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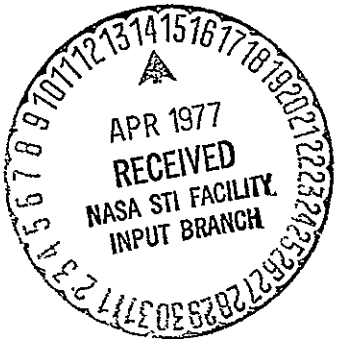
EVALUATION OF VIKING LANDER BAROMETRIC

PRESSURE SENSOR






by Michael Mitchell



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

LANGLEY RESEARCH CENTER, HAMPTON, VIRGINIA 23665

# EVALUATION OF VIKING LANDER BAROMETRIC PRESSURE SENSOR

Michael Mitchell
Langley Research Center

## SUMMARY

Two variable reluctance type pressure sensors with a full range of $1.79 \times 10^3$ N/M (18 mb) were evaluated to determine their performance characteristics related to Viking Mission environment levels. Twelve static calibrations were performed throughout the evaluation over the full range of the sensors using two point contact manometer standards. From the beginning of the evaluation to the end of the evaluation, the zero shift in the two sensors was within 0.5 percent and the sensitivity shift was 0.05 percent. The maximum thermal zero coefficient exhibited by the sensors was 0.026% FS/°C and the maximum thermal sensitivity coefficient was 0.032%/°C over the temperature range of -28.89°C to 71.11°C. The evaluation results indicated that the sensors are capable of making high accuracy pressure measurements while being exposed to the conditions mentioned herein.

## INTRODUCTION

During the Viking Mission on Mars, many parameters were measured for extending the scientific knowledge of the planet. One parameter, the Martian barometric pressure, was measured using two pressure sensors housed in the Viking Lander. Over the course of the mission, the sensors are exposed to both high and low temperatures, high vibrational forces, long duration of very low pressure, periods of dormancy, temperature fluctuations, pressure fluctuations and pyrotechnic shock. All of these conditions and environments can affect the performance of these sensors particularly with respect to zero and sensitivity shifts. In order to determine the effects of these conditions on the sensors, identical sensors were exposed to the conditions and environments expected to be encountered during the Viking Mission. However, since the entire mission was to last approximately 22 months, it was not feasible to duplicate the time scale. Therefore, this evaluation was performed using an abbreviated mission format in which the sensors were exposed to the various conditions and environments expected to be encountered on the actual Viking Mission. Results of these tests have application to aiding the interpretation of the mission data. During this 6-month evaluation, a calibration was performed following each of 11 major events in the test, and one calibration was performed at the end of the evaluation. Data from the sensors and the other environmental test equipment were recorded to provide continuous observation of the sensor performance. This report presents the results of these tests and the analysis of the performance characteristics of the sensors.

## MISSION DESCRIPTION

The Viking Mini-Mission, using an abbreviated Viking Mission format, was composed of six distinct parts. These six parts are a general screening test, sterilization, atmospheric hold, cruise environment, entry environment, and landed environment. The following is a description of these various parts:

Screening Test - The screening test is a process for selecting sensors for application to the Viking Mission. The screening test is divided into the following four parts:

1. Three initial calibrations - calibrations taken at ambient temperature at pressure points of approximately 0, 20, 40, 50, 60, 80, and 100% of full scale.

2. Vibration Test - sensors were exposed to sine and random vibration along the X axis followed by a static calibration and then along the Y and Z axis followed by a check calibration.

3. Burn-in - sensors were exposed to a temperature cycle from ambient temperature to 68°C to ambient temperature, where one cycle required between 20 hours and 56 hours, until 160 total hours at 68°C had accumulated. A check calibration was performed upon completion of the burn-in.

4. Thermal Coefficient Calibration - sensors were exposed to temperatures of 24°C, -29°C, 24°C, 71°C, and 24°C with a calibration following each exposure. The last 24°C calibration was labeled the reference calibration of the transducers for subsequent data comparison.

Sterilization - Sensors were exposed to 1 atmosphere at 24°C for 21 hours with no power to sensors, then the sensors were exposed to 1 atmosphere at 111°C for 54 hours.

Atmospheric Hold - Sensors were maintained at ambient temperature and pressure for a period of 14 days.

Cruise Environment - Sensors were maintained at 18°C and at a pressure less than $10^{-1}$ N/M$^2$ for a period of 30 days while zero pressure output measurements were made every 24 hours.

Entry Environment - Sensors were exposed to the thermal environment shown in figure 1 and the pressure was maintained at less than $10^{-1}$ N/M$^2$ for 35 hours and 12 minutes with output measurements made every hour. The pressure was ramped to $8 \times 10^2$ N/M$^2$ over last 10 minutes of test with output measurements made every second. The final zero was obtained at 34 hours and 42 minutes into test. The entry test period lasted 35 hours and 22 minutes.

Landed Environment - Sensors maintained at pressure varying between $5 \times 10^2$ N/M$^2$ and $12 \times 10^2$ N/M$^2$. The temperature was cycled daily as shown

in figure 2 for a 30-day period. Each hour the sensors were powered on for 30 seconds and three output measurements were taken. The sensors were then turned off. A final calibration was performed at the conclusion of the Mini-Mission which provided a final data point for the analysis of the performance data.

## SENSOR DESCRIPTION

The pressure sensor was a variable reluctance type with all of its signal conditioning and power circuitry contained within the sensor case. The variable element in the sensor is a thin metal diaphragm positioned between two magnetic inductance coils and forms the separation between a chamber connected to the external pressure port and a sealed reference chamber. Deflection of the diaphragm produces a decrease in the magnetic flux of one coil while simultaneously increasing the magnetic flux of the other coil. The output voltage is proportional to the ratio between the two inductances. The sensor requires 24 to 37 Vdc with 6 mA input and provides 4 Vdc output for a full range of $1.79 \times 10^3$ N/M$^2$ (18 millibars). The sensor measured 12.7 cm in length, 3.8 cm in diameter, 5.08 cm in height (including the mounting feet) and weighed 454 grams. Manufacturer's specifications are listed in Table 1. The sensor requires a six-pin Belden-type plug for its electrical connection and 1/4-inch flared tubing for its pressure connection. Figure 3 shows two of the sensors with the case of one cut away to show the electronics.

## INSTRUMENTATION

The equipment used for the simulation of the exposed Viking Mission conditions and environments (fig. 4) was a vacuum system and a cam-programable thermal environment chamber. The oil diffusion pumped vacuum system was capable of obtaining pressures as low as $1.3 \times 10^{-5}$ N/M$^2$ ($1.3 \times 10^{-7}$ mb). The system was constructed in such way as to allow the pressure sensors to be maintained at various pressures for calibrations and simulations. Attached to the vacuum system were two point contact manometer calibration standards which were used to obtain true pressure measurements throughout the testing. The point contact oil manometer had a range of 1.37 N/M$^2$ ($1.37 \times 10^{-2}$ mb) to $4.619 \times 10^2$ N/M$^2$ (4.619 mb) with a measurement uncertainty of $2.6 \times 10^{-1}$ N/M$^2$ ($2.6 \times 10^{-3}$ mb) over the range. The point contact mercury manometer had a range of $1.379 \times 10^2$ N/M$^2$ (1.379 mb) to $1.31 \times 10^4$ N/M$^2$ ($1.31 \times 10^2$ mb) with a measurement uncertainty of 1.36 N/M$^2$ ($1.36 \times 10^{-2}$ mb) over the range. A capacitance gage with an uncertainty of 0.45% of reading provided a continuous measurement of the pressure. The environmental chamber, with a control tolerance of $\pm 0.14^{\circ}$C, provided both programable or manual control of temperature during thermal calibrations and simulations. A programable calculator system, having a voltmeter with an uncertainty of approximately $\pm 0.013$% of reading, was used to automatically obtain sensor output measurements and temperature measurements. During the environment simulations, the

calculator automatically acquired sensor output and temperature measurements at predetermined time intervals. The thermocouple system, referenced to an ice-point junction, had an accuracy of 0.375% over the range of -28.89 to 71.11°C. In addition, the sensors' outputs, temperature measurements, and the capacitance gage output were continuously recorded using an analog data system which had an accuracy of ±0.25% of full scale (10 volts).

## TEST RESULTS

Two Tavis Corp. Model P-4 sensors, having serial numbers S/N 1583 and S/N 1591, were chosen to be evaluated using the Viking Mini-Mission format. On September 23, 1975, the sensors were connected to the vacuum system and pumped to less than $10^{-1}$ N/M$^2$ ($10^{-3}$ mb). The sensors were supplied with 28 Vdc and the current to the parallel connected sensors was 9.3 mA. The zero pressure output of S/N 1583 was 0.4961 V and S/N 1591 was 0.4904 V. The sensors were evacuated for 500 hours while the thermocouples attached to sensor cases and sensor outputs were continuously recorded on the analog data system. An hourly account of this data is presented in Table II. A leak test was performed at this time. It was found that the sensor output did not differ by more than 1 mV over a 15 minute period, which indicated no leakage in the system and the normal degree of outgassing had occurred. An accident involving the blow-back of the oil from the oil manometer into the vacuum system necessitated exposing the sensors to atmosphere to clean the system. On October 17, the sensors were again evacuated with the zero pressure output of S/N 1583 being 0.5154 V and S/N 1591 being 0.5027 V. The input current was measured to be 8.9 mA. After 74 hours of additional evacuation, a 16-minute rate-of-rise test was conducted with the pumping valve closed off. S/N 1583 showed a maximum change of 0.7 mV and S/N 1591 showed a maximum change of 0.9 mV. Table III shows the tabulated rate-of-rise test which followed the 74-hour evacuation. At the end of the evacuation, October 20, the zero pressure output for S/N 1583 was 0.509 V and S/N 1591 was 0.492 V.

## THREE INITIAL CALIBRATIONS

Three static calibrations were performed using nitrogen gas as the test medium. Data for the increasing pressure measurements only is shown in figures 5 and 6 where the data is presented as deviation from the linear least square line as a function of applied pressure. Figures 5 and 6 show an apparent error in the pressure measurement of the first calibration which places the third and fourth point out of line with the normal deviation curve. Neglecting these two points, figure 5 shows a maximum deviation of -19.54 mV within the expected Martain atmospheric pressure range (exclusive of the endpoints), and a maximum data spread of 8.47 mV for S/N 1583. Figure 6 shows a maximum deviation of -15 mV and a maximum data variation of 9.65 mV. The sensitivities and zeroes of S/N 1583 and S/N 1591 for the three initial calibrations are shown below.

THREE INITIAL CALIBRATIONS

| S/N | Sensitivity ($\times 10^2$ N/M$^2$/V) | Zero (V) |
|---|---|---|
| | 1st Calibration | |
| 1583 | 4.5231 | 0.5254 |
| 1591 | 4.5266 | 0.5133 |
| | 2nd Calibration | |
| 1583 | 4.5188 | 0.5272 |
| 1591 | 4.5345 | 0.5150 |
| | 3rd Calibration | |
| 1583 | 4.5307 | 0.5268 |
| 1591 | 4.5218 | 0.5154 |

VIBRATION TESTS

The vibration test was divided into two components, the sine vibration test and the random vibration test. The sine vibration test consisted of a 5.0 G peak level limited to 0.4-inch double amplitude swept from 5 to 250 to 5 Hz at a rate of 2 octaves per minute. The random vibration test's spectrum is defined in figure 7. On November 7, the sensors were exposed to the sine and random vibration test along the X axis. A plot of voltage increase versus frequency for the sine vibration test only is presented in figure 8, showing an increase of 1 mV due to the vibration. The output change for the random vibration test was less than the $\pm$1.25 V peak-to-peak limit prescribed for the test. On November 11, a static calibration was performed on the two sensors. Data for the increasing pressure measurements for the two sensors, figure 9, shows for S/N 1583 a maximum deviation of -15.39 mV within the expected pressure range and S/N 1591 had a maximum deviation of -11.52 mV. S/N 1583 experienced an increase in zero pressure output of 14 mV and S/N 1591 experienced an increase of 9 mV. The sensors were exposed to the sine and random vibration test along the Z axis and Y axis. A plot of voltage deviation versus frequency for the sine vibration test only is presented in figures 10 and 11, both exhibiting an increase in output voltage less than the $\pm$0.5 V peak to peak prescribed for the test. On November 14, a check calibration (0, 50, and 100%) was performed on the two sensors. Data for the increasing pressure measurements for the two sensors, figure 12, shows for S/N 1583 a maximum deviation of -26.73 mV within the expected pressure range and S/N 1591 shows a maximum deviation of -23.37 mV. S/N 1583 increased 15.6 mV in the zero pressure output from the

three static calibrations and S/N 1591 increased 11 mV in the zero pressure output. The sensitivities and zeroes of S/N 1583 and S/N 1591 for the vibration calibrations are shown below.

VIBRATION CALIBRATIONS

| S/N | Sensitivity ($\times 10^2$ N/M$^2$/V) | Zero (V) |
|---|---|---|
| | X Axis Vibration Calibration | |
| 1583 | 4.5353 | 0.5403 |
| 1591 | 4.5351 | 0.5237 |
| | Y and Z Axis Vibration Calibration | |
| 1583 | 4.5271 | 0.5421 |
| 1591 | 4.5320 | 0.5258 |

BURN-IN

Between November 17-28, the sensors were exposed to five temperature cycles with each cycle going from ambient temperature to 68°C to ambient temperature. The first cycle lasted 24 hours and 30 minutes with the sensors at 68°C for 22 hours 20 minutes. Cycle two lasted 28 hours 35 minutes with the sensors at 68°C for 24 hours 2 minutes. The third cycle lasted a period of 25 hours 10 minutes with the sensors at 68°C for 24 hours. Cycle four lasted 52 hours 36 minutes and the sensors experienced 68°C for 50 hours. The final cycle lasted 46 hours 10 minutes with the sensors at 68°C for 44 hours. The sensors were at 68°C for a total of 161 hours 22 minutes. The input voltage during the burn-in was set at 35.5 Vdc. The input current, transducer temperature, and output voltage were monitored during the test and at several points in the test they were recorded. These points are presented in Tables IV and V as a function of elapsed time from the beginning of the test. Table IV and V show the output voltage to be steady at the two temperatures, varying directly with temperature and with the input current varying inversely with temperature. On December 1, a check calibration was performed on the two sensors. Data for the increasing pressure measurements for the two sensors, figure 13, shows for S/N 1583 a maximum deviation of -24.7 mV and S/N 1591 shows a maximum deviation of -18.97 mV. S/N 1583 showed an increase in zero of 10 mV from the zero of the three initial calibration and S/N 1591 showed an increase of 2.5 mV in the zero. The sensitivities and zeroes of S/N 1583 and S/N 1591 for the burn-in calibrations are shown below.

## BURN-IN CALIBRATION

| S/N | Sensitivity ($\times 10^2$ N/M$^2$/V) | Zero (V) |
|---|---|---|
| 1583 | 4.5411 | 0.5367 |
| 1591 | 4.5405 | 0.5171 |

## THERMAL COEFFICIENT CALIBRATIONS

During this period of testing the sensors were exposed to temperatures of 24°C, -28.89°C, 24°C, 71.1°C, and 24°C for at least 24 hours with a static calibration following each exposure. The first thermal coefficient calibration was performed at 24°C. Data for the increasing pressure measurements, figure 14, shows for S/N 1583 a maximum deviation of -18 mV and S/N 1591 had a maximum deviation of -14.25 mV. S/N 1583 showed an increase in zero of 17.3 mV from the zero of the three initial calibrations and S/N 1591 showed an increase of 11.3 mV in the zero. On December 8, the second thermal calibration was performed at -28.89°C. Data for the increasing pressure measurements, figure 15, shows for S/N 1583 a maximum deviation of -24.3 mV within the pressure range (exclusive of the endpoints) and S/N 1591 had a maximum deviation of -18.95 mV. S/N 1583 showed an increase in zero of 59.7 mV from the zero of the three initial calibrations and S/N 1591 showed an increase of 14.3 mV in the zero. The third thermal calibration was performed at 24°C. Data for the increasing pressure measurements,figure 16, shows for S/N 1583 a maximum deviation of 20.87 mV and S/N 1591 had a maximum deviation of 22.31 mV. S/N 1583 showed a decrease in zero of 13.9 mV from the zero of the three inital calibrations and S/N 1591 showed a decrease of 16.6 mV in the zero output. The fourth thermal calibration was performed at 71.1°C. Data for the increasing pressure measurements, figure 17, shows for S/N 1583 a maximum deviation of -19.37 mV and S/N 1591 had a maximum deviation of -15.43 mV. S/N 1583 showed a decrease in zero of 33 mV from the zero of the three initial calibrations and S/N 1591 showed a decrease of 54 mV in the zero output. The fifth thermal calibration (reference calibration) was performed at 24°C. Data for the increasing pressure measurements, figure 18, shows for S/N 1583 a maximum deviation of -15.98 mV and S/N 1591 had a maximum deviation of -13.67 mV. S/N 1583 showed an increase in zero of 5 mV from the zero of the three initial calibrations and S/N 1591 showed a decrease of 6.8 mV in the zero output. A thermal sensitivity coefficient and a thermal zero coefficient were calculated for S/N 1583 over the range of 71.11°C to -28.89°C ,and were found to be $-6.966 \times 10^{-2}$ N/M$^2$/V/°C and $-1.04194 \times 10^{-3}$ V/°C, respectively. The thermal sensitivity and thermal zero coefficients for S/N 1591 were found to be $-5.647 \times 10^{-2}$ N/M$^2$/V°C and $-6.8612 \times 10^{-4}$ V/°C, respectively. The sensitivities and zeroes of S/N 1583 and S/N 1591 for the thermal coefficient calibrations are shown below.

## THERMAL COEFFICIENT CALIBRATIONS

| S/N | Sensitivity ($\times 10^2$ N/M$^2$/V) | Zero (V) |
|---|---|---|
| | 1st Thermal Calibration at 24°C | |
| 1583 | 4.5153 | 0.5437 |
| 1591 | 4.5174 | 0.5259 |
| | 2nd Thermal Calibration at -29°C | |
| 1583 | 4.5778 | 0.5862 |
| 1591 | 4.5582 | 0.5289 |
| | 3rd Thermal Calibration at 24°C | |
| 1583 | 4.4993 | 0.5125 |
| 1591 | 4.4994 | 0.4980 |
| | 4th Thermal Calibration at 71°C | |
| 1583 | 4.5082 | 0.4820 |
| 1591 | 4.5017 | 0.4603 |
| | Reference Calibration at 24°C | |
| 1583 | 4.5264 | 0.5316 |
| 1591 | 4.5174 | 0.5078 |

## STERILIZATION

On December 15, the sensors, after being maintained at less than $10^{-1}$ N/M$^2$ for 94 hours, were exposed to 1 atmosphere. The input current and output voltages were recorded prior to and after the pressure was raised to 1 atmosphere and are as follows:

Time 11:00 a.m. (Temp 22°C)

Current 9.2 mA

| S/N | Output (V) |
|---|---|
| 1583 | 0.5009 |
| 1591 | 0.4844 |

At 1 Atmosphere

Current 27.5 mA

| S/N | Output (V) |
|---|---|
| 1583 | 5.5541 |
| 1591 | 5.5153 |

Between 4:00 p.m. on December 15 and 7:45 a.m. on December 16, a sensor (S/N 1583) ceased functioning and the test was placed in a hold mode until the malfunction (faulty plug) was located. The sterilization test resumed on January 7, 1976, and was completed 50 hours later on January 9.

## ATMOSPHERIC HOLD

Between the period lasting from January 12 to January 26, the sensors were maintained at ambient temperature and ambient pressure. During this period there was no voltage applied to the sensors. This test simulated the period of dormancy between the sterilization of the sensors and the actual launch of the Viking spacecraft.

## CRUISE ENVIRONMENT

During the 30-day period beginning on February 2, the sensors were maintained at 18°C $\pm$1.4°C and a pressure less than $10^{-1}$ N/M$^2$. Zero pressure output measurements were obtained every 24 hours and are presented in Table VI. A plot of zero pressure output versus time (fig. 19) shows the sensors settling to a stable zero during days 5-9. On the 9th day, S/N 1591 and S/N 1583 experienced a drop in zero output voltage of 8 mV and 41 mV, respectively, due to a sudden drop and recovery in temperature of approximately 67°C. This temperature drop was due to a temporary malfunction in the thermal environment chamber which dropped the temperature to approximately -51°C in 1 hour. Figure 20 shows a more detailed account of this incident.

## ENTRY ENVIRONMENT

At 8:10 a.m. on March 3, the sensors began their exposure to the temperature as shown in figure 1 and were maintained at a pressure of less than $10^{-1}$ N/M$^2$. Zero output measurements were taken every 1 hour along with the sensor temperature measurement. An hourly account of the sensor output and sensor temperature is shown in Appendix A. Thirty-four hours and 42 minutes after the beginning of the test a final zero was obtained for the two sensors at 6:32 p.m. on March 4. These final zeroes are subtracted from the gross output of the sensor in computing the pressures during the landed environment. The zeroes are shown below with the sensor temperatures.

| S/N | Output | Temp. |
|---|---|---|
| 1583 | 0.4791 V | 35.8°C |
| 1591 | 0.4668 V | 34.4°C |

During the last 10 minutes of the test, the pressure was ramped to approximately 8 x $10^2$ N/M$^2$, and the output measurements were recorded once every second. The sensor measurements at the beginning of the entry environment were 0.4881 and 0.4774 V for S/N 1583 and S/N 1591, respectively. The zero pressure measurement just before the pressure was ramped was measured to be 0.4792 and 0.4670 V for S/N 1583 and S/N 1591, respectively, for a shift of 8.86 mV and 10.40 mV over a temperature increase of approximately 16.6°C.

## LANDED ENVIRONMENT

On March 4, the sensors began their exposure to the 24-hour thermal profile in figure 2. The test period lasted 30 days during which time the pressure was varied between 5.3 x $10^2$ and 10.7 x $10^2$ N/M$^2$. The pressure variations consisted of (1) ramping the pressure from a low pressure to a higher pressure, (2) holding the pressure steady at different pressures, and (3) ramping the pressure from a high pressure to a lower pressure. During the test, the sensors were turned on automatically every hour. After 30 seconds the data acquisition system obtained three readings of the sensor outputs and temperature. The sensors required approximately 0.35 seconds to stabilize after they were turned on. The sensors were then automatically turned off. On March 17, the capacitance gage output was added to the information printed out by the data acquisition system. During the test, the sensors were turned on a total of 720 times. True pressure measurements were taken at arbitrary times during each day using the mercury manometer, providing a total of 60 direct pressure measurements. Nineteen capacitance gage pressure measurements were taken from the printout and recorded on a daily basis (March 17 to April 4) at the time corresponding to the maximum environmental temperature of approximately 26.7°C (between 6:30 p.m. and

7:40 p.m.). Recorded along with this data was the date and time of day, the computed true pressure measurement (obtained from the calibration curve of the capacitance gage), the output voltage of the sensors and the temperature of the sensors. Sixty-seven capacitance gage pressure measurements corresponding to the 3:00 a.m., 7:00 p.m., 9:00 p.m., and 11:00 p.m. hours were taken from the printout and recorded on a daily basis. These 146 data points, shown in Appendix B, provide a good cross section (with reference to time of day, temperature, and pressure)from which an analysis of data was performed. A plot of error in percent of reading as a function of time is presented for S/N 1583 and S/N 1591 in figures 21 and 22, respectively.

## FINAL CALIBRATION

A final calibration, not a part of the mini-mission format, was performed at the conclusion of the mini-mission on April 6. This calibration provided the opportunity to determine the net zero and sensitivity shift experienced by the two sensors. Data for the increasing pressure measurements is shown in figure 23 for the two sensors. Figure 23 shows for S/N 1583 a maximum deviation of -19.5 mV and S/N 1591 had a maximum deviation of -17 mV. S/N 1583 showed a decrease of 5.4 mV (0.1%) in the zero over the duration of the test and S/N 1591 showed a decrease of 21.5 mV (0.5%) in the zero. S/N 1583 showed a sensitivity shift of 0.036% over the duration of the test and S/N 1591 showed a sensitivity shift of 0.05%. The sensitivities and zeroes of S/N 1583 and S/N 1591 for the final calibration are shown below.

FINAL CALIBRATION

| S/N | Sensitivity ($\times 10^2$ N/M$^2$/V) | Zero (V) |
|---|---|---|
| 1583 | 4.5226 | 0.5210 |
| 1591 | 4.5300 | 0.4931 |

The zero shift and sensitivity shift corresponding to the various phases of the evaluation are shown in figures 24 and 25.

## DATA ANALYSIS

In performing the linear least square analysis on the calibration data, the slope of the linear least square line corresponds to the sensitivity of the sensor during that calibration and the Y-intercept corresponds to the zero pressure output of the sensor during the calibration. The sensitivity for the reference calibration was found to be $4.52642 \times 10^2$ N/M$^2$/V and $4.51744 \times 10^2$ N/M$^2$/V for S/N 1583 and S/N 1591, respectively. The final zero

taken just before the pressure ramp in the entry environment was found to be 0.4791 V and 0.4667 V for S/N 1583 and S/N 1591, respectively. Given a sensor output measurement corresponding to a specific pressure, this pressure can be computed by first subtracting the final zero from the sensor output measurement. Then this new output measurement is multiplied by the sensor sensitivity of the reference calibration to yield the value of the pressure. In applying this method to a sufficient cross section of data from the landed environment and not making any thermal corrections, a mean error in percent of reading was found to be 3.90% and 2.13% for S/N 1583 and S/N 1591, respectively. The plots of deviation from true pressure versus true pressure for the various calibrations follow a second order curve rather than a linear curve. By applying a second order fit to the reference calibration data, the sensitivity for S/N 1583 becomes:

$$P_c = -6.341\ N/M^2 + 4.3270 \times 10^2\ N/M^2/V\ (V_o) + 4.8316\ N/M^2/V^2\ (V_o)^2$$

and for S/N 1591 the sensitivity becomes:

$$P_c = -5.4509\ N/M^2 + 4.3515 \times 10^2\ N/M^2/V\ (V_o) + 3.9796\ N/M^2/V^2\ (V_o)^2$$

where $P_c$ is the computed pressure and $V_o$ is the gross output corrected for zero.

For the -29°C calibration, the sensitivity for S/N 1583 was found to become:

$$P_c = -2.1964\ N/M^2 + 4.3371 \times 10^2\ N/M^2/V\ (V_o) + 5.9069\ N/M^2/V^2\ (V_o)^2$$

and for S/N 1591 the sensitivity becomes:

$$P_c = 2.8145\ N/M^2 + 4.3780 \times 10^2\ N/M^2/V\ (V_o) + 4.5286\ N/M^2/V^2\ (V_o)^2$$

For any other temperatures the sensitivity for S/N 1583 becomes:

$$P_c = -6.3410\ N/M^2 + [\ 7.8541 \times 10^{-2}\ N/M^2/^oC\ (24^oC - T)]$$
$$+ 4.3270 \times 10^2\ N/M^2/V\ (V_o) + [\ 1.9284 \times 10^{-2}\ N/M^2/V/^oC\ (24^oC - T)]\ (V_o)$$
$$+ 4.8316\ N/M^2/V^2\ (V_o)^2 + [\ 2.0377 \times 10^{-2}\ N/M^2/V^2/^oC\ (24^oC - T)]\ (V_o)^2$$

and for S/N 1591 the sensitivity becomes:

$$P_c = -5.4509\ N/M^2 + [\ 1.5663 \times 10^{-1}\ N/M^2/^oC\ (24^oC - T)]$$

$$+ 4.3515 \times 10^2\ N/M^2/V\ (V_o) + [\ 5.0142 \times 10^{-2}\ N/M^2/V/^oC\ (24^oC - T)]\ (V_o)$$

$$+ 3.9796\ N/M^2/V^2\ (V_o)^2 + [\ 1.0404 \times 10^{-2}\ N/M^2/V^2/^oC\ (24^oC - T)\ ]\ (V_o)^2$$

So in using the second order equation for sensitivity from the reference calibration and by taking into account thermal sensitivity and thermal zero shifts, the pressure can be computed with a lesser degree of error. In applying this method to the same cross section of data, a mean error in percent of reading was found to be approximately -0.318% and -0.902% for S/N 1583 and S/N 1591, respectively. A comparison of the two methods is shown in Table VII and Table VIII with the computed pressure being labeled $P_v$ for the first method and $P_m$ for the second method.

## CONCLUDING REMARKS

From the results of these tests on S/N 1583 and S/N 1591, it has been determined that:

1. The amount of shift in zero from the beginning of the test to the end of the test of either sensor was less than or equal to 0.5% of full scale and the amount of shift in sensitivity was 0.05%. By adding the amount of zero shift incurred during the cruise environment thermal accident to the zero in the final calibration, the zero shift for the duration of the test becomes less than or equal to 0.88% of full scale.

2. Pressure measurements may be computed to within an average of 3.9% of reading $\pm$0.90% without making corrections for sensor nonlinearity, thermal zero shift and thermal sensitivity shift.

3. By correcting for sensor linearity, thermal zero shift and thermal sensitivity shift, pressure measurement computations can be improved by a factor of 3.

4. The maximum thermal zero coefficient exhibited by the sensors was found to be $-1.04194 \times 10^{-3}$ V/°C.

5. The maximum sensitivity shift due to a change in temperature was calculated to be 0.032%/°C.

6. The thermal effect on the sensor zero and the sensitivity is the major source of error.

7. From the results of these test, this variable reluctance type sensor is capable of making measurements over the range of 4 to 16 x $10^2$ $N/M^2$ with an uncertainty of less than 1.4% of reading provided that effects due to sensor nonlinearity, thermal zero shift, and thermal sensitivity shift are considered in the data reduction.

| Parameter | Specifications |
|---|---|
| Range | 1. 79 x $10^3$ $N/m^2$ (18 mB) |
| Nonlinearity | $\pm$1.5 percent of Full Scale from Endpoint Straight Line |
| Hysteresis | $\leq\pm$0.1 percent of Full Scale |
| Temperature Range | -28.89°C to 71.11°C |
| Repeatability | to within $\pm$0.2 percent |
| Resolution | 0.02 percent of Full Scale |
| Weight | 454 grams |
| Sensor Size | 12.7 cm Length; 5.08 cm Height; 3.8 cm Diameter |
| Static Error Band | $\pm$0.5 percent of Full Scale |

TABLE I-MANUFACTURER'S SPECIFICATIONS

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.4875 | 1.283 | | | 10:50 a.m. | 10-9-75 |
| 0.4875 | 1.283 | | | 11:00 a.m. | |
| 0.4875 | 1.25 | | | noon | |
| 0.485 | 1.28 | 0.4874 | 1.285 | 1:00 p.m. | |
| 0.4875 | 1.27 | 0.4840 | 1.280 | 2:00 p.m. | |
| 0.4855 | 1.26 | 0.480 | 1.25 | 3:00 p.m. | |
| 0.4840 | 1.273 | 0.4830 | 1.245 | 4:00 p.m. | |
| 0.4840 | 1.26 | 0.4810 | 1.245 | 5:00 p.m. | |
| 0.4845 | 1.26 | 0.4840 | 1.302 | 6:00 p.m. | |
| 0.4840 | 1.263 | 0.4850 | 1.32 | 7:00 p.m. | |
| 0.4875 | 1.247 | 0.4850 | 1.29 | 8:00 p.m. | |
| 0.4875 | 1.24 | 0.4810 | 1.285 | 9:00 p.m. | |
| 0.4875 | 1.235 | 0.4810 | 1.28 | 10:00 p.m. | |
| 0.4875 | 1.23 | 0.4810 | 1.29 | 11:00 p.m. | |
| 0.4875 | 1.23 | 0.4825 | 1.298 | midnight | |
| 0.4875 | 1.23 | 0.4840 | 1.304 | 1:00 a.m. | 10-10-75 |
| 0.4875 | 1.24 | 0.4850 | 1.284 | 2:00 a.m. | |

TABLE II INITIAL EVACUATION DATA

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.4875 | 1.24 | 0.4850 | 1.26 | 3:00 a.m. | 10-10-75 |
| 0.4875 | 1.228 | 0.4830 | 1.235 | 4:00 a.m. | |
| 0.4875 | 1.24 | 0.4810 | 1.25 | 5:00 a.m. | |
| 0.4875 | 1.23 | 0.4820 | 1.29 | 6:00 a.m. | |
| 0.4875 | 1.228 | 0.4840 | 1.237 | 7:00 a.m. | |
| 0.4870 | 1.232 | 0.4825 | 1.24 | 8:00 a.m. | |
| 0.485 | 1.275 | 0.4850 | 1.244 | 9:00 a.m. | |
| 0.4875 | 1.29 | 0.4850 | 1.25 | 10:00 a.m. | |
| 0.4875 | 1.30 | 0.4850 | 1.255 | 10:30 a.m. | |
| 0.490 | 1.29 | 0.4825 | 1.24 | 11:00 a.m. | |
| 0.489 | 1.272 | 0.4825 | 1.22 | noon | |
| 0.490 | 1.261 | 0.4825 | 1.24 | 1:00 p.m. | |
| 0.489 | 1.28 | 0.4825 | 1.24 | 2:00 p.m. | |
| 0.4875 | 1.282 | 0.4825 | 1.243 | 3:00 p.m. | |
| 0.4875 | 1.282 | 0.485 | 1.258 | 4:00 p.m. | |
| 0.4875 | 1.25 | 0.486 | 1.245 | 5:00 p.m. | |
| 0.490 | 1.24 | 0.4875 | 1.237 | 6:00 p.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.489 | 1.23 | 0.485 | 1.236 | 7:00 p.m. | 10-10-75 |
| 0.490 | 1.223 | 0.485 | 1.236 | 8:00 p.m. | |
| 0.491 | 1.22 | 0.4825 | 1.242 | 9:00 p.m. | |
| 0.490 | 1.22 | 0.4825 | 1.25 | 10:00 p.m. | |
| 0.490 | 1.225 | 0.483 | 1.255 | 11:00 p.m. | |
| 0.489 | 1.23 | 0.484 | 1.26 | midnight | |
| 0.490 | 1.225 | 0.485 | 1.255 | 1:00 a.m. | 10-11-75 |
| 0.490 | 1.21 | 0.485 | 1.255 | 2:00 a.m. | |
| 0.490 | 1.22 | 0.483 | 1.257 | 3:00 a.m. | |
| 0.490 | 1.23 | 0.484 | 1.258 | 4:00 a.m. | |
| 0.490 | 1.232 | 0.484 | 1.25 | 5:00 a.m. | |
| 0.490 | 1.232 | 0.483 | 1.242 | 6:00 a.m. | |
| 0.491 | 1.22 | 0.484 | 1.240 | 7:00 a.m. | |
| 0.490 | 1.219 | 0.485 | 1.238 | 8:00 a.m. | |
| 0.490 | 1.21 | 0.4865 | 1.236 | 9:00 a.m. | |
| 0.490 | 1.22 | 0.4875 | 1.225 | 10:00 a.m. | |
| 0.489 | 1.23 | 0.4875 | 1.225 | 11:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.488 | 1.235 | 0.4870 | 1.220 | noon | 10-11-75 |
| 0.489 | 1.24 | 0.4850 | 1.218 | 1:00 p.m. | |
| 0.490 | 1.23 | 0.4850 | 1.215 | 2:00 p.m. | |
| 0.490 | 1.235 | 0.4850 | 1.215 | 3:00 p.m. | |
| 0.488 | 1.24 | 0.4850 | 1.218 | 4:00 p.m. | |
| 0.488 | 1.242 | 0.4870 | 1.237 | 5:00 p.m. | |
| 0.489 | 1.222 | 0.4860 | 1.242 | 6:00 p.m. | |
| 0.490 | 1.228 | 0.4860 | 1.242 | 7:00 p.m. | |
| 0.489 | 1.22 | 0.4860 | 1.242 | 8:00 p.m. | |
| 0.489 | 1.22 | 0.4850 | 1.238 | 9:00 p.m. | |
| 0.490 | 1.205 | 0.4850 | 1.253 | 10:00 p.m. | |
| 0.4905 | 1.202 | 0.4850 | 1.257 | 11:00 p.m. | |
| 0.491 | 1.205 | 0.4860 | 1.260 | midnight | |
| 0.4925 | 1.20 | | | 1:00 a.m. | 10-12-75 |
| 0.4915 | 1.199 | | | 2:00 a.m. | |
| 0.490 | 1.199 | | | 3:00 a.m. | |
| 0.489 | 1.205 | | | 4:00 a.m. | |
| 0.488 | 1.218 | | | 5:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.490 | 1.22 | | | 6:00 a.m. | 10-12-75 |
| 0.490 | 1.22 | | | 7:00 a.m. | |
| 0.490 | 1.22 | | | 8:00 a.m. | |
| 0.490 | 1.23 | | | 9:00 a.m. | |
| 0.489 | 1.235 | | | 10:00 a.m. | |
| 0.488 | 1.24 | | | 11:00 a.m. | |
| 0.4875 | 1.25 | | | noon | |
| 0.488 | 1.247 | | | 1:00 p.m. | |
| 0.488 | 1.252 | | | 2:00 p.m. | |
| 0.478 | 1.275 | | | 3:00 p.m. | |
| 0.488 | 1.28 | | | 4:00 p.m. | |
| 0.478 | 1.295 | | | 5:00 p.m. | |
| 0.488 | 1.278 | | | 6:00 p.m. | |
| 0.490 | 1.245 | | | 7:00 p.m. | |
| 0.490 | 1.245 | | | 8:00 p.m. | |
| 0.491 | 1.235 | | | 9:00 p.m. | |
| 0.491 | 1.23 | | | 10:00 p.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.490 | 1.23 | | | 11:00 p.m. | |
| 0.490 | 1.228 | | | midnight | |
| 0.490 | 1.23 | | | 1:00 a.m. | 10-13-75 |
| 0.491 | 1.225 | | | 2:00 a.m. | |
| 0.490 | 1.22 | | | 3:00 a.m. | |
| 0.490 | 1.22 | | | 4:00 a.m. | |
| 0.490 | 1.22 | | | 5:00 a.m. | |
| 0.490 | 1.22 | | | 6:00 a.m. | |
| 0.490 | 1.225 | | | 7:00 a.m. | |
| 0.490 | 1.225 | | | 8:00 a.m. | |
| 0.489 | 1.24 | | | 9:00 a.m. | |
| 0.489 | 1.24 | | | 10:00 a.m. | |
| 0.488 | 1.25 | | | 11:00 a.m. | |
| 0.4975 | 1.259 | | | noon | |
| 0.4875 | 1.26 | | | 1:00 p.m. | |
| 0.4875 | 1.262 | | | 2:00 p.m. | |
| 0.4875 | 1.26 | | | 3:00 p.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.4935 | 1.268 | 0.4884 | 1.275 | 10:30 a.m. | 10-13-75 |
| 0.495 | 1.258 | 0.488 | 1.270 | 11:00 a.m. | |
| 0.4935 | 1.272 | 0.484 | 1.275 | noon | |
| 0.4975 | 1.255 | 0.4805 | 1.250 | 1:00 p.m. | |
| 0.4925 | 1.271 | 0.481 | 1.280 | 2:00 p.m. | |
| 0.4905 | 1.297 | 0.484 | 1.30 | 3:00 p.m. | |
| 0.4905 | 1.29 | 0.4884 | 1.30 | 4:00 p.m. | |
| 0.4915 | 1.295 | 0.490 | 1.30 | 5:00 p.m. | |
| 0.4910 | 1.281 | 0.493 | 1.30 | 6:00 p.m. | |
| 0.4975 | 1.254 | 0.496 | 1.270 | 7:00 p.m. | |
| 0.4960 | 1.250 | 0.498 | 1.310 | 8:00 p.m. | |
| 0.4940 | 1.272 | 0.501 | 1.265 | 9:00 p.m. | |
| 0.4950 | 1.232 | 0.503 | 1.260 | 10:00 p.m. | |
| 0.4940 | 1.232 | 0.508 | 1.255 | 11:00 p.m. | |
| 0.4950 | 1.220 | | | midnight | |
| 0.4970 | 1.210 | | | 1:00 a.m. | 10-15-75 |
| 0.4950 | 1.210 | | | 2:00 a.m. | |
| 0.4970 | 1.220 | | | 3:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.488 | 1.235 | 0.4870 | 1.220 | noon | 10-11-75 |
| 0.489 | 1.24 | 0.4850 | 1.218 | 1:00 p.m. | |
| 0.490 | 1.23 | 0.4850 | 1.215 | 2:00 p.m. | |
| 0.490 | 1.235 | 0.4850 | 1.215 | 3:00 p.m. | |
| 0.488 | 1.24 | 0.4850 | 1.218 | 4:00 p.m. | |
| 0.488 | 1.242 | 0.4870 | 1.237 | 5:00 p.m. | |
| 0.489 | 1.222 | 0.4860 | 1.242 | 6:00 p.m. | |
| 0.490 | 1.228 | 0.4860 | 1.242 | 7:00 p.m. | |
| 0.489 | 1.22 | 0.4860 | 1.242 | 8:00 p.m. | |
| 0.489 | 1.22 | 0.4850 | 1.238 | 9:00 p.m. | |
| 0.490 | 1.205 | 0.4850 | 1.253 | 10:00 p.m. | |
| 0.4905 | 1.202 | 0.4850 | 1.257 | 11:00 p.m. | |
| 0.491 | 1.205 | 0.4860 | 1.260 | midnight | |
| 0.4925 | 1.20 | | | 1:00 a.m. | 10-12-75 |
| 0.4915 | 1.199 | | | 2:00 a.m. | |
| 0.490 | 1.199 | | | 3:00 a.m. | |
| 0.489 | 1.205 | | | 4:00 a.m. | |
| 0.488 | 1.218 | | | 5:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.4960 | 1.220 | | | 4:00 a.m. | 10-15-75 |
| 0.4945 | 1.210 | | | 5:00 a.m. | |
| 0.4945 | 1.210 | | | 6:00 a.m. | |
| 0.4945 | 1.208 | | | 7:00 a.m. | |
| 0.4950 | 1.208 | 0.4939 | 1.232 | 8:00 a.m. | |
| 0.4925 | 1.260 | 0.484 | 1.280 | 9:00 a.m. | |
| 0.490 | 1.33 | 0.510 | 1.33 | 10:00 a.m. | |
| 0.5154 | | 0.5027 | | 8:43 a.m. | 10-17-75 |
| 0.5152 | 1.30 | 0.5023 | 1.325 | 8:45 a.m. | |
| 0.52351 | 1.31 | 0.5107 | 1.338 | 8:50 a.m. | |
| 0.5499 | 1.312 | 0.53753 | 1.338 | 8:51 a.m. | |
| 0.57361 | 1.312 | 0.55999 | 1.339 | 8:52 a.m. | |
| 0.5921 | 1.373 | 0.57831 | 1.34 | 8:53 a.m. | |
| 0.60825 | 1.313 | 0.59423 | 1.34 | 8:54 a.m. | |
| 0.516 | 1.323 | 0.5023 | 1.342 | 9:00 a.m. | |
| 0.514 | 1.347 | 0.4975 | 1.363 | 10:00 a.m. | |
| 0.512 | 1.348 | 0.4975 | 1.37 | 11:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.510 | 1.349 | 0.4975 | 1.371 | noon | 10-17-75 |
| 0.516 | 1.35 | 0.5035 | 1.371 | 1:00 p.m. | |
| 0.514 | 1.345 | 0.5025 | 1.37 | 2:00 p.m. | |
| 0.511 | 1.351 | 0.5015 | 1.38 | 3:00 p.m. | |
| 0.5105 | 1.36 | 0.5020 | 1.382 | 4:00 p.m. | |
| 0.510 | 1.345 | 0.5025 | 1.37 | 5:00 p.m. | |
| 0.510 | 1.340 | 0.5010 | 1.365 | 6:00 p.m. | |
| 0.511 | 1.342 | 0.5000 | 1.36 | 7:00 p.m. | |
| 0.510 | 1.340 | 0.4995 | 1.36 | 8:00 p.m. | |
| 0.510 | 1.338 | 0.499 | 1.36 | 9:00 p.m. | |
| 0.510 | 1.338 | 0.499 | 1.36 | 10:00 p.m. | |
| 0.510 | 1.322 | 0.499 | 1.355 | 11:00 p.m. | |
| 0.510 | 1.332 | 0.4985 | 1.35 | midnight | |
| 0.510 | 1.332 | 0.499 | 1.355 | 1:00 a.m. | 10-18-75 |
| 0.510 | 1.333 | 0.4985 | 1.36 | 2:00 a.m. | |
| 0.510 | 1.33 | 0.498 | 1.355 | 3:00 a.m. | |
| 0.510 | 1.33 | 0.498 | 1.355 | 4:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.507 | 1.333 | 0.4975 | 1.358 | 10:00 p.m. | 10-18-75 |
| 0.508 | 1.329 | 0.4975 | 1.349 | 11:00 p.m. | |
| 0.5075 | 1.328 | 0.4975 | 1.35 | midnight | |
| 0.508 | 1.330 | 0.4975 | 1.342 | 1:00 a.m. | 10-19-75 |
| 0.509 | 1.328 | 0.4975 | 1.35 | 2:00 a.m. | |
| 0.508 | 1.330 | 0.4975 | 1.36 | 3:00 a.m. | |
| 0.5075 | 1.335 | 0.4975 | 1.36 | 4:00 a.m. | |
| 0.5065 | 1.335 | 0.4975 | 1.36 | 5:00 a.m. | |
| 0.505 | 1.332 | 0.4975 | 1.358 | 6:00 a.m. | |
| 0.5075 | 1.328 | 0.4975 | 1.347 | 7:00 a.m. | |
| 0.5075 | 1.33 | 0.4975 | 1.36 | 8:00 a.m. | |
| 0.5075 | 1.34 | 0.4975 | 1.362 | 9:00 a.m. | |
| 0.508 | 1.34 | 0.4975 | 1.36 | 10:00 a.m. | |
| 0.508 | 1.334 | 0.4975 | 1.37 | 11:00 a.m. | |
| 0.5075 | 1.35 | 0.4925 | 1.36 | noon | |
| 0.5075 | 1.35 | 0.488 | 1.353 | 1:00 p.m. | |
| 0.508 | 1.345 | 0.4875 | 1.35 | 2:00 p.m. | |
| 0.5075 | 1.345 | 0.4875 | 1.35 | 3:00 p.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.505 | 1.342 | 0.4875 | 1.34 | 4:00 p.m. | 10-19-75 |
| 0.508 | 1.34 | 0.4875 | 1.352 | 5:00 p.m. | |
| 0.5075 | 1.35 | 0.4875 | 1.36 | 6:00 p.m. | |
| 0.5085 | 1.355 | 0.4875 | 1.34 | 7:00 p.m. | |
| 0.509 | 1.345 | 0.4875 | 1.348 | 8:00 p.m. | |
| 0.509 | 1.345 | 0.4875 | 1.355 | 9:00 p.m. | |
| 0.508 | 1.35 | 0.4875 | 1.345 | 10:00 p.m. | |
| 0.508 | 1.342 | 0.4875 | 1.35 | 11:00 p.m. | |
| 0.5075 | 1.342 | 0.4875 | 1.355 | midnight | |
| 0.507 | 1.345 | 0.4875 | 1.342 | 1:00 a.m. | 10-20-75 |
| 0.5075 | 1.34 | 0.4875 | 1.357 | 2:00 a.m. | |
| 0.5075 | 1.348 | 0.4875 | 1.355 | 3:00 a.m. | |
| 0.508 | 1.35 | 0.4875 | 1.345 | 4:00 a.m. | |
| 0.505 | 1.346 | 0.4875 | 1.35 | 5:00 a.m. | |
| 0.509 | 1.348 | 0.4875 | 1.35 | 6:00 a.m. | |
| 0.5065 | 1.3475 | 0.4875 | 1.35 | 7:00 a.m. | |
| 0.5065 | 1.347 | 0.4875 | 1.362 | 8:00 a.m. | |

TABLE II CONTINUED

| 1583 (Volts) | Temp (mV) | 1591 (Volts) | Temp (mV) | Time | Date |
|---|---|---|---|---|---|
| 0.5055 | 1.351 | 0.4875 | 1.36 | 8:39 a.m. | 10-20-75 |
| 0.5065 | 1.358 | 0.4875 | 1.378 | 8:00 a.m. | |
| 0.5075 | 1.378 | 0.4875 | 1.39 | 10:00 a.m. | |
| 0.5075 | 1.38 | 0.4875 | 1.39 | 11:00 a.m. | |
| 0.506 | 1.389 | 0.488 | 1.40 | noon | |
| 0.509 | 1.392 | 0.492 | 1.42 | 12:40 p.m. | |

TABLE II CONCLUDED

RATE-OF-RISE TEST

10/20/75 10:22 a.m.

| ZERO OUTPUT | | MINUTES |
|---|---|---|
| 1583 | 1591 | |
| 0.50294 | 0.49458 | 0 |
| 0.50281 | 0.49506 | 1 |
| 0.50276 | 0.49498 | 2 |
| 0.50299 | 0.49501 | 3 |
| 0.50269 | 0.49498 | 4 |
| 0.50274 | 0.49492 | 5 |
| 0.50283 | 0.49462 | 6 |
| 0.50274 | 0.49523 | 7 |
| 0.50257 | 0.49447 | 8 |
| 0.50262 | 0.49442 | 9 |
| 0.50286 | 0.49484 | 10 |
| 0.50291 | 0.49437 | 11 |
| 0.50295 | 0.49444 | 12 |
| 0.50277 | 0.49492 | 13 |
| 0.50276 | 0.49455 | 14 |
| 0.50327 | 0.49484 | 15 |
| 0.50273 | 0.49465 | 16 |

TABLE III RATE-OF-RISE TEST

BURN-IN

S/N 1583

| At (Hr: min) | Event | Output Voltage (V) | Current (mA) | Temp ($^{o}$C) |
|---|---|---|---|---|
| 0:0 | 1st Cycle Started | - | - | - |
| 1:30 | | 5.6121 | 23.9 | 68 |
| 24:25 | | 5.5583 | 27.4 | 29.1 |
| 24:30 | 1st Cycle Ended | - | - | - |
| 26:30 | | 5.5560 | - | 26.4 |
| 27:00 | | 5.5551 | - | 25.9 |
| 54:30 | 2nd Cycle Started | 5.5571 | 27.5 | 26.1 |
| 55:40 | | 5.6135 | 23.8 | 68 |
| 84:15 | 2nd Cycle Ended | 5.5550 | - | 26 |
| 84:45 | 3rd Cycle Started | - | - | - |
| 109:55 | 3rd Cycle Ended | 5.5544 | 27.9 | 25.4 |
| 176:25 | | 5.5523 | 28.4 | 26.7 |
| 177:45 | 4th Cycle Started | - | - | - |
| 229:20 | 4th Cycle Ended | - | - | - |
| 230:10 | | 5.5542 | - | 25.4 |
| 230:20 | 5th Cycle Started | - | - | - |

TABLE IV BURN-IN DATA

BURN-IN

S/N 1583

| Δt (Hr: min) | Event | Output Voltage (V) | Current (mA) | Temp (°C) |
|---|---|---|---|---|
| 275:20 | | 5.6149 | - | 70.2 |
| 276:35 | 5th Cycle Ended | 5.5551 | - | 26.1 |

TABLE IV CONCLUDED

BURN-IN

S/N 1591

| Δt (Hr: min) | Event | Output Voltage (V) | Current (mA) | Temp (°C) |
|---|---|---|---|---|
| 0:0 | 1st Cycle Started | - | - | - |
| 1:30 | | 5.5732 | 23.9 | 68 |
| 24:25 | | 5.5174 | 27.4 | 29.1 |
| 24:30 | 1st Cycle Ended | - | - | - |
| 26:30 | | 5.5158 | - | 26.4 |
| 27:00 | | 5.5149 | - | 25.9 |
| 54:30 | 2nd Cycle Started | 5.5164 | 27.5 | 26.1 |
| 55:40 | | 5.5719 | 23.8 | 68 |
| 84:15 | 2nd Cycle Ended | 5.5150 | - | 26 |
| 84:45 | 3rd Cycle Started | - | - | - |
| 109:55 | 3rd Cycle Ended | 5.5142 | 27.9 | 25.4 |
| 176:25 | | 5.5130 | 28.4 | 26.7 |
| 177:45 | 4th Cycle Started | - | - | - |
| 229:20 | 4th Cycle Ended | - | - | - |
| 230:10 | | 5,5181 | - | 25.4 |
| 230:20 | 5th Cycle Started | - | - | - |

TABLE V BURN-IN DATA

BURN-IN

S/N 1591

| $\Delta t$ (Hr: min) | Event | Output Voltage (V) | Current (mA) | Temp ($^{o}C$) |
|---|---|---|---|---|
| 275:20 | | 5.5731 | - | 70.2 |
| 276:35 | 5th Cycle Ended | 5.5149 | - | 26.1 |

TABLE V CONCLUDED

CRUISE ENVIRONMENT ZERO READINGS

| Date | 1591 | 1583 | Current | Time |
|---|---|---|---|---|
| 2/2/76 | .49546 | .54618 | 9.4 mA | 12:30 p.m. |
| 2/3/76 | .49113 | .53797 | 9.4 mA | 11:00 a.m. |
| 2/4/76 | .48984 | .53606 | 9.4 mA | 11:00 a.m. |
| 2/5/76 | .48919 | .53556 | 9.4 mA | 11:00 a.m. |
| 2/6/76 | .48860 | .52767 | 9.1 mA | 11:00 a.m. |
| 2/9/76 | .48870 | .53006 | 9.1 mA | 11:00 a.m. |
| 2/10/76 | .48727 | .52887 | 9.0 mA | 11:00 a.m. |
| | .47876 | .48791 | 9.0 mA | 1:52 p.m. |
| 2/11/76 | .47798 | .48874 | 9.0 mA | 11:00 a.m. |
| 2/12/76 | .47798 | .48893 | 9.0 mA | 11:00 a.m. |
| 2/13/76 | .47827 | .48875 | 9.0 mA | 11:00 a.m. |
| 2/17/76 | .47765 | .48768 | 9.0 mA | 11:00 a.m. |
| 2/18/76 | .47857 | .48747 | 9.0 mA | 11:00 a.m. |
| 2/19/76 | .47776 | .48788 | 9.0 mA | 11:00 a.m. |
| 2/20/76 | .47788 | .48790 | 9.0 mA | 11:00 a.m. |

TABLE VI CRUISE ENVIRONMENT DATA

CRUISE ENVIRONMENT ZERO READINGS

| Date | 1591 | 1583 | Current | Time |
|---|---|---|---|---|
| 2/23/76 | .47769 | .48788 | 9.0 mA | 11:00 a.m. |
| 2/25/76 | .47709 | .48734 | 9.0 mA | 11:00 a.m. |
| 2/26/76 | .47733 | .48786 | 9.0 mA | 11:00 a.m. |
| 2/27/76 | .47792 | .48732 | 9.0 mA | 11:00 a.m. |
| 2/28/76 | .47777 | .48751 | 9.0 mA | 11:00 a.m. |
| 2/29/76 | .47734 | .48758 | 9.0 mA | 11:00 a.m. |
| 3/1/76 | .47737 | .48811 | 9.0 mA | 11:00 a.m. |
| 3/2/76 | .47758 | .48781 | 9.0 mA | 11:00 a.m. |

TABLE VI CONCLUDED

| GROSS OUTPUT (V) | TEMP. (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | Pv (mB) | PERCENT OF READING (%) | Pm (mB) | PERCENT OF READING (%) |
|---|---|---|---|---|---|---|---|
| 2.2468 | 7.3 | 1.7388 | 7.6762 | 8.0013 | 4.23 | 7.6352 | -0.534 |
| 2.1882 | -0.1 | 1.6725 | 7.3930 | 7.7761 | 4.64 | 7.3488 | -0.598 |
| 2.161 | -1.9 | 1.6434 | 7.2564 | 7.6130 | 4.91 | 7.2206 | -0.493 |
| 2.171 | -2.1 | 1.6532 | 7.3082 | 7.6582 | 4.79 | 7.2651 | -0.589 |
| 2.298 | 18.0 | 1.8012 | 7.9625 | 8.2331 | 3.39 | 7.8976 | -0.815 |
| 2.304 | 26.5 | 1.816 | 7.9983 | 8.2607 | 3.27 | 7.9489 | -0.617 |
| 2.2417 | 22.7 | 1.7498 | 7.6994 | 7.9783 | 3.62 | 7.6579 | -0.539 |
| 2.1932 | 15.9 | 1.6942 | 7.4643 | 7.7587 | 3.94 | 7.4195 | -0.599 |
| 2.8020 | 1.3 | 2.2878 | 10.1410 | 10.5144 | 3.68 | 10.1404 | -0.006 |
| 2.7570 | -0.5 | 2.2409 | 9.9379 | 10.3107 | 3.75 | 9.9301 | -0.078 |
| 2.8040 | 9.2 | 2.2980 | 10.2481 | 10.5235 | 2.69 | 10.1689 | -0.773 |
| 2.8340 | 13.8 | 2.3328 | 10.3714 | 10.6593 | 2.78 | 10.3171 | -0.523 |
| 2.7920 | 22.2 | 2.2996 | 10.1656 | 10.4691 | 2.98 | 10.1462 | -0.190 |
| 2.8124 | 26.8 | 2.3248 | 10.2542 | 10.5615 | 3.00 | 10.2502 | -0.038 |

TABLE VII - SUMMARY OF DIURNAL DATA (S/N 1583)

S/N 1583

| GROSS OUTPUT (V) | TEMP. ($^{o}$C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | Pv (mB) | PERCENT OF READING (%) | Pm (mB) | PERCENT OF READING (%) |
|---|---|---|---|---|---|---|---|
| 3.2759 | -0.5 | 2.7598 | 12.2858 | 12.6595 | 3.04 | 12.3161 | 0.246 |
| 1.9430 | -1.6 | 1.4258 | 6.2811 | 6.6262 | 5.49 | 6.2417 | -0.626 |
| 2.0297 | 7.8 | 1.5222 | 6.7019 | 7.0187 | 4.73 | 6.6599 | -0.625 |
| 2.0054 | 0.1 | 1.4899 | 6.5540 | 6.9087 | 5.41 | 6.5268 | -0.414 |

TABLE VII CONCLUDED

| GROSS OUTPUT (V) | TEMP. (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | Pv (mB) | PERCENT OF READING (%) | Pm (mB) | PERCENT OF READING (%) |
|---|---|---|---|---|---|---|---|
| 2.2065 | 6.4 | 1.7208 | 7.6762 | 7.8594 | 2.39 | 7.5993 | -1.001 |
| 2.1423 | -1.0 | 1.6515 | 7.3930 | 7.5694 | 2.39 | 7.3072 | -1.160 |
| 2.1140 | -2.8 | 1.6220 | 7.2564 | 7.4416 | 2.55 | 7.1791 | -1.064 |
| 2.1250 | -3.0 | 1.6328 | 7.3082 | 7.4913 | 2.50 | 7.2283 | -1.092 |
| 2.2640 | 17.1 | 1.7856 | 7.9625 | 8.1192 | 1.97 | 7.8614 | -1.269 |
| 2.2698 | 25.7 | 1.7973 | 7.9983 | 8.1454 | 1.84 | 7.8899 | -1.354 |
| 2.2062 | 21.8 | 1.7311 | 7.6994 | 7.8581 | 2.06 | 7.6034 | -1.246 |
| 2.1555 | 15.0 | 1.6757 | 7.4643 | 7.6290 | 2.21 | 7.3731 | -1.222 |
| 2.7576 | 0.4 | 2.2678 | 10.1410 | 10.3490 | 2.05 | 10.0946 | -0.457 |
| 2.7110 | -1.3 | 2.2200 | 9.9379 | 10.1385 | 2.02 | 9.8824 | -0.558 |
| 2.7640 | 8.3 | 2.2796 | 10.2481 | 10.3779 | 1.27 | 10.1227 | -1.223 |
| 2.7970 | 12.9 | 2.3158 | 10.3714 | 10.5270 | 1.50 | 10.2723 | -0.955 |
| 2.7580 | 21.2 | 2.2824 | 10.1656 | 10.3508 | 1.82 | 10.0935 | -0.71 |
| 2.7771 | 25.8 | 2.3047 | 10.2542 | 10.4371 | 1.78 | 10.1796 | -0.73 |
| 3.2311 | -1.4 | 2.7400 | 12.2858 | 12.4880 | 1.64 | 12.2616 | -0.20 |
| 1.8970 | -2.6 | 1.4051 | 6.2811 | 6.4613 | 2.87 | 6.2040 | -1.23 |
| 1.9895 | 6.7 | 1.5040 | 6.7019 | 6.8792 | 2.64 | 6.6241 | -1.16 |
| 1.9607 | -0.9 | 1.4700 | 6.5540 | 6.7490 | 2.98 | 6.4909 | -0.96 |

TABLE VIII - SUMMARY OF DIURNAL DATA (S/N 1591)

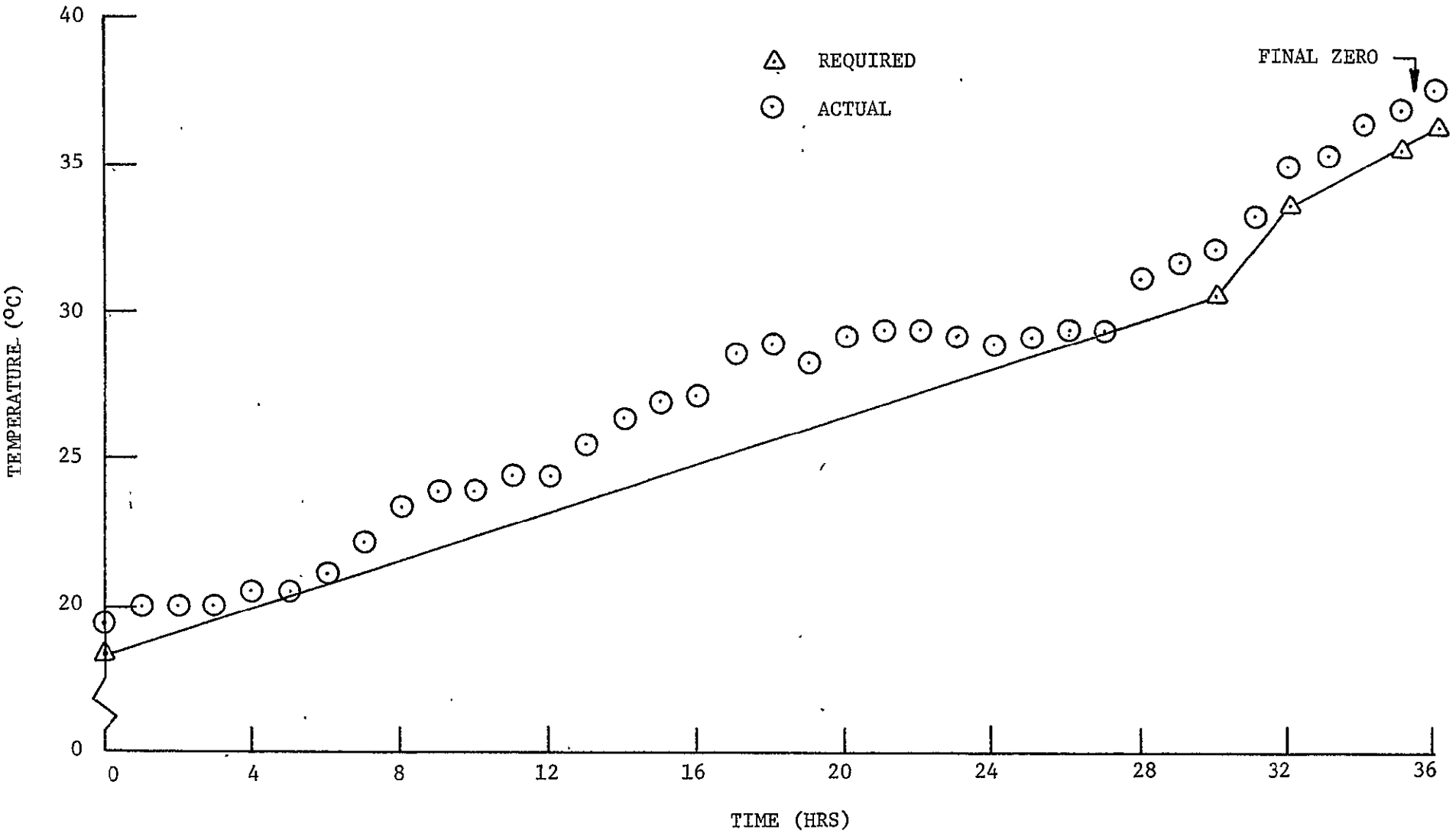



Fig. 1 - Entry Environment Temp. Profile

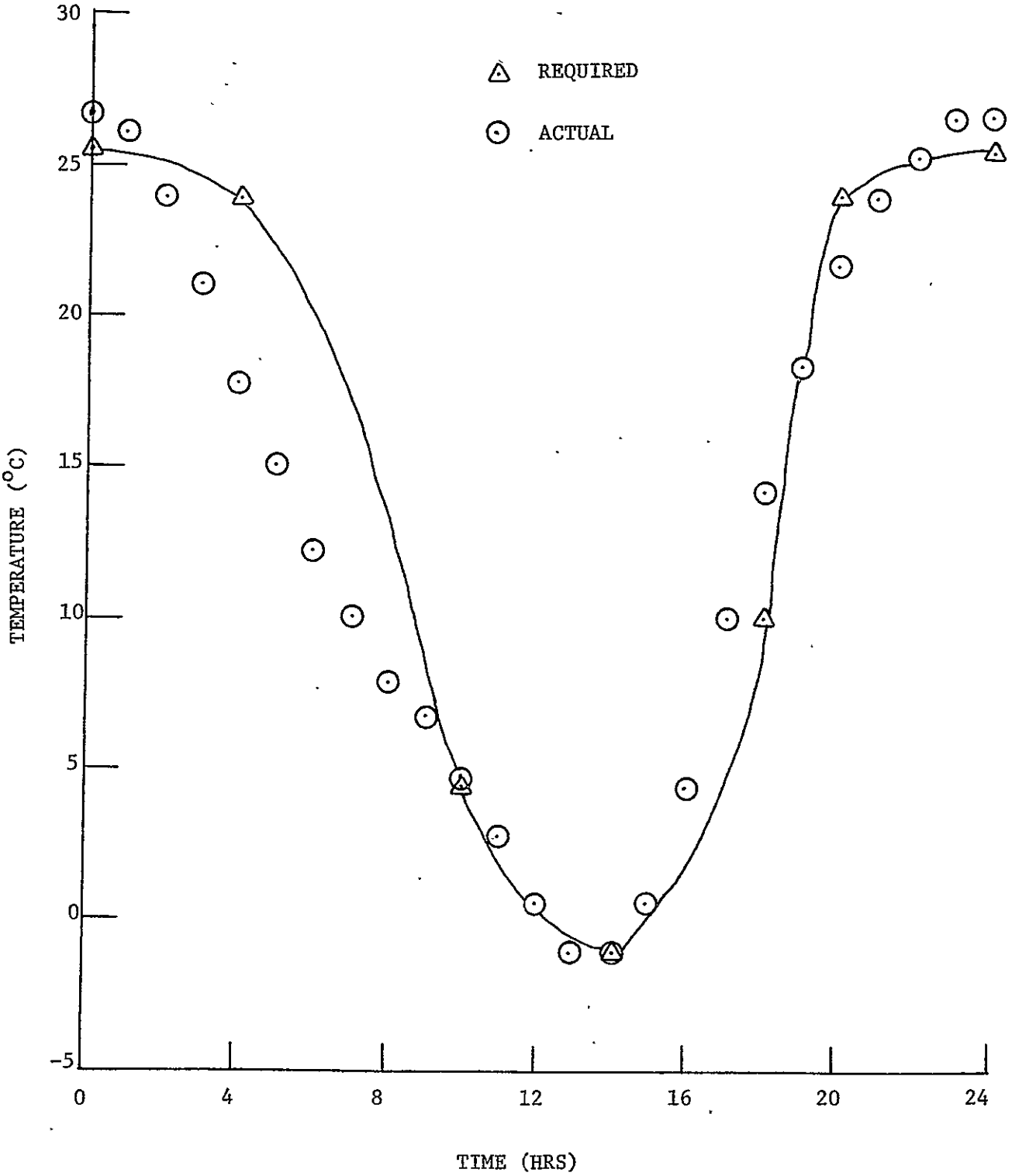



Fig. 2 - Landed Environment Temp. Profile

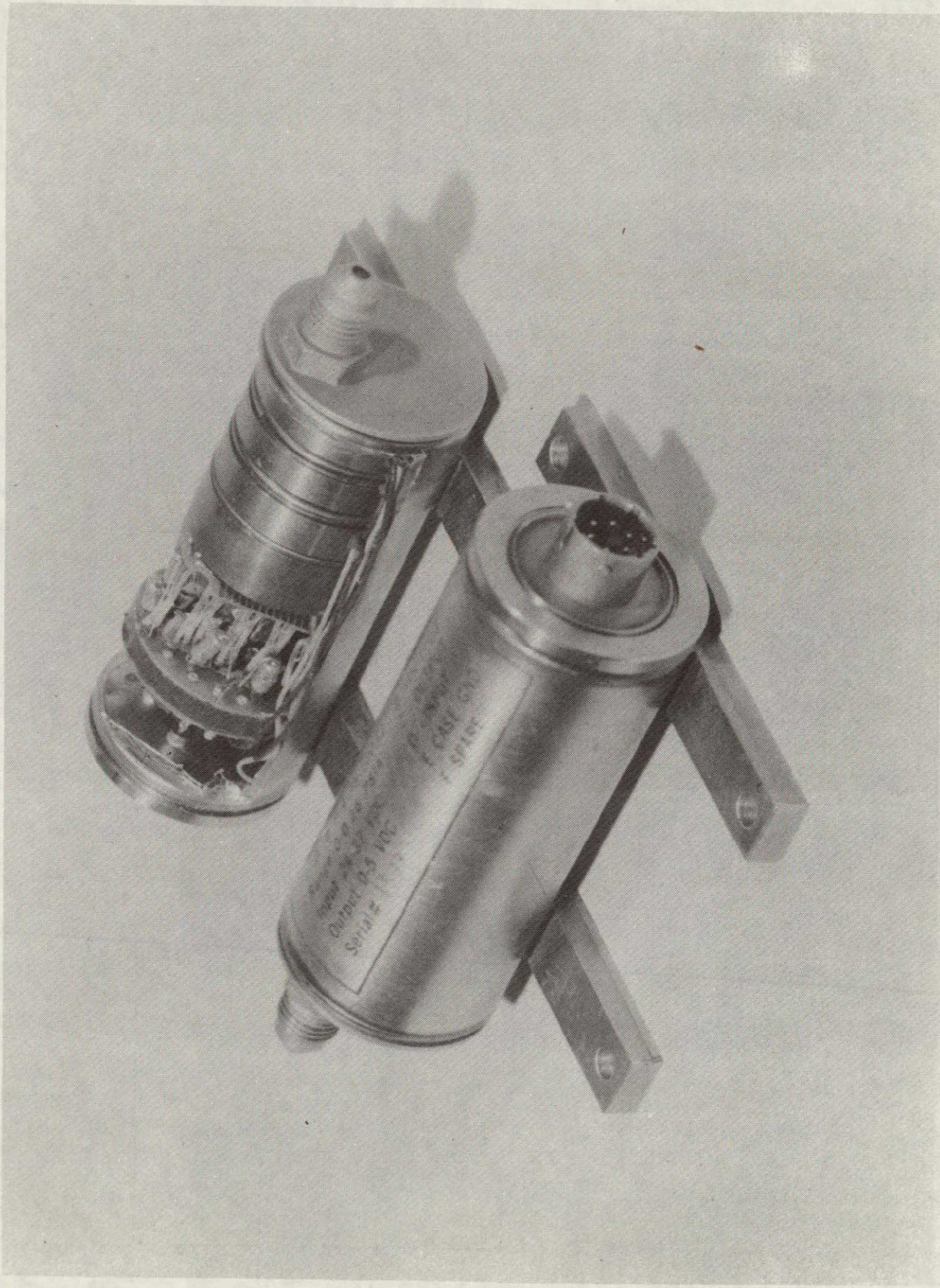


FIG. 3 VIEW OF SENSORS

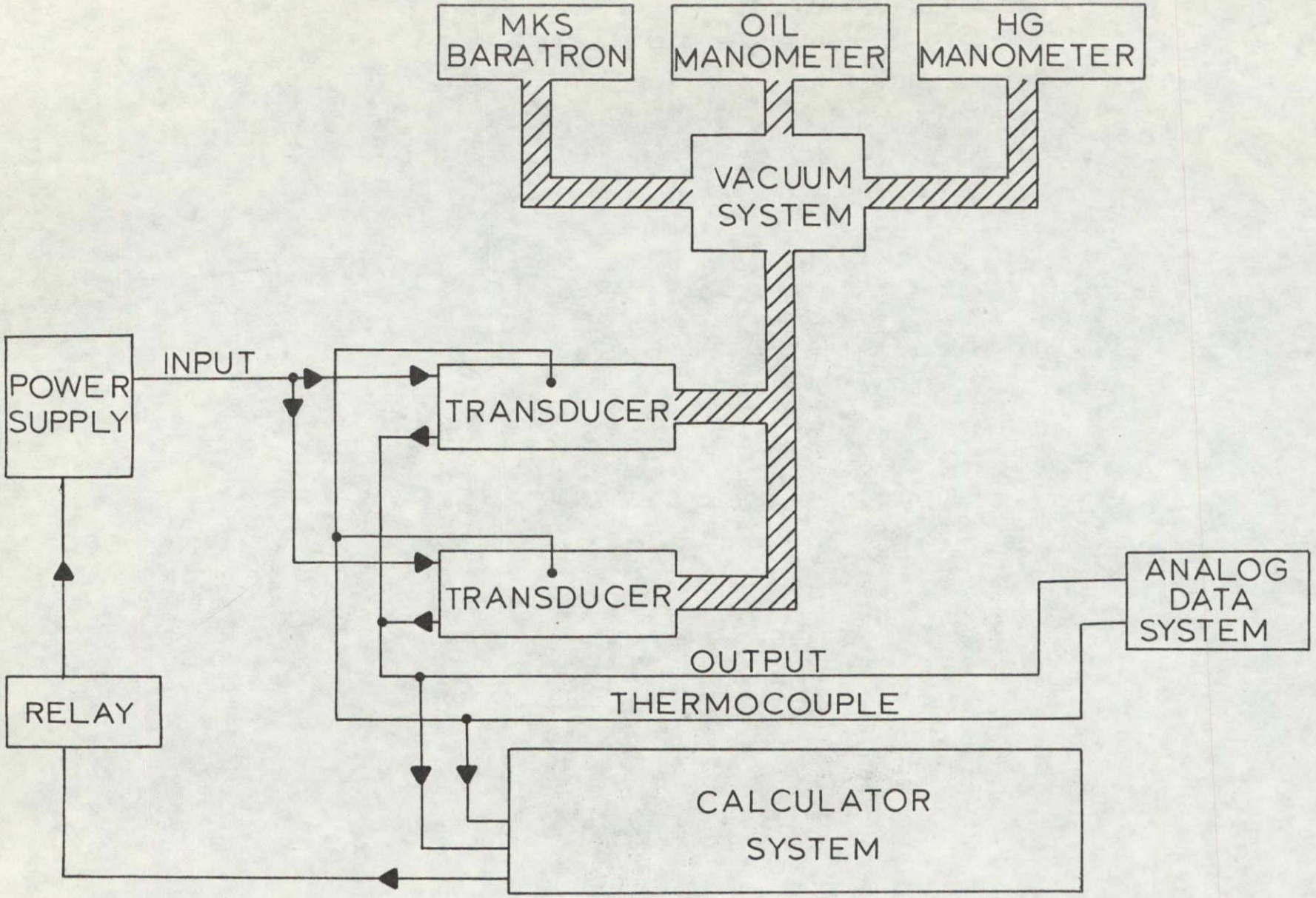



Fig. 4 - Diagram of Experiment Set-Up

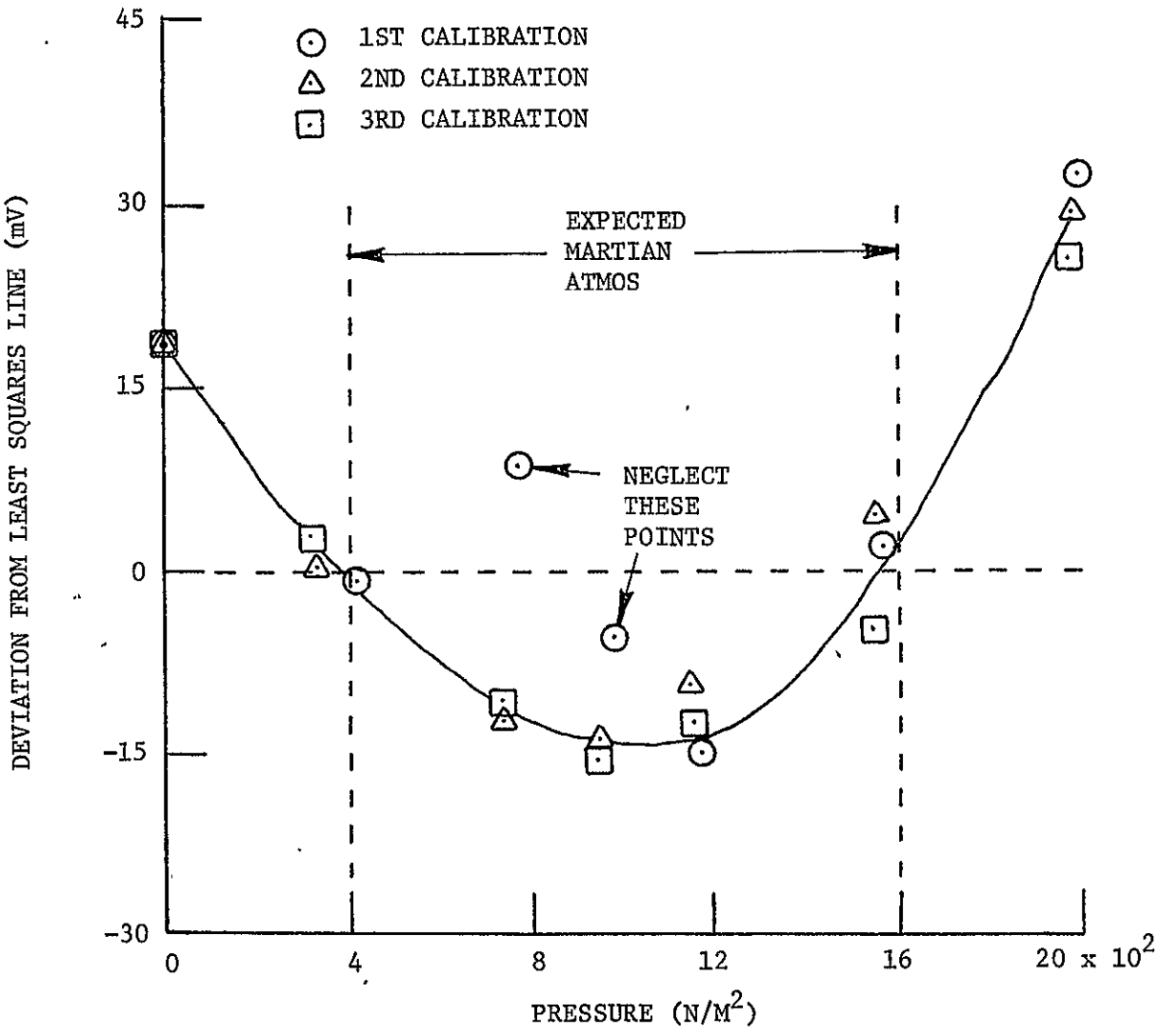



Fig. 6 - Three Initial Calibrations (S/N 1591)

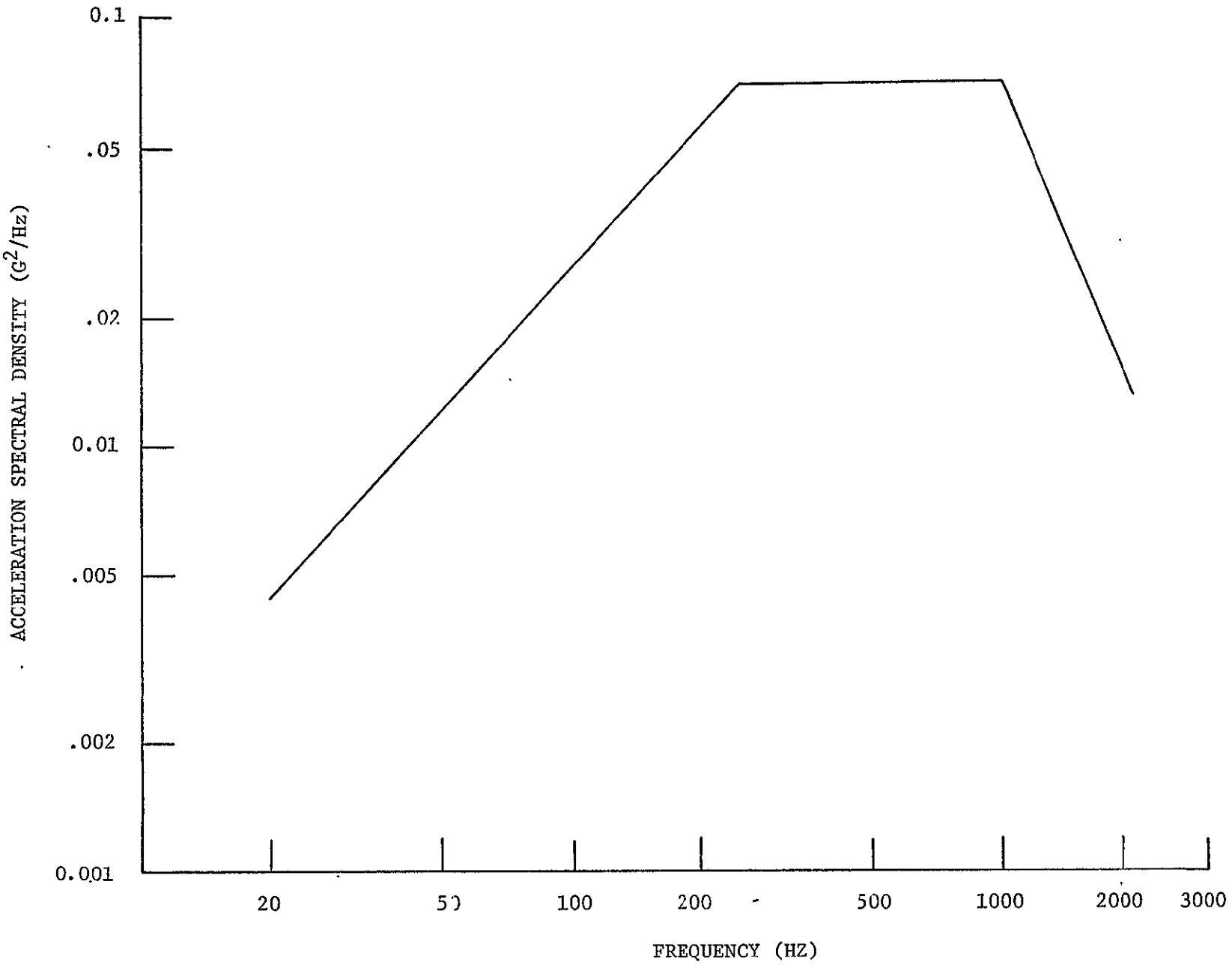



Fig. 7 - Random Vibration Spectrum

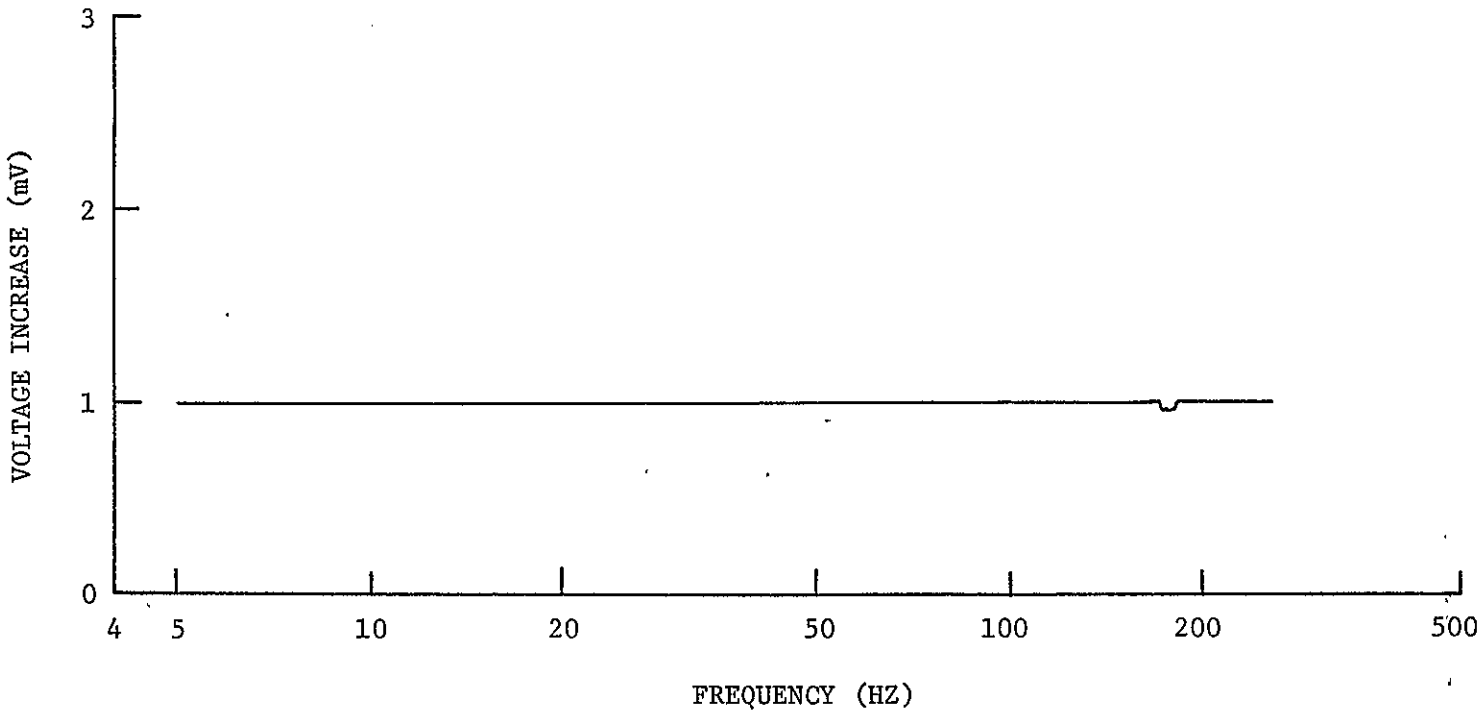



Fig. 8 - Voltage Deviation Verus Frequency (X-Axis)

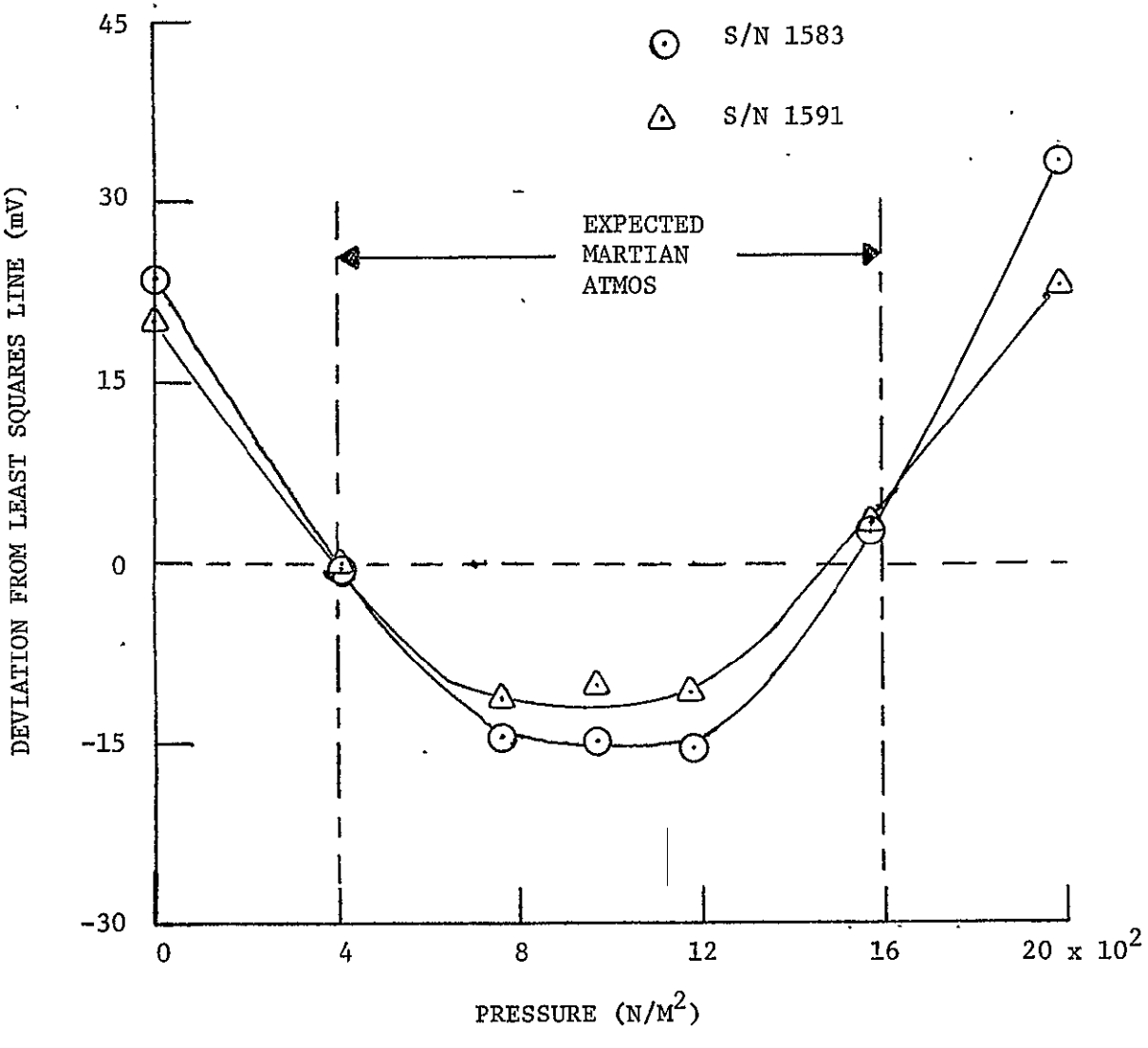



Fig 9. - Calibration Following X-Axis Vibration

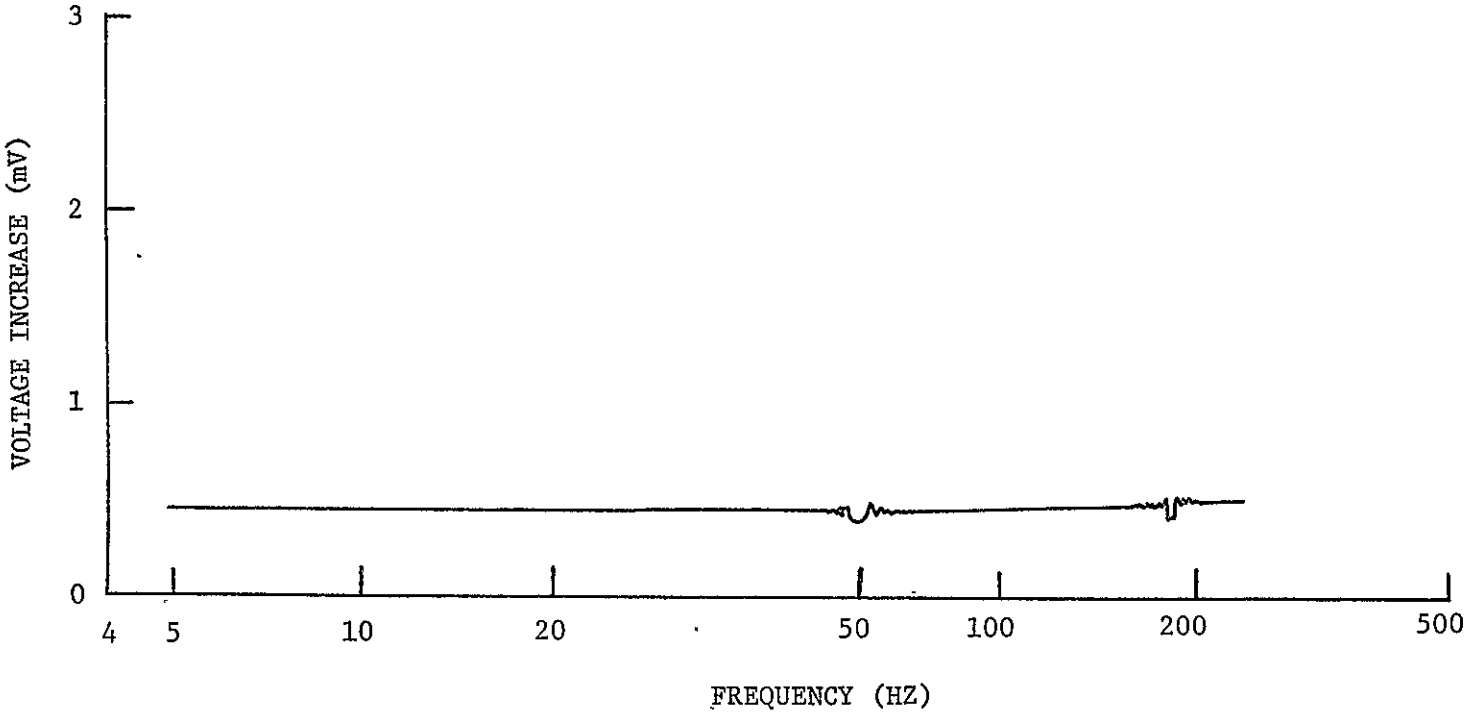



Fig. 10 - Voltage Deviation Versus Frequency (Z-Axis)

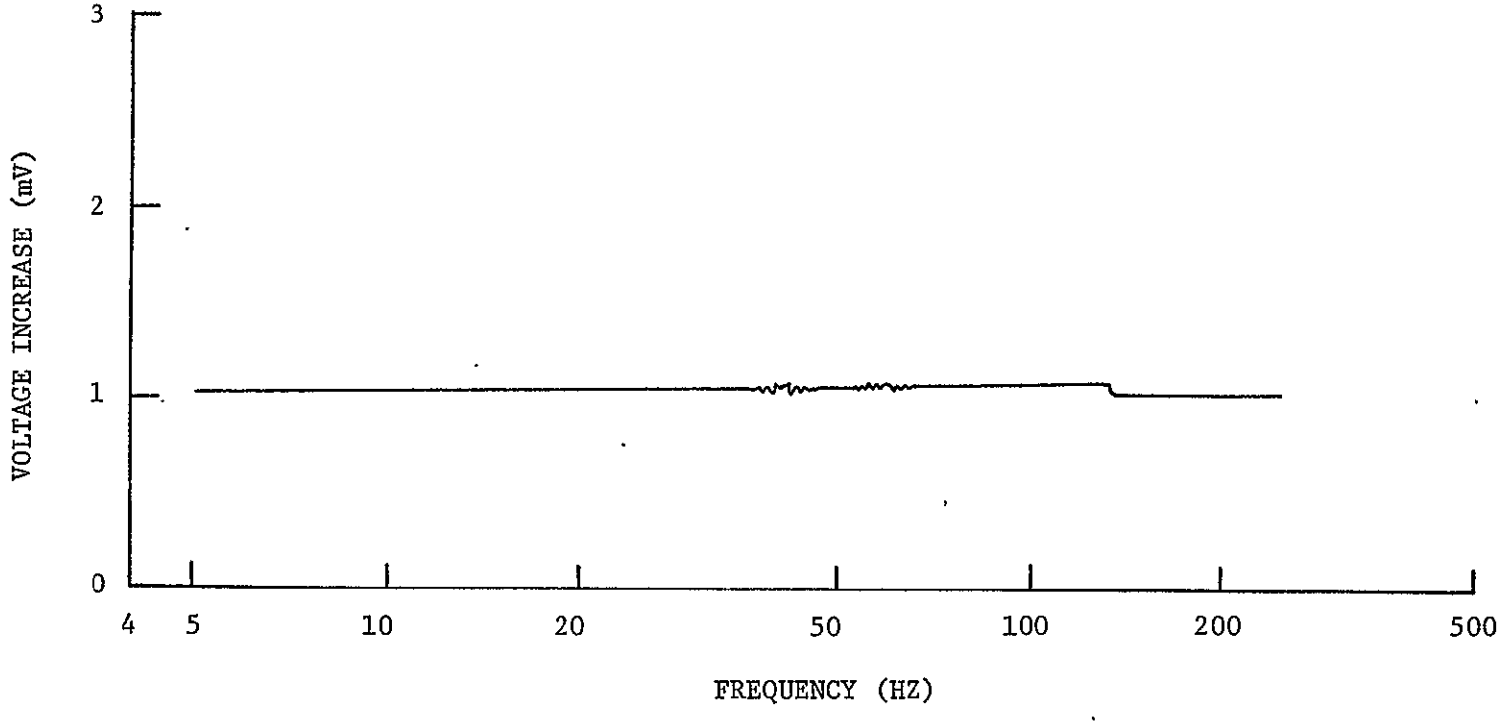



Fig. 11 - Voltage Deviation Versus Frequency (Y-Axis)

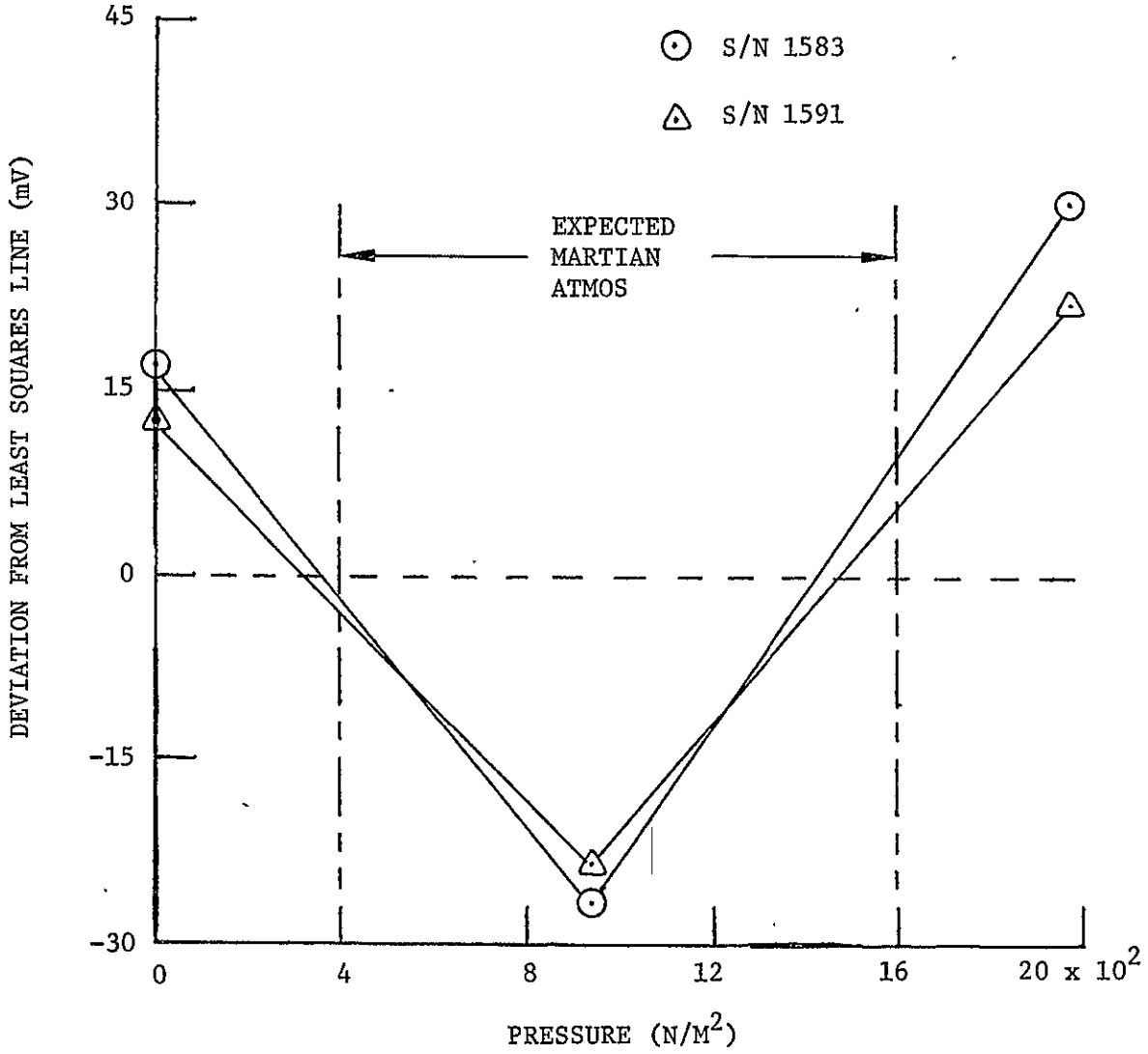



Fig. 12 - Calibration Following Y and Z Axis Vibration

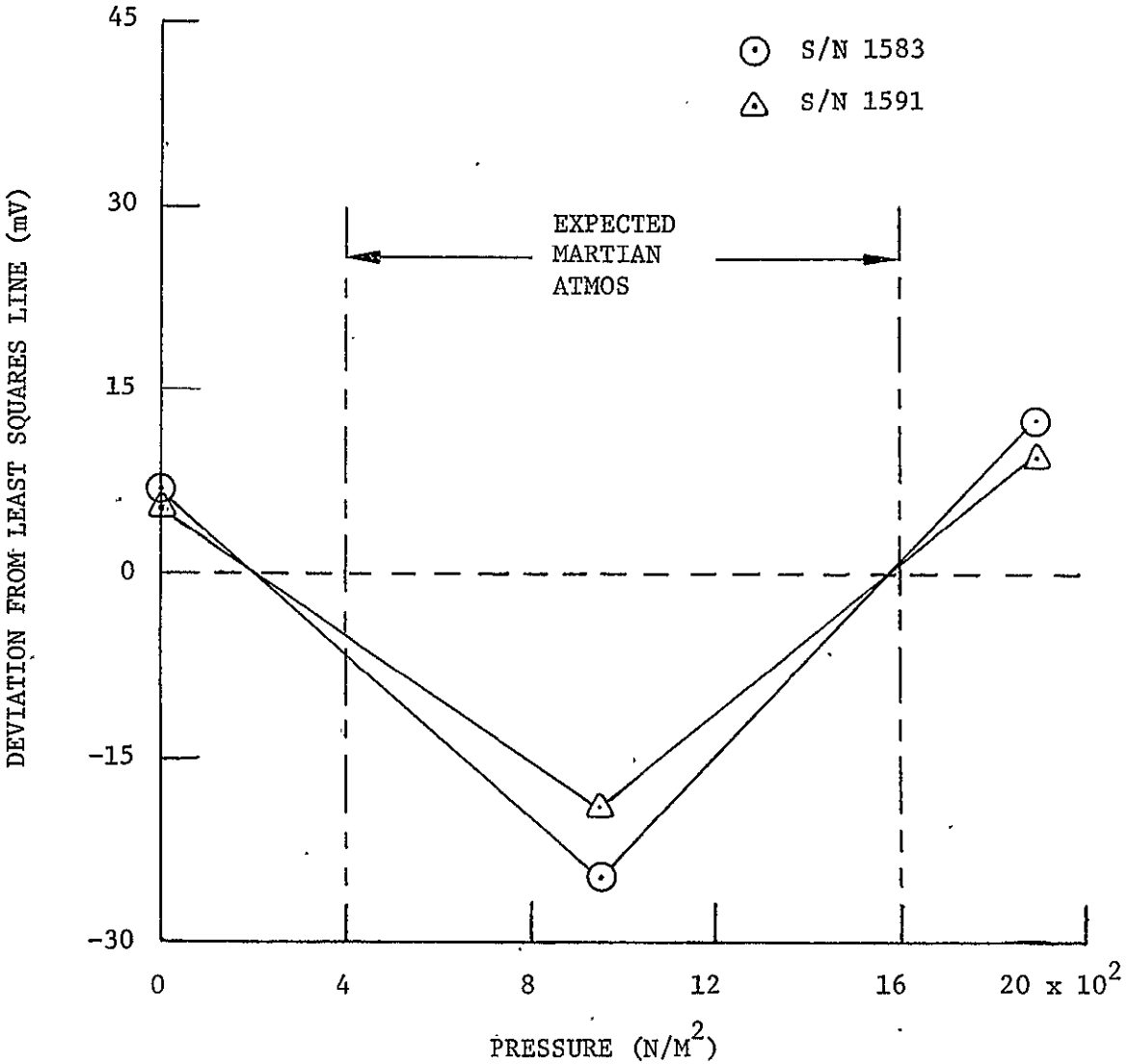



Fig. 13 - Calibration Following Burn-In

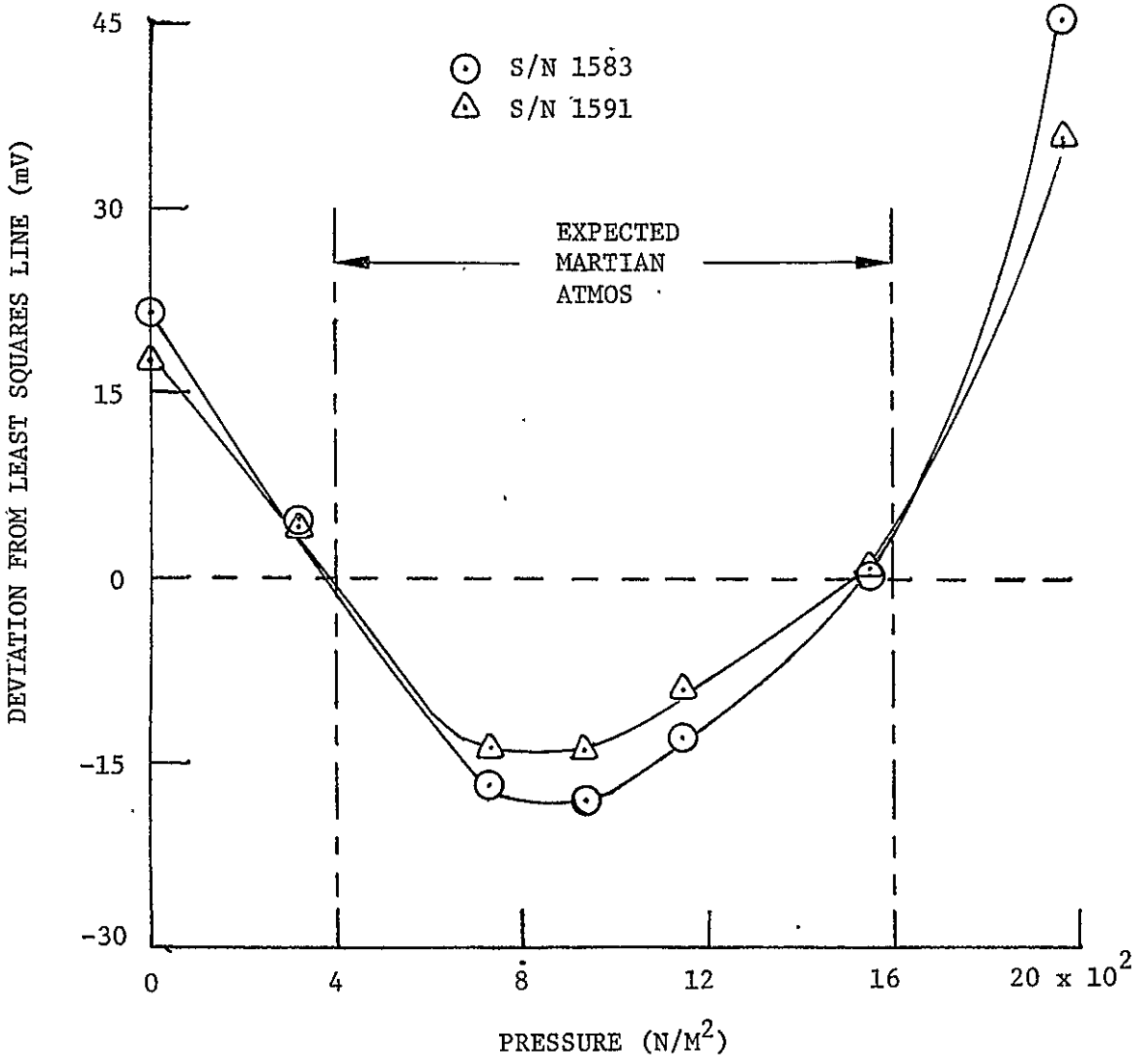



Fig. 14 - First Thermal Calibration at 24°C

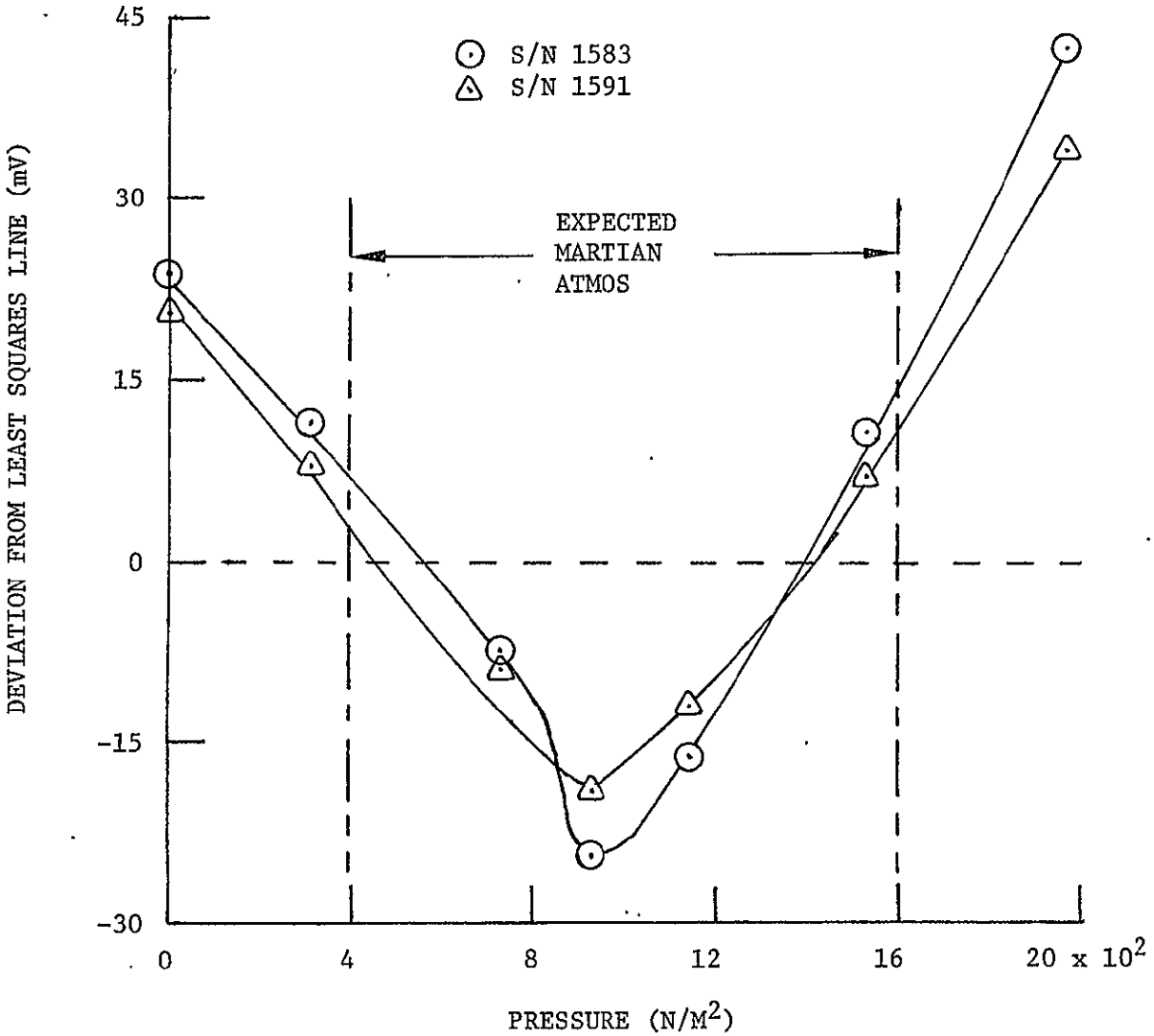



Fig. 15 - Second Thermal Calibration at -28.89°C

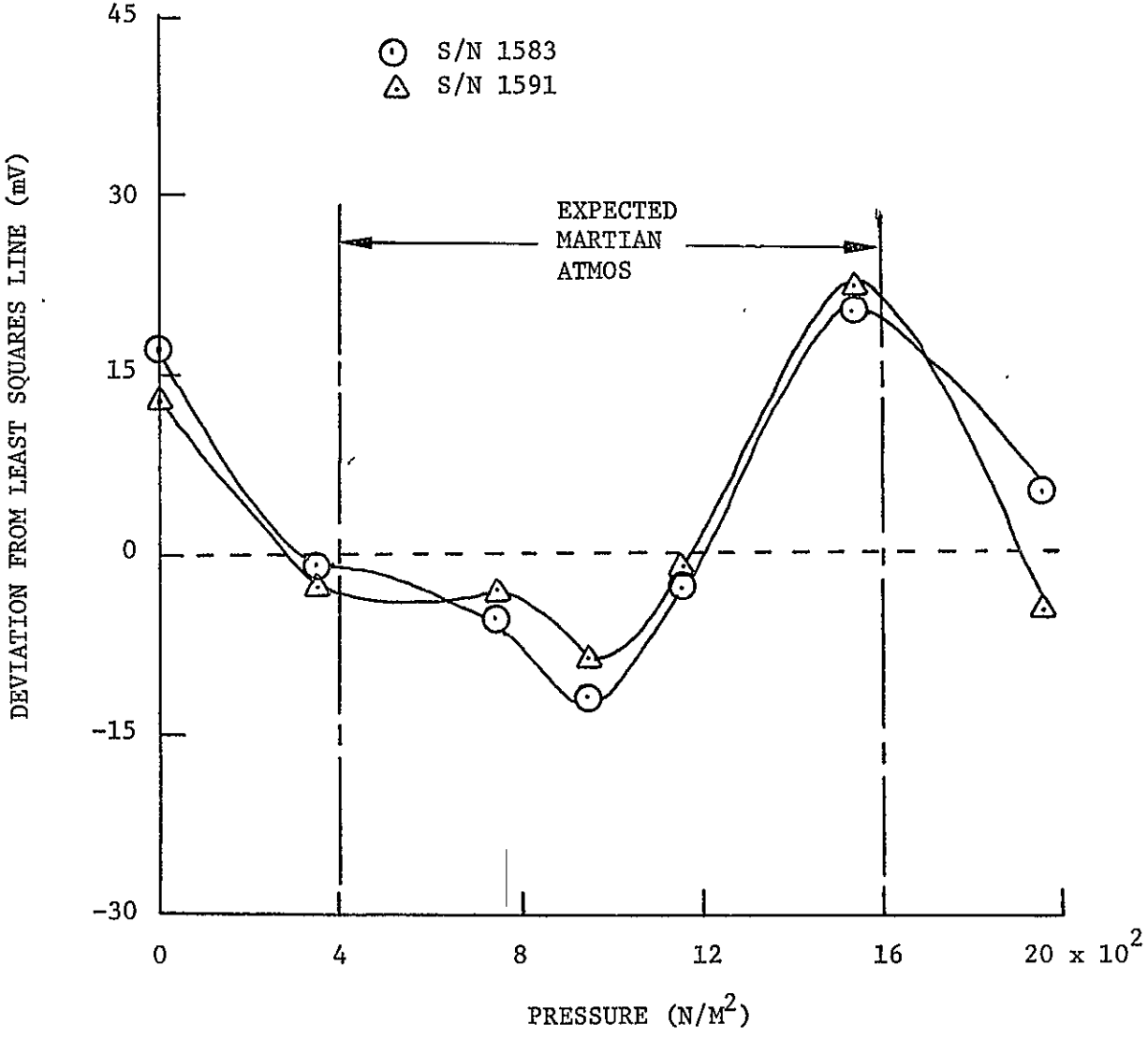



Fig. 16 - Third Thermal Calibration at 24°C

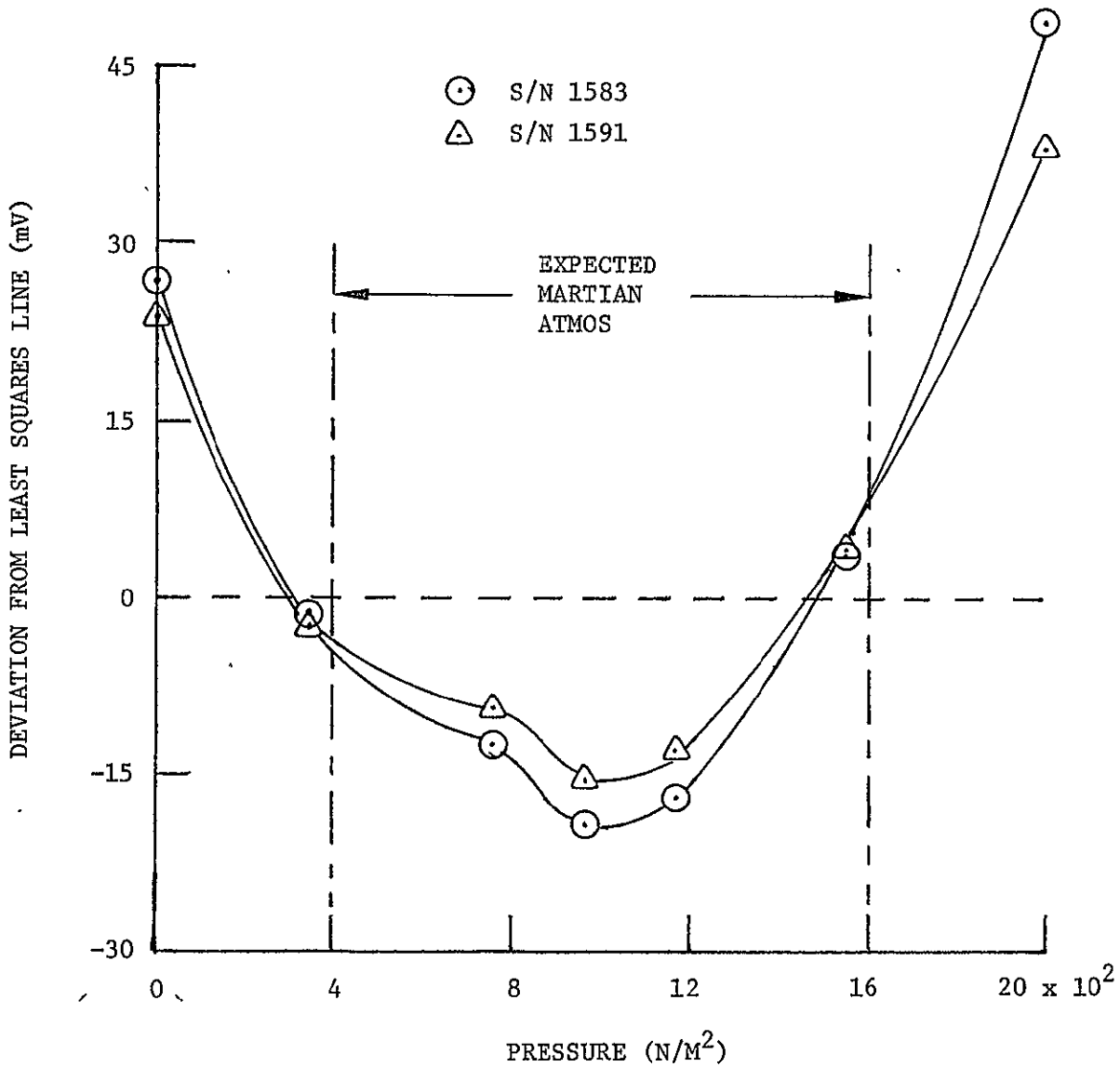



Fig. 17 - Fourth Thermal Calibration at 71.1°C

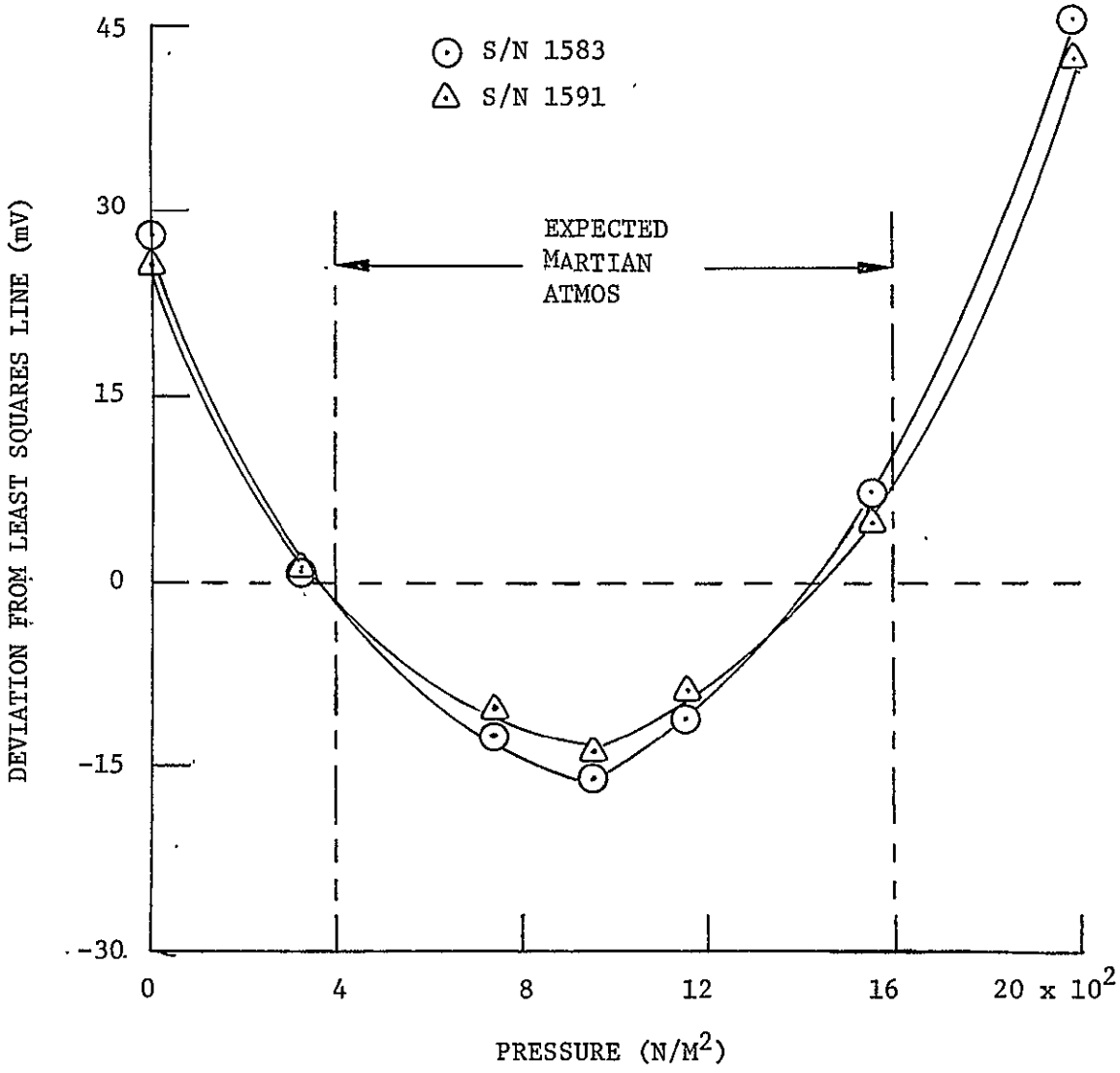



Fig. 18 - Reference Calibration at 24°C

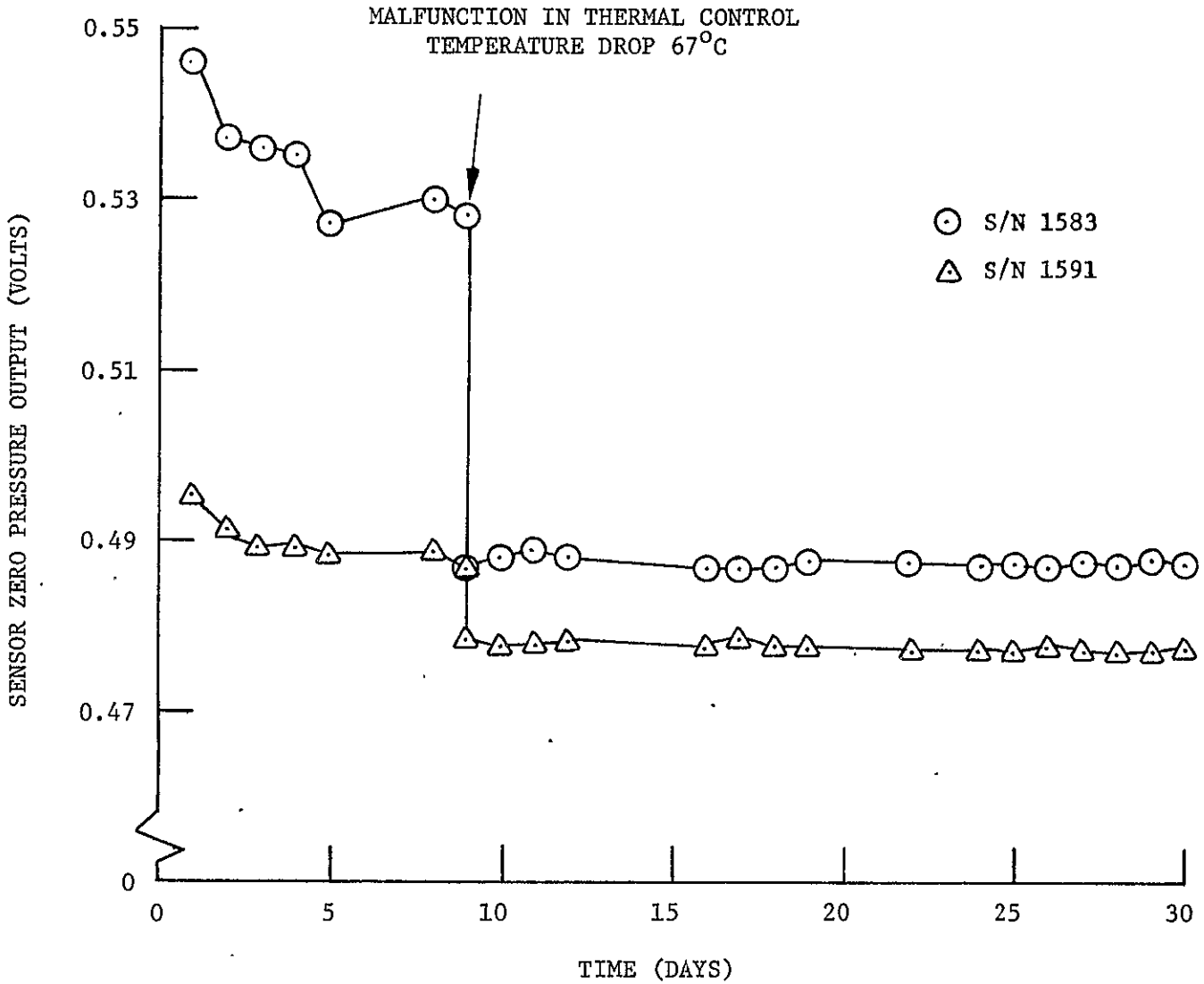



Fig. 19 - Cruise Environment Data

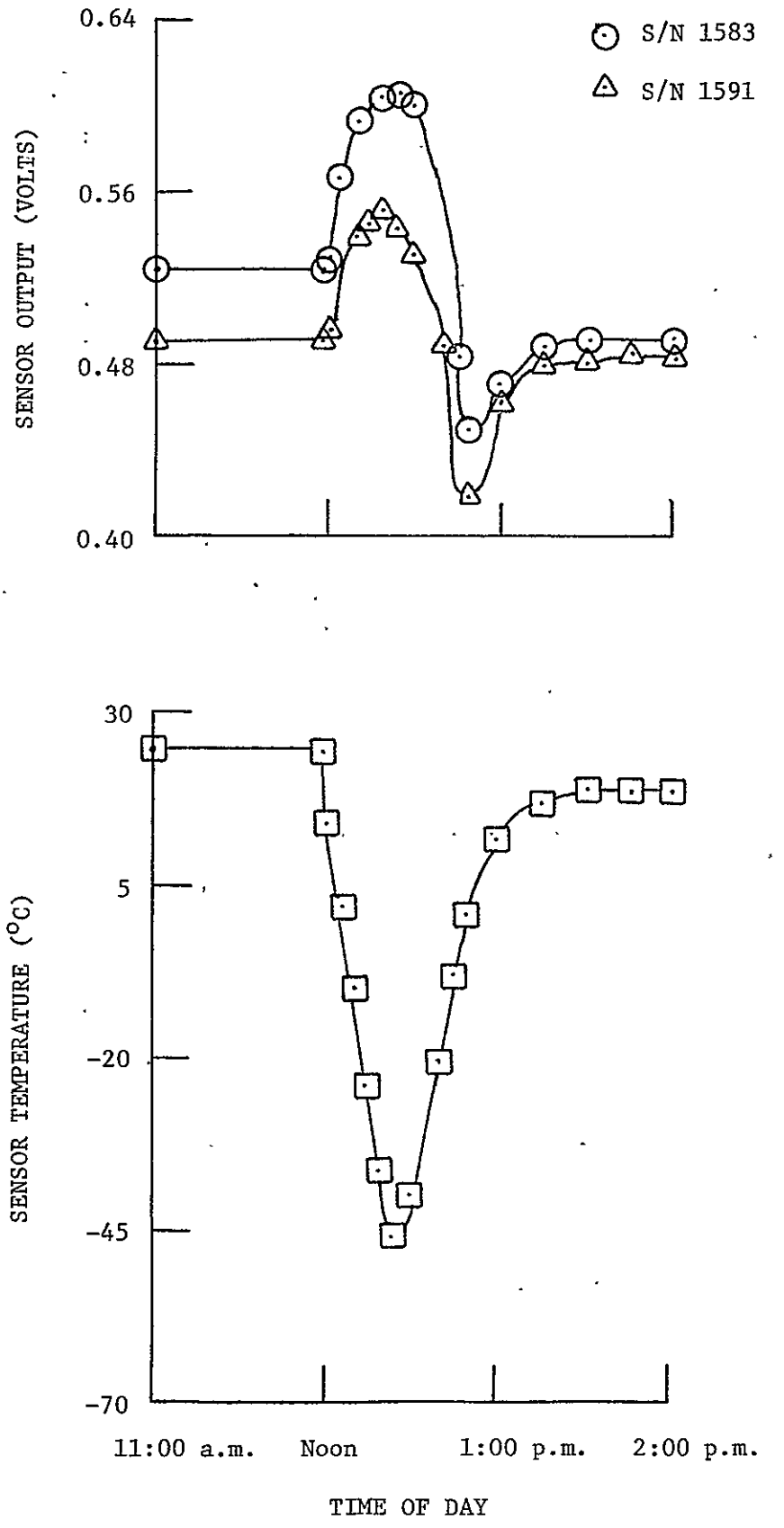



Fig. 20 - Temp Malfunction During Cruise Environment

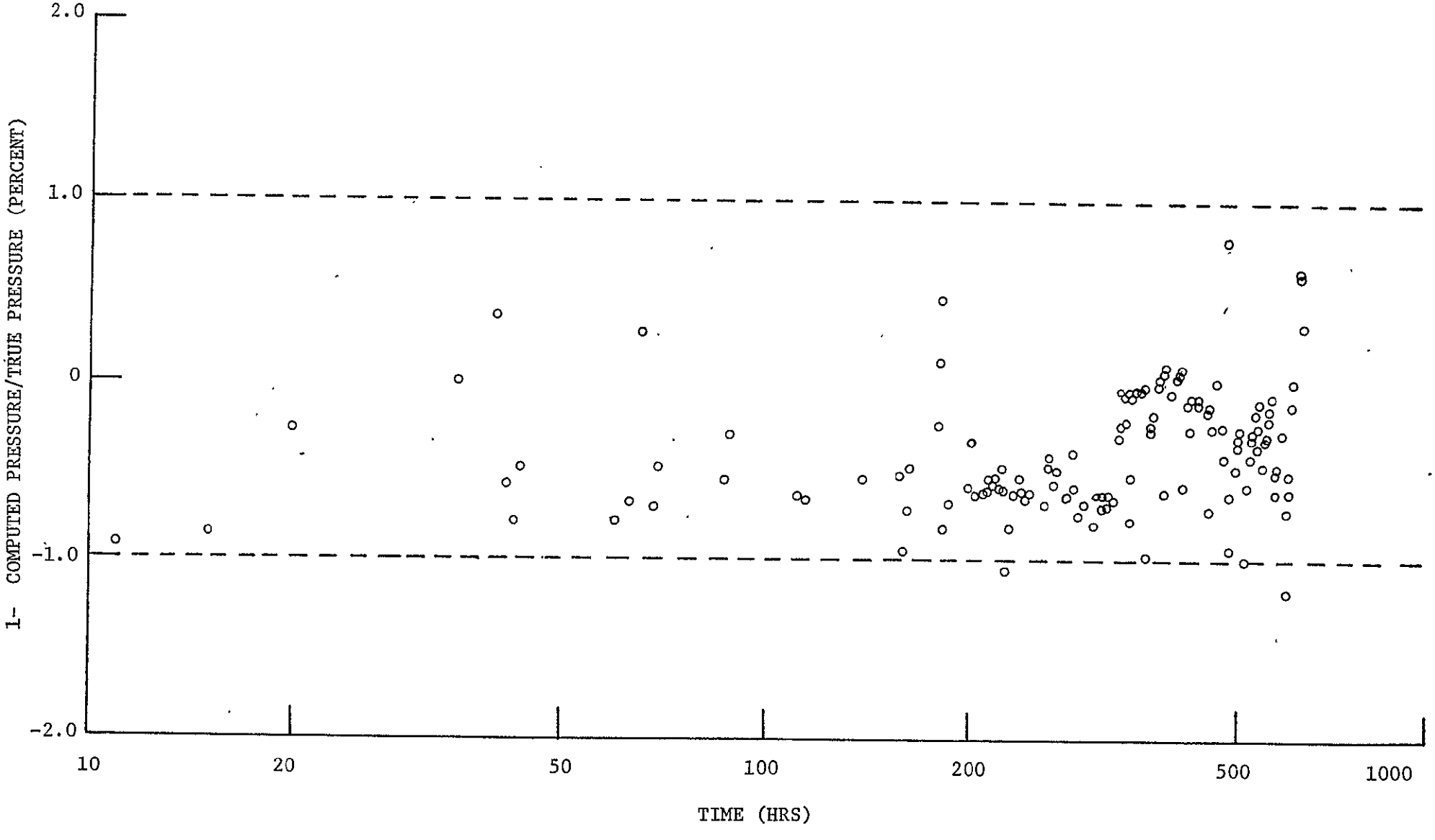



Fig. 21 - Error Versus Time (S/N 1583)

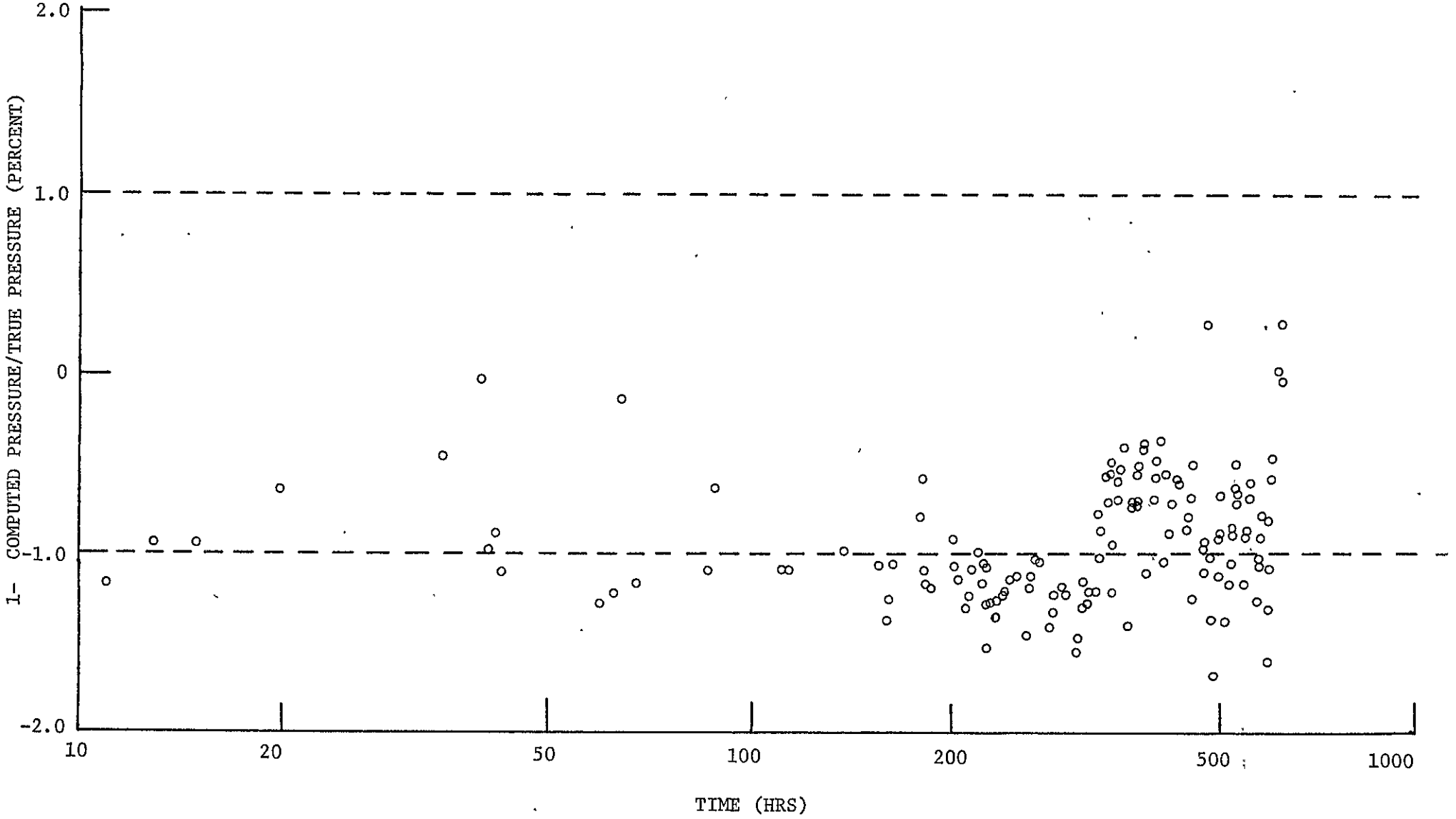



Fig. 22 - Error Versus Time (S/N 1591)

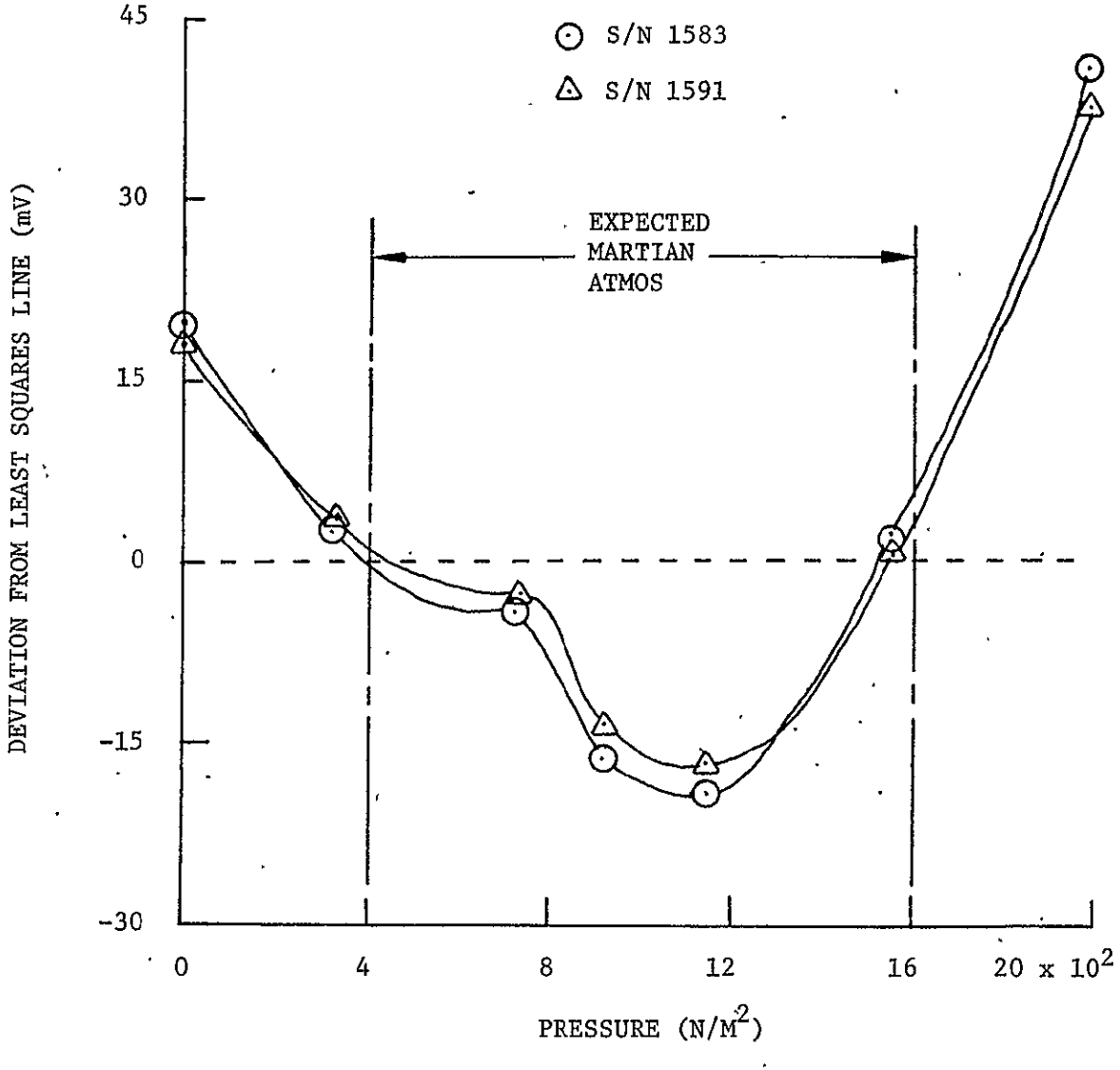



Fig. 23 - Final Calibration

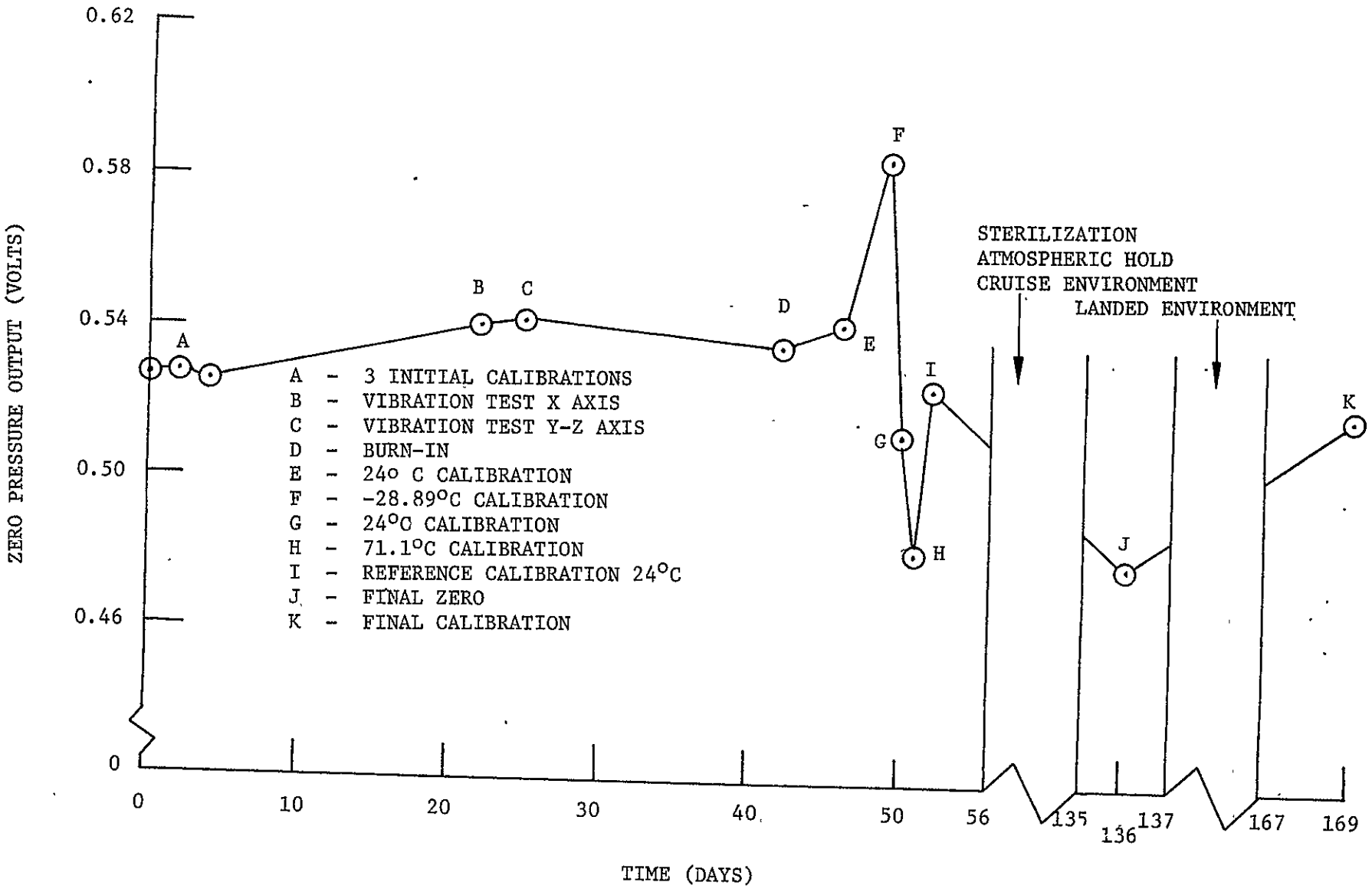



Fig. 24 - Zero Pressure Output Vs. Time

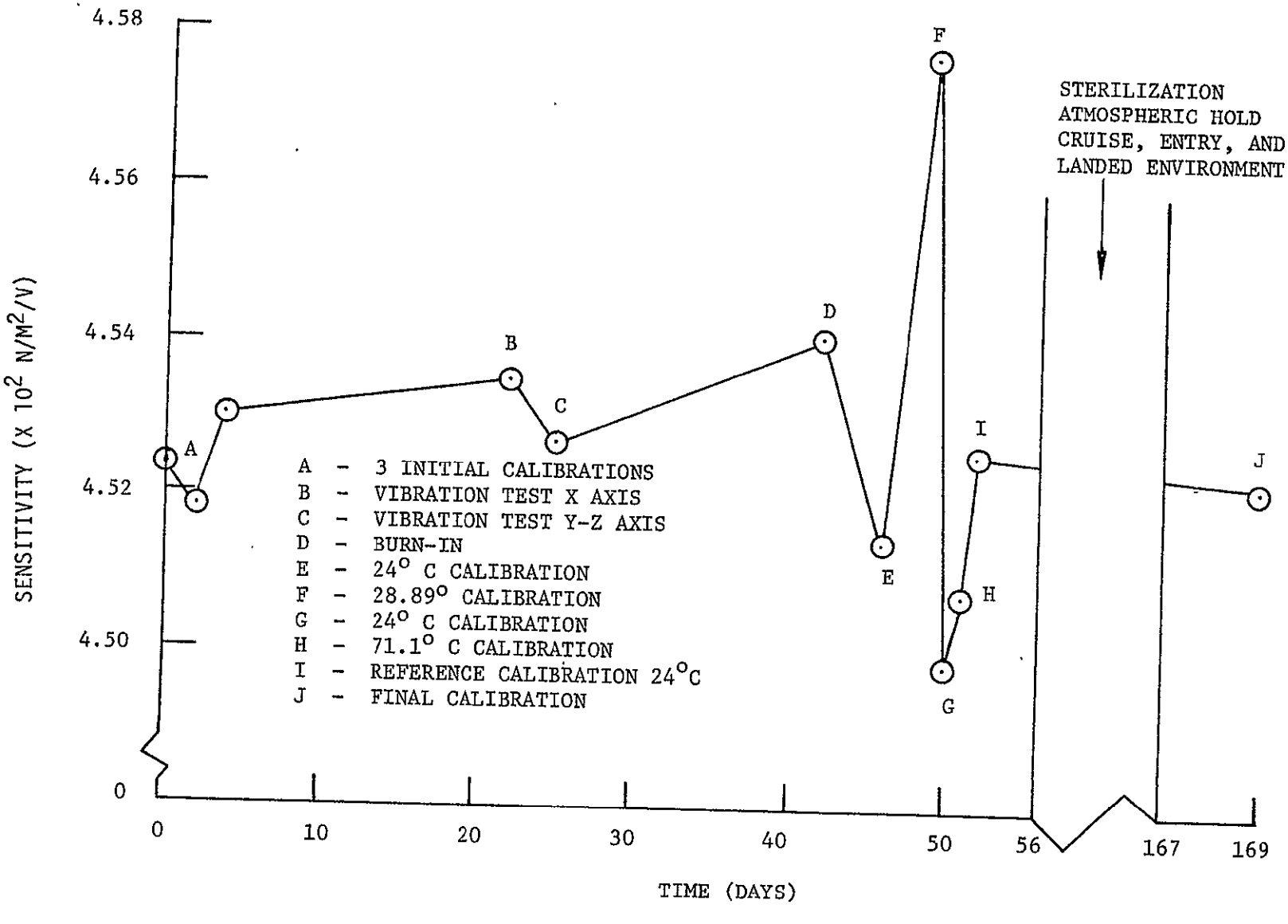



Fig. 25 - Sensitivity Vs. Time

# APPENDIX A

## HOURLY ACCOUNT OF ENTRY ENVIRONMENT

| TIME | S/N 1583 OUTPUT (V) | TEMP (°C) | S/N 1591 OUTPUT (V) | TEMP (°C) |
|---|---|---|---|---|
| 8:10 a.m. | 0.48806 | 19.0 | 0.47745 | 18.1 |
| 8:26 | 0.48515 | 20.0 | 0.47564 | 19.2 |
| 9:26 | 0.4846 | 21.1 | 0.47525 | 20.0 |
| 10:26 | 0.48584 | 21.4 | 0.47579 | 20.3 |
| 11:29 | 0.4858 | 21.4 | 0.47575 | 20.3 |
| 12:26 p.m. | 0.48589 | 21.4 | 0.47546 | 20.3 |
| 1:26 | 0.48564 | 21.1 | 0.47607 | 20.3 |
| 2:26 | 0.48601 | 21.5 | 0.47607 | 20.3 |
| 3:26 | 0.48512 | 21.5 | 0.47543 | 20.4 |
| 4:26 | 0.48496 | 22.0 | 0.47514 | 21.1 |
| 5:26 | 0.48408 | 23.1 | 0.47459 | 22.2 |
| 6:26 | 0.48353 | 23.3 | 0.47366 | 22.5 |
| 7:26 | 0.48284 | 23.7 | 0.47306 | 22.8 |
| 8:26 | 0.48312 | 23.8 | 0.47389 | 22.9 |
| 9:26 | 0.48235 | 24.4 | 0.47256 | 23.5 |

| TIME | S/N 1583 OUTPUT (V) | TEMP (°C) | S/N 1591 OUTPUT (V) | TEMP (°C) |
|---|---|---|---|---|
| 10:26 | 0.48143 | 25.2 | 0.47298 | 24.3 |
| 11:26 | 0.48022 | 25.4 | 0.47182 | 24.5 |
| 12:26 a.m. | 0.48044 | 26.4 | 0.47192 | 25.5 |
| 1:26 | 0.48101 | 26.8 | 0.47176 | 25.9 |
| 2:26 | 0.47929 | 27.9 | 0.4708 | 27.0 |
| 3:26 | 0.47922 | 27.9 | 0.47099 | 27.0 |
| 4:26 | 0.47927 | 28.1 | 0.47071 | 27.2 |
| 5:26 | 0.47868 | 28.7 | 0.47009 | 27.8 |
| 6:26 | 0.48159 | 29.4 | 0.46994 | 28.5 |
| 7:26 | 0.48162 | 29.4 | 0.46994 | 28.7 |
| 8:26 | 0.48282 | 28.8 | 0.47136 | 28.1 |
| 9:26 | 0.48018 | 29.4 | 0.46971 | 28.7 |
| 10:26 | 0.47981 | 30.2 | 0.46878 | 29.4 |
| 11:26 | 0.48 | 30.2 | 0.46919 | 29.4 |

| TIME | S/N 1583 OUTPUT (V) | TEMP (°C) | S/N 1591 OUTPUT (V) | TEMP (°C) |
|---|---|---|---|---|
| 12:26 p.m. | 0.47859 | 30.5 | 0.46824 | 29.8 |
| 1:26 | 0.47806 | 31.8 | 0.46806 | 30.9 |
| 2:27 | 0.47897 | 31.7 | 0.46816 | 30.8 |
| 7:01 p.m. | 0.47836 | 35.9 | 0.46644 | 34.8 |
| 7:02 | 0.47909 | 35.9 | 0.4675 | 34.8 |
| 7:03 | 0.47976 | 35.9 | 0.46823 | 34.8 |
| 7:04 | 0.4806 | 36.1 | 0.46842 | 34.8 |
| 7:05 | 0.48116 | 36.1 | 0.46926 | 34.8 |
| 7:06 | 0.48178 | 36.1 | 0.46941 | 34.8 |
| 7:07 | 0.48259 | 36.1 | 0.47139 | 34.8 |
| 7:08 | 0.48346 | 36.1 | 0.4721 | 34.8 |
| 7:09 | 0.49129 | 36.1 | 0.47981 | 34.8 |
| 7:10 | 0.716 | 36.1 | 0.70434 | 34.8 |
| 7:40 | 2.272 | 35.3 | 2.2552 | 34.4 |

# APPENDIX B

## CROSS SECTION OF DATA POINTS TAKEN DURING LANDED ENVIRONMENT

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-4 | 8:15 p.m. | 2.2866 | 25.9 | 1.7980 | 7.9628 | 7.86904 | -.09376 | -1.177 |
| 3-5 | 7:20 a.m. | 2.2730 | 0.1 | 1.7575 | 7.8038 | 7.73216 | -.07164 | -.918 |
| 3-5 | 9:27 a.m. | 2.2649 | -2.1 | 1.7471 | 7.7455 | 7.68901 | -.05649 | -.729 |
| 3-5 | 11:05 a.m. | 2.2513 | 3.6 | 1.7395 | 7.7097 | 7.64477 | -.06493 | -.842 |
| 3-5 | 4:00 p.m. | 2.2740 | 24.0 | 1.7834 | 7.8273 | 7.80675 | -.02055 | -.263 |
| 3-8 | 7:18 a.m. | 2.8020 | 1.3 | 2.2878 | 10.1410 | 10.14047 | -.00053 | -.005 |
| 3-8 | 12:10 p.m. | 2.3624 | 6.0 | 1.8531 | 8.1248 | 8.15374 | .02894 | .356 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 25.9 | $P = -0.0650 + 4.3266V + 0.0479V^2$ |
| 0.1 | $P = -0.0447 + 4.3315V + 0.0532V^2$ |
| -2.1 | $P = -0.0430 + 4.3319V + 0.0536V^2$ |
| 3.6 | $P = -0.0475 + 4.3309V + 0.0524V^2$ |
| 24.0 | $P = -0.0635 + 4.3269V + 0.0483V^2$ |
| 1.3 | $P = -0.0457 + 4.3313V + 0.0529V^2$ |
| 6.0 | $P = -0.0494 + 4.3304V + 0.0519V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | CROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-8 | 1:44 p.m. | 2.2372 | 15.1 | 1.7374 | 7.6595 | 7.61533 | -.04417 | -.577 |
| 3-8 | 2:43 p.m. | 2.2011 | 18.9 | 1.7052 | 7.5237 | 7.46391 | -.05979 | -.795 |
| 3-8 | 3:44 p.m. | 2.2149 | 22.7 | 1.7230 | 7.5741 | 7.53741 | -.03669 | -.484 |
| 3-9 | 7:27 a.m. | 2.4640 | -0.2 | 1.9482 | 8.6642 | 8.59634 | -.06786 | -.783 |
| 3-9 | 10:18 a.m. | 2.3670 | 0.6 | 1.8520 | 8.2149 | 8.15870 | -.05619 | -.684 |
| 3-9 | 12:42 p.m. | 2.3320 | 10.1 | 1.8270 | 8.0063 | 8.02827 | .02197 | .274 |
| 3-9 | 3:28 p.m. | 2.3110 | 22.1 | 1.8184 | 8.0240 | 7.96771 | -.05629 | -.701 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 15.1 | $P = -0.0565 + 4.3286V + 0.0501V^2$ |
| 18.9 | $P = -0.0595 + 4.3279V + 0.0493V^2$ |
| 22.7 | $P = -0.0625 + 4.3272V + 0.0485V^2$ |
| -0.2 | $P = -0.0445 + 4.3316V + 0.0532V^2$ |
| 0.6 | $P = -0.0451 + 4.3314V + 0.0530V^2$ |
| 10.1 | $P = -0.0526 + 4.3296V + 0.0511V^2$ |
| 22.1 | $P = -0.0620 + 4.3273V + 0.0487V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-10 | 10:28 a.m. | 2.2770 | 0.0 | 1.7614 | 7.7928 | 7.74996 | -.04284 | -.550 |
| 3-10 | 12:22 p.m. | 2.3180 | 9.4 | 1.8122 | 7.9860 | 7.96270 | -.02330 | -.292 |
| 3-11 | 11:20 a.m. | 2.3150 | 4.5 | 1.8041 | 7.9864 | 7.93493 | -.05147 | -.644 |
| 3-11 | 2:27 p.m. | 2.2790 | 17.9 | 1.7821 | 7.8631 | 7.81173 | -.05137 | -.653 |
| 3-12 | 7:20 a.m. | 2.3690 | -0.2 | 1.8532 | 8.2840 | 8.16561 | -.11839 | -1.429 |
| 3-12 | 2:30 p.m. | 2.3190 | 18.0 | 1.8222 | 8.0360 | 7.99227 | -.04373 | -.544 |
| 3-15 | 8:56 a.m. | 2.234 | -2.2 | 1.7161 | 7.5894 | 7.54914 | -.04026 | -.531 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 0.0 | $P= -0.0446 + 4.3316V + 0.0532V^2$ |
| 9.4 | $P= -0.0520 + 4.3298V + 0.0513V^2$ |
| 4.5 | $P= -0.0482 + 4.3307V + 0.0523V^2$ |
| 17.9 | $P= -0.0587 + 4.3281V + 0.0495V^2$ |
| -0.2 | $P= -0.0445 + 4.3316V + 0.0532V^2$ |
| 18.0 | $P= -0.0588 + 4.3281V + 0.04951V^2$ |
| -2.2 | $P= -0.0429 + 4.3320V + 0.0536V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-15 | 12:15 p.m. | 2.288 | 7.0 | 1.7797 | 7.8949 | 7.82026 | -.07464 | -.945 |
| 3-15 | 12:58 p.m. | 2.285 | 11.9 | 1.7818 | 7.8777 | 7.82103 | -.05667 | -.719 |
| 3-15 | 3:59 p.m. | 2.270 | 23.6 | 1.7790 | 7.825 | 7.78766 | -0.03734 | -.477 |
| 3-16 | 9:00 a.m. | 2.435 | -2.4 | 1.9169 | 8.480 | 8.45851 | -0.02149 | -.253 |
| 3-16 | 10:00 a.m. | 2.353 | -2.0 | 1.8353 | 8.0792 | 8.08785 | 0.00865 | .107 |
| 3-16 | 11:03 a.m. | 2.353 | 2.6 | 1.8401 | 8.0646 | 8.10117 | 0.03657 | .453 |
| 3-16 | 12:10 p.m. | 2.309 | 7.8 | 1.8016 | 7.9830 | 7.91771 | -0.06529 | -.818 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 7.0 | $P= -0.0515 + 4.3302V + 0.0517V^2$ |
| 11.9 | $P= -0.0540 + 4.3293V + 0.0507V^2$ |
| 23.6 | $P= -0.0632 + 4.3270V + 0.0484V^2$ |
| -2.4 | $P= -0.0428 + 4.3320V + 0.0537V^2$ |
| -2.0 | $P= -0.0431 + 4.3319V + 0.0529V^2$ |
| 2.6 | $P= -0.0467 + 4.3311V + 0.0526V^2$ |
| 7.8 | $P= -0.0508 + 4.3300V + 0.0516V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-16 | 4:05 p.m. | 2.297 | 23.8 | 1.8062 | 7.9638 | 7.90971 | -0.05409 | -.679 |
| 3-17 | 8:10 a.m. | 2.2760 | -2.0 | 1.7583 | 7.7854 | 7.73946 | -0.04594 | -.590 |
| 3-17 | 10:20 a.m. | 2.2840 | -0.8 | 1.7676 | 7.8060 | 7.77939 | -0.02661 | -.341 |
| 3-17 | 1:10 p.m. | 2.327 | 13.2 | 1.8252 | 8.0655 | 8.01451 | -0.05099 | -.632 |
| 3-17 | 7:14 p.m. | 2.3344 | 26.6 | 1.8465 | 8.1364 | 8.08606 | -0.05034 | -.619 |
| 3-17 | 9:15 p.m. | 2.3217 | 23.4 | 1.8305 | 8.0604 | 8.01986 | -0.04414 | -.547 |
| 3-17 | 11:16 p.m. | 2.2002 | 16.6 | 1.8019 | 7.9488 | 7.90327 | -0.04553 | -.573 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 23.8 | $P = -0.0633 + 4.3270V + 0.0483V^2$ |
| -2.0 | $P = -0.0431 + 4.3319V + 0.0536V^2$ |
| -0.8 | $P = -0.0440 + 4.3317V + 0.0533V^2$ |
| 13.2 | $P = -0.0550 + 4.3290V + 0.0505V^2$ |
| 26.6 | $P = -0.0655 + 4.3264V + 0.0484V^2$ |
| 23.4 | $P = -0.0630 + 4.3270V + 0.0484V^2$ |
| 16.6 | $P = -0.0577 + 4.3284V + 0.0498V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-18 | 9:28 p.m. | 2.2417 | 22.7 | 1.7498 | 7.6994 | 2.65790 | -0.04150 | -.539 |
| 3-18 | 11:29 p.m. | 2.1932 | 15.9 | 1.6942 | 7.4643 | 7.41955 | -0.04475 | -.600 |
| 3-19 | 3:31 a.m. | 2.0785 | 7.0 | 1.5702 | 6.9214 | 6.87675 | -0.04465 | -.645 |
| 3-19 | 7:32 a.m. | 1.9430 | -0.3 | 1.4271 | 6.2842 | 6.24567 | -0.04233 | -.613 |
| 3-19 | 7:40 p.m. | 2.1877 | 26.6 | 1.6998 | 7.4774 | 7.42653 | -0.05087 | -.680 |
| 3-19 | 9:41 p.m. | 2.2098 | 22.2 | 1.7174 | 7.5480 | 7.5131 | -0.03490 | -.426 |
| 3-19 | 11:42 p.m. | 2.2023 | 15.6 | 1.7030 | 7.4914 | 7.45964 | -0.03176 | -.424 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 22.7 | $P = -0.0625 + 4.3272V + 0.0486V^2$ |
| 15.9 | $P = -0.0571 + 4.3285V + 0.0499V^2$ |
| 7.0 | $P = -0.0501 + 4.3302V + 0.0518V^2$ |
| -0.3 | $P = -0.0444 + 4.3316V + 0.0532V^2$ |
| 26.6 | $P = -0.0655 + 4.3264V + 0.0478V^2$ |
| 22.2 | $P = -0.0621 + 4.3273V + 0.0487V^2$ |
| 15.6 | $P = -0.0569 + 4.3285V + 0.0500V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-18 | 3:19 a.m. | 2.2468 | 7.3 | 1.7388 | 7.6762 | 7.63518 | -0.04102 | -.534 |
| 3-18 | 7:21 a.m. | 2.1882 | -0.1 | 1.6725 | 7.3930 | 7.34882 | -0.04418 | -.598 |
| 3-18 | 8:25 a.m. | 2.1610 | -1.9 | 1.6434 | 7.2564 | 7.22061 | -0.03579 | -.493 |
| 3-18 | 9:25 a.m. | 2.1710 | -2.1 | 1.6532 | 7.3082 | 7.26512 | -0.04308 | -.589 |
| 3-18 | 11:20 a.m. | 2.2110 | 4.5 | 1.7001 | 7.5449 | 7.46549 | -0.07941 | -1.052 |
| 3-18 | 2:29 p.m. | 2.298 | 18.0 | 1.8012 | 7.9625 | 7.89761 | -0.06489 | -.815 |
| 3-18 | 6:27 p.m. | 2.304 | 26.5 | 1.8160 | 7.9983 | 7.94895 | -0.04935 | -.617 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 7.3 | $P = -0.0504 + 4.3302V + 0.0517V^2$ |
| -0.1 | $P = -0.0446 + 4.3316V + 0.0532V^2$ |
| -1.9 | $P = -0.0432 + 4.3319V + 0.0536V^2$ |
| -2.1 | $P = -0.0430 + 4.3320V + 0.0536V^2$ |
| 4.5 | $P = -0.0482 + 4.3307V + 0.0523V^2$ |
| 18.0 | $P = -0.0588 + 4.3281V + 0.0495V^2$ |
| 26.5 | $P = -0.0655 + 4.3264V + 0.0478V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-20 | 3:44 a.m. | 2.1558 | 6.9 | 1.6474 | 7.2651 | 7.22407 | -0.04103 | -.567 |
| 3-20 | 7:46 a.m. | 2.1077 | -0.8 | 1.5913 | 7.0186 | 6.98412 | -0.03448 | -.491 |
| 3-20 | 6:50 p.m. | 2.1242 | 26.9 | 1.6367 | 7.1893 | 7.14298 | -0.04632 | -.644 |
| 3-20 | 9:57 p.m. | 2.1334 | 22.6 | 1.6438 | 7.2102 | 7.18191 | -0.02829 | -.392 |
| 3-20 | 11:54 p.m. | 2.1189 | 15.3 | 1.6193 | 7.1258 | 7.08393 | -0.04187 | -.588 |
| 3-21 | 3:55 a.m. | 2.0756 | 6.7 | 1.5670 | 6.9141 | 6.86285 | -0.05124 | -.741 |
| 3-21 | 7:57 a.m. | 2.0393 | -1.2 | 1.5225 | 6.7201 | 6.67529 | -0.04481 | -.667 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 6.9 | $P = -0.0501 + 4.3302V + 0.0518V^2$ |
| -0.8 | $P = -0.0440 + 4.3317V + 0.0533V^2$ |
| 26.9 | $P = -0.0655 + 4.3264V + 0.0478V^2$ |
| 22.6 | $P = -0.0624 + 4.3272V + 0.0486V^2$ |
| 15.3 | $P = -0.0567 + 4.3286V + 0.0501V^2$ |
| 6.7 | $P = -0.0499 + 4.3303V + 0.0518V^2$ |
| -1.2 | $P = -0.0437 + 4.3318V + 0.0534V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-21 | 7:03 p.m. | 2.0733 | 26.9 | 1.5858 | 6.9708 | 6.91494 | -0.05586 | -.801 |
| 3-21 | 9:04 p.m. | 2.0829 | 24.4 | 1.5928 | 6.9944 | 6.95031 | -0.04409 | -.630 |
| 3-21 | 11:05 p.m. | 2.0730 | 17.7 | 1.5759 | 6.9333 | 6.88529 | -0.04801 | -.692 |
| 3-22 | 3:07 a.m. | 2.0297 | 7.8 | 1.5222 | 6.7019 | 6.65998 | -0.04192 | -.625 |
| 3-22 | 7:09 a.m. | 1.9782 | 0.8 | 1.4635 | 6.4509 | 6.40729 | -0.04361 | -.676 |
| 3-22 | 8:18 a.m. | 1.943 | -1.6 | 1.4258 | 6.2811 | 6.24176 | -0.03934 | -.626 |
| 3-22 | 4:00 p.m. | 1.6655 | 24.1 | 1.6655 | 7.3248 | 7.2768 | -0.04800 | -.655 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 26.9 | $P= -0.0655 + 4.3264V + 0.0478V^2$ |
| 24.4 | $P= -0.0638 + 4.3269V + 0.0482V^2$ |
| 17.7 | $P= -0.0586 + 4.3281V + 0.0496V^2$ |
| 7.8 | $P= -0.0508 + 4.3301V + 0.0516V^2$ |
| 0.8 | $P= -0.0453 + 4.3314V + 0.0530V^2$ |
| -1.6 | $P= -0.0434 + 4.3319V + 0.0535V^2$ |
| 24.1 | $P= -0.0636 + 4.3269V + 0.0483V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP ($^{o}$C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-22 | 7:11 p.m. | 2.2976 | 26.6 | 1.8097 | 7.9239 | 7.92042 | -0.00348 | -.044 |
| 3-22 | 9:12 p.m. | 2.4075 | 22.8 | 1.9157 | 8.4309 | 8.40512 | -0.02579 | -.306 |
| 3-22 | 11:12 p.m. | 2.4919 | 16.9 | 1.9939 | 8.7916 | 8.77002 | -0.02158 | -.245 |
| 3-23 | 3:15 a.m. | 2.6268 | 7.5 | 2.1190 | 9.3637 | 9.35691 | -0.00679 | -.073 |
| 3-23 | 7:24 a.m. | 2.736 | 0.3 | 2.2207 | 9.8587 | 9.83605 | -0.02265 | -.230 |
| 3-23 | 10:20 a.m. | 2.757 | -0.5 | 2.2409 | 9.9379 | 9.93013 | -0.00777 | -.078 |
| 3-23 | 12:22 p.m. | 2.804 | 9.2 | 2.2980 | 10.2481 | 10.16892 | -0.07918 | -.773 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 26.6 | $P = -0.0655 + 4.3264V + 0.0478V^2$ |
| 22.8 | $P = -0.0626 + 4.3272V + 0.0485V^2$ |
| 16.9 | $P = -0.0579 + 4.3283V + 0.0497V^2$ |
| 7.5 | $P = -0.0505 + 4.3301V + 0.0516V^2$ |
| 0.3 | $P = -0.0499 + 4.3315V + 0.0531V^2$ |
| -0.5 | $P = -0.0443 + 4.3317V + 0.0533V^2$ |
| 9.2 | $P = -0.0519 + 4.3298V + 0.0513V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-23 | 1:23 p.m. | 2.834 | 13.8 | 2.3328 | 10.3714 | 10.31708 | -0.05432 | -.524 |
| 3-23 | 7:22 p.m. | 2.8761 | 26.7 | 2.3883 | 10.5451 | 10.53947 | -0.00563 | -.053 |
| 3-23 | 9:23 p.m. | 2.8717 | 23.2 | 2.3803 | 10.5055 | 10.51143 | 0.00593 | .056 |
| 3-23 | 11:24 p.m. | 2.8539 | 16.4 | 2.3554 | 10.4115 | 10.41409 | 0.00259 | .029 |
| 3-24 | 3:26 a.m. | 2.8065 | 7.4 | 2.2986 | 10.1720 | 10.17581 | 0.00381 | .037 |
| 3-24 | 7:30 a.m. | 2.754 | -0.1 | 2.2383 | 10.014 | 9.91735 | -0.09665 | -.965 |
| 3-24 | 11:32 a.m. | 2.814 | 5.0 | 2.3036 | 10.2299 | 10.20420 | -0.02571 | -.251 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 13.8 | $P = -0.0555 + 4.3289V + 0.0504V^2$ |
| 26.7 | $P = -0.0656 + 4.3264V + 0.0477V^2$ |
| 23.2 | $P = -0.0629 + 4.3271V + 0.0484V^2$ |
| 16.4 | $P = -0.0575 + 4.3284V + 0.0498V^2$ |
| 7.4 | $P = -0.0505 + 4.3301V + 0.0517V^2$ |
| -0.1 | $P = -0.0446 + 4.3316V + 0.0532V^2$ |
| 5.9 | $P = -0.0486 + 4.3306V + 0.0522V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP ($^{o}$C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-24 | 12:33 p.m. | 2.830 | 10.1 | 2.3250 | 10.3187 | 10.29012 | -0.02858 | -.277 |
| 3-24 | 3:36 p.m. | 2.792 | 22.2 | 2.2996 | 10.1656 | 10.14624 | -0.01936 | -.190 |
| 3-24 | 7:33 p.m. | 2.8124 | 26.8 | 2.3248 | 10.2542 | 10.25022 | -0.00398 | -.039 |
| 3-24 | 9:34 p.m. | 2.8186 | 22.6 | 2.3266 | 10.2646 | 10.26822 | 0.00362 | .035 |
| 3-24 | 11:35 p.m. | 2.7997 | 15.9 | 2.3007 | 10.1660 | 10.16579 | -0.00021 | -.002 |
| 3-25 | 3:37 a.m. | 2.7462 | 7.0 | 2.2379 | 9.8955 | 9.89964 | 0.00414 | .042 |
| 3-25 | 7:42 a.m. | 2.678 | -0.5 | 2.1619 | 9.5617 | 9.56939 | 0.00769 | .080 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 10.1 | $P= -0.0526 + 4.3296V + 0.0511V^2$ |
| 22.2 | $P= -0.0621 + 4.3273V + 0.0486V^2$ |
| 26.8 | $P= -0.0657 + 4.3264V + 0.0477V^2$ |
| 22.6 | $P= -0.0624 + 4.3272V + 0.0486V^2$ |
| 15.9 | $P= -0.0571 + 4.3285V + 0.0499V^2$ |
| 7.0 | $P= -0.0501 + 4.3302V + 0.0518V^2$ |
| -0.5 | $P= -0.0443 + 4.3317V + 0.0533V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP ($^{o}$C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-25 | 8:42 a.m. | 2.677 | -1.9 | 2.1594 | 9.6210 | 9.56100 | -0.06000 | -.624 |
| 3-25 | 7:45 p.m. | 2.906 | 26.7 | 2.4182 | 10.6832 | 10.67569 | -0.00661 | -.062 |
| 3-25 | 9:46 p.m. | 2.9278 | 22.0 | 2.4351 | 10.7626 | 10.76430 | 0.00170 | .016 |
| 3-25 | 11:47 p.m. | 2.9318 | 15.4 | 2.4386 | 10.7918 | 10.79656 | 0.00476 | .044 |
| 3-26 | 3:48 a.m. | 2.9334 | 6.7 | 2.4248 | 10.7472 | 10.75479 | 0.00759 | .071 |
| 3-26 | 7:52 a.m. | 2.930 | -1.1 | 2.4133 | 10.785 | 10.72112 | -0.06383 | -.592 |
| 3-26 | 1:58 p.m. | 2.723 | 15.9 | 2.2240 | 9.8279 | 9.81646 | -0.01144 | -.116 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -1.9 | $P= -0.0432 + 4.3319V + 0.0536V^2$ |
| 26.7 | $P= -0.0656 + 4.3264V + 0.0477V^2$ |
| 22.0 | $P= -0.0619 + 4.3273V + 0.0487V^2$ |
| 15.4 | $P= -0.0567 + 4.3286V + 0.0500V^2$ |
| 6.7 | $P= -0.0499 + 4.3303V + 0.0518V^2$ |
| -1.1 | $P= -0.0438 + 4.3318V + 0.0534V^2$ |
| 15.9 | $P= -0.0571 + 4.3285V + 0.0499V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP ($^{o}$C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-26 | 6:55 p.m. | 2.6114 | 26.7 | 2.1236 | 9.3611 | 9.33725 | -0.02385 | -.255 |
| 3-26 | 9:57 p.m. | 2.5763 | 21.3 | 2.0829 | 9.1733 | 9.16417 | -0.00913 | -.099 |
| 3-26 | 11:58 p.m. | 2.5277 | 15.2 | 2.0280 | 8.9367 | 8.92786 | -0.00884 | -.099 |
| 3-27 | 3:59 a.m. | 2.4287 | 6.5 | 1.9199 | 8.4630 | 8.45515 | -0.00785 | -.093 |
| 3-27 | 7:01 a.m. | 2.3574 | .9 | 1.8428 | 8.1252 | 8.11650 | -0.00870 | -.107 |
| 3-27 | 7:06 p.m. | 2.2911 | 26.9 | 1.8036 | 7.9047 | 7.89244 | -0.01226 | -.155 |
| 3-27 | 9:07 p.m. | 2.2912 | 24.2 | 1.8008 | 7.8953 | 7.88469 | -0.01061 | -.134 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 26.7 | $P = -0.0656 + 4.3264V + 0.0477V^2$ |
| 21.3 | $P = -0.0614 + 4.3275V + 0.0488V^2$ |
| 15.2 | $P = -0.0566 + 4.3286V + 0.0501V^2$ |
| 6.5 | $P = -0.0498 + 4.3303V + 0.0519V^2$ |
| 0.9 | $P = -0.0454 + 4.3314V + 0.0530V^2$ |
| 26.9 | $P = -0.0658 + 4.3264V + 0.0477V^2$ |
| 24.2 | $P = -0.0637 + 4.3269V + 0.0482V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-27 | 11:08 p.m. | 2.2762 | 17.3 | 1.7786 | 7.8529 | 7.79703 | -0.05587 | -.711 |
| 3-28 | 3:10 a.m. | 2.2104 | 7.6 | 1.7028 | 7.4912 | 7.47238 | -0.01882 | -.251 |
| 3-28 | 7:12 a.m. | 2.1367 | 0.6 | 1.6218 | 7.1193 | 7.11917 | -0.00012 | -.002 |
| 3-28 | 7:18 p.m. | 2.1760 | 26.9 | 1.6885 | 7.3939 | 7.37530 | -0.01860 | -.252 |
| 3-28 | 9:19 p.m. | 2.1620 | 23.5 | 1.6709 | 7.3321 | 7.30204 | -0.03006 | -.410 |
| 3-28 | 11:20 p.m. | 2.1350 | 16.7 | 1.6368 | 7.1905 | 7.16023 | -0.03027 | -.421 |
| 3-29 | 3:20 a.m. | 2.0719 | 7.4 | 1.5640 | 6.7941 | 6.84827 | 0.05417 | .797 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 17.3 | $P= -0.0582 + 4.3282V + 0.0497V^2$ |
| 7.6 | $P= -0.0506 + 4.3301V + 0.0516V^2$ |
| 0.6 | $P= -0.0451 + 4.3314V + 0.0531V^2$ |
| 26.9 | $P= -0.0658 + 4.3264V + 0.0477V^2$ |
| 23.5 | $P= -0.0631 + 4.3270V + 0.0484V^2$ |
| 16.7 | $P= -0.0578 + 4.3283V + 0.0498V^2$ |
| 7.4 | $P= -0.0505 + 4.3301V + 0.0517V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-29 | 7:22 a.m. | 2.005 | 0.1 | 1.4895 | 6.5666 | 6.52505 | -0.04155 | -.633 |
| 3-29 | 8:25 a.m. | 1.965 | -1.8 | 1.4476 | 6.3997 | 6.33985 | -0.05985 | -.935 |
| 3-29 | 12:27 p.m. | 2.060 | 9.6 | 1.5544 | 6.8871 | 6.80168 | -0.08542 | -1.240 |
| 3-29 | 7:28 p.m. | 2.3568 | 26.7 | 1.8690 | 8.2269 | 8.18721 | -0.03969 | -.482 |
| 3-29 | 9:29 p.m. | 2.3986 | 22.7 | 1.9067 | 8.3949 | 8.36469 | -0.03021 | -.360 |
| 3-29 | 11:30 p.m. | 2.4174 | 16.0 | 1.9185 | 8.4579 | 8.43071 | -0.02719 | -.321 |
| 3-30 | 3:32 a.m. | 2.4315 | 7.1 | 1.9233 | 8.4930 | 8.46941 | -0.02359 | -.278 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 0.1 | $P= -0.0447 + 4.3315V + 0.0532V^2$ |
| -1.8 | $P= -0.0432 + 4.3319V + 0.0535V^2$ |
| 9.6 | $P= -0.0522 + 4.3297V + 0.0512V^2$ |
| 26.7 | $P= -0.0656 + 4.3264V + 0.0477V^2$ |
| 22.7 | $P= -0.0625 + 4.3272V + 0.0486V^2$ |
| 16.0 | $P= -0.0572 + 4.3285V + 0.0499V^2$ |
| 7.1 | $P= -0.0502 + 4.3302V + 0.0517V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-30 | 7:23 a.m. | 2.4160 | -0.3 | 1.9001 | 8.4613 | 8.37832 | -0.08298 | -.981 |
| 3-30 | 3:40 p.m. | 2.341 | 22.5 | 1.8489 | 8.1520 | 8.10441 | -0.04759 | -.584 |
| 3-30 | 7:39 p.m. | 2.3955 | 26.7 | 1.9078 | 8.3985 | 8.36208 | -0.03642 | -.434 |
| 3-30 | 9:40 p.m. | 2.4165 | 22.2 | 1.9385 | 8.5362 | 8.50920 | -0.02700 | -.316 |
| 3-30 | 11:41 p.m. | 2.4438 | 15.6 | 1.9445 | 8.5941 | 8.54903 | -0.02507 | -.292 |
| 3-31 | 3:44 a.m. | 2.4431 | 6.9 | 1.9347 | 8.5363 | 8.52143 | -0.01487 | -.174 |
| 3-31 | 7:47 a.m. | 2.4075 | -0.8 | 1.8911 | 8.3488 | 8.33846 | -0.01034 | -.124 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -0.3 | $P= -0.0444 + 4.3316V + 0.0532V^2$ |
| 22.5 | $P= -0.0623 + 4.3272V + 0.0486V^2$ |
| 26.7 | $P= -0.0656 + 4.3264V + 0.0477V^2$ |
| 22.2 | $P= -0.0621 + 4.3273V + 0.0487V^2$ |
| 15.6 | $P= -0.0569 + 4.3286V + 0.0500V^2$ |
| 6.9 | $P= -0.0501 + 4.3302V + 0.0518V^2$ |
| -0.8 | $P= -0.0440 + 4.3317V + 0.0533V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-31 | 8:47 a.m. | 2.375 | -1.9 | 1.8574 | 8.2176 | 8.18778 | -0.02982 | -.363 |
| 3-31 | 10:49 a.m. | 2.342 | 1.8 | 1.8283 | 8.0696 | 8.04924 | -0.02036 | -.252 |
| 3-31 | 6:50 p.m. | 2.3499 | 26.7 | 1.8622 | 8.1953 | 8.15650 | -0.03872 | -.472 |
| 3-31 | 9:52 p.m. | 2.4144 | 21.6 | 1.9216 | 8.4625 | 8.43403 | -0.02847 | -.336 |
| 3-31 | 11:52 p.m. | 2.4323 | 15.2 | 1.9326 | 8.5238 | 8.49599 | -0.02781 | -.326 |
| 4-1 | 3:55 a.m. | 2.4427 | 6.6 | 1.9340 | 8.5362 | 8.51883 | -0.01737 | -.203 |
| 4-1 | 7:57 a.m. | 2.4054 | -1.4 | 1.8884 | 8.3399 | 8.32735 | -0.01255 | -.150 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -1.9 | $P = -0.0432 + 4.3319V + 0.0536V^2$ |
| 1.8 | $P = -0.0461 + 4.3312V + 0.0528V^2$ |
| 26.7 | $P = -0.0656 + 4.3264V + 0.0477V^2$ |
| 21.6 | $P = -0.0616 + 4.3274V + 0.0488V^2$ |
| 15.2 | $P = -0.0566 + 4.3286V + 0.0501V^2$ |
| 6.6 | $P = -0.0498 + 4.3303V + 0.0518V^2$ |
| -1.4 | $P = -0.0435 + 4.3318V + 0.0535V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 4-1 | 8:57 a.m. | 2.3710 | -1.9 | 1.8534 | 8.1762 | 8.16965 | -0.00655 | -.080 |
| 4-1 | 7:01 p.m. | 2.2918 | 26.7 | 1.8040 | 7.9440 | 7.89460 | -0.04940 | -.622 |
| 4-1 | 9:02 p.m. | 2.2698 | 24.2 | 1.7794 | 7.8259 | 7.78839 | -0.03751 | -.479 |
| 4-1 | 11:03 p.m. | 2.2391 | 17.5 | 1.7418 | 7.6710 | 7.63097 | -0.04003 | -.522 |
| 4-2 | 3:05 a.m. | 2.1734 | 7.5 | 1.6656 | 7.3417 | 7.30500 | -0.03670 | -.500 |
| 4-2 | 7:27 a.m. | 2.107 | 0.8 | 1.5923 | 7.006 | 6.98605 | -0.01995 | -.285 |
| 4-2 | 3:13 a.m. | 2.154 | 21.9 | 1.6617 | 7.3474 | 7.26117 | -0.08623 | -1.174 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -1.9 | $P = -0.0432 + 4.3314V + 0.0536V^2$ |
| 26.7 | $P = -0.0656 + 4.3264V + 0.0477V^2$ |
| 24.2 | $P = -0.0637 + 4.3269V + 0.0482V^2$ |
| 17.5 | $P = -0.0584 + 4.3282V + 0.0496V^2$ |
| 7.5 | $P = -0.0505 + 4.3301V + 0.0516V^2$ |
| 0.8 | $P = -0.0453 + 4.3314V + 0.0536V^2$ |
| 21.9 | $P = -0.0618 + 4.3273V + 0.0487V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1583

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 4-2 | 7:14 p.m. | 2.2521 | 26.7 | 1.7643 | 7.7727 | 7.71608 | -0.05662 | -.728 |
| 4-2 | 9:15 p.m. | 2.3115 | 23.6 | 1.8205 | 8.0151 | 7.97446 | -0.04064 | -.507 |
| 4-2 | 11:16 p.m. | 2.3468 | 16.9 | 1.8488 | 8.1430 | 8.11425 | -0.02875 | -.353 |
| 4-3 | 3:18 a.m. | 2.3930 | 7.4 | 1.8857 | 8.3090 | 8.29862 | -0.01038 | -.125 |
| 4-3 | 7:21 a.m. | 2.4252 | 0.3 | 1.9099 | 8.4227 | 8.42167 | -0.00108 | -.013 |
| 4-3 | 7:28 p.m. | 2.7606 | 26.9 | 2.2731 | 9.9538 | 10.01497 | 0.06117 | .615 |
| 4-3 | 9:29 p.m. | 2.8092 | 23.2 | 2.3178 | 10.1672 | 10.22676 | 0.05956 | .586 |
| 4-3 | 11:30 p.m. | 2.8481 | 16.6 | 2.3394 | 10.3078 | 10.34062 | 0.03282 | .318 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 26.7 | $P = -0.0656 + 4.3264V + 0.0477V^2$ |
| 23.6 | $P = -0.0632 + 4.3270V + 0.0484V^2$ |
| 16.9 | $P = -0.0579 + 4.3283V + 0.0497V^2$ |
| 7.4 | $P = -0.0505 + 4.3301V + 0.0517V^2$ |
| 0.3 | $P = -0.0449 + 4.3315V + 0.0531V^2$ |
| 26.9 | $P = -0.0658 + 4.3264V + 0.0477V^2$ |
| 23.2 | $P = -0.0629 + 4.3271V + 0.0484V^2$ |
| 16.6 | $P = -0.0577 + 4.3284V + 0.0498V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-4 | 8:15 p.m. | 2.2631 | 25.0 | 1.7902 | 7.9628 | 7.86003 | -0.10277 | -1.291 |
| 3-5 | 7:20 a.m. | 2.2321 | -0.6 | 1.7416 | 7.8038 | 7.71229 | -0.09151 | -1.173 |
| 3-5 | 9:27 a.m. | 2.2234 | -3.0 | 1.7312 | 7.7455 | 7.67197 | -0.07353 | -.949 |
| 3-5 | 11:05 a.m. | 2.2149 | 2.9 | 1.7268 | 7.7097 | 7.63594 | -0.07376 | -.957 |
| 3-5 | 4:00 p.m. | 2.2446 | 23.2 | 1.7704 | 7.8273 | 7.77609 | -0.05121 | -.654 |
| 3-8 | 7:18 a.m. | 2.7576 | 0.4 | 2.2678 | 10.1410 | 10.09463 | -0.04638 | -.457 |
| 3-8 | 12:10 p.m. | 2.3224 | 5.0 | 1.8357 | 8.1248 | 8.12129 | -0.00351 | -.043 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 25.0 | $P = -0.0563 + 4\ 3510V + 0.0397V^2$ |
| -0.6 | $P = -0.0162 + 4.3638V + 0.0432V^2$ |
| -3.0 | $P = -0.0124 + 4.3650V + 0.0426V^2$ |
| 2.9 | $P = -0.0216 + 4.3621V + 0.0420V^2$ |
| 23.2 | $P = -0.0534 + 4.3518V + 0.0399V^2$ |
| 0.4 | $P = -0.0177 + 4.3633V + 0.0422V^2$ |
| 5.0 | $P = -0.0249 + 4.3610V + 0.0418V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-8 | 1:44 p.m. | 2.2025 | 14.3 | 1.7222 | 7.6595 | 7.58399 | -0.07551 | -.986 |
| 3-8 | 2:43 p.m. | 2.1668 | 18.2 | 1.6961 | 7.5237 | 7.45605 | -0.06765 | -.899 |
| 3-8 | 3:44 p.m. | 2.181 | 21.8 | 1.7059 | 7.5741 | 7.49027 | -0.08383 | -1.107 |
| 3-9 | 7:27 a.m. | 2.418 | -1.2 | 1.9271 | 8.6642 | 8.55235 | -0.11185 | -1.291 |
| 3-9 | 10:18 a.m. | 2.321 | -0.2 | 1.8308 | 8.2149 | 8.11390 | -0.10100 | -1.229 |
| 3-9 | 12:42 p.m. | 2.294 | 9.3 | 1.8103 | 8.0063 | 7.99455 | -0.01175 | -.147 |
| 3-9 | 3:28 p.m. | 2.279 | 21.2 | 1.8034 | 8.0240 | 7.93002 | -0.09398 | -1.171 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 14.3 | $P= -0.0395 + 4.3563V + 0.0408V^2$ |
| 18.2 | $P= -0.0456 + 4.3544V + 0.0404V^2$ |
| 21.8 | $P= -0.0512 + 4.3526V + 0.0400V^2$ |
| -1.2 | $P= -0.0152 + 4.3641V + 0.0424V^2$ |
| -0.2 | $P= -0.0168 + 4.3636V + 0.0423V^2$ |
| 9.3 | $P= -0.0317 + 4.3588V + 0.0413V^2$ |
| 21.2 | $P= -0.0503 + 4.3529V + 0.0401V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-10 | 10:28 a.m. | 2.231 | -0.8 | 1.7404 | 7.7928 | 7.70743 | -0.08537 | -1.095 |
| 3-10 | 12:22 p.m. | 2.281 | 8.5 | 1.7967 | 7.9860 | 7.93549 | -0.05051 | -.633 |
| 3-11 | 11:20 a.m. | 2.273 | 3.6 | 1.7854 | 7.9864 | 7.89824 | -0.08816 | -1.104 |
| 3-11 | 2:27 p.m. | 2.245 | 17.0 | 1.7666 | 7.8631 | 7.77623 | -0.08687 | -1.105 |
| 3-12 | 7:20 a.m. | 2.321 | -1.1 | 1.8301 | 8.2840 | 8.11329 | -0.17071 | -2.061 |
| 3-12 | 2:30 p.m. | 2.285 | 17.1 | 1.8066 | 8.0360 | 7.95594 | -0.08006 | -.996 |
| 3-15 | 8:56 a.m. | 2.187 | -3.0 | 1.6948 | 7.5894 | 7.50777 | -0.08163 | -1.076 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -0.8 | $P= -0.0158 + 4.3639V + 0.0424V^2$ |
| 8.5 | $P= -0.0304 + 4.3592V + 0.0414V^2$ |
| 3.6 | $P= -0.0227 + 4.3617V + 0.0419V^2$ |
| 17.0 | $P= -0.0437 + 4.3550V + 0.0405V^2$ |
| -1.1 | $P= -0.0154 + 4.3641V + 0.0424V^2$ |
| 17.1 | $P= -0.0439 + 4.3549V + 0.0405V^2$ |
| -3.0 | $P= -0.0124 + 4.3650V + 0.0426V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-15 | 12:15 p.m. | 2.248 | 6.1 | 1.7621 | 7.8949 | 7.78621 | -0.10869 | -1.377 |
| 3-15 | 12:58 p.m. | 2.246 | 11.0 | 1.7634 | 7.8777 | 7.77848 | -0.09922 | -1.259 |
| 3-15 | 3:59 p.m. | 2.2370 | 22.6 | 1.7624 | 7.825 | 7.74181 | -0.08319 | -1.063 |
| 3-16 | 9:00 a.m. | 2.3870 | -3.4 | 1.8946 | 8.480 | 8.41161 | -0.06839 | -.807 |
| 3-16 | 10:00 a.m. | 2.3030 | -2.9 | 1.8109 | 8.0792 | 8.03160 | -0.04760 | -.589 |
| 3-16 | 11:03 a.m. | 2.2890 | 1.9 | 1.8002 | 8.0646 | 7.96978 | -0.09482 | -1.176 |
| 3-16 | 12:10 p.m. | 2.2720 | 7.1 | 1.7868 | 7.9830 | 7.89477 | -0.08823 | -1.105 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 6.1 | $P = -0.0267 + 4.3605V + 0.0416V^2$ |
| 11.0 | $P = -0.0343 + 4.3580V + 0.0411V^2$ |
| 22.6 | $P = -0.0525 + 4.3522V + 0.0399V^2$ |
| -3.4 | $P = -0.0118 + 4.3652V + 0.0426V^2$ |
| -2.9 | $P = -0.0126 + 4.3650V + 0.0426V^2$ |
| 1.9 | $P = -0.0201 + 4.3626V + 0.0421V^2$ |
| 7.1 | $P = -0.0282 + 4.3600V + 0.0415V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | CROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-16 | 4:05 p.m. | 2.2650 | 23.0 | 1.7907 | 7.9638 | 7.86787 | -0.09593 | -1.205 |
| 3-17 | 8:10 a.m. | 2.2300 | -3.0 | 1.7378 | 7.7854 | 7.70175 | -0.08365 | -1.074 |
| 3-17 | 10:20 a.m. | 2.2370 | -1.6 | 1.7458 | 7.8060 | 7.73400 | -0.07200 | -.922 |
| 3-17 | 1:10 p.m. | 2.2890 | 12.4 | 1.8074 | 8.0655 | 7.97276 | -0.09274 | -1.150 |
| 3-17 | 7:14 p.m. | 2.3008 | 25.6 | 1.8283 | 8.1364 | 8.02957 | -0.10683 | -1.313 |
| 3-17 | 9:15 p.m. | 2.2863 | 22.3 | 1.8115 | 8.0604 | 7.96335 | -0.10065 | -1.248 |
| 3-17 | 11:16 p.m. | 2.2640 | 15.6 | 1.7846 | 7.9488 | 7.86112 | -0.08768 | -1.103 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 23.0 | $P = -0.0531 + 4.3520V + 0.0399V^2$ |
| -3.0 | $P = -0.0124 + 4.3650V + 0.0426V^2$ |
| -1.6 | $P = -0.0146 + 4.3643V + 0.0424V^2$ |
| 12.4 | $P = -0.0365 + 4.3573V + 0.0410V^2$ |
| 25.6 | $P = -0.0572 + 4.3507V + 0.0396V^2$ |
| 22.3 | $P = -0.0520 + 4.3523V + 0.0400V^2$ |
| 15.6 | $P = -0.0415 + 4.3557V + 0.0407V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-18 | 3:19 a.m. | 2.2065 | 6.4 | 1.7208 | 7.6762 | 7.59931 | -0.07689 | -1.002 |
| 3-18 | 7:21 a.m. | 2.1423 | -1.0 | 1.6515 | 7.3930 | 7.30724 | -0.08576 | -1.160 |
| 3-18 | 8:25 a.m. | 2.1140 | -2.8 | 1.6220 | 7.2564 | 7.17918 | -0.07722 | -1.064 |
| 3-18 | 9:25 a.m. | 2.1250 | -3.0 | 1.6328 | 7.3082 | 7.22835 | -0.07985 | -1.093 |
| 3-18 | 11:20 a.m. | 2.169 | 3.6 | 1.6814 | 7.5449 | 7.42951 | -0.11539 | -1.529 |
| 3-18 | 2:29 p.m. | 2.2640 | 17.1 | 1.7856 | 7.9625 | 7.86143 | -0.10107 | -1.269 |
| 3-18 | 6:27 p.m. | 2.2698 | 25.7 | 1.7973 | 7.9983 | 7.88997 | -0.10833 | -1.354 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 6.4 | $P = -0.0271 + 4.3603V + 0.0416V^2$ |
| -1.0 | $P = -0.0155 + 4.3640V + 0.0424V^2$ |
| -2.8 | $P = -0.0127 + 4.3649V + 0.0426V^2$ |
| -3.0 | $P = -0.0124 + 4.3650V + 0.0426V^2$ |
| 3.6 | $P = -0.0227 + 4.3617V + 0.0419V^2$ |
| 17.1 | $P = -0.0439 + 4.3549V + 0.0405V^2$ |
| 25.7 | $P = -0.0574 + 4.3506V + 0.0396V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | CROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-18 | 9:28 p.m. | 2.2062 | 21.8 | 1.7311 | 7.6994 | 7.60342 | -0.09598 | -1.247 |
| 3-18 | 11:29 p.m. | 2.1555 | 15.0 | 1.6757 | 7.4643 | 7.37308 | -0.09122 | -1.222 |
| 3-19 | 3:31 a.m. | 2.0380 | 6.2 | 1.5522 | 6.9214 | 6.84172 | -0.07968 | -1.151 |
| 3-19 | 7:32 a.m. | 1.8980 | -1.2 | 1.4071 | 6.2842 | 6.20948 | -0.07852 | -1.189 |
| 3-19 | 7:40 p.m. | 2.1536 | 25.8 | 1.6812 | 7.4774 | 7.36860 | -0.10880 | -1.455 |
| 3-19 | 9:41 p.m. | 2.1737 | 21.3 | 1.6982 | 7.5480 | 7.45706 | -0.09094 | -1.205 |
| 3-19 | 11:42 p.m. | 2.1629 | 14.6 | 1.6828 | 7.4914 | 7.40606 | -0.08534 | -1.139 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 21.8 | $P= -0.0512 + 4.3526V + 0.0400V^2$ |
| 15.0 | $P= -0.0406 + 4.3560V + 0.0407V^2$ |
| 6.2 | $P= -0.0268 + 4.3604V + 0.0416V^2$ |
| -1.2 | $P= -0.0152 + 4.3641V + 0.0424V^2$ |
| 25.8 | $P= -0.0575 + 4.3506V + 0.0396V^2$ |
| 21.3 | $P= -0.0505 + 4.3528V + 0.0401V^2$ |
| 14.6 | $P= -0.0400 + 4.3562V + 0.0408V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-20 | 3:44 a.m. | 2.1156 | 6.0 | 1.6296 | 7.2651 | 7.19000 | -0.07510 | -1.034 |
| 3-20 | 7:46 a.m. | 2.0618 | -1.8 | 1.5705 | 7.0186 | 6.94478 | -0.07382 | -1.052 |
| 3-20 | 6:50 p.m. | 2.0909 | 25.8 | 1.6185 | 7.1893 | 7.08762 | -0.10168 | -1.414 |
| 3-20 | 9:57 p.m. | 2.0973 | 20.6 | 1.6213 | 7.2102 | 7.11396 | -0.09624 | -1.335 |
| 3-20 | 11:54 p.m. | 2.0808 | 14.2 | 1.6004 | 7.1258 | 7.03714 | -0.08866 | -1.244 |
| 3-21 | 3:55 a.m. | 2.0360 | 5.6 | 1.5497 | 6.9141 | 6.83206 | -0.08204 | -1.187 |
| 3-21 | 7:57 a.m. | 1.9934 | -2.3 | 1.5017 | 6.7201 | 6.63681 | -0.08329 | -1.239 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 6.0 | $P= -0.0265 + 4.3605V + 0.0417V^2$ |
| -1.8 | $P= -0.0143 + 4.3644V + 0.0425V^2$ |
| 25.8 | $P= -0.0575 + 4.3506V + 0.0396V^2$ |
| 20.6 | $P= -0.0494 + 4.3532V + 0.0401V^2$ |
| 14.2 | $P= -0.0393 + 4.3564V + 0.0408V^2$ |
| 5.6 | $P= -0.0259 + 4.3607V + 0.0417V^2$ |
| -2.3 | $P= -0.0135 + 4.3647V + 0.0425V^2$ |

C-2

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | CROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-21 | 7:03 p.m. | 2.0407 | 25.7 | 1.5682 | 6.9708 | 6.86270 | -0.10810 | -1.551 |
| 3-21 | 9:04 p.m. | 2.0472 | 23.3 | 1.5731 | 6.9944 | 6.89090 | -0.10350 | -1.480 |
| 3-21 | 11:05 p.m. | 2.0371 | 16.5 | 1.5731 | 6.9333 | 6.84233 | -0.09097 | -1.312 |
| 3-22 | 3:07 a.m. | 1.9895 | 6.7 | 1.5040 | 6.7019 | 6.62414 | -0.07776 | -1.160 |
| 3-22 | 7:09 a.m. | 1.9333 | -0.4 | 1.4429 | 6.4509 | 6.36804 | -0.08286 | -1.284 |
| 3-22 | 8:18 a.m. | 1.8970 | -2.6 | 1.4051 | 6.2811 | 6.20399 | -0.07712 | -1.228 |
| 3-22 | 4:00 p.m. | 2.1240 | 23.3 | 1.6499 | 7.3248 | 7.23499 | -0.08981 | -1.226 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 25.7 | $P = -0.0574 + 4.3506V + 0.0396V^2$ |
| 23.3 | $P = -0.0536 + 4.3518V + 0.0398V^2$ |
| 16.5 | $P = -0.0429 + 4.3552V + 0.0406V^2$ |
| 6.7 | $P = -0.0276 + 4.3602V + 0.0416V^2$ |
| -0.4 | $P = -0.0165 + 4.3637V + 0.0423V^2$ |
| -2.6 | $P = -0.0130 + 4.3648V + 0.0425V^2$ |
| 23.3 | $P = -0.0536 + 4.3518V + 0.0398V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-22 | 7:11 p.m. | 2.2635 | 25.7 | 1.7910 | 7.9239 | 7.86166 | -0.06223 | -.785 |
| 3-22 | 9:12 p.m. | 2.3710 | 22.7 | 1.8965 | 8.4309 | 8.34474 | -0.08616 | -1.022 |
| 3-22 | 11:13 p.m. | 2.4534 | 15.9 | 1.9742 | 8.7916 | 8.71505 | -0.07655 | -.871 |
| 3-23 | 3:15 a.m. | 2.5847 | 6.5 | 2.0991 | 9.3637 | 9.30865 | -0.05505 | -.588 |
| 3-23 | 7:24 a.m. | 2.690 | -0.6 | 2.1995 | 9.8587 | 9.78690 | -0.07180 | -.728 |
| 3-23 | 10:20 a.m. | 2.7110 | -1.3 | 2.2200 | 9.9379 | 9.88243 | -0.05548 | -.558 |
| 3-23 | 12:22 p.m. | 2.7640 | 8.3 | 2.2796 | 10.2481 | 10.12271 | -0.12539 | -1.224 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 25.7 | $P = -0.0574 + 4.3506V + 0.0396V^2$ |
| 22.7 | $P = -0.0527 + 4.3521V + 0.0399V^2$ |
| 15.9 | $P = -0.0420 + 4.3555V + 0.0406V^2$ |
| 6.5 | $P = -0.0273 + 4.3603V + 0.0416V^2$ |
| -0.6 | $P = -0.0162 + 4.3638V + 0.0423V^2$ |
| -1.3 | $P = -0.0151 + 4.3642V + 0.0424V^2$ |
| 8.3 | $P = -0.0301 + 4.3593V + 0.0414V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-23 | 1:23 p.m. | 2.7970 | 12.9 | 2.3158 | 10.3714 | 10.27229 | -0.09911 | -.956 |
| 3-23 | 7:22 p.m. | 2.8415 | 25.7 | 2.3690 | 10.5451 | 10.47156 | -0.07654 | -.697 |
| 3-23 | 9:23 p.m. | 2.8345 | 22.1 | 2.3600 | 10.5055 | 10.44271 | -0.06279 | -.598 |
| 3-23 | 11:24 p.m. | 2.8151 | 15.0 | 2.3356 | 10.4115 | 10.35539 | -0.05611 | -.539 |
| 3-24 | 3:26 a.m. | 2.7656 | 6.4 | 2.2799 | 10.1720 | 10.13025 | -0.04175 | -.410 |
| 3-24 | 7:30 a.m. | 2.7090 | -1.0 | 2.2182 | 10.0410 | 9.87328 | -0.14072 | -1.405 |
| 3-24 | 11:32 a.m. | 2.7710 | 4.1 | 2.2837 | 10.2299 | 10.15502 | -0.07488 | -.732 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 12.9 | $P= -0.0373 + 4.3570V + 0.0409V^2$ |
| 25.7 | $P= -0.0574 + 4.3506V + 0.0396V^2$ |
| 22.1 | $P= -0.0517 + 4.3524V + 0.0400V^2$ |
| 15.0 | $P= -0.0406 + 4.3560V + 0.0407V^2$ |
| 6.4 | $P= -0.0271 + 4.3603V + 0.0416V^2$ |
| -1.0 | $P= -0.0155 + 4.3640V + 0.0424V^2$ |
| 4.1 | $P= -0.0235 + 4.3615V + 0.0418V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-24 | 12:33 p.m. | 2.7910 | 9.2 | 2.3072 | 10.3187 | 10.24532 | -0.07338 | -.711 |
| 3-24 | 3:36 p.m. | 2.7580 | 21.2 | 2.2824 | 10.1656 | 10.09348 | -0.07212 | -.709 |
| 3-24 | 7:33 p.m. | 2.7771 | 25.8 | 2.3047 | 10.2542 | 10.17959 | -0.07461 | -.728 |
| 3-24 | 9:34 p.m. | 2.7826 | 21.6 | 2.3073 | 10.2646 | 10.20514 | -0.05946 | -.579 |
| 3-24 | 11:35 p.m. | 2.7619 | 14.8 | 2.2820 | 10.1660 | 10.11248 | -0.05352 | -.526 |
| 3-25 | 3:37 a.m. | 2.7045 | 6.0 | 2.2185 | 9.8955 | 9.85231 | -0.04319 | -.436 |
| 3-25 | 7:42 a.m. | 2.6320 | -1.5 | 2.1409 | 9.5617 | 9.52321 | -0.03849 | -.403 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 9.2 | $P= -0.0315 + 4.3589V + 0.0413V^2$ |
| 21.2 | $P= -0.0503 + 4.3529V + 0.0401V^2$ |
| 25.8 | $P= -0.0575 + 4.3506V + 0.0396V^2$ |
| 21.6 | $P= -0.0509 + 4.3527V + 0.0400V^2$ |
| 14.8 | $P= -0.0403 + 4.3561V + 0.0407V^2$ |
| 6.0 | $P= -0.0265 + 4.3605V + 0.0417V^2$ |
| -1.5 | $P= -0.0148 + 4.3643V + 0.0424V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-25 | 8:42 a.m. | 2.6300 | -2.8 | 2.1380 | 9.6210 | 9.51408 | -0.10692 | -1.111 |
| 3-25 | 7:45 p.m. | 2.8712 | 25.8 | 2.3988 | 10.6832 | 10.60650 | -0.07580 | -.710 |
| 3-25 | 9:46 p.m. | 2.8915 | 21.1 | 2.4159 | 10.7626 | 10.70007 | -0.06253 | -.581 |
| 3-25 | 11:47 p.m. | 2.8996 | 14.6 | 2.4195 | 10.7918 | 10.73846 | -0.05334 | -.494 |
| 3-26 | 3:48 a.m. | 2.8922 | 5.8 | 2.4061 | 10.7472 | 10.70715 | -0.04005 | -.373 |
| 3-26 | 7:52 a.m. | 2.8840 | -2.0 | 2.3925 | 10.7850 | 10.67135 | -0.11365 | -1.054 |
| 3-26 | 1:58 p.m. | 2.6870 | 15.1 | 2.2073 | 9.8279 | 9.77247 | -0.05543 | -.564 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -2.8 | $P = -0.0127 + 4.3649V + 0.0426V^2$ |
| 25.8 | $P = -0.0575 + 4.3506V + 0.0396V^2$ |
| 21.1 | $P = -0.0501 + 4.3529V + 0.0401V^2$ |
| 14.6 | $P = -0.0400 + 4.3562V + 0.0408V^2$ |
| 5.8 | $P = -0.0262 + 4.3606V + 0.0417V^2$ |
| -2.0 | $P = -0.0140 + 4.3645V + 0.0425V^2$ |
| 15.1 | $P = -0.0408 + 4.3559V + 0.0407V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-26 | 6:55 p.m. | 2.5778 | 25.7 | 2.1053 | 9.3611 | 9.27757 | -0.08353 | -.892 |
| 3-26 | 9:57 p.m. | 2.5400 | 20.4 | 2.0639 | 9.1733 | 9.10675 | -0.06655 | -.725 |
| 3-26 | 11:58 p.m. | 2.4891 | 14.1 | 2.0087 | 8.9367 | 8.87628 | -0.06042 | -.676 |
| 3-27 | 3:59 a.m. | 2.3572 | 5.4 | 1.9008 | 8.4630 | 8.41419 | -0.04881 | -.577 |
| 3-27 | 7:01 a.m. | 2.3129 | -0.1 | 1.8227 | 8.1252 | 8.07702 | -0.04818 | -.593 |
| 3-27 | 7:06 p.m. | 2.2579 | 25.8 | 1.7855 | 7.9047 | 7.83668 | -0.06802 | -.861 |
| 3-27 | 9:07 p.m. | 2.2571 | 23.1 | 1.7829 | 7.8953 | 7.83254 | -0.06276 | -.795 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 25.7 | $P= -0.0574 + 4.3506V + 0.0396V^2$ |
| 20.4 | $P= -0.0491 + 4.3533V + 0.0402V^2$ |
| 14.1 | $P= -0.0392 + 4.3564V + 0.0408V^2$ |
| 5.4 | $P= -0.0256 + 4.3608V + 0.0417V^2$ |
| -0.1 | $P= -0.0169 + 4.3636V + 0.0423V^2$ |
| 25.8 | $P= -0.0575 + 4.3506V + 0.0396V^2$ |
| 23.1 | $P= -0.0533 + 4.3519V + 0.0399V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | CROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-27 | 11:08 p.m. | 2.2402 | 16.3 | 1.7613 | 7.8529 | 7.75433 | -0.09857 | -1.255 |
| 3-28 | 3:10 a.m. | 2.1707 | 6.6 | 1.6851 | 7.4912 | 7.43805 | -0.05315 | -.709 |
| 3-28 | 7:12 a.m. | 2.0925 | -0.4 | 1.6021 | 7.1193 | 7.08326 | -0.03604 | -.506 |
| 3-28 | 7:18 p.m. | 2.1432 | 25.7 | 1.6707 | 7.3939 | 7.32179 | -0.07211 | -.975 |
| 3-28 | 9:19 p.m. | 2.1275 | 22.4 | 1.6528 | 7.3321 | 7.25040 | -0.08170 | -1.114 |
| 3-28 | 11:20 p.m. | 2.0998 | 15.5 | 1.6203 | 7.1905 | 7.12300 | -0.06750 | -.939 |
| 3-29 | 3:20 a.m. | 2.0314 | 6.4 | 1.5457 | 6.7941 | 6.81202 | 0.01792 | .264 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 16.3 | $P= -0.0426 + 4.3553V + 0.0406V^2$ |
| 6.6 | $P= -0.0274 + 4.3602V + 0.0416V^2$ |
| -0.4 | $P= -0.0165 + 4.3637V + 0.0423V^2$ |
| 25.7 | $P= -0.0594 + 4.3506V + 0.0396V^2$ |
| 22.4 | $P= -0.0522 + 4.3523V + 0.0399V^2$ |
| 15.5 | $P= -0.0414 + 4.3557V + 0.0407V^2$ |
| 6.4 | $P= -0.0271 + 4.3603V + 0.0416V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-29 | 7:22 a.m. | 1.9610 | -0.9 | 1.4703 | 6.5666 | 6.49225 | -0.07435 | -1.132 |
| 3-29 | 8:25 a.m. | 1.9210 | -2.8 | 1.4290 | 6.3997 | 6.31168 | -0.08802 | -1.375 |
| 3-29 | 12:27 a.m. | 2.0220 | 8.7 | 1.5379 | 6.8871 | 6.77107 | -0.11603 | -1.685 |
| 3-29 | 7:28 p.m. | 2.3239 | 25.6 | 1.8514 | 8.2269 | 8.13344 | -0.09346 | -1.136 |
| 3-29 | 9:29 p.m. | 2.3649 | 21.6 | 1.8896 | 8.3949 | 8.31684 | -0.07806 | -.930 |
| 3-29 | 11:30 p.m. | 2.3796 | 14.9 | 1.8997 | 8.4579 | 8.38173 | -0.07617 | -.901 |
| 3-30 | 3:32 a.m. | 2.3920 | 6.0 | 1.9060 | 8.4930 | 8.43596 | -0.05704 | -.672 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -0.9 | $P= -0.0157 + 4.3640V + 0.0424V^2$ |
| -2.8 | $P= -0.0127 + 4.3649V + 0.0426V^2$ |
| 8.7 | $P= -0.0307 + 4.3591V + 0.0414V^2$ |
| 25.6 | $P= -0.0572 + 4.3507V + 0.0396V^2$ |
| 21.6 | $P= -0.0509 + 4.3527V + 0.0400V^2$ |
| 14.9 | $P= -0.0404 + 4.3560V + 0.0407V^2$ |
| 6.0 | $P= -0.0265 + 4.3605V + 0.0416V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | CROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-27 | 11:08 p.m. | 2.2402 | 16.3 | 1.7613 | 7.8529 | 7.75433 | -0.09857 | -1.255 |
| 3-28 | 3:10 a.m. | 2.1707 | 6.6 | 1.6851 | 7.4912 | 7.43805 | -0.05315 | -.709 |
| 3-28 | 7:12 a.m. | 2.0925 | -0.4 | 1.6021 | 7.1193 | 7.08326 | -0.03604 | -.506 |
| 3-28 | 7:18 p.m. | 2.1432 | 25.7 | 1.6707 | 7.3939 | 7.32179 | -0.07211 | -.975 |
| 3-28 | 9:19 p.m. | 2.1275 | 22.4 | 1.6528 | 7.3321 | 7.25040 | -0.08170 | -1.114 |
| 3-28 | 11:20 p.m. | 2.0998 | 15.5 | 1.6203 | 7.1905 | 7.12300 | -0.06750 | -.939 |
| 3-29 | 3:20 a.m. | 2.0314 | 6.4 | 1.5457 | 6.7941 | 6.81202 | 0.01792 | .264 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 16.3 | $P = -0.0426 + 4.3553V + 0.0406V^2$ |
| 6.6 | $P = -0.0274 + 4.3602V + 0.0416V^2$ |
| -0.4 | $P = -0.0165 + 4.3637V + 0.0423V^2$ |
| 25.7 | $P = -0.0594 + 4.3506V + 0.0396V^2$ |
| 22.4 | $P = -0.0522 + 4.3523V + 0.0399V^2$ |
| 15.5 | $P = -0.0414 + 4.3557V + 0.0407V^2$ |
| 6.4 | $P = -0.0271 + 4.3603V + 0.0416V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-29 | 7:22 a.m. | 1.9610 | -0.9 | 1.4703 | 6.5666 | 6.49225 | -0.07435 | -1.132 |
| 3-29 | 8:25 a.m. | 1.9210 | -2.8 | 1.4290 | 6.3997 | 6.31168 | -0.08802 | -1.375 |
| 3-29 | 12:27 a.m. | 2.0220 | 8.7 | 1.5379 | 6.8871 | 6.77107 | -0.11603 | -1.685 |
| 3-29 | 7:28 p.m. | 2.3239 | 25.6 | 1.8514 | 8.2269 | 8.13344 | -0.09346 | -1.136 |
| 3-29 | 9:29 p.m. | 2.3649 | 21.6 | 1.8896 | 8.3949 | 8.31684 | -0.07806 | -.930 |
| 3-29 | 11:30 p.m. | 2.3796 | 14.9 | 1.8997 | 8.4579 | 8.38173 | -0.07617 | -.901 |
| 3-30 | 3:32 a.m. | 2.3920 | 6.0 | 1.9060 | 8.4930 | 8.43596 | -0.05704 | -.672 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -0.9 | $P= -0.0157 + 4.3640V + 0.0424V^2$ |
| -2.8 | $P= -0.0127 + 4.3649V + 0.0426V^2$ |
| 8.7 | $P= -0.0307 + 4.3591V + 0.0414V^2$ |
| 25.6 | $P= -0.0572 + 4.3507V + 0.0396V^2$ |
| 21.6 | $P= -0.0509 + 4.3527V + 0.0400V^2$ |
| 14.9 | $P= -0.0404 + 4.3560V + 0.0407V^2$ |
| 6.0 | $P= -0.0265 + 4.3605V + 0.0416V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-30 | 7:23 a.m. | 2.3720 | -1.2 | 1.8811 | 8.4613 | 8.34417 | -0.11713 | -1.384 |
| 3-30 | 3:40 p.m. | 2.3070 | 21.6 | 1.8317 | 8.1520 | 8.05619 | -0.09581 | -1.175 |
| 3-30 | 7:39 p.m. | 2.3630 | 25.7 | 1.8905 | 8.3985 | 8.30906 | -0.08944 | -1.065 |
| 3-30 | 9:40 p.m. | 2.3974 | 21.2 | 1.9218 | 8.5362 | 8.46307 | -0.07313 | -.857 |
| 3-30 | 11:41 p.m. | 2.4055 | 14.4 | 1.9253 | 8.5741 | 8.49869 | -0.07541 | -.880 |
| 3-31 | 3:34 a.m. | 2.4022 | 5.9 | 1.9162 | 8.5363 | 8.48235 | -0.05395 | -.632 |
| 3-31 | 7:47 a.m. | 2.3637 | -1.8 | 1.8724 | 8.3488 | 8.30654 | -0.04226 | -.506 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -1.2 | $P= -0.0152 + 4.3641V + 0.0424V^2$ |
| 21.6 | $P= -0.0509 + 4.3527V + 0.0400V^2$ |
| 25.7 | $P= -0.0574 + 4.3506V + 0.0396V^2$ |
| 21.2 | $P= -0.0503 + 4.3529V + 0.0401V^2$ |
| 14.4 | $P= -0.0397 + 4.3563V + 0.0408V^2$ |
| 5.9 | $P= -0.0263 + 4.3606V + 0.0417V^2$ |
| -1.8 | $P= -0.0143 + 4.3644V + 0.0425V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 3-31 | 8:47 a.m. | 2.3310 | -2.9 | 1.8389 | 8.2176 | 8.15818 | -0.05942 | -.723 |
| 3-31 | 10:49 a.m. | 2.2990 | 0.8 | 1.8095 | 8.0696 | 8.01487 | -0.05473 | -.678 |
| 3-31 | 6:50 p.m. | 2.3164 | 25.7 | 1.8439 | 8.1953 | 8.09943 | -0.09587 | -1.170 |
| 3-31 | 9:52 p.m. | 2.3802 | 20.6 | 1.9042 | 8.4625 | 8.38551 | -0.07699 | -.910 |
| 3-31 | 11:52 p.m. | 2.3945 | 14.2 | 1.9141 | 8.5238 | 8.44873 | -0.07507 | -.881 |
| 4-1 | 3:55 a.m. | 2.4011 | 5.6 | 1.9148 | 8.5362 | 8.47689 | -0.05931 | -.695 |
| 4-1 | 7:57 a.m. | 2.3599 | -2.3 | 1.8682 | 8.3399 | 8.28897 | -0.05093 | -.611 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -2.9 | $P= -0.0126 + 4.3650V + 0.0426V^2$ |
| 0.8 | $P= -0.0184 + 4.3631V + 0.0422V^2$ |
| 25.7 | $P= -0.0574 + 4.3506V + 0.0396V^2$ |
| 20.6 | $P= -0.0494 + 4.3532V + 0.0401V^2$ |
| 14.2 | $P= -0.0393 + 4.3564V + 0.0408V^2$ |
| 5.6 | $P= -0.0259 + 4.3607V + 0.0417V^2$ |
| -2.3 | $P= -0.0135 + 4.3647V + 0.0425V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 4-1 | 8:57 a.m. | 2.3250 | -2.8 | 1.8330 | 8.1762 | 8.13121 | -0.04499 | -.550 |
| 4-1 | 7:01 p.m. | 2.2592 | 25.8 | 1.7868 | 7.9440 | 7.84252 | -0.10148 | -1.277 |
| 4-1 | 9:02 p.m. | 2.2370 | 23.5 | 1.7630 | 7.8259 | 7.74201 | -0.08389 | -1.072 |
| 4-1 | 11:03 p.m. | 2.2040 | 16.7 | 1.7254 | 7.6710 | 7.59180 | -0.07920 | -1.032 |
| 4-2 | 3:05 a.m. | 2.1343 | 6.8 | 1.6489 | 7.3417 | 7.27466 | -0.06704 | -.913 |
| 4-2 | 7:27 a.m. | 2.0630 | -0.1 | 1.5728 | 7.0060 | 6.95068 | -0.05532 | -.790 |
| 4-2 | 3:13 p.m. | 2.1230 | 20.1 | 1.6467 | 7.3474 | 7.22920 | -0.11820 | -1.609 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| -2.8 | $P = -0.0127 + 4.3649V + 0.0426V^2$ |
| 25.8 | $P = -0.0575 + 4.3506V + 0.0396V^2$ |
| 23.8 | $P = -0.0539 + 4.3517V + 0.0398V^2$ |
| 16.7 | $P = -0.0433 + 4.3551V + 0.0405V^2$ |
| 6.8 | $P = -0.0278 + 4.3601V + 0.0416V^2$ |
| -0.1 | $P = -0.0169 + 4.3636V + 0.0423V^2$ |
| 20.1 | $P = -0.0486 + 4.3534V + 0.0402V^2$ |

SECOND ORDER FIT WITH CORRECTED ZERO-NO ENDPOINTS
1591

| DATE | TIME | GROSS OUTPUT (V) | TEMP (°C) | CORRECTED OUTPUT (V) | TRUE PRESSURE (mB) | COMPUTED PRESSURE (mB) | DEVIATION COMPUTED-TRUE (mB) | PERCENT OF READING |
|---|---|---|---|---|---|---|---|---|
| 4-2 | 7:14 p.m. | 2.2211 | 25.7 | 1.7486 | 7.7727 | 7.67126 | -0.10145 | -1.305 |
| 4-2 | 9:15 p.m. | 2.2783 | 22.7 | 1.8038 | 8.0151 | 7.92760 | -0.08750 | -1.092 |
| 4-2 | 11:16 p.m. | 2.3117 | 16.0 | 1.8326 | 8.1430 | 8.07612 | -0.06688 | -.821 |
| 4-3 | 3:18 a.m. | 2.3531 | 6.5 | 1.8675 | 8.3090 | 8.26059 | -0.04841 | -.583 |
| 4-3 | 7:21 a.m. | 2.3806 | -0.6 | 1.8901 | 8.4227 | 8.38315 | -0.03955 | -.470 |
| 4-3 | 7:28 p.m. | 2.7277 | 25.8 | 2.2553 | 9.9538 | 9.95575 | -0.00195 | -.020 |
| 4-3 | 9:29 p.m. | 2.7732 | 22.1 | 2.2983 | 10.1672 | 10.16267 | -0.00453 | -.045 |
| 4-3 | 11:30 p.m. | 2.8110 | 15.3 | 2.3314 | 10.3078 | 10.33531 | 0.02751 | .267 |

| TEMPERATURE | PRESSURE EQUATION |
|---|---|
| 25.7 | $P= -0.0574 + 4.3506V + 0.0396V^2$ |
| 22.7 | $P= -0.0527 + 4.3521V + 0.0399V^2$ |
| 16.0 | $P= -0.0422 + 4.3555V + 0.0406V^2$ |
| 6.5 | $P= -0.0273 + 4.3603V + 0.0416V^2$ |
| -0.6 | $P= -0.0162 + 4.3638V + 0.0423V^2$ |
| 25.8 | $P= -0.0575 + 4.3506V + 0.0396V^2$ |
| 22.1 | $P= -0.0517 + 4.3524V + 0.0400V^2$ |
| 15.3 | $P= -0.0411 + 4.3558V + 0.0407V^2$ |