DSOS Users Procedure

Melanie Leong, November 26, 2007 Hiroshige Yoshida, September 13, 2011

February 21, 2012

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.



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 $ZA = 45^{\circ}$.

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:

Image: State
<th

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

DSOSinit [Enter]



DSOSmonitor [Enter]

200	Toronted to be the first of	000	1.82411	inal — tesh (ttyp2	7.0
	Terminal — tesh (ttyp1)	45 0.843 +6.0 0.843 +6			
DOUGH SEPES	DIST SONFACE OF THE ATEON SYSTEM PONETER	46 0.860 -11.7 0.860 -11			
		47 8.794 -10.3 8.794 -10			
	8 +8.9 9 -8. 9 -8.0 T THEM (u)				
SET 1100 19:19:15 11-00/07	9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9 -9	49 0.833 -7.3 0.885 -7	.8 +8.8 6.855 +7.3		
	-0.0 -0.1 -0.0 USUU (up)			10.0 0.598 19.5	
			16 4818 01803 4916	-Registration +9.55	
8 46.0 2	ie.a 7 ie.e 17 ie.a 17 ie.a 7 ie.e 9 ie.e	52 0.657 -10.0 0.657 -10		8.8 8.557 -10.0	-8.8
	0.0 4 +0.0 3 +0.0 2 +0.0 1 +0.0 2 +0.0	53 0.8% +11.0 0.8% +11		10.0 0.392 11.0	0.0
		51 8.824 -6.5 8.824 -6		+8.3 8.324 +5.5	
		57 0.001 -0.5 0.001 -0		+0.0 0.716 +0.6	-0.0
and other states	6 +8.8 6 +8.9 6 +8.9 6 +8.9 6 +8.0 9 +8.0				
		56 0.814 12.7 0.814 12		18.8 9.814 112.7	1010
		67 8.853 48.8 8.653 48			
		61.8.775 -12.7 8.775 +12		+8.d 8.775 -12.7	
_ التقدر المحمد العرب	المستركا لمصا لمصا لمصا لمسار مصار	63 0.676 -10.6 0.676 +10		10.3 3.575 110.5	
		04 8.704 .9.0 8.704 .9		10.0.0.784 19.0	
5-10-0 7-16-6 6-16-6	5 18.8 4 18.8 3 18.8 2 8.8 1 18.8 0 18.8 5 18.8	65 0.814 -04.0 0.804 -04		-8-000-014 -14-0	
		66 0.822 +8.8 0.822 +8	18 1010 01892 1818	18.8 8.892 18.8	
فتناط إلاناها إلاناط إحد		- 07 0.004 -11 4 0.004 +11		-0.0 0.004 -11 -	. 8.8
a -o olla -o olla -o alla	10.4 0 +3.3 0 +3.3 0 +0.0 0 +0.0 0 +0.0 0 +0.0 0 +0.0 0 +0.0			+8.8 8.853 +3.1	
4 8.0 9 10 8 8 16 8 7	e a 6 19 9 6 19 9 4 9 9 9 10 0 2 10 0 1 10 0 10 10 10 10 10 10 10 10 10	69 0.821 12 0.821 12		+8.8 8.324 +12.1	-0.0
	10.4 43.5 43.5 43.5 43.5 45.5 45.5 45.5 45			18.8 8 794 15.3	10.0
+0.0 +0.0 +0.0 -	16.4 +8.8 +8.8 +8.8 +8.8 +8.8 +8.8 +8.8 +8				
		- 71 0.775 -10.0 0.775 -10			
				(8.8 8.814 (12.9	
+0.0 +0.0 +0.0	+8.8 +8.8 +0.3 +0.0 +0.0 +0.0 +8.8				
	المستا لمستا لمستا لمستا لمستا				
				(8.8.8.378 +13.2	-9.0
		77 1.010 46.2 1.010 46		+0.0 1.010 +6.2	-0.0
8-8-0.0 +8-8	18.8 18.8 18.8 18.8 10.0 10.0 10.0 18.8 18.8	78 8.922 -18.1 8.922 -18			
ط ليصب المسب (ع. ه، ق	المسط لحمط لعملها لتستعا المسط المسط لمسط	79 0.755 +9.5 0.755 +9	.5 +6.0 6.755 +9.5	+8.8 8.755 +9.5	
3.34 5 3.34 5	1 +8.8 1 +8.8 1 +8.8 1 +8.0 1 +8.0 1 +8.4 1 +8.0 +8.8	38 8.373 48.8 8.875 48	.6 +6.6 6.673 +18.8	18.8 8.873 18.8	
1 +6.6 9 +8.8	9 +8.8 8 +8.8 7 +0.8 6 +0.0 5 +0.0 4 +0.0	01-0.000 -02.0 0.000 -02		+8.8 8.535 +12.5	
18 -0.0 -0.0 -0.0	18.8 18.0 18.0 18.0 18.0 18.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19	82 0.821 +7.0 0.821 +7	.0 +0.0 0.004 +7.8	+0.8 0.321 +7.0	
2 -8.8	ار به وار الصلية المصالحين المصالحين المصالحين ال	810.861 7.90.861 7		18.8.8.883 17.9	3,3
	-e.e 0.0+0 0.0+0 0-0.0 0+0.0 0+0.0 +0.0	0+10.705 -9.010.205 -9		481818-785 4910	-9,9
		85 0.657 -6.0 0.657 -6		+8 -8 -8 -657 +6 -8	-0.0
	1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	86 8 735 -8 7 8 735 -8		18.8 8.735 18.7	0.0
1 .0.0	···· • • • • • • • • • • • • • • • • •	87-8-7048-5-9-7046		10.0 0.784 10.5	9,9
	[8+8.8][8+8.0][8-0.0][8-0.0][8+0.0]	38 8.735 -14.7 8.735 -14		+8.0 8.795 +14.7	-0.0
	5 18 8 4 18 8 3 18 8 2 18 8 1 18 8	30 0.775 -10 0.775 -10			-0.0
				48+3-3-775-410-1	
		90 0.735 -10.7 0.735 -10		48.0.0.735 410.7	
100		90 0.024 -9.5 0.024 -9		+8.8 8.024 +9.5	-9.8
				+R-B 0.786 +9.8	-0.0
1740 -010 1953 -014 -				+8:8 8:657 -42.2	
				+8.0 8.775 +11.3	+010
		96 0.863 -33.9 0.863 -15		18.0 0.353 13.9	0.0
		97 9.000 18.3 9.000 18	13 4818 8.882 4813	48.8 366.8 6.64	
			40.0 0.775 +0.1	+0.0 0.775 +0.1	
		22 0.755 -10.3 0.755 -10			
		Thu Nov 8 19:19:15 UTC			
THE OWNER WHEN PERSON NAMED	and the second state of th	visitor@tpick:/devel/dsc			

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:

		Ferminal			
it View Search Terminal NITOR AUG11 DISH 5	1.	TTMT 7ATT	ON SYSTEM MONITOR		PA
VIION AUGII DISH :	SUNFACE OF	PIIMIZAII	UN STSTEP PUNLTUR		PA
Power Supply 5	OFFLINE		Power Supply 1	OFFLINE	
Source Voltage	15.0		Source Voltage	15.0	
Source Current	75.0		Source Current	75.0	
Measured Voltage	0.0		Measured Voltage	0.0	
Measured Current	0.3	A	Measured Current	0.2	A
Operation Condition	000000		Operation Condition	000000	
Questionable Condition	000013		Questionable Condition	000013	
Protection Condition	0000		Protection Condition	0000	
Measured at 16:23:31	09/13/11		Measured at 16:23:25	09/13/11	
Power Supply 6	OFFLINE		Power Supply 2	OFFLINE	
Source Voltage	15.0	v	Source Voltage	15.0	v
Source Current	75.0	A	Source Current	75.0	A
Measured Voltage	0.0	v	Measured Voltage	0.0	v
Measured Current	0.0	A	Measured Current	0.2	A
Operation Condition	000000		Operation Condition	000000	
Questionable Condition	000013		Questionable Condition	000013	
Protection Condition	0000		Protection Condition	0000	
Measured at 16:23:21	09/13/11		Measured at 16:23:27	09/13/11	
Power Supply 7	OFFLINE		Power Supply 3	OFFLINE	
Source Voltage	15.0		Source Voltage	15.0	
Source Current	75.0	A	Source Current	75.0	A
Measured Voltage	0.0	V	Measured Voltage	0.0	V
Measured Current	0.0	A	Measured Current	0.0	A
Operation Condition	000000		Operation Condition	000000	
Questionable Condition	000013		Questionable Condition		
Protection Condition	0000		Protection Condition	0000	
Measured at 16:23:22	09/13/11		Measured at 16:23:28	09/13/11	
Power Supply 8	OFFLINE		Power Supply 4	OFFLINE	
Source Voltage	15.0	v	Source Voltage	15.0	v
Source Current	75.0	2.5	Source Current	75.0	
Measured Voltage	0.0		Measured Voltage	0.0	
Measured Current	0.0	A	Measured Current	0.0	A
Operation Condition	000000		Operation Condition	000000	
Questionable Condition	000013		Questionable Condition	000013	
Protection Condition	0000		Protection Condition	0000	
Measured at 16:23:24	09/13/11		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.

	ON OFF	OUTPUT: 15.01 VOLTS 2.6 AMPS	CONSTANT VOL FORM	MEAR EAST IN
	s	orensen DHP Series	PS1	
1				
		rus		100 00
11º			CONSTANTION (AND	
	ON	OUTPUT: 15.01 VOLTS 3.: AMPS	CONSTANT CORRECT	ME

6 During Your Observation Night

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

1

b) 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:



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

[ctrl]	\mathbf{c}
--------	--------------

	Law Ol	-	all a delaural	A day	A VOCDOC VDCOCARANT
					s/SEP05>./DS0Sagent
hu I	Nov	8	19:37:15	UTC	2007
hu I	Nov		19:39:45	UTC	2007
hu I	Nov		19:42:15	UTC	2007
hu I	Nov		19:44:45	UTC	2007
hu I	Nov		19:47:15	UTC	2007
hu l	Nov		19:49:45	UTC	2007
hu I	Nov		19:52:15	UTC	2007
hu I	Nov		19:54:45	UTC	2007
hu I	Nov		19:57:15	UTC	2007
hu	Nov	8	19:57:31	UTC	2007

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

10.00	OOO Terminal - tcsh (ttyp2)
O O O Terminal — tcsh (ttyp1)	45 0.813 +5.0 8.833 +5.2 +8.4 8.843 +6.8 +8.0 8.843 +6.0 -10.5
DESIN SEPES DESIN SUFFICE OPTIMIZATION SYSTEM MUNITOR	
In the second	- +7 0.79+ +10.3 0.78+ +10.5 +0.4 0.794 +10.3 +0.0 0.794 +10.3 -6.0
101 (101 19:19:12 11/00/07 0:00.0 9:00.0 9:00.0 1:00.0 1 10000 (00 507 (100 19:50:00 11:00/07 9:00.0 0:00.0 1:00.0 1 10.0 1 1000 1 1000 1 1000 1 1000 1 1000 1 1000 1 1000 1 1000 1	
DEF 24 53.00 40.0 40.0 40.0 10	0 49 8.833 +7.3 8.833 +7.3 +8.8 8.833 +7.3 +8.8 8.833 +7.3 +7.4 50 8.593 +9.5 8.533 +9.6 +8.4 8.598 +9.5 +6.6 6.596 +9.5 +6.3
	50 0.000 12.0 0.000 12.0 1.000 10.0 10.0
8 +6.6 17 +6.5 17 +6.6117 +6.4117 +6.31 7 +6.6 19 +6.6	52 0.657 +10.0 0.657 +10.0 +0.0 0.657 +10.0 +0.0 0.657 +10.0 +10.7
	53 8.892 (11.8 8.892 (11.2 (8.4 6.692 (11.6 (0.0 6.892 (11.6 (17.8
8 +8 3 17 +8 4 16 +0 0 6 +0 4 6 +0 0 6 +0 4 16 +0 4 16 +0 4 9 +0 3	
7 46.6 N 46.6 9 46.6 8 46.6 7 46.8 4 48.8 9 48.8 2 48.8 46.2 46.4 46.6 46.4 46.8 46.4 46.4 46.4 46.4	57 0.853 +0.5 0.853 +0.6 +0.6 0.055 +0.6 +0.0 0.853 +0.6 +0.4 50 0.710 +11.5 0.705 +11.5 +0.4 0.715 +11.5 +0.0 0.716 +11.5 +14.5
	50 8, 10 411 5 8, 80 411 5 40 4 6, 40 411 5 40 8 6, 40 8 411 5 40 8 411 5 40 8 5, 40 8 411 5 40 8 5 40 8 5 40 8
8 x6x6 0 x6x4 0 x6x6 0 x6x4 0 x6x6 0 x6x4 5 x6x6 5 x6x4 9 x6x4	59 9.78+ 7.9 9.775 7.2 (8.4 8.764 (7.6) 6.8 6.764 (7.6) 4.6
6 18 8 4 18 8 2 10 18 8 2 10 8 1 10 8 10 1 10 10 10 10 10 10 10 10 10 10 10 1	61 0.775 +12.7 0.775 +12.7 +8.8 8,775 +12.7 +0.6 6,775 +12.7 -5.4
	62 8:745 19:5 8:735 19:7 18:4 8:745 19:6 18:8 8:745 19:6 24:7
5 46.8 7 46.8 6 46.8 5 46.8 4 46.8 3 46.8 2 46.8 1 46.4 10 46.8 5 46.8 48.8 48.8 46.2 46.4 40.4 40.4 40.4 40.0 40.3 40.3 40.3 40	65 0.014 (14:0 0.004 (14:1 (0.4 0.014 (14:0 16:0 0.014 (14:0)4:7 66 0.002 (0.002 (0.002 (0.0 14:0 0.012 (0.0 0.002 (0.00
10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	- 57 9.394 411.4 8.394 411.4 48.8 6.064 411.4 48.8 6.664 411.4 -3.5
8	8 66 0.863 +9.1 0.853 +9.2 +0.4 0.863 +5.1 +0.0 0.863 +9.1 -2.0
	8 69 8.824 412.1 8.824 412.1 48.8 8.824 412.1 48.6 8.824 412.1 41.3
	- 71 0.775 +10.0 0.775 +10.0 +0.0 0.775 +10.0 +0.0 0.775 +10.0 +2.2
	72 0.735 (0.1 0.745 (0.2 (0.1 0.305 (0.2 (0.1 0.755 (0.1 0.755 (0.1 0.755 (0.1 0.755 (0.1 0.755 (0.1 0.755 (0.1 0.755 (0.1 0.755 (0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1
	73 8.814 +12.8 8.884 +12.1 +8.4 8.614 +12.6 +6.8 8.804 +12.0 +13.1 74 8.794 +18.5 8.794 +18.5 +8.6 6.794 +18.5 +6.6 6.794 +18.5 +7.8
	75 0.000 +12.0 0.024 +13.0 +0.1 0.000 +12.0 +0.0 0.000 +12.0 -13.0
[a (e, 1] [2 (e, e] [2 (e,	76 0.873 +13.2 0.853 +13.4 +0.5 6.875 +13.2 +0.0 0.873 +15.2 -13.8
	- 77 1.010 .0.2 0.990 .0.5 .0.7 1.010 .0.2 .0.0 1.010 .0.2 .4.4
8 +8.3 +8.3 +8.8 +6.6 +6.6 +6.0 +6.0 +8.0 +8.3 +8.4 +8.3 9 +8.	
19 +8.8 [] [
B 48.4 48.4 48.4 48.4 40.0 40.0 40.4 40.5 40.4 40.8 940.4	02 0.024 -7.0 0.024 -7.0 -0.024 -7.0 -0.024 -7.0 -0.024 -7.0 -0.024
2 18.8	83 8.863 +7.9 8.853 +8.1 +8.3 8.865 +7.9 +6.6 6.865 +7.9 -10.3
	85 0.657 +5.0 0.657 +5.8 +8.8 8.657 +6.0 +8.0 8.657 +6.0 -32.5
	05 0.705 10.7 0.735 10.7 10.0 0.735 10.7 10.0 0.705 10.7 20.1 07 0.705 10.7 0.735 10.7 10.0 10.7 0.705 10.7 10.0 0.705 10.7 10.0 10.7
46.4 [0.40.0][0.40.4][0.40.7][0.40.4][0.40.0][0.40.3] 48.3	87 8.78 +8.5 8.775 +8.6 +8.3 8.784 +8.5 +6.6 8.784 +8.5 +13.0 88 8.735 +14.7 8.735 +14.7 +8.8 8.735 +14.7 +8.6 6.735 +14.7 +10.4
5 +0.0 5 +0.0 5 +0.0 3 +0.0 2 +0.0 1 +0.0	09.0.75 400.1 0.75 400.1 40.0 0.75 400.1 40.0 0.75 400.1 40.0
	90 0.775 +10.7 0.735 +10.7 +0.8 0.735 +10.7 +0.0 0.775 +10.7 -18.5
REAL (m) 0 +0.0 9 +0.0 0 +0.0 7 +0.0 6 +0.0 REAL +0.7 805 0.7 +0.1 +0.4 +0.4 +0.7 +0.5	90 9.050 (15.7 9.040 (15.8 (45.3 4.65) (15.7 (6.6 9.65) (15.7 -7.7 9) 9.077 (12.2 9.077 (12.4 (46.8 9.657 (11.1 (46.9 9.657 (11.2 (45.5
	94 0.007 +12.2 0.047 +12.4 +0.4 0.057 +12.2 +0.0 0.057 +12.2 -25.5 95 0.775 +11.3 0.775 +11.3 +0.0 0.775 +11.3 -04.6
	20 0.110 4113 9.110 4113 40.0 0.10 41.3 40.0 0.70 41.3 50.0
	97 0.882 +8-3 8.882 +8-3 +8.8 48.882 +8-3 +8-6 6.882 +8-3 -22-8
	Thu N2Y 6 19159139 UTC 2897
	visitor@toicki/devel/dsos/SEP85/

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:

$$PS1 = 7V / 75.0A$$

 $PS2 = 15V / 0.00A$

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