

**HERSCHEL  
FLIGHT OPERATIONS PLAN**

**VOLUME 7**

**Contingency Flight Control Procedures**

**Thermal CRP's**

**PT-HMOC-OPS-FOP-6001-OPS-OAH**

**Issue 3.1**

**05/09/11**



## DOCUMENT APPROVAL

The Approval Page for all Volumes of the FOP can be found in Volume 1.



## DISTRIBUTION LIST

The Distribution List for all Volumes of the FOP can be found in Volume 1.

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## CHANGE SUMMARY

| Date       | FOP Issue | Version | Modification Description                     | Author      | SPR Ref |
|------------|-----------|---------|--|-------------|---------|
| 01/08/2008 |           | 1       | Created                                      | mvoegele-hp |         |
| 04/08/2008 |           | 2       | Updated for Issue 1.0                        | mvoegele-hp |         |
| 05/08/2008 | 1.0       | 3       | Changed title                                | mvoegele-hp |         |
| 02/02/2009 | 2.0       | 4       | Updated change control history for Issue 2.0 | mvoegele-hp |         |
| 06/03/2009 | 2.1       | 5       | Updated change control history for Issue 2.1 | mvoegele-hp |         |
| 26/03/2009 | 2.2       | 6       | Updated change control history for Issue 2.2 | mvoegele-hp |         |
| 23/04/2009 | 2.3       | 7       | Updated change control history for Issue 2.3 | mvoegele-hp |         |
| 06/05/2009 | 2.4       | 8       | Updated change history for Issue 2.4         | mvoegele-hp |         |
| 08/10/2009 | 2.5       | 9       | Updated change control history for Issue 2.5 | dbleakle-hp |         |
| 13/04/2010 | 3.0       | 10      | Updated change control history for issue 3.0 | mvoegele-hp |         |
| 05/09/2011 | 3.1       | 11      | Updated change control history for issue 3.1 | mvoegele-hp |         |

## CHANGE RECORD SHEET
















































| Change No. | Type of Change | Date of Issue | Section Affected   |  |
|------------|----------------|---------------|--|--|
| 1          | 1.0            | 06/08/08      | All  |  |
|            |                |               | Updated:   |  |
|            |                |               | Added:   | H_CRP_TCS_CLR, H_CRP_TCS_CLRB,<br>H_CRP_TCS_HCNR, H_CRP_TCS_HCPR,<br>H_CRP_TCS_HCR, H_CRP_TCS_HPNO,<br>H_CRP_TCS_HPNI, H_CRP_TCS_HPR0,<br>H_CRP_TCS_HPR1, H_CRP_TCS_MANG,<br>H_CRP_TCS_TCT, H_CRP_TCS_THMR   |
|            |                |               | Deleted:   |  |
| 2          | 2.0            | 02/02/09      | All – Complete re-print for Issue 2.0  |  |
|            |                |               | Updated:   | H_CRP_TCS_CLR, H_CRP_TCS_CLRB,<br>H_CRP_TCS_HCNR, H_CRP_TCS_HCPR,<br>H_CRP_TCS_HCR, H_CRP_TCS_HPNO,<br>H_CRP_TCS_HPNI, H_CRP_TCS_HPR0,<br>H_CRP_TCS_HPR1, H_CRP_TCS_MANG,<br>H_CRP_TCS_TCT, H_CRP_TCS_THMR   |
|            |                |               | Added:   | H_CRP_TCS_CLN  |
|            |                |               | Deleted:   |  |
| 3          | 2.1            | 06/03/09      | All – Complete re-print for Issue 2.1  |  |
|            |                |               | Updated:   | H_CRP_TCS_CLRB, H_CRP_TCS_HCNR,<br>H_CRP_TCS_TCT   |
|            |                |               | Added:   | H_CRP_TCS_01H0, H_CRP_TCS_01H1,<br>H_CRP_TCS_02H0, H_CRP_TCS_02H1,<br>H_CRP_TCS_03H0, H_CRP_TCS_03H1,<br>H_CRP_TCS_04H0, H_CRP_TCS_04H1,<br>H_CRP_TCS_05H0, H_CRP_TCS_05H1,<br>H_CRP_TCS_06H0, H_CRP_TCS_06H1,<br>H_CRP_TCS_07H0, H_CRP_TCS_07H1,<br>H_CRP_TCS_08H0, H_CRP_TCS_08H1,<br>H_CRP_TCS_09H0, H_CRP_TCS_09H1,<br>H_CRP_TCS_10H0, H_CRP_TCS_10H1,<br>H_CRP_TCS_11H0, H_CRP_TCS_11H1,<br>H_CRP_TCS_12H0, H_CRP_TCS_12H1,<br>H_CRP_TCS_13H0, H_CRP_TCS_13H1,<br>H_CRP_TCS_14H0, H_CRP_TCS_14H1,<br>H_CRP_TCS_15H0, H_CRP_TCS_15H1,<br>H_CRP_TCS_16H0, H_CRP_TCS_16H1,<br>H_CRP_TCS_17H0, H_CRP_TCS_17H1,<br>H_CRP_TCS_18H0, H_CRP_TCS_18H1,<br>H_CRP_TCS_HPSR |
|            |                |               | Deleted:   |  |
| 4          | 2.2            | 26/03/09      | Front Page, Change Summary, Change Record Sheet and List of Procedures replaced. |  |
|            |                |               | Updated:   | H_CRP_TCS_CLN, H_CRP_TCS_CLR,<br>H_CRP_TCS_HCNR, H_CRP_TCS_HPSR,<br>H_CRP_TCS_MANG, H_CRP_TCS_TCT,<br>H_CRP_TCS_THMR   |
|            |                |               | Added:   | H_CRP_TCS_STRF   |
|            |                |               | Deleted:   |  |
| 5          | 2.3            | 23/04/09      | All – Complete re-print for Issue 2.3  |  |
|            |                |               | Updated:   | H_CRP_TCS_CLN, H_CRP_TCS_CLRB,<br>H_CRP_TCS_HPSR, H_CRP_TCS_TCT  |

|                |     |          |  |   |
|----------------|-----|----------|--|---|
|                |     |          | Added:   | H_CRP_TCS_CLMX, H_CRP_TCS_CLN2,<br>H_CRP_TCS_FDIR, H_CRP_TCS_RLRB |
|                |     |          | Deleted:   |   |
| 6              | 2.4 | 06/05/09 | Front Page, Change Summary, Change Record Sheet and List of Procedures replaced. |   |
|                |     |          | Updated:   | H_CRP_TCS_HPSR  |
|                |     |          | Added:   | H_CRP_TCS_FCCG, H_CRP_TCS_HCRN,<br>H_CRP_TCS_HRVT                 |
|                |     |          | Deleted:   | H_CRP_TCS_STRF  |
| 7              | 2.5 | 07/10/09 | Front Page, Change Summary, Change Record Sheet and List of Procedures replaced. |   |
|                |     |          | Updated:   |   |
|                |     |          | Added:   |   |
|                |     |          | Deleted:   | H_CRP_TCS_HRVT  |
| 8              | 3.0 | 13/04/10 | Complete re-print  |   |
|                |     |          | Updated:   |   |
|                |     |          | Added:   |   |
|                |     |          | Deleted:   |   |
| <del>8</del> 9 | 3.1 | 05/09/11 | Front Page, Change Summary, Change Record Sheet and List of Procedures replaced. |   |
|                |     |          | Updated:   |   |
|                |     |          | Added:   | H_CRP_TCS_TCTF  |
|                |     |          | Deleted:   |   |













## **Introduction**

## 2.6 Thermal Flight Control Procedures

|   |                                |   |   |            |
|---|--------------------------------|---|---|------------|
|    | <a href="#">H_CRP_TCS_01H0</a> | Switch OFF HCS of HPS1  | 2 | 26/02/2009 |
|    | <a href="#">H_CRP_TCS_01H1</a> | Switch ON HCS of HPS1   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_02H0</a> | Switch OFF HCS of HPS2  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_02H1</a> | Switch ON HCS of HPS2   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_03H0</a> | Switch OFF HCS of HPS3  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_03H1</a> | Switch ON HCS of HPS3   | 2 | 26/02/2009 |
|    | <a href="#">H_CRP_TCS_04H0</a> | Switch OFF HCS of HPS4  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_04H1</a> | Switch ON HCS of HPS4   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_05H0</a> | Switch OFF HCS of HPS5  | 2 | 26/02/2009 |
|    | <a href="#">H_CRP_TCS_05H1</a> | Switch ON HCS of HPS5   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_06H0</a> | Switch OFF HCS of HPS6  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_06H1</a> | Switch ON HCS of HPS6   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_07H0</a> | Switch OFF HCS of HPS7  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_07H1</a> | Switch ON HCS of HPS7   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_08H0</a> | Switch OFF HCS of HPS8  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_08H1</a> | Switch ON HCS of HPS8   | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_09H0</a> | Switch OFF HCS of HPS9  | 1 | 16/02/2009 |
|    | <a href="#">H_CRP_TCS_09H1</a> | Switch ON HCS of HPS9   | 2 | 27/02/2009 |
|   | <a href="#">H_CRP_TCS_10H0</a> | Switch OFF HCS of HPS10   | 1 | 16/02/2009 |
|   | <a href="#">H_CRP_TCS_10H1</a> | Switch ON HCS of HPS10  | 1 | 16/02/2009 |
|  | <a href="#">H_CRP_TCS_11H0</a> | Switch OFF HCS of HPS11   | 1 | 16/02/2009 |
|  | <a href="#">H_CRP_TCS_11H1</a> | Switch ON HCS of HPS11  | 1 | 16/02/2009 |
|  | <a href="#">H_CRP_TCS_12H0</a> | Switch OFF HCS of HPS12   | 1 | 16/02/2009 |
|  | <a href="#">H_CRP_TCS_12H1</a> | Switch ON HCS of HPS12  | 1 | 16/02/2009 |
|  | <a href="#">H_CRP_TCS_13H0</a> | Switch OFF HCS of HPS13   | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_13H1</a> | Switch ON HCS of HPS13  | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_14H0</a> | Switch OFF HCS of HPS14   | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_14H1</a> | Switch ON HCS of HPS14  | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_15H0</a> | Switch OFF HCS of HPS15   | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_15H1</a> | Switch ON HCS of HPS15  | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_16H0</a> | Switch OFF HCS of HPS16   | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_16H1</a> | Switch ON HCS of HPS16  | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_17H0</a> | Switch OFF HCS of HPS17   | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_17H1</a> | Switch ON HCS of HPS17  | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_18H0</a> | Switch OFF HCS of HPS18   | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_18H1</a> | Switch ON HCS of HPS18  | 1 | 17/02/2009 |
|  | <a href="#">H_CRP_TCS_CLMX</a> | Thermal Control Loop MOT Check_mask update                              | 1 | 03/04/2009 |
|  | <a href="#">H_CRP_TCS_CLN</a>  | Configure Redundant Heater Group [10 to 18]<br>Nominal after CL failure | 4 | 22/04/2009 |
|  | <a href="#">H_CRP_TCS_CLN2</a> | Configure Redundant Heater Group [1 to 9]<br>Nominal after CL failure   | 1 | 22/04/2009 |
|  | <a href="#">H_CRP_TCS_CLR</a>  | Configuration check after thermal control loop failure                  | 2 | 18/03/2009 |
|  | <a href="#">H_CRP_TCS_CLRB</a> | Roll back after thermal control loop on board reconfiguration           | 6 | 16/04/2009 |
|  | <a href="#">H_CRP_TCS_FCCG</a> | Restore Ground FCCT parameters  | 1 | 29/04/2009 |
|  | <a href="#">H_CRP_TCS_FDIR</a> | Trigger TCS FDIR Level 2 Recovery                                       | 1 | 04/04/2009 |
|  | <a href="#">H_CRP_TCS_HCNR</a> | Heater Group reconfiguration after failure of the Nominal one           | 5 | 16/03/2009 |
|  | <a href="#">H_CRP_TCS_HCPR</a> | Reset Heater Group protection   | 2 | 08/12/2008 |
|  | <a href="#">H_CRP_TCS_HCR</a>  | Configuration check after HCS high dissipation detection                | 3 | 09/01/2009 |
|  | <a href="#">H_CRP_TCS_HCRN</a> | Heater Group reconfiguration from HPS 10-18 to                          | 1 | 04/05/2009 |



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|   |                                |   |              |
|---|--------------------------------|---|--------------|
|   | HPS 1-9                        |   |              |
|  | <a href="#">H_CRP_TCS_HPNO</a> | Nominal HPS switch OFF  | 2 08/12/2008 |
|  | <a href="#">H_CRP_TCS_HPNI</a> | Nominal HPS switch ON   | 2 08/12/2008 |
|  | <a href="#">H_CRP_TCS_HPRO</a> | Redundant HPS switch OFF  | 2 08/12/2008 |
|  | <a href="#">H_CRP_TCS_HPRI</a> | Redundant HPS switch ON   | 2 08/12/2008 |
|  | <a href="#">H_CRP_TCS_HPSR</a> | HPS current OOLs  | 5 05/05/2009 |
|  | <a href="#">H_CRP_TCS_MANG</a> | Start/Stop Thermal Control function                                 | 2 18/03/2009 |
|  | <a href="#">H_CRP_TCS_RLRB</a> | Roll back after thermal control loop on board reconfiguration TCS B | 1 16/04/2009 |
|  | <a href="#">H_CRP_TCS_TCT</a>  | Thermal Control Table maintenance                                   | 7 16/04/2009 |
|  | <a href="#">H_CRP_TCS_TCTF</a> | In-flight Thermal Control Table updates                             | 1 07/03/2011 |
|  | <a href="#">H_CRP_TCS_THMR</a> | Configuration check after thermistor failure                        | 4 24/03/2009 |