



STS-130/20A

FD 12 Execute Package

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Approved by FAO:

R. Smith

Last Updated: Feb 18 2010 8:17 PM GMT

JEDI (Joint Execute package Development and Integration), v3.0



“Endeavour, Houston. We didn’t say transfer by *curling*. Surgeon wanted to know if anyone was hampered by *hurling*.”

MSG 159A (22-0771A) - FD12 FLIGHT PLAN REVISION

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MSG INDEX

<u>MSG NO.</u>	<u>TITLE</u>
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MSG-169	Additional LiOH Swap Activity
MSG-170	Space Shuttle Program Commemorative Patch

1. Post-Sleep Cryo Config

For today's Post-Sleep cryo config, O2 tanks 2, 3 & 4 and H2 tanks 2 and 4 will be active.

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

A11 CRYO TK4 HTR O2 A - AUTO

A15 CRYO TK5 HTR O2 A - OFF

Pre-Sleep Cryo Config

√MCC for deltas prior to configuring for Pre-Sleep.

For tonight's Pre-Sleep cryo config, Manifold 1 will be closed with O2 tanks 1 and 4 and H2 tanks 1 and 5 active.

A15 CRYO TK5 HTRS H2 A,B (two) - AUTO

A11 CRYO TK4 HTRS H2 A,B (two) - OFF

**R1 O2 TK1 HTR A - AUTO
TK2 HTR A - OFF
TK3 HTR A - OFF**

**H2 TK1 HTRS A,B (two) - AUTO
TK2 HTRS A,B (two) - OFF**

O2,H2 MANF VLV TK1 (two) - CL (tb-CL)

MSG 159A (22-0771A) - FD12 FLIGHT PLAN REVISION

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2. Soyuz Survey During Flyaround

During flyaround tomorrow, we would like some additional pictures of ISS; specifically, we need photos of the lifted MLI on Soyuz TMA-16 (20S). Please reference MSG 166 for additional words and pictures regarding the area of interest and camera settings. Let us know if you have any questions.

3. Cupola Picture Notes

For pictures taken in the cupola, MSG 167 has recommended camera settings for the shuttle D2Xs for various lighting scenarios.

4. H2O Ops Cue Card Update

Today you will fill CWC #8, which is the final CWC fill of the flight. Yesterday, the two remaining CWCs listed on your cue card, s/n 1072 and 1086, were reported as half full and unavailable, respectively. Return CWC s/n 1072 to NOD2O2 and locate s/n 1004, 1030, or 1081 to use for CWC #8. All three of these CWCs should be empty and located at NOD2O2.

5. RHC Fabric Boot Install

PLT: For the RWS fabric boot install, can you confirm that the contact strip you had trouble installing it was oriented per figure 7 of MSG 140 3.2.711 ROTATION HAND CONTROLLER FABRIC BOOT INSTALLATION? The strip has an L shape cross section; the vertical sides should point up on the hand controller. Please take a picture of that contact strip that didn't go on correctly so we can determine if it is reusable.

6. REPLACE PAGES 2-42 THROUGH 2-45 and 3-126 THROUGH 3-135.

REPLANNED

02/18/10 13:16:50

FD12
GMT 02/18/10 (049)
MET Day_010

	12	13	14	15	16	17	18	19	20	21	22	23	09	011/00
CDR ZAWKA	POST SLEEP				XFER OPS	L10H CAN EX-CHANGE	CREW CONF	MEAL	CP RH EO WT 0	ARED	ARED	F W HATCH CLOSE		
PLT VIRTS	POST SLEEP				CUPOLA 02 SYS TEARDOWN		CREW CONF	MEAL	CP RH EO WT 0	ARED	RNDZ TOOLS C/O	P/TV 04 S/U	ODS LEAK CHECK	
MS1 HIRE	POST SLEEP				XFER OPS		CREW CONF	MEAL	CP RH EO WT 0		RNDZ TOOLS C/O	F W HATCH CLOSE	EXER	
MS2 ROBINSON	POST SLEEP				XFER OPS		CREW CONF	MEAL	CP RH EO WT 0	EXERCISE		F W HATCH CLOSE	ODS LEAK CHECK	
MS3 PATRICK	POST SLEEP				XFER OPS		CREW CONF	MEAL	CP RH EO WT 0	ISS A/L TOOL STOW		F W HATCH CLOSE	EXER CI SE	
MS4 BEHNKEN	POST SLEEP				XFER OPS		CREW CONF	MEAL	CP RH EO WT 0	ISS A/L TOOL STOW		F W HATCH CLOSE	EXER CI SE	
DAY/NIGHT ORBIT	167	168	169	170	171	172	173	174						
TDRS E Z														
ORB ATT														
TDRS AVAIL														
ISS														
NOTES														

02/18/10 13:16:50

REPLANNED

02/19/10 (050)

GMT

011/00

Day 011

MET

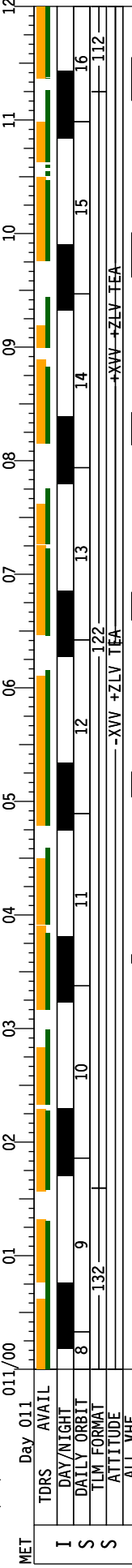
CDR ZAMKA	PMC OCA	PRE SLEEP	SLEEP	POST SLEEP						
PLT VIRTS	*	PRE SLEEP	SLEEP	POST SLEEP						
MS1 HIRE	EXER	PRE SLEEP	SLEEP	POST SLEEP						
MS2 ROBINSON	⊕	PRE SLEEP	SLEEP	POST SLEEP						
MS3 PATRICK	EXER CISE	PRE SLEEP	SLEEP	POST SLEEP						
MS4 BEHNKEN		PRE SLEEP	SLEEP	POST SLEEP						
DAY/NIGHT ORBIT	174	175	176	177	178	179	180	181	182	
TDRS W										
TDRS E										
TDRS Z										
ORB ATT	BIAS -XIV -ZW									
TDRS AVAIL	*ODS LEAK CHECK ⊕ODS LEAK CHECK									
NOTES										

S T S - 1 3 0

02/18/10 13:16:50

REPLANNED

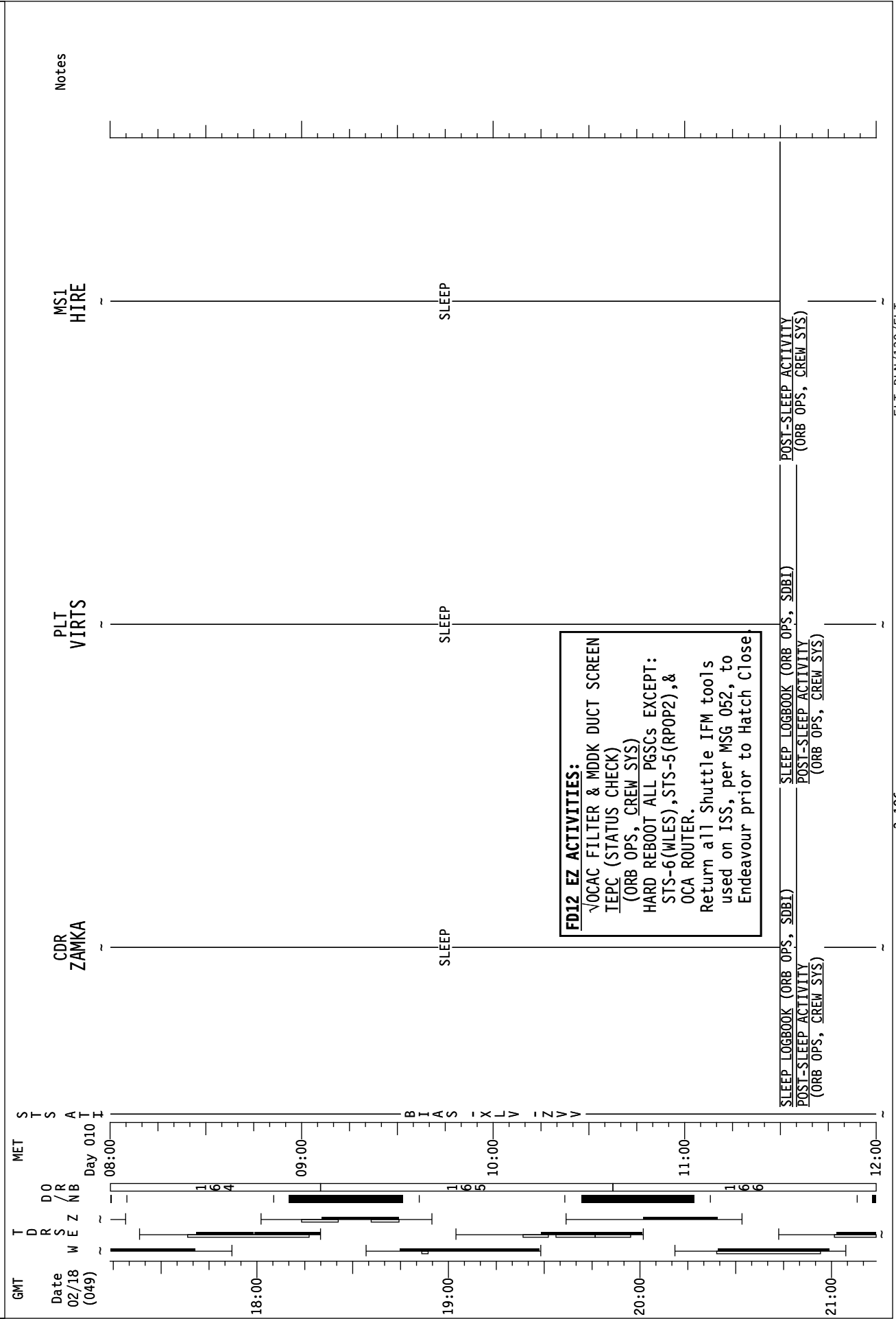
GMT 02/19/10 (050)



ISS CDR	FE-1	FE-4	FE-5	FE-6	TDRS
ISS CDR	FE-1	FE-4	FE-5	FE-6	TDRS
PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	PRE SLEEP-ISS	
SLEEP	SLEEP	SLEEP	SLEEP	SLEEP	
POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	POST SLEEP	
W					W
E					E
Z					Z
STS1 ORB ATT					

*FD/ISS CREW-CONF
 @EXPOSE-FE4-CLSOUT
 -XVV +ZLV TEA
 -122
 +XVV +ZLV TEA
 -112

STS-130 FD12



STS-130 FD12

GMT

Date 02/18 (049)

Time 18:00

Time 19:00

Time 20:00

Time 21:00

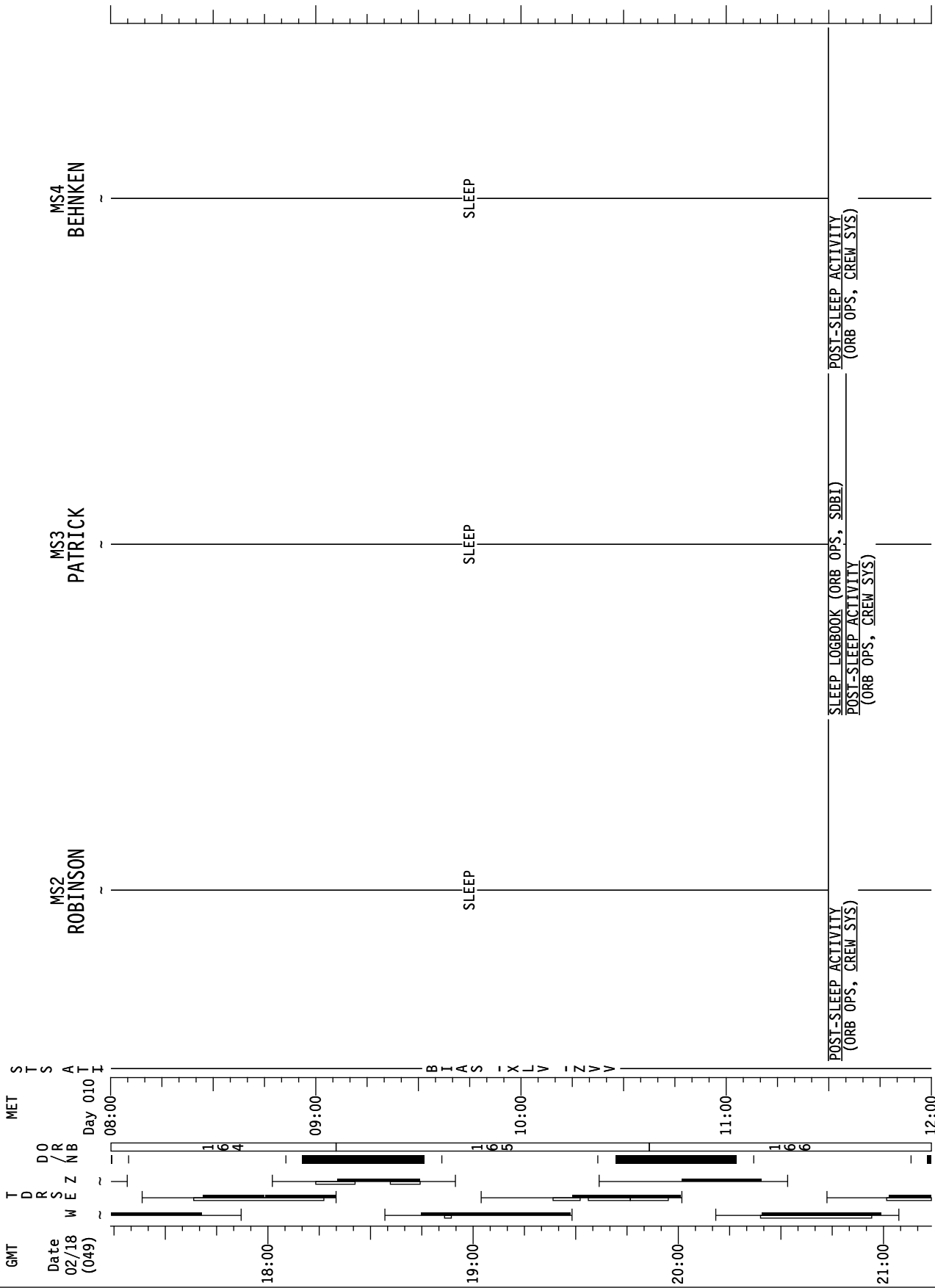
Time 12:00

MS2 ROBINSON

MS3 PATRICK

MS4 BEHNKEN

Notes



STS-130 FD12

GMT Date 02/18 (049)

MS2 ROBINSON

MS3 PATRICK

MS4 BEHNKEN

Notes

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

JOINT OPS: 2.303 PCS DEACTIVATION
Ref. Transfer List: Item 39

ORBITER SSC SETUP Steps 3-4, Ref. MSG 017
For step 4.1, relocate SSC 20 to ISS and stow per Transfer List: Item 804.

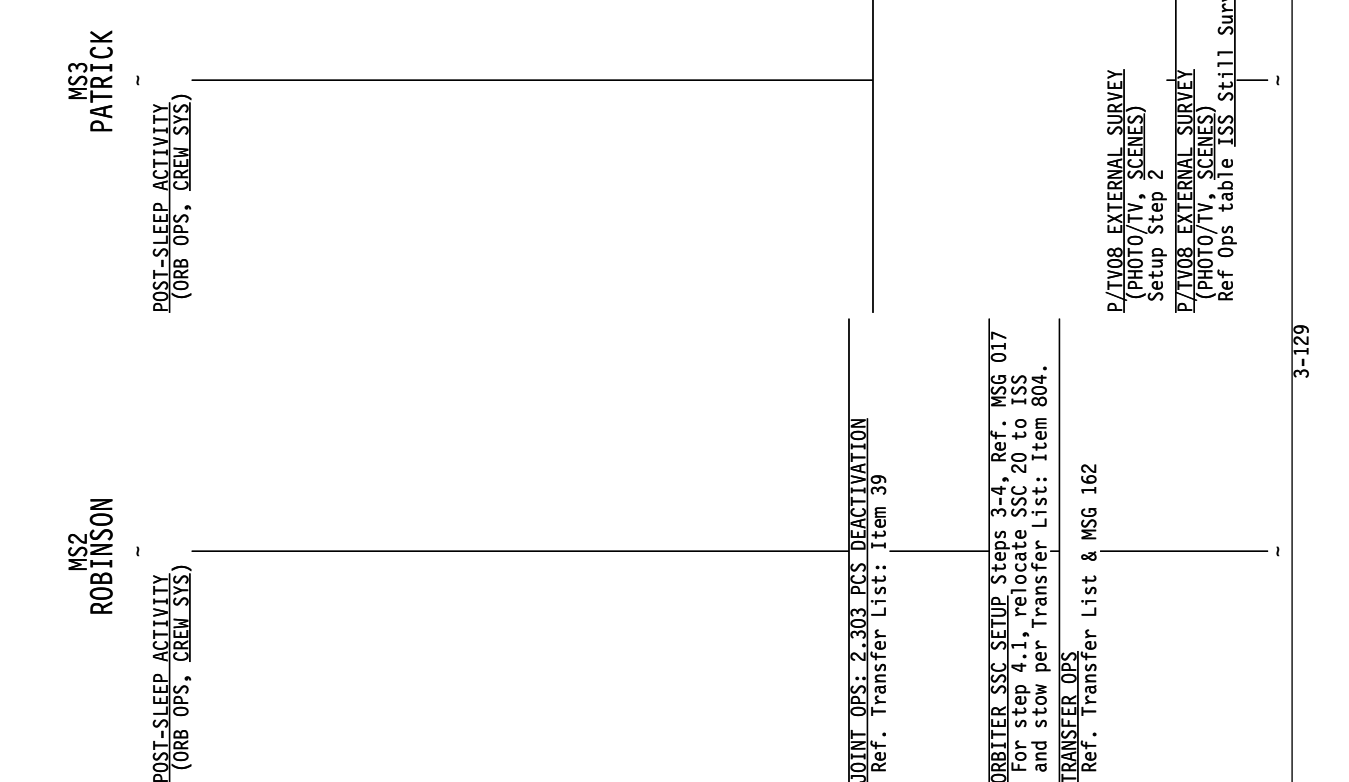
TRANSFER OPS
Ref. Transfer List & MSG 162

P/TY08 EXTERNAL SURVEY (PHOTO/TV, SCENES)
Setup Step 2

P/TY08 EXTERNAL SURVEY (PHOTO/TV, SCENES)
Ref Ops table ISS Still Survey

GLACIER STATUS CHECK (ASSY OPS,CC)

CMC FILL (ORB OPS, CMC OPS)
Init Fill #8
Ref. MSG 027 & Ref. MSG 159, Item 4



STS-130 FD12

GMT	Date 02/19 (050)	T D R S W E Z	DO /R NB	MET Day 010	ST S A T	Notes
						MS1 HIRE
						PLT VIRTS
						CDR ZAMKA
						TRANSFEEER_OPS Ref. Transfer List & MSG 162
						TRANSFEEER_OPS Ref. Transfer List & MSG 162
						LIQH_CAN_EXCHANGE Ref: MSG 169 Ref. Transfer List: Items 807,906,907.
						CREW CONFERENCE ISS KU AVAIL: 17:25-18:04 Ref. MSG 165
						CREW CONFERENCE ISS KU AVAIL: 17:25-18:04 Ref. MSG 165
						CREW CONFERENCE ISS KU AVAIL: 17:25-18:04 Ref. MSG 165
						MEAL
						MEAL
						MEAL
						CREW PHOTO
						CREW PHOTO
						CREW PHOTO
						CUPOLA CEREMONY ISS KU AVAIL: 19:05-19:52 TDRS HANDOVER: 19:37
						CUPOLA CEREMONY ISS KU AVAIL: 19:05-19:52 TDRS HANDOVER: 19:37
						P/TY05 ISS INTERNAL OPS (PHOTO/TV, SCENES) Perform DEACTIVATION, Steps 2 and 3
						TRANSFEEER_TAGUP Coordinate with transfer counterpart
						TRANSFEEER_BRIEF Call down status to MCC
						FLT PLN/130/FLT

STS-130 FD12

GMT	Date 02/19 (050)	T D R S W E Z	DO /R NB	MET Day 010	ST S A I	Notes
02:00			169	16:00		MS2 ROBINSON TRANSFER OPS Ref. Transfer List & MSG 162
02:00				17:00		MS3 PATRICK P/TY08 EXTERNAL SURVEY (PHOTO/TV, SCENES) Ref Ops table ISS Still Survey
02:00				17:00		MS4 BEHNKEN CMC FILL (ORB OPS, CMC OPS) Perform FILL TERMINATION
02:00				17:00		CMC TRANSFER Transfer CMC to ISS
02:00				17:00		EMU INSTALLATION (EVA, AIRLOCK CONFIG)
03:00			170	18:00		CREW CONFERENCE ISS KU AVAIL: 17:25-18:04 Ref. MSG 165
03:00				18:00		CREW CONFERENCE ISS KU AVAIL: 17:25-18:04 Ref. MSG 165
03:00				18:00		CREW CONFERENCE ISS KU AVAIL: 17:25-18:04 Ref. MSG 165
04:00			171	19:00		MEAL
04:00				19:00		MEAL
04:00				19:00		MEAL
05:00			172	20:00		CREW PHOTO
05:00				20:00		CREW PHOTO
05:00				20:00		CREW PHOTO
05:00				20:00		CUPOLA CEREMONY ISS KU AVAIL: 19:05-19:52 TDRS HANDOVER: 19:37
05:00				20:00		CUPOLA CEREMONY ISS KU AVAIL: 19:05-19:52 TDRS HANDOVER: 19:37
05:00				20:00		CUPOLA CEREMONY ISS KU AVAIL: 19:05-19:52 TDRS HANDOVER: 19:37
05:00				20:00		ISS A/L TOOL STOW See Page 3-133
05:00				20:00		ISS A/L TOOL STOW See Page 3-133
05:00				20:00		EXERCISE

STS-130 FD12

GMT Date 02/19 (050) MET Day 010 T

CDR ZAMKA

PLT VIRTS

MS1 HIRE

Notes

IMU STAR OF OPPTY ALIGN (ORB OPS, GNC)

MED OPS: 2.1.175-ARED - EXERCISE Login as ARED Guest and refer to MSG 030 how to deviate using the ARED Display. Verify X-Rotation Dashpot Inspection Complete.

TRANSFER BRIEF Call down status to MCC

MED OPS: 2.1.175-ARED - EXERCISE Login as ARED Guest and refer to MSG 030 how to deviate using the ARED Display. Verify X-Rotation Dashpot Inspection Complete.

RNDZ TOOLS CHECKOUT (RNDZ, RNDZ TOOLS)

RNDZ TOOLS CHECKOUT (RNDZ, RNDZ TOOLS)

TFL 192

P/TY04 INGRESS/EGRESS (PHOTO/TV, SCENES) Perform SETUP

TFL 184

FAREWELL

FAREWELL

FAREWELL

JOINT OPS: 4.102 SHUTTLE/ISS DUCT REMOVAL & HATCH CLOSING Ground will perform Steps 2-3

JOINT OPS: 4.102 SHUTTLE/ISS DUCT REMOVAL & HATCH CLOSING Ground will perform Steps 2-3

JOINT OPS: 4.102 SHUTTLE/ISS DUCT REMOVAL & HATCH CLOSING Ground will perform Steps 2-3

JOINT OPS: 4.104 ODS VEST/PMA DPRS AND HATCH LEAK CHECK

On MCC GO: M010W 14.7 CAB REG INLET SYS 2 VLV-OP Expect possible "S66 CAB N2(02) FLO 2" msg. Avoid WCS area during periods of high N2 flow.

PCS ACTIE FLIGHT DIRECTOR CONFERENCE

STS-130 FD12

GMT	Date 02/19 (050)	DRS W E Z	DO/R NB	MET Day 010	STSAI	MS2 ROBINSON	MS3 PATRICK	MS4 BEHNKEN	Notes
06:00				20:00		EXERCISE	ISS A/L TOOL STOW CREW TETHER INSPECTIONS (EVA, TOOLS AND STORAGE) Steps 1 and 2 BRT INSPECTION (EVA, TOOLS AND STORAGE) Ref. MSG 139	ISS A/L TOOL STOW CREW TETHER INSPECTIONS (EVA, TOOLS AND STORAGE) Steps 1 and 2 BRT INSPECTION (EVA, TOOLS AND STORAGE) Ref. MSG 139	
07:00				21:00		<p>WLES RNDZ TOOLS C/O PREP(ORB OPS,WLE SNRS)</p> <p>PPA LR REMOVAL CONFERENCE VIA S/G2LF</p> <p>ISS KU AVAIL: 20:48-21:30</p> <p>FDiscuss status and difficulties with MTL/LTL PPA Launch Bracket removals. Ref. 1.136 NODE 3 MTL PUMP PKG ASSY(PPA)LAUNCH BRACKET RMVL (ASSY OPS, ACT&C/O)</p> <p>Ref. 1.134 NODE 3 LTL PUMP PKG ASSY(PPA)LAUNCH BRACKET RMVL (ASSY OPS, ACT&C/O)</p>			
08:00				22:00		<p>FAREWELL</p> <p>JOINT OPS: 4.102 SHUTTLE/ISS DUCT REMOVAL & HATCH CLOSING Ground will perform Steps 2-3</p>	FAREWELL	FAREWELL	
09:00				23:00		<p>JOINT OPS: 4.104 ODS VEST/PMA DPRS AND HATCH LEAK CHECK</p> <p>C/L CAMP INSTALL (PHOTO/TV, REF PROC) Perform step 1 only</p>	EXERCISE	EXERCISE	
00:00				00:00		EXERCISE	EXERCISE	GLACIER STATUS CHECK (ASSY OPS,CC)	

STS-130 FD12

GMT Date 02/19 (050)
 TDRS WEZ
 MET STS A I
 Day 011 I

CDR ZAMKA

PLT VIRTS

MS1 HIRE

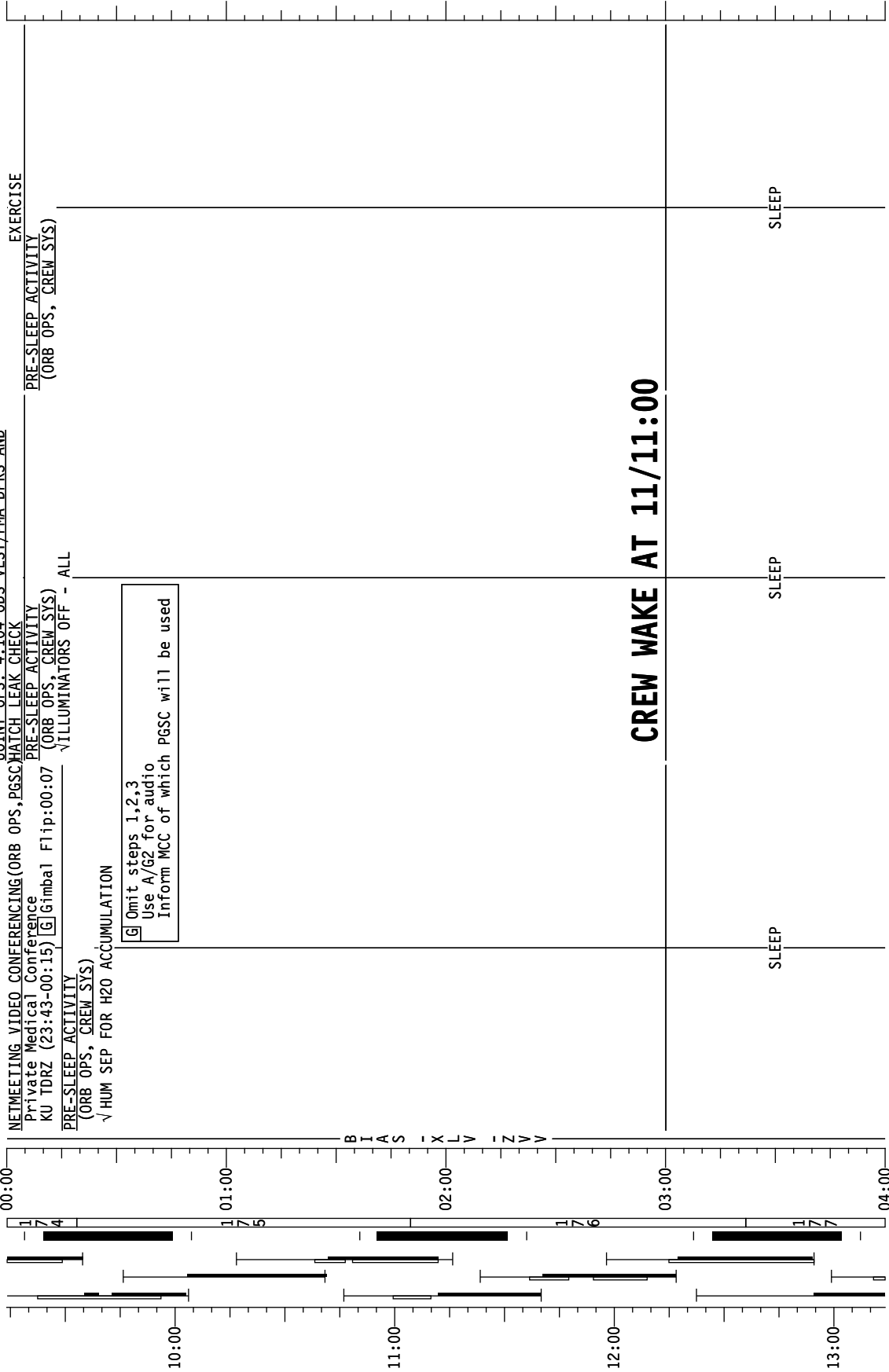
Notes

NETMEETING VIDEO CONFERENCING(ORB OPS,PGSC,HATCH LEAK CHECK
 Private Medical Conference
 KU TDRZ (23:43-00:15) [G] Gimbal Flip:00:07 (ORB OPS, CREW SYS)
 PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)
 V HUM SEP FOR H2O ACCUMULATION

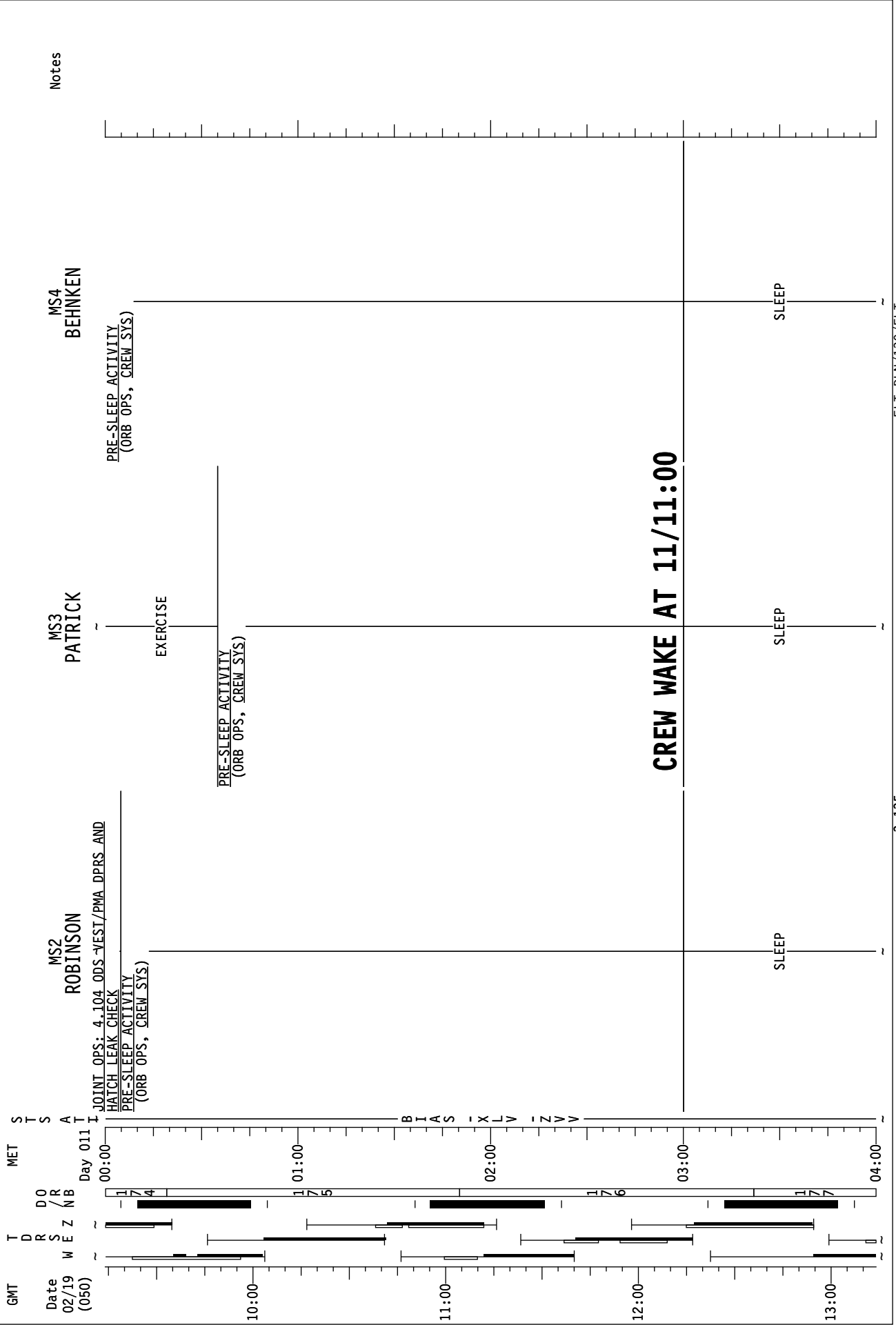
PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)
 EXERCISE

JOINT OPS: 4.104 ODS -VEST/PMA DPRS AND
 V ILLUMINATORS OFF - ALL

[G] Omit steps 1,2,3
 Use A/G2 for audio
 Inform MCC of which PGSC will be used



STS-130 FD12



MSG 160 - FD12 MISSION SUMMARY

1
2 Congratulations on a docked mission of "Olympic" proportions. You are officially the only
3 folks who are able to get more hang time than Shaun White.
4

5
6 YOUR CURRENT ORBIT IS: 191 X 181 NM
7

8 NOTAMS: ONE CHANGE (ADDED ESN)
9

10 EDW - TEMP RWY IN USE. PERM RWY CLOSED FOR CONSTRUCTION.
11 EDW - LAKEBED RWYS RED.
12 NOR - LAKEBED RWYS USABLE. DRYING OUT.
13 FOK - CLOSED.
14 WAL - CLOSED.
15 DOV - RWY 32 RWY END LIGHTS OUT OF SERVICE.
16 ZZA - ARRESTING NET INSTALLED 40M FROM END OF RWY 30L.
17 **ESN - RWY03R/21L CLOSED. 03L/21R USABLE**
18 GUA - RWY 06L/24R RWY END LIGHTS OUT OF SERVICE.
19 PTN - CLOSED FOR RUNWAY CONSTRUCTION.
20 IKF - NOT USABLE. NO AGREEMENT.
21 BEN - NOT RECOMMENDED/NOT SUPPORTED.
22

23 NEXT 2 PLS OPPORTUNITIES:
24

25 EDT22R ORB 172 – 10/20:36 BKN200 7 230/8P12
26 KSC33 ORB 186 – 11/17:54 BKN150 BKN250 7 290/6P9
27

28
29 OMS TANK FAIL CAPABILITY:
30

31 L OMS FAILS: NO
32 R OMS FAILS: NO
33

34 LEAKING OMS PRPLT BURN:
35

36 L OMS LEAK: ALWAYS BURN RETROGRADE
37 R OMS LEAK: ALWAYS BURN RETROGRADE
38

39 OMS QUANTITIES(%)
40

41 L OMS OX = 30.2 R OMS OX = 31.4
42 FU = 29.9 FU = 31.2
43

44 Subtract interconnect counter for current OMS quantities.
45
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MSG 160 - FD12 MISSION SUMMARY

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DELTA V AVAILABLE:

OMS	322 FPS
<u>ARCS (TOTAL ABOVE QTY1)</u>	<u>42 FPS</u>
TOTAL IN THE AFT	364 FPS
ARCS (TOTAL ABOVE QTY2)	76 FPS
FRCS (ABOVE QTY 1)	0 FPS
AFT QTY 1	66 %
AFT QTY 2	28 %

THERE ARE NO FAILURE/IMPACT/WORK AROUNDS FOR TODAY.

MSG 162 (22-0769) - FD12 TRANSFER MESSAGE

Page 1 of 3

1
2 Good morning Kay, Terry, & Steve,

3
4 It is hard to believe, but the final day of transfer has arrived! You are 87 percent complete
5 and on your way to 100 percent! We have listed all the open items we are still tracking in
6 your choreography below. Since yesterday, we have added the LiOH can swaps
7 (scheduled on George today) as well as a few new items on both resupply and return.
8

9 The Transfer List Excel file, FD12_Transfer_List_STS130.xls, is located on the KFX
10 machine in **C:\OCA-up\transfer** (and available via the **PGSC homepage**).

11
12 For ISS, the Transfer List Excel file, FD12_Transfer_List_STS130.xls, is located in **K:\OCA-**
13 **up\transfer**.

14 15 16 Change Pages

17 **Please incorporate changes as follows:**

18
19 In the Transfer List **RESUPPLY** tab

20 Replace the following page:
21 Resupply – 14

22
23 In the Transfer List **RETURN** tab

24 Replace the following page:
25 Return – 9

26 27 28 FD12 Choreography

- 29 • Jeff: Transfer returning blood sample per BLD STW activity (Item 704)
- 30 • TJ: Transfer returning saliva sample per SLV STW activity (Item 728)
- 31 • Steve: Transfer AFD PCS per AFT PCS XFER activity (Item 39)
- 32 • Steve: Transfer SSC back to ISS during SSC RETURN activity (Item 804)
- 33 • George: Transfer LiOH per LiOH CAN EXCHANGE activity (Items 807, 906, and
34 907)
- 35 • Soichi: Transfer DCBs to shuttle per DCB-TRANSFER activity (Items 709 and 710)
36 (this is scheduled to occur after the Transfer Brief)
- 37 • XFER OPS:
 - 38 ○ Complete water hardware transfers (Items 24, 25, and 729)
 - 39 ○ Transfer remaining 5 MLE bags (Items 408, 700, 701, and 702)
 - 40 ○ Transfer EMUs (Items 712, and 713)
 - 41 ○ Transfer Return to Houston Imagery ziplock (Item 727)
 - 42 ○ Complete new transfer items (Items 805, 806, 903, 904, and 905)

43
44
45 Have a great day!

46
47 - The 20A Transfer Team
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CHNG	FD	Initials	Item #	Item Name	Qty	Initial Stowage	Temp Stowage	Stowage at Undock	Wt (lbs)	ACTIVITY / Constraints / **Comments
	<input checked="" type="checkbox"/>		801	Potable Sample Adapter	1	MF57K (in Sample/ Purge Kit s/n 1001)		NOD202 (in Sample/ Purge Kit s/n 1008, in M-02 Bag s/n 1026)	0.63	Transfer FD06 or later. **Item has a blue handle. Swaps with return item 735.
	<input checked="" type="checkbox"/>		802	LiOH [STS 130/20A # 1-9, USED]	9 cans	Shuttle LiOH Box		NOD3A2 (in CTBs)	85.23	Transfer on FD07 per LiOH XFER activity.
	<input checked="" type="checkbox"/>		803	LiOH [STS 130/20A # 24-30 31, NEW]	7 & cans	Shuttle LiOH Box		NOD1S4_D2	59.76	Transfer on FD07 per LiOH XFER activity.
			804	SSC 20	1		Shuttle Flight Deck	LAB1P6	7.94	Transfer on FD12 per SSC XFER activity. **Temp stowed on shuttle for docked mission only. Reference return item 739.
X			<u>805</u>	Shampoo	=	Shuttle Hygiene Kits		<u>PMA1</u> (in 0.5 CTB s/h 1123)	<u>0.66</u>	<u>Retain what is needed for remainder of mission, transfer any bottles not needed to ISS.</u> <u>Report number of bottles transferred.</u>
			<u>806</u>	1/8" Hex Head, 1/4" Drive	1	MA16D (in Tray 3)		<u>NOD1D4_G2</u> <u>Drawer 2</u>	<u>0.06</u>	<u>This is a replacement for ISS's broken tool. Please take the tool currently in Drawer 2 and move it to the CTB.</u> <u>"Broken/Expired Items #1" (s/n 1272) located at NOD1O4 E2.</u>
X			<u>807</u>	LiOH [STS-130/20A # 20-23, 14, 17, 31]	7 cans	Shuttle LiOH Box		<u>NOD1S4_D2</u>	<u>52.29</u>	<u>Transfer per LiOH CAN EXCHANGE activity on FD12.</u>

CHNG	☑	FD	Initials	Item #	Item Name	Qty	Initial Stowage	Temp Stowage	Stowage at Undock	Wt (lbs)	ACTIVITY / Constraints / **Comments
				Return Realtime Additions							
					Item deleted - still returning - will be handled in EVA procedures						
	☑	11		902	MCA Series Sample Pump Assembly [s/n F0002]	1	NOD1D2 (in 1.0 CTB 1152)		MF57G (in top tray in foam cut-out)	6.90	
X				903	MCA Verification Gas Assembly [s/n F0002]	1	NOD2D2 (in 1.0 CTB s/n 1152)		MDDK Seat 7 Bag (in Bag 406)	12.22	<u>Pack item for return in Bag 406 if space is available. If this item does not fit, please restow it on ISS.</u>
X				904	Node 3 Closeout Panel Launch Bolts	Ziplock(s)	NOD1P2 (in 0.5 CTB s/n 1065, in 3.0 CTB s/n 1048)		MDDK (in available food lockers)	48.92	<u>Pad with towels to avoid damage to co-located hardware.</u> <u>Report locker location(s) used.</u>
X				905	MCIU PCMCIA RS-422 CABLE [s/n 312]	1	LAB1S5 installed		MDDK (in available food locker)	0.22	<u>Wrap in towel or bubble wrap.</u> <u>Report locker location used.</u> **This cable is attached to QUATECH RS-422 CABLE s/n 6003.
X				906	LiOH [STS-129/UJLF3 # 1-3 and 5-7]	6 cans	NOD1S4 D2		Shuttle LiOH Box	56.82	<u>Transfer per LIOH CAN EXCHANGE activity on FD12.</u>
X				907	LiOH [STS-130/20A # TBD]	1 can	NOD3A2 (in 2.0 CTB)		Shuttle LiOH Box	9.47	<u>Transfer per LIOH CAN EXCHANGE activity on FD12.</u>

MSG 164A - FD12 CREW CHOICE DOWNLINK

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FD 12 Morning Crew Choice Times

TDRS	AOS	LOS	Delta (min)	Notes
E-TDS	10/11:48	10/12:14	26	Gimbal flip at 12:14
E-TDS	10/12:16	10/12:25	9	
W-171	10/13:06	10/13:17	11	
E-TDS	10/13:27	10/13:53	26	
W-TDW	10/14:32	10/14:52	20	

FD 12 Evening Crew Choice Times

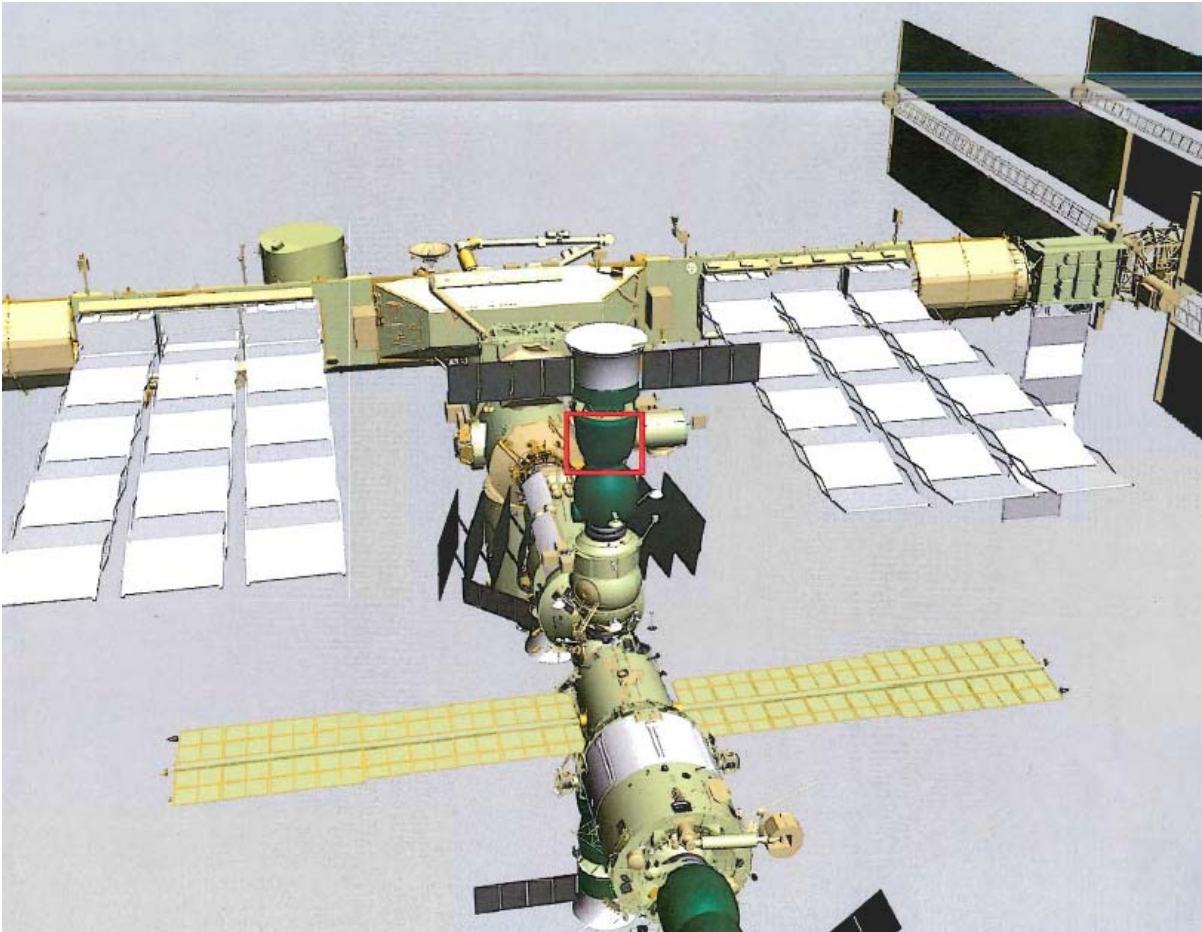
TDRS	AOS	LOS	Delta (min)	Notes
E-275	10/23:43	11/00:15	32	Gimbal flip at 00:07; Analog only
W-TDW	11/00:29	11/00:41	12	
E-275	11/01:35	11/01:57	22	Gimbal flip at 01:48; Analog only
E-TDS	11/02:41	11/02:55	14	

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

MSG 166 - PHOTOGRAPHY SURVEY OF SOYUZ DURING FLYAROUND

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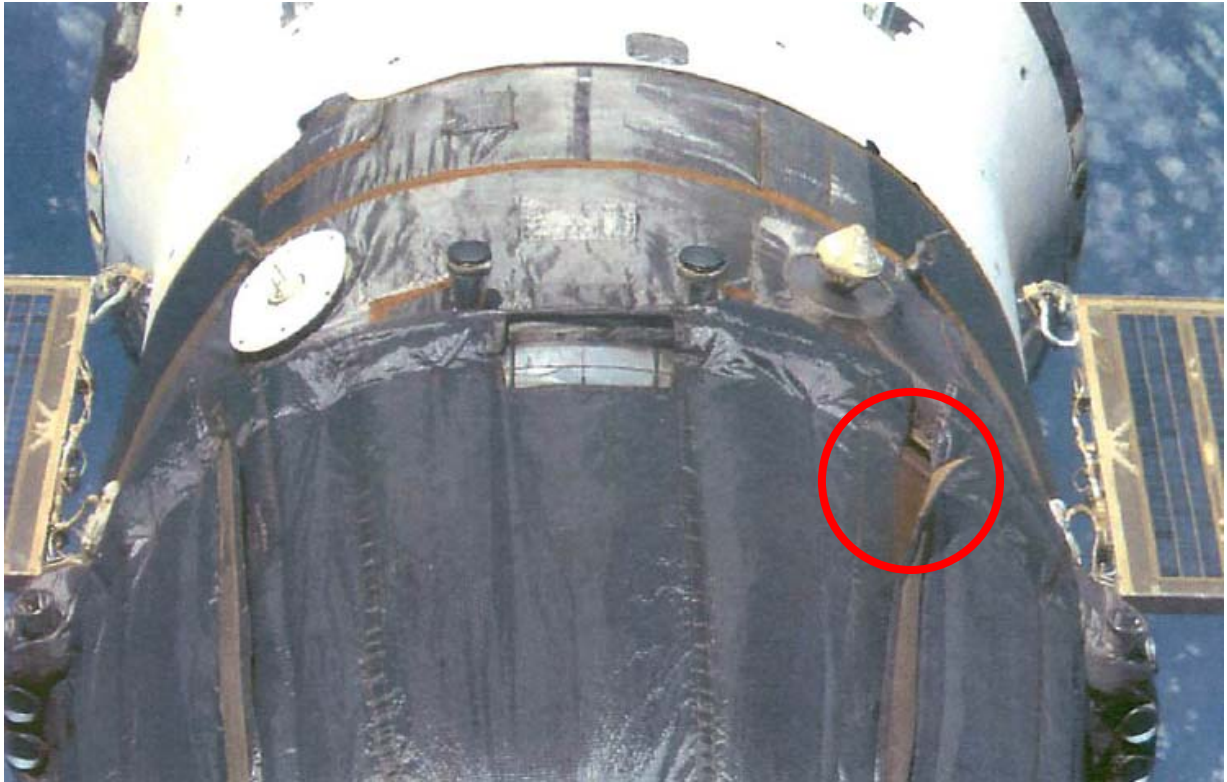
In order to check the MLI condition of Soyuz TMA-16 (20S), please perform a photo survey of Soyuz 20S, docked to MRM2 from the SM side during Orbiter ISS flyaround, after undocking. See the photos below for the area of interest. Please use the D2Xs camera with the 400mm lens to photograph as much of the area as possible. The camera will already be setup and in the correct configuration before the flyaround per P/TV03 UNDOCK, SETUP, Step 3.



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The area of interest is within the red box on the Soyuz.

MSG 166 - PHOTOGRAPHY SURVEY OF SOYUZ DURING FLYAROUND



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Example of expected imagery.

MSG 167 - CUPOLA PICTURE NOTES

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If windows open during day pass:

D2Xs Cue Card

Perform D2Xs Exposure Match "Hero Shot"

Try various flash head positions and check the picture for major reflections in the window.

Note: The pictures that we have seen downlinked used the following camera settings and looked good.

Lens 12-24mm

Exposure Mode - Manual

ISO - 200

Shutter Speed - 1/250

Aperture - f/8

If windows open during night pass:

D2Xs Cue Card

Perform D2Xs Aperture Priority

Lens 12-24mm

Aperture f/8

Try various flash head positions and check the picture for major reflections in the window.

If windows closed:

D2Xs Cue Card

Perform D2Xs Aperture Priority

Lens 12-24mm

Aperture f/8

Try various flash head positions and check the picture for major reflections in the window.

MSG 169 (22-0795) - ADDITIONAL LIOH SWAP ACTIVITY

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Additional LiOH Swap Activity

There were 7 LiOH cans saved during the mission that will be swapped with 7 used cans on ISS. Cryo does not support EOM+3, so cans 14, 17, and 31 will be transferred and can be deleted from your LiOH cue card.

- Obtain any available empty bag to assist in transfer. Return this bag to its initial position when complete with transfer.
- Swap 7 new STS-130/20A cans (20-23, 14, 17 & 31) from the LiOH box with 7 used cans on ISS. Install socks on cans 14 and 17 so that all cans going to ISS have socks.
- 6 used cans (STS-129/ULF3 cans 1-3, 5-7) can be found in the ISS LiOH Contingency Reserve located at NOD1S4_D2. 1 additional used can (STS-130/20A can X) can be found in a CTB at NOD3A2 (transferred FD6).
- Remove socks from the used cans and stow in a ziplock in the LiOH box.
- Verify all cans being transferred to ISS have socks.
- Report decal numbers of used cans to MCC.

LiOH Can	Initial Location	Final Location
STS-130/20A cans 20-23, 14, 17 & 31	Shuttle LiOH Box	NOD1S4_D2
STS-129/ULF3 cans 1-3 & 5-7	NOD1S4_D2	Shuttle LiOH Box
Any 1 from STS-130/20A cans 1-9	NOD3A2	Shuttle LiOH Box

MSG 170 (22-0796) - SPACE SHUTTLE PROGRAM COMMEMORATIVE PATCH

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We would like to thank those who participated in the Space Shuttle Program Commemorative Patch Contest. The quality of the submissions and the emotion behind the designs shows tremendous commitment and loyalty to the Space Shuttle Program. The judges were so impressed with the quality and imagination of the designs and found the task of selecting a difficult one.

The artwork for the winning patch will be flown and awarded to the winner in a presentation by John Shannon, Manager, Space Shuttle Program at STS-130 Crew Debrief at Space Center Houston in early March. Second and third place winners are invited to receive their awards at this venue as well.

All entries have been manifested and will be flown aboard STS-132, Atlantis (OV-104), which is scheduled to fly in May of 2010. The participants will receive a CD that contains all of the flown designs.

First Place winner:
Mr. Blake Dumesnil, Hamilton Sundstrand, Johnson Space Center

Second Place winner:
Ms. Jennifer Franzo, Michoud Assembly Facility, New Orleans

Third Place winner:
Mr. Tim Gagnon, Kennedy Space Center, Florida

MSG 170 (22-0796) - SPACE SHUTTLE PROGRAM COMMEMORATIVE PATCH

Page 2 of 4

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2 First Place winner:

3 Mr. Blake Dumesnil, Hamilton Sundstrand, Johnson Space Center



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5 To celebrate the upcoming 30th anniversary and retirement of the Space Shuttle Program, I
6 aimed to design a patch that captured the visual essence and spirit of the program in an
7 iconic and triumphant manner. As the Space Shuttle Program has been an innovative, iconic
8 gem in the history of American spaceflight, the overall shape of the patch and its faceted
9 panels are reminiscent of a diamond or other fine jewel. As the shape of the patch fans out
10 from a fine point at the bottom to a wide array across the top, this evokes the vastness of
11 space and our aim to explore it, as the Shuttle has done successfully for decades. The
12 outlined blue circle represents the Shuttle's exploration within low Earth orbit, but also
13 creates a dynamic fluidity from the bottom right around to the top left to allude to the
14 smoothness of the Shuttle orbiting the earth. The diagonal lines cascading down into the top
15 right corner of the design form the American Flag as the Shuttle has been one of the most
16 recognizable icons in American history over the last three decades. In the top left and right
17 panels of the design, there are 7 prominent stars on each side which represent the 14 crew
18 members that were lost on shuttles Challenger and Columbia. Inside of the middle panel to
19 the right of the Shuttle, there are 5 larger, more prominent stars that signify the 5 Space
20 Shuttle vehicles NASA has had in its fleet throughout the program.

21

22 While there have been a multitude of accomplishments in such a long, successful program, I
23 felt it more appropriate to focus on the symbolism and iconography of the Shuttle program
24 as simplistically recognized by all Americans rather than attempting to reflect so many of the
25 exceptional program accomplishments such as the Hubble Telescope, creation of the
26 International Space Station, the success of the Remote Manipulator System, etc in such an
27 ultimately confined space. Instead, I have designed this patch as an overall celebration of
28 the much-beloved program and vehicle that so many people have dedicated themselves to
29 in so many capacities over the years with a sense of vibrancy and mysticism that the Space
30 Shuttle Program will always be remembered by.

MSG 170 (22-0796) - SPACE SHUTTLE PROGRAM COMMEMORATIVE PATCH

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Second Place winner:

Ms. Jennifer Franzo, Michoud Assembly Facility, New Orleans



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My patch design was set forth to symbolize the true spirit and honor of the Space Shuttle program. I also wanted to honor the brave men and women we lost on the Columbia and Challenger with the two bright stars in the background glowing as the shuttle travels towards them, and also the yellowed out names of the space ships around the circle. The red and white stripes and the white star symbolize the United States of America and the dedicated support for the program over the past 30 years. The actual shuttle is positioned right in the middle and tipping its wing to the world, as way to say thank you and farewell, just as a cowboy would wave goodbye into the sunset. Mission Complete and God Bless!

MSG 170 (22-0796) - SPACE SHUTTLE PROGRAM COMMEMORATIVE PATCH

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Third Place winner:
Mr. Tim Gagnon, Kennedy Space Center, Florida



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This design attempts to honor the generation long accomplishments and history of the first Space Transportation System – the “Space Shuttle.” One that saw us actually learn to live and work in space for long periods of time. When you think about what we knew when the program started and what we know now – the accomplishments are too numerous to list.

The focus of the design is the orbiter coming home for a safe landing at the conclusion of its final mission. The sun is setting on an extraordinary era while the constellation Orion rises in the sky – the next golden age of exploration? We hope so. The crescent Moon and the red “star” of the planet Mars as seen from Earth are prominently displayed as they represent the goals of the Constellation Program. The galaxy is a tribute to the Great Observatories launched by the space shuttle. Hubble, Chandra, Compton and the knowledge gained from those satellites. The International Space Station passes overhead. Now complete, it continues its mission of science and international cooperation.

The inner border is made up of 135 stars representing every shuttle mission. The first star is blue to honor the work performed in the atmospheric test of the orbiter “Enterprise.” The stars representing the STS-51L and STS-107 missions are gold to reflect on their ultimate sacrifice. The outer border prominently displays the colors of the Flag of the United States of America – to honor the people who designed, built, and supported the program in other ways. From the administrators to the clerical staff and maintenance workers – and to those who cheered on from the sidelines. The dates 1976-2010 were chosen because the first orbiter rolled out of the assembly plant on September 17, 1976 “Constitution Day” during our Bicentennial Year. The last wheels stop is scheduled to occur in September 2010.

The Mercury, Gemini and Apollo programs were the awe inspiring missions of my childhood. But the Space Shuttle Program was the one I had the honor and privilege to play a part in. It was an incredible achievement and one that we should all be proud of.