

|              |  |              |                                 |
|--------------|--|--------------|---------------------------------|
| <b>SPIRE</b> | <b>Project Document</b>                      | <b>Ref</b>   | <b>SPIRE-RAL-PRJ-001079</b>     |
|              |  | <b>Issue</b> | <b>9.0</b>                      |
|              | <b>Non-conformance Reports Status Report</b> | <b>Date</b>  | <b>16<sup>th</sup> May 2006</b> |
|              |  |              |                                 |

# SPIRE

|                                       |  |                             |
|---------------------------------------|--|-----------------------------|
| <b>SUBJECT:</b>                       | <b>Non-Conformance Reports Status Report</b> |                             |
| <b>PREPARED BY:</b>                   | <b>E A Clark</b>                             |                             |
| <b>DOCUMENT No:</b>                   | <b>SPIRE-RAL-PRJ-0001079</b>                 |                             |
|                                       |  |                             |
| <b>APPROVED BY:</b>                   | <b>Name</b>                                  | <b>Signature &amp; Date</b> |
| <b>Project Manager</b>                | <b>K.J. King</b>                             |                             |
| <b>Instrument Development Manager</b> | <b>E. Sawyer</b>                             |                             |
| <b>Product Assurance Manager</b>      | <b>Eric Clark</b>                            |                             |

## Distribution

**Live Link**



# List of RAL Non-Conformances

PRODUCT ASSURANCE  
SPACE SCIENCE DEPARTMENT  
Rutherford Appleton Laboratory

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.               | Level | Subsystem Assembly/ Part | Model                    | NCR Title  | Issue Date | Disposition/Corrective Actions  | References | Close Out Date |
|------------------------------|-------|--------------------------|--------------------------|--|------------|---|------------|----------------|
| (ATC) SPI-BSM-NCR-17         | Major | BSM                      | STM                      | None (Mirror spotting water marks)   | 14-Oct-02  | See NCR   |            | 01-Nov-02      |
| (ATC) SPI-BSM-NCR-34         | Major | BSM                      | PFM                      | None (Fail safe rest position)   | 19-Jan-04  | See NCR<br>RFW SPI-BSM-NOT-730 is applicable  |            | 01-Jul-04      |
| (ATC) SPI-BSM-NCR-39         | Major | BSM                      | PFM                      | None (Chop fails settling time)  | 23-Jun-04  | See NCR   |            | 01-Jul-04      |
| (CEA) LAM.QUA.SPI.AN 20067   | Minor | Mirrors CM5              | STM                      | Undersize Mirror   | 25-Nov-02  | Use as is<br>Width of the Mirrors too short by 1mm (160mm instead of 161mm). The mirror remains symmetrical with respect to the Mechanical interface. |            | 03-Jan-03      |
| (CEA) LAM.QUA.SPI.NC 30017.1 | Major | D-Tool                   | SSW Spectrometer Channel | Discrepancy on the distance between the two dowel pins at the I/F with Spire optical bench | 12-Feb-03  | See NCR   |            | 10-Jan-03      |
| (CEA) LAM.QUA.SPI.NC 30038.1 | Major | SMEC                     | STM                      | Diameter of the SMEC attachment points   | 19-Mar-03  | See NCR   |            | 14-Nov-03      |
| (CEA) LAM.QUA.SPI.NC 30038.2 | Major | SMEC                     | STM                      | Diameter of the SMEC attachment points   | 19-Mar-03  | See NCR   |            | 14-Nov-03      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i>              | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i>      | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|------------------------------------|--------------|---------------------------------|-------------------|--|-------------------|--|-------------------|-----------------------|
| (CEA)<br>LAM.QUA.SPI.NC<br>30045.1 | Major        | CM3 mirror                      | STM<br>STM<br>STM | iscrepancy on CM3 optical surface orientation with respect to spigot axis        | 25-Apr-03         | See NCR  |                   | 14-Nov-03             |
| (CEA)<br>LAM.QUA.SPI.NC<br>30047.1 | Major        | SM7 Mirror M                    | STM<br>STM<br>STM | Orientation of the SM7 Mirror  | 14-Jul-03         | See NCR<br>HR-SP-MSSL-ECR-002 raised but Not Implemented<br>MSSL referenced NCR and modified drawing (issue 3) accordingly |                   | 07-Oct-03             |
| (CEA)<br>LAM.QUA.SPI.NC<br>30048.1 | Major        | SM8_a Mirror                    | STM<br>STM<br>STM | SM8 Mirror Orientation   | 11-Sep-03         | See NCR<br>HR-SP-MSSL-ECR-001 raised but Not Implemented<br>MSSL referenced NCR and modified drawing (issue 3) accordingly |                   | 07-Oct-03             |
| (CEA)<br>NCR_DCU_<br>104           | Major        | Warm FCU/MCU                    | QM1               | MCU QM0 J01/J39 position swapped   | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.  |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>105           | Major        | Warm FCU/MCU                    | QM1               | MCU QM0 Board position and connector position not representative of flight model | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.  |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>109           | Major        | Warm DCU Backplane              | QM1               | DCU photometer and spectrometer supplies merged                                  | 27-Aug-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.  |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>110           | Major        | Warm DCU                        | QM1               | DCU photometer and spectrometer noise allocation                                 | 27-Aug-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.  |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>118           | Major        | Warm FCU/SCU CCHK               | QM1               | J03 pin out not consistant with DRCU ICD   | 10-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.  |                   | 04-Nov-04             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i>    | <i>Level</i> | <i>Subsystem Assembly/Part</i> | <i>Model</i> | <i>NCR Title</i>  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|--------------------------|--------------|--------------------------------|--------------|---|-------------------|---|-------------------|-----------------------|
| (CEA)<br>NCR_DCU_<br>121 | Major        | Warm<br>DCU<br>BIAS            | QM1          | Transients to FPU at power on   | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>122 | Major        | Warm<br>FCU/MCU                | QM1          | MCU QM0 command to response timing exceeds specification                                      | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>123 | Major        | Warm<br>FCU/MCU                | QM1          | MCU QM0 drains excessive current on MCU_P15 at power on                                       | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>124 | Major        | Warm<br>DCU<br>BIAS            | QM1          | "Temperature Readout" Bias channel: Amplitude Non-conformance                                 | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP: May be related to NCR 155 |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>125 | Major        | Warm<br>DCU                    | QM1          | Missing Supply voltage HK channels on all DCU<br>issing supply voltage HK channels on all DCU | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>126 | Major        | Warm<br>DCU<br>BIAS            | QM1          | Missing temperature probe on BIAS board   | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>127 | Major        | Warm<br>DCU<br>BIAS            | QM1          | Vdd1 for bias spectro not found   | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>128 | Major        | Warm<br>FCU/SCU<br>TEMP        | QM1          | SCU QM1 "ScuTHTref" HK channel not functional   | 15-Sep-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.                           |                   | 04-Nov-04             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i>    | <i>Level</i> | <i>Subsystem Assembly/Part</i> | <i>Model</i> | <i>NCR Title</i>  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>                     | <i>References</i> | <i>Close Out Date</i> |
|--------------------------|--------------|--------------------------------|--------------|---|-------------------|---|-------------------|-----------------------|
| (CEA)<br>NCR_DCU_<br>129 | Major        | Warm<br>DCU<br>LIAS            | QM1          | 6 DCU LIAS channels show none<br>reproducible behaviour             | 15-Sep-<br>03     | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>130 | Major        | Warm<br>FCU/SCU<br>CCHK-IF     | QM1          | Position of the parameters in the<br>telemetry data frame           | 15-Sep-<br>03     | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>132 | Major        | Warm<br>DCU                    | QM1          | DCU J03 Connector missing pin 13                                    | 16-Sep-<br>03     | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>134 | Major        | Warm<br>DCU<br>Bias            | QM1          | Heater PMW2 channel not functional                                  | 24-Sep-<br>03     | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>138 | Major        | Warm<br>FCU/SCU<br>CCHK-IF     | QM1          | TC_heater voltage, inconsistency<br>between Sap & SEDI measurements | 24-Sep-<br>03     | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>147 | Major        | Warm<br>DCU<br>LIAP            | QM1          | LIAP No 5 Shows bad gain on channel 30                              | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>148 | Major        | Warm<br>DCU<br>LIAP            | QM1          | LIAP No 6 Shows bad gain on channel 9                               | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |
| (CEA)<br>NCR_DCU_<br>149 | Major        | Warm<br>DCU<br>LIAS            | QM1          | LIAS cut-off frequency non-conformance                              | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP. |                   | 04-Nov-<br>04         |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i>    | <i>Level</i> | <i>Subsystem Assembly/Part</i> | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>                         | <i>References</i> | <i>Close Out Date</i> |
|--------------------------|--------------|--------------------------------|--------------|--|-------------------|---|-------------------|-----------------------|
| (CEA)<br>NCR_DCU_<br>150 | Major        | Warm<br>DCU<br>LIAP            | QM1          | LIAP cut-off frequency non-conformance                       | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.     |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>151 | Major        | Warm<br>DCU<br>BIAS            | QM1          | BIAS amplitude depends on frequency                          | 28-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.     |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>152 | Major        | Warm<br>DCU<br>LIAS            | QM1          | LIAS no 1 shows bad gain on Channels 13, 19, 23              | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.     |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>153 | Major        | Warm<br>DCU<br>LIAS            | QM1          | LIAS no 2 shows bad gain on Channels 1, 5, 9, 12, 20, 21, 24 | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.     |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>154 | Major        | Warm<br>DCU<br>LIAS            | QM1          | LIAS no 3 shows bad gain on Channels 8, 9, 10, 11, 21, 24    | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.     |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>155 | Major        | Warm<br>DCU<br>BIAS            | QM1          | Bolometer Bias Max. amplitude is 200mVpp instead of 200mVrms | 29-Oct-03         | See NCR<br>Supplied as part of the Warm Electronics EIDP.     |                   | 04-Nov-04             |
| (CEA)<br>NCR_DCU_<br>270 | Major        | Warm<br>FCU/SCU                | QM1          | FCU temperature channels, reduced ranges                     | 07-Sep-05         | See NCR<br>Supplied Late                                      |                   |                       |
| (CEA)<br>NCR_DCU_<br>360 | Major        | Warm<br>DCU                    | QM2          | Reset Bias   | 01-Jun-05         | See NCR<br>Supplied as part of the Warm Electronics QM2 EIDP. |                   | 29-Sep-05             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i>  | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>                         | <i>References</i> | <i>Close Out Date</i> |
|------------------------|--------------|---------------------------------|--------------|--|-------------------|---|-------------------|-----------------------|
| (CEA) NCR_DCU_368      | Major        | Warm DCU                        | QM2          | DCU QM2 RAL, Noise at LIA input exceeds budget   | 22-Jun-05         | See NCR Supplied as part of the Warm Electronics QM2 EIDP.    |                   |                       |
| (CEA) NCR_DCU_369      | Major        | Warm DCU/FCU                    | QM2          | DCU & FCU QM2 RAL, not compliant with FM type MICD   | 22-Jun-05         | See NCR Supplied as part of the Warm Electronics QM2 EIDP.    |                   |                       |
| (CEA) NCR-DPU-CGS-B-24 | Minor        | DPU                             | EM           | A spike on the read signal of the FIFOs occurs in correspondence with a write cycle on Board DPU-EM-210.00-0 S/N 01&02 | 23-Jan-04         | See NCR Copy of NCR received by RAL PA Section Mon 07/06/2004 |                   |                       |
| (CEA) NCR-DPU-CGS-B-25 | Minor        | DPU                             | EM           | Loss of communication on 1355  | 23-Jan-04         | See NCR Copy of NCR received by RAL PA Section Mon 07/06/2004 |                   |                       |
| (CEA) NCR-DPU-CGS-B-27 | Minor        | DPU                             | EM           | Misalignment of the bytes composing the words read from the FIFOs on board DPU-EM-210.00.0 S/N 05 & 06                 | 26-Jan-04         | See NCR Copy of NCR received by RAL PA Section Mon 07/06/2004 |                   |                       |
| (CEA) NCR-DPU-CGS-B-28 | Minor        | DPU                             | EM           | DPU Boot failure   | 18-Feb-04         | See NCR Copy of NCR received by RAL PA Section Mon 07/06/2004 |                   |                       |
| HP-111000-ASED-NC-1340 | Minor        |                                 | EQM          | HIFI FPU: SIH connectors not fully fixed after fastening of fix. Screws  | 08-Aug-05         | See NCR Information only                                      |                   |                       |
| HP-112000-ASED-NC-1248 | Major        |                                 | EQM          | SPIRE SIH PSW_JFETV Gnd open line  | 11-Jul-05         | See NCR   |                   |                       |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i>  | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>      | <i>References</i> | <i>Close Out Date</i> |
|------------------------|--------------|---------------------------------|--------------|--|-------------------|--|-------------------|-----------------------|
| HP-112000-ASED-NC-1340 | Minor        | FPU SIH connector               | EQM          | SPIRE: FPU SIH connectors not fully fixed after fastening of fix. Screws | 08-Aug-05         | See NCR                                    |                   |                       |
| HP-112000-ASED-NC-1375 | Major        |                                 | EQM          | Source Sequence Counter Errors on CCS                                    | 22-Aug-05         | See NCR                                    |                   |                       |
| HP-112000-ASED-NC-1662 | not listed   |                                 | EQM          | High correlation between cryo cover temp and SPIRE L1 temp               | 25-Oct-05         | See NCR                                    |                   |                       |
| HP-112000-ASED-NC-1688 | not listed   |                                 | EQM          | Evaporator temperature not correct wrt L0 temperature                    | 07-Nov-05         | See NCR                                    |                   |                       |
| HP-112000-ASED-NC-1800 | Major        | EMC Test                        | EQM          | SPIRE EMC H-Field RS Test Results non conformances                       | 29-Nov-05         | See NCR                                    |                   |                       |
| HP-112000-ASED-NC-1804 | Major        |                                 | EQM          | SPIRE EMC E-Field RS test results non conformances                       | 30-Nov-05         | See NCR                                    |                   |                       |
| HP-112000-ASED-NC-1812 | not list     |                                 | EQM          | SPIRE detector chain partial failure                                     | 02-Dec-05         | See NCR                                    |                   |                       |
| HP-112200-ASED-NC-1083 | Major        | SPIRE warm                      | EQM          | SPIRE: MIL bus functional behaviour out of requirement detect. w. IDAS   | 15-May-05         | See NCR<br>Information only NCR from ESTEC |                   |                       |



|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i>     | <i>NCR Title</i>  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|------------------|---|-------------------|--|-------------------|-----------------------|
| HP-121432-ASED-NC-895 | not list     | SIH CVV Inter                   | Information only | Error in Spire CVV Internal Harness Definition                | 06-Apr-05         | See NCR Information only   |                   |                       |
| HP-121432-ASED-NC-896 | not list     | SIH CVV Exte                    | Information only | Spire SIH CVV External Harness C4 to C9 Pin 47 connection     | 06-Apr-05         | See NCR Information only   |                   |                       |
| HP-121432-ASED-NC-912 | Major        | Scientific instr                | Information only | Discrepancy in SPIRE Harness Definition shielding of Gnd wire | 05-Apr-05         | See NCR Information only   |                   |                       |
| HP-121432-ASED-NC-941 | Major        | SIH SVM Inter                   | Information only | SPIRE SIH Double Pin allocation Pin 7 bundle C3               | 11-Apr-05         | See NCR Information only   |                   |                       |
| HP-153300-ASED-NC-210 | Major        | DPU<br>SN 153300                | PACS             | PACS DPU anomalous behaviour during first test at ASED        | 06-Apr-04         | See NCR Information only NCR from ESTEC  |                   |                       |
| HP-2-SEN-NC-6         | Minor        | Optical Bench Plate             | PFM<br>EQM       | out of position holes mismatch FPU to OBP                     | 30-Jun-04         | Use as is<br>NCR Accepted and agreed by Spire Email sent 30 July 04                                |                   | 30-Jul-04             |
| HP-2-SEN-NC-7         | Minor        | Optical Bench Plate             | EQM              | Flatness of FPU mounting Pads out of tolerance                | 30-Jun-04         | Use as is<br>NCR Accepted and agreed by Spire Email sent 30 July 04                                |                   | 30-Jul-04             |
| HR-MSSL-SPIRE-NCR-1   | Major        | Structure<br>Photometer c       | CQM              | Baffle panel damaged  | 13-Aug-02         | implement recovery procedure once it has been appr<br>ITEM Scrapped due to other damage NCR closed |                   | 17-Apr-03             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/Part</i> | <i>Model</i> | <i>NCR Title</i>                                  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|--------------------------------|--------------|---|-------------------|---|-------------------|-----------------------|
| HR-MSSL-SPIRE-NCR-3   | Major        | L0 Strap                       | CQM          | Electrical short on Level 0 Thermal strap         | 26-Jan-05         | TBD   |                   |                       |
| HR-MSSL-SPIRE-NCR-4   | Major        | Level 0 Evapo                  | FM           |   | 28-Sep-05         |   |                   |                       |
| HR-MSSL-SPIRE-NCR-5   | Major        | Level 0 Evapo                  | FM           |   | 28-Sep-05         |   |                   |                       |
| HR-MSSL-SPIRE-NCR-6   | Major        | Level 0 Pump                   | FM           |   | 28-Sep-05         |   |                   |                       |
| HR-MSSL-SPIRE-NCR-7   | Major        | Level 0 Spectr                 | FM           |   | 03-Oct-05         |   |                   |                       |
| HR-SP-AS-NCR-1        | Minor        | AS Cryostat                    | GSE          | Flange Change                                     | 13-Dec-02         | Adaptor Flange made and fitted Abingdon Scientific Cryostat Manufacturer  |                   | 13-Dec-02             |
| HR-SP-IFSI-NCR-1      | Minor        | IFSI DPU                       | AVM          | RANDOM ERRORS IN FAST SERIAL DATA LINKS RECEPTION | 12-Nov-03         | See NCR<br>Introduction of integrating capacitances on the READ pins of the receiving FIFOs has highly mitigated the error rate, but still not completely removed the source of |                   | 03-Nov-04             |
| HR-SP-JPL-NCR-5       | Minor        | JFET's<br>Sn 001-008           | CQM          | JFET Incoming inspection                          | 08-Oct-03         | Corrected at RAL (See NCR)<br>JPL Reviewed and corrected Packing procedure No further action requiredref SPIRE-RAL-REP-001829 incoming inspection report.                       |                   | 04-Apr-05             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>                 | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|----------------------------------|-------------------|---|-------------------|-----------------------|
| HR-SP-JPL-NCR-6       | Minor        | JFET's                          | PFM          | Yield Degradation of JFET Module | 31-May-05         | See JPL PFR attached to NCR<br>Preliminary NRB held during JPL Weekly telecon of 31-May-2005 . (See attached) JPL PFR attached 21/12/05   |                   | 21-Dec-05             |
| HR-SP-JPL-NCR-7       | Minor        | BDA<br>PMW and PS               | PFM FS       | PMW and PSW focal position shift | 01-Jul-04         | TBW<br>Formall raised as TBD allocated as number 006 by JPL re-allocated as 007 by RAL due to duplication of numbers<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB   |                   | 14-Jul-05             |
| HR-SP-JPL-NCR-NCR-1   | Minor        | JPL<br>RF Filter Mod            | CQM          | RF Filters over Max Mass Limit   | 14-Aug-03         | Use as Delivered re-allocated Mass budget. NCR Closed<br>Action 1 JPL Note Should be added to the EIDP<br>Regarding the increased Mass allowance as of 3/2/2003.<br>Action 2 JPL Request for Waiver should be submitted, to |                   | 14-May-04             |
| HR-SP-JPL-NCR-NCR-2   | Minor        | JPL<br>PLWBDA<br>PLW Filter     | CQM          | PLW FILTER BOWING                | 03-Sep-03         | Use as is deos not affect detector performance.<br>UWC to comment and complete Cause & Action sections of NCR form  |                   | 14-May-04             |
| HR-SP-JPL-NCR-NCR-3   | Minor        | JPL<br>PLW BD. SL               | CQM          | Array Process Change             | 06-Oct-03         | Recommend 'Use as is' for the P/LW on CQM only S/LW<br>Recommend 'Use as is' for the P/LW on CQM only S/LW<br>use on PFM 1 build - NOT SUITABLE FOR FLIGHT –<br>review situation for flight spare                           |                   | 18-Oct-04             |
| HR-SP-JPL-NCR-NCR-4   | Minor        | JPL                             | CQM          | Performance criteria not met     | 06-Oct-03         | See NCR<br>NCR CLOSED Corrective Action accepted by SPIRE<br>Project Team.  |                   | 18-Oct-04             |
| HR-SP-MSSL-NCR-1      | Minor        | Structure                       | GSE          | Gold Plating                     | 25-Mar-03         | see NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001717  |                   | 17-Jun-03             |
| HR-SP-RAL-NCR-1       | Minor        | EGSE                            | GSE          | Double Click Error               | 27-Sep-01         | Complete the removal.<br>Whole packets are now displayed via the log file display.<br>Awaiting Acceptance test before closing   |                   | 14-Feb-03             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: CDMS-Sim         | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i>      | <i>Model</i> | <i>NCR Title</i>                              | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|--------------------------------------|--------------|---|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-2       | Minor        | EGSE                                 | GSE          | Astrium Buslist Error                         | 27-Sep-01         | Corrected during Acceptance Test.<br>Circulate correction sheet for users to amend their software release 0.6 installation.  |                   | 14-Feb-03             |
| HR-SP-RAL-NCR-3       | Minor        | EGSE                                 | GSE          | Master Time error                             | 27-Sep-01         | Corrected during Acceptance Test.<br>AAdd brackets to software text. Corrected during acceptance test Correct in version 0.7. See DDC.CPP Change Record Attached. (October 1st ) Awaiting next |                   | 14-Feb-03             |
| HR-SP-RAL-NCR-4       | Minor        | EGSE                                 | GSE          | DDC Bus Message log                           | 27-Sep-01         | Use Programme MTZDISK.EXE instead of ACE windows Menue. Check test plan instruction changed to reflect above instruction.  |                   | 14-Feb-03             |
| HR-SP-RAL-NCR-5       | Minor        | EGSE                                 | GSE          | TMReq message timing                          | 27-Sep-01         | See DDC.CPP Change Record attached (October 10th Fix) Awaiting acceptance test results before closing NCR  |                   | 14-Feb-03             |
| HR-SP-RAL-NCR-6       | Minor        | EGSE                                 | GSE          | RT implementation of Flow Control flags       | 27-Sep-01         | The Instrument Simulator has been modified to set the FLOW CONTROL bits to indicate whether or not there is a telemetry packet awaiting transfer. Awaiting acceptance                          |                   | 14-Feb-03             |
| HR-SP-RAL-NCR-7       | Minor        | OGSE for Telescope Si Mirror M2, Tel | GSE          | Focal length out-of-spec                      | 30-Nov-01         | see NCR<br>Assess impact on M2 imaging performances / Marc Ferlet<br>30/11/2001  |                   | 17-Dec-01             |
| HR-SP-RAL-NCR-8       | Minor        | Calibration Cryoharness Connectors   | GSE          | Crimp contacts with tails in wrong end        | 21-Jun-02         | Glenair to provide replacement MIL Spec contacts<br>Glenair to provide replacement contacts with solder leads crimped in correct end.  |                   | 21-Jun-02             |
| HR-SP-RAL-NCR-9       | Minor        | JFET 6 JFET assy                     | SM           | Out of tolerance thermal straps (6 JFET assy) | 30-Sep-02         | Use as is (see NCR)<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; IF extra such items are ordered for STM, consider swapping to keep best ones for flight.                                 |                   | 14-Nov-03             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>                       | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|--|-------------------|---|-------------------|-----------------------|
| HR-SP-RAL-NCR-10      | Minor        | MGSE Rear Frame a               | GSE          | Spire MGSE rear frame assy             | 26-Sep-02         | Return to manufacturer for re-work<br>Manufacturer corrected problem but other holes found missing corrected in house   |                   | 07-May-03             |
| HR-SP-RAL-NCR-10.1    | Minor        | MGSE Rear Frame a               | GSE          | Spire MGSE rear frame assy             | 26-Sep-02         | Return to manufacturer for re-work<br>Reworked by manufacturer when returned holes were found to be missing corrected in house Use as is  |                   | 09-May-03             |
| HR-SP-RAL-NCR-11      | Minor        | MGSE Support Fram Frame Parts   | GSE          | Aluchrome Finish on support rails      | 23-Sep-02         | Components to be cleaned to remove bead blasting r<br>Components to be cleaned to remove bead blasting residue and re-aluchromed to DEF 1200 Reworked finish still poor USE As IS.                      |                   | 09-May-03             |
| HR-SP-RAL-NCR-12      | Minor        | MGSE Trolley Bridge rails       | GSE          | Mismatch on Rail Cross Section         | 23-Sep-02         | TBD<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863;   |                   | 14-Nov-03             |
| HR-SP-RAL-NCR-13      | Minor        | HDPE Windo                      | GSE          | Surface finish                         | 30-Sep-02         | Use as is, Has been found to be leak tight during cold test<br>NCR closed re SPIRE-RAL-MoM-002013   |                   | 14-May-04             |
| HR-SP-RAL-NCR-14      | Minor        | MGSE HOB Plate                  | GSE          | Hob Plate material to soft             | 09-Oct-02         | Have new plate made from harder material Use exist<br>Existing plate will be used for the Cryostat cold tests and MGSE fit checks   |                   | 23-Oct-02             |
| HR-SP-RAL-NCR-15      | Minor        | MGSE Support Fram               | GSE          | MGSE Support Frame Dimension incorrect | 10-Oct-02         | Dimensions were checked against the drawings and w<br>Dimensions were checked against the drawings and were found to be correct. Therefore there is no problem NCR can be closed without further action |                   | 23-Oct-02             |
| HR-SP-RAL-NCR-16      | Minor        | MGSE Trolley                    | GSE          | MGSE Trolley Tolerance stack up        | 10-Oct-02         | see NCR   |                   | 23-Oct-02             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>                | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|---------------------------------|-------------------|---|-------------------|-----------------------|
| HR-SP-RAL-NCR-17      | Minor        | MGSE Hob Plate                  | GSE          | HOB Plate                       | 10-Oct-02         | MSSL to Advise<br>THIS NCR IS CLOSED and superceded by updated version 017v1 below                          |                   | 18-Mar-03             |
| HR-SP-RAL-NCR-17.1    | Minor        | MGSE Hob Plate HOB-SIM_Ch       | GSE          | HOB Plate                       | 18-Mar-03         | MSSL to Advise Use as is<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001717<br>USE As Is                      |                   | 17-Jun-03             |
| HR-SP-RAL-NCR-18      | Minor        | MGSE Hob Plate HOB-SIM_Ch       | GSE          | HOB Plate                       | 07-Jan-03         | Drawings to be ammended before ordering 2nd Hob PI<br>Drawings to be ammended before ordering 2nd Hob Plate |                   | 09-May-03             |
| HR-SP-RAL-NCR-19      | Minor        | JFET racks                      | SM           | Feet Don't seat down properly   | 10-Jan-03         | see NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863 with Manufacturer (SENAR) REPLY attached to NCR    |                   | 14-Nov-03             |
| HR-SP-RAL-NCR-20      | Minor        | MGSE Cryostat Chamber           | GSE          | Initial pump-down test failure. | 14-Jan-03         | see NCR   |                   | 09-May-03             |
| HR-SP-RAL-NCR-21      | Minor        | GSE Cryostat Cold Harness       | GSE          | SPIRE TF Cryoharness Labelling  | 25-Feb-03         | See NCR<br>Defines the Harness connector labeling without ambiguities. Superceded by v.1                    |                   | 07-May-03             |
| HR-SP-RAL-NCR-21.1    | Minor        | GSE Cryostat Cold Harness       | GSE          | SPIRE TF Cryoharness Labelling  | 25-Feb-03         | See NCR<br>Superseded by v2connector designator coloums corrected   |                   | 14-Nov-03             |
| HR-SP-RAL-NCR-21.2    | Minor        | GSE Cryostat Cold Harness       | GSE          | SPIRE TF Cryoharness Labelling  | 25-Feb-03         | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; connector designator coloums corrected            |                   | 14-Nov-03             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/ Part          | Model | NCR Title                                    | Issue Date | Disposition/Corrective Actions  | References | Close Out Date |
|--------------------|-------|-----------------------------------|-------|--|------------|---|------------|----------------|
| HR-SP-RAL-NCR-22   | Minor | MGSE Cryostat HOB_SIM HA          | GSE   | HOB Simulator-B Hole Dimensions              | 05-Mar-03  | MSSL to Advise Use as is<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001717   |            | 17-Jun-03      |
| HR-SP-RAL-NCR-23   | Minor | MGSE Cryostat Foot Rail           | GSE   | Cryostat Rail Dimension incorrect            | 18-Mar-03  | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; Rail should have been 1,000mm long instead was 970mm datum hole therefore incorrectly positioned                                  |            | 14-Nov-03      |
| HR-SP-RAL-NCR-24   | Minor | MGSE Test Cryostat Main burst dis | GSE   | Leak in Cryostat Drop Plate                  | 28-Mar-03  | See NCR<br>1. Inspect flange for flatness. If flange is not flat then plate cannot be used as it is.<br>2. Remount plate and carefully tighten bolts ensuring                               |            | 10-Jun-03      |
| HR-SP-RAL-NCR-25   | Minor | MGSE HOB Simulato                 | GSE   | Surface Damage to HOB simulator              | 28-Mar-03  | Assess level of damage when removed from bake-out.<br>If possible make minor repairs and measure flatness of damaged/repared area<br>If possible make minor repairs and measure flatness of |            | 10-Jun-03      |
| HR-SP-RAL-NCR-26   | Minor | J-FET Rack fe                     | All   | Not Thermally Isolated enough.               | 11-Apr-03  | "Modifications have been implemented Problem resolved"<br>NCR Closed. Ref NRB SPIRE-RAL-MoM-002013  |            | 14-May-04      |
| HR-SP-RAL-NCR-27   | Minor | FPU Spectrometer                  | SM    | SM11b interferes with the optics bench       | 30-Apr-03  | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001717-<br>On the STM the rib was modified by hand. The PFM rib to be modified. It is suggested that a 45degree chamfer                   |            | 17-Jun-03      |
| HR-SP-RAL-NCR-28   | Minor | Structure RF Filter box           | SM    | Mechanical interference of the FR filter box | 30-Apr-03  | See NCR   |            | 03-Jul-03      |
| HR-SP-RAL-NCR-28.2 | Minor | Structure RF Filter box           | SM    | Mechanical interference of the FR filter box | 30-Apr-03  | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863;   |            | 07-May-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|---|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-29      | Minor        | alignment cub                   | SM           | STM Alignment cube  | 30-Apr-03         | The cubes fit the HOB simulator but not the SOB<br>NCR Closed Ref HR-SP-RAL-NCR-035  |                   | 09-Jun-03             |
| HR-SP-RAL-NCR-30      | Minor        | LAM<br>FPU<br>CM3               | AM           | CM3 interferes with the sub optics bench at its lower edge.                     | 30-Apr-03         | Drawing of sub bench A1 5264 305 12 has been updated<br>STM mirror may need to be removed and the mount modified accordingly                                       |                   | 14-May-04             |
| HR-SP-RAL-NCR-31      | Minor        | Detector<br>FPU                 | SM           | Screw Sheared off in Detector Housing   | 05-Jun-03         | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; MSSL to investigate and report back, MSSL corrected problem see NCR fo details.                          |                   | 14-Nov-03             |
| HR-SP-RAL-NCR-32      | Minor        | JFET racks                      | SM           | Backharness 37way backshells do not fit 6 module rack metalwork                 | 06-Jun-03         | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; Parts corrected Dwg upissued   |                   | 14-Nov-03             |
| HR-SP-RAL-NCR-33      | Minor        | DPU<br>HSDPU                    | AM           | Not possible to load OBS via telecommands                                       | 29-Apr-03         | See NCR<br>Reset CPU Before booting with new Image. IFSI To implement Firmware Change on future models to allow software to reset CPU, thus allowing it to operate |                   | 14-Nov-03             |
| HR-SP-RAL-NCR-34      | Minor        | DPU<br>HSDPU                    | AM           | DPU Power interface discrepancy   | 29-Apr-03         | NRB MoM's No SPIRE-RAL-MoM-001616<br>Reclassified as Major at in depth PA meeting 13/14th April 2004 at Ral NRB MoM's No SPIRE-RAL-MoM-001616 -                    |                   | 14-Apr-04             |
| HR-SP-RAL-NCR-34.1    | Major        | DPU<br>HSDPU                    | AM           | DPU Power interface discrepancy   | 14-Apr-04         | See NCR<br>Awaiting Closure from ESA: Harness Definition Document: SPIRE-RAL-PRJ-000608 issue 1.2 corrects this. NCR Closed ref SPIRE-RAL-MoM-002250 NCR           |                   | 20-Dec-04             |
| HR-SP-RAL-NCR-35      | Major        | Structure &<br>Alignment Cu     | SM           | Non compliant interface (mounting holes pattern) between SOB and alignment cube | 30-Apr-03         | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; NCR 029 closed ref this NCR  |                   | 14-Nov-03             |



|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/ Part           | Model    | NCR Title                                 | Issue Date | Disposition/Corrective Actions   | References | Close Out Date |
|--------------------|-------|------------------------------------|----------|---|------------|--|------------|----------------|
| HR-SP-RAL-NCR-36   | Major | Structure                          | SM       | SPIRE Optical Bench BSM I/F Location      | 02-May-03  | See NCR<br>Can be Closed ref NCR MRB Number SPIRE-RAL-MoM-001863; ATC ICD is reissued is attached  |            | 12-Jul-04      |
| HR-SP-RAL-NCR-37   | Major | MGSE Flexible Pipe Co-Axial heat   | Cryostat | Solder on co-axial heater melted          | 02-May-03  | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; NCR copied to AS for comment   |            | 14-Nov-03      |
| HR-SP-RAL-NCR-38   | Minor | Structure 300mK Strap Photometer S | SM       | 300-mK Thermal Short during STM Programme | 06-May-03  | See NCR<br>Superseded by 038v2   |            | 21-May-03      |
| HR-SP-RAL-NCR-38.2 | Minor | Structure 300mK Strap Photometer S | SM       | 300-mK Thermal Short during STM Programme | 21-May-03  | Item 1-Doug to issue a check list to cover Key integration<br>See note in blue on NCR. Items 2 & 3 no longer valid<br>Delete. NCR Closed                                       |            | 14-May-04      |
| HR-SP-RAL-NCR-39   | Minor | BSM position senso                 |          | BSM Jiggle Frame Clipping                 | 29-May-03  | Design change by ATC<br>NCR closed Optical study by RAL not required as ATC implemented a design change  |            | 04-Jun-03      |
| HR-SP-RAL-NCR-40   | Minor | FPU Spectrometer                   | SM STM   | SM1 1a interferes with the optics bench.  | 17-Jun-03  | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001717   |            | 17-Apr-03      |
| HR-SP-RAL-NCR-41   | Minor | MGSE Pumping Syst                  | Cryostat | Cryostat Pumping system shutdown          | 07-Jul-03  | Superseded By 41v1   |            | 07-Jul-03      |
| HR-SP-RAL-NCR-41.1 | Minor | MGSE Pumping Syst                  | Cryostat | Cryostat Pumping system shutdown          | 30-Sep-03  | No re-occurrence NCR Closed.<br>Under investigatiog Suspected Glitch on Mains supply<br>Mains Filter will be used in future.Mains Filter fitted(in place for sutdown 25/09/04) |            | 14-May-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/Part              | Model       | NCR Title  | Issue Date | Disposition/Corrective Actions   | References | Close Out Date |
|--------------------|-------|--------------------------------------|-------------|--|------------|--|------------|----------------|
| HR-SP-RAL-NCR-42   | Minor | FPU<br>CM3                           | SM /<br>CQM | CM3 Mirror Damage                                      | 30-Jul-03  | See NCR<br>USE AS IS. LAM comments and sign off of the NCR added to the NCR  |            | 08-Oct-03      |
| HR-SP-RAL-NCR-43   | Minor | MGSE<br>Cold Blackbod                | Cryostat    | Cold-BlackBody Dimensions                              | 02-Sep-03  | All Actions completed Cold Black Body Modified NCR closed<br>Design of Cold Black Body does not match the cryostat ICD   |            | 14-May-04      |
| HR-SP-RAL-NCR-44   | Minor | Test Harness                         | SM<br>SM    | Connector Plating Flaking Off                          | 20-Oct-03  | See NCR<br>Superseded By 44v1  |            | 22-Oct-03      |
| HR-SP-RAL-NCR-44.1 | Minor | GSE<br>Test Cryoharn                 | SM          | Connector Plating Flaking Off                          | 20-Oct-03  | See NCR<br>Use as is but remove loose plating and vacuum connectors before Mating.MRB SPIRE-RAL-MoM-1846 referers  |            | 05-Nov-03      |
| HR-SP-RAL-NCR-45   | Minor | Spectrometer<br>SMEC<br>Harness Clam | CQM         | SMEC harness clamp interference with Structure webbing | 28-Oct-03  | Remove Lower Harness clamp back webbing<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863;  |            | 14-Nov-03      |
| HR-SP-RAL-NCR-46   | Minor | DPU                                  | AVM         | JTAG fouls adjacent circuit board                      | 12-Nov-03  | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; JTAG connectors will not be implemented on any other models of the DPU so the problem will not be  |            | 14-Nov-03      |
| HR-SP-RAL-NCR-47   | Minor | 2K Photomete<br>PFIL 3 & cold        | CQM         | 2K Photometer box filter dowel pin fouling             | 04-Nov-03  | Sort term remove dowel pin. Long term replace with<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863;<br>Ral Corrected item   |            | 14-Nov-03      |
| HR-SP-RAL-NCR-48   | Minor | S-Cal<br>Connectors                  | CQM         | CQM S-Cal Connector Orientation                        | 20-Nov-03  | SCAL-ICD-000 issue C Flight Model Shows correct orient<br>Remove S-Cal from FPU • Check that the Prime Connector is wired to the active sources • Re-assemble S-Cal so that the prime and redundant connectors are |            | 14-May-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/Part       | Model  | NCR Title   | Issue Date | Disposition/Corrective Actions  | References | Close Out Date |
|--------------------|-------|-------------------------------|--------|---|------------|---|------------|----------------|
| HR-SP-RAL-NCR-49   | Minor | Structure FPU Connector Jac   | CQM    | RF Filter Connector Jack post thread length       | 20-Nov-03  | Half returned for rework when done some still had to be re<br>Half the Items returned to Taylor Embex for rework the remainder will be reworked at RAL  |            | 14-May-04      |
| HR-SP-RAL-NCR-50   | Minor | Structure spectrometer C      | All    | Harnes slot missing on Spectrometer cover baffle. | 05-Dec-03  | Flight Model Drawings updated NCR Closed  |            | 14-May-04      |
| HR-SP-RAL-NCR-51   | Minor | GSE. Cold Harness             | GSE    | Pins Bent on GSE Harness                          | 22-Dec-03  | Returned to Manufacturer for correction Ok when returned<br>A pin straightening jig could be made. If the pin does not maintain the hermetic seal, the pins can be cut off or removed as they are both redundant ground pins. To be |            | 14-May-04      |
| HR-SP-RAL-NCR-52   | Minor | GSE Warm Test Ha              | GSE    | Grounding Problems Warm test Harness              | 22-Dec-03  | Harness will need modification<br>Harness returned to Manufacturer for modification (hardware now consistent with Documentation that was correct) NCR closed. Ref SPIRE-RAL-MoM-002013  |            | 14-May-04      |
| HR-SP-RAL-NCR-53   | Minor | Calibration MGSE Support Fram | GSE    | Brass Wheels Worn on MGSE Frame                   | 07-Jan-04  | Wheels changed to Delrin<br>Brass wheels replaced with Delrin wheels. The frame now moves on the cryostat rails more freely.  |            | 15-Jan-04      |
| HR-SP-RAL-NCR-54   | Minor | Tekdata SLW PFM Incoming insp | PFM/FS | PFM SLW Harness different to FS on inspection Rep | 07-Jan-04  | See NCR<br>SLW FS Harness correct but incoming inspection report indicates SLW PFM is incorrect: Error on incoming inspection Report  |            | 18-Mar-04      |
| HR-SP-RAL-NCR-55   | Minor | CEA Sap DCU Connectors        | QM1    | Pins incorrectly inserted                         | 08-Jan-04  | TBD<br>Superceded By V2   |            | 26-Jan-04      |
| HR-SP-RAL-NCR-55.2 | Minor | CEA Sap DCU Connectors        | QM1    | Pins incorrectly inserted                         | 08-Jan-04  | See NCR<br>Corrective actions specified on NCR Repaired at RAL<br>NCR Closed  |            | 04-Feb-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/Part             | Model | NCR Title  | Issue Date | Disposition/Corrective Actions  | References | Close Out Date |
|--------------------|-------|-------------------------------------|-------|--|------------|---|------------|----------------|
| HR-SP-RAL-NCR-56   | Minor | Detector chan                       | CQM   | Detector Channels do not follow ICD                  | 12-Jan-04  | Raised in error NCR Closed<br>Raised in error all OK Close NCR no further Action Required ref SPIRE-RAL-MoM-002013  |            | 14-May-04      |
| HR-SP-RAL-NCR-57   | Minor | BDA                                 | CQM   | Anomalous warm behavior of Detector System           | 12-Jan-04  | None Known feture before delivery<br>No Action required Known feature before delivery see EIDP NCR Closed   |            | 14-May-04      |
| HR-SP-RAL-NCR-58   | Major | DRCU                                | CQM   | MCU switch on over current                           | 16-Jan-04  | This unit not built to Flight design QM1 et seq will be ok. N<br>LAM to investigate why 14 V is applied continuously to Launch Latch coils – there is a fault in the MCU QM0 unit. Use as is for CQM testing with harness connector |            | 14-May-04      |
| HR-SP-RAL-NCR-59   | Minor | Cryostat FPU DCU J28                | GSE   | Ground Short on DCU J28 LIA-5 connector              | 21-Jan-04  | See NCR<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB<br>Investigation completed but inconclusive check at next cold Test.   |            | 14-Jul-05      |
| HR-SP-RAL-NCR-60   | Minor | Cryoharnesses FPU Faraday socket S5 | GSE   | Open circuit on FPU Faraday Shield Link Jumper on S5 | 22-Jan-04  | See NCR<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB<br>Further investigation when Cryostat is opened at end of CQM testing   |            | 14-Jul-05      |
| HR-SP-RAL-NCR-61   | Minor | DRCU                                | CQM   | DRCU accepting an unknown command                    | 17-Feb-04  | Close NCR Reclassify as SPR Sunil to do.<br>Raised as an NCR but should have been an Software Problem report (SPR)  |            | 14-May-04      |
| HR-SP-RAL-NCR-61.1 | Minor | DRCU                                | CQM   | DRCU accepting an unknown command                    | 17-Feb-04  | This is a feature of the MCU operation – it does not flag in<br>This was originally thought to be a SPR but later proved to be an NCR so the NCR was Up issued accordingly<br>Ref SPIRE-RAL-MoM-002013                              |            | 01-Dec-04      |
| HR-SP-RAL-NCR-62   | Minor | Cooler SCO Evaporator H             | CQM   | Response time of SPIRE CQM Evaporator Heat Switch    | 19-Feb-04  | See NCR<br>The NCR has been raised to report and track the issue. A slow switch would be troublesome in flight. The performance of the switch will be monitored during the  |            | 02-Nov-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/ Part    | Model | NCR Title   | Issue Date | Disposition/Corrective Actions   | References | Close Out Date |
|--------------------|-------|-----------------------------|-------|---|------------|--|------------|----------------|
| HR-SP-RAL-NCR-62.1 | Minor | Cooler SCO<br>Evaporator H  | CQM   | Response time of SPIRE CQM Evaporator Heat Switch | 19-Feb-04  | See NCR<br>The NCR has been raised to report and track the issue. A slow switch would be troublesome in flight. The performance of the switch will be monitored during the             |            | 02-Nov-04      |
| HR-SP-RAL-NCR-63   | Minor | Cooler, FPU<br>Evaporator H | CQM   | Evaporator HS & Pump HS commands reversed.        | 19-Feb-04  | See NCR<br>When the instrument is removed from the cryostat after the end of the initial CQM cool down, the EGSE, DPU, SCU and cryoharness will be tested to see if there              |            | 28-May-04      |
| HR-SP-RAL-NCR-63.1 | Minor | Cooler, FPU<br>Evaporator H | CQM   | Evaporator HS & Pump HS commands reversed.        | 28-May-04  | Check when removed from Cryostat<br>Tests need to be carried out on the Cooler and FPU F16 and F17 to determine if the fault lies in either of these two components                    |            | 15-Jun-04      |
| HR-SP-RAL-NCR-63.2 | Minor | Cooler, FPU<br>Evaporator H | CQM   | Evaporator HS & Pump HS commands reversed.        | 19-Feb-04  | Update Harness definition<br>The cooler ICD should remain the same, as any change would propagate to the PACS instrument. The Harness Definition Document Issue 1.1 and the DRCU / DPU |            | 02-Nov-04      |
| HR-SP-RAL-NCR-63.3 | Minor | Cooler, FPU<br>Evaporator H | CQM   | Evaporator HS & Pump HS commands reversed.        | 19-Feb-04  | See NCR<br>See NCR   |            | 02-Nov-04      |
| HR-SP-RAL-NCR-64   | Minor | SCAL<br>Prime 4% sou        | CQM   | Apparent failure of CQM S-Cal 4% source           | 19-Feb-04  | See NCR<br>Superseded by issue of HR-SP-RAL-NCR-064v1  |            | 13-May-04      |
| HR-SP-RAL-NCR-64.1 | Minor | SCAL<br>Prime 4% sou        | CQM   | Apparent failure of CQM S-Cal 4% source           | 09-Mar-04  | Review instrument commanding and telemetry streams to<br>Superseded by issue of HR-SP-RAL-NCR-064v2 HSO-CDF-RP-065 attached report from P Hargrave.                                    |            | 18-Jun-04      |
| HR-SP-RAL-NCR-64.2 | Minor | SCAL<br>Prime 4% sou        | CQM   | Apparent failure of CQM S-Cal 4% source           | 18-Jun-04  | See NCR  |            | 02-Nov-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i>   | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|-----------------------------------|--------------|--|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-65      | Minor        | Cryostat                          | GSE          | FIR optical loading of detectors from room background      | 19-Feb-04         | Action 1 done Action 2 N/A<br>Note On rechecking the DATA Loading is as expected   |                   | 14-May-04             |
| HR-SP-RAL-NCR-66      | Minor        | SCAL                              | CQM<br>CQM   | SCAL Interface Mismatch                                    | 16-Mar-04         | See NCR<br>1.For CQM only, use 0.5mm washers to space SCAL from box. 2.For PFM and FS chamfer mounting ring of SCAL box to ensure flush mounting                               |                   | 12-Jul-04             |
| HR-SP-RAL-NCR-67      | Minor        | FPU                               | PFM          | Hole Miss-alignment  | 07-Apr-04         | See NCR<br>Rework completed NCR Closed ref SPIRE-RAL-MoM-002497v2 PFM 2 TRR)   |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-68      | Minor        | JFET<br>JFET feet<br>Torlon Washe | CQM          | Torlon Insulating washer upside down on JFET foot assembly | 07-May-04         | None required, washers are bonded into place so should   |                   | 02-Nov-04             |
| HR-SP-RAL-NCR-69      | Minor        | RF Filter                         | CQM          | Screw from filter unit support fallen out                  | 12-May-04         | Incorporate a specific reminder to stake the screw with Sc<br>The updated document with the reminder is "SPIRE Final Integration Checklist - SPIRE-RAL-NOT-002088 Issue 1.0"   |                   | 02-Nov-04             |
| HR-SP-RAL-NCR-70      | Minor        | SMEC<br>Bushes                    | CQM          | Possible chaffing/wear marks on SMEC bushes                | 12-May-04         | See NCR<br>This mechanism is designed to give similar dynamic performance to the FM. To achieve this, non flight -like bushes are used. Some movement of these bushes is       |                   | 02-Nov-04             |
| HR-SP-RAL-NCR-71      | Minor        | FPU<br>Harnesses                  | CQM          | Piece of Kapton found between webbing on filter side       | 12-May-04         | Incorporate a specific reminder for this in the document b   |                   | 02-Nov-04             |
| HR-SP-RAL-NCR-72      | Minor        | Filters                           | CQM          | Damage on photometer detector box filters                  | 12-May-04         | See NCR<br>Inspection by Peter Hargrave from Cardiff. He reported that this type of appearance of a hot pressed filter is not unusual. This is not a damaged filter. Close NCR |                   | 02-Nov-04             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Subsystems:                  | Issue : 9.0                      |
| Model: All                   | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/ Part | Model      | NCR Title   | Issue Date | Disposition/Corrective Actions   | References | Close Out Date |
|--------------------|-------|--------------------------|------------|---|------------|--|------------|----------------|
| HR-SP-RAL-NCR-73   | Minor | BDA-JFET M               | CQM        | Cracking of elastomer in BDA-JFET MDM 51S connector               | 12-May-04  | see remarks<br>The seal is not necessary in SPIRE and is to be removed. It is noted that the same seal is present also in the following connectors and is to be removed. PFM JFP                       |            | 05-Nov-04      |
| HR-SP-RAL-NCR-74   | Minor | JFET Back harness        | CQM        | Heat Shrink on JFET back Harnesses                                | 12-May-04  | See NCR<br>The all existing Kynar heat shrink is to be removed from the Backharness. Adhesive Kapton tape is to be used to substitute the Heat Shrink. (Note. The braid is                             |            | 02-Nov-04      |
| HR-SP-RAL-NCR-75   | Major | Instrument               | CQM        | During Cold vibration test the sine test went to 200Hz            | 12-May-04  | See NCR<br>Closed Ref SPIRE CQM DRB Ref (H-P-ASP-MN-5613)  |            | 12-Oct-04      |
| HR-SP-RAL-NCR-76   | Major | FPU Phot Detector        | PFM        | Poor Alachrome on photometer Detector box                         | 10-Jun-04  | See NCR<br>Alachrome cleaned off and unit made clean to flight standard. Closed ref 076v1<br>Use as is for current alignment integration activities.   |            | 20-Sep-04      |
| HR-SP-RAL-NCR-76.1 | Major | Phot Detector            | PFM        | Poor Alachrome on photometer Detector box                         | 10-Jun-04  | See NCR<br>Closed ref SPIRE-RAL-MoM-002131 NRB MoM's   |            | 23-Sep-04      |
| HR-SP-RAL-NCR-77   | Minor | MSSL FPU Belville washe  | PFM        | Two sizes of Belville washers with the same assembly number       | 11-Jun-04  | Checks will be made during the bagging of the fixings to e Walton plating (not the original company). They think that some agent has attacked the alocrom! This is due to the fact that it was patchy. |            | 23-Sep-04      |
| HR-SP-RAL-NCR-78   | Minor | BSMOGSE                  | OGSE       | Modifications to BSM OGSE   | 17-Jun-04  | See NCR  |            | 21-Dec-04      |
| HR-SP-RAL-NCR-79   | Minor | FPU 300mk strap          | CQM<br>CQM | Minimal clearence between Spect Det Box SLB and 300mk split clamp | 01-Jul-04  | Examine a copy of the drawings and the assembled compo<br>Reference ECR 075  |            | 02-Nov-04      |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|---|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-80      | Minor        | Beam splitter i                 | PFM          | Beam Splitter /Mount Interface                                | 11-Aug-04         | MSSL to remachine and update drawings<br>Upissued drawing attached to NCR Closed ref SPIRE-RAL-MoM-002131 NRB MoM's  |                   | 15-Sep-04             |
| HR-SP-RAL-NCR-81      | Major        | JFP I/F<br>Carbon Fibre         | CQM 2        | Electrical Short on JFP I/F                                   | 20-Aug-04         | See NCR<br>HR-SP-RAL-ECR-079 raised to track changes: NCR Re classified as Major 3rd Nov 2004  |                   | 03-Nov-04             |
| HR-SP-RAL-NCR-82      | Minor        |                                 | CQM 2        | Electrical Short on Cooler Strap                              | 20-Aug-04         | The Joint Integrity is to be monitored as per existing SPIR<br>Precise cause unknown. Possibly the screw preload caused the short? The joint was assembled using a single layer of thin Dacron. The PFM design and |                   | 25-Oct-04             |
| HR-SP-RAL-NCR-83      | Minor        | Detector Box Feet               | PFM<br>CQM   | Electrical Short on Photometer Detector Box Feet              | 06-Sep-04         | See NCR<br>The Kapton was removed from all detector box mounts and a 200um layer of PCB board material (possibly a glass reinforced Kapton) was inserted between the   |                   | 25-Oct-04             |
| HR-SP-RAL-NCR-84      | Minor        | Cryostat Thermal Strap Heaters  | GSE          | Heater failures on Thermal Straps during cool down.           | 08-Sep-04         | Investigate fault when cryostat opened<br>superseded by HR-SP-RAL-NCR-084v1  |                   | 21-Dec-04             |
| HR-SP-RAL-NCR-84.1    | Minor        | Cryostat Thermal Strap          | GSE          | Facility Heater failure on L0 Thermal Straps during cool down | 21-Dec-04         | See NCR  |                   | 01-Nov-05             |
| HR-SP-RAL-NCR-85      | Minor        | Cryostat PUMP                   | GSE          | Pump Failure during cool down                                 | 08-Sep-04         | ACKNOWLEDGE ERROR MESSAGE..REBOOT PUMPI<br>superseded by HR-SP-RAL-NCR-085v1   |                   | 21-Dec-04             |
| HR-SP-RAL-NCR-85.1    | Minor        | Cryostat PUMP                   | GSE          | Facility Vacuum Pump Failure during cool down                 | 21-Dec-04         | Monitor the vacuum pressure closely when filling the cryo<br>superseded by HR-SP-RAL-NCR-085v2   |                   | 19-Apr-05             |



|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.     | Level | Subsystem Assembly/ Part | Model | NCR Title  | Issue Date | Disposition/Corrective Actions  | References | Close Out Date |
|--------------------|-------|--------------------------|-------|--|------------|---|------------|----------------|
| HR-SP-RAL-NCR-85.2 | Minor | Cryostat PUMP            | GSE   | Facility Vacuum Pump Failure during cool down        | 19-Apr-05  | Monitor the vacuum pressure closely when filling the cryo   |            | 01-Mar-06      |
| HR-SP-RAL-NCR-86   | Minor | Cryostat Temp sensors    | GSE   | Temp sensor failures                                 | 08-Sep-04  | TBD superseded by HR-SP-RAL-NCR-086v1   |            | 21-Dec-04      |
| HR-SP-RAL-NCR-86.1 | Minor | Cryostat Temp sensors    | GSE   | Temp sensor failure During cool down                 | 21-Dec-04  | New harness required for key interface thermometers (S2 Do not use wiring contractor in future  |            | 01-Nov-05      |
| HR-SP-RAL-NCR-87   | Major | JFET's                   | CQM   | One JFET Turned on one did not during 2nd cold test. | 18-Oct-04  | Spare JFETS sent to replace damaged JFETS and the da JFET REPLACED ON CQM Progression of NRB's held:SPIRE-RAL-MoM-002193, 002193v1, 002243, and 002243v1  |            |                |
| HR-SP-RAL-NCR-88   | Major | 300mk strap              | CQM   | 300-mK strap clearance at cooler cold-tip            | 14-Sep-04  | See NCR 1mm was removed from each of the straps to increase the clearance between the components to enable CQM-II testing to proceed. This needs to be formally reviewed  |            | 25-Oct-04      |
| HR-SP-RAL-NCR-89   | Minor | Cryostat                 | GSE   | Cooler hold time anomaly                             | 21-Oct-04  | TBD Closed ref SPIRE-RAL-MoM-002462v1 NRB   |            | 14-Jul-05      |
| HR-SP-RAL-NCR-90   | Minor | Cryostat Harness         | GSE   | Electrical Short on SPIRE Cryostat Harness           | 18-Oct-04  | Update master procedure for PFM-I test to monitor groun Closed ref SPIRE-RAL-MoM-002462v1 NRB   |            | 14-Jul-05      |
| HR-SP-RAL-NCR-91   | Minor | FPU PCAL                 | CQM   | Drive shorted to shield in FPU                       | 10-Nov-04  | USE as is for CQM, leave OPEN for PFM If, as assumed, this was always the case for the CQM it has no effect on the PCAL operation as the shield wire is not connected to chassis at any point in the system. We |            |                |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>                                    | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|---|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-92      | Minor        | FPU/JFP/JFS                     | EQM          | SPIRE EQM Electrical Interface Bench Test Anomalies | 30-Nov-04         | Closed by HR-SP-RAL-NCR-92v2. ref SPIRE-RAL-MoM-002304   |                   | 12-Jan-05             |
| HR-SP-RAL-NCR-92.2    | Major        | FPU/JFP/JFS                     | PFM CQM      | SPIRE EQM Electrical Interface Bench Test Anomalies | 12-Jan-05         | USE as is for CQM, leave OPEN for PFM NRB ref SPIRE-RAL-MoM-002304 Closed ref SPIRE-RAL-MoM-002462v1 NRB ( CQM USE AS IS Part of normal check therefore no need to leave open for PFM              |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-93      | Minor        | S-CAL Box                       | PFM          | S-Cal Box Blacking behind SM8B"                     | 30-Nov-04         | Use as is note disposition on PFM ABCIDL closed by email from Bruce Swinyard awaiting copy of email  |                   | 24-Feb-06             |
| HR-SP-RAL-NCR-94      | Major        | 300mk Busbar                    | CQM          | Large temperature drop along CQM 300 mK busbar      | 01-Dec-04         | PFM bus-bar made from 5N annealed copper – see MSS USE AS IS for CQM NCR CLOSED SPIRE-RAL-TN-002248 attached   |                   | 04-Apr-05             |
| HR-SP-RAL-NCR-95      | Minor        | OGSE                            | CQM          | Misalignment between SPIRE and OGSE                 | 01-Dec-04         | Add optical alignment procedure to the PFM1 Cold Test M NCR Closed all actions taken.  |                   | 04-Apr-05             |
| HR-SP-RAL-NCR-96      | Major        | FPU                             | PFM CQM      | L1 electrical short                                 | 13-Dec-04         | The cause of the short to be investigated. Ref NRB SPIRE-RAL-MoM-002247 (v1 to v3) Agreed to use as is. Leave NCR open until isolation test plan is established for PFM. Closed ref SPIRE-RAL-MoM- |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-97      | Minor        | SFIL                            | PFM          | SFIL COLD STOP insert came out of Housing           | 20-Dec-04         | Refit Insert Closed ref SPIRE-RAL-MoM-002462v1 NRB   |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-98      | Minor        | SLW SSW                         | PFM          | LOCATION DIAMETER TO SMALL                          | 20-Dec-04         | Open bores out to 25.00mm Closed ref SPIRE-RAL-MoM-002462v1 NRB  |                   | 14-Jul-05             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|--|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-99      | Minor        |                                 | PFM          | Bores on the photometer harness connector plate need re-machining              | 22-Dec-04         | Holes opened out to 25.10mm diameter<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB  |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-100     | Minor        | BDA                             | PFM          | Damage to PFM SSW BDA J06 and PFM F14 P06 Pin 26                               | 25-Jan-05         | For PFM-I test campaign – Temporary fix as per Figure 4<br>Needs updating to record fix  |                   | 02-Nov-05             |
| HR-SP-RAL-NCR-101     | Minor        | SSW BDA<br>J06 / P06            | PFM          | Damage to PFM F14 JFS-P12 (Pin 1)  | 27-Jan-05         | Straighten pin see r"emarks"<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB Gauge wire inserted into socket contact to protect it from buckling damage. The pin was carefully bent back into the |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-102     | Minor        | JFS                             | PFM          | Incorrect labeling of connectors of JFS J11, J12, J13 and J14                  | 31-Jan-05         | Use as is for PFM-1 and re-work for PFM-II<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB  |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-103     | Minor        | BSM                             | PFM          | Inconsistent BSM position sensor signal polarity                               | 31-Jan-05         | Awaiting completion of cause and disposition sections  |                   |                       |
| HR-SP-RAL-NCR-104     | Minor        | JFS<br>PTC                      | FS           | Ground short on PTC  | 31-Jan-05         | Use Flight Spare SN 002 on PFM Model and return faulty<br>Awaiting Doug to sign to close   |                   |                       |
| HR-SP-RAL-NCR-105     | Major        | MCU<br>CQM1                     | QM1<br>CQM   | Simultaneous generation of BSM and SMEC frames leads to Frame ID error reports | 03-Feb-05         | See NCR<br>Still have to check whether we can generate SMEC+BSM frames simultaneously. This will only be possible after we actually switch the MCU on!                                     |                   |                       |
| HR-SP-RAL-NCR-106     | Minor        | FPU                             | PFM          | Electrical short between FPU and Cryostat Chassis                              | 03-Feb-05         | See NCR<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB   |                   | 14-Jul-05             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>  | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|---|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-107     | Minor        | Warm DCU/SCU DC Thermom         | PFM          | Dynamic range of SCU thermometry not matched to flight thermometers | 03-Mar-05         | ADC ranges for later models to be set to match the actual<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB                       |                   | 14-Jul-05             |
| HR-SP-RAL-NCR-108     | Major        |                                 | PFM          | Autonomous Shut Down of LIAs  | 11-Mar-05         | See NCR<br>Closed By delivery of QM2 (Ref SPIRE-RAL-MoM-002497v2 PFM2 TRR)   |                   | 23-Aug-05             |
| HR-SP-RAL-NCR-109     | Minor        | LO Straps Evaporator Str        | CQM          | Evaporator Straps fail incoming inspection                          | 17-Mar-05         | Remove corner to produce 5 X 450 chamfer.<br>Operation carried out by A Pearce. NCR closed                               |                   | 04-Apr-05             |
| HR-SP-RAL-NCR-110     | Major        | MCU                             | PFM 1        | Large noise spikes observed on the science data from the MCU        | 19-Apr-05         | The MCU DSP was reprogrammed by Didier Ferrand duri<br>Accepted by RAL 7/03/06. ECS to sign circulate to ESA when signed |                   |                       |
| HR-SP-RAL-NCR-111     | Minor        | Cryostat Vacuum Gaug            | GSE          | Vacuume Guage failure   | 19-Apr-05         | Clean vacuum gauge head<br>Failed during PFM1  |                   | 01-Nov-05             |
| HR-SP-RAL-NCR-112     | Minor        | Cryostat Regulator              | GSE          | Faulty Regulator  | 19-Apr-05         | Replaced with new regulator in March 2005 will not requir<br>Failed during PFM1  |                   | 01-Nov-05             |
| HR-SP-RAL-NCR-113     | Minor        | Cold Black                      | PFM 1        | Cold Black body   | 19-Apr-05         | NCR Withdrawn<br>Withdrawn as perceived problem was found to be non existent.  |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-114     | Minor        |                                 | GSE          | Air Leak  | 19-Apr-05         | Reminder sent 09/08/05<br>Failed during PFM1   |                   |                       |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|--|-------------------|---|-------------------|-----------------------|
| HR-SP-RAL-NCR-115     | Minor        | Software                        | PFM 1        | The TFTS rejected all commands from SCOS during PFM1 testing   | 19-Apr-05         | 1. Problem report SPR-0391 closed on the HCSS. 2. Prob Completed by Asier 20/10/05 not finally signed off until 23/02/06  |                   | 20-Oct-05             |
| HR-SP-RAL-NCR-116     | Minor        | BSM & MCU                       | PFM 1        | BSM and MCU Oscillations   | 19-Apr-05         | The board was returned to LAM and the component solde   |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-117     | Minor        | Software Warm Electro           | PFM 1        | Anomalous HK Parameter Values are observed during DCU science generation at some bias and sampling frequencies | 19-Apr-05         | FPGA to be replaced on QM2-RAL Model<br>During the DRCU QM2 tests at RAL on 9-10 Feb 2006 CEA demonstrated that the problem is fixed. These tests were done with their LTU but we need to verify this using |                   |                       |
| HR-SP-RAL-NCR-118     | Minor        | Software                        | PFM 1        | Separate Switch on commands for DRCU, MCU, SPEC & PHOT LIA's   | 19-Apr-05         | Rejected by CEA NCR Closed<br>NCR closed as the request was not part of the original requirements.  |                   | 07-Mar-06             |
| HR-SP-RAL-NCR-119     | Minor        | Software                        | PFM 1        | The CDMS Simulator clock drifts with respect to system time of computer  | 19-Apr-05         | None it is an expected situation during operations<br>Can be withdrawn because this time drift is representative of the expected situation during operations. NOT APPROVED                                  |                   | 07-Mar-06             |
| HR-SP-RAL-NCR-120     | Minor        |                                 | PFM 1        | PIXEL SWAP   | 19-Apr-05         | Reminder sent 09/08/05<br>Allocated to Doug Griffin   |                   |                       |
| HR-SP-RAL-NCR-121     | Minor        | L0 Straps                       | CQM          | L0 straps fouls on integration due to Slight distortion  | 20-Apr-05         | See NCR<br>Forwarded to MSSL for comment/action 18th Aug 2005   |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-122     | Minor        | PCAL                            | PFM          | Failure at incoming inspection due to soldering not to ESA spec.   | 20-Apr-05         | Rework at RAL<br>Closed ref SPIRE-RAL-MoM-002462v1 NRB  |                   | 14-Jul-05             |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| NCR Serial No.    | Level | Subsystem Assembly/ Part   | Model | NCR Title  | Issue Date | Disposition/Corrective Actions  | References | Close Out Date |
|-------------------|-------|----------------------------|-------|--|------------|---|------------|----------------|
| HR-SP-RAL-NCR-123 | Minor | Photo Box Tiles            | PFM   | Phot box Black tiles Foul on Dichroics.                              | 12-Jul-05  | For this cool down tiles removed. Tiles to be remade and i  |            | 23-Feb-06      |
| HR-SP-RAL-NCR-124 | Minor | Detector mnemonic co       | PFM   | Pins on Nannonics connectors out of optimum alignment                | 21-Jul-05  | Use As Is NCR Closed. Re informal NRB held between Er Closed. Re informal NRB held between Eric Sawyer, Eric Clark, Doug Griffin, & Alan Pearce.                          |            | 22-Jul-05      |
| HR-SP-RAL-NCR-125 | Minor | JFET Back Harness          | PFM   | Short in JFET back harness   | 09-Aug-05  | See NCR<br>The area causing the short was located close to the connector J51. After discussions with JPL, it was agreed to remove the outer Kapton tape, release the band |            | 23-Feb-06      |
| HR-SP-RAL-NCR-126 | Minor | JFET JFET RACK             | PFM   | HSJFP connector labelling  | 15-Aug-05  | Amend as per markups on next page when SPIRE next d all actions are completed and inspected NCR closed  |            | 23-Feb-06      |
| HR-SP-RAL-NCR-127 | Minor |                            |       | BDA Open circuit   | 18-Aug-05  | Allocated to Doug Griffin   |            |                |
| HR-SP-RAL-NCR-128 | Minor | FPU PHOT DETEC Temp Sensor | PFM   | Prime Photometer Detector Box Temp sensor                            | 18-Aug-05  | Use As Is   |            |                |
| HR-SP-RAL-NCR-129 | Minor | PFM 2 Cryo Harness         | EGSE  | High impedance Short between the Faraday shield and cryostat Chassis | 31-Aug-05  | Use As Is<br>Un-minuted telecon with Matt Griffin and discussions at RAL between ECS, DLS and DKG came to this conclusion. The noise performance of the detectors will    |            | 23-Feb-06      |
| HR-SP-RAL-NCR-130 | Minor | FPU PHOTO DETE Test Heater | PFM   | NCR TitlePhotometer Detector Box Test Heater Open Circuit            | 06-Sep-05  | Use as is   |            |                |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i> | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>   | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|---------------------------------|--------------|--|-------------------|---|-------------------|-----------------------|
| HR-SP-RAL-NCR-131     | Minor        | MCU                             | PFM          | MCU Boot failure   | 01-Nov-05         | We have QM2 MCU now. The NCR was raised on QM1 M<br>We have QM2 MCU now. The NCR was raised on QM1 MCU. To be tested during DRCU acceptance tests and PFM3. |                   |                       |
| HR-SP-RAL-NCR-132     | Minor        | MCU                             | PFM          | MCU switch off caused SCU and DCU to enter a hung status   | 01-Nov-05         | TBD<br>We have QM2 MCU now. The NCR was raised on QM1 MCU. To be tested during DRCU acceptance tests and PFM3.  |                   |                       |
| HR-SP-RAL-NCR-133     | Minor        | Cryostat<br>Cryostat Instr      | GSE          | Cryostat Harness Short                                     | 01-Nov-05         | After the test campaign ended, the cryoharness was inspe<br>superseded by v1  |                   | 21-Apr-06             |
| HR-SP-RAL-NCR-133.1   | Minor        | Cryostat<br>Cryostat Instr      | GSE          | Cryostat Harness Short                                     | 21-Apr-06         | Issue 2   |                   |                       |
| HR-SP-RAL-NCR-134     | Minor        | Cryostat                        | GSE          | Helium Transfer Line Blocked Sinter                        | 01-Nov-05         | Sinter removed for remainder of test campaign.<br>NCR closed when actions comleted  |                   |                       |
| HR-SP-RAL-NCR-135     | Minor        | PTC                             | PFM          | Bent pin on PTC  | 09-Nov-05         | Allocated to Doug Griffin   |                   |                       |
| HR-SP-RAL-NCR-136     | Major        | FPU                             | PFM          | Cryo-vibration test Z axis                                 | 05-Dec-05         | See NCR<br>Option 2 of corrective actions selected and all actions completed NCR closed circulated to ESA 24/02/06.   |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-137     | Major        | DRCU/DPU                        | PFM          | Intermittent failure of commands to flash PCAL during PFM2 | 09-Dec-05         | See NCR<br>Reviewed 07/03/06 Still under investigation  |                   |                       |

|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i>   | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|-----------------------------------|--------------|--|-------------------|--|-------------------|-----------------------|
| HR-SP-RAL-NCR-138     | Minor        | MCU QM1                           | PFM          | Commands not listed in the ICD should be rejected by the MCU   | 12-Dec-05         | See NCR Reviewed 07/03/06 Still under investigation  |                   |                       |
| HR-SP-RAL-NCR-139     | Minor        | Thermometry                       | PFM          | Error in temperature sensor database   | 22-Dec-05         | See NCR  |                   |                       |
| HR-SP-RAL-NCR-140     | Minor        | Photometer JFETS Back Harness     | PFM          | Incorrect connector labeling on the PHOTOMETER JFET back harness.  | 08-Feb-06         | Harness Plugs to be correctly labeled after this test camp Corrected at RAL NCR closed.                            |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-141     | Minor        | Spectrometer JFETS                | PFM          | SPECTROMETER JFET connectors not Labeled.  | 08-Feb-06         | Corrective action performed at RAL, JFET units labeled u Corrected at RAL NCR closed.                              |                   | 23-Feb-06             |
| HR-SP-RAL-NCR-142     | Major        | Software OBS                      | PFM          | FDIR recovery action protocol in OBS 2.1.E causes the instrument to be put into SAFE mode when it shouldn't. | 21-Feb-06         | See NCR the warm electronics software not working correctly  |                   |                       |
| HR-SP-RAL-NCR-143     | Minor        | A Frame Photometer si Tapered Was | PFM          | A Frame Electrical short   | 28-Feb-06         | Temporary remedy is to loosen interface screw and move Circulated to CBB, ECS, & DG for information / comment etc. |                   |                       |
| HR-SP-RAL-NCR-144     | Minor        | A Frame Spectrometer              | PFM          | Short between Spectrometer Detector Box A-Frame and FPU Cover.   | 06-Mar-06         | See NCR  |                   |                       |
| HR-SP-RAL-NCR-145     | Minor        |                                   | PFM          |  | 21-Apr-06         |  |                   |                       |



|                              |                                  |
|------------------------------|----------------------------------|
| Spacecraft/Project: Herschel | Originator: RAL/SSTD/PA          |
| Instrument: SPIRE            | Document No SPIRE-RAL-PRJ-001079 |
| Model: All                   | Issue : 9.0                      |
| Subsystems:                  | Date: 16-May-06                  |

| <i>NCR Serial No.</i> | <i>Level</i> | <i>Subsystem Assembly/ Part</i>     | <i>Model</i> | <i>NCR Title</i>   | <i>Issue Date</i> | <i>Disposition/Corrective Actions</i>  | <i>References</i> | <i>Close Out Date</i> |
|-----------------------|--------------|-------------------------------------|--------------|--|-------------------|--|-------------------|-----------------------|
| HR-SP-UCF-NCR-1       | Minor        | FPU<br>300mk parts<br>Cooler Spec b | CQM          | Cooler to Spectrometer Bus-Bar incorrect                   | 08-Aug-03         | See NCR<br>Closed at NCR MRB Number SPIRE-RAL-MoM-001863; Attempt to reform second Bus Bar supplied for correct functionality for CQM if OK reform CQM Bus-Bar |                   | 14-Nov-03             |
| HR-SP-UCF-NCR-2       | Major        | SCAL                                | PFM          | Prime & redundant connectors soldering not to ESA standard | 20-Aug-04         | Rework of the connectors by an ESA Qualified operator, a Corrected at Cardiff and Photo's inspected at RAL SCAL Can be accepted.                               |                   | 04-Nov-04             |
| HR-SP-UCF-NCR-3       | Minor        | Light Baffle                        | PFM          | Difficulty fitting light baffle to photometer box          | 29-Jun-05         | See NCR<br>Ref SPIRE-RAL-MoM-002458 NRB Closed ref SPIRE-RAL-MoM-002462v1 NRB  |                   | 14-Jul-05             |

**END OF LIST**