SOLAR-B Instrument

EIS MTM/TTM THERMAL BALANCE TEST SPECIFICATION, PROCEDURES AND PREDICTIONS

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INTRODUCTION

The EUV Imaging Spectrometer, on the Solar-B satellite, will be launched into a near Earth, Sun synchronous orbit. Optical light is prevented from entering the spectrometer by a filter, which effectively creates a closed thermal box. The EIS detector is a pair of CCDs that are passively cooled to about -55°C. The Read-Out Electronics box (ROE) temperature is controlled with a heater and by radiating to a cold plate (the thermal shield), which is passively cooled by the ROE radiator. The temperature of the other EIS subsystems, and structure, are controlled by heater resistors and mats.

This document describes the thermal balance test planned for the EIS MTM/TTM (Mechanical Test Model / Thermal Test Model). The differences between the EIS Flight and the MTM/TTM model are listed in Appendix 1.

TEST OBJECTIVES

- To verify the thermal mathematical model
- To determine the effective conductivity of the MLI in situ
- To determine the extent of thermal deformations

TEST CONFIGURATION

The thermal balance test will take place in the RAL Space Test Chamber (see Figure 1). The chamber is 3m diameter and 5.5m long. It has a liquid nitrogen shroud that will act as the test boundary temperature at -180°C.

EIS is about 3.5m long, 0.3m high and 0.5m wide. It will be hung from the top of the chamber with 1mm steel ropes (upside-down, effectively). The ropes will pass through eyebolts at the leg interface points.

EIS is covered in MLI. The only other surfaces which have view factors to the outside are:

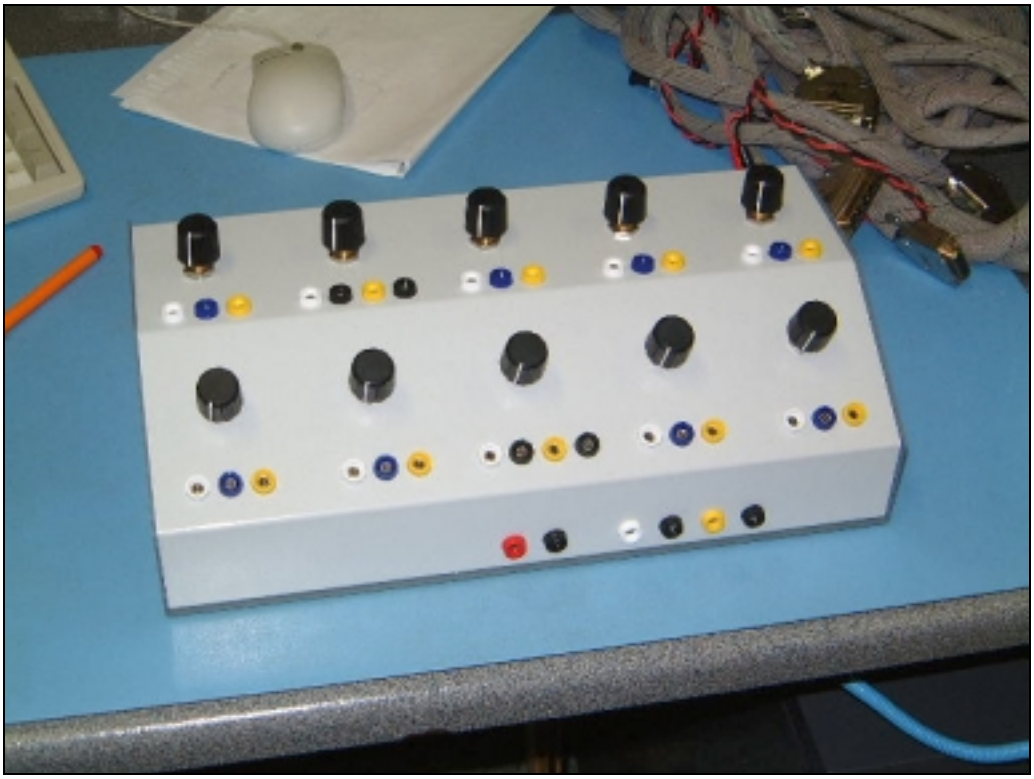
- the spectrometer aperture
- the CCD radiator
- the Read Out Electronics (ROE) cooling radiator

The 20 heaters will be controlled from outside the Space Test Chamber (STC) using the control box shown in Figure 2. There is a 4m lead running from the chamber to the control box.

The 37 temperature sensors will be monitored using the RAL PC based data acquisition system. RAL will provide a full data set on CD. Temperatures will be recorded at a frequency of one per minute. A computer, with access to Birmingham University, will be set up for the remote running of thermal analysis software, and RAL will provide a temperature profile of the thermal shroud.

Figure 1: The RAL Space Test Chamber

Figure 2: The Heater Control Box



TEST OVERVIEW

A total of *four* tests will be performed:

- Hot (Operational) Steady-State Test
- Hot to Cold Transient Test
- Cold (Non-Operational) Steady-State Test
- CCD Transient Test

The thermal balance test procedure is described in the schedule below. The Cold Test simulates non-operational temperature conditions, so it will also incorporate a steady-state gradient test. During the survival coldcase in orbit, it is foreseen that large temperature gradients will occur along the structure as survival heater power is concentrated to keep components within temperature limits. The Gradient Test will enable initial measurements to be made of possible thermal deformation. The CCD Transient Test is included to determine the performance of the unique cooling system design used for the CCD.

The structure temperature will be controlled with 20 heaters. These will initially be set to the power dissipations predicted by the thermal model to achieve the appropriate temperatures. During the first few hours of each test it is possible to adjust these power dissipations if the actual temperatures vary from those predicted. The final temperatures and power dissipations for each test will then be recorded and compared to the thermal model results.

Temperatures will be recorded at a frequency of 1 per minute. These results will be compared to the thermal math model so the EIS thermal performance becomes fully understood. The quick reference form should be completed during each schedule step. This form is shown in Appendix 2.

The temperature of EIS must be allowed to rise above 15°C before the chamber can be let up to atmosphere. Heaters can be used to accelerate this process as the chamber shroud temperature rises.

TEST SCHEDULE

Step	Time (hrs)	*Action:* Monitoring, Hot Steady-State, Hot to Cold Transient, Cold Steady-State, CCD Transient, or Gradient Steady-State	Step Time (hrs)
0	-	Pre-test procedure. See Appendix 6.	1 day
1	0	EIS is inside chamber. t=0hr when shroud starts cooling. Monitor temperatures for 3hrs. Turn on heaters if any temperature reaches the "adjust heater" limits shown in Table 4.	3
2	3	Turn on heaters to Hot Test powers (see Table 3). Monitor temperatures for at least 3 hrs, or until change in temperature is less than 2degC per hour. Adjust heaters if temperatures reach the "adjust heater" limits shown in Table 4. Adjust heaters if temperatures are not approaching those shown in Table 5 (in order of priority).	3
3	6	Leave system to achieve equilibrium. Temperatures should be monitored by RAL and the EIS thermal engineer notified if temperatures exceed the "adjust heater" limits shown in Table 4.	18
4	24	Check all temperatures are within limits. Check change in temperature is less than 1degC/hr. Check all temperatures are within predicted limits, in order of priority. Possibly adjust heaters.	2
5	26	Turn off all heaters. Monitor temperatures for four hours. Adjust heaters if temperatures reach the "adjust heater" limits shown in Table 4.	4
6	30	Turn on heaters to Cold Test powers (see Table 3). Monitor temperatures for at least 3 hrs, or until change in temperature is less than 2degC per hour. Adjust heaters if temperatures reach the "adjust heater" limits shown in Table 4. Adjust heaters if temperatures are not approaching those shown in Table 5 (in order of priority).	3
7	33	Leave system to achieve equilibrium. Temperatures should be monitored by RAL and the EIS thermal engineer notified if temperatures exceed the "adjust heater" limits shown in Table 4.	17
8	50	Check all temperatures are within limits. Check change in temperature is less than 1degC/hr. Check all temperatures are within predicted limits, in order of priority. Possibly adjust heaters.	2
9	52	Turn off CCD and CCD radiator heaters (heaters 16 and 18 respectively).	1
10	53	Turn on CCD radiator heater to 8W (heater 18).	2
11	55	Turn on CCD heater to 2W (heater 16).	1
12	56	Turn on CCD heater to 4W (heater 16).	1
13	57	Turn on CCD radiator heater to 16W (heater 18).	2
14	59	End of thermal balance test. Allow all temperatures to recover to at least 15degC.	-
15	-	Post-test procedure. See Appendix 6.	1/2 day

TEST SUPERVISION SCHEDULE

Day	Activity	People (ASRG)	People (MSSL)	People (RAL)	Start Time
Sat 23	MLI out of bake-out. MLI fit check	 Helen		 Jenny	am 10 am
Sun 24	MLI fit check	Helen	Graham, Ady	Jenny	am
Mon 25	Move EIS (etc.) to tank room (see Appendix 6) Pre-test Procedure (includes MLI fitting) Pump down over night	Helen Helen	Graham, Ady, Berend Graham, Ady, Berend	1 for lifting Jenny + 1 for lifting	am
Tues 26	Test start - Test Day 1	Helen	Graham, Ady		8 am
Wed 27	Test Day 2	Helen, Chris C., Chris G.			8 am
Thur 28	Test Day 3 (includes CCD transient section) Allow temperatures to reach 15°C & pump up overnight	Helen	Chris B.-B., Berend		10 am 6 pm
Fri 1	Post-Test Procedure (includes MLI removal)	Helen, Mark P., Chris C.		Jenny + 2 for lifting	10 am

Notes: The test start is defined as when the tank shroud temperature begins to decrease.
Starting the test any later than 8am will shift the Test Day 3 end time. For example, starting at 10 am will mean finishing at 8 pm on Thursday.
I suggest that Test Day 1 is not started any later than 12 noon. If the set-up is not ready by this time, Test Day 1 will have to move to Wednesday.

The MLI fitting and removal will occur in the tank room.
A sturdy table about 3m long (less than 3.5m) is required in the tank room.

Clean room garments will be required for all people. Please bear in mind that different sizes will be required!

TEMPERATURE SENSORS

The 37 temperature sensors to be used in the EIS thermal balance test are detailed in Table 1. They are all wire thermocouples. See Appendix 3 for EIS panel and node numbers. See also Document No. BU/SLB-EIS/TN/021 and drawing No. SR8483.

Note that sensors EIS-TTS-02, -07 and -09 failed and so have been replaced by thermocouples taped to the structure (instead of glued). This may detriment their thermal contact with the structure.

Table 1: EIS Thermal Balance Test Temperature Sensors

Sensor Name	Thermal Node	Description of Position
EIS-TTS-01	6032	Inside, P1 +Y face bt P2, P12A0, P13, P9
EIS-TTS-02	6011	Inside, P1 +Y face bt P2, P13, P14, P10
EIS-TTS-03	6009	Inside, P1 +Y face bt P2, P14, P15, P11
EIS-TTS-04	6050	Inside, P1 +Y face bt P2, P15, P16, P3
EIS-TTS-05	6049	Inside, P1 +Y face bt P2, P15, P16, P3
EIS-TTS-06	6048	Inside, P1 +Y face bt P2, P16, P7, P3
EIS-TTS-07	6047	Inside, P1 +Y face bt P2, P16, P7, P3
EIS-TTS-08	6059	Inside, P7 +Z face centre
EIS-TTS-09	6028	Inside, P8 -Z face centre
EIS-TTS-10	6025	Inside, P1 +Y face bt P9, P8, P12C0, P4
EIS-TTS-11	6024	Inside, P1 +Y face bt P9, P12CO, P13, P4
EIS-TTS-12	6012	Inside, P1 +Y face bt P10, P13, P14, P4
EIS-TTS-13	6010	Inside, P1 +Y face bt P11, P14, P15, P4
EIS-TTS-14	6044	Outside, P5 +Y face bt P2, P16, P7, P3
EIS-TTS-15	6014	Outside, P6 +Y face bt P2, P13, P14, P10
EIS-TTS-16	6034	Outside, P6 +Y face bt P2, P12A0, P13, P9
EIS-TTS-17	6027	Outside, P6 +Y face bt P9, P8, P12CO, P4
EIS-TTS-18	6144	On P5 MLI, bt P2, P16, P7, P3
EIS-TTS-19	6114	On P6 MLI, bt P2, P13, P14, P10
EIS-TTS-20	6134	On P6 MLI, bt P2, P12A0, P13, P9
EIS-TTS-21	6127	On P6 MLI, bt P9, P8, P12C0, P4
EIS-TTS-22	6159	On P7 MLI, centre
EIS-TTS-23	6128	On P8 MLI, centre
EIS-TTS-24	6152	On P2 MLI, bt PP16, P7, P1, P5
EIS-TTS-25	6106	On P2 MLI, bt P13, P14, P1, P6
EIS-TTS-26	6130	On P2 MLI, bt P12A0, P13, P1, P6
EIS-TTS-27	6121	On P4 MLI, bt P8, P12CO, P1, P6
EIS-TTS-28	6112	On P1 MLI, bt P10, P13, P14, P4
EIS-TTS-29	6079	ROE structure
EIS-TTS-30	6065	MHC structure
EIS-TTS-31	6063	Mirror centre
EIS-TTS-32	6070	CCD
EIS-TTS-33	6064	Grating centre
EIS-TTS-34	6065	CCD radiator
EIS-TTS-35	6076	ROE radiator
EIS-TTS-36	6073	Particle shield top
EIS-TTS-37	6080	Particle shield bottom

HEATERS

The 20 heaters used to control the temperature of EIS during the thermal balance test are detailed in Table 2. A summary of the predicted heater loads is shown in Table 3. Appendix 4 includes complete heater load graphs. See also Document No. BU/SLB-EIS/TN/022 and drawing No. SR8482 for heater placements.

Table 2: EIS Thermal Balance Test Heaters

Heater Number	Thermal Node	Max. Power (W)	Resistance (Ohms)	Equivalent Sensor	Heater Type	Heater Position Description (bt=between, P=Panel)
0a	6032	4 W (on/off)	106	1	Heater Mat	P1, bt P2, P12A0, P13, P9
0b	6032	4 W	106	1	Heater Mat	P1, bt P2, P12A0, P13, P9
1	6011	4 W	106	2	Heater Mat	P1, bt P2, P13, P14, P10
2	6009	4 W	106	3	Heater Mat	P1, bt P2, P14, P15, P11
3	6050	4 W	106	4	Heater Mat	P1, bt P2, P15, P16, P3
4	6049	4 W	106	5	Heater Mat	P1, bt P2, P15, P16, P3
5	6048	4 W	106	6	Heater Mat	P1, bt P2, P16, P7, P3
6	6047	4 W	106	7	Heater Mat	P1, bt P2, P16, P7, P3
7	6059	4 W	106	8	Heater Mat	P7 centre
8	6028	4 W	106	9	Heater Mat	P8 centre
9	6025	4 W	106	10	Heater Mat	P1, bt P9, P8, P12C0, P4
10	6024	4 W	106	11	Heater Mat	P1, bt P9, P12C0, P13, P4
12	6010	4 W	106	13	Heater Mat	P1, bt P11, P14, P15, P4
14	6079	6.6 W	100	29	Heater Resistor	ROE
15	6065	4.5 W	150	30	Heater Resistor	MHC
16	6063	4.5 W	150	31	Heater Resistor	Mirror
17	6070	4 W	150	32	Heater Resistor	CCD
18	6064	6.5 W	100	33	Heater Resistor	Grating
19	6075	16 W	68	34	Heater Resistor	CCD Radiator
20	6076	4 W	150	35	Heater Resistor	ROE Radiator

Table 3: Heater Load Summary for EIS Thermal Balance Test

Node	Heater	Hot Test Power (W)	Cold Test Power (W)
6032	0a	on (4)	on (4)
6032	0b	2	3
6011	1	4	3
6009	2	3	2
6050	3	2	1
6049	4	2	1
6048	5	1	1
6047	6	1	1
6059	7	1	2
6028	8	0	2
6025	9	3	4
6024	10	4	1
6010	12	1	1
6079	14	6.6	0
6065	15	4.5	0
6063	16	1	2
6070*	17	3	4
6064	18	0.5	1
6075*	19	16	13
6076	20	3	3

* Varied during Cold period for CCD tests

TEMPERATURE LIMITS

During the EIS thermal balance test, temperatures must not exceed the assumed survival temperature limits. If they approach a +/- 5°C limit margin, the heaters must be adjusted. Table 4 highlights the temperature limits for all thermal nodes with sensors, lists the temperature at which heaters must be adjusted, and shows the primary heater that needs adjusting. Note that the MLI temperature depends on the amount of power it is required to radiate, so it is effectively controlled with the structure temperature. Also, the CCD temperature limits have not been defined.

The order of priority defined below will determine the sequence sensors should be checked in, and the order of priority given to achieve the predicted temperatures.

Table 4: Temperature Limits (in order of priority)

Sensor Name	Thermal Node	Limit		Adjust Heaters when reach:		Primary Heater to Adjust
		Min	Max	Min	Max	
EIS-TTS-31	6063	0	40	5	35	15
EIS-TTS-33	6064	0	40	5	35	17
EIS-TTS-30	6065	-30	65	-25	60	14
EIS-TTS-08	6059	-40	40	-35	35	7
EIS-TTS-09	6028	-40	40	-35	35	8
EIS-TTS-07	6047	-40	40	-35	35	6
EIS-TTS-10	6025	-40	40	-35	35	9
EIS-TTS-13	6010	-40	40	-35	35	12
EIS-TTS-12	6012	-40	40	-35	35	0b
EIS-TTS-01	6032	-40	40	-35	35	0b
EIS-TTS-06	6048	-40	40	-35	35	5
EIS-TTS-05	6049	-40	40	-35	35	4
EIS-TTS-04	6050	-40	40	-35	35	3
EIS-TTS-03	6009	-40	40	-35	35	2
EIS-TTS-02	6011	-40	40	-35	35	1
EIS-TTS-11	6024	-40	40	-35	35	10
EIS-TTS-14	6044	-40	40	-35	35	5
EIS-TTS-15	6014	-40	40	-35	35	1
EIS-TTS-16	6034	-40	40	-35	35	0b
EIS-TTS-17	6027	-40	40	-35	35	9
EIS-TTS-29	6079	-30	65	-25	60	13
EIS-TTS-32	6070	tbd	tbd	tbd	tbd	16
EIS-TTS-34	6075	-100	100	-95	95	18
EIS-TTS-35	6076	-100	100	-95	95	19
EIS-TTS-36	6073	-50	40	-45	35	12
EIS-TTS-37	6080	-50	40	-45	35	12
EIS-TTS-18	6144	N/A	N/A	N/A	N/A	N/A
EIS-TTS-19	6114	N/A	N/A	N/A	N/A	N/A
EIS-TTS-20	6134	N/A	N/A	N/A	N/A	N/A
EIS-TTS-21	6127	N/A	N/A	N/A	N/A	N/A
EIS-TTS-22	6159	N/A	N/A	N/A	N/A	N/A
EIS-TTS-23	6128	N/A	N/A	N/A	N/A	N/A
EIS-TTS-24	6152	N/A	N/A	N/A	N/A	N/A
EIS-TTS-25	6106	N/A	N/A	N/A	N/A	N/A
EIS-TTS-26	6130	N/A	N/A	N/A	N/A	N/A
EIS-TTS-27	6121	N/A	N/A	N/A	N/A	N/A
EIS-TTS-28	6112	N/A	N/A	N/A	N/A	N/A

PREDICTED TEMPERATURES

The aim will be to achieve the predicted temperatures and temperature gradients during the steady-state and transient cases respectively. However, the thermal models predict large settling times for all components and structure to reach equilibrium, so it will probably not be possible to vary the heater loads in real time to achieve the predicted temperatures. The monitoring steps are therefore very important (Steps 1,2,5,6,15 of the schedule), as these will enable the monitor to adjust the heater loads if temperatures are significantly varying from the predictions. The final heater loads and temperatures will then be compared to the thermal model results.

Table 5 shows the predicted temperatures for the steady-state tests. Appendix 5 includes temperature graphs for all monitored nodes throughout the thermal balance test.

When heater loads are being adjusted to make temperatures correspond to thermal model results, there should be an order of priority given to the nodal areas. If the components and structure reach equilibrium much quicker than predicted, this order of priority should also be followed when adjusting the steady-state temperatures in real time. No effort should be made to adjust temperatures when the sensor shows a temperature within 3°C of that predicted by the thermal model. The order of priority for achieving predicted temperatures is:

1. Mirror	6063
2. Grating	6064
3. MHC	6065
4. Structure near components	6059, 6028, 6047, 6025, 6010, 6012, 6032
5. Other structure areas	6048, 6049, 6050, 6009, 6011, 6024, 6044, 6014, 6034, 6027
6. ROE	6079
7. CCD	6070
8. ROE radiator	6075
9. CCD cooling system	6073, 6080, 6076
10. MLI	6144, 6114, 6134, 6127, 6159, 6128, 6152, 6106, 6130, 6121, 6112

- Appendix 7 contains all predicted temperatures over the first 52 hours of the test period.

- Appendix 8 contains all predicted power dissipations over the first 52 hours of the test period.

Table 5: Predicted Steady-State Temperatures (in order of priority)

Table 5a: Hot Test Temperatures

Sensor Name	Thermal Node	Acceptable Temperatures		Temperature Predictions (from t=0)				
		Minimum	Maximum	6 hours	9 hours	15 hours	24 hours	Steady-State
EIS-TTS-31	6063	23	28	20.7	21.3	22.4	23.9	26.4
EIS-TTS-33	6064	25	29	20.9	22.7	24.9	26.1	27.3
EIS-TTS-30	6065	28	32	24.1	26.5	28.1	28.8	29.8
EIS-TTS-08	6059	23	29	21.1	21.7	22.8	24.2	26.5
EIS-TTS-09	6028	19	24	16.2	17.8	19.4	20.4	21.5
EIS-TTS-07	6047	20	26	18.4	18.9	20.0	21.4	23.6
EIS-TTS-10	6025	24	28	20.8	22.3	23.9	24.8	25.9
EIS-TTS-13	6010	22	26	20.4	21.8	22.9	23.4	24.4
EIS-TTS-12	6012	25	29	22.0	24.0	25.5	26.1	27.1
EIS-TTS-01	6032	23	27	23.5	23.8	24.0	24.2	25.1
EIS-TTS-06	6048	20	25	17.7	18.2	19.4	20.6	22.7
EIS-TTS-05	6049	22	27	20.0	20.7	21.8	22.9	24.6
EIS-TTS-04	6050	22	27	20.0	20.9	22.1	23.0	24.5
EIS-TTS-03	6009	22	26	19.8	21.0	22.1	22.8	24.0
EIS-TTS-02	6011	24	28	22.2	23.6	24.7	25.2	26.2
EIS-TTS-11	6024	25	29	23.3	24.4	25.2	25.7	26.7
EIS-TTS-14	6044	18	24	16.5	17.0	18.2	19.4	21.5
EIS-TTS-15	6014	20	24	18.0	19.3	20.3	20.9	21.9
EIS-TTS-16	6034	18	22	17.8	18.1	18.3	18.5	19.5
EIS-TTS-17	6027	20	24	16.6	18.1	19.7	20.6	21.7
EIS-TTS-29	6079	27	31	24.9	26.5	27.6	28.1	29.0
EIS-TTS-32	6070	-52	-48	-42.3	-48.1	-49.7	-49.9	-49.5
EIS-TTS-34	6075	-58	-54	-49.0	-54.3	-55.8	-55.9	-55.7
EIS-TTS-36	6073	-55	-51	-46.1	-51.7	-53.2	-53.3	-53.0
EIS-TTS-37	6080	-57	-43	-35.6	-43.3	-45.4	-45.4	-45.0
EIS-TTS-35	6076	-34	-30	-34.0	-33.7	-33.1	-32.8	-32.2
EIS-TTS-18	6144	N/A	N/A	-162.5	-162.4	-162.3	-162.0	-161.7
EIS-TTS-19	6114	N/A	N/A	-150.1	-150.0	-149.8	-149.7	-149.5
EIS-TTS-20	6134	N/A	N/A	-152.8	-152.8	-152.8	-152.8	-152.6
EIS-TTS-21	6127	N/A	N/A	-153.2	-153.0	-152.7	-152.6	-152.4
EIS-TTS-22	6159	N/A	N/A	-162.1	-162.0	-161.8	-161.6	-161.2
EIS-TTS-23	6128	N/A	N/A	-153.6	-153.4	-153.1	-152.9	-152.8
EIS-TTS-24	6152	N/A	N/A	-163.0	-162.9	-162.7	-162.5	-162.1
EIS-TTS-25	6106	N/A	N/A	-153.3	-153.1	-153.0	-152.9	-152.7
EIS-TTS-26	6130	N/A	N/A	-153.4	-153.3	-153.3	-153.3	-153.1
EIS-TTS-27	6121	N/A	N/A	-153.4	-153.2	-152.9	-152.8	-152.6
EIS-TTS-28	6112	N/A	N/A	-152.5	-152.2	-151.9	-151.8	-151.7

Table 5b: Cold Test Temperatures

Sensor Name	Thermal Node	Acceptable Temperatures		Temperature Predictions (from t=0)				
		Minimum	Maximum	29 hours	32 hours	38 hours	50 hours	Steady-State
EIS-TTS-31	6063	15	22	19.2	19.0	21.1	21.3	16.4
EIS-TTS-33	6064	19	25	17.8	16.2	22.5	24.3	19.5
EIS-TTS-30	6065	-11	-3	14.4	4.0	-0.8	-3.5	-10.4
EIS-TTS-08	6059	16	23	17.0	20.6	22.2	22.2	17.4
EIS-TTS-09	6028	15	21	10.0	15.0	19.8	20.3	15.5
EIS-TTS-07	6047	8	15	14.7	13.6	14.2	13.9	8.7
EIS-TTS-10	6025	14	21	10.6	14.5	19.1	19.6	14.8
EIS-TTS-13	6010	-18	-5	6.5	-0.2	-4.4	-7.5	-17.0
EIS-TTS-12	6012	-11	-2	12.3	3.4	-0.8	-3.4	-10.2
EIS-TTS-01	6032	0	8	3.7	9.3	8.7	6.9	1.4
EIS-TTS-06	6048	3	10	13.1	10.3	9.8	9.0	3.5
EIS-TTS-05	6049	-3	-4	11.4	7.5	5.6	4.2	-1.8
EIS-TTS-04	6050	-5	2	10.0	5.4	2.7	0.8	-5.6
EIS-TTS-03	6009	-11	-2	8.0	3.0	-0.3	-2.8	-10.0
EIS-TTS-02	6011	-7	1	8.4	5.3	2.4	0.1	-6.4
EIS-TTS-11	6024	-3	5	6.9	5.0	5.5	4.2	-1.5
EIS-TTS-14	6044	1	9	12.9	9.1	8.6	7.8	2.2
EIS-TTS-15	6014	-11	2	6.9	1.6	-1.0	-3.3	-9.8
EIS-TTS-16	6034	-8	0	3.4	2.0	1.4	-0.5	-6.5
EIS-TTS-17	6027	8	13	9.3	8.9	13.6	13.9	8.8
EIS-TTS-29	6079	-21	-9	6.1	-2.8	-7.2	-10.4	-19.5
EIS-TTS-32	6070	-62	-57	-84.0	-71.5	-59.5	-58.5	-59.7
EIS-TTS-34	6075	-68	-63	-87.6	-77.5	-66.0	-65.2	-66.3
EIS-TTS-36	6073	-66	-61	-85.1	-75.5	-63.7	-62.9	-64.1
EIS-TTS-37	6080	-62	-56	-70.3	-72.8	-58.9	-58.0	-60.2
EIS-TTS-35	6076	-57	-48	-56.8	-48.3	-48.8	-50.4	-54.8
EIS-TTS-18	6144	N/A	N/A	-163.4	-164.0	-164.0	-164.1	-165.1
EIS-TTS-19	6114	N/A	N/A	-152.6	-153.4	-153.7	-154.1	-155.2
EIS-TTS-20	6134	N/A	N/A	-155.5	-155.7	-155.7	-156.0	-157.0
EIS-TTS-21	6127	N/A	N/A	-154.6	-154.7	-153.8	-153.8	-154.6
EIS-TTS-22	6159	N/A	N/A	-162.8	-162.4	-162.1	-162.1	-162.9
EIS-TTS-23	6128	N/A	N/A	-154.6	-153.8	-153.1	-153.0	-153.8
EIS-TTS-24	6152	N/A	N/A	-163.6	-164.3	-164.4	-164.5	-165.5
EIS-TTS-25	6106	N/A	N/A	-155.1	-156.1	-156.5	-156.8	-157.9
EIS-TTS-26	6130	N/A	N/A	-155.8	-156.0	-156.1	-156.5	-157.4
EIS-TTS-27	6121	N/A	N/A	-154.7	-154.8	-154.0	-153.9	-154.8
EIS-TTS-28	6112	N/A	N/A	-154.1	-155.6	-156.3	-156.7	-157.9

APPENDIX 1: LIST OF DIFFERENCES BETWEEN THE EIS FLIGHT AND MTM/TTM INSTRUMENTS

This list contains the differences that will effect the thermal performance of EIS (which have been accounted for in the thermal math model).

- The CCD and ROE cooling system (particle shield, thermal shield and radiator cones) are not covered with two layers of foil to be used for further radiative insulation
  - The CCD and ROE will not achieve the low temperatures predicted for the flight model.

- There is no thermal shroud extension
  - The +Z section of EIS will not be thermally representative of the flight instrument, though the effect on the main components is minimal.

- Not all structure panels have been weighed: a 12% mass increase has been predicted
  - The thermal capacitance of the structure may have some error, effecting the time taken for the instrument to reach equilibrium.

- The filter and clamshell system consists of one aluminium dummy mass.
  - Heat transfer through the system will be conductive instead of radiative.

- Test masses used
  - The optical properties are not correct, so components will have different radiative relationships inside the structure.

- No spacecraft!
  - The radiative relationship with the spacecraft will not be investigated during the sub-system (EIS) thermal balance test.

- No sunshields in front of the CCD radiator
  - Minimum effect as there is no solar simulator during the tests.

APPENDIX 2: COPY OF FORM TO BE USED FOR QUICK TEMPERATURE COMPARISON DURING TESTS

This form concentrates on the components and base structure sensors, and is to be used for initial comparisons between thermal model predictions and actual temperatures at specific times.

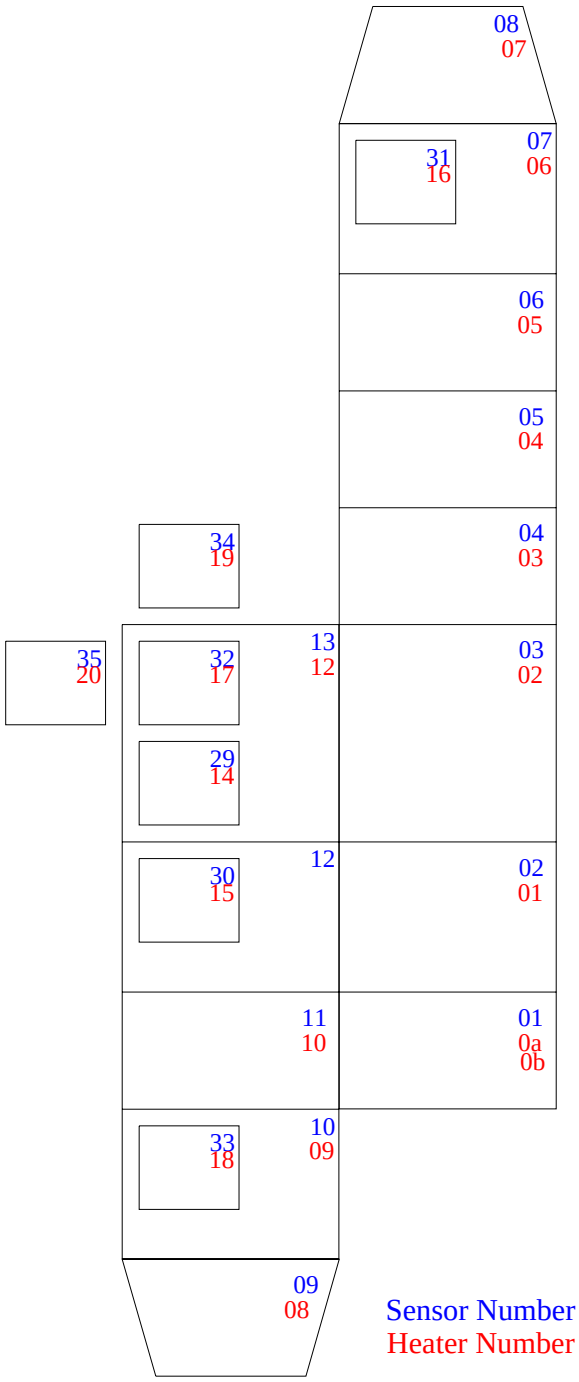
Name:

Date:

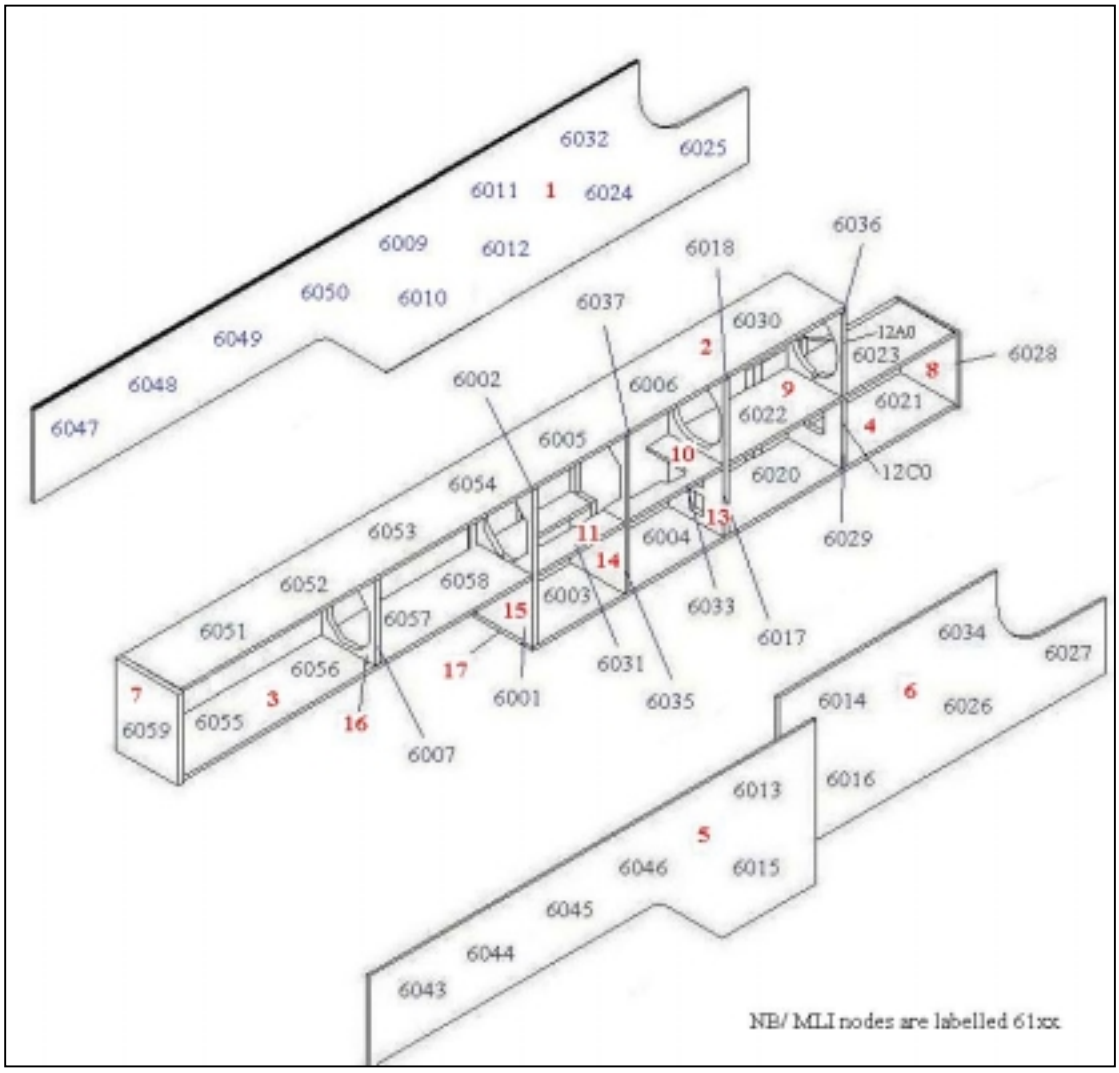
Time:

Test Time:

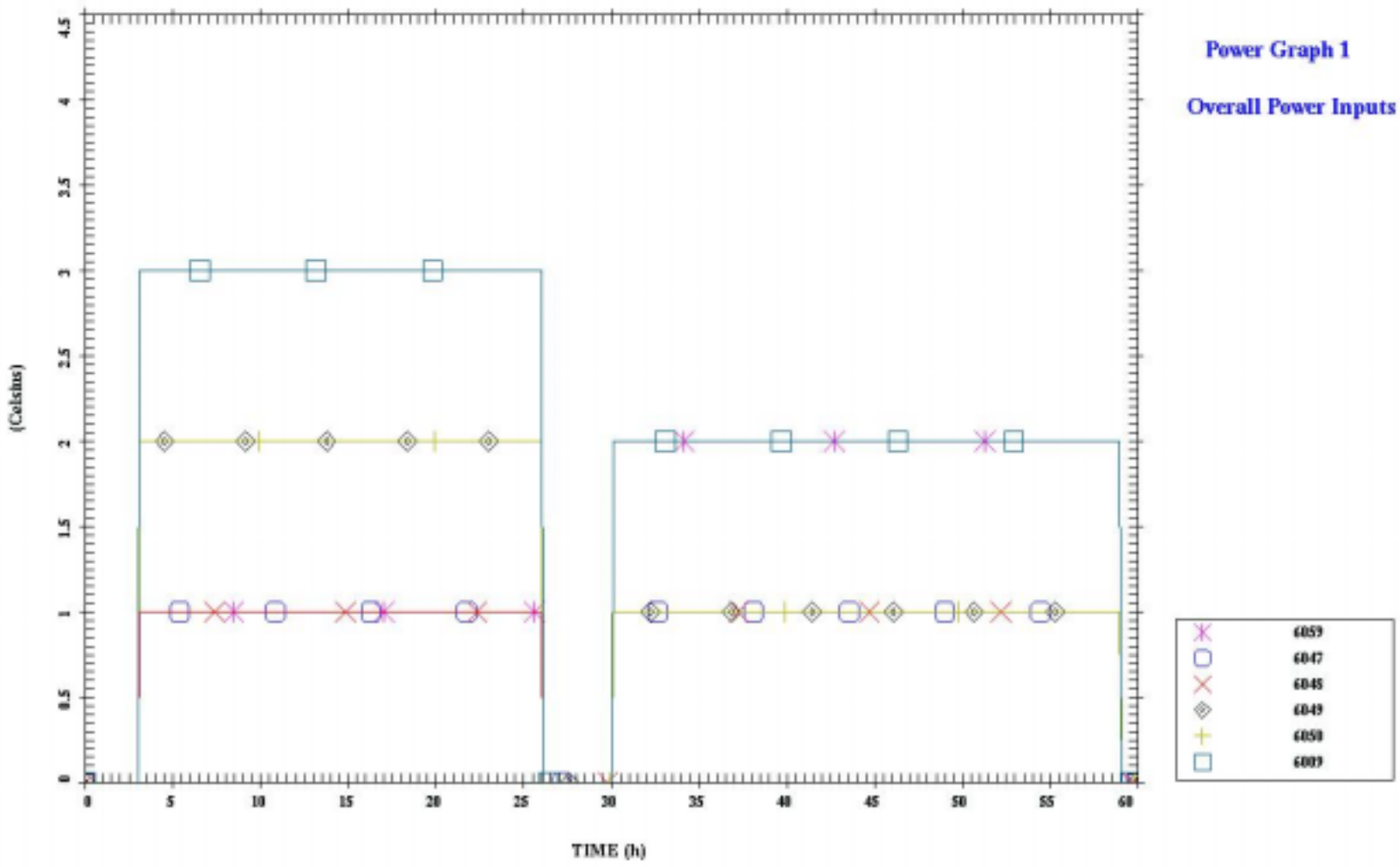
Details:

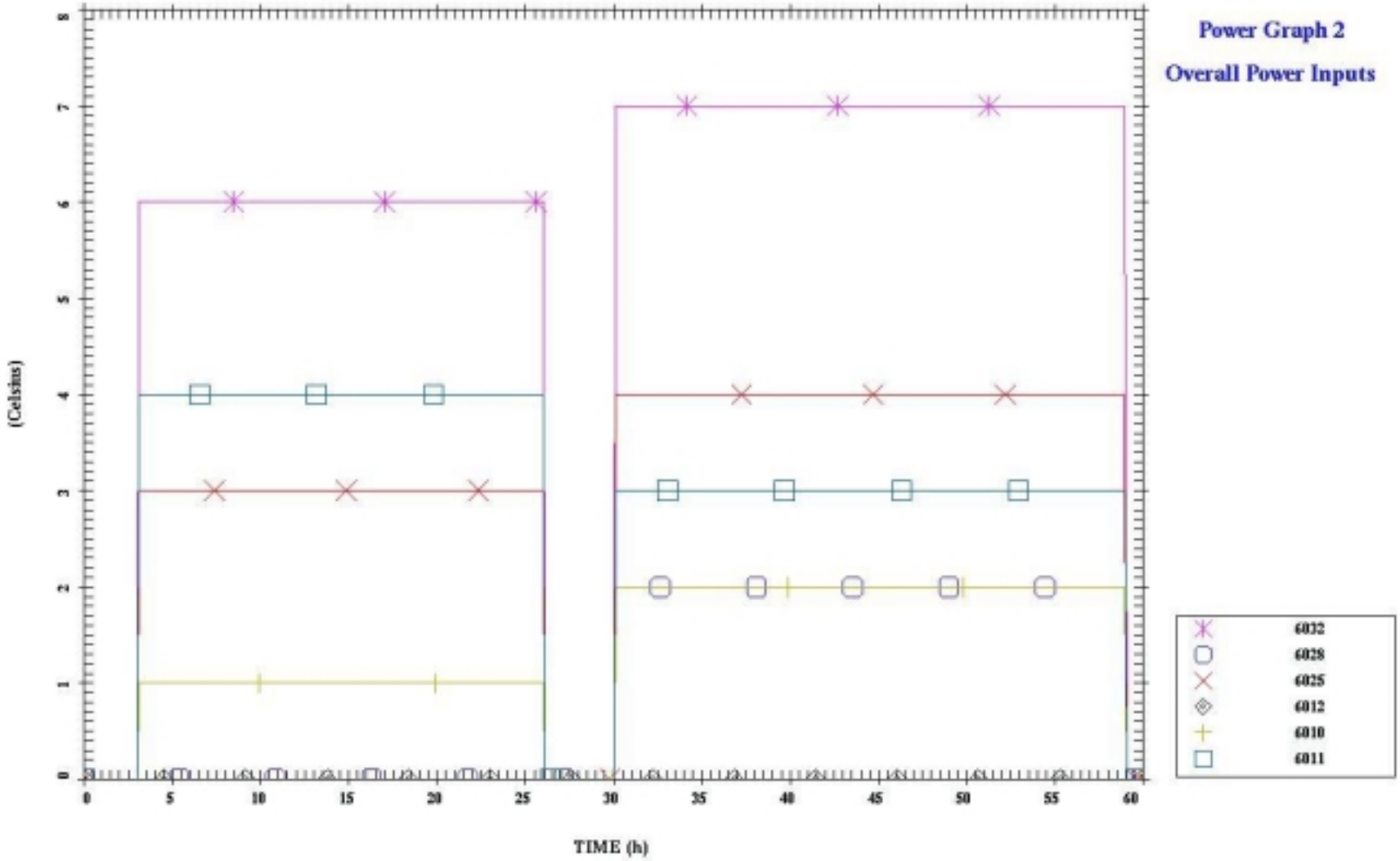


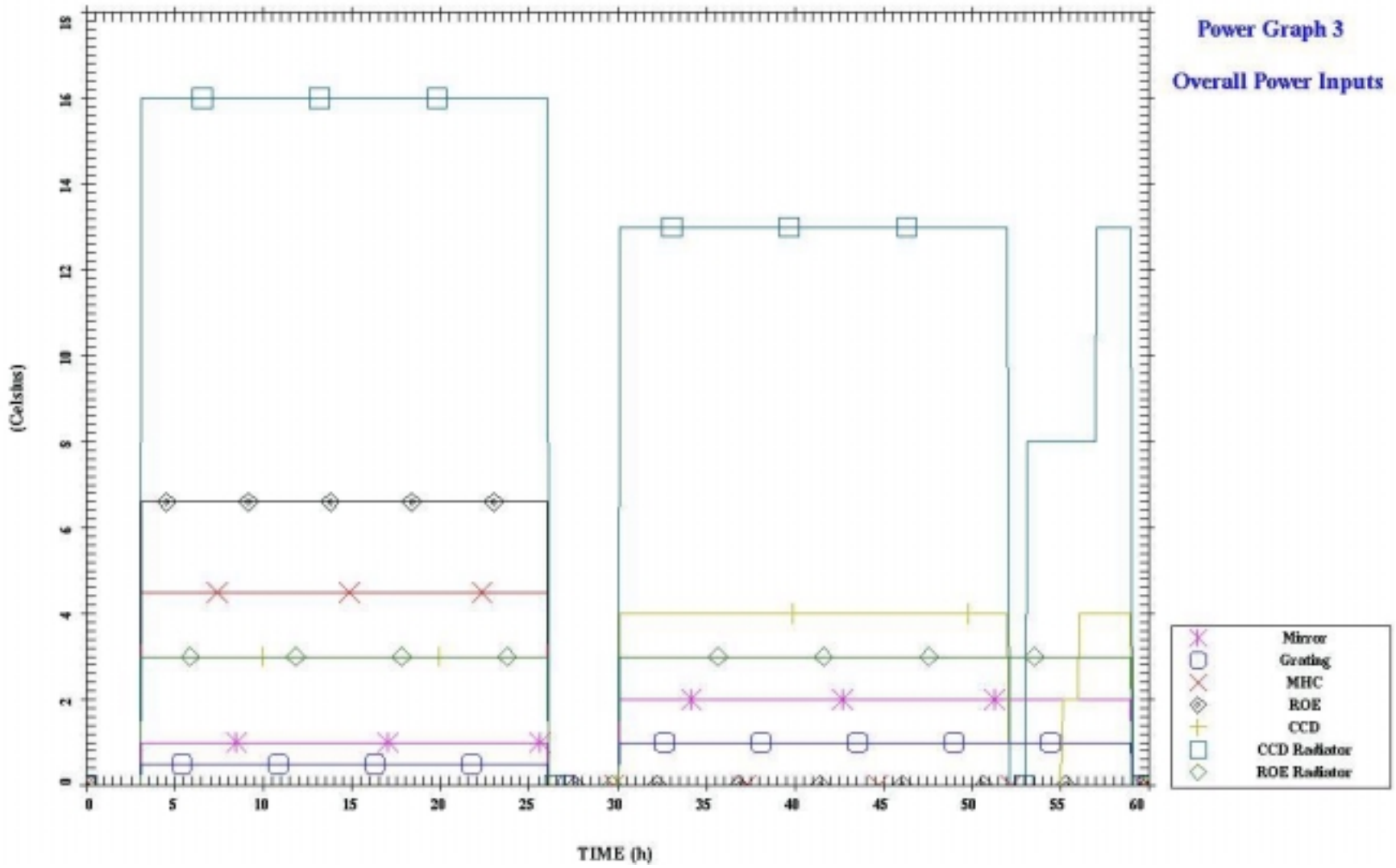
APPENDIX 3: EIS PANEL AND THERMAL NODE (60XX) NUMBERS

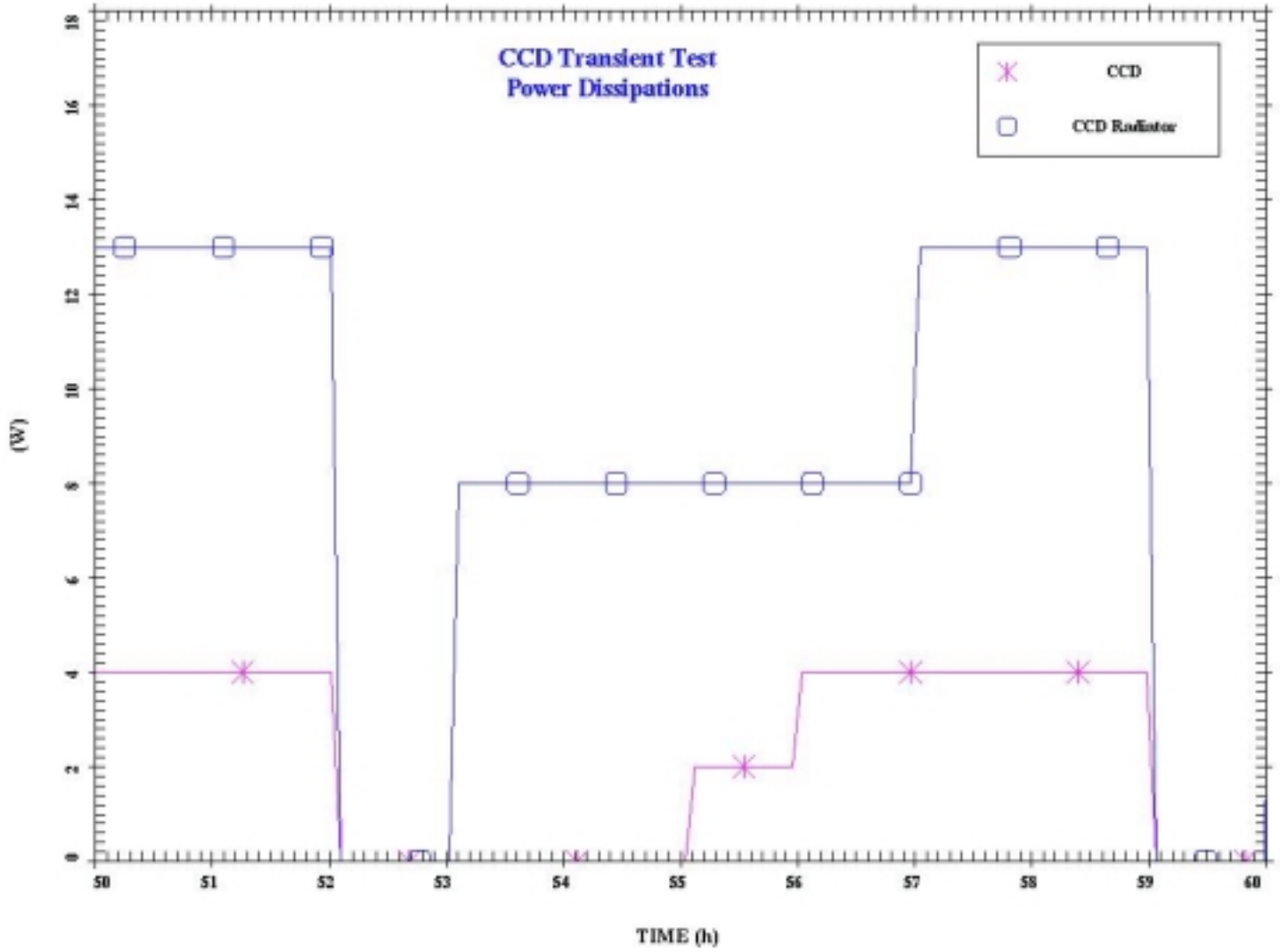


APPENDIX 4: HEATER LOADS FOR WHOLE THERMAL BALANCE TEST

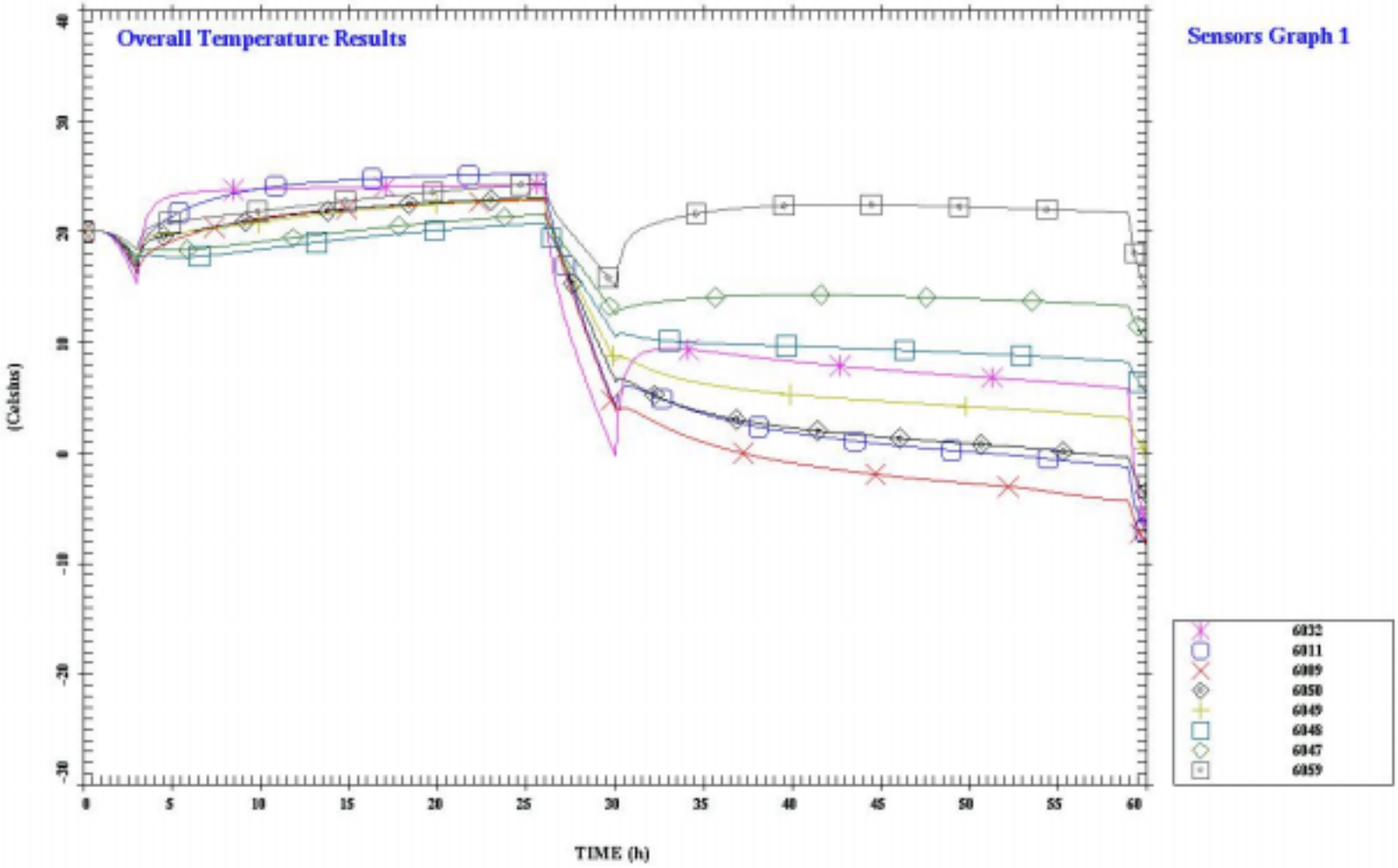


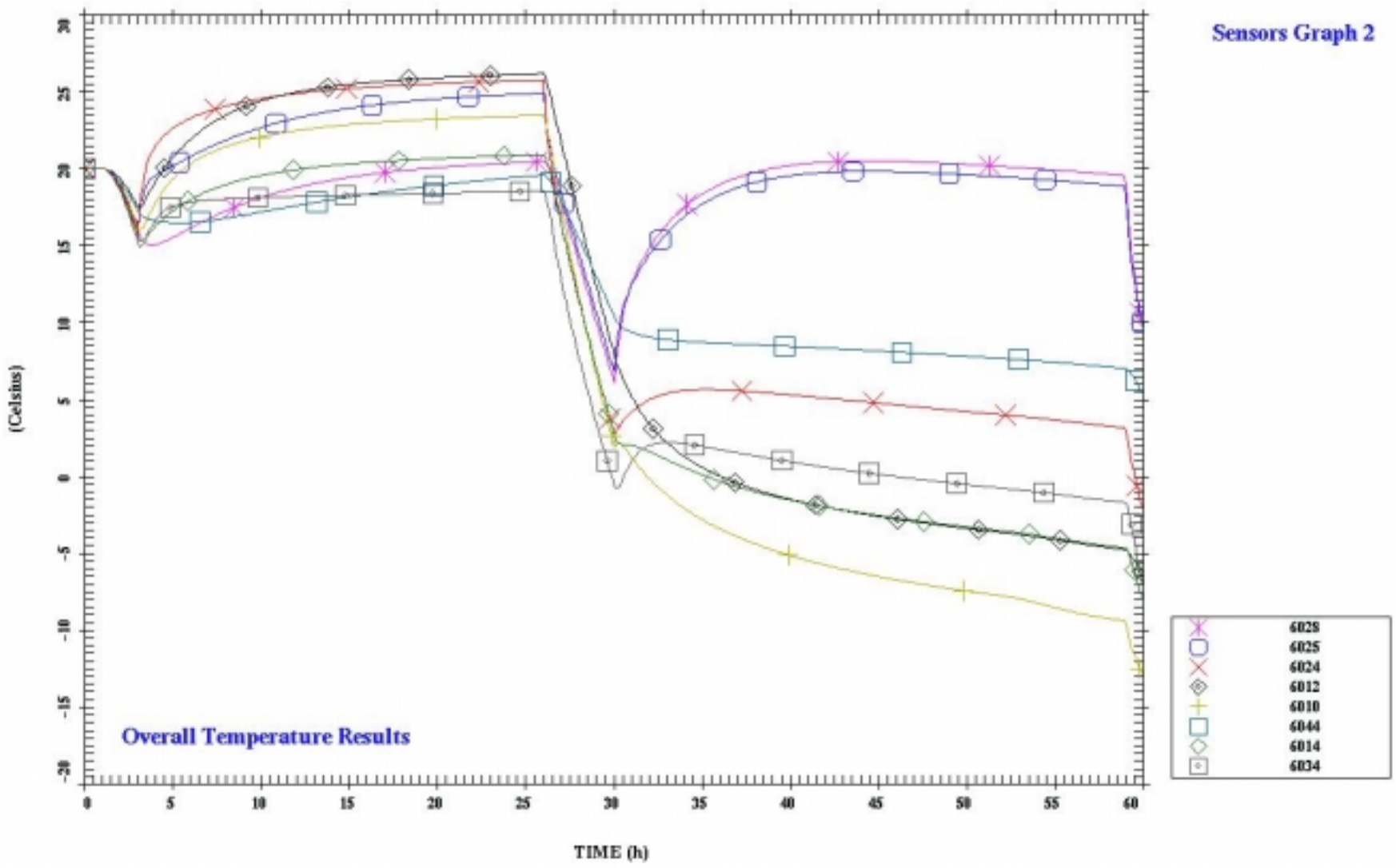

Power Graph 2
Overall Power Inputs
(Celsius)
TIME (h)
0
5
10
15
20
25
30
35
40
45
50
55
60
6032
6028
6025
6012
6010
6011

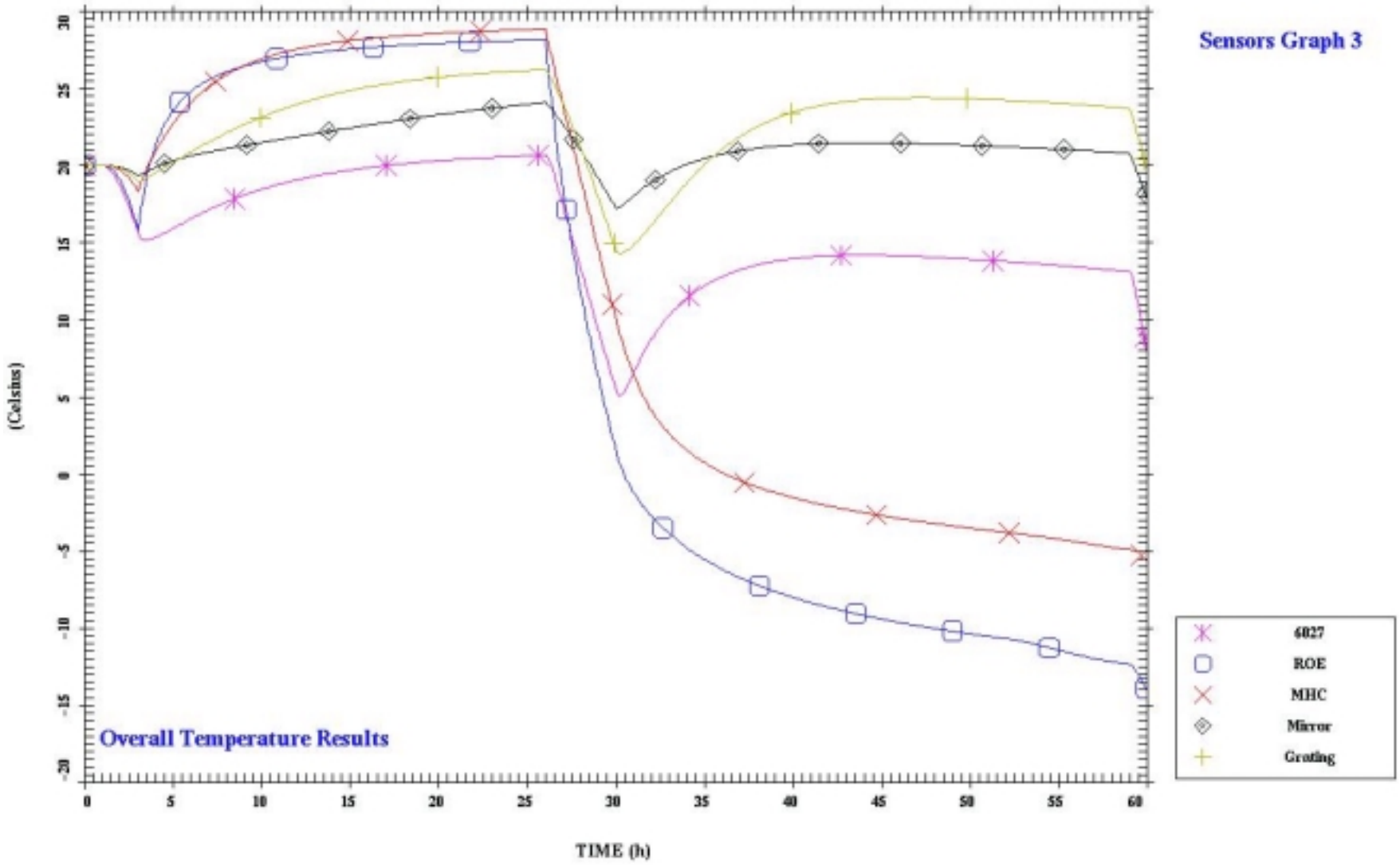

Power Graph 3
Overall Power Inputs
(Celsius)
TIME (h)
Mirror
Grating
MHC
ROE
CCD
CCD Radiator
ROE Radiator

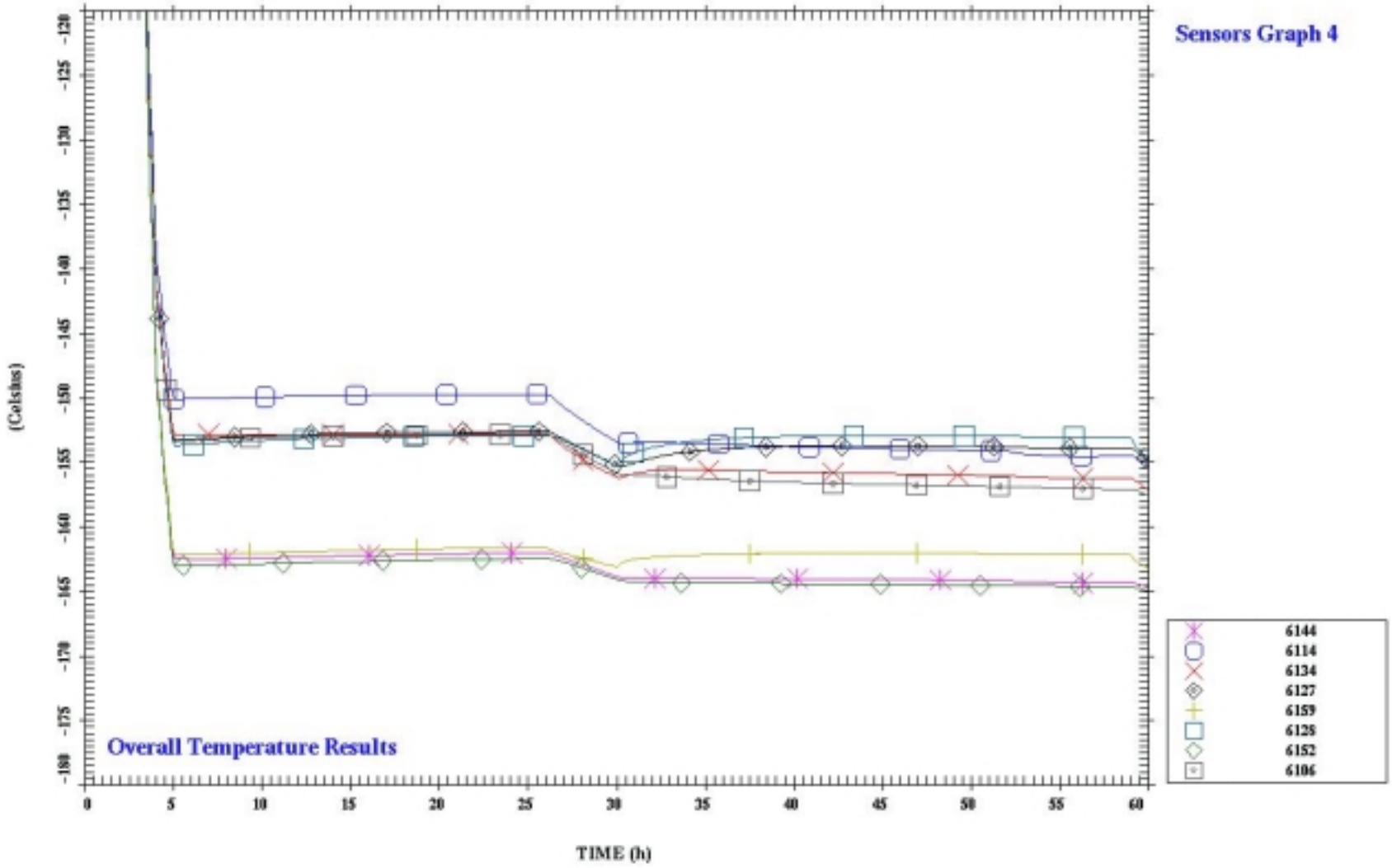

CCD Transient Test
Power Dissipations
CCD
CCD Radiator
(W)
TIME (h)
0
2
4
6
8
10
12
14
16
18
50
51
52
53
54
55
56
57
58
59
60

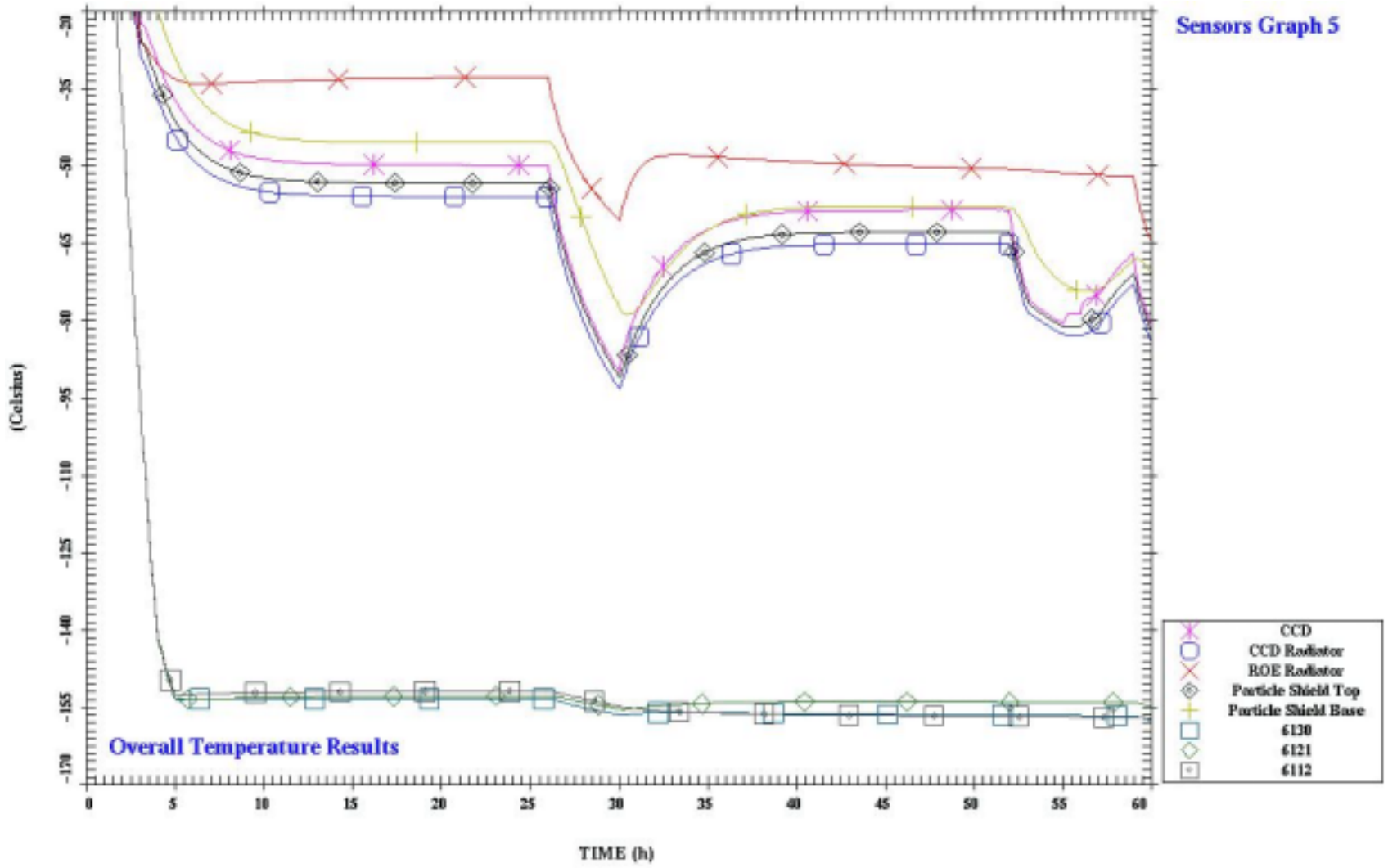
APPENDIX 5: TEMPERATURE PREDICTIONS FOR THE WHOLE THERMAL BALANCE TEST

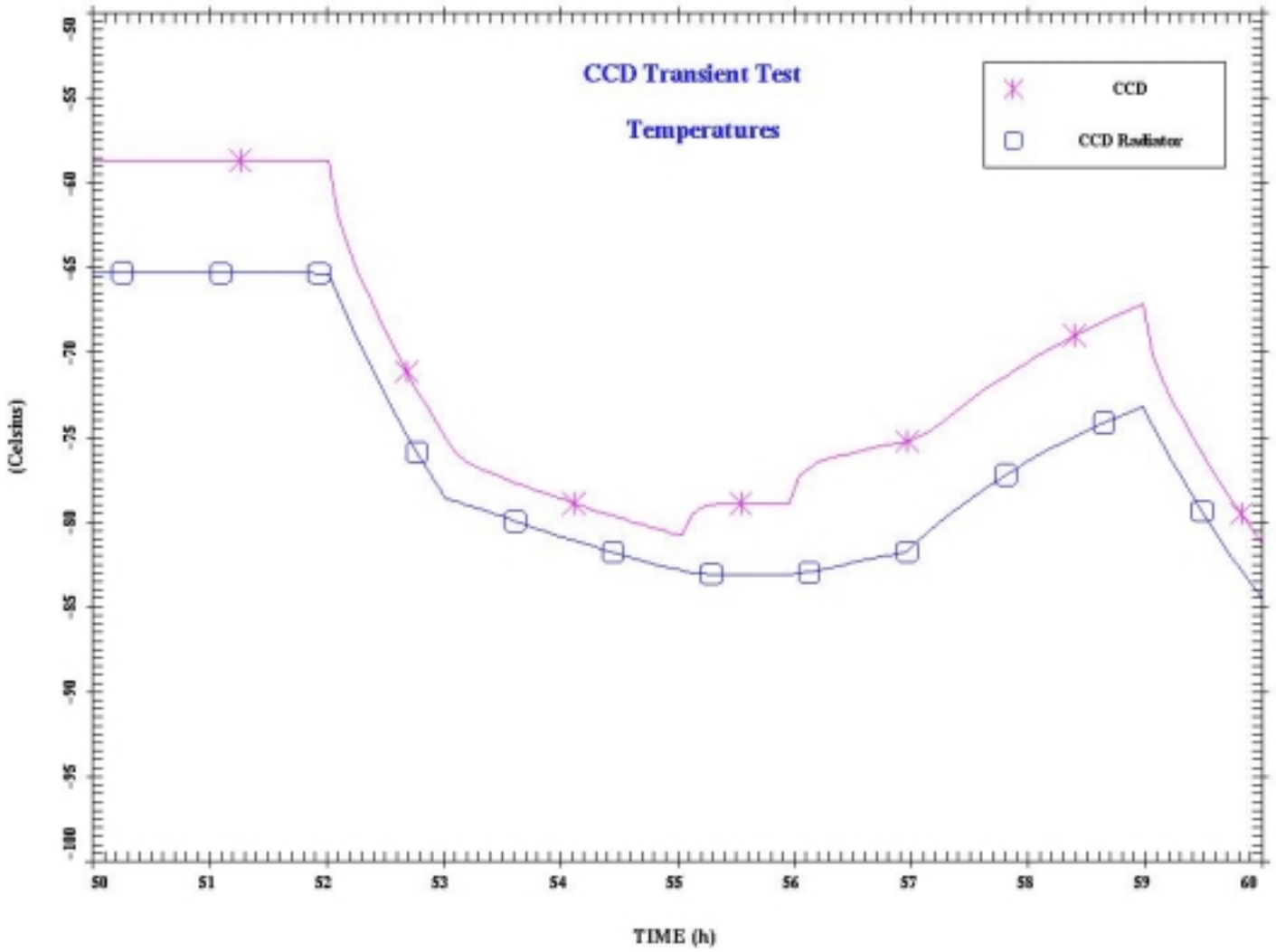



Sensors Graph 2
(Celsius)
TIME (h)
Overall Temperature Results
6028
6025
6024
6012
6010
6044
6014
6034


Sensors Graph 3
Overall Temperature Results
(Celsius)
TIME (h)
6027
ROE
MHC
Mirror
Grating


Sensors Graph 4
Overall Temperature Results
(Celsius)
TIME (h)
-120
-125
-130
-135
-140
-145
-150
-155
-160
-165
-170
-175
-180
0
5
10
15
20
25
30
35
40
45
50
55
60
6144
6114
6134
6127
6159
6128
6152
6106


Sensors Graph 5
(Celsius)
-20
-35
-50
-65
-80
-95
-110
-125
-140
-155
-170
0
5
10
15
20
25
30
35
40
45
50
55
60
TIME (h)
Overall Temperature Results
CCD
CCD Radiator
ROE Radiator
Particle Shield Top
Particle Shield Base
6120
6121
6112


CCD Transient Test
Temperatures
CCD
CCD Radiator
(Celsius)
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
50
51
52
53
54
55
56
57
58
59
60
TIME (h)

APPENDIX 6: PRE- AND POST TEST PROCEDURE

Important Notes:

- It is assumed that the MLI has been fit-checked prior to this procedure, and that the EIS structure, MLI, MLI stud buttons, eyebolt interfaces, turning equipment and necessary tools are in the STC clean room.
- The following should be repeated in reverse as the post-test procedure.

Extra Resources Required:

- at least 4 people willing to lift and manoeuvre the EIS MTM/TTM structure (weights at least 60kg total)
- a clean sturdy table about 3m long (less than 3.5m)

Procedure:

1. Structure is on its +Y face (upside-down), resting on its mounts, on the table
   - attach eyebolts (see Figure 4)
   - attach -Z base MLI, leaving the end structure uncovered
   - attach +Z base MLI, leaving the end structure uncovered

2. Lift structure and rotate 180° in the Z axis, taking care not to handle surfaces with MLI. The MLI will be loose at the ends of EIS, where 4 people can find purchase to lift and rotate the structure, avoiding contact with the front thermal shroud. Rest the structure on its -Y face (normal orientation), on its mounts, on the table. A fifth person is required to position the mounts.
   - attach mirror shield
   - attach -Z top MLI, , leaving the end structure uncovered
   - attach +Z top MLI, leaving the end structure uncovered
   - attach ROE radiator
   - attach CCD radiator
   - attach turning equipment (see Figure 5)

3. Using the turning equipment (though still taking care not to handle surfaces with MLI), lift then rotate structure so it is upside-down again. The turning equipment should be used by at least four people. A fifth person will then need to loop the steel cables through the eyebolts. When the structure is safely secured by the cables and eyebolts, the turning equipment can be removed.

4. The RAL lifting equipment will then be used to carry the EIS TTM into the Space Test Chamber.
   - ensure structure is secure in Chamber, positioned parallel with the axis and in the centre of the Chamber diameter
   - attach sensor and heater looming
   - perform functional tests of heaters and sensors, noting actual heater resistance

5. Close STC door and start pump down. The thermal tests begin when the chamber is pumped down and cooling of the nitrogen shroud commences.

Figure 4: The Eyebolts used to Support the EIS TTM during the Thermal Tests

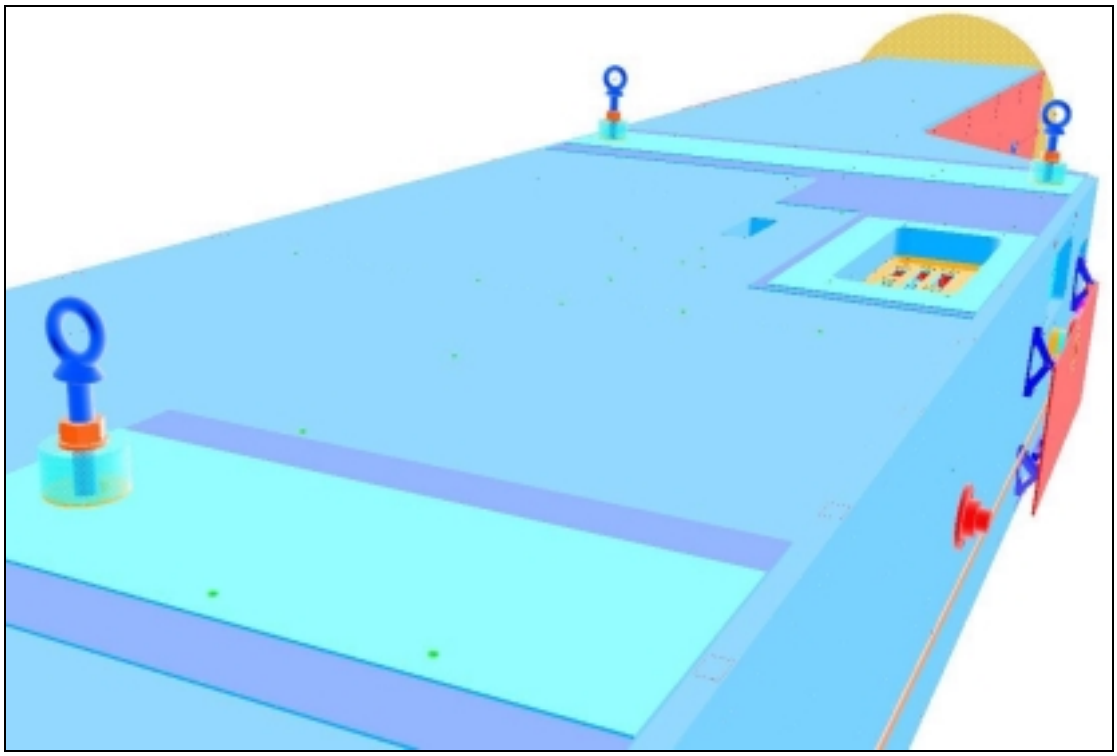


Figure 5: The Turning Equipment

Figure 5a: +Z Turning Wheel

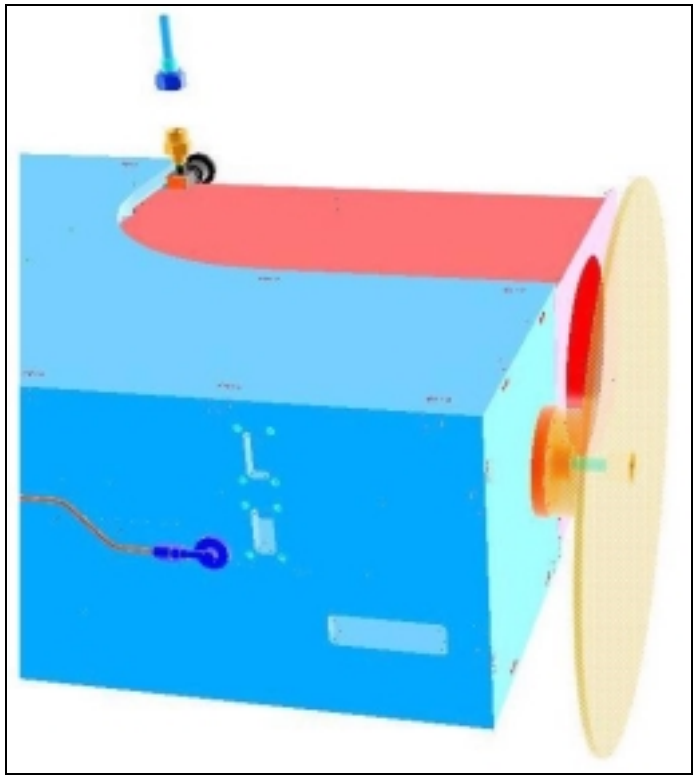


Figure 5b: -Z Turning Wheel

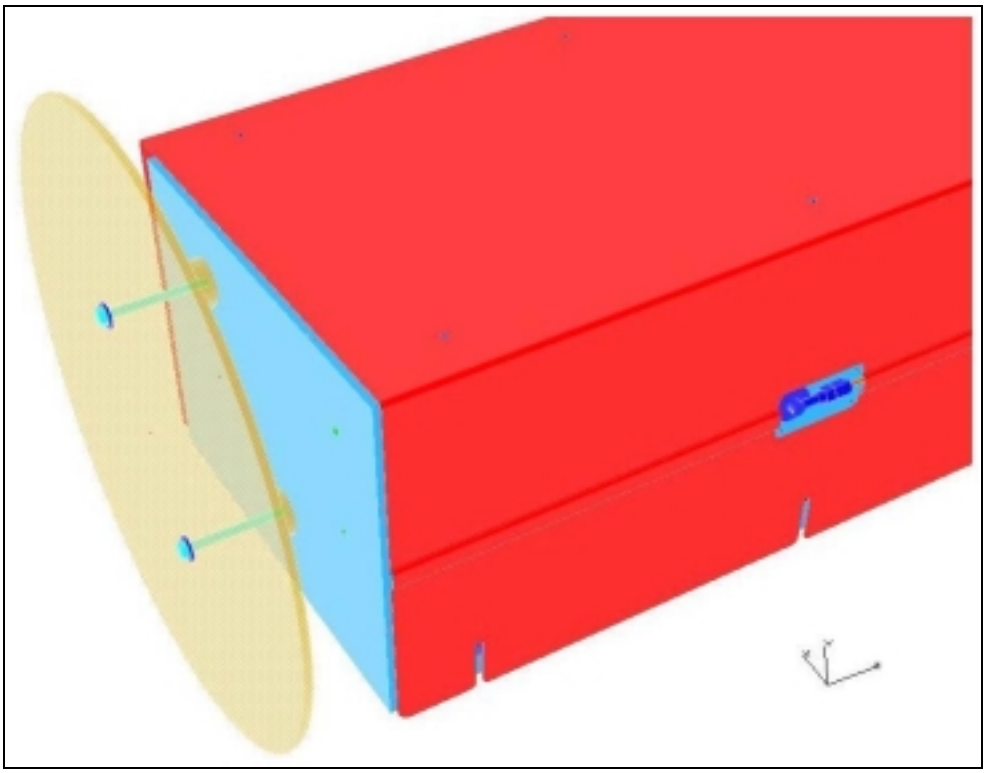
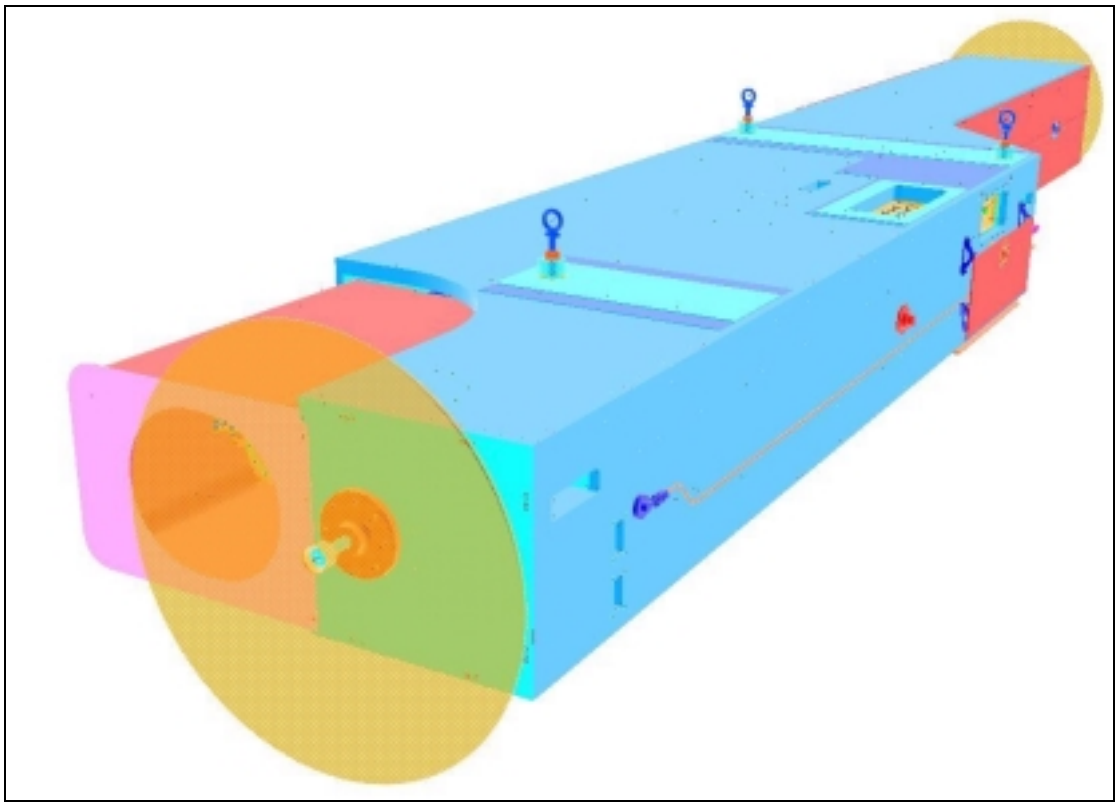


Figure 5c: Pre-Test Procedure Set-Up



APPENDIX 7: COMPLETE TEMPERATURE PREDICTIONS FOR ALL SENSORS

Sensor:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Node:	*6032*	*6011*	*6009*	*6050*	*6049*	*6048*	*6047*	*6059*	*6028*	*6025*	*6024*	*6012*	*6010*	*6044*	*6014*	*6034*	*6027*	*6144*	*6114*	*6134*
Time (Hrs)																				
0.00	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.17	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.34	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.50	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.67	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.84	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
1.01	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	19.6	19.6	19.6
1.17	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	9.6	9.8	9.7
1.34	19.8	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.8	19.9	19.8	19.9	19.9	19.9	19.8	19.8	19.8	-0.3	-0.1	-0.1
1.51	19.6	19.7	19.8	19.8	19.8	19.8	19.8	19.9	19.7	19.7	19.7	19.8	19.8	19.8	19.6	19.6	19.6	-10.2	-9.9	-10.0
1.68	19.4	19.5	19.6	19.6	19.7	19.7	19.7	19.8	19.4	19.5	19.4	19.7	19.6	19.6	19.4	19.3	19.3	-20.1	-19.6	-19.8
1.85	19.0	19.2	19.4	19.4	19.5	19.5	19.5	19.6	19.1	19.2	19.1	19.5	19.4	19.4	19.0	19.0	19.0	-30.0	-29.3	-29.5
2.01	18.6	18.9	19.1	19.2	19.2	19.2	19.3	19.5	18.8	18.9	18.8	19.4	19.1	19.2	18.7	18.6	18.6	-39.9	-39.0	-39.2
2.18	18.2	18.6	18.8	18.9	19.0	19.0	19.1	19.4	18.4	18.5	18.4	19.1	18.7	18.9	18.2	18.1	18.2	-49.7	-48.5	-48.9
2.35	17.7	18.2	18.4	18.6	18.7	18.7	18.8	19.2	18.0	18.1	17.9	18.9	18.2	18.6	17.8	17.6	17.8	-59.5	-58.0	-58.4
2.52	17.1	17.7	17.9	18.2	18.4	18.4	18.6	19.0	17.5	17.7	17.4	18.6	17.7	18.3	17.3	17.0	17.3	-69.2	-67.4	-67.9
2.68	16.5	17.2	17.5	17.8	18.0	18.1	18.3	18.8	17.0	17.2	16.9	18.2	17.2	18.0	16.7	16.4	16.8	-78.8	-76.6	-77.2
2.85	15.9	16.7	16.9	17.4	17.6	17.8	18.0	18.6	16.5	16.8	16.4	17.9	16.6	17.6	16.2	15.8	16.2	-88.4	-85.7	-86.4
3.02	15.3	16.2	16.4	16.9	17.2	17.4	17.7	18.4	16.0	16.2	15.8	17.5	16.0	17.3	15.6	15.2	15.7	-97.8	-94.6	-95.5
3.19	18.5	18.1	17.1	18.1	18.4	17.7	18.1	19.3	15.5	17.8	18.3	17.5	16.1	17.0	15.3	15.0	15.3	-107.0	-103.2	-104.2
3.36	20.1	19.0	17.5	18.6	19.0	17.8	18.3	19.8	15.3	18.6	19.6	17.9	16.3	16.9	15.4	15.2	15.2	-116.0	-111.5	-112.7
3.52	21.1	19.5	17.8	19.0	19.3	17.9	18.3	20.2	15.1	19.0	20.3	18.2	16.7	16.8	15.6	15.7	15.2	-124.8	-119.3	-120.7
3.69	21.7	19.8	18.1	19.2	19.5	17.9	18.4	20.4	15.1	19.3	20.8	18.6	17.1	16.7	15.9	16.1	15.2	-133.1	-126.7	-128.3
3.86	22.1	20.1	18.3	19.3	19.6	17.8	18.4	20.5	15.1	19.4	21.2	18.9	17.5	16.7	16.1	16.4	15.3	-141.0	-133.4	-135.3
4.03	22.4	20.3	18.4	19.4	19.7	17.8	18.4	20.6	15.1	19.6	21.5	19.2	17.8	16.6	16.3	16.7	15.4	-147.7	-139.0	-141.1
4.19	22.6	20.5	18.6	19.5	19.8	17.8	18.4	20.7	15.1	19.7	21.8	19.5	18.2	16.6	16.5	16.9	15.5	-150.6	-141.3	-143.5
4.36	22.8	20.8	18.7	19.5	19.8	17.8	18.4	20.7	15.2	19.8	22.0	19.8	18.5	16.6	16.7	17.1	15.6	-153.4	-143.5	-145.8
4.53	23.0	20.9	18.9	19.6	19.8	17.7	18.4	20.8	15.3	19.9	22.2	20.1	18.7	16.5	16.8	17.3	15.7	-156.0	-145.4	-147.8
4.70	23.1	21.1	19.0	19.7	19.8	17.7	18.4	20.8	15.4	20.0	22.4	20.3	19.0	16.5	17.0	17.4	15.8	-158.4	-147.2	-149.8
4.87	23.2	21.3	19.1	19.7	19.9	17.7	18.4	20.9	15.5	20.1	22.5	20.6	19.2	16.5	17.2	17.5	15.9	-160.7	-148.9	-151.5
5.03	23.3	21.4	19.2	19.8	19.9	17.7	18.4	20.9	15.6	20.2	22.7	20.8	19.4	16.5	17.3	17.6	16.0	-162.4	-150.1	-152.8
5.20	23.3	21.6	19.3	19.8	19.9	17.7	18.4	20.9	15.7	20.3	22.8	21.0	19.6	16.5	17.4	17.6	16.1	-162.4	-150.1	-152.8
5.37	23.4	21.7	19.4	19.8	19.9	17.7	18.4	21.0	15.8	20.4	22.9	21.2	19.8	16.5	17.6	17.7	16.2	-162.5	-150.1	-152.8
5.54	23.4	21.9	19.5	19.9	19.9	17.7	18.4	21.0	15.9	20.5	23.0	21.4	19.9	16.5	17.7	17.7	16.3	-162.5	-150.1	-152.8
5.71	23.5	22.0	19.6	19.9	20.0	17.7	18.4	21.0	16.0	20.6	23.1	21.6	20.1	16.5	17.8	17.8	16.4	-162.5	-150.1	-152.8
5.87	23.5	22.1	19.7	20.0	20.0	17.7	18.4	21.1	16.1	20.7	23.2	21.8	20.2	16.5	17.9	17.8	16.5	-162.5	-150.1	-152.8
6.04	23.5	22.2	19.8	20.0	20.0	17.7	18.4	21.1	16.2	20.8	23.3	22.0	20.4	16.5	18.0	17.8	16.6	-162.5	-150.1	-152.8
6.21	23.6	22.3	19.8	20.1	20.0	17.7	18.4	21.1	16.3	20.9	23.4	22.1	20.5	16.5	18.1	17.9	16.7	-162.5	-150.1	-152.8
6.38	23.6	22.5	19.9	20.1	20.1	17.8	18.5	21.2	16.4	21.0	23.5	22.3	20.6	16.5	18.2	17.9	16.8	-162.5	-150.1	-152.8
6.54	23.6	22.6	20.0	20.2	20.1	17.8	18.5	21.2	16.5	21.1	23.6	22.5	20.7	16.6	18.3	17.9	16.9	-162.5	-150.1	-152.8
6.71	23.6	22.6	20.1	20.2	20.1	17.8	18.5	21.2	16.6	21.2	23.6	22.6	20.8	16.6	18.4	17.9	17.0	-162.5	-150.1	-152.8
6.88	23.6	22.7	20.2	20.3	20.2	17.8	18.5	21.3	16.7	21.3	23.7	22.7	20.9	16.6	18.5	18.0	17.1	-162.5	-150.1	-152.8
7.05	23.7	22.8	20.2	20.3	20.2	17.8	18.6	21.3	16.8	21.4	23.8	22.9	21.0	16.6	18.6	18.0	17.2	-162.5	-150.0	-152.8
7.22	23.7	22.9	20.3	20.4	20.2	17.9	18.6	21.3	16.9	21.5	23.8	23.0	21.1	16.7	18.7	18.0	17.3	-162.5	-150.0	-152.8
7.38	23.7	23.0	20.4	20.4	20.3	17.9	18.6	21.4	17.0	21.6	23.9	23.1	21.2	16.7	18.7	18.0	17.3	-162.5	-150.0	-152.8
7.55	23.7	23.1	20.4	20.5	20.3	17.9	18.6	21.4	17.0	21.7	23.9	23.2	21.3	16.7	18.8	18.0	17.4	-162.5	-150.0	-152.8
7.72	23.7	23.1	20.5	20.5	20.4	18.0	18.7	21.4	17.1	21.7	24.0	23.3	21.3	16.7	18.9	18.0	17.5	-162.5	-150.0	-152.8
7.89	23.7	23.2	20.6	20.6	20.4	18.0	18.7	21.5	17.2	21.8	24.1	23.4	21.4	16.8	18.9	18.0	17.6	-162.5	-150.0	-152.8
8.05	23.7	23.3	20.6	20.6	20.4	18.0	18.7	21.5	17.3	21.9	24.1	23.5	21.5	16.8	19.0	18.1	17.7	-162.5	-150.0	-152.8
8.22	23.8	23.3	20.7	20.7	20.5	18.0	18.8	21.5	17.4	22.0	24.2	23.6	21.5	16.8	19.1	18.1	17.8	-162.5	-150.0	-152.8
8.39	23.8	23.4	20.8	20.7	20.5	18.1	18.8	21.6	17.5	22.1	24.2	23.7	21.6	16.9	19.1	18.1	17.8	-162.5	-150.0	-152.8
8.56	23.8	23.5	20.8	20.8	20.6	18.1	18.8	21.6	17.5	22.1	24.2	23.8	21.7	16.9	19.2	18.1	17.9	-162.5	-150.0	-152.9
8.73	23.8	23.5	20.9	20.8	20.6	18.1	18.8	21.6	17.6	22.2	24.3	23.9	21.7	16.9	19.2	18.1	18.0	-162.4	-150.0	-152.8
8.89	23.8	23.6	20.9	20.9	20.6	18.2	18.9	21.7	17.7	22.3	24.3	24.0	21.8	17.0	19.3	18.1	18.0	-162.4	-150.0	-152.8
9.06	23.8	23.6	21.0	20.9	20.7	18.2	18.9	21.7	17.8	22.3	24.4	24.0	21.8	17.0	19.3	18.1	18.1	-162.4	-150.0	-152.8
9.23	23.8	23.7	21.0	20.9	20.7	18.2	18.9	21.7	17.8	22.4	24.4	24.1	21.9	17.0	19.4	18.1	18.2	-162.4	-150.0	-152.8
9.40	23.8	23.7	21.1	21.0	20.7	18.3	19.0	21.8	17.9	22.5	24.4	24.2	21.9	17.1	19.4	18.1	18.3	-162.4	-150.0	-152.8
9.56	23.8	23.8	21.1	21.0	20.8	18.3	19.0	21.8	18.0	22.5	24.5	24.3	22.0	17.1	19.5	18.1	18.3	-162.4	-150.0	-152.8
9.73	23.8	23.8	21.2	21.1	20.8	18.3	19.0	21.8	18.0	22.6	24.5	24.3	22.0	17.1	19.5	18.1	18.4	-162.4	-150.0	-152.8
9.90	23.8	23.9	21.2	21.1	20.9	18.4	19.1	21.8	18.1	22.7	24.6	24.4	22.1	17.2	19.6	18.1	18.4	-162.4	-149.9	-152.8
10.07	23.8	23.9	21.2	21.2	20.9	18.4	19.1	21.9	18.2	22.7	24.6	24.4	22.1	17.2	19.6	18.1	18.5	-162.4	-149.9	-152.8
10.24	23.9	24.0	21.3	21.2	20.9	18.5	19.1	21.9	18.2	22.8	24.6	24.5	22.1	17.3	19.6	18.2	18.6	-162.4	-149.9	-152.8
10.40	23.9	24.0	21.3	21.2	21.0	18.5	19.2	21.9	18.3	22.8	24.6	24.6	22.2	17.3	19.7	18.2	18.6	-162.4	-149.9	-152.8
10.57	23.9	24.0	21.4	21.3	21.0	18.5	19.2	22.0	18.3	22.9	24.7	24.6	22.2	17.3	19.7	18.2	18.7	-162.4	-149.9	-152.8
10.74	23.9	24.1	21.4	21.3	21.0	18.6	19.2	22.0	18.4	22.9	24.7	24.7	22.2	17.4	19.7	18.2	18.7	-162.4	-149.9	-152.8
10.91	23.9	24.1	21.4	21.3	21.1	18.6	19.3	22.0	18.5	23.0	24.7	24.7	22.3	17.4	19.8	18.2	18.8	-162.4	-149.9	-152.8
11.07	23.9	24.1	21.5	21.4	21.1	18.6	19.3	22.1	18.5	23.0	24.8	24.8	22.3	17.4	19.8	18.2	18.8	-162.4	-149.9	-152.8
11.24	23.9	24.2	21.5	21.4	21.2	18.7	19.3	22.1	18.6	23.1	24.8	24.8	22.4	17.5	19.8	18.2	18.9	-162.4	-149.9	-152.8
11.41	23.9	24.2	21.5	21.5	21.2	18.7	19.4	22.1	18.6	23.1	24.8	24.8	22.4	17.5	19.9	18.2	18.9	-162.4	-149.9	-152.8
11.58	23.9	24.2	21.6	21.5	21.2	18.7	19.4	22.2	18.7	23.2	24.8	24.9	22.4	17.5	19.9	18.2	19.0	-162.4	-149.9	-152.8
11.75	23.9	24.3	21.6	21.5	21.3	18.8	19.4	22.2	18.7	23.2	24.9	24.9	22.4	17.6	19.9	18.2	19.0	-162.4	-149.9	-152.8
11.91	23.9	24.3	21.6	21.6	21.3	18.8	19.5	22.2	18.8	23.3	24.9	25.0	22.5	17.6	19.9	18.2	19.1	-162.3	-149.9	-152.8

Sensor:	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Node:	*6127*	*6159*	*6128*	*6152*	*6106*	*6130*	*6121*	*6112*	*6079*	*6065*	*6063*	*6070*	*6064*	*6075*	*6076*	*6073*	*6080*
Time (Hrs)																	
0.00	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.17	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.34	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.50	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.67	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
0.84	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
1.01	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	20.0	20.0	20.0	20.0	20.0	20.0	19.9	20.0	20.0
1.17	9.7	9.6	9.7	9.6	9.7	9.7	9.7	9.7	20.0	20.0	20.0	19.7	20.0	18.5	18.1	19.2	19.9
1.34	-0.2	-0.3	-0.2	-0.3	-0.2	-0.2	-0.2	-0.2	19.9	20.0	20.0	18.2	20.0	15.8	14.9	17.2	19.6
1.51	-10.0	-10.3	-10.0	-10.3	-10.0	-10.0	-10.0	-10.0	19.8	20.0	20.0	15.6	20.0	12.3	10.9	14.2	18.8
1.68	-19.8	-20.2	-19.8	-20.2	-19.8	-19.8	-19.8	-19.8	19.6	19.9	20.0	12.3	19.9	8.2	6.6	10.6	17.6
1.85	-29.5	-30.1	-29.6	-30.1	-29.6	-29.6	-29.6	-29.6	19.4	19.8	19.9	8.4	19.9	3.8	2.2	6.6	15.9
2.01	-39.2	-39.9	-39.3	-39.9	-39.3	-39.3	-39.3	-39.3	19.0	19.7	19.9	4.3	19.8	-0.8	-2.3	2.3	13.8
2.18	-48.9	-49.7	-48.9	-49.8	-48.9	-48.9	-48.9	-48.9	18.6	19.6	19.8	-0.1	19.7	-5.5	-6.7	-2.2	11.3
2.35	-58.4	-59.5	-58.5	-59.5	-58.5	-58.5	-58.5	-58.5	18.2	19.4	19.8	-4.6	19.6	-10.3	-11.0	-6.8	8.5
2.52	-67.9	-69.2	-68.0	-69.3	-68.0	-68.0	-68.0	-67.9	17.7	19.2	19.7	-9.2	19.5	-15.0	-15.1	-11.3	5.5
2.68	-77.3	-78.9	-77.3	-78.9	-77.3	-77.4	-77.3	-77.2	17.1	18.9	19.6	-13.7	19.3	-19.6	-19.0	-15.9	2.2
2.85	-86.5	-88.4	-86.5	-88.5	-86.5	-86.6	-86.5	-86.4	16.5	18.7	19.5	-18.1	19.2	-24.1	-22.7	-20.3	-1.2
3.02	-95.5	-97.9	-95.6	-97.9	-95.6	-95.6	-95.6	-95.4	15.9	18.4	19.3	-22.5	19.0	-28.4	-26.2	-24.6	-4.7
3.19	-104.3	-107.1	-104.4	-107.2	-104.4	-104.4	-104.4	-104.2	17.3	18.9	19.4	-22.6	19.0	-29.6	-26.4	-26.4	-8.0
3.36	-112.7	-116.1	-112.9	-116.3	-112.9	-112.9	-112.9	-112.6	18.4	19.4	19.5	-23.8	19.1	-31.0	-27.0	-27.7	-10.9
3.52	-120.8	-124.8	-121.1	-125.0	-121.0	-121.0	-121.0	-120.7	19.4	19.9	19.6	-25.2	19.2	-32.6	-27.8	-29.2	-13.5
3.69	-128.5	-133.1	-128.8	-133.4	-128.7	-128.7	-128.7	-128.3	20.2	20.3	19.7	-26.7	19.3	-34.1	-28.6	-30.8	-15.8
3.86	-135.6	-141.0	-135.9	-141.4	-135.8	-135.7	-135.8	-135.3	20.8	20.7	19.8	-28.3	19.4	-35.7	-29.5	-32.4	-18.0
4.03	-141.4	-147.6	-141.7	-148.1	-141.6	-141.5	-141.6	-141.1	21.4	21.0	19.9	-29.9	19.6	-37.2	-30.4	-33.9	-20.0
4.19	-143.9	-150.5	-144.2	-151.0	-144.0	-144.0	-144.1	-143.5	21.9	21.3	20.0	-31.4	19.7	-38.7	-31.1	-35.4	-21.8
4.36	-146.1	-153.2	-146.5	-153.8	-146.3	-146.3	-146.3	-145.8	22.4	21.7	20.1	-32.8	19.8	-40.0	-31.7	-36.8	-23.5
4.53	-148.2	-155.8	-148.6	-156.5	-148.4	-148.4	-148.4	-147.8	22.8	22.0	20.1	-34.1	19.9	-41.2	-32.2	-38.1	-25.2
4.70	-150.2	-158.2	-150.6	-158.9	-150.3	-150.3	-150.4	-149.7	23.1	22.3	20.2	-35.3	20.0	-42.4	-32.6	-39.3	-26.7
4.87	-151.9	-160.5	-152.4	-161.2	-152.1	-152.1	-152.2	-151.4	23.4	22.5	20.3	-36.5	20.1	-43.5	-32.9	-40.4	-28.1
5.03	-153.3	-162.2	-153.7	-163.0	-153.4	-153.4	-153.5	-152.7	23.7	22.8	20.3	-37.5	20.3	-44.5	-33.2	-41.4	-29.4
5.20	-153.3	-162.2	-153.7	-163.0	-153.4	-153.4	-153.5	-152.7	23.9	23.1	20.4	-38.5	20.4	-45.4	-33.5	-42.4	-30.6
5.37	-153.3	-162.2	-153.7	-163.0	-153.4	-153.4	-153.5	-152.6	24.1	23.3	20.5	-39.4	20.5	-46.3	-33.7	-43.2	-31.8
5.54	-153.2	-162.2	-153.7	-163.0	-153.4	-153.4	-153.5	-152.6	24.3	23.5	20.5	-40.2	20.6	-47.0	-33.8	-44.1	-32.8
5.71	-153.2	-162.2	-153.6	-163.0	-153.3	-153.4	-153.4	-152.6	24.5	23.7	20.6	-41.0	20.7	-47.7	-33.9	-44.8	-33.8
5.87	-153.2	-162.2	-153.6	-163.0	-153.3	-153.4	-153.4	-152.5	24.7	24.0	20.6	-41.7	20.8	-48.4	-33.9	-45.5	-34.7
6.04	-153.2	-162.1	-153.6	-163.0	-153.3	-153.4	-153.4	-152.5	24.9	24.1	20.7	-42.3	20.9	-49.0	-34.0	-46.1	-35.6
6.21	-153.2	-162.1	-153.6	-163.0	-153.3	-153.4	-153.4	-152.5	25.0	24.3	20.7	-42.9	21.0	-49.5	-34.0	-46.7	-36.4
6.38	-153.2	-162.1	-153.6	-163.0	-153.3	-153.4	-153.4	-152.5	25.1	24.5	20.7	-43.5	21.1	-50.0	-34.0	-47.2	-37.1
6.54	-153.2	-162.1	-153.6	-163.0	-153.3	-153.4	-153.4	-152.4	25.3	24.7	20.8	-44.0	21.2	-50.5	-34.0	-47.7	-37.8
6.71	-153.2	-162.1	-153.6	-163.0	-153.3	-153.4	-153.3	-152.4	25.4	24.9	20.8	-44.4	21.4	-50.9	-34.0	-48.1	-38.4
6.88	-153.1	-162.1	-153.5	-163.0	-153.2	-153.4	-153.3	-152.4	25.5	25.0	20.9	-44.8	21.5	-51.3	-34.0	-48.5	-38.9
7.05	-153.1	-162.1	-153.5	-163.0	-153.2	-153.4	-153.3	-152.4	25.6	25.2	20.9	-45.2	21.6	-51.7	-34.0	-48.9	-39.5
7.22	-153.1	-162.1	-153.5	-163.0	-153.2	-153.4	-153.3	-152.3	25.7	25.3	20.9	-45.6	21.7	-52.0	-34.0	-49.2	-39.9
7.38	-153.1	-162.1	-153.5	-163.0	-153.2	-153.4	-153.3	-152.3	25.8	25.4	21.0	-45.9	21.8	-52.3	-34.0	-49.6	-40.4
7.55	-153.1	-162.1	-153.5	-162.9	-153.2	-153.4	-153.3	-152.3	25.9	25.6	21.0	-46.2	21.9	-52.6	-34.0	-49.8	-40.8
7.72	-153.1	-162.1	-153.5	-162.9	-153.2	-153.4	-153.3	-152.3	25.9	25.7	21.0	-46.5	22.0	-52.8	-33.9	-50.1	-41.2
7.89	-153.1	-162.1	-153.4	-162.9	-153.2	-153.4	-153.2	-152.3	26.0	25.8	21.1	-46.7	22.1	-53.1	-33.9	-50.4	-41.5
8.05	-153.1	-162.1	-153.4	-162.9	-153.2	-153.4	-153.2	-152.3	26.1	25.9	21.1	-47.0	22.2	-53.3	-33.9	-50.6	-41.8
8.22	-153.1	-162.1	-153.4	-162.9	-153.2	-153.4	-153.2	-152.2	26.2	26.0	21.1	-47.2	22.2	-53.5	-33.9	-50.8	-42.1
8.39	-153.0	-162.1	-153.4	-162.9	-153.1	-153.4	-153.2	-152.2	26.2	26.1	21.2	-47.4	22.3	-53.7	-33.8	-51.0	-42.4
8.56	-153.0	-162.1	-153.4	-162.9	-153.1	-153.4	-153.2	-152.2	26.3	26.2	21.2	-47.6	22.4	-53.9	-33.8	-51.2	-42.6
8.73	-153.0	-162.1	-153.4	-162.9	-153.1	-153.3	-153.2	-152.2	26.4	26.3	21.2	-47.8	22.5	-54.0	-33.8	-51.4	-42.9
8.89	-153.0	-162.1	-153.4	-162.9	-153.1	-153.3	-153.2	-152.2	26.4	26.4	21.3	-47.9	22.6	-54.2	-33.8	-51.5	-43.1
9.06	-153.0	-162.0	-153.4	-162.9	-153.1	-153.3	-153.2	-152.2	26.5	26.5	21.3	-48.1	22.7	-54.3	-33.7	-51.7	-43.3
9.23	-153.0	-162.0	-153.4	-162.9	-153.1	-153.3	-153.2	-152.2	26.5	26.6	21.3	-48.2	22.8	-54.4	-33.7	-51.8	-43.5
9.40	-153.0	-162.0	-153.3	-162.9	-153.1	-153.3	-153.1	-152.2	26.6	26.7	21.4	-48.3	22.9	-54.6	-33.7	-51.9	-43.6
9.56	-153.0	-162.0	-153.3	-162.9	-153.1	-153.3	-153.1	-152.1	26.6	26.7	21.4	-48.4	23.0	-54.7	-33.7	-52.0	-43.8
9.73	-153.0	-162.0	-153.3	-162.9	-153.1	-153.3	-153.1	-152.1	26.7	26.8	21.4	-48.5	23.0	-54.8	-33.6	-52.1	-43.9
9.90	-152.9	-162.0	-153.3	-162.9	-153.1	-153.3	-153.1	-152.1	26.7	26.9	21.5	-48.6	23.1	-54.9	-33.6	-52.2	-44.0
10.07	-152.9	-162.0	-153.3	-162.9	-153.1	-153.3	-153.1	-152.1	26.8	27.0	21.5	-48.7	23.2	-54.9	-33.6	-52.3	-44.2
10.24	-152.9	-162.0	-153.3	-162.9	-153.1	-153.3	-153.1	-152.1	26.8	27.0	21.5	-48.8	23.3	-55.0	-33.6	-52.4	-44.3
10.40	-152.9	-162.0	-153.3	-162.8	-153.1	-153.3	-153.1	-152.1	26.8	27.1	21.6	-48.9	23.3	-55.1	-33.5	-52.5	-44.4
10.57	-152.9	-162.0	-153.3	-162.8	-153.1	-153.3	-153.1	-152.1	26.9	27.1	21.6	-49.0	23.4	-55.2	-33.5	-52.5	-44.5
10.74	-152.9	-162.0	-153.3	-162.8	-153.0	-153.3	-153.1	-152.1	26.9	27.2	21.6	-49.0	23.5	-55.2	-33.5	-52.6	-44.5
10.91	-152.9	-162.0	-153.3	-162.8	-153.0	-153.3	-153.1	-152.1	27.0	27.3	21.7	-49.1	23.6	-55.3	-33.5	-52.6	-44.6
11.07	-152.9	-162.0	-153.2	-162.8	-153.0	-153.3	-153.1	-152.1	27.0	27.3	21.7	-49.1	23.6	-55.3	-33.5	-52.7	-44.7
11.24	-152.9	-162.0	-153.2	-162.8	-153.0	-153.3	-153.0	-152.0	27.0	27.4	21.7	-49.2	23.7	-55.4	-33.5	-52.8	-44.8
11.41	-152.9	-162.0	-153.2	-162.8	-153.0	-153.3	-153.0	-152.0	27.1	27.4	21.8	-49.2	23.8	-55.4	-33.4	-52.8	-44.8
11.58	-152.9	-162.0	-153.2	-162.8	-153.0	-153.3	-153.0	-152.0	27.1	27.5	21.8	-49.3	23.8	-55.5	-33.4	-52.8	-44.9
11.75	-152.9	-162.0	-153.2	-162.8	-153.0	-153.3	-153.0	-152.0	27.1	27.5	21.8	-49.3	23.9	-55.5	-33.4	-52.9	-44.9
11.91	-152.9	-161.9	-153.2	-162.8	-153.0	-153.3	-153.0	-152.0	27.2	27.5	21.9	-49.4	24.0	-55.5	-33.4	-52.9	-45.0

Sensor:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Node:	*6032*	*6011*	*6009*	*6050*	*6049*	*6048*	*6047*	*6059*	*6028*	*6025*	*6024*	*6012*	*6010*	*6044*	*6014*	*6034*	*6027*	*6144*	*6114*	*6134*
Time (Hrs)																				
27.69	9.6	14.5	14.0	15.0	15.7	16.4	17.6	19.6	15.3	15.8	13.0	18.5	13.5	16.3	13.1	9.3	14.7	-162.7	-151.4	-154.4
27.85	8.8	13.7	13.2	14.4	15.1	16.0	17.3	19.3	14.6	15.1	12.2	17.7	12.6	15.9	12.3	8.5	14.0	-162.8	-151.6	-154.6
28.02	8.0	12.9	12.4	13.7	14.6	15.6	16.9	19.0	13.9	14.5	11.4	16.9	11.6	15.4	11.5	7.7	13.3	-162.9	-151.7	-154.7
28.19	7.2	12.1	11.7	13.1	14.1	15.2	16.6	18.7	13.3	13.8	10.6	16.1	10.7	15.0	10.7	7.0	12.6	-163.0	-151.9	-154.9
28.36	6.5	11.4	10.9	12.5	13.5	14.8	16.2	18.3	12.6	13.2	9.8	15.3	9.8	14.6	9.9	6.2	11.9	-163.1	-152.0	-155.0
28.53	5.8	10.6	10.2	11.9	13.0	14.4	15.8	18.0	11.9	12.5	9.1	14.6	9.0	14.2	9.2	5.5	11.3	-163.2	-152.2	-155.1
28.69	5.1	9.8	9.4	11.2	12.5	13.9	15.5	17.7	11.3	11.9	8.4	13.8	8.1	13.8	8.4	4.8	10.6	-163.2	-152.3	-155.2
28.86	4.4	9.1	8.7	10.6	11.9	13.5	15.1	17.4	10.6	11.2	7.6	13.0	7.3	13.3	7.7	4.1	9.9	-163.3	-152.5	-155.4
29.03	3.7	8.4	8.0	10.0	11.4	13.1	14.7	17.0	10.0	10.6	6.9	12.3	6.5	12.9	6.9	3.4	9.3	-163.4	-152.6	-155.5
29.20	3.0	7.6	7.2	9.4	10.9	12.7	14.4	16.7	9.3	9.9	6.2	11.5	5.7	12.5	6.2	2.7	8.6	-163.5	-152.8	-155.6
29.36	2.3	6.9	6.5	8.8	10.4	12.2	14.0	16.4	8.7	9.3	5.5	10.8	4.9	12.1	5.5	2.0	7.9	-163.6	-152.9	-155.7
29.53	1.7	6.2	5.8	8.2	9.8	11.8	13.6	16.0	8.0	8.7	4.8	10.0	4.2	11.6	4.8	1.4	7.3	-163.6	-153.1	-155.8
29.70	1.0	5.5	5.1	7.6	9.3	11.4	13.3	15.7	7.4	8.0	4.1	9.3	3.4	11.2	4.1	0.7	6.7	-163.7	-153.2	-155.9
29.87	0.4	4.8	4.5	7.0	8.8	10.9	12.9	15.4	6.8	7.4	3.5	8.6	2.7	10.8	3.4	0.1	6.0	-163.8	-153.3	-156.1
30.04	-0.3	4.1	3.8	6.4	8.3	10.5	12.5	15.0	6.1	6.8	2.8	7.9	1.9	10.4	2.7	-0.6	5.4	-163.9	-153.5	-156.2
30.20	3.6	5.4	4.0	6.7	8.6	10.7	12.8	16.8	8.3	9.0	3.1	7.3	2.2	10.0	2.3	-0.8	5.1	-163.9	-153.5	-156.2
30.37	5.7	5.8	4.1	6.7	8.7	10.8	13.0	18.0	9.7	10.2	3.4	6.8	2.1	9.8	2.1	-0.5	5.2	-164.0	-153.5	-156.2
30.54	6.8	6.0	4.1	6.6	8.6	10.8	13.1	18.7	10.8	11.1	3.7	6.3	1.9	9.7	2.1	0.0	5.5	-164.0	-153.5	-156.1
30.71	7.6	6.0	4.0	6.5	8.5	10.7	13.2	19.2	11.6	11.7	3.9	5.9	1.7	9.5	2.1	0.4	5.9	-164.0	-153.5	-156.0
30.87	8.1	6.0	3.9	6.4	8.4	10.7	13.3	19.6	12.2	12.2	4.1	5.5	1.5	9.4	2.1	0.8	6.3	-164.0	-153.5	-155.9
31.04	8.4	5.9	3.8	6.2	8.2	10.6	13.3	19.8	12.7	12.6	4.2	5.1	1.2	9.4	2.0	1.1	6.7	-164.0	-153.5	-155.9
31.21	8.7	5.8	3.7	6.1	8.1	10.5	13.4	20.0	13.2	13.0	4.4	4.8	0.9	9.3	2.0	1.4	7.1	-164.0	-153.5	-155.8
31.38	8.9	5.7	3.5	5.9	8.0	10.5	13.4	20.2	13.6	13.3	4.5	4.5	0.7	9.2	1.9	1.6	7.5	-164.0	-153.5	-155.8
31.55	9.0	5.6	3.4	5.8	7.9	10.4	13.5	20.3	14.0	13.6	4.7	4.2	0.5	9.2	1.8	1.7	7.9	-164.0	-153.5	-155.7
31.71	9.1	5.5	3.3	5.6	7.7	10.4	13.5	20.4	14.3	13.9	4.8	3.9	0.2	9.1	1.8	1.9	8.2	-164.0	-153.4	-155.7
31.88	9.2	5.4	3.1	5.5	7.6	10.3	13.5	20.5	14.7	14.2	4.9	3.6	0.0	9.1	1.7	2.0	8.6	-164.0	-153.4	-155.7
32.05	9.3	5.3	3.0	5.4	7.5	10.3	13.6	20.6	15.0	14.5	5.0	3.4	-0.2	9.1	1.6	2.0	8.9	-164.0	-153.4	-155.7
32.22	9.3	5.2	2.8	5.2	7.4	10.3	13.6	20.7	15.3	14.8	5.1	3.1	-0.4	9.0	1.5	2.1	9.2	-164.0	-153.5	-155.6
32.38	9.4	5.1	2.7	5.1	7.3	10.2	13.6	20.8	15.5	15.0	5.2	2.9	-0.6	9.0	1.4	2.1	9.4	-164.0	-153.5	-155.6
32.55	9.4	4.9	2.6	5.0	7.2	10.2	13.7	20.9	15.8	15.3	5.3	2.7	-0.8	9.0	1.3	2.2	9.7	-164.0	-153.5	-155.6
32.72	9.4	4.8	2.4	4.9	7.1	10.2	13.7	21.0	16.0	15.5	5.3	2.5	-0.9	8.9	1.2	2.2	9.9	-164.0	-153.5	-155.6
32.89	9.4	4.7	2.3	4.8	7.1	10.1	13.7	21.0	16.3	15.7	5.4	2.3	-1.1	8.9	1.2	2.2	10.2	-164.0	-153.5	-155.6
33.06	9.4	4.6	2.2	4.7	7.0	10.1	13.8	21.1	16.5	15.9	5.4	2.1	-1.3	8.9	1.1	2.2	10.4	-164.0	-153.5	-155.6
33.22	9.4	4.5	2.1	4.6	6.9	10.1	13.8	21.2	16.7	16.1	5.5	2.0	-1.4	8.9	1.0	2.2	10.6	-164.0	-153.5	-155.6
33.39	9.4	4.4	1.9	4.5	6.8	10.1	13.8	21.3	16.9	16.3	5.5	1.8	-1.6	8.9	0.9	2.2	10.8	-164.0	-153.5	-155.6
33.56	9.4	4.3	1.8	4.4	6.8	10.1	13.8	21.3	17.1	16.5	5.5	1.7	-1.7	8.8	0.8	2.2	11.0	-164.0	-153.5	-155.6
33.73	9.4	4.2	1.7	4.3	6.7	10.0	13.9	21.4	17.3	16.7	5.6	1.5	-1.9	8.8	0.7	2.2	11.1	-164.0	-153.5	-155.6
33.89	9.4	4.1	1.6	4.2	6.6	10.0	13.9	21.4	17.4	16.8	5.6	1.4	-2.0	8.8	0.6	2.2	11.3	-164.0	-153.5	-155.6
34.06	9.4	4.0	1.5	4.1	6.6	10.0	13.9	21.5	17.6	17.0	5.6	1.2	-2.1	8.8	0.5	2.1	11.5	-164.0	-153.5	-155.6
34.23	9.3	3.9	1.4	4.0	6.5	10.0	13.9	21.5	17.7	17.1	5.6	1.1	-2.3	8.8	0.5	2.1	11.6	-164.0	-153.5	-155.6
34.40	9.3	3.8	1.3	3.9	6.5	10.0	14.0	21.6	17.9	17.3	5.6	1.0	-2.4	8.8	0.4	2.1	11.8	-164.0	-153.5	-155.6
34.57	9.3	3.7	1.2	3.9	6.4	10.0	14.0	21.6	18.0	17.4	5.6	0.9	-2.5	8.8	0.3	2.0	11.9	-164.0	-153.5	-155.6
34.73	9.3	3.7	1.1	3.8	6.3	9.9	14.0	21.7	18.2	17.5	5.6	0.8	-2.6	8.7	0.2	2.0	12.0	-164.0	-153.5	-155.6
34.90	9.2	3.6	1.0	3.7	6.3	9.9	14.0	21.7	18.3	17.6	5.7	0.6	-2.7	8.7	0.1	2.0	12.1	-164.0	-153.6	-155.6
35.07	9.2	3.5	0.9	3.7	6.2	9.9	14.0	21.8	18.4	17.8	5.7	0.5	-2.8	8.7	0.1	2.0	12.3	-164.0	-153.6	-155.6
35.24	9.2	3.4	0.8	3.6	6.2	9.9	14.1	21.8	18.5	17.9	5.7	0.4	-3.0	8.7	0.0	1.9	12.4	-164.0	-153.6	-155.6
35.40	9.1	3.3	0.8	3.5	6.2	9.9	14.1	21.8	18.6	18.0	5.7	0.3	-3.1	8.7	-0.1	1.9	12.5	-164.0	-153.6	-155.6
35.57	9.1	3.3	0.7	3.5	6.1	9.9	14.1	21.9	18.7	18.1	5.7	0.2	-3.2	8.7	-0.2	1.8	12.6	-164.0	-153.6	-155.6
35.74	9.1	3.2	0.6	3.4	6.1	9.9	14.1	21.9	18.8	18.2	5.6	0.2	-3.3	8.7	-0.2	1.8	12.7	-164.0	-153.6	-155.6
35.91	9.0	3.1	0.5	3.3	6.0	9.9	14.1	21.9	18.9	18.3	5.6	0.1	-3.4	8.7	-0.3	1.8	12.8	-164.0	-153.6	-155.6
36.08	9.0	3.1	0.4	3.3	6.0	9.9	14.1	22.0	19.0	18.4	5.6	0.0	-3.4	8.7	-0.3	1.7	12.8	-164.0	-153.6	-155.6
36.24	9.0	3.0	0.4	3.2	5.9	9.9	14.1	22.0	19.1	18.4	5.6	-0.1	-3.5	8.7	-0.4	1.7	12.9	-164.0	-153.6	-155.6
36.41	8.9	2.9	0.3	3.2	5.9	9.8	14.2	22.0	19.2	18.5	5.6	-0.2	-3.6	8.6	-0.5	1.7	13.0	-164.0	-153.6	-155.6
36.58	8.9	2.9	0.2	3.1	5.9	9.8	14.2	22.1	19.3	18.6	5.6	-0.3	-3.7	8.6	-0.5	1.6	13.1	-164.0	-153.6	-155.6
36.75	8.9	2.8	0.2	3.1	5.8	9.8	14.2	22.1	19.3	18.7	5.6	-0.3	-3.8	8.6	-0.6	1.6	13.2	-164.0	-153.6	-155.7
36.91	8.9	2.7	0.1	3.0	5.8	9.8	14.2	22.1	19.4	18.7	5.6	-0.4	-3.9	8.6	-0.7	1.6	13.2	-164.0	-153.7	-155.7
37.08	8.8	2.7	0.0	3.0	5.8	9.8	14.2	22.1	19.5	18.8	5.6	-0.5	-4.0	8.6	-0.7	1.5	13.3	-164.0	-153.7	-155.7
37.25	8.8	2.6	0.0	2.9	5.7	9.8	14.2	22.1	19.5	18.9	5.6	-0.6	-4.0	8.6	-0.8	1.5	13.3	-164.0	-153.7	-155.7
37.42	8.8	2.6	-0.1	2.9	5.7	9.8	14.2	22.2	19.6	18.9	5.6	-0.6	-4.1	8.6	-0.8	1.5	13.4	-164.0	-153.7	-155.7
37.59	8.7	2.5	-0.2	2.8	5.7	9.8	14.2	22.2	19.7	19.0	5.5	-0.7	-4.2	8.6	-0.9	1.4	13.5	-164.0	-153.7	-155.7
37.75	8.7	2.5	-0.2	2.8	5.6	9.8	14.2	22.2	19.7	19.0	5.5	-0.8	-4.3	8.6	-0.9	1.4	13.5	-164.0	-153.7	-155.7
37.92	8.7	2.4	-0.3	2.7	5.6	9.8	14.2	22.2	19.8	19.1	5.5	-0.8	-4.4	8.6	-1.0	1.4	13.6	-164.0	-153.7	-155.7
38.09	8.6	2.4	-0.3	2.7	5.6	9.8	14.2	22.2	19.8	19.1	5.5	-0.9	-4.4	8.6	-1.0	1.3	13.6	-164.0	-153.7	-155.7
38.26	8.6	2.3	-0.4	2.7	5.6	9.8	14.3	22.3	19.9	19.2	5.5	-0.9	-4.5	8.6	-1.1	1.3	13.6	-164.0	-153.7	-155.7
38.42	8.6	2.3	-0.5	2.6	5.5	9.7	14.3	22.3	19.9	19.2	5.5	-1.0	-4.6	8.5	-1.1	1.3	13.7	-164.0	-153.7	-155.7
38.59	8.5	2.2	-0.5	2.6	5.5	9.7	14.3	22.3	20.0	19.3	5.5	-1.1	-4.6	8.5	-1.2	1.2	13.7	-164.0	-153.7	-155.7
38.76	8.5	2.2	-0.6	2.5	5.5	9.7	14.3	22.3	20.0	19.3	5.4	-1.1	-4.7	8.5	-1.2	1.2	13.8	-164.0	-153.7	-155.7
38.93	8.5	2.1	-0.6	2.5	5.4	9.7	14.3	22.3	20.0	19.4	5.4	-1.2	-4.8	8.5	-1.3	1.2	13.8	-164.0	-153.7	-155.7
39.10	8.4	2.1	-0.7	2.5	5.4	9.7	14.3	22.3	20.1	19.4	5.4	-1.2	-4.8	8.5	-1.3	1.1	13.8	-164.0	-153.7	-155.7
39.26	8.4	2.0	-0.7	2.4	5.4	9.7	14.3	22.3	20.1	19.4	5.4	-1.3	-4.9	8.5	-1.4	1.1	13.9	-164.0	-153.8	-155.7
39.43	8.4	2.0	-0.8	2.4	5.4	9.7	14.3	22.3	20.1	19.5	5.4	-1.3	-4.9	8.5	-1.4	1.1	13.9	-164.0	-153.8	-155.7
39.60	8.4	1.9	-0.8	2.3	5.3	9.7	14.3	22.4	20.2	19.5	5.4	-1.4	-5.0	8.5	-1.4	1.0	13.9	-164.0	-153.8	-155.7

Sensor:	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Node:	*6127*	*6159*	*6128*	*6152*	*6106*	*6130*	*6121*	*6112*	*6079*	*6065*	*6063*	*6070*	*6064*	*6075*	*6076*	*6073*	*6080*
Time (Hrs)																	
27.69	-153.7	-162.3	-153.8	-163.0	-154.1	-154.8	-153.8	-153.1	13.7	20.7	21.6	-73.4	22.1	-77.5	-50.3	-74.7	-58.2
27.85	-153.8	-162.4	-153.9	-163.1	-154.2	-154.9	-153.9	-153.2	12.7	19.9	21.3	-74.9	21.6	-79.0	-51.3	-76.2	-59.9
28.02	-153.9	-162.4	-154.0	-163.2	-154.4	-155.1	-154.0	-153.3	11.7	19.1	21.0	-76.4	21.1	-80.4	-52.2	-77.7	-61.5
28.19	-154.0	-162.5	-154.1	-163.3	-154.5	-155.2	-154.1	-153.5	10.7	18.3	20.7	-77.8	20.6	-81.7	-53.1	-79.0	-63.0
28.36	-154.1	-162.5	-154.2	-163.3	-154.6	-155.3	-154.2	-153.6	9.7	17.5	20.4	-79.2	20.0	-83.0	-53.9	-80.4	-64.6
28.53	-154.3	-162.6	-154.3	-163.4	-154.7	-155.4	-154.3	-153.7	8.8	16.7	20.1	-80.4	19.5	-84.2	-54.7	-81.6	-66.1
28.69	-154.4	-162.7	-154.4	-163.5	-154.9	-155.5	-154.5	-153.9	7.9	15.9	19.8	-81.7	19.0	-85.4	-55.4	-82.8	-67.5
28.86	-154.5	-162.7	-154.5	-163.6	-155.0	-155.7	-154.6	-154.0	7.0	15.2	19.5	-82.8	18.4	-86.5	-56.1	-84.0	-68.9
29.03	-154.6	-162.8	-154.6	-163.6	-155.1	-155.8	-154.7	-154.1	6.1	14.4	19.2	-84.0	17.8	-87.6	-56.8	-85.1	-70.3
29.20	-154.7	-162.8	-154.7	-163.7	-155.2	-155.9	-154.8	-154.2	5.3	13.6	18.8	-85.0	17.3	-88.6	-57.5	-86.2	-71.6
29.36	-154.8	-162.9	-154.8	-163.8	-155.4	-156.0	-154.9	-154.4	4.5	12.9	18.5	-86.1	16.7	-89.6	-58.2	-87.2	-72.8
29.53	-154.9	-162.9	-155.0	-163.9	-155.5	-156.1	-155.0	-154.5	3.7	12.1	18.2	-87.1	16.1	-90.5	-58.8	-88.2	-74.0
29.70	-155.0	-163.0	-155.1	-163.9	-155.6	-156.2	-155.1	-154.6	2.9	11.4	17.9	-88.1	15.6	-91.5	-59.4	-89.1	-75.2
29.87	-155.2	-163.1	-155.2	-164.0	-155.7	-156.3	-155.2	-154.7	2.1	10.6	17.6	-89.0	15.0	-92.3	-60.0	-90.0	-76.4
30.04	-155.3	-163.1	-155.3	-164.1	-155.8	-156.4	-155.3	-154.8	1.4	9.9	17.2	-89.9	14.4	-93.2	-60.6	-90.9	-77.5
30.20	-155.3	-162.9	-155.0	-164.1	-155.9	-156.5	-155.4	-154.9	0.7	9.2	17.3	-85.9	14.3	-91.4	-57.9	-89.4	-78.4
30.37	-155.3	-162.8	-154.7	-164.2	-156.0	-156.5	-155.4	-155.0	0.2	8.5	17.4	-83.9	14.4	-89.6	-55.9	-87.6	-78.8
30.54	-155.2	-162.7	-154.6	-164.2	-156.0	-156.4	-155.3	-155.1	-0.3	7.9	17.6	-82.2	14.5	-88.0	-54.2	-86.0	-78.8
30.71	-155.2	-162.6	-154.4	-164.2	-156.0	-156.3	-155.3	-155.2	-0.6	7.3	17.8	-80.7	14.6	-86.5	-52.9	-84.5	-78.6
30.87	-155.1	-162.5	-154.3	-164.2	-156.0	-156.2	-155.2	-155.2	-1.0	6.8	17.9	-79.3	14.7	-85.1	-51.8	-83.1	-78.2
31.04	-155.0	-162.5	-154.2	-164.3	-156.0	-156.2	-155.1	-155.3	-1.3	6.3	18.1	-77.9	14.9	-83.8	-50.9	-81.8	-77.6
31.21	-155.0	-162.5	-154.1	-164.3	-156.0	-156.1	-155.1	-155.4	-1.6	5.9	18.2	-76.7	15.1	-82.5	-50.2	-80.6	-76.9
31.38	-154.9	-162.4	-154.1	-164.3	-156.0	-156.1	-155.0	-155.4	-1.8	5.4	18.4	-75.5	15.3	-81.4	-49.6	-79.4	-76.1
31.55	-154.8	-162.4	-154.0	-164.3	-156.0	-156.1	-154.9	-155.5	-2.1	5.1	18.5	-74.4	15.5	-80.3	-49.2	-78.4	-75.3
31.71	-154.8	-162.4	-153.9	-164.3	-156.0	-156.1	-154.9	-155.5	-2.3	4.7	18.7	-73.4	15.8	-79.4	-48.8	-77.4	-74.5
31.88	-154.7	-162.4	-153.9	-164.3	-156.0	-156.0	-154.8	-155.5	-2.6	4.4	18.8	-72.4	16.0	-78.4	-48.5	-76.4	-73.7
32.05	-154.7	-162.4	-153.8	-164.3	-156.1	-156.0	-154.8	-155.6	-2.8	4.0	19.0	-71.5	16.2	-77.5	-48.3	-75.5	-72.8
32.22	-154.6	-162.3	-153.8	-164.3	-156.1	-156.0	-154.7	-155.6	-3.0	3.8	19.1	-70.7	16.5	-76.7	-48.2	-74.7	-72.0
32.38	-154.6	-162.3	-153.8	-164.3	-156.1	-156.0	-154.7	-155.7	-3.2	3.5	19.2	-69.9	16.7	-76.0	-48.1	-73.9	-71.2
32.55	-154.5	-162.3	-153.7	-164.3	-156.1	-156.0	-154.6	-155.7	-3.4	3.2	19.3	-69.1	16.9	-75.2	-48.0	-73.2	-70.4
32.72	-154.5	-162.3	-153.7	-164.3	-156.1	-156.0	-154.6	-155.7	-3.6	3.0	19.4	-68.4	17.2	-74.6	-47.9	-72.5	-69.7
32.89	-154.4	-162.3	-153.6	-164.3	-156.1	-156.0	-154.5	-155.8	-3.8	2.8	19.5	-67.8	17.4	-73.9	-47.9	-71.8	-68.9
33.06	-154.4	-162.3	-153.6	-164.3	-156.1	-156.0	-154.5	-155.8	-3.9	2.5	19.6	-67.2	17.6	-73.4	-47.8	-71.2	-68.2
33.22	-154.3	-162.3	-153.6	-164.3	-156.2	-156.0	-154.5	-155.8	-4.1	2.3	19.7	-66.6	17.9	-72.8	-47.8	-70.7	-67.6
33.39	-154.3	-162.2	-153.5	-164.3	-156.2	-156.0	-154.4	-155.8	-4.3	2.1	19.8	-66.0	18.1	-72.3	-47.8	-70.1	-66.9
33.56	-154.3	-162.2	-153.5	-164.3	-156.2	-156.0	-154.4	-155.9	-4.4	2.0	19.9	-65.5	18.3	-71.8	-47.9	-69.6	-66.3
33.73	-154.2	-162.2	-153.5	-164.3	-156.2	-156.0	-154.4	-155.9	-4.6	1.8	20.0	-65.1	18.6	-71.3	-47.9	-69.2	-65.8
33.89	-154.2	-162.2	-153.4	-164.4	-156.2	-156.0	-154.4	-155.9	-4.7	1.6	20.0	-64.6	18.8	-70.9	-47.9	-68.7	-65.2
34.06	-154.2	-162.2	-153.4	-164.4	-156.2	-156.0	-154.3	-155.9	-4.8	1.5	20.1	-64.2	19.0	-70.5	-47.9	-68.3	-64.7
34.23	-154.2	-162.2	-153.4	-164.4	-156.2	-156.0	-154.3	-156.0	-5.0	1.3	20.2	-63.8	19.2	-70.1	-48.0	-67.9	-64.2
34.40	-154.1	-162.2	-153.4	-164.4	-156.2	-156.0	-154.3	-156.0	-5.1	1.2	20.3	-63.4	19.4	-69.8	-48.0	-67.6	-63.8
34.57	-154.1	-162.2	-153.3	-164.4	-156.3	-156.0	-154.3	-156.0	-5.2	1.1	20.3	-63.1	19.6	-69.5	-48.0	-67.2	-63.4
34.73	-154.1	-162.2	-153.3	-164.4	-156.3	-156.0	-154.2	-156.0	-5.4	0.9	20.4	-62.8	19.8	-69.1	-48.1	-66.9	-63.0
34.90	-154.1	-162.2	-153.3	-164.4	-156.3	-156.0	-154.2	-156.0	-5.5	0.8	20.4	-62.5	20.0	-68.9	-48.1	-66.6	-62.6
35.07	-154.1	-162.2	-153.3	-164.4	-156.3	-156.0	-154.2	-156.1	-5.6	0.7	20.5	-62.2	20.2	-68.6	-48.1	-66.4	-62.3
35.24	-154.0	-162.2	-153.3	-164.4	-156.3	-156.0	-154.2	-156.1	-5.7	0.6	20.5	-61.9	20.3	-68.3	-48.2	-66.1	-61.9
35.40	-154.0	-162.1	-153.2	-164.4	-156.3	-156.0	-154.2	-156.1	-5.8	0.5	20.6	-61.7	20.5	-68.1	-48.2	-65.9	-61.6
35.57	-154.0	-162.1	-153.2	-164.4	-156.3	-156.1	-154.1	-156.1	-5.9	0.3	20.6	-61.4	20.7	-67.9	-48.3	-65.6	-61.3
35.74	-154.0	-162.1	-153.2	-164.4	-156.3	-156.1	-154.1	-156.1	-6.0	0.2	20.7	-61.2	20.8	-67.7	-48.3	-65.4	-61.1
35.91	-154.0	-162.1	-153.2	-164.4	-156.4	-156.1	-154.1	-156.1	-6.1	0.1	20.7	-61.0	21.0	-67.5	-48.3	-65.2	-60.8
36.08	-154.0	-162.1	-153.2	-164.4	-156.4	-156.1	-154.1	-156.1	-6.2	0.1	20.8	-60.8	21.1	-67.3	-48.4	-65.0	-60.6
36.24	-153.9	-162.1	-153.2	-164.4	-156.4	-156.1	-154.1	-156.2	-6.3	0.0	20.8	-60.7	21.3	-67.2	-48.4	-64.9	-60.4
36.41	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.1	-156.2	-6.4	-0.1	20.9	-60.5	21.4	-67.0	-48.5	-64.7	-60.2
36.58	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.1	-156.2	-6.5	-0.2	20.9	-60.4	21.6	-66.9	-48.5	-64.6	-60.0
36.75	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.0	-156.2	-6.6	-0.3	20.9	-60.2	21.7	-66.7	-48.5	-64.4	-59.8
36.91	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.0	-156.2	-6.7	-0.4	21.0	-60.1	21.8	-66.6	-48.6	-64.3	-59.6
37.08	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.0	-156.2	-6.8	-0.5	21.0	-60.0	22.0	-66.5	-48.6	-64.2	-59.5
37.25	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.0	-156.2	-6.9	-0.5	21.0	-59.9	22.1	-66.4	-48.7	-64.1	-59.4
37.42	-153.9	-162.1	-153.1	-164.4	-156.4	-156.1	-154.0	-156.2	-6.9	-0.6	21.1	-59.8	22.2	-66.3	-48.7	-64.0	-59.2
37.59	-153.8	-162.1	-153.1	-164.4	-156.4	-156.1	-154.0	-156.3	-7.0	-0.7	21.1	-59.7	22.3	-66.2	-48.7	-63.9	-59.1
37.75	-153.8	-162.1	-153.1	-164.4	-156.5	-156.1	-154.0	-156.3	-7.1	-0.8	21.1	-59.6	22.4	-66.1	-48.8	-63.8	-59.0
37.92	-153.8	-162.1	-153.1	-164.4	-156.5	-156.1	-154.0	-156.3	-7.2	-0.8	21.1	-59.5	22.5	-66.0	-48.8	-63.7	-58.9
38.09	-153.8	-162.1	-153.0	-164.4	-156.5	-156.1	-154.0	-156.3	-7.3	-0.9	21.2	-59.4	22.6	-66.0	-48.8	-63.6	-58.8
38.26	-153.8	-162.1	-153.0	-164.4	-156.5	-156.1	-154.0	-156.3	-7.3	-1.0	21.2	-59.3	22.7	-65.9	-48.9	-63.6	-58.7
38.42	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-154.0	-156.3	-7.4	-1.0	21.2	-59.3	22.8	-65.8	-48.9	-63.5	-58.6
38.59	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-154.0	-156.3	-7.5	-1.1	21.2	-59.2	22.9	-65.8	-48.9	-63.4	-58.5
38.76	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-154.0	-156.3	-7.5	-1.1	21.2	-59.2	23.0	-65.7	-49.0	-63.4	-58.5
38.93	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-153.9	-156.3	-7.6	-1.2	21.3	-59.1	23.0	-65.7	-49.0	-63.3	-58.4
39.10	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-153.9	-156.3	-7.7	-1.3	21.3	-59.1	23.1	-65.6	-49.0	-63.3	-58.4
39.26	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-153.9	-156.4	-7.7	-1.3	21.3	-59.0	23.2	-65.6	-49.1	-63.2	-58.3
39.43	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-153.9	-156.4	-7.8	-1.4	21.3	-59.0	23.3	-65.5	-49.1	-63.2	-58.2
39.60	-153.8	-162.1	-153.0	-164.4	-156.5	-156.2	-153.9	-156.4	-7.9	-1.4	21.3	-58.9	23.3	-65.5	-49.1	-63.2	-58.2

Sensor:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Node:	*6032*	*6011*	*6009*	*6050*	*6049*	*6048*	*6047*	*6059*	*6028*	*6025*	*6024*	*6012*	*6010*	*6044*	*6014*	*6034*	*6027*	*6144*	*6114*	*6134*
Time (Hrs)																				
41.28	8.1	1.5	-1.2	2.0	5.1	9.6	14.3	22.4	20.4	19.7	5.2	-1.8	-5.6	8.4	-1.8	0.7	14.1	-164.0	-153.8	-155.8
41.45	8.1	1.5	-1.3	2.0	5.1	9.6	14.3	22.4	20.4	19.7	5.2	-1.9	-5.6	8.4	-1.9	0.7	14.1	-164.0	-153.8	-155.8
41.61	8.0	1.5	-1.3	2.0	5.1	9.6	14.3	22.4	20.4	19.7	5.1	-1.9	-5.7	8.4	-1.9	0.7	14.1	-164.0	-153.8	-155.8
41.78	8.0	1.4	-1.4	1.9	5.1	9.6	14.3	22.4	20.4	19.8	5.1	-1.9	-5.7	8.4	-1.9	0.6	14.1	-164.0	-153.9	-155.8
41.95	8.0	1.4	-1.4	1.9	5.0	9.6	14.3	22.4	20.4	19.8	5.1	-2.0	-5.7	8.4	-2.0	0.6	14.2	-164.0	-153.9	-155.8
42.12	7.9	1.4	-1.4	1.9	5.0	9.5	14.3	22.4	20.4	19.8	5.1	-2.0	-5.8	8.3	-2.0	0.6	14.2	-164.0	-153.9	-155.8
42.28	7.9	1.3	-1.5	1.9	5.0	9.5	14.3	22.4	20.5	19.8	5.1	-2.1	-5.8	8.3	-2.0	0.6	14.2	-164.1	-153.9	-155.8
42.45	7.9	1.3	-1.5	1.8	5.0	9.5	14.3	22.4	20.5	19.8	5.1	-2.1	-5.9	8.3	-2.1	0.5	14.2	-164.1	-153.9	-155.8
42.62	7.9	1.3	-1.5	1.8	5.0	9.5	14.3	22.4	20.5	19.8	5.0	-2.1	-5.9	8.3	-2.1	0.5	14.2	-164.1	-153.9	-155.8
42.79	7.8	1.2	-1.6	1.8	4.9	9.5	14.3	22.4	20.5	19.8	5.0	-2.2	-6.0	8.3	-2.1	0.5	14.2	-164.1	-153.9	-155.8
42.96	7.8	1.2	-1.6	1.8	4.9	9.5	14.3	22.4	20.5	19.8	5.0	-2.2	-6.0	8.3	-2.2	0.5	14.2	-164.1	-153.9	-155.8
43.12	7.8	1.2	-1.6	1.7	4.9	9.5	14.3	22.4	20.5	19.8	5.0	-2.2	-6.1	8.3	-2.2	0.4	14.2	-164.1	-153.9	-155.8
43.29	7.8	1.1	-1.7	1.7	4.9	9.5	14.3	22.4	20.5	19.8	5.0	-2.3	-6.1	8.3	-2.2	0.4	14.2	-164.1	-153.9	-155.8
43.46	7.8	1.1	-1.7	1.7	4.9	9.5	14.2	22.4	20.5	19.8	4.9	-2.3	-6.1	8.3	-2.3	0.4	14.2	-164.1	-153.9	-155.8
43.63	7.7	1.1	-1.7	1.6	4.8	9.5	14.2	22.4	20.5	19.8	4.9	-2.3	-6.2	8.3	-2.3	0.3	14.2	-164.1	-153.9	-155.8
43.79	7.7	1.0	-1.8	1.6	4.8	9.4	14.2	22.4	20.5	19.8	4.9	-2.4	-6.2	8.2	-2.3	0.3	14.2	-164.1	-153.9	-155.9
43.96	7.7	1.0	-1.8	1.6	4.8	9.4	14.2	22.4	20.5	19.8	4.9	-2.4	-6.3	8.2	-2.4	0.3	14.2	-164.1	-153.9	-155.9
44.13	7.7	1.0	-1.8	1.6	4.8	9.4	14.2	22.4	20.5	19.8	4.9	-2.4	-6.3	8.2	-2.4	0.3	14.2	-164.1	-153.9	-155.9
44.30	7.6	0.9	-1.9	1.6	4.8	9.4	14.2	22.4	20.5	19.8	4.9	-2.5	-6.4	8.2	-2.4	0.2	14.2	-164.1	-153.9	-155.9
44.47	7.6	0.9	-1.9	1.5	4.7	9.4	14.2	22.4	20.5	19.8	4.8	-2.5	-6.4	8.2	-2.4	0.2	14.2	-164.1	-153.9	-155.9
44.63	7.6	0.9	-1.9	1.5	4.7	9.4	14.2	22.4	20.5	19.8	4.8	-2.5	-6.4	8.2	-2.5	0.2	14.2	-164.1	-153.9	-155.9
44.80	7.6	0.9	-2.0	1.5	4.7	9.4	14.2	22.4	20.5	19.8	4.8	-2.6	-6.5	8.2	-2.5	0.2	14.2	-164.1	-153.9	-155.9
44.97	7.5	0.8	-2.0	1.5	4.7	9.4	14.2	22.4	20.5	19.8	4.8	-2.6	-6.5	8.2	-2.5	0.1	14.2	-164.1	-154.0	-155.9
45.14	7.5	0.8	-2.0	1.4	4.7	9.4	14.2	22.4	20.5	19.8	4.8	-2.6	-6.5	8.2	-2.6	0.1	14.2	-164.1	-154.0	-155.9
45.30	7.5	0.8	-2.1	1.4	4.7	9.3	14.2	22.4	20.5	19.8	4.7	-2.7	-6.6	8.1	-2.6	0.1	14.2	-164.1	-154.0	-155.9
45.47	7.5	0.7	-2.1	1.4	4.6	9.3	14.2	22.4	20.5	19.8	4.7	-2.7	-6.6	8.1	-2.6	0.1	14.2	-164.1	-154.0	-155.9
45.64	7.5	0.7	-2.1	1.4	4.6	9.3	14.2	22.4	20.5	19.8	4.7	-2.7	-6.6	8.1	-2.6	0.0	14.2	-164.1	-154.0	-155.9
45.81	7.4	0.7	-2.1	1.3	4.6	9.3	14.2	22.4	20.5	19.8	4.7	-2.7	-6.7	8.1	-2.7	0.0	14.2	-164.1	-154.0	-155.9
45.98	7.4	0.7	-2.2	1.3	4.6	9.3	14.2	22.4	20.5	19.8	4.7	-2.8	-6.7	8.1	-2.7	0.0	14.2	-164.1	-154.0	-155.9
46.14	7.4	0.6	-2.2	1.3	4.6	9.3	14.1	22.4	20.5	19.8	4.6	-2.8	-6.8	8.1	-2.7	0.0	14.2	-164.1	-154.0	-155.9
46.31	7.4	0.6	-2.2	1.3	4.6	9.3	14.1	22.4	20.5	19.8	4.6	-2.8	-6.8	8.1	-2.7	-0.1	14.1	-164.1	-154.0	-155.9
46.48	7.3	0.6	-2.2	1.3	4.5	9.3	14.1	22.4	20.5	19.8	4.6	-2.9	-6.8	8.1	-2.8	-0.1	14.1	-164.1	-154.0	-155.9
46.65	7.3	0.6	-2.3	1.2	4.5	9.3	14.1	22.4	20.5	19.8	4.6	-2.9	-6.9	8.1	-2.8	-0.1	14.1	-164.1	-154.0	-155.9
46.81	7.3	0.5	-2.3	1.2	4.5	9.2	14.1	22.4	20.5	19.8	4.6	-2.9	-6.9	8.0	-2.8	-0.1	14.1	-164.1	-154.0	-155.9
46.98	7.3	0.5	-2.3	1.2	4.5	9.2	14.1	22.4	20.5	19.8	4.6	-2.9	-6.9	8.0	-2.9	-0.1	14.1	-164.1	-154.0	-155.9
47.15	7.3	0.5	-2.4	1.2	4.5	9.2	14.1	22.4	20.4	19.8	4.5	-3.0	-7.0	8.0	-2.9	-0.2	14.1	-164.1	-154.0	-155.9
47.32	7.2	0.5	-2.4	1.2	4.5	9.2	14.1	22.4	20.4	19.8	4.5	-3.0	-7.0	8.0	-2.9	-0.2	14.1	-164.1	-154.0	-155.9
47.49	7.2	0.4	-2.4	1.1	4.4	9.2	14.1	22.4	20.4	19.8	4.5	-3.0	-7.0	8.0	-2.9	-0.2	14.1	-164.1	-154.0	-155.9
47.65	7.2	0.4	-2.4	1.1	4.4	9.2	14.1	22.3	20.4	19.8	4.5	-3.0	-7.0	8.0	-3.0	-0.2	14.1	-164.1	-154.0	-155.9
47.82	7.2	0.4	-2.5	1.1	4.4	9.2	14.1	22.3	20.4	19.7	4.5	-3.1	-7.1	8.0	-3.0	-0.3	14.1	-164.1	-154.0	-155.9
47.99	7.2	0.4	-2.5	1.1	4.4	9.2	14.1	22.3	20.4	19.7	4.4	-3.1	-7.1	8.0	-3.0	-0.3	14.1	-164.1	-154.0	-155.9
48.16	7.1	0.3	-2.5	1.1	4.4	9.2	14.0	22.3	20.4	19.7	4.4	-3.1	-7.1	8.0	-3.0	-0.3	14.1	-164.1	-154.0	-156.0
48.32	7.1	0.3	-2.5	1.0	4.4	9.1	14.0	22.3	20.4	19.7	4.4	-3.1	-7.2	7.9	-3.0	-0.3	14.0	-164.1	-154.0	-156.0
48.49	7.1	0.3	-2.6	1.0	4.3	9.1	14.0	22.3	20.4	19.7	4.4	-3.2	-7.2	7.9	-3.1	-0.3	14.0	-164.1	-154.0	-156.0
48.66	7.1	0.3	-2.6	1.0	4.3	9.1	14.0	22.3	20.4	19.7	4.4	-3.2	-7.2	7.9	-3.1	-0.4	14.0	-164.1	-154.1	-156.0
48.83	7.1	0.3	-2.6	1.0	4.3	9.1	14.0	22.3	20.4	19.7	4.4	-3.2	-7.3	7.9	-3.1	-0.4	14.0	-164.1	-154.1	-156.0
49.00	7.0	0.2	-2.6	1.0	4.3	9.1	14.0	22.3	20.4	19.7	4.3	-3.2	-7.3	7.9	-3.1	-0.4	14.0	-164.1	-154.1	-156.0
49.16	7.0	0.2	-2.6	0.9	4.3	9.1	14.0	22.3	20.3	19.7	4.3	-3.3	-7.3	7.9	-3.2	-0.4	14.0	-164.1	-154.1	-156.0
49.33	7.0	0.2	-2.7	0.9	4.3	9.1	14.0	22.3	20.3	19.7	4.3	-3.3	-7.3	7.9	-3.2	-0.4	14.0	-164.1	-154.1	-156.0
49.50	7.0	0.2	-2.7	0.9	4.2	9.1	14.0	22.3	20.3	19.6	4.3	-3.3	-7.4	7.9	-3.2	-0.5	14.0	-164.1	-154.1	-156.0
49.67	7.0	0.1	-2.7	0.9	4.2	9.0	14.0	22.3	20.3	19.6	4.3	-3.3	-7.4	7.8	-3.2	-0.5	14.0	-164.1	-154.1	-156.0
49.83	6.9	0.1	-2.7	0.9	4.2	9.0	14.0	22.3	20.3	19.6	4.2	-3.4	-7.4	7.8	-3.3	-0.5	13.9	-164.1	-154.1	-156.0
50.00	6.9	0.1	-2.8	0.8	4.2	9.0	13.9	22.2	20.3	19.6	4.2	-3.4	-7.5	7.8	-3.3	-0.5	13.9	-164.1	-154.1	-156.0
50.17	6.9	0.1	-2.8	0.8	4.2	9.0	13.9	22.2	20.3	19.6	4.2	-3.4	-7.5	7.8	-3.3	-0.6	13.9	-164.1	-154.1	-156.0
50.34	6.9	0.1	-2.8	0.8	4.2	9.0	13.9	22.2	20.3	19.6	4.2	-3.4	-7.5	7.8	-3.3	-0.6	13.9	-164.1	-154.1	-156.0
50.51	6.9	0.0	-2.8	0.8	4.1	9.0	13.9	22.2	20.3	19.6	4.2	-3.4	-7.5	7.8	-3.3	-0.6	13.9	-164.1	-154.1	-156.0
50.67	6.8	0.0	-2.9	0.8	4.1	9.0	13.9	22.2	20.3	19.6	4.2	-3.5	-7.6	7.8	-3.4	-0.6	13.9	-164.1	-154.1	-156.0
50.84	6.8	0.0	-2.9	0.8	4.1	9.0	13.9	22.2	20.2	19.6	4.1	-3.5	-7.6	7.8	-3.4	-0.6	13.9	-164.2	-154.1	-156.0
51.01	6.8	0.0	-2.9	0.7	4.1	8.9	13.9	22.2	20.2	19.5	4.1	-3.5	-7.6	7.7	-3.4	-0.7	13.9	-164.2	-154.1	-156.0
51.18	6.8	-0.1	-2.9	0.7	4.1	8.9	13.9	22.2	20.2	19.5	4.1	-3.5	-7.6	7.7	-3.4	-0.7	13.8	-164.2	-154.1	-156.0
51.35	6.8	-0.1	-2.9	0.7	4.1	8.9	13.9	22.2	20.2	19.5	4.1	-3.6	-7.7	7.7	-3.4	-0.7	13.8	-164.2	-154.1	-156.0
51.51	6.8	-0.1	-3.0	0.7	4.1	8.9	13.9	22.2	20.2	19.5	4.1	-3.6	-7.7	7.7	-3.5	-0.7	13.8	-164.2	-154.1	-156.0
51.68	6.7	-0.1	-3.0	0.7	4.0	8.9	13.8	22.2	20.2	19.5	4.1	-3.6	-7.7	7.7	-3.5	-0.7	13.8	-164.2	-154.1	-156.0
51.85	6.7	-0.1	-3.0	0.6	4.0	8.9	13.8	22.2	20.2	19.5	4.0	-3.6	-7.7	7.7	-3.5	-0.7	13.8	-164.2	-154.1	-156.0
52.02	6.7	-0.2	-3.0	0.6	4.0	8.9	13.8	22.1	20.2	19.5	4.0	-3.6	-7.8	7.7	-3.5	-0.8	13.8	-164.2	-154.1	-156.0
52.18	6.7	-0.2	-3.0	0.6	4.0	8.9	13.8	22.1	20.1	19.5	4.0	-3.7	-7.8	7.7	-3.5	-0.8	13.8	-164.2	-154.2	-156.1

Sensor:	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
Node:	*6127*	*6159*	*6128*	*6152*	*6106*	*6130*	*6121*	*6112*	*6079*	*6065*	*6063*	*6070*	*6064*	*6075*	*6076*	*6073*	*6080*
Time (Hrs)																	
41.28	-153.7	-162.0	-153.0	-164.4	-156.6	-156.2	-153.9	-156.4	-8.4	-1.9	21.4	-58.7	23.8	-65.3	-49.4	-62.9	-57.9
41.45	-153.7	-162.0	-153.0	-164.4	-156.6	-156.2	-153.9	-156.5	-8.5	-1.9	21.4	-58.7	23.9	-65.3	-49.4	-62.9	-57.9
41.61	-153.7	-162.0	-152.9	-164.4	-156.6	-156.3	-153.9	-156.5	-8.5	-2.0	21.4	-58.7	23.9	-65.2	-49.5	-62.9	-57.9
41.78	-153.7	-162.0	-152.9	-164.4	-156.6	-156.3	-153.9	-156.5	-8.6	-2.0	21.4	-58.7	24.0	-65.2	-49.5	-62.9	-57.9
41.95	-153.7	-162.0	-152.9	-164.4	-156.6	-156.3	-153.9	-156.5	-8.6	-2.1	21.5	-58.7	24.0	-65.2	-49.5	-62.9	-57.9
42.12	-153.7	-162.0	-152.9	-164.4	-156.6	-156.3	-153.9	-156.5	-8.7	-2.1	21.5	-58.7	24.0	-65.2	-49.5	-62.9	-57.9
42.28	-153.7	-162.0	-152.9	-164.4	-156.6	-156.3	-153.9	-156.5	-8.7	-2.1	21.5	-58.6	24.1	-65.2	-49.6	-62.9	-57.9
42.45	-153.7	-162.0	-152.9	-164.4	-156.6	-156.3	-153.9	-156.5	-8.8	-2.2	21.5	-58.6	24.1	-65.2	-49.6	-62.9	-57.9
42.62	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-8.8	-2.2	21.5	-58.6	24.1	-65.2	-49.6	-62.9	-57.9
42.79	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-8.9	-2.3	21.5	-58.6	24.1	-65.2	-49.6	-62.9	-57.9
42.96	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-8.9	-2.3	21.5	-58.6	24.2	-65.2	-49.6	-62.9	-57.9
43.12	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-9.0	-2.3	21.5	-58.6	24.2	-65.2	-49.7	-62.9	-57.9
43.29	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-9.0	-2.4	21.5	-58.6	24.2	-65.2	-49.7	-62.9	-57.9
43.46	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-9.0	-2.4	21.5	-58.6	24.2	-65.2	-49.7	-62.9	-57.9
43.63	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-9.1	-2.4	21.5	-58.6	24.2	-65.2	-49.7	-62.9	-57.9
43.79	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-9.1	-2.5	21.5	-58.6	24.3	-65.2	-49.8	-62.9	-57.9
43.96	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.5	-9.2	-2.5	21.5	-58.6	24.3	-65.2	-49.8	-62.9	-57.9
44.13	-153.7	-162.0	-152.9	-164.4	-156.7	-156.3	-153.9	-156.6	-9.2	-2.5	21.5	-58.6	24.3	-65.2	-49.8	-62.8	-57.9
44.30	-153.7	-162.0	-152.9	-164.5	-156.7	-156.3	-153.9	-156.6	-9.2	-2.6	21.5	-58.6	24.3	-65.2	-49.8	-62.8	-57.9
44.47	-153.7	-162.0	-152.9	-164.5	-156.7	-156.3	-153.9	-156.6	-9.3	-2.6	21.5	-58.6	24.3	-65.2	-49.8	-62.8	-57.9
44.63	-153.7	-162.0	-152.9	-164.5	-156.7	-156.3	-153.9	-156.6	-9.3	-2.6	21.5	-58.6	24.3	-65.2	-49.9	-62.8	-57.9
44.80	-153.7	-162.0	-152.9	-164.5	-156.7	-156.3	-153.9	-156.6	-9.4	-2.7	21.5	-58.6	24.3	-65.2	-49.9	-62.8	-57.9
44.97	-153.7	-162.0	-152.9	-164.5	-156.7	-156.3	-153.9	-156.6	-9.4	-2.7	21.5	-58.6	24.4	-65.2	-49.9	-62.8	-57.9
45.14	-153.7	-162.0	-152.9	-164.5	-156.7	-156.3	-153.9	-156.6	-9.4	-2.7	21.5	-58.6	24.4	-65.2	-49.9	-62.8	-57.9
45.30	-153.7	-162.0	-152.9	-164.5	-156.7	-156.4	-153.9	-156.6	-9.5	-2.8	21.5	-58.5	24.4	-65.2	-49.9	-62.8	-57.9
45.47	-153.7	-162.0	-152.9	-164.5	-156.7	-156.4	-153.9	-156.6	-9.5	-2.8	21.5	-58.5	24.4	-65.2	-50.0	-62.8	-57.9
45.64	-153.7	-162.0	-152.9	-164.5	-156.7	-156.4	-153.9	-156.6	-9.6	-2.8	21.5	-58.5	24.4	-65.2	-50.0	-62.8	-57.9
45.81	-153.7	-162.1	-152.9	-164.5	-156.7	-156.4	-153.9	-156.6	-9.6	-2.9	21.5	-58.5	24.4	-65.2	-50.0	-62.8	-57.9
45.98	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.6	-2.9	21.5	-58.5	24.4	-65.2	-50.0	-62.8	-57.9
46.14	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.7	-2.9	21.5	-58.5	24.4	-65.2	-50.0	-62.8	-57.9
46.31	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.7	-2.9	21.5	-58.5	24.4	-65.2	-50.1	-62.8	-57.9
46.48	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.7	-3.0	21.4	-58.5	24.4	-65.2	-50.1	-62.8	-57.9
46.65	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.8	-3.0	21.4	-58.5	24.4	-65.2	-50.1	-62.8	-57.9
46.81	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.8	-3.0	21.4	-58.5	24.4	-65.2	-50.1	-62.8	-57.9
46.98	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.8	-3.1	21.4	-58.5	24.4	-65.2	-50.1	-62.8	-57.9
47.15	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.9	-3.1	21.4	-58.5	24.4	-65.2	-50.1	-62.8	-57.9
47.32	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.9	-3.1	21.4	-58.5	24.4	-65.2	-50.2	-62.8	-57.9
47.49	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.6	-9.9	-3.1	21.4	-58.5	24.4	-65.2	-50.2	-62.8	-57.9
47.65	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.7	-10.0	-3.2	21.4	-58.5	24.4	-65.2	-50.2	-62.8	-57.9
47.82	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.7	-10.0	-3.2	21.4	-58.5	24.4	-65.2	-50.2	-62.8	-57.9
47.99	-153.7	-162.1	-152.9	-164.5	-156.8	-156.4	-153.9	-156.7	-10.0	-3.2	21.4	-58.5	24.4	-65.2	-50.2	-62.8	-57.9
48.16	-153.7	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.1	-3.2	21.4	-58.5	24.4	-65.2	-50.2	-62.8	-57.9
48.32	-153.7	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.1	-3.3	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-57.9
48.49	-153.7	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.1	-3.3	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-57.9
48.66	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.1	-3.3	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-58.0
48.83	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.2	-3.3	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-58.0
49.00	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.2	-3.4	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-58.0
49.16	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.2	-3.4	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-58.0
49.33	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.3	-3.4	21.4	-58.5	24.4	-65.2	-50.3	-62.8	-58.0
49.50	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.3	-3.4	21.3	-58.5	24.4	-65.2	-50.4	-62.8	-58.0
49.67	-153.8	-162.1	-153.0	-164.5	-156.8	-156.4	-153.9	-156.7	-10.3	-3.5	21.3	-58.5	24.4	-65.2	-50.4	-62.8	-58.0
49.83	-153.8	-162.1	-153.0	-164.5	-156.8	-156.5	-153.9	-156.7	-10.3	-3.5	21.3	-58.5	24.4	-65.2	-50.4	-62.8	-58.0
50.00	-153.8	-162.1	-153.0	-164.5	-156.8	-156.5	-153.9	-156.7	-10.4	-3.5	21.3	-58.5	24.3	-65.2	-50.4	-62.9	-58.0
50.17	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.4	-3.5	21.3	-58.5	24.3	-65.2	-50.4	-62.9	-58.0
50.34	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.4	-3.6	21.3	-58.5	24.3	-65.2	-50.4	-62.9	-58.0
50.51	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.4	-3.6	21.3	-58.5	24.3	-65.2	-50.4	-62.9	-58.0
50.67	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.5	-3.6	21.3	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
50.84	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.5	-3.6	21.3	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
51.01	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.5	-3.7	21.3	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
51.18	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.6	-3.7	21.3	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
51.35	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.6	-3.7	21.3	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
51.51	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.6	-3.7	21.3	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
51.68	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.6	-3.7	21.2	-58.5	24.3	-65.2	-50.5	-62.9	-58.0
51.85	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-153.9	-156.7	-10.7	-3.8	21.2	-58.5	24.3	-65.2	-50.6	-62.9	-58.0
52.02	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-154.0	-156.8	-10.7	-3.8	21.2	-58.5	24.2	-65.2	-50.6	-62.9	-58.1
52.18	-153.8	-162.1	-153.0	-164.5	-156.9	-156.5	-154.0	-156.8	-10.7	-3.8	21.2	-63.5	24.2	-67.8	-50.6	-65.3	-58.2

APPENDIX 8: COMPLETE POWER DISSIPATION PREDICTIONS FOR ALL SENSORS

Heater:	0	1	2	3	4	5	6	7	8	9	10	12	14	15	16	17	18	19	20
Node:	*6032*	*6011*	*6009*	*6050*	*6049*	*6048*	*6047*	*6059*	*6028*	*6025*	*6024*	*6010*	*6079*	*6065*	*6063*	*6070*	*6064*	*6075*	*6076*
Time (Hrs)																			
0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.19	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
3.36	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
3.52	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
3.69	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
3.86	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
4.03	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
4.19	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
4.36	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
4.53	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
4.70	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
4.87	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
5.03	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
5.20	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
5.37	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
5.54	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
5.71	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
5.87	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
6.04	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
6.21	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
6.38	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
6.54	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
6.71	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
6.88	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
7.05	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
7.22	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
7.38	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
7.55	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
7.72	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
7.89	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
8.05	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
8.22	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
8.39	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
8.56	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
8.73	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
8.89	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
9.06	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
9.23	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
9.40	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
9.56	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
9.73	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
9.90	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
10.07	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
10.24	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
10.40	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
10.57	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
10.74	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
10.91	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
11.07	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
11.24	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
11.41	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
11.58	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
11.75	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
11.91	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3

Heater: ***Node:*** **Time (Hrs)**	0 *6032*	1 *6011*	2 *6009*	3 *6050*	4 *6049*	5 *6048*	6 *6047*	7 *6059*	8 *6028*	9 *6025*	10 *6024*	12 *6010*	14 *6079*	15 *6065*	16 *6063*	17 *6070*	18 *6064*	19 *6075*	20 *6076*
13.59	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
13.76	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
13.93	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
14.09	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
14.26	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
14.43	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
14.60	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
14.77	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
14.93	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
15.10	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
15.27	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
15.44	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
15.60	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
15.77	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
15.94	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
16.11	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
16.28	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
16.44	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
16.61	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
16.78	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
16.95	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
17.12	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
17.28	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
17.45	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
17.62	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
17.79	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
17.95	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
18.12	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
18.29	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
18.46	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
18.63	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
18.79	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
18.96	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
19.13	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
19.30	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
19.46	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
19.63	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
19.80	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
19.97	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
20.14	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
20.30	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
20.47	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
20.64	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
20.81	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
20.97	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
21.14	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
21.31	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
21.48	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
21.65	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
21.81	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
21.98	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
22.15	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
22.32	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
22.48	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
22.65	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
22.82	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
22.99	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
23.16	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
23.32	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
23.49	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
23.66	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
23.83	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
23.99	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
24.16	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
24.33	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
24.50	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
24.67	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
24.83	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
25.00	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
25.17	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
25.34	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3
25.50	6	4	3	2	2	1	1	1	0	3	4	1	1	6.6	4.5	1	0.5	16	3

Heater: ***Node:*** **Time (Hrs)**	0 *6032*	1 *6011*	2 *6009*	3 *6050*	4 *6049*	5 *6048*	6 *6047*	7 *6059*	8 *6028*	9 *6025*	10 *6024*	12 *6010*	14 *6079*	15 *6065*	16 *6063*	17 *6070*	18 *6064*	19 *6075*	20 *6076*
27.18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27.35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30.20	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
30.37	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
30.54	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
30.71	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
30.87	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
31.04	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
31.21	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
31.38	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
31.55	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
31.71	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
31.88	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
32.05	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
32.22	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
32.38	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
32.55	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
32.72	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
32.89	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
33.06	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
33.22	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
33.39	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
33.56	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
33.73	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
33.89	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
34.06	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
34.23	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
34.40	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
34.57	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
34.73	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
34.90	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
35.07	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
35.24	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
35.40	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
35.57	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
35.74	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
35.91	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
36.08	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
36.24	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
36.41	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
36.58	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
36.75	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
36.91	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
37.08	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
37.25	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
37.42	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
37.59	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
37.75	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
37.92	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
38.09	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
38.26	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
38.42	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
38.59	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
38.76	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
38.93	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
39.10	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3

Heater: ***Node:*** **Time (Hrs)**	0 *6032*	1 *6011*	2 *6009*	3 *6050*	4 *6049*	5 *6048*	6 *6047*	7 *6059*	8 *6028*	9 *6025*	10 *6024*	12 *6010*	14 *6079*	15 *6065*	16 *6063*	17 *6070*	18 *6064*	19 *6075*	20 *6076*
40.77	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
40.94	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
41.11	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
41.28	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
41.45	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
41.61	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
41.78	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
41.95	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
42.12	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
42.28	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
42.45	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
42.62	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
42.79	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
42.96	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
43.12	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
43.29	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
43.46	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
43.63	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
43.79	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
43.96	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
44.13	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
44.30	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
44.47	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
44.63	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
44.80	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
44.97	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
45.14	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
45.30	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
45.47	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
45.64	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
45.81	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
45.98	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
46.14	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
46.31	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
46.48	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
46.65	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
46.81	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
46.98	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
47.15	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
47.32	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
47.49	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
47.65	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
47.82	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
47.99	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
48.16	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
48.32	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
48.49	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
48.66	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
48.83	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
49.00	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
49.16	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
49.33	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
49.50	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
49.67	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
49.83	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
50.00	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
50.17	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
50.34	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
50.51	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
50.67	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
50.84	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
51.01	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
51.18	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
51.35	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
51.51	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
51.68	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
51.85	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
52.02	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	13	3
52.18	7	3	2	1	1	1	1	2	2	4	1	2	2	0	0	2	1	0	3