STS-131 / 19A

FD 11 Execute Package

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Approved by FAO:

L. Rush

Last Updated: Apr 15 2010 4:16 AM GMT

JEDI *(**J**oint **E**xecute package **D**evelopment and **I**ntegration), v3.0*

I'm a little teapot, tall and crass.
Here is my parrot, here is my 'stache.
If you don't like my humor, you can kiss my COAS.
Send me your humor if you think this is trash.

Sung to the tune of "I'm a Little Teapot".

MSG INDEX

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MSG-100	Docked Late Inspection Procedures

1. Post-Sleep Cryo Config

For today's post-sleep cryo config, O2 and H2 tanks 2 and 5 will be active. O2 tank 5 is expected to be depleted today.

R1 O2,H2 MANF VLV TK2 (two) - OP (tb-OP)
O2 TK3 HTR A - OFF

A11 CRYO TK4 HTR O2 A - OFF

A15 CRYO TK5 HTR O2 A - AUTO

O2 Tank 5 Depletion Cryo Config

On MCC go, please perform the following steps for the depletion of O2 tank 5.

A15 CRYO TK5 HTR O2 A - OFF

A11 CRYO TK4 HTR O2 A - AUTO

Pre-Sleep Cryo Config

√MCC for deltas prior to configuring for pre-sleep.

For tonight's pre-sleep cryo config, manifold 2 will be closed with O2 tanks 2 and 4, and H2 tanks 2 and 5 active.

R1 O2,H2 MANF VLV TK2 (two) – CL (tb-CL)

2. Comm Loop Overview for Flight Day 11

S/G 1 & A/G 1	S/G 2	A/G 2
MPLM Egress/Deact	SSRMS details	Transfer
MPLM Uninstall/Berth	ISS Payloads	MPLM Pressure Check
Exercise Constraints	Russian Ops	Rndz Tools Checkout
O2 Transfer Teardown	DPC	All other STS Comm
Hatch Close	All other ISS Comm	

3. MMT Summary

The MMT met today to review orbiter systems and mission progress. Discovery continues to perform very well with no issues being worked. The teams are looking forward to your final packing of the MPLM and return to Discovery's payload bay.

During the MMT, there was discussion related to a potential EVA 4 to support the S1 NTA GPRV anomaly. Following the MMT, the teams acquired some additional data and discussed their findings with ISS and Shuttle Program management. The official ISS and Shuttle Program decision is that EVA 4 is not required. The ISS ETCS can operate in the current configuration for now with no new operational constraints. The ISS team is comfortable with the margins in the system for now and will be investigating additional troubleshooting and recovery options to pursue in the stage.

Note: You will see some whitespace in the timeline in your afternoon. This is due to the EVA4 activities that were deleted. We did not have the chance to fill in the time prior to wakeup. We may call up some activities to you to fill in that time later in your day.

4. LiOH Cue Card

Your new LiOH cue card is MSG099. This cue card reflects 14+0+3. Use this cue card for the remainder of the mission starting with today's post sleep LiOH changeout. If mission duration changes we will uplink an updated cue card to reflect the change.

5. MPLM Berthing Operations

For Stephanie and Naoko, we just wanted to remind you that at the end of the MPLM berthing operations, you will maneuver the SSRMS to a viewing position to support docked late inspection. The plan will be as follows:
- Execute 1.210 MPLM Demate and Berth thru step 21 (this will leave the SSRMS at MPLM pre-grapple)
- then execute MSG096 to maneuver the SSRMS to DLI clearance position

6. Docked Late Inspection References

MSG100 contains the procedures for docked late inspection tomorrow and MSG097 contains some reference data related to these inspections (overview words, RSAD/DOUG setup notes, supplemental pictures for sensor pointing, and racetrack cue cards). The RSAD files, DOUG targets, and new autosequences are on board. We've scheduled a conference for you this afternoon with the PV team to discuss the procedures and their notes from the PV session. In the mean time, we will gladly address any questions, comments, or concerns you might have.

7. REPLACE PAGES 2-40, 2-42 AND 3-118 THROUGH 3-127.

REPLANNED

FD11

GMT 04/15/10 (105)
β = 13
MET Day 009

18 19 20 21 22 23 010/00 01 02 03 04 05 06
05 06 07 08 09 10 11 12 13 14 15 16

STS-131

CDR	POINDEXTER	POST SLEEP; A/L HTR; MDDK XFER; IMU; CWC#6; INCIT; EXERCISE; CWC; TERM; CWC; XFER; MEAL; MDDK XFER; DLI CONF; DLI DOUG REVIEW
PLT	DUTTON	MYCO; SMPL; POST SLEEP; POST EVA EMU RCNFG; EVA XFER TO STS; MEAL; FLTR INSP; PTVO6; STUOP; P/TV06; DLI CONF; DLI DOUG REVIEW
MS1	MASTRACCHIO	MYCO; SMPL; POST SLEEP; POST EVA EMU RCNFG; EVA XFER TO STS; MEAL; MPLM@; APCU#; APCU$; EXER-CISE
MS2	METCALF-LINDENBURGER	POST SLEEP; EXERCISE; EPO RVW; EPO S/U; EPO SRMS; EPO SSRMS; STOW; MEAL; PRLA; DLI CONF; DLI DOUG REVIEW
MS3	WILSON	LOG; POST SLEEP; MDDK; EXERCISE; MDDK XFER; MEAL; DOUG; S/U; SSRMS MPLM GRAPL; SSRMS MPLM UNINSTL; SSRMS; MPLM*; MNVR; DLI%; DLI CONF; DLI DOUG REVIEW
MS4	YAMAZAKI	MYCO; SMPL; POST SLEEP; XFER; UPDAT; MDDK XFER; EXERCISE; EPO SRMS; EPO SSRMS; MEAL; SSRMS MPLM GRAPL; SSRMS MPLM UNINSTL; SSRMS; MPLM*; MNVR; DLI%; DLI CONF; DLI DOUG REVIEW
MS5	ANDERSON	LOG; POST SLEEP; MPLM; EGRS; MPLM; DEACT; MPLM VEST DEMATE; MPLM VEST DEPRESS; MEAL; EXERCISE

TDRS W E Z

DAY/NIGHT

ORBIT 155 156 157 158 159 160 161 162

ORB ATT BIAS -XLV -ZVV BIAS -XLV -ZVV

TDRS AVAIL

NOTES

NO EXERCISE (MPLM UNINSTL/ BOLT UNLOAD)

NO T2 (BACKOFF TO BERTH)

%CLEAR @SHELL HTR ACT
#ACT $DEACT
*UNGRAPPLE

FLT PLN/131/FLT

REPLANNED

FD11

GMT 04/15/10 (105)
β = 16
MET Day 010

06 17 18 19 20 21 22 23 04/16 01 02 03 04
07 08 09 10 11 12 13 14 15 16 17 18

STS-131

CDR POINDEXTER	DLI DOUG REVIEW	XFER	TAGUP	A/L HTR	PRE	SLEEP	PMC A/G	PRE SLEEP	SLEEP															
PLT DUTTON	DLI DOUG REVIEW	EXERCISE						PRE SLEEP	SLEEP															
MS1 MASTRACCHIO	EXERE-	CISE						PRE SLEEP	SLEEP															
MS2 METCALF-LINDENBURGER	DLI DOUG REVIEW							PRE SLEEP	SLEEP															
MS3 WILSON	DLI DOUG REVIEW			AEM%	MDK			PRE SLEEP	SLEEP															
MS4 YAMAZAKI	DLI DOUG REVIEW	XFER	TAGUP	PRE SLEEP			XFER	BRIEF	PRE SLEEP	SLEEP														
MS5 ANDERSON							PRE SLEEP	SLEEP																

TDRS W E Z

DAY/NIGHT

ORBIT 162 163 164 165 166 167 168 169 170

ORB ATT BIAS -XLV -ZVV

TDRS AVAIL

NOTES %STATUS CHECK

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | T D R S E | Z | D/N | O R B | MET Day 009 | STS ATI

CDR POINDEXTER | PLT DUTTON | MS2 METCALF-LINDENBURGER | NOTES

16:00 — 17:00 — 18:00 — 19:00 — 20:00

03:00 — 04:00 — 05:00 — 06:00

153 — 154 — 155 — 156

BIAS-XLV-ZVV

CDR

SLEEP

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)
√HUM SEP for H2O accumulation

PLT

SLEEP

MYCO BODY SAMPLE COLLECTION
(ASSY OPS, PAYLOADS)
At step 6.1, hand Myco Kit to FE-5 for MELFI insertion.

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MS2

SLEEP

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

FD11 EZ ACTIVITIES:
TEPC (ORB OPS, CREW SYSTEMS)
Check Status
OCAC Filter Inspection
Check MDDK Duct Screen
Hard reboot all PGSCs not shut down overnight.

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | T D R S E | Z | D/N | O R B | MET Day 009 | STS ATI

MS1 MASTRACCHIO | MS3 WILSON | MS4 YAMAZAKI | MS5 ANDERSON | NOTES

153 | 154 | 155 | 156

16:00 | 17:00 | 18:00 | 19:00 | 20:00

03:00 | 04:00 | 05:00 | 06:00

BIAS-XLV-ZVV

MS1 MASTRACCHIO	MS3 WILSON	MS4 YAMAZAKI	MS5 ANDERSON
SLEEP	SLEEP	SLEEP	SLEEP
MYCO BODY SAMPLE COLLECTION (ASSY OPS, PAYLOADS) At step 6.1, hand Myco Kit to FE-5 for MELFI insertion.	SLEEP LOGBOOK (SDBI 1634) POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)	MYCO BODY SAMPLE COLLECTION (ASSY OPS, PAYLOADS) At step 6.1, hand Myco Kit to FE-5 for MELFI insertion.	SLEEP LOGBOOK (SDBI 1634) POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)
POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)		POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)	

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W E Z | DORN | MET Day 009 | STS ATI

CDR POINDEXTER

20:00 — POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)
√HUM SEP for H2O accumulation

07:00 — 156

21:00 — ML86B:C cb MNB EXT ARLK HTR STRUC Z1/2/3 - op

08:00 — 157

TRANSFER OPS
Ref. MDDK Transfer List and MSG 094

22:00 — IMU STAR OF OPPTY ALIGN (ORB OPS, GNC)
SHUTTLE/ISS H2O CONTAINER FILL (HC) (ORB OPS, ECLS)
Perform CWC FILL #6, Ref. MSG 012

09:00 — 158

23:00 — EXERCISE

SHUTTLE/ISS H2O CONTAINER FILL (HC) (ORB OPS, ECLS)
Perform FILL TERMINATION

10:00 — CWC TRANSFER
Transfer 1 CWC to ISS

00:00

BIAS-XLV-ZVV

PLT DUTTON

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

POST EVA EMU RECONFIG (EVA, AIRLOCK CONFIG)
Ref. MSG 079

EVA TRANSFER TO SHUTTLE (EVA, AIRLOCK CONFIG)
Ref. MDDK Return Transfer List: Items 703-706 & 708

MEAL

MS2 METCALF-LINDENBURGER

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

EXERCISE

P/TV10 EPO - ROBOTICS (P/TV, SCENES) Review OPS

P/TV10 EPO - ROBOTICS (P/TV, SCENES) SETUP

P/TV10 EPO - ROBOTICS (P/TV, SCENES) OPS, SRMS

P/TV10 EPO - ROBOTICS (P/TV, SCENES) OPS, SSRMS

P/TV10 EPO - ROBOTICS (P/TV, SCENES) DEACTIVATION

NOTES

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W E Z | DRS TDRS | DO/N ORB | MET Day 009 | STS ATI

MS1 MASTRACCHIO

20:00 POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

07:00 POST EVA EMU RECONFIG (EVA, AIRLOCK CONFIG) Ref. MSG 079

21:00

08:00

22:00

09:00

23:00 EVA TRANSFER TO SHUTTLE (EVA, AIRLOCK CONFIG) Ref. MDDK Return Transfer List: Items 703-706 & 708

10:00

00:00 MEAL

MS3 WILSON

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

MERLIN STATUS CK (Cue Card)
GLACIER STATUS CK (Cue Card)
STL STATUS CK (Cue Card)

A Steps 1-6 (Ground can perform steps 4-5 on request). Remove PFE and PBA from MPLM and stow in the following locations: PFE: NOD1P2-12 PEPS Locker and PBA: NOD2P2 PEPS Locker.

EXERCISE

TRANSFER OPS Ref. MDDK Transfer List and MSG 094

MEAL

MS4 YAMAZAKI

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

DAILY TRANSFER LIST UPDATE Ref. MDDK Transfer List and MSG 094

TRANSFER OPS Ref. MDDK Transfer List and MSG 094

EXERCISE

P/TV10 EPO - ROBOTICS (P/TV, SCENES) OPS, SRMS

P/TV10 EPO - ROBOTICS (P/TV, SCENES) OPS, SSRMS

MEAL

MS5 ANDERSON

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

MPLM: 1.105 MPLM EGRESS A Ref. MPLM Return Transfer List: Items 822 & 823

MPLM: 1.106 MPLM DEACTIVATION Steps 1-2,4-6

S&M: 1.109 MPLM VESTIBULE CONFIGURE FOR DEMATE

MPLM: 1.110 NODE 2 TO MPLM VESTIBULE DEPRESS AND LEAK CHECK Skip step 9.10

NOTES

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | TDRSE | Z | D/N | ORB | MET Day 010 | STS ATI

158 | 159 | 160 | 161

BIAS-XLV-ZVV

BIAS-XLV-ZVV

CDR POINDEXTER

MEAL

TRANSFER OPS
Ref. MDDK Transfer List
and MSG 094

PLT DUTTON

MEAL

FILTER CLEANING
(IFM, SCHEDULED MAINTENANCE)
Inspect filters and clean
as necessary

P/TV06 ROBOTICS
(P/TV, SCENES)
SETUP

P/TV06 ROBOTICS OPERATIONS
(P/TV, SCENES)
SETUP & OPS
Items 1 & 3 for MPLM Berth in PLB

MS2 METCALF-LINDENBURGER

P/TV10 EPO - ROBOTICS
(P/TV, SCENES) DEACTIVATION

MEAL

ROBO: 1.210 MPLM DEMATE AND BERTH
Steps 12-19

NOTES

NO EXERCISE
(MPLM UNINST/
BOLT LOADING)

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | T D R S E | Z | D/N | O R B | MET Day 010 | STS ATI

MS1 MASTRACCHIO | MS3 WILSON | MS4 YAMAZAKI | MS5 ANDERSON | NOTES

00:00

158

MEAL

MEAL

MEAL

MPLM: 1.110 NODE 2 TO MPLM VESTIBULE DEPRESS AND LEAK CHECK
Skip step 9.10

11:00

POC: 2.7.501 DOUG STARTUP PROCEDURE
Step 1

01:00

159

ROBO: 1.210 MPLM DEMATE AND BERTH
Steps 1-3

ROBO: 1.210 MPLM DEMATE AND BERTH
Steps 1-3

BIAS-XLV-ZVV

12:00

MEAL

02:00

ROBO: 1.210 MPLM DEMATE AND BERTH
Steps 4-19

ROBO: 1.210 MPLM DEMATE AND BERTH
Steps 4-19

NO EXERCISE (MPLM UNINST/ BOLT LOADING)

160

13:00

03:00

BIAS-XLV-ZVV

14:00

161

ROBO: 1.210 MPLM DEMATE AND BERTH Steps 20-21

ROBO: 1.210 MPLM DEMATE AND BERTH Steps 20-21

04:00

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | TDRS E | Z | DO/N | ORB | MET Day 010 | STS ATI

CDR POINDEXTER | **PLT** DUTTON | **MS2** METCALF-LINDENBURGER | NOTES

04:00

P/TVO6 ROBOTICS OPERATIONS
(P/TV, SCENES)
SETUP & OPS
Items 1 & 3 for MPLM Berth in PLB

161

15:00

PRIVATE DOCKED LATE INSPECTION CONFERENCE VIA S/G 2
Ref. MSG 092, item 6
ISS TDRS (04:27-04:36) (04:37-05:13)

05:00

162

16:00

BIAS-XLV-ZVV

DOCKED LATE INSPECTION DOUG REVIEW
Ref. MSG 092, item 6

06:00

17:00

TRANSFER TAGUP
Coordinate with transfer counterparts

163

07:00

ML86B:C cb MNB EXT ARLK HTR STRUC Z1/2/3 - cl

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)
Air Quality Report

EXERCISE

L9 PAYLOAD STATION A/G (two) - OFF
PRIVATE MEDICAL CONFERENCE VIA A/G 2

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

18:00

08:00

11

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W E Z | TDRS | DON/ORB | MET Day 010 | STS ATI

MS1 MASTRACCHIO

MPLM SHELL HTR ACT [B]
On MCC GO: A15 APCU 1 OUTPUT - ON

On MCC GO: A15 APCU 1 OUTPUT - OFF

EXERCISE

[B] R1 PL PRI MN C - ON (tb-ON)
SSP1 MPLM CHAN 1,2 HTR PWR (two) - ON (tb-gray)

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MS3 WILSON

ROBO: 1.210 MPLM DEMATE
AND BERTH Steps 20-21
SSRMS MNVR TO DLI CLEAR
Ref. MSG 096

PRIVATE DOCKED LATE
INSPECTION CONFERENCE
VIA S/G 2
Ref. MSG 092, item 6
ISS TDRS (04:27-04:36)
(04:37-05:13)

DOCKED LATE INSPECTION
DOUG REVIEW
Ref. MSG 092, item 6

AEM UNIT#1 CK (Cue Card)
AEM UNIT#2 CK (Cue Card)
MERLIN STATUS CK (Cue Card)
GLACIER STATUS CK (Cue Card)
STL STATUS CK (Cue Card)
PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

MS4 YAMAZAKI

ROBO: 1.210 MPLM DEMATE
AND BERTH Steps 20-21
SSRMS MNVR TO DLI CLEAR
Ref. MSG 096

PRIVATE DOCKED LATE
INSPECTION CONFERENCE
VIA S/G 2
Ref. MSG 092, item 6
ISS TDRS (04:27-04:36)
(04:37-05:13)

DOCKED LATE INSPECTION
DOUG REVIEW
Ref. MSG 092, item 6

TRANSFER TAGUP
Coordinate with transfer
counterparts

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

TRANSFER BRIEF
Call down status to MCC

MS5 ANDERSON

EXERCISE

PRE-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

NOTES

TFL 199
MPLM PRESS CHECK
TFL 184

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | T D R S E | Z | D / N | O R B | MET Day 010 | STS ATI

CDR POINDEXTER | PLT DUTTON | MS2 METCALF-LINDENBURGER | NOTES

08:00 — PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)

19:00 — 164

09:00

20:00 — BIAS-XLV-ZVV

10:00 — **CREW WAKEUP AT 10/18:00**

21:00 — 165

11:00 — SLEEP

22:00 — 166

12:00

13

STS-131/19A FD11

REPLANNED

GMT Date 04/15 (105) | W | TDRS E | TDRS Z | DO/N | ORB | MET Day 010 | STS ATI

MS1 MASTRACCHIO | MS3 WILSON | MS4 YAMAZAKI | MS5 ANDERSON | NOTES

08:00 — 09:00 — 10:00 — 11:00 — 12:00

19:00 — 20:00 — 21:00 — 22:00

164 — 165 — 166

BIAS-XLV-ZVV

MS1 MASTRACCHIO

PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)

SLEEP

MS3 WILSON

PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)

SLEEP

MS4 YAMAZAKI

TRANSFER BRIEF
Call down status to MCC

PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)

SLEEP

MS5 ANDERSON

PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)

SLEEP

CREW WAKEUP AT 10/18:00

MSG 093 - FD11 MISSION SUMMARY

Good Morning Discovery,

We continue to be impressed by all your great work. Congratulations on completing MPLM transfer ops - time to button it up now! Have fun with the uninstall!

YOUR CURRENT ORBIT IS: 189 X 182 NM

NOTAMS (DELETED NTU, YHZ, KBO)

EDW -	EDT 22R/04L IN USE. EDW 22/04 CLOSED FOR CONSTRUCTION.
EDW -	LAKEBED RWYS RED.
NOR -	LAKEBED RWYS GREEN.
FOK -	RWY 06/24 CLOSED.
DOV -	RWY 32 REIL OTS.
FMH -	RWY 23 ALS OTS.
YYT -	TACAN UYT23 AZIMUTH OTS.
YQX -	DME YQX74 OTS.
JTY -	RWY 18 ALS OTS.
MYR -	RWY 18/36 CLOSED FROM 0340 - 0930 GMT.
KKI -	TACAN RIY92 OTS.
MRN -	RWY 20 THRESHOLD DISPLACED. RWY 02/20 LDA = 9085 FT.
PTN -	RWY 14/32 CLOSED.
IKF -	NOT USABLE. NO AGREEMENT.
BEN -	NOT RECOMMENDED/NOT SUPPORTED.

<u>NEXT 2 PLS OPPORTUNITIES:</u>

EDR22R ORB 161 – 10/04:32	BKN200	7	220/08P12
EDR22R ORB 176 – 11/03:20	SCT200	7	220/07P10

<u>OMS TANK FAIL CAPABILITY:</u>

L OMS FAILS: NO
R OMS FAILS: NO

<u>LEAKING OMS PRPLT BURN:</u>

L OMS LEAK: ALWAYS BURN RETROGRADE
R OMS LEAK: ALWAYS BURN RETROGRADE

<u>OMS QUANTITIES(%)</u>

L OMS OX = 34.08 R OMS OX = 35.28
FU = 33.60 FU = 35.21

END OF PAGE 1 OF 2, MSG 093

DELTA V AVAILABLE:

OMS	339 FPS
ARCS (TOTAL ABOVE QTY1)	28 FPS
TOTAL IN THE AFT	367 FPS
ARCS (TOTAL ABOVE QTY2)	58 FPS
FRCS (ABOVE QTY 1)	25 FPS
AFT QTY 1	80 %
AFT QTY 2	42 %

END OF PAGE 2 OF 2, MSG 093

Good Morning Dex, Naoko, and Steph,

Excellent job completing MPLM transfer yesterday! Things should slow down quite a bit on the transfer front with the MPLM back in the bay.

Today you'll be transferring the last few items out of the MPLM as you close it up. In addition, you have a few middeck transfer items you can complete.

The Transfer List Excel file, FD11_Transfer_List_STS131.xls, locations are:

- Shuttle: **C:\OCA-up\transfer** (KFX machine)
- Station: **K:\OCA-up\transfer**

Transfer Notes

- **Extra UCB(s) and additional WHC hardware:** Dex, please report where you were able to stow any extra UCBs and what additional WHC hardware you packed in the MPLM. If you needed to remove any food containers to accommodate this, please let us know how many and the barcodes of each.

- **Food Containers and 2.0 CTB:** Naoko, please let us know if you were able to stow the extra six food containers and the empty 2.0 CTB s/n 1109 in MPL1S1_K1.

FD11 Choreography (in timeline order)

- **Items 822 and 823:** Return the MPLM PBA and PFE to ISS.
- **Item 721:** Stow Catalytic Reactor for return following the Catalytic Reactor Prep.
- **Items 703, 704, 705, 706, and 708:** Transfer EVA items from ISS to shuttle per the EVA XFER TO STS activity.
- **Item 436.7:** Transfer the Microbial Capture Device following the EHS WATER T+2 activity (if growth is present).

Please incorporate uplink pages as follows (we've listed the updates in the order they printed out for you):

In the Middeck Transfer List **RESUPPLY** tab
Replace the following page:
Resupply 9

In the Middeck Transfer List **RETURN** tab
Replace the following pages:
Return 2
Return 4
Return 5
Return 6
Return 7
Return 8

<u>FD12 Choreography</u> (in timeline order)

- **Items 431.3 and 431.4:** Transfer dosimeters following the Dosimeter Stow activity.
- **Item 716:** Transfer NLP Cells 3 Stow Bag following the CGBA-5 NLP CELLS REMOVE activity.

- The STS-131 Transfer Team

The following times indicate good Shuttle Sband on A/G 2 and ISS Ku for crew choice downlink.

AOS	LOS	Delta (min)	Notes
10/06:58	10/07:38	40	A/G 20 second H/O at 07:10:27 KU gap from 07:24-07:26
10/08:03	10/09:20	77	A/G 20 second H/O at 08:22:09 KU H/O at 08:34:17 A/G 20 second H/O at 08:58:18 KU gap from 09:04-09:07
10/09:42	10/10:28	46	A/G 20 second H/O at 09:57:39

Note: Please notify MCC-H 10 minutes prior to the event to allow for ground network configuration.

NOTE

1. This procedure replaces, 1.210 MPLM DEMATE AND BERTH, steps 22 - 23 (US SODF: ROBOTICS: ROBOTICS FLIGHT SPECIFIC ISS-19A: NOMINAL: MPLM), then:

2. SY Joint Auto overlay bar may appear at end of Joint OCAS when SY is +250.0.

1. SETUP
   Configure cameras and overlays as required.

Monitor 1	Monitor 2	Monitor 3	SSC1 (MON1)	SSC2 (DTV)
09: P1 Lower Outboard (+130, +30) 24: Tip Elbow (-155, 0)	03: S1 Lower Outboard (+55, +20)	07: P1 Lower Inboard (+130, +40)	SRMS Elbow (-145, +45)	Camera C (0, +30)

Figure 1.- MPLM Backoff
(09: P1 Lower Outboard: +130, +30).

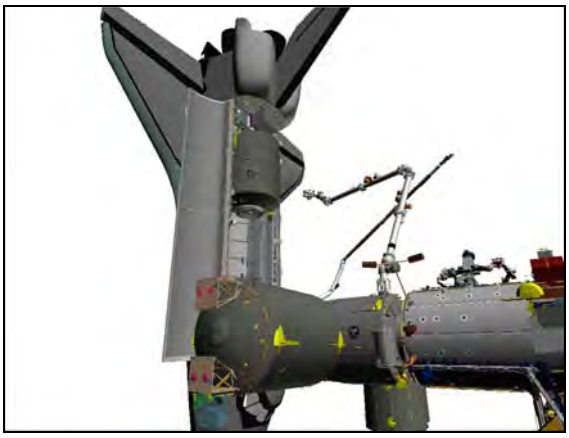

Figure 2.- MPLM Backoff
(03: S1 Lower Outboard: +55, +20).

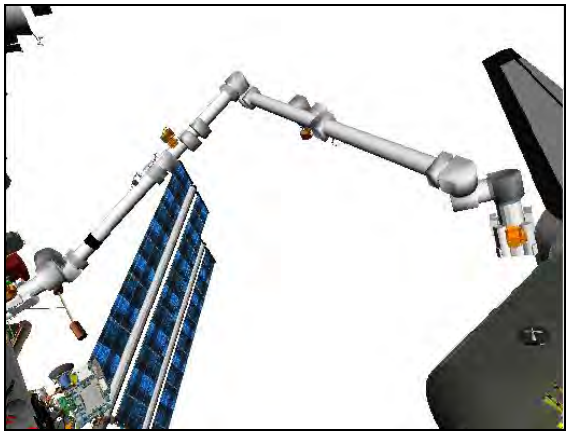

Figure 3.- MPLM Backoff
(SRMS Elbow: -145, +45).

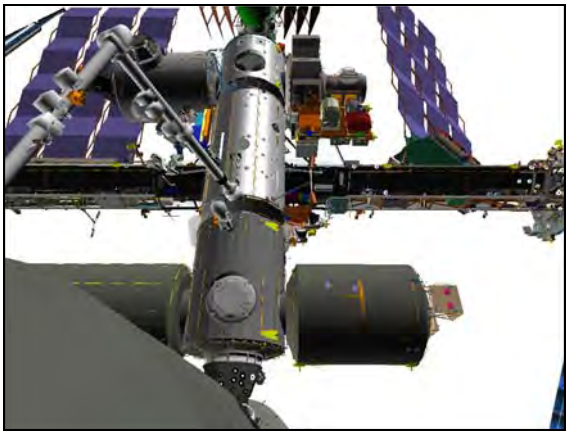

Figure 4.- MPLM Backoff
(Camera C: 0, +30).

PCS MSS: SSRMS: Rate: SSRMS Rate

Set ‘Scale’ ‘Vernier’ Rate Scale: 1.0 (Verify 1.0)

2. DLI CLEARANCE POSITION JOINT OCAS (4 MINUTES)

MSS: SSRMS: SSRMS

Enter Mode – Joint OCAS (Verify blue)

SSRMS Joint OCAS

Input ‘Joint Angles’ ‘Destination’ for DLI Clearance position.

SR	SY	SP	EP	WP	WY	WR
+74.6	+250.0	-120.0	-50.0	-140.0	0.0	+180.0

cmd Load (Verify Sequence Status – Confirm or Cancel)

MON Verify joint angles and errors are correct on Joint Angle Position overlay.

	SR	SY	SP	EP	WP	WY	WR
(current)	+74.6	+162.7	-176.3	-91.8	-45.5	-54.9	+99.3
TGT	**+74.6**	**+250.0**	**-120.0**	**-50.0**	**-140.0**	**0.0**	**+180.0**
ERR	0.0	-87.3	-56.3	-41.8	+94.5	-54.9	-80.7

PCS **cmd** Confirm (Verify Sequence Status – Auto Seq sw - Hot)

DCP AUTO SEQ → PROC

PCS MSS: SSRMS: SSRMS

Verify Posn Hold – orange

Verify SSRMS at DLI Clearance position (within 5 cm/1 deg).

SR	SY	SP	EP	WP	WY	WR
+74.6	+250.0	-120.0	-50.0	-140.0	0.0	+180.0
X	Y	Z	Pitch	Yaw	Roll	
+389	+1047	+1238	+30.7	-47.7	-44.8	
FOR	Unloaded – LEE Tip, SR Held					
Disp	ISS>ISSACS					

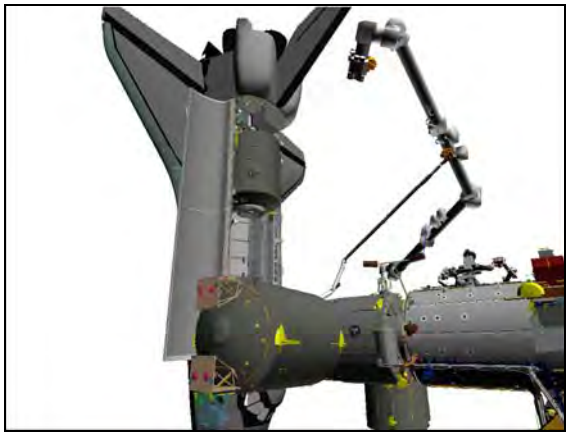

Figure 5.- DLI Clearance
(03: S1 Lower Outboard: +70, +30).

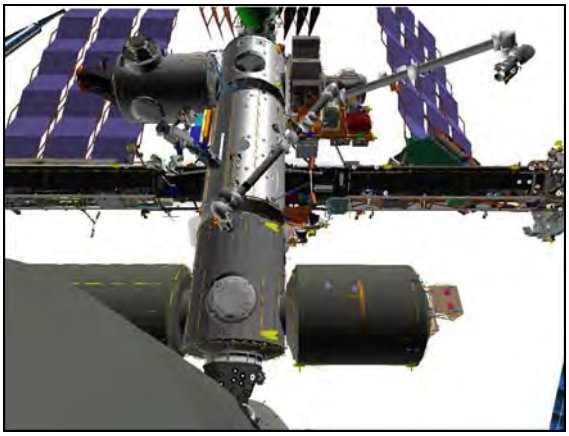

Figure 6.- DLI Clearance
(Camera C: 0, +30).

NOTE

Expect the following message when safing is commanded:

'**R3Z - MSS OCS SSRMS Prime(Redun) ACU SRT Cat-1 Brk Stat Fail**' (SCR 17495)

This message should return to Norm.

DCP SAFING → SAFE (Verify ON)

DOCKED LATE INSPECTION REFERENCE DATA

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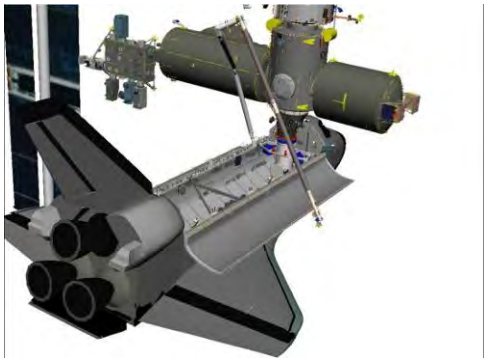
RSAD DATA CONFIGURATION 4
ITVC VIEW VERIFICATION 6
OBSS DOCKED LDRI SCAN PATTERN CUE CARD - STBD & PORT 14
- NOSE CAP 15

DOCKED LATE INSPECTION OVERVIEW

Structural interference from the ISS prevents running the standard FD 2 autosequences, so MCC has uplinked docked inspection autosequences developed for STS-134/ULF-6. These autosequences provide full LDRI coverage of RCC, but limited IDC coverage (IDC data will not be collected). As with nominal late inspection there will not be any ITVC survey of the sidewalls or OMS pods. Movies of all surveys have been uplinked. They are located on the KFX machine in “C:\OCA-UP\OTHER\”.

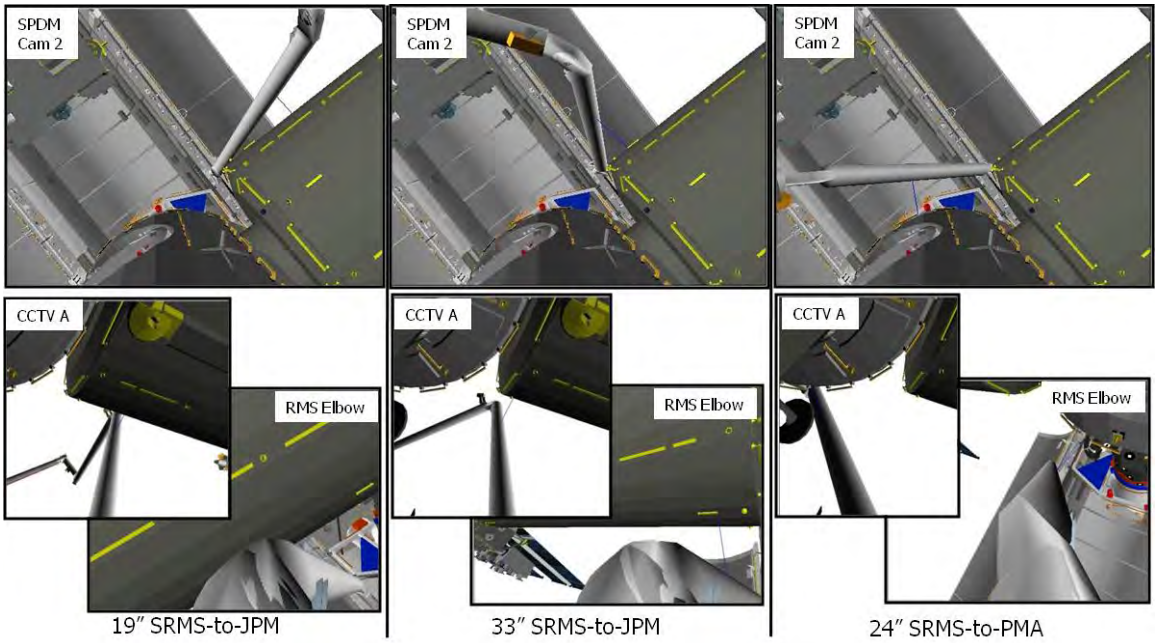
<u>STBD Survey</u>
The stbd survey will start at MPLM viewing position. It is divided into 2 parts. In the first part, the SRMS/OBSS reaches over the PLB to scan the upper, forward, and some lower RCC zones -- the MPLM must be berthed in the PLB for this. In the second part, the SRMS/OBSS reaches under the PLB to scan some lower RCC zones.



Stbd Survey Part 1

Stbd Survey Part 2

In order to get full coverage, we will have to accept several close clearances between both the OBSS-RCC and SRMS-JPM. The minimum clearance expected between the SRMS and JPM is 19 inches with several points within 36 inches. SPDM camera 2 and the SSRMS Tip Elbow camera provide excellent views of this clearance and the SSRMS will be configured for additional views. Minimum clearance between the OBSS and RCC is expected to be 42 inches with several good available views (RSC, RMS Elbow, etc). These tight clearances require the stbd survey be heavily segmented, with several pause points, LDRI pan/tilt reconfigs, and places where data is taken via a pan/tilt survey.

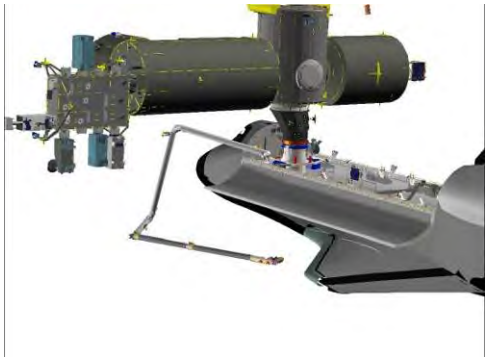


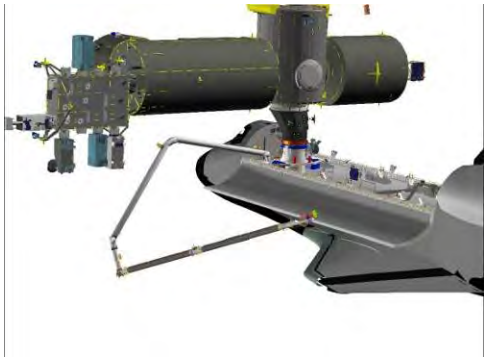
Examples of minimum expected clearance to JPM

NOSE & PORT Surveys

Both the nose and port surveys have the SRMS under the JPM. In the nose cap survey, the OBSS “wraps” around the front of the vehicle and requires less than 5 ft clearance to completely survey the stbd side of the nose cap. The port survey brings the OBSS under then over the port wing and requires less than 5 ft clearance to the port PLBD for some upper RCC surfaces. The port survey will end at the Undock position.

Nose Cap Survey





Port Survey

ACAS Information

Auto Seq ID	Name	PLID	# of Points	Start Point
1	Docked Stbd LDRI Survey - Part 1	2	41	1
2	Transition from Stbd Part 1 to Stbd Part 2	2	8	42
3	Docked Stbd LDRI Survey - Part 2	2	13	50
4	Transition From Stbd to Nosecap	2	5	63
5	Docked Nose Cap LDRI Survey	2	21	68
6	Transition from Nose Cap to Port	2	6	89
7	Docked Port LDRI Survey	2	40	95
8	Port Survey End to Undock Position	2	7	135
9	Mnvr MPLM Viewing to Flat Field	1	4	142

DOCKED LATE INSPECTION RSAD DATA CONFIGURATION

Operation

When RSAD is activated, the crew should select "STS-131 Survey Docked" when the Configuration Selection Dialog opens, as shown in Figure 1.

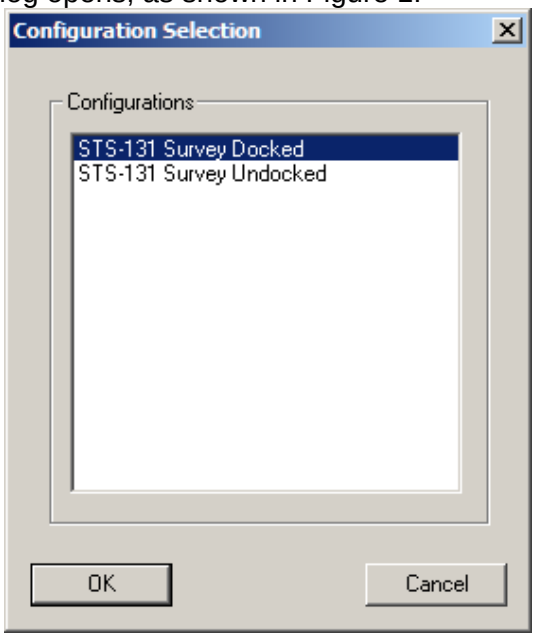


Figure 1 - Configuration Selection Dialog

Once RSAD is running, the crew may then open the Target Selection Dialog (<F8> or the Select Target command on the Data menu) and select "Mnvr to Flat Field" in the Waypoints section, which will automatically select the first target in that waypoints group, as shown in Figures 2 and 3.

After starting RSAD, start DOUG and in the “Select Display Context” window, choose either the **RMS - Data from RSAD** option (to allow RSAD to drive the RMS joint angles and targets, but not the SSRMS) or the **RMS_&_SSRMS with OIU** option (to allow RSAD to also drive the SSRMS joint angles with OIU data). If needed, reference DOUG SETUP INSTRUCTIONS (PGSC, ORB OPS).

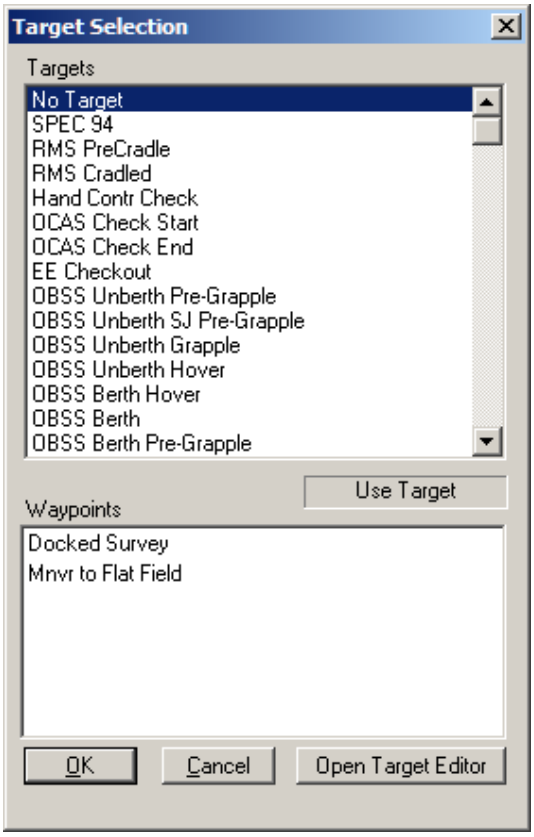


Figure 2 - Target Selection Dialog on Open

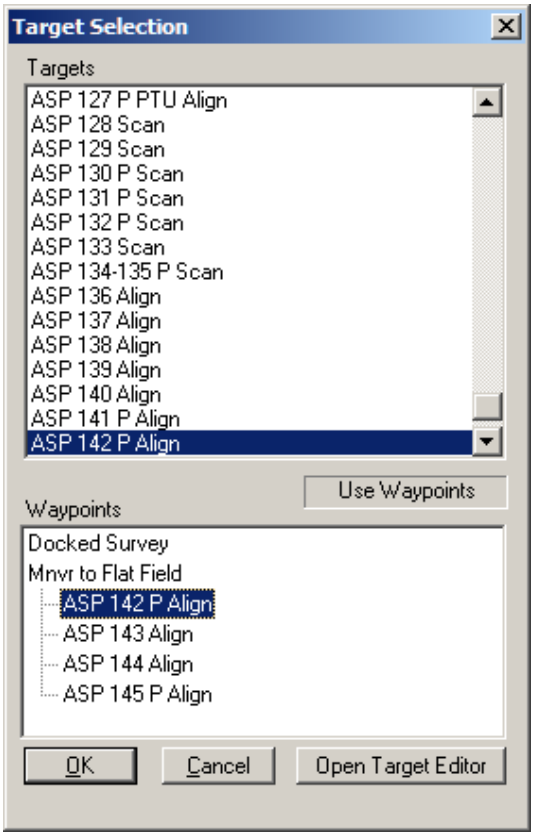


Figure 3 - Target Selection Dialog with Mnvr to Flat Field Selected

Once that maneuver is complete, the crew may then re-open the Target Selection Dialog and select "Docked Survey" in the Waypoints section for the entire docked survey, which will automatically select the first target in that waypoints group, as shown in Figure 4.

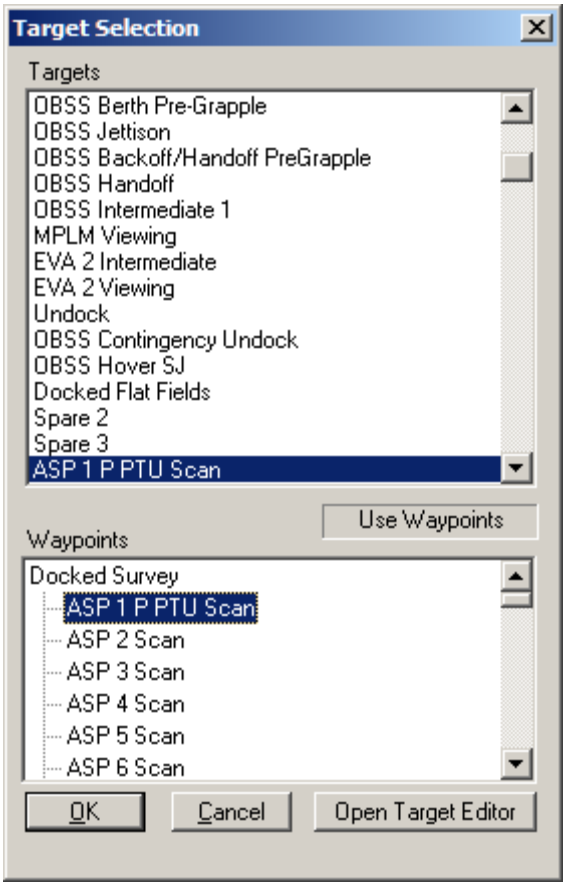


Figure 4 - Target Selection Dialog with Docked Survey Selected

DOCKED LATE INSPECTION ITVC VIEW VERIFICATION

Some pan/tilt reconfigs occur at nondescript panels so MCC may request ITVC (wider FOV) be used to verify LDRI pointed at correct panel. This is intended for coarse pointing only, fine alignments should be made based on LDRI images in procedure.

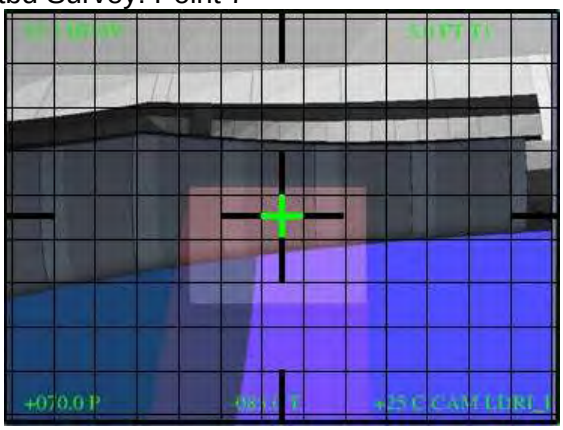
On MCC Go:

A7U
MUX 1 L ← MIDDECK
LDRI MODE 2 pb – push (ITVC image displayed)
DTV ← PL2
ZOOM – full out
Match corresponding image below

MUX 1 L ← MIDDECK
LDRI MODE 4 pb – push (brighter LDRI displayed)
DTV ← PL2
Match LDRI image in procedure

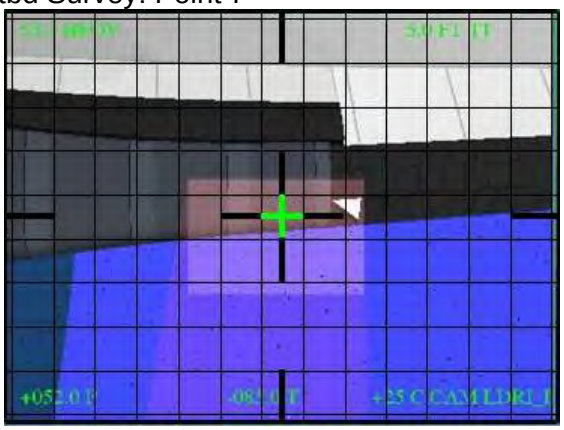
√MCC to verify correct view

Stbd Survey: Point 7



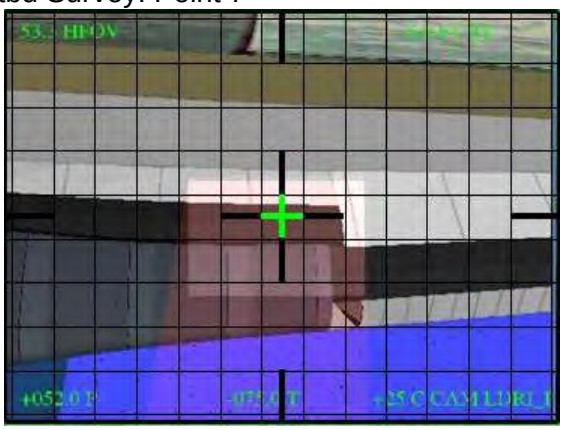
ITVC (+70, -85)

Stbd Survey: Point 7



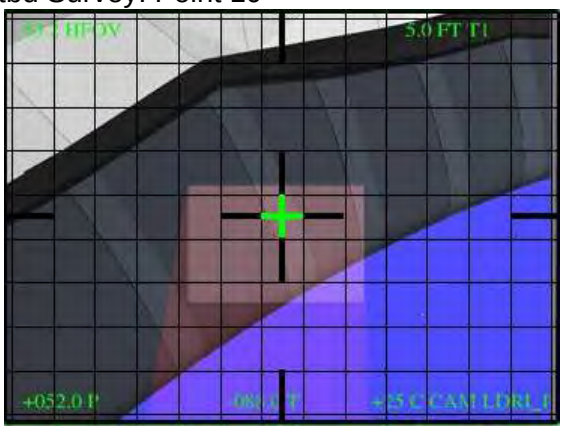
ITVC (+52, -85)

Stbd Survey: Point 7



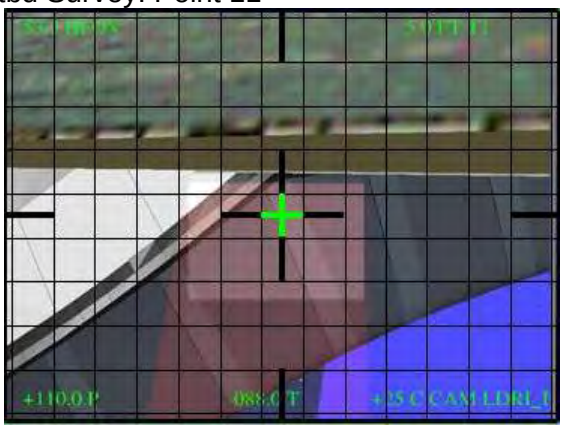
ITVC (+52, -75)

Stbd Survey: Point 10



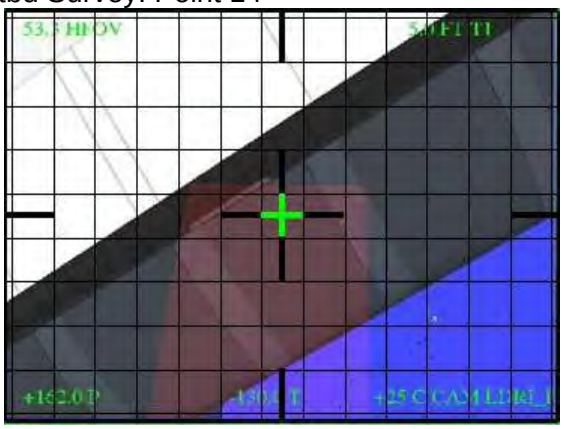
ITVC (+52, -88)

Stbd Survey: Point 11



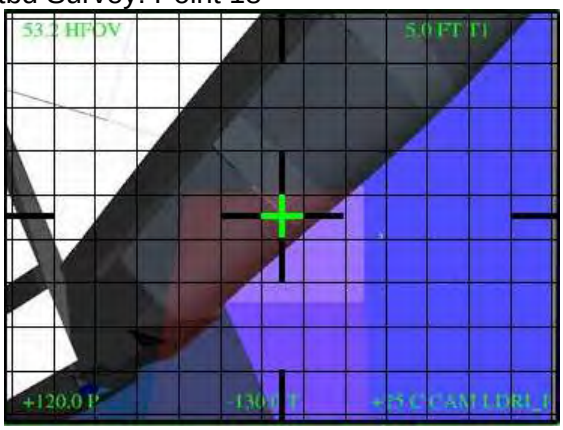
ITVC (+110, -88)

Stbd Survey: Point 14



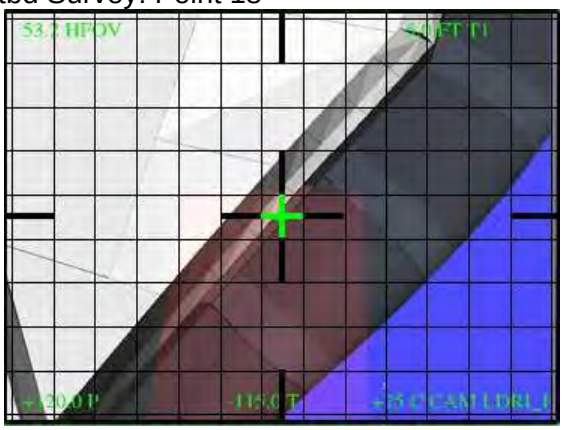
ITVC (+162, -130)

Stbd Survey: Point 18



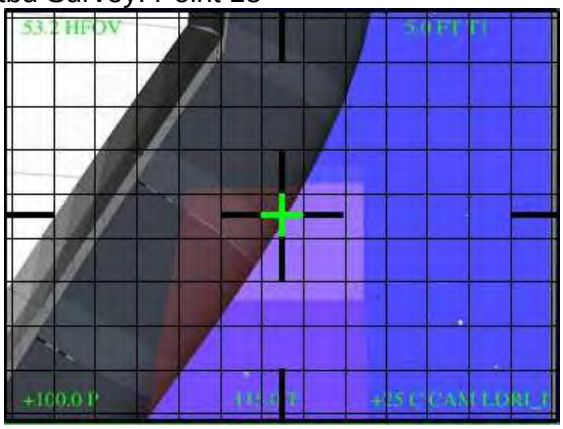
ITVC (+120, -130)

Stbd Survey: Point 18



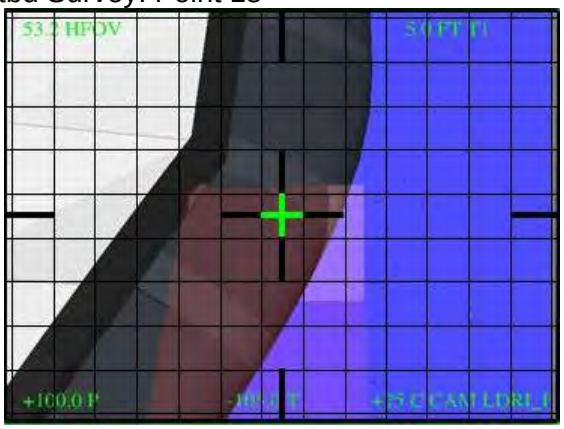
ITVC (+120, -115)

Stbd Survey: Point 18



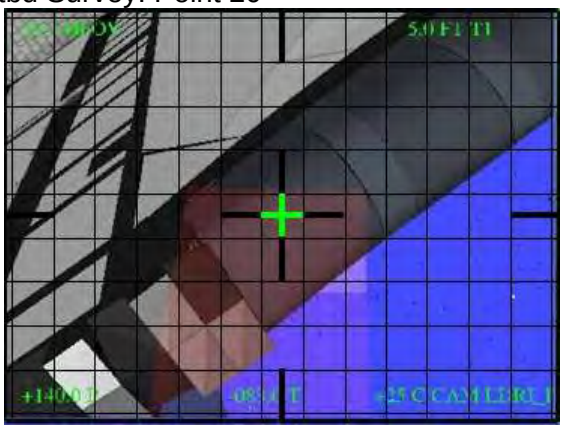
ITVC (+100, -115)

Stbd Survey: Point 18



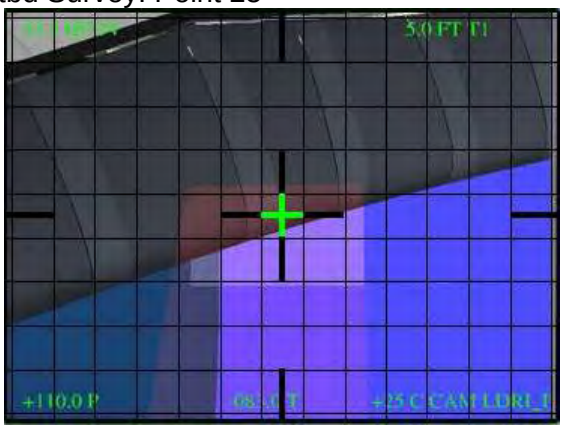
ITVC (+100, -105)

Stbd Survey: Point 20



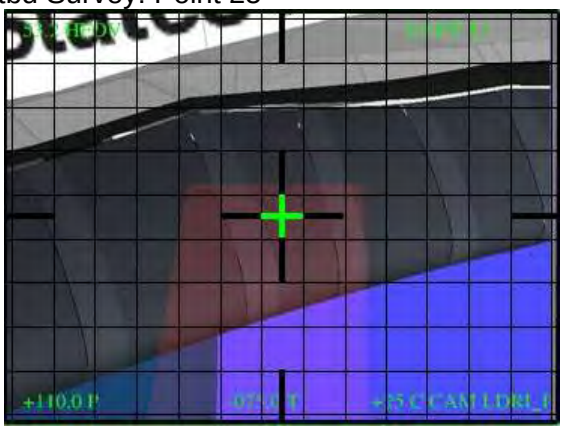
ITVC (+140, -83)

Stbd Survey: Point 25



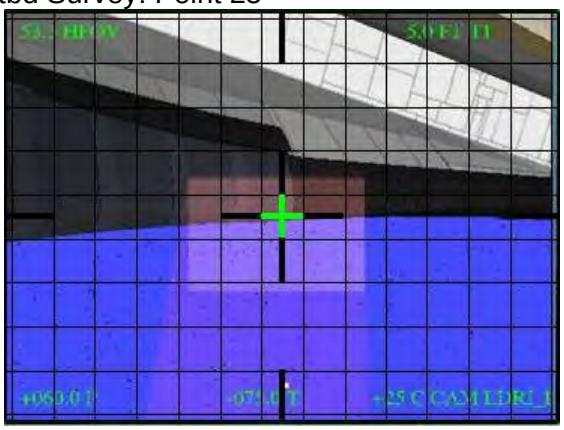
ITVC (+110, -83)

Stbd Survey: Point 25



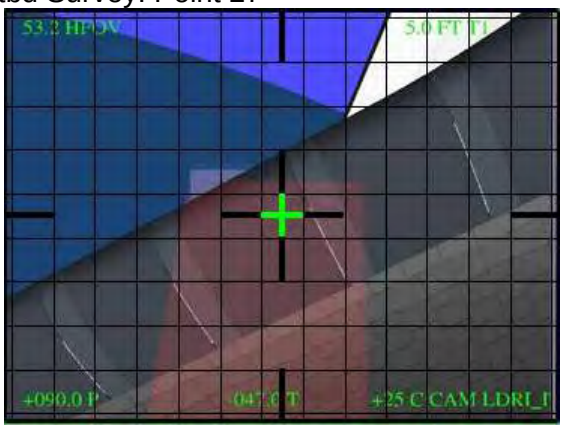
ITVC (+110, -75)

Stbd Survey: Point 25



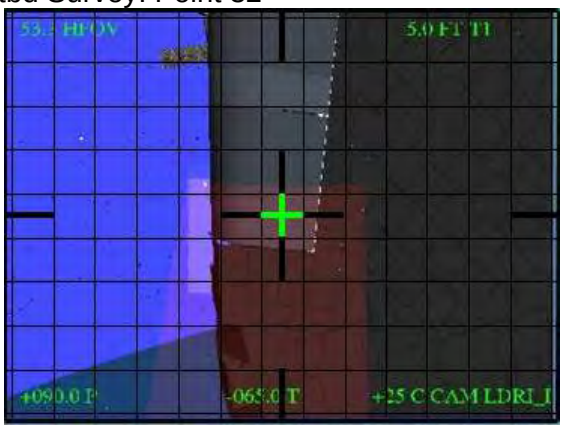
ITVC (+60, -75)

Stbd Survey: Point 27



ITVC (+90, -47)

Stbd Survey: Point 32

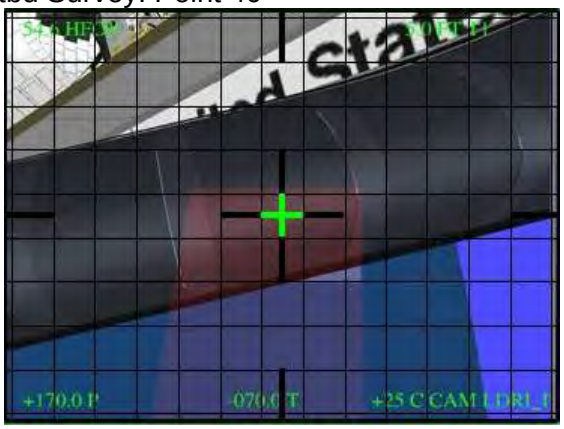


ITVC (+90, -65)

Stbd Survey: Point 34

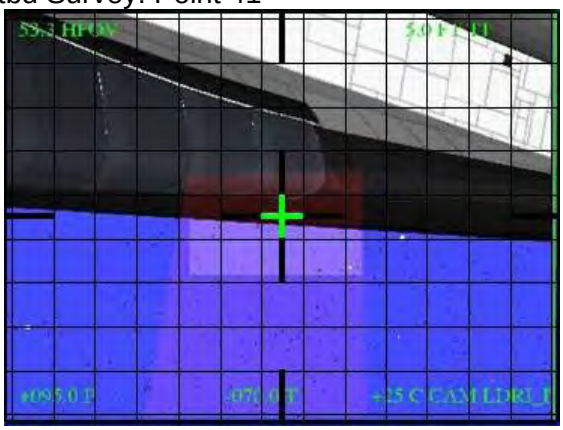
ITVC (+170, -61)

Stbd Survey: Point 40



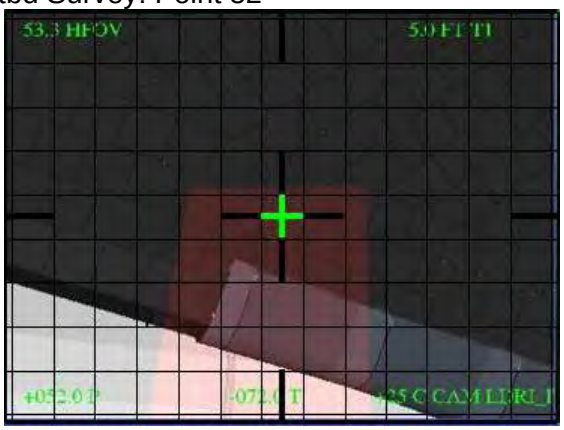
ITVC (+170, -70)

Stbd Survey: Point 41



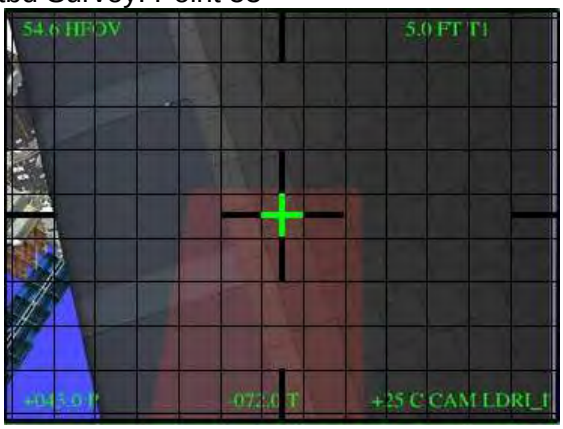
ITVC (+95, -70)

Stbd Survey: Point 52



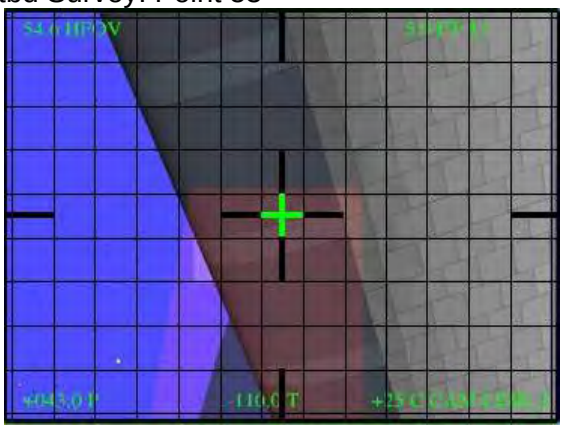
ITVC (+52, -72)

Stbd Survey: Point 53



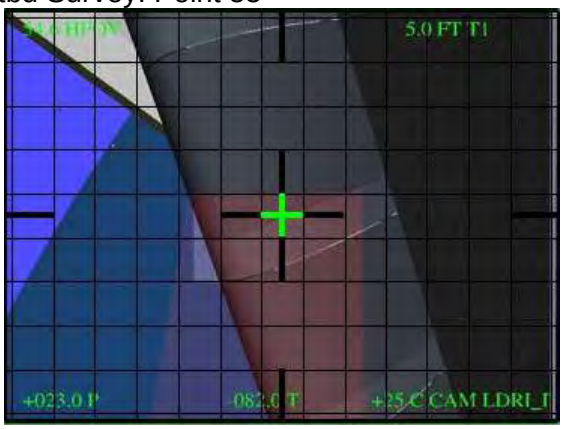
ITVC (+43, -72)

Stbd Survey: Point 53



ITVC (+43, -110)

Stbd Survey: Point 55



ITVC (+23, -82)

Stbd Survey: Point 58

ITVC (+23, -72)

Stbd Survey: Point 58

ITVC (+30, -72)

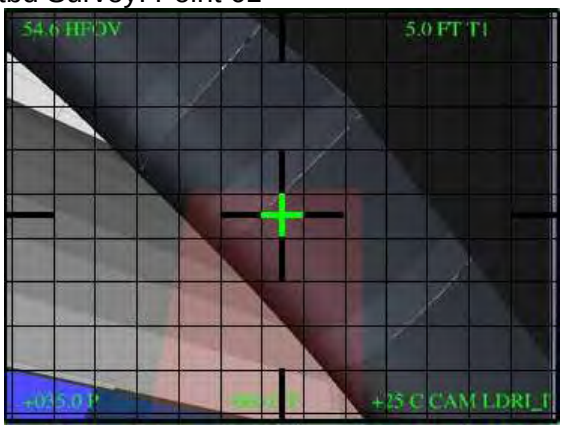
Stbd Survey: Point 58

ITVC (+30, -65)

Stbd Survey: Point 60

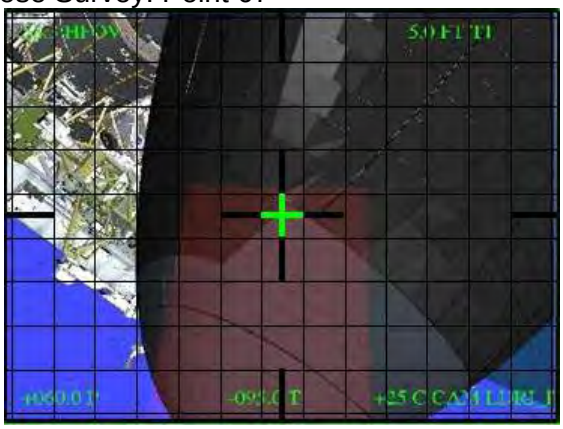
ITVC (+47, -49)

Stbd Survey: Point 61



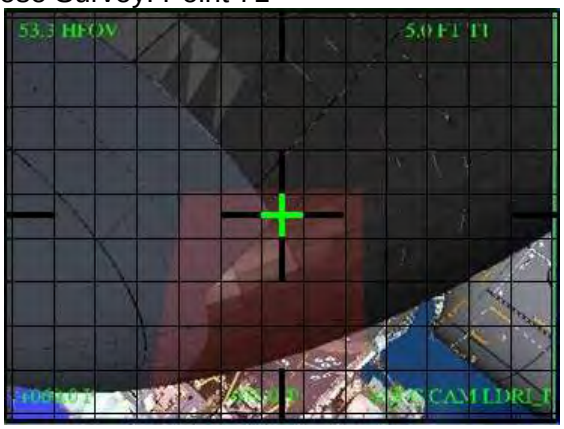
ITVC (+35, -60)

Nose Survey: Point 67



ITVC (+60, -95)

Nose Survey: Point 71

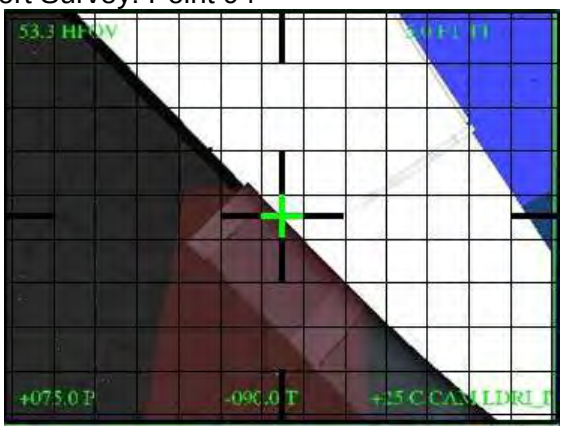


ITVC (+60, -70)

Nose Survey: Point 80

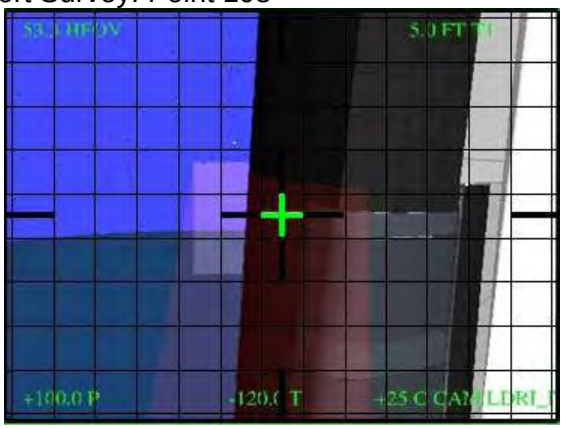
ITVC (+60, -50)

Port Survey: Point 94



ITVC (+75, -90)

Port Survey: Point 108

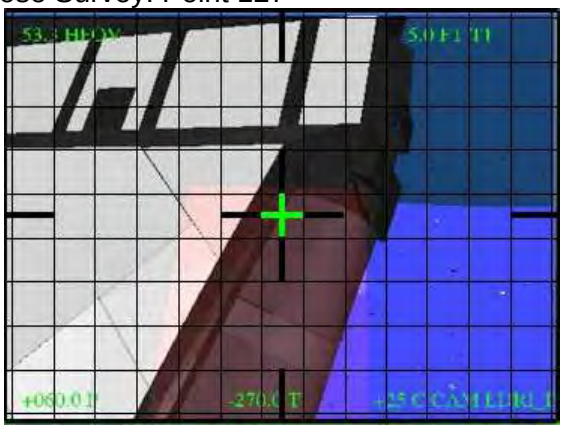


ITVC (+100, -120)

Port Survey: Point 120

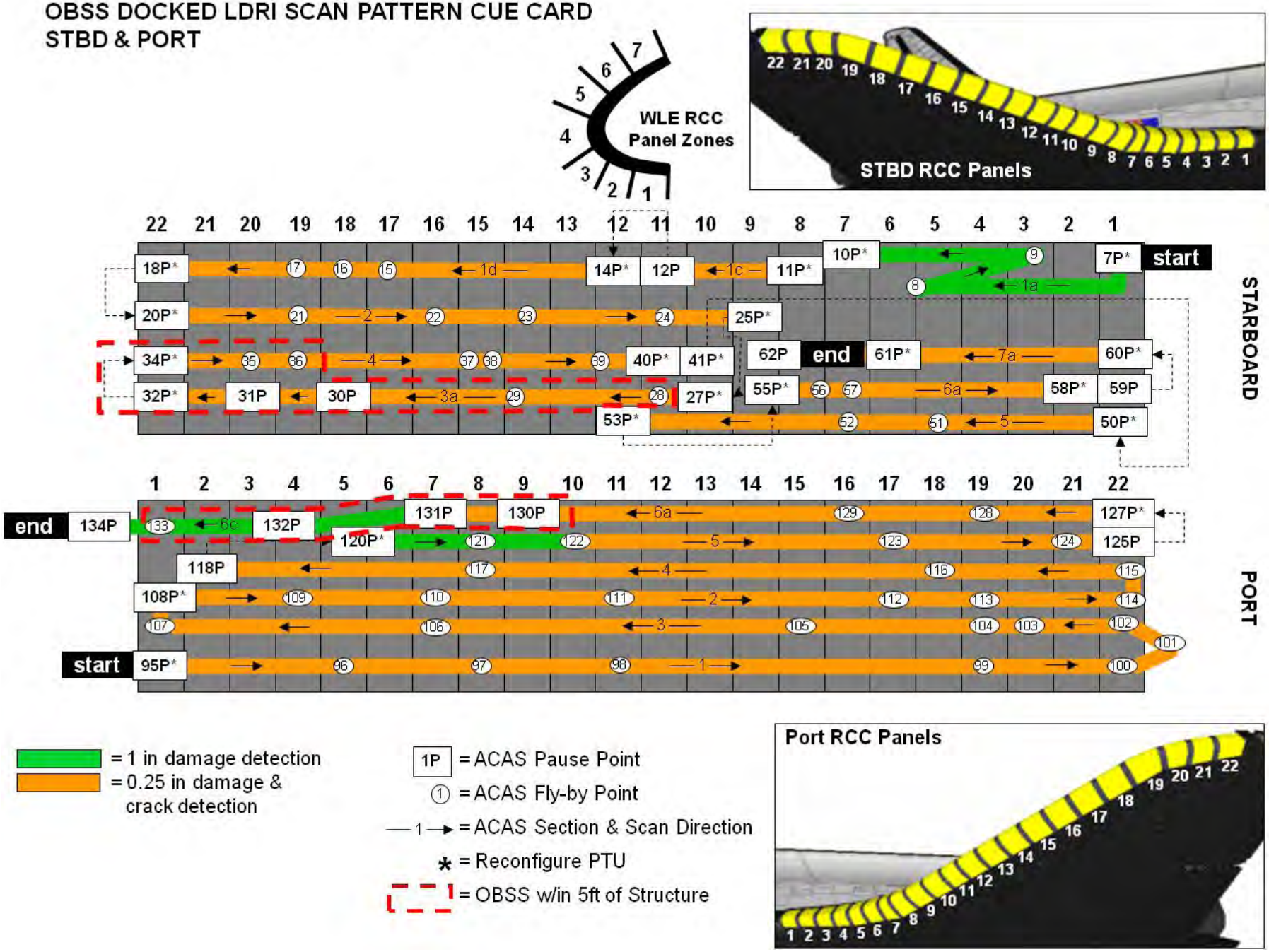
ITVC (+50, -250)

Nose Survey: Point 127

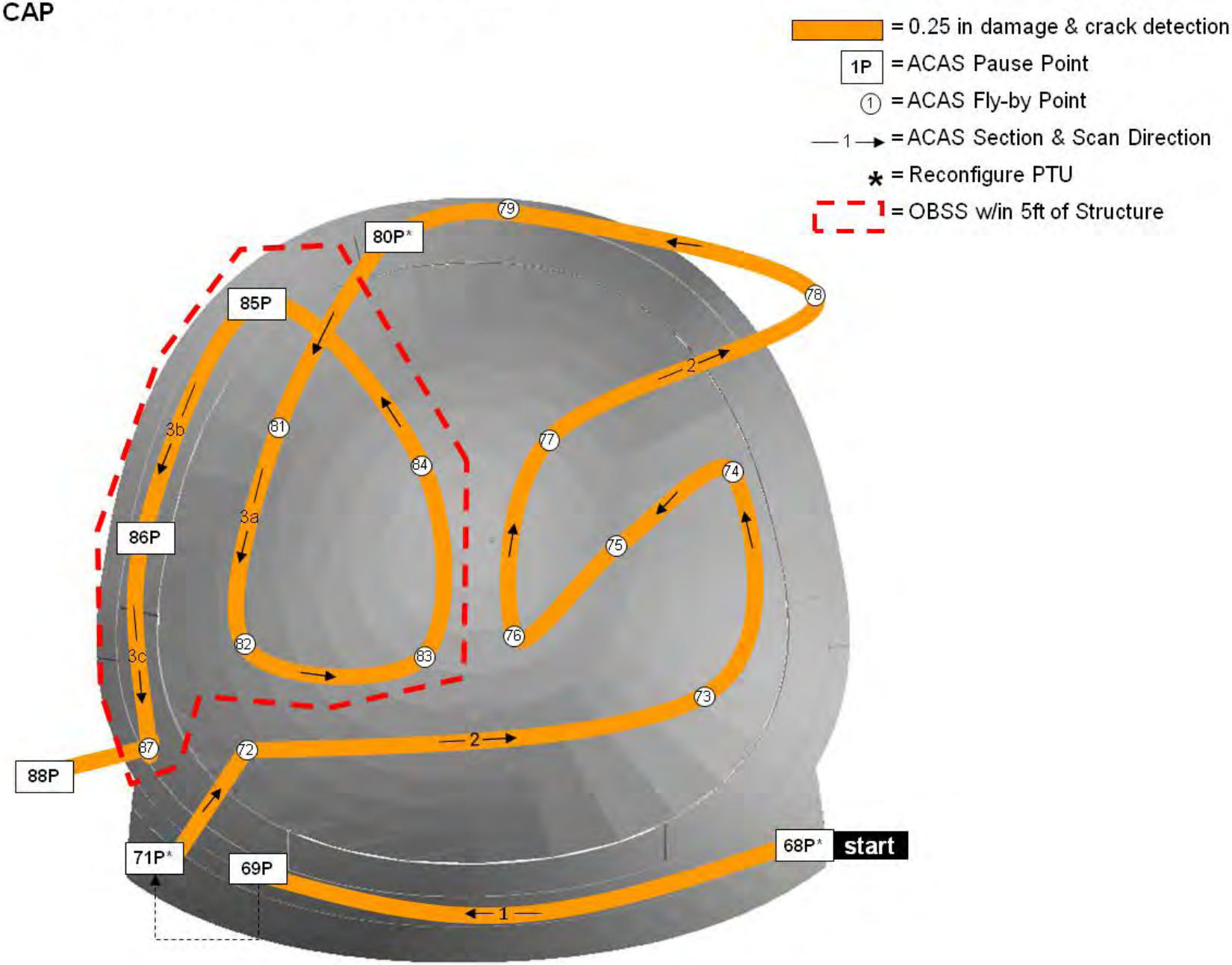


ITVC (+60, -270)

OBSS DOCKED LDRI SCAN PATTERN CUE CARD
STBD & PORT



OBSS DOCKED LDRI SCAN PATTERN CUE CARD
NOSE CAP



END OF PAGE 15 OF 15, MSG 97

Well, we were going to be using this note to walk you through a slew of messages on NTA R&R, but instead all we have to tell you is that we have returned to the nominal preflight plan of reconfiguring your EMUs for transfer back to Shuttle! If Rick can give us a status of where he left off with the Tool Restow yesterday (reference message 81 (23-0266)), we may also consider performing more of this activity in the afternoon. For your entertainment, here is what the EVA Planning MPSR looked like when they heard the news of no additional EVA -- the Execute team and Team 4 were home crying.

1

LIOH CHANGEOUT

(7 crewmembers/Single Shift/FD 1-18)

FLIGHT DAY	POS A	POS B	CK CMPLT
LAUNCH	1	2	
PRE FD01	"	"	
POST FD02	3	4	
PRE FD02	5	6*	
POST FD03	"	7	DOCKING
PRE FD03	8	"	
POST FD04	"	9	
PRE FD04	10	"	
POST FD05	"	11	
PRE FD05	12	"	
POST FD06	"	13	
PRE FD06	14	"	
POST FD07	"	15	
PRE FD07	16	"	
POST FD08	"	17	
PRE FD08	18	"	
POST FD09	"	19	
PRE FD09	20	"	
POST FD10	"	21	
PRE FD10	22	"	
POST FD11	"	23	
PRE FD11	24	"	
POST FD12	"	25	
PRE FD12	26	"	
POST FD13	"	27*	
MID FD13	28*	29	HATCH CLOSE
PRE FD13	30*	"	
POST FD14	31	32	
PRE FD14	33*	34*	
POST FD15	35	36	EOM
PRE FD15	"	37	
POST FD16	38	39	EOM+1
PRE FD16	40*	41*	
POST FD17	42	43	EOM+2
PRE FD17	44	"	
POST FD18	45	46	EOM+3

*****Reseal LiOH cans with Gray Tape and stow

NOTE

This card is specifically used for the STS-131 mission with the orbiter conducting single shift ops with a Shuttle crew size of 7 and ISS crew size of 6. This changeout scheme reflects FD3 docking with ISS, Vozdukh, and dual-bed CDRA operation

2

3

DOCKED LATE INSPECTION

OBSS DOCKED LDRI RCC SURVEY – STBD 2
– NOSE CAP 37
– PORT 48

OBSS DOCKED LDRI RCC SURVEY – STBD

WARNING
Stbd and Port radiator must be stowed

NOTE

In case of SPEE pwr loss, reset RSC Illuminator, reset PTU, select correct LDRI mode. Reference SPEE PWR DEACT CLEANUP ACTIONS (LDRI/ITVC (Cue Card), PHOTO/TV) as required.

For PL IDs 1 and 2, the rates have been set such that Coarse is allowed within 10 ft of structure for all auto maneuvers. Vern rates are only necessary for IDC scans.

Due to docked attitude constraints, the sun may enter the LDRI FOV causing it to temporarily shut down (it will power up automatically, in last mode, after 20-30 sec). MCC will predict which survey points/passes may be affected. If required, the survey will be paused at an ACAS pause point until the lighting concern has passed. When recording, **crew will be prime to pause autosequence** if image is lost or dark due to LDRI shutdown or sun in FOV.

PHOTO/TV NOTE

Pan and tilt of LDRI/ITVC requires that VIDEO IN PL2 light is illuminated with green VPU jumper in ‘LDRI/ITVC’.

LDRI/ITVC view must be displayed on orbiter Monitors 1 or 2 to see pan and tilt values.

When pan and tilt of LDRI/ITVC finished, crew should ensure that the VIDEO IN PL2 light is not illuminated, to prevent inadvertant pan, tilt, or pan-tilt reset of LDRI/ITVC.

LDRI/ITVC pan and tilt operations used for taking survey data (recorders on) should be performed in LOW RATE. HIGH RATE allowed when not taking data (recorders off)

Some transitions are recorded for efficiency even though RCC is not in the FOV

1. SETUP

Verify SSRMS on NODE 2 at LATE INSPECTION VIEWING/CLEAR posn:

	SR	SY	SP	EP	WP	WY	WR
√	+74.6	+250.0	-120.0	-50.0	-140.0	0.0	+180.0

Verify SPDM on Lab PDGF in PARK posn:

	SR	SY	SP	EP	WP	WY	WR
√Arm 1:	-90.0	-45.0	+80.0	+45.0	-45.0	-90.0	+0.0
√Arm 2:	-90.0	-45.0	-110.0	-45.0	+45.0	-90.0	+0.0
√Body:	-50.0						

SM 94 PDRS CONTROL

√PL ID, ITEM 3: 1

√INIT ID, ITEM 24: 1

Verify at OBSS MPLM VIEWING posn:

	X	Y	Z	PITCH	YAW	ROLL	PL ID
√	-967	-643	-386	60	349	282	1
	SY	SP	EP	WP	WY	WR	
√	+62.5	+25.0	-23.0	0.0	-13.2	-21.9	

2. MNVR TO DOCKED FLAT FIELDS

A7U CCTV – config as req

Mnvr to Flat Field Clearance Views	**Cameras**
RMS-to-JPM	Tip Elbow(SPDM), A Elbow
OBSS-to-PLBD	RSC, D, C, Elbow

NOTE

Clearance between RMS and JPM is:
48 inches at point 142

Clearance between OBSS and STBD RCC is:
59 inches at point 145P

Brief OCAS required to meet ACAS initial conditions

SM 94 PDRS CONTROL

AUTO MODES – ITEM 13 +9 EXEC
END POS – ITEM 18 -9 6 7 -6 4 3 -3 8 6 EXEC
ATT – ITEM 21 +6 0 +3 4 9 +2 8 2 EXEC
CMD CK – ITEM 25 EXEC (GOOD)

RHC RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – OPR CMD, ENTER (READY lt on)

AUTO SEQ – PROCEED (IN PROG lt on)

When AUTO SEQ IN PROG lt – off:
MODE – AUTO 1, ENTER (READY lt on)

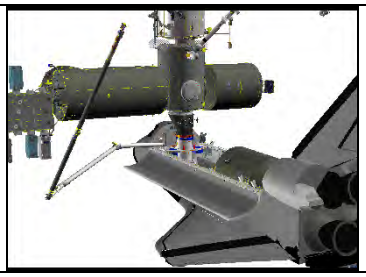
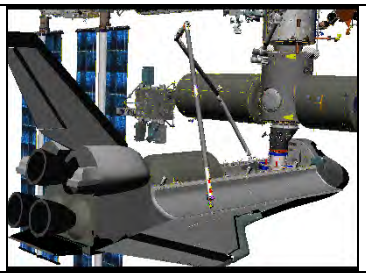
SM 94 PDRS CONTROL

√START PT, ITEM 17: 142

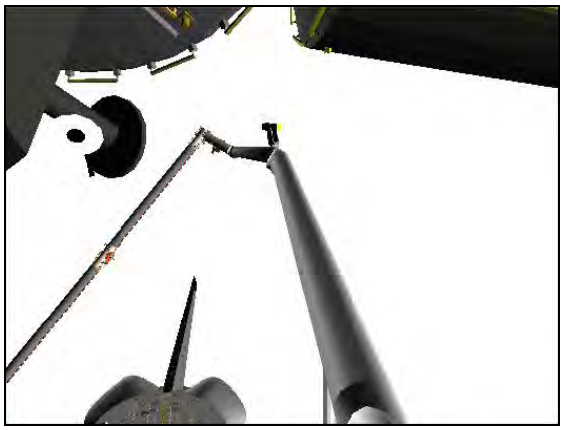
SM 169 PDRS STATUS
Monitor ACAS progress

AUTO SEQ – PROCEED (IN PROG lt on)

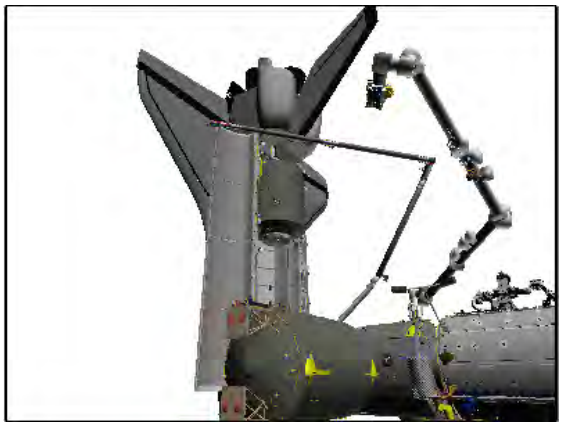
Mnvr to Docked Flat Field (6:20)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
142P	**-967**	**-643**	**-386**	**60**	**349**	**282**		
143	-1239	-96	-700	121	277	347		
144	-1150	-12	-815	264	291	119		
145P	**-1064**	**-15**	**-872**	**291**	**329**	**78**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)



CCTV A (10,30)



03: S1 LOOB (50,25)

3. CONFIGURE FOR SURVEYS
For survey scan pattern, refer to OBSS DOCKED LDRI SCAN PATTERN CUE CARD – STBD & PORT

SM 94 PDRS CONTROL
AUTO MODES – ITEM 13 +1 +2 +3 +4 EXEC
PL ID – ITEM 3 +2 EXEC
INIT ID – ITEM 24 +2 EXEC

Verify DOCKED FLAT FIELDS posn:

	X	Y	Z	PITCH	YAW	ROLL	PL ID
√	-1246	+278	-391	291	329	108	2
	SY	SP	EP	WP	WY	WR	
√	-22.9	+50.3	-17.7	-3.6	-57.0	-151.3	

√ACTIVATION (LDRI/ITVC (Cue Card), PHOTO/TV) steps 1, 4, and 5

A7U MUX 1 L ← MIDDECK

LDRI MODE 4 pb – push (brighter LDRI displayed)

NOTE

For all LDRI pan/tilt ops, MCC requires LDRI/ITVC image in real time, meaning PL2 must be routed to MON 2 (ISS Ch 71). When real-time views are no longer required, return to preferred clearance view. PL2 should remain routed to DTV for recording

DTV ← PL2

CAMR CMD PAN/TILT – HI RATE
PAN – L (to hard stop)
TILT – UP (to hard stop)
PAN/TILT – RESET, HI RATE (LO within 10°)
PAN: +70 (right)
TILT: -135 (down)

VID OUT – not DTV
VID IN – not PL2

4. MNVR TO ACAS START

Mnvr to ACAS Start Clearance Views	**Cameras**
RMS-to-JPM	Tip Elbow(SPDM), A, Elbow
OBSS-to-PLBD	RSC, D, C, Elbow

NOTE

Clearance between RMS and JPM is:
19 inches at point 4,
53 inches at point 6, and
29 inches at point 7

Expect C/W SINGULAR lt during mnvr to point 7.
This C/W will extinguish during mnvr to point 9

RHC RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 1, ENTER (READY lt on)

* If unable to enter AUTO mode (no READY lt): *
* √MCC *

SM 94 PDRS CONTROL
√START PT, ITEM 17: 1

SM 169 PDRS STATUS
Monitor ACAS progress

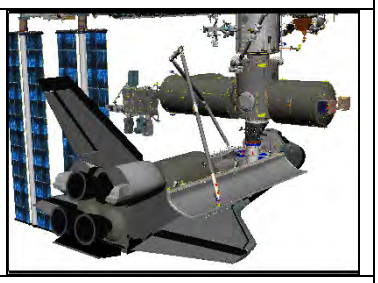
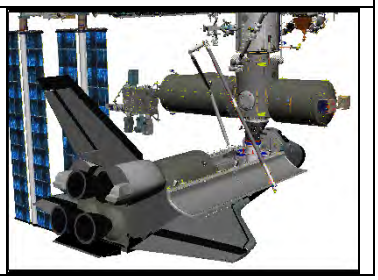
L10(VTR) REC pb – push, hold
PLAY pb – push, simo (red ●)

NOTE

ACAS pause pts **shaded in bold**, ● col indicates data recording (black = VTR on)

AUTO SEQ – PROCEED (IN PROG lt on)

Mnvr to ACAS Start (03:15)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
1P	**-1247**	**+277**	**-392**	**291**	**329**	**108**		
2	-1240	+330	-392	291	329	108		
3	-1200	+320	-392	291	329	108		
4	-1182	+281	-392	291	329	108		
5	-1236	+280	-392	291	329	108		
6	-1236	+280	-418	292	324	110		
7P	**-940**	**+291**	**-363**	**267**	**331**	**64**		

When AUTO SEQ READY lt – on:
L10(VTR) STOP pb – push (no red ●)

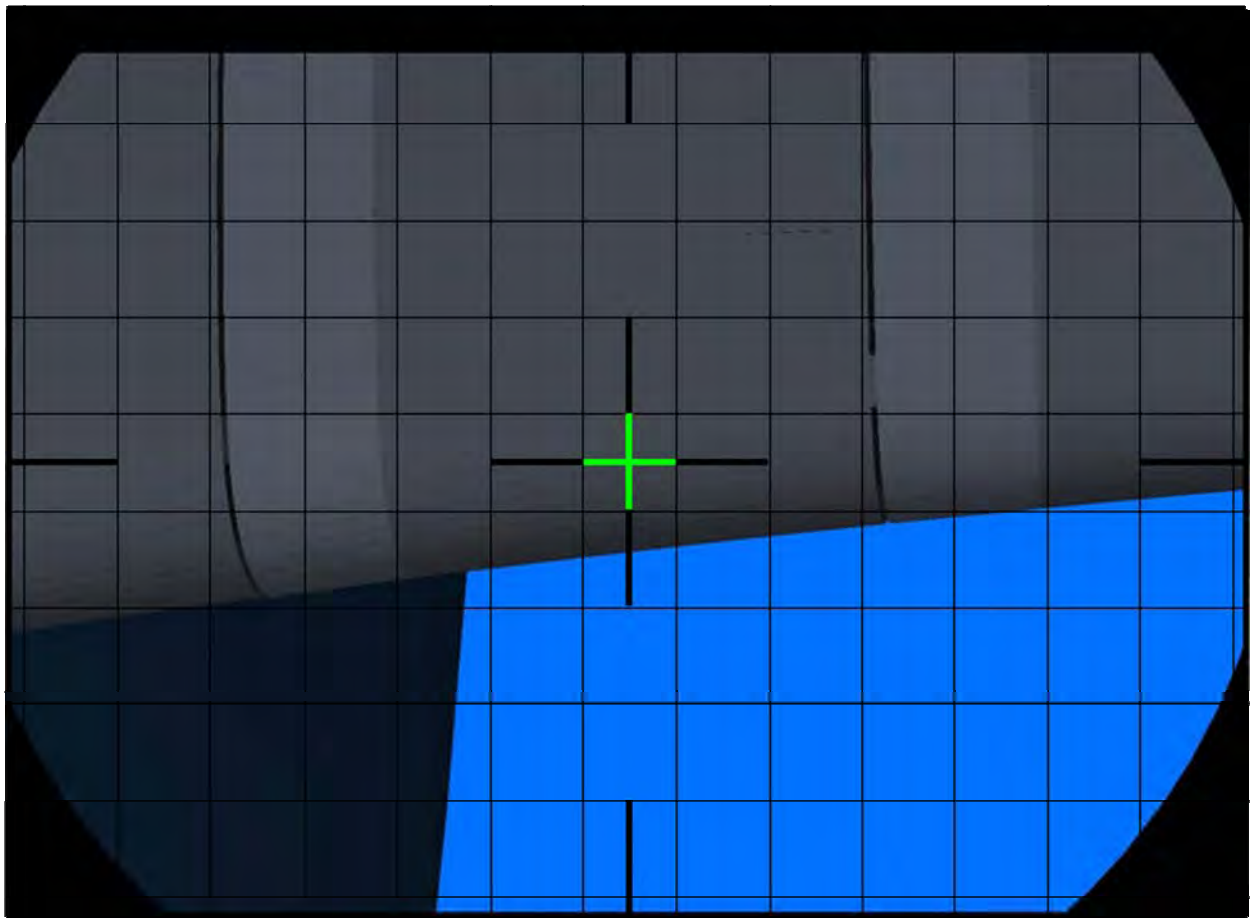
5. STBD LDRI ACAS, SECTION 1a

Section 1 Clearance Views	Cameras
RMS-to-JPM	Tip Elbow(SPDM), A, Elbow
OBSS-to-PLBD	RSC, C, D, Elbow

NOTE

Clearance between RMS and JPM is 25 inches at point 9

A7U √DTV ← PL2
TILT to match LDRI view shown below (LOW RATE within 10°)



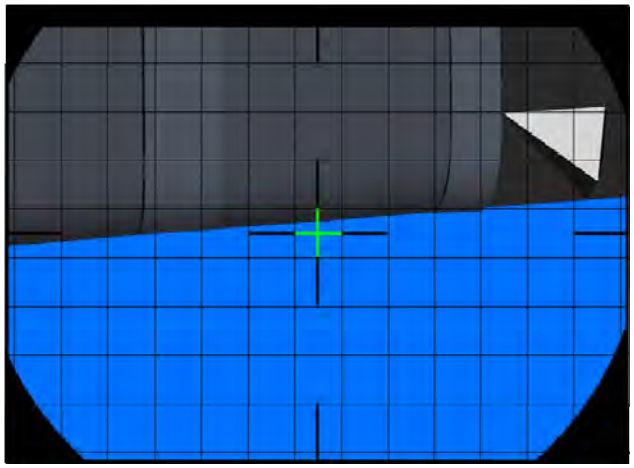
LDRI: +70, -85 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

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

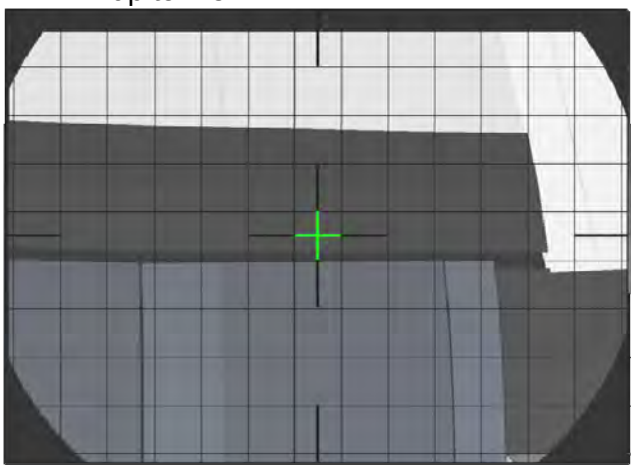
A7U CAMR CMD PAN/TILT – LOW RATE
PAN/TILT as shown to match LDRI views below

1. PAN left to +52



LDRI: +52, -85

2. TILT up to -75



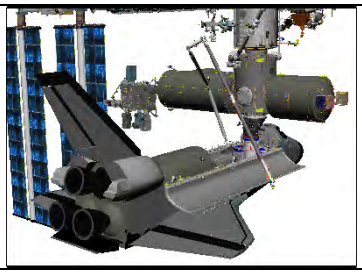
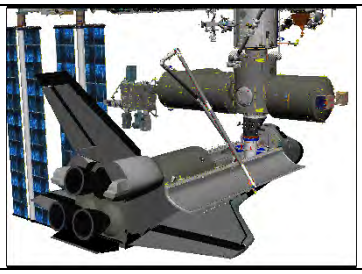
LDRI: +52, -75

√MCC to verify correct coverage and view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

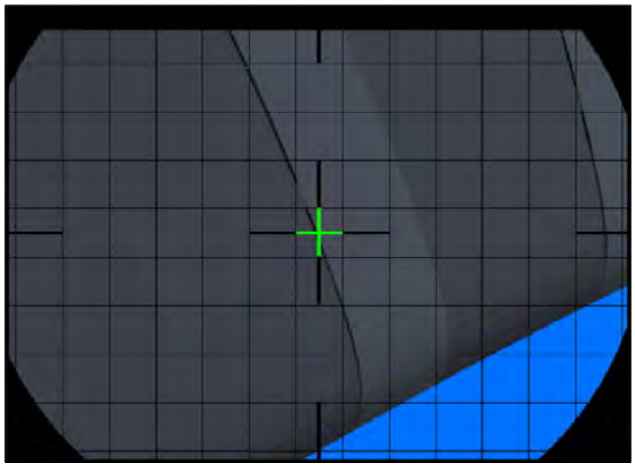
AUTO SEQ – PROCEED (IN PROG lt on)

STBD SCAN section 1a (01:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	•	
7P	**-940**	**+291**	**-363**	**267**	**331**	**64**		
8	-1036	+304	-344	272	326	63		
9	-971	+287	-376	270	322	61		
10P	**-1055**	**+293**	**-373**	**273**	**322**	**63**		

When AUTO SEQ READY lt – on:
A7U √DTV ← PL2
√CAMR CMD PAN/TILT – LOW RATE

TILT down to -88 to match LDRI view below



LDRI: +52, -88

√MCC to verify correct coverage
Note PAN/TILT: _____, _____

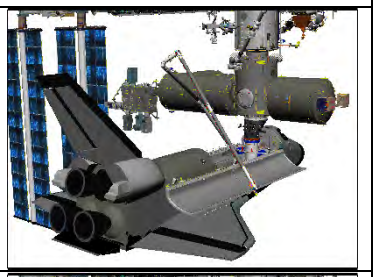
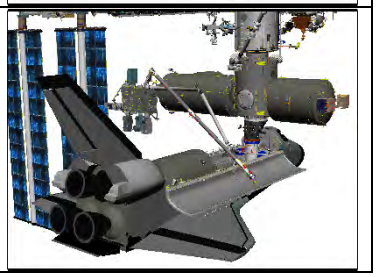
A7U VID OUT – not DTV
VID IN – not PL2

6. <u>STBD LDRI ACAS, SECTION 1b and 1c</u>

<u>NOTE</u>
Clearance between RMS and JPM is 19 inches at point 11.
Monitor with Tip Elbow(SPDM) and Camera A(Elbow)

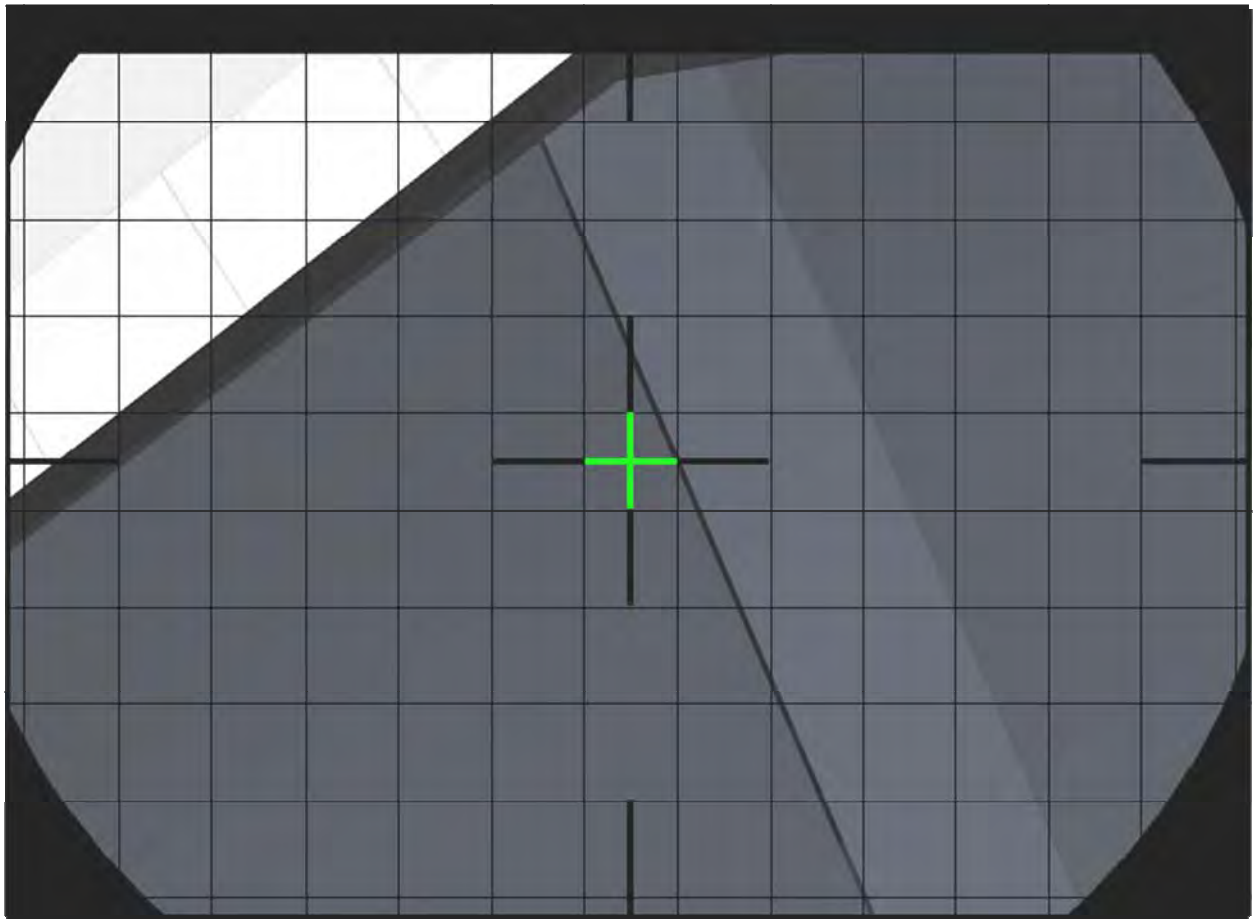
AUTO SEQ – PROCEED (IN PROG lt on)

Section 1b (01:05)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
10P	**-1055**	**+293**	**-373**	**273**	**322**	**63**		
11P	**-1020**	**+265**	**-407**	**268**	**308**	**95**		

When AUTO SEQ READY lt – on:
L10(VTR) STOP pb – push (no red ●)

A7U √DTV ← PL2
PAN to match LDRI view shown below (LOW RATE within 10°)



LDRI: +110 (right), -88

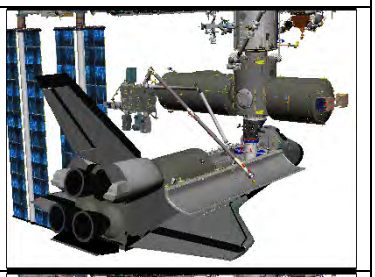
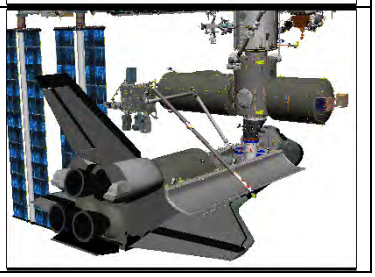
√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

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

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 1c (01:20)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
11P	**-1020**	**+265**	**-407**	**268**	**308**	**95**		
12P	**-1104**	**+321**	**-383**	**274**	**305**	**101**		

When AUTO SEQ READY lt – on:

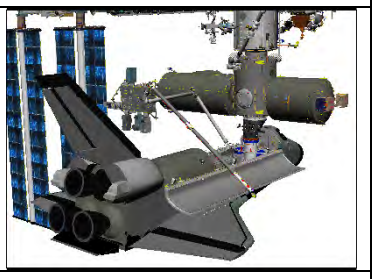
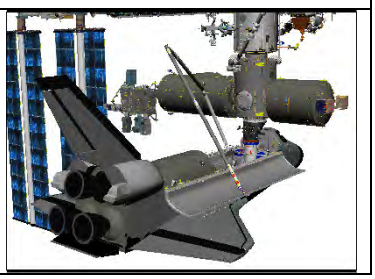
L10(VTR) STOP pb – push (no red ●)

NOTE

Minimum clearance between RMS and JPM is 25 inches between points 13 and 14. Monitor with Tip Elbow(SPDM, LEE) and Camera A(Elbow)

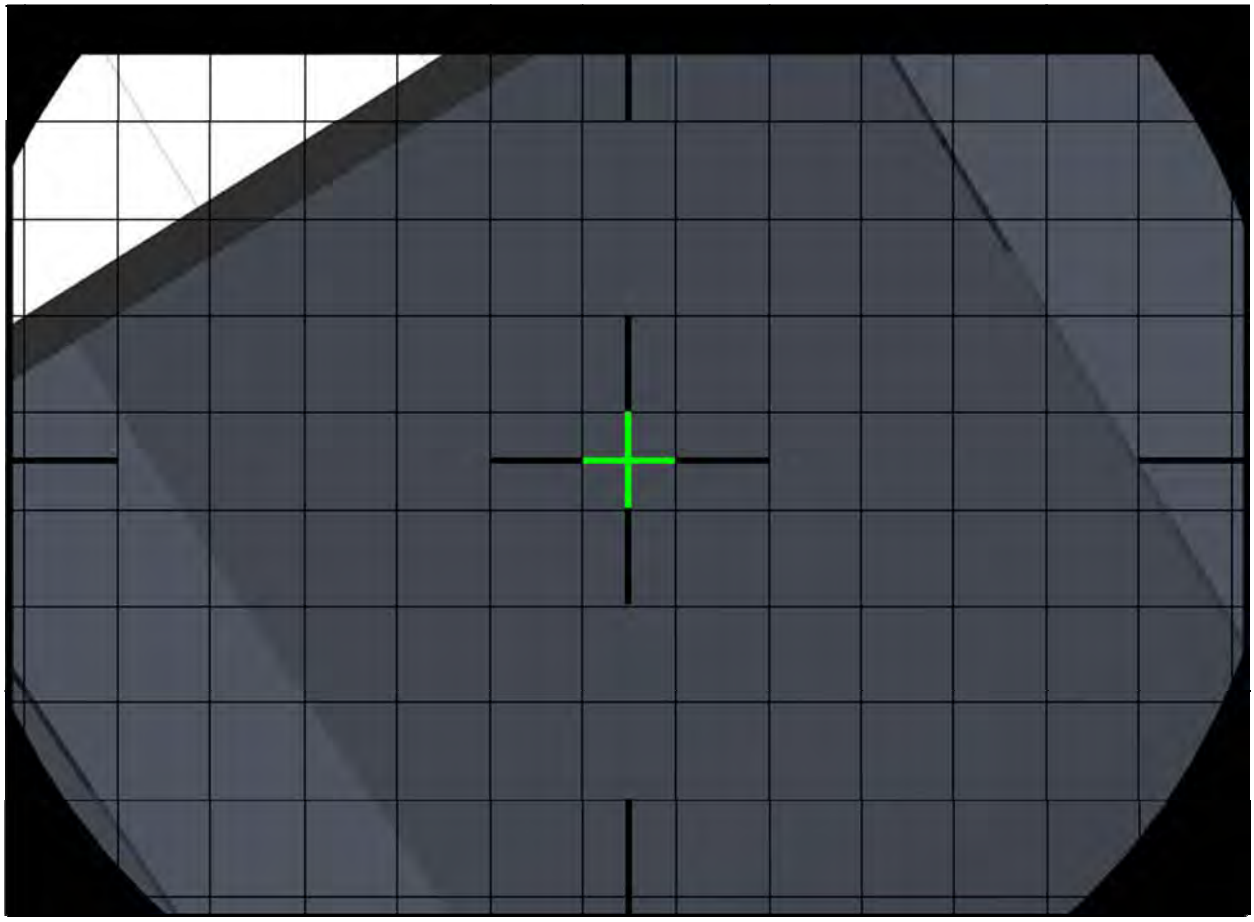
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 1d (01:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
12P	**-1104**	**+321**	**-383**	**274**	**305**	**101**		
13	-1180	+310	-395	277	309	116		
14P	**-1106**	**+278**	**-397**	**275**	**323**	**154**		

7. <u>STBD LDRI ACAS, SECTION 1d</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10)



LDRI: +162 (right), -130 (down)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

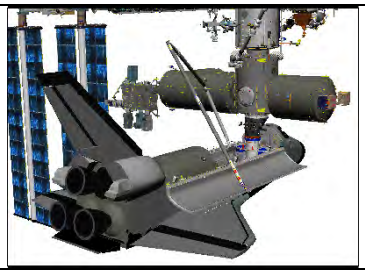
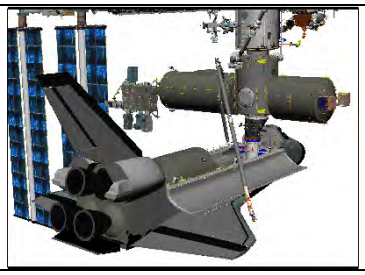
<u>NOTE</u>

Minimum clearance between RMS and JPM is 19 inches at point 16. Monitor with Tip Elbow(SPDM) and Camera A(Elbow)

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

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 1d (02:25)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
14P	**-1106**	**+278**	**-397**	**275**	**323**	**154**		
15	-1225	+417	-390	288	323	154		
16	-1219	+419	-386	295	327	164		
17	-1250	+448	-385	296	327	164		
18P	**-1327**	**+464**	**-389**	**302**	**327**	**164**		

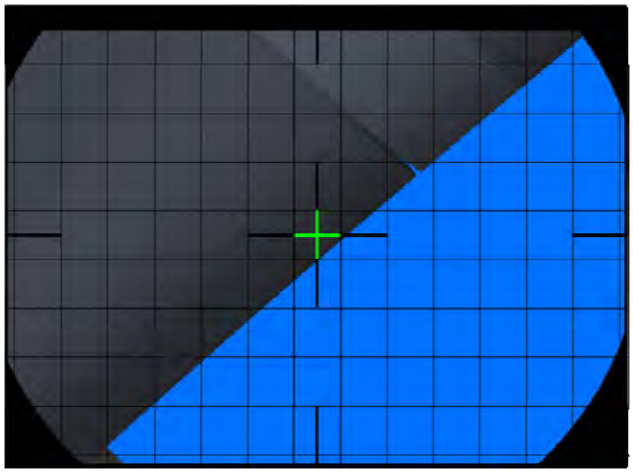
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

CAMR CMD PAN/TILT – LOW RATE

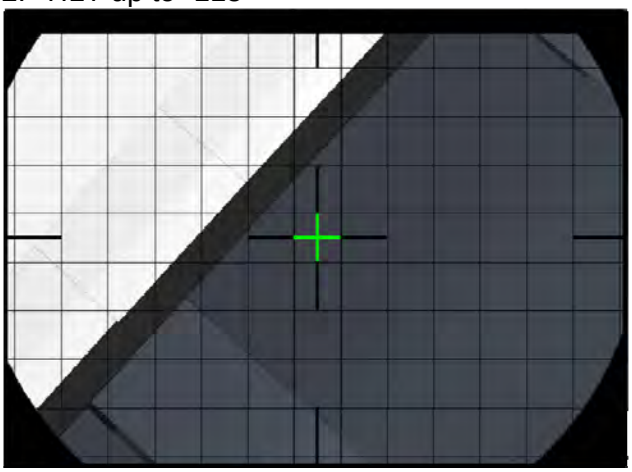
PAN/TILT as shown to match LDRI views below

1. PAN left to +120



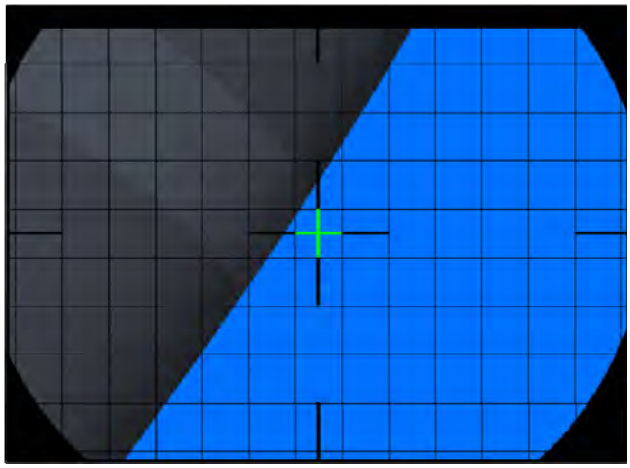
LDRI: +120, -130

2. TILT up to -115



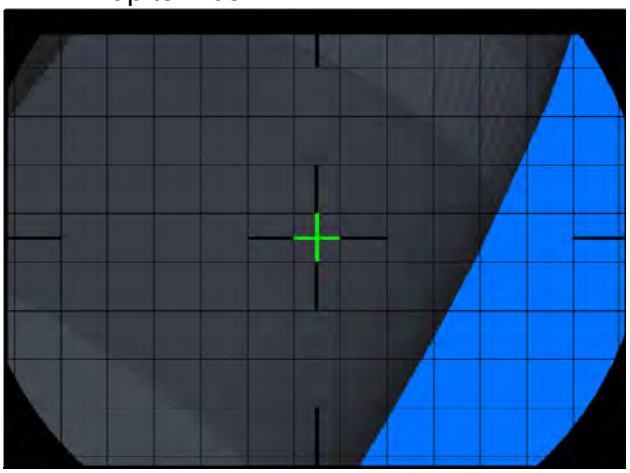
LDRI: +120, -115

3. PAN left to +100



LDRI: +100, -115

4. TILT up to -105



LDRI: +100, -105

√MCC to verify correct coverage
Note PAN/TILT: _____, _____

L10(VTR) STOP pb – push (no red ●)

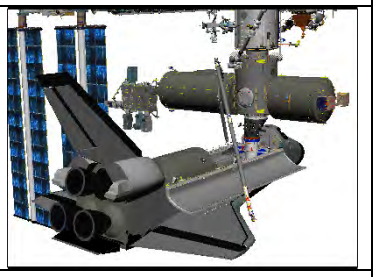
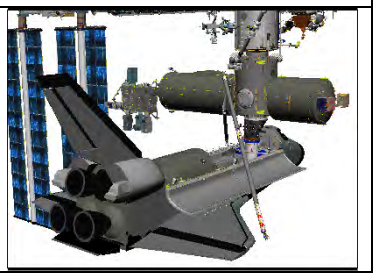
Remove TAPE and replace with fresh one.

NOTE
Carry the old TAPE to the Worldmap machine for download to .avi file

A7U VID OUT – not DTV
VID IN – not PL2

AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 2 (00:55)

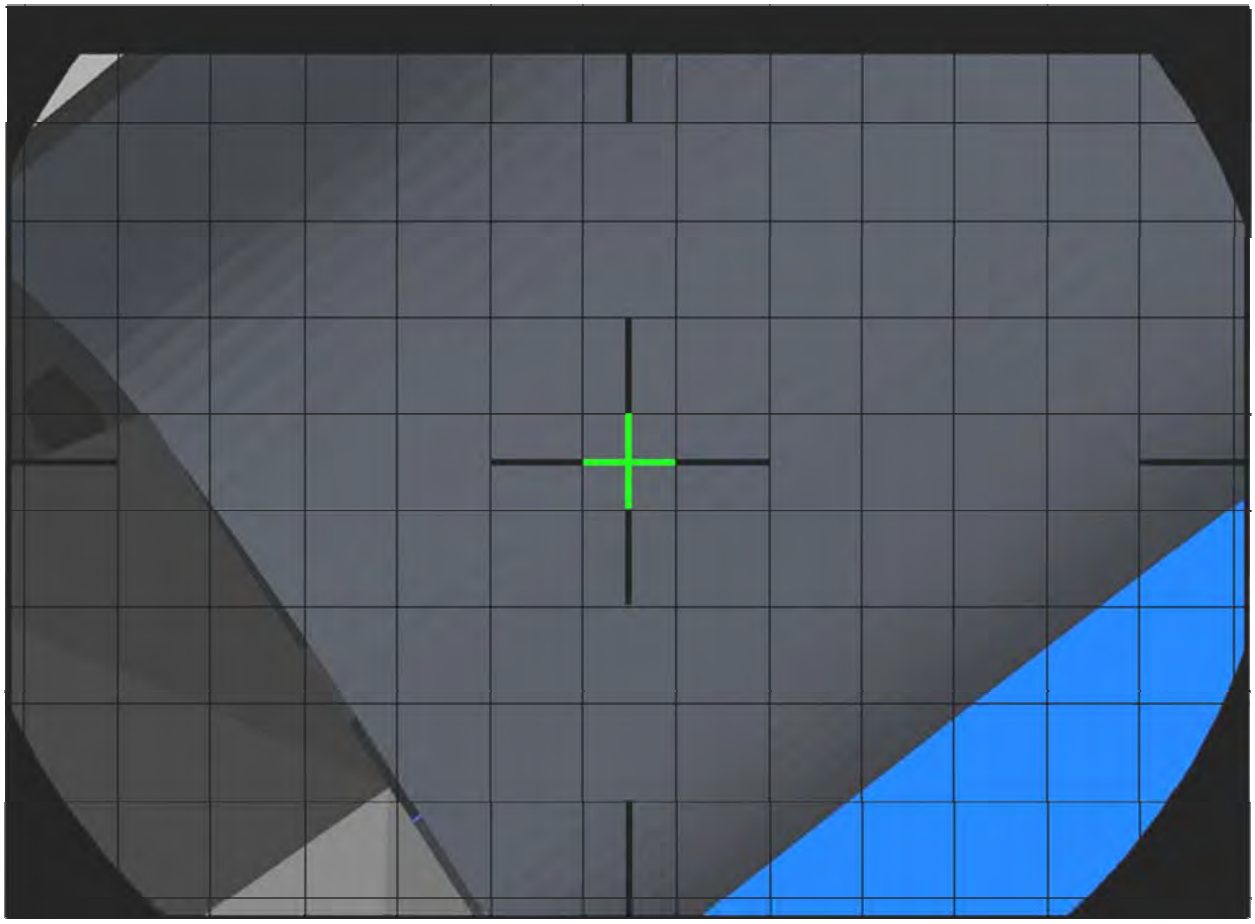
Pt	X	Y	Z	PITCH	YAW	ROLL	●	
18P	**-1327**	**+464**	**-389**	**302**	**327**	**164**		
19	-1341	+495	-380	304	321	168		
20P	**-1342**	**+517**	**-355**	**302**	**326**	**164**		

8. STBD LDRI ACAS, SECTION 2

When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +140 (right), -83 (up)

√MCC to verify correct sensor view

Note PAN/TILT: _____, _____

A7U √DTV ← PL2

VID OUT – not DTV

VID IN – not PL2

Section 2 Clearance Views	Cameras
RMS-to-JPM	Tip Elbow(SPDM), A, Elbow
OBSS-to-RCC	RSC, D, C, Elbow

NOTE

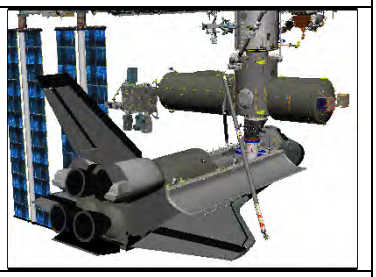
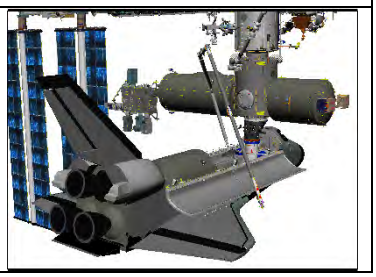
Minimum clearance between RMS and JPM is 28 inches at points 24 and 25

L10(VTR) REC pb – push, hold

PLAY pb – push, simo (red ●)

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 2 (02:45)

Pt	X	Y	Z	PITCH	YAW	ROLL	•	
20P	**-1342**	**+517**	**-355**	**302**	**326**	**164**		
21	-1240	+498	-354	294	315	136		
22	-1160	+422	-338	284	314	111		
23	-1122	+386	-331	280	323	108		
24	-1068	+334	-330	275	330	106		
25P	**-1036**	**+304**	**-328**	**273**	**335**	**111**		

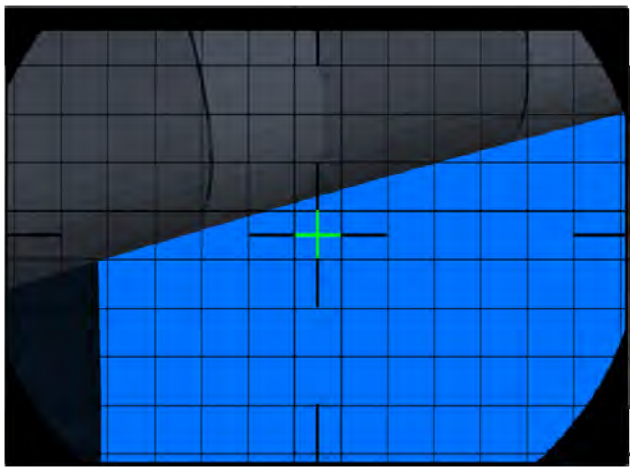
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

CAMR CMD PAN/TILT – LOW RATE

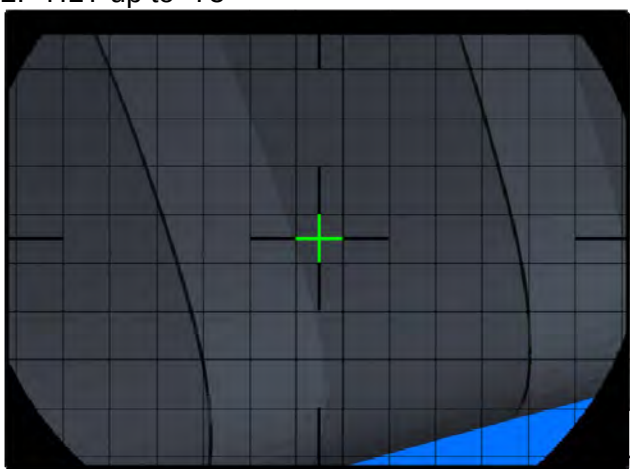
PAN/TILT as shown to match LDRI views below

1. PAN left to +110



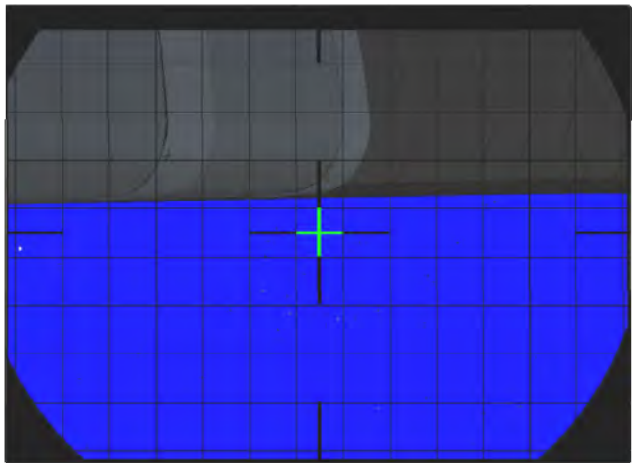
LDRI: +110, -83

2. TILT up to -75



LDRI: +110, -75

3. PAN left to +60



LDRI: +60, -75

√MCC to verify correct coverage
Note PAN/TILT: _____, _____

L10(VTR) STOP pb – push (no red ●)

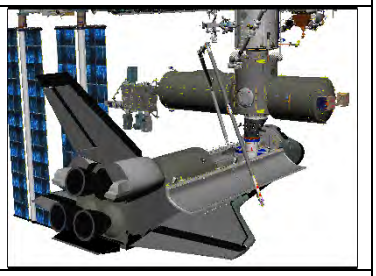
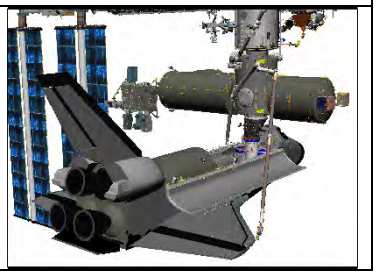
NOTE

Minimum clearance between RMS and JPM is 24 inches between points 25 and 26. Monitor with Tip Elbow(SPDM) and Camera A(Elbow).

At point 27, the clearance between the RMS and Node 2 is 27 inches and between RMS and PMA is 28 inches. Monitor with Tip Elbow(LEE,SPDM) and Camera A(Elbow)

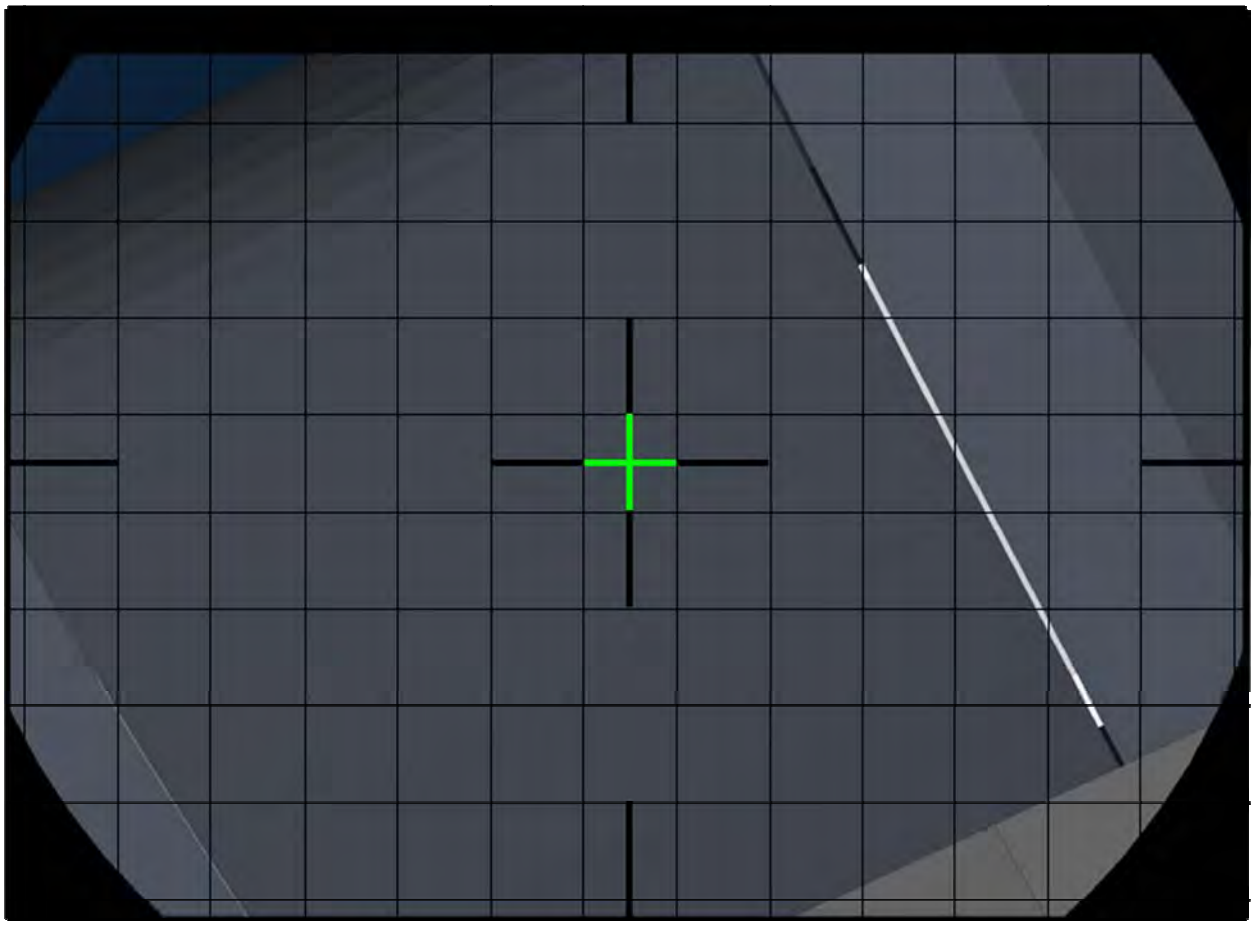
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 3 (02:30)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
25P	**-1036**	**+304**	**-328**	**273**	**335**	**111**		
26	-1066	+376	-193	274	334	111		
27P	**-1053**	**+298**	**-210**	**290**	**354**	**34**		

9. <u>STBD LDRI ACAS, SECTION 3</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LO RATE within 10°)



LDRI: +90 (right), -47 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

Section 3 Clearance Views	Cameras
RMS-to-Node 2/PMA	Tip Elbow (LEE, SPDM), A, Elbow
OBSS-to-RCC	RSC, D, C

NOTE

Clearance between OBSS and RCC is less than 60 inches throughout section 3 (minimum clearance of 43 inches at point 41)

Clearance between RMS and Node 2 and between RMS and PMA is less than 36 inches throughout section 3 with minimum of:

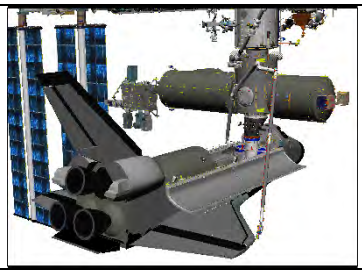
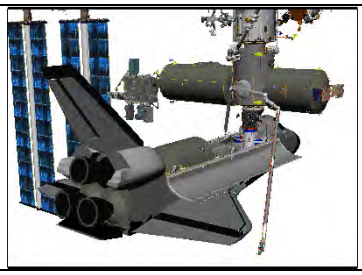
24 inches to Node 2 at point 29
22 inches to PMA 2 at point 32

Points 30-31 are pause points to ensure correct RCC coverage

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

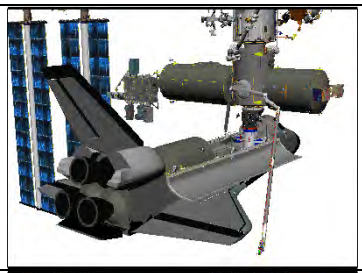
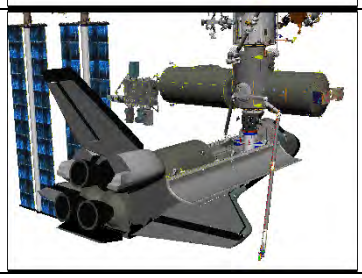
AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 3a (02:00)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
27P	**-1053**	**+298**	**-210**	**290**	**354**	**34**		
28	-1075	+298	-213	293	354	33		
29	-1161	+370	-220	303	349	29		
30P	**-1268**	**+460**	**-220**	**317**	**341**	**23**		

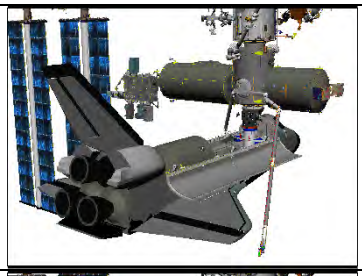
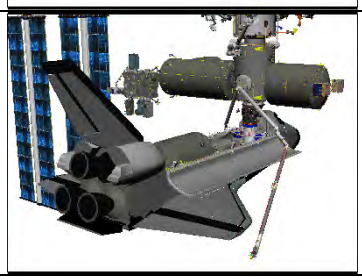
When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 3b (00:30)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
30P	**-1268**	**+460**	**-220**	**317**	**341**	**23**		
31P	**-1288**	**+474**	**-222**	**317**	**341**	**23**		

When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 3c (01:15)

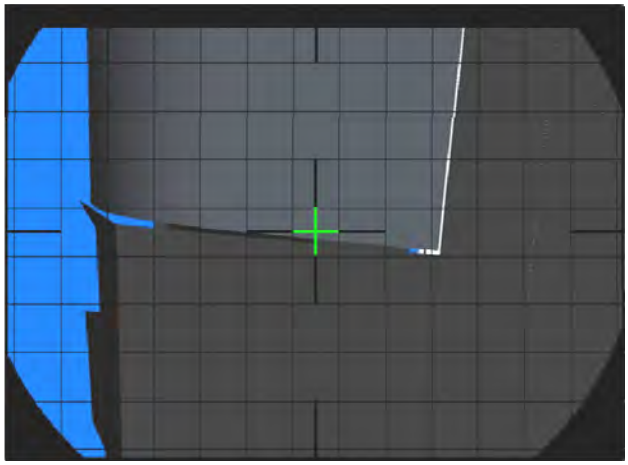
Pt	X	Y	Z	PITCH	YAW	ROLL	●	
31P	**-1288**	**+474**	**-222**	**317**	**341**	**23**		
32P	**-1342**	**+481**	**-221**	**337**	**341**	**23**		

When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

CAMR CMD PAN/TILT – LOW RATE

TILT down to -65 to match LDRI view below



LDRI: +90, -65

√MCC to verify correct coverage

Note PAN/TILT: _____, _____

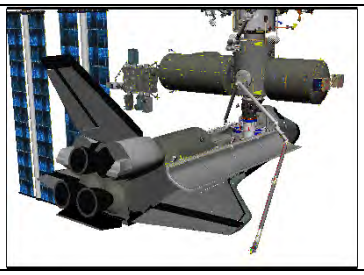
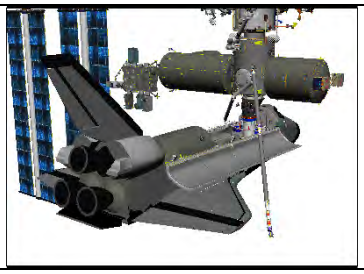
L10(VTR) STOP pb – push (no red ●)

A7U VID OUT – not DTV

VID IN – not PL2

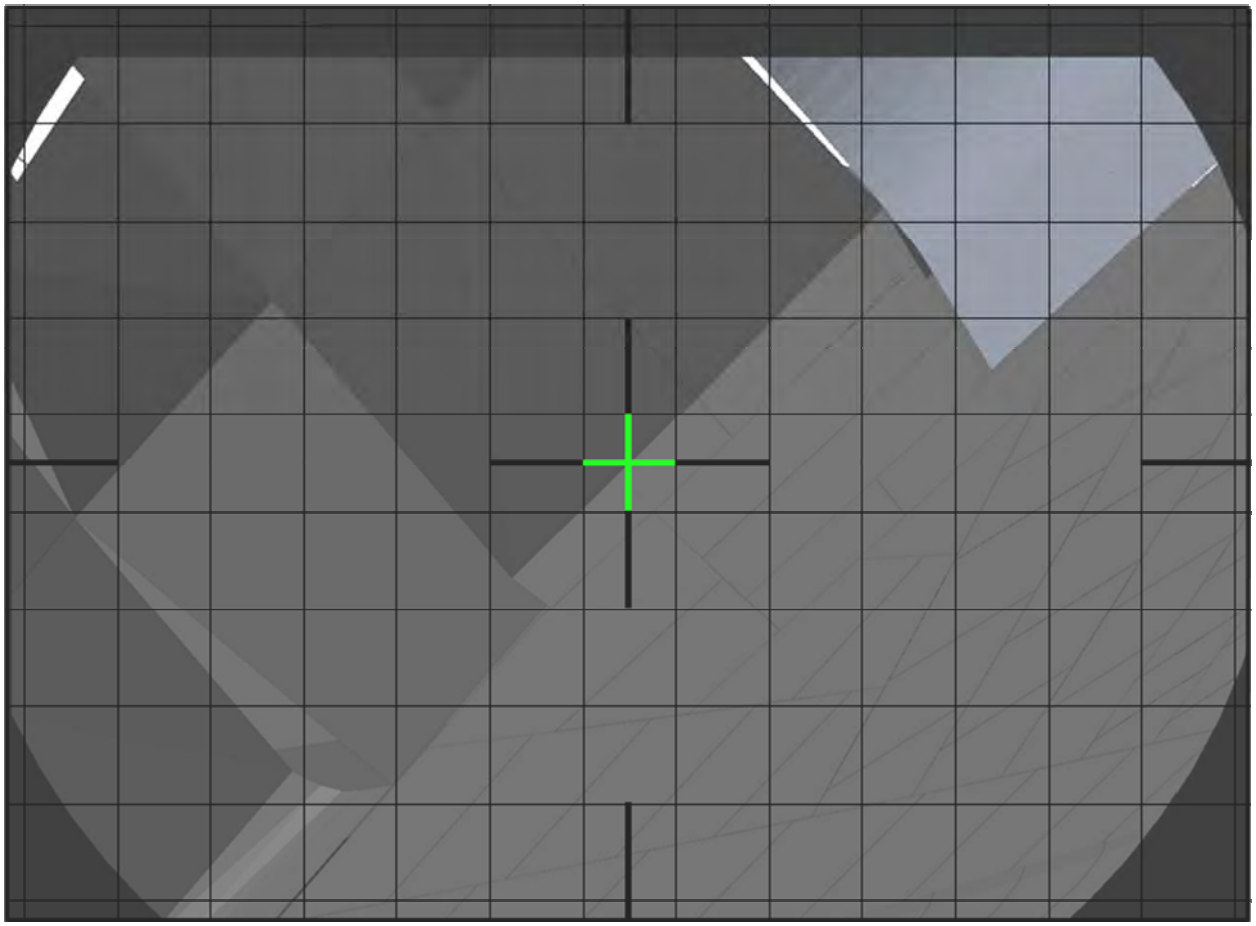
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 4 (02:55)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
32P	**-1342**	**+481**	**-221**	**337**	**341**	**23**		
33	-1300	+521	-193	307	341	141		
34P	**-1333**	**+541**	**-285**	**304**	**334**	**155**		

10. <u>STBD LDRI ACAS, SECTION 4</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +170 (right), -61 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

Section 4 Clearance Views	Cameras
RMS-to-JPM/Node 2/PMA	Tip Elbow (LEE), A, Elbow
OBSS-to-RCC	RSC, D, C

<u>NOTE</u>

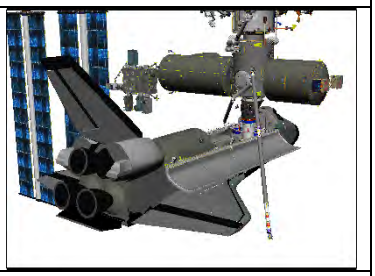
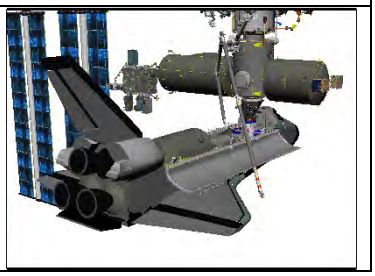
Minimum clearances between RMS and Node 2 (36 inches) and RMS and PMA (37 inches) occur at point 35

Minimum clearances between the RMS and JPM are:
20 inches at point 37
24 inches at point 39

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

AUTO SEQ – PROCEED (IN PROG lt on)

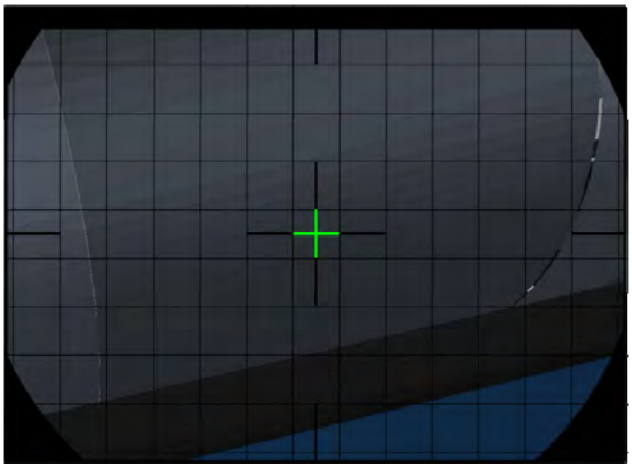
STBD ACAS section 4a (02:45)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
34P	**-1333**	**+541**	**-285**	**304**	**334**	**155**		
35	-1281	+528	-295	305	331	157		
36	-1241	+505	-295	298	331	157		
37	-1173	+438	-293	292	332	157		
38	-1166	+448	-296	285	335	154		
39	-1083	+350	-291	279	338	151		
40P	**-1058**	**+335**	**-293**	**275**	**340**	**145**		

When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
CAMR CMD PAN/TILT – LOW RATE

TILT down to -70 to match LDRI view below



LDRI: +170, -70

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

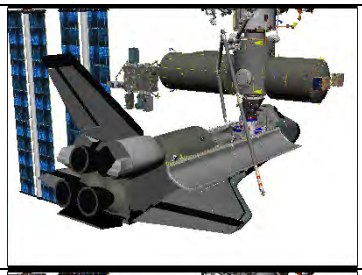
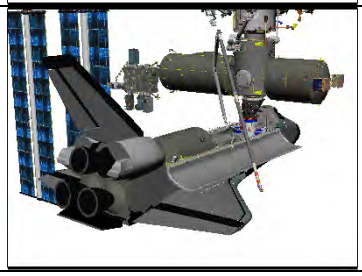
A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

NOTE

Clearance between RMS and JPM is 18 inches at point 41. Monitor with Tip Elbow(SPDM) and Camera A(Elbow)

AUTO SEQ – PROCEED (IN PROG lt on)

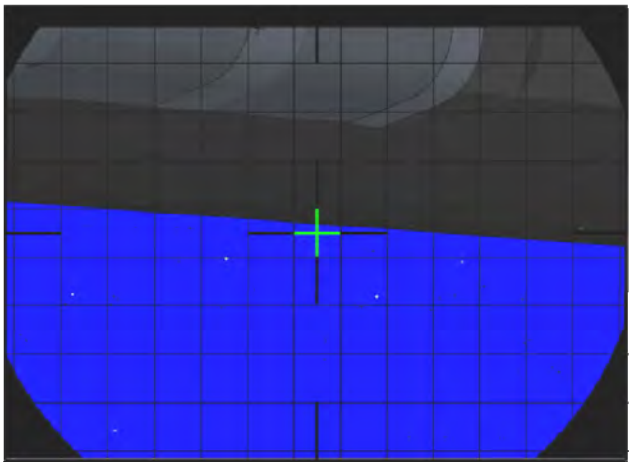
STBD ACAS section 4b (00:45)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
40P	**-1058**	**+335**	**-293**	**275**	**340**	**145**		
41P	**-1021**	**+303**	**-294**	**273**	**340**	**140**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)

A7U √DTV ← PL2
CAMR CMD PAN/TILT – LOW RATE

PAN left to 95 to match LDRI view below



LDRI: +95, -70

√MCC to verify correct coverage

L10(VTR) STOP pb – push (no red ●)

Remove TAPE and replace with fresh one

NOTE

Carry the old TAPE to the Worldmap machine for download to .avi file

11. CONFIGURE FOR STBD SURVEY PART 2

RHC √RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 2, ENTER (READY lt on)

* If unable to enter AUTO mode (no AUTO READY lt): *
* √MCC *

SM 94 PDRS CONTROL

√START PT, ITEM 17: 42

SM 169 PDRS STATUS

Monitor ACAS progress

NOTE

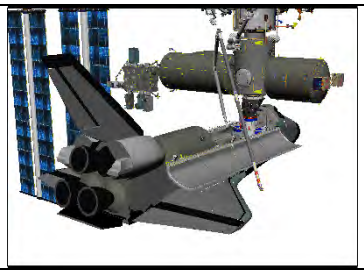
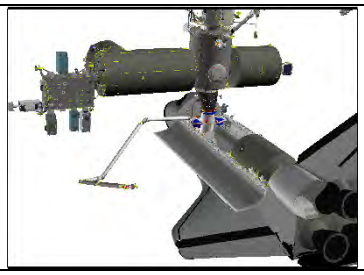
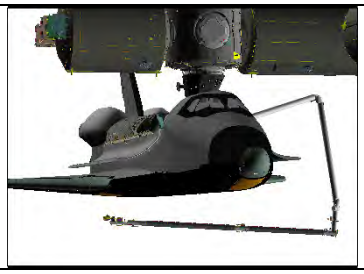
Minimum clearances between RMS and JPM are 19 inches at point 42 and 53 inches between points 43 and 44. Monitor with Camera A and Tip Elbow(SPDM).

Minimum clearance between OBSS and MPLM is 54 inches at point 43. Monitor with Camera C(D).

Clearance between OBSS and Veritcal Stabilizer is greater than 8 feet but can be monitored with Camera B(C)

AUTO SEQ – PROCEED (IN PROG lt on)

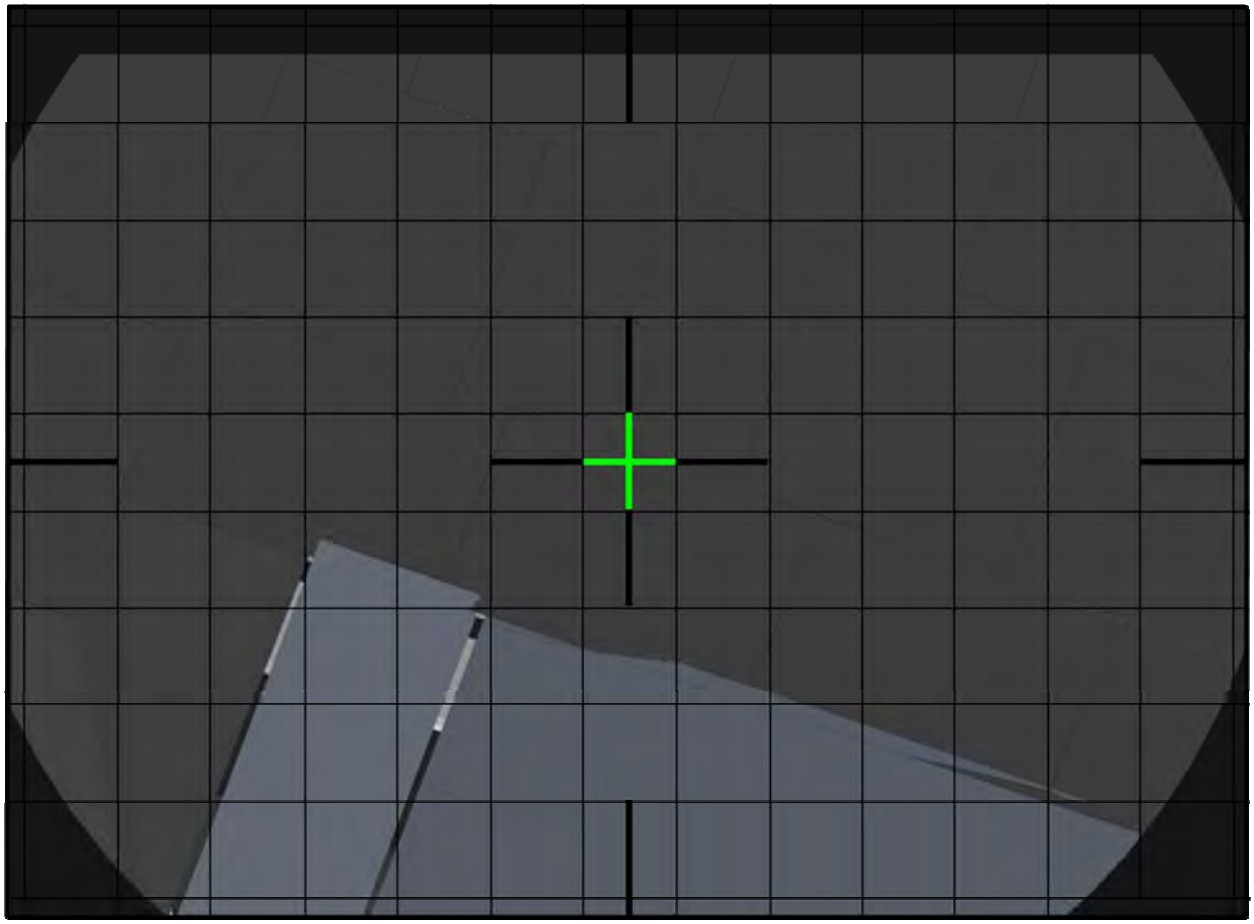
Configure for section 5 (18:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
42P	**-1021**	**+303**	**-294**	**273**	**340**	**140**		
43	-1285	+500	-585	350	280	240		
44	-1225	+54	-585	36	295	290		
45	-1267	-200	-570	35	318	294		
46	-1406	-625	-549	24	1	274		
47	-1379	-587	-15	330	357	273		
48	-1192	-107	-68	333	310	336		
49P	**-903**	**+180**	**-212**	**31**	**278**	**24**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)

12. <u>STBD LDRI ACAS, SECTION 5</u>

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +52 (left), -72 (down)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

Section 5-7 Clearance Views	Cameras
RMS-to-JPM	B, A
RMS-to-PLBD	Elbow, A, B
OBSS-to-RCC	RSC, S1 LOOB

RHC √RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 3, ENTER (READY lt on)

* If unable to enter AUTO mode (no AUTO READY lt): *
* √MCC *
* *
* When READY lt on: *
* √MCC to reverify correct sensor view *

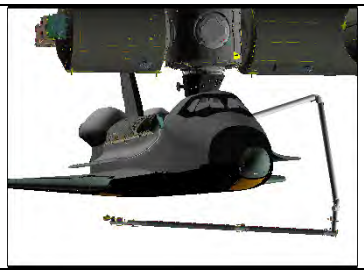
SM 94 PDRS CONTROL
√START PT, ITEM 17: 50

SM 169 PDRS STATUS
Monitor ACAS progress

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

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 5 (01:45)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
50P	**-903**	**+180**	**-212**	**31**	**278**	**24**		
51	-1008	+201	-214	15	291	357		
52	-1062	+224	-214	15	291	357		
53P	**-1128**	**+281**	**-208**	**11**	**298**	**345**		

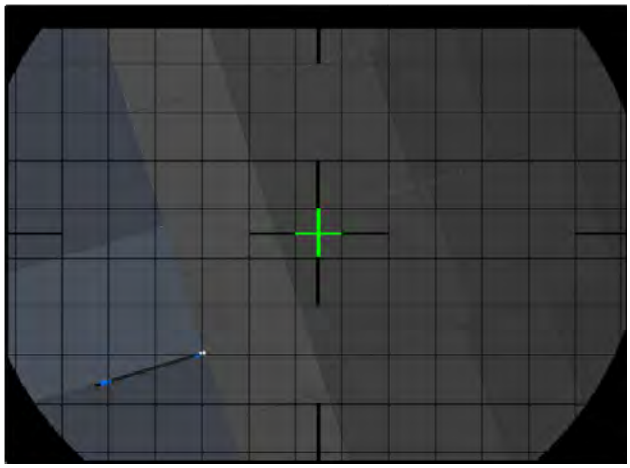
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

CAMR CMD PAN/TILT – LOW RATE

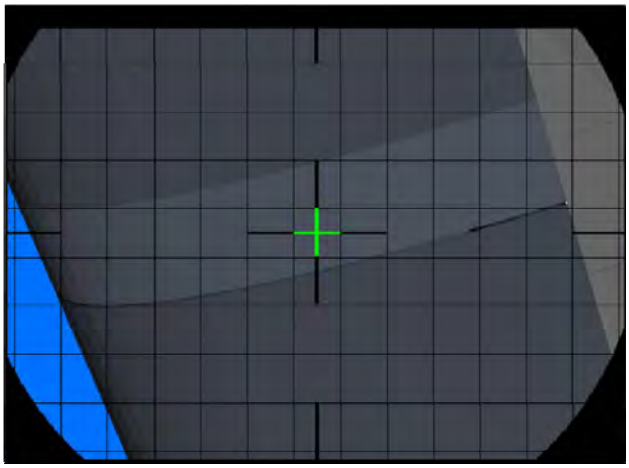
PAN/TILT as shown to match LDRI views below

1. PAN left to +43



LDRI: +43, -72

2. TILT down to -110



LDRI: +43, -110

√MCC to verify correct coverage

L10(VTR) STOP pb – push (no red ●)

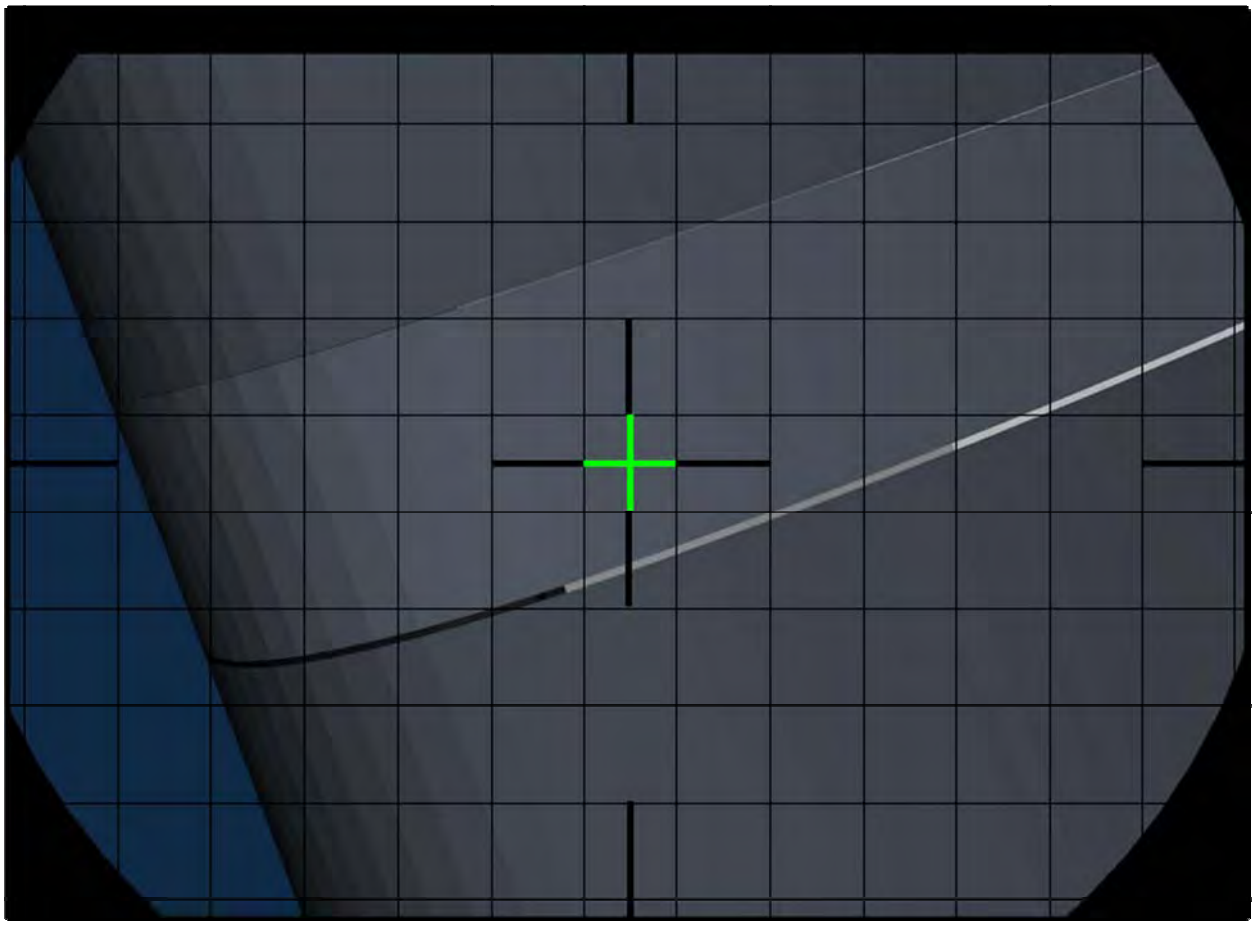
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 6 (00:50)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
53P	**-1128**	**+281**	**-208**	**11**	**298**	**345**		
54	-1060	+295	-237	18	298	7		
55P	**-1071**	**+307**	**-245**	**25**	**299**	**15**		

13. <u>STBD LDRI ACAS, SECTION 6</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +23 (left), -82 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

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

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 6a (01:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
55P	**-1071**	**+307**	**-245**	**25**	**299**	**15**		
56	-1043	+280	-238	18	298	7		
57	-1007	+255	-238	18	299	9		
58P	**-924**	**+228**	**-241**	**21**	**302**	**14**		

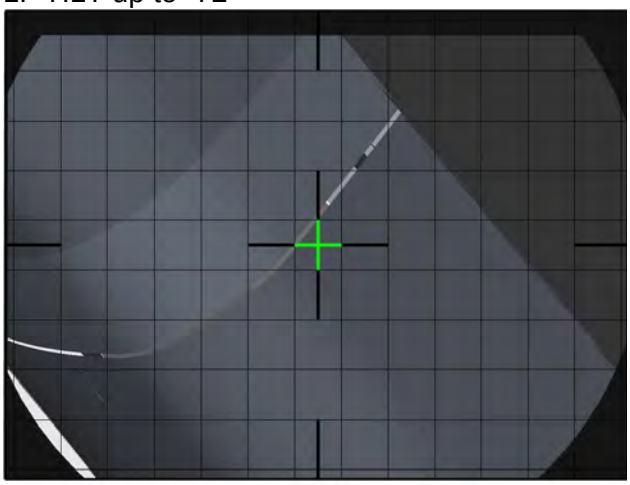
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

CAMR CMD PAN/TILT – LOW RATE

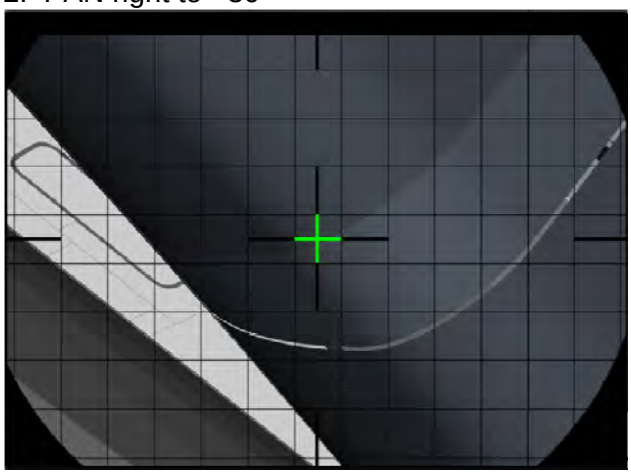
PAN/TILT as shown to match LDRI views below

1. TILT up to -72



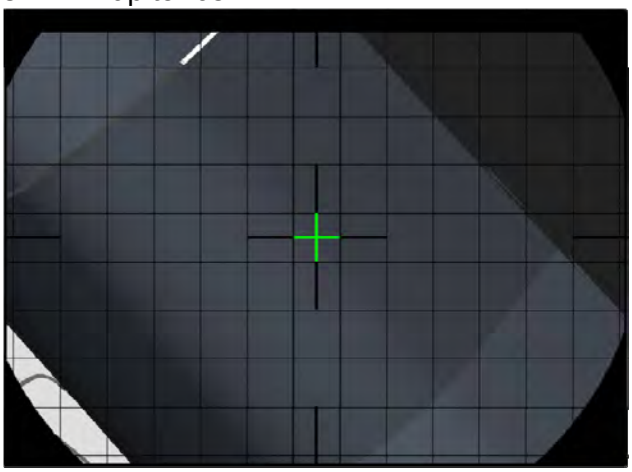
LDRI: +23, -72

2. PAN right to +30



LDRI: +30, -72

3. TILT up to -65



LDRI: +30, -65

√MCC to verify correct sensor coverage and view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

NOTE
Clearance between RMS and JPM is 32 inches at point 59.
Monitor with Camera B

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 6b (00:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
58P	**-924**	**+228**	**-241**	**21**	**302**	**14**		
59P	**-892**	**+222**	**-235**	**15**	**301**	**11**		

When AUTO SEQ READY lt – on:
L10(VTR) STOP pb – push (no red ●)

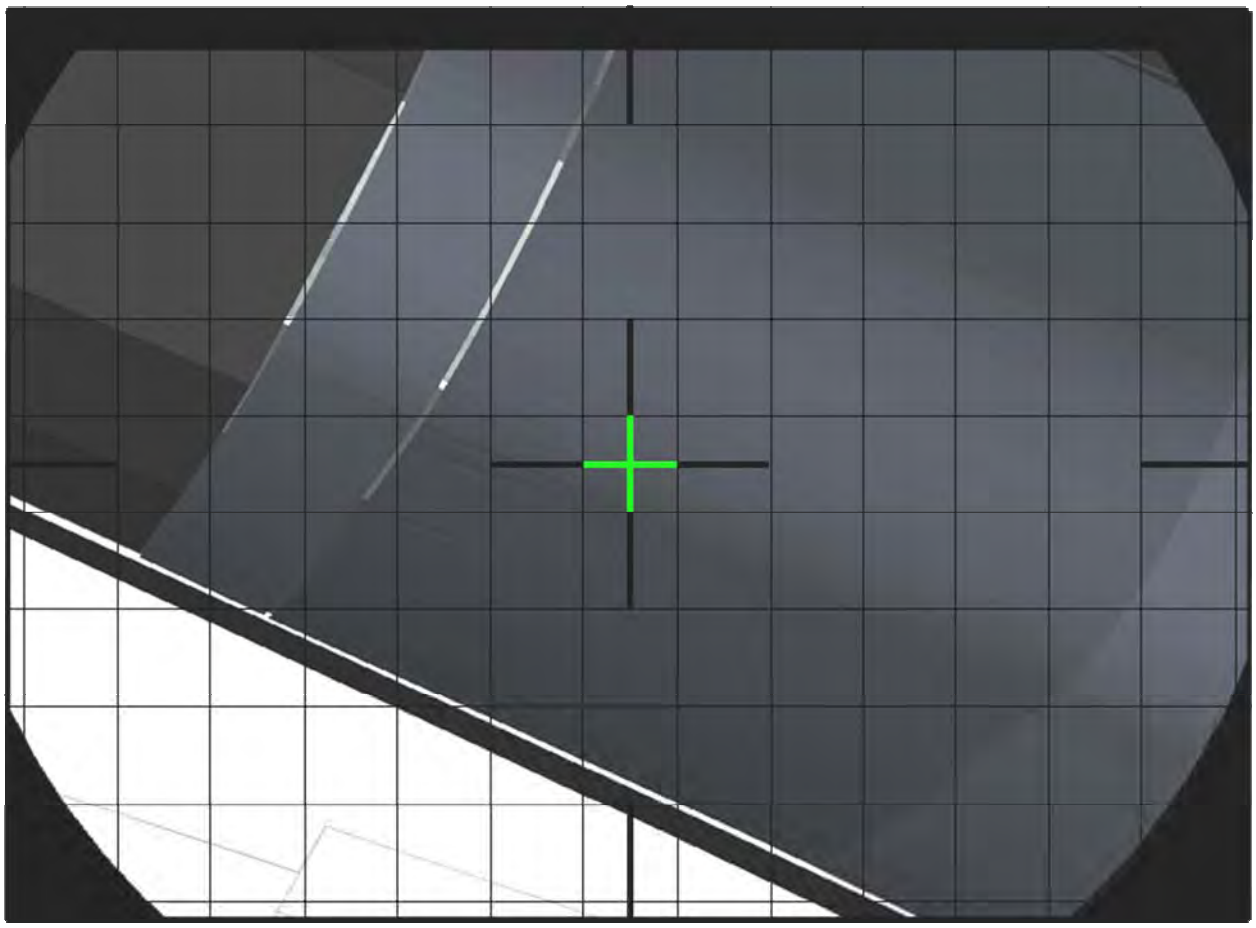
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 7 (01:30)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
59P	**-892**	**+222**	**-235**	**15**	**301**	**11**		
60P	**-903**	**+241**	**-246**	**67**	**288**	**61**		

14. <u>STBD LDRI ACAS, SECTION 7</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +47 (right), -49 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

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

AUTO SEQ – PROCEED (IN PROG lt on)

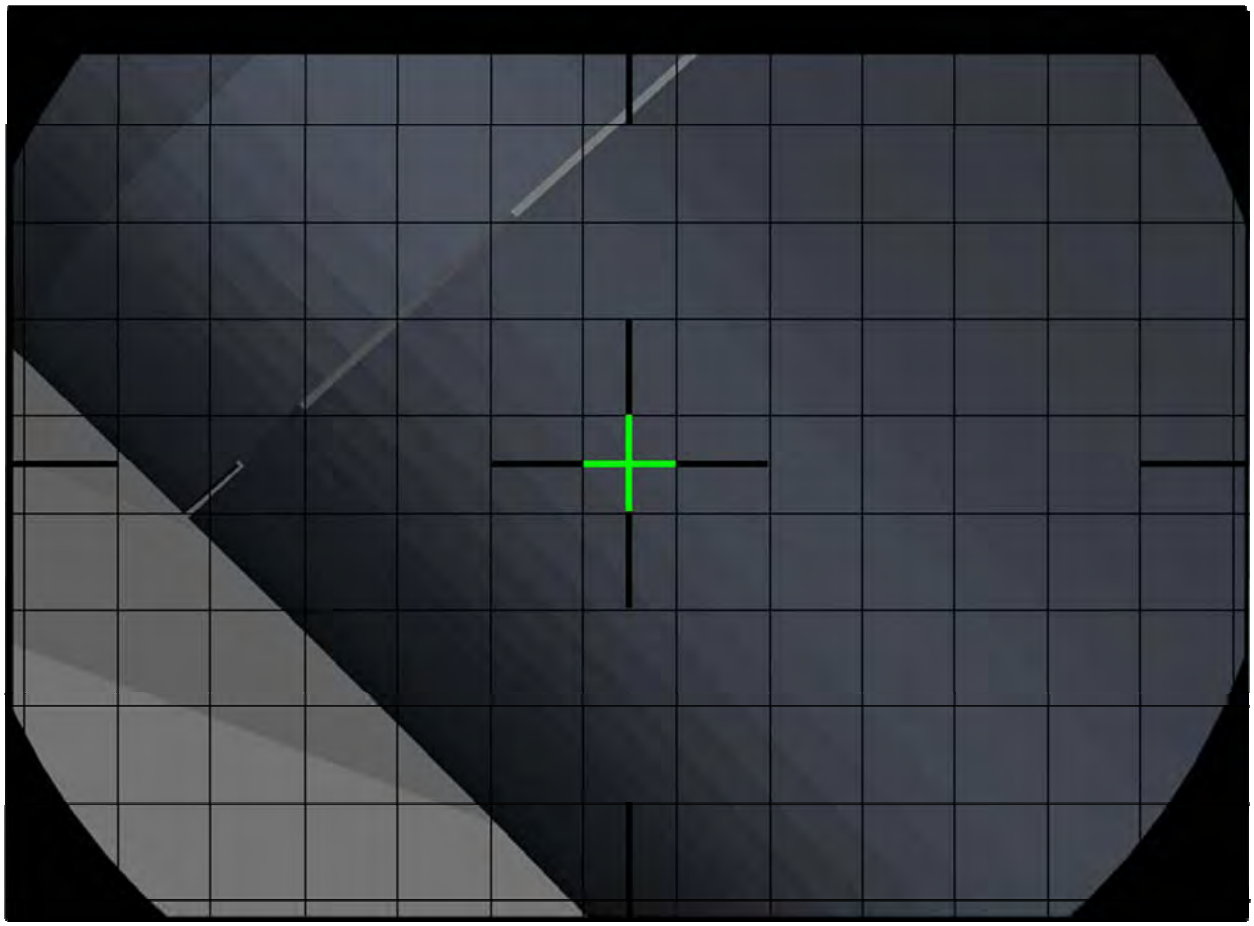
STBD ACAS section 7a (01:05)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
60P	**-903**	**+241**	**-246**	**67**	**288**	**61**		
61P	**-1020**	**+276**	**-246**	**67**	**288**	**61**		

When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

PAN/TILT to match LDRI views shown below (LOW RATE within 10°)



LDRI: +35 (left), -60 (down)

√MCC to verify correct sensor view

Note PAN/TILT: _____, _____

A7U √DTV ← PL2

VID OUT – not DTV

VID IN – not PL2

AUTO SEQ – PROCEED (IN PROG lt on)

STBD ACAS section 7b (00:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
61P	**-1020**	**+276**	**-246**	**67**	**288**	**61**		
62P	**-1044**	**+306**	**-248**	**67**	**288**	**61**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)

L10(VTR) STOP pb – push (no red ●)

Remove TAPE and replace with fresh one

NOTE

Carry the old TAPE to the Worldmap machine for download to .avi file. When download complete, perform Worldmap ultrabay hard drive swap. Transfer old hard drive to ISS machine

OBSS DOCKED LDRI RCC SURVEY – NOSE CAP

WARNING
Port PLBD radiator must be stowed

1. SETUP

SM 94 PDRS CONTROL
√PL ID, ITEM 3: 2
√INIT ID, ITEM 24: 2

AUTO MODE – ITEM 13 +5 +6 +7 EXEC
√AUTO MODE 4, ITEM 16: 4

2. INHIBIT NOSE JETS

A6U √DAP: FREE

NOTE
Expect DAP RECONFIG message after FRCS manifold 5 status overridden to close

GNC 23 RCS
RCS FWD – ITEM 1 EXEC (*)
MANF VLVS OVRD 1 – ITEM 40 EXEC (CL)
2 – ITEM 41 EXEC (CL)
3 – ITEM 42 EXEC (CL)
4 – ITEM 43 EXEC (CL)
5 – ITEM 44 EXEC (CL)

3. MNVR TO NOSE CAP START POSN

Nose Cap Clearance Views	Cameras
OBSS-to-Orbiter	RSC, S1 LOOB(P1 LOOB, JEM-EF Fwd), Elbow
RMS-to-JPM	B, A
RMS-to-PLBD	A, B, Elbow

RHC √RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 4, ENTER (READY lt on)

* If unable to enter AUTO mode (no AUTO READY lt): *
* √MCC *

SM 94 PDRS CONTROL
√START PT, ITEM 17: 63

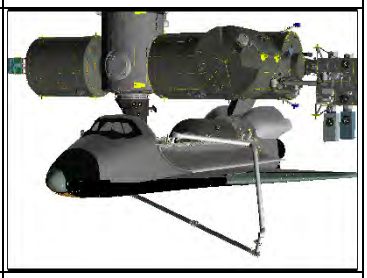
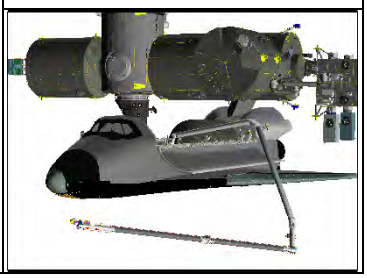
SM 169 PDRS STATUS
Monitor ACAS progress

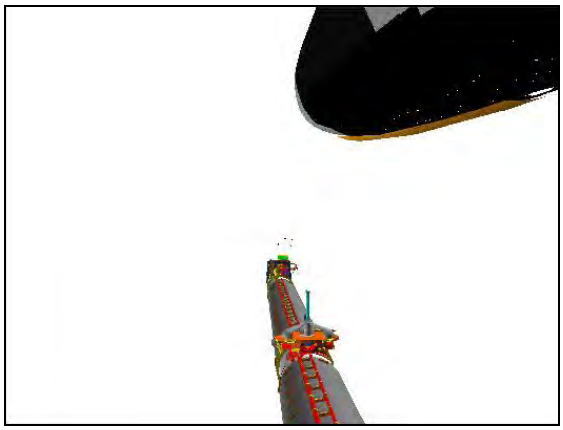
NOTE

ACAS, pause pts **shaded in bold**, ● col indicates data recording (black = VTR on)

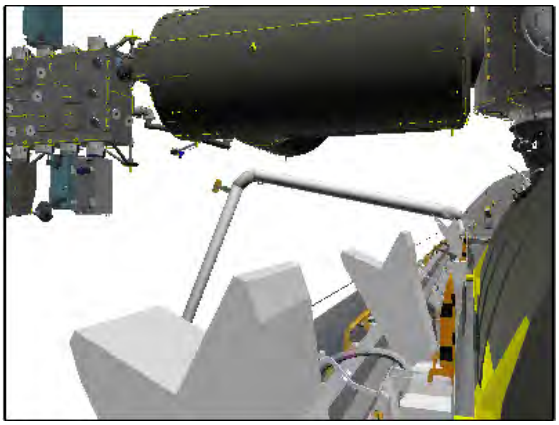
AUTO SEQ – PROCEED (IN PROG lt on)

Mnvr to NOSE CAP START posn: (09:15)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
63P	**-1044**	**+306**	**-248**	**67**	**288**	**61**		
64	-1060	+310	-194	56	284	42		
65	-725	-226	+190	276	315	273		
66	-234	-149	-170	186	314	216		
67P	**-236**	**-70**	**-244**	**169**	**316**	**191**		



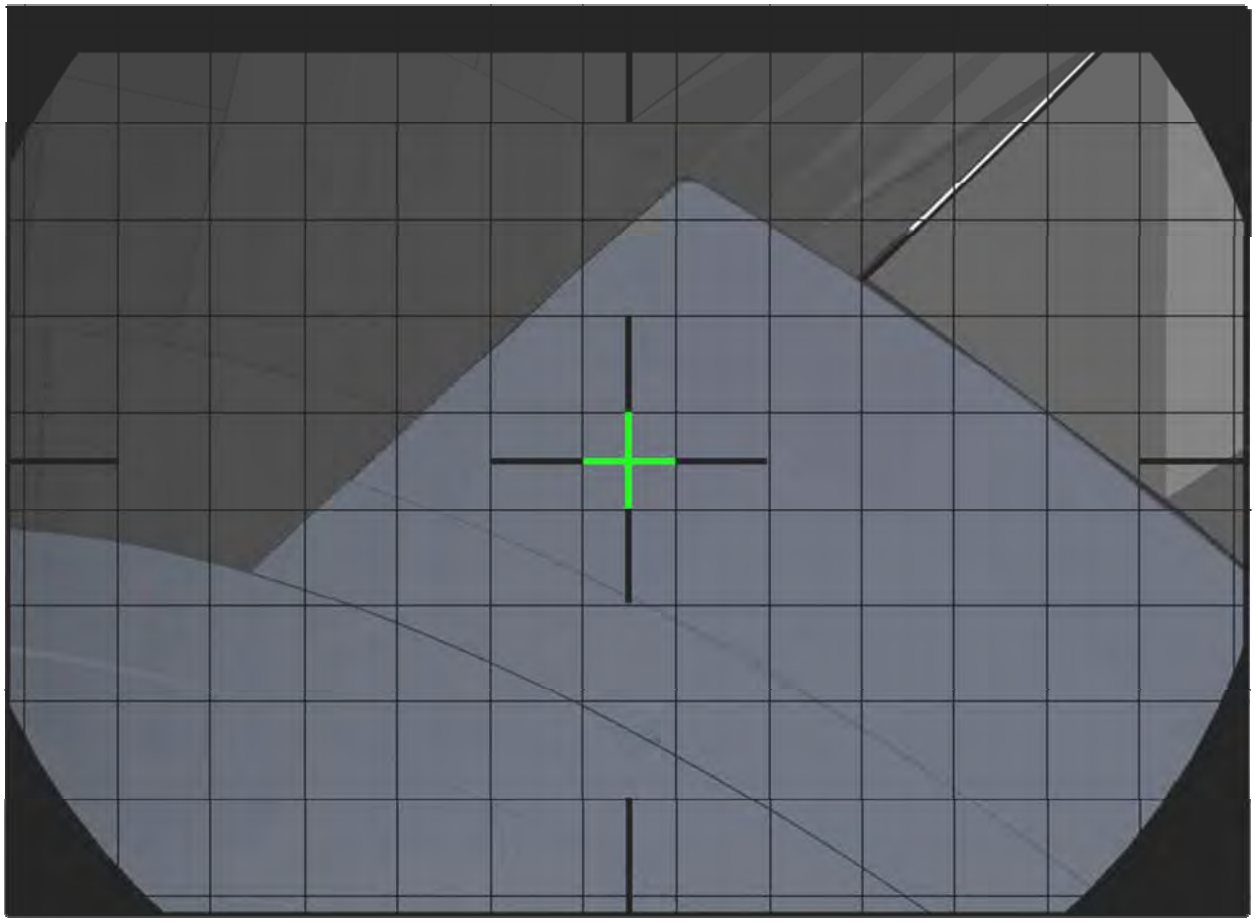
RSC



CCTV B (-20,0)

4. <u>NOSE CAP LDRI ACAS, SECTION 1</u>
When AUTO SEQ IN PROG lt – off:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +60 (right), -95 (down)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

For survey scan pattern, refer to <u>OBSS DOCKED LDRI SCAN PATTERN CUE CARD – NOSE CAP</u>

MODE – AUTO 1, ENTER (READY lt on)

```
*  If unable to enter AUTO mode (no AUTO READY lt): *
*     √MCC                                          *
*                                                   *
*       When READY lt on:                           *
*          √MCC to reverify correct sensor view     *
```

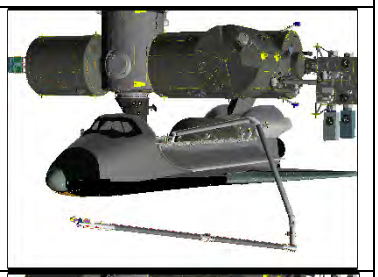
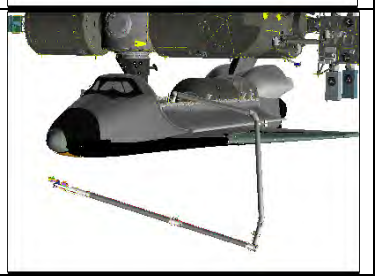
SM 94 PDRS CONTROL
√START PT, ITEM 17: 68

SM 169 PDRS STATUS
Monitor ACAS progress

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

AUTO SEQ – PROCEED (IN PROG lt on)

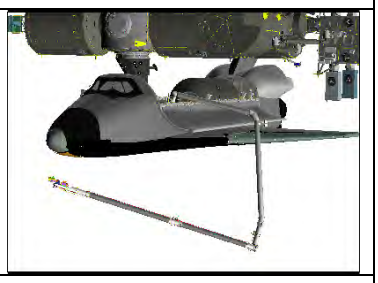
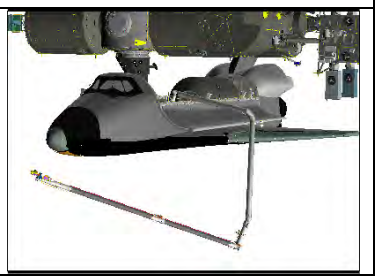
NOSE CAP ACAS section 1 (01:10)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
68P	**-236**	**-70**	**-244**	**169**	**316**	**191**		
69P	**-237**	**-2**	**-240**	**155**	**321**	**170**		

When AUTO SEQ READY lt – on:
L10(VTR) STOP pb – push (no red ●)

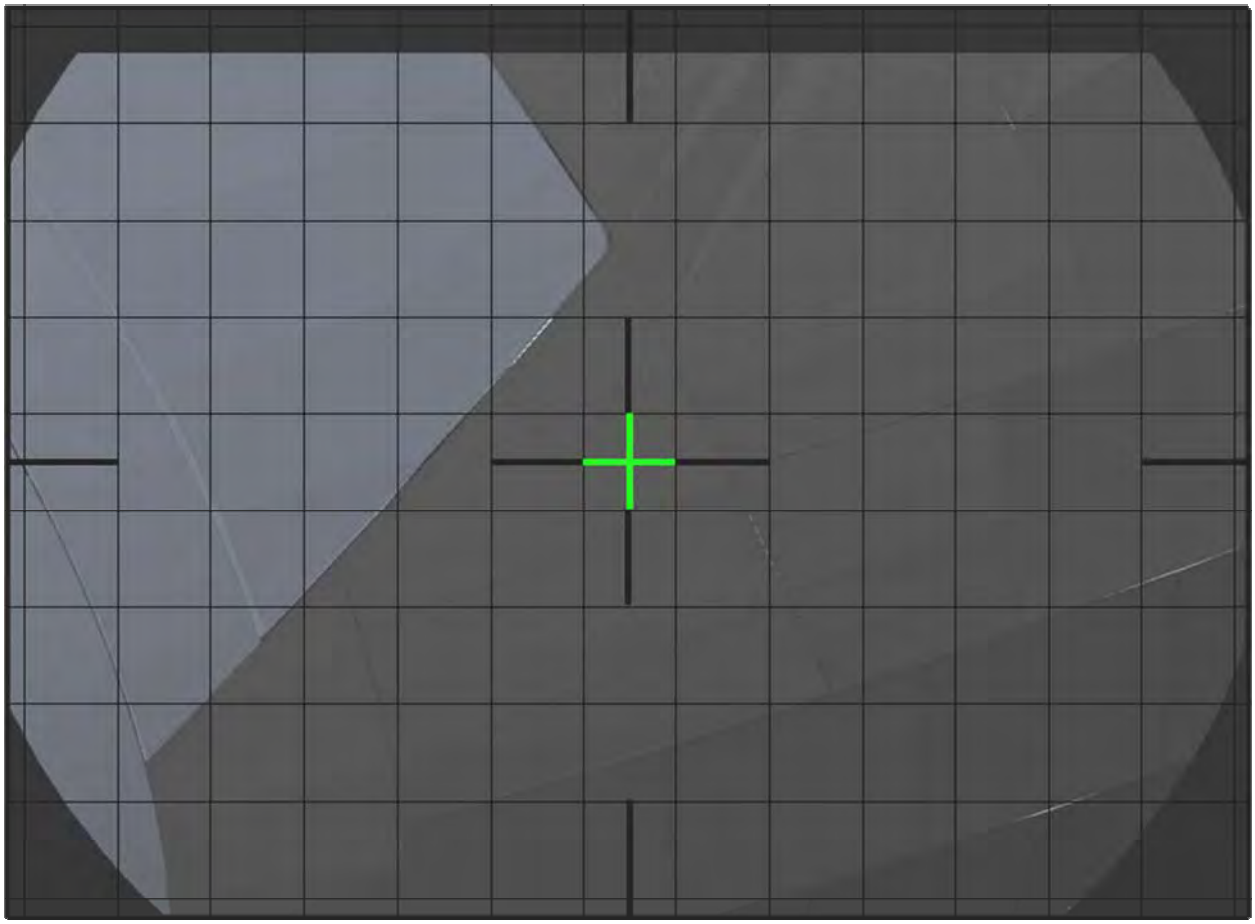
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 2 (00:40)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
69P	**-237**	**-2**	**-240**	**155**	**321**	**170**		
70	-237	+47	-240	159	319	177		
71P	**-227**	**+44**	**-251**	**153**	**320**	**157**		

5. <u>NOSE CAP LDRI ACAS, SECTION 2</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +60, -70 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

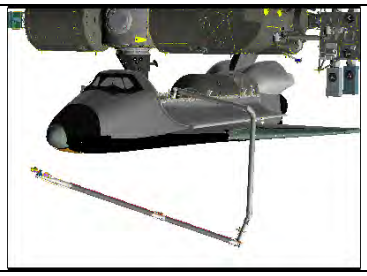
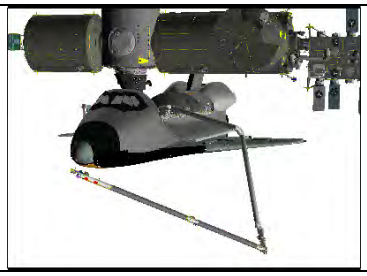
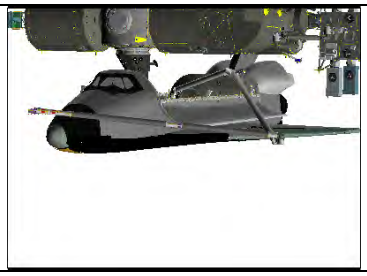
L10(VTR) REC pb – push, hold
PLAY pb – push, simo (red ●)

NOTE

Minimum clearance between RMS and JPM is 36 inches between points 79 and 80. Monitor with Camera B

AUTO SEQ – PROCEED (IN PROG lt on)

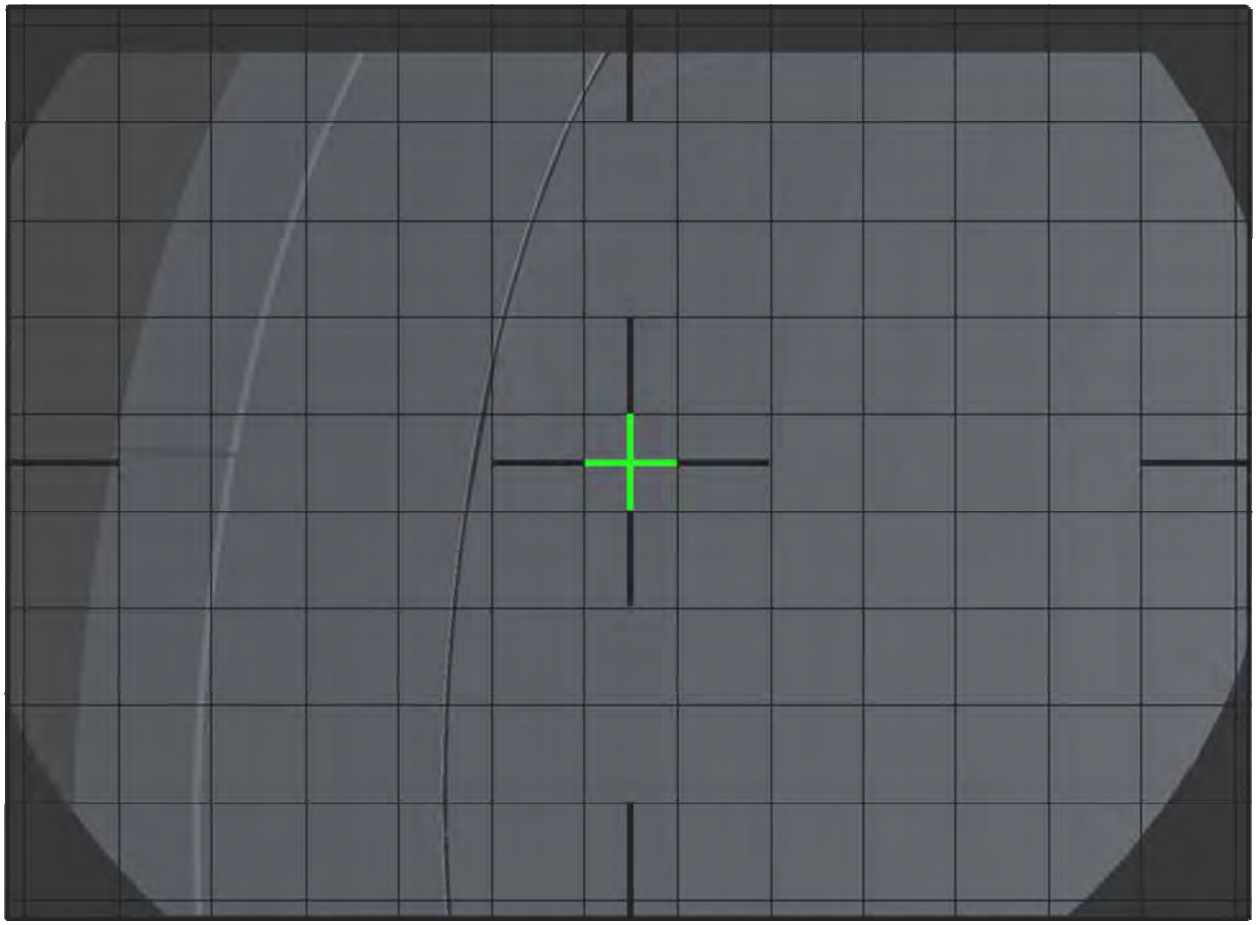
NOSE CAP ACAS section 2 (05:50)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
71P	**-227**	**+44**	**-251**	**153**	**320**	**157**		
72	-193	-3	-267	150	315	177		
73	-185	-76	-302	149	323	213		
74	-185	-76	-336	152	332	219		
75	-175	-40	-316	146	320	207		
76	-174	-16	-298	146	315	202		
77	-155	-20	-357	162	292	240		
78	-184	-74	-374	157	303	249		
79	-188	-4	-404	177	289	283		
80P	**-180**	**+17**	**-400**	**168**	**289**	**274**		

6. <u>NOSE CAP LDRI ACAS, SECTION 3</u>
When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
CAMR CMD PAN/TILT – LOW RATE

TILT to match LDRI view shown below



LDRI: +60, -50 (up)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

NOTE

Minimum clearances between RMS and JPM are 31 inches between points 80 and 81 and 43 inches between points 83 and 84. Monitor with Camera B

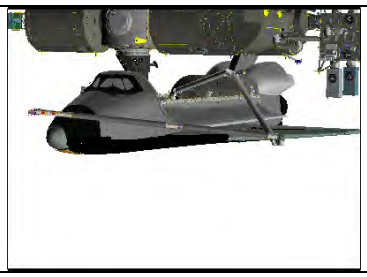
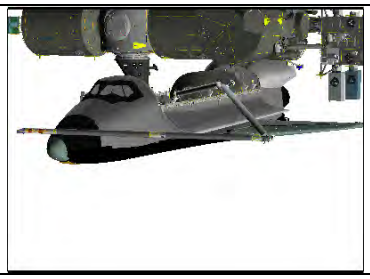
Clearance between OBSS and Nose Cap is less than 60 inches throughout section 3. Monitor with RSC and S1 LOOB(P1 LOOB). Minimum clearances are:

50 inches at point 84
44 inches at point 86
41 inches between points 86 and 87

Points 85-86 are pause points to ensure correct RCC coverage

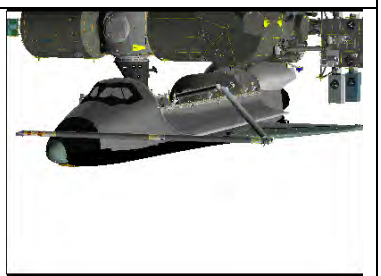
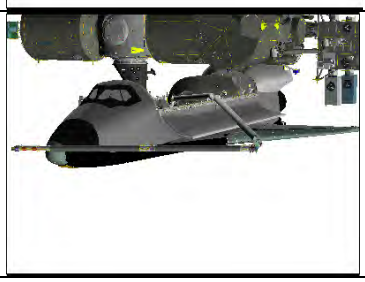
AUTO SEQ – PROCEED (IN PROG lt on)

NOSE CAP ACAS section 3a (02:00)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
80P	**-180**	**+17**	**-400**	**168**	**289**	**274**		
81	-166	+52	-343	203	283	277		
82	-167	+42	-293	224	286	272		
83	-170	+9	-310	196	288	254		
84	-170	+21	-350	186	286	267		
85P	**-181**	**+50**	**-386**	**183**	**281**	**280**		

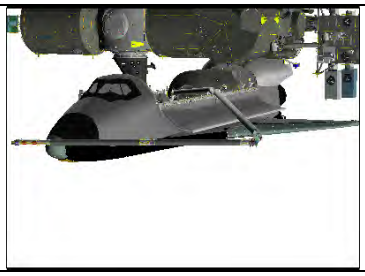
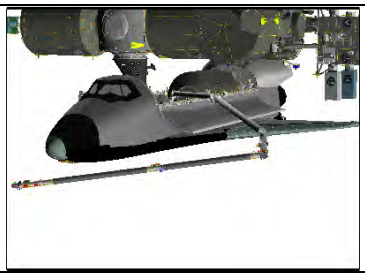
When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

NOSE CAP ACAS section 3b (00:35)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
85P	**-181**	**+50**	**-386**	**183**	**281**	**280**		
86P	**-181**	**+64**	**-353**	**198**	**279**	**284**		

When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

NOSE CAP ACAS section 3c (01:05)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
86P	**-181**	**+64**	**-353**	**198**	**279**	**284**		
87	-180	+59	-293	215	281	280		
88P	**-128**	**+25**	**-263**	**212**	**288**	**272**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)

L10(VTR) STOP pb – push (no red ●)

Remove TAPE and replace with fresh one

<u>NOTE</u>
Carry the old TAPE to the Worldmap machine for download to .avi file

7. MNVR TO PORT LDRI ACAS START

RHC √RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 2, ENTER (READY lt on)

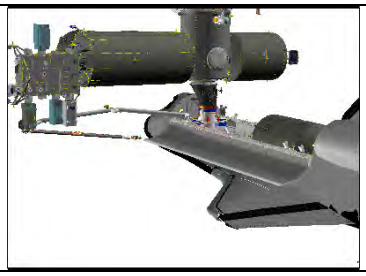
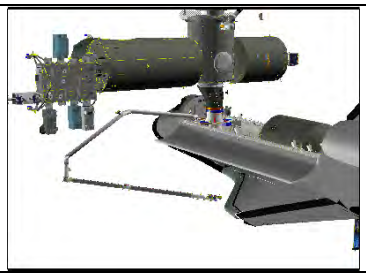
* If unable to enter AUTO mode (no AUTO READY lt): *
* √MCC *

SM 94 PDRS CONTROL
√START PT, ITEM 17: 89

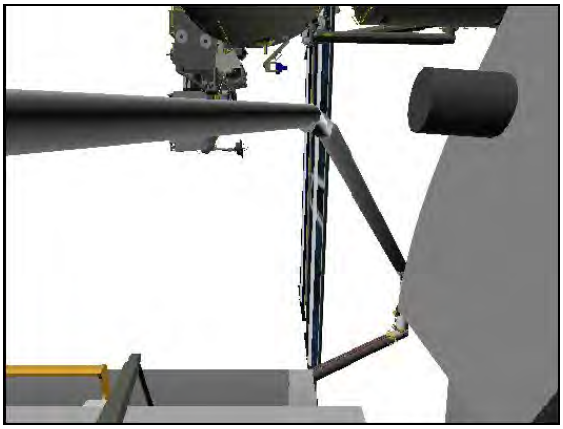
SM 169 PDRS STATUS
Monitor ACAS progress

AUTO SEQ – PROCEED (IN PROG lt on)

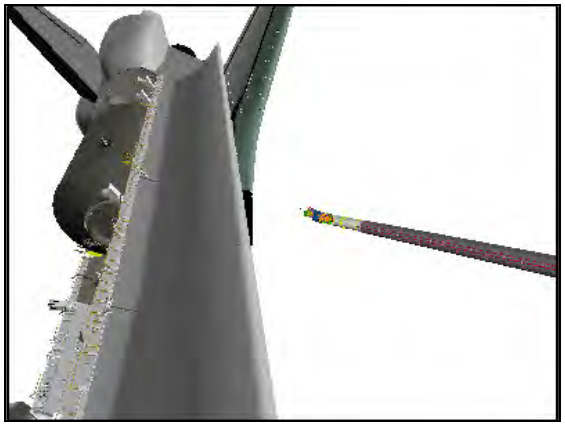
Mnvr to PORT LDRI ACAS START posn: (08:50)

Pt	X	Y	Z	PITCH	YAW	ROLL	•	
89P	**-128**	**+25**	**-263**	**212**	**288**	**272**		
90	-24	-42	-182	214	302	262		
91	-310	-60	+70	212	304	210		
92	-610	-60	+70	283	301	292		
93	-708	-137	+70	323	326	343		
94P	**-920**	**-177**	**-209**	**359**	**325**	**355**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)



CCTV A (90,-10)



ELBOW (-100,-10)

8. <u>ENABLE NOSE VERN JETS</u>

   GNC 23 RCS

   RCS FWD – ITEM 1 EXEC (*)
   MANF VLVS OVRD 5 – ITEM 44 EXEC (OP)

```
* If Orbiter Control required:  *
*     DAP: VERN                 *
*     DAP: LVLH                 *
*     When rates damped:        *
*         DAP: FREE > 2 sec     *
*         DAP: AUTO             *
```

OBSS DOCKED LDRI RCC SURVEY – PORT

WARNING
Port PLBD radiator must be stowed

1. SETUP

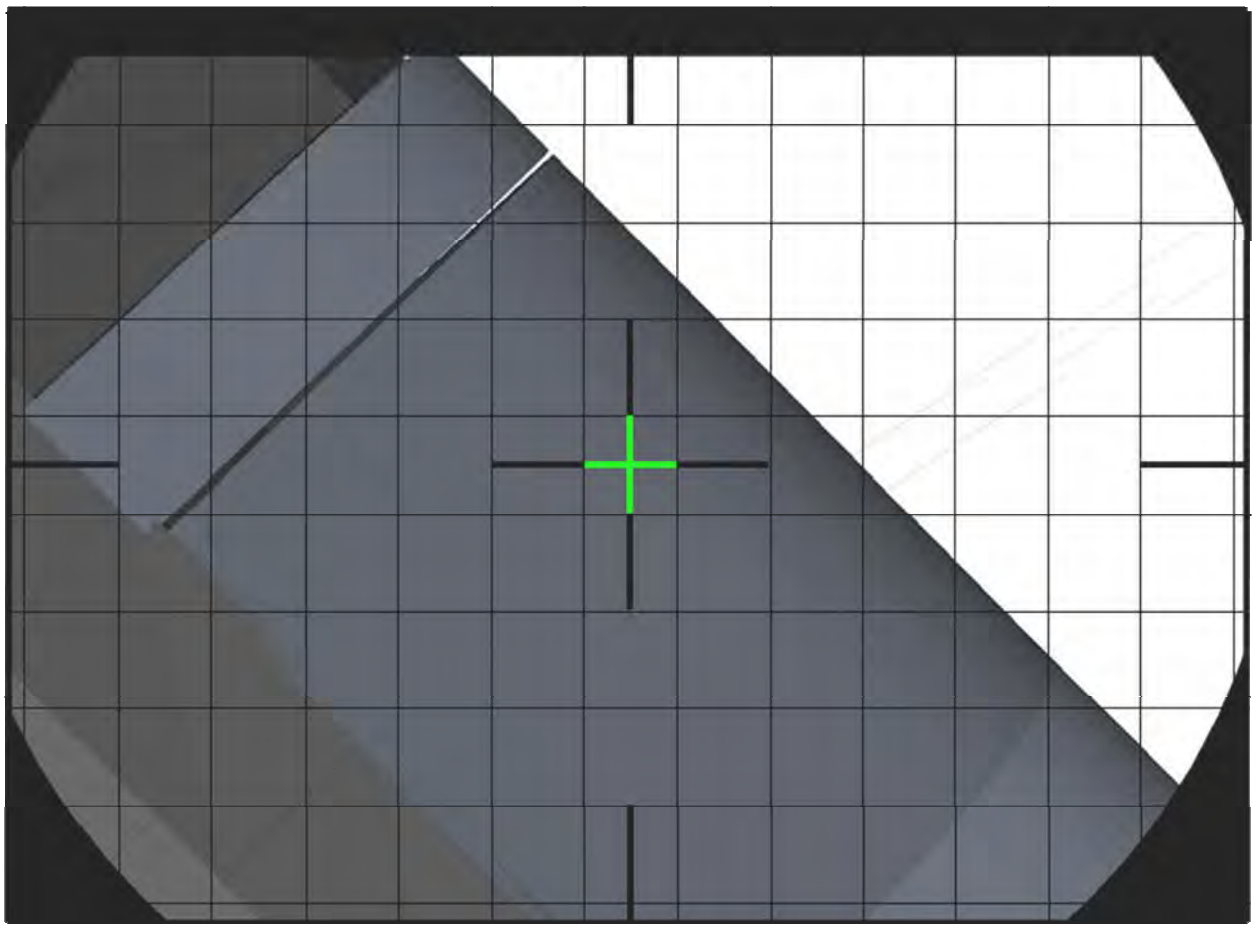
SM 94 PDRS CONTROL

√PL ID, ITEM 3: 2
√INIT ID, ITEM 24: 2

√AUTO MODE 3, ITEM 15: 7

2. PORT LDRI ACAS, SECTION 1

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +75 (right), -90 (down)

√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

For survey scan pattern, refer to OBSS DOCKED LDRI SCAN PATTERN CUE CARD – STBD & PORT

RHC √RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 3, ENTER (READY lt on)

```
* If unable to enter AUTO mode (no READY lt) *
*    √MCC                                    *
*                                            *
*    When READY lt on:                       *
*       √MCC to reverify correct sensor view *
```

SM 94 PDRS CONTROL
√START PT, ITEM 17: 95

SM 169 PDRS STATUS
Monitor ACAS progress

Section 1-5 Clearance Views	Cameras
RMS-to-JPM	B, A
OBSS-to-RCC	RSC, Elbow, P1 LOOB

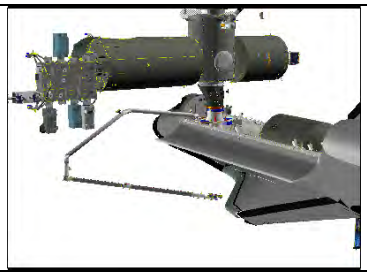
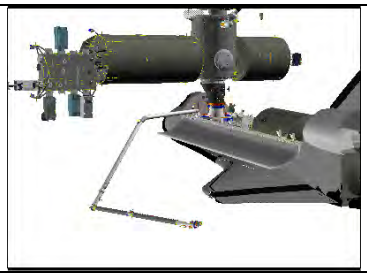
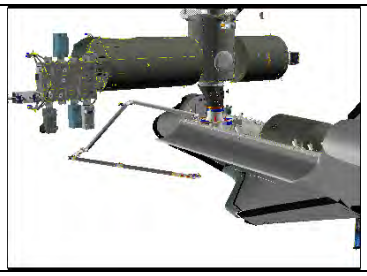
NOTE

Minimum clearances between RMS and JPM are:
37 inches between points 95 and 96
33 inches between points 105 and 106

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

AUTO SEQ – PROCEED (IN PROG lt on)

PORT ACAS section 1 (Pts 95-101) and section 2 (Pts 102-107) (09:50)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
95P	**-920**	**-177**	**-209**	**359**	**325**	**355**		
96	-1010	-186	-207	2	341	356		
97	-1070	-215	-204	4	356	356		
98	-1132	-275	-205	10	356	356		
99	-1295	-440	-213	10	356	356		
100	-1365	-456	-213	10	356	356		
101	-1365	-495	-233	8	353	325		
102	-1365	-525	-260	6	351	305		
103	-1297	-496	-250	7	352	310		
104	-1258	-478	-243	7	352	310		
105	-1193	-414	-243	6	357	310		
106	-1045	-260	-230	5	357	310		
107	-919	-232	-239	5	357	310		
108P	**-899**	**-252**	**-284**	**2**	**341**	**289**		

When AUTO SEQ READY lt – on:

L10(VTR) STOP pb – push (no red ●)

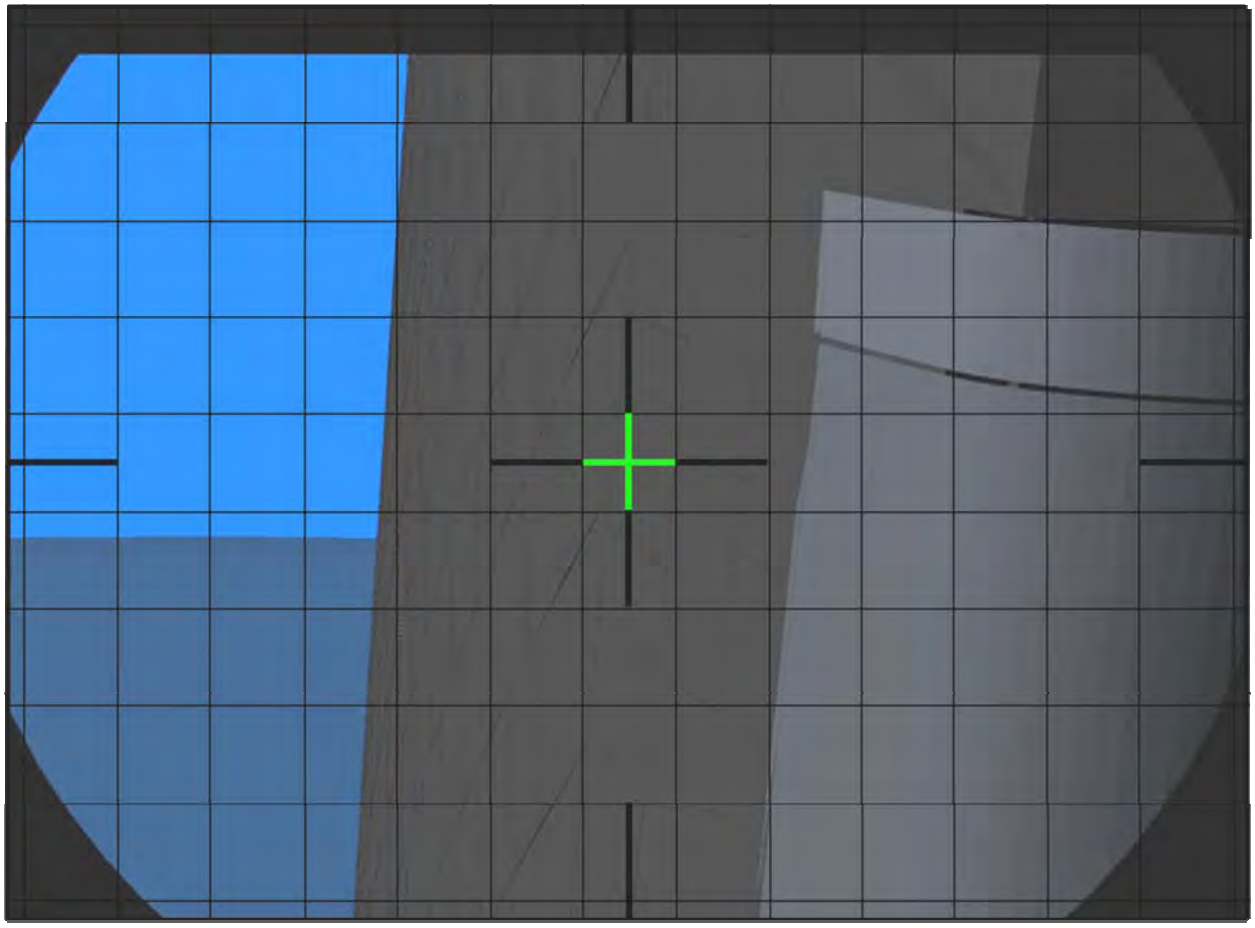
Remove TAPE and replace with fresh one

<u>NOTE</u>

Carry the old TAPE to the Worldmap machine for download to .avi file

3. <u>PORT LDRI ACAS, SECTIONS 3 and 4</u>

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +100 (right), -120 (down)

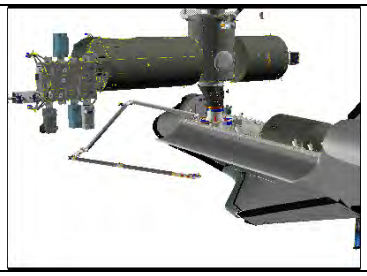
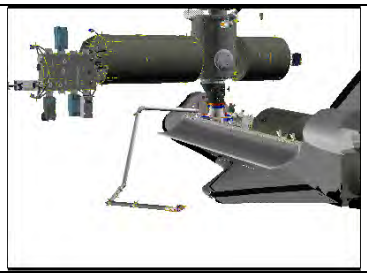
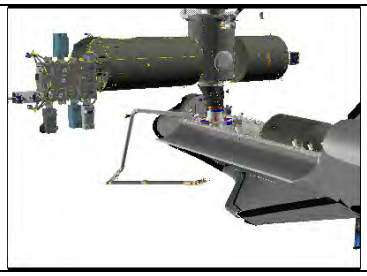
√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

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

AUTO SEQ – PROCEED (IN PROG lt on)

PORT ACAS section 3 (Pts 108-114) and section 4 (Pts 115-118) (07:20)

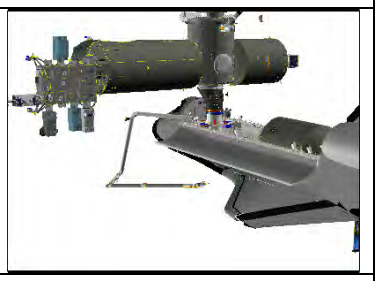
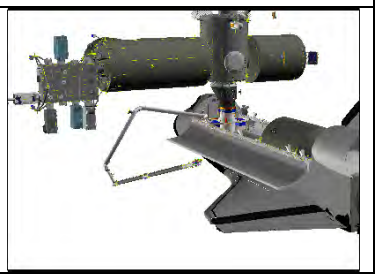
Pt	X	Y	Z	PITCH	YAW	ROLL	●	
108P	**-899**	**-252**	**-284**	**2**	**341**	**289**		
109	-964	-254	-281	10	343	297		
110	-1027	-281	-267	13	347	304		
111	-1073	-322	-262	16	355	308		
112	-1208	-450	-257	15	7	319		
113	-1255	-500	-266	14	3	316		
114	-1312	-518	-269	12	3	313		
115	-1306	-526	-304	14	354	287		
116	-1224	-498	-304	14	354	287		
117	-1032	-293	-300	14	354	287		
118P	**-919**	**-242**	**-270**	**12**	**356**	**305**		

When AUTO SEQ READY lt – on:

L10(VTR) STOP pb – push (no red ●)

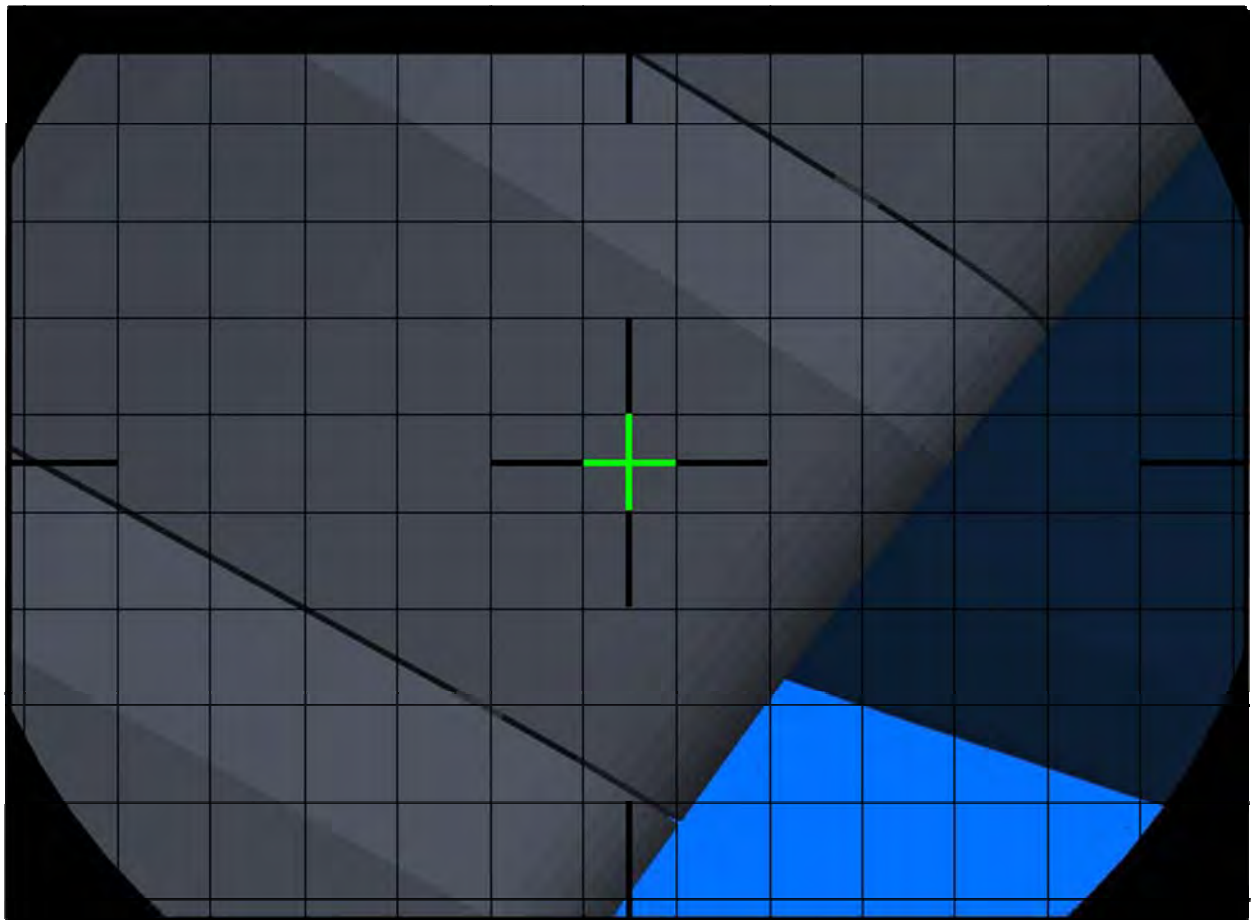
AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 5 (01:50)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
118P	**-919**	**-242**	**-270**	**12**	**356**	**305**		
119	-950	-353	-233	10	4	300		
120P	**-976**	**-289**	**-366**	**20**	**352**	**22**		

4. <u>PORT LDRI ACAS, SECTION 5</u>
   When AUTO SEQ READY lt – on:

A7U √DTV ← PL2
PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +50 (left), -250 (down)

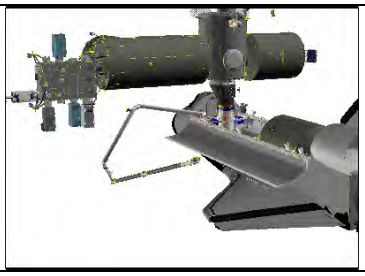
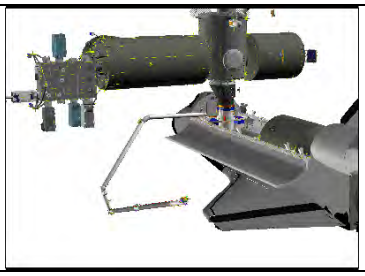
√MCC to verify correct sensor view
Note PAN/TILT: _____, _____

A7U √DTV ← PL2
VID OUT – not DTV
VID IN – not PL2

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

AUTO SEQ – PROCEED (IN PROG lt on)

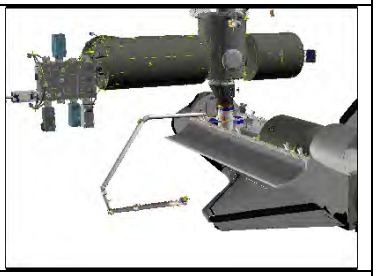
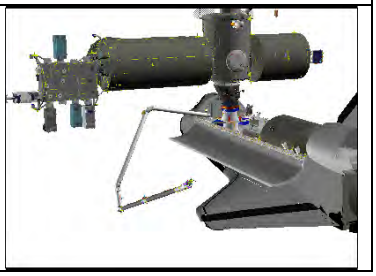
PORT ACAS section 5 (03:00)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
120P	**-976**	**-289**	**-366**	**20**	**352**	**22**		
121	-1036	-287	-350	19	350	17		
122	-1069	-313	-350	19	350	17		
123	-1194	-436	-352	19	350	17		
124	-1268	-502	-362	19	0	14		
125P	**-1330**	**-514**	**-362**	**19**	**0**	**14**		

When AUTO SEQ READY lt – on:
L10(VTR) STOP pb – push (no red ●)

AUTO SEQ – PROCEED (IN PROG lt on)

Configure for section 6 (00:45)

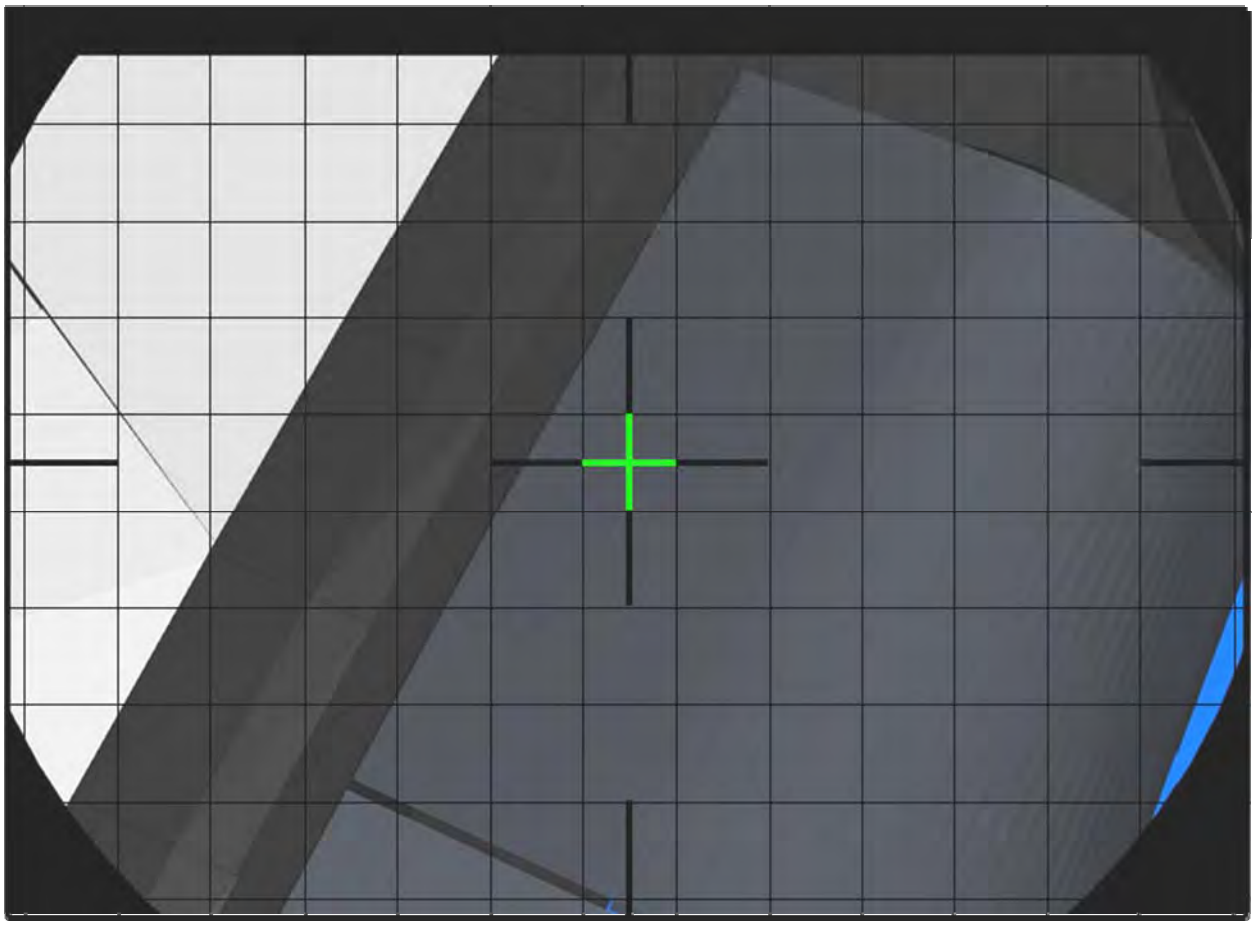
Pt	X	Y	Z	PITCH	YAW	ROLL	●	
125P	**-1330**	**-514**	**-362**	**19**	**0**	**14**		
126	-1330	-520	-400	22	359	0		
127P	**-1330**	**-477**	**-400**	**22**	**359**	**0**		

5. PORT LDRI ACAS, SECTION 6

When AUTO SEQ READY lt – on:

A7U √DTV ← PL2

PAN/TILT to match LDRI view shown below (LOW RATE within 10°)



LDRI: +60 (right), -270 (down)

√MCC to verify correct sensor view

Note PAN/TILT: _____, _____

A7U √DTV ← PL2

VID OUT – not DTV

VID IN – not PL2

Section 6 Clearance Views	Cameras
OBSS-to-PLBD	RSC, Elbow, SPDM
RMS-to-JPM	B, A

NOTE

Clearance between OBSS and PLBD is less than 60 inches between points 130 and 133 (minimum clearance of 42 inches at point 133)

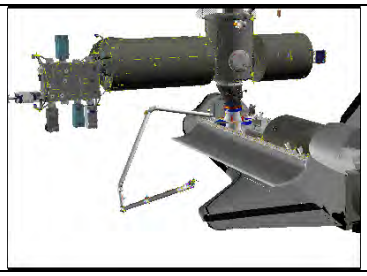
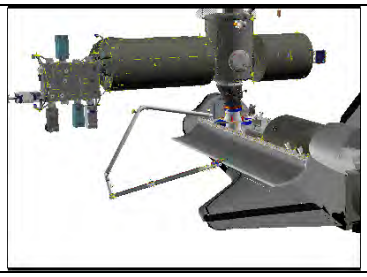
Minimum clearance between RMS and JPM is 30 inches between points 128 and 29. Monitor with Camera B or A

Points 130-132 are pause points to ensure correct RCC coverage

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

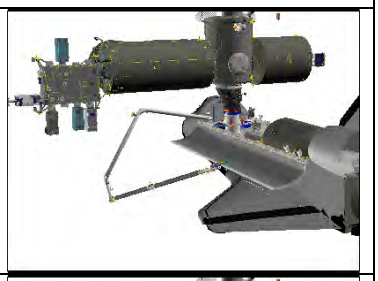
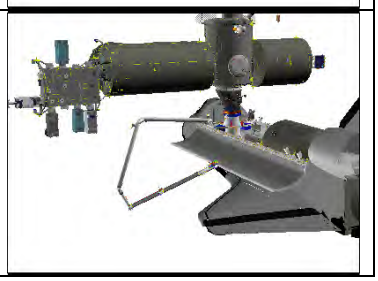
AUTO SEQ – PROCEED (IN PROG lt on)

PORT ACAS section 6a (02:10)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
127P	**-1330**	**-477**	**-400**	**22**	**359**	**0**		
128	-1270	-456	-392	22	359	0		
129	-1203	-386	-392	22	0	0		
130P	**-1102**	**-280**	**-386**	**23**	**342**	**7**		

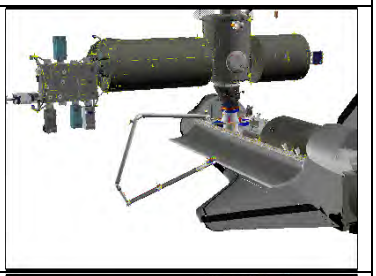
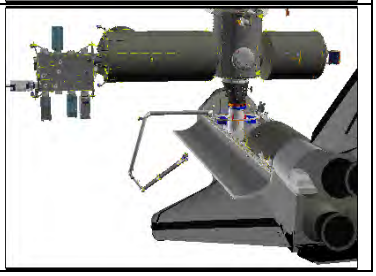
When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

PORT ACAS section 6b (00:50)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
130P	**-1102**	**-280**	**-386**	**23**	**342**	**7**		
131P	**-1062**	**-275**	**-386**	**27**	**350**	**25**		

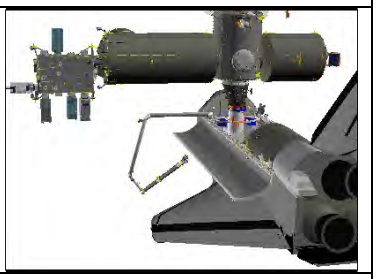
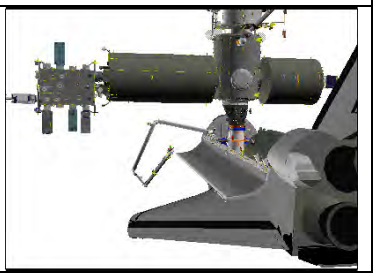
When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

PORT ACAS section 6c (00:55)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
131P	**-1062**	**-275**	**-386**	**27**	**350**	**25**		
132P	**-980**	**-273**	**-380**	**29**	**356**	**35**		

When AUTO SEQ READY lt – on:
AUTO SEQ – PROCEED (IN PROG lt on)

PORT ACAS section 6d (01:15)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
132P	**-980**	**-273**	**-380**	**29**	**356**	**35**		
133	-917	-273	-367	23	358	39		
134P	**-917**	**-295**	**-420**	**23**	**358**	**39**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)

L10(VTR) STOP pb – push (no red ●)

A7U MUX 1 L ← MIDDECK
LDRI MODE 2 pb – push (ITVC video displayed)

Remove TAPE and replace with fresh one

NOTE

Carry the old TAPE to the Worldmap machine for download to .avi file. When download complete, transfer ultrabay hard drive to ISS machine

ELBOW (-110,-10)

CCTV B (-20,-5)

6. MNVR TO UNDOCK

SM 94 PDRS CONTROL

AUTO MODE – ITEM 13 +8 EXEC

NOTE

Minimum clearances between RMS and JPM are 50 inches between points 136 and 137 (monitor with Camera B) and 36 inches at point 141. Monitor with Camera A

RHC √RATE – COARSE (RATE MIN tb-OFF)
BRAKES – OFF (tb-OFF)
MODE – AUTO 1, ENTER (READY lt on)

SM 94 PDRS CONTROL

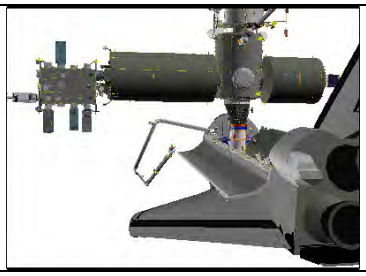
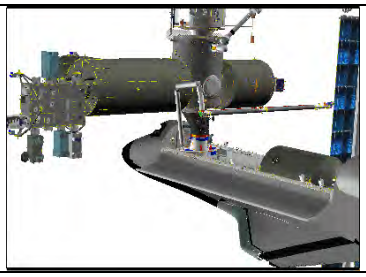
√ START PT, ITEM 17: 135

SM 169 PDRS STATUS

Monitor ACAS progress

AUTO SEQ – PROCEED (IN PROG lt on)

Mnvr to UNDOCK (8:40)

Pt	X	Y	Z	PITCH	YAW	ROLL	●	
135P	**-917**	**-295**	**-420**	**23**	**358**	**39**		
136	-903	-353	-471	21	354	10		
137	-1048	-310	-495	31	340	13		
138	-1176	-276	-616	41	328	16		
139	-1029	-38	-809	83	310	43		
140	-1175	+15	-662	58	299	33		
141P	**-1029**	**+229**	**-614**	**47**	**270**	**33**		

When AUTO SEQ IN PROG lt – off:
BRAKES – ON (tb-ON)
PARAM – PORT TEMP
JOINT – CRIT TEMP

7. <u>ENABLE NOSE JETS</u>

GNC 23 RCS

RCS FWD – ITEM 1 EXEC (*****)
MANF VLVS OVRD 1 – ITEM 40 EXEC (OP)
2 – ITEM 41 EXEC (OP)
3 – ITEM 42 EXEC (OP)
4 – ITEM 43 EXEC (OP)
√5 – ITEM 44 EXEC (OP)