

ROBOTICS BOOK - FLIGHT SPECIFIC	01 JUN 05
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30 JUN 05

Sheet 1 of 1

List of Implemented CR(s):

Robotics_FSU174

Uplinked Messages (or Approved Flight Notes) replaced by this PCN, remove from Book:

None

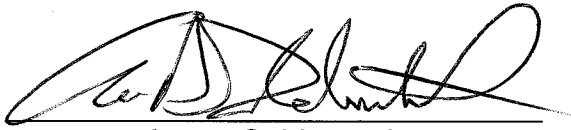
Incorporates the following:

1. Replace cover
2. Replace iii thru viii
3. Replace 47 thru 52

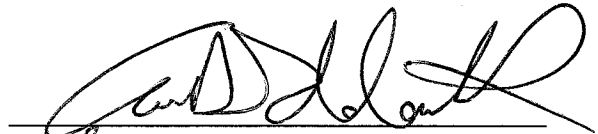
APPROVED BY:



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Aaron Goldenthal
Lead, Robotics Systems Group

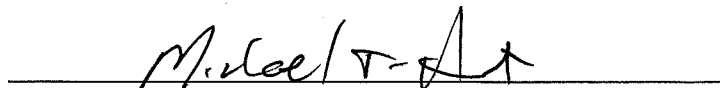


for Daniel D. Lindner
Chief, Robotics Operations Branch



SODF Coordinator

ACCEPTED BY:



Michael T. Hurt
SODF Manager

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



International Space Station Robotics Group Robotics Book - Flight Specific

ISS-LF1

**Mission Operations Directorate
Operations Division**

30 JUN 05

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



United Space Alliance

**INTERNATIONAL SPACE STATION
ROBOTICS GROUP
ROBOTICS BOOK - FLIGHT SPECIFIC
ISS-LF1**

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viii

RBT FS

1.123 OBSS BERTH

(RBT FS/LF1/FIN 2)

1. SETUP

Configure Cameras and overlays as required.

Monitor 1	Monitor 2	Monitor 3	V10
92: Camera C (10, 15)	13: LAB Stbd Zenith (-20, -20)	91: SRMS Elbow (-115, 20)	Camera D (-10, 15)

PCS

MSS: SSRMS:

Verify Loaded Parameters – √

Verify 'Loaded Parameters' (two) – OBSS Mid MPM, SY Held

Verify Display – LAB>Berthed OBSS MidMPM

Verify Command – LAB>Berthed OBSS MidMPM

√Vernier

Verify Mode – FOR OCAS

Verify SY – Locked

2. MANEUVER TO LOW HOVER POSITION

NOTE

1. Due to the way the FOR OCAS file was built, the following are expected on the SSRMS FOR OCAS page on the PCS when the FOR OCAS file is selected:
 - a) 'Display Frame' field has a red background and indicates LAB>Berthed OBSS FwdMPM display frame.
 - b) 'FOR' field indicates OBSS Fwd MPM
 - c) Error symbol present on the Confirm button.
2. Monitor clearance to UHF Antenna using Lab Stbd Zenith, Camera C, or SRMS Elbow camera. Clearance at Low Hover is approximately 91 cm.
3. Monitor clearance to MPLM with Camera C.

pick File ► LAB ► OBSS Berth

Verify 'FOR' 'Destination' for OBSS Low Hover position.

X	Y	Z	Pitch	Yaw	Roll
0	0	-100	0.0	0.0	0.0

cmd Load (Verify Sequence Status – Confirm or Cancel)

1.123 OBSS BERTH

(RBT FS/LF1/FIN 2)

MON Verify FOR and errors are correct on FOR Position overlay.

	X	Y	Z	Pitch	Yaw	Roll
FOR	-1	-190	-167	0.0	0.0	0.0
TGT	0	0	-100	0.0	0.0	0.0
ERR	-1	-190	-67	0.0	0.0	0.0

PCS * If FOR/errors are incorrect
 * **cmd** Cancel (Verify Sequence Status – Waiting Destination)
 *
 * Input correct Dest FOR per table above.
 *
 * **cmd** Load (Verify Sequence Status – Confirm or Cancel)
 *

MON * Verify FOR and errors are correct on FOR Position overlay.

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

DCP AUTO SEQ → PROC

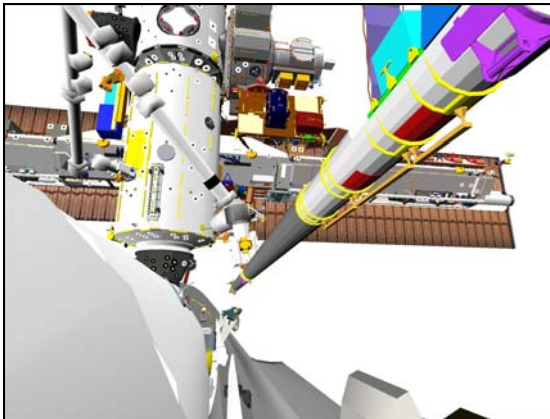


Figure 1.- OBSS Low Hover
(92: Camera C: 10, 15).

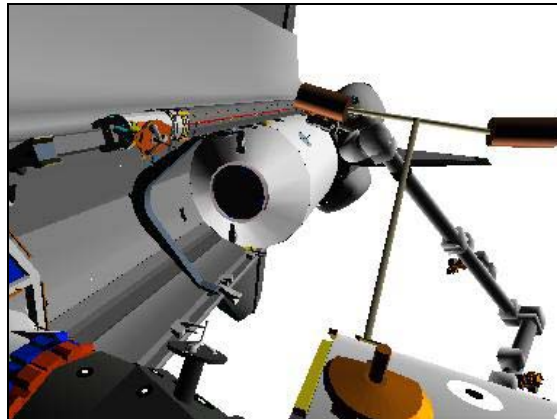


Figure 2.- OBSS Low Hover
(13: LAB Stbd Zenith: -20, -40).

1.123 OBSS BERTH

(RBT FS/LF1/FIN 2)

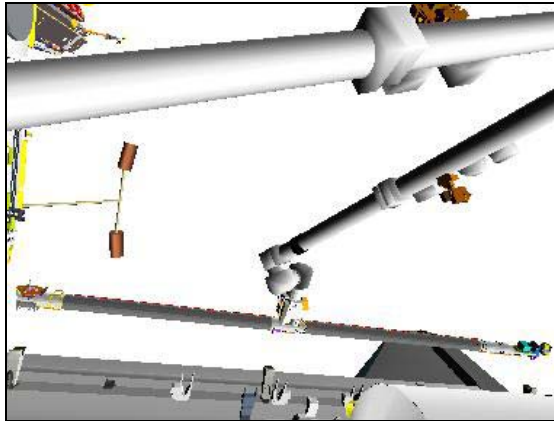


Figure 3.- OBSS Low Hover
(91: SRMS Elbow: -113, 20).



Figure 4.- OBSS Low Hover
(V10: Camera D: -10, 15).

PCS

MSS: SSRMS:

Verify Posn Hold – orange

Verify SSRMS at OBSS Low Hover position (within 5 cm/1 deg).

	Locked					
SR	SY	SP	EP	WP	WY	WR
+77.2	+40.4	+38.3	+116.2	-181.2	-141.1	+32.9
X	Y	Z	Pitch	Yaw	Roll	
0	0	-100	0.0	0.0	0.0	
FOR	Loaded – OBSS Mid MPM, SY Held					
Disp	LAB>Berthed OBSS MidMPM					

3. ATTITUDE CONTROL CONFIGURATION

MSS: SSRMS: Thrusters:

Verify 'Desat Request:' – Inh

If using shuttle attitude control, coordinate with shuttle crewmembers
DAP: FREE

4. BERTHING OBSS

Notify shuttle crew to watch for STBD RMS R-F-Ls.

MSS: SSRMS: Rate:

Set 'Scale' 'Vernier' Rate Scale: 0.5 (Verify 0.5)

MSS: SSRMS:

Enter Mode – Manual (Verify blue)

1.123 OBSS BERTH

(RBT FS/LF1/FIN 2)

MSS: SSRMS: SSRMS Manual: Joint Lock: Joint Lock

cmd Shoulder Yaw (Verify SY – Locked)

THC/RHC Maneuver OBSS to Berthed position (until shuttle crew callout that 3 of 3 STBD RMS R-F-L tb - gray, expected at Z: 0)

Expected OBSS Berthed position.

		Locked					
SR	SY	SP	EP	WP	WY	WR	
+68.4	+40.4	+38.4	+113.4	-188.4	-144.8	+25.9	
X	Y	Z	Pitch	Yaw	Roll		
0	0	0	0.0	0.0	0.0		
FOR	Loaded – OBSS Mid MPM, SY Held						
Disp	LAB>Berthed OBSS MidMPM						

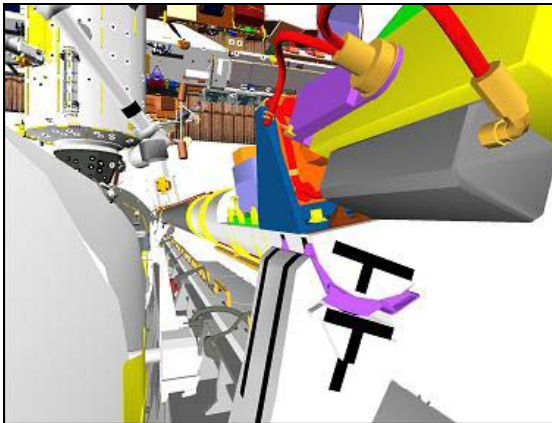


Figure 5.- OBSS Berth
(92: Camera C: 20, 0).

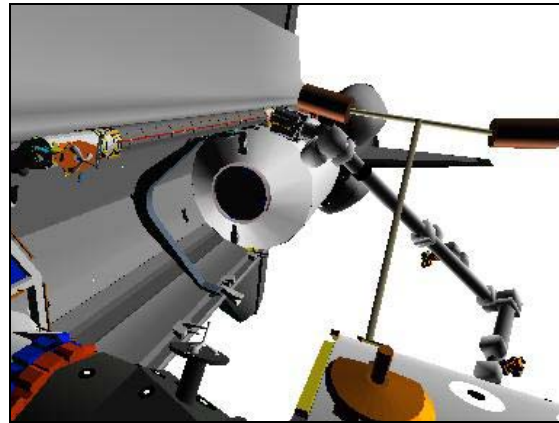


Figure 6.- OBSS Berth
(13: LAB Stbd Zenith: -20, -40).



Figure 7.- OBSS Berth
(V10: Camera D: -10, 15).

1.123 OBSS BERTH

(RBT FS/LF1/FIN 2)

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PCS

MSS: SSRMS:

Verify Posn Hold – orange

Enter Mode – Standby (Verify blue)

5. LIMPING WRIST JOINTS

MSS: SSRMS: Limp:

sel WP, WY, WR

cmd Execute

MSS: SSRMS:

Verify Limp – blue

Verify WP, WY, WR – Limped

6. LATCHING MRLs TO TC

Give SRMS Operator GO to Latch STBD MRLs to TC.

7. CARRIAGE DERIGIDIZATION

On SRMS Operator Go to Limp All SSRMS Joints and Derigidize

MSS: SSRMS: Limp:

cmd All Limp (Verify Limp – blue)

MSS: SSRMS:

Verify all joints – Limped

MSS: SSRMS: Tip LEE:

cmd 'Carriage' Derigidize ► Slow (Verify Speed – Slow)

Verify '**Confirm or Terminate**' prompt.

cmd Confirm (Verify RHC Trigger Hot icon)

Verify LEE Mode – Derigidize

RHC

TRIGGER → press (momentarily) (SCR 19064)

PCS

Verify 'Carriage' Derigidize – blue (90 s max)

Give SRMS Operator GO to complete latching of STBD MRLs

8. CLEANUP

NOTE

Carriage rigidization is performed in this step to re-seat the SSRMS LEE over the OBSS GF prior to initiating a nominal push-off release operation

On SRMS Operator GO for OBSS Ungrapple

MSS: SSRMS: Tip LEE: SSRMS Tip LEE

cmd 'Carriage' Rigidize ► Slow (Verify Speed – Slow)

Verify '**Confirm or Terminate**' prompt.

cmd Confirm (Verify RHC Trigger Hot icon)

Verify LEE Mode – Rigidize

RHC TRIGGER → press (momentarily) (SCR 19064)

PCS Verify 'Carriage' Tension ~5500 N (90 s max)
Verify 'Carriage' Retract – blue

DCP BRAKES SSRMS → ON (Verify ON)

9. ATTITUDE CONTROL CONFIGURATION

If using Shuttle attitude control, coordinate with shuttle crewmembers

	DAP: LVLH
	When rates damped
	DAP: FREE > 2 seconds
	Then DAP: AUTO