<table>
<thead>
<tr>
<th>MSG</th>
<th>Page(s)</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>159A</td>
<td>1 - 16</td>
<td>FD12 Flight Plan Revision</td>
</tr>
<tr>
<td>160</td>
<td>17 - 18</td>
<td>FD12 Mission Summary</td>
</tr>
<tr>
<td>161</td>
<td>---</td>
<td>Daily Summary</td>
</tr>
<tr>
<td>162</td>
<td>19 - 21</td>
<td>FD12 Transfer Message</td>
</tr>
<tr>
<td>163</td>
<td>---</td>
<td>Stowage Locations for FD12 (GMT 050)</td>
</tr>
<tr>
<td>164A</td>
<td>22</td>
<td>FD12 Crew Choice Downlink</td>
</tr>
<tr>
<td>165B</td>
<td>---</td>
<td>FD12 PAO Event Summary Message - Joint Crew News</td>
</tr>
<tr>
<td>166</td>
<td>23 - 24</td>
<td>Photography Survey of Soyuz During Flyaround</td>
</tr>
<tr>
<td>167</td>
<td>25</td>
<td>Cupola Picture Notes</td>
</tr>
<tr>
<td>168</td>
<td>---</td>
<td>IMMT Results – 2/18/10</td>
</tr>
<tr>
<td>169</td>
<td>26</td>
<td>Additional LiOH Swap Activity</td>
</tr>
<tr>
<td>170</td>
<td>27 - 30</td>
<td>Space Shuttle Program Commemorative Patch</td>
</tr>
</tbody>
</table>

**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*.**
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.

\[\text{R1} \quad \text{O2,H2 MANF VLV TK2 (two) - OP (tb-OP)}\]
\[\text{O2 TK3 HTR A - AUTO}\]

\[\text{A11} \quad \text{CRYO TK4 HTR O2 A - AUTO}\]

\[\text{A15} \quad \text{CRYO TK5 HTR O2 A - OFF}\]

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.

\[\text{A15} \quad \text{CRYO TK5 HTRS H2 A,B (two) - AUTO}\]

\[\text{A11} \quad \text{CRYO TK4 HTRS H2 A,B (two) - OFF}\]

\[\text{R1} \quad \text{O2 TK1 HTR A - AUTO}\]
\[\text{TK2 HTR A - OFF}\]
\[\text{TK3 HTR A - OFF}\]

\[\text{H2 TK1 HTRS A,B (two) - AUTO}\]
\[\text{TK2 HTRS A,B (two) - OFF}\]

\[\text{O2,H2 MANF VLV TK1 (two) - CL (tb-CL)}\]
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.
<table>
<thead>
<tr>
<th>Day</th>
<th>Crew &amp; Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ISS CDR Williams</td>
<td>POST SLEEP</td>
</tr>
<tr>
<td>2</td>
<td>FE-1 Suraev</td>
<td>POST SLEEP</td>
</tr>
<tr>
<td>3</td>
<td>FE-4 Kotov</td>
<td>POST SLEEP</td>
</tr>
<tr>
<td>4</td>
<td>FE-5 Noguchi</td>
<td>POST SLEEP</td>
</tr>
<tr>
<td>5</td>
<td>FE-6 Creamer</td>
<td>POST SLEEP</td>
</tr>
</tbody>
</table>

For detailed activities and coordinates, please refer to the full document.
REPLANNED

GMT 02/19/10 (050)

TDRS AVAIL
DAY/NIGHT
DAILY ORBIT
TLM FORMAT
ATTITUDE
ALL VHF

ISS CDR
PRE SLEEP-ISS
SLEEP
POST SLEEP

FE-1
PRE SLEEP-ISS
SLEEP
POST SLEEP

FE-4
PRE SLEEP-ISS
SLEEP
POST SLEEP

FE-5
PRE SLEEP-ISS
SLEEP
POST SLEEP

FE-6
PRE SLEEP-ISS
SLEEP
POST SLEEP

TDRS
WEZ

STSI ORB ATT
FD/ISS CREW-CONF
EXPOSE-FE4-CLSOUT
BIAS -XLV -ZVV

NOTES
FD12 EZ ACTIVITIES:

- VOCAC FILTER & MDDK DUCT SCREEN
- TEPC (STATUS CHECK)
- (ORB OPS, CREW SYS)
- HARD REBOOT ALL PGSCs EXCEPT: STS-6(WLES), STS-5(RPOP2), & OCA ROUTER.
- Return all Shuttle IFM tools used on ISS, per MSG 052, to Endeavour prior to Hatch Close.

SLEEP LOGBOOK (ORB OPS, SDBI)  SLEEP LOGBOOK (ORB OPS, SDBI)  POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)  (ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY  POST-SLEEP ACTIVITY  POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)  (ORB OPS, CREW SYS)  (ORB OPS, CREW SYS)
ROBINSON PATRICK BEHNKEN

REPLANNED

3-127

STS-130 FD

02/18/10  13:30:51

MS2
ROBINSON

MS3
PATRICK

MS4
BEHNKEN

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP LOGBOOK (ORB OPS, SDBI)
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

SLEEP

SLEEP

SLEEP
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00</td>
<td>Transfer Ops (Ref. Transfer List &amp; MSG 162)</td>
</tr>
<tr>
<td>01:00</td>
<td>Transfer Ops (Ref. Transfer List &amp; MSG 162)</td>
</tr>
<tr>
<td>12:00</td>
<td>POST-SLEEP ACTIVITY (ORB Ops, Crew Sys)</td>
</tr>
<tr>
<td></td>
<td>POST-SLEEP ACTIVITY (ORB Ops, Crew Sys)</td>
</tr>
<tr>
<td></td>
<td>POST-SLEEP ACTIVITY (ORB Ops, Crew Sys)</td>
</tr>
</tbody>
</table>

### A) N2 Repress Using P/L N2 VLVS
- (ORB Ops, ECLS) on MCC GO
- Perform Steps 8-13
- MCC will TMBU S/W FDA in Step 13
- Work the ()s for all steps performed

### B) O2 Repress Init
- OCAC PWR - OFF
- CS DIRECT O2 vl v - OP


### D) On MCC GO, O2 Repress Term:
- CS DIRECT O2 vlv - CL
- OCAC PWR - ON

### Notes
- Handover status and forward work on Cupola Corner Panel Install to Soichi. Do not perform proc.
POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

POST-SLEEP ACTIVITY
(ORB OPS, CREW SYS)

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

GLACIER STATUS CHECK (ASSY OPS, CC)

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.

P/TV OR EXTERNAL SURVEY
(setup Step 2'

P/TV OR EXTERNAL SURVEY
(Ref Ops table ISS Still Survey

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

Notes
## STS-130 FD12

### Notes

**1.168 CUPOLA CORNER PANEL INSTALL**

Handover status and forward work on Cupola Corner Panel Install to Soichi. Do not perform proc.

**TRANSFER OPS**

Ref. Transfer List & MSG 162

**JOIN OPS: 3.118 O2 TRANSFER TEARDOWN**

Steps 1-6, ground will perform steps 1, 6, 4, 5, 7-8

**LIOH CAN EXCHANGE**

Ref: MSG 169 Ref. Transfer List: Items 807, 906, 907.

**P/TV05 ISS INTERNAL OPS**

Perform DEACTIVATION, Steps 2 and 3

**TRANSFER TAGUP**

Coordinate with transfer counterpart

**TRANSFER BRIEF**

Call down status to MCC

---

### Schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>16:00</td>
<td>TRANSFER OPS Ref. Transfer List &amp; MSG 162</td>
</tr>
<tr>
<td>17:00</td>
<td>LIOH CAN EXCHANGE Ref. MSG 169 Ref. Transfer List: Items 807, 906, 907.</td>
</tr>
<tr>
<td>18:00</td>
<td>CUPOLA CEREMONY ISS KU AVAIL: 19:05-19:52</td>
</tr>
<tr>
<td></td>
<td>TDRS HANDOVER: 19:37</td>
</tr>
<tr>
<td>19:00</td>
<td>CREW PHOTO</td>
</tr>
<tr>
<td>20:00</td>
<td>CREW PHOTO</td>
</tr>
</tbody>
</table>
STSW-130 FD12

Replanned

Notes

ISS A/L TOOL STOW

See Page 3-133
**On MCC GO:**

- MO10W 14.7 CAB REG INLET SYS 2 vlv-OP
  - Expect possible "S66 CAB N2(O2) FLO 2" msg. Avoid WCS area during periods of high N2 flow.

**FLIGHT DIRECTOR CONFERENCE**
F Discuss 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)
Ref. 1.134 NODE 3 LTL PUMP PKG ASSY(PPA) LAUNCH BRACKET RMVL (ASSY OPS, ACT/C/O)

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
C/L CAMR INSTALL (PHOTO/TV, REF PROC)
Perform step 1 only

GLACIER STATUS CHECK (ASSY OPS, CC)
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00</td>
<td>Joint Ops: 4.104 ODS VEST/PMA DPRS and Hatch Leak Check</td>
</tr>
<tr>
<td>01:00</td>
<td>PRE-SLEEP ACTIVITY (ORB OPS, CREW STS) HUM SEP FOR H2O ACCUMULATION</td>
</tr>
<tr>
<td>02:00</td>
<td>PRE-SLEEP ACTIVITY (ORB OPS, CREW STS) ILLUMINATORS OFF - ALL</td>
</tr>
<tr>
<td>03:00</td>
<td>SLEEP</td>
</tr>
<tr>
<td>10:00</td>
<td>Private Medical Conference KU TDRZ (23:43-00:15) G Gimbal Flip:00:07</td>
</tr>
<tr>
<td>11:00</td>
<td>NETMEETING VIDEO CONFERENCING (ORB OPS, PGSC)</td>
</tr>
<tr>
<td></td>
<td>SLEEP (ORB OPS, CREW STS)</td>
</tr>
<tr>
<td>12:00</td>
<td>SLEEP</td>
</tr>
<tr>
<td></td>
<td>SLEEP</td>
</tr>
<tr>
<td>13:00</td>
<td>SLEEP</td>
</tr>
</tbody>
</table>

**Notes**

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

**CREW WAKE AT 11/11:00**
ROBINSON PATRICK BEHNKEN

CREW WAKE AT 11/11:00

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

REPLANNED STS-130 FD

10:00 11:00 12:00 13:00

Notes
Congratulations on a docked mission of "Olympic" proportions. You are officially the only folks who are able to get more hang time then Shaun White.

YOUR CURRENT ORBIT IS: 191 X 181 NM

NOTAMS: ONE CHANGE (ADDED ESN)

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

NEXT 2 PLS OPPORTUNITIES:

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

OMS TANK FAIL CAPABILITY:

L OMS FAILS: NO
R OMS FAILS: NO

LEAKING OMS PRPLT BURN:

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

OMS QUANTITIES(%)

L OMS OX = 30.2 R OMS OX = 31.4
FU = 29.9 FU = 31.2

Subtract interconnect counter for current OMS quantities.
DELTA V AVAILABLE:

OMS 322 FPS
ARCS (TOTAL ABOVE QTY1) 42 FPS

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.
Good morning Kay, Terry, & Steve,

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

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

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

Change Pages
Please incorporate changes as follows:

In the Transfer List RESUPPLY tab
Replace the following page:
   Resupply – 14

In the Transfer List RETURN tab
Replace the following page:
   Return – 9

FD12 Choreography
- Jeff: Transfer returning blood sample per BLD STW activity (Item 704)
- TJ: Transfer returning saliva sample per SLV STW activity (Item 728)
- Steve: Transfer AFD PCS per AFT PCS XFER activity (Item 39)
- Steve: Transfer SSC back to ISS during SSC RETURN activity (Item 804)
- George: Transfer LiOH per LiOH CAN EXCHANGE activity (Items 807, 906, and 907)
- Soichi: Transfer DCBs to shuttle per DCB-TRANSFER activity (Items 709 and 710) (this is scheduled to occur after the Transfer Brief)
- XFER OPS:
  - Complete water hardware transfers (Items 24, 25, and 729)
  - Transfer remaining 5 MLE bags (Items 408, 700, 701, and 702)
  - Transfer EMUs (Items 712, and 713)
  - Transfer Return to Houston Imagery ziplock (Item 727)
  - Complete new transfer items (Items 805, 806, 903, 904, and 905)

Have a great day!

- The 20A Transfer Team
<table>
<thead>
<tr>
<th>CHNG</th>
<th>FD</th>
<th>Initials</th>
<th>Item #</th>
<th>Item Name</th>
<th>Qty</th>
<th>Initial Stowage</th>
<th>Temp Stowage</th>
<th>Stowage at Undock</th>
<th>Wt (lbs)</th>
<th>ACTIVITY / Constraints / **Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>801</td>
<td>Potable Sample Adapter</td>
<td>1</td>
<td>MF57K (in Sample/Purge Kit s/n 1001)</td>
<td>NOD202 (in Sample/Purge Kit s/n 1008, in M-02 Bag s/n 1026)</td>
<td>0.63</td>
<td>Transfer FD06 or later. **Item has a blue handle. Swaps with return item 735.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>802</td>
<td>LiOH [STS 130/20A # 1-9, USED]</td>
<td>9 cans</td>
<td>Shuttle LiOH Box</td>
<td>NOD3A2 (in CTBs)</td>
<td>85.23</td>
<td>Transfer on FD07 per LiOH XFER activity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>803</td>
<td>LiOH [STS 130/20A # 24-30 34, NEW]</td>
<td>7 4 cans</td>
<td>Shuttle LiOH Box</td>
<td>NOD1S4_D2</td>
<td>59.76</td>
<td>Transfer on FD07 per LiOH XFER activity.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>804</td>
<td>SSC 20</td>
<td>1</td>
<td>Shuttle Flight Deck</td>
<td>LAB1P6</td>
<td>7.94</td>
<td>Transfer on FD12 per SSC XFER activity. **Temp stowed on shuttle for docked mission only. Reference return item 739.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>805</td>
<td>Shampoo</td>
<td>:</td>
<td>Shuttle Hygiene Kits</td>
<td>PMA1 (in 0.5 CTB s/n 1123)</td>
<td>0.66</td>
<td>Retain what is needed for remainder of mission, transfer any bottles not needed to ISS. Report number of bottles transferred.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>806</td>
<td>1/8&quot; Hex Head, 1/4&quot; Drive</td>
<td>1</td>
<td>MA16D (in Tray 3)</td>
<td>NOD1D4_G2 (Drawer 2)</td>
<td>0.06</td>
<td>This is a replacement for ISS's broken tool. Please take the tool currently in Drawer 2 and move it to the CTB &quot;Broken/Expired Items #1&quot; (s/n 1272) located at NOD1O4_E2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>807</td>
<td>LiOH [STS-130/20A # 20-23, 14, 17, 31]</td>
<td>7 cans</td>
<td>Shuttle LiOH Box</td>
<td>NOD1S4_D2</td>
<td>52.29</td>
<td>Transfer per LiOH CAN EXCHANGE activity on FD12.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHNG</td>
<td>FD</td>
<td>Initials</td>
<td>Item #</td>
<td>Item Name</td>
<td>Qty</td>
<td>Initial Stowage</td>
<td>Temp Stowage</td>
<td>Stowage at Undock</td>
<td>Wt (lbs)</td>
<td>ACTIVITY / Constraints / **Comments</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Return Realtime Additions</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>902</td>
<td>MCA Series Sample Pump Assembly [s/n F0002]</td>
<td>1</td>
<td>NOD1D2 (in 1.0 CTB 1152)</td>
<td>MF57G (in top tray in foam cut-out)</td>
<td>6.90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ø 11</td>
<td>11</td>
<td></td>
<td></td>
<td>MCA Verification Gas Assembly [s/n F0002]</td>
<td>1</td>
<td>NOD2D2 (in 1.0 CTB s/n 1152)</td>
<td>MDDK Seat 7 Bag (in Bag 406)</td>
<td>12.22</td>
<td>Pack item for return in Bag 406 if space is available. If this item does not fit, please restow it on ISS.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>903</td>
<td></td>
<td></td>
<td>Node 3 Closeout Panel Launch Bolts</td>
<td>Ziplock(s)</td>
<td>NOD1P2 (in 0.5 CTB s/n 1065, in 3.0 CTB s/n 1048)</td>
<td>MDDK (in available food lockers)</td>
<td>48.92</td>
<td>Pad with towels to avoid damage to co-located hardware. Report locker location(s) used.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>904</td>
<td></td>
<td></td>
<td>MCIU PCMCIA RS-422 CABLE [s/n 312]</td>
<td>1</td>
<td>LAB1S5 installed</td>
<td>MDDK (in available food locker)</td>
<td>0.22</td>
<td>Wrap in towel or bubble wrap. Report locker location used. **This cable is attached to QUATECH RS-422 CABLE s/n 6003.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>905</td>
<td></td>
<td></td>
<td>LiOH [STS-129/ULF3 # 1-3 and 5-7]</td>
<td>6 cans</td>
<td>NOD1S4 D2</td>
<td>Shuttle LiOH Box</td>
<td>56.82</td>
<td>Transfer per LiOH CAN EXCHANGE activity on FD12.</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>906</td>
<td></td>
<td></td>
<td>LiOH [STS-130/20A # TBD]</td>
<td>1 can</td>
<td>NOD3A2 (in 2.0 CTB)</td>
<td>Shuttle LiOH Box</td>
<td>9.47</td>
<td>Transfer per LiOH CAN EXCHANGE activity on FD12.</td>
<td></td>
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**FD 12 Morning Crew Choice Times**

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

**FD 12 Evening Crew Choice Times**

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

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

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.

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

<table>
<thead>
<tr>
<th>LiOH Can</th>
<th>Initial Location</th>
<th>Final Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>STS-130/20A cans 20-23, 14, 17 &amp; 31</td>
<td>Shuttle LiOH Box</td>
<td>NOD1S4_D2</td>
</tr>
<tr>
<td>STS-129/ULF3 cans 1-3 &amp; 5-7</td>
<td>NOD1S4_D2</td>
<td>Shuttle LiOH Box</td>
</tr>
<tr>
<td>Any 1 from STS-130/20A cans 1-9</td>
<td>NOD3A2</td>
<td>Shuttle LiOH Box</td>
</tr>
</tbody>
</table>
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
First Place winner:
Mr. Blake Dumesnil, Hamilton Sundstrand, Johnson Space Center

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

While there have been a multitude of accomplishments in such a long, successful program, I felt it more appropriate to focus on the symbolism and iconography of the Shuttle program as simplistically recognized by all Americans rather than attempting to reflect so many of the exceptional program accomplishments such as the Hubble Telescope, creation of the International Space Station, the success of the Remote Manipulator System, etc in such an ultimately confined space. Instead, I have designed this patch as an overall celebration of the much-beloved program and vehicle that so many people have dedicated themselves to in so many capacities over the years with a sense of vibrancy and mysticism that the Space Shuttle Program will always be remembered by.
Second Place winner:
Ms. Jennifer Franzo, Michoud Assembly Facility, New Orleans

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

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.