CHANDRA
X-ray Center 60 Garden St., Cambridge Massachusetts 02138 USA

MEMORANDUM

Date: January 28, 2004
From: Joe DePasquale
To: SOT/FOT
Subject: ACIS PSMC Thermal Issue Update

1 Perihelion Summary

Throughout the current perihelion season, there have been no thermal limit trips in the ACIS PSMC. It is worth noting, however, that the upward trend in temperatures, first noticed during last year's perihelion season, continues. There have been a number of thermal excursions in which the temperature of 1PIN1AT has exceeded its old yellow hi thermal limit of 30 C and approached the current limit of 35 C within 1.8 C. In three instances, of the 10 excursions noted, the actual PSMC board temperature, measured as 1PDEAAT, exceeded its old yellow hi limit of 50 C; the current 1PDEAAT limit is 54 C. We will continue to closely monitor the thermal status of the ACIS PSMC throughout the rest of the perihelion season. Please refer to Table 1 for a summary of the recent thermal excursions and plots 1 through 10 for a glimpse at the temperature profiles of these excursions. Plots 11, 12 and 13 show the 1PDEAAT and 1PDEABT board temperatures for the two excursions which exceeded the old yellow hi limit of 50 C.
ACIS PSMC thermal limit changes: old 1PIN1AT yellow hi: 30 C, current 1PIN1AT yellow hi: 35 C. old 1PDEA[A/B]T yellow hi: 50 C, current 1PDEA[A/B]T yellow hi 54 C.

2 Thermal Excursion Summary & Thermal Plots

Table 1: **ACIS PSMC Thermal Excursions**

			Max Temp (C)			
Exc #	Date (DOY)	Pitch (^{o})	1PIN1AT	1PDEAAT	1PDEABT	Duration (ks)
1	2003-245	47.78	33.18	48.35	40.39	20.83
2	2003-260	49.62	33.19	49.89	40.39	90.27
3	2003-278	49.90	31.90	48.35	39.82	72.67
4	2003-282	57.87	30.62	47.21	38.12	100.8
5	2003-296	50.53	31.90	48.64	40.39	77.92
6	2003-319	47.57	33.19	50.63	41.81	45.74
7	2003-333	53.61	33.18	50.63	40.95	121.49
8	2003-341	47.90	31.90	48.35	39.54	30.27
9	2003-364	55.95	30.62	45.79	37.84	40.03
10	2004-025	50.66	33.18	50.91	40.68	60.03

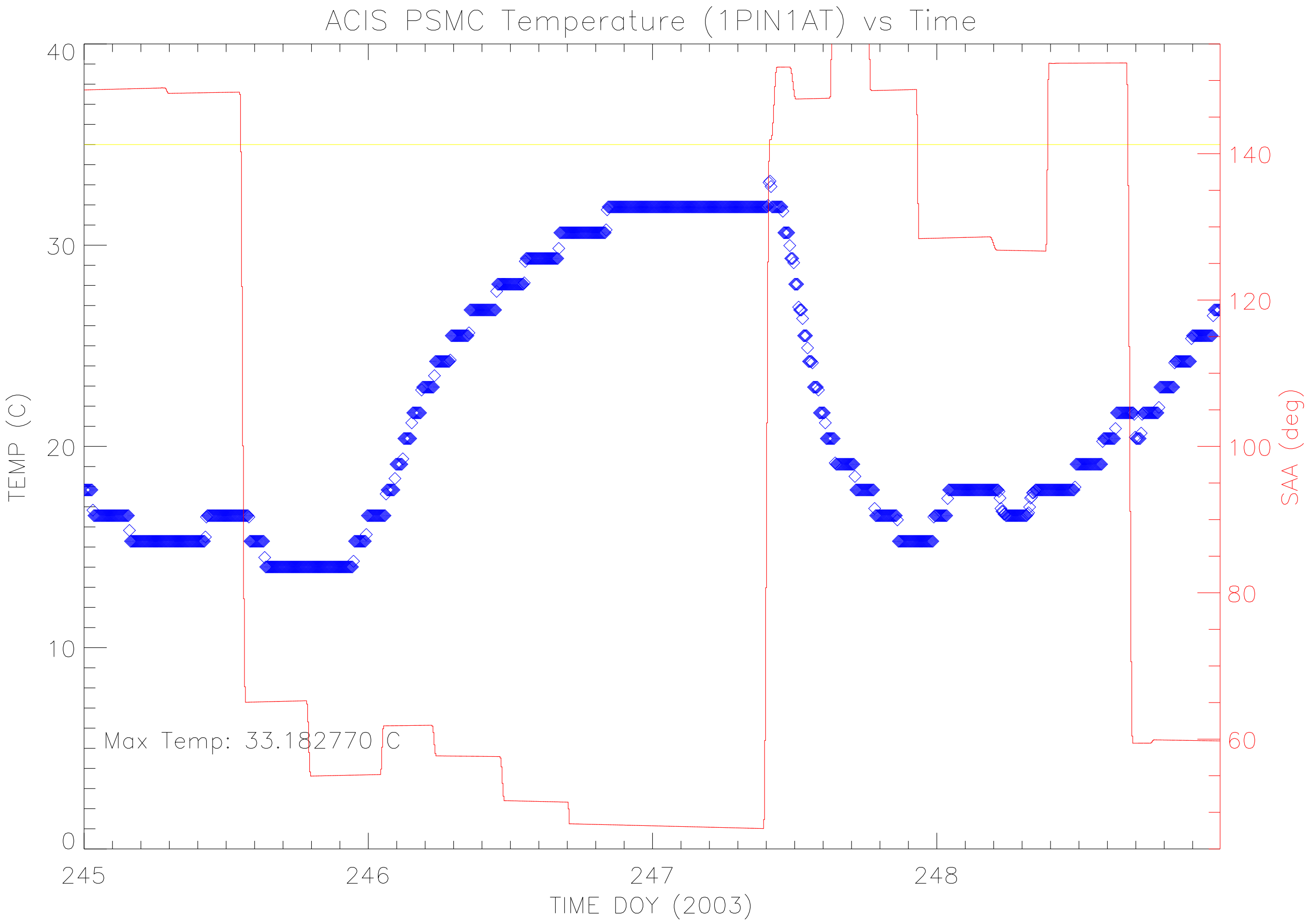
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
SAA (deg)
TIME DOY (2003)
Max Temp: 33.182770 C
0
10
20
30
40
60
80
100
120
140
245
246
247
248

Figure 1:

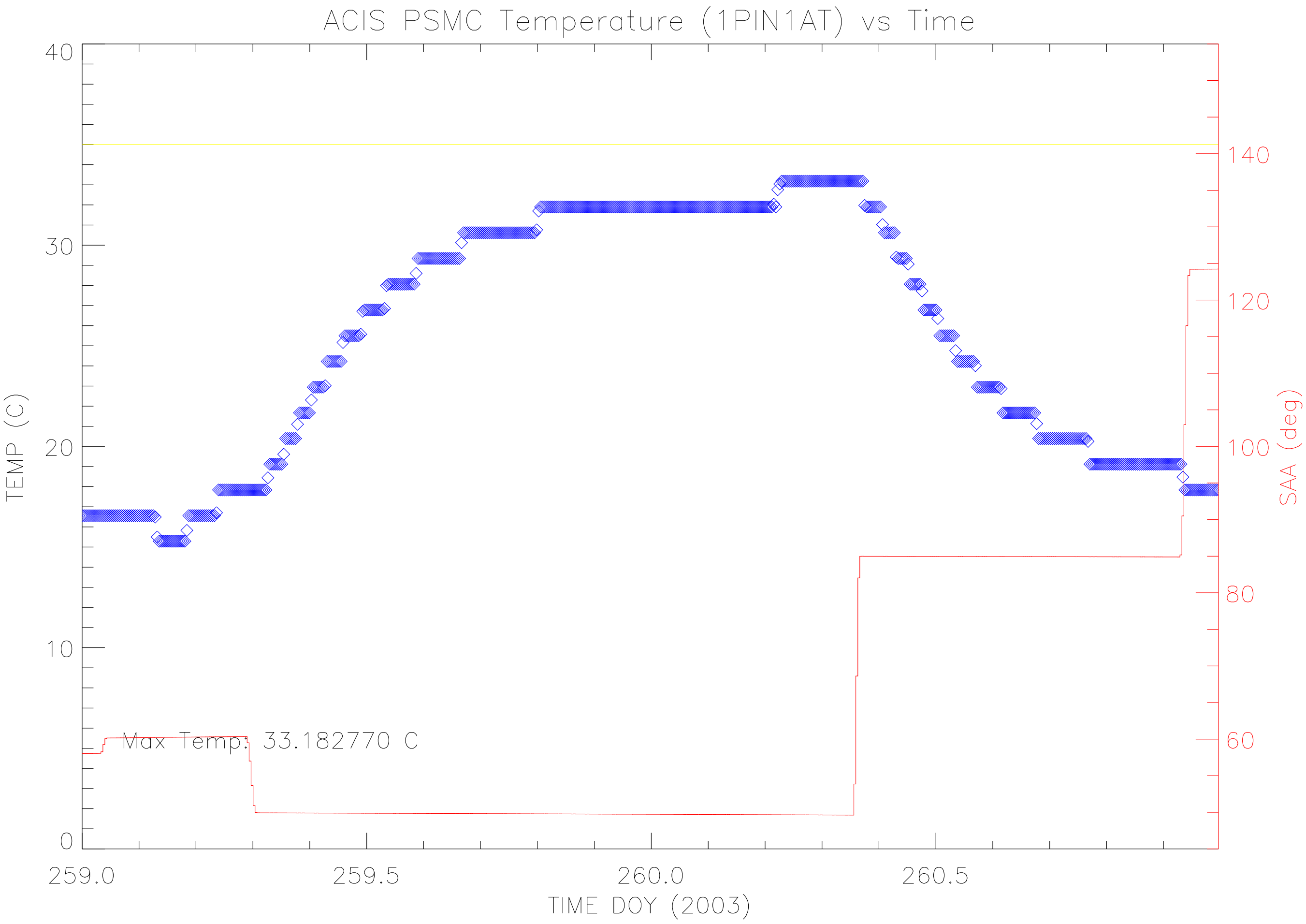
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
SAA (deg)
TIME DOY (2003)
Max Temp: 33.182770 C
40
30
20
10
0
140
120
100
80
60
259.0
259.5
260.0
260.5

Figure 2:

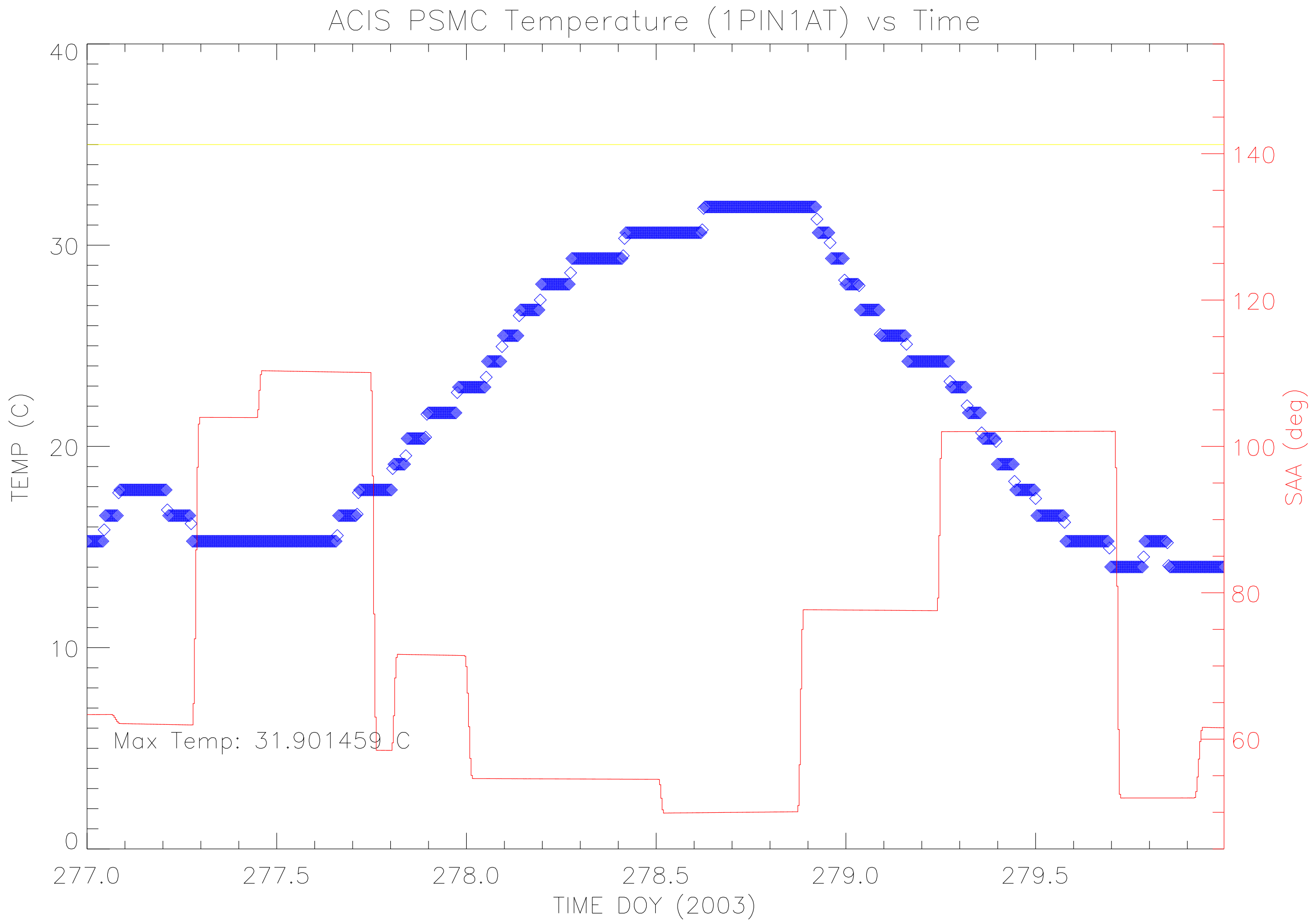
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
SAA (deg)
TIME DOY (2003)
Max Temp: 31.901459 C
40
30
20
10
0
140
120
100
80
60
277.0
277.5
278.0
278.5
279.0
279.5

Figure 3:

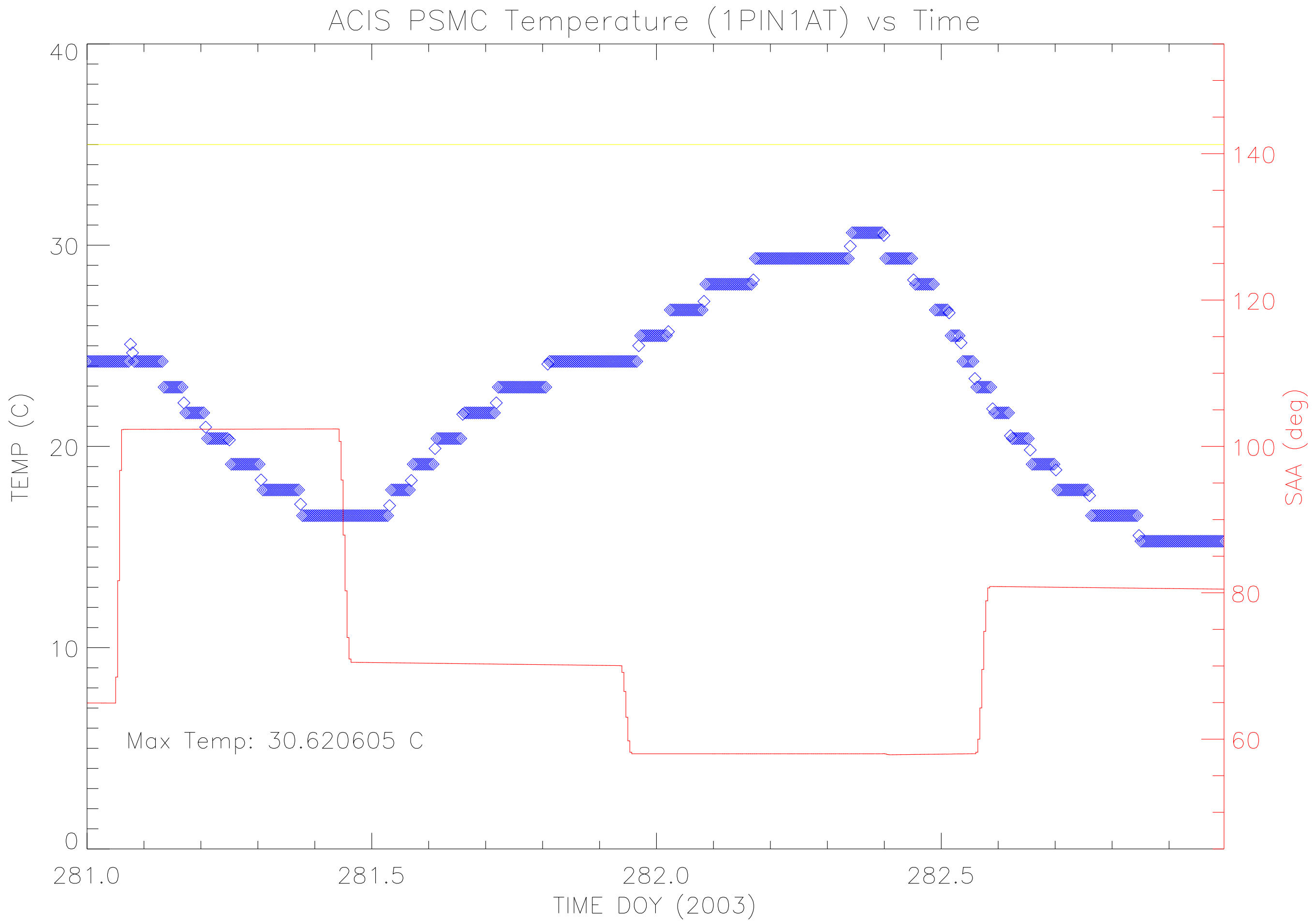
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
0
10
20
30
40
SAA (deg)
60
80
100
120
140
Max Temp: 30.620605 C
281.0
281.5
282.0
282.5
TIME DOY (2003)

Figure 4:

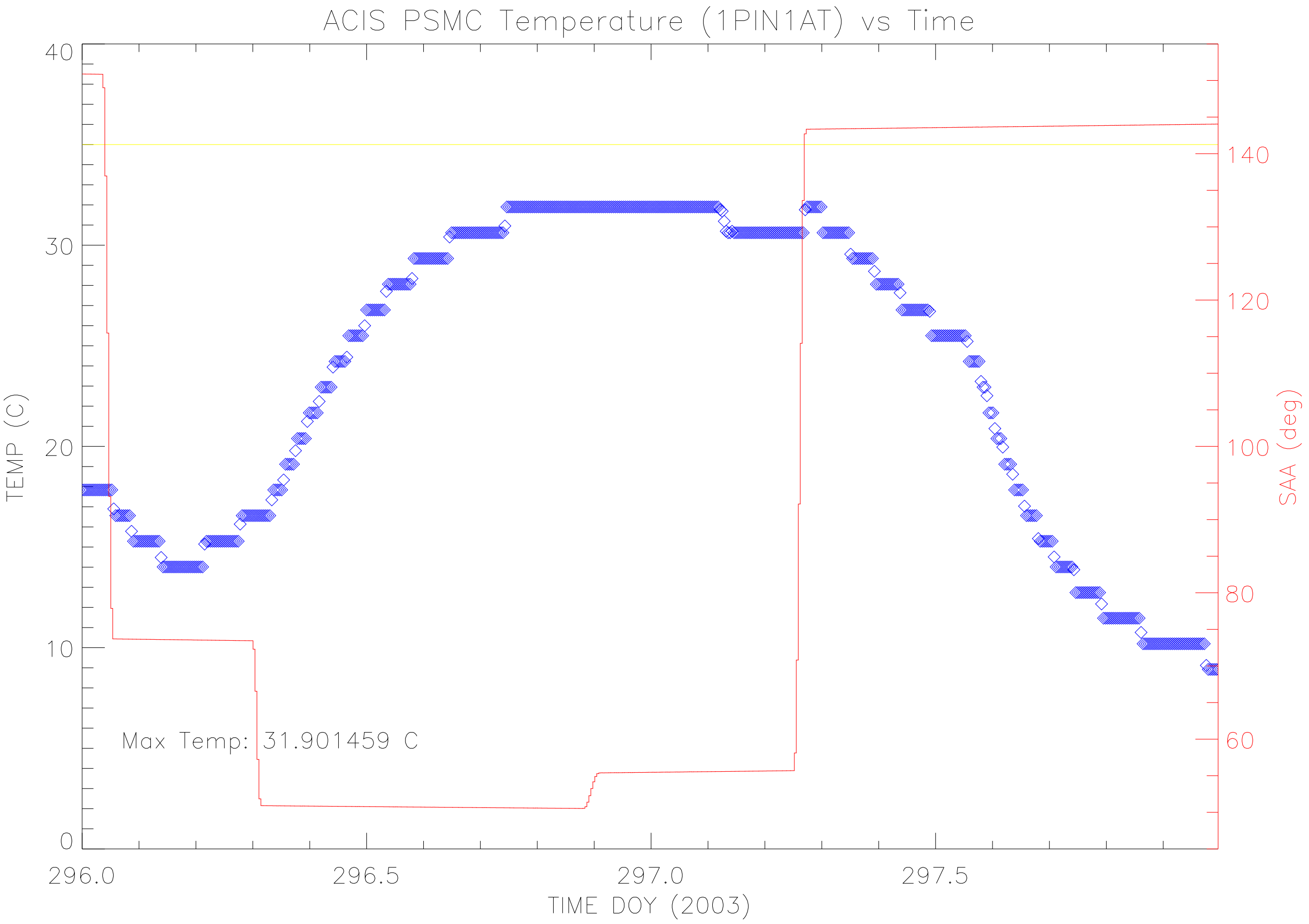
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
SAA (deg)
TIME DOY (2003)
Max Temp: 31.901459 C
0
10
20
30
40
60
80
100
120
140
296.0
296.5
297.0
297.5

Figure 5:

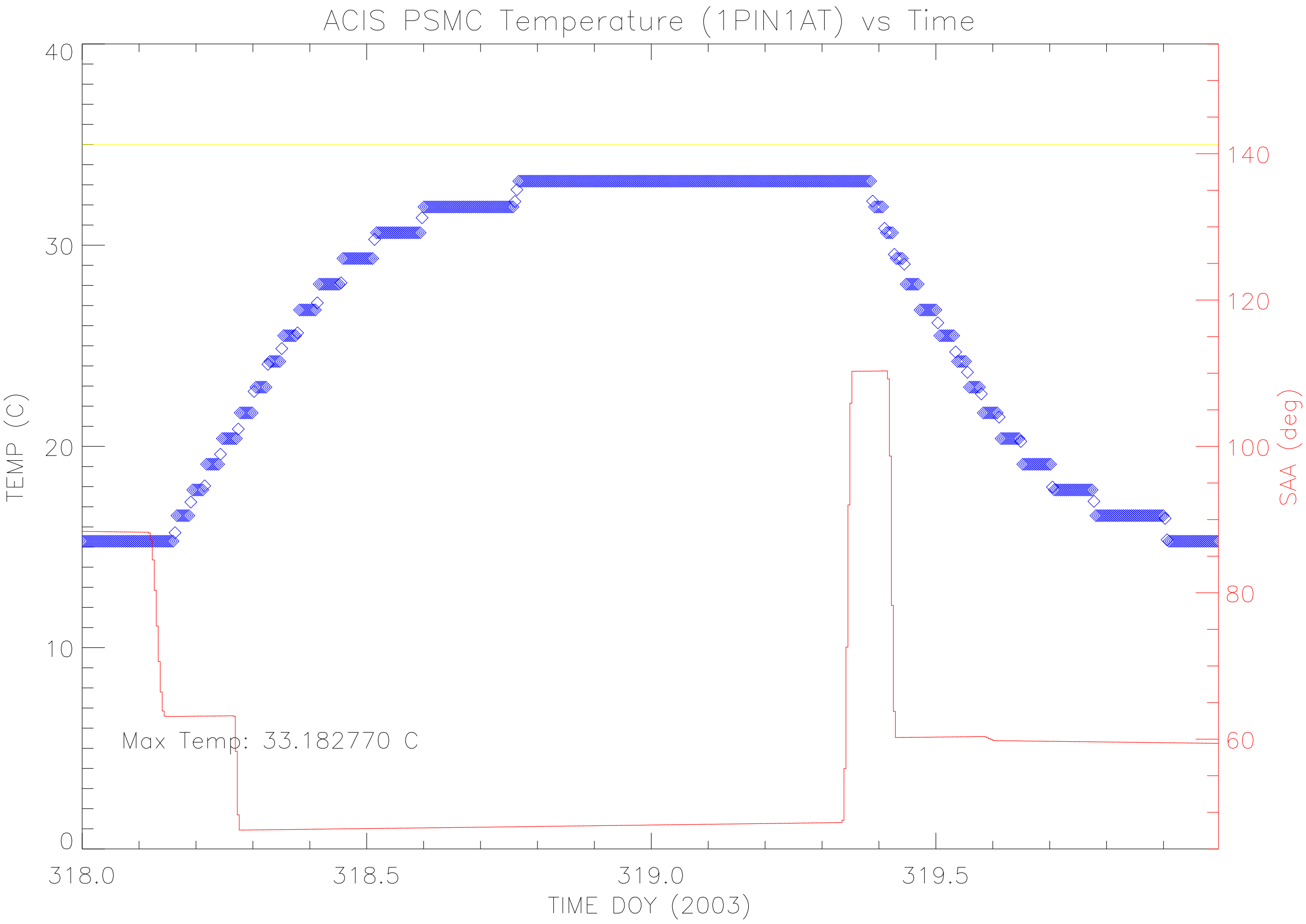
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
SAA (deg)
TIME DOY (2003)
Max Temp: 33.182770 C
0
10
20
30
40
60
80
100
120
140
318.0
318.5
319.0
319.5

Figure 6:

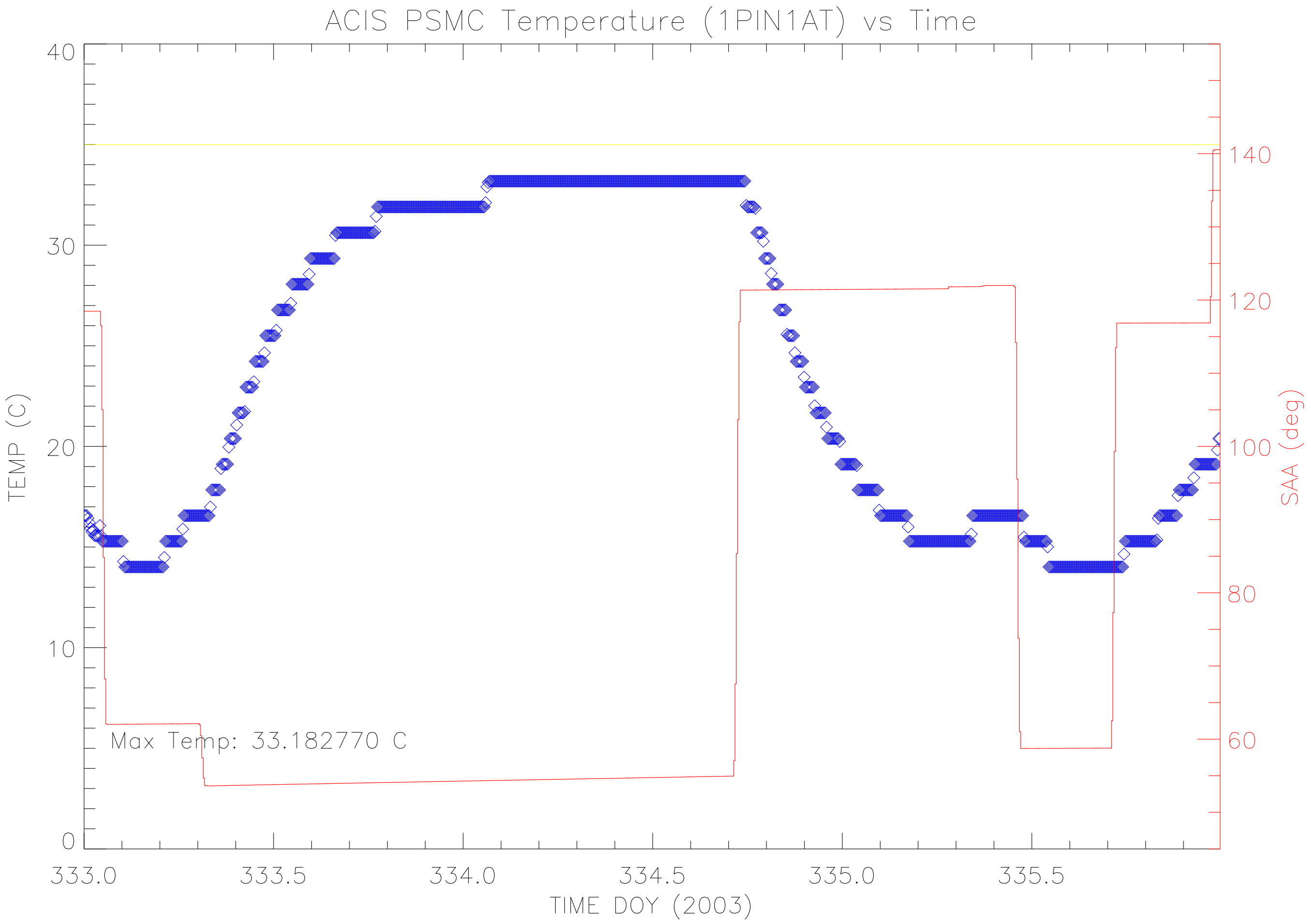
ACIS PSMC Temperature (1PIN1AT) vs Time
40
30
20
10
0
TEMP (C)
140
120
100
80
60
SAA (deg)
Max Temp: 33.182770 C
333.0
333.5
334.0
334.5
335.0
335.5
TIME DOY (2003)

Figure 7:

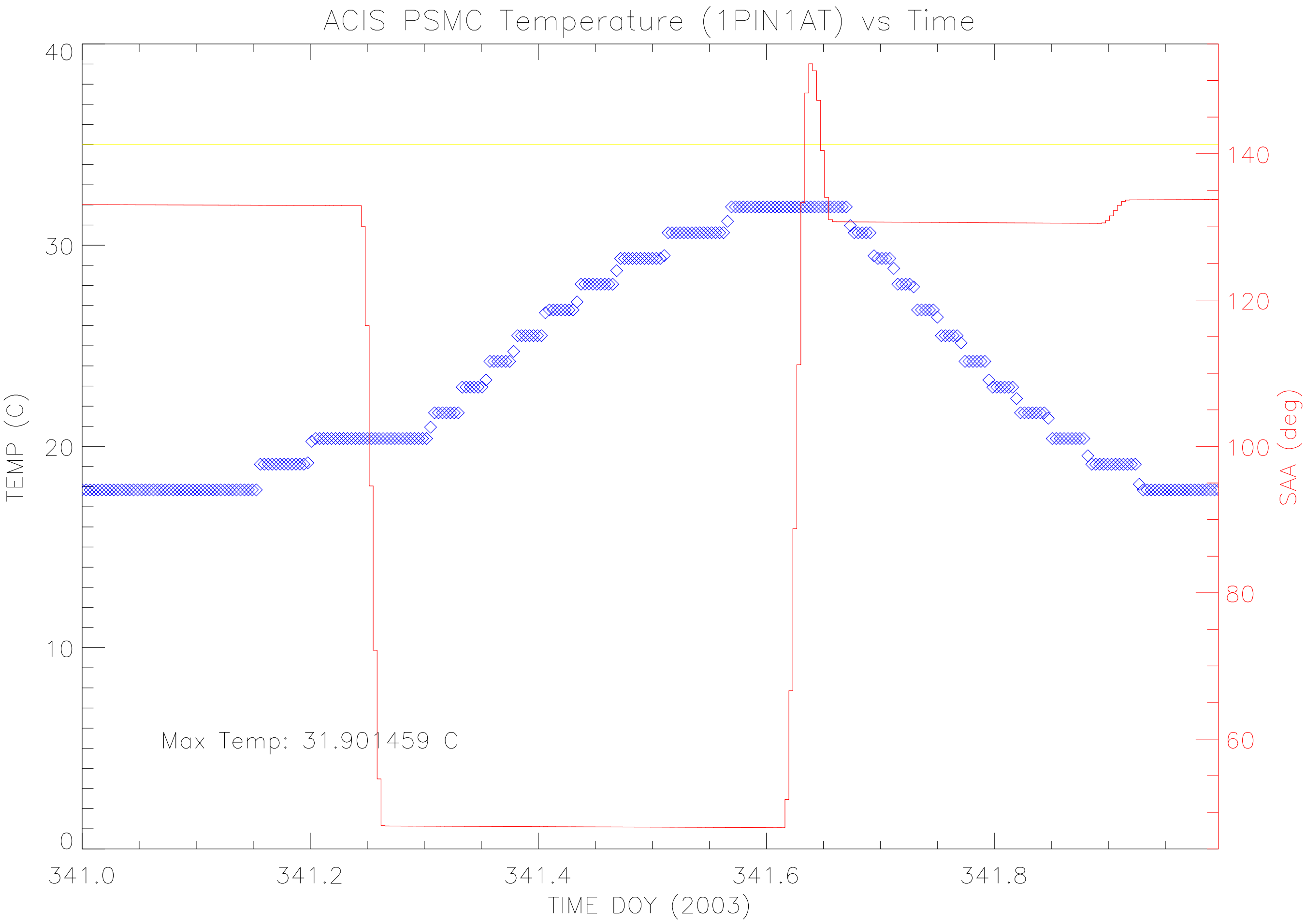
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
0
10
20
30
40
SAA (deg)
60
80
100
120
140
Max Temp: 31.901459 C
341.0
341.2
341.4
341.6
341.8
TIME DOY (2003)

Figure 8:

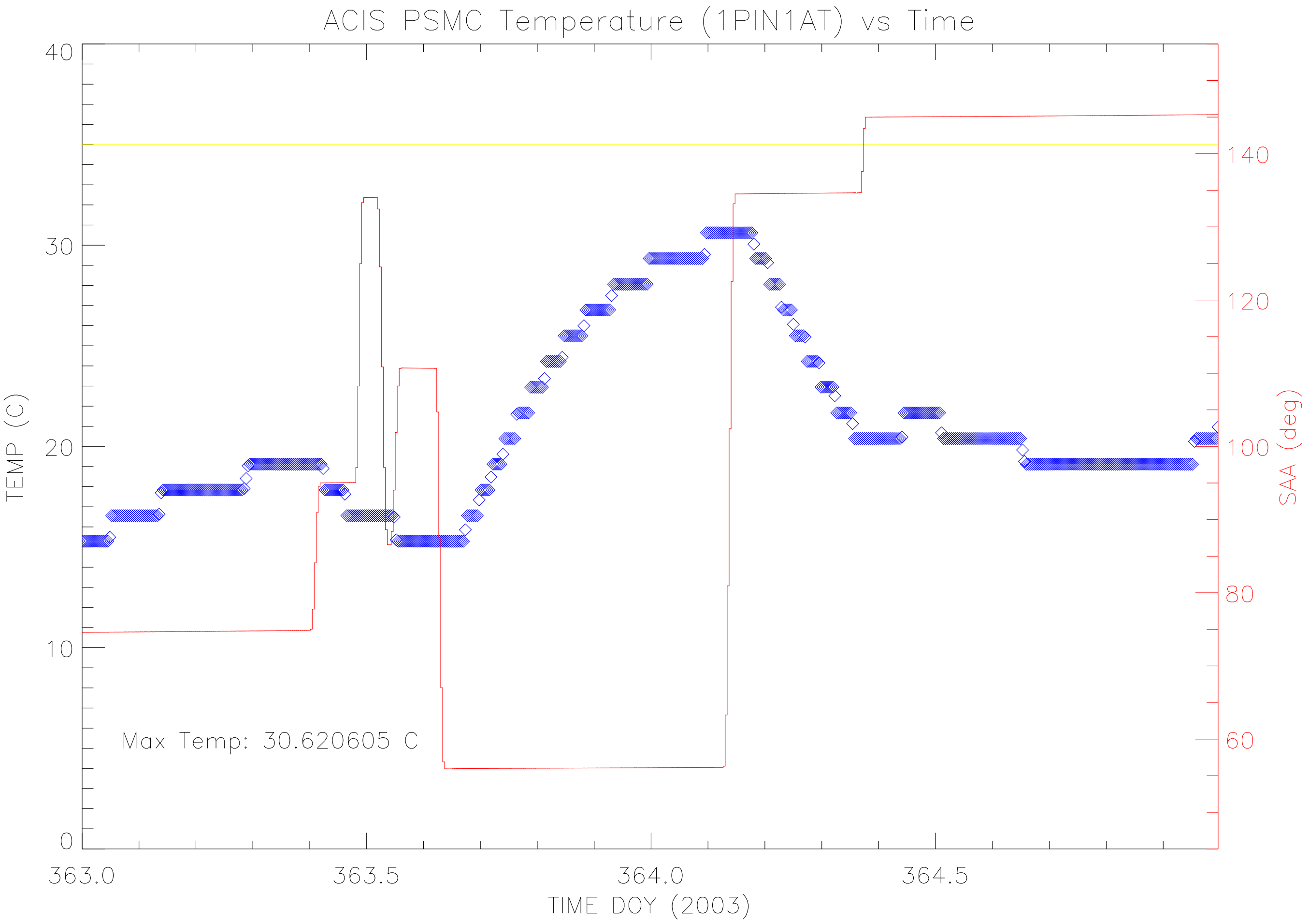
ACIS PSMC Temperature (1PIN1AT) vs Time
40
30
20
10
0
TEMP (C)
140
120
100
80
60
SAA (deg)
Max Temp: 30.620605 C
363.0
363.5
364.0
364.5
TIME DOY (2003)

Figure 9:

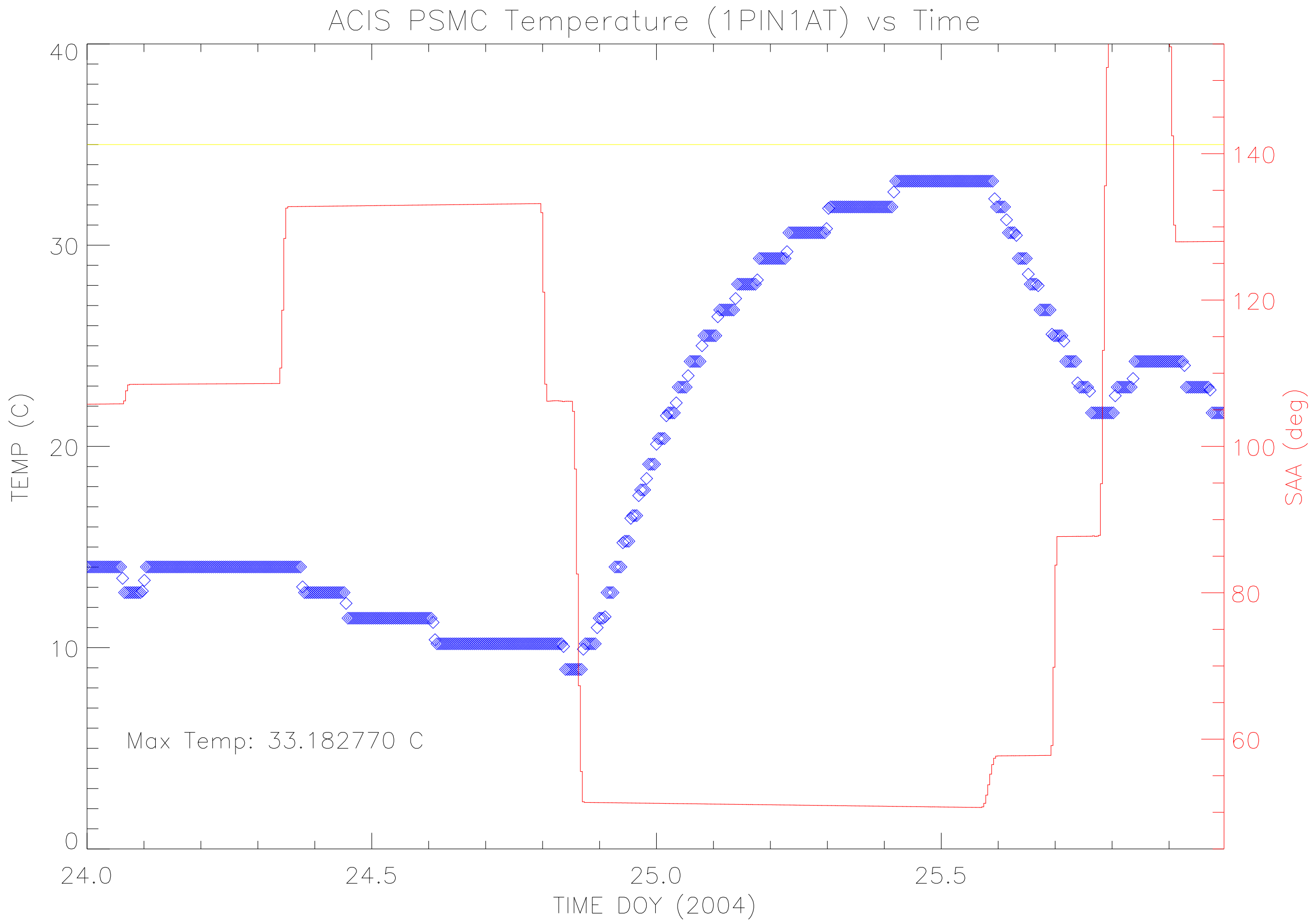
ACIS PSMC Temperature (1PIN1AT) vs Time
TEMP (C)
SAA (deg)
TIME DOY (2004)
Max Temp: 33.182770 C
0
10
20
30
40
60
80
100
120
140
24.0
24.5
25.0
25.5

Figure 10:

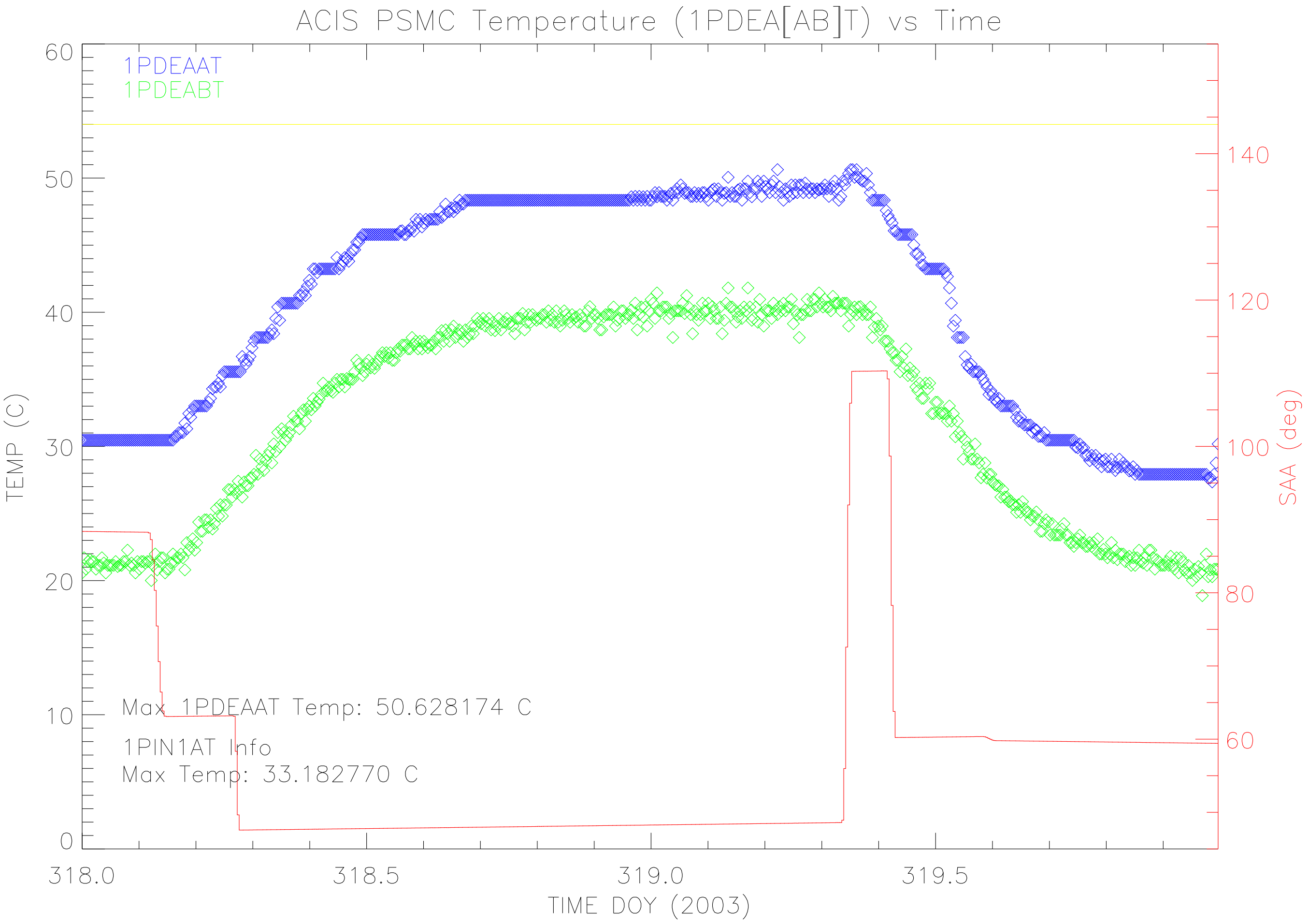
ACIS PSMC Temperature (1PDEA[AB]T) vs Time
1PDEAAT
1PDEABT
Max 1PDEAAT Temp: 50.628174 C
1PIN1AT Info
Max Temp: 33.182770 C
TEMP (C)
SAA (deg)
TIME DOY (2003)
318.0
318.5
319.0
319.5
0
10
20
30
40
50
60
60
80
100
120
140

Figure 11:

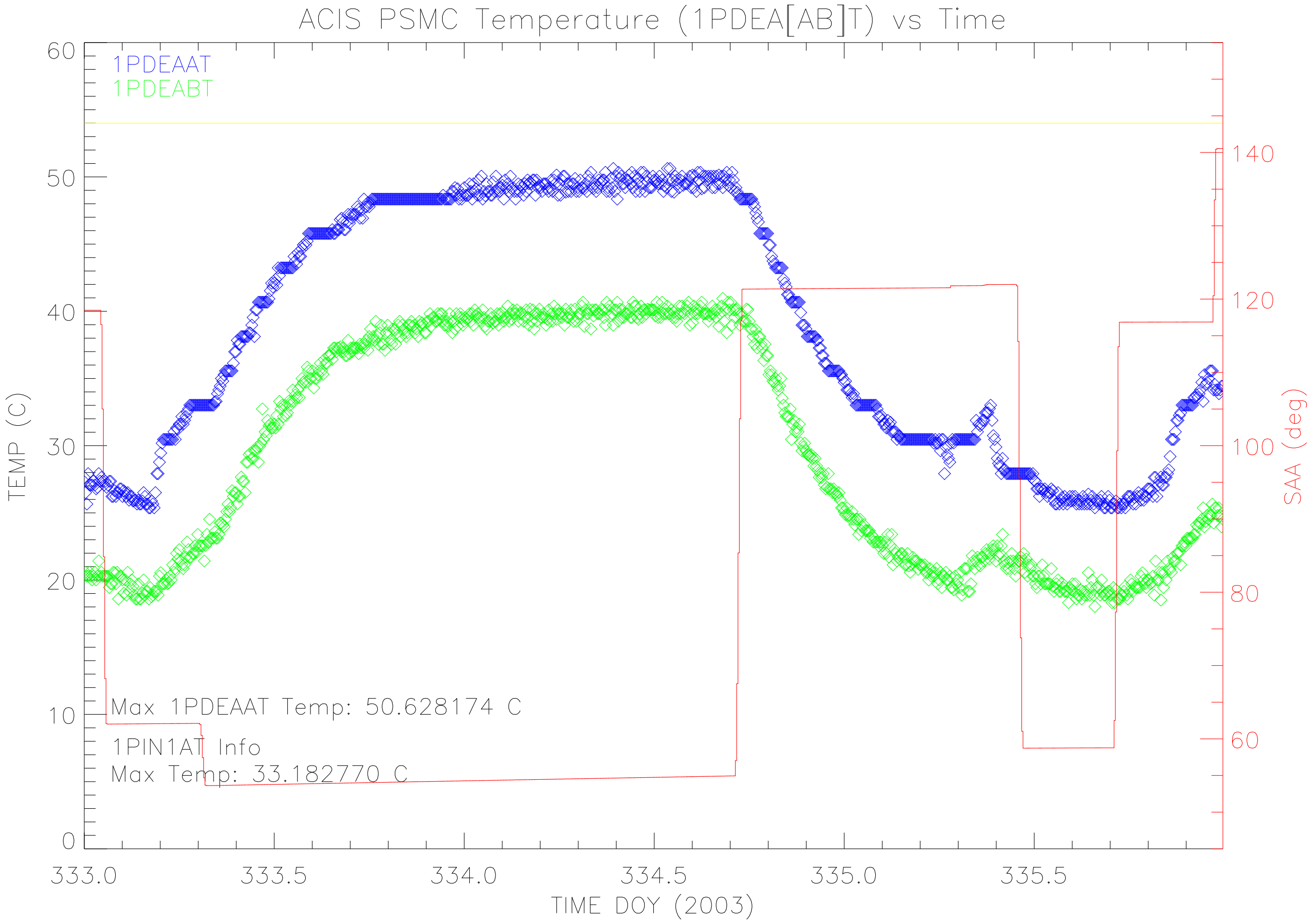
ACIS PSMC Temperature (1PDEA[AB]T) vs Time
1PDEAAT
1PDEABT
TEMP (C)
SAA (deg)
TIME DOY (2003)
Max 1PDEAAT Temp: 50.628174 C
1PIN1AT Info
Max Temp: 33.182770 C
0
10
20
30
40
50
60
60
80
100
120
140
333.0
333.5
334.0
334.5
335.0
335.5

Figure 12:

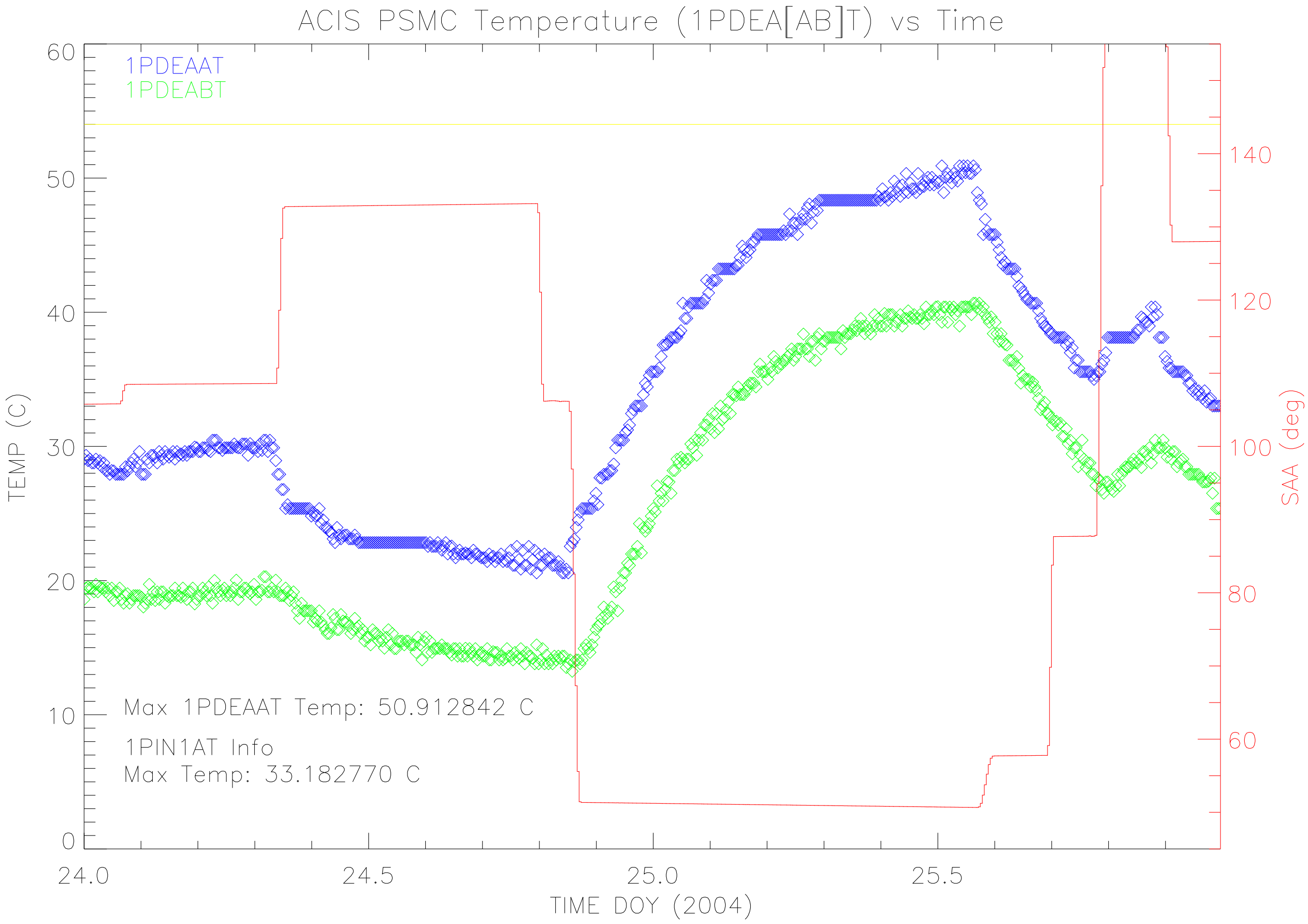
ACIS PSMC Temperature (1PDEA[AB]T) vs Time
1PDEAAT
1PDEABT
TEMP (C)
SAA (deg)
TIME DOY (2004)
0
10
20
30
40
50
60
60
80
100
120
140
24.0
24.5
25.0
25.5
Max 1PDEAAT Temp: 50.912842 C
1PIN1AT Info
Max Temp: 33.182770 C

Figure 13: