Planned Burn Information (from FDF)

Maneuver Number (Orbital Maintenance Burn)_____`Delta-i #2`_____

Maneuver Start Time (doy/hh/mm/ss) GMT _____`285-13:53:00`_____

Maneuver End Time (doy/hh/mm/ss) GMT _____`285-14:11:00`_____

Duration _____`1061  sec`_____ **NOAPLS**____`42448`____

Thruster Set _____`1`_____ **THRDUR**____`13265`____

Timeline and Steps

Load RTCS _____Day 283 loads_____ at ___`TDW; 7934`___
(file name)   (station; orbit)
This RTCS load is attached as Appendix A.

Validate RTCS 22 at _`TDW; 7934`__ with the following proc;
(station; orbit)

    `S RTCSCONFIG (22,1,0)`
     1. Take the same action on the Stby SCP? (enter **NO**)
==
TDS 7935
Set up FSW at __`TDS; 7935`__ with the following;
(station; orbit)

    Start PREDELI NOTE: Once this proc is started, DO NOT type anything on the
              command line except answers to proc prompts!

    The proc will do the following (monitor the MNVR page)....

1. Check for Ext FSW tlm mode, PRADS complete, Precision mode, and at least 1 of 2 Latch Valves to be Open. If these do not verify, the proc will end.

2. Check for the ESA early orbit flag being set to YES (SFFESAALT = YES). If it is, the proc will prompt to set it to NO. (This should always be set to NO, and should be skipped by the proc)

3. **Wait for a GO** to Disable use of the Skew wheel Bias (type **GO** only after approval) After this cmd is sent, the Skew wheel will begin to drift down to 0 rpm. Gmt=_____

4. Check for FSW offset pointing to be Enabled. (SFOFFSETENBL = Disable) If it is, proc will ask for a GO to Disable it. (This should always be set to Disable, and should be skipped by the proc)

5. Check for System momentum to be used for Thruster momentum unloading (SFFSYSMOM_1 = System). If it is not, proc will ask for a GO to select it. (This should always be set to System, and should be skipped by the proc)

6. Check for Stuck thruster processing to be Disabled (SFSTCKREAEN=NO). If it is, proc will ASK if you want to Enable it. (This should always be set to Yes, and should be skipped by the proc)

7. Check for automatic LV closing by FSW (REDMN) to be ON (SFLATCHVEN=NO). If it is, proc will ASK if you want to turn it off. (This should always be set to Yes, and should be skipped by the proc)

8. Check for bypassing of the maneuver torque filter. If it is, the proc will automatically send the command for the filter to be used. It should be used for all burns over 25 sec in duration. (This will need a "/Allow")

After the proc completes, verify the following using the MNVR page;

Attitude Mode = PRECISION	_____
Attitude Offset Status = DISABLED	_____
Stuck REA Enabled? = YES	_____
Latch Valve REDMN Enabled? = YES	_____
Maneuver Torque Filter = USE	_____
Skew and Yaw Wheels drifting to 0 RPM	_____

Set new TEMPBIAS scales for PCD at __**TDS; 7935**__ with the following;

                                (station; orbit)

    S LOAD1W
      Address = **244DB**
      Value   = **0020**

Set new Maneuver Abort limits (+/- 5.5°) for P and R at __**TDS; 7935**__

                                          (station; orbit)

    Execute ER #143 (attached)
==
                                                            TDZ 7935

Move cooler door to Outgas proc at__**TDZ; 7935**__ with the following;

                               (station; orbit)

    Start ETMCDOG <u>NOTE:</u> Once this proc is started, DO NOT type anything on the
                               command line except answers to proc prompts!

The proc will do the following (monitor the ETM_STAT page)....

1. Check for ETM+ to be in a non-powered mode

2. ASK if you want to move the cooler door. (answer **YES** only after approval)

3. ASK what final position you want the door in. (answer **OUTGAS** after approval)

4. ASK what is the desired heater state. (answer **OFF** after approval)

5. Place the ETM+ into INIT mode. This may take a minute or two as the commands are metered out and certain power supply timing constraints are followed.

6. Power the cooler door motor ; Tlm about the cooler door position and mode are valid ONLY while the door motor is powered. Use the ETM_STAT page to verify steps 6 and 7 as the proc commands them.

7. Choose the CLOSE direction, move the door (the proc waits here for 23 sec before trying to verify the door position = OUTGAS), and power off the door drive.

8. Turn off outgas heaters (they should already be off)

9. Turn off the ETM+ power supplies.

10. ASK what final configuration you want other heaters in. (answer **NOR** after approval)

Verify the following using the ETM_STAT and MNVR pages;

    ETM+ Safestate Htr is ENABLED   _____

    ETM+ power supplies are OFF   _____

> **Before making the YawSlew RTCS = VALID, verify all previous steps have completed successfully. Verify attitude errors and rates are below the abort criterea listed in the *NOTE* below.**

Validate YAWSLEW RTCS at   **TDZ; 7935**   with the following proc;
                                   (station; orbit)

      RTCSCONFIG (20,1,0)
         1. Take the same action on the Stby SCP? (enter **NO**)

===

                                             SGS 7936

Verify the following using the SLEW, and MNVR pages;

Catbed Htrs ON	**12:52:40**	_____
S/A starts SLEW Fwd (to get to a position > 180°)	**13:16:30**	_____
S/A is commanded to rotate to 0° and stop	**13:23:40**	_____
At Yaw Slew time - 1 min.....		
Solar Array is at 0° and Stopped	**13:33:30**	_____
Thruster momentum unloading = Enabled	**13:34:27**	_____
Attitude limits selection = COARSE	**13:34:28**	_____
Star processing Inhibit? = YES	**13:34:29**	_____
Magnetic unloading using System momentum	**13:34:30**	_____
At Yaw Slew time - 32 sec.....		
FSW Tlm is in DATAB1 (Should be commanded ON at)	**13:35:02**	_____
ACS mode is Precision		_____
Batteries are <12% DOD, and array is heating up		_____
Catbeds are at least 113°C		_____
At Yaw Slew time.....		

NOTE: During the slew, if CAE_0 or CAE_1 (Roll and Pitch) exceed ± 2.5° or if CRA_0, CRA_1, or CRA_2 (Roll, Pitch, and Yaw) exceed ±0.17°/sec, the slew will be aborted. *The slew may be aborted manually using* /cfslwabrts.

ACS mode = SLEW   **13:35:34**   _____

GCYAW increasing to 90.75°   _____

Solar array current will start out at or near 0 amps and array will heat up. During the slew, array curent should begin to increase. Final values may be near 3/4 the normal output of the array.

EYESLEW (2 & 3) increasing towards 0.7   _____

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                                                                          TDS 7936

At Burn-5 min (Yaw slew complete).....

ACS mode = SLEW   **13:47:40**   _____

GCYAW settling to 90.75°   _____

EYESLEW (0,1,2,3) = 0.0, 0.0, 0.711, 0.702   _____

Wheel speeds and CAEs settling   _____

Before making the Burn RTCS = VALID, verify all previous steps have completed successfully.   Verify attitude errors and rates are below the abort criterea listed in the *NOTE* below.

Validate BURN RTCS prior to___**13:52:40**___with the following;

    RTCSCONFIG (21,1,0)
1. Take the same action on the Stby SCP? (enter **NO**)

VERIFY the following using the MNVR page;

    At Burn time.....

NOTE: *During the burn, if CAE_0 or CAE_1 (Roll and Pitch) ex ceed ± 5° or if CRA_0, CRA_1, or CRA_2 (Roll, Pitch, and Yaw) exceed ±0.22°/sec, the burn will be aborted. The burn may be aborted manually using* /cfmnvrabrts.

ACS mode=MANEUVER   _____

Jet pulses & catbed temps for jets 1-4 are increasing   _____

Duration Time = 3387   _____

Commanded OAE pulses = 10836   _____

Total On Pulses increasing to value in Commanded OAE pulses   _____

    After the burn is complete.....

ACS mode = Precision (coarse attitude limits enabled)   _____

RTCS 21 = INVALID   _____

Wheel speeds and CAEs settling   _____

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At Yaw Slew time.....   MGS 7936

ACS mode = SLEW   **14:17:40**   _____

GCYAW decreasing to 0°   _____

EYESLEW (0,1,2,3) heading for a final value of 0.0, 0.0, 0.0, 1.0   _____

    At Yaw end.....

ACS mode = SLEW   **14:28:30**   _____

GCYAW settling to 0°   _____

EYESLEW (0,1,2,3) = (0.0, 0.0, 0.0, 1.0) ± 0.001   _____

Wheel speeds and CAEs settling   _____

S/A return to Ephemeris mode and begin to rotate fwd. **14:32:00**   _____

Switch to DATAB2 at ___**MGS; 7936**___   with the following;
              (station; orbit)

    S DATAB(DT2)

Return to Precision mode at ____**MGS; 7936**____   with the following responses;
              (station; orbit)

    S GOTOPREC

      Wait for a GO to change ACS modes. NOTE: If PRADS is not converged, the proc will not allow you to switch and the command **/CFBMDERC** must be sent.
===

                                                                             TDZ 7936

Enable Star Processing when approved.

    /CFCATDS   (verify using the SLEW page)

Open the cooler door at__**TDZ; 7936**__   with the following responses;
                      (station; orbit)

    S ETMCDOG   <u>NOTE:</u> Once this proc is started, DO NOT type anything on the command line except answers to proc prompts!

The proc will do the following (monitor the ETM_STAT page)....

1. Check for ETM+ to be in a non-powered mode

2. ASK if you want to move the cooler door. (answer **YES** only after approval)

3. ASK what final position you want the door in. (answer **OPEN** after approval)

4. ASK what is the desired heater state. (answer **OFF** after approval)

5. Place the ETM+ into INIT mode. This may take a minute or two as the commands are metered out and certain power supply timing constraints are followed.

6. Power the cooler door motor; Tlm about the cooler door position and mode are valid ONLY while the door motor is powered. Use the ETM_STAT page to verify steps 6 and 7 as the proc commands them.

7. Choose the OPEN direction, move the door (the proc waits here for 23 sec before trying to verify the door position = OPEN), and power off the door drive.

8. Turn off outgas heaters (they should already be off)

9. Turn off the ETM+ power supplies.

10. ASK what final configuration you want other heaters in. (answer **NOR** after approval)

Put ETM+ in Stby mode at__**TDZ; 7936**__with the following proc;
$\qquad\qquad\qquad\qquad\qquad\qquad$(station; orbit)

$\quad$**S ETMINIT**$\qquad$This proc will do the following (monitor the ETM_STAT page);

1. ASK to which mode the ETM+ should be commanded. (answer **STBY** after approval)

2. ASK whether or not to Validate RTCS 70, 71. (answer **YES** after approval)

NOTE: ETM+ operations will not resume for at least 2 orbits in order to allow the instrument to reach thermal equilibrium.

Confirm ETM+ Htr configuration ; It will be necessary to disable the CFPA htr at this time.

$\quad$**/CECFPAHCOF**$\;$ CFPA Htr Control OFF
$\quad$**/CEBBHCOF**$\qquad$Blackbody htr control OFF/Backup OFF
$\quad$**/CEBHCOF**$\qquad\;$ Baffle htr control OFF/Backup OFF

Begin cleanup of fsw at __**TDZ; 7936**__ with the following responses;
$\qquad\qquad\qquad\qquad\qquad\;$(station; orbit)

$\quad$**S POSTDELI**$\quad$NOTE: This proc may be run in 2 or more parts.

1. Wait Until Mode   Maneuver, Maneuver mode enable status flag (SFFMMACSEN) = DISABLED, and GCYAW (SFCOMPFLT_16)   2.5

2. ASK whether or not to enable use of the Skew wheel bias. (answer **as directed**) This cmd will start the Skew wheel spinning towards its bias speed. Make sure the s/c is stable (CAEs and CRAs are low) before proceeding.

3. ASK whether or not to transfer into PRECISION mode. (answer **NO** if already in Precision**.** Otherwise, answer **YES.**) This cmd will change ACS mode from SLEW to PRECISION. Make sure the s/c is stable (CAEs and CRAs are low) before proceeding to Fine limits.

4. ASK whether or not to Disable ESA coarse attitude limits. (answer **as directed**) This cmd will set Attitude limits selection = FINE. Make sure the s/c is stable (CAEs and CRAs are low) and we are still in Precision before proceeding.

5. ASK whether or not to return to DATAB2. (answer **YES**)

6. ASK whether or not to re-enable the FSW pointing offsets. (answer **NO** after approval)

7. Check (and command if necessary) that RTCSs 19, 20, and 21 are Inactive and Invalid.

8. ASK whether or not to disable thruster momentum unloading and shut off the catbed htrs. (answer **YES** after approval)

==
$\hfill$SGS 7937

Load post-burn ephemeris; Load and move in r/t at __**SGS; 7937**__
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$(station; orbit)

$\hfill$ 5/29/01

Possible Re-run of POSTDELI for Skew wheel and Fine limits at __**LGS; 7937**__
<div align="right">(station; orbit)</div>

New Acq data; Send to the sites and notify them of the new products.

Proceed to settle and correct attitude.
> It may be necessary over an orbit or two to perform full resets on PRADS.
> This is done using the command **/CFFRSETS** <u>as directed</u>.

 DO NOT proceed until attitude is stable and correct; and PRADS is converged

Reset TEMPBIAS scales for PDC at __**TDS; 7937**__ using the following commands
<div align="center">(station; orbit)</div>

```
    S LOAD1W
       Address = 244DB
       Value   = 0030
```

Return Normal Slew Quaternion at __**TDS; 7937**__ with the following commands;
<div align="center">(station; orbit)</div>

```
    Switch to DATAB 1 using the DATAB(DT1) proc.
    /CFEYSLEW_0 CFEYSLEW_0A=0.0
    /CFEYSLEW_1 CFEYSLEW_1A=0.0
    /CFEYSLEW_3 CFEYSLEW_3A=1.0
    Switch to DATAB 2 using the DATAB(DT2) proc.
```

Return to normal RTCS configuration at __**TDS; 7937**__ with the following commands;
<div align="center">(station; orbit)</div>

```
    S RTCSCONFIG(19,1,0)
    S RTCSCONFIG(22,0,0)
```

Monitor ETM+ cooldown.

<u>When the CFPA reaches 110°K</u>, send the following commands;
> **/CEBBHCON**   Blackbody htr control ON/T1 SELECT
> **/CEBBT3S**   Blackbody T3 SELECT

<u>When the CFPA reaches 95°K</u>, send the following command;
> **/CEBHCON**   Baffle htr control ON

<u>When the CFPA reaches 87°K</u>, send the following command;
> **/CECFPAHCON**   CFPA Htr Control ON/T1 SELECT/Tlm ON

_____   _____
FOT Lead Operations Engineer   Date