# FLUXGATE MAGNETOMETER CALIBRATION FOR

# R O S E T T A

## RO–IGM–TR–0002

**Issue: 2 Revision: 2**

**October 10, 2001**

# Report on the

# Flight Unit (FM)

# and

# Flight Spare Unit (FS)

# Calibration

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# Contents

# 1 Introduction

This document describes the ROSETTA Flight Unit Calibration performed from March 19th, to May 2nd, 2001 and from August 28th to September 13th, 2000 (additional temperature cycle) at the Institute of Geophysics and Meteorology, Technical University of Braunschweig. Day by day the performed calibration steps, special tests and some handling steps are described with their conditions and the necessary support information in detail. Thus this document describes an easy way to find the data of a specific calibration task. To support the user of this document in finding a specific measurement an index to all measurements is added. In addition a complete list of data files faced to there configuration files can be found in the appendix at page 303ff.

Another interesting part of the appendix is the collection of all the coil system stability measurements prior to the calibration starting at page 258. Also in the appendix (page 325ff) helpful information of the temperature measurements during this calibration session can be found.

Finally the appendix gives an album of all the photos taken during the calibration. On page 333 a list of titles to the photos is given.

### 1.1 Related Documents

Some documents developed during the CLUSTER I and CLUSTER II investigations may be of help understanding the general topics also covered by this document related to ROSETTA mission. Some documents related to the calibration facility are referenced in the following table. The last CLUSTER II calibration report is mentioned for comparison. The documents are of special interest for understanding and interpreting the calibration data, as well as some documents issued for the Magnetsrode standard systems. The documents of special interest for understanding the calibration data and procedures are the following.

| | |
|---|---|
| MR–IGM–TN–0004<br>MRode Software Manual & Configuration of attached hardware. | Description of the controlling software, the hardware devices and handling notes. |
| CL–IGM–TN–0008<br>Calibration Data Recording System | Description of the Data Formats, the ClusTerm program and the Utility programs for working on the CCD files. |
| CL–IGM–TN–0014<br>Methods of Analysis for Magnetometer Calibration. | Analysis methods for evaluating the various calibration measurements of the Cluster magnetometers are described in detail. |
| CL–IGM–TR–0440<br>Report on the Cluster F1 Calibration. | Calibration report. |
| CL–IGM–TR–0441<br>Results of the F1 Calibration. | Calibration analysis. |
| CL2–IGM–TR–0002<br>Report on the Cluster–II F7 Calibration. | Calibration report. |
| CL2–IGM–TR–0003<br>Results of the F7 Calibration. | Calibration analysis. |
| RO–IGM–TR–0003<br>Results of the ROSETTA Calibration. | Calibration analysis. |
| MR–IGM–TN–0005 | Manual for the Thermal Test Box. |
| RO–IWF–TR–0001<br>(by IWF Graz) | ROSETTA sample rate and frequency response analysis. |

### 1.2 Part Identification

The items listed below are combined to build up two complete FGM systems. These parts have been checked and calibrated in different configurations to ensure that, in case of a later on recognized failure, all parameters are known. Therefore, the FM sensors have been calibrated with the FM and FS DPU as well as the FS sensors have been checked with both DPUs.

| Item | PTI | Serial | Cube Mirror |
|---|---|---|---|
| DPU | FM | FGM electronics FM | |
| FGM–OB | FM–MAG #1 | FGM OB sensor FM | OB |
| FGM–IB | FM–MAG #2 | FGM IB sensor FM | IB |
| | | | |
| DPU | FS | FGM electronics FS | |
| FGM–OB | FS–MAG #1 | FGM OB sensor FS | OB |
| FGM–IB | FS–MAG #2 | FGM IB sensor FS | IB |

### 1.3 Key Personnel

| | | |
|---|---|---|
| IGM–Team: | Falko Kuhnke | Experiment Setup |
| | Carsten Othmer | DC–Analysis of the data. |
| | Matthias Rahm | Documentation: Overview Plots, ... |
| | Ingo Richter | Operating the MCF–System, the Calibration Data Recording System and the ROSETTA FGM during the whole calibration. Documentation, DC & Special Analysis. |
| IWF–Team: | Hans Eichelberger | AC–Analysis of the data. |


Figure 1: I010424A

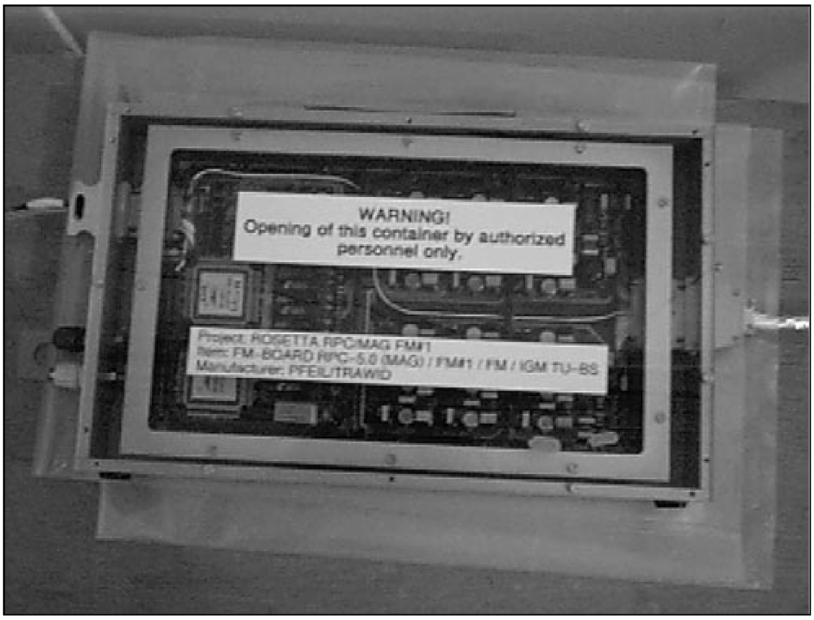


Figure 2: I010423E

# 2 Monday March 19, 2001

## 2.1 Pre Calibration Residual Field Adjustment

Prior to the ROSETTA FGM calibration the status of the coil system concerning the residual field has been checked. For this purpose the Overhauser Magnetometer (OVH) was placed diagonally in space in the center of the coil system (CoC). The orientation of the sensor was from north–west–down to south–east–up. Fields have been applied with the S/W MCF_CTRL. The data output of the OVH was logged with HyperTerm on a Laptop in House 1.

Initial measurement:

| Component | Applied Field [nT] | Measured Modulus [nT] | Residual Field [nT] | Old PA-Offset |
|---|---|---|---|---|
| X | +50000 | 49998 | +06 | 505 |
| X | −50000 | 49987 | | |
| Y | +50000 | 49977 | −20 | 390 |
| Y | −50000 | 50016 | | |
| Z | +50000 | 50008 | +10 | 690 |
| Z | −50000 | 49988 | | |

Status after adjustment:

| Component | Applied Field [nT] | Measured Modulus [nT] | Residual Field [nT] | Old PA-Offset |
|---|---|---|---|---|
| X | +50000 | 49993 | 00 | 458 |
| X | −50000 | 49993 | | |
| Y | +50000 | 49997 | 00 | 560 |
| Y | −50000 | 50097 | | |
| Z | +50000 | 49998 | 00 | 600 |
| Z | −50000 | 49998 | | |

The measurement gave very stable results. The variation of the OVH output for a stable field configuration was in the order of a few tenth of a nanotesla.

## 2.2 Calibration Setup

After the described residual field adjustment to the real ROSETTA calibration session starts now with the system Setup.

The CDRS[1] is set up and configured in the standard way. All the coil facility devices work properly.

### 2.2.1 Hardware Setup

1. ROSETTA sensors unpacked and mounted on their aluminium support at house 2 mainroom.
2. The mirrors have been attached to the sensors (Mirror IB to the IB–sensor, mirror OB to the OB–Sensor).
3. DPU placed on the small desk in the southwest corner of the house 2 main room.
4. PIU–Simulator–Board installed at the house 2 anteroom.
5. PIU–Simulator output connected to CLUSTERM GSD–Port via RS–232 lines from house 2 to house 1.
6. S/C–Simulator connected to DPU.
7. DPU analog output: N/A
8. MAD–System. Only the ZOPFMAG actually connected.

| Sensor | Line | MAD | Sensor | Line | MAD | Sensor | Line | MAD |
|---|---|---|---|---|---|---|---|---|
| Zopf–$X_m$ | B1 | Ch00 | | A1 | | | A4 | |
| Zopf–$Y_m$ | B2 | Ch01 | | A2 | | | A5 | |
| Zopf–$Z_m$ | B3 | Ch02 | | A3 | | | B4 | |

9. The Zopfmagnetometer is placed at the lower central reference position in the coil system for the whole calibration. Actual sensitivity: 1000 nT/V.

The hardware setup is completed, so now the software has to be checked.

[1] Calibration and Data Recording System

### 2.2.2 Software Setup

The following table lists the current versions of the used software packages.

| Computer | Software | Version / Date | Remark |
|---|---|---|---|
| MRode | Mag_Out | 28.0 / 20.10.1999 | |
| | SimElnk | | No Ops |
| | Mag_Sim | 3.1a / 20.07.1998 | |
| | `Elnk2Cmd.def` | | No Ops |
| ClusTerm | RoseTerm | 1.1! / 04.12.2000 | |
| TempCtrl | TempCtrl | 4.6 / 12.09.1997 | |
| | Analyser | | No Ops |
| MAD | MessAuf | 1.4a / 10.04.1997 | |
| any | CCD2T | 4.6c / 17.11.1998 | |
| | CCR2CCD | 1.3 / 09.11.1998 | |
| | CCD2ROS | 1.1 / 16.11.2000 | |

The system starts without complications.

## 2.3 Offset Measurements — DPU: FM, Sensors FM–IB & FM–OB

To perform the offset measurements both sensors are mounted with their aluminium support at the stand on top of the green trolley. Figure 236 shows a photographic view of the setup in the normal position for the measurement of FGM–OB. The following figures show the turned positions according to the test procedure.

| | |
|---|---|
| Purpose: | Measure the FGM–IB & and FGM–OB offset. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 1 nT/mV; |
| | Ch7 FSP pulse; |
| | Timer 500, SumUp 100, Vector rate 1.00 Hz. |
| PREMA: | |
| Files: | `OFF?_?1.SEQ` |
| Start: | 19.03.01 15:01 |
| End: | 19.03.01 16:10 |

#### 2.3.1 Data

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 1: Normal<br>OB @ CoC, height: 13cm, 010405A |
| ALI10.cfg | 01-03-19\15_01_03.CCD | |
| OFFX_N1.cfg | 01-03-19\15_08_30.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 2: Normal<br>IB @ CoC, height: 13cm, 010405B |
| OFFX_N1.cfg | 01-03-19\15_12_37.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 3: Turned @ \Zc<br>OB @ CoC, height: 13cm, 010405C |
| ALI10.cfg | 01-03-19\15_29_16.CCD | |
| OFFX_T1.cfg | 01-03-19\15_36_45.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 4: Turned @ \Zc<br>IB @ CoC, height: 13cm, 010405D |
| OFFX_T1.cfg | 01-03-19\15_42_39.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 5: Turned @ \Yc<br>OB @ CoC, height: 20cm, 010405E |
| ALI10.cfg | 01-03-19\15_53_19.CCD | |
| OFFZ_T1.cfg | 01-03-19\16_00_30.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 6: Turned @ \Yc<br>IB @ CoC, height: 20cm, 010405F |
| OFFZ_T1.cfg | 01-03-19\16_07_30.CCD | |

### 2.4 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors FM–IB & FM–OB

As a short test over night the system has been set up for linearity, sensitivity and cross talk measurements. The sensors were aligned geometrically using the aluminium support on top of the thermobox mounting plate. The OB sensor was in the north, IB in the south, the center of this double–sensor configuration at the CoC.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | Both sensors in geometrically aligned position. |
| | CoC in center between FGM–OB and FGM-IB |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV; |
| | Ch7 FSP pulse; |
| | Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010319.SEQ` |
| Start: | 19.03.01 16:23 |
| End: | 20.03.01 09:58 |

#### 2.4.1 Data

| Configuration File | CCD File | CCD File |
|---|---|---|
| ALI10.cfg | 01-03-19\16_23_48.CCD | |
| 14000XYZ.CFG | 01-03-19\16_31_23.CCD | 01-03-19\20_21_50.CCD |
| LX15.CFG | 01-03-19\17_04_04.CCD | 01-03-19\20_54_30.CCD |
| LY15.CFG | 01-03-19\17_35_25.CCD | 01-03-19\21_25_30.CCD |
| LZ15.CFG | 01-03-19\18_06_26.CCD | 01-03-19\21_56_30.CCD |
| SP15.CFG | 01-03-19\18_37_27.CCD | 01-03-19\22_27_31.CCD |

## 2.5 Overview Plots: System Performance, Temperatures and Earthfield Variations.

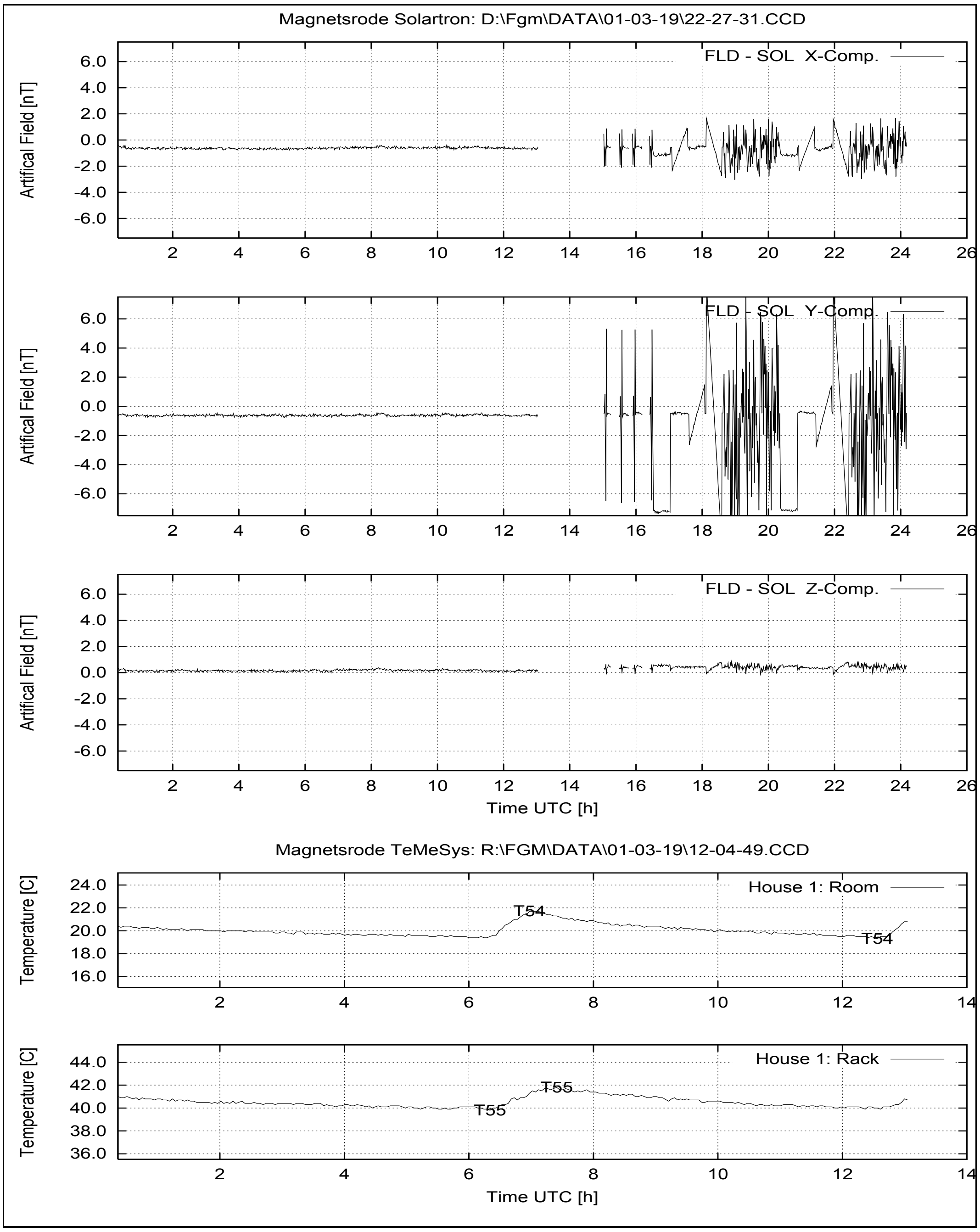


Figure 3: March 19, 2001: System Performance: FLD – SOL; Temperatures at House 1.

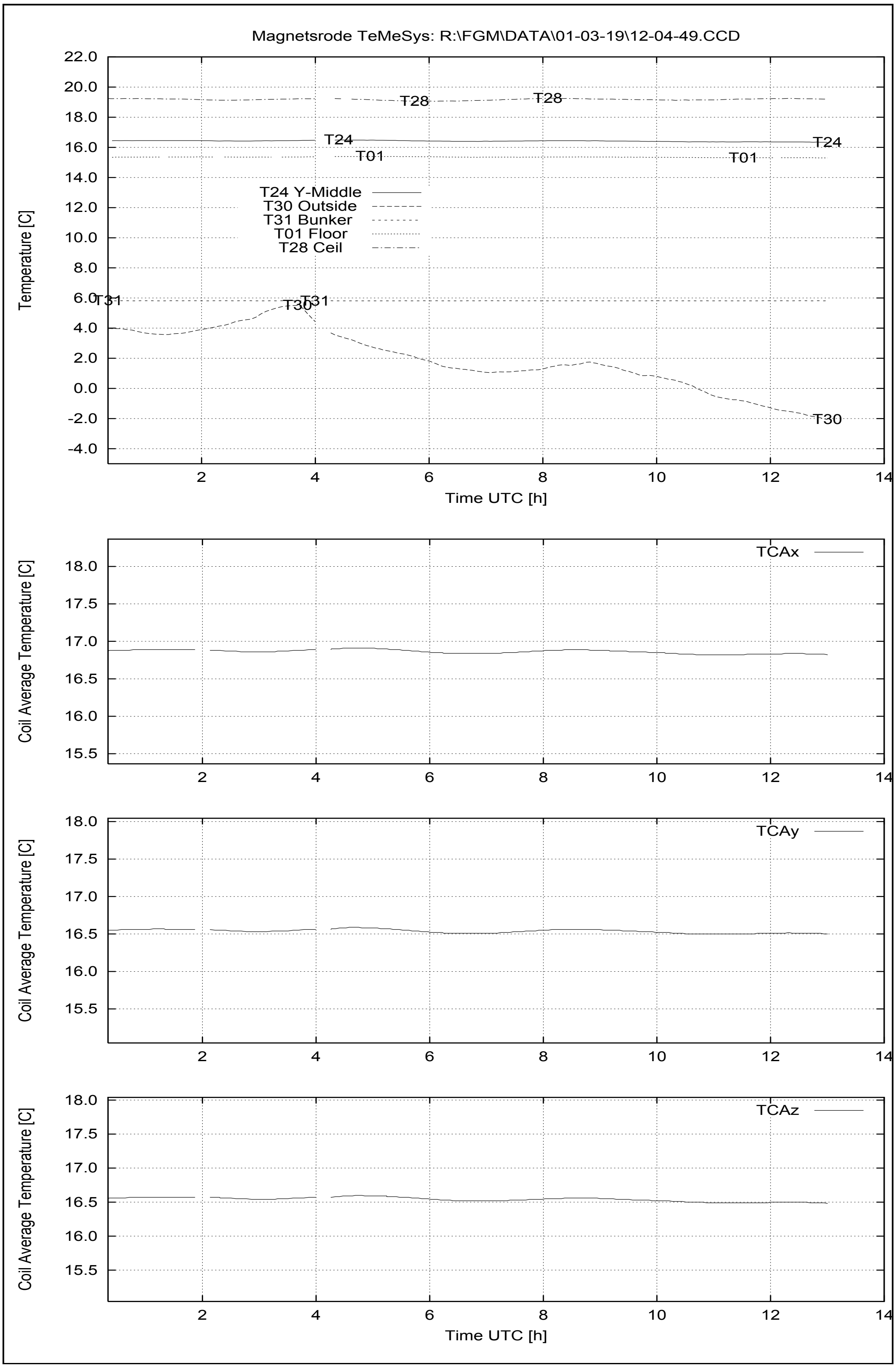


Figure 4: March 19, 2001: Temperatures House 2.

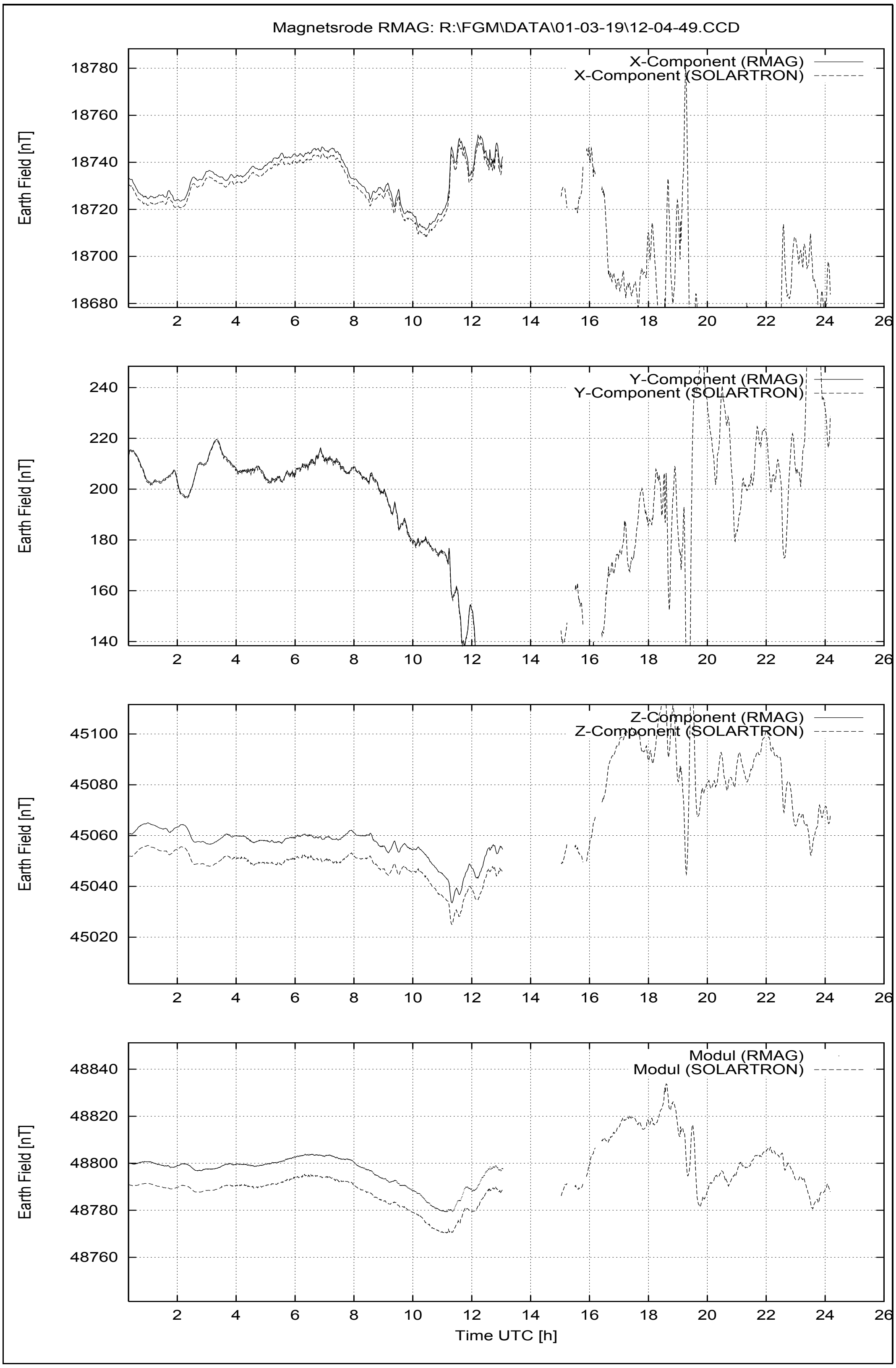


Figure 5: March 19, 2001: Earthfield variations.

# 3 Tuesday March 20, 2001

## 3.1 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors FM–IB & FM–OB — Continued

The linearity, sensitivity and cross talk measurements continued over night.

### 3.1.1 Data

| Configuration File | CCD File |
|---|---|
| 14000XYZ.CFG | 01-03-20\00_11_53.CCD |
| LX15.CFG | 01-03-20\00_44_33.CCD |
| LY15.CFG | 01-03-20\01_15_51.CCD |
| LZ15.CFG | 01-03-20\01_46_51.CCD |
| SP15.CFG | 01-03-20\02_17_51.CCD |
| 14000XYZ.CFG | 01-03-20\04_02_13.CCD |
| LX15.CFG | 01-03-20\04_34_53.CCD |
| LY15.CFG | 01-03-20\05_05_52.CCD |
| LZ15.CFG | 01-03-20\05_36_52.CCD |
| SP15.CFG | 01-03-20\06_07_53.CCD |
| 14000XYZ.CFG | 01-03-20\07_52_14.CCD |
| LX15.CFG | 01-03-20\08_25_24.CCD |
| LY15.CFG | 01-03-20\08_56_24.CCD |
| LZ15.CFG | 01-03-20\09_27_25.CCD |
| SP15.CFG | 01-03-20\09_58_26.CCD |

Afterwards the sensors have been dismounted for mechanical fine tuning.

## 3.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

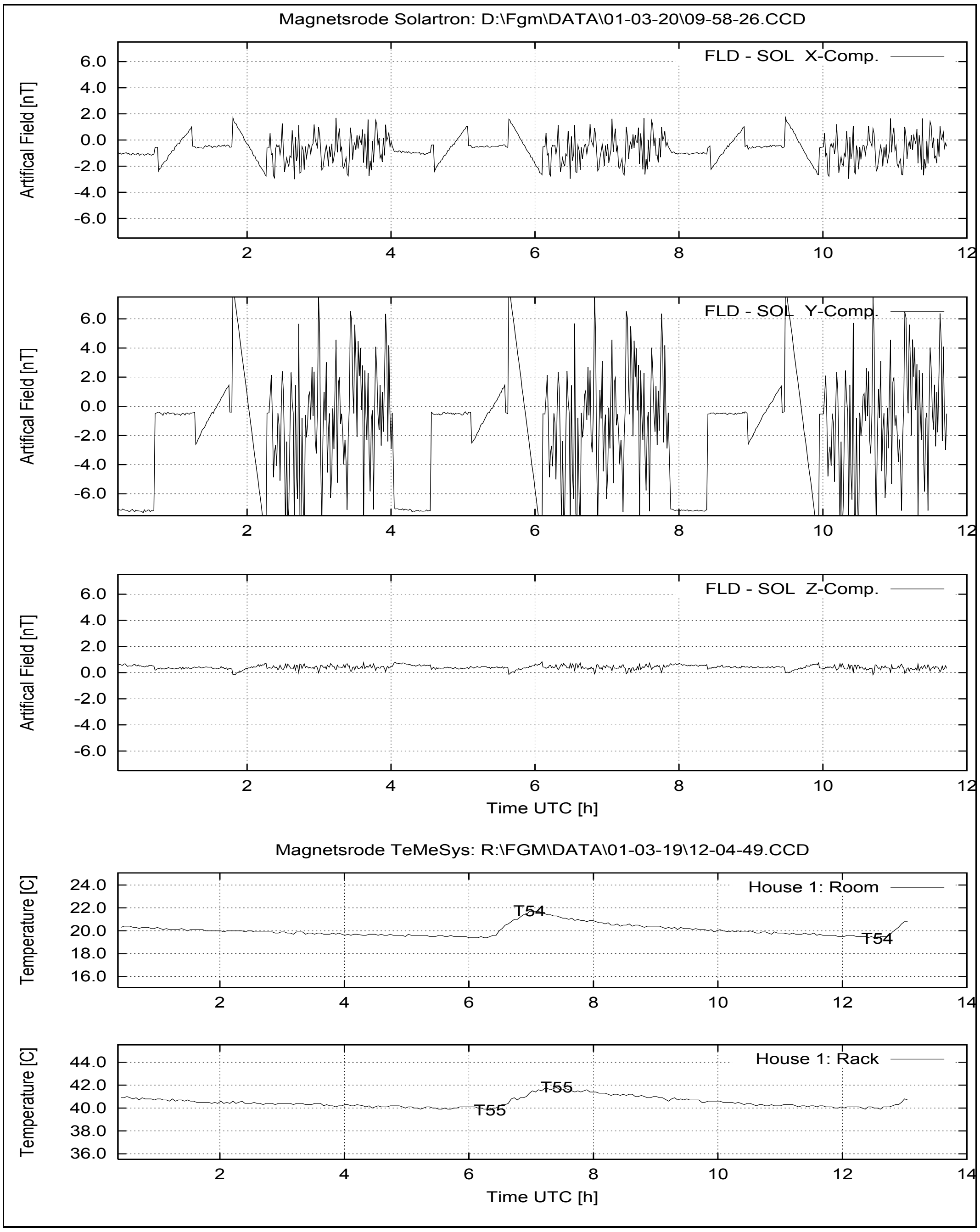


Figure 6: March 20, 2001: System Performance: FLD – SOL; Temperatures at House 1.

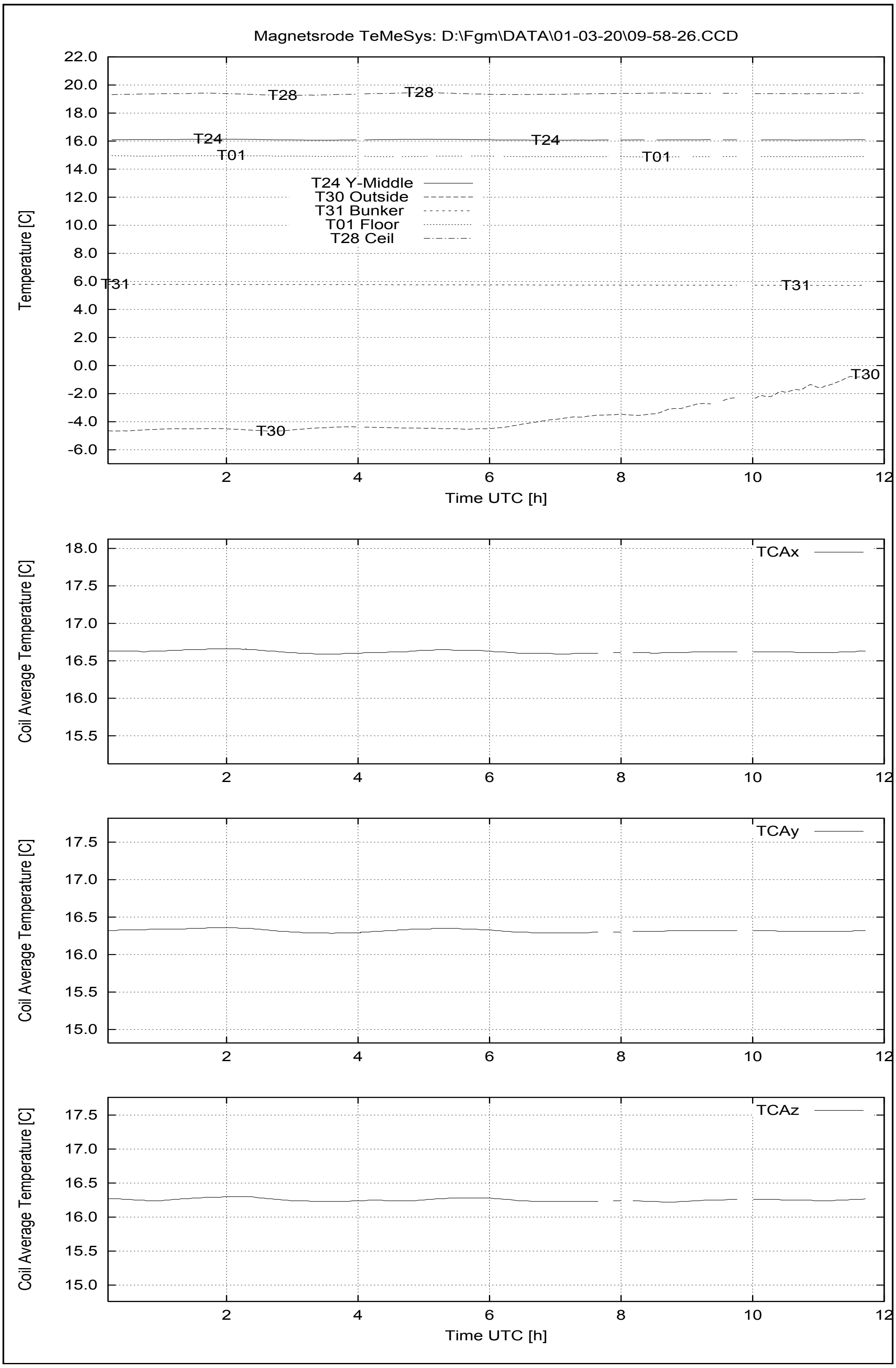


Figure 7: March 20, 2001: Temperatures House 2.

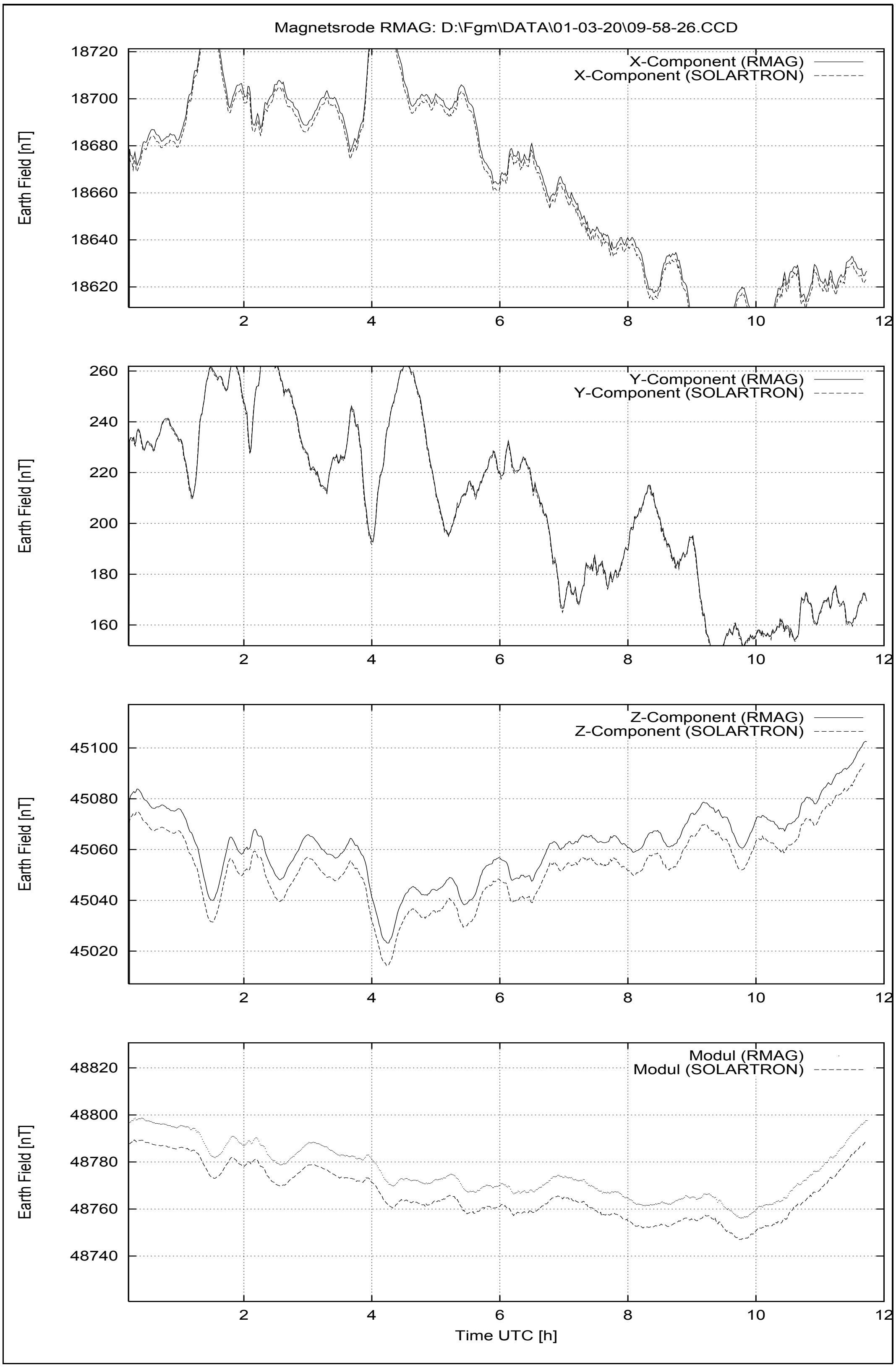


Figure 8: March 20, 2001: Earthfield variations.

# 4 Wednesday March 21, 2001

After the data collection the optical alignment took place for the FGM-OB sensor.

## 4.1 Optical Alignment System

The optical alignment system at Magnetsrode is shown in figure 9. The laser is mounted on a turntable. Its angular position is indicated in degrees and minutes. The angles between the reference mirror, the centerline of the coil system and the cross mirror are well known from a former calibration of this system. The crossing of centerline and cross mirror beam gives exactly the geometrical center of the coil system. The cube mirror of the magnetometer sensor is positioned at the center of the coil system in a way that the laser beam is nearly autocollimated. Figure 10 shows all the positions for the optical alignments of the FGM sensors.

## 4.2 FGM–OB: Optical Alignment

The standard procedure for the optical alignment of a sensor is performed. The results are shown in the following tables 1 and 2. The Thermal Test Box is used as stand for the sensor. The sensor is placed in the center of the Test Box mounting plate. As the alignment control axes of the box are not orthogonal, the alignment has to be repeated some times between the magnetometer position and the cross position of the laser to iterate to the best position. The remaining error is shifted to the cross position and noticed there (see tables 1 and 2).

Prior to the optical alignment the mirror #OB has been mounted on the northern OB sensor. Refer to picture 231. As parts of the laser tripod system should be used for the ROSETTA EMC Test at Alenia, the laser system had to be re-assembled and to be recalibrated before the real optical alignment procedure could be executed. This was done successfully in some hours work.

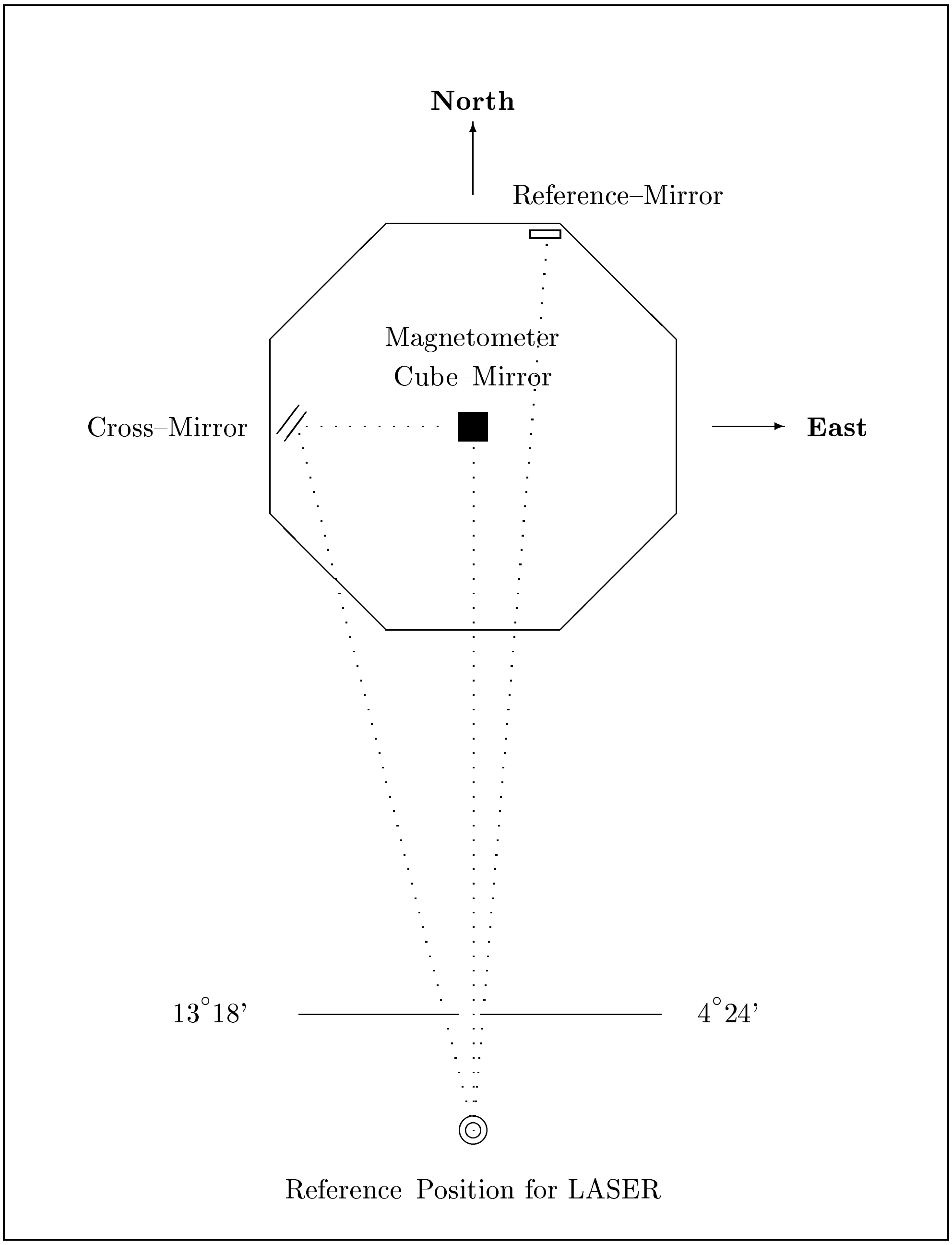


Figure 9: Sketch of the optical alignment system at Magnetsrode. (View from the top.)

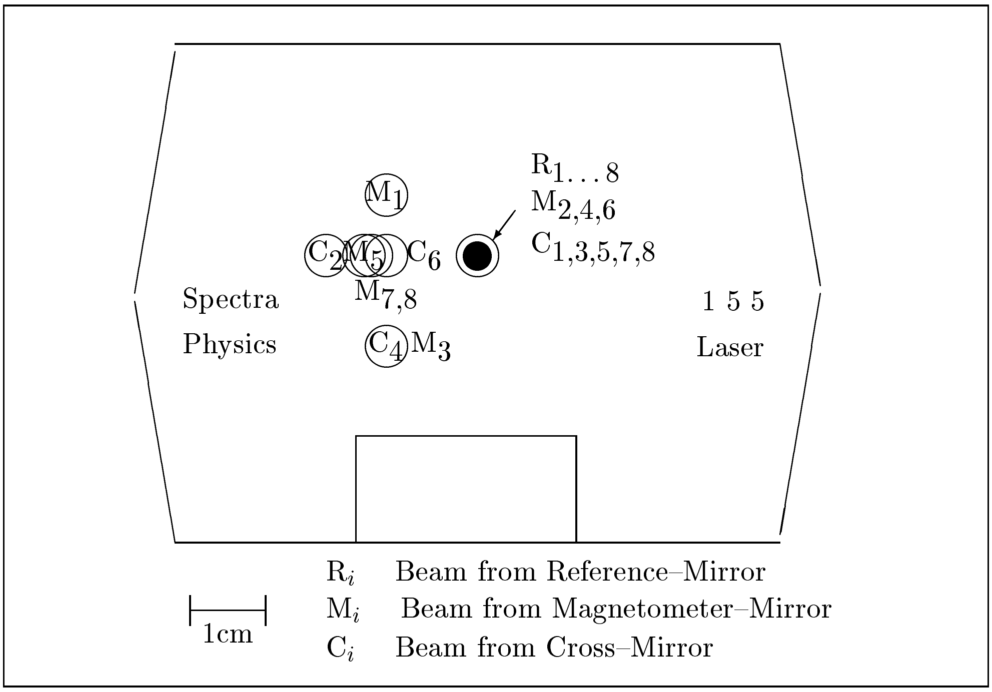


Figure 10: The Laser front plate with the reflected beams of the optical alignment.

| Laser at | Turntable angles | | | |
|---|---|---|---|---|
| | FM–OB: 21.03.01 | FM–IB: 22.03.01 | FS–OB: 05.04.01 | FS–IB: 06.04.01 |
| Reference–Mirror | $R_1 = 328^\circ 01'$ | $R_2 = 329^\circ 32'$ | $R_3 = 328^\circ 12'$ | $R_4 = 328^\circ 24'$ |
| FGM | $M_1 = 323^\circ 37'$ | $M_2 = 325^\circ 08'$ | $M_3 = 323^\circ 48'$ | $M_4 = 324^\circ 00'$ |
| difference | $x = -12$ mm | $x = +00$ mm | $x = -12$ mm | $x = +00$ mm |
| | $y = +08$ mm | $y = +00$ mm | $y = -12$ mm | $y = +00$ mm |
| Cross–Mirror | $C_1 = 310^\circ 19'$ | $C_2 = 311^\circ 50'$ | $C_3 = 310^\circ 30'$ | $C_4 = 310^\circ 42'$ |
| difference | $x = +00$ mm | $x = -20$ mm | $x = +00$ mm | $x = -12$ mm |
| | $y = +00$ mm | $y = +00$ mm | $y = +00$ mm | $y = -12$ mm |
| Top–Laser | shadowed | shadowed | shadowed | shadowed |

Table 1: Data of the optical alignment procedures performed during the calibration. Part 1

| Laser at | Turntable angles | | | |
|---|---|---|---|---|
| | FS–IB: 20.04.01 | FS–OB: 21.04.01 | FS–IB: 23.04.01 | FS–OB: 24.04.01 |
| Reference–Mirror | $R_5 = 328^\circ 26'$ | $R_6 = 328^\circ 20'$ | $R_7 = 328^\circ 16'$ | $R_8 = 328^\circ 26'$ |
| FGM | $M_5 = 324^\circ 02'$ | $M_6 = 323^\circ 56'$ | $M_7 = 323^\circ 52'$ | $M_8 = 324^\circ 02'$ |
| difference | $x = -15$ mm | $x = +00$ mm | $x = -14$ mm | $x = -14$ mm |
| | $y = +00$ mm | $y = +00$ mm | $y = +00$ mm | $y = +00$ mm |
| Cross–Mirror | $C_5 = 310^\circ 44'$ | $C_6 = 310^\circ 38'$ | $C_7 = 310^\circ 34'$ | $C_8 = 310^\circ 44'$ |
| difference | $x = +00$ mm | $x = -12$ mm | $x = +00$ mm | $x = +00$ mm |
| | $y = +00$ mm | $y = +00$ mm | $y = +00$ mm | $y = +00$ mm |
| Top–Laser | shadowed | shadowed | shadowed | shadowed |

Table 2: Data of the optical alignment procedures performed during the calibration. Part 2

### 4.3 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FM–OB

After the optical alignment of the FM–OB sensor (refer to table 1 column #1) the linearity, sensitivity and cross talk measurements should be performed. Unluckily a power break–down on the complete MRode Facility occurred at 11:00 and lasted until 12:20.
After a subsequent system setup and check we started the desired measurements.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FM–OB in optical aligned position at CoC<br>FM–IB south of CoC on aluminium support.<br>Refer to picture 231. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010321.SEQ` |
| Start: | 21.03.01 12:58 |
| End: | 22.03.01 11:16 |

#### 4.3.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-03-21\12_58_42.CCD |
| STABTST.cfg | 01-03-21\13_06_10.CCD |
| STABTST.cfg | 01-03-21\14_06_50.CCD |
| STABTST.cfg | 01-03-21\15_07_30.CCD |
| STABTST.cfg | 01-03-21\16_08_10.CCD |
| STABTST.cfg | 01-03-21\17_08_50.CCD |
| STABTST.cfg | 01-03-21\18_09_30.CCD |
| LX15.CFG | 01-03-21\19_10_11.CCD |
| LY15.CFG | 01-03-21\19_41_11.CCD |
| LZ15.CFG | 01-03-21\20_12_11.CCD |
| SP15spir.CFG | 01-03-21\20_43_12.CCD |

## 4.4 Overview Plots: System Performance, Temperatures and Earthfield Variations.

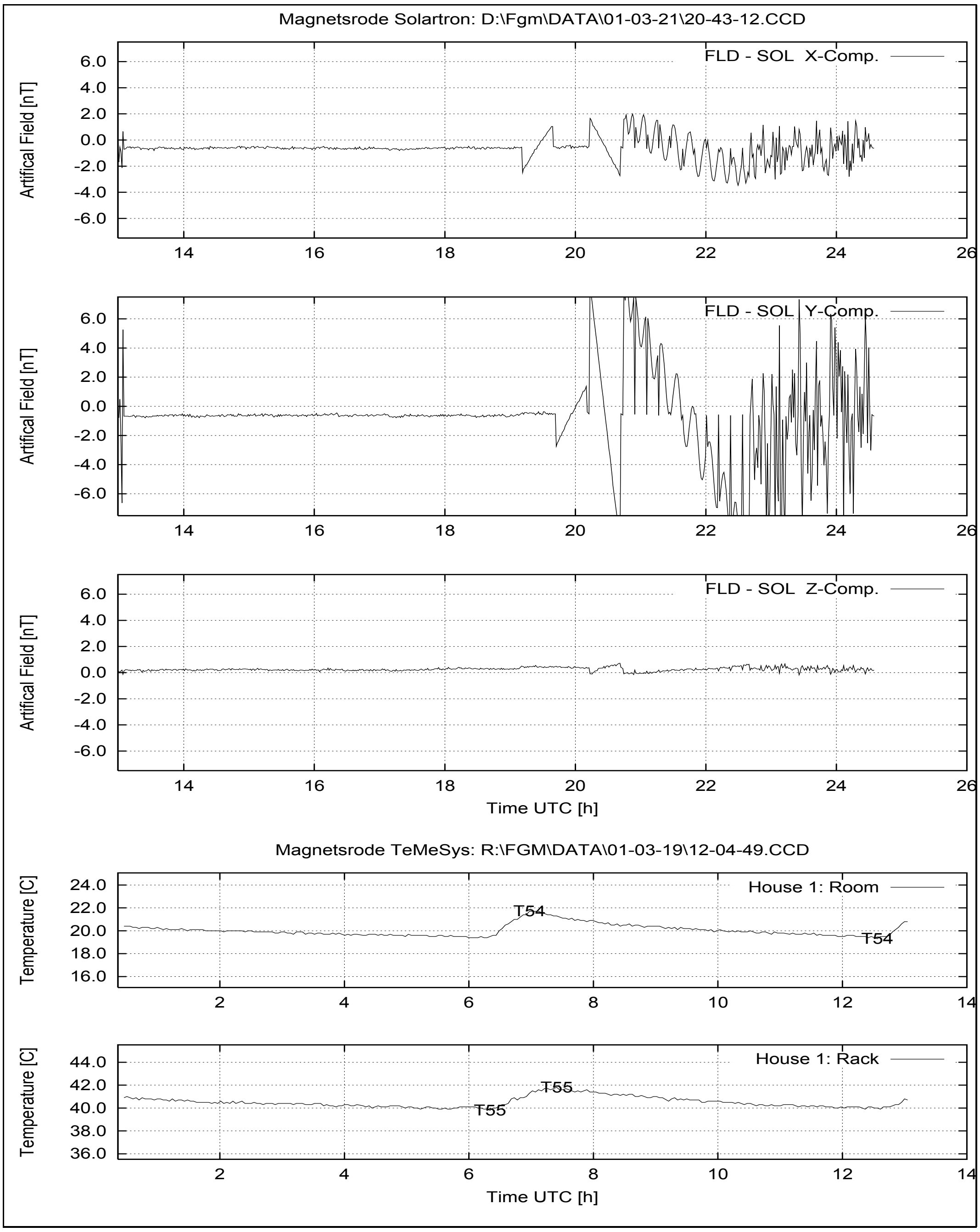


Figure 11: March 21, 2001: System Performance: FLD – SOL; Temperatures at House 1.

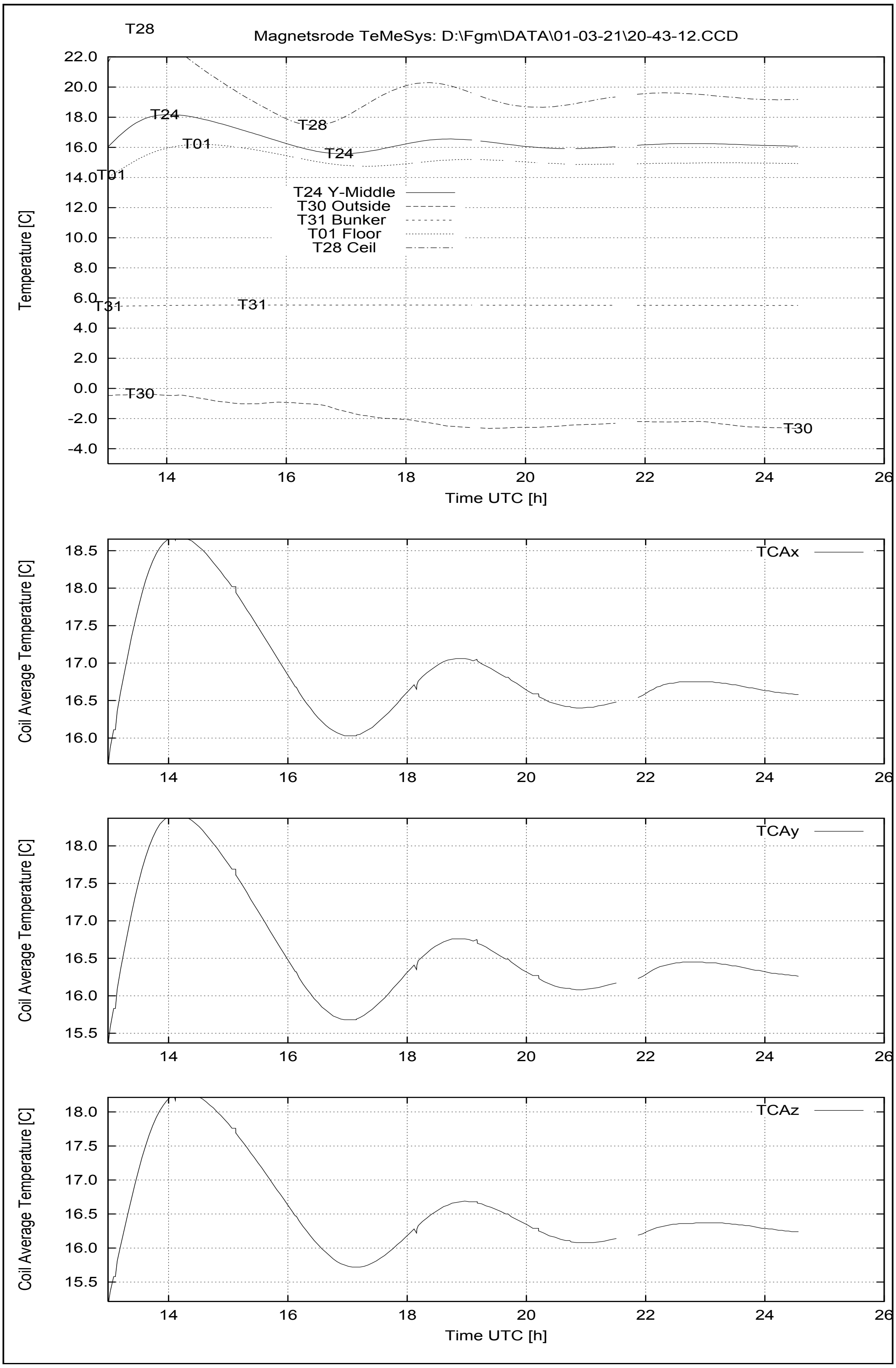


Figure 12: March 21, 2001: Temperatures House 2.

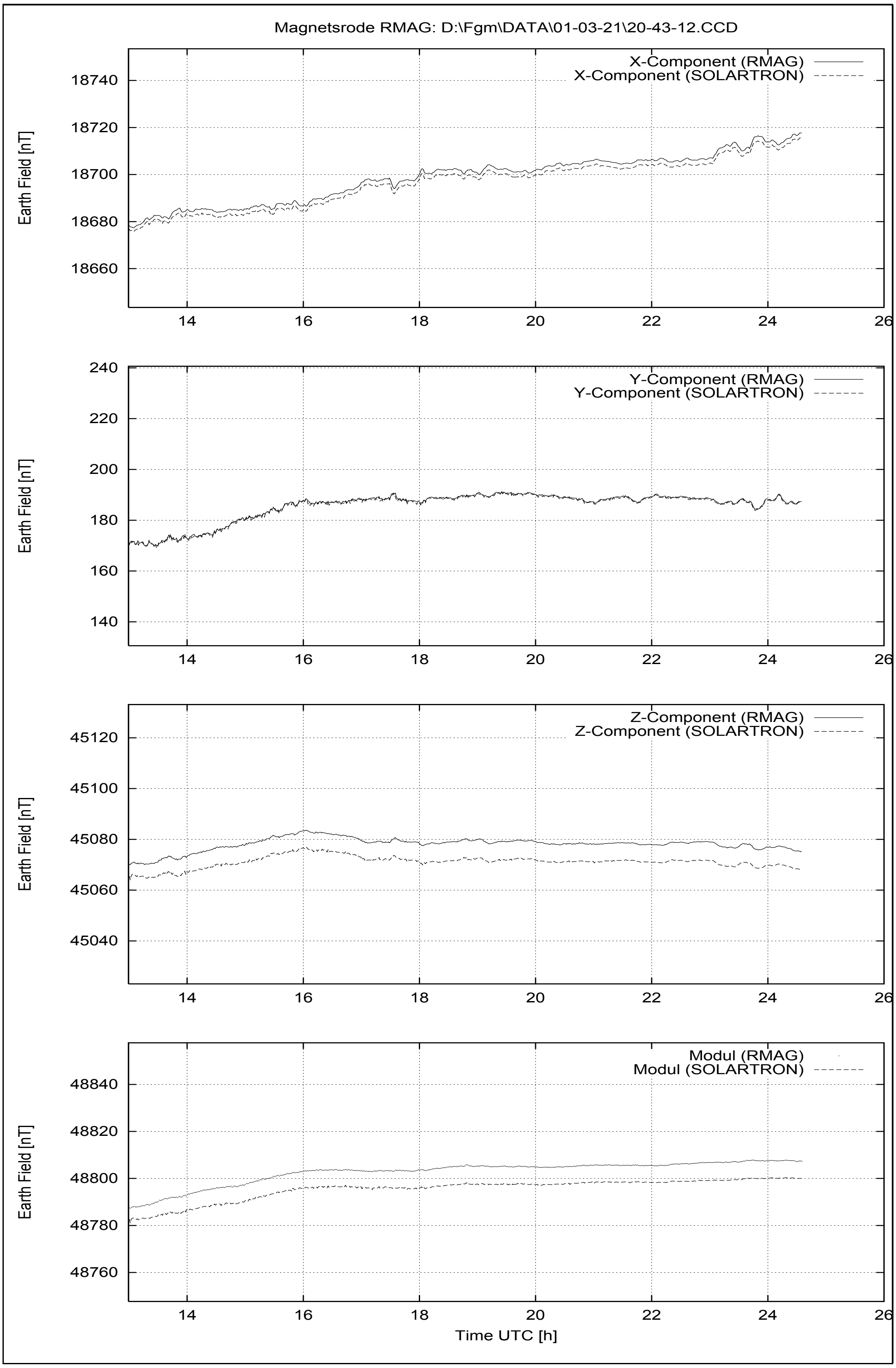


Figure 13: March 21, 2001: Earthfield variations.

# 5 Thursday March 22, 2001

## 5.1 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FM–OB — Continued

The linearity, sensitivity and cross talk measurements from yesterday were continued over night.

### 5.1.1 Data

| Configuration File | CCD File |
|---|---|
| SP15sphe.CFG | 01-03-22\00_35_57.CCD |
| LX15.CFG | 01-03-22\05_08_37.CCD |
| LY15.CFG | 01-03-22\05_39_37.CCD |
| LZ15.CFG | 01-03-22\06_10_38.CCD |
| SP15sphe.CFG | 01-03-22\06_41_38.CCD |

After the data collection the setup was changed for the linearity measurements of the FM–IB sensor.

## 5.2 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FM–IB

The calibration mirror # IB was placed on the FM–IB sensor.
After the optical alignment of the FM–IB sensor (refer to table 1column #2) the linearity, sensitivity and cross talk measurements were initialised

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FM–IB in optical aligned position at CoC<br>FM–OB north of CoC on aluminium support.<br>Refer to picture 232 and picture 233. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | M010322.SEQ |
| Start: | 22.03.01 12:44 |
| End: | 23.03.01 11:04 |

### 5.2.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-03-22\12_44_38.CCD |
| STABTST.cfg | 01-03-22\12_52_04.CCD |
| STABTST.cfg | 01-03-22\13_52_45.CCD |
| STABTST.cfg | 01-03-22\14_53_26.CCD |
| STABTST.cfg | 01-03-22\15_54_07.CCD |
| STABTST.cfg | 01-03-22\16_54_49.CCD |
| STABTST.cfg | 01-03-22\17_55_30.CCD |
| LX15.CFG | 01-03-22\18_56_10.CCD |
| LY15.CFG | 01-03-22\19_27_12.CCD |
| LZ15.CFG | 01-03-22\19_58_13.CCD |
| SP15spir.CFG | 01-03-22\20_29_13.CCD |

## 5.3 Overview Plots: System Performance, Temperatures and Earthfield Variations.

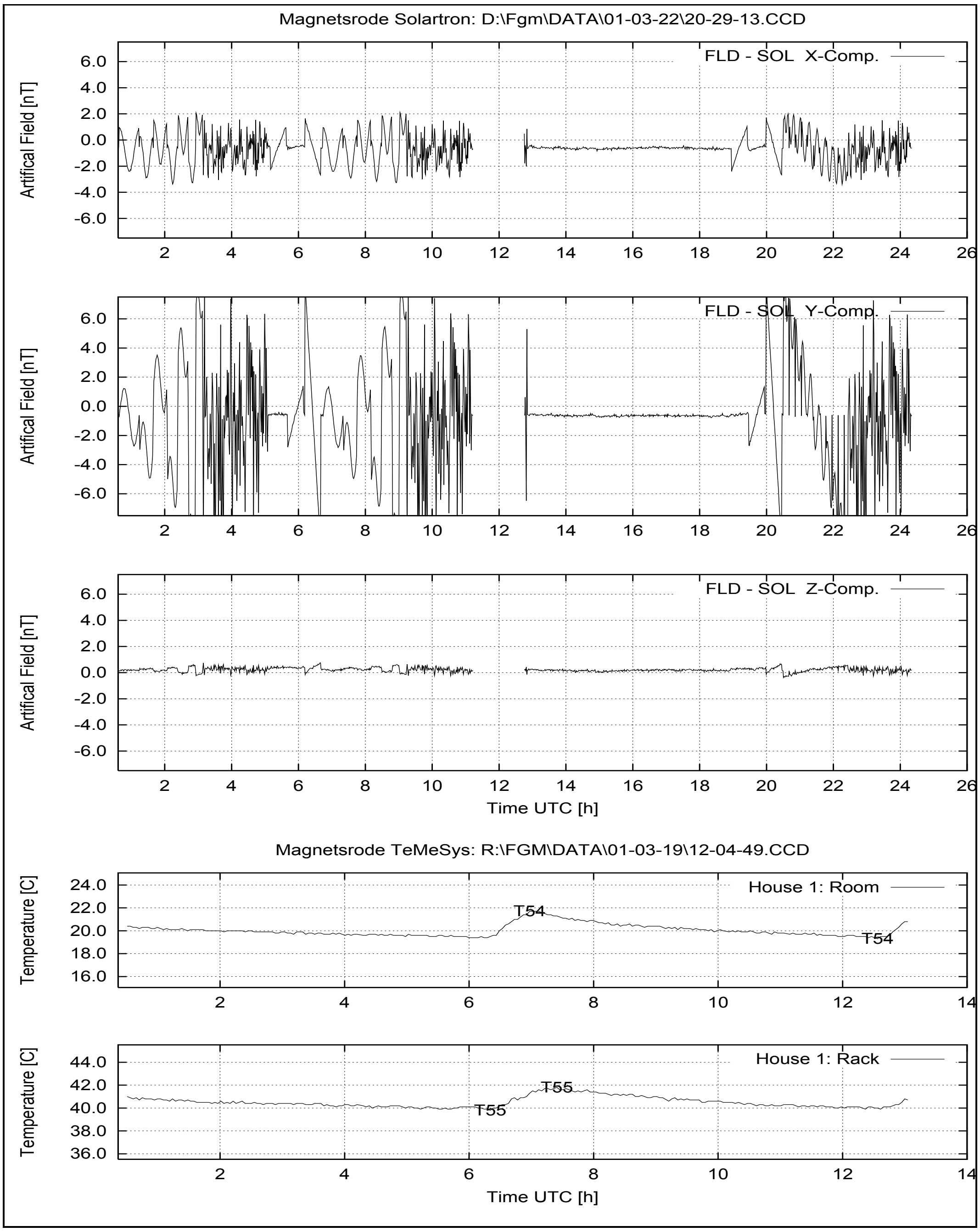


Figure 14: March 22, 2001: System Performance: FLD – SOL; Temperatures at House 1.

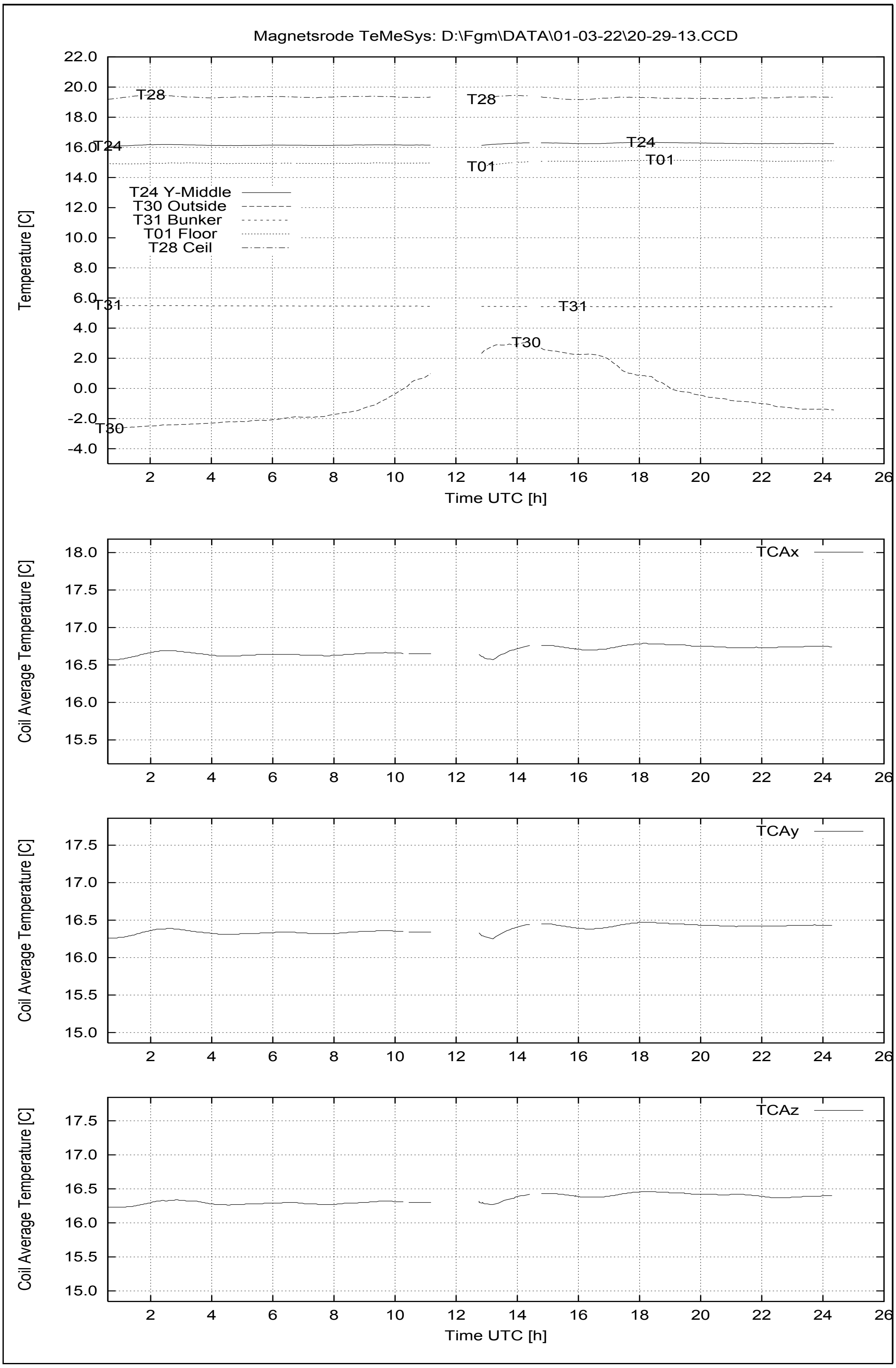


Figure 15: March 22, 2001: Temperatures House 2.

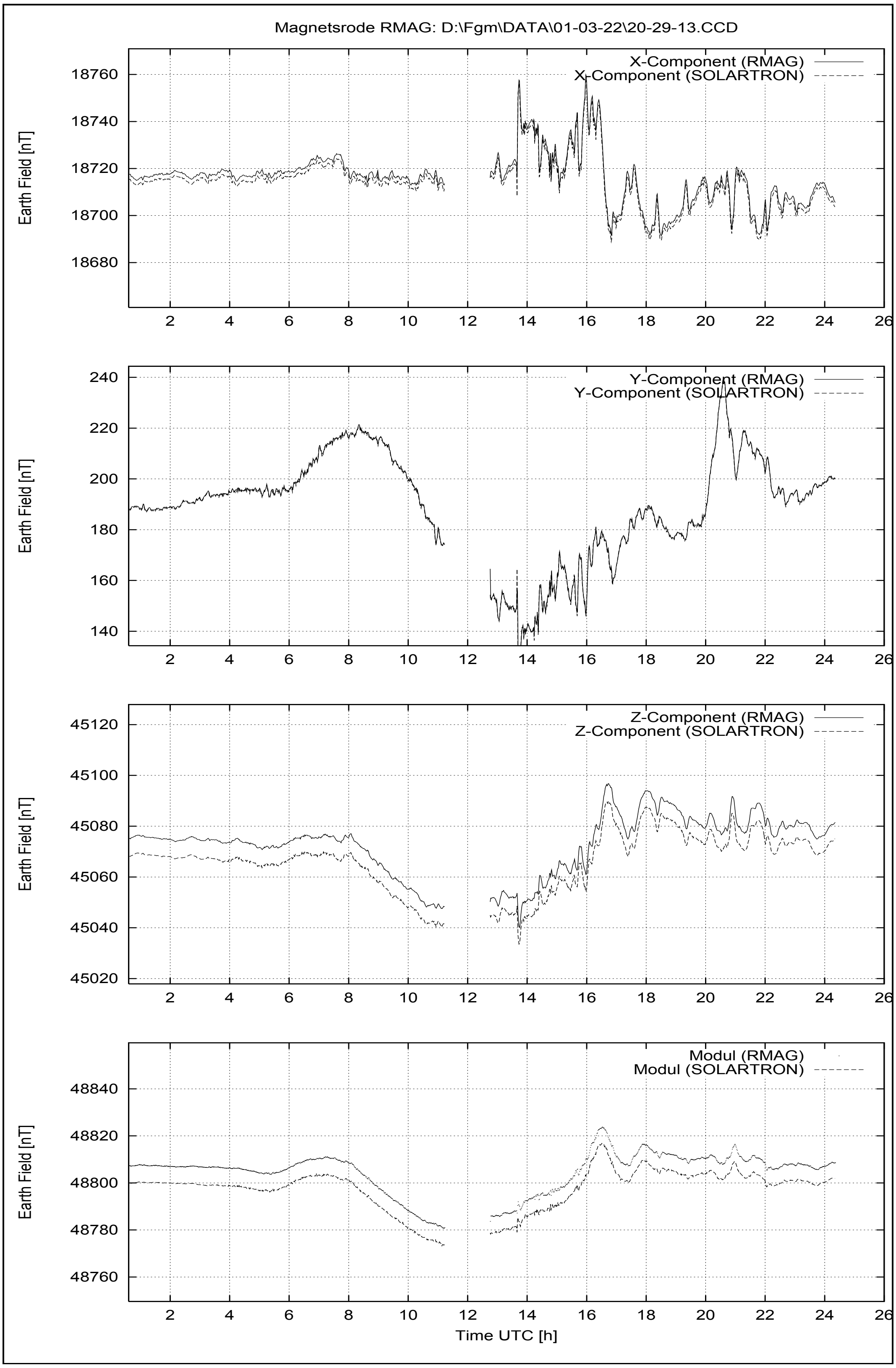


Figure 16: March 22, 2001: Earthfield variations.

# 6 Friday March 23, 2001

## 6.1 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FM–IB — Continued

The overnight measurement sequence was executed properly until noon.

### 6.1.1 Data

| Configuration File | CCD File |
|---|---|
| SP15sphe.CFG | 01-03-23\00_21_58.CCD |
| LX15.CFG | 01-03-23\04_54_38.CCD |
| LY15.CFG | 01-03-23\05_25_39.CCD |
| LZ15.CFG | 01-03-23\05_58_17.CCD |
| SP15sphe.CFG | 01-03-23\06_29_17.CCD |

## 6.2 Setup for the Temperature Calibration

Both sensors, mounted together on their aluminium support, are fixed on the mounting plate of the Thermal Test Box. See figure 115 for details. Also a photographic view (figures 235 and 235) will help.
The FM–OB is on the northern side, FM–IB on the southern side. The temperature sensors of the TeMeSys–B system $T_{56}$ to $T_{63}$ are placed in the box. The positions are given in table 5.

| Sensor | Position |
|---|---|
| $T_{57}$ | under FGM–OB sensor |
| $T_{59}$ | under FGM–IB sensor |
| $T_{56}$ | mounting plate, upper side, western edge, central |
| $T_{58}$ | mounting plate, upper side, south west corner |
| $T_{29}$ | outside thermal box at the northern side of the Coil System |
| $T_{60}$ | ground plate, north middle |
| $T_{61}$ | mounting plate, eastern side, central |
| $T_{62}$ | ground plate, south west |
| $T_{63}$ | ground plate, south east |

Table 3: The TeMeSys–B sensors in the Thermal Test Box.

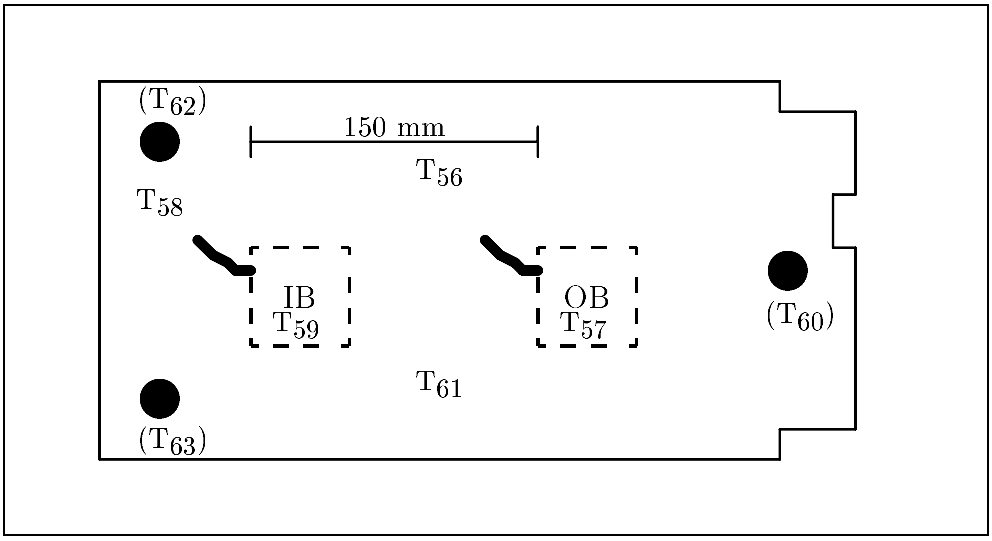


Figure 17: The temperature sensors at the Thermal Test Box mounting plate. The draft shows the top view. Sensors in brackets are mounted near the Thermal Test Box ground plate, not on the mounting plate.

The software TempCtrl is used to control the heating process. This software switches on the electrical heater during the SOLARTRON measurement cycle. This was done, because during the SOLARTRON measurements the data should not be used and so they may be disturbed anyway. For details on the heater and the control software see the related document *MR–IGM–TN0005*. The appendix E gives details on the measurements and shows an overview on the complete cooling and heating cycle.

### 6.3 Temperature Cycle, Linearities, FM Sensors

Before the temperature calibration will be performed some linearity measurements should be executed in the chosen setup for the temperature cycle. The sensors are fixed, but the box is still open for filling in the dry ice after these measurements.

| | |
|---|---|
| Purpose: | Measure the linearity of the FGM sensors. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `T_LIN.SEQ` |
| Start: | 23.03.01 12:21 |
| End: | 23.03.01 13:20 |

### 6.3.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-03-23\12_21_23.CCD |
| TX15.CFG | 01-03-23\12_40_29.CCD |
| TY15.CFG | 01-03-23\12_53_30.CCD |
| TZ15.CFG | 01-03-23\13_06_31.CCD |

## 6.4 Temperature Calibration, Cooling Cycle, FM Sensors

| | |
|---|---|
| Purpose: | Measure the temperature behaviour of the FM sensors. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | TEMP.SEQ |
| Temperature File: | ROSETTA1.CUR |
| Start: | 23.03.01 13:26 |
| End: | 29.03.01 17:00 ESC. |
| Remark: | 10 kg of broken dry ice are filled in during the first measurement.<br>Dry ice fill in completed at about 13:33 |

### 6.4.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| 14000XYZ.CFG | 01-03-23\13_26_01.CCD | Dry Ice filled in |
| ali10.CFG | 01-03-23\13_58_41.CCD | |
| TEMP.CFG | 01-03-23\14_05_56.CCD | |
| TEMP.CFG | 01-03-23\15_13_37.CCD | |
| TEMP.CFG | 01-03-23\16_21_17.CCD | |
| TEMP.CFG | 01-03-23\17_28_58.CCD | |
| TEMP.CFG | 01-03-23\18_36_39.CCD | |
| TEMP.CFG | 01-03-23\19_44_20.CCD | |
| TEMP.CFG | 01-03-23\20_52_00.CCD | |
| TEMP.CFG | 01-03-23\21_59_40.CCD | |
| TEMP.CFG | 01-03-23\23_07_21.CCD | |

## 6.5 Overview Plots: System Performance, Temperatures and Earthfield Variations.

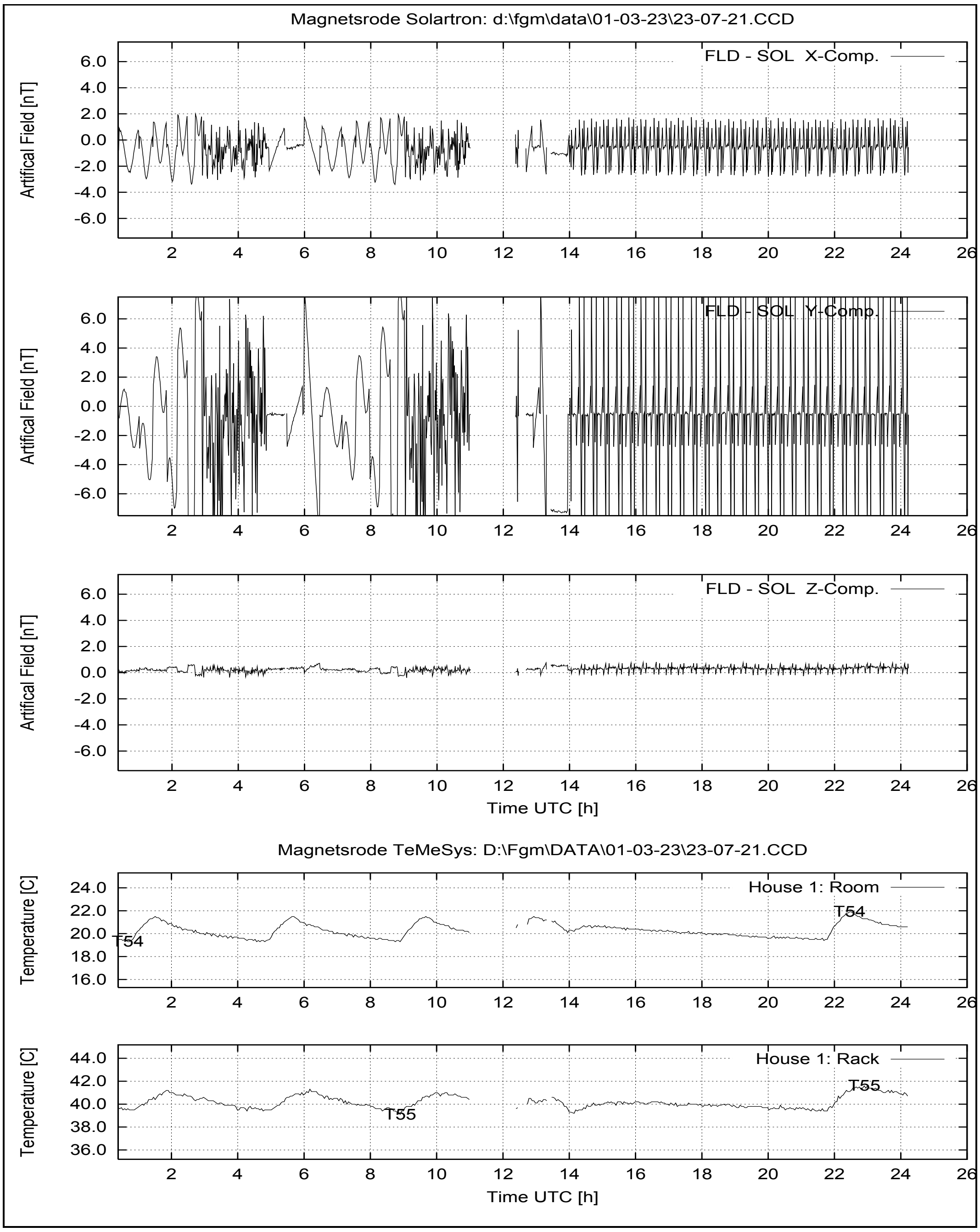


Figure 18: March 23, 2001: System Performance: FLD – SOL; Temperatures at House 1.

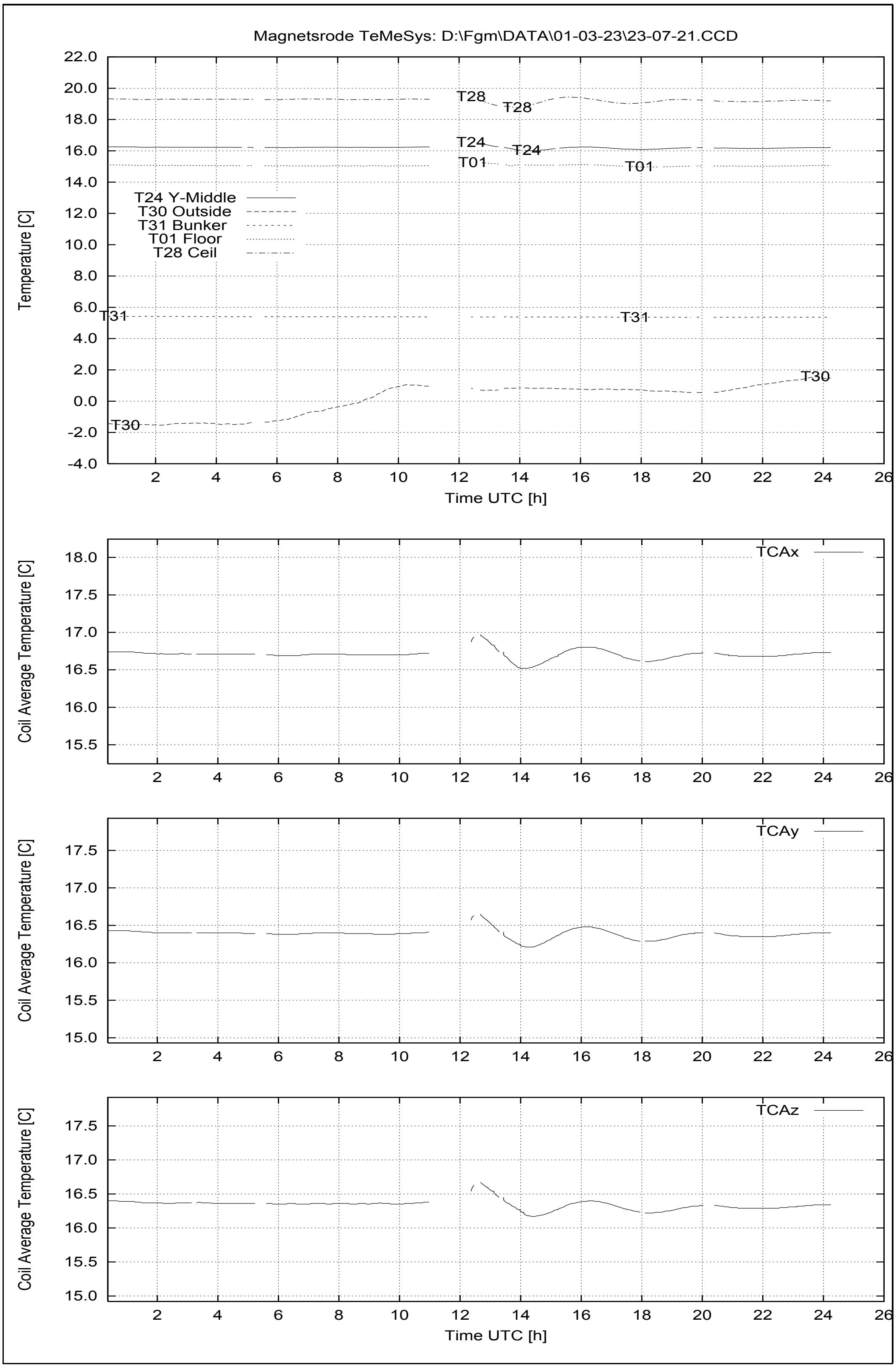


Figure 19: March 23, 2001: Temperatures House 2.

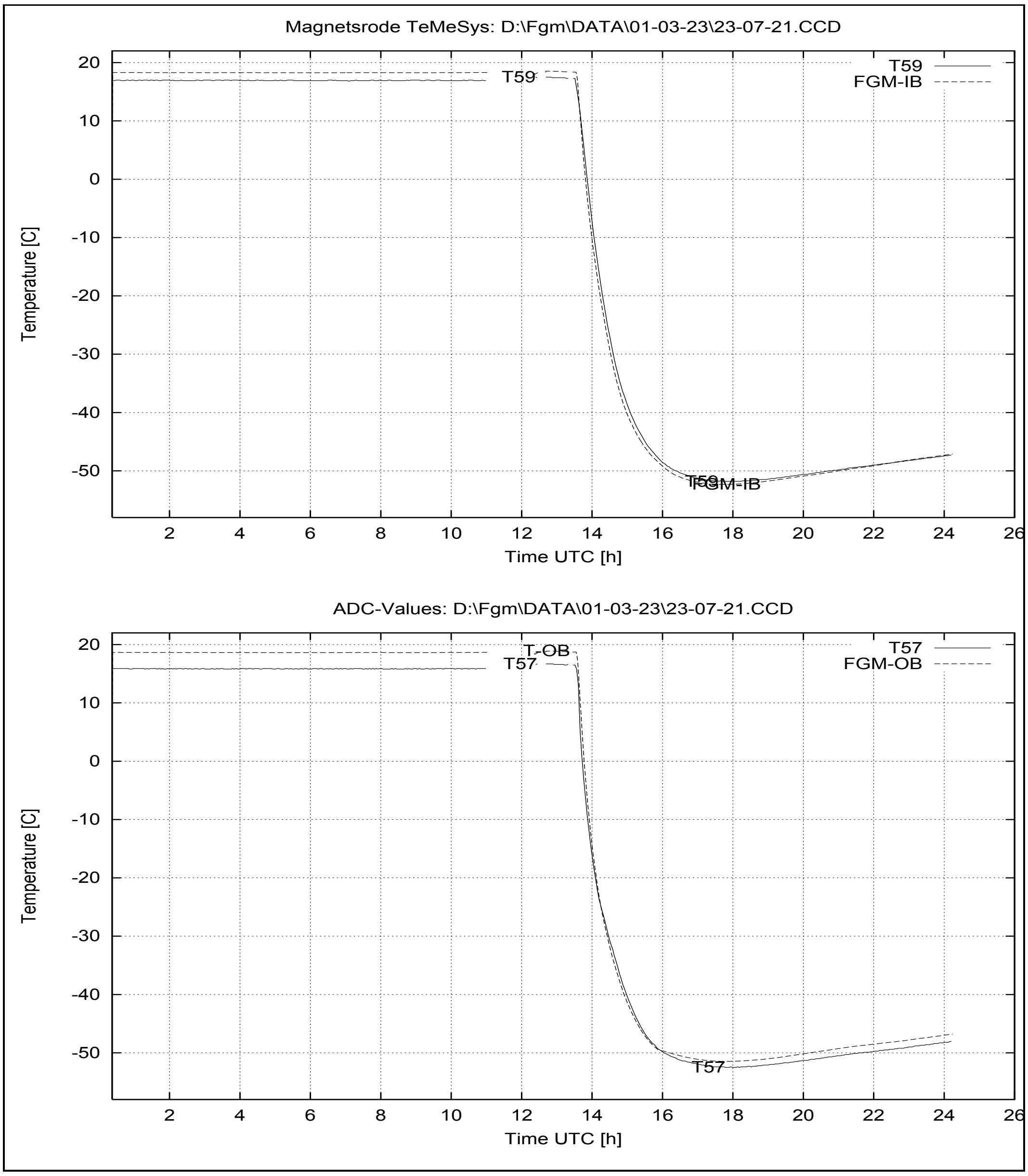


Figure 20: March 23, 2001: Sensor Temperatures at House 2.

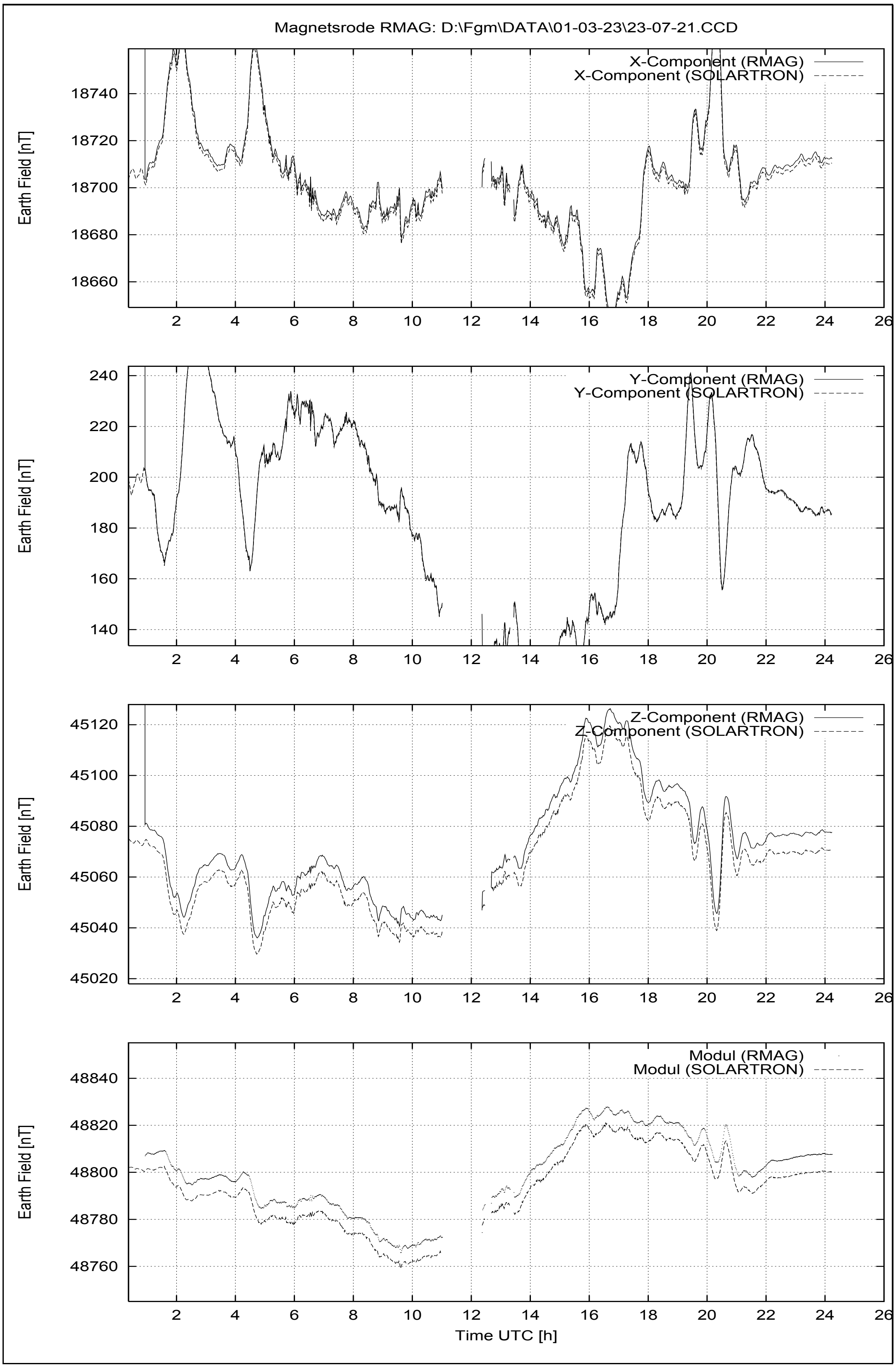


Figure 21: March 23, 2001: Earthfield variations.

# 7 Saturday March 24, 2001

## 7.1 Temperature Calibration, Cooling Cycle, FM Sensors, Continued

The cooling cycle goes on today without any problem. No personnel around today.

### 7.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-03-24\00_15_02.CCD | 01-03-24\12_40_17.CCD | |
| TEMP.CFG | 01-03-24\01_22_43.CCD | 01-03-24\13_47_57.CCD | |
| TEMP.CFG | 01-03-24\02_30_23.CCD | 01-03-24\14_55_38.CCD | |
| TEMP.CFG | 01-03-24\03_38_04.CCD | 01-03-24\16_03_18.CCD | |
| TEMP.CFG | 01-03-24\04_45_45.CCD | 01-03-24\17_10_59.CCD | |
| TEMP.CFG | 01-03-24\05_53_25.CCD | 01-03-24\18_18_38.CCD | |
| TEMP.CFG | 01-03-24\07_01_06.CCD | 01-03-24\19_26_18.CCD | |
| TEMP.CFG | 01-03-24\08_08_46.CCD | 01-03-24\20_33_59.CCD | |
| TEMP.CFG | 01-03-24\09_16_46.CCD | 01-03-24\21_41_40.CCD | |
| TEMP.CFG | 01-03-24\10_24_56.CCD | 01-03-24\22_49_20.CCD | |
| TEMP.CFG | 01-03-24\11_32_36.CCD | 01-03-24\23_57_00.CCD | |

## 7.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

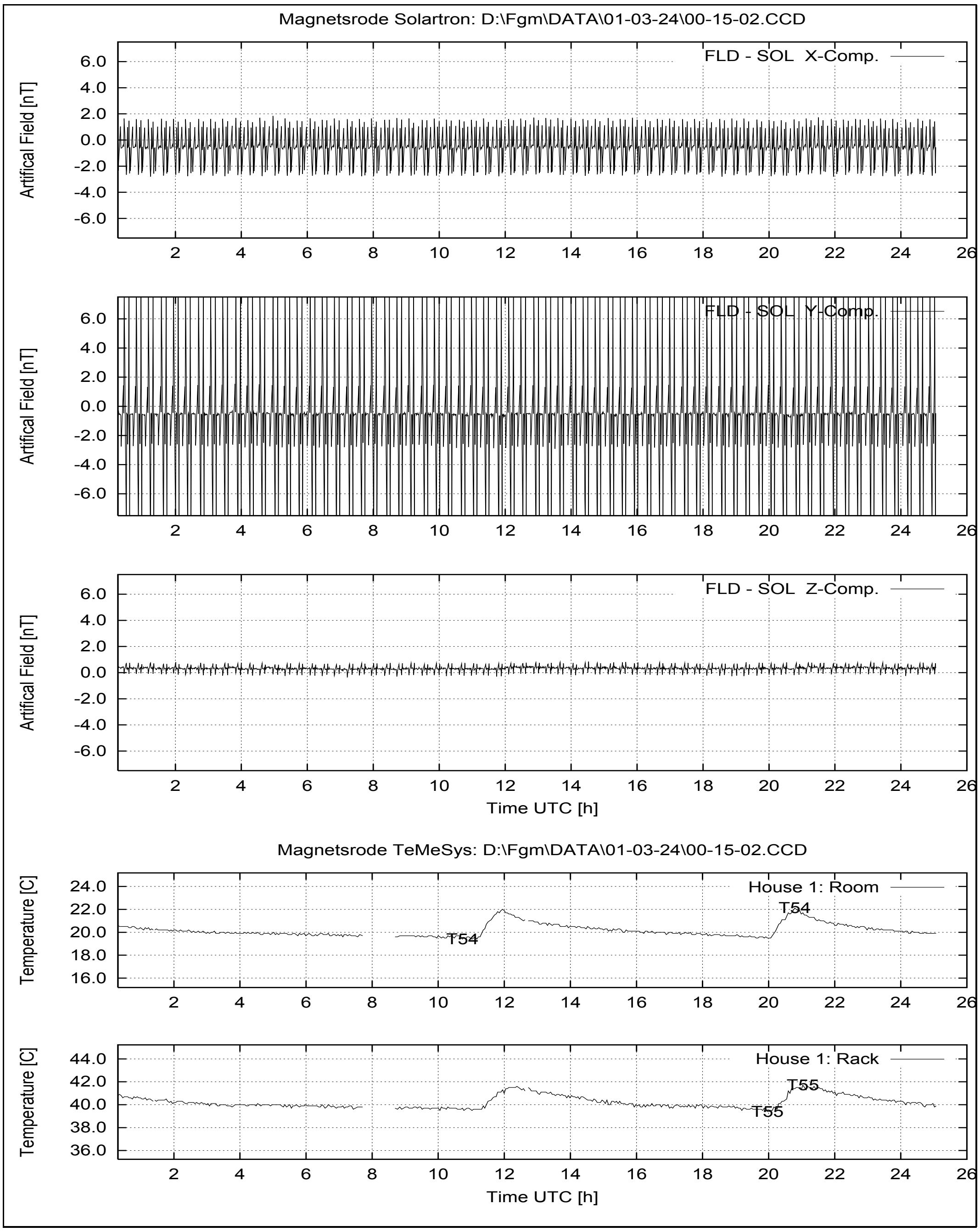


Figure 22: March 24, 2001: System Performance: FLD – SOL; Temperatures at House 1.

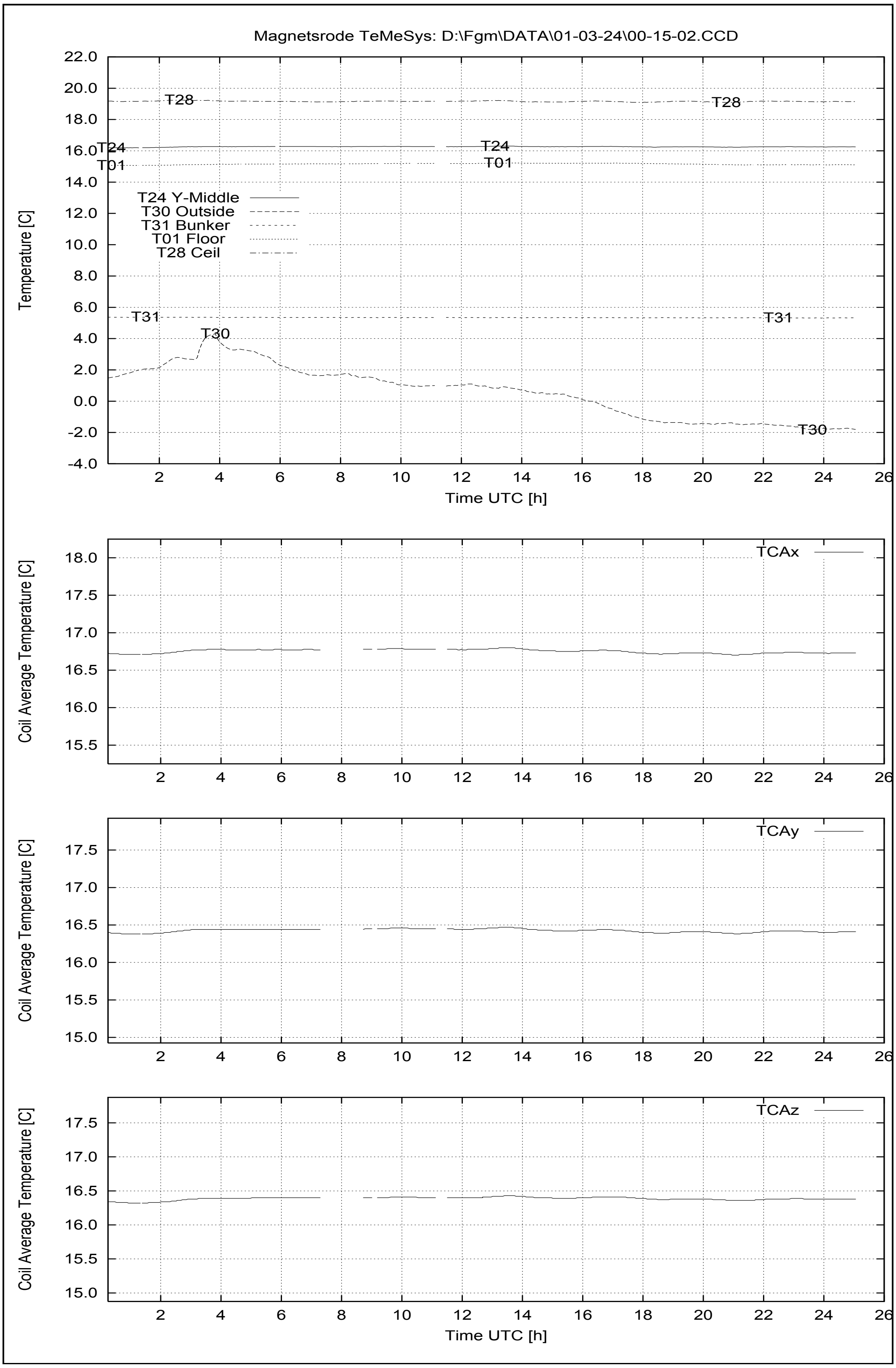


Figure 23: March 24, 2001: Temperatures House 2.

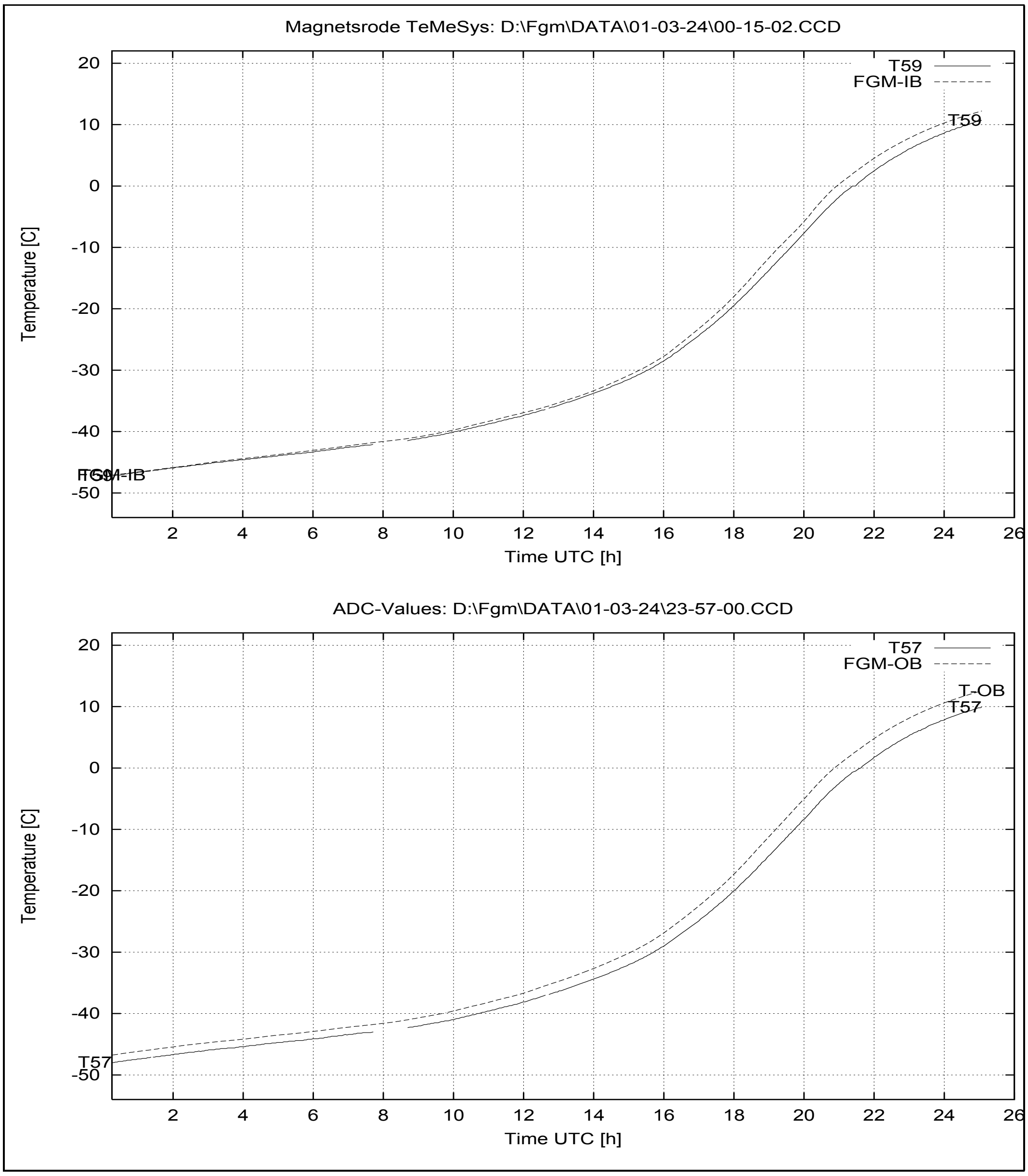


Figure 24: March 23, 2001: Sensor Temperatures at House 2.

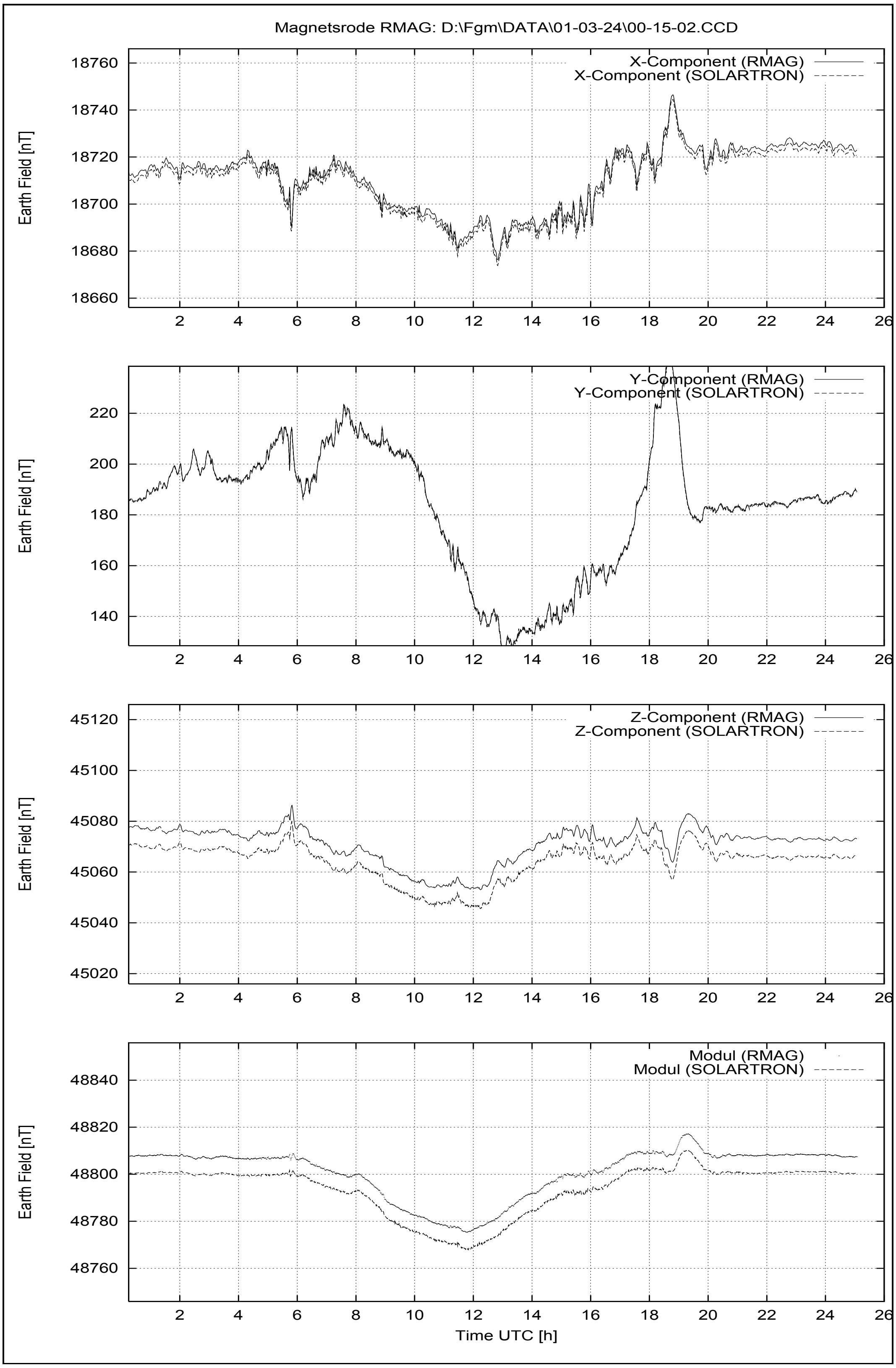


Figure 25: March 24, 2001: Earthfield variations.

# 8 Sunday March 25, 2001

## 8.1 Temperature Calibration, Heating Cycle, FM Sensors

The cooling cycle ended in the early morning hours. At reaching +10° the heating cycle started automatically as TempCtrl was in AUTOMATIC running mode. The processed temperature profil was `ROSSETTA1.CUR`
Due to a loose contact at the heating foils inside the thermobox the system did not heat up although the TempCtrl s/w worked properly. The failure was detected in the afternoon. Therefore the system was stopped at 14:36. After the successful executed contingency recovery procedure (connecting the loose heater power line to the heater foil) the heating cycle ran without any problems. Also TempCtrl was restarted.

File: `T_2.SEQ`

Restart : 14:45:21

### 8.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-03-25\01_04_41.CCD | 01-03-25\12_21_25.CCD | |
| TEMP.CFG | 01-03-25\02_12_20.CCD | 01-03-25\13_29_06.CCD | |
| TEMP.CFG | 01-03-25\03_20_02.CCD | 01-03-25\14_45_21.CCD | |
| TEMP.CFG | 01-03-25\04_27_43.CCD | 01-03-25\15_53_01.CCD | |
| TEMP.CFG | 01-03-25\05_35_23.CCD | 01-03-25\17_00_41.CCD | |
| TEMP.CFG | 01-03-25\06_43_03.CCD | 01-03-25\18_08_22.CCD | |
| TEMP.CFG | 01-03-25\07_50_44.CCD | 01-03-25\19_16_02.CCD | |
| TEMP.CFG | 01-03-25\08_58_24.CCD | 01-03-25\20_23_42.CCD | |
| TEMP.CFG | 01-03-25\10_06_05.CCD | 01-03-25\21_31_23.CCD | |
| TEMP.CFG | 01-03-25\11_13_44.CCD | 01-03-25\22_39_04.CCD | |
| TEMP.CFG | | 01-03-25\23_46_45.CCD | |

## 8.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

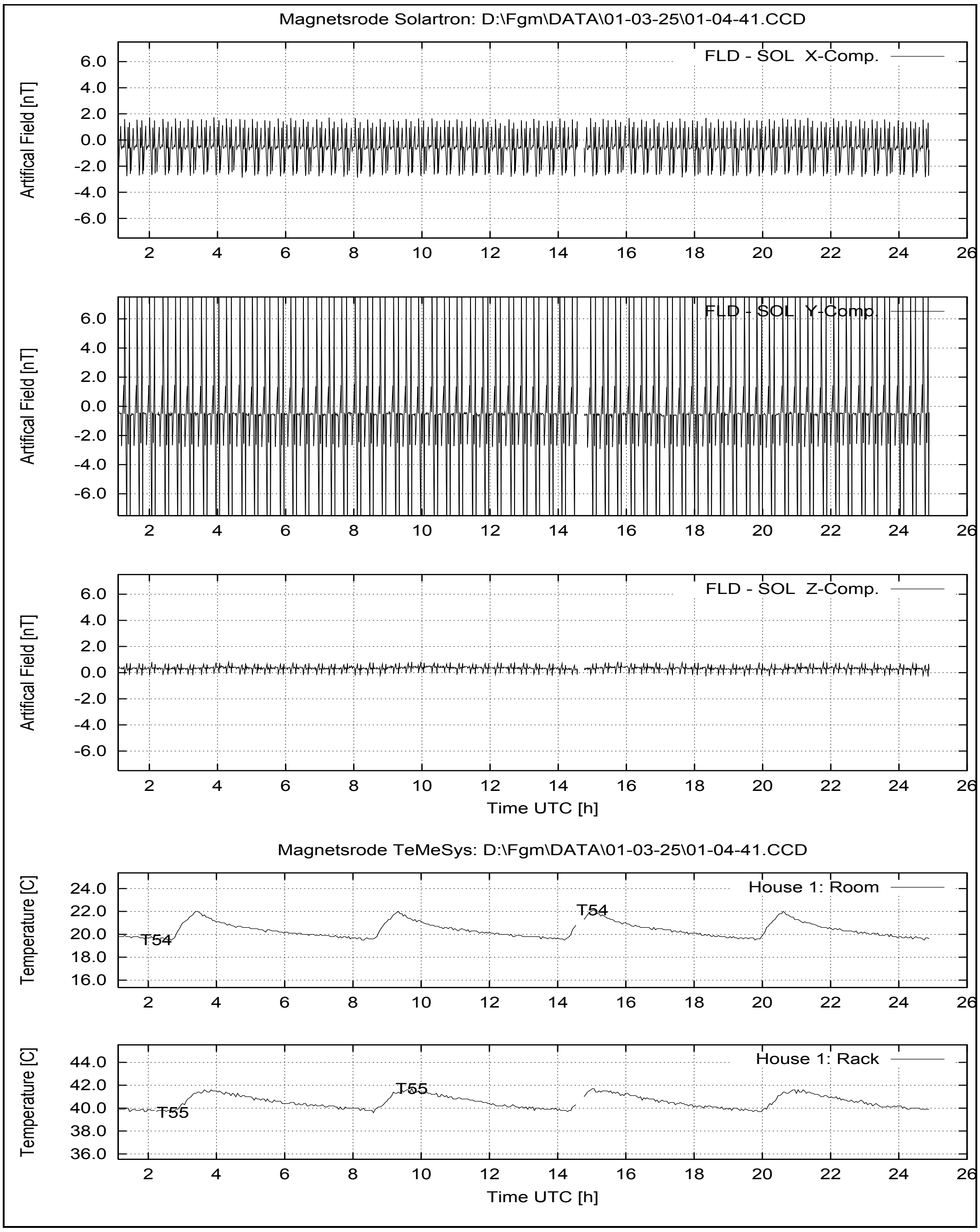


Figure 26: March 25, 2001: System Performance: FLD – SOL; Temperatures at House 1.

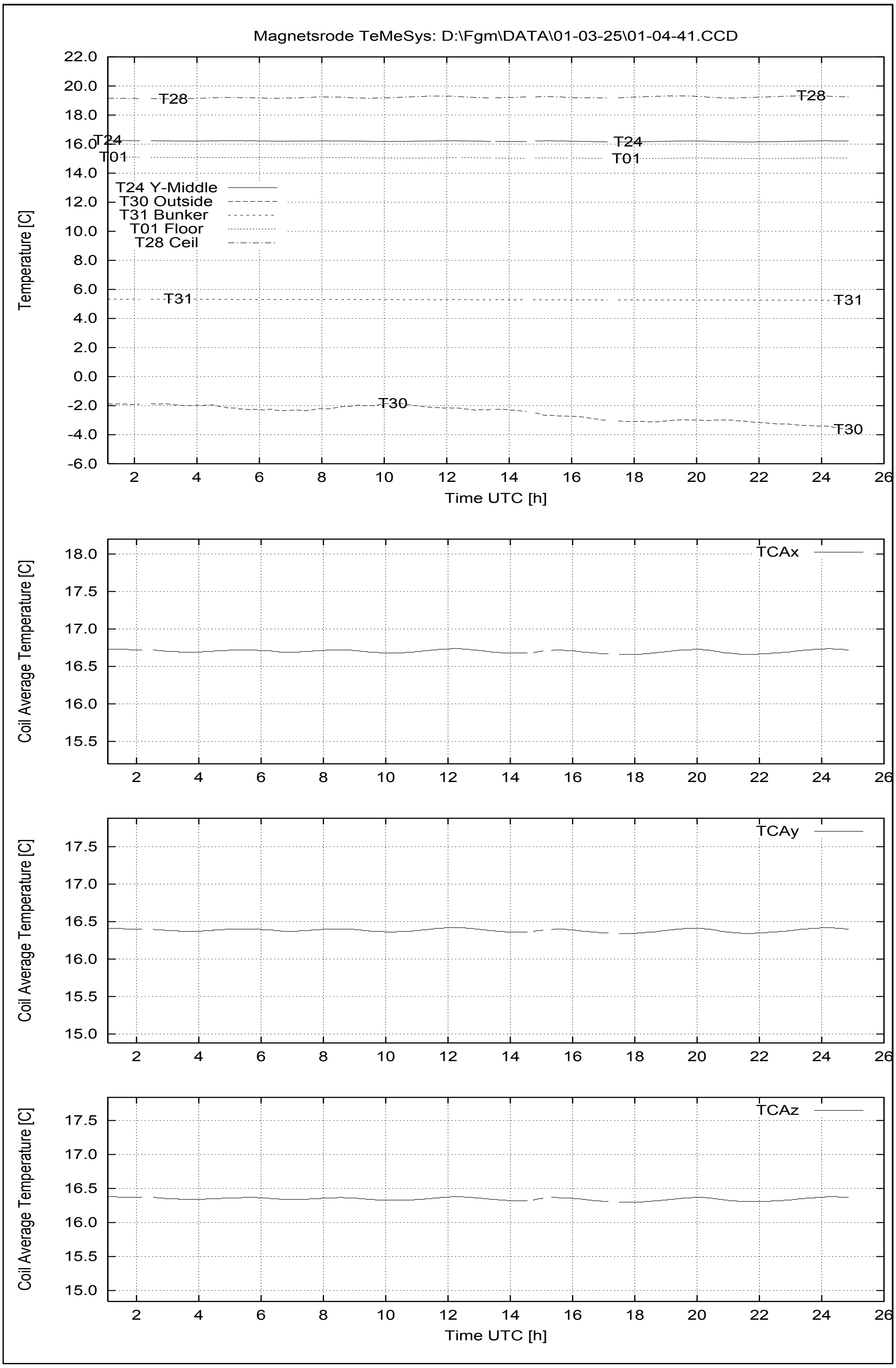


Figure 27: March 25, 2001: Temperatures House 2.

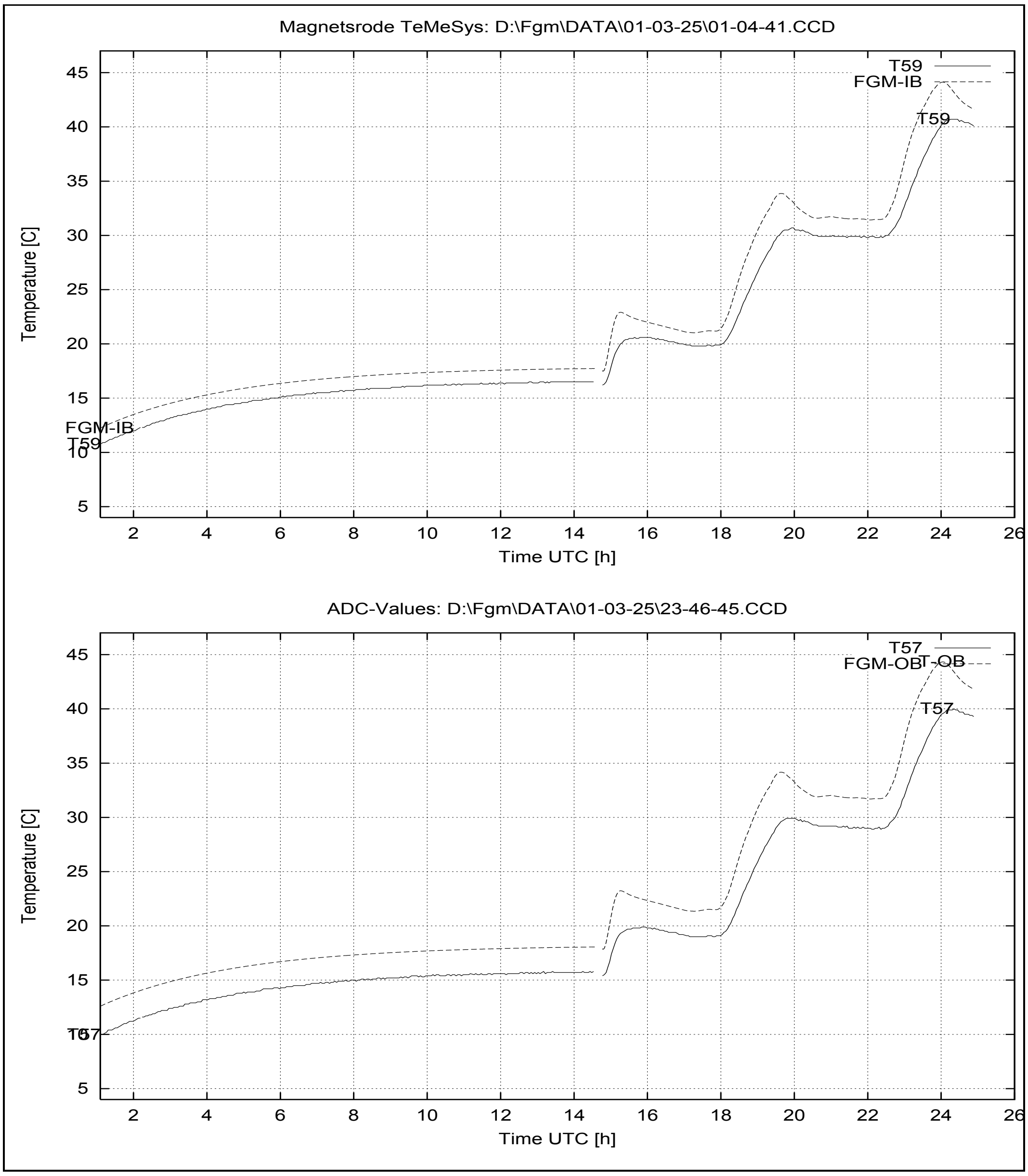


Figure 28: March 25, 2001: Sensor Temperatures at House 2.

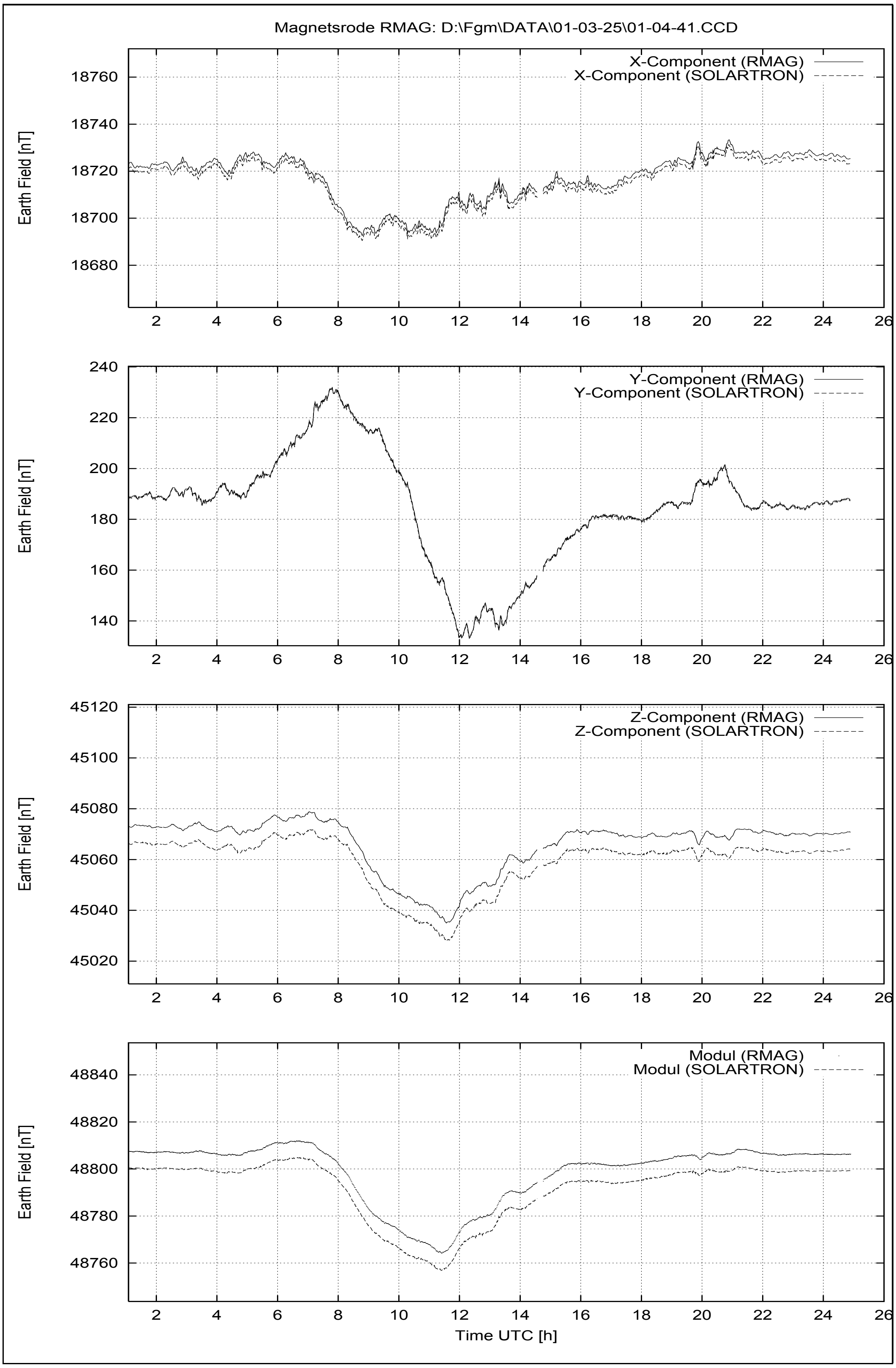


Figure 29: March 25, 2001: Earthfield variations.

# 9 Monday March 26, 2001

## 9.1 Temperature Calibration, Heating Cycle, FM Sensors, Continued

The heating cycle did go on without any problems. No personnel around on this day.

### 9.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-03-26\00_54_26.CCD | 01-03-26\13_19_10.CCD | |
| TEMP.CFG | 01-03-26\02_02_06.CCD | 01-03-26\14_26_51.CCD | |
| TEMP.CFG | 01-03-26\03_09_46.CCD | 01-03-26\15_34_32.CCD | |
| TEMP.CFG | 01-03-26\04_17_27.CCD | 01-03-26\16_42_12.CCD | |
| TEMP.CFG | 01-03-26\05_25_28.CCD | 01-03-26\17_49_53.CCD | |
| TEMP.CFG | 01-03-26\06_33_08.CCD | 01-03-26\18_57_34.CCD | |
| TEMP.CFG | 01-03-26\07_40_49.CCD | 01-03-26\20_05_15.CCD | |
| TEMP.CFG | 01-03-26\08_48_29.CCD | 01-03-26\21_12_54.CCD | |
| TEMP.CFG | 01-03-26\09_56_08.CCD | 01-03-26\22_20_35.CCD | |
| TEMP.CFG | 01-03-26\11_03_49.CCD | 01-03-26\23_28_15.CCD | |
| TEMP.CFG | 01-03-26\12_11_29.CCD | | |

## 9.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

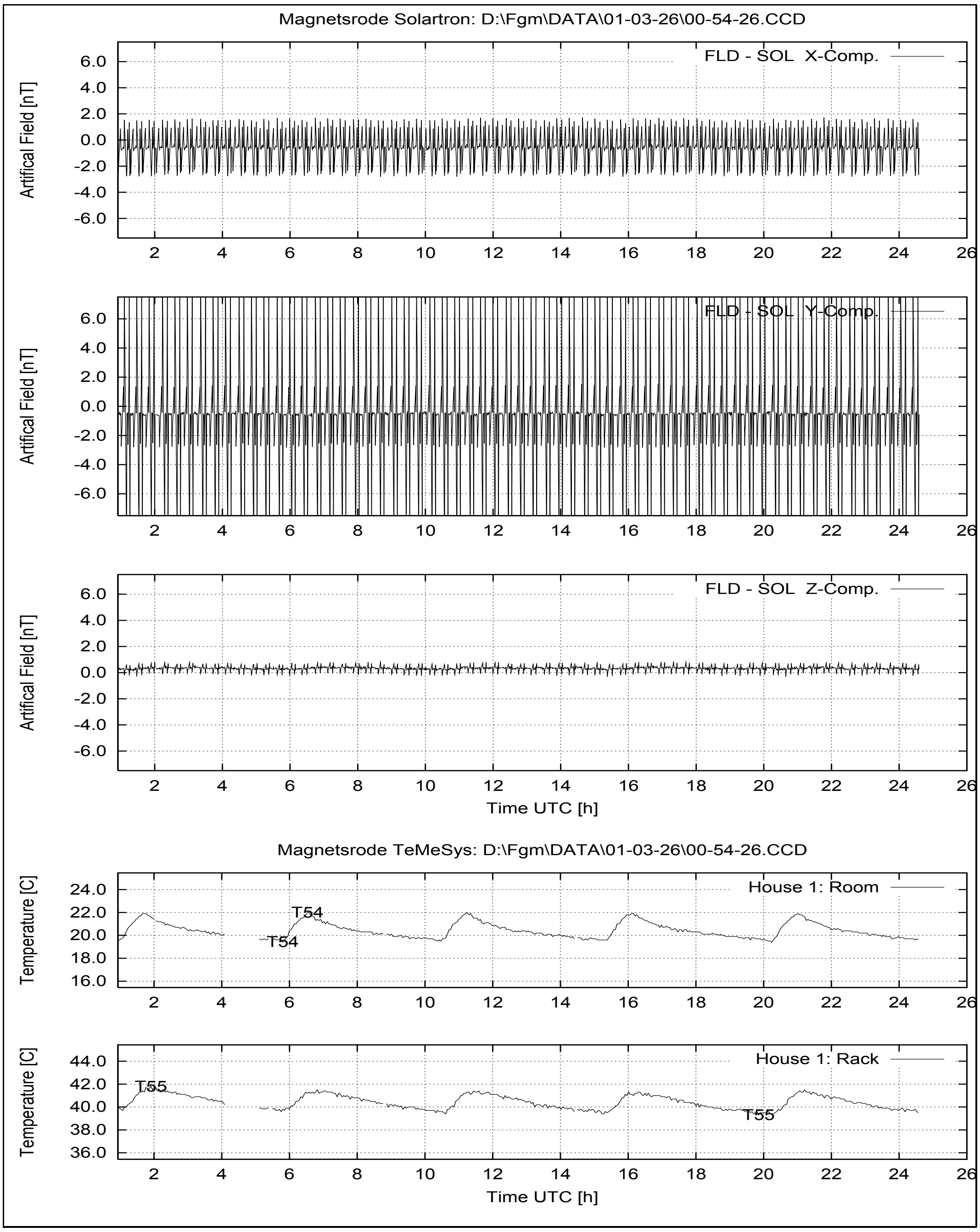


Figure 30: March 26, 2001: System Performance: FLD – SOL; Temperatures at House 1.

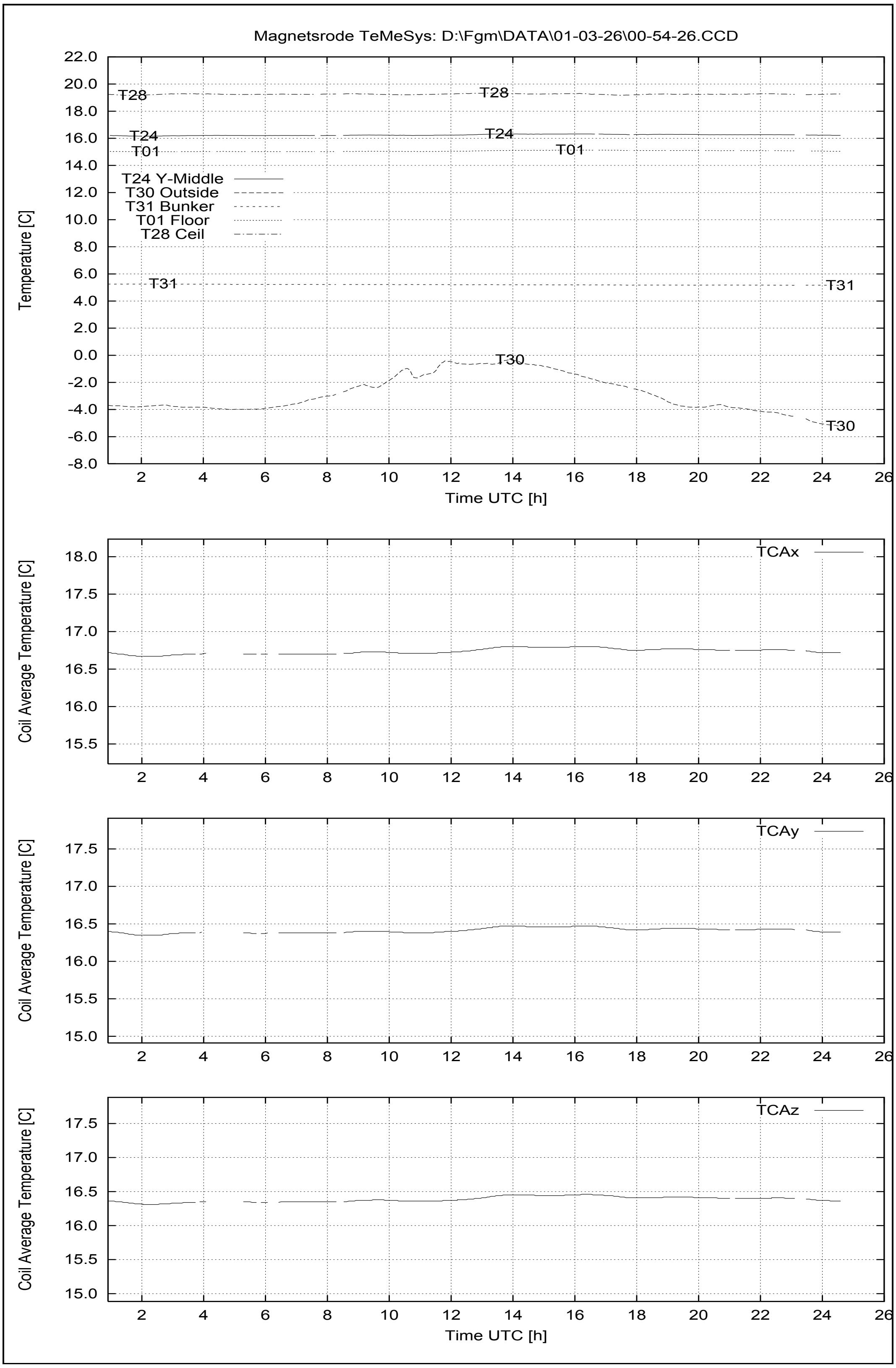


Figure 31: March 26, 2001: Temperatures House 2.

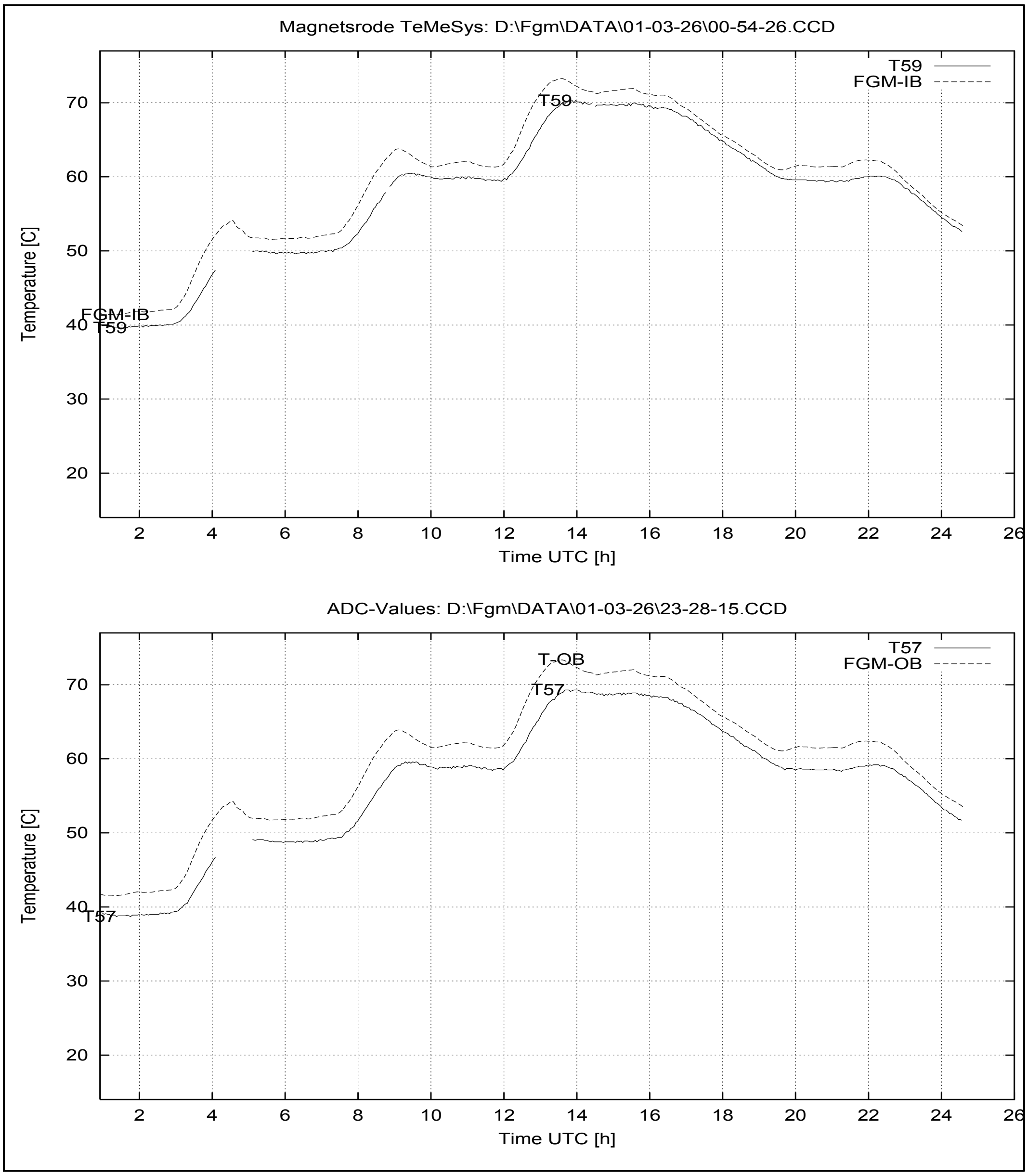


Figure 32: March 26, 2001: Sensor Temperatures at House 2.

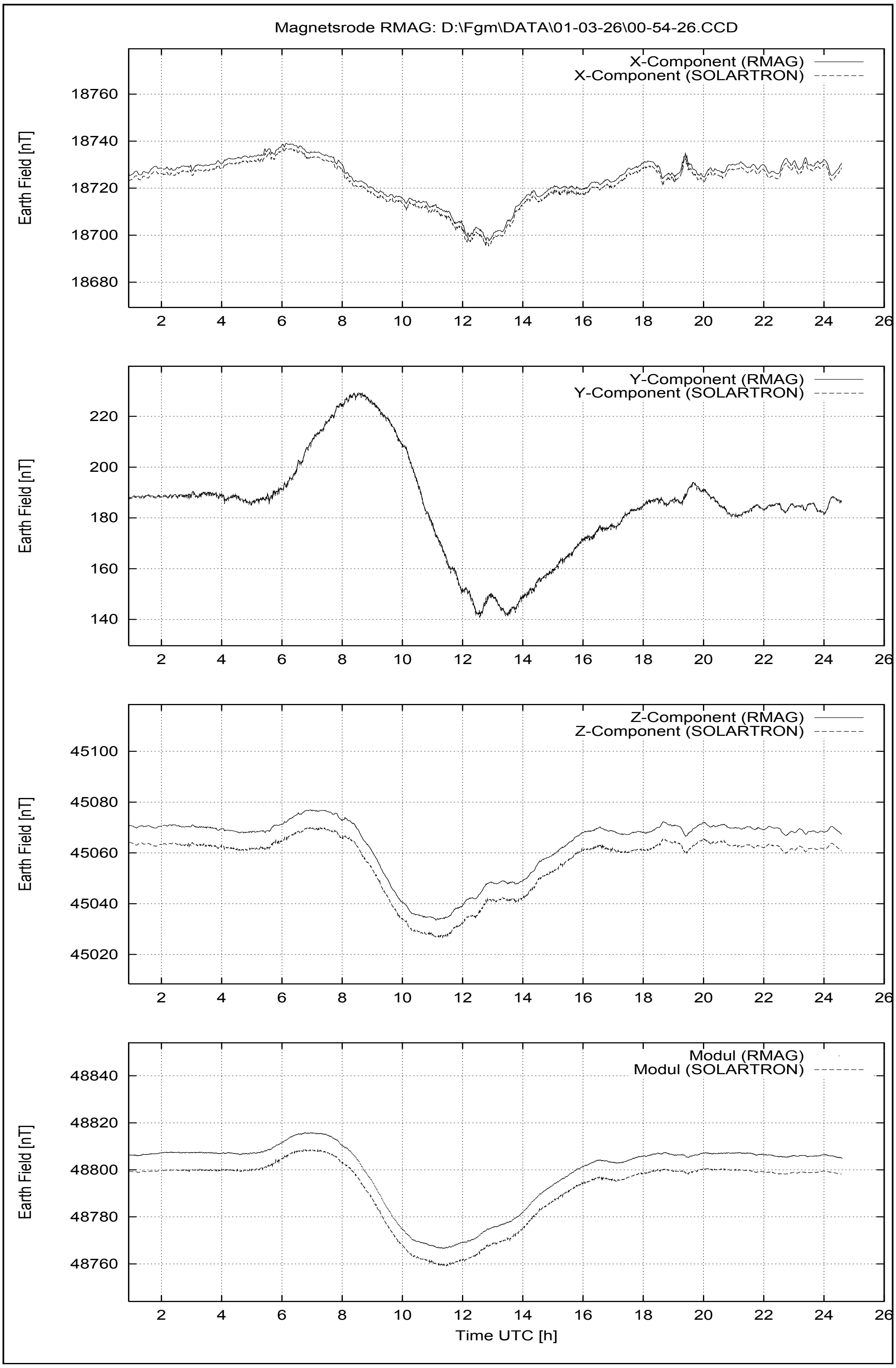


Figure 33: March 26, 2001: Earthfield variations.

# 10 Tuesday March 27, 2001

## 10.1 Temperature Calibration, Heating Cycle, FM Sensors, Continued

The heating cycle did go on without any problems. No personnel around on this day.

### 10.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-03-27\00_36_28.CCD | 01-03-27\13_00_55.CCD | |
| TEMP.CFG | 01-03-27\01_44_09.CCD | 01-03-27\14_08_35.CCD | |
| TEMP.CFG | 01-03-27\02_51_49.CCD | 01-03-27\15_16_15.CCD | |
| TEMP.CFG | 01-03-27\03_59_29.CCD | 01-03-27\16_23_55.CCD | |
| TEMP.CFG | 01-03-27\05_07_10.CCD | 01-03-27\17_31_36.CCD | |
| TEMP.CFG | 01-03-27\06_14_51.CCD | 01-03-27\18_39_17.CCD | |
| TEMP.CFG | 01-03-27\07_22_32.CCD | 01-03-27\19_46_57.CCD | |
| TEMP.CFG | 01-03-27\08_30_12.CCD | 01-03-27\20_54_36.CCD | |
| TEMP.CFG | 01-03-27\09_37_52.CCD | 01-03-27\22_02_17.CCD | |
| TEMP.CFG | 01-03-27\10_45_33.CCD | 01-03-27\23_09_57.CCD | |
| TEMP.CFG | 01-03-27\11_53_14.CCD | | |

## 10.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

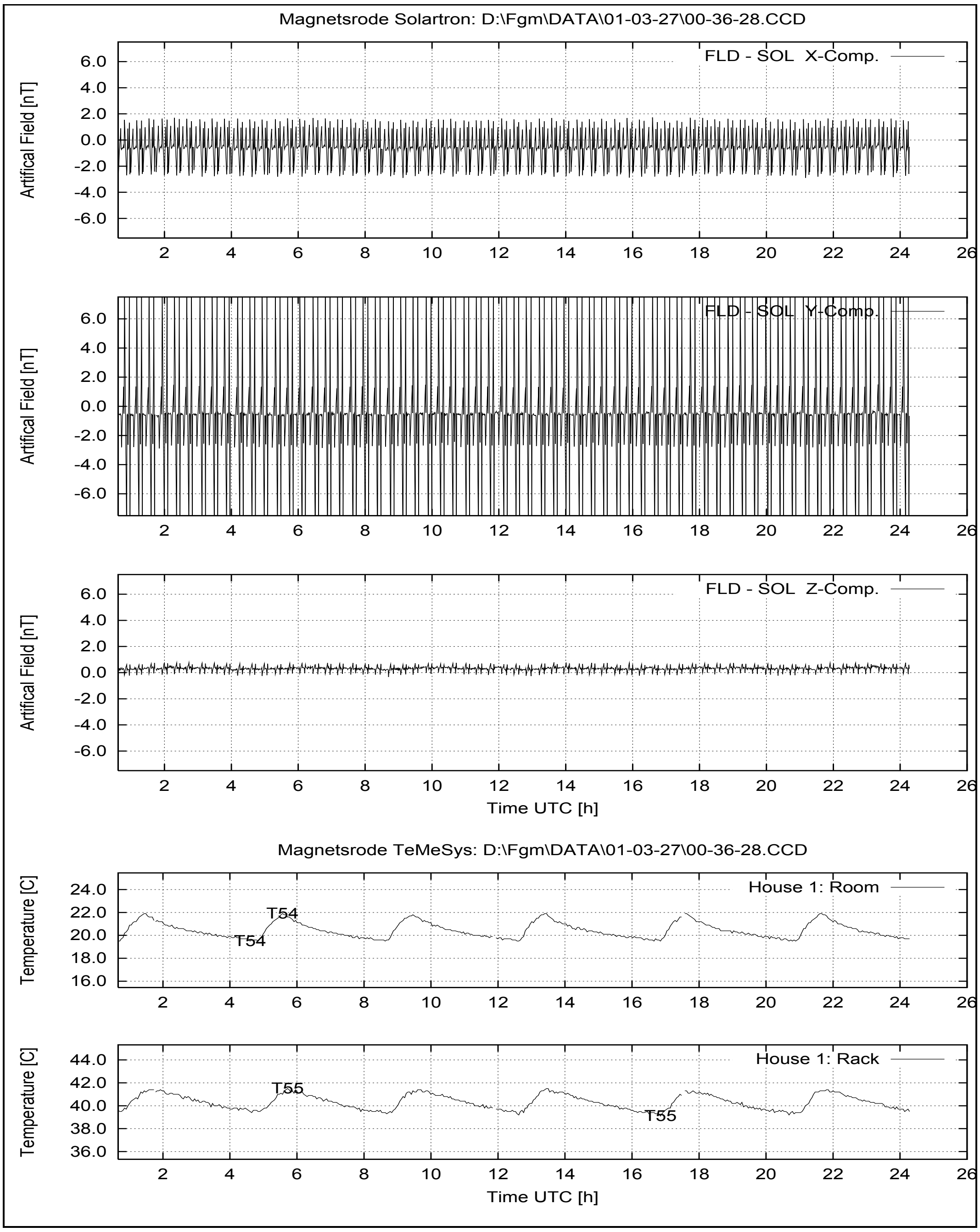


Figure 34: March 27, 2001: System Performance: FLD – SOL; Temperatures at House 1.

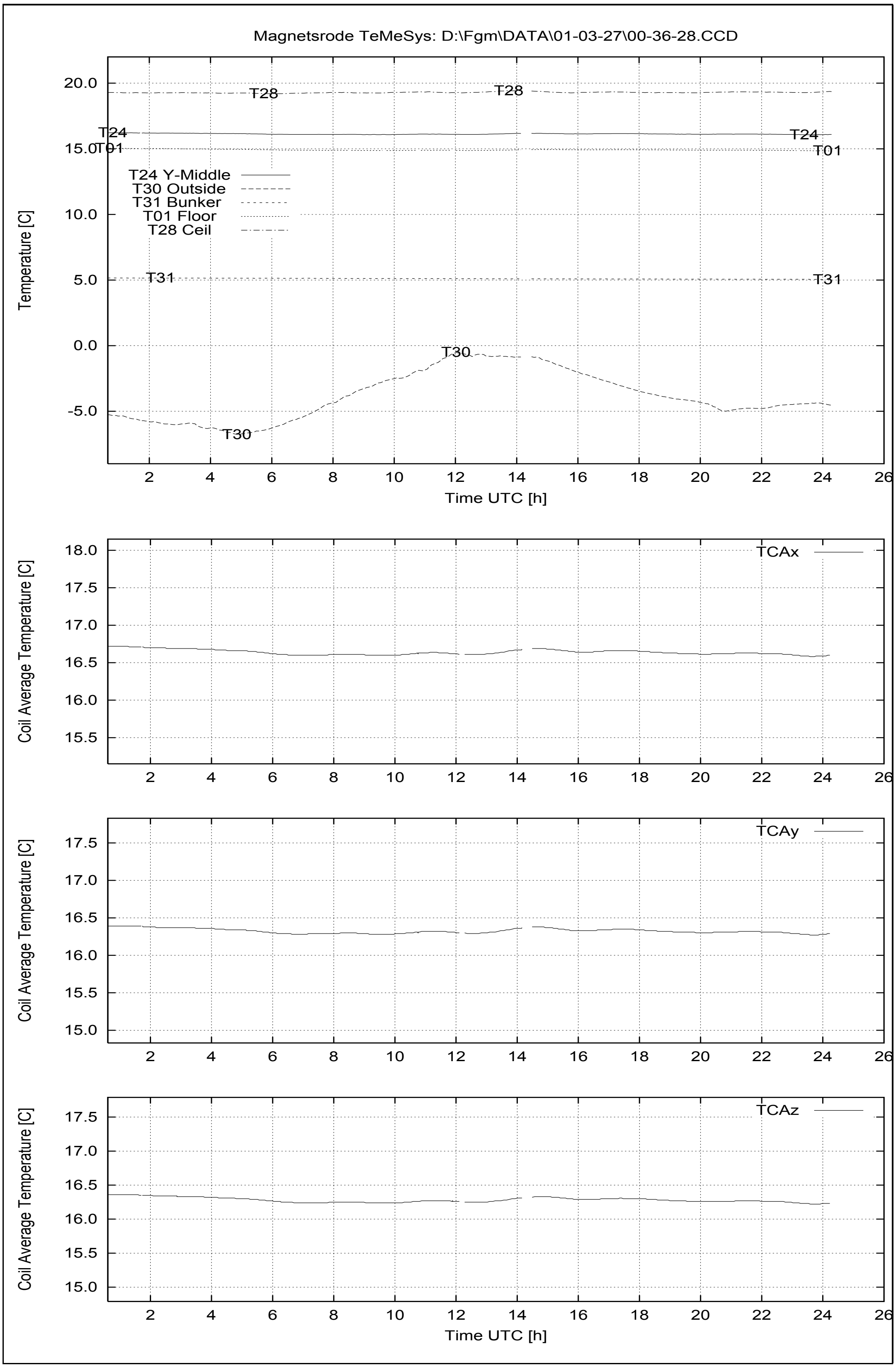


Figure 35: March 27, 2001: Temperatures House 2.

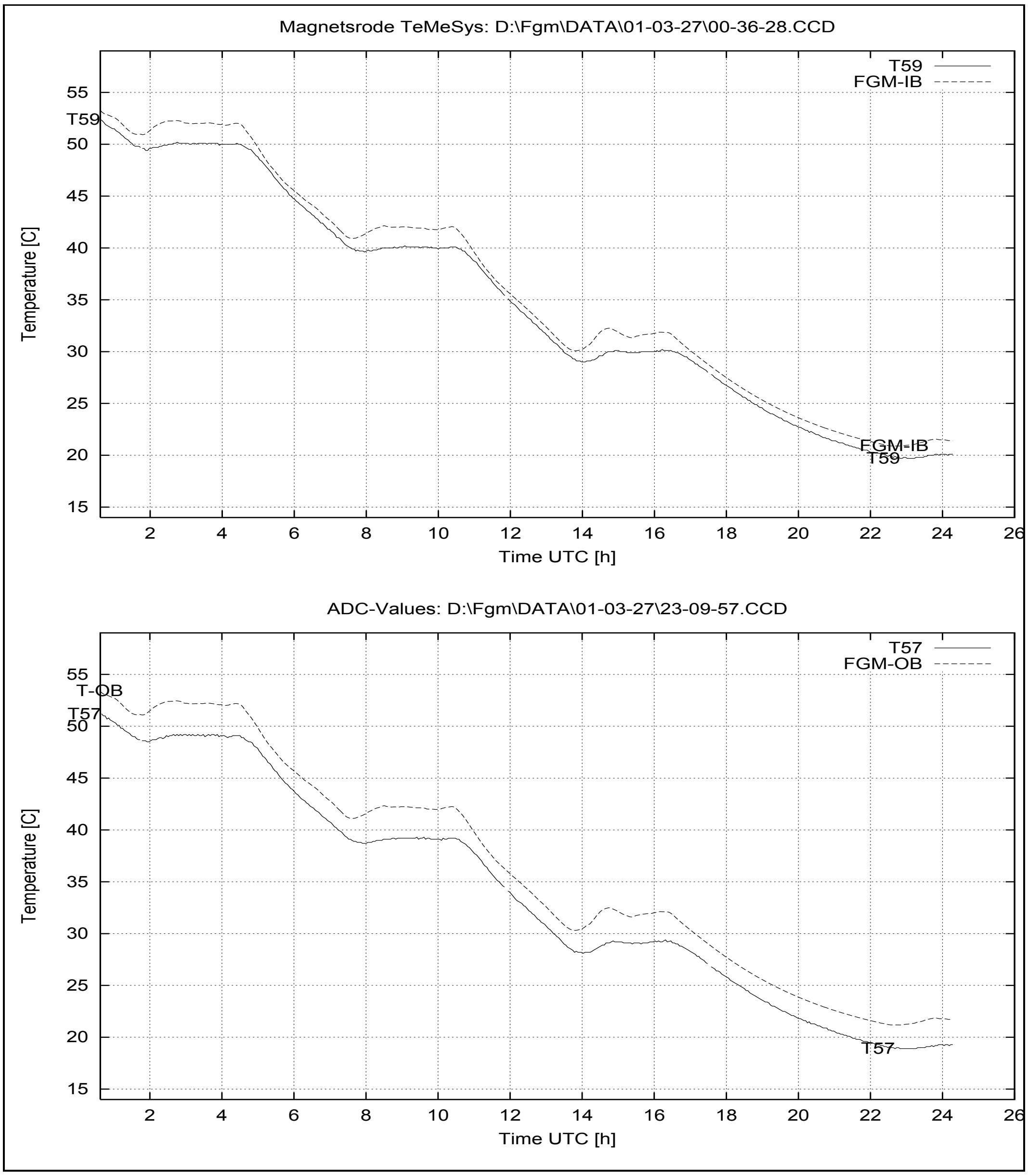


Figure 36: March 27, 2001: Sensor Temperatures at House 2.

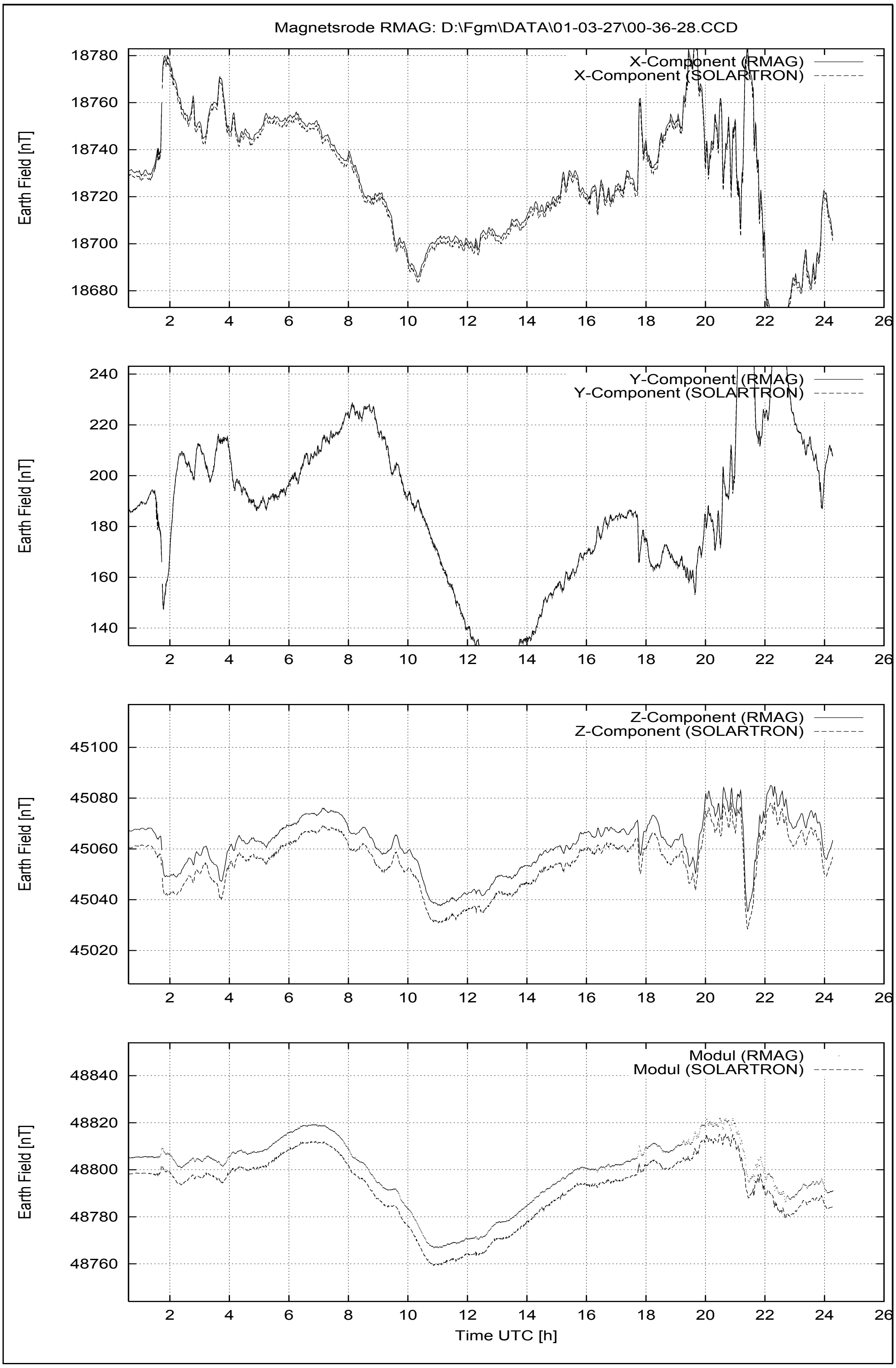


Figure 37: March 27, 2001: Earthfield variations.

# 11 Wednesday March 28, 2001

## 11.1 Temperature Calibration, Heating Cycle, FM Sensors, Continued

The heating cycle has been finished in the morning hours. The measurements have been stopped with ESC on the MRode controller.

Afterwards the linearity measurements after the T-Cycle have been performed.

### 11.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-03-28\00_17_38.CCD | 01-03-28\04_48_44.CCD | |
| TEMP.CFG | 01-03-28\01_25_17.CCD | 01-03-28\05_56_26.CCD | |
| TEMP.CFG | 01-03-28\02_32_59.CCD | 01-03-28\07_04_05.CCD | |
| TEMP.CFG | 01-03-28\03_40_40.CCD | 01-03-28\08_11_46.CCD | |

## 11.2 Temperature Cycle, Linearities, FM Sensors

After the temperature calibration has finished some linearity measurements should be executed in the chosen setup of the temperature cycle. The sensors are still fixed and the box has not been touched.

| | |
|---|---|
| Purpose: | Measure the linearity of the FGM sensors. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | T_LIN.SEQ |
| Start: | 28.03.01 08:56 |
| End: | 28.03.01 09:45 |

### 11.2.1 Data

| Configuration File | CCD File |
|---|---|
| ali10.CFG | 01-03-28\08_56_45.CCD |
| TX15.CFG | 01-03-28\09_03_55.CCD |
| TY15.CFG | 01-03-28\09_16_55.CCD |
| TZ15.CFG | 01-03-28\09_29_55.CCD |

### 11.3 Earth Field Variation Check. DPU: FM, Sensors: FM–IB & FM–OB

The check is designed to investigate the regular registration of the two FGM sensors. The sensors are placed and fixed on the aluminium support inside the thermal test box (They have not been touched since closing the box after filling in the dry ice on Friday, 23rd.The distance between them is 15 cm.

| | |
|---|---|
| Purpose: | Earth field variation check. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP; |
| File: | `VAR_SEQ.CFG` |
| Start: | 28.03.01 18:21 |
| End: | 29.03.01 15:17 ESC |

#### 11.3.1 Data

| Configuration File | CCD File | CCD File | Remarks |
|---|---|---|---|
| ali10.CFG | 01-03-28\09_51_44.CCD | | |
| VAR.CFG | 01-03-28\09_58_54.CCD | 01-03-28\17_03_42.CCD | |
| VAR.CFG | 01-03-28\10_59_36.CCD | 01-03-28\18_04_22.CCD | |
| VAR.CFG | 01-03-28\12_00_18.CCD | 01-03-28\19_05_03.CCD | |
| VAR.CFG | 01-03-28\13_00_59.CCD | 01-03-28\20_05_44.CCD | |
| VAR.CFG | 01-03-28\14_01_40.CCD | 01-03-28\21_06_24.CCD | |
| VAR.CFG | 01-03-28\15_02_20.CCD | 01-03-28\22_07_05.CCD | |
| VAR.CFG | 01-03-28\16_03_01.CCD | 01-03-28\23_07_46.CCD | |

## 11.4 Overview Plots: System Performance, Temperatures and Earthfield Variations.

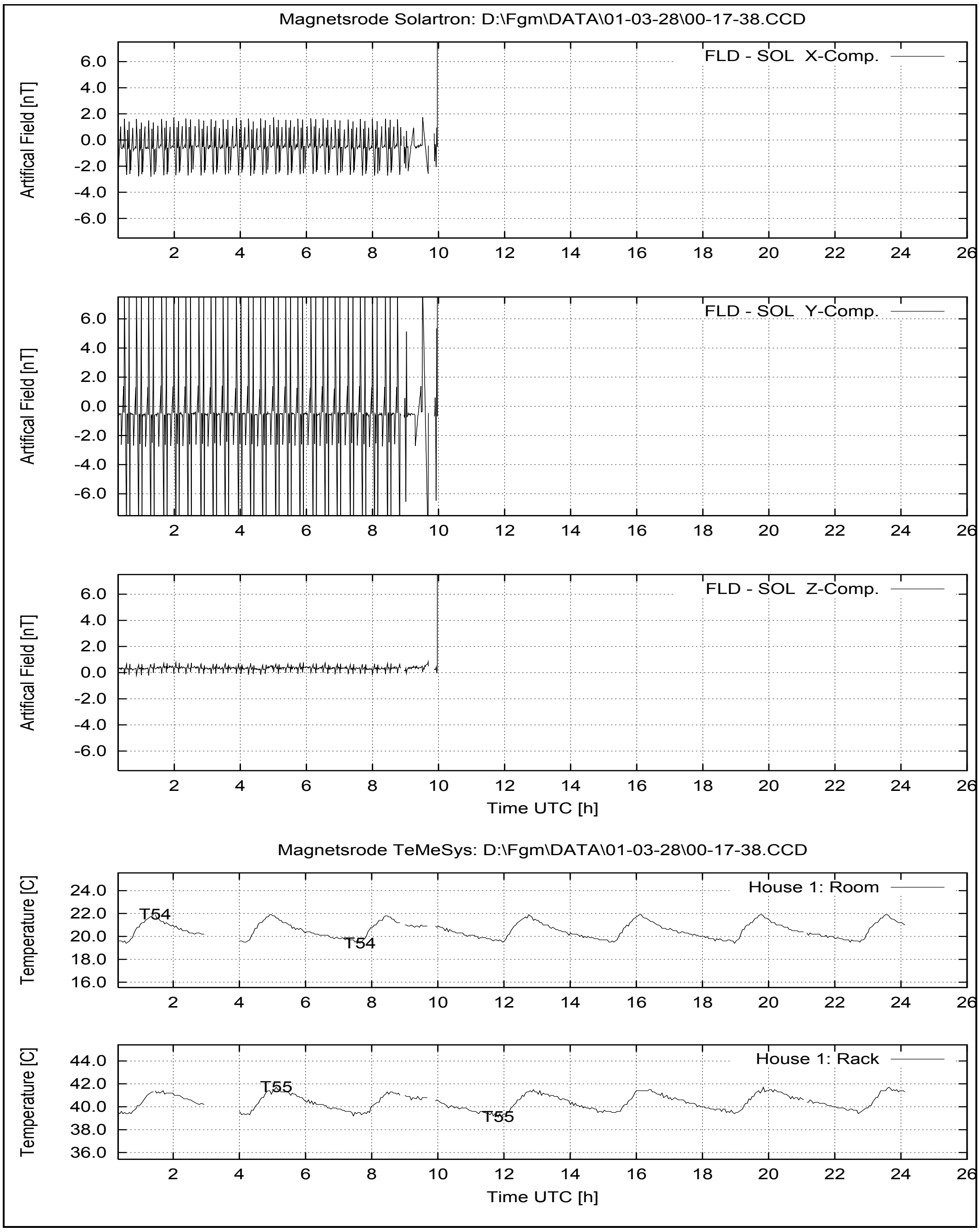


Figure 38: March 28, 2001: System Performance: FLD – SOL; Temperatures at House 1.

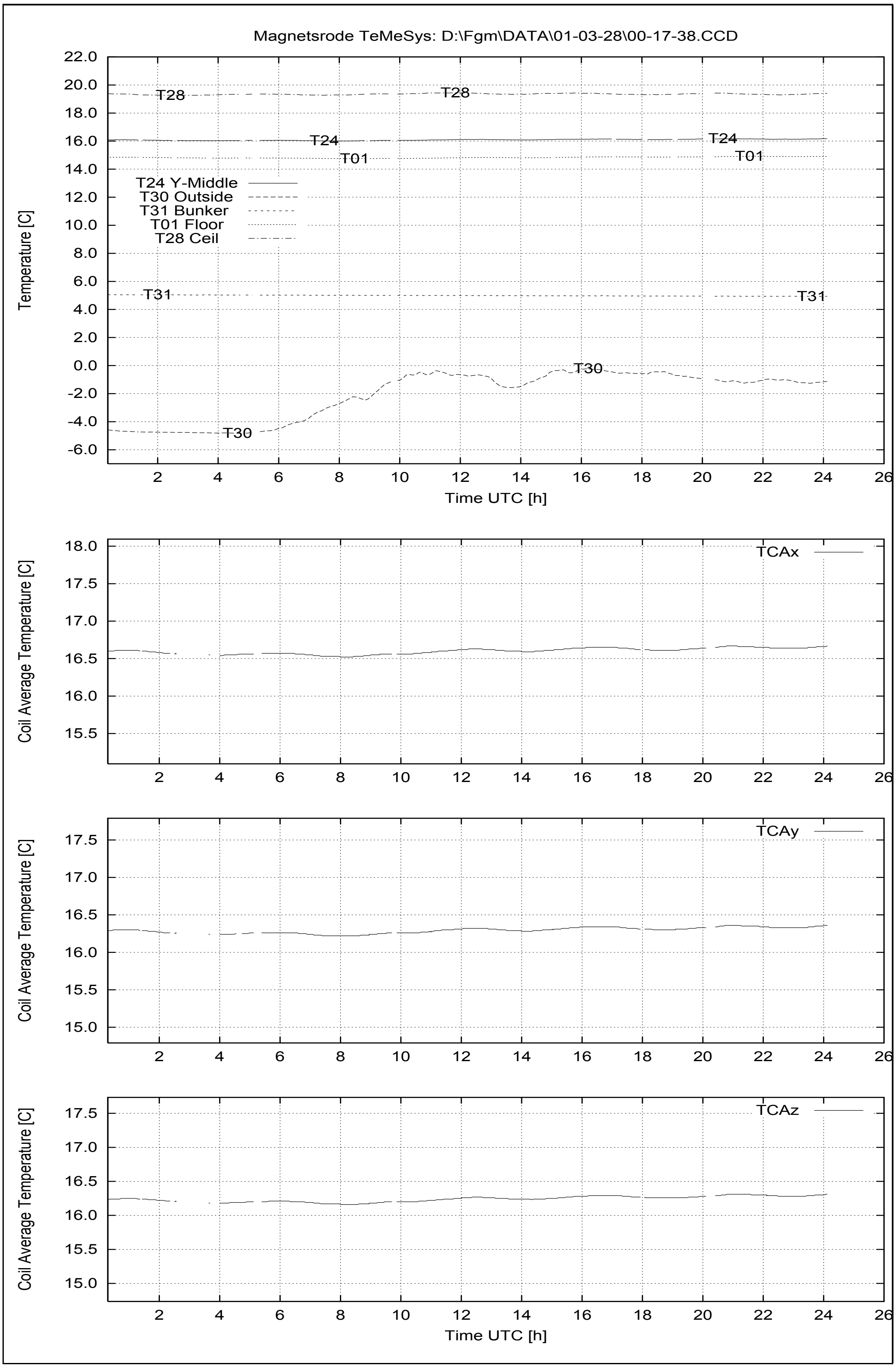


Figure 39: March 28, 2001: Temperatures House 2.

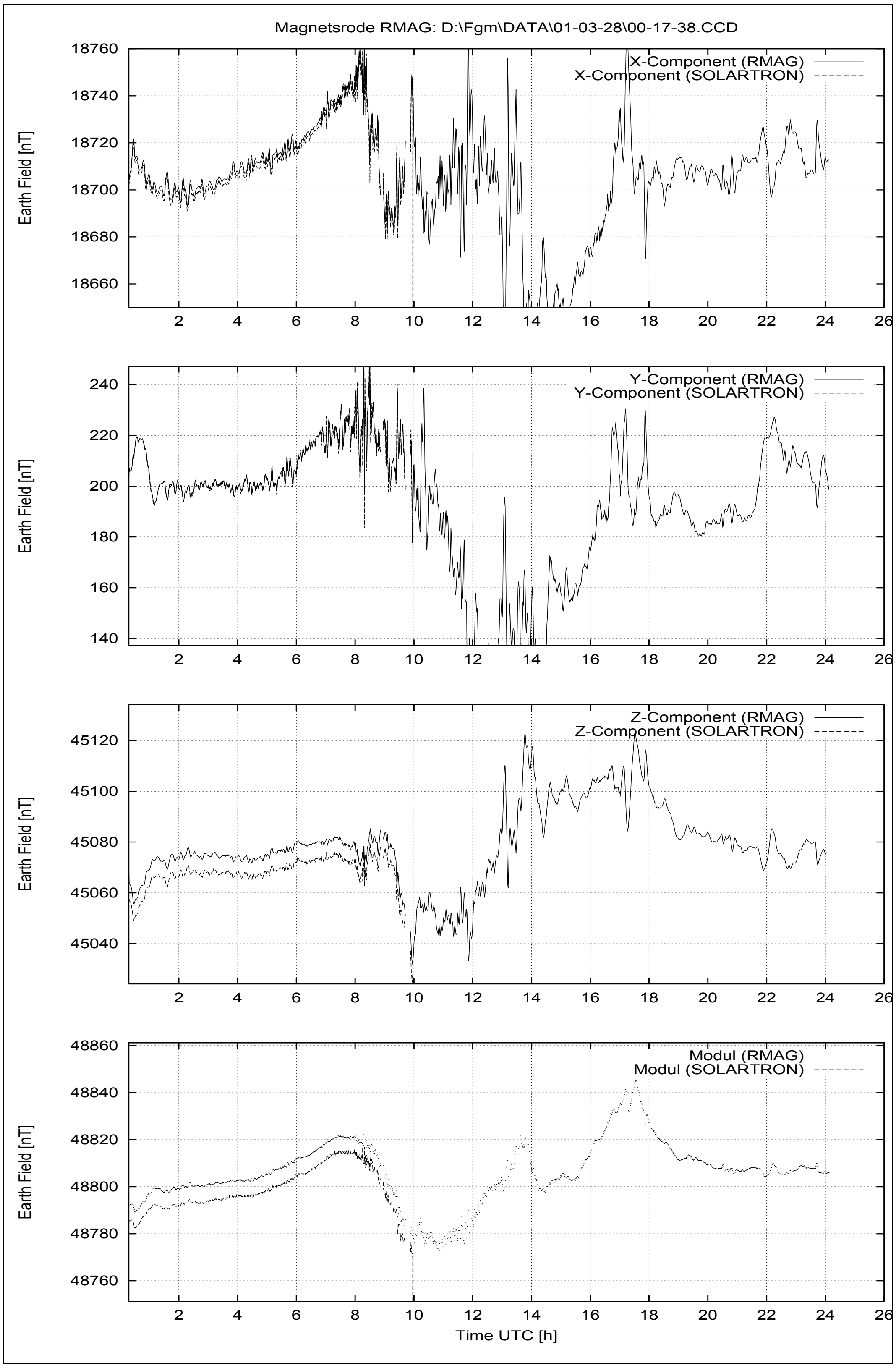


Figure 40: March 28, 2001: Earthfield variations.

# 12 Thursday March 29, 2001

## 12.1 Earth Field Variation Check. DPU: FM, Sensors: FM–IB & FM–OB, Continued

The measurements with a suppressed constant earth field continued over night until the afternoon.

### 12.1.1 Data

| Configuration File | CCD File | CCD File | Remarks |
|---|---|---|---|
| VAR.CFG | 01-03-29\00_08_26.CCD | | |
| VAR.CFG | 01-03-29\01_09_06.CCD | | |
| VAR.CFG | 01-03-29\02_09_48.CCD | | |
| VAR.CFG | 01-03-29\03_10_29.CCD | | |
| VAR.CFG | 01-03-29\04_11_11.CCD | | |
| VAR.CFG | 01-03-29\05_11_52.CCD | | |
| VAR.CFG | 01-03-29\06_12_33.CCD | | |
| VAR.CFG | 01-03-29\07_13_14.CCD | | |
| VAR.CFG | 01-03-29\08_13_54.CCD | | |
| VAR.CFG | 01-03-29\09_14_35.CCD | | |
| VAR.CFG | 01-03-29\10_15_16.CCD | | |
| VAR.CFG | 01-03-29\11_15_56.CCD | | |
| VAR.CFG | 01-03-29\12_16_37.CCD | | |
| VAR.CFG | 01-03-29\13_17_17.CCD | | |
| VAR.CFG | 01-03-29\14_17_58.CCD | | |

Afterwards the complete ROSETTA system (DPU & Sensors, Power supply & cables, PIU-SIM) has been removed from the facilitiy and shipped to Pfeil in Hildesheim for coating etc. Due to this circumstance the calibration was interrupted until April, 5th.

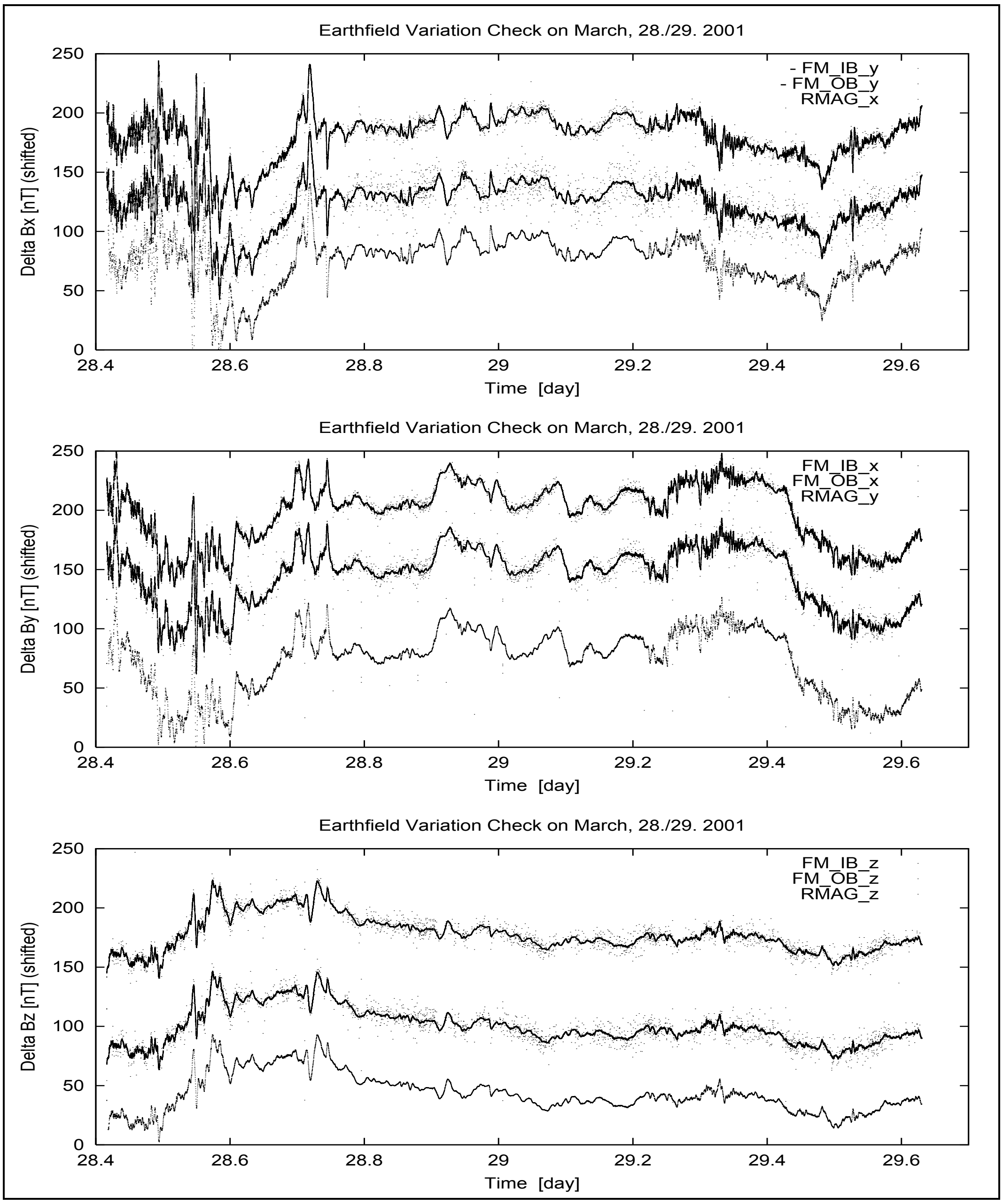


Figure 41: March, 28./29. 2001: Earth field variation Check

## 12.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

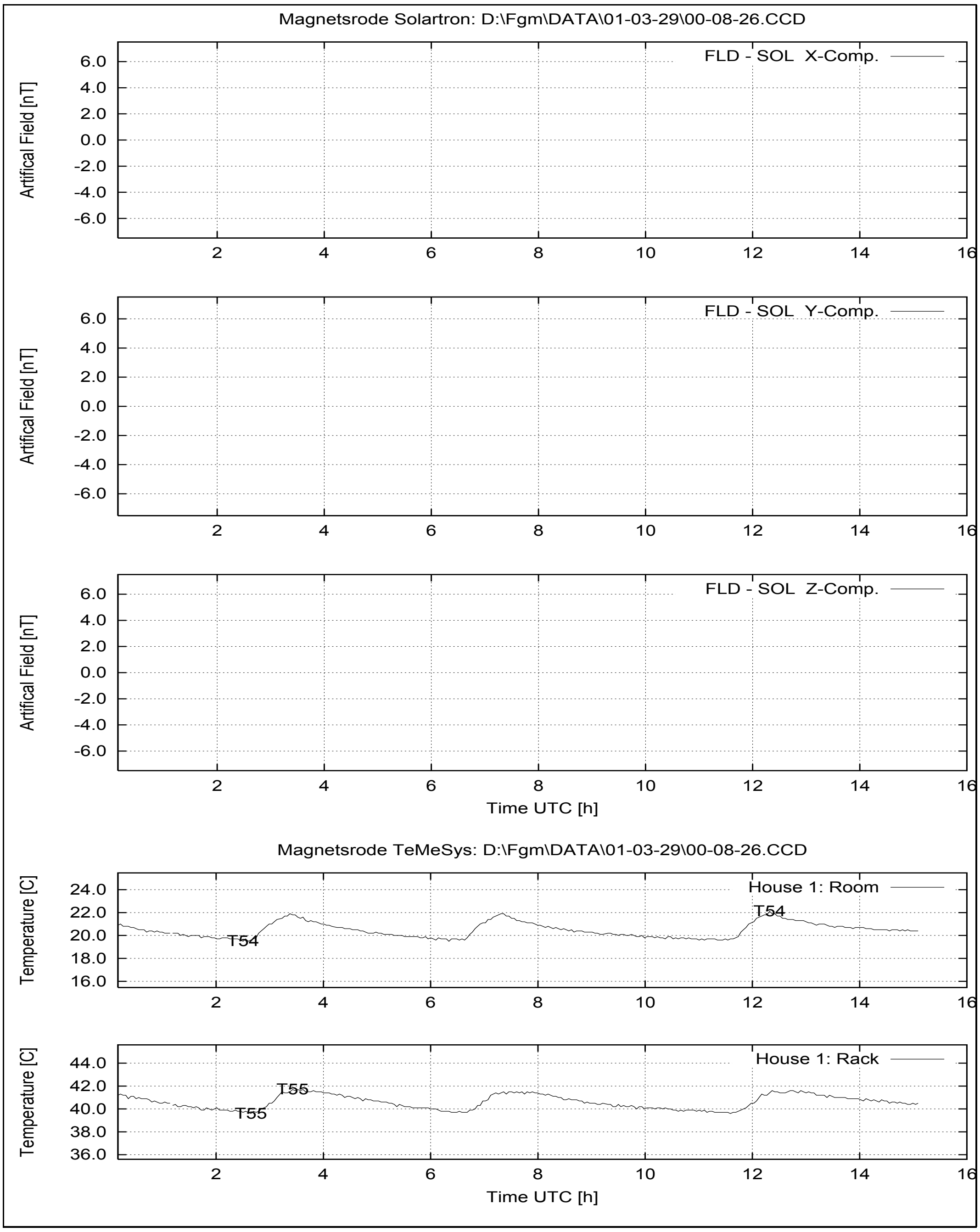


Figure 42: March 29, 2001: System Performance: FLD – SOL; Temperatures at House 1.

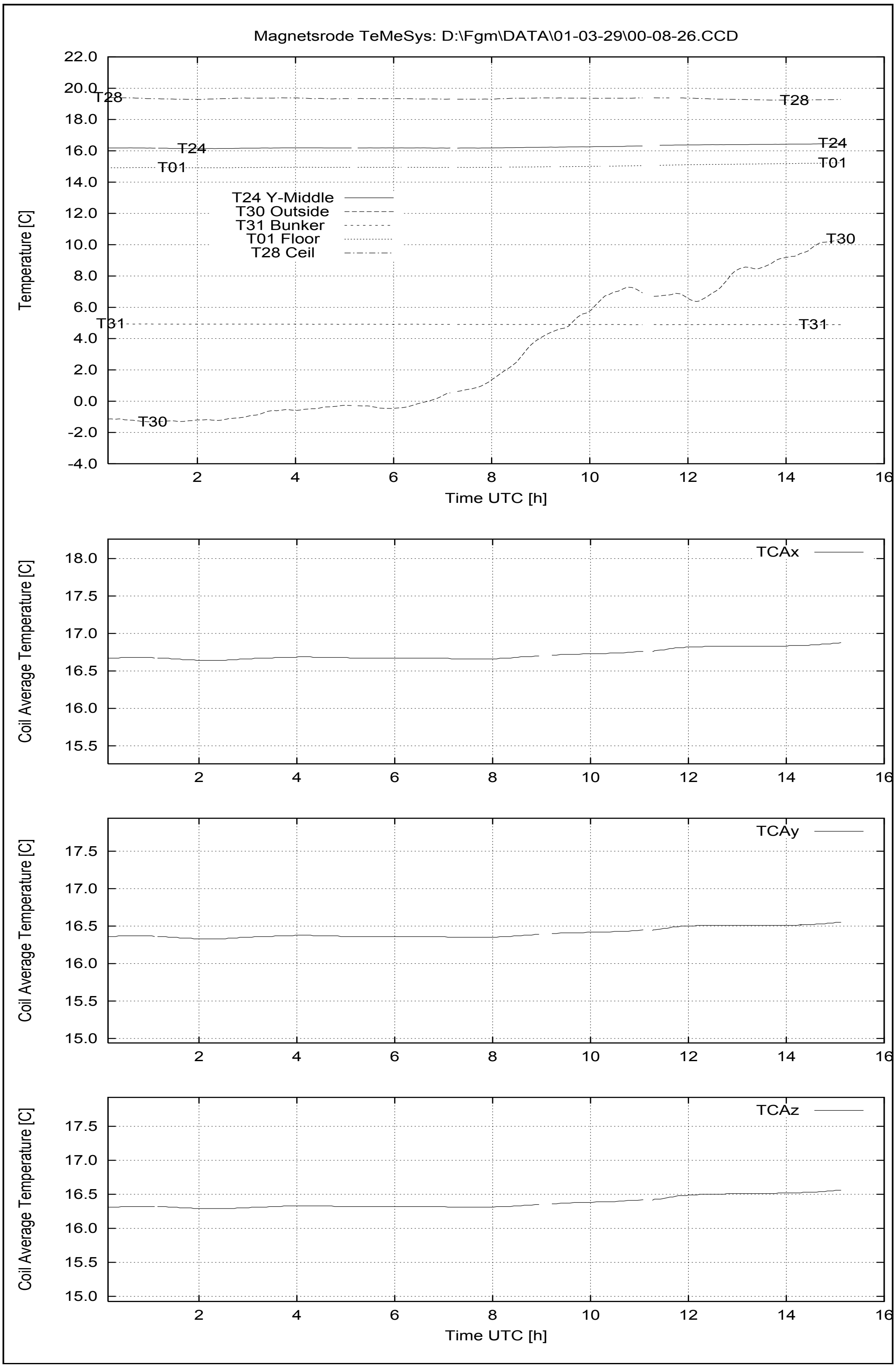


Figure 43: March 29, 2001: Temperatures House 2.

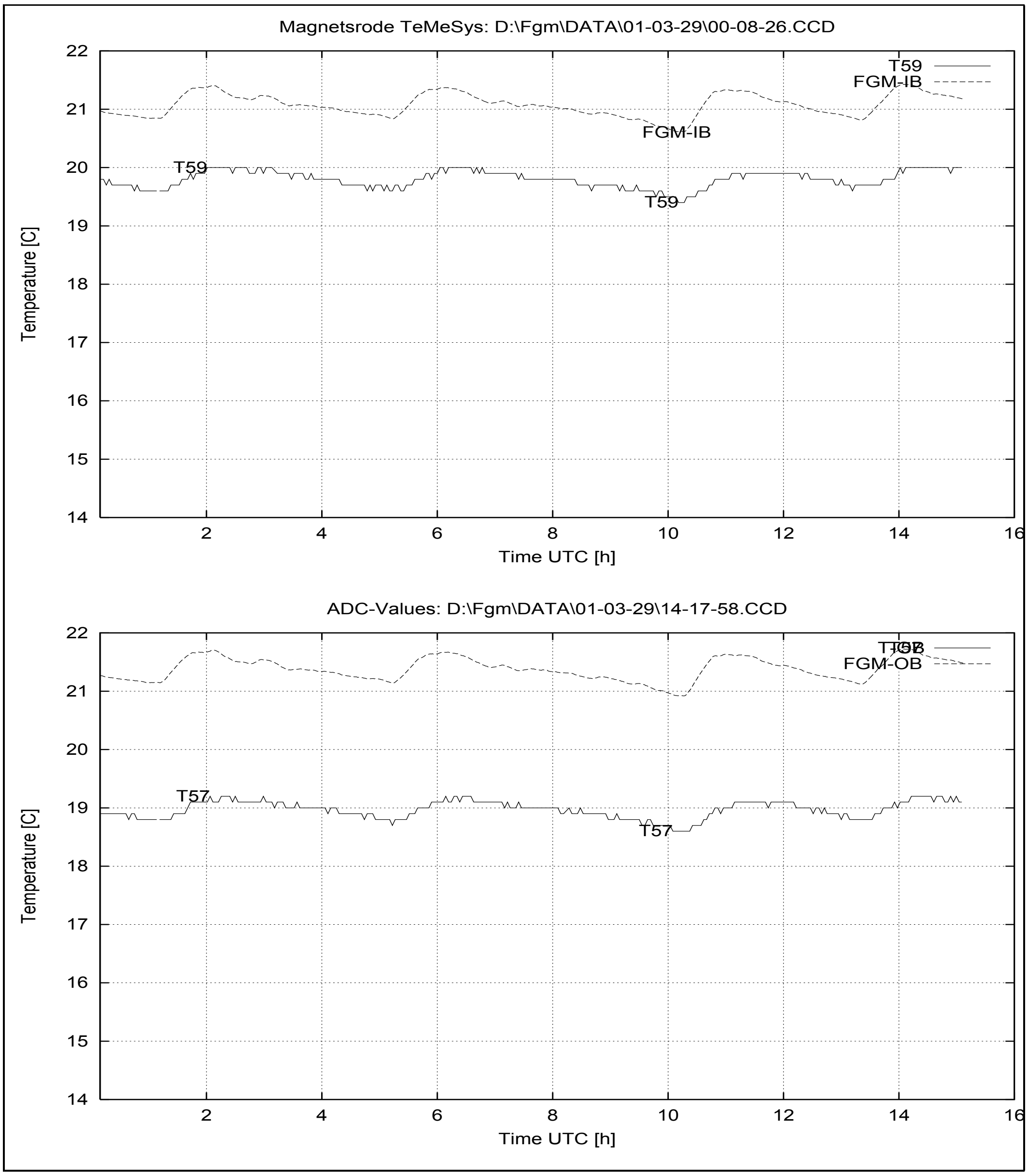


Figure 44: March 29, 2001: Sensor Temperatures at House 2.

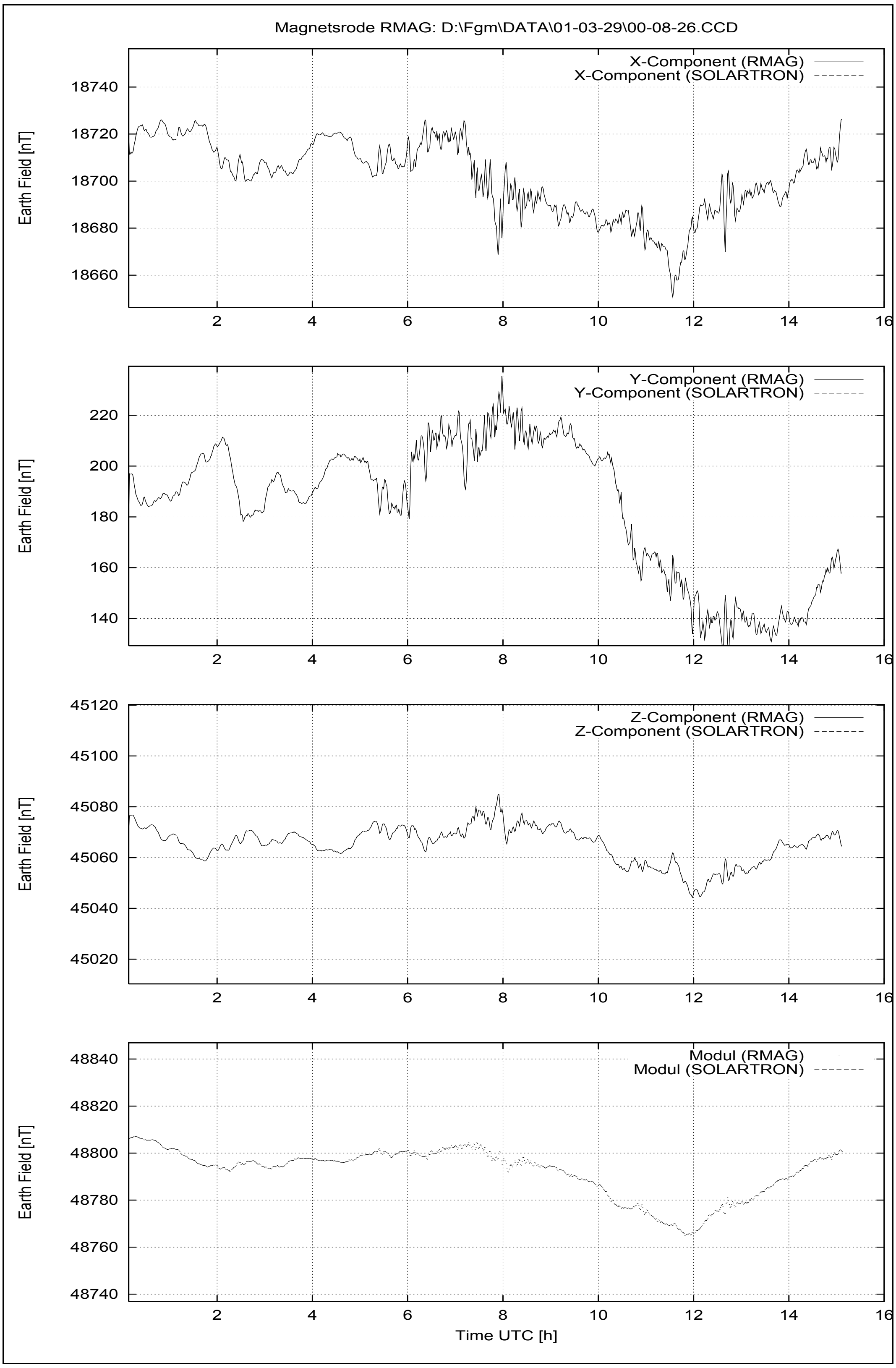


Figure 45: March 29, 2001: Earthfield variations.

# 13 Thursday April 5, 2001

Until now the **FM DPU** connected to the **FM Sensors** has been checked. For the following measurements we switch over to the **FS DPU**, however, connected to the **FM sensors**.
We start with the Offset measurements.

## 13.1 Offset Measurements — DPU: FS, Sensors FM–IB & FM–OB

To perform the offset measurements both sensors are mounted with their aluminium support at the stand on top of the green trolley. Figure 236 shows a photographic view of the setup in the normal position for the measurement of FM–OB. The following figures show the turned positions according to the test procedure.

| | |
|---|---|
| Purpose: | Measure the FM–IB & and FM–OB offset. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vector rate 1.00 Hz. |
| PREMA: | |
| Files: | `OFF?_?1.SEQ` |
| Start: | 05.04.01 09:34 |
| End: | 05.04.01 10:35 |

### 13.1.1 Data

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 1: Normal`<br>`OB @ CoC, height: 13cm, 010405A` |
| `ali10.CFG` | `01-04-05\09_34_37.CCD` | |
| `offx_N1.CFG` | `01-04-05\09_42_17.CCD` | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 2: Normal`<br>`IB @ CoC, height: 13cm, 010405B` |
| `offx_N1.CFG` | `01-04-05\09_46_47.CCD` | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 3: Turned @ \Zc`<br>`OB @ CoC, height: 13cm, 010405C` |
| `ALI10.CFG` | `01-04-05\09_51_50.CCD` | |
| `offx_t1.CFG` | `01-04-05\09_59_00.CCD` | |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| offx_t1.CFG | 01-04-05\10_06_02.CCD | Position 4: Turned @ \Zc IB @ CoC, height: 13cm, 010405D |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| ali10.CFG | 01-04-05\10_15_05.CCD | Position 5: Turned @ \Yc OB @ CoC, height: 20cm, 010405E |
| offz_t1.CFG | 01-04-05\10_22_15.CCD | |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| offz_t1.CFG | 01-04-05\10_29_10.CCD | Position 6: Turned @ \Yc IB @ CoC, height: 20cm, 010405F |

After these measurements the setup was changed for the frequency measurements.

### 13.2 Digital Frequency Response — DPU: FS, Sensors FM–IB & FM–OB

The digital frequency response function will be measured with two different amplitudes. For these chosen amplitudes the frequency will be discretely swept from 1000 Hz down to 100 mHz. The sensors were placed diagonal in space on the open Thermal Test Box mounting plate (refer to picture 242). The aluminium sensor support is elevated by 45° from the $X_C$–$Y_C$ plane using the gray diagonal stand which is turned around $Z_C$ by 54°. This is to get equal signals on all sensor components from the fields applied on the $Y_C$ component. The measurements are performed for both sensors in parallel.

| | | |
| --- | --- | --- |
| Purpose: | Measure the digital frequency response | |
| Conditions: | FM–IB & FM–OB placed diagonal in space in the coil system center.<br>FM–OB is the upper, FM–IB the lower one<br>AC–Generator signal (AC2) applied to $Y_C$ without attenuator. | |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch6 Generator signal (AC2) direct (no attenuation);<br>Ch7 FSP pulse;<br>Timer 500, SumUp 6, Vector Rate 16.67 Hz. | |
| Files: | F.SEQ | |
| Start: | 05.04.01 | 10:45 |
| End: | 05.04.01 | 12:46 |

#### 13.2.1 Data

| Configuration File | CCD File |
|---|---|
| ali10.CFG | 01-04-05\10_45_49.CCD |
| fd_H.CFG | 01-04-05\10_53_16.CCD |
| fd_L.CFG | 01-04-05\11_40_37.CCD |

After the data collection the setup was changed for the linearity measurements of the FM–OB sensor.

### 13.3 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FM–OB

The calibration mirror #OB was placed on the FM–OB sensor.
After the optical alignment of the FM–OB sensor (refer to table 1 column #3) the linearity, sensitivity and cross talk measurements were initialised.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FM–OB in optical aligned position at CoC |
| | FM–IB south of CoC on aluminium support. |
| | Refer to picture 243. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV; |
| | Ch7 FSP pulse; |
| | Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010405.SEQ` |
| Start: | 05.04.01 12:59 |
| End: | 06.04.01 05:14 |

#### 13.3.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-05\12_59_59.CCD |
| LX15.CFG | 01-04-05\13_08_09.CCD |
| LY15.CFG | 01-04-05\13_39_12.CCD |
| LZ15.CFG | 01-04-05\14_10_13.CCD |
| SP15spir.CFG | 01-04-05\14_41_13.CCD |
| SP15sphe.CFG | 01-04-05\18_33_57.CCD |
| LX15.CFG | 01-04-05\23_06_37.CCD |
| LY15.CFG | 01-04-05\23_37_38.CCD |

### 13.4 Overview Plots: System Performance, Temperatures and Earthfield Variations.

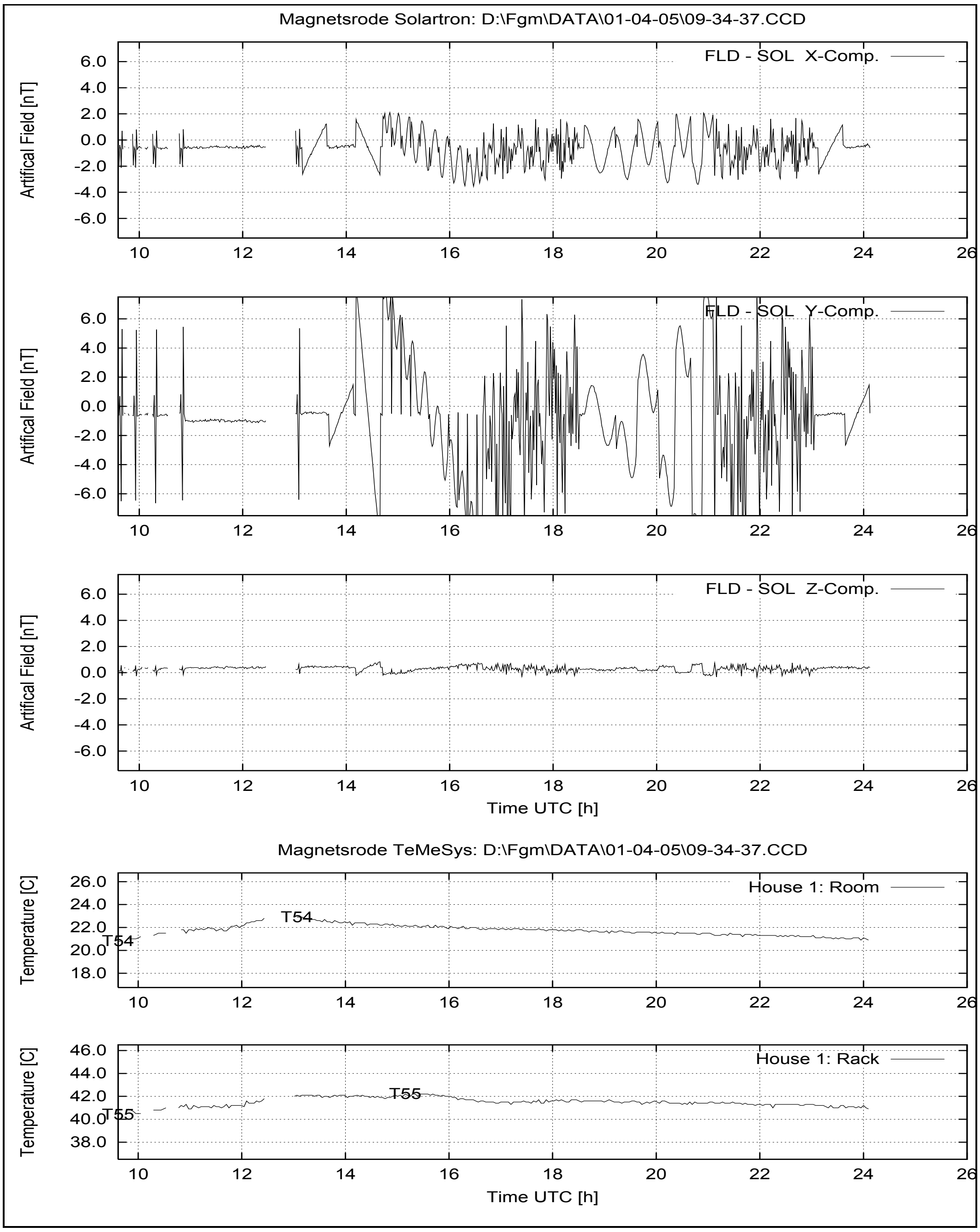


Figure 46: April 5, 2001: System Performance: FLD – SOL; Temperatures at House 1.

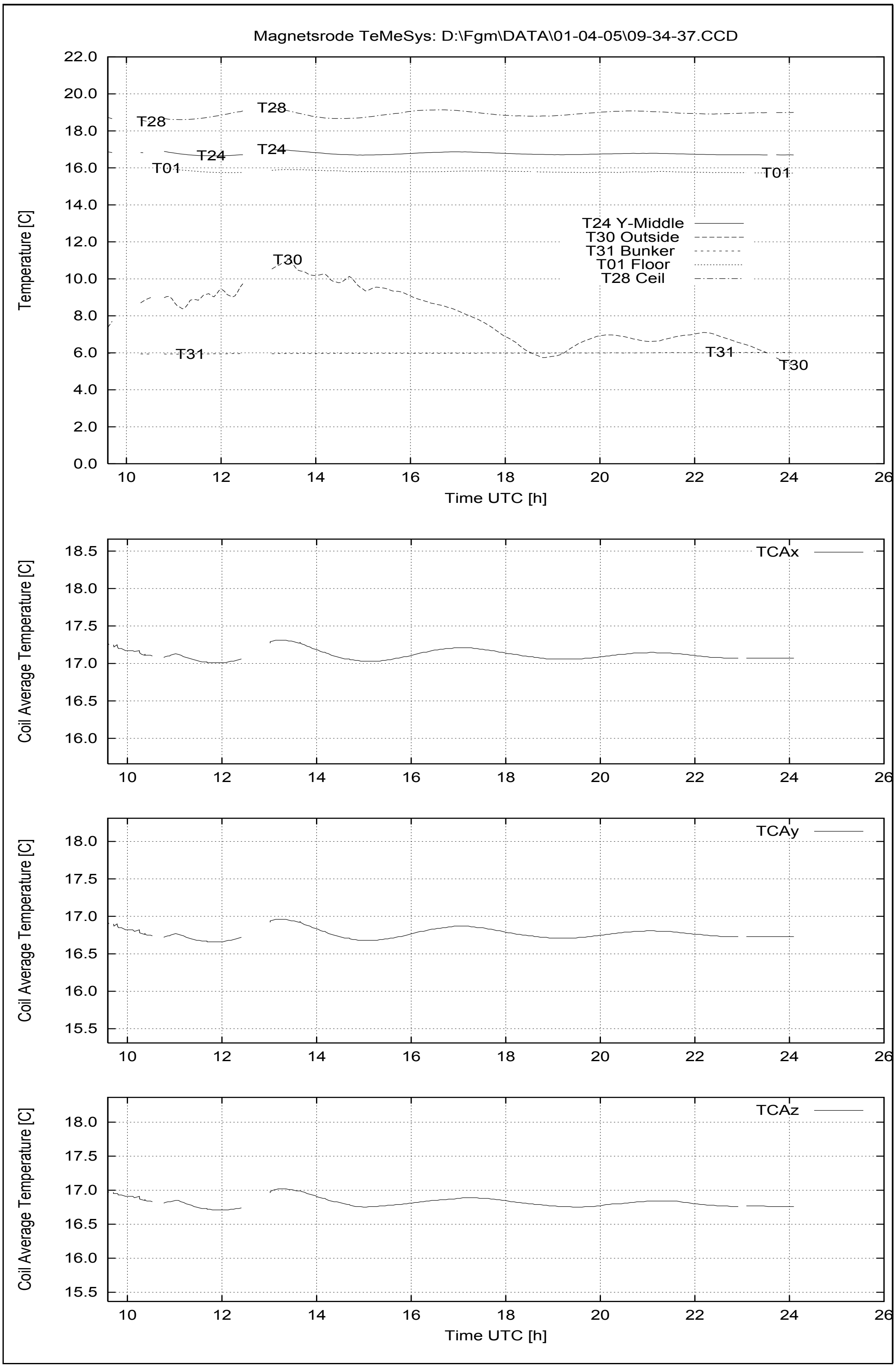


Figure 47: April 5, 2001: Temperatures House 2.

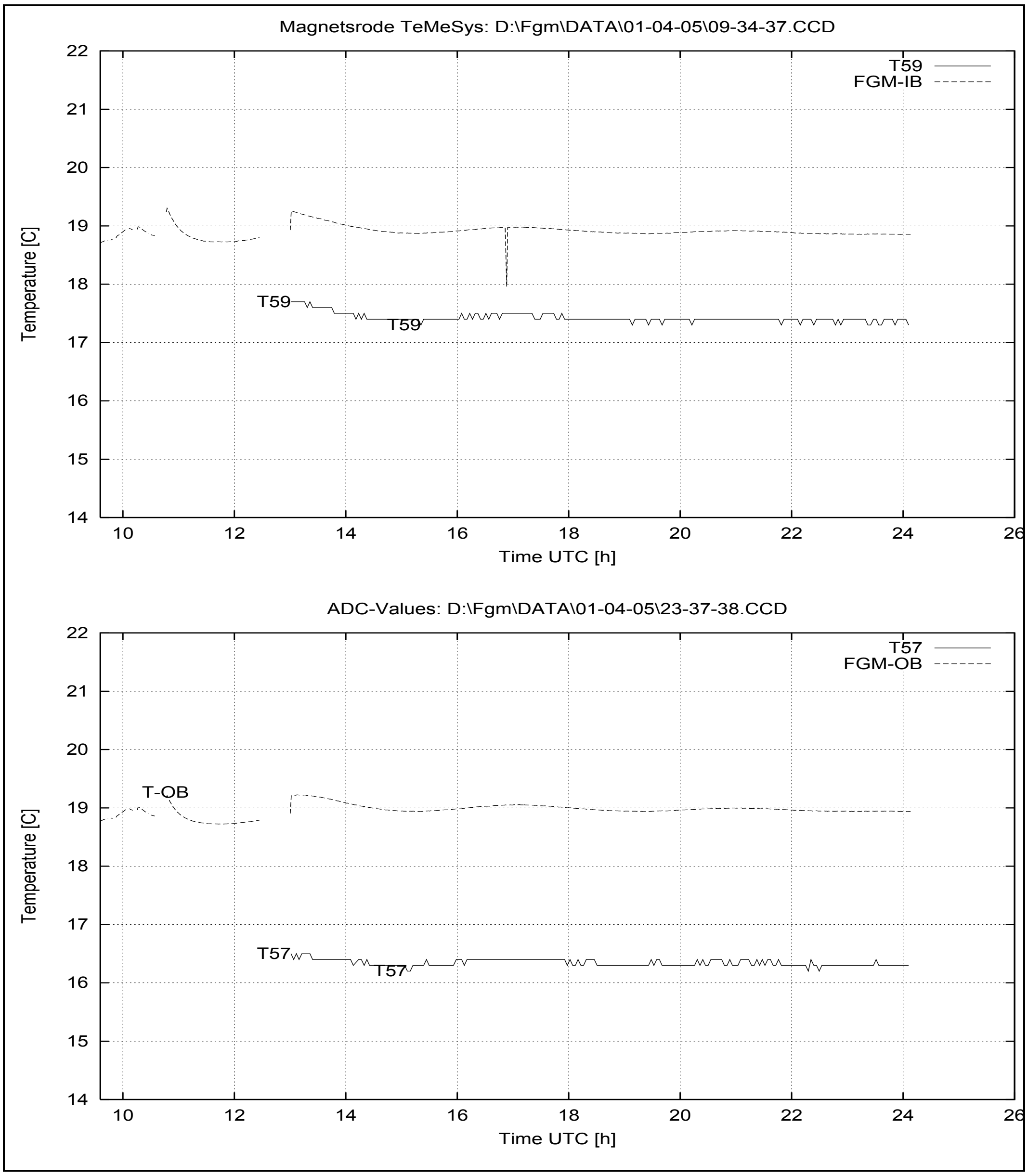


Figure 48: April 5, 2001: Sensor Temperatures at House 2.

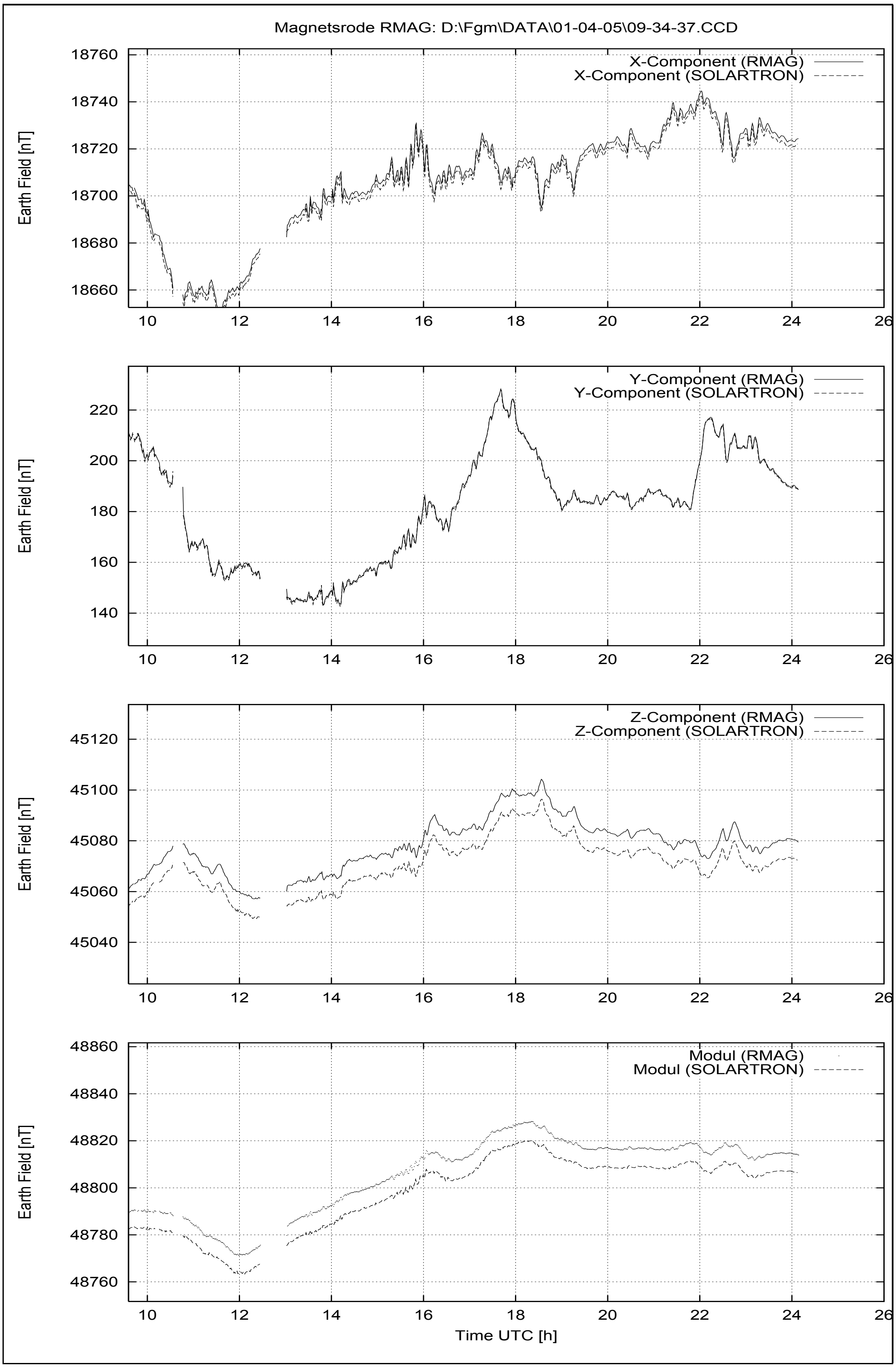


Figure 49: April 5, 2001: Earthfield variations.

# 14 Friday April 6, 2001

## 14.1 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FM–OB, Continued

The linearity, sensitivity and cross talk measurements did go on until the early morning. The investigations were finished at 05:14.

### 14.1.1 Data

| Configuration File | CCD File |
|---|---|
| `LZ15.CFG` | `01-04-06\00_08_38.CCD` |
| `SP15sphe.CFG` | `01-04-06\00_39_39.CCD` |

After the data collection the setup was changed for the linearity measurements of the FM–IB sensor.

## 14.2 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FM–IB

The calibration mirror # IB was placed on the FM–IB sensor.
After the optical alignment of the FM–IB sensor (refer to table 1 column #4) the linearity, sensitivity and cross talk measurements were initialised.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FM–IB in optical aligned position at CoC<br>FM–OB north of CoC on aluminium support.<br>Refer to picture 244. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010406.SEQ` |
| Start: | 06.04.01 07:18 |
| End: | 06.04.01 12:53 |

#### 14.2.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-06\07_18_23.CCD |
| LX15.CFG | 01-04-06\07_25_45.CCD |
| LY15.CFG | 01-04-06\07_56_49.CCD |
| LZ15.CFG | 01-04-06\08_27_52.CCD |
| SP15spir.CFG | 01-04-06\08_58_51.CCD |

After these measurements the units were shipped temporarily to IC / London.

### 14.3 Overview Plots: System Performance, Temperatures and Earthfield Variations.

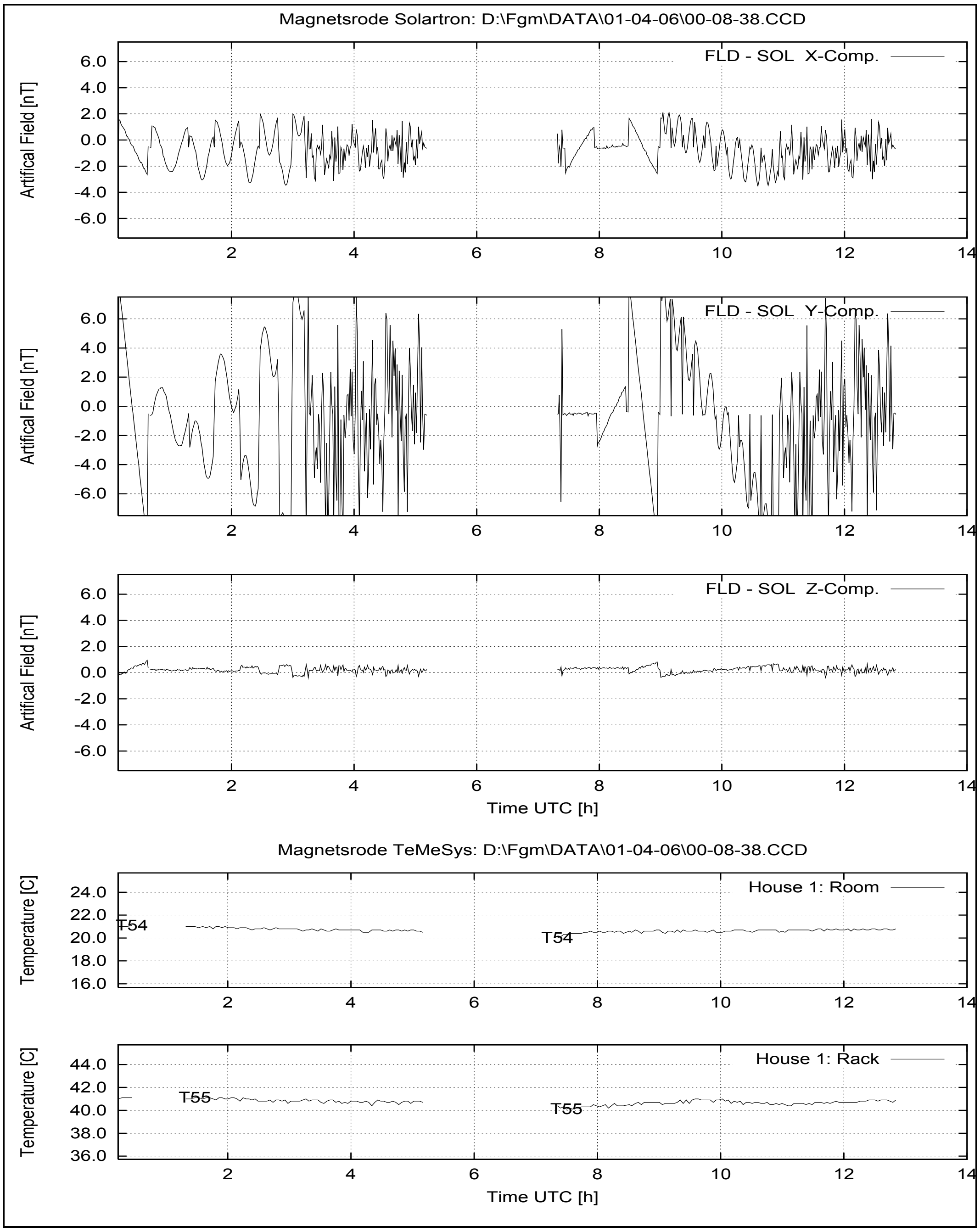


Figure 50: April 6, 2001: System Performance: FLD – SOL; Temperatures at House 1.

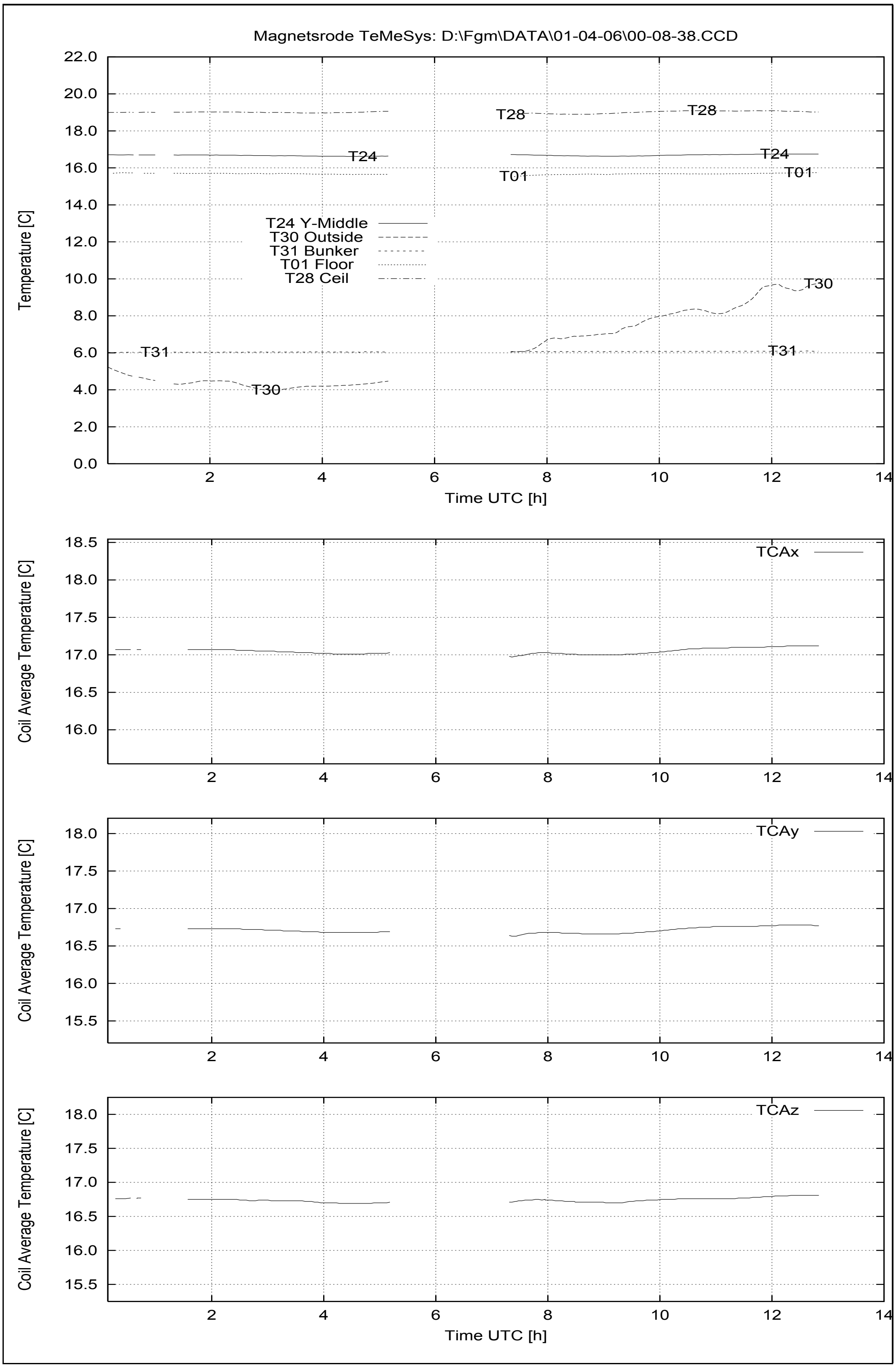


Figure 51: April 6, 2001: Temperatures House 2.

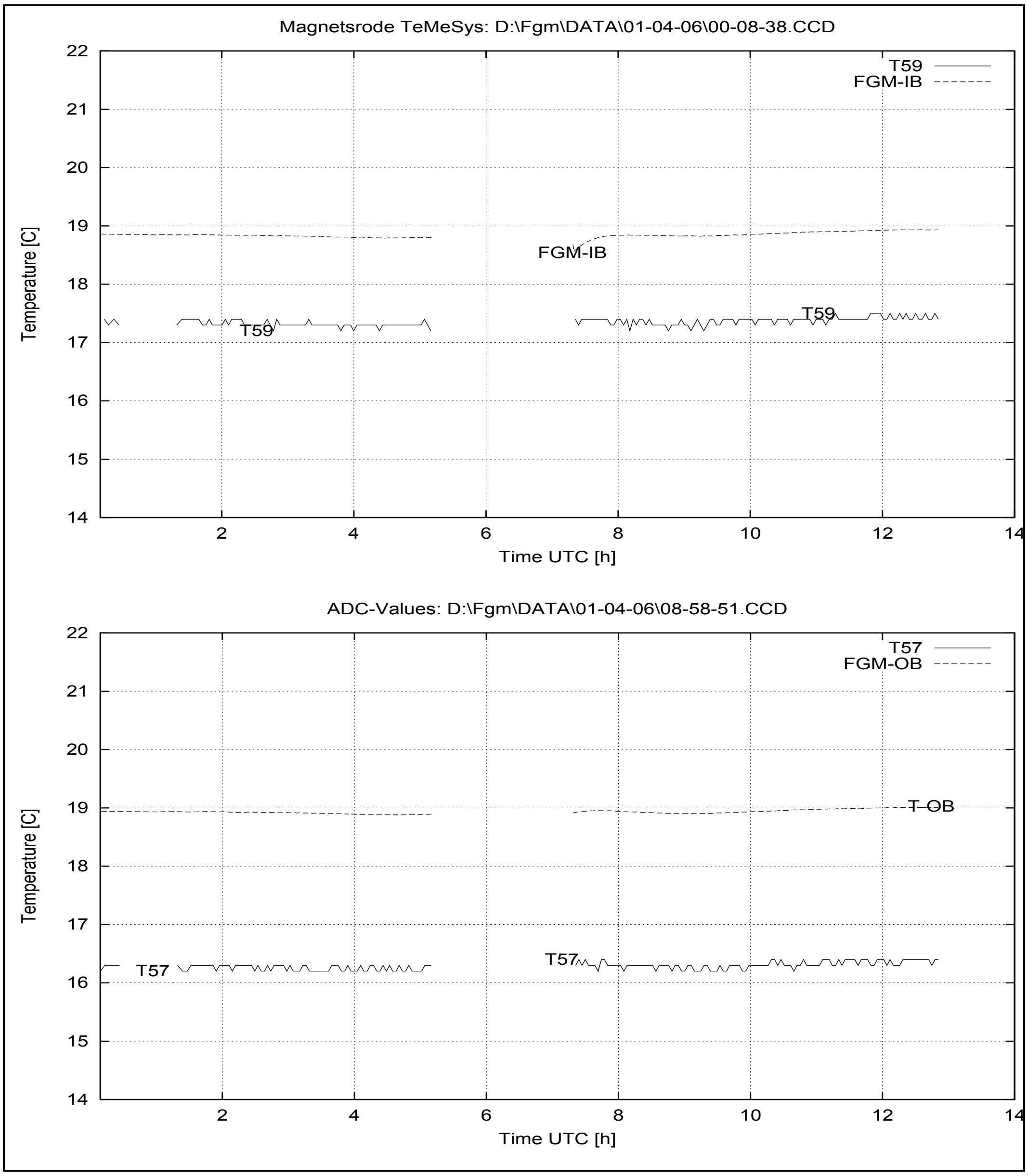


Figure 52: April 6, 2001: Sensor Temperatures at House 2.

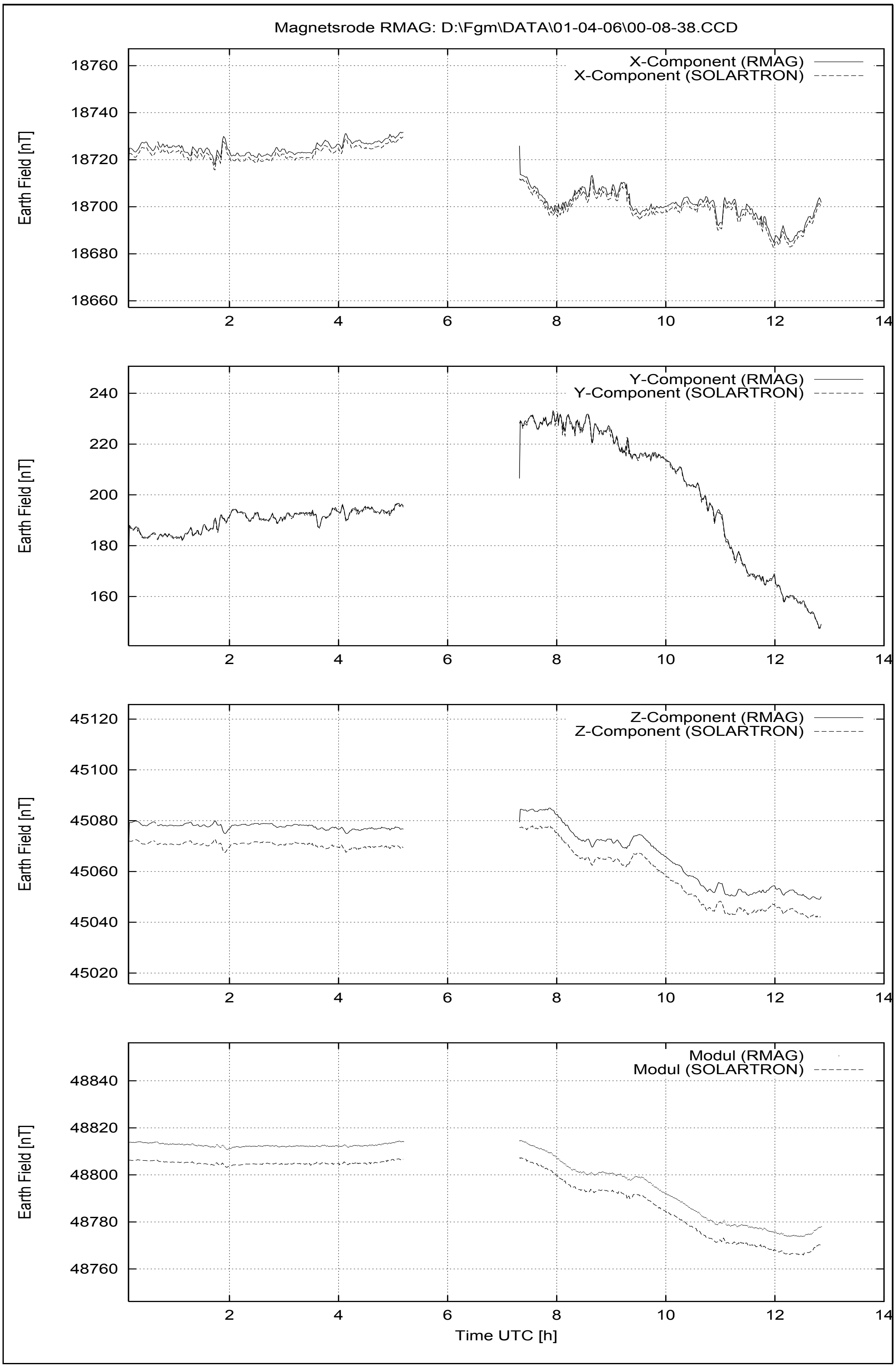


Figure 53: April 6, 2001: Earthfield variations.

# 15 Friday April 20, 2001

The recently performed measurements dealt with the **FS DPU** in connection with the **FM Sensors**. As there are still some measurements missing for the combination **FM DPU / FM Sensors** we now switch again back to the latter DUT to perform frequency measurements and the power variation check.

## 15.1 Digital Frequency Response — DPU: FM, Sensors FM–IB & FM–OB

The digital frequency response function will be measured with two different amplitudes. For these chosen amplitudes the frequency will be discretely swept from 1000 Hz down to 100 mHz. The sensors were placed diagonal in space on the open Thermal Test Box mounting plate (refer to picture 245). As the aluminium support is N/A (shipped to Pfeil) today, the sensors were placed and fixed on the small green mounting plate of the EMC Gradiometer System. Mounting scheme as follows:

| | |
|---|---|
| 1. Sensor (top) | Gradiometer Sensor 1 |
| 2. Sensor | FM–OB |
| 3. Sensor | Gradiometer Sensor 2 |
| 4. Sensor (bottom) | FM–IB |

The temperature sensors $T_{56}$, $T_{58}$, $T_{59}$, and $T_{60}$ are placed on the green thermobox mounting plate below the MAG sensors.

The aluminium sensor support is elevated by 45° from the $X_C$–$Y_C$ plane using the gray diagonal stand which is turned around $Z_C$ by 54°. This is to get equal signals on all sensor components from the fields applied on the $Y_C$ component. The measurements are performed for both sensors in parallel.

| | |
|---|---|
| Purpose: | Measure the digital frequency response |
| Conditions: | FM–IB & FM–OB placed diagonal in space in the coil system center. |
| | FM–OB is the upper, FM–IB the lower one |
| | AC–Generator signal (AC2) applied to $Y_C$ without attenuator. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV; |
| | Ch6 Generator signal (AC2) direct (no attenuation); |
| | Ch7 FSP pulse; |
| | Timer 500, SumUp 6, Vector Rate 16.67 Hz. |
| Files: | `F.SEQ` |
| Start: | 20.04.01 08:53 |
| End: | 20.04.01 10:35 |

### 15.1.1 Data

| Configuration File | CCD File |
|---|---|
| `ALI10.cfg` | `01-04-20\08_53_39.CCD` |
| `fd_h.CFG` | `01-04-20\09_01_12.CCD` |
| `fd_l.CFG` | `01-04-20\09_48_34.CCD` |

Afterwards the setup for the voltage variation check was prepared.

## 15.2 Supply Voltage Dependence — DPU: FM, Sensors FM–IB & FM–OB

With this check it should be tested whether the digital readings are influenced by the supply voltage. Therefore, the supply voltages generated by the instrument power supply are varied in discrete steps. The needed positive and negative supply voltages are changed in parallel at the same time.
The used voltages are:

| Step | Voltage [V] | %-Variation |
|---|---|---|
| 1 | ±5.00 | abs(Nominal) |
| 2 | ±4.90 | abs(Nominal) −2% |
| 3 | ±4.75 | abs(Nominal) −5% |
| 4 | ±4.50 | abs(Nominal) −10% |
| 5 | ±5.10 | abs(Nominal) +2% |
| 6 | ±5.25 | abs(Nominal) +5% |
| 7 | ±5.50 | abs(Nominal) +10% |

The test is done for both, FM–OB and FM–IB, sensors. The sensors are placed in diagonal in space position. Unchanged since the recent frequency measurements. Refer to picture 245.

| | |
|---|---|
| Purpose: | Measure supply voltage dependence of the digital data readings. |
| Conditions: | FM–IB & FM–OB placed diagonal in space in the coil system center.<br>FM–OB is the upper, FM–IB the lower one |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 6, Vector Rate 16.67 Hz. |
| Files: | `PWR_VAR.*` |
| Start: | 20.04.01 10:49:54 |
| End: | 20.04.01 11:27 |

### 15.2.1 Data

| Configuration File | CCD File ADC1 |
|---|---|
| PWR_VAR.cfg | 01-04-20\10_49_54.CCD |
| PWR_VAR.cfg | 01-04-20\10_58_12.CCD |
| PWR_VAR.cfg | 01-04-20\11_03_07.CCD |
| PWR_VAR.cfg | 01-04-20\11_07_39.CCD |
| PWR_VAR.cfg | 01-04-20\11_12_51.CCD |
| PWR_VAR.cfg | 01-04-20\11_17_23.CCD |
| PWR_VAR.cfg | 01-04-20\11_22_01.CCD |

### 15.2.2 Results

The following plots show the results of the supply voltage variation check. As visible in the first diagram of figure 54 and 55 the applied field structure was 0 nT, +20000 nT, -20000 nT, 0 nT for every pair of supply voltages. For a better visibility the $y$–component has been plotted with an inverted sign. Additionally the single traces have been shifted by convenient offsets for a maximum of clarity.

The analysis of the plots reveals that the $y$– and the $z$–component are nearly constant, the $x$–component, however, shows significant changes in dependency of the supply voltage. Figure 56 shows the result in the most clear way, as the output signals of both, the FM–OB and the FM–IB sensors, are plotted versus the deviation of the supply voltage.
As the power supply onboard the ROSETTA s/c will keep the voltages constant in the order of 1 %, the performance of the instrument is acceptable.

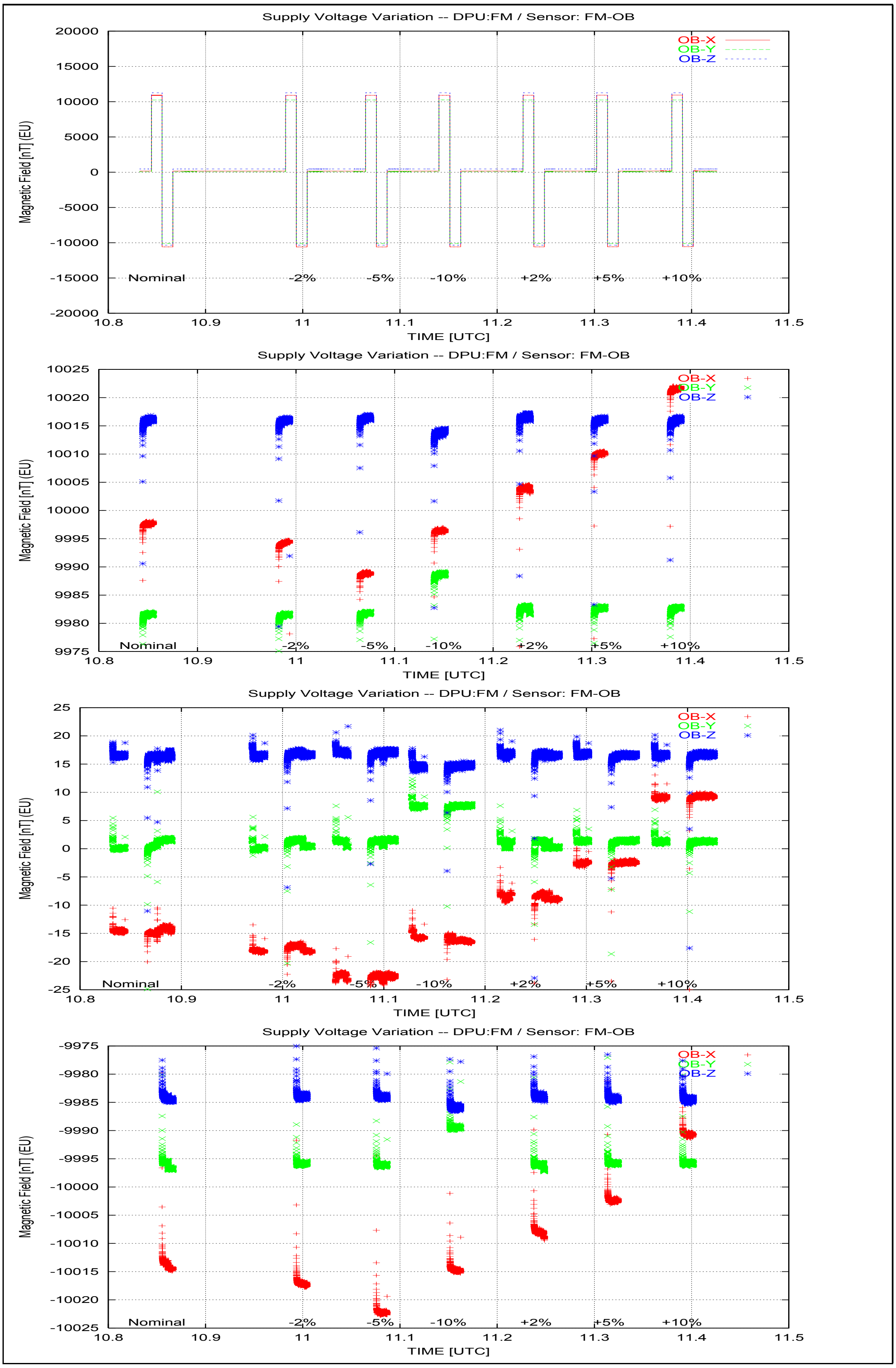


Figure 54: Supply voltage dependence results: FM – OB.

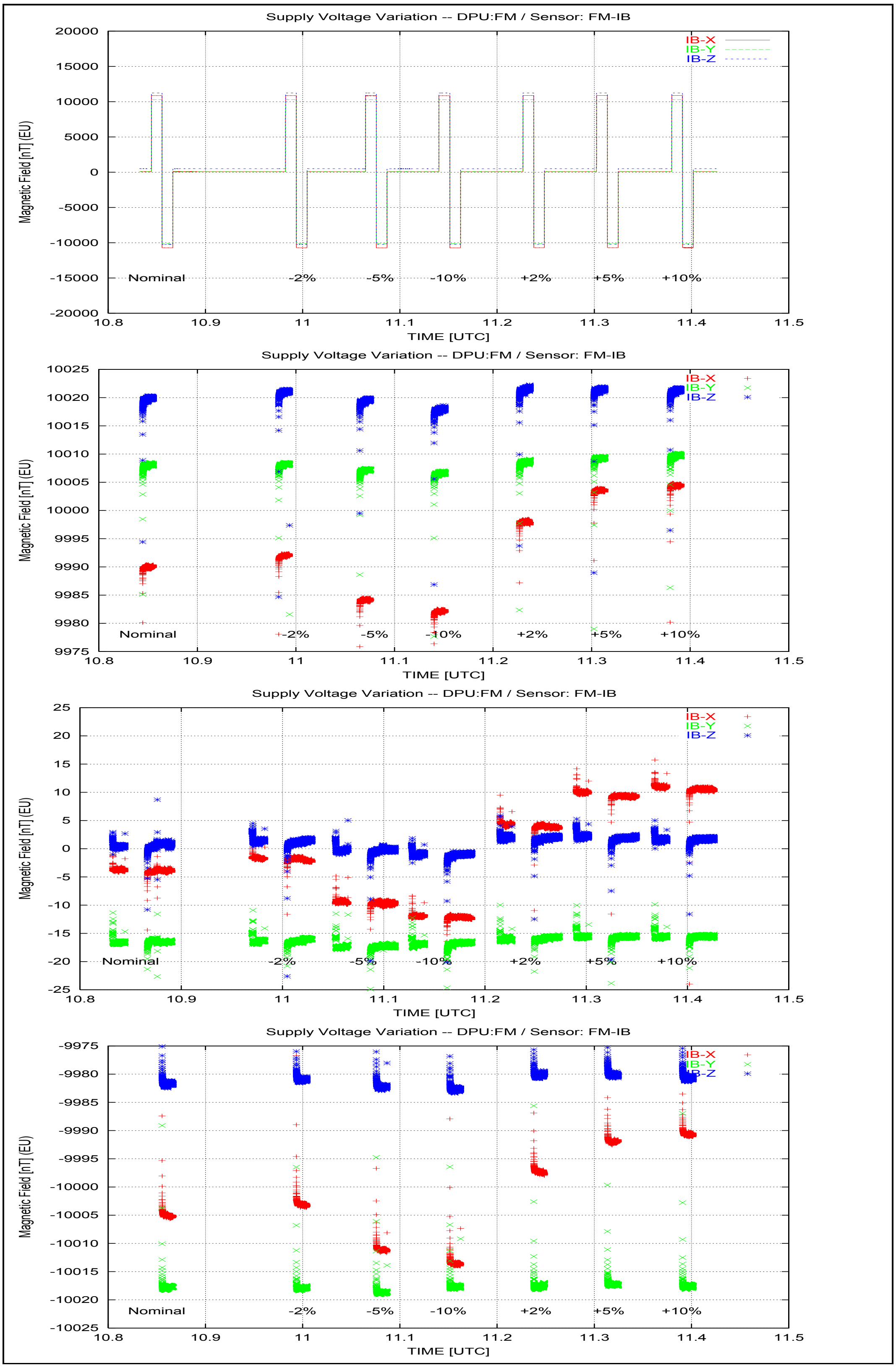


Figure 55: Supply voltage dependence results: FM – IB.

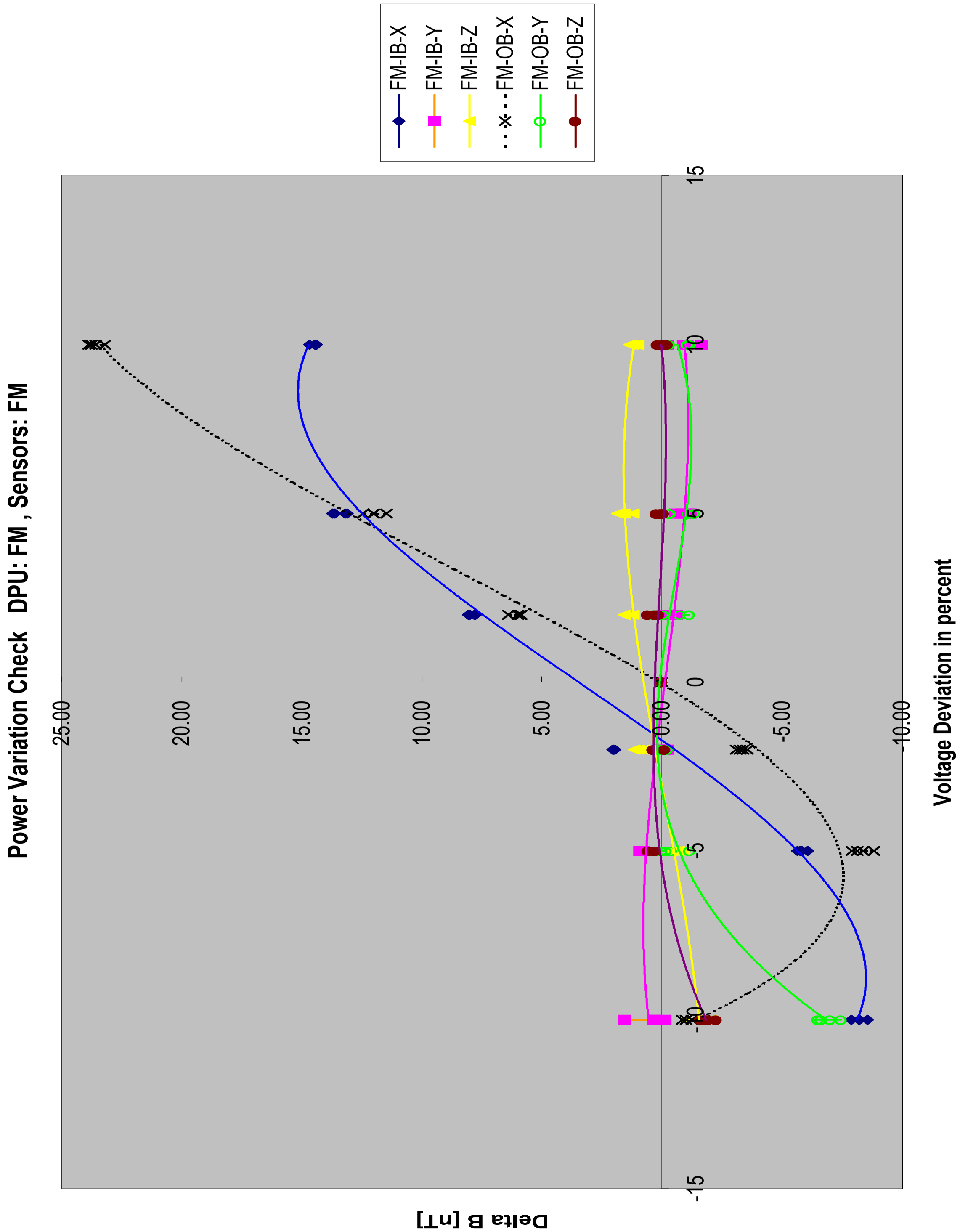


Figure 56: Supply voltage dependence results: DPU: FM, Sensors: FM.

After these measurements the DUT was changed from the FM–DPU and the FM–Sensors to the **FM–DPU connected to the FS–Sensors**.

## 15.3 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FS–IB

The calibration mirror #IB was placed on the FS–IB sensor.
After the optical alignment of the FS–IB sensor (refer to table 2 column #1) the linearity, sensitivity and cross talk measurements were initialised.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FS–IB in optical aligned position at CoC<br>FS–OB north of CoC on aluminium support.<br>Refer to picture 246. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010420.SEQ` |
| Start: | 20.04.01 12:00 |
| End: | 21.04.01 10:08 |

### 15.3.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-20\12_00_24.CCD |
| STABTST.cfg | 01-04-20\12_07_49.CCD |
| STABTST.cfg | 01-04-20\13_08_30.CCD |
| LX15.CFG | 01-04-20\14_09_12.CCD |
| LY15.CFG | 01-04-20\14_40_13.CCD |
| LZ15.CFG | 01-04-20\15_11_14.CCD |
| SP15spir.CFG | 01-04-20\15_42_14.CCD |
| SP15sphe.CFG | 01-04-20\19_34_58.CCD |

## 15.4 Overview Plots: System Performance, Temperatures and Earthfield Variations.

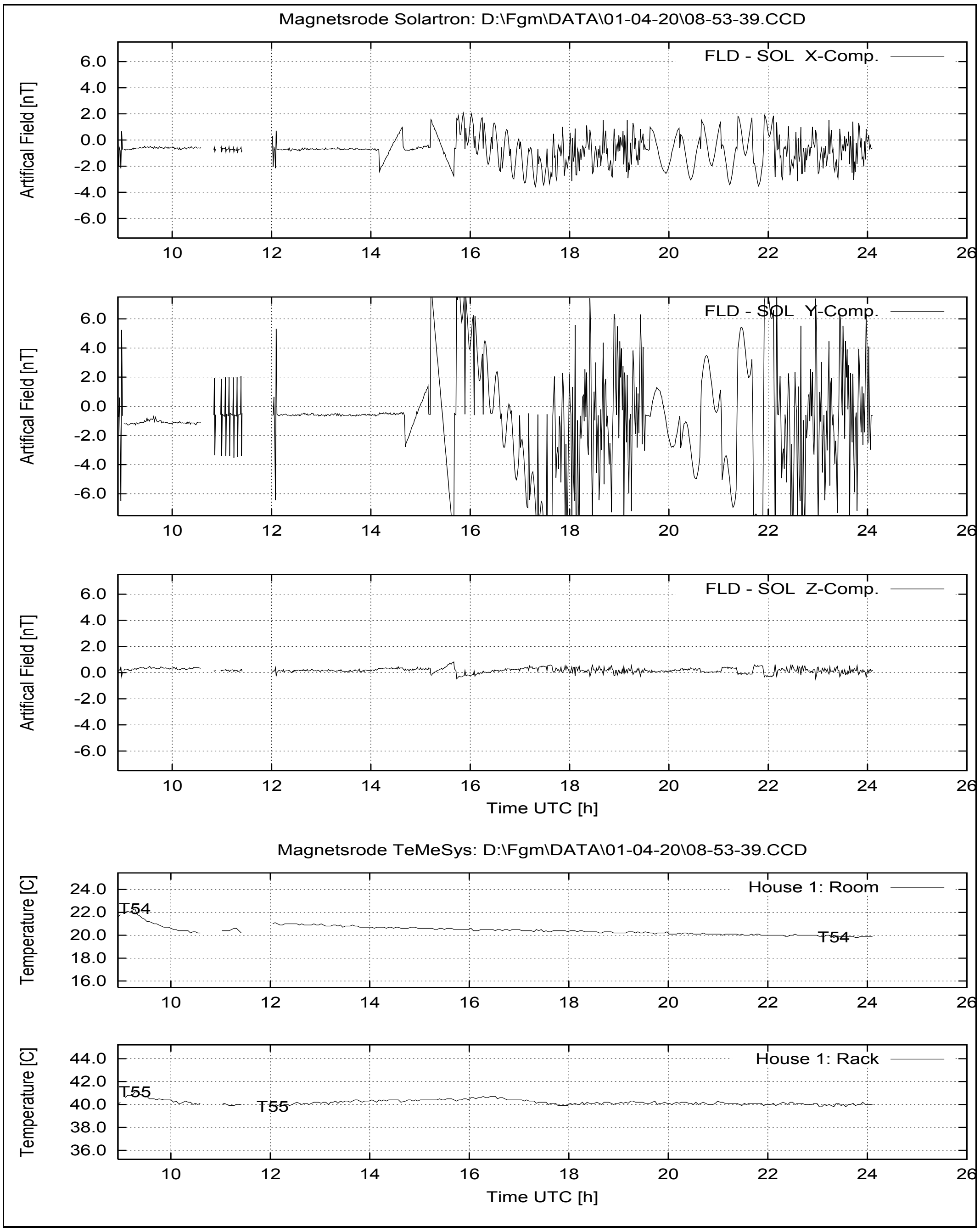


Figure 57: April 20, 2001: System Performance: FLD – SOL; Temperatures at House 1.

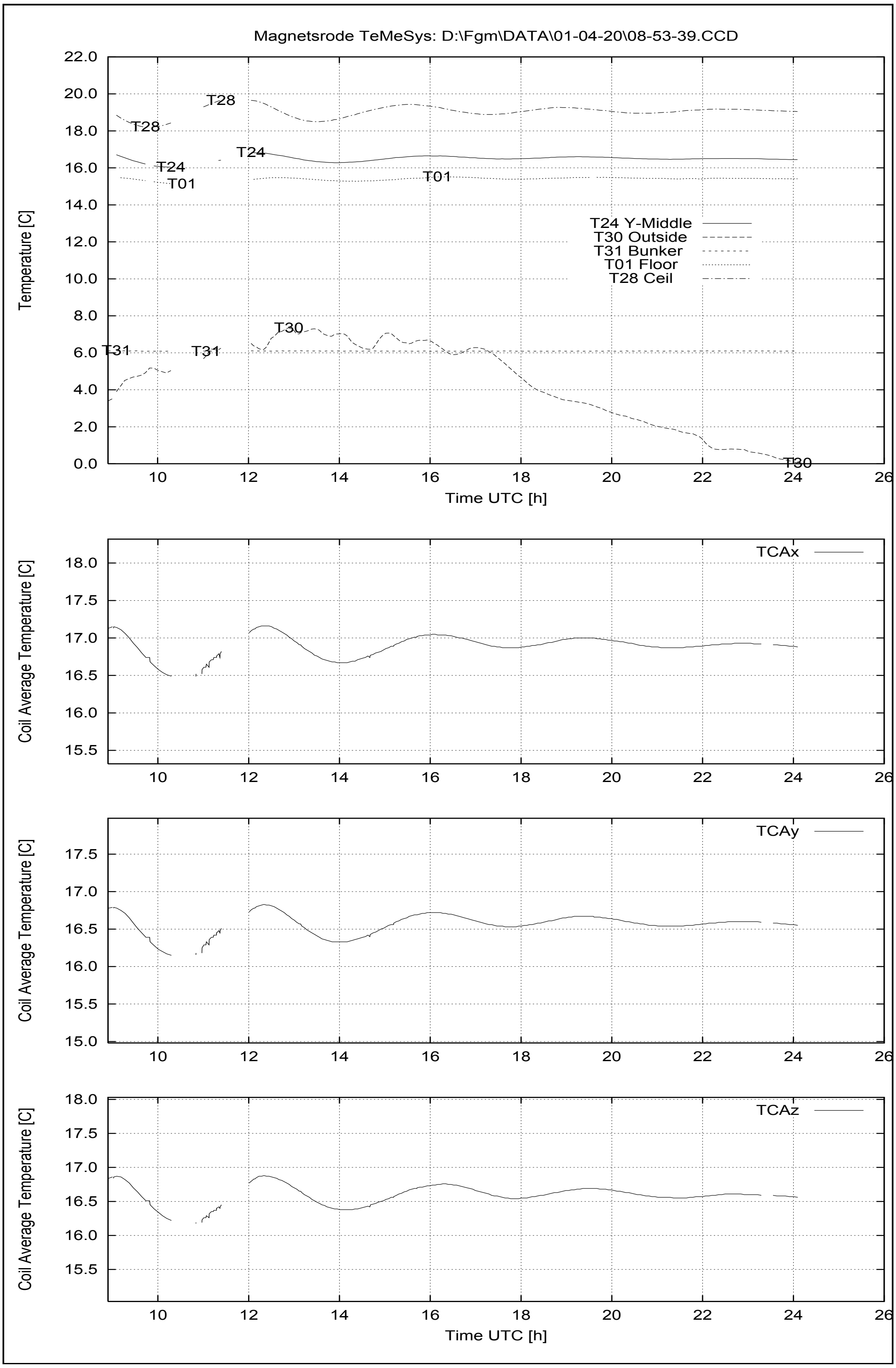


Figure 58: April 20, 2001: Temperatures House 2.

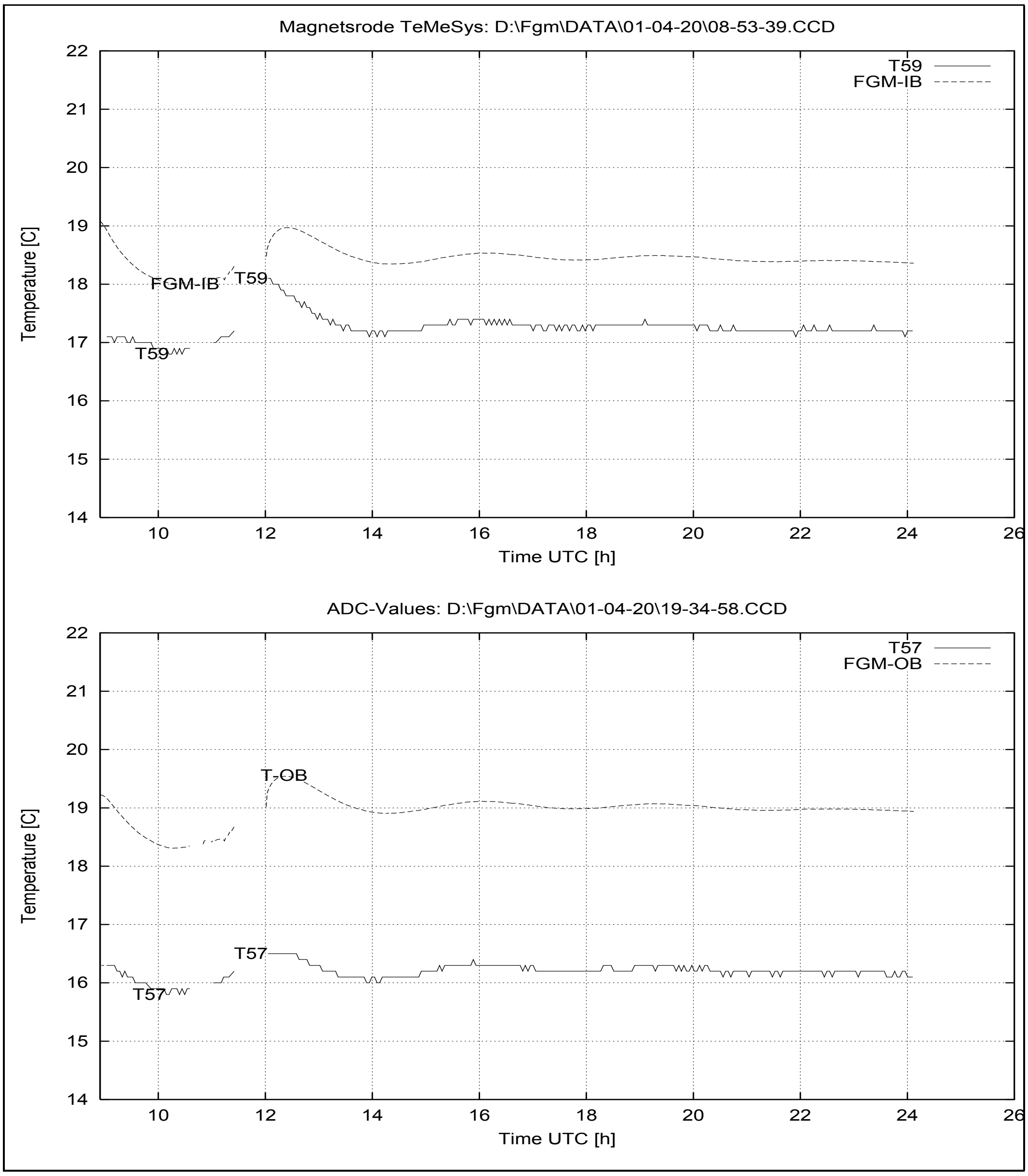


Figure 59: April 20, 2001: Sensor Temperatures at House 2.

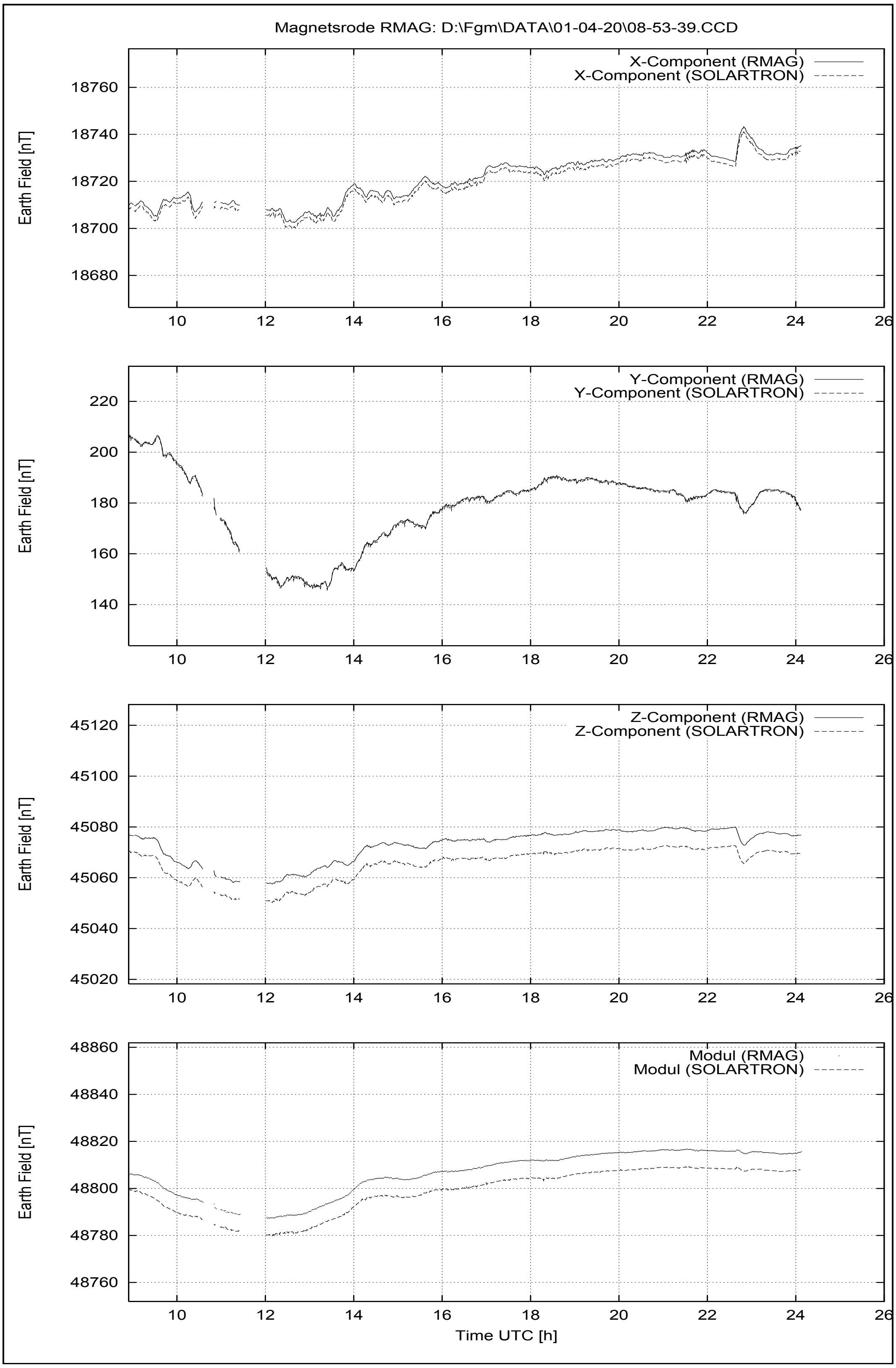


Figure 60: April 20, 2001: Earthfield variations.

# 16 Saturday April 21, 2001

## 16.1 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FS–IB,Continued

The measurements in the optical aligned position proceeded over night and ended at 10:08.

### 16.1.1 Data

| Configuration File | CCD File |
|---|---|
| LX15.CFG | 01-04-21\00-07-39.CCD |
| LY15.CFG | 01-04-21\00-38-39.CCD |
| LZ15.CFG | 01-04-21\01-09-40.CCD |
| SP15spir.CFG | 01-04-21\01-40-40.CCD |
| SP15sphe.CFG | 01-04-21\05-33-42.CCD |

After the data collection the setup was changed for the linearity measurements of the FS–OB sensor.

## 16.2 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FS–OB

The calibration mirror # OB was placed on the FS–OB sensor.
After the optical alignment of the FS–OB sensor (refer to table 2 column #2) the linearity, sensitivity and cross talk measurements were initialised.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FS–OB in optical aligned position at CoC<br>FS–IB south of CoC on aluminium support.<br>Refer to picture 247. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | M010421.SEQ |
| Start: | 21.04.01 11:21 |
| End: | 23.04.01 06:36 |

#### 16.2.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-21\11-21-57.CCD |
| LX15.CFG | 01-04-21\11-29-19.CCD |
| LY15.CFG | 01-04-21\12-00-20.CCD |
| LZ15.CFG | 01-04-21\12-31-22.CCD |
| SP15spir.CFG | 01-04-21\13-02-23.CCD |
| SP15sphe.CFG | 01-04-21\16-55-08.CCD |
| LX15.CFG | 01-04-21\21-27-48.CCD |
| LY15.CFG | 01-04-21\21-58-48.CCD |
| LZ15.CFG | 01-04-21\22-29-49.CCD |
| SP15spir.CFG | 01-04-21\23-00-49.CCD |

## 16.3 Overview Plots: System Performance, Temperatures and Earthfield Variations.

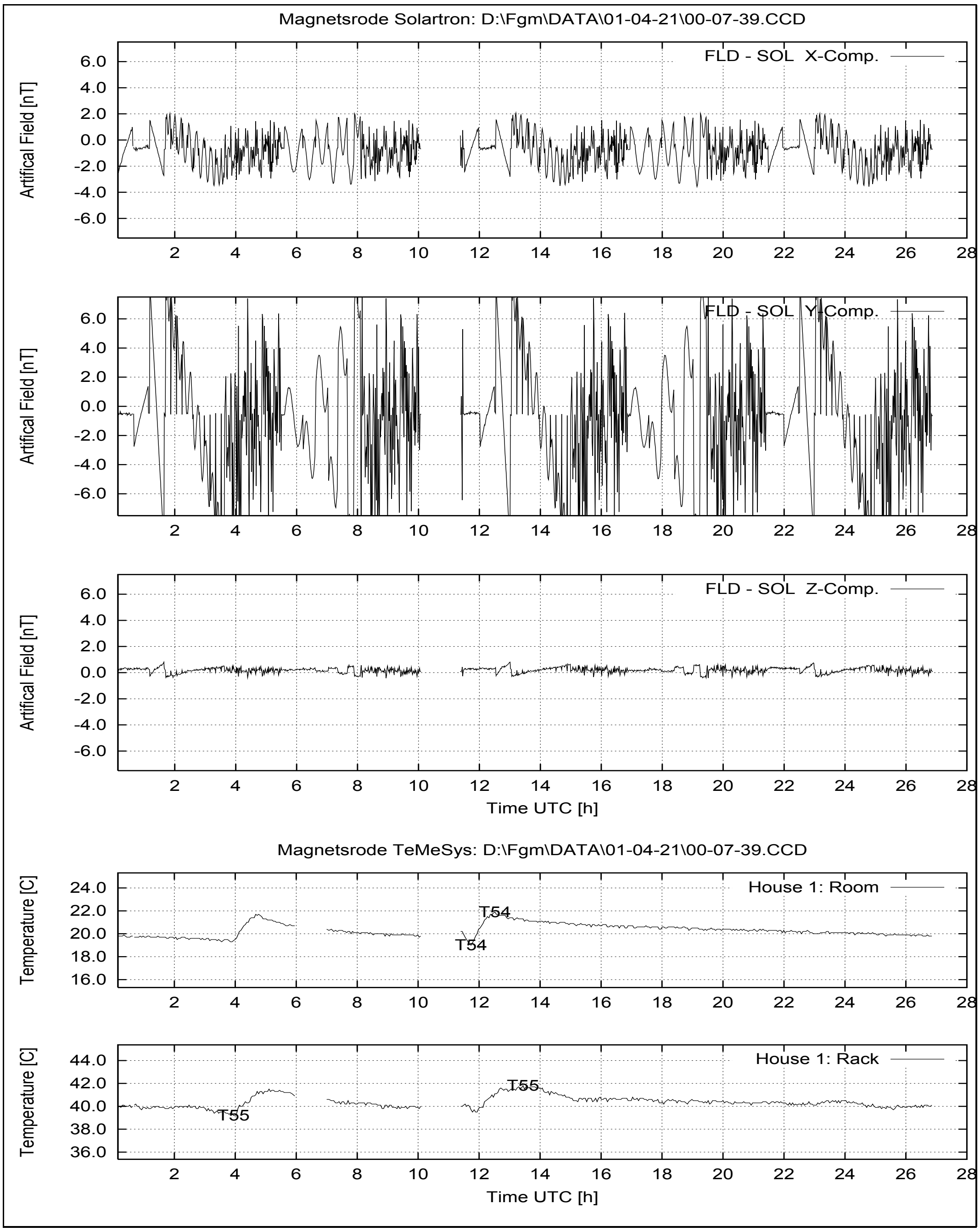


Figure 61: April 21, 2001: System Performance: FLD – SOL; Temperatures at House 1.

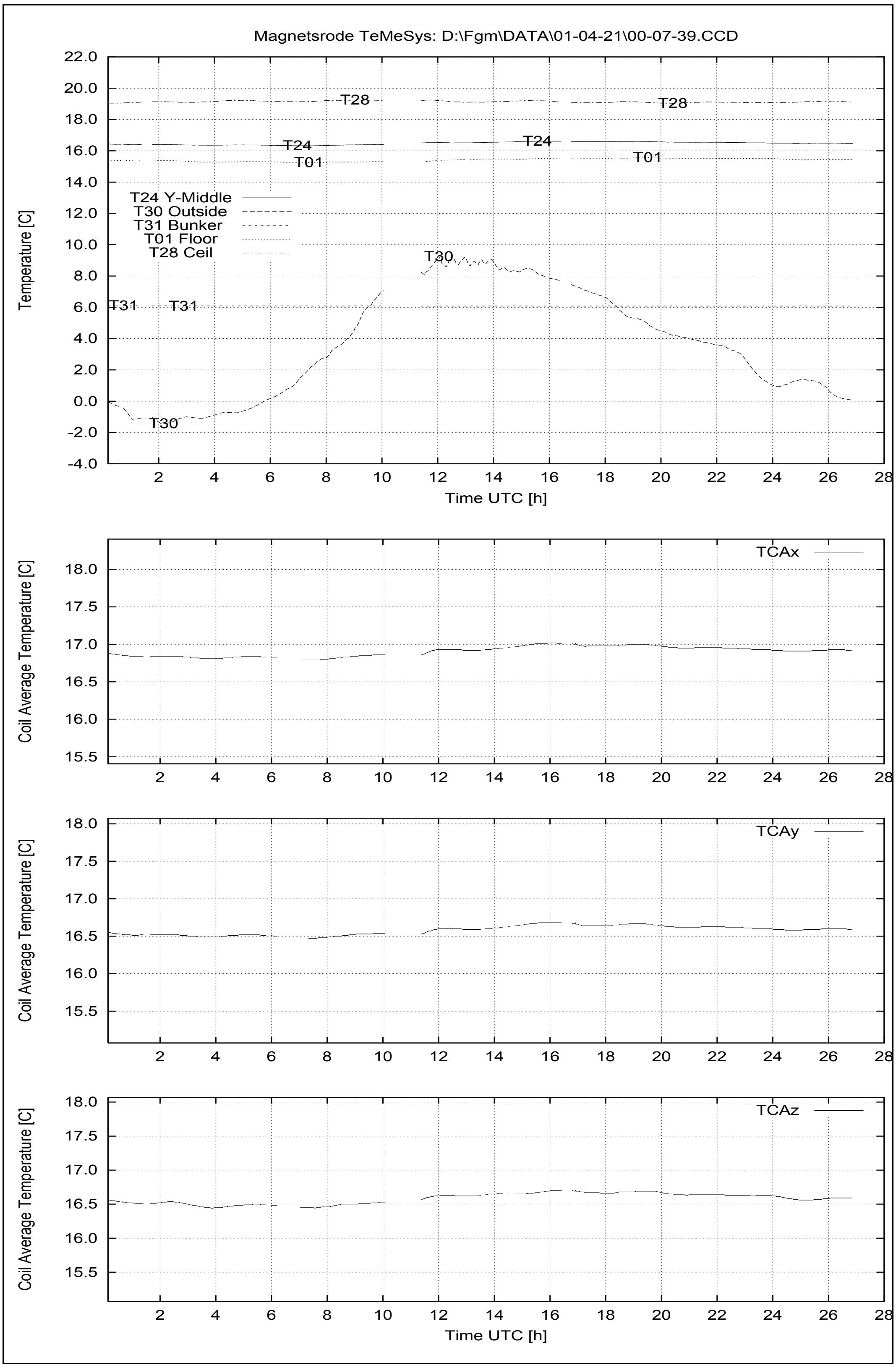


Figure 62: April 21, 2001: Temperatures House 2.

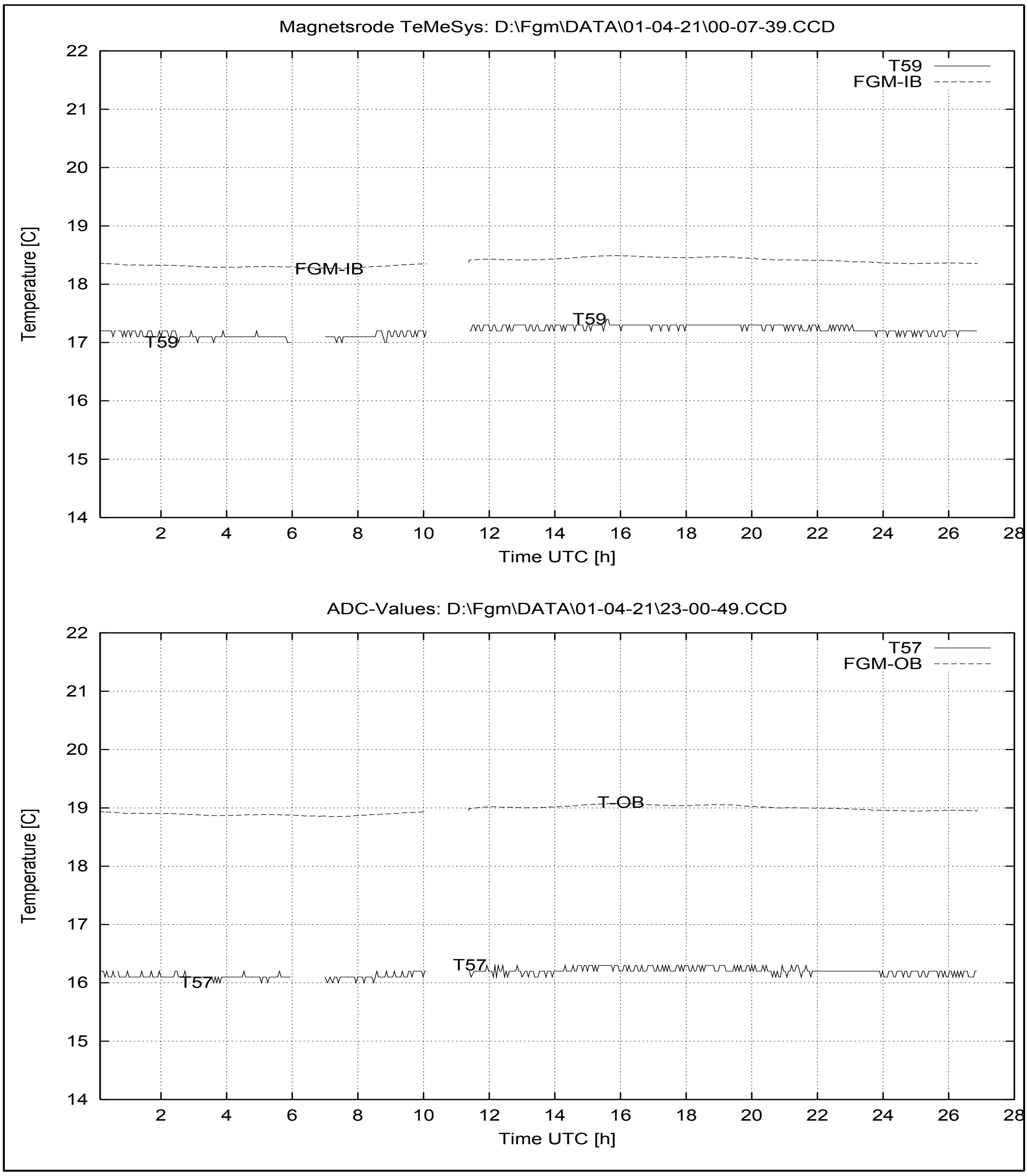


Figure 63: April 21, 2001: Sensor Temperatures at House 2.

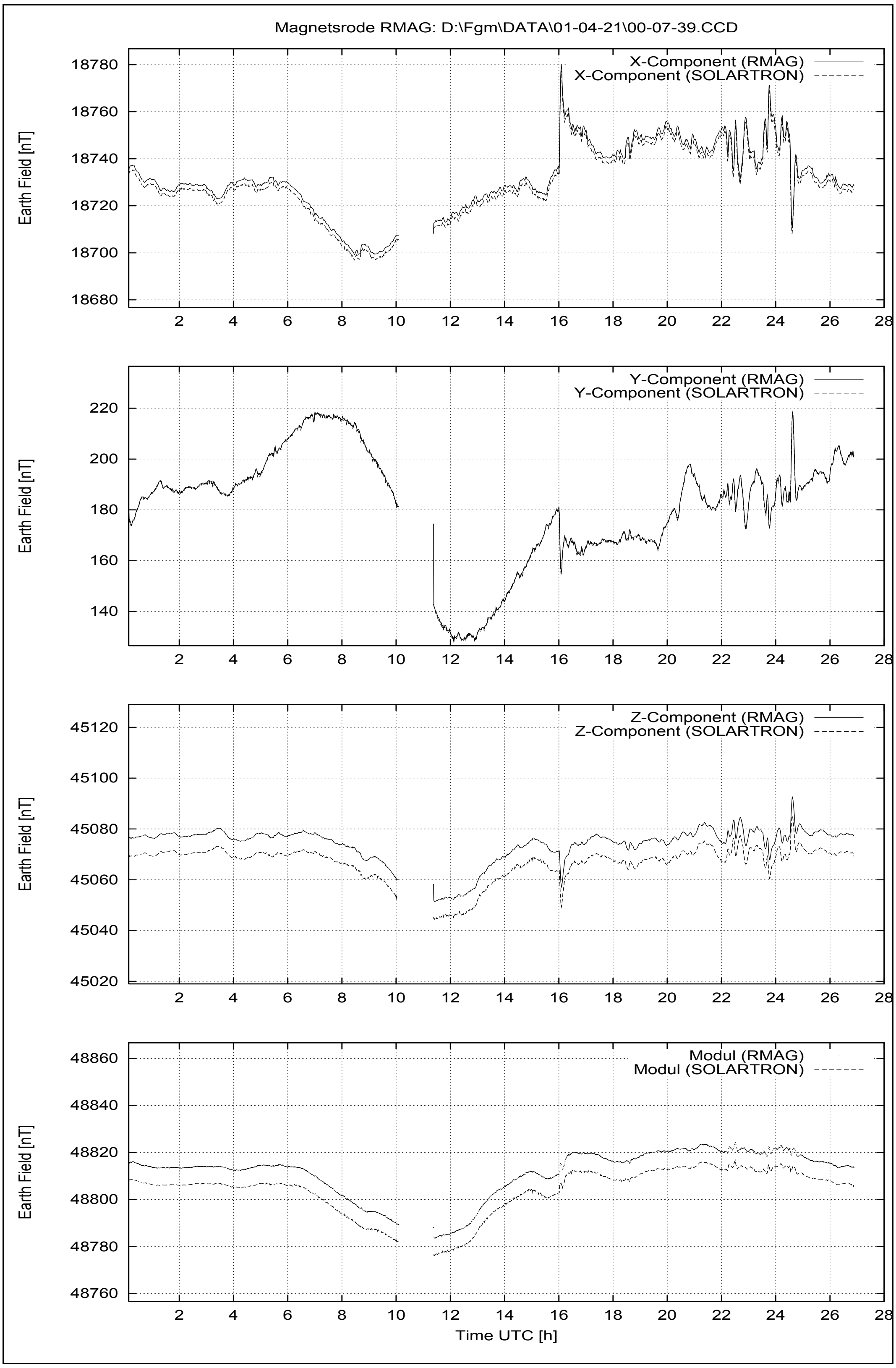


Figure 64: April 21, 2001: Earthfield variations.

# 17 Sunday April 22, 2001

The measurements on the OB sensor were executed automatically on this sunday. No personnel around today.

## 17.1 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FS–OB,Continued

In the early morning a spike sphere measurement was executed.

### 17.1.1 Data

| Configuration File | CCD File |
|---|---|
| `SP15sphe.CFG` | `01-04-22\02_53_34.CCD` |

Afterwards some earth field variation measurements were performed.

## 17.2 Earth Field Variation Check. DPU: FM, Sensors: FS–IB & FS–OB

The check is designed to investigate the regular registration of the two FGM sensors. The sensors are placed and fixed on the aluminium support on the open thermal test box plate (They have not been touched since the optical alignment of the FS–OB on Saturday.). The distance between them is 15 cm. The test has been performed with a fixed suppressed earth field.

| | |
|---|---|
| Purpose: | Earth field variation check. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm.<br>FS–OB optical aligned at CoC. FS–IB south of CoC. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP; |
| File: | Running `M010422.CFG` |
| Start: | 22.04.01 07:26 |
| End: | 22.04.01 20:34 |

#### 17.2.1 Data

| Configuration File | CCD File | CCD File | Remarks |
|---|---|---|---|
| var.CFG | 01-04-22\07_26_14.CCD | | |
| var.CFG | 01-04-22\08_26_55.CCD | | |
| var.CFG | 01-04-22\09_27_35.CCD | | |
| var.CFG | 01-04-22\10_28_16.CCD | | |
| var.CFG | 01-04-22\11_28_56.CCD | | |
| var.CFG | 01-04-22\12_29_37.CCD | | |
| var.CFG | 01-04-22\13_30_37.CCD | | |
| var.CFG | 01-04-22\14_31_17.CCD | | |
| var.CFG | 01-04-22\15_31_57.CCD | | |
| var.CFG | 01-04-22\16_32_38.CCD | | |
| var.CFG | 01-04-22\17_33_19.CCD | | |
| var.CFG | 01-04-22\18_34_00.CCD | | |
| var.CFG | 01-04-22\19_34_40.CCD | | |

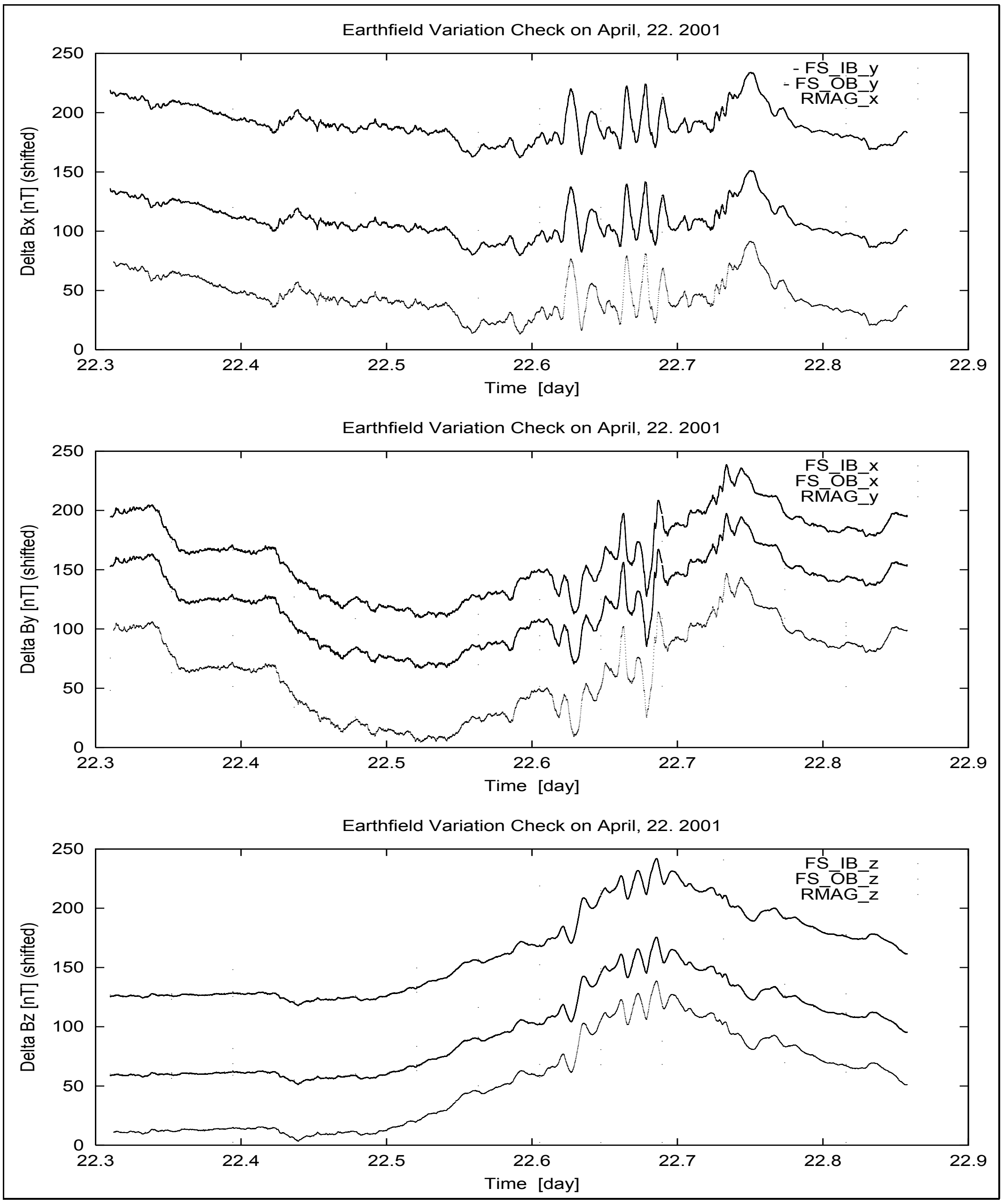


Figure 65: April, 22. 2001: Earth field variation Check

## 17.3 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FS–OB,Continued

After the earth field variation measurements have been finished the generated sequence continued and some linearity measurements were executed. The sensor setup is still unchanged. No personnel around.

### 17.3.1 Data

| Configuration File | CCD File |
|---|---|
| LX15.CFG | 01-04-22\20_35_21.CCD |
| LY15.CFG | 01-04-22\21_06_22.CCD |
| LZ15.CFG | 01-04-22\21_37_22.CCD |
| SP15spir.CFG | 01-04-22\22_08_23.CCD |

## 17.4 Overview Plots: System Performance, Temperatures and Earthfield Variations.

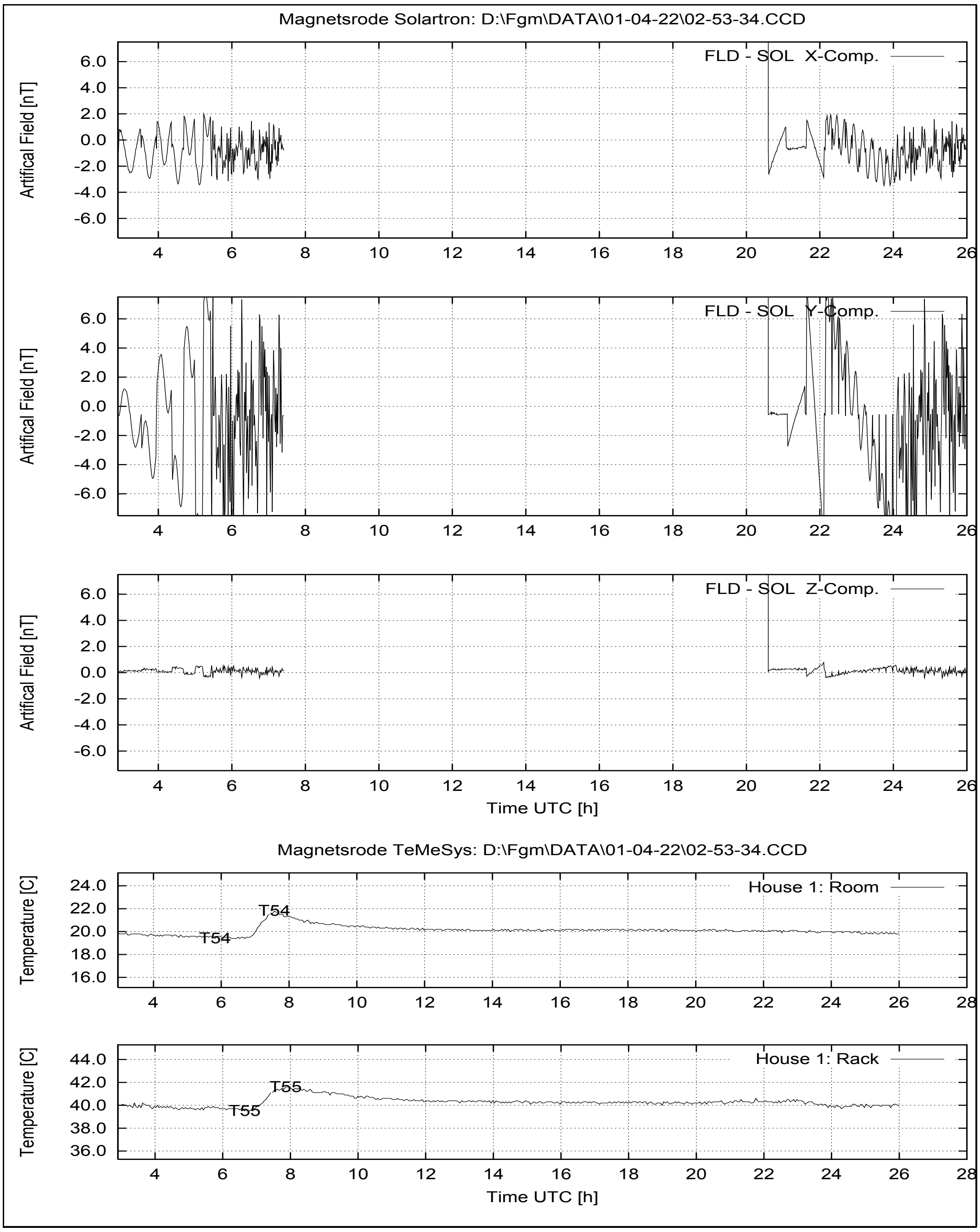


Figure 66: April 22, 2001: System Performance: FLD – SOL; Temperatures at House 1.

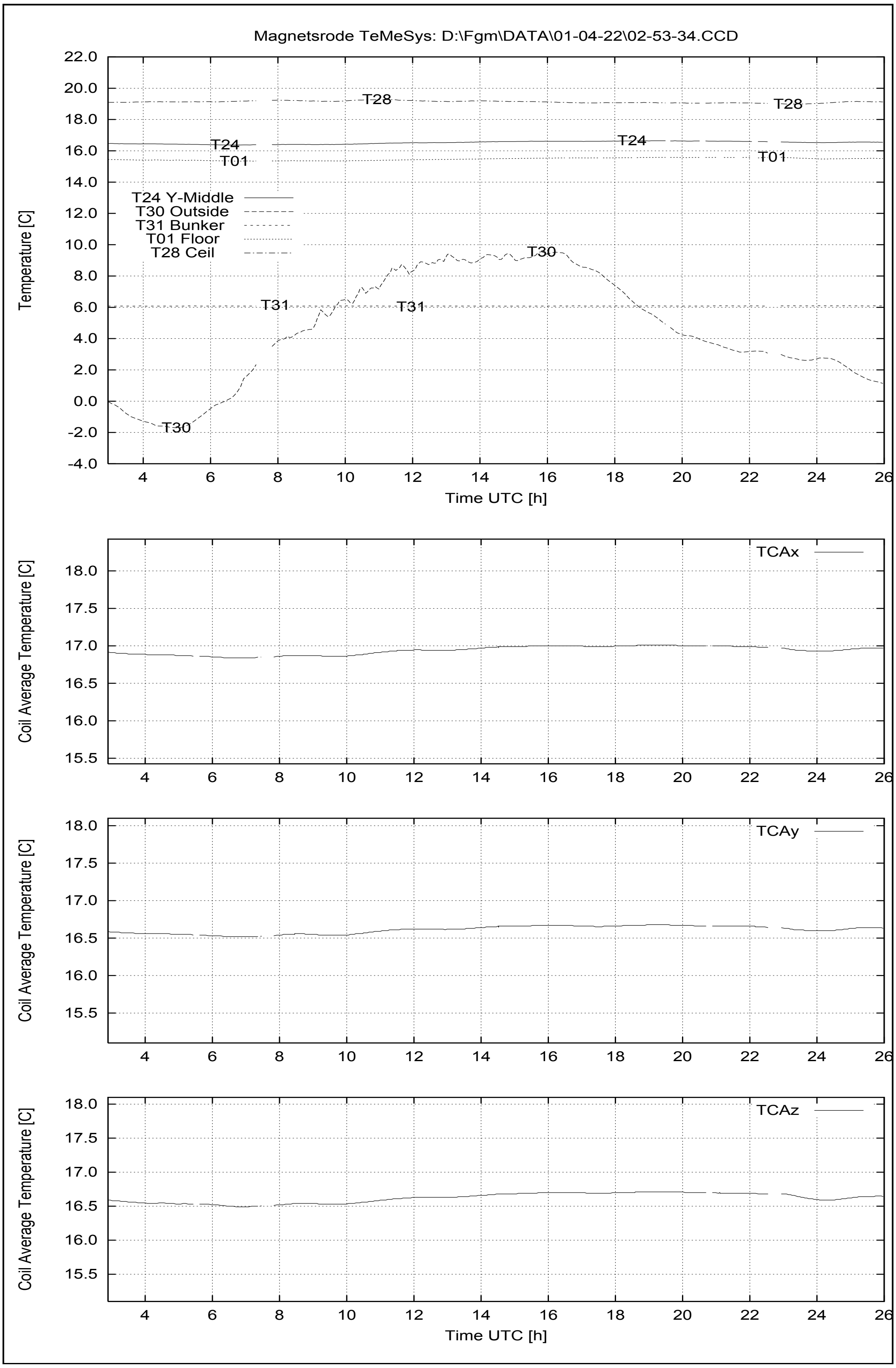


Figure 67: April 22, 2001: Temperatures House 2.

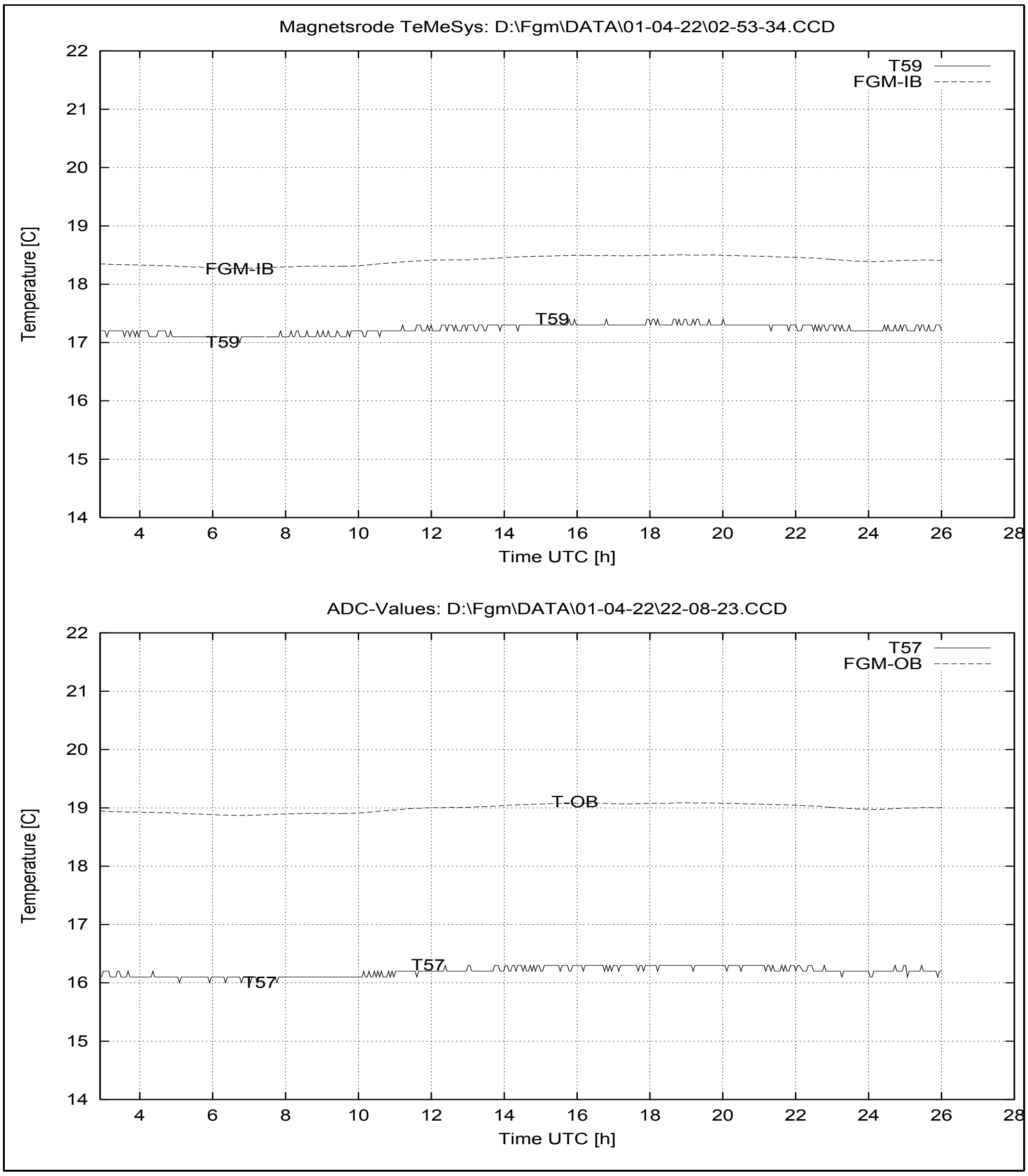


Figure 68: April 22, 2001: Sensor Temperatures at House 2.

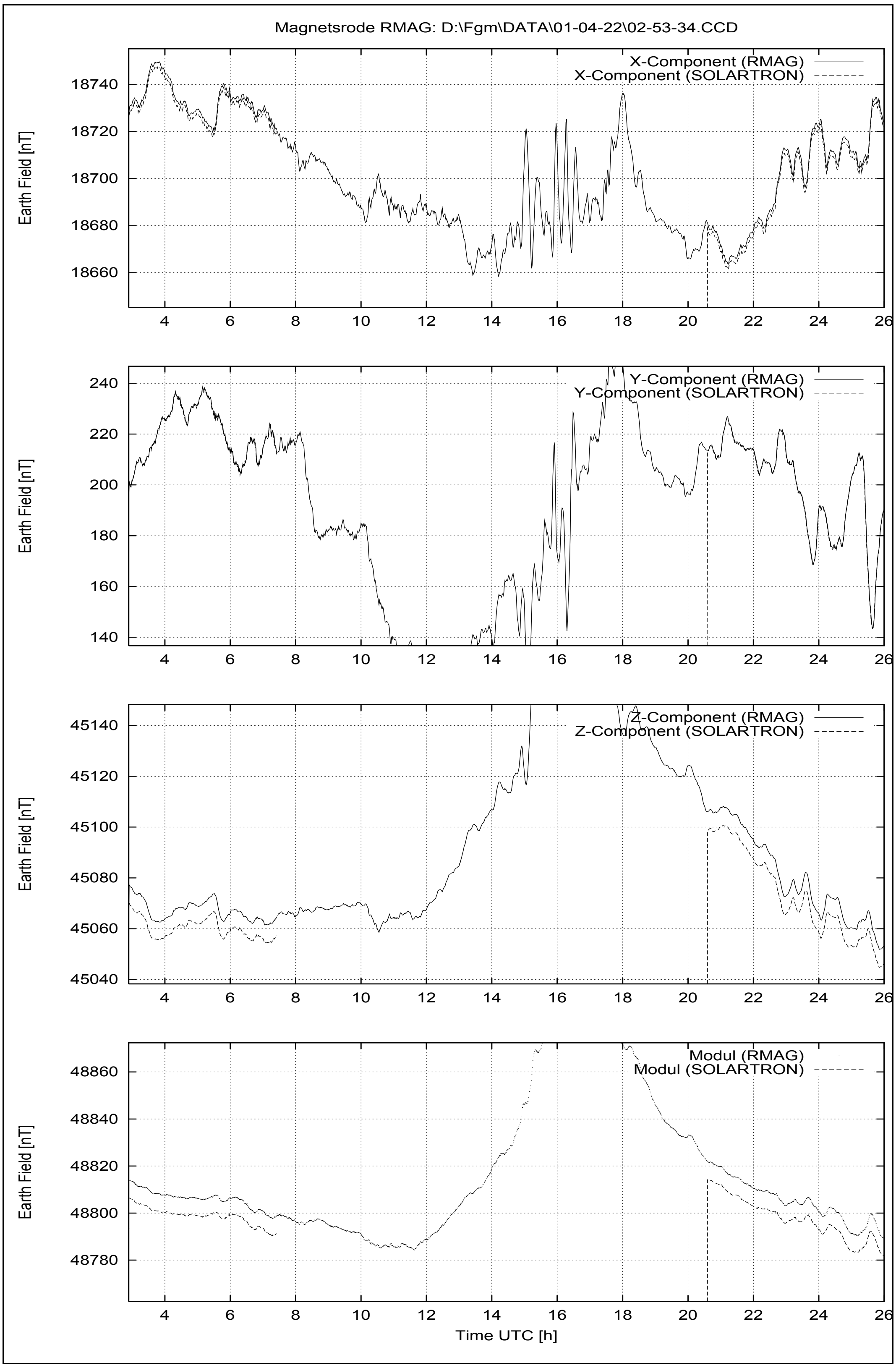


Figure 69: April 22, 2001: Earthfield variations.

# 18 Monday April 23, 2001

## 18.1 Linearity, Sensitivity and Cross Talk — DPU: FM, Sensors: FS–OB,Continued

The linearity measurements finished in the early morning hours.

### 18.1.1 Data

| Configuration File | CCD File |
| --- | --- |
| `SP15sphe.CFG` | `01-04-23\02_01_04.CCD` |

After these measurements the setup was changed for the frequency measurements.

## 18.2 Digital Frequency Response — DPU: FM, Sensors FS–IB & FS–OB

The digital frequency response function will be measured with two different amplitudes. For these chosen amplitudes the frequency will be discretely swept from 1000 Hz down to 100 mHz. The sensors were placed diagonal in space on the open Thermal Test Box mounting plate (refer to picture 248). The aluminium sensor support is elevated by 45° from the $X_C$–$Y_C$ plane using the gray diagonal stand which is turned around $Z_C$ by 54°. This is to get equal signals on all sensor components from the fields applied on the $Y_C$ component. The measurements have been performed for both sensors in parallel.

| | |
| --- | --- |
| Purpose: | Measure the digital frequency response |
| Conditions: | FS–IB & FS–OB placed diagonal in space in the coil system center.<br>FS–IB is the upper, FS–OB the lower one.<br>AC–Generator signal (AC2) applied to $Y_C$ without attenuator. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch6 Generator signal (AC2) direct (no attenuation);<br>Ch7 FSP pulse;<br>Timer 500, SumUp 6, Vector Rate 16.67 Hz. |
| Files: | `F.SEQ` |
| Start: | 23.04.01 07:00 |
| End: | 23.04.01 08:41 |

### 18.2.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-23\07_00_01.CCD |
| fd_h.CFG | 01-04-23\07_07_33.CCD |
| fd_l.CFG | 01-04-23\07_54_55.CCD |

After the frequency measurements have been finished, the setup was changed to perform the offset measurements on the FS sensor connected to the FM DPU.

## 18.3 Offset Measurements — DPU: FM, Sensors FS–IB & FS–OB

To perform the offset measurements both sensors are mounted with their aluminium support at the stand on top of the green trolley. Figure 249 shows a photographic view of the setup in the normal position for the measurement of FS–OB. The following figures show the turned positions according to the test procedure.

| | |
|---|---|
| Purpose: | Measure the FS–IB & and FS–OB offset. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vector rate 1.00 Hz. |
| PREMA: | |
| Files: | OFF?_?1.SEQ |
| Start: | 23.04.01 08:53 |
| End: | 23.04.01 09:55 |

### 18.3.1 Data

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 1: Normal<br>OB @ CoC, height: 13cm, 010423B |
| ALI10.cfg | 01-04-23\08_53_30.CCD | |
| offx_n1.CFG | 01-04-23\09_01_01.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 2: Normal<br>IB @ CoC, height: 13cm, No Photo |
| offx_n1.CFG | 01-04-23\09_04_58.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 3: Turned @ \Zc`<br>`OB @ CoC, height: 13cm, 010423C` |
| `ALI10.cfg` | `01-04-23\09_10_36.CCD` | |
| `offx_t1.CFG` | `01-04-23\09_17_46.CCD` | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 4: Turned @ \Zc`<br>`IB @ CoC, height: 13cm, No Photo` |
| `offx_t1.CFG` | `01-04-23\09_24_30.CCD` | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 5: Turned @ \Yc`<br>`OB @ CoC, height: 20cm, 010423D` |
| `ALI10.cfg` | `01-04-23\09_34_59.CCD` | |
| `offz_t1.CFG` | `01-04-23\09_42_09.CCD` | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | `Position 6: Turned @ \Yc`<br>`IB @ CoC, height: 20cm, No Photo` |
| `offz_t1.CFG` | `01-04-23\09_49_30.CCD` | |

After the successful executed offset measurement of the FS sensor with the FM DPU we changed the setup to perform linearity measurements in the combination **FS DPU with the FS Sensors**.

### 18.4 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FS–IB

The calibration mirror #IB was placed on the FS–IB sensor.
After the optical alignment of the FS–IB sensor (refer to table 2 column #3) the linearity, sensitivity and cross talk measurements were initialised.

| | |
|---|---|
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FS–IB in optical aligned position at CoC<br>FS–OB north of CoC on aluminium support.<br>Refer to picture 253. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010423.SEQ` |
| Start: | 23.04.01 10:25 |
| End: | 24.04.01 08:36 |

#### 18.4.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-23\10_25_59.CCD |
| STABTST.cfg | 01-04-23\10_33_31.CCD |
| STABTST.cfg | 01-04-23\11_34_11.CCD |
| LX15.CFG | 01-04-23\12_34_52.CCD |
| LY15.CFG | 01-04-23\13_06_15.CCD |
| LZ15.CFG | 01-04-23\13_37_46.CCD |
| SP15spir.CFG | 01-04-23\14_09_10.CCD |
| SP15sphe.CFG | 01-04-23\18_01_54.CCD |
| LX15.CFG | 01-04-23\22_34_36.CCD |
| LY15.CFG | 01-04-23\23_05_35.CCD |
| LZ15.CFG | 01-04-23\23_36_35.CCD |

## 18.5 Overview Plots: System Performance, Temperatures and Earth-field Variations.

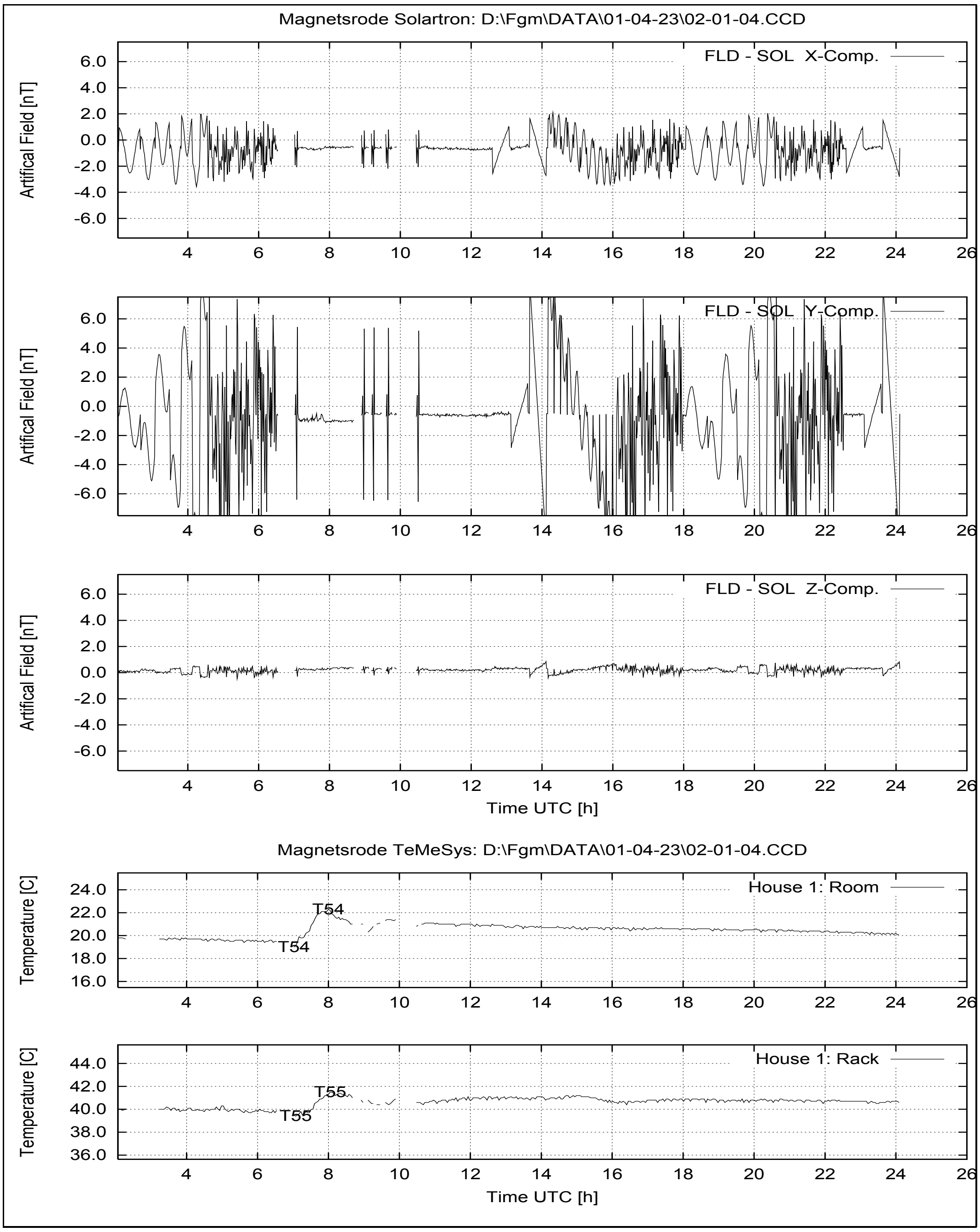


Figure 70: April 23, 2001: System Performance: FLD – SOL; Temperatures at House 1.

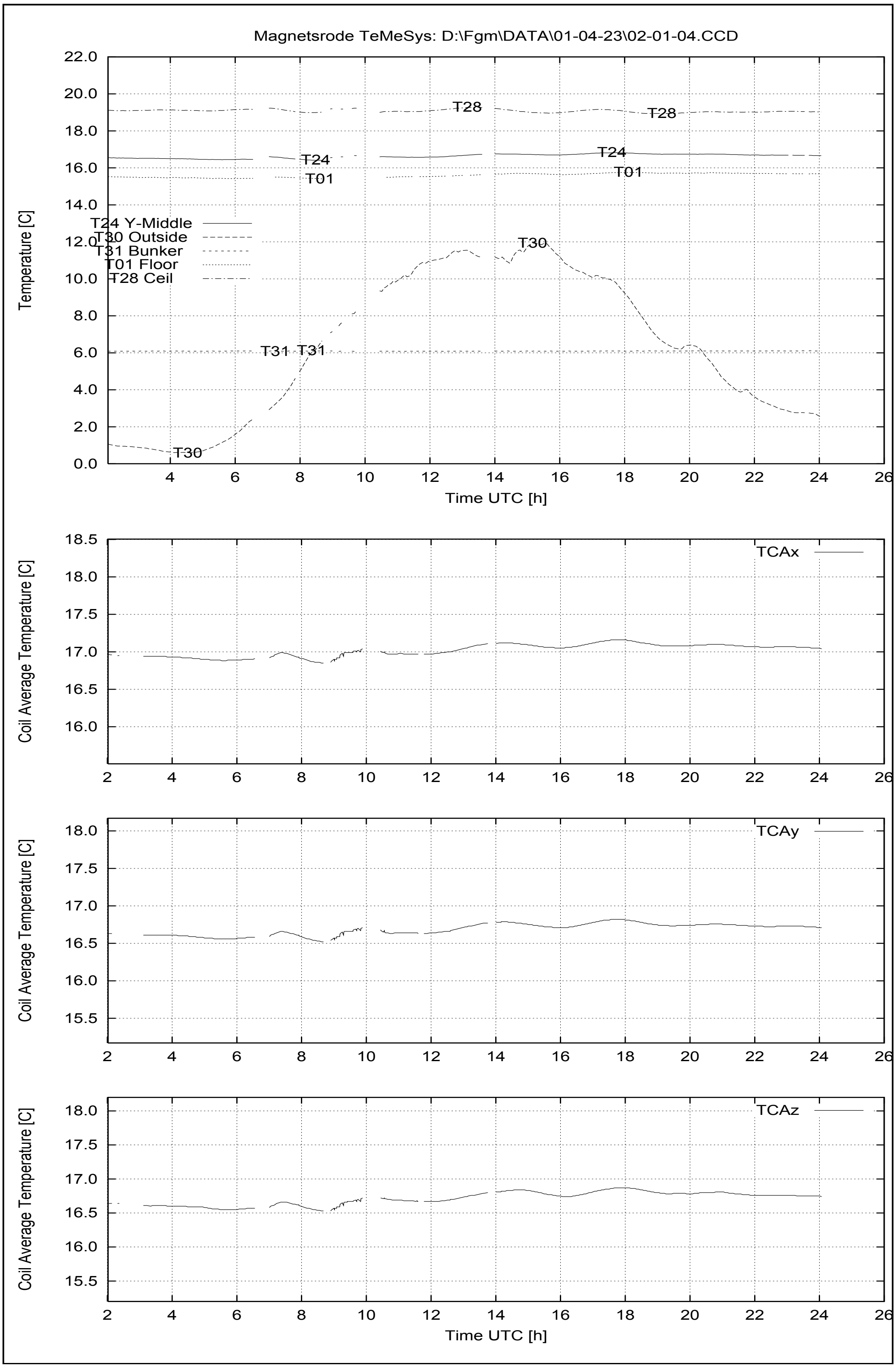


Figure 71: April 23, 2001: Temperatures House 2.

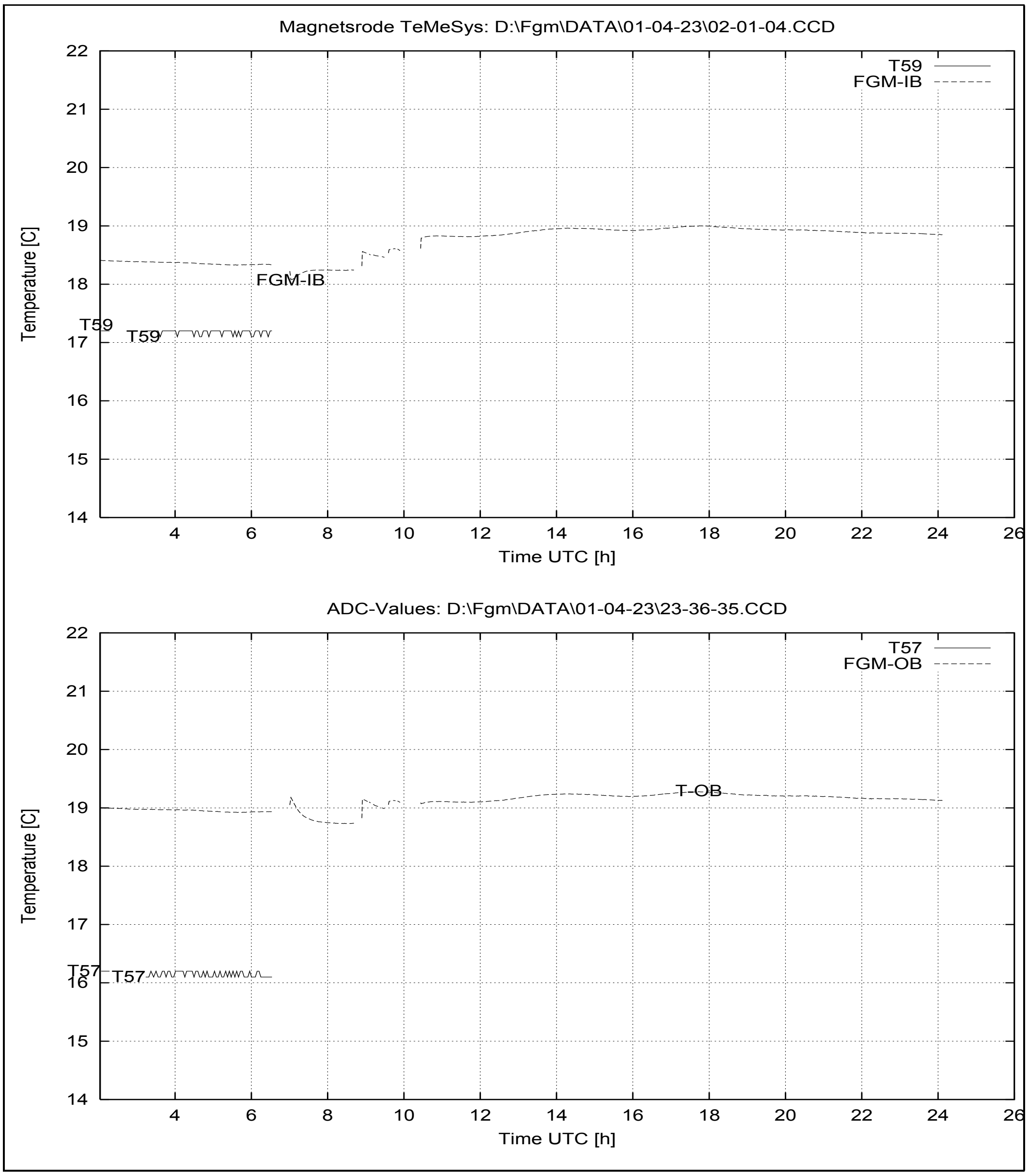


Figure 72: April 23, 2001: Sensor Temperatures at House 2.

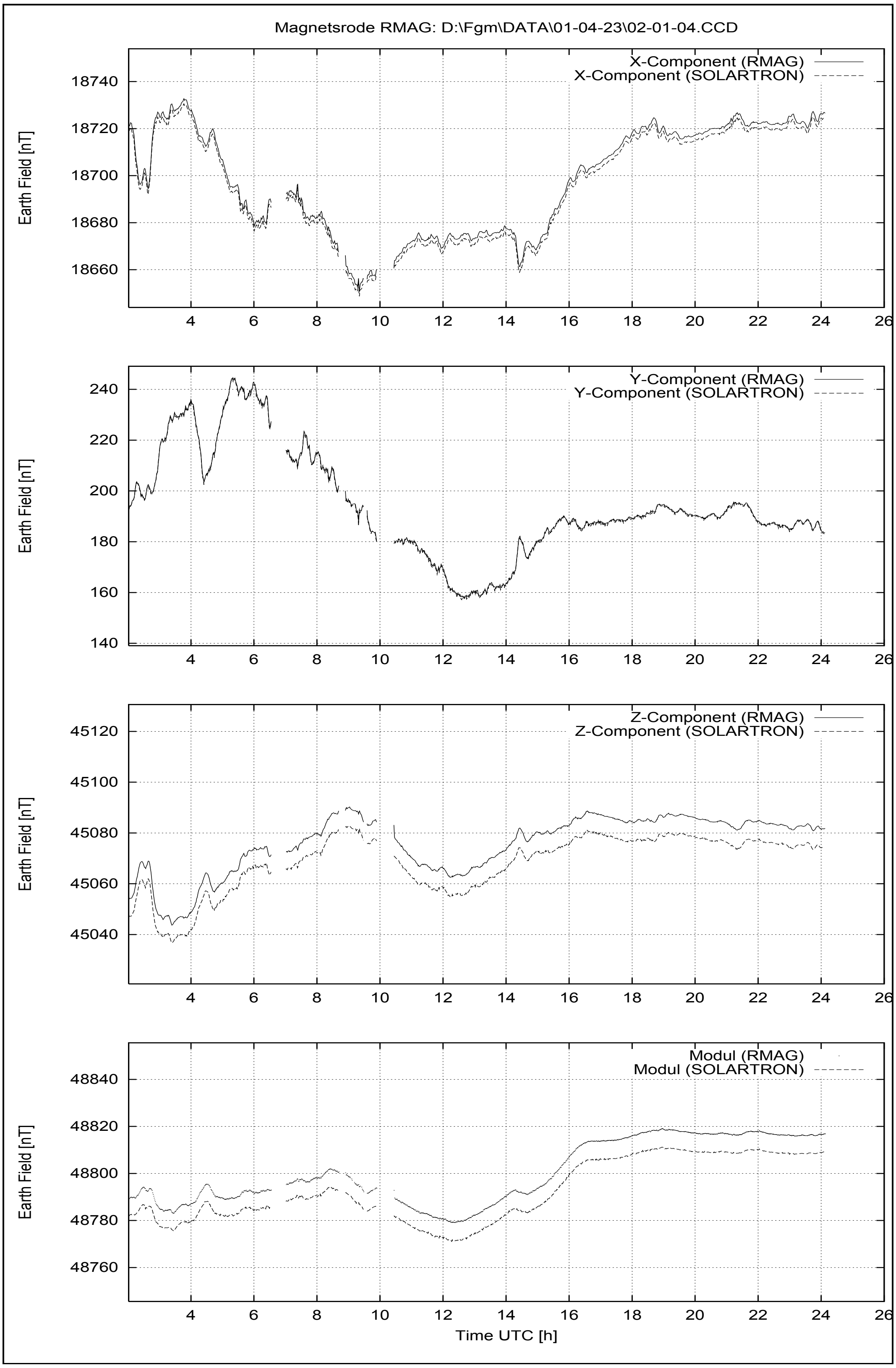


Figure 73: April 23, 2001: Earthfield variations.

# 19 Tuesday April 24, 2001

## 19.1 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FS–IB,Continued

The missing two measurements of the actual linearity sequence were performed in the early morning hours.

### 19.1.1 Data

| Configuration File | CCD File |
| --- | --- |
| SP15spir.CFG | 01-04-24\00_07_37.CCD |
| SP15sphe.CFG | 01-04-24\04_00_21.CCD |

After the IB measurements the missing OB measurements were performed.

## 19.2 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FS–OB

The calibration mirror #OB was placed on the FS–OB sensor.
After the optical alignment of the FS–OB sensor (refer to table 2 column #4) the linearity, sensitivity and cross talk measurements were initialised.

| | |
| --- | --- |
| Purpose: | Measure the linearity, sensitivity and cross talk data set |
| Conditions: | FS–OB in optical aligned position at CoC<br>FS–IB south of CoC on aluminium support.<br>Refer to picture 255. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV;<br>Ch7 FSP pulse;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `M010424.SEQ` |
| Start: | 24.04.01 11:22 |
| End: | 25.04.01 09:32 |

### 19.2.1 Data

| Configuration File | CCD File |
| --- | --- |
| ALI10.cfg | 01-04-24\11_22_15.CCD |
| STABTST.cfg | 01-04-24\11_29_38.CCD |
| STABTST.cfg | 01-04-24\12_30_17.CCD |
| LX15.CFG | 01-04-24\13_30_57.CCD |
| LY15.CFG | 01-04-24\14_01_58.CCD |
| LZ15.CFG | 01-04-24\14_32_59.CCD |
| SP15spir.CFG | 01-04-24\15_03_59.CCD |
| SP15sphe.CFG | 01-04-24\18_56_42.CCD |
| LX15.CFG | 01-04-24\23_29_22.CCD |

## 19.3 Overview Plots: System Performance, Temperatures and Earthfield Variations.

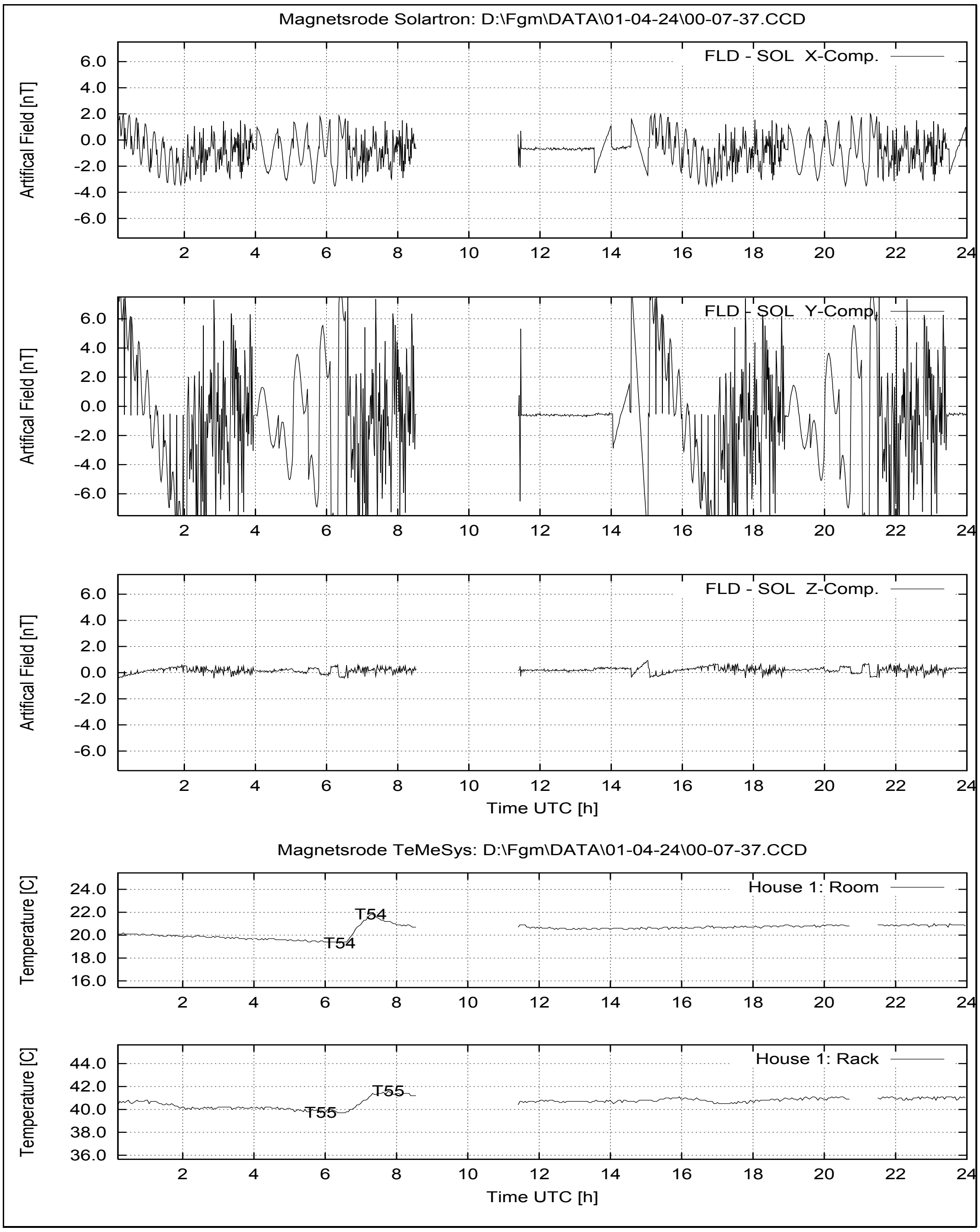


Figure 74: April 24, 2001: System Performance: FLD – SOL; Temperatures at House 1.

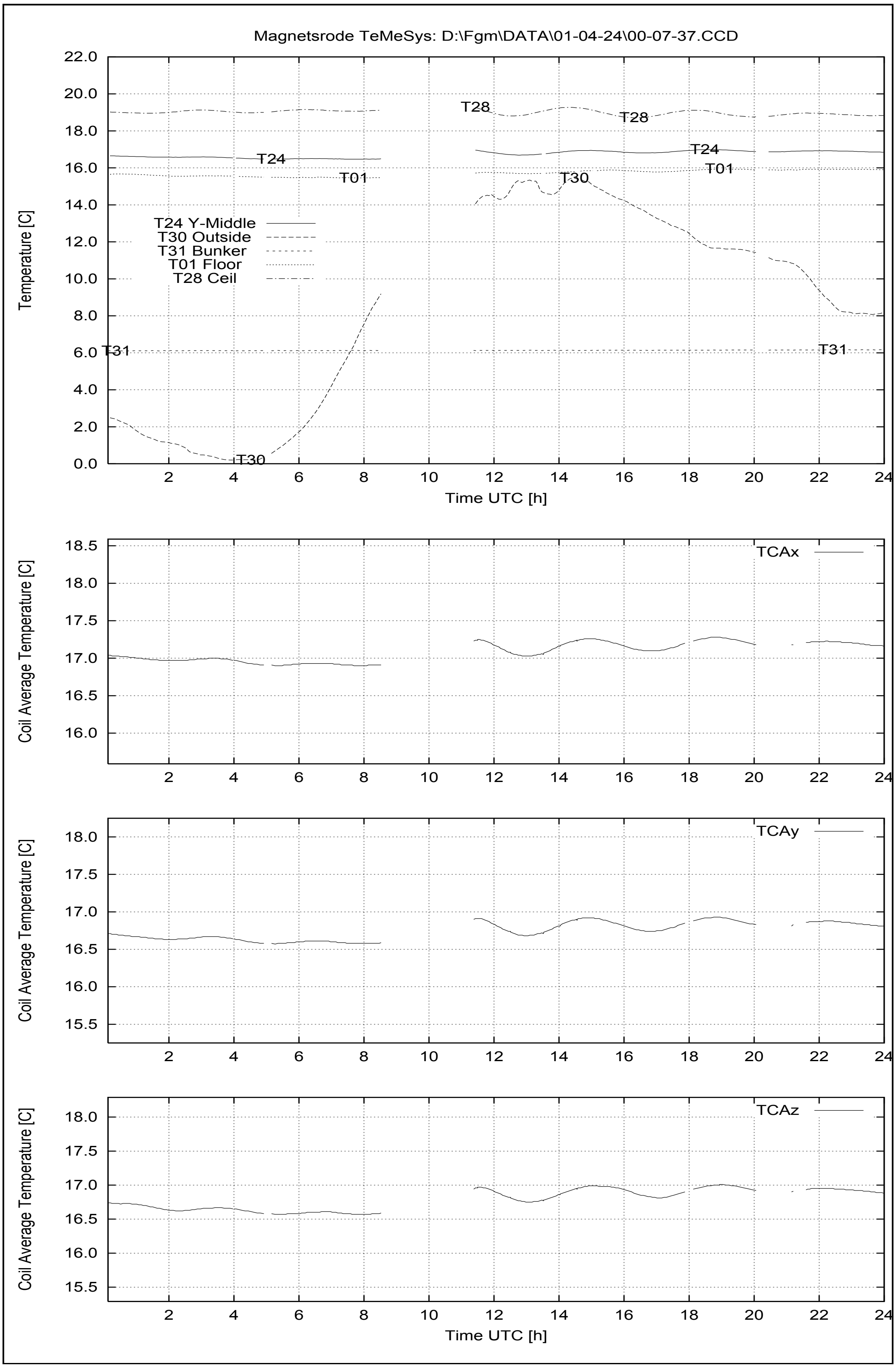


Figure 75: April 24, 2001: Temperatures House 2.

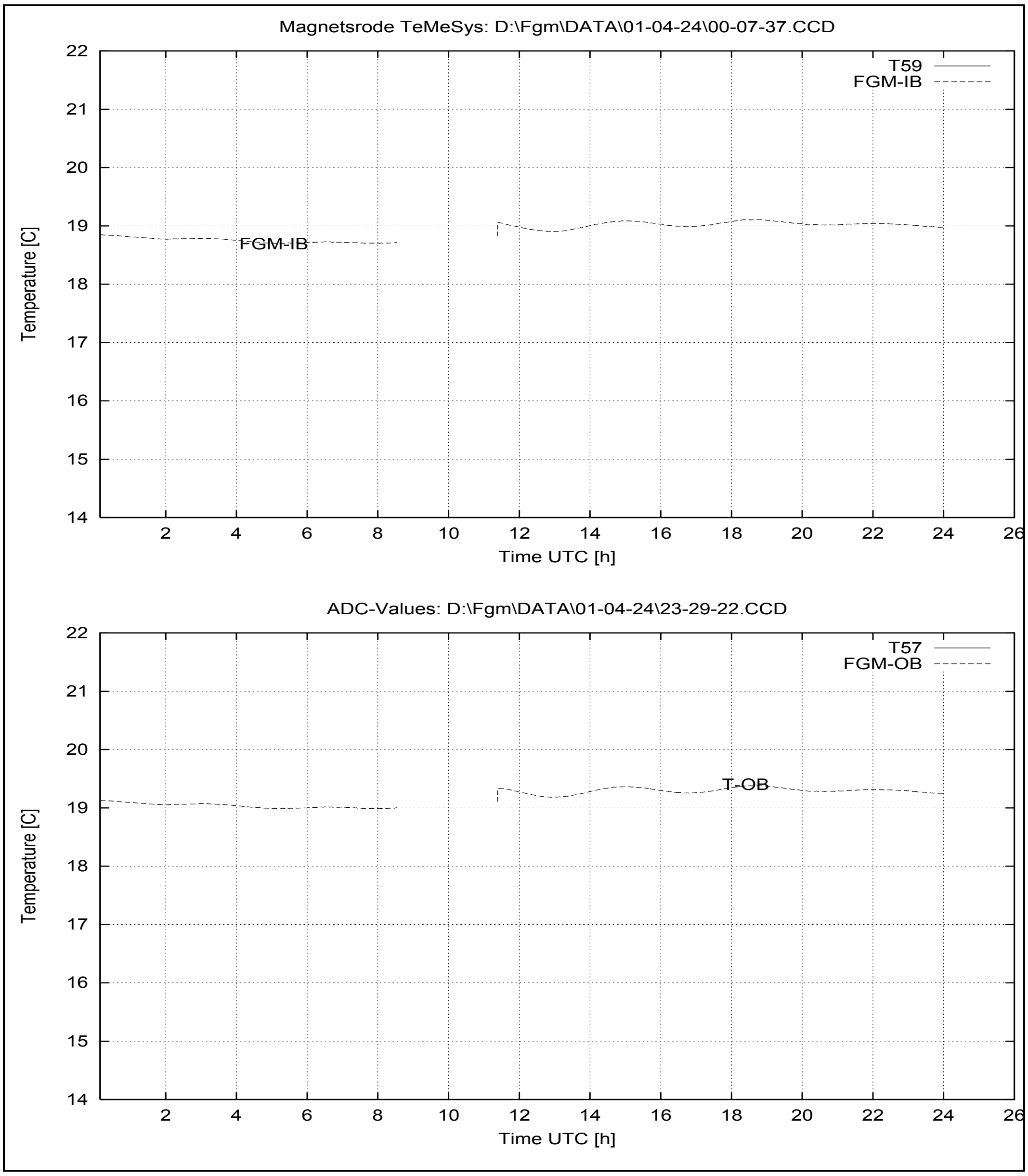


Figure 76: April 24, 2001: Sensor Temperatures at House 2.

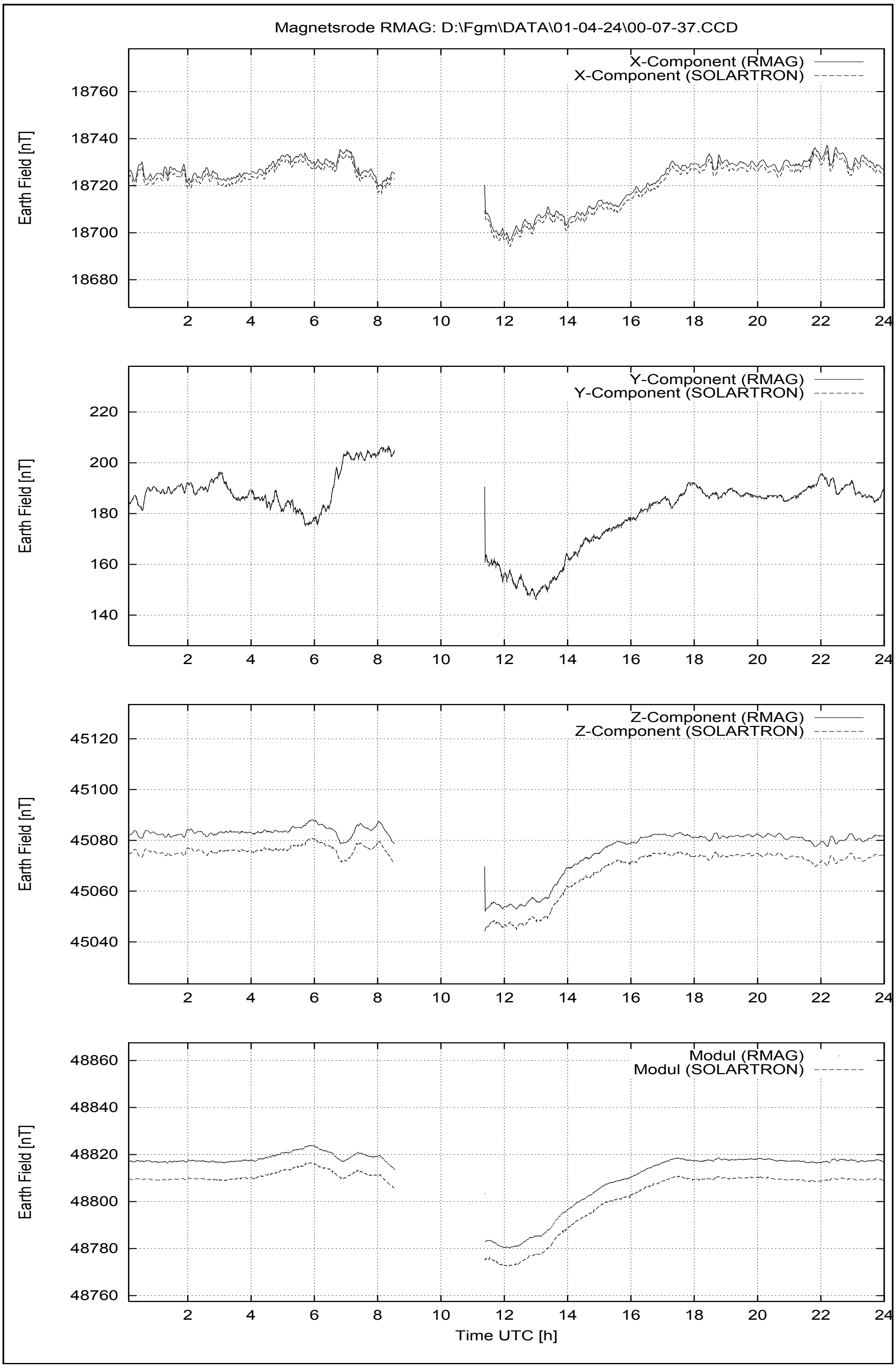


Figure 77: April 24, 2001: Earthfield variations.

# 20 Wednesday April 25, 2001

## 20.1 Linearity, Sensitivity and Cross Talk — DPU: FS, Sensors: FS–OB, Continued

The missing measurements of the linearity sequence were performed in the early morning hours.

### 20.1.1 Data

| Configuration File | CCD File |
|---|---|
| LY15.CFG | 01-04-25\00_00_24.CCD |
| LZ15.CFG | 01-04-25\00_31_24.CCD |
| SP15spir.CFG | 01-04-25\01_02_24.CCD |
| SP15sphe.CFG | 01-04-25\04_55_08.CCD |

After these measurements the setup was changed for the frequency measurements.

## 20.2 Digital Frequency Response — DPU: FS, Sensors FS–IB & FS–OB, Failed

The digital frequency response function will be measured with two different amplitudes. For these chosen amplitudes the frequency will be discretely swept from 1000 Hz down to 100 mHz. The sensors were placed diagonal in space on the open Thermal Test Box mounting plate (refer to picture 256). The aluminium sensor support is elevated by 45° from the $X_C$–$Y_C$ plane using the gray diagonal stand which is turned around $Z_C$ by 54°. This is to get equal signals on all sensor components from the fields applied on the $Y_C$ component. The measurements were performed for both sensors in parallel.

| | |
|---|---|
| Purpose: | Measure the digital frequency response |
| Conditions: | FS–IB & FS–OB placed diagonal in space in the coil system center.<br>FS–IB is the upper, FS–OB the lower one.<br>AC–Generator signal (AC2) applied to $Y_C$ without attenuator. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch6 Generator signal (AC2) direct (no attenuation);<br>Ch7 FSP pulse;<br>Timer 500, SumUp 6, Vector Rate 16.67 Hz. |
| Files: | `F.SEQ` |
| Start: | 25.04.01 11:20 |
| End: | 25.04.01 13:02 |
| **REMARK:** | The 50 Ω Terminator on the $Y_C$input was NOT applied. |

#### 20.2.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-25\11_20_48.CCD |
| fd_h.CFG | 01-04-25\11_28_26.CCD |
| fd_l.CFG | 01-04-25\12_15_47.CCD |

After the frequency measurements have been finished, the setup was changed to perform the offset measurements on the FS sensor connected to the FS DPU. The failed frequency measurements will be repeated afterwards.

### 20.3 Offset Measurements — DPU: FS, Sensors FS–IB & FS–OB

To perform the offset measurements both sensors are mounted with their aluminium support at the stand on top of the green trolley. Figure 257 shows a photographic view of the setup in the normal position for the measurement of FS–OB. The following figures show the turned positions according to the test procedure.

| | |
|---|---|
| Purpose: | Measure the FS–IB & and FS–OB offset. |
| MAD: | Ch0 to Ch2 connected to ZopfMag x to z, 10 nT/mV; |
| | Ch7 FSP pulse; |
| | Timer 500, SumUp 100, Vector rate 1.00 Hz. |
| PREMA: | |
| Files: | OFF?_?1.SEQ |
| Start: | 25.04.01 13:19 |
| End: | 25.04.01 14:23 |

#### 20.3.1 Data

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 1: Normal |
| | | OB @ CoC, height: 13cm, 010425B |
| ALI10.cfg | 01-04-25\13_19_54.CCD | |
| offx_n1.CFG | 01-04-25\13_27_21.CCD | |

| Configuration File | CCD File | Position Picture |
|---|---|---|
| | | Position 2: Normal |
| | | IB @ CoC, height: 13cm, 010425C |
| offx_n1.CFG | 01-04-25\13_32_01.CCD | |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| | | Position 3: Turned @ \Zc OB @ CoC, height: 13cm, 010425D |
| ALI10.cfg | 01-04-25\13_38_17.CCD | |
| offx_t1.CFG | 01-04-25\13_45_28.CCD | |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| | | Position 4: Turned @ \Zc IB @ CoC, height: 13cm, 010425E |
| offx_t1.CFG | 01-04-25\13_53_02.CCD | |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| | | Position 5: Turned @ \Yc OB @ CoC, height: 20cm, 010425F |
| ALI10.cfg | 01-04-25\14_01_34.CCD | |
| offz_t1.CFG | 01-04-25\14_08_44.CCD | |

| Configuration File | CCD File | Position Picture |
| --- | --- | --- |
| | | Position 6: Turned @ \Yc IB @ CoC, height: 20cm, 010425G |
| offz_t1.CFG | 01-04-25\14_15_35.CCD | |

After the successful executed offset measurement of the FS sensor with the FS DPU we changed the setup to repeat the failed frequency measurements.

## 20.4 Digital Frequency Response — DPU: FS, Sensors FS–IB & FS–OB, Repetition

The digital frequency response function which was measured in this morning will be repeated now, as the 50 Ω terminator was not connected at the $Y_C$–input channel at the morning measurement.
Frequency measurement setup as usual. The sensors have been mounted on the gradiometer sensor plate, as on April, 20th. Refer to picture 263.

| | |
|---|---|
| Purpose: | Measure the digital frequency response |
| Conditions: | FS–IB & FS–OB placed diagonal in space in the coil system center. |
| | FS–OB is the upper, FS–IB the lower one. |
| | AC–Generator signal (AC2) applied to $Y_C$ without attenuator. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV; |
| | Ch6 Generator signal (AC2) direct (no attenuation); |
| | Ch7 FSP pulse; |
| | Timer 500, SumUp 6, Vector Rate 16.67 Hz. |
| Files: | `F_LONG.SEQ` |
| Start: | 25.04.01 14:38 |
| End: | 26.04.01 03:28 |

### 20.4.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.cfg | 01-04-25\14_38_48.CCD |
| fd_h.CFG | 01-04-25\14_46_10.CCD |
| fd_l.CFG | 01-04-25\15_33_33.CCD |
| fd_h.CFG | 01-04-25\16_20_57.CCD |
| fd_l.CFG | 01-04-25\17_08_17.CCD |
| fd_h.CFG | 01-04-25\17_55_38.CCD |
| fd_l.CFG | 01-04-25\18_42_58.CCD |
| fd_h.CFG | 01-04-25\19_30_18.CCD |
| fd_l.CFG | 01-04-25\20_17_39.CCD |
| fd_h.CFG | 01-04-25\21_04_59.CCD |
| fd_l.CFG | 01-04-25\21_52_20.CCD |
| fd_h.CFG | 01-04-25\22_39_41.CCD |
| fd_l.CFG | 01-04-25\23_27_01.CCD |

### 20.5 Overview Plots: System Performance, Temperatures and Earth-field Variations.

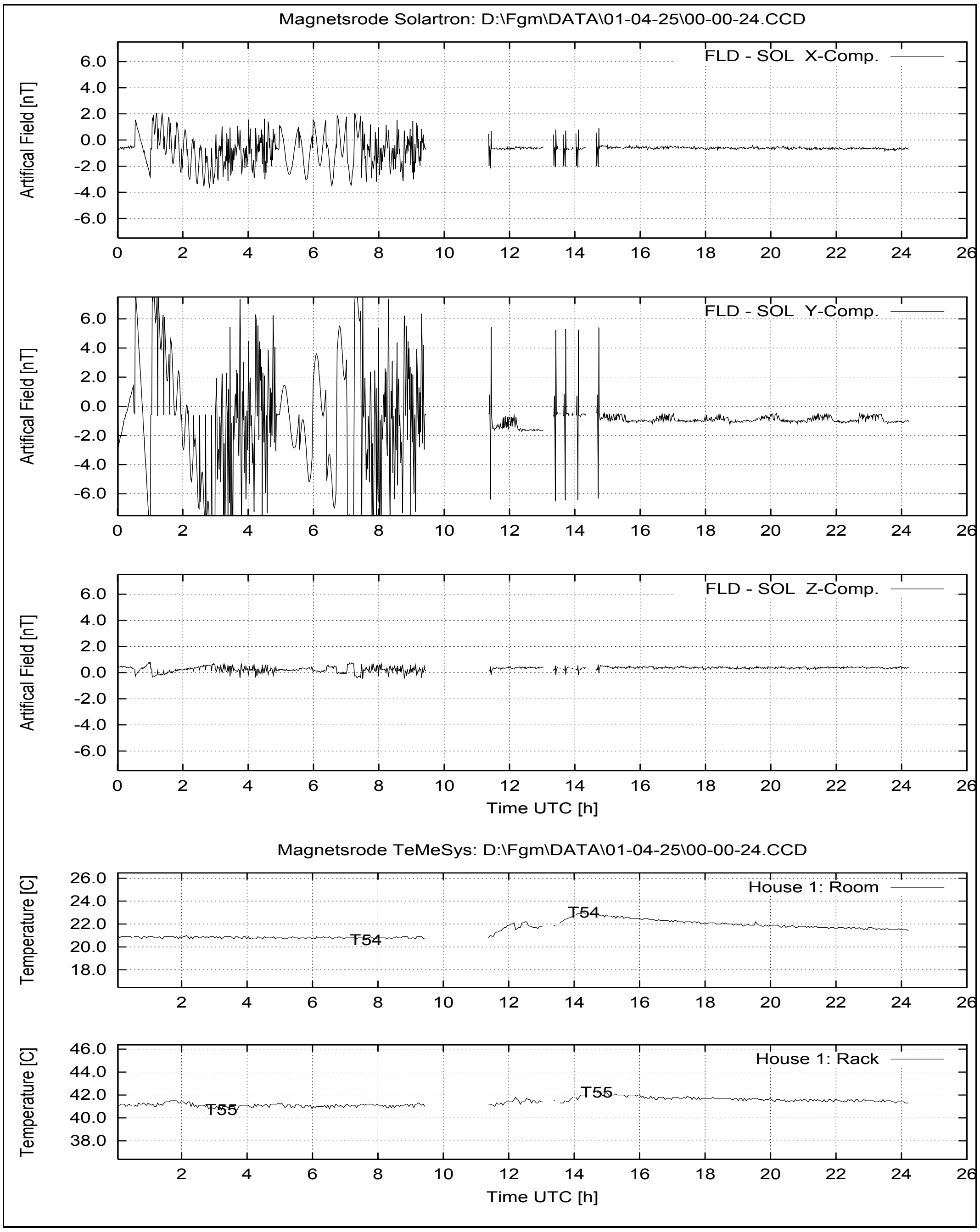


Figure 78: April 25, 2001: System Performance: FLD – SOL; Temperatures at House 1.

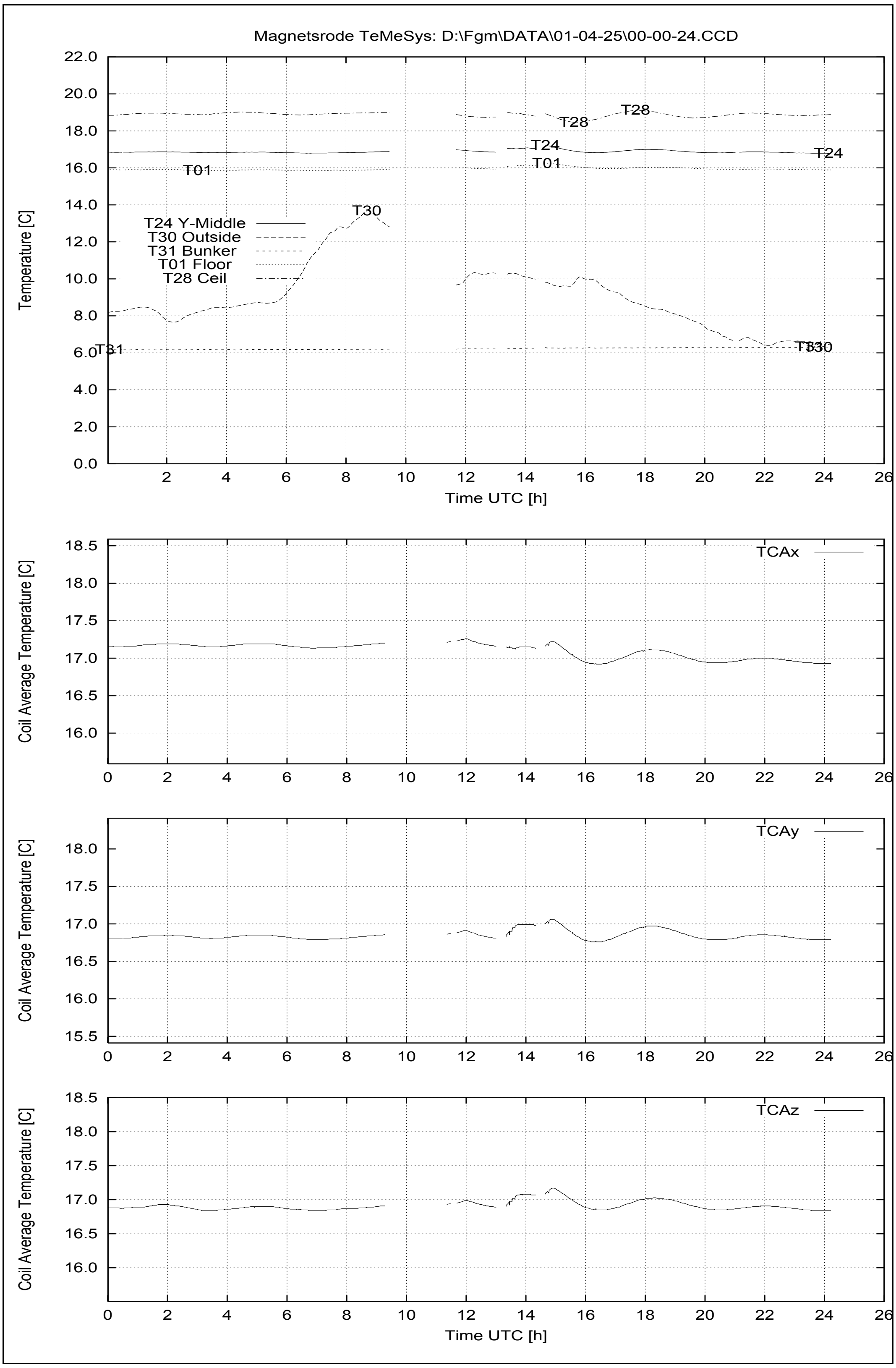


Figure 79: April 25, 2001: Temperatures House 2.

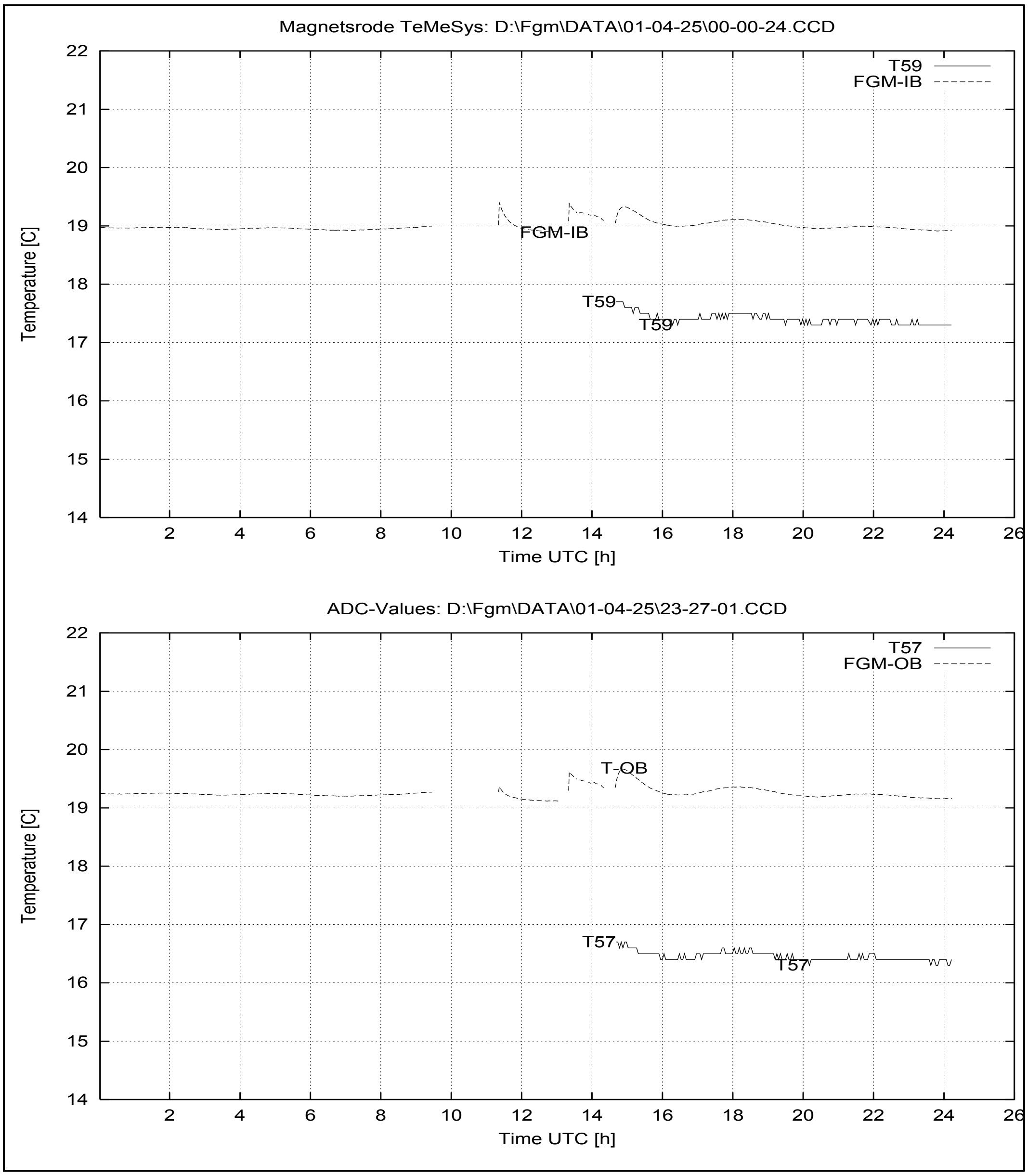


Figure 80: April 25, 2001: Sensor Temperatures at House 2.

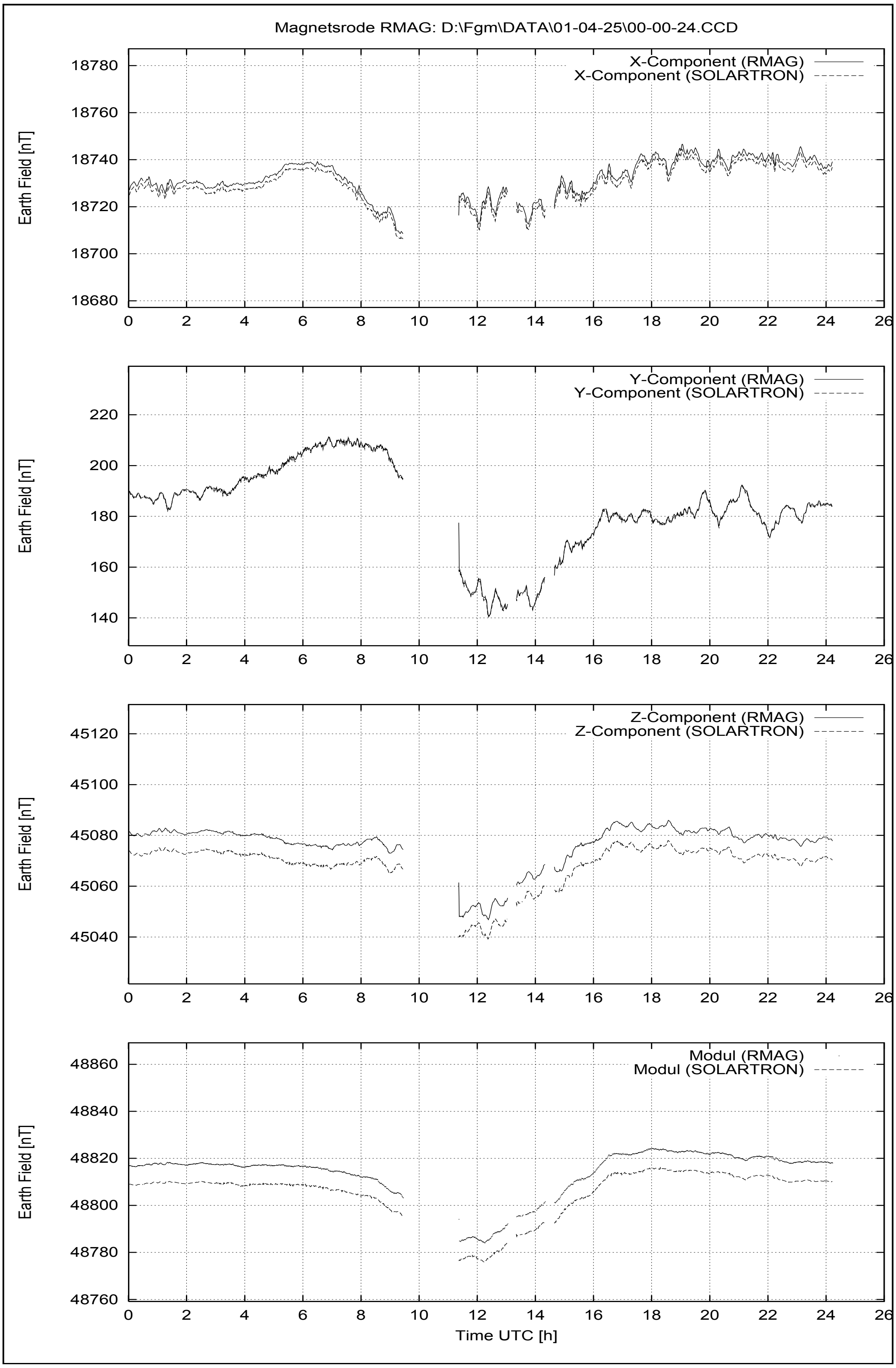


Figure 81: April 25, 2001: Earthfield variations.

# 21 Thursday April 26, 2001

## 21.1 Digital Frequency Response — DPU: FS, Sensors FS–IB & FS–OB, Repetition

As there was a lot of time during the night we repeated the frequency measurements for some times. The sequence ended at 03:38.

### 21.1.1 Data

| Configuration File | CCD File |
| --- | --- |
| fd_h.CFG | 01-04-26\00_14_21.CCD |
| fd_l.CFG | 01-04-26\01_01_41.CCD |
| fd_h.CFG | 01-04-26\01_49_02.CCD |
| fd_l.CFG | 01-04-26\02_36_22.CCD |

Afterwards the setup for the voltage variation check was prepared.

## 21.2 Supply Voltage Dependence — DPU: FS, Sensors FS–IB & FS–OB

With this check it should be tested whether the digital readings are influenced by the supply voltage. Therefore, the supply voltages generated by the instrument power supply are varied in discrete steps. The needed positive and negative supply voltages are changed in parallel at the same time.
The used voltages are:

| Step | Voltage [V] | %-Variation |
| --- | --- | --- |
| 1 | ±5.00 | abs(Nominal) |
| 2 | ±4.90 | abs(Nominal) −2% |
| 3 | ±4.75 | abs(Nominal) −5% |
| 4 | ±4.50 | abs(Nominal) −10% |
| 5 | ±5.10 | abs(Nominal) +2% |
| 6 | ±5.25 | abs(Nominal) +5% |
| 7 | ±5.50 | abs(Nominal) +10% |

The test is done for both, FS–OB and FS–IB, sensors. The sensors are placed in diagonal in space position. Unchanged since the recent frequency measurements. Refer to picture 263.

| | |
|---|---|
| Purpose: | Measure supply voltage dependence of the digital data readings. |
| Conditions: | FS–IB & FS–OB placed diagonal in space in the coil system center. FS–OB is the upper, FS–IB the lower one |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV; Ch7 FSP pulse; Timer 500, SumUp 100, Vector Rate 1.00 Hz. |
| Files: | `PWR_VAR.*` |
| Start: | 26.04.01 08:34:20 |
| End: | 26.04.01 09:11 |

#### 21.2.1 Data

| Configuration File | CCD File ADC1 |
|---|---|
| pwr_var.cfg | 01-04-26\08_34_20.CCD |
| pwr_var.cfg | 01-04-26\08_40_18.CCD |
| pwr_var.cfg | 01-04-26\08_45_39.CCD |
| pwr_var.cfg | 01-04-26\08_50_44.CCD |
| pwr_var.cfg | 01-04-26\08_56_21.CCD |
| pwr_var.cfg | 01-04-26\09_01_17.CCD |
| pwr_var.cfg | 01-04-26\09_06_31.CCD |

#### 21.2.2 Results

The following plots show the results of the supply voltage variation check. As visible in the first diagram of figure 82 and 83 the applied field structure was 0 nT, +20000 nT, -20000 nT, 0 nT for every pair of supply voltages. For a better visibility the $y$–component has been plotted with an inverted sign. Additionally the single traces have been shifted by convenient offsets for a maximum of clarity.

The analysis of the plots reveals that the FS–OB–y and the FS–OB–z component are nearly constant. The other ones , however, show significant changes in dependency of the supply voltage in the region of positive deviation of the nominal supply voltage. Figure 84 shows the result in the most clear way, as the output signals of both, the FS–OB and the FS–IB sensors, are plotted versus the deviation of the supply voltage.
As the power supply onboard the ROSETTA s/c will keep the voltages constant in the order of 1 %, the performance of the instrument is acceptable.

After these special power supply variation check the setup was changed for the temperature measurements of the FS Sensors connected to the FS DPU.

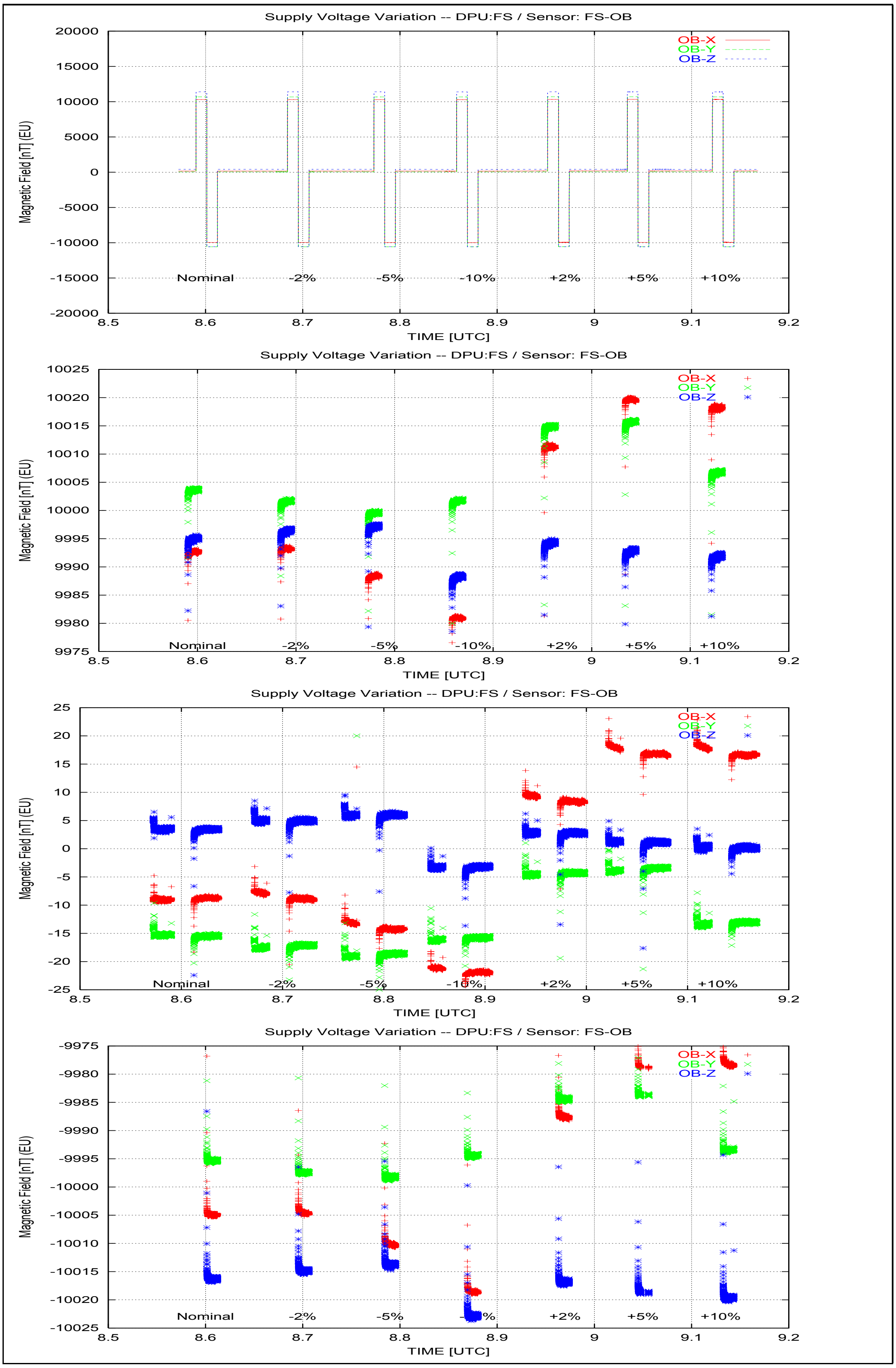


Figure 82: Supply voltage dependence results: FS – OB.

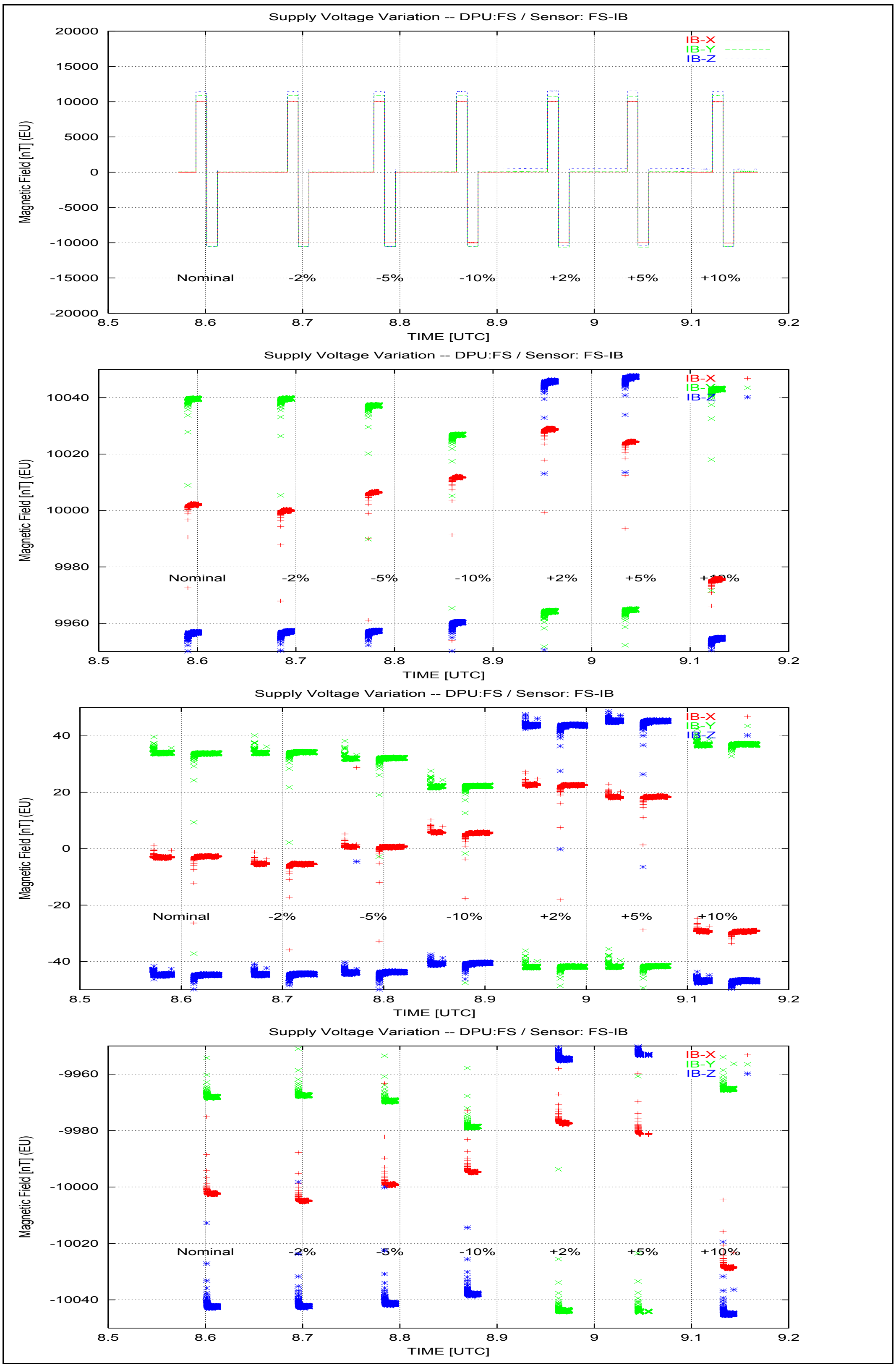


Figure 83: Supply voltage dependence results: FS – IB.

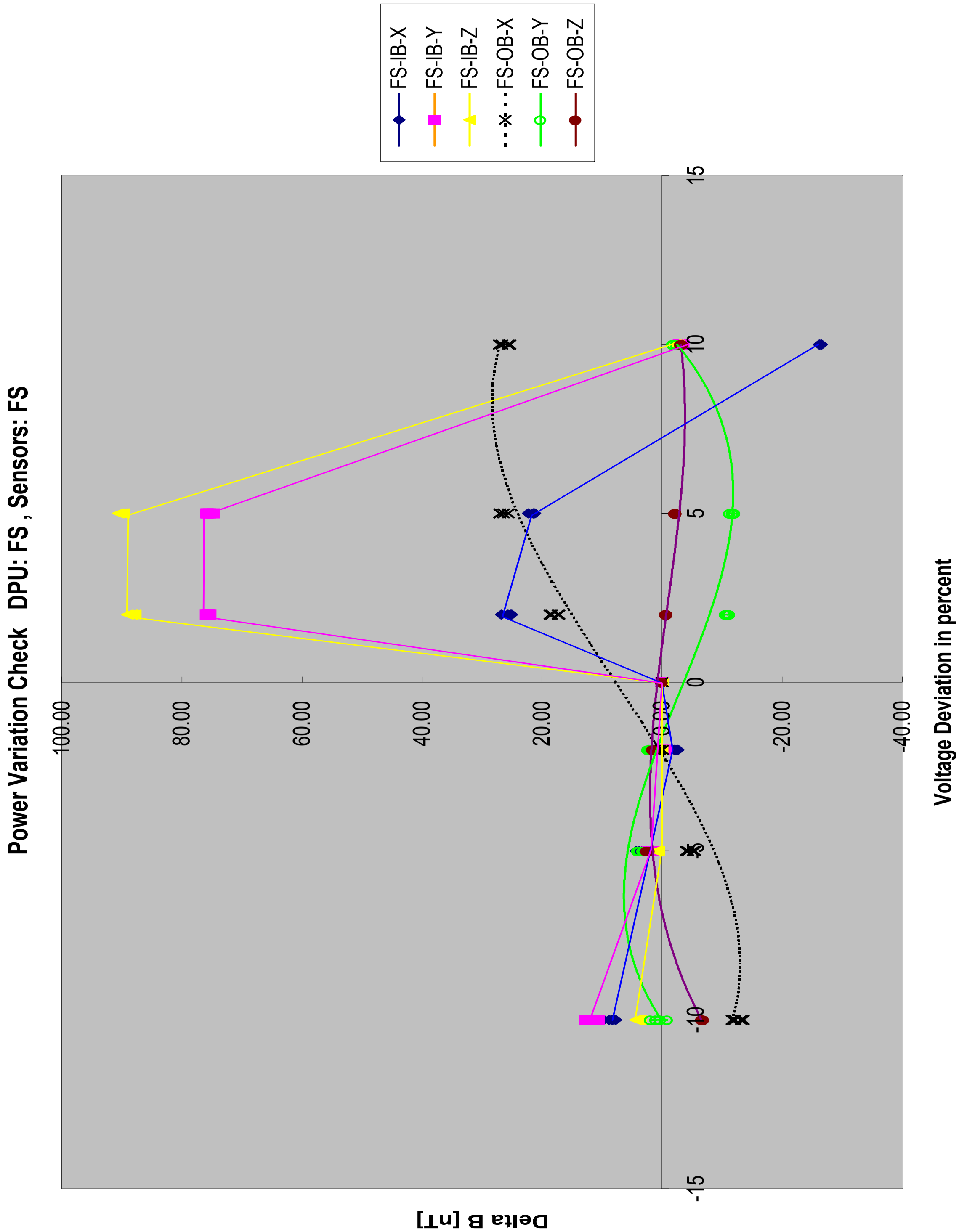


Figure 84: Supply voltage dependence results: DPU: FS, Sensors: FS.

### 21.3 Setup for the Temperature Calibration

Both sensors, mounted together on their aluminium support, are fixed on the mounting plate of the Thermal Test Box. See figure 85 for details. Also a photographic view (figures 264 and 265) will help.
The FS–OB is on the northern side, FS–IB on the southern side. The temperature sensors of the TeMeSys–B system $T_{56}$ to $T_{63}$ are placed in the box. The positions are given in table 4.

| Sensor | Position |
| --- | --- |
| $T_{57}$ | under FS–OB sensor |
| $T_{59}$ | under FS–IB sensor |
| $T_{56}$ | mounting plate, upper side, western edge, central |
| $T_{58}$ | mounting plate, upper side, south west corner |
| $T_{29}$ | outside thermal box at the northern side of the Coil System |
| $T_{60}$ | ground plate, north middle |
| $T_{61}$ | mounting plate, eastern side, central |
| $T_{62}$ | ground plate, south west |
| $T_{63}$ | ground plate, south east |

Table 4: The TeMeSys–B sensors in the Thermal Test Box.

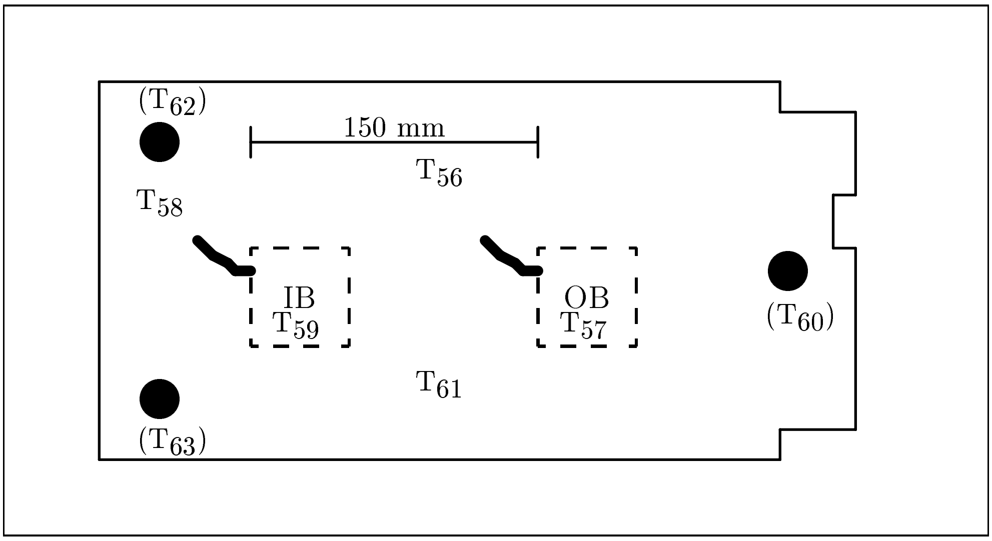


Figure 85: The temperature sensors at the Thermal Test Box mounting plate. The draft shows the top view. Sensors in brackets are mounted near the Thermal Test Box ground plate, not on the mounting plate.

The software TempCtrl is used to control the heating process. This software switches on the electrical heater during the SOLARTRON measurement cycle. This was done, because during the SOLARTRON measurements the data should not be used and so they may be disturbed anyway. For details on the heater and the control software see the related document *MR–IGM–TN0005*. The appendix E gives details on the measurements and shows an overview on the complete cooling and heating cycle.

## 21.4 Temperature Cycle, Linearities, FS Sensors

Before the temperature calibration will be performed some linearity measurements should be executed in the chosen setup for the temperature cycle. The sensors are fixed, but the box is still open for filling in the dry ice after these measurements.

| | |
|---|---|
| Purpose: | Measure the linearity of the FGM–FS sensors. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `T_LIN.SEQ` |
| Start: | 26.04.01 09:57 |
| End: | 26.04.01 10:45 |

### 21.4.1 Data

| Configuration File | CCD File |
|---|---|
| `ali10.CFG` | `01-04-26\09_57_42.CCD` |
| `TX15.CFG` | `01-04-26\10_05_09.CCD` |
| `TY15.CFG` | `01-04-26\10_18_10.CCD` |
| `TZ15.CFG` | `01-04-26\10_31_11.CCD` |

## 21.5 Temperature Calibration, Cooling Cycle, FS Sensors

| | |
|---|---|
| Purpose: | Measure the temperature behaviour of the FS sensors. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm.<br>OB north and IB south of CoC. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `TEMP2.SEQ` |
| REMARK | Sequence contains `T_LIN.SEQ` after T–Cycle |
| Temperature File: | `ROSETTA2.CUR` (SOL-Time = 24 s, FLD-Time = 40 s) |
| Start: | 26.04.01 10:53 |
| End: | 02.05.01 17:00 ESC. |
| Remark: | 10 kg of broken dry ice are filled in during the first measurement.<br>Dry ice fill in between 10:59 and 11:04. |

### 21.5.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| 14000XYZ.CFG | 01-04-26\10_53_36.CCD | Dry Ice filled in |
| ali10.CFG | 01-04-26\11_26_34.CCD | |
| TEMP.CFG | 01-04-26\11_33_50.CCD | |
| TEMP.CFG | 01-04-26\12_41_30.CCD | |
| TEMP.CFG | 01-04-26\13_49_11.CCD | |
| TEMP.CFG | 01-04-26\14_56_51.CCD | |
| TEMP.CFG | 01-04-26\16_04_32.CCD | |
| TEMP.CFG | 01-04-26\17_12_14.CCD | |
| TEMP.CFG | 01-04-26\18_19_55.CCD | |
| TEMP.CFG | 01-04-26\19_27_56.CCD | |
| TEMP.CFG | 01-04-26\20_35_37.CCD | |
| TEMP.CFG | 01-04-26\21_43_18.CCD | |
| TEMP.CFG | 01-04-26\22_50_58.CCD | |
| TEMP.CFG | 01-04-26\23_58_38.CCD | |

## 21.6 Overview Plots: System Performance, Temperatures and Earth-field Variations.

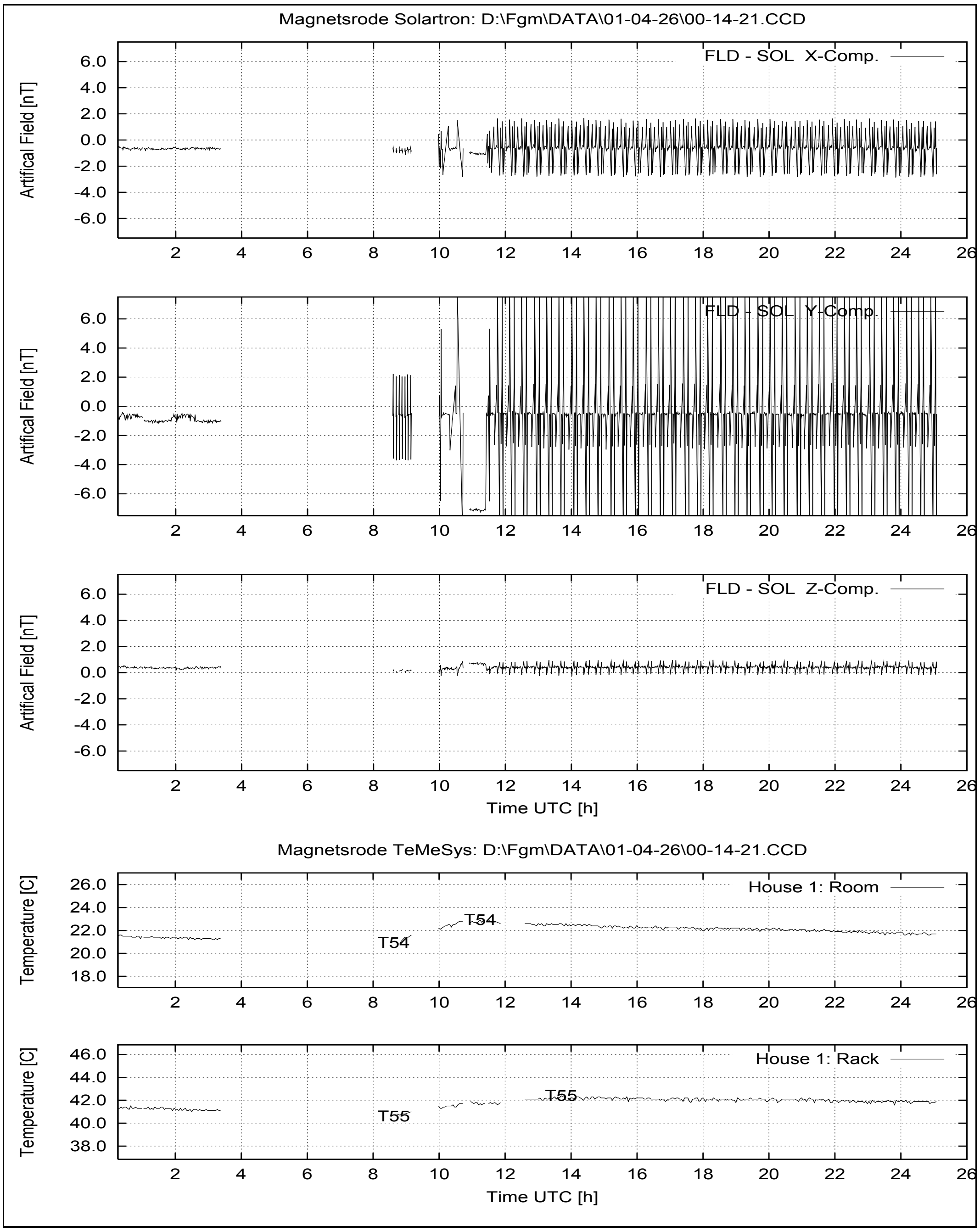


Figure 86: April 26, 2001: System Performance: FLD – SOL; Temperatures at House 1.

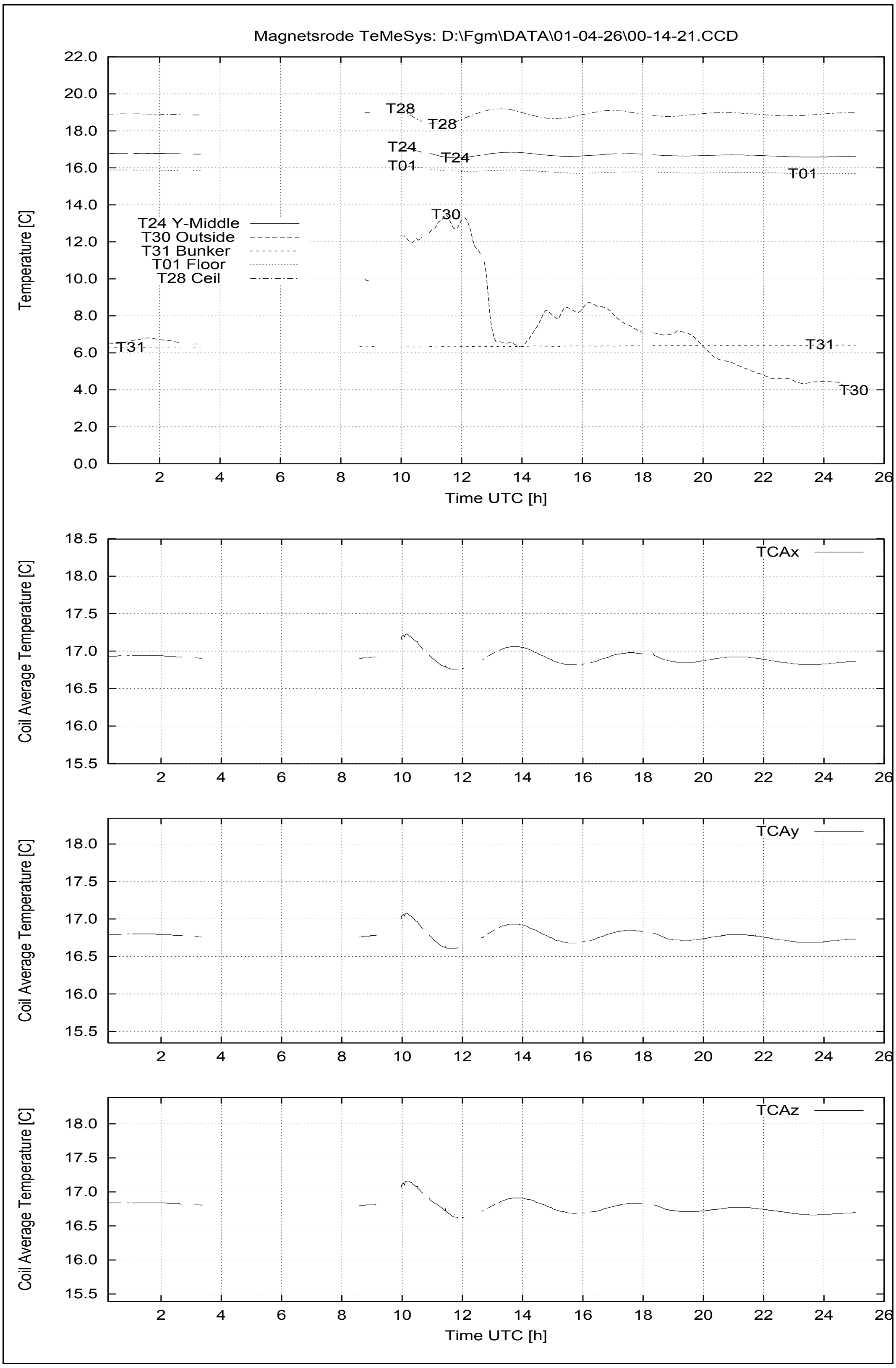


Figure 87: April 26, 2001: Temperatures House 2.

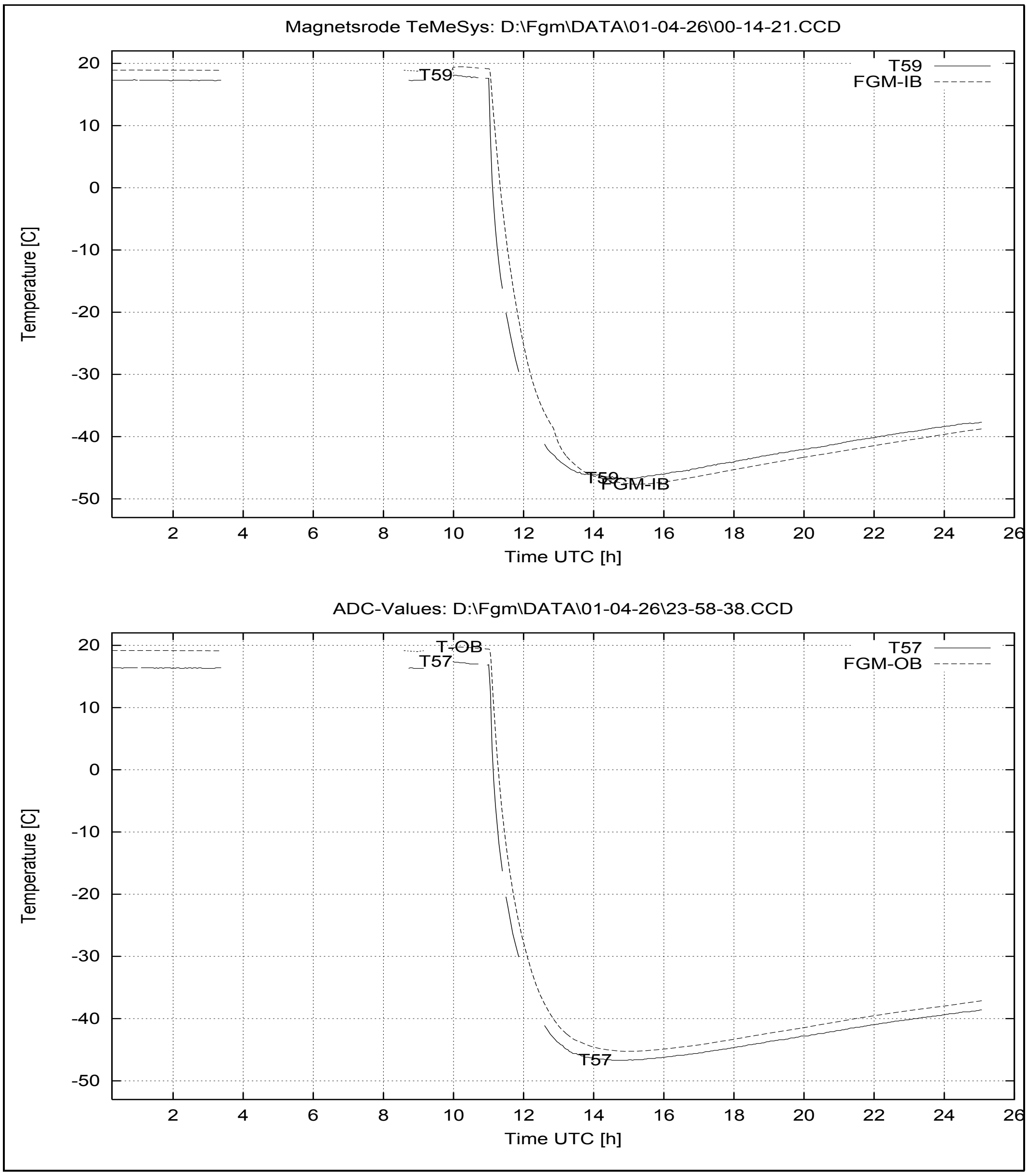


Figure 88: April 26, 2001: Sensor Temperatures at House 2.

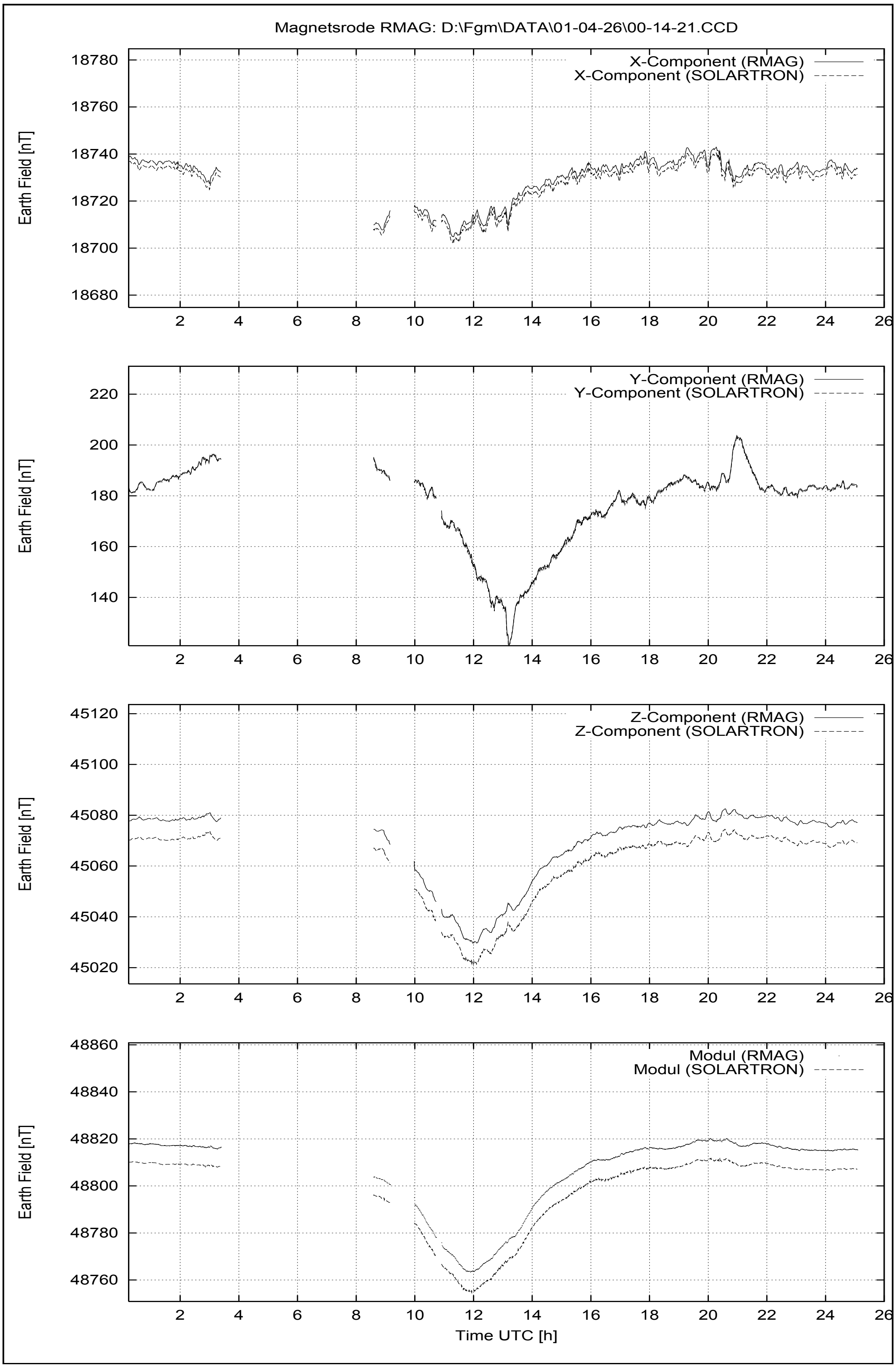


Figure 89: April 26, 2001: Earthfield variations.

# 22 Friday April 27, 2001

## 22.1 Temperature Calibration, Cooling Cycle, FS Sensors, Continued

The cooling cycle goes on today without any problem. No personnel around today.

### 22.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-04-27\01_06_18.CCD | 01-04-27\13_30_44.CCD | |
| TEMP.CFG | 01-04-27\02_13_58.CCD | 01-04-27\14_38_26.CCD | |
| TEMP.CFG | 01-04-27\03_21_38.CCD | 01-04-27\15_46_21.CCD | |
| TEMP.CFG | 01-04-27\04_29_18.CCD | 01-04-27\16_54_02.CCD | |
| TEMP.CFG | 01-04-27\05_36_57.CCD | 01-04-27\18_01_43.CCD | |
| TEMP.CFG | 01-04-27\06_44_38.CCD | 01-04-27\19_09_24.CCD | |
| TEMP.CFG | 01-04-27\07_52_19.CCD | 01-04-27\20_17_05.CCD | |
| TEMP.CFG | 01-04-27\09_00_03.CCD | 01-04-27\21_24_46.CCD | |
| TEMP.CFG | 01-04-27\10_07_43.CCD | 01-04-27\22_32_27.CCD | |
| TEMP.CFG | 01-04-27\11_15_23.CCD | 01-04-27\23_40_08.CCD | |
| TEMP.CFG | 01-04-27\12_23_04.CCD | | |

## 22.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

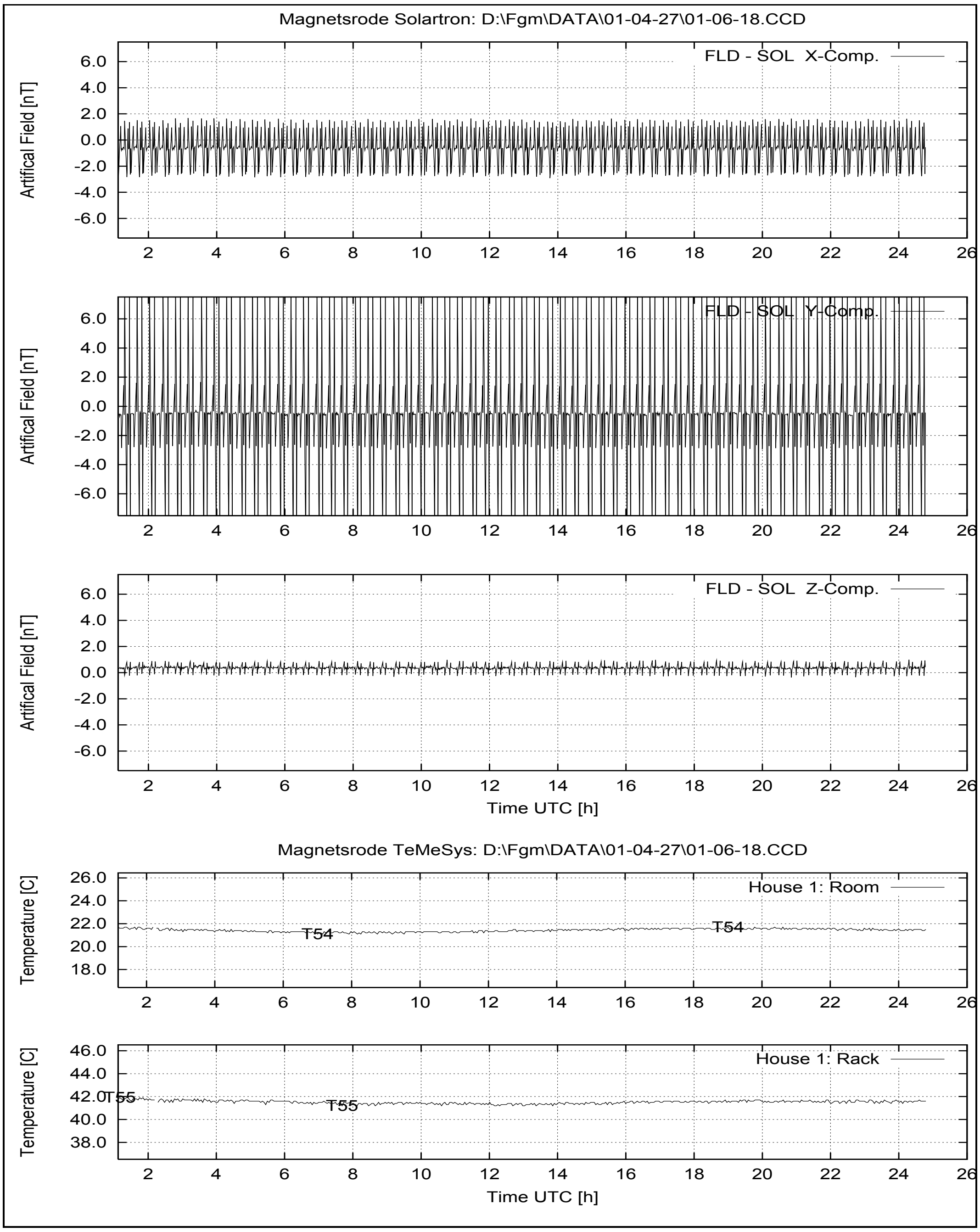


Figure 90: April 27, 2001: System Performance: FLD – SOL; Temperatures at House 1.

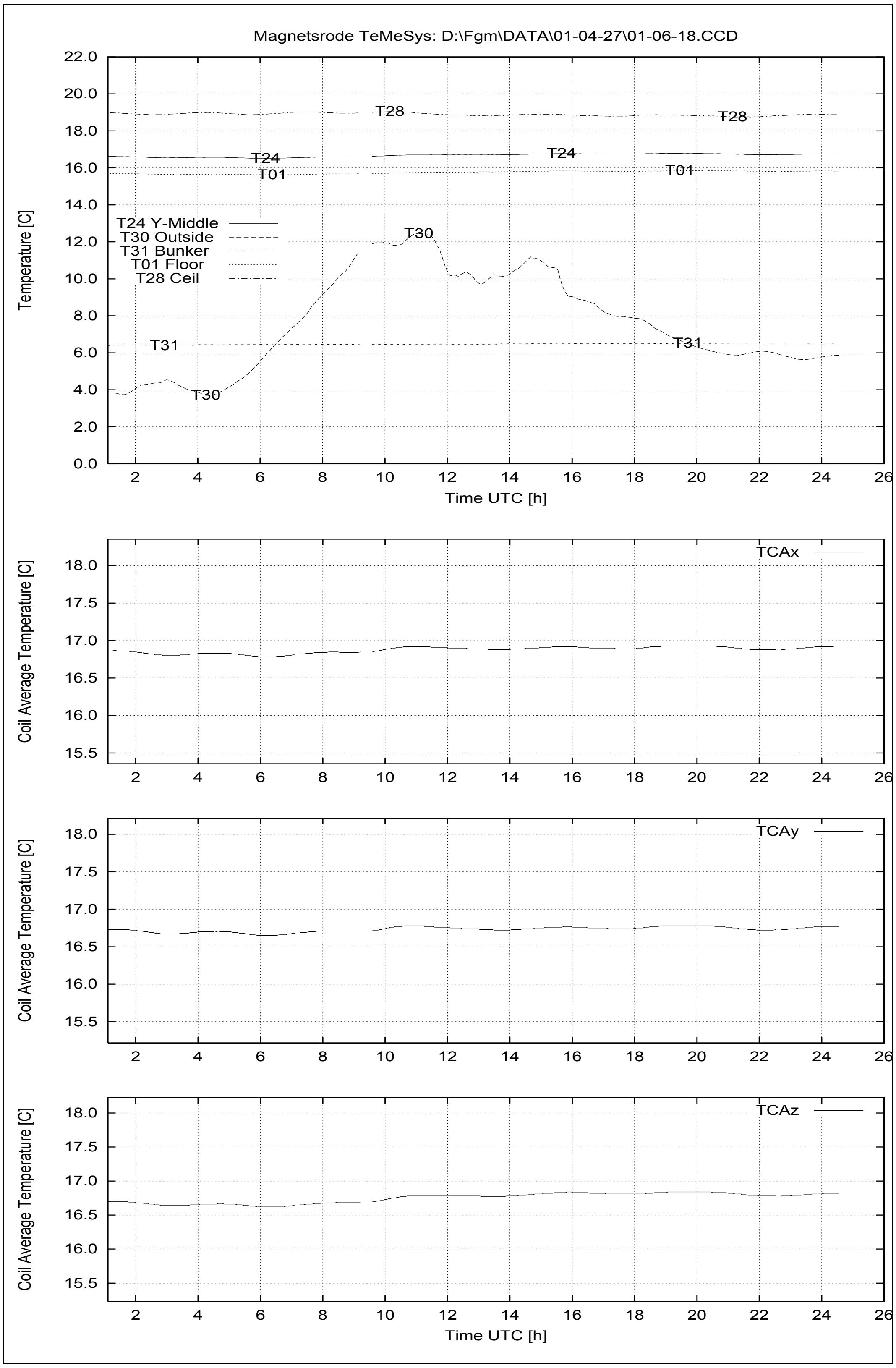


Figure 91: April 27, 2001: Temperatures House 2.

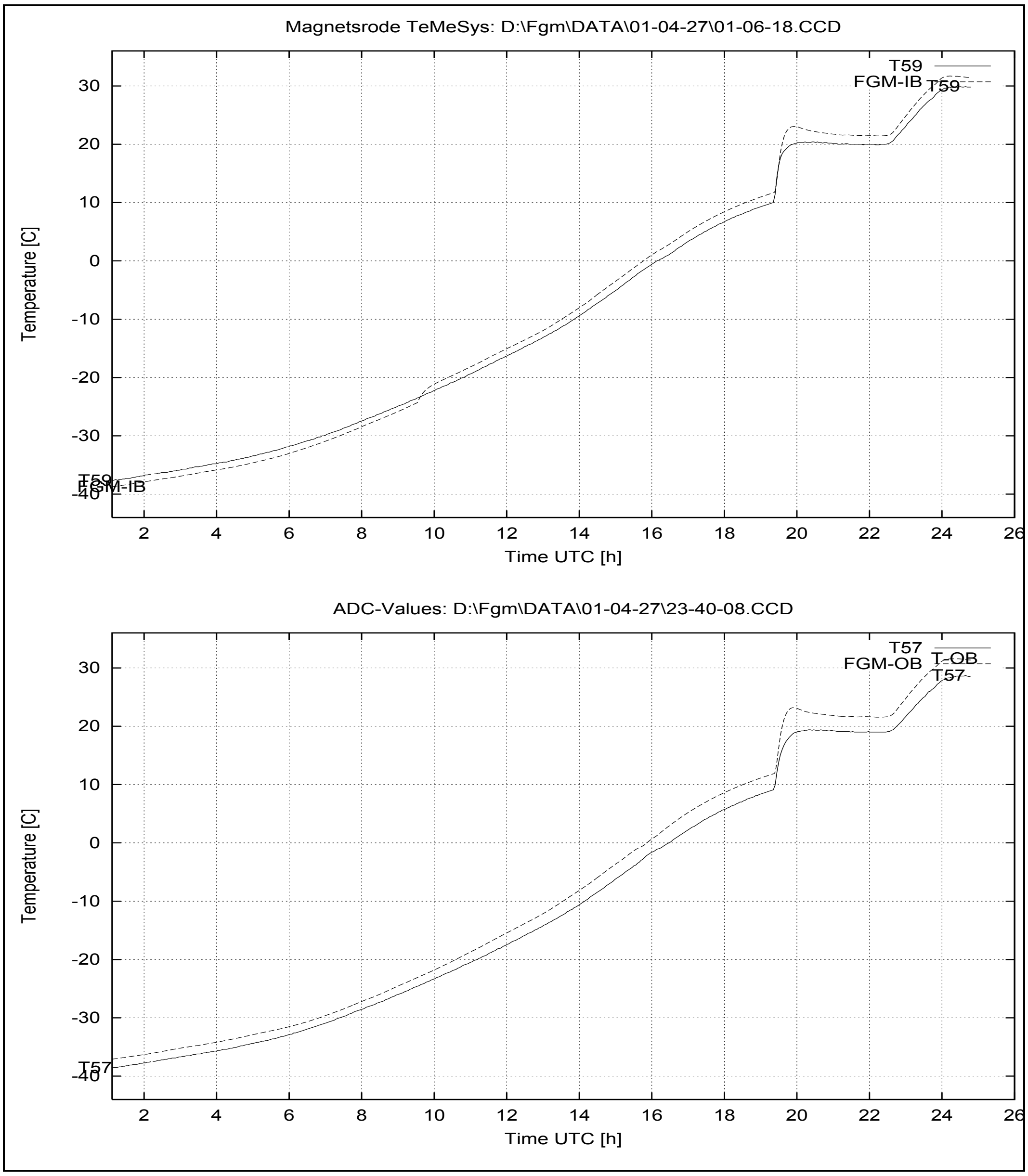


Figure 92: April 27, 2001: Sensor Temperatures at House 2.

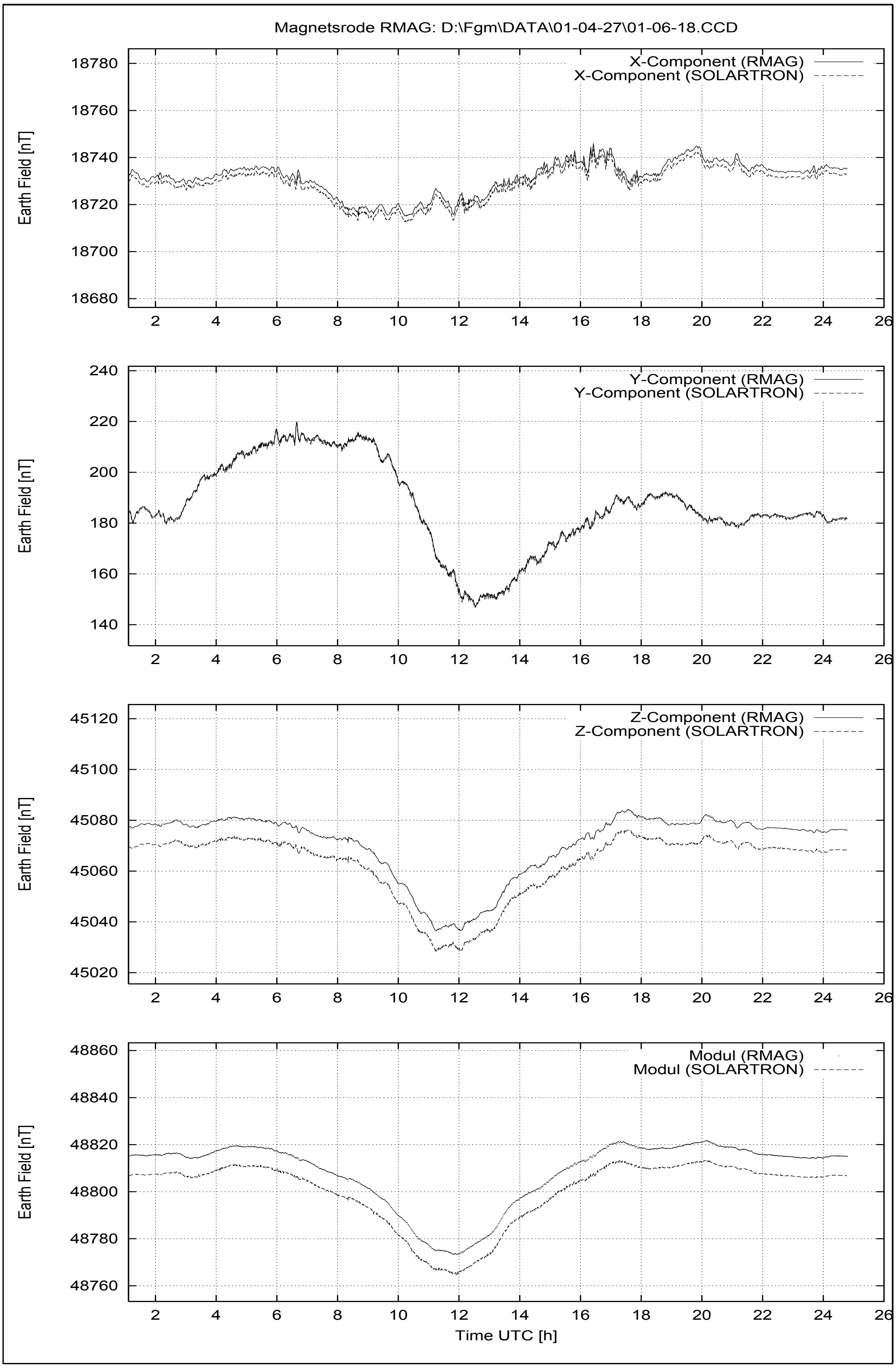


Figure 93: April 27, 2001: Earthfield variations.

# 23 Saturday April 28, 2001

## 23.1 Temperature Calibration, Heating Cycle, FS Sensors

The cooling cycle ended yesterday evening. At reaching +10° the heating cycle started automatically as TempCtrl was in AUTOMATIC running mode. The processed temperature profile was `ROSSETTA2.CUR`
No personnel around today.

### 23.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-04-28\00_47_48.CCD | 01-04-28\13_13_15.CCD | |
| TEMP.CFG | 01-04-28\01_55_28.CCD | 01-04-28\14_20_56.CCD | |
| TEMP.CFG | 01-04-28\03_03_08.CCD | 01-04-28\15_29_04.CCD | |
| TEMP.CFG | 01-04-28\04_10_49.CCD | 01-04-28\16_36_43.CCD | |
| TEMP.CFG | 01-04-28\05_19_21.CCD | 01-04-28\17_44_24.CCD | |
| TEMP.CFG | 01-04-28\06_27_01.CCD | 01-04-28\18_52_04.CCD | |
| TEMP.CFG | 01-04-28\07_34_41.CCD | 01-04-28\19_59_45.CCD | |
| TEMP.CFG | 01-04-28\08_42_21.CCD | 01-04-28\21_07_24.CCD | |
| TEMP.CFG | 01-04-28\09_50_02.CCD | 01-04-28\22_15_05.CCD | |
| TEMP.CFG | 01-04-28\10_57_42.CCD | 01-04-28\23_22_46.CCD | |
| TEMP.CFG | 01-04-28\12_05_35.CCD | | |

## 23.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

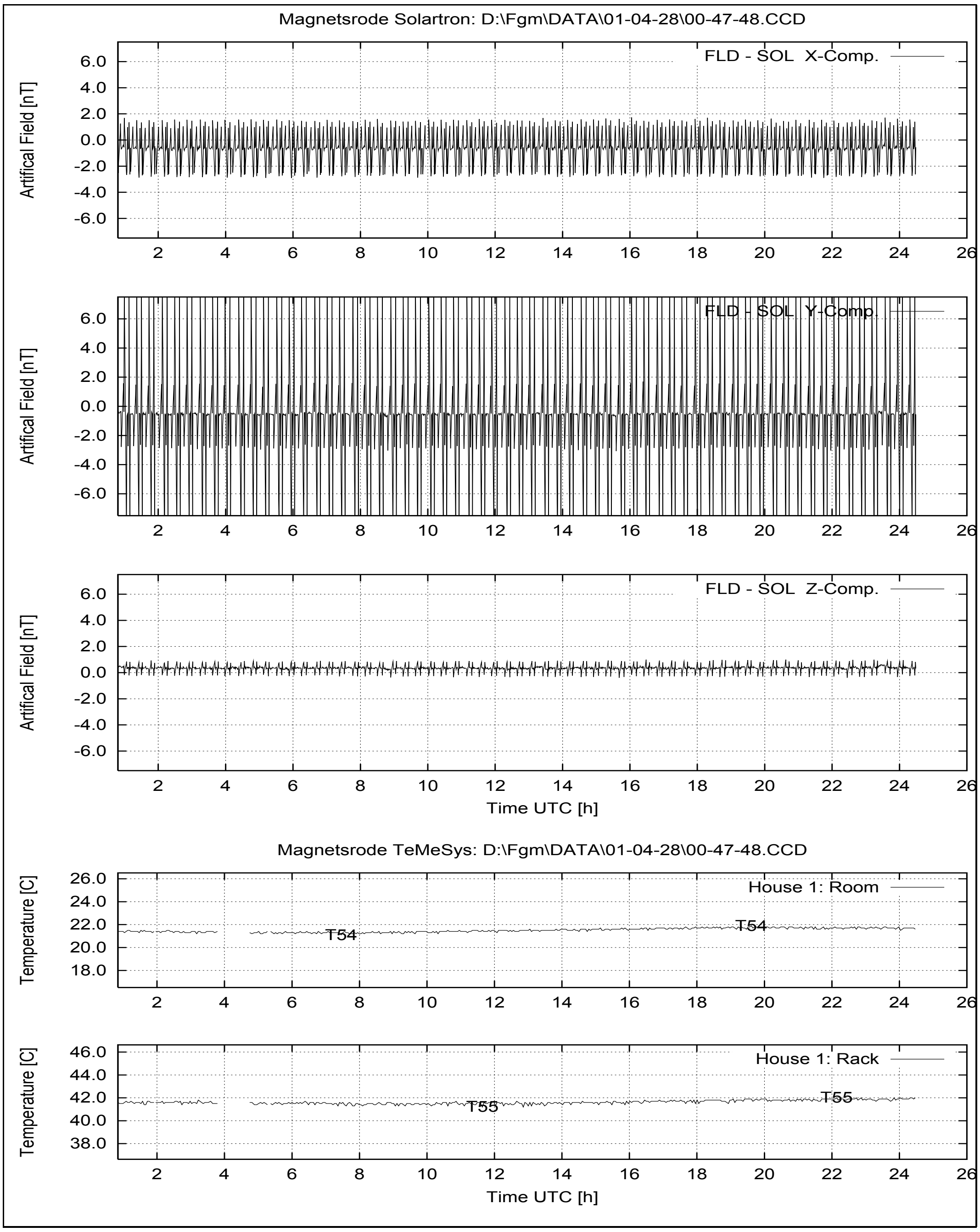


Figure 94: April 28, 2001: System Performance: FLD – SOL; Temperatures at House 1.

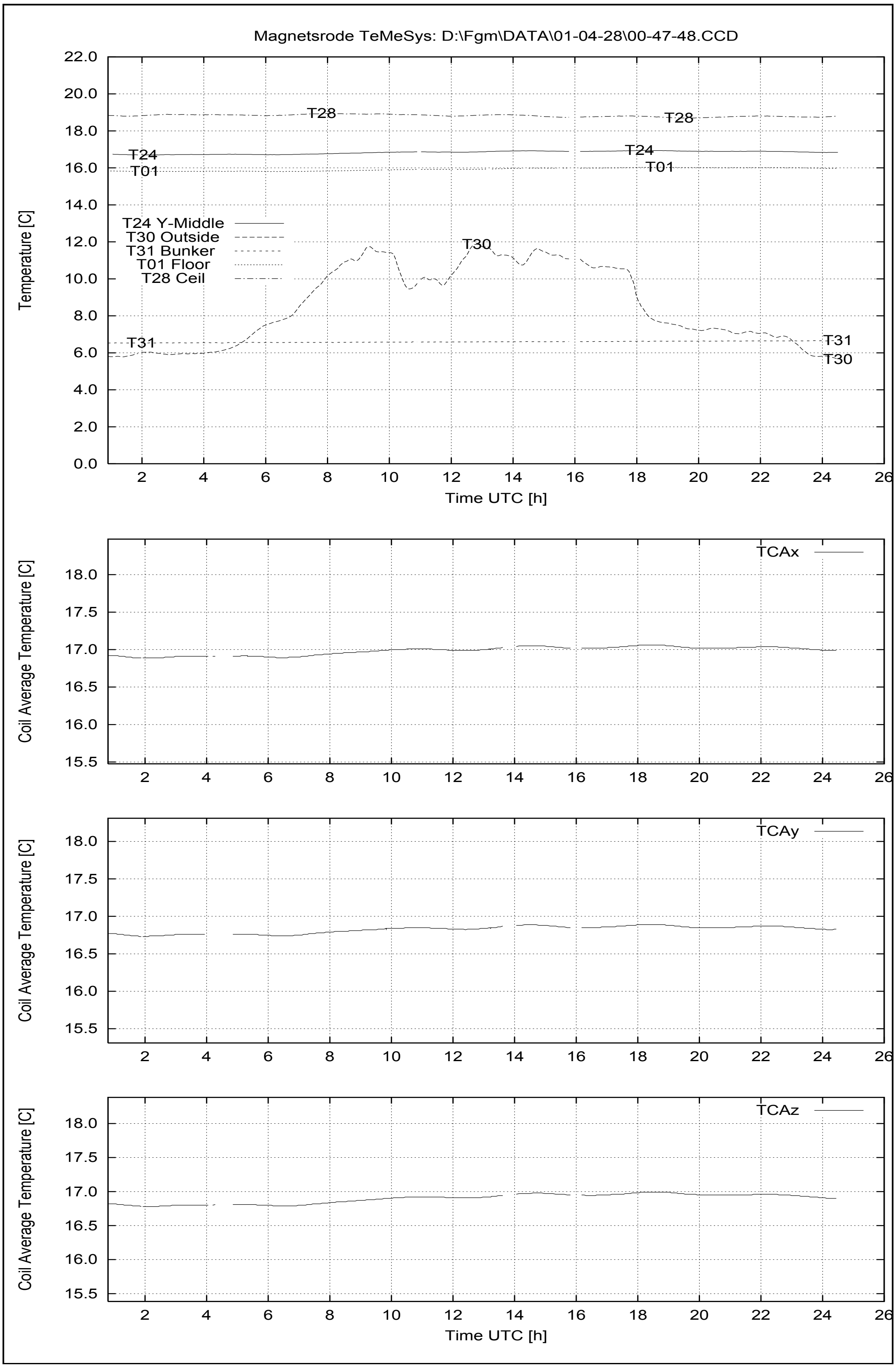


Figure 95: April 28, 2001: Temperatures House 2.

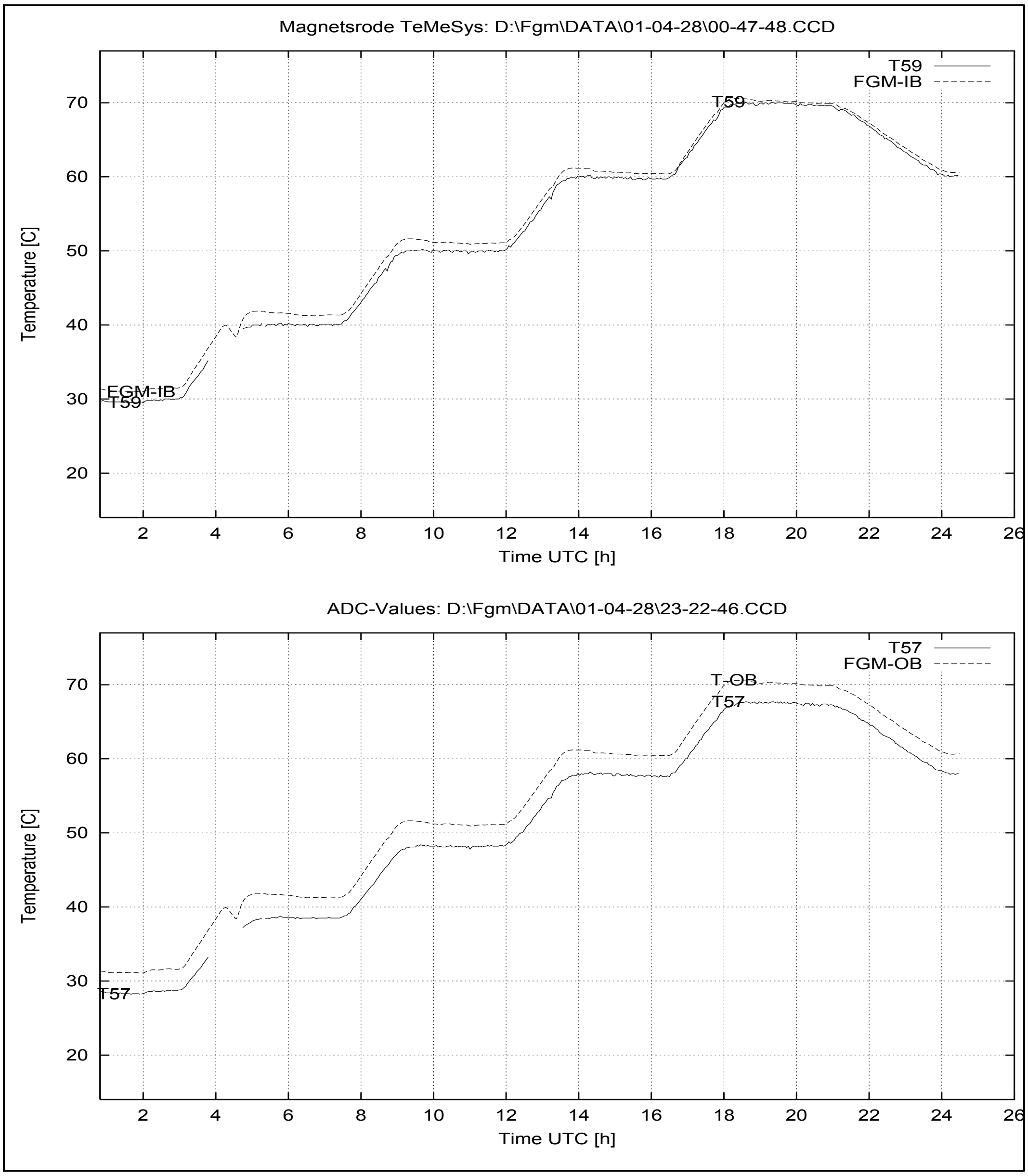


Figure 96: April 27, 2001: Sensor Temperatures at House 2.

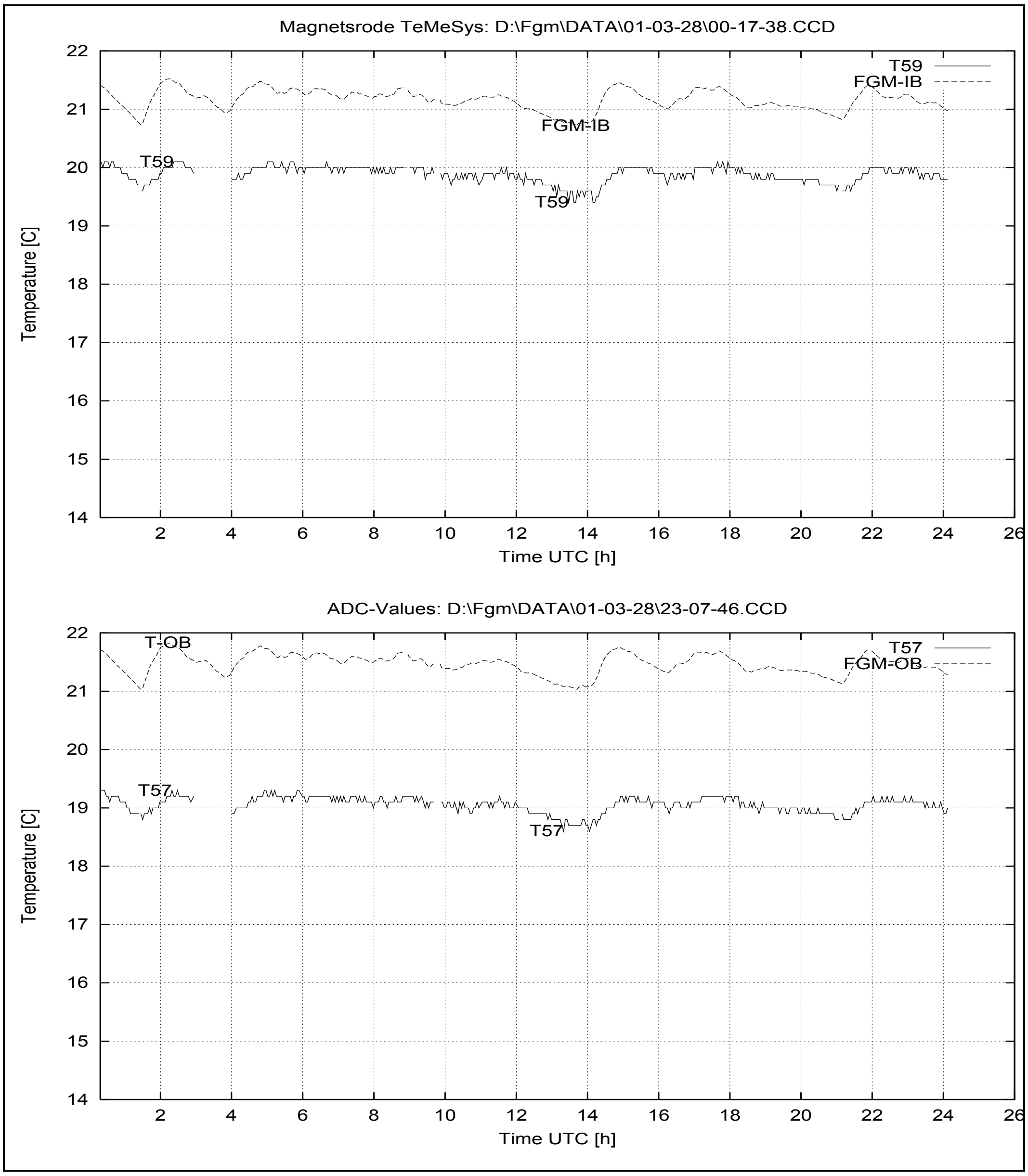


Figure 97: March 28, 2001: Sensor Temperatures at House 2.

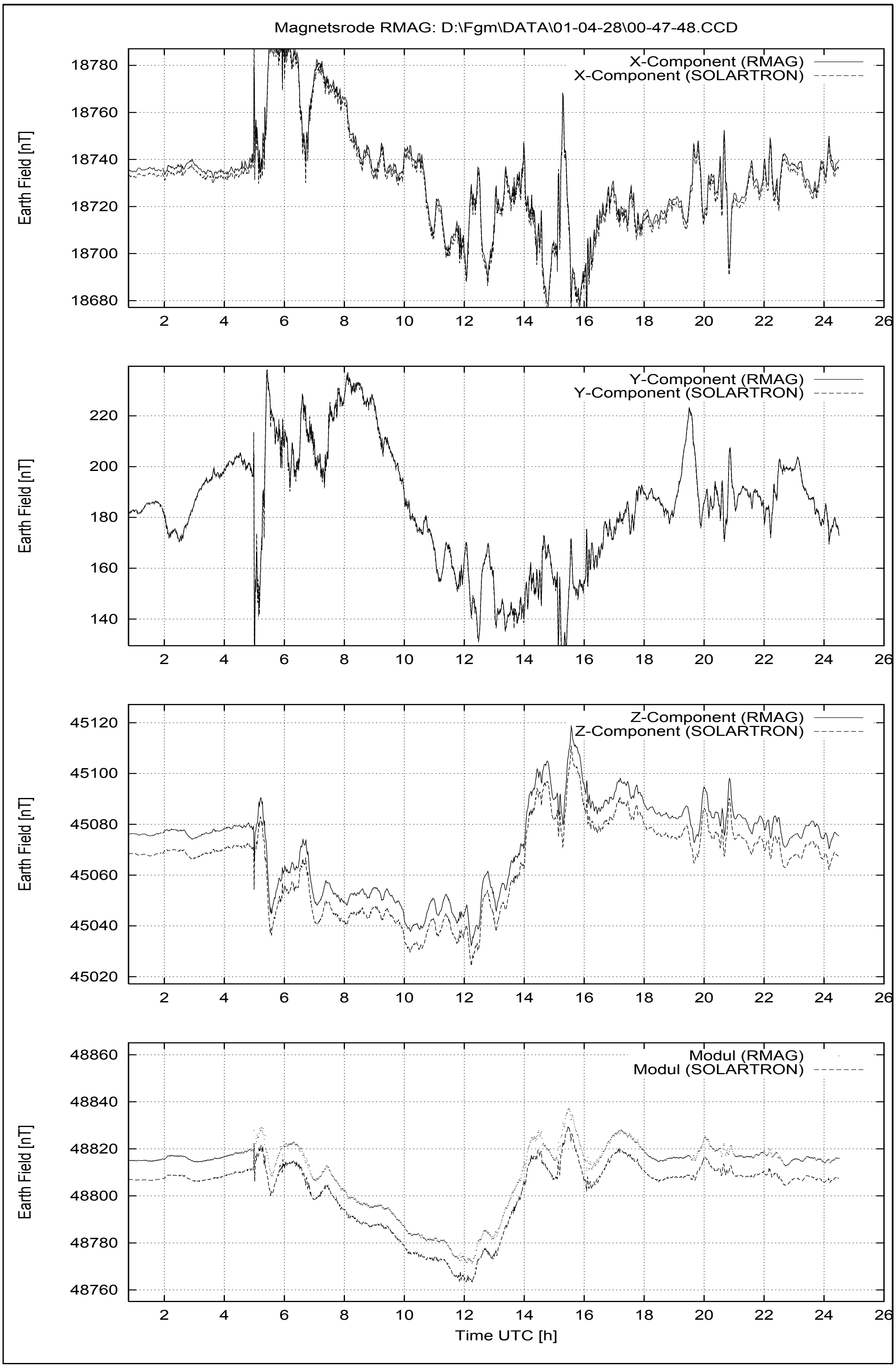


Figure 98: April 28, 2001: Earthfield variations.

# 24 Sunday April 29, 2001

## 24.1 Temperature Calibration, Heating Cycle, FS Sensors, Continued

The execution of the temperature cycle according to `ROSSETTA2.CUR` continued today. No personnel around today.

### 24.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-04-29\00_30_27.CCD | 01-04-29\12_56_31.CCD | |
| TEMP.CFG | 01-04-29\01_38_06.CCD | 01-04-29\14_04_11.CCD | |
| TEMP.CFG | 01-04-29\02_45_47.CCD | 01-04-29\15_11_51.CCD | |
| TEMP.CFG | 01-04-29\03_53_28.CCD | 01-04-29\16_19_32.CCD | |
| TEMP.CFG | 01-04-29\05_01_09.CCD | 01-04-29\17_27_12.CCD | |
| TEMP.CFG | 01-04-29\06_08_50.CCD | 01-04-29\18_34_53.CCD | |
| TEMP.CFG | 01-04-29\07_16_31.CCD | 01-04-29\19_42_34.CCD | |
| TEMP.CFG | 01-04-29\08_25_50.CCD | 01-04-29\20_50_35.CCD | |
| TEMP.CFG | 01-04-29\09_33_30.CCD | 01-04-29\21_58_16.CCD | |
| TEMP.CFG | 01-04-29\10_41_10.CCD | 01-04-29\23_05_56.CCD | |
| TEMP.CFG | 01-04-29\11_48_50.CCD | | |

## 24.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

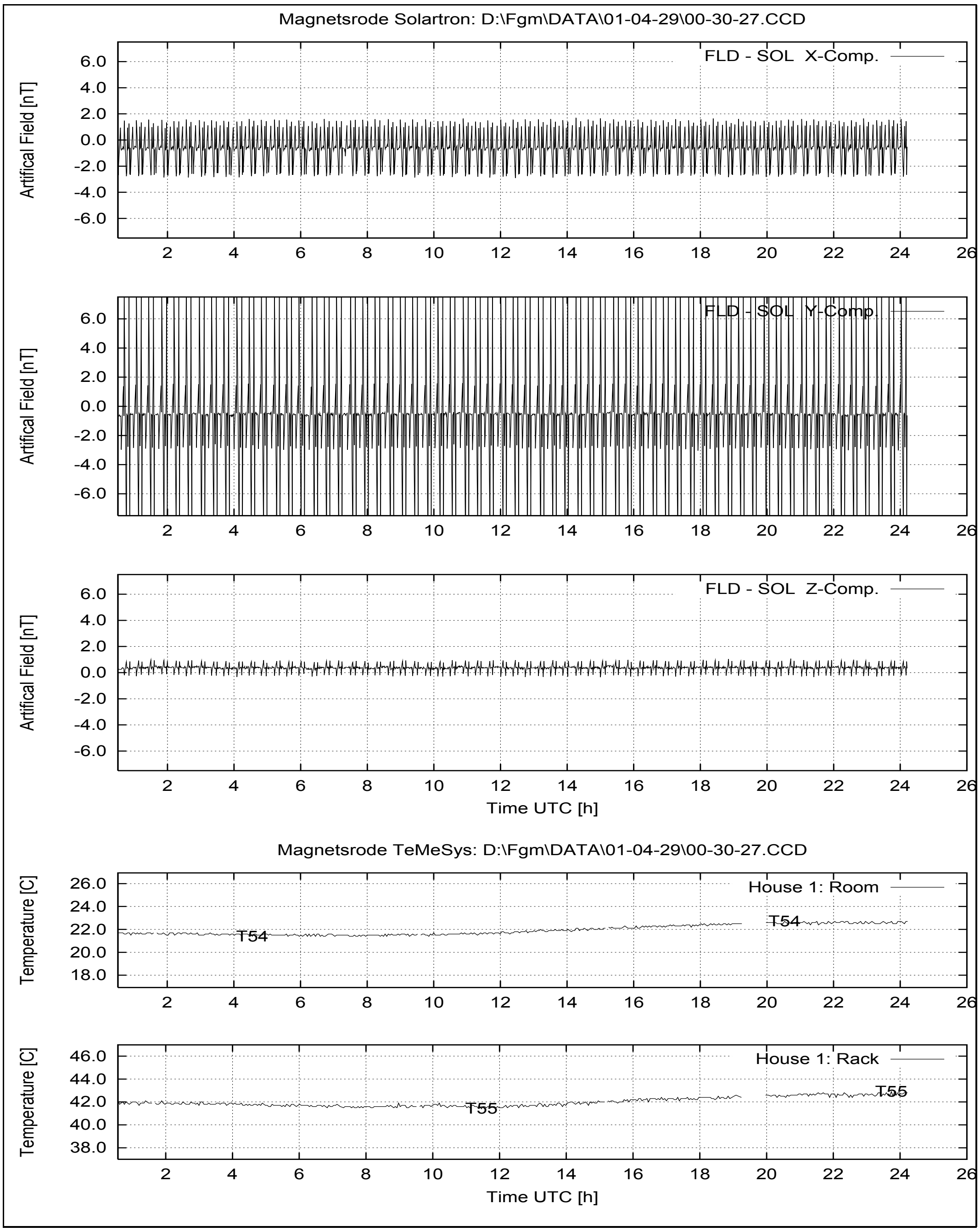


Figure 99: April 29, 2001: System Performance: FLD – SOL; Temperatures at House 1.

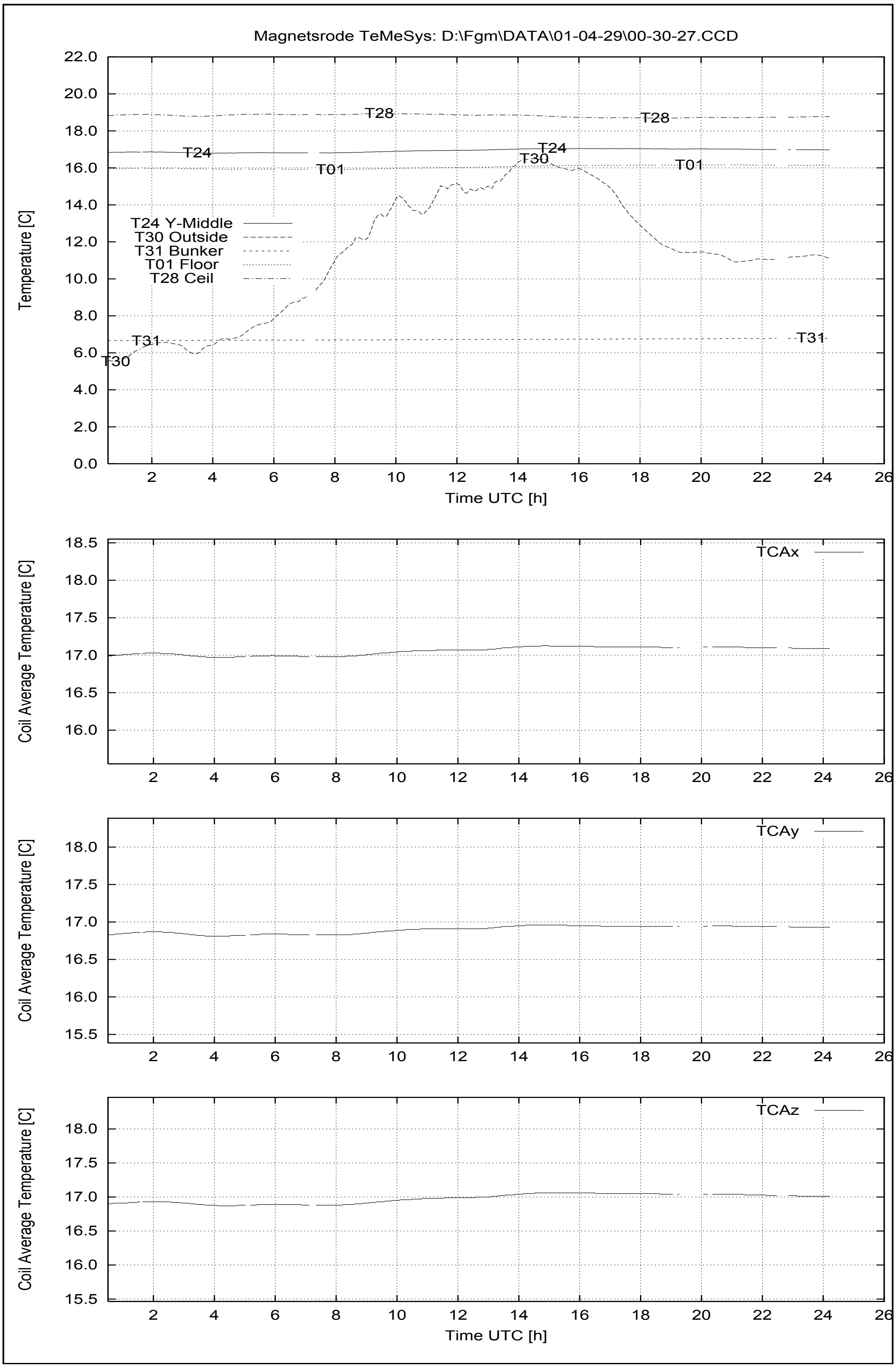


Figure 100: April 29, 2001: Temperatures House 2.

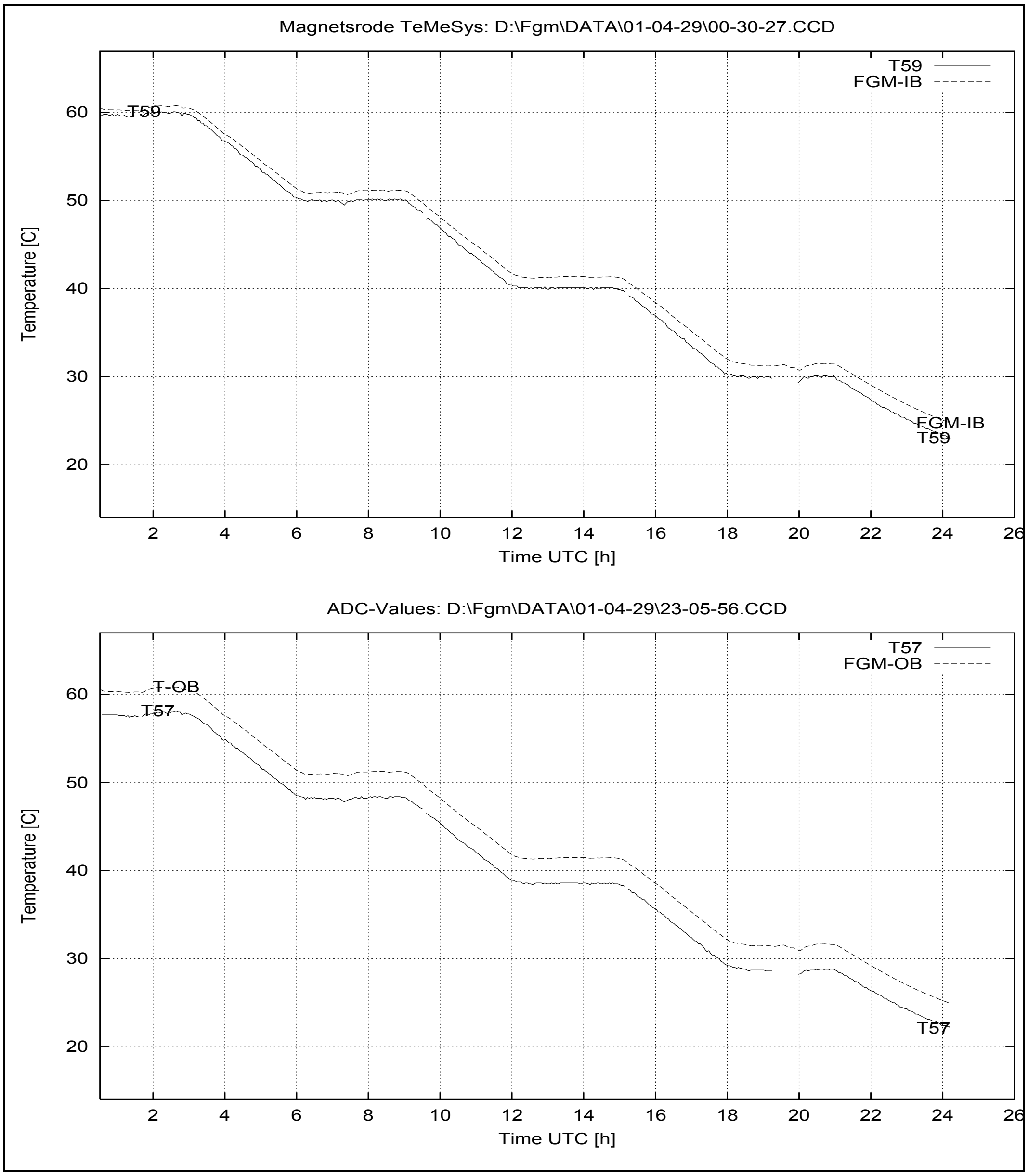


Figure 101: April 29, 2001: Sensor Temperatures at House 2.

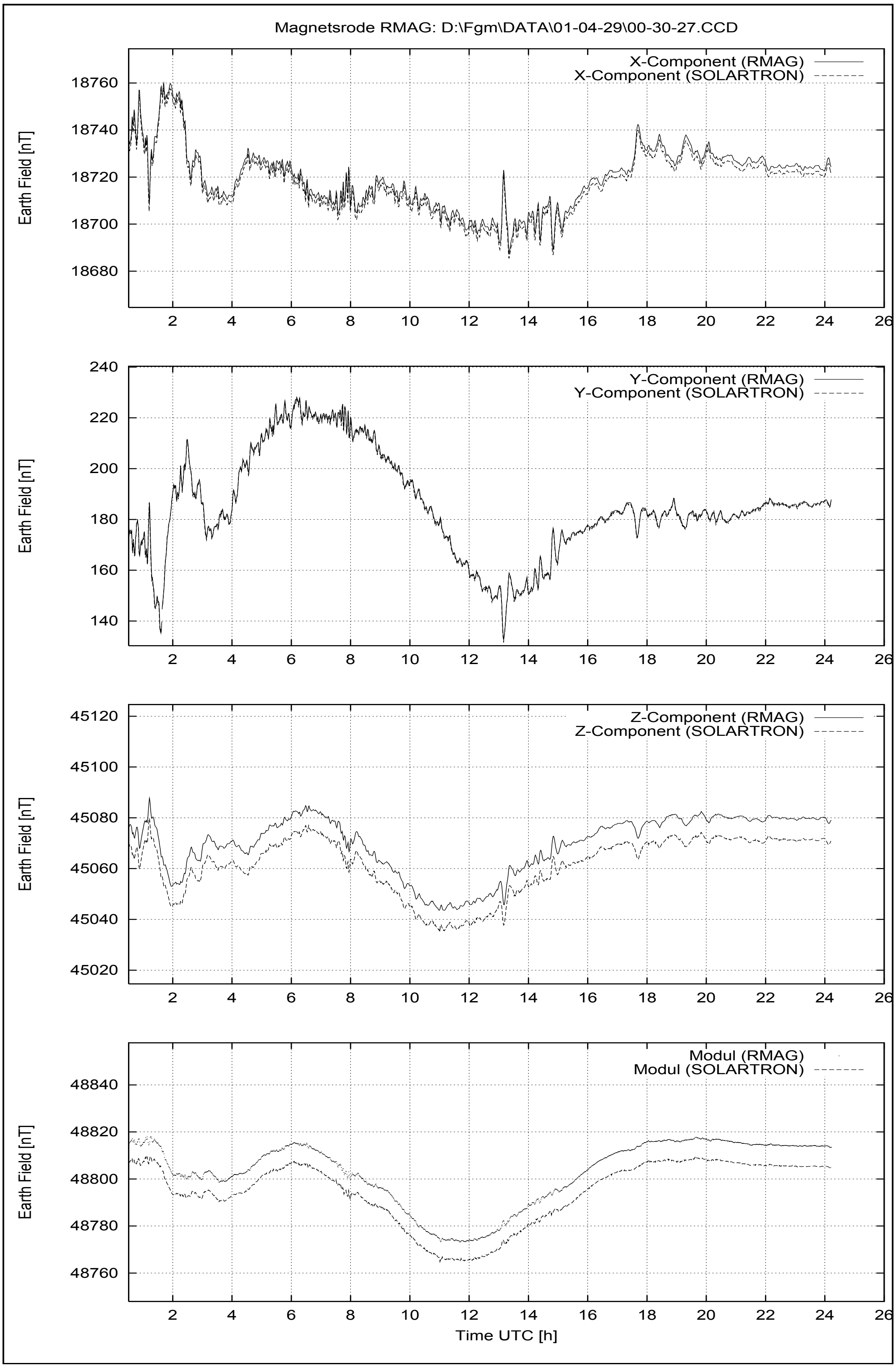


Figure 102: April 29, 2001: Earthfield variations.

# 25 Monday April 30, 2001

## 25.1 Temperature Calibration, Heating Cycle, FS Sensors, Continued

The execution of the temperature cycle according to `ROSSETTA2.CUR` continued today. No personnel around today.

### 25.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-04-30\00_13_37.CCD | 01-04-30\12_38_00.CCD | |
| TEMP.CFG | 01-04-30\01_21_17.CCD | 01-04-30\13_45_42.CCD | |
| TEMP.CFG | 01-04-30\02_28_58.CCD | 01-04-30\14_53_22.CCD | |
| TEMP.CFG | 01-04-30\03_36_39.CCD | 01-04-30\16_01_03.CCD | |
| TEMP.CFG | 01-04-30\04_44_20.CCD | 01-04-30\17_08_43.CCD | |
| TEMP.CFG | 01-04-30\05_51_59.CCD | 01-04-30\18_16_25.CCD | |
| TEMP.CFG | 01-04-30\06_59_39.CCD | 01-04-30\19_24_06.CCD | |
| TEMP.CFG | 01-04-30\08_07_20.CCD | 01-04-30\20_31_45.CCD | |
| TEMP.CFG | 01-04-30\09_15_01.CCD | 01-04-30\21_39_27.CCD | |
| TEMP.CFG | 01-04-30\10_22_40.CCD | 01-04-30\22_47_08.CCD | |
| TEMP.CFG | 01-04-30\11_30_21.CCD | 01-04-30\23_54_48.CCD | |

## 25.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

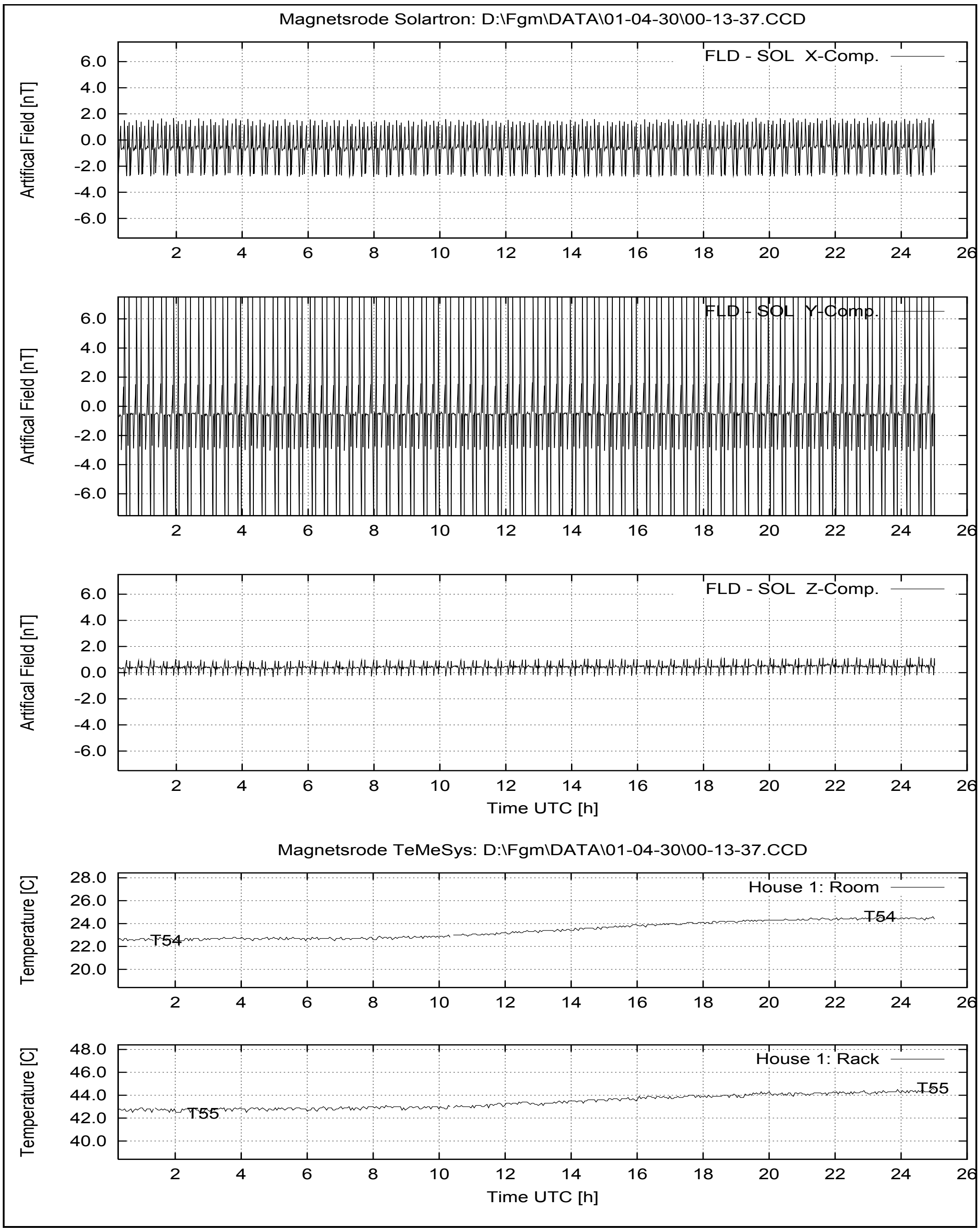


Figure 103: April 30, 2001: System Performance: FLD – SOL; Temperatures at House 1.

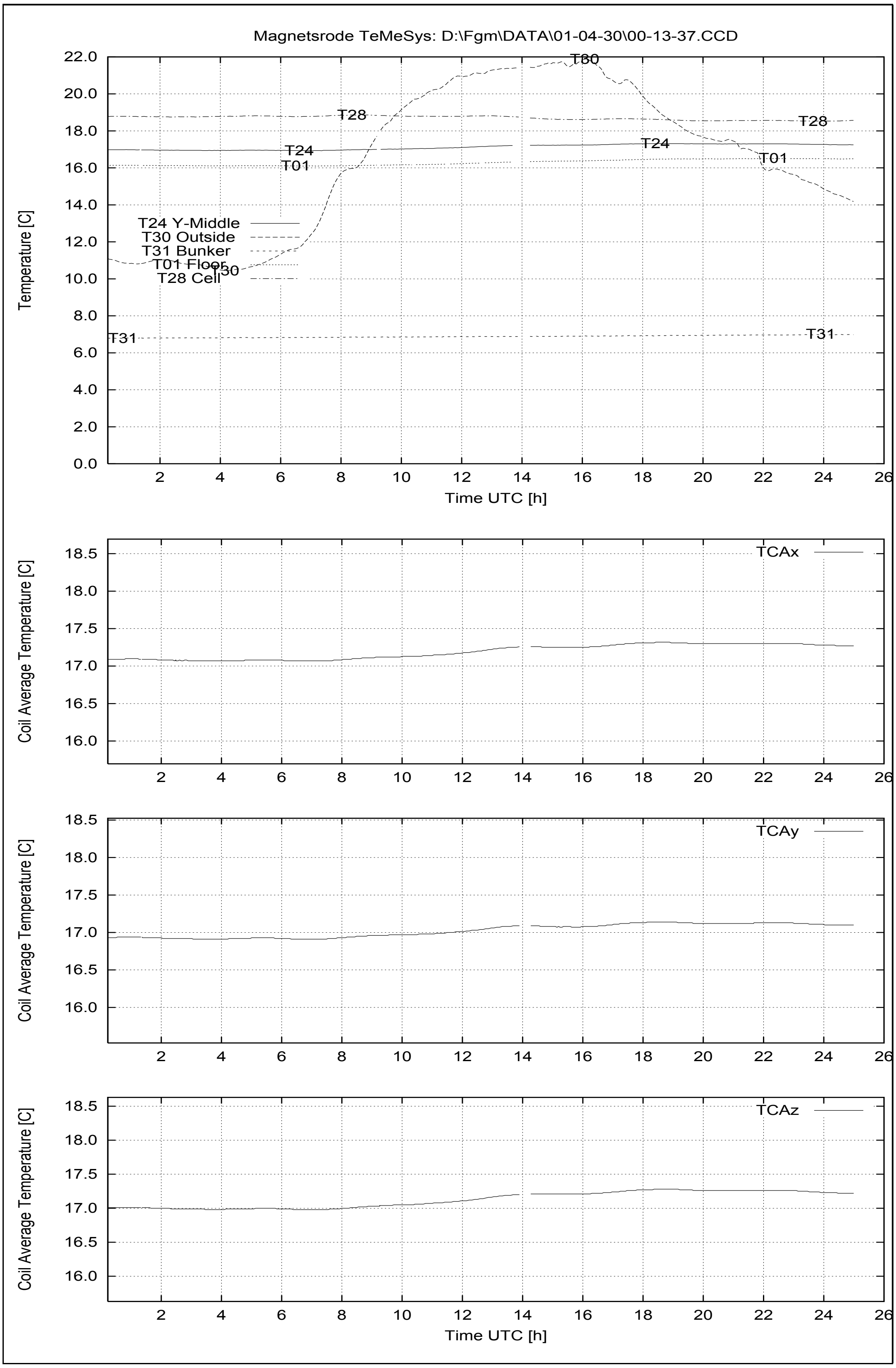


Figure 104: April 30, 2001: Temperatures House 2.

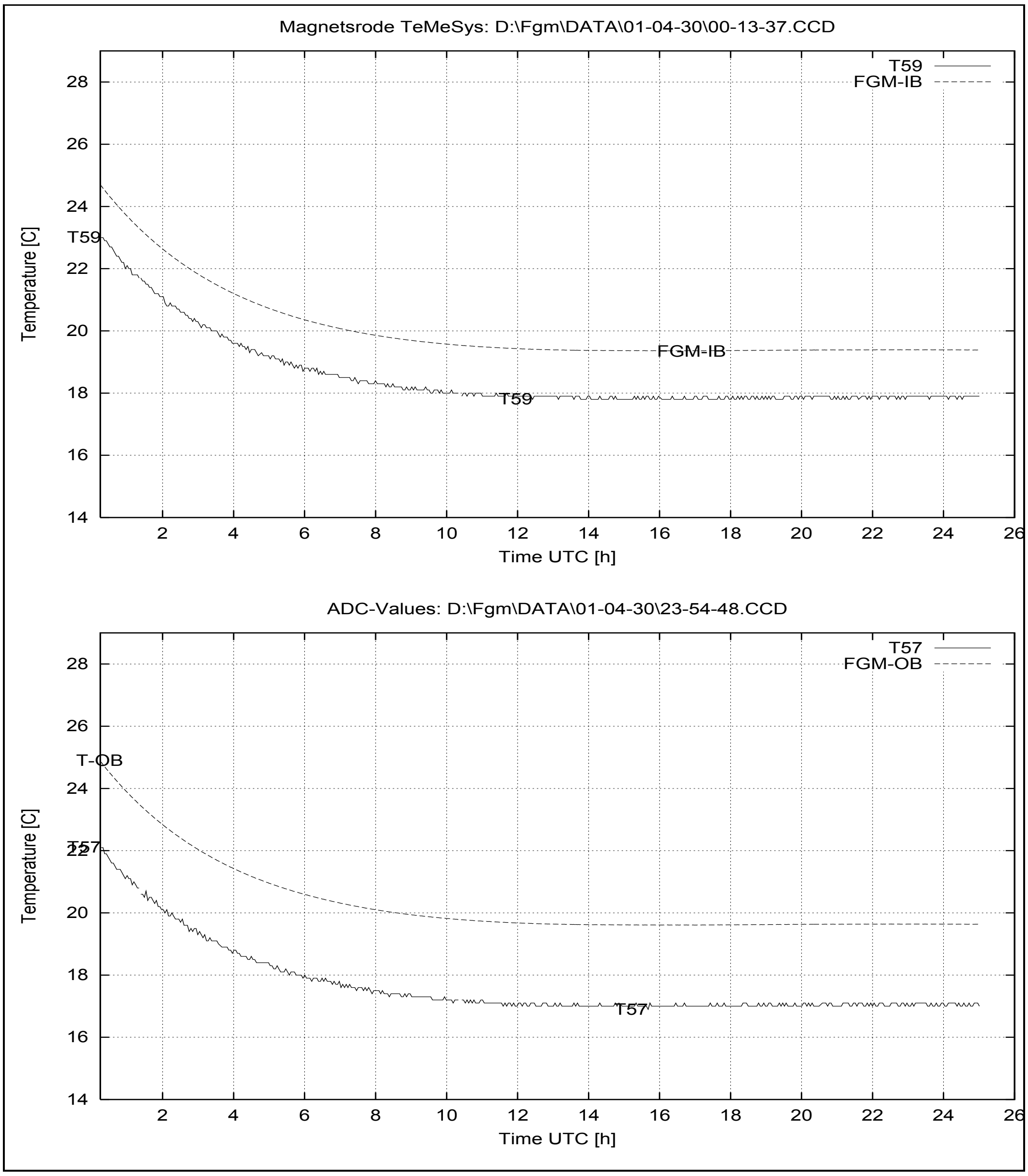


Figure 105: April 30, 2001: Sensor Temperatures at House 2.

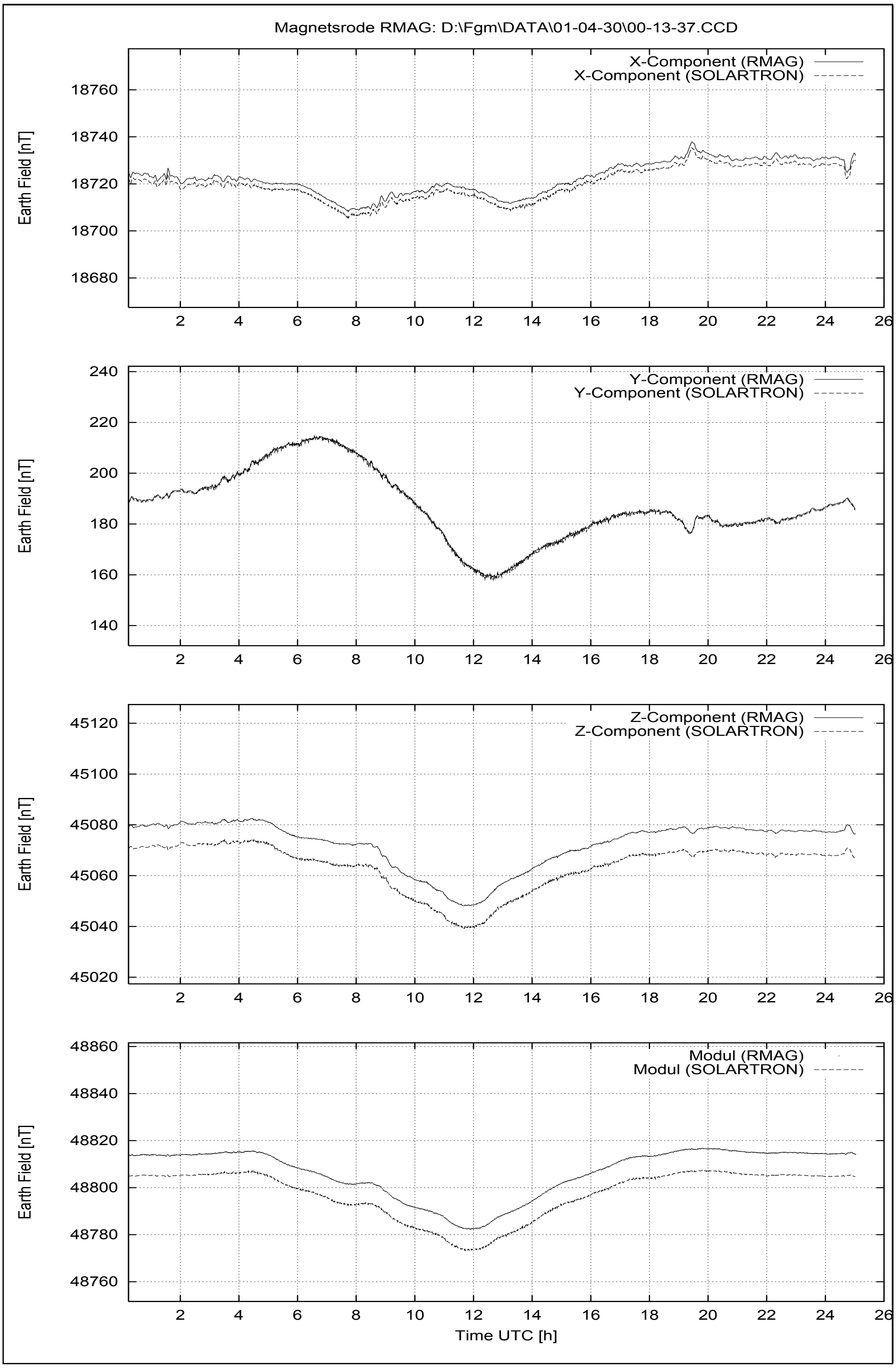


Figure 106: April 30, 2001: Earthfield variations.

# 26 Tuesday May 1, 2001

## 26.1 Temperature Calibration, Heating Cycle, FS Sensors, Continued

The execution of the temperature cycle according to `ROSSETTA2.CUR` continued today. No personnel around today.

### 26.1.1 Data

| Configuration File | CCD File | CCD File | Remark |
|---|---|---|---|
| TEMP.CFG | 01-05-01\01_02_28.CCD | 01-05-01\12_19_49.CCD | |
| TEMP.CFG | 01-05-01\02_10_26.CCD | 01-05-01\13_27_29.CCD | |
| TEMP.CFG | 01-05-01\03_18_06.CCD | 01-05-01\14_35_09.CCD | |
| TEMP.CFG | 01-05-01\04_25_46.CCD | 01-05-01\15_42_50.CCD | |
| TEMP.CFG | 01-05-01\05_33_27.CCD | 01-05-01\16_50_31.CCD | |
| TEMP.CFG | 01-05-01\06_41_07.CCD | 01-05-01\17_58_12.CCD | |
| TEMP.CFG | 01-05-01\07_48_47.CCD | 01-05-01\19_05_53.CCD | |
| TEMP.CFG | 01-05-01\08_56_27.CCD | 01-05-01\20_13_34.CCD | |
| TEMP.CFG | 01-05-01\10_04_07.CCD | 01-05-01\21_21_15.CCD | |
| TEMP.CFG | 01-05-01\11_11_48.CCD | 01-05-01\22_30_32.CCD | |

## 26.2 Temperature Cycle, Linearities, FS Sensors

At the end of the temperature calibration the usual linearity measurements after the T–cycle were executed in the chosen setup for the temperature cycle. The sensors are fixed and unchanged

| | |
|---|---|
| Purpose: | Measure the linearity of the FGM–FS sensors. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `T_LIN.SEQ` embedded in `TEMP.SEQ` |
| Start: | 01.05.01 23:38 |
| End: | 02.05.01 01:42 |

#### 26.2.1 Data

| Configuration File | CCD File |
|---|---|
| ALI10.CFG | 01-05-01\23_38_13.CCD |
| TX15.CFG | 01-05-01\23_45_24.CCD |
| TY15.CFG | 01-05-01\23_58_24.CCD |

## 26.3 Overview Plots: System Performance, Temperatures and Earth-field Variations.

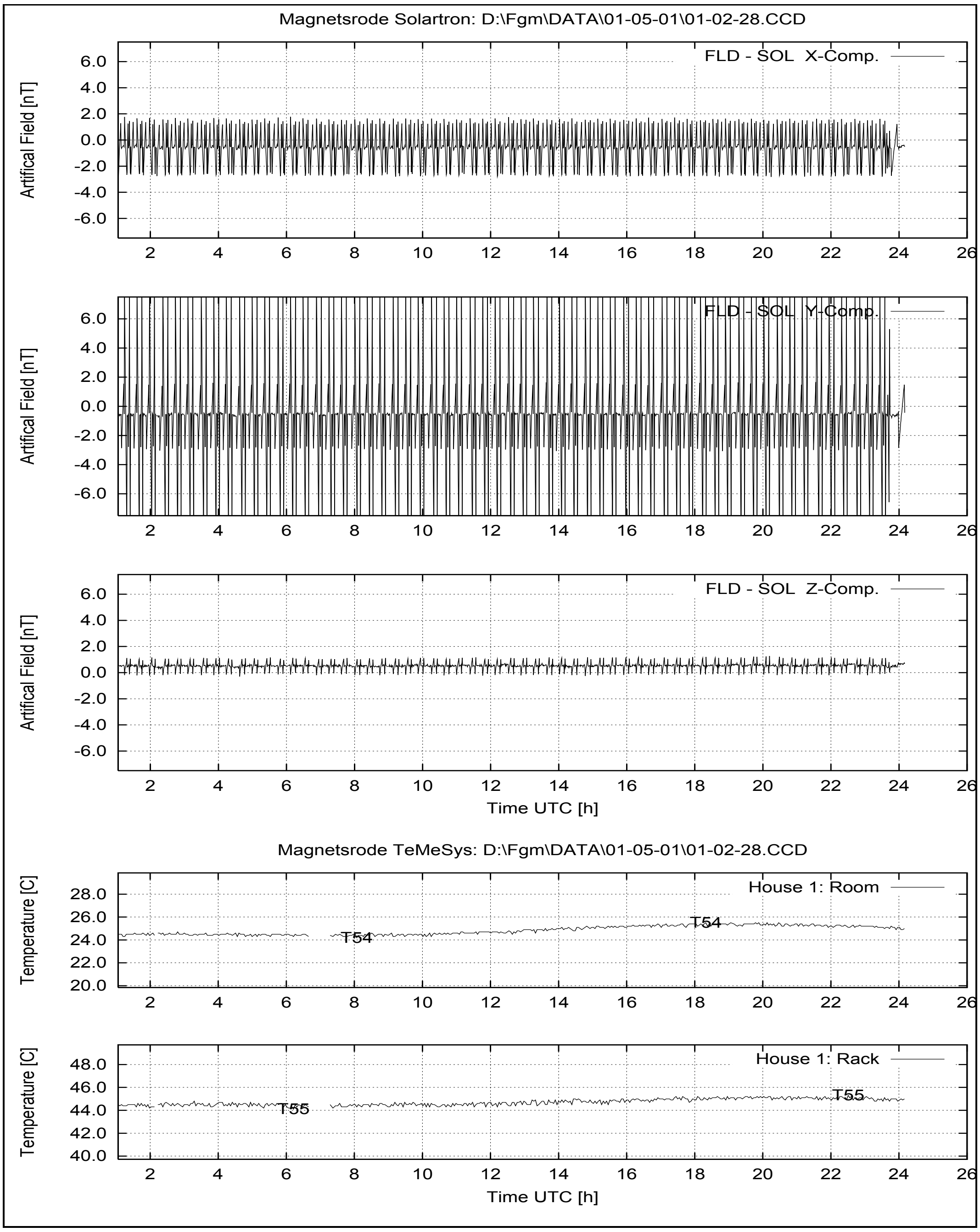


Figure 107: May 1, 2001: System Performance: FLD – SOL; Temperatures at House 1.

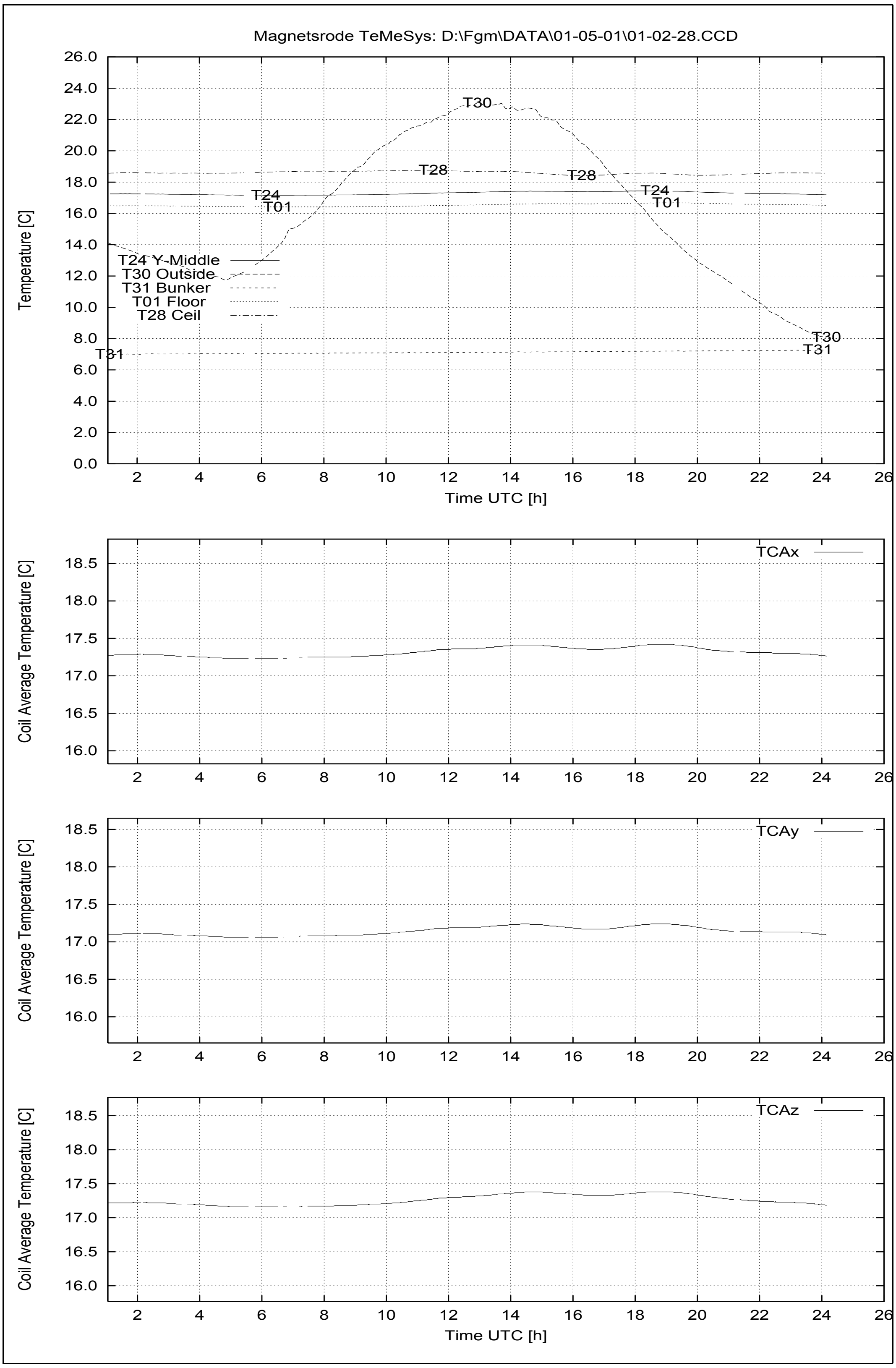


Figure 108: May 1, 2001: Temperatures House 2.

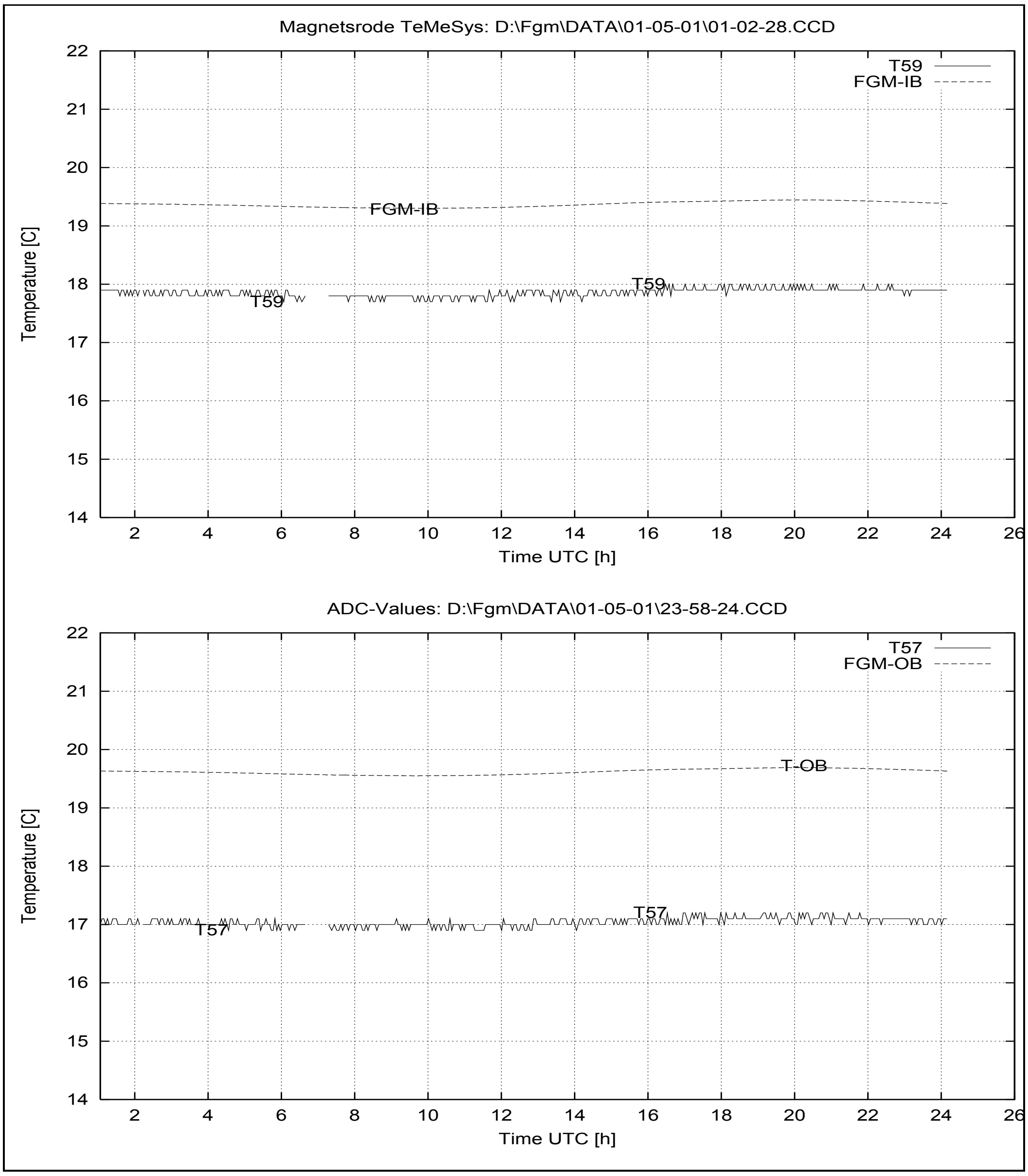


Figure 109: Mai 1, 2001: Sensor Temperatures at House 2.

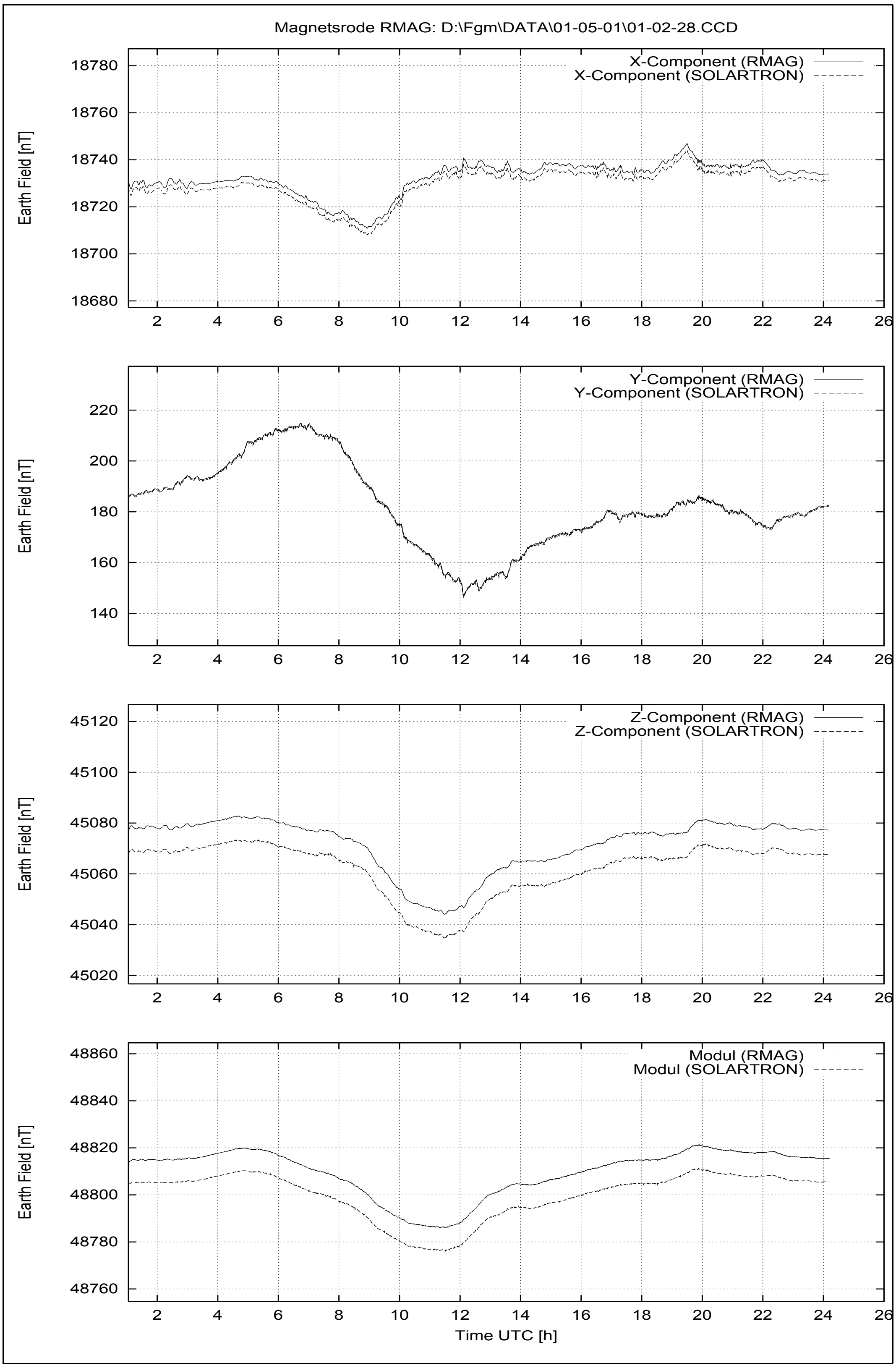


Figure 110: May 1, 2001: Earthfield variations.

# 27 Wednesday May 2, 2001

## 27.1 Temperature Cycle, Linearities, FS Sensors

The remaining measurements of the linearity sequence were performed in the early morning.

### 27.1.1 Data

| Configuration File | CCD File |
|---|---|
| TZ15.CFG | 01-05-02\00_11_24.CCD |
| TX15.CFG | 01-05-02\00_24_25.CCD |
| TY15.CFG | 01-05-02\00_37_25.CCD |
| TZ15.CFG | 01-05-02\00_50_25.CCD |
| TX15.CFG | 01-05-02\01_03_26.CCD |
| TY15.CFG | 01-05-02\01_16_25.CCD |
| TZ15.CFG | 01-05-02\01_29_26.CCD |

## 27.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

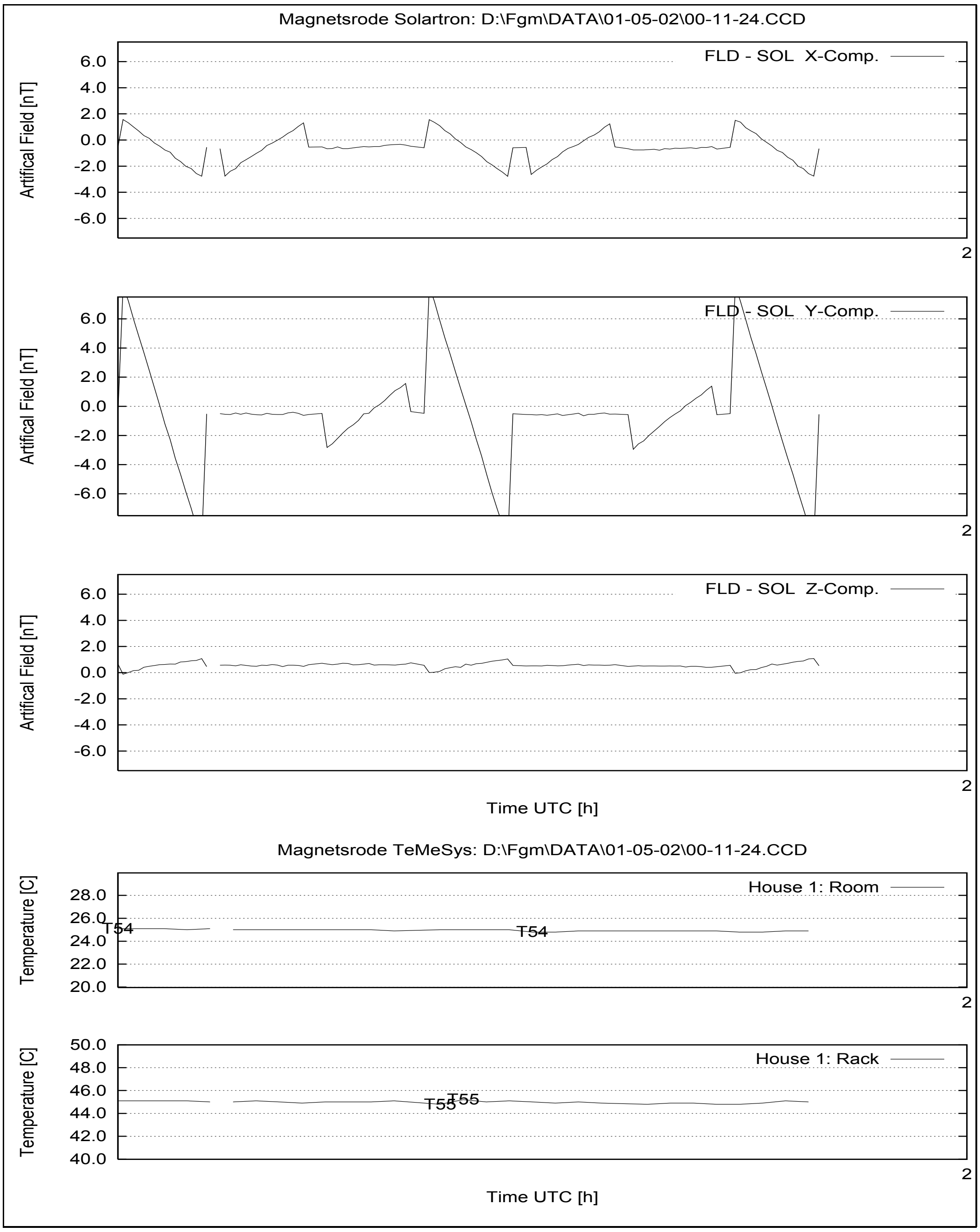


Figure 111: May 2, 2001: System Performance: FLD – SOL; Temperatures at House 1.

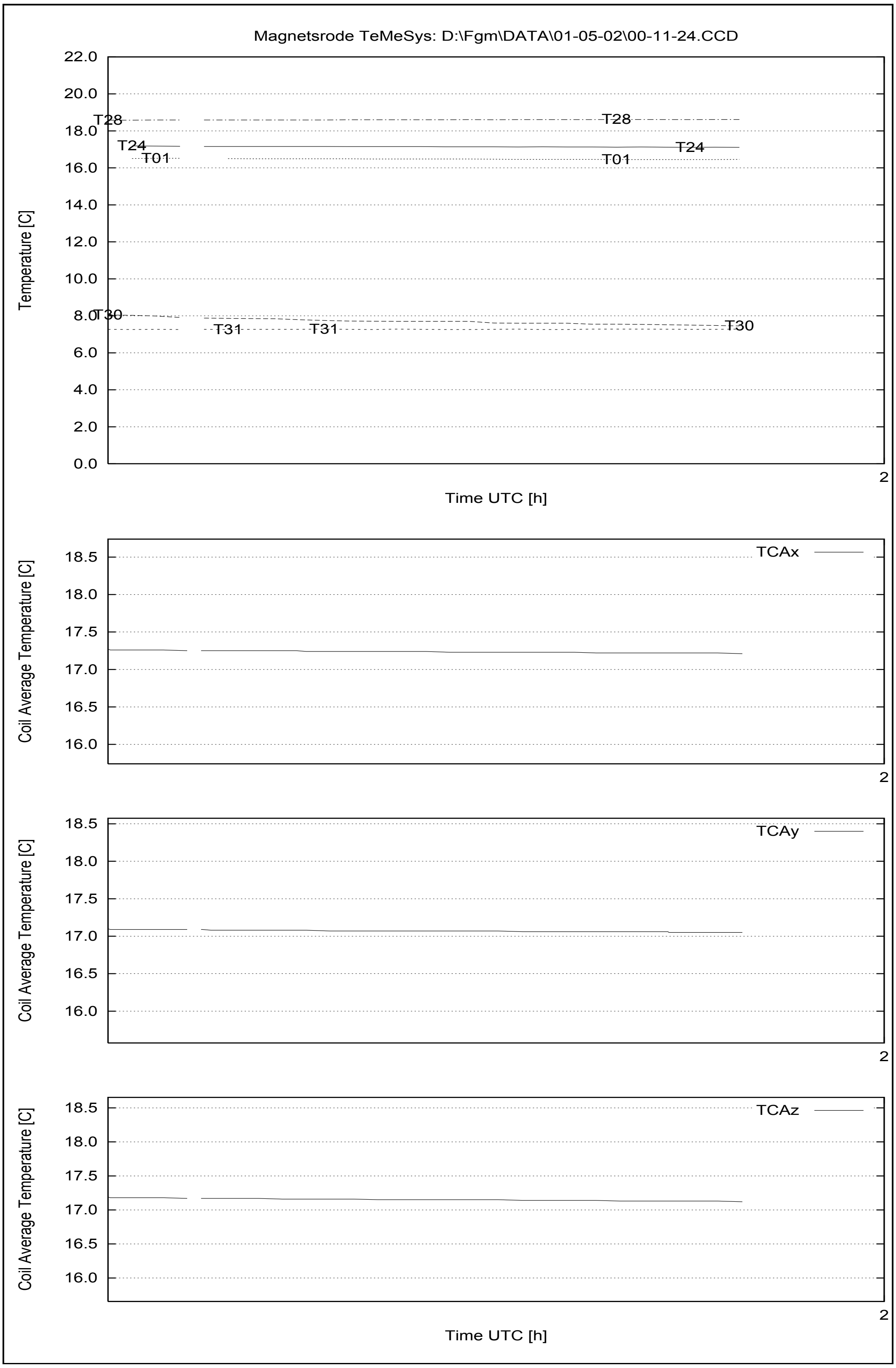


Figure 112: May 2, 2001: Temperatures House 2.

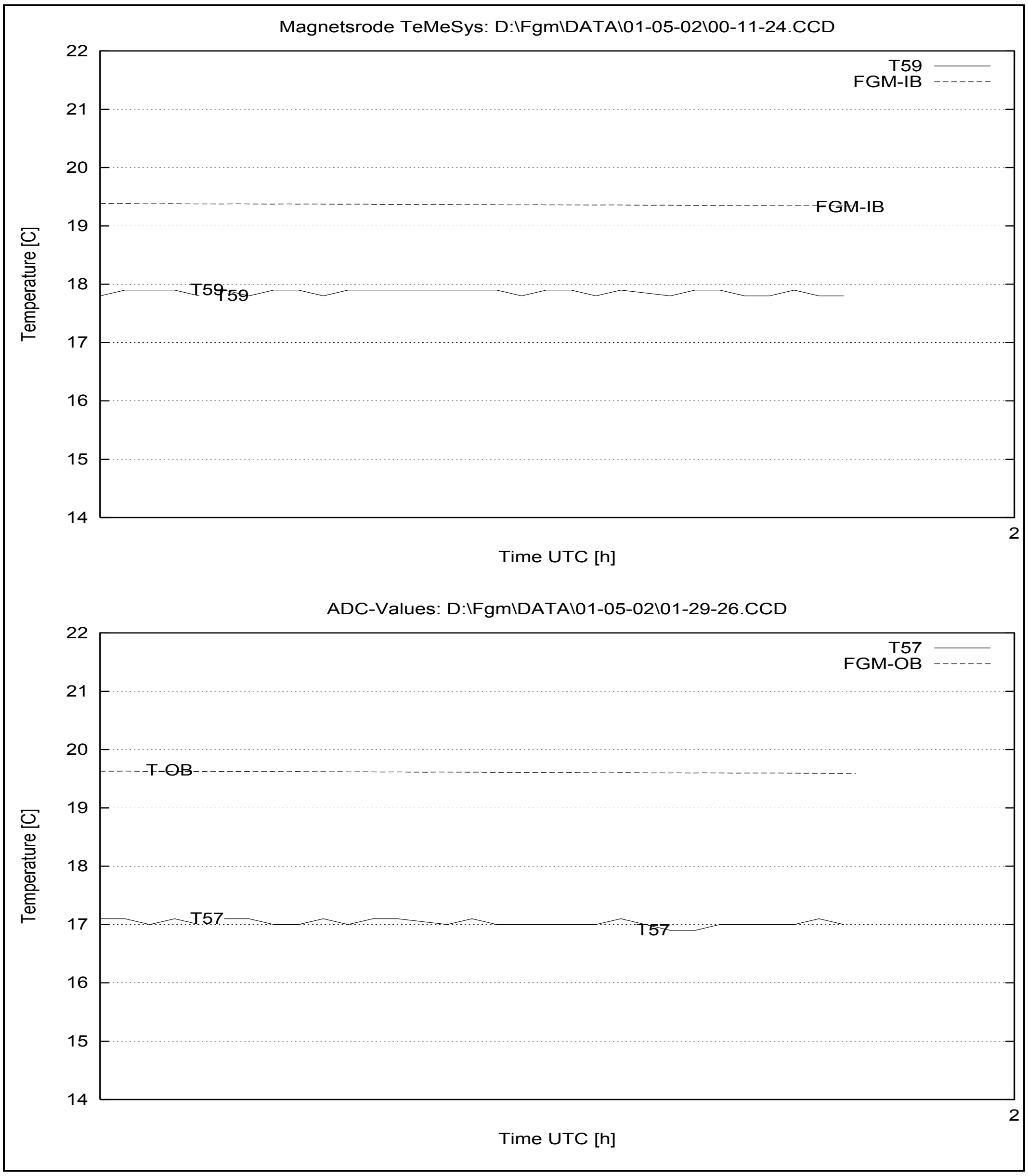


Figure 113: Mai 2, 2001: Sensor Temperatures at House 2.

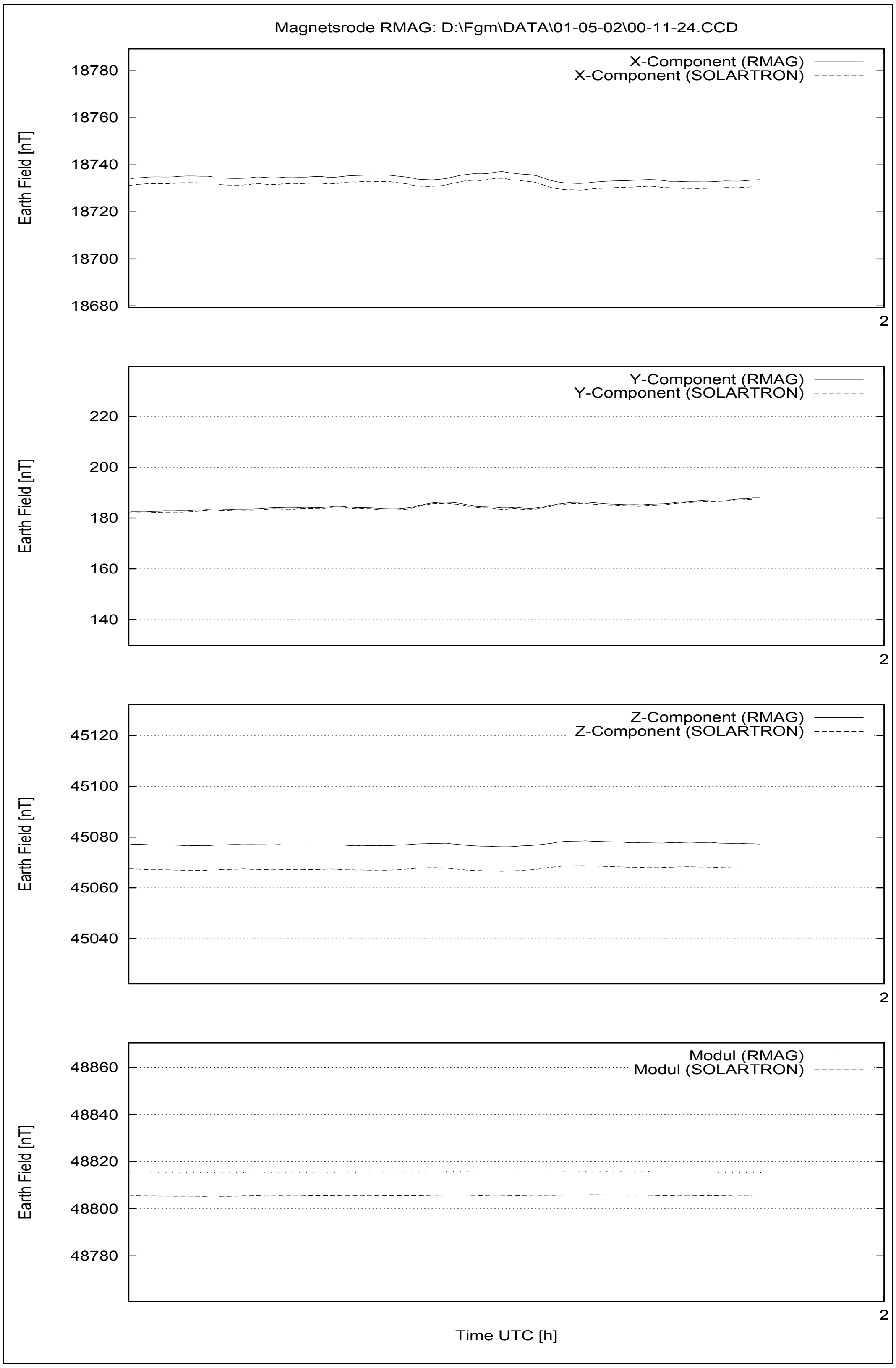


Figure 114: May 2, 2001: Earthfield variations.

# 28 Tuesday August 28, 2001

## 28.1 Pre Calibration Residual Field Adjustment

After a break of four month the residual field of the coil system had to be checked and nulled before the new calibration measurements. For this purpose the Overhauser Magnetometer (OVH) was placed diagonally in space in the center of the coil system (CoC). The orientation of the sensor was from south–west–down to north–east–up. Refer to picture 267. Fields have been applied with the S/W MCF_CTRL. The data output of the OVH was logged with HyperTerm on a Laptop in House 1.

Initial measurement:

| Component | Applied Field [nT] | Measured Modulus [nT] | Residual Field [nT] | Old PA-Offset |
|---|---|---|---|---|
| X | +50000 | 49991 | +00 | 458 |
| X | −50000 | 49991 | | |
| Y | +50000 | 50014 | +23 | 560 |
| Y | −50000 | 49967 | | |
| Z | +50000 | 49995 | −5 | 600 |
| Z | −50000 | 50004 | | |

Status after adjustment:

| Component | Applied Field [nT] | Measured Modulus [nT] | Residual Field [nT] | Old PA-Offset |
|---|---|---|---|---|
| X | +50000 | 49991 | 00 | 458 |
| X | −50000 | 49991 | | |
| Y | +50000 | 49991 | 00 | 355 |
| Y | −50000 | 50091 | | |
| Z | +50000 | 49999 | 00 | 645 |
| Z | −50000 | 49999 | | |

The measurement stability was not as good as at the residual field check at the beginning of the ROSETTA calibration. Most likely there were some higher frequent radiation or induction at the coil system. Nevertheless the result is confident at enough.

### 28.2 Setup for the Temperature Calibration

Both sensors, mounted together on their aluminium support, are fixed on the mounting plate of the Thermal Test Box. See figure 115 for details. Also a photographic view (figures 266 will help.
The FM–OB is on the northern side, FM–IB on the southern side. The temperature sensors of the TeMeSys–B system $T_{56}$ to $T_{63}$ are placed in the box. The positions are given in table 5.

| Sensor | Position |
| --- | --- |
| $T_{57}$ | under FGM–OB sensor |
| $T_{59}$ | under FGM–IB sensor |
| $T_{56}$ | mounting plate, upper side, western edge, central |
| $T_{58}$ | mounting plate, upper side, south west corner |
| $T_{29}$ | outside thermal box at the northern side of the Coil System |
| $T_{60}$ | ground plate, north middle |
| $T_{61}$ | mounting plate, eastern side, central |
| $T_{62}$ | ground plate, south west |
| $T_{63}$ | ground plate, south east |

Table 5: The TeMeSys–B sensors in the Thermal Test Box.

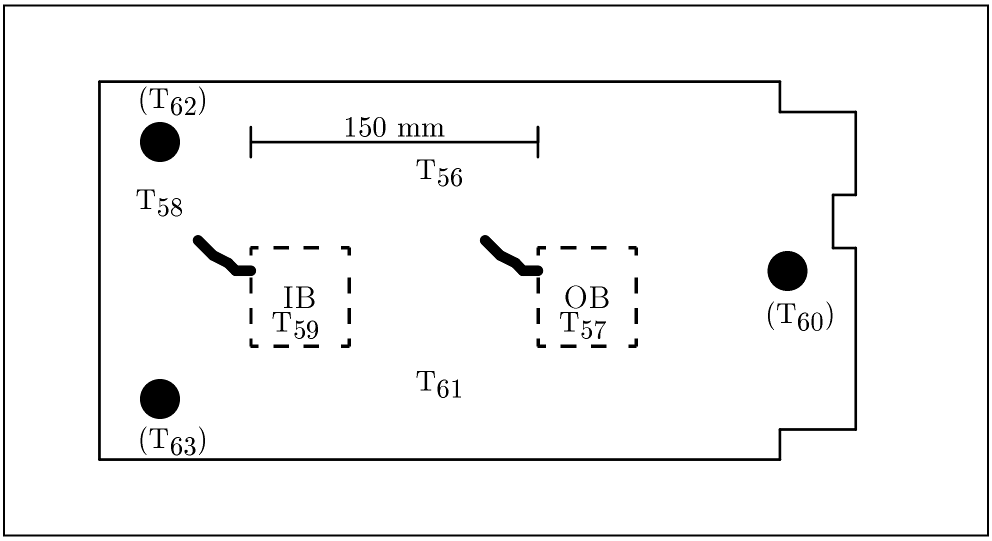


Figure 115: The temperature sensors at the Thermal Test Box mounting plate. The draft shows the top view. Sensors in brackets are mounted near the Thermal Test Box ground plate, not on the mounting plate.

The software TempCtrl is used to control the heating process. This software switches on the electrical heater during the SOLARTRON measurement cycle. This was done, because during the SOLARTRON measurements the data should not be used and so they may be disturbed anyway. For details on the heater and the control software see the related document *MR–IGM–TN0005*. The appendix E gives details on the measurements and shows an overview on the complete cooling and heating cycle.

**As the power supply onboard the ROSETTA s/c is supposed to be 5.1 V rather than 5.0 V all the following calibration steps are executed with the external power supply set to '± Nominal + 2 %' which means $\pm 5.1V$.**

## 28.3 Temperature Cycle, Linearities, DPU:FS, Sensors: FS

Before the temperature calibration will be performed some linearity measurements should be executed in the chosen setup for the temperature cycle. The sensors are fixed, but the box is still open for filling in the dry ice after these measurements.

| | |
|---|---|
| Purpose: | Measure the linearity of the FGM-FS sensors using the FS DPU. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP; Lower Reference position<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `T_LIN.SEQ` |
| Start: | 28.08.01 11:25 |
| End: | 28.08.01 11:58 |

### 28.3.1 Data

| Configuration File | CCD File |
|---|---|
| ali10.CFG | 01-08-28\11_25_10.CCD |
| TX15.CFG | 01-08-28\11_32_31.CCD |
| TY15.CFG | 01-08-28\11_45_32.CCD |
| TZ15.CFG | 01-08-28\11_58_33.CCD |

## 28.4 Temperature Calibration, Heating Cycle, DPU:FS, Sensors: FS

| | |
|---|---|
| Purpose: | Measure the temperature behaviour of the FS sensors using the FS DPU. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `TEMP3.SEQ` |
| Temperature File: | `ROSETTA3.CUR` |
| Tctrlparam. | FLDtime: 40 s – TCctrl times: 12 s / 20s |
| Start: | 28.08.01 13:26 |
| End: | 30.08.01 13:00 ESC. |

### 28.4.1 Data

| Configuration File | CCD File | CCD file |
|---|---|---|
| TEMP.CFG | 01-08-28\12_14_04.CCD | 01-08-28\19_00_13.CCD |
| TEMP.CFG | 01-08-28\13_21_46.CCD | 01-08-28\20_07_55.CCD |
| TEMP.CFG | 01-08-28\14_29_27.CCD | 01-08-28\21_15_36.CCD |
| TEMP.CFG | 01-08-28\15_37_08.CCD | 01-08-28\22_23_17.CCD |
| TEMP.CFG | 01-08-28\16_44_50.CCD | 01-08-28\23_30_58.CCD |
| TEMP.CFG | 01-08-28\17_52_32.CCD | |

## 28.5 Overview Plots: System Performance, Temperatures and Earthfield Variations.

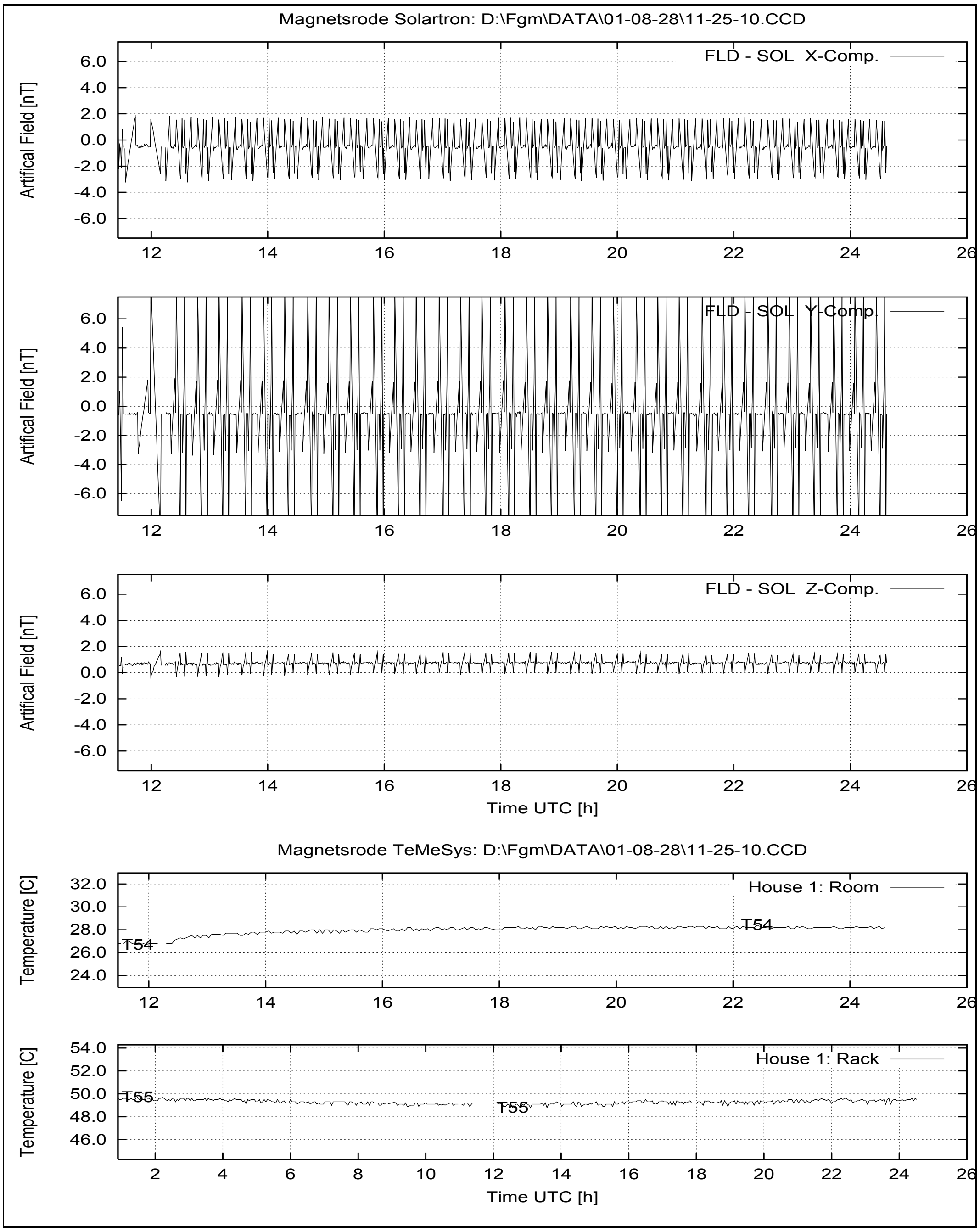


Figure 116: August 28, 2001: System Performance: FLD – SOL; Temperatures House 1.

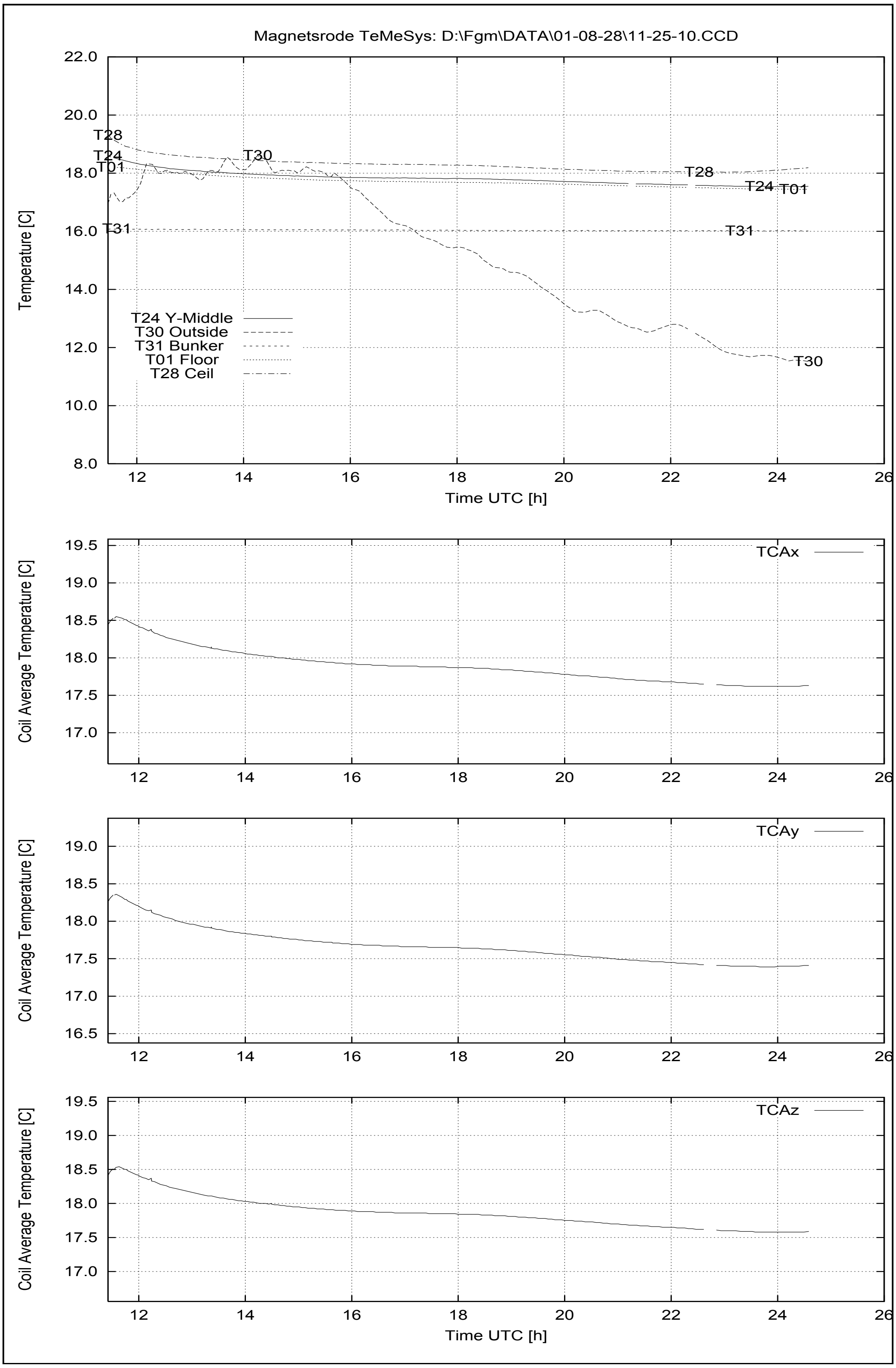


Figure 117: August 28, 2001: Temperatures House 2.

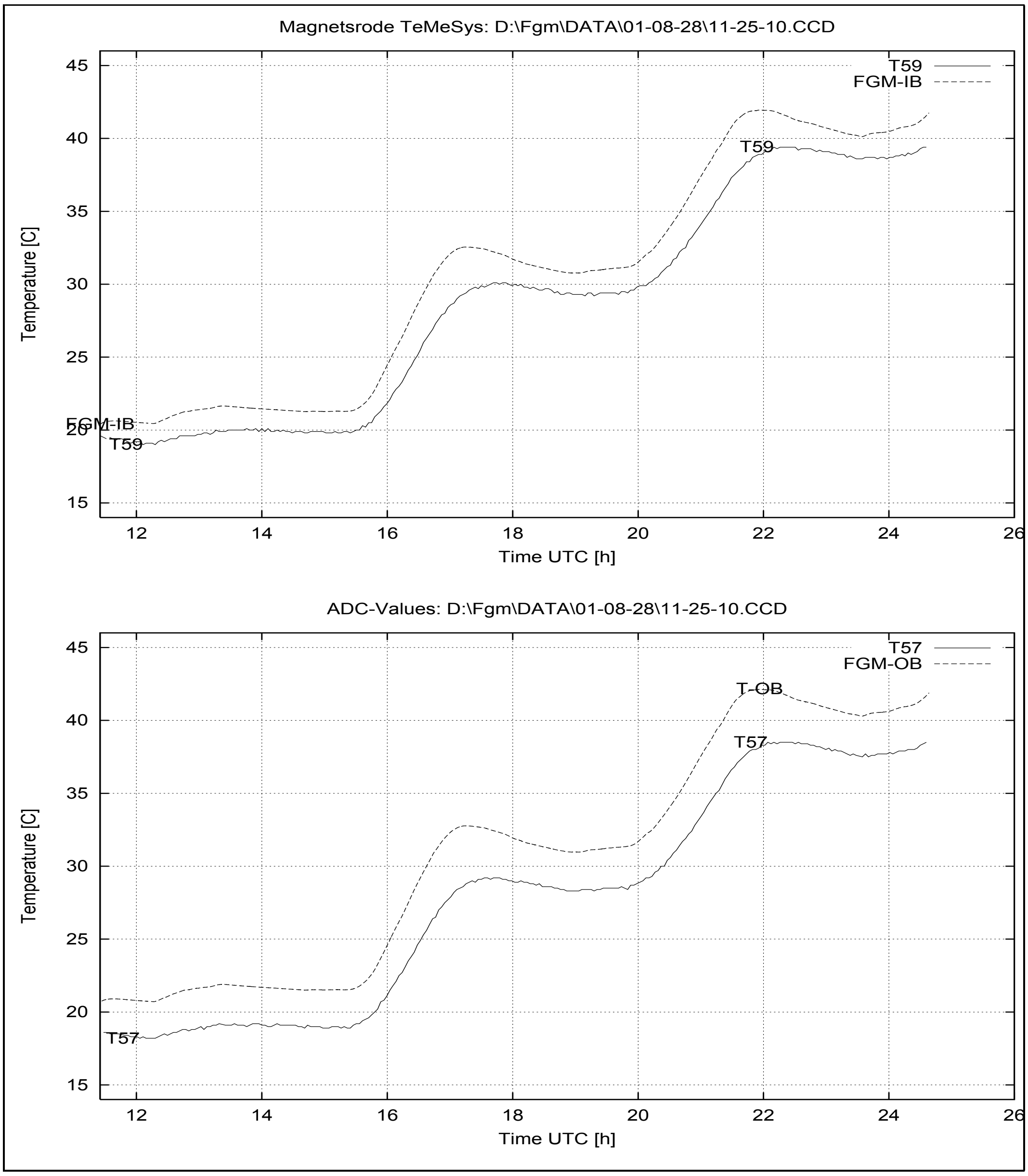


Figure 118: August 28, 2001: Sensor Temperatures at House 2.

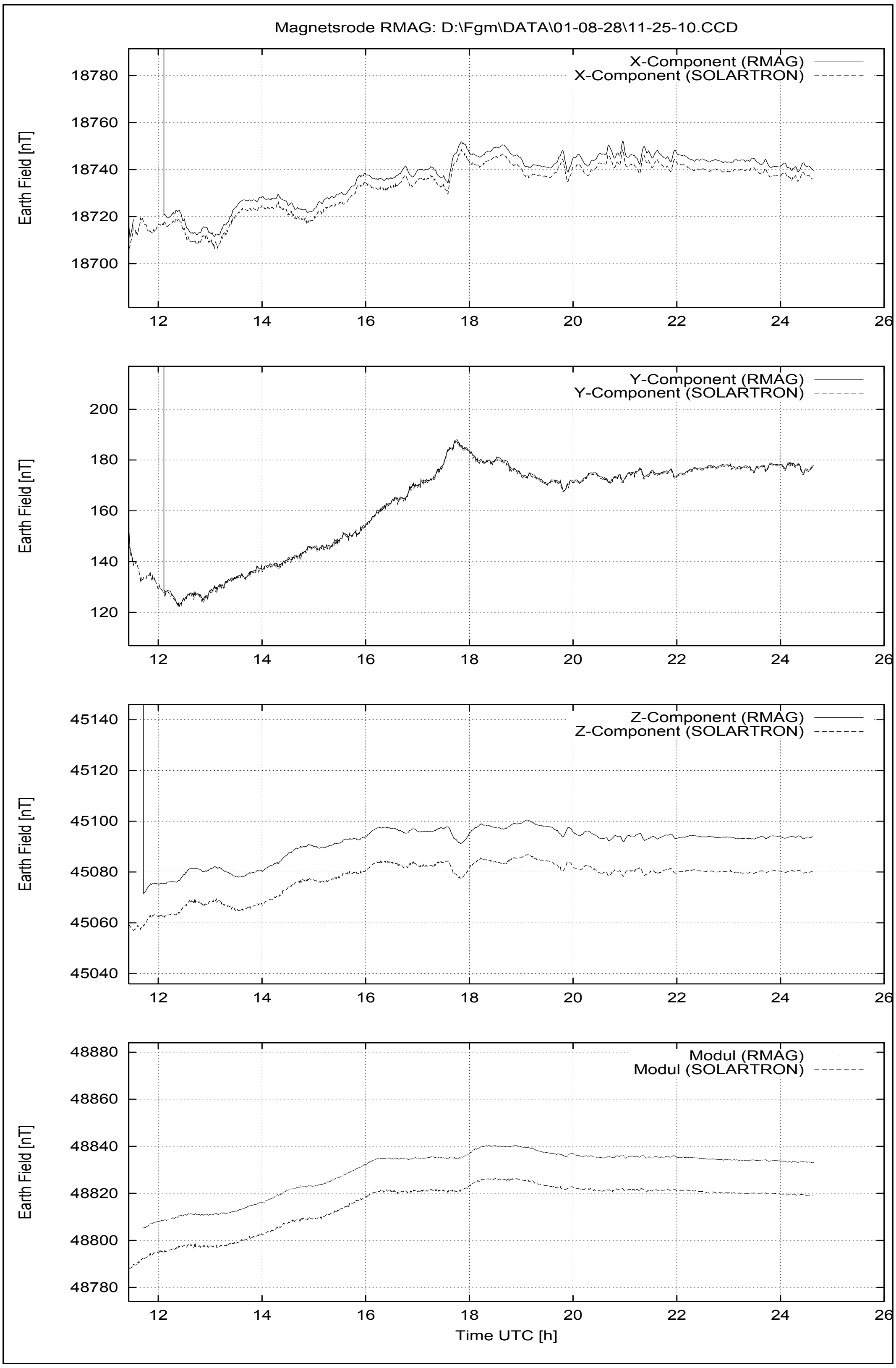


Figure 119: August 28, 2001: Earthfield variations.

# 29 Wednesday August 29, 2001

## 29.1 Temperature Calibration, Heating Cycle continued, DPU:FS, Sensors: FS

The heating cycle continued without any personal support today.

### 29.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-08-29\00_38_40.CCD | |
| TEMP.CFG | 01-08-29\01_46_21.CCD | |
| TEMP.CFG | 01-08-29\02_54_02.CCD | |
| TEMP.CFG | 01-08-29\04_01_42.CCD | |
| TEMP.CFG | 01-08-29\05_09_24.CCD | |
| TEMP.CFG | 01-08-29\06_17_05.CCD | |
| TEMP.CFG | 01-08-29\07_24_48.CCD | |
| TEMP.CFG | 01-08-29\08_32_29.CCD | |
| TEMP.CFG | 01-08-29\09_40_10.CCD | |
| TEMP.CFG | 01-08-29\10_47_52.CCD | |
| TEMP.CFG | 01-08-29\11_55_33.CCD | |
| TEMP.CFG | 01-08-29\13_03_14.CCD | |
| TEMP.CFG | 01-08-29\14_10_55.CCD | |
| TEMP.CFG | 01-08-29\15_18_36.CCD | |
| TEMP.CFG | 01-08-29\16_26_17.CCD | |
| TEMP.CFG | 01-08-29\17_34_27.CCD | |
| TEMP.CFG | 01-08-29\18_42_08.CCD | |
| TEMP.CFG | 01-08-29\19_49_50.CCD | |
| TEMP.CFG | 01-08-29\20_57_31.CCD | |
| TEMP.CFG | 01-08-29\22_05_12.CCD | |
| TEMP.CFG | 01-08-29\23_12_54.CCD | |

## 29.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

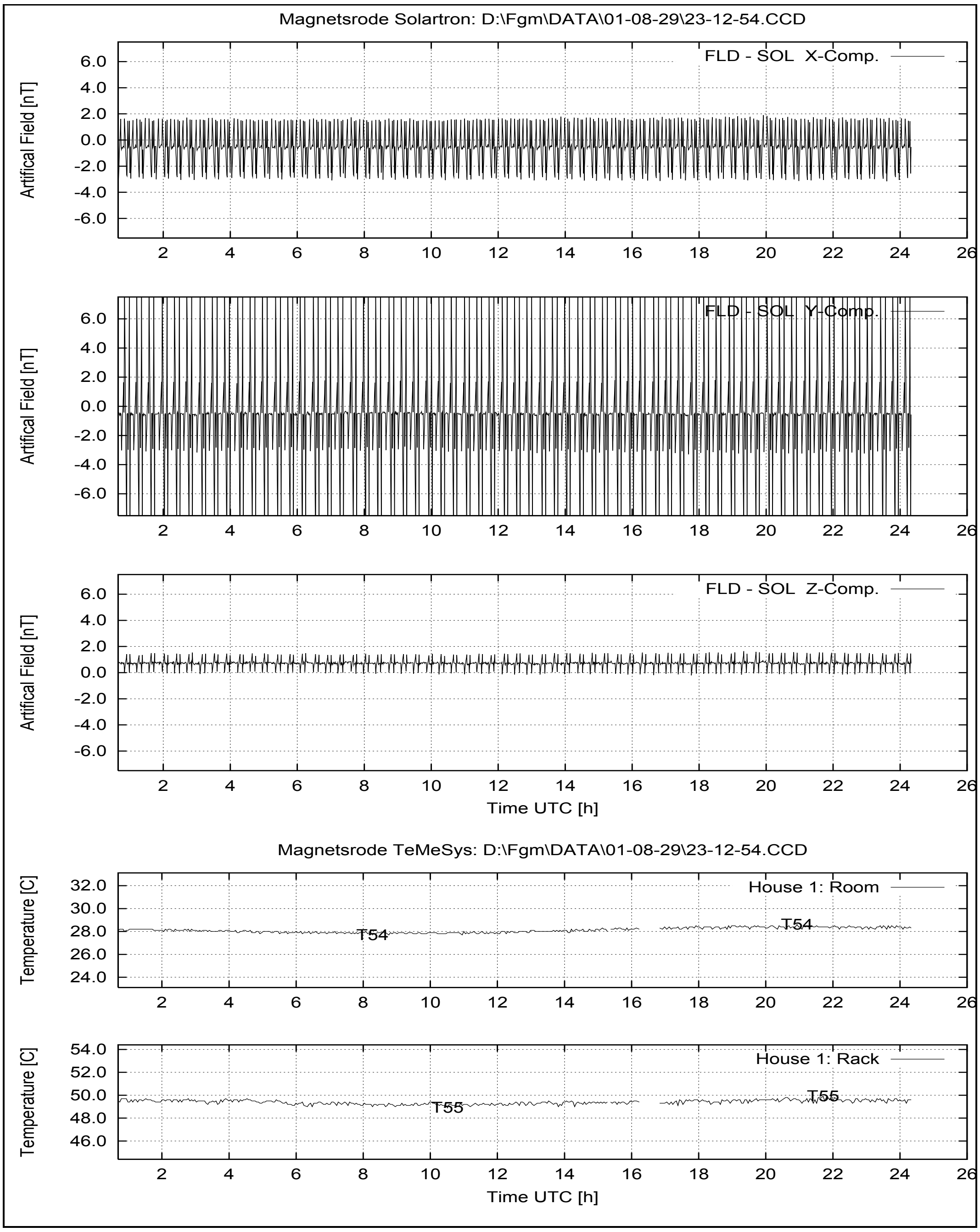


Figure 120: August 29, 2001: System Performance: FLD – SOL; Temperatures House 1.

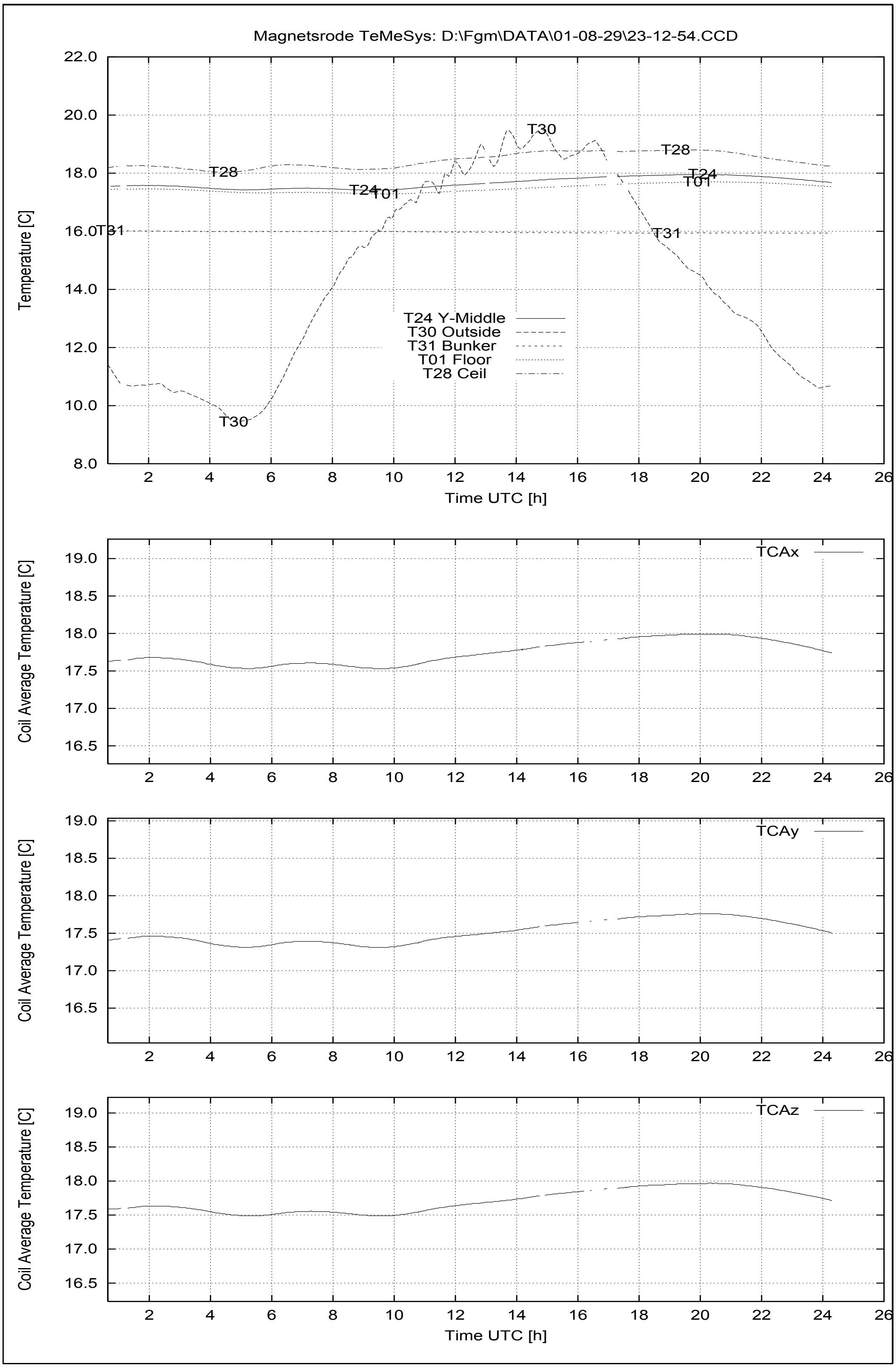


Figure 121: August 29, 2001: Temperatures House 2.

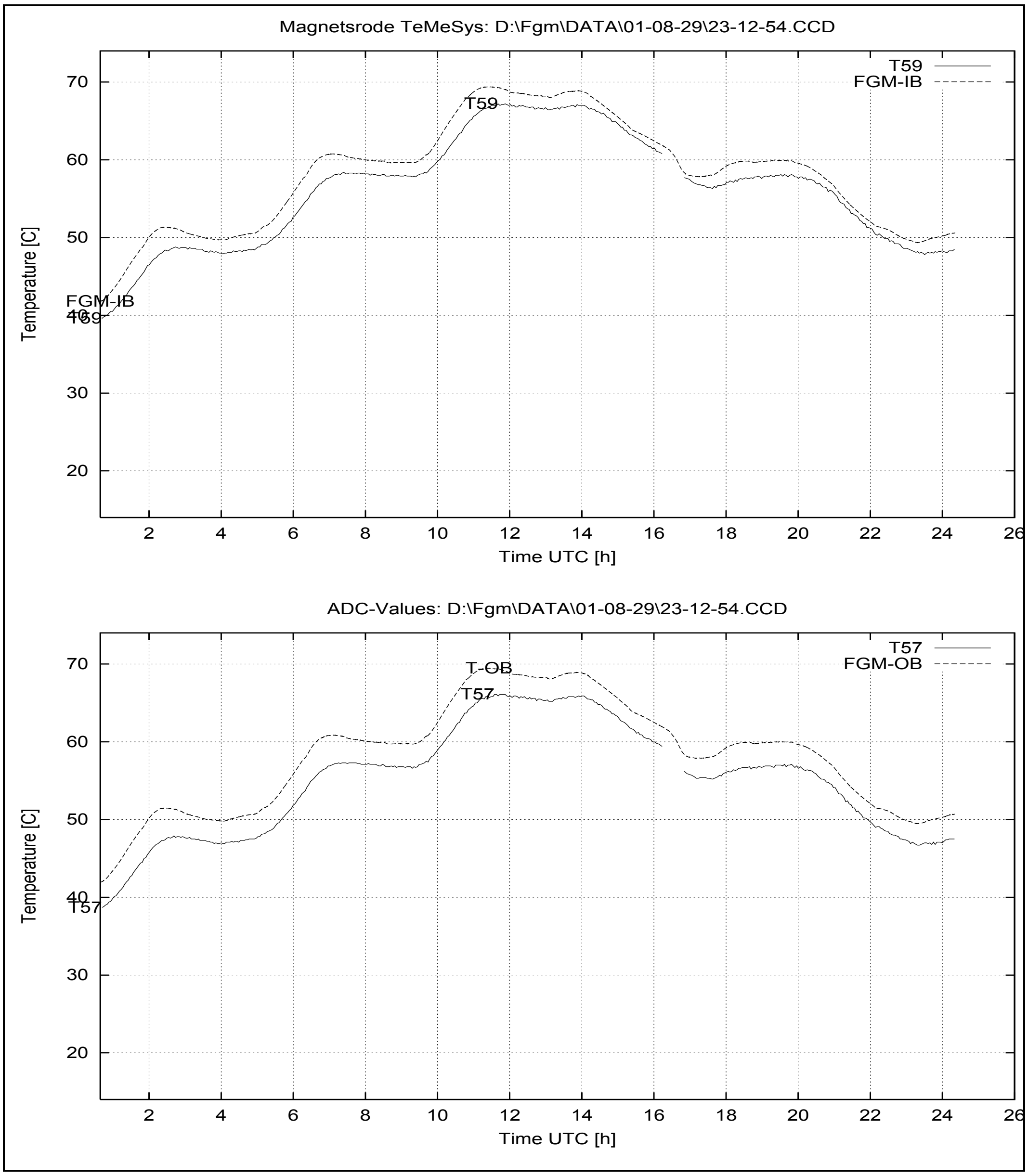


Figure 122: August 29, 2001: Sensor Temperatures at House 2.

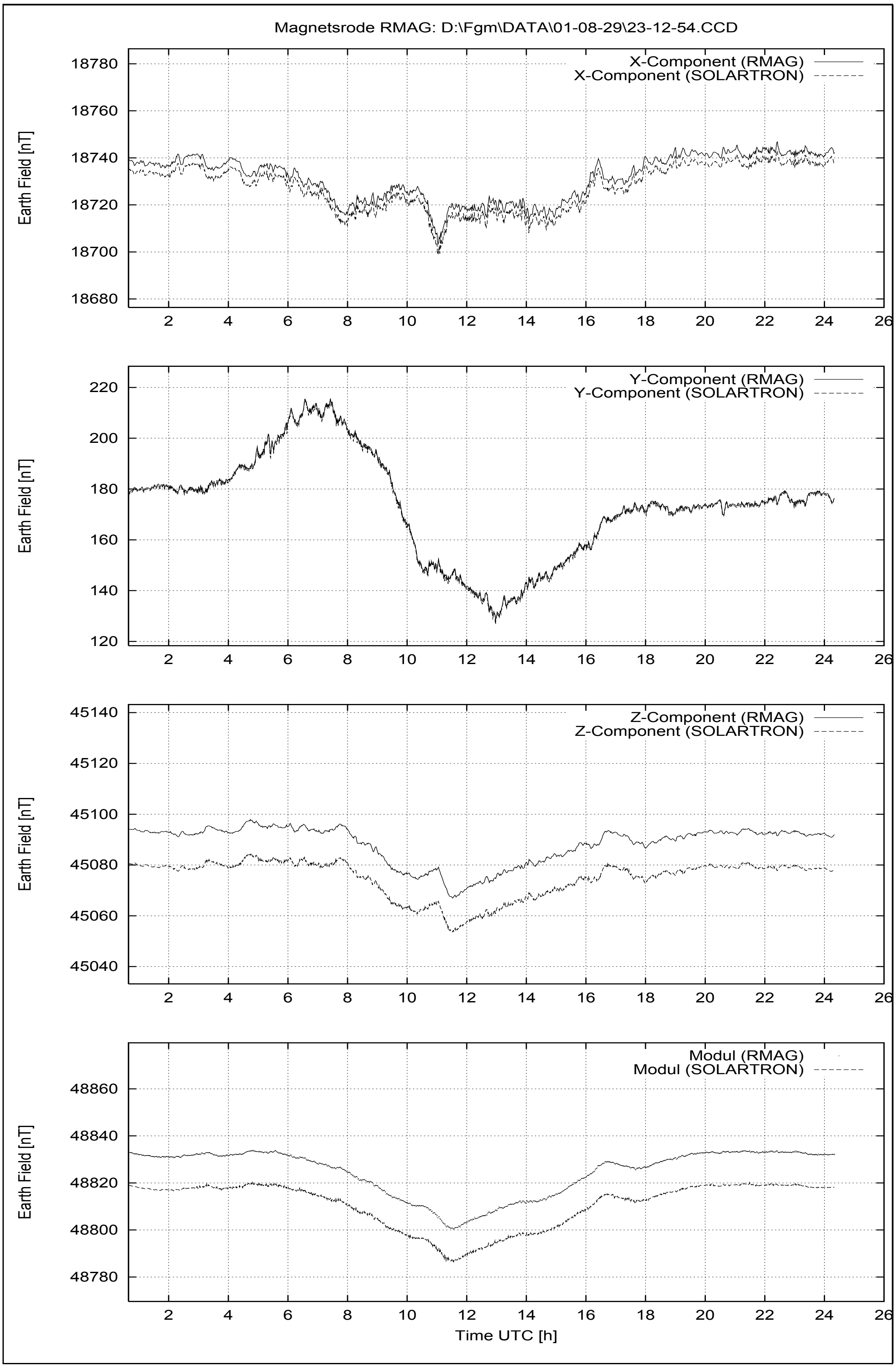


Figure 123: August 29, 2001: Earthfield variations.

# 30 Thursday August 30, 2001

## 30.1 Temperature Calibration, Heating Cycle continued, DPU:FS, Sensors: FS

The heating cycle continued until noon.

### 30.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-08-30\00_20_56.CCD | |
| TEMP.CFG | 01-08-30\01_28_37.CCD | |
| TEMP.CFG | 01-08-30\02_36_18.CCD | |
| TEMP.CFG | 01-08-30\03_43_59.CCD | |
| TEMP.CFG | 01-08-30\04_51_40.CCD | |
| TEMP.CFG | 01-08-30\05_59_22.CCD | |
| TEMP.CFG | 01-08-30\07_07_03.CCD | |
| TEMP.CFG | 01-08-30\08_14_45.CCD | |
| TEMP.CFG | 01-08-30\09_22_26.CCD | |
| TEMP.CFG | 01-08-30\10_30_07.CCD | |
| TEMP.CFG | 01-08-30\11_37_48.CCD | |

An inspection took place at 13:00. The system worked properly, the box temperature was at about 30°C.

Remark:

People from the METRONIX company were around from 08:40 – 11:05. Work was done in house 3 and should have not affected the calibration in house 2.

## 30.2 Temperature Calibration, Cooling Cycle, DPU:FS, Sensors: FS

| | |
|---|---|
| Purpose: | Measure the temperature behaviour of the FS sensors using the FS DPU. |
| Conditions: | FS–OB and FS–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | TEMP3.SEQ |
| Temperature File: | ROSETTA4.CUR |
| Tctrlparam. | FLDtime: 40 s – TCctrl times: 24 s / 40s |
| Start: | 30.08.01 13:01 |
| End: | 03.09.01 07:00 ESC. |
| Remark: | Dry ice filling completed at 13:17. |

### 30.2.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-08-30\13_01_26.CCD | |
| TEMP.CFG | 01-08-30\14_09_22.CCD | |
| TEMP.CFG | 01-08-30\15_17_04.CCD | |
| TEMP.CFG | 01-08-30\16_24_44.CCD | |
| TEMP.CFG | 01-08-30\17_32_25.CCD | |
| TEMP.CFG | 01-08-30\18_40_07.CCD | |
| TEMP.CFG | 01-08-30\19_47_48.CCD | |
| TEMP.CFG | 01-08-30\20_55_28.CCD | |
| TEMP.CFG | 01-08-30\22_03_10.CCD | |
| TEMP.CFG | 01-08-30\23_10_50.CCD | |

## 30.3 Overview Plots: System Performance, Temperatures and Earth-field Variations.

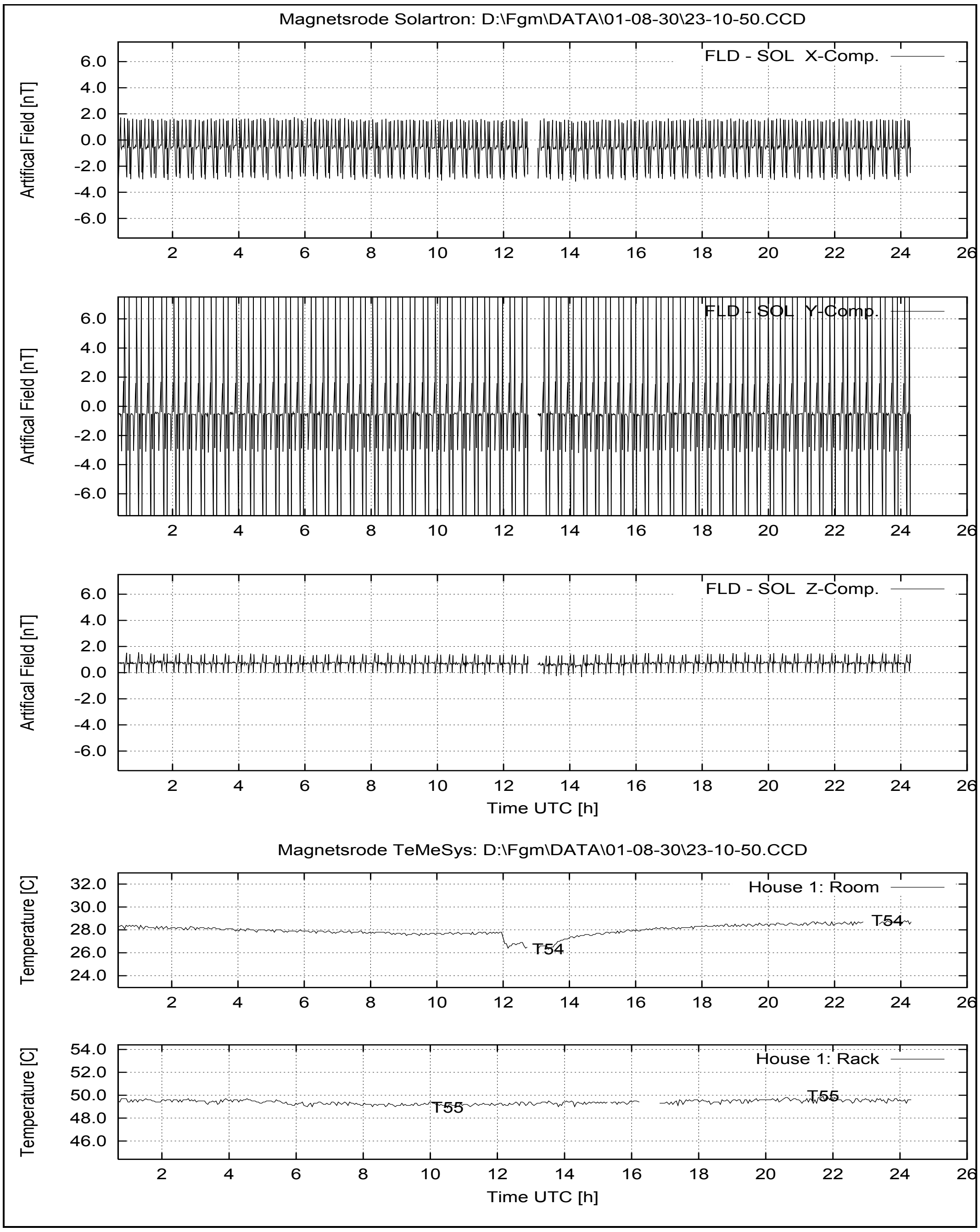


Figure 124: August 30, 2001: System Performance: FLD – SOL; Temperatures House 1.

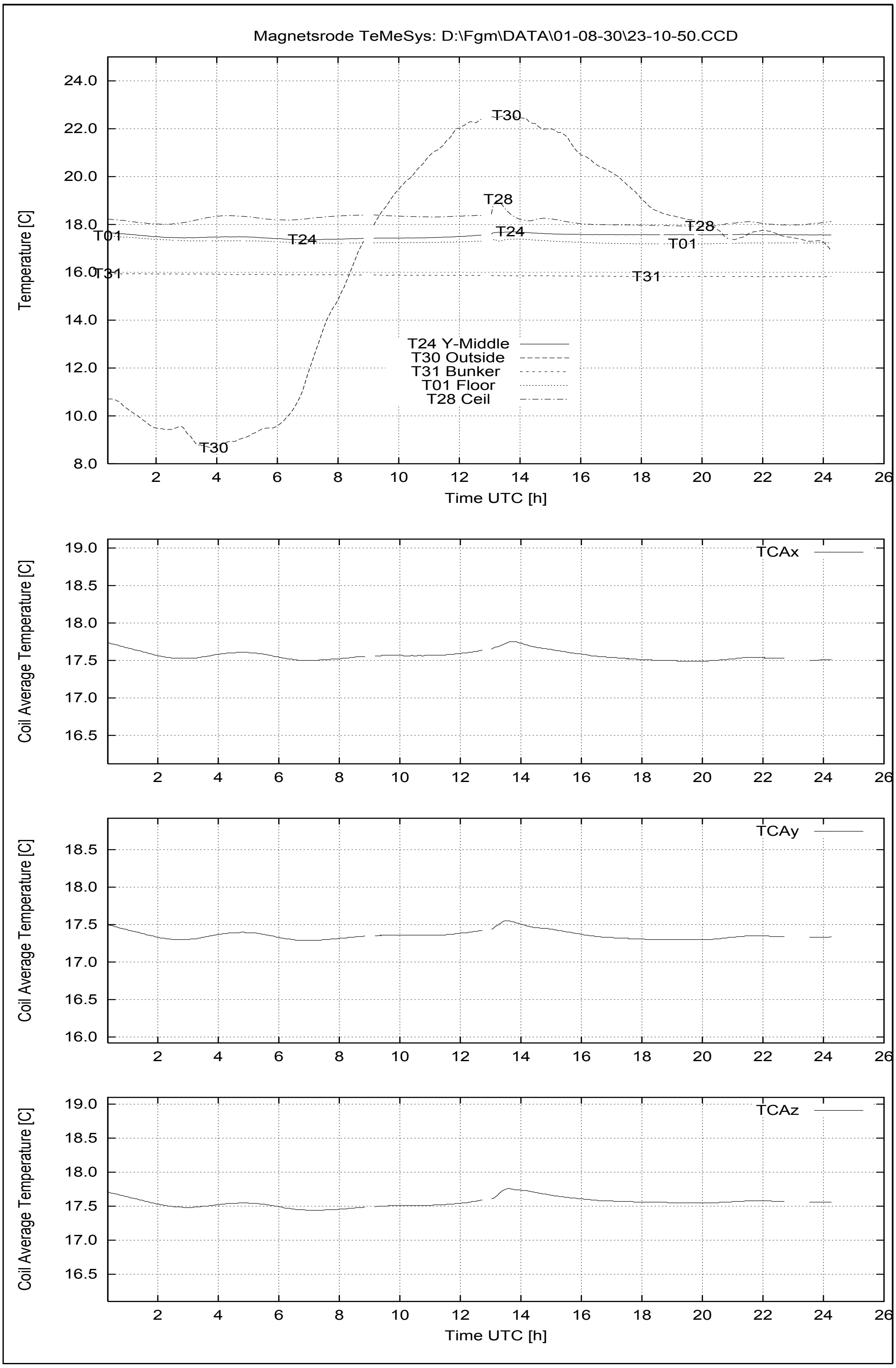


Figure 125: August 30, 2001: Temperatures House 2.

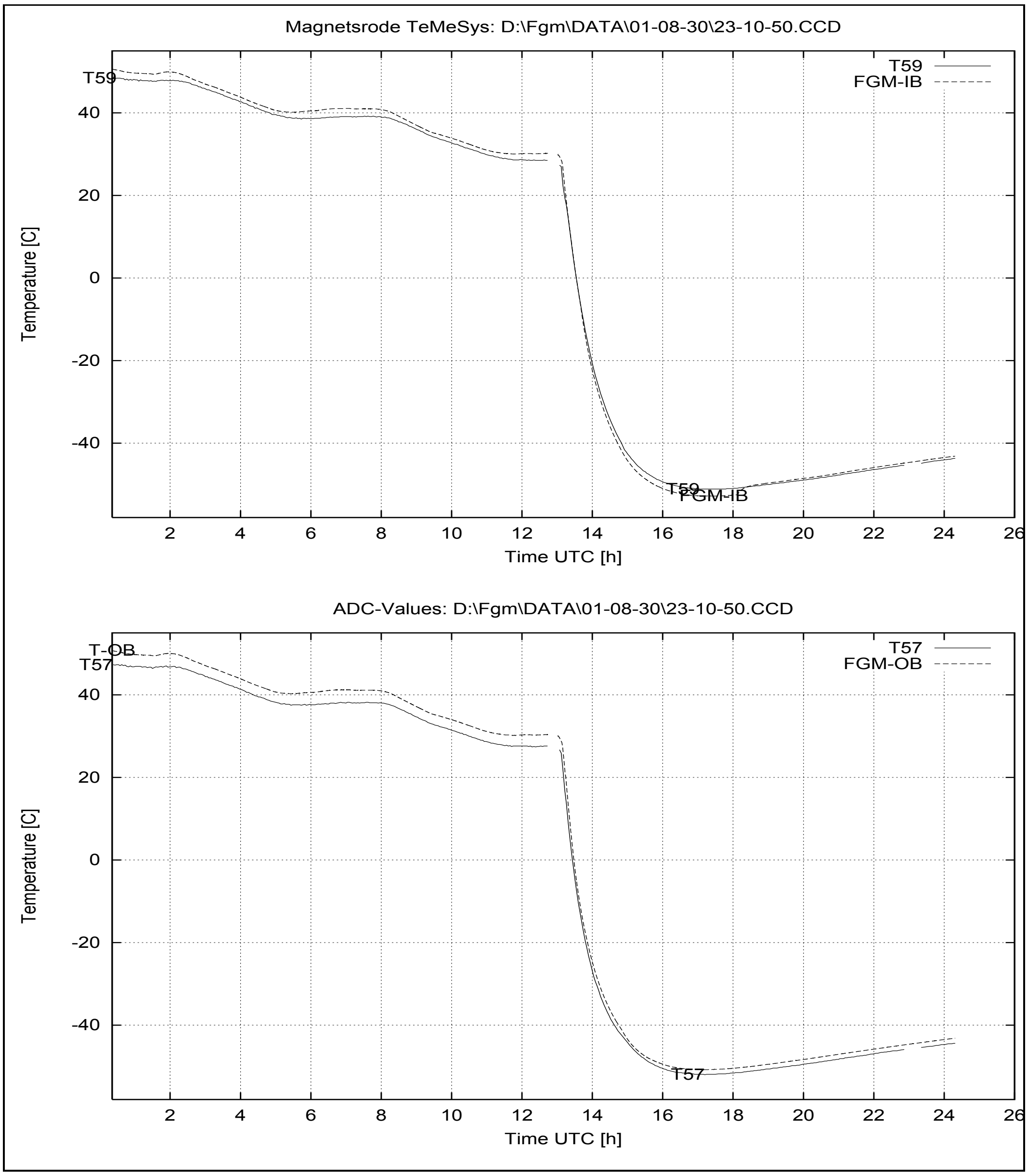


Figure 126: August 30, 2001: Sensor Temperatures at House 2.

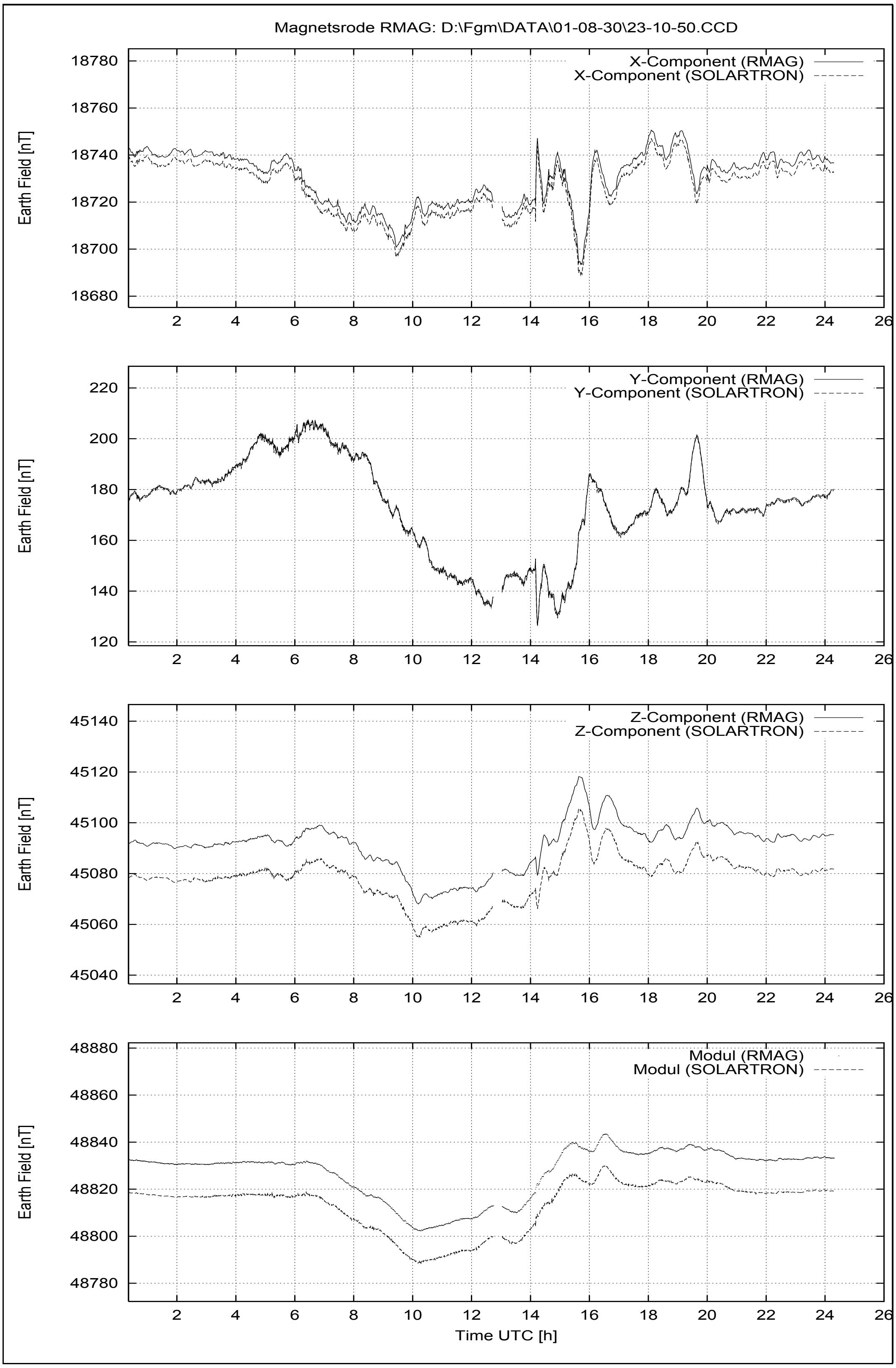


Figure 127: August 30, 2001: Earthfield variations.

# 31 Friday August 31, 2001

## 31.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FS

The cooling cycle continued today without any personal support.

### 31.1.1 Data

| Configuration File | CCD File | Remark |
| --- | --- | --- |
| TEMP.CFG | 01-08-31\00_18_53.CCD | |
| TEMP.CFG | 01-08-31\01_26_33.CCD | |
| TEMP.CFG | 01-08-31\02_34_12.CCD | |
| TEMP.CFG | 01-08-31\03_41_53.CCD | |
| TEMP.CFG | 01-08-31\04_49_33.CCD | |
| TEMP.CFG | 01-08-31\05_57_13.CCD | |
| TEMP.CFG | 01-08-31\07_05_48.CCD | |
| TEMP.CFG | 01-08-31\08_13_29.CCD | |
| TEMP.CFG | 01-08-31\09_21_09.CCD | |
| TEMP.CFG | 01-08-31\10_28_49.CCD | |
| TEMP.CFG | 01-08-31\11_36_29.CCD | |
| TEMP.CFG | 01-08-31\12_44_09.CCD | |
| TEMP.CFG | 01-08-31\13_52_07.CCD | |
| TEMP.CFG | 01-08-31\14_59_47.CCD | |
| TEMP.CFG | 01-08-31\16_07_27.CCD | |
| TEMP.CFG | 01-08-31\17_15_08.CCD | |
| TEMP.CFG | 01-08-31\18_22_47.CCD | |
| TEMP.CFG | 01-08-31\19_30_28.CCD | |
| TEMP.CFG | 01-08-31\20_38_08.CCD | |
| TEMP.CFG | 01-08-31\21_45_49.CCD | |
| TEMP.CFG | 01-08-31\22_53_29.CCD | |

## 31.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

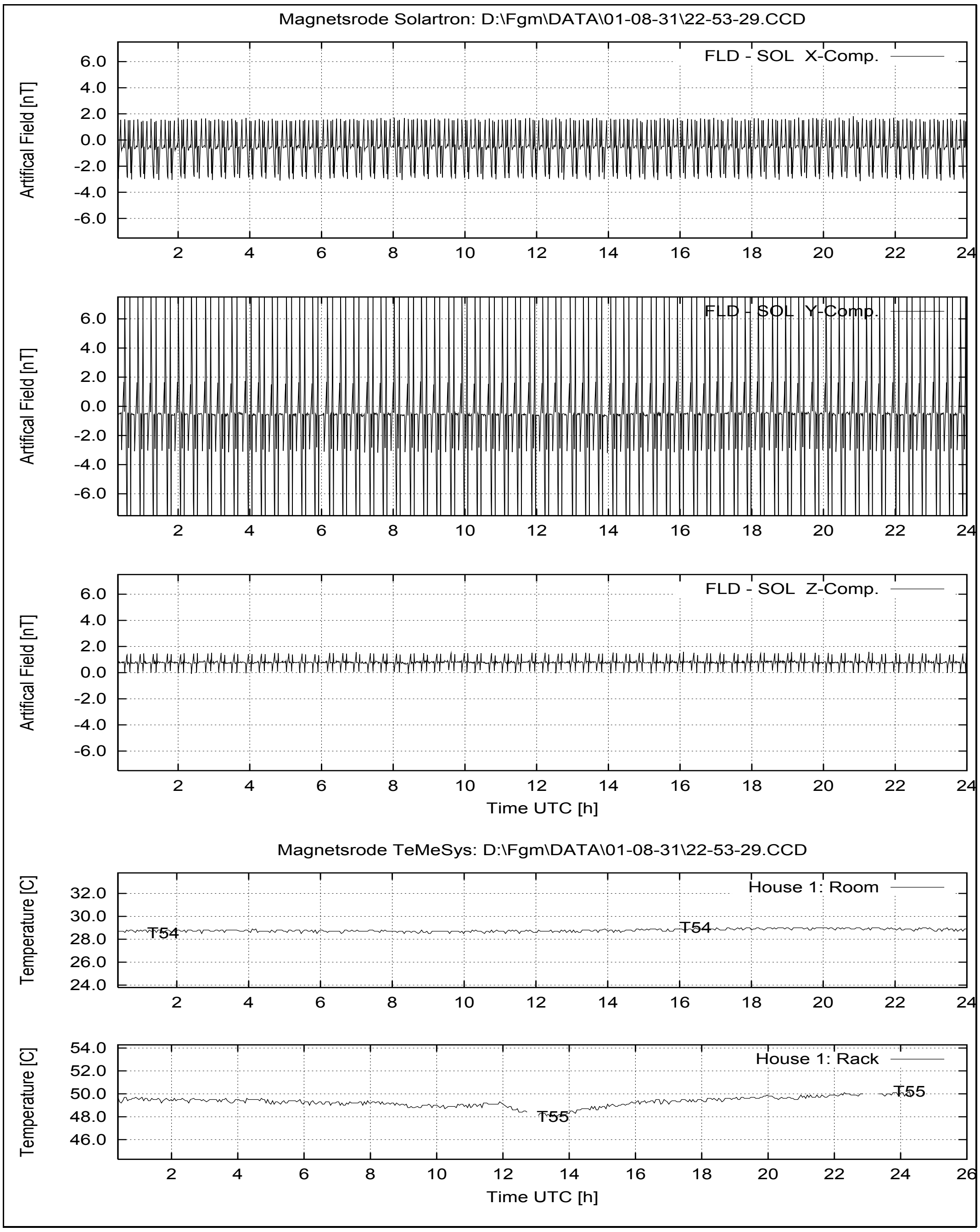


Figure 128: August 31, 2001: System Performance: FLD – SOL; Temperatures House 1.

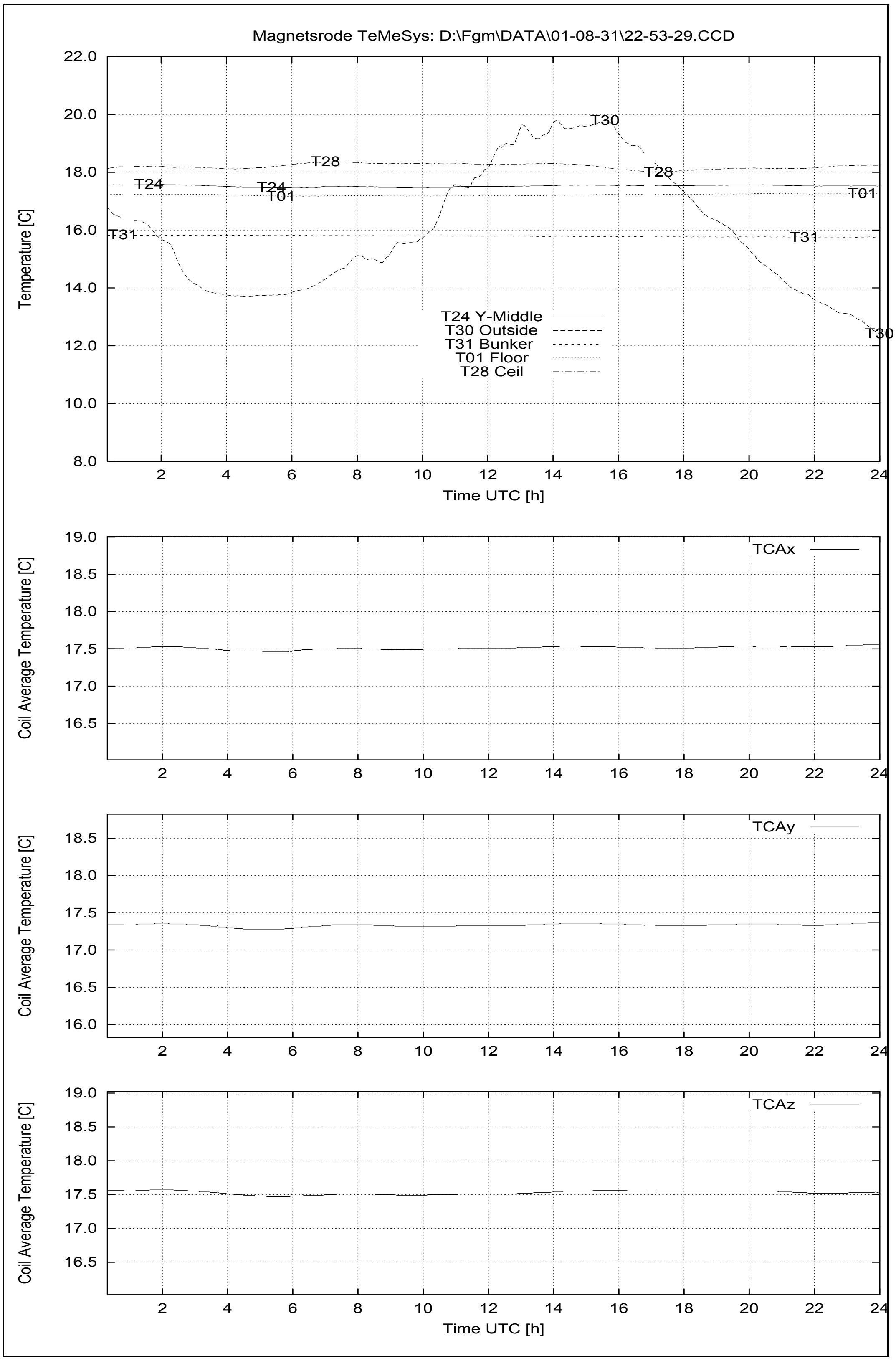


Figure 129: August 31, 2001: Temperatures House 2.

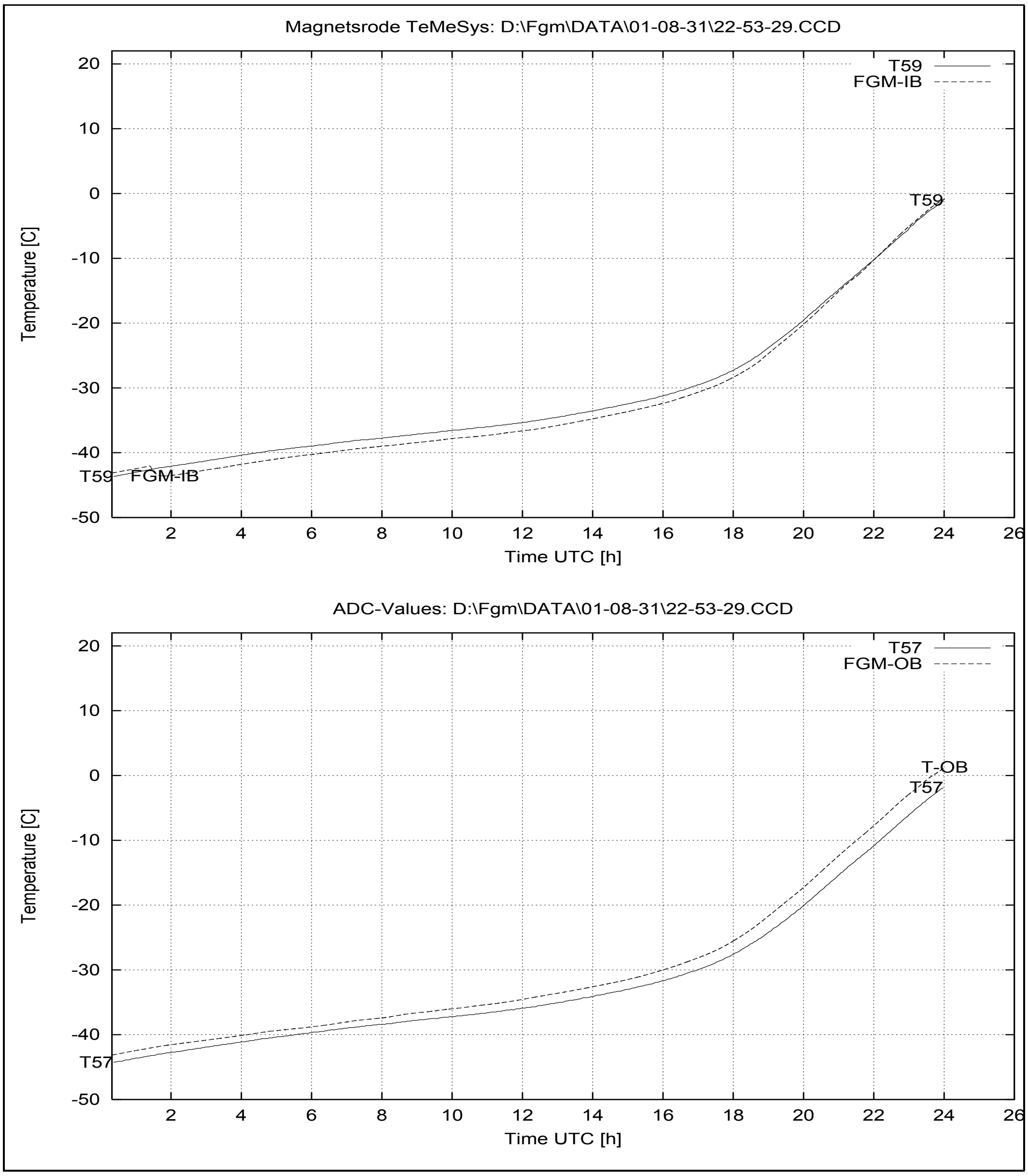


Figure 130: August 31, 2001: Sensor Temperatures at House 2.

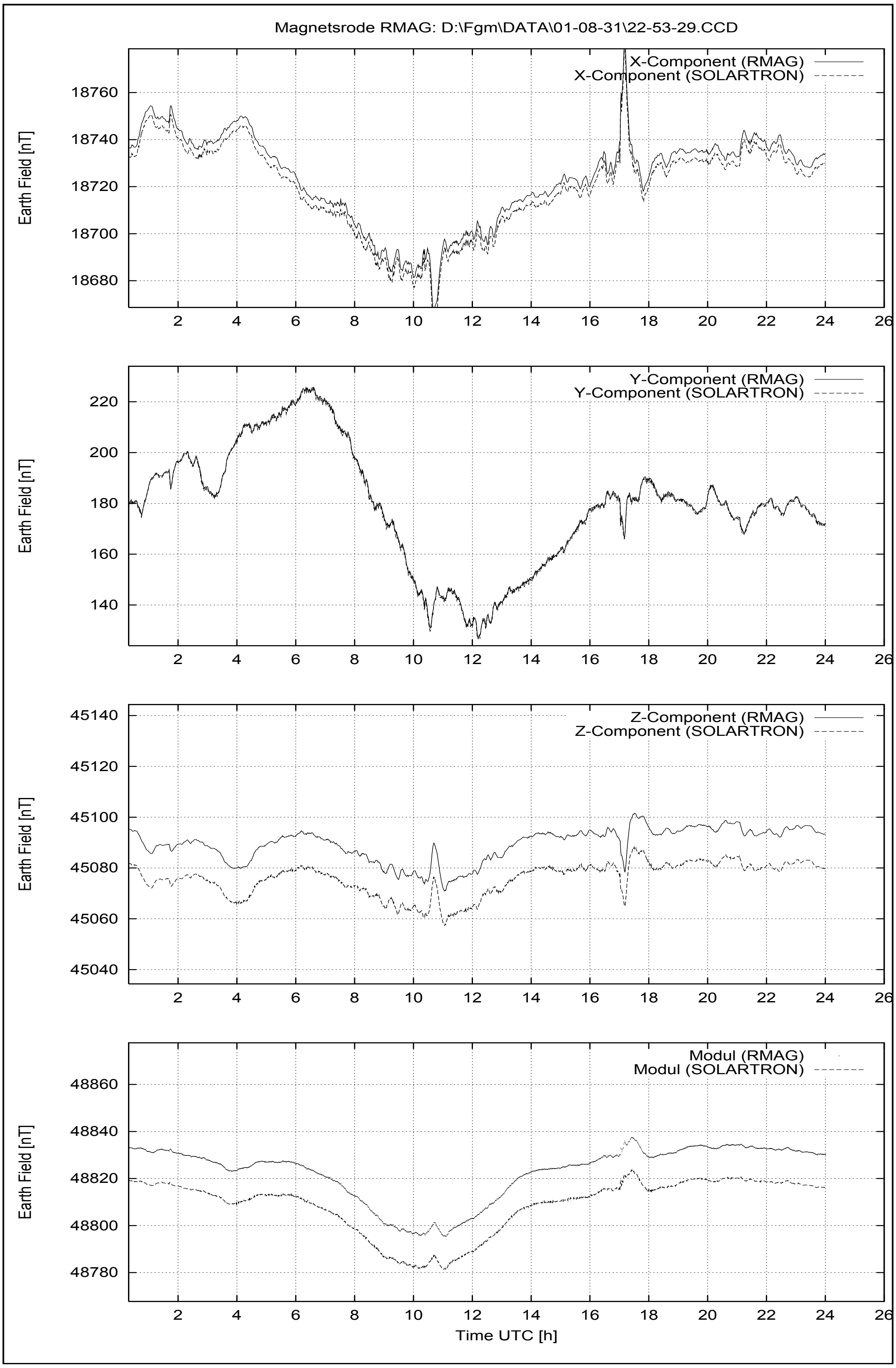


Figure 131: August 31, 2001: Earthfield variations.

# 32 Saturday September 1, 2001

## 32.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FS

The cooling cycle continued today without any personal support.

### 32.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-01\00_01_10.CCD | |
| TEMP.CFG | 01-09-01\01_08_50.CCD | |
| TEMP.CFG | 01-09-01\02_16_31.CCD | |
| TEMP.CFG | 01-09-01\03_24_11.CCD | |
| TEMP.CFG | 01-09-01\04_31_52.CCD | |
| TEMP.CFG | 01-09-01\05_39_32.CCD | |
| TEMP.CFG | 01-09-01\06_47_12.CCD | |
| TEMP.CFG | 01-09-01\07_54_52.CCD | |
| TEMP.CFG | 01-09-01\09_02_33.CCD | |
| TEMP.CFG | 01-09-01\10_10_14.CCD | |
| TEMP.CFG | 01-09-01\11_17_54.CCD | |
| TEMP.CFG | 01-09-01\12_25_35.CCD | |
| TEMP.CFG | 01-09-01\13_33_16.CCD | |
| TEMP.CFG | 01-09-01\14_40_56.CCD | |
| TEMP.CFG | 01-09-01\15_48_37.CCD | |
| TEMP.CFG | 01-09-01\16_56_17.CCD | |
| TEMP.CFG | 01-09-01\18_03_58.CCD | |
| TEMP.CFG | 01-09-01\19_11_38.CCD | |
| TEMP.CFG | 01-09-01\20_19_19.CCD | |
| TEMP.CFG | 01-09-01\21_26_59.CCD | |
| TEMP.CFG | 01-09-01\22_34_40.CCD | |
| TEMP.CFG | 01-09-01\23_42_21.CCD | |

## 32.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

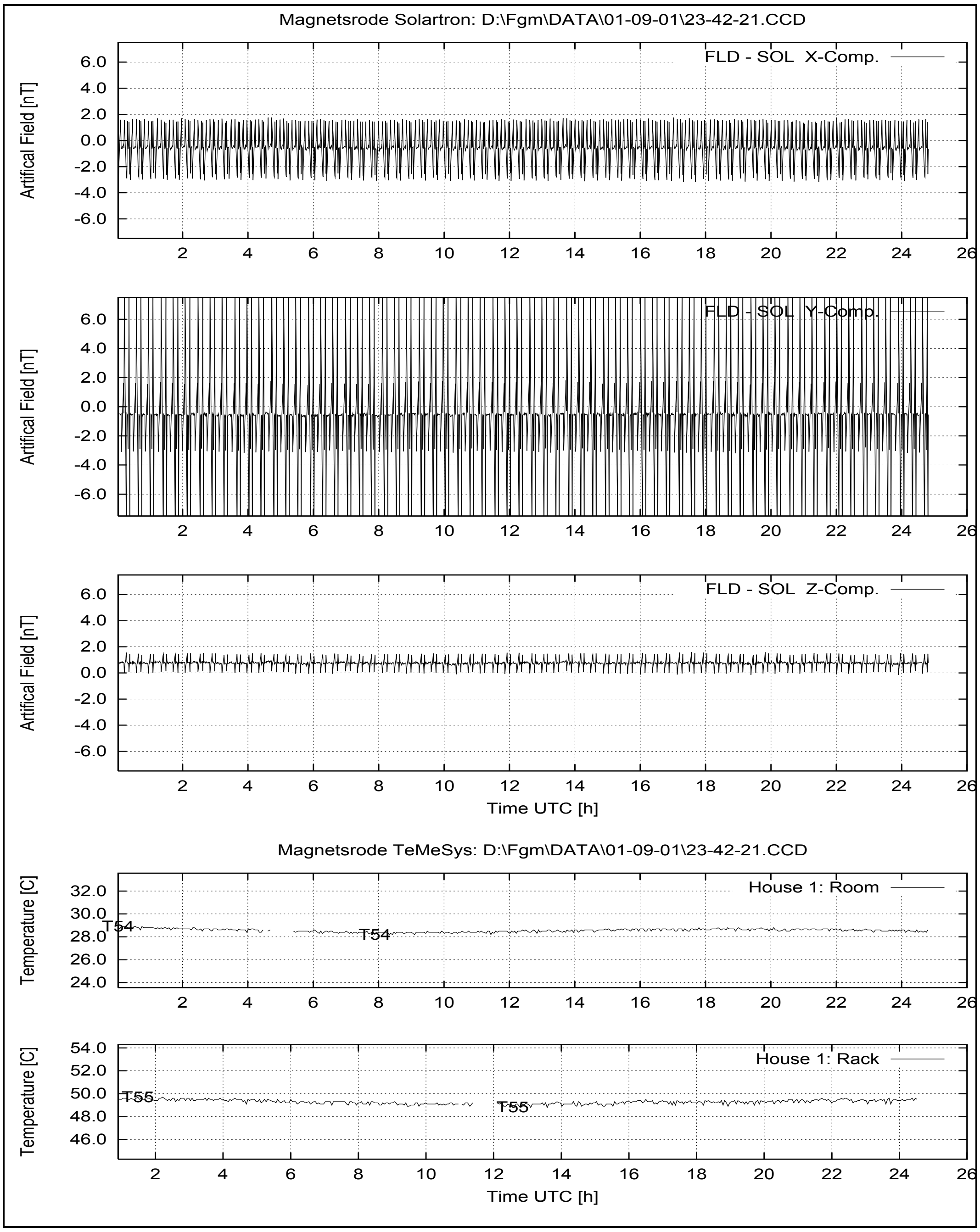


Figure 132: September 1, 2001: System Performance: FLD – SOL; Temperatures House 1.

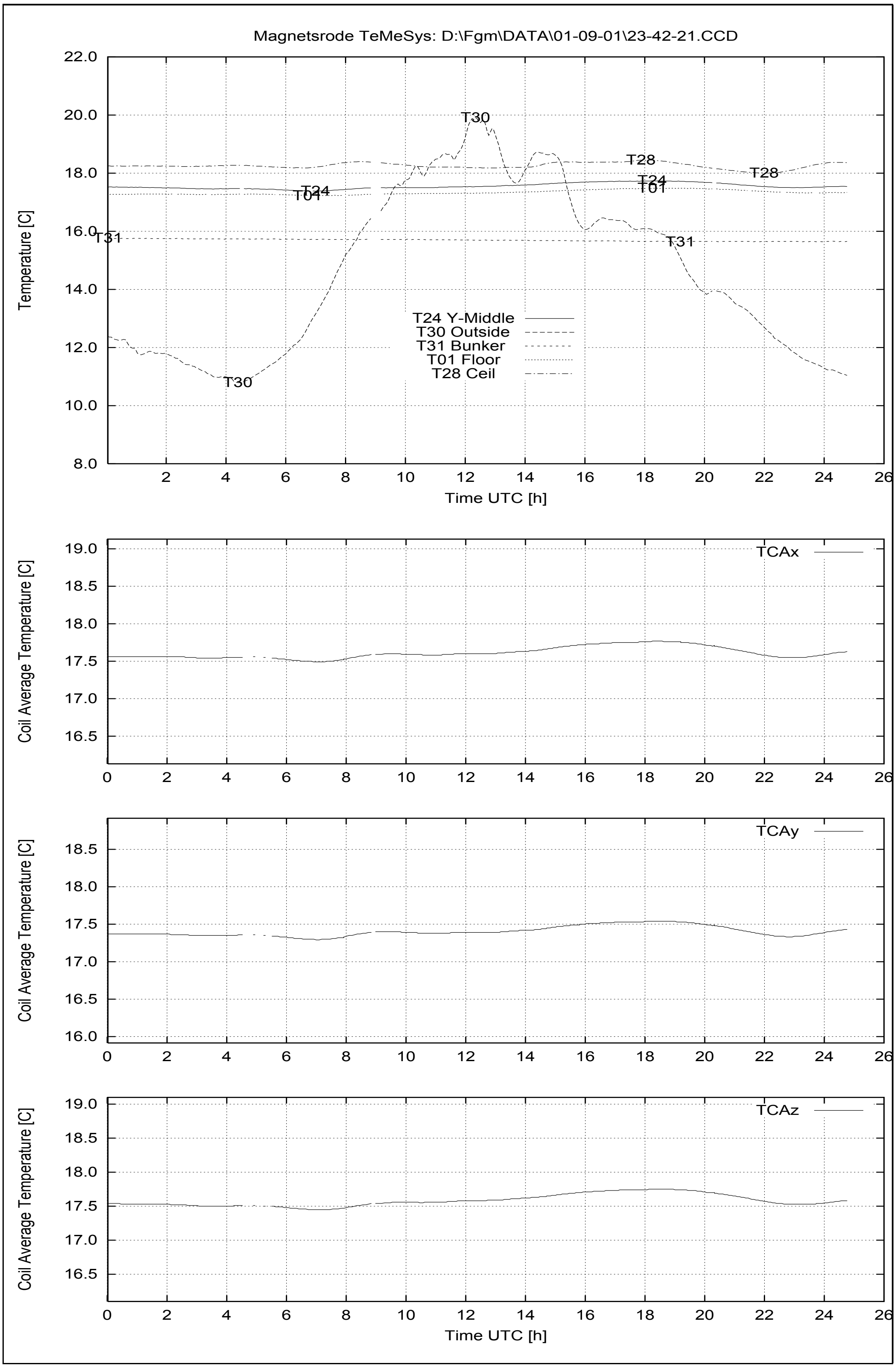


Figure 133: September 1, 2001: Temperatures House 2.

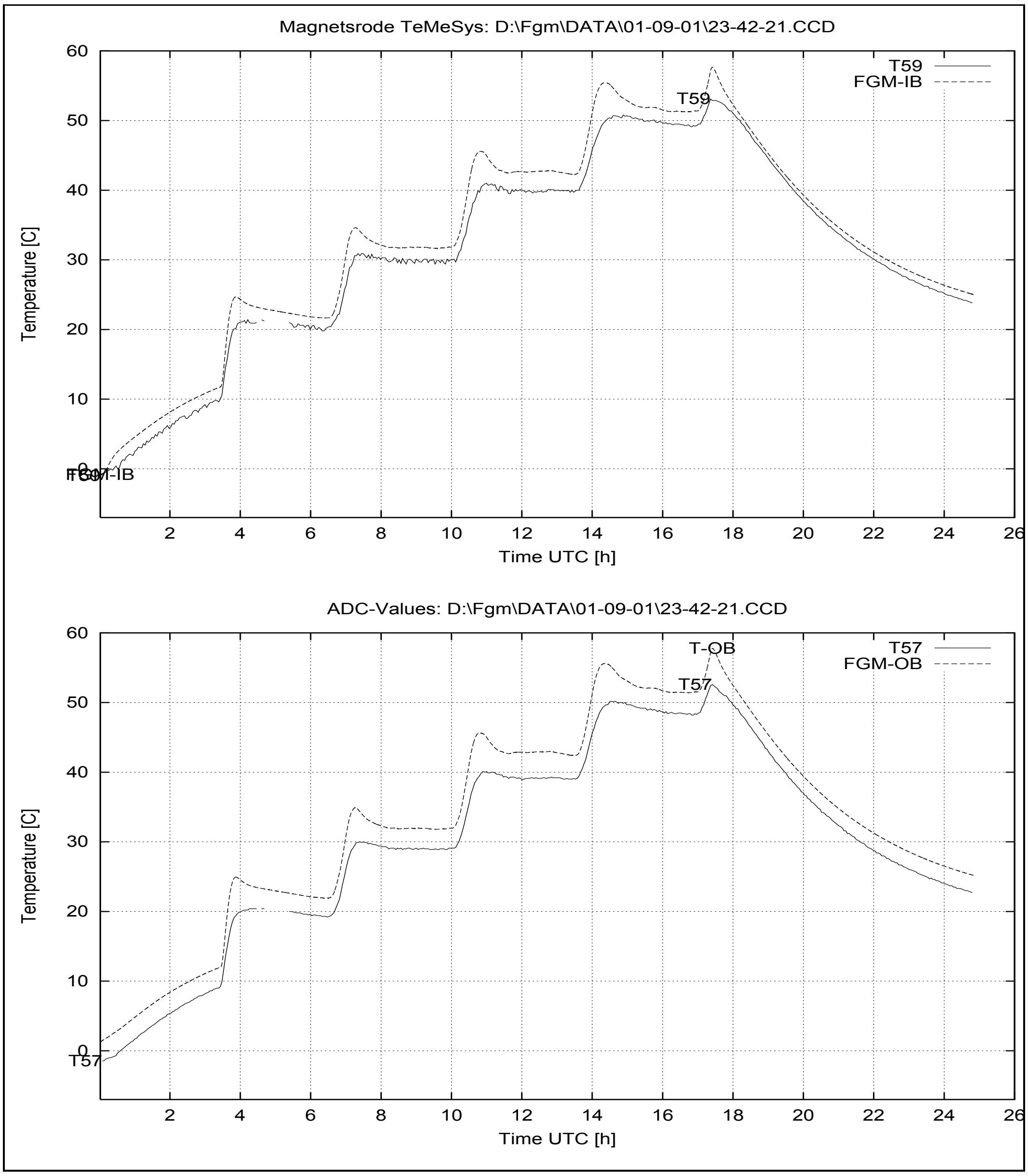


Figure 134: September 1, 2001: Sensor Temperatures at House 2.

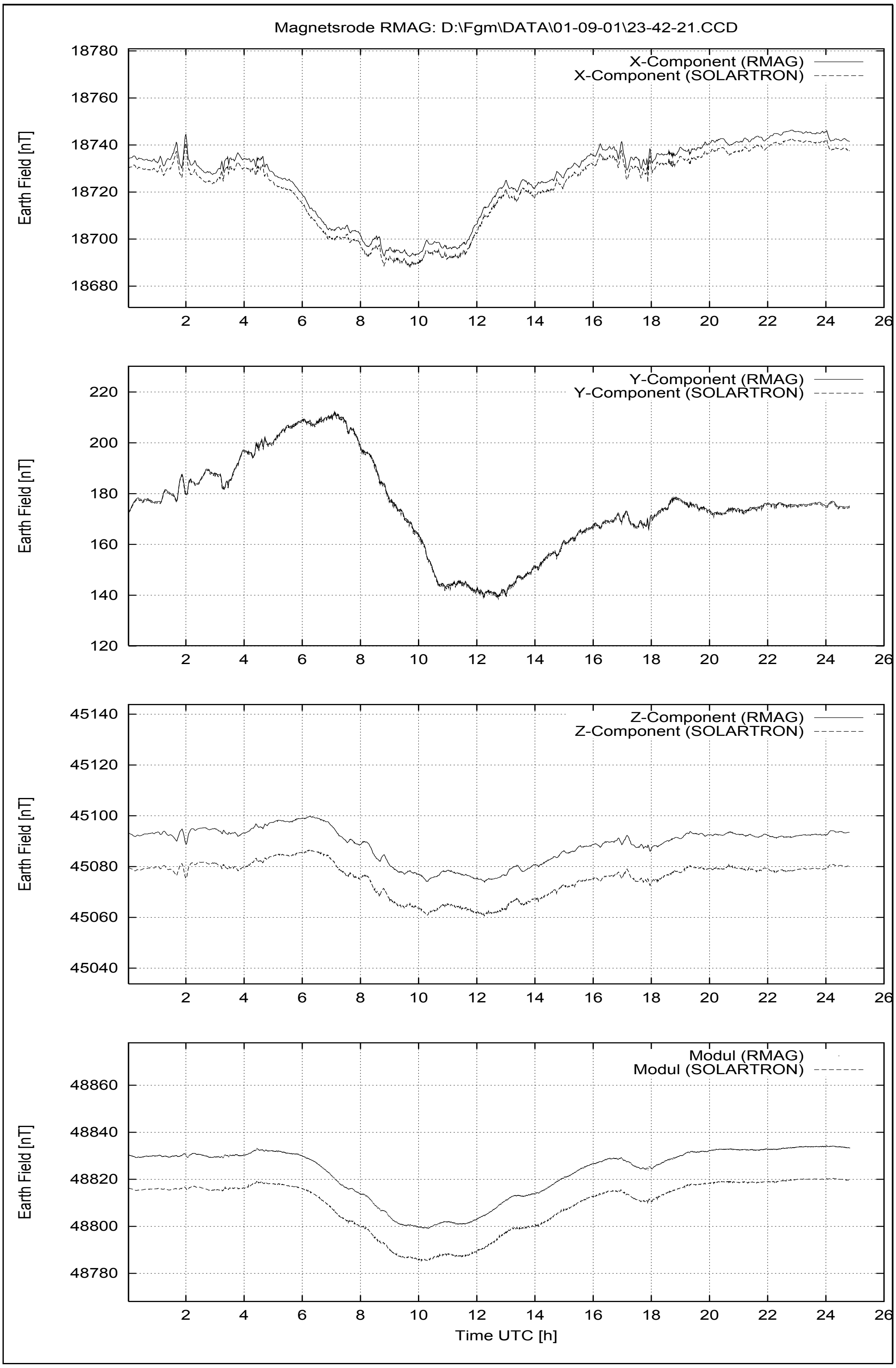


Figure 135: September 1, 2001: Earthfield variations.

# 33 Sunday September 2, 2001

## 33.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FS

The cooling cycle continued today without any personal support.

### 33.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-02\00_50_02.CCD | |
| TEMP.CFG | 01-09-02\01_58_11.CCD | |
| TEMP.CFG | 01-09-02\03_05_50.CCD | |
| TEMP.CFG | 01-09-02\04_13_30.CCD | |
| TEMP.CFG | 01-09-02\05_21_11.CCD | |
| TEMP.CFG | 01-09-02\06_28_52.CCD | |
| TEMP.CFG | 01-09-02\07_36_34.CCD | |
| TEMP.CFG | 01-09-02\08_44_13.CCD | |
| TEMP.CFG | 01-09-02\09_51_54.CCD | |
| TEMP.CFG | 01-09-02\10_59_34.CCD | |
| TEMP.CFG | 01-09-02\12_07_15.CCD | |
| TEMP.CFG | 01-09-02\13_15_06.CCD | |
| TEMP.CFG | 01-09-02\14_22_47.CCD | |
| TEMP.CFG | 01-09-02\15_30_28.CCD | |
| TEMP.CFG | 01-09-02\16_38_08.CCD | |
| TEMP.CFG | 01-09-02\17_45_50.CCD | |
| TEMP.CFG | 01-09-02\18_53_30.CCD | |
| TEMP.CFG | 01-09-02\20_01_10.CCD | |
| TEMP.CFG | 01-09-02\21_08_51.CCD | |
| TEMP.CFG | 01-09-02\22_16_32.CCD | |
| TEMP.CFG | 01-09-02\23_24_12.CCD | |

## 33.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

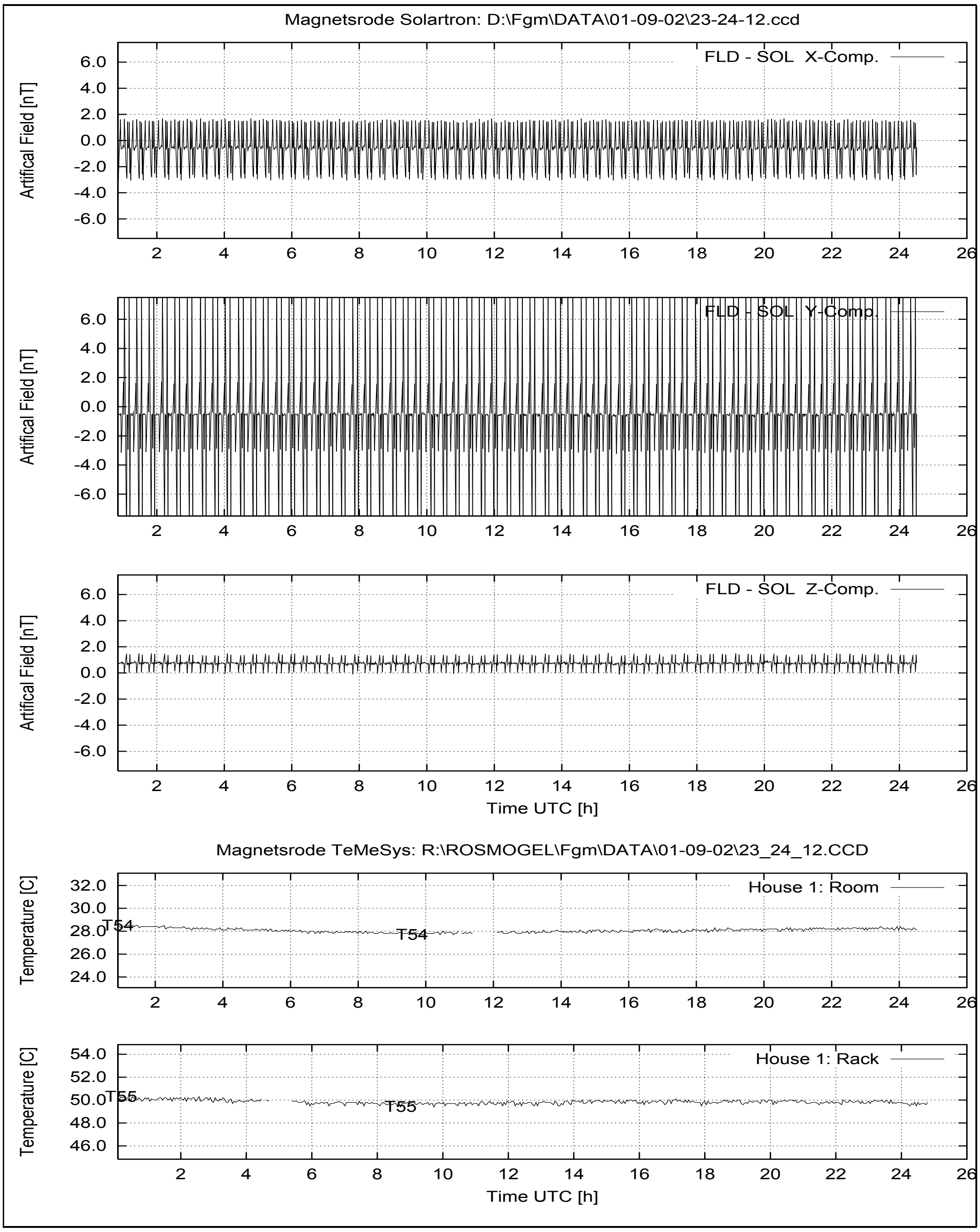


Figure 136: September 2, 2001: System Performance: FLD – SOL; Temperatures House 1.

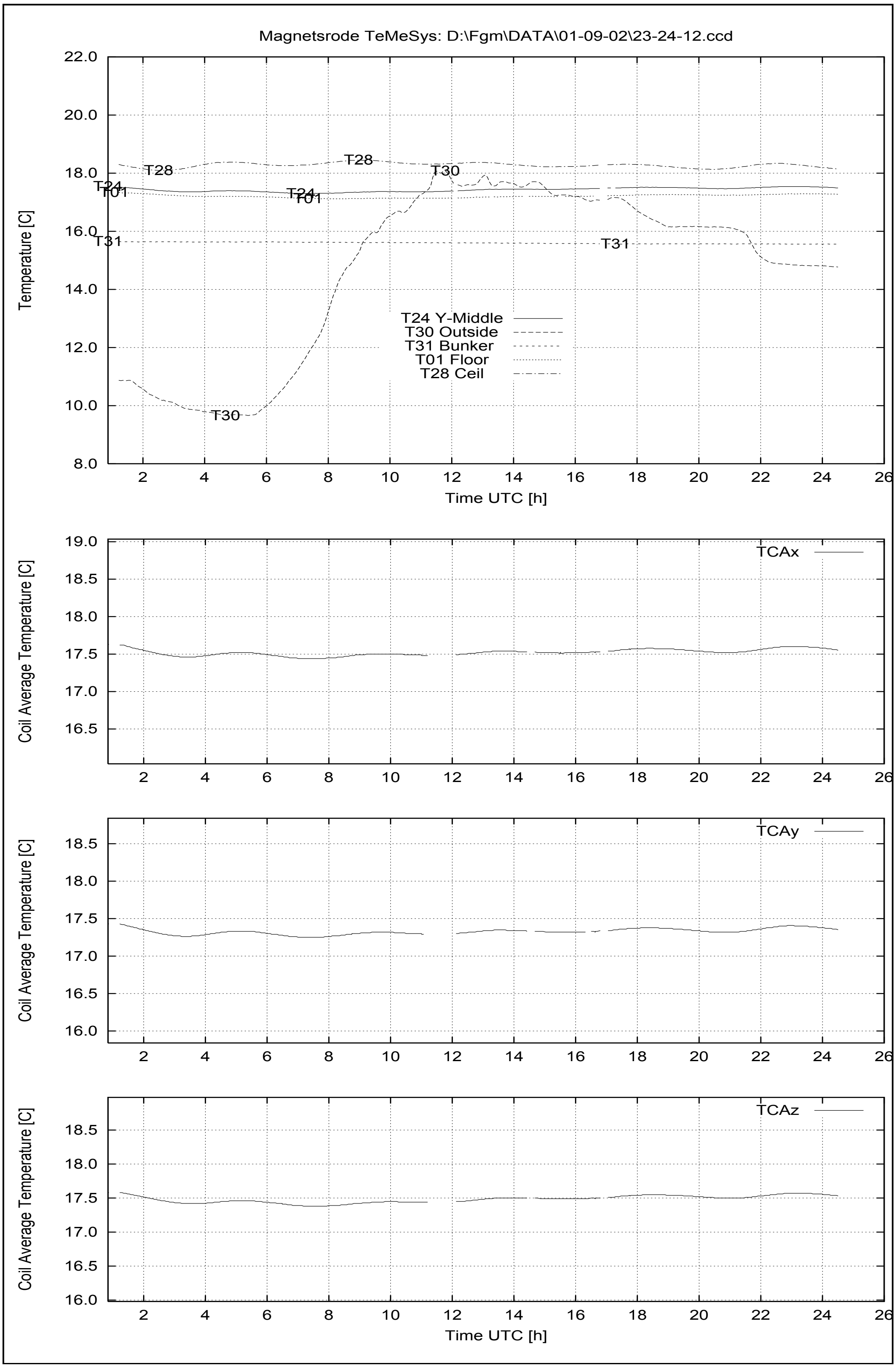


Figure 137: September 2, 2001: Temperatures House 2.

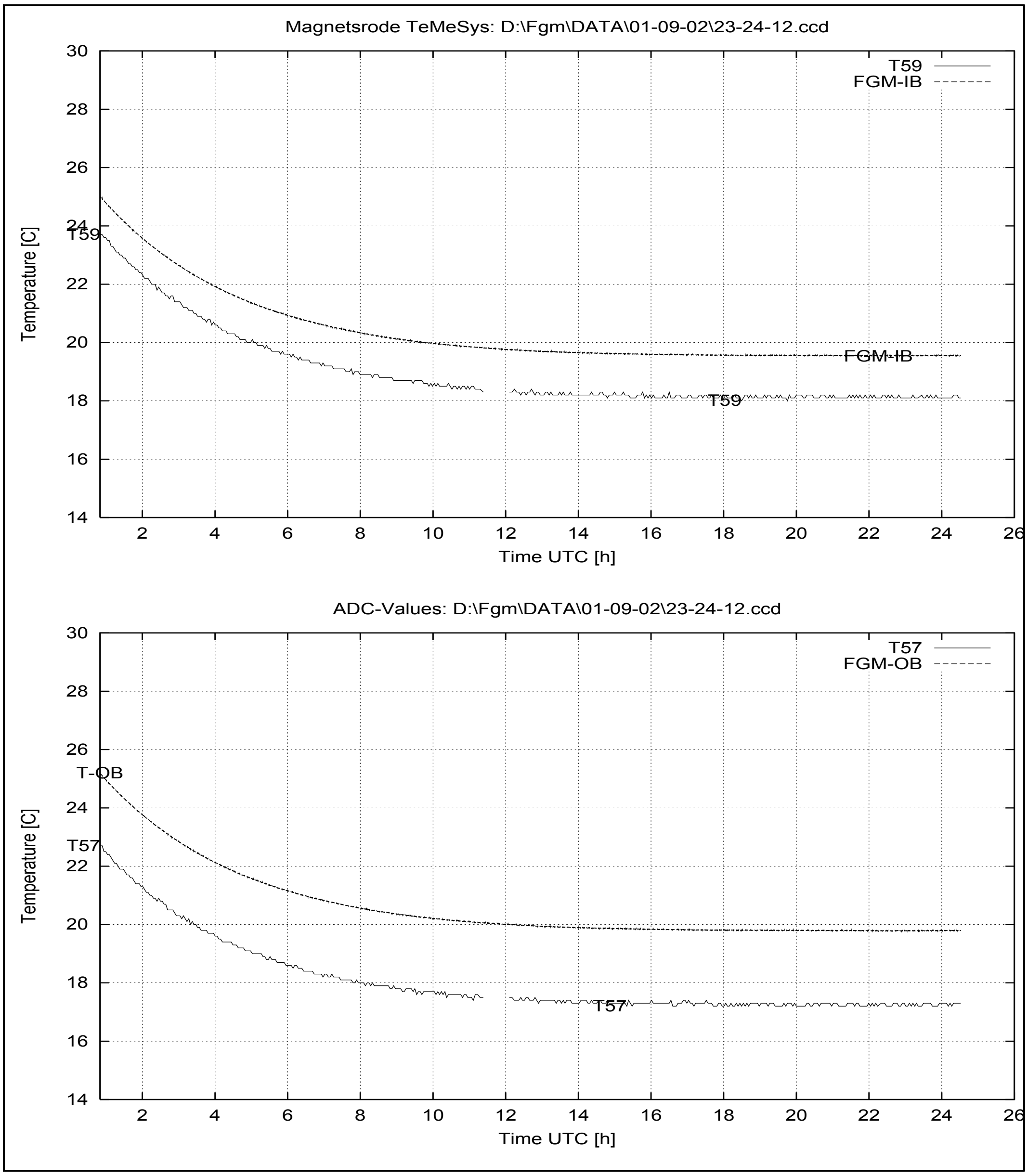


Figure 138: September 2, 2001: Sensor Temperatures at House 2.

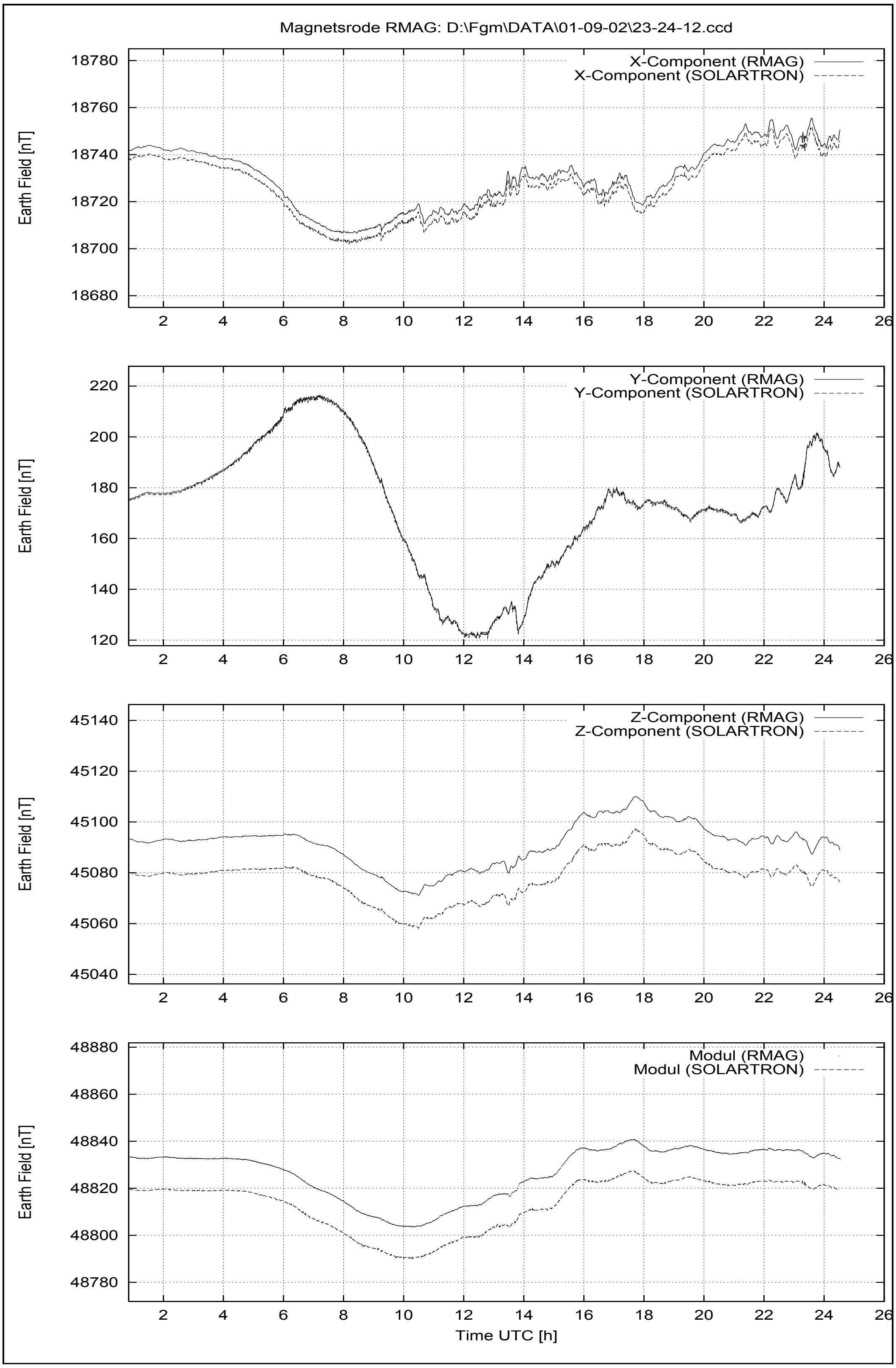


Figure 139: September 2, 2001: Earthfield variations.

# 34 Monday September 3, 2001

## 34.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FS

The cooling cycle continued today until the morning hours. The system was inspected at 07:00. The box temperature was at 18°C. The check of the TempCtrl electronics box revealed an error at the 'OK' LED. It was dark. Therefore, the calibration was interrupted manually at file #80. An in depth analysis showed up that the main fuse of the TempCtrl electronics box was melted. The failure occurred at 01-09-01/ 17:20. This was most likely caused by the very steep temperature profile curve. The needed power could probably not be provided. May be this failure was just an effect of the old fuse, which has been used for some years. The fuse was exchanged, and the system worked properly again.

As the failure occurred at about 50 °C it was decided to take just the already measured data and not to start another new run on these sensors.

After after a break of two days, the calibration of the FM sensors started.

### 34.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-03\00_31_53.CCD | |
| TEMP.CFG | 01-09-03\01_39_34.CCD | |
| TEMP.CFG | 01-09-03\02_47_15.CCD | |
| TEMP.CFG | 01-09-03\03_54_56.CCD | |
| TEMP.CFG | 01-09-03\05_02_36.CCD | |
| TEMP.CFG | 01-09-03\06_10_17.CCD | |

### 34.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

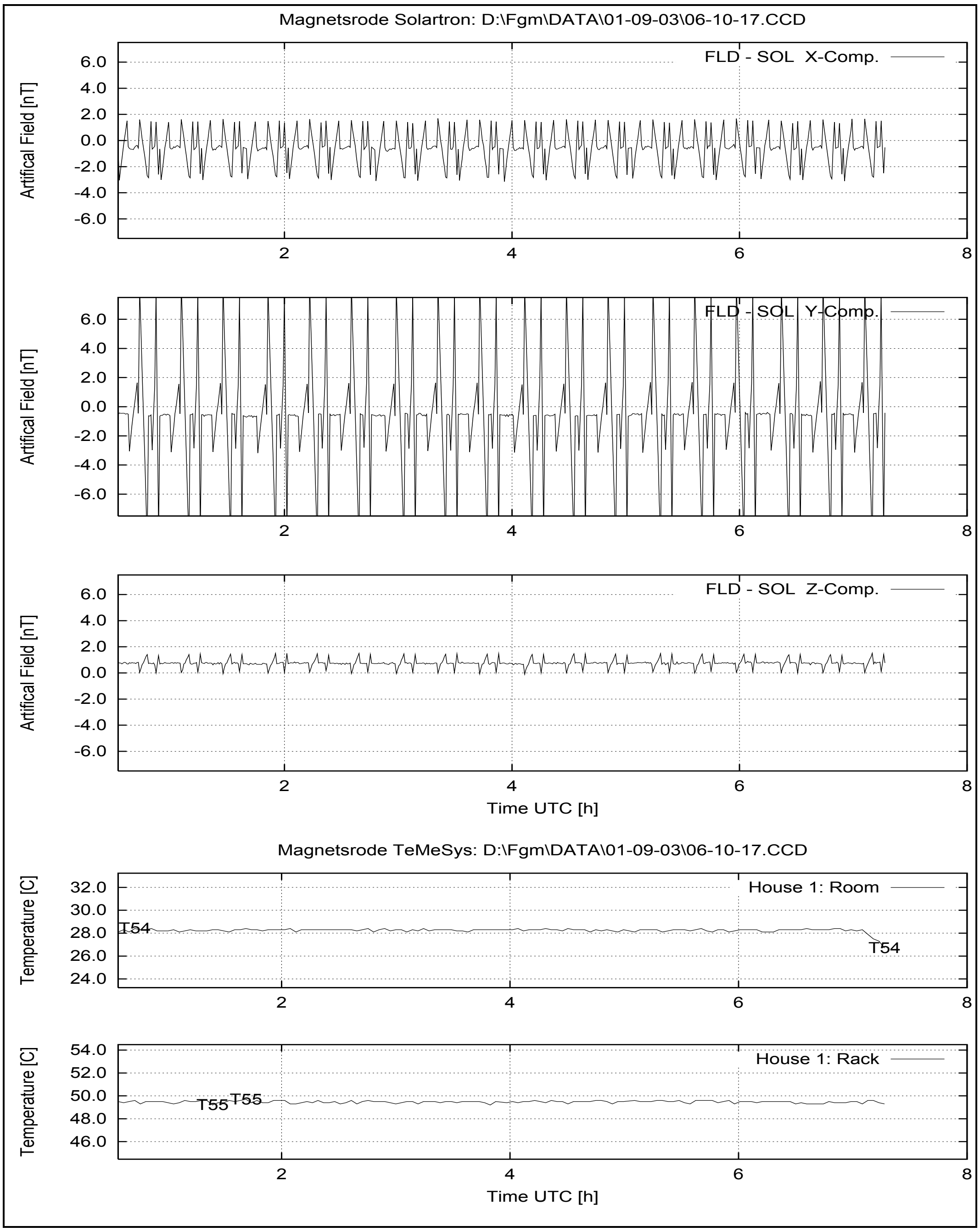


Figure 140: September 3, 2001: System Performance: FLD – SOL; Temperatures House 1.

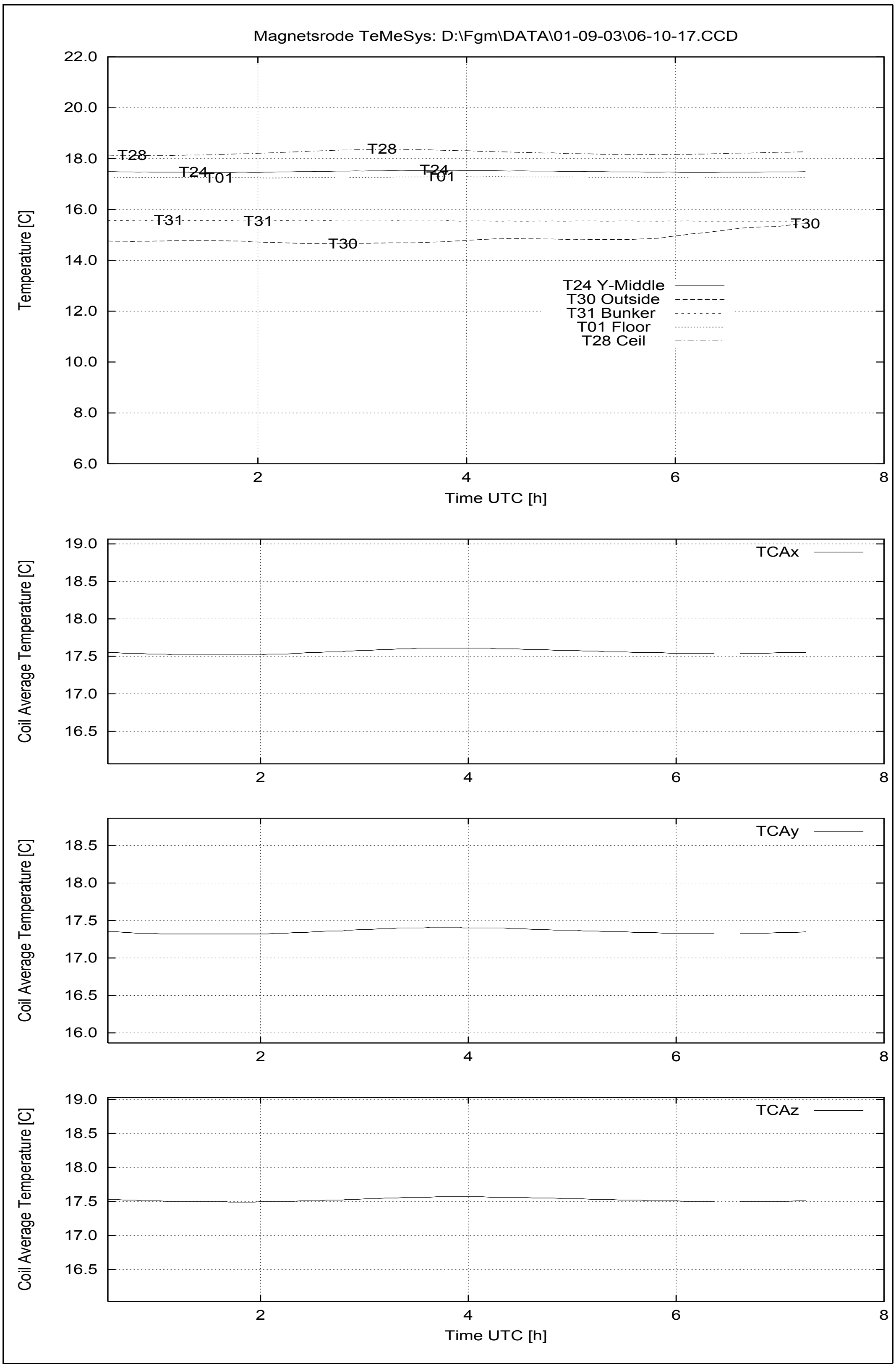


Figure 141: September 3, 2001: Temperatures House 2.

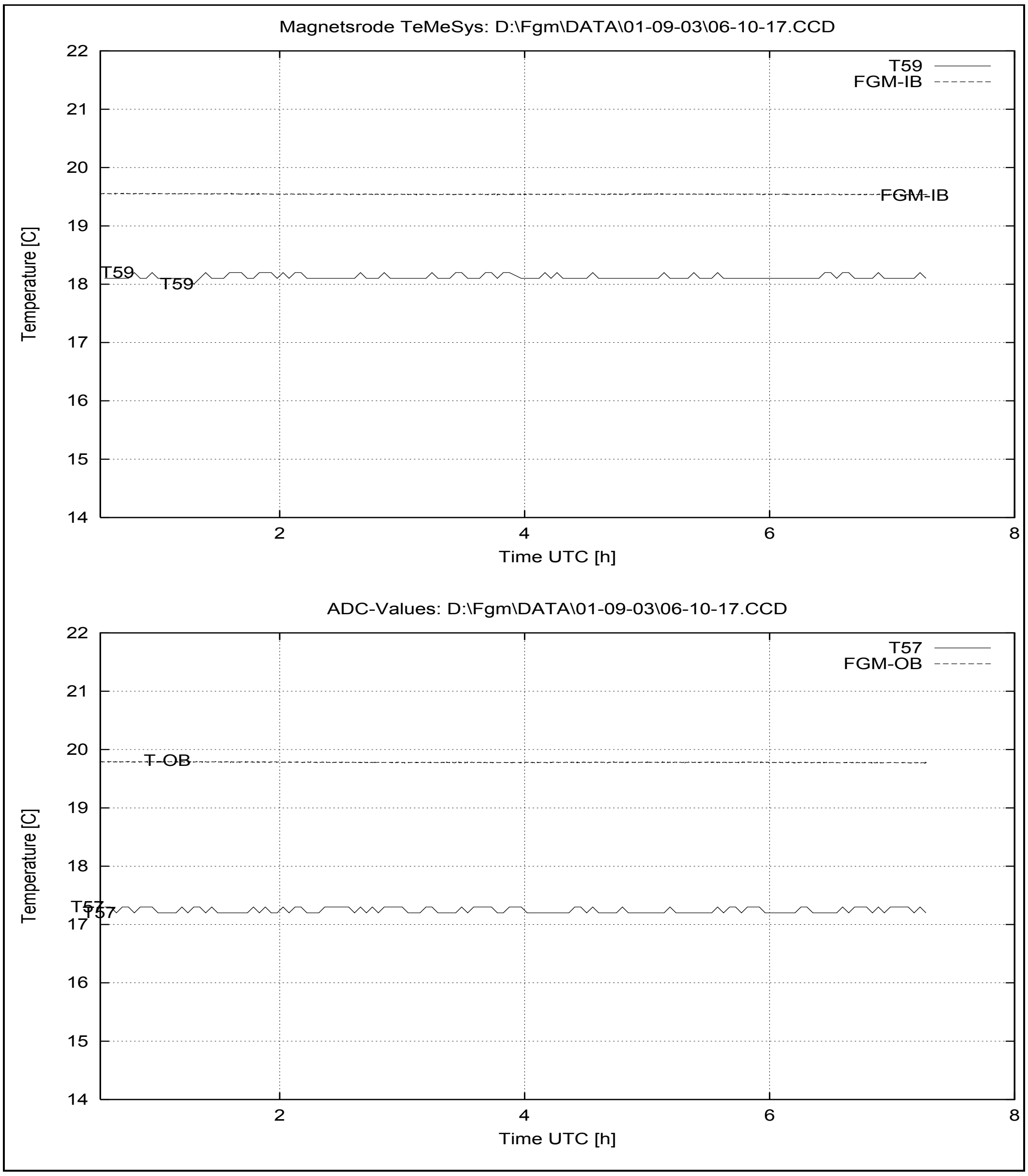


Figure 142: September 3, 2001: Sensor Temperatures at House 2.

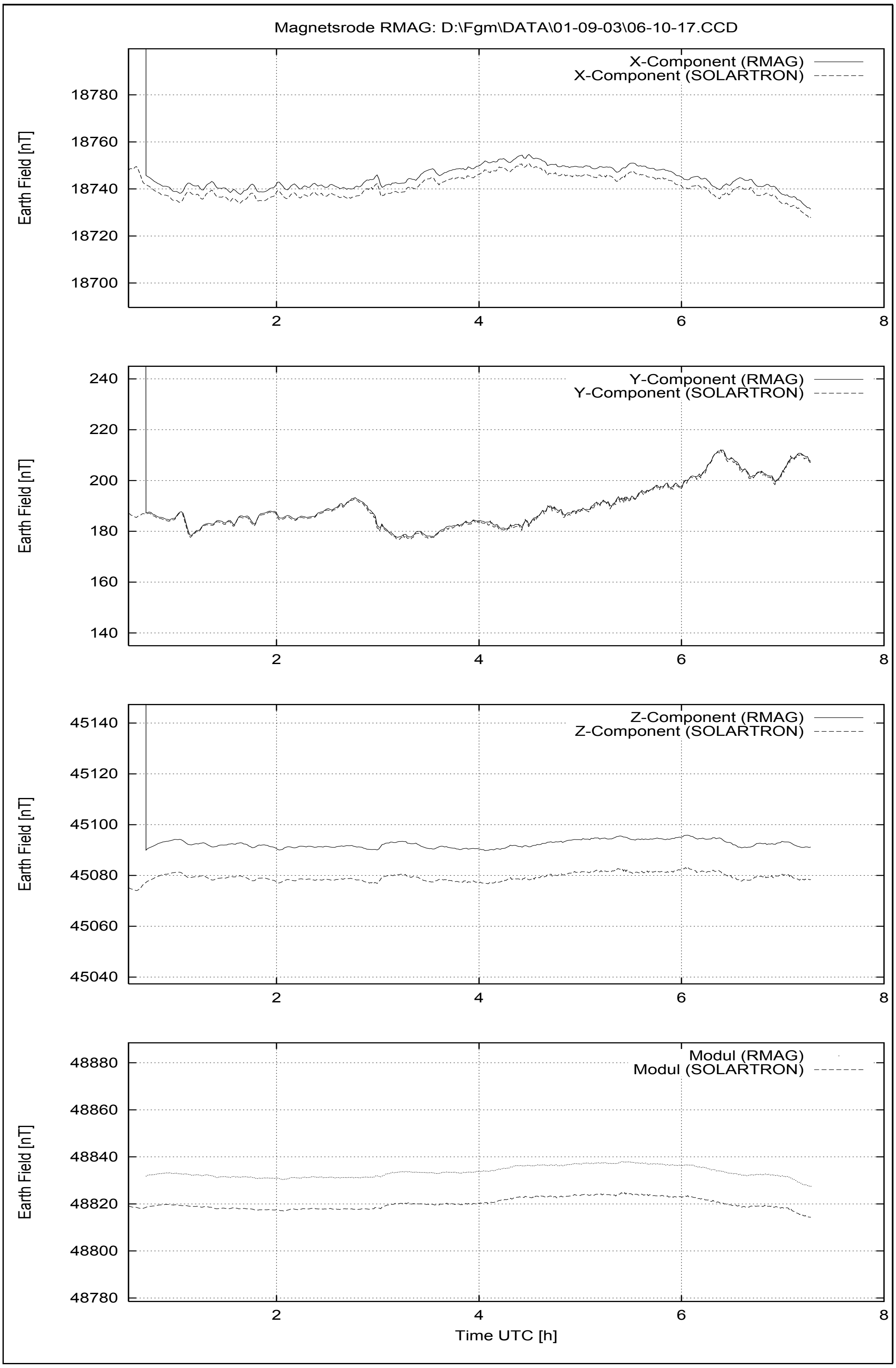


Figure 143: September 3, 2001: Earthfield variations.

# 35 Thursday September 6, 2001

## 35.1 Temperature Cycle, Linearities, DPU:FS, Sensors: FM

Before the temperature calibration will be performed some linearity measurements should be executed in the chosen setup for the temperature cycle. The sensors are fixed, but the box is still open for filling in the dry ice after these measurements.

| | |
|---|---|
| Purpose: | Measure the linearity of the FGM-FM sensors using the FS DPU. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP; Lower Reference position<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | T_LIN.SEQ |
| Start: | 06.09.01 12:07 |
| End: | 06.09.01 12:50 |

### 35.1.1 Data

| Configuration File | CCD File |
|---|---|
| ali10.CFG | 01-09-06\12_07_17.CCD |
| TX15.CFG | 01-09-06\12_14_27.CCD |
| TY15.CFG | 01-09-06\12_27_28.CCD |
| TZ15.CFG | 01-09-06\12_40_29.CCD |

## 35.2 Temperature Calibration, Cooling Cycle, DPU:FS, Sensors: FM

| | |
|---|---|
| Purpose: | Measure the temperature behaviour of the FM sensors using the FS DPU. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | TEMP3.SEQ |
| Temperature File: | ROSETTA5.CUR |
| Tctrlparam. | FLDtime: 40 s – TCctrl times: 24 s / 40s |
| Start: | 06.09.01 12:54 |
| End: | 10.09.01 13:58 ESC. |
| Remark: | Dry ice filling from 12:55 – 13:02 |

### 35.2.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-06\12_54_54.CCD | |
| TEMP.CFG | 01-09-06\14_02_36.CCD | |
| TEMP.CFG | 01-09-06\15_10_17.CCD | |
| TEMP.CFG | 01-09-06\16_17_57.CCD | |
| TEMP.CFG | 01-09-06\17_25_39.CCD | |
| TEMP.CFG | 01-09-06\18_33_21.CCD | |
| TEMP.CFG | 01-09-06\19_41_02.CCD | |
| TEMP.CFG | 01-09-06\20_48_41.CCD | |
| TEMP.CFG | 01-09-06\21_56_22.CCD | |
| TEMP.CFG | 01-09-06\23_04_03.CCD | |

### 35.3 Overview Plots: System Performance, Temperatures and Earth-field Variations.

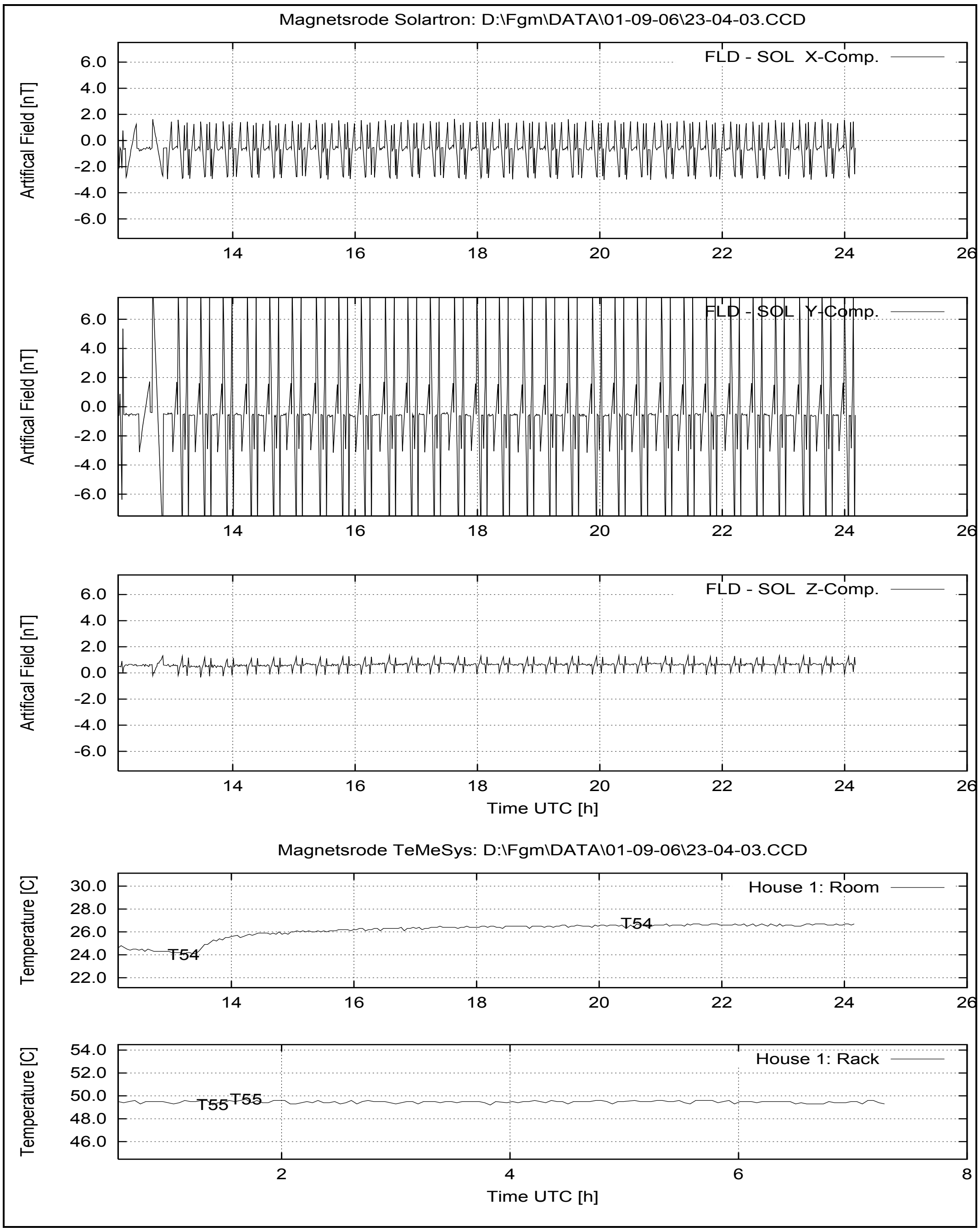


Figure 144: September 6, 2001: System Performance: FLD – SOL; Temperatures House 1.

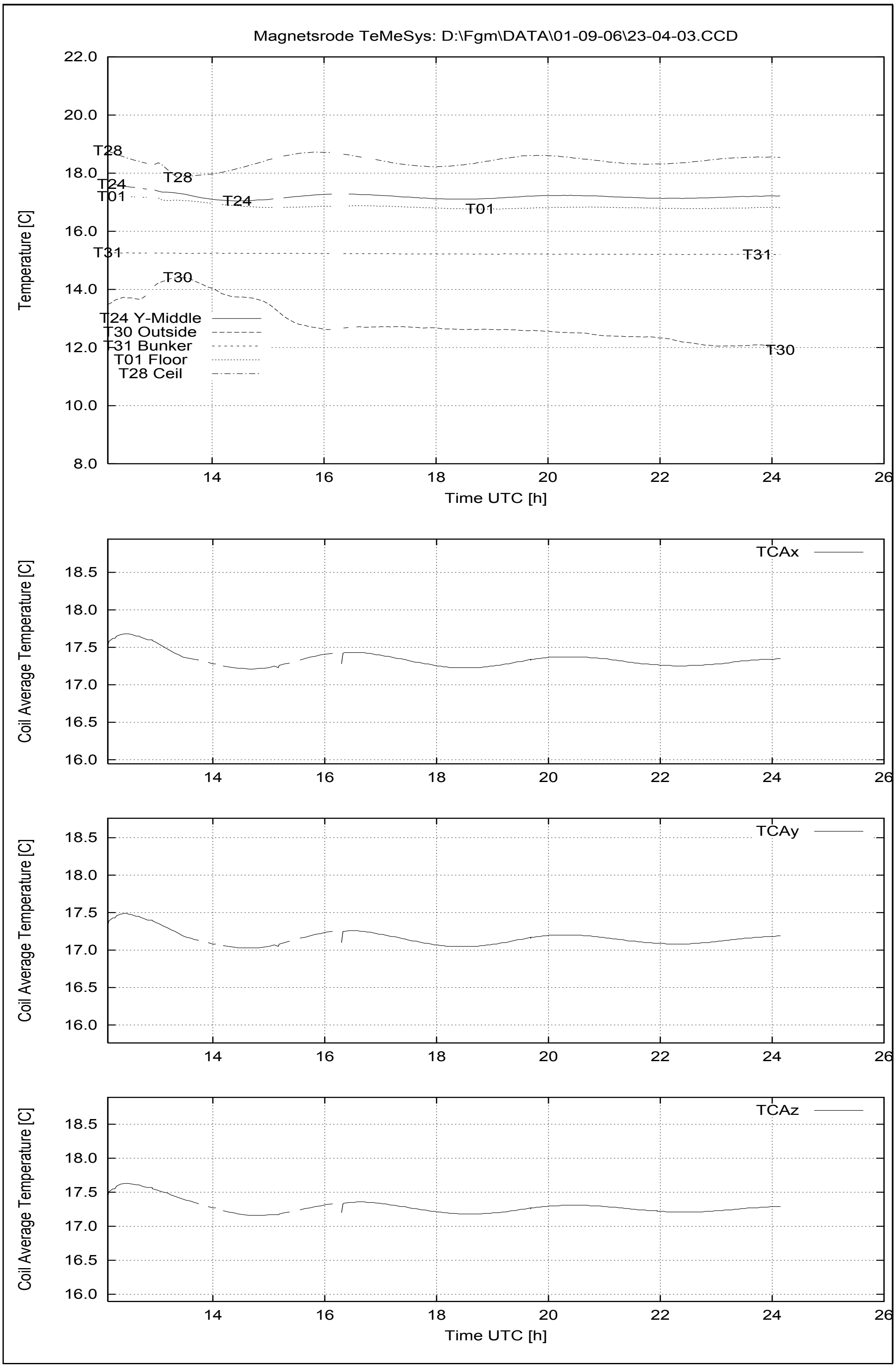


Figure 145: September 6, 2001: Temperatures House 2.

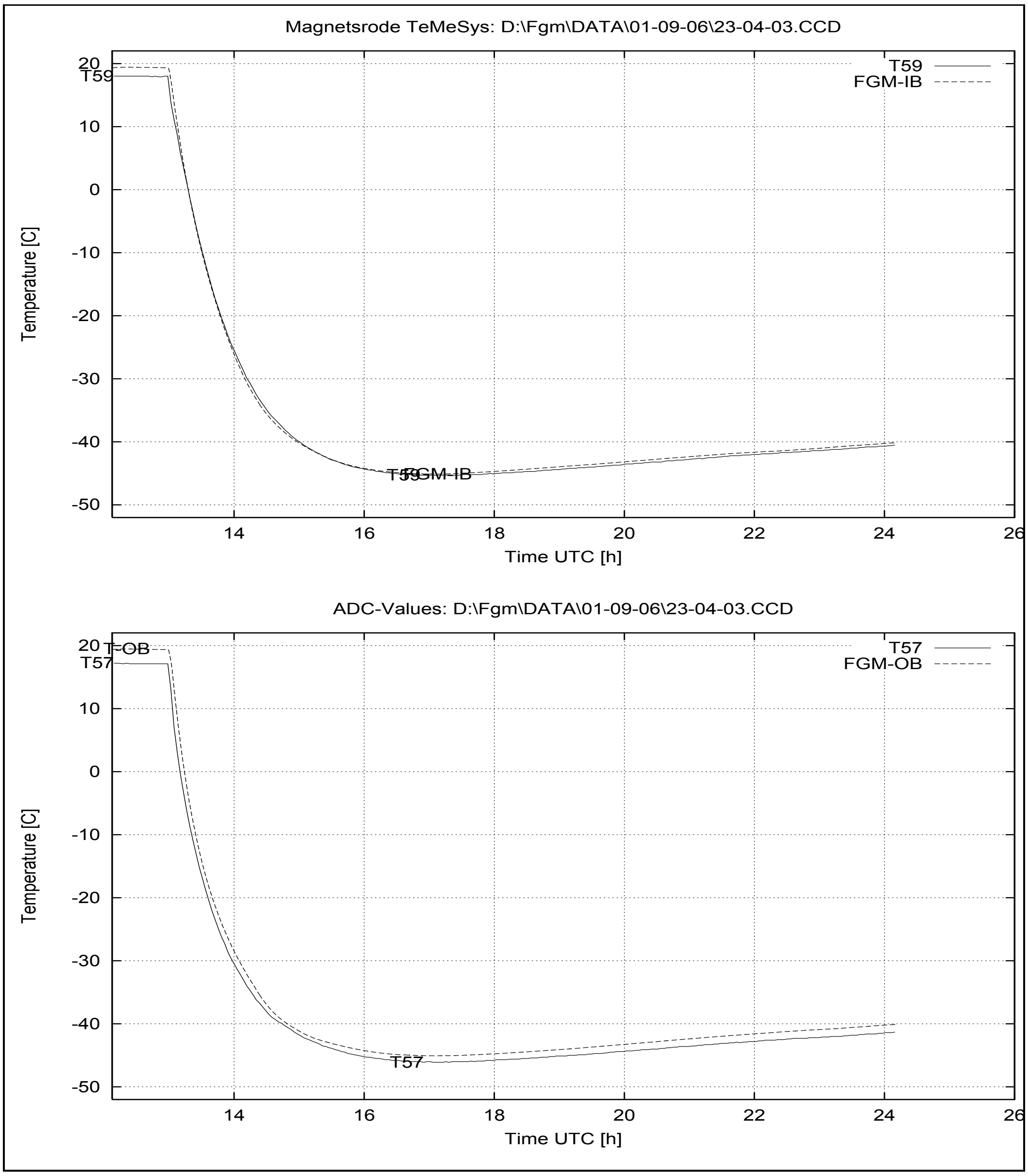


Figure 146: September 6, 2001: Sensor Temperatures at House 2.

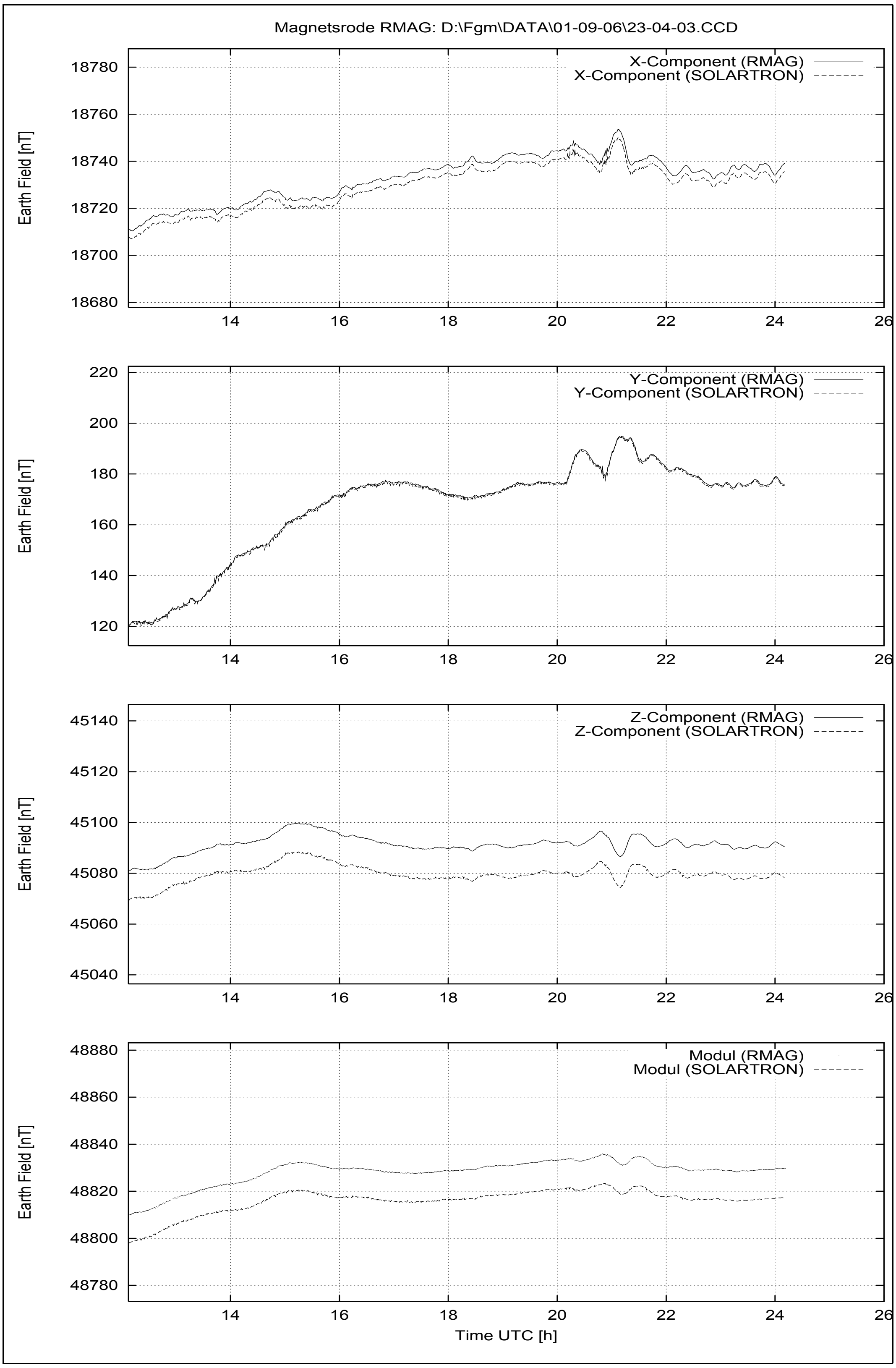


Figure 147: September 6, 2001: Earthfield variations.

# 36 Friday September 7, 2001

## 36.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FM

The cooling cycle continued today without any personal support.

### 36.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-07\00_11_43.CCD | |
| TEMP.CFG | 01-09-07\01_19_24.CCD | |
| TEMP.CFG | 01-09-07\02_27_06.CCD | |
| TEMP.CFG | 01-09-07\03_34_46.CCD | |
| TEMP.CFG | 01-09-07\04_42_26.CCD | |
| TEMP.CFG | 01-09-07\05_50_07.CCD | |
| TEMP.CFG | 01-09-07\06_58_11.CCD | |
| TEMP.CFG | 01-09-07\08_05_52.CCD | |
| TEMP.CFG | 01-09-07\09_14_24.CCD | |
| TEMP.CFG | 01-09-07\10_22_04.CCD | |
| TEMP.CFG | 01-09-07\11_29_45.CCD | |
| TEMP.CFG | 01-09-07\12_37_25.CCD | |
| TEMP.CFG | 01-09-07\13_45_05.CCD | |
| TEMP.CFG | 01-09-07\14_52_46.CCD | |
| TEMP.CFG | 01-09-07\16_00_27.CCD | |
| TEMP.CFG | 01-09-07\17_08_10.CCD | |
| TEMP.CFG | 01-09-07\18_15_50.CCD | |
| TEMP.CFG | 01-09-07\19_23_30.CCD | |
| TEMP.CFG | 01-09-07\20_31_10.CCD | |
| TEMP.CFG | 01-09-07\21_38_51.CCD | |
| TEMP.CFG | 01-09-07\22_46_32.CCD | |
| TEMP.CFG | 01-09-07\23_54_13.CCD | |

## 36.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

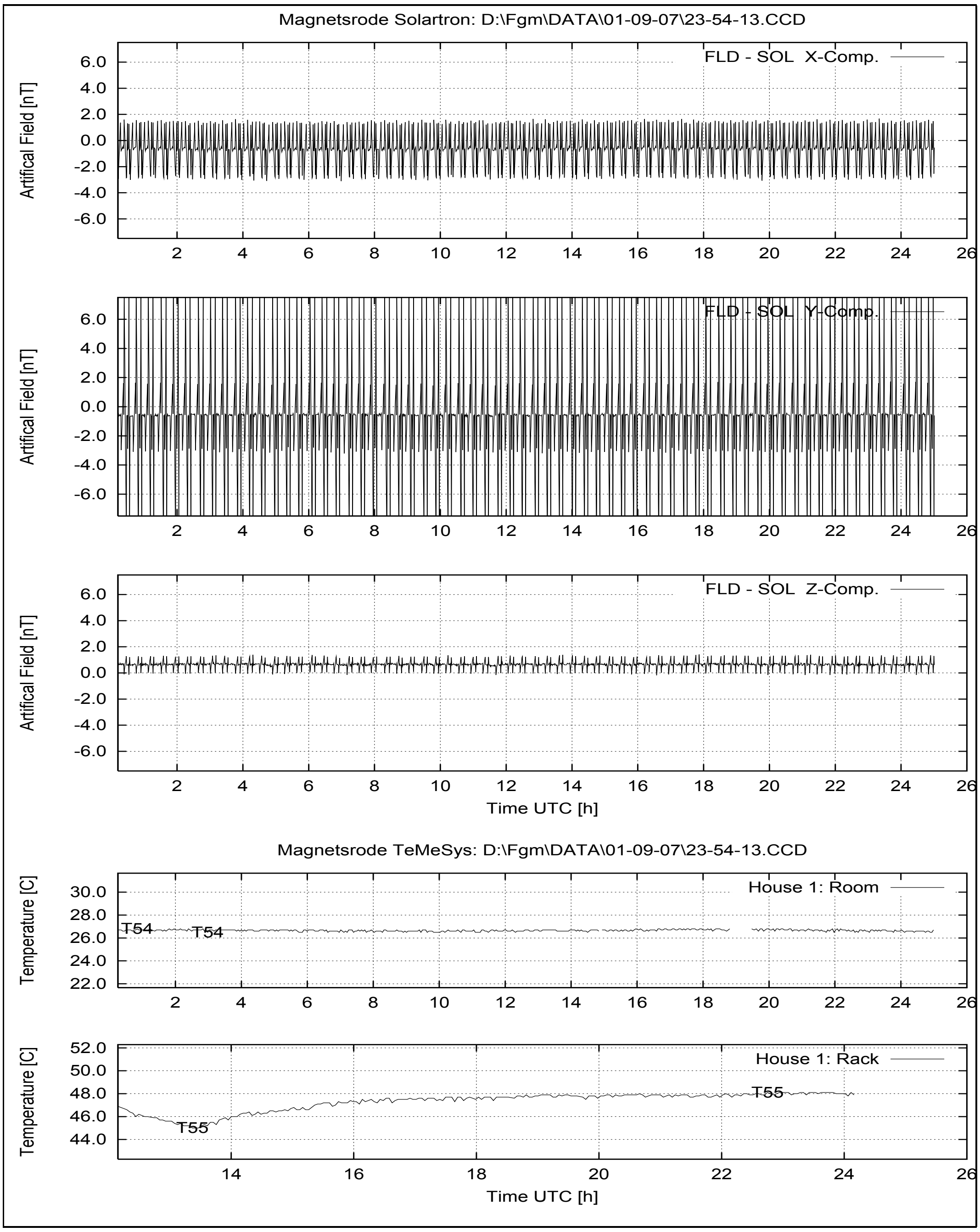


Figure 148: September 7, 2001: System Performance: FLD – SOL; Temperatures House 1.

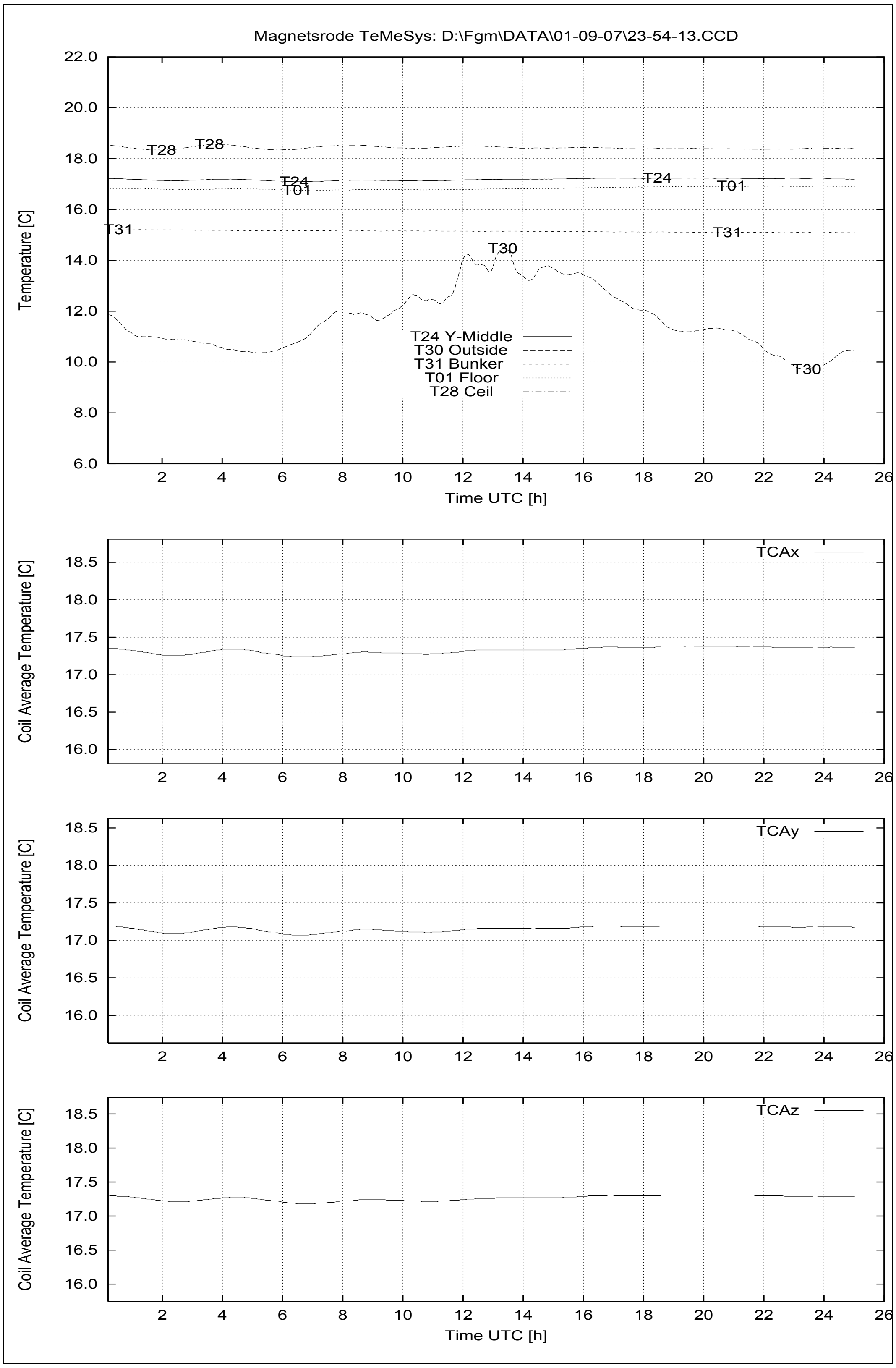


Figure 149: September 7, 2001: Temperatures House 2.

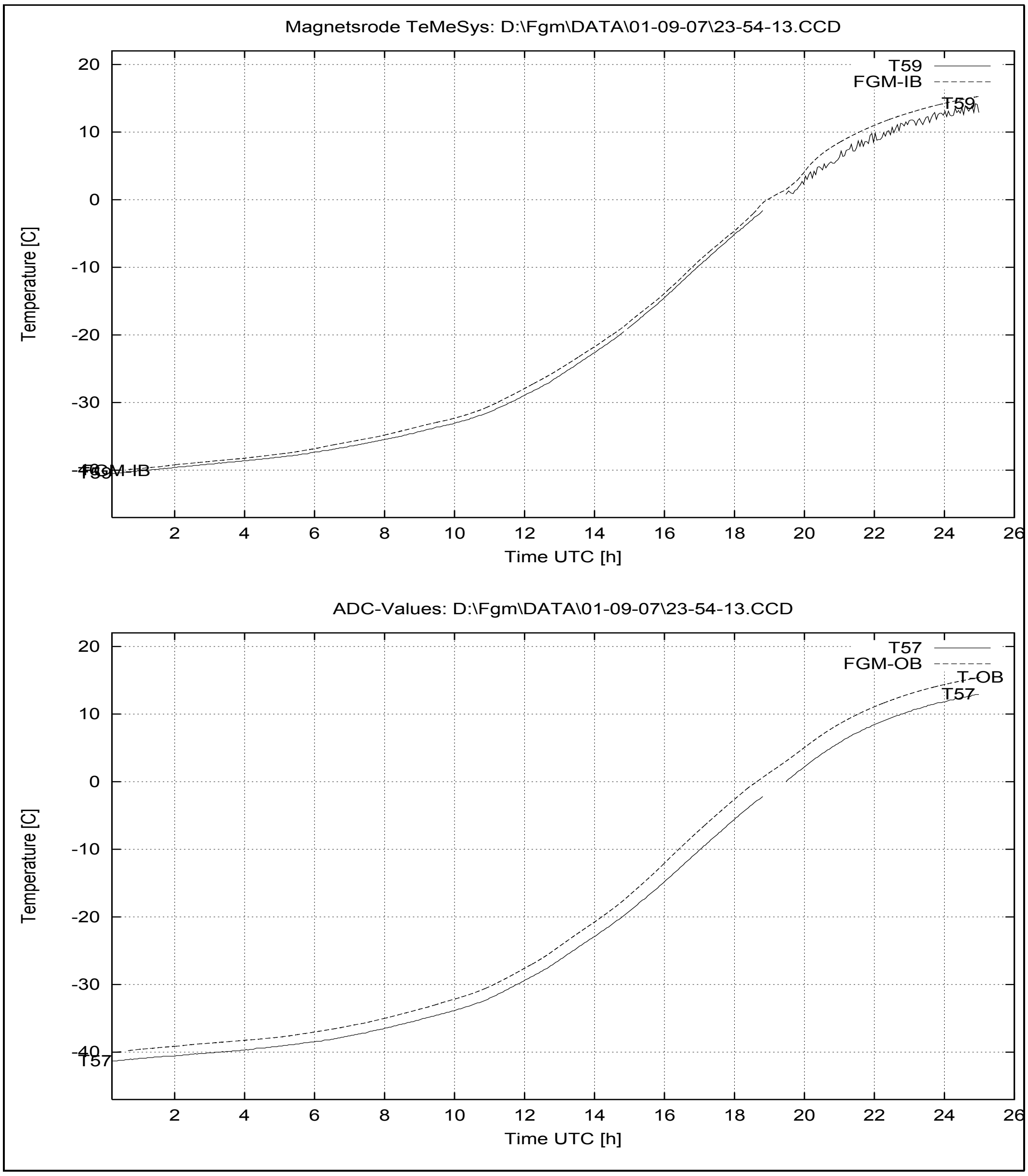


Figure 150: September 7, 2001: Sensor Temperatures at House 2.

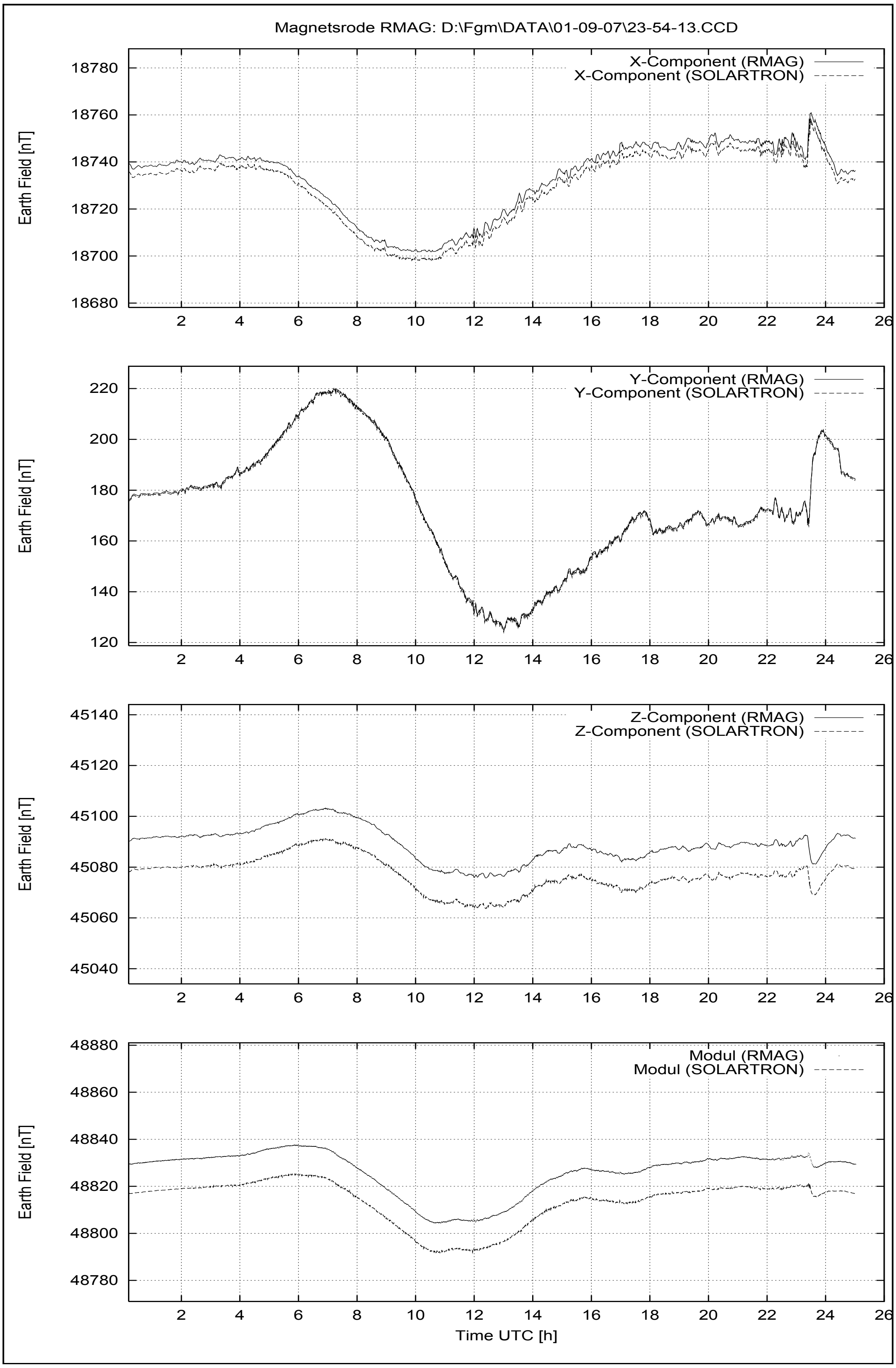


Figure 151: September 7, 2001: Earthfield variations.

# 37 Saturday September 8, 2001

## 37.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FM

The cooling cycle continued today without any personal support.

### 37.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-08\01_01_54.CCD | |
| TEMP.CFG | 01-09-08\02_09_34.CCD | |
| TEMP.CFG | 01-09-08\03_17_14.CCD | |
| TEMP.CFG | 01-09-08\04_24_53.CCD | |
| TEMP.CFG | 01-09-08\05_32_34.CCD | |
| TEMP.CFG | 01-09-08\06_40_14.CCD | |
| TEMP.CFG | 01-09-08\07_47_55.CCD | |
| TEMP.CFG | 01-09-08\08_55_35.CCD | |
| TEMP.CFG | 01-09-08\10_03_16.CCD | |
| TEMP.CFG | 01-09-08\11_10_56.CCD | |
| TEMP.CFG | 01-09-08\12_18_39.CCD | |
| TEMP.CFG | 01-09-08\13_26_19.CCD | |
| TEMP.CFG | 01-09-08\14_34_00.CCD | |
| TEMP.CFG | 01-09-08\15_41_41.CCD | |
| TEMP.CFG | 01-09-08\16_49_22.CCD | |
| TEMP.CFG | 01-09-08\17_57_02.CCD | |
| TEMP.CFG | 01-09-08\19_04_42.CCD | |
| TEMP.CFG | 01-09-08\20_12_21.CCD | |
| TEMP.CFG | 01-09-08\21_20_01.CCD | |
| TEMP.CFG | 01-09-08\22_27_42.CCD | |
| TEMP.CFG | 01-09-08\23_35_22.CCD | |

### 37.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

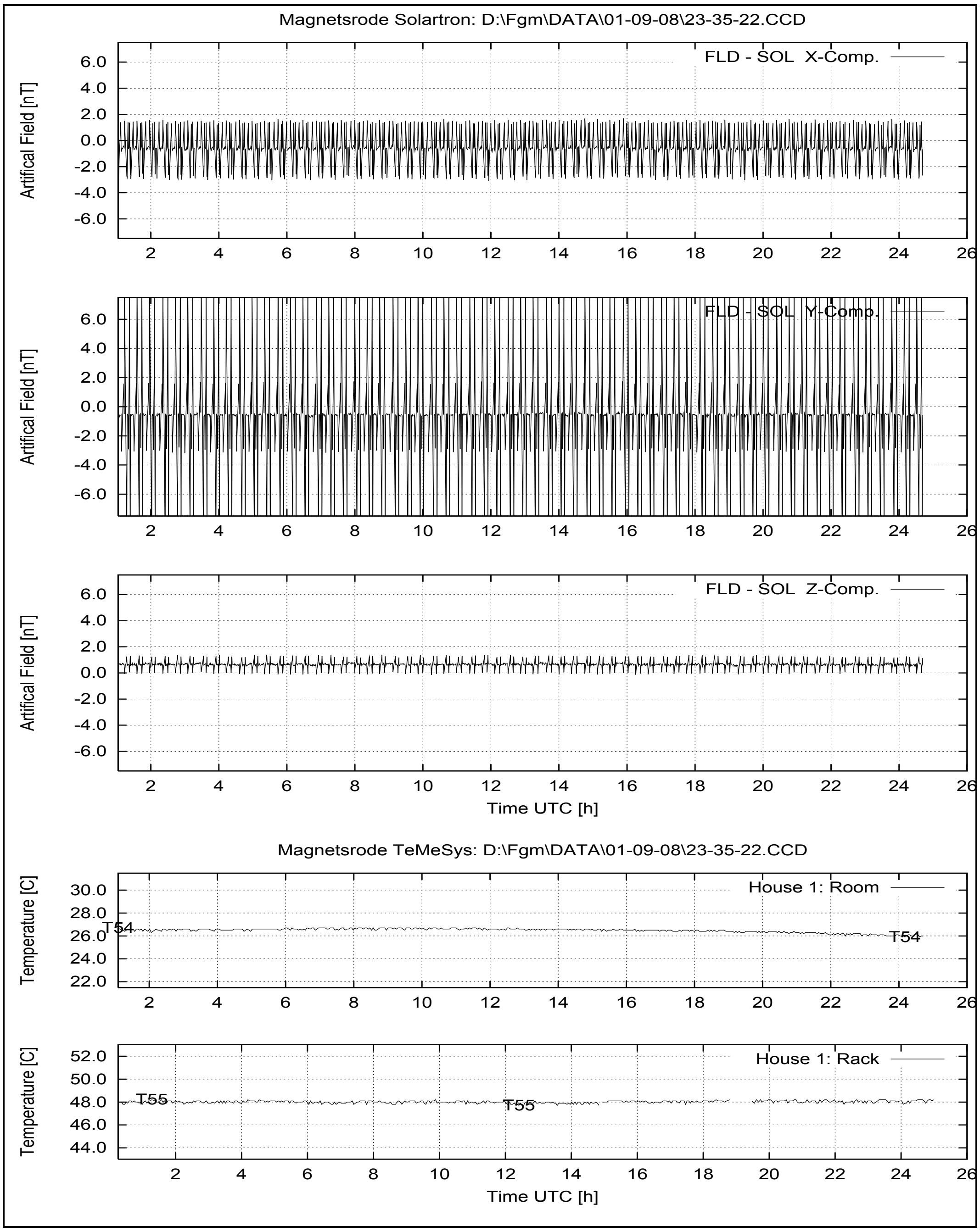


Figure 152: September 8, 2001: System Performance: FLD – SOL; Temperatures House 1.

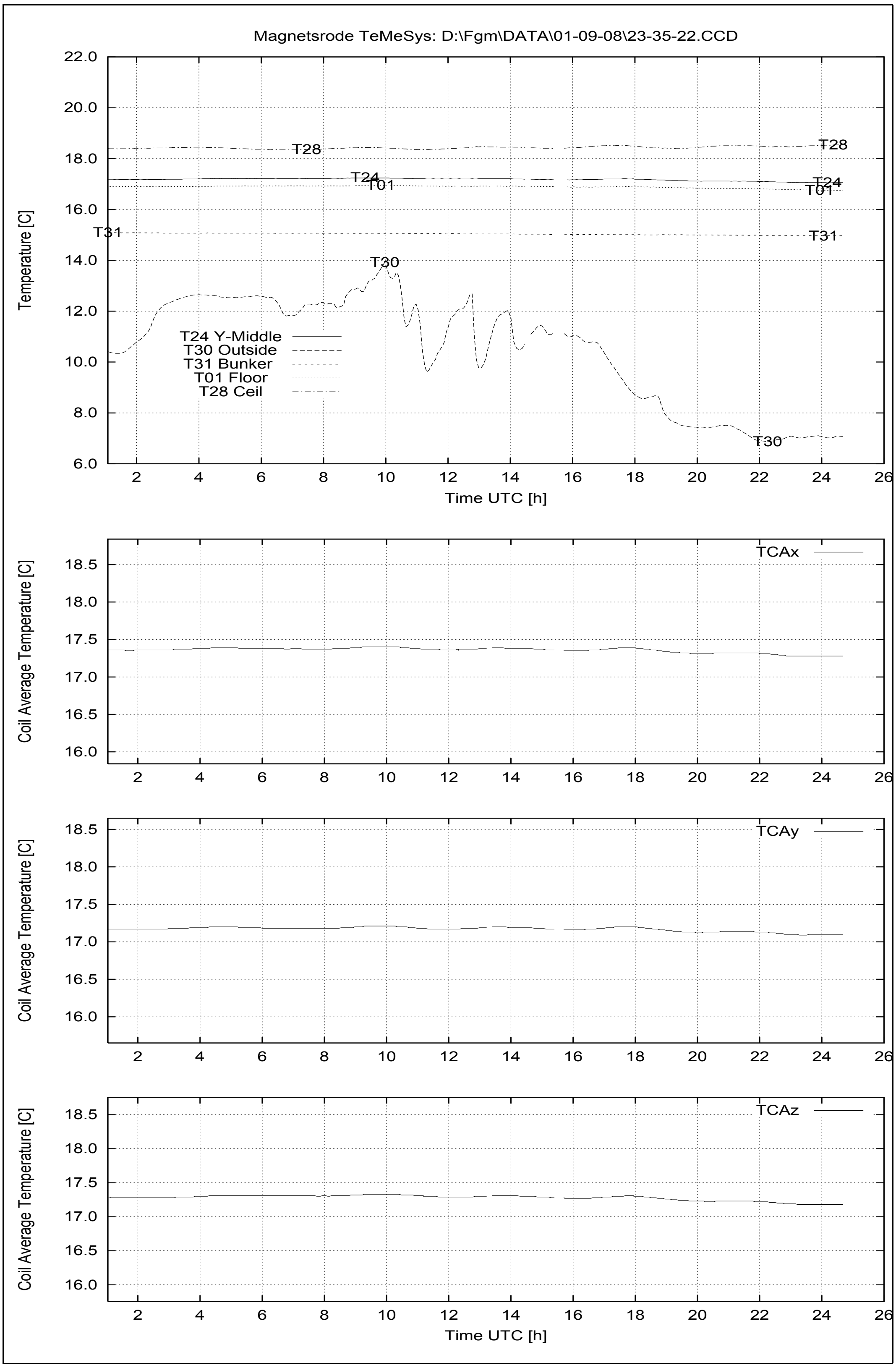


Figure 153: September 8, 2001: Temperatures House 2.

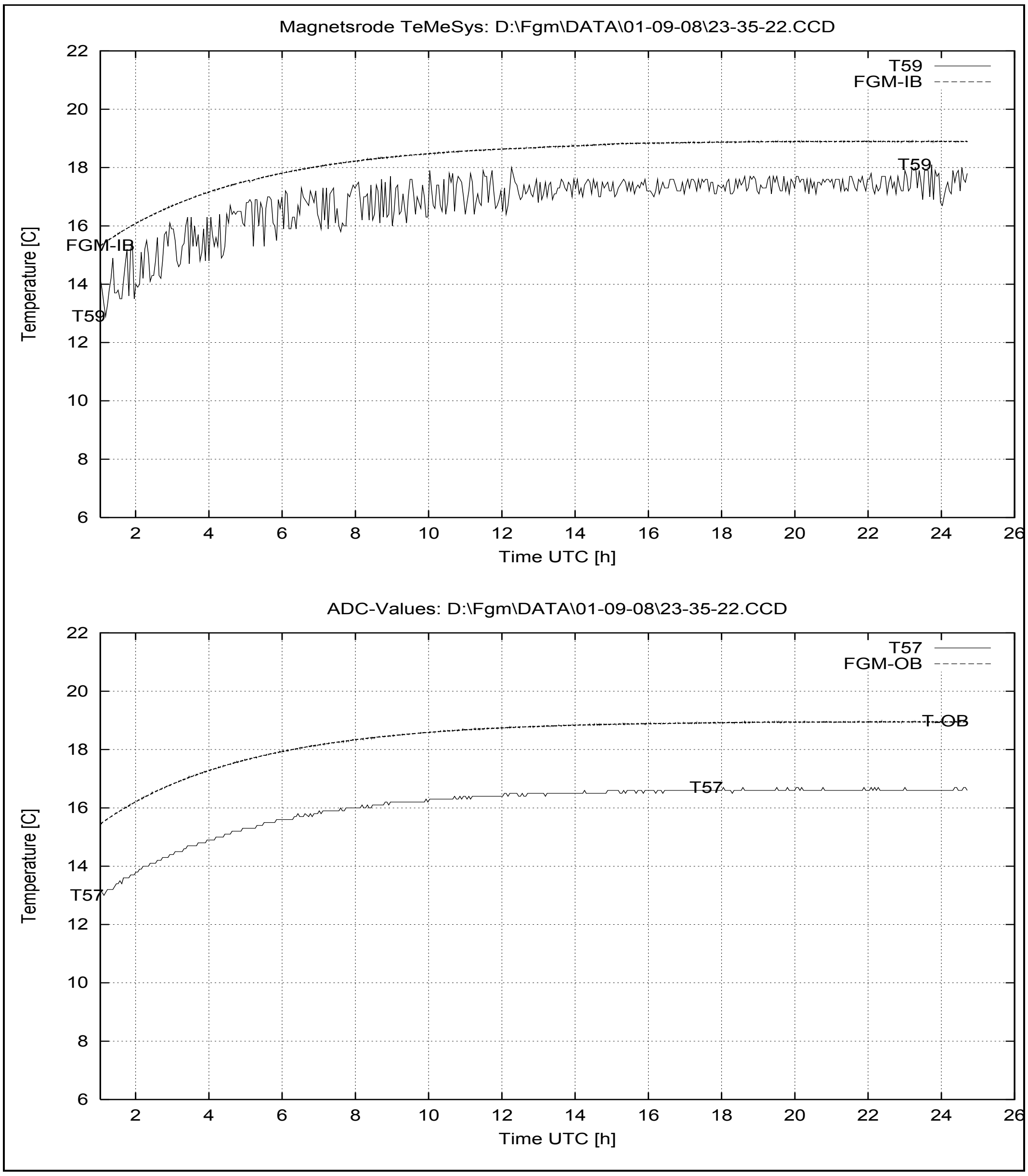


Figure 154: September 8, 2001: Sensor Temperatures at House 2.

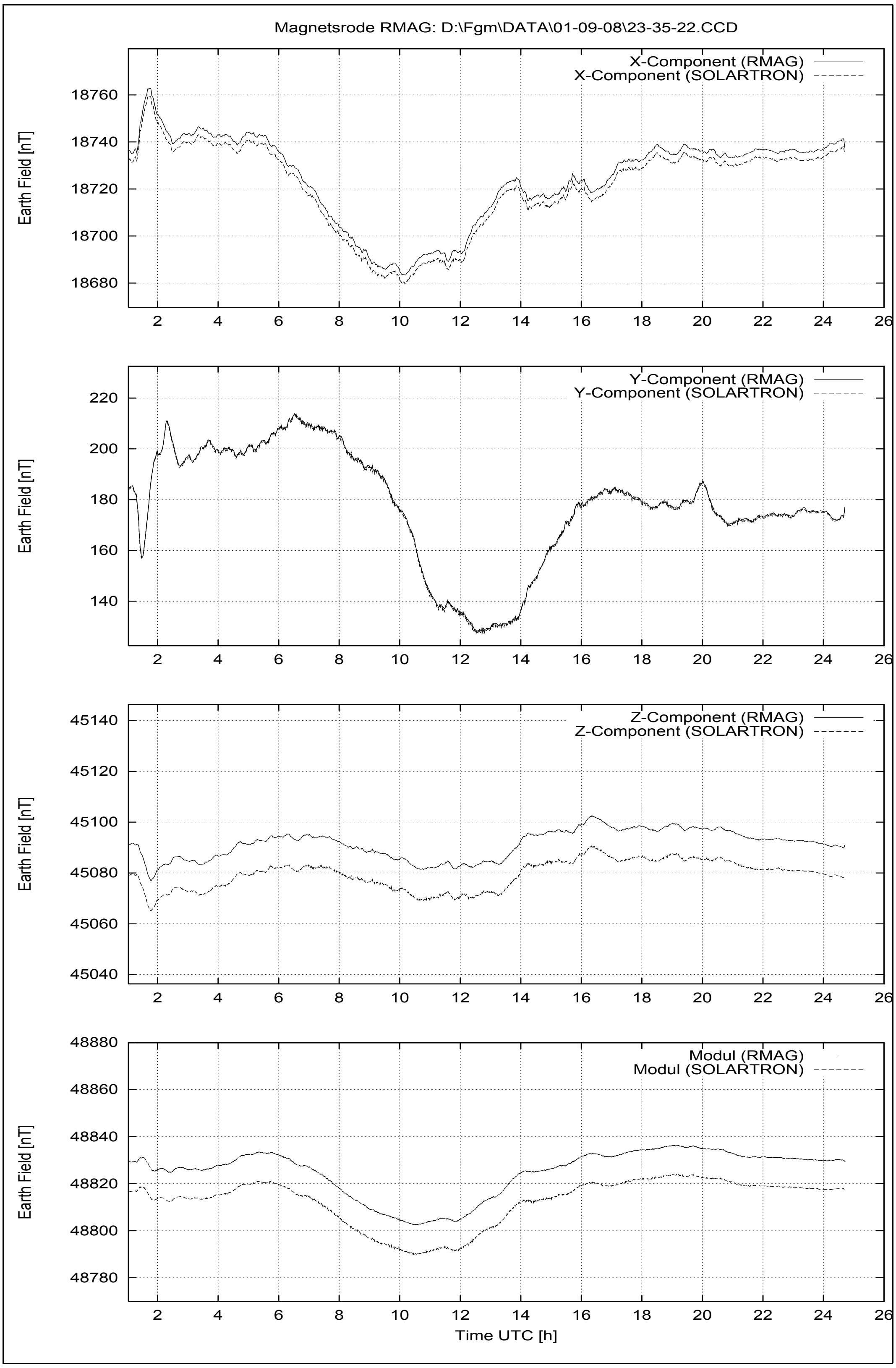


Figure 155: September 8, 2001: Earthfield variations.

# 38 Sunday September 9, 2001

## 38.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FM

The cooling cycle continued today without any personal support.

The subsequent data analysis revealed that the thermistor of the FM–IB sensor showed a malfunction starting at 10:49 on September 9th while the temperature in the box was at baout 18°C. The output voltage of this thermistor dropped to the half of the nominal voltage and decreased continuously until the end of the calibration. An inspection of the sensor afterwards, however, did not show any suspicious behaviour. All wires and soldering connections are ok.

### 38.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-09\00_43_03.CCD | |
| TEMP.CFG | 01-09-09\01_50_44.CCD | |
| TEMP.CFG | 01-09-09\02_58_25.CCD | |
| TEMP.CFG | 01-09-09\04_06_06.CCD | |
| TEMP.CFG | 01-09-09\05_14_07.CCD | |
| TEMP.CFG | 01-09-09\06_21_46.CCD | |
| TEMP.CFG | 01-09-09\07_29_27.CCD | |
| TEMP.CFG | 01-09-09\08_38_47.CCD | |
| TEMP.CFG | 01-09-09\09_46_27.CCD | |
| TEMP.CFG | 01-09-09\10_54_08.CCD | |
| TEMP.CFG | 01-09-09\12_01_48.CCD | |
| TEMP.CFG | 01-09-09\13_09_28.CCD | |
| TEMP.CFG | 01-09-09\14_17_29.CCD | |
| TEMP.CFG | 01-09-09\15_25_10.CCD | |
| TEMP.CFG | 01-09-09\16_32_50.CCD | |
| TEMP.CFG | 01-09-09\17_40_31.CCD | |
| TEMP.CFG | 01-09-09\18_48_12.CCD | |
| TEMP.CFG | 01-09-09\19_55_53.CCD | |
| TEMP.CFG | 01-09-09\21_03_33.CCD | |
| TEMP.CFG | 01-09-09\22_11_14.CCD | |
| TEMP.CFG | 01-09-09\23_18_54.CCD | |

## 38.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

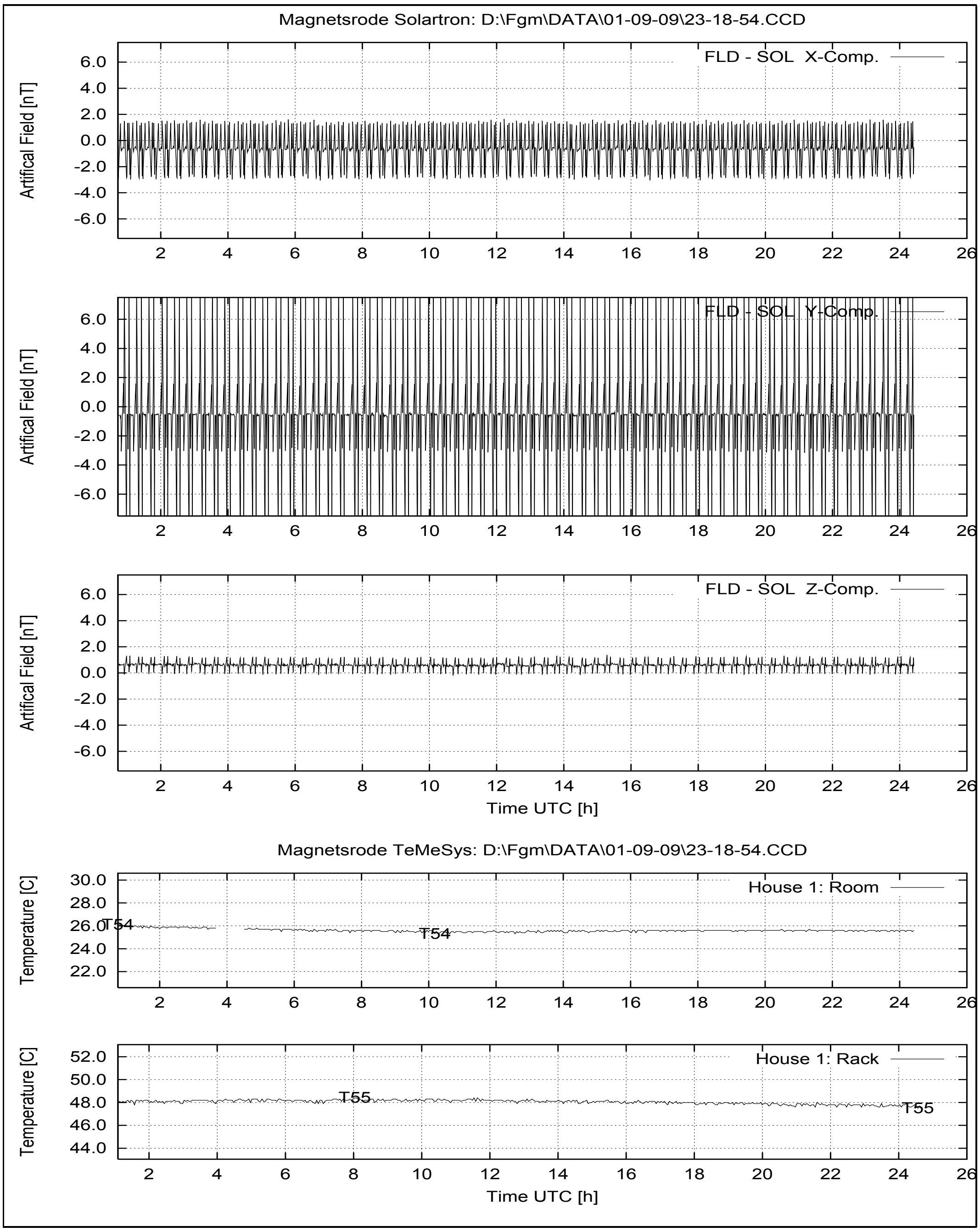


Figure 156: September 9, 2001: System Performance: FLD – SOL; Temperatures House 1.

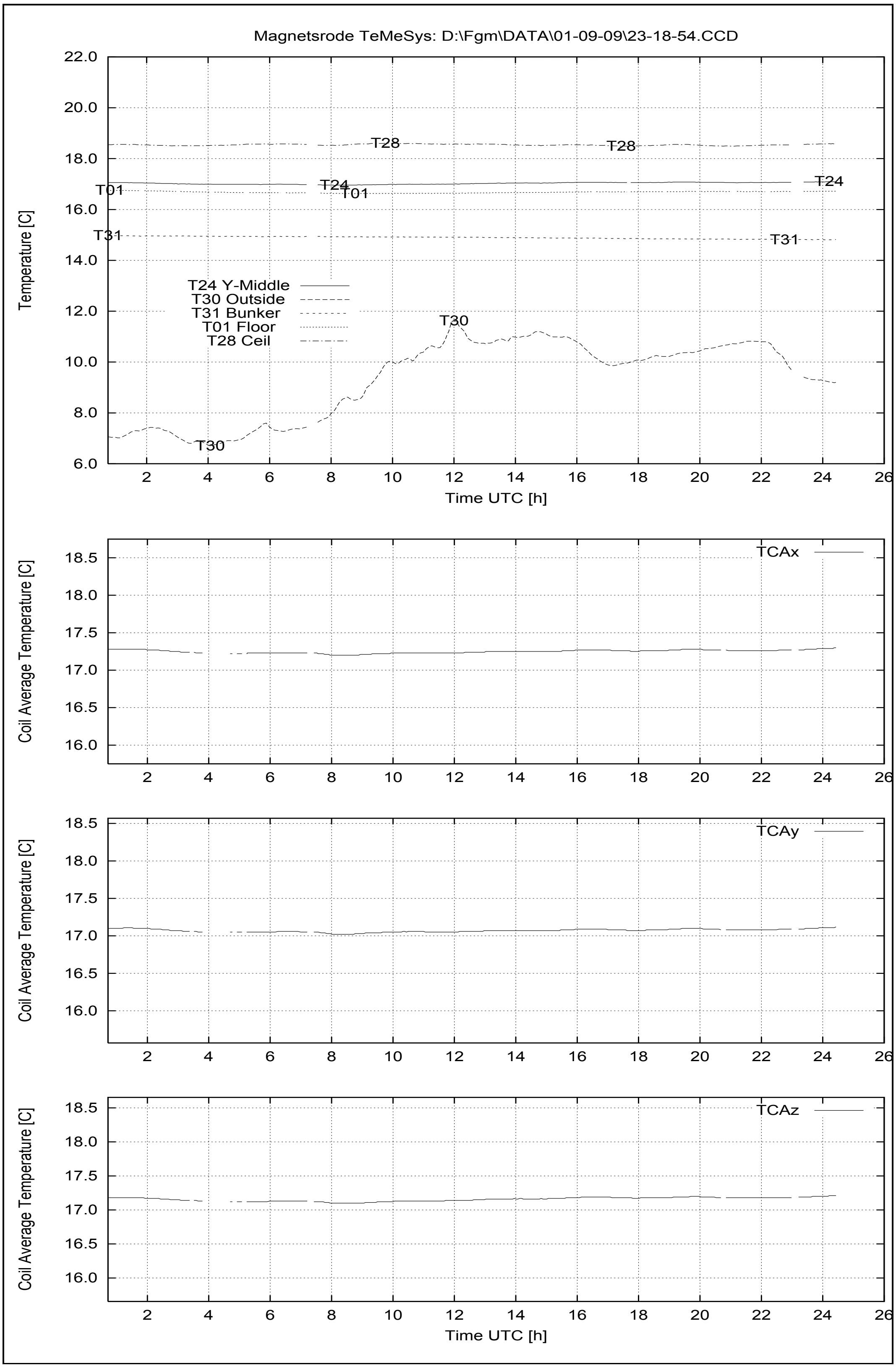


Figure 157: September 9, 2001: Temperatures House 2.

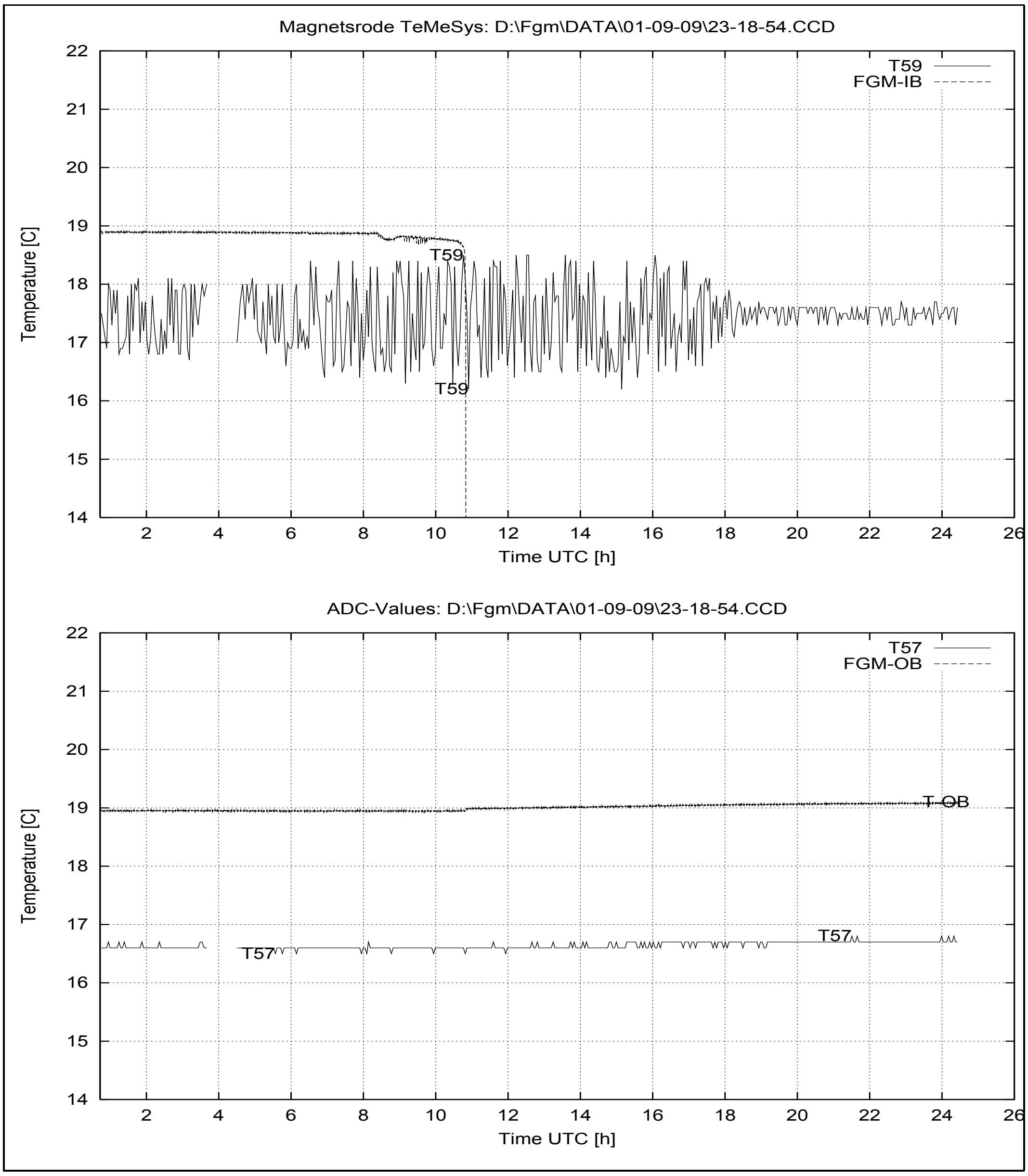


Figure 158: September 9, 2001: Sensor Temperatures at House 2.

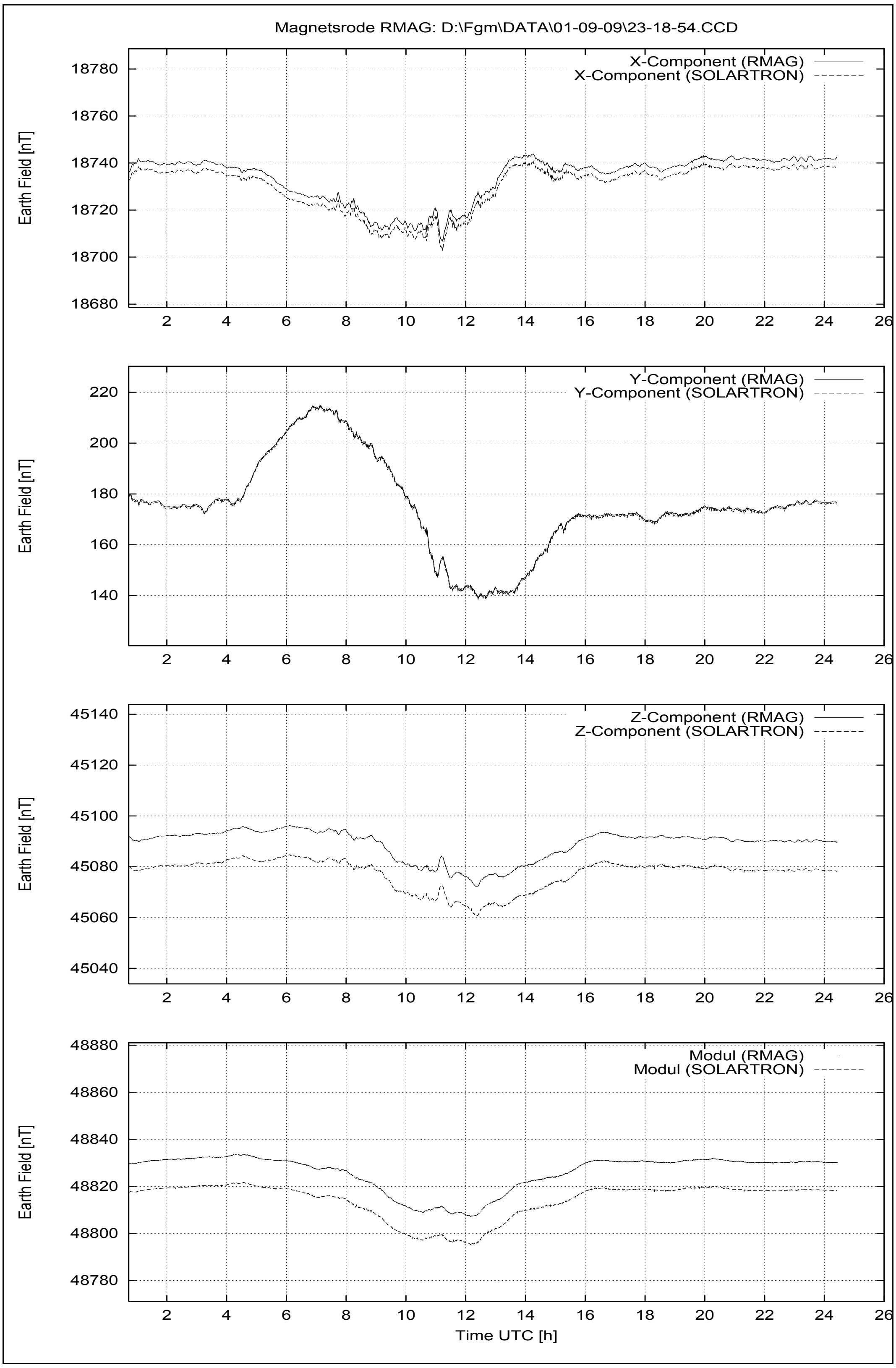


Figure 159: September 9, 2001: Earthfield variations.

# 39 Monday September 10, 2001

## 39.1 Temperature Calibration, Cooling Cycle continued, DPU:FS, Sensors: FM

The cooling cycle continued today until the early afternoon.

The heating cycle should have started automatically, but due to a loose contact of the supply cable at the heating foil inside the box the heating failed. Therefore, the box was opened, the contact was fixed and the system was restarted. Additionally the TeMeSys was rebooted, as it seemed to to be crashed.

### 39.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-10\00_26_35.CCD | |
| TEMP.CFG | 01-09-10\01_34_15.CCD | |
| TEMP.CFG | 01-09-10\02_41_54.CCD | |
| TEMP.CFG | 01-09-10\03_49_34.CCD | |
| TEMP.CFG | 01-09-10\04_57_15.CCD | |
| TEMP.CFG | 01-09-10\06_04_54.CCD | |
| TEMP.CFG | 01-09-10\07_12_35.CCD | |
| TEMP.CFG | 01-09-10\08_20_15.CCD | |
| TEMP.CFG | 01-09-10\09_27_55.CCD | |
| TEMP.CFG | 01-09-10\10_35_36.CCD | |
| TEMP.CFG | 01-09-10\11_43_16.CCD | |
| TEMP.CFG | 01-09-10\12_50_56.CCD | |

## 39.2 Temperature Calibration, Heating Cycle, DPU:FS, Sensors: FM

| | |
|---|---|
| Purpose: | Measure the temperature behaviour of the FM sensors using the FS DPU. |
| Conditions: | FM–OB and FM–IB placed in the Thermal Test Box on the aluminium support. The distance between them is 150 mm. |
| MAD: | Ch0 to Ch2 connected to Zopfmag x to z, 10 nT/mV;<br>Ch7 FSP;<br>Timer 500, SumUp 100, Vectorrate 1.00 Hz. |
| Files: | `TEMP3.SEQ` |
| Temperature File: | `ROSETTA5.CUR` |
| Tctrlparam. | FLDtime: 40 s – TCctrl times: 24 s / 40s |
| Start: | 00.09.01 15:10 |
| End: | 13.09.01 07:00 ESC. |

### 39.2.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-10\15_10_43.CCD | |
| TEMP.CFG | 01-09-10\16_18_24.CCD | |
| TEMP.CFG | 01-09-10\17_27_04.CCD | |
| TEMP.CFG | 01-09-10\18_34_43.CCD | |
| TEMP.CFG | 01-09-10\19_42_24.CCD | |
| TEMP.CFG | 01-09-10\20_50_04.CCD | |
| TEMP.CFG | 01-09-10\21_57_44.CCD | |
| TEMP.CFG | 01-09-10\23_05_25.CCD | |

## 39.3 Overview Plots: System Performance, Temperatures and Earth-field Variations.

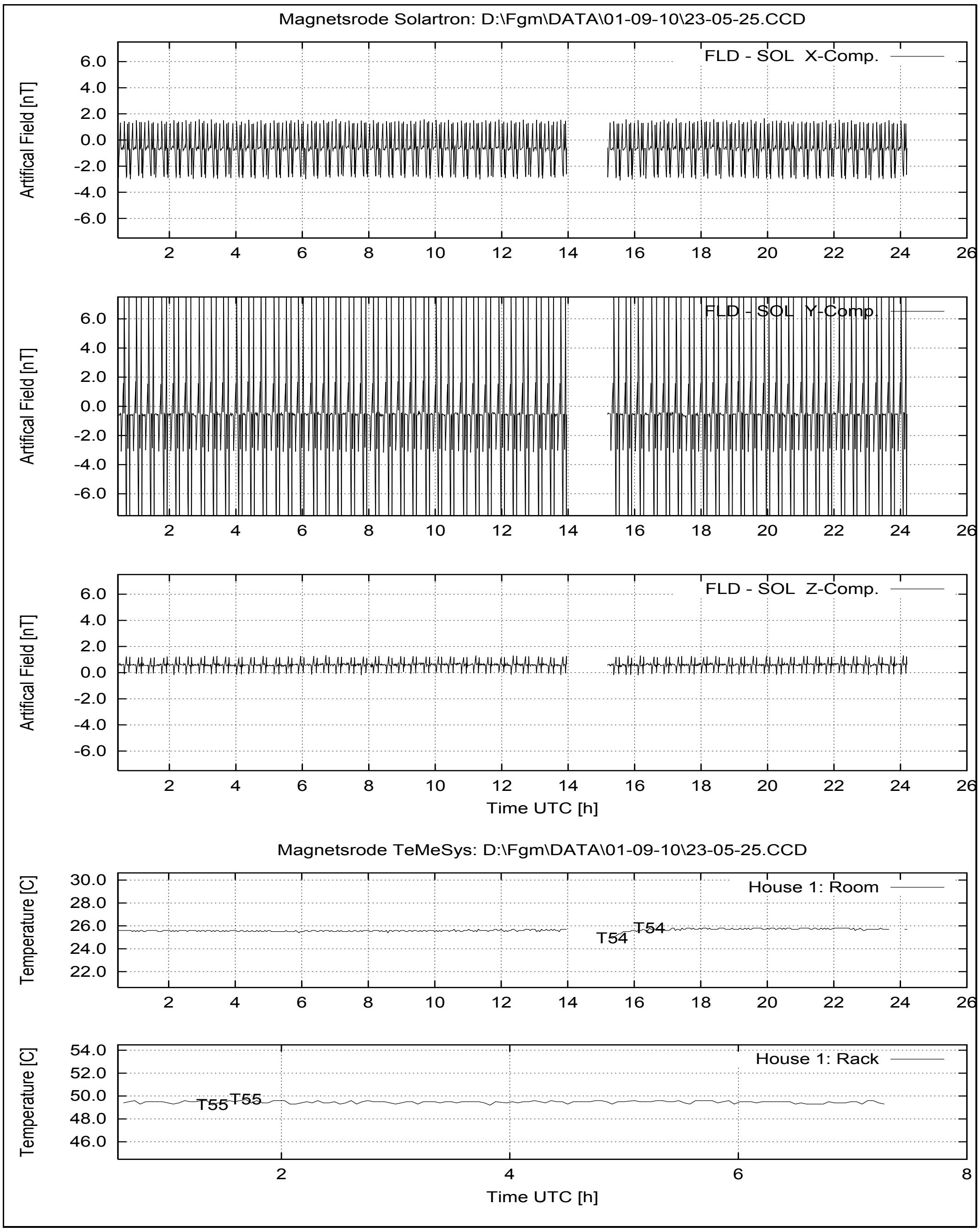


Figure 160: Sep. 10, 2001: System Performance: FLD – SOL; Temperatures House 1.

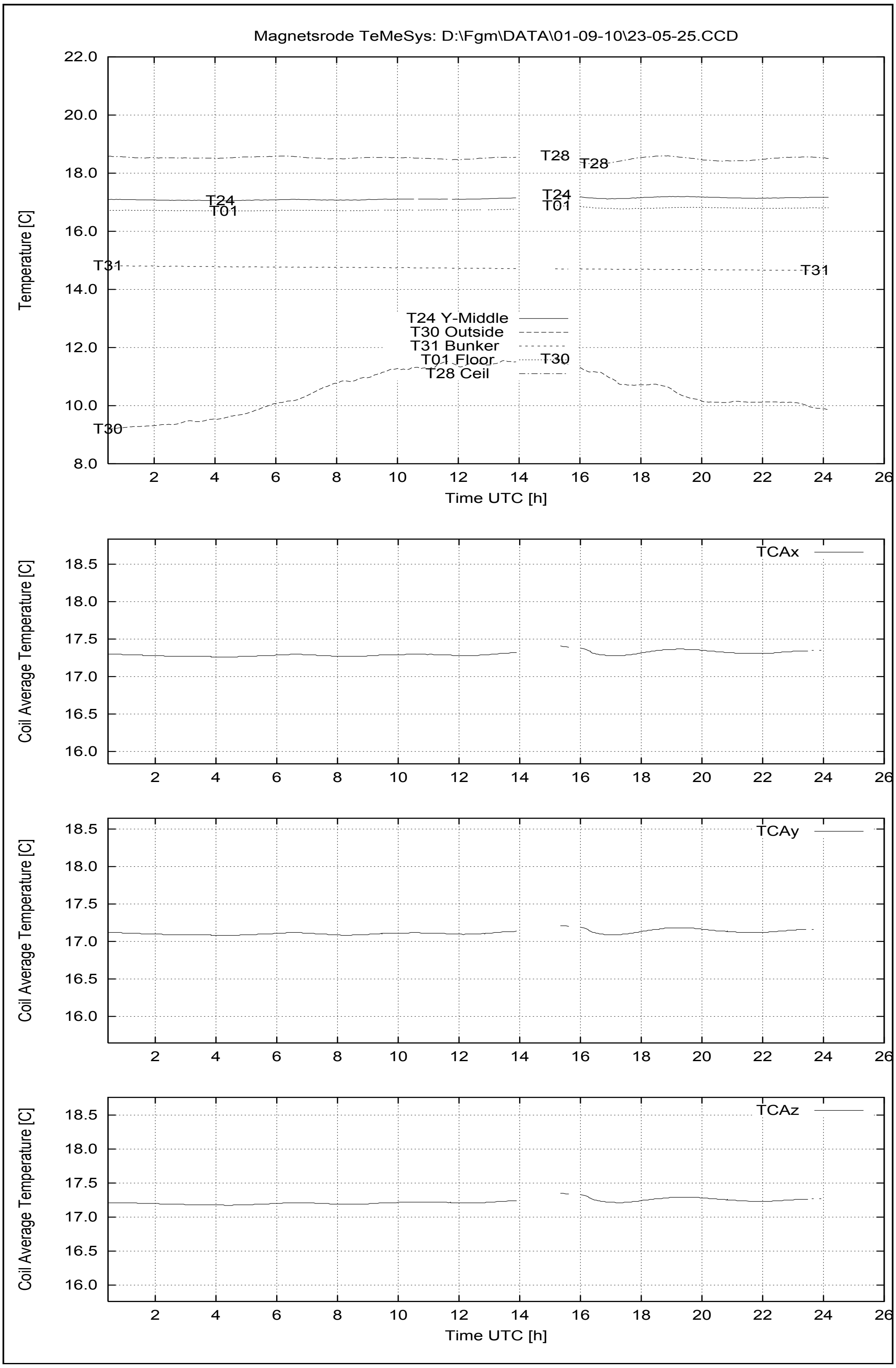


Figure 161: September 10, 2001: Temperatures House 2.

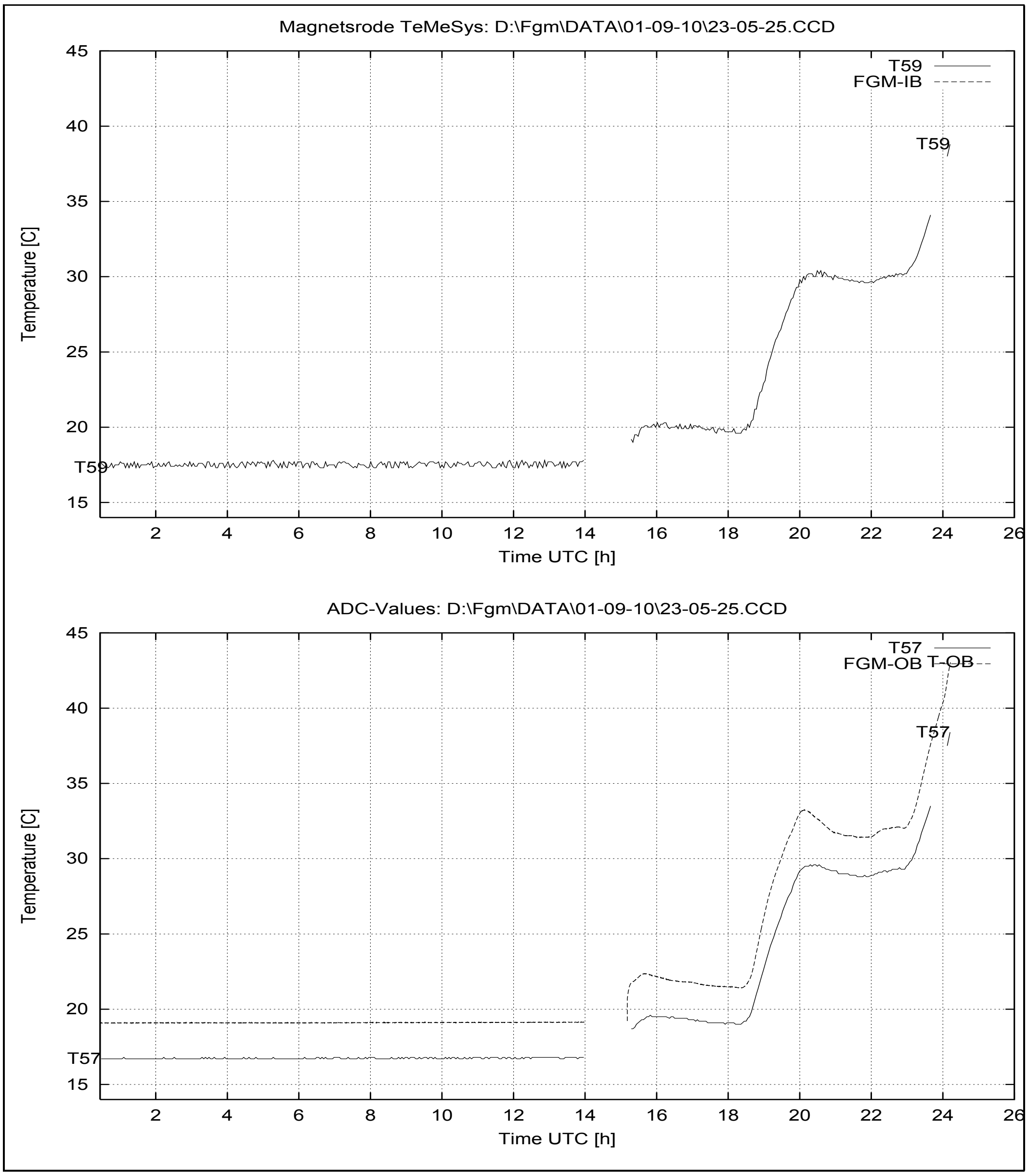


Figure 162: September 10, 2001: Sensor Temperatures at House 2.

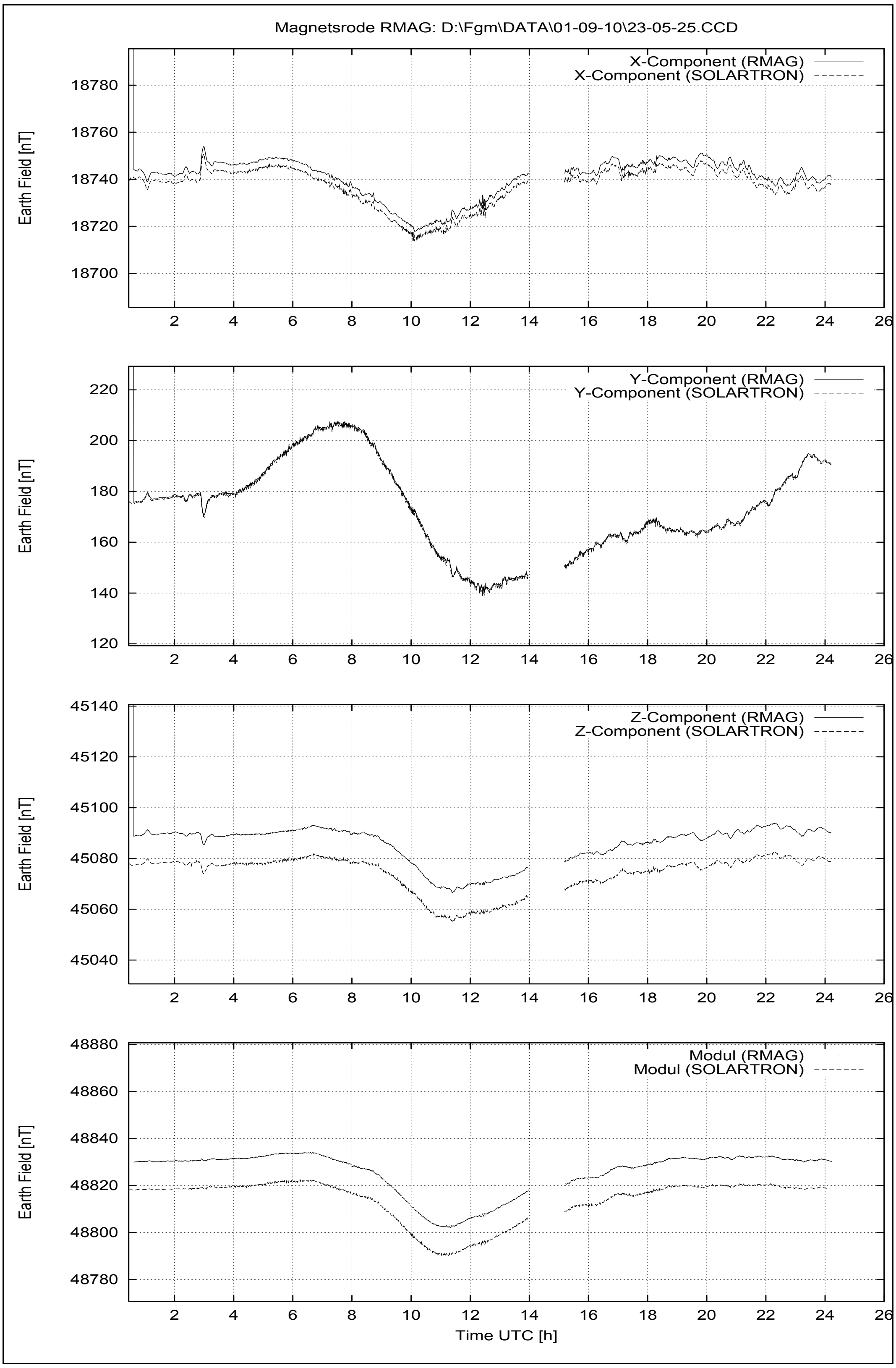


Figure 163: September 10, 2001: Earthfield variations.

# 40 Tuesday September 11, 2001

## 40.1 Temperature Calibration, Heating Cycle continued, DPU:FS, Sensors: FM

The heating cycle continued without any personal support today.

### 40.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-11\00_13_06.CCD | |
| TEMP.CFG | 01-09-11\01_20_47.CCD | |
| TEMP.CFG | 01-09-11\02_28_28.CCD | |
| TEMP.CFG | 01-09-11\03_36_08.CCD | |
| TEMP.CFG | 01-09-11\04_43_49.CCD | |
| TEMP.CFG | 01-09-11\05_51_59.CCD | |
| TEMP.CFG | 01-09-11\06_59_40.CCD | |
| TEMP.CFG | 01-09-11\08_07_33.CCD | |
| TEMP.CFG | 01-09-11\09_15_12.CCD | |
| TEMP.CFG | 01-09-11\10_22_53.CCD | |
| TEMP.CFG | 01-09-11\11_30_33.CCD | |
| TEMP.CFG | 01-09-11\12_38_13.CCD | |
| TEMP.CFG | 01-09-11\13_45_52.CCD | |
| TEMP.CFG | 01-09-11\14_53_33.CCD | |
| TEMP.CFG | 01-09-11\16_01_13.CCD | |
| TEMP.CFG | 01-09-11\17_08_54.CCD | |
| TEMP.CFG | 01-09-11\18_16_35.CCD | |
| TEMP.CFG | 01-09-11\19_24_16.CCD | |
| TEMP.CFG | 01-09-11\20_31_57.CCD | |
| TEMP.CFG | 01-09-11\21_39_38.CCD | |
| TEMP.CFG | 01-09-11\22_47_17.CCD | |
| TEMP.CFG | 01-09-11\23_54_58.CCD | |

## 40.2 Overview Plots: System Performance, Temperatures and Earthfield Variations.

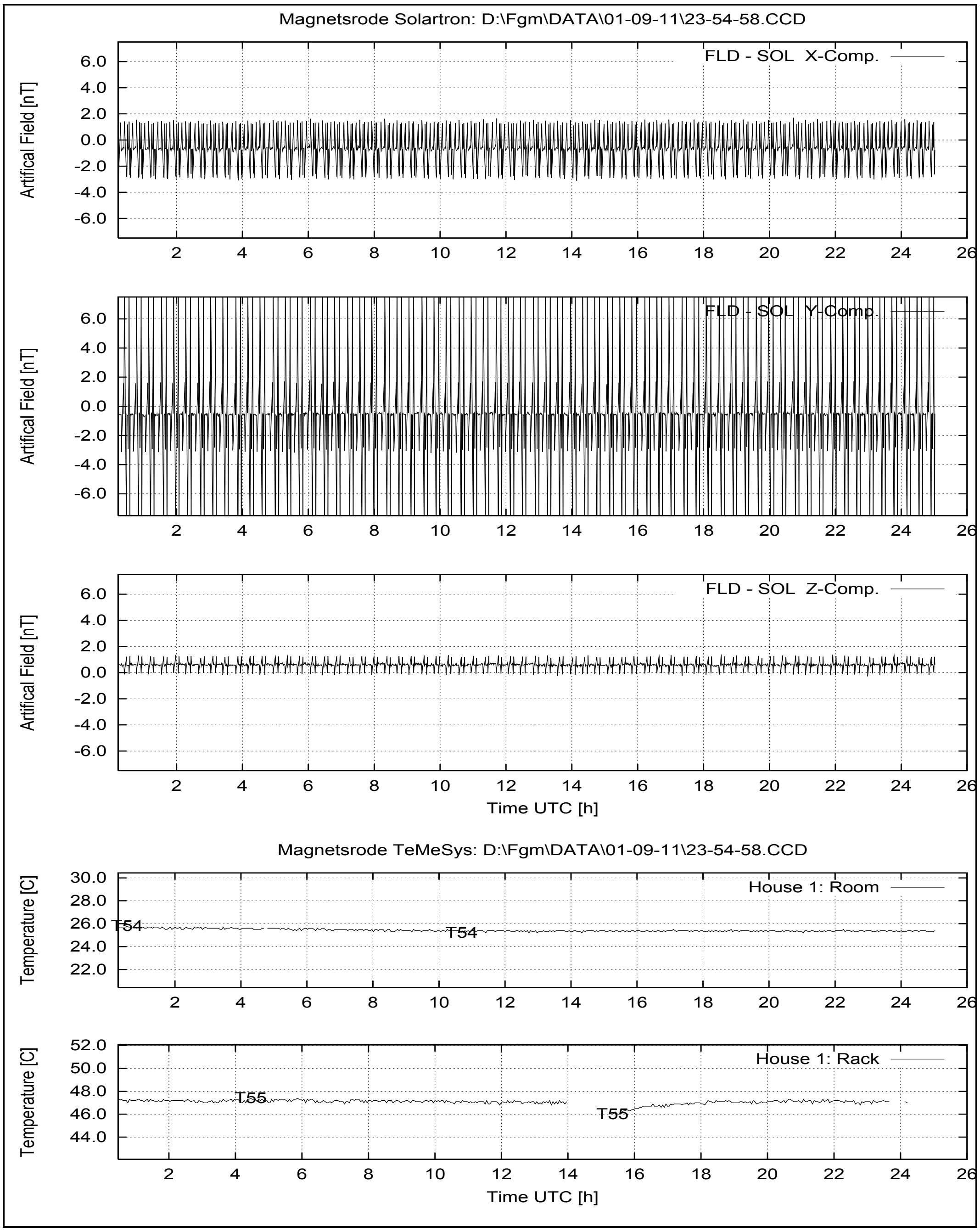


Figure 164: Sep. 11, 2001: System Performance: FLD – SOL; Temperatures House 1.

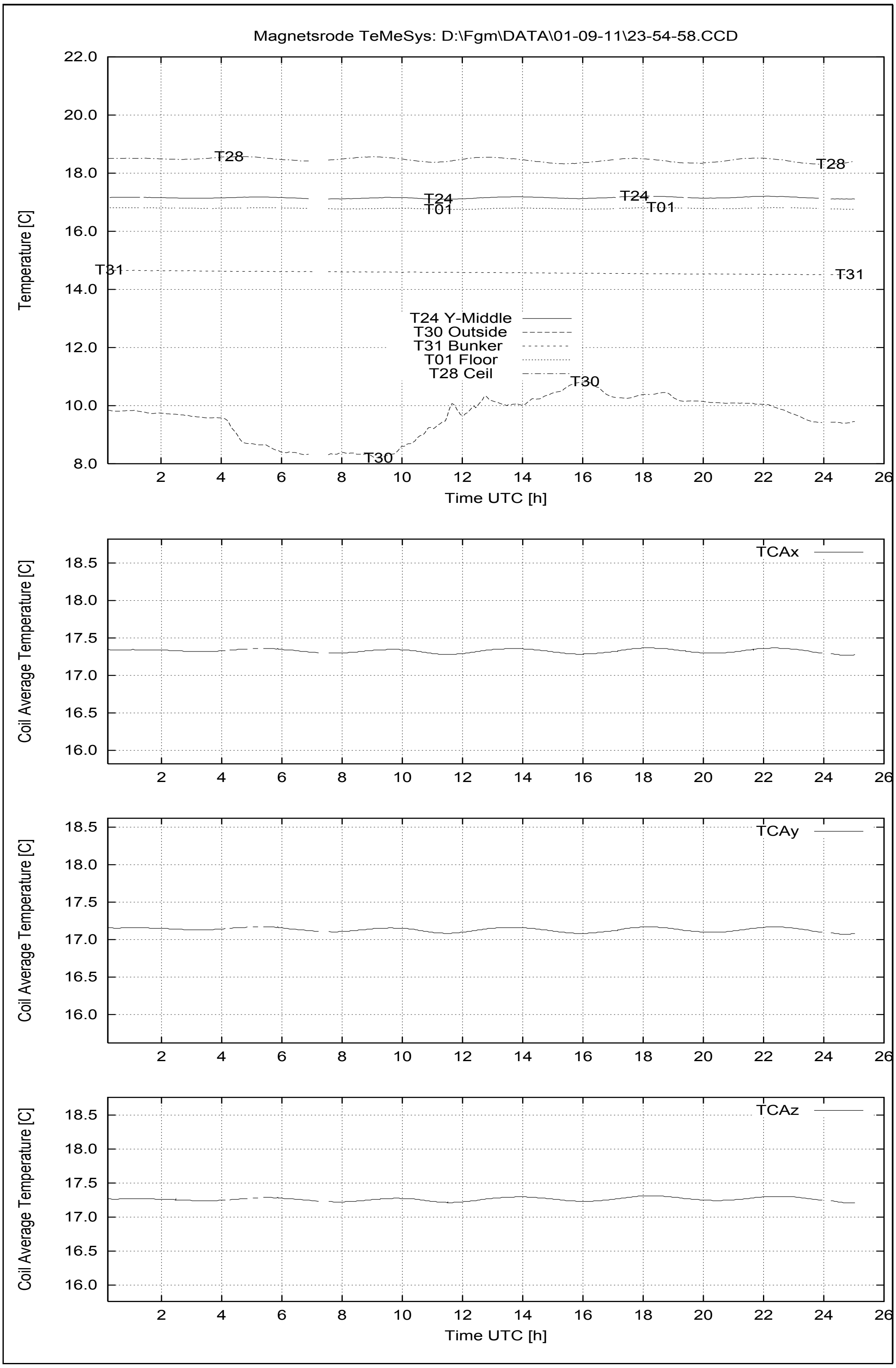


Figure 165: September 11, 2001: Temperatures House 2.

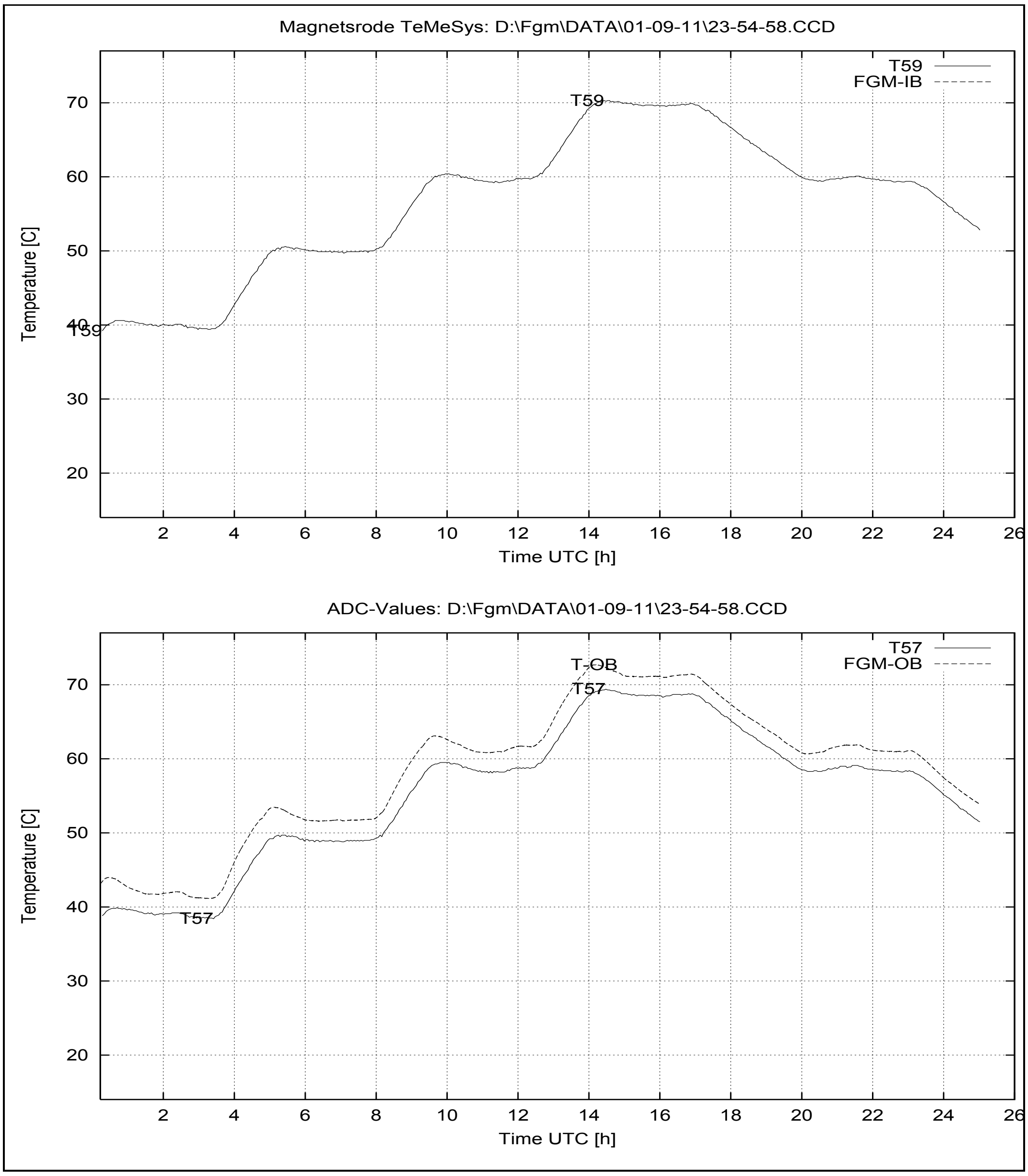


Figure 166: September 11, 2001: Sensor Temperatures at House 2.

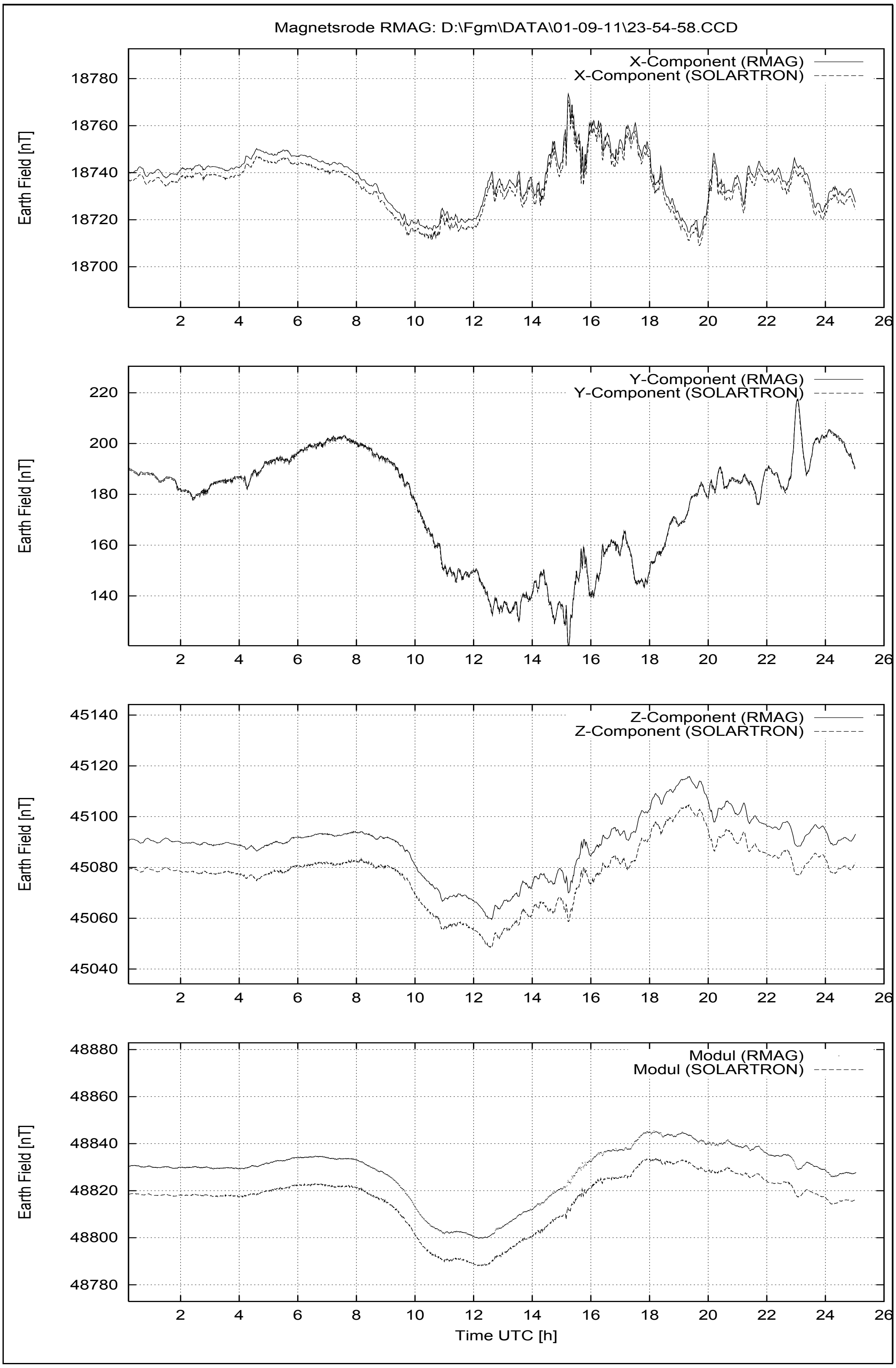


Figure 167: September 11, 2001: Earthfield variations.

# 41 Wednesday September 12, 2001

## 41.1 Temperature Calibration, Heating Cycle continued, DPU:FS, Sensors: FM

The heating cycle continued without any personal support today.

### 41.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-12\01_02_38.CCD | |
| TEMP.CFG | 01-09-12\02_10_18.CCD | |
| TEMP.CFG | 01-09-12\03_17_59.CCD | |
| TEMP.CFG | 01-09-12\04_25_39.CCD | |
| TEMP.CFG | 01-09-12\05_33_19.CCD | |
| TEMP.CFG | 01-09-12\06_40_59.CCD | |
| TEMP.CFG | 01-09-12\07_49_00.CCD | |
| TEMP.CFG | 01-09-12\08_56_40.CCD | |
| TEMP.CFG | 01-09-12\10_04_21.CCD | |
| TEMP.CFG | 01-09-12\11_12_02.CCD | |
| TEMP.CFG | 01-09-12\12_19_42.CCD | |
| TEMP.CFG | 01-09-12\13_27_23.CCD | |
| TEMP.CFG | 01-09-12\14_35_29.CCD | |
| TEMP.CFG | 01-09-12\15_43_38.CCD | |
| TEMP.CFG | 01-09-12\16_51_18.CCD | |
| TEMP.CFG | 01-09-12\17_58_58.CCD | |
| TEMP.CFG | 01-09-12\19_06_39.CCD | |
| TEMP.CFG | 01-09-12\20_14_19.CCD | |
| TEMP.CFG | 01-09-12\21_21_59.CCD | |
| TEMP.CFG | 01-09-12\22_29_40.CCD | |
| TEMP.CFG | 01-09-12\23_37_21.CCD | |

## 41.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

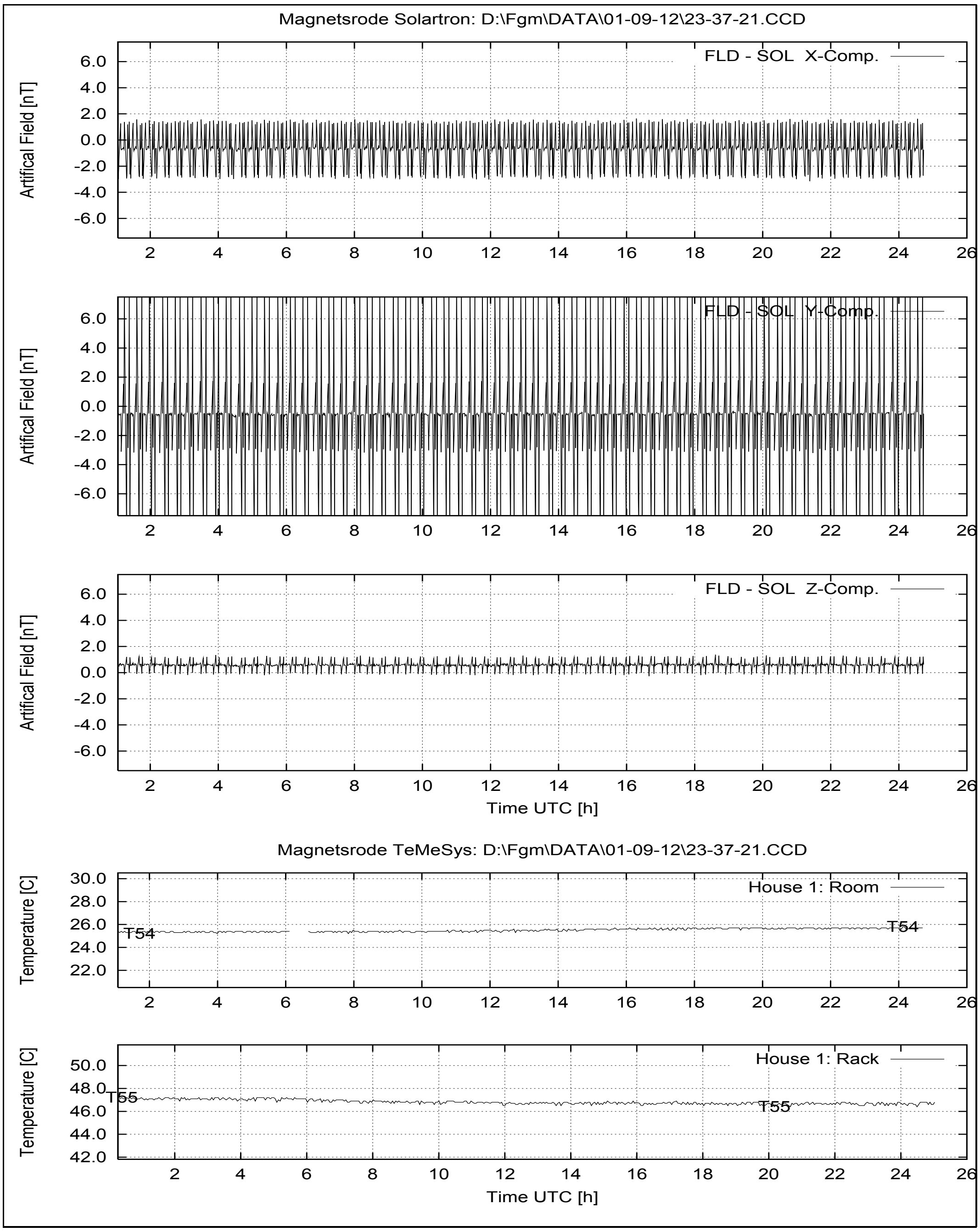


Figure 168: Sep. 12, 2001: System Performance: FLD – SOL; Temperatures House 1.

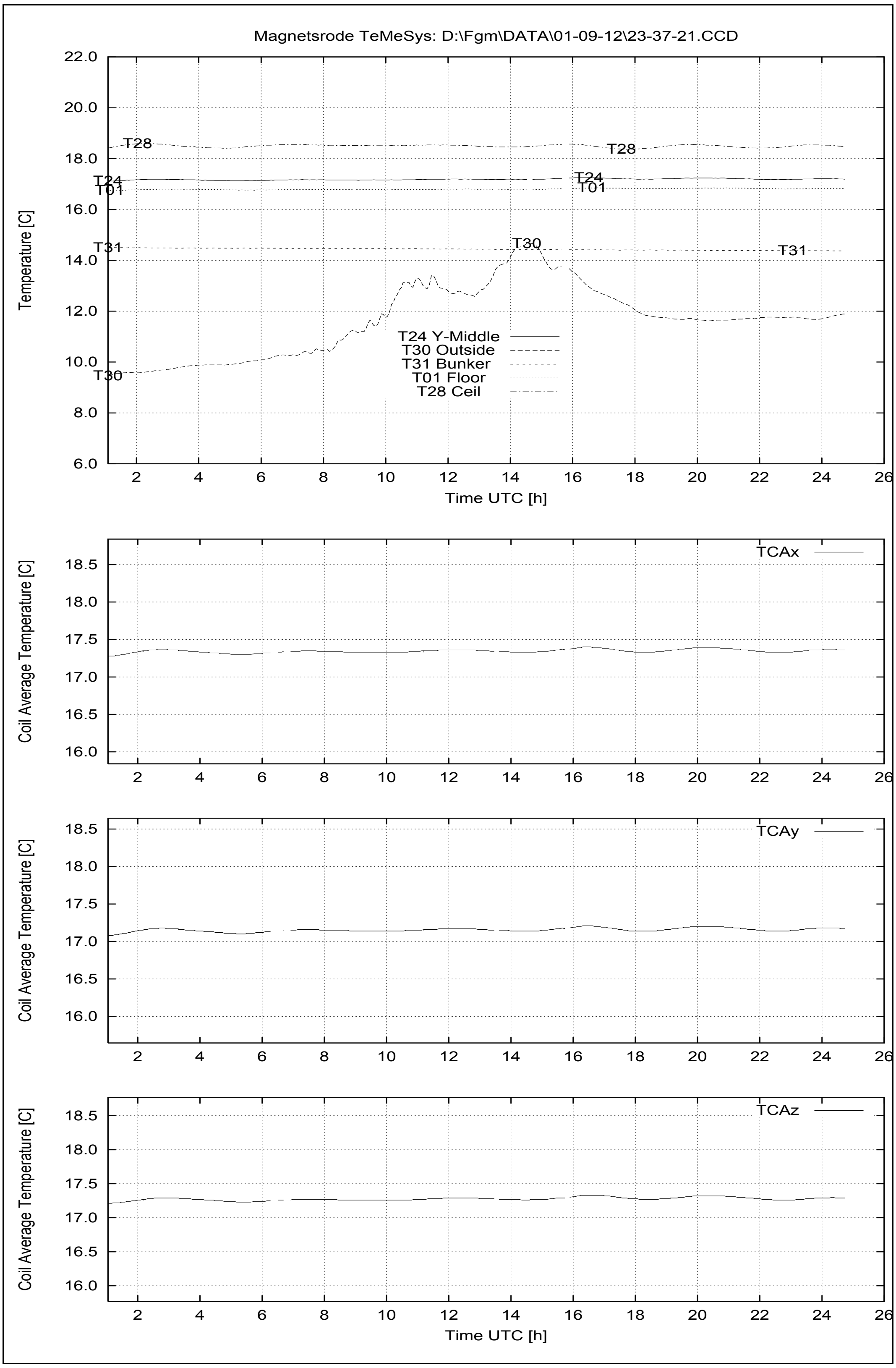


Figure 169: September 12, 2001: Temperatures House 2.

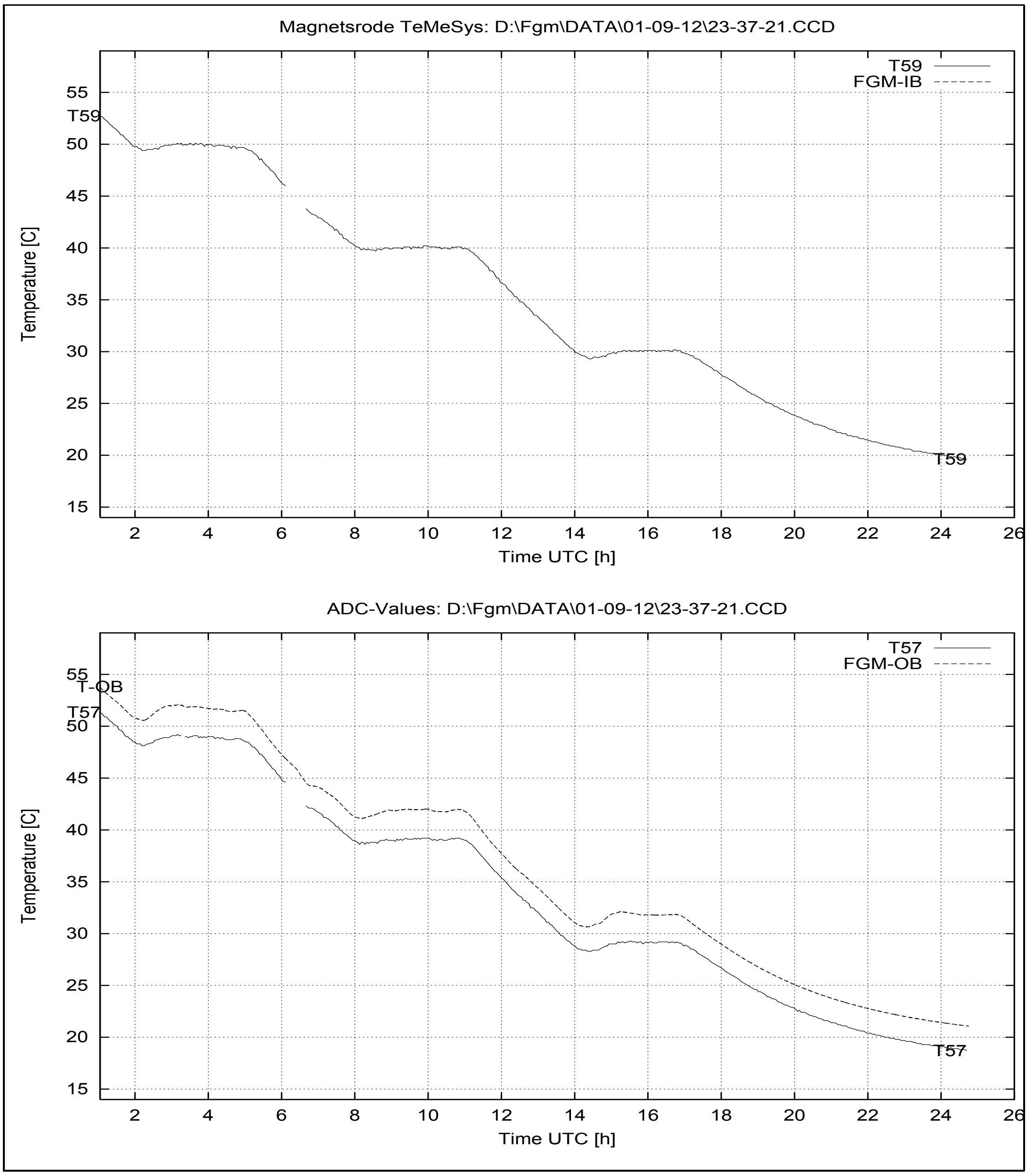


Figure 170: September 12, 2001: Sensor Temperatures at House 2.

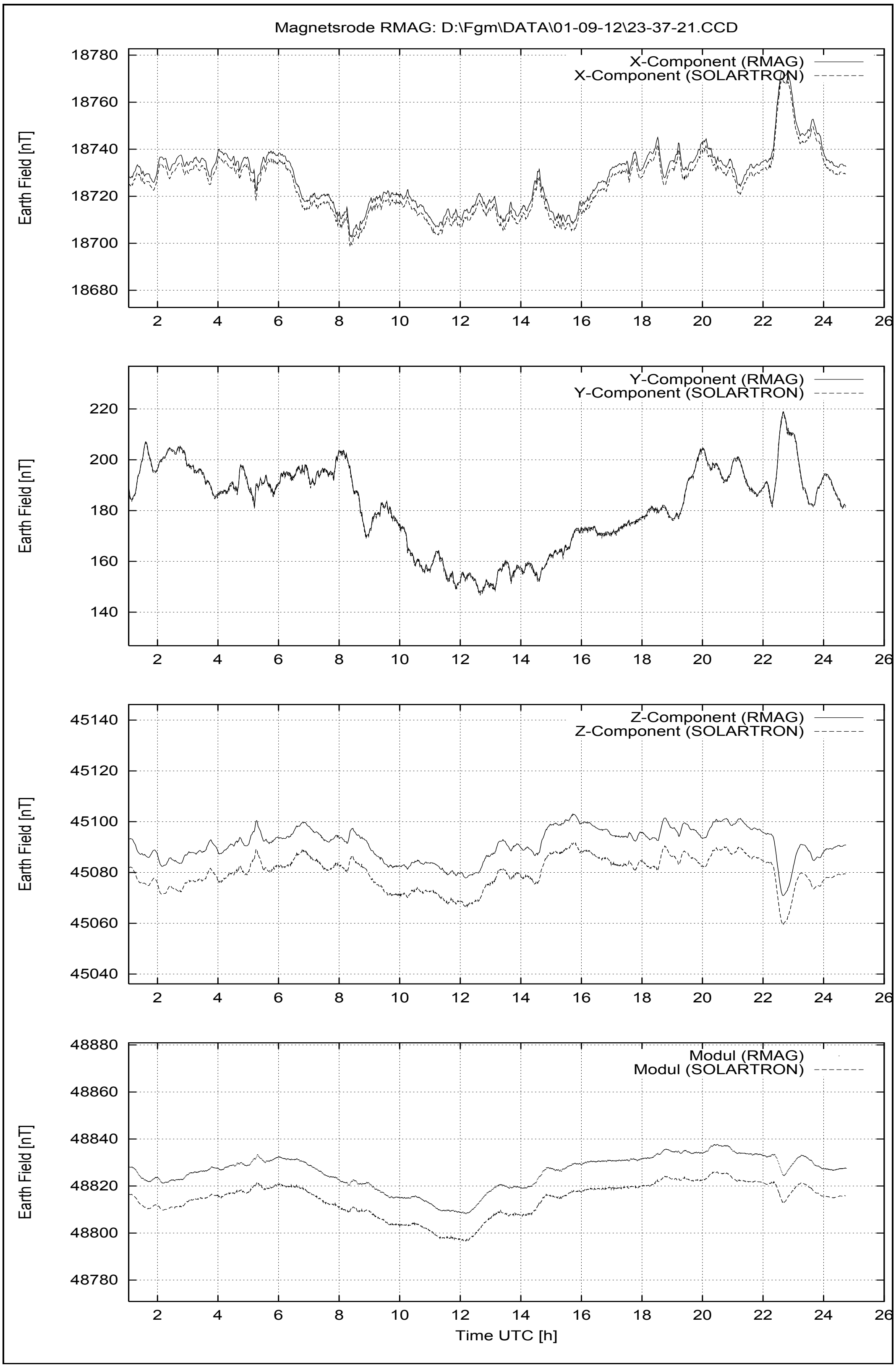


Figure 171: September 12, 2001: Earthfield variations.

# 42 Thursday September 13, 2001

## 42.1 Temperature Calibration, Heating Cycle continued, DPU:FS, Sensors: FM

The heating cycle continued without until the early morning without any problems – finally.

### 42.1.1 Data

| Configuration File | CCD File | Remark |
|---|---|---|
| TEMP.CFG | 01-09-13\00_45_03.CCD | |
| TEMP.CFG | 01-09-13\01_52_44.CCD | |
| TEMP.CFG | 01-09-13\03_00_24.CCD | |
| TEMP.CFG | 01-09-13\04_08_04.CCD | |
| TEMP.CFG | 01-09-13\05_15_45.CCD | |
| TEMP.CFG | 01-09-13\06_23_26.CCD | |

ROSETTA calibration completed.

## 42.2 Overview Plots: System Performance, Temperatures and Earth-field Variations.

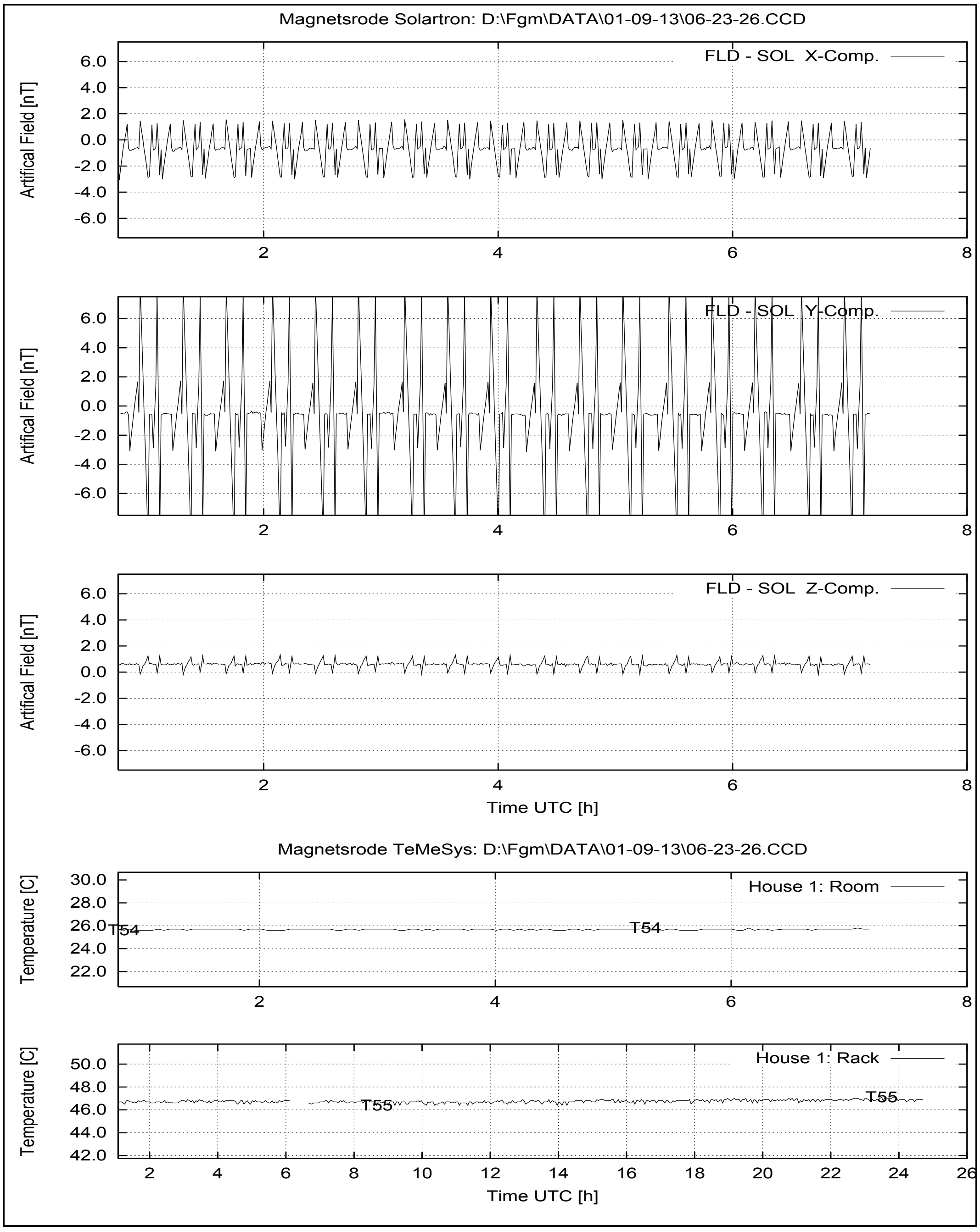


Figure 172: Sep. 13, 2001: System Performance: FLD – SOL; Temperatures House 1.

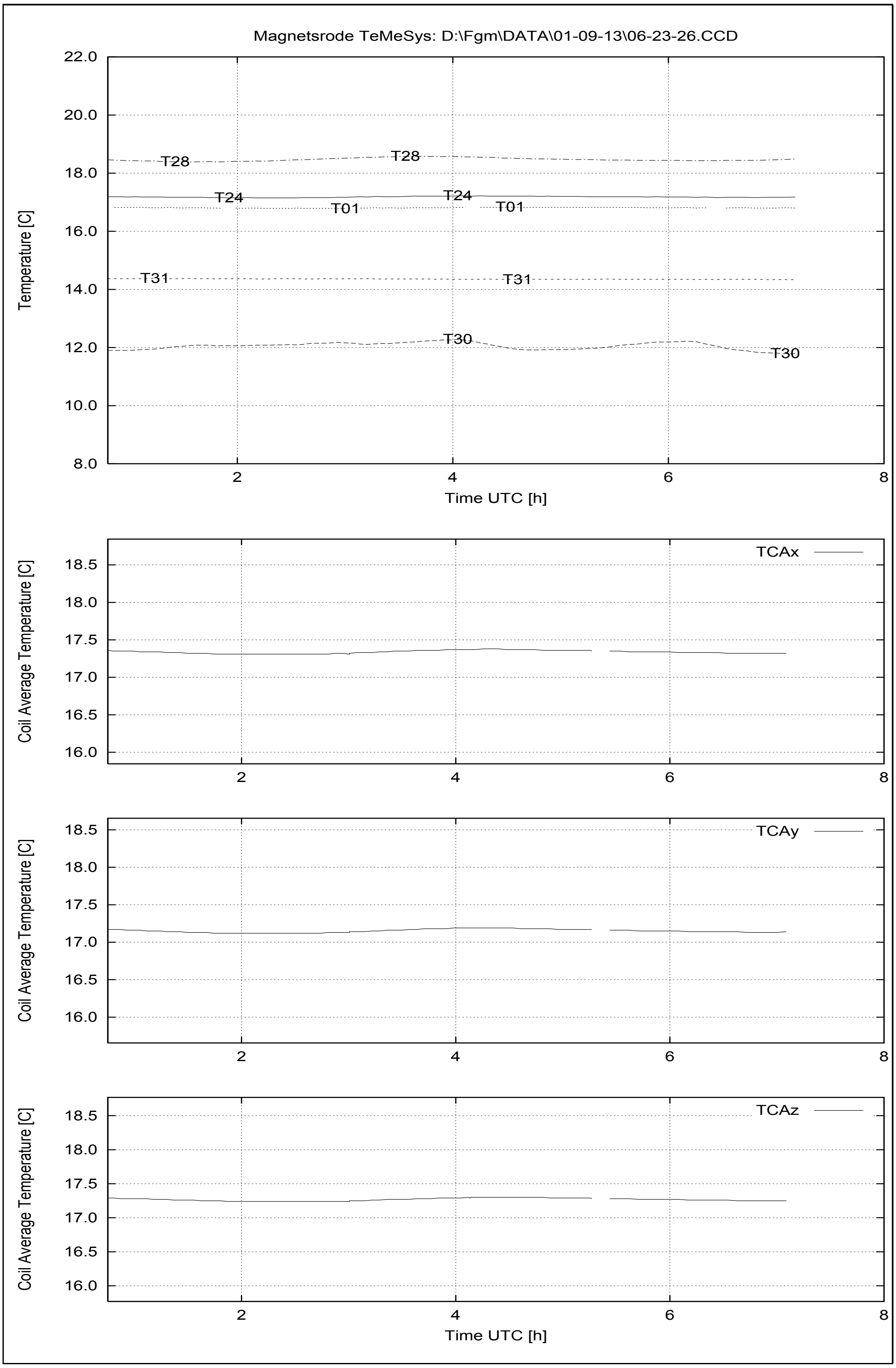


Figure 173: September 13, 2001: Temperatures House 2.

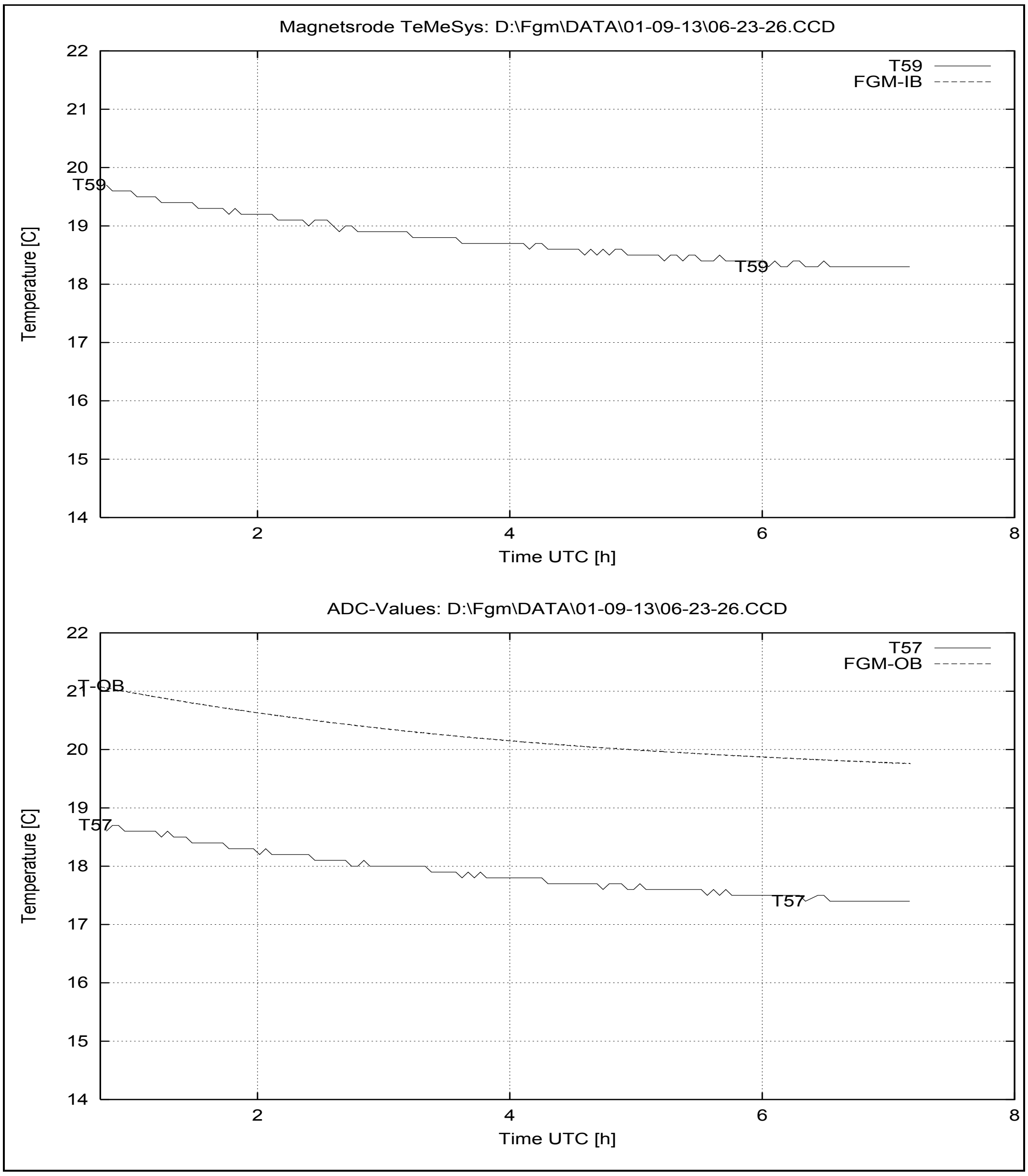


Figure 174: September 13, 2001: Sensor Temperatures at House 2.

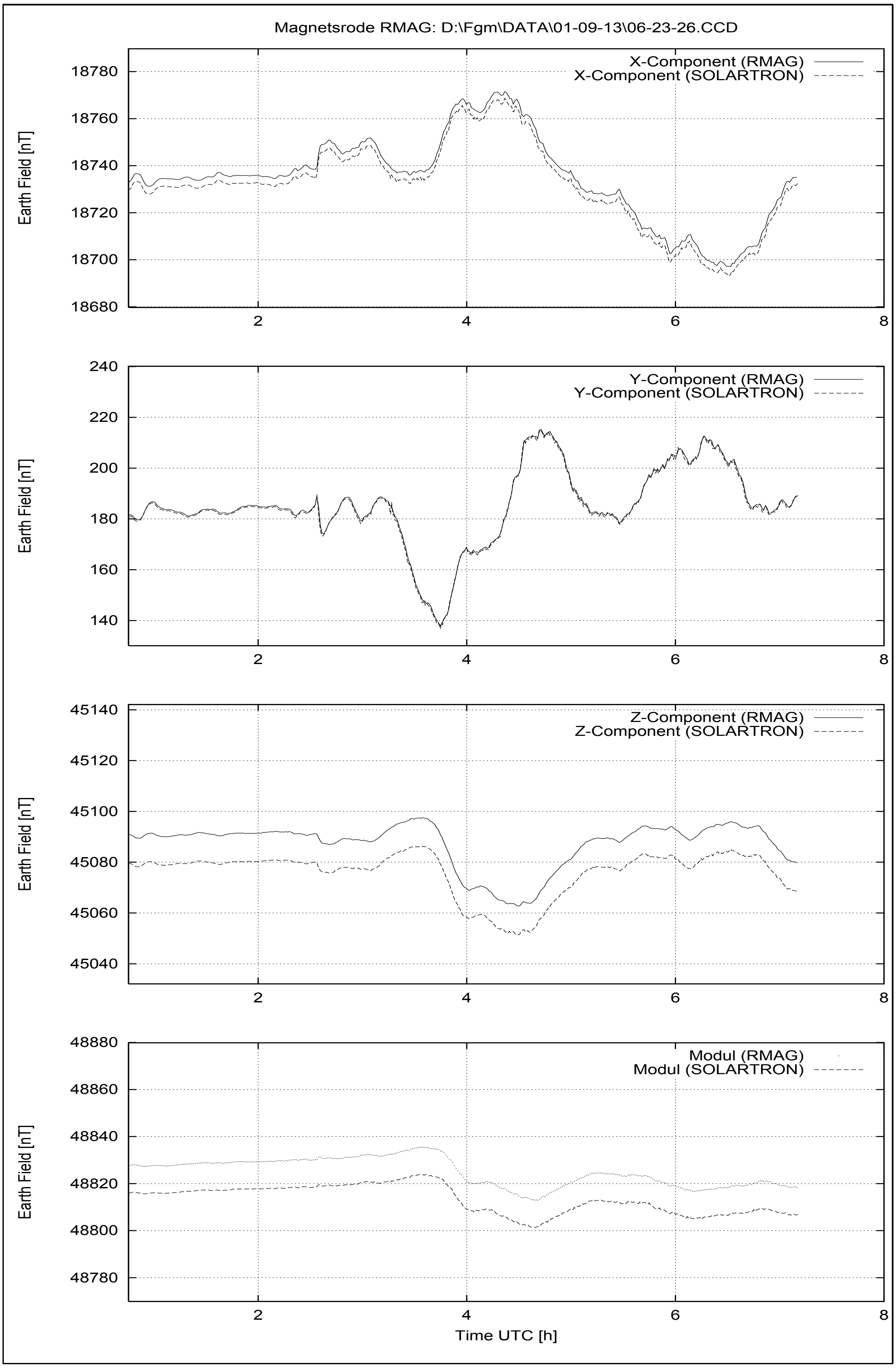


Figure 175: September 13, 2001: Earthfield variations.

## 43 The End

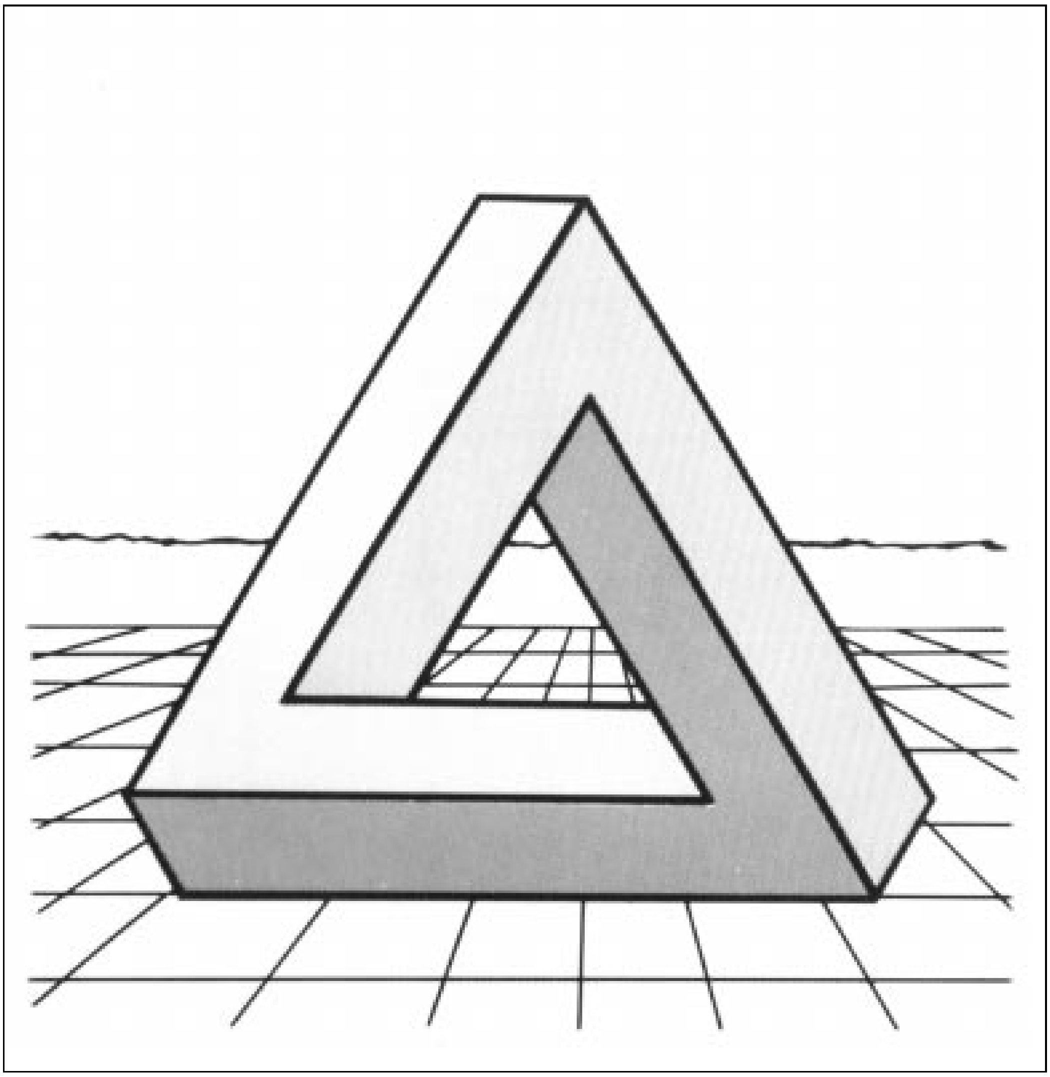

Figure 176: Going straight forward on the surface leads directly to perfect calibrations.

# A Overview Plots

## A.1 General Remarks

The overview plots for each day are produced using a lot of special batches and scripts after the data have been extracted from the `*.CCD` data files. The extraction was performed using the software `CCD2T`. This program extracts time series of a specific data type from the data files. Tables 6 and 7 shows some of the extraction setup topics. Especially the nominal averaging rates.

For the ROSETTA calibration the two different types of ADC frame within the `*.CCD` data files are of special interest. The ROSETTA specific data recording program `ROSEterm` records the digital data from the experiment as standard ADC frames using the ident ROSETTA.

| Date / nom.Av. | RMAG 6 | TEMA 1 | TEMB 1 | TCA 1 | SOL 1 | PROT 10 | ADC (DT5816A) 60 | ADC (ROSETTA) — |
|---|---|---|---|---|---|---|---|---|
| 0308 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0309 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0310 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0311 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0312 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0313 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0314 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0315 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0316 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0317 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0318 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | — |
| 0319 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0320 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0321 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0322 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0323 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0324 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0325 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0326 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0327 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0328 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0329 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0405 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0406 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |

Table 6: Time serias extraction list 1.

For PREMA, SOL, PROT and ADC some special setups are necessary for `CCD2T`. These parameters can only be set using the *Set Parameter* function of the program for extraction of this data type. After the setup has been performed the program should be terminated to save the actual configuration. Now *Set Parameter* can be called using a extraction list. The extraction lists are named `RO_mmdd.EXT`. They are created by the function *Prepare Extraction List* from `CCD2T`.

After the data have been extracted from the `*.CCD` files they have to be plotted. This is done using some batches to copy the data to standard names, call the plot program `GnuPlot` with an appropriate script and copy the plots back to specific names. The

| Date / nom.Av. | RMAG 6 | TEMA 1 | TEMB 1 | TCA 1 | SOL 1 | PROT 10 | ADC (DT5816A) 60 | ADC (ROSETTA) 200 |
|---|---|---|---|---|---|---|---|---|
| 0420 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0421 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0422 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0423 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0424 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0425 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0426 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0427 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0428 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0429 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0430 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0501 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0502 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0828 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0829 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0830 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0831 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0901 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0902 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0903 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0906 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0907 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0908 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0909 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0910 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0911 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0912 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |
| 0913 | 6 | 1 | 1 | 1 | 1 | 10 | 60 | 200 |

Table 7: Time serias extraction list 2.

following table A.1 lists the names of the plot files, the batches, scripts and the nominal vertical size parameter. The abbreviation `mmdd` will be filled with two digits month and day.

| Overview | Files | Batch | Script | Size |
|---|---|---|---|---|
| 1 | FDAmmddX.EPS | SOLDELTA.BAT | SOLDELTA.INI | 0.50 |
| | FDAmmddY.EPS | SOLDELTA.BAT | SOLDELTA.INI | 0.50 |
| | FDAmmddZ.EPS | SOLDELTA.BAT | SOLDELTA.INI | 0.50 |
| | TmmddG.EPS | Temp_HS1.BAT | Temp_HS2.INI | 0.35 |
| | TmmddH.EPS | Temp_HS1.BAT | Temp_HS2.INI | 0.35 |
| 2 | TmmddA.EPS | Temp_ROS.BAT | Temp_ROS.INI | 1.00 |
| | TmmddB.EPS | Temp_ROS.BAT | Temp_ROS.INI | 0.55 |
| | TmmddC.EPS | Temp_ROS.BAT | Temp_ROS.INI | 0.55 |
| | TmmddD.EPS | Temp_ROS.BAT | Temp_ROS.INI | 0.55 |
| 3 | TmmddI.EPS | Temp_RO2.BAT | Temp_RO2.INI | 1.00 |
| | TmmddO.EPS | Temp_RO2.BAT | Temp_RO2.INI | 1.00 |
| 4 | Rmmdd00.EPS | RMAGSOL.BAT | RMAGSOL.INI | 0.66 |
| | Rmmdd01.EPS | RMAGSOL.BAT | RMAGSOL.INI | 0.66 |
| | Rmmdd02.EPS | RMAGSOL.BAT | RMAGSOL.INI | 0.66 |
| | RmmddB02.EPS | RMAGPROT.BAT | RMAGPROT.INI | 0.66 |
| special | Zmmdd00.EPS | STABREP.BAT | STABREP.INI | 0.66 |
| | Zmmdd01.EPS | STABREP.BAT | STABREP.INI | 0.66 |
| | Zmmdd02.EPS | STABREP.BAT | STABREP.INI | 0.66 |
| | ZmmddB02.EPS | STABREP.BAT | STABREP.INI | 0.66 |

Table 8: Batches and scripts to produce the overview plots types 1 to 4. The figures 136, 137, 138 and 139 (the first at page 202) are examples for these types. The Sensor Temperature Plots (figure 138, page 204) are of special interest for the Temperature Calibration Cycles. The special type is only used for documenting the stability measurement from March 3rd to March 19th. For an example see the plots starting page 260.

## A.2 Remarks on Calibration Specials

### A.2.1 System Performance, the FLD−SOL Problem

Due to the fact that the data are recorded on `*.CCR` files to be transformed to real `*.CCD` files off line, which is necessary for calculating the FLD–Frames from the SOLARTRON readings, the original FLD–Frames are lost. The calculation of the system performance (this is symbolic written as FLD−SOL) is no longer possible on the `*.CCD` files. This calculation has to be performed on the original recorded data `*.CCR`. So the batch `SOLDELTA.BAT` should be called using the SOLARTRON measurement time series data extracted from the `*.CCR` files. They have to be extracted from the archive files `YYMMDDr.ZIP`. To extract the time series from those files (`*.CCR`) they have to be renamed do `*.CCD`. All this was done preparing this document.

# B Stability Measurements

Prior to all the calibration measurements the system zero field stability was investigated.

## B.1 Setup

During a long period only zero fields are applied in one minute measurement steps. One run lasts about 1 hour. The zero field was measured using the so called ZopfMag, which is the coil system reference magnetometer, in the high resolution range (1 nT/mV). The vector rate was set to 1 Hz. For the following plot 60 vectors are averaged so the resulting "dot rate" is approximately 1 per minute.

The ZopfMag was placed in the center of the coil system. See the following picture to get an impression of the mechanical setup.

In the following day by day the standard overview plots (see B.2 at page 259) are shown. In addition the second plot on all the days show the zero field measurements from the ZopfMag. There was no offset measurement available, therefore the offset of the ZopfMag is *not* compensated. The fields measured are the offset plus the residual field from the system.

## B.2 Thursday March 8, 2001

### B.2.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

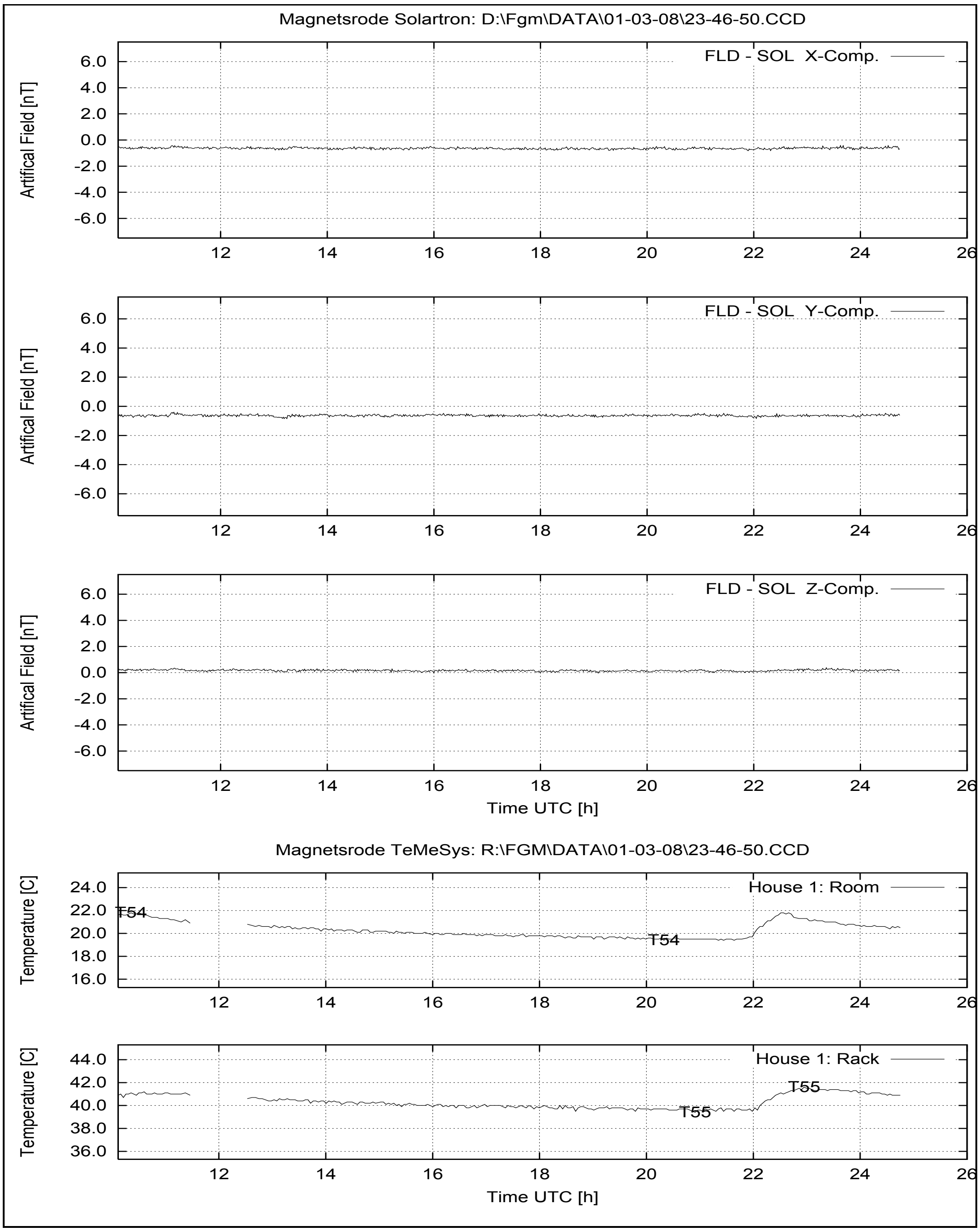


Figure 177: March 8, 2001: System Performance: FLD – SOL; Temperatures at House 1.

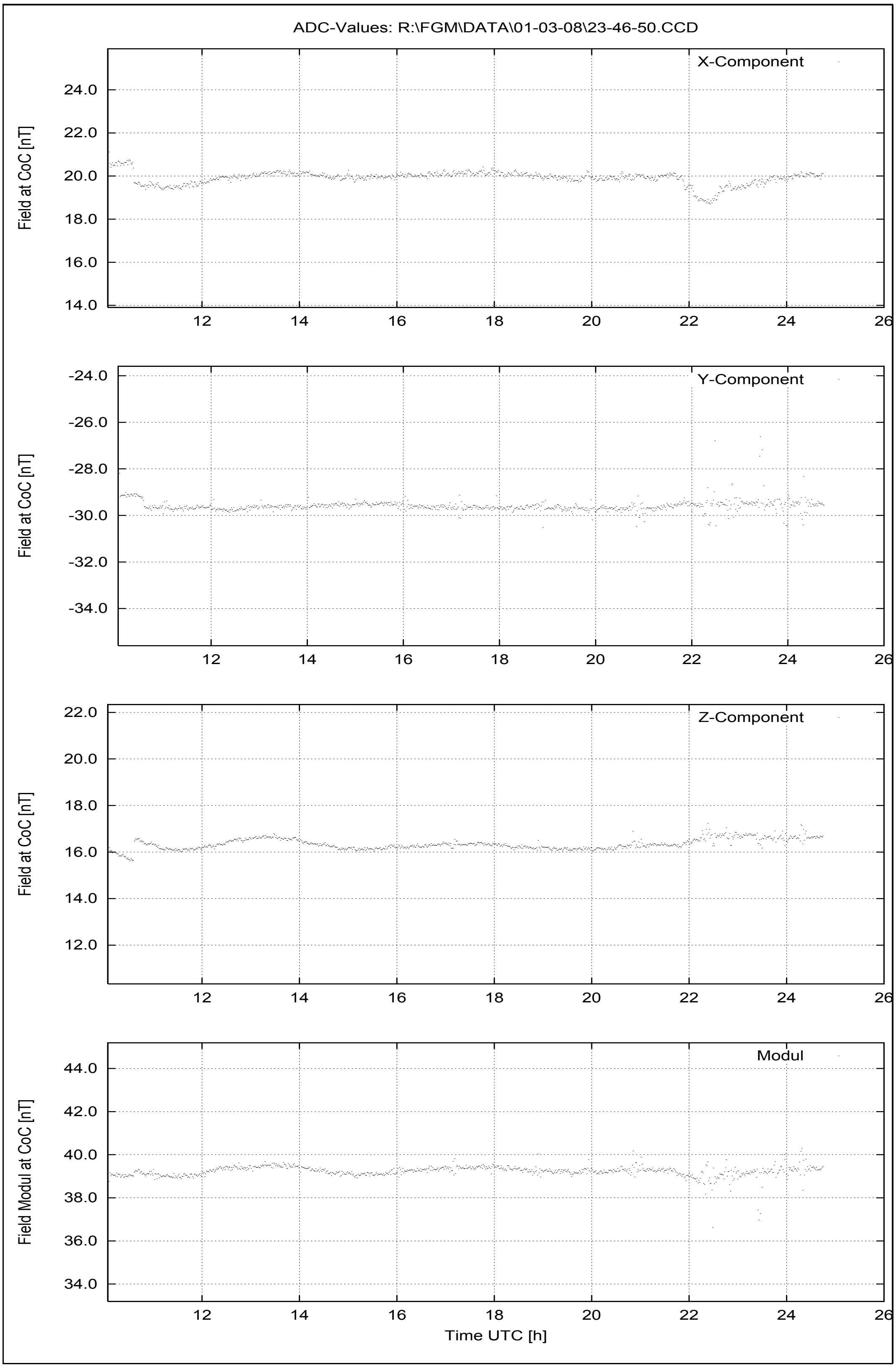


Figure 178: March 8, 2001: Zero field at CoC.

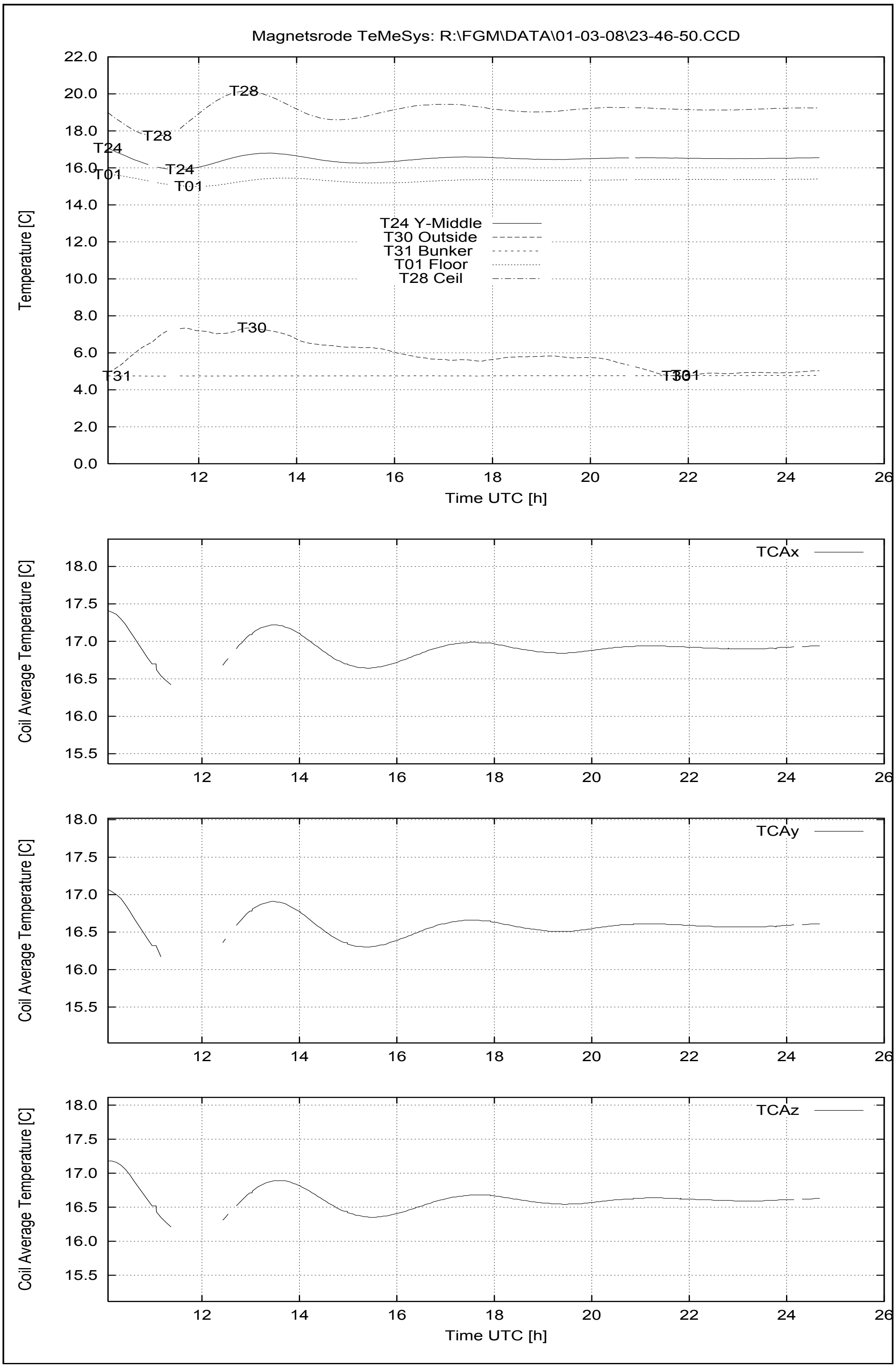


Figure 179: March 8, 2001: Temperatures House 2.

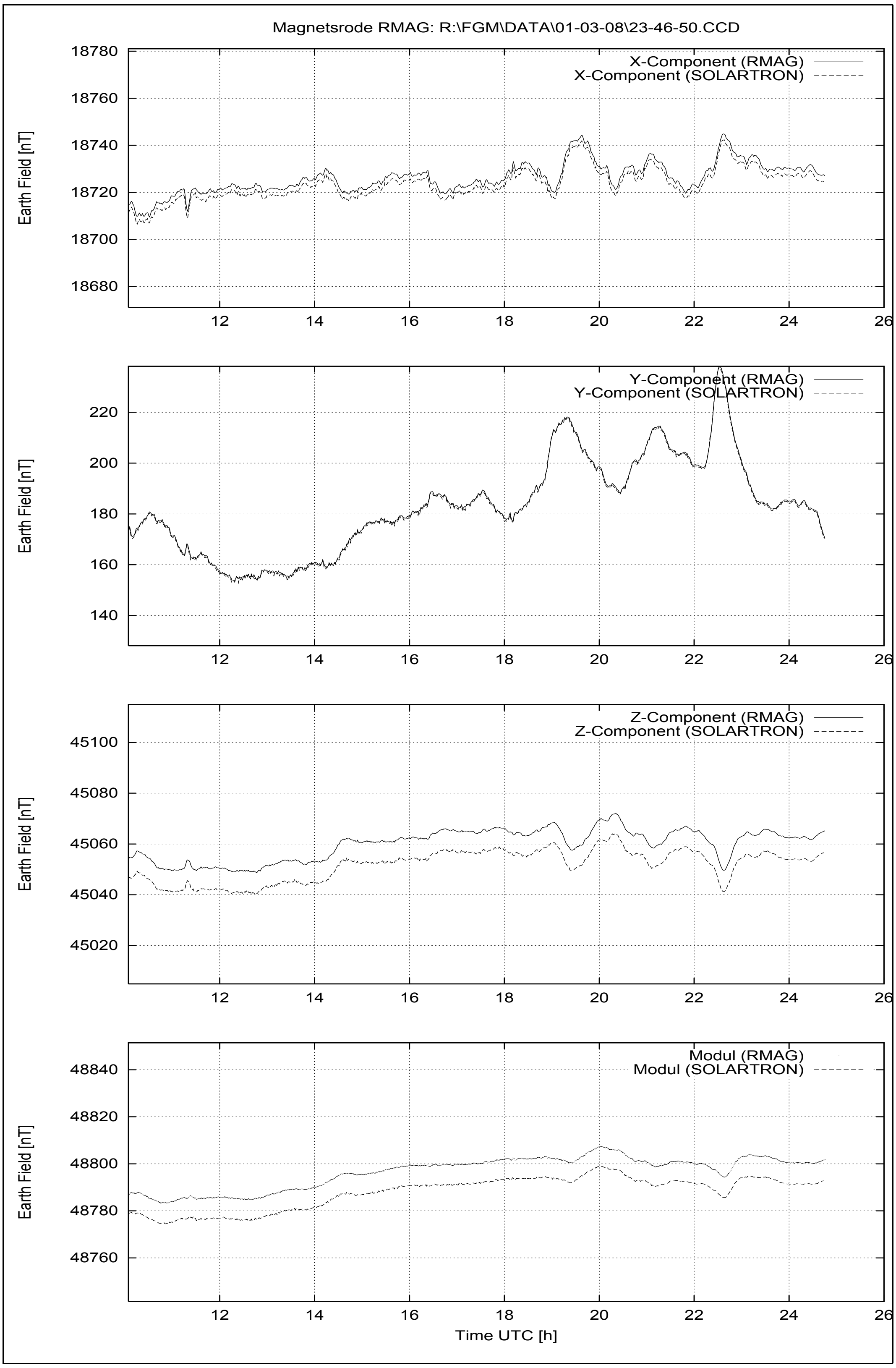


Figure 180: March 8, 2001: Earth field variations.

## B.3 Friday March 9, 2001

### B.3.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

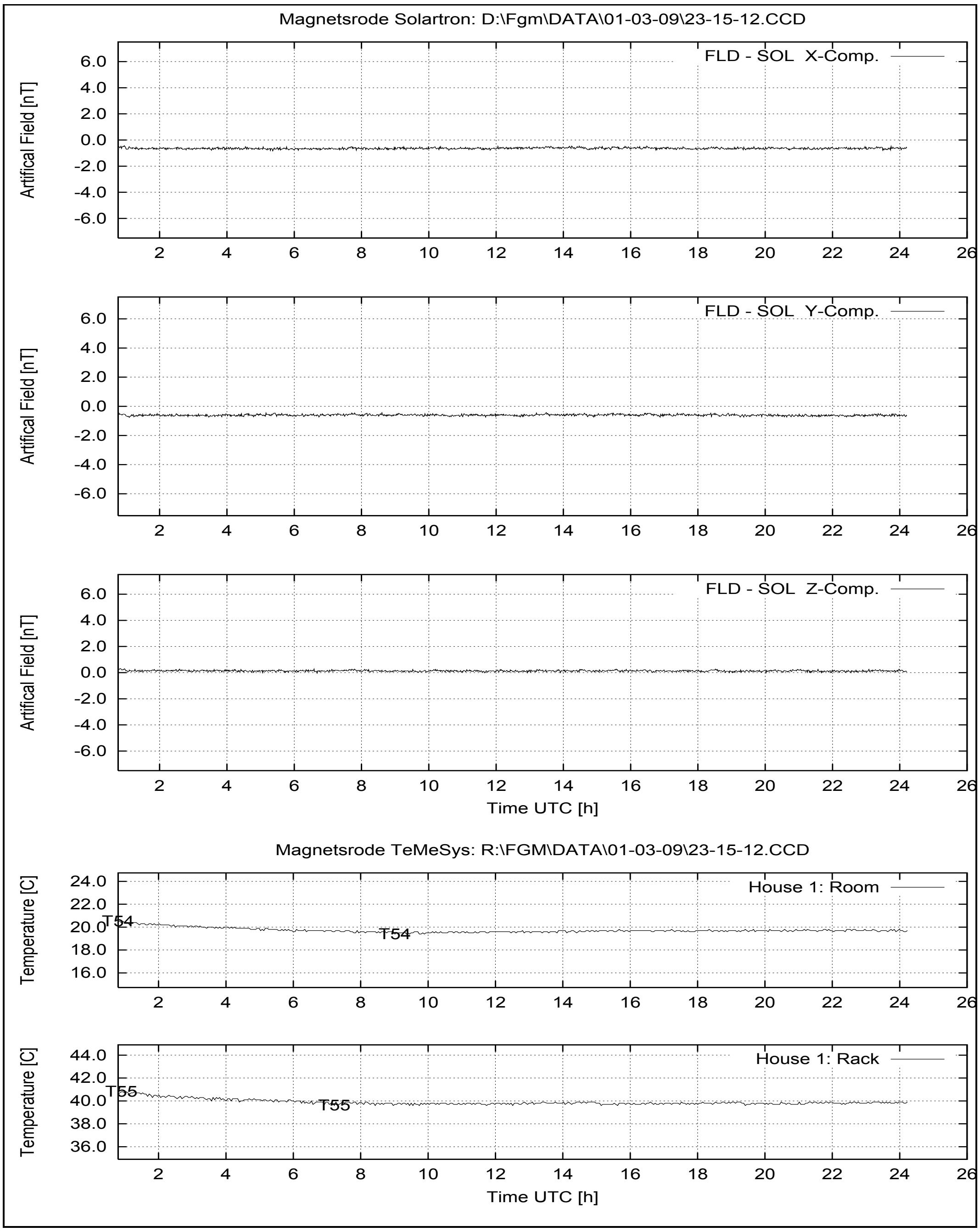


Figure 181: March 9, 2001: System Performance: FLD – SOL; Temperatures at House 1.

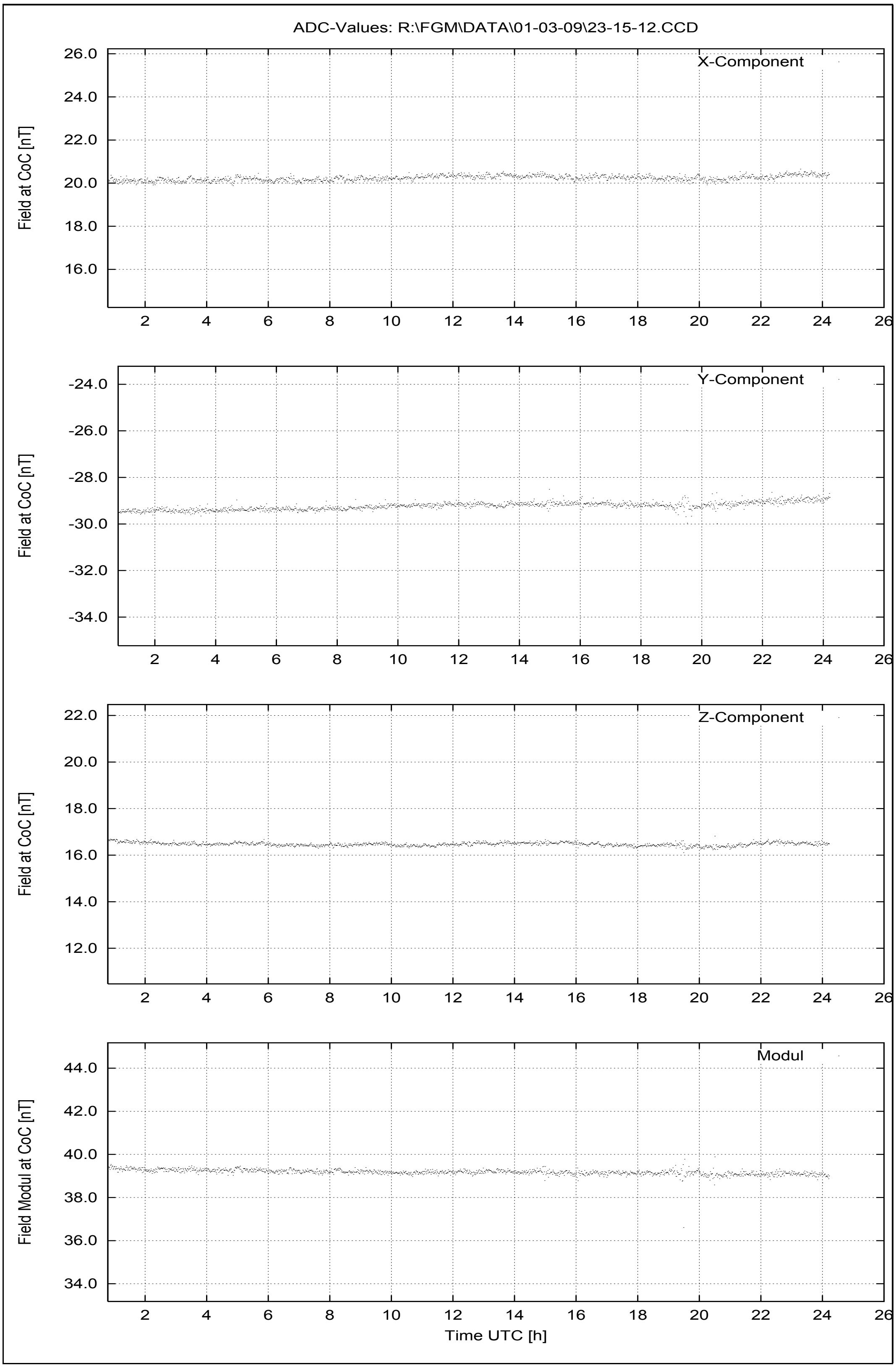


Figure 182: March 9, 2001: Zero field at CoC.

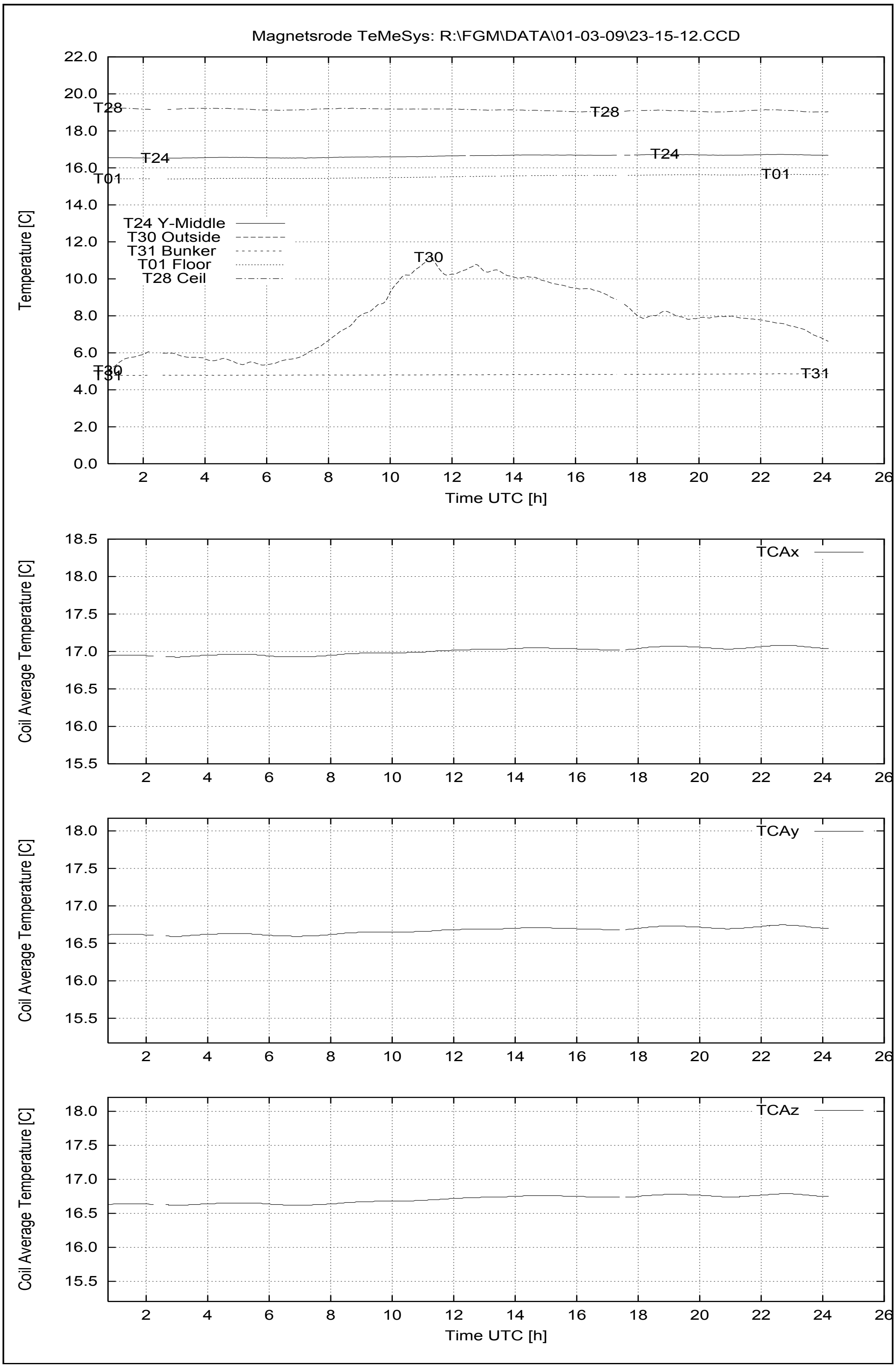


Figure 183: March 9, 2001: Temperatures House 2.

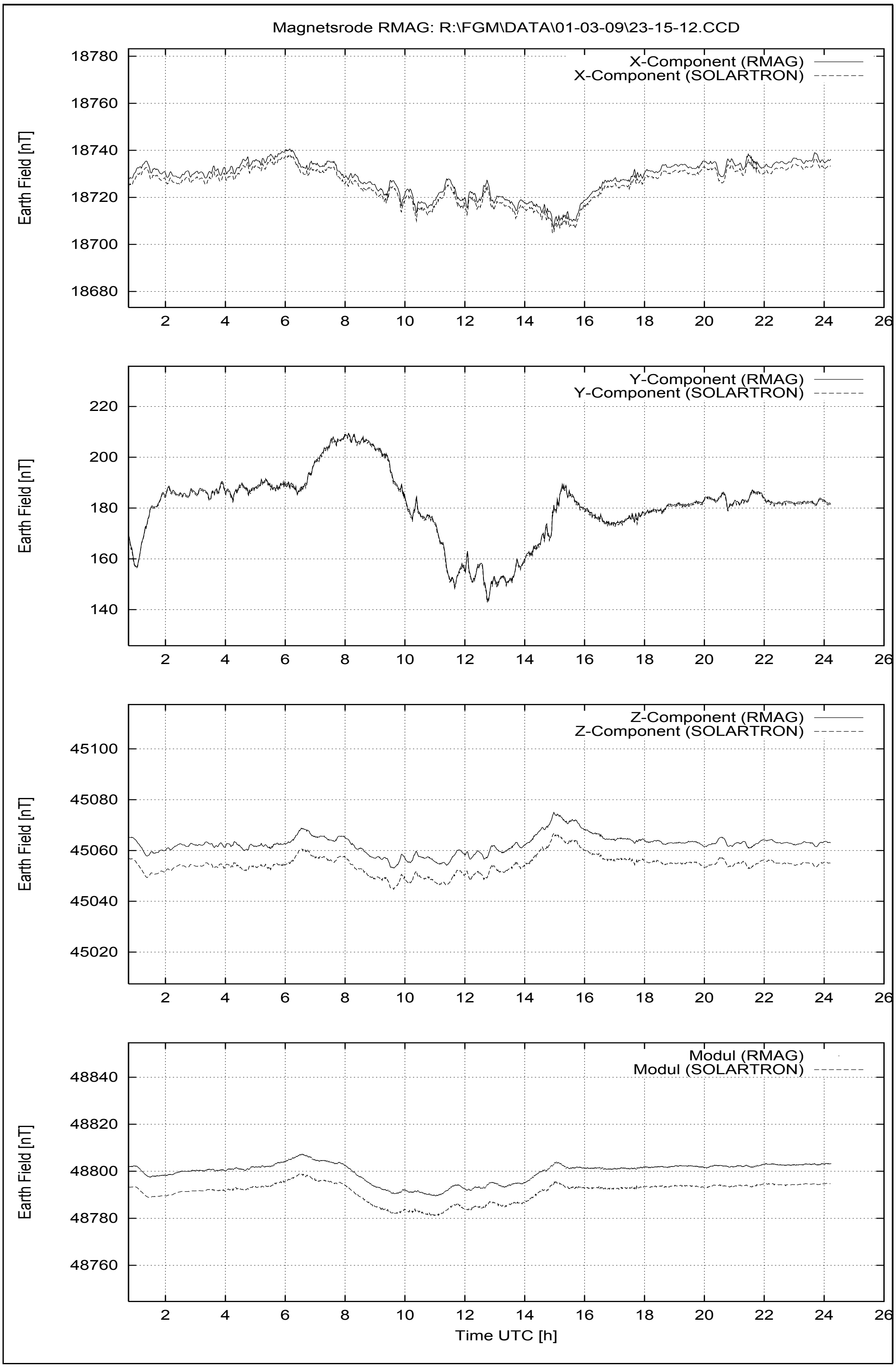


Figure 184: March 9, 2001: Earthfield variations.

## B.4 Saturday March 10, 2001

### B.4.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

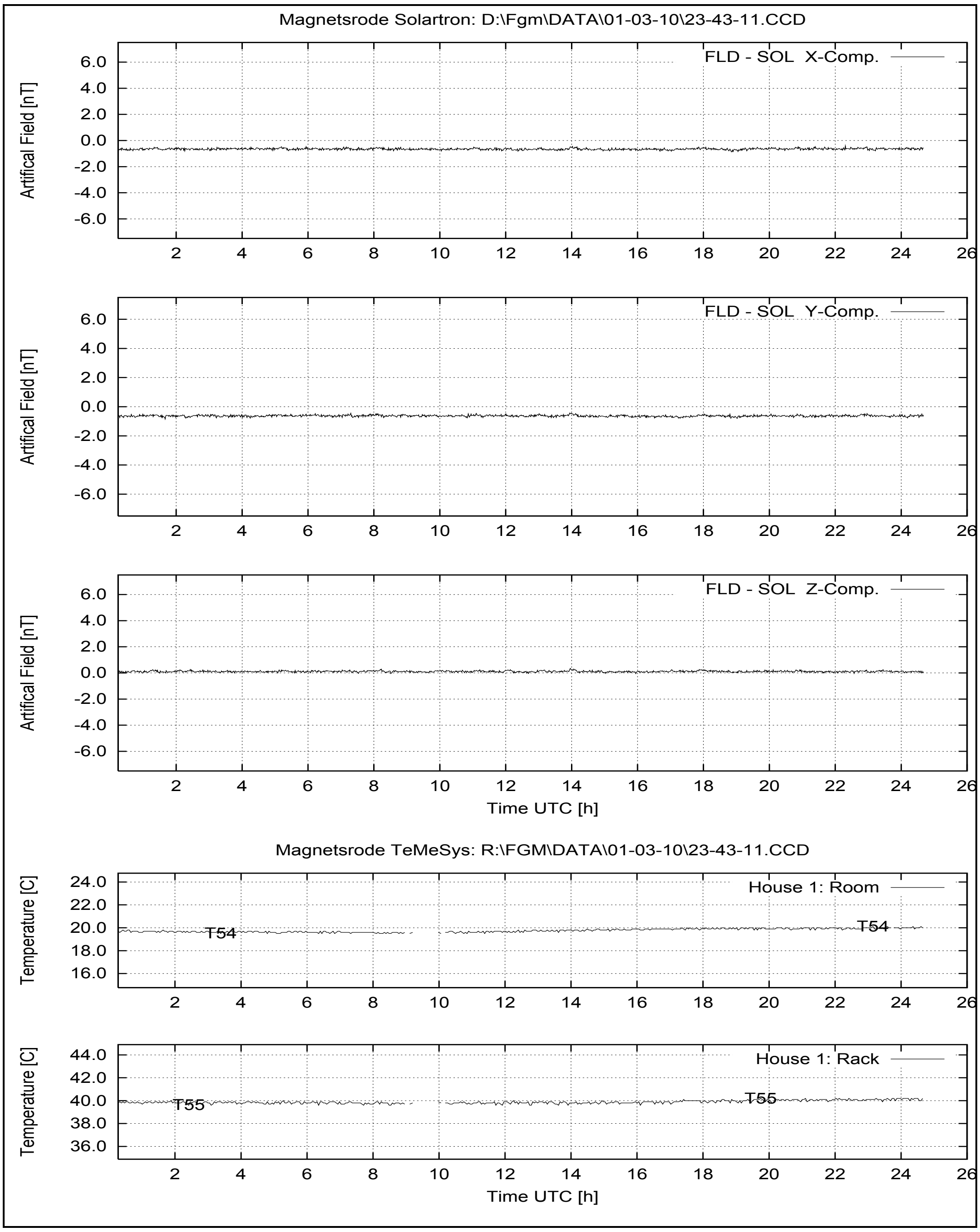


Figure 185: March 10, 2001: System Performance: FLD – SOL; Temperatures at House 1.

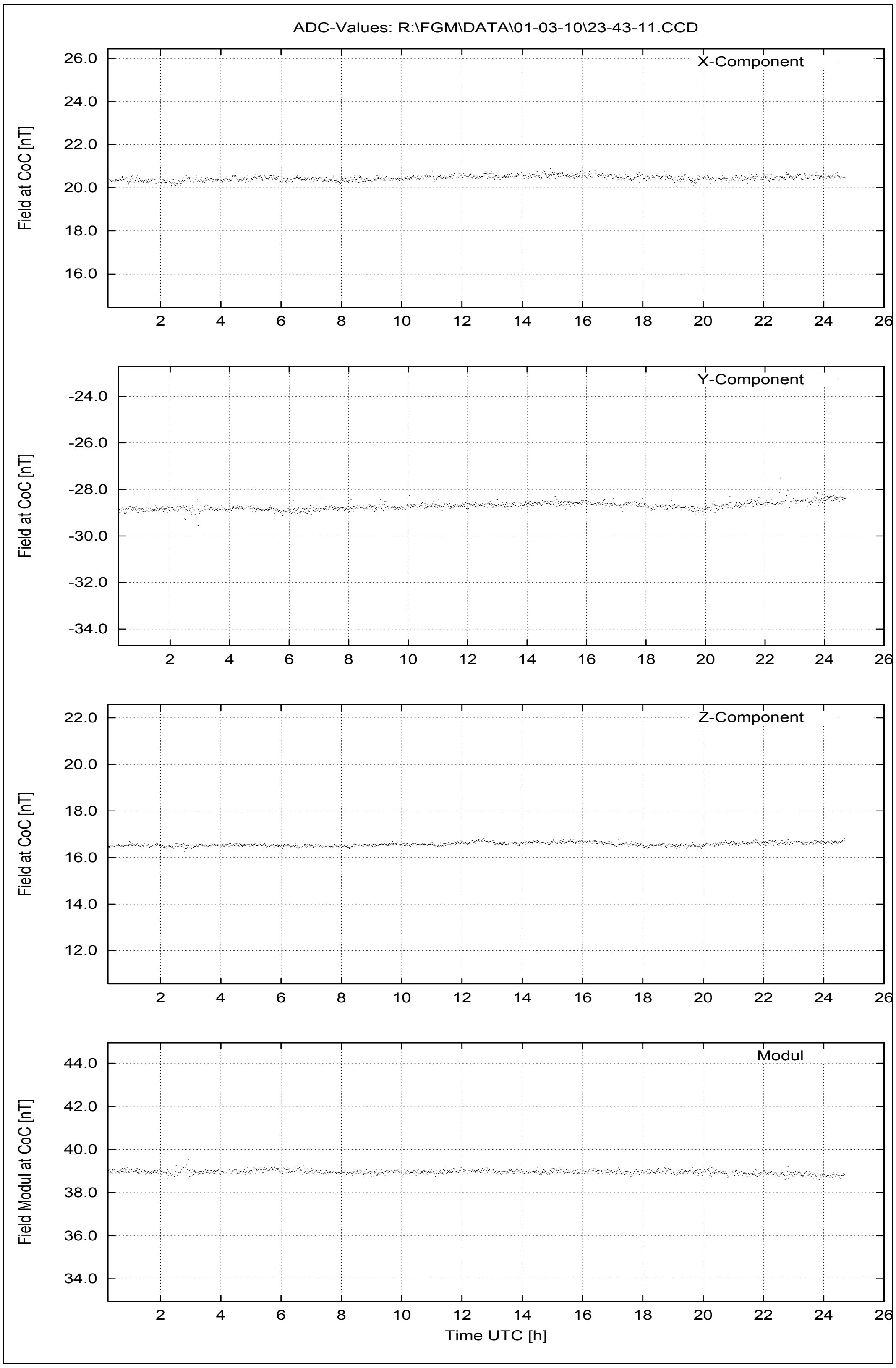


Figure 186: March 10, 2001: Zero field at CoC.

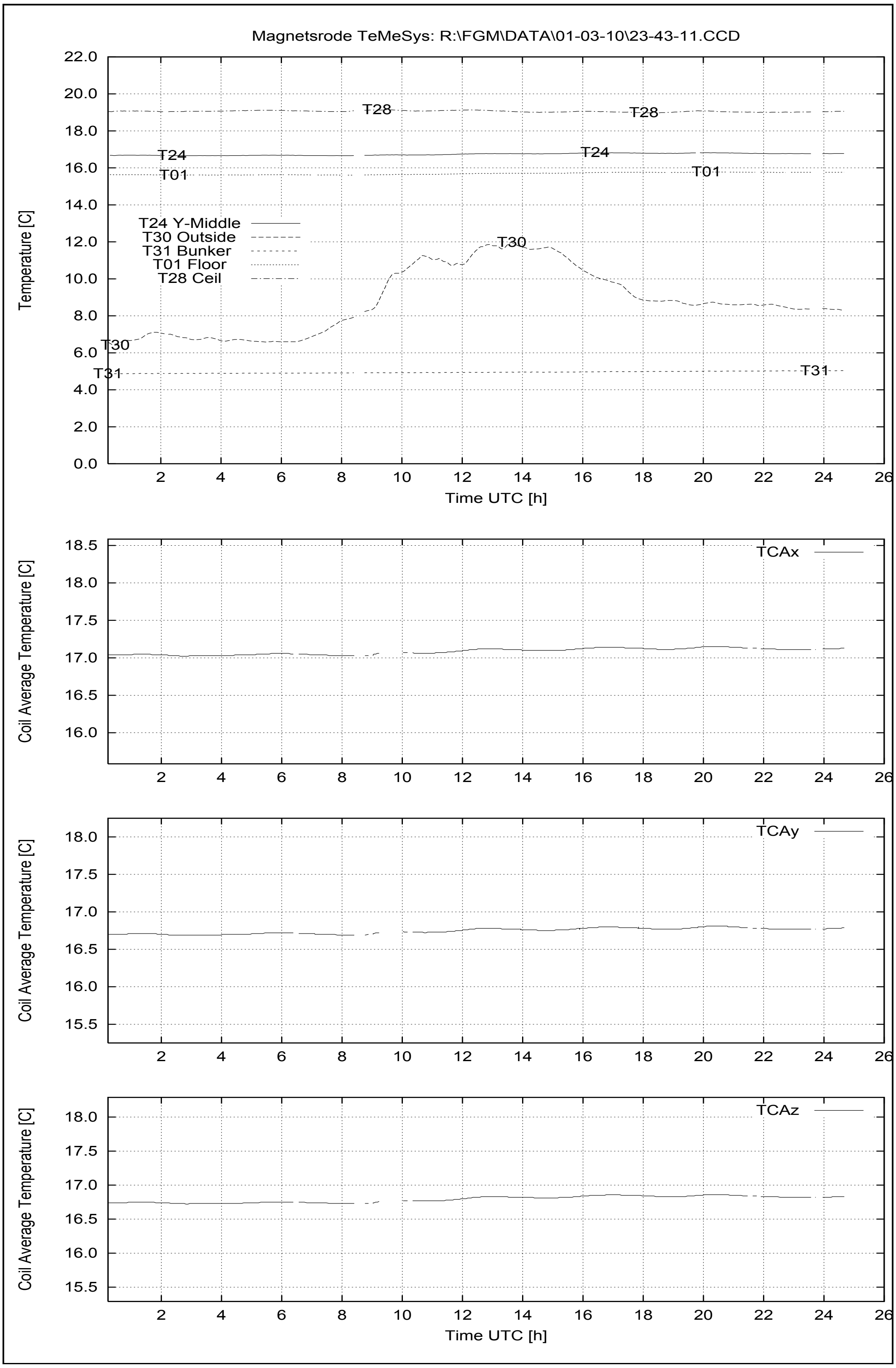


Figure 187: March 10, 2001: Temperatures House 2.

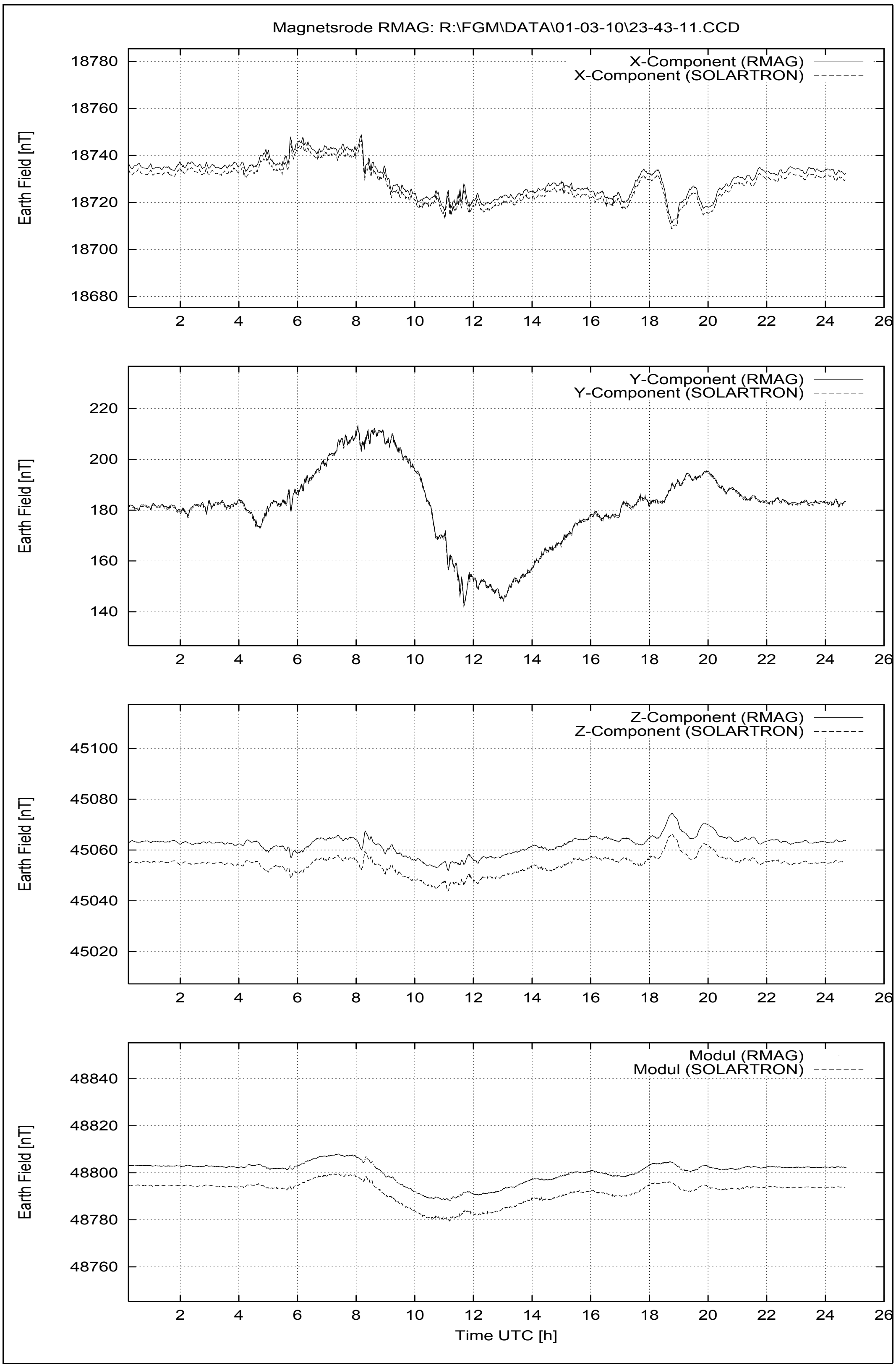


Figure 188: March 10, 2001: Earthfield variations.

## B.5 Sunday March 11, 2001

### B.5.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

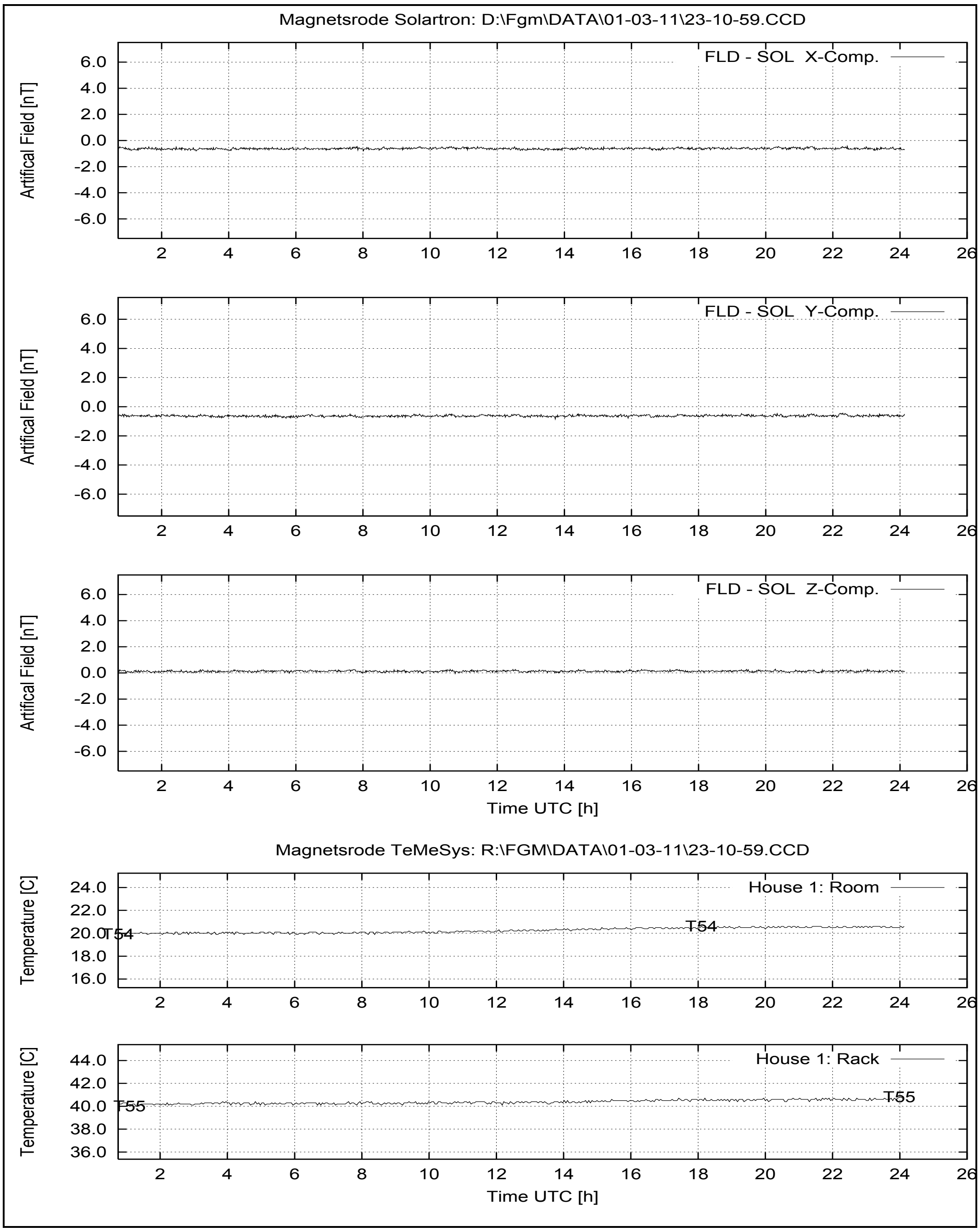


Figure 189: March 11, 2001: System Performance: FLD – SOL; Temperatures at House 1.

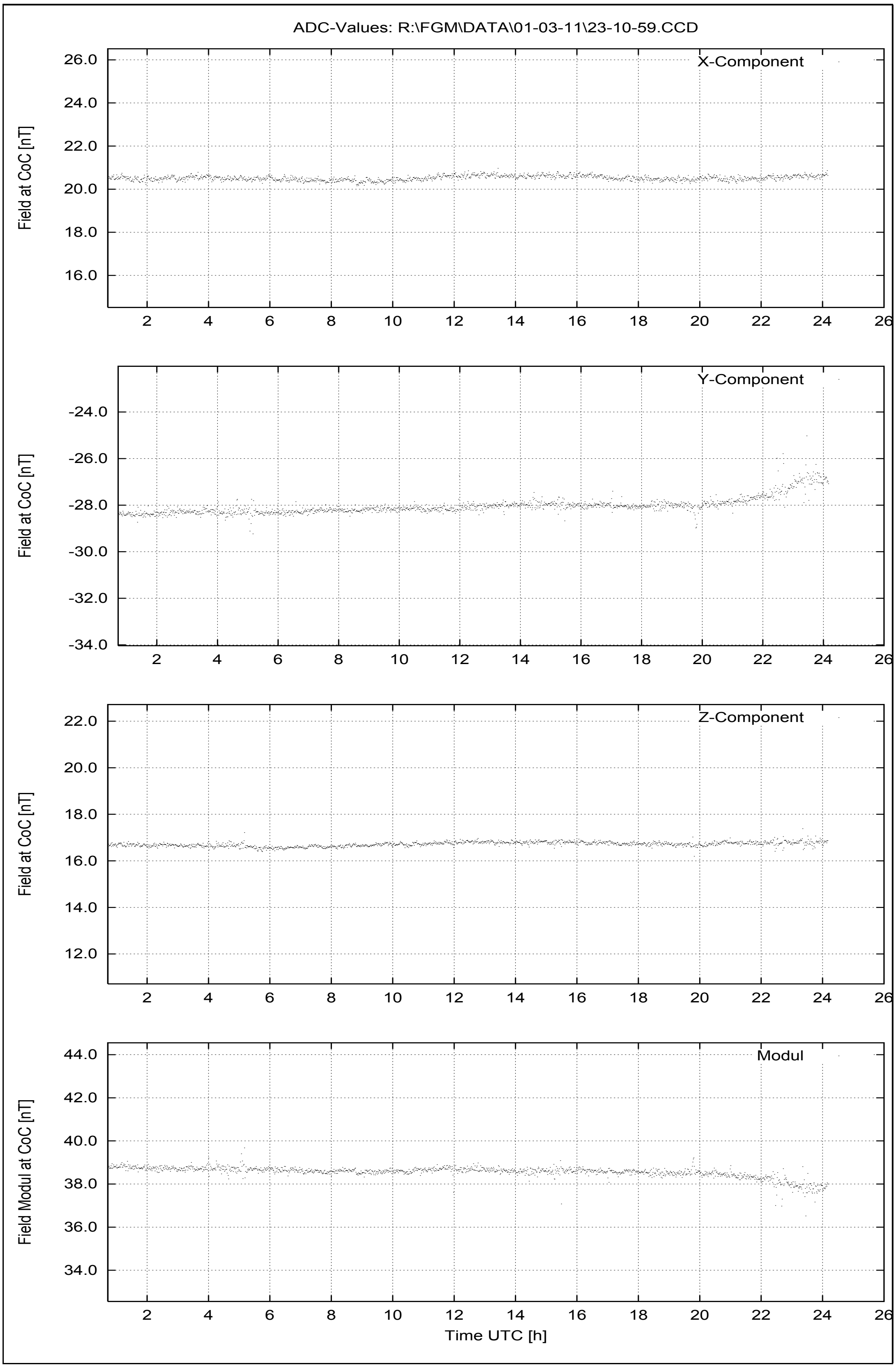


Figure 190: March 11, 2001: Zero field at CoC.

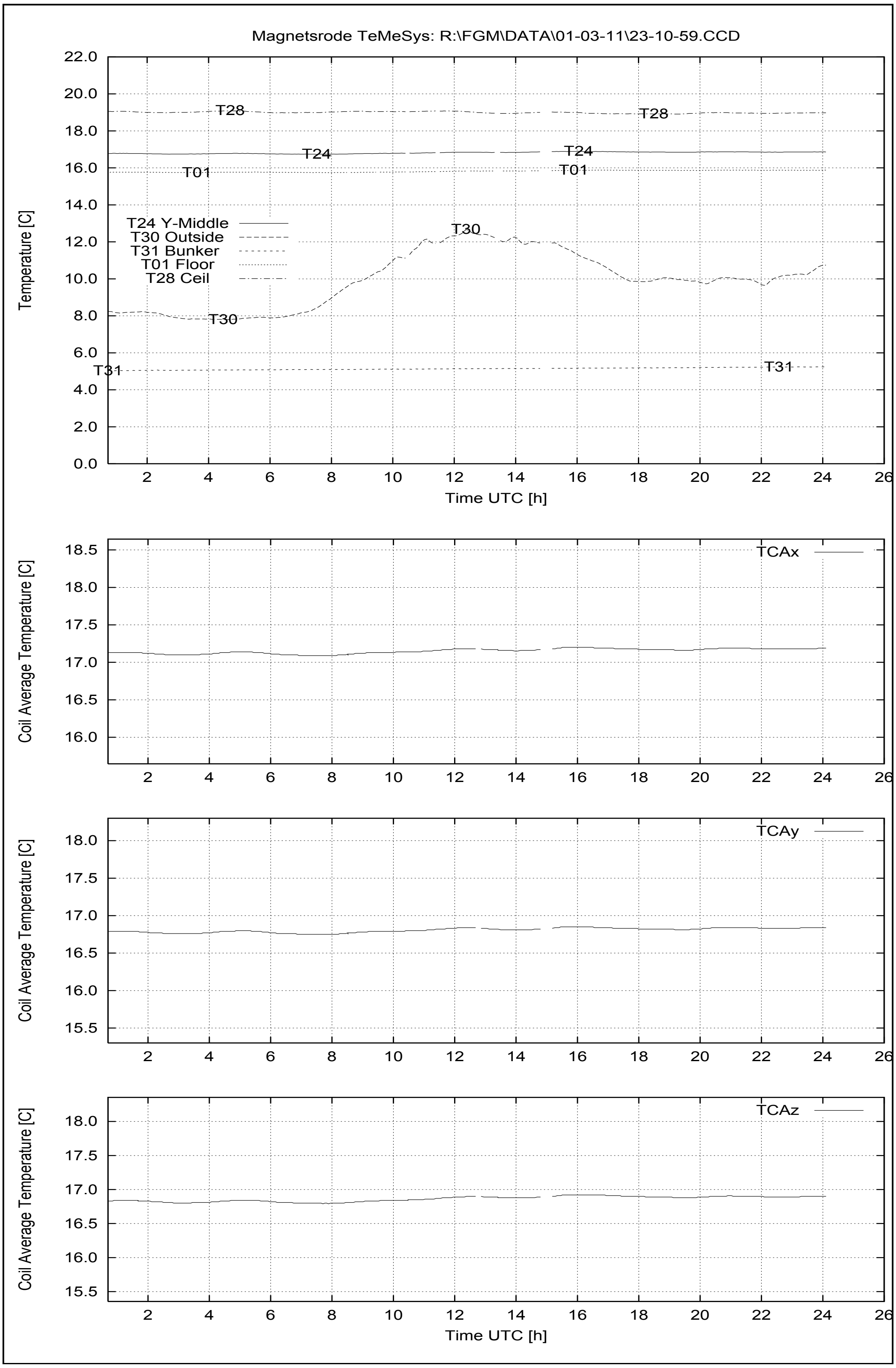


Figure 191: March 11, 2001: Temperatures House 2.

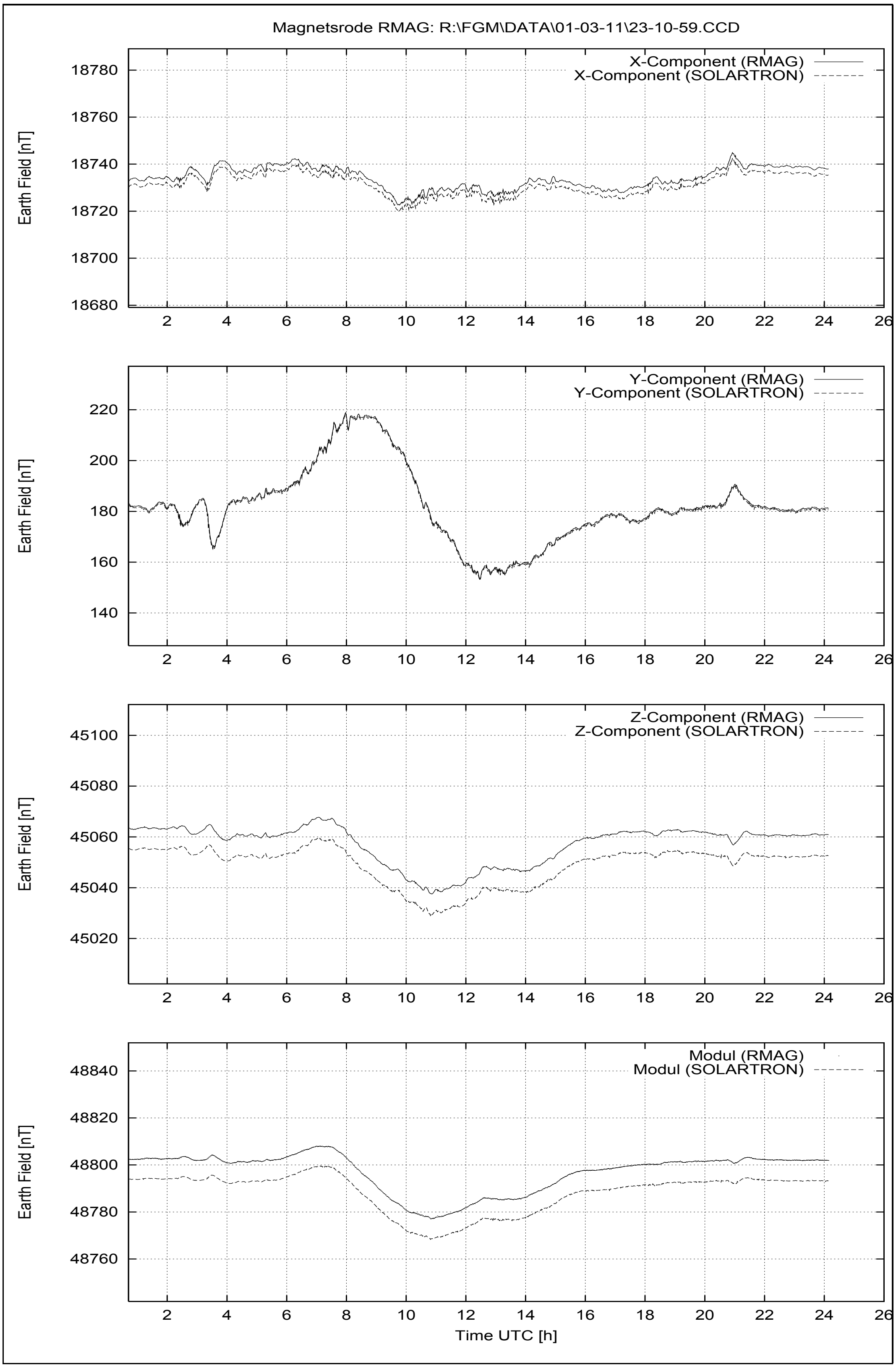


Figure 192: March 11, 2001: Earthfield variations.

## B.6 Monday March 12, 2001

### B.6.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

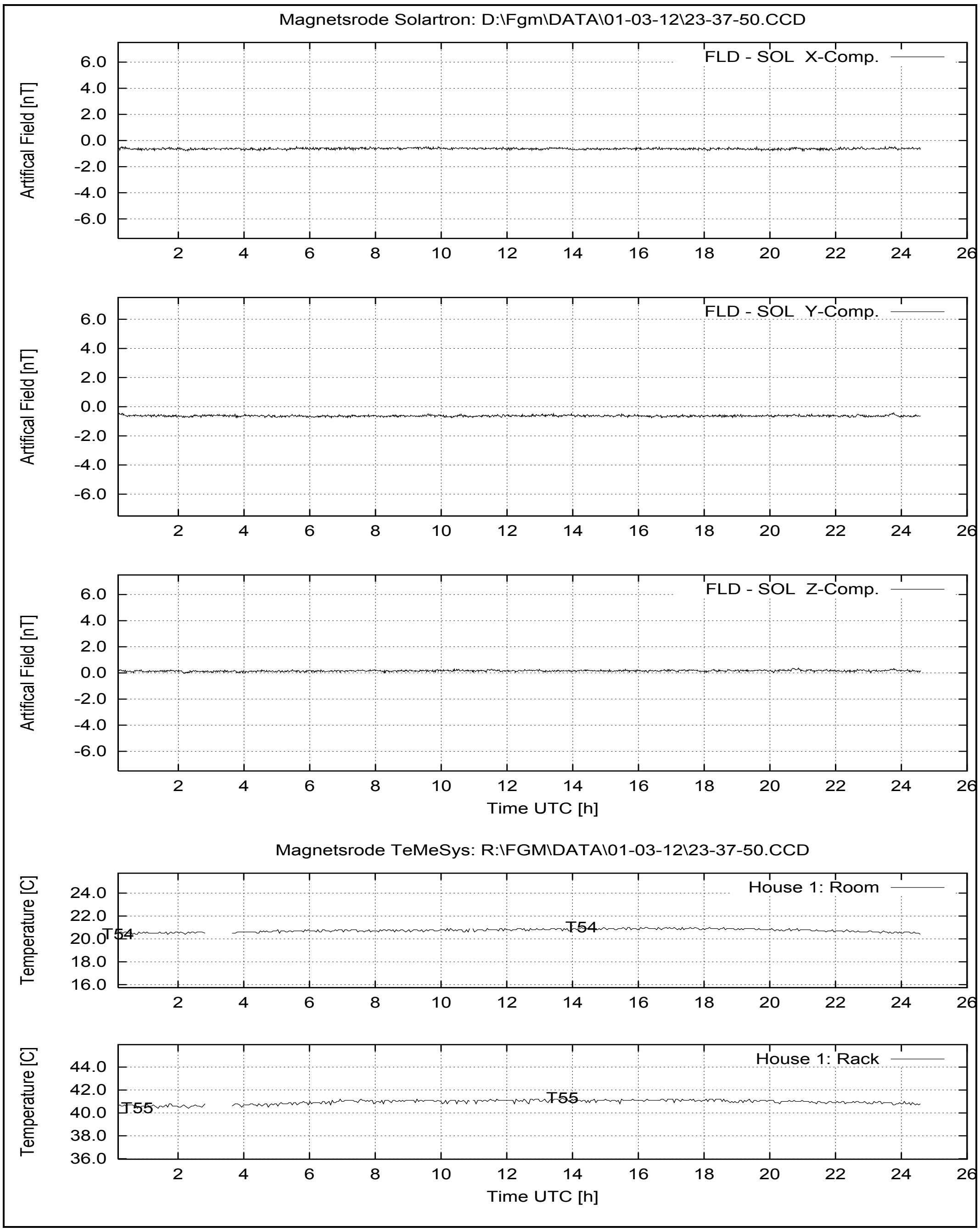


Figure 193: March 12, 2001: System Performance: FLD – SOL; Temperatures at House 1.

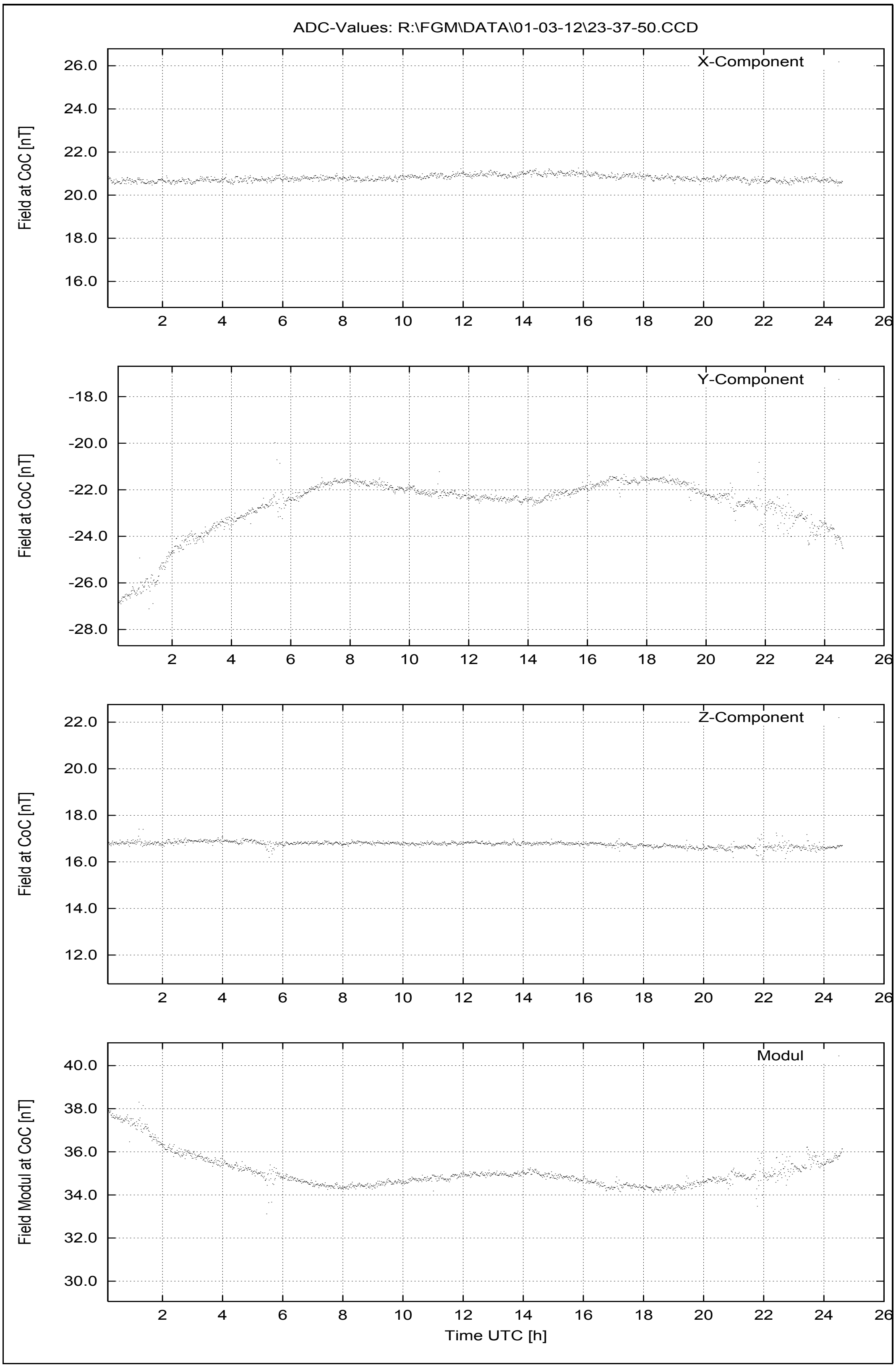


Figure 194: March 12, 2001: Zero field at CoC.

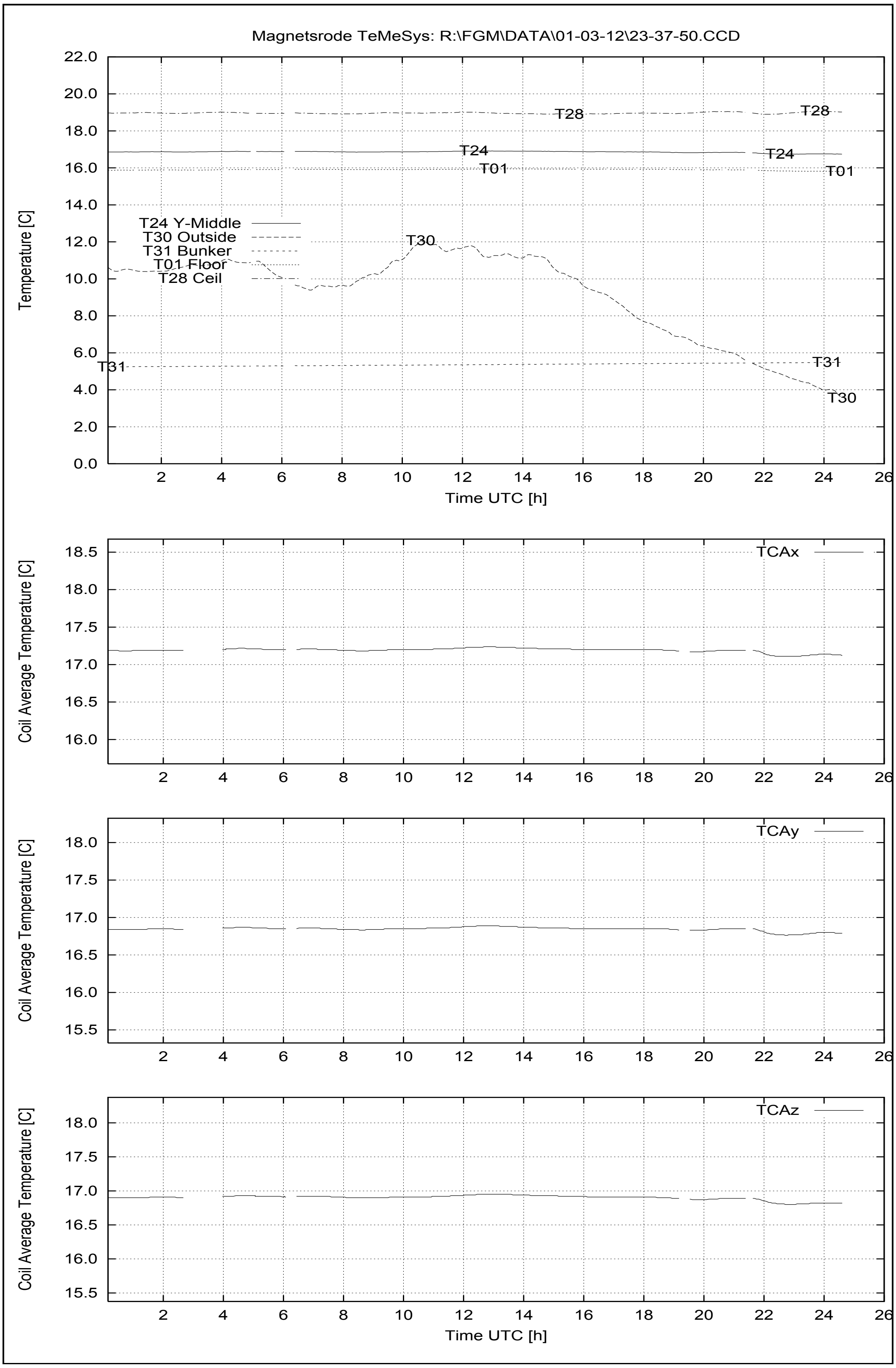


Figure 195: March 12, 2001: Temperatures House 2.

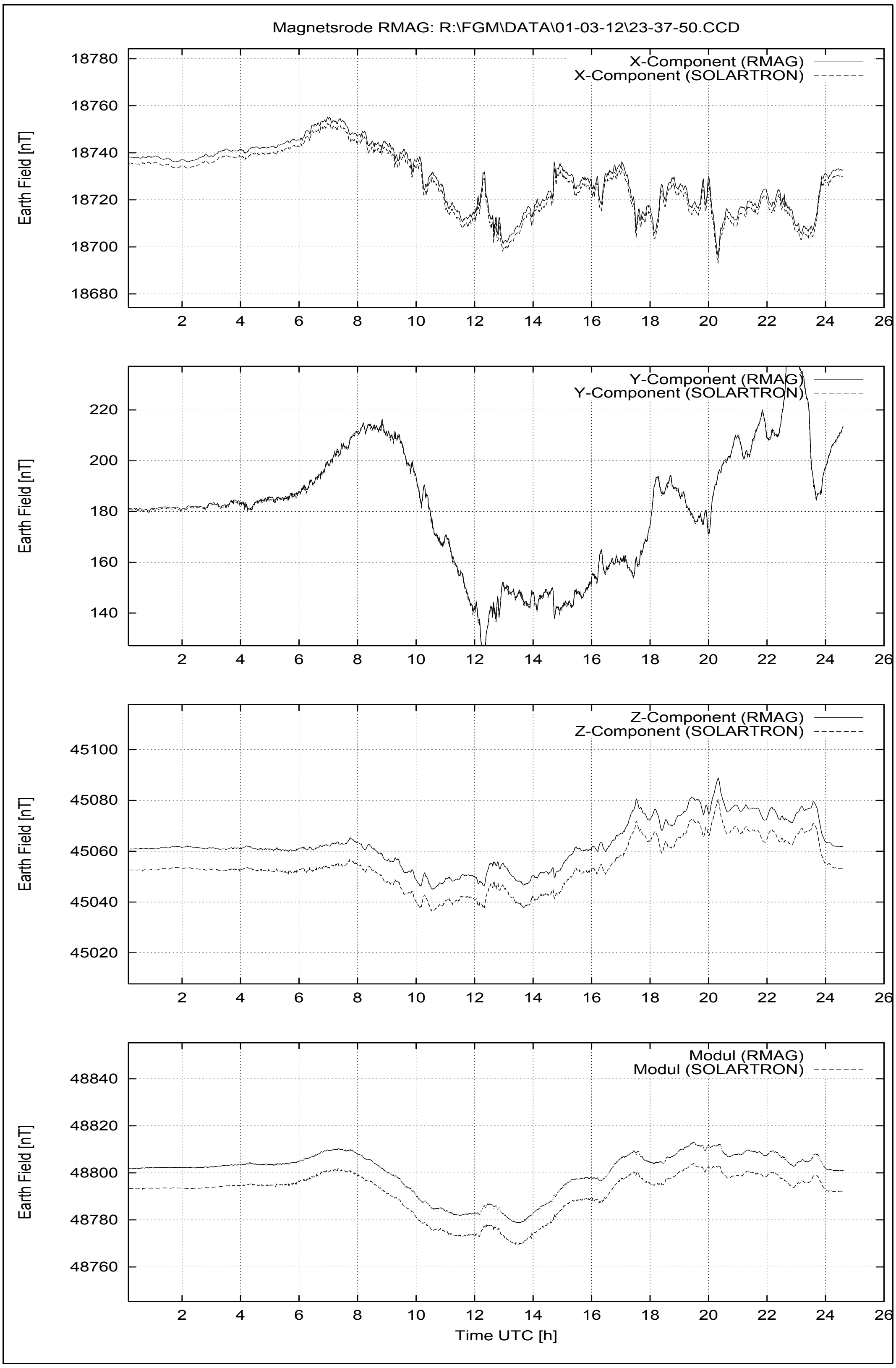


Figure 196: March 12, 2001: Earthfield variations.

## B.7 Tuesday March 13, 2001

### B.7.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

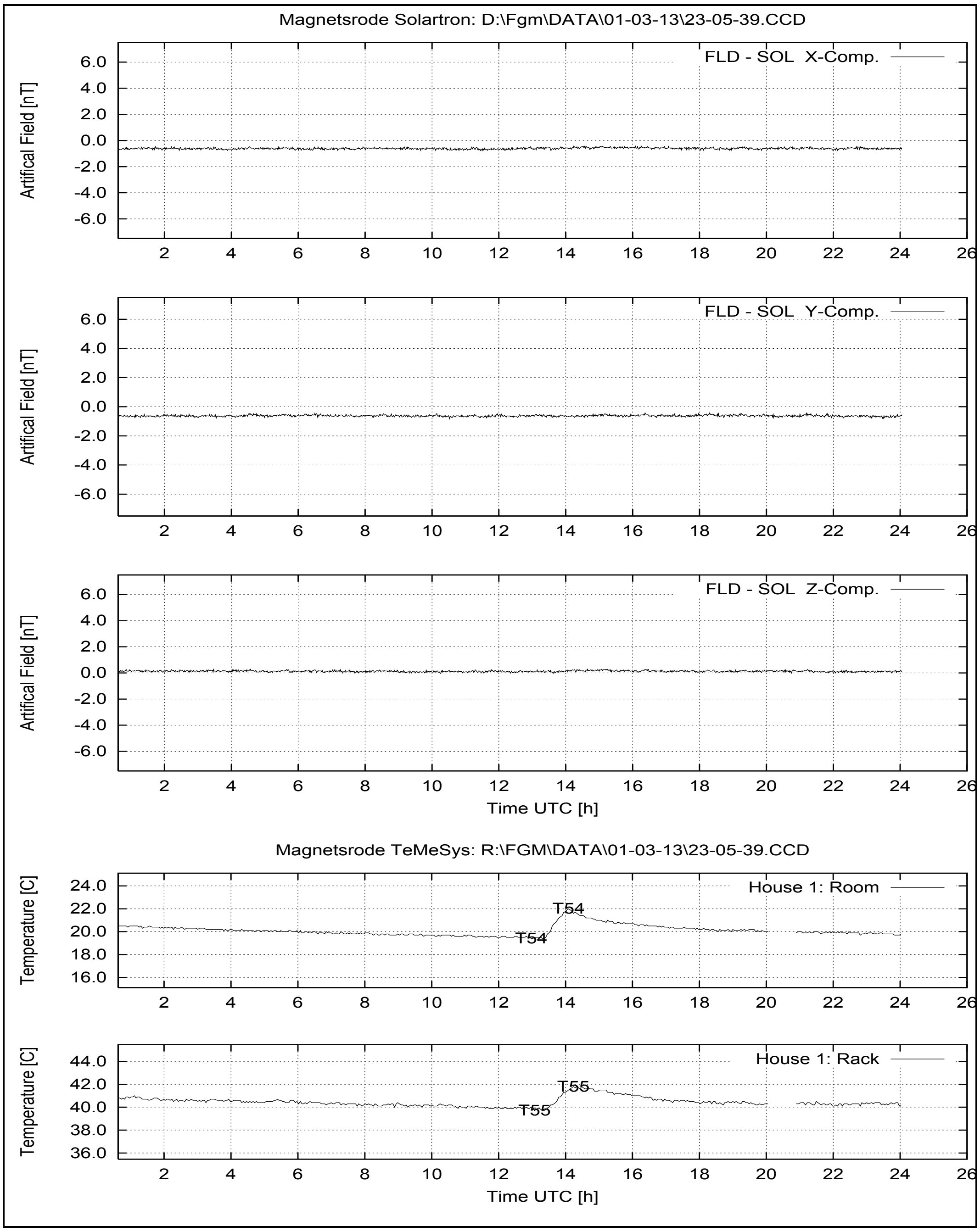


Figure 197: March 13, 2001: System Performance: FLD – SOL; Temperatures at House 1.

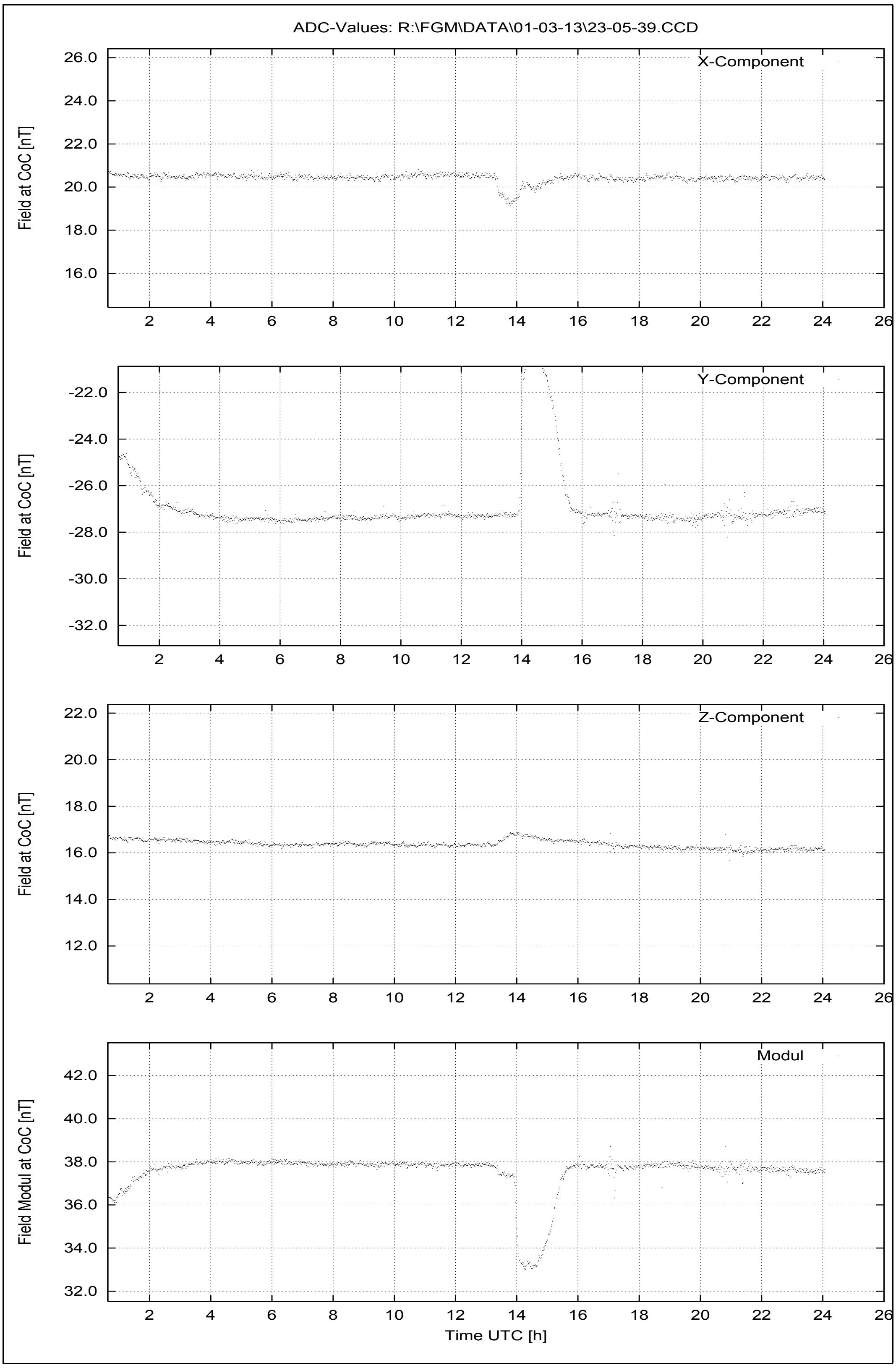


Figure 198: March 13, 2001: Zero field at CoC.

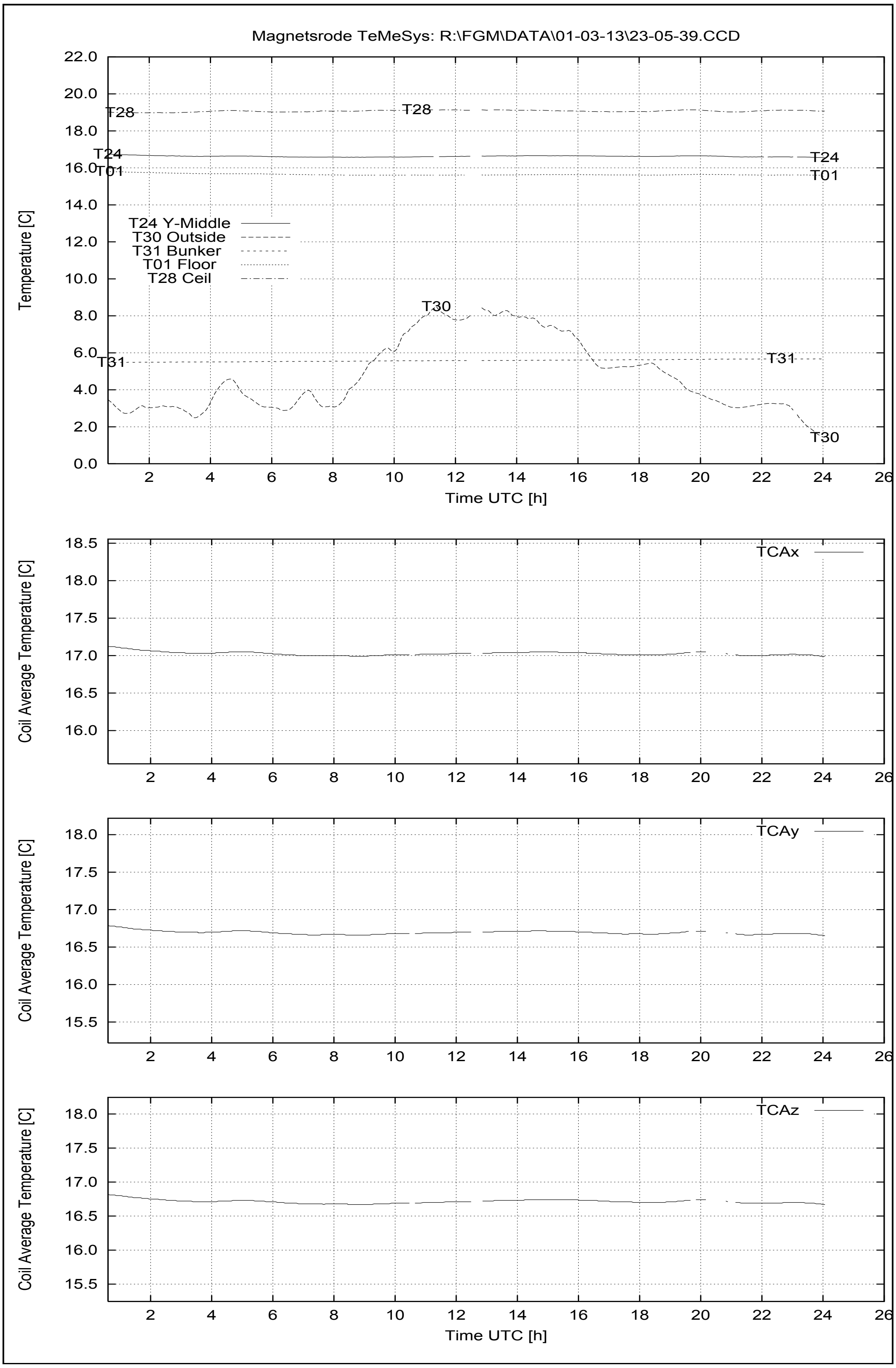


Figure 199: March 13, 2001: Temperatures House 2.

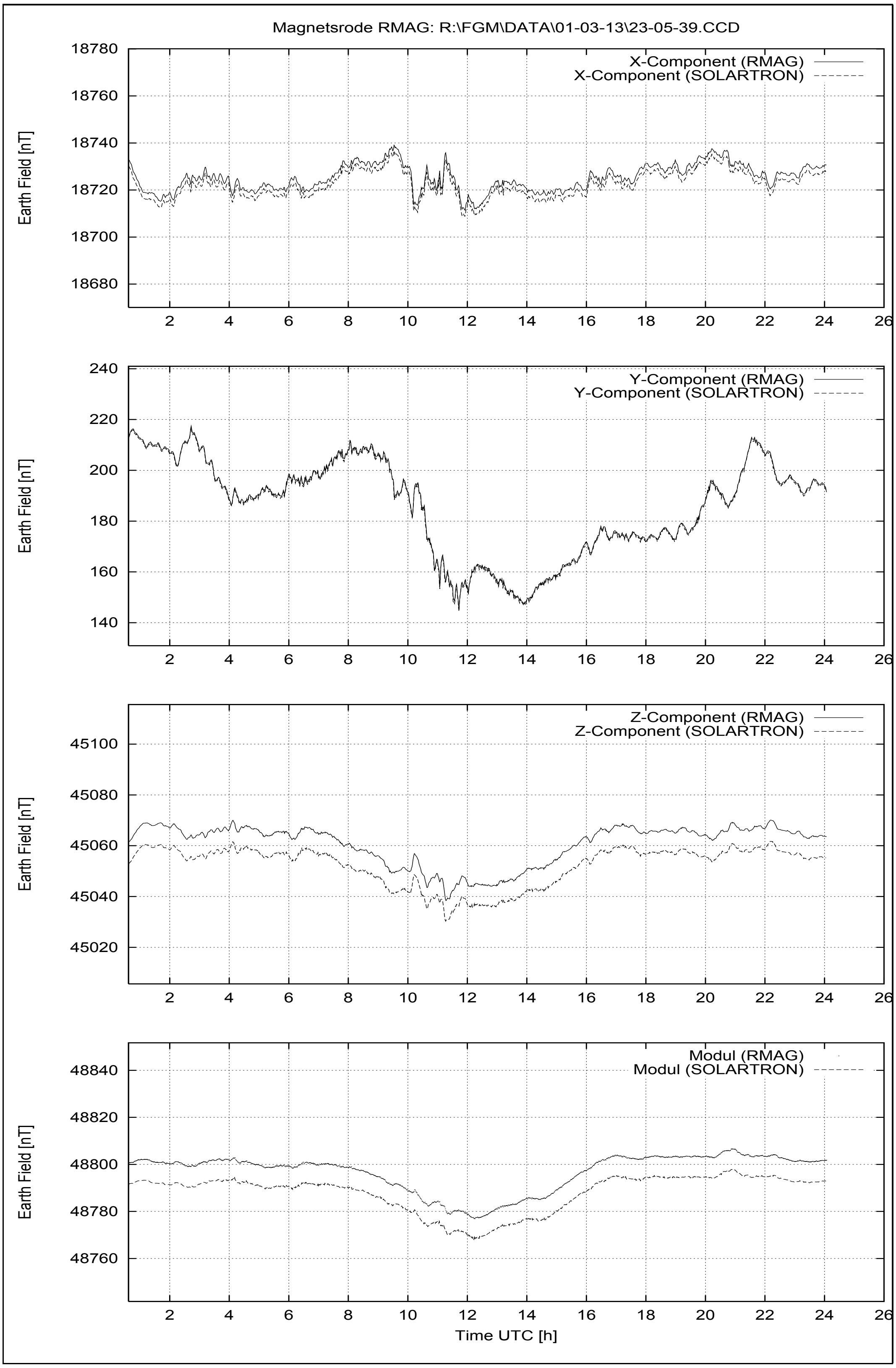


Figure 200: March 13, 2001: Earthfield variations.

## B.8 Wednesday March 14, 2001

### B.8.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

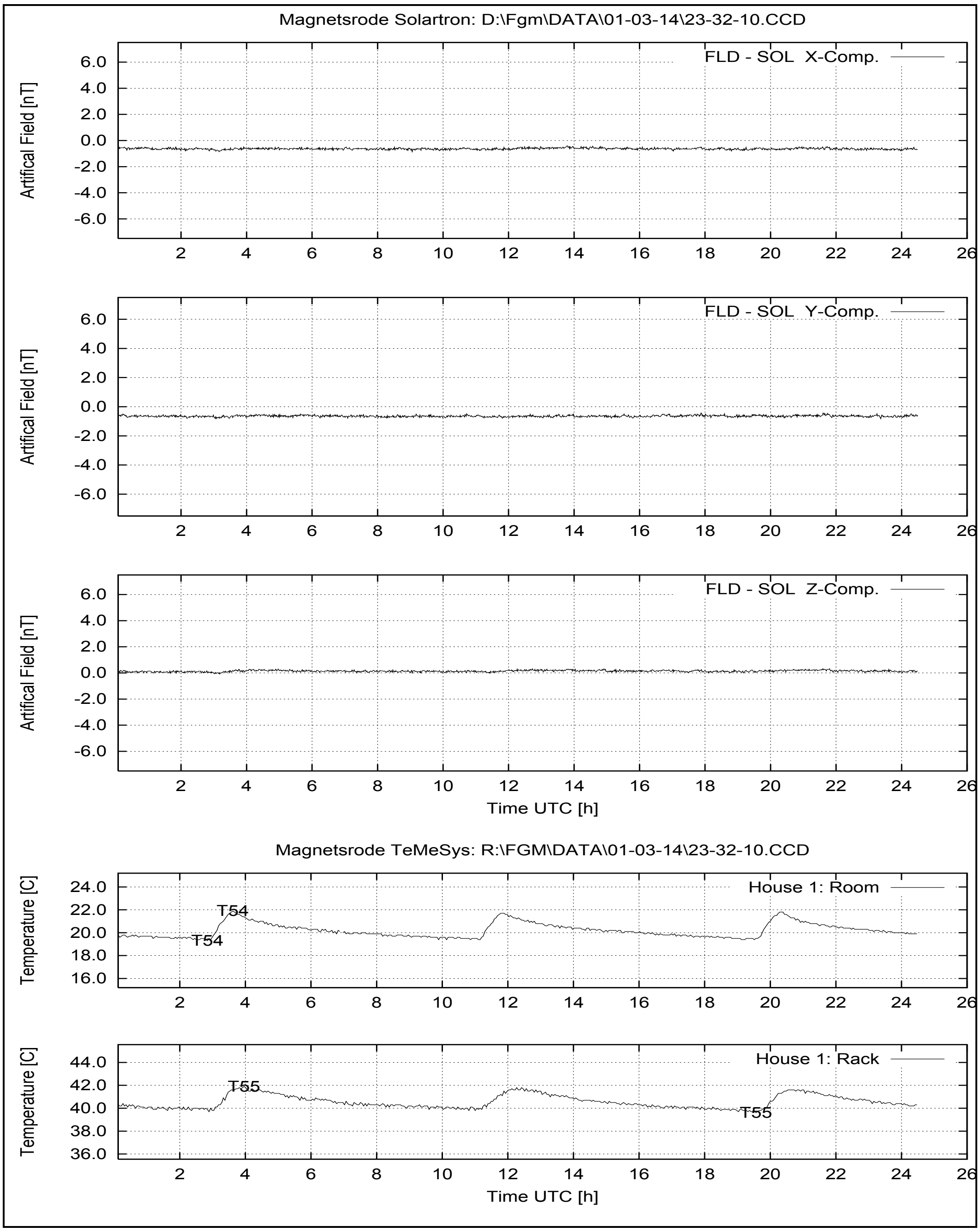


Figure 201: March 14, 2001: System Performance: FLD – SOL; Temperatures at House 1.

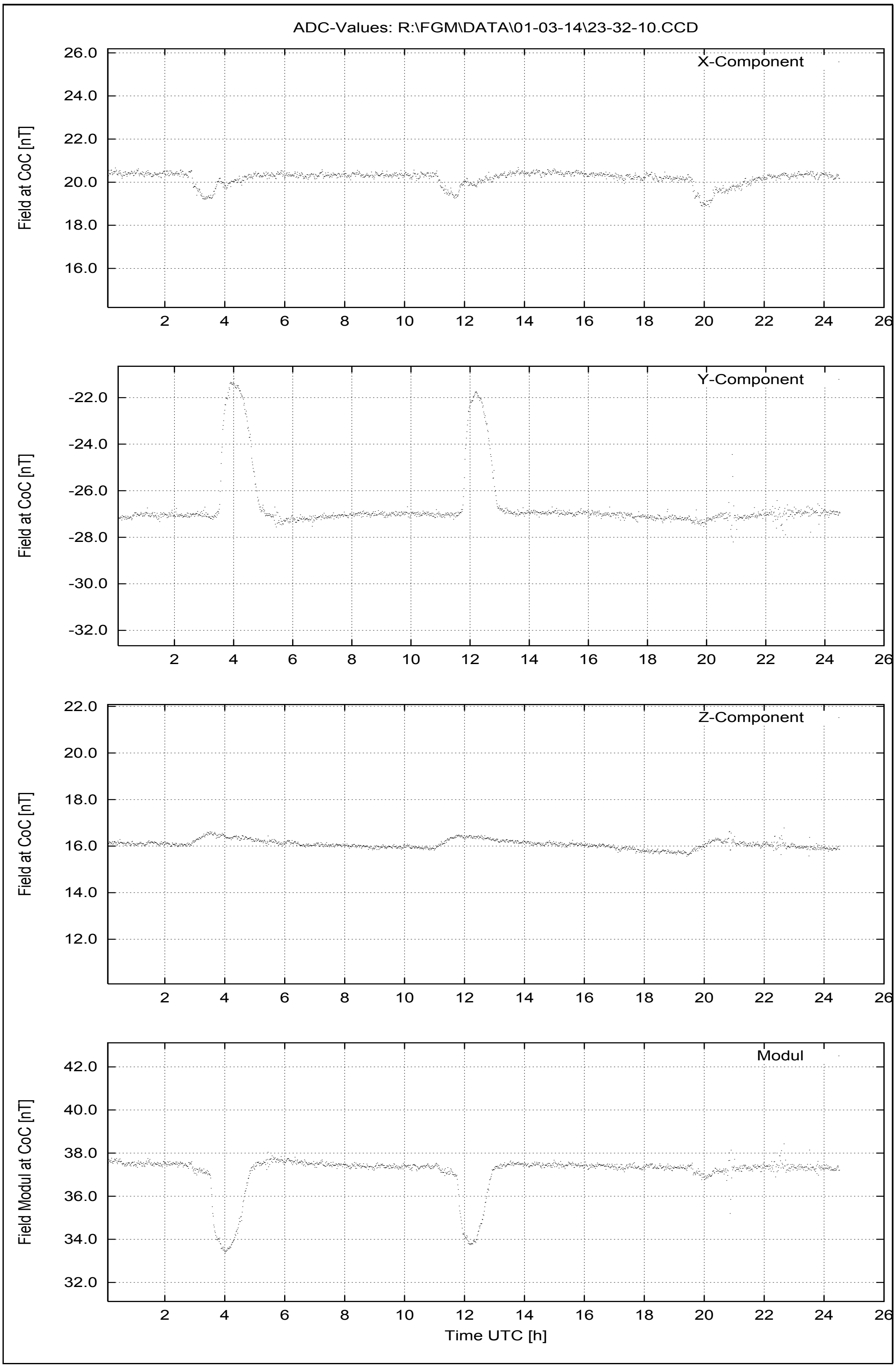


Figure 202: March 14, 2001: Zero field at CoC.

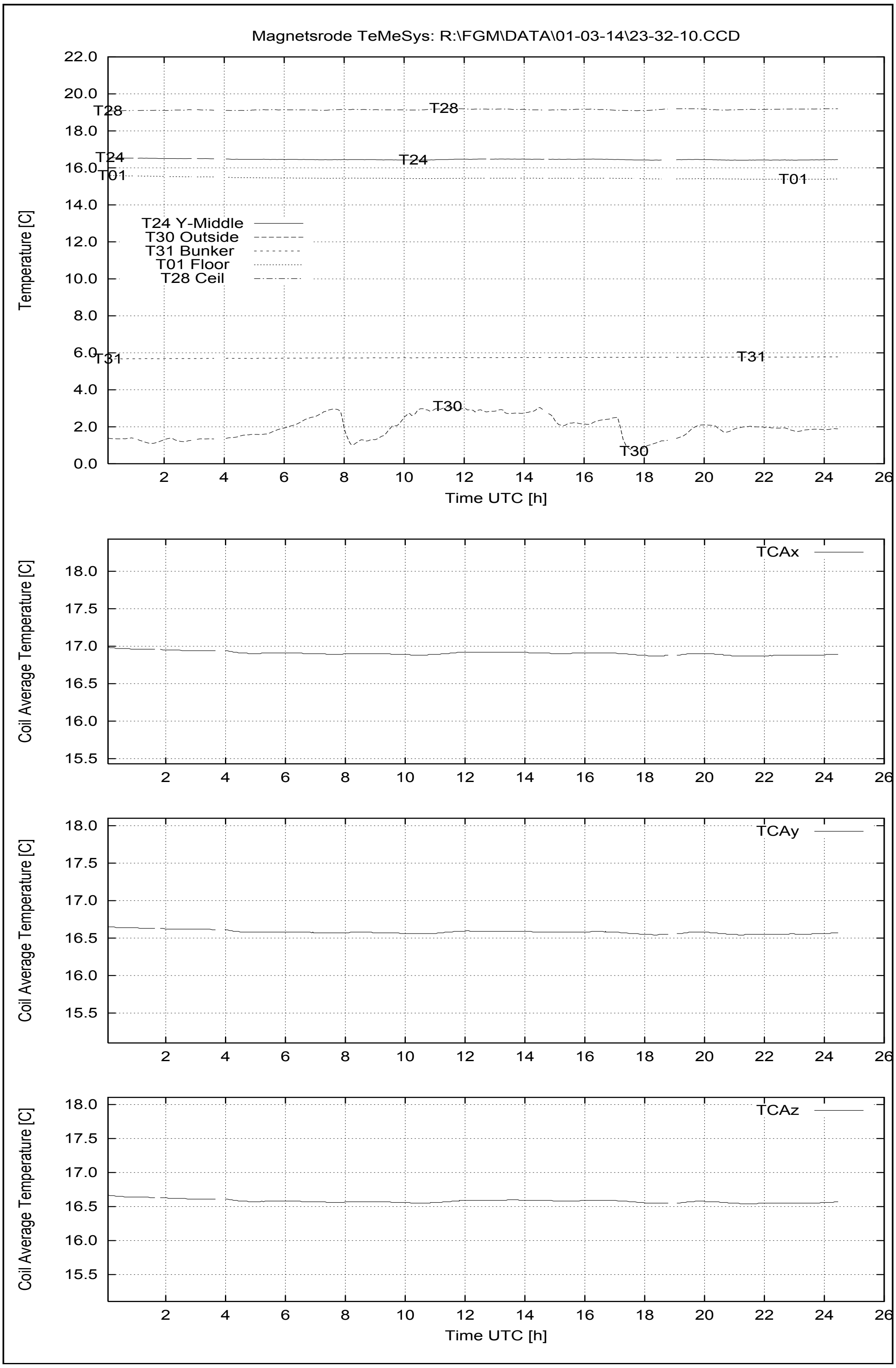


Figure 203: March 14, 2001: Temperatures House 2.

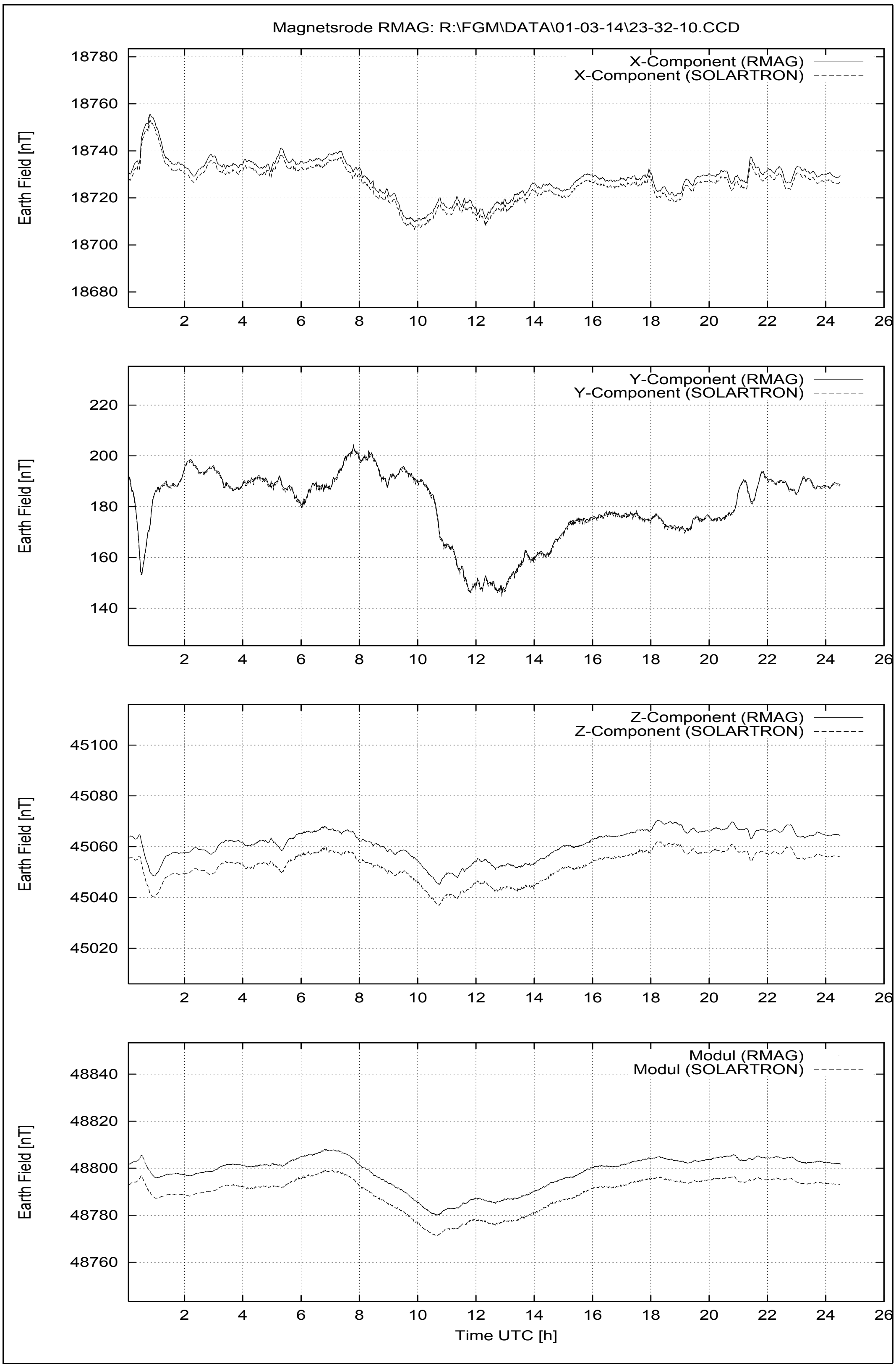


Figure 204: March 14, 2001: Earthfield variations.

## B.9 Thursday March 15, 2001

### B.9.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

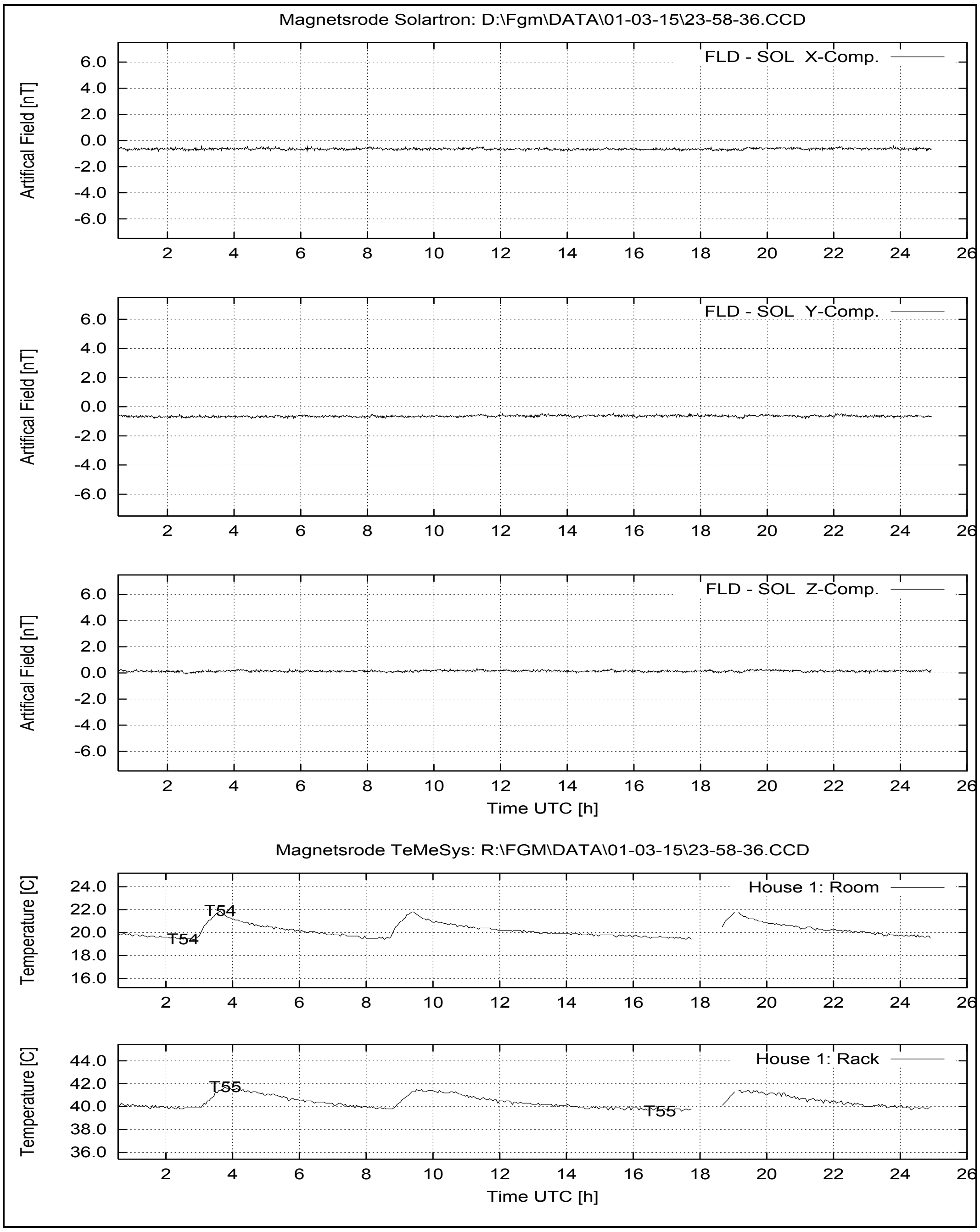


Figure 205: March 15, 2001: System Performance: FLD – SOL; Temperatures at House 1.

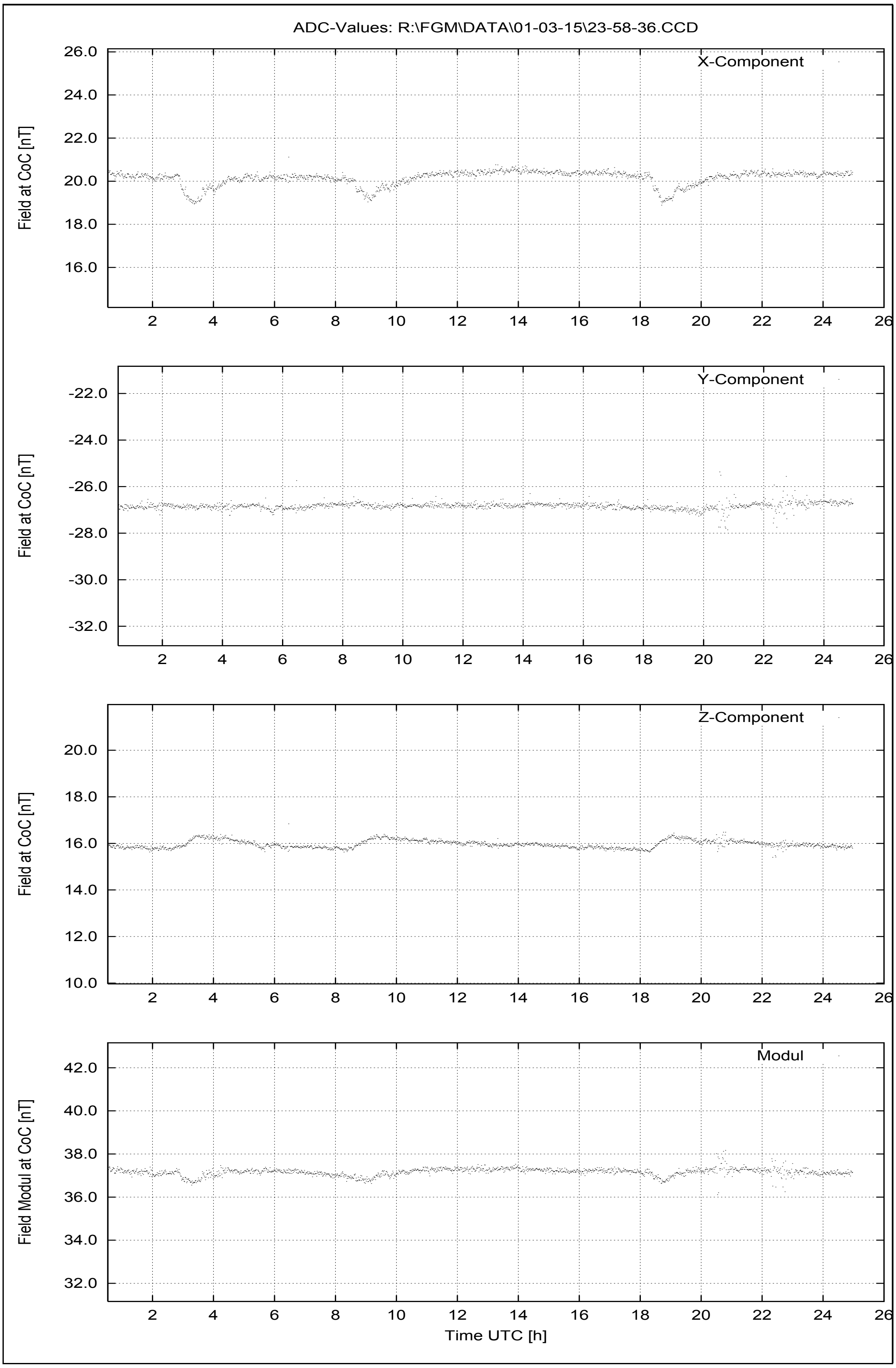


Figure 206: March 15, 2001: Zero field at CoC.

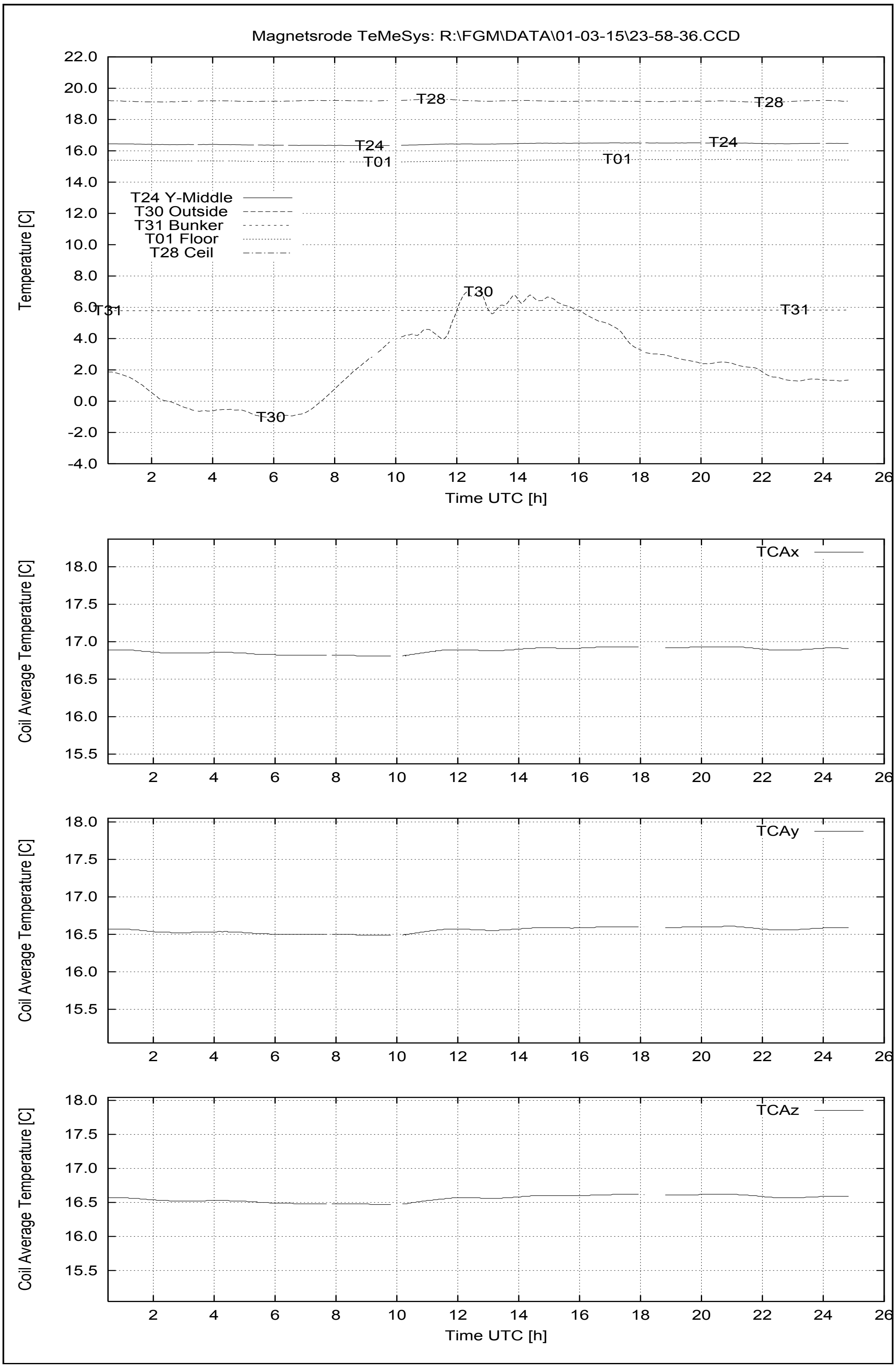


Figure 207: March 15, 2001: Temperatures House 2.

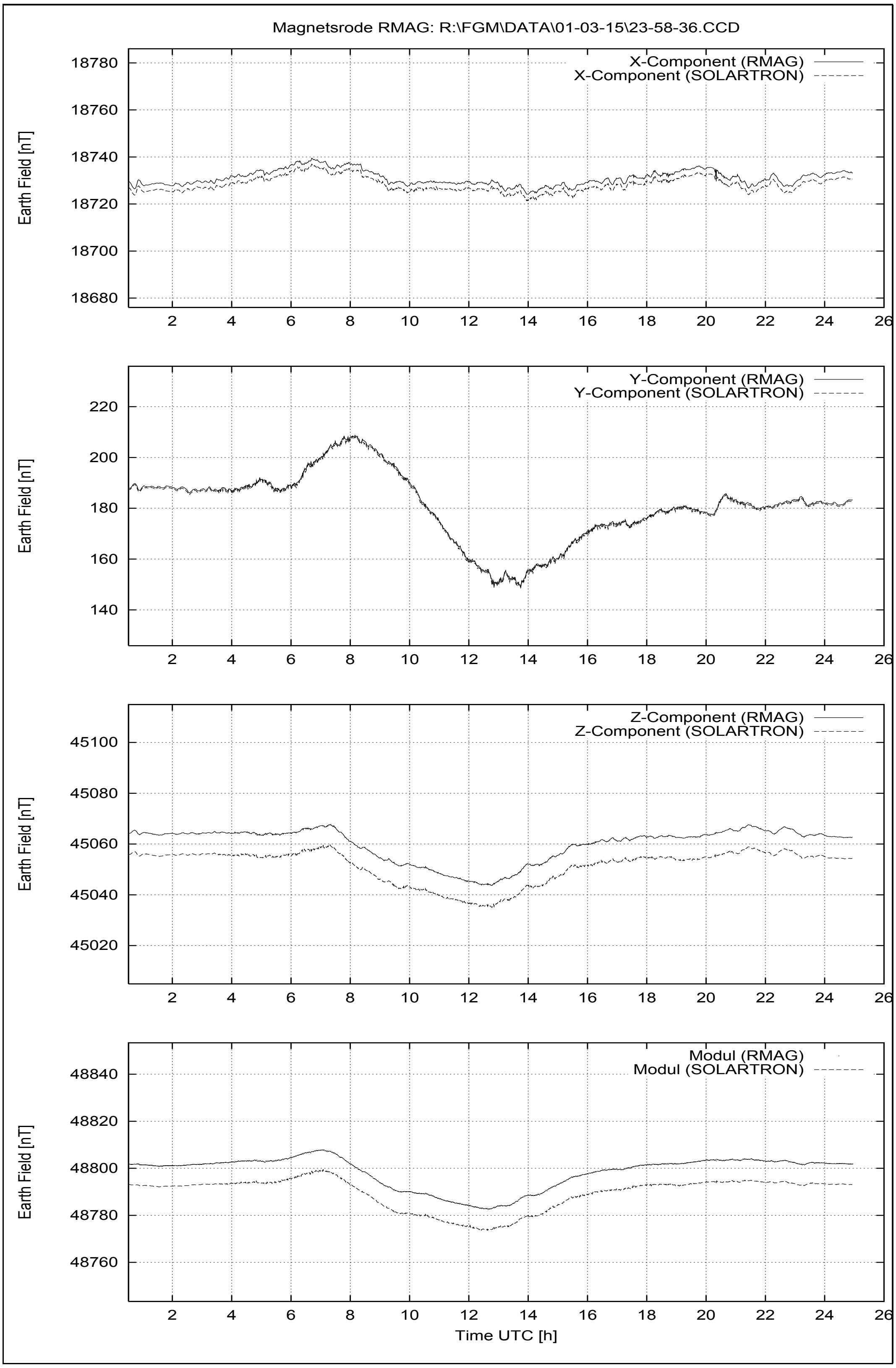


Figure 208: March 15, 2001: Earthfield variations.

## B.10 Friday March 16, 2001

### B.10.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

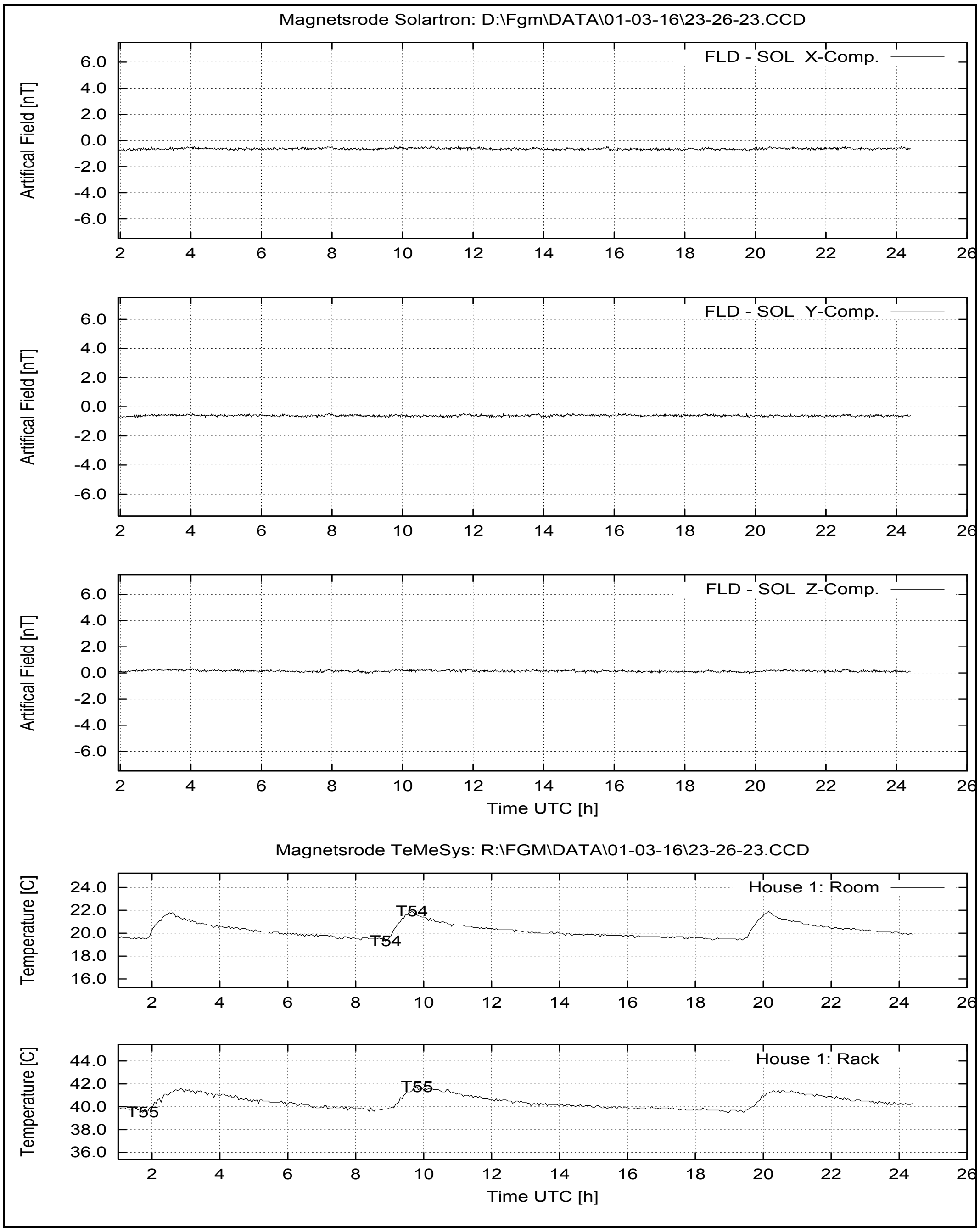


Figure 209: March 16, 2001: System Performance: FLD – SOL; Temperatures at House 1.

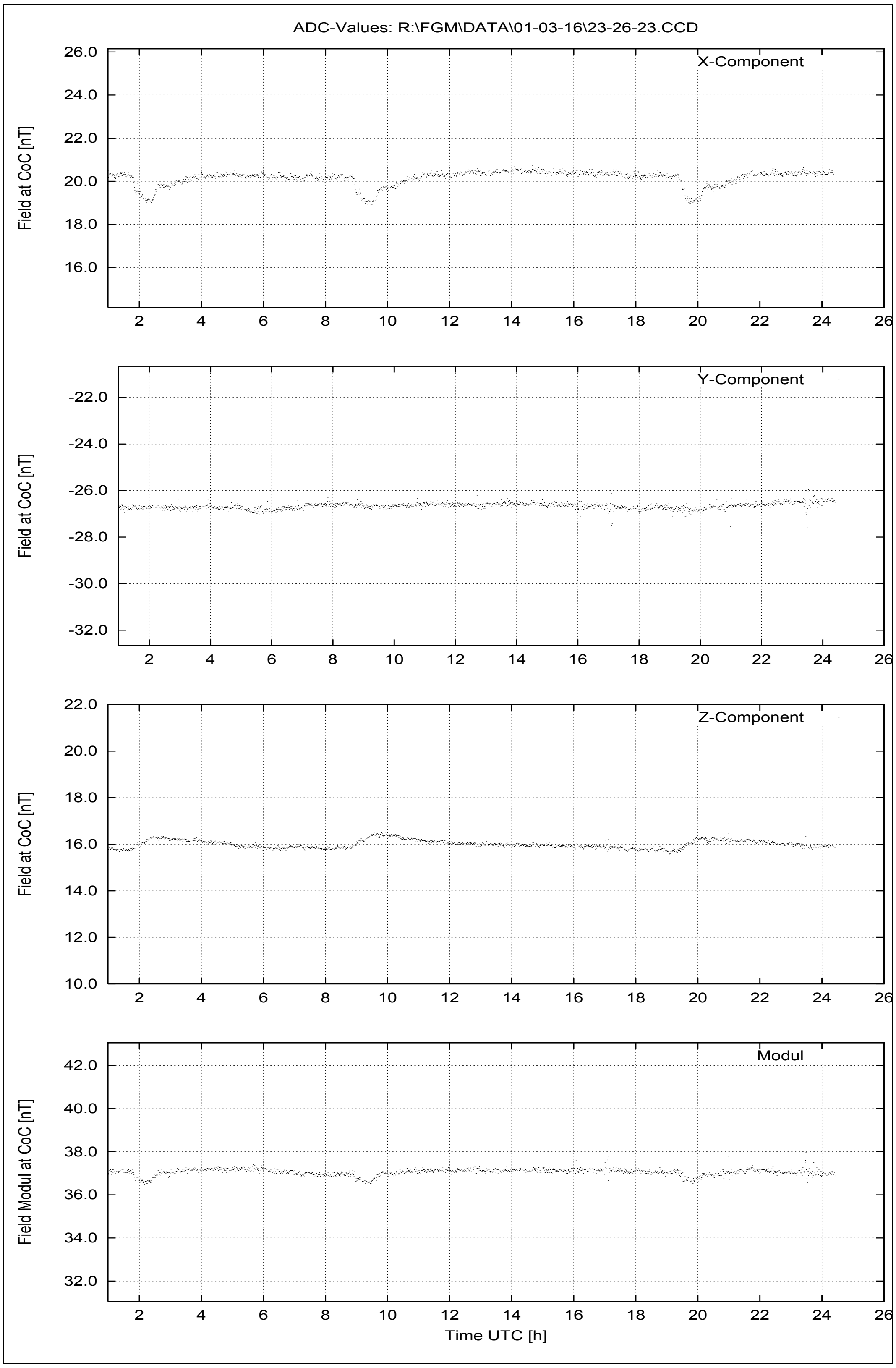


Figure 210: March 16, 2001: Zero field at CoC.

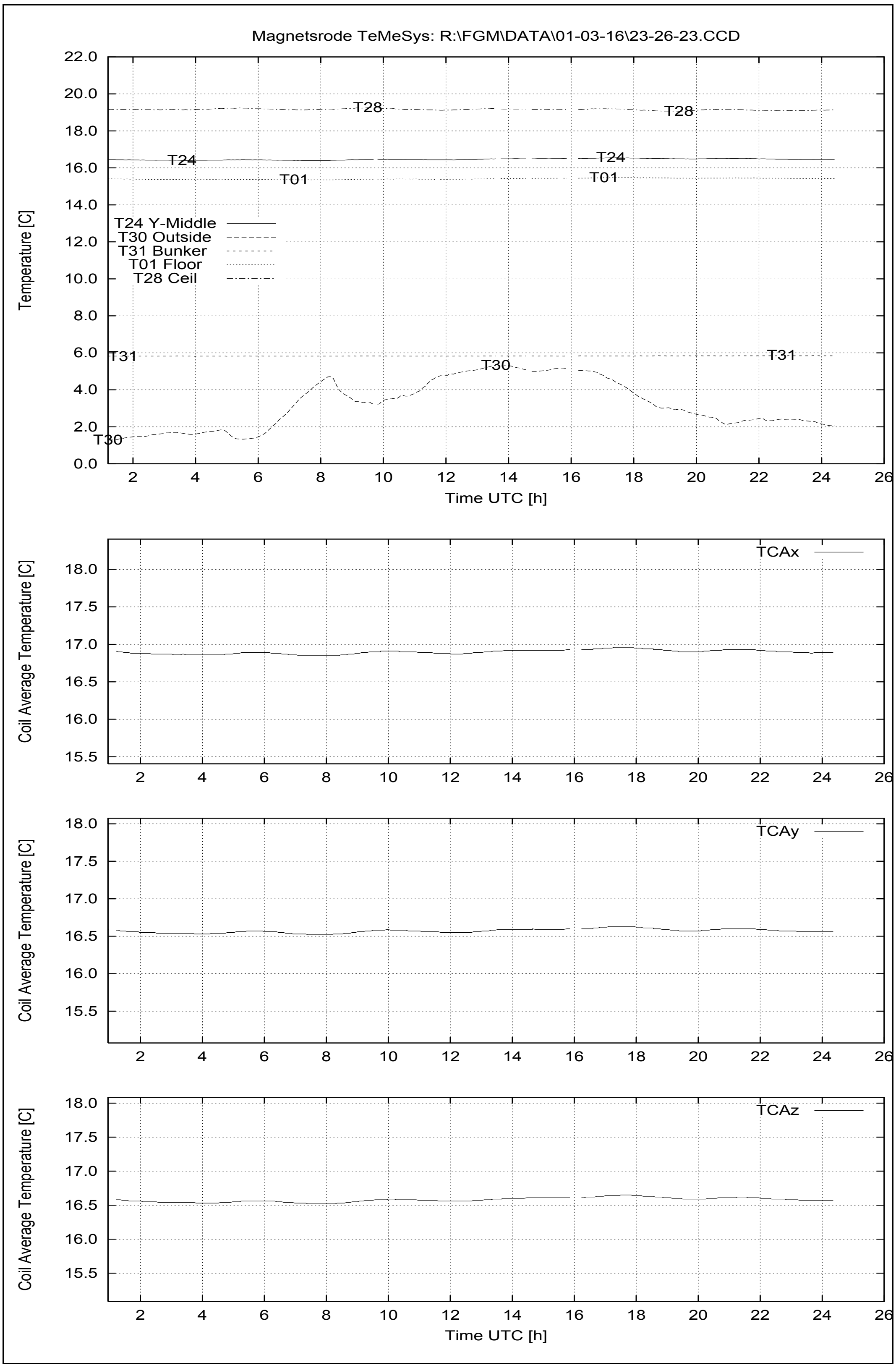


Figure 211: March 16, 2001: Temperatures House 2.

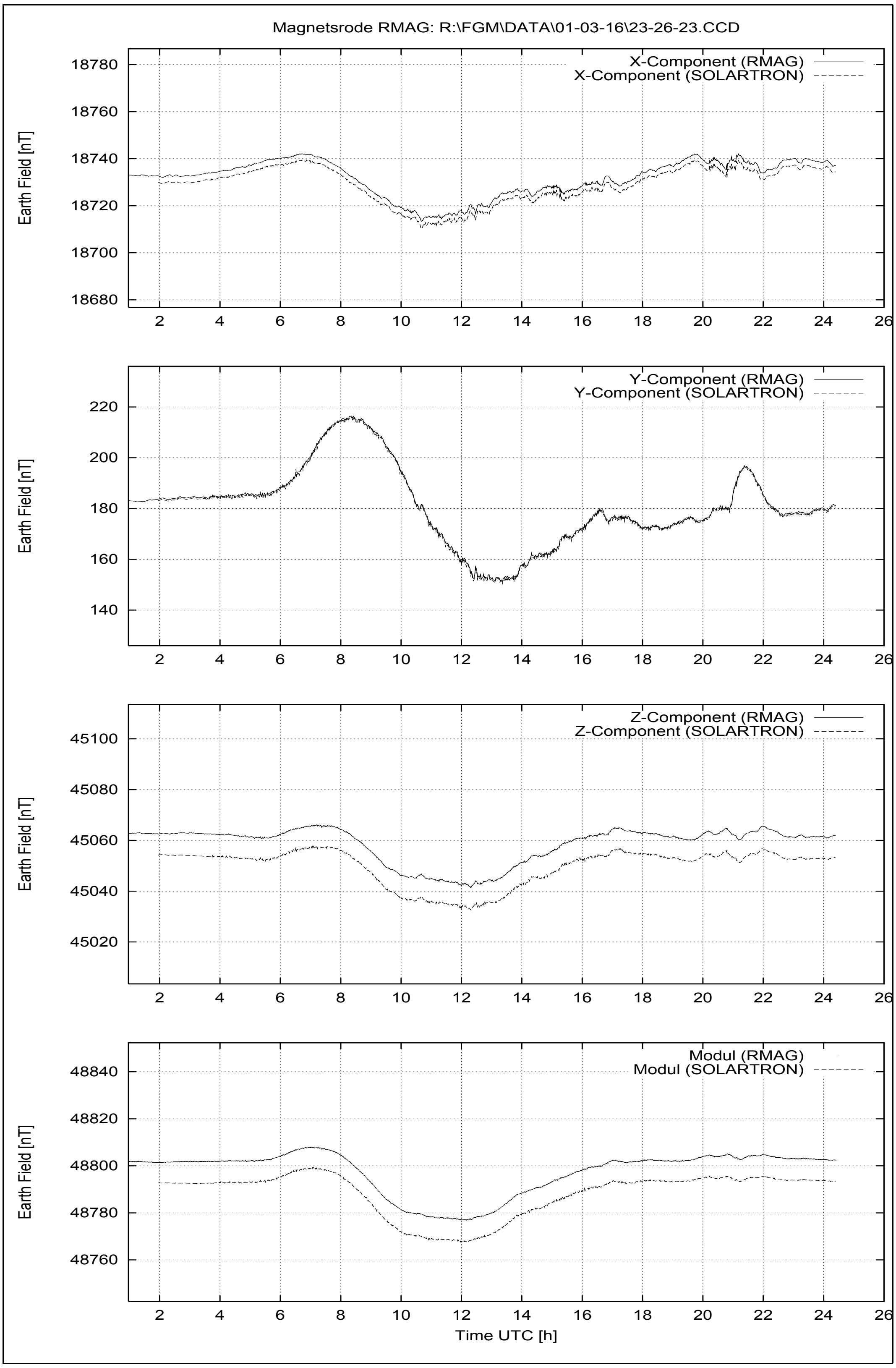


Figure 212: March 16, 2001: Earthfield variations.

## B.11 Saturday March 17, 2001

### B.11.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

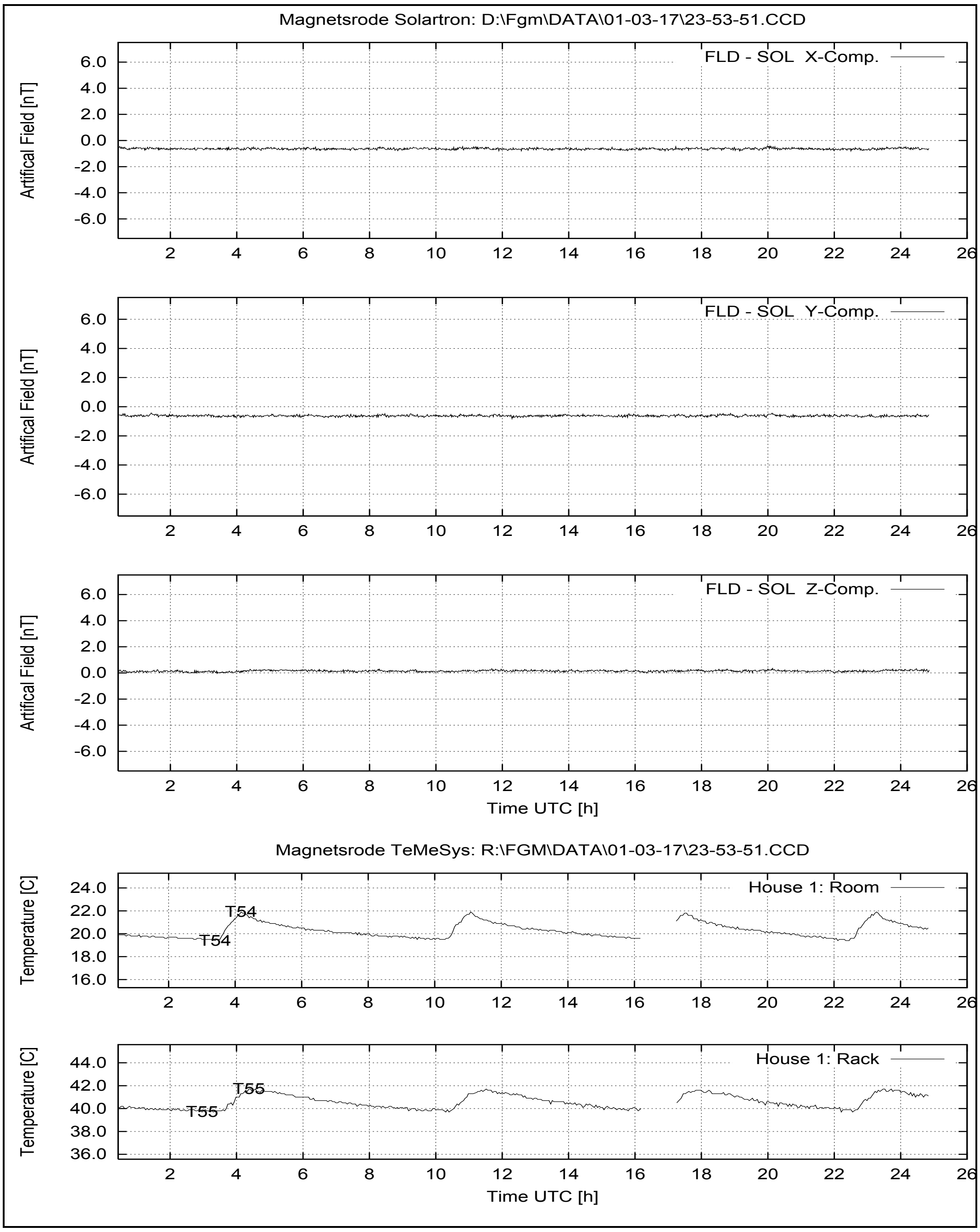


Figure 213: March 17, 2001: System Performance: FLD – SOL; Temperatures at House 1.

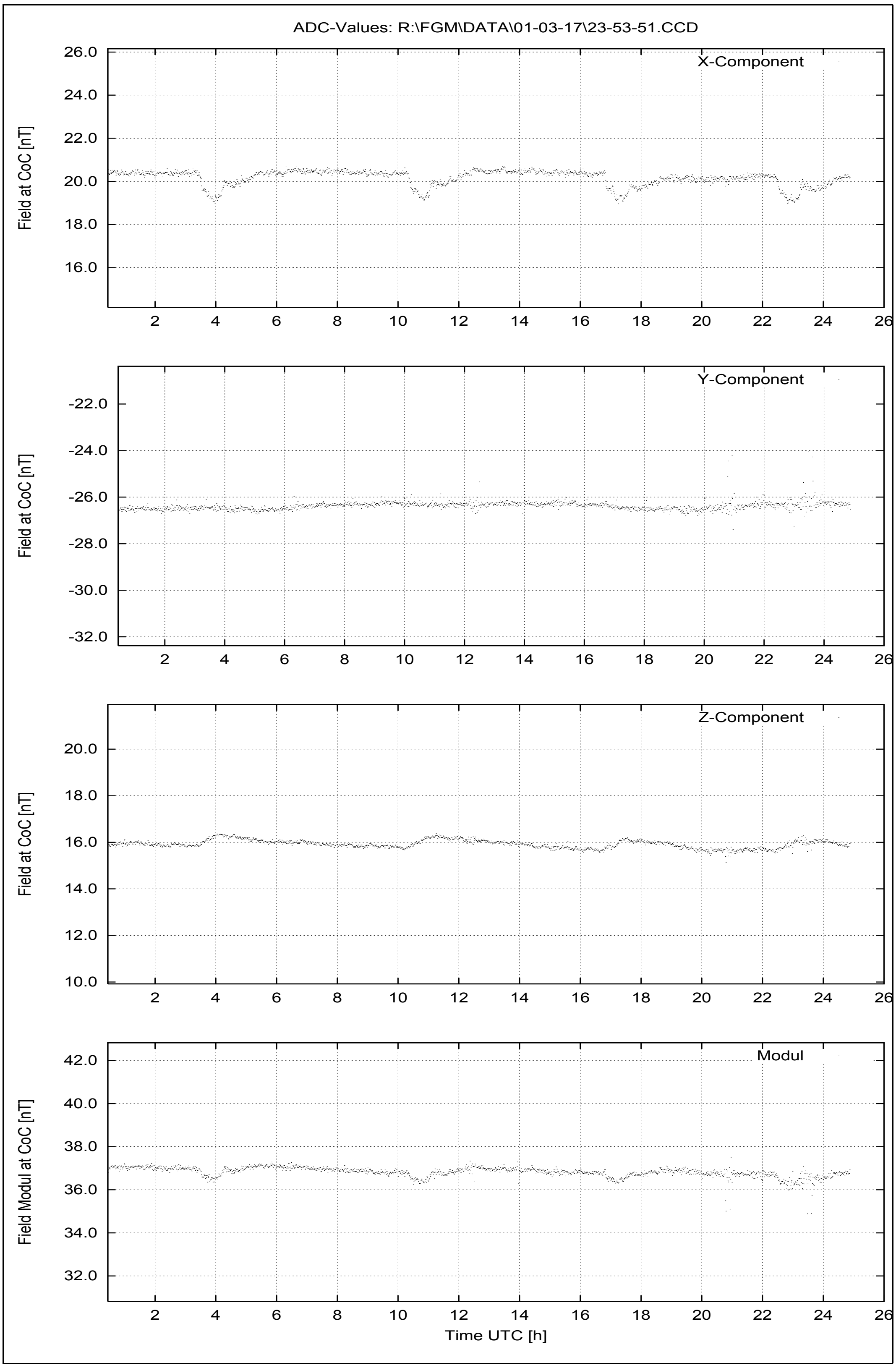


Figure 214: March 17, 2001: Zero field at CoC.

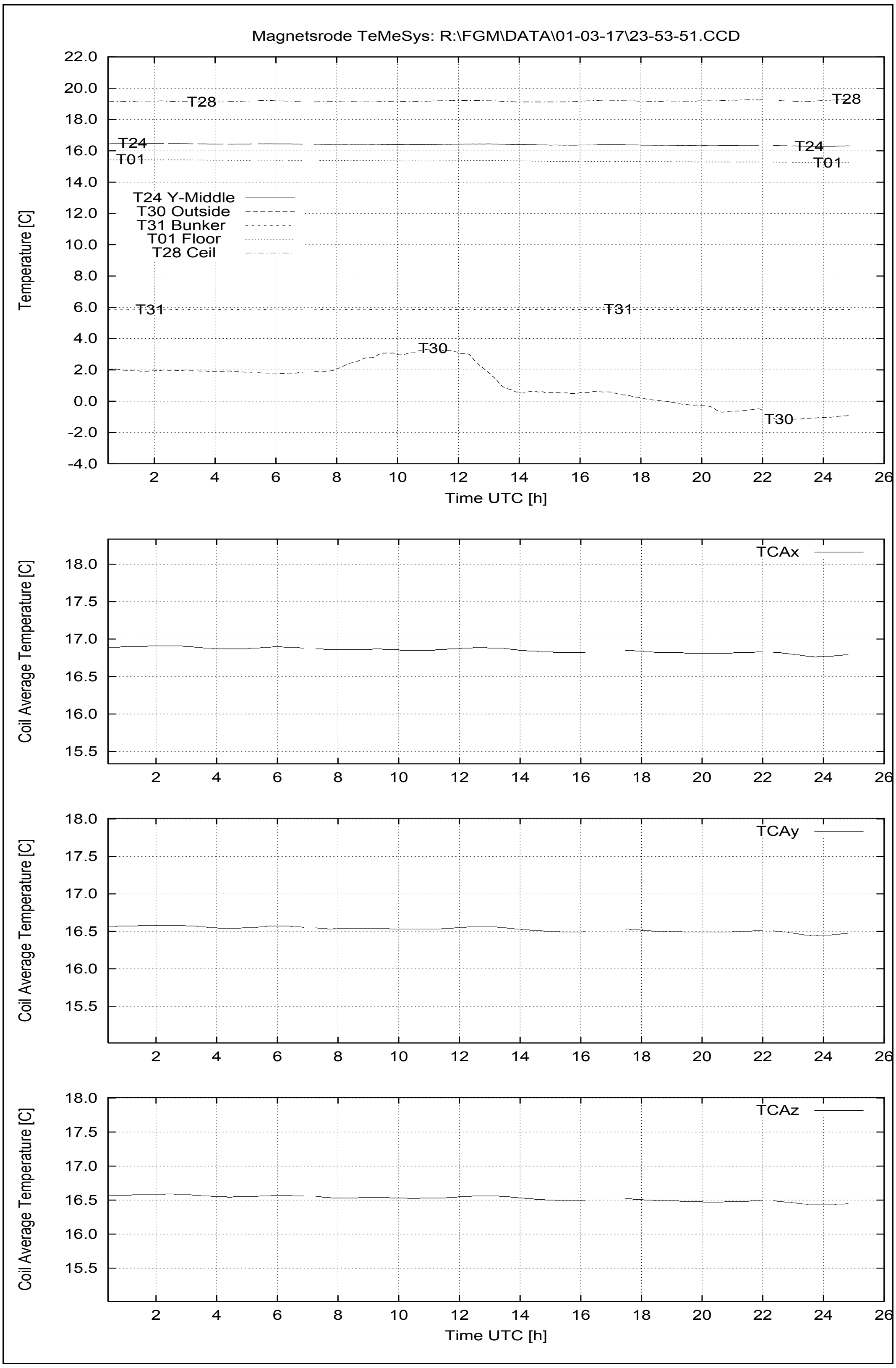


Figure 215: March 17, 2001: Temperatures House 2.

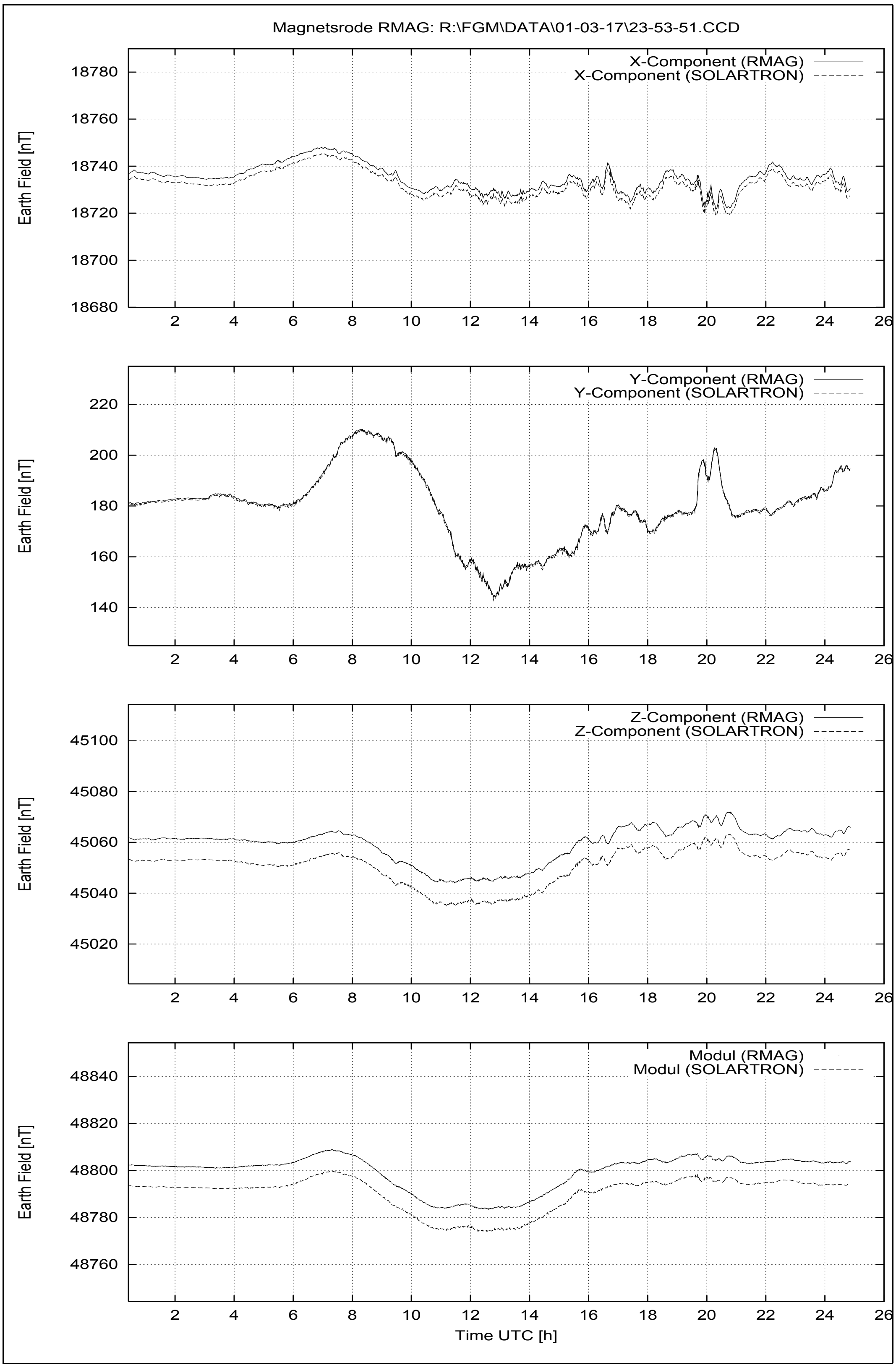


Figure 216: March 17, 2001: Earthfield variations.

## B.12 Sunday March 18, 2001

### B.12.1 Overview Plots: System Performance, Temperatures and Earthfield Variations.

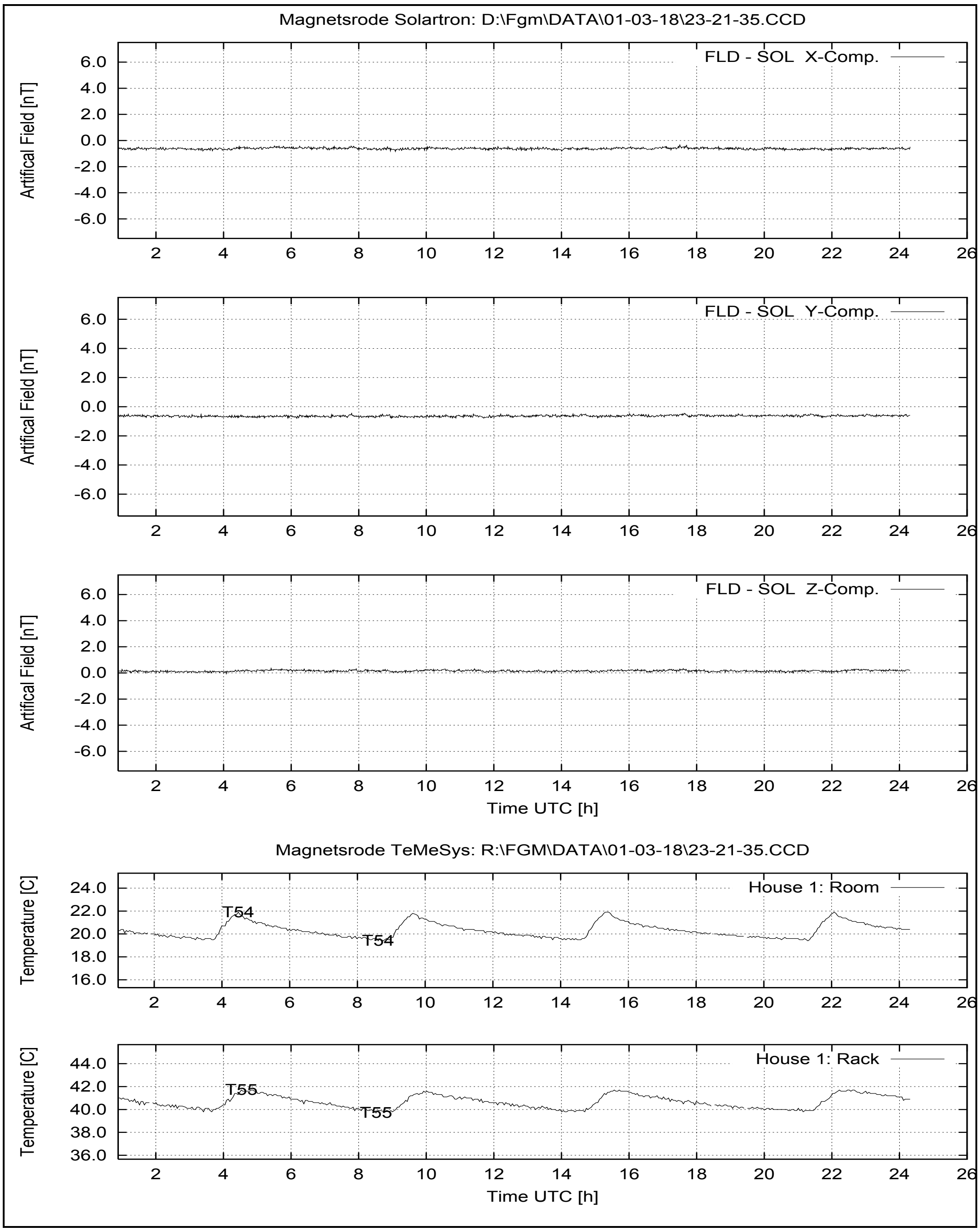


Figure 217: March 18, 2001: System Performance: FLD – SOL; Temperatures at House 1.

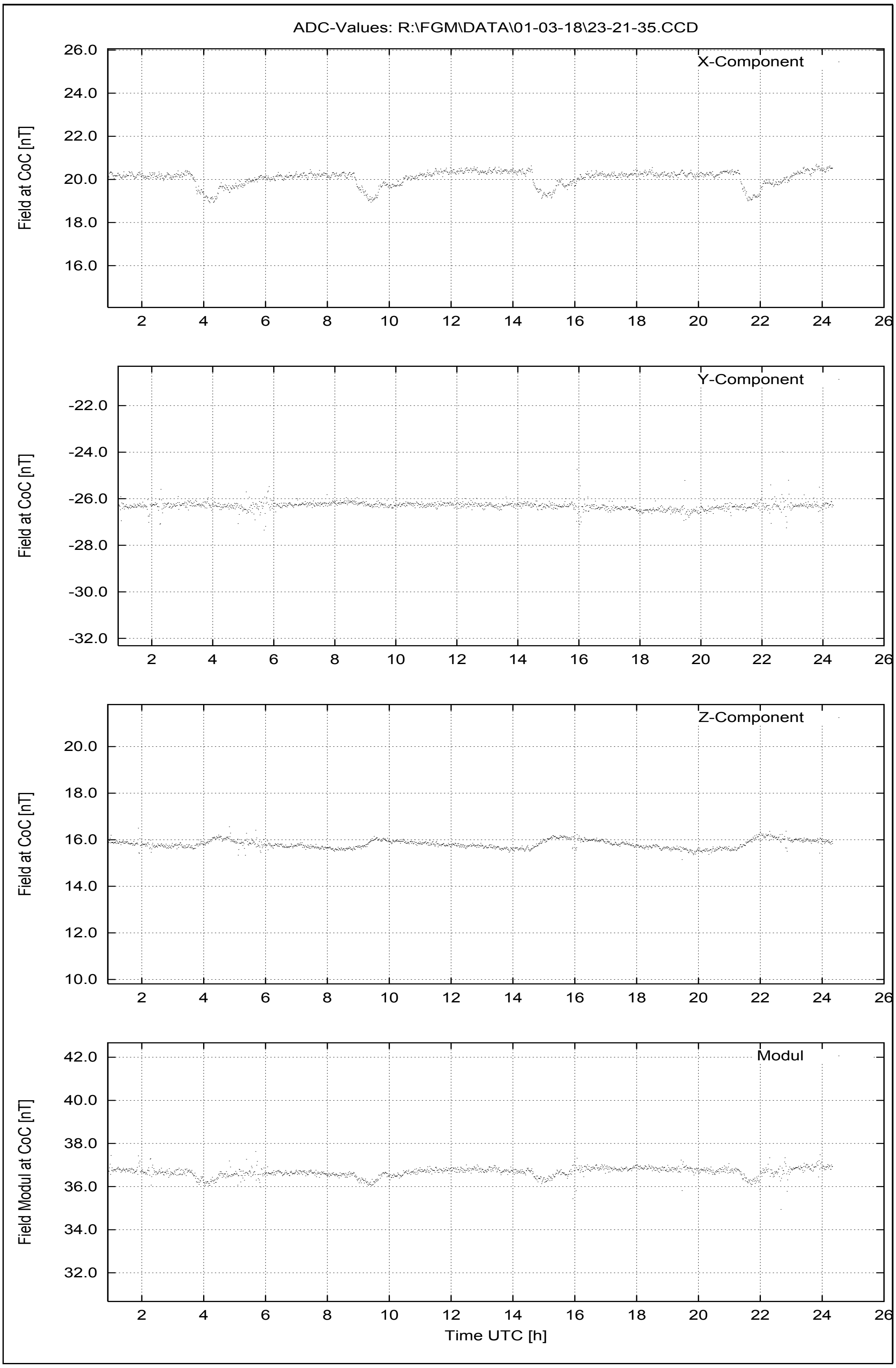


Figure 218: March 18, 2001: Zero field at CoC.

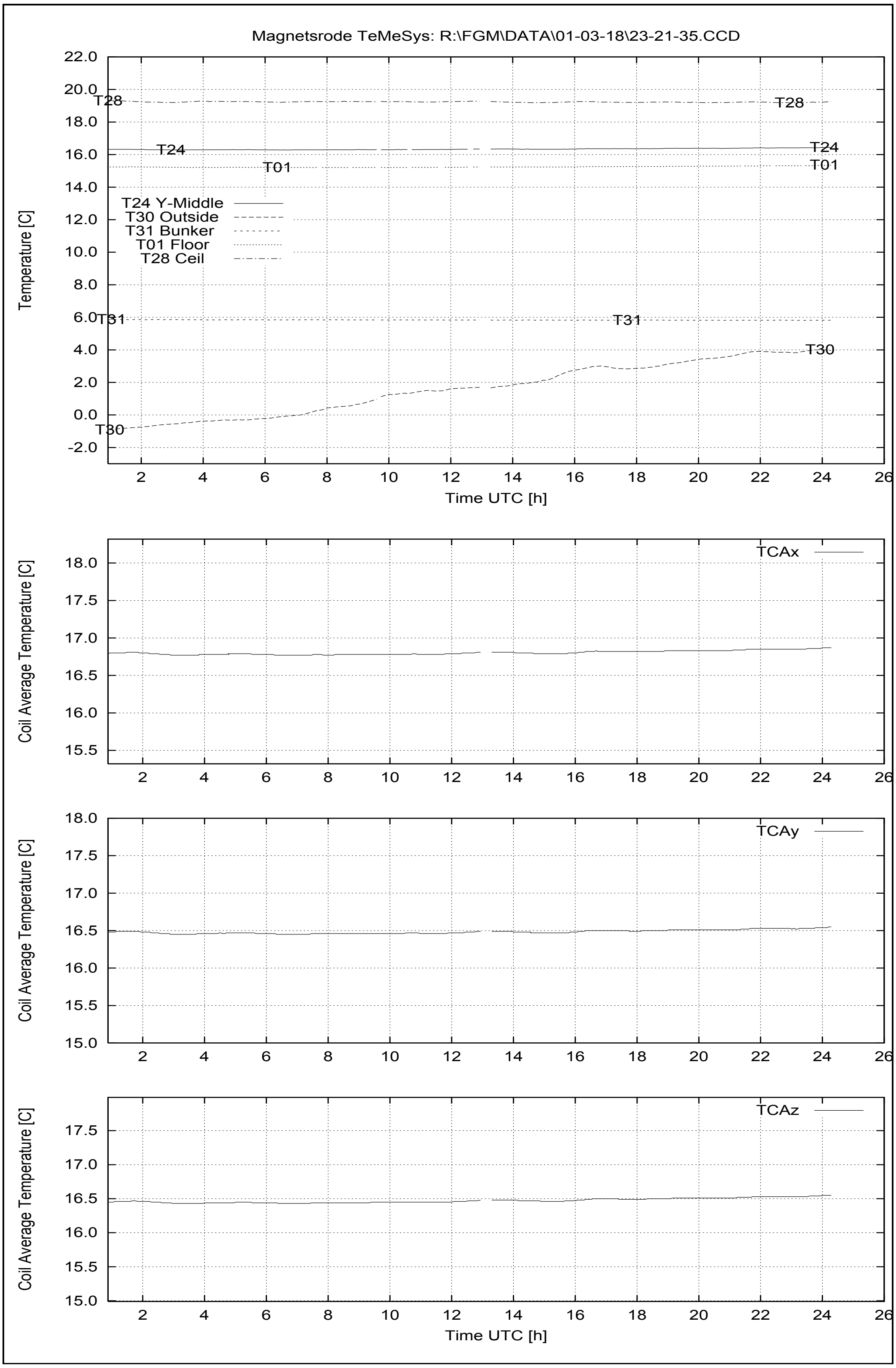


Figure 219: March 18, 2001: Temperatures House 2.

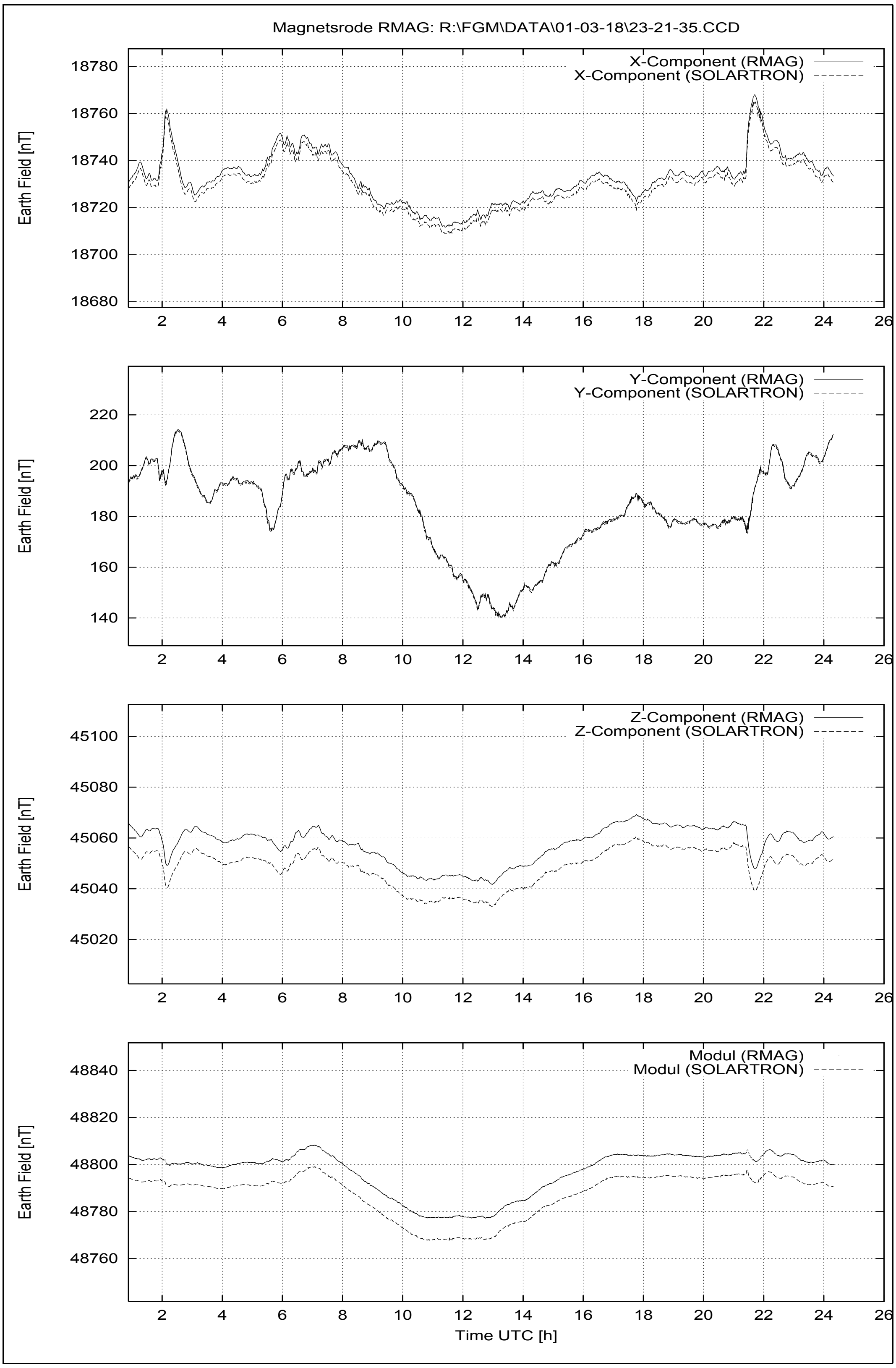


Figure 220: March 18, 2001: Earthfield variations.

# C File Info Tables

The following tables gave a reference of the recorded `*.CCD` data file and the configuration file for that measurement. A specific calibration step data file can be looked up easily using these tables. The data are organized day by day.

## C.1 CD–ROM

The complete data set as well as the calibration report, the analysis report and some other stuff is available on the CD-ROMs with the following described content.

| ROSETTA 1-1 | | | ROSETTA 2-1 | | ROSETTA 3-1 |
|---|---|---|---|---|---|
| 01-03-08 | 01-03-14 | 01-03-20 | 01-03-23 | 01-03-28 | 01-04-05 |
| 01-03-09 | 01-03-15 | 01-03-21 | 01-03-24 | 01-03-29 | 01-04-06 |
| 01-03-10 | 01-03-16 | 01-03-22 | 01-03-25 | | |
| 01-03-11 | 01-03-17 | 01-03-23 | 01-03-26 | | 01-04-20 |
| 01-03-12 | 01-03-18 | (partial) | 01-03-27 | | 01-04-21 |
| 01-03-13 | 01-03-19 | | | | 01-04-22 |

| ROSETTA 4-1 | | ROSETTA 5-1 | | ROSETTA 6-1 | |
|---|---|---|---|---|---|
| 01-04-23 | 01-04-27 | 01-04-30 | Miscelleaneous | 01-08-28 | 01-09-01 |
| 01-04-24 | 01-04-28 | 01-05-01 | Images | 01-08-29 | 01-09-02 |
| 01-04-25 | 01-04-29 | 01-05-02 | Materials | 01-08-30 | |
| 01-04-26 | | | Documentation | 01-08-31 | |

| ROSETTA 7-1 | |
|---|---|
| 01-09-03 | 01-09-10 |
| 01-09-06 | 01-09-11 |
| 01-09-07 | 01-09-12 |
| 01-09-08 | 01-09-13 |
| 01-09-09 | |

### C.2 01-03-08

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-08\10-03-48.CCD | STABall.CFG | 01-03-08\17-54-48.CCD |
| STABall.CFG | 01-03-08\11-02-59.CCD | STABall.CFG | 01-03-08\18-53-28.CCD |
| STABall.CFG | 01-03-08\12-01-40.CCD | STABall.CFG | 01-03-08\19-52-08.CCD |
| STABall.CFG | 01-03-08\13-01-11.CCD | STABall.CFG | 01-03-08\20-50-49.CCD |
| STABall.CFG | 01-03-08\13-59-52.CCD | STABall.CFG | 01-03-08\21-49-30.CCD |
| STABall.CFG | 01-03-08\14-58-31.CCD | STABall.CFG | 01-03-08\22-48-10.CCD |
| STABall.CFG | 01-03-08\15-57-12.CCD | STABall.CFG | 01-03-08\23-46-50.CCD |
| STABall.CFG | 01-03-08\16-56-07.CCD | | |

### C.3 01-03-09

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-09\00-45-31.CCD | STABall.CFG | 01-03-09\12-29-36.CCD |
| STABall.CFG | 01-03-09\01-44-10.CCD | STABall.CFG | 01-03-09\13-28-15.CCD |
| STABall.CFG | 01-03-09\02-42-52.CCD | STABall.CFG | 01-03-09\14-26-56.CCD |
| STABall.CFG | 01-03-09\03-41-32.CCD | STABall.CFG | 01-03-09\15-25-37.CCD |
| STABall.CFG | 01-03-09\04-40-13.CCD | STABall.CFG | 01-03-09\16-24-18.CCD |
| STABall.CFG | 01-03-09\05-38-54.CCD | STABall.CFG | 01-03-09\17-22-58.CCD |
| STABall.CFG | 01-03-09\06-37-34.CCD | STABall.CFG | 01-03-09\18-21-38.CCD |
| STABall.CFG | 01-03-09\07-36-15.CCD | STABall.CFG | 01-03-09\19-20-19.CCD |
| STABall.CFG | 01-03-09\08-34-55.CCD | STABall.CFG | 01-03-09\20-18-59.CCD |
| STABall.CFG | 01-03-09\09-33-35.CCD | STABall.CFG | 01-03-09\21-17-40.CCD |
| STABall.CFG | 01-03-09\10-32-15.CCD | STABall.CFG | 01-03-09\22-16-20.CCD |
| STABall.CFG | 01-03-09\11-30-56.CCD | STABall.CFG | 01-03-09\23-15-12.CCD |

### C.4 01-03-10

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-10\00-13-52.CCD | STABall.CFG | 01-03-10\12-57-30.CCD |
| STABall.CFG | 01-03-10\01-12-33.CCD | STABall.CFG | 01-03-10\13-56-09.CCD |
| STABall.CFG | 01-03-10\02-11-13.CCD | STABall.CFG | 01-03-10\14-54-50.CCD |
| STABall.CFG | 01-03-10\03-09-53.CCD | STABall.CFG | 01-03-10\15-53-29.CCD |
| STABall.CFG | 01-03-10\04-08-33.CCD | STABall.CFG | 01-03-10\16-52-09.CCD |
| STABall.CFG | 01-03-10\05-07-14.CCD | STABall.CFG | 01-03-10\17-50-49.CCD |
| STABall.CFG | 01-03-10\06-05-53.CCD | STABall.CFG | 01-03-10\18-49-29.CCD |
| STABall.CFG | 01-03-10\07-04-34.CCD | STABall.CFG | 01-03-10\19-48-10.CCD |
| STABall.CFG | 01-03-10\08-03-14.CCD | STABall.CFG | 01-03-10\20-47-12.CCD |
| STABall.CFG | 01-03-10\09-01-54.CCD | STABall.CFG | 01-03-10\21-45-51.CCD |
| STABall.CFG | 01-03-10\10-00-34.CCD | STABall.CFG | 01-03-10\22-44-32.CCD |
| STABall.CFG | 01-03-10\11-00-08.CCD | STABall.CFG | 01-03-10\23-43-11.CCD |
| STABall.CFG | 01-03-10\11-58-49.CCD | | |

### C.5 01-03-11

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-11\00-41-51.CCD | STABall.CFG | 01-03-11\12-25-45.CCD |
| STABall.CFG | 01-03-11\01-40-30.CCD | STABall.CFG | 01-03-11\13-24-25.CCD |
| STABall.CFG | 01-03-11\02-39-10.CCD | STABall.CFG | 01-03-11\14-23-04.CCD |
| STABall.CFG | 01-03-11\03-37-49.CCD | STABall.CFG | 01-03-11\15-21-44.CCD |
| STABall.CFG | 01-03-11\04-36-29.CCD | STABall.CFG | 01-03-11\16-20-23.CCD |
| STABall.CFG | 01-03-11\05-35-09.CCD | STABall.CFG | 01-03-11\17-19-03.CCD |
| STABall.CFG | 01-03-11\06-33-48.CCD | STABall.CFG | 01-03-11\18-17-43.CCD |
| STABall.CFG | 01-03-11\07-32-27.CCD | STABall.CFG | 01-03-11\19-16-23.CCD |
| STABall.CFG | 01-03-11\08-31-07.CCD | STABall.CFG | 01-03-11\20-15-02.CCD |
| STABall.CFG | 01-03-11\09-29-47.CCD | STABall.CFG | 01-03-11\21-13-41.CCD |
| STABall.CFG | 01-03-11\10-28-27.CCD | STABall.CFG | 01-03-11\22-12-20.CCD |
| STABall.CFG | 01-03-11\11-27-06.CCD | STABall.CFG | 01-03-11\23-10-59.CCD |

### C.6 01-03-12

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-12\00-09-39.CCD | STABall.CFG | 01-03-12\12-52-37.CCD |
| STABall.CFG | 01-03-12\01-08-19.CCD | STABall.CFG | 01-03-12\13-51-17.CCD |
| STABall.CFG | 01-03-12\02-06-58.CCD | STABall.CFG | 01-03-12\14-49-56.CCD |
| STABall.CFG | 01-03-12\03-05-37.CCD | STABall.CFG | 01-03-12\15-48-35.CCD |
| STABall.CFG | 01-03-12\04-04-41.CCD | STABall.CFG | 01-03-12\16-47-14.CCD |
| STABall.CFG | 01-03-12\05-03-21.CCD | STABall.CFG | 01-03-12\17-45-54.CCD |
| STABall.CFG | 01-03-12\06-02-01.CCD | STABall.CFG | 01-03-12\18-44-34.CCD |
| STABall.CFG | 01-03-12\07-00-41.CCD | STABall.CFG | 01-03-12\19-43-13.CCD |
| STABall.CFG | 01-03-12\07-59-20.CCD | STABall.CFG | 01-03-12\20-41-52.CCD |
| STABall.CFG | 01-03-12\08-58-00.CCD | STABall.CFG | 01-03-12\21-40-31.CCD |
| STABall.CFG | 01-03-12\09-56-40.CCD | STABall.CFG | 01-03-12\22-39-10.CCD |
| STABall.CFG | 01-03-12\10-55-19.CCD | STABall.CFG | 01-03-12\23-37-50.CCD |
| STABall.CFG | 01-03-12\11-53-58.CCD | | |

### C.7 01-03-13

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-13\00-36-29.CCD | STABall.CFG | 01-03-13\12-20-23.CCD |
| STABall.CFG | 01-03-13\01-35-08.CCD | STABall.CFG | 01-03-13\13-19-02.CCD |
| STABall.CFG | 01-03-13\02-33-48.CCD | STABall.CFG | 01-03-13\14-17-42.CCD |
| STABall.CFG | 01-03-13\03-32-27.CCD | STABall.CFG | 01-03-13\15-16-22.CCD |
| STABall.CFG | 01-03-13\04-31-06.CCD | STABall.CFG | 01-03-13\16-15-02.CCD |
| STABall.CFG | 01-03-13\05-29-45.CCD | STABall.CFG | 01-03-13\17-13-41.CCD |
| STABall.CFG | 01-03-13\06-28-24.CCD | STABall.CFG | 01-03-13\18-12-21.CCD |
| STABall.CFG | 01-03-13\07-27-04.CCD | STABall.CFG | 01-03-13\19-11-01.CCD |
| STABall.CFG | 01-03-13\08-25-43.CCD | STABall.CFG | 01-03-13\20-09-41.CCD |
| STABall.CFG | 01-03-13\09-24-23.CCD | STABall.CFG | 01-03-13\21-08-20.CCD |
| STABall.CFG | 01-03-13\10-23-03.CCD | STABall.CFG | 01-03-13\22-07-00.CCD |
| STABall.CFG | 01-03-13\11-21-43.CCD | STABall.CFG | 01-03-13\23-05-39.CCD |

### C.8 01-03-14

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-14\00-04-19.CCD | STABall.CFG | 01-03-14\12-46-55.CCD |
| STABall.CFG | 01-03-14\01-02-58.CCD | STABall.CFG | 01-03-14\13-45-34.CCD |
| STABall.CFG | 01-03-14\02-01-38.CCD | STABall.CFG | 01-03-14\14-44-13.CCD |
| STABall.CFG | 01-03-14\03-00-18.CCD | STABall.CFG | 01-03-14\15-42-53.CCD |
| STABall.CFG | 01-03-14\03-58-58.CCD | STABall.CFG | 01-03-14\16-41-33.CCD |
| STABall.CFG | 01-03-14\04-57-38.CCD | STABall.CFG | 01-03-14\17-40-12.CCD |
| STABall.CFG | 01-03-14\05-56-17.CCD | STABall.CFG | 01-03-14\18-38-51.CCD |
| STABall.CFG | 01-03-14\06-54-56.CCD | STABall.CFG | 01-03-14\19-37-31.CCD |
| STABall.CFG | 01-03-14\07-53-35.CCD | STABall.CFG | 01-03-14\20-36-11.CCD |
| STABall.CFG | 01-03-14\08-52-15.CCD | STABall.CFG | 01-03-14\21-34-50.CCD |
| STABall.CFG | 01-03-14\09-50-55.CCD | STABall.CFG | 01-03-14\22-33-30.CCD |
| STABall.CFG | 01-03-14\10-49-35.CCD | STABall.CFG | 01-03-14\23-32-10.CCD |
| STABall.CFG | 01-03-14\11-48-15.CCD | | |

### C.9 01-03-15

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-15\00-30-49.CCD | STABall.CFG | 01-03-15\13-13-20.CCD |
| STABall.CFG | 01-03-15\01-29-29.CCD | STABall.CFG | 01-03-15\14-12-00.CCD |
| STABall.CFG | 01-03-15\02-28-08.CCD | STABall.CFG | 01-03-15\15-10-40.CCD |
| STABall.CFG | 01-03-15\03-26-47.CCD | STABall.CFG | 01-03-15\16-09-19.CCD |
| STABall.CFG | 01-03-15\04-25-27.CCD | STABall.CFG | 01-03-15\17-07-58.CCD |
| STABall.CFG | 01-03-15\05-24-06.CCD | STABall.CFG | 01-03-15\18-06-38.CCD |
| STABall.CFG | 01-03-15\06-22-45.CCD | STABall.CFG | 01-03-15\19-05-18.CCD |
| STABall.CFG | 01-03-15\07-21-25.CCD | STABall.CFG | 01-03-15\20-03-57.CCD |
| STABall.CFG | 01-03-15\08-20-04.CCD | STABall.CFG | 01-03-15\21-02-37.CCD |
| STABall.CFG | 01-03-15\09-18-44.CCD | STABall.CFG | 01-03-15\22-01-16.CCD |
| STABall.CFG | 01-03-15\10-17-23.CCD | STABall.CFG | 01-03-15\22-59-56.CCD |
| STABall.CFG | 01-03-15\11-16-02.CCD | STABall.CFG | 01-03-15\23-58-36.CCD |
| STABall.CFG | 01-03-15\12-14-41.CCD | | |

### C.10 01-03-16

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| | 01-03-16\00-57-16.CCD | STABall.CFG | 01-03-16\12-41-08.CCD |
| STABall.CFG | 01-03-16\01-55-56.CCD | STABall.CFG | 01-03-16\13-39-48.CCD |
| STABall.CFG | 01-03-16\02-54-35.CCD | STABall.CFG | 01-03-16\14-38-28.CCD |
| STABall.CFG | 01-03-16\03-53-15.CCD | STABall.CFG | 01-03-16\15-37-07.CCD |
| STABall.CFG | 01-03-16\04-51-53.CCD | STABall.CFG | 01-03-16\16-35-47.CCD |
| STABall.CFG | 01-03-16\05-50-33.CCD | STABall.CFG | 01-03-16\17-34-27.CCD |
| STABall.CFG | 01-03-16\06-49-12.CCD | STABall.CFG | 01-03-16\18-33-06.CCD |
| STABall.CFG | 01-03-16\07-47-52.CCD | STABall.CFG | 01-03-16\19-31-45.CCD |
| STABall.CFG | 01-03-16\08-46-31.CCD | STABall.CFG | 01-03-16\20-30-25.CCD |
| STABall.CFG | 01-03-16\09-45-10.CCD | STABall.CFG | 01-03-16\21-29-05.CCD |
| STABall.CFG | 01-03-16\10-43-49.CCD | STABall.CFG | 01-03-16\22-27-44.CCD |
| STABall.CFG | 01-03-16\11-42-30.CCD | STABall.CFG | 01-03-16\23-26-23.CCD |

### C.11 01-03-17

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-17\00-25-03.CCD | STABall.CFG | 01-03-17\12-08-59.CCD |
| STABall.CFG | 01-03-17\01-23-42.CCD | STABall.CFG | 01-03-17\13-07-38.CCD |
| STABall.CFG | 01-03-17\02-22-21.CCD | STABall.CFG | 01-03-17\14-06-17.CCD |
| STABall.CFG | 01-03-17\03-21-01.CCD | STABall.CFG | 01-03-17\15-04-57.CCD |
| STABall.CFG | 01-03-17\04-19-40.CCD | STABall.CFG | 01-03-17\16-03-37.CCD |
| STABall.CFG | 01-03-17\05-18-19.CCD | STABall.CFG | 01-03-17\17-02-17.CCD |
| STABall.CFG | 01-03-17\06-16-59.CCD | STABall.CFG | 01-03-17\18-01-52.CCD |
| STABall.CFG | 01-03-17\07-15-39.CCD | STABall.CFG | 01-03-17\19-00-31.CCD |
| STABall.CFG | 01-03-17\08-14-21.CCD | STABall.CFG | 01-03-17\19-59-12.CCD |
| STABall.CFG | 01-03-17\09-13-00.CCD | STABall.CFG | 01-03-17\20-57-51.CCD |
| STABall.CFG | 01-03-17\10-11-40.CCD | STABall.CFG | 01-03-17\21-56-31.CCD |
| STABall.CFG | 01-03-17\11-10-19.CCD | STABall.CFG | 01-03-17\22-55-11.CCD |
| STABall.CFG | 01-03-17\12-08-59.CCD | STABall.CFG | 01-03-17\23-53-51.CCD |

### C.12 01-03-18

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-18\00-52-30.CCD | STABall.CFG | 01-03-18\12-36-22.CCD |
| STABall.CFG | 01-03-18\01-51-09.CCD | STABall.CFG | 01-03-18\13-35-01.CCD |
| STABall.CFG | 01-03-18\02-49-49.CCD | STABall.CFG | 01-03-18\14-33-41.CCD |
| STABall.CFG | 01-03-18\03-48-29.CCD | STABall.CFG | 01-03-18\15-32-21.CCD |
| STABall.CFG | 01-03-18\04-47-08.CCD | STABall.CFG | 01-03-18\16-31-00.CCD |
| STABall.CFG | 01-03-18\05-45-48.CCD | STABall.CFG | 01-03-18\17-29-40.CCD |
| STABall.CFG | 01-03-18\06-44-27.CCD | STABall.CFG | 01-03-18\18-28-20.CCD |
| STABall.CFG | 01-03-18\07-43-06.CCD | STABall.CFG | 01-03-18\19-26-59.CCD |
| STABall.CFG | 01-03-18\08-41-45.CCD | STABall.CFG | 01-03-18\20-25-38.CCD |
| STABall.CFG | 01-03-18\09-40-25.CCD | STABall.CFG | 01-03-18\21-24-17.CCD |
| STABall.CFG | 01-03-18\10-39-04.CCD | STABall.CFG | 01-03-18\22-22-56.CCD |
| STABall.CFG | 01-03-18\11-37-43.CCD | STABall.CFG | 01-03-18\23-21-35.CCD |

### C.13 01-03-19

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| STABall.CFG | 01-03-19\00-20-15.CCD | ALI10.cfg | 01-03-19\15-29-16.CCD |
| STABall.CFG | 01-03-19\01-18-55.CCD | OFFX_T1.cfg | 01-03-19\15-36-45.CCD |
| STABall.CFG | 01-03-19\02-17-35.CCD | OFFX_T1.cfg | 01-03-19\15-42-39.CCD |
| STABall.CFG | 01-03-19\03-16-15.CCD | ALI10.cfg | 01-03-19\15-53-19.CCD |
| STABall.CFG | 01-03-19\04-14-54.CCD | OFFZ_T1.cfg | 01-03-19\16-00-30.CCD |
| STABall.CFG | 01-03-19\05-14-11.CCD | OFFZ_T1.cfg | 01-03-19\16-07-30.CCD |
| STABall.CFG | 01-03-19\06-12-51.CCD | ALI10.cfg | 01-03-19\16-23-48.CCD |
| STABall.CFG | 01-03-19\07-11-31.CCD | 14000XYZ.CFG | 01-03-19\16-31-23.CCD |
| STABall.CFG | 01-03-19\08-10-11.CCD | LX15.CFG | 01-03-19\17-04-04.CCD |
| STABall.CFG | 01-03-19\09-08-51.CCD | LY15.CFG | 01-03-19\17-35-25.CCD |
| STABall.CFG | 01-03-19\10-07-31.CCD | LZ15.CFG | 01-03-19\18-06-26.CCD |
| STABall.CFG | 01-03-19\11-06-10.CCD | SP15.CFG | 01-03-19\18-37-27.CCD |
| STABall.CFG | 01-03-19\12-04-49.CCD | 14000XYZ.CFG | 01-03-19\20-21-50.CCD |
| | | LX15.CFG | 01-03-19\20-54-30.CCD |
| ALI10.cfg | 01-03-19\15-01-03.CCD | LY15.CFG | 01-03-19\21-25-30.CCD |
| OFFX_N1.cfg | 01-03-19\15-08-30.CCD | LZ15.CFG | 01-03-19\21-56-30.CCD |
| OFFX_N1.cfg | 01-03-19\15-12-37.CCD | SP15.CFG | 01-03-19\22-27-31.CCD |

### C.14 01-03-20

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| 14000XYZ.CFG | 01-03-20\00-11-53.CCD | LZ15.CFG | 01-03-20\05-36-52.CCD |
| LX15.CFG | 01-03-20\00-44-33.CCD | SP15.CFG | 01-03-20\06-07-53.CCD |
| LY15.CFG | 01-03-20\01-15-51.CCD | 14000XYZ.CFG | 01-03-20\07-52-14.CCD |
| LZ15.CFG | 01-03-20\01-46-51.CCD | LX15.CFG | 01-03-20\08-25-24.CCD |
| SP15.CFG | 01-03-20\02-17-51.CCD | LY15.CFG | 01-03-20\08-56-24.CCD |
| 14000XYZ.CFG | 01-03-20\04-02-13.CCD | LZ15.CFG | 01-03-20\09-27-25.CCD |
| LX15.CFG | 01-03-20\04-34-53.CCD | SP15.CFG | 01-03-20\09-58-26.CCD |
| LY15.CFG | 01-03-20\05-05-52.CCD | | |

### C.15 01-03-21

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| ALI10.cfg | 01-03-21\12-58-42.CCD | LX15.CFG | 01-03-21\19-10-11.CCD |
| STABTST.cfg | 01-03-21\13-06-10.CCD | LY15.CFG | 01-03-21\19-41-11.CCD |
| STABTST.cfg | 01-03-21\14-06-50.CCD | LZ15.CFG | 01-03-21\20-12-11.CCD |
| STABTST.cfg | 01-03-21\15-07-30.CCD | SP15spir.CFG | 01-03-21\20-43-12.CCD |
| STABTST.cfg | 01-03-21\16-08-10.CCD | | |
| STABTST.cfg | 01-03-21\17-08-50.CCD | | |
| STABTST.cfg | 01-03-21\18-09-30.CCD | | |

### C.16 01-03-22

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| SP15sphe.CFG | 01-03-22\00-35-57.CCD | STABTST.cfg | 01-03-22\14-53-26.CCD |
| LX15.CFG | 01-03-22\05-08-37.CCD | STABTST.cfg | 01-03-22\15-54-07.CCD |
| LY15.CFG | 01-03-22\05-39-37.CCD | STABTST.cfg | 01-03-22\16-54-49.CCD |
| LZ15.CFG | 01-03-22\06-10-38.CCD | STABTST.cfg | 01-03-22\17-55-30.CCD |
| SP15sphe.CFG | 01-03-22\06-41-38.CCD | LX15.CFG | 01-03-22\18-56-10.CCD |
| ALI10.cfg | 01-03-22\12-44-38.CCD | LY15.CFG | 01-03-22\19-27-12.CCD |
| STABTST.cfg | 01-03-22\12-52-04.CCD | LZ15.CFG | 01-03-22\19-58-13.CCD |
| STABTST.cfg | 01-03-22\13-52-45.CCD | SP15spir.CFG | 01-03-22\20-29-13.CCD |

### C.17 01-03-23

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| SP15sphe.CFG | 01-03-23\00-21-58.CCD | ali10.CFG | 01-03-23\13-58-41.CCD |
| LX15.CFG | 01-03-23\04-54-38.CCD | TEMP.CFG | 01-03-23\14-05-56.CCD |
| LY15.CFG | 01-03-23\05-25-39.CCD | TEMP.CFG | 01-03-23\15-13-37.CCD |
| LZ15.CFG | 01-03-23\05-58-17.CCD | TEMP.CFG | 01-03-23\16-21-17.CCD |
| SP15sphe.CFG | 01-03-23\06-29-17.CCD | TEMP.CFG | 01-03-23\17-28-58.CCD |
| ALI10.cfg | 01-03-23\12-21-23.CCD | TEMP.CFG | 01-03-23\18-36-39.CCD |
| TX15.CFG | 01-03-23\12-40-29.CCD | TEMP.CFG | 01-03-23\19-44-20.CCD |
| TY15.CFG | 01-03-23\12-53-30.CCD | TEMP.CFG | 01-03-23\20-52-00.CCD |
| TZ15.CFG | 01-03-23\13-06-31.CCD | TEMP.CFG | 01-03-23\21-59-40.CCD |
| 14000XYZ.CFG | 01-03-23\13-26-01.CCD | TEMP.CFG | 01-03-23\23-07-21.CCD |

### C.18 01-03-24

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-03-24\00-15-02.CCD | TEMP.CFG | 01-03-24\12-40-17.CCD |
| TEMP.CFG | 01-03-24\01-22-43.CCD | TEMP.CFG | 01-03-24\13-47-57.CCD |
| TEMP.CFG | 01-03-24\02-30-23.CCD | TEMP.CFG | 01-03-24\14-55-38.CCD |
| TEMP.CFG | 01-03-24\03-38-04.CCD | TEMP.CFG | 01-03-24\16-03-18.CCD |
| TEMP.CFG | 01-03-24\04-45-45.CCD | TEMP.CFG | 01-03-24\17-10-59.CCD |
| TEMP.CFG | 01-03-24\05-53-25.CCD | TEMP.CFG | 01-03-24\18-18-38.CCD |
| TEMP.CFG | 01-03-24\07-01-06.CCD | TEMP.CFG | 01-03-24\19-26-18.CCD |
| TEMP.CFG | 01-03-24\08-08-46.CCD | TEMP.CFG | 01-03-24\20-33-59.CCD |
| TEMP.CFG | 01-03-24\09-16-46.CCD | TEMP.CFG | 01-03-24\21-41-40.CCD |
| TEMP.CFG | 01-03-24\10-24-56.CCD | TEMP.CFG | 01-03-24\22-49-20.CCD |
| TEMP.CFG | 01-03-24\11-32-36.CCD | TEMP.CFG | 01-03-24\23-57-00.CCD |

### C.19 01-03-25

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-03-25\01-04-41.CCD | TEMP.CFG | 01-03-25\13-29-06.CCD |
| TEMP.CFG | 01-03-25\02-12-20.CCD | TEMP.CFG | 01-03-25\14-45-21.CCD |
| TEMP.CFG | 01-03-25\03-20-02.CCD | TEMP.CFG | 01-03-25\15-53-01.CCD |
| TEMP.CFG | 01-03-25\04-27-43.CCD | TEMP.CFG | 01-03-25\17-00-41.CCD |
| TEMP.CFG | 01-03-25\05-35-23.CCD | TEMP.CFG | 01-03-25\18-08-22.CCD |
| TEMP.CFG | 01-03-25\06-43-03.CCD | TEMP.CFG | 01-03-25\19-16-02.CCD |
| TEMP.CFG | 01-03-25\07-50-44.CCD | TEMP.CFG | 01-03-25\20-23-42.CCD |
| TEMP.CFG | 01-03-25\08-58-24.CCD | TEMP.CFG | 01-03-25\21-31-23.CCD |
| TEMP.CFG | 01-03-25\10-06-05.CCD | TEMP.CFG | 01-03-25\22-39-04.CCD |
| TEMP.CFG | 01-03-25\11-13-44.CCD | TEMP.CFG | 01-03-25\23-46-45.CCD |
| TEMP.CFG | 01-03-25\12-21-25.CCD | | |

### C.20 01-03-26

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-03-26\00-54-26.CCD | TEMP.CFG | 01-03-26\13-19-10.CCD |
| TEMP.CFG | 01-03-26\02-02-06.CCD | TEMP.CFG | 01-03-26\14-26-51.CCD |
| TEMP.CFG | 01-03-26\03-09-46.CCD | TEMP.CFG | 01-03-26\15-34-32.CCD |
| TEMP.CFG | 01-03-26\04-17-27.CCD | TEMP.CFG | 01-03-26\16-42-12.CCD |
| TEMP.CFG | 01-03-26\05-25-28.CCD | TEMP.CFG | 01-03-26\17-49-53.CCD |
| TEMP.CFG | 01-03-26\06-33-08.CCD | TEMP.CFG | 01-03-26\18-57-34.CCD |
| TEMP.CFG | 01-03-26\07-40-49.CCD | TEMP.CFG | 01-03-26\20-05-15.CCD |
| TEMP.CFG | 01-03-26\08-48-29.CCD | TEMP.CFG | 01-03-26\21-12-54.CCD |
| TEMP.CFG | 01-03-26\09-56-08.CCD | TEMP.CFG | 01-03-26\22-20-35.CCD |
| TEMP.CFG | 01-03-26\11-03-49.CCD | TEMP.CFG | 01-03-26\23-28-15.CCD |
| TEMP.CFG | 01-03-26\12-11-29.CCD | | |

### C.21 01-03-27

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-03-27\00-36-28.CCD | TEMP.CFG | 01-03-27\13-00-55.CCD |
| TEMP.CFG | 01-03-27\01-44-09.CCD | TEMP.CFG | 01-03-27\14-08-35.CCD |
| TEMP.CFG | 01-03-27\02-51-49.CCD | TEMP.CFG | 01-03-27\15-16-15.CCD |
| TEMP.CFG | 01-03-27\03-59-29.CCD | TEMP.CFG | 01-03-27\16-23-55.CCD |
| TEMP.CFG | 01-03-27\05-07-10.CCD | TEMP.CFG | 01-03-27\17-31-36.CCD |
| TEMP.CFG | 01-03-27\06-14-51.CCD | TEMP.CFG | 01-03-27\18-39-17.CCD |
| TEMP.CFG | 01-03-27\07-22-32.CCD | TEMP.CFG | 01-03-27\19-46-57.CCD |
| TEMP.CFG | 01-03-27\08-30-12.CCD | TEMP.CFG | 01-03-27\20-54-36.CCD |
| TEMP.CFG | 01-03-27\09-37-52.CCD | TEMP.CFG | 01-03-27\22-02-17.CCD |
| TEMP.CFG | 01-03-27\10-45-33.CCD | TEMP.CFG | 01-03-27\23-09-57.CCD |
| TEMP.CFG | 01-03-27\11-53-14.CCD | | |

### C.22 01-03-28

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-03-28\00-17-38.CCD | VAR.CFG | 01-03-28\10-59-36.CCD |
| TEMP.CFG | 01-03-28\01-25-17.CCD | VAR.CFG | 01-03-28\12-00-18.CCD |
| TEMP.CFG | 01-03-28\02-32-59.CCD | VAR.CFG | 01-03-28\13-00-59.CCD |
| TEMP.CFG | 01-03-28\03-40-40.CCD | VAR.CFG | 01-03-28\14-01-40.CCD |
| TEMP.CFG | 01-03-28\04-48-44.CCD | VAR.CFG | 01-03-28\15-02-20.CCD |
| TEMP.CFG | 01-03-28\05-56-26.CCD | VAR.CFG | 01-03-28\16-03-01.CCD |
| TEMP.CFG | 01-03-28\07-04-05.CCD | VAR.CFG | 01-03-28\17-03-42.CCD |
| TEMP.CFG | 01-03-28\08-11-46.CCD | VAR.CFG | 01-03-28\18-04-22.CCD |
| ali10.CFG | 01-03-28\08-56-45.CCD | VAR.CFG | 01-03-28\19-05-03.CCD |
| TX15.CFG | 01-03-28\09-03-55.CCD | VAR.CFG | 01-03-28\20-05-44.CCD |
| TY15.CFG | 01-03-28\09-16-55.CCD | VAR.CFG | 01-03-28\21-06-24.CCD |
| TZ15.CFG | 01-03-28\09-29-55.CCD | VAR.CFG | 01-03-28\22-07-05.CCD |
| ali10.CFG | 01-03-28\09-51-44.CCD | VAR.CFG | 01-03-28\23-07-46.CCD |
| VAR.CFG | 01-03-28\09-58-54.CCD | | |

### C.23 01-03-29

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| VAR.CFG | 01-03-29\00-08-26.CCD | VAR.CFG | 01-03-29\08-13-54.CCD |
| VAR.CFG | 01-03-29\01-09-06.CCD | VAR.CFG | 01-03-29\09-14-35.CCD |
| VAR.CFG | 01-03-29\02-09-48.CCD | VAR.CFG | 01-03-29\10-15-16.CCD |
| VAR.CFG | 01-03-29\03-10-29.CCD | VAR.CFG | 01-03-29\11-15-56.CCD |
| VAR.CFG | 01-03-29\04-11-11.CCD | VAR.CFG | 01-03-29\12-16-37.CCD |
| VAR.CFG | 01-03-29\05-11-52.CCD | VAR.CFG | 01-03-29\13-17-17.CCD |
| VAR.CFG | 01-03-29\06-12-33.CCD | VAR.CFG | 01-03-29\14-17-58.CCD |
| VAR.CFG | 01-03-29\07-13-14.CCD | | |

### C.24 01-04-05

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| ali10.CFG | 01-04-05\09-34-37.CCD | fd_H.CFG | 01-04-05\10-53-16.CCD |
| offx_N1.CFG | 01-04-05\09-42-17.CCD | fd_L.CFG | 01-04-05\11-40-37.CCD |
| offx_N1.CFG | 01-04-05\09-46-47.CCD | ALI10.cfg | 01-04-05\12-59-59.CCD |
| ALI10.CFG | 01-04-05\09-51-50.CCD | LX15.CFG | 01-04-05\13-08-09.CCD |
| offx_t1.CFG | 01-04-05\09-59-00.CCD | LY15.CFG | 01-04-05\13-39-12.CCD |
| offx_t1.CFG | 01-04-05\10-06-02.CCD | LZ15.CFG | 01-04-05\14-10-13.CCD |
| ali10.CFG | 01-04-05\10-15-05.CCD | SP15spir.CFG | 01-04-05\14-41-13.CCD |
| offz_t1.CFG | 01-04-05\10-22-15.CCD | SP15sphe.CFG | 01-04-05\18-33-57.CCD |
| offz_t1.CFG | 01-04-05\10-29-10.CCD | LX15.CFG | 01-04-05\23-06-37.CCD |
| ali10.CFG | 01-04-05\10-45-49.CCD | LY15.CFG | 01-04-05\23-37-38.CCD |

### C.25 01-04-06

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| LZ15.CFG | 01-04-06\00-08-38.CCD | LY15.CFG | 01-04-06\07-56-49.CCD |
| SP15sphe.CFG | 01-04-06\00-39-39.CCD | LZ15.CFG | 01-04-06\08-27-52.CCD |
| ALI10.cfg | 01-04-06\07-18-23.CCD | SP15spir.CFG | 01-04-06\08-58-51.CCD |
| LX15.CFG | 01-04-06\07-25-45.CCD | | |

### C.26 01-04-20

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| ALI10.cfg | 01-04-20\08-53-39.CCD | ALI10.cfg | 01-04-20\12-00-24.CCD |
| fd_h.CFG | 01-04-20\09-01-12.CCD | STABTST.cfg | 01-04-20\12-07-49.CCD |
| fd_l.CFG | 01-04-20\09-48-34.CCD | STABTST.cfg | 01-04-20\13-08-30.CCD |
| PWR_VAR.cfg | 01-04-20\10-49-54.CCD | LX15.CFG | 01-04-20\14-09-12.CCD |
| PWR_VAR.cfg | 01-04-20\10-58-12.CCD | LY15.CFG | 01-04-20\14-40-13.CCD |
| PWR_VAR.cfg | 01-04-20\11-03-07.CCD | LZ15.CFG | 01-04-20\15-11-14.CCD |
| PWR_VAR.cfg | 01-04-20\11-07-39.CCD | SP15spir.CFG | 01-04-20\15-42-14.CCD |
| PWR_VAR.cfg | 01-04-20\11-12-51.CCD | SP15sphe.CFG | 01-04-20\19-34-58.CCD |
| PWR_VAR.cfg | 01-04-20\11-17-23.CCD | | |
| PWR_VAR.cfg | 01-04-20\11-22-01.CCD | | |

### C.27 01-04-21

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| LX15.CFG | 01-04-21\00-07-39.CCD | LZ15.CFG | 01-04-21\12-31-22.CCD |
| LY15.CFG | 01-04-21\00-38-39.CCD | SP15spir.CFG | 01-04-21\13-02-23.CCD |
| LZ15.CFG | 01-04-21\01-09-40.CCD | SP15sphe.CFG | 01-04-21\16-55-08.CCD |
| SP15spir.CFG | 01-04-21\01-40-40.CCD | LX15.CFG | 01-04-21\21-27-48.CCD |
| SP15sphe.CFG | 01-04-21\05-33-42.CCD | LY15.CFG | 01-04-21\21-58-48.CCD |
| ALI10.cfg | 01-04-21\11-21-57.CCD | LZ15.CFG | 01-04-21\22-29-49.CCD |
| LX15.CFG | 01-04-21\11-29-19.CCD | SP15spir.CFG | 01-04-21\23-00-49.CCD |
| LY15.CFG | 01-04-21\12-00-20.CCD | | |

### C.28 01-04-22

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| SP15sphe.CFG | 01-04-22\02-53-34.CCD | var.CFG | 01-04-22\15-31-57.CCD |
| var.CFG | 01-04-22\07-26-14.CCD | var.CFG | 01-04-22\16-32-38.CCD |
| var.CFG | 01-04-22\08-26-55.CCD | var.CFG | 01-04-22\17-33-19.CCD |
| var.CFG | 01-04-22\09-27-35.CCD | var.CFG | 01-04-22\18-34-00.CCD |
| var.CFG | 01-04-22\10-28-16.CCD | var.CFG | 01-04-22\19-34-40.CCD |
| var.CFG | 01-04-22\11-28-56.CCD | LX15.CFG | 01-04-22\20-35-21.CCD |
| var.CFG | 01-04-22\12-29-37.CCD | LY15.CFG | 01-04-22\21-06-22.CCD |
| var.CFG | 01-04-22\13-30-37.CCD | LZ15.CFG | 01-04-22\21-37-22.CCD |
| var.CFG | 01-04-22\14-31-17.CCD | SP15spir.CFG | 01-04-22\22-08-23.CCD |

### C.29 01-04-23

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| SP15sphe.CFG | 01-04-23\02-01-04.CCD | offz_t1.CFG | 01-04-23\09-49-30.CCD |
| ALI10.cfg | 01-04-23\07-00-01.CCD | ALI10.cfg | 01-04-23\10-25-59.CCD |
| fd_h.CFG | 01-04-23\07-07-33.CCD | STABTST.cfg | 01-04-23\10-33-31.CCD |
| fd_l.CFG | 01-04-23\07-54-55.CCD | STABTST.cfg | 01-04-23\11-34-11.CCD |
| ALI10.cfg | 01-04-23\08-53-30.CCD | LX15.CFG | 01-04-23\12-34-52.CCD |
| offx_n1.CFG | 01-04-23\09-01-01.CCD | LY15.CFG | 01-04-23\13-06-15.CCD |
| offx_n1.CFG | 01-04-23\09-04-58.CCD | LZ15.CFG | 01-04-23\13-37-46.CCD |
| ALI10.cfg | 01-04-23\09-10-36.CCD | SP15spir.CFG | 01-04-23\14-09-10.CCD |
| offx_t1.CFG | 01-04-23\09-17-46.CCD | SP15sphe.CFG | 01-04-23\18-01-54.CCD |
| offx_t1.CFG | 01-04-23\09-24-30.CCD | LX15.CFG | 01-04-23\22-34-36.CCD |
| ALI10.cfg | 01-04-23\09-34-59.CCD | LY15.CFG | 01-04-23\23-05-35.CCD |
| offz_t1.CFG | 01-04-23\09-42-09.CCD | LZ15.CFG | 01-04-23\23-36-35.CCD |

### C.30 01-04-24

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| SP15spir.CFG | 01-04-24\00-07-37.CCD | LY15.CFG | 01-04-24\14-01-58.CCD |
| SP15sphe.CFG | 01-04-24\04-00-21.CCD | LZ15.CFG | 01-04-24\14-32-59.CCD |
| ALI10.cfg | 01-04-24\11-22-15.CCD | SP15spir.CFG | 01-04-24\15-03-59.CCD |
| STABTST.cfg | 01-04-24\11-29-38.CCD | SP15sphe.CFG | 01-04-24\18-56-42.CCD |
| STABTST.cfg | 01-04-24\12-30-17.CCD | LX15.CFG | 01-04-24\23-29-22.CCD |
| LX15.CFG | 01-04-24\13-30-57.CCD | | |

### C.31 01-04-25

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| LY15.CFG | 01-04-25\00-00-24.CCD | offz_t1.CFG | 01-04-25\14-15-35.CCD |
| LZ15.CFG | 01-04-25\00-31-24.CCD | ALI10.cfg | 01-04-25\14-38-48.CCD |
| SP15spir.CFG | 01-04-25\01-02-24.CCD | fd_h.CFG | 01-04-25\14-46-10.CCD |
| SP15sphe.CFG | 01-04-25\04-55-08.CCD | fd_l.CFG | 01-04-25\15-33-33.CCD |
| ALI10.cfg | 01-04-25\11-20-48.CCD | fd_h.CFG | 01-04-25\16-20-57.CCD |
| fd_h.CFG | 01-04-25\11-28-26.CCD | fd_l.CFG | 01-04-25\17-08-17.CCD |
| fd_l.CFG | 01-04-25\12-15-47.CCD | fd_h.CFG | 01-04-25\17-55-38.CCD |
| ALI10.cfg | 01-04-25\13-19-54.CCD | fd_l.CFG | 01-04-25\18-42-58.CCD |
| offx_n1.CFG | 01-04-25\13-27-21.CCD | fd_h.CFG | 01-04-25\19-30-18.CCD |
| offx_n1.CFG | 01-04-25\13-32-01.CCD | fd_l.CFG | 01-04-25\20-17-39.CCD |
| ALI10.cfg | 01-04-25\13-38-17.CCD | fd_h.CFG | 01-04-25\21-04-59.CCD |
| offx_t1.CFG | 01-04-25\13-45-28.CCD | fd_l.CFG | 01-04-25\21-52-20.CCD |
| offx_t1.CFG | 01-04-25\13-53-02.CCD | fd_h.CFG | 01-04-25\22-39-41.CCD |
| ALI10.cfg | 01-04-25\14-01-34.CCD | fd_l.CFG | 01-04-25\23-27-01.CCD |
| offz_t1.CFG | 01-04-25\14-08-44.CCD | | |

### C.32 01-04-26

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| fd_h.CFG | 01-04-26\00-14-21.CCD | TZ15.CFG | 01-04-26\10-31-11.CCD |
| fd_l.CFG | 01-04-26\01-01-41.CCD | ali10.CFG | 01-04-26\11-26-34.CCD |
| fd_h.CFG | 01-04-26\01-49-02.CCD | TEMP.CFG | 01-04-26\11-33-50.CCD |
| fd_l.CFG | 01-04-26\02-36-22.CCD | TEMP.CFG | 01-04-26\12-41-30.CCD |
| pwr_var.cfg | 01-04-26\08-34-20.CCD | TEMP.CFG | 01-04-26\13-49-11.CCD |
| pwr_var.cfg | 01-04-26\08-40-18.CCD | TEMP.CFG | 01-04-26\14-56-51.CCD |
| pwr_var.cfg | 01-04-26\08-45-39.CCD | TEMP.CFG | 01-04-26\16-04-32.CCD |
| pwr_var.cfg | 01-04-26\08-50-44.CCD | TEMP.CFG | 01-04-26\17-12-14.CCD |
| pwr_var.cfg | 01-04-26\08-56-21.CCD | TEMP.CFG | 01-04-26\18-19-55.CCD |
| pwr_var.cfg | 01-04-26\09-01-17.CCD | TEMP.CFG | 01-04-26\19-27-56.CCD |
| pwr_var.cfg | 01-04-26\09-06-31.CCD | TEMP.CFG | 01-04-26\20-35-37.CCD |
| ali10.CFG | 01-04-26\09-57-42.CCD | TEMP.CFG | 01-04-26\21-43-18.CCD |
| TX15.CFG | 01-04-26\10-05-09.CCD | TEMP.CFG | 01-04-26\22-50-58.CCD |
| TY15.CFG | 01-04-26\10-18-10.CCD | TEMP.CFG | 01-04-26\23-58-38.CCD |

## C.33 01-04-27

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-04-27\01-06-18.CCD | TEMP.CFG | 01-04-27\13-30-44.CCD |
| TEMP.CFG | 01-04-27\02-13-58.CCD | TEMP.CFG | 01-04-27\14-38-26.CCD |
| TEMP.CFG | 01-04-27\03-21-38.CCD | TEMP.CFG | 01-04-27\15-46-21.CCD |
| TEMP.CFG | 01-04-27\04-29-18.CCD | TEMP.CFG | 01-04-27\16-54-02.CCD |
| TEMP.CFG | 01-04-27\05-36-57.CCD | TEMP.CFG | 01-04-27\18-01-43.CCD |
| TEMP.CFG | 01-04-27\06-44-38.CCD | TEMP.CFG | 01-04-27\19-09-24.CCD |
| TEMP.CFG | 01-04-27\07-52-19.CCD | TEMP.CFG | 01-04-27\20-17-05.CCD |
| TEMP.CFG | 01-04-27\09-00-03.CCD | TEMP.CFG | 01-04-27\21-24-46.CCD |
| TEMP.CFG | 01-04-27\10-07-43.CCD | TEMP.CFG | 01-04-27\22-32-27.CCD |
| TEMP.CFG | 01-04-27\11-15-23.CCD | TEMP.CFG | 01-04-27\23-40-08.CCD |
| TEMP.CFG | 01-04-27\12-23-04.CCD | | |

## C.34 01-04-28

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-04-28\00-47-48.CCD | TEMP.CFG | 01-04-28\13-13-15.CCD |
| TEMP.CFG | 01-04-28\01-55-28.CCD | TEMP.CFG | 01-04-28\14-20-56.CCD |
| TEMP.CFG | 01-04-28\03-03-08.CCD | TEMP.CFG | 01-04-28\15-29-04.CCD |
| TEMP.CFG | 01-04-28\04-10-49.CCD | TEMP.CFG | 01-04-28\16-36-43.CCD |
| TEMP.CFG | 01-04-28\05-19-21.CCD | TEMP.CFG | 01-04-28\17-44-24.CCD |
| TEMP.CFG | 01-04-28\06-27-01.CCD | TEMP.CFG | 01-04-28\18-52-04.CCD |
| TEMP.CFG | 01-04-28\07-34-41.CCD | TEMP.CFG | 01-04-28\19-59-45.CCD |
| TEMP.CFG | 01-04-28\08-42-21.CCD | TEMP.CFG | 01-04-28\21-07-24.CCD |
| TEMP.CFG | 01-04-28\09-50-02.CCD | TEMP.CFG | 01-04-28\22-15-05.CCD |
| TEMP.CFG | 01-04-28\10-57-42.CCD | TEMP.CFG | 01-04-28\23-22-46.CCD |
| TEMP.CFG | 01-04-28\12-05-35.CCD | | |

## C.35 01-04-29

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-04-29\00-30-27.CCD | TEMP.CFG | 01-04-29\12-56-31.CCD |
| TEMP.CFG | 01-04-29\01-38-06.CCD | TEMP.CFG | 01-04-29\14-04-11.CCD |
| TEMP.CFG | 01-04-29\02-45-47.CCD | TEMP.CFG | 01-04-29\15-11-51.CCD |
| TEMP.CFG | 01-04-29\03-53-28.CCD | TEMP.CFG | 01-04-29\16-19-32.CCD |
| TEMP.CFG | 01-04-29\05-01-09.CCD | TEMP.CFG | 01-04-29\17-27-12.CCD |
| TEMP.CFG | 01-04-29\06-08-50.CCD | TEMP.CFG | 01-04-29\18-34-53.CCD |
| TEMP.CFG | 01-04-29\07-16-31.CCD | TEMP.CFG | 01-04-29\19-42-34.CCD |
| TEMP.CFG | 01-04-29\08-25-50.CCD | TEMP.CFG | 01-04-29\20-50-35.CCD |
| TEMP.CFG | 01-04-29\09-33-30.CCD | TEMP.CFG | 01-04-29\21-58-16.CCD |
| TEMP.CFG | 01-04-29\10-41-10.CCD | TEMP.CFG | 01-04-29\23-05-56.CCD |
| TEMP.CFG | 01-04-29\11-48-50.CCD | | |

## C.36 01-04-30

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-04-30\00-13-37.CCD | TEMP.CFG | 01-04-30\12-38-00.CCD |
| TEMP.CFG | 01-04-30\01-21-17.CCD | TEMP.CFG | 01-04-30\13-45-42.CCD |
| TEMP.CFG | 01-04-30\02-28-58.CCD | TEMP.CFG | 01-04-30\14-53-22.CCD |
| TEMP.CFG | 01-04-30\03-36-39.CCD | TEMP.CFG | 01-04-30\16-01-03.CCD |
| TEMP.CFG | 01-04-30\04-44-20.CCD | TEMP.CFG | 01-04-30\17-08-43.CCD |
| TEMP.CFG | 01-04-30\05-51-59.CCD | TEMP.CFG | 01-04-30\18-16-25.CCD |
| TEMP.CFG | 01-04-30\06-59-39.CCD | TEMP.CFG | 01-04-30\19-24-06.CCD |
| TEMP.CFG | 01-04-30\08-07-20.CCD | TEMP.CFG | 01-04-30\20-31-45.CCD |
| TEMP.CFG | 01-04-30\09-15-01.CCD | TEMP.CFG | 01-04-30\21-39-27.CCD |
| TEMP.CFG | 01-04-30\10-22-40.CCD | TEMP.CFG | 01-04-30\22-47-08.CCD |
| TEMP.CFG | 01-04-30\11-30-21.CCD | TEMP.CFG | 01-04-30\23-54-48.CCD |

## C.37 01-05-01

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-05-01\01-02-28.CCD | TEMP.CFG | 01-05-01\14-35-09.CCD |
| TEMP.CFG | 01-05-01\02-10-26.CCD | TEMP.CFG | 01-05-01\15-42-50.CCD |
| TEMP.CFG | 01-05-01\03-18-06.CCD | TEMP.CFG | 01-05-01\16-50-31.CCD |
| TEMP.CFG | 01-05-01\04-25-46.CCD | TEMP.CFG | 01-05-01\17-58-12.CCD |
| TEMP.CFG | 01-05-01\05-33-27.CCD | TEMP.CFG | 01-05-01\19-05-53.CCD |
| TEMP.CFG | 01-05-01\06-41-07.CCD | TEMP.CFG | 01-05-01\20-13-34.CCD |
| TEMP.CFG | 01-05-01\07-48-47.CCD | TEMP.CFG | 01-05-01\21-21-15.CCD |
| TEMP.CFG | 01-05-01\08-56-27.CCD | TEMP.CFG | 01-05-01\22-30-32.CCD |
| TEMP.CFG | 01-05-01\10-04-07.CCD | ALI10.CFG | 01-05-01\23-38-13.CCD |
| TEMP.CFG | 01-05-01\11-11-48.CCD | TX15.CFG | 01-05-01\23-45-24.CCD |
| TEMP.CFG | 01-05-01\12-19-49.CCD | TY15.CFG | 01-05-01\23-58-24.CCD |
| TEMP.CFG | 01-05-01\13-27-29.CCD | | |

## C.38 01-05-02

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TZ15.CFG | 01-05-02\00-11-24.CCD | TX15.CFG | 01-05-02\01-03-26.CCD |
| TX15.CFG | 01-05-02\00-24-25.CCD | TY15.CFG | 01-05-02\01-16-25.CCD |
| TY15.CFG | 01-05-02\00-37-25.CCD | TZ15.CFG | 01-05-02\01-29-26.CCD |
| TZ15.CFG | 01-05-02\00-50-25.CCD | | |

### C.39 01-08-28

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TX15.CFG | 01-08-28\11-32-31.CCD | TEMP.CFG | 01-08-28\17-52-32.CCD |
| TY15.CFG | 01-08-28\11-45-32.CCD | TEMP.CFG | 01-08-28\19-00-13.CCD |
| TZ15.CFG | 01-08-28\11-58-33.CCD | TEMP.CFG | 01-08-28\20-07-55.CCD |
| TEMP.CFG | 01-08-28\12-14-04.CCD | TEMP.CFG | 01-08-28\21-15-36.CCD |
| TEMP.CFG | 01-08-28\13-21-46.CCD | TEMP.CFG | 01-08-28\22-23-17.CCD |
| TEMP.CFG | 01-08-28\14-29-27.CCD | TEMP.CFG | 01-08-28\23-30-58.CCD |
| TEMP.CFG | 01-08-28\15-37-08.CCD | ali10.CFG | 01-08-28\11-25-10.CCD |
| TEMP.CFG | 01-08-28\16-44-50.CCD | | |

### C.40 01-08-29

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-08-29\00-38-40.CCD | TEMP.CFG | 01-08-29\13-03-14.CCD |
| TEMP.CFG | 01-08-29\01-46-21.CCD | TEMP.CFG | 01-08-29\14-10-55.CCD |
| TEMP.CFG | 01-08-29\02-54-02.CCD | TEMP.CFG | 01-08-29\15-18-36.CCD |
| TEMP.CFG | 01-08-29\04-01-42.CCD | TEMP.CFG | 01-08-29\16-26-17.CCD |
| TEMP.CFG | 01-08-29\05-09-24.CCD | TEMP.CFG | 01-08-29\17-34-27.CCD |
| TEMP.CFG | 01-08-29\06-17-05.CCD | TEMP.CFG | 01-08-29\18-42-08.CCD |
| TEMP.CFG | 01-08-29\07-24-48.CCD | TEMP.CFG | 01-08-29\19-49-50.CCD |
| TEMP.CFG | 01-08-29\08-32-29.CCD | TEMP.CFG | 01-08-29\20-57-31.CCD |
| TEMP.CFG | 01-08-29\09-40-10.CCD | TEMP.CFG | 01-08-29\22-05-12.CCD |
| TEMP.CFG | 01-08-29\10-47-52.CCD | TEMP.CFG | 01-08-29\23-12-54.CCD |
| TEMP.CFG | 01-08-29\11-55-33.CCD | | |

### C.41 01-08-30

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-08-30\00-20-56.CCD | TEMP.CFG | 01-08-30\13-01-26.CCD |
| TEMP.CFG | 01-08-30\01-28-37.CCD | TEMP.CFG | 01-08-30\14-09-22.CCD |
| TEMP.CFG | 01-08-30\02-36-18.CCD | TEMP.CFG | 01-08-30\15-17-04.CCD |
| TEMP.CFG | 01-08-30\03-43-59.CCD | TEMP.CFG | 01-08-30\16-24-44.CCD |
| TEMP.CFG | 01-08-30\04-51-40.CCD | TEMP.CFG | 01-08-30\17-32-25.CCD |
| TEMP.CFG | 01-08-30\05-59-22.CCD | TEMP.CFG | 01-08-30\18-40-07.CCD |
| TEMP.CFG | 01-08-30\07-07-03.CCD | TEMP.CFG | 01-08-30\19-47-48.CCD |
| TEMP.CFG | 01-08-30\08-14-45.CCD | TEMP.CFG | 01-08-30\20-55-28.CCD |
| TEMP.CFG | 01-08-30\09-22-26.CCD | TEMP.CFG | 01-08-30\22-03-10.CCD |
| TEMP.CFG | 01-08-30\10-30-07.CCD | TEMP.CFG | 01-08-30\23-10-50.CCD |
| TEMP.CFG | 01-08-30\11-37-48.CCD | | |

### C.42 01-08-31

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-08-31\00-18-53.CCD | TEMP.CFG | 01-08-31\12-44-09.CCD |
| TEMP.CFG | 01-08-31\01-26-33.CCD | TEMP.CFG | 01-08-31\13-52-07.CCD |
| TEMP.CFG | 01-08-31\02-34-12.CCD | TEMP.CFG | 01-08-31\14-59-47.CCD |
| TEMP.CFG | 01-08-31\03-41-53.CCD | TEMP.CFG | 01-08-31\16-07-27.CCD |
| TEMP.CFG | 01-08-31\04-49-33.CCD | TEMP.CFG | 01-08-31\17-15-08.CCD |
| TEMP.CFG | 01-08-31\05-57-13.CCD | TEMP.CFG | 01-08-31\18-22-47.CCD |
| TEMP.CFG | 01-08-31\07-05-48.CCD | TEMP.CFG | 01-08-31\19-30-28.CCD |
| TEMP.CFG | 01-08-31\08-13-29.CCD | TEMP.CFG | 01-08-31\20-38-08.CCD |
| TEMP.CFG | 01-08-31\09-21-09.CCD | TEMP.CFG | 01-08-31\21-45-49.CCD |
| TEMP.CFG | 01-08-31\10-28-49.CCD | TEMP.CFG | 01-08-31\22-53-29.CCD |
| TEMP.CFG | 01-08-31\11-36-29.CCD | | |

### C.43 01-09-01

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-01\00-01-10.CCD | TEMP.CFG | 01-09-01\12-25-35.CCD |
| TEMP.CFG | 01-09-01\01-08-50.CCD | TEMP.CFG | 01-09-01\13-33-16.CCD |
| TEMP.CFG | 01-09-01\02-16-31.CCD | TEMP.CFG | 01-09-01\14-40-56.CCD |
| TEMP.CFG | 01-09-01\03-24-11.CCD | TEMP.CFG | 01-09-01\15-48-37.CCD |
| TEMP.CFG | 01-09-01\04-31-52.CCD | TEMP.CFG | 01-09-01\16-56-17.CCD |
| TEMP.CFG | 01-09-01\05-39-32.CCD | TEMP.CFG | 01-09-01\18-03-58.CCD |
| TEMP.CFG | 01-09-01\06-47-12.CCD | TEMP.CFG | 01-09-01\19-11-38.CCD |
| TEMP.CFG | 01-09-01\07-54-52.CCD | TEMP.CFG | 01-09-01\20-19-19.CCD |
| TEMP.CFG | 01-09-01\09-02-33.CCD | TEMP.CFG | 01-09-01\21-26-59.CCD |
| TEMP.CFG | 01-09-01\10-10-14.CCD | TEMP.CFG | 01-09-01\22-34-40.CCD |
| TEMP.CFG | 01-09-01\11-17-54.CCD | TEMP.CFG | 01-09-01\23-42-21.CCD |

### C.44 01-09-02

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-02\00-50-02.CCD | TEMP.CFG | 01-09-02\06-28-52.CCD |
| TEMP.CFG | 01-09-02\01-58-11.CCD | TEMP.CFG | 01-09-02\07-36-34.CCD |
| TEMP.CFG | 01-09-02\03-05-50.CCD | TEMP.CFG | 01-09-02\08-44-13.CCD |
| TEMP.CFG | 01-09-02\04-13-30.CCD | TEMP.CFG | 01-09-02\09-51-54.CCD |
| TEMP.CFG | 01-09-02\05-21-11.CCD | TEMP.CFG | 01-09-02\10-59-34.CCD |

### C.45 01-09-03

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-03\01-39-34.CCD | TEMP.CFG | 01-09-03\05-02-36.CCD |
| TEMP.CFG | 01-09-03\02-47-15.CCD | TEMP.CFG | 01-09-03\06-10-17.CCD |
| TEMP.CFG | 01-09-03\03-54-56.CCD | TEMP.CFG | 01-09-03\00-31-53.CCD |

### C.46 01-09-06

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| ali10.CFG | 01-09-06\12-07-17.CCD | TEMP.CFG | 01-09-06\16-17-57.CCD |
| TX15.CFG | 01-09-06\12-14-27.CCD | TEMP.CFG | 01-09-06\17-25-39.CCD |
| TY15.CFG | 01-09-06\12-27-28.CCD | TEMP.CFG | 01-09-06\18-33-21.CCD |
| TZ15.CFG | 01-09-06\12-40-29.CCD | TEMP.CFG | 01-09-06\19-41-02.CCD |
| TEMP.CFG | 01-09-06\12-54-54.CCD | TEMP.CFG | 01-09-06\20-48-41.CCD |
| TEMP.CFG | 01-09-06\14-02-36.CCD | TEMP.CFG | 01-09-06\21-56-22.CCD |
| TEMP.CFG | 01-09-06\15-10-17.CCD | TEMP.CFG | 01-09-06\23-04-03.CCD |

### C.47 01-09-07

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-07\00-11-43.CCD | TEMP.CFG | 01-09-07\12-37-25.CCD |
| TEMP.CFG | 01-09-07\01-19-24.CCD | TEMP.CFG | 01-09-07\13-45-05.CCD |
| TEMP.CFG | 01-09-07\02-27-06.CCD | TEMP.CFG | 01-09-07\14-52-46.CCD |
| TEMP.CFG | 01-09-07\03-34-46.CCD | TEMP.CFG | 01-09-07\16-00-27.CCD |
| TEMP.CFG | 01-09-07\04-42-26.CCD | TEMP.CFG | 01-09-07\17-08-10.CCD |
| TEMP.CFG | 01-09-07\05-50-07.CCD | TEMP.CFG | 01-09-07\18-15-50.CCD |
| TEMP.CFG | 01-09-07\06-58-11.CCD | TEMP.CFG | 01-09-07\19-23-30.CCD |
| TEMP.CFG | 01-09-07\08-05-52.CCD | TEMP.CFG | 01-09-07\20-31-10.CCD |
| TEMP.CFG | 01-09-07\09-14-24.CCD | TEMP.CFG | 01-09-07\21-38-51.CCD |
| TEMP.CFG | 01-09-07\10-22-04.CCD | TEMP.CFG | 01-09-07\22-46-32.CCD |
| TEMP.CFG | 01-09-07\11-29-45.CCD | TEMP.CFG | 01-09-07\23-54-13.CCD |

## C.48 01-09-08

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-08\02-09-34.CCD | TEMP.CFG | 01-09-08\14-34-00.CCD |
| TEMP.CFG | 01-09-08\03-17-14.CCD | TEMP.CFG | 01-09-08\15-41-41.CCD |
| TEMP.CFG | 01-09-08\04-24-53.CCD | TEMP.CFG | 01-09-08\16-49-22.CCD |
| TEMP.CFG | 01-09-08\05-32-34.CCD | TEMP.CFG | 01-09-08\17-57-02.CCD |
| TEMP.CFG | 01-09-08\06-40-14.CCD | TEMP.CFG | 01-09-08\19-04-42.CCD |
| TEMP.CFG | 01-09-08\07-47-55.CCD | TEMP.CFG | 01-09-08\20-12-21.CCD |
| TEMP.CFG | 01-09-08\08-55-35.CCD | TEMP.CFG | 01-09-08\21-20-01.CCD |
| TEMP.CFG | 01-09-08\10-03-16.CCD | TEMP.CFG | 01-09-08\22-27-42.CCD |
| TEMP.CFG | 01-09-08\11-10-56.CCD | TEMP.CFG | 01-09-08\23-35-22.CCD |
| TEMP.CFG | 01-09-08\12-18-39.CCD | TEMP.CFG | 01-09-08\01-01-54.CCD |
| TEMP.CFG | 01-09-08\13-26-19.CCD | | |

## C.49 01-09-09

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-09\00-43-03.CCD | TEMP.CFG | 01-09-09\13-09-28.CCD |
| TEMP.CFG | 01-09-09\01-50-44.CCD | TEMP.CFG | 01-09-09\14-17-29.CCD |
| TEMP.CFG | 01-09-09\02-58-25.CCD | TEMP.CFG | 01-09-09\15-25-10.CCD |
| TEMP.CFG | 01-09-09\04-06-06.CCD | TEMP.CFG | 01-09-09\16-32-50.CCD |
| TEMP.CFG | 01-09-09\05-14-07.CCD | TEMP.CFG | 01-09-09\17-40-31.CCD |
| TEMP.CFG | 01-09-09\06-21-46.CCD | TEMP.CFG | 01-09-09\18-48-12.CCD |
| TEMP.CFG | 01-09-09\07-29-27.CCD | TEMP.CFG | 01-09-09\19-55-53.CCD |
| TEMP.CFG | 01-09-09\08-38-47.CCD | TEMP.CFG | 01-09-09\21-03-33.CCD |
| TEMP.CFG | 01-09-09\09-46-27.CCD | TEMP.CFG | 01-09-09\22-11-14.CCD |
| TEMP.CFG | 01-09-09\10-54-08.CCD | TEMP.CFG | 01-09-09\23-18-54.CCD |
| TEMP.CFG | 01-09-09\12-01-48.CCD | | |

## C.50 01-09-10

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-10\15-10-43.CCD | TEMP.CFG | 01-09-10\02-41-54.CCD |
| TEMP.CFG | 01-09-10\16-18-24.CCD | TEMP.CFG | 01-09-10\03-49-34.CCD |
| TEMP.CFG | 01-09-10\17-27-04.CCD | TEMP.CFG | 01-09-10\04-57-15.CCD |
| TEMP.CFG | 01-09-10\18-34-43.CCD | TEMP.CFG | 01-09-10\06-04-54.CCD |
| TEMP.CFG | 01-09-10\19-42-24.CCD | TEMP.CFG | 01-09-10\07-12-35.CCD |
| TEMP.CFG | 01-09-10\20-50-04.CCD | TEMP.CFG | 01-09-10\08-20-15.CCD |
| TEMP.CFG | 01-09-10\21-57-44.CCD | TEMP.CFG | 01-09-10\09-27-55.CCD |
| TEMP.CFG | 01-09-10\23-05-25.CCD | TEMP.CFG | 01-09-10\10-35-36.CCD |
| TEMP.CFG | 01-09-10\00-26-35.CCD | TEMP.CFG | 01-09-10\11-43-16.CCD |
| TEMP.CFG | 01-09-10\01-34-15.CCD | TEMP.CFG | 01-09-10\12-50-56.CCD |

### C.51 01-09-11

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-11\00-13-06.CCD | TEMP.CFG | 01-09-11\12-38-13.CCD |
| TEMP.CFG | 01-09-11\01-20-47.CCD | TEMP.CFG | 01-09-11\13-45-52.CCD |
| TEMP.CFG | 01-09-11\02-28-28.CCD | TEMP.CFG | 01-09-11\14-53-33.CCD |
| TEMP.CFG | 01-09-11\03-36-08.CCD | TEMP.CFG | 01-09-11\16-01-13.CCD |
| TEMP.CFG | 01-09-11\04-43-49.CCD | TEMP.CFG | 01-09-11\17-08-54.CCD |
| TEMP.CFG | 01-09-11\05-51-59.CCD | TEMP.CFG | 01-09-11\18-16-35.CCD |
| TEMP.CFG | 01-09-11\06-59-40.CCD | TEMP.CFG | 01-09-11\19-24-16.CCD |
| TEMP.CFG | 01-09-11\08-07-33.CCD | TEMP.CFG | 01-09-11\20-31-57.CCD |
| TEMP.CFG | 01-09-11\09-15-12.CCD | TEMP.CFG | 01-09-11\21-39-38.CCD |
| TEMP.CFG | 01-09-11\10-22-53.CCD | TEMP.CFG | 01-09-11\22-47-17.CCD |
| TEMP.CFG | 01-09-11\11-30-33.CCD | TEMP.CFG | 01-09-11\23-54-58.CCD |

### C.52 01-09-12

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-12\01-02-38.CCD | TEMP.CFG | 01-09-12\13-27-23.CCD |
| TEMP.CFG | 01-09-12\02-10-18.CCD | TEMP.CFG | 01-09-12\14-35-29.CCD |
| TEMP.CFG | 01-09-12\03-17-59.CCD | TEMP.CFG | 01-09-12\15-43-38.CCD |
| TEMP.CFG | 01-09-12\04-25-39.CCD | TEMP.CFG | 01-09-12\16-51-18.CCD |
| TEMP.CFG | 01-09-12\05-33-19.CCD | TEMP.CFG | 01-09-12\17-58-58.CCD |
| TEMP.CFG | 01-09-12\06-40-59.CCD | TEMP.CFG | 01-09-12\19-06-39.CCD |
| TEMP.CFG | 01-09-12\07-49-00.CCD | TEMP.CFG | 01-09-12\20-14-19.CCD |
| TEMP.CFG | 01-09-12\08-56-40.CCD | TEMP.CFG | 01-09-12\21-21-59.CCD |
| TEMP.CFG | 01-09-12\10-04-21.CCD | TEMP.CFG | 01-09-12\22-29-40.CCD |
| TEMP.CFG | 01-09-12\11-12-02.CCD | TEMP.CFG | 01-09-12\23-37-21.CCD |
| TEMP.CFG | 01-09-12\12-19-42.CCD | | |

### C.53 01-09-13

| Configuration File | CCD File | Configuration File | CCD File |
|---|---|---|---|
| TEMP.CFG | 01-09-13\00-45-03.CCD | TEMP.CFG | 01-09-13\04-08-04.CCD |
| TEMP.CFG | 01-09-13\01-52-44.CCD | TEMP.CFG | 01-09-13\05-15-45.CCD |
| TEMP.CFG | 01-09-13\03-00-24.CCD | TEMP.CFG | 01-09-13\06-23-26.CCD |

# D FGM Sensor Alignment Tables

The following tables 9 shows the alignment data measured with all the `ALI10.CFG` files during the whole calibration session. The data are listed in chronological order for both sensors in parallel. See the following table which lists the magnetometer answer on a positive field applied on the coil system axis $X_C$, $Y_C$, and $Z_C$.

| | | FGM–IB | | | FGM–OB | | |
|---|---|---|---|---|---|---|---|
| `*.CCD` File | FGM Data | $X_C$ | $Y_C$ | $Z_C$ | $X_C$ | $Y_C$ | $Z_C$ |
| `01-03-19\15-01-03.CCD` | `ALI_01` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-19\15-29-16.CCD` | `ALI_02` | $+Y_m$ | $-X_m$ | $+Z_m$ | $+Y_m$ | $-X_m$ | $+Z_m$ |
| `01-03-19\15-53-19.CCD` | `ALI_03` | $-Y_m$ | $-X_m$ | $-Z_m$ | $-Y_m$ | $-X_m$ | $-Z_m$ |
| `01-03-19\16-23-48.CCD` | `ALI_04` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-21\12-58-42.CCD` | `ALI_05` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-22\12-44-38.CCD` | `ALI_06` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-23\12-21-23.CCD` | `ALI_07` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-23\13-58-41.CCD` | `ALI_08` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-28\08-56-45.CCD` | `ALI_09` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-03-28\09-51-44.CCD` | `ALI_10` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-05\09-34-37.CCD` | `ALI_11` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-05\09-51-50.CCD` | `ALI_12` | $+Y_m$ | $-X_m$ | $+Z_m$ | $+Y_m$ | $-X_m$ | $+Z_m$ |
| `01-04-05\10-15-05.CCD` | `ALI_13` | $-Y_m$ | $-X_m$ | $-Z_m$ | $-Y_m$ | $-X_m$ | $-Z_m$ |
| `01-04-05\10-45-49.CCD` | `ALI_14` | | diagonal | | | diagonal | |
| `01-04-05\12-59-59.CCD` | `ALI_15` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-06\07-18-23.CCD` | `ALI_16` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-20\08-53-39.CCD` | `ALI_17` | | diagonal | | | diagonal | |
| `01-04-20\12-00-24.CCD` | `ALI_18` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-21\11-21-57.CCD` | `ALI_19` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-23\07-00-01.CCD` | `ALI_20` | | diagonal | | | diagonal | |
| `01-04-23\08-53-30.CCD` | `ALI_21` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-23\09-10-36.CCD` | `ALI_22` | $+Y_m$ | $-X_m$ | $+Z_m$ | $+Y_m$ | $-X_m$ | $+Z_m$ |
| `01-04-23\09-34-59.CCD` | `ALI_23` | $+Y_m$ | $+X_m$ | $-Z_m$ | $+Y_m$ | $+X_m$ | $-Z_m$ |
| `01-04-23\10-25-59.CCD` | `ALI_24` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-24\11-22-15.CCD` | `ALI_25` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-25\11-20-48.CCD` | `ALI_26` | | diagonal | | | diagonal | |
| `01-04-25\13-19-54.CCD` | `ALI_27` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-25\13-38-17.CCD` | `ALI_28` | $+Y_m$ | $-X_m$ | $+Z_m$ | $+Y_m$ | $-X_m$ | $+Z_m$ |
| `01-04-25\14-01-34.CCD` | `ALI_29` | $-Y_m$ | $-X_m$ | $-Z_m$ | $-Y_m$ | $-X_m$ | $-Z_m$ |
| `01-04-25\14-38-48.CCD` | `ALI_30` | | diagonal | | | diagonal | |
| `01-04-26\09-57-42.CCD` | `ALI_31` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-04-26\11-26-34.CCD` | `ALI_32` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-05-01\23-38-13.CCD` | `ALI_33` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-08-28\11-25-10.CCD` | `ALI_35` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |
| `01-09-06\12-07-17.CCD` | `ALI_36` | $-Y_m$ | $+X_m$ | $+Z_m$ | $-Y_m$ | $+X_m$ | $+Z_m$ |

Table 9: Alignment 1: Results of all the FGM alignment measurements during the whole calibration session.

As a new feature for this calibration session the alignment is computed directly from the extracted data (`ALI_xx`). In former sessions this work was done manually by looking on plots and writing down the alignments. Special for the analysis of the ROSETTA calibration a new version of the alignment tool, working with two magnetometers simultaneous, was developed. This tool is named `align_2.pas`.

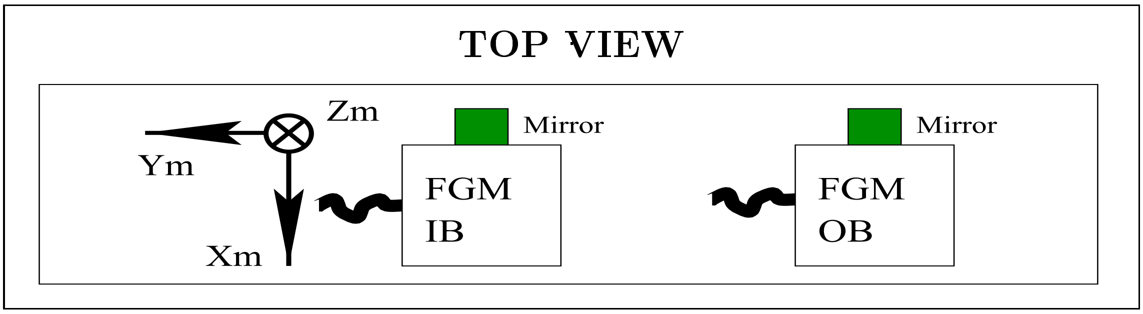


Figure 221: The FGM sensors FGM–OB and FGM–IB seen from the top with their coordinate system mounted on the aluminium support.

# E Temperature Measurements

## E.1 Sensor Temperatures

The sensor temperatures are measured using standard PT1000 elements inside the sensors. Table E.1 gives a part of the manufactures provided nominal function used for the measurements here. For the plots in this document polynomial approximations of order 3 for the functions $T(U)$ is used.

$$\begin{aligned} T(U) &= a_0 + a_1 U + a_2 U^2 + a_3 U^3 \\ \text{with } a_0 &= -368.61072 \\ a_1 &= 458.49304 \\ a_2 &= -356.02890 \\ a_3 &= 180.00644 \end{aligned} \tag{1}$$

| T [°C] | R(T) [Ω] | U(T) [V] | T [°C] | R(T) [Ω] | U(T) [V] |
|---|---|---|---|---|---|
| -150.000 | 423.219 | 0.743420 | 10.0000 | 1039.14 | 1.27399 |
| -140.000 | 461.402 | 0.789310 | 20.0000 | 1078.40 | 1.29715 |
| -130.000 | 499.567 | 0.832850 | 30.0000 | 1117.77 | 1.31951 |
| -120.000 | 537.730 | 0.874230 | 40.0000 | 1157.26 | 1.34112 |
| -110.000 | 575.906 | 0.913610 | 50.0000 | 1196.86 | 1.36201 |
| -100.000 | 614.108 | 0.951160 | 60.0000 | 1236.58 | 1.38222 |
| -90.0000 | 652.351 | 0.987000 | 70.0000 | 1276.41 | 1.40178 |
| -80.0000 | 690.646 | 1.02128 | 80.0000 | 1316.36 | 1.42072 |
| -70.0000 | 729.005 | 1.05408 | 90.0000 | 1356.43 | 1.43907 |
| -60.0000 | 767.436 | 1.08552 | 100.000 | 1396.60 | 1.45686 |
| -50.0000 | 805.950 | 1.11569 | 110.000 | 1436.90 | 1.47411 |
| -40.0000 | 844.555 | 1.14466 | 120.000 | 1477.31 | 1.49084 |
| -30.0000 | 883.256 | 1.17251 | 130.000 | 1517.84 | 1.50708 |
| -20.0000 | 922.061 | 1.19931 | 140.000 | 1558.48 | 1.52286 |
| -10.0000 | 960.974 | 1.22512 | 150.000 | 1599.24 | 1.53818 |
| 0.000000 | 1000.00 | 1.25000 | | | |

Table 10: Calibration data for the sensor PT1000 elements, nominal data provided by the manufacturer.

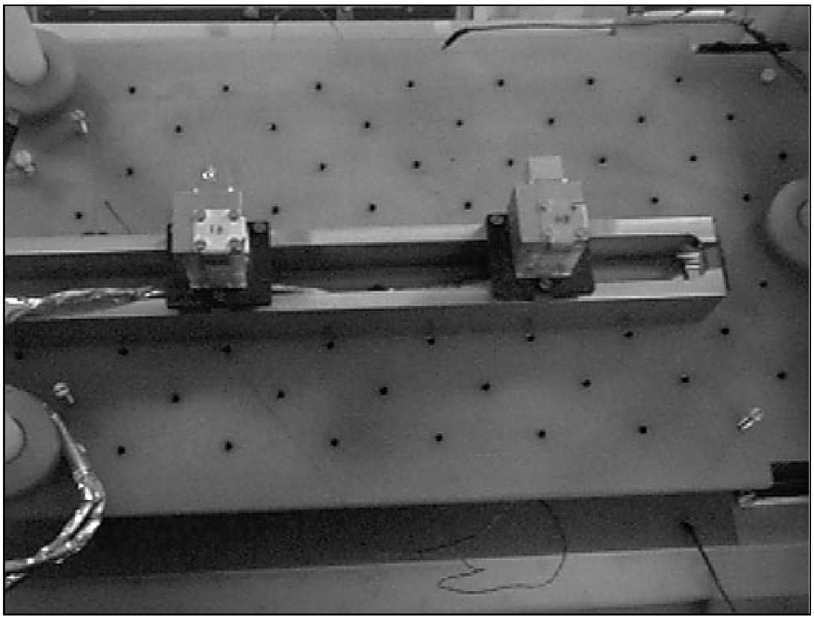

Figure 222: I010322A

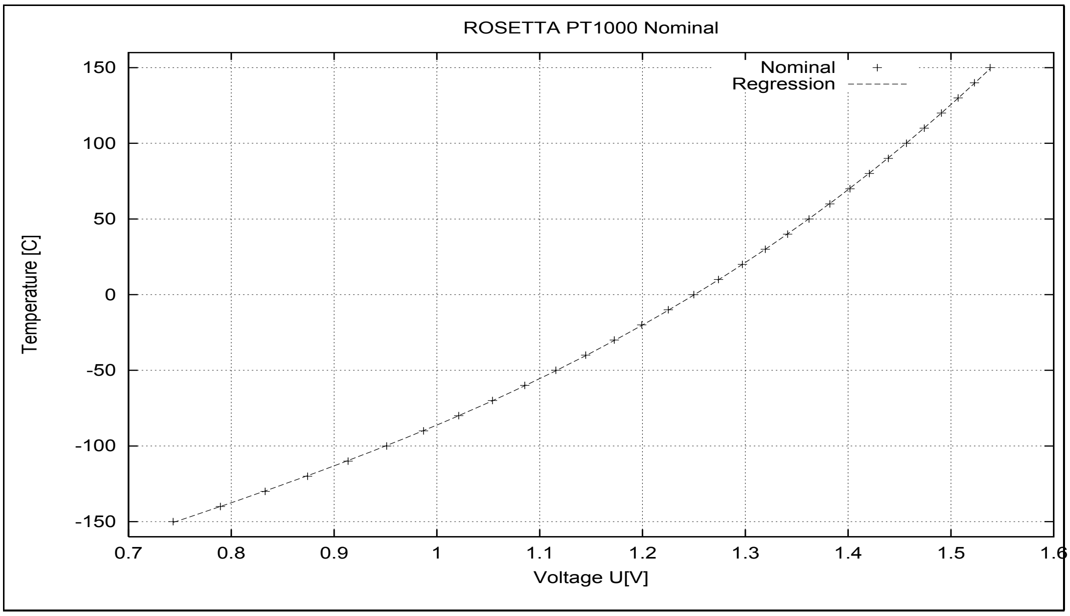


Figure 223: Nominal function and regression for a standard PT1000 thermistor element.

## E.2 Thermal Test Box Temperatures

Figure 234 shows a picture of the Thermal Test Box with the installed sensors. The heater foils and the basin are not just installed to show the orientation of the sensors. The following table gives again the TeMeSys–B channel with respect to the position of the sensor inside the Thermal Test Box. See also the draft in figure 224 on page 327.

| Sensor | Position |
|---|---|
| $T_{57}$ | under FGM–OB sensor |
| $T_{59}$ | under FGM–IB sensor |
| $T_{56}$ | mounting plate, upper side, north west corner |
| $T_{58}$ | mounting plate, upper side, south west corner |
| $T_{29}$ | mounting plate, upper side, center |
| $T_{60}$ | ground plate, north middle |
| $T_{61}$ | mounting plate, lower side, center |
| $T_{62}$ | ground plate, south west |
| $T_{63}$ | ground plate, south east |

Table 11: The TeMeSys–B sensors in the Thermal Test Box.

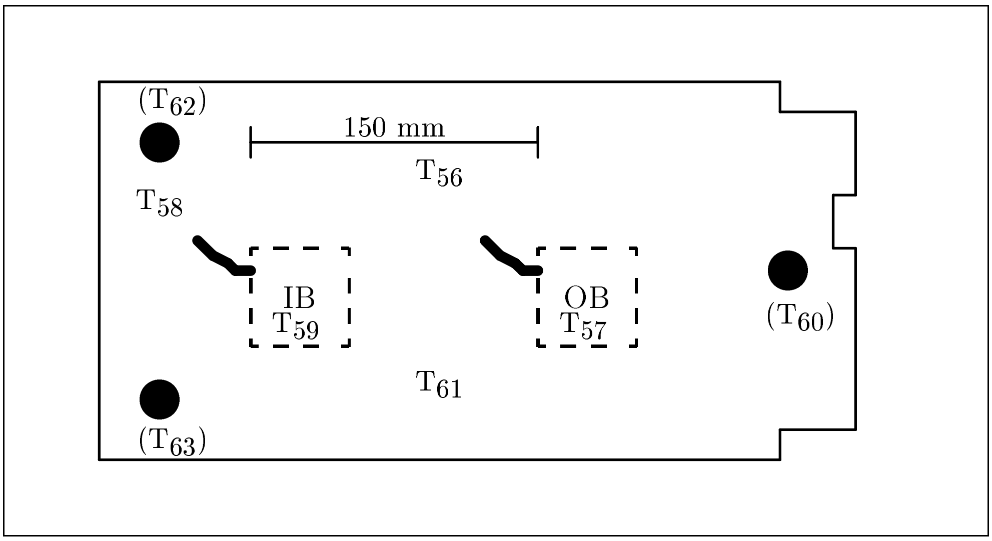


Figure 224: The temperature sensors at the Thermal Test Box mounting plate. The draft shows the top view. Sensors in brackets are mounted near the Thermal Test Box ground plate, not on the mounting plate.

## E.3 Temperature Calibration Cycle 1, March 2001, DPU: FM, Sensors: FM

The following figure 225 shows an overview of the temperature cycle performed from March 23rd to March 29th. The arbitrary step function starting early on March 25th is the nominal goal temperature. Due to an error on the Thermal Test Box Power Supply no heating occurs. Later on the 25th the heating is restarted manually and the system performs normally. The instrument temperatures can be found in detail on the overview plots for the specific day.

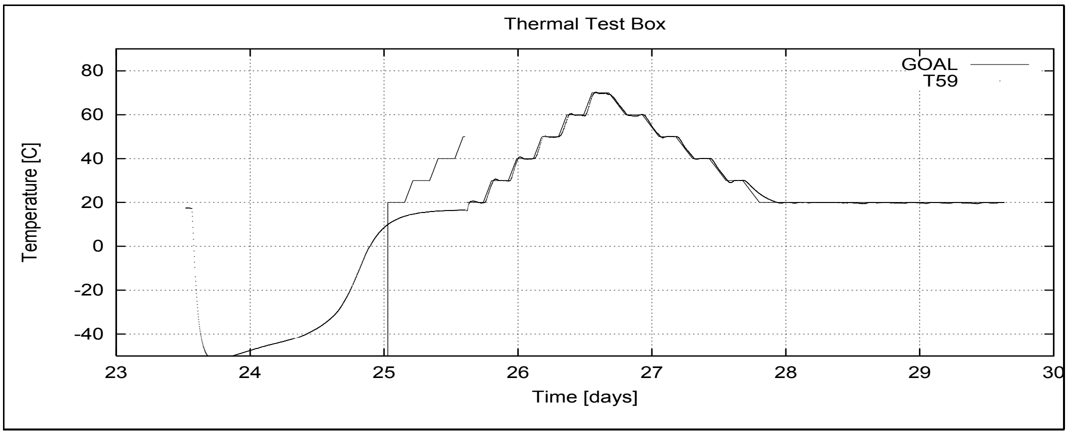


Figure 225: The first Temperature Calibration Cycle, March 23rd to March 29th.

## E.4 Temperature Calibration Cycle 2, April 2001,DPU: FS, Sensors: FS

The second run is without any doubts. In the plot the days are numbered ongoing starting at the 26th. Therefore, 31 is May 1st.

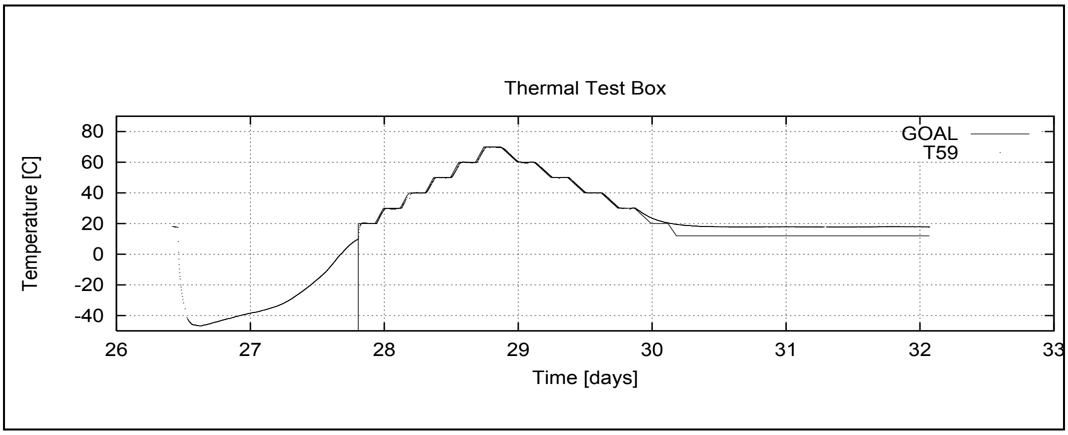


Figure 226: The first Temperature Calibration Cycle, April 26th to May 2nd.

## E.5 Temperature Calibration Cycle 3, August 2001,DPU: FS, Sensors: FS

Caused by some trouble analyzing the Temperature Calibration Cycles they are redone starting on the 28th of August.

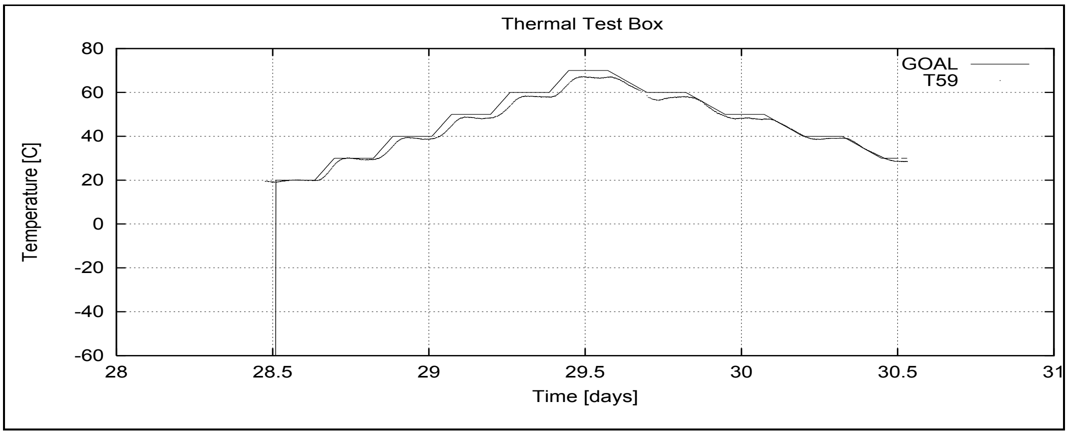


Figure 227: The third Temperature Calibration Cycle, heating cycle from August 28th to 30th.

## E.6 Temperature Calibration Cycle 4, August and September 2001,DPU: FS, Sensors: FS

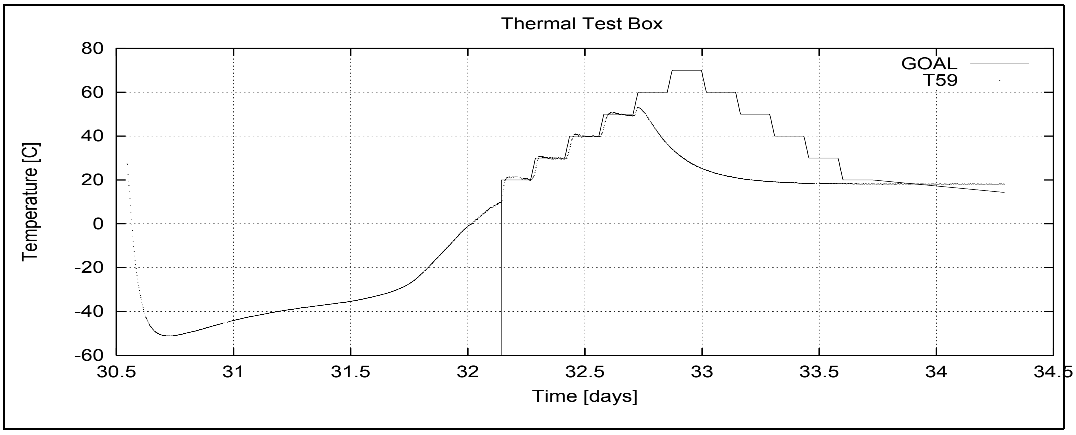


Figure 228: The fourth Temperature Calibration Cycle, cooling cycle from August 30th to September 1st and heating cycle from September 1st to 3rd.

It is obvious, that the heating was not completed. In the afternoon of September 1st at 17:20 the heating stopped due melting of the main fuse of the temperature control electronics. Most likely the temperature profile was chosen to steep. Therefore, the required heater power was to large.
As the achieved temperature was already about 50°C it was decided to waive an other T-cycle.

## E.7 Temperature Calibration Cycle 5, September 2001, DPU: FS, Sensors: FM

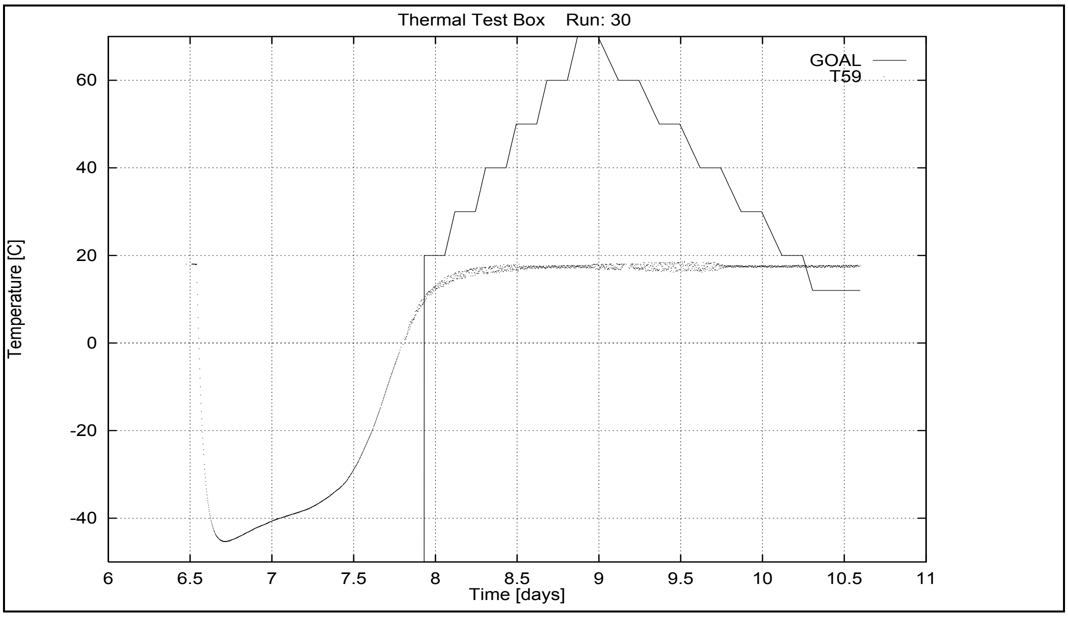


Figure 229: The fifth Temperature Calibration Cycle. Cooling from September 6th to September 10th.

After the cooling cycle the system did not start the heating cycle due to a loose contact at the heating foils. Therefore, the box was opened, the contact was fixed and the heating started in a sixth cycle.

## E.8 Temperature Calibration Cycle 6, September 2001, DPU: FS, Sensors: FM

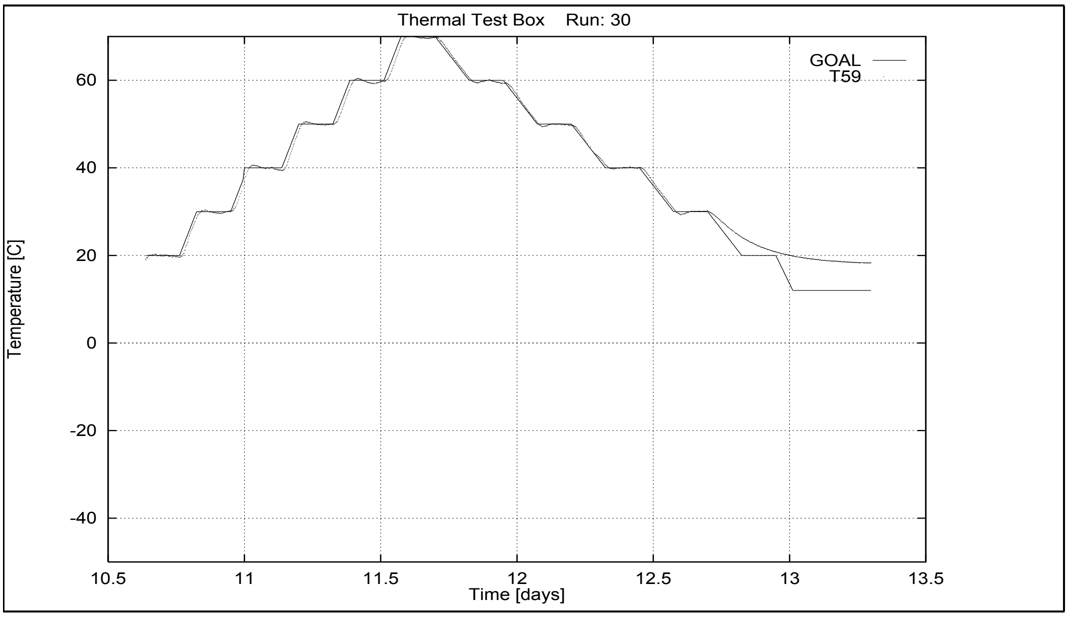


Figure 230: The sixth Temperature Calibration Cycle. Heating from September 10th to September 13th.

# F Images of the ROSETTA Calibration

In the following you will find an album of all the fotos taken during the calibration session. Some of them are also used in the previous parts of the document, all others can be found here.

The following listing provides a short description to all the pictures.

```
--------------- ROSETTA --------------------------------------------------------------
I010321A    FM-OB(north) optical aligned at CoC, south west view
I010322A    FM-IB(south) optical aligned at CoC, top east view
I010322B    FM-IB(south) optical aligned at CoC, south west view

I010323A    FM-OB(north) and FM-IB(south) in Temperature configuration
            top east view
I010323B    FM-OB(north) and FM-IB(south) in Temperature configuration
            south view

I010405A    FM-OB(north) at CoC, Offset position 1, normal, south west view
I010405B    FM-IB(south) at CoC, Offset position 2, normal, south west view
I010405C    FM-OB(south) at CoC, Offset position 3, turned, south west view
I010405D    FM-IB(north) at CoC, Offset position 4, turned, south west view
I010405E    FM-OB(north) at CoC, Offset position 5, turned, west view
I010405F    FM-IB(south) at CoC, Offset position 6, turned, west view
I010405G    FM-OB(down) and FM-IB(up) diagonal at CoC for frequency measurements
            south west view

I010405H    FM-OB(north) optical aligned at CoC, south west view

I010406A    FM-IB(south) optical aligned at CoC, west view

I010420A    FM-OB(up,2) and FM-IB(down,4) diagonal at CoC for frequency measurements
            south west view, sensor on Gradiometer mounting plate
            (Grad sensors at first and third position)

I010420B    FS-IB(south) optical aligned at CoC, south west view

I010421A    FS-OB(north) optical aligned at CoC, south west view

I010423A    FM-OB(down) and FM-IB(up) diagonal at CoC for frequency measurements
            south west view
I010423B    FS-OB(north) at CoC, Offset position 1, normal, south west view
I010423C    FM-OB(south) at CoC, Offset position 3, turned, south west view
I010423D    FM-OB(south) at CoC, Offset position 5, turned, west view

I010423E    FM-DPU, top view
I010423F    FS-IB(south) optical aligned at CoC, west view
I010424A    FS-DPU, Top view
I010424B    FS-OB(north) optical aligned at CoC, west view
--------------------------------------------------------------------------------------
```

```
--------------- ROSETTA -----------------------------------------------------------
I010425A    FM-OB(down) and FM-IB(up) diagonal at CoC for frequency measurements
            south west view
I010425B    FS-OB(north) at CoC, Offset position 1, normal, south west view
I010425C    FS-IB(south) at CoC, Offset position 2, normal, south west view
I010425D    FS-OB(south) at CoC, Offset position 3, turned, south west view
I010425E    FS-IB(north) at CoC, Offset position 4, turned, south west view
I010425F    FS-OB(north) at CoC, Offset position 5, turned, west view
I010425G    FS-IB(south) at CoC, Offset position 6, turned, west view
I010425H    FM-OB(up,2) and FM-IB(down,4) diagonal at CoC for frequency measurements
            south west view, sensor on Gradiometer mounting plate
            (Grad sensors at first and third position)

I010426A    FM-OB(north) and FM-IB(south) in Temperature configuration
            west view
            FM-OB(north) and FM-IB(south) in Temperature configuration
I010426B    south view

I010828A    FS-IB (south) and FS-OB (north) in T-Box for temperature cycle

I010828B    OVH at CoC (south west down to north east up) for residual field
            check

I010913A    Power supply and interface board (DPU-CLUSTERM) in Haouse 2 anteroom
I010913B    FM-IB (south) and FM-OB (north) in T-Box for temperature cycle
-----------------------------------------------------------------------------------
```

## F.1 Album

### F.1.1 Images 01–03–21

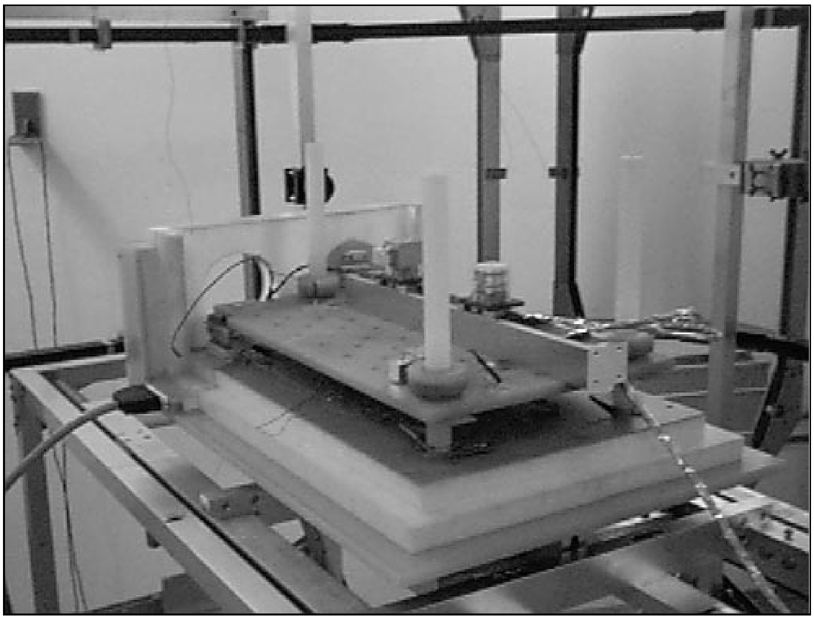

Figure 231: I010321A

#### F.1.2 Images 01–03–22

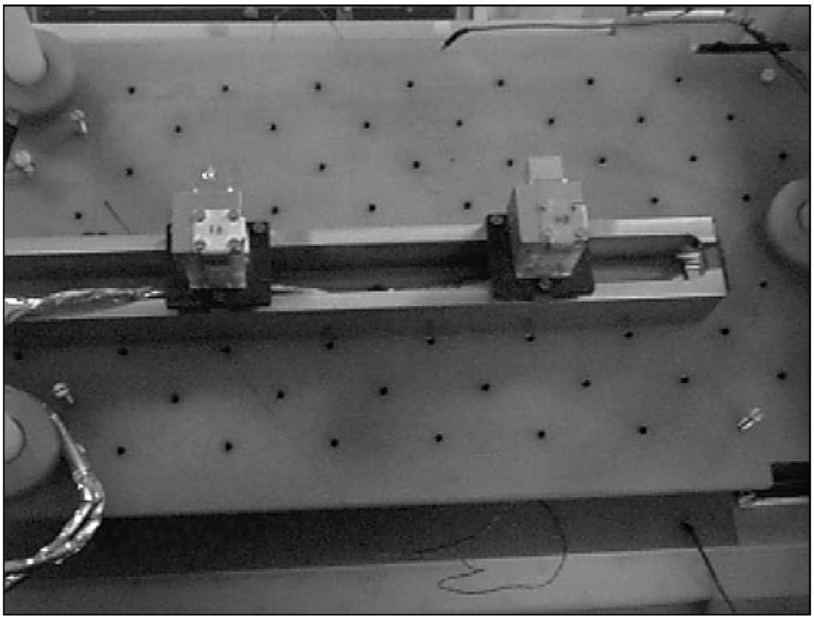

Figure 232: I010322A

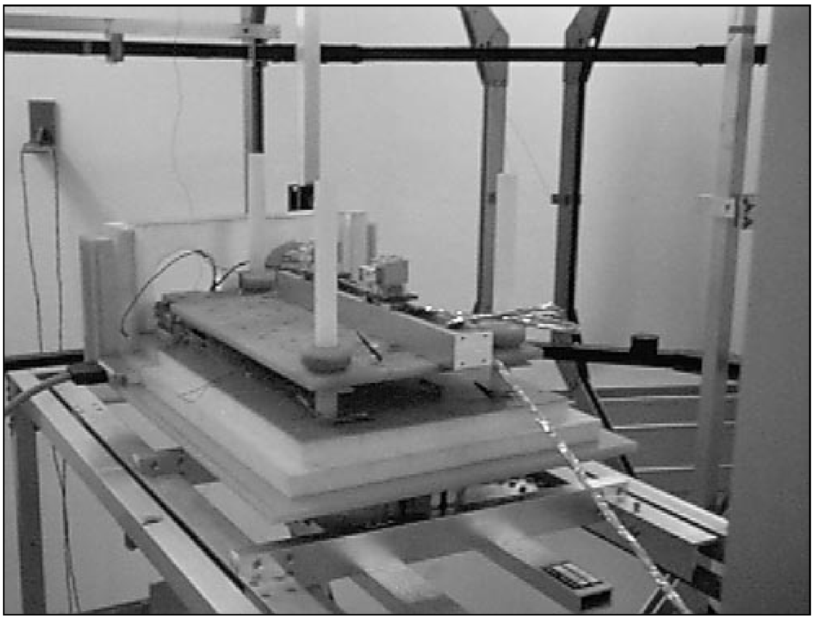

Figure 233: I010322B

### F.1.3 Images 01–03–23

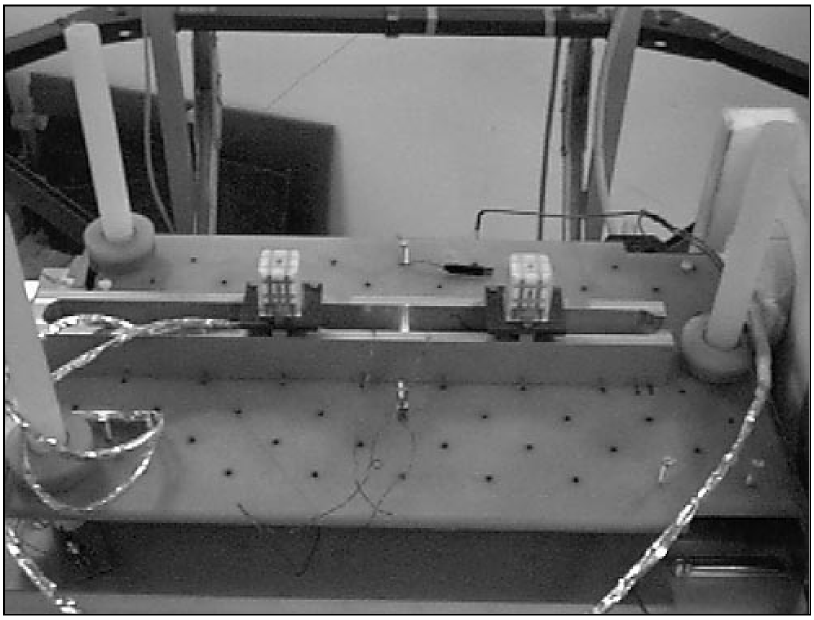

Figure 234: I010323A

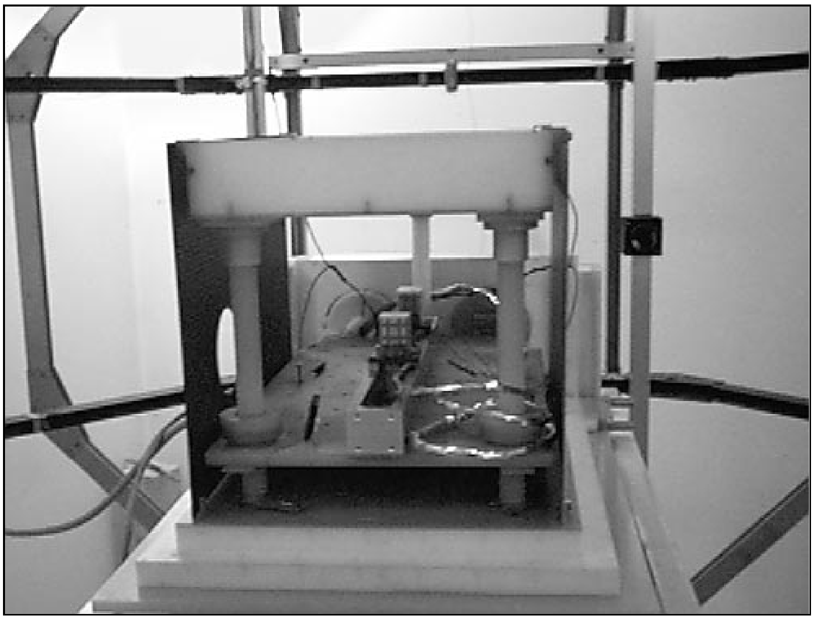

Figure 235: I010323B

#### F.1.4 Images 01–04–05

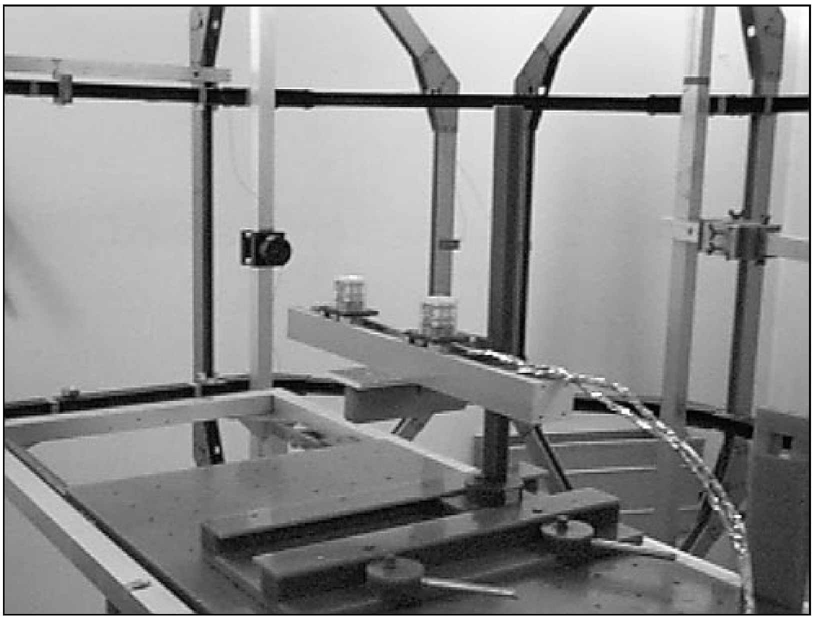

Figure 236: I010405A

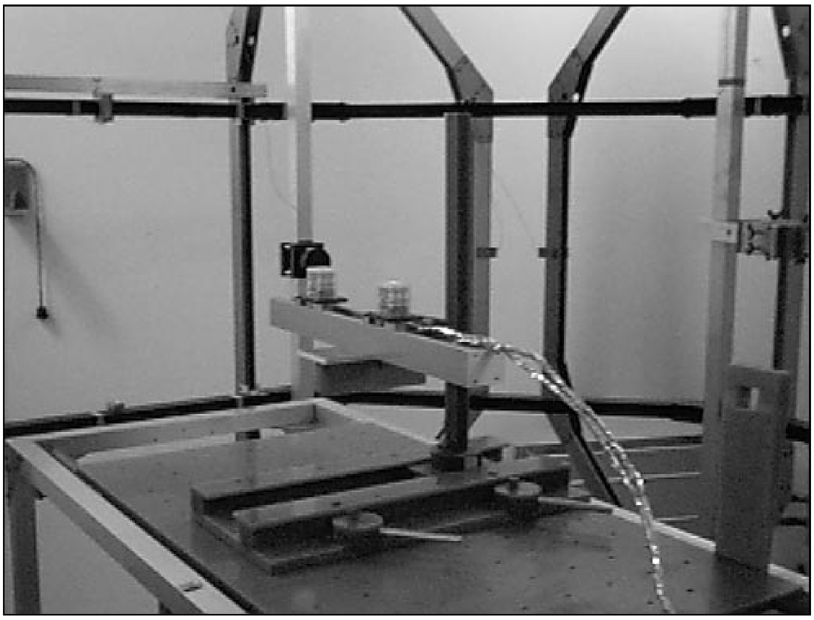

Figure 237: I010405B

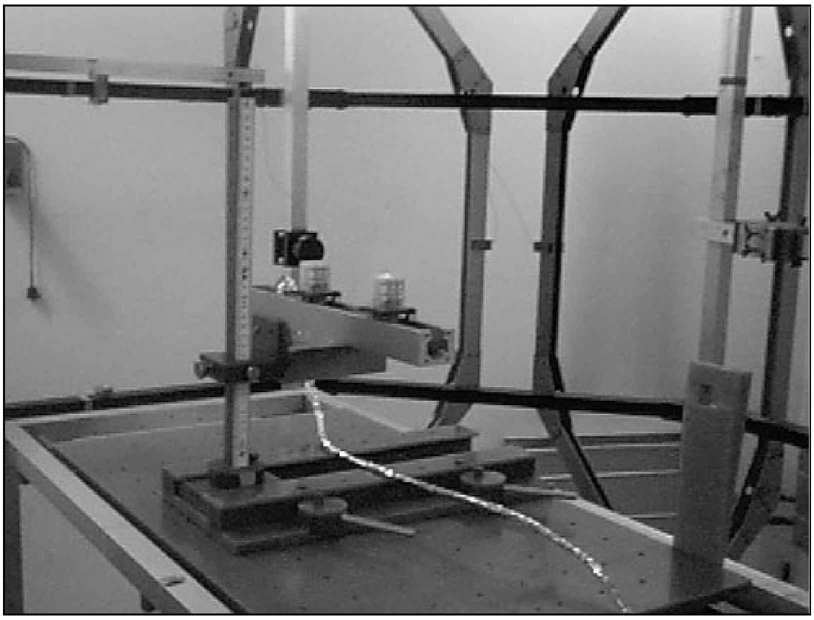

Figure 238: I010405C

Figure 239: I010405D

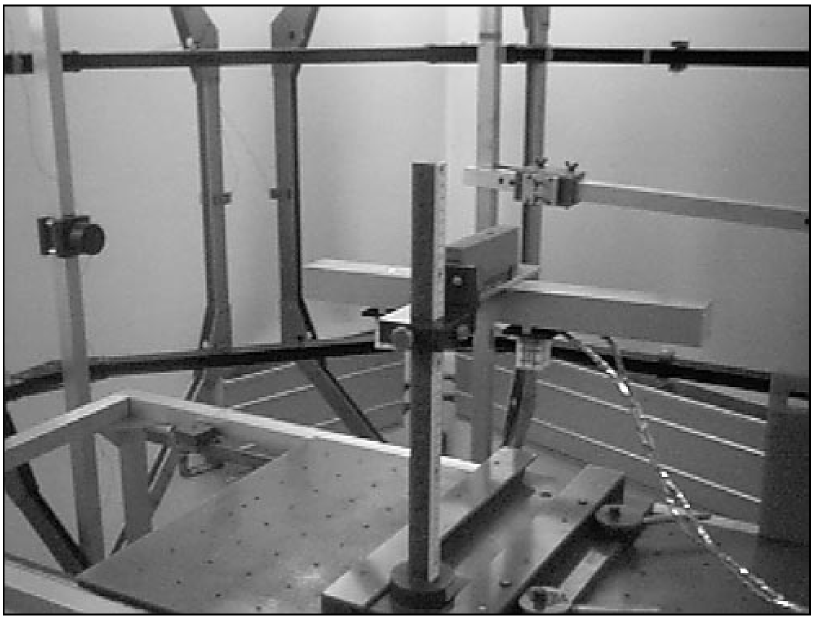

Figure 240: I010405E

Figure 241: I010405F

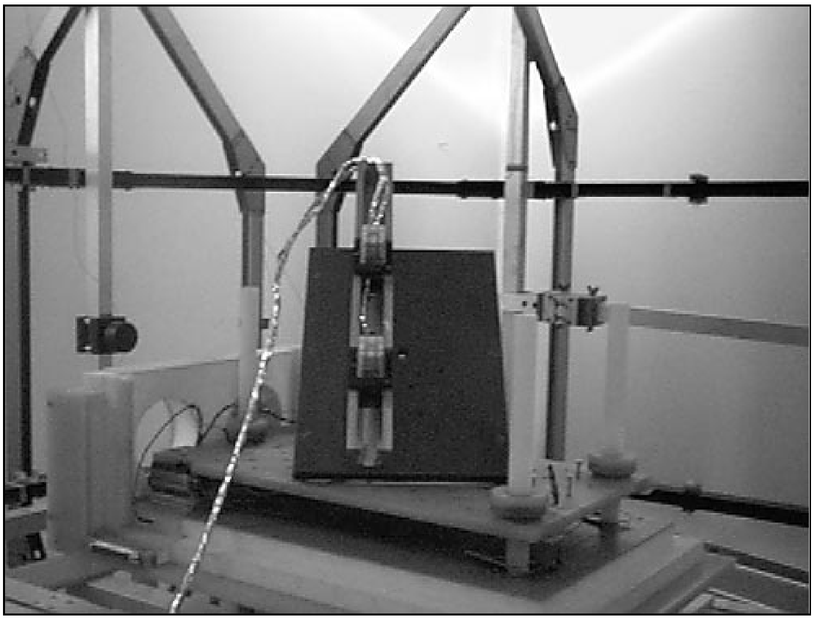

Figure 242: I010405G

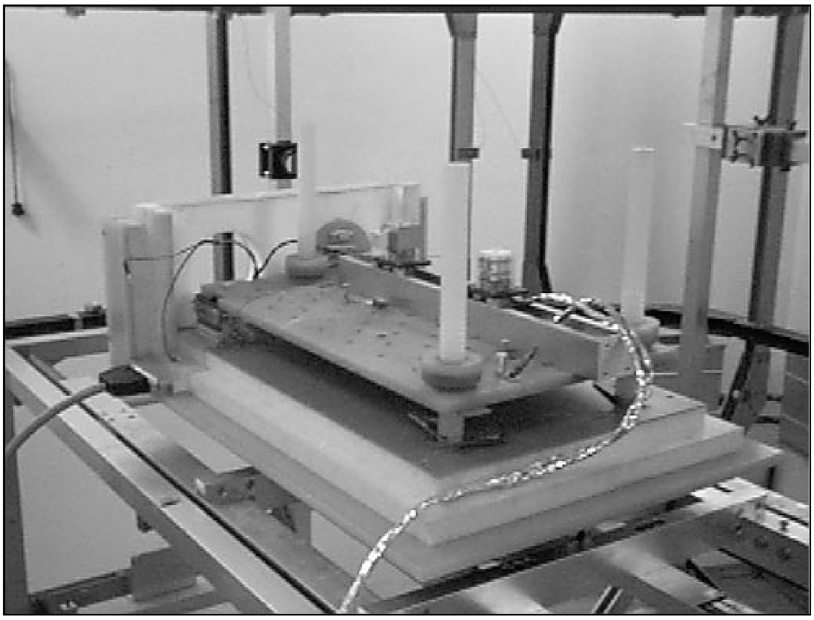

Figure 243: I010405H

#### F.1.5 Images 01–04–06

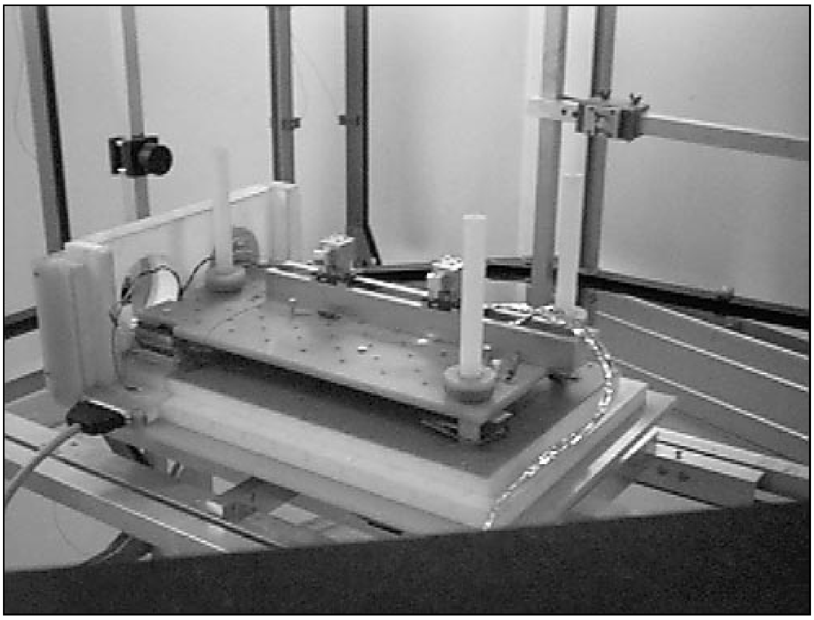

Figure 244: I010406A

#### F.1.6 Images 01–04–20

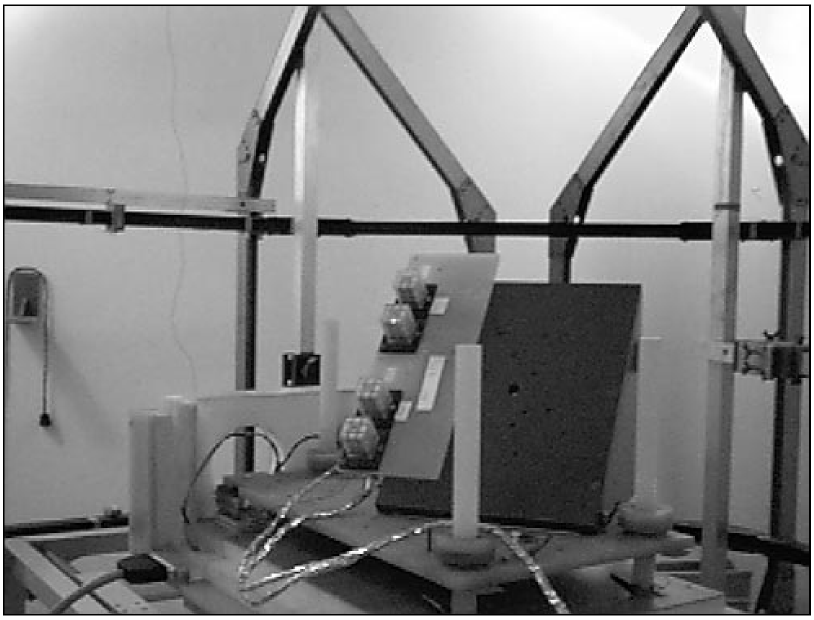

Figure 245: I010420A

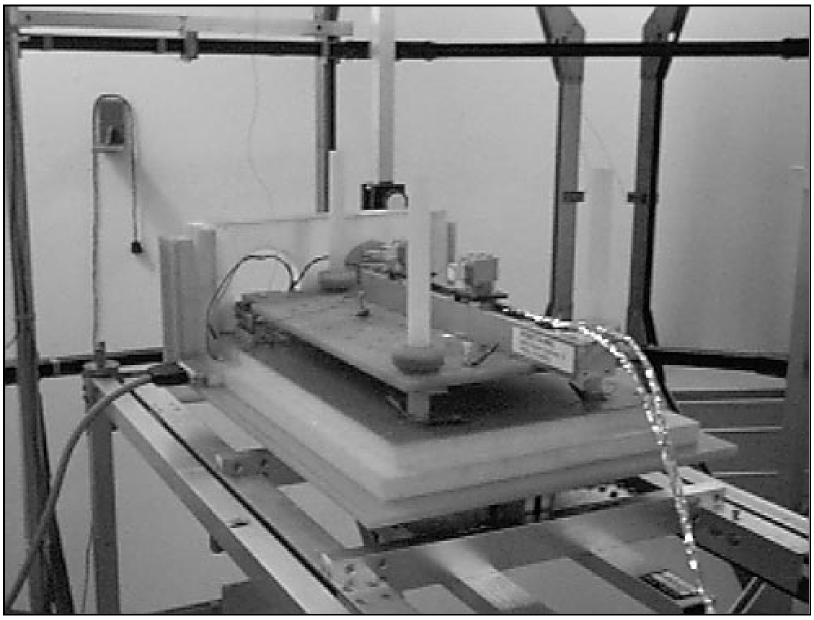

Figure 246: I010420B

#### F.1.7 Images 01–04–21

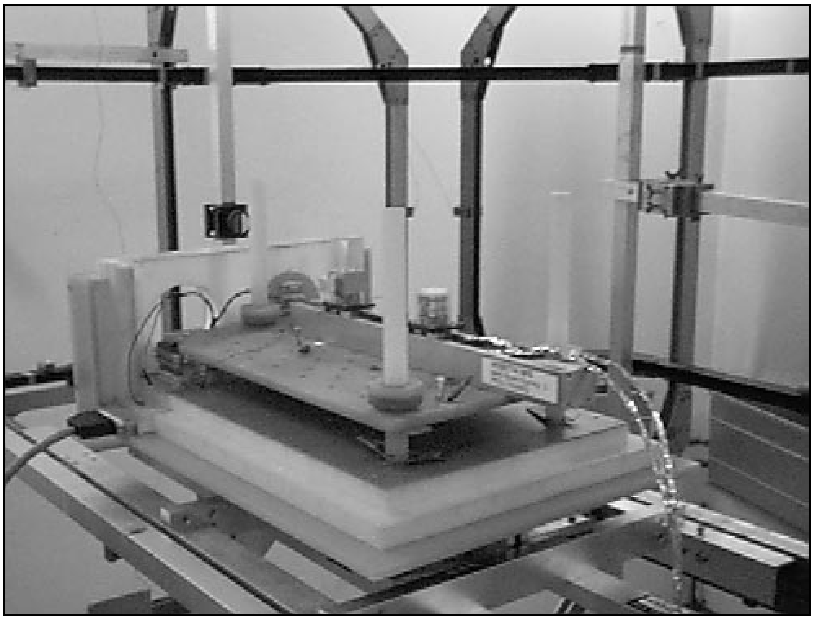

Figure 247: I010421A

#### F.1.8 Images 01–04–23

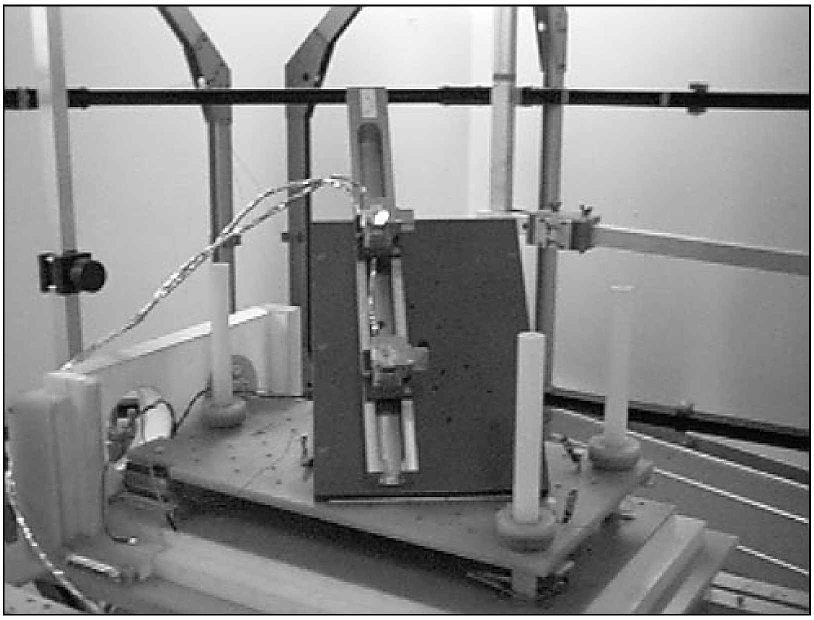

Figure 248: I010423A

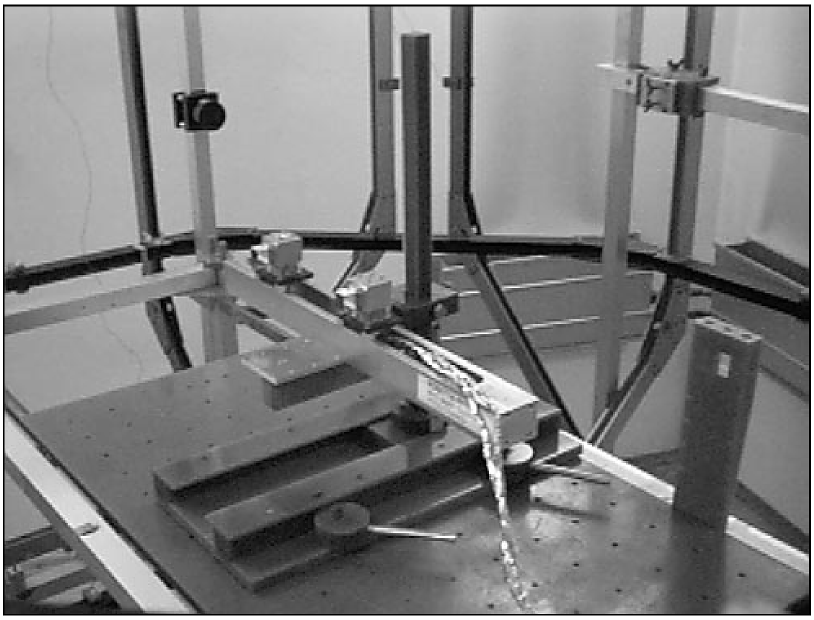

Figure 249: I010423B

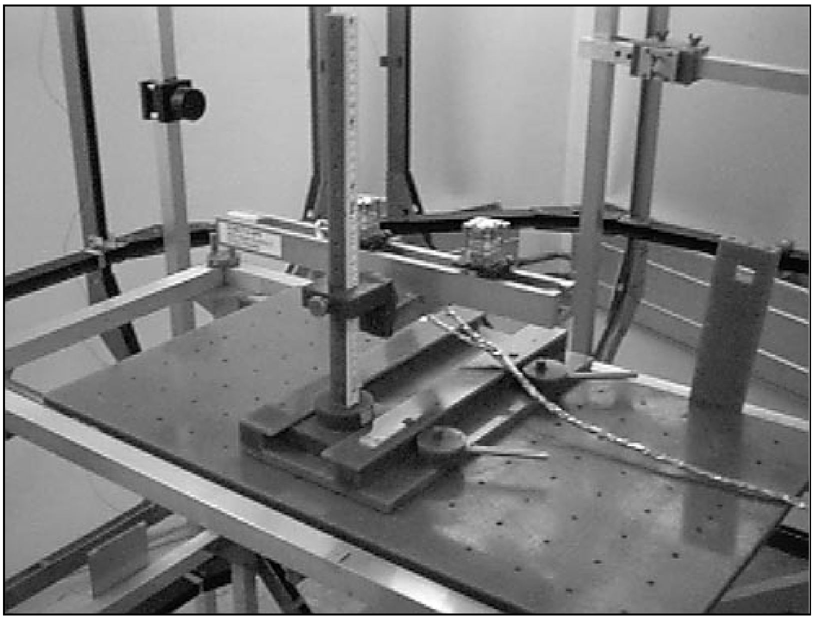

Figure 250: I010423C

Figure 251: I010423D

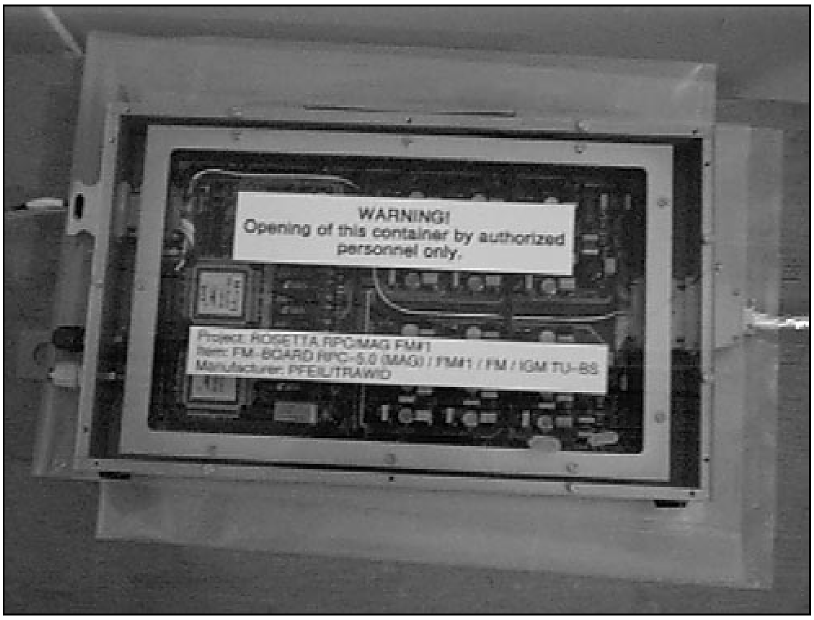


Figure 252: I010423E

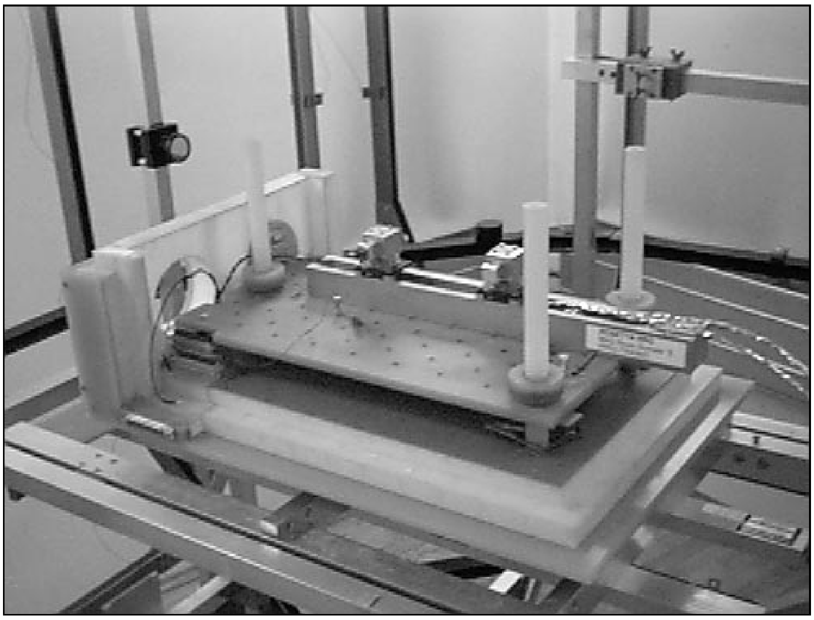

Figure 253: I010423F

### F.1.9 Images 01–04–24


Figure 254: I010424A

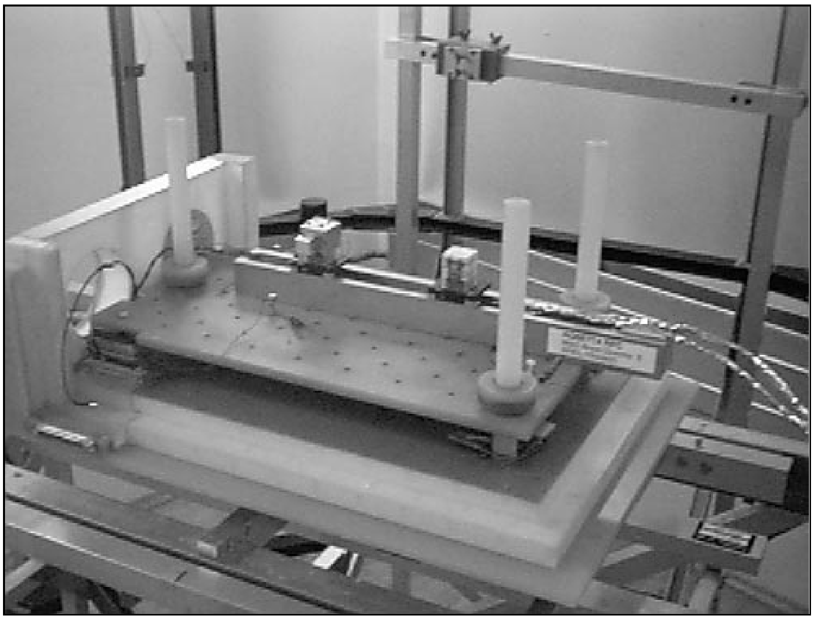

Figure 255: I010424B

### F.1.10 Images 01–04–25

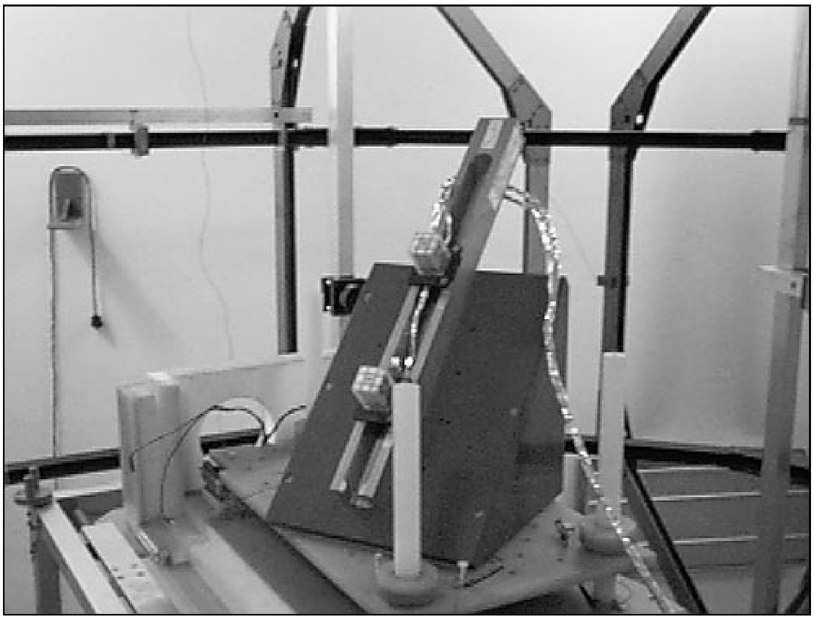

Figure 256: I010425A

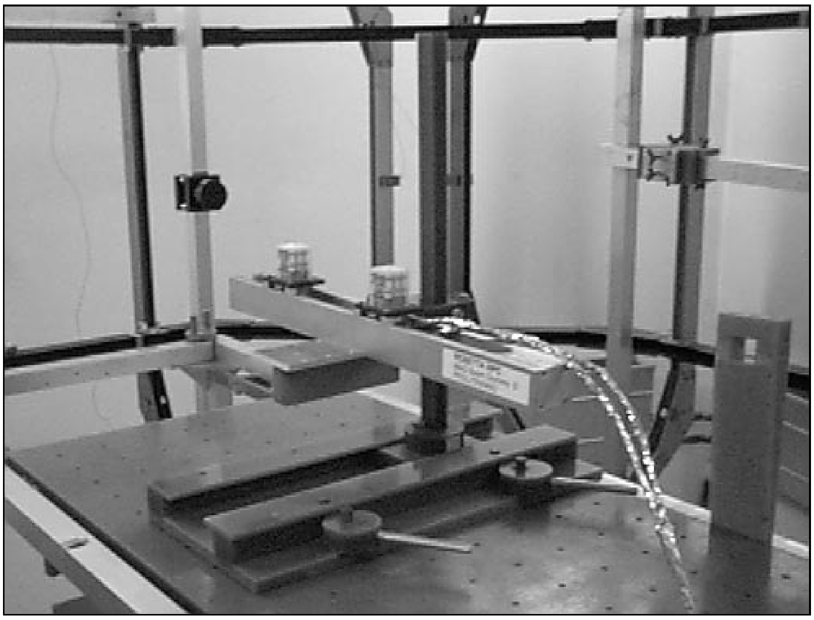

Figure 257: I010425B

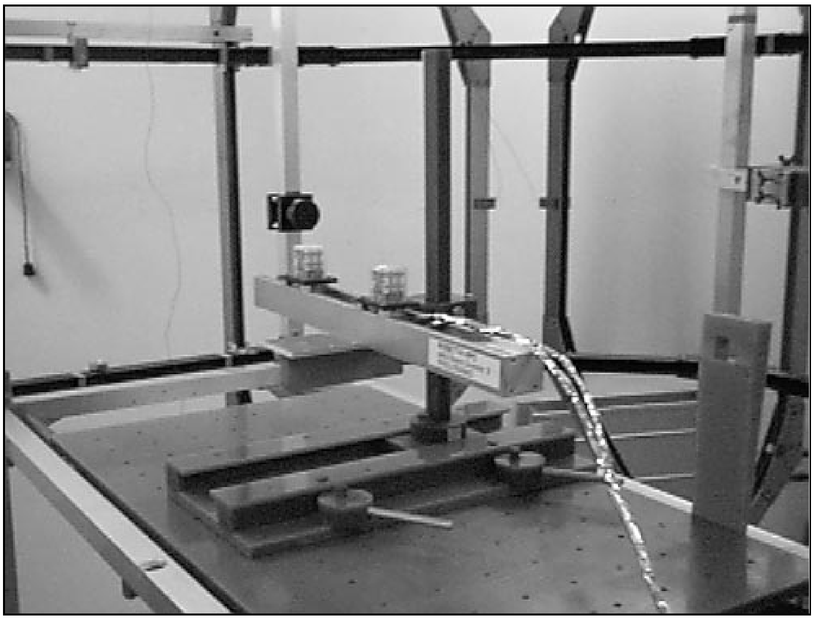

Figure 258: I010425C

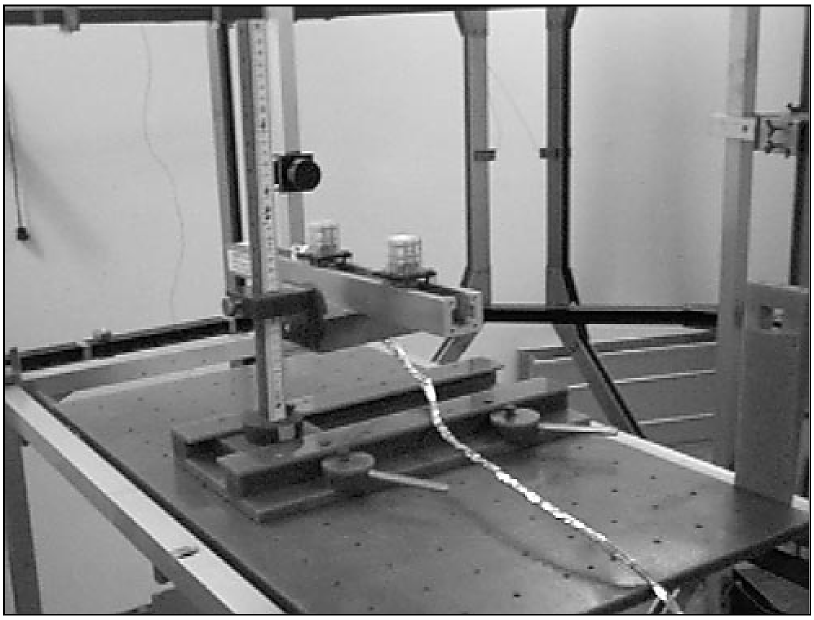

Figure 259: I010425D

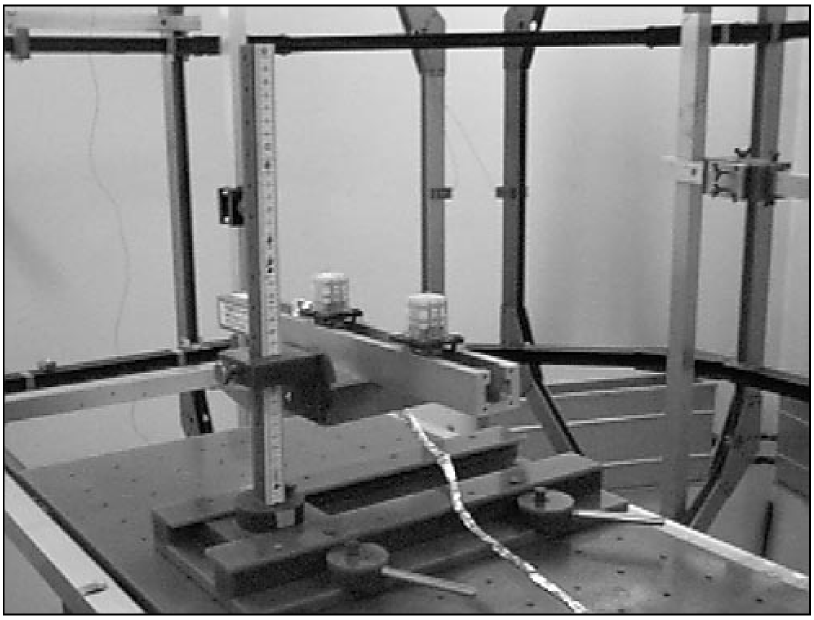

Figure 260: I010425E

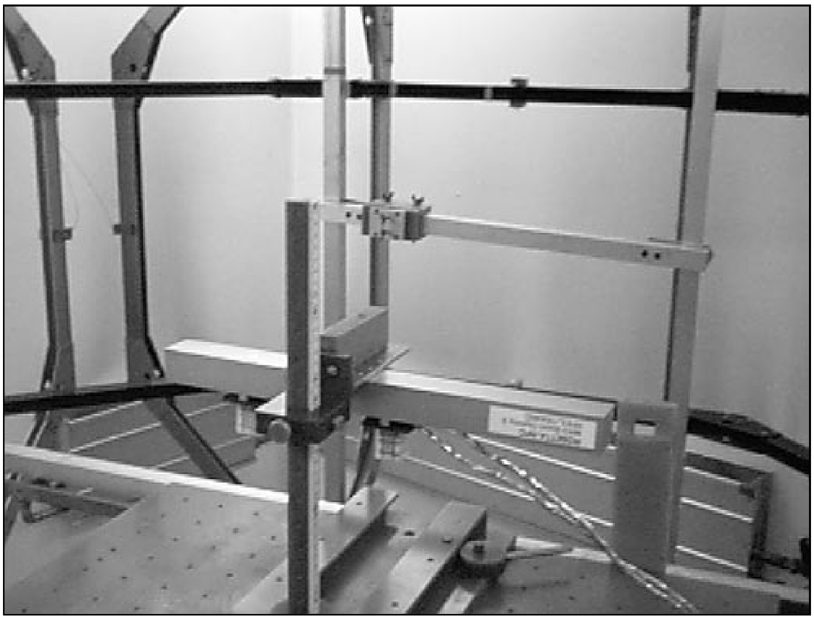

Figure 261: I010425F

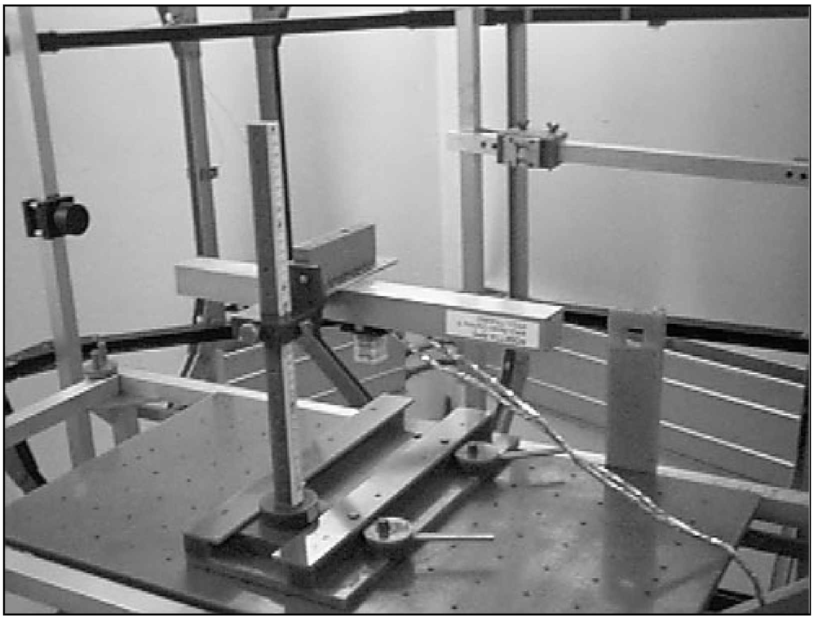

Figure 262: I010425G

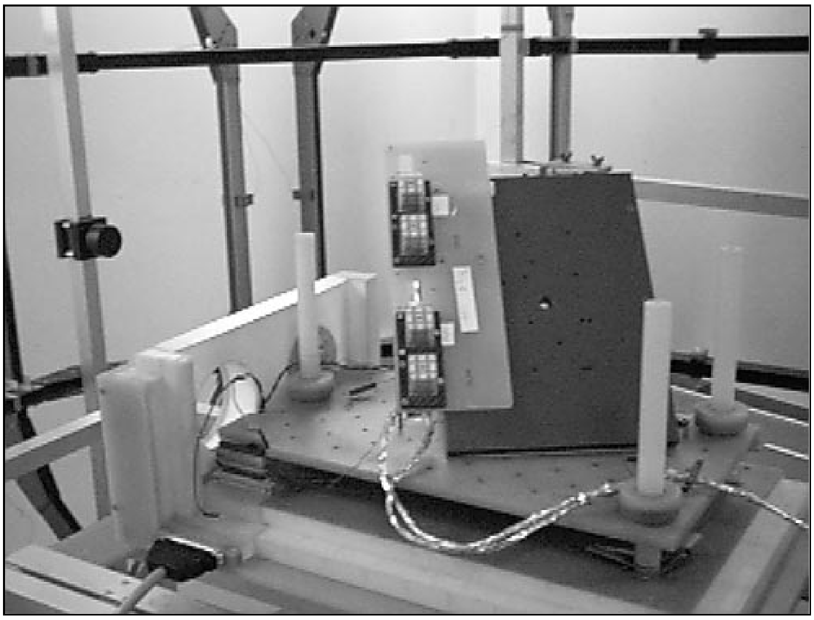

Figure 263: I010425H

### F.1.11 Images 01–04–26

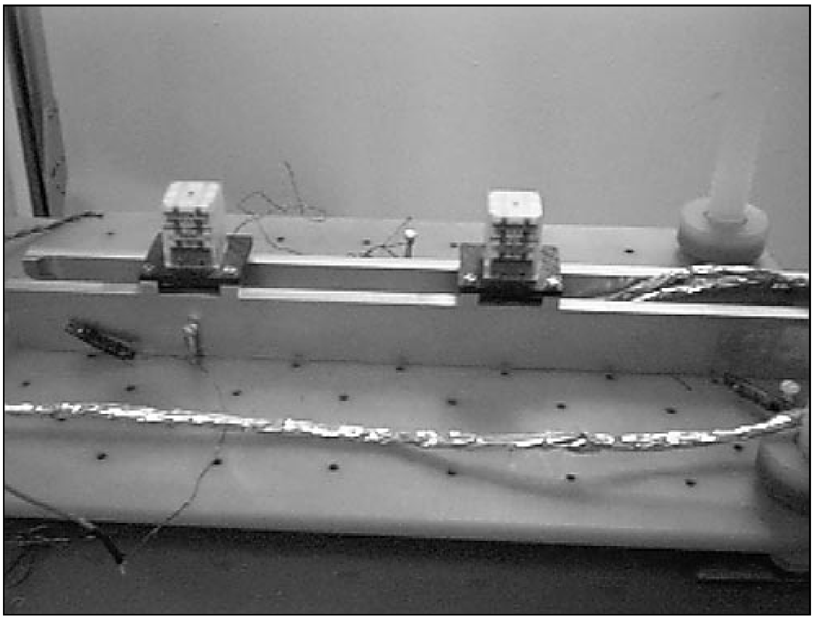

Figure 264: I010426A

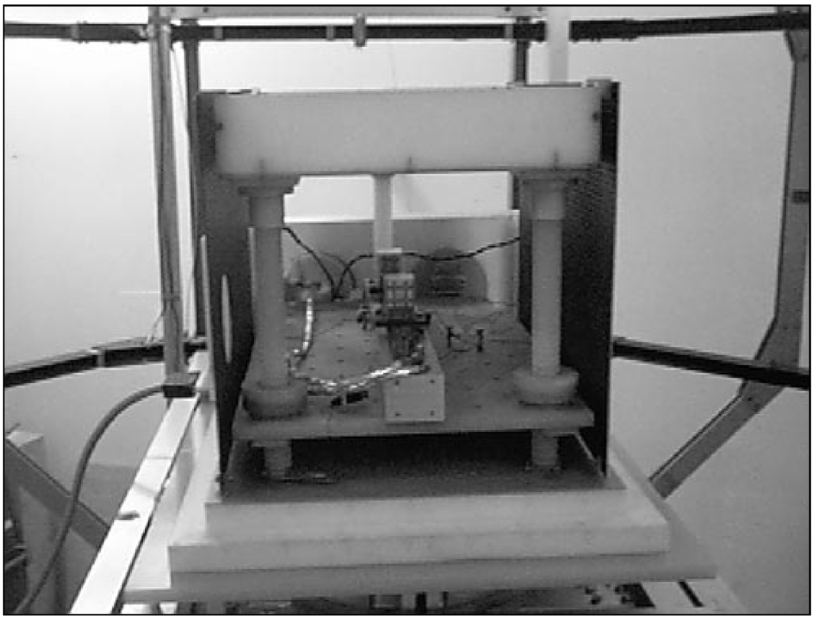

Figure 265: I010426B

#### F.1.12 Images 01–08–28

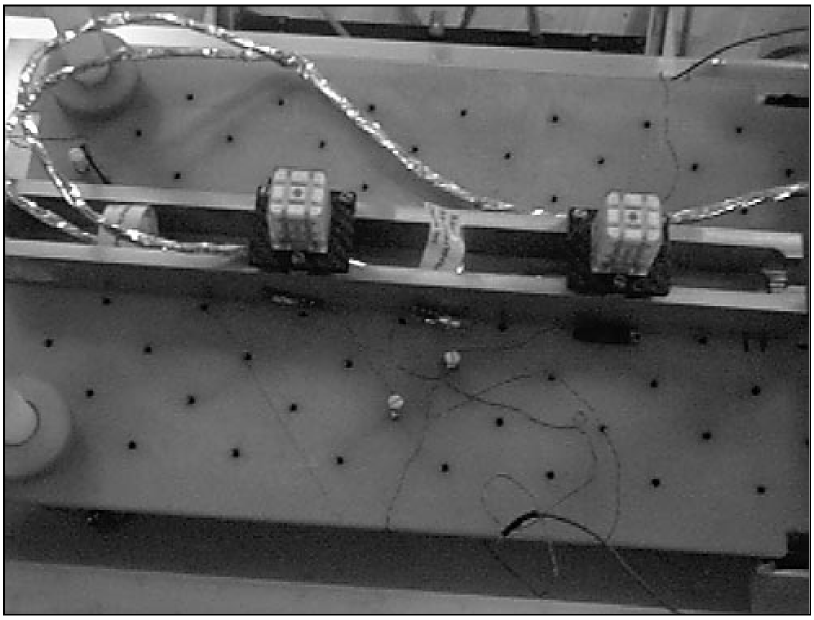

Figure 266: I010828A

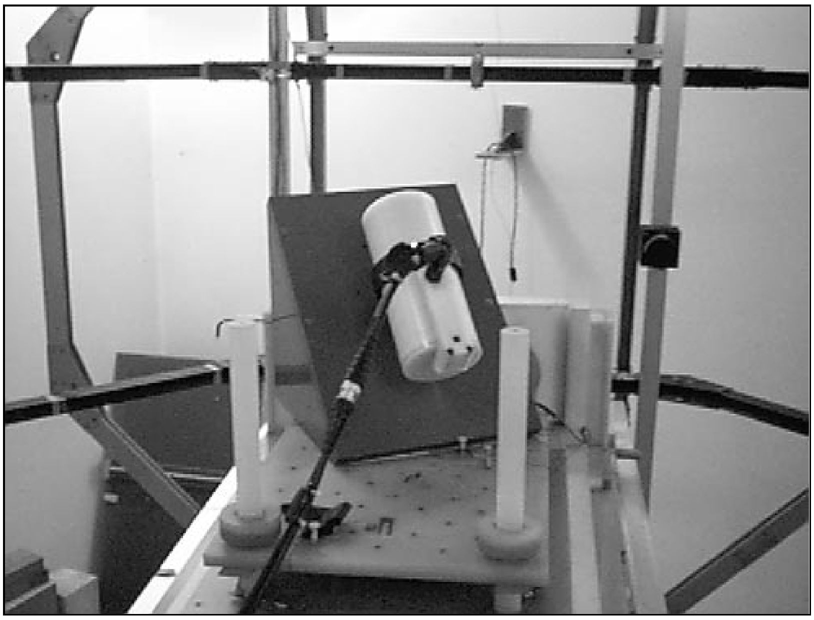

Figure 267: I010828B

#### F.1.13 Images 01–09–13

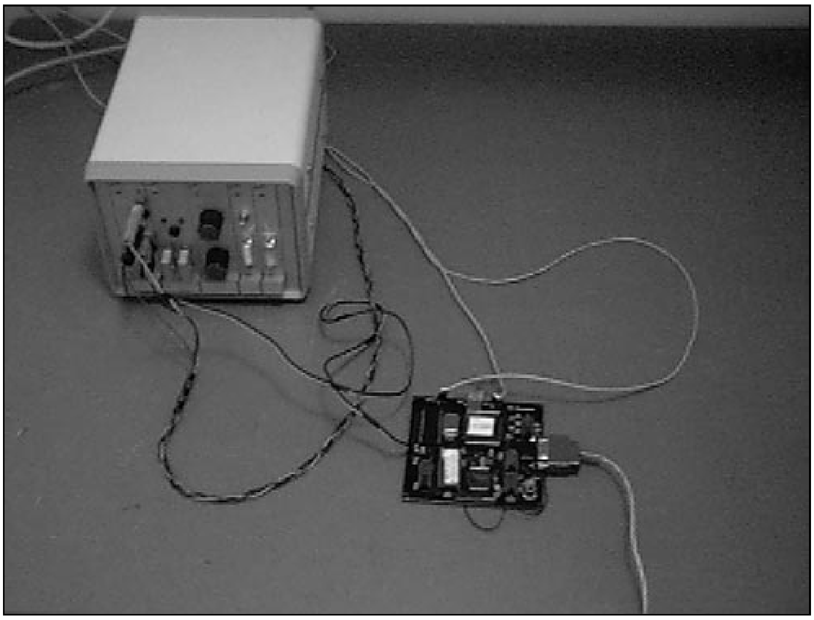

Figure 268: I010913A

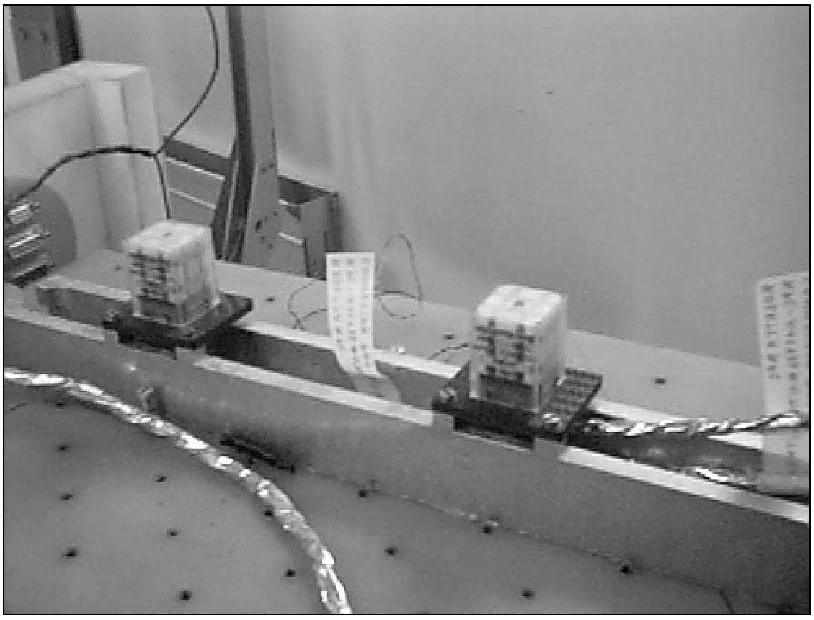

Figure 269: I010913B