

# STS-132/ULF4

## FD 07 Execute Package



MSG	Page(s)	Title
052C	1 - 18	FD07 Flight Plan Revision
053	19 - 20	FD07 Mission Summary
054	21	FD06 MMT Summary
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056	22	FD07 EVA Deltas
057	23	EVA3 Delta Summary Timeline
059	24 - 25	EMU Swap for EVA3
060	26	FD07 Transfer Message
061	27 - 29	EVA3 Delta Tool Config

Approved by FAO:

F. Reynolds

A handwritten signature in black ink, appearing to read 'F. Reynolds'.

Last Updated: May 20 2010 5:41 AM GMT

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

## Congratulations to Lonnie Schmitt for supporting his 100<sup>th</sup> Space Shuttle flight

### TOP 10 QUOTABLE LONNIE SCHMITT QUOTES:



- (17) "Flight, your never gonna believe this..."
- (16) "Orbit 3, welcome to the funny farm..."
- (15) "Of course I want to load the forward RCS full!"
- (14) "Why didn't you get them to load the forward RCS full?"
- (13) "Flight, don't forget the damn drivers!"
- (12) "I wish the FDOs would make up their minds about how much reboost they want"
- (11) "Of course, we don't have the prop for it anyway"
- (10) "Well, Flight, if you hadn't been yappin with PDRS,  
I would have come back to you sooner."
- (9) "Well, Flight, you COULD do it that way..."
- (8) "I sure wish we would get some realistic failures"
- (7) "Any more failures, I'm going to slash his tires."
- (6) "Prop Monitor, I'm gonna slash your tires..."
- (5) "I would say 'rode hard and put away wet' is the best way to describe this sim"
- (4) "You go ahead and debrief all you want.  
I'm going outside for a smoke, then home for a drink"
- (3) <<Flight/Ceccacci calling Lonnie on the Flight Loop>> "PROP, FLIGHT"  
<<Lonnie responding on the Flight Loop>> "PROP, PROP"
- (2) "FLIGHT, PROP, How about I don't answer your question...  
and you just do what I told you to do"

... And the #1 Lonnie Schmitt Quote is...

- (1) "Flight, imagine you have 20 gallons of MMH that leaked in the back of your SUV.  
Would you call that a small leak or a big leak?"

# MSG 052C (23-0646C) - FD07 FLIGHT PLAN REVISION

Page 1 of 18

## MSG INDEX

<u>MSG NO.</u>	<u>TITLE</u>
052	FD07 Flight Plan Revision (23-0646)
053	FD07 Mission Summary
054	FD06 MMT Summary
055	FD07 PAO Event Summary
056	FD07 EVA Deltas (23-0647)
057	EVA 3 Delta Summary Timeline (23-0648)
058	EVA 3 Procedure Deltas (23-0649)
059	EMU Swap for EVA3 (23-0650)
060	FD07 Transfer Message (23-0651)
061	EVA3 Delta Tool Config (23-0653)

### 1. Post-Sleep Cryo Config

For today's post-sleep cryo config, O2 tanks 1 and 2 and H2 tanks 2 and 5 will be active.

**R1 O2,H2 MANF VLV TK2 (two) - OP (tb-OP)  
O2 TK1 HTRS A,B (two) - 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 2 will be closed with O2 tanks 2 and 5, and H2 tanks 2 and 4 active.

**A15 CRYO TK5 HTRS H2 A,B (two) - OFF  
HTR O2 A - AUTO**

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

**R1 O2 TK1 HTRS A,B (two) - OFF  
O2,H2 MANF VLV TK2 (two) - CL (tb-CL)**

### 2. Crew Choice Downlink Opportunities

TDRS	AOS	LOS	Delta (min)	Notes
W	06/00:40	06/01:15	35	
W	06/02:16	06/02:33	17	
E	06/02:53	06/03:06	13	

**MSG 052C (23-0646C) - FD07 FLIGHT PLAN REVISION**

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3. We moved the EMU Swap and LiOH/Battery Replacement from Garrett and Bueno to Tony and Steve. This was done to increase Tool Config and Procedure Review time due to the additional tasks added to EVA 3.

4. Ken and Bueno,

Please report where you stowed the CWC-Is from the FD05 and FD06 fills, if different from the Water Ops Cue Card (MSG 016). Soichi had reported earlier that the location in the cue card was insufficient, so let us know if you had any issues. Also, please let us know which CWC-Is were stowed in which CTB.

5. Replace pages 2-20 through 2-25 and 3-66 through 3-75.

**REPLANNED**

**FD06**  
 GMT 05/19/10 (139)  
 MET Day\_005

005/00	POST EVA w/H2O	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
01	POST EVA w/H2O	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
02	ET VA AG UOCA P	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
03	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
04	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
05	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
06	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
07	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
08	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
09	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
10	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
11	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP
12	PRE SLEEP	PRE SLEEP	PRE SLEEP	SLEEP	POST SLEEP

ISS EXTERNAL SURVEY

S T S - 1 3 2

DAY/NIGHT	ORBIT	80	81	82	83	84	85	86	87	88
TDRS	W	E	Z							
ISS TDRS	AVAIL									
ORB ATT										
SSRMS POS										

BIAS -XLV -ZVY  
 MBS PDGF3 @ MS8

#STATUS CHECK

NOTES

**REPLANNED**

**FD06** GMT 05/19/10 (139) Day 005 005/00

ISS TDRS AVAIL

ISS CDR Kotov	TVIS	PS	DPC	PRE SLEEP-ISS	SLEEP	POST SLEEP
FE-1 Skvortsov	VELO	PS	DPC	PRE SLEEP-ISS	SLEEP	POST SLEEP
FE-2 Caldwell-Dyson	BSA PW - I	PS	DPC	PRE SLEEP-ISS	SLEEP	POST SLEEP
FE-3 Kormienko	MBM 16	PS	DPC	PRE SLEEP-ISS	SLEEP	POST SLEEP
FE-5 Noguchi	PW	PS	DPC	PRE SLEEP-ISS	SLEEP	POST SLEEP
FE-6 Creamer	PW	PS	DPC	PRE SLEEP-ISS	SLEEP	POST SLEEP

DAY/NIGHT	80	81	82	83	84	85	86	87	88
ORBIT									
SSRMS POS									
ALL VHF									

NOTES

**REPLANNED**

**FD07**  
 GMT 05/20/10 (140)  
 MET Day\_005

12	13	14	15	16	17	18	19	20	21	22	23	18
CDR Ham	POST SLEEP	EXERCISE	EXERCISE	EXERCISE	MDDK XFER	PAO	MEAL	OFF DUTY	OFF DUTY	OFF DUTY	EVA 3 PROC RVW	
PLT Antone11i	POST SLEEP	EMU SWAP EVA3	LBI IAN OTS HTT L	EXERCISE	EVA 3 TOOL CONFG	PAO	MEAL	OFF DUTY	OFF DUTY	OFF DUTY	EVA 3 PROC RVW	
MS1 Reisman	POST SLEEP	POST SLEEP	POST SLEEP	EXERCISE	EVA 3 TOOL CONFG	EVA 3 PROC RVW	MEAL	OFF DUTY	OFF DUTY	OFF DUTY	EVA 3 PROC RVW	
MS2 Good	POST SLEEP	EXERCISE	POST SLEEP	POST SLEEP	EVA 3 TOOL CONFG	EVA 3 PROC RVW	MEAL	OFF DUTY	OFF DUTY	OFF DUTY	EVA 3 PROC RVW	
MS3 Bowen	POST SLEEP	EMU SWAP EVA3	LBI IAN OTS HTT L	EXERCISE	EVA 3 TOOL CONFG	EVA 3 PROC RVW	MEAL	OFF DUTY	OFF DUTY	OFF DUTY	EVA 3 PROC RVW	
MS4 Sellers	POST SLEEP	MDDK #	MDDK #	MDDK XFER	EXERCISE	PAO	MEAL	OFF DUTY	OFF DUTY	OFF DUTY	EVA 3 PROC RVW	
DAY/NIGHT ORBIT	88	89	90	91	92	93	94	95	96			
TDRS	W	E	Z									
ISS TDRS AVAIL												
ORB ATT												
SSRMS POS												
NOTES												

BIAS -XLV -ZVW  
 MBS PDGF3 @ MS8  
 \*FILTER CK %CHECK  
 ^FILTER CK  
 ^CLOSE  
 #STATUS CHECK  
 2-22  
 FLT PLN/132/FLIGHT

**REPLANNED**

**FD07** GMT 05/20/10 (140) ISS TDRS Day 005 12 07 08 09 10 11 12 13 14 15 16 17 18 006/00

ISS CDR Kotov	POST SLEEP	PW DPC	PW	M1 AIR INIT	TVIS	MIDDAY MEAL	M1 INGRESS PREP	DPART PREP	M1 CCA CTM DIS	DPART PREP	ARED
FE-1 Skvortsov	POST SLEEP	PW DPC	M1 1-2-DL	TVIS	MIDDAY MEAL	MIDDAY MEAL	M1 INGRESS PREP	CPD CHIBOL	M1 CCA CTM DIS	VELO	*
FE-2 Caldwell-Dyson	POST SLEEP	PW DPC	T2	PC FSL VMU LAI DLT CA REINST	PAO SUP	MIDDAY MEAL	CS RTRV	CDRA INSTL	CS PMC	WARN EMER DPLY	EVA 3 PROC RVW
FE-3 Kornienko	POST SLEEP	PW DPC	TVIS	VELO	IMS	MIDDAY MEAL	TVIS MNTH MNT	R-PAO CHRONICLE P/V	GPO SYMBOLIC		
FE-5 Noguchi	POST SLEEP	PW DPC	FISH SMPLE RTRV	FISH SMPLE FIX1	ARED	MIDDAY MEAL	DPART PREP	PMC	CWQMK ANLS	T2	EVA 3 PROC RVW
FE-6 Creamer	POST SLEEP	PW DPC	ARED	T2	WIN SCAT	MIDDAY MEAL	EVA CAM	CDRA INSTL	HAH A DPART PREP	PROC RVW	
DAY/NIGHT ORBIT	88	89	90	91	92	93	94	95	96		
SSRMS POS ALL VHF					MBS PDGF3 @ WS8						
NOTES											

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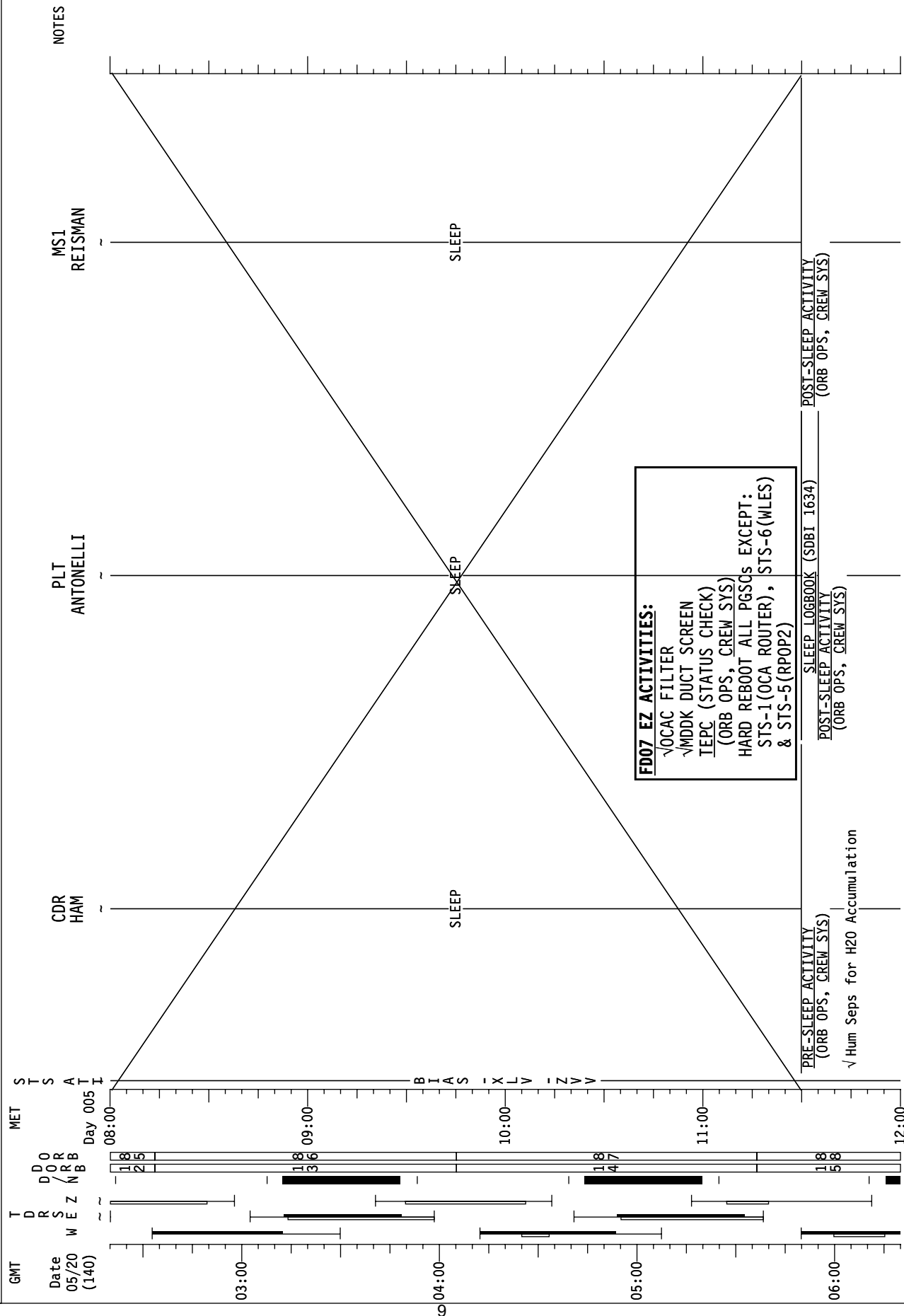


**REPLANNED**

**FD07** GMT 05/20/10 (140) ISS Day 006 006/00

ISS	TDRS	AVAIL	00	01	02	03	04	05	06	07	08	09	10	11	12
ISS CDR Kotov	ARRPW DPC				PRE SLEEP-ISS					SLEEP					
FE-1 skvortsov	TDEN XLD -15	P M DPC			PRE SLEEP-ISS					SLEEP					POST SLEEP
FE-2 Caldwell-Dyson	EVA 3 PROC RW				PRE SLEEP-ISS					SLEEP					POST SLEEP
FE-3 Kornienko	FS PY OM K B O L I C				PRE SLEEP-ISS					SLEEP					POST SLEEP
FE-5 Noguchi	EVA 3 PROC RW				PRE SLEEP-ISS					SLEEP					POST SLEEP
FE-6 Creamer	PROC RW				PRE SLEEP-ISS					SLEEP					POST SLEEP
DAY/NIGHT	ORBIT														
SSRMS POS	ALL VHF														
MBS PDGF3 @ WS8															
NOTES															

STS-132 FD (06)





REPLANNED

STS-132 FD (07)

GMT	Date 05/20 (140)	DRS W E Z	DRS M E Z	DRS D O R / R B	DRS N B	MET	STS S A T	CDR HAM	PLT ANTONELLI	MS1 REISMAN	NOTES
07:00											
08:00											
09:00											
10:00											
11:00											
12:00											
13:00											
14:00											
15:00											
16:00											

PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)  
 √ Hum Seps for H2O Accumulation

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

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POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY (ORB OPS, CREW SYS)

A] MCS CRADLE - AUTO INHIBIT  
 Inspect hose block filter, change if req'd  
 MCS CRADLE - AUTO

L17 Check MCIU filter screen  
 MCS FILTER CHECK [A]  
 CWC-I FILL (ORB OPS, ECLS)  
 Z Fill CWC-I #18, Perform Parts D, E & F  
 V Ref. MSG 016

CWC-I TRANSFER  
 Transfer I CWC-I to ISS

PRLA CLOSE  
 (ORB OPS, PRLA)  
 EMU SWAP FOR EVA 3  
 (EVA, AIRLOCK CONFIG)  
 Ref. MSG 059

EVA SYSTEMS: 1.515 EMU METOX/LI0H/BATTERY  
 REPLACEMENT Gather LI0H canisters from C  
 Bag, install in EMUS. Report to MCC-H which  
 LI0H S/N in which EMUS  
 Ref: STS-132 CONSUMABLES.CC

SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS)  
 Perform EQUIP PREP and  
 WATER TRANSFER HOSE PURGE  
 Ref. MSG 016

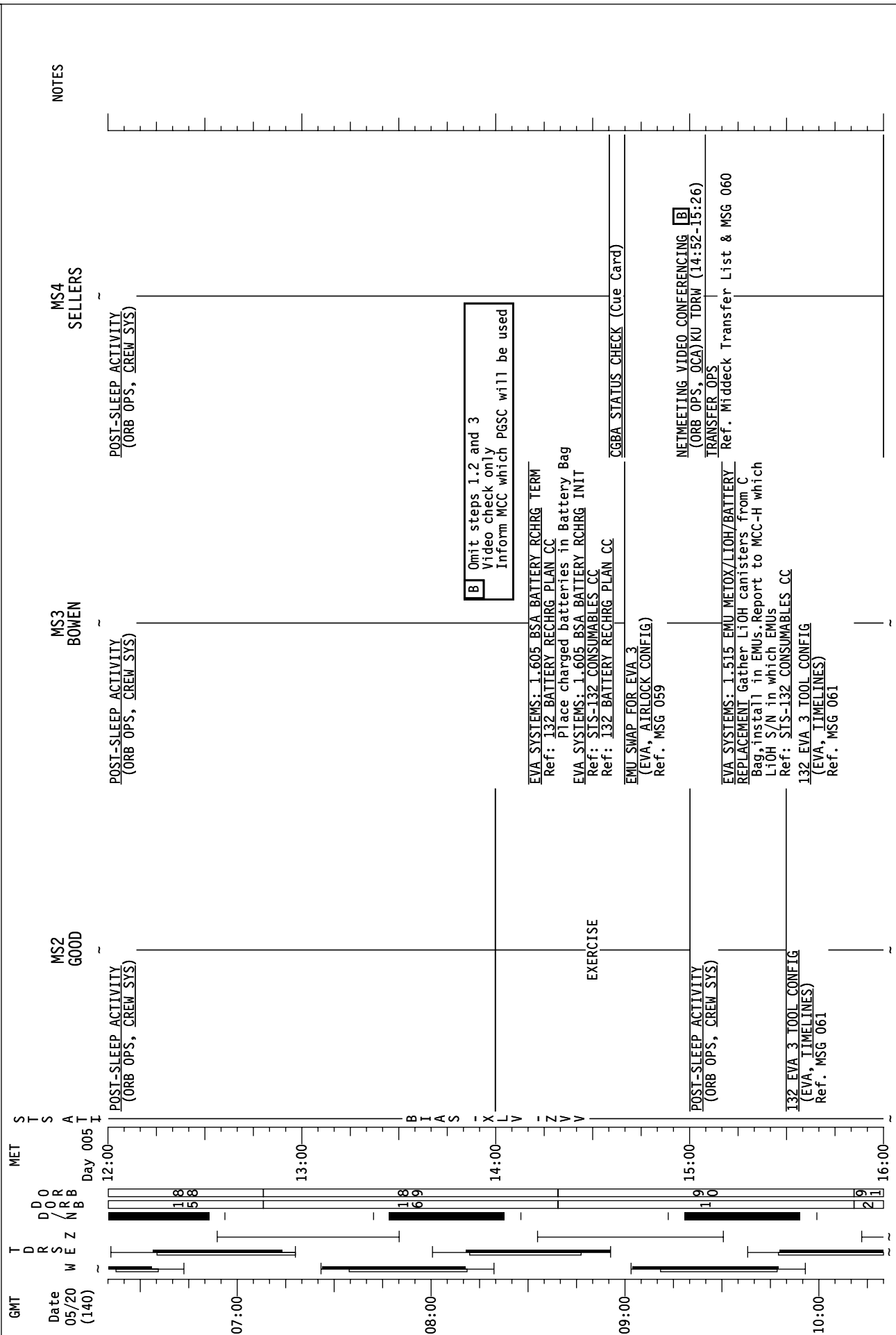
EXERCISE

EXERCISE

EXERCISE

REPLANNED

STS-132 FD (07)



REPLANNED

STS-132 FD (07)

GMT	Date 05/20 (140)	DRS W E Z	MET Day 005 T	CDR HAM	PLT ANTONELLI	MS1 REISMAN	NOTES
16:00				SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) Perform EQUIP PREP and WATER TRANSFER HOSE PURGE Ref. MSG 016	EXERCISE	132 EVA 3 TOOL CONFIG (EVA, TIMELINES) Ref. MSG 061	
17:00				SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) Init Fill #1 Ref. MSG 016	TRANSFER OPS Ref. Middeck Transfer List & MSG 060	EVA SYSTEMS: 1.305 EQUIPMENT LOCK PREP	
18:00				SHUTTLE/ISS H2O CNTR FILL (ORB OPS, ECLS) Perform FILL TERMINATION - CWC TRANSFER Transfer 1 CWC to ISS	TRANSFER OPS Ref. Middeck Transfer List & MSG 060	EVA 3 PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) Ref. MSG 056, 057, 058	
19:00				PUBLIC AFFAIRS EVENT ISS KU AVAIL: 17:56-18:39 Ref. MSG 055	PUBLIC AFFAIRS EVENT ISS KU AVAIL: 17:56-18:39 Ref. MSG 055		
20:00							

STS-132 FD (07)

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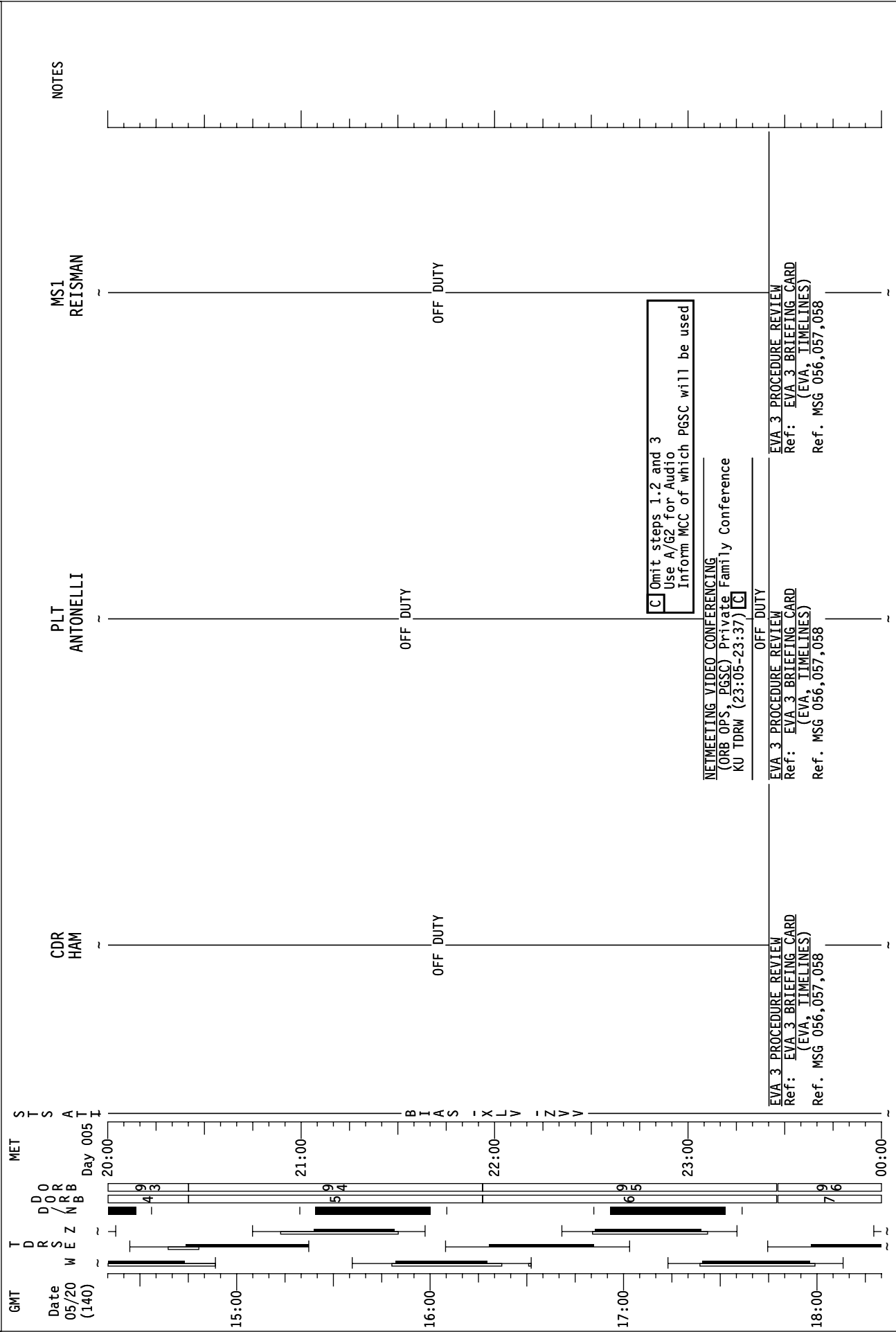
GMT	Date 05/20 (140)	DRS W E Z	MET S T S D O R A S A	Day 005 I	MS2 GOOD	MS3 BOWEN	MS4 SELLERS	NOTES
11:00					132 EVA 3 TOOL CONFIG (EVA, TIMELINES) Ref. MSG 061	132 EVA 3 TOOL CONFIG (EVA, TIMELINES) Ref. MSG 061		
12:00					EVA SYSTEMS: 1.305 EQUIPMENT LOCK PREP			TRANSFER OPS Ref. Middeck Transfer List & MSG 060
13:00						EVA 3 PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) Ref. MSG 056,057,058		
14:00								
15:00								
16:00								
17:00								
18:00								
19:00								
20:00								

C Omit steps 1.2 and 3  
Use A/g2 for Audio  
Inform MCC of which PGSC will be used

NETMEETING VIDEO CONFERRING (PFC)  
(ORB OPS, PGSC) KU TDWM (19:53-20:23) [C]

STS-132 FD (07)

REPLANNED







REPLANNED

STS-132 FD (07)

GMT	Date 05/20 (140)	T D R S W E Z	MET S T S A I	Day 006 T	CDR HAM	PLT ANTONELLI	MS1 REISMAN	NOTES
19:00				00:00	EVA 3 PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) Ref. MSG 056,057,058	EVA 3 PROCEDURE REVIEW Ref: EVA 3 BRIEFING CARD (EVA, TIMELINES) Ref. MSG 056,057,058		
					ILLUMINATOR OPS(CUE CARD,TV)ILLUM ON - A,D TRANSFER TAGUP PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) Air Quality Report	Coordinate with transfer counterpart	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)	
					NETMEETING VIDEO CONFERENCE (ORB OPS, PGSC) Private Family Conference KU TDRW (00:40-01:15) [C]			
				01:00	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS) Air Quality Report	TRANSFER BRIEF Call down status to MCC		
					PRIVATE MEDICAL CONFERENCE L9 PAYLOAD STATION AUDIO A/G (two) -OFF I Perform via A/G2			
20:00				02:00	PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)			EVA SYSTEMS: 1-206 10-2 PSIA CAMPOUT MASK PREBREATHE Ref: 132 EVA3 TOOL CONFIG (EVA, TIMELINES) Ref: STS-132 CONSUMABLES_CC
					<div style="border: 1px solid black; padding: 5px;">                     C1 Omit steps 1.2 and 3                      Use A/G2 for Audio                      Inform MCC of which PGSC will be used                 </div>			
21:00				03:00				PRE-SLEEP ACTIVITY (ORB OPS, CREW SYS)
22:00				04:00				SLEEP
								SLEEP
								<b>WAKE UP AT 6/11:30</b>



MSG 053 - FD07 MISSION SUMMARY

1  
2 Great job on EVA 2. Your reward is more spacewalking on EVA 3.

3  
4 Thanks for the entertaining flight day highlights - keep 'em coming.

5  
6  
7 YOUR CURRENT ORBIT IS: 191 X 184 NM

8  
9 NOTAMS - (ONE CHANGE: DOV CLSD RWY CHANGE)

10  
11 EDW - EDW 22L/04R IN USE. EDT 22R/04L CLOSED FOR CONSTRUCTION.  
12 EDW - LAKEBED RWYS 15/33 GREEN. 18L RED.  
13 NOR - LAKEBED RWYS GREEN.  
14 NTU - RWY 05R/23L CLSD.  
15 FOK - CLOSED.  
16 FMH - RWY 23 APCH LTS OTS.  
17 DOV - RWY 01/19 CLSD 1100 - 2100.  
18 EDF - TACAN EDF81 OTS.  
19 YYT - TACAN UYT23 AZIMUTH OTS.  
20 AMB - RWY 15/33 REQUIRES 30MIN PN TO CLEAR WIP.  
21 PTN - CLSD.  
22 IKF - NOT USABLE. NO AGREEMENT.  
23 BEN - NOT RECOMMENDED/NOT SUPPORTED.  
24 .

25  
26 NEXT 2 PLS OPPORTUNITIES:

27  
28 EDW22 ORB 95 – 5/22:49 SKC 7 250/11P18  
29 KSC15 ORB109 – 6/20:07 FEW030 7 080/07P10

30  
31 OMS TANK FAIL CAPABILITY:

32  
33 L or R OMS FAILS: NO

34  
35 LEAKING OMS PRPLT BURN:

36  
37 L or R OMS LEAK: ALWAYS BURN RETROGRADE

38  
39 OMS QUANTITIES(%)

40  
41 L OMS OX = 36.77 R OMS OX = 37.23  
42 FU = 36.79 FU = 36.89

43  
44 FOR CURRENT QTYS, SUBTRACT INCN'T COUNTER  
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MSG 053 - FD07 MISSION SUMMARY

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DELTA V AVAILABLE:

OMS 391 FPS  
ARCS (TOTAL ABOVE QTY1) 39 FPS

TOTAL IN THE AFT 430 FPS

ARCS (TOTAL ABOVE QTY2) 72 FPS  
 FRCS (ABOVE QTY 1) 37 FPS

AFT QTY 1 84 %  
 AFT QTY 2 46 %

<u>SYSTEM</u>	<u>FAILURE</u>	<u>IMPACT</u>	<u>WORK AROUND</u>
EVA	Tear on EV2's ISS Small Trash Bag	No impact for EVA2; crew will need to bring out additional trash bag for EVA3	Stowed in Truss C/L bag, to be brought back inside on EVA3
EVA	Stbd CETA Cart WIF2 Pitch/Yaw fitting stuck	Crewmember forced to use off-nominal pitch setting; task completed successfully	Additional OBSS GCA reqd

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MSG 054 - FD06 MMT SUMMARY

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STS-132/ULF4 FD06 - MMT Summary

The MMT met today to review the orbiter systems and mission progress.

Atlantis continues to perform well with no new anomalies reported since the MMT yesterday.

The MMT expressed their Kudos to the entire team for a job well done in support of EVA2. Exceptional job installing the 4 battery sets and the SGANT get ahead. A successful checkout of the ITVC/LDRI PTU was complete and full functionality was verified.

The MMT is still discussing the requirement to do additional docked RCC surveys. While the available data looks very good and no concerns have been identified, final assessment is in work. A decision is expected at tomorrow's MMT.

## 23-0647 (MSG 056) – FD07 EVA Deltas

Page 1 of 1

1 Steve, Big G, Bueno, Tony, and Hock,

2  
3 Another great EVA yesterday! We were very impressed with your effort and way to fix both  
4 shuttle and ISS on EVA 2. We have a few deltas for EVA 3:

- 5  
6 1. Msg 23-0648 (132-057) is your new EVA 3 Summary Timeline. We have added the P4/P5  
7 NH3 Jumper Install Task and a Get Ahead block to the timeline with some additional time  
8 for the P6 Cleanup.  
9
- 10 2. Msg 23-0649 (132-058) {Uplinked Procedures; US SODF: EVA Task; 23-0649 (MSG 058)  
11 EVA3 Get-Ahead Tasks} is the Get Ahead Procedures for EVA 3. It includes procedures  
12 for P1 Radiator GF Stow Beam Troubleshooting, EOTP MLI Flap close and Tool Stow.  
13
- 14 3. Msg 23- 0643 (132-059) is the EMU SWAP FOR EVA3 procedure which has been  
15 updated for Garrett, to switch to his back-up EVA gloves. He will also need to transfer over  
16 his wrist mirrors and change some arm cams settings.  
17
- 18 4. Msg 23-0653 (132-061) is your new EVA3 Tool Config.  
19
- 20 5. Next you will find some Pen and Inks for EVA 3 Timeline:  
21
- 22 □ Page FS 7-64a: Change EV2 step 1:  
23 WAS: Translate to P6 HR 5316; drop GREEN hook  
24 IS: Translate to P6 HR 5313; drop GREEN hook
  - 25 □ Page FS 7-65: Delete page
  - 26 □ Page FS 7-66:
    - 27 a. Delete EV1 steps 1-12
    - 28 b. Delete EV2 steps 1-12
    - 29 c. Change EV2 step 13:
      - 30 WAS: Reconfig APFR to WIF 21 settings [12,QQ,D,12]
      - 31 Verify locking collar black on black; perform pull/twist test; ingress
      - 32 IS: Verify APFR in WIF 21 settings [12,QQ,D,12]
      - 33 Verify locking collar black on black; perform pull/twist test; ingress
  - 34 □ Page FS 7-69:
    - 35 a. Change Time for P6 Cleanup
      - 36 WAS: (00:30)
      - 37 IS: (01:00)
    - 38 b. Add EV1 step 32
    - 39 32. Proceed to P4/P5 NH3 Jumper Install on Page FS 7-85
    - 40 c. Add EV2 step 22
    - 41 22. Proceed to P4/P5 NH3 Jumper Install on Page FS 7-85
  - 42 □ Page FS 7-85:
    - 43 a. Add EV2 step 1a
    - 44 1a. Open TA clamps (2)
    - 45 b. Add EV2 step 6a
    - 46 6a. Close TA clamps (2)
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23-0648 (MSG 057) – EVA3 Delta Summary Timeline

Page 1 of 1

EVA 3 SUMMARY TIMELINE

PET HR : MIN	IV/SSRMS	EV1 (Good)	EV2 (Reisman)
00:00		EGRESS/SETUP (00:30) Post Depress (00:05) Egress (00:15) Setup (00:10)	EGRESS/SETUP (00:30) Post Depress (00:05) Egress (00:15) Setup (00:10)
01:00		BATTERY 5 R&R (00:30) • Remove Battery 5 – Truss • Install Battery 5 – Pallet	BATTERY 5 R&R (00:30) • Remove Battery 5 – Truss • Install Battery 5 – Pallet
02:00		BATTERY E/6 R&R (01:05) • Remove Battery E – Pallet • Install Battery E – Truss • Remove Battery 6 – Truss • Install Battery 6 – Pallet	BATTERY E/6 R&R (01:05) • Remove Battery E – Pallet • Install Battery E – Truss • Remove Battery 6 – Truss • Install Battery 6 – Pallet
03:00		BATTERY F R&R (00:35) • Remove Battery F – Pallet • Install Battery F – Truss	BATTERY F R&R (00:35) • Remove Battery F – Pallet • Install Battery F – Truss
04:00		INSTALL TEMP STOWED BATTERY (00:35)	INSTALL TEMP STOWED BATTERY (00:35)
05:00	Get Aheads - ref.Msq.58 P1 Radiator GF Stow Beam (01:30) Re-secure EOTP Input Drive MLI (00:10) Tool Stow (01:00) - can be broken up	P6 CLEANUP (01:00)	P6 CLEANUP (01:00)
06:00		P4/P5 NH3 JUMPER INSTALL (00:15)	P4/P5 NH3 JUMPER INSTALL (00:15)
06:30		ORBITER PDGF RETRIEVAL (01:00)	ORBITER PDGF RETRIEVAL (01:00)
		GET-AHEADS (00:25)	GET-AHEADS (00:25)
		CLEANUP/INGRESS (00:30) Cleanup (00:20) Ingress (00:10)	CLEANUP/INGRESS (00:30) Cleanup (00:20) Ingress (00:10)
		PRE-REPRESS (00:05)	PRE-REPRESS (00:05)



1 **EMU SWAP FOR EVA 3** (30 min)

NOTE

This procedure assumes the following procedures have been completed following EVA 2:

{1.240 POST EVA} (SODF: ISS EVA SYS: EVA PREP/POST)

{1.605 BSA BATTERY RECHARGE - term} (SODF: ISS EVA SYS: BATTERY OPS)

{1.605 BSA BATTERY RECHARGE - init} (SODF: ISS EVA SYS: BATTERY OPS)

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- Both EMUs  1. Connect:
  - Boots to LTA
  - LTA to HUT
- EMU 3004 (BW)  2. Remove STS-132 Cuff C/L flight specific pages and stow ISS EVA Cuff C/L in Done Bag
- 3. Connect gloves to lower arms
- 4. Remove, temp stow:
  - Remove Helmet Lights and EMU TV
  - MWS
- 5. Remove helmet
- 6. Disconnect Comm Cap (BW2), stow in BW ECOK  
√DIDB restraint bag in correct position
- 7. Install helmet; sun visors down, cover installed
- 8. Remove REBA from PLSS, stow in M-02 Bag (s/n 1038)
- 9. Verify LiOH installed and EMU battery for return per STS-132 CONSUMABLES TRACKING CUE CARD
- 10. Gather EV1 (BW) EMU crew-specific items and place in BW ECOK  
Transfer ECOK to C Bag
- A/L1AO  11. Remove from EMU Equipment Bag the Shuttle Crew Specific Compartment (left side of bag) and stow in EVA Sys Xfer Bag
- EMU 3004 (BW)  12. Remove EMU from aft EDDA; transfer to Node 1
- EMU 3009 (G)  13. Transfer EMU from fwd to aft EDDA
- EMU 3018 (RM)  14. Transfer EMU and RM ECOK to E-Lk; install EMU on fwd EDDA
- 15. Install Helmet Lights and EMU TV  
Perform pull test to verify all latches fully seated  
√Sun visors down, cover installed
- 16. Install backup gloves (RM2), transfer wrist mirrors from prime gloves; stow prime gloves (RM1) in Bag E.

**23-0643 (MSG 059) – EMU Swap for EVA3**

Page 2 of 2

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17. Change arm cams for backup gloves per STS-132 NOMINAL EMU SIZING in section 12.

18. Install MWS

RM ECOK

18. Unstow ISS Crew Specific Compartment from RM ECOK and install on EMU Equipment Bag

Both EMUs

19. Install for EVA 3:  
 Helmet Light Batteries from STS-132 Battery Bag per STS-132 CONSUMABLES TRACKING CUE CARD

## MSG 060 (23-0651) - FD07 TRANSFER MESSAGE

Page 1 of 1

1  
2 Good morning Ken and Tony,

3  
4 You are 66% complete with transfer and still blazing through the choreography. We've  
5 added a D2Xs battery swap to the transfer list based on Tracy's call downs. If you have any  
6 trouble finding them, Tracy is the expert.

7  
8 The Transfer List Excel file, FD07\_Transfer\_List\_STS132.xls, is located on the KFX  
9 machine in **C:\OCA-up\transfer**.

10  
11 For ISS, the Transfer List Excel file, FD07\_Transfer\_List\_STS132.xls, is located in  
12 **K:\OCA-up\transfer**.

### 13 14 **Transfer Questions/Comments**

15  
16 Worklights: We're happy to hear that you found 1018. If 1019 can't be located, we only want  
17 you to do a one-for-one swap.

18  
19 Seat 7 Bag: Della was counting on some additional volume in Seat 7, and we're working on  
20 a plan to add items to that bag for return. Thanks for the heads up!

### 21 22 **FD07 Transfer Choreography:**

- 23
- 24 • T.J.: Transfer return GSC after GSC OPS activity (Item 723)
- 25 • Soichi: Transfer return samples after CWQMK activities (Item 734 and 735)
- 26 • T.J. and Tracy: Transfer CDRA Bed prior to CDRA-INSTALL activity (Item 10.1)
- 27 • MDDK XFER:
  - 28 ○ Continue return transfers
- 29

### 30 **Change Pages:**

31 **Please incorporate changes as follows:**

32  
33 In the Transfer List **RESUPPLY** tab  
34 Replace the following pages:  
35 Resupply Page – 9

36  
37 In the Transfer List **RETURN** tab  
38 Replace the following pages:  
39 Return Page – 10

### 40 41 **FD08 Transfer Choreography:**

- 42 • Soichi: Transfer return MCD after MCD/T+2 activity, if there is growth present (item  
43 725)
- 44 • MDDK XFER:
  - 45 ○ Continue return transfers
- 46
- 47

48 Let us know if you have any questions!  
49 - The ULF4 Transfer Team

50

# 23-0653 (MSG 061) - EVA3 Delta Tool Config

Page 1 of 3

## ISS Configuration

MT @ WS8 CETA Port/Stbd  
 PALLET on SSRMS at P6  
 SSRMS on PDGF 3

## Safety Tether config (STP = safety tether pack, 55+85)

EV1 ST pack (55+85) 85-ft anchor at P1 HR 3651  
 FWD D-ring  
 EV2 ST pack (55+85) 85-ft anchor at P1 HR 3650  
 AFT D-ring

NOTE: Prior to use, inspect the following hardware:

- Use RED RETs only
- RET cords for fraying
- Inspect Load Alleviating Straps and D-ring Extenders; ref CREW TETHER INSPECTIONS, ISS EVA Tasks Checklist 2.230.105:
  1. MMOD/general damage
  2. Discoloration
  3. Tack Stitching
  4. Red Band
- ISS Trash Bag: Brisle deformation/damage, after having stowed tools in trash bag
- Shuttle Trash Bag: Inspect frame for damage
- Inspect MWS End Effector Attachment Screws

Tether counts:	used	total available
RET sm-sm -381	15	16
RET lg-sm -385	4	8
RET sm-sm pp -383	4	5
AET sm-sm	7 (2-Shuttle)	10
AET lg-sm	2	2
Fish Stringer	2	5

## EV1 – Good

MWS √Tabs UP

- 2 – Wire ties as tether loops
- RET w/PIP Pin
- 5/8 x 7.8-in ext (stow in trash bag)
- RET sm-sm
- ISS Trash Bag
- 2 - AET
- Swing Arm (right side)
- RET sm-sm
- PGT s/n \_\_\_\_\_ (√MTL 30.5)
- 6-in ext
- 2-in ext
- BRT (left side) √Tab UP
- RET sm-sm
- Rnd Scoop
- PUMAA
- RET sm-sm
- 2 – short wire ties

EMU Right D-ring

- 55-ft RED hook, √locked
- D-ring Extender
- Waist Tether, √locked

EMU Left D-ring

- D-ring Extender

## EV2 – Reisman

MWS √Tabs UP

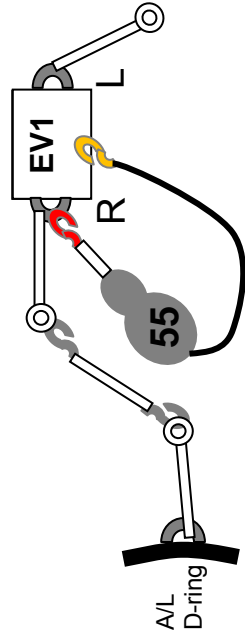
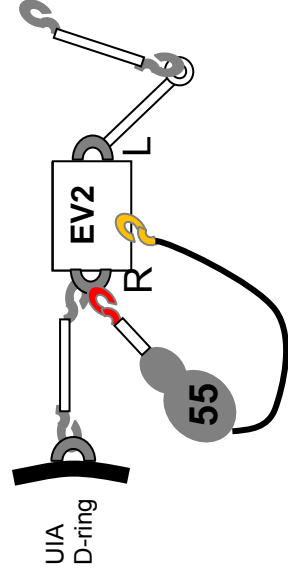
- 4 – Wire ties as tether loops
- Shuttle Style Trash Bag
- RET w/PIP Pin
- RET w/PIP Pin
- 2 – AET
- Swing Arm (right side)
- RET sm-sm
- PGT s/n \_\_\_\_\_ (√MTL 30.5)
- 6-in ext
- Camera w/bracket
- BRT (left side) √Tab UP
- RET sm-sm
- 2 – short wire ties

EMU Right D-ring

- 55-ft RED hook, √locked
- Waist Tether, √locked

EMU Left D-ring

- D-ring Extender
- Waist Tether, √locked



# 23-0653 (MSG 061) - EVA3 Delta Tool Config

Page 2 of 3

## P6 HR 5329

### C/L Bag – Truss (T)

#### Integral RETs

- MUT EE
- MUT EE
- Square Scoop
- Square Scoop

#### Internal D-rings

- RET sm-sm
- Ballstack
- AET
- RET sm-sm
- ISS Trash Bag
- Gap spanners (4)

#### External D-rings

- AET lg-sm
- AET sm-sm

## P6 HR 5328

### C/L Bag – Pallet (P)

#### Integral RETs

- Ratchet wrench w/o palm

#### wheel

- 2-in ext
- Square Scoop
- Square Scoop

#### Internal D-rings

- RET sm-sm
- Sq Torque Multiplier
- 7/16-in rec socket
- RET sm-sm
- socket caddy
- 2-in ext
- 6-in ext

#### External D-rings

- RET sm-sm
- AET Lg-sm

- RET-sm-sm**

## P6 IEA Battery

- Square Scoop
- Square Scoop

## P6 HR 5329 or 5355

- MUT EE
- Ballstack
- RET sm-sm
- AET (attached to HR)
- MUT EE
- P6 Battery
- Square Scoop
- Square Scoop
- AET (H1 Scoop to

HR 5338)

## Crewlock

- Spare safety tether pack
- RET Lg-sm (A/L stowage)

- Rnd Scoop
- PUMAA
- RET sm-sm
- PDGF

- RET Lg-sm (A/L stowage)

### C/L Bag – Truss

### C/L Bag – Pallet

- RET Lg-sm (A/L stowage)
- Camera w/bracket
- RET Lg-sm (A/L stowage)**
- C/L Bag – Tool Stow**

## Staging Bag

- Fish Stringer #1
- Wire Tie Caddy (hook #1)
- 9 wire ties
- Velcro/Tape Caddy (hook #2)
- PGT (hook #3)/s/n \_\_\_\_\_ s/n \_\_\_\_\_
- PGT Battery
- Vise-Grips (hook #4)**
- Ratchet Wrench (hook #5)
- 6-in (wobble) ext
- 3 – Long duration tie down tethers, hooked together (hook #6)
- W/F Adapter (hook #7)
- Fish Stringer #2
- ERAD (hook #1) s/n \_\_\_\_\_
- Connector Cleaner Tool Kit (hook #2)
- Pin Straightener Assy (hook #3)**
- Probe (hook #4)**
- Prybar (hook #5)
- Needle nose Pliers (hook #6)
- Cheater-bar (hook #7)**
- MWS Key Strap Assy (on wire tie, to strap)

## IV Bag

- Ammonia Contamination Cue Card
- 2 – Towels
- Contamination Detection Kit
- RET (sm-sm) (Black)
- 2 – DCM Plug (SAFER Hardmount)
- RET (sm-sm) (Black)
- 2 – GP Caddy
- 2 – Thermal Mitten (pair)
- RET (sm-sm) (Black)
- Socket Caddy
- 1/2-in (wobble) Socket – 8 ext
- 7/16-in (wobble) Socket – 6 ext

**Tool Stow C/L Bag:**

Integral RETs

- Pin Straightener [Staging bag, Fish Stinger 2 - hook 3]
- AET
- Short MMOD T-handle Tool [A/L100 1.0 CTB s/n 1161: EVA Miscellaneous Tools #2]
- Short MMOD T-handle Tool [A/L100 1.0 CTB s/n 1161: EVA Miscellaneous Tools #2]
- AET
- Vise Grips [Staging bag, Fish Stinger 1 - hook 4]
- Probe [Staging bag, Fish Stinger 2 - hook 4]
- Ratchet Wrench, w/ palm wheel [A/L100;1.0 CTB s/n 1161: EVA Miscellaneous Tools #2]
- RET
- Socket Caddy
- 12" Wobble Socket [A/L100; 1.0 CTB s/n 1161: EVA Miscellaneous Tools #2]
- RAD [A/L100; 1.0 CTB s/n 1161: EVA Miscellaneous Tools #2]
- RET w/ PIP Pin
- 18" Wobble Socket [A/L100; 1.0 CTB s/n 1161: EVA Miscellaneous Tools #2]
- RET
- Cheater Bar [Staging bag, Fish Stinger 2 - hook 7]
- GP Caddy [A/L100;1.0 CTB s/n 1013: MWS Hardware]
- Cannon Connector Tool [Done Mesh Bag]
- Cannon Connector Tool [Done Mesh Bag]
- Square Torque Multiplier Board (Will retrieve from Z1 stbd toolbox)

