

DSOS Users Procedure

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1 Flow to the DSOS Heat Exchangers

- a) Open the dome's shutter. This helps the dish and Neslabs come to ambient temperature.
- b) To help bleed out any air in the plumbing, which restricts coolant flow, tip the dish to a ZA of 4°. In UIP, type:

```
za 4 [Enter]
```

Leave at this zenith angle for 15 minutes before changing to another zenith angle.

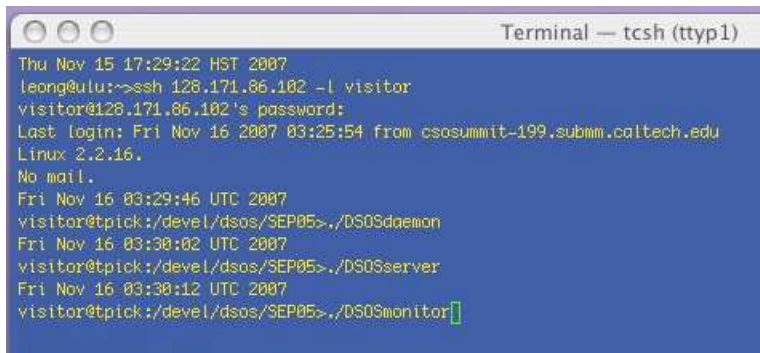
- c) After 15 minutes, tip the dish to 45°. In UIP, type:

```
za 45 [Enter]
```

2 Login to tpick as visitor

Log in from a computer that is not prone to crashing! I usually use my own laptop. The Controller's computer name is tpick.

- a) Open an xterm shell
- b) `ssh 128.171.86.102 -l visitor`
- c) Password is on the wall next to control room whiteboard.



```
Terminal — tcsh (ttyp1)
Thu Nov 15 17:29:22 HST 2007
leong@ulu:~>ssh 128.171.86.102 -l visitor
visitor@128.171.86.102's password:
Last login: Fri Nov 16 2007 03:25:54 from csosummit-199.submm.caltech.edu
Linux 2.2.16.
No mail.
Fri Nov 16 03:29:46 UTC 2007
visitor@tpick:/devel/dsos/SEP05>./DSOSdaemon
Fri Nov 16 03:30:02 UTC 2007
visitor@tpick:/devel/dsos/SEP05>./DSOSserver
Fri Nov 16 03:30:12 UTC 2007
visitor@tpick:/devel/dsos/SEP05>./DSOSmonitor
```

3 Initialize and Create the Night's Baseline Setting

Initializing should be done with the dome open at least 1 hour and after sunset, dish ZA = 45°.

- a) Activate the daemon. Type:

```
DSOSdaemon [Enter]
```

- b) Activate the remote server for SHARCII IRC. Type:

```
DSOSserver [Enter]
```

- c) Start the SHARCII client and server - see SHARCII instructions.

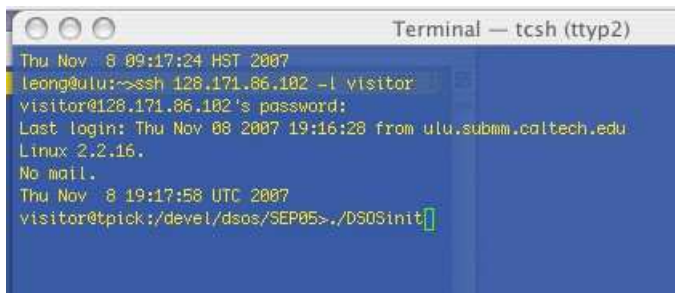
- d) If you would like the DSOS status monitor displayed, bring up a terminal and enlarge it to accommodate the picture to be displayed. Type:

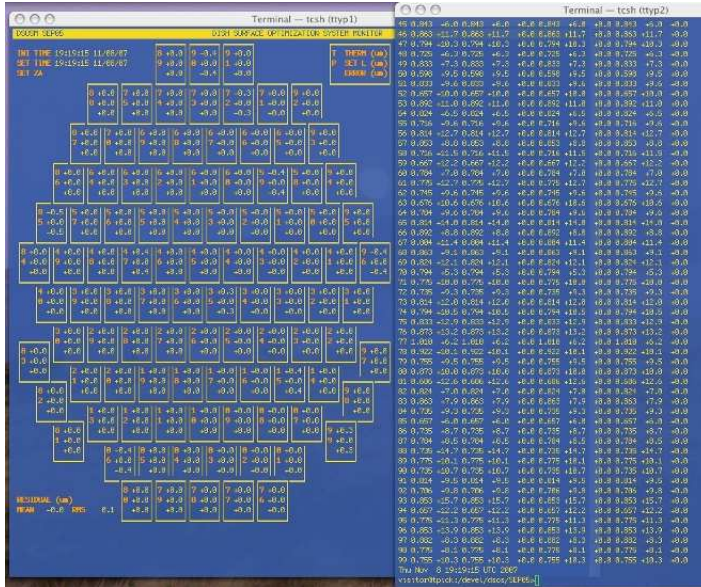
```
DSOSmonitor [Enter]
```



- e) Initialize - execute this at the beginning of your observation run. Open a second terminal. Type:

```
DSOSinit [Enter]
```





4 Power to the Driver Amplifiers

- a) Turn on the power supplies, in pairs, via their front panel switches on the left.



- b) Switch the DSOS status monitor display to the power supply status page. Within the terminal running the status monitor, type:

p

```

Terminal
File Edit View Search Terminal Help
DSOSMONITOR AUG11 DISH SURFACE OPTIMIZATION SYSTEM MONITOR PAGE 0
Power Supply 5 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.3 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:31 09/13/11
Power Supply 1 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.2 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:25 09/13/11
Power Supply 6 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.0 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:21 09/13/11
Power Supply 2 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.2 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:27 09/13/11
Power Supply 7 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.0 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:22 09/13/11
Power Supply 3 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.0 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:28 09/13/11
Power Supply 8 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.0 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:24 09/13/11
Power Supply 4 OFFLINE
Source Voltage 15.0 V
Source Current 75.0 A
Measured Voltage 0.0 V
Measured Current 0.0 A
Operation Condition 000000
Questionable Condition 000013
Protection Condition 0000
Measured at 16:23:30 09/13/11

```

c) Program the power supplies and enable the outputs. Type:

DSOSpower on [Enter]

5 Let the Dish System Settle for about 15 minutes

The power supply displays should reflect the current demands, cycle, and then settle after 15 minutes depending on the amount of initial toothpick displacements. The settled current values are about 9 Amps or less for both +15 Volt and -15 Volt power supplies.



6 During Your Observation Night

- Switch the DSOS status monitor display back to the dish status page. Within the terminal running the status monitor, type:

1

- The following command gets the present ZA from the antenna computer and sends commands to specific toothpicks. New command values are sent and their settings logged every 2.5 minutes in agent.log. Type:

DSOSagent [Enter]

- At the end of your night, stop the DSOS agent from running. Type:

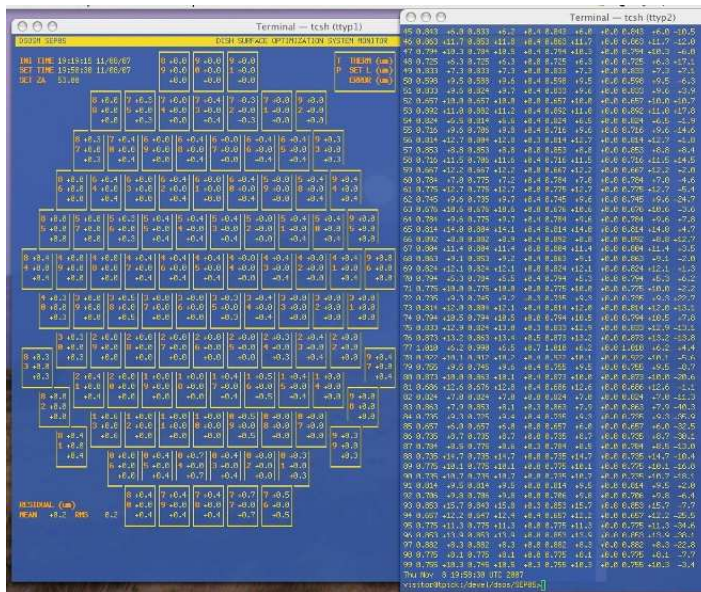
[ctrl] c

```
Thu Nov 8 19:36:58 UTC 2007
visitor@tpick:/devel/dsos/SEP05-./DSOSagent
Thu Nov 8 19:37:15 UTC 2007
Thu Nov 8 19:39:45 UTC 2007
Thu Nov 8 19:42:15 UTC 2007
Thu Nov 8 19:44:45 UTC 2007
Thu Nov 8 19:47:15 UTC 2007
Thu Nov 8 19:49:45 UTC 2007
Thu Nov 8 19:52:15 UTC 2007
Thu Nov 8 19:54:45 UTC 2007
Thu Nov 8 19:57:15 UTC 2007

Thu Nov 8 19:57:31 UTC 2007
visitor@tpick:/devel/dsos/SEP05-./DSOSbase
```

d) Set the DSOS back to its baseline value. Type:

DSOSbase [Enter]



e) You can watch the channels acquire on the DSOS monitor shell. To stop the monitor from displaying, in the DSOS monitor shell, type:

[ctrl] c

f) After 10 minutes, power down the (8) DSOS power supplies. Leave everything else on. First disable the power supply outputs by software. Type:

DSOSpower off [Enter]

Then turn off the power supplies via their front panel switches on the left.

g) Log out of tpick.

7 * Check the System periodically * to make sure everything is powered up and running correctly.

- Are thermistor and/or D/A values reading 0.00? The computer will put out a notification if this occurs.
- Is coolant not flowing to the Dish and the System racks?
- Any Neslabs, pumps, and rack fans are not running?
- Any Driver power supply pairs too one sided? Example:

$$\begin{aligned} \text{PS1} &= 7\text{V} / 75.0\text{A} \\ \text{PS2} &= 15\text{V} / 0.00\text{A} \end{aligned}$$

Should any of the above occur, **power down the power supplies first!** Then shut the rest of the system down.

If any of these things cease to function, the system may get damaged and the dish will not be adjusted correctly.

VERY ESSENTIAL STEP - Notify CSO staff what has failed, and when it occurred. Failure to do this will keep the DSOS from operating while you are here.

A Some Solutions

A.1 IF You Want to Rebaseline

If you initialized the system's thermistors during the day before the sun has set, reinitializing 1 hour after the sun has gone down would be a good thing to do. It is NOT recommended that you perform this often.

- 1) Command the DSOS to go back to its original reference. Type:

```
DSOSbase [Enter]
```

- 2) After 10 minutes, turn off the Driver power supplies. Type:

```
DSOSpower off [Enter]
```

- 3) Move the dish to a zenith angle of 45°. In UIP, type:

```
za 45 [Enter]
```

- 4) Wait 40 minutes for the dish to come to ambient temperature.

- 5) Go to step 3 of this procedure and start over again.

Another reason to reset the baseline is if the ambient temperature changes more than 5°C from the initial ambient temperature. Significant changes in temperature in the middle of the night usually indicates bad observing weather, so be sure to check if it is raining or snowing. You may need to shut the dome.

A.2 Computer Crash

If the computer you are running the DSOS software from crashes:

- 1) Shut the power supplies down.
- 2) Control-c and log out of tpick if possible.
- 3) The Initialization procedure of tpick should be posted on the bulletin board.
- 4) Reboot, or better yet, find another computer to run tpick from.
- 5) Start from step 2 of this Users Procedure.

A.3 Neslabs

In case the alarm sounds on any of the Neslabs on the 3rd and 4th floors:

- 1) **ADD** displayed: Fill with distilled water to the LOWER fill line in the unit's bath.
- 2) **Error 54** displayed:
 - a) Press the up and down arrow keys on the front panel simultaneously and hold for 10 seconds until the alarm turns off.
 - b) Press the computer control button (picture of a keyboard on the button) so that the light is off.
 - c) Power the Neslab off.
 - d) Power the Neslab back on. Alarm and error message should be gone.

A.4 Glycol Pumps

In case any of the 4 pumps to the dish manifolds fail, usually no or low pressure reading on meters, and the pump is hot to the touch:

- 1) Turn off the Driver Racks' (8) power supplies.
- 2) Close the manifold valves to the associated pump. There are 3 valves for each pump, turn them clockwise until the valves are closed.
- 3) Shut the power off to the pump by either turning its associated power strip off, or by unplugging the pump from its power strip.
- 4) Follow steps 6c-6e, and 6g. Do not use the DSOS until pump is repaired or replaced.
- 5) **VERY ESSENTIAL STEP** - Notify CSO staff which pump has failed, and at what time. Failure to do this will keep the DSOS from operating while you are here.

Good Sky,
Melanie