Photo/TV Checklist

STS-131 Flight Supplement

Mission Operations Directorate
Operations Division

Final
November 6, 2009
List of Implemented Change Requests (482s):

P/TV_FS-0121

Incorporate the following:

1. Replace FS iii thru FS viii
2. Replace FS 1-5 thru FS 1-10, FS 1-45 and FS 1-46, FS 1-57 and FS 1-58, FS 1-73 and FS 1-74
3. Replace FS 2-21 and FS 2-22
4. Replace FS CC 3-19 and FS CC 3-20
List of Implemented Change Requests (482s):
P/TV_FS-0119

Incorporate the following:

1. Replace FS iii thru FS viii
3. Replace FS 2-1 thru FS 2-6, FS 2-17 and FS 2-18, FS 2-21 and FS 2-22 After FS 2-28, add FS 2-29 thru FS 2-44 (16 pages)
4. Replace FS CC 3-7 and FS CC 3-8, FS CC 3-17 thru FS CC 3-20, FS CC 3-25 and FS CC 3-26

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Prepared by: [Signature] Mission Lead
Approved by: [Signature] Lead, Shuttle Photo/TV Group
Accepted by: [Signature] FDF Manager

Encl: 74 pages

*File this PCN immediately behind the front cover as a permanent record*
List of Implemented Change Requests (482s):
P/TV_FS-0110
P/TV_FS-0115

Incorporate the following:
1. Replace FS iii thru FS viii
2. Replace FS 1-3 thru FS 1-6, FS 1-43 thru FS 1-46, FS 1-49 thru FS 1-52,
FS 1-57 and FS 1-58
   After FS 1-58, add FS 1-58a and FS 1-58b
   Replace FS 1-59 thru FS 1-62, FS 1-65 and FS 1-66, FS 1-73 thru FS 1-76,
   FS 1-79 thru FS 1-82
3. Replace FS 2-21 thru FS 2-24
4. Replace FS CC 3-3 and FS CC 3-4, FS CC 3-7 and FS CC 3-8

Prepared by: [Signature]
Mission Lead

Approved by: [Signature]
Lead, Shuttle Photo/TV Group

Accepted by: [Signature]
FDF Manager

Encl: 44 pages

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

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### AREAS OF TECHNICAL RESPONSIBILITY

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† – May be replaced with CD in flight book only
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P/TV01 VIDEO SETUP (Continued)

SETUP

NOTE
Steps 1-7 minimum reqmt for OBSS RCC Inspection (focused and post undocked)

1. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd

2. Perform DTV Setup

Deconfig ASCENT AVIU
TV PWR – OFF

O19

Unstow AVIU and disconnect following cables:
- ASC/ENT/FD TV Pwr Cable from J2
- AVIU Adapter Cable from J5
- ASC/ENT FD V10 Cable from J1

Temp stow AVIU for use on Flight Deck
Config DTV H/W per H/W SUMMARY, FS 1-4

Config Panels

L10 (MUX)
\checkmark VTR/CC PWR – on (LED on)
If dnlk:
\checkmark MUX/VTR/CC PWR – on (LED on)
\checkmark MUX BYPASS – ACT

(VIP)
\checkmark ATU – REC
\checkmark CCTV VIDEO IN – J3
\checkmark PWR – on (LED on)

(VTR)
\checkmark ON/STANDBY LED – green
\checkmark Switches set to White Dot (seven)
\checkmark COUNTER SELECT – COUNTER (TC)

Config Video

MON 1
SOURCE – DNLK

MON 2
Connect DTV MON 2 Cbl to C-IN
SOURCE – C

Config Audio

A15
Connect DTV Audio Cable to PS CCU

L9
Config PS ATU per Comm Plan
P/TV01 VIDEO SETUP (Continued)

SETUP (Continued)

3. Perform MON 1,2 V10 Setup

MA16D Remove MON 1,2 Desk Assy Hardware from Stow-n-Go CTB

O19 TV PWR – OFF

Config MON 1,2 V10s and Cables per H/W SUMMARY, FS 1-4
Retrieve MON 1 V10 from MS1 Saddlebag
Connect:
- MON 1,2 Digital CC Vid/Pwr Cables to MON 1,2 V10s
- MON 1,2 AVIU-CC Video Cables to MON 1,2 V10s
- Multiuse Brkt to desk
- RWS #1 Drag-Thru Cable to MON 1 AVIU J6
- MON 1 AVIU Cable to MON 1 AVIU J4
- MON 2 AVIU Cable to MON 2 AVIU J4
- MON 1,2 TV PWR Cable to MON 1,2 AVIU J2
- MON 1 Repeater Cable string to A31p Vid In port
- Multiuse Brkt to wall

AVIU (MON 1,2)
- SYNC/VIDEO – VIDEO
- HI-Z/75 – 75
- PWR SELECT – LO

R12 (VPU) VPU PWR – ON (LED on)

O19 TV PWR – ON

V10 (MON 1,2) PWR – ON
- DISPLAY pb – toggle to display tape counter
- Tape installed

4. RSC Video Cable connected between R12/OPP-RSC Video (J105) and R12/WIB-CCTV PL3
P/TV01  VIDEO SETUP (Continued)

SETUP (Continued)

5. Perform Analog Camcorder Setup for FD, MD

O19, MO58F  TV PWR – OFF
  Config G1 CCs per H/W SUMMARY, FS 1-4, as reqd

AVIU (FD, MD)  SYNC/VIDEO – VIDEO
  HI-Z/75 – 75
  PWR SELECT – LO

O19, MO58F  TV PWR – ON

CC (FD, MD)  Install Wide Conversion lens
  √ND FILTER – OFF
  √OUTPUT – CAM
  √STANDBY/LOCK – STANDBY
  PWR dial – “green”
  √Tape installed
  √Viewfinder (LCD) displays “green”
  Install Audio Muting Plug (optional)
  Install Multiuse Brkt

6. Perform LCS Cable Connections per H/W SUMMARY, FS 1-4, as reqd

Middeck  Connect MD TV Pwr Cable to MD AVIU J2
AVIU (MD)  Connect end of LCS Video Cable to MD AVIU J1
  HI-Z/75 – 75

Flt Deck  Connect other end of LCS Video Cable (A31p Video Adapter) to A31p Video Out port via PGSC Usage Chart
  Connect OPP-LCC Cable to A31p RJ45 Ethernet port via PGSC Usage Chart
P/TV01 VIDEO SETUP (Continued)

SETUP (Continued)

7. Perform SSV Setup

MA16N

Unstow:
- SSV Compression Encoder Box
- SSV BNC-BNC Cable
- SSV to PDIP/CIP Cable
- SSV DC Pwr Cable
- Bal/Unbal Xfmr

Config SSV H/W per H/W SUMMARY, FS 1-4

NOTE
Video Spare 1 controlled by MCC instead of pnl A7

L12 (SSP 2) \check Mark CB PDIP 2 PWR 1 – cl
L11 (PDIP 2) DC PWR 1 – ON

Config SSV settings

SSV
- IN SEL – NTSC
- Mode – 3
- OUTRATE – 4
- SSV Pwr – on
- \check Mark Pwr LED illum
- \check Mark ENC DATA LED flickering
- \check Mark FRM DATA LED flickering
- \check Mark FILL FRM pulsing

Inform MCC when SSV SETUP complete

8. Perform HDTV Setup for handheld ET Video Downlink

L10:A1 Unstow MPC
WHITE BRICK
MPD-TV MUX Cbl (Fiber Optic)

MA16D/Stow-n-Go MPC-G1 Cbl (Firewire)

Config H/W per diagram on back of HD DIGITAL VIA CC PLAYBACK Cue Card

FS 1-8
9. Perform WVS Setup

a. Activate WVS System

A7  WIRELESS VID HTR – ON
    PWR – ON

MO58F  TV PWR – OFF

MA16D  b. Remove WVS Hardware from Stow-n-Go CTB

Config WVS 1,2 V10s and Cables per H/W SUMMARY, FS 1-4
Connect:
- WVS 1,2 Digital CC Vid/Pwr Cables to WVS 1,2 V10s
- WVS 1,2 AVIU-CC Vid Cables to WVS 1,2 V10s
- Multiuse Brkt to desk
- Pre-routed WVS 1,2 Balanced Video Cables from R12/VPU XCVR 1,2 BAL to WVS 1,2 AVIU J4
- Pre-routed WVS TV Pwr Cables to WVS 1,2 AVIU J2
- Balanced Video Cables stowed on WVS Stow-n-Go desk to WVS 1,2 AVIU J6
- ATU Recorder Cables to left (white) port per H/W SUMMARY, FS 1-4
- Multiuse Brkt to wall
- PCMCIA-to-WIB Remote Cable to R12/WIB J701
- RS-422 PCMCIA Card/Cable Assy and PCMCIA-to-WIB Remote Cable to bottom PCMCIA slot on A31p per
  PGSC Usage Chart

AVIU (WVS 1,2)
\✓SYNC/VIDEO – VIDEO
\✓HI-Z/75 – 75
\✓PWR SELECT – LO

V10 (WVS 1,2)
\✓V10 (two)
PWR – ON

MO58F  TV PWR – ON

V10 (WVS 1,2)
PWR – ON

\✓Tape installed
\✓WVS Test Pattern displayed (color bars w/"No WVS Video")
PWR – OFF

R10  Config MS ATU/CCU per Comm Plan
9. Perform WVS Setup (Continued)

c. WVS PGSC Prep

PGSC Pwrup and Application Opening

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 in bottom PCMCIA slot
Pwr – ON
Sel Shuttle Apps icon
Sel WVS icon
RF Camera page will appear

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:

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<tr>
<td>18</td>
<td>1007</td>
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<td>EV2</td>
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If Camr IDs not correct:
Sel ‘Delete Entry’ until all deleted
Perform CAMR ID ASSIGNMENT (Cue Card, WVS) as reqd
When complete, sel ‘OK’
SETUP (Concluded)

9. Perform WVS Setup (Concluded)
   c. WVS PGSC Prep (Concluded)

   Application Setup (Concluded)

   Sel ‘File’ → ‘Advanced Controls’
   On XVCR tab:
   √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’

   d. PWRDN

   Sel ‘File’ → ‘Exit’

   A7
   WIRELESS VID PWR – OFF
   HTR – OFF

   MA16N 10. Unstow, set up BPSMU w/BPSMU to CCU Adapter Cable at CDR CCU
             Connect BPSMU Batt

   A17/CC BAG 11. Unstow, connect CC Batt Charger to W4 AVIU J5 port
SCENE SYNOPSIS
Scene contains procedures for obtaining video, still photos of ISS rndz, docking

SETUP
1. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
2. Perform D2Xs PROGRAM w/FLASH for in-cabin imagery
   - Lens – 12-24mm
   - Aperture – Min, locked
   - Body Focus Mode – S
   - √Batt installed
   - √Flash Card installed
   - Pwr – ON
   - Top LCD:
     - √Batt
     - √Frames remaining sufficient
   - Exp Comp (  ) – 0.0
   - Exp Mode – P
   - Meter – Matrix ( )
   - Diopter – Adjust
   - Frame Rate – S
   - √BKT disabled – 0 F
   - Rear LCD:
     - √ISO – 100
     - √QUAL – RAW
     - √WB – 0, A
     - AF Area Mode – [ ]
     - √Focus Area – Center
     - √Focus Selector Lock – L
   - SB-800 Flash Settings:
     - ON/OFF pb – ON
     - √Diffuser Dome installed
     - √MODE – TTL
     - √Exp Comp – 0 EV
     - Tilt – 45° (Direct)
3. Perform D2Xs MANUAL for docking/external imagery

Remove ovhd window shields

SB-800 Flash Settings:
  ON/OFF pb – OFF

Lens – 400mm(80-200mm)
If 400mm:
  Focus Limit – ∞ -6m
  Lens Focus Mode – A
If 80-200mm:
  Focus Limit – full
  Lens Focus Mode – A
Aperture – Min, locked
Body Focus Mode – S
√Batt installed
√Flash Card installed
Pwr – ON
Top LCD:
  √Batt
  √Frames remaining sufficient
Exp Comp (📸) – 0.0
Exp Mode – M:
  SS – 500
  f/stop – 8
Meter – Matrix (📸)
Diopter – Adjust
Frame Rate – S
√BKT disabled – 0 F
Rear LCD:
  √ISO – 100
  √QUAL – RAW
  √WB – 0, A
AF Area Mode – [ ]
√Focus Area – Center
√Focus Selector Lock – L
P/TV02  DOCK (Continued)

SETUP (Continued)

4. Perform Hardware Verification for V10s, FD CC, DTV

O19
√TV PWR – ON

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

V10
PWR – ON
(MON 1,2)
√Tape installed
DISPLAY pb – Toggle to display tape counter

For in-cabin views:

CC
√Wide Conversion lens installed
√ND FILTER – OFF
√OUTPUT – CAM
√[ ] [ ] – [ ]
√STANDBY/LOCK – STANDBY
PWR dial – “green” [ ]
√Tape installed
Open LCD:
√“green” • || displayed
Install Audio Muting Plug (optional)
P/TV02  DOCK (Continued)

**SETUP** (Concluded)

4. Perform Hardware Verification for V10s, FD CC, DTV (Concluded)

For sunlit ISS views:

**CC**
- Remove Wide Conversion Lens
- Install fresh Batt as reqd
- ND FILTER – OFF
- AF/M – M
- AGC – OFF
- GAIN – L
- OUTPUT – CAM
- AWB – ON
- LD, IV – ON
- STANDBY/LOCK – STANDBY
- PWR dial – M
- Tape installed
- Open LCD:
  - “green” •|| displayed
  - SS – 1/500
  - GAIN – 0dB
  - f/stop – F8.0
  - FOCUS – M ∞ (adjust as reqd)
- Install Audio Muting Plug (optional)

**R7**
- Verify World Map A31p per diagram on FS 1-14, with MON 1 World Map Repeater Video Cbl connected to RWS #1 BAL/UNBAL XFMR

**MON 2**
- SOURCE – C

**L10 (MUX)**
- VTR/CC PWR – on (LED on)
- If dnlk, MUX/VTR/CC PWR – on (LED on)
- (VIP) PWR – on (LED on)
- (VTR) ON/STANDBY LED – green
- Tape installed

**A31p**
- Double click ‘Shuttle Apps’ > ‘NASA Video Overlay’
- ‘NASA Video Overlay’ window displayed
- Sel ‘Full Screen’
- Press ‘ESC’ or ‘W’ key to minimize display as reqd
## 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>1.</td>
<td>19A-11</td>
<td>PAO Coverage</td>
<td>D2Xs (Interior) 12-24mm If exterior: Flash ON/OFF – OFF</td>
<td>As desired</td>
<td>G1 Tape installed L1VE (if avail) Plan for end of day crew choice video,DCS</td>
</tr>
<tr>
<td>2.</td>
<td>19A-3</td>
<td>Rendezvous • Overall • Closeup • Damage • Deterioration</td>
<td>D2Xs (Exterior) 400mm(80-200mm) Flash ON/OFF – OFF</td>
<td>A(B,C,D), ELB G1</td>
<td>As desired Map ISS surfaces w/30% overlap</td>
</tr>
<tr>
<td>3.</td>
<td>19A-3</td>
<td>Approach,Dock • PMA2 Docking Target • PMA2 Mating Surfaces • PMA2 TCS Planar and Hemispherical Retro Reflectors</td>
<td>D2Xs (Exterior) 400mm(80-200mm) Flash ON/OFF – OFF</td>
<td>C/L Per RNDZ A(D) Per RNDZ C(B) Docking view</td>
<td>G1 As desired Rcd C/L Camr video thru hard dock on DTV Continually v/ focus sharpness</td>
</tr>
</tbody>
</table>
OPS (Continued)

APPROACH/DOCKING RQMTS

Mapping of ISS Module Surfaces

D2Xs Camr w/400mm Lens

PMA2 APDS Area

D2Xs Camr w/80-200mm Lens

PAO Views

D2Xs Camr w/12-24mm Lens

C/L Camr

Docking View

MON 2, DTV (RCD)

MON 1

Range Ruler

jsa48038_131_003r1.cvx
P/TV02  DOCK (Concluded)

OPS (Concluded)

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

DEACTIVATION

1.  D2Xs
   √ Exp Mode – P
   Pwr – OFF
   √ Flash ON/OFF – ON

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

R7
    Connect RWS #1 Cable to BAL/UNBAL XFMR

3.  G1
    PWR dial – “green”  
    Install Wide Conversion Lens
SCENE SYNOPSIS
Scene contains procedures for obtaining video, still photos of ISS undocking, flyaround

SETUP
1. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
2. Perform D2Xs PROGRAM w/ FLASH for in-cabin imagery
   - Lens – 12-24mm
   - Aperture – Min, locked
   - Body Focus Mode – S
   - √ Batt installed
   - √ Flash Card installed
   - Pwr – ON
   - Top LCD:
     - √ Batt
     - √ Frames remaining sufficient
   - Exp Comp ( ) – 0.0
   - Exp Mode – P
   - Meter – Matrix ( )
   - Diopter – Adjust
   - Frame Rate – S
   - √ BKT disabled – 0 F
   - Rear LCD:
     - √ ISO – 100
     - √ QUAL – RAW
     - √ WB – 0, A
     - AF Area Mode – [ ]
   - √ Focus Area – Center
   - √ Focus Selector Lock – L
   - SB-800 Flash Settings:
     - ON/OFF pb – ON
     - √ Diffuser Dome installed
     - √ MODE – [ ] [ ] [ ]
     - √ Exp Comp – 0 EV
     - Tilt – 45° (Direct)
P/TV03  UNDOCK (Continued)

SETUP (Continued)

3. Perform D2Xs MANUAL for undocking/external imagery

Remove ovhd window shields

SB-800 Flash Settings:
   ON/OFF pb – OFF

Lens – 400mm(80-200mm)
If 400mm:
   Focus Limit – ∞ -6m
   Lens Focus Mode – A
If 80-200mm:
   Focus Limit – full
   Lens Focus Mode – A
Aperture – Min, locked
Body Focus Mode – S
√Batt installed
√Flash Card installed
Pwr – ON
Top LCD:
   √Batt
   √Frames remaining sufficient
Exp Comp ( ) – 0.0
Exp Mode – M:
   SS – 500
   f/stop – 8
Meter – Matrix ( )
Diopter – Adjust
Frame Rate – S
√BKT disabled – 0 F
Rear LCD:
   √ISO – 100
   √QUAL – RAW
   √WB – 0,A
AF Area Mode – [ ]
√Focus Area – Center
√Focus Selector Lock – L
SETUP (Continued)

4. Perform Hardware Verification for V10s, FD CC, DTV

O19
\[TV\text{ PWR – ON}\]

R12 (VPU)
\[VPU\text{ PWR – ON (LED on)}\]
\[\checkmark\text{Green Jumper – SEC C/L}\]
\[\checkmark\text{SEC C/L Cap installed}\]

V10
\[(\text{MON 1,2})\]
\[\text{PWR – ON}\]
\[\checkmark\text{Tape installed}\]
\[\text{DISPLAY pb – Toggle to display tape counter}\]

For in-cabin views:

CC
\[\checkmark\text{Wide Conversion lens installed}\]
\[\checkmark\text{ND FILTER – OFF}\]
\[\checkmark\text{OUTPUT – CAM}\]
\[\checkmark\text{[] \text{[E] \text{ [E]} – [E]}\]
\[\checkmark\text{STANDBY/LOCK – STANDBY}\]
\[\text{PWR dial – “green” \text{[E]}\]
\[\checkmark\text{Tape installed}\]
\[\text{Open LCD:}\]
\[\checkmark\text{“green” •|| displayed}\]
\[\text{Install Audio Muting Plug (optional)}\]
4. Perform Hardware Verification for V10s, FD CC, DTV (Concluded)

For sunlit ISS views:

CC
- Remove Wide Conversion Lens
- Install fresh Batt as reqd
- ND FILTER – OFF
- AF/M – M
- AGC – OFF
- GAIN – L
- OUTPUT – CAM
- AWB – ON
- ○ [NOT 1/500]
- STANDBY/LOCK – STANDBY
- PWR dial – M
- Tape installed
  - Open LCD:
    - “green” •|| displayed
    - SS – 1/500
    - GAIN – 0dB
    - f/stop – F8.0
    - FOCUS – M∞ (adjust as reqd)
    - Install Audio Muting Plug (optional)

R7
- Reconnect Cable String from World Map A31p to RWS #1 BAL/UNBAL XFRM

MON 2
- SOURCE – C

L10 (MUX)
- VTR/CC PWR – on (LED on)
- If dnlk, MUX/VTR/CC PWR – on (LED on)
- (VIP)
  - PWR – on (LED on)
- (VTR)
  - ON/STANDBY LED – green
  - Tape installed

A31p
- Double click ‘Shuttle Apps’ > ‘NASA Video Overlay’
- NASA Video Overlay’ window displayed
- Sel ‘Full Screen’
- Press ‘ESC’ or ‘W’ key to minimize display as reqd
### UNDOCK (Continued)

#### OPS

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<td>PAO Coverage</td>
<td>D2Xs (Interior) 12-24mm If exterior: Flash ON/OFF – OFF</td>
<td>As desired</td>
<td>G1 Tape installed</td>
</tr>
<tr>
<td>2</td>
<td>19A-2 19A-3</td>
<td>Undock and Flyaround</td>
<td>D2Xs (Exterior) 80-200mm (400mm) Flash ON/OFF – OFF</td>
<td>A(C,D) Per RNDZ C/L Docking tgt and PAO view</td>
<td>G1 Tape installed</td>
</tr>
</tbody>
</table>

- **PMA-2 Docking Tgt/Mating Surfaces**
- **PMA-2 TCS Planar, Hemispherical Retro Reflectors**
- **Surfaces**
- **Solar Panels**
- **Handrails**
- **SM Thrusters on Zenith, near aft end**
- **Trusses including rads/baseplates and SAWs (in/outboard SABB insulation degradation)**
- **SOLAR on Columbus EPF**
- **MISSE-7 on ELC2 on S3**
UNDOCKING/FLYAROUND RQMTS

- PMA2 APDS Area
- Mapping of ISS Module Surfaces
- PAO Views
- C/L Camr
- Camr C
- Camr A(D) (flyaround at 400 ft) (At 400 ft only)
- Camr A(D)
P/TV03 UNDOCK (Concluded)

OPS (Concluded)

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

DEACTIVATION

1. D2Xs
   - Exp Mode – P
   - Pwr – OFF
   - Flash ON/OFF – ON

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
     - Go to DEACTIVATION (Cue Card, TV) as reqd

3. G1
   - PWR dial – “green” □
   - Install Wide Conversion Lens
INGRESS TV CONFIG

VIDEO PROCESSING UNIT

Wireless Video System Interface Box
CCTV PL3

ISS

Batt
MD CC
Wide Conversion Lens
Worklight

(R12)
P/TV04  INGRESS/EGRESS (Continued)

SCENE SYNOPSIS

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

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 Camcorder Setup
   Obtain two Batts, one for CC and one spare
   Install Batt

CC
   Install Wide Conversion lens
   ND FILTER – OFF
   OUTPUT – CAM
   STANDBY/LOCK – STANDBY
   PWR dial – “green”
   Tape installed
   Viewfinder (LCD) displays “green” •
   Install Audio Muting Plug (optional)
   Install Multiuse Brkt

   CAUTION
   Due to temp constraints, worklights at full pwr for 60 min; 90% pwr for unlimited time

Worklights
   Install fresh Batts
   Mount light on CC
   PWR – as reqd
P/TV04  INGRESS/EGRESS (Continued)

**SETUP** (Concluded)

3. Perform D2Xs PROGRAM w/FLASH

   - Lens – 12-24mm
   - Aperture – Min, locked
   - Body Focus Mode – S
   - Batt installed
   - Flash Card installed
   - Pwr – ON
   - Top LCD:
     - Batt
     - Frames remaining sufficient
   - Exp Comp (📅) – 0.0
   - Exp Mode – P
   - Meter – Matrix (★★★★)
   - Diopter – Adjust
   - Frame Rate – S
   - BKT disabled – 0 F
   - Rear LCD:
     - ISO – 100
     - QUAL – RAW
     - WB – 0,A
     - AF Area Mode – [ ]
     - Focus Area – Center
     - Focus Selector Lock – L

   SB-800 Flash Settings:
   - Diffuser Dome installed
     - ON/OFF pb – ON
   - MODE – [ ]
   - Exp Comp – 0 EV
     - Tilt – 45° (Direct)
## P/TV04 INGRESS/EGRESS (Concluded)

### OPS

<table>
<thead>
<tr>
<th>Item #</th>
<th>Track #</th>
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<th>Video</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>19A-11</td>
<td>Hatch Opening, Ingress</td>
<td>D2Xs 12-24mm</td>
<td>G1</td>
<td>LIVE (if avail)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hatch Close, Egress</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

### DEACTIVATION

1. **D2Xs**
   Pwr – OFF

2. **TV System**
   Go to DEACTIVATION (Cue Card, TV) as reqd
Scene contains procedures for setup, documenting ISS internal ops (surveys, PAO events, logistics, transfers, closeouts) w/video, still photos

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 AND RWS CABLES**

1. Config H/W per **H/W SUMMARY**, FS 1-40 and FS 1-41

**MA16N**
- Retrieve second BPSMU, connect internal battery, temp stow in ODS for contingency use
- Config RWS Vid Cables:
  - MON 1,2 (Stow-n-Go)
    - RWS 1 Drag-Thru Cable connected to MON 1 AVIU J6
    - L10:A1
    - RWS 2 Drag-Thru Cable connected to DTV VTR OUT connector

**Config BPSMU and RWS Cables:**
- ODS/PMA2
  - Connect orbiter RWS 1,2 Cables to Drag-Through QD Box
- AW82D
  - Connect BPSMU Cables to orbiter A/L CCU 1,2 and Drag-Through QD Box
  - Config A/L ATU per Comm Plan

If V10:

**ISS**
- Pwr configured per P/TV121 DOCKED OPERATIONS, dwg USOS 120VDC –V10 VTRs (SODF: ISS PTV: SCENES)

**V10 (RWS 1,2)**
- PWR – ON
SETUP (Continued)

BPSMU AND RWS CABLES (Concluded)

~

If A31p w/’NASA Video Monitor’ under Station Apps:

- Drag-Thru Cable connected to A31p Video Adapter
- PWR – ON
  - Sel ‘Station Apps: NASA Video Monitor’
  - NASA Video Monitor 1.0.0.0’ window displayed
    - Sel ‘Settings’
    - ‘Configuration’ window displayed
    - Video Input Standard: – NTSC
      - Input – ‘Composite (RCA)’
      - Control – press ‘Set to defaults’ pb
      - Commit Changes – ‘OK’
      - Sel ‘Full Screen’
      - Press ‘ESC’ to minimize display as reqd

PAO EVENT

1. Config VPU

R12 (VPU)

- Green Jumper – ISS
- VPU PWR – ON (LED on)

2. Config Shuttle Video

A7

- VID OUT DNLK pb – push
  - IN PL2(VPU) pb – push
P/TV05  ISS INTERNAL OPS (Continued)

STILL CAMR

1. Perform D2Xs PROGRAM w/FLASH

   Lens – 12-24mm
   √Aperture – Min, locked
   Body Focus Mode – S
   √Batt installed
   √Flash Card installed
   Pwr – ON
   Top LCD:
      √Batt
      √Frames remaining sufficient
   Exp Comp (.Logger) – 0.0
   Exp Mode – P
   Meter – Matrix ((Logger))
   Diopter – Adjust
   Frame Rate – S
   √BKT disabled – 0 F
   Rear LCD:
      √ISO – 100
      √QUAL – RAW
      √WB – 0,A
   AF Area Mode – [  ]
   √Focus Area – Center
   √Focus Selector Lock – L

SB-800 Flash Settings:
   √Diffuser Dome installed
      ON/OFF pb – ON
   √MODE – T T T B
   √Exp Comp – 0 EV
   Tilt – 45° (Direct)
### ISS INTERNAL OPS (Continued)

#### OPS

<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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</thead>
<tbody>
<tr>
<td>1. 19A-11</td>
<td></td>
<td>General ISS IVA Activity</td>
<td>D2Xs 12-24mm</td>
<td>ISS G1</td>
<td>LIVE (if avail)</td>
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<tr>
<td></td>
<td></td>
<td>• PAO Scenes of Interest</td>
<td></td>
<td></td>
<td>Plan for end of day crew choice video</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crew Photo</td>
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<td></td>
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<tr>
<td>2. 19A-20</td>
<td>19A-21</td>
<td>MPLM</td>
<td>D2Xs 12-24mm</td>
<td>ISS G1</td>
<td>LIVE (if avail)</td>
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<td></td>
<td>19A-22</td>
<td>• Node 2 to MPLM Vestibule leak chk, outfitting</td>
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<td>19A-23</td>
<td>• Hatch opening</td>
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<tr>
<td></td>
<td>19A-26</td>
<td>• Closeout mapping of interior after ingress, prior to egress</td>
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<tr>
<td></td>
<td>19A-27</td>
<td>• Photos of rack xfers including pre-install, final configs of:</td>
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<td>– MELFI FU #3</td>
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<td>– 7 RSPs</td>
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<td>– 3 RSRs</td>
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<td>– Crew qtrs</td>
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<td>– WORF</td>
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<td></td>
<td>– Express 7</td>
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<td>– MARES</td>
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<td>– 2 ZSRs</td>
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<td>– AEC</td>
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</tr>
</tbody>
</table>

If OPS temporarily suspended, perform DEACTIVATION as reqd
If OPS completed, go to DEACTIVATION
P/TV05  ISS INTERNAL OPS (Concluded)

DEACTIVATION

1. D2Xs
   Pwr – OFF

2. Drag-Through QD Box
   Disconnect:
   - RWS Cables (two) from orbiter side Video 1,2 ports. Stow cables on orbiter
   - BPSMU Cables from orbiter side BPSMU 1,2 and ODS CCU ports; stow cables on orbiter
   Transfer Drag-Through QD Box and remaining attached cables to ISS

3. Temp Stowed BPSMU
   ODS
   Remove temp-stowed BPSMU from ODS location. Stow in MA16N

4. TV System
   - Go to DEACTIVATION (Cue Card, TV) as reqd
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H/W SUMMARY

- Wide Conversion Lens
- Digital CC Vid/Pwr Cable (15 ft)
- AVIU-CC Video Cable (Not Used)
- Video J1, 75, J5, LO, J3, J7
- MON 1 AVIU Cable
- MON 1 TV Pwr Cable (10 ft)
- Digital CC Vid/Pwr Cable (15 ft)
- MON 2 TV Pwr Cable (10 ft)
- MON 2 AVIU Cable
- RCA-BNC Adapter
- Wide Conversion Lens
- RWS 1 BNC Vid Cable
- RWS 1 BNC Vid Cable
- RWS 1 VU-CM Cable
- RWS 1 BNC Vid Cable
- RWS 2 BNC Vid Cable
- BNC Straight Adapters
SCENE SYNOPSIS

Scene contains procedures for obtaining video of SSRMS activities

SETUP

1. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
2. Perform Hardware Verification for V10s, FD CC, DTV, Keel Camr

O19
   √TV PWR – ON
R12 (VPU)
   √VPU PWR – ON (LED on)
   Green Jumper – LDRI/ITVC
   √Drag-Thru Cables configured as reqd
A17/DTV Bag
   Unstow VPU Repeater Ziploc Bag, connect Cbl String between VPU “FROM ISS” to RPOP2 “VIDEO IN” per diagram on FS 1-48
V10
   PWR – ON
   (MON 1,2) Tape installed
      DISPLAY pb – Toggle to display tape counter
CC
   √Wide Conversion lens installed
   √ND FILTER – OFF
   √OUTPUT – CAM
   √STANDBY/LOCK – STANDBY
   PWR dial – “green”
   √Tape installed
   √Viewfinder (LCD) displays “green”■
      Install Audio Muting Plug (optional)
      Install Multiuse Brkt
MON 1
   SOURCE – DNLK
MON 2 SOURCE – C
L10 (MUX) VTR/CC PWR – on (LED on)
   If dnlk, MUX/VTR/CC PWR – on (LED on)
(VIP) PWR – on (LED on)
(VTR) ON/STANDBY LED – green
   √Tape installed
**ROBOTICS OPERATIONS (Continued)**

**SETUP** (Concluded)

3. MPLM Reberth:

- **R12 (VPU)**
  - VPU PWR – ON
  - Green Jumper – KEEL 1
- **(SSP 2)**
  - cb SW PWR 3 – cl
  - MPLM KEEL CAM HTR/ILLUM PWR – ON
  - PWR – ON

**OPS**

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<td>As desired</td>
<td>G1 Tape installed</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>If exterior: Flash ON/OFF – OFF</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.</td>
<td>19A-24</td>
<td>MPLM XFER TO ISS</td>
<td>Per SODF: ROBO FS</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• SSRMS Grapple, Release</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• ROEU Disconnect</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• PRLA, Keel Latch Release</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Unberth, Hover</td>
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<td></td>
<td></td>
<td></td>
<td>• Positioning Mnvs for CBM Seal Inspection</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Premate Mnvr of MPLM to Node 2</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• Matings</td>
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<td></td>
<td></td>
<td></td>
<td>• Capture</td>
<td></td>
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<td></td>
<td></td>
<td>• Securing MPLM to NODE 2</td>
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<td></td>
<td></td>
<td>• SSRMS Release</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Still Photo of RWS Monitor w/CBCS Overlay and CBCS Camr View of MPLM Target</td>
<td>D2Xs 28-70mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EXP Mode – S SS: 1/30 sec Flash ON/OFF – ON</td>
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</tr>
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</table>
ROBOTICS OPERATIONS (Concluded)

OPS (Concluded)

<table>
<thead>
<tr>
<th>√</th>
<th>Item #</th>
<th>Track #</th>
<th>Rqmts</th>
<th>Still Imagery</th>
<th>Video</th>
<th>Notes</th>
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<td>DCS</td>
<td>PLB</td>
<td>CC</td>
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<td>3.</td>
<td>19A-25</td>
<td>MPLM XFER to PLB</td>
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<td></td>
<td>Per SODF: ROBO FS</td>
<td>Rcd video</td>
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<td></td>
<td></td>
<td>• Removal</td>
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<td>• Berthing</td>
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<td>• PRLA Latching</td>
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<td></td>
<td>• ROEU Connect</td>
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</tr>
</tbody>
</table>

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

DEACTIVATION

1. TV System
   L12 (SSP2) MPLM KEEL CAM PWR – OFF
   √ HTR/ILLUM PWR – ON

   Go to DEACTIVATION (Cue Card, TV) as reqd
SCENE SYNOPSIS

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

SETUP

FOR ALL EVAs:
1. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd
2. Perform D2Xs PROGRAM w/FLASH
   - Lens – 12-24mm
   - √ Aperture – Min, locked
   - Body Focus Mode – S
   - √ Batt installed
   - √ Flash Card installed
   - Pwr – ON
   - Top LCD:
     - √ Batt
     - √ Frames remaining sufficient
   - Exp Comp ( 0.0
   - Exp Mode – P
   - Meter – Matrix (  )
   - Diopter – Adjust
   - Frame Rate – S
   - √ BKT disabled – 0 F
   - Rear LCD:
     - √ ISO – 100
     - √ QUAL – RAW
     - √ WB – 0, A
     - AF Area Mode – [ ]
     - √ Focus Area – Center
     - √ Focus Selector Lock – L
   - SB-800 Flash Settings:
     - Diffuser Dome installed
       - ON/OFF pb – ON
     - √ MODE – TTL
     - Exp Comp – 0 EV
     - Tilt – 45° (Direct)
P/TV07  EVA (Continued)

SETUP (Continued)

3. Perform Hardware Verification for V10s, FD CC, DTV

<table>
<thead>
<tr>
<th>O19</th>
<th>√TV PWR – ON</th>
</tr>
</thead>
<tbody>
<tr>
<td>R12 (VPU)</td>
<td>√VPU PWR – ON (LED on)</td>
</tr>
<tr>
<td></td>
<td>√Green Jumper – LDRI/ITVC</td>
</tr>
<tr>
<td>V10 (MON 1,2, WVS 1,2)</td>
<td>PWR – ON</td>
</tr>
<tr>
<td></td>
<td>√Tape installed</td>
</tr>
<tr>
<td></td>
<td>DISPLAY pb – Toggle to display tape counter</td>
</tr>
</tbody>
</table>

CC

Install Wide Conversion lens
√ND FILTER – OFF
√OUTPUT – CAM
√CAM (CAM – CAM) – CAM
√STANDBY/LOCK – STANDBY
PWR dial – “green”  
√Tape installed
√Viewfinder (LCD) displays “green” ••
Install Audio Muting Plug (optional)
Install Multiuse Brkt

MON 2

L10 (MUX) SOURCE – C
VTR/CC PWR – on (LED on)
If dnlk, MUX/VTR/CC PWR – on (LED on)
(VIP) PWR – on (LED on)
(VTR) ON/STANDBY LED – green
√Tape installed
P/TV07  EVA (Continued)

SETUP (Concluded)

4. Config WVS and PGSC
   a. Activate WVS System
      \n      WIRELESS VID HTR – ON
      PWR – ON
   
   b. WVS PGSC Prep
      PGSC Pwrup and Application Opening
      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

      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 alert msg, perform ALERT MSG TROUBLESHOOTING (Cue Card, WVS)
      Select Page – RF CAMERA
      Near middle of RF Camera page, sel ‘Advanced Controls’
      When Post-A/L Depress:
         For center lens on each RF Camr Assy:
            Lens Iris Cntl – op(cl) until good video on V10(MON)
## 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>
<tbody>
<tr>
<td>1. 19A-11</td>
<td>PAO Coverage</td>
<td>IVA D2Xs 12-24mm If exterior: Flash ON/OFF – OFF</td>
<td>As desired WVS</td>
<td>G1 As desired</td>
<td>LIVE (if avail) Plan for end of day crew choice video, DCS stills</td>
</tr>
<tr>
<td>2. 19A-28</td>
<td>Thermal Cover Closeout Imagery • All areas where thermal covers were altered during EVA</td>
<td>EVA D2Xs per EVA C/L</td>
<td>PLB Camrs As desired WVS</td>
<td>G1 As available</td>
<td>LIVE (if avail)</td>
</tr>
<tr>
<td>3. 19A-13</td>
<td>LWAPA Retrieval Video • Video of retrieval of LWAPA from Columbus EPF</td>
<td></td>
<td>PLB Camrs As desired WVS</td>
<td></td>
<td>LIVE (if avail)</td>
</tr>
<tr>
<td>4. 19A-14</td>
<td>MPAC &amp; SEED Retrieval from SEDA-AP • Imagery of MPAC &amp; SEED on SEDA-AP • Still images of MPAC (rt hand side), then SEED (lt hand side), then of both prior to cover installation • Video of retrieval task</td>
<td>EVA D2Xs per EVA C/L</td>
<td>PLB Camrs As reqd WVS</td>
<td></td>
<td></td>
</tr>
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</table>
## P/TV07  EVA (Concluded)

**OPS (Concluded)**

<table>
<thead>
<tr>
<th>√</th>
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<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>5.</td>
<td>19A-15</td>
<td></td>
<td>EVA Closeouts</td>
<td></td>
<td>PLB Camrs As desired WVS</td>
<td>LIVE (if avail)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>a. S1 ATA (old), EVA 1</td>
<td>EVA D2Xs per EVA C/L</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>b. RGA 1 R&amp;R</td>
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<td></td>
<td></td>
<td>c. ATA temp tiedown on CETA</td>
<td></td>
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<td></td>
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<td></td>
<td>d. P1/P3 fluid jumper closeout</td>
<td></td>
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<td></td>
<td>e. S1 ATA (new), EVA 2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>f. CETA brake handles &amp; WIFs</td>
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<td></td>
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<td></td>
<td>g. CLPA</td>
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<td></td>
<td>h. CP 13 ETVCG</td>
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</tr>
</tbody>
</table>

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

### DEACTIVATION

1. **IVA D2Xs**
   - Pwr – OFF
   - Flash ON/OFF – ON
   - Download images

2. **TV System**
   - Perform PWRDN (Cue Card, WVS)
   - Go to DEACTIVATION (Cue Card, TV) as reqd
SCENE SYNOPSIS
Scene contains procedures for documenting STS, ISS external structures w/still photos during general survey activities

SETUP

1. D2Xs Camr Configuration for OMS Pod Survey
   Remove aft window shields
   If Sunlit OMS Pod, config D2Xs Manual Mode:
   - SB-800 Flash Settings:
     - ON/OFF pb – OFF
   - Lens – 80-200mm at 200mm
   - Focus Limit – full
   - Lens Focus Mode – A
   - Aperture – Min, locked
   - Body Focus Mode – S
   - √ Batt installed
   - Install Empty Card Pwr – ON
   - Top LCD:
     - √ Batt
     - √ Frames remaining sufficient
     - Exp Comp ( ) – 0.0
     - Exp Mode – M:
       - SS – 1000
       - f/stop – F8
     - Meter – Matrix ( )
     - Diopter – Adjust
     - Frame Rate – S
   - √ BKT disabled – 0 F
   - Rear LCD:
     - √ ISO – 100
     - √ QUAL – RAW
     - √ WB – 0,A
     - AF Area Mode – [ ]
     - √ Focus Area – Center
     - √ Focus Selector Lock – L

FS 1-60
P/TV08  EXTERNAL SURVEY (Continued)

SETUP (Continued)

1. D2Xs Camr Configuration for OMS Pod Survey (Concluded)

   If Earthshine OMS Pod, config D2Xs Program Mode:

   - SB-800 Flash Settings:
     - ON/OFF pb – OFF
   - Lens – 80-200mm at 200mm
   - Focus Limit – full
   - Lens Focus Mode – A
   - √Aperture – Min, locked
   - Body Focus Mode – S
   - √Batt installed
   - Install Empty Card
   - Pwr – ON
   - Top LCD:
     - √Batt
     - √Frames remaining sufficient
     - Exp Comp (      ) – 0.0
     - Exp Mode – P
     - Meter – Matrix
     - Diopter – Adjust
     - Frame Rate – S
     - BKT disabled – 0 F
   - Rear LCD:
     - √ISO – 100
     - QUAL – RAW
     - WB – 0,A
     - AF Area Mode – [ ]
     - √Focus Area – Center
     - √Focus Selector Lock – L
2. D2Xs Camr Config for ISS Still Survey (D2Xs Shutter Priority Mode)

SB-800 Flash Settings:
   ON/OFF pb – OFF

Lens – 50mm(80-200mm @ 200mm)
If 80-200mm:
   √ Focus Limit – full
   √ Lens Focus Mode – A
   √ Aperture – Min, locked
   √ Body Focus Mode – S
   √ Batt installed
   √ Flash Card installed
   √ Pwr – ON
   √ Top LCD:
      √ Batt
      √ Frames remaining sufficient
   Exp Comp (    ) – 0.0
   Exp Mode – S:
      SS – 500
   Meter – Matrix (    )
   Diopter – Adjust
   Frame Rate – S
   √ BKT disabled – 0 F
   Rear LCD:
      √ ISO – 100
      √ QUAL – RAW
      √ WB – 0, A
      AF Area Mode – [  ]
      √ Focus Area – Center
      √ Focus Selector Lock – L
3. SEITE(SIMPLEX) OMS Burn Photography

3a. Remove window shields prior to setup

3b. Perform ACTIVATION, OPERATION (Cue Card, TV) as reqd

3c. D2Xs Camr Config for SEITE(SIMPLEX) (D2Xs Shutter Priority Mode)

SB-800 Flash Settings:
- ON/OFF pb – OFF
- Lens – 28mm
- √Aperture – Min, locked
- Lens Focus Mode – M
- √Batt installed
- √Flash Card installed
- Pwr – ON
- Top LCD:
  - √Batt
  - √Frames remaining sufficient
- Exp Comp (_popup) – 0.0
- Exp Mode – S:
  - SS – 500
- Meter – Matrix (_popup)
- Diopter – Adjust
- Frame Rate – CL
- √BKT disabled – 0 F
- Rear LCD:
  - √ISO – 100
  - √QUAL – RAW
  - √WB – 0, A
- AF Area Mode – [ ]
- √Focus Area – Center
- √Focus Selector Lock – L
P/TV8   EXTERNAL SURVEY (Continued)

SETUP (Concluded)

3c. D2Xs Camr Config for SEITE(SIMPLEX) (D2Xs Shutter Priority Mode) (Concluded)

  Menu Settings:
  
  MENU pb – press
  Navigation Pad sel – Shooting Menu ( ) Hi-speed Crop > ON
  – Custom Settings Menu > d Shooting/Display > d1 Shooting Speed > 4 fps

  Accessory Equipment:
  Shutter Release Cable – install
  Multiuse Base – install in W9/10
  Multiuse Brkt – install on Base
  Frame on OMS pod

3d. Perform Hardware Verification for DTV

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:

L9

PS AUD PWR – AUD
 Desired Loops – RCV, Vol tw 5
 Other Loops – OFF

A7

VID OUT DTV pb – push
 VID IN pb – A(D)

L10 (VTR) REC pb – push, hold
 PLAY pb – push, simo (red dot displayed)
### P/TV08 EXTERNAL SURVEY (Continued)

#### OPS

<table>
<thead>
<tr>
<th>Item #</th>
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<th>Video</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>OMS Pod Survey</td>
<td>D2Xs 80-200mm @ 200mm</td>
<td></td>
<td></td>
<td>Download images to MCC once complete</td>
</tr>
<tr>
<td></td>
<td>• No shadows on OMS pod tiles</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Remove window shields</td>
<td></td>
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<tr>
<td></td>
<td>• 50 percent overlap mapping of both OMS pods and vertical stabilizer w/emphasis on Black Tile areas</td>
<td></td>
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<tr>
<td></td>
<td>• Repeat thru other window</td>
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<tr>
<td>2.</td>
<td>ISS Still Survey</td>
<td>D2Xs 28-70mm @ 50mm (80-200mm @ 200mm)</td>
<td></td>
<td></td>
<td>Map ISS surfaces w/30% overlap from all Flt Deck windows</td>
</tr>
<tr>
<td>19A-5</td>
<td>• Surfaces</td>
<td></td>
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<tr>
<td></td>
<td>• Solar Panels</td>
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<tr>
<td></td>
<td>• Handrails</td>
<td></td>
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<tr>
<td></td>
<td>• MISSE-7 on ELC2 on S3</td>
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<td></td>
<td>• SOLAR on Columbus EPF</td>
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<tr>
<td>3.</td>
<td>SEITE(SIMPLEX)</td>
<td>D2Xs 28mm</td>
<td>A(D)</td>
<td>LIVE (if avail)</td>
<td>Focus set on OMS pad</td>
</tr>
</tbody>
</table>
Priority of ISS Photographic Targets During Docked Phase:

1. P6, P5, P3/P4, ESP 3, P1, JEM, JLP, Columbus, S0, S1, S3/S4, S5, S6, Solar Arrays – W1, W6 (special emphasis on newly installed components)
2. Node 2, Columbus, JEM, JLP – W7, W8
3. PMA2 – W9, W10
P/TV08  EXTERNAL SURVEY (Concluded)

**OPS** (Concluded)

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

**DEACTIVATION**

1. **D2Xs**
   - Lens Focus Mode – A
   - Exp Mode – P
   - Frame Rate – S
   - Flash ON/OFF – ON

   Menu Settings:
   - MENU pb – press
   - Navigation Pad sel – Shooting Menu ( ) Hi-speed Crop > OFF
   - Custom Settings Menu > d Shooting/Display > d1 Shooting Speed > 3 fps

2. **TV System**
   - Remove, mark tape for SEITE(SIMPLEX)
   - Go to DEACTIVATION (Cue Card, TV) as reqd
P/TV09  MIDDECK PL

P/TV09  MIDDECK PAYLOADS

H/W SUMMARY

Audio Meeting Plug (optional)
Wide Conversion Lens
Bracket optional

jsc48038_131_017r1.cvx
P/TV09  MIDDECK PAYLOADS (Continued)

SCENE SYNOPSIS

Scene contains procedures for obtaining in-cabin photo-documentation conducted within orbiter/ISS of GLACIER, MERLIN, MOUSE, STL

SETUP

1. Perform Camcorder Setup for MD per H/W SUMMARY, FS 1-76, as reqd

   √ Batt installed
   CC
   √ Install Wide Conversion lens
   √ ND FILTER – OFF
   √ OUTPUT – CAM
   √ [ ] [ ]
   √ STANDBY/LOCK – STANDBY
   PWR dial – “green” [ ]
   √ Tape installed
   √ Viewfinder (LCD) displays “green” [ ]
   Install Audio Muting Plug (optional)
   Install Multiuse Brkt, Clamp as reqd

   CAUTION
   Due to temp constraints, worklights at full pwr for 60 min; 90% pwr for unlimited time

   Worklight
   Install fresh Batts
   Mount light on CC
   PWR – as reqd
P/TV09  MIDDECK PAYLOADS (Continued)

SETUP (Concluded)

2. Perform D2Xs PROGRAM w/FLASH

   Lens – 12-24mm
   Aperture – Min, locked
   Body Focus Mode – S
   √Batt installed
   √Flash Card installed
   Pwr – ON
   Top LCD
   √Batt
   √Frames remaining sufficient
   Exp Comp (√) – 0.0
   Exp Mode – P
   Meter – Matrix ( ),
   Diopter – Adjust
   Frame Rate – S
   √BKT disabled – 0 F
   Rear LCD
   √ISO – 100
   √QUAL – RAW
   √WB – 0, A
   AF Area Mode – [ ]
   √Focus Area – Center
   √Focus Selector Lock – L

   SB-800 Flash Settings
   √Diffuser Dome installed
   ON/OFF pb – ON
   √MODE –
   √Exp Comp – 0 EV
   Tilt – 45° (Direct)
## MIDDECK PAYLOADS (Continued)

### OPS

<table>
<thead>
<tr>
<th>Item #</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>19A-7</td>
<td></td>
<td>GLACIER Video, Still Photography</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19A-8</td>
<td></td>
<td>• Wide-angle video, photos showing crew interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Medium-angle video, photos showing stowage location</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Closeup video, photos of front panel after activation for gnd verification</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D2Xs 12-24mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>G1</td>
<td></td>
<td>LIVE desired within 12 hrs</td>
</tr>
<tr>
<td>2.</td>
<td>19A-31</td>
<td></td>
<td>MERLIN Video, Still Photography</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19A-32</td>
<td></td>
<td>• Wide-angle video, photos showing crew interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Medium-angle video, photos showing stowage location</td>
<td></td>
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<td></td>
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<td></td>
<td>• Closeup video, photos of front panel after activation for gnd verification</td>
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<td>D2Xs 12-24mm</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>G1</td>
<td></td>
<td>PLAYBACK desired</td>
</tr>
<tr>
<td>3.</td>
<td>19A-33</td>
<td></td>
<td>MOUSE Immunology</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19A-34</td>
<td></td>
<td>• Record 10 min video of 1st, 2nd AEM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Take general photos of experiment, ops</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D2Xs 12-24mm</td>
<td></td>
<td>Video is restricted. Do not DNLK (PLAYBACK)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>G1</td>
<td></td>
<td>Frame the view of the animal enclosure Label tape ‘AEM Video’ Do not clamp on metal tape Use Witches Hat as reqd</td>
</tr>
<tr>
<td>4.</td>
<td>19A-9</td>
<td></td>
<td>STL Still Photography</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>19A-10</td>
<td></td>
<td>• Photos of front panel, crew interaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Take at completion of initialization and re-entry procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>D2Xs 12-24mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

DEACTIVATION

Worklight
1. PWR – OFF
 Remove, mark tape
 PWR dial – OFF

CC
This Page Intentionally Blank
P/TV10  EPO – ROBOTICS

H/W SUMMARY

SCENE SYNOPSIS

Scene contains procedures for recording video for Education Payload Operations (EPO) of MS2 explaining importance of Robotic Operations and Exploration on Shuttle, ISS at their respective ARM OPS stations. Video intended for students 5-12.
P/TV10  EPO – ROBOTICS (Continued)

SETUP

Config H/W per H/W SUMMARY on FS 1-76

CC
√ Fresh Batt installed
√ Wide Conversion lens installed
√ ND FILTER – OFF
√ AF/M – AF
   GAIN – L(M) per scene exposure
√ OUTPUT – CAM
√ AWB – ON
√ ( ] – [ ]
√ STANDBY/LOCK – STANDBY
   PWR dial – A
   Open LCD
√ CP1(2-9) displayed
   Install fresh tape
   Mount CC w/Multiuse Brkt, Clamp as reqd
   Install Headphones
   Install LAV MIC

LAV MIC
ON/OFF – ON

CAUTION
Due to temp constraints, worklights at full
pwr for 60 min; 90% pwr for unlimited time

Worklight (2)
Install fresh Batt
Mount First Light on CC
Mount Second Light w/Brkt (Velcro/Tape)
PWR – as reqd

Cabin Lts
On as reqd
Lts in FOV – OFF as reqd
Lt, Window Shades – install as reqd

CC
√ Scene Composition, Lighting, adjust as reqd
√ Audio Quality
<table>
<thead>
<tr>
<th>SCENE LOCATION</th>
<th>SCRIPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shuttle Robotic Arm Workstation</td>
<td>Talking Points:</td>
</tr>
<tr>
<td></td>
<td>(Note: Talking points do not need to be completed verbatim. Dottie</td>
</tr>
<tr>
<td></td>
<td>is encouraged to use her own words if preferred.)</td>
</tr>
<tr>
<td></td>
<td>Introduction:</td>
</tr>
<tr>
<td></td>
<td>Objective: Provide students/educators with background info on yourself</td>
</tr>
<tr>
<td></td>
<td>(Dottie)/setting/purpose.</td>
</tr>
<tr>
<td></td>
<td>(Dottie floats in front of the camera with the shuttle robotic arm</td>
</tr>
<tr>
<td></td>
<td>workstation in the background)</td>
</tr>
<tr>
<td></td>
<td>&quot;Hello, my name is Dottie Metcalf-Lindenburger and I am a Mission</td>
</tr>
<tr>
<td></td>
<td>Specialist with STS-131.</td>
</tr>
<tr>
<td></td>
<td>Currently I am on Space Shuttle Discovery orbiting 240 miles above the</td>
</tr>
<tr>
<td></td>
<td>Earth and traveling about 17,500 mph.</td>
</tr>
<tr>
<td></td>
<td>(Dottie does a somersault or floats an object in front of her)</td>
</tr>
<tr>
<td></td>
<td>As you can see… I am in microgravity.</td>
</tr>
<tr>
<td></td>
<td>This is a unique environment that allows us to conduct many experiments</td>
</tr>
<tr>
<td></td>
<td>that would be more difficult to conduct on Earth.</td>
</tr>
<tr>
<td></td>
<td>The Space Shuttle Discovery is currently docked with the International</td>
</tr>
<tr>
<td></td>
<td>Space Station.</td>
</tr>
<tr>
<td></td>
<td>The ISS is filled with many biological and technological experiments</td>
</tr>
<tr>
<td></td>
<td>that help us with Earth applications and long duration space flight.</td>
</tr>
<tr>
<td></td>
<td>The research obtained helps us learn more about what it will take to</td>
</tr>
<tr>
<td></td>
<td>go back to the moon, on to Mars, and beyond.&quot;</td>
</tr>
</tbody>
</table>
**P/TV10  EPO – ROBOTICS (Continued)**

**OPS (Continued)**

<table>
<thead>
<tr>
<th>SCENE LOCATION</th>
<th>SCRIPT</th>
</tr>
</thead>
</table>
| Shuttle Robotic Arm Workstation (Continued) | **Topic 1 – Robotics Overview:**  
Objective: Provide students/educators w/overview of general NASA robotics.  

“Exploring space is a difficult task. Scientists and engineers are working everyday to develop robotic explorers for many destinations that humans are not capable of traveling to at this time.

Robotics is a topic that involves many different areas. Currently robotics is being used in spacecrafts like LRO, LCROSS, CASSINI, and Hubble that capture data about distant planets and moons. Robotic rovers and landers such as Spirit, Opportunity, and Phoenix are investigating Mars. Robotic aircraft such as Global Hawk are being developed to investigate environmental science research. Human interactive robotics like Robonaut are being developed. And robotic arms assist us with many difficult tasks here on the space shuttle and ISS.” |

**Topic 2 – Shuttle Robotic Arm:**  
Objective: Provide students/educators w/overview of the Shuttle Robotic Arm and procedures from the workstation.  

“I am standing in front of the shuttle robotic arm workstation. This workstation involves the controls needed to manipulate the robotic arm that is located in the payload bay of the shuttle. This arm was developed by Canada. We call it the Space Shuttle Robotic Manipulator System or simply, the shuttle arm.

*(Dottie uses her arm to demonstrate the joints)*  
The robotic arm is similar to a human arm. It has two joints in the shoulder, 1 joint in the elbow, and 3 joints in the wrist.

The joints may be similar, however the length and weight are very different. The robotic arm is about 50 feet in length and weighs about 900 pounds on Earth.

I thought I was pretty strong, but the robotic arm is much stronger. It has a mass handling capacity of about 200,000 pounds. Wow! That is a lot!
Shuttle Robotic Arm Workstation (Concluded)

<table>
<thead>
<tr>
<th>SCENE LOCATION</th>
<th>SCRIPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>The robotic arm may be longer and stronger than my arm, but my arm is much quicker. The robotic arm is only capable of moving about 2 inches every second when it is loaded. This is because in space it is very difficult to start or stop large masses in motion. Newton's Laws can help explain why. We also do not want to damage any components by moving them too quickly. The shuttle robotic arm is used on every flight to check for damage to the tiles that protect the shuttle during re-entry to Earth’s atmosphere. The shuttle robotic arm can also be used to take payloads out of the payload bay and attach them to the space station, but we will not be doing that with the shuttle arm on this flight. A lot of the maneuvers we make are difficult to see from the windows. To assist us we have 2 video cameras installed, one on the elbow and one on the wrist of the robotic arm. There are also several other cameras that are attached to the shuttle payload bay that we can use. And when we’re docked to the ISS, we can use their cameras also.</td>
<td></td>
</tr>
<tr>
<td>(Dottie discusses some of the controls that are used to manipulate the arm and some of the robotic arm tasks that she is conducting during her mission)</td>
<td>(Dottie floats away from camera view)</td>
</tr>
<tr>
<td>Now, let’s head over to the International Space Station and check out the robotic work station there.”</td>
<td>(Dottie floats away from camera view)</td>
</tr>
</tbody>
</table>
Station Robotic Arm Workstation

Topic 3 – Station Robotic Arm:
Objective: Provide students/educators w/overview of the Station Robotic Arm and procedures from the workstation.

“Now I am standing in front of the ISS Mobile Servicing System for the station arm. This robotic arm is similar to the shuttle’s, but is much more versatile. The shuttle arm is fixed to the shuttle by one end. The station arm has no fixed end and can travel the entire length of the space station on the Mobile Base System.

This robotic arm has many neat features such as force moment sensors to provide a sense of touch, automatic vision feature for capturing, and automatic collision avoidance. There are also four color video cameras, one on each side of the elbow and two on the Latching End Effectors.

As you notice, there are no windows at the workstation. So we need to use the video cameras located on the arm and station along with the monitors to view what we are doing.”

Topic 4 – Robotic Training and Careers:
Objective: Provide students/educators w/background information on robotic arm training and careers involved.

“These operations involve much training and practice. On the ground I trained for numerous hours on how to complete the tasks given during this mission. Many careers are involved with the robotic arm from the engineers who designed and constructed the arm; the engineers who train the astronauts on how to work the arm, to the astronauts that need to manipulate the arm on-orbit.

The shuttle robotic arm cannot even support its own weight on earth, even though it’s capable of lifting several thousands of pounds of weight in microgravity. To learn how to use the shuttle robotic arm, we train in facilities that use computer-generated graphics that make it look like we’re flying the robotic arm, but it’s actually a simulator that is like a video game. All of the workstation displays and hand controllers are very much like the real workstations on the vehicles.”
The field of robotics includes a wide variety of careers. Many types of engineers and scientists are designing new types of robots that will explore and discover our future. Check out the Career Corner on the NASA Robotics website to learn more.”

Closing:
Objective: Inspire students to study science, technology, engineering, and math.

“Robotics is a very cool topic and applies to many areas of content that students are learning in school including science, technology, engineering, and math. As I was learning this content or teaching it, I never thought I would be applying it someday in space. I hope you follow your dreams and maybe someday I will see you at NASA.

To learn more about robotics check out the variety of resources available at the NASA Robotics website.

Goodbye!”
(Dottie waves goodbye.)

DEACTIVATION

Worklight (2) PWR – OFF
CC Remove, protect, mark Tape
PWR dial – OFF
LAV MIC ON/OFF – OFF
## REFERENCED PROCEDURES

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<td>SETUP</td>
<td>FS 2-18</td>
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<td>DEACTIVATION</td>
<td>FS 2-19</td>
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<td>LCS/IDC (HEATER ONLY MODE)/(OPERATIONAL PWR MODE) DATA AND PWR INTERFACES</td>
<td>FS 2-26</td>
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<tr>
<td>PTU 2/MAIN BUS B SYSTEM DETAILS</td>
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<td>FS 2-30</td>
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<tr>
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</tr>
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<td>FS 2-44</td>
</tr>
<tr>
<td>.WAV FILE PLAYBACK</td>
<td>FS 2-44</td>
</tr>
</tbody>
</table>
CENTERLINE (C/L) CAMR

C/L CAMR INSTALL

1. ODS C/L Camr Config
   L12 (SSP 2)  √ C/L CAM PWR – OFF

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

ML60B  Unstow PRI C/L Camr, PRI C/L TV Camr Harness Assy

NOTE
When connecting ODS C/L TV Camr Harness Assy, √ pins to socket connection

ODS  √ ODS C/L Camr Brkt mounted securely
   Mount PRI C/L Camr to ODS C/L Camr Brkt
   √ Flex Duct attached to Camr brkt
   Config cable per dwg at right

C/L Camr  √ SSF/STS sw – STS

L12 (SSP 1)  √ cb SSP2 SEC C/L CAM – cl
   (SSP 2)  C/L CAM PWR – SEC ON

A6L  LT VEST PORT, STBD – ON as reqd

   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

P/TV/131/FIN 2
CENTERLINE (C/L) CAMR (Continued)

C/L CAMR INSTALL (Continued)

2. Camr Position Verification

This view in ODS looking up from Camr bottom

NOTE
This view in ODS looking up from Camr bottom

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

C/L CAMR INSTALL (Concluded)

3. ODS C/L Camr Alignment Check
   MON 1(2)
   LDATA – ON
   CDATA – GRN
   XHAIR – GRN

   A7
   Zoom to $10^\circ \pm 0.5^\circ$
   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 $\sim 10\text{--}40^\circ$ zoom range of Camr

   Report results of both alignment verifications (at $10^\circ$ and $40^\circ$) to MCC

4. Deactivation
   A7 CAMR CMD IRIS – CL
   L12 (SSP 2) C/L CAM PWR – OFF
   Go to DEACTIVATION (Cue Card, TV) as reqd

   A6L LT VEST PORT, STBD – OFF as reqd
**DTV**

**VTR CLOCK SET**

1. Activate VTR

   - R1
     - √PL AUX – ON
   - L10 (MUX) VTR/CC PWR – on (LED on)
     - √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,VIP as reqd

   - (VIP)
     - ON/STANDBY pb – push (red LED on)
     - PWR – off (LED off)
D2Xs

**DATE/TIME SET**

1. MENU pb – press
2. Navigate pad – sel Menu icon setup menu
   - press (right)
   - sel WORLD TIME (up,down)
   - press (right)
   - sel DATE (up,down)
   - press (right)
3. Set TIME/DATE to GMT
   Navigate pad – sel desired field (left,right)
   - sel desired setting (up,down)
4. ENTER pb – press
5. MENU pb – press twice
This Page Intentionally Blank
CANON G1

ANALOG (SD DTV) CC REC,DNLK

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
   √ ND FILTER – OFF
    Install Audio Muting Plug (optional)
   √ OUTPUT – CAM
    √ A/V1/V2 – V2
    √ ( ) – ( )
    √ STANDBY/LOCK – STANDBY
    PWR dial – “green”
    If rec to tape:
        Tape – Install
    √ Viewfinder (LCD) displays “green” •||
    Mount w/Multiuse Brkt, Clamp as reqd

CAUTION
Due to temp constraints, worklights at full pwr for 60 min; 90% pwr for unlimited time

Worklights
Install fresh Batts
Mount light(s) w/brkts (Velcro/tape)
PWR – as reqd

Cabin Lts
Ft Deck – ON
Lts in FOV – OFF as reqd
Lt Shades – install as reqd
Window Shades – install as reqd
CANON G1 (Continued)

ANALOG (SD DTV) CC REC, DNLK (Concluded)

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 dnlk:

A7
√ TV DNLK – ENA
PWR CNTL – PNL
CONTR UNIT – MNA(B)
CNTL – CMD (wait 10 sec for system initialization)

If Analog, on MCC GO:

L10
√ Cables connected
(MUX) MUX/VTR/CC PWR – on (LED on)
√ MUX BYPASS – ACT
(VIP) PWR – on (LED on, DATA FLOW LED flashes twice)
(VTR) √ ON/STANDBY LED – green
(VIP) √ INPUT SELECT – VIDEO

A7
VID OUT DTV pb – push
IN FLT DECK(MIDDECK) pb – push

If SD DTV, on MCC GO:

L10 (MUX)
√ CH 3 DATA LED – on

When dnlk complete:

CC
PWR dial – OFF
Worklights PWR – off
L10 (MUX) MUX/VTR/CC PWR – off (LED off)

Go to DEACTIVATION (Cue Card, TV) as reqd
CANON G1 (Continued)

**HD CC DNLK**

Notify MCC, configuring for HD TV dnlk

Config H/W per dwg at right

**CC**

For cable strain relief attach MPC-to-G1 Cable
Velcro strap to CC strap

**AVIU**

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

**O19**

√ TV PWR – ON

**CC**

√ Wide Conversion Lens installed
   Install LAV MIC
   √ ND FILTER – OFF
   √ OUTPUT – CAM
   √ E .. D - PC
   √ STANDBY/LOCK – STANDBY
   PWR dial – “green” ⬜
   If rec to tape:
      TAPE – INSTALL
      √ VIEWFINDER (LED) displays “green” ⬜
   Mount w/Multiuse Brkt, Clamp as reqd

**L10 (MUX)**

√ MUX/VTR/CC PWR – on (LED on)
   MUX BYPASS – ACT
   CH 0,1 RATE SEL – 1
   CH 2 RATE SEL – 8
   (VTR) ON/STBY pb – push (LED red)
   (VIP) PWR – off (LED off)

**O19**

DC UTIL PWR MNA – ON

**MPC PWR**

DC PWR SPL Y PWR SW1 – ON

**SPLY**

MPC PWR – ON (HDV, TAXI, 5V, 3V green LEDs on)
CANON G1 (Continued)

HD CC DNLK (Continued)
L10 (MUX)  √CH 2 F/O OK, DATA LEDs on

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due to temp constraints, worklights at full pwr for 60 min; 90% pwr for unlimited time</td>
</tr>
</tbody>
</table>

Worklights  Install fresh Batts
Mount light(s) w/brkts (Velcro/tape)
PWR – as reqd

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

LAV MIC  PWR – ON (talk), OFF (listen)

√MCC if Black video and color bars reqd
If reqd:
   PWR dial – Av
   Aperture – close
   √Av CLOSE displayed on top left of LCD
   AGC – OFF
   GAIN sw – L
   ±0dB displayed on LCD
   OUTPUT – BARS

When MCC says done w/bars:
   OUTPUT – CAM

When MCC says done w/black screen test:
   PWR dial – “green”  

FS 2-15  P/TV/131/FIN
CANON G1 (Concluded)

HD CC DNLK (Concluded)

When dnlk complete:

CC  PWR dial – OFF

Worklights  PWR – OFF

O19  TV PWR – OFF as reqd

MPC  PWR – OFF
    PWR  DC PWR SPLY PWR SW1 – OFF
    SPLY

O19  DC UTIL PWR MNA – OFF

L10 (MUX)  MUX/VTR/CC PWR – off (LED off)
(VIP)  PWR – on (LED on, DATA FLOW LED flashes twice)
(VTR)  ON/STANDBY pb – push (LED green)

Notify MCC, returned to SD DTV dnlk

Go to DEACTIVATION (Cue Card, TV) as reqd
FCS CHECKOUT CAMR SETUP

SYNOPSIS

The following camera and camcorder settings will be used to photodocument items that may be liberated from the Orbiter during FCS C/O. Images and video should be downlinked if time and assets are available.

SETUP

1. D2Xs
   Lens – 400mm
   
   **NOTE**
   If auto focus unachievable:
   Lens Focus Mode – M

SB-800 Flash Settings:
   ON/OFF pb – OFF
   Aperture – Min, locked
   Lens Focus Limit – ∞ -6m
   Lens Focus Mode – A
   Body Focus Mode – S
   \ Checkmark
   Batt installed
   \ Checkmark
   Flash Card installed
   Pwr – ON
   Top LCD:
   \ Checkmark
   Batt
   \ Checkmark
   Frames remaining sufficient
   Exp Comp – 0.0
   Exp Mode – M:
   SS – 500
   f/stop – f/8
   Meter – Matrix
   Diopter – Adjust
   Frame Rate – S
   \ Checkmark
   BKT disabled – 0 F
   Rear LCD:
   \ Checkmark
   ISO – 100
   \ Checkmark
   QUAL – RAW
   \ Checkmark
   WB – 0,A
   AF Area Mode – [ ]
   \ Checkmark
   Focus Area – Center
   \ Checkmark
   Focus Selector Lock – L
FCS CHECKOUT CAMR SETUP (Concluded)

SETUP (Concluded)

2. G1 CC
   - Remove Wide Conversion Lens
   - Install Batt
   - √ ND FILTER – OFF
   - AF/M – M
   - AGC – OFF
   - GAIN – L
   - √ OUTPUT – CAM
   - √ AWB – ON
   - √ FOCUS – M
   - √ STANDBY/LOCK – STANDBY
   - PWR dial – M
   - √ Tape installed
   - Open LCD:
     - 'green' • displayed
     - SS = 1/500
     - √ GAIN – 0dB
     - f/stop = F8.0
     - FOCUS – M ∞

DEACTIVATION

1. D2Xs
   - Lens focus mode – A
   - EXP Mode – P
   - Pwr – OFF

2. G1
   - Install Wide Conversion Lens
   - AF/M – AF
   - AGC – ON
   - Pwr dial – OFF
   - Remove Batt
   - Connect Dig/CC Vid Pwr Cable
   - PWR dial – ‘green’
   - Place G1 on brkt
MINI-CAM (Continued)

ENTRY VIDEO SETUP (Continued)

1. Remove “Entry” Ziplock bag from DTV Bag

2. Config Mini-Cam, VTR for Audio, Video Recording
   Config H/W per dwg, FS 2-22
   
   a. Config HUD Mini-Cam w/12mm Lens
      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 – ∞ (Just off hard-stop)
      Aperture – f/5.6 for daylight landing, 1.4 for night landing

      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)

   b. Config in-cabin and MD Mini-Cam w/3.5mm Lens

   3.5mm Lens
      Aperture – f/1.8

   c. Config additional Mini-Cam H/W

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)
   VTR/CC PWR – on (LED on)
   \ON/STANDBY LED – green
MINI-CAM (Concluded)

ENTRY VIDEO SETUP (Concluded)

Acquire four (4) V10 Li-ION batts

NOTE
One Batt will be used on V10 for system c/o. Second Batt is spare. Batt will be removed after c/o and used for Entry

V10 (FD, MD)

Install fresh Batt

\[\text{PWR – ON}\]

\[\sqrt{\text{HUD 12mm Lens/Mini-Cam producing good video}}\]

Change config to in-cabin 3.5mm Lens/Mini-Cam

\[\sqrt{\text{In-cabin 3.5mm Lens/Mini-Cam producing good video}}\]

\[\sqrt{\text{MD Camera view}}\]

\[\text{PWR – OFF}\]

L10 (VTR)

ON/STANDBY pb – push (red LED off)

(LUS)

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
LASER CAMR SYSTEM (LCS)/INTEGRATED SENSOR INSPECTION SYSTEM DIGITAL CAMR (IDC)

LCS/IDC (HEATER ONLY MODE)/(OPERATIONAL PWR MODE) DATA AND PWR INTERFACES

*LCS/IDC*
PTU 2/MAIN BUS B SYSTEM DETAILS

PTU 2

CNTL PWR

MNB

PTU/MAIN BUS

B - ON

OFF

ON

ESS2CA

PTU 2

PWR TO
 OTHER
 SYSTEMS

ESS2CA

MNB PWR
 TO BE CONVERTED
 BY APCU 2

MNC

MNB CONTR
O13

MNB CONTR
O15

A15

PTU 2

M

MNB

PWR TO
 OTHER
 SYSTEMS

PWR TO
 OTHER
 SYSTEMS

MNC

ESS2CA
D3s

**SPECIFICATIONS**

**CAMR BODY**

- **CMOS SENSOR SIZE:** 36mm x 23.9mm (DX MODE 24mm x 16mm)
- **PIXEL COUNT:** 4256 x 2832 (12.1 million pixels)
- **FRAME/CARD:** ~202/4 GB EVA Flash Card
- **RAW FILE SIZE:** ~11.3 MB compressed lossless (12-bit)
- **EXPOSURE CONTROL:** Auto (program, shutter priority, aperture priority), Manual
- **METER PATTERN:** 3D Color Matrix II, Center Weighted, Spot
- **EXPOSURE COMP:** ±5 EV RANGE in 1/2 or 1/3 EV steps
- **SHUTTER:**
  - Program & Aperture Priority – 1/8000 thru 30 sec (virtually stepless)
  - Manual & Shutter Priority – 1/8000 thru 30 sec (1/3 or 1/2) stop increments), 250x, and Bulb (manual only)
- **ISO Setting:** 200 to 12,800; H-0.3, H-0.5, H-0.7, H-1.0, H-2.0, H-3.0, L-0.3, L-0.7, and L-1.0 available (H-3.0 = 102,400 ISO)
- **FRAME RATE:** Single continuous up to 9 frames/sec (up to 11 frames/sec in DX MODE)
  - Burst Rate: 41 raw images
- **MOVIE MODE SIZES:** 1280 x 720/24 fps, 640 x 420/24 fps, 320 x 260/24 fps
- **MOVIE FORMAT:** AVI
- **MOVIE COMPRESSION:** Motion JPEG
- **MOVIE ISO:** 200-12,800
- **MOVIE RECORDING TIME:** 5 min max in 1280 x 720, 20 min max in other movie modes
- **MOVIE FILE SIZE:** Max 2 GB
- **CAMERA INTERFACES:** USB, audio/video, HDMI, Microphone, 10-pin remote
- **CAMR BATT:** Li-ION EN-EL4A
- **CAMR BATT VOLTAGE:** 11.1VDC
- **CAMR WEIGHT:** 3.2 lb (w/Batt & Memory Card)

**FLASH**

- **SB-800 DX**
  - **BATT:** 4AA
  - **BATT LIFETIME:** 200+ images
  - **WEIGHT:** w/o Batts – .77 lb
  - **SYNC FLASH CONTROL:** Master, Remote
### D3s (Continued)

**LENS DATA**

**NOTE**
Do not use non-AF lens w/D3s

<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>
<tbody>
<tr>
<td></td>
<td></td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Diagonal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.5mm AF DXG</td>
<td>f/2.8-f/22</td>
<td>–</td>
<td>–</td>
<td>180°</td>
<td>0.5</td>
<td>.6</td>
</tr>
<tr>
<td>12-24mm AF DX</td>
<td>f/4.0-f/22</td>
<td>89°-53°</td>
<td>66°-36°</td>
<td>100°-61°</td>
<td>1.0</td>
<td>1.02</td>
</tr>
<tr>
<td>14mm</td>
<td>f/2.8-f/22</td>
<td>104°</td>
<td>81°</td>
<td>114°</td>
<td>0.66</td>
<td>1.48</td>
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<tr>
<td>16mm</td>
<td>f/2.8-f/22</td>
<td>97°</td>
<td>74°</td>
<td>107°</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>17-35mm</td>
<td>f/2.8-f/22</td>
<td>93°-54°</td>
<td>70°-38°</td>
<td>104°-63°</td>
<td>1.0</td>
<td>1.6</td>
</tr>
<tr>
<td>24-70mm</td>
<td>f/2.8-f/22</td>
<td>74°-29°</td>
<td>53°-19°</td>
<td>84°-34°</td>
<td>1.2</td>
<td>2.0</td>
</tr>
<tr>
<td>17-55mm</td>
<td>f/2.8-f/22</td>
<td>70°-24°</td>
<td>50°-16°</td>
<td>80°-29°</td>
<td>1.3</td>
<td>1.7</td>
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<tr>
<td>20-35mm</td>
<td>f/2.8-f/22</td>
<td>61°-37°</td>
<td>43°-25°</td>
<td>71°-44°</td>
<td>1.7</td>
<td>1.3</td>
</tr>
<tr>
<td>24-85mm</td>
<td>f/2.8(4)-f/22</td>
<td>53°-16°</td>
<td>36°-11°</td>
<td>61°-19°</td>
<td>1.6</td>
<td>1.2</td>
</tr>
<tr>
<td>28mm</td>
<td>f/2.8-f/22</td>
<td>46°</td>
<td>31°</td>
<td>54°</td>
<td>1.25</td>
<td>0.5</td>
</tr>
<tr>
<td>28mm</td>
<td>f/1.4-f/16</td>
<td>46°</td>
<td>31°</td>
<td>54°</td>
<td>1.14</td>
<td>1.1</td>
</tr>
<tr>
<td>28-70mm</td>
<td>f/2.8-f/22</td>
<td>46°-19°</td>
<td>31°-13°</td>
<td>54°-23°</td>
<td>2.3 (1.5 ft macro)</td>
<td>2.0</td>
</tr>
<tr>
<td>35mm</td>
<td>f/2-f/22</td>
<td>54°</td>
<td>38°</td>
<td>63°</td>
<td>0.9</td>
<td>0.5</td>
</tr>
<tr>
<td>35-70mm</td>
<td>f/2.8-f/22</td>
<td>54°-29°</td>
<td>38°-19°</td>
<td>63°-34°</td>
<td>2.0 (0.9 ft macro)</td>
<td>1.5</td>
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<tr>
<td>50mm</td>
<td>f/1.4-f/16</td>
<td>40°</td>
<td>27°</td>
<td>47°</td>
<td>1.5</td>
<td>0.5</td>
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<tr>
<td>58mm Noct MF</td>
<td>f/1.2-f/16</td>
<td>35°</td>
<td>23°</td>
<td>41°</td>
<td>2</td>
<td>1.1</td>
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<tr>
<td>60mm Micro</td>
<td>f/2.8-f/32</td>
<td>33°</td>
<td>23°</td>
<td>40°</td>
<td>0.66</td>
<td>1.0</td>
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<tr>
<td>80-200mm</td>
<td>f/2.8-f/22</td>
<td>25°-10°</td>
<td>17°-7°</td>
<td>30°-12°</td>
<td>6</td>
<td>2.87</td>
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<tr>
<td>80-400mm VR</td>
<td>f/4.5(5.6)-f/32</td>
<td>25°-5°</td>
<td>17°-3°</td>
<td>30°-6°</td>
<td>7.5</td>
<td>2.96</td>
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<tr>
<td>85mm</td>
<td>f/1.8-f/16</td>
<td>24°</td>
<td>16°</td>
<td>29°</td>
<td>3.0</td>
<td>1.2</td>
</tr>
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</table>
### LENS DATA (Concluded)

<table>
<thead>
<tr>
<th>Lens</th>
<th>Aperture Range (f/stop)</th>
<th>Approximate Field of View (FOV)</th>
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<th>Weight (lb)</th>
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<tbody>
<tr>
<td></td>
<td>Horizontal</td>
<td>Vertical</td>
<td>Diagonal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105mm Micro 180mm</td>
<td>f/2.8-f/32</td>
<td>20°</td>
<td>13°</td>
<td>23°</td>
<td>1.0</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td>f/2.8-f/22</td>
<td>11°</td>
<td>8°</td>
<td>14°</td>
<td>5.0</td>
<td>1.7</td>
</tr>
<tr>
<td>200-400mm VR</td>
<td>f/4-f/32</td>
<td>10°-5.2°</td>
<td>7°-3.4°</td>
<td>12°-6.2°</td>
<td>6.6</td>
<td>7.2</td>
</tr>
<tr>
<td>400mm</td>
<td>f/2.8-f/22</td>
<td>5.2°</td>
<td>3.4°</td>
<td>6.2°</td>
<td>12.5</td>
<td>10.6</td>
</tr>
<tr>
<td>400mm w/2X Teleconverter (800mm) TC-20E</td>
<td>f/5.6-f/45</td>
<td>2.6°</td>
<td>1.7°</td>
<td>3.1°</td>
<td>12.5</td>
<td>11.3</td>
</tr>
<tr>
<td>Sigma 300-800mm</td>
<td>f/5.6-f/32</td>
<td>6.9°-2.6°</td>
<td>4.6°-1.7°</td>
<td>8.2°-3.1°</td>
<td>19.7</td>
<td>12.7</td>
</tr>
</tbody>
</table>
NOMENCLATURE

Nikon D3s Camera Front

1. sw Shutter-release Lock (vertical shooting)
2. pb Shutter-release (vertical shooting)
3. pb Fn
4. pb Depth-of-field Preview
5. Sub-command Dial
6. Mirror
7. 1/4-20 Socket
8. Sub-command Dial (vertical shooting)
D3s (Continued)

NOMENCLATURE (Continued)

CAMR – BACK

Nikon D3s Camera Back

1. pb info
2. pb OK
3. pb Protect
4. pb Thumbnail/Zoom
5. pb MENU
6. pb Playback
7. pb Delete
8. Eyepiece Shutter Lever
9. Viewfinder Eyepiece
10. pb AE/AF Lock
11. pb AF-ON
12. Main Command Dial
13. Navigate Pad
14. Focus Selector Lock
15. Memory Card Busy Lamp
16. AF-Area Mode Selector
17. pb AF-ON (vertical shooting)
18. Main Command Dial (vertical shooting)
19. pb Live View
20. pb Microphone
21. Microphone
22. pb White Balance
23. pb QUAL (image quality/size)
24. pb ISO Sensitivity
D3s (Continued)

NOMENCLATURE (Continued)

Nikon D3s Camera Top

1. Shooting mode dial
2. pb Bracketing (BKT)
3. Shooting mode dial lock release
4. Metering selector
5. pb Metering selector lock
6. pb Exposure mode (MODE)
7. sw Power
8. pb Shutter-release
9. pb Exposure compensation
10. Top LCD
11. Diopter adjustment knob
12. Accessory shoe
13. pb Lock
14. pb Flash Mode
NOMENCLATURE (Continued)

1. Self-timer Lamp
2. Microphone (for movies)
3. Flash Sync Terminal
4. Ten-pin Remote Terminal
5. USB Connector
6. Microphone Port
7. Audio/Video (A/V) Connector
8. DC-IN Connector for optional AC Adapter EH-6
9. HDMI Connector
10. Lens Release Button
11. Focus-mode Selector
12. Battery Door Latch
13. Battery Door

Nikon D3s Camera Left Front
D3s (Continued)

NOMENCLATURE (Continued)

CAMR – TOP CONTROL PANEL

Nikon D3s Camera Top Control Panel - 1

1 Custom settings bank
2 Shooting menu bank
3 Flash mode
4 Exposure mode
5 Flexible program indicator
6 Shutter-speed lock icon
7 Shutter speed
8 Aperture delta
9 Aperture (f/number)
10 Battery indicator
11 Frame count
12 "K" (indicates memory remains for over 1000 exposures)
13 Number of exposures remaining
14 Memory card indicator (slot 2)
15 Memory card indicator (slot 1)

Nikon D3s Camera Top Control Panel - 2

1 GPS connection indicator
2 Clock battery indicator
3 Flash sync indicator
4 FV lock indicator
5 Interval timer indicator
6 Multiple exposure indicator
7 Aperture lock icon
8 Image comment indicator
9 "Beep" indicator
10 Exposure compensation indicator
11 Exposure and flash bracketing indicator
12 White balance bracketing indicator
13 Electronic analog exposure display
14 Focus mode indicator
D3s (Continued)

NOMENCLATURE (Continued)

CAMR – REAR CONTROL PANEL

1. ISO sensitivity indicator
2. Image size (JPEG and TIFF images)
3. Image quality (JPEG images)
4. White-balance bracketing indicator
5. Voice memo recording indicator (shooting mode)
6. Voice memo status indicator
7. Voice memo recording mode
8. White balance
9. Memory card slot indicators
10. "Remaining" indicator
11. "K" (indicates memory remains for over 1000 exposures)
12. ISO sensitivity
### D3s (Continued)

**NOMENCLATURE (Continued)**

**VIEWFINDER DISPLAY – LOWER BAR**

<table>
<thead>
<tr>
<th>Viewfinder Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Focus Points</td>
</tr>
<tr>
<td>2</td>
<td>AF Area Brackets</td>
</tr>
<tr>
<td>3</td>
<td>12-mm Reference Circle for Center-weighted Metering</td>
</tr>
<tr>
<td>4</td>
<td>Exposure Indicator</td>
</tr>
<tr>
<td>5</td>
<td>Exposure Compensation Indicator (Z)</td>
</tr>
<tr>
<td>6</td>
<td>Exposure and Flash Bracketing Indicator (BKT)</td>
</tr>
<tr>
<td>7</td>
<td>Flash-ready Indicator ( )</td>
</tr>
<tr>
<td>8</td>
<td>Frame Count</td>
</tr>
<tr>
<td>9</td>
<td>Battery Indicator ( )</td>
</tr>
<tr>
<td>10</td>
<td>ISO Sensitivity ( )</td>
</tr>
<tr>
<td>11</td>
<td>Aperture</td>
</tr>
<tr>
<td>12</td>
<td>Aperture Lock Icon ( )</td>
</tr>
<tr>
<td>13</td>
<td>Shutter Speed</td>
</tr>
<tr>
<td>14</td>
<td>Shutter Speed Lock Icon ( )</td>
</tr>
<tr>
<td>15</td>
<td>Auto Exposure Lock (AE-L)</td>
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<tr>
<td>16</td>
<td>Metering ( )</td>
</tr>
<tr>
<td>17</td>
<td>Focus Indicator ( )</td>
</tr>
<tr>
<td>18</td>
<td>FV Lock Indicator ( )</td>
</tr>
<tr>
<td>19</td>
<td>Exposure Mode ( )</td>
</tr>
<tr>
<td>20</td>
<td>Flash Sync Indicator (X)</td>
</tr>
<tr>
<td>21</td>
<td>Aperture Stop Indicator ( )</td>
</tr>
<tr>
<td>22</td>
<td>ISO Sensitivity Indicator ( )</td>
</tr>
<tr>
<td>23</td>
<td>&quot;K&quot; (Appears when memory remains for over 1000 exposures)</td>
</tr>
</tbody>
</table>

**D3s Viewfinder Display**

- **1**: Voice Memo Status Indicator
- **2**: White Balance Bracketing Indicator
- **3**: White Balance Mode
- **4**: Image Size
- **5**: Image Quality
- **6**: ISO Sensitivity Indicator
- **7**: ISO Sensitivity

**FS 2-39**
D3s (Continued)

NOMINAL SETUP

D3s PROGRAM w/FLASH

- Lens – as reqd
- Aperture – Min, locked
- Body Focus Mode – S
- Batt installed
- Flash Card installed
- Pwr – ON
- Top LCD
  - Batt
  - Frames remaining sufficient
- Exp Comp (      ) – 0.0
- Exp Mode – P
- Meter – Matrix (      )
- Diopter – Adjust
- Frame Rate – S
- BKT disabled – 0 F
- Rear LCD
  - ISO – 200
  - QUAL – RAW
  - WB – 0,A
- AF Area Mode – [  ]
- Info pb – press
- Focus Selector Lock – • (unlocked)
- Focus Area – Center
- Navigate Pad, Center – press
- Focus Selector Lock – L

SB-800 Flash Settings
- Diffuser Dome installed
  - ON/OFF pb – ON
- MODE = [ TTL ]
- Exp Comp – 0 EV
  - Tilt – 45° (Direct)

D3s SHUTTER PRIORITY (EARTH OBS)

- Lens – as reqd
- Aperture – Min, locked
- Body Focus Mode – S
- Batt installed
- Flash Card installed
- Pwr – ON
- Top LCD
  - Batt
  - Frames remaining sufficient
- Exp Comp (      ) – 0.0
- Exp Mode – S
  - SS – 500
- Meter – Matrix (      )
- Diopter – Adjust
- Frame Rate – S
- BKT disabled – 0 F
- Rear LCD
  - ISO – 200
  - QUAL – RAW
  - WB – 0,A
- AF Area Mode – [  ]
- Info pb – press
- Focus Selector Lock – • (unlocked)
- Focus Area – Center
- Navigate Pad, Center – press
- Focus Selector Lock – L

SB-800 Flash Settings
- ON/OFF pb – OFF
D3s (Continued)

NOMINAL SETUP (Continued)

D3s MANUAL (SUNLIT OBJECT)

SB-800 Flash Settings
ON/OFF pb – OFF

Lens – as reqd
Aperture – Min, locked
Body Focus Mode – S
√Batt installed
√Flash Card installed
Pwr – ON
Top LCD
√Batt
√Frames remaining sufficient
Exp Comp ( ) – 0.0
Exp Mode – M
SS – 1000
f/stop – f8
Meter – Matrix ( )
Diopter – Adjust
Frame Rate – S
√BKT disabled – 0 F
Rear LCD
√ISO – 200
√QUAL – RAW
√WB – 0,A
AF Area Mode – [ ]
Info pb – press
Focus Selector Lock – • (unlocked)
Focus Area – Center
Navigate Pad, Center – press
Focus Selector Lock – L

D3s AURORA/AIRGLOW

Lens – as reqd
   Lens Focus Mode – A
   Aperture – Min, locked
   Body Focus Mode – S
   √Batt installed
   √Flash Card installed
   Pwr – ON
   Top LCD
   √Batt
   √Frames remaining sufficient
Exp Comp ( ) – 0.0
Exp Mode – M
   SS – 1"
   f/stop – maximum (smallest number)
Meter – Matrix ( )
Diopter – Adjust
√BKT disabled – 0 F
Rear LCD
   √ISO – 12,800
   √QUAL – RAW
   √WB – 0,A
AF Area Mode – [ ]
Info pb – press
Focus Selector Lock – • (unlocked)
Focus Area – Center
Navigate Pad, Center – press
Focus Selector Lock – L

SB-800 Flash Settings
ON/OFF pb – OFF

Technique
1. Dim cabin lights
2. Use dark clothing to shield window
3. Focus, Frame, Fire
D3s (Continued)

NOMINAL SETUP (Concluded)

D3s CITY LIGHTS/STARS

- **Lens** – as reqd
- **Lens Focus Mode** – A
- **Aperture** – Min, locked
- **Body Focus Mode** – S
- √ **Batt installed**
- √ **Flash Card installed**
- **Pwr** – ON
- **Top LCD**
  - √ **Batt**
  - √ **Frames remaining sufficient**
- **Exp Comp (      )** – 0.0
- **Exp Mode** – M
  - SS – 15
  - f/stop – maximum (smallest number)
- **Meter** – Matrix (     )
- **Diopter** – Adjust
- √ **BKT disabled – 0 F**
- **Rear LCD**
  - ISO – 12,800
  - QUAL – RAW
  - WB – 0,A
- **AF Area Mode** – [ ]
- **Info pb** – press
- **Focus Selector Lock** – ● (unlocked)
- **Focus Area** – Center
- **Navigate Pad, Center** – press
- **Focus Selector Lock** – L
- **SB-800 Flash Settings**
  - ON/OFF pb – OFF
- **Accessory Equipment**
  - Shutter Release Cable – Install
  - Multiuse Brkt, Clamp – Install

**Technique**
1. Dim cabin lights
2. Use dark clothing to shield window
3. Focus, Frame, Fire

D3s LIGHTNING

- **Lens** – as reqd
- **Lens Focus Mode** – A
- **Aperture** – Min, locked
- **Body Focus Mode** – S
- √ **Batt installed**
- √ **Flash Card installed**
- **Pwr** – ON
- **Top LCD**
  - √ **Batt**
  - √ **Frames remaining sufficient**
- **Exp Comp (      )** – 0.0
- **Exp Mode** – M
  - SS – 2"
  - f/stop – maximum (smallest number)
- **Meter** – Matrix (     )
- **Diopter** – Adjust
- Frame Rate – S
- √ **BKT disabled – 0 F**
- **Rear LCD**
  - ISO – 400
  - QUAL – RAW
  - WB – 0,A
- **AF Area Mode** – [ ]
- **Info pb** – press
- **Focus Selector Lock** – ● (unlocked)
- **Focus Area** – Center
- **Navigate Pad, Center** – press
- **Focus Selector Lock** – L
- **SB-800 Flash Settings**
  - ON/OFF pb – OFF
- **Accessory Equipment**
  - Shutter Release Cable – Install
  - Multiuse Brkt, Clamp – Install as reqd

**Technique**
1. Fire Camr repeatedly. Luck reqd
D3s (Continued)

DATE/TIME SET

1. MENU pb – press
   Set TIME ZONE
2. Navigate pad – sel menu icon  SETUP MENU
   – press (right)
   – sel TIME ZONE and DATE (up, down)
   – press (right)
   – sel TIME ZONE (up, down)
   – press (right)
   – sel LONDON, CASABLANCA (left, right)
   – OK pb – press
3. Set DATE/TIME to GMT
   Navigate pad – sel DATE and TIME (up, down)
   – sel desired field (left, right)
   – sel desired setting (up, down)
4. OK pb – press
5. MENU pb – press twice

DELETING SINGLE IMAGES

1. PLAYBACK pb – press
2. Navigate pad – sel image (left, right)
3. DELETE pb – press twice to delete

ADDING .WAV FILES TO AN IMAGE

1. PLAYBACK pb – press
2. Navigate pad – sel image (left, right)
3. MICROPHONE pb – press, hold (√microphone icon  appears on upper left of rear LCD)
4. Talk to MIC
5. ♬Music Note icon  appears in upper left image
D3s (Concluded)

DELETING .WAV FILE FROM AN IMAGE

1. PLAYBACK ▶ pb – press
2. Navigate pad – sel image (left, right)
3. DELETE 🗑 pb – press
4. Sel – Sound only
5. DELETE 🗑 pb – press

.WAV FILE PLAYBACK

1. PLAYBACK ▶ pb – press
2. Navigate pad – sel image w/music note ♫ (left, right)
3. MICROPHONE ♫ pb – press
## CUE CARD CONFIGURATION

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<th>CUE CARD CONFIGURATION</th>
<th>PAGE</th>
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</thead>
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<td>FS CC 3-5</td>
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<td>ET PHOTO</td>
<td>FS CC 3-7</td>
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<td>LCS</td>
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<td>FS CC 3-25</td>
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<tr>
<td>G1 CC SETUP</td>
<td>FS CC 3-27</td>
</tr>
</tbody>
</table>
**TV**

### Activation

- **A3** MON 1(2) PWR – ON (LED ON)
- **A7** TV DNLK – ENA
- **PWR CONTR UNIT – MNA(A/B)
- CTRL – PNL, wait 10 sec for system initialization, CMD

### Deactivation

- **A7** PORT RMS CAMR – WRIST
- **PORT RMS CAMR – ELBOW**
- **TV CAMR PWR A/B(C,D,RMS) – ON (tb-ON), wait 10 sec**
- **TV CAMR PWR – OFF (tb-OFF)**

### Operation

#### Auto Ops (Auto Exposure)

- **A7** TV CAMR PWR A/B(C,D,RMS) – ON (tb-ON)
- **IN pb – as reqd**

  **If CTVC:**
  - ALC pb – push
  - AVG pb – push

  **If ITVC:**
  - TV CAMR PWR A/B(C,D,RMS) – OFF, wait 10 sec
  - Repeat until MAN GAIN pb illuminated

  **LT LEVEL pb – push**
  - DAY(NIGHT) pb – push
  - ALC pb – push
  - AVG pb – push

#### Manual Exposure

- **A7** MAN GAIN pb – push
- **0(+12,+24) dB pb – push**
- **CAMR CMD IRIS – CL**

### DNLK Ops

- **Coordinate dnlk and sync config w/MCC**
- **Config audio as reqd**

  **A7** VID OUT DNLK pb – push

  **IN pb – as reqd**

#### Manual Exposure ON

- **A7** VID OUT MON pb – as reqd
- **VID IN pb – as reqd**

#### Manual Exposure OFF

- **A7** VID OUT MON pb – as reqd
- **VID IN pb – as reqd**

### Manual Ops

- **CTVC/ITVC**
  - **(Manual Exposure)**
  - **CAUTION**
  - **DO NOT LEAVE CAMRS UNATTENDED IN MAN.MODE. DIRECT SUNLIGHT WILL DAMAGE CAMRS**

### MUX Ops

- **NOTE**
  - Although dnlk/rcd is in color, MON will display MUX in B&W

#### Video Out MUX

- **L10** VID OUT PB – push
- **VID IN MUX 1(2) pb – push**
- **VID OUT MUX 1(2) L pb – push**
- **VID IN pb – as reqd**
- **VID OUT MUX 1(2) R pb – push**
- **VID IN pb – as reqd**

#### For RSC ops:

- Go to LDRI/ITVC Cue Card

### Keel Cam

- **L12** SW PWR 3 – cl
- **(SSP 2B)**
- **MPLM KEEL CAM HTR/ILLUM PWR – ON**
- **MPLM KEEL CAM PWR – ON**

### Deactivation

- **If Illuminator ON:**
  - Refer to Illuminator Ops and perform Illuminator OFF

- **A7** TV PWR – OFF
- **CTRL – PNL**
- **CTRL – CMD**
- **A3** MON 1,2 PWR – OFF
Illuminator Ops

Illuminator ON

If MPLM Keel Illuminator:
- L12 (SSP 2B)
- MPLM KEEL CAM PWR – ON
  HTR/ILLUM PWR – OFF, ON for
  Hi (repeat for MED, LOW, OFF)

If Wrist Illuminator:
- R14 (E)
  TV RMS CAMR/PTU – cl
  WRIST ILLUM/CAMR HTR – cl
  – op, cl

If Elbow Illuminator:
- cb TV RMS CAMR/PTU – cl
  ELB ILLUM/PTU HTR – cl
  – op, cl

If A(B, C, D, E, ELB) Illuminator:
- cb TV A(B, C, D, RMS, ELB) CAMR/PTU – cl
  ILLUM/PTU HTR – cl
  – op, cl

Illuminator OFF

If MPLM Keel Illuminator:
- L12 (SSP 2B)
- MPLM KEEL CAM HTR/ILLUM PWR – toggle until
  Illuminator OFF (leave sw in ON posn)

If Wrist Illuminator:
- R14 (E)
  cb TV RMS WRIST ILLUM/CAMR HTR – op, cl

If Elbow Illuminator:
- cb TV RMS ELB ILLUM/PTU HTR – op, cl

If A(B, C, D) Illuminator:
- cb TV A(B, C, D) ILLUM/PTU HTR – op, cl

If RSC Illuminator:
- Go to LDRI/ITVC (Cue Card)
ANALOG PLAYBACK

ANALOG VIA CC

**NOTE**
Analog Playback from CC only possible for CC Video recordings

**ACTIVATION**

- **CC**: Setup per diagram (back of cue card)
- **A7**: Perform ACTIVATION (Cue Card, TV), as reqd
- **O19**: TV PWR – ON
- **AVIU**: SYNC/VIDEO – VIDEO
  - Hi-Z/75 – 75
  - PWR SELECT – LO
- **CC**: PWR – VTR/PLAY
  - AV1/V2 – V2

**OPERATIONS**

**PLBK or DNLK VIDEO**

- **CC**: Install tape, if reqd
  - If audio reqd:
    - **CCU**: If MHA, COMM PWR – ON
    - **ATU**: PWR – AUD
    - Desired Loops – T/R
    - Other Loops – RCV(OFF)
    - XMIT/COM Mode – VOX/VOX
    - VOX SEN6 – MAX
- **CC**: Speaker Vol Max
- **A7**: VID OUT MON pb – as reqd
  - IN FLTD(MIDDECK) pb – push
- **CC**: VTR pb – REW(FF) to cue tape

  **If Dnlk**
  - **A7**: VID OUT DNLK pb – push
  - IN FLTD(MIDDECK) pb – push
  - CC: PLAY pb – push (green • displayed)
  - If PLBK(DNLK) complete:
    - STOP pb – push
  - If CC ops complete, go to DEACTIVATION

**DEACTIVATION**

- **CC**: Remove, mark, stow tape as reqd
- **ATU**: PWR – OFF
- **O19**: Recconfig as desired

**ANALOG VIA VTR**

**ACTIVATION**

- **AVIU**: SYNC/VIDEO – VIDEO
  - Hi-Z/75 – 75
  - PWR SELECT – LO
- **L10**: VTR/CC PWR – on (LED on)

**OPERATIONS**

**PLBK or DNLK VIDEO**

- **L10**: Install tape if reqd
  - DISPLAY SELECT – DATA
  - If audio reqd:
    - **CCU**: If MHA, COMM PWR – ON
    - **ATU**: PWR – AUD
    - Desired Loops – T/R
    - Other Loops – OFF
    - XMIT/COM Mode – VOX/VOX
    - VOX SEN6 – MAX
  - **A7**: VID OUT Desired MON pb – push
  - IN FLTD pb – push
  - CC: PLAY pb – push (green • displayed)

  **If Dnlk**
  - **A7**: VID OUT DNLK pb – push
  - IN FLTD(MIDDECK) pb – push
  - **L10**: PLAY pb – push (green • displayed)

  **DEACTIVATION**

- **L10**: Connect CC video input to AVIU J3
- **L10**: Remove, mark, stow tape as reqd
- **ATU**: Recconfig as desired
- **O19**: TV PWR – OFF, as reqd
- Go to DEACTIVATION (Cue Card, TV) as reqd
D2Xs

LENS SETTINGS:
√ APERTURE – MIN, LOCKED
√ LENS FOCUS MODE – A

CAMR SETTINGS
PWR – ON
TOP LCD:
√ BATT
√ EXP MODE – M
√ SS – 1000
√ F/STOP – 8

DIOPTER – ADJUST
√ FRAME RATE – S
√ BODY FOCUS MODE – S

REAR LCD:
√ ISO – 100
√ QUAL – RAW

CRITICAL FOCUS REQD EACH FRAME

G1 CC

LENS CAP – REMOVE
INSTALL MUTING PLUG

√ ND FILTER – OFF
√ AF/M – M
√ AGC – OFF
√ GAIN – L
√ OUTPUT – CAM
√ AWB – ON
√ POWER dial – M
√ LOCK (handle) – off (aft)
STANDBY/LOCK – STANDBY

OPEN LCD
√ BATT SUFFICIENT
√ EXP MODE – M
√ SS – 1/1000
√ GAIN – ±0dB
√ F/STOP – F8.0
√ FOCUS MODE – MF

ZOOM – WIDE TO FIND TANK, THEN TIGHT
START RECORDING
√ LCD DISPLAYS RED DOT
<table>
<thead>
<tr>
<th>MEDIA ALLOCATIONS</th>
<th>3 hr/tape</th>
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<tbody>
<tr>
<td><strong>DVCAM</strong></td>
<td>15 14 13 12 11</td>
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<tr>
<td></td>
<td>10 9 8 7 6 5 4 3 2 1</td>
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<table>
<thead>
<tr>
<th>MINI DVCAM</th>
<th>40 min/tape</th>
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<td></td>
<td>224 223 222 221</td>
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<td>220 219 218 217 216 215 214 213 212 211</td>
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<td>210 209 208 207 206 205 204 203 202 201</td>
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<td>20 19 18 17 16 15 14 13 12 11</td>
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<tr>
<td></td>
<td>10 9 8 7 6 5 4 3 2 1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HI-8mm</th>
<th>2 hr/tape</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 3 2 1</td>
</tr>
</tbody>
</table>
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
\( \sqrt{ } \)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 \( \sqrt{ } \)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
V10 STOP pb – push
Mark, stow tapes
PWR – OFF
A7 WIRELESS VID PWR – OFF
HTR – OFF

WVS

CAMR ADJUSTMENTS

VIDEO SIGNAL PROBLEMS
For problem EMU TV:
EMU EMU TV Pwr pb – push (no LED), wait 10 sec, push (green LED)

If no joy:
PGSC \( \sqrt{ } \)Select Page – XCVR
\( \sqrt{ } \)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:
For XCVR with good video:
Sel RF Camr – reselect original EVA crewmember
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 10)
⑤
③
XCVRS Bay 5

Slightly above sill (Bay 4)
②
UHF CMD Antenna (Bay 3)

Inboard of sill (Bay 1)
⑦
FWD BULKHEAD

①

P/TV-5a/131/O/B

(reduced copy)

FS CC 3-10

P/TV/131/FIN
### Alert MSG Troubleshooting

#### Static XCVR

**Condition:** No comm between PGSC & PLB XCVR

**PGSC**
1. & Cable connections between WIB and PGSC
2. WIRELESS VID PWR – OFF, wait 10 sec, ON
   - If no joy:
3. Sel ‘Start’ > ‘Shut Down’ > ‘Restart’ > ‘OK’
   - When reboot complete:
     - Sel Shuttle Apps icon > WVS icon
     - Sel ‘Yes’ at ‘Restore To Previous Settings’ window
     - RF Camera page will appear
   - If still no joy:
4. & MCC

#### Static RF Camera

**Condition:** No telemetry and video received by PLB XCVR from EMU TV

**EMU**
1. & EMU TV Pwr pb pushed (green LED)
   - If no joy:
2. & Correct RF Camera selected via pulldown menu
   - RF Camera (two) – ON (green "ON")
   - If not ON:
     - RF Camera (of static EMU TV) – sel "None" via pulldown menu, then sel original EMU TV
   - If still no joy:
3. RF Camera 1(2) – sel "None"
   - Perform CAMR ID ASSIGNMENT
   - Reattempt RF Carr selections
   - If still no joy:
4. & CMD PWR:LVL – green "ON:Min" for XCVR 1(2)
   - If not ON:
     - Select Page – XCVR
     - Transceiver 1(2) CMD Power – On (green CMD PWR:LVL - "ON:Min")
   - If still no joy:
5. EMU TV Pwr pb (of static EMU TV) – push (no LED), wait 10 sec, push (green LED)
   - If still no joy:
6. & MCC

#### 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:

#### 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)

#### 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)

#### 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

**Camr ID Data**

<table>
<thead>
<tr>
<th>Camr ID Data</th>
<th>Camr Address</th>
<th>Serial Number</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camr Address</td>
<td>16</td>
<td>16</td>
<td>EV1</td>
</tr>
<tr>
<td>Serial Number</td>
<td>1010</td>
<td>1007</td>
<td>EV2</td>
</tr>
<tr>
<td>Label</td>
<td>EV1</td>
<td>EV2</td>
<td></td>
</tr>
</tbody>
</table>

Sel P/TV-5b/131/O/A
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  \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:
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  \REC pb – push, hold
   \PLAY pb – push, simo (red dot displayed)
ACTIVATION

1. **Config CCTV Sys**
   - A7
     - L10 (MUX)
       - MUX/VTR/CC PWR – on (LED on)
       - Cabling from VTR MON port to MON 2 C-IN
     - R12 (VPU)
       - VPU PWR – ON (LED on)
       - Green Jumper – LDRI/ITVC
     - TOP
       - MON 1,2
         - DATA – ON
         - DATA – GRN
       - X-HAIR – GRN
     - TOP MON 2
       - SOURCE – C

2. **Apply SPEE Pwr**
   - R12 (OPP)
     - ob OBSS SW PWR – cl
     - OBSS SW PWR – ON
     - A6U
       - EVENT TIMER CNTL – STOP
       - EVENT TIMER CNTL – START
       - (15 min LDRI calibration warmup)
   - R12 (OBSS)
     - SPEE PWR – ON
     - EVENT TIMER CNTL – STOP
     - EVENT TIMER CNTL – START

3. **Config RSC Illum to HI**
   - A7
     - VID OUT MON 1 pb – push
     - IN C pb – push
     - PANTILT – Adjust to see RSC Camr
   - R12 (OBSS)
     - SPEE PWR – OFF, wait 10 sec, ON
     - RSC illum on HI (three rings)
   - MON 1
     - LDRI MODE 1 pb – push

4. **Enable ITVC**
   - R12 (OBSS)
     - ITVC ENA – ON
   - A7
     - VID OUT DTV pb – push
     - IN PL 2(VPU) pb – push
     - IF MAN GAIN pb not illuminated:
       - Repeat until MAN GAIN pb illuminated
   - R12 (OBSS)
     - ITVC ENA – OFF, wait 10 sec, ON
     - LT LEVEL pb – push
     - DAY (NIGHT) pb – push
     - AVG pb – push
     - MON 2
       - ITVC video displayed

5. **Turn LDRI Laser On**
   - A7
     - VID OUT MUX 1 L pb – push
     - IN MIDDECK pb – push
     - LDRI MODE 2 pb – push
     - VID OUT DTV pb – push, to return to ITVC control

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 willum displayed

- **Modes 3 (4,5,6)**
  - A7
    - LDRI MODE 3(4,5,6) pb – push
    - MON 2
      - ITVC w/illum corners displayed
      - To adjust brightness:
        - 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) cntrls functional

- A7
  - VID OUT MON 1 pb – push
  - IN PL2(VPU) pb – push
  - CAMR CMD PANTILT – as reqd
  - VID OUT MUX 1 L pb – push, to return to LDRI cntrl

DEACTIVATION

- **Mode 1 – Standby**
  - A7
    - VID OUT MUX 1 L pb – push
    - IN MIDDECK pb – t on
    - LDRI MODE 1 pb – push

- **Mode 2 – Illuminator**
  - A7
    - LDRI laser active, LDRI camera inactive

- **Mode 3 – 2D**
  - A7
    - LDRI 2D video
    - Similar to ITVC video

- **Mode 4 – 2D Gamma**
  - A7
    - LDRI 2D video w/Gamma Black Stretch
    - Similar to ITVC video

- **Mode 5 – 3D**
  - A7
    - LDRI 3D video
    - Flicker on MON

- **Mode 6 – 3D Gamma**
  - A7
    - LDRI 3D video w/Gamma Black Stretch
    - Flicker on MON

LDRI MODE SUMMARY

- **Mode 1**
  - ITVC video
  - LDRI in standby

- **Mode 2**
  - ITVC video willum
  - LDRI laser active, LDRI camera inactive

- **Mode 3**
  - LDRI 2D video
  - Similar to ITVC video

- **Mode 4**
  - LDRI 2D video w/Gamma Black Stretch
  - Similar to ITVC video

- **Mode 5**
  - LDRI 3D video
  - Flicker on MON

- **Mode 6**
  - LDRI 3D video w/Gamma Black Stretch
  - Flicker on MON
**RSC CAMR OPS**

**NOTE**  
Camr nominally pwrd in Block 3 of POST INSERT

R12 (OPP) cb 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 pwr 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  
√ ITVC ENA – OFF  
A7 VID OUT MON 1 pb – push  
IN A(B,C,D) pb – push  
PAN,TILT – Adjust to see RSC Camr

**NOTE**  
SPEE pwr cycle will reset LDRI/ITVC to Mode 1 and reset the PTU angles

R12 (OBSS) SPEE PWR – OFF, wait 10 sec, ON  
MON 1 RSC illum on  
To cycle thru illuminator modes:  
R12 (OBSS) SPEE PWR – OFF, wait 10 sec, ON  
Perform LDRI/ITVC ACTIVATION, step 4  
Return to original LDRI/ITVC Mode, continue OPS

**CONTINGENCY LDRI CLEARANCE VIEW**

**NOTE**  
Do not apply RMS brakes

A8U AUTO SEQ – STOP (READY It on)

L10(VTR) STOP pb – push (no red •)  
A7 VID OUT MUX 1 L pb – push (MIDDECK It on)  
LDRI MODE 3(4) pb – push (steady LDRI video)  
VID OUT MON 1 pb – push  
IN PL2(VPU) pb – push  
Record PTU Pan ______ and Tilt ______  
CAMR CMD PAN/TILT – HI RATE  
PAN: 0 (left, to hard stop)  
TILT: 0 (up, to hard stop)

**LDRI PAN/TILT RESET**

Reset PTU  
A7 VID OUT MON 1 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

**SPEE PWR DEACT CLEANUP ACTIONS**

Config RSC illum to Hi  
R12 (OBSS) SPEE PWR – OFF  
RSC PWR – OFF, wait 10 sec, ON  
SPEE PWR – ON, OFF, wait 10 sec, ON

Config ITVC  
ITVC ENA – ON  
A7 VID OUT DTV pb – push  
IN PL2(VPU) pb – push  
If MAN GAIN pb not illuminated:

R12 (OBSS) ITVC ENA – OFF, wait 10 sec, ON  
Repeat until MAN GAIN pb illuminated  
A7 LT LEVEL pb – push  
DAY (NIGHT) pb – push  
ALC pb – push  
AVG pb – push

Reset PTU  
A7 CAMR CMD PAN/TILT – HI RATE  
PAN – L (to hard stop)  
TILT – UP (to hard stop)  
PAN/TILT – RESET  
PAN and TILT ITVC to values needed for Survey

Return LDRI to Mode 6  
A7 VID OUT MUX 1 L pb – push  
IN MIDDECK pb – push  
LDRI MODE 6 pb – push  
VID OUT DTV pb – push, to return to ITVC control

**LDRI MODE 3(4)**

Note clearance thru LDRI FOV  
Return PTU to Pan and Tilt values recorded above  
VID OUT MUX 1 L pb – push (MIDDECK It on)  
LDRI MODE 6 pb – push (flickering LDRI video)  
VID OUT MON 1 pb – push  
IN pb – as desired (not PL2)

L10(VTR) REC pb – push, hold  
PLAY pb – push, simo (red dot)

A8U AUTO SEQ – PROCEED (IN PROG It on)
LCH ACTIVATION

Activate SSPTS APCU 2

PTU 2 TO — on
APCU 2 OUTPUT — ON
CONV — ON

SM 175 POWER TRANSFER
PTU 2 APCU OUT VOLT: 123V to 126V
OUTPUT — ON

LCC ACTIVATION

1. LCC Setup
   - Hardware and cables configured per diagram below:

2. LCC Startup
   - PGSC Pwr — ON
     Yellow ‘RJ-45 Port Configured for LCS Ops’ displayed on desktop crew patch
     If yellow text not displayed, perform TROUBLESHOOTING.
     Yellow ‘RJ-45 Port Configured for LCS Ops Not Displayed on Desktop Crew Patch’
     If ‘LCS Camera Controller’ minimized on desktop taskbar, maximize window
     If not minimized, set ‘Shuttle Apps > ‘LCC’ (wait 2-3 min from APCU CONV — ON for GUI Status)
     Laser off — blue
     Comm — green
     If Laser off and Comm status not correct: \(\text{MCC}\)

3. Verify LCC Desktop Video
   - MO58F TV PWR — ON
   - AVIU HI-Z/75 — 75
   - CC PWR SELECT — LO
   - A3 VID ON MON1(2) pb — push
   - IN MIDDECK pb — push
   - \(\text{LCC} \) desktop displayed on MON1(2)
   - If ‘LCS Camera Controller’ minimized on desktop taskbar, maximize window
   - If Laser off and Comm status not correct: \(\text{MCC}\)

LCS

3. Verify LCC Desktop Video (Concluded)

   - A3p Minimize all programs
   - Right click on ATI icon on system tray
   - Select ‘Schemes’
   - Select ‘ENABLE DESKTOP DOWNLINK’, ‘ATI Property Page’ displayed
   - Select ‘Yes’
   - Maximize program windows as desired

   - A7 VID OUT MON1(2) pb — push
   - IN MIDDECK pb — push
   - \(\text{LCC} \) desktop displayed on MON1(2)
     * If LCC Desktop not displayed
       * \(\text{MCC}\)

4. Verify GMT

   - A3p \(\text{GMT} \) on GUI lower right-hand side within 3 sec of SM-GPC GMT
     * If GMT not within 3 sec of SM-GPC:
       * Set ‘Tools’ > ‘Set GMT’
       * Adjust GMT as reqd
       * 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)
   - MCC for desired LCS database
   - ‘DB Name’: Field on upper left-hand side of LCS GUI
     * If ‘DB Name’ incorrect:
       * Select ‘Load Database…’ from File menu
       * Select MCC desired database file
       * Select ‘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 (No LCC to LCH Network Connection)</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):
   - Laser On — green
   - Comm — green
   - Scan Display — updating
   - Temp — green
   - 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)
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 Sel ‘File’ > ‘Exit’
   When ‘Shutdown’ dialog box opens:
   √ ‘Shutdown LCH and Exit LCC Software’ selected
   Sel ‘OK’
   When ‘Shutdown?’ dialog box opens:
   Sel ‘OK’

2. A31p Screen Resolution Reset
   A31p Right click on ATI icon on system tray
   Sel ‘Schemes’
   Sel ‘DISABLE DESKTOP DOWNLINK, ATI Property Settings’
   Sel ‘Yes’
   Arrange program windows as desired

LCH DEACTIVATION

CAUTION
Deactivating SSPTS APCU 2 will remove critical keep-alive pwr to LCH and IDC. Pwr must be reapplied within 105 min

1. Deactivate SSPTS APCU 2/LCH
   A15 APCU 2 CONV – OFF
   SM 179 POWER TRANSFER
   √ PTU 2 APCU OUT VOLTS: 120V
   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 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 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
Exit LCC software and shut down Windows

A15 APCU 2 CONV – OFF
   OUTPUT - OFF, wait 10 sec, ON
   CONV – ON
   SM 179 POWER TRANSFER
   √ PTU 2 APCU OUT VOLTS: 123V to 126V

A31p LCC PGSC Pwr – ON
   √ APCU 2 CONV – ON
   √ Local Area Network Interface Card LED green
   Perform LCC ACTIVATION, step 2
   √ Local Area Network Connection status icon (with red X) in Windows system tray not displayed
   √ MCC if LCC GUI Comm status still yellow

Message Area Entry
   Report LCC GUI message area log entry(ies) to MCC

Yellow ‘RJ-45 Port Configured for LCS Ops’ Not Displayed on Desktop Crew Patch
A31p Sel ‘Shuttle Apps’ > ‘Network Configuration’ > ‘LCS RJ-45 Network Setup’
   Enter ‘1’ in network window
   Sel ‘OK’
   Sel ‘OK’ in LCS window
   Allow 20 sec for program to execute
   √ Yellow text displayed on desktop
   Resume LCS Ops

(For SSPTS APCU 2 flights only)

(reduced copy)
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:
   A31p APCU 2 CONV – OFF
   OUTPUT – OFF, wait 10 sec, ON
   CONV – 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
   CAUTION
   Pwr off IDC when not imaging. Pointing IDC at Sun when pwr on will damage Camr
   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 dlnk

1. Configure LDRI Illumination
   R12 (VPU) \Green Jumper – LDRI/ITVC
   A7 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 PAN/TILT – HI RATE
   PAN – L (to hard stop)
   TILT – UP (to hard stop)
   PAN/TILT – RESET
   – LO RATE within 10°
   PAN: +85 (right)
   TILT: -57 (down)

NOTE
If IDC GUI 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)
   \MCC for AOI FOV
   Sel 'Scan Hi-Res'  If Scanning w/no RMS Motion:  Sel 'Stop Scan' after 30 sec
   If scanning w/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
   \Default
   \RCC – Day
   \RCC – Night
   \Black Tile – Day
   \Black Tile – Night
   \White Tile – Day
   \White Tile – Night
   Sel 'Acquire Set'
   \Acquiring Set' displayed
   \Waiting for User Command' displayed after set
   \MCC content w/data take

(For SSPTS APCU 2 flights only)

(For SSPTS APCU 2 flights only)
IDC DEACTIVATION

1. IDC and Software Shutdown
   A31p Select ‘Power off’ on IDC GUI
   IDC software > ‘YES’
   Close (X) IDC software > ‘YES’

2. A31p Screen Resolution Reset
   Right click on ATI icon on system tray
   Select ‘Schemes’
   Select ‘DISABLE DESKTOP DOWNLINK, ATI Property Settings’
   Select ‘Yes’
   Arrange program windows as desired

IDC HOT KEY COMMANDS

<table>
<thead>
<tr>
<th>Key</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<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 AE Box to Default</td>
</tr>
<tr>
<td>F11</td>
<td>Toggle AE Box Visibility</td>
</tr>
<tr>
<td>F12</td>
<td>Find AE Box</td>
</tr>
</tbody>
</table>

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
- **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 (with red X) tool tip on system tray:
   ![Local Area Network Connection unplugged]
   Reseat OPP to LCC Cable (20 ft) to LCC RJ45 port
   \Local Area Network Connection Speed 10 mps
   If no connection:
   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 and LCS CMD/TLM port
   A15 APCU 2 CONV – OFF
   OUTPUT – OFF, wait 10 sec, ON
   CONV – ON
   SM 179 POWER TRANSFER
   PTU 2 APCU OUT VOLTS: 123V to 126V
   A31p LCC PGSC Pwr – ON
   \A31p 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)
### D2Xs SETUP

**D2Xs PROGRAM**

**In Cabin**
- Lens – as reqd
- Aperture – Min, locked
- Body Focus Mode – S
- Battery installed
- Flash Card installed
- Pwr – ON
- Top LCD:
  - Batt
  - Frames remaining sufficient
- Exp Comp (0) – 0.0
- Exp Mode – P
- Meter – Matrix (n)
- Diopter – Adjust
- Frame Rate – S
- BKT disabled – 0 F
- Rear LCD:
  - ISO – 100
  - QUAL – RAW
  - WB – 0 A
  - AF Area Mode – [[ ]]
  - Focus Area – Center
  - Focus Selector Lock – L

**SB-800 Flash Settings:**
- Diffuser Dome installed
  - ON/OFF pb – ON
- MODE – Motor
- Exp Comp – 0 EV
- Tilt – 45° (Direct)

---

**D2Xs Aperture Priority**

**“Earth Obs”**
- Lens – as reqd
- Aperture – Min, locked
- Body Focus Mode – S
- Battery installed
- Flash Card installed
- Pwr – ON
- Top LCD:
  - Batt
  - Frames remaining sufficient
- Exp Comp (0) – 0.0
- Exp Mode – A:
  - f/stop – as reqd
- Meter – Matrix (n)
- Diopter – Adjust
- Frame Rate – S
- BKT disabled – 0 F
- Rear LCD:
  - ISO – 100
  - QUAL – RAW
  - WB – 0 A
  - AF Area Mode – [[ ]]
  - Focus Area – Center
  - Focus Selector Lock – L

**SB-800 Flash Settings:**
- Diffuser Dome installed
  - ON/OFF pb – ON
- MODE – Motor
- Exp Comp – 0 EV
- Tilt – 45° (Direct)

---

**D2Xs Shutter Priority**

**Pwr – ON**

**Top LCD:**
- Batt
- Frames remaining sufficient
- Exp Comp (0) – 0.0
- Exp Mode – S:
  - SS – 500
- Meter – Matrix (n)
- Diopter – Adjust
- Frame Rate – S
- BKT disabled – 0 F
- Rear LCD:
  - ISO – 100
  - QUAL – RAW
  - WB – 0 A
  - AF Area Mode – [[ ]]
  - Focus Area – Center
  - Focus Selector Lock – L

**SB-800 Flash Settings:**
- Diffuser Dome installed
  - ON/OFF pb – ON
- MODE – Motor
- Exp Comp – 0 EV
- Tilt – 45° (Direct)
### D2Xs MANUAL
#### “SUNLIT OBJECTS”

<table>
<thead>
<tr>
<th>SB-800 Flash Settings:</th>
<th>OFF/OFF pb – OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens – as reqd</td>
<td></td>
</tr>
<tr>
<td><strong>NOTE</strong></td>
<td></td>
</tr>
<tr>
<td>If auto focus unachievable:</td>
<td></td>
</tr>
<tr>
<td>Lens Focus Mode – M</td>
<td></td>
</tr>
<tr>
<td>Lens – 12-24mm @ 18mm</td>
<td></td>
</tr>
<tr>
<td>Aperture – Min, locked</td>
<td></td>
</tr>
<tr>
<td>Body Focus Mode – S</td>
<td></td>
</tr>
<tr>
<td>Batt installed</td>
<td></td>
</tr>
<tr>
<td>Flash Card installed</td>
<td></td>
</tr>
<tr>
<td>Pwr – ON</td>
<td></td>
</tr>
<tr>
<td>Top LCD:</td>
<td></td>
</tr>
<tr>
<td>Batt</td>
<td></td>
</tr>
<tr>
<td>Frames remaining sufficient</td>
<td></td>
</tr>
<tr>
<td>Exp Comp (📅) – 0.0</td>
<td></td>
</tr>
<tr>
<td><strong>Exp Mode – M:</strong></td>
<td></td>
</tr>
<tr>
<td>SS – 500</td>
<td></td>
</tr>
<tr>
<td>f/stop – f/8</td>
<td></td>
</tr>
<tr>
<td>Meter – Matrix (☀)</td>
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</tr>
<tr>
<td>Diopeter – Adjust</td>
<td></td>
</tr>
<tr>
<td>Frame Rate – S</td>
<td></td>
</tr>
<tr>
<td>BKT disabled – 0 F</td>
<td></td>
</tr>
<tr>
<td>Rear LCD:</td>
<td></td>
</tr>
<tr>
<td>ISO – 100</td>
<td></td>
</tr>
<tr>
<td>QUAL – RAW</td>
<td></td>
</tr>
<tr>
<td>WB – 0,A</td>
<td></td>
</tr>
<tr>
<td>AF Area Mode – [[]]</td>
<td></td>
</tr>
<tr>
<td>Focus Area – Center</td>
<td></td>
</tr>
<tr>
<td>Focus Selector Lock – L</td>
<td></td>
</tr>
<tr>
<td><strong>SB-800 Flash Settings:</strong></td>
<td></td>
</tr>
<tr>
<td>Diffuser Dome installed</td>
<td></td>
</tr>
<tr>
<td>OFF/OFF pb – ON</td>
<td></td>
</tr>
<tr>
<td>MODE –</td>
<td></td>
</tr>
<tr>
<td>Exp Comp – 0 EV</td>
<td></td>
</tr>
<tr>
<td>Tilt – 45° (Direct)</td>
<td></td>
</tr>
</tbody>
</table>

**Technique**

1. Fill FOV w/sunlit subject
2. Activate D2Xs Camr
3. Auto Exp Lock – Depress, hold
4. Focus, Frame, Fire

### D2Xs EXPOSURE MATCH
#### “HERO SHOT”

<table>
<thead>
<tr>
<th>Lens – 17-35mm @ 17mm</th>
<th>Aperture – Min, locked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Focus Mode – S</td>
<td>Batt installed</td>
</tr>
<tr>
<td>Flash Card installed</td>
<td>Pwr – ON</td>
</tr>
<tr>
<td>Top LCD:</td>
<td>Batt</td>
</tr>
<tr>
<td>Frames remaining sufficient</td>
<td></td>
</tr>
<tr>
<td>Exp Comp (📅) – 0.0</td>
<td><strong>Exp Mode – A:</strong></td>
</tr>
<tr>
<td>SS – 500</td>
<td>f/stop – f/8</td>
</tr>
<tr>
<td>Meter – Matrix (☀)</td>
<td><strong>Frame Rate – Selftimer</strong></td>
</tr>
<tr>
<td>Diopeter – Adjust</td>
<td>BKT disabled – 0 F</td>
</tr>
<tr>
<td>Frame Rate – S</td>
<td>ISO – 100</td>
</tr>
<tr>
<td>BKT disabled – 0 F</td>
<td>QUAL – RAW</td>
</tr>
<tr>
<td>AF Area Mode – [[]]</td>
<td>WB – 0,A</td>
</tr>
<tr>
<td>Focus Area – Center</td>
<td>Focus Area – Center</td>
</tr>
<tr>
<td>Focus Selector Lock – L</td>
<td>Focus Selector Lock – L</td>
</tr>
<tr>
<td><strong>SB-800 Flash Settings:</strong></td>
<td></td>
</tr>
<tr>
<td>Diffuser Dome installed</td>
<td></td>
</tr>
<tr>
<td>OFF/OFF pb – ON</td>
<td></td>
</tr>
<tr>
<td>MODE –</td>
<td></td>
</tr>
<tr>
<td>Exp Comp – 0 EV</td>
<td></td>
</tr>
<tr>
<td>Tilt – 45° (Direct)</td>
<td></td>
</tr>
</tbody>
</table>

**Accessory Equipment:**

- Shutter Release Cable – Install
- Multiuse Brkt – Install
- Multiuse Brkt Clamp – Install as reqd

**Technique**

1. Focus on crewmember
2. **Body Focus Mode – M**
3. Frame, Fire

### D2Xs CREW PHOTO

- Lens – as reqd
- Aperture – Min, locked
- Body Focus Mode – S
- Batt installed
- Flash Card installed
- Pwr – ON
- **Top LCD:** Batt
- Frames remaining sufficient
- Exp Comp (📅) – 0.0
- **Exp Mode – P:**
- SS – 500
- f/stop – f/8
- Meter – Matrix (☀)
- Diopeter – Adjust
- Frame Rate – S
- BKT disabled – 0 F
- Rear LCD:
  - ISO – 100
  - QUAL – RAW
  - WB – 0,A
  - AF Area Mode – [[]]
  - Focus Area – Center
  - Focus Selector Lock – L
- **SB-800 Flash Settings:**
  - Diffuser Dome installed
  - OFF/OFF pb – ON
  - MODE – |                  |
  - Exp Comp – 0 EV
  - Tilt – 45° (Direct)
- **Technique**
  1. Fill FOV w/sunlit subject
  2. Activate D2Xs Camr
  3. Auto Exp Lock – Depress, hold
  4. Focus, Frame, Fire
DIGITAL PLAYBACK

HD DIGITAL VIA CC

**NOTE**
Digital Playback from CC only possible for CC Video recordings

**ACTIVATION**

CC
- Setup per diagram (back of cue card)
- For cable strain relief, attach MPC-to-G1 Cable Velcro strap to CC strap

AVIU
- SYNC/VIDEO – VIDEO
- Hi/77s – 75
- PWR SELECT – 0

019
- TV PWR – ON

CC
- PWR dial – VCR/PLAY

**TOP**

**NOTE**
Digital Playback from CC only possible for CC Video recordings

**ACTIVATION**

CC
- Setup per diagram (back of cue card)
- For cable strain relief, attach MPC-to-G1 Cable Velcro strap to CC strap

AVIU
- SYNC/VIDEO – VIDEO
- Hi/77s – 75
- PWR SELECT – 0

019
- TV PWR – ON

CC
- PWR dial – VCR/PLAY

**DISSOCIATION**

CC
- Remove, mark, stow tape as reqd

O19
- TV PWR – OFF, as reqd

**DEACTIVATION**

CC
- Remove, mark, stow tape as reqd

O19
- TV PWR – OFF, as reqd

**DIGITAL VIA VTR**

**ACTIVATION**

L10 (MUX)
- MXVTR/CC PWR – on (LED on)
- MXV BYPASS – ACT
- CH 0,1 RATE SEL – 1
- CH 2 RATE SEL – 8

(VTR)
- ON/STANDBY pb – push (LED red)

(VIP)
- PWR – off (LED off)

019
- DC UTIL PWR MNA – ON

MPC PWR SPY
- DC PWR SPY PWR SW1 – ON

MPC
- PWR – (5V,3V green LEDs on)

L10 (MUX)
- CH 2 F/O OK LED on

**OPERATIONS**

**PLBK or DNLK VIDEO**

CC
- Install tape, if reqd

VTR pb – REW(FF),PLAY,PAUSE to cue tape

**TOP**

CC
- Install tape, if reqd

VTR pb – REW(FF),PLAY,PAUSE to cue tape

**DEACTIVATION**

CC
- Remove, mark, stow tape as reqd

O19
- TV PWR – OFF, as reqd

**Remote**

If Index Search reqd:
- ID – VTR4
  - SEARCH MODE pb – push (INDEX SEARCH mode displayed)
  - |◄◄►►| pb – push to move highlight bar to desired GMT start
  - When VTR auto-cue complete, green • displayed:
    - PAUSE pb – push

If playback time not displayed on DSR-25 LCD:
  - Cycle "DATA CODE" repeatedly until time displayed

**DEACTIVATION**

L10 (VTR)
- REW(FF),PLAY,PAUSE pb – push as reqd to cue tape

**L10 (MUX)**
- MXVTR/CC PWR – on (LED on)
- MXV BYPASS – ACT
- CH 3 DATA LED – on

**L10 (VTR)**
- PLAY pb – push (green • displayed)
  - If PLBK(DNLK) complete:
    - STOP pb – push
  - If VTR ops complete, go to DEACTIVATION

**DEACTIVATION**

L10 (VTR)
- Remove, mark, stow tape as reqd
  - Go to DEACTIVATION (Cue Card, TV) as reqd

L10 (MUX)
- MXVTR/CC PWR – on (LED on)
- MXV BYPASS – ACT
- CH 3 DATA LED – on

**L10 (VTR)**
- PLAY pb – push (green • displayed)
  - If PLBK(DNLK) complete:
    - STOP pb – push
  - If VTR ops complete, go to DEACTIVATION

**DEACTIVATION**

L10 (VTR)
- Remove, mark, stow tape as reqd
  - Go to DEACTIVATION (Cue Card, TV) as reqd
### G1 CC SETUP CUE CARD

**ASSUMPTION:** G1 is powered by either direct or battery power

<table>
<thead>
<tr>
<th>WELL LIT SCENE (“green”)</th>
<th>SUN-LIT SCENE (M)</th>
<th>DIM-LIT SCENE (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Wide Conversion Lens as reqd</td>
<td>Install Wide Conversion Lens as reqd</td>
<td>Install Wide Conversion Lens as reqd</td>
</tr>
<tr>
<td>ND FILTER – OFF (per CC prompt)</td>
<td>√ND FILTER – OFF</td>
<td>√ND FILTER – OFF</td>
</tr>
<tr>
<td>√OUTPUT – CAM</td>
<td>AF/M – AF(M)</td>
<td>AF/M – AF</td>
</tr>
<tr>
<td>√A/V1/V2 – V2</td>
<td>AGC – OFF</td>
<td>AGC – OFF</td>
</tr>
<tr>
<td>√PWR dial – “green”</td>
<td>OUTPUT – CAM</td>
<td>OUTPUT – CAM</td>
</tr>
<tr>
<td>Open LCD</td>
<td>√AWB – ON</td>
<td>√AWB – ON</td>
</tr>
<tr>
<td>√Tape installed</td>
<td>√AUDIO LEVEL – A</td>
<td>√AUDIO LEVEL – A</td>
</tr>
<tr>
<td></td>
<td>√A/V1/V2 – V2</td>
<td>√A/V1/V2 – V2</td>
</tr>
<tr>
<td></td>
<td>√PWR dial – M</td>
<td>√PWR dial – M</td>
</tr>
<tr>
<td></td>
<td>Open LCD</td>
<td>Open LCD</td>
</tr>
<tr>
<td></td>
<td>√Tape installed</td>
<td>√Tape installed</td>
</tr>
<tr>
<td></td>
<td>√GAIN – 0dB</td>
<td>√GAIN – L (M,H) per Scene</td>
</tr>
<tr>
<td></td>
<td>SS – 1/500 (Small Wheel)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>f/stop – F8.0 (Aft Ring)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adjust focus if AF/M – M (Fwd Ring)</td>
<td></td>
</tr>
</tbody>
</table>
NOTE
Replace this page with four (4) sheets of blue K-10 stock in crew copies only
NOTE
Replace this page with four (4) sheets of blue K-10 stock in crew copies only