
<tr>
<td></td>
<td>V10</td>
<td>(LED ON)</td>
</tr>
</tbody>
</table>
SETUP

1. √V10 FROM MON 1 (SONY V10) performed
2. √V10 FROM MON 2 (SONY V10) performed
3. √SETUP (DTV) performed
4. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
5. √ANALOG PAO CC (SONY PD100) performed
6. For MON 1 Drag-Thru:
   Disconnect RWS 1 Drag-Thru Cable from WVS and connect to BAL/UNBAL
   Connect Balanced Video Cable (stowed in DTV Bag) to BAL/UNBAL and MON 1AVIU J6, per HARDWARE
   SUMMARY, pg 1-32

OPS

<table>
<thead>
<tr>
<th>Item #</th>
<th>Track #</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DCS</td>
<td>PLB</td>
<td>CC</td>
</tr>
<tr>
<td>1.</td>
<td>S5 Unberth/Mnvr</td>
<td></td>
<td>Per ROBO</td>
<td>LIVE</td>
</tr>
</tbody>
</table>

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

DEACTIVATION

1. TV System
   Go to DEACTIVATION (Cue Card, TV) as reqd
P/TV07  EVA (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ISS EVA and IVA ops w/video,still photos

QUICK CHECK

<table>
<thead>
<tr>
<th>Shuttle V10 (four)</th>
<th>DTV</th>
<th>PAO CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>O19,MO58F TV PWR – ON</td>
<td>L10 (MUX)</td>
<td>O19 TV PWR – ON</td>
</tr>
<tr>
<td>R12 (VPU) VPU PWR – ON (LED on)</td>
<td>(VIP)</td>
<td>CC PWR – CAMERA</td>
</tr>
<tr>
<td>V10 PWR – ON</td>
<td>(VTR) TV PWR – on (LED on)</td>
<td>Tape – Install</td>
</tr>
<tr>
<td>Tape – Install</td>
<td>\ON/STANDBY LED – green</td>
<td>\Viewfinder (LCD) displays STBY</td>
</tr>
<tr>
<td>DISPLAY pb – Toggle to display</td>
<td>Tape installed</td>
<td>\FOCUS – AUTO</td>
</tr>
<tr>
<td>tape counter</td>
<td></td>
<td>\Scene composition, focus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WVS</th>
<th>Mini-Cam</th>
</tr>
</thead>
<tbody>
<tr>
<td>A7 WIRELESS VIDEO HTR – ON</td>
<td>MO58F TV PWR – ON</td>
</tr>
<tr>
<td>PWR – ON</td>
<td></td>
</tr>
<tr>
<td>AVIU</td>
<td>PWR SELECT – HI</td>
</tr>
</tbody>
</table>

SETUP

1. √V10 FROM MON 1 (SONY V10) performed
2. √V10 FROM MON 2 (SONY V10) performed
3. Perform ACTIVATION,OPERATION (Cue Card, TV) as reqd
4. √RWS V10(A31p) FROM WIB (SONY V10) for two drag-thru V10s(A31p) performed
5. √SETUP (DTV) performed
6. √ANALOG PAO CC (SONY PD100) for PAO CC (O19) performed
P/TV07  EVA (Continued)

SETUP (Concluded)

7. Config WVS and PGSC
   √WVS INITIAL SETUP w/o ERCAs (WVS), steps 1,2 performed
   Perform WVS DAY-of-EVA CHECK (WVS)

8. Config ISS VIDEO
   Green Jumper – ISS
   √VPU PWR – ON (LED on)

9. √IN-CABIN MINI-CAM (MINI-CAM) from MD PAO CC AVIU performed

10. Perform 760 PROGRAM w/FLASH (DCS 760)

OPS

<table>
<thead>
<tr>
<th>√</th>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DCS</td>
<td>PLB</td>
<td>CC</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>IVA 760</td>
<td>As desired</td>
<td>PD100</td>
<td>LIVE (if avail)</td>
</tr>
<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>EVA 760 28-70mm</td>
<td>As desired</td>
<td>PD100</td>
<td>LIVE (if avail)</td>
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<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>LIVE (if avail)</td>
<td>Plan for end of day crew choice video, DCS stills</td>
</tr>
<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>EVA 760 28mm</td>
<td>WVS, B, C, D, ELB, EE, SSRMS</td>
<td>LIVE (if avail)</td>
<td>Plan for end of day crew choice video, DCS stills</td>
</tr>
<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>LIVE (if avail)</td>
<td>Plan for end of day crew choice video, DCS stills</td>
</tr>
<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>LIVE (if avail)</td>
<td>Plan for end of day crew choice video, DCS stills</td>
</tr>
<tr>
<td>1.</td>
<td>13A.1-6</td>
<td>PAO Coverage</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>LIVE (if avail)</td>
<td>Plan for end of day crew choice video, DCS stills</td>
</tr>
<tr>
<td>√</td>
<td>Item # Track #</td>
<td>Rqmts</td>
<td>Still Imagery</td>
<td>Video</td>
<td>Notes</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>DCS</td>
<td>PLB</td>
<td>CC</td>
<td>DnkJ</td>
</tr>
<tr>
<td>6.</td>
<td>13A.1-14</td>
<td>Relocate EAS to ICC</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>Live (if avail)</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>13A.1-15</td>
<td>SASA Relocation from P6 to P1</td>
<td>EVA 760 28mm</td>
<td>WVS,SSRMS</td>
<td>Live (if avail)</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>13A.1-16</td>
<td>Upgraded S-Band BSP and Transponder Installation on P1</td>
<td>EVA 760 28mm</td>
<td>WVS,SSRMS</td>
<td>Live (if avail)</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>13A.1-17</td>
<td>BDCU Relocation from ICC to ESP2</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>Live (if avail)</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>13A.1-18</td>
<td>VSSA Installation on ICC • Structural Interface • VSSA relative to surrounding structure</td>
<td>EVA 760 28mm</td>
<td>WVS,SSRMS</td>
<td>Live (REPLAY)</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>13A.1-32</td>
<td>PAS Deployment • Closeout of each PAS</td>
<td>EVA 760 28mm</td>
<td>WVS,SSRMS</td>
<td>Live (if avail)</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>13A.1-7</td>
<td>S4 Capture Pin Removal • Pins #1,3</td>
<td>EVA 760 28mm</td>
<td>WVS</td>
<td>Live (if avail)</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>13A.1-11</td>
<td>IBA OSE Xfer, Install on Two S1 Z Trunnions</td>
<td>EVA 760 28mm</td>
<td>WVS,SSRMS</td>
<td>Live (REPLAY)</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>13A.1-21</td>
<td>CETA Carts (two) Relocation to STBD for P6 Relocation</td>
<td>EVA 760 28mm</td>
<td></td>
<td></td>
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</tbody>
</table>
### OPS (Concluded)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.</td>
<td>13A.1-22</td>
<td>RPCM</td>
<td></td>
<td>WVS</td>
<td>LIVE (if avail)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• SO2B-D RPCM removal, replacement for CMG-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Patch panel reconfig</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>16.</td>
<td>13A.1-29</td>
<td>P6 Transponder Retrieval</td>
<td>WVS</td>
<td>LIVE (if avail)</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>13A.1-32</td>
<td>S5 to S6 RTAS Removal</td>
<td>WVS,SSRMS</td>
<td>LIVE (if avail)</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>13A.1-32</td>
<td>S5 RTAS Opening</td>
<td>WVS,SSRMS</td>
<td>LIVE (if avail)</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>13A.1-28</td>
<td>P6 Fwd PVR Retract, Cinch</td>
<td>WVS,SSRMS</td>
<td>LIVE (if avail)</td>
<td></td>
</tr>
</tbody>
</table>

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION
P/TV07  EVA (Concluded)

DEACTIVATION

1. **EVA DCS 760**
   If between EVAs, perform 760 EVA – CAMR ONLY DISASSEMBLY, BETWEEN EVAs (DCS 760 EVA)
   If EVAs completed, perform 760 EVA – CAMR ONLY DISASSEMBLY, POST-EVA (DCS 760 EVA)

2. **IVA DCS 760**
   Pwr – OFF
   Flash ON/OFF – ON
   Download images
   Start batt recharge as reqd

3. **TV System**
   Perform PWRDN (Cue Card, WVS)
   Go to DEACTIVATION (Cue Card, TV) as reqd
P/TV08  EXTERNAL SURVEY

SCENE SYNOPSIS

Scene contains procedures for documenting ISS external structures w/still photos during general survey activities

SETUP

1. 760 Camr Configuration
   If Sunlit OMS Pod Survey, config 760 Manual
   Pwr – ON
   √Disk installed
   Rear LCD
   √Batt
   √Frames remaining sufficient
   √White Balance – Auto
   √ISO – 100
   √BKT – Disabled
   √Focus Area – Center, LOCK displayed
   Exp Comp – 0.0
   Exp Mode – M
   SS – 1000
   AF Area Mode – [ ] (no “+”)
   Meter – Matrix
   Diopter – Adjust
   Film Adv – S
   Body Focus Mode – S
   Lens Focus Mode – A(M/A)
   Aperture – Min, locked
   f/stop – F8
   Flash Settings
   ON/OFF – OFF
P/TV08   EXTERNAL SURVEY (Continued)

SETUP (Concluded)

1. **760 Camr Configuration (Concluded)**

   If Earthshine OMS Pod Survey, config 760 Program
   - Pwr – ON
   - √Disk installed
   - Rear LCD
     - √Batt
     - √Frames remaining sufficient
   - √White Balance – Auto
   - √ISO – 100
   - √BKT – Disabled
   - √Focus Area – Center, LOCK displayed
   - Exp Comp – 0.0
   - Exp Mode – P
   - AF Area Mode – [ ] (no “+”)
   - Meter – Spot
   - Diopter – Adjust
   - Film Adv – S
   - Body Focus Mode – S
   - Lens Focus Mode – A(M/A)
   - Aperture – Min, locked
   - Flash Settings
     - ON/OFF – OFF

2. Perform 760 SHUTTER PRIORITY (DCS 760)
## OMS Pod Survey

- 50 percent mapping of both OMS pods and vertical stabilizer w/emphasis on Black Tile areas

### Still Imagery
- **760**
- **80-200mm (400mm)**

### Notes
- Download images to MCC once complete

## ISS Still Survey

- Surfaces
- Solar Panels
- Handrails
- MISSE
- Truss ES Including:
  - Rads/baseplates
  - SAWs (in/outboard SABB insulation degradation)
- Plasma Arcing Effects

### Still Imagery
- **760** (Shutter)
- **50mm (80-200mm)**

### Notes
- Map ISS surfaces w/10% overlap from all Flt Deck windows

### Map specified area of Lab MMOD shield w/10% overlap from W7(W8):
Priority of ISS Photographic Targets During Docked Phase:

1. P5, P3/P4, P1, ESP2, Joint Airlock, MISSE 3&4, S1, Solar Arrays – W1, W6 (special emphasis on newly installed components)
2. P6, S0, Lab – W7,W8
3. PMA2 – W9,W10
4. P6 Fwd Radiator – Fwd windows
5. ISS Nadir Surfaces – Spacehab windows (if available)
EXTERNAL SURVEY (Concluded)

**OPS** (Concluded)

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION

**DEACTIVATION**

1. **DCS 760**
   Exp Mode – P
   PWR – OFF
   Flash ON/OFF – ON
   Start Batt recharge as reqd
**SCENE SYNOPSIS**

Scene contains procedures for recording P4 SAW, P4 TCS Radiator motion during reboost

**QUICK CHECK**

<table>
<thead>
<tr>
<th>V10</th>
<th>DTV</th>
</tr>
</thead>
<tbody>
<tr>
<td>O19</td>
<td>L10 (MUX)</td>
</tr>
<tr>
<td>TV PWR – ON</td>
<td>VTR/CC PWR – on (LED on)</td>
</tr>
<tr>
<td>R12 (VPU)</td>
<td>(VIP)</td>
</tr>
<tr>
<td>VPU PWR – ON (LED on)</td>
<td>PWR – on (LED on)</td>
</tr>
<tr>
<td>V10</td>
<td>(VTR)</td>
</tr>
<tr>
<td>PWR – ON</td>
<td>ON/STANDBY LED – green</td>
</tr>
<tr>
<td>Tape – Install</td>
<td>Tape installed</td>
</tr>
<tr>
<td>DISPLAY pb – Toggle to display tape counter</td>
<td></td>
</tr>
<tr>
<td>O19</td>
<td>O19</td>
</tr>
<tr>
<td>TV PWR – ON</td>
<td>TV PWR – ON</td>
</tr>
<tr>
<td>V10</td>
<td>V10</td>
</tr>
<tr>
<td>PWR – ON</td>
<td>PWR – ON</td>
</tr>
</tbody>
</table>

**PAO CC**

<table>
<thead>
<tr>
<th>O19</th>
<th>CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV PWR – ON</td>
<td>Remove Wide Conversion Lens</td>
</tr>
<tr>
<td></td>
<td>PWR – CAMERA</td>
</tr>
<tr>
<td></td>
<td>Tape – Install</td>
</tr>
<tr>
<td></td>
<td>Viewfinder (LCD) displays STBY</td>
</tr>
<tr>
<td></td>
<td>Camr Settings</td>
</tr>
<tr>
<td></td>
<td>AUTO LOCK – AUTO LOCK</td>
</tr>
<tr>
<td></td>
<td>FOCUS – INFINITY</td>
</tr>
</tbody>
</table>

- Scene composition, exposure, focus
P/TV09 STRUCTURAL DYNAMICS (Continued)

SETUP

1. √V10 From MON 1 (SONY V10) performed
2. Perform ACTIVATION,OPERATION (Cue Card, TV) as reqd
3. √SETUP (DTV) performed
4. √ANALOG PAO CC (SONY PD100), but remove Wide Conversion Lens performed
5. Config VPU Green Jumper – ISS

OPS

<table>
<thead>
<tr>
<th>√</th>
<th>Item #</th>
<th>Rqmts</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12A-18</td>
<td>REBOOST</td>
<td>Movement of P4 SAWs TCS Radiators</td>
<td>A</td>
<td>Frame as shown. Focus on P1 radiator tip</td>
</tr>
<tr>
<td>2. Camr FOV Setup Prior to Test</td>
<td>• Frame per values but use pictures for final pan,tilt&lt;br&gt;• Pan/tilt settings approx and assume zeroed, PTU angles&lt;br&gt;• √A,C Illuminators – On</td>
<td>PAN: 107.8°&lt;br&gt;TILT: 64.5°&lt;br&gt;FOV: 16.0° ± 0.5°&lt;br&gt;Actual FOV: _________</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PAN: -36.7°&lt;br&gt;TILT: 44.9°&lt;br&gt;FOV: 16.0° ± 0.5°&lt;br&gt;Actual FOV: _________</td>
<td></td>
<td>Frame as shown. Focus on P1 radiator tip</td>
</tr>
</tbody>
</table>
### OPS (Concluded)

<table>
<thead>
<tr>
<th>Item #</th>
<th>Rqmts</th>
<th>Video</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NOTE</strong></td>
<td>To maintain Time sync, once video recorders started, do not stop tape until test completed</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Start Recorders (two)</td>
<td>V10 REC pb (two) – push to begin recording LCD displays RED DOT L10 (VTR) REC pb – push, hold PLAY pb – push, SIMO (RED dot displayed)</td>
</tr>
<tr>
<td>4.</td>
<td>Route FD CC Video to Recorders (two) and Downlink</td>
<td>VID OUT MON 1 pb – push IN FLT DECK pb – push Frame GMT clock in FD CC FOV using MON 1 VID OUT DTV pb – push IN FLT DECK pb – push GMT clock on DTV V10 VID OUT DNLK pb – push IN FLT DECK pb – push</td>
</tr>
<tr>
<td>5.</td>
<td>Route Views to Recorders (two) and Downlink</td>
<td>VID OUT MON 1 pb – push IN A pb – push VID OUT DTV pb – push IN C pb – push VID OUT DNLK pb – push IN A pb – push</td>
</tr>
<tr>
<td>6.</td>
<td>Re-route FD CC Video to Recorders (two) and Downlink Before Tape Ends</td>
<td>VID OUT MON 1 pb – push IN FLT DECK pb – push Frame GMT clock in FD CC FOV using MON 1 VID OUT DTV pb – push IN FLT DECK pb – push GMT clock on DTV V10 VID OUT DNLK pb – push IN FLT DECK pb – push</td>
</tr>
</tbody>
</table>

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION
P/TV09 STRUCTURAL DYNAMICS (Concluded)

DEACTIVATION

1. PAO CC
   Re-install Wide Conversion Lens

2. TV System
   Label tapes as “REBOOST”
   Go to DEACTIVATION (Cue Card, TV) as reqd
P/TV10  ESP3 UNBERTH,INSTALL (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting ESP3 unberth, handoff to SSRMS, and installation w/video

QUICK CHECK

<table>
<thead>
<tr>
<th></th>
<th>DTV</th>
</tr>
</thead>
<tbody>
<tr>
<td>O19</td>
<td>TV PWR – ON</td>
</tr>
<tr>
<td>R12 (VPU)</td>
<td>VPU PWR – ON (LED on)</td>
</tr>
<tr>
<td>V10</td>
<td>Green Jumper – ISS PWR – ON</td>
</tr>
<tr>
<td></td>
<td>Tape – Install DISPLAY pb – Toggle to display tape counter</td>
</tr>
<tr>
<td></td>
<td>TV PWR – ON</td>
</tr>
<tr>
<td></td>
<td>VPU PWR – ON (LED on)</td>
</tr>
<tr>
<td></td>
<td>Green Jumper – ISS PWR – ON</td>
</tr>
<tr>
<td></td>
<td>Tape – Install DISPLAY pb – Toggle to display tape counter</td>
</tr>
<tr>
<td></td>
<td>TV PWR – ON</td>
</tr>
</tbody>
</table>

|               | PWR – ON (LED ON)                                                   |
|               | If dnlk, MUX/VTR/CC PWR – on (LED on)                               |
| VIP           | VTR/CC PWR – on (LED on)                                            |
| VTR           | ON/STANDBY LED – green                                              |
|               | Tape installed                                                       |
|               | TV PWR – ON                                                          |
| O19           | TV PWR – ON                                                          |
| V10           | PWR – ON (LED ON)                                                   |
|               | PAO CC                                                               |
|               | Mini-Camr                                                           |
|               | TV PWR – ON                                                          |
| CC            | PWR – CAMERA                                                        |
|               | Tape – Install                                                      |
|               | Viewfinder (LCD) displays STBY                                      |
|               | Camr Settings                                                       |
|               | AUTO LOCK – AUTO LOCK                                               |
|               | FOCUS – AUTO                                                        |
|               | Scene composition, focus                                           |
|               | TV PWR – ON                                                          |
| O19           | TV PWR – ON                                                          |
| MO58F         | PWR SELECT – HI                                                     |
| AVIU          | PWR SELECT – HI                                                     |

1-57
P/TV10 ESP3 UNBERTH, INSTALL (Concluded)

SETUP

1. √ V10 FROM MON 1 (SONY V10) performed
2. √ V10 FROM MON 2 (SONY V10) performed
3. Perform RWS VIDEO CABLE SETUP FOR ESP3 UNBERTH, INSTALL (SONY V10)
4. √ SETUP (DTV) performed
5. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
6. √ ANALOG PAO CC (SONY PD100) performed
7. √ IN-CABIN MINI-CAM (MINI-CAM) from MD PAO CC AVIU performed
8. For DTV Drag-Thru:
   Disconnect RWS 2 Cable from WVS
   Connect Drag-Thru Cable to RWS 2 BNC Vid Cable [Perform RWS VIDEO CABLE SETUP FOR ESP3 UNBERTH, INSTALL (SONY V10)]

OPS

<table>
<thead>
<tr>
<th>√</th>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DCS</td>
<td>PLB</td>
<td>CC</td>
</tr>
<tr>
<td>1.</td>
<td>ESP3 Unberth/Mnvr/Install</td>
<td>13A.1-20</td>
<td>Per ROBO</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

DEACTIVATION

1. TV System
   Go to DEACTIVATION (Cue Card, TV) as reqd
P/TV11  CBTM (Continued)

SCENE SYNOPSIS

Scene contains procedures for documenting CBTM

QUICK CHECK

| MO58F | TV PWR – ON       |
| CC    | PWR – CAMERA      |
|       | Tape – Install    |
|       | Viewfinder (LCD) displays STBY |
|       | Camr Settings    |
|       | AUTO LOCK – AUTO LOCK |
|       | FOCUS – AUTO      |
|       | Turn off orbiter lts causing reflection in FOV |

SETUP

1. PD100 CBTM Setup
   Turn on CBTM enclosure lts
   Attach Multiuse Arm to Base Plate near CBTM Lockers
   Attach PD100 to Multiuse Arm
   Config PD100 per dwg. pg 1-60
   TV PWR – ON
   Wide Conversion Lens installed
   PWR – CAMERA
   Tape – Install
   Viewfinder (LCD) displays STBY
   Camr Settings
   AUTO LOCK – AUTOLOCK
   FOCUS – AUTO
   FOV includes entire animal compartment
   Turn off lts causing reflection in FOV
2. DCS CBTM Setup

Config DCS 760
Lens – 28mm
Pwr – ON
Install new Flash Card
Rear Batt
√Batt
√Frames remaining sufficient
√White Balance – Auto
ISO – 100
√BKT disabled
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [ ] (no "+")
Meter – Matrix
Dioptrter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A
Aperture – Min, locked
Flash Settings
ON/OFF – ON
√TTL, Matrix
√Zoom
Tilt – Direct

If enclosure shots reqd by NASA Vet:
Turn on CBTM enclosure lts
Install SC-17 Flash Cord between Camr, Flash
√FOV includes entire animal complement
Body Focus Mode – M
Posn Flash at 45° angle to surface of AEM
Turn off orbiter lts causing reflection in FOV
Take multiple exposures as needed to comply w/Vet rqmts
## P/TV11 CBTM (Concluded)

### OPS

<table>
<thead>
<tr>
<th>√</th>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DCS</td>
<td>PLB</td>
<td>CC</td>
</tr>
<tr>
<td>1.</td>
<td>CBTM</td>
<td></td>
<td>Document rodents w/PD100, DCS 760 (on MCC call)</td>
<td>DCS 760</td>
<td>PD100 Tape installed</td>
<td>No video dnlk of CBTM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Document each animal enclosure w/40 min of video</td>
<td>28mm Lens</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Document CBTM unit general locations w/crewmember interaction</td>
<td>DCS 760 28mm Lens</td>
<td></td>
<td>Enclosure shots per NASA Vet request only</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• If photo documentation of animal enclosure reqd:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– Verify new Flash Card in DCS760</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– When documentation complete, place Flash Card in KFX machine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>– Create folder titled 'CBTM' in 'OCA-DOWN' directory and place images into 'CBTM' folder</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If operations temporarily suspended, perform DEACTIVATION as reqd
If operations completed, go to DEACTIVATION

### DEACTIVATION

1. **DCS 760**
   - PWR – OFF
   - Start Batt recharge as reqd
   - Flash Cord removed, Flash on body not shoe

2. **TV System**
   - Go to DEACTIVATION (Cue Card, TV) as reqd
SCENE SYNOPSIS

Scene contains procedures to capture video, still photos of MERLIN, CCM-A, CGBA-CSI

QUICK CHECK

<table>
<thead>
<tr>
<th></th>
<th>PAO CC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MO58F</td>
<td>\checkmark TV PWR – ON</td>
</tr>
<tr>
<td>CC</td>
<td>PWR – CAMERA</td>
</tr>
<tr>
<td></td>
<td>Tape – Install</td>
</tr>
<tr>
<td></td>
<td>\checkmark Viewfinder (LCD) displays STBY</td>
</tr>
<tr>
<td></td>
<td>\checkmark Camr Settings</td>
</tr>
<tr>
<td></td>
<td>\checkmark AUTO LOCK – AUTO LOCK</td>
</tr>
<tr>
<td></td>
<td>\checkmark FOCUS – AUTO</td>
</tr>
<tr>
<td>MO52J</td>
<td>\checkmark AC UTIL AC1 – ON</td>
</tr>
<tr>
<td>Photoflood</td>
<td>ON/OFF – ON</td>
</tr>
<tr>
<td>CC</td>
<td>\checkmark Scene composition, focus</td>
</tr>
</tbody>
</table>

SETUP

1. Perform ANALOG PAO CC (SONY PD100) for middeck
2. Perform 760 PROGRAM w/FLASH (DCS 760)
### OPS

<table>
<thead>
<tr>
<th>√</th>
<th>Item # Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>DCS</td>
<td>PLB</td>
<td>CC</td>
</tr>
</tbody>
</table>
| 1 | MERLIN Video, Still Photography | • Wide angle video, photos showing crew interaction  
• Medium angle video, photos showing stowage location  
• Closeup video, photos of front pnl after activation for gnd verification | 760 28-70mm | PD100 | Playback desired | |
| 2 | CCM-A Still Photography | • Photograph CCM-A front pnl after activation  
• Photograph CCM-A front pnl during Entry prep after the Time and Rail temps have been recorded | 760 28-70mm | | | |
| 3 | CGBA-CSI | • Photos of crew interaction | 760 28-70mm | | | |

If operations temporarily suspended, perform DEACTIVATION as reqd  
If operations completed, go to DEACTIVATION

### DEACTIVATION

1. DCS 760  
PWR – OFF  
Start Batt recharge as reqd

2. TV System  
Remove, mark tapes for MERLIN  
Go to DEACTIVATION (Cue Card, TV) as reqd
NOTE
Not being flown
DCS 760

SETUP

760 PROGRAM w/FLASH

Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining sufficient
√White Balance – Auto
ISO – 100
√BKT disabled
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [ ] (no “+”)
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A (M/A)
Aperture – Min, locked
Flash Settings
   ON/OFF – ON
   √TTL, Matrix
   √Zoom – Auto (no M)
   Tilt – Direct

760 SHUTTER PRIORITY

Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining sufficient
√White Balance – Auto
ISO – 100
√BKT disabled
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – S
SS – 500
AF Area Mode – [ ] (no “+”)

NOTE
For Docking:
   Meter – Spot/Matrix
For Undocking:
   Meter – Matrix/Spot

Meter – Matrix (Spot when ISS <1/2 frame)
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A (M/A)
Aperture – Min, locked
Flash Settings
   ON/OFF – OFF
### DCS 760 (Continued)

#### SETUP (Continued)

**760 SHUTTER PRIORITY w/AUTO-BRACKETING**

- Pwr – ON
- √Disk installed
- Rear LCD
  - √Batt
  - √Frames remaining sufficient
  - √White Balance – Auto
  - ISO – 100
  - BKT – BKT, 3F 1.0 displayed
- √Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – S
- SS – 500
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – C_H
- Body Focus Mode – S
- Lens Focus Mode – A (M/A)
- Aperture – Min, locked
- Flash Settings
  - ON/OFF – OFF

**760 CREW PHOTO**

- Lens – 28mm
- Pwr – ON
- √Disk installed
- Rear LCD
  - √Batt
  - √Frames remaining sufficient
  - √White Balance – Auto
  - √ISO – 100
  - √BKT – OFF
- √Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – A
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – Selftimer
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
  - f/stop – 8
- Flash Settings
  - ON/OFF – ON
  - √TTL, Matrix
  - √Zoom – Auto (no M)
  - Tilt – Direct
- Remote Release – Install
- Multiuse Brkt (clamp)
- Focus
- Body Focus Mode – M
- Frame, Fire
DCS 760 (Continued)

SETUP (Continued)

760 EXPOSURE MATCH

- Lens – 28mm
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining sufficient
- White Balance – Auto
- ISO – 100
- BKT disabled
- Focus Area – Center, LOCK displayed
- CSM – 21-1, AEL
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked
- Flash Settings
  - ON/OFF – ON
  - TTL, Matrix
  - Zoom – Auto (no M)
  - Tilt – Direct

TECHNIQUE
1. Fill FOV w/Sunlit subject
2. Activate Camr
3. Exposure Lock pb – Depress and hold
   Expect values such as 250, F16
4. Focus, Frame, Fire

760 AURORA/AIRGLOW

- Lens – 50mm
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining sufficient
- White Balance – Auto
- ISO – 400
- BKT – BKT, 3F 1.0 displayed
- Focus Area – Center, LOCK displayed
- CSM – 21-1, AEL
- Exp Comp – 0.0
- Exp Mode – M
- SS – 2"
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – C
- Body Focus Mode – M
- Aperture – Min, locked
  - f/stop – F1.4
- Flash Settings
  - ON/OFF – OFF
- Remote Release – Install
- Multiuse Brkt (Clamp)
- Focus, Frame, Fire, hold for 3 frames

TECHNIQUE
1. Dim Cabin lights
2. Use witch’s hat or dark clothing to shield window
**DCS 760 (Continued)**

**SETUP (Continued)**

<table>
<thead>
<tr>
<th>760 CITY LIGHTS/STARS</th>
<th>760 LIGHTNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens – 50mm</td>
<td>Lens – 50mm</td>
</tr>
<tr>
<td>Pwr – ON</td>
<td>Pwr – ON</td>
</tr>
<tr>
<td>√Disk installed</td>
<td>√Disk installed</td>
</tr>
<tr>
<td>Rear LCD</td>
<td>Rear LCD</td>
</tr>
<tr>
<td>√Batt</td>
<td>√Batt</td>
</tr>
<tr>
<td>√Frames remaining sufficient</td>
<td>√Frames remaining sufficient</td>
</tr>
<tr>
<td>White Balance – Auto</td>
<td>White Balance – Auto</td>
</tr>
<tr>
<td>ISO – 400</td>
<td>ISO – 400</td>
</tr>
<tr>
<td>√BKT – BKT, 3F 1.0 displayed</td>
<td>√BKT – Disabled</td>
</tr>
<tr>
<td>Focus Area – Center, LOCK displayed</td>
<td>Focus Area – Center, LOCK displayed</td>
</tr>
<tr>
<td>Exp Comp – 0.0</td>
<td>Exp Comp – 0.0</td>
</tr>
<tr>
<td>Exp Mode – M</td>
<td>Exp Mode – M</td>
</tr>
<tr>
<td>SS – 2</td>
<td>SS – 2</td>
</tr>
<tr>
<td>AF Area Mode – [ ] (no “+”)</td>
<td>AF Area Mode – [ ] (no “+”)</td>
</tr>
<tr>
<td>Meter – Matrix</td>
<td>Meter – Matrix</td>
</tr>
<tr>
<td>Diopter – Adjust</td>
<td>Diopter – Adjust</td>
</tr>
<tr>
<td>Film Adv – C_H</td>
<td>Film Adv – S</td>
</tr>
<tr>
<td>Body Focus Mode – M</td>
<td>Body Focus Mode – M</td>
</tr>
<tr>
<td>Aperture – Min, locked</td>
<td>Aperture – Min, locked</td>
</tr>
<tr>
<td>f/stop – F1.4</td>
<td>f/stop – F1.4</td>
</tr>
<tr>
<td>Flash Settings</td>
<td>Flash Settings</td>
</tr>
<tr>
<td>ON/OFF – OFF</td>
<td>ON/OFF – OFF</td>
</tr>
<tr>
<td>Remote Release – Install</td>
<td>Remote Release – Install</td>
</tr>
<tr>
<td>Multiuse Brkt (Clamp)</td>
<td>Multiuse Brkt (Clamp)</td>
</tr>
<tr>
<td>Focus, Frame, Fire, hold for 3 frames</td>
<td>Focus, Frame, Fire</td>
</tr>
</tbody>
</table>

**TECHNIQUE**

1. Dim Cabin lights
2. Use dark clothing to shield window

**TECHNIQUE**

Fire Camr repeatedly. Luck reqd
DCS 760 (Continued)

SETUP (Continued)

760 MOON

- Lens – As reqd
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining sufficient
- White Balance – Auto
- ISO – 100
- BKT – Disabled
- Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – M
- SS – 500
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Aperture – Min, locked
  f/stop – F8
- Flash Settings
  ON/OFF – OFF
- Multiuse Brkt (Clamp)

760 SILHOUETTE

- Lens – 50mm
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining sufficient
- White Balance – Auto
- ISO – 100
- BKT – Disabled
- Focus Area – Center, LOCK displayed
- CSM – 21-1, AEL
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Aperture – Min, locked
- Flash Settings
  ON/OFF – OFF

TECHNIQUE
1. Fill FOV w/bright subject
2. Activate Camr
3. Exposure Lock pb – Depress and hold
   Expect values such as 250, F8-11
4. Focus, Frame, Fire
DCS 760 (Continued)

SETUP (Continued)

760 SUNRISE/SUNSET

- Lens – As reqd
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining sufficient
- White Balance – Auto
- ISO – 400
- BKT – BKT, 3F 1.0 displayed
- Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – [ ] (no “+”)  
- Meter – Matrix
- Diopter – Adjust
- Film Adv – CH
- Body Focus Mode – S
- Aperture – Min, locked
- Flash Settings
  - ON/OFF – OFF
- Focus, Frame, Fire, hold for 3 frames

WARNING
Do not look at Sun

760 SUN STAR EFFECT

- Lens – 16mm
- Pwr – ON
- Disk installed
- Rear LCD
- Frames remaining sufficient
- White Balance – Auto
- ISO – 100
- BKT – Disabled
- Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – A
- AF Area Mode – [ ] (no “+”)  
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – M
- Aperture – Min, locked
- f/stop – F22
- Flash Settings
  - ON/OFF – OFF
- Focus, Frame, Fire

TECHNIQUE
Place Sun w/Earth, orbiter, crewmember, etc, in FOV
DCS 760 (Continued)

SETUP (Concluded)

760 TV MONITOR

- Lens – 50mm
- Pwr – ON
- √ Disk installed
- Rear LCD
- √ Batt
- √ Frames remaining sufficient
- √ White Balance – Auto
- √ ISO – 100
- √ BKT – Disabled
- √ Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – S
  - SS – 30
- AF Area Mode – [ ] (no “+”)
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Aperture – Min, locked
- Flash Settings
  - ON/OFF – OFF
- Focus, Frame, Fire
DCS 760 (Continued)

SPECIFICATIONS

CAMR BODY

CCD SIZE:  18.48mm x 27.65mm
PIXEL COUNT:  2008 x 3032
DISK/FRAME:  1 GB Micro Drive:  117 Frames; 1 GB EVA Flash Card:  112 Frames
FILE SIZE:  6 MB
EXPOSURE CONTROL:  Auto (program, shutter priority, aperture priority), Manual
METER PATTERN:  3D Color Matrix, Center Weighted, Spot
EXPOSURE COMP:  ±5 in 1/3 stops
SHUTTER:
  Program & Aperture Priority – 1/8000 thru 30 sec (virtually stepless)
  Manual & Shutter Priority – 1/8000 thru 30 sec (1/3 stop increments), and B (manual only)
ISO Setting:
  Manual:  80-400
MOTOR DRIVE:  Single, C_H (1.5 fps), C_L (1.0 fps), C_S (1.0 fps)
  Interval: 10-25 shot burst
CAMR BATT:  Rechargeable
CAMR BATT VOLTAGE:  7.2V
CAMR BATT LIFETIME:  ~100 frames
CAMR WEIGHT:  4.09 lb (w/batt & PCMCIA)

FLASH

BATT:  4AA
BATT LIFETIME:  ~144-216 shot
WEIGHT:  w/o Batts – 0.85 lb
### LENS DATA

**NOTE**

Do not use non-AF lens w/DCS 760

<table>
<thead>
<tr>
<th>Lens</th>
<th>Aperture Range (f/stop)</th>
<th>Approximate Field of View (FOV)</th>
<th>Approx Minimum Focus Distance (ft)</th>
<th>Weight (lb)</th>
<th>Filter Size</th>
<th>M-A Switch</th>
</tr>
</thead>
</table>
| 16mm AF | f/2.8-f/22 | Horizontal: 123°  
Vertical: 82°  
Diagonal: 148° | 1.0 | 0.69 | Rear |
| 17-35mm AFD | f/2.8-f/22 | Horizontal: 78°-43°  
Vertical: 57°-30°  
Diagonal: 89°-51° | 1.0 | 1.64 | 77mm  
Yes |
| 20mm AF | f/2.8-f/22 | Horizontal: 69°  
Vertical: 50°  
Diagonal: 80° | 0.85 | 0.62 | 62mm |
| 20-35mm AFD | f/2.8-f/22 | Horizontal: 69°-43°  
Vertical: 50°-30°  
Diagonal: 51° | 1.7 | 1.36 | 77mm  
Yes |
| 28mm AF | f/2.8-f/22 | Horizontal: 53°  
Vertical: 37°  
Diagonal: 61° | 1.25 | 0.46 | 52mm |
| 28mm AFD | f/1.4-f/16 | Horizontal: 53°  
Vertical: 37°  
Diagonal: 61° | 1.14 | 1.15 | 72mm  
Yes |
| 28-70mm AFD | f/2.8-f/22 | Horizontal: 53°-22°  
Vertical: 37°-15°  
Diagonal: 61°-27° | 2.3 (1.5 ft macro) | 1.95 | 77mm  
Yes |
| 35mm AF | f/2.0-f/22 | Horizontal: 43°  
Vertical: 30°  
Diagonal: 51° | 0.9 | 0.51 | 52mm |
| 24-50mm AF | f/3.3(4.5)-f/22 | Horizontal: 60°-31°  
Vertical: 42°-21°  
Diagonal: 69°-37° | 2.0 (1.6 ft macro) | 0.86 | 62mm |
| 35-70mm AF | f/2.8-f/22 | Horizontal: 43°-22°  
Vertical: 30°-15°  
Diagonal: 51°-27° | 2.0 (0.9 ft macro) | 1.5 | 62mm |
| 50mm AFD | f/1.4-f/16 | Horizontal: 31°  
Vertical: 21°  
Diagonal: 37° | 1.5 | 0.59 | 52mm |
| 60mm AF | f/2.8-f/32 | Horizontal: 26°  
Vertical: 18°  
Diagonal: 31° | 0.73 | 0.93 | 62mm  
Yes |
| 85mm AF | f/1.8-f/16 | Horizontal: 19°  
Vertical: 12°  
Diagonal: 22° | 3.0 | 0.93 | 62mm |
| 105mm AF | f/2.8-f/32 | Horizontal: 15°  
Vertical: 10°  
Diagonal: 18° | 1.0 | 1.22 | 52mm  
Yes |
| 180mm AFD | f/2.8-f/22 | Horizontal: 9°  
Vertical: 6°  
Diagonal: 11° | 5.0 | 1.72 | 72mm |
| 80-200mm AFD | f/2.8-f/22 | Horizontal: 20°-8°  
Vertical: 13°-5°  
Diagonal: 24°-10° | 6.0 | 2.98 | 77mm  
Yes |
| 300mm AF | f/2.8-f/22 | Horizontal: 5°  
Vertical: 4°  
Diagonal: 6° | 10.0 | 6.36 | 39mm  
Yes |
| 400mm AFD | f/2.8-f/22 | Horizontal: 4°  
Vertical: 3°  
Diagonal: 5° | 9.75 | 10.58 | 52mm  
Yes |
NOMENCLATURE

1. Vertical–Shooting Shutter Release pb
2. Mirror Lockup Lever
3. Depth of Field Preview pb
4. Sub–Command Dial
5. Camr Strap Eyelet
6. Exposure Compensation pb
7. Shutter Release pb
8. Exposure Mode pb
9. AF Area Mode pb
10. Film Advance Mode/Selftimer Selector
11. Sync Terminal
12. Selftimer LED
13. Lens Release pb
14. Body Focus Mode Selector
NOMENCLATURE (Continued)

1. Rear LCD Panel
2. TAG/RECORD pb
3. MENU pb
4. CANCEL pb
5. OK pb
6. Image LCD Panel
7. Alert LED
8. Finder Release pb
9. Eyepiece Shutter Lever
10. Viewfinder Eyepiece
11. Auto Exposure (AE–L)/Autofocus Lock (AF–L) pb
12. AF Start (AF–ON) pb
13. Main–Command Dial
14. Microphone
15. Navigate Pad
16. Vertical AF Start (AF–ON) pb
17. Remote Release Port
18. Body Bracketing pb
19. ISO pb
20. Shutter Speed/Aperture/Focus Area Lock pb
21. Flash Sync Mode pb
22. Custom Setting Menu pb
23. Green Panic pb
DCS 760 (Continued)

NOMENCLATURE (Continued)

1. Film Advance Mode/Selftimer Selector
2. Film Advance Mode Selector Lock Release
3. Metering System Selector
4. AF Area Mode pb
5. Exposure Mode pb
6. Pwr/LCD Panel Illumination sw
7. Shutter Release pb
8. Pwr sw Lock Release
9. Exposure Compensation pb
10. Top LCD Panel
11. Diopter Adjustment Knob
12. Accessory Shoe
13. Pwr Adapter Connection (cover not shown)
14. IEEE 1394 Cable Port (cover not shown)
15. Vertical–Shooting Shutter Release pb
16. Card Busy LED Opening
17. Serial Port
18. Video Port
19. Card Busy LED
20. Hard Drive Slot 1
21. Hard Drive Slot 2
22. Eject pb
23. Batt

Open Batt/PC Card Door
Card Door
DCS 760 (Continued)

NOMENCLATURE (Concluded)

Exposure Mode
Exposure Compensation
Shutter Speed
Shutter Speed Lock
Aperture Lock
Aperture
Focus Area Lock
Focus Area
Bracketing
Exposure Compensation Value
Flexible Program
Frame Number
White Balance
Bracketing
ISO Setting Mode
ISO/Bracketing Information/Custom Setting
Bracketing Bar Graphs
Flash Sync Mode
Personal Computer Connection
Custom Setting
Hard Drive Present
Microphone
Batt Level
Frames Remaining on Hard Drive
NOTE
There are two menus for custom settings. Options on each menu are identical.
Although either menu can be used, menu A is recommended for consistency.

ACTIVATION

CSM pb – press, hold
Main Command Dial – Rotate to desired setting number
(lower rear LCD)
Sub-command Dial – Rotate to desired setting (lower rear LCD)
CSM pb – release, then press, hold again
√
Number after dash is “1” and “CUSTOM” displayed on lower rear LCD

DEACTIVATION

BKT pb, CSM pb – press simo, hold for 2 sec (display blinks)
√“CUSTOM” no longer displayed on lower rear LCD
Focus Area – Center, LOCK displayed
Between Frame Data – PRINT

<table>
<thead>
<tr>
<th>#</th>
<th>Menu</th>
<th>Settings</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Selecting Custom Menus</td>
<td>0 - A: Custom settings A</td>
<td>Can specify setting combinations wanted for A,B; makes it easy to switch from one setting combination to another</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 - B: Custom settings B</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Continuous Servo AF</td>
<td>1 - 0: Release-priority</td>
<td>Change from release-priority to focus-priority</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 - 1: Focus-priority</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Single Servo AF</td>
<td>2 - 0: Focus-priority</td>
<td>Change from focus-priority to release-priority</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - 1: Release-priority</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bracketing Order</td>
<td>3 - 0: Metered value, below metered value, above metered value</td>
<td>Change order to under the metered value, the metered value, and over the metered value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 - 1: Below metered value, metered value, above metered value</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Autofocus Activated When Shutter Release pb Lightly Pressed</td>
<td>4 - 0: Activated</td>
<td>Delete shutter release pb’s AF activation function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - 1: Disabled</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>AE Lock</td>
<td>5 - 0: Exposure value</td>
<td>Lock shutter speed and aperture for AE lock function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5 - 1: Shutter speed and aperture value</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Direction of Command Dial Rotation</td>
<td>6 - 0: Default</td>
<td>Change from left-to-right to right-to-left when increasing values</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 - 1: Opposite</td>
<td></td>
</tr>
</tbody>
</table>
## CUSTOM SETTINGS (Continued)

<table>
<thead>
<tr>
<th>#</th>
<th>Menu</th>
<th>Settings</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>AE Lock When Shutter Release pb Lightly Pressed</td>
<td>7 - 0: Disabled</td>
<td>Lock exposure when shutter release pb lightly pressed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 - 1: Activated</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
<td>8 - 0:</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
<td>9 - 0:</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
<td>10 - 0:</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Alert LED in Long Time Exposure</td>
<td>11 - 0: Does not blink</td>
<td>Make Alert LED blink during long time exposure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11 - 1: Blinks</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
<td>12 - 0:</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
<td>13 - 0: Canceled after release</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Center-Weighted Metering</td>
<td>14 - 0: Default (75% concentration in 12mm dia. area)</td>
<td>Change 12mm-dia area to 8mm(15mm,20mm) average metering</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14 - 1: Change setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C 8: 8mm-dia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C 12: 12mm-dia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C 15: 15mm-dia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C 20: 20mm-dia</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A: Average</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Time Delay for Auto Meter-Switch-Off</td>
<td>15 - 0: Default (16 sec)</td>
<td>Change from 16 sec to 4(8,12) sec</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 - 1: Change setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L 4: 4 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L 8: 8 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L 16: 16 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>L 32: 32 sec</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Self-Timer Duration</td>
<td>16 - 0: Default (10 sec)</td>
<td>Choose from 2 to 60 sec</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 - 1: Change setting</td>
<td>Go to L10 to clear setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>L 2 to L60: 2 to 60 sec</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Bracketing in Manual Exposure Mode</td>
<td>17 - 0: Default (shifts shutter speed)</td>
<td>Change shifting factor in Manual Exposure mode from shutter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>17 - 1: Change setting</td>
<td>speed to choice of shutter speed/aperture combination, aperture, or flash output level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11A: Shutter speed/aperture combination</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10A: Shutter speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>01A: Aperture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>00A: Flash output level</td>
<td></td>
</tr>
</tbody>
</table>
# Menu Settings Notes

<table>
<thead>
<tr>
<th>#</th>
<th><strong>Menu</strong></th>
<th><strong>Settings</strong></th>
<th><strong>Notes</strong></th>
<th><strong>Notes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Focusing Screen Compensation</td>
<td>18 - 0: No compensation</td>
<td>Change EV level of focusing screen from -2.0 to +2.0 in 0.5 EV steps. See special focusing screen instruction manual for reqd compensation value.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>18 - 1: Change setting</td>
<td>-2.0 to +2.0: -2 to +2 in 0.5 EV steps</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Prolong Shutter Speed</td>
<td>19 - 0: Disabled</td>
<td>Choose from 40 sec to 30 min duration</td>
<td>Long exposures may add noise and produce a less desirable image. Images should not be &gt; 0.5 sec</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19 - 1: Enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Top TTL, Flash Sync Speed</td>
<td>20 - 0: Default (1/250 sec)</td>
<td>To set top TTL flash sync speed. 1/300 sec* can be selected only in Shutter-Priority Auto or Manual Exposure modes</td>
<td>*Shutter speed controlled by 1/250 in Programmed Auto or Aperture-Priority Auto exposure modes</td>
</tr>
<tr>
<td>21</td>
<td>AE-L/AF-L pb</td>
<td>21 - 0: Default (simultaneous lock)</td>
<td>Change to AE(AF) lock only</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>21 - 1: Change setting</td>
<td>AEL: AE lock AFL: AF lock L-L: Simultaneous lock</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Aperture Setting via Sub-Command Dial</td>
<td>22 - 0: Enabled</td>
<td>Only way to set aperture is to rotate lens aperture ring</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>22 - 1: Disabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>► or ◄ Focus Indicator</td>
<td>23 - 0: Displayed</td>
<td>Don’t show display of ► and ◄ (focused at rear or in front of subject) in viewfinder during Autofocus mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>23 - 1: Not displayed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Auto Exposure/Flash Exposure Bracketing</td>
<td>24 - 0: Default (auto exposure/flash exposure bracketing)</td>
<td>When Auto(Flash) Exposure Bracketing only wanted</td>
<td></td>
</tr>
</tbody>
</table>
DCS 760 (Continued)

DATE/TIME SET

1. MENU pb – press
2. Navigate pad – sel Menu icon  
3. OK pb – press
4. Navigate pad – sel TIME/DATE
5. OK pb – press

NOTE
Set TIME/DATE to GMT

6. Navigate pad – sel desired field (left,right)
7. Navigate pad – sel desired setting (up,down)
8. OK pb – press

DELETING SINGLE IMAGES

1. OK pb – press
2. Sel image
3. Navigate pad – down to sel Delete option
4. OK pb – press (twice) to delete
5. CANCEL pb – press to exit Delete option

ADDING .WAV FILES TO AN IMAGE

1. OK pb – press
2. Sel image
3. TAG/RECORD pb – press, hold (microphone icon  appears on rear LCD)
4. Talk to MIC (~9-12 in from MIC)
5. Speaker icon  appears under image
DCS 760 (Continued)

IMAGE VIEWING ON PGSC

1. Insert DCS MICRO DRIVE into PGSC, brand name up

2. If A31p, open SHUTTLE APPS | Kodak DCS Camera | KODAK DCS Photo Desk
   If 760XD, open SHUTTLE APPS | Photo Desk

3. Sel FILE | OPEN

4. Sel appropriate drive/folder

5. Sel "Open ‘--------’ as contact sheet"

6. To view image info:
   Sel VIEW
   √Image Info selected (check mark next to Image Info)
   Single-click on desired image

7. To view enlarged individual image:
   Double-click on desired image
DCS 760 (Continued)

DCS FILE TRANSFER

**NOTE**
Do not delete images from cards. All images should be saved and cards stowed

**DNLK FROM MICRO DRIVE**
1. Insert DCS MICRO DRIVE (1 GB EVA Flash Card) into **KFX PGSC**, brand name up
2. Inform MCC “files ready”

**DCS FILE TO HARD DRIVE**
1. Insert DCS MICRO DRIVE (1 GB EVA Flash Card) into any **networked PGSC**, brand name up
2. Double click:
   - “My Computer” icon on desktop
   - “Removable Disk D” or appropriate drive
   - “Folder 1” or appropriate folder
3. Select all files
4. Copy all files
5. Double click:
   - “DCS Folder on KFX PGSC” shortcut on desktop
   - Appropriate subfolder (e.g., FD1, OMS Pod, etc.)
6. Paste files
7. Close all windows
8. Inform MCC “files ready” on PGSC
9. Stow card
DCS 760 (Continued)

**SUSPECT HARD DRIVE SCAN (760XD ONLY)**

1. Insert suspect DCS Micro Drive (1 GB EVA Flash Card) into PGSC, brand name up
2. Sel ‘Start’ | ‘Run...’
3. In ‘Run’ window, type: SCANDISK, then sel OK
4. In ‘ScanDisk’ window:
   - Sel MICRO DRIVE drive (usually D: drive)
   - ‘Type of Test’ – Standard
   - Sel ‘Automatically fix errors’
   - Sel ‘Start’

5. In ‘ScanDisk Results’ Window:
   - If error fixed(nonexistent), continue to use hard drive
   - If error not fixed, mark and stow hard drive
   - Notify MCC of results

6. Close all windows used to scan hard drive

**SUSPECT HARD DRIVE SCAN (A31p ONLY)**

1. Insert suspect DCS Micro Drive (1 GB EVA Flash Card) into A31p, brand name up
2. Sel ‘My Computer’
3. Right click on drive (D:)
4. Sel ‘Properties’
5. Sel ‘Tools’ tab
6. In ‘Error-checking’ box, sel ‘Check Now...’
7. In ‘Check Disk’ window:
   - Sel ‘Automatically fix file system errors’
   - Sel ‘Start’
8. Notify MCC of results
9. Sel ‘OK’ to close dialog boxes
10. Close ‘My Computer’ window
NOTE
Do not compress images for OCA dnlk. Image compression to be used only for image insertion into a document or e-mail

1. Perform IMAGE VIEWING ON PGSC, steps 1-5 on 3-19, then:

2. Single-click image for compression

3. Sel FILE | SAVE SELECTED AS (Not “SAVE AS”)

4. Sel appropriate drive and folder in “Save In” window

5. Sel “Standard JPEG” (*.jpg)” in format window

6. Sel RENAME IMAGE FILE(S)

If A31p:
7. Enter new file name in “Base Name” window
8. Sel “Save files in ‘--------’ ”
If 760XD:
9. Enter new file name in NEW NAME window

10. Sel “Save files in ‘--------’ ”

11. Sel IMAGE SIZE = 50%

12. Sel IMAGE QUALITY = GOOD

13. √RESOLUTION = 300

14. √DOTS PER INCH selected

15. Sel OK
RECOVER LOST IMAGES

1. Insert suspect DCS Micro Drive (1 GB EVA Flash Card) into A31p, brand name up
2. Open SHUTTLE APPS | Kodak DCS Camera | mediaRECOVER
3. In 'mediaRECOVER' window
   Sel 'Settings' in left-hand column
   Under 'My image file size', move slider until '10.00 MB' displayed
   Sel 'Recovery' in left-hand column
   In 'Drive to recover' column, sel 'Removable Disk' in pulldown menu
   Sel 'Next >'
4. In 'Where do you want to save recovered files?' column
   Sel '…' button
   In 'Choose directory…' window
     Sel 'Local Disk (C)'
     Sel 'OCA-down'
     Sel 'DCS'
     Sel 'New Folder' option button
     Type 'Recover' as new folder name
     Press Enter
     Click on 'Recover' folder
     Sel 'OK'
     Sel 'Next >'
5. In 'Progress' column
   √'Preview' box
   Sel 'Start'
6. In 'Analyze Drive' window

   NOTE
   Scan will take several min

   Sel 'Use folder based recover'
   Verify √ in box next to 'Look for additional lost files'
   Sel 'Continue'
7. When 'Preview' window appears, move 'Preview' window below 'mediaRECOVER' window to view progress bar
DCS 760 (Continued)

RECOVER LOST IMAGES (Concluded)

NOTE
When scan completed, 'Save Images' window will appear

8. In 'Save Images' window

NOTE
May take several minutes to save to 'Recover' folder

√All images have '√' in their select box
Sel 'Save Images'

9. When finished saving ('Save Images' window will automatically close), close 'mediaRECOVER' window
10. Close 'Kodak DCS Camera' window
11. Notify MCC regarding location of images
DCS 760

3.1 CAMR FAILS TO FIRE

Camr Fails to Fire

Nominal Config:
(Camr)
Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining sufficient
√White Balance – Auto
ISO – 100
√BKT disabled
√Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [ ]
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A
Aperture – Min, locked
(Flash)
ON/OFF – ON
√TTL, Matrix
√Zoom
Tilt – Direct

1
•√Batt
• Replace if low
Camr fires?
Yes
No

2
•√Disk installed
•√Frames remaining ≥ 1 (LCD disk icon not blinking)
Camr fires?
Yes
No

3
•√Focus area – Center
•√Subject contrast – Adequate
•√Lt level sufficient
Camr fires?
Yes
No

4
•√Channel A CSM setting #4 not activated (off = 4-0)
Camr fires?
Yes
No

5
• Continue nominal ops

6
•√MCC

09/03/04 3-25 P/TV/118/FIN
3.2 CANNOT SEE THRU VIEWFINDER

Nominal Config:
-Camr
Pwr – ON
Disk installed
Rear LCD
Batt
Frames remaining
White Balance – Auto
ISO – 100
BKT disabled
Focus Area – Center, LOCK displayed
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [ ]
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – S
Lens Focus Mode – A
Aperture – Min, locked

(Flash)
ON/OFF – ON
TTL, Matrix
Zoom
Tilt – Direct

1. • Eyepiece Shutter Lever open
   View obstructed?
   Yes

2. • Mirror Lockup Lever released
   View obstructed?
   Yes

3. • Continue nominal ops

4. • MCC

09/03/04 3-26 P/TV/118/FIN
3.3 CAMR FAILS TO AUTOFOCUS

Nominal Config:

(Camr)
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining sufficient
- White Balance – Auto
- ISO – 100
- BKT disabled
- Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – [ ]
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked

(Flash)
- ON/OFF – ON
- TTL, Matrix
- Zoom
- Tilt – Direct

1. 35-70mm lens will not auto-focus in Macro
DCS 760

3.4 “ERR” BLINKS ON TOP LCD AND ALERT LED ALSO BLINKS

Nominal Config:
(Camr)
Pwr – ON
√Disk installed
Rear LCD
√Batt
√Frames remaining
sufficient
√White Balance –
Auto
ISO – 100
√BKT disabled
√Focus Area –
Center, LOCK
displayed
Exp Comp – 0.0
Exp Mode – P
AF Area Mode – [ ]
Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus
Mode – S
Lens Focus
Mode – A
Aperture – Min,
locked
(Flash)
ON/OFF – ON
√TTL, Matrix
√Zoom
Tilt – Direct

“Err” Blinks On
Top LCD And
Alert LED Also
Blinks

1
• Recycle Camr pwr
sw
Blinking “Err” and
alert LED disappear?
Yes
2
• Continue nominal
ops
No
3
• MCC
DCS 760

3.5 EXCESSIVE SAVE IMAGE TO HARD DISK TIME

Nominal Config:

(Camr)
- Pwr – ON
- Disk installed
- Rear LCD
- Batt
- Frames remaining
- White Balance – Auto
- ISO – 100
- BKT disabled
- Focus Area – Center, LOCK displayed
- Exp Comp – 0.0
- Exp Mode – P
- AF Area Mode – [ ]
- Meter – Matrix
- Diopter – Adjust
- Film Adv – S
- Body Focus Mode – S
- Lens Focus Mode – A
- Aperture – Min, locked

(Flash)
- ON/OFF – ON
- TTL, Matrix
- Zoom
- Tilt – Direct

Excessive Save Image to Hard Disk Time

1.
- Replace Flash Card (PCMCIA)
- Label faulty Flash Card (PCMCIA) and perform SUSPECT HARD DRIVE SCAN, 3-17

Improved save image time after Camr fires?

Yes
- Continue nominal ops

No

3.
- 
- MCC
# DCS 760 EVA CAMR

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DCS 760 EVA CAMR

760 EVA – CAMR ONLY

NOTE
When Camr not in use during EVA, Thermal Lens Cap must be installed

1. Unstow and assemble from EVA Camr Accessories Bag
   DCS 760 Camr
   Lens – As Req’d
   If 28(35,50,105)mm EVA Lens:
   √Circular Polar 52mm Filter w/o glass fully installed on lens
   Action Viewfinder (EVA)

2. Unstow but do not install
   1 GB EVA Flash Cards (two)
   EVA Camr Blanket
   Camr Mounting Assy w/Thermal Blanket
   Tie Wraps (4/Camr)

3. Config DCS Batt Charger Pwr Supply (one per Camr) per dwg at right
   √Cb PWR IN – cl
   √OUT – cl
   MAIN PWR – ON (LED on)
   CAMR PWR – ON (LED on)

4. Camr Settings
   Pwr – ON
   Install 1 GB EVA Flash Card in slot 1
   Rear LCD
   √Frames Remaining ≥112
   If <112, perform 760 QUICK FORMAT, 4-34
   Remove 1 GB EVA Flash Card
   Install second 1 GB EVA Flash Card in slot 1
   Rear LCD
   √Frames Remaining ≥112
   If <112, perform 760 QUICK FORMAT, 4-34
   Install first 1 GB EVA Flash Card in slot 2
   √White Balance – Auto
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY (Continued)

DCS 760

4. Camr Settings (Concluded)
   - ISO – 100
   - Camr Bracket Disabled
   - Top LCD
     - Focus Area – Center, Locked
     - Exposure Comp – 0.0
     - Exposure Mode – P
     - Auto Focus Area Mode – [ ] (no “+” displayed)
   - Meter – Matrix
   - Film Advance – S
   - Body Focus Mode – S
   - Lens Focus Mode – A (if applicable)
   - Aperture – Min, locked
   - Vertical Shooting Shutter Release – Locked (L to line)

Main Menu
   - Menu pb – press
   - Main Menu – press OK
   - Processing – Off
   - Time/Date – GMT
   - Menu pb – press twice
   - Properties
     - Properties – press OK
     - Auto OK Errors – Yes
     - Enable Sharpening – No
     - High Temp Limit – Yes
     - Long Exposure Processing – Exposures >¼ sec
     - CANCEL pb – press twice

5. Remove Lens

   NOTE
   Do not pwr off Camr

DCS Batt Chgr

6. CAMR PWR – OFF (LED off)

   7. Disconnect DCS 760 Pwr Cable from Pwr Adapter Connection on DCS 760 Camr

DCS 760

8. Install EVA Camr Blanket starting at right side of Camr and stopping short of covering Batt/PC Door
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY (Continued)

9. \(\sqrt{}\) Aperture – Min, locked on lens
10. Install lens (EVA Camr Blanket may need to be adjusted)
11. \(\sqrt{}\) Lens Cap removed
12. Secure EVA Camr Blanket around lens
13. Reconnect DCS 760 Pwr Cable to Pwr Adapter Connection on DCS 760 Camr
14. CAMR PWR – ON (LED on)
15. Install DCS 760 Batt
16. Activate Shutter Release:
   \(\sqrt{}\) No “EE” in Viewfinder
   If “EE” displayed, go to step 9
   \(\sqrt{}\) Lens moves freely under EVA Camr Blanket
17. Insert Light-Pipe thru Batt/PC Door into Card Busy LED opening
18. Test fire to confirm Light-Pipe operational – Blinking Red LED on EVA Camr Blanket
19. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
20. Complete EVA Camr Blanket installation (close Flaps 1,4)

**NOTE**

Tie Wrap joints should be on opposite side from pull tab on Thermal Cover

21. Wrap Tie Wraps (two) around Camr Mounting Assy threading them under Thermal Blanket in back
NOTE

Enough slack should be left in loops to allow threading of two additional Tie Wraps

22. Insert remaining Tie Wraps (two) thru Camr Mount Loop

23. Install Camr Mounting Assy w/Thermal Blanket from rear
24. √Camr Mounting Assy seated, will not slip off Camr. Release pb – out
25. Loop Tie Wraps (two) from step 22 thru D-Ring on Camr Thermal Blanket. Secure w/o pulling D-Ring taut
26. Tighten Tie Wrap loops to snug fit
27. Trim ends as reqd

FINAL CONFIGURATION

28. Temp stow Flap 3 (will not be used for EVA)
29. Stow Camr until day of EVA
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY (Concluded)

If Remote Cord Assy used:
  30. Connect Remote Cord Assy to Remote Release port on DCS 760 Camr (Connector will thread into place)

31. Remote Cord Assy not locked
32. Using Velcro, secure Flap 3 to EVA Camr Blanket (DO NOT snap Flap 3) (Optional)
33. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
34. Test fire DCS 760 Camr w/Remote Release
35. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

NOTE
  Do not remove Camr from orbiter pwr

36. Stow until day of EVA
760 EVA – CAMR ONLY DISASSEMBLY

BETWEEN EVAs

NOTE
Removal of Batts, Cards main objective

1. Use scissors to remove Tie Wraps (four) from Camr Mounting Assy and D-Ring
2. Detach Camr Mounting Assy from DCS 760
3. In order to access Batt/PC Door, open Flap 1 of EVA Camr Blanket
4. Remove Light-Pipe from Batt/PC Door
5. Open Batt/PC door:
   Remove DCS 760 Batt
   Remove 1 GB EVA Flash Cards (two)

POST-EVA

NOTE
Stowing of EVA H/W and IVA use of DCS 760 main objective

1. Remove Lens
2. If Remote Cord Assy used, disconnect from Remote Release Port on DCS 760 Camr. Disconnect Flap 3
3. Remove EVA Camr Blanket:
   Open Flap 1 on EVA Camr Blanket
   Uninstall Light-Pipe from DCS 760 Batt/PC Door
   Remove EVA Camr Blanket from left to right
4. Temp stow EVA Camr Blanket
5. Replace lens
6. Camr Pwr – OFF
7. Open Batt/PC Door:
   Remove DCS 760 Batt
   Remove 1 GB EVA Flash Card (two)
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR ONLY DISASSEMBLY (Concluded)

POST-EVA (Concluded)

If reqd:
8. Return Camr to Nominal Ops
   Replace DCS 760 Batt and 1 GB EVA Flash Card
   Camr Settings:
      Camr Pwr – ON
      Nom Ops settings:
         Auto OK Errors – No
         High Temp Limit – No
         Long Exposures Processing – Exposures > 1/4 sec
   Camr Pwr – OFF
   Replace Action Viewfinder w/Nominal Viewfinder
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY

**NOTE**
When Camr not in use during EVA, Thermal Lens Cap must be installed

1. **Unstow and assemble from EVA Camr Accessories Bag**
   - DCS 760 Camr
   - Lens – As Req'd
     - If 28(35,50,105)mm EVA Lens:
       - Circular Polar 52mm Filter w/o glass fully installed on lens
       - Action Viewfinder (EVA)

2. **Unstow but do not install**
   - 1 GB EVA Flash Cards (two)
   - EVA Camr Blanket
   - Camr Mounting Assy w/Thermal Blanket
   - Flash Bracket w/Thermal Blanket
   - Remote Cord Assy (SED33112525-302) as reqd
   - Tie Wraps (4/Camr)

3. **Config DCS Batt Charger Pwr Supply** (one per Camr) per dwg at right
   - \sqrt{cb PWR IN – cl}
   - \sqrt{OUT – cl}
   - MAIN PWR – ON (LED on)
   - CAMR PWR – ON (LED on)

4. **Camr Settings**
   - Pwr – ON
   - Install 1 GB EVA Flash Card in slot 1
   - Rear LCD
     - \sqrt{Frames Remaining \geq 112}
     - If <112, perform 760 QUICK FORMAT, 4-34
   - Remove 1 GB EVA Flash Card
   - Install second 1 GB EVA Flash Card in slot 1
   - Rear LCD
     - \sqrt{Frames Remaining \geq 112}
     - If <112, perform 760 QUICK FORMAT, 4-34
   - Install first 1 GB EVA Flash Card in slot 2
   - White Balance – Auto
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

INITIAL CAMR SETUP (Concluded)

DCS 760 4. Camr Settings (Concluded)
√ISO – 100
√Camr Bracket Disabled
Top LCD
√Focus Area – Center, Locked
  Exposure Comp – 0.0
  Exposure Mode – P
  Auto Focus Area Mode – [ ] (no “+” displayed)
Meter – Matrix
Film Advance – S
Body Focus Mode – S
Lens Focus Mode – A (if applicable)
Aperture – Min, locked
√Vertical Shooting Shutter Release – Locked (L to line)
Main Menu
  Menu pb – press
  Main Menu – press OK
√Processing – Off
√Time/Date – GMT
  Menu pb – press twice
Properties
  Properties – press OK
  Auto OK Errors – Yes
√Enable Sharpening – No
  High Temp Limit – Yes
  Long Exposure Processing – Exposures >¼ sec
  CANCEL pb – press twice

DCS 760 5. Remove Lens

NOTE
Do not pwr off Camr

DCS Batt Chgr 6. CAMR PWR – OFF (LED off)
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

7. Disconnect DCS 760 Pwr Cable from Pwr Adapter Connection on DCS 760 Camr
8. Install EVA Camr Blanket starting at right side of Camr and stopping short of covering Batt/PC Door
9. √Aperture – Min, locked on lens
10. Install lens (Thermal Blanket may need to be adjusted)
11. √Lens Cap removed
12. Secure EVA Camr Blanket around lens
13. Reconnect DCS 760 Pwr Cable to Pwr Adapter Connection on DCS 760 Camr

DCS Batt Chgr

14. CAMR PWR – ON (LED on)

DCS 760

15. Install DCS 760 Batt
16. Activate Shutter Release:
   √No “FEE” in viewfinder
   If “FEE” displayed, go to step 9
   √Lens moves freely under EVA Camr Blanket
17. Insert Light-Pipe thru Batt/PC Door into Card Busy LED opening
18. Test fire to confirm Light-Pipe operational – Blinking Red LED on EVA Camr Blanket
19. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
20. Complete EVA Camr Blanket installation (close Flaps 1,4)

Brkt Assy

21. Obtain Bracket Assy w/Thermal Blanket
   If Thermal Blanket not installed, install on Bracket Assy:
   Config Thermal Blanket for use w/o Flash
If Remote Cord Assy not configured for use w/Bracket Assy:

22. Temp stow Flap 3 (will not be used for EVA)
23. Install DCS 760 Camr onto Bracket Assy (from front)

24. Install Camr Mounting Assy w/Thermal Blanket to Bracket Assy (from rear)

NOTE
Tie Wrap joints should be on opposite side from pull tab on Thermal Cover

25. Wrap Tie Wraps (two) around Camr Mounting Assy threading them under Thermal Blanket in back
NOTE
Enough slack should be left in loops to allow threading of two additional Tie Wraps

26. Insert remaining Tie Wraps (two) thru Camr Mount Loop

27. DCS 760 Camr and Camr Mount seated, will not slip off Bracket Assy. Release pb – out
28. Loop Tie Wraps (two) from step 26 thru D-Ring on Camr Thermal Blanket. Secure w/o pulling D-Ring taut
29. Tighten Tie Wrap loops to snug fit
30. Trim ends as reqd

FINAL CONFIGURATION
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

~

**NOTE**
Do not remove Camr from orbiter pwr

31. Stow until day of EVA

If Remote Cord Assy configured for use w/Bracket Assy:

32. Insert Remote Cord Assy thru hole in Thermal Blanket (verify Remote Cord Assy not locked) and place lip of remote under Thermal Blanket

33. Coil excess cord and stow between mount for EVA Flash and Thermal Cover Flap

34. Install DCS 760 Camr onto Bracket Assy (from front)

35. Install Camr Mounting Assy w/Thermal Blanket to Bracket Assy (from rear)
NOTE
Tie Wrap joints should be on opposite side from pull tab on Thermal Cover

36. Wrap Tie Wraps (two) around Camr Mounting Assy threading them under Thermal Blanket in back

NOTE
Enough slack should be left in loops to allow threading of two additional Tie Wraps

37. Insert remaining Tie Wraps (two) thru Camr Mount Loop

38. √DCS 760 Camr and Camr Mounting Assy seated, will not slip off Bracket Assy. Release pb – out
39. Loop Tie Wraps (two) from step 36 thru D-Ring on Camr Thermal Blanket. Secure w/o pulling D-Ring taut
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Continued)

40. Tighten Tie Wrap loops to snug fit
41. Trim ends as reqd

FINAL CONFIGURATION

DCS 760
42. Remove Flap 3 from EVA Camr Blanket
   Place Remote Cord Assy into Flap 3 per photo; close flaps

43. Using Velcro, secure Flap 3 to EVA Camr Blanket (DO NOT snap Flap 3)
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/BRACKET ONLY (Concluded)

44. Connect Remote Cord Assy to Remote Release port on DCS 760 Camr (Connector will thread into place)

45. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
46. Test fire w/Remote Release (two shots)
   √ Shutter Release on Remote Cord Assy not locked
47. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

   NOTE
   Do not remove Camr from orbiter pwr

48. Stow until day of EVA
DCS 760 EVA CAMR (Continued)

**760 EVA – CAMR w/FLASH**

**NOTE**

When Camr not in use during EVA, Thermal Lens Cap must be installed

1. **Unstow and assemble from EVA Camr Accessories Bag**
   - DCS 760 Camr
   - Lens – As Req’d
     - If 28(35,50,105)mm EVA Lens:
       - Circular Polar 52mm Filter w/o glass fully installed on lens
     - Action Viewfinder

2. **Unstow but do not install**
   - 1 GB EVA Flash Cards (two)
   - EVA Camr Blanket
   - Camr Mounting Assy w/Thermal Blanket
   - Bracket Assy w/Thermal Blanket
   - EVA Flash w/Thermal Blanket
   - Flash Sync Cable Assy w/Thermal Blanket
   - Remote Cord Assy (SED33112525-302)
   - DCS EVA 7 VDC Pwr Cable
   - Tie Wraps (4/Camr)

3. **Config DCS Batt Charger Pwr Supply** (one per Camr) per dwg at right
   - cb PWR IN – cl
   - OUT – cl
   - MAIN PWR – ON (LED on)
   - CAMR PWR – ON (LED on)

4. **Camr Settings**
   - Pwr – ON
   - Install 1 GB EVA Flash Card in slot 1
   - Rear LCD
     - Frames Remaining ≥112
     - If <112, perform 760 QUICK FORMAT, 4-34
   - Remove 1 GB EVA Flash Card
   - Install second 1 GB EVA Flash Card in slot 1
   - Rear LCD
     - Frames Remaining ≥112
     - If <112, perform 760 QUICK FORMAT, 4-34
   - Install first 1 GB EVA Flash Card in slot 2
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

DCS 760 4. Camr Settings (Concluded)

- White Balance – Auto
- ISO – 100
- Camr Bracket Disabled
- Top LCD
  - Focus Area – Center, LOCK
  - Exposure Comp – 0.0
  - Mode – P
- Auto Focus Area Mode – [ ] (no “+” displayed)
- Meter – Matrix
- Film Advance – S
- Body Focus Mode – S
- Lens Focus Mode – A (if applicable)
- Aperture – Min, locked
- Vertical Shooting Shutter Release – Locked (L to line)

Main Menu
- Menu pb – press
- Main Menu – press OK
- Processing – Off
- Time/Date – GMT
- Menu pb – press twice
- Properties
  - Properties – press OK
  - Auto OK Errors – Yes
- Enable Sharpening – No
- High Temp Limit – Yes
- Long Exposure Processing – Exposures >¼ sec
- CANCEL pb – press twice

5. Remove Lens

NOTE
Do not pwr off Camr

DCS Batt 6. CAMR PWR – OFF (LED off)

Chgr
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

DCS 760
7. Disconnect DCS 760 Pwr Cable from Pwr Adapter Connection on DCS 760 Camr
8. Install EVA Camr Blanket starting at right side of Camr and stopping short of covering Batt/PC Door
9. √ Aperture – Min, locked on lens
10. Install lens (EVA Camr Blanket may need to be adjusted)
11. √ Lens Cap removed
12. Secure EVA Camr Blanket around lens
13. Reconnect DCS 760 Pwr Cable to Pwr Adapter Connection on DCS 760 Camr

DCS Batt
14. CAMR PWR – ON (LED on)

Chgr

DCS 760
15. Install DCS 760 Batt
16. Activate Shutter Release:
   √ No “f EE” in Viewfinder
   If “f EE” displayed, go to step 9
   √ Lens moves freely under EVA Camr Blanket
17. Insert Light-Pipe thru Batt/PC Door into Card Busy LED opening
18. Test fire to confirm Light-Pipe operational – Blinking Red LED on EVA Camr Blanket
19. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
20. Complete EVA Camr Blanket installation (close Flap 1)

Brkt Assy
21. Obtain Bracket Assy w/Thermal Blanket
If Thermal Blanket not installed, install on Bracket Assy

22. Insert Remote Cord Assy thru hole in Thermal Blanket (verify Remote Cord Assy not locked) and place lip of remote under Thermal Blanket
23. Remove Flash Sync Cover from Flash Sync Cable
24. Install Flash Sync Cable to Camr Hot Shoe:
   - Lock Flash Sync Cable – turn lever cw
   - Secure Flap 4 to EVA Camr Blanket
25. Reinstall Flash Sync Cover onto Flash Sync Cable Assy
26. Secure Flash Sync Cable under Flap 2 on left side of Camr
27. Install DCS 760 Camr onto Bracket Assy (from front)
28. Install EVA Flash onto Bracket Assy (from rear)

29. Install Camr Mounting Assy w/Thermal Blanket to Bracket Assy (from rear)

**NOTE**
Tie Wrap joints should be on opposite side from pull tab on Thermal Cover
30. Wrap Tie Wraps (two) around Camr Mounting Assy threading them under Thermal Blanket in back

Mount for EVA Camera
Mount for Flash
Mount for Camr Mounting Assy (underneath)
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

NOTE

   Enough slack should be left in loops to allow threading of two additional Tie Wraps

31. Insert remaining Tie Wraps (two) thru Camr Mount Loop

32. DCS 760 Camr, EVA Flash, and Camr Mounting Assy seated, will not slip off Bracket Assy. Release pb – out

33. Loop Tie Wraps (two) from step 31 thru D-Ring on Camr Thermal Blanket. Secure w/o pulling D-Ring taut

34. Tighten Tie Wrap loops to snug fit

35. Trim ends as reqd

FINAL CONFIGURATION
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

EVA Flash
36. Open Flaps A,B
37. Under Flap B, tuck excess Remote Cord Assy (two coils) into pocket on EVA Flash unit

38. Connect DCS EVA 7 VDC Pwr Cable to Ext Camr Pwr port (small) on EVA Flash under Flap A
39. Run Remote Cord Assy and DCS EVA 7 VDC Pwr Cable under Flap B
40. Close Flap B using two snaps

DCS 760
41. Connect Flash Sync Cable Assy to Flash Sync port on EVA Flash
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

42. Close Flap A over Flash Sync Cable Assy

NOTE
Adjustments to cables may be reqd during installation

43. Remove EVA Camr Blanket Flap 3 from EVA Camr Blanket
Place Remote Cord Assy and DCS EVA 7 VDC Pwr Cable into Flap 3 per photo; close flaps

44. Using Velcro, secure Flap 3 to EVA Camr Blanket (DO NOT snap Flap 3)
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Continued)

45. Connect Remote Cord Assy to Remote Release port on DCS 760 Camr (Connector will thread into place)

46. Access Flash Batt Compartment (remove Flap(s) C as reqd)

47. Remove Batt Cap

48. Install one DCS 760 Batt into FLASH slot (align arrows)

49. Reinstall Batt Cap

50. Flash – ON

51. Activate Camr

52. Open Flap D; verify following:
   √Mode – TTL BL
      If TTL BL not displayed, press viewfinder Forward
   √Zoom – “M” not displayed
      If “M” displayed, contact MCC

53. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

54. Test fire Camr w/Flash using Remote Release (two shots)

55. Flash fired

56. Flash – OFF

57. Close Flap D

58. Remove DCS 760 Batt from FLASH slot

59. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

NOTE
Do not remove Camr from orbiter pwr

60. Stow until day of EVA
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH (Concluded)

PRIOR TO ENTERING AIRLOCK:

EVA Flash
1. Remove Batt Cap
2. Install two DCS 760 Batts into CAMERA,FLASH slots (align arrows)
3. Reinstall Batt Cap
4. Flash – ON
5. Activate Camr
6. Open Flap D; verify following:
   √ Mode – \TTL\BL
   
   If \TTL\BL not displayed, press viewfinder Forward
   √ Zoom – “M” not displayed
   
   If “M” displayed, contact MCC

DCS 760
7. Remove 28mm, 35mm, 50mm Lens Cap (Thermal Cap)
8. Test fire Camr w/Flash
9. Install 28mm, 35mm, 50mm Lens Cap (Thermal Cap)

EVA Flash
10. Flash – OFF
11. Close Flap D
12. Close Flap C
13. CAMR BATT PWR – EXT

DCS Batt Chgr
14. Camr Pwr – off

DCS 760
15. Disconnect DCS 760 Pwr Cable
16. Connect DCS EVA 7 VDC Pwr Cable to Camr (flat side fwd)
17. Secure snap on Flap 3 to EVA Camr Blanket
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH DISASSEMBLY

BETWEEN EVAs

NOTE
Removal of Batts, Cards main objective

FLASH

1. Flash – OFF
2. Open Flap C to access Flash Batt compartment
3. Remove Batt Cap
4. Remove DCS 760 Batt (two)
5. Install Batt Cap
6. Close Flap C

CAMR

1. Use scissors to remove Tie Wraps (four) from Camr Mounting Assy and D-Ring
2. Remove Flap 3 snap from EVA Camr Blanket
3. Disconnect Remote Cord Assy and DCS EVA 7 VDC Pwr Cable from DCS 760 Camr
4. Detach Flap 3 from EVA Camr Blanket
5. Disconnect Flash Sync Cable Assy from Camr Hot Shoe:
   Unlock Flash Sync Cable Assy – turn ccw
6. Remove Flash Sync Cable Assy from under Flap 2 on left side of Camr
7. Detach Camr Mounting Assy from Bracket Assy
8. Detach DCS 760 Camr from Bracket Assy
9. In order to access Batt/PC Door, open Flap 1 of EVA Camr Blanket
10. Remove Light-Pipe from Batt/PC Door
11. Open Batt/PC door:
   Remove DCS 760 Batt
   Remove 1GB EVA Flash Cards (two)
NOTE
Stowing of EVA H/W and IVA use of DCS 760 main objective

CAMR w/FLASH

1. Use scissors to remove Tie Wraps (four) from Camr Mounting Assy and D-Ring
2. Remove snap on Flap 3 from EVA Camr Blanket
3. Disconnect Remote Cord Assy and DCS EVA 7 VDC Pwr Cable from DCS 760 Camr
4. Detach Flap 3 from EVA Camr Blanket
5. Remove Remote Cord Assy and DCS EVA 7 VDC Pwr Cable from Flap 3
6. Secure Flap 3 to DCS EVA Camr Blanket
7. Disconnect Flash Sync Cable Assy from Camr Hot Shoe:
   Unlock Flash Sync Cable Assy – turn ccw
8. Remove Flash Sync Cable Assy from under Flap 2 on left side of Camr
9. Detach Camr Mount from Bracket Assy
10. Detach DCS 760 Camr from Bracket Assy

CAMR

1. Remove Lens
2. Remove EVA Camr Blanket:
   Open Flap 1 on EVA Camr Blanket
   Uninstall Light-Pipe from DCS 760 Batt/PC Door
   Remove EVA Camr Blanket from left to right
3. Temp stow EVA Camr Blanket
4. Replace lens
5. Camr Pwr – OFF
6. Open Batt/PC Door:
   Remove DCS 760 Batt
   Remove 1 GB EVA Flash Cards (two)
DCS 760 EVA CAMR (Continued)

760 EVA – CAMR w/FLASH DISASSEMBLY (Concluded)

POST-EVA (Concluded)

EVA FLASH AND FLASH BRACKET

1. Flash – OFF
2. Open Flap C to access Flash Batt compartment
3. Open Batt Cap and remove DCS 760 Batts (two)
4. Secure Batt Cap
5. Close Flap C
6. Open Flaps A,B
7. Remove Remote Cord Assy, Flash Sync Cable and DCS EVA 7 VDC Pwr Cable from Flap B
8. Disconnect Flash Sync Cable Assy from Flash
9. Disconnect EVA 7 VDC Pwr Cable from Flash
10. Close Flaps A,B
11. Remove EVA Flash from Bracket Assy
12. Remove Remote Cord Assy from Thermal Blanket
13. Temp Stow EVA Flash and Bracket Assy w/Thermal Blanket

RETURN CAMR TO NOM OPS (as reqd)

1. Replace DCS 760 Batt and 1 GB EVA Flash Card
2. Camr Settings:
   Camr Pwr sw – ON
   Nom Ops settings:
   Auto OK Errors – No
   High Temp Limit – Yes
   Long Exposures Processing – Exposures > 1/4 sec
3. Camr Pwr – OFF
4. Replace Action Viewfinder w/Nominal Viewfinder
DCS 760 EVA CAMR (Continued)

SPECIFICATIONS

CAMR BODY

CCD SIZE: 18.48mm x 27.65mm  
PIXEL COUNT: 2008 x 3032  
DISK/FRAME: 1 GB: 112 Frames  
FILE SIZE: 6 MB  
EXPOSURE CONTROL: Auto (program, shutter priority, aperture priority), Manual  
METER PATTERN: 3D Color Matrix, Center Weighted, Spot  
EXPOSURE COMP: ±5 in 1/3 stops  
SHUTTER:  
  Program & Aperture Priority – 1/8000 thru 30 sec (virtually stepless)  
  Manual & Shutter Priority – 1/8000 thru 30 sec (1/3 stop increments), and B (manual only)  
ISO Setting:  
  Manual: 80-400  
MOTOR DRIVE: Single, CH (1.5 fps), CL (1.0 fps), CS (1.0 fps)  
  Interval: 10-25 shot burst  
CAMR BATT: Rechargeable  
CAMR BATT VOLTAGE: 7.2V  
CAMR BATT LIFETIME: ~100 frames  
CAMR WEIGHT: 4.09 lb (w/batt & PCMCIA)
### LENS DATA

**NOTE**
Do not use non-EVA lens w/DCS 760 EVA

<table>
<thead>
<tr>
<th>Lens</th>
<th>Aperture Range (f/stop)</th>
<th>Approximate Field of View (FOV)</th>
<th>Approx Minimum Focus Distance (ft)</th>
<th>Weight (lb)</th>
<th>Filter Size</th>
<th>M-A Sw</th>
<th>Focus Limit Sw</th>
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<tbody>
<tr>
<td>28mm AF</td>
<td>f/2.8-f/22</td>
<td>53°</td>
<td>37°</td>
<td>61°</td>
<td>1.25</td>
<td>0.46</td>
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<tr>
<td>35mm AF</td>
<td>f/2.0-f/22</td>
<td>43°</td>
<td>30°</td>
<td>51°</td>
<td>0.9</td>
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<td>50mm AFD</td>
<td>f/1.4-f/16</td>
<td>31°</td>
<td>21°</td>
<td>37°</td>
<td>1.5</td>
<td>0.59</td>
<td>52mm</td>
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<td>85mm AF</td>
<td>f/1.8-f/16</td>
<td>19°</td>
<td>12°</td>
<td>22°</td>
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<td>0.93</td>
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<td>105mm AF</td>
<td>f/2.8-f/32</td>
<td>15°</td>
<td>10°</td>
<td>18°</td>
<td>1.0</td>
<td>1.22</td>
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<tr>
<td>180mm AFD</td>
<td>f/2.8-f/22</td>
<td>9°</td>
<td>6°</td>
<td>11°</td>
<td>5.0</td>
<td>1.72</td>
<td>72mm Yes</td>
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<tr>
<td>70-200mm AFD</td>
<td>f/2.8-f/22</td>
<td>20°-8°</td>
<td>13°-5°</td>
<td>24°-10°</td>
<td>6.0</td>
<td>2.98</td>
<td>77mm Yes</td>
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</tbody>
</table>
DCS 760 EVA CAMR (Continued)

NOMENCLATURE

1. Flash Pwr sw
2. External Camr Batt Low Light/LED
3. Batt Cap
4. Rear Flash Display Window
5. Flash Ready Lt Window
6. Flash Mount Rail
7. Camr Batt Pwr sw
8. Flash Housing
9. Batt Cap Straps
10. Batt Housing
11. External Camr Pwr Port
12. Flash Sync Port
DCS 760 EVA CAMR (Continued)

DATE/TIME SET

1. MENU pb – press
2. Navigate pad – sel Menu icon ⬤, then MAIN MENU
3. OK pb – press
4. Navigate pad – sel TIME/DATE
5. OK pb – press

NOTE
Set TIME/DATE to GMT

6. Navigate pad – sel desired field (left,right)
7. Navigate pad – sel desired setting (up,down)
8. OK pb – press
760 QUICK FORMAT

**NOTE**
Only one card may be in Camr while formatting

1. Pwr – ON
2. MENU pb – press
3. Navigate pad – sel Menu icon ➞, then MAIN MENU
4. OK pb – press
5. Navigate pad – sel ‘Card’
6. OK pb – press
7. Navigate pad – sel ‘Quick Format’
8. OK pb – press
9. ‘Format card? (All data will be erased)’
10. OK pb – press
11. ‘Are you sure you want to erase the card?’
12. OK pb – press
13. ‘Formatting Card’
14. ‘Card format complete’
15. OK pb – press
16. CANCEL pb – press
DCS 760 EVA CAMR (Continued)

760 FULL FORMAT

1. Perform DCS BATT CHARGING (BATTS & FUSES)

   NOTE
   Pwr Camr from vehicle and batt to ensure completion of formatting.
   Only one card may be in Camr while formatting

2. Pwr – ON
3. MENU pb – press
4. Navigate pad – sel Menu icon ☐☐, then MAIN MENU
5. OK pb – press
6. Navigate pad – sel ‘Card’
7. OK pb – press
8. Navigate pad – sel ‘Full Format’
9. OK pb – press
10. ‘Format card? (All data will be erased)’
11. OK pb – press
12. ‘Are you sure you want to erase the card?’
13. OK pb – press

   NOTE
   Formatting will take approx 20 min

14. ‘Formatting Card’ will be displayed w/progress bar
15. ‘Card format complete. No bad clusters found’
16. OK pb – press
17. CANCEL pb – press
DCS 760 EVA CAMR (Continued)

760 FIRMWARE UPDATE

**PGSC**

1. Insert PCMCIA 1 GB MICRO DRIVE into PGSC
2. Copy ‘DCS7XX.bin’ to root directory of PCMCIA 1 GB MICRO DRIVE
3. Remove PCMCIA 1 GB MICRO DRIVE from PGSC

**CAMR**

1. Install fresh Batt
2. Install PCMCIA 1 GB MICRO DRIVE w/loaded Firmware
3. Power – ON
4. MENU pb – press
5. Navigate pad – sel Menu icon , then MAIN MENU
6. OK pb – press
7. Navigate pad – sel ‘Firmware’
8. OK pb – press
9. Navigate pad – sel ‘Update from Card’
10. OK pb – press
11. ‘Loading firmware file from card’
12. ‘Firmware update will take about 15 seconds’
13. OK pb – press
14. ‘Updating firmware’
15. ‘Firmware update complete. Turn camera off and on to restart’
16. OK pb – press
17. PWR – OFF
18. PWR – ON
19. ‘New firmware version loaded 3.3.14’
20. √ Version number 3.3.14

**NOTE**

Process must be completed two times to update both Firmware slots

21. OK pb – OK
22. Repeat steps 4-21, then go to step 23
23. PWR – OFF
DCS 760 EVA CAMR (Continued)

DATA LOG FILE PROCEDURE

CREATING LOG FILE

1. MENU pb – press
2. Navigate pad – sel Menu icon ➳, then MAIN MENU
3. OK pb – press
4. Navigate pad – sel ‘Firmware’
5. OK pb – press
7. OK pb – press
8. MENU pb – press, hold
9. OK pb – press
10. ‘Saving log file’ – displayed
11. ‘Log file saved’ – displayed (log file saved in root directory)
12. OK pb – press
13. Cancel pb – press twice to turn off display
14. Dnlk imagery and log file
DCS 760 EVA CAMR (Continued)

BLANK IMAGE

CAMR SETTINGS – ACTIVATION

NOTE
Camr must be pwrd off for 30 min prior to performing Blank Image procedure

Install Body(Lens) Cap
Pwr – ON
Disk installed
Rear LCD

\Batt

\Frames remaining sufficient

\White Balance – Auto
ISO – 100
BKT disabled

Focus Area – Center, LOCK displayed
Exp Comp – 0,0
Exp Mode – M
SS – 30
AF Area Mode – [ ] (no “+”)

Meter – Matrix
Diopter – Adjust
Film Adv – S
Body Focus Mode – M
Aperture – Min, locked (‘--‘ displayed on top LCD when no Lens installed)
Flash Settings

ON/OFF – OFF

TECHNIQUE
1. Fire Camr
2. Note image number (number in brackets on rear LCD)
3. Rcd audio file to denote “blank image taken"
4. Transfer image to PGSC for dlknk to MCC-H

CAMR SETTINGS – DEACTIVATION

Exp Mode – P
Body Focus Mode – S
Flash Settings

ON/OFF – ON
DCS 760 EVA CAMR (Concluded)

STEREO PHOTOGRAMMETRY PROCEDURE

CAMR SETTINGS – ACTIVATION

1. Rcd CAMR and LENS S/Ns
2. Perform EVA – CAMR ONLY(CAMR w/BRACKET ONLY, CAMR w/FLASH)
3. Install Lens – 50mm EVA (preferred)
   Exp Mode – P
   Flash Settings:
   ON/OFF – OFF

TECHNIQUE

1. Distance to subject: 5-7 ft
2. Take mapping images normal to surface, followed by one additional convergent view on each side
3. Shoot photos in pairs. Offset each image laterally 2 in/ft of subject distance, ~10-14 in
4. An additional row of photos may be taken at a 90-60 deg angle to surface to capture critical details not covered in previous images
5. Repeat as time permits

CAMR SETTINGS – DEACTIVATION

1. Exp Mode – P
   Body Focus Mode – S
   Flash Settings:
   ON/OFF – ON
EVA IR CAMR

NOTE
Not being flown
SPOTMETER 303

NOTE
Not being flown
SONY PD100

ANALOG PAO CC

Config H/W per dwg at right

AVIU

SYNC/VIDEO – VIDEO (SYNC for Middeck)
HI-Z75 – 75
PWR SELECT – LO

O19(MO58F)

√ TV PWR – ON

CC

√ Wide Conversion lens installed (not W6 CC)
PWR – CAMERA
If rec to tape:
  Tape – Install
  √ Viewfinder (LCD) displays STBY
If live event:
  Tape – Remove
  √ Viewfinder (LCD) displays blinking yellow tape
Camar Settings
  √ AUTO LOCK – AUTO LOCK
  √ FOCUS – AUTO
Install Audio Muting Plug (optional)
Multiuse Brkt, Clamp

F1(MO52J)

AC UTIL PWR AC1 – ON

Photoflood

ON/OFF – ON
HI/LO – HI

Cabin Lts

Flt Deck – ON
Lts in FOV – OFF as reqd
Lt Shades – install as reqd
Window Shades – install as reqd

CC

√ Scene composition
  Adjust Camr angle for best framing

CCU

CCU PWR – ON

ATU

PWR – AUD
A/G 1(2) – T/R
All Other Loops – OFF
XMIT/ICOM MODE SEL – PTT/PTT
MSTR SPKR VOL SEL – As reqd

When ready for drnk:

A7

√ TV DNLK – ENA
PWR CNTL – PNL
CONTR UNIT – MNA(B)
CNTL – CMD (wait 10 sec for system initialization)
VID OUT DNLK pb – push
IN FLT DECK(MIDDECK) pb – push
SONY PD100 (Continued)

DIGITAL PAO CC

Config H/W per dwg at right

To compose scene but not dnlk:

L10 (MUX)

VTR/CC PWR – on (LED on)

CC

√ Wide Conversion lens installed
PWR – CAMERA

If rec to tape:

Tape – Install
√ Viewfinder (LCD) displays STBY

If live event:

Tape – Remove
√ Viewfinder (LCD) displays blinking yellow tape

Camr Settings

√ AUTO LOCK – AUTO LOCK
√ FOCUS – AUTO

Install Audio Muting Plug

Multiuse Brkt, Clamp

F1(MO52J)

AC UTIL PWR AC1 – ON

Photoflood

ON/OFF – ON

HI/LO – HI

Cabin Lts

Fit Deck – ON
Lts in FOV – OFF as reqd
Lt Shades – install as reqd
Window Shades – install as reqd

CC

√ Scene composition

Adjust Camr angle for best framing

CCU

CCU PWR – ON

ATU

PWR – AUD
A/G 1(2) – T/R
All Other Loops – OFF
XMIT/ICOM MODE SEL – PTT/PTT
MSTR SPKR VOL SEL – As reqd

When ready to dnlk signal:

L10 (MUX)

MUX/VTR/CC PWR – on (LED on)
√ MUX BYPASS – ACT
√ CHANNEL 3 DATA LED – on
SONY PD100 (Continued)

SPACEHAB CC SETUP

CAMCORDER SETUP

1. Safe/Config Pwr Ports
   EXCP2
   ✓ cb TVC PWR – OFF

2. CC Setup
   Obtain:
   A16 (DTV Bag) TV Pwr Cable (10 ft)
   AVIU
   Digital CC Vid/Pwr Cable
   SHAB Drag-Thru Cable String
   Multiuse Arm
   FLT DECK
   PD100 CC w/Wide Conversion Lens
   A/V Adapter Cable
   MA9G
   Multiuse Clamp
   (Stow-N-Go)
   Config CC H/W per dwg at right
   AVIU
   SYNC/VIDEO – VIDEO
   HI-Z/75 – 75
   PWR SELECT – LO
   EXCP2
   cb TVC PWR – ON
   CC
   ✓ Wide Conversion lens installed
   PWR – CAMERA
   If rec to tape:
   Tape – install
   ✓ Viewfinder (LCD) displays STBY
   Install Lav mic
   If live:
   Tape – Remove
   ✓ Viewfinder (LCD) displays blinking yellow tape
   Camr Settings
   ✓ AUTO LOCK – AUTO LOCK
   ✓ FOCUS – AUTO
   Multiuse Brkt, Clamp
SONY PD100 (Continued)

MINIDV DIGITAL TAPE DNLK

Configuration per dwg at right
Notify MCC of digital dnlk

L10 (MUX)  √VTR/CC PWR – on (LED on)

CC
PWR – VTR
Open REC/SAVE tab on MiniDV Tape (Red showing)
Tape – install
VTR pb – REW(FF) to cue tape

For Dnlk:
L10 (MUX)  MUX/VTR/CC PWR – on (LED on)
√MUX BYPASS – ACT
CC  PLAY pb – push (green ▶ displayed)
L10 (MUX)  √CHANNEL 3 DATA LED – on

If PLBK(DNLK) complete:
CC  STOP pb – push
If CC ops complete:
L10 (MUX)  MUX/VTR/CC PWR – off (LED off)
VTR/CC PWR – off (LED off) as reqd
CC  Remove,mark,stow tape as reqd
PWR – OFF
Config CC for nominal FD ops

NOTE
Remove Batt Adapter (SEZ16103288-701) to
install DTV IEEE 1394 w/Batt Adapter Cable.
Li-ION Batt may be used in place of Batt Adapter
portion of DTV IEEE 1394 w/Batt Adapter Cable.
SONY PD100 (Continued)

SPECIFICATIONS

TAPE: Mini DVCAM Cassette
TAPE LENGTH: 40 min
SENSING AREA: 1/4-in Color CCD (three) (5.08mm Horizontal, 3.81mm Vertical, 6.35mm Diagonal)
VIEWFINDER: Color
LCD: Color, 3.5 in
ZOOM: 12X, 48X Digital Zoom
FOCAL LENGTH: 4.3mm to 51.6mm
APERTURE: f/1.6-2.6 - f/11
MICROPHONE: Built-in Stereo Electret Condenser
AUDIO: 16-Bit at 48KHz
MINIMUM ILLUMINATION: 4 Lux at f/1.6
POWER: 7.2V Batt
  8.4V DC IN
BATT LIFETIME: ~60 min
BODY WEIGHT: 2.5 lb
BATT WEIGHT: 0.41 lb

WIDE ANGLE CONVERTER

CONVERSION: 0.7X
CONVERTED FOCAL LENGTH: 3.01mm to 36.2mm
WEIGHT: 0.53 lb

LENS DATA

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<thead>
<tr>
<th>Lens</th>
<th>Zoom Ratio</th>
<th>Approximate Field of View</th>
<th>Filter Size</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Horizontal</td>
<td>Vertical</td>
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<tr>
<td>4.3-51.6mm</td>
<td>12:1</td>
<td>61.1°-5.6°</td>
<td>47.8°-4.2°</td>
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<tr>
<td>w/Wide Conversion Lens</td>
<td>12:1</td>
<td>80.3°-8.0°</td>
<td>64.7°-6.0°</td>
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<tr>
<td>3.0-36mm</td>
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SONY PD100 (Continued)

NOMENCLATURE (Continued)

1. Accessory Shoe
2. Focus Ring
3. Tape Transport pbs
   - Stop (stop)
   - Rew (rewind)
   - Play (playback)
   - Ff (fast forward)
   - Pause (pause)
   - Rec (record)
4. Zoom Control
5. Tc Reset pb
6. Viewfinder
7. Display Window
8. Focus sw
9. Push Auto pb
10. Memory Release pb (not visible)
11. Built-in Microphone
12. Rec Lamp
13. Remote Sensor
SONY PD100 (Continued)

NOMENCLATURE (Continued)

1. Cassette Eject
2. Zoom Control
3. Cassette Compartment
4. MIC PLUG–IN Pwr
5. Wide Conversion Locking Collar
6. Wide Conversion Lens
7. S VIDEO Jack
8. AUDIO/VIDEO Jack
9. Headphone Jack
10. LANC Jack
11. DV IN/OUT Jack
SONY PD100 (Continued)

NOMENCLATURE (Concluded)

1. REC pb
2. PAUSE pb
3. STOP pb
4. Frame by Frame Reverse pb
5. PLAY pb
6. REW pb
7. REW Search pb
8. DATA CODE pb
9. SEARCH Mode pb
10. DISPLAY pb
11. PHOTO pb
12. VTR SELECT
13. START/STOP pb
14. ZERO SET MEMORY pb (not used)
15. Zoom Controls
16. FF Search pb
17. FF pb
18. Frame by Frame FF pb
19. SLOW pb
20. X2 pb
21. AUDIO DUB pb

jsc48037_028.cnv
### SONY PD100 (Continued)

#### NOMINAL MENU SETTINGS

##### CAMR MODE

<table>
<thead>
<tr>
<th>MANUAL SET</th>
<th>VTR MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTO SHUTTER – ON</td>
<td>VTR SET</td>
</tr>
<tr>
<td>PROG SCAN – OFF</td>
<td>HiFi SOUND – STEREO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAMR SET</th>
<th>LCD/VF SET</th>
<th>TAPE SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>D.ZOOM – OFF (non-default)</td>
<td>LCD B.L. – BRT Normal</td>
<td>AUDIO MODE – FS48K (non-default)</td>
</tr>
<tr>
<td>16:9 WIDE – OFF</td>
<td>LCD COLOR – “center”</td>
<td>MIC LEVEL – AUTO</td>
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<tr>
<td>STEADYSHOT – ON</td>
<td>VF BRIGHT – “center”</td>
<td>[!] REMAIN – ON (non-default)</td>
</tr>
<tr>
<td>AE SHIFT – “center”</td>
<td></td>
<td>DATA CODE – DATE/CAM</td>
</tr>
<tr>
<td>GAIN SHIFT – 0dB</td>
<td></td>
<td>TIME CODE – DF</td>
</tr>
<tr>
<td>FRAME REC – OFF</td>
<td>MEMORY SET</td>
<td>SETUP MENU</td>
</tr>
<tr>
<td>INT REC – OFF</td>
<td>N/A</td>
<td>LTR SIZE – NORMAL</td>
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##### LCD/VF SET

<table>
<thead>
<tr>
<th>CM SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
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##### TAPE SET

<table>
<thead>
<tr>
<th>CM SET</th>
<th>TAPE SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>AUDIO MODE – AUTO</td>
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##### MEMORY SET

<table>
<thead>
<tr>
<th>CM SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
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##### SETUP MENU

<table>
<thead>
<tr>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORLD TIME – 0 HR</td>
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<tr>
<td>BEEP – NORMAL (non-default)</td>
</tr>
<tr>
<td>COMMANDER – ON</td>
</tr>
<tr>
<td>DISPLAY – LCD</td>
</tr>
<tr>
<td>REC LAMP – OFF (non-default)</td>
</tr>
<tr>
<td>COLOR BAR – OFF</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEEP – NORMAL (non-default)</td>
</tr>
<tr>
<td>COMMANDER – ON</td>
</tr>
<tr>
<td>DISPLAY – LCD</td>
</tr>
<tr>
<td>DV EDITING – N/A</td>
</tr>
</tbody>
</table>
SONY PD100 (Continued)

MANUAL SETTINGS

FOCUS

MANUAL FOCUS
PWR – CAMERA
FOCUS sw – MANUAL (√.§ display in viewfinder (LCD))
Zoom – IN to subject
Focus manually
Zoom to desired setting
Begin recording as reqd

TEMP AUTO FOCUS
PUSH AUTO pb – press,hold for temp Auto Focus

SHUTTER

PWR – CAMERA
AUTO LOCK – “center”
SHUTTER SPD pb – press
CONTROL tw – Rotate to select SS from 1/4 to 1/10,000 sec
To exit Shutter Speed:
  SHUTTER SPEED pb – press
  √No SS displayed

WHITE BALANCE

PWR – CAMERA
Camr Settings
  AUTO LOCK – “center”
  WHT BAL pb – press
To set WHT BAL, place white sheet of paper in CC FOV
  (under same lighting conditions)
CONTROL tw – press
White Balance icon ♛ will blink for 2 sec and become steady
To exit WHT BAL:
  WHT BAL – press

APERTURE

PWR – CAMERA
AUTO LOCK – “center”
PROGRAM AE pb – press
√A E displayed
CONTROL tw – press
Adjust aperture as reqd
To exit Aperture:
  PROGRAM AE pb – press
  √No A E displayed
SONY PD100 (Continued)

PD100 TO PD100 VIA FIREWIRE

Config H/W per dwg at right

AVIU
SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO

PLBK CC
PWR – VTR
DISPLAY pb – push
Install source tape. Protect Tab – Slide (red visible)
PLAY pb – push
Cue tape to desired take
PAUSE pb – push

RCD CC
PWR – VTR
DISPLAY pb – push
Install new tape

PLBK CC
MENU pb – push
Sel ETC(OTHERS)/DV EDITING
Perform following for each video segment:
Sel IN to mark beginning of video clip
FF pb – push to move to end of video clip
Sel OUT to mark end of video clip
SONY PD100 (Continued)

**PD100 TO V10 VIA FIREWIRE**

Config H/W per dwg at right

**AVIU**
- SYNC/VIDEO – VIDEO
- HI-Z/75 – 75
- PWR SELECT – LO

**CC**
- PWR – VTR
  - DISPLAY pb – push
  - Install source tape. Protect Tab – Slide (red visible)
  - PLAY pb – push
  - Cue tape to desired take
  - PAUSE pb – push

**V10**
- PWR – ON
  - DISPLAY pb – push
  - Install new tape

**CC**
- MENU pb – push
- Sel ETC(OTHERS)/DV EDITING
  - Perform following for each video segment:
    - Sel IN to mark beginning of video clip
    - FF pb – push to move to end of video clip
    - Sel OUT to mark end of video clip
SONY PD100 (Continued)

PD100 TO V10 VIA ORBITER TV SYSTEM

Config H/W per dwg at right
√Orbiter in async mode

AVIU
SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO

O19(MO58F) √TV PWR – ON

CC
PWR – VTR
DISPLAY pb – push
Install source tape
Protect Tab – Slide (red visible)
PLAY pb – push
Cue tape to desired take
PAUSE pb – push

V10
PWR – ON
DISPLAY pb – push
Install new tape
REC pb – push
PAUSE pb – push

A7
VID OUT MON 1(2) pb – push
IN FLT DECK(MIDDECK) pb – push

Perform following for each video segment:
CC
PAUSE pb – push (To PLAY)
V10
PAUSE pb – push (To REC)

When EDIT segment complete:
CC
PAUSE pb – push (PAUSE)
V10
PAUSE pb – push (PAUSE)
SONY PD100 (Continued)

PD100 TO DSR-25 VTR

Config H/W per dwg at right

L10 (MUX)   √ VTR/CC PWR – on (LED on)
(VTR)  ON/STANDBY pb – push (green LED on)
       INPUT SELECT – DV
       Install new tape

CC
       PWR – VTR
       DISPLAY pb – push
       Install source tape
       Cue tape to desired take
       PAUSE pb – push
       MENU pb – push
       Sel ETC(OTHERS)/DV EDITING

Perform following for each video segment:
   Sel IN to mark beginning of video clip
   FF pb – push to move to end of video clip
   Sel OUT to mark end of video clip

When complete:

L10 (VTR)   INPUT SELECT – VIDEO
       Remove, mark tape
       ON/STANDBY pb – push (red LED on)
       Remove, stow IEEE 1394 female cable
(MUX)   VTR/CC PWR – off (LED off) as reqd
       Reconnect IEEE 1394 male cable to IEEE 1394 connector
SONY PD100 (Concluded)

SINGLE CAMCORDER w/CAMCORDER MICROPHONE

Config H/W per dwg at right

AVIU
SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO

O19(MO58F)
√TV PWR – ON

CC
√Wide Conversion Lens installed
PWR – CAMERA
Tape – Install
√Viewfinder(LCD) displays STBY
Camr Settings
√AUTO LOCK – AUTO LOCK
√FOCUS – AUTO
Multiuse Brkt, Clamp

Lav Mic
ON/OFF – ON

F1(MO52J)
AC UTIL PWR AC1 – ON

Photoflood
ON/OFF – ON
HI/LO – HI

Cabin Lts
Flt Deck(Middeck) – ON
Lts in FOV – Off as reqd
Lt Shades – install as reqd

CC
√Scene Composition
Adjust Camr for best framing
√Audio Quality

TV Pwr Cable (10 ft or 20 ft)
(2293284–504/528–20650–1, 2293284–503/528–20650–3)

Digital CC Vid/Pwr Cable
(SEZ16103275–303)

Loc-Line (w/Clamp)

AC UTIL PWR
AC1
F1(MO52J)
## SONY V10

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<th>Section</th>
<th>Page</th>
</tr>
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<td>V10 FROM MON 2</td>
<td>8-4</td>
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<tr>
<td>RWS VIDEO CABLE SETUP FOR ESP3 UNBERTH, INSTALL</td>
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<td>8-11</td>
</tr>
</tbody>
</table>
SONY V10

V10 FROM MON 1

Config H/W per dwg below

AVIU
SYNC/VIDEO – VIDEO
HI-Z/75 – 75
PWR SELECT – LO

O19 √ TV PWR – ON

V10 PWR – ON
DISPLAY pb – Toggle to display tape counter
Tape – Install
SONY V10 (Continued)

V10 FROM MON 2

Config H/W per dwg below

AVIU
  SYNC/VIDEO – VIDEO
  HI-Z/75 – 75
  PWR SELECT – LO

O19
  TV PWR – ON

V10
  PWR – ON
  DISPLAY pb – Toggle to display tape counter
  Tape – Install

R12
  VPU PWR – ON (LED on)
SONY V10 (Continued)

RWS VIDEO CABLE SETUP FOR ESP3 UNBERTH, INSTALL

1. Config H/W per dwg at right

WARNING
Locate QDs at hatches for ease in locating, disconnecting during hatch closure. Route, restrain cables to prevent loose cable lengths which could entrap crew

Middeck
2. Drag-thru RWS 2 Cable Assy to RWS located in ISS Lab

3. Pwr configured per P/TV118 DOCKED OPERATIONS, dwg USOS 120VDC – V10 VTRs (SODF: PHOTO/TV: SCENES)

V10
4. PWR – ON
SONY V10 (Continued)

RWS V10(A31p) FROM WVS

1. Config H/W per dwg below

WARNING
Locate QDs at hatches for ease in locating, disconnecting during hatch closure. Route, restrain cables to prevent loose cable lengths which could entrap crew.

If V10:
2. √ Pwr configured per P/TV121 DOCKED OPERATIONS, dwg USOS 120VDC – V10 VTRs (SODF: ISS PTV: SCENES)
3. PWR (RWS 1, RWS 2) – ON

If A31p:
4. √ Drag-Thru Cable connected to A31p Video Adapter
5. √ PWR (two) – ON
6. Sel 'Station Apps : COSS Apps : Video Converter'
7. √ 'Video Converter' window displayed
8. Sel 'Set Properties'
9. √ 'Video Settings' window displayed
10. Format: – NTSC
11. Close 'Video Settings' window
12. Sel 'Local Full Screen'
13. Press 'ESC' or 'W' to minimize display as reqd
SONY V10 (Continued)

SPECIFICATIONS

TAPE: Mini DVCAM Cassette
TAPE LENGTH: 40 min
CD: Color, 5.5 in
AUDIO: 16 bit at 48 KHz
PWR: 7.2V Batt
  8.4V DC IN
BATT LIFETIME: ~60 min w/LCD closed
  ~30 min w/LCD open
BODY WEIGHT: 2.00 lb
BATT WEIGHT: 0.41 lb
SONY V10 (Continued)

NOMENCLATURE

1. REC ORG TC Lamp
2. REC ORG TC pb
3. TC Reset pb
4. DISPLAY pb
5. AUDIO DUB pb
6. REC (recording) pb and Lamp
7. SLOW pb
8. PAUSE pb
9. PLAY (playback) pb
10. FF (fast Forward) pb
11. STOP pb
12. REW (rewind) pb
13. LCD Screen
14. POWER sw
15. MENU pb, Control dial
16. AUDIO Input/Output Jacks (R,L)
17. RFU DC OUT Jack
18. VIDEO Input/Output Jack
19. S VIDEO Input/Output Jack
20. LCD BRIGHT pb
21. Speaker
22. Volume pb
23. Headphone Jack
24. EJECT sw
25. Remote Sensor
26. Power Lamp
SONY V10 (Continued)

NOMENCLATURE (Concluded)

1. PUSH OPEN pb
2. EDITOR COVER RELEASE
3. DV IN/OUT Jack
4. BATT Release
5. Batt Adapter
SONY V10 (Continued)

NOMINAL MENU SETTINGS

CMD – VTR4
HiFi SOUND – STEREO
AUDIO MODE – FS48K (non-default)
TIME CODE – DF
BEEP – ON
AUDIO MIX – “left” (ST1)
CM SEARCH – ON
DATA CODE – DATE/CAM
LCD COLOR – “center”
LCD HUE – “center”
DISPLAY – LCD
JOG AUDIO – OFF
CLOCK SET – set to GMT
SONY V10 (Concluded)

V10 TO V10 VIA FIREWIRE

Config H/W per dwg at right

AVIU
  SYNC/VIDEO – VIDEO
  HI-Z/75 – 75
  PWR SELECT – LO

PLBK V10
  PWR – ON
  DISPLAY pb – push
  Install source tape. Protect Tab – Slide (red visible)
  PLAY pb – push
  Cue tape to desired take
  PAUSE pb – push

RCD V10
  PWR – ON
  DISPLAY pb – push
  Install new tape
  REC pb – push
  PAUSE pb – push

Perform following for each video segment:

PLBK V10
  PAUSE pb – push (To PLAY)

RCD V10
  PAUSE pb – push (To REC)

When EDIT segment complete:

PLBK V10
  PAUSE pb – push (PAUSE)

RCD V10
  PAUSE pb – push (PAUSE)
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PORTABLE MONITORS

PGSC VIDEO OVERLAY

PGSC

1. √PGSC Pwr – ON

2. Connect VID IN/OUT Cable to PGSC VID IN port
   (i.e., port w/Camr symbol next to Pwr port)

3. Connect appropriate hardware from video source to VID IN/OUT Cable depending on desired video source per table below

<table>
<thead>
<tr>
<th>Video Source</th>
<th>Hardware (part #)</th>
<th>From</th>
<th>To</th>
<th>Cable Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAYLOAD/DTV</td>
<td>•AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>•L10A1 VTR OUT</td>
<td>•Vid In/Out cbl</td>
<td>•BNC - RCA</td>
</tr>
<tr>
<td>Monitor 1(2) (option 1)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED3311493-302/303) •AVIU Video Cable Assy (SEZ33114239-301)</td>
<td>•Mon/J3</td>
<td>•AVIU/J4</td>
<td>•Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>•AVIU/J5</td>
<td>•Vid In/Out cbl</td>
</tr>
<tr>
<td>Monitor 1(2) (option 2)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED3311493-302/303) •Balanced Video Cable (SED33105778-301) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>•Mon/J3</td>
<td>•AVIU/J4</td>
<td>•Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>•AVIU/J6</td>
<td>•Bal/Unbal xfmr</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>•Balanced Video cbl</td>
<td>•AVIU-CC Video cbl</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>•Bal/Unbal Xfmr</td>
<td>•Vid In/Out cbl</td>
</tr>
<tr>
<td>Monitor 1(2) (option 3)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •AVIU (SED3311493-302/303) •AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>•Mon/J3</td>
<td>•AVIU/J4</td>
<td>•Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>•AVIU/J7</td>
<td>•Vid In/Out cbl</td>
</tr>
<tr>
<td>Monitor 1(2) (option 4)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303) •Bal/Unbal Xfmr (SED39124190-301) •AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>•Mon/J3</td>
<td>•Bal/Unbal Xfmr</td>
<td>•Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>•Vid In/Out cbl</td>
</tr>
</tbody>
</table>
## PORTABLE MONITORS (Continued)

### PGSC VIDEO OVERLAY (Concluded)

<table>
<thead>
<tr>
<th>Video Source</th>
<th>Hardware (part #)</th>
<th>From</th>
<th>To</th>
<th>Cable Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISS</td>
<td>• VPU Patch Cable (SED39136025-301)</td>
<td>• VPU FROM ISS</td>
<td>• Bal/Unbal Xfmr</td>
<td>• Plug - Twinax</td>
</tr>
<tr>
<td></td>
<td>• Bal/Unbal Xfmr (SED39124190-301)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>• Bal/Unbal Xfmr</td>
<td>Vid In/Out cbl</td>
<td>• BNC - RCA</td>
</tr>
<tr>
<td>Spare 1 (SSV)</td>
<td>• SSV to PDIP/CIP Cable (SED16103246-301)</td>
<td>• L11A2 PDIP/J107</td>
<td>• Bal/Unbal Xfmr</td>
<td>• Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td>• Bal/Unbal Xfmr (SED39124190-301)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>• Bal/Unbal Xfmr</td>
<td>Vid In/Out cbl</td>
<td>• BNC - RCA</td>
</tr>
<tr>
<td>WVS</td>
<td>• AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>• R12A2 WIB XCVR1(2) UNBAL</td>
<td>Vid In/Out cbl</td>
<td>• BNC - RCA</td>
</tr>
<tr>
<td>PD100 Camc (option 1)</td>
<td>• PD100 A/V Adapter Cable (SEZ16103275-301)</td>
<td>• PD100 A/V port</td>
<td>• RCA-RCA cbl (via female adapter)</td>
<td>• Stereo - RCA</td>
</tr>
<tr>
<td></td>
<td>• RCA - RCA Cable (SED39122260-314)</td>
<td>• A/V adapter</td>
<td>Vid In/Out cbl</td>
<td>• RCA - RCA</td>
</tr>
<tr>
<td>PD100 Camc (option 2)</td>
<td>• Y-C Cable (SED33104816-301)</td>
<td>• PD100 S-Video port</td>
<td>Vid In/Out cbl</td>
<td>• S-Video - S-Video</td>
</tr>
</tbody>
</table>

4. Configure video source
5. Double-click Shuttle Apps > Video Overlay
6. \(\sqrt{\text{Video overlay displayed}}\)
   
   * If image not displayed on PGSC: *
   * Press 'S' *
   * \(\sqrt{\text{VIDEO}}\) selected *
   * Sel OK *

[Diagram of video source connections]
PORTABLE MONITORS (Continued)

**A31p VIDEO CONVERTER**

A31p 1. √A31p Pwr – ON

2. Connect A31p Video Adapter to A31p VID IN “

3. Connect appropriate hardware from video source to A31p Video Adapter Cable depending on desired video source per table below

<table>
<thead>
<tr>
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<th>Hardware (part #)</th>
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<td>•A31p Video Adapter</td>
<td>BNC - RCA</td>
</tr>
<tr>
<td>Monitor 1(2) (option 1)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303)</td>
<td>•Mon/J3</td>
<td>•AVIU/J4</td>
<td>Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td>•AVIU (SED33111493-302/303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>•AVIU Video Cable Assy (SEZ33114239-301)</td>
<td>•AVIU/J5</td>
<td>•A31p Video Adapter</td>
<td>Unique - RCA</td>
</tr>
<tr>
<td></td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>•AVIU (SED33111493-302/303)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>•Balanced Video Cable (SED33105778-301)</td>
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<tr>
<td></td>
<td>•Bal/Unbal Xfmr (SED39124190-301)</td>
<td></td>
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<tr>
<td></td>
<td>•AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
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<tr>
<td>Monitor 1(2) (option 2)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303)</td>
<td>•Mon/J3</td>
<td>•AVIU/J4</td>
<td>Circ - Twinax</td>
</tr>
<tr>
<td></td>
<td>•AVIU (SED33111493-302/303)</td>
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<td></td>
<td>•Balanced Video Cable (SED33105778-301)</td>
<td>•Bal/Unbal Xfmr</td>
<td>•A31p Video Adapter</td>
<td>BNC - RCA</td>
</tr>
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<td>•Bal/Unbal Xfmr (SED39124190-301)</td>
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<td></td>
<td>•AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
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<tr>
<td>Monitor 1(2) (option 3)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303)</td>
<td>•Mon/J3</td>
<td>•AVIU/J4</td>
<td>Circ - Twinax</td>
</tr>
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<td></td>
<td>•AVIU (SED33111493-302/303)</td>
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<td></td>
<td>•AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>•AVIU/J7</td>
<td>•A31p Video Adapter</td>
<td>BNC - RCA</td>
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<td>Monitor 1(2) (option 4)</td>
<td>•Monitor to AVIU/CM Cable (20ft) (SED39122074-303)</td>
<td>•Mon/J3</td>
<td>•Bal/Unbal Xfmr</td>
<td>Circ - Twinax</td>
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<tr>
<td></td>
<td>•Bal/Unbal Xfmr (SED39124190-301)</td>
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<tr>
<td></td>
<td>•AVIU-CC Video Cable (15ft) (SED39122269-301)</td>
<td>•Bal/Unbal Xfmr</td>
<td>•A31p Video Adapter</td>
<td>BNC - RCA</td>
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</table>
# PORTABLE MONITORS (Continued)

## A31p VIDEO CONVERTER (Concluded)

<table>
<thead>
<tr>
<th>Video Source</th>
<th>Hardware (part #)</th>
<th>From</th>
<th>To</th>
<th>Cable Connections</th>
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<tbody>
<tr>
<td>ISS</td>
<td>•VPU Patch Cable</td>
<td>VPU FROM ISS</td>
<td>Bal/Unbal Xfmr</td>
<td>Plug - Twinax</td>
</tr>
<tr>
<td></td>
<td>(SED39136025-301)</td>
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<tr>
<td></td>
<td>•Bal/Unbal Xfmr</td>
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<tr>
<td></td>
<td>(SED39124190-301)</td>
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<tr>
<td></td>
<td>•AVIU-CC Video Cable (15ft)</td>
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<td></td>
<td>(SED39122269-301)</td>
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<tr>
<td>Spare 1 (SSV)</td>
<td>•SSV to PDIP/CIP Cable</td>
<td>L11A2 PDIP/J107</td>
<td>Bal/Unbal Xfmr</td>
<td>Circ - Twinax</td>
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<tr>
<td></td>
<td>(SED16103246-301)</td>
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<td></td>
<td>•Bal/Unbal Xfmr</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(SED39124190-301)</td>
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</tr>
<tr>
<td></td>
<td>•AVIU-CC Video Cable (15ft)</td>
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<td></td>
<td>(SED39122269-301)</td>
<td></td>
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<tr>
<td>WVS</td>
<td>•AVIU-CC Video Cable (15ft)</td>
<td>R12A2 WIB XCVR1(2)</td>
<td>A31p Video Adapter</td>
<td>BNC - RCA</td>
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<tr>
<td></td>
<td>(SED39122269-301)</td>
<td>UNBAL</td>
<td></td>
<td></td>
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<tr>
<td>PD100 Camc</td>
<td>•PD100 A/V Adapter Cable</td>
<td>PD100 A/V port</td>
<td>RCA-RCA cbl (via female adapter)</td>
<td>Stereo - RCA</td>
</tr>
<tr>
<td>(option 1)</td>
<td>(SEZ16103275-301)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>•RCA - RCA Cable</td>
<td>A/V adapter</td>
<td>A31p Video Adapter</td>
<td>RCA - RCA</td>
</tr>
<tr>
<td></td>
<td>(SED39122260-314)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>PD100 Camc</td>
<td>•Y-C Cable</td>
<td>PD100 S-Video port</td>
<td>A31p Video In port (No A31p Video Adapter)</td>
<td>S-Video - S-Video</td>
</tr>
<tr>
<td>(option 2)</td>
<td>(SED33104816-301)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Configure H/W per dwg at right

5. Double-click Shuttle Apps > Video Overlay

6. √'Video Converter' window displayed

7. Sel 'Local Full Screen'
   Press 'ESC' or 'W' key to minimize display as reqd
PORTABLE MONITORS (Concluded)

VPU REPEATER
PORTABLE MONITORS (Continued)

SONY LCD SPECIFICATIONS

IMAGE AREA: 3 in
BATT: 6 AA
BATT VOLTAGE: 9V
DIMENSIONS: 1.5 in (L) X 4 in (W) X 3.25 in (H)

SONY LCD NOMENCLATURE

1. DC IN (6V)
2. Color Cntl
3. Huc Cntl
4. Bright Cntl
5. Pwr sw
6. Volume Cntl
7. Ear Phone
8. BNC Adapter
CCTV

SPECIFICATIONS

CTVC (SOLID STATE)
- EFFECTIVE IMAGE SIZE: 6.54mm X 8.62mm
- PWR: 43.3W at 32V (all motors on)
- ZOOM SPEED: End-to-End 8 sec
- FOCUS SPEED: End-to-End 22 sec
- IRIS: Auto(Manual) Close ~7 sec
- WEIGHT: 18.9 lb
- DIMENSION: 17” (L) x 6.4” (W) x 6.3” (H)

ITVC
- EFFECTIVE IMAGE SIZE: 6.54mm X 8.62mm
- PWR: 33.6W at 32V
- ZOOM SPEED: End-to-End 8 sec
- FOCUS SPEED: End-to-End 22 sec
- IRIS: Auto close ~6 sec
- WEIGHT: 17 lb
- DIMENSION: 19.6” (L) (Includes 3.2” Lens) x 6.4” (W) x 6.3” (H)
### LENS DATA

<table>
<thead>
<tr>
<th>Lens/Focal Length</th>
<th>Aperture Range</th>
<th>Zoom Ratio</th>
<th>Minimum Focus Distance (ft)</th>
<th>Approximate Field of View (FOV)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CTVC (COLOR)</strong>*</td>
<td>f/1.7 to f/16 (T2-T360)</td>
<td>8:1</td>
<td>1.0</td>
<td>75°-10°</td>
</tr>
<tr>
<td>5.5mm-47mm</td>
<td></td>
<td></td>
<td></td>
<td>61°-8°</td>
</tr>
<tr>
<td><strong>ITVC (B/W)</strong>*</td>
<td>f/1.7 to f/16 (T2-T360)</td>
<td>15:1</td>
<td>3.0</td>
<td>53°-4°</td>
</tr>
<tr>
<td>8.5mm-127mm</td>
<td></td>
<td></td>
<td></td>
<td>41°-3°</td>
</tr>
</tbody>
</table>

### ILLUMINATOR DATA

<table>
<thead>
<tr>
<th>Color</th>
<th>LEDs</th>
<th>LED Deg Angles</th>
<th>Camr Type</th>
<th>Locations</th>
<th>Modes</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>120</td>
<td>8°/22°/8° *</td>
<td>ITVC</td>
<td>Bulkhead, Elbow, Keel</td>
<td>ON/OFF</td>
<td>cb CAMR HTR</td>
</tr>
<tr>
<td></td>
<td>120</td>
<td>22°</td>
<td>ITVC</td>
<td>Bulkhead, Elbow, Keel</td>
<td>ON/OFF</td>
<td>cb CAMR HTR</td>
</tr>
<tr>
<td>White</td>
<td>40</td>
<td>44°</td>
<td>CTVC</td>
<td>Wrist</td>
<td>ON/OFF</td>
<td>cb CAMR HTR</td>
</tr>
<tr>
<td></td>
<td>180</td>
<td>20°</td>
<td>CTVC/ITVC</td>
<td>Bulkhead, Elbow, Keel</td>
<td>ON/OFF</td>
<td>cb PAN/TILT HTR</td>
</tr>
<tr>
<td></td>
<td>156</td>
<td>29°</td>
<td>Videospection</td>
<td>Keel</td>
<td>156 LED/84 LED/30 LED/OFF</td>
<td>SSP/CAMR HTR sw</td>
</tr>
</tbody>
</table>

*Three rings of LEDs:
  - Inner, outer rings – 8° LEDs
  - Middle ring – 22° LEDs
AVIU OVERVIEW

- **J1**
  - Unbalanced Video Input (Output)
- **J2**
  - 28V Input
  - Sync Input
  - Balanced Video Output
- **J3**
  - 8.4V Power Output if HI/LO sw – LO
  - Unbalanced Video Input (Output)
- **J4**
  - Balanced Video Input
- **J5**
  - 12V Power Output if HI/LO sw – HI
  - Unbalanced Video Input (Output)
  - Unbalanced Video Output (of J4 Balanced Input) if SYNC/VIDEO sw – VIDEO
  - Sync Output if SYNC/VIDEO sw – SYNC
- **J6**
  - Balanced Video Signal Output (turnaround from J4)
- **J7**
  - Unbalanced Video Output (of J4 Balanced Input) if SYNC/VIDEO sw – VIDEO
  - Sync Output if SYNC/VIDEO sw – SYNC

**SYNC/VIDEO sw**
- VIDEO – Unbalanced Video Output to J5, J7 from J4 Input
- SYNC – Sync Output to J5 (J7) from J2 input

**HI-Z/75 sw**
- 75 – For nominal video output at J1
- HI-Z – For video output at J1 to a terminal source (i.e., PGSC, PD100, or V10)

**HI/LO sw**
- HI – 12V output at J5
- LO – 8.4V output at J3
CCTV (Continued)

TVCU

TV CONTROLLER UNIT
P/N SED39126161–301
S/N 1001

PGSC

J6

J1 J2

CAMCORDER VIDEO OUT
LCD OUTPUT

J1

J2

VIDEO TO CTVM
CAMCORDER VIDEO OUT
PANEL 019–POWER

J3

J4

J5

S1

CENTERLINE VIDEO/SYNC

CAMCORDER VIDEO IN

CENTERLINE

CAMCORDER

PGSC

jsc48037_045.cnv
CCTV (Continued)
PHOTO FLOODLIGHT

1. Accessory Foot (Photoflood)
2. AC Connector
3. 2A Fuse
4. ON/OFF sw
5. HI/LO sw
No Picture on Monitor 1(2)

Nominal Config:
(R14:D)
- cb MNA TV C AFT BAY CAMR/PAN-TILT – cl
- CAMR HTR – cl
- PAN-TILT HTR – cl
- cb MNA TV CONTR UNIT – cl
- cb MNA TV MON 1 – cl
- cb MNB TV A FWD BAY CAMR/PAN-TILT – cl
- CAMR HTR – cl
- PAN-TILT HTR – cl
- cb MNB TV CONTR UNIT – cl
- cb MNB TV MON 2 – cl
- cb MNC TV B KEEL/EVA CAMR/PAN-TILT – cl
- CAMR HTR – cl
- PAN-TILT HTR – cl
- cb MNC TV CAB – cl
(R14:E)
- cb MNA D STBD RMS TV CAMR/PAN-TILT – cl
- CAMR HTR – cl
- PAN-TILT HTR – cl
- cb MNB RMS PORT RMS TV CAMR/PAN-TILT – cl
- CAMR HTR – cl
- PAN-TILT HTR – cl
(A7U)
- TV PWR CNTL – CMD
- TV PWR CONTR UNIT – MNA(MNB)
- TV SYNC – NORM
- TV DNLK – ENA
(A3)
- MON 1(2) SOURCE – as reqd
- SYNC – INT
- PWR – ON
- MODE – AUTO
- GUNS – R,G,B – ON

1. LVPS = low voltage pwr supply
2. Current SOURCE and INPUT recorded here will be used in subsequent mal blocks

10.1 NO MONITOR PICTURE/MENU

1. MON 1(2) LVPS STATUS
   (A3) MON 1(2)
   Green LED lit?
   No

2. Record current MON 1(2) Source and Video Input Device if possible
   (A3)
   MON 1(2) menu
   • Record SOURCE:
   (A7U)
   • VID OUT MON 1(2) (DNLK) pb – push
   • Record VID INPUT:
   Menu visible?
   Yes
   No

3. Try to bring up Menu
   (A3)
   MON 1(2)
   • FUNCTION – →
   • FUNCTION – ←
   Menu visible?
   Yes
   No

4. Does cursor move?
   Yes
   No

5. Send test pattern to MON 2(1)
   (A3)
   MON 2(1) menu
   • SOURCE – PNL
   (A7U)
   • VID OUT MON 2(1) pb – push
   • VID IN TEST pb – push
   Test pattern on MON 2(1)?
   Yes
   No

6. Which menu SOURCE is currently in use:
   (A3)
   MON 2(1) menu
   • SOURCE – PNL
   • DNLK SOURCE
   (A3)
   MON 2(1) menu
   • SOURCE – DNLK
   Picture on MON 2(1)?
   No
   Yes

8. VCU OK
   22

---

08/12/04 10-9 P/TV/118/FIN
3 INPUT used here was recorded in block 2

4 Video Input Device is the device connected to INPUT which was recorded in block 2

5 All TV config in VCU will be lost. All camrs must be pwrd up and reselected

6 Standalone MON 1(2) ops may be possible on inputs C,D, or RGB if connected and also if input SOURCE generates its own sync

9 Try MON 2(1) PNL SOURCE
   (A3) MON 2(1) menu • \SOURCE – PNL
   (A7U) • VID OUT MON 2(1) pb – push • VID IN INPUT pb – push
   Selected picture on MON 2(1)?
   Yes
   No

10 Send test pattern to MON 1(2)
   (A3) MON 1(2) menu • \SOURCE – PNL
   (A7U) • VID OUT MON 1(2) pb – push • VID IN TEST pb – push
   Test pattern on MON 1(2)?
   Yes
   No

11 • \MON 1(2) PNL SOURCE
   (A3) MON 1(2) menu • \SOURCE – PNL
   (A7U) • TV SYNC – REVERSE • VID OUT MON 1(2) pb – push • VID IN TEST pb – push
   Test pattern on MON 1(2)?
   No
   Yes

12 Switch SYNC generators
   (A7U) • TV PWR CNTL – MNB(MNA)
   • TV PWR CONTR UNIT – MNB(MNA)
   • Wait 10 sec • VID OUT MON 1(2) pb – push • VID IN TEST pb – push

13 Try other VCU pwr source
   (A7U) • TV PWR RELAY OR RELAY DRIVER IN RCU

14 VIDEO INPUT DEVICE OR VSU INPUT FAILURE

15 SYNC GEN FAILURE

16 Continue on SYNC REVERSE

17 Which Video device used for input:
   STANDARD ORBITER CCTV
   CAMR (NOT CAMCORDER)
   CAMCORDER
   ORBITER VTR

18 FAILED PWR RELAY OR RELAY DRIVER IN RCU

19 VCU FAILURE; LOSS OF ALL TV

20 Continue nominal ops on MNB(MNA)

21 • \MCC
Brightness and contrast controls may need to be adjusted to see menu

7

SOURCE is the source recorded in block 2

8
CCTV 10.1 (Cont)

39 Try another input for DNLK
(A7U)
- VID OUT DNLK pb – push
- VID IN TEST pb – push

Test pattern on MON 1(2)?

Yes

40 Try original input to MON 1(2)
PNL SOURCE
(A7U)
- VID OUT MON 1(2) pb – push
- VID IN TEST pb – push
(A3)
MON 1(2) menu
- SOURCE – PNL

Picture on MON 1(2)?

No

Yes

41 VIDEO INPUT DEVICE OR VSU INPUT FAILURE

42 INPUT Y TO DNLK CROSSPOINT FAILED IN VSU

43 Select PNL SOURCE for MON 1(2)

(A3)
MON 1(2) menu
- SOURCE – PNL
(A7U)
- VID OUT MON 1(2) pb – push
- VID IN TEST pb – push

Test pattern on MON 1(2)?

No

Yes

44 Which Video device used for input:
- STANDARD ORBITER CCTV CAMR (NOT CAMCORDER)
- CAMCORDER
- ORBITER VTR

45 Continue nominal ops with other inputs for dnlk

46 MON 1(2) SIGNAL PROCESSING CIRCUIT FAILURE. MON 1(2) LOST

47 MON 1(2) DNLK INPUT OR VSU MON 1(2) DNLK OUTPUT LOST

55

48 Use MON 2(1)

49 Continue MON 1(2) ops on other sources

(A3)
MON 1(2) menu
- MODE – AUTO
SOURCE is the source recorded in block 2.

Picture will be B&W with possible flicker.
If DNLK in progress, selecting test pattern to DNLK not reqd. MCC will advise on DNLK status.

1. Try another input to MON 1(2) PNL SOURCE
   (A7U)
   - VID OUT MON 1(2) pb – push
   - VID IN TEST pb – push
   Test pattern on MON 1(2)?

2. Select DNLK SOURCE for MON 1(2)
   (A7U)
   - MCC for DNLK status
   If reqd:
   - VID OUT DNLK pb – push
   - VID IN TEST pb – push
   (A3)
   MON 1(2) menu
   - SOURCE – DNLK
   Picture on MON 1(2)?

3. MON 1(2) SIGNAL PROCESSING CIRCUIT FAILURE. MON 1(2) LOST

4. Use MON 2(1)
Recovery of video source device may be possible

Inputs C,D may be useable without SPLIT
10.2 NO CAMR VIDEO

No Camr Video

Nominal Config:
(R14:D)
- cb MNA TV C AFT
  - BAY CAMR/PAN-TILT – cl
  - CAMR HTR – cl
  - PAN-TILT HTR – cl
- cb MNA TV CONTR UNIT – cl
- cb MNA TV MON 1 – cl
- cb MNB TV A FWD
  - BAY CAMR/PAN-TILT – cl
  - CAMR HTR – cl
  - PAN-TILT HTR – cl
- cb MNB TV CONTR UNIT – cl
- cb MNB TV MON 2 – cl
- cb MNC TV B KEEL/EVA CAMR/PAN-TILT – cl
  - CAMR HTR – cl
  - PAN-TILT HTR – cl
- cb MNC TV CAB – cl
(R14:E)
- cb MNA D STBD
  - RMS TV CAMR/PAN-TILT – cl
  - CMR HTR – cl
  - PAN-TILT HTR – cl
- cb MNB RMS PORT
  - RMS TV CAMR/PAN-TILT – cl
  - CAMR HTR – cl
  - PAN-TILT HTR – cl
- cb MNC TV CAB – cl
(A7U)
- TV PWR CNTL – CMD
- TV PWR CONTR UNIT – MNA(MNB)
- TV SYNC – NORM
- TV DNLK – ENA
(A3)
- MON 1(2)
  - SOURCE – as reqd
  - SYNC – INT
  - MODE – AUTO
  - GUNS – R,G,B – ON

1. Send test pattern to MON 1(2)
(A3)
- MON 1(2) menu
  - SOURCE – PNL

(A7U)
- VID OUT MON 1(2) pb – push
- VID IN TEST pb – push

Test pattern on MON 1(2)?

2. Location of affected Camr:
- CABIN – Camcorder
- CABIN – Standard orbiter CCTV Camr (not Camcorder)

3. Cycle MIDDLE(FLT DECK) Camr pwr
(M058F(O19))
- TV PWR – OFF
- Wait 10 sec
- TV PWR – ON

(A7U)
- VID OUT MON 1(2) pb – push
- VID IN MIDDLE (FLT DECK) pb – push
- CAMR CMD ALC pb – push
- CAMR CMD AVG pb – push

Picture on MON 1(2)?

4. Cycle Camr pwr
(A7U)
- (Aff Camr) TV CAMR PWR – OFF
- Wait 10 sec
- (Aff Camr) TV CAMR PWR – ON
- VID OUT MON 1(2) pb – push
- VID IN (Aff Camr) pb – push
- CAMR CMD ALC pb – push
- CAMR CMD AVG pb – push

Picture on MON 1(2)?

5. Cycle RMS Camr pwr
- TV CAMR PWR RMS – OFF
- Wait 10 sec
- TV CAMR PWR RMS – ON
- VID OUT MON 1(2) pb – push
- VID IN (PORT) RMS pb – push
- CAMR CMD ALC pb – push
- CAMR CMD AVG pb – push

Picture on MON 1(2)?

6. CAMR LOST

7. ALC LOGIC LOCKUP IN AFFECTED CAMR

8. Continue nominal ops

1. KEEL Camr pwr control and KEEL Camr Video inputs are mission specific
If currently selected to WRIST(ELBOW) then select ELBOW (WRIST)

9 Try alternate TV cable
   (A7U)
   • VID OUT MON 1(2) pb – push
   • VID IN MIDDECK (FLT DECK) pb – push
   (MO58F(O19))
   • TV PWR – OFF
   • Replace Camr cable
   • TV PWR – ON
   (On Camr)
   • ALC - AVG
   Picture on MON 1(2)?
   Yes
   No

10 Switch to alternate RMS Camr
   (A7U)
   • RMS CAMR PORT – ELBOW(WRIST)
   • Wait 10 sec
   • CAMR CMD ALC pb – push
   • CAMR CMD AVG pb – push
   Picture on MON 1(2)?
   Yes
   No

11 RMS WRIST(ELBOW) CAMR FAILURE

12 CAMR CABLE FAILURE

13 RMS REMOTE VIDEO SWITCHER FAILURE OR VSU RMS INPUT FAILURE

14 RMS ELBOW(WRIST) Camr functional

15 Try alternate TV pnl
   (MO58F(O19))
   (original pnl)
   • TV PWR – OFF
   • Disconnect TV Cable at pnl
   (O19(MO58F))
   (new pnl)
   • TV PWR – OFF
   • Connect cable
   • TV PWR – ON
   (On Camr)
   • ALC - AVG
   Picture on MON 1(2)?
   Yes
   No

16 Both RMS Camrs unusable

17 Try alternate Camr
   (O19(MO58F))
   • TV PWR – OFF
   • Connect alternate Camr
   • TV PWR – ON
   (On Camr)
   • ALC - AVG
   Picture on MON 1(2)?
   Yes
   No

18 ORIGINAL TV PANEL FAILURE

19 TV CAMR FAILURE

20 INDEPENDENT DOUBLE FAILURE

14 RMS ELBOW(WRIST) Camr functional

17 Try alternate Camr
   (O19(MO58F))
   • TV PWR – OFF
   • Connect alternate Camr
   • TV PWR – ON
   (On Camr)
   • ALC - AVG
   Picture on MON 1(2)?
   Yes
   No

18 ORIGINAL TV PANEL FAILURE

19 TV CAMR FAILURE

20 INDEPENDENT DOUBLE FAILURE
1. Replacement tape should have good video recorded on it
2. V10 requires dump thru pnl O19(MO58F)
3. √MCC if alternate equip avail
4. IFM for AVIU(cables) may be possible

No VTR Playback Video

Nominal Config:
(R14:D)
- cb MNA TV CONTR UNIT – cl
- cb MNA TV MON 1 – cl
- cb MNB TV CONTR UNIT – cl
- cb MNB TV MON 2 – cl
- cb MNC TV CAB – cl
(A7U)
- TV PWR CNTL – CMD
- TV PWR CONTR UNIT – MNA(MNB)
- TV SYNC – NORM
- TV DNLK – ENA
(A3)
- MON 1(2) SOURCE – as reqd
- SYNC – INT
- MODE – AUTO
- GUNS – R,G,B – ON
(V10)
- PWR – ON

1. Send test pattern to MON 1(2)
   (A3)
   - MON 1(2) menu
   - SOURCE – PNL
   (A7U)
   - VID OUT MON 1(2) pb – push
   - VID IN TEST pb – push
   Test pattern on MON 1(2)?
2. Try another tape in V10
   (A7U)
   - Tape – EJECT
   - Change tapes
   - PLAY pb – press
3. Select V10 to MON 1(2)
   (A7U)
   - VID OUT MON 1(2) pb – push
   - VID IN FLT DECK (MIDDECK) pb – push
   Picture on MON 1(2)?
4. FIRST TAPE CONTAINED NO VIDEO
5. Try alternate TV Pwr Cable
   (V10)
   - STOP pb – press
   (O19(MO58F))
   - TV PWR – OFF
   - Replace TV Pwr Cable
   - TV PWR – ON
   (V10)
   - PLAY pb – push
   Picture on MON 1(2)?
6. ORIGINAL TV PWR CABLE FAILURE
7. Continue ops on alternate TV Pwr Cable
8. √MCC
CCTV 10.3 (Cont)

3
\MCC if alternate equip avail

4
IFM for AVIU(cables) may be possible

9
Try alternate PIGMY Cable

(V10)
- STOP pb – push

(O19(M058F))
- TV PWR – OFF
- Replace PIGMY Cable
- TV PWR – ON

(V10)
- PLAY pb – push

Picture on MON 1(2)?

Yes

10
ORIGINAL PIGMY CABLE VID/SYNC/PWR LEG FAILURE

11
- Continue ops on alternate PIGMY Cable

No

12
Try alternate TV pnl

(O19(M058F))
(Original pnl)
- TV PWR – OFF
- Disconnect TV Cable(PIGMY Cable) at pnl

(M058F(O19))
(new pnl)
- TV PWR – OFF
- Connect cable
- TV PWR – ON

(A7U)
- VID OUT MON 1(2) pb – push
- VID IN MIDDECK (FLT DECK) pb – push

Picture on MON 1(2)?

No

13
\MCC

Yes

14
V10 FAILURE

15
ORIGINAL TV PNL FAILURE

16
- Continue ops using alternate TV pnl

17
- Continue ops on alternate PIGMY Cable

3
\MCC if alternate equip avail

4
IFM for AVIU(cables) may be possible
10.4 NO CAMCORDER VIDEO ON COLOR TV MONITOR

1. Send test pattern to MON 1(2)
   - (A3) MON 1(2) menu
     - SOURCE – PNL
   - (A7U) VID OUT MON 1(2) pb – push
     - VID IN TEST pb – push
     - Test pattern on MON 1(2)
     - Yes
     - No

2. Cycle Camcorder pwr
   - MODE – OFF
     - Wait 10 sec
     - MODE – CAMERA
     - Config as reqd
     - Yes
     - No

3. Send Camcorder video to MON 1(2)
   - (A7U) VID OUT MON 1(2) pb – push
     - VID IN FLT DECK (MIDDECK) pb – push
     - Picture on MON 1(2)?
     - Yes
     - No

4. TRANSIENT CAMCORDER FAILURE
   - AVIU OR CABLE FAILURE
     - Yes
     - No

5. Continue normal ops
   - No

Nominal Config:
- (R14:D)
  - cb MNA TV CONTR UNIT – cl
  - cb MNA TV MON 1 – cl
  - cb MNB TV CONTR UNIT – cl
  - cb MNB TV MON 2 – cl
  - cb MNC TV CAB – cl
- (A7U)
  - TV PWR CNTL – CMD
  - TV PWR CONTR UNIT – MNA(MNB)
  - TV SYNC – NORM
  - TV DNLK – ENA
- (A3)
  - MON 1(2) SOURCE – as reqd
  - SYNC – INT
  - PWR – ON
  - MODE – AUTO
  - GUNS – R,G,B – ON
- (PD100)
  - MODE – CAMERA
Video link from Camcorder to orbiter TV pnl should already be connected via Digital CC Vid/Pwr cable, AVIU, and TV Pwr cable when viewing Camcorder video on orbiter color TV monitor.

1. Change out Camcorder Battery Pack
   - (A7U) VID OUT MON 1(2) pb – push
   - VID IN MIDDECK (FLT DECK) pb – push

2. Try powering Camcorder w/orbiter pwr
   - (A7U) VID OUT MON 1(2) pb – push
   - VID IN MIDDECK (FLT DECK) pb – push

3. Picture on MON 1(2)?

4. Change out Camcorder Battery Pack
   - (A7U) VID OUT MON 1(2) pb – push
   - VID IN MIDDECK (FLT DECK) pb – push

5. Try powering Camcorder w/Battery Pack
   - (MO58F(O19)) TV PWR – OFF
   - (PD100) MODE – OFF
   - Remove Digital CC Vid/Pwr Cable
   - Install Battery Pack
   - MODE – CAMERA

6. Camcorder viewfinder/LCD?

7. Camcorder can be used w/Batteries. If orbiter pwr desired, continue troubleshooting to isolate problem

8. Try to pwr other devices from MO58F(O19)
   - (MO58F(O19)) TV PWR – ON

9. Picture on MON 1(2)?

10. Try powering Camcorder w/orbiter pwr
    - (A7U) VID OUT MON 1(2) pb – push
    - VID IN MIDDECK (FLT DECK) pb – push

11. OLD BATTERY PACK DEAD
    - TV PWR – OFF

12. ORIGINAL BATTERY PACK DEAD
    - TV PWR – ON

13. Continue ops on alternate battery pack

14. CAMCORDER FAILURE. CAMCORDER NOT USEABLE

15. CAMCORDER FAILURE. CAMCORDER NOT USEABLE

16. BATTERY PACK DEAD

17. BATTERY PACK DEAD

18. Try to pwr other devices from MO58F(O19)
    - (MO58F(O19)) TV PWR – ON

19. Continue ops on orbiter pwr or try remaining Batteries

20. Other devices receiving pwr?

21. Picture on MON 1(2)?

22. Camcorder can be used w/Batteries. If orbiter pwr desired, continue troubleshooting to isolate problem

23. CAMCORDER FAILURE. CAMCORDER NOT USEABLE
CCTV 10.4 (Cont)

20 AVIU OR CABLE FAILURE

21 Continue troubleshooting w/orbiter TV pwr

(CC)
• PWR – OFF
• Remove Battery pack
• Install CC VID/PWR Cable Battery Pack

22 Try alternate TV Pwr Cable

(A7U)
• VID OUT MON 1(2) pb – push
• VID IN MIDDECK (FLT DECK) pb – push

(PD100)
• MODE – OFF

(MOS58F(O19))
• TV PWR – OFF
• Replace TV Pwr Cable
• TV PWR – ON

(PD100)
• MODE – CAMERA

Picture on MON 1(2)?

23 Try alternate TV pnl

(PD100)
• MODE – OFF
• Remove Battery Pack
• Install Digital CC Vid/Pwr Cable

(MOS58F(O19))
(Original pnl)
• TV PWR – OFF
• Disconnect TV Pwr Cable (PIGMY Cable) at pnl

(O19(MOS58F))
(New pnl)
• Connect TV Pwr Cable (PIGMY Cable) to pnl
• TV PWR – ON

(CC)
• MODE – CAMERA

(A7U)
• VID OUT MON 1(2) pb – push
• VID IN MIDDECK (FLT DECK) pb – push

(PD100)
• MODE – OFF

(MOS58F(O19))
• TV PWR – OFF
• Replace PIGMY Cable
• TV PWR – ON

(PD100)
• MODE – CAMERA

Picture on MON 1(2)?

No

24 ORIGINAL TV PWR CABLE FAILURE

Yes

25 Try alternate PIGMY Cable

(A7U)
• VID OUT MON 1(2) pb – push
• VID IN MIDDECK (FLT DECK) pb – push

(PD100)
• MODE – OFF

(MOS58F(O19))
• TV PWR – OFF
• Replace PIGMY Cable
• TV PWR – ON

(PD100)
• MODE – CAMERA

Picture on MON 1(2)?

No

26 Continue ops on alternate TV Pwr Cable

No

27

30 ORIGINAL TV PNL FAILURE

31

√

MCC

Yes

32 Continue ops on alternate PIGMY cable

34

√

MCC

35

33 Continue ops using alternate TV pnl (Batteries)
35 Try alternate AVIU
(A7U)
- VID OUT MON 1(2) pb – push
- VID IN MIDDECK (FLT DECK) pb – push

(PD100)
- MODE – OFF

(MO58F(O19))
- TV PWR – OFF
- Replace AVIU
- TV PWR – ON

(PD100)
- MODE – CAMERA

Picture on MON 1(2)?

Yes

36 ORIGINAL AVIU FAILURE

No

37 Try alternate Digital CC VID/PWR Cable
(A7U)
- VID OUT MON 1(2) pb – push
- VID IN MIDDECK (FLT DECK) pb – push

(PD100)
- MODE – OFF

(MO58F(O19))
- TV PWR – OFF
- Replace Digital CC Vid/Pwr Cable
- TV PWR – ON

(PD100)
- MODE – CAMERA

Picture on MON 1(2)?

Yes

38 Continue ops on alternate AVIU

No

39 \(√\) MCC

40 CAMCORDER VIDEO PORT FAILURE

41 ORIGINAL DIGITAL CC VID/PWR CABLE FAILURE

42 Use alternate Camcorder if video output reqd

43 \(√\) MCC

\(√\) MCC if alternate equip not avail

IFM for AVIU or cables may be possible
Pwr routed to both Camrs at all times and switched inside Camrs. Short occurring in one Camr may cause loss of pwr to both Camrs on RMS. Decision to proceed based on current spikes, if any, and importance of RMS Camrs to remainder of mission.
9 (A7U)
- TV CAMR PWR RMS – ON
- CAMR CMD ALC pb – PEAK

Video on Monitor and cb closed?

10 Elbow Camr operational

8

11 Wrist Camr work in block 3?

Yes

12 Select Wrist Camr

(A7U)
- PORT RMS CAMR – WRIST

(R14:E)
On MCC GO:
- cb MNB RMS PORT RMS
- TV CAMR/PAN-TILT – cl

(A7U)
- CAMR CMD ALC pb – push
- CAMR CMD PEAK pb – push

Video on Monitor and cb closed?

13 WIRING
FAILURE OR CAMR PWR RELAY FROZEN. BOTH RMS CAMRS LOST

14 WRIST CAMR OPERATIONAL. ELBOW CAMR FAILED

15
- Do not use Elbow Camr

No
CENTERLINE (C/L) CAMR

C/L CAMR INSTALL

1. ODS C/L Camr Config
   L12 (SSP 2) \( \sqrt{ } \) C/L CAM PWR – OFF
   R12 (VPU) \( \sqrt{ } \) SEC C/L Cap installed
   \( \sqrt{ } \) Green Jumper – SEC C/L
   \( \sqrt{ } \) VPU PWR – ON (LED on)

MF43C Unstow PRI C/L Camr, PRI C/L TV Camr Harness Assy

NOTE
When connecting ODS C/L TV Camr Harness Assy, \( \sqrt{ } \) pins to socket connection

ODS \( \sqrt{ } \) ODS C/L Camr Brkt mounted securely
   Mount PRI C/L Camr to ODS C/L Camr Brkt
   \( \sqrt{ } \) Flex Duct attached to Camr brkt
   Config cable per dwg at right

C/L Camr \( \sqrt{ } \) SSF/STS sw – STS

L12 (SSP 1) \( \sqrt{ } \) cb SW PWR 1 (CB2) – cl
   (SSP 2) C/L CAM PWR – SEC ON
2. Camr Position Verification

NOTE
This view in ODS looking up from Camr bottom

PRI C/L TV Camr Harness Assy (8.5 ft)
V828–774057–004

(jsoc48037_049r2.cxx)
CENTERLINE (C/L) CAMR (Continued)

C/L CAMR INSTALL (Concluded)

3. ODS C/L Camr Alignment Check
   Perform ACTIVATION (Cue Card, TV) as reqd

   A7
   
   VID OUT MON 1(2) pb – push
   IN PL2(VPU) pb – push
   ALC pb – push
   AVG pb – push

   MON 1(2)
   LDATA – ON
   CDATA – GRN
   XHAIR – GRN

   A7
   Zoom to 10° ± 0.5°
   Focus to see Xhair target

   NOTE
   Green xhairs on monitor may move off center in calibration target when zooming in/out. Xhair will be closest to center at full zoom in position

   MON 1(2)
   √ Vertical xhairs coincide w/vertical alignment wire and are parallel. If xhair marks overlay each other, no yaw(axial) alignment needed (see dwg above)

   √ Intersection of monitor vertical, horizontal xhair falls within target circular opening from ~10-40° zoom range of Camr

   Report results of both alignment verifications (at 10° and 40°) to MCC

4. Deactivation

   A7
   CAMR CMD IRIS – CL
   C/L CAM PWR – OFF

   Go to DEACTIVATION (Cue Card, TV) as reqd
CENTERLINE (C/L) CAMR (Continued)

C/L CAMR VIDEO TROUBLESHOOT

1. √C/L Camr nominal config:
   ODS   Camr SSF/STS sw – STS
   PRI C/L Camr connected via PRI C/L TV Camr Harness Assy to TV2 port
   R12 (VPU) √VPU SEC C/L Cap installed on SEC C/L
   √Green Jumper – SEC C/L
   √VPU PWR – ON (lt ON)
   L12 (SSP 1) √cb SW PWR 1 (CB2) – cl
   (SSP 2) √C/L CAM PWR – SEC ON
   A7   VID OUT MON 1(2) pb – push
        IN PL2(VPU) pb – push
   A3 (MON) √C/L Camr Video

   If no C/L Camr video on monitor:

2. Pwr-Cycle C/L Camr:
   A7   CAMR CMD IRIS – CL (hold 8 sec)
   L12 (SSP 2) C/L CAM PWR – OFF, wait 10 sec, SEC ON
   A7   ALC pb – push
        AVG pb – push
   A3 (MON) √C/L Camr Video
If still no C/L Camr video on monitor:

3. Change ODS TV port:

A7   CAMR CMD IRIS – CL (hold 8 sec)
L12 (SSP 2)   C/L CAM PWR – OFF

ODS   Disconnect PRI C/L TV Camr Harness Assy from TV2 port
      Connect PRI C/L TV Camr Harness Assy to TV1 port
R12 (VPU)   √VPU PRI C/L Cap installed on PRI C/L
            Green Jumper – PRI C/L
L12 (SSP 2)   C/L CAM PWR – PRI ON

A7   ALC pb – push
    AVG pb – push
A3 (MON)   √C/L Camr Video

If still no C/L Camr video on monitor:

4. Change C/L TV Camr Harness Assy:

A7   CAMR CMD IRIS – CL (hold 8 sec)
L12 (SSP 2)   C/L CAM PWR – OFF

MD CEIL   Unstow SEC C/L TV Camr Harness Assy
(STBD 2)   Disconnect PRI C/L TV Camr Harness Assy from ODS TV1 port and PRI C/L Camr
           Connect SEC C/L TV Camr Harness Assy to ODS TV1 and PRI C/L Camr
L12 (SSP 2)   C/L CAM PWR – PRI ON

A7   ALC pb – push
    AVG pb – push
A3 (MON)   √C/L Camr Video
CENTERLINE (C/L) CAMR (Continued)

C/L CAMR VIDEO TROUBLESHOOT (Concluded)

If still no C/L Camr video on monitor:

5. Install SEC C/L Camr:
   A7   CAMR CMD IRIS – CL (hold 8 sec)  
   L12 (SSP 2)  C/L CAM PWR – OFF

   MD CEIL (STBD 2)  Unstow SEC C/L TV Camr
   Disconnect SEC C/L TV Camr Harness Assy from PRI C/L Camr
   Remove PRI C/L Camr from ODS C/L Camr Brkt
   Mount SEC C/L Camr to ODS C/L Camr Brkt
   Connect SEC C/L TV Camr Harness Assy to SEC C/L Camr
   L12 (SSP 2)  C/L CAM PWR – PRI ON

   A7   ALC pb – push
   AVG pb – push
   A3 (MON)  √C/L Camr Video
   If video, perform C/L CAMR INSTALL, step 3

If still no C/L Camr video on monitor:

6. √MCC
CENTERLINE (C/L) CAMR (Continued)

C/L CAMR MISALIGNMENT

If green xhair outside inner diameter of circular portion of calibration target during PRI C/L Camr alignment, perform following:

1. Describe to MCC location of xhair in relation to target circle. Reference dwgs, 11-9
2. Remove, re-install Camr to bridge. Recheck alignment per C/L CAMR INSTALL, step 3

Perform each of the remaining steps if misalignment persists:

3. Remove, re-install mounting bridge to ODS. Recheck alignment per C/L CAMR INSTALL, step 3
4. Shim Camr/bridge interface:
   a. Obtain feeler gauges from ML60B Primary C/L Foam
   b. Loosen fasteners on Camr/bridge interface
   c. Insert feeler gauge between Camr brkt and bridge as appropriate to center x-hair and tighten fasteners
   d. Recheck alignment per C/L CAMR INSTALL, step 3
   e. Repeat as reqd w/different sized feeler gauges or shim locations until x-hair within target circle

5. Install SEC C/L Camr using PRI C/L Camr Harness Assy and ODS TV Port 2 (no change to VPU selections):
   - A7 CAMR CMD IRIS – CL (hold 8 sec)
   - L12 (SSP 2) C/L CAM PWR – OFF
   - ODS Disconnect Camr Harness Assy from PRI C/L Camr
   - Replace PRI C/L Camr w/SEC C/L Camr
   - Connect Camr Harness Assy to SEC C/L Camr
   - L12 (SSP 2) C/L CAMR PWR – SEC ON
   - A7 ALC pb – push
   - AVG pb – push

   Check alignment per C/L CAMR INSTALL, step 3. Describe misalignment to MCC per step 1

6. Repeat step 4 for SEC C/L Camr
7. If shimming both PRI and SEC C/L Camrs fails to bring xhair within target circle, re-install Camr w/best alignment. Report which Camr installed
8. √MCC to determine if ODS CENTERLINE CAMR ANGULAR ALIGNMENT (IFM, PROCEDURES M THRU R) reqd
CENTERLINE (C/L) CAMR (Continued)

C/L CAMR MISALIGNMENT (Concluded)

PRI C/L CAMR

SEC C/L CAMR
1. **Setup**
   
   **Obtain:**
   
   - TVCU/CIP I/F Cable
   - TVCU
   - Camr Cont/CTVM Cable
   - TV Pwr Cable (20 ft) (2)
   - AVIU LCD Cable
   - LCD
   - RS-232 Cable
   - PGSC
   - PGSC Pwr Cable(s)
   - PIGMY
   - AVIU
   - V10
   - MON to VIU/CM Cable
   - Digital CC VID/PWR Cable
   - AVIU-CC VID Cable
   
   A3  \(\sqrt{\text{MON 2 PWR – OFF}}\)
   
   R14:D  \(\text{cb MNB TV MON 2 – op}\)
   
   A3  \(\text{Disconnect Pwr MNB from MON 2 J1}\)
   
   \(\text{Config per dwg, 11-11}\)

2. **Activation**
   
   **TVCU**
   - CENTERLINE/CAMCORDER sw – CENTERLINE
   - L12
   - TV Pwr – ON
   - (SSP 2)
   - C/L CAM PWR – SEC ON
   
   **PGSC**
   - PGSC PWR SOURCE – ON
   
   R14:D
   - cb MNB TV MON 2 – cl
   
   A3
   - MON 1 PWR – ON
   
   V10
   - PWR – ON (LED on)
   - Tape – Installed
   
   LCD
   - PWR – ON
   
   **PGSC**
   - RUN TV CONTROLLER program
   
   760XD
   - SHUTTLE Aps (double-click)
   - TV Controller (double-click)
   - Sel ‘YES’ in dialog box
   
   CTVC CONTROLLER menu
   - CAMERA (click)
   - P2 (click)
   - ALC – AVG (click)
   
   Return to P/TV scene as reqd
   
   CTVC CONTROLLER menu
   - Zoom, Iris, Focus as reqd
3. Deactivation

PGSC
CTVC CONTROLLER menu
IRIS – CLOSE
QUIT
PGSC – OFF
PGSC Pwr Source – OFF
L12 (SSP 2)  C/L CAM PWR – OFF
O19  TV PWR – OFF
LCD  PWR – OFF
MON 2  Pwr – OFF
Stow hardware as reqd
## DTV

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**DTV**

**SETUP**

1. **Config Panels**
   - L10
     - Unstow AVIU, reconnect outside of container
     - Config H/W per dwg at right
   - L10 (MUX)
     - VTR/CC PWR – on (LED on)
     - If dnlk:
       - MUX/VTR/CC PWR – on (LED on)
       - √MUX BYPASS – ACT
   - (VIP)
     - √ATU – REC
     - √CCTV VIDEO IN – J3
     - PWR – on (LED on, DATA FLOW LED flashes twice)
   - (VTR)
     - √ON/STANDBY LED – green
     - √Switches set to White Dot (seven)
     - √COUNTER SELECT – COUNTER (TC)

2. **Config DTV V10**
   - AVIU
     - SYNC/VIDEO – VIDEO
     - HI-Z/75 – 75
     - PWR SELECT – LO
   - O19
     - TV PWR – ON
   - V10
     - PWR – ON
     - MENU pb – push
     - SEL COMMANDER
     - SEL – OFF
     - MENU pb – push

3. **Config Audio**
   - L9
     - PS AUD PWR – AUD
     - Desired Loops – RCV, Vol tw-5
     - Other Loops – OFF

---

**Diagram**

- A/E (DTV MON) TV Pwr Cable (10 ft) (2293284-504,528-20650-1)
- DTV Audio Cable (25 ft) (SED33104173-301)
- Digital CC Vid/wr Cable (15 ft) (SED33111490-303)
DTV (Continued)

SPECIFICATIONS

VIP
PWR SOURCE: 400 Hz A/C via AC2 PAYLOAD 3Φ (MA73C:E)
PWR DRAW: 6.84 Watts
FUSES: F1 = 5 amp
F2 = 2 amp
WEIGHT: 4.19 lb
DIMENSION: 10.5" (L) X 5.25" (W) X 2.69" (H)

VTR (SONY DSR-25)
PWR SOURCE: 13.2 VDC via MUX
PWR DRAW: 12.88 to 33.6 Watts (depending on mode)
TAPE: Standard DVCAM or Mini DVCAM
TAPE LENGTH: 3 hr or 40 min
AUDIO: 2 Channel, 16 bit at 48 KHz
CLOCK PWR: 300 hr internal rechargeable capacitor (after 8 hr charge)
OPERATING TEMP: 41 degF to 104 degF
WEIGHT: 9 lb
DIMENSION: 15.5" (L) X 8.37" (W) X 3.87" (H)

MUX
PWR: 28 VDC via PAYLOAD AUX bus (R1)
PWR DRAW: 39.76 to 72.8 Watts (depending on VTR,CC config)
FUSE: 5 amp
WEIGHT: 15.2 lb
DIMENSION: 19" (L) X 17.88" (W) X 3.45" (H)
NOMENCLATURE

VIP

BACK
1. Video Loop Thru Connector (J5)
2. ATU Audio Connector (J2)
3. F2: 2–Amp Fuse
4. F1: 5–Amp Fuse
5. AC Pwr Connector (J1)
6. Playback Audio Connector (J8)
7. Record Audio Connector (J7)
8. Interval DATA OUT Connector (J6)

FRONT
9. Data Flow LED (green)
10. PWR LED (green)
11. PWR sw
12. Balanced Video Connector (J3)
13. ATU sw
14. PLAYBACK/KEY MIC LED
15. Unbalanced Video Connector (J4)
16. CCTV VIDEO IN sw
DTV (Continued)

NOMENCLATURE (Continued)

VTR (SONY DSR-25) – FRONT PANEL

1. Phone Jacks
2. PHONE LEVEL Control kb
3. AUDIO OUTPUT SELECT sw (CH 1/2)
4. TIMER sw (OFF)
5. ON/STANDBY pb, LED (red/green)
6. KEY INH sw (OFF)
7. Cassette Compartment
8. Display Window and Controls
9. EJECT pb
10. AUDIO INPUT sw (FIX)
11. CH-1 AUDIO REC LEVEL Control kb (N/A)
12. CH-2 AUDIO REC LEVEL Control kb (N/A)
13. DUP pb (not used)
14. AUDIO DUB pb (N/A)
15. Tape Transport Controls
16. INPUT SELECT sw (VIDEO)
17. CHARACTER DISPLAY sw (OFF)
18. Monitor Display and Controls
<table>
<thead>
<tr>
<th></th>
<th>NOMENCLATURE (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTR (SONY DSR-25) – FRONT PANEL (Concluded)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>PHONES jack</td>
</tr>
<tr>
<td>2</td>
<td>PHONE LEVEL kb</td>
</tr>
<tr>
<td>3</td>
<td>AUDIO OUTPUT SELECT sw (Default = CH 1/2)</td>
</tr>
<tr>
<td>4</td>
<td>TIMER sw (Default = OFF)</td>
</tr>
<tr>
<td>5</td>
<td>ON/STANDBY pb, LED (red/green)</td>
</tr>
<tr>
<td>6</td>
<td>KEY INH sw (Default = OFF)</td>
</tr>
<tr>
<td>7</td>
<td>Cassette Compartment</td>
</tr>
<tr>
<td>8</td>
<td>Display windows and controls</td>
</tr>
<tr>
<td>9</td>
<td>EJECT pb</td>
</tr>
<tr>
<td>10</td>
<td>AUDIO INPUT sw (Default = FIX)</td>
</tr>
<tr>
<td>11</td>
<td>CH-1 AUDIO REC LEVEL kb (N/A)</td>
</tr>
<tr>
<td>12</td>
<td>CH-2 AUDIO REC LEVEL kb (N/A)</td>
</tr>
<tr>
<td>13</td>
<td>DUP pb (not used)</td>
</tr>
<tr>
<td>14</td>
<td>AUDIO DUB pb (N/A)</td>
</tr>
<tr>
<td>15</td>
<td>Tape Transport Controls</td>
</tr>
<tr>
<td>16</td>
<td>INPUT SELECT sw (Default = VIDEO)</td>
</tr>
<tr>
<td>17</td>
<td>CHARACTER DISPLAY sw (Default = OFF)</td>
</tr>
<tr>
<td>18</td>
<td>Monitor Display and Controls</td>
</tr>
</tbody>
</table>
### VTR (SONY DSR-25) – DISPLAY WINDOW AND CONTROLS

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Function/Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PAL Indicator/Amber (not used)</td>
<td>Lit when NTSC/PAL sw is in PAL posn or PAL formatted video being processed by the VTR</td>
</tr>
<tr>
<td>2</td>
<td>NTSC Indicator/Amber (on)</td>
<td>Lit when NTSC/PAL sw is in NTSC posn or NTSC formatted video being processed by the VTR</td>
</tr>
<tr>
<td>3</td>
<td>DVCAM Indicator/Amber (on)</td>
<td>Lit when the VTR is playing a DVCAM-formatted tape or when the VTR is set to DVCAM</td>
</tr>
<tr>
<td>4</td>
<td>Cassette Indicator/Amber</td>
<td>Lit solid when a tape is loaded into the VTR. Flashes during tape ejection</td>
</tr>
<tr>
<td>5</td>
<td>INDEX pb</td>
<td>Initiates index mark on the tape that can be used to cue the tape to that posn on the tape via INDEX SEARCH</td>
</tr>
<tr>
<td>6</td>
<td>END SEARCH pb</td>
<td>VTR will search for the last 5 sec of recorded video, play it, and return to stop mode</td>
</tr>
<tr>
<td>7</td>
<td>RESET pb</td>
<td>Resets COUNTER displayed numbers to all zeroes</td>
</tr>
<tr>
<td>8</td>
<td>COUNTER SELECT sw</td>
<td>Determines which time data will be displayed in the counter display</td>
</tr>
<tr>
<td></td>
<td>COUNTER</td>
<td>Count value of the counter (DD:HH:MM:SS)</td>
</tr>
<tr>
<td></td>
<td>TC</td>
<td>Time code</td>
</tr>
<tr>
<td></td>
<td>U-BIT</td>
<td>User bits (not used)</td>
</tr>
<tr>
<td>9</td>
<td>Time Counter Display</td>
<td>Displays time data (counter/time code/user bits). Self-diagnosis code numbers or error msgs</td>
</tr>
<tr>
<td>10</td>
<td>Remote Control Detector</td>
<td>Self explanatory</td>
</tr>
</tbody>
</table>
### VTR (SONY DSR-25) – TAPE TRANSPORT CONTROLS

#### NOMENCLATURE (Continued)

<table>
<thead>
<tr>
<th>Control</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP pb</td>
<td>Stops current tape transport operation</td>
</tr>
<tr>
<td>REW pb/Indicator/Ampber</td>
<td>Rewinds tape and illuminates the REW indicator. Video not visible unless held during play or play/pause mode</td>
</tr>
<tr>
<td>PLAY pb/Indicator/Green</td>
<td>Starts playback ops and illuminates the PLAY indicator</td>
</tr>
<tr>
<td>FF pb/Indicator/Ampber</td>
<td>Fast forwards tape and illuminates the FF indicator. Video not visible unless held during play or play/pause mode</td>
</tr>
<tr>
<td>PAUSE pb/Indicator/Ampber</td>
<td>Pauses playback or recording ops</td>
</tr>
<tr>
<td>REC pb/Indicator/Red</td>
<td>Pressing PLAY pb while holding in REC pb will start recording and both PLAY and REC indicators will illuminate. Just pressing REC pb will illuminate the REC indicator and allow for audio, video monitoring</td>
</tr>
</tbody>
</table>
NOMENCLATURE (Continued)

VTR (SONY DSR-25) – MONITOR DISPLAY AND CONTROLS

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LCD Monitor</td>
<td>Displays playback(live) video and superimposed text, audio levels, and menu data</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CHARACTER DISPLAY (LCD) sw (Default = ON)</td>
<td>Controls the display of superimposed text on the monitor. BLACK BACK will block video flow to the monitor to provide a black background to improve superimposed data viewing</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>DISPLAY SELECT sw</td>
<td>Determine what superimposed data is displayed on the monitor</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MENU</td>
<td>Menu data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DATA</td>
<td>VTR information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AUDIO</td>
<td>Audio levels</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>EXEC pb</td>
<td>Executes and selects menu items</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>↑↓ pbs</td>
<td>Allows navigation through and setting of menu items when in MENU mode, and adjusts monitor brightness when in DATA mode</td>
<td></td>
</tr>
</tbody>
</table>
NOMENCLATURE (Continued)

VTR (SONY DSR-25) – REAR PANEL

1. INPUT Jacks
2. OUTPUT Jacks
3. MONITOR Jack
4. DV Jack
5. Cooling Fan (two)
6. DC IN Connector
7. AUDIO INPUT LEVEL sw (-10)
### VTR (SONY DSR-25) – REAR PANEL (Concluded)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>INPUT Jacks</strong></td>
<td>Video and audio inputs</td>
</tr>
<tr>
<td></td>
<td>S_VIDEO</td>
<td>Not used</td>
</tr>
<tr>
<td></td>
<td>VIDEO</td>
<td>Video input of DTV signal from orbiter VSU</td>
</tr>
<tr>
<td></td>
<td>AUDIO CH-1/3</td>
<td>Orbiter audio input</td>
</tr>
<tr>
<td></td>
<td>AUDIO CH-2/4</td>
<td>Orbiter &quot;VI&quot; input</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td><strong>OUTPUT Jacks</strong></td>
<td>Video and audio outputs</td>
</tr>
<tr>
<td></td>
<td>S_VIDEO</td>
<td>Not used</td>
</tr>
<tr>
<td></td>
<td>VIDEO</td>
<td>VTR OUT video (No VI data)</td>
</tr>
<tr>
<td></td>
<td>AUDIO CH-1/3</td>
<td>Orbiter audio playback output</td>
</tr>
<tr>
<td></td>
<td>AUDIO CH-2/4</td>
<td>Not used</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td><strong>MONITOR Jack</strong></td>
<td>VTR MON Video (NOTE: Will not display VTR Playback Video)</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td><strong>DV Jack</strong></td>
<td>IEEE 1394 4-pin video/audio connection</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td><strong>Cooling Fans</strong></td>
<td>Reversed to bring air into unit</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td><strong>DC IN Connector</strong></td>
<td>DC pwr source connection</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td><strong>AUDIO INPUT LEVEL sw</strong></td>
<td>Sets the audio fixed gain level when the AUDIO INPUT is set to FIX. Default is -10. Is ignored in the VAR setting</td>
</tr>
</tbody>
</table>
DTV (Continued)

NOMENCLATURE (Continued)

MUX – FRONT

1. VTR/CC PWR LED (green)
2. VTR/CC PWR sw
3. +12 VDC Connector (N/A)
4. MUX BYPASS sw
5. MUX 5–Amp Fuse
6. MUX/VTR/CC sw
7. MUX PWR LED (green)
8. BYPFR DATA Connector
9. BYPFR CLOCK Connector
10. IEEE 1394 Connector
11. CHANNEL 3 BUFFER ERROR LED (yellow)
12. CHANNEL 3 1394 ERROR LED (yellow)
13. CHANNEL 3 DATA LED (green)
14. CHANNEL 2 DATA Ports,LEDs (N/A)
15. CHANNEL 1 DATA Ports,LEDs (N/A)
16. CHANNEL 0 DATA Ports,LEDs (N/A)
NOMENCLATURE (Concluded)

MUX – BACK

1. DATA Port (N/A)
2. CLOCK IN Connector (J1)
3. DATA IN Connector (J2)
4. CLOCK OUT Connector (J3)
5. DATA OUT Connector (J4)
6. +12 VDC OUTPUT Connector (J6)
7. +28 VDC INPUT Connector (J5)
### VTR (SONY DSR-25) NOMINAL MENU SETTINGS

<table>
<thead>
<tr>
<th>MENU (TC/UB SET)</th>
<th>SUB MENU</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC PRESET – N/A</td>
<td></td>
</tr>
<tr>
<td>UB PRESET – N/A</td>
<td></td>
</tr>
<tr>
<td>DV IN TC – INTERNAL</td>
<td></td>
</tr>
<tr>
<td>TC MAKE – REGEN</td>
<td></td>
</tr>
<tr>
<td>TC RUN – REC RUN</td>
<td></td>
</tr>
<tr>
<td>TC FORMAT – AUTO</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SUB MENU</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TC PRESET</td>
<td>N/A</td>
</tr>
<tr>
<td>UB PRESET</td>
<td>N/A</td>
</tr>
<tr>
<td>DV IN TC</td>
<td>INTERNAL</td>
</tr>
<tr>
<td>TC MAKE</td>
<td>REGEN</td>
</tr>
<tr>
<td>TC RUN</td>
<td>REC RUN</td>
</tr>
<tr>
<td>TC FORMAT</td>
<td>AUTO</td>
</tr>
<tr>
<td>TC FORMAT</td>
<td>AUTO</td>
</tr>
<tr>
<td>STILL PICT</td>
<td>AUTO</td>
</tr>
<tr>
<td>FF/REW SPD</td>
<td>FF/REW</td>
</tr>
<tr>
<td>DUPLICATE</td>
<td>N/A</td>
</tr>
<tr>
<td>DV EE OUT</td>
<td>ON (non-default)</td>
</tr>
<tr>
<td>STILL TIME</td>
<td>1 MIN (non-default)</td>
</tr>
<tr>
<td>FROM STILL</td>
<td>STOP</td>
</tr>
<tr>
<td>AC ON MODE</td>
<td>POWER ON (non-default)</td>
</tr>
<tr>
<td>AUTO STBY</td>
<td>DISABLE</td>
</tr>
<tr>
<td>BEEP – ON</td>
<td></td>
</tr>
<tr>
<td>LCD BRIGHT</td>
<td>mid</td>
</tr>
<tr>
<td>LCD COLOR</td>
<td>mid</td>
</tr>
<tr>
<td>CLOCK SET</td>
<td>GMT</td>
</tr>
<tr>
<td>HRS METER</td>
<td>N/A</td>
</tr>
<tr>
<td>PB YNR</td>
<td>OFF</td>
</tr>
<tr>
<td>PB CNR</td>
<td>OFF</td>
</tr>
</tbody>
</table>
VTM CLOCK SET

1. Activate VTR

R1       PL AUX – ON

L10 (MUX) VTR/CC PWR – on (LED on)
(VTR)     ON/STANDBY LED – green

2. Set VTR clock to GMT

DISPLAY SELECT – MENU
↓ pb – ETC, EXEC pb – push
↓ pb – CLOCK SET, EXEC pb – push
Use ↑,↓,EXEC to set Y,M,D,hr,min to GMT

DISPLAY SELECT – DATA

3. Deactivate VTR as reqd

ON/STANDBY pb – push (red LED on)
(MUX) VTR/CC PWR – off (LED off)
DTV (Continued)

MALS

12.1 NO VIDEO AT VTR OUT

A7 \checkmark Video Signal routed to VID OUT DTV pb

   If using CTVM:

MON 2 \checkmark SOURCE – C

R1 \checkmark PL AUX – ON

MA73C \checkmark cb AC2 PL 3Φ – cl

L10 (MUX) \checkmark VTR/CC(MUX/VTR/CC) PWR – on (LEDs on); if not, go to MAL 12.3

(VIP) \checkmark CCTV VIDEO IN – J3

(VTR) \checkmark PWR – on (LED on); if not, go to MAL 12.5

\checkmark DATA FLOW LED – on; if not, go to MAL 12.6

\checkmark INPUT SELECT – VIDEO

   If no joy, \checkmark MCC

12.2 NO DIGITAL DNLK VIDEO AT MCC

\checkmark Video from VTR MONITOR, if none, perform MAL 12.1

\checkmark MCC has configured Ku Signal Band Processor CH3 for PL MAX

L10 (MUX) \checkmark MUX BYPASS – ACT

   If performing PD100 dnlk

   \checkmark IEEE 1394 Batt Adapter Cable – IEEE 1394 port I/F

PD100 \checkmark IEEE 1394 Batt Adapter Cable – Camcorder I/F

   If not performing PD100 dnlk

L10 (MUX) \checkmark IEEE 1394 male cable connected to IEEE 1394 port

(VTR) \checkmark DISPLAY SELECT – MENU

   \downarrow pb – VTR, EXEC pb – push

   \downarrow pb – DVEE OUT, \checkmark ON

\checkmark DISPLAY SELECT – DATA

(MUX) \checkmark CHANNEL 3 DATA LED – on; if not, go to MAL 12.4

   If no joy, \checkmark MCC for possible IEEE 1394 male cable replacement
DVT (Continued)

MALS (Continued)

12.3   MUX PWR LED(s) OFF

R1   √PL AUX – ON

L10 (MUX)   √VTR/CC(MUX/VTR/CC) PWR – on (LEDs on)
    Notify MCC before proceeding
    √5 Amp Fuse (spare in DTV Fuse Kit)
    If no joy, √MCC

12.4   MUX CHANNEL 3 DATA LED OFF

√DTV MAL 12.2 complete

L10 (MUX)   If CHANNEL 3 1394,BUFF LEDs – on, signal not reaching MUX for processing
            (VTR)    ON/STANDBY pb – push (red LED on)
            If PD100:
            PD100   PWR – OFF

L10 (MUX)   MUX/VTR/CC PWR – off, wait 5 sec, on
            (VTR)    √ON/STANDBY LED – green
            If PD100:
            PD100   PWR – CAMERA
            If no joy:
            Repeat pwrdn per previous steps
            Disconnect,reconnect IEEE 1394 cable
            Repeat pwrup per previous steps
            If no joy, √MCC

If only CHANNEL 3 1394 LED – on, MUX 1394 format error
    √MCC
If only CHANNEL 3 BUFF LED – on, MUX FIFO memory buffer error
    √MCC
DTV (Continued)

MALS (Continued)

12.5  VIP PWR LED OFF

MA73C  √cb AC2 PL 3Φ – cl

L10 (VIP)  √PWR – on
            Notify MCC before proceeding
            Pull VIP from container to check fuses
            √F1 5 Amp Fuse (spare in DTV Fuse Kit)
            √F2 2 Amp Fuse (spare in DTV Fuse Kit)

            If no joy, √MCC

12.6  VIP DATA FLOW LED OFF

MA73C  √cb AC2 PL 3Φ – cl

L10 (VIP)  √PWR – on

A7  √Video signal routed to VID OUT DTV pb
    √Video signal has Vertical Interval data (PLB Camrs)

L10 (VTR)  DISPLAY SELECT – AUDIO
            √CHANNEL 2 AUDIO LEVEL METER indicates signal
            If signal indicated, LED failed
            Notify MCC, continue Nom Ops

DISPLAY SELECT – DATA

(VIP)  PWR – off, then on (√DATA FLOW LED flashes twice)
       If LED does not flash twice, √MCC
DTV (Continued)

MALS (Continued)

12.7 VTR ON/STANDBY RED LED OFF

R1 √PL AUX – ON

L10 (MUX) √VTR/CC(MUX/VTR/CC) PWR – on (LEDs on)
Reset internal fuse by:
VTR/CC(MUX/VTR/CC) PWR – off, wait 30 sec, on

If no joy, √MCC

12.8 VTR STARTS RECORDING OR REWINDS AND STARTS PLAYING AFTER MUX PWR APPLIED

Timer sw out of config

L10 (VTR) √TIMER – OFF

If no joy, √MCC

12.9 VTR TAPE CONTROLS NOT FUNCTIONING (VTR DISPLAY INDICATES “ERR”)

Key Inhibit sw appears to be on

L10 (VTR) √KEY INH – OFF

If no joy, √MCC

12.10 VTR DISPLAYS ERROR MSG 32

VTR has entered SAFE MODE

L10 (VTR) ON/STANDBY pb – push (red LED on)
(MUX) VTR/CC,MUX/VTR/CC PWR – off (LEDs off), wait 10 sec, on (LED on)
(VTR) √ON/STANDBY LED – green
√Error msg no longer displayed

If no joy, √MCC
DTV (Concluded)

MALs (Concluded)

12.11 VTR DISPLAYS ERROR MSG 21

VTR has detected moisture inside

L10 (VTR) Remove tape
ON/STANDBY pb – push (red LED on)
Leave for 1 hr before re-attempting pwr on
Notify MCC

12.12 VTR AUTOMATICALLY PWRS OFF

VTR Auto Off feature on

L10 (VTR) DISPLAY SELECT – MENU
↓ pb – ETC, EXEC pb – push
↓ pb – AUTO STBY, √ Disable
DISPLAY SELECT – DATA

If no joy, √ MCC
BPSMU

BPSMU AUDIO ONLY

1. Set up BPSMU, Cables
   Replace BPSMU Batt Pack (SED16102434-701) in BPSMU unit as reqd
   Discard old BPSMU Batt Packs
   Config H/W per dwg at right

2. Config Comm System
   AIRLK AUD PWR – AUD/TONE
   \MSTR VOL 1(2) – MAX
   A/G 2,ICOM B – T/R (or loop as desired)
   XMIT/ICOM MODE sel – PTT/PTT
   VOL A/G 2,ICOM B tw – 8
   Other Loops – OFF
BPSMU (Continued)

SPACEHAB BPSMU AUDIO ONLY

1. Set up BPSMU, Safe ODS TV Port

   BPSMU
   L12 (SSP 2) C/L CAM PWR – OFF

   Config H/W per dwg at right
BPSMU (Continued)

SPACEHAB BPSMU AUDIO ONLY (Concluded)

2. Config TV System
   Config H/W per dwg at right

   R12 (VPU)  √VPU PWR – ON (LED on)

3. Config Comm System

   O9 R AUD PWR – AUD/TONE
   √MSTR VOL 1(2) – MAX
   A/G 2,ICOM B – T/R (or loop as desired)
   XMIT/ICOM MODE sel – PTT/PTT
   VOL A/G 2,ICOM B tw – 8
   Other Loops – OFF

   Perform audio check w/BPSMU
BPSMU (Continued)

**BPSMU AUDIO/VIDEO**

1. **Set up BPSMU, Safe ODS TV Port**
   - BPSMU
   - Connect Batt
   - L12 (SSP 2)
   - C/L CAM PWR – OFF
   - Config H/W per dwg at right

2. **Set up PD100**
   - CC
   - Install Sony Headset
   - Install Batt
   - √ Wide Conversion Lens installed
   - PWR – CAMERA
   - Tape – Install
   - √ Viewfinder (LCD) displays STBY
   - Camr Settings
     - √ AUTO LOCK – AUTO LOCK
     - √ FOCUS – AUTO

3. **Config TVCU**
   - TVCU
   - CENTERLINE/CAMCORDER sw – CAMCORDER
BPSMU (Continued)

BPSMU AUDIO/VIDEO (Concluded)

4. Config TV System
   Config H/W per dwg at right

   R12 (VPU)  Green Jumper – SEC C/L
   √  VPU PWR – ON (LED on)

   L12 (SSP2)  C/L CAM PWR – SEC ON

   MON 1  PWR – ON (LED on)
   A7  TV PWR CNTL – PNL
       CONTR UNIT – MNA(B)
       CNTL – CMD (wait 10 sec for system initialization)
       VID OUT MON 1 pb – push
       IN PL2(VPU) pb – push

   MON 1  √  CC video

5. Config Comm System

   O9  R AUD PWR – AUD/TONE
       √  MSTR VOL 1(2) – MAX
       A/G 2,ICOM B – T/R (or loop as desired)
       XMIT/ICOM MODE sel – PTT/PTT
       VOL A/G 2,ICOM B tw – 8
       Other Loops – OFF

   Perform audio check w/BPSMU
BPSMU (Continued)

SPACEHAB BPSMU AUDIO/VIDEO

1. Set up BPSMU, Safe ODS TV Port
   Connect Batt

   L12 (SSP 2) C/L CAM PWR – OFF
   Config H/W per dwg at right

2. Set up PD100
   Install Sony Headset
   Install Batt
   √Wide Conversion Lens installed
   PWR – CAMERA
   Tape – Install
   √Viewfinder (LCD) displays STBY
   Camr Settings
     √AUTO LOCK – AUTO LOCK
     √FOCUS – AUTO

3. Config TVCU
   TVCU CENTERLINE/CAMCORDER sw – CAMCORDER
**BPSMU (Continued)**

**SPACEHAB BPSMU AUDIO/VIDEO (Concluded)**

4. **Config TV System**
   - Config H/W per dwg at right
   - **R12 (VPU)** Green Jumper – SEC C/L
   - √ VPU PWR – ON (LED on)
   - **L12 (SSP2)** C/L CAM PWR – SEC ON
   - **MON 1** PWR – ON (LED on)
   - **A7** TV PWR CNTL – PNL
     - CONTR UNIT – MNA(B)
     - CNTL – CMD (wait 10 sec for system initialization)
     - VID OUT MON 1 pb – push
     - IN PL2(VPU) pb – push
   - **MON 1** √ CC video

5. **Config Comm System**
   - **O9** R AUD PWR – AUD/TONE
     - √ MSTR VOL 1(2) – MAX
     - A/G 2,ICOM B – T/R (or loop as desired)
     - XMIT/ICOM MODE sel – PTT/PTT
     - VOL A/G 2,ICOM B tw – 8
   - Other Loops – OFF
   - Perform audio check w/BPSMU
BPSMU (Continued)

BPSMU SPECIFICATIONS

BPSMU
- INTEGRAL CABLE LENGTH: 8 ft
- RECOMMENDED MIC POSITION: Directly in front of mouth; 6 in. from mouth
- BATT: Two 9V (pwr s mic, not speaker; launched disconnected)
- BATT: 18V
- BATT LIFETIME: ~7-10 days
- BPSMU WEIGHT: 1.12 lb (w/batt)

BPSMU CABLES – DIRECT CCU CONNECTIONS
- BPSMU TO CCU ADAPTER (1 ft): Adapts BPSMU integral cable to CCU
- BPSMU/ODS ADAPTER (4 in): Adapts 4 ft A/V Cable to CCU
- A/V CABLES (4 ft, 42 ft): Minimum A/V Cable config for audio ops

BPSMU CABLES – TV CONNECTIONS
- A/V CABLES (4 ft, 22 ft, 44 ft, 35 ft, 42 ft) w/TVCU: Config for Camcorder thru ODS TV 1(2) port (TVCU assumes 125 ft of cable)
- BPSMU A/V PATCH CABLE (10 ft): Patches ODS TV Port audio into CCU using PRI SEC) C/L port on VPU
BPSMU NOMENCLATURE

1. Integral Cable
2. Speaker
3. ICOM pb
4. XMIT pb
5. Speaker Volume Control kb
6. Microphone (detachable)
7. Batt Compartment
BPSMU (Continued)

DRAG THROUGH QD MATING

NOTE
If activation of quick disconnect feature of the Drag Through QD reqd, both halves (station and orbiter) are to be mated using Alignment Tool

1. Disconnect cables from orbiter half of Drag Through QD. Disconnect cables from Station half as reqd
2. Inspect connectors, mating surfaces for debris or bent pins
3. Open access hole (rotate cw)

4. Remove Alignment Tool from Drag Through QD Handle Stowage (unthread ccw)
5. Place two Drag Through QD halves together, but not mated, and insert Alignment Tool into access hole
6. Squeeze quick release levers together, rotate Alignment Tool cw (pressure may be needed to engage Alignment Tool threads on station half) until Alignment Tool reaches a soft stop

7. Release quick release levers, verify quick release levers in normal spread posn

8. Remove Alignment Tool (turn ccw)
9. Stow Alignment Tool in Drag Through QD Handle Stowage (turn cw)
BPSMU (Continued)

DRAG THROUGH QD MATING (Concluded)

10. Replace Alignment Tool on station half of Drag Through QD

DRAG THROUGH QD DEACTIVATION

1. Disconnect RWS cables (two) from orbiter side Video 1,2 ports. Stow on orbiter stbd ditch wall
2. Disconnect BPSMU cable from ODS CCU port 1 (coil as reqd)
3. Transfer Drag Through QD and remaining attached cables to ISS
BPSMU (Continued)

DRAG THROUGH QD NOMENCLATURE

1. BPMU #1 (J5), BPMU #2 (J7) directly below
2. Video #2 (J3)
3. Ethernet (J9)
4. Video #1 (J1)
5. Video #1 (J2)
6. Ethernet (J10)
7. Video #2 (J4)
8. Quick Release Lever
9. BPMU #1 (J6), BPMU #2 (J8) directly below
10. Alignment Tool
11. Alignment Tool Holder
BPSMU (Continued)

DRAG THROUGH QD NOMENCLATURE (Continued)

**STATION HALF**

1. Quick Release Lever
2. Alignment Tool Holder
3. Alignment Pin Receptacle
4. Center Locking Pin Receptacle
5. DB25 Male Connector

**ORBITER HALF**

6. Alignment Pin
7. DB25 Female Connector
8. Ball Plunger
9. Center Locking Pin
BPSMU (Concluded)

DRAG THROUGH QD NOMENCLATURE (Concluded)

STATION HALF

1. BPSMU #2 (J8)
2. Alignment Tool
3. BPSMU #1 (J6)
4. Video #2 (J4)
5. Quick Release Lever
6. Video #1 (J2)
7. Ethernet (J10)

ORBITER HALF

8. Video #1 (J1)
9. Video #2 (J3)
10. BPSMU #1 (J5)
11. Alignment Tool
12. BPSMU #2 (J7)
13. Alignment Tool Access Hole Cover
14. Ethernet (J9)
MINI-CAM

IN-CABIN MINI-CAM

Config H/W per dwg below

AVIU
SYNC/VIDEO – SYNC
HI-Z/75 – 75
PWR SELECT – HI

O19(MO58F) √TV PWR – ON

LCD
Pwr – ON (as reqd)

Mini-Cam
Lens – 3.5mm
Aperture – Adjust per LCD
MINI-CAM (Continued)

ENTRY VIDEO SETUP

SCHEMATICS

FLT DECK (O19)

TV

AVIU Adapter Cable (1 ft)
(SED39122226-301)

AVIU-CC Video Cable
(SED39122268-301)

Mini-Cam On-Orbit Cable (10 ft)
(SED39127626-301)

Mini-Cam Extension Cable (13 ft)
(SED39127626-303)

ASC/HUD Mini-Cam Extension Cable (13 ft)
(SED39127626-303)

BNC Straight Adapter

BNC Straight Adapter

A/E V10 Video Cable (15 ft)
(SED39105779–301)

A/E V10 Video Cable (20 ft)
(SED39122260-320)

DTV Audio Cable (25 ft)
(SED33104173–301)

Batt

RCA Phono Adapter
(SED39122368-301)

FLAT DECK (O19)

AVIU

J2

J4

J6

J1

J3

J5

J7

S–Band FM
Signal
Processor
(PL Analog)

Dnlk Y Cable
(SED39127625–301)

Mini-Cam On-Orbit
Cable (10 ft)
(SED39127626–301)

Mini-Cam Extension
Cable (13 ft)
(SED39127626–303)

Bottom of
Locker Cable

FLAT DECK (O19)

AVIU Adapter Cable (1 ft)
(528-21088-1)

S–Band FM
Signal
Processor
(PL Analog)

Dnlk Y Cable
(SED39127625–301)

Mini-Cam On-Orbit
Cable (10 ft)
(SED39127626–301)

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Mini-Cam On-Orbit
Cable (10 ft)
(SED39127626–301)

Bottom of
 Locker Cable
MINI-CAM (Continued)
ENTRY VIDEO SETUP (Continued)

1. Config Mini-Cam,VTR for Audio Video Recording
   Config H/W per dwg, 14-4

   HUD Brkt/Cam
   Using two (2) captive screws, attach HUD Brkt to installation holes for protective cover w/HUD Brkt tab pointing up
   Attach Tie Wrap thru holes on captive screws to prevent screw from coming loose; cut off extra length on Tie Wrap
   Attach Mini-Cam Extension Cable to Mini-Cam

   12mm Lens
   Focus – ∞
   Aperture – f/5.6
   Velcro Mini-Cam w/12mm lens to HUD Brkt. (Top of black Velcro on front of Camr should be at top edge of HUD Brkt.
   Only yellow Velcro should be visible above HUD Brkt)

   3.5mm Lens
   Aperture – f/1.8

   L10:A1
   AVIU
   SYNC/VIDEO – VIDEO
   HI-Z/75 – HI-Z
   PWR SELECT – HI

   O19
   √TV PWR – ON

   PS ATU
   Config audio as reqd for entry audio

   L10
   (MUX)
   VTR/CC PWR – on (LED on)
   (VTR)
   √ON/STANDBY LED – green

   V10 (two)
   Install fresh batts
   PWR – ON
MINI-CAM (Continued)

ENTRY VIDEO SETUP (Concluded)

√12mm Lens/Mini-Cam producing good video

Change config to 3.5mm Lens/Mini-Cam
√3.5mm Lens/Mini-Cam producing good video

V10 (two) PWR – OFF

L10
(VTR) ON/STANDBY pb – push (red LED on)
(MUX) VTR/CC PWR – off (LED off)

O19 TV PWR – OFF

NOTE
TV,VTR pwr will be re-enabled per ENT AFT FLT DECK CONFIG [T5] (DEORB, NOMINAL DEORBIT PREP); recording will be initiated via ENTRY C/L

Start w/3.5mm Lens/Mini-Cam video in-cabin and reconfig for 12mm Lens/Mini-Cam when exterior scene available

When exterior avail:
Focus – Adjust per V10
Aperture – Adjust per V10
If needed, turn down brightness on HUD display

Turn off V10 when not needed
MINI-CAM (Continued)

SPECIFICATIONS

CAMR DIMENSIONS: 5 1/4 in (L) X 1 in (W) X 1 3/16in (D)
WEIGHT: 0.40 lb
IMAGER MODEL: XC-999
HORIZONTAL RESOLUTION: 470 lines
PIXEL COUNT: 768 Horizontal, 494 Vertical
SENSING AREA: 6.4mm Horizontal, 4.8mm Vertical, 8.0mm Diagonal
AVIU VOLTAGE: 12V
WEIGHT: 1.6 lb

LENS DATA

<table>
<thead>
<tr>
<th>Lens</th>
<th>Aperture Range (f/stop)</th>
<th>Approximate Horizontal Field of View (FOV)</th>
<th>Minimum Focus Distance</th>
<th>Weight (lb)</th>
<th>Configuration Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.5mm</td>
<td>f/1.8-f/16</td>
<td>84.87°</td>
<td>Fixed</td>
<td>0.10</td>
<td>Glareshield, Aft Window</td>
</tr>
<tr>
<td>6.0mm</td>
<td>f/1.4-f/16</td>
<td>56.15°</td>
<td>0.3m</td>
<td>0.10</td>
<td>Aft Window</td>
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<tr>
<td>12.0mm</td>
<td>f/1.4-f/16</td>
<td>29.86°</td>
<td>0.5m</td>
<td>0.10</td>
<td>HUD</td>
</tr>
<tr>
<td>23.0mm</td>
<td>f/1.4-f/22</td>
<td>15.8°</td>
<td>0.2m</td>
<td>0.31</td>
<td></td>
</tr>
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BRACKET DATA

<table>
<thead>
<tr>
<th>Bracket</th>
<th>Dimensions</th>
<th>Mount Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glareshield</td>
<td>9.5 in - 10.5 in, 2 in</td>
<td>Velcro w/FDF Tether</td>
</tr>
<tr>
<td>Rear Window</td>
<td>12 in - 20 in, 2 in</td>
<td>Velcro w/FDF Tether</td>
</tr>
<tr>
<td>HUD</td>
<td>4.5-in base, 1.5-in extension, 2-in rise, N/A</td>
<td>Thumbscrew w/Tie Wrap</td>
</tr>
</tbody>
</table>
MINI-CAM (Concluded)

NOMENCLATURE

1. Pwr/Video Connector
2. Body (covered in Black Velcro hook)
3. Yellow Velcro (HUD Brkt)
4. Lens
5. CCD
6. Lens Mount
7. Threaded Mount
8. Aperture Ring
9. Focus Ring
10. Aperture Lock Nut

3.5 mm Lens
6 mm Lens
12 mm Lens
23 mm Lens
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<td>WVS INITIAL SETUP w/ERCAs</td>
<td>15-6</td>
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<tr>
<td>WVS DAY-OF-EVA CHECK</td>
<td>15-10</td>
</tr>
<tr>
<td>SPECIFICATIONS</td>
<td>15-12</td>
</tr>
<tr>
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<td>15-14</td>
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<td>RF CAMR ELECTRONICS</td>
<td>15-17</td>
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<tr>
<td>WVS PLB MOUNTED H/W</td>
<td>15-18</td>
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<tr>
<td>SOFTWARE – TOP STATUS AREA</td>
<td>15-19</td>
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<td>SOFTWARE – RF CAMR PAGE</td>
<td>15-20</td>
</tr>
<tr>
<td>SOFTWARE – XCVR PAGE</td>
<td>15-22</td>
</tr>
<tr>
<td>SOFTWARE – TELEMETRY PAGE</td>
<td>15-24</td>
</tr>
</tbody>
</table>
WIRELESS VIDEO SYSTEM (WVS)

WVS INITIAL SETUP w/o ERCAs

1. Unstow and set up IV H/W per diagram

NOTE
Connection not reqd until EVA day
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/o ERCAs (Continued)

2. WVS System

   A7  WIRELESS VID HTR – ON
       PWR – ON

3. Photo/TV H/W Preparations

   AVIUs Powering V10s (two)
       SYNC/VIDEO – VIDEO
       HI-Z/75 – 75
       PWR SELECT – LO

   MO58F
       TV PWR – ON

   V10 (two)
       PWR – ON
       Tape installed
       WVS Test Pattern displayed (color bars w/"No WVS Video")
       PWR – OFF

   Audio

   A11
       CCU PWR – ON

   R10
       MS AUD PWR – AUD/TONE
       A/G 1 – T/R
       ICOM A – T/R

4. WVS PGSC Prep

   PGSC Pwrup and Application Opening

   O19
       DC UTIL PWR MNA – ON

   PGSC
       Pwr – ON
       Sel Shuttle Apps icon
       Sel WVS icon
       Sel ‘No’ at ‘Restore To Previous Settings:’ window

       If ‘Comm Port Configuration’ error displayed:
           Remove Quatech RS-422 Card
           Sel ‘Start’ > ‘Shut Down’ > ‘Shut Down’ > ‘OK’
           Reinstall Quatech RS-422 Card
           Pwr – ON
           Sel Shuttle Apps icon
           Sel WVS icon
           RF Camera page will appear
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/o ERCAs (Concluded)

4. WVS PGSC Prep (Concluded)

Application Setup

If ‘Static XCVR’ (‘Bad Camera ID’, ‘Temp Alert’, ‘Temp Caution’) alert msg:
   Perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)
If ‘Static RF Camera’ alert msg:
   Disregard
Sel File ➔ ‘Assign Camera ID’
Verify following:

<table>
<thead>
<tr>
<th>Camr Address</th>
<th>S/N</th>
<th>In Use</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>1010</td>
<td>1</td>
<td>EV1</td>
</tr>
<tr>
<td>18</td>
<td>1007</td>
<td>1</td>
<td>EV2</td>
</tr>
</tbody>
</table>

When complete, sel ‘OK’
If Camr IDs not correct:
   Sel ‘Delete Entry’ until all deleted
   Perform CAMR ID ASSIGNMENT (Cue Card, WVS) as reqd
Sel File ➔ Advanced Controls
On XCVR tab:
   √ Chroma Stabilizer – selected
   √ IF – selected
   √ Other options not selected
Sel RF Camera tab:
   √ Power Selections – selected
   √ Automatic Gain Control – selected
   √ S-Band Level – selected
   √ Other options not selected
When complete, sel ‘OK’

5. PWRDN

Sel File ➔ Exit
A7 WIRELESS VID PWR – OFF
HTR – OFF
Go to DEACTIVATION (Cue Card, TV) as reqd
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs

1. Unstow and set up IV H/W per diagram

NOTE
Connection not reqd until EVA day
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs (Continued)

2. WVS System

A7  WIRELESS VID HTR – ON
     PWR – ON

3. Photo/TV H/W Preparations

   AVIUs Powering V10s (two)
   SYNC/VIDEO – VIDEO
   HI-Z/75 – 75
   PWR SELECT – LO

   V10 (two)
   √TV PWR – ON

   MO58F
   √V10   PWR – ON
       DISPLAY pb – press to display tape counter
   √Tape installed
   √WVS Test Pattern displayed (color bars w/"No WVS Video")

   Audio

   A11
   √CCU PWR – ON

   R10
   √MS AUD PWR – AUD/TONE
   √A/G 1 – T/R
   √ICOM A – T/R

4. WVS PGSC Prep

   PGSC Pwrup and Application Opening

   O19
   √DC UTIL PWR MNA – ON

   PGSC
   Pwr – ON
   Sel Shuttle Apps icon
   Sel WVS icon
   Sel ‘No’ at ‘Restore To Previous Settings:’ window
   If ‘Comm Port Configuration’ error displayed:
   Remove Quatech RS-422 Card
   Sel ‘Start’ > ‘Shut Down’ > ‘Shut Down’ > ‘OK’
   Reinstall Quatech RS-422 Card
   Pwr – ON
   Sel Shuttle Apps icon
   Sel WVS icon
   RF Camera page will appear
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs (Continued)

4. WVS PGSC Prep (Concluded)

   Application Setup
   Select Page – XCVR
   Transceiver 1(2) CMD Power – ON (green CMD PWR:LVL- “ON:Min”)
   Sel RF Camera 1 – One EVA crewmember (green “ON”)
   Sel RF Camera 2 – Other EVA crewmember (green “ON”)

   If crewmember designations not in pulldown menu:
   √ RF Camera 1,2 – None
     Perform CAMERA ID ASSIGNMENT (Cue Card, WVS), then:
     Reattempt RF Camr selections
   If alert msg, perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)

   Sel File → Advanced Controls
   On XVCR tab:
   √ Chroma Stabilizer – selected
   √ IF – selected
   √ Other options not selected
   Sel RF Camera tab:
   √ Power Selections – selected
   √ Automatic Gain Control – selected
   √ S-Band Level – selected
   √ Other options not selected

   When complete, sel ‘OK’

5. WVS Checkout

   TV System
   Perform ACTIVATION (Cue Card, TV)

   EMU, Airlock Prep

   Airlock
   Lights – ON

   EMU
   √ EMU TV installed on Helmet

   PLSS
   REBA sw – ON

   EMU
   EMU TV Pwr pb – press (green LED)
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS INITIAL SETUP w/ERCAs (Concluded)

5. WVS Checkout (Concluded)

   Video Quality Check
   V10    REC pb (two) – press (red LED)
   PGSC   Select Page – RF Camera
   For C,L,R lens on each RF Camr Assy:
       Lens Iris Cntl – op(cl)
       √Video quality and perform CAMR ADJUSTMENTS (Cue Card, WVS) as desired

   Video Routing Check
   R12 (WIB)   CCTV PL 3 port – One of two XCVR/AVIU inputs
   A7        VID OUT MON 1(2) pb – push
   IN PL 3(WVS) pb – push
   MON      √Video quality
   R12 (WIB)   CCTV PL3 port – Other XCVR/AVIU input
   MON      √Video quality

6. PWRDN

   Perform PWRDN (WVS, Cue Card)

   EMU     EMU TV Pwr pb – push (no green LED)
   PLSS    REBA sw – OFF
   Airlock Lights – As reqd

   Go to DEACTIVATION (Cue Card, TV) as reqd
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS DAY-OF-EVA CHECK

1. Photo/TV H/W Activation

   MO58F
   V10 (two)
   √TV PWR – ON
   V10
   PWR – ON
   DISPLAY pb – press to display tape counter
   √Tape installed

2. WVS Sys Check

   A7
   √WIRELESS VID HTR – ON
   √PWR – ON

3. PGSC Pwrup and Application Opening

   O19
   √DC UTIL PWR MNC – ON
   PGSC
   Pwr – ON
   Sel Shuttle Apps icon
   Sel WVS icon
   Sel ‘No’ at ‘Restore To Previous Settings’ window

   If ‘Comm Port Configuration’ error displayed:
   Remove Quatech RS-422 Card
   Sel ‘Start’> ‘Shut Down’> ‘Shut Down’> ‘OK’
   Reinstall Quatech RS-422 Card
   Pwr – ON
   Sel Shuttle Apps icon
   Sel WVS icon
   RF Camera page will appear

   NOTE
   During EVA prep, EMU TV assy will be pwrd
4. Application Setup

Select Page – XCVR
Transceiver 1(2) CMD Power – ON (green CMD PWR:LVL- “ON:Min”)
RF Camera 1 – One EVA crewmember (green “ON”)
RF Camera 2 – Other EVA crewmember (green “ON”)

If crewmember designations not in pulldown menu:
√ RF Camera 1,2 – None
  Perform CAMERA ID ASSIGNMENT (Cue Card, WVS), then:
  Reattempt RF Camr selections
If alert msg, perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)

Select Page – RF CAMERA

Near middle of RF Camera page, sel ‘Advanced Controls’
S-Band Level (two) – Maximum

For center lens on each RF Camr Assy:
  Lens Iris Cntl – op(cl) until good video on V10(MON)
WIRELESS VIDEO SYSTEM (WVS) (Continued)

SPECIFICATIONS

RF CAMR (aka EVA mobility unit Radio frequency Camr Assembly (ERCA))
  MOUNTING INTERFACE: EVA helmet light structure
  CAMRS: 3 per helmet
  LENS FOCAL LENGTH:
    LEFT: 6mm (56° HFOV) (mounted on left helmet light)
    CENTER: 3.5mm (85° HFOV)
    RIGHT: 12mm (30° HFOV) (mounted on right helmet light)
  FOCUS CONTROL: FIXED at HYPERFOCAL
  IRIS: MANUAL via PGSC
  SHUTTER SPEED: AUTO(MANUAL)
  GAIN CONTROL: AUTO(MANUAL) (0 to +6 dB)
  WHITE BALANCE: AUTO(PRESET)

IMAGER:
  MODEL: Sony XC-999
  HORIZONTAL RESOLUTION: 470 lines
  PIXEL COUNT: 768 Horizontal, 494 Vertical
  SENSING AREA: 6.4mm Horizontal, 4.8mm Vertical, 8.0mm Diagonal
  UHF RCVR ANTENNA: 1 (on top of helmet)
  S-BAND XMT ANTENNAS: 2 (on side of helmet light batts)
  POWER: 12V from REBA batt enabled by pwr pb on right side of ERCA
  OPERATING TEMP: -31 degC to +185 degC

PAYLOAD BAY TRANSCEIVERS (XCVR): 2 units
  LOCATION: BAY 5 (under PLB liner)
  OPS POWER: 28 VDC from A7/WIRELESS VIDEO POWER sw, Control Bus BC1
  HTR POWER: 28 VDC from A7/WIRELESS VIDEO HEATER sw, Control Bus BC1
  OPERATING TEMP: -190 degC to +210 degC

UHF PLB COMMAND ANTENNA: 1 unit
  LOCATION: ODS TRUSS – AFT
WIRELESS VIDEO SYSTEM (WVS) (Continued)

SPECIFICATIONS (Concluded)

S-BAND RECEIVE ANTENNAS: Up to 7
   LOCATIONS: 2 at BAY 1 PORT, STBD SILL
              2 at BAY 4 PORT, STBD SILL
              2 at BAY 11 PORT, STBD SILL
              1 at AFT BULKHEAD
   POWER: 28 VDC from A7/WIRELESS VIDEO HEATER sw, Control Bus BC1

COMMAND LINK: UHF
   FREQUENCY: 400 MHz
   EFFECTIVE BANDWIDTH: 12kHz
   BIT RATE: 9600 bps

TELEMETRY/VIDEO LINK: S-BAND
   FREQUENCY: 2410 & 2470 MHz
   VIDEO BANDWIDTH: 16 MHz
   TELEMETRY BANDWIDTH: 5.8 & 6.8 MHz
   TELEMETRY BIT RATE: 9600 bps per channel
   RANGE: 300 ft reqd, 1100 ft expected (direct line-of-sight)
WIRELESS VIDEO SYSTEM (WVS) (Continued)

NOMENCLATURE

RF CAMR MOUNTED TO EMU HELMET

1. EMU Helmet
2. Pwr Indicator
3. Pwr sw
4. 12mm Lens
5. UHF Antenna
6. 3.5mm Lens
7. 6mm Lens
8. Latch (2X)
9. Pwr Receptacle
10. S–Band Antenna (2X)
11. PLSS
12. Helmet Light Module (2X)

NOTE
Thermal Cover not shown for clarity
WIRELESS VIDEO SYSTEM (WVS) (Continued)

NOMENCLATURE (Continued)

RF CAMR MOUNTED TO EMU HELMET LIGHT

1. 12mm Lens
2. Pwr sw
3. Pwr Indicator
4. UHF Antenna
5. 3.5mm Lens
6. 6mm Lens
7. S–Band Antenna
WIRELESS VIDEO SYSTEM (WVS) (Continued)

NOMENCLATURE (Concluded)

RF CAMR SHELL
WIRELESS VIDEO SYSTEM (WVS) (Continued)

WVS PLB MOUNTED H/W

1. Aft Bulkhead Antenna
2. Mid–Body S–Band Antennas
3. Transceivers
4. Mid–Body S–Band Antennas
5. Fwd S–Band Antennas
6. UHF Cmd Antenna
WIRELESS VIDEO SYSTEM (WVS) (Continued)

SOFTWARE – TOP STATUS AREA

RF Camera Status
[ON/green / OFF/black]

RF CAMERA Status
[ON/green / OFF/black]

RF CAMERA Pulldown
Selects/deselects Camr assignments to each PLB XCVR. RF Camrs will swap assignments if alternate assigned Camr selected

CMD PWR:LVL Status
[OFF:Min(Max) / ON:Min(Max)]

Denotes which PLB XCVR is processing/sending cmds (ON/OFF). Displays cmd level (Min/Max)

Frequency Status/Cmd
[F: High / L: Low]

Frequency that PLB XCVR is receiving S-Band signal from RF Camr. Will swap Camr assignments. Easiest way to swap Camr video coming from WIB connectors, recorders

Lens Select Cmd
[L,C,R]

Selects operational lens. Default is Center

ALERT Msg Display
Displays error msgs generated by system. Msgs start off flashing/blue and change to static/black when acknowledged (clicked). “Temp Caution” msg will start off flashing/yellow until acknowledged. Msgs disappear when problem fixed. Highest priority error displayed first. Five available msgs:

Static XCVR
Loss of comm between PGSC, PLB XCVR

Static RF Camera
Loss of comm between XCVR, RF Camr

Bad Camera ID
Mismatch between RF Camr selected and RF Camr transmitting ID

Temp Alert
Displays when RF Camr(PLB XCVR) temp is 5° from going into caution range (ERCA = -35° to -30° C or +80° to +85° C, XCVR = -40° to -35° C or +80° to +85° C)

Temp Caution
Displays RF Camr(PLB XCVR) temp has gone out of limits (ERCA < -35° C or >+85° C, XCVR < -40° C or >+85° C)

Select Page Icons
[RF Camera, XCVR, Telemetry]
Provides selection between the three displays
SOFTWARE – RF CAMR PAGE

XCVR | RF Camera | CMD PWR:LVL | Frequency | Lens Select | ALERT | Select Page
-----|-----------|-------------|-----------|-------------|-------|--------------
1    | Off       | Off:Min     | High      | L           | C     | R            | RF Camera | Telemetry |
2    | Off       | Off:Min     | Low       | L           | C     | R            | XCVR      

None  C

Lens Iris Control | Close | Open |
Electronic Shutter | Auto  |
White Balance Control | Auto  |

Advanced Control

Automatic Gain Control | Disabled |
Power | ON Off MUTE |
S-Band Level | Dynamic |

Automatic Gain Control | Disabled |
Power | ON Off MUTE |
S-Band Level | Dynamic |
**WIRELESS VIDEO SYSTEM (WVS) (Continued)**

**SOFTWARE – RF CAMR PAGE (Concluded)**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lens Iris Control</strong></td>
<td>Opens(closes) Iris for selected lens. No telemetry other than video. Number displayed shows motor speed. Can click, hold</td>
</tr>
<tr>
<td><strong>Electronic Shutter Control</strong></td>
<td>Brightens(darkens) image scene by controlling electronic shutter. Manual status runs from dark (0 = tbd sec) to bright (100 = 1/60 sec). Initial value = 50. Afterwards, setting stays where it was left</td>
</tr>
<tr>
<td><strong>White Balance Control</strong></td>
<td>Determines how white balance set for Camr</td>
</tr>
<tr>
<td>Auto,2800K,6100K,Variable</td>
<td>2800K – PLB lights&lt;br&gt;6100K – Sunlight&lt;br&gt;Variable – Allows red, blue gain control</td>
</tr>
<tr>
<td><strong>Automatic Gain Control</strong></td>
<td>Controls status of AGC. Enabled needed for dark subjects; otherwise, it is disabled to reduce noise on video</td>
</tr>
<tr>
<td><strong>Power Status</strong></td>
<td>Status of RF Camr transmitter. Related to top status or RF Camr (black off, green on). Mute stops video signal from being sent to antenna</td>
</tr>
<tr>
<td><strong>S-Band Level</strong></td>
<td>Dynamic (default) – Pwr adjusted per signal strength seen at receiver (adjusted to be received at -40dB)&lt;br&gt;Maximum – Sends signal at full pwr for signal strength problems</td>
</tr>
<tr>
<td><strong>Black Pedestal</strong></td>
<td>NOT USED. Brightness control varies from 0 to 100</td>
</tr>
<tr>
<td><strong>Zoom, Focus, LED Control</strong></td>
<td>NOT AVAILABLE. Future capabilities</td>
</tr>
</tbody>
</table>

15-21 P/TV/118/FIN
### SOFTWARE – XCVR PAGE

<table>
<thead>
<tr>
<th>XCVR</th>
<th>RF Camera</th>
<th>CMD PWR LVL</th>
<th>Frequency</th>
<th>Lens Select</th>
<th>ALERT</th>
<th>Select Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 OFF</td>
<td>None</td>
<td>OFF:Min</td>
<td>High</td>
<td>L</td>
<td>C</td>
<td>R</td>
</tr>
<tr>
<td>2 OFF</td>
<td>None</td>
<td>OFF:Min</td>
<td>Low</td>
<td>L</td>
<td>C</td>
<td>R</td>
</tr>
</tbody>
</table>

#### Transceiver 1
- **CMD Power**: Off
- **Antenna**: Auto

#### Transceiver 2
- **CMD Power**: Off
- **Antenna**: Auto

#### Advance Controls
- **Chroma Stablizer**: On
  - **IF**: Wide
  - **CMD Level**: Min
- **Chroma Stablizer**: On
  - **IF**: Wide
  - **CMD Level**: Min
### SOFTWARE – XCVR PAGE (Concluded)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CMD Power</strong></td>
<td>Activates XCVR cmd processor. Only one XCVR can perform this duty. XCVR 1,2 selections are</td>
</tr>
<tr>
<td>[OFF,ON]</td>
<td>mutually exclusive and an ON cmd will automatically turn the other OFF. Status also shown under</td>
</tr>
<tr>
<td></td>
<td>CMD PWR:LVL in top status area</td>
</tr>
<tr>
<td><strong>Antenna</strong></td>
<td>Controls antenna selection method. Auto (default) picks antenna based on strongest signal strength.</td>
</tr>
<tr>
<td><strong>Chroma Stabilizer</strong></td>
<td>NOT USED</td>
</tr>
<tr>
<td><strong>Intermediate Frequency (IF)</strong></td>
<td>Controls bandwidth sampled for RF Camr return signal. Changed to Narrow during signal strength</td>
</tr>
<tr>
<td>[Wide,Narrow]</td>
<td>troubleshooting</td>
</tr>
<tr>
<td><strong>CMD Level</strong></td>
<td>NOT USED w/new spread spectrum XCVRs. Status shown under CMD PWR:LVL in top status area</td>
</tr>
</tbody>
</table>
### SOFTWARE – TELEMETRY PAGE

**RF Camera System Telemetry**

<table>
<thead>
<tr>
<th>XCVR</th>
<th>RF Camera</th>
<th>CMD PWR LVL</th>
<th>Frequency</th>
<th>Lens Select</th>
<th>ALERT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>OFF</td>
<td>OFF: Min</td>
<td>High</td>
<td>L</td>
<td>C</td>
</tr>
<tr>
<td>2</td>
<td>OFF</td>
<td>OFF: Min</td>
<td>Low</td>
<td>L</td>
<td>C</td>
</tr>
</tbody>
</table>

**Component Values**

- **RF Camera Lens**
  - **Signal Strength**
    - UHF: -1.00 M
  - **RX Gain**
    - UHF: -1 M

- **Power**
  - **Voltage**
    - 0.00 M
  - **Ampere**
    - 0.00 M

- **Temperature (°C)**
  - **Electronics**
    - L: 32 M
    - C: 32 M
    - R: 32 M

**Transceiver Telemetry**

<table>
<thead>
<tr>
<th>XCVR</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>32 M</td>
</tr>
<tr>
<td>2</td>
<td>32 M</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Channel</th>
<th>Signal Strength</th>
<th>Antenna Select</th>
<th>Antenna Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.00 M</td>
<td>1 M</td>
<td>Manual M</td>
</tr>
<tr>
<td>2</td>
<td>0.00 M</td>
<td>1 M</td>
<td>Manual M</td>
</tr>
</tbody>
</table>

**Component Values**

- **Voltage**
  - 10.00 M
- **Ampere**
  - 10.00 M
RF Camr System Telemetry

- **RF CAMERA**
  - Displays RF Camr title
- **Lens**
  - Displays currently selected lens
- **UHF Signal Strength**
  - Displays cmd link signal strength in dB seen at RF Camr
  - [nom = -120 to -59]
- **UHF RX Good**
  - NOT USED
- **Pwr Voltage**
  - Displays RF Camr system voltage
  - [nom = 12.8]
- **Pwr Amperes**
  - Displays RF Camr system current
  - [nom = 0.40]
- **Temperature Electronics**
  - Displays RF Camr electronics temp in degC. Alert range = -30° to -35° C and +80° to +85° degC. Caution range = <-35° and >+85° degC
  - [nom = 13 to 30]
- **Temperature L,C,R**
  - Displays RF Camr left Camr temp in degC. Alert range = -30° to -35° C and +80° to +85° C. Caution range = <-35° C and >+85° C
  - [nom = 0 to 33]

Transceiver Telemetry

- **XCVR 1,2 Temperature**
  - Displays XCVR temp in degC. Alert range = -40° to -35° C and +80° to +85° C.
  - Caution range = <-40° and >85° C
  - [nom = 18 to 37]
- **S-Band Signal Strength**
  - Displays return signal strength seen at XVC in dB
  - [nom = 97.5 to -10.5]
- **S-Band Antenna Select**
  - Displays which S-Band antenna the XCVR is using to get video signal
- **S-Band Antenna Mode**
  - Displays XCVR antenna selection mode
  - [Auto,Manual]
- **Power Voltage**
  - Displays XCVR system voltage
  - [nom = 12.42]
- **Power Amperes**
  - Displays XCVR system current
  - [nom = 1.10]
- **Quads 1,2**
  - Displays current signal strength for each XCVR’s selected S-Band antenna in dB showing strongest of antenna quads
This Page Intentionally Blank
# Sequential Still Video (SSV)

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<td>16-6</td>
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<td>16-7</td>
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<td>16-7</td>
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<tr>
<td>16.2 FRONT PANEL LEDs NOT INDICATING CORRECTLY</td>
<td>16-7</td>
</tr>
</tbody>
</table>
SEQUENTIAL STILL VIDEO (SSV)

SSV NOMINAL SETUP

1. Obtain following H/W:
   - MF43C SSV Compression Encoder Box
   - SSV BNC to BNC Cable
   - SSV to PDIP/CIP Cable
   - PGSC Pwr Cable
   - Bal/UnBal Xfer

2. Config SSV H/W to PDIP 2
   Config H/W per dwg at right
   
   NOTE
   Video Spare 1 controlled by MCC instead of pnl A7

   PDIP 2 PWR 1 (CB3) – cl
   DC PWR 1 – ON

3. Config SSV settings
   IN SEL – NTSC
   Mode – 3 (may change if desired)
   OUTRATE per FLIGHT PLAN
   SSV Pwr – on
   Pwr LED illum
   ENC DATA LED flickering
   FRM DATA LED flickering
   FILL FRM pulsing

4. Inform MCC when SSV SETUP complete
SEQUENTIAL STILL VIDEO (SSV) (Continued)

SSV DEACTIVATION

1. SSV
   SSV Pwr – off
   √Pwr LED not illuminated
   √ENC DATA LED not illuminated
   √FRM DATA LED not illuminated
   √FILL FRM LED not illuminated

L11 (PDIP 2)
   DC PWR 1 – OFF

2. TV System
   Go to DEACTIVATION (Cue Card, TV) as reqd
SEQUENTIAL STILL VIDEO (SSV) (Continued)

SPECIFICATIONS

DIMENSIONS: 8.5 in (L) x 4.245 in (W) x 2.72 in (H)
PWR: 28V
FUSE: 2A
WEIGHT: 3.02 lb

NOMENCLATURE

Encoder Data LED
28 VDC Port
BNC Composite Video Port
IN SEL sw
Y/C Component Video Port
Pwr LED
MODE sw
OUT RATE sw
DOWNLINK OUT Port
Fill Frame Data LED
Framer Data LED
FUSE

TOP DECAL

IN SEL
NTSC – BNC CONN
Y/C – 4 PIN DIN CONN
TST_PAT – COLOR BAR TEST PATTERN
MODE
1 – Q = 10
2 – Q = 30
3 – Q = 50
4 – Q = 70
5 – Q = 85
6 – TELEMETRY TEST PATTERN
OUT RATE
1 – 4KBPS
2 – 8KBPS
3 – 16KBPS
4 – 25KBPS
5 – 32KBPS
6 – 64KBPS
7 – 2MBPS
8 – 4MBPS

SEQUENTIAL STILL VIDEO COMPRESSION ENCODER
P/N SED 16103222–301
S/N [ ]
SEQUENTIAL STILL VIDEO (SSV) (Continued)

CAMCORDER VIA SSV

1.  Config per dwg at right

2.  Camcorder Settings

   AVIU      SYNC/VIDEO – VIDEO
             HI-Z/75 – 75
             PWR SELECT – LO

   O19       √TV Pwr – ON
   CC        √Wide Conversion Lens installed
             PWR – CAMERA
             Tape – Remove
             √Viewfinder displays blinking yellow tape
            Camr Settings
             √AUTO LOCK – AUTO LOCK
             FOCUS – AUTO
             Multiuse Brkt, Clamp
             Zoom in to check focus; zoom out to frame

3.  SSV Settings

    IN SEL – Y/C
    Mode – 5 (may change if desired)
    OUT RATE per FLIGHT PLAN
    SSV Pwr – ON
    √Pwr LED illum
    √ENC DATA LED flickering
    √FRM DATA LED flickering
    √FILL FRM pulsing
SEQUENTIAL STILL VIDEO (SSV) (Continued)

TEST PATTERN VIA SSV

1. Perform SSV NOMINAL SETUP, step 1

2. SSV Settings
   IN SEL – TEST PAT
   Mode – 3 (may change if desired)
   OUT RATE per FLIGHT PLAN
   SSV Pwr – ON
   √ Pwr LED illum
   √ ENC DATA LED flickering
   √ FRM DATA LED flickering
   √ FILL FRM pulsing

SSV TLM DNLK

1. Perform SSV NOMINAL SETUP, step 1

2. SSV Settings
   IN SEL – NTSC
   Mode – 6
   OUT RATE per FLIGHT PLAN
   SSV Pwr – ON
   √ Pwr LED illum
   √ ENC DATA LED flickering
   √ FRM DATA LED flickering
   √ FILL FRM pulsing
SEQUENTIAL STILL VIDEO (SSV) (Concluded)

MALS

16.1  PWR LED NOT LIT

√Fuse
Replace fuse if blown w/fuse from SSV Fuse Kit
(SED 15500338-301)

√DC Pwr from orbiter util

16.2  FRONT PANEL LEDs NOT INDICATING CORRECTLY

Cycle pwr on SSV Compression Encoder
SSV Pwr – 0 (off)
Wait 5 sec
SSV Pwr – 1 (on)

√Cables
√Video source
<table>
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<td>MALS</td>
<td>17-2</td>
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<tr>
<td>17.1 CANNOT STABILIZE IMAGE</td>
<td>17-2</td>
</tr>
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</table>
## BINOCULARS

### SPECIFICATIONS

<table>
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<tr>
<th>Model</th>
<th>Stabilization</th>
<th>Pwr</th>
<th>Magnification</th>
<th>Objective Lens (mm)</th>
<th>Exit Pupil</th>
<th>Approx FOV</th>
<th>Approx Linear FOV @ 1000 yd</th>
<th>Approx Minimum Focus (ft)</th>
<th>Weight (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeiss 8 X 20</td>
<td>No</td>
<td>N/A</td>
<td>8X</td>
<td>20</td>
<td>2.5mm</td>
<td>6.6°</td>
<td>346.5 ft</td>
<td>9.0</td>
<td>0.39</td>
</tr>
<tr>
<td>Fuji 10 X 40</td>
<td>Yes (Gyro)</td>
<td>6AA</td>
<td>10X</td>
<td>40</td>
<td>4.5mm</td>
<td>5.0°</td>
<td>210.0 ft</td>
<td>65.0</td>
<td>5.5</td>
</tr>
<tr>
<td>Fuji 14 X 40</td>
<td>Yes (Gyro)</td>
<td>6AA</td>
<td>14X</td>
<td>40</td>
<td>2.8mm</td>
<td>4.0°</td>
<td>210.0 ft</td>
<td>75.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Fuji 16 X 70</td>
<td>No</td>
<td>N/A</td>
<td>16X</td>
<td>70</td>
<td>4.4mm</td>
<td>4.0°</td>
<td>210.0 ft</td>
<td>100.0</td>
<td>4.76</td>
</tr>
<tr>
<td>Zeiss 20 X 60</td>
<td>Yes (Mechanical)</td>
<td>N/A</td>
<td>20X</td>
<td>60</td>
<td>3.0mm</td>
<td>2.9°</td>
<td>150.0 ft</td>
<td>50.0</td>
<td>3.66</td>
</tr>
</tbody>
</table>

### MALS

**17.1  CANNOT STABILIZE IMAGE**

- √ Batts, replace as needed
- If stabilization obtainable, continue nominal ops
- If stabilization not obtainable, √ MCC
FIBERSCOPE

SPECIFICATIONS

LIGHT PWR: Orbiter – 6V via IFM Breakout Box

NOMENCLATURE

<table>
<thead>
<tr>
<th>Lens Tip Adapter (FOV in deg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10D</td>
</tr>
<tr>
<td>20D</td>
</tr>
<tr>
<td>40D</td>
</tr>
<tr>
<td>40S (Rt angle Lens)</td>
</tr>
<tr>
<td>80D</td>
</tr>
</tbody>
</table>

Mini–Cam

Fiberscope to Mini–Cam Adapter

Fiberscope (SED 33103861–303)

Bending Section

Objective Lens

Screw Thread

Locking Ring

Positioning Silt

Light Guide/Windows

(Forward-viewing Adapter)

Objective Lens

Positioning Dot (red)

Ocular

Diopter Adjustment Ring

Focusing Ring

Angle Free Knob (for RIGHT and LEFT)

Angle Knob (for UP and DOWN)

Angle Knob (for RIGHT and LEFT)

Light Guide Windows

Mini–Cam
FIBERSCOPE (Continued)

ACTIVATION/OPERATION

MA9N 1. Unstow Fiberscope Kit, Fiberscope Light, if reqd

2. If Fiberscope Light reqd:
   Install Fiberscope Light Plug into Fiberscope Light
   Perform FIBERSCOPE LIGHT PWRUP, 18-4, steps 1 thru 12

3. If installed lens not desired:
   Unstow spare lens
   Perform FIBERSCOPE LENS REPLACEMENT, 18-6

4. If video dnlk(viewing) reqd:
   Unstow Fiberscope-to-Mini-Cam Adapter
   Screw Adapter into Mini-Cam body lens mount
   Mount Adapter to Fiberscope by aligning setter pin w/orange dot, rotate Adapter cw to lock
   Perform IN-CABIN MINI-CAM (MINI-CAM)
   Route Mini-Cam video to monitor or dnlk:
   A7  VID OUT MON 1(2) (DNLK) pb – push
       IN FLT DECK(MIDDECK) pb – push
   Push button on Adapter and rotate Fiberscope until slit mark on image edge at top of image
   OR
   Unstow,install Fiberscope Eyepiece

5. Adjust diopter until slit mark clearly visible
   Adjust Camr viewing by rotating up/down,left/right angle knobs while free knobs are in F posn
   Adjust focus by rotating focus ring

DEACTIVATION

1. If Fiberscope Light used:
   Perform FIBERSCOPE LIGHT PWRUP, 18-4, steps 13 thru 15
   Remove Fiberscope Light from Fiberscope Light Plug
   Stow Fiberscope Light

2. If Mini-Cam used:
   O19(MO58F) TV PWR – OFF
   Remove Mini-Cam Adapter from Fiberscope
   Remove,stow Mini-Cam Adapter from Mini-Cam body

3. Remove,stow Fiberscope Eyepiece

4. Stow Fiberscope, Fiberscope Kit
FIBERSCOPE (Continued)

FIBERSCOPE LIGHT PWRUP (30 min)

1. Unstow:
   Multimeter
   Pin Kit (two 5-in 20 ga Pin/Pin Test Jumper Leads, two 24-in Minigrabbers, 5-Amp Fuse)
   Gray Tape
   IFM Breakout Box
   DC Pwr Cable

2. Remove Battery Holder Assembly from Fiberscope Light

3. √ DC UTIL PWR MNA – OFF

4. a. Config Breakout Box:
   AUX – OFF
   28V/VAR VOLT – VAR VOLTS
   PWR A,B – OFF
   b. Remove fuse cap from side A
   c. Rotate GA SEL A – 20
   d. Install 5-Amp Fuse, replace cap

5. Assemble Breakout Box and Multimeter as shown below
FIBERSCOPE (Continued)

FIBERSCOPE LIGHT PWRUP (30 min) (Continued)

6. Configure Multimeter for DC V (auto range)

MO52J 7. DC UTIL PWR MNA – ON

8. Breakout Box:
   √ VAR VOLTS – ON (lt on)

9. Set VAR VOLTS output by rotating VAR rotary sw until Multimeter reads 6 VDC

   NOTE
   Positive, negative leads from Breakout Box can be
   attached to either terminal on Fiberscope Light

10. Install Breakout Box and cables to Fiberscope Light as shown below

![Diagram of cable connections]
FIBERSCOPE (Concluded)

FIBERSCOPE LIGHT PWRUP (30 min) (Concluded)

11. Secure IFM Breakout Box, Multimeter, and PWR Cable in convenient location

12. When ready to operate Fiberscope:
   Breakout Box: PWR A – ON (lt on)

13. When finished operating Fiberscope:
   Breakout Box: PWR A – OFF

14. DC UTIL PWR MNA – OFF

15. Disconnect Minigrabbers, Test Jumper Leads, Multimeter, and IFM DC Pwr Cable

FIBERSCOPE LENS REPLACEMENT

1. Unscrew lock ring from lens until second threads disengage

2. Rotate lens to align green dots

3. Pull lens to engage first threads, unscrew lock ring until lens free

4. Select desired lens and stow removed lens in foam

5. Align green dots on lens and Fiberscope; slowly push lens on until lens stops against first threads; screw on lens until first threads disengage

6. Rotate lens until green dot aligns w/Fiberscope red dot

7. Push lens into Fiberscope until it stops against second threads, screw on lens until second threads fully engaged
NIGHT VISION EQUIPMENT

NOTE
Not being flown
# LASER DYNAMIC RANGE IMAGER (LDRI)

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</table>
LASER DYNAMIC RANGE IMAGER (LDRI)

SPECIFICATIONS

CAMERA MODEL: Sony XC-ST70
PIXEL COUNT: 720 x 480
CAMERA SENSOR FOV: 15 x 19.7 deg
FOCAL LENGTH: 50.6mm
IRIS: Fixed at F11
FOCUS: Fixed at 6 ft

LASER MODEL & TYPE: LaserTelLT-1110-20W-CS, Class IV rated @ 20W and limited to 11W
LASER WAVELENGTH: 805 nm +/- TBD based upon laser temperature
LASER COVERAGE: 23.7 (vertical) x 19.9 deg (horizontal)
CAMERA/LASER PARALLAX: Approx 1.5 in horizontal
HAZARD ZONE: 9 ft

MOUNTING INTERFACE: Bottom of ITVC (ITVC specifications in CCTV section)
POINTING CAPABILITY: Standard Pan Tilt Unit (PTU)
PAN RANGE: 179.8 deg
TILT RANGE: 300 deg
ITVC ILLUMINATOR: LDRI

WEIGHT: 6.5 lb + 3 lb counter-weight
DIMENSION: 11 in (L) x 5.88 in (W) x 4.0 in (H)
PWR: 28V +/- 4V
NOMENCLATURE

NOTE
Thermal covers are not depicted

1. W601 Interface Cable Assembly (EVA releasable at boom I/F)
2. Isolator Plate
3. Isolator (x4)
4. PTU External Thermistor Interface Cable*
5. Counterweight Support
6. Counterweight
7. ITCV
8. ITCV External Thermistor Interface Cable*
9. LDRI Laser Diffuser
10. LDRI Camera Orifice
11. LDRI Power/Sync Input and Video Output
12. LDRI
13. ITVC Power/Sync Input and Video Output
14. Boom Interface Bracket (EVA Releasable)

* Items 4 and 8 are subsets of item 1, the W601 Interface Cable Assembly
LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

NOMENCLATURE (Concluded)

- 1. LDRI Front Face
- 2. Power/Sync Input and Video Output
- 3. Camera Orifice
- 4. Laser Orifice (covered by diffuser)
OBSS PTU PAN AND TILT RANGES

**Pan**
In this depiction, pan = -90 deg relative to the origin.

- **Pan**
  - +9.8 deg
  - -170.0 deg

**Tilt**

- **Mounting Surface for PTU**
- **Boom Surface**
- **Boom Interface Bracket**
- **OBSS Interface Bracket**

- **Tilt**
  - +175 deg
  - -125 deg
  (negative tilt range is limited by cable routed to LDRI)
LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

FUNCTIONAL FLOW

[Diagram of functional flow]
LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

ITVC, LDRI, AND PTU INTERACTIONS

* Pan and tilt values for display on MON
LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

OPP PANEL

R12

**OBSS SW PWR (CB1 AND S1)**
- Closure of 3-amp OBSS SW PWR cb followed by sw will provide CAB PL3 POWER to R12 OBSS panel

**RSC VIDEO (J105)**
- Provides balanced, asynchronous video from RMS Sideview Camr (RSC)
- Video will be routed to VSU PL3 input on R12/VPU/WIB using PDIP Video Cable to support viewing/recording/dnlk ops

**LCS CMD/TLM (J107)**
- Provides PGSC interface for crew control, data, and telemetry for Laser Camr System (LCS) and ISIS Digital Camr (IDC)
LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

OBSS PANEL

RSC PWR (S2)
- Provides CABIN PL3 POWER to RMS Sideview Camr (RSC) and its heater
- Heater must remain active for duration of mission

ITVC ENA (S3)
- ON sends an enable command to the OBSS ITVC
- SPEE PWR must be ON prior to ITVC enable
- OFF disables Camr. A 10-sec wait reqd before re-enabling

SPEE PWR (S4)
- ON closes K1 pwr relay in RMS End Effector. Pwr flows to OBSS ITVC/LDRI/PTU and to RSC illuminator. Upon initial relay closure, illuminator has pwr but not active
- After initial closure of K1 relay, cycling SPEE PWR sw to OFF, then ON will command RSC illuminator to full pwr (156 LEDs). Subsequent K1 relay cycling will take illuminator to med pwr (84 LEDs), then low pwr (30 LEDs), then OFF, and then back to full pwr
- Cycling K1 relay OFF, then ON will rest OBSS PTU pan and tilt values to zero; take LDRI to stby (Mode 1) and ITVC to manual state
LASER DYNAMIC RANGE IMAGER (LDRI) (Continued)

A7 PANEL

NOTE
Command interfaces listed below pertain only to OBSS LDRI and not to OBSS ITVC/PTU. Commands to ITVC/PTU handled by selecting PL2 as video input and treating that address in same manner as PLB ITVC

MUX1(2)(L).MIDDECK pb
- Selection of any of four VIDEO OUTPUT MUX pb followed by VID IN MIDDECK pb enables commanding of OBSS LDRI

IRIS sw
- IRIS sw provides gain cntl for LDRI Modes 3,4,5,6. Feedback is available in MON Lens Data in place of T-stop
- Gain range – 10 (brightest) to 280 (darkest). Default value – 280
- Gain applied on one of Modes 3(4,5,6) will apply to other three. Gain returns to default value by selecting Mode 1

MODE, MENU pb
- Six MODE/MENU pb, left to right, allow selection of LDRI modes 1 thru 6:
  MODE 1 – STANDBY
  MODE 2 – ILLUMINATOR
  MODE 3 – 2D
  MODE 4 – 2D GAMMA
  MODE 5 – 3D
  MODE 6 – 3D GAMMA
- If OBSS/ITVC cntl selected (by depressing VID OUT pb selected for PL2) while in LDRI modes 3(4,5,6), LDRI video will continue to flow to VID OUT. For this scenario, all ITVC cmds active in blind
- Mode fdbk for Modes 3,4,5,6 avail when PL2 illuminated. In Modes 1 and 2, MODE/MENU pb indicate ITVC exposure setting, not mode
LASER DYNAMIC RANGE IMAGER (LDRI) (Concluded)

MONITOR INDICATIONS FOR LDRI VIDEO

NOTE
LDRI video assigned to PL2 using R12/VPU MISS CAM jumper posn. LDRI video (Modes 3-6) will have black rounded corners. Lens data and green Camr data ON for this illustration.

Gain value as set by IRIS sw on A7 (70=brightest and 280=darkest)
Default = 280

20.0 FOV
6.0 FT
T 280

Fixed
Random

-112.5P +22.5T +28C
CAMB

Pan, tilt for OBSS PTU
Temp from LDRI Laser

Gain value as set by IRIS sw on A7 (70=brightest and 280=darkest)
Default = 280

20.0 FOV
6.0 FT
T 280

Fixed
Random

-112.5P +22.5T +28C
CAMB

Pan, tilt for OBSS PTU
Temp from LDRI Laser
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<td>MANUAL A31p DESKTOP DNLK SETUP</td>
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<td>RECONFIGURATION OF A31p SCREEN RESOLUTION</td>
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</tbody>
</table>
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC)

LCS SPECIFICATIONS

LASER WAVELENGTH: ≈1500 nm, near-IR
LASER CLASSIFICATION: Class 3b
OPERATIONAL RANGE: 4-10 ft
LASER SPOT SIZE: 0.04 in @ 4.5 ft
HAZARD ZONE:
  Nominal Hazard Keep Out Zone (KOZ) – 5 ft
  Worst Case Hazard KOZ – 64 ft
LASER COVERAGE:
  Detailed Area and Quick View Scan Modes – 30 x 30 deg
  Continuous Line Scan Mode – Variable 2 to 42 deg
LINEAR DETECTION ARRAY (LDA): 256-pixel linear array CCD w/13-bit intensity dynamic range
LCH WEIGHT: 24.5 lb
LCH DIMENSIONS: 11 in (L), 10 in (W), 5.6 in (H)
LCH PWR MODES/SOURCES:

<table>
<thead>
<tr>
<th>OBSS State</th>
<th>Pwr</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational/RMS Grappled</td>
<td>124V</td>
<td>APCU2</td>
</tr>
<tr>
<td>MPM Berthed</td>
<td>28V</td>
<td>MNA and MNB (only LCH,IDC heaters in this mode)</td>
</tr>
</tbody>
</table>

HEATER PWR MODES/SOURCES:

<table>
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<th>Heater</th>
<th>Pwr</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>124V Heater (RMS Grappled)</td>
<td>124V</td>
<td>APCU2 (A15 APCU2 CONV and OUTPUT sws)</td>
</tr>
<tr>
<td></td>
<td>28V</td>
<td>MNA and MNB (Pnl A8 STBD HTRS A,B sws)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(only LCH,IDC heaters in this mode)</td>
</tr>
<tr>
<td>28V Heater (MPM Berthed)</td>
<td>124V</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28V</td>
<td></td>
</tr>
</tbody>
</table>

LASER SCAN MODES:

- Detailed Area – Two-directional scanning in rectangular pattern (used for "stop and stare" ops). Both X,Y mirrors used
- Quick View – Low-resolution detailed area-scan mode
- Continuous Line – One-directional scanning passes thru optical center of FOV (used for scanning ops). RMS provides scanning motion

CREW CONTROL:

- Hardware – LCC (Laser Camr Controller – A31p)
- Software – LCC software shortcut (Shuttle Apps\IDC)
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCS NOMENCLATURE

1. Laser Orifice
2. RS422 Connector (J4)
3. Test Connector (J3)
4. COMMS/DATA Connector (J2)
5. POWER Connector (J1)
6. Ethernet Peripheral Device Connector (J5)
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE GUI

LCS Camera Controller

File    Tools    Help

Fit 1:1

Database
C:\lcs\Config\lcs.dsc

Stop Scan

Scanning    System Data

Detailed Area Scan

Start Area Scan

Continuous Line Scan

Start Line Scan

Quick View Scan

Start Quick View

Laser    Comm    Temp    Elec

Scan Status:

GMT    Message    MSG ID

GMT:
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

### LCC SOFTWARE GUI (Continued)

#### Menu Bar [File, Tools, Help]

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<th>Description</th>
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<tr>
<td><strong>File</strong></td>
<td></td>
</tr>
<tr>
<td>Open</td>
<td>Allows user to open and view previous scan bin files. If several open, they are shown in order under File menu.</td>
</tr>
<tr>
<td>Close</td>
<td>Closes displayed scan bin file. Appears only when viewing previous scans. If several open, only currently selected file will be closed with this function.</td>
</tr>
<tr>
<td>Close All</td>
<td>Closes all scan bin files. Appears only when viewing previous scans. If several open, all files will be closed. Multiple scans collected in series will reside in RAM until cleared with this feature. Good housekeeping feature to use between scan AOIs.</td>
</tr>
<tr>
<td>Load Database</td>
<td>Allows user to change current database. When load database option selected, a window will appear and allow user to select another database. Only files with .dsc extension selectable.</td>
</tr>
<tr>
<td>Exit</td>
<td>See LCC SOFTWARE EXIT DIALOGUE BOXES, 21-18</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td></td>
</tr>
<tr>
<td>Set GMT</td>
<td>Sets GMT clock on both LCC/LCH. When selected, window will appear allowing A31p time to be set. LCC time must be within 3 sec of onboard SM GPC. Once clock set, LCC A31p will update it’s system clock every 5 min using LCH system clock if LCC GUI running.</td>
</tr>
<tr>
<td>IDC Control</td>
<td>Not used. Allows user to pwr on/off IDC. This task preferably done via IDC software.</td>
</tr>
<tr>
<td>Zoom Toolbar</td>
<td>Allows Zoom Toolbar to be displayed under Menu Bar.</td>
</tr>
<tr>
<td>Intensity Adjustments</td>
<td>Not currently selected(used). Invokes Intensity Adjustment window on GUI so user can adjust Gamma, Brightness, and Contrast of displayed scan image.</td>
</tr>
<tr>
<td>Peak Status Highlight</td>
<td>Not currently selected(used). Invokes Peak Status window so user to select voxel status: Below Min Intensity, Above Max Intensity, Overflow, Underflow, Invalid Peak, No Peak, and Multiple Highlights.</td>
</tr>
<tr>
<td>Status Toolbar</td>
<td>Allows Status Toolbar to be displayed below GUI. Contains only GMT.</td>
</tr>
<tr>
<td><strong>Window</strong></td>
<td></td>
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<tr>
<td>Cascade</td>
<td>Cascades all currently opened scan bin files.</td>
</tr>
<tr>
<td>Tile Vertically</td>
<td>Will ‘vertically tile’ all opened scan bin files. User can scroll up/down with vertical, horizontal slide bars.</td>
</tr>
<tr>
<td>Tile Horizontally</td>
<td>Will ‘horizontally tile’ all opened scan bin files. User can scroll up with vertical slide bar.</td>
</tr>
<tr>
<td>Arrange Icons</td>
<td>If multiple windows open and minimized in display area, will align minimized files.</td>
</tr>
<tr>
<td><strong>Help</strong></td>
<td></td>
</tr>
<tr>
<td>About</td>
<td>Displays window w/software-specific information; i.e., version of release.</td>
</tr>
</tbody>
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#### Zoom Toolbar

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<th>Zoom Tool</th>
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<td>Fit 1:1</td>
<td>If displayed scan bin file has been zoomed in(out), button allows user to fit image to display area.</td>
</tr>
<tr>
<td>Magnifier w/+ Sign</td>
<td>Zoom in button.</td>
</tr>
<tr>
<td>Magnifier w/- Sign</td>
<td>Zoom out button.</td>
</tr>
<tr>
<td>Magnifier in box</td>
<td>Allows user to select a box on display to zoom in on. Mouse arrow will change to magnifier. User will outline area w/two mouse clicks and view is fitted in display area.</td>
</tr>
<tr>
<td><strong>Database</strong></td>
<td></td>
</tr>
<tr>
<td>Database</td>
<td>Displays current database and its path. Default is &quot;c:/lcs/config/lcs.doc&quot;.</td>
</tr>
<tr>
<td><strong>File</strong></td>
<td></td>
</tr>
<tr>
<td>File</td>
<td>Displays name of current file being saved on LCC hard drive during scan. Will display last scan file name when no scan in progress.</td>
</tr>
</tbody>
</table>

#### Scanning Page [Detailed Area Scan, Continuous Line Scan, Quick View Scan]

(One of two pages which allows user to select scan from one of three drop-down menus and execute each type of scan)

<table>
<thead>
<tr>
<th>Scan Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Detailed Area Scan</strong></td>
<td></td>
</tr>
<tr>
<td>Detailed Area Scan</td>
<td>Drop-down menu allows user to select one out of a possible 30 detailed area scans.</td>
</tr>
<tr>
<td>Start Area Scan</td>
<td>Executes detailed area scan selected from drop-down menu.</td>
</tr>
<tr>
<td><strong>Continuous Line Scan</strong></td>
<td></td>
</tr>
<tr>
<td>Detailed Area Scan</td>
<td>Drop-down menu allows user to select one out of a possible 30 continuous line scans.</td>
</tr>
<tr>
<td>Start Line Scan</td>
<td>Executes continuous line scan selected from drop-down menu.</td>
</tr>
<tr>
<td><strong>Quick View Scan</strong></td>
<td></td>
</tr>
<tr>
<td>Detailed Area Scan</td>
<td>Drop-down menu allows user to select one out of a possible 10 quick-view scans.</td>
</tr>
<tr>
<td>Start Quick View</td>
<td>Executes quick-view scan selected from drop-down menu.</td>
</tr>
</tbody>
</table>
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCC SOFTWARE GUI (Continued)
LCC SOFTWARE GUI (Concluded)

<table>
<thead>
<tr>
<th>System Data Page [Temperature (degC), Electrical]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(One of two pages. Gives user insight into various temp, elec values of components inside LCH. Values are software FDA'd according to limits set in current database. An out of allowable limit value is backlit in yellow and cause a msg to be displayed)</td>
</tr>
<tr>
<td><strong>[Temperature]</strong></td>
</tr>
<tr>
<td><strong>[Electrical]</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Laser On/Off [Laser On, Laser Off, Laser ?]</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Displays on, off status of Laser diode)</td>
</tr>
<tr>
<td><strong>Laser On (Green)</strong></td>
</tr>
<tr>
<td><strong>Laser Off (Blue)</strong></td>
</tr>
<tr>
<td><strong>Laser ? (Gray)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light displays Ethernet communication state between LCC, LCH</td>
</tr>
<tr>
<td><strong>Green Light</strong> – Indicates good Ethernet connection</td>
</tr>
<tr>
<td><strong>Yellow Light</strong> – Indicates bad Ethernet connection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temp (Green/Yellow)</strong></td>
</tr>
<tr>
<td><strong>Green Light</strong> – Backlit in green when all LCH component temp values within ranges specified by current database</td>
</tr>
<tr>
<td><strong>Yellow Light</strong> – Backlit in yellow when one or more values out of limits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elec</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elec (Green/Yellow)</strong></td>
</tr>
<tr>
<td><strong>Green Light</strong> – Backlit in green when all elec values within ranges specified by current database</td>
</tr>
<tr>
<td><strong>Yellow Light</strong> – Backlit in yellow when one or more values out of limits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scan Status (Blank, Complete, Vertical Resolution)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blank</strong></td>
</tr>
<tr>
<td><strong>Complete</strong></td>
</tr>
<tr>
<td><strong>Vertical Resolution</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Message Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GMT</strong></td>
</tr>
<tr>
<td><strong>Message</strong></td>
</tr>
<tr>
<td><strong>MSG ID</strong></td>
</tr>
<tr>
<td><strong>CLR</strong></td>
</tr>
<tr>
<td><strong>GMT DDD/HH:MM:SS</strong></td>
</tr>
</tbody>
</table>
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SPECIFICATIONS

IDC DIMENSIONS: 6 in (L), 5 in (W), 2 in (D)
IDC ELECTRONIC COMPONENTS: Adimec-2000m/S and Pleora i-port PT1000-CL
IDC ELECTRONIC PWR: 12V conditioned pwr from LCH
HEATER PWR MODES/SOURCES:

<table>
<thead>
<tr>
<th>OBSS State</th>
<th>Pwr</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMS Grappled</td>
<td>124V</td>
<td>APCU2 (A15 APCU2 CONV and OUTPUT sws)</td>
</tr>
<tr>
<td></td>
<td>28V</td>
<td>MNA and MNB (Pnl A8 STBD HTRS A,B sws)</td>
</tr>
</tbody>
</table>

(only heater pwrd in this mode)

IMAGER MODEL: Adimec-2000m/S gray-scale imager
CCD: 1920 x 1080
CCD PIXEL SIZE: 7.4 microns (square pixels)
SPECTRAL RESPONSE:
- 350 nanometers (25%)
- 500 nanometers (42% Peak)
- 700 nanometers (20%)
FOCAL LENGTH: 50mm
DYNAMIC RANGE: 60dB
GAIN: 1X-8X
APERTURE: f/8
FOCUS DISTANCE: 6 ft 3 in
WORKING DISTANCE: 5 ft
- Target Resolution at 5 ft: 113 pixels/in
- Horizontal Coverage at 5 ft: 17 in
- Vertical Coverage at 5 ft: 10 in
INTERFACE: 10Base2 half duplex
CREW CONTROL:
- Hardware – LCC (Laser Camr Controller – A31p)
- Software – LCC software shortcut (Shuttle Apps\IDC)
IMAGE FORMAT: 16-bit tif
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC NOMENCLATURE

1. DCA to LCH Cable Connector
2. Digital Camr Assy (DCA)
3. Lens Attachment

50mm Lens
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SOFTWARE GUI

**ISIS Digital Camera for OBSS**

1. Other Commands…

2. [Blank]


4. Power On | Power Off  □ CC  □ AE  □ SP  Default Scenario  ▼

5. Scan Lo-Res  Scan Hi-Res  o Avg  o Sub  o Peak

6. Acquire Set  Acquire One  View File…  ▼  ▼

Gain: #X  Exp: #### usec
**LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)**

### IDC SOFTWARE GUI (Continued)

#### Other Commands (Pulldown menu provides other commands w/hot keys)

<table>
<thead>
<tr>
<th>1 Advanced Command</th>
<th>Brings up an Advanced Settings dialog box in which user may apply or see specific setting for individual image acquisition options. See pg 21-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>[F2]</td>
<td>Brings up &quot;Add Notation&quot; box for adding text to tiff. This text will be added to all tiffs; so, clear it if added to text box</td>
</tr>
<tr>
<td>[F5]</td>
<td>Toggle Summary View</td>
</tr>
<tr>
<td>[F6]</td>
<td>Toggle Image Mode</td>
</tr>
<tr>
<td>[F7]</td>
<td>Zoom In</td>
</tr>
<tr>
<td>[F8]</td>
<td>Zoom Out</td>
</tr>
<tr>
<td>[F9]</td>
<td>Reset Brightness and Contrast</td>
</tr>
<tr>
<td>[F10]</td>
<td>Reset Auto Exposure Aperture to Default</td>
</tr>
<tr>
<td>[F11]</td>
<td>Toggle Auto Exposure Aperture Visibility</td>
</tr>
<tr>
<td>[F12]</td>
<td>Find Auto Exposure Aperture</td>
</tr>
</tbody>
</table>

#### Display Area

- Shows the tiff or last image collected

#### Status Bar 1

- GMT: Displays current time
- Zoom Level: Fit, 1X, 2X, 4X, 8X
- Mouse Position: Shows "X,Y" positions of mouse
- Camr Temperature: Temperature of Camr in Celsius
- Comm Status Light: Blinking green light when in nominal case; static while imaging

#### Power On/Off, Auto Exposure (AE), Color Coded (CC), Scenario File Drop List/Brightness and Contrast Controls

- [Power On]/[Power Off]: Buttons control the pwr to the IDC
- [CC]: Allows user to color code the over and under exposed areas of image
- [AE]: Allows selection of auto-exposure capability
- AE Setpoint Slide Bar: Allows user to set starting exposure for AE algorithm. Bar can be used when Avg, Sub, and Peak algorithms selected
- Scenario File Drop List: Drop down list allows user to select Gain and Exposure settings for all image acquisition buttons that depend upon light scenario
- Brightness and Contrast: When user switches into "Image Mode", scenario drop down list turns into "Brightness and Contrast" controls, allowing user to manipulate viewable image
  - Note: Brightness and Contrast has no control over Camr brightness or contrast

#### Image Command Area

- Image Acquisition Buttons: (Each button may be accessed during another operation to switch acquisition types quickly. Allows user to set scene with "Scan Lo-Res" and then Hi-Res, "Acquire Set" or "Acquire One" as needed without extra action)
  - Scan Lo-Res: Image(s) not saved to disk. Displays decimated Camr view. Used to set software exposure and situational awareness
  - Scan Hi-Res: Continuously saves full images to disk
  - Acquire Set: Image(s) saved to disk. Acquires bracket set of images
  - Acquire One: Image saved to disk. Acquires one image with no exposure control from AE
- Avg: Selects averaging AE algorithm. Exposes based on pixels inside box
- Sub: Selects sub image AE algorithm. Takes two images
- Peak: Selects peak AE algorithm. Exposes based on brightest pixels in box
- View and Save Files: Allows user to select a file from a directory to view or (when holding "CTRL" key while clicking on "Save File To..." button) select a directory indicating where subsequent images will be saved. Green arrows allow user to quickly browse thru images alphabetically

#### Status Bar 2

- Contains status of current operation, gain and exposure settings for image being displayed, Status Bar Error Advisory, Status Error Strings, and Normal Operation Strings
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

IDC SOFTWARE GUI (Continued)

Advanced Settings

Acquire One
- Exposure
- Gain

Acquire Set
- Select Image:
- Exposure
- Gain
- or Fraction

Scan
- Select Type:
  - Lo-Res
  - Hi-Res
- Decimation
- Period

Do Self Test
Black Level
Cancel
Reset to Defaults
Accept
## IDC SOFTWARE GUI (Concluded)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| **8** | *Acquire One* Settings  
(Allows user to set exposure and gain settings for "Acquire One" cmd which acquires a single image from Camr) |
|   | ![Exposure] User may set exposure from 25 usec to 80025 usec |
|   | ![Gain] User may set Gain from 1X to 8X |
| **9** | *Acquire Set* Settings  
(user to set exposure and gain settings for "Acquire Set" cmd. Each image acquired in set can have a different setting for exposure and gain. [Display] checkbox will determine if image is to be displayed when acquired) |
|   | ![Select Image] As a default, user may select up to 7 images |
|   | ![Exposure] User may set exposure from 25 usec to 80025 usec |
|   | ![Gain] User may set Gain from 1X to 8X |
|   | ![or Fraction] Shows denominator value for exposure value. A "1" is assumed for the numerator |
| **10** | *Scan* Settings  
(Allows user to exposure, gain, and decimation settings for low/high resolution continuous scans) |
| ![Lo-Res]/[Hi-Res] Buttons | User selects which scan to set attributes to:  
Lo-Res – Scans are displayed only and not saved to disk  
Hi-Res – Scans are displayed and saved to disk |
| ![Exposure] | User may set exposure from 25 usec to 80025 usec |
| ![Gain] | User may set Gain from 1X to 8X |
| ![Decimation] | User may select a decimation level between 1-16. When decimation is a high number, time for image to be displayed on screen is faster due to smaller size and lower quality of image |
| ![Period] | Sets scan period. Allows user to throttle rate of image/file creation for some scan scenarios |
| **11** | *Do Self Test* Command  
Queries IDC for an image test pattern which is then displayed on main display window. Test image is also stored to disk |
| *Black Level* Input Box | Sets Camr's “Black Level” threshold for all acquired images. Can be set from 0 to 4095 |
| *Reset to Defaults* Command | Restores application defaults applied at startup to all settings. Holding CTRL and pressing "Reset to Defaults" will restore project defaults established in DCCS.ini file |
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCS/IDC COMBINED NOMENCLATURE

1. ISIS Digital Camr (IDC)
2. 50mm Lens
3. Top View (from IDC perspective)
4. LC-I Radiator
5. Top View (from LCH scan perspective)
6. Towards OBSS Grapple Fixtures
7. Laser Camr Head (LCH)
8. Laser Camr Head (LCH) to Digital Camr Assy (ECA) Cable
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCS/IDC KEEP ALIVE PWR AND DATA INTERFACES (Berthed on MPMs)
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

LCS/IDC (HEATER ONLY MODE)/(OPERATIONAL PWR MODE) DATA AND PWR INTERFACES

*See PTU 2/MAIN BUS B (PTU 1/MAIN BUS A) for detailed system dwg

**Image of a diagram showing various components and connections in a system.**
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

PTU 2/MAIN BUS B(PTU 1/MAIN BUS A) SYSTEM DETAILS

PWR TO OTHER SYSTEMS

ESS2CA (ESS1BC)

MNB (MNA) CONTR

O13

MNB (MNA) CONTR

O15

PTU 2(1)

CNTL PWR PTU 2(1)

PTU/MAIN BUS B(A) - ON

OFF

ON

M

MNB (MNA) PWR TO BE CONVERTED BY APCU 2(1)

ESS2CA (ESS1BC)

MNC (MNB) PWR TO BE CONVERTED BY APCU 2(1)
LCC SOFTWARE EXIT DIALOGUE BOXES

**Case 1:** Selecting "File" and choosing "Exit" with a green Comm light.

When either "Shutdown LCH and exit LCC software" or "Shutdown LCH" are selected from the "Shutdown" dialogue box, the following "Shutdown?" dialogue box is displayed:

**Shutdown?**

This will shutdown the LCH and the IDC.

Note: an LCH power cycle will be required to resume sensor operations.

[OK] [Cancel]

When "Exit LCC software" is selected from the following "Shutdown" dialogue box, the "Shutdown?" dialogue box is displayed:

**Shutdown?**

This will only exit the LCC software.

Note: LCH health and status monitoring is not possible in this state. LCC software will need to be restarted to shutdown the LCH.

[OK] [Cancel]

**Case 2:** Selecting "File" and choosing "Exit" with a yellow Comm light.

Shutdown?

OK will exit the LCC software only

[OK] [Cancel]
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Continued)

MANUAL A31p DESKTOP DNLK SETUP

NOTE
For desktop dnlk config to work correctly, ensure there is a load on A31p Video Out port (video coming out of laptop into pwrд input, such as AVIU(V10))

1. Video destination properly configured per LCC ACTIVATION, step 1 (Cue Card, LCS) and pwrд
   MO58F
   TV PWR – ON
   HI-Z/75 – 75
   PWR SELECT – LO
   CC
   PWR – OFF

   A31p
   2. Desktop
      Right click
      Sel 'Properties'

   3. 'Display Properties' Dialog Box
      Sel 'Settings'
      Screen Area – 1024 x 768
      If not 1024 x 768:
      Move Screen Area slidebar to 1024 x 768
      Sel 'Apply'
      When second 'Display Properties' dialog box opens:
      Sel 'OK'
      When 'Monitor Settings' dialog box opens:
      Sel 'Yes'

   4. 'Display Properties' Dialog Box
      Sel 'Advanced'

   5. '(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box
      Sel 'Displays' tab
6. ‘Displays’ tab against fig 21-1 cases’ circled areas and perform matching case steps below:

- **Case 1**
  - If Case 1 (Video out port enabled and good A31p video to powered AVIU):
    - Sel ‘OK’

- **Case 2**
  - If Case 2 (Video signal lost due to bad LCS video cable, adapter, or AVIU setting):
    - Sel ‘OK’
    - TV PWR – ON
    - LCS Video Cable connected to J1
    - LCS Video Adapter connected to A31p Video Out port
    - Repeat steps 4-6

- **Case 3**
  - If Case 3 (Video out port disabled and good LCS video cable connection to powered AVIU):
    - Click on red button in Case 3 circle
    - Display looks like Case 1
    - Sel ‘OK’
    - When ATI Property Page appears:
      - Sel ‘Yes’

Figure 21-1.- Multiple monitors and ATI mobility fire GL 7800 display tab.
6. (Concluded)

If Case 4 (Bad LCS video cable, adapter, or connection, AVIU not powered or configured or A31p port problem):
   Sel 'OK'
   LCS Video Cable connected to J1
   LCS Video Adapter connected to A31p Video Out port
   Repeat steps 4-6
   If no longer Case 4:
      Repeat step 6
   If still Case 4:
      Sel 'OK'
      Replace entire LCS Video Cable (including A31p Video Adapter)
      Repeat steps 4-6
      If no longer Case 4:
         Repeat step 6
      If still Case 4:
         Sel 'OK'
         Replace AVIU
         Repeat steps 4-6
         If no longer Case 4:
            Repeat step 6
         If still Case 4:
            Sel 'OK'
            Replace A31p
            Repeat steps 1-6
            If no longer Case 4:
               Repeat step 6
            If still Case 4:
               MCC

7. 'Display Properties' Dialog Box
   Sel 'OK'
NOTE
Following steps will disable auto reconfiguration that automatically ships video. Capture Card will need to be manually configured using MANUAL A31p USING DESKTOP DNLK SETUP procedure, 21-19 for desktop dnlk ops

A31p

1. Desktop
   Right click
   Sel 'Properties'

2. 'Display Properties' Dialog Box
   Sel 'Settings'
   Sel 'Advanced'

3. '(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box
   Sel 'Displays'

4. √TV display tab
   If Red(Gray) tab:
   Go to step 5
   If Green tab:
   Click Green tab. Tab automatically turns red after selection (see fig 21-1)
   Sel 'Apply'

5. 'ATI Property Page' Dialog Box
   Sel 'Yes'

6. '(Multiple Monitors) and ATI MOBILITY FIRE GL 7800 Properties' Dialog Box
   Sel 'OK'

7. 'Display Properties' Dialog Box
   Sel 'OK'

8. Desktop
   Right Click
   Sel 'Properties'
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC) (Concluded)

RECONFIGURATION OF A31p SCREEN RESOLUTION (Concluded)

9. 'Display Properties' Dialog Box
   Sel 'Settings'
   Move Screen Area slidebar to 1600 x 1200
   √Colors – True Color (32 bit)
   If not, sel True Color (32 bit) from drop down menu
   Sel 'Apply'
   When 'Display Properties' dialog box opens:
     Sel 'OK'
   When 'Monitor Settings' dialog box opens:
     Sel 'Yes' (within 15 sec)
     If 15 sec window missed:
       Repeat step 9
   When 'Display Properties' dialog box opens:
   Sel 'OK'
# BATTS & FUSES

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCS BATT CHARGING</td>
<td>22-2</td>
</tr>
<tr>
<td>CC BATT CHARGING</td>
<td>22-3</td>
</tr>
<tr>
<td>BATT/FUSE REFERENCE</td>
<td>22-4</td>
</tr>
</tbody>
</table>
BATTS & FUSES

DCS BATT CHARGING

1. Config H/W per dwg below (DCS 760 Pwr Cable reqd for direct Camr pwr)

ML85E

2. \(\sqrt{\text{cb}}\) DC 10 AMP MNB CB5 – cl
   \(\sqrt{\text{DC}}\) 10 AMP MNB S5 – ON

Batt Chgr

3. \(\sqrt{\text{cb}}\) PWR IN (CB1) – cl

4. MAIN PWR – ON (LED on)

5. If Direct Camr Pwr:
   \(\sqrt{\text{cb}}\) PWR OUT (CB2) – cl
   CAMERA PWR – ON (LED on)

6. Insert Batt(s), check charger LEDs for charge status (~2hr)

NOTE
Green Itt (≤45 min) = 80% charge. For full charge, leave batts for additional 2 hr.
OK to leave batts in charger longer

---

BATTS & FUSES

DCS 760

ML85E

DC UTIL PWR (J23)

DC Pwr Adapter
Cable 28VDC (8 ft)
(SEZ33112998–301)

---

Front

Back

DCS 760 Pwr Cable (15 ft)
(SEZ33112997–301)
CC BATT CHARGING

1. Config H/W per dwg below

AVIU

2. SYNC/VIDEO – VIDEO
   HI-Z/75 – 75
   PWR SELECT – HI

NOTE
When batt charger not in use, remove pwr

O19 (MO58F)

3. √ TV PWR – ON

4. Insert Batt in charger. Check charger LED for charge status (~2 hr)
### BATTS & FUSES (Concluded)

#### BATT/FUSE REFERENCE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>BATTERY</th>
<th>SAME AS:</th>
<th>FUSE</th>
<th>SAME AS:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVIU</td>
<td>NONE</td>
<td>N/A</td>
<td>2A</td>
<td>NONE</td>
</tr>
<tr>
<td>BINOCULARS – 14 X40 GYRO – 10 X40 GYRO</td>
<td>AA (6)</td>
<td>CC Remote LCD MONITOR NIKON FLASH</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>BPSMU</td>
<td>18V (two 9V)</td>
<td>NONE</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>CAMCORDER – PD100</td>
<td>LI-ION</td>
<td>RECORDER – V10</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>CC Batt Charger</td>
<td>N/A</td>
<td>N/A</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>CC Remote</td>
<td>AA(2)</td>
<td>GYRO BINOCULARS LCD MONITOR NIKON FLASH</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>DCS 760</td>
<td>NIMH (RECHARGEABLE)</td>
<td>NONE</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>DCS Batt Charger</td>
<td>N/A</td>
<td>N/A</td>
<td>CB</td>
<td>N/A</td>
</tr>
<tr>
<td>LAVALIER MIC</td>
<td>76 (1)</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>LCD MONITOR</td>
<td>AA (6)</td>
<td>CC Remote GYRO BINOCULARS NIKON FLASH</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>NIKON FLASH</td>
<td>AA (4)</td>
<td>CC Remote GYRO BINOCULARS LCD MONITOR</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>PHOTOFLOOD</td>
<td>NONE</td>
<td>N/A</td>
<td>1.7A</td>
<td>NONE</td>
</tr>
<tr>
<td>RECORDER – V10</td>
<td>LI-ION</td>
<td>CAMCORDER – PD100</td>
<td>NONE</td>
<td>N/A</td>
</tr>
<tr>
<td>SEQUENTIAL STILL VIDEO ENCODER</td>
<td>N/A</td>
<td>N/A</td>
<td>2A</td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INSTRUMENT FUSES</th>
<th>IFM FUSE KIT</th>
<th>BUS FUSES (1/4 X 1-1/4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 A(2)</td>
<td>1/4A (2)</td>
<td>1/2A (2)</td>
</tr>
<tr>
<td>1A (5)</td>
<td>3A (2)</td>
<td>5A (5)</td>
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<tr>
<td>2A (2)</td>
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<td>7.5A (2)</td>
</tr>
<tr>
<td>3A (5)</td>
<td>2A (2)</td>
<td>10A (2)</td>
</tr>
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</table>

22-4 P/TV/118/FIN
## CUE CARD CONFIGURATION

<table>
<thead>
<tr>
<th>Cue Card Configuration</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV</td>
<td>CC 23-3</td>
</tr>
<tr>
<td>PLAYBACK</td>
<td>CC 23-5</td>
</tr>
<tr>
<td>ET PHOTO</td>
<td>CC 23-7</td>
</tr>
<tr>
<td>MEDIA ALLOCATIONS</td>
<td>CC 23-8</td>
</tr>
<tr>
<td>WVS</td>
<td>CC 23-10</td>
</tr>
<tr>
<td>PLBD VTR RECORDING</td>
<td>CC 23-12</td>
</tr>
<tr>
<td>LDRI/ITVC</td>
<td>CC 23-14</td>
</tr>
<tr>
<td>LCS</td>
<td>CC 23-16</td>
</tr>
<tr>
<td>IDC</td>
<td>CC 23-18</td>
</tr>
<tr>
<td>VIDEO SETUP</td>
<td>CC 23-20</td>
</tr>
<tr>
<td>DOCK/UNDOCK (Back of VIDEO SETUP)</td>
<td>CC 23-21</td>
</tr>
<tr>
<td>SPACEHAB BPSMU AUDIO ONLY</td>
<td>CC 23-22</td>
</tr>
<tr>
<td>DOCKED OPS</td>
<td>CC 23-24</td>
</tr>
<tr>
<td>EVA (Back of DOCKED OPS)</td>
<td>CC 23-25</td>
</tr>
<tr>
<td>LDRI/ITVC A17 PLACARD</td>
<td>CC 23-26</td>
</tr>
<tr>
<td>SPACEHAB VIDEO DNLK</td>
<td>CC 23-27</td>
</tr>
</tbody>
</table>
ACTIVATION
A3 MON 1(2) PWR – ON (LED ON)
A7 TV DNLK – ENA
NRM PWR – PNL
CONTR UNI T – MIN(B)
CONTR UNI T – CMD (wait 10 sec for system initialization)

OPERATION
Auto Ops (Auto Exposure)

NOTE
-MCC has command/ed sync config

A7 TV CAMR PWR A(B,C,D,RMS) – ON (b-ON)
IN pb – As reqd

-IF CTVC:
  -TV CAMR PWR A(B,C,D,RMS) – OFF, wait 10 sec, then ON
  -Repeat until MAN GAIN pb illuminated
-IF TV:
  -TV CAMR PWR A(B,C,D,RMS) – OFF, wait 10 sec, then ON
  -Repeat until MAN GAIN pb illuminated

NOTE
-ALC pb – push
-RT(12,24) pb – push
-CAMR CMD IRIS – OP, CL

DEACTIVATION
If Illuminator ON:
Refer to Illuminator Ops and perform Illuminator OFF

A7 PORT RMS CAMR – W/FRST
TV CAMR PWR A(B,C,D,RMS) – OFF (b-OFF), wait 10 sec
PORT RMS CAMR – ELBOW
TV CAMR PWR RMS – On (b-on), wait 10 sec, OFF (b-OFF)
TV PWR CNTL – PNL
CONTR UNI T – OFF
CONTR UNI T – CMD
A3 MON 1,2 PWR – OFF

-IF DTV:

Manu Ops – CTVC/ITVC (Manual Exposure)

NOTE
DO NOT LEAVE CAMRS UNATTENDED IN MANUAL MODE. DIRECT SUNLIGHT WILL DAMAGE CAMRS

A7 MAN GAIN pb – push
IN(+12,+24) pb – push
CAMR CMD IRIS – OP,CL

Return to Auto Exposure
AVG pb – push

MUX Ops

NOTE
Although dnlk/rcd is in color, MON will display MUX in B&W

A7 VID OUT MON pb – as reqd
OUT MUX 1(2) pb – push
IN pb – As reqd
OUT MUX 1(2) R pb – push
IN pb – As reqd

For RSC ops:
Go to LDRI/ITVC Cue Card

CAUTION
DO NOT LEAVE CAMRS UNATTENDED IN MANUAL MODE. DIRECT SUNLIGHT WILL DAMAGE CAMRS

NOTE
Although dnlk/rcd is in color, MON will display MUX in B&W

A7 VID OUT MUX pb – push
IN pb – As reqd
OUT MUX 1(2) pb – push
IN pb – As reqd
OUT MUX 1(2) R pb – push
IN pb – As reqd
**Illuminator Ops**

**Illuminator ON**
- Wrist Illuminator:
  - cb TV RMS CAMR/PTU – cl
  - WRIST ILLUM/CAMR HTR – cl
- Elbow Illuminator:
  - cb TV RMS CAMR/PTU – cl
  - ELB ILLUMPTU HTR – cl
- A(B,C,D,ELB) Illuminator:
  - cb TV A(B,C,D,RMS,ELB) CAMR/PTU – cl
  - ILLUMPTU HTR – cl

**Illuminator OFF**
- Wrist Illuminator:
  - cb TV RMS WRIST ILLUM/CAMR HTR – op, then cl
- Elbow Illuminator:
  - cb TV RMS ELB ILLUMPTU HTR – op, then cl
- A(B,C,D,ELB) Illuminator:
  - cb TV A(B,C,D,RMS,ELB) ILLUMPTU HTR – op, then cl
- RSC Illuminator:
  - Go to LDRI/ITVC (Cue Card)

*If Wrist Illuminator:*
- R14:D(E) cb TV RMS WRIST ILLUM/CAMR HTR – op, then cl

*If Elbow Illuminator:*
- cb TV RMS CAMR/PTU – op, then cl

*If A(B,C,D,ELB) Illuminator:*
- cb TV A(B,C,D,RMS,ELB) CAMR/PTU – op, then cl

*If RSC Illuminator:*
- Go to LDRI/ITVC (Cue Card)
**TOP**

**HOOK VELCRO**

**PLAYBACK**

### ANALOG ACTIVATION

- CC: Setup per diagram (back of cue card)
- A7: Perform ACTIVATION (Cue Card, TV), as reqd
- O19(MO58F): TV PWR – ON

**AVIU**
- SYNC/VIDEO – VIDEO
- Hi-Z/75 – 75
- PWR SELECT – LO

**CC**
- PWR – VTR

**OPERATIONS**

**PLBK or DNLK VIDEO**
- CC: Install tape, if reqd
- CCU: If MHA, COMM PWR – ON
- ATU: PWR – AUD

**DIGITAL ACTIVATION**

- L10 (MUX): VTR/CC PWR – on (LED on)
- (VTR): ON/STANDBY LED – green

**OPERATIONS**

**PLBK or DNLK VIDEO**
- L10 (VTR): Install tape, if reqd
- Display SELECT – DATA
- If audio reqd:
  - CCU: PWR – AUD
  - ATU: Desired Loops – T/R
  - Other Loops – RCV/(OFF)
  - XMIT/COM Mode – VOX/VOX
  - VOX SENS – MAX

**DEACTIVATION**
- CC: Remove, mark, stow tape as reqd
- ATU: PWR – OFF
- O19(MO58F): Go to DEACTIVATION (Cue Card, TV), as reqd

**VTR VIA ANALOG**

### ANALOG ACTIVATION

- CC: Setup per diagram (back of cue card)
- A7: Perform ACTIVATION (Cue Card, TV), as reqd
- O19(MO58F): TV PWR – ON

**AVIU**
- SYNC/VIDEO – VIDEO
- HI-Z/75 – 75
- PWR SELECT – LO

**L10 (VTR)**
- VTR/CC PWR – on (LED on)

- (VTR): ON/STANDBY LED – green

**OPERATIONS**

**PLBK or DNLK VIDEO**
- L10 (VTR): Install tape, if reqd
- Display SELECT – DATA
- If audio reqd:
  - CCU: PWR – AUD
  - ATU: Desired Loops – T/R
  - Other Loops – OFF
  - XMIT/COM Mode – VOX/VOX
  - VOX SENS – MAX

**DEACTIVATION**
- CC: Remove, mark, stow tape as reqd
- ATU: PWR – OFF
- O19(MO58F): Go to DEACTIVATION (Cue Card, TV) as reqd

**DIGITAL ACTIVATION**

- L10 (VTR): Install tape, if reqd
- Display SELECT – DATA
- If audio reqd:
  - CCU: PWR – AUD
  - ATU: Desired Loops – T/R
  - Other Loops – OFF

**DEACTIVATION**
- CC: Remove, mark, stow tape as reqd
- ATU: PWR – OFF
- O19(MO58F): Go to DEACTIVATION (Cue Card, TV) as reqd
ET PHOTO

DCS 760

LENS SETTINGS

√LENS APERTURE RING – MIN, LOCKED
√LENS FOCUS MODE – M

CAMR SETTINGS

PWR – ON
REAR LCD
√BATT ICON FULL
√ISO – 100
TOP LCD
√EXP MODE – M
√SS – 1000
√F/STOP – 8
DIOPTER – ADJUST
√FRAME ADVANCE – S
√BODY FOCUS MODE – S

CRITICAL FOCUS REQD EACH FRAME

ET PHOTO

PD100

LENS CAP – REMOVE, SECURE
MODE – CAMERA
OPEN LCD
√STBY
√1000
√F8
√ (FOCUS – INFINITY)
√AUTO LOCK – HOLD
ZOOM – WIDE TO FIND TANK, THEN TIGHT
START RECORDING
√LCD DISPLAYS REC

Final Display

P/TV-3a/118/O/A

P/TV-3b/118/O/A
# Media Allocations

<table>
<thead>
<tr>
<th>DCS</th>
<th>1gb/112 shots</th>
<th>DVCAM</th>
<th>3 hr/tape</th>
<th>MINI DVCAM</th>
<th>40 min/tape</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 GB EVA Flash Card</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>36</td>
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<td>10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

(reduced copy)

CC 23-8
ADJUST BRIGHTNESS

Course Adjustment
PGSC Select Page – RF Camera
  Lens Iris Control – cl(op)

Fine Adjustment
PGSC Select Page – RF Camera
  Electronic Shutter – Manual
  Brightness – Dec(Inc)
  (# to right: 100 = brightest; 0 = darkest)

DARK SUBJECT
PGSC Select Page – RF Camera
\Advanced Controls displayed
  Automatic Gain Control – Enabled
  (Disabled preferred)

PWRDN
For all lens (three) on each RF Camera Assy:
PGSC Lens Iris Control – Close until view black
V10 Test Pattern displayed (color bars w/"No WVS Video")
PGSC Select Page – XCVR
  Transceiver 1(2) CMD Pwr – Off
  (black CMD PWR:LVL="OFF:Min")
  Sel File → Exit

A7 STOP pb – push
  Mark, stow tapes
  PWR – OFF

For problem EMU TV:
EMU EMU TV Pwr pb – push (no LED), wait 10 sec, push (green LED)

If no joy:
PGSC √Select Page – XCVR
  √Advanced Controls displayed
  For XCVR w/video problem: IF – Narrow

If still no joy:
A7 WIRELESS VID PWR – OFF, wait 10 sec, ON

If still no joy:
PGSC For XCVR w/video problem: IF – Wide
  For XCVR w/good video: Sel RF Camr – None (black ’OFF’)
  If video acceptable, other EMU TV interfering w/signal
  Alternately sel EMU TVs to acquire video

If still no joy:
PGSC For XCVR w/video problem: Antenna – Manual
  Sel desired antenna

If still no joy:
For XCVR w/video problem: Antenna – Auto
  √MCC

COMMANING PROBLEM (UHF)
If commanding of WVS not visually seen:
PGSC Select Page – XCVR
  Sel Transceiver 2(1) CMD Pwr – On
  (green CMD PWR:LVL="ON:Min")

ANTENNA LOCATIONS

AFT BULKHEAD

Slightly above sill (Bay 4)

UHF CMD Antenna (Bay 3)

Inboard of sill (Bay 1)

FWD BULKHEAD
TOP
BACK OF ‘WVS’

ALERT MSG TROUBLESHOOTING

BAD CAMERA ID
Condition: Mismatch between EMU TV Camera ID and software camera ID

PGSC 1. Select Page – XCVR
   Transceiver 1(2) CMD Power – On (green CMD PWR:LVL - "ON:Min")
   Sel RF Camera 1,2 – None
   Sel File > Assign Camera ID
   Camera IDs match data under CAMR ID ASSIGNMENT
   If not a match,
   Highlight entry, then sel ‘Delete Entry’ option
   Perform CAMR ID ASSIGNMENT
   Sel RF Camera 1.2 – EVA crewmembers
If still no joy:
2. √MCC

TEMP ALERT (blue text)
Condition: EMU TV -35 °C to -30 °C OR 80 °C to 85 °C range
   PLB XCVR -40 °C to -35 °C OR 80 °C to 85 °C range

Select Page – Telemetry
Identify component w/temperature alert (blue text)
√MCC

TEMP CAUTION (yellow text)
Condition: EMU TV < -35 °C OR > 85 °C
   PLB XCVR < -40 °C OR > 85 °C

Select Page – Telemetry
Identify component w/temperature alert (yellow text)
√MCC

CAMR ID ASSIGNMENT
Sel File → Assign Camr ID
√All EV crewmembers listed as options on pulldown ‘Label’ menu under CAMERA ID SETUP

If label entry reqd:
Type label into space next to “Add Label” icon
Sel “Add Label” icon to add to listing

Under CAMERA ID SETUP:
Camera Address – As reqd via left/right arrows
Serial Number – As reqd via left/right arrows
Label – As reqd via pulldown menu
“In Use” Box – Check via single click
Sel “Save Entry” icon to right of Camr ID table (top)
√Data entry visible in Camr ID table
Sel OK

Camr ID Data

<table>
<thead>
<tr>
<th>Camr Address</th>
<th>16</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>1010</td>
<td>1007</td>
</tr>
<tr>
<td>Label</td>
<td>EV1</td>
<td>EV2</td>
</tr>
</tbody>
</table>

(reduced copy)

CC 23-11
PLBD VTR RECORDING

L10 √ VIP, VTR covers removed
R1 √ PL AUX – ON
MA73C:E cb AC2 PL3Φ – cl
√ Cables config’d per dwg (back of cue card)

L10 (MUX) VTR/CC PWR – on (LED on)
(VIP) √ ATU – REC
√ CCTV VIDEO IN – J3
PWR – on (LED on, DATA FLOW flashes twice)
(VTR) √ ON/STANDBY LED – green
√ Switches set to white dot (seven)
√ COUNTER SELECT – COUNTER (TC)
√ Tape installed (tape icon LED on)

Set GMT:
DISPLAY SELECT – MENU
↓ pb – ETC, EXEC pb – push
↓ pb – CLOCK SET, EXEC pb – push
Use ↓, ↑, EXEC to set Y.M.D, hr, min to GMT
DISPLAY SELECT – DATA
If Audio desired:
A15 Connect DTV Audio Cable

L9 PS AUD PWR – AUD
Desired Loops – RCV, Vol tw 5
Other Loops – OFF
A7 VID OUT DTV pb – push
IN pb – as reqd

L10 (VTR) REC pb – push, hold
PLAY pb – push, simo (red dot displayed)
TOP
BACK OF 'PBD VTR RECORDING'

HOOK
VELCRO

VTR/CC
MUX
MUX/VTR/CC

VTR

OITU Audio Cable (25 ft)

Audio →

DTV Audio Cable (25 ft)

cc48037_118_020r1.cvx

(reduced copy)

CC 23-13

P/TV-6b/118/O/B

P/TV/118/FIN
### ACTIVATION

1. **Config CCTV Sys**
   - **A7** activ (Cue Card, TV) performed
   - **L10 (MUX)** MUX/VTR/CC PWR – on (LED on)
   - **R12 (VPU)** VPU PWR – ON (LED on)
   - **MON 1,2** L-DATA – ON
   - **C-DATA – GRN
   - **X-HAIR – GRN

2. **Apply SPEE Pwr**
   - **A8L** STBD RMS HTR (two) – OFF
   - **R12 (OPP)** OBSS SW PWR – cl
   - **OBSS SW PWR – ON
   - **A6U** EVENT TIMER CNTL – STOP
   - **EVENT TIMER – RESET
   - **CNTL – START
   - (15 min LDRI calibration warmup)

3. **Config RSC Illum to HI**
   - **A7** VID OUT MON 1(2) pb – push IN C pb – push
   - **R12 (OBSS)** PAN/TILT – Adjust to see RSC Camr
   - **MON 1(2)** RSC illum on HI (three rings)

4. **Enable ITVC**
   - **R12 (OBSS)** ITVC ENA – ON
   - **A7** VID OUT DTV pb – push IN PL 2(VPU) pb – push
   - **R12 (OBSS)** if MAN GAIN pb not illuminated:
   - **ITVC ENA – OFF, wait 10 sec, then ON
   - **A7** CAMR CMD IRIS – OP, CL, as reqd
   - **MON 2** ITVC video displayed

5. **Verify LDRI Powered**
   - **A7** VID OUT MUX 1 L pb – push IN MIDDECK pb – push
   - **R12 (OBSS)** ITVC ENA – OFF
   - **A6U** EVENT TIMER CNTL – UP
   - **CNTL – START

### GENERAL LDRI CONTROL

**Mode 1** (default at pwrup)
- **A7** LDRI MODE 1 pb – push
- **MON 2** ITVC video displayed

**Mode 2**
- **A7** LDRI MODE 2 pb – push
- **MON 2** ITVC video w/illum displayed

**Modes 3 (4,5,6)**
- **A7** LDRI MODE 3(4,5,6) pb – push
- **MON 2** LDRI w/rounded corners displayed
- **A7** CAMR CMD IRIS – OP, CL, as reqd

**PAN/TILT OPS WITH LDRI ACTIVE**

**NOTE**
- When adjusting pan/tilt in Modes 3(4,5,6), ITVC FOCUS (ZOOM, IRIS) cntls functional

**A7** VID OUT MON 2 pb – push
- **IN PL 2(VPU) pb – push
- **CAMR CMD PAN,TILT – as reqd
- **VID OUT MUX 1 L pb – push, to return to LDRI cntl

### DEACTIVATION

**A7** VID OUT MUX 1 L pb – push
- **IN MIDDECK pb**
- **LDRI MODE 1 pb – push
- **R12 (OBSS)** ITVC ENA – OFF
- **A6U EVENT TIMER CNTL – UP
- **CNTL – START

### LDRI MODE SUMMARY

**Mode 1** – Standby
- **ITVC video**
- **LDRI** in standby

**Mode 2** – Illuminator
- **ITVC video w/illum**
- **LDRI laser active, LDRI camera inactive**

**Mode 3** – 2D
- **LDRI 2D video**
- **Similar to ITVC video**

**Mode 4** – 2D Gamma
- **LDRI 2D video w/Gamma Black Stretch**
- **Similar to ITVC video**

**Mode 5** – 3D
- **LDRI 3D video**
- **Flicker on MON**

**Mode 6** – 3D Gamma
- **LDRI 3D video w/Gamma Black Stretch**
- **Flicker on MON**
RSC CAMR OPS

NOTE
Camr nominally pwrd in Block 4 of PI C/L

R12 (OPP)
OBSS SW PWR CB1 – cl
OBSS SW PWR – ON

(RBSS) RSC PWR – ON

RSC ILLUMINATOR OPS

NOTE
RSC illuminator OFF when SPEE PWR sw initially taken to ON. A cycle of the SPEE PWR sw takes RSC illuminator to HIGH. Subsequent pwrr cycles take illuminator to MED, LOW, OFF and then back to HIGH. Config may req alt Camr view of RSC

R12 (OBSS) SPEE PWR – ON
RSC PWR – ON

A7 VID OUT MON 1(2) pb – push
IN PL 3(WVS) pb – push
MON 1(2) RSC video displayed

NOTE
SPEE pwrr cycle will reset LDRI/ITVC to Mode 1 and reset the PTU angles

R12 (OBSS) SPEE PWR – OFF, wait 10 sec, then ON
MON 1(2) RSC video willum displayed

To cycle thru illuminator modes:
R12 (OBSS) SPEE PWR – OFF, wait 10 sec, then ON

CONTINGENCY LDRI CLEARANCE VIEW

NOTE
Do not apply RMS brakes

A8U AUTO SEQ – STOP (READY lit on)

L10(VTR) STOP pb – push (no red •)

A7 VID OUT MUX 1 L pb – push (MIDDECK lit on)
LDRI MODE 3(4) pb – push (steady LDRI video)

VID OUT MON2 pb – push
IN PL2(VPU) pb – push

Record PTU Pan _________ and Tilt _________

CAMR CMD PAN/TILT – HI RATE (LO within 10°)
PAN: 0 (left, to hard stop)
TILT: 0 (up, to hard stop)

LDRI PAN/TILT RESET

Reset PTU
A7 VID OUT MON2 pb – push
IN PL2(VPU) pb – push

CAMR CMD PAN/TILT – HI RATE
PAN – L (to hard stop)
TILT – UP (to hard stop)
PAN/TILT – RESET

LDRI

Return PTU to Pan and Tilt values recorded above

VID OUT MUX 1 L pb – push (MIDDECK lit on)
LDRI MODE 6 pb – push (flickering LDRI video)

VID OUT MON2 pb – push
IN pb – as desired (not PL2)

L10(VTR) REC pb – push, hold
PLAY pb – push, simo (red •)

A8U AUTO SEQ – PROCEED (IN PROG lit on)

Note clearance thru LDRI FOV

ORBITER
IN THIS SPACE

Note clearance thru LDRI FOV

LDRI

Return PTU to Pan and Tilt values recorded above

VID OUT MUX 1 L pb – push (MIDDECK lit on)
LDRI MODE 6 pb – push (flickering LDRI video)

VID OUT MON2 pb – push
IN pb – as desired (not PL2)

L10(VTR) REC pb – push, hold
PLAY pb – push, simo (red •)

A8U AUTO SEQ – PROCEED (IN PROG lit on)
TOP

LCS

3. Verify LCC Desktop Video (Concluded)
   A31p  \(\checkmark\) TV VID OUT PORT ENA – green
   (Right click on desktop > Properties > Settings > Advanced > Displays > TV Tab > Green > OK > Yes)
   A7   VID OUT MON(1) pb – push
        IN MIDDECK pb – push
   A3   \(\checkmark\) LCC desktop displayed on MON(1)
        * If LCC Desktop not displayed *
        * \(\checkmark\) MCC

4. Verify GMT
   A31p  \(\checkmark\) GMT on GUI lower right-hand side within 3 sec of SM-GPC GMT
   * If GMT not within 3 sec of SM GPC; *
       * \(\checkmark\) Set 'Tools' > 'Set GMT' *
       * Adjust GMT as reqd *
       * \(\checkmark\) Set 'Apply' > 'OK'

OPERATION

NOTE

PDRS OPS will call for appropriate scan steps on LCC.
MCC may have limited insight if desktop dnlk avail

1. Load Database (if reqd)
   \(\checkmark\) MCC for desired LCS database
   \(\checkmark\) 'DB Name': Field on upper left-hand side of LCS GUI
   * If 'DB Name' incorrect:
       * \(\checkmark\) Sel 'Load Database…' from File menu
       * \(\checkmark\) MCC desired database file
       * \(\checkmark\) 'OK'

2. LCS System Status

   LCS SYSTEM STATUS

<table>
<thead>
<tr>
<th>Laser On/Off</th>
<th>Comm</th>
<th>LCS State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser ? (gray)</td>
<td>No Comm (yellow)</td>
<td>Unknown or Keep Alive Heater Only Mode</td>
</tr>
<tr>
<td>Laser Off (blue)</td>
<td>Comm (green)</td>
<td>Configuration (Waiting for user command)</td>
</tr>
<tr>
<td>Laser On (green)</td>
<td>Comm (green)</td>
<td>Operational (Scan in progress)</td>
</tr>
</tbody>
</table>

   While Scan in progress ('Scan Status' counter incrementing):
   \(\checkmark\) Laser On – green
   \(\checkmark\) Comm – green
   \(\checkmark\) Scan Display – updating
   \(\checkmark\) Temp – green
   \(\checkmark\) Elec – green

   Scan complete when 'Scan Status: Complete' displayed

   If LCS system status out of config, perform appropriate
   TROUBLESHOOTING section of this cue card

(For SSPTS APCU 2 flights only)

(reduced copy)
LCC DEACTIVATION

NOTE
Shutting down LCC software also puts LCH in
keep-alive heater mode. No LCH scans/insight or
IDC ops available. APCU Converter pwr cycle
reqd to reinitialize LCH for scanning and IDC ops.

1. LCC Software Shutdown
   A31p Set 'File' > 'Exit'
   When 'Shutdown' dialog box opens:
   √ 'Shutdown LCH and Exit LCC Software' selected
   Sel 'OK'
   When 'Shutdown?' dialog box opens:
   √ 'OK'

2. A31p Screen Resolution Reset
   Go to RECONFIGURATION OF A31p SCREEN RESOLUTION
   (LCS/IDC)

LCH DEACTIVATION

CAUTION
Deactivating SSPTS APCU 2 will remove
critical keep-alive pwr to LCH and IDC.

1. Deactivate SSPTS APCU 2/LCH
   A15 APCU 2 CONV – OFF
   SM 179 POWER TRANSFER
   PTU 2 APCU OUT VOLT: <10V
   APCU 2 OUTPUT – OFF

TROUBLESHOOTING

Temp or Elec Status Yellow
   A31p Sel 'System' page
   Report 'Elec' or 'Temp' values backlit in yellow to MCC.

Comm Status Yellow and LAN2 Network cable unplugged (red X on A31p system tray)

NOTE
LCC GUI Comm status will be yellow and A31p Local Area Network 2
status (w/red X on A31p system tray) cable unplugged tool tip will
appear if LCH is in keep-alive heater mode.

A31p If unexpected red X w/Local Area Network Connection 2 tool tip shown on
   A31p system tray:

   R12 √ OPP to LCC Cable connected to LCS CMD/TLM(J107) port
   A31p √ OPP to LCC Cable connected to LCC RJ45 port
   A15 Exit LCC software
   PGSC Pwr – OFF

   A15 APCU 2 CONV – OFF, then ON
   SM 179 POWER TRANSFER
   PTU 2 APCU OUT VOLT: 123V to 126V
   A31p PGSC Pwr – ON
   √ A31p internal RJ45 Network Interface Card LED green
   Perform LCC ACTIVATION, step 2

Message Area Entry
   Report LCC GUI message area log entry(ies) to MCC

(For SSPTS APCU 2 flights only)
IDC ACTIVATION

1. LCC Setup
   ✓ Hardware configured per LCC ACTIVATION steps 1,2 (Cue Card, LCS)
   - A31p PGSC Pwr – ON

2. IDC connectivity Check
   - A31p ✓ A31p internal RJ45 Network Interface Card LED green
     If RJ45 Network Interface Card LED not green:
     - A15 APCU 2 CONV – OFF, then ON
     ✓ SM 179 POWER TRANSFER
     ✓ PTU 2 APCU OUT VOLTS 123V to 126V

IDC SOFTWARE ACTIVATION

1. IDC Software Startup
   - A31p Sel ‘Shuttle Apps’ > ‘IDC’

2. Verify GMT
   - A31p ✓ GMT within 3 sec of SM-GPC GMT
     * If GMT not within 3 sec:*
     * Double click on GMT box on GUI
     * Adjust GMT as reqd
     * Sel ‘OK’ on MTU Time dialogue box

3. IDC Pwr on and self test
   - A31p Sel ‘Power On’
     ✓ Black and White self-test image displayed
     ✓ Waiting for User Command displayed
     * If red backlit error msg displayed:
     * Perform appropriate TROUBLESHOOTING steps on this cue card

OPERATION

NOTE
PDRS OPS will call for IDC image steps on LCC A31p. Limited MCC real-time insight avail if configured for desktop dnlk

1. Configure LDRI Illumination
   - R12 (VPU)
     ✓ Green Jumper – LDRI/ITVC
     - VID OUT MUX 1L pb – push
     - IN MIDDECK pb – push
     - LDRI MODE 2 pb – push
     - VID OUT MON 1(2) pb – push
     - IN PL2 (VPU) pb – push
     - CAMR CMD PANTILT – HI RATE
     - PAN – L (to hard stop)
     - TILT – UP (to hard stop)
     - PANTILT – RESET
     - LO RATE within 10°
     - PAN – +85 (right)
     - TILT – -57 (down)

NOTE
If GMT does not update during Ops, an attempt to shut down/restart A31p should be made.

2. Auto Exposure (AE) Ops
   - A31p ✓ Use AE checked
     Sel ‘Scan Lo-Res’ Resize and posn AE box as reqd (pause 2 sec) Sel ‘Scan Hi-Res’
     If Scanning with no RMS Motion:
     - Sel ‘Stop Scan’ after 30 sec
     If scanning with RMS motion:
     - Move box to maintain RCC in AE box (using keyboard arrows)
     - Sel ‘Stop Scan’ at pause point
     ✓ Waiting for User Command displayed

3. Scenario File Ops
   - A31p From Scenario File drop-list, sel appropriate lighting condition
     ✓ Acquiring Set displayed
     ✓ Waiting for User Command displayed after set

(For SSPTS APCU 2 flights only)
IDC DEACTIVATION
1. IDC and Software Shutdown
   A31p Set ‘Power off’ on IDC GUI
   Close (X) IDC software > ‘YES’
2. A31p Screen Resolution Reset
   Go to RECONFIGURATION OF A31p SCREEN RESOLUTION (LCS/IDC)

IDC HOT KEY COMMANDS
- F5 – Toggle Summary View
- F6 – Toggle Image Mode
- F7 – Zoom In
- F8 – Zoom Out
- F9 – Reset Brightness and Contrast
- F10 – Reset AE Box to Default
- F11 – Toggle AE Box Visibility
- F12 – Find AE Box

IDC SOFTWARE ERROR MESSAGES
- Can’t connect to LCH: Perform TROUBLESHOOTING, steps 1,2
  Condition: Possible heater only mode or Network failure
- Iport probe failed: Perform TROUBLESHOOTING, step 2
  Condition: Iport startup check failed. Expected during first pwr on attempt-resend pwr on
- Iport not responding: Perform TROUBLESHOOTING, step 2
  Condition: Iport connection lost
- Camera not responding: Perform TROUBLESHOOTING, step 2
  Condition: Camera connectivity lost
- Image acquisition failed: Perform TROUBLESHOOTING, steps 1,2
  Condition: Camera connectivity lost during imaging
- Network recovery failed: Perform TROUBLESHOOTING, steps 1,2
  Condition: LCH network switch connection lost
- Bad initialization file: Perform TROUBLESHOOTING, step 3
  Condition: Software will not launch due to severe ini file corruption

TROUBLESHOOTING
1. LCC to LCH Connectivity Check
   A31p If Local Area Network Connection 2 (with red X) tool tip on system tray:
   - Reseat OPP to LCC Cable (20 ft) to LCC RJ45 port
      - Local Area Network Connection 2 Speed 10 mps
      - Local Area Network Connection 2 Speed 10 mps
   - Perform LCH, LCC, and IDC Reset, step 2
     Continue nominal ops

2. LCH, LCC, and IDC Reset
   A31p Exit IDC software and shut down Windows
   - OPP to LCC Cable (20 ft) connected to LCC RJ45 port
   - APCU 2 CONV – OFF, then ON
   - PTU 2 APCU OUT VOLTS: 123V to 126V
   - LCC PGSC Par – ON
   - LCC internal RJ45 Network Interface Card LED green
   - Perform IDC SOFTWARE ACTIVATION
     Continue nominal ops

3. LCC Swap
   A31p Exit IDC software and shut down Windows
   Swap LCC with other A31p
   Perform IDC Activation
   Perform IDC Software Activation
   Continue nominal ops

(For SSPTS APCU 2 flights only)
(reduced copy)
1. Set up BPSMU, Safe ODS TV Port
   BPSMU Connect Batt
   L12 (SSP 2) C/L CAM PWR – OFF

   Config H/W per dwg below
2. **Config TV System**
   Config H/W per dwg below
   
   R12 (VPU)  
   √ VPU PWR – ON (LED on)

3. **Config Comm System**
   
   O9  
   R AUD PWR – AUD/TONE
   √ MSTR VOL 1(2) – MAX
   A/G 2,ICOM B – T/R (or loop as desired)
   XMIT/ICOM MODE sel – PTT/PTT
   VOL A/G 2,ICOM B tw – 8
   Other Loops – OFF

   Perform audio check w/BPSMU

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**Diagram:**

- **Hook Velcro**
- **Video Processing Unit**
- **Shab BPSMU A/V Patch Cable** (V838-713763-001)
- **PLT CCU**

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SPACEHAB VIDEO DNLK

ISS Dnlk via Spacehab Drag-Thru Cables:
1. Remove A31p video adapter from Spacehab Drag-Thru Cable at RWS station
2. Install RCA-BNC Adapter to Drag-Thru Cable
3. Connect Cable/Adapter to Lab Camcorder AVIU J1 Connector
   (same side of lab as RWS, about mid-module; would be cable string routing
   retraction if anything)
4. Switch AVIU Pwr Sw to HI to turn off Camcorder and allow video from J1 to go
   into system via AVIU J2
5. Have MCC dnlk Lab TV port

Shuttle Dnlk via BPSMU Cable:
1. Disconnect PD100 A/V Adapter Cable from Spacehab Drag-Thru Cable string
2. Connect PD100 A/V Adapter Cable to video leg of 42 ft BPSMU string
3. Move 4 ft BPSMU Cable from TV1 to TV2 in ODS
4. Connect two 4 ft BPSMU Ccable connectors to TVCU; secure TVCU to wall
5. Turn on C/L Camr pwr to SEC C/L on pnl L12L
6. Move BPSMU A/V Patch Cable from PRI C/L to SEC C/L on VPU at R12
7. Move VPU Green Jumper to SEC C/L
8. Dnlk PL2
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PHOTO/TV CHECKLIST

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