

SPIRE COOLER RECYCLING SCOS PROCEDURE SPIRE-RAL-PRC-002267

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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 window (**figure 3**) from SCOS select **COOLER_RECYCLE.tcl** procedure from the top left sub window by **single** clicking on the procedure name.
2. Hit Run button.
3. At this moment some commands to set up the EGSE observation identifier and building blocks identifiers will be sent.
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 40 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 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 slightly.
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.
10. Next window to pop-up will tell you to press ok when the EVAPHSTEMP goes below 16K. At this point the Pump Heat Switch is turned on and the cooler recycling commanding is 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). 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.
13. When the PUMPHTR temp reaches 1.8K close the manostat valve.
14. Another window will still pop-up just to finish the "observation" from EGSE, just press ok when the evaporator temperature is stabilised at operating temperatures.

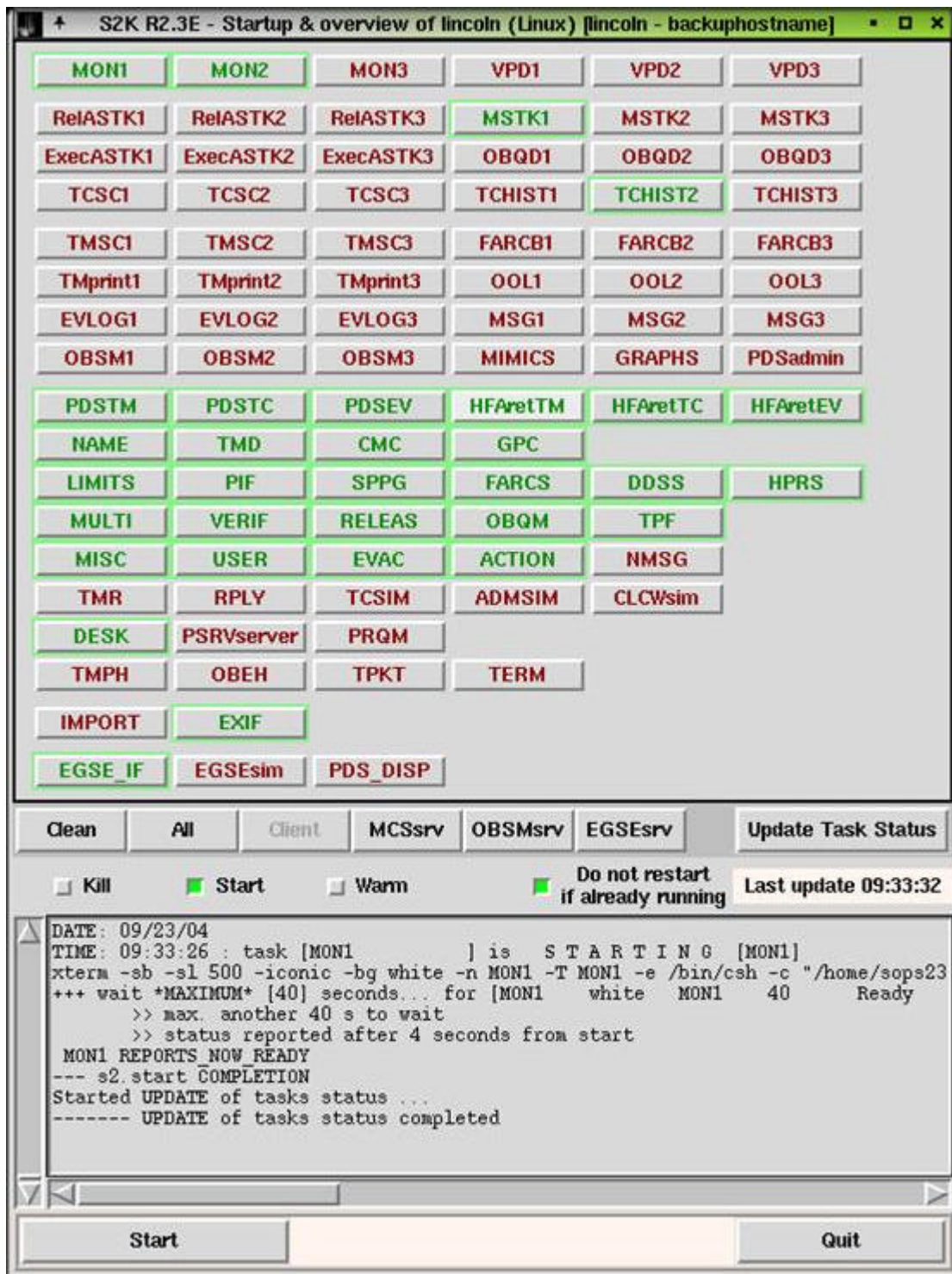


Figure 1: SCOS main window

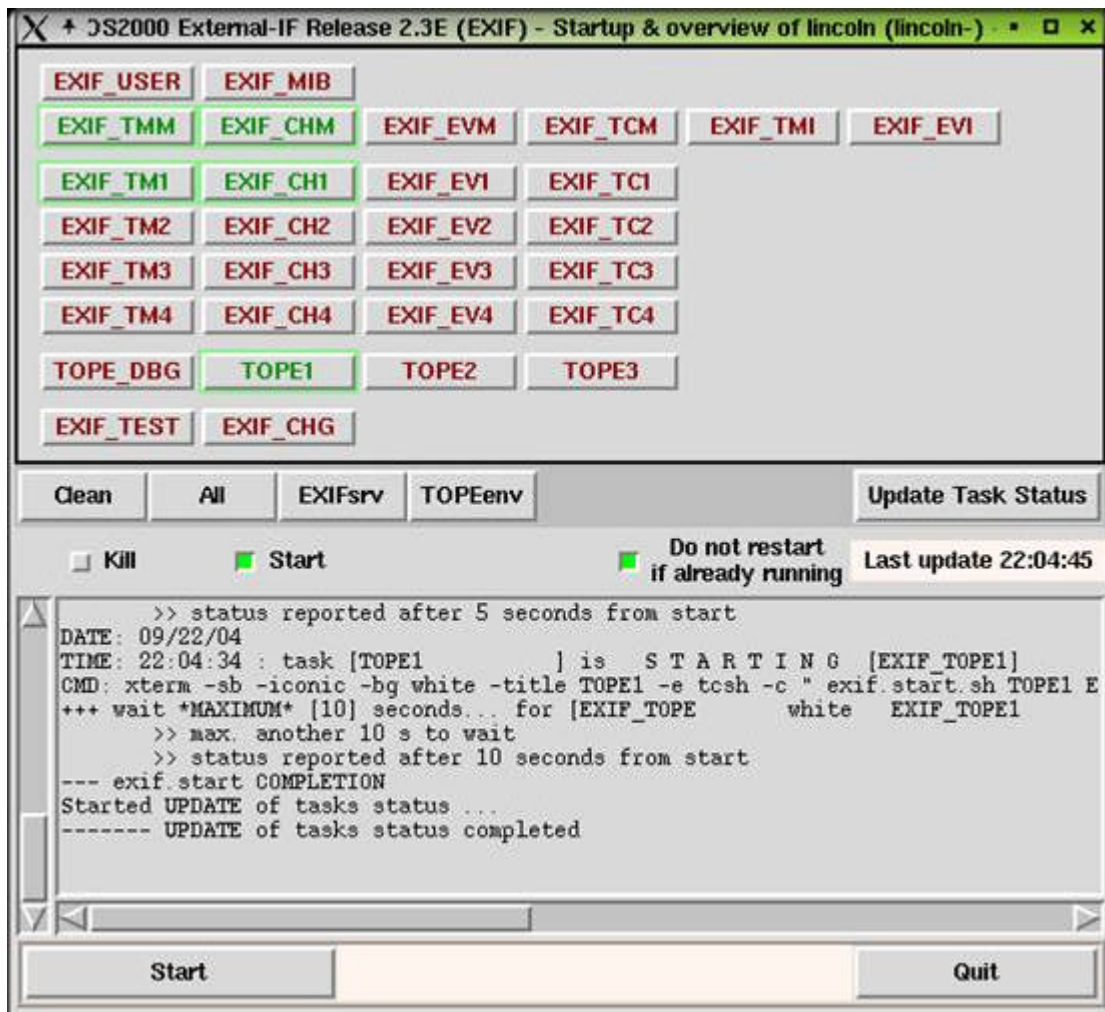


Figure 2: EXIF window

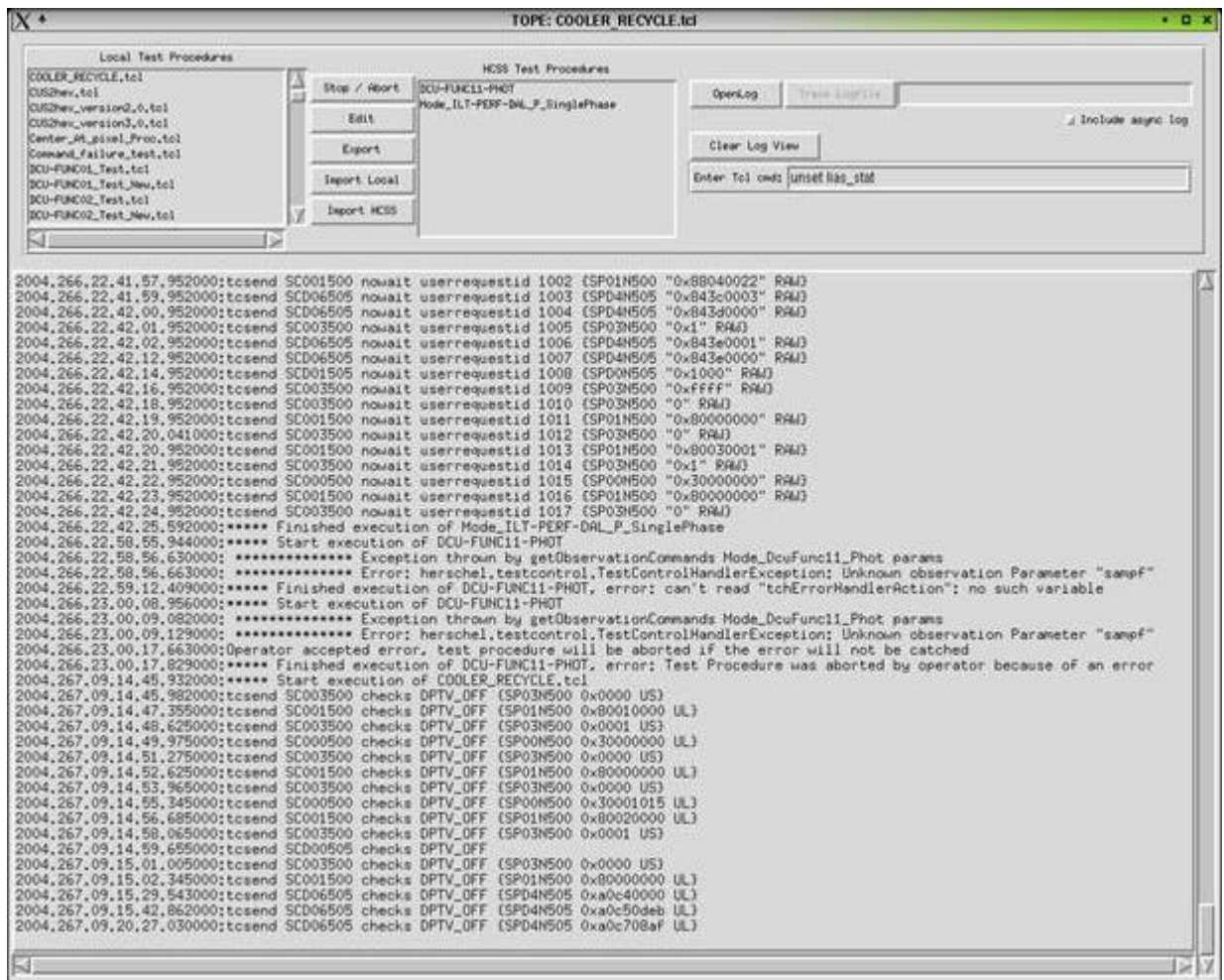


Figure 3: TOPE window