

**SPIRE COOLER RECYCLING SCOS PROCEDURE**  
**SPIRE-RAL-PRC-002267**  
**Revised: 03-02-2005 draft 2**

**Asier Aramburu**

To recycle the SPIRE cooler using a TOPE procedure follow this steps:

**Setting up for recycling:**

If TOPE window is not open on SCOS main window (**figure 1**) (which will be open) select **exif** task by clicking over it and pushing Star button on **the bottom left** (not the one in the middle). A small confirmation window will appear probably hidden on the top or the bottom of the screen). After confirmation a second window will pop-up (**figure 2**) press the button which are coloured green in the figure and the press start, then confirm continue. TOPE window takes a few moments to appear.

**Note: Some error messages may appear in the bottom message window of SCOS when opening some of the windows, ignore them.**

**Alphanumeric Displays :**

AND Displays needed to monitor the cooler recycle:

SCU PARAMETERS

**Graphical displays:**

GRD Displays needed monitor the cooler recycle:

SPIRE COOLER TEMPERATURES

**To open both alpha numeric displays (if in they are not open):**

In SCOS main window press MON1 and/or MON2, then confirm to continue. Once the monitor opens in the bottom left there are a few buttons called AND and GRD. To display SCU PARAMETERS press AND, then select SCU PARAMETERS one. To display SPIRE COOLER TEMPERATURES press GRD button and do the same thing.

The SPIRE COOLER TEMPERATURES display will appear in the normal size. To have a better view, in the top left corner of the graphical display there is a resize button, press it and select Large, this will cause the window to resize itself.

**Recycling :**

- 1) In TOPE HCSS Test Procedures run StartTest.tcl procedure. This will flag the whole cooler recycle with an HCSS obsid for future inspection of the telemetry if wanted.
- 2) In TOPE window (**figure 3**) from SCOS select **COOLER\_RECYCLE.tcl** procedure from the top left sub window by **single** clicking on the procedure name.
- 3) Hit Run button.
- 4) After this, a pop-up window will appear asking if the Pump Heat Switch is ON. If the cooler has previously been recycled, the PUMPHS will be ON

(PUMPHSTEMP parameter in SCU PARAMETERS display will be ~ 16.39K) and you should press yes to switch it OFF.

- 5) A new window will appear to confirm the sending of 1.4 mA to the Evaporator Heat Switch, press OK.
- 6) Next window tells you to wait for the PUMPHSTEMP parameter in the SCOS SCU parameters display to decrease below 12 K. Keep an eye on this parameter to see when it goes below 12K, then press ok and a command to dissipate 300 mW in the Pump Heater will be sent.
- 7) When the evaporator heat switch closes, the evaporator temperature will increase causing an increase in the L0 interface temperature (AND INSTRUMENT PARAMETERS T\_L0\_ESTR). When this occurs and SPIRE is in the SPIRE Cryolab (NOT APPLICABLE FOR EQM testing) the manostat bypass valve should be opened to prevent the L0 temperature from rising above 2K.
- 8) After this there is approximately a 30 minutes wait until the PUMPHTRTEMP (SCU parameter) reaches 45K. A window will pop-up telling you to press ok when this parameter reaches 45K to reduce the pump power dissipation to 40 mW.
- 9) After pressing ok another window will come up telling you to press ok when SUBKTEMP parameter goes below 2K. Then the evaporator heat switch will be turned off as well as the Pump Heater.

**Note: For EQM testing, the evaporator heat switch must be turned off a maximum of 1 hour after the beginning of the recycling. (EVEN IF THE EVAPORATOR HAS NOT REACHED 2K YET).**

- 10) Next window to pop-up will tell you to press ok when the EVAPHSTEMP g goes below 16K. At this point the Pump Heat Switch is turned on and the cooler recycling commanding is finished although the real cooler recycling has not yet finished.
- 11) The pump heat switch takes a while to actually reach ~16K and close. You won't see a significant temperature drop rate until it reaches that temperature.
- 12) When the pump heat switch closes (~16K) there will be a sharp increase in the L0 pump temperature to approx 8K (AND INSTRUMENT PARAMETERS instrument parameter T\_L0\_PSTR).  
**Note: Check the cryostat L0 temperatures to make sure that the temperatures do not exceed 3K. If temperatures go above this, open the manostat a few more turns. (ONLY APPLICABLE FOR SPIRE TESTING AT SPIRE CRYOLAB).**
- 13) When the PUMPHTR temp reaches 1.8K close the manostat valve. **(ONLY APPLICABLE FOR SPIRE TESTING AT SPIRE CRYOLAB).**
- 14) When the evaporator temperature has stabilised at operating temperatures from TOPE HCSS Test Procedures run EndTest.tcl procedure.

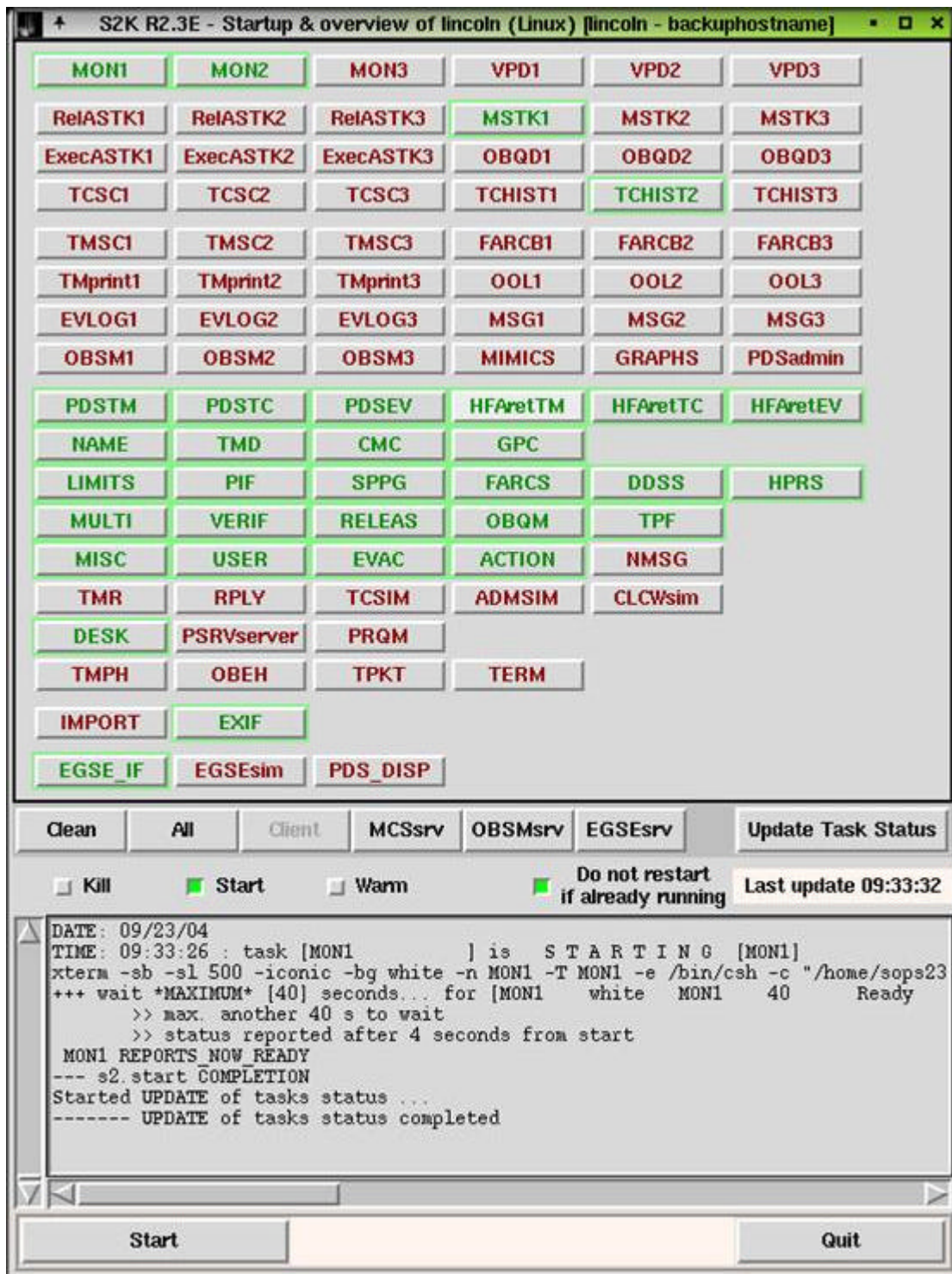


Figure 1: SCOS main window

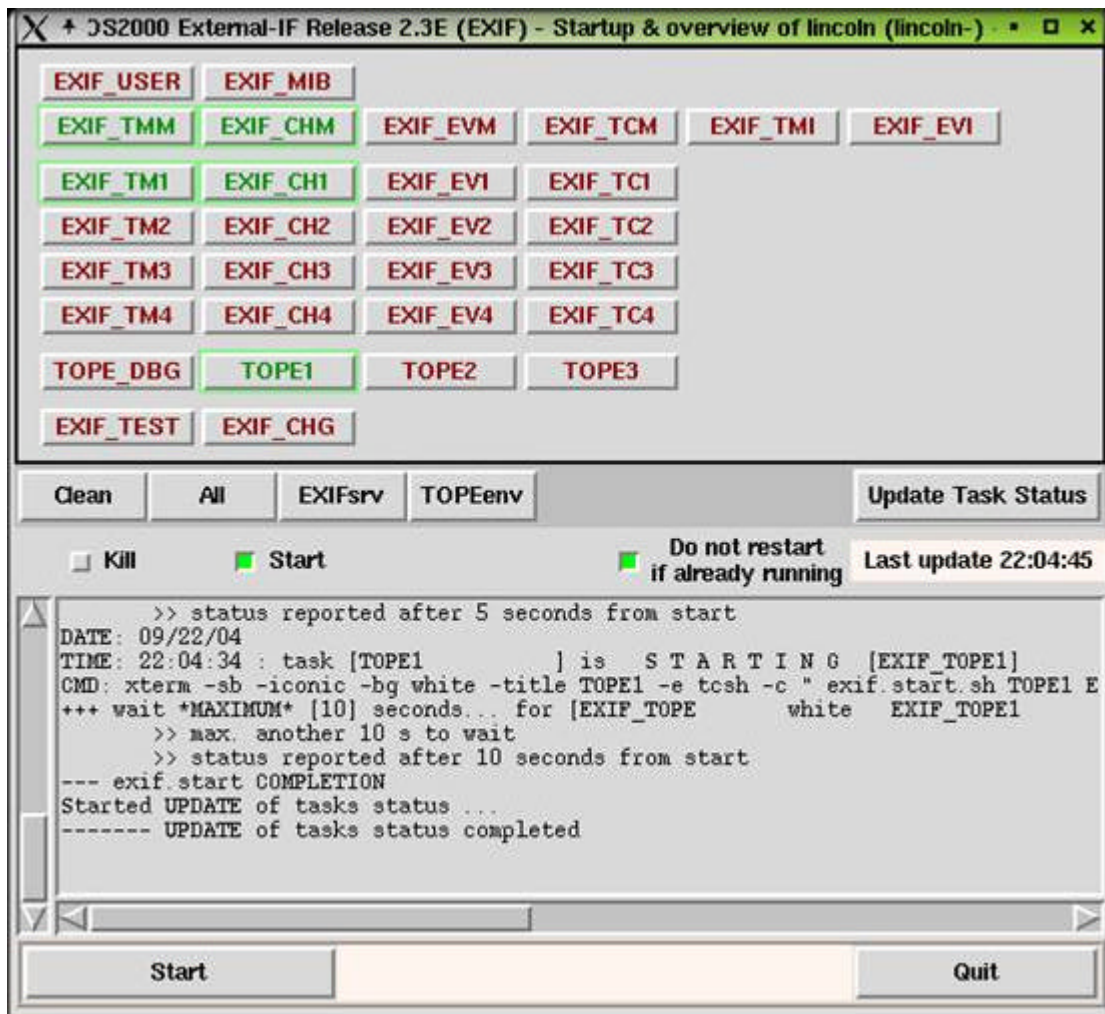


Figure 2: EXIF window

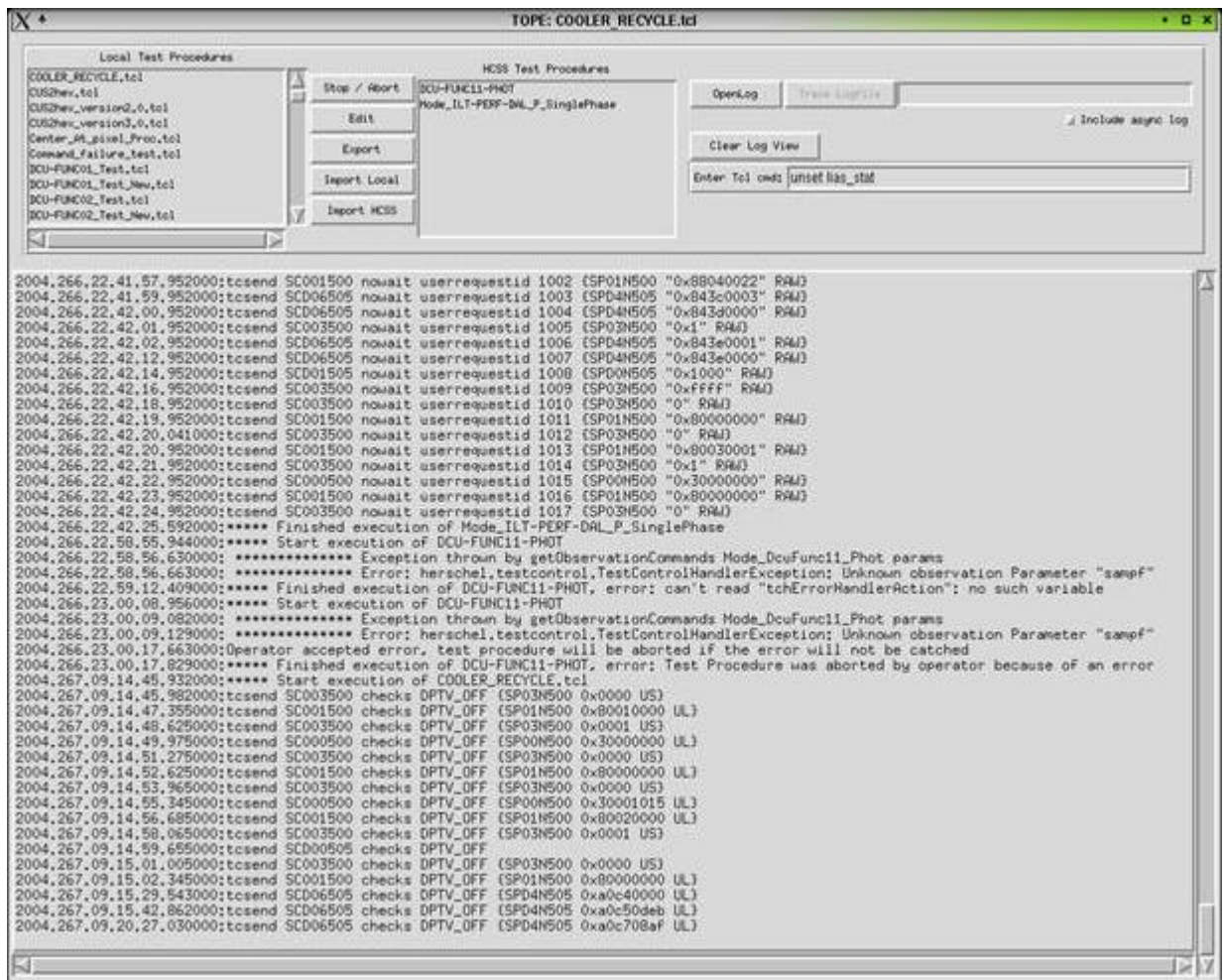


Figure 3: TOPE window