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PREPARED BY

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SUBMITTED TO

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ASCENSION #1

WELL TEST REPORT

TESTED DECEMBER 1986

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ACKNOWLEDGEMENTS

This report and the test that it describes are the result of team efforts. The well test was conducted by a team comprised of people from EG&G and WPT. The report and analyses contained in it were also prepared by a team of people. The report was published by Well Production Testing, but the contents are a result of the efforts of the following people (in alphabetical order):

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Special thanks and acknowledgment to Gary Berglund, the EG&G field manager, for his input and review of the report, and James Thompson who performed the post-test well logging.

Ascension #1 project geology and drilling were managed by the University of Utah Research Institute, Earth Sciences Laboratory (UURI). The chemical analysis was performed, for the most part, by UURI. The figures used in the background section as well as the chemical plots were provided by UURI and we wish to acknowledge their contribution to this report.

ASCENSION #1 WELL TEST REPORT

Tested December 1986

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1. SUMMARY

This report documents the test of Ascension #1 that was performed during December 1986 and January 1987. Included is a description of the test, the data collected and the conclusions reached.

The test was originally planned as a single-phase pumped well test. The well, however, produced a mixture of CO_2 and water and was self-flowing. Pressure and temperature measurements were made at the wellhead and at points along the flowline. An orifice originally planned for a single-phase flow measurement was used to estimate two-phase mass flow. Water to gas ratios were estimated using a sample line with a condenser.

A total of sixteen downhole temperature and pressure surveys were conducted, thirteen just prior to and during the test, and three approximately a month after the test. The maximum downhole temperature recorded during the test was 457 °F at 8600 feet. The formation equilibrium temperature projected from a Horner Analysis at 8640 feet is 419°F. The pojected temperature gradient ranges between 23.7°F/100 feet and 1.0°F/100 feet. The temperature gradient in the bottom 350 feet of the well appears to be at the higher end of this range, but there is considerable doubt that it is as high as 23.7°F/100 feet.

Lithologic data[1] and analyses of test data indicate that the well has encountered a CO_2-rich zone at a depth of about 8050 feet, with the permeable zone extending to a depth of about 8400 feet. The well has no significant water inflow zones and there appear to be no inflows below a depth of 8400 feet. The proportion of water and CO_2 being produced by the well are difficult to determine due to the complex downhole conditions. Over a period of time, the well appears to develop a semi-stable two-phase gas froth condition rather than an all-liquid column.

Initial chemical analyses indicate that the produced water is similar to seawater chemistry, although enriched in calcium. The complex downhole condition precludes a determination of fluid chemistry under reservoir conditions.

Data to date are not conclusive in supporting the existence of a hydrothermal resource, however, further exploration appears warranted. The continuous flow of CO_2 indicates that its source is not an isolated pocket. The existence of CO_2 in a reservoir of some size positioned just above an apparent increase in temperature gradient are positive indications that there is a hydrothermal resource in the area penetrated by this well. The postulated resource may either be deeper in this bore or in close proximity.

2. BACKGROUND

Ascension #1 was drilled as an exploratory well as part of a joint UURI/EG&G project being conducted for the United States Air Force, Eastern Space and Missile Center, Patrick Air Force Base, Florida. The objective of the Ascension Geothermal Project is to evaluate the geothermal potential on Ascension and to develop a power generation system should sufficient resource be identified.

Ascension Island is located about 5000 miles southeast of Florida, approximately 8° south of the equator. The island is owned by the British and supports communications operations by the British Broadcasting Corporation, Cable and Wireless Public Limited, the Composite Signals Organization and the South Atlantic Cable Company. Land on the island is leased to the U.S. Air Force and to NASA for downrange tracking operations.

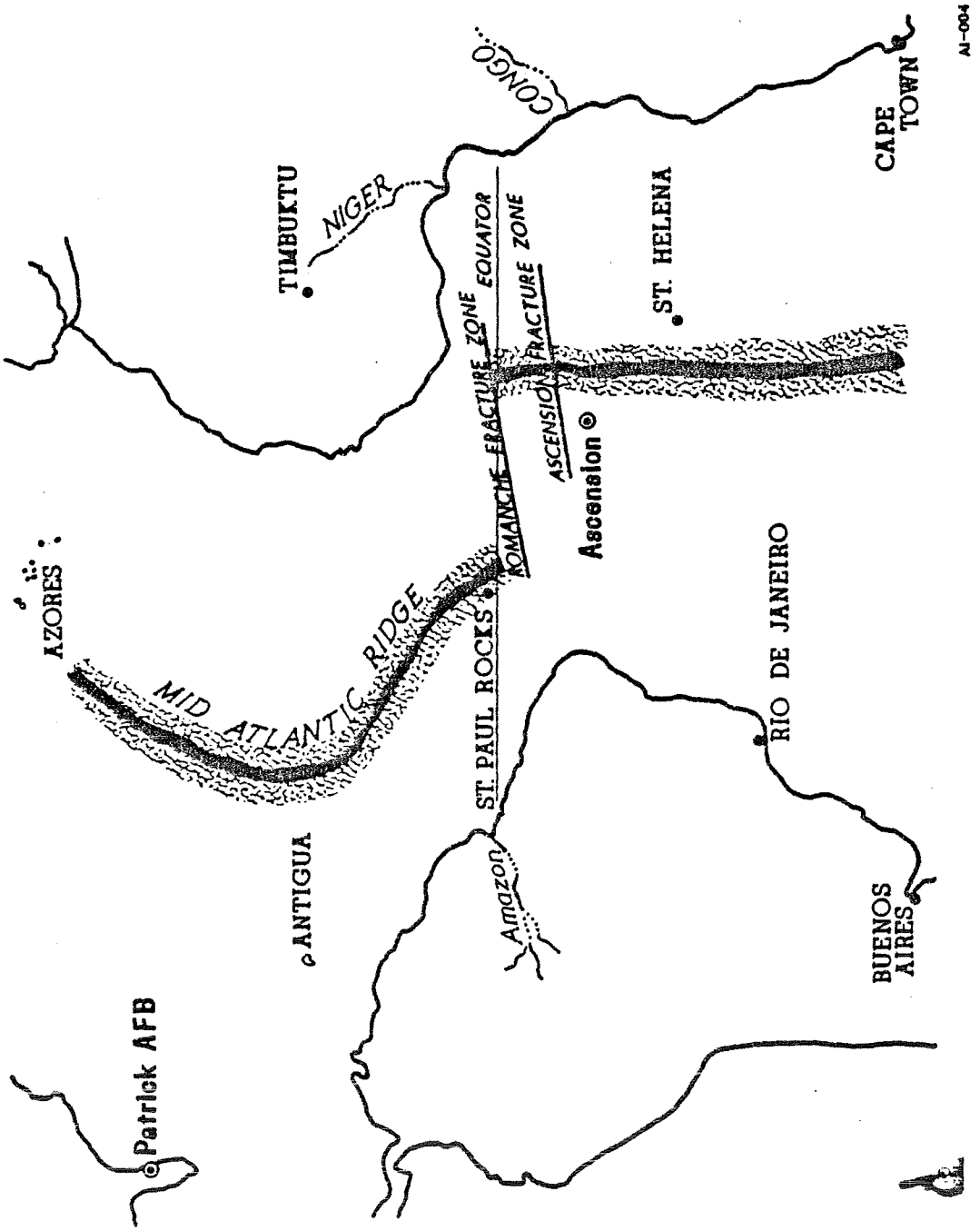
The island is located about 100 km west of the mid-Atlantic Ridge and 50 km south of the Ascension Fracture Zone (Figure 2-1). Ascension is composed almost entirely of volcanic rocks, with minor alluvium and limited beach sand deposits. It represents the top of a volcanic mountain which rises 4 km above the sea floor and 900 m above sea level[2].

The Ascension Geothermal Project began in 1982 with geologic mapping of the island. Geophysical surveys were conducted in 1983 to further define the geologic structure of the island and to identify potential exploration targets. Seven temperature gradient wells were drilled to depths ranging from 206 to 1750 feet in late 1983. The maximum temperature measured in the holes was 130°F in GH-6. Bottomhole temperature gradients ranged from gradients apparently buffered to sea water temperature up to gradients of 72°C/km[3].

Analyses of the data collected during the exploration phases of the project indicated the potential presence of a

moderate- to high-temperature geothermal system beneath Ascension Island. The most prospective area was identified in the vicinity of Middleton Ridge near the center of the island and the drilling of a deep test hole was recommended[3].

Figure 2-1 ASCENSION ISLAND LOCATION MAP



3. DRILLING AND COMPLETION

Ascension #1 was sited on the west end of Middleton Ridge in a rift zone and an area of low resistivity (Figure 3-1). The well is located approximately 3 miles from the U.S. Air Force base at an elevation of 573 feet above sea level. Drilling began August 3, 1986, and was completed on November 25, 1986. Operations were suspended for about two months at a depth of 4600 feet pending delivery of supplies.

A schematic of the well is shown in Figure 3-2. The hole is cased to 4548 feet with $7^{5}/_{8}$-inch casing and is completed with a $6\text{-}^{3}/_{4}$-inch openhole section to a total depth of 8706 feet. The openhole section was drilled with air mist/foam.

The upper 4000 feet of the well penetrate trachyte/pyroclastic deposits and basalt flows. Significant lost circulation zones were encountered to a depth of 1770 feet. The maximum temperature encountered while drilling the upper section of the hole was 200° F at 4473 feet. After the two-month standby, this temperature had increased to about 270°F.

The openhole section penetrates primarily hyaloclastite formations and basalt flows. At a depth of 8050 feet, calcite veining was encountered. The CO_2 concentration in the drilling fluid return line increased from about 3000 ppm to about 13,000 ppm. A minor increase in methane was also noted at this depth. Hydrogen sulfide concentrations ranged from 2 to 5 ppm over the openhole section, with no notable increase at 8050 feet.

The bottom 300 feet of the well penetrate a granitic intrusive. Drilling was suspended at a depth of 8706 feet, the limit of the available drill pipe, pending the results of the well test and data analysis.

No substantial water entries were encountered while drilling the openhole section; however, possible water entries were noted on the mud log at depths of 6317, 6655, 8120, 8250 and 8370 feet. Extremely high drilling rates over short intervals were experienced between 8040 and 8420 feet, a potential indication of fractures.

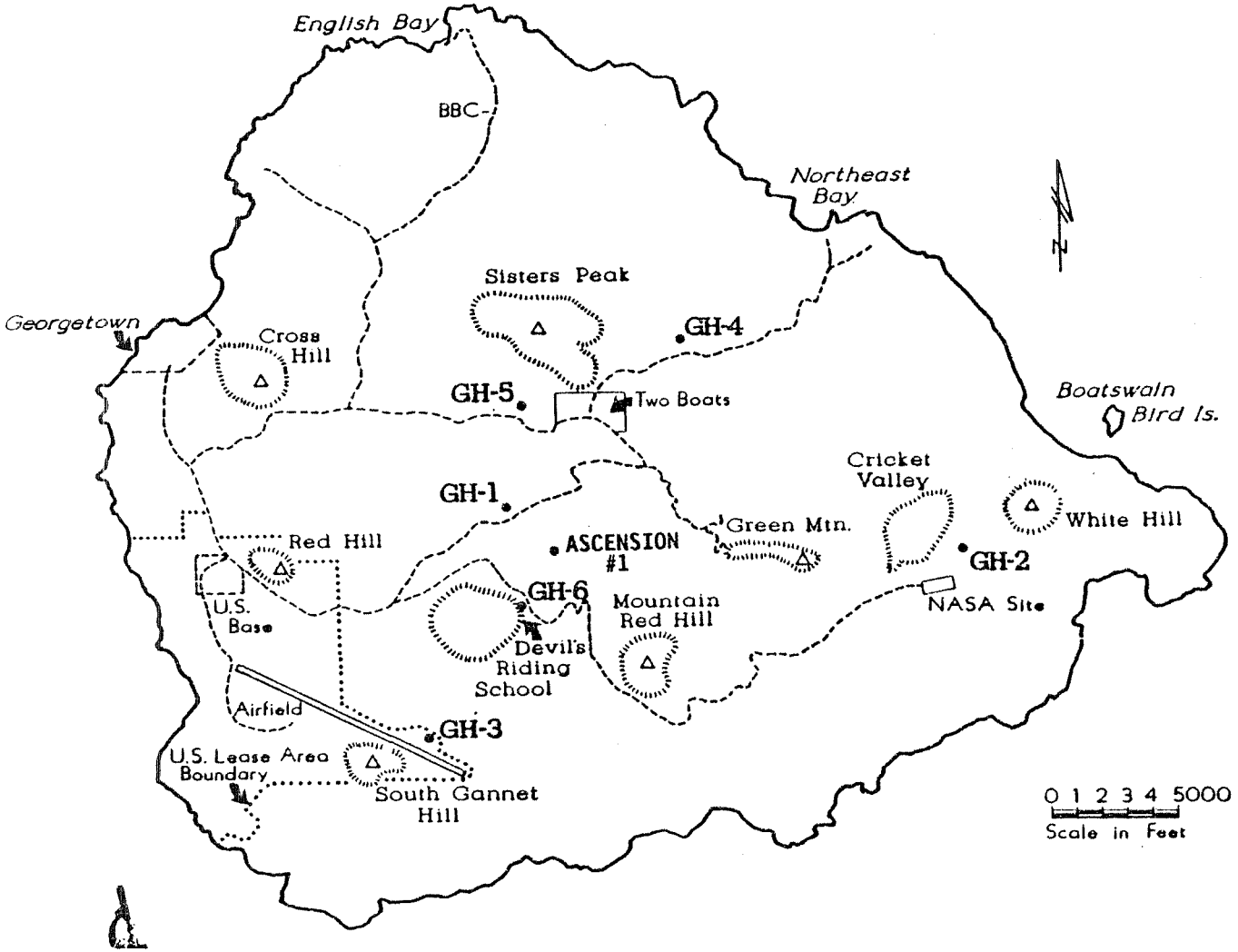
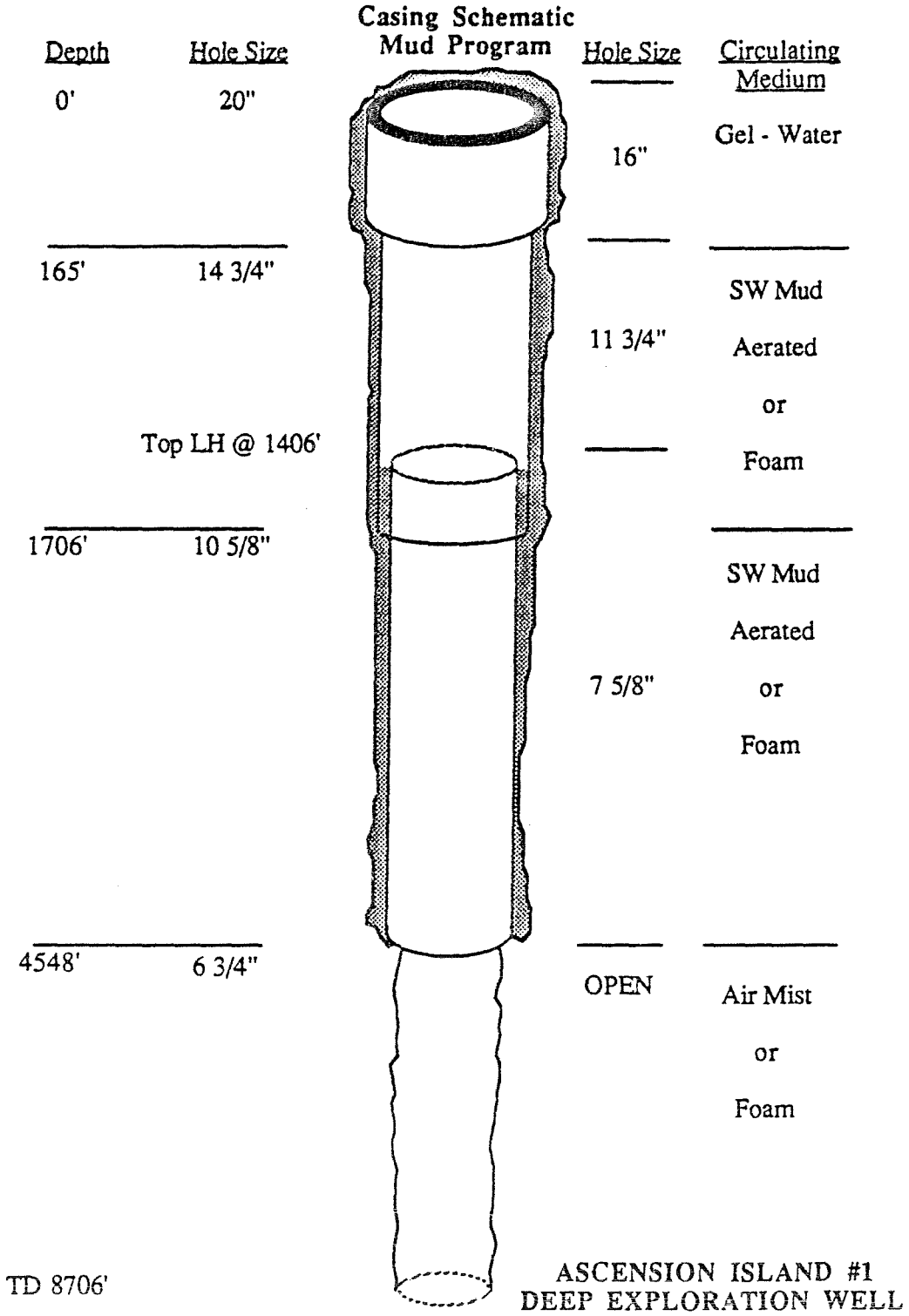


Figure 3-1 WELL LOCATION MAP

Figure 3-2 ASCENSION #1 WELL DESIGN



4. TEST EQUIPMENT

The conditions encountered while drilling and testing Ascension #1 were radically different than those that were assumed in the Test Plan[4] and that were used to generate the specifications for the surface flow test equipment design. The equipment was designed to test a single-phase, pumped liquid resource. However, the well produced a two-phase fluid consisting of CO_2 and subcooled water with brief periods of two-phase water and CO_2. The well was self flowing and the pump was not required.

4.1. Mechanical System

The flow line constructed for the test was modified to allow it to accommodate the drilling rig left over the hole and to attach to a ten-inch flange on the BOPE stack. Figure 4-1 is a piping and instrumentation diagram of the system and Figure 4-2 is a plan schematic of the test equipment. A four-inch vent line was installed on the wellhead in the position that the flow line was originally intended to occupy. This line provided the ability to isolate the flow line without shutting in the well. The vent line was attached to one of the three-inch wellhead wing valves and was constructed from the four-inch pipe that was intended for the pressure relief system on the original flow system and from some three-inch water pipe that was on site.

The flow piping was attached to a twelve-inch tee above the master valve and was lengthened by adding 38 feet of 10-inch casing that was available on site. The casing was run at the elevation of the tee and connected to the downcomer that was included with the original flow system. The original flow system was hydrostatically tested to 650 psig prior to shipping. There were no provision on the island to perform a hydrostatic on the modified system. The orifice plate installed in the eight-inch diameter line had a diameter of 5.871 inches, and remained in the system for the entire test. A four-inch

James Tube was attached to the end of the flow unit for the entire test.

A two-phase sample rake was fashioned from 1/4-inch stainless steel tube and RTD installation hardware. The two-phase sample rake was placed horizonially in the sample port to allow for extraction of fluid samples that better represented the true character of the mixed properties of the fluid. A schematic of the two-phase rake is included in Figure 4-1. The rake is described in section 8.2 of this report.

The flow equipment as modified enabled testing of the well and all the equipment functioned as intended.

4.2. Instrumentation

The flow test instrumentation that was installed was also quite different than originally envisioned and specified in the Test Plan[4]. A schematic of the instrumentation used during the test is shown as Figure 4-3. Table 4-1 is a list of all the instrumentation that was used on the test. The primary data were obtained electronically with a digital data acquisition system using electronic measurement devices. A complete manual system was also installed as a backup to the digital system. Recording pressure and differential pressure devices (Barton meters) were supplied for the wellhead and orifice, respectively, but proved to be of little value. The wellhead Barton meter had a 0 to 600 psig bellows to be consistent with a pumped single-phase test, while the actual pressures at the wellhead for the majority of the test were in the vicinity of 10 psig. The instrumentation piping on the orifice differential pressure taps made measurement of the pressure drop across the orifice difficult. In a two-phase environment "isolation pots" should be used to assure a common and consistent head of water on the instrument. As a result the Barton meter was removed in favor of a "U" tube manometer in an attempt to simplify the differential pressure measurement. Obtaining good measurements

at the low pressures encountered in a two-phase system proved to be difficult.

A schematic of the digital data acquisition system used for the test is included as Figure 4-4. Three types of sensors were used. Pressure was measured with Paroscientific crystal transducers and Honeywell strain gauge pressure transducers. Temperature was measured using Resistance Temperature measuring Devices (RTDs).

All of the instruments were calibrated on site prior to installation and the data acquisition computer program utilized the coefficients that resulted from the pressure transducer calibration. No calibration coefficients were required for the RTDs. The location of each instrument and the coefficients used are included in Table 4-2, and a discussion of the instrument accuracy can be found in section 6.3 of this report.

4.3. Data Acquisition

Data were taken both electronically and manually during the test. Copies of the manual data sheets are included as Appendix C. The actual data reduction was performed using the electronic data, with the exception of the orifice pressure drop. The manual data were taken to provide a backup and to provide a redundant and diverse measurement to assure data quality.

A schematic of the digital data acquisition system is included as Figure 4-4. There were two types of electronic instruments used to collect data and each required different conditioning equipment. The strain gauge type pressure transducers and the RTDs produced analog signals that were converted to digital values in an Omega analog-to-digital converter. The Omega is a 64,000 byte digital computer that contains twelve 4 to 20 milliampere loops. The WPT Omega Board has been modified to provide a power supply and loop for four

strain gauge pressure transducers. The digital signals were routed to a 640 byte specially equipped IBM-compatible micro-computer.

The Paroscientific transducers produce an frequency modulated (FM) signal. The Paro signal and be "counted" either in a Paroscientific computer or on countercards in the micro-computer. The counter cards were kept as backup and the Paroscientific computer was used to condition the signal and to digitize it for recording on Ascension Island.

The micro-computer used during the test was equipped with two floppy disc drives, and a special program was written to write the data on both the line printer and a floppy disk drive. The computer program was written specifically for this test and is included as Appendix D.

TABLE 4-1

ASCENSION #1 INSTRUMENTATION
FOR
THE DECEMBER 1986 FLOW TEST

P&ID NAME	DESCRIPTION	TYPE	RANGE AND ACCURACY
PA	PRESSURE, AMBIENT	PARO	0-900 PSIA ±0.05%
TA	TEMPERATURE, AMBIENT	RTD	0-500°F, ± 1%
P1A	PRESSURE, WELLHEAD	GAUGE	0-100, 1-300 OR 0-800 PSIG, ±1 OR 2%
P1	PRESSURE, WELLHEAD	BART.	0-600 PSIG, ± 1%
PWH	PRESSURE, WELLHEAD	PARO.	0-900 PSIA, ±0.05%
TWH	TEMP., WELLHEAD	RTD	0-500°F, ± 1%
T1	TEMP., WELLHEAD	DIAL.	100-700°F, ± 1%
P2	PRESSURE, FLOW LINE	GAUGE	0-100 & 0-600 PSIG, ± 2%
P2	PRESSURE, FLOW LINE	HWELL	0-600 PSIG, ± 1%
T2	TEMP. FLOW LINE	DIAL.	100-700°F, ± 1%
T2	TEMP. FLOW LINE	RTD	100-700°F, ± 1%
PO	PRESSURE, ORIFICE	PARO	0-600 PSIA ± .05%
DP	DIFFERENTIAL PRESS	HWELL	0-90 PSIG ± 1%
DP	DIFFERENTIAL PRESS	MANO.	VAR. AS FUNCTION OF FLUID
PJ	PRESSURE, JAMES TUBE	PARO	0-400 PSIA, ±0.05 %
PJ	PRESSURE, JAMES TUBE	GAUGE	0-100 PSIA, ± 2%

LEGEND:

PARO = PAROSCIENTIFIC CRYSTAL PRESSURE TRANSDUCER
RTD = RESISTANCE TEMPERATURE MEASUREMENT DEVICE
GAUGE = BOURDON TUBE PRESSURE GAUGE
BART. = BARTON METER WITH CIRCULAR CHART
DIAL = DIAL TEMPERATURE INDICATOR
HWELL = HONEYWELL STRAIN GAUGE PRESSURE TRANSDUCER
MANO = "U" TUBE MANOMETER - USED WATER AND 1.75 SPECIFIC GRAVITY FLUIDS AT DIFFERENT TIMES

TABLE 4-2

ELECTRONIC INSTRUMENT LOCATION
and
COEFFICIENTS

LOCATION	SERIAL NUMBER	ACQUISITION COEFFICIENTS
PA	PARO 26196	Zero offset=0.307, C=4612.84, D=0.0136887, τ_o=25.60759
PWH	PARO 11874	Zero Offset=0.057, C=5028.66, D=-0.00505, τ_o=24.43285
PO	PARO 26195	Zero Offset=0.067, C=4525.07, D=0.0264811, τ_o=25.88765
PJ	PARO 11242	Zero Offset=0.127, C=1981.14, D=0.00424, τ_o=24.78983
DP	Honeywell 7934	DP=(SIGNAL-19.7)*0.9
P2	Honeywell 7933	P2=(SIGNAL-20.8)*7.04+PA

LEGEND:

PA=Ambient Pressure, psia
PWH=Wellhead Pressure, psia
PO=Orifice Upstream Pressure, psia
PJ=Pressure James Tube, psia
DP=Orifice Differential Pressure, psid
P2=Pressure in the Flow line, psia

The coefficients C, D and τ_o are defined by the equation:

$$P=C([1-(\tau/\tau_o)^3]-D[1-(\tau/\tau_o)^3]^3)$$

used to convert the Paroscietific signal (τ) to pressure. These coefficients are supplied by Paroscientific.

The RTD signals are found by measuring the resistance change in a 4 to 20 milliamp loop:

$$T(^oF)=SIGNAL*1.8+32.0$$

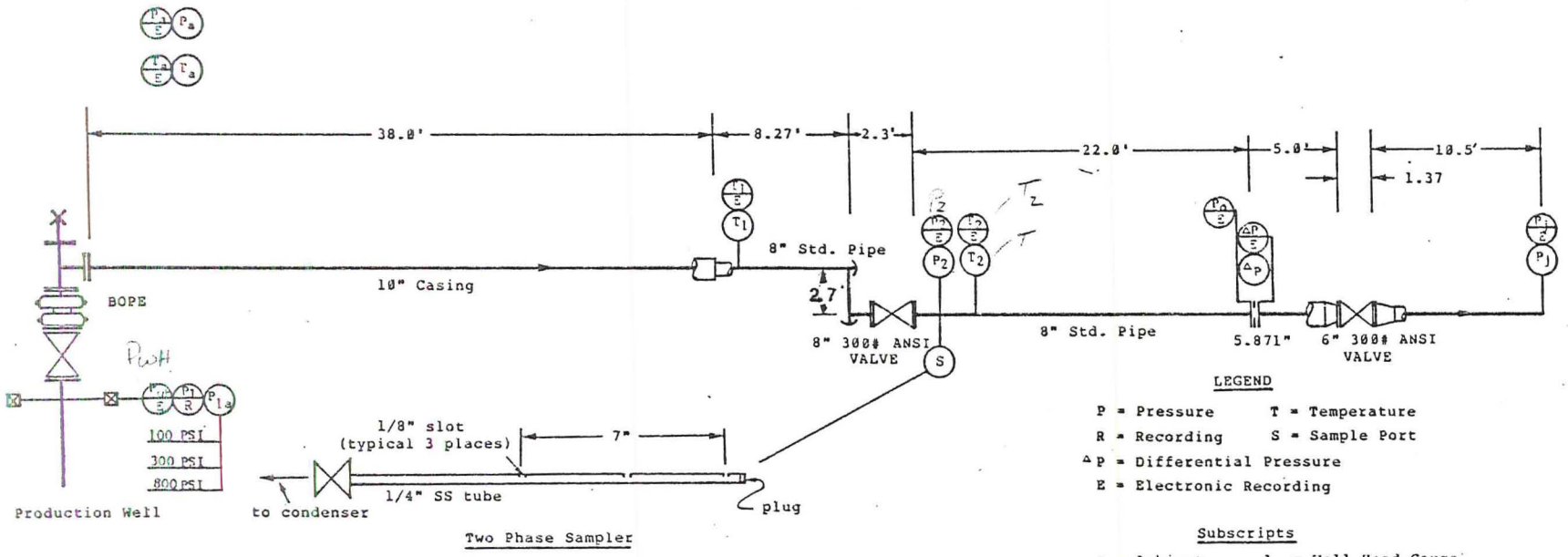


FIGURE 4-1

TEST EQUIPTMENT P&ID

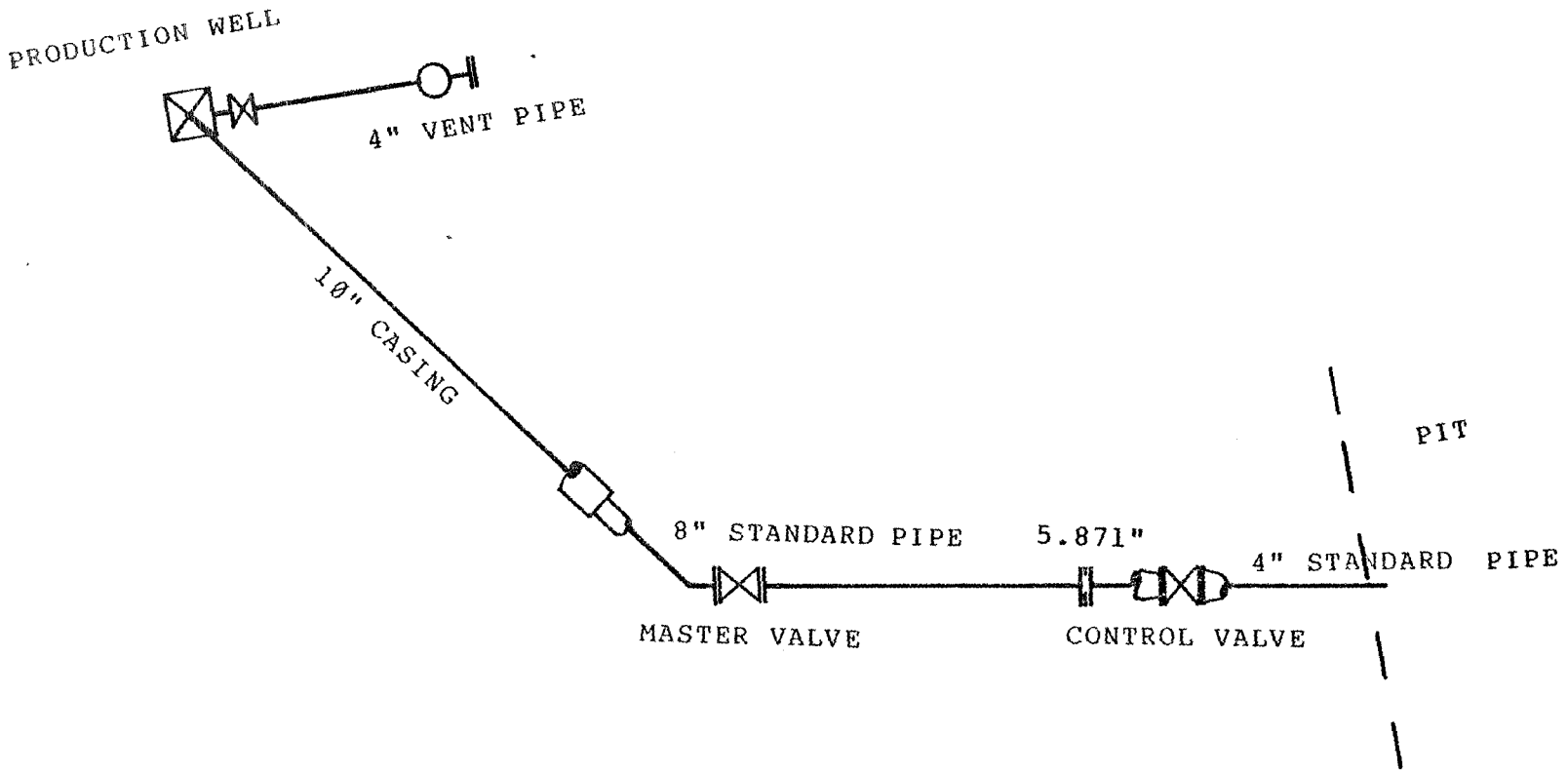
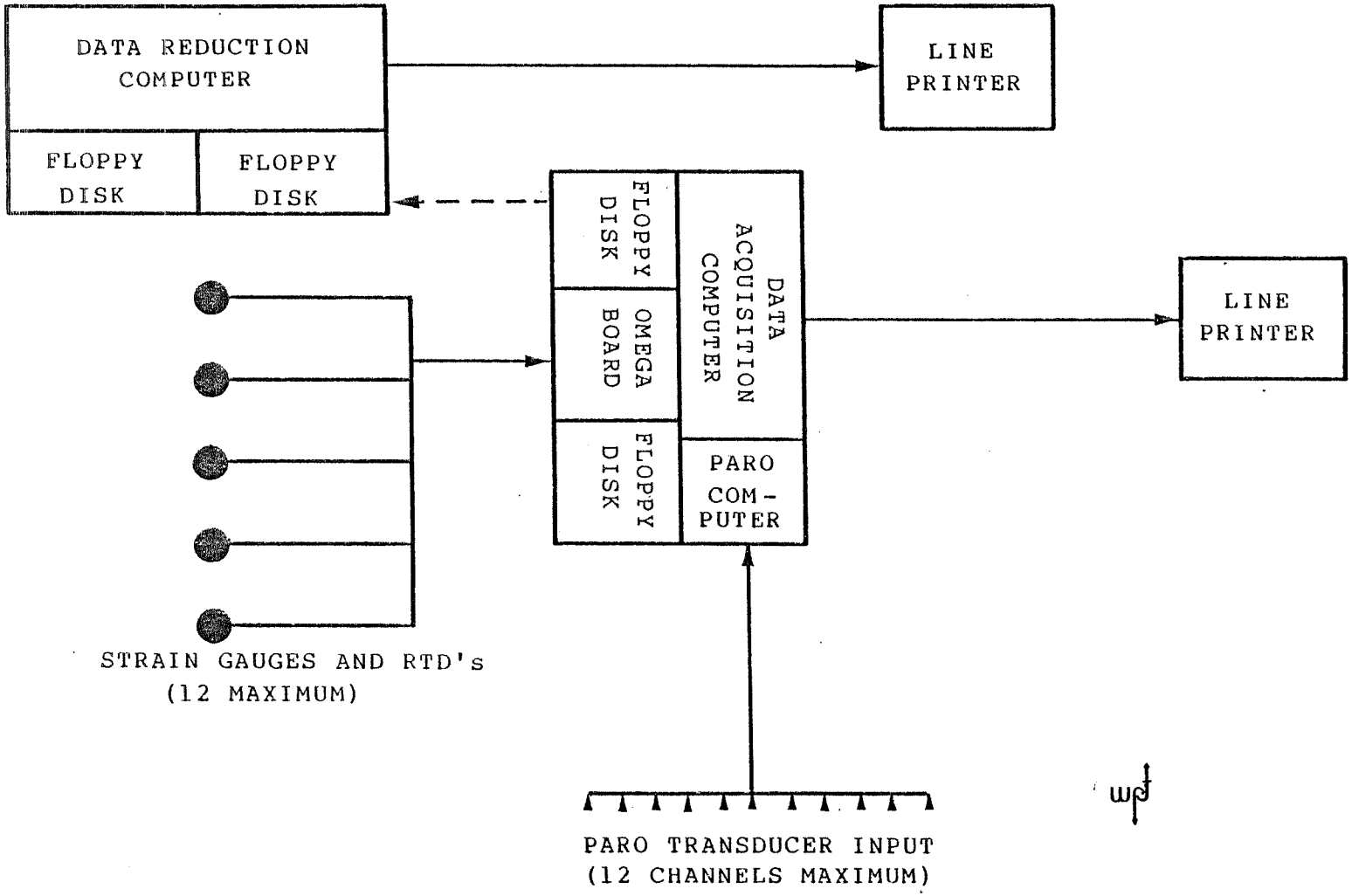


FIGURE 4-2

TEST EQUIPTMENT

PLANFORM SCHEMATIC



DATA ACQUISITION SYSTEM

FIGURE 4-3

5. OPERATIONS

The well was flowing when it was turned over to the test crew by the drillers and as a result the test start time was rather arbitrarily defined. Downhole slickline surveys for pressure and temperature were conducted during the drilling. After drilling manual data collection was initiated at 1300 hours on November 30, 1986, and computer data acquisition was started on December 1, 1986 at 0600 hours. The data acquisition and reduction software used midnight, December 1, 1986 as zero test time, and all data listings and plots that use test time are consistent with that zero time.

The first eight downhole surveys were run prior to December 1, 1986. The first four were temperature surveys run in the drill pipe. The drill pipe was removed from the hole and the first openhole pressure and temperature survey was run on November 26, 1986. The well was flowing for all but the first survey. A description of the downhole surveys is included in Section 7 of this report.

A plot of wellhead pressure and temperature for the duration of the test is included as Figure 5-1. The well was allowed to flow through the test line with the valves open for the majority of the test. Three step rate tests and a pressure build-up test were run. The first step rate test (Figure 5-2) was started at about 16 hours, test time and had steps of approximately 60 and 130 psia wellhead pressure. Each step was held for approximately 3 hours. The second and third step tests, shown in Figures 5-3 and 5-4, were started at 109 and 131 hours test time and consisted of steps similar to the first. The final build-up test was started at test time 208 hours, when the wellhead pressure was stepped to approximately 300 psia and held at that pressue until 224 hours test time. At that point, on December 10, 1986, the master valve was closed in an attempt to shut in the well. The shut-in was aborted at a wellhead pressure of approximately 750 psia (Figure 5-5) when it became apparent that

the wellhead pressure was going to exceed the range of the available wellhead pressure gauges (800 psig). There was concern that the well head and casing should not be exposed to excessive pressures. When it became appearent that the pressure gauge range was going to be exceeded which precluded monitoring the well head pressure, the shut-in was aborted.

A detailed Chronology of Events is included as Appendix B. The following is a summary of key events by the day they occurred.

11/20 Stopped drilling at 6288 ft. Blew out hole for 1 hour. Ran Temperature survey in drill pipe set at 6244 feet.

11/22 Drilling ahead - at 7060 feet the Mud Engineer estimates making 22 bbl/hr of water.

11/24 CO_2 "kick" at 8050 feet from 3000 ppm to 13,000 ppm. At 8120 feet had a 440 psi increase and 16 °F temperature increase (initial increases). Pressure and temperature kicks were also encountered at:

8135 feet, 560 psi, 5 °F
8142 feet, 650 psi, 8 °F
8250 feet, 350 psi, 8 °F
8292 feet, 400 psi
8370 feet, 555 psi, 10°F
8545 feet, 350 psi, 8 °F

Well producing on its own. Ran temperature survey through drill pipe to 8300 feet.
Stopped drilling at 8706 feet.

11/25 Well still producing on its own. Ran temperature survey through drill pipe from 8000 to 8640 feet.

11/26 Ran temperature survey through drill pipe of upper section of the hole (to 7930 feet).

11/26 Ran flowing temperature/pressure survey to 8600 feet.

11/27	Shut-in well to change from 3-inch plastic bloole line to 4-inch steel line. Wellhead pressure increased to 400 psig; opened valve. For about an hour well slugging and flow was "wetter". Wellhead pressure had declined to 20 psig in approximately 90 minutes.
11/28	Flow switched from bleed line to flow line. Ran pressure test to 100 psig. Ran openhole temperature and pressure survey to 4500 feet. Calibrated pressure tool, checked to ± 2 psi in the 0 - 500 psig range.
11/29	Attempted to run a pressure and temperature survey from 4000 feet to bottom hole (TD). Could not get below hole size reduction at 4600 feet. Continued to rig up flow test unit and surface instrumentation.
11/30	Attempted to run downhole survey with a centralizer. Could not get below 4600 feet. Started taking surface data manually from gauges.
12/1	Computer data acquisition system on line. Zero test time is midnight 12/1/86. Ran step rate test with wellhead pressure steps of 60 and 130 psia.
12/2	Continued step test. Plume is very dry at high pressure and sounds like a jet. Opened throttle valve and well produced noticeably more water. Toxic gas detector alarmed briefly. Production back to "normal" in approximately 15 minutes.
12/3	Flowing, valves wide open.
12/4	Ran flowing pressure/temperature survey to bottomhole.
12/5	Ran step test starting at about noon. At 130 psia step, plume looked very dry. Toxic gas monitor alarmed briefly. Opened control valve; well produced lots of water vapor.
12/6	Ran step tests with pressure and temperature tools sitting at 8120 feet to evaluate possible entry at this depth.
12/7	Flowing open
12/8	Flowing open

12/9 Noon: started downhole for last pressure and temperature survey. Will remain on bottom for shut-in. At 1603 hours started shutting throttle valve. Wellhead pressure up to 270 psig at 1641 hours; cracked throttle valve. Continued to close valve until wellhead pressure increased to approximately 300 psig.

12/10 Pressure continuing to decline slightly. At 0525 hours, the wellhead pressure at 300 psig. At 0714 hours wellhead pressure at 321 psig. Downhole tools coming out of the hole.

Shut-in wellhead master valve at 0944 hours. At 1135 hours wellhead pressure rising at at rate of about 3 psi/minute. Wellhead pressure is 650 psia.

At 1222 hours, opened wing valve. Started to vent water at about 1300 hours, blowing about 60 feet into the air. Wellhead pressure beginning to rise from 110 psig to 230 psig. At 1310 hours, opened master valve to vent well through the flow line. At 1540 hours, shut master valve with wellhead pressure at 10 psig and allowed well to vent through the wing valve/vent line.

12/11-1/29/87

Well remained on vent with the wellhead pressure slowly declining from 15.5 psig to 4.5 psig (note that the configuration of the vent line influences the wellhead pressure). Some episodes of "geysering" were observed.

1/30 Returned to conduct additional surveys and sampling. Wellhead pressure 2 psig but increased to 6-9 psig every 10 minutes or so and well "geysers".

1/31 Ran temperature/pressure survey; could not get below 8005 feet. Immediately following survey the well started blowing water 30-35 feet in the air. Geysering continued for about two hours. Switched flow from vent line to flow line.

2/1 Ran temperature/pressure survey to 8140 feet.

2/2 Throttled well to a wellhead pressure of nominally 90 psig for 8 hours for additional sampling and temperature/pressure surveys.

2/3 Shut master valve and left well on vent. Wellhead pressure 1.1 psig.

ASCENSION #1 — FLOW TEST (DEC. 1986)

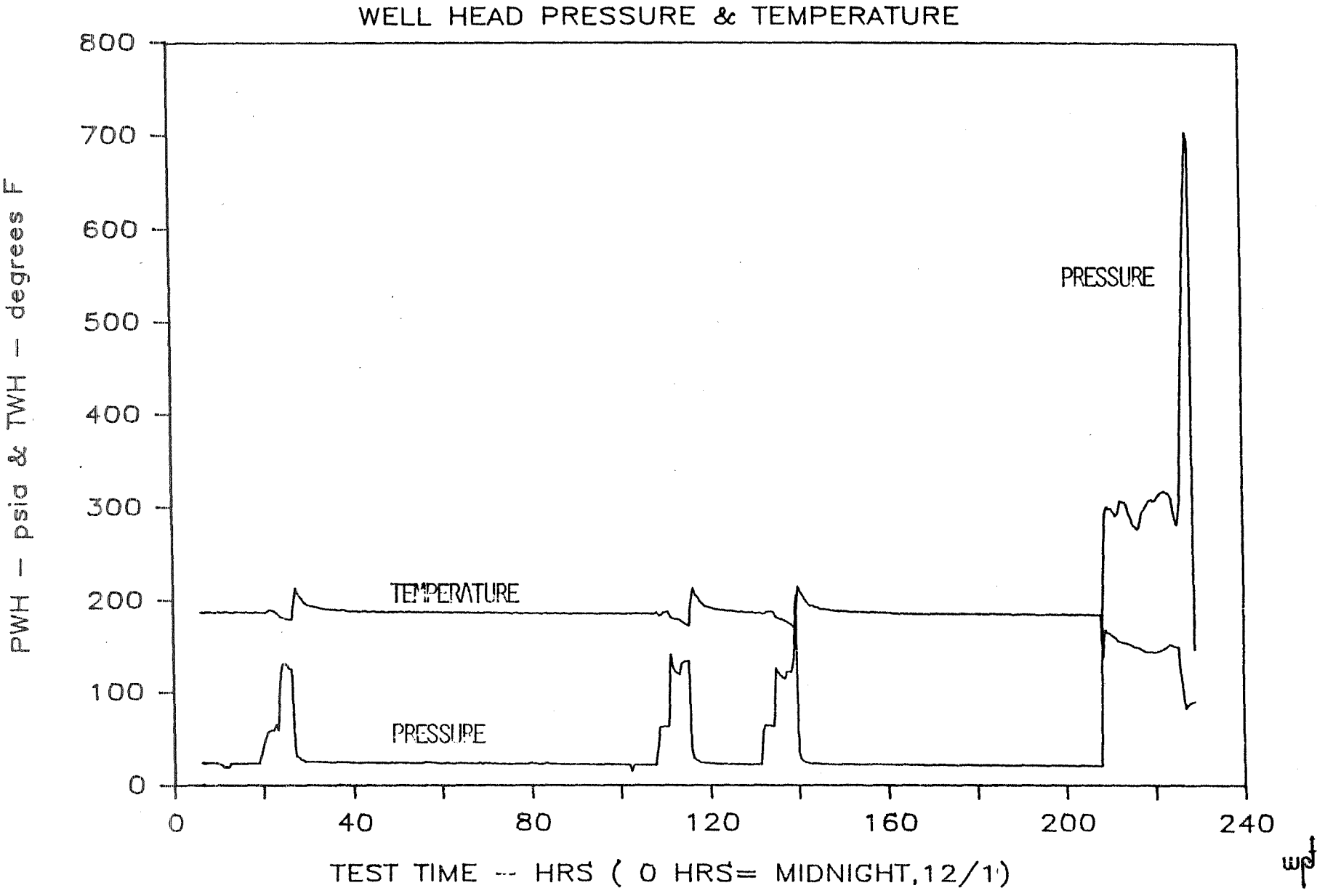


FIGURE 5-1

ASCENSION #1 — FLOW TEST (DEC. 1986)

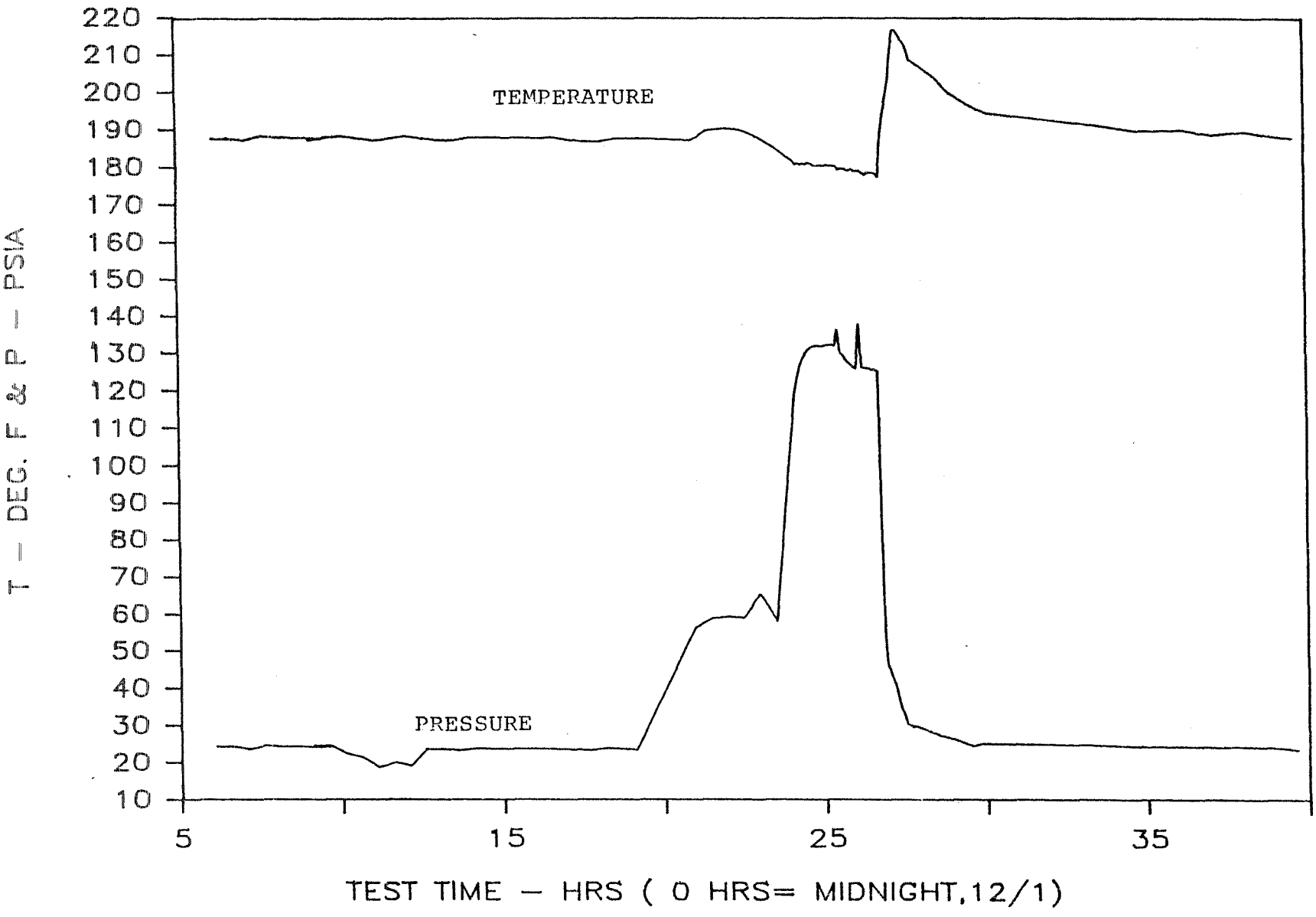


FIGURE 5-2

ASCENSION #1 — FLOW TEST (DEC. 1986)

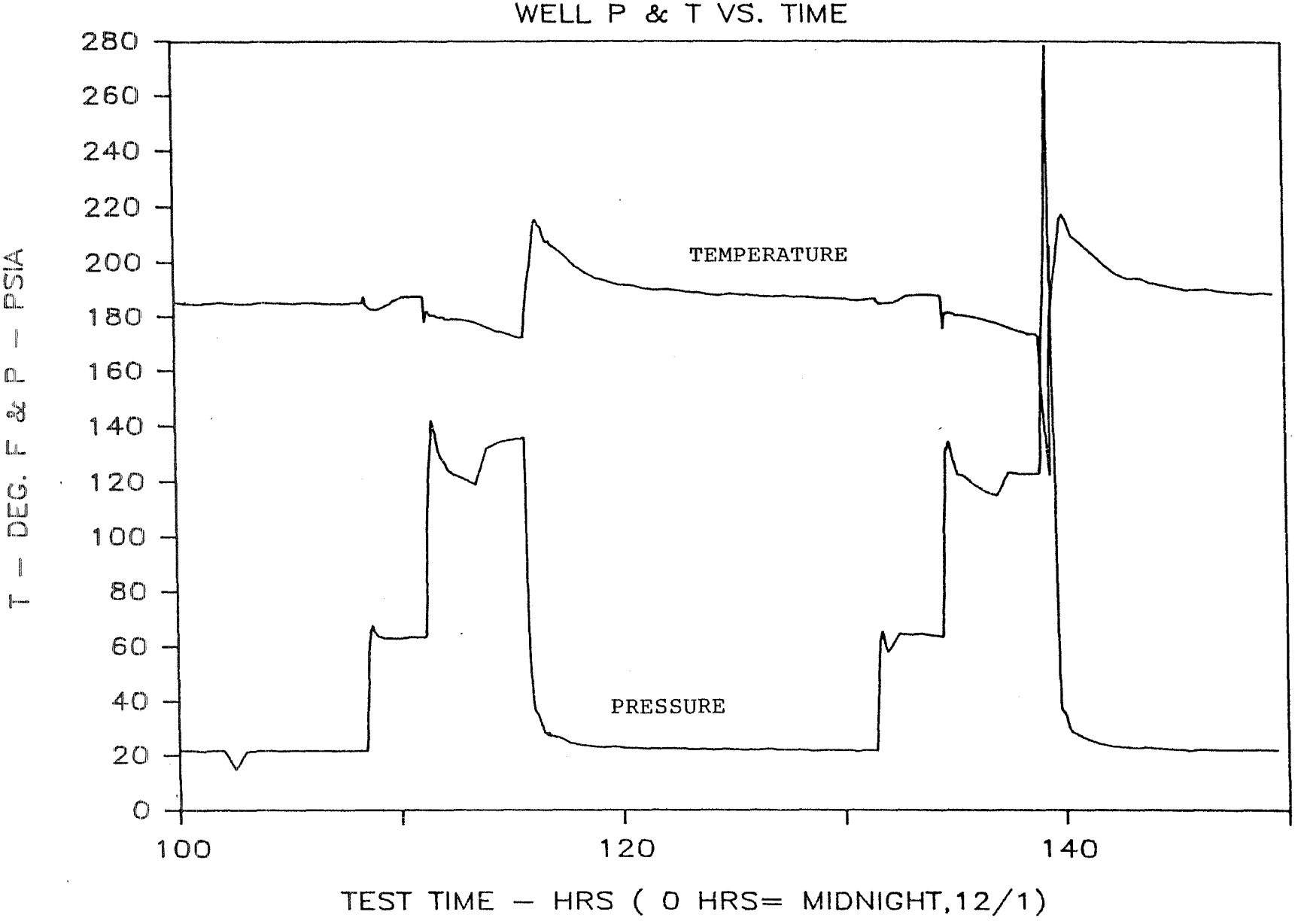


FIGURE 5-3

ASCENSION #1 — FLOW TEST (DEC. 1986)

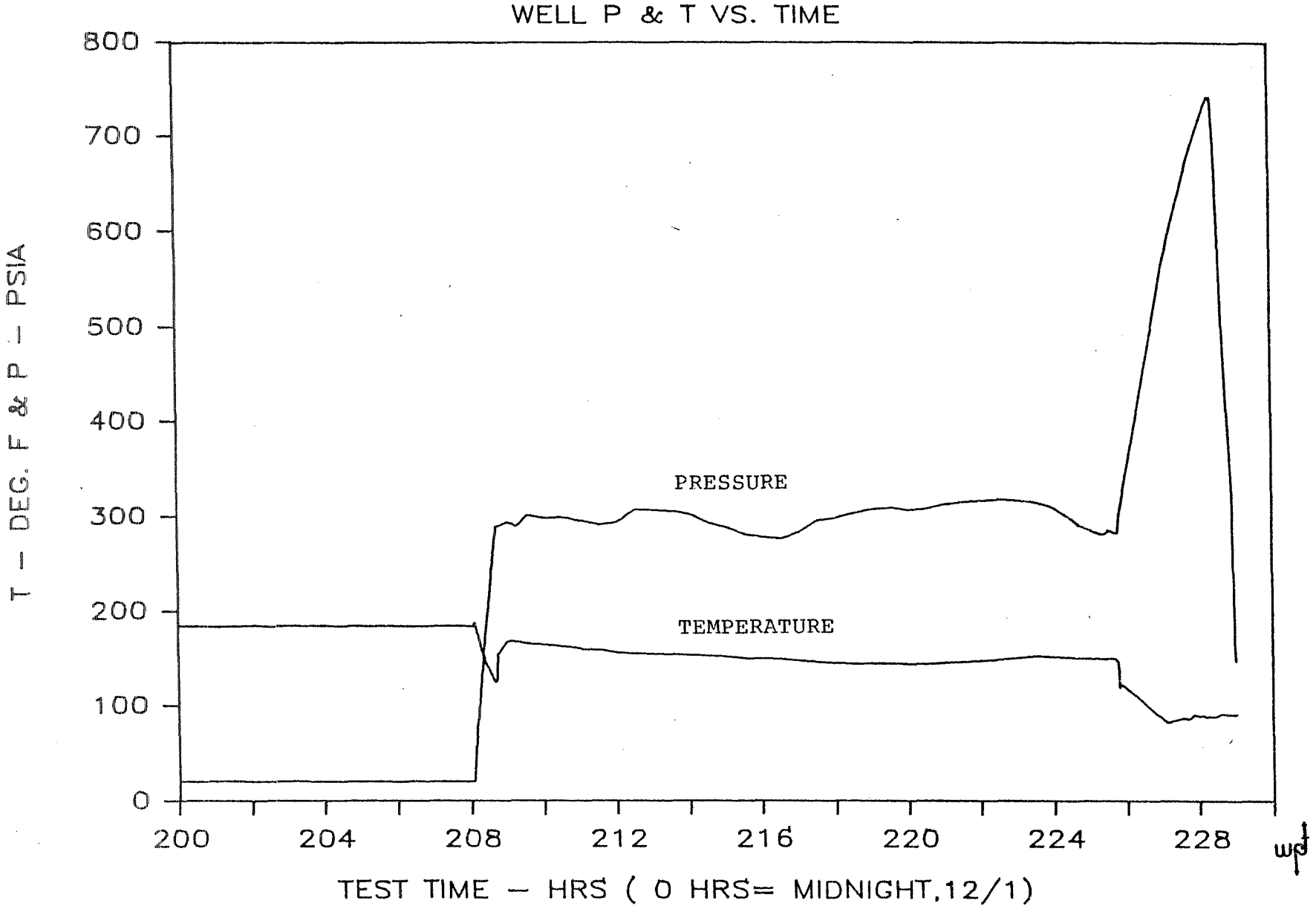


FIGURE 5-4

ASCENSION #1 — FLOW TEST (DEC. 1986)

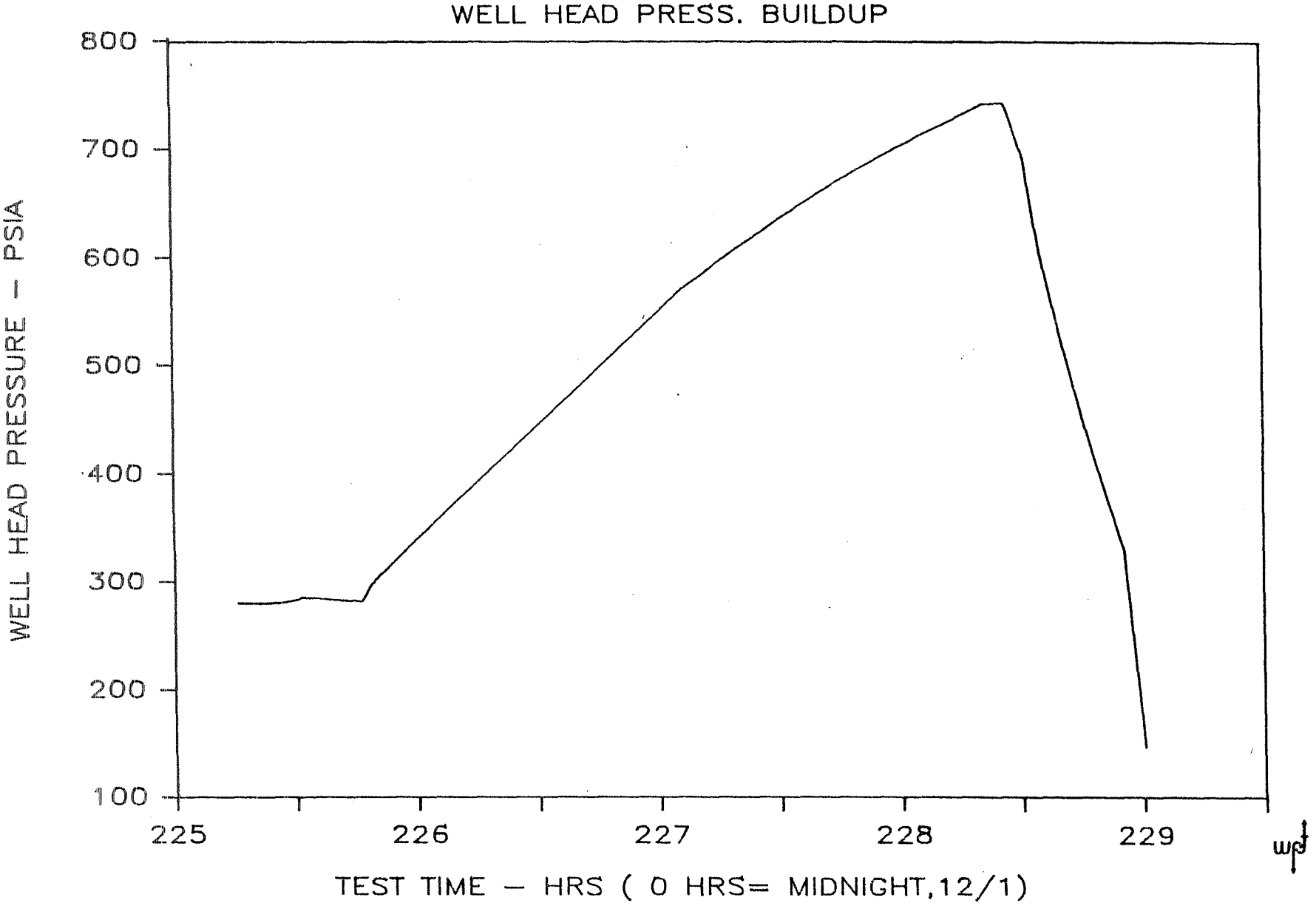


FIGURE 5-5

6. DATA REDUCTION

6.1 Instrumentation

The primary surface data was acquired by a digital data acquisition system. A micro-computer read the transducer outputs, converted the signals to engineering units, and recorded the measurements on paper printout and diskettes. The signals were corrected by the results of pretest instrument calibrations. The parameters measured are presented in Table 6-1.

Each of these measurements were backed up by a secondary instrument, except for the James Tube pressure. The instruments were manually recorded nominally every half hour. The secondary devices were included solely to back up the electronically acquired data, and to provide a redundant data source for quality assurance during the test. In general these data are less accurate than the electronic measurements and were not used for data analysis. In the course of events only the manometer poduced data that were needed to validate the eletronic data by supporting the measurement of pressure drop across the orifice plate. The manual data sheets are included as Appendix C.

6.2 Pressure Instrumentation Calibration

Calibration checks were performed on each of the surface pressure devices before and after the test. These checks were performed using a deadweight tester. The Paroscientific devices showed a slight offset (-0.06 to 0.2 psia) and linear trend (1.002 to 1.004). The offsets were adjusted in the data acquisition program, but the slope of the response was not corrected because the trend is not statistically different from 1.0.

The Honeywell gauge sn7933 (P2) indicated a 20.9 mV

reading at 0 psig. A value of 20.8 was used in the data acquisition program for the offset for a psia reading. The calibration showed a perfectly linear trend. A comparison to the Paro sn26195 (P orifice) showed less than 1% linear variation in their responses. These instruments are believed to yield accurate readings to better than 1%.

The orifice delta pressure gauge (Honeywell sn7934) is a 0 to 90 psid instrument. The calibration of this instrument was performed over the full scale of the device. The calibration revealed a 19.7 mV offset and a 1.141 linear trend. During the test the gauge was inspected and a 0.5-inch dent was found on the low-pressure face of the diaphragm. The instrument was inspected prior to shipment and and the dent was not noted at that time. The post-test calibration gave the same results as the pre-shipment and pre-test checks. This instrument was working at less than 1% of full scale during most of the test and these full-scale calibrations did not give sufficient indication of the response at this low range. To check the low end sensitivity this device was sent to Honeywell for an additional calibration. The calibration confirmed an accuracy of 0.5% of full scale and indicated a 1.0% accuracy at 1.5 psid.

The manometer was installed during the test to provide a backup and cross-check on the delta P gauge. Unfortunately the manometer was beset with problems associated with the condensation of well fluid in its lines. Until a method was devised to prefill the manometer source lines with water, measurements were accurate only moments after refilling the manometer U-tube with fluid. Hence the manometer did not provide reliable data from which to cross-check the orifice delta pressure readings.

6.3 Data Reduction and Qualification

The data presented in Appendix F have been qualified through the use of pre- and post-test instrument calibrations and the backup instrumentation. The data record has been split into a total test record of half-hour increments and separate records of the transient portions of the test. Some of the raw data have been removed because they were redundant or, in a few cases, obviously erroneous.

Only the pressure drop across the orifice plate required correction. To dorrect a mathematical error the recorded pressure drop across the orifice has been multiplied by 1.141/0.90=1.268. The zero of the delta P exhibited shifts during the test; hoveve there was no appreciable change in the zero between the pre- and post-test calibration. It is believed that the shifts were due to a liquid presence in the instrument tubing. The zero was adjusted in the acquisition program on 12/5 at 1530 hours. An offset of +0.17 psig was added to the measurement at this time and remained throughout the remainder of the test. The calibrations of the other pressure instruments showed deviations of less that 1%, which is the limit of resolution of the calibration process. This is not sufficient justification to adjust the data. The temperature measurements agreed with the backup measurements and were consistent between themselves to within 1%.

Flow rate was also calculated assuming that the exit of the flow system was sonic (choked). The calculations use the James tube pressure measurement, but not the James Correlation due to the presence of large amounts of CO_2. The results are plotted in Figure 6-1 along with the flow calculated using the orifice measurements. It appears from the comparison of the flows that the James Tube was sonic only for the times when the wellhead pressure was over 100 psia and the quality approached 1.0. The flows calculated with this method should be disregarded at all other times.

TABLE 6-1

Electronic Instrument List

Parameter	Instrument	Range
Ambient Pressure	Paro #26196	0-900 psia
Ambient Temp.	RTD	
Wellhead pressure	Paro #11874	0-900 psia
Wellhead Temp	RTD	
Pipe pressure (P2)	Honeywell #7933	0-600 psig
Pipe Temp. (T2)	RTD	
Orifice Upstream P.	Paro #26195	0-900 psia
Delta P of Orifice	Honeywell #7934	0-90 psid
James Tube pressure	Paro #11242	0-400 psia

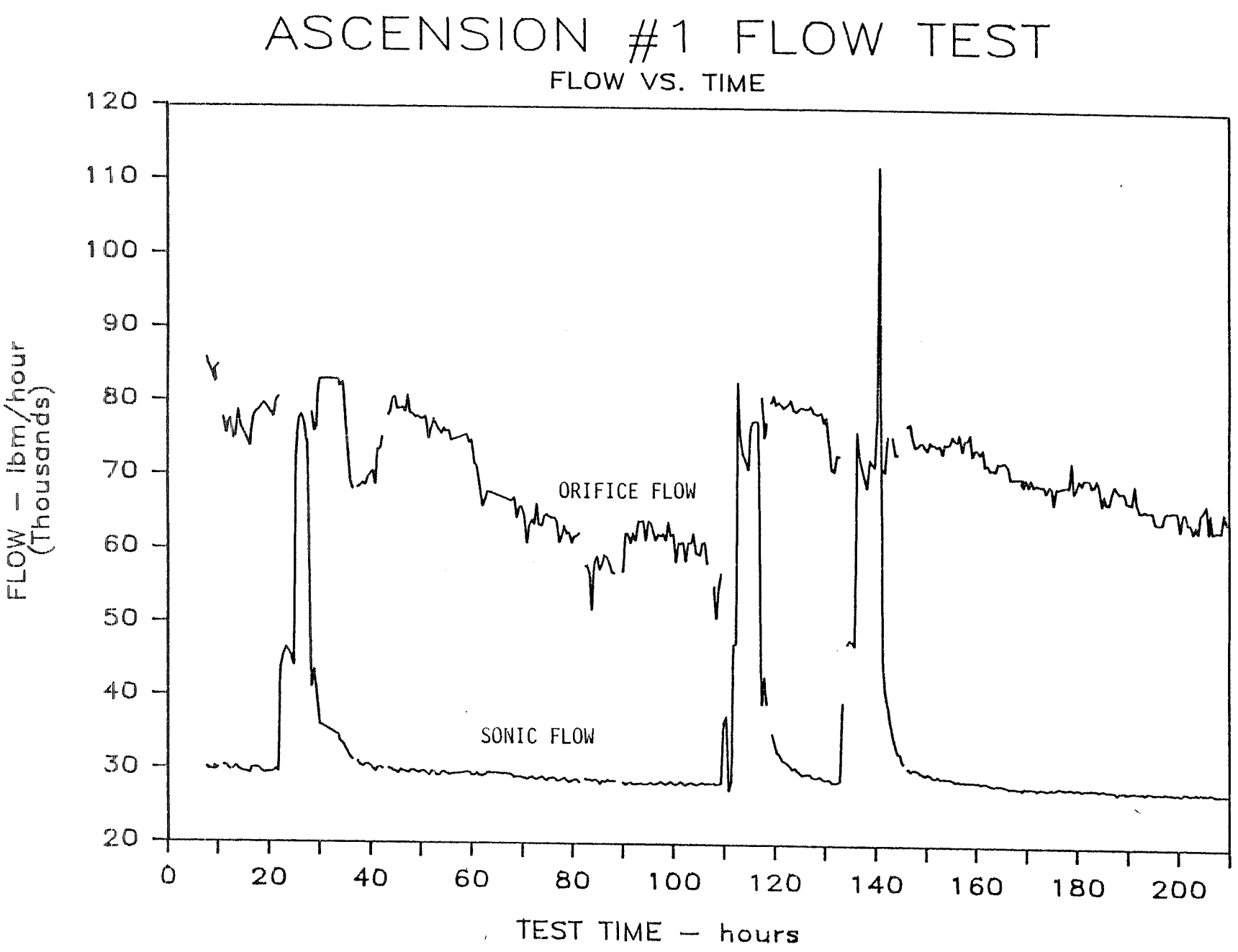

ASCENSION #1 FLOW TEST
FLOW VS. TIME
FLOW – lbm/hour (Thousands)
120
110
100
90
80
70
60
50
40
30
20
ORIFICE FLOW
SONIC FLOW
0
20
40
60
80
100
120
140
160
180
200
TEST TIME – hours

FIGURE 6-1

7. WELLBORE LOGS

During the period from November 19 through December 9, 1986, 13 downhole surveys were performed in Ascension #1. As a result of the well performance and to support a better understanding of downhole conditions and possible well rework, more emphasis was placed on the downhole surveys and more data were taken than was originally described in the Test Plan[4]. A list of the surveys is shown in Table 7-1. All surveys were performed using Kuster slickline tools. No electric logs of the well were performed.

The first four surveys were temperature profiles taken inside the drill pipe as the drilling was being completed.

During the subsequent "openhole" surveys a great deal of difficulty was experienced descending below 4160 feet. At this point the hole diameter changes from 10-3/4 inches to 6-3/4 inches, and it is assumed that the tools were stopping on the resulting ledge. Runs 7 and 8 were abandoned since attempts to descend below 4160 feet were unsuccessful. Subsequent attempts to reach bottom hole were successful as a result of allowing the tool to bounce off the ledge and continue downhole. This technique, however, resulted in the element stylus slipping and loss of the time reference in a number of cases (Table 7-1).

The downhole surveys produced a considerable amount of believable and interesting data and to a large part provided the data used to arrive at the conclusions presented in this report.

7.1. Accuracy of Data

The presence of vapor in the wellbore resulted in much lower downhole pressures than were originally expected and as a result the 0-3825 psig Kuster pressure elements were ranged far too

high for all but Run #13. One of the Kuster pressure elements was calibrated at low pressures on site using a deadweight tester and found to be within ± 3.0 psi at 100 psig.

7.2. Downhole Data

The original data sheets and the logging technician's logs are reproduced in Appendix G. The data for each run include the log that was kept on the surface while the run was being performed and the data sheet that was prepared on site when the charts were read.

Runs #1, 2 and 3 were made in the drill pipe as the well was being drilled and completed. A temperature of 308°F was measured in Run #1 after the tool was allowed to sit for 84 minutes at 6240 feet (Figure 7-1). That is the highest temperature recorded at that depth. Either this is an anomalous point or flow from lower and cooler zones subsequently cooled the wellbore in subsequent runs.

Temperature vs. time at 6240 feet is plotted in Figure 7-2. This plot indicates that the temperature is building rapidly. The length of the survey (along with the low temperature conductivity of the gaseous phase in the wellbore) was insufficient for the normal exponential temperature buildup period to be accurately calculated. A Horner buildup analysis using these data indicates a projected formation temperature of 444°F. The length of the buildup was limited by concern that the drill bit and string could become stuck in the open-hole section if circulation and rotation were not resumed.

Run #2 was made in the drill pipe to 8300 feet. The data are shown in Figure 7-3. A plot of temperature vs time at 8300 feet is shown in Figure 7-4. Projected temperatures at this depth did not yield reasonable results.

A temperature buildup survey was made at 8640 feet during Run #3. The Horner buildup analysis indicated an equilibrium formation temperature of 418°F. Runs #3 and 4 can be concatenated to provide a temperature profile at the completion of drilling (Figures 7-5 and 7-6). The well was still warming at this point and the common point, 8000 feet, is off-set, but a good indication of the temperature profile results.

Run #5 (Figure 7-7) was the first openhole survey. The pressures must be considered carefully, since the range of the pressure element is 3825 psig and the pressure element may be affected by rapid changes of temperature. The pressure element used in these logs was checked on a deadweight tester on site and was found to be giving readings that were within ± 3 psig at 100 psig. That would indicate that the profiles shown are acceptably accurate. The clock failed during Run #5 at 4000 feet, but the maximum temperature recorded, 348°F, was assumed to have occurred at bottom hole. Since this temperature is significantly lower than the other logs it is assumed to be anomalous.

Runs #6,7 and 8 are not plotted since the tool was stopped at 4160 feet by the ledge in the wellbore, and no openhole data were obtained.

Run #9, Figure 7-8, was run during a step rate test where the wellhead pressure was stepped from 27 psia to 60 and 130 psia. At each of these pressures the well was surveyed from 7500 feet to bottomhole. The results show a cooling trend in the bottom section, which may indicate a reduced water flow in this area.

Run #11 is also a run that was made during a step rate test. The results are plotted in Figures 7-10 and 7-11 and are similar to the previous step rate test.

Run #12 (Figures 7-12 and 7-13) was run during the third step rate test. This time the tool was left at 8120 feet and allowed to equilibrate for 3 hours at 65 psia wellhead pressure and for 3-1/2 hours at 115 psia.

Run #13 (plotted in Figure 7-14), the final survey in the first series, was made to document the steady state temperature and pressure profiles that existed when the well was flowing with a wellhead pressure of approximately 15 psia. There is a high temperature gradient at bottom hole and the pressure appears to be following the boiling curve for a highly CO_2-saturated water. At approximately 8000 feet the temperature exhibits a sharp temperature change, believed to be caused by the entry of large amount of relatively cool CO_2 into the wellbore.

Run #14 was made January 31, 1987 (Figure 7-15). The well had been on vent with the wellhead pressure declining from 15 to 5 psig for approximately 45 days. The temperature at 8000 feet measured 368°F. An obstruction was encountered in the hole at 8005 feet, and logging could not be accomplished below this depth. The pressure gradient, as shown in Figure 7-15, indicates a gas-water mixture in the wellbore from the surface to 8000 feet.

Immediately following Run #14 the well blew down. During this event, which lasted approximately two hours, the wellhead pressure increased to a maximum of 45 psig and the wellhead temperature reached 248°F.

Run #15 was conducted after the wellhead pressure had stabilized at 2.5 psig and the well was venting through the eight-inch flow line. The pressure and temperature profiles are shown in Figure 7-16.

Run #16, shown in Figure 7-17, was made with the wellhead

pressure choked back to 81 psig. The temperature and pressuredata obtain during this run indicate that the well was in a transient state.

The pressure gradients from Run #14 were used to estimate the amount of CO_2 and liquid in the wellbore. There was approximately 3.45 weight percent CO_2 in the bottom portion of the wellbore. The large amount of wellbore storage and fluid interaction in the wellbore, however, preclude arriving at any conclusion as to the quality of the fluid flowing into the wellbore or the fluid flowing out of the well. The well appears to be in an unstable state in which the velocity of the incoming gas is insufficient to carry out the water entering the well. The slip velocity (difference between gas and water velocities) becomes large and siginificant amounts of water are held up in the wellbore. Perturbations such as the movement of the logging tool appear to be sufficient for the well to discharge large amounts of the stored water. The calculations using the pressure gradient from Run #14 indicate at that time that CO_2 is flowing at a much higher velocity than the water and appears to be bubbling up through the water in the wellbore. The distribution has the appearance of churn or dispersed flow. The result is a CO_2-water froth that changes quality along the wellbore to account for the pressure change in fluid weight. This system is not stable since it affects the drawdown of the reservoir. As the pressure changes in the reservoir, the fluid conditions in the wellbore will change to reach a pressure balance. In other words, the well can be expected to "geyser".

7.3 Analysis of downhole data

The downhole data are difficult to analyze because of the low flow rates and complex downhole flows of both CO_2 and liquid. The two primary reasons for running the numerous downhole surveys were to (1) determine the flow characteristics of the reservoir and (2) determine the formation temperatures. As a

result of the complex downhole conditions it is extremely difficult to accurately interpret the logs to conclusively predict either formation temperature or location of the production zones.

The pressure buildup behavior and flow behavior both suggest a low permeability reservoir that produces a gas (CO_2) with varying amounts of brine. The pressure and temperature data along with the mud logger's data indicate that the flows are between approximately 7,050 feet and 8,430 feet. There does not appear to be any flow into the wellbore from 8,430 feet to 8,707 feet (the total measured depth of the well).

7.3.1 Pressure Buildup Tests

Two buildup tests, Runs #12 and #13, were made after the multiple rate flow test. While the downhole pressure tool was in the hole for Run #12, the well was pinched back at 14:35 hrs according to the supervisors log (14:32 according to the clock on the WH pressure transducer). The buildup data ended at 18:00 hrs for a 3-1/2 hr shut-in. The wellhead pressure (WHP) and the downhole pressure (DHP) data are plotted in Figure 7-19. WHP was maintained in the range of 110 to 130 psia during the shut-in. DHP nearly leveled off at 370 psig after 20 minutes before it began to build up again. After 100 minutes the pressure began to rise more rapidly to the end of the test while the WHP remained essentially constant.

The valve was closed at 16:03 hrs for Run #13 according to the supervisor's log (16:06 according to the WH clock). At 16:42 hrs the valve was opened and manipulated thereafter to maintain WHP.

After shut-in, both WHP and DHP increased in parallel (Figure 7-19) and then leveled off at about 40 minutes after shut-in, then the WHP was maintained at around 300 psig. At approximately 80 minutes the DHP began to rise again, reaching a

peak of 1028 psig at 850 minutes. Ater this point it began to drop until the time that the test ended, and the tool was removed from the hole. This decreasing pressure effect appears to have been caused by manipulation of the throttle valve. The test lasted 16-1/2 hours.

The behavior of the DHP in both Runs #12 and #13 indicated that immediately after the well was pinched back, or shut-in, the pressure tool was in gas containing a mist of liquid water. After a period of time, fluid entering the wellbore rose to the depth of the gage and then continued to rise above the level of the gage. Most of the liquid probably came from a zone with a low liquid permeability. Because of the problem of fluid rising above the level of the pressure tool and because of wellbore storage effects, the pressure buildup data were difficult to analyze. Additional analysis was suspended since the homogeneous properties of the CO_2 reservoir where not of interest.

7.3.2 Temperature Data

The temperature data were difficult to analyze because of the flows into the wellbore as a result of the combination of gas and liquid entering the wellbore, and the wellbore pressure being below the saturation pressure of the liquid. The maximum recorded bottomhole temperature was 457 °F at 8,640 feet on survey No. 11. This corresponds to a saturation pressure for pure water of 468 psig. The "flash" point for water containing dissolved CO_2 would be higher than 468 psig; thus, anytime the wellbore pressure was below 468 psig flashing would be occurring at the bottom of the well. During run #11, liquid flashed into the wellbore leading to unsteady near wellbore temperatures. Even when the wellbore pressure exceeded the saturation pressure, as occurred during the pressure buildup on survey Run No. 13, the wellbore temperature was continuing to recover and did not reach the previously measured 457 °F. This appeared to be due to the temperature perturbation caused by

liquid entering the wellbore from around 8,040 feet, flowing downward and boiling in the wellbore. During this shut-in the wellbore temperature was also considerably disturbed by convective flows within the wellbore.

Further complications in analyzing the downhole temperature data may be attributed to stratified flows of gases and liquids in the deviated wellbore. The wellbore had deviated over 14 degrees from the vertical at 5700 feet. No directional surveys were taken below this depth. The deviation from vertical in the lower section of the hole is unknown.

Initially it appeared during the drilling from 6,240 feet to 8,707 feet that the temperature gradient was increasing significantly with increasing depth. A detailed analysis of the temperature gradient using separate data sources, however, does not provide consistent results. A temperature survey was taken at 6,240 feet. Drilling was stopped at 6,243 feet for this survey. The maximum recorded temperature was 307.8°F. A Horner analysis of this data is shown in Figure 7-20. The temperature projects to be between 440°F. This projection is considered to be high since drilling was being done with air/foam. A Horner projection was done on the temperature data at 8,640 feet from survey data on Run #3. The projected temperature is 419° (Figure 7-21). This seems to be reasonable since the temperature at 8600 feet was measured to be 457°F in Run # 11. A Horner projection was done on the temperature data at 8,600 feet taken during survey #13 (Figure 7-22). This projected a temperature of 399°F. This is considered to be a low projection. There were four days of flow between survey No. 11 (12/5/86) and survey #13 (12/9/86), and considerable cooling of the wellbore had taken place due to the flow.

In conclusion, the wellbore temperature around 8,640 feet may be above 457°F. However, the temperature gradient of the formations is still in question. The gradient appears to lie between 23.7°F/100 feet and 1.0°F/100 feet. The maximum

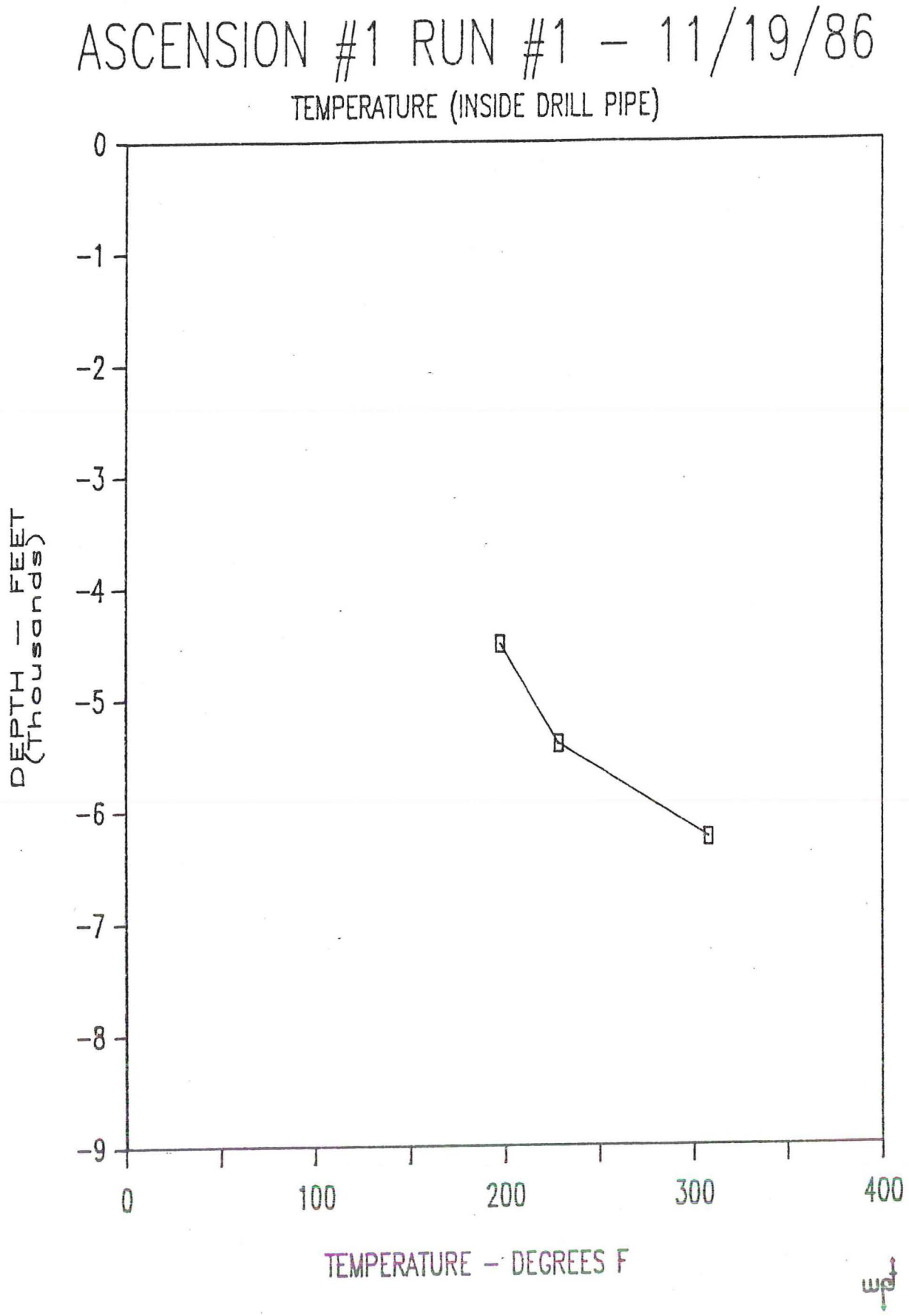
measured temperatures during Run #11, which are 457°F at 8,600 feet and 374°F at 8,250 feet, indicate the high gradient. The projected temperature of 434°F at 6,240 feet and the measured temperature of 457°F at 8,600 feet indicate the lower gradient. Neither seems correct. The unstable wellbore fluids suggests that the measurements during Run #11 do not accurately reflect the formation temperatures, and the projected temperature at 6,240 feet are doubtful because of the drilling fluid medium.

The 1.0°F/100 feet gradient represents an average between 6240 feet and 8640 feet, and therefore is conservative when related to the bottom of the well. The actual gradient between 8250 feet and 8600 feet is probably not as high as 23.7°F/100 feet since the temperature at 8250 feet is cooled by the CO_2.

Table 7-1
Ascension #1
DOWNHOLE SLICKLINE SURVEYS

RUN	DATE	DEPTH-FT	DESCRIPTION
1	11/19/86	6,240	Temperature survey inside the drill pipe. Stops at 4500 and 5400 feet
2	1/20/86	8,300	Temperature survey inside the drill pipe
3	11/21/86	8,640	Temperature survey inside the drill pipe. Stops at 8000, 8100, 8200, 8300, 8400, 8500 AND 8600 feet - flowing
4	11/24/86	7,930	Temperature survey inside the drill pipe. Stops at 500, 1000, 4000, 4500, 5000, 5500, 6000, 6500, 7000, and 7500 feet - flowing
5	11/25/86	8,600	Temperature and pressure survey - Stops at 500, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 7500, 7750, 8000, 8230, 8300, 8600 and 3000 feet. Lost temperature chart.
6	11/28/86	4,500	Temperature and pressure survey - Stops at 1000, 2000, 3000, 4000, 4500 and 3000 feet.
7	11/29/86	4,610	Temperature and pressure - unable to pass 4610-4620 feet.
8	11/30/86	4,610	Temperature and pressure - added centralizer in as attmept to get past ledge at 4610 feet - didn't help.
9	12/1/86	8,600	Temperature and pressure - stops at 4000, 7500, 7750, 8000, 8250, 8600 (P WH=29 psig); 7500, 7750, 8000, 8250, 8600 (P WH=45 psig); 7500, 8000, 8250 and 8600 feet (P WH=115 psig). pres. recorder stopped after 4000 feet.
10	12/4/86	8,600	Temperature and pressure - stops at 500, 1000, 4000, 7000, 7500, 7750, 8000, 8250, 8500 and 8600 feet. Lost time reference on pressure chart after 4500 feet.
11	12/5/86	8,600	Temperature and pressure - Stops at 4000, 7500, 7750, 8000, 8250, 8600 (P WH=22 psig); 7500, 7750, 8000, 8250, 8600 (P WH=49 psig); 7500, 7750, 8000, 8250 AND 8600 feet (P WH= 100 psig). Temperature chart lost time reference.
12	12/6/86	8,120	Pressure and temperature. Stops at 4000 and 4148 feet. At 8120 stepped P WH 7, 50 AND 100 Psig
13	12/9/86	8,600	Pressure and temperature. Stops at 500, 1000, 4000, 4670, 7500, 7750, 8000 and 8250 feet. Attempted to shut in well for recovery. Abandoned shut-in at P WH=281 PSIG.
14	1/31/87	8,005	Pressure and temperature survey with P WH=2.4 psig. Pressure element 0-3975 psig range. Stops at 1000, 2000, 3000, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 7900 AND 8000
15	2/1/87	8,100	Pressure and temperature survey. Pressure element 0-800 psig range. Well on vent. Stops at 1000, 2000, 3000, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 7600, 7700, 7800, 7900, 8000 and 8100.
16	2/2/87	8,100	Pressure and temperature survey P WH=81 psig. Pressure element 0-800 psig range. Same stops as 15.

FIGURE 7-1


ASCENSION #1 RUN #1 – 11/19/86
TEMPERATURE (INSIDE DRILL PIPE)
DEPTH – FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
TEMPERATURE – DEGREES F

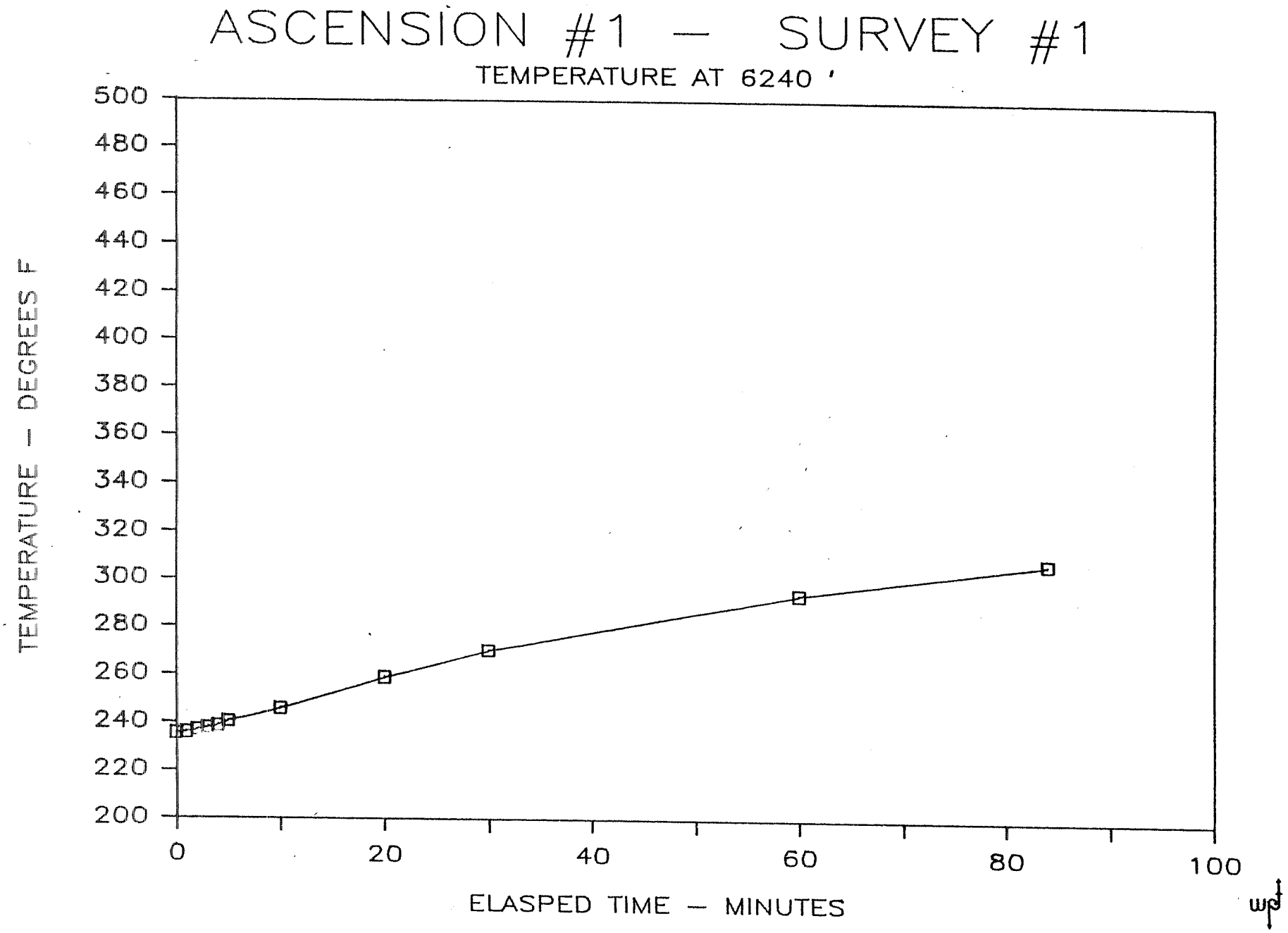
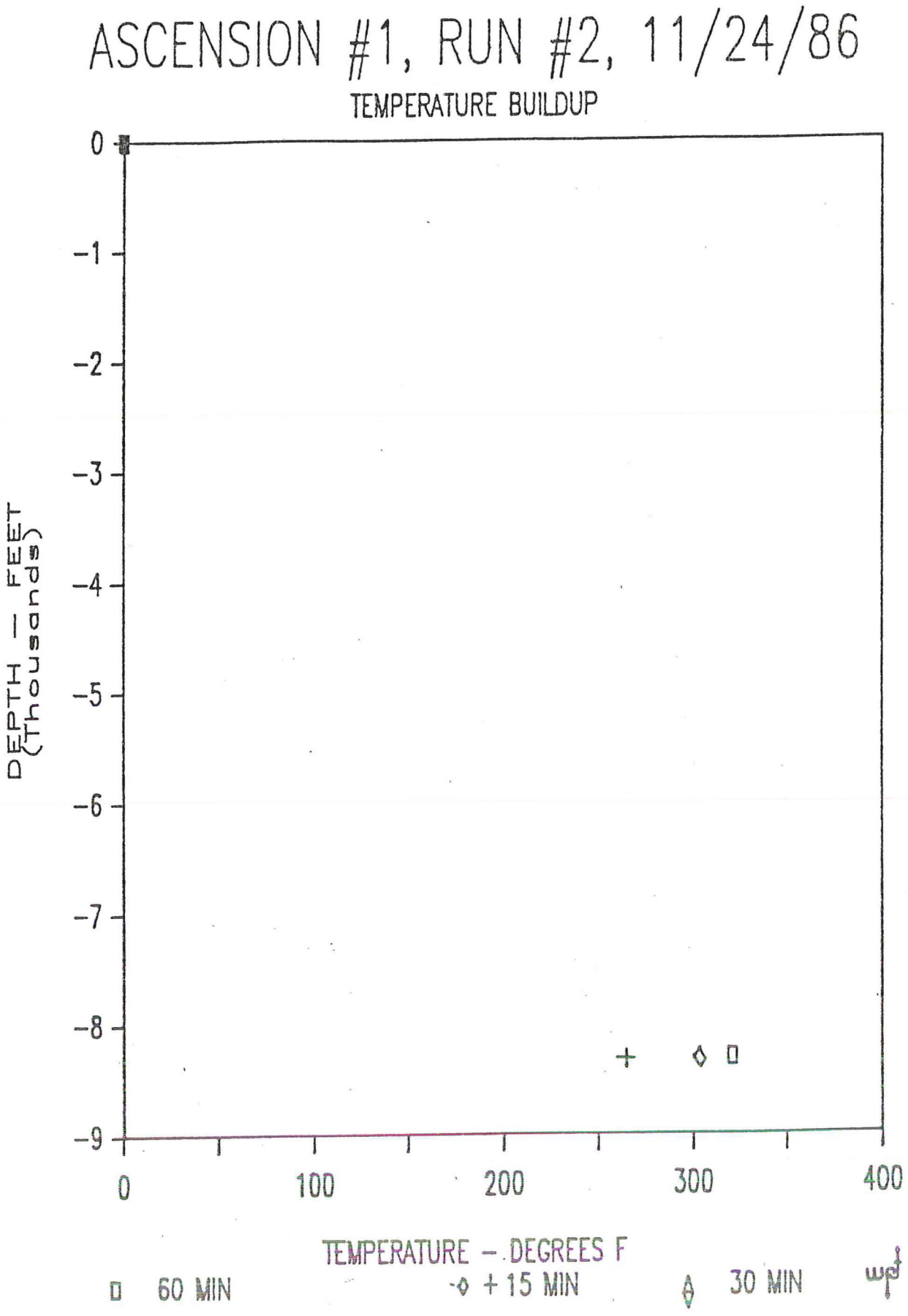

ASCENSION #1 — SURVEY #1
TEMPERATURE AT 6240 '
TEMPERATURE — DEGREES F
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
0
20
40
60
80
100
ELASPED TIME — MINUTES

FIGURE 7-2

FIGURE 7-3


ASCENSION #1, RUN #2, 11/24/86
TEMPERATURE BUILDUP
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
TEMPERATURE - DEGREES F
60 MIN
+15 MIN
30 MIN

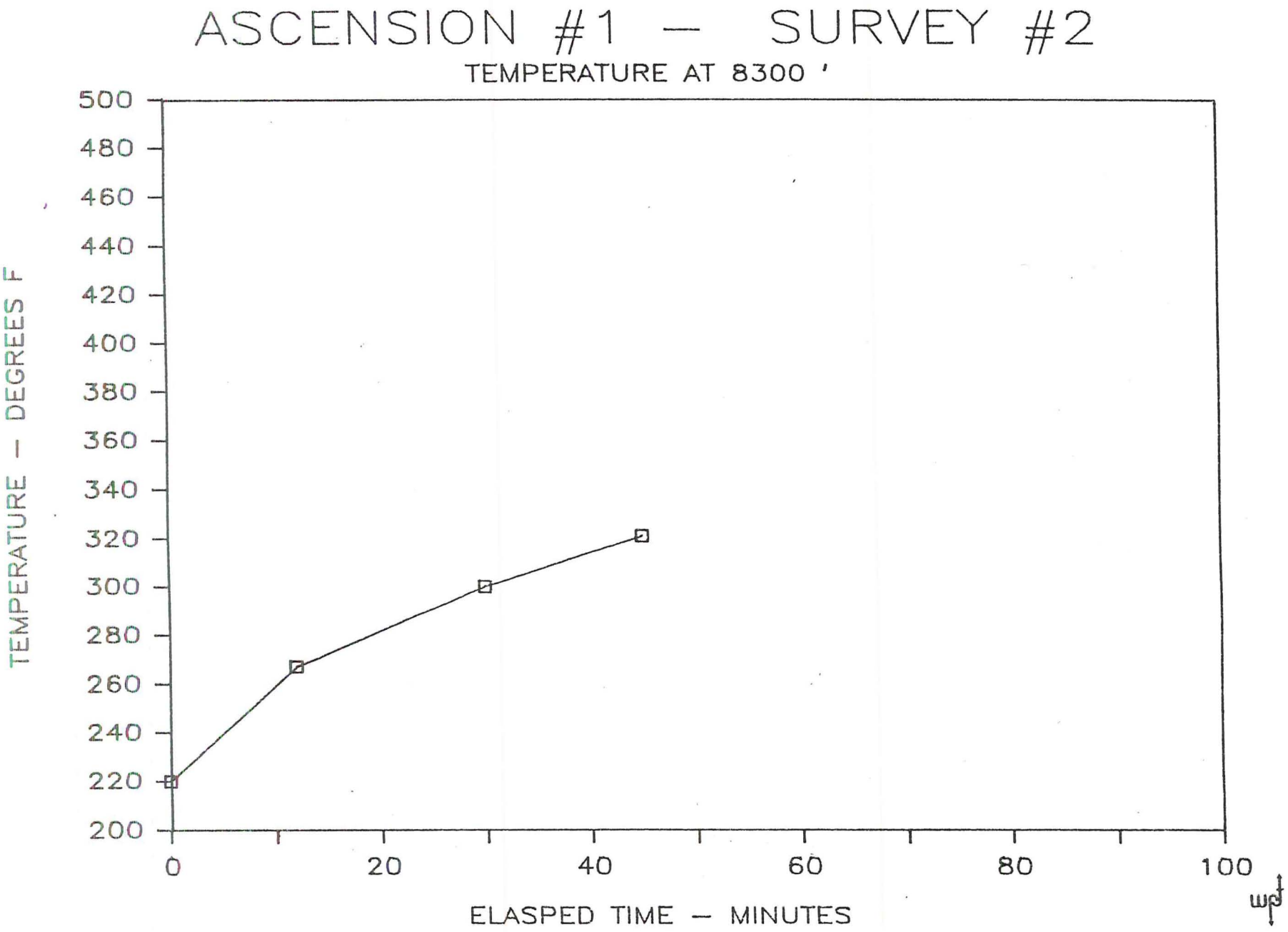

ASCENSION #1 — SURVEY #2
TEMPERATURE AT 8300 '
TEMPERATURE — DEGREES F
500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
0
20
40
60
80
100
ELASPED TIME — MINUTES

FIGURE 7-4

FIGURE 7-5

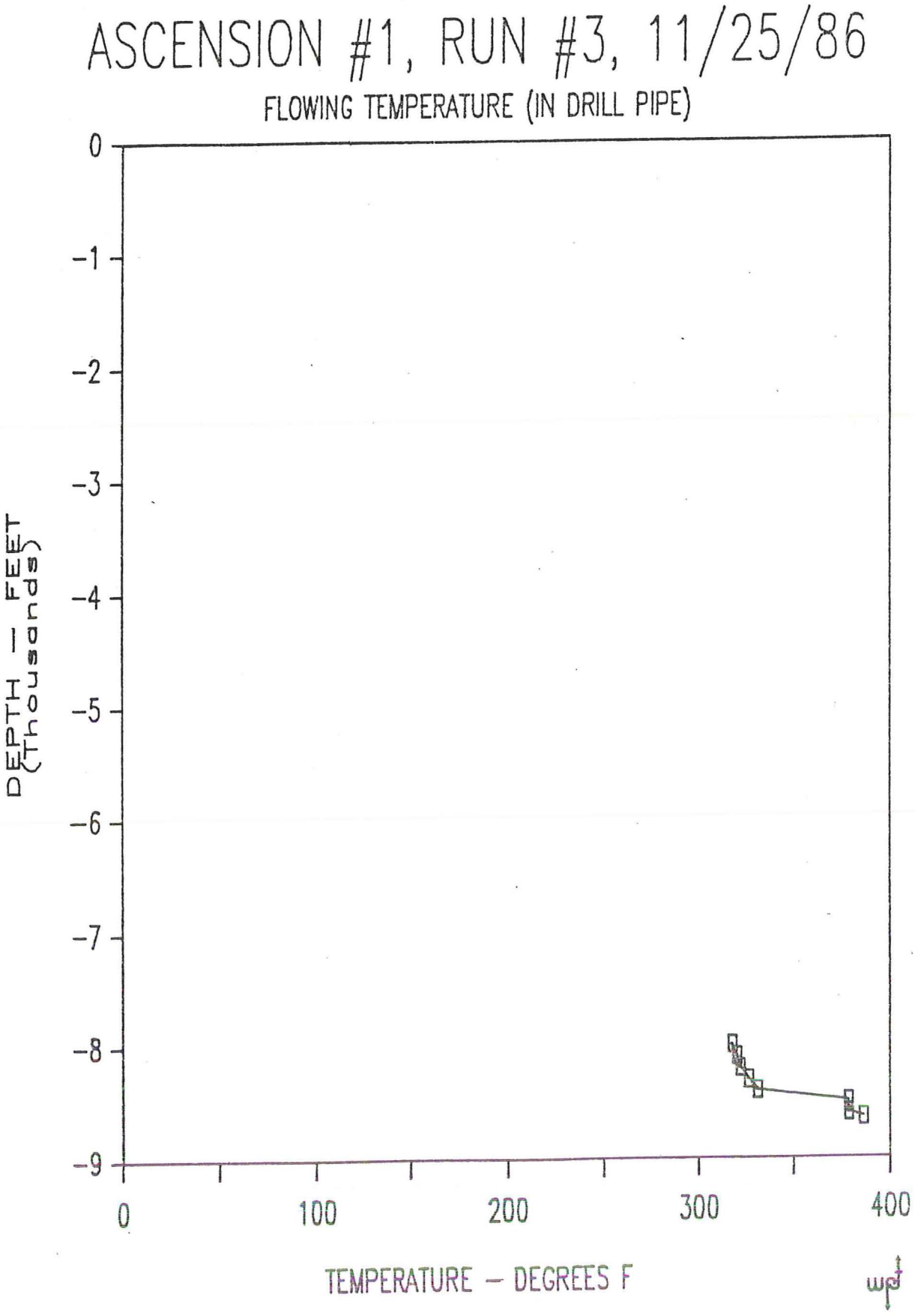

ASCENSION #1, RUN #3, 11/25/86
FLOWING TEMPERATURE (IN DRILL PIPE)
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
TEMPERATURE - DEGREES F

FIGURE 7-6

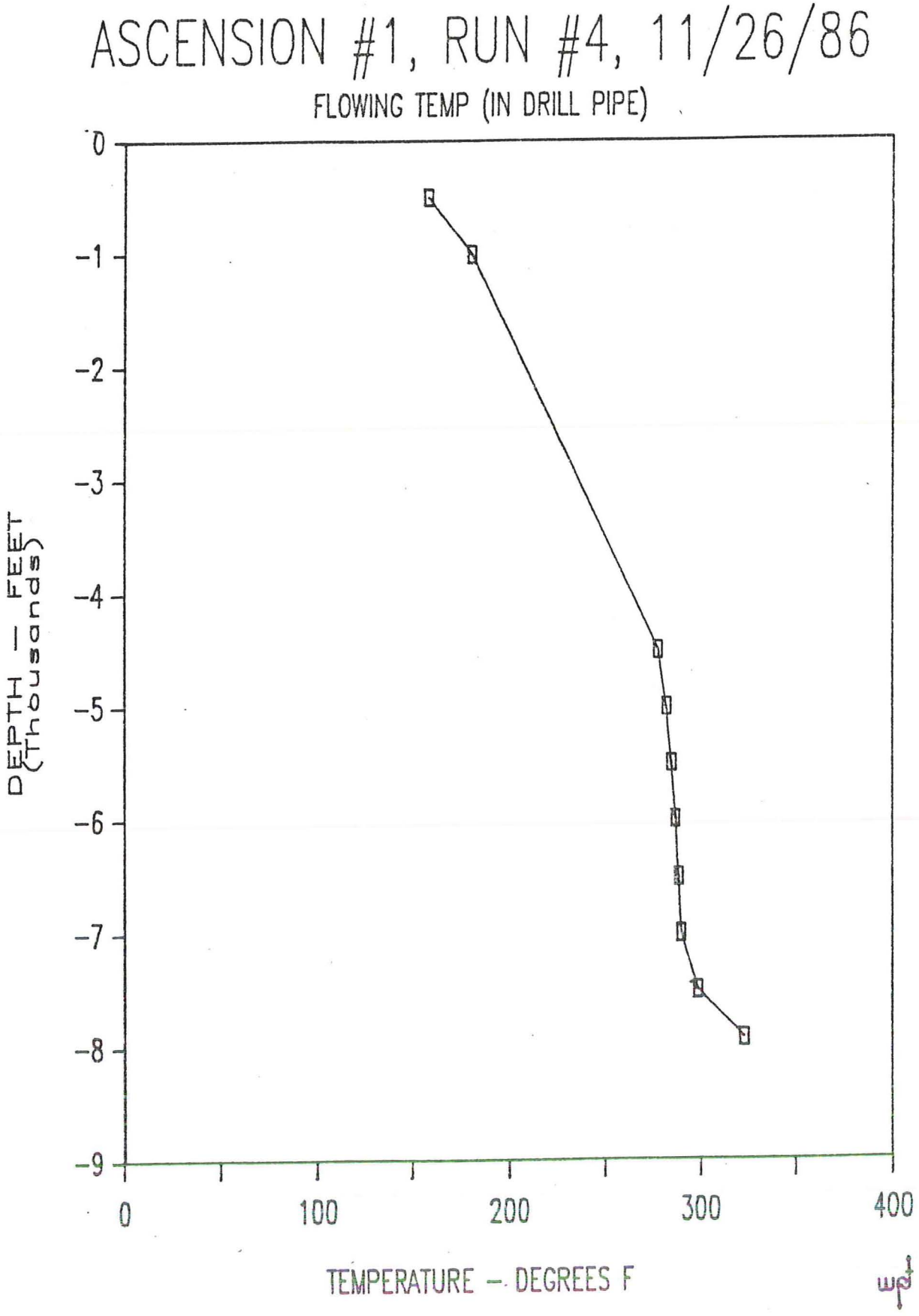

ASCENSION #1, RUN #4, 11/26/86
FLOWING TEMP (IN DRILL PIPE)
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
TEMPERATURE - DEGREES F

FIGURE 7-7

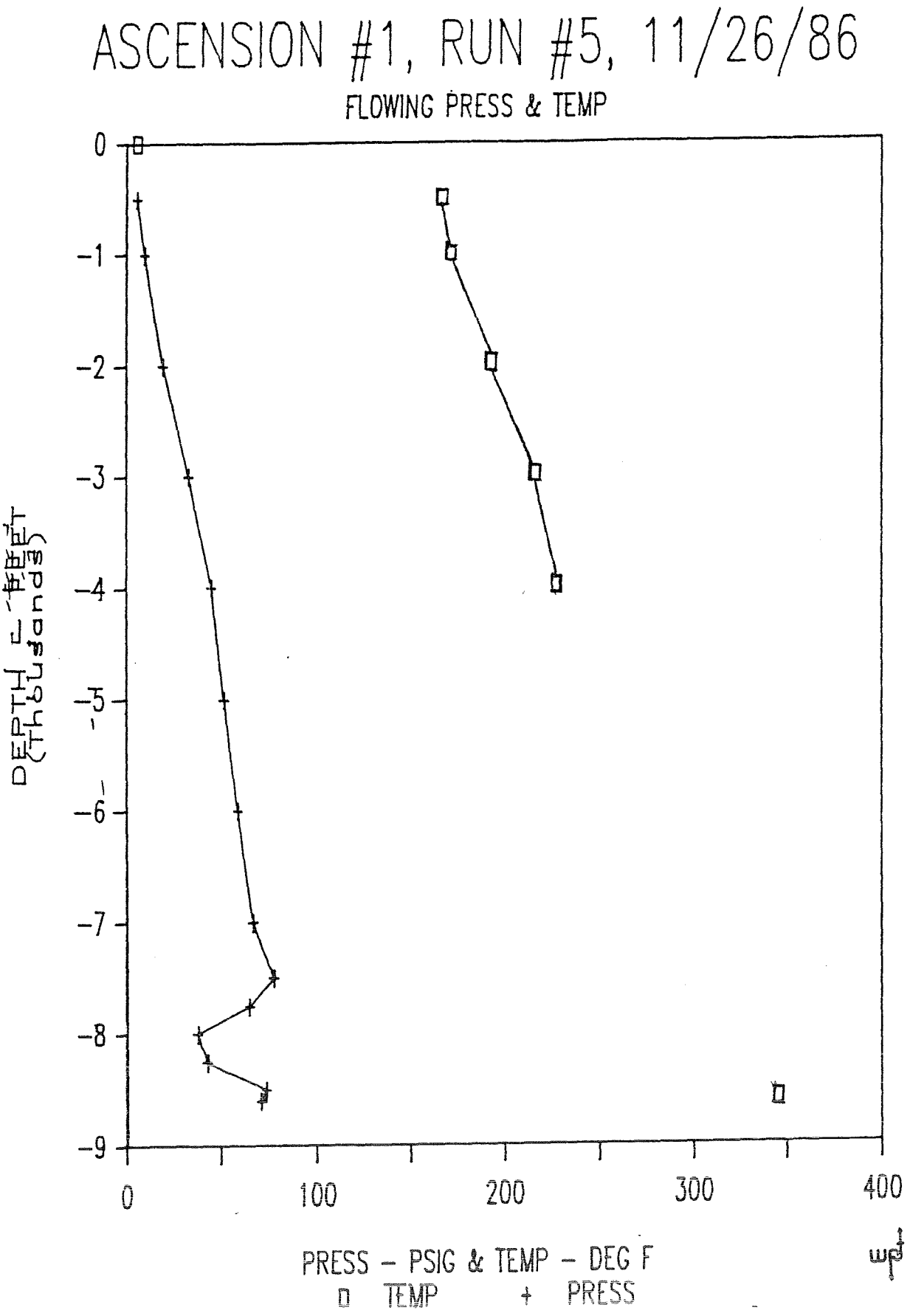

ASCENSION #1, RUN #5, 11/26/86
FLOWING PRESS & TEMP
DEPTH (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
PRESS - PSIG & TEMP - DEG F
TEMP
PRESS

FIGURE 7-8

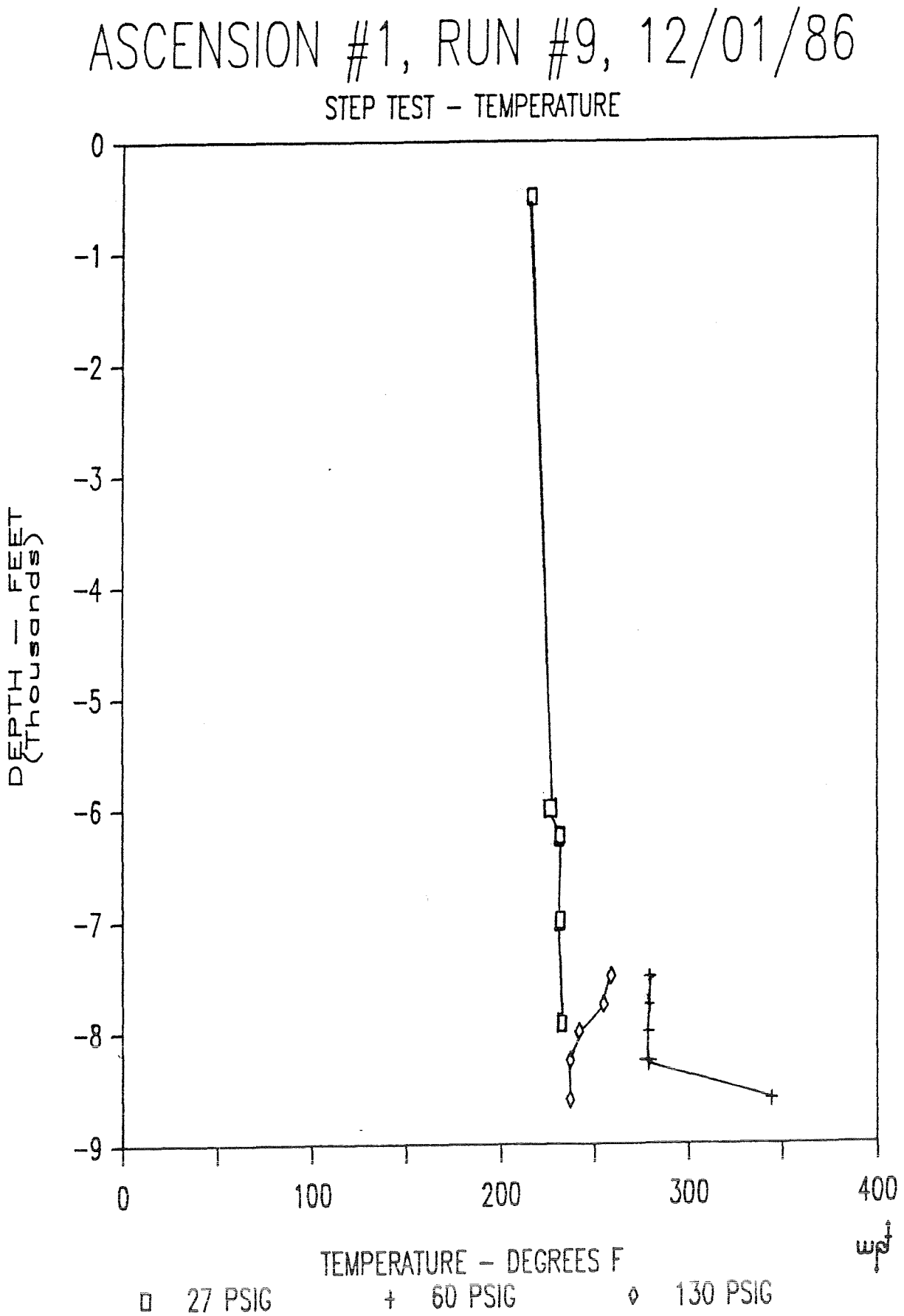

ASCENSION #1, RUN #9, 12/01/86
STEP TEST - TEMPERATURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
TEMPERATURE - DEGREES F
27 PSIG
60 PSIG
130 PSIG

FIGURE 7-9

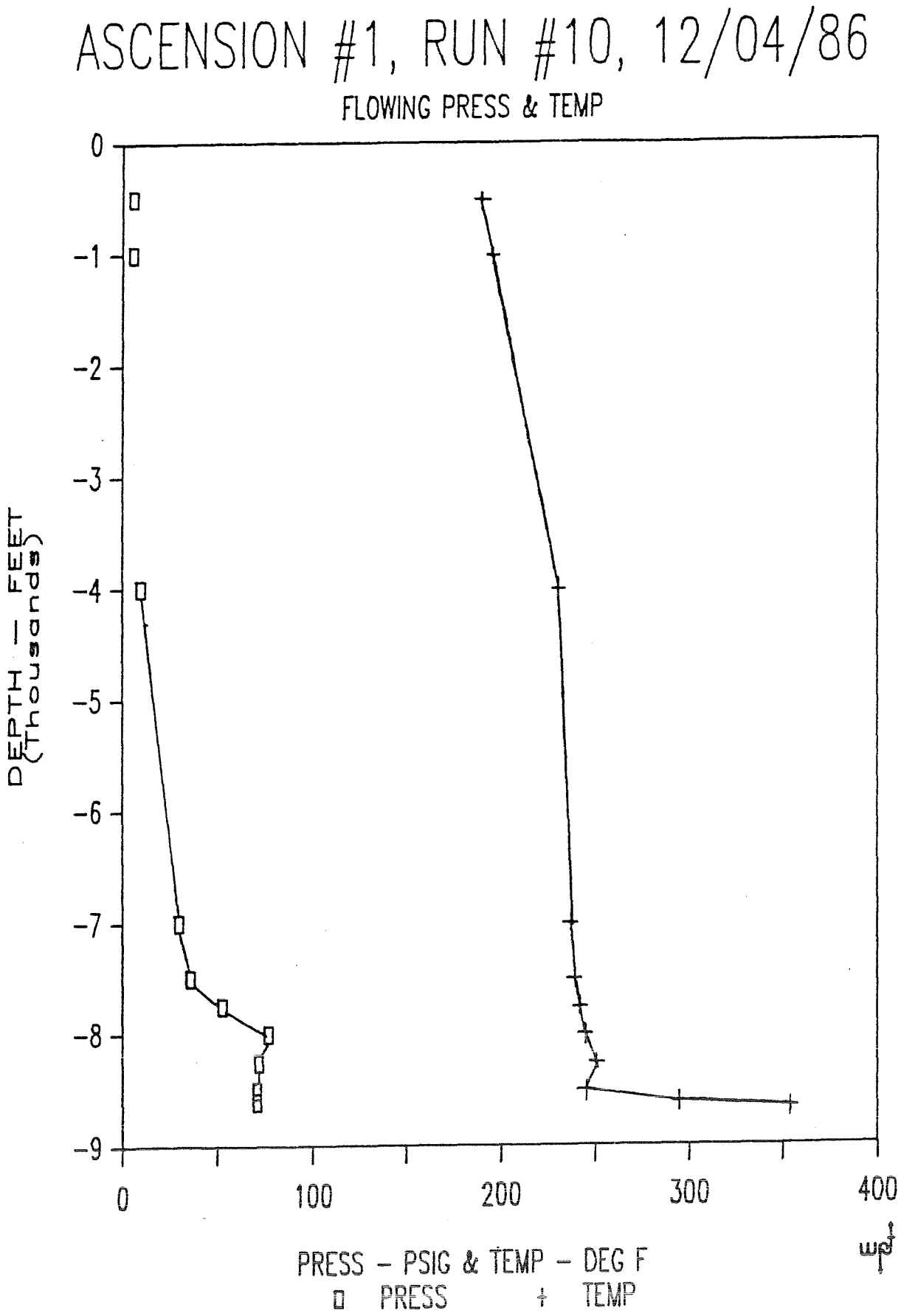

ASCENSION #1, RUN #10, 12/04/86
FLOWING PRESS & TEMP
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
PRESS - PSIG & TEMP - DEG F
PRESS
TEMP

FIGURE 7-10

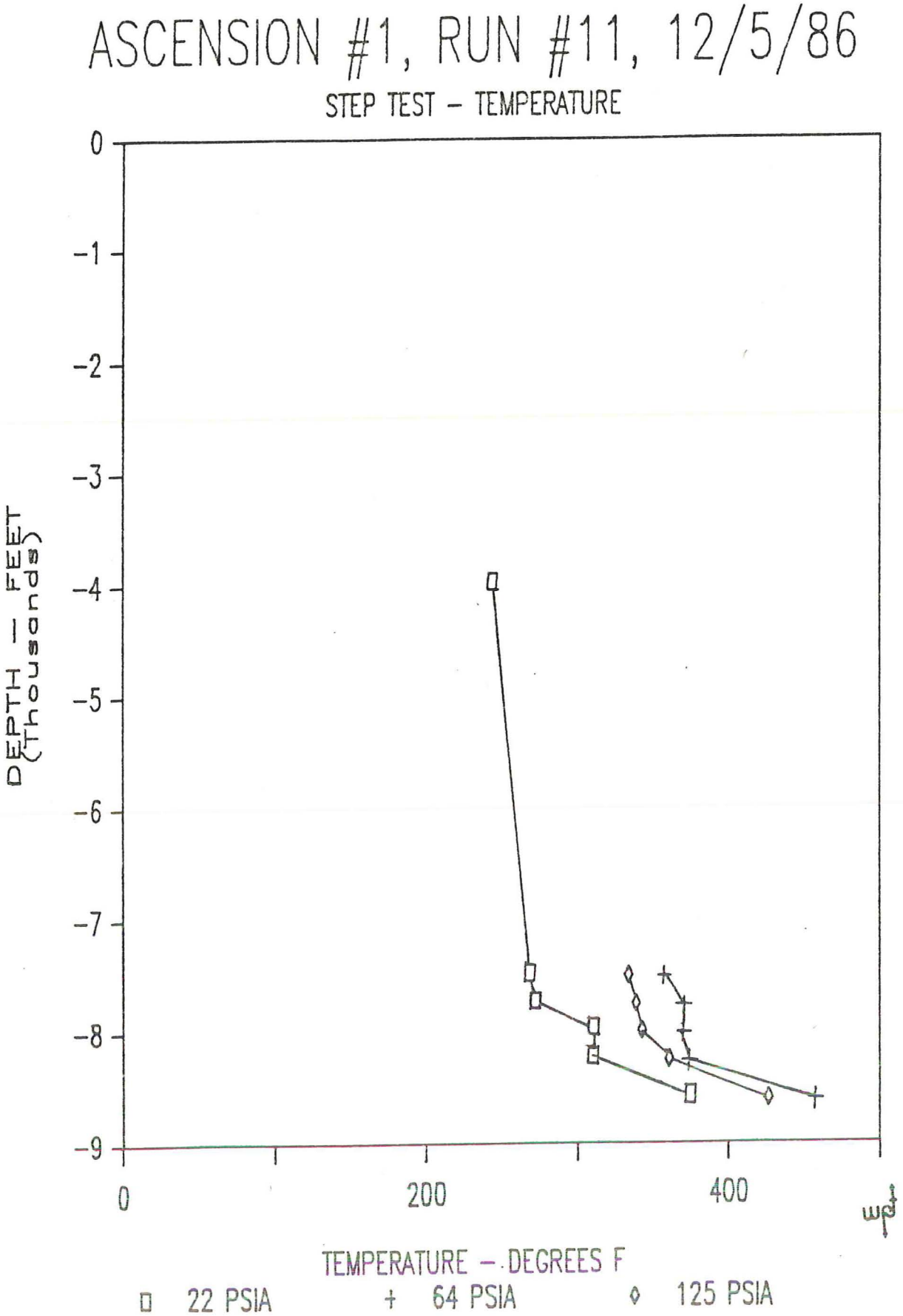

ASCENSION #1, RUN #11, 12/5/86
STEP TEST - TEMPERATURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
200
400
TEMPERATURE - DEGREES F
22 PSIA
64 PSIA
125 PSIA

FIGURE 7-11

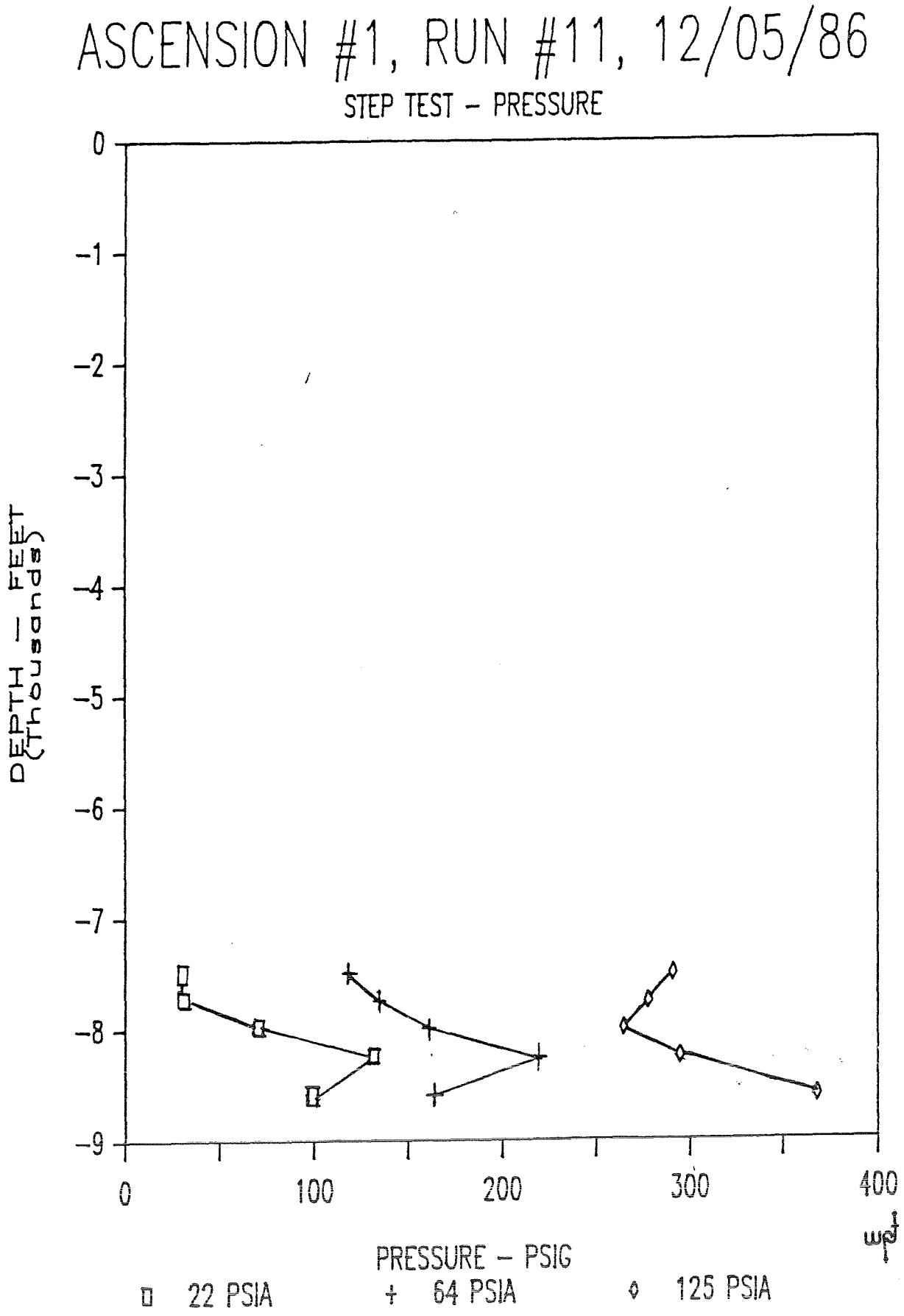

ASCENSION #1, RUN #11, 12/05/86
STEP TEST - PRESSURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
PRESSURE - PSIG
22 PSIA
64 PSIA
125 PSIA

FIGURE 7-12

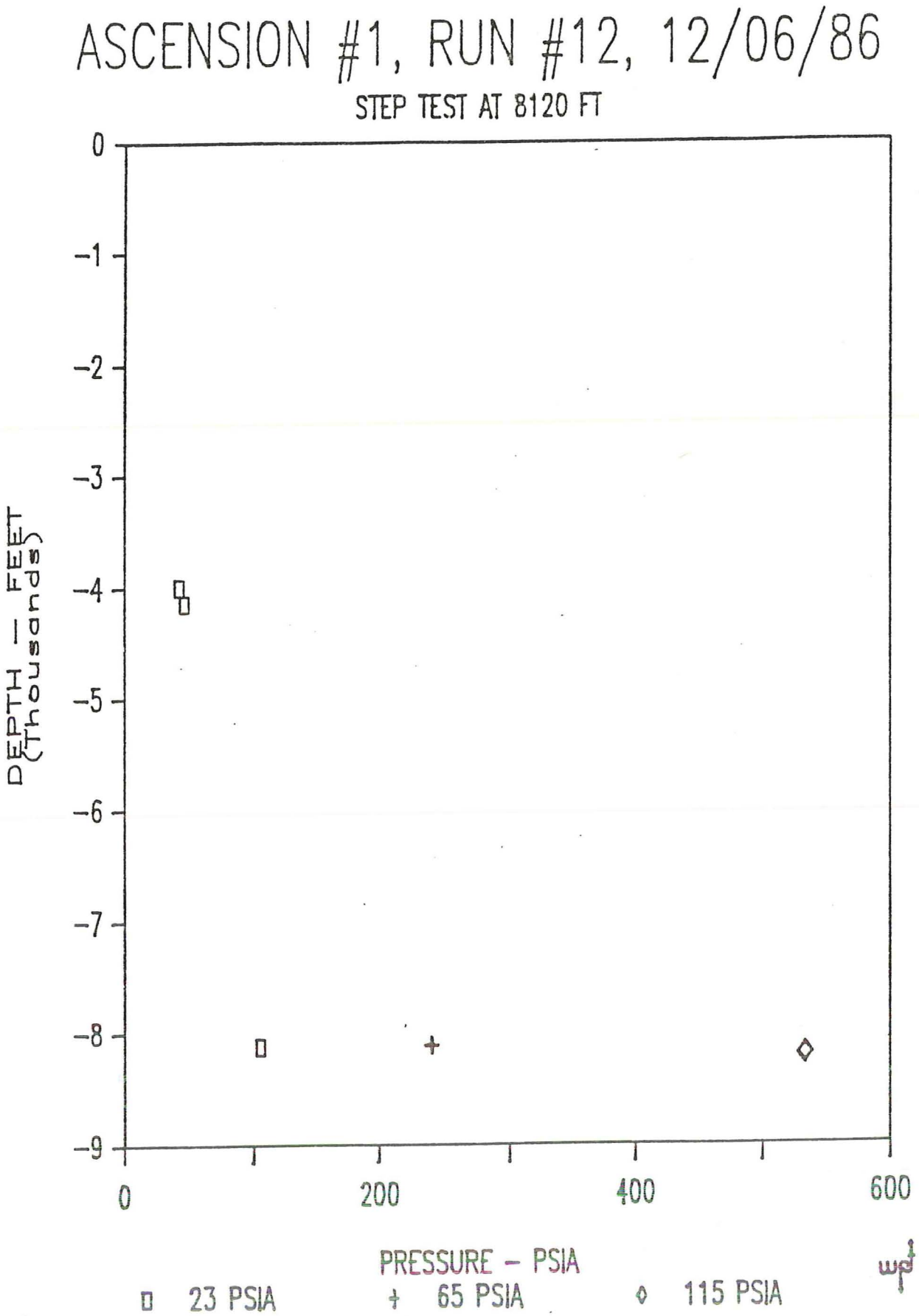

ASCENSION #1, RUN #12, 12/06/86
STEP TEST AT 8120 FT
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
200
400
600
PRESSURE - PSIA
23 PSIA
65 PSIA
115 PSIA

FIGURE 7-13

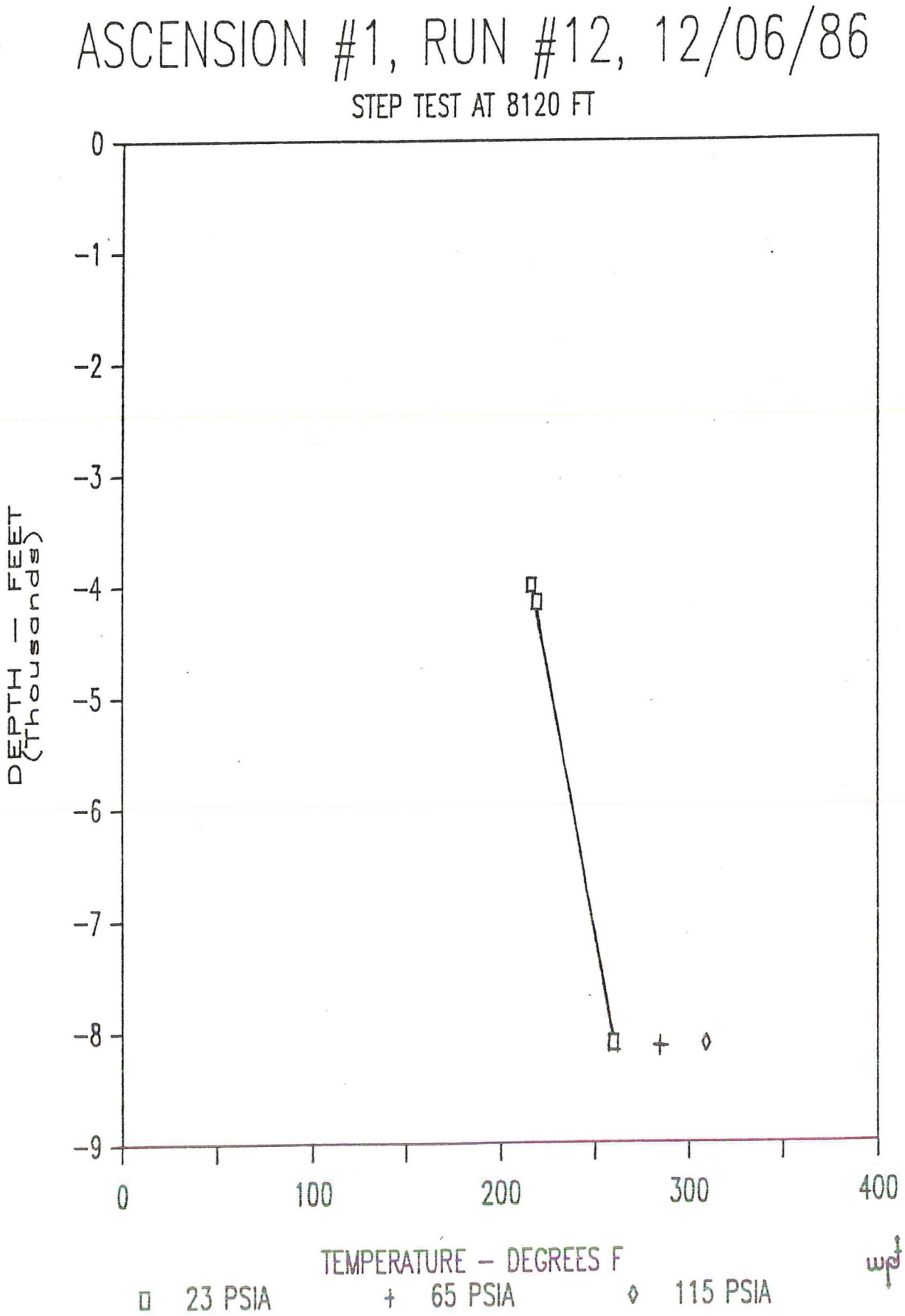

ASCENSION #1, RUN #12, 12/06/86
STEP TEST AT 8120 FT
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
TEMPERATURE - DEGREES F
23 PSIA
65 PSIA
115 PSIA

FIGURE 7-14

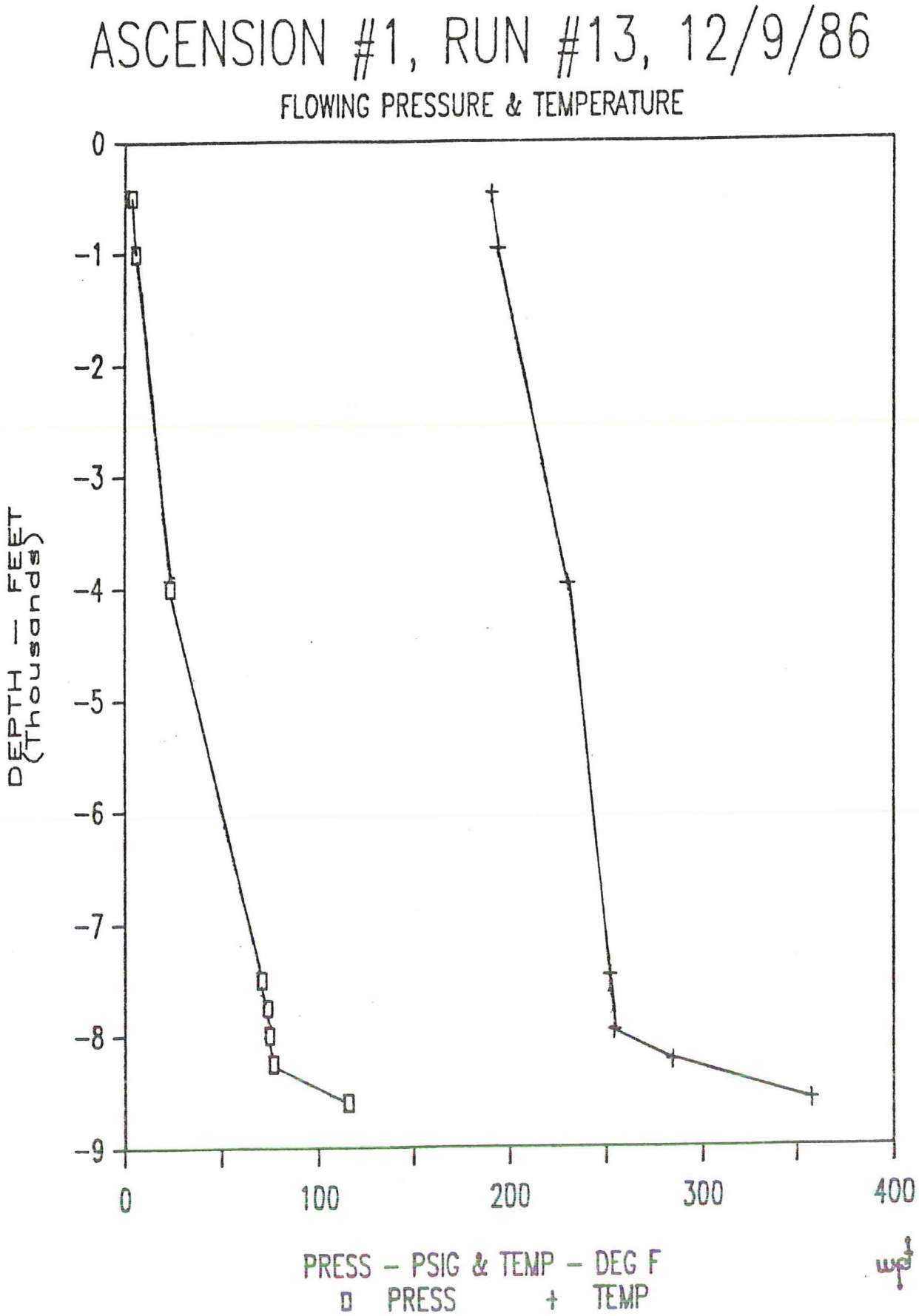

ASCENSION #1, RUN #13, 12/9/86
FLOWING PRESSURE & TEMPERATURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
PRESS - PSIG & TEMP - DEG F
PRESS
TEMP

FIGURE 7-15

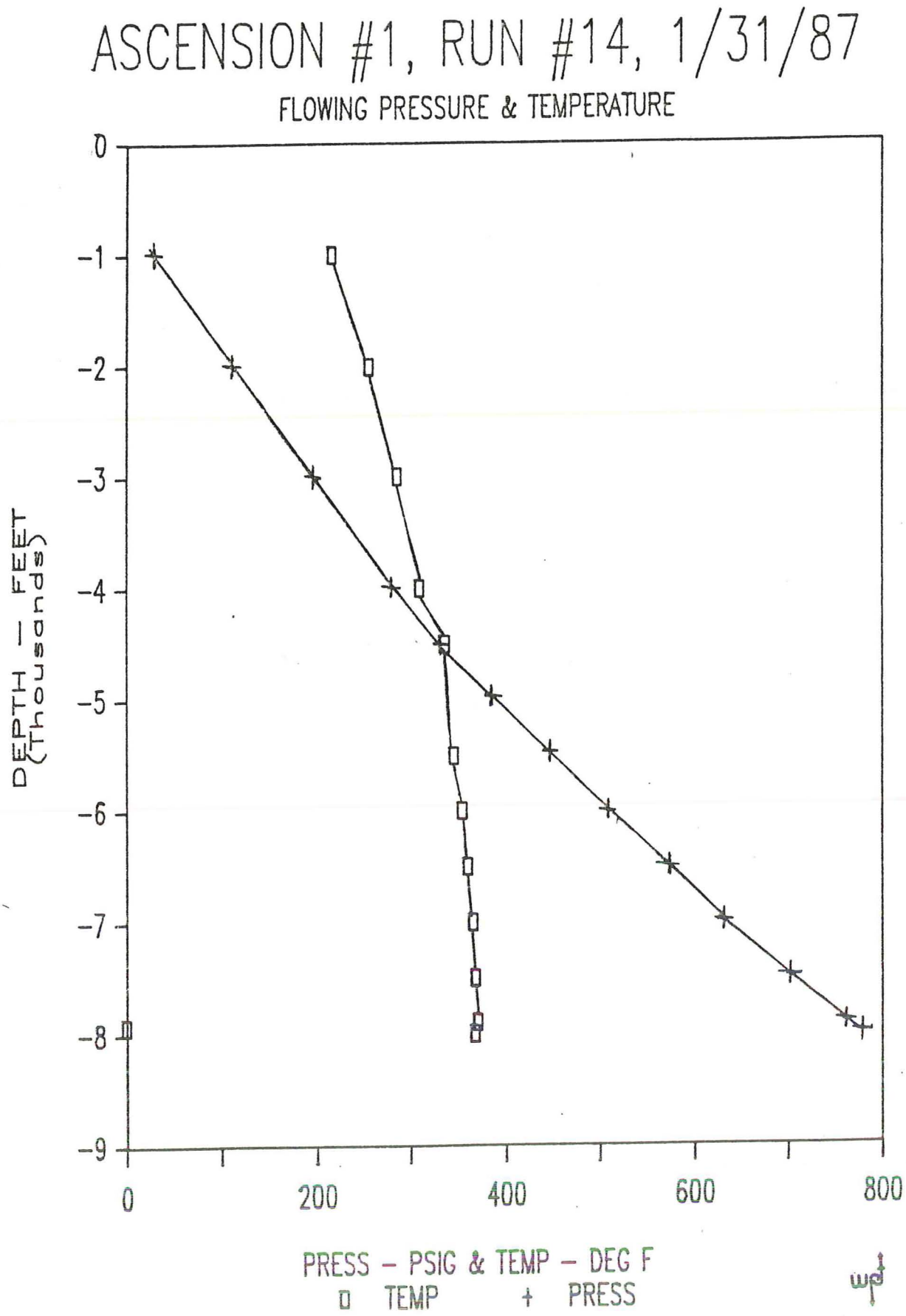

ASCENSION #1, RUN #14, 1/31/87
FLOWING PRESSURE & TEMPERATURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
200
400
600
800
PRESS - PSIG & TEMP - DEG F
TEMP
PRESS

FIGURE 7-16

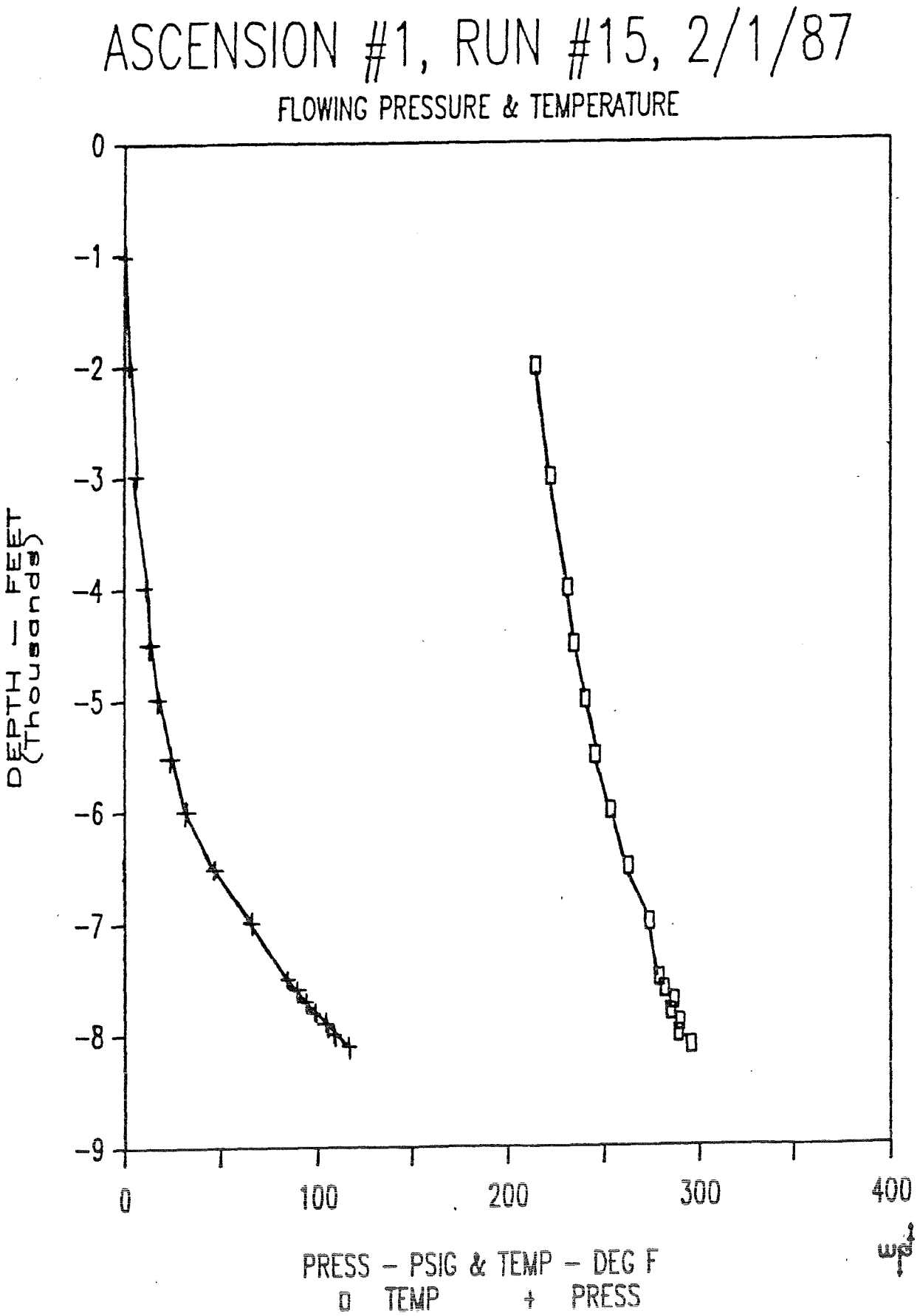
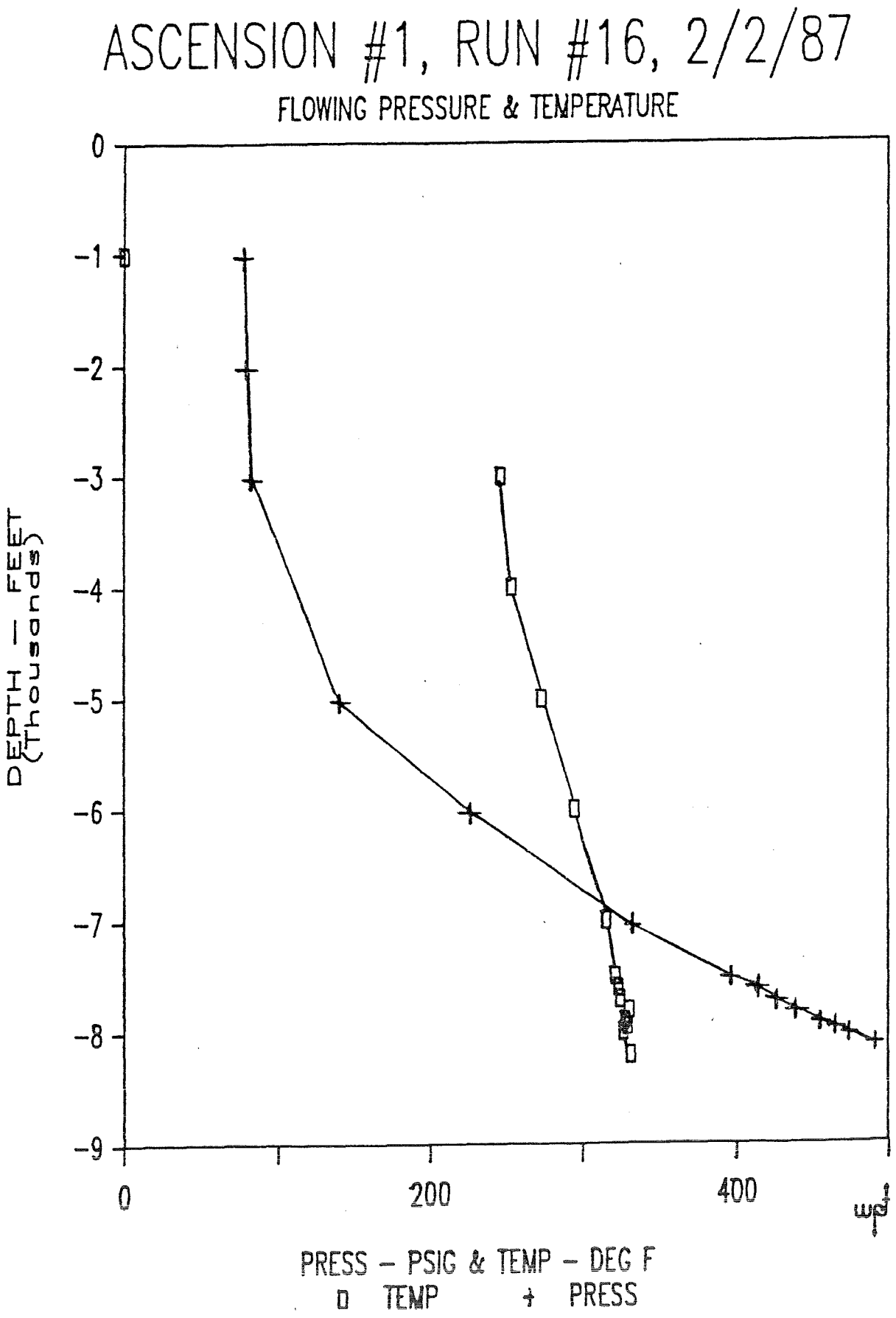

ASCENSION #1, RUN #15, 2/1/87
FLOWING PRESSURE & TEMPERATURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
100
200
300
400
PRESS - PSIG & TEMP - DEG F
□ TEMP
+ PRESS

FIGURE 7-17


ASCENSION #1, RUN #16, 2/2/87
FLOWING PRESSURE & TEMPERATURE
DEPTH - FEET (Thousands)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
0
200
400
PRESS - PSIG & TEMP - DEG F
TEMP
PRESS

46 5492

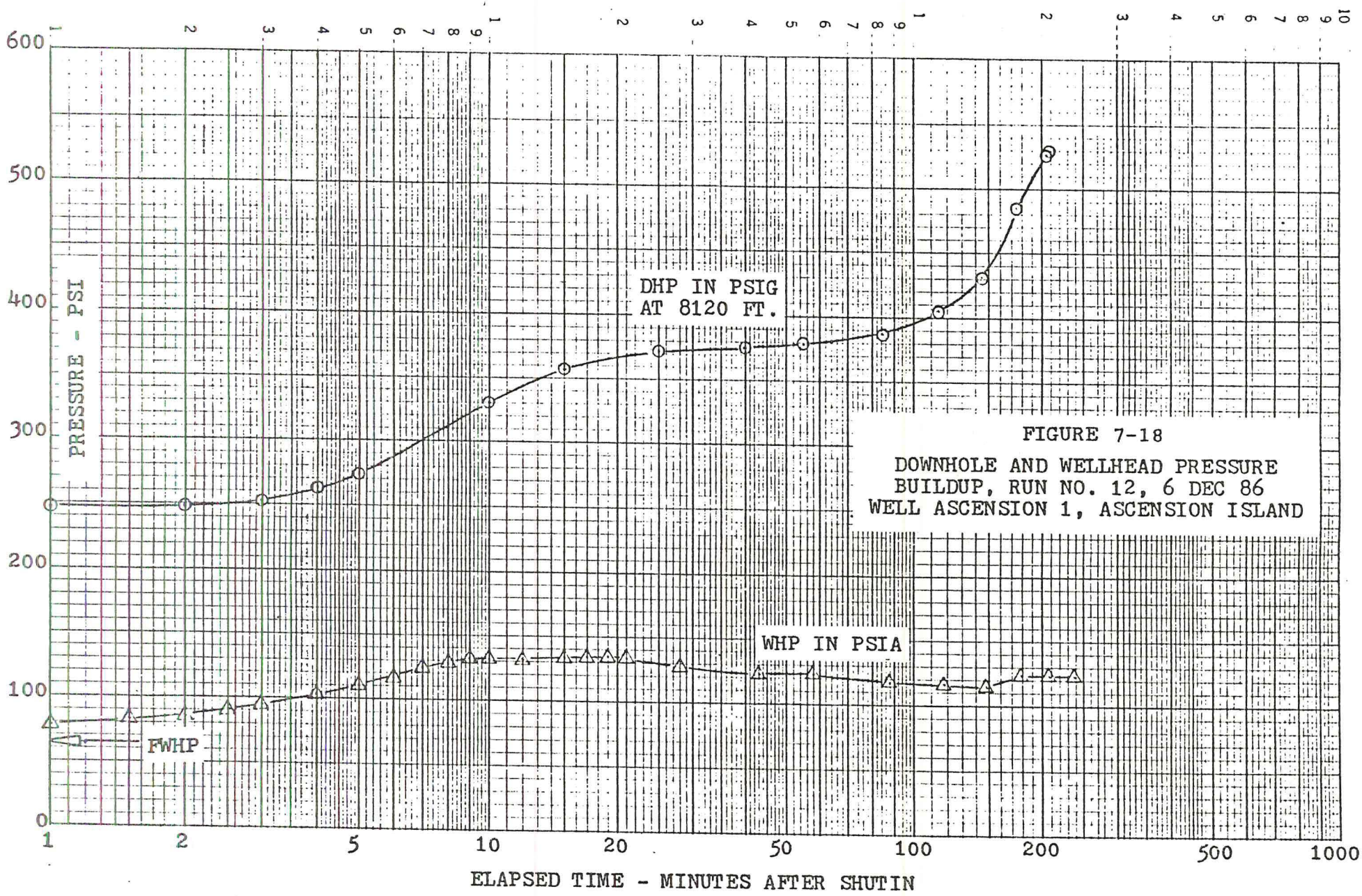


FIGURE 7-18

DOWNHOLE AND WELLHEAD PRESSURE
BUILDUP, RUN NO. 12, 6 DEC 86
WELL ASCENSION 1, ASCENSION ISLAND

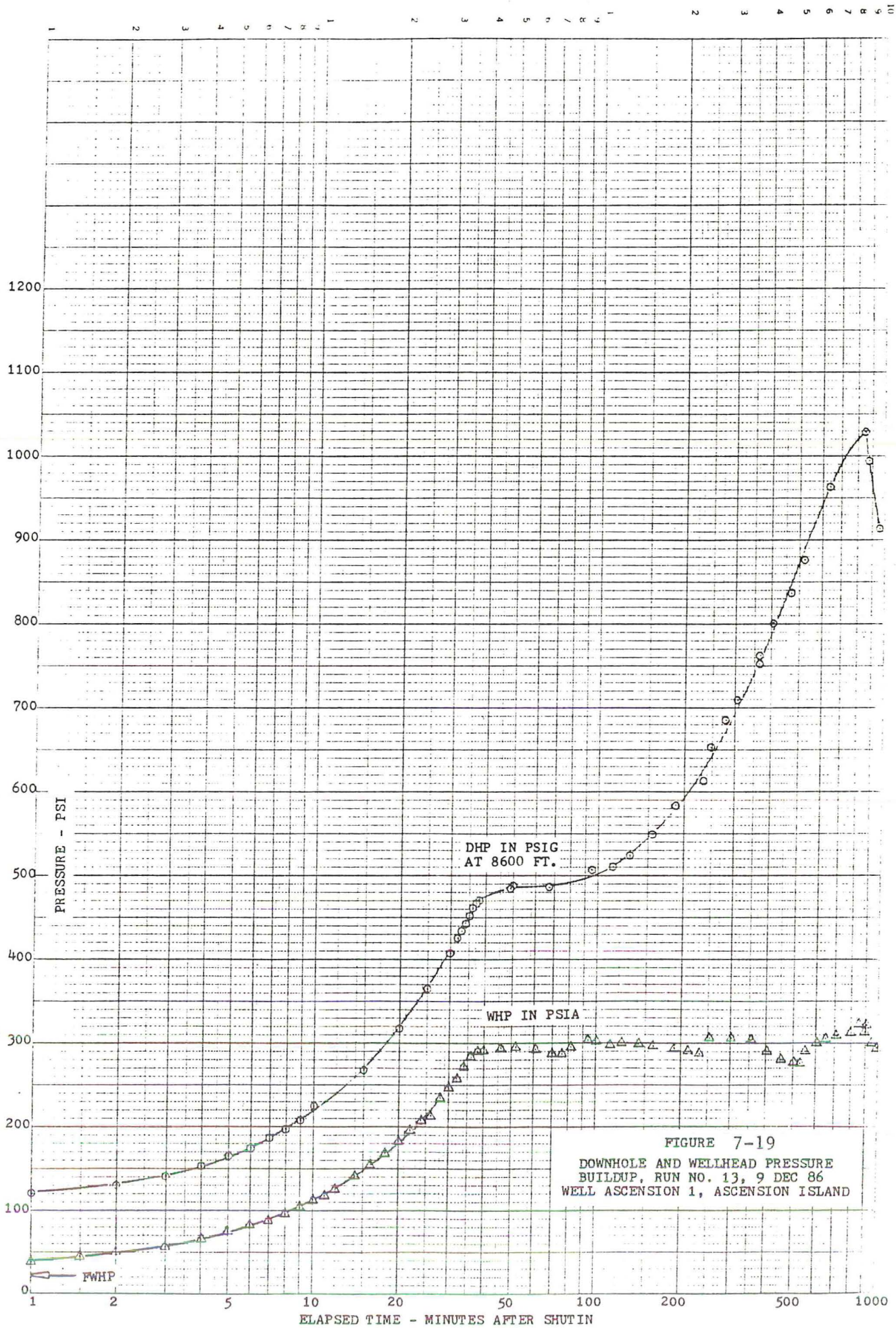


FIGURE 7-19
DOWNHOLE AND WELLHEAD PRESSURE
BUILDUP, RUN NO. 13, 9 DEC 86
WELL ASCENSION 1, ASCENSION ISLAND

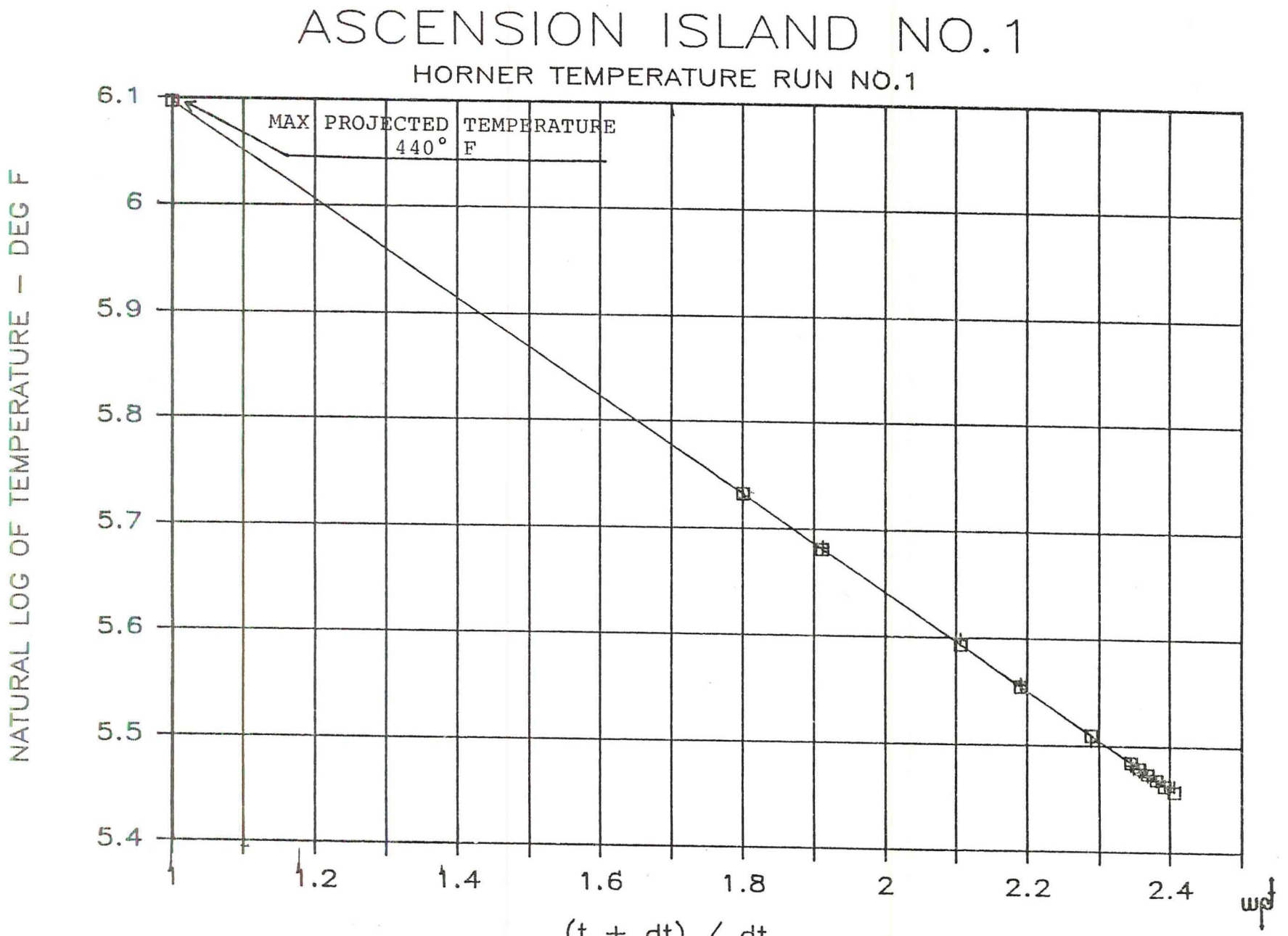

ASCENSION ISLAND NO.1
HORNER TEMPERATURE RUN NO.1
MAX PROJECTED TEMPERATURE
440° F
NATURAL LOG OF TEMPERATURE - DEG F
6.1
6
5.9
5.8
5.7
5.6
5.5
5.4
1
1.2
1.4
1.6
1.8
2
2.2
2.4
(t + dt) / dt

FIGURE 7-20

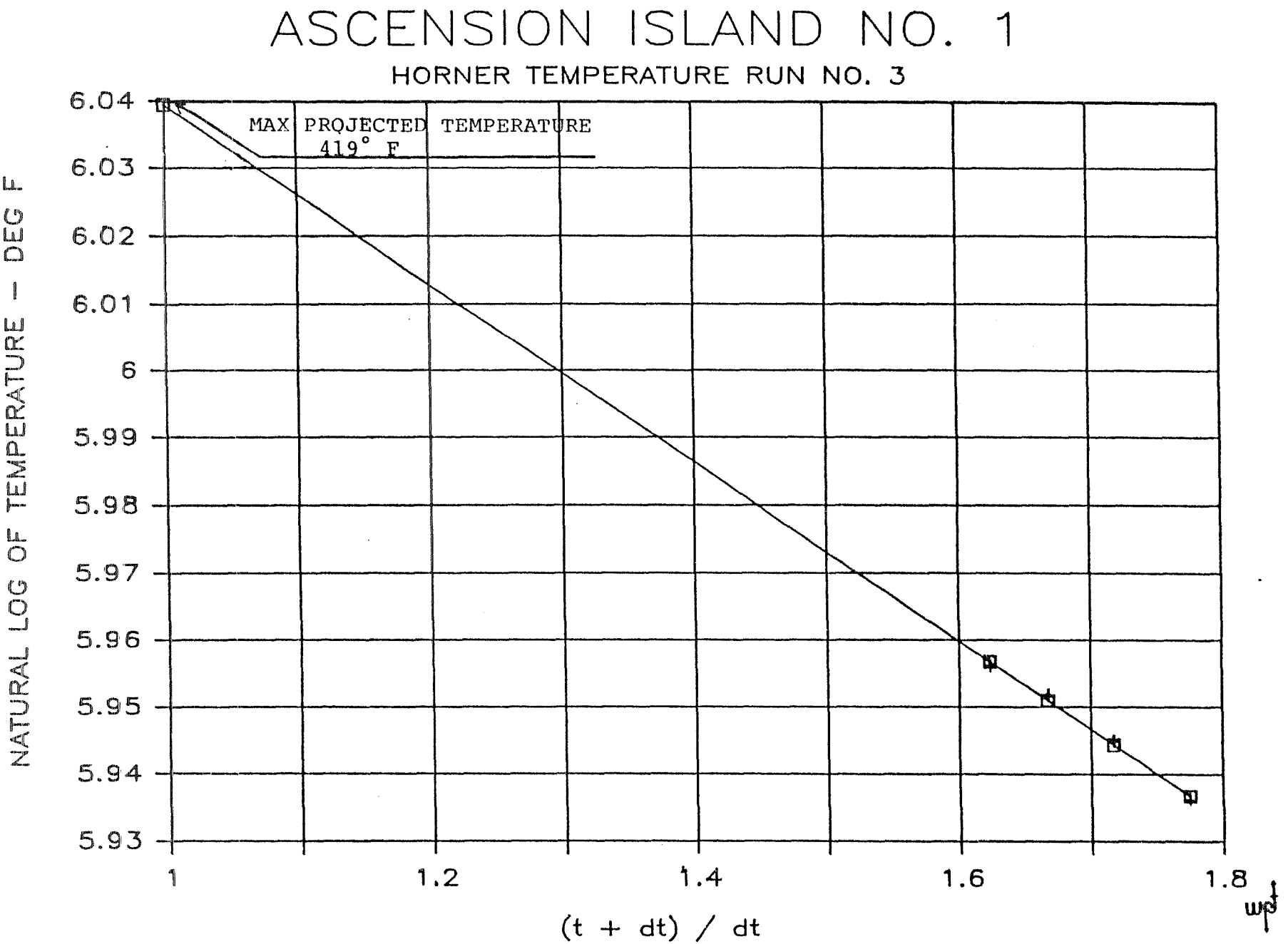
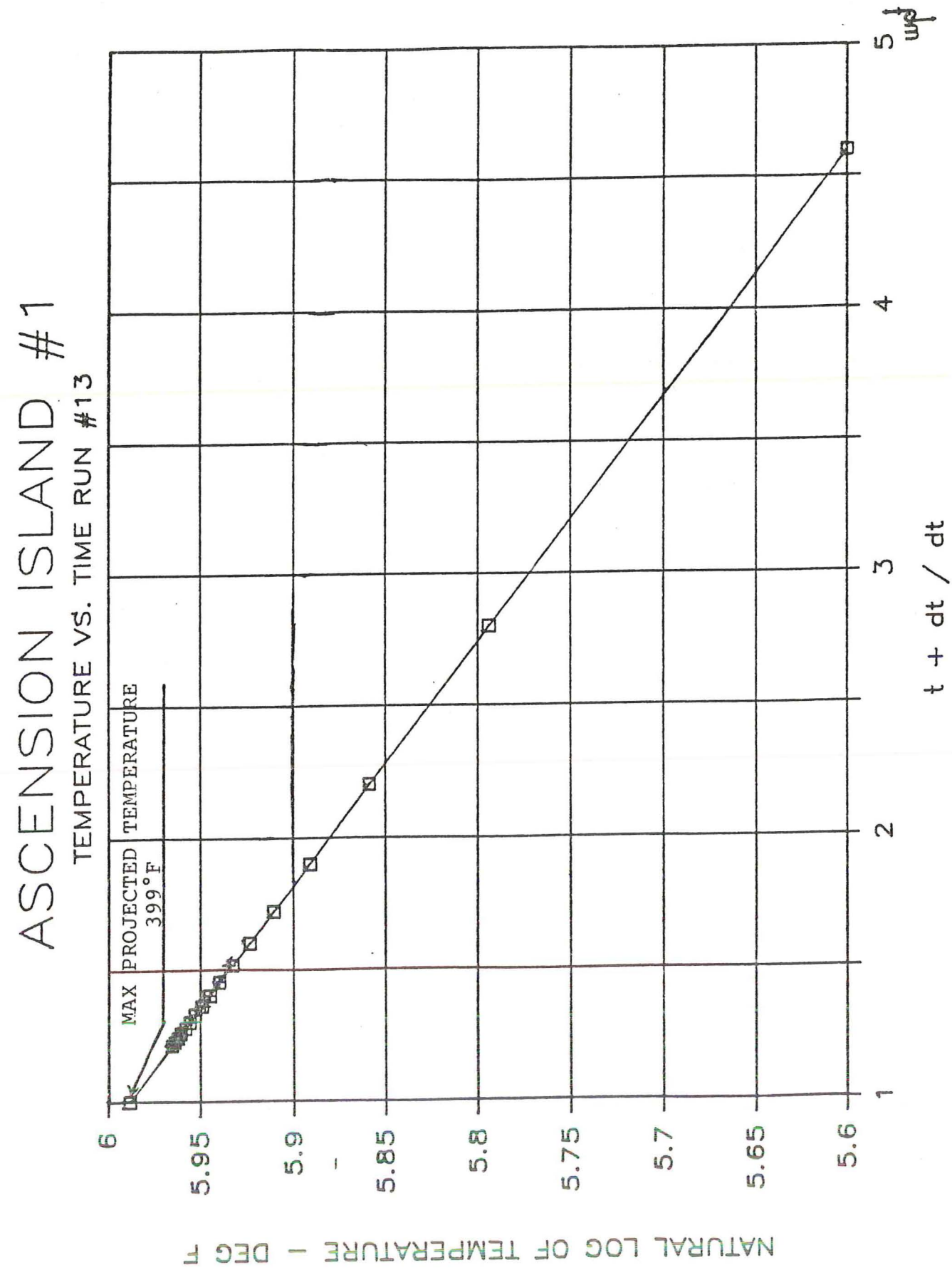

ASCENSION ISLAND NO. 1
HORNER TEMPERATURE RUN NO. 3
MAX PROJECTED TEMPERATURE
419° F
NATURAL LOG OF TEMPERATURE - DEG F
6.04
6.03
6.02
6.01
6
5.99
5.98
5.97
5.96
5.95
5.94
5.93
1
1.2
1.4
1.6
1.8
(t + dt) / dt

FIGURE 7-21

FIGURE 7-22


ASCENSION ISLAND #1
TEMPERATURE VS. TIME RUN #13
MAX PROJECTED TEMPERATURE
399°F
NATURAL LOG OF TEMPERATURE - DEG F
6
5.95
5.9
5.85
5.8
5.75
5.7
5.65
5.6
1
2
3
4
5
t + dt / dt

8. CHEMICAL SAMPLING AND ANALYSIS

The purpose of this section is to explain and document sample collection, the method used to compare fluid vs gas production, the date and time of sample collection, and to present the initial results

8.1. Sample Rake Construction

The sample rake was constructed of 1/4-inch SS tubing approximately 22 inches long. The inboard end of this tubing was plugged. Three slots were milled into the inboard end, one approximately 1/2 inch from the plugged end, one approximately 4 inches from the plugged end, and one approximately 7 inches from the plugged end. These slots were approximately 3/16-inch wide and penetrated approximately 1/3 of the inner diameter of the tubing. On the outboard end of the tubing was a valve, a 0-30 PSIG gauge and a cooling coil suspended in a five-gallon bucket of cool water. A 24-inch piece of Tygon tubing was attached to the end of this coil for gas sampling. The SS tubing was inserted through a 1/4-inch hole in a 1/2-inch NPT double male-ended fitting and a ferrel crimped onto it as a stop. This unit was inserted through a ball valve and into the flow stream (see Figure 4-1).

8.2. Gas Sample Collection

Gas samples were collected in evacuated glass bombs using standard gas sampling techniques. The glass bombs contained a sodium hydroxide solution to absorb CO_2 and cadmium sulfate, which precipitates cadmium sulfide in the presence of H_2S.

8.3 Liquid to Gas Flow Measurement

Samples were taken perildically to measure the ratio of noncondensable gas to water in the well effluent. These samples were collected from the sample rake. To determine the relative flow rates the time to fill a known volume was recorded. A 550-ml sample

was used. The water samples filled the bottle to a depth of 1-inch approximately 85-ml). This volume was selected due to the length of time it took to collect that amount of water. The gas samples were acquired by inverting a water-filled bottle in the bath and timing the gas displacement.

These measurements were susceptible to two sources of error. The measurement uncertainty of the gas sample was large due to the short time needed to fill the bottle and difficulties in inserting the sample line into the bottle. An uncertainty of 20% seems reasonable for these measurements. The second source of error is the assumption of uniform water content over the vertical cross-section of the piping. It is possible that a protion of the water is not entrained but flows along the bottom of the pipe. This effect is ameliorated somewhat by the location of the sample port (downstream of two 90° turns), but is still a possible source of error.

8.4 Results of Chemical Analysis

A series of liquid and gas samples were collected from the flow line during the flow test and again in late January, 1987. Preliminary analyses of the samples collected during the flow test have been completed and are included as Appendix H.

The first gas sample collected apparently had some air contamination, as evidenced by the analysis of the gas in the head space. The analysis was corrected for the air contamination by applying a proportional correction to the remainder of the atmospheric gases. The corrected analysis showed:

CO_2 - 98.6% by volume
N_2 - 1.24%
Ar - trace
Hydrogen sulfide, ammonia, methane, hydrogen were not detected (detection limits 2 X 10^{-3} vol %)

The high CO_2 concentration and the relatively slow CO_2/NaOH

reaction kinetics complicated gas sample collection and no reliable determination of the weight percent of gas and liquid could be made.

Table 8-2 presents analyses of the first three liquid samples collected during the flow test compared to sea water. A trilinear plot of the 11/28/86 sample (Figure 8-1) indicates that the fluid being produced is similar to sea water, enriched in calcium. This enrichment is probably due to rock-water interactions. Isotope data indicate that the fluids are not magmatic in origin.

Significant variability was observed in the chemical analyses of the liquid samples collected during the test. This is indicative of the complex two-phase, two-component flow dynamics which exist in the wellbore. As a result, there is no reliable basis for determining the chemical composition of the fluids as they exist in the reservoir.

TABLE 8-1

CHEMICAL SAMPLE COLLECTION SUMMARY

DATE	TIME	SYNOPSIS OF SAMPLE COLLECTION
11/28		Liquid sample collected
12/2		Liquid sample collected
12/3	0940	2 Phase sampling device installed
	1000	Two fluid samples collected
	1700	Fluid vs gas flow measured
12/4	0320	Fluid vs gas flow measured
	0945	Fluid vs gas flow measured
	2043	Gas sample collected
12/5	0500	Fluid vs gas flow measured
	0852	Fluid vs gas flow measured
	1330	Fluid vs gas flow measured
	1445	Gas sample collected
	1615	Gas sample collected
12/6	0003	Fluid vs gas flow measured
12/7	1000	Fluid vs gas flow measured
	1400	Fluid vs gas flow measured
	1400	Condensate sample taken
	1800	Fluid vs gas flow measured
	2300	Condensate sample taken
	2345	Fluid vs gas flow measured
12/8	0614	Fluid vs gas flow measured
12/9	0200	Fluid vs gas flow measured
	0920	fluid vs gas flow measured

TABLE 8-2

WATER TO GAS RATIO MEASUREMENTS

SAMPLE NUMBER	DATE	TIME	WELLHEAD PRES. psia	WATER TIME	GAS TIME	MH_2O MCO_2
1	12/3	1700	24.7	8'0"	4"	0.69
2	12/4	0320	22.5	3'59"	3.55"	1.23
3	12/4	0940	22.4	3'59"	2.39"	0.83
4	12/5	0500	21.5	2'59"	4.74"	2.23
5	12/5	0900	22.2	2'42"	4.54"	2.32
6	12/5	1330	62.7	10'25"	0.84"	0.11
7	12/6	0000	22.5	3'2"	4.25"	1.94
8	12/7	1000	22.0	2'57"	4.64"	2.17
9	12/7	1400	21.8	3'6"	4.90"	2.18
10	12/7	1800	21.5	2'48"	5.17"	2.55
11	12/7	2100	21.1	2'29"	5.40"	3.00
12	12/7	0614	21.3	2'46"	5.10"	2.54
13	12/9	0200	21.2	2'40"	5.70"	2.95
14	12/9	0920	21.0	2'39"	5.29"	2.76

TABLE 8-2

ASCENSION #1 FLUID CHEMISTRY

	11/28/86 (ppm)	12/2/86* (ppm)	12/4/86 (ppm)	Sea water (mg/L)
Na	7780	3280	8830	10500
Mg	16.2	5.85	8.77	1350
Ca	4120	1660	4790	400
K	563	249	701	380
Sr	79.9	34.1	92.8	8.0
B	21.6	7.88	27.5	4.6
Li	3.09	1.87	5.39	0.17
Rb	--	--	--	0.12
Ba	2.20	0.78	2.43	0.03
Fe	127	24.0	75.4	0.01
Zn	0.33	nd	nd	0.01
Al	nd	nd	nd	0.01
Cu	nd	nd	nd	0.003
Mn	3.31	1.52	1.85	0.002
Ni	0.34	nd	nd	0.002
La	0.79	0.33	0.81	$3x10^{-6}$
SiO_2	205	70.8	205	3.0**
Cl^-	18900	7700	21600	19000
$SO_4^=$	132	53.0	143	2660
HCO_3^-	240	217	327	142
Br^-	--	--	--	65
F^-	0.50	0.70	0.65	1.3

* Sample collected immediately following first step test.

** as Si.

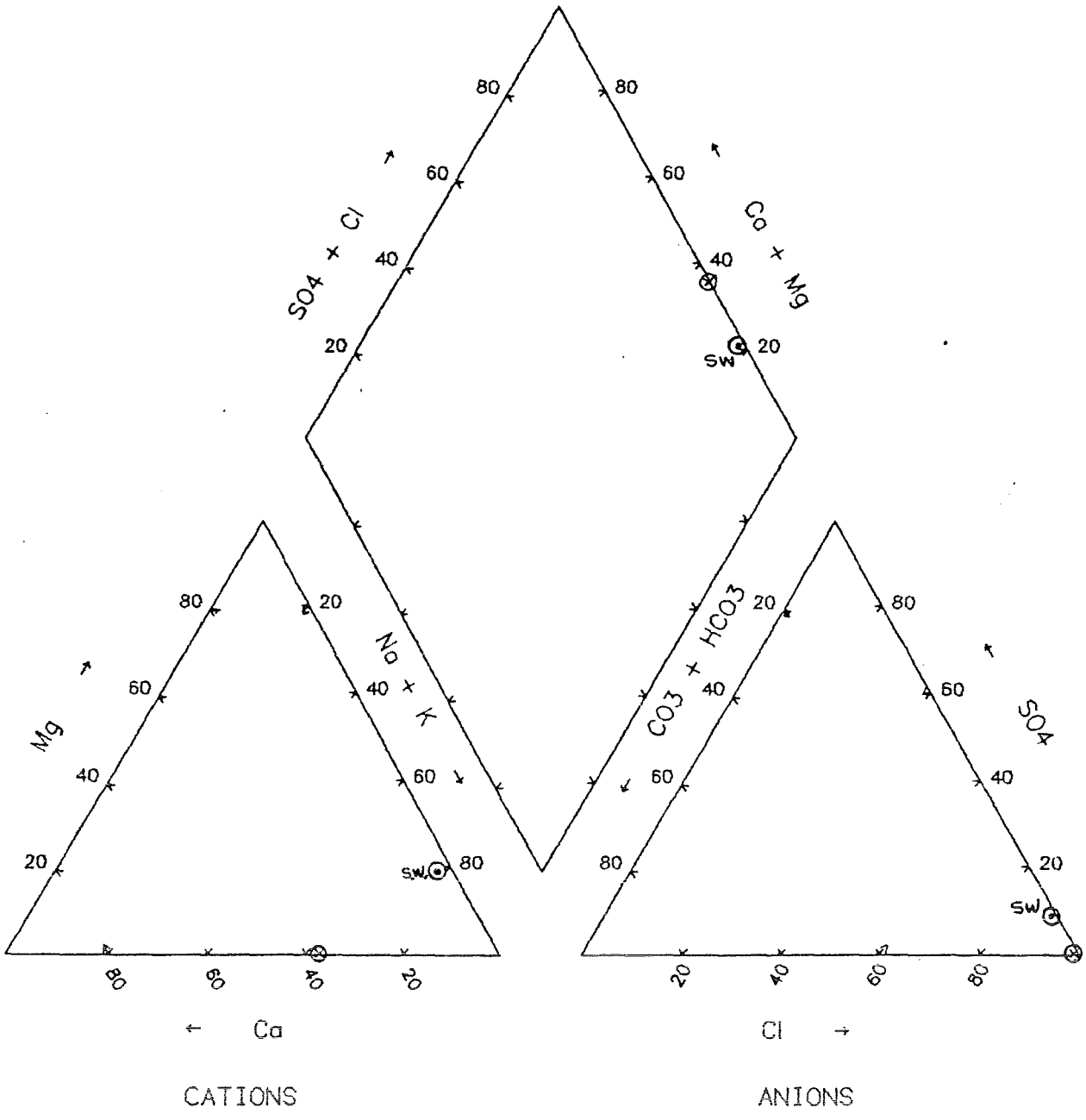
FIGURE 8-1

ASCENSION #1

TRILINEAR PLOT

ASCENSION
CONDENSED FLIUD 11/28/86

UURI ID# A:AS112886
DATE: 09-29-86



⊙ Seawater

PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. Conclusions

The mud log (Appendix B) and the temperature logs indicate that the well appears to have entered a carbon dioxide zone at approximately 8050 feet which corresponds to the top of a carbonate-rich zone. This permeable zone appears to exist between 8050 and 8400 feet. The well has no significant water inflows, and there appears to be no significant flow into the well below 8400 feet.

The maximum temperature measured in logging run #11 (457°F) in the wellbore is high enough for electric generation at the depths encountered. This temperature is supported by temperature projections from other runs, however a suitable hydrothermal resource has not been encountered, and until water is located in a suitably permeable reservoir the project is still in an exploratory phase.

The temperature gradient from 6240 to 8640 feet is estimated to be 1.0°F/100 feet, and 23.7°F/100 feet from 8250 to 8600 feet. The first gradient is based on a Horner projection of 434°F at 6240 feet from logging run #1 and the maximum measured temperature of 457°F at 8600 feet from logging run #11. The higher gradient is based on a measured temperature of 374°F at 8250 feet and the maximum measured temperature of 457°F at 8600 feet, both from logging run #11. Significant deviation of the wellbore from the vertical would result in a higher than predicted gradient.

There is no evidence of a producing hydrothermal resource at the present depth (8706 feet). The bottomhole temperatures are approaching those required for the well to sustain water flow if a hydrothermal resource were encountered. The slow decrease in wellhead pressure indicates that the carbon dioxide

(CO_2) reservoir above the granite intrusion has a significant volume and low permeability. The continual inflow of gas into the wellbore precludes a column of pure liquid standing in the wellbore. The shut-in wellhead pressure has the potential of reaching 3000 psig, but with some water inflow may stabilize at 2000 psig.

The magnitude of the CO_2 inflow and the high temperature at the bottom of the hole are positive indications of a potential hydrothermal resource. However, it is not clear if the postulated resource is located below or along side of the present well bore. A high temperature gradient would be indicative of a resource below the present well bottom, while a moderate gradient would indicate that the borehole is paralleling the fractures that contain the resource.

Chemical analyses of the recovered fluids indicate that the fluid from a potential hydrothermal zone may be entering the wellbore. The wellbore flow behavior is too complex for detailed chemical analysis to yield definitive results.

9.2. Recommendations for Additional Data

The location of the bottom of the well should be determined by running a directional survey. A downhole water sample should be taken if possible to provide an indication of the nature of the potential resource.

It does not appear to be necessary to collect additional flow data since the present inflow zones do not represent sufficient heat influx for exploitation. A shut-in pressure and temperature survey may provide additional indications of the location and nature of the present producing zones (the present mechanical completion equipment is inadequate to allow shut-in at high pressure conditions).

A suite of electric logs would provide a great deal of information on the formations penetrated by the wellbore and the potential for a hydrothermal resource. A gamma ray/cement bond log, porosity, caliper and sonic log would be advisable. In addition, after running the directional survey, it would be advisable to run a dipmeter to determine the dip of the granite contact and give an indication of the potential direction to drill toward a hydrothermal resource.

9.3. Recommendations for Continuation of the Project

Data to date are not conclusive in supporting the existence of a hydrothermal resource, however, further exploration appears warranted. The continuous flow of CO_2 indicates that its source is not an isolated pocket. The existence of CO_2 in a reservoir of some size positioned just above an apparent increase in temperature gradient are positive indications that there is a hydrothermal resource in the area penetrated by this well. The postulated resource may either be deeper in this bore or in close proximity. If the granite encountered in the bottom of the hole is the host rock for the fractures that contain the resource, the resource should be close to the bore (within 1000 feet).

There are two possible actions for this well:

Isolate the CO_2 zone and deepen to approximately 9500 feet or until a significant production zone is reached.

If the directional survey indicates that the bottom hole is not in the target area, sidetrack the well and complete in the fractured area.

10. References

1. Ascension #1 Drilling Report to be issued by The University of Utah Research Institute, Earth Science Labratory in 1987.

2. Nielson, D.L., 1982, "TECHNICAL REPORT GEOTHERMAL POTENTIAL OF ASCENSION ISLAND, SOUTH ATLANTIC PHASE I - PRELIMINARY EXAMINATION", University of Utah Research Institute.

3. Sibbett, B.S., D.L. Nielson, M.C. Adams, 1984, "TECHNICAL REPORT GEOTHERMAL GRADIENT DRILLING & MEASUREMENT ASCENSION ISLAND, SOUTH ATLANTIC OCEAN", University of Utah Research Institute.

4. Test Plan for the Flow Test of the Ascension Island Geothermal Exploratory Well", Well Production Testing, Inc., May 19, 1986, I86-05-01

APPENDIX A

TEST SUPERVISORS LOG

20

Nov. 30 - Sunday

Bob is writing software for data acquisition system.

[redacted] Installed two thermowells downstream of wellhead while master valve shut-in. RTD in one well & bi-metallic in the other.

Completed connecting wires for DAS.

Replumbed WH to add a 300# gauge to the 600# gauge. WH pressure too low to read on higher-range gauge.

Lee rigged up his tools with a centralizer to see if he could get down hole. [redacted] Closed master valve & bled well through the ¾" line while running thru the upper valve on drill pipe. Tried again, including dropping tool assembly 100 ft to get past 4610' ± could not. Pulled out of hole. Lee indicated obstruction felt "soft".

Used Parker light plant in the morning for the survey. Shut off at 1300 hrs. & switched to Tan Am generator.

see GB notes (pg 11)

NOV 30 Sunday

Completed setting up instrumentation for flow test. B. Stiger still working on collecting data on computer. Started taking data

1300 hrs Began taking manual data at 1300 hrs

Lee Walden attempted to make downhole temp/pressure survey. Could not get beyond 4610 ft. Will try again tomorrow.

1920 Main Generator acts like it is running out of fuel. Called power plant. Power plant people here by 1945 hrs. They put 15 gallons of fuel in Generator tank and it ran fine. Disconnected hose from gen fuel inlet and filled gen. tank. Took approximately 30 ~~gals~~ more gallons. Power plant indicated that we should add 1 qt oil per 10 gallon of fuel. We added 2½ qts/fuel Gen smokes like crazy. Power plant people coming back tomorrow afternoon.

2110 → 2215 Main Gen. still acting like it is low on fuel. Cycles drop way off and Gen. engine lugging. At 2215 decided to switch over to aux. gen unit

Dec 1 - Monday

0130 - Changed charts on recorders. ΔP meter still not working well. Rezeroed with recorder reading a little lower than before. Wound clocks.

0100 - put fuel in generator.

0530 - filled up generator; using about 1/4 every 2 hrs.

Worked on orifice calculations, assuming all CO_2.

0550 - down breaking

loose connection on T_1 RTD.

0600 - programming for data acquisition system completed. Set system to record every 30 mins.

0800 - checked toxic gas detector with ether. Alarming OK in the presence of HC's.

0915 - added fuel to generator. Barton meter off-line: out of water. Refilled. Meter reading 0.

1000 - 1030 - working on Barton meter. Took off & hooked up manometer. ΔP reading 19.40" WC.

- checked T_1 RTD. Missing a screw; fixed.

- put wires in a trench for access to boxes to be shipped to UURI.

- checked wellhead para. - water in the lines. Disconnected & filled lines with glycerin. Reoriented pigtail to act as a trap.

12:00 Lee Walden / Gary Berglund on shift

12:15 Switched over to Parker Generator so that Lee can do a down hole log

12:30 Started PAN AM generator to see if it acted like it did last night. It doesn't. Runs smooth. Noted however that fuel pressure is steady at 20psig. Last night it was 0psig.

22

Put 25 gals. gas in Bronco.

16:30 Lee downhole with Press Temp. Should be able to go through 4650 blakage.

~1900 Lee at bottom of hole

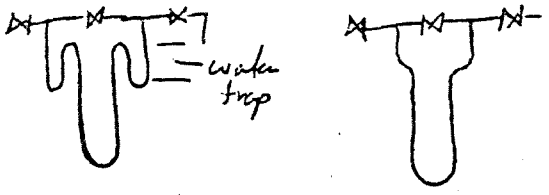
1935 H_2O flow = .5in/11 min

Volume Gas / Volume H_2O = 2145

Gas flow 6.5in/4sec

2050 Readjusted well head Pressure to 35 PSIG by 2115 ~~ft~~ pressure steady at 44 PSIG

2115 → 2145 'U' tube (ΔP) full of water both sides. Also noted that set up had a water trap just above 'U' tube See sketch below for was condition. Removed some water and set up to new ~~adjust~~ Configuration



WAS IS

Water should of condensed at the same rate on each side but ~~in~~ in the is condition Condensate flows into U tube

2150 Attempted to Compare ~~volume~~ water flow to gas flow. In 10 minutes Could only get bottom of Sample bottle Covered 99.4% of flow is gas

2215 Noticed that manometer and rosemount had poor comparison Tighten all fittings to assure that no leaks existed. Found no loose fittings Rosemount reads .13 PSI = 3.6 "H_2O

M

2345 Well pressure increased. Downhole survey continuing.

12-2-Tuesday

0025 - wellhead pressure mostly stable at about 132 psia. Began last wellbore survey.

0030 - plume just barely visible. Sounds like a gas jet. ↳ get spurts of vapor, then plume is clear.

Rosemount ΔP below detection limit.

0145 - Bubbled gas thru dap water for 90 secs. Beginning pH: 6.8 6.8. Ending pH: 6.0 (maybe to 6.4)

0200 - Noted WH pressure chart thinks it's 6 pm. The clock must be running slow. Rewound & changed charts.

⇒ Should wind clock once a shift.

Checked log - we took offline to drain lines about 1100 h. yesterday, so clock was OK up till then.

0230 - PI clock seems to be running O.K.

0242 - Lee started out of hole.

0250 - OPEN (thuckle valve) WELL - CONSIDERABLE WATER

WELL HEAD PRESSURE HELD AT 40 - 50 PSIG FOR 2-3 MINUTES, JAMES PRESSURE AT ABOUT 4-5 PSIG. SLUGS OF WATER EVIDENT AT JAMES TUBE

NOTES IF WE DO THIS AGAIN SET COMPUTER SAMPLE RATE UP TO 30 SEC (.5 MIN).

Toxic gas detector alarmed - @ 50 ppm on T1 scale, then gradually decreased to 0. ?

Collected samples from line until quit producing water. Didn't have it to condenser - line temp. was 177°F.

0305 - Plume from well fairly stable. No indication of any more water slugs.

0340 - Lea out of hole. Charts did have good records, tho pressure will be tough to read.

0357 - Took computer off-line while switching generators.

0400 - Big PanAm generator ran for 1 min. before kicking out. Switched to little generator; its running fine.

0605 - Switched back to big-PanAm generator.

0630 - conducting orifice calculations for throttled conditions.

RLS making improvements to data analysis code.

12/3

0700 - working on manometer. Problem appears to be in the manifold. Will dismantle & clean up.

0800 - PanAm generator guy here. Thinks fuel lines are clogging.

⇒ check fuel pressure, fuel filters, etc. on data rounds.

0830 - manometer reading 6.3" WC — not yet consistent.

Samples collected @ 0250:

12-02-86 #1 - not filtered

12-02-86 #2 - not filtered, Added 1.8mL HNO_3.

0845 - manometer levels reversed. Line probably plugged.

Cleared clogged sample tubing.

> upstream orifice tap clogged with cuttings. Cleared out.

0915 - Tom, Glen & Don arrived on-site. Went thru data collection, safety, generators.

1115 CHANGED OUT PROCESS fluid in Glass MANOMETER FOR 1.75 d fluid $\Delta P = 10.5''$ gf

13.30 FILLED TANK OF PAN AM MAIN GENERATOR

2330 G Tinsley & D Payette on site

12/3 0030 Filled DIESEL TANK

0400 Completed CHECK of Barton meter clocks -- All OK.

0700 E. F. Swttser on site

DELAYED ENTRY

2300 hrs P1 WELL HEAD PRESSURE RECORDER OUT of ORDER

0940 FABRICATED AND INSTALLED 2Ø SAMPLE RACK

1100 TOPPED off GENERATOR fuel

pH tests - 12/2/86.

pH of tap water - 5.7

bubbled gas stream thru tap water for 90 secs. - pH reduced to 4.5

tried alkalinity test, but too low to measure - pass end point in 1 drop. Will try again with larger sample.

Used Nora's H_2S in water test kit & did not detect any.

12/3 1140 FABRICATED & INSTALLED MANIFOLD ON 0-50" H_2O BARTON METER SET UP ON DEAD WEIGHT TESTER & BLED DOWN

1150

1230 Added 1 qt oil to crank case of generator diesel

1700 Took water/gas flow through sample rack
Sample container 2¼" dia
water 1"/8 min gas 6.5"/4 seconds
line condition 12 PSIG @ ~~150°F~~ 150°F

1750 Added 1 QT oil to Jet Fuel & fill tank full.

2000 COMPUTER HUNG DUE TO A BAD CONNECTION BETWEEN OMEGA AND COMPUTER

MUCH OF VOLUME 2 DATA LOST (HIDDEN) DUE TO FAILURE TO CLOSE DISK FILE I THINK. PUT A NOTE ON COMPUTER TO EXECUTE CLOSE #3 (RTN) AFTER ALL EXITS FROM PROGRAM

2345 G. Tunsley & D. Parente on site
SENT NOTE TO GARY BERGLUND
Re DIESEL fuel

12/4 0245 TOPPED off DIESEL fuel

0320 WATER/GAS sample from sample RACK
1" water / 3.51 & 10 sec
displace water 3.55 sec
3.44; 3.35; 3.18

* 0410 CHANGED OUT P1A & P2 GAUGES FOR 0-100 PSI GAUGES. NEW readings on chart: P1A = 09.0 PSI
P2 = 07.5 PSI
MAKES MORE SENSE (?)

0700 - completed Tie down of JAMES TUBE 12/4

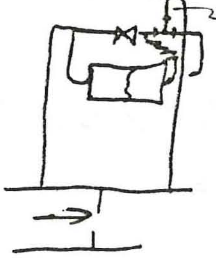
0800 - MODIFIED COMPUTER PROGRAM TO PROTECT DATA FILE RRS

1145 CALIBRATED 0-600 PSI GAGE & INSTALLED @ P_2.
INSTALLED ISOLATION VALVE ON 0-100 PSI GAGE @ P1A

0940 Delayed ENTRY
water vs Gas
H_2O · 1" = 3:59"
Gas = 2:39"

1135 L. Walden & T. Clemco on site

1500 HRS Drained water from ΔP rosemount



1630 R. Stigen replumbed Rosemount ΔP to eliminate condensate trap on down stream side. Also refilled manometer with fluid SP GR = 1.75. THE MANOMETER WAS UNBALANCED ~~...~~ - i.e MORE WATER ABOVE THE BLUE (BROWN) FLUID ON THE DOWNSTREAM SIDE. THIS CONDITION IS EXPECTED TO CORRECT ITSELF WITH TIME.

1825 DATA POINT #206 JAMES TUBE OPEN TO ATM. PRESS & AGRESS WITH PAMB. RS

1836 - OPENED MANOMETER CROSSOVER VALVE IN ATTEMPT TO GET BOTH SIDES EQUAL H_2O. SEEMS TO BE WORKING.

— STILL HAVE SMALL LEAK AT TOP OF TUBE — NEED TO REPLACE GLASS WITH SPARE — GRAVE YARD SHIFT. RS

1900 Closed Manometer crossover valve. Reading seem normal both legs usually full of water and fluid ΔP= 272 WC

2010 Lee out of hole - switched over to Pan Am Generator

2043 gas sample # 1 taken P_2 = 6psig; T_2 = 81 8.5psig Wellhd Pressure valve was cracked and allowed to flow for ~5min before a positive PSIG of 0.2 was registered. Flow was slow without much liquid entrainment

12/5 2330 G. Tunsley & D. Parrett on site

0500 WATER Vs GAS Sample
WATER = 2'56" per 1"
GAS = 4.74 sec (4.71/4.78)

0530 R. & S. STIGER ON SITE
0545 STIGER's DEPART

0635 TOPPED off Fuel TANK in GENERATOR
0715 Bill from PARKER on site

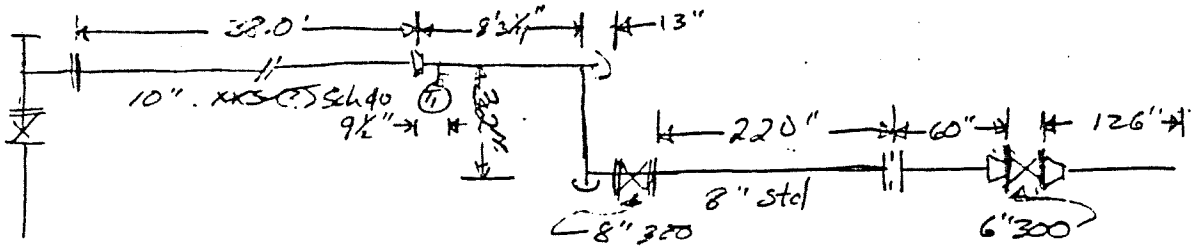
0852 WATER Vs GAS Sample
WATER = 2.70' for 1"
GAS = 4.54 sec for 6.5in)?

0953 CHANGED OUT MANOMETER 'U' TUBE & SEALS
NEW Reading = 9.2 + 8.8 = 18"
USING .75 fluid. Compares favorably with
Manomet ~~Rosemount~~ 18"X .75/27.7 = .48 PSI
Rosemount reads .44 → .48 GRB

DATA FLOW 1500 HRS to 0953
Capped ¼" SS Tubing Nuts found to be loose & leaking. GT

12/5

As Built of Flow unit



1208 Lee down hole 8600

1228 Begin to increase well head pressure

1240 At 50PSIG well head pressure – steady

1245 → 1250 Upstream port on orifice plugged unplugged that at 1250

1310 Rosemont ΔP disconnected still reading

1330 Water vs gas sample

$P_{WH} = 48.2$ psia
$P_2 = 48$ psia
$T_2 = 180$

Time of gas $\frac{0.98 + 0.70}{2} = 0.84$ sec for 6.5"

time of liquid 10' 25" for 1"

14:28. Took apart Rosemount LP to [illegible] bellows. Down stream (low pressure side) damaged as evidenced by depression 1/2" dia in bellows. This must have happened when we changed well head pressure. (Up stream post got [illegible] [illegible]. Reassemble and put back on line. Still reads negative but U tube reads 3.5" and [illegible] when [illegible] is [illegible] assume that U tube is accurate. Good thing since we just repaired it this morning.

1525 Went to 100 PSIG well head pressure. At very low flow .8" H_2O KL75 ℄ SP GR

1530 Tom C. put in offset of +.17 on Rosemount LP. -.17 is what Rosemount reads when [illegible] [illegible] to atmosphere

1615 Took Gas Bomb Sample Well Hd Pressure 105 PSIG .46
Temp 178°F SAMPLE NO. 3
1.5 PSIG IN BOMB

17:30 Water content in flow may be increasing sample bottle has been filling throughout test. I think it is filling faster now. also some puffs of [illegible] occur which were not [illegible] [illegible] TMC

1904 Lee out of hole with tools Run #11

~~20~~

1945 Noticed CO_2/H_2S monitor pegged at over 200ppm
Opened Control Valve wide open
Took Sample #4 150# 50PSIG at sample point

ΔP blown dry because of large # flow

~2000 Refilled Manometer with 1.75 SpGr fluid.

~~1905~~ 21:45 3.0" of H_2O condensate collected during entire period of 100PSIG operation

(19:45 - 15:25) = ~~4.33~~ 4.33 hrs TMC

DAY Summary Lee Waldon completed 3 downhole surveys ~~over~~ at three different well head pressures. First indications are that pressure & temp loss are good. It will read them tomorrow. Well head pressures 7.5PSIG (Full open), ≈ 50PSIG, & ≈ 110PSIG. ~~Upon~~ At 115PSIG discharge from James tube appeared very dry. Upon opening to full flow lots of water vapor was seen. Temperature

$H \times .75/27.7 = PSIG$

↑ manometer reading

2330 G. Tinsley & D. Parrett on site

0000 - 12/6/86 Data Run Completed

0003 one inch Condensate collected 3 min 230 ~~sec~~ displace 6½" H_2O $\frac{4.21 + 4.28}{2} = 4.25$ sec

0120 Topped of Generator fuel Tank.

0200 MANOMETER = $\frac{20.7 \times .75}{27.7} = .560$
$\Delta P = .87$
$- .56$
$.31$ PSG

12/6/86 cont.

0300 MANOMETER = 20.4 x .075 / 27.7 = 0.552 = .29
ΔPe = .85

0305 computer failed to TAKE 0230 ~~0300~~ Data set
would not respond to 'T' input
used 'E' orderly shut down
reloaded & Ran @0307 hrs

0520: Computer Program inadvertently Take off Line. Reset 0528

0730: ck'd calibration of 0-300 GAUGE: P-2A
3 PSI high @ 0
6 PSI Low @ 150
3 PSI Low @ 300

0805: CK'd calibration of 0-300 GAUGE P-2
0 = 0
150 1 PSI high
300 0

1004: Site Power cycled & lost (Rig motorman kicked motor)
Shut down Computer No controls

1010: on Rig Power
Computer on Line

11:30 Clams on site
11:30 Pinched well back to 50 PSIG
DP system B.O.

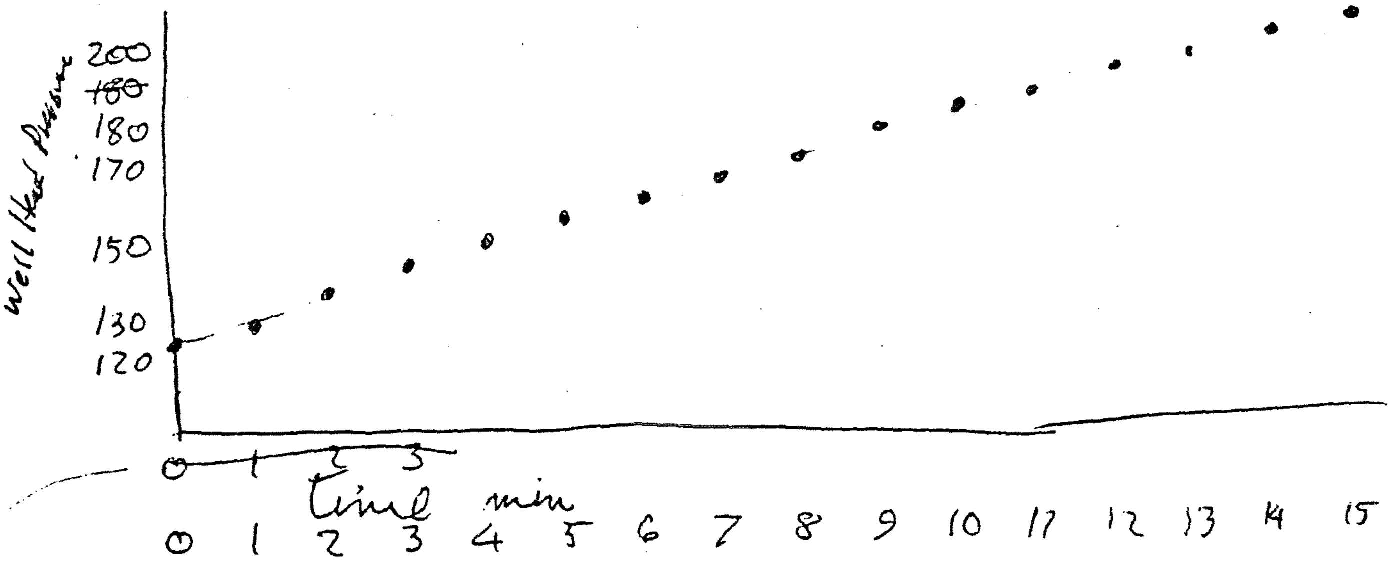
1300 MANOMETER HAS AIR GAP
TOOK DATA POINT W CROSSOVER OPEN AND CLOSED

1325 Replaced Fluid in Manometer with water

14:35 pinched well back to 100 Psig: MANOMETER READ -0.4 to -1.0 during valve closing
water sample from 50 Psig operation collected TMC

1800 Lee starting to pull out of hole

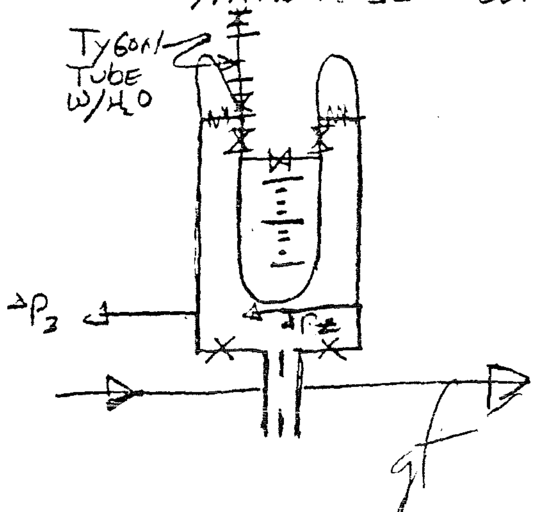
[illegible]



~1900 Switched to PAN AM Generator for 100PSIG and post shutin
1930 TOOK Condensate sample for TMC
2130 Filled PAN AM Generator with Fuel
2130 FILLED MANOMETER w 1.75 FLUID

shutin pressure history

2330 G. Tinsley & D. PARRETT on site
Installed Tygon Reservoir on upstream leg of MANOMETER completed @ 0026 12/7/86 (Remember Pearl Harbor!)



1000 12/7/86

one cycle condensate in 2½ Bottle 2 min 57 sec
displace 6½" water 4.64 sec $\frac{(4.9+4.64+4.39)}{3}$

1125 Topped off Generator fuel

1200 Clemes + Walden on site

1400 Water to air ratio
Water to 1" = 3' 06"
air displaces 6.5" 4.90 sec
Condensate sample taken TMC

1800 Water to air ratio
water to 1" = 2'.48"
air to 6.5" = 5.17 sec TMC

Condensate sample collected

1800 filled PAN/AM GENERATOR

Added 1 QT oil To FUEL.

2100 Water to air ration
water to 1" = 2' 29"
air to 6.5" = 5.40 sec TMC

2300 Condensate sample taken TMC

2345 ~~2400~~ Water to air ratio
water to 1" 2' 50"
air to 6.5" 5.03 sec

12/8 0000 G. Tinsley & D. PARRETT on site

0100 Topped off Generator fuel

0614 CONDENSATE TO GAS RATIO
CONDENSATE TO 1" 2'46.26"
0:5:08 GAS TO 6.5" 5.10 sec
0:5:25
0:4:98
15.31/3

0830 G. Berglond on site

1150 G. Berglund & Lee Walden on site
1700 Clemo on site (Good Dog)
21:30 generator ran out of gas
power dipped - recovered about
4-5 cycles before more fuel was
added. Power was not lost
21:30 james tube paro dropped out.
Keep an eye on it. ~~[illegible]~~
2345 G. T[illegible] & D. P[illegible] on site
0000 12/9/86
0200 Fluid vs Gas flow measured
2'40" for 1" fluid
5.70 sec for 6.5" gas 5.79 + 5.60 + 5.70 / 3
0900 Fluid VA Gas flow measured
2'39" for one inch fluid
5.27 sec to displace 6.5" H_2O
5.03 + 5.40 + 5.38 / 3
0700 Generator Topped off with [illegible] added
2 qts oil to crankcase

1110 Lee's downhole clock started Pressure
1130 Gary Bergfum, Tom Clems on site

1139 Lee's downhole, Clock Started, for Temp
1156 Lee starting down hole to

12:00 Lee at 500' with press/temp 24 hour clock

1535 Collected 1" of water in 3 min 25 seconds
6.5" of water in 1.5 Seconds ← pretty hard to measure

1535 @ 8600'

1600 Ms 6.5 PSIA this starts Vol 6 of Data set

Clement time 1603 / 05 closing test valve shut

2.5 psi/min

200 ~~7~~. 4:29
221 4:33
250 4:37:58
~~257~~ 4:39:0
270 4 41

7
36 √250
252

16:42 open valve 4:42 holding ~274

16:50 280 psig
16:55 valve opened a bit - pressure dropping very slightly *

17:07 275 tweak valve -15° tighten / these probably are removing backlash from screw
17:14 273 tweak 15° tighten

17:16 tighten 15°
17:21 " " still dropping ~171 psig
17:29 open ~10° ~182
17:31 open ~185
17:36 open ~189
17:35 open ~10° ~189
17:42 288PSIG & steady for past 3 min
17:47 282 psig
1750 281 PSIG closed valve 10'
1800 281 psig
1810 284 psig
1825 284 PSIG
1900 279 PSIG

1955 PWH = 270 PSIG
1956 Closed Valve 15°
2013 Open Valve a little
Lee Walden off site at 2015 hrs

12-10-86

2350 Glen & Danny on site
0048 Closed valve 10° PWH 255 PSIG
0105 completed CALIBRATION CHECK OF
WH-P_1 0-100 GAUGE
0 = 0
50 = 50
100 = 99.5 gf
DOWNCOMER-P_2 0-100 GAUGE
0 = 0
50 = 50.25
100 = 99.75 gf
0117 OPENED P_4 TO ATMOSPHERE READS .02 PSI LOW 14.41 (P_1) vs 14.39 (P_3)
* 0136 OPENED P_0 (upstream orifice) TO ATMOSPHERE FOUND IT BARELY THREADED IN —
DATA SUSPECT !!! gf
READS .03 PSI BELOW P_1 (14.38 vs 14.35)
ΔP ROSEMOUNT- both legs open
Reads -.14
0223. CALIBRATE High side of ΔP Rosemount

	DW	Rosemount
Hi	DW = 25	Rosemount = 20.26
Hi	DW = 50	" = 40.82
LO	= 0	= 0.81
LO	= 5	= 3.63
LO	= 10	= 8.08
	= 25	= 19.79
	= 30	= 23.05

12/10/86 (Cont.)

0309 OPENED P_{2e} to Atmosphere
$P_2 = 14.37$ $P_1 = 14.37$ $\Theta = 0$

0330 CHECKED CALIBRATION of P_2 0-600 Gauge

DW		Gauge
600	=	600
300	=	294
150	=	1##
50	=	45

0405 checked calibration of P_{2e}

0	= 14.37
300	= 313.42
150	= 163.40
25	= 38.79

0523 WHP = 300 PSIG CRACKED Throttle Valve
0557 " = 309 " " " "
0606 " = 304 " " " "
0618 " 306 " " " "
0714 " = 321 " " " "
0745 L. Walden & Bill Wilhelm on site
0944 Well shut in!!! 1023 PSI

11##35 Well head pressure rising at a rate of
13 PSI/5 min no sign of slowing down
650 PSIA PWH.

1222 Opened wing valve
1300 WING VALVE VENT starting to vent water. Water going ~60 ft in the air. Well head pressure beginning to rise (# from 110 PSIG → 230 PSIG)
1310 Open Master Valve to vent
3:40 Shut Master Valve
PWH = 10 PSIG

Date	Time	WHP	Temp. (psig)	(°F)	Comments
01/30	1000	2	--		Arrived on site. WHP increases to 6-9 psig every 10 minutes for a "blow". 0-30psig pressure gauge on wellhead. Well venting through 3" wing valve and 4" line (top of stack about 14 ft above WH elevation).
	1245	13	--		Blowing about 5 ft. above top of stack. Water streaming down side of stack almost continuously, even when the plume appears drier.
	1255	11.5	--		
	1300	10.5	--		
	1305	8.7	--		
	1309	8.0	--		
	1334	5	--		Plume drier, but water still flowing down the outside of the pipe.
	1339	4.7	--		
	1344	5.6	--		
	1349	5.6	--		
	1356	4.5	--		
	1409	4.1	--		
	1426	3.8	--		Less surging of pressure.
	1441	3.8	--		
	1454	3.5	--		
	1457	5.2	--		Plume wetter. Opening master valve against closed flow line to run into hole with sinker bars on the wireline. Well still on vent.
	1459	3.9	--		" " "
	1501	3.4	--		" " "
	1503	3.0	--		Plume very dry. Master valve all the way open. Very <u>tiny</u> leak from flow line.
	1510				Started down the hole with 2 sinker bars only. Had to bang pretty hard at 4650 ft to get past. Went thru a couple of times. At 8139 ft, hit a bridge and didn't run any deeper.
	1612	3.2	--		Logging out of the hole.
	1638	3.4	--		Shut the master valve.
01/31	0800				Changed out the set-up on the wellhead. Installed both a 30 psi and a 3000 psi gauge on the pigtail. Topped off the glycerin in the pigtail.

01/31, continued.

0900	3.2	--	Plume appears dry.
0930	2.4	--	Opened master valved for logging with P/T tools; well on vent; flow line shut.
1000	3.0	--	Logging.
1015	2.4	--	"
1032	2.3	--	"
1045	2.7	--	"
1100	2.1	--	"
1115	1.8	--	Varied between 1.7 & 2.7 over last 5 mins.
1135	2.2	--	Hit obstruction at 5100ft and worked through.
1147	2.0	--	Still logging.
1300	2.2	--	"
1320	2.0	--	"
1340	2.4	--	Hit obstruction at 8005 ft. Could not work through.
1355	3.2	--	
1404	0.5	--	
			Out of the hole about 1415 hrs.
1425	23	--	Started geysering and blowing water about 15-20 feet above the top of the stack.
1430	27	--	WHP surging 1-2 psi.
1435	17	--	" "
1436	27	--	" "
1437	21	--	" "
1438	25	--	
1439	25.5	--	
1440	29	--	WHP went as high as 30 psig.
1445		--	Surging, with WHP as high as 40 (on 30 psi gauge).
1459	45	--	Switched to 0-600 psig gauge.
1453	38	--	
1455	40	--	
1501			Opened master valve; vent line wobbling with surging of water.
1502	32		
1505	35	--	Closed vent line.
1512	29	230	Installed dial thermometer in thermowell by sampling port.
1522	28	240	
1533	26	248	
1553	20	240	
1600	16.8	235	Switched to 30 psig gauge at WH.
1613	14	230	
1621	12.7	225	Took water sample. Plume had dried out a fair amount.
1640	9.2	215	
1720	6.5	205	

02/01	0700	3.0	190	On flow line. Plume fairly wet, with water dripping from end of James tube.
	0715	3.0	190	
	0730	3.0-	188	
	0800	2.9	188	
	0857	2.8	188	Switching to vent line to hook up UUR separator.
	0930	10.0	--	On vent line.
	1010	10.0	--	Completed separator hook up. Began opening master valve.
	1015	3.8	190	Shut vent. Plume fairly wet; no slugging.
	1025	2.8	188	
	1100	2,4	190	UURI thermocouple reads 88°C.
	1215	2.5	195	UURI completed gas sampling; collected rain water for isotopic analyses.
	1300	2.5	195	Started into hole with low pressure tool and temperature tool.
	1345	2.5	195	
	1405	2.5	190	Got past 5100'on the first try with the tools.
	1532			Tagged bridge at 8140 feet. Started out of the hole.
	1537	2.5	188	
	1545	2.5	188	
	1600	2.5	188	
	1623			Started shutting in. Changed out WHP gauge to 0-600 psi gauge in preparation for throttling well.
	1700	30		Throttling slowly. Pressure built up slowly to about 65 psig. Developed leak in separator piping. Opened throttle valve at 1715 hrs.
	1730	4.8		
02/02	0730			Shut master valve and changed leaky fitting on UURI separator. Started throttling at 0900. Throttled to about 30 psig initially; WHP climbing about 12 psi in 5 minutes.
	0935	124		Opened throttle valve a little.
	0948	130		
	0953	135		Opened throttle valve a little.
	0958	128		
	1003	121		
	1008	117		
	1013	112		
	1018	108		
	1023	105		
	1028	103	170	
	1033	101		
	1038	99		
	1043			97

02/02, continued.

	1048	96		
	1053	95		
	1058	93		
	1103	92+		
	1108	92-		
	1113	90+		Closed throttle valve a very little.
	1125	89		
	1135	88		
	1145	87		Closed valve another little bit.
	1155	86		Closed valve another little bit.
	1205	85		
	1215	85	165	Closed another 1/6 turn.
	1225	84		
	1255	81	165	Started into the hole for a logging run.
	1330	82		Closed valve 1/12 turn. Appears mostly shut.
	1345	83		Logging tools hung up at 4760 feet and fell through.
	1445	79	163	
	1545	74	163	Opened throttle valve so that UURI could sample the "slug".
	1551	7.0	180	
	1558	5.5	180	
	1602	5.5	175	
	1615	4.0	165	
	1631	3.0	165	
	1642	0.9	160	Began taking readings off wellhead gauge instead of the gauge on UURI separator inlet.
	1705	0.9	158	
	1717	0.7		
	1721	0.7	158	No real slug (as had been observed in the past) appeared. Plume did get substantially wetter, but not obvious slug of water. Took liquid and gas samples during this period.
02/03	am	0.9	158	Shut-in master valve and switched to vent. WHP at 1.1 psig. Started to geyser for about 1 minute, with water shooting about 6-10 feet over the top of the vent. WHP increased to 9-12 psig. Gradually died off. Left well on vent with master valve locked shut.
	pm			Checked well conditions. Well geysered for a couple of minutes.

APPENDIX B

MUD LOG EXCERPT

lor alt;abnt patchy powdery apr sol limonite/hem alt of mtrx; loc com sph .1-.5mm chlor amygd mnr soft wh cly amygd;mnr whyel clr anhed anhydrite vng;tr dk grn sbhed actinolite amygd

7460-70' bronze anhed bornite vng;7370-74' blk aphyric glassy bslt frags

BASALTIC HYDROCLASTICS:m-dk grn loc brnshgry;gran-mott appr;sl res-wxy;pred perv alt chlor mtrx;v com blk-dk gry aphan bslt clas w/ v com amygd filled w/ wh qtz loc bl opal & tr wh calc;v com mlky-clr qtz vng;tr wh calc vng;loc tr dissem pyr vng

VESICULAR BASALT:pred blk-dk grn loc brn gry & tr ox red; aphan felty tex;amygd pred filled w/ wh qtz & wh calc r blue opal loc r w/ sft fibr zeolite poss stilbite ?

BASALT:pred blk loc lt gry red lt-m grn;res-sl wxy;aphyric-tr microxln;pred dk grndmas oft sl chlor;loc tr brnshgrn oliv pheno;v com qtz wh-clr anhed com vng;tr whcalc vng;loc tr pstacio grn anhed ep vng assoc w/ wh qtz vng;loc tr dissem pyr vng

BASALT:blk-dk gry occ ox red loc dk grn;sl vit;aphyric gran tex;com mlky qtz vng;tr wh calc vng;loc dr dissem pyr

7700-10';anhed qtz & ep vng

BASALT:blk-dk gry occ ox red loc dk grn;sl vit;aphyric gran tex;com mlky qtz vng;tr wh calc vng;loc dr dissem pyr

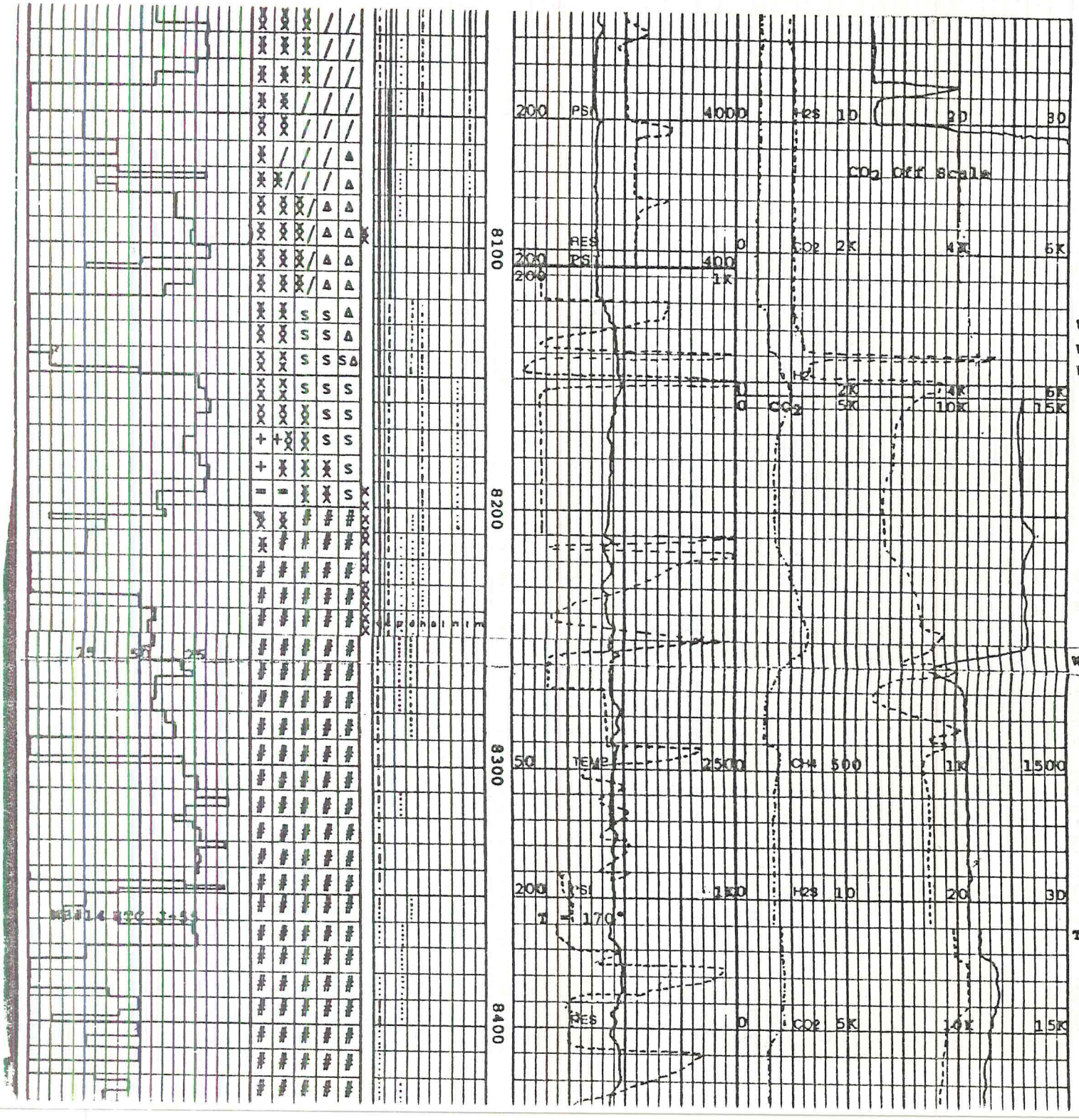
7700-10';euhed qtz & ep vng

SQUAGENE TUFF:m grn loc lt gry-wh;wxy-sl res;mod sft-sft;pred grn chlor mtrx;occ blk vit vf-crs bslt clas;com clr elong glass shards;tr blk vit obsid clas;tr hem stain ox oliv ?; com pred mlky loc clr anhed qtz vng;tr grn anhed ep assoc w/ wh qtz vng;loc tr dissem pyr

BASALT;m gry com grybrn;mod hd; brit blky frac;aphyric;gen no ves;loc hem alt gndmas;occ hem cotd gr;abnt clr elong anhed-sbhed anhydrite vng;f/7870' an incr in grnyel anhed ep vng;abnt clr-mlky wh anhed qtz vng; 7870-80' orng calc w/ qtz vng; loc tr dk grn anhed actinolite vng;v abnt mic dissem mag;7900-10' incr in soft wh kao;7880-7900' clr euhed qtz & grnyel euhed ep frac fill

BASALTIC BRECCIA:7970-8050';bl-m gry;aphyric ang non ves bsl frags;wh-lt grn occ lt brn fri brit & hd crptoxln calc mega vng surrounds bslt frags;loc chlor & hem alt of bslt gndmas mnr loc grnyel ep vng

LIMESTONE:8040-8080';mott wh-l grn occ lt brn;fri-brit & hd; crptoxln;abnt anhed qtz & calc vng;incr soft wh kao;assoc w/ loc lens of lt-m gry hd brit crptoxln cht;occ-abnt m gry-blk aphan bslt frags



LIMESTONE:8040-8080';mott wh-lt grn occ lt brn;fri-brit & hd; crptoxln;abnt anhed qtz & calc vng;incr soft wh kao;assoc w/ loc lens of lt-m gry hd brit crptoxln cht;occ-abnt m gry-blk aphan bslt frags

SILICIFIED BASALTIC BRECCIA: 8120-50';wh-lt grn occ lt-dk gry-grybrn;apr silgndmas w/ occ vis remnant ves & amygd;sme totally chlor & hem alt gndmas; 10% dk gry unalt bslt frags;abnt mega qtz vng sme orng & pk; abnt hem stn & cotd ctgs;com but decr wh anhed calc vng;mnr yel-grnyel ep vng

W

W

W

8120'.Poss water entry.Init 440 psi incr.Stab as a 10psi incr Initial 16°T incr.Stab as a 10° T incr.

8135'.Init 560psi incr.Stab as a 10psi decr.Initial 5°T incr. Stab as a 2°T incr.

8142'.Init 650psi incr.Stab as a 5psi incr.Initial 8°T incr. Stab as no change.

W

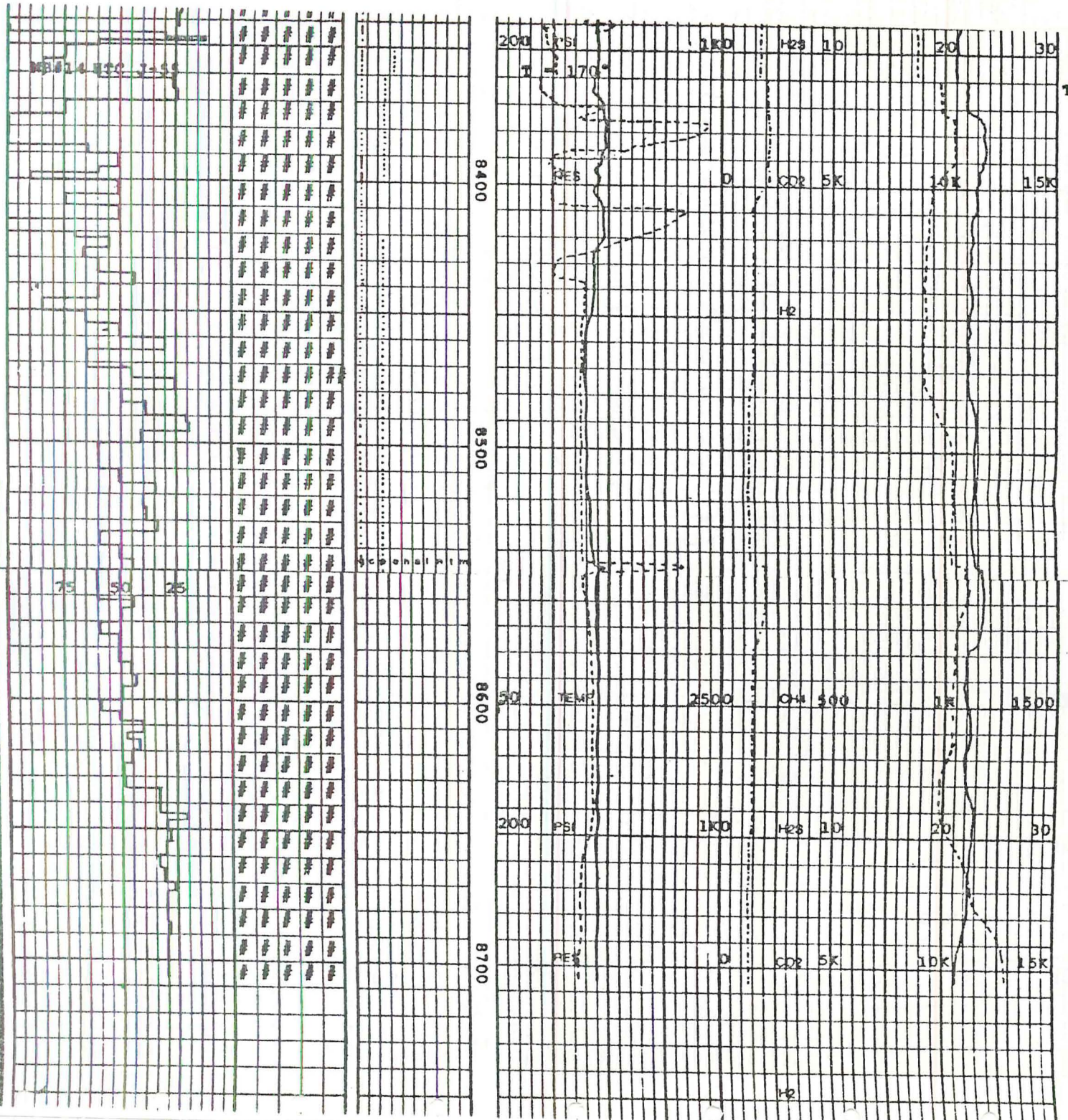
8250'.Poss water entry.Init ~~incr 350psi stab @ 50psi.Init~~ T incr 8° stab no change

8292'.Init incr 400psi stab @ no change.No change of T

T

8370'.Poss water entry.Init 555 psi incr.Stab as a 10psi incr. Init 10°T incr.Stab no change.

GRANITIC INTRUSIVE:lt gry-whish pred vf gr ctgs;intergran tex; .05-.25mm gr size=outer chill boundry?;60-70% dull wh-lt grn-com lt tan fspr w/ occ kao alt rims;10-20% clr anhed qtz;2-5% blk anhed hornblende;loc lt grn



8370'.Poss water entry.Init 555 psi incr.Stab as a 10psi incr. Init 10°T incr.Stab no change.

GRANITIC INTRUSIVE:lt gry-whish pred vf gr ctgs;intergran tex; .05-.25mm gr size-outer chill boundry?;60-70% dull wh-lt grn-com lt tan fspr w/ occ kao alt rims;10-20% clr anhed qtz;2-5% blk anhed hornblende;loc lt grn fspr vng;occ clr anhed qtz vng; mnr grnyel anhed ep vng;loc lse pyr gr;abnt hem stn on ctgs f/ dark rusty brn formation H_2O?

8450':dk red hem stain drops out

8450';lt grn alt of ctgs begins incr w/ depth.

8545'.Init incr 350psi stab @ No P chg. Init T incr 8° stab @ 2°

8510-20';Granite marg-perv alt darker grn. Ctgs incr in size.

GRANITIC INTRUSIVE:wh-sl yel loc stained red-orng loc (8450-8550')marg-parv alt lt-dk grn; microxln gran tex;pred wh-alt lt-m grn loc stained red-orng flds;com clr pred anhed loc sbhed qtz(tr alt lt grn);occ dk grn-blk vit mica;tr mlky qtz vng;loc tr pred sbhed r cubic pyr;ctgs vf

8670-8706';dk brick red ox abnt

Drillers depth = 8706.12

APPENDIX C

MANUAL DATA COLLECTION SHEETS

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL

FLOW TEST

DATA SHEET

(1)

DATE 11-30-86

TIME	PUMP RPM	AMBIENT P_A	T_A	P_{1A}	P_1	T_1 °F	P_2 PSI	T_2	ΔP_ϕ (circ.)	P_J	Separator [illegible]	[illegible]	BY	COMMENTS
1300h				(300) 12	10	185	14	185	47.0 (~~25.5~~)	0			SGS	ΔP time off - need to check.
1500h				12	11	185	14	185	47.0	0			GRB	
1600h				12	11	185	14	185	51.0	0	F	44	SGS	
1702h				12	11	185	13	185	1.143 53.0	0	F	OK	SGS	[illegible] ΔP (* [illegible] in psi)
1726				Compared ΔP with Rosemount Inst It reads about 1.14 PSI										
1800				25.6 PSIA 10	11	185	24.5 PSIA 13	182	1.09 PSI 54.0 WC	13.8 PSIA 0			GRB	
1900				10	11	185	13	185	1.13 PSI 56 WC	0			LW	
1920				TRANSFER TO STAND BY GENERATOR - CALL POWER STATION FOR HELP!										
2000				10	10	185	13	184	1.05 [illegible]	0			GRB	
2015				Tried to Re Zero ΔP Barton Meter - does not Re Zero at All.										FOUND PI [illegible] ON P[illegible]
2100				11	11	185	13	185	1.09 30	0			GRB	
2105				MAIN DIESEL TANK FILLED WITH FUEL + 2 QTS OIL										
2200				11	11	185	13	185	1.10 PSI 32	0			LW	
2215				SWITCH TO AUX GENERATOR									LW	
2300				11	12	185	12	182	1.08 PSI 45	13.9 PSIA 0			GRB	
2400				11	11	185	13	185	1.07 PSI 45	0			LW	
0100				11 (300)	12	185	13	185	49	0	Full	OK	SGS	filled fuel on generator / zeroed ΔP**
0200				11 (300)	8**	185	13	184	1.04 51	13.85 0	7/8+		SGS	toxic gas 0 -

← NOTE WHETHER 300# OR 600# GAUGE

paro: 7.8

wpt

FIGURE 8.1

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

DATE 12-1-86

②

TIME	PUMP RPM	AMBIENT P_A	AMBIENT T_A	P_{1A}	P_1 (circ.)	T_1	P_2	T_2	ΔP_ϕ (circ.)	P_J	GENERATOR Fuel Level	GENERATOR Oil Level	BY	COMMENTS
0300				300 11	9 on pano 8	185	13	185	51	13.8 C	3/4	OK	SQS	Button not working.
0400		14.36	NBS 71.8	10	10 on pano 8	185	13	185	1.03 54	14.0 0	5/8		SQS	toxic gas 0
0500			NBS 73°	11	10 on pano 8	185	13	185	53	0	1/2+		SQS	fuel in generator
0555		14.35	NBS 74°	10	8	185	12.5	185	1.02 58	13.97 0	F-		SQS	
0700		14.36	NBS 75°	10	8	184	12+	184	0.99 59	13.97 0	3/4		SQS	
0800		14.38	NBS 76°	10	10 on pano. 7	185	12+	185	0.99 —	13.99 0	5/8		SQS	toxic gas 0
0900		14.40	NBS 77°	10	6+	184	12.5	184	—	0	F		SQS	working on ΔP meter - out of water
1000				10	6	185	12.5	184	—	0	F-		SQS	running manometer
1100				10	6	184	12.5	184	19.2" *	0	3/4+		SQS	check on ΔP gauge *on manometer
1200				11	6	185	12+	183	19.6"	0	3/4		GRB	
1310				10	6	185	12	183	19.6	0			GRB	
1400				11	6	185	12	182	19.3	0			GRB	13.4 + 5.9 = 19.3
1500				10	4	184	12	181	19.9	0			GRB	13.6 + 6.0
1630				10	5	184	12	185	20.7	0			GRB	14.2 + 6.5 Lee Damude with P/T
1700				10	4	185	12	184	20.8	0			GRB	14.2 + 6.6
1800				10	4	184	12	182	22.4	0			GRB	15.0 + 7.4
1900				10	5	185	12	183	22.0	0			GRB	14.8 + 7.2
1935			Took	water	flow	/ gas	flow	water gas	5 in / 6.5 in	11 min / 14 sec	V_{gas}/V_{H_2O} = 2	145	GRB	

Margin notes: 11.2" / 7.9" / 19.1" ; 12.5 / 7.1 / 19.6 ; 12.7 / 6.9

← NOTE WHETHER (300#) OR 600# GAUGE

wpf

11.3 / 7.9 / 19.2

FIGURE 6.1

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(3)

DATE 12-1-86

TIME	PUMP RPM	AMBIENT P_A	AMBIENT T_A	P_{1A}	P_1 (circ.)	T_1	P_2	T_2	ΔP_ϕ MANO.	P_J	GENERATOR Fuel Level	GENERATOR Oil	BY	COMMENTS
2005				10	6	185	12	182	22.4"	0			GPB	15 ± 7.4
2052				36	30	185	38	182		0			GPB	15.4 ± 7.8 Reduced Flow at 2050
2110		WELL	HEAD	PRESSURE	IS	STEADY	AT	45.4 PSIG	← FROM	BARO				
2115				44	40	185	44	182		0			GPB	Had to readjust "U" tube
2145				44	40	189	44	184	2.9	0			GPB	2.0 ± .9
2210				44	40	189	44+	186	7.9	0			GPB	5.1 ± 2.8
2235				~~44~~	~~186~~	188	44	185	5.5	0			GPB	4.0 ± 1.5
~~2300~~ 2330				44	40	188	45	185	7.5	0			GRB.	5.0 ± 2.5 Poor comparison w.th Rosemount
2330				43	39	~~182~~ 183	44	183	7.5	0			GPB	5.1 ± 2.4
2345		WELL	PRESSURE			INCREASED								
0030				116 (300 G-300)	110	180	115	176	2.7"	0			SQS	low leg of manometer on P1
0100		PBARO 14.07	78°	116	116	179	116	175	2.7" wc	0	OFF LINE.		RRS	2.8 ± .1 / 2.7
0130		14.06	74°	116	110	178	115	175	2.6" wc	0			SQS	toxic gas O
0200			73°	105	111	178°	111	176	2.6" wc	0			SQS	check not working well on P1
0232		14.04	NBS 72°	110	111	177°	111	175	2.5" wc	13.97 psia 0			SQS	opened throttle @ 0245 - blew water from manometer
0305				28	30	203°	27	200°	—	1.1			SQS	toxic gas O
0345				15 ~~20~~	20	205°	18	203°	—	1.0			SQS	
0415			72°	14	18	202°	16	202°	—	1.0	S/B		SQS	

← NOTE WHETHER 300# OR 600# GAUGE

wpf

FIGURE 6.1

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(4)

DATE 12-2

TIME	PUMP RPM	AMBIENT P_A	AMBIENT T_A	P_{1A} (orifice)	P_1 (circ.)	T_1	P_2	T_2	ΔP_{MAIN} (circ.)	P_J	GENERATOR Fuel Level	GENERATOR Oil	BY	COMMENTS
0500				12	16	198	14.5	196	—	1.0	1/2+		SGS	
0600			NBS 73°	11	16	192	14	190	—	1.0	on Pan from big generator		SGS	
0705				11	15	190	13	188	—	1.0	↓		SGS	manometer being refilled
0805		14.38		11	14	188	13	185	—	1.0			SGS	checked fuel pressure - cleaned fuel screen
0900			NBS 76°	11	14	188	13	185	—	1.0			SGS	toxic gas: 0
1010				10	14	186	13	185	—	1.0	P=60		SGS	manometer off-line
1030			1	10	14	187	12	185	—	0.0	P=60		DP	
1140				9	14	188	12	185	21	0.0	P=60		DP	~~10.5+9.8~~ SP GR=.75
1209				9	4	186	13	185	20.3	0.0	P=62		GRB	10.5+9.8 SP GR=.75
1300				10	4	185	13	183	20.8	0.0	62			10.6+10.2=20.8
1400		14.09 BAR	NBS 77	10	4	186	13	183	20.5	0.0	62		GRB	10.5+10
1500			78	10	4	185	13	185	20.1	0.0	61		GRB	10.2+9.9
1630				10	4	185	13	185	19.9	0	61		GRB	10.1+9.8
1700				9	3	184	13	183	19.7	0	61		GRB	10+9.7
1740				Filled	ΔP	chambers with		water					GRB	.8
1800				10	0	185	12	183	29.2	0	60		GRB	13.7+13.5 MANOMETER POSSIBLY NOT FULL OF H2O
1900		14.05	72	10	0	185	12.0	182	27.7	0	63		GRB	14.0+13.7
2000				10	0	183	12	182	28.8	0	62		GRB	14+14.4

NOTE WHETHER 300# OR 600# GAUGE

wpt

FIGURE 8.1

(5)

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

DATE 12-02-86

TIME	PUMP RPM	AMBIENT P_A	AMBIENT T_A	P_{1A}	P_1 (circ.)	T_1	P_2	T_2	ΔP_J (Manometer)	P_J	Generator Fuel Pressure	Generator Oil	BY	COMMENTS
2112				9	5	185	11	185	28.9	0			LW	14.5 + 14.4 = 28.9
2201		14.38 FBA	72°F	9	5	185	11	185	28.9	0	60		LW	14.4 + 14.5 = 28.9
2300		14.38	72	10	—	185	12	185	29.1	0	62 PSIG		LW	(BARTON METER BELOW) 14.5 + 14.6 = 29.1
[illegible]		[illegible]	74	10	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	[illegible]		DP	
[illegible]		14.7	72	10	—	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]		DP	
1:55		[illegible]	[illegible]	10	—	[illegible]	[illegible]	[illegible]	[illegible]	0	58		DP	
[illegible]		[illegible]	71	10	—	185	13	[illegible]	29.7	0	[illegible]		DP	
353		[illegible]	[illegible]	10	—	185	12	185	29.5	0	55		DP	
4:58		[illegible]	71	10	—	[illegible]	[illegible]	185	29.7	0	5.5		DP	
552		14.06	70	10	—	184	12	185	29.55	0	55		GT	
0655		14.06	71	10	—	185	12	184	29.7	0	67		GT	
[illegible]757		[illegible]	[illegible]	10	—	184	[illegible]	185	[illegible]	0	62		DP	
[illegible]		15	76	[illegible]	—	185	[illegible]	185	29.5	0	61		DP	
1000		[illegible]	75	9	—	184	13	185	29.9	0	61		DP	
[illegible]		[illegible]	[illegible]	10	—	184	13	184	29.9	0	61			
1225		14.11	83	9	—	183	12	181	30.4	0	62		GRB	
1330		—	—	9	—	[illegible]	12	182	30.2	0	62		GRB	15.3 + 14.9
1400		[illegible]	82	9	—	[illegible]	12	182	30.4	0	60		GRB	

NOTE WHETHER (300#) ~~[illegible] GAUGE~~

12-03 ↓

C-5

FIGURE 8.1

wpt

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

⑥

DATE 12-3-[illegible]

TIME	PUMP RPM	AMBIENT P_A	AMBIENT T_A	P_{1A}	P_1 (SIDE)	T_1	P_2	T_2	ΔP_ϕ (Air)	P_J	Generator Fuel Level	Generator Oil	BY	COMMENTS
1500		[illegible]	[illegible]	9	—	181	11	[illegible]	[illegible]	0	[illegible]		GRB	
1635		14.09	81	9	—	181	12	182	28.7	0	60		TMC	
1700		COND WATER FLOW				1"/	8 [illegible]	GAL	6.5"/4 SEC				GRB	
1700		14.42		9	=	182	12	181	28.9	0	60		GRB	14.6+14.3
18[illegible]		14.39	76	9	—	182	11	182	[illegible]	0	60	1qt	LW	[illegible]
[illegible]		[illegible]	[illegible]	9	—	182	11	182	[illegible]	[illegible]	60		LW	[illegible]
2000		14.39	74	9	—	182	11	182	28.6	0	60		LW	14.2 +14.4
2100		14.38	74	9	—	182	12	182	28.7	0	60		LW	14.4 + 14.3
2200		14.40	74	9	—	182	12	182	28.5	0	60		LW	14.2+ +14.3
2300		14.39	74	9	—	182	11	182	28.6	0	60		LW	14.2+ 14.4
2400		994 1004mb	74	9	—	182	12	183	28.5	0	60	FULL	DP	
0100		994 [illegible]	7[illegible]	9	—	182	12	183	28.4	0	60		DP	
0200		994	7[illegible]	10	—	182	12	183	28.2	0	60		DP	
0355		993 [illegible]	7[illegible]	10	—	18[illegible]	13	183	28.4	0			DP	
[illegible]		993	72	9		18[illegible]	12	181	28.5	0	60		[illegible]	
0411				9			7.5						[illegible]	CHANGED OUT P1A & P2 for 0-150# GAUGE
0454		993 1003mb	70	9		184	7	182	28.3	0	60		[illegible]	
0500		993	70	9	—	183	7	182	28.1	0	60	FULL	DP	

NOTE WHETHER 300# ~~OR 600#~~ GAUGE

Margin notes: gage; Full; Full; Full; Full; TMC change

C-9

FIGURE 6.1

wpf

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(7)

DATE 10/11

TIME	PUMP RPM	AMBIENT P_A	AMBIENT T_A	P_{1A}	P_1 (circ.)	T_1	P_2	T_2	ΔP_ϕ (feet)	P_J	Generator Fuel level	Generator Oil	BY	COMMENTS
0700		995	71	4	—	180	7	180	26.1	0	60	FULL	DP	
0800		994	75	4	—	181	7	182	26.1	0	54		DP	
0900		994	78	8	—	181	7	180	26.3	0	59		DP	
1000		994	78	8.5	—	181	7	182	26.5	0	59		DP	
1055		995	81	8.5	—	182	7	182	26.4	0	59	FULL	DP	
1200		994		8	—	183	6	183	25.4	0	59		DP	
1300		994	90	8.5	—	181	6	181	28.2	0	OFF		TMC	T_A IN SUN
1400		9937	80	8.5	—	181	6	181	28.3	0	OFF		TMC	
1500		9930	82	8.5		181	6	181	28.3	0	—		GBD	
1600				8.2	—	181	6	181	223	0	OFF		CBB	1/13 + 14.3 Logging
1700		9927	80	8.2	—	180	6	181	—	0	—		TC	ΔP loss air water interface at 10"
1800				8.2	—	180	6	181	—	0	—		TMC	10"
1900				8.5	—	180	6.1	181	27.2	DAS COMPLETE	OFF		GBB	13.7 + 13.5
2000		9933	74	8.5		181	6	181	29.5		58		TMC	14.9 + 14.6
2100		9935	74	8.5		180	5.5	181	29.1		58		TMC	14.7 14.4
2200		9940	73	8.5		182	6	181	29.7		58		TMC	15 + 14.7
2300		9940	73	8.5		181	6.2	181	30.		58		TMC	15.1 14.9
2400		9941	72	8.5	—	182	6.1	181	30.2	0	58	FULL	DF	

NOTE WHETHER 300* or 600* GAUGE

wf

C-7

FIGURE 6.1

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(8)

DATE ________

(100PSI Gauge)

TIME	PUMP RPM	AMBIENT P_A	T_A	P_{1A}	P_1 (circ.)	T_1	P_2	T_2	ΔP_ϕ (circ.)	P_J	Generator Fuel level	Oil	BY	COMMENTS
01[illegible]		[illegible]	71	8.1	—	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	Full	DP	
0156		9940	71	8.5		182	6.0	181	30.4	/				
0255		9[illegible]	71	8.3	—	182	6.1	182	30.7	0	63		DP	
0400		9940	72	8.4	—	182	6	182	30.6	0	62		DP	
0455		9940	71	8.2	—	181	5.4	182	30.1	0	63	Full	DP	
0555		9950	71	8.3	—	182	6	182	30.5	0	63		DP	
0655		9950	71	7.7	—	181	6.1	182	31	0	65		DP	
0850		9960	71	8	—	182	6	182	30.5	0	64		DP	
0855		9960	73	7.8	—	182	5.7	182	30.3	0	64	Full	DP	
0956		9960	79	7.8	—	182	5.8	182	17.5	0	—		DP	CHANGED MANOMETER [illegible]
1100		[illegible]	80	7.9	—	182	5.8	182	[illegible]	←			DP	SEALS (TA In [illegible])
~~[illegible]~~				~~7.8~~										All fluid [illegible] water in [illegible]
1200		9950	78	7.8		182	5.7	182	16.9	—	NOT USING		GRB	
1300		9945	80	49		180	47.5	180	3.6	—			TMC	1.5 + 1.8 FLOW STEP
1500				49		185	47.5	188	4.2	—			GRB	2.2 + 1.9
1520				110	—	INCREASED	WELL PRESSURE							
1530			79	110		180	110	180	.2	—	NOT	USING	GRB	
1600		9938	79	110	—	179	108	178	2.0	—	NOT	USING	GRB	

NOTE WHETHER ~~500#~~ OR ~~1000#~~ GAUGE

wpf

FIGURE 8.1

C-8

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(9)

DATE 12-5-80

TIME	PUMP RPM	AMBIENT P	AMBIENT T	P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	CHECK PUMP OIL	CHECK PUMP H_2O	BY	COMMENTS
1700		9925	79	110	—	174	100	(183)	2.4	—		OIL	LW	1.2 + 1.2
		992	76	112		~~182~~ 175	112	171	1.4					
1900		9942	76	119		172	116	171	1.6		OFF		TMC	
1930		Switched to PAN AM Generator												
2000				21.5	—	200	19	202			60PSIG		GRB	1975 opened Flowline DP empty
2100				12.0	←	200	10.5	200						
2200		9950	74°	9.5	—	198	8.1	195	20		62PSI		GRB	DP Possibly not full of water in hoses
2300		9948	74°	8.9	—	190	7.3	190	20.2		62BI		GRB	9.8+10.4
0[illegible]		994[illegible]	7[illegible]°	8.[illegible]	—	1[illegible]	7.1	189	20.5	—	62		DP	
0100		994	73°	8.5	—	189	7.0	189	20.5	—	62	Full	DP	TOPPED OFF FUEL
0200		993	71°	8.1	—	186	6.9	185	20.7	—	61	—	GT	
0300		992	72°	8.0	—	186	6.9	185	20.4	—	62	—	GT	
0400		99[illegible]	72°	8.1	—	19[illegible]	6.9	185	20.3	—	63	—	DP	
0500		9[illegible]	71	8.0	—	184	6.8	184	20.4	—	63	—	DP	
0600		993.5	70	8.[illegible]	—	184	6.6	185	20.4	—	63	Full	DP	
0700		994	72	8.0	—	183	6.6	182	20.4	—	62	—	DP	
0800		994.5	73	8.0	—	183	6.5	184	20.7	—	64	—	DP	Refueled Gen.
0900		994.6	73	7.7	—	183	6.6	184	20.6	—	64	—	DP	

FIGURE 6.1

(10)

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

DATE 12/6/86

TIME	PUMP RPM	AMBIENT P	AMBIENT T	P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	~~CHECK OIL~~ Fuel Press	~~PUMP H2O~~ OIL ~~Press~~	BY	COMMENTS
1000		994.5	78	7.8	—	183	6.4	183	19.5	—	66	—	DP	
1100		994	80	7.8	—	183	6.5	183	18	—	OFF	Full	DP	
1200		994.5	79	43	~~43~~	182	42	182	—	—	OFF		TMC	MANOMETER PLUGGED
1245				50		183	49	183					TMC	
1300				50		185	49	185	0.8 →				TMC	MANOMETER ZERO = -2.0
1325		Replaced Fluid in manometer with ~~fluid~~ water												
1400		9935	83	49.4	/	186	48.5	187	4.1	—	OFF		TMC	
1430				49.0	/	185	48	186	4.3	—	OFF		TMC	JUST PRIOR TO 100 PSI
1500				110	/	180	110	180	2.1	—			TMC	
1600		9930	81	100	/	178	100	178	1.95	—	OFF		TMC	MANOMETER ZERO = ~~0.5~~ 0.0
1700				93	/	177	95	177	1.90	—	OFF		TMC	
1800		9920	78	105	—	172	104	172	1.50	—	OFF		GRB	
2000		9940	75	18.5	—	213	16	213	OPEN	—	64		TMC	FILLED GEN
2100		9930	74	9.3	—	200	8.3	200	BAD	—	63		TMC	
2200		9938	74	9.2	—	194	7.6	195	BAD	—	63		TMC	
2300		9945	74	8.6		190	7.0	193	21.5					MANOMETER FIXED SP GR = 1.75
2400		9945	74	8.5	—	189	6.9	190	20.3	—	63	Full	DP	TA Inside
0100		9945	72	8.1	—	188	6.8	188	out of order	—	63		DP	

(-.4)

-.4
-1.0 wpd

FIGURE 6.1

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(11)

Fuel Press OIL

DATE 12/7/86

TIME	PUMP RPM	AMBIENT P	AMBIENT T	P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	CHECK ~~OIL~~	PUMP H_2O	BY	COMMENTS
0700		995.2	72	8	—	188	6.8	188	22.7	—	63	Full	DP	
0300		995.2	72	8.0		186	6.6	186	22.5	—	63		GT	
0400		994.5	72	7.9	—	185	6.6	185	22.5	—	63		DP	
0500		995	72	7.8	—	185	6.4	186	22.7	—	63	Full	DP	fueled gen.
0600		995	72	7.5		185	6.1	184	22.3	—	62		GT	
0700		996	72	7.8	—	185	6.2	185	22.8	—	63		DP	
0800		995.5	72	7.6	—	184	6.3	185	22.5	—	63		DP	
0900		996	73	7.5	—	185	6.1	184	22.7	—	64	Full	DP	
1005		996	73	7.4	—	184	6.2	183	22.1	—	64		DP	
1100		995.5	77	7.3	—	184	6.1	184	22	—	64		DP	
1200		9952	79	7.4	—	183	6.1	183	21.8	—	62	FULL	TMC	
1300		995.5	78	7.3	—	183	6.0	183	21.8	—	62		TMC	
1400		9950	85	7.6	—	183	6.1	183	21.6	—	62		TMC	
1500		9947	82	7.5	—	183	6.0	183	21.2	—	62		TMC	
1600		9943	84	7.5	—	182	6.0	182	21.1	—	62		TMC	
1700		9939	80	7.8	—	181	6.8	182	21.4	—	62		TMC	
1800		9938	76	7.4	—	181	6.9	182	21.4	—	62	FULL	TMC	FILLED GEN
1900				7.1	—	181	5.9	182	21.1	—	60		TMC	

wpt

FIGURE 8.1

M

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(42)

DATE 12/7/80

FUEL OIL

TIME	PUMP RPM	AMBIENT P	AMBIENT T	P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	CHECK OIL / PUMP H_2O		BY	COMMENTS
2000		994.0	74	7.1	—	181	5.8	182	21.1	—			THC	
2100			/	7.0	—	181	6.0	181	20.9		62		LW	
2200		994.5	72	7.0	—	181	5.7	181	21.3	—	60		LW	
2300		994.7	72	7.1	—	181	5.8	181	21.0	—	60		THC	
2400		994.8	72	7.1	—	181	5.8	182	21.0	—	61	FULL	DP	
0100		994.9	72	7.1		181	5.5	182	21.0		61		GT	TOPPED OFF DIESEL
0200		994.5	72	7.0		181	5.5	182	21.0		64		GT	
0300		994.5	72	7.0		181	5.2	182	21.0		64		GT	
0400		994.4	72	7.0		181	5.2	182	21.1		64		GT	
0500		995	72	7.0	—	181	5.5	182	21.2	—	64	FULL	DP	
0600		995.4	72	7.0	—	181	5.2	182	20.5	—	64		DP	
0700		995.5	72	7.0	—	181	5.6	182	21.1	—	65		DP	
0800		996.0	73	6.9	—	181	5.7	182	21.2	—	65		DP	
0900		997.0	77	6.9	—	181	5.5	182	21.1	—	64	FULL	DP	
1000		996.5	75	7.0	—	181	5.6	182	21.0	—	64		DP	
1100		996.0	82	7.0	—	181	5.8	182	20.7		64		GT	
1200		995	82	7.0	—	181	5.5	182	20.8	—	64	FULL	LW	10.4 + 10.4
1300		993.5	80	6.9	—	181	5.1	181	20.0		64			

C-12

FIGURE

wp

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(13a)

DATE 12-8-87

TIME	PUMP RPM	AMBIENT P		P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	CHECK ~~OIL~~ FUEL PRESS	~~PUMP~~ H_2O	BY	COMMENTS
1400	MISSED		READING	— ON	FIGURE								GRB	
1500				6.9	—	181	5.5	183	20.1	—	64		GRB	
1600	0	992	80	6.8	—	181	5.5	182	20.4	—	64		LW	10.2+10.2
1700		992	82	6.9	—	181	5.6	182	20.7	—	64		LW	10.3+10.4
1800		991.0	76	6.9		181	5.5	181	22.2	—	64		GRB	11.8+10.4
1900		992.0	75	7.0		181	5.3	180	21.3	—	64		GRB	10.5+10.8
2000		993.0	74	6.9		181	5.2	181	21.5	—	67		TMC	
2100		992.9	72	6.9		181	5.1	181	21.3	—	64		GRB	
2200		994.2	72	6.9		181	5.0	181	20.8	—	60		TMC	
2300		993.5	70	6.8		180	5.1	180	21.7	—	57		GRB	
2400		994.7	71	6.8	—	180	5.1	181	21.2	—	56		DP	
0100		994.9	71	6.9	—	180	5.1	181	21.6	—	56	Full	DP	
0200		993.4	71	6.9		180	5.1	181	21.2	—	64		DP	
0300		993.2	71	6.9	—	180	5.1	181	21.5	—	64		DP	
0400		992.5	71	6.9	—	180	5.1	181	20.7	—	63		DP	
0500		993.2	70	6.9	—	180	5.1	181	21.1	—	63		DP	
0600		994.0	69	6.9		180	5.0	180	20.7		64		DP	
0700		994.5	70	6.8	—	180	5.2	181	22.1	—	65	Full	DP	fuel'd up, And oil'd up.

Fuel temp 3/4

FIGURE 6.

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

(14)

DATE 12/9/86

TIME	PUMP RPM	AMBIENT P	AMBIENT T	P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	~~CHECK OIL~~	PUMP H_2O	BY	COMMENTS
~~0800~~											fuel	OIL	~~DP~~	
0800		995.0	74	6.9	—	180	5.0	181	21.0	—	63	Full	DP	
0900		995.0	74	6.8	—	180	5.1	181	21.1	—	63		DP	
1000		996.0	77	6.8	—	181	5.0	181	21.3	—	64		DP	
1100		995.3	80	6.8	—	181	5.1	181	21.3	—	65		DP	
1200		9950	86?	6.8	—	181	5.0	181	21.2	—	OFF		TMC	
1300				6.3	—	180	5.0	180	21.1	—	OFF		GRB	
1400		9935	78	6.5	—	180	4.9	181	20.6	—	OFF		GRB	
1500		9930	80	6.5	—	180	5.0	181	20.4	—	OFF		GRB	
1515		1" of water collected in 3 min 25 sec 6.5" of gas collected in 1.5 seconds												
1825		993.?	76	184 (300 psig)	Read on 5000 psig gage	160	278	160	-11.6		OFF		LW	5.6 + 6.0
1900			76	279		160	275	160	-10.9		OFF		LW	5.5 + 5.4 START Generator 1930
1958		993.0	74	270		151	266	150	-11.2		64		LW	5.5 + 5.7
2200		9950	74	280		150	275	150	4.9 11.1		62		TMC	
2300		9950	72	270		150	265	150	5.0					
2400		9950	71	280	—	150	256	150	5.0	—	63		DP	
0100		994.5	71	263	—	147	261	148	5.0	—	63		DP	
0200		993.5	70	280	—	145	280	146	—	—	63		DP	

C-14

FIGURE 6.1

wpt

ASCENSION ISLAND GEOTHERMAL EXPLORATORY WELL
FLOW TEST
DATA SHEET

DATE 12/10/26

TIME	PUMP RPM	AMBIENT P	AMBIENT T	P_{1A}	P_1	T_1	P_2	T_2	ΔP	P_J	Fuel CHECK ~~OIL~~	PUMP H_2O	BY	COMMENTS
0300	—	993.0	71	290	—	143	284	143	—	—	63	—	DP	
0400	—	993.1	70	290	—	143	—	143	—	—	64	—	DP	
0500		994.0	70	298		145		143			64		sf	
0600	—	994.0	70	301	—	144	—	143	—	—		—	DP	CRACKED TV.
0700	—	994.7	72	299	—	150	—	152	—	—	64	—	DP	
0805	—	994.0	73	284	—	150	—	151	—	—	OFF	—	DP	
0900	—	—	76	269	—	150	—	150	—	—	OFF	—	DP	
1015				395			P_{1A}							
1020				423		1110	565							
1025				445		1115	580							
1030				458		1120	595							
1035				471		1125								
1040				485		1130								
1045				498		1135								
1050				511		1140								
1055				522		1145								
1100				539		1150								
1105				551		1155								

The End

wp

FIGURE 8.1

Ascension Wellhead Pressures

Date	Time	Press. psia	+/-	Comments
12/12	1200	21	1	Period 2.4 sec.
12/13	1030	20.8	1	Period 2.4 sec.
	1700	20.5	0.7	
12/14	1000	20.	0.4	
	1300	19.8	0.4	
	1700	20.2	0.4	Period 2.5 sec
12/15	0800	19.2	0.4	Precipitate changed color
	1200	19.8	0.6	from golden brown to a grey
	1600	19.5	0.8	green. Collected a sample
	1830	19.2	0.4	
12/16	0900	18.8	0.4	
	1230	18.2	0.6	Color has returned to golden
	1430	18.2	0.4	brown
12/17		18.2		
12/18	0930	17.8		
	1930	17.0		
12/19	0930	17.5		
	1400	17.0		
12/20	0900	16.2		
	1830	16.2		
12/22	0800	14.8		
	1300	15.2		

Ascension Wellhead Pressures

December/January, 1987
(from PanAm)

Date	Time	Press.	Time	Press.
12/23		1830	15.5 psig	
12/24	0800	15 psig	1600	14.0 psig
12/25	1000	14.0 "	1630	13.5 "
12.26	0930	13.5 "	1700	13.5 "
12/27	1000	13.5 "	1600	13.5 "
12/28	1100	13.0 "	1330	13.0 "
12/29	0800	13.0 "	1700	12.5 "
12/30	1000	12.0 "	1630	12.0 "
12/31	0800	12.0 "	1500	12.0 "
01/01	0930	11.5 "	1700	11.5 "
01/02	0900	11.5 "	1600	11.5 "
01/03	1000	11.5 "	1600	11.5 "
01/04	0830	11.5 "	1500	10.0 "
01/05	1000	9.0 "	1400	9.0 "
01/06	1000	9.0 "	1700	8.5 "
01/07	0830	8.5 "	1400	8.5 "
01/08	0900	6.5 "	1700	6.5 "
01/09	0830	5.5 "	1630	5.5 "
01/10	no data			
01/11	0830	9.0 "	1200	10.0 "
		1600	9.0 "	
01/12	0800	6.0 "	1720	20.0 "
		1840 9.0 "		
01/13	?	9.0 "	1830	5.0 "
01/14	0800	4.0 "	1030	4.5 "

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APPENDIX D

DATA ACQUISITION PROGRAM LISTING

NOTE: This program was expressly developed for data collection for this test. This program is not warrantee for any use and neither DoE, The U.S. Air Force or any of their contractors guarentees this program in any way.

```
1780 REM ************************************************************************
1790 REM NOW THE OMEGA PRESSURES
1800 REM ORIFICE PRESSURE DIFFERENTIAL, HONEYWELL SN7934
1810      PRINT #2, "*0:CHA/2:"
1820      INPUT #2, CHA2$
1830           DELP=(VAL(MID$(CHA2$,5,7))-19.7)*.9
1840 REM P2 FROM HONEYWELL SN 7933
1850      PRINT #2, "*0:CHA/3:"
1860      INPUT #2, CHA3$
1870          P2=(VAL(MID$(CHA3$,5,7))-20.8)*7.04+PA
1880 REM ************************************************************************
1900 RETURN
2000 REM ************************************************************************
2000 REM ************************************************************************
2010 REM SUBROUTINE TO PRINT DATA
2020 REM ************************************************************************
2030 REM    IF NEW PAGE PRINT HEADINGS
2040        IF KP%=0 GOTO 2500
2050 REM    IF NOT PRINT DATA
2060 LPRINT USING "####";J%;
2070 LPRINT USING " &&&&&&&&&&";DN$;
2080 LPRINT USING " &&&&&&&&&&";TN$;
2090 LPRINT USING " ####.##";PA,TA,PWH,TWH,P2,T2,P0,DELP,PJ
2100 KP%=KP%+1
2110 IF KP%)= 40 THEN  KP%=0
2120 GOTO 2800
2500 LPRINT CHR$(12):LPRINT:LPRINT
2510 LPRINT "                                                ",DATE$
2520 LPRINT "              ASCENSION #1 - FLOW TEST":PRINT:PRINT
2530 LPRINT "PT.#   DATE      TIME        PA      TA      PWH     TWH     P2      T2      P0      DELP     PJ
2540 LPRINT "---- --------- --------- ------ ------ ------ ------ ------ ------ ------ ------ ------
2550 GOTO 2060
2700 REM ************************************************************************
2800 RETURN
3000 REM ************************************************************************
3010 REM    SUBROUTINE TO WRITE DATA DISK
3020 REM ************************************************************************
3030 REM     LOAD THE PRINT BUFFER
3040          LSET    DA$=DN$
3050          LSET    TIM$=TN$
3060          LSET    PA$=MKS$(PA)
3070          LSET    TA$=MKS$(TA)
3080          LSET    PWH$=MKS$(PWH)
3090          LSET    TWH$=MKS$(TWH)
3100          LSET    P2$=MKS$(P2)
3110          LSET    T2$=MKS$(T2)
3120          LSET    P0$=MKS$(P0)
3130          LSET    DELP$=MKS$(DELP)
3140          LSET    PJ$=MKS$(PJ)
3150          LSET    TT$=MKS$(TT)
3200 PUT #3,J%
3400 REM************************************************************************
3500 RETURN
9000 CLOSE #3
```

```
460     GOSUB 2000
470 REM PUT THE DATA ON THE DISK
480     GOSUB 3000
490 REM INCREASE THE TIME FOR THE NEXT DATA POINT
500     T=T+DELT
505     TT=TNOW-T0
506     J%=J%+1
510  REM LOOP UNTIL NEXT DATA POINT AND CHECK THE KEY BOARD
520  A$=INKEY$
530  IF LEN(A$)=0, GOTO 550
540  IF ASC(A$)=69, GOTO 9000
541          INPUT "ENTER NEW DELTA T ";DELTA
542          T=T-DELT
543          DELT=DELTA
544          T=T+DELT
545      IF T ( TNOW , T=TNOW
550  TN$=TIME$
555  DN$=DATE$
556    TD=(VAL(MID$(DATE$,4,2))-1!)*24*60
560  TNOW=VAL(MID$(TN$,1,2))*60! + VAL(MID$(TN$,4,2)) + VAL(MID$(TN$,7,2))/60!+ TD
565 GOSUB 1000
570  REM CHECK FOR NEXT TIME POINT
580      IF TNOW = ) T, GOTO 430
590  GOTO 510
1000 REM ************************************************************************
1010 REM    SUBROUTINE TO READ THE DATA FROM THE PARO AND THE OMEGA BOARD
1020 REM ************************************************************************
1030 REM READ THE PARO
1040      FOR I = 1 TO 4
1050      INPUT #1, PARODAT$(I)
1060      STRIP$=MID$(PARODAT$(I),2)
1070      STRIP$=MID$(STRIP$,1,1)
1080      INDEX=VAL(STRIP$)
1090      P(INDEX)=VAL(MID$(PARODAT$(I),4))
1100      NEXT I
1110           REM AMBIENT PRESSURE SN 26196
1120           PA=P(1)+(14.397-14.09)
1130           REM WELL HEAD PRESSURE SN 11874
1140           PWH=P(2)+(14.397-14.34)
1150           REM ORIFICE INLET PRESSURE SN 26195
1160           PO=P(3)+(14.397- 14.33)
1170           REM JAMES TUBE PRESSURE SN 11242
1180           PJ=P(4)+(14.397-14.27)
1660 REM ************************************************************************
1670 REM NOW READ THE OMEGA TEMPERATURES
1680      PRINT #2,"*0:CHA/8:"
1690      INPUT #2,CHA8$
1700      PRINT #2,"*0:CHA/9:"
1710      INPUT #2,CHA9$
1720      PRINT #2,"*0:CHA/11:"
1725     INPUT #2,CHA11$
1730           CHA8$=MID$(CHA8$,5,7)
1740           CHA8=VAL(CHA8$)
1750           T2=CHA8*1.8+32!
1760           TWH=VAL(MID$(CHA9$,5,7))*1.8+32!
1770           TA=VAL(MID$(CHA11$,5,7))*1.8+32!
```

```
10 REM ************************************************************************
20 REM      ASCENSION ISLAND DATA ACQUISITION PROGRAM
30 REM                DECEMBER 1, 1986
40 REM ************************************************************************
50 REM SET PRINTER TO SMALL PRINT
60              LPRINT CHR$(15) : WIDTH "LPT1:",142
65 ON ERROR GOTO 9020
70 REM CLEAR THE SCREEN:CLS
80              CLS
90 PRINT " ASCENSION ISLAND #1 PRODUCTION TEST ",DATE$
100 PRINT:PRINT:PRINT
110 REM INPUT REQUIRED FOR INITIALIZATION
120 PRINT " YOU MUST NOW INPUT THE RESTART PARAMETERS":PRINT:PRINT
130 INPUT "INPUT DATA FILE VOLUMN NUMBER     ",FILENUM%
140 INPUT " WHAT RECORD NUMBER ON THAT FILE   ",J%
150 INPUT "INPUT THE PRINT COUNTER, 0 FOR A NEW PAGE     ", KP%
160 REM INPUT " INPUT THE INITIAL TIME , NEGATIVE WILL USE CURRENT TIME     ", TO
170 INPUT " INPUT THE TIME FOR THE NEXT DATA POINT, A - WILL USE THE CURRENT TIME    ", T
171 INPUT "INPUT THE DESIRED DATA INTERVAL IN MINUTES ";DELT
174     T$= TIME$
175    TD=(VAL(MID$(DATE$,4,2))-1!)*24*60
176     TNOW=VAL(MID$(TIME$,1,2))*60! + VAL(MID$(TIME$,4,2)) + VAL(MID$(TIME$,7,2))/60!+TD
180    REM IF TO ( 0 , GO TO 210
181    TO=366
190     GOTO 220
210     TO= VAL(MID$(T$,1,2)) * 60! + VAL(MID$(T$,4,2)) + VAL(MID$(T$,7,2))/60!+TD
220     IF T ( 0 GOTO 222
221     GOTO 225
222     T=TNOW
225 REM CLEAR THE SCREE AND PRINT INITIAL CONDITIONS AND MESSAGES
230 CLS
240 PRINT " ASCENSION ISLAND #1 PRODUCTION TEST ",DATE$
250 PRINT  " INITIAL TIME =", TO :PRINT:PRINT
260 PRINT  " DATA DISC IS VOLUME ";FILENUM%;"   AT RECORD NO.";J%:PRINT:PRINT
270 PRINT "TIME OF DAY =",TIME$
300 REM OPEN THE DATA FILE
310     FILENUM$=STR$(FILENUM%): FILENUM$=MID$(FILENUM$,2,3)
320     PREFIX$="B:AI":SUFX$=".DAT"
330     OPEN PREFIX$+FILENUM$+SUFX$ AS #3  LEN=100
340    REM DEFINE THE BUFFER FOR THE DATA FILE
350    FIELD #3 ,10ASDA$,8ASTIM$,8ASTT$,8ASPA$,8ASTA$,8ASPWH$,8ASTWH$,8ASP2$,8AST2$,8ASPO$,8ASDELP$,8ASPJ$
360 REM OPEN THE COM PORTS
370 REM COM2 IS THE OMEGA BOARD
380     OPEN "COM2:9600,O" AS 2
390 REM COM1 IS THE PAROSCIENTIFIC
400     OPEN "COM1:4800,N,8,1,RS,CS,DS,CS" AS 1
410 REM CHECK IF ITS TIME READ THE DATA AT START
420     IF T ) TNOW, GOTO 510
425     TN$=T$:DN$=DATE$
430 REM DO READ THE DATA
440     GOSUB 1000
450 REM PRINT THE DATA ON THE PRINTER
```

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APPENDIX E

ELECTRONIC DATA

ASCENSION WELL TEST No. 1. 30 Min. DATA

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
01-Dec-86	06:06:30	6.11	14.35	71.06	24.50	187.70	23.29	186.62	23.48	1.295	13.97
01-Dec-86	06:36:31	6.61	14.37	70.88	24.48	187.52	23.17	186.08	23.40	1.257	13.98
01-Dec-86	07:06:30	7.11	14.37	70.88	23.64	187.16	23.45	185.72	23.60	1.181	13.96
01-Dec-86	07:36:30	7.61	14.38	70.88	24.80	188.42	23.47	186.98	23.74	1.257	13.99
01-Dec-86	08:06:32	8.11	14.39	71.06	24.54	188.06	23.33	186.62	23.49	1.257	14.00
01-Dec-86	09:36:31	9.61	14.39	71.06	24.39	187.70	23.33	186.26	23.38	1.257	14.03
01-Dec-86	09:06:31	9.11	14.40	74.84	24.71	187.16	23.69	186.08			14.12
01-Dec-86	09:36:30	9.61	14.41	75.92	24.85	188.06	23.70	186.98	23.82	1.063	14.19
01-Dec-86	10:06:31	10.11	14.41	77.36	22.57	188.42	23.49	187.16	23.53	1.006	14.26
01-Dec-86	10:36:30	10.61	14.41	77.72	21.39	187.52	23.49	186.26	23.37	1.040	14.30
01-Dec-86	11:06:31	11.11	14.41	77.90	18.72	187.16	23.35	185.72	23.36	1.041	14.30
01-Dec-86	11:36:31	11.61	14.41	77.72	20.25	187.70	23.70	186.26	23.77	0.978	14.27
01-Dec-86	12:06:31	12.11	14.41	78.44	19.06	188.42	23.70	186.98	23.65	1.003	14.30
01-Dec-86	12:36:32	12.61	14.41	78.44	23.85	187.70	23.35	186.08	23.39	1.080	14.25
01-Dec-86	13:06:30	13.11	14.40	78.44	23.80	187.16	23.34	185.36	23.32	1.003	14.25
01-Dec-86	13:36:31	13.61	14.39	78.26	23.29	186.98	22.84	185.18	22.80	0.927	14.32
01-Dec-86	14:06:32	14.11	14.38	77.36	24.01	188.06	23.32	186.26	23.56	1.003	14.34
01-Dec-86	14:36:30	14.61	14.38	77.90	23.79	188.06	22.97	186.62	23.29	1.003	14.35
01-Dec-86	16:22:23	16.37	14.36	75.38	23.86	187.70	22.95	186.62	23.34	1.067	14.25
01-Dec-86	16:34:14	16.57	14.37	74.48	23.78	188.06	22.95	186.62	23.27	1.080	14.19
01-Dec-86	16:38:37	16.64	14.36	74.30	23.73	188.06	22.95	186.62	23.23	1.086	14.17
01-Dec-86	17:08:35	17.14	14.36	74.48	23.53	187.16	22.81	185.72	23.06	1.086	14.23
01-Dec-86	17:38:36	17.64	14.36	74.48	23.48	186.62	22.60	185.18	22.96	1.086	14.21
01-Dec-86	18:08:35	18.14	14.36	73.76	24.10	186.62	23.30	185.18	23.58	1.040	14.17
01-Dec-86	18:38:35	18.64	14.35	72.50	23.76	187.70	22.94	186.26	23.24	1.120	14.07
01-Dec-86	19:08:36	19.14	14.36	72.32	23.52	187.52	22.80	185.72	22.97	1.118	14.00
01-Dec-86	20:59:34	20.99	14.36	71.78	56.44	186.98	55.76	186.26	56.31	0.171	14.05
01-Dec-86	21:29:34	21.49	14.37	71.78	59.06	189.86	58.23	188.96	58.85	0.165	14.04
01-Dec-86	21.59.34	21.99	14.38	71.96	59.43	190.40	58.37	190.40	59.44	0.165	14.05
01-Dec-86	22:29:35	22.49	14.37	71.78	59.00	189.86	58.73	188.96	58.85	0.165	10.04
01-Dec-86	22:59:35	22.99	14.37	71.78	65.57	188.06	58.23	187.16	58.64	0.191	14.04
01-Dec-86	23:29:34	23.49	14.38	71.78	58.05	185.36	57.88	184.64	57.92	0.165	14.03
02-Dec-86	00:07:35	24.13	14.38	71.96	119.96	181.40	119.56	179.96	119.84	-0.023	14.02
02-Dec-86	00:32:34	24.54	14.38	71.96	130.95	180.50	130.54	179.42	131.05	-0.000	14.02
02-Dec-86	01:02:33	25.04	14.37	71.96	132.12	180.14	131.80	179.42	132.13	-0.000	14.02
02-Dec-86	01:32:33	25.54	14.37	71.78	130.42	179.06	129.89	178.16	130.40	-0.023	14.01
02-Dec-86	02:02:33	26.04	14.36	71.42	125.68	178.70	125.03	177.62	125.63	-0.023	13.98
02-Dec-86	02:32:33	26.54	14.35	71.06	125.39	178.52	124.67	177.26	125.27	-0.000	13.97
02-Dec-86	03:02:33	27.04	14.34	70.34	44.08	198.50	41.30	196.70	41.77	1.452	15.90
02-Dec-86	03:32:35	27.54	14.34	70.88	30.47	213.80	28.42	212.18	29.01	1.429	14.97
02-Dec-86	03:47:33	27.79	14.34	70.88	29.89	208.58	27.92	206.96	28.58	1.372	14.90
02-Dec-86	04:32:43	28.55	14.34	70.88	27.39	203.90	25.68	202.46	26.22	1.486	14.89
02-Dec-86	05:02:43	29.05	14.35	70.52	26.04	199.40	24.49	197.96	24.98	1.429	14.84
02-Dec-86	05:32:43	29.55	14.34	70.88	24.56	196.70	23.99	195.26	24.52	1.372	14.82
02-Dec-86	05:51:20	29.86	14.35	70.88	25.36	195.26	23.78	193.82	24.34	1.314	14.81
02-Dec-86	06:11:24	30.19	14.36	70.88	25.16	194.18	23.65	192.92	24.16	1.314	14.82
02-Dec-86	09:49:48	33.83	14.40	74.84	24.61	190.58	23.34	189.50	23.38	0.869	14.82

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
02-Dec-86	10:04:16	34.07	14.40	75.74	24.53	190.40	23.20	188.96	23.33	0.834	14.82
02-Dec-86	10:48:00	34.80	14.41	79.88	24.42	189.50	23.00	188.06			14.81
02-Dec-86	12:12:00	36.20	14.42	79.88	24.35	189.86	22.87	188.42	23.17	0.834	14.80
02-Dec-86	12:42:02	36.70	14.42	79.70	24.28	188.96	22.66	187.70	23.05	0.834	14.78
02-Dec-86	13:09:38	37.16	14.42	79.34	24.20	188.42	22.65	187.16	22.97	0.834	14.76
02-Dec-86	13:39:38	37.66	14.40	76.28	24.53	189.14	22.99	187.70	23.36	0.834	14.70
02-Dec-86	14:09:39	38.16	14.40	77.90	24.33	189.50	22.85	188.06	23.15	0.869	14.74
02-Dec-86	14:39:38	38.66	14.40	77.90	24.18	188.60	22.64	187.52	22.97	0.869	14.78
02-Dec-86	15:09:40	39.16	14.37	78.44	24.06	188.06	22.47	186.62	22.84	0.869	14.74
02-Dec-86	15:39:39	39.66	14.37	76.46	23.46	187.52	21.97	186.26	22.23	0.812	14.73
02-Dec-86	16:09:38	40.16	14.37	75.74	24.31	188.42	22.81	186.98	23.09	0.949	14.72
02-Dec-86	16:39:39	40.66	14.36	74.30	24.13	188.60	22.60	187.16	22.90	0.949	14.66
02-Dec-86	17:09:38	41.16	14.36	74.30	23.98	187.70	22.46	186.62	22.72	0.983	14.66
02-Dec-86	17:39:38	41.66	14.37	72.50	23.94	187.52	22.25	186.08			14.58
02-Dec-86	18:09:38	42.16	14.36	71.78	24.28	188.06	22.60	186.62	22.95	1.063	14.53
02-Dec-86	18:39:39	42.66	14.36	70.34	24.06	188.42	22.45	186.98	22.68	1.086	14.50
02-Dec-86	19:09:39	43.16	14.36	70.34	23.88	187.70	22.24	186.26	22.51	1.120	14.50
02-Dec-86	19:39:39	43.66	14.36	70.88	23.82	187.16	22.10	186.08	22.43	1.120	14.51
02-Dec-86	20:09:39	44.16	14.36	71.06	24.25	186.62	22.60	185.18	22.86	1.063	14.51
02-Dec-86	20:39:38	44.66	14.37	71.42	24.04	187.70	22.47	186.62	22.72	1.086	14.52
02-Dec-86	21:09:38	45.16	14.37	71.42	23.90	187.70	22.25	186.26	22.60	1.086	14.52
02-Dec-86	21:39:39	45.66	14.38	71.42	23.77	187.16	22.12	186.08	22.47	1.063	14.52
02-Dec-86	22:09:39	46.16	14.38	71.42	24.38	186.98	22.61	185.36	23.00	1.120	14.54
02-Dec-86	22:39:38	46.66	14.38	71.42	24.08	187.52	22.47	186.26	22.79	1.063	14.52
02-Dec-86	23:09:39	47.16	14.38	71.06	23.85	187.70	22.27	186.62	22.57	1.063	14.52
02-Dec-86	23:39:38	47.66	14.39	71.42	23.76	187.16	22.13	186.08	22.44	1.040	14.52
03-Dec-86	00:09:40	48.16	14.38	71.42	23.71	186.62	22.13	185.72	22.38	1.040	14.52
03-Dec-86	00:39:39	48.66	14.38	70.34	25.07	187.52	22.47	186.08	22.81	1.040	14.50
03-Dec-86	01:09:39	49.16	14.37	70.52	23.82	187.70	22.12	186.26	22.54	1.040	14.50
03-Dec-86	01:39:38	49.66	14.36	70.88	23.69	187.16	22.11	185.72	22.41	1.040	14.50
03-Dec-86	02:09:40	50.16	14.36	70.88	23.21	186.62	21.61	185.36	21.91	0.949	14.49
03-Dec-86	02:39:38	50.66	14.36	70.88	23.86	187.52	22.24	186.26	22.59	1.006	14.51
03-Dec-86	03:09:38	51.16	14.36	70.52	23.72	187.70	22.11	186.26	22.43	1.040	14.50
03-Dec-86	03:39:39	51.66	14.35	70.88	23.59	186.98	21.95	185.36	22.28	1.006	14.50
03-Dec-86	04:09:39	52.16	14.36	70.88	23.55	186.62	21.96	185.18	22.19	0.983	14.50
03-Dec-86	04:39:39	52.66	14.36	70.88	23.97	187.16	22.46	186.08	22.68	0.983	14.50
03-Dec-86	05:09:40	53.16	14.36	70.88	23.70	187.70	21.97	186.26	22.45	1.006	14.50
03-Dec-86	05:39:39	53.66	14.37	70.34	23.56	187.16	21.97	185.72	22.22	0.983	14.50
03-Dec-86	06:09:39	54.16	14.36	70.34	23.48	186.62	21.97	185.36	22.15	0.983	14.51
03-Dec-86	06:39:39	54.66	14.37	70.52	23.90	186.62	22.25	185.36	22.57	0.949	14.51
03-Dec-86	07:09:39	55.16	14.37	70.88	23.70	187.52	22.11	186.26	22.40	0.983	14.52
03-Dec-86	07:39:39	55.66	14.38	71.06	23.55	187.16	21.99	186.08	22.23	0.949	14.54
03-Dec-86	08:09:39	56.16	14.39	71.78	24.88	186.62	21.99	185.36	22.12	0.949	14.55
03-Dec-86	11:09:39	59.16	14.41	76.82	23.13	186.98	22.16	185.36	22.32	0.869	14.65
03-Dec-86	11:39:39	59.66	14.42	76.82	22.96	187.16	22.02	186.08	22.17	0.869	14.68
03-Dec-86	12:09:40	60.16	14.42	78.80	23.85	186.62	22.02	185.36	22.06	0.812	14.72
03-Dec-86	12:39:38	60.66	14.42	80.42	22.77	186.26	22.02	185.18	22.02	0.732	14.75

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
03-Dec-86	13:09:38	61.16	14.42	78.80	25.28	186.62	22.30	185.36	22.45	0.754	14.70
03-Dec-86	13:39:38	61.66	14.42	78.80	24.02	187.52	22.02	186.08	22.20	0.789	14.75
03-Dec-86	14:09:39	62.16	14.42	79.16	22.85	186.98	21.81	185.72	22.05	0.754	14.74
03-Dec-86	14:39:40	62.66	14.42	79.34	22.78	186.08	21.81	184.82	21.94	0.754	14.71
03-Dec-86	15:09:39	63.16	14.43	77.90	23.33	186.08	22.31	184.82	22.47	0.697	14.70
03-Dec-86	19:54:04	67.90	14.38	71.78	22.83	186.26	21.64	185.18	21.99	0.732	14.48
03-Dec-86	20:32:16	68.54	14.39	71.78	24.67	186.62	21.65	185.18	21.80	0.732	14.49
03-Dec-86	21:02:16	69.04	14.38	71.78	22.57	186.08	21.42	184.82	21.70	0.697	14.48
03-Dec-86	21:32:18	69.54	14.39	71.78	24.32	185.72	21.29	184.64	21.47	0.617	14.48
03-Dec-86	22:02:16	70.04	14.40	71.96	22.81	186.26	21.65	184.82	21.94	0.674	14.49
03-Dec-86	22:32:17	70.54	14.40	72.32	23.66	186.62	21.44	185.36	21.82	0.697	14.50
03-Dec-86	23:02:17	71.04	14.39	72.32	22.55	186.08	21.43	184.82	21.71	0.674	14.50
03-Dec-86	23:32:16	71.54	14.39	72.32	22.99	185.72	21.79	184.28	22.09	0.732	14.50
04-Dec-86	00:02:16	72.04	14.39	71.42	22.83	186.26	21.64	184.82	21.98	0.674	14.47
04-Dec-86	00:32:16	72.54	14.39	70.88	22.64	186.98	21.43	185.36	21.79	0.674	14.48
04-Dec-86	01:02:16	73.04	14.38	69.98	22.50	186.08	21.28	184.64	21.63	0.697	14.47
04-Dec-86	01:32:17	73.54	14.38	69.98	22.43	185.72	21.28	184.28	21.57	0.697	14.48
04-Dec-86	02:02:17	74.04	14.38	70.34	22.84	186.26	21.63	184.82	22.00	0.697	14.49
04-Dec-86	02:32:17	74.54	14.37	70.88	22.62	186.62	21.41	185.18	21.78	0.697	14.49
04-Dec-86	03:02:17	75.04	14.37	71.06	22.50	186.26	21.27	185.18	21.66	0.697	14.49
04-Dec-86	03:32:16	75.54	14.37	70.52	22.41	185.72	21.27	184.28	21.58	0.674	14.49
04-Dec-86	04:02:18	76.04	14.37	69.98	22.85	185.18	21.62	183.92	22.02	0.617	14.48
04-Dec-86	04:32:17	76.54	14.37	69.62	22.58	186.08	21.05	184.64	21.76	0.640	14.48
04-Dec-86	05:02:16	77.04	14.37	69.98	22.46	186.26	20.71	185.18	21.60	0.674	14.49
04-Dec-86	05:32:18	77.54	14.37	68.54	22.34	185.72	20.70	184.28	21.53	0.640	14.46
04-Dec-86	06:02:16	78.04	14.38	69.98	22.25	185.18	20.57	183.92	21.37	0.640	14.47
04-Dec-86	06:32:17	78.54	14.38	70.34	22.64	185.72	20.93	184.28	21.80	0.617	14.48
04-Dec-86	07:02:16	79.04	14.39	70.34	22.47	186.26	20.93	184.82	21.63	0.640	14.49
04-Dec-86	07:32:16	79.54	14.39	71.06	24.38	185.72	20.73	184.64	21.54	0.640	14.51
04-Dec-86	08:02:16	80.04	14.41	71.42	25.29	185.36	20.60	183.92	21.46	0.640	14.53
04-Dec-86	08:31:01	80.52	14.41	75.92	22.75	185.72	21.10	184.64		0.583	14.58
04-Dec-86	09:01:02	81.02	14.41	74.84	23.53	186.26	20.96	184.82	21.77	0.560	14.64
04-Dec-86	09:31:02	81.52	14.42	76.28	22.39	186.08	20.75	184.82	21.63	0.560	14.66
04-Dec-86	10:01:02	82.02	14.43	78.26	22.31	185.72	20.62	184.64	21.54	0.537	14.70
04-Dec-86	10:31:02	82.52	14.43	79.34	22.75	185.18	21.33	183.92	21.94	0.446	14.72
04-Dec-86	11:01:03	83.02	14.42	78.26	23.52	185.72	20.97	184.64	21.69	0.560	14.69
04-Dec-86	11:31:01	83.52	14.42	77.36	24.43	186.08	20.47	184.82	21.57	0.583	14.63
04-Dec-86	12:01:02	84.02	14.42	77.72	22.31	185.36	20.26	184.28	21.42	0.583	14.62
04-Dec-86	12:31:01	84.52	14.42	77.90	21.82	185.18	19.77	183.74	20.91	0.537	14.63
04-Dec-86	12:49:23	84.82	14.42	77.72	22.70	185.72	20.75	184.28	21.84	0.560	14.62
04-Dec-86	13:02:23	85.04	14.41	77.90	22.52	185.36	20.60	183.92	21.68	0.583	14.63
04-Dec-86	13:32:24	85.54	14.41	79.70	22.40	186.08	20.47	184.82	21.49	0.583	14.67
04-Dec-86	14:02:23	86.04	14.42	79.70	22.30	185.72	20.26	184.28	21.40	0.560	14.70
04-Dec-86	14:32:24	86.54	14.41	79.16	22.22	185.36	20.25	184.28	21.34	0.537	14.69
04-Dec-86	15:02:25	87.04	14.40	78.26	22.62	185.36	20.60	184.28	21.72	0.537	14.70
04-Dec-86	15:32:24	87.54	14.40	79.16	22.36	186.08	20.45	184.82			14.72
04-Dec-86	16:02:24	88.04	14.40	77.90	22.27	185.36	20.24	184.28			14.67

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
04-Dec-86	16:32:23	88.54	14.40	77.72	22.14	185.18	20.10	183.92	21.18	0.537	14.68
04-Dec-86	17:02:25	89.04	14.38	75.92	22.55	184.82	20.58	183.38	21.62	0.640	14.62
04-Dec-86	17:32:24	89.54	14.39	75.38	22.32	185.36	20.23	183.92	21.38	0.640	14.58
04-Dec-86	18:02:23	90.04	14.38	74.84	22.18	185.36	20.08	184.28	21.27	0.617	14.52
04-Dec-86	18:32:01	90.53	14.38	73.94	22.13	185.18	20.09	183.74	21.22	0.640	14.58
04-Dec-86	19:02:02	91.03	14.38	73.04	22.00	185.18	19.87	183.74	21.08	0.617	14.51
04-Dec-86	19:32:01	91.53	14.37	72.32	22.24	185.18	20.22	183.74	21.36	0.674	14.49
04-Dec-86	20:02:01	92.03	14.37	72.32	22.18	185.36	20.07	183.92	21.29	0.674	14.49
04-Dec-86	20:32:06	92.54	14.37	72.32	22.09	185.18	20.08	183.74	21.20	0.674	14.48
04-Dec-86	21:02:06	93.04	14.38	72.32	21.95	185.18	19.88	183.74	21.05	0.617	14.48
04-Dec-86	21:32:06	93.54	14.38	71.96	22.27	185.18	20.23	183.74	21.39	0.674	14.48
04-Dec-86	22:02:06	94.04	14.38	71.96	22.12	185.72	20.08	184.28	21.26	0.674	14.48
04-Dec-86	22:32:07	94.54	14.39	71.96	22.03	185.18	20.09	183.74	21.15	0.640	14.48
04-Dec-86	23:02:07	95.04	14.39	71.78	21.98	184.82	19.88	183.74	21.09	0.617	14.47
04-Dec-86	23:32:06	95.54	14.39	71.42	22.22	185.36	20.23	183.92	21.36	0.640	14.47
05-Dec-86	00:02:04	96.03	14.39	71.78	22.12	185.72	20.09	184.64	21.25	0.640	14.47
05-Dec-86	00:32:03	96.53	14.38	70.88	22.05	185.36	19.88	183.92	21.16	0.640	14.46
05-Dec-86	01:02:04	97.03	14.39	71.06	21.81	185.18	19.74	183.74	20.93	0.617	14.45
05-Dec-86	01:32:04	97.53	14.38	71.06	22.20	185.18	20.08	183.92	21.34	0.674	14.47
05-Dec-86	02:02:04	98.03	14.38	71.06	22.05	185.72	20.08	184.64	21.19	0.640	14.48
05-Dec-86	02:32:03	98.53	14.38	71.42	22.00	185.18	19.87	183.92	21.12	0.640	14.48
05-Dec-86	03:02:04	99.03	14.38	71.42	21.51	185.18	19.38	183.74	20.62	0.560	14.48
05-Dec-86	03:32:03	99.53	14.38	71.06	22.16	185.18	20.09	183.92	21.30	0.617	14.49
05-Dec-86	04:02:03	100.03	14.38	71.06	22.02	185.72	20.08	184.64	21.18	0.617	14.48
05-Dec-86	04:32:05	100.53	14.38	70.88	21.95	185.18	19.87	183.92	21.08	0.617	14.45
05-Dec-86	05:02:03	101.03	14.38	71.42	21.51	184.82	19.38	183.74	20.61	0.560	14.46
05-Dec-86	05:32:03	101.53	14.39	71.06	22.15	185.18	20.09	183.92	21.30	0.617	14.48
05-Dec-86	06:02:03	102.03	14.39	70.52	22.00	185.72	20.09	184.28	21.14	0.617	14.44
05-Dec-86	06:32:03	102.53	14.40	70.88	14.70	185.18	19.89	183.92	21.05	0.640	14.47
05-Dec-86	07:02:04	103.03	14.39	70.52	21.70	184.82	19.74	183.74	20.92	0.583	14.47
05-Dec-86	07:32:03	103.53	14.41	69.62	22.13	185.18	20.12	183.92	21.32	0.583	14.46
05-Dec-86	08:02:03	104.03	14.41	71.42	21.97	185.72	19.90	184.28	21.14	0.617	14.49
05-Dec-86	08:32:04	104.53	14.42	71.42	21.90	185.36	19.91	183.92	21.06	0.617	14.51
05-Dec-86	09:18:38	105.31	14.42	73.04	22.19	185.18	20.27	183.92	21.33	0.560	14.58
05-Dec-86	09:48:39	105.81	14.42	73.40	21.83	185.36	19.91	184.28	20.81	0.034	14.59
05-Dec-86	10:18:38	106.31	14.42	73.94	21.84	185.36	19.91	184.28	21.10	0.503	14.62
05-Dec-86	10:48:39	106.81	14.42	74.84	21.81	184.82	19.91	183.74	21.06	0.423	14.63
05-Dec-86	11:37:57	107.63	14.44	75.92	22.04	184.82	20.28	183.74	21.26	0.503	14.66
05-Dec-86	12:01:57	108.03	14.44	76.82	21.87	185.36	19.93	184.28	21.09	0.537	14.65
05-Dec-86	12:33:25	108.56	14.44	78.80	40.02	187.52	39.22	187.16	40.18	-0.389	14.57
05-Dec-86	13:03:24	109.06	14.44	76.82	63.56	182.48	62.04	181.76	45.85	-0.331	14.61
05-Dec-86	13:33:25	109.56	14.44	78.26	62.74	184.28	61.19	183.74	17.23	-0.526	14.64
05-Dec-86	14:03:25	110.06	14.44	79.70	62.92	186.62	61.54	186.08	17.43	-0.160	14.59
05-Dec-86	14:33:24	110.56	14.43	78.44	63.44	187.52	61.88	186.98	63.16	-0.057	14.57
05-Dec-86	15:03:24	111.06	14.41	77.36	63.41	187.70	62.00	187.16	63.25	-0.023	14.49
05-Dec-86	15:32:22	111.54	14.42	79.70	141.97	180.50	140.79	179.60	141.91	0.022	14.54
05-Dec-86	15:59:54	112.00	14.41	77.18	127.52	179.60	125.99	178.52	127.14	0.079	14.47

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
05-Dec-86	16:29:52	112.50	14.40	77.90	122.26	179.06	120.78	178.16	121.96	0.079	14.55
05-Dec-86	16:59:53	113.00	14.40	76.46	120.78	178.70	119.23	177.62	120.32	0.079	14.49
05-Dec-86	17:29:52	113.50	14.40	75.92	118.61	177.98	117.05	177.08	118.05	0.102	14.52
05-Dec-86	17:59:52	114.00	14.39	75.02	131.92	176.18	130.41	174.74	131.65	0.079	14.37
05-Dec-86	18:29:53	114.50	14.41	73.94	134.06	174.38	132.68	173.12	133.87	0.102	14.34
05-Dec-86	18:59:53	115.00	14.40	73.76	135.01	173.30	133.66	171.68	134.86	0.102	14.33
05-Dec-86	19:32:20	115.54	14.40	73.40	135.40	171.86	133.87	170.42	135.15	0.159	14.32
05-Dec-86	20:00:14	116.00	14.41	73.40	40.07	197.06	37.64	195.26	38.11	1.473	15.32
05-Dec-86	20:30:14	116.50	14.41	73.04	28.23	213.26	26.80	211.46	26.64	1.393	14.79
05-Dec-86	21:00:14	117.00	14.41	73.04	26.64	206.06	25.25	204.26	25.08	1.336	14.75
05-Dec-86	21:34:14	117.57	14.41	73.40	24.56	202.46	23.35	201.38			14.74
05-Dec-86	22:04:15	118.07	14.41	73.04	23.68	198.50	22.51	197.24	22.35	1.302	14.72
05-Dec-86	22:34:14	118.57	14.41	73.04	23.29	195.80	22.15	194.36	21.99	1.279	14.71
05-Dec-86	23:04:14	119.07	14.41	72.86	22.92	193.82	21.80	192.38	21.72	1.199	14.70
05-Dec-86	23:34:14	119.57	14.41	72.86	23.43	192.74	22.29	191.48	22.15	1.199	14.70
06-Dec-86	00:04:13	120.07	14.41	72.86	22.84	191.48	21.66	190.40	21.55	1.165	14.68
06-Dec-86	00:34:14	120.57	14.39	72.50	22.72	191.48	21.65	190.04	21.44	1.142	14.67
06-Dec-86	01:04:13	121.07	14.40	72.32	22.54	190.40	21.44	188.96	21.29	1.142	14.66
06-Dec-86	01:34:15	121.57	14.39	71.96	22.45	189.50	21.29	188.06	21.17	1.142	14.65
06-Dec-86	02:04:14	122.07	14.38	71.78	22.66	189.86	21.42	188.42	21.42	1.107	14.64
06-Dec-86	03:07:41	123.13	14.36	71.78	22.36	188.96	21.26	187.70	21.13	1.085	14.63
06-Dec-86	03:31:41	123.53	14.37	71.78	22.29	188.60	21.06	187.16	21.08	1.085	14.63
06-Dec-86	04:01:43	124.03	14.37	71.78	22.20	188.06	21.06	186.62	20.97	1.085	14.62
06-Dec-86	04:31:42	124.53	14.37	71.78	22.46	187.70	21.27	186.62	21.24	1.085	14.63
06-Dec-86	05:01:41	125.03	14.38	71.42	22.29	188.42	21.06	186.98	21.10	1.085	14.62
06-Dec-86	05:30:26	125.51	14.39	71.06	22.20	188.06	21.08	186.98	21.00	1.085	14.62
06-Dec-86	05:59:22	125.99	14.39	71.42	22.09	187.52	20.94	186.26	20.92	1.085	14.63
06-Dec-86	06:29:22	126.49	14.39	71.78	22.46	187.16	21.29	185.72	21.24	1.050	14.63
06-Dec-86	06:59:21	126.99	14.39	71.78	22.18	187.16	21.08	186.08	21.01	1.050	14.64
06-Dec-86	07:29:22	127.49	14.41	72.32	22.15	187.70	20.96	186.26	20.99	1.050	14.65
06-Dec-86	07:59:23	127.99	14.42	72.32	22.04	186.98	20.96	185.72	20.89	1.050	14.64
06-Dec-86	08:29:22	128.49	14.42	72.86	21.77	186.98	20.76	185.36	20.67	1.005	14.67
06-Dec-86	08:59:21	128.99	14.42	73.76	22.18	186.62	21.11	185.36	21.01	1.027	14.69
06-Dec-86	09:33:16	129.55	14.42	77.36	22.02	186.62	20.97	185.72	20.89	0.970	14.69
06-Dec-86	10:01:16	130.02	14.42	77.90	21.92	186.26	20.97	185.18	20.89	0.913	14.66
06-Dec-86	10:30:52	130.51	14.42	78.80	21.39	185.72	20.62	184.82	20.32	0.833	14.67
06-Dec-86	10:49:52	130.83	14.43	80.24	22.14	185.72	21.12	184.64	21.09	0.833	14.68
06-Dec-86	11:08:53	131.15	14.42	77.18	21.99	186.08	20.97	184.82	20.88	0.890	14.58
06-Dec-86	11:27:51	131.46	14.43	78.26	21.94	186.62	20.77	185.36	20.80	0.890	14.62
06-Dec-86	12:00:47	132.01	14.43	77.36	58.09	184.64	57.37	183.92	48.43	11.097	14.54
06-Dec-86	12:30:48	132.51	14.43	78.26	64.62	185.36	63.78	184.82			14.56
06-Dec-86	13:00:47	133.01	14.42	77.18	64.39	187.52	63.77	186.62	63.65	0.102	14.52
06-Dec-86	13:30:47	133.51	14.43	79.34	64.75	188.06	64.27	187.70	64.26	0.056	14.60
06-Dec-86	14:00:49	134.01	14.43	78.44	63.92	188.06	63.43	187.70	63.46	0.056	14.60
06-Dec-86	14:30:18	134.51	14.42	78.44	63.51	187.52	62.93	186.98	63.02	0.056	14.60
06-Dec-86	15:00:17	135.00	14.41	78.26	127.85	181.40	126.98	180.50	127.39	-0.058	14.57
06-Dec-86	15:30:48	135.51	14.41	78.26	121.58	180.14	120.99	179.42	121.09	-0.001	14.54

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
06-Dec-86	16:00:48	136.01	14.40	77.18	118.23	179.60	117.68	178.70	117.70	0.022	14.49
06-Dec-86	16:30:47	136.51	14.41	77.18	115.73	178.52	115.29	177.62	115.17	-0.001	14.49
06-Dec-86	17:00:47	137.01	14.40	76.82	114.36	177.08	114.09	175.82	113.93	-0.001	14.44
06-Dec-86	17:30:48	137.51	14.40	75.92	123.07	175.64	122.68	174.38	122.77	-0.001	14.47
06-Dec-86	18:00:47	138.01	14.40	75.38	122.36	174.38	121.83	173.30	122.00	0.022	14.40
06-Dec-86	18:30:47	138.51	14.39	74.30	122.42	173.12	121.68	171.68	121.98	0.022	14.35
06-Dec-86	19:00:01	139.00	14.40	73.76	137.12	170.24	136.61	169.34	136.81	-0.001	14.29
06-Dec-86	19:30:01	139.50	14.40	73.04	205.52	176.72	205.05	175.64	205.68	0.525	23.15
06-Dec-86	20:00:03	140.00	14.39	72.86	35.31	215.78	33.33	213.80	33.32	1.302	14.95
06-Dec-86	20:30:04	140.50	14.39	72.86	27.54	209.12	26.29	207.50	25.90	1.165	14.72
06-Dec-86	21:00:03	141.00	14.39	72.50	25.60	205.70	24.39	204.26	24.12	1.279	14.72
06-Dec-86	21:30:03	141.50	14.40	72.32	24.24	201.92	22.99	200.48	21.34	-0.058	14.72
06-Dec-86	22:00:04	142.00	14.40	72.32	23.35	198.14	22.14	196.70	22.07	1.142	14.70
06-Dec-86	22:30:05	142.50	14.40	72.32	22.92	195.26	21.79	193.82	21.66	1.027	14.68
06-Dec-86	23:00:04	143.00	14.41	72.32	22.62	193.64	21.45	192.38	21.36	1.005	14.68
06-Dec-86	23:30:03	143.50	14.41	72.32	22.98	193.82	21.80	192.38	21.63	0.330	14.68
07-Dec-86	00:00:04	144.00	14.40	71.96	22.45	192.02	21.44	190.58	20.66	0.193	14.67
07-Dec-86	00:30:05	144.50	14.41	71.96	22.33	191.30	21.31	190.04	20.59	0.193	14.66
07-Dec-86	01:00:05	145.00	14.39	71.96	22.24	190.40	21.08	188.96			14.66
07-Dec-86	01:19:37	145.33	14.40	71.78	22.18	189.86	21.09	188.60	20.92	1.050	14.66
07-Dec-86	01:31:19	145.52	14.39	71.96	21.73	189.50	20.73	188.06	20.51	1.050	14.65
07-Dec-86	02:01:19	146.02	14.38	71.78	22.27	189.50	21.07	188.42	21.04	1.005	14.65
07-Dec-86	02:31:20	146.52	14.39	71.78	22.17	189.86	21.08	188.42	20.92	0.970	14.64
07-Dec-86	03:01:20	147.02	14.39	71.78	22.06	189.14	21.08	188.06	20.85	0.970	14.65
07-Dec-86	03:31:19	147.52	14.38	71.42	21.95	188.60	20.93	187.52	20.72	0.970	14.64
07-Dec-86	04:01:19	148.02	14.38	71.78	22.21	188.42	21.06	187.16	21.00	0.970	14.64
07-Dec-86	04:31:20	148.52	14.38	71.78	22.04	188.06	20.92	186.98	20.82	0.947	14.64
07-Dec-86	05:01:20	149.02	14.39	71.42	21.98	188.60	20.93	187.52	20.78	0.947	14.64
07-Dec-86	05:31:21	149.52	14.39	71.78	21.90	188.06	20.72	186.98	20.67	0.970	14.65
07-Dec-86	06:01:19	150.02	14.39	71.96	22.14	187.70	21.08	186.26	20.94	0.947	14.65
07-Dec-86	06:31:20	150.52	14.40	71.78	21.89	187.52	20.74	186.26	20.73	0.947	14.65
07-Dec-86	07:01:19	151.02	14.41	71.42	21.91	188.06	20.95	186.98	20.74	0.947	14.65
07-Dec-86	07:31:21	151.52	14.41	72.32	21.89	187.52	20.74	186.26	20.62	0.947	14.66
07-Dec-86	08:01:20	152.02	14.43	83.30	22.00	187.16	21.12	186.08	20.87	0.913	14.67
07-Dec-86	08:31:20	152.52	14.44	76.28	21.82	187.16	20.78	186.08	20.67	0.947	14.61
07-Dec-86	09:01:19	153.02	14.44	75.74	21.83	187.52	20.78	186.26	20.65	0.947	14.62
07-Dec-86	09:31:19	153.52	14.46	76.82	21.74	187.16	20.80	186.08	20.61	0.947	14.62
07-Dec-86	10:01:20	154.02	14.46	78.44	21.98	186.98	21.00	185.72	20.81	0.970	14.65
07-Dec-86	10:31:19	154.52	14.45	79.34	21.76	186.62	20.78	185.36	20.63	0.947	14.62
07-Dec-86	11:01:20	155.02	14.45	79.70	21.72	186.98	20.79	185.72	20.60	0.947	14.64
07-Dec-86	11:31:20	155.52	14.46	79.34	21.64	186.62	20.65	185.36	20.49	0.970	14.62
07-Dec-86	12:01:21	156.02	14.44	77.90	21.88	186.62	20.78	185.36	20.78	0.913	14.59
07-Dec-86	12:31:19	156.52	14.43	75.92	21.71	186.26	20.62	185.18	20.58	0.947	14.52
07-Dec-86	13:01:20	157.02	14.43	79.70	21.65	186.62	20.62	185.36	20.47	0.947	14.63
07-Dec-86	13:31:19	157.52	14.42	79.34	22.16	186.26	21.11	185.18	20.99	0.970	14.64
07-Dec-86	14:01:19	158.02	14.41	79.16	21.80	186.26	20.60	185.18	20.59	0.890	14.61
07-Dec-86	14:31:20	158.52	14.42	78.26	21.65	186.26	20.61	185.18	20.45	0.913	14.60

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07-Dec-86	15:01:20	159.02	14.42	78.80	21.59	186.62	20.62	185.36	20.42	0.913	14.63
07-Dec-86	15:31:19	159.52	14.41	77.72	21.60	186.08	20.60	184.82	20.42	0.890	14.53
07-Dec-86	16:01:19	160.02	14.40	77.36	21.61	186.08	20.60	185.18	20.42	0.913	14.58
07-Dec-86	16:31:20	160.52	14.40	76.82	21.57	186.26	20.46	185.18	20.39	0.856	14.50
07-Dec-86	17:01:20	161.02	14.39	75.92	21.48	186.08	20.45	184.82	20.32	0.856	14.48
07-Dec-86	17:31:19	161.52	14.39	74.84	21.71	185.72	20.58	184.28	20.55	0.833	14.43
07-Dec-86	18:01:20	162.02	14.38	74.30	21.52	185.72	20.23	184.28	20.34	0.833	14.41
07-Dec-86	18:31:19	162.52	14.39	73.76	21.50	185.72	20.23	184.64	20.33	0.833	14.37
07-Dec-86	19:01:19	163.02	14.38	73.40	21.77	185.36	20.43	184.28	20.51	0.856	14.36
07-Dec-86	19:33:10	163.55	14.37	72.50	21.57	185.72	20.43	184.64	20.39	0.856	14.34
07-Dec-86	20:01:10	164.02	14.37	71.96	21.48	185.36	20.22	184.28	20.29	0.856	14.34
07-Dec-86	20:31:11	164.52	14.37	71.96	21.42	185.18	20.08	184.28	20.23	0.856	14.34
07-Dec-86	21:01:11	165.02	14.38	71.78	21.17	185.18	19.87	183.92	19.99	0.833	14.33
07-Dec-86	21:31:10	165.52	14.37	71.78	21.46	185.36	20.07	183.92	20.25	0.799	14.33
07-Dec-86	22:01:10	166.02	14.37	71.78	21.42	185.36	20.08	183.92	20.24	0.799	14.33
07-Dec-86	22:31:10	166.52	14.37	71.42	21.36	185.18	20.07	183.74	20.18	0.799	14.33
07-Dec-86	23:01:11	167.02	14.37	71.42	21.55	184.82	20.21	183.74	20.36	0.799	14.32
07-Dec-86	23:31:10	167.52	14.37	71.06	21.38	184.82	20.07	183.74	20.20	0.799	14.32
08-Dec-86	00:01:11	168.02	14.36	71.06	21.33	185.18	19.85	183.92	20.12	0.799	14.32
08-Dec-86	00:31:11	168.52	14.37	70.88	21.03	184.64	19.72	183.38	19.87	0.776	14.31
08-Dec-86	01:01:11	169.02	14.38	71.06	21.48	185.18	20.09	183.92	20.30	0.776	14.31
08-Dec-86	01:31:11	169.52	14.38	71.06	21.36	185.18	20.09	183.92	20.17	0.799	14.32
08-Dec-86	01:01:11	169.02	14.38	71.06	21.48	185.18	20.09	183.92	20.30	0.776	14.31
08-Dec-86	01:31:11	169.52	14.38	71.06	21.36	185.18	20.09	183.92	20.17	0.799	14.32
08-Dec-86	02:01:10	170.02	14.38	71.06	21.29	185.18	20.08	183.92	20.13	0.776	14.31
08-Dec-86	02:31:10	170.52	14.37	70.88	21.35	184.82	20.07	183.38	20.17	0.776	14.31
08-Dec-86	03:01:11	171.02	14.37	70.88	21.32	184.82	19.86	183.74	20.11	0.776	14.31
08-Dec-86	03:31:10	171.52	14.37	70.88	21.32	185.18	19.86	183.92	20.12	0.776	14.30
08-Dec-86	04:01:11	172.02	14.36	70.88	21.30	185.18	19.85	183.74	20.08	0.776	14.30
08-Dec-86	04:29:48	172.50	14.37	70.88	21.50	184.64	20.07	183.38	20.30	0.753	14.30
08-Dec-86	05:01:49	173.03	14.37	70.52	21.29	184.82	19.86	183.74	20.10	0.776	14.30
08-Dec-86	05:30:50	173.51	14.38	71.06	21.26	185.18	19.87	183.92	20.09	0.776	14.31
08-Dec-86	06:00:50	174.01	14.39	71.06	20.93	184.82	19.53	183.74	19.76	0.719	14.31
08-Dec-86	06:30:50	174.51	14.39	71.06	21.36	185.18	19.88	183.92	20.19	0.776	14.33
08-Dec-86	07:00:50	175.01	14.41	71.42	21.27	185.18	19.90	184.28	20.13	0.776	14.33
08-Dec-86	07:30:49	175.51	14.42	71.96	21.21	185.18	19.91	183.92	20.07	0.776	14.36
08-Dec-86	08:00:49	176.01	14.42	71.96	21.51	184.82	20.12	183.74	20.33	0.776	14.37
08-Dec-86	08:30:49	176.51	14.43	72.50	21.28	185.18	19.92	183.74	20.12	0.776	14.39
08-Dec-86	09:00:50	177.01	14.43	73.04	21.26	185.18	19.92	183.92	20.09	0.776	14.40
08-Dec-86	09:30:49	177.51	14.43	75.02	21.84	184.82	20.48	183.74	20.68	0.856	14.46
08-Dec-86	10:00:49	178.01	14.42	71.06	21.37	184.64	20.13	183.38	20.24	0.753	14.36
08-Dec-86	10:30:49	178.51	14.43	78.80	21.28	185.18	20.14	183.92	20.14	0.776	14.54
08-Dec-86	11:00:50	179.01	14.43	78.80	21.21	185.18	20.14	183.92	20.08	0.799	14.55
08-Dec-86	11:30:49	179.51	14.43	79.88	21.23	184.64	20.13	183.38	20.12	0.776	14.53
08-Dec-86	12:00:51	180.01	14.42	80.24	21.19	184.82	19.91	183.74	20.07	0.799	14.54
08-Dec-86	12:30:50	180.51	14.42	81.68	21.18	184.82	19.91	183.74	20.08	0.799	14.56
08-Dec-86	13:00:51	181.01	14.42	80.78	21.16	184.64	19.91	183.74	20.06	0.799	14.57

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
08-Dec-86	13:30:49	181.51	14.42	79.88	21.38	184.64	20.26	183.74	20.24	0.776	14.57
08-Dec-86	14:00:49	182.01	14.41	78.80	21.19	184.64	19.90	183.74	20.06	0.776	14.54
08-Dec-86	14:30:50	182.51	14.41	79.34	21.15	184.82	19.90	183.74	20.02	0.799	14.56
08-Dec-86	15:00:49	183.01	14.40	77.90	21.09	184.64	19.89	183.38	20.00	0.776	14.55
08-Dec-86	15:30:51	183.51	14.40	78.44	21.17	184.82	19.89	183.74	20.03	0.719	14.55
08-Dec-86	16:00:49	184.01	14.39	77.72	21.12	184.64	19.89	183.74	19.97	0.753	14.52
08-Dec-86	16:30:50	184.51	14.39	76.82	21.09	184.64	19.74	183.38	19.93	0.719	14.53
08-Dec-86	17:00:50	185.01	14.39	75.92	21.33	184.28	20.09	183.20	20.14	0.719	14.50
08-Dec-86	17:30:50	185.51	14.38	75.38	21.11	184.64	19.73	183.38	19.93	0.753	14.46
08-Dec-86	18:00:50	186.01	14.37	74.84	21.09	184.64	19.72	183.38	19.93	0.776	14.43
08-Dec-86	18:30:49	186.51	14.38	73.76	20.73	184.28	19.38	182.84	19.56	0.753	14.37
08-Dec-86	19:00:50	187.01	14.38	72.86	21.12	184.64	19.73	183.38	19.94	0.753	14.33
08-Dec-86	19:30:50	187.51	14.38	72.32	21.05	184.64	19.52	183.38	19.88	0.753	14.32
08-Dec-86	20:00:49	188.01	14.37	71.96	21.03	184.64	19.51	183.38	19.86	0.753	14.31
08-Dec-86	20:30:50	188.51	14.38	71.78	21.27	183.92	19.73	182.84	20.10	0.719	14.31
08-Dec-86	21:00:49	189.01	14.39	71.78	21.04	184.28	19.53	183.20	19.88	0.719	14.31
08-Dec-86	21:31:21	189.52	14.39	71.42	21.03	184.64	19.53	183.38	19.86	0.719	0.13
08-Dec-86	22:01:22	190.02	14.39	71.06	21.47	184.28	19.88	183.20	20.22	0.776	14.33
08-Dec-86	22:31:22	190.52	14.39	71.06	21.19	184.28	19.74	183.20	19.99	0.719	14.32
08-Dec-86	23:01:22	191.02	14.38	70.88	21.03	184.64	19.52	183.20	19.86	0.696	14.31
08-Dec-86	23:31:23	191.52	14.37	70.52	20.99	184.64	19.51	183.38	19.78	0.696	14.31
09-Dec-86	00:01:22	192.02	14.38	70.88	21.04	184.28	19.52	182.84	19.86	0.696	14.31
09-Dec-86	00:31:22	192.52	14.38	70.52	21.01	184.64	19.52	183.38	19.85	0.696	14.31
09-Dec-86	01:01:22	193.02	14.37	70.52	20.99	184.64	19.51	183.38	19.82	0.696	14.30
09-Dec-86	01:31:21	193.52	14.37	70.34	20.95	184.28	19.37	183.20	19.76	0.696	14.29
09-Dec-86	02:01:22	194.02	14.36	70.34	21.19	183.92	19.50	182.84	20.01	0.662	14.29
09-Dec-86	02:31:22	194.52	14.36	69.98	20.99	184.28	19.35	183.20	19.84	0.662	14.28
09-Dec-86	03:01:23	195.02	14.35	69.98	20.93	184.28	19.35	183.20	19.76	0.662	14.28
09-Dec-86	03:31:22	195.52	14.36	69.98	20.70	184.28	19.15	183.20	19.58	0.662	14.28
09-Dec-86	04:01:21	196.02	14.36	69.98	20.99	184.64	19.35	183.38	19.81	0.696	14.28
09-Dec-86	04:31:21	196.52	14.35	69.62	20.93	184.28	19.35	183.20	19.78	0.696	14.28
09-Dec-86	05:01:22	197.02	14.36	69.62	20.91	184.28	19.35	183.20	19.71	0.696	14.29
09-Dec-86	05:31:21	197.52	14.36	69.44	21.17	183.92	19.50	182.84	20.00	0.696	14.28
09-Dec-86	06:01:22	198.02	14.36	69.44	20.96	184.28	19.36	183.20	19.78	0.696	14.29
09-Dec-86	06:31:21	198.52	14.37	69.62	20.92	184.28	19.37	183.20	19.72	0.696	14.30
09-Dec-86	07:01:22	199.02	14.39	70.34	20.59	183.92	19.04	182.84	19.47	0.639	14.31
09-Dec-86	07:31:22	199.52	14.40	71.06	21.01	184.64	19.40	183.38	19.83	0.696	14.33
09-Dec-86	08:01:21	200.02	14.41	72.32	20.91	184.64	19.41	183.38	19.80	0.696	14.36
09-Dec-86	08:31:21	200.52	14.42	72.32	20.88	184.28	19.41	183.20	19.75	0.662	14.36
09-Dec-86	09:01:23	201.02	14.41	72.86	21.16	183.92	19.55	182.84	20.01	0.662	14.37
09-Dec-86	09:31:22	201.52	14.43	73.76	20.95	184.28	19.43	183.20	19.81	0.639	14.42
09-Dec-86	10:01:23	202.02	14.43	73.76	20.89	184.64	19.43	183.38	19.79	0.662	14.42
09-Dec-86	10:31:22	202.52	14.43	75.02	20.63	183.92	19.22	183.20	19.51	0.639	14.44
09-Dec-86	11:01:21	203.02	14.43	79.70	21.01	184.64	19.78	183.38	19.87	0.696	14.55
09-Dec-86	11:31:21	203.52	14.42	78.80	20.91	184.28	19.77	183.20	19.78	0.696	14.53
09-Dec-86	12:01:24	204.02	14.42	80.24	20.78	184.28	19.56	183.20	19.73	0.719	14.59
09-Dec-86	12:25:26	204.42	14.41	78.44	20.82	183.92	19.55	183.20	19.78	0.639	14.53

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
09-Dec-86	12:49:25	204.82	14.42	77.36	20.87	184.28	19.56	183.38	19.81	0.696	14.47
09-Dec-86	13:37:25	205.62	14.42	79.16	20.77	184.28	19.56	183.20	19.70	0.639	14.59
09-Dec-86	14:01:26	206.02	14.42	78.80	20.43	183.74	19.21	182.84	19.38	0.639	14.55
09-Dec-86	14:25:26	206.42	14.41	77.90	20.98	183.92	19.54	182.84	19.85	0.639	14.53
09-Dec-86	14:49:25	206.82	14.42	79.16	20.83	183.92	19.56	182.84	19.68	0.639	14.58
09-Dec-86	15:37:26	207.62	14.41	78.44	20.63	184.28	19.41	183.20	19.49	0.696	14.57
09-Dec-86	16:01:25	208.02	14.41	78.44	20.64	183.74	19.40	182.84	19.53	0.662	14.59
09-Dec-86	16:30:22	208.51	14.41	77.36	209.35	138.38	208.43	142.34	208.98	-0.344	14.48
09-Dec-86	17:01:21	209.02	14.41	76.46	293.89	168.44	293.05	165.92	293.4328	-0.310	14.47
09-Dec-86	17:34:22	209.57	14.40	75.74	301.45	165.02	300.58	162.14	301.02	-0.310	14.46
09-Dec-86	18:01:21	210.02	14.40	75.02	298.11	163.58	297.34	161.06	297.6853	-0.287	14.41
09-Dec-86	18:31:21	210.52	14.39	73.94	299.06	161.60	297.96	158.90	298.6123	-0.287	14.36
09-Dec-86	19:01:20	211.02	14.38	72.86	294.99	159.80	294.01	156.92	294.5061	-0.253	14.29
09-Dec-86	19:33:36	211.56	14.39	71.96	290.31	158.18	289.38	155.48	289.8823	-0.230	14.26
09-Dec-86	20:03:36	212.06	14.39	71.96	293.31	155.30	292.47	152.42	292.9063	-0.230	14.25
09-Dec-86	20:33:38	212.56	14.39	71.78	307.40	154.76	306.55	151.88	306.9632	-0.230	14.25
09-Dec-86	21:03:36	213.06	14.40	71.78	306.73	154.04	305.71	150.98	306.3119	-0.230	14.26
09-Dec-86	21:33:37	213.56	14.39	71.42	304.65	153.32	303.66	150.62	304.206	-0.230	14.25
09-Dec-86	22:03:36	214.06	14.40	71.42	301.39	152.60	300.43	149.54	300.9513	-0.196	14.25
09-Dec-86	22:33:36	214.56	14.41	71.42	292.01	151.88	291.15	148.64	291.5259	-0.196	14.25
09-Dec-86	23:03:37	215.06	14.40	71.42	287.30	150.98	286.50	147.74	286.7863	-0.173	14.25
09-Dec-86	23:33:37	215.56	14.40	71.06	279.88	149.18	279.10	146.12	279.412	-0.150	14.24
10-Dec-86	00:03:37	216.06	14.40	71.06	276.71	149.00	276.01	145.76	276.2092	-0.150	14.24
10-Dec-86	00:33:38	216.56	14.39	70.88	275.95	148.64	275.29	145.22	275.4071	-0.150	14.23
10-Dec-86	01:03:38	217.06	14.38	71.06	283.73	146.66	282.89	142.88	283.3079	-0.173	14.23
10-Dec-86	01:33:37	217.56	14.39	70.88	296.12	145.76	295.21	142.34	295.693	-0.196	14.43
10-Dec-86	02:03:37	218.06	14.37	70.52	298.48	144.32	297.94	140.54	14.361		14.43
10-Dec-86	02:30:04	218.50	14.37	70.52	303.10	143.78	302.09	140.00	14.361		14.43
10-Dec-86	03:04:38	219.08	14.37	70.52	307.97	144.32	307.09	140.54	14.361	-0.173	14.43
10-Dec-86	03:34:37	219.58	14.36	70.52	309.13	144.32		141.26	14.361	-0.173	14.43
10-Dec-86	04:00:07	220.00	14.37	70.52	306.64	143.78		140.54	14.361	-0.150	14.43
10-Dec-86	04:30:19	220.51	14.37	70.88	308.52	143.78	14.23	141.26		-0.196	0.13
10-Dec-86	05:00:19	221.01	14.37	71.06	312.74	145.58	14.37	142.88		-0.196	0.13
10-Dec-86	05:35:19	221.59	14.38	70.88	315.85	146.30	14.38	144.14		-0.196	0.13
10-Dec-86	06:32:20	222.54	14.38	70.88	318.10	149.00	14.38	148.28		-0.196	0.13
10-Dec-86	07:30:15	223.50	14.39	71.78	314.53	152.60	14.39	152.06		-0.173	0.13
10-Dec-86	08:00:16	224.00	14.40	72.50	309.05	151.52	14.40	152.06		-0.173	0.13
10-Dec-86	08:35:51	224.60	14.41	73.04	294.46	150.62	14.41	149.54		-0.173	0.13
10-Dec-86	08:43:37	224.73	14.42	75.02	288.96	149.54	14.42	148.10		-0.173	0.13
10-Dec-86	09:15:49	225.26	14.41	74.30	280.30	149.54	14.41	147.74		-0.196	0.13
10-Dec-86	09:30:50	225.51	14.42	74.48	283.89	150.44	14.42	149.72		-0.173	0.13
10-Dec-86	09:50:51	225.85	14.42	75.38	306.99	123.26	14.42	126.14		-0.173	0.13
10-Dec-86	11:06:29	227.11	14.41	75.92	571.66	82.22	14.27	81.32		-0.173	0.13
10-Dec-86	11:31:31	227.53	14.43	77.90	638.60	87.08	14.43	85.82		-0.150	0.13
10-Dec-86	12:01:29	228.02	14.42	77.90	704.84	89.24	14.42	87.80		-0.150	0.13
10-Dec-86	12:31:27	228.52	14.42	79.16	690.40	90.50	14.42	88.52		-0.173	0.13
10-Dec-86	13:00:23	229.01	14.42	77.72	146.80	90.68	14.42	85.10		-0.173	0.13

ASCENSION WELL TEST No. 1 FIRST STEP RATE TEST

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
01-Dec-86	18:08:35	18.14	14.36	73.76	24.10	186.62	23.30	185.18	23.58	1.040	14.17
01-Dec-86	18:38:35	18.64	14.35	72.50	23.76	187.70	22.94	186.26	23.24	1.120	14.07
01-Dec-86	19:08:36	19.14	14.36	72.32	23.52	187.52	22.80	185.72	22.97	1.118	14.00
01-Dec-86	20:59:34	20.99	14.36	71.78	56.44	186.98	55.76	186.26	56.31	0.171	14.05
01-Dec-86	21:29:34	21.49	14.37	71.78	59.06	189.86	58.23	188.96	58.85	0.165	14.04
01-Dec-86	21.59.34	21.99	14.38	71.96	59.43	190.40	58.37	190.40	59.44	0.165	14.05
30-Nov-86	22:29:35	22.49	14.37	71.78	59.00	189.86	58.73	188.96	58.85	0.165	10.04
30-Nov-86	22:59:35	22.99	14.37	71.78	65.57	188.06	58.23	187.16	58.64	0.191	14.04
30-Nov-86	23:29:34	23.49	14.38	71.78	58.05	185.36	57.88	184.64	57.92	0.165	14.03
02-Dec-86	00:07:35	24.13	14.38	71.96	119.96	181.40	119.56	179.96	119.84	-0.023	14.02
02-Dec-86	00:12:34	24.21	14.38	71.96	124.32	180.50	123.71	179.42	124.28	-0.023	14.01
02-Dec-86	00:17:33	24.29	14.38	71.96	127.01	180.86	126.60	179.60	127.01	-0.023	14.01
02-Dec-86	00:22:34	24.38	14.38	71.96	128.95	180.50	128.50	179.06	128.97	-0.000	14.01
02-Dec-86	00:27:33	24.46	14.38	71.96	130.20	180.86	129.70	179.60	130.18	-0.000	14.02
02-Dec-86	00:32:34	24.54	14.38	71.96	130.95	180.50	130.54	179.42	131.05	-0.000	14.02
02-Dec-86	00:37:33	24.63	14.38	71.96	131.66	181.04	131.10	179.96	131.58	-0.000	14.02
02-Dec-86	00:42:34	24.71	14.38	71.96	131.94	180.86	131.45	179.60	131.91	-0.000	14.02
02-Dec-86	00:47:33	24.79	14.38	71.96	132.10	180.14	131.59	179.06	132.09	-0.000	14.02
02-Dec-86	00:52:33	24.88	14.38	71.96	132.08	180.14	131.59	179.06	132.11	-0.000	14.02
02-Dec-86	00:57:33	24.96	14.37	71.96	132.07	180.14	131.45	179.06	131.98	-0.000	14.01
02-Dec-86	01:02:33	25.04	14.37	71.96	132.12	180.14	131.80	179.42	132.13	-0.000	14.02
02-Dec-86	01:07:33	25.13	14.38	71.96	132.26	180.14	131.59	179.06	132.28	-0.023	14.02
02-Dec-86	01:12:33	25.21	14.37	71.96	132.27	180.14	131.59	179.06	132.15	-0.023	14.01
02-Dec-86	01:17:35	25.29	14.37	71.78	132.39	179.96	131.94	178.52	132.43	-0.000	14.01
02-Dec-86	01:22:34	25.38	14.37	71.78	131.87	180.14	131.23	178.70	131.89	-0.023	14.01
02-Dec-86	01:27:34	25.46	14.37	71.78	136.38	179.96	130.88	178.70	132.33	-0.000	14.00
02-Dec-86	01:32:33	25.54	14.37	71.78	130.42	179.06	129.89	178.16	130.40	-0.023	14.01
02-Dec-86	01:37:34	25.63	14.37	71.78	129.45	179.42	128.70	178.16	129.41	-0.023	14.00
02-Dec-86	01:42:33	25.71	14.37	71.78	128.07	179.42	127.51	178.16	128.07	-0.023	14.00
02-Dec-86	01:47:34	25.79	14.36	71.78	127.34	179.06	126.79	177.98	127.19	-0.023	14.00
02-Dec-86	01:52:33	25.88	14.37	71.42	126.69	178.70	126.09	177.62	126.73	-0.023	13.99
02-Dec-86	01:57:33	25.96	14.36	71.42	126.13	179.42	125.38	178.16	126.10	-0.023	13.98
02-Dec-86	02:02:33	26.04	14.36	71.42	125.68	178.70	125.03	177.62	125.63	-0.023	13.98
02-Dec-86	02:07:33	26.13	14.36	71.42	137.95	178.70	125.59	177.26	126.08	-0.023	13.99
02-Dec-86	02:12:33	26.21	14.36	71.42	126.02	178.70	125.38	177.26	125.87	-0.023	13.99
02-Dec-86	02:17:33	26.29	14.35	71.06	125.88	178.16	125.23	176.72	125.81	-0.023	13.97
02-Dec-86	02:22:34	26.38	14.35	71.06	125.82	177.62	125.02	176.54	125.82	-0.023	13.97
02-Dec-86	02:27:33	26.46	14.35	71.06	125.68	178.52	125.02	177.08	125.62	-0.000	13.97
02-Dec-86	02:32:33	26.54	14.35	71.06	125.39	178.52	124.67	177.26	125.27	-0.000	13.97
02-Dec-86	02:37:34	26.63	14.35	71.06	125.35	178.52	124.66	177.08	125.29	-0.000	13.97
02-Dec-86	02:42:35	26.71	14.34	70.52	125.18	177.98	124.37	176.72	124.94	-0.000	13.95
02-Dec-86	02:47:34	26.79	14.34	70.34	96.03	177.08	91.71	175.28	92.69	2.732	30.23
02-Dec-86	02:52:35	26.88	14.34	70.34	55.96	188.96	52.85	187.16	53.16	1.623	18.85
02-Dec-86	02:57:33	26.96	14.34	70.52	46.69	194.18	43.42	192.74	43.81	1.703	16.32
02-Dec-86	03:02:33	27.04	14.34	70.34	44.08	198.50	41.30	196.70	41.77	1.452	15.90
02-Dec-86	03:07:34	27.13	14.34	70.34	41.92	203.18	39.13	201.38	39.44	1.429	15.74
02-Dec-86	03:12:34	27.21	14.35	70.88	40.61	211.28	38.42	208.94	38.69	1.429	15.62

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
02-Dec-86	03:17:35	27.29	14.34	70.52	37.07	216.68	34.83	214.70	35.08	1.486	15.29
02-Dec-86	03:22:35	27.38	14.34	70.88	34.54	216.68	32.36	215.06	32.90	1.452	15.11
02-Dec-86	03:27:34	27.46	14.34	70.88	32.88	215.24	30.81	213.62	31.21	1.509	15.09
02-Dec-86	03:32:35	27.54	14.34	70.88	30.47	213.80	28.42	212.18	29.01	1.429	14.97
02-Dec-86	03:37:33	27.63	14.34	70.88	30.29	212.90	28.42	211.28	28.90	1.509	14.98
02-Dec-86	03:42:33	27.71	14.34	70.88	29.58	210.92	27.79	209.48	28.25	1.486	14.96
02-Dec-86	03:47:33	27.79	14.34	70.88	29.89	208.58	27.92	206.96	28.58	1.372	14.90
02-Dec-86	04:32:43	28.55	14.34	70.88	27.39	203.90	25.68	202.46	26.22	1.486	14.89
02-Dec-86	05:02:43	29.05	14.35	70.52	26.04	199.40	24.49	197.96	24.98	1.429	14.84
02-Dec-86	05:32:43	29.55	14.34	70.88	24.56	196.70	23.99	195.26	24.52	1.372	14.82
02-Dec-86	05:51:20	29.86	14.35	70.88	25.36	195.26	23.78	193.82	24.34	1.314	14.81
02-Dec-86	06:11:24	30.19	14.36	70.88	25.16	194.18	23.65	192.92	24.16	1.314	14.82
02-Dec-86	09:49:48	33.83	14.40	74.84	24.61	190.58	23.34	189.50	23.38	0.869	14.82
02-Dec-86	10:04:16	34.07	14.40	75.74	24.53	190.40	23.20	188.96	23.33	0.834	14.82
02-Dec-86	10:48:00	34.80	14.41	79.88	24.42	189.50	23.00	188.06	20.93	-0.331	14.81

ASCENSION WELL TEST No. 1 SECOND STEP RATE TEST

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
05-Dec-86	12:18:30	108.31	14.44	78.44	21.84	185.36	19.94	184.28	21.04	0.537	14.65
05-Dec-86	12:23:25	108.39	14.44	77.72	21.81	185.18	19.94	183.92	21.01	0.537	14.62
05-Dec-86	12:28:24	108.47	14.45	78.26	21.80	185.36	19.94	183.92	21.00	0.537	14.68
05-Dec-86	12:33:25	108.56	14.44	78.80	40.02	187.52	39.22	187.16	40.18	-0.389	14.57
05-Dec-86	12:38:24	108.64	14.44	77.18	62.35	184.28	61.05	183.38	62.32	-0.366	14.57
05-Dec-86	12:43:25	108.72	14.44	77.36	66.13	183.74	64.99	182.84	65.97	-0.274	14.60
05-Dec-86	12:48:24	108.81	14.44	78.26	67.45	183.20	66.19	182.48	14.71	-0.560	14.64
05-Dec-86	12:53:25	108.89	14.44	77.18	65.33	182.48	63.93	181.94	65.17	-0.309	14.62
05-Dec-86	12:58:25	108.97	14.44	77.36	64.14	182.48	62.73	181.94	18.50	-0.583	14.62
05-Dec-86	13:03:24	109.06	14.44	76.82	63.56	182.48	62.04	181.76	45.85	-0.331	14.61
05-Dec-86	13:08:25	109.14	14.44	76.82	63.32	182.48	61.89	181.76	18.25	-0.503	14.62
05-Dec-86	13:13:25	109.22	14.44	76.82	63.03	182.84	61.68	181.94	17.61	-0.526	14.62
05-Dec-86	13:18:24	109.31	14.44	78.26	62.85	183.20	61.54	182.48	17.49	-0.526	14.65
05-Dec-86	13:23:25	109.39	14.43	77.18	62.81	183.38	61.39	182.84	17.43	-0.526	14.60
05-Dec-86	13:28:24	109.47	14.44	78.26	62.70	183.92	61.19	183.38	17.25	-0.526	14.61
05-Dec-86	13:33:25	109.56	14.44	78.26	62.74	184.28	61.19	183.74	17.23	-0.526	14.64
05-Dec-86	13:38:24	109.64	14.43	78.26	62.81	184.64	61.39	183.92	17.26	-0.526	14.59
05-Dec-86	13:43:25	109.72	14.43	77.90	62.75	184.82	61.39	184.28	17.27	-0.526	14.57
05-Dec-86	13:48:24	109.81	14.44	78.44	62.76	185.72	61.54	185.18	17.30	-0.526	14.61
05-Dec-86	13:53:25	109.89	14.44	78.80	62.91	186.26	61.54	185.72	17.37	-0.526	14.64
05-Dec-86	13:58:24	109.97	14.44	78.80	62.97	186.26	61.68	185.72	17.38	-1.063	14.64
05-Dec-86	14:03:25	110.06	14.44	79.70	62.92	186.62	61.54	186.08	17.43	-0.160	14.59
05-Dec-86	14:08:25	110.14	14.44	79.88	63.00	186.98	61.68	186.62	17.48	-0.217	14.62
05-Dec-86	14:13:24	110.22	14.44	79.88	63.07	187.16	61.68	186.98	17.52	-0.217	14.63
05-Dec-86	14:18:25	110.31	14.44	79.88	63.15	187.52	61.68	186.98	17.58	-0.274	14.61
05-Dec-86	14:23:24	110.39	14.44	79.16	63.17	187.16	61.68	186.62	17.60	-0.217	14.53
05-Dec-86	14:28:24	110.47	14.44	79.16	63.32	187.70	61.89	187.16	63.03	-0.057	14.61
05-Dec-86	14:33:24	110.56	14.43	78.44	63.44	187.52	61.88	186.98	63.16	-0.057	14.57
05-Dec-86	14:38:25	110.64	14.42	78.44	63.51	187.16	62.01	186.98	63.08	-0.057	14.52
05-Dec-86	14:43:24	110.72	14.43	78.44	63.38	187.70	62.02	187.16	62.97	-0.057	14.54
05-Dec-86	14:48:24	110.81	14.42	77.90	63.24	187.52	61.87	186.98	63.01	-0.057	14.52
05-Dec-86	14:53:25	110.89	14.43	78.80	63.51	187.70	62.02	187.16	63.01	-0.023	14.55
05-Dec-86	14:58:24	110.97	14.42	77.90	63.41	187.70	61.87	187.16	63.31	-0.023	14.52
05-Dec-86	15:03:24	111.06	14.41	77.36	63.41	187.70	62.00	187.16	63.25	-0.023	14.49
05-Dec-86	15:08:25	111.14	14.43	78.26	63.31	187.70	61.88	187.16	62.88	-0.023	14.55
05-Dec-86	15:13:26	111.22	14.42	77.72	64.40	187.52	63.77	186.62	59.91	-0.217	14.47
05-Dec-86	15:18:25	111.31	14.42	78.26	108.48	177.98	107.20	179.06	108.42	-0.217	14.49
05-Dec-86	15:23:24	111.39	14.42	78.44	123.88	181.94	122.70	180.86	123.84	-0.194	14.53
05-Dec-86	15:28:25	111.47	14.43	79.16	135.17	181.76	133.90	180.86	135.07	-0.194	14.56
05-Dec-86	15:32:22	111.54	14.42	79.70	141.97	180.50	140.79	179.60	141.91	0.022	14.54
05-Dec-86	15:39:58	111.67	14.42	77.90	137.96	180.50	136.42	179.42	137.78	0.079	14.51
05-Dec-86	15:44:52	111.75	14.41	77.72	133.51	180.50	131.98	179.06	133.16	0.056	14.47
05-Dec-86	15:49:52	111.83	14.40	76.82	130.37	179.96	128.87	179.06	130.03	0.079	14.45
05-Dec-86	15:54:52	111.91	14.41	76.82	128.23	179.60	126.62	178.52	127.87	0.079	14.43
05-Dec-86	15:59:54	112.00	14.41	77.18	127.52	179.60	125.99	178.52	127.14	0.079	14.47
05-Dec-86	16:04:52	112.08	14.39	77.72	126.61	179.96	125.06	179.06	126.29	0.079	14.53
05-Dec-86	16:09:52	112.16	14.40	78.44	125.28	179.60	123.73	178.52	124.88	0.079	14.52

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
05-Dec-86	16:14:52	112.25	14.40	77.36	124.18	179.06	122.53	178.16	123.71	0.079	14.49
05-Dec-86	16:19:52	112.33	14.39	76.82	123.43	179.06	121.83	177.98	123.07	0.079	14.51
05-Dec-86	16:24:52	112.41	14.39	77.36	122.89	179.06	121.33	178.16	122.44	0.079	14.52
05-Dec-86	16:29:52	112.50	14.40	77.90	122.26	179.06	120.78	178.16	121.96	0.079	14.55
05-Dec-86	16:59:53	113.00	14.40	76.46	120.78	178.70	119.23	177.62	120.32	0.079	14.49
05-Dec-86	17:29:52	113.50	14.40	75.92	118.61	177.98	117.05	177.08	118.05	0.102	14.52
05-Dec-86	17:59:52	114.00	14.39	75.02	131.92	176.18	130.41	174.74	131.65	0.079	14.37
05-Dec-86	18:29:53	114.50	14.41	73.94	134.06	174.38	132.68	173.12	133.87	0.102	14.34
05-Dec-86	18:59:53	115.00	14.40	73.76	135.01	173.30	133.66	171.68	134.86	0.102	14.33
05-Dec-86	19:22:19	115.37	14.40	73.40	135.42	172.22	134.22	170.78	135.31	0.159	14.31
05-Dec-86	19:32:20	115.54	14.40	73.40	135.40	171.86	133.87	170.42	135.15	0.159	14.32
05-Dec-86	19:37:13	115.62	14.41	73.40	135.80	172.40	134.37	170.78	135.69	0.159	14.32
05-Dec-86	19:42:14	115.70	14.40	73.40	135.57	172.40	134.22	170.96	135.41	0.159	14.32
05-Dec-86	19:47:14	115.79	14.39	73.40	85.22	183.20	77.83	181.40	79.84	2.650	26.64
05-Dec-86	19:52:14	115.87	14.40	73.40	58.35	190.58	53.61	189.14	55.14	2.205	20.34
05-Dec-86	19:54:14	115.90	14.39	73.40	52.29	192.74	48.61	190.94	49.50	1.839	17.79
05-Dec-86	19:56:13	115.94	14.41	73.40	47.06	194.36	43.48	192.74	43.78	1.748	16.48
05-Dec-86	19:58:14	115.97	14.40	73.40	43.66	195.62	40.87	193.82	40.57	1.553	15.62
05-Dec-86	20:00:14	116.00	14.41	73.40	40.07	197.06	37.64	195.26	38.11	1.473	15.32
05-Dec-86	20:02:15	116.04	14.41	73.40	37.67	199.04	35.17	197.06	35.27	1.450	15.05
05-Dec-86	20:04:13	116.07	14.41	73.40	36.47	201.92	34.54	199.94	34.46	1.393	15.03
05-Dec-86	20:06:14	116.10	14.40	73.04	36.05	204.62	33.69	202.46	34.10	1.359	14.96
05-Dec-86	20:08:14	116.14	14.40	73.40	35.86	207.50	33.34	205.52	33.65	1.416	14.97
05-Dec-86	20:10:15	116.17	14.40	73.04	35.41	209.84	33.48	207.68	33.42	1.359	14.96
05-Dec-86	20:12:13	116.20	14.40	73.40	35.11	211.82	32.99	209.84	33.03	1.473	14.97
05-Dec-86	20:14:13	116.24	14.40	73.40	34.54	213.80	33.13	211.82	32.57	1.336	14.90
05-Dec-86	20:16:14	116.27	14.41	73.40	33.54	215.06	31.44	212.90	31.59	1.450	14.90
05-Dec-86	20:18:15	116.30	14.40	73.40	32.57	215.60	30.73	213.62	30.73	1.473	14.88
05-Dec-86	20:20:13	116.34	14.40	73.40	31.92	215.60	30.03	213.62	30.07	1.450	14.86
05-Dec-86	20:22:14	116.37	14.40	73.40	31.21	215.06	29.54	213.26	29.36	1.450	14.85
05-Dec-86	20:24:14	116.40	14.40	73.40	30.70	214.34	29.19	212.72	28.92	1.416	14.84
05-Dec-86	20:26:13	116.44	14.40	73.40	29.92	213.80	28.13	212.18	28.23	1.450	14.82
05-Dec-86	20:28:13	116.47	14.40	73.04	28.54	213.26	26.79	211.46	26.93	1.393	14.78
05-Dec-86	20:30:14	116.50	14.41	73.04	28.23	213.26	26.80	211.46	26.64	1.393	14.79
05-Dec-86	20:32:14	116.54	14.40	73.04	28.29	212.72	26.79	210.92	26.61	1.450	14.80
05-Dec-86	20:34:13	116.57	14.40	73.04	28.20	212.18	26.58	210.56	26.55	1.450	14.81
05-Dec-86	20:36:13	116.60	14.40	73.04	27.70	211.46	26.09	210.02	26.19	1.473	14.80
05-Dec-86	20:38:14	116.64	14.41	73.04	27.28	210.56	25.95	209.12	25.78	1.473	14.79
05-Dec-86	20:40:14	116.67	14.40	72.86	28.66	209.12	27.14	207.68	26.96	1.393	14.79
05-Dec-86	20:42:15	116.70	14.40	72.86	27.97	208.40	26.44	206.60	26.32	1.302	14.76
05-Dec-86	20:44:13	116.74	14.41	73.04	27.28	207.68	25.74	206.24	25.69	1.302	14.75
05-Dec-86	20:46:13	116.77	14.41	73.04	27.25	207.68	25.74	206.06	25.65	1.302	14.75
05-Dec-86	20:48:14	116.80	14.40	73.04	27.45	207.14	25.74	205.52	25.82	1.336	14.76
05-Dec-86	20:50:15	116.84	14.41	73.04	27.43	207.50	25.95	205.70	25.79	1.359	14.76
05-Dec-86	20:52:13	116.87	14.40	73.04	27.30	207.50	25.74	205.70	25.68	1.393	14.77
05-Dec-86	20:54:14	116.90	14.40	73.04	26.97	207.50	25.38	205.70	25.40	1.416	14.77
05-Dec-86	20:56:15	116.94	14.41	73.40	27.10	207.14	25.60	205.52	25.51	1.416	14.78

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
05-Dec-86	20:58:13	116.97	14.41	73.04	26.90	206.24	25.60	204.62	25.33	1.302	14.75
05-Dec-86	21:00:14	117.00	14.41	73.04	26.64	206.06	25.25	204.26	25.08	1.336	14.75
05-Dec-86	21:02:14	117.04	14.40	73.04	26.68	205.70	25.24	204.26	25.09	1.336	14.75
05-Dec-86	21:04:13	117.07	14.41	73.04	26.73	205.52	25.25	203.72	25.13	1.336	14.76
05-Dec-86	21:34:14	117.57	14.41	73.40	24.56	202.46	23.35	201.38	14.45	0.102	14.74
05-Dec-86	22:04:15	118.07	14.41	73.04	23.68	198.50	22.51	197.24	22.35	1.302	14.72
05-Dec-86	22:34:14	118.57	14.41	73.04	23.29	195.80	22.15	194.36	21.99	1.279	14.71
05-Dec-86	23:04:14	119.07	14.41	72.86	22.92	193.82	21.80	192.38	21.72	1.199	14.70
05-Dec-86	23:34:14	119.57	14.41	72.86	23.43	192.74	22.29	191.48	22.15	1.199	14.70
06-Dec-86	00:04:13	120.07	14.41	72.86	22.84	191.48	21.66	190.40	21.55	1.165	14.68
06-Dec-86	00:34:14	120.57	14.39	72.50	22.72	191.48	21.65	190.04	21.44	1.142	14.67
06-Dec-86	01:04:13	121.07	14.40	72.32	22.54	190.40	21.44	188.96	21.29	1.142	14.66
06-Dec-86	01:34:15	121.57	14.39	71.96	22.45	189.50	21.29	188.06	21.17	1.142	14.65

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
06-Dec-86	10:49:52	130.83	14.43	80.24	22.14	185.72	21.12	184.64	21.09	0.833	14.68
06-Dec-86	11:08:53	131.15	14.42	77.18	21.99	186.08	20.97	184.82	20.88	0.890	14.58
06-Dec-86	11:27:51	131.46	14.43	78.26	21.94	186.62	20.77	185.36	20.80	0.890	14.62
06-Dec-86	11:37:54	131.63	14.43	78.80	60.57	186.26	59.62	185.72	60.26	-0.036	14.56
06-Dec-86	11:39:48	131.66	14.43	78.44	62.17	185.72	61.18	185.18	61.76	0.022	14.55
06-Dec-86	11:41:47	131.70	14.43	78.26	63.56	185.36	62.59	185.18	63.10	0.022	14.56
06-Dec-86	11:43:47	131.73	14.43	78.26	64.71	185.18	63.57	184.82	64.25	0.022	14.55
06-Dec-86	11:45:49	131.76	14.43	78.80	65.56	184.82	64.63	184.64	65.13	0.056	14.55
06-Dec-86	11:47:47	131.80	14.43	78.26	65.16	184.28	63.93	183.92	64.58	-0.116	14.56
06-Dec-86	11:49:48	131.83	14.43	77.90	62.54	184.82	61.53	184.28	60.85		14.56
06-Dec-86	11:51:49	131.86	14.43	78.26	61.04	184.64	59.84	183.92			14.55
06-Dec-86	11:53:48	131.90	14.43	77.90	59.94	184.64	59.13	183.92	59.54	0.136	14.52
06-Dec-86	12:00:47	132.01	14.43	77.36	58.09	184.64	57.37	183.92	48.43	11.097	14.54
06-Dec-86	12:30:48	132.51	14.43	78.26	64.62	185.36	63.78	184.82			14.56
06-Dec-86	13:00:47	133.01	14.42	77.18	64.39	187.52	63.77	186.62	63.65	0.102	14.52
06-Dec-86	13:30:47	133.51	14.43	79.34	64.75	188.06	64.27	187.70	64.26	0.056	14.60
06-Dec-86	14:00:49	134.01	14.43	78.44	63.92	188.06	63.43	187.70	63.46	0.056	14.60
06-Dec-86	14:27:24	134.46	14.41	79.16	63.64	187.52	62.92	187.16	62.89	0.056	14.61
06-Dec-86	14:27:47	134.46	14.42	78.80	63.57	187.52	62.71	186.98	62.89	0.056	14.61
06-Dec-86	14:28:17	134.47	14.42	78.80	63.48	187.52	62.93	186.98	63.01	0.056	14.60
06-Dec-86	14:28:48	134.48	14.42	78.80	63.52	187.52	63.07	186.98	63.17	0.056	14.60
06-Dec-86	14:29:18	134.49	14.42	78.44	63.43	187.52	62.93	186.98	62.95	0.056	14.61
06-Dec-86	14:29:48	134.50	14.42	78.44	63.54	187.52	63.07	186.98	63.09	0.056	14.61
06-Dec-86	14:30:18	134.51	14.42	78.44	63.51	187.52	62.93	186.98	63.02	0.056	14.60
06-Dec-86	14:30:49	134.51	14.42	78.44	63.47	187.52	62.93	186.98	62.99	0.056	14.60
06-Dec-86	14:31:19	134.52	14.42	78.80	63.55	187.52	62.93	186.98	63.02	0.056	14.60
06-Dec-86	14:31:47	134.53	14.42	78.80	64.40	187.52	64.13	187.16	64.07	-0.036	14.57
06-Dec-86	14:32:17	134.54	14.42	78.80	68.78	187.52	68.42	187.16	68.58	-0.093	14.54
06-Dec-86	14:32:47	134.55	14.42	78.80	73.85	187.52	73.34	186.98	73.63	-0.116	14.55
06-Dec-86	14:33:18	134.56	14.42	78.44	78.11	186.98	77.71	186.26	77.80	-0.116	14.54
06-Dec-86	14:33:48	134.56	14.42	78.44	82.04	186.26	81.65	185.72	81.72	-0.116	14.54
06-Dec-86	14:34:18	134.57	14.42	79.16	85.90	185.36	85.39	185.18	85.51	-0.116	14.53
06-Dec-86	14:34:49	134.58	14.42	79.16	90.01	184.82	89.54	184.64	89.72	-0.150	14.53
06-Dec-86	14:35:17	134.59	14.41	78.80	94.01	184.28	93.68	183.92	93.72	-0.150	14.54
06-Dec-86	14:35:47	134.60	14.42	79.34	98.24	183.20	97.77	183.20	97.97	-0.150	14.54
06-Dec-86	14:36:17	134.60	14.42	79.16	102.39	182.30	101.93	182.30	102.09	-0.150	14.52
06-Dec-86	14:36:47	134.61	14.42	78.80	106.41	181.40	105.87	181.40	106.10	-0.116	14.51
06-Dec-86	14:37:17	134.62	14.42	78.44	110.24	180.14	109.67	180.50	109.98	-0.116	14.52
06-Dec-86	14:37:48	134.63	14.41	78.44	113.92	179.06	113.40	179.42	113.64	-0.116	14.53
06-Dec-86	14:38:18	134.64	14.42	78.80	117.45	177.98	117.06	178.52	117.16	-0.150	14.53
06-Dec-86	14:38:48	134.65	14.42	79.34	120.81	177.08	120.31	177.26	120.51	-0.150	14.53
06-Dec-86	14:39:18	134.66	14.42	79.34	124.14	176.18	123.54	176.54	123.83	-0.150	14.53
06-Dec-86	14:39:49	134.66	14.42	79.16	127.05	175.28	126.50	175.64	126.74	-0.150	14.53
06-Dec-86	14:40:17	134.67	14.42	78.80	129.03	175.28	128.40	174.74	128.69	-0.150	14.54
06-Dec-86	14:40:47	134.68	14.42	78.44	130.21	176.72	129.59	175.28	129.95	-0.150	14.53
06-Dec-86	14:41:17	134.69	14.42	78.80	130.80	178.52	130.08	176.18	130.44	-0.116	14.55
06-Dec-86	14:41:48	134.70	14.42	79.16	131.63	179.42	130.79	177.08	131.24	-0.116	14.55

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
06-Dec-86	14:42:18	134.71	14.42	78.44	131.05	179.96	130.44	177.98	130.81	-0.116	14.56
06-Dec-86	14:42:48	134.71	14.42	78.44	131.28	180.14	130.44	178.52	130.82	-0.093	14.57
06-Dec-86	14:43:18	134.72	14.42	78.80	130.94	180.50	130.08	178.70	130.52	-0.093	14.57
06-Dec-86	14:43:49	134.73	14.42	79.16	130.94	180.86	130.09	179.42	130.61	-0.093	14.57
06-Dec-86	14:44:19	134.74	14.42	79.70	131.09	180.86	130.30	179.60	130.67	-0.093	14.57
06-Dec-86	14:44:47	134.75	14.42	79.70	131.27	181.04	130.44	179.60	130.88	-0.093	14.57
06-Dec-86	14:45:17	134.75	14.42	79.70	131.50	181.04	130.79	179.96	131.13	-0.093	14.56
06-Dec-86	14:47:18	134.79	14.42	78.80	132.79	181.04	132.13	180.14	132.43	-0.093	14.56
06-Dec-86	14:49:17	134.82	14.41	79.16	134.12	181.40	133.39	180.14	133.71	-0.093	14.55
06-Dec-86	14:51:18	134.86	14.42	78.80	134.24	181.04	133.39	180.50	133.80	-0.093	14.58
06-Dec-86	14:53:17	134.89	14.41	78.26	133.10	181.40	132.12	180.50	132.66	-0.093	14.56
06-Dec-86	15:00:17	135.00	14.41	78.26	127.85	181.40	126.98	180.50	127.39	-0.058	14.57
06-Dec-86	15:15:17	135.25	14.41	78.26	122.04	180.14	121.49	179.60	121.62	-0.036	14.56
06-Dec-86	15:20:47	135.35	14.42	78.44	122.11	180.14	121.50	179.42	121.63	-0.001	14.57
06-Dec-86	15:30:48	135.51	14.41	78.26	121.58	180.14	120.99	179.42	121.09	-0.001	14.54
06-Dec-86	16:00:48	136.01	14.40	77.18	118.23	179.60	117.68	178.70	117.70	0.022	14.49
06-Dec-86	16:30:47	136.51	14.41	77.18	115.73	178.52	115.29	177.62	115.17	-0.001	14.49
06-Dec-86	17:00:47	137.01	14.40	76.82	114.36	177.08	114.09	175.82	113.93	-0.001	14.44
06-Dec-86	17:30:48	137.51	14.40	75.92	123.07	175.64	122.68	174.38	122.77	-0.001	14.47
06-Dec-86	18:00:47	138.01	14.40	75.38	122.36	174.38	121.83	173.30	122.00	0.022	14.40
06-Dec-86	18:30:47	138.51	14.39	74.30	122.42	173.12	121.68	171.68	121.98	0.022	14.35
06-Dec-86	18:55:01	138.92	14.40	73.40	122.77	173.12	122.18	171.32	122.29	0.056	14.32
06-Dec-86	18:56:02	138.93	14.40	73.76	122.74	172.76	122.18	171.68	122.39	0.056	14.32
06-Dec-86	18:57:02	138.95	14.41	73.76	124.87	172.76	122.19	171.68	122.52	0.056	14.32
06-Dec-86	18:58:02	138.97	14.41	73.40	122.95	173.12	122.19	171.32	122.46	0.056	14.32
06-Dec-86	18:59:03	138.98	14.40	73.40	128.93	172.40	128.38	171.32	128.62	-0.001	14.29
06-Dec-86	19:00:01	139.00	14.40	73.76	137.12	170.24	136.61	169.34	136.81	-0.001	14.29
06-Dec-86	19:01:01	139.02	14.39	73.40	142.83	167.00	142.24	166.64	142.49	-0.001	14.28
06-Dec-86	19:02:01	139.03	14.41	73.40	148.96	163.58	148.45	164.48	148.62	-0.001	14.28
06-Dec-86	19:03:02	139.05	14.40	73.04	154.64	160.34	154.15	161.78	154.30	-0.001	14.28
06-Dec-86	19:04:02	139.07	14.39	73.04	160.08	157.46	159.49	159.62	159.68	-0.001	14.28
06-Dec-86	19:05:02	139.08	14.40	73.04	165.00	154.94	164.42	157.28	164.66	-0.001	14.28
06-Dec-86	19:06:02	139.10	14.41	73.40	169.89	152.60	169.29	154.94	169.55	-0.001	14.28
06-Dec-86	19:07:01	139.12	14.41	73.40	174.27	150.62	173.72	153.32	173.87	-0.001	14.28
06-Dec-86	19:08:01	139.13	14.40	73.40	178.46	148.64	177.87	150.98	178.12	-0.001	14.28
06-Dec-86	19:09:01	139.15	14.40	73.40	182.22	146.84	181.67	149.18	181.85	-0.001	14.28
06-Dec-86	19:10:02	139.17	14.39	73.40	185.86	144.86	185.26	147.20	185.50	-0.001	14.28
06-Dec-86	19:11:02	139.18	14.39	73.04	190.76	143.24	190.25	145.76	190.43	-0.001	14.28
06-Dec-86	19:12:03	139.20	14.39	73.04	195.82	141.44	195.39	144.14	195.56	-0.001	14.27
06-Dec-86	19:13:01	139.22	14.40	73.04	200.69	139.82	200.18	142.34	200.33	-0.001	14.27
06-Dec-86	19:14:01	139.23	14.41	73.04	205.91	138.02	205.33	140.90	205.56	-0.001	14.27
06-Dec-86	19:15:02	139.25	14.41	73.40	211.82	136.58	211.17	139.10	211.51	-0.001	14.27
06-Dec-86	19:16:02	139.27	14.40	73.40	217.83	134.96	217.22	137.84	217.55	-0.001	14.27
06-Dec-86	19:17:03	139.28	14.39	73.40	224.12	133.16	223.55	136.40	223.83	-0.036	14.27
06-Dec-86	19:18:01	139.30	14.39	73.04	230.15	131.54	229.60	134.96	229.89	-0.001	14.28
06-Dec-86	19:19:01	139.32	14.39	73.04	236.44	130.10	235.94	133.52	236.15	-0.036	14.28
06-Dec-86	19:20:02	139.33	14.40	73.04	242.82	128.66	242.28	132.08	242.60	-0.036	14.28

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
06-Dec-86	19:21:03	139.35	14.39	73.04	249.62	127.22	249.18	130.64	249.38	-0.036	14.28
06-Dec-86	19:22:01	139.37	14.39	73.04	256.06	126.14	255.51	129.56	255.78	-0.036	14.28
06-Dec-86	19:23:02	139.38	14.40	73.04	262.73	124.88	262.28	128.30	262.46	-0.036	14.28
06-Dec-86	19:24:02	139.40	14.40	73.04	269.26	123.98	268.75	127.22	268.98	-0.036	14.27
06-Dec-86	19:25:03	139.42	14.40	73.40	268.72	122.90	268.62	126.32	268.68	-0.036	14.27
06-Dec-86	19:26:01	139.43	14.39	73.04	278.53	121.82	277.90	125.24	278.17	-0.036	14.27
06-Dec-86	19:27:01	139.45	14.39	73.40	259.20	148.64	257.76	136.94	258.15	0.559	22.26
06-Dec-86	19:28:02	139.47	14.39	73.04	211.58	165.92	210.53	161.24	210.34	1.085	27.96
06-Dec-86	19:29:03	139.48	14.40	73.04	192.60	170.42	191.60	167.90	191.43	0.947	25.09
06-Dec-86	19:30:01	139.50	14.40	73.04	205.52	176.72	205.05	175.64	205.68	0.525	23.15
06-Dec-86	19:31:01	139.52	14.41	73.04	201.01	179.96	199.21	179.06	198.68	0.525	23.21
06-Dec-86	19:47:03	139.78	14.39	72.86	41.01	201.02	38.61	199.40	38.33	1.507	15.449
06-Dec-86	19:48:04	139.80	14.39	72.86	39.34	202.46	36.57	200.84	37.08	1.416	15.250
06-Dec-86	19:49:04	139.82	14.39	72.86	38.25	203.90	36.43	201.92	35.84	1.359	15.089
06-Dec-86	19:50:04	139.83	14.40	72.86	37.50	205.16	35.17	203.36	35.08	1.302	15.064
06-Dec-86	19:51:04	139.85	14.39	72.86	37.02	206.24	35.01	204.26	34.87	1.302	15.042
06-Dec-86	19:52:04	139.87	14.39	72.86	36.69	207.14	34.31	205.52	34.65	1.279	14.991
06-Dec-86	19:53:04	139.88	14.40	72.86	36.54	208.40	34.67	206.24	34.58	1.256	14.985
06-Dec-86	19:54:04	139.90	14.39	72.86	36.26	209.12	34.66	207.14	34.12	1.256	14.960
06-Dec-86	19:55:04	139.92	14.39	72.86	36.25	210.38	33.97	208.40	34.11	1.302	14.982
06-Dec-86	19:56:04	139.93	14.39	72.86	36.32	211.28	34.53	209.12	33.71	1.302	14.968
06-Dec-86	19:57:03	139.95	14.40	72.86	36.14	212.72	34.32	210.56	33.60	1.302	14.964
06-Dec-86	19:58:03	139.97	14.40	72.86	35.93	213.80	33.69	211.82	33.92	1.359	14.979
06-Dec-86	19:59:03	139.98	14.40	72.86	35.69	214.70	33.97	212.72	33.60	1.302	14.961
06-Dec-86	20:00:03	140.00	14.39	72.86	35.31	215.78	33.33	213.80	33.32	1.302	14.953
06-Dec-86	20:01:03	140.02	14.39	72.86	34.89	216.50	32.77	214.34	32.67	1.416	14.949
06-Dec-86	20:06:04	140.10	14.39	72.86	32.36	217.22	30.58	215.24	30.25	1.416	14.870
06-Dec-86	20:11:04	140.18	14.38	72.86	30.26	215.78	28.68	214.16	28.36	1.336	14.802
06-Dec-86	20:16:04	140.27	14.38	72.86	28.60	214.70	27.13	212.90	26.90	1.336	14.776
06-Dec-86	20:30:04	140.50	14.39	72.86	27.54	209.12	26.29	207.50	25.90	1.165	14.724
06-Dec-86	20:44:03	140.73	14.39	72.50	26.56	207.50	25.24	205.70	24.92	1.222	14.727
06-Dec-86	21:00:03	141.00	14.39	72.50	25.60	205.70	24.39	204.26	24.12	1.279	14.724
06-Dec-86	21:30:03	141.50	14.40	72.32	24.24	201.92	22.99	200.48	21.34	-0.058	14.716

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
09-Dec-86	16:01:25	208.02	14.41	78.44	20.64	183.74	19.40	182.84	19.53	0.662	14.59
09-Dec-86	16:03:50	208.06	14.41	78.44	20.74	183.74	19.54	182.84	19.61	0.662	14.59
09-Dec-86	16:04:21	208.07	14.40	77.90	20.74	183.74	19.54	182.48	19.62	0.662	14.58
09-Dec-86	16:04:51	208.08	14.41	77.90	20.75	183.38	19.54	182.48	19.65	0.662	14.57
09-Dec-86	16:05:21	208.09	14.40	77.72	20.75	183.38	19.54	182.48	19.64	0.662	14.57
09-Dec-86	16:05:51	208.10	14.40	77.90	20.83	183.74	19.54	182.48	19.81	0.605	14.57
09-Dec-86	16:06:21	208.11	14.41	77.90	22.86	184.64	22.15	183.38	22.78	-0.093	14.53
09-Dec-86	16:06:51	208.11	14.41	78.44	31.68	186.62	31.09	185.36	31.63	-0.253	14.52
09-Dec-86	16:07:21	208.12	14.42	78.26	39.43	187.70	38.63	186.62	39.15	-0.253	14.52
09-Dec-86	16:07:51	208.13	14.42	77.90	45.18	186.98	44.34	186.08	44.84	-0.253	14.52
09-Dec-86	16:08:21	208.14	14.41	77.72	49.98	185.72	48.98	184.82	49.59	-0.253	14.52
09-Dec-86	16:08:51	208.15	14.41	78.26	54.24	184.28	53.06	183.74	53.84	-0.253	14.52
09-Dec-86	16:09:22	208.16	14.41	78.44	58.21	182.84	57.21	182.48	57.79	-0.253	14.51
09-Dec-86	16:09:52	208.16	14.41	78.26	62.19	181.40	61.15	181.40	61.80	-0.253	14.51
09-Dec-86	16:10:22	208.17	14.40	77.90	66.12	180.14	65.09	180.50	65.74	-0.253	14.50
09-Dec-86	16:10:52	208.18	14.41	78.26	70.07	178.70	69.04	179.42	69.66	-0.253	14.51
09-Dec-86	16:11:20	208.19	14.41	78.80	73.73	177.98	72.70	178.52	73.36	-0.253	14.51
09-Dec-86	16:11:50	208.20	14.41	78.80	77.70	176.72	76.79	177.62	77.33	-0.253	14.50
09-Dec-86	16:12:20	208.21	14.41	78.80	81.66	175.28	80.59	176.54	81.28	-0.253	14.50
09-Dec-86	16:12:50	208.21	14.42	78.44	85.51	173.84	84.53	175.28	85.15	-0.253	14.51
09-Dec-86	16:13:20	208.22	14.41	78.44	89.28	172.40	88.33	174.20	88.91	-0.287	14.51
09-Dec-86	16:13:50	208.23	14.41	78.80	93.03	170.96	91.92	173.12	92.64	-0.287	14.51
09-Dec-86	16:14:20	208.24	14.41	78.44	96.75	169.88	95.72	172.22	96.38	-0.287	14.51
09-Dec-86	16:14:51	208.25	14.40	78.26	100.46	168.80	99.52	170.96	99.99	-0.390	14.51
09-Dec-86	16:15:21	208.26	14.41	77.90	104.16	167.54	103.11	170.24	103.71	0.102	14.51
09-Dec-86	16:15:51	208.26	14.41	77.90	107.82	166.46	106.91	168.98	107.46	-0.310	14.50
09-Dec-86	16:16:21	208.27	14.42	78.26	111.52	165.20	110.51	168.08	111.15	-0.344	14.50
09-Dec-86	16:16:51	208.28	14.42	78.26	115.22	163.94	114.31	167.00	114.83	-0.344	14.51
09-Dec-86	16:17:21	208.29	14.42	78.44	118.91	162.68	117.90	165.92	118.52	-0.344	14.51
09-Dec-86	16:17:51	208.30	14.42	78.44	122.58	161.60	121.49	165.02	122.20	-0.344	14.50
09-Dec-86	16:18:22	208.31	14.42	78.44	126.21	160.34	125.30	163.94	125.86	-0.344	14.51
09-Dec-86	16:18:52	208.31	14.42	78.44	129.85	159.26	128.89	163.04	129.50	-0.344	14.51
09-Dec-86	16:19:20	208.32	14.41	78.26	133.22	158.36	132.33	161.78	132.83	-0.344	14.50
09-Dec-86	16:19:50	208.33	14.41	77.90	136.88	157.28	135.92	160.70	136.50	-0.344	14.50
09-Dec-86	16:20:20	208.34	14.41	77.72	140.62	156.02	139.51	159.80	140.20	-0.344	14.50
09-Dec-86	16:20:50	208.35	14.40	77.90	144.29	154.94	143.30	158.72	143.91	-0.344	14.49
09-Dec-86	16:21:20	208.36	14.41	77.90	148.02	153.86	147.12	157.46	147.64	-0.344	14.49
09-Dec-86	16:21:51	208.36	14.41	77.72	151.76	152.96	150.91	156.74	151.34	-0.344	14.48
09-Dec-86	16:22:21	208.37	14.40	77.36	155.32	151.88	154.29	155.48	154.90	-0.344	14.47
09-Dec-86	16:22:51	208.38	14.40	77.18	158.82	150.62	157.94	154.40	158.38	-0.344	14.47
09-Dec-86	16:23:21	208.39	14.40	77.18	162.32	149.18	161.33	153.50	161.87	-0.344	14.46
09-Dec-86	16:23:51	208.40	14.40	76.82	165.77	148.10	164.77	152.42	165.42	-0.344	14.46
09-Dec-86	16:24:21	208.41	14.40	77.18	169.22	146.84	168.23	151.16	168.85	-0.344	14.46
09-Dec-86	16:24:51	208.41	14.40	77.36	172.67	145.76	171.82	150.44	172.29	-0.344	14.47
09-Dec-86	16:25:21	208.42	14.41	77.90	176.17	144.86	175.13	149.54	175.78	-0.344	14.48
09-Dec-86	16:25:52	208.43	14.41	78.44	179.60	144.14	178.59	148.64	179.19	-0.344	14.49
09-Dec-86	16:26:22	208.44	14.42	78.44	183.01	143.24	182.18	147.74	182.68	-0.344	14.50

DATE	CLOCK TIME	TEST TIME	PA (PSIA)	TA (DEG F)	PWH (PSIA)	TWH (DEG F)	P2 (PSIA)	T2 (DEG F)	PO (PSIA)	DELP (PSI)	PJAMES (PSIA)
09-Dec-86	16:26:50	208.45	14.41	78.26	186.17	142.70	185.27	147.20	185.80	-0.344	14.50
09-Dec-86	16:27:20	208.46	14.41	78.26	189.59	141.98	188.72	146.66	189.15	-0.344	14.49
09-Dec-86	16:27:50	208.46	14.41	78.44	192.90	141.44	191.95	145.76	192.57	-0.344	14.50
09-Dec-86	16:28:20	208.47	14.41	78.26	196.25	140.90	195.19	145.22	195.96	-0.344	14.49
09-Dec-86	16:28:51	208.48	14.41	77.90	199.56	140.36	198.65	144.32	199.24	-0.344	14.48
09-Dec-86	16:29:21	208.49	14.41	77.72	202.83	139.82	201.96	143.78	202.48	-0.344	14.48
09-Dec-86	16:29:51	208.50	14.40	77.72	206.10	138.92	205.19	143.24	205.74	-0.344	14.49
09-Dec-86	16:30:22	208.51	14.41	77.36	209.35	138.38	208.43	142.34	208.98	-0.344	14.48
09-Dec-86	16:30:50	208.51	14.41	77.72	212.31	137.84	211.38	141.80	211.94	-0.344	14.49
09-Dec-86	16:31:20	208.52	14.42	78.26	215.49	137.12	214.64	141.26	215.19	-0.344	14.49
09-Dec-86	16:31:50	208.53	14.41	77.72	218.79	136.58	217.72	140.54	218.38	-0.344	14.48
09-Dec-86	16:32:21	208.54	14.41	77.72	221.94	136.04	221.03	139.82	221.56	-0.344	14.47
09-Dec-86	16:32:51	208.55	14.41	77.90	225.11	135.50	224.27	139.10	224.77	-0.344	14.48
09-Dec-86	16:33:21	208.56	14.41	77.90	228.34	134.60	227.51	138.38	227.92	-0.344	14.48
09-Dec-86	16:33:52	208.56	14.42	77.72	231.44	134.06	230.47	137.84	231.09	-0.344	14.46
09-Dec-86	16:34:22	208.57	14.41	77.36	234.59	133.52	233.71	137.12	234.22	-0.367	14.46
09-Dec-86	16:34:50	208.58	14.41	77.36	237.54	132.62	236.67	136.40	237.20	-0.344	14.46
09-Dec-86	16:35:20	208.59	14.41	77.72	240.70	132.08	239.76	135.68	240.28	-0.344	14.45
09-Dec-86	16:35:50	208.60	14.41	77.36	243.62	131.54	242.86	135.14	243.27	-0.344	14.46
09-Dec-86	16:36:20	208.61	14.41	77.36	246.76	130.64	245.95	134.42	246.40	-0.344	14.45
09-Dec-86	16:36:50	208.61	14.42	77.36	250.11	130.10	249.20	133.70	249.76	-0.344	14.46
09-Dec-86	16:37:21	208.62	14.41	77.18	253.20	129.20	252.15	132.98	252.84	-0.367	14.45
09-Dec-86	16:37:51	208.63	14.41	76.82	255.92	128.30	255.03	132.08	255.56	-0.367	14.45
09-Dec-86	16:38:21	208.64	14.41	76.82	259.22	127.76	258.48	131.54	258.88	-0.367	14.44
09-Dec-86	16:38:51	208.65	14.41	76.82	262.45	126.86	261.58	130.64	262.11	-0.367	14.44
09-Dec-86	16:39:22	208.66	14.41	77.18	265.50	126.32	264.68	130.10	265.19	-0.367	14.46
09-Dec-86	16:39:50	208.66	14.41	77.36	268.21	125.78	267.21	129.56	267.79	-0.367	14.47
09-Dec-86	16:40:20	208.67	14.40	77.36	270.94	125.24	269.95	128.84	270.56	-0.367	14.48
09-Dec-86	16:40:50	208.68	14.40	77.72	274.07	124.88	273.26	128.30	273.72	-0.367	14.48
09-Dec-86	16:41:21	208.69	14.41	77.36	277.11	124.34	276.36	127.76	276.80	-0.367	14.47
09-Dec-86	16:41:51	208.70	14.41	77.72	280.20	123.98	279.47	127.40	279.8438	-0.367	14.48
09-Dec-86	16:42:22	208.71	14.41	77.90	283.15	123.80	282.21	126.86	282.7858	-0.367	14.48
09-Dec-86	16:42:50	208.71	14.42	77.90	285.71	123.80	284.75	126.32	285.3025	-0.367	14.49
09-Dec-86	16:43:20	208.72	14.41	78.26	287.20	124.70	286.30	126.68	286.8054	-0.367	14.49
09-Dec-86	16:43:50	208.73	14.41	77.90	288.93	129.20	288.06	127.76	288.5413	-0.367	14.49
09-Dec-86	16:44:21	208.74	14.41	77.90	289.77	138.56	288.76	132.62	289.3467	-0.344	14.50
09-Dec-86	16:44:51	208.75	14.42	78.26	289.83	149.72	288.91	141.26	289.4154	-0.344	14.50
09-Dec-86	16:45:21	208.76	14.41	78.44	290.01	155.48	289.04	147.20	289.5605	-0.344	14.50
09-Dec-86	17:01:21	209.02	14.41	76.46	293.89	168.44	293.05	165.92	293.4328	-0.310	14.47
09-Dec-86	17:16:22	209.27	14.40	75.74	289.25	167.36	288.40	165.02	288.8135	-0.310	14.46
09-Dec-86	17:34:22	209.57	14.40	75.74	301.45	165.02	300.58	162.14	301.02	-0.310	14.46
09-Dec-86	18:01:21	210.02	14.40	75.02	298.11	163.58	297.34	161.06	297.6853	-0.287	14.41
09-Dec-86	18:31:21	210.52	14.39	73.94	299.06	161.60	297.96	158.90	298.6123	-0.287	14.36
09-Dec-86	19:01:20	211.02	14.38	72.86	294.99	159.80	294.01	156.92	294.5061	-0.253	14.29
09-Dec-86	19:04:22	211.07	14.39	72.50	294.62	159.26	293.67	156.74	294.1754	-0.253	14.29
09-Dec-86	19:33:36	211.56	14.39	71.96	290.31	158.18	289.38	155.48	289.8823	-0.230	14.26
09-Dec-86	20:03:36	212.06	14.39	71.96	293.31	155.30	292.47	152.42	292.9063	-0.230	14.25

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09-Dec-86	20:33:38	212.56	14.39	71.78	307.40	154.76	306.55	151.88	306.9632	-0.230	14.25
09-Dec-86	21:03:36	213.06	14.40	71.78	306.73	154.04	305.71	150.98	306.3119	-0.230	14.26
09-Dec-86	21:33:37	213.56	14.39	71.42	304.65	153.32	303.66	150.62	304.206	-0.230	14.25
09-Dec-86	22:03:36	214.06	14.40	71.42	301.39	152.60	300.43	149.54	300.9513	-0.196	14.25
09-Dec-86	22:33:36	214.56	14.41	71.42	292.01	151.88	291.15	148.64	291.5259	-0.196	14.25
09-Dec-86	23:03:37	215.06	14.40	71.42	287.30	150.98	286.50	147.74	286.7863	-0.173	14.25
09-Dec-86	23:33:37	215.56	14.40	71.06	279.88	149.18	279.10	146.12	279.412	-0.150	14.24
10-Dec-86	00:03:37	216.06	14.40	71.06	276.71	149.00	276.01	145.76	276.2092	-0.150	14.24
10-Dec-86	00:33:38	216.56	14.39	70.88	275.95	148.64	275.29	145.22	275.4071	-0.150	14.23
10-Dec-86	01:03:38	217.06	14.38	71.06	283.73	146.66	282.89	142.88	283.3079	-0.173	14.23
10-Dec-86	01:33:37	217.56	14.39	70.88	296.12	145.76	295.21	142.34	295.693	-0.196	14.43
10-Dec-86	02:03:37	218.06	14.37	70.52	298.48	144.32	297.94	140.54	14.361	-22.301	14.43
10-Dec-86	02:30:04	218.50	14.37	70.52	303.10	143.78	302.09	140.00	14.361	4.491	14.43
10-Dec-86	03:04:38	219.08	14.37	70.52	307.97	144.32	307.09	140.54	14.361	-0.173	14.43
10-Dec-86	03:34:37	219.58	14.36	70.52	309.13	144.32	-132.08	141.26	14.361	-0.173	14.43
10-Dec-86	04:00:07	220.00	14.37	70.52	306.64	143.78	-132.06	140.54	14.361	-0.150	14.43
10-Dec-86	04:30:19	220.51	14.37	70.88	308.52	143.78	14.23	141.26	0.067000	-0.196	0.13
10-Dec-86	05:00:19	221.01	14.37	71.06	312.74	145.58	14.37	142.88	0.067000	-0.196	0.13
10-Dec-86	05:35:19	221.59	14.38	70.88	315.85	146.30	14.38	144.14	0.067000	-0.196	0.13
10-Dec-86	06:32:20	222.54	14.38	70.88	318.10	149.00	14.38	148.28	0.067000	-0.196	0.13
10-Dec-86	07:30:15	223.50	14.39	71.78	314.53	152.60	14.39	152.06	0.067000	-0.173	0.13
10-Dec-86	08:00:16	224.00	14.40	72.50	309.05	151.52	14.40	152.06	0.067000	-0.173	0.13
10-Dec-86	08:35:51	224.60	14.41	73.04	294.46	150.62	14.41	149.54	0.067000	-0.173	0.13
10-Dec-86	08:43:37	224.73	14.42	75.02	288.96	149.54	14.42	148.10	0.067000	-0.173	0.13
10-Dec-86	09:15:49	225.26	14.41	74.30	280.30	149.54	14.41	147.74	0.067000	-0.196	0.13
10-Dec-86	09:20:49	225.35	14.42	75.38	279.94	149.18	14.42	148.10	0.067000	-0.173	0.13
10-Dec-86	09:25:49	225.43	14.42	74.84	280.34	149.72	14.42	148.64	0.067000	-0.173	0.13
10-Dec-86	09:30:50	225.51	14.42	74.48	283.89	150.44	14.42	149.72	0.067000	-0.173	0.13
10-Dec-86	09:31:20	225.52	14.42	74.84	285.43	150.62	14.42	149.72	0.067000	-0.173	0.13
10-Dec-86	09:41:18	225.69	14.42	75.74	282.47	150.44	14.42	148.64	0.067000	-0.173	0.13
10-Dec-86	09:46:19	225.77	14.42	75.02	281.33	144.68	14.42	144.68	0.067000	-0.173	0.13
10-Dec-86	09:48:23	225.81	14.42	76.28	295.15	118.94	14.42	122.72	0.067000	-0.173	0.13
10-Dec-86	09:48:27	225.81	14.42	76.28	295.74	119.12	14.42	122.72	0.067000	-0.173	0.13
10-Dec-86	09:48:33	225.81	14.42	76.28	296.30	119.48	14.42	122.90	0.067000	-0.173	0.13
10-Dec-86	09:48:39	225.81	14.42	76.28	296.87	119.84	14.42	123.26	0.067000	-0.173	0.13
10-Dec-86	09:48:45	225.81	14.42	75.92	297.40	120.02	14.42	123.26	0.067000	-0.173	0.13
10-Dec-86	09:48:51	225.81	14.43	75.92	297.97	120.38	14.43	123.44	0.067000	-0.173	0.13
10-Dec-86	09:49:05	225.82	14.43	75.74	298.46	120.56	14.43	123.80	0.067000	-0.173	0.13
10-Dec-86	09:49:53	225.83	14.42	75.38	302.84	122.36	14.42	125.42	0.067000	-0.173	0.13
10-Dec-86	09:50:51	225.85	14.42	75.38	306.99	123.26	14.42	126.14	0.067000	-0.173	0.13
10-Dec-86	11:06:29	227.11	14.41	75.92	571.66	82.22	14.27	81.32	0.067000	-0.173	0.13
10-Dec-86	11:11:31	227.19	14.43	76.46	584.73	82.40	14.29	81.32	0.067000	-0.173	0.13
10-Dec-86	11:16:30	227.28	14.42	76.82	599.20	84.56	14.28	84.74	0.067000	-0.150	0.13
10-Dec-86	11:21:30	227.36	14.43	77.36	612.86	85.28	14.43	83.84	0.067000	-0.150	0.13
10-Dec-86	11:26:29	227.44	14.43	77.36	625.94	85.82	14.43	86.72	0.067000	-0.150	0.13
10-Dec-86	11:31:31	227.53	14.43	77.90	638.60	87.08	14.43	85.82	0.067000	-0.150	0.13
10-Dec-86	11:36:30	227.61	14.43	77.36	650.75	87.26	14.43	86.72	0.067000	-0.150	0.13

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10-Dec-86	11:41:29	227.69	14.43	76.82	662.31	86.18	14.43	83.12	0.067000	-0.150	0.13
10-Dec-86	11:46:29	227.77	14.43	77.72	673.54	87.26	14.43	83.30	0.067000	-0.150	0.13
10-Dec-86	11:51:29	227.86	14.43	78.80	684.24	90.68	14.43	86.54	0.067000	-0.150	0.13
10-Dec-86	11:56:29	227.94	14.43	78.80	694.65	89.96	14.43	87.08	0.067000	-0.150	0.13
10-Dec-86	12:01:29	228.02	14.42	77.90	704.84	89.24	14.42	87.80	0.067000	-0.150	0.13
10-Dec-86	12:06:29	228.11	14.43	78.26	714.69	90.14	14.43	86.72	0.067000	-0.150	0.13
10-Dec-86	12:11:29	228.19	14.42	77.72	724.17	88.16	14.42	83.30	0.067000	-0.150	0.13
10-Dec-86	12:16:29	228.27	14.42	78.26	733.53	89.24	14.42	84.74	0.067000	-0.150	0.13
10-Dec-86	12:21:30	228.36	14.43	79.16	742.40	88.70	14.43	87.62	0.067000	-0.173	0.13
10-Dec-86	12:26:31	228.44	14.42	78.80	742.87	89.06	14.42	85.64	0.067000	-0.173	0.13
10-Dec-86	12:31:27	228.52	14.42	79.16	690.40	90.50	14.42	88.52	0.067000	-0.173	0.13
10-Dec-86	12:32:23	228.54	14.43	79.16	666.99	91.22	14.43	88.70	0.067000	-0.173	0.13
10-Dec-86	12:33:24	228.56	14.43	79.88	644.51	91.58	14.43	88.52	0.067000	-0.173	0.13
10-Dec-86	12:34:22	228.57	14.42	80.42	624.31	91.58	14.42	88.16	0.067000	-0.173	0.13
10-Dec-86	12:35:23	228.59	14.42	79.70	603.89	91.94	14.42	87.80	0.067000	-0.173	0.13
10-Dec-86	12:40:22	228.67	14.42	79.70	520.67	91.94	14.42	84.74	0.067000	-0.173	0.13
10-Dec-86	12:45:25	228.76	14.41	78.44	449.55	90.68	14.41	83.84	0.067000	-0.173	0.13
10-Dec-86	12:50:24	228.84	14.42	78.26	389.78	91.04	14.42	83.84	0.067000	-0.173	0.13
10-Dec-86	12:55:23	228.92	14.43	78.44	329.51	90.68	14.43	84.20	0.067000	-0.173	0.13
10-Dec-86	13:00:23	229.01	14.42	77.72	146.80	90.68	14.42	85.10	0.067000	-0.173	0.13

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APPENDIX F

REDUCTION EQUATIONS

AND

REDUCED DATA

MASS FLOW CALCULATIONS

The equation for mass for two phase mass flow through an orifice is

$$w = CYA\sqrt{2g_c \Delta P v_{eff}}$$

where:

w = flow Lbm/sec

C = orifice coef = 0.73

Y = expantion factor = 0.97

A = area of flow

$= \frac{d^2}{4}\ 0.188\ ft^2$

d = inner orifice diameter

= 5.87"/12

v_{eff} = effective specific volume

$= \chi^{1.5}\left(\frac{1}{\rho_g} - \frac{1}{\rho_\ell}\right) + \frac{1}{\rho_\ell}$ James Equation

ρ_g = density of gas

ρ_ℓ = density of liquid

= 62.4 Lbm/sec

χ = quality = $\frac{\text{gas mass fraction}}{\text{total mass fraction}}$

$$= \frac{\rho_{Co_2} + \rho_{H_2O}}{\rho_{Co_2} + R' * \rho_{H_2O}}$$

ρ_{CO_2} = density of Co_2

ρ_{H_2O} = density of H_2O based on vapor pressure of H_2O

R' = ratio of total water mass to water vapor ratio

R′ is determined from the measurements of water and noncondensable gas.

To determine the total water mass to vapor, the water to CO_2 mass ratio is estimated. This estimation is then compared to the measurement of water to gas ratio.

The vapor pressure of H_2O if given by

P_{H_2O} = 7.51 + 0.182* (T-180); T = Temperature [°F]

$P_{CO_2} = P_T - PH_2O$

P_{CO_2} = Pressure of CO_2

P_T = Total pressure

P_{H_2O} = Vapor pressure of H_2O

$$\rho_{CO_2} = \frac{P_{CO2}}{R_c T}$$

R_c = 35.1 = gas constant for CO_2

T = Temperature [°R]

$$\rho_{H_2O} = \frac{P_{H_2O}}{R_H T}$$

$R_H = 85.5$ = gas constant for H_2O

ratio of water vapor to CO_2 is

$$\frac{\rho_{H_2O}}{\rho CO_2}$$

R' is then

$$\frac{\dot{M}H_2O}{\dot{M}\ CO_2 \text{ measured}} \div \frac{\rho_{H_2O}}{\rho CO_2}$$

ASCENSION WELL TEST No. 1 FLOW RATE CALCULATION FROM ORIFICE DELTA P

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
01-Dec-86	07:36:30	7.61	186.62	23.48	1.295	8.71	14.77	0.0937	0.0224	0.456	2.67	8.59E+04
01-Dec-86	08:06:32	8.11	186.08	23.40	1.257	8.62	14.78	0.0939	0.0221	0.458	2.69	8.49E+04
01-Dec-86	09:36:31	9.61	185.72	23.60	1.181	8.55	15.05	0.0957	0.0220	0.463	2.70	8.25E+04
01-Dec-86	09:06:31	9.11	186.98	23.74	1.257	8.78	14.96	0.0949	0.0225	0.457	2.65	8.43E+04
01-Dec-86	09:36:30	9.61	186.62	23.49	1.257	8.71	14.78	0.0938	0.0224	0.456	2.67	8.46E+04
01-Dec-86	10:06:31	10.11	186.26	23.38	1.257	8.65	14.73	0.0936	0.0222	0.457	2.69	8.48E+04
01-Dec-86	10:36:30	10.61	186.08			8.62	-8.62	-0.0547	0.0221	-0.312	ERR	ERR
01-Dec-86	11:06:31	11.11	186.98	23.82	1.063	8.78	15.04	0.0954	0.0225	0.458	2.65	7.74E+04
01-Dec-86	11:36:31	11.61	187.16	23.53	1.006	8.81	14.72	0.0933	0.0226	0.453	2.65	7.53E+04
01-Dec-86	12:06:31	12.11	186.26	23.37	1.040	8.65	14.72	0.0935	0.0222	0.457	2.69	7.72E+04
01-Dec-86	12:36:32	12.61	185.72	23.36	1.041	8.55	14.81	0.0941	0.0220	0.460	2.71	7.75E+04
01-Dec-86	13:06:30	13.11	186.26	23.77	0.978	8.65	15.12	0.0960	0.0222	0.462	2.68	7.47E+04
01-Dec-86	13:36:31	13.61	186.98	23.65	1.003	8.78	14.87	0.0943	0.0225	0.456	2.65	7.53E+04
01-Dec-86	14:06:32	14.11	186.08	23.39	1.080	8.62	14.77	0.0939	0.0221	0.458	2.69	7.87E+04
01-Dec-86	14:36:30	14.61	185.36	23.32	1.003	8.49	14.83	0.0943	0.0218	0.462	2.73	7.63E+04
01-Dec-86	16:22:23	16.37	185.18	22.80	0.927	8.45	14.35	0.0913	0.0217	0.456	2.75	7.36E+04
01-Dec-86	16:34:14	16.57	186.26	23.56	1.003	8.65	14.91	0.0947	0.0222	0.459	2.68	7.57E+04
01-Dec-86	16:38:37	16.64	186.62	23.29	1.003	8.71	14.58	0.0925	0.0224	0.453	2.68	7.56E+04
01-Dec-86	17:08:35	17.14	186.62	23.34	1.067	8.71	14.63	0.0928	0.0224	0.454	2.68	7.80E+04
01-Dec-86	17:38:36	17.64	186.62	23.27	1.080	8.71	14.56	0.0924	0.0224	0.453	2.68	7.85E+04
01-Dec-86	18:08:35	18.14	186.62	23.23	1.086	8.71	14.51	0.0921	0.0224	0.452	2.68	7.87E+04
01-Dec-86	18:38:35	18.64	185.72	23.06	1.086	8.55	14.51	0.0922	0.0220	0.456	2.72	7.93E+04
01-Dec-86	19:08:36	19.14	185.18	22.96	1.086	8.45	14.50	0.0923	0.0217	0.458	2.74	7.96E+04
01-Dec-86	20:59:34	20.99	185.18	23.58	1.040	8.45	15.12	0.0962	0.0217	0.467	2.72	7.77E+04
01-Dec-86	21:29:34	21.49	186.26	23.24	1.120	8.65	14.59	0.0926	0.0222	0.455	2.69	8.01E+04
01-Dec-86	21.59.34	21.99	185.72	22.97	1.118	8.55	14.42	0.0917	0.0220	0.455	2.72	8.05E+04
01-Dec-86	22:29:35	22.49	186.26	56.31	0.171	8.65	47.66	0.3027	0.0222	0.702	1.84	2.59E+04
01-Dec-86	22:59:35	22.99	188.96	58.85	0.165	9.14	49.71	0.3144	0.0234	0.700	1.76	2.49E+04
01-Dec-86	23:29:34	23.49	190.40	59.44	0.165	9.40	50.04	0.3158	0.0240	0.696	1.73	2.47E+04
02-Dec-86	00:07:35	24.13	188.96	58.85	0.165	9.14	49.71	0.3144	0.0234	0.700	1.76	2.49E+04
02-Dec-86	00:32:34	24.54	187.16	58.64	0.191	8.81	49.83	0.3160	0.0226	0.707	1.78	2.69E+04
02-Dec-86	01:02:33	25.04	184.64	57.92	0.165	8.35	49.57	0.3156	0.0215	0.717	1.83	2.53E+04
02-Dec-86	01:32:33	25.54	179.96	119.84	-0.023	7.50	112.33	0.7205	0.0195	0.860	1.11	ERR
02-Dec-86	02:02:33	26.04	179.42	131.05	-0.000	7.40	123.64	0.7937	0.0192	0.872	1.03	ERR
02-Dec-86	02:32:33	26.54	179.42	132.13	-0.000	7.40	124.73	0.8006	0.0192	0.873	1.03	ERR
02-Dec-86	03:02:33	27.04	178.16	130.40	-0.023	7.18	123.22	0.7925	0.0187	0.875	1.04	ERR
02-Dec-86	03:32:35	27.54	177.62	125.63	-0.023	7.08	118.55	0.7631	0.0184	0.873	1.07	ERR
02-Dec-86	03:47:33	27.79	177.26	125.27	-0.000	7.01	118.26	0.7617	0.0183	0.873	1.08	ERR
02-Dec-86	04:32:43	28.55	196.70	41.77	1.452	10.55	31.22	0.1951	0.0267	0.573	1.98	7.82E+04
02-Dec-86	05:02:43	29.05	212.18	29.01	1.429	13.37	15.64	0.0955	0.0330	0.386	1.88	7.57E+04
02-Dec-86	05:32:43	29.55	206.96	28.58	1.372	12.42	16.17	0.0995	0.0309	0.405	2.00	7.64E+04
02-Dec-86	05:51:20	29.86	202.46	26.22	1.486	11.60	14.62	0.0906	0.0291	0.399	2.13	8.21E+04
02-Dec-86	06:11:24	30.19	197.96	24.98	1.429	10.78	14.21	0.0886	0.0272	0.407	2.26	8.30E+04
02-Dec-86	09:49:48	33.83	195.26	24.52	1.372	10.29	14.23	0.0891	0.0261	0.416	2.35	8.29E+04
02-Dec-86	10:04:16	34.07	193.82	24.34	1.314	10.03	14.31	0.0898	0.0254	0.422	2.40	8.20E+04
02-Dec-86	10:48:00	34.80	192.92	24.16	1.314	9.86	14.29	0.0899	0.0251	0.425	2.43	8.25E+04
02-Dec-86	12:12:00	36.20	189.50	23.38	0.869	9.24	14.14	0.0894	0.0236	0.436	2.57	6.89E+04

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
02-Dec-86	12:42:02	36.70	188.96	23.33	0.834	9.14	14.19	0.0897	0.0234	0.438	2.59	6.78E+04
02-Dec-86	13:09:38	37.16	188.06			8.98	-8.98	-0.0569	0.0230	-0.312	ERR	ERR
02-Dec-86	13:39:38	37.66	188.42	23.17	0.834	9.04	14.13	0.0894	0.0231	0.440	2.61	6.81E+04
02-Dec-86	14:09:39	38.16	187.70	23.05	0.834	8.91	14.14	0.0896	0.0228	0.443	2.64	6.85E+04
02-Dec-86	14:39:38	38.66	187.16	22.97	0.834	8.81	14.16	0.0898	0.0226	0.445	2.66	6.88E+04
02-Dec-86	15:09:40	39.16	187.70	23.36	0.834	8.91	14.45	0.0915	0.0228	0.447	2.63	6.84E+04
02-Dec-86	15:39:39	39.66	188.06	23.15	0.869	8.98	14.17	0.0898	0.0230	0.442	2.62	6.97E+04
02-Dec-86	16:09:38	40.16	187.52	22.97	0.869	8.88	14.09	0.0893	0.0228	0.443	2.65	7.00E+04
02-Dec-86	16:39:39	40.66	186.62	22.84	0.869	8.71	14.12	0.0896	0.0224	0.447	2.69	7.05E+04
02-Dec-86	17:09:38	41.16	186.26	22.23	0.812	8.65	13.58	0.0863	0.0222	0.441	2.72	6.85E+04
02-Dec-86	17:39:38	41.66	186.98	23.09	0.949	8.78	14.31	0.0908	0.0225	0.448	2.67	7.34E+04
02-Dec-86	18:09:38	42.16	187.16	22.90	0.949	8.81	14.09	0.0894	0.0226	0.444	2.67	7.34E+04
02-Dec-86	18:39:39	42.66	186.62	22.72	0.983	8.71	14.00	0.0889	0.0224	0.445	2.69	7.51E+04
02-Dec-86	19:09:39	43.16	186.08			8.62	-8.62	-0.0547	0.0221	-0.312	ERR	ERR
02-Dec-86	19:39:39	43.66	186.62	22.95	1.063	8.71	14.23	0.0903	0.0224	0.448	2.69	7.80E+04
02-Dec-86	20:09:39	44.16	186.98	22.68	1.086	8.78	13.90	0.0882	0.0225	0.442	2.68	7.87E+04
02-Dec-86	20:39:38	44.66	186.26	22.51	1.120	8.65	13.86	0.0880	0.0222	0.445	2.71	8.04E+04
02-Dec-86	21:09:38	45.16	186.08	22.43	1.120	8.62	13.81	0.0877	0.0221	0.445	2.72	8.06E+04
02-Dec-86	21:39:39	45.66	185.18	22.86	1.063	8.45	14.41	0.0917	0.0217	0.457	2.75	7.88E+04
02-Dec-86	22:09:39	46.16	186.62	22.72	1.086	8.71	14.01	0.0889	0.0224	0.445	2.69	7.89E+04
02-Dec-86	22:39:38	46.66	186.26	22.60	1.086	8.65	13.95	0.0886	0.0222	0.446	2.71	7.92E+04
02-Dec-86	23:09:39	47.16	186.08	22.47	1.063	8.62	13.85	0.0880	0.0221	0.445	2.72	7.85E+04
02-Dec-86	23:39:38	47.66	185.36	23.00	1.120	8.49	14.52	0.0923	0.0218	0.458	2.73	8.08E+04
03-Dec-86	00:09:40	48.16	186.26	22.79	1.063	8.65	14.14	0.0898	0.0222	0.449	2.70	7.82E+04
03-Dec-86	00:39:39	48.66	186.62	22.57	1.063	8.71	13.86	0.0880	0.0224	0.443	2.69	7.81E+04
03-Dec-86	01:09:39	49.16	186.08	22.44	1.040	8.62	13.83	0.0878	0.0221	0.445	2.72	7.76E+04
03-Dec-86	01:39:38	49.66	185.72	22.38	1.040	8.55	13.83	0.0879	0.0220	0.446	2.74	7.79E+04
03-Dec-86	02:09:40	50.16	186.08	22.81	1.040	8.62	14.20	0.0902	0.0221	0.450	2.71	7.75E+04
03-Dec-86	02:39:38	50.66	186.26	22.54	1.040	8.65	13.89	0.0882	0.0222	0.445	2.71	7.75E+04
03-Dec-86	03:09:38	51.16	185.72	22.41	1.040	8.55	13.86	0.0881	0.0220	0.447	2.74	7.78E+04
03-Dec-86	03:39:39	51.66	185.36	21.91	0.949	8.49	13.43	0.0854	0.0218	0.442	2.76	7.47E+04
03-Dec-86	04:09:39	52.16	186.26	22.59	1.006	8.65	13.94	0.0886	0.0222	0.446	2.71	7.62E+04
03-Dec-86	04:39:39	52.66	186.26	22.43	1.040	8.65	13.78	0.0875	0.0222	0.444	2.71	7.75E+04
03-Dec-86	05:09:40	53.16	185.36	22.28	1.006	8.49	13.79	0.0877	0.0218	0.447	2.75	7.68E+04
03-Dec-86	05:39:39	53.66	185.18	22.19	0.983	8.45	13.74	0.0874	0.0217	0.447	2.76	7.61E+04
03-Dec-86	06:09:39	54.16	186.08	22.68	0.983	8.62	14.07	0.0894	0.0221	0.448	2.71	7.54E+04
03-Dec-86	06:39:39	54.66	186.26	22.45	1.006	8.65	13.80	0.0876	0.0222	0.444	2.71	7.62E+04
03-Dec-86	07:09:39	55.16	185.72	22.22	0.983	8.55	13.67	0.0869	0.0220	0.444	2.74	7.57E+04
03-Dec-86	07:39:39	55.66	185.36	22.15	0.983	8.49	13.66	0.0869	0.0218	0.446	2.76	7.60E+04
03-Dec-86	08:09:39	56.16	185.36	22.57	0.949	8.49	14.09	0.0896	0.0218	0.452	2.75	7.45E+04
03-Dec-86	11:09:39	59.16	186.26	22.40	0.983	8.65	13.75	0.0873	0.0222	0.443	2.71	7.54E+04
03-Dec-86	11:39:39	59.66	186.08	22.23	0.949	8.62	13.61	0.0865	0.0221	0.442	2.73	7.42E+04
03-Dec-86	12:09:40	60.16	185.36	22.12	0.949	8.49	13.63	0.0867	0.0218	0.445	2.76	7.47E+04
03-Dec-86	12:39:38	60.66	185.36	22.32	0.869	8.49	13.84	0.0880	0.0218	0.448	2.75	7.14E+04
03-Dec-86	13:09:38	61.16	186.08	22.17	0.869	8.62	13.56	0.0861	0.0221	0.441	2.73	7.10E+04
03-Dec-86	13:39:38	61.66	185.36	22.06	0.812	8.49	13.58	0.0864	0.0218	0.444	2.76	6.91E+04
03-Dec-86	14:09:39	62.16	185.18	22.02	0.732	8.45	13.57	0.0863	0.0217	0.445	2.77	6.57E+04

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
03-Dec-86	14:39:40	62.66	185.36	22.45	0.754	8.49	13.96	0.0888	0.0218	0.450	2.75	6.65E+04
03-Dec-86	15:09:39	63.16	186.08	22.20	0.789	8.62	13.58	0.0863	0.0221	0.441	2.73	6.77E+04
03-Dec-86	19:54:04	67.90	185.72	22.05	0.754	8.55	13.50	0.0858	0.0220	0.442	2.74	6.64E+04
03-Dec-86	20:32:16	68.54	184.82	21.94	0.754	8.39	13.55	0.0863	0.0216	0.446	2.79	6.69E+04
03-Dec-86	21:02:16	69.04	184.82	22.47	0.697	8.39	14.08	0.0896	0.0216	0.454	2.77	6.41E+04
03-Dec-86	21:32:18	69.54	185.18	21.99	0.732	8.45	13.54	0.0861	0.0217	0.445	2.77	6.57E+04
03-Dec-86	22:02:16	70.04	185.18	21.80	0.732	8.45	13.34	0.0849	0.0217	0.442	2.77	6.57E+04
03-Dec-86	22:32:17	70.54	184.82	21.70	0.697	8.39	13.32	0.0848	0.0216	0.443	2.79	6.44E+04
03-Dec-86	23:02:17	71.04	184.64	21.47	0.617	8.35	13.12	0.0835	0.0215	0.441	2.81	6.07E+04
03-Dec-86	23:32:16	71.54	184.82	21.94	0.674	8.39	13.56	0.0863	0.0216	0.446	2.79	6.33E+04
04-Dec-86	00:02:16	72.04	185.36	21.82	0.697	8.49	13.34	0.0848	0.0218	0.441	2.77	6.41E+04
04-Dec-86	00:32:16	72.54	184.82	21.71	0.674	8.39	13.32	0.0848	0.0216	0.443	2.79	6.33E+04
04-Dec-86	01:02:16	73.04	184.28	22.09	0.732	8.29	13.80	0.0879	0.0213	0.452	2.80	6.61E+04
04-Dec-86	01:32:17	73.54	184.82	21.98	0.674	8.39	13.59	0.0865	0.0216	0.447	2.78	6.32E+04
04-Dec-86	02:02:17	74.04	185.36	21.79	0.674	8.49	13.31	0.0846	0.0218	0.440	2.77	6.30E+04
04-Dec-86	02:32:17	74.54	184.64	21.63	0.697	8.35	13.28	0.0845	0.0215	0.443	2.80	6.45E+04
04-Dec-86	03:02:17	75.04	184.28	21.57	0.697	8.29	13.28	0.0846	0.0213	0.445	2.82	6.47E+04
04-Dec-86	03:32:16	75.54	184.82	22.00	0.697	8.39	13.61	0.0866	0.0216	0.447	2.78	6.43E+04
04-Dec-86	04:02:18	76.04	185.18	21.78	0.697	8.45	13.32	0.0848	0.0217	0.441	2.77	6.42E+04
04-Dec-86	04:32:17	76.54	185.18	21.66	0.697	8.45	13.21	0.0840	0.0217	0.440	2.78	6.42E+04
04-Dec-86	05:02:16	77.04	184.28	21.58	0.674	8.29	13.29	0.0846	0.0213	0.445	2.82	6.36E+04
04-Dec-86	05:32:18	77.54	183.92	22.02	0.617	8.22	13.79	0.0879	0.0212	0.454	2.82	6.09E+04
04-Dec-86	06:02:16	78.04	184.64	21.76	0.640	8.35	13.41	0.0854	0.0215	0.445	2.80	6.18E+04
04-Dec-86	06:32:17	78.54	185.18	21.60	0.674	8.45	13.15	0.0836	0.0217	0.439	2.78	6.32E+04
04-Dec-86	07:02:16	79.04	184.28	21.53	0.640	8.29	13.25	0.0844	0.0213	0.444	2.82	6.20E+04
04-Dec-86	07:32:16	79.54	183.92	21.37	0.640	8.22	13.14	0.0838	0.0212	0.444	2.84	6.22E+04
04-Dec-86	08:02:16	80.04	184.28	21.80	0.617	8.29	13.51	0.0861	0.0213	0.448	2.81	6.08E+04
04-Dec-86	08:31:01	80.52	184.82	21.63	0.640	8.39	13.25	0.0843	0.0216	0.442	2.79	6.17E+04
04-Dec-86	09:01:02	81.02	184.64	21.54	0.640	8.35	13.18	0.0839	0.0215	0.442	2.80	6.18E+04
04-Dec-86	09:31:02	81.52	183.92	21.46	0.640	8.22	13.24	0.0844	0.0212	0.446	2.84	6.22E+04
04-Dec-86	10:01:02	82.02	184.64		0.583	8.35	-8.35	-0.0532	0.0215	-0.312	ERR	ERR
04-Dec-86	10:31:02	82.52	184.82	21.77	0.560	8.39	13.38	0.0852	0.0216	0.444	2.79	5.77E+04
04-Dec-86	11:01:03	83.02	184.82	21.63	0.560	8.39	13.24	0.0843	0.0216	0.442	2.79	5.77E+04
04-Dec-86	11:31:01	83.52	184.64	21.54	0.537	8.35	13.19	0.0840	0.0215	0.442	2.80	5.66E+04
04-Dec-86	12:01:02	84.02	183.92	21.94	0.446	8.22	13.71	0.0874	0.0212	0.453	2.82	5.18E+04
04-Dec-86	12:31:01	84.52	184.64	21.69	0.560	8.35	13.33	0.0849	0.0215	0.444	2.80	5.78E+04
04-Dec-86	12:49:23	84.82	184.82	21.57	0.583	8.39	13.18	0.0839	0.0216	0.441	2.80	5.89E+04
04-Dec-86	13:02:23	85.04	184.28	21.42	0.583	8.29	13.13	0.0836	0.0213	0.442	2.82	5.92E+04
04-Dec-86	13:32:24	85.54	183.74	20.91	0.537	8.19	12.72	0.0811	0.0211	0.438	2.86	5.72E+04
04-Dec-86	14:02:23	86.04	184.28	21.84	0.560	8.29	13.55	0.0863	0.0213	0.449	2.81	5.79E+04
04-Dec-86	14:32:24	86.54	183.92	21.68	0.583	8.22	13.45	0.0858	0.0212	0.449	2.83	5.93E+04
04-Dec-86	15:02:25	87.04	184.82	21.49	0.583	8.39	13.10	0.0834	0.0216	0.440	2.80	5.89E+04
04-Dec-86	15:32:24	87.54	184.28	21.40	0.560	8.29	13.11	0.0835	0.0213	0.442	2.82	5.80E+04
04-Dec-86	16:02:24	88.04	184.28	21.34	0.537	8.29	13.05	0.0831	0.0213	0.441	2.83	5.69E+04
04-Dec-86	16:32:23	88.54	184.28	21.72	0.537	8.29	13.43	0.0856	0.0213	0.447	2.82	5.68E+04
04-Dec-86	17:02:25	89.04	184.82			8.39	-8.39	-0.0534	0.0216	-0.312	ERR	ERR
04-Dec-86	17:32:24	89.54	184.28			8.29	-8.29	-0.0528	0.0213	-0.312	ERR	ERR

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
04-Dec-86	18:02:23	90.04	183.92	21.18	0.537	8.22	12.96	0.0826	0.0212	0.441	2.85	5.71E+04
04-Dec-86	18:32:01	90.53	183.38	21.62	0.640	8.13	13.50	0.0861	0.0210	0.452	2.86	6.24E+04
04-Dec-86	19:02:02	91.03	183.92	21.38	0.640	8.22	13.16	0.0839	0.0212	0.444	2.84	6.22E+04
04-Dec-86	19:32:01	91.53	184.28	21.27	0.617	8.29	12.98	0.0827	0.0213	0.440	2.83	6.10E+04
04-Dec-86	20:02:01	92.03	183.74	21.22	0.640	8.19	13.03	0.0831	0.0211	0.443	2.85	6.24E+04
04-Dec-86	20:32:06	92.54	183.74	21.08	0.617	8.19	12.89	0.0822	0.0211	0.441	2.86	6.13E+04
04-Dec-86	21:02:06	93.04	183.74	21.36	0.674	8.19	13.17	0.0840	0.0211	0.445	2.85	6.40E+04
04-Dec-86	21:32:06	93.54	183.92	21.29	0.674	8.22	13.07	0.0833	0.0212	0.443	2.84	6.39E+04
04-Dec-86	22:02:06	94.04	183.74	21.20	0.674	8.19	13.01	0.0829	0.0211	0.443	2.85	6.40E+04
04-Dec-86	22:32:07	94.54	183.74	21.05	0.617	8.19	12.86	0.0820	0.0211	0.441	2.86	6.13E+04
04-Dec-86	23:02:07	95.04	183.74	21.39	0.674	8.19	13.20	0.0842	0.0211	0.446	2.85	6.40E+04
04-Dec-86	23:32:06	95.54	184.28	21.26	0.674	8.29	12.97	0.0826	0.0213	0.440	2.83	6.37E+04
05-Dec-86	00:02:04	96.03	183.74	21.15	0.640	8.19	12.96	0.0826	0.0211	0.442	2.86	6.24E+04
05-Dec-86	00:32:03	96.53	183.74	21.09	0.617	8.19	12.90	0.0822	0.0211	0.441	2.86	6.13E+04
05-Dec-86	01:02:04	97.03	183.92	21.36	0.640	8.22	13.13	0.0837	0.0212	0.444	2.84	6.22E+04
05-Dec-86	01:32:04	97.53	184.64	21.25	0.640	8.35	12.90	0.0821	0.0215	0.437	2.81	6.19E+04
05-Dec-86	02:02:04	98.03	183.92	21.16	0.640	8.22	12.93	0.0824	0.0212	0.441	2.85	6.23E+04
05-Dec-86	02:32:03	98.53	183.74	20.93	0.617	8.19	12.74	0.0812	0.0211	0.439	2.86	6.13E+04
05-Dec-86	03:02:04	99.03	183.92	21.34	0.674	8.22	13.12	0.0836	0.0212	0.444	2.84	6.39E+04
05-Dec-86	03:32:03	99.53	184.64	21.19	0.640	8.35	12.84	0.0817	0.0215	0.436	2.81	6.19E+04
05-Dec-86	04:02:03	100.03	183.92	21.12	0.640	8.22	12.89	0.0822	0.0212	0.440	2.85	6.23E+04
05-Dec-86	04:32:05	100.53	183.74	20.62	0.560	8.19	12.43	0.0793	0.0211	0.434	2.87	5.85E+04
05-Dec-86	05:02:03	101.03	183.92	21.30	0.617	8.22	13.08	0.0834	0.0212	0.443	2.84	6.11E+04
05-Dec-86	05:32:03	101.53	184.64	21.18	0.617	8.35	12.82	0.0816	0.0215	0.436	2.81	6.08E+04
05-Dec-86	06:02:03	102.03	183.92	21.08	0.617	8.22	12.85	0.0819	0.0212	0.440	2.85	6.12E+04
05-Dec-86	06:32:03	102.53	183.74	20.61	0.560	8.19	12.42	0.0792	0.0211	0.434	2.87	5.85E+04
05-Dec-86	07:02:04	103.03	183.92	21.30	0.617	8.22	13.08	0.0834	0.0212	0.443	2.84	6.11E+04
05-Dec-86	07:32:03	103.53	184.28	21.14	0.617	8.29	12.85	0.0819	0.0213	0.438	2.83	6.10E+04
05-Dec-86	08:02:03	104.03	183.92	21.05	0.640	8.22	12.82	0.0817	0.0212	0.439	2.85	6.23E+04
05-Dec-86	08:32:04	104.53	183.74	20.92	0.583	8.19	12.73	0.0812	0.0211	0.439	2.86	5.96E+04
05-Dec-86	09:18:38	105.31	183.92	21.32	0.583	8.22	13.09	0.0835	0.0212	0.443	2.84	5.94E+04
05-Dec-86	09:48:39	105.81	184.28	21.14	0.617	8.29	12.85	0.0819	0.0213	0.438	2.83	6.10E+04
05-Dec-86	10:18:38	106.31	183.92	21.06	0.617	8.22	12.84	0.0818	0.0212	0.440	2.85	6.12E+04
05-Dec-86	10:48:39	106.81	183.92	21.33	0.560	8.22	13.10	0.0835	0.0212	0.444	2.84	5.82E+04
05-Dec-86	11:37:57	107.63	184.28	20.81	0.034	8.29	12.52	0.0798	0.0213	0.433	2.84	1.44E+04
05-Dec-86	12:01:57	108.03	184.28	21.10	0.503	8.29	12.81	0.0816	0.0213	0.438	2.83	5.51E+04
05-Dec-86	12:33:25	108.56	183.74	21.06	0.423	8.19	12.87	0.0821	0.0211	0.441	2.86	5.07E+04
05-Dec-86	13:03:24	109.06	183.74	21.26	0.503	8.19	13.07	0.0833	0.0211	0.444	2.85	5.53E+04
05-Dec-86	13:33:25	109.56	184.28	21.09	0.537	8.29	12.80	0.0815	0.0213	0.437	2.83	5.69E+04
05-Dec-86	14:03:25	110.06	187.16	40.18	-0.389	8.81	31.36	0.1989	0.0226	0.613	2.19	ERR
05-Dec-86	14:33:24	110.56	181.76	45.85	-0.331	7.83	38.02	0.2432	0.0202	0.677	2.14	ERR
05-Dec-86	15:03:24	111.06	183.74	17.23	-0.526	8.19	9.04	0.0576	0.0211	0.376	2.94	ERR
05-Dec-86	15:32:22	111.54	186.08	17.43	-0.160	8.62	8.82	0.0560	0.0221	0.363	2.82	ERR
05-Dec-86	15:59:54	112.00	186.98	63.16	-0.057	8.78	54.38	0.3450	0.0225	0.725	1.71	ERR
05-Dec-86	16:29:52	112.50	187.16	63.25	-0.023	8.81	54.44	0.3453	0.0226	0.724	1.70	ERR
05-Dec-86	16:59:53	113.00	179.60	141.91	0.022	7.44	134.47	0.8629	0.0193	0.881	0.97	6.67E+03
05-Dec-86	17:29:52	113.50	178.52	127.14	0.079	7.24	119.90	0.7707	0.0188	0.871	1.06	1.33E+04

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
05-Dec-86	17:59:52	114.00	178.16	121.96	0.079	7.18	114.78	0.7382	0.0187	0.867	1.10	1.36E+04
05-Dec-86	18:29:53	114.50	177.62	120.32	0.079	7.08	113.24	0.7290	0.0184	0.867	1.11	1.36E+04
05-Dec-86	18:59:53	115.00	177.08	118.05	0.102	6.98	111.07	0.7156	0.0182	0.867	1.13	1.56E+04
05-Dec-86	19:32:20	115.54	174.74	131.65	0.079	6.55	125.10	0.8089	0.0171	0.886	1.04	1.32E+04
05-Dec-86	20:00:14	116.00	173.12	133.87	0.102	6.26	127.61	0.8273	0.0164	0.892	1.03	1.49E+04
05-Dec-86	20:30:14	116.50	171.68	134.86	0.102	6.00	128.86	0.8373	0.0157	0.897	1.03	1.49E+04
05-Dec-86	21:00:14	117.00	170.42	135.15	0.159	5.77	129.39	0.8424	0.0152	0.901	1.03	1.86E+04
05-Dec-86	21:34:14	117.57	195.26	38.11	1.473	10.29	27.82	0.1743	0.0261	0.554	2.08	8.08E+04
05-Dec-86	22:04:15	118.07	211.46	26.64	1.393	13.24	13.40	0.0819	0.0327	0.361	1.91	7.53E+04
05-Dec-86	22:34:14	118.57	204.26	25.08	1.336	11.93	13.15	0.0813	0.0298	0.375	2.09	7.71E+04
05-Dec-86	23:04:14	119.07	201.38			11.40	-11.40	-0.0708	0.0286	-0.312	ERR	ERR
05-Dec-86	23:34:14	119.57	197.24	22.35	1.302	10.65	11.70	0.0731	0.0269	0.375	2.32	8.01E+04
06-Dec-86	00:04:13	120.07	194.36	21.99	1.279	10.12	11.87	0.0744	0.0257	0.386	2.42	8.11E+04
06-Dec-86	00:34:14	120.57	192.38	21.72	1.199	9.76	11.95	0.0752	0.0248	0.394	2.49	7.98E+04
06-Dec-86	01:04:13	121.07	191.48	22.15	1.199	9.60	12.56	0.0791	0.0245	0.406	2.52	8.02E+04
06-Dec-86	01:34:15	121.57	190.40	21.55	1.165	9.40	12.15	0.0767	0.0240	0.404	2.57	7.98E+04
06-Dec-86	02:04:14	122.07	190.04	21.44	1.142	9.34	12.10	0.0764	0.0238	0.404	2.58	7.93E+04
06-Dec-86	03:07:41	123.13	188.96	21.29	1.142	9.14	12.15	0.0769	0.0234	0.409	2.63	8.00E+04
06-Dec-86	03:31:41	123.53	188.06	21.17	1.142	8.98	12.20	0.0772	0.0230	0.413	2.67	8.05E+04
06-Dec-86	04:01:43	124.03	188.42	21.42	1.107	9.04	12.37	0.0783	0.0231	0.414	2.65	7.90E+04
06-Dec-86	04:31:42	124.53	187.70	21.13	1.085	8.91	12.22	0.0774	0.0228	0.415	2.68	7.87E+04
06-Dec-86	05:01:41	125.03	187.16	21.08	1.085	8.81	12.26	0.0778	0.0226	0.417	2.71	7.91E+04
06-Dec-86	05:30:26	125.51	186.62	20.97	1.085	8.71	12.26	0.0778	0.0224	0.419	2.73	7.95E+04
06-Dec-86	05:59:22	125.99	186.62	21.24	1.085	8.71	12.52	0.0795	0.0224	0.424	2.73	7.94E+04
06-Dec-86	06:29:22	126.49	186.98	21.10	1.085	8.78	12.32	0.0782	0.0225	0.419	2.71	7.92E+04
06-Dec-86	06:59:21	126.99	186.98	21.00	1.085	8.78	12.22	0.0775	0.0225	0.417	2.72	7.92E+04
06-Dec-86	07:29:22	127.49	186.26	20.92	1.085	8.65	12.27	0.0779	0.0222	0.421	2.75	7.97E+04
06-Dec-86	07:59:23	127.99	185.72	21.24	1.050	8.55	12.69	0.0807	0.0220	0.430	2.77	7.87E+04
06-Dec-86	08:29:22	128.49	186.08	21.01	1.050	8.62	12.40	0.0788	0.0221	0.424	2.76	7.85E+04
06-Dec-86	08:59:21	128.99	186.26	20.99	1.050	8.65	12.34	0.0784	0.0222	0.422	2.75	7.84E+04
06-Dec-86	09:33:16	129.55	185.72	20.89	1.050	8.55	12.34	0.0784	0.0220	0.424	2.77	7.88E+04
06-Dec-86	10:01:16	130.02	185.36	20.67	1.005	8.49	12.18	0.0775	0.0218	0.423	2.79	7.73E+04
06-Dec-86	10:30:52	130.51	185.36	21.01	1.027	8.49	12.53	0.0797	0.0218	0.429	2.79	7.81E+04
06-Dec-86	10:49:52	130.83	185.72	20.89	0.970	8.55	12.33	0.0784	0.0220	0.424	2.77	7.57E+04
06-Dec-86	11:08:53	131.15	185.18	20.89	0.913	8.45	12.43	0.0791	0.0217	0.428	2.80	7.38E+04
06-Dec-86	11:27:51	131.46	184.82	20.32	0.833	8.39	11.93	0.0759	0.0216	0.422	2.83	7.08E+04
06-Dec-86	12:00:47	132.01	184.64	21.09	0.833	8.35	12.74	0.0811	0.0215	0.435	2.82	7.07E+04
06-Dec-86	12:30:48	132.51	184.82	20.88	0.890	8.39	12.49	0.0795	0.0216	0.430	2.81	7.30E+04
06-Dec-86	13:00:47	133.01	185.36	20.80	0.890	8.49	12.31	0.0783	0.0218	0.425	2.79	7.28E+04
06-Dec-86	13:30:47	133.51	183.92	48.43	11.097	8.22	40.21	0.2563	0.0212	0.679	2.04	2.20E+05
06-Dec-86	14:00:49	134.01	184.82			8.39	-8.39	-0.0534	0.0216	-0.312	ERR	ERR
06-Dec-86	14:30:18	134.51	186.62	63.65	0.102	8.71	54.94	0.3487	0.0224	0.728	1.70	1.92E+04
06-Dec-86	15:00:17	135.00	187.70	64.26	0.056	8.91	55.35	0.3508	0.0228	0.725	1.68	1.41E+04
06-Dec-86	15:30:48	135.51	187.70	63.46	0.056	8.91	54.55	0.3457	0.0228	0.722	1.69	1.42E+04
06-Dec-86	16:00:48	136.01	186.98	63.02	0.056	8.78	54.24	0.3441	0.0225	0.724	1.71	1.43E+04
06-Dec-86	16:30:47	136.51	180.50	127.39	-0.058	7.60	119.79	0.7677	0.0197	0.866	1.05	ERR
06-Dec-86	17:00:47	137.01	179.42	121.09	-0.001	7.40	113.69	0.7298	0.0192	0.863	1.10	ERR

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
06-Dec-86	17:30:48	137.51	178.70	117.70	0.022	7.27	110.43	0.7097	0.0189	0.861	1.13	7.20E+03
06-Dec-86	18:00:47	138.01	177.62	115.17	-0.001	7.08	108.10	0.6958	0.0184	0.862	1.15	ERR
06-Dec-86	18:30:47	138.51	175.82	113.93	-0.001	6.75	107.18	0.6919	0.0176	0.867	1.17	ERR
06-Dec-86	19:00:01	139.00	174.38	122.77	-0.001	6.49	116.28	0.7524	0.0170	0.880	1.10	ERR
06-Dec-86	19:30:01	139.50	173.30	122.00	0.022	6.29	115.71	0.7499	0.0165	0.882	1.11	7.15E+03
06-Dec-86	20:00:03	140.00	171.68	121.98	0.022	6.00	115.98	0.7536	0.0157	0.887	1.12	7.17E+03
06-Dec-86	20:30:04	140.50	169.34	136.81	-0.001	5.57	131.24	0.8559	0.0147	0.905	1.02	ERR
06-Dec-86	21:00:03	141.00	175.64	205.68	0.525	6.72	198.97	1.2848	0.0175	0.923	0.71	2.82E+04
06-Dec-86	21:30:03	141.50	213.80	33.32	1.302	13.66	19.66	0.1198	0.0337	0.424	1.82	7.10E+04
06-Dec-86	22:00:04	142.00	207.50	25.90	1.165	12.51	13.38	0.0823	0.0311	0.370	2.01	7.05E+04
06-Dec-86	22:30:05	142.50	204.26	24.12	1.279	11.93	12.20	0.0754	0.0298	0.363	2.10	7.56E+04
06-Dec-86	23:00:04	143.00	200.48	21.34	-0.058	11.24	10.11	0.0628	0.0282	0.342	2.22	ERR
06-Dec-86	23:30:03	143.50	196.70	22.07	1.142	10.55	11.52	0.0720	0.0267	0.374	2.34	7.54E+04
07-Dec-86	00:00:04	144.00	193.82	21.66	1.027	10.03	11.63	0.0730	0.0254	0.384	2.44	7.31E+04
07-Dec-86	00:30:05	144.50	192.38	21.36	1.005	9.76	11.60	0.0730	0.0248	0.388	2.50	7.31E+04
07-Dec-86	01:00:05	145.00	192.38	21.63	0.330	9.76	11.86	0.0746	0.0248	0.392	2.49	4.19E+04
07-Dec-86	01:19:37	145.33	190.58	20.66	0.193	9.44	11.23	0.0708	0.0241	0.389	2.57	3.25E+04
07-Dec-86	01:31:19	145.52	190.04	20.59	0.193	9.34	11.25	0.0710	0.0238	0.391	2.60	3.27E+04
07-Dec-86	02:01:19	146.02	188.96			9.14	-9.14	-0.0578	0.0234	-0.312	ERR	ERR
07-Dec-86	02:31:20	146.52	188.60	20.92	1.050	9.08	11.84	0.0750	0.0232	0.405	2.65	7.70E+04
07-Dec-86	03:01:20	147.02	188.06	20.51	1.050	8.98	11.54	0.0731	0.0230	0.403	2.68	7.74E+04
07-Dec-86	03:31:19	147.52	188.42	21.04	1.005	9.04	12.00	0.0760	0.0231	0.409	2.66	7.54E+04
07-Dec-86	04:01:19	148.02	188.42	20.92	0.970	9.04	11.88	0.0752	0.0231	0.407	2.66	7.41E+04
07-Dec-86	04:31:20	148.52	188.06	20.85	0.970	8.98	11.87	0.0752	0.0230	0.408	2.67	7.43E+04
07-Dec-86	05:01:20	149.02	187.52	20.72	0.970	8.88	11.84	0.0750	0.0228	0.409	2.70	7.47E+04
07-Dec-86	05:31:21	149.52	187.16	21.00	0.970	8.81	12.18	0.0773	0.0226	0.416	2.71	7.48E+04
07-Dec-86	06:01:19	150.02	186.98	20.82	0.947	8.78	12.04	0.0764	0.0225	0.415	2.72	7.41E+04
07-Dec-86	06:31:20	150.52	187.52	20.78	0.947	8.88	11.91	0.0755	0.0228	0.410	2.70	7.38E+04
07-Dec-86	07:01:19	151.02	186.98	20.67	0.970	8.78	11.89	0.0754	0.0225	0.412	2.72	7.50E+04
07-Dec-86	07:31:21	151.52	186.26	20.94	0.947	8.65	12.29	0.0781	0.0222	0.421	2.75	7.45E+04
07-Dec-86	08:01:20	152.02	186.26	20.73	0.947	8.65	12.08	0.0767	0.0222	0.418	2.75	7.45E+04
07-Dec-86	08:31:20	152.52	186.98	20.74	0.947	8.78	11.96	0.0759	0.0225	0.413	2.72	7.41E+04
07-Dec-86	09:01:19	153.02	186.26	20.62	0.947	8.65	11.97	0.0760	0.0222	0.416	2.76	7.46E+04
07-Dec-86	09:31:19	153.52	186.08	20.87	0.913	8.62	12.25	0.0779	0.0221	0.422	2.76	7.32E+04
07-Dec-86	10:01:20	154.02	186.08	20.67	0.947	8.62	12.05	0.0766	0.0221	0.418	2.76	7.47E+04
07-Dec-86	10:31:19	154.52	186.26	20.65	0.947	8.65	12.00	0.0762	0.0222	0.417	2.76	7.46E+04
07-Dec-86	11:01:20	155.02	186.08	20.61	0.947	8.62	11.99	0.0762	0.0221	0.417	2.76	7.47E+04
07-Dec-86	11:31:20	155.52	185.72	20.81	0.970	8.55	12.25	0.0779	0.0220	0.423	2.78	7.57E+04
07-Dec-86	12:01:21	156.02	185.36	20.63	0.947	8.49	12.14	0.0772	0.0218	0.423	2.80	7.51E+04
07-Dec-86	12:31:19	156.52	185.72	20.60	0.947	8.55	12.05	0.0766	0.0220	0.420	2.78	7.49E+04
07-Dec-86	13:01:20	157.02	185.36	20.49	0.970	8.49	12.00	0.0763	0.0218	0.421	2.80	7.61E+04
07-Dec-86	13:31:19	157.52	185.36	20.78	0.913	8.49	12.29	0.0782	0.0218	0.425	2.79	7.37E+04
07-Dec-86	14:01:19	158.02	185.18	20.58	0.947	8.45	12.13	0.0771	0.0217	0.423	2.81	7.52E+04
07-Dec-86	14:31:20	158.52	185.36	20.47	0.947	8.49	11.99	0.0762	0.0218	0.420	2.80	7.52E+04
07-Dec-86	15:01:20	159.02	185.18	20.99	0.970	8.45	12.54	0.0798	0.0217	0.430	2.80	7.60E+04
07-Dec-86	15:31:19	159.52	185.18	20.59	0.890	8.45	12.13	0.0772	0.0217	0.423	2.80	7.29E+04
07-Dec-86	16:01:19	160.02	185.18	20.45	0.913	8.45	12.00	0.0763	0.0217	0.421	2.81	7.39E+04

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
07-Dec-86	16:31:20	160.52	185.36	20.42	0.913	8.49	11.93	0.0759	0.0218	0.419	2.80	7.38E+04
07-Dec-86	17:01:20	161.02	184.82	20.42	0.890	8.39	12.04	0.0766	0.0216	0.423	2.83	7.32E+04
07-Dec-86	17:31:19	161.52	185.18	20.42	0.913	8.45	11.97	0.0762	0.0217	0.421	2.81	7.39E+04
07-Dec-86	18:01:20	162.02	185.18	20.39	0.856	8.45	11.93	0.0759	0.0217	0.420	2.81	7.16E+04
07-Dec-86	18:31:19	162.52	184.82	20.32	0.856	8.39	11.94	0.0760	0.0216	0.422	2.83	7.18E+0
07-Dec-86	19:01:19	163.02	184.28	20.55	0.833	8.29	12.26	0.0781	0.0213	0.429	2.85	7.11E+04
07-Dec-86	19:33:10	163.55	184.28	20.34	0.833	8.29	12.05	0.0768	0.0213	0.426	2.85	7.11E+04
07-Dec-86	20:01:10	164.02	184.64	20.33	0.833	8.35	11.97	0.0762	0.0215	0.423	2.84	7.09E+04
07-Dec-86	20:31:11	164.52	184.28	20.51	0.856	8.29	12.22	0.0779	0.0213	0.428	2.85	7.21E+04
07-Dec-86	21:01:11	165.02	184.64	20.39	0.856	8.35	12.04	0.0766	0.0215	0.424	2.83	7.19E+04
07-Dec-86	21:31:10	165.52	184.28	20.29	0.856	8.29	12.00	0.0764	0.0213	0.425	2.85	7.21E+0
07-Dec-86	22:01:10	166.02	184.28	20.23	0.856	8.29	11.94	0.0761	0.0213	0.424	2.85	7.21E+04
07-Dec-86	22:31:10	166.52	183.92	19.99	0.833	8.22	11.77	0.0750	0.0212	0.423	2.88	7.15E+04
07-Dec-86	23:01:11	167.02	183.92	20.25	0.799	8.22	12.02	0.0766	0.0212	0.427	2.87	6.99E+04
07-Dec-86	23:31:10	167.52	183.92	20.24	0.799	8.22	12.02	0.0766	0.0212	0.427	2.87	6.99E+04
08-Dec-86	00:01:11	168.02	183.74	20.18	0.799	8.19	11.99	0.0764	0.0211	0.427	2.88	7.00E+04
08-Dec-86	00:31:11	168.52	183.74	20.36	0.799	8.19	12.17	0.0776	0.0211	0.430	2.88	7.00E+0
08-Dec-86	01:01:11	169.02	183.74	20.20	0.799	8.19	12.01	0.0766	0.0211	0.427	2.88	7.00E+04
08-Dec-86	01:31:11	169.52	183.92	20.12	0.799	8.22	11.90	0.0758	0.0212	0.425	2.87	6.99E+04
08-Dec-86	01:01:11	169.02	183.38	19.87	0.776	8.13	11.75	0.0749	0.0210	0.425	2.91	6.93E+04
08-Dec-86	01:31:11	169.52	183.92	20.30	0.776	8.22	12.07	0.0769	0.0212	0.428	2.87	6.89E+04
08-Dec-86	02:01:10	170.02	183.92	20.17	0.799	8.22	11.95	0.0762	0.0212	0.426	2.87	6.99E+04
08-Dec-86	02:31:10	170.52	183.92	20.30	0.776	8.22	12.07	0.0769	0.0212	0.428	2.87	6.89E+0
08-Dec-86	03:01:11	171.02	183.92	20.17	0.799	8.22	11.95	0.0762	0.0212	0.426	2.87	6.99E+04
08-Dec-86	03:31:10	171.52	183.92	20.13	0.776	8.22	11.91	0.0759	0.0212	0.425	2.87	6.89E+04
08-Dec-86	04:01:11	172.02	183.38	20.17	0.776	8.13	12.05	0.0769	0.0210	0.430	2.90	6.92E+04
08-Dec-86	04:29:48	172.50	183.74	20.11	0.776	8.19	11.92	0.0760	0.0211	0.426	2.88	6.90E+04
08-Dec-86	05:01:49	173.03	183.92	20.12	0.776	8.22	11.89	0.0758	0.0212	0.425	2.87	6.89E+04
08-Dec-86	05:30:50	173.51	183.74	20.08	0.776	8.19	11.89	0.0758	0.0211	0.425	2.88	6.90E+0
08-Dec-86	06:00:50	174.01	183.38	20.30	0.753	8.13	12.17	0.0776	0.0210	0.431	2.90	6.82E+04
08-Dec-86	06:30:50	174.51	183.74	20.10	0.776	8.19	11.91	0.0760	0.0211	0.426	2.88	6.90E+04
08-Dec-86	07:00:50	175.01	183.92	20.09	0.776	8.22	11.86	0.0756	0.0212	0.424	2.88	6.89E+04
08-Dec-86	07:30:49	175.51	183.74	19.76	0.719	8.19	11.57	0.0738	0.0211	0.420	2.89	6.65E+04
08-Dec-86	08:00:49	176.01	183.92	20.19	0.776	8.22	11.97	0.0763	0.0212	0.426	2.87	6.89E+04
08-Dec-86	08:30:49	176.51	184.28	20.13	0.776	8.29	11.84	0.0754	0.0213	0.422	2.86	6.87E+0
08-Dec-86	09:00:50	177.01	183.92	20.07	0.776	8.22	11.84	0.0755	0.0212	0.424	2.88	6.89E+04
08-Dec-86	09:30:49	177.51	183.74	20.33	0.776	8.19	12.14	0.0774	0.0211	0.429	2.88	6.90E+04
08-Dec-86	10:00:49	178.01	183.74	20.12	0.776	8.19	11.93	0.0761	0.0211	0.426	2.88	6.90E+04
08-Dec-86	10:30:49	178.51	183.92	20.09	0.776	8.22	11.86	0.0756	0.0212	0.424	2.88	6.89E+04
08-Dec-86	11:00:50	179.01	183.74	20.68	0.856	8.19	12.49	0.0797	0.0211	0.435	2.87	7.23E+04
08-Dec-86	11:30:49	179.51	183.38	20.24	0.753	8.13	12.12	0.0773	0.0210	0.431	2.90	6.82E+04
08-Dec-86	12:00:51	180.01	183.92	20.14	0.776	8.22	11.91	0.0759	0.0212	0.425	2.87	6.89E+04
08-Dec-86	12:30:50	180.51	183.92	20.08	0.799	8.22	11.85	0.0756	0.0212	0.424	2.88	6.99E+04
08-Dec-86	13:00:51	181.01	183.38	20.12	0.776	8.13	12.00	0.0765	0.0210	0.429	2.90	6.92E+04
08-Dec-86	13:30:49	181.51	183.74	20.07	0.799	8.19	11.88	0.0757	0.0211	0.425	2.88	7.01E+04
08-Dec-86	14:00:49	182.01	183.74	20.08	0.799	8.19	11.89	0.0758	0.0211	0.425	2.88	7.01E+04
08-Dec-86	14:30:50	182.51	183.74	20.06	0.799	8.19	11.86	0.0756	0.0211	0.425	2.88	7.01E+04

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
08-Dec-86	15:00:49	183.01	183.74	20.24	0.776	8.19	12.05	0.0768	0.0211	0.428	2.88	6.90E+04
08-Dec-86	15:30:51	183.51	183.74	20.06	0.776	8.19	11.87	0.0757	0.0211	0.425	2.88	6.90E+04
08-Dec-86	16:00:49	184.01	183.74	20.02	0.799	8.19	11.83	0.0754	0.0211	0.424	2.89	7.01E+04
08-Dec-86	16:30:50	184.51	183.38	20.00	0.776	8.13	11.87	0.0757	0.0210	0.427	2.90	6.93E+04
08-Dec-86	17:00:50	185.01	183.74	20.03	0.719	8.19	11.84	0.0755	0.0211	0.425	2.89	6.65E+04
08-Dec-86	17:30:50	185.51	183.74	19.97	0.753	8.19	11.78	0.0751	0.0211	0.424	2.89	6.81E+04
08-Dec-86	18:00:50	186.01	183.38	19.93	0.719	8.13	11.81	0.0753	0.0210	0.426	2.91	6.67E+04
08-Dec-86	18:30:49	186.51	183.20	20.14	0.719	8.09	12.05	0.0769	0.0209	0.430	2.91	6.67E+04
08-Dec-86	19:00:50	187.01	183.38	19.93	0.753	8.13	11.81	0.0753	0.0210	0.426	2.91	6.83E+04
08-Dec-86	19:30:50	187.51	183.38	19.93	0.776	8.13	11.81	0.0753	0.0210	0.426	2.91	6.93E+04
08-Dec-86	20:00:49	188.01	182.84	19.56	0.753	8.03	11.54	0.0737	0.0207	0.424	2.94	6.87E+04
08-Dec-86	20:30:50	188.51	183.38	19.94	0.753	8.13	11.81	0.0754	0.0210	0.426	2.91	6.83E+04
08-Dec-86	21:00:49	189.01	183.38	19.88	0.753	8.13	11.76	0.0750	0.0210	0.425	2.91	6.83E+04
08-Dec-86	21:31:21	189.52	183.38	19.86	0.753	8.13	11.73	0.0748	0.0210	0.424	2.91	6.83E+04
08-Dec-86	22:01:22	190.02	182.84	20.10	0.719	8.03	12.07	0.0771	0.0207	0.432	2.93	6.69E+04
08-Dec-86	22:31:22	190.52	183.20	19.88	0.719	8.09	11.79	0.0752	0.0209	0.426	2.92	6.68E+04
08-Dec-86	23:01:22	191.02	183.38	19.86	0.719	8.13	11.73	0.0748	0.0210	0.424	2.91	6.67E+04
08-Dec-86	23:31:23	191.52	183.20	20.22	0.776	8.09	12.13	0.0774	0.0209	0.432	2.91	6.93E+04
09-Dec-86	00:01:22	192.02	183.20	19.99	0.719	8.09	11.89	0.0759	0.0209	0.428	2.91	6.68E+04
09-Dec-86	00:31:22	192.52	183.20	19.86	0.696	8.09	11.77	0.0751	0.0209	0.426	2.92	6.57E+04
09-Dec-86	01:01:22	193.02	183.38	19.78	0.696	8.13	11.66	0.0744	0.0210	0.423	2.91	6.57E+04
09-Dec-86	01:31:21	193.52	182.84	19.86	0.696	8.03	11.83	0.0756	0.0207	0.428	2.93	6.59E+04
09-Dec-86	02:01:22	194.02	183.38	19.85	0.696	8.13	11.73	0.0748	0.0210	0.424	2.91	6.57E+04
09-Dec-86	02:31:22	194.52	183.38	19.82	0.696	8.13	11.69	0.0746	0.0210	0.424	2.91	6.57E+04
09-Dec-86	03:01:23	195.02	183.20	19.76	0.696	8.09	11.67	0.0745	0.0209	0.424	2.92	6.58E+04
09-Dec-86	03:31:22	195.52	182.84	20.01	0.662	8.03	11.99	0.0765	0.0207	0.431	2.93	6.43E+04
09-Dec-86	04:01:21	196.02	183.20	19.84	0.662	8.09	11.74	0.0749	0.0209	0.425	2.92	6.41E+04
09-Dec-86	04:31:21	196.52	183.20	19.76	0.662	8.09	11.67	0.0745	0.0209	0.424	2.92	6.41E+04
09-Dec-86	05:01:22	197.02	183.20	19.58	0.662	8.09	11.49	0.0733	0.0209	0.421	2.92	6.42E+04
09-Dec-86	05:31:21	197.52	183.38	19.81	0.696	8.13	11.68	0.0745	0.0210	0.424	2.91	6.57E+04
09-Dec-86	06:01:22	198.02	183.20	19.78	0.696	8.09	11.69	0.0746	0.0209	0.425	2.92	6.58E+04
09-Dec-86	06:31:21	198.52	183.20	19.71	0.696	8.09	11.62	0.0741	0.0209	0.423	2.92	6.58E+04
09-Dec-86	07:01:22	199.02	182.84	20.00	0.696	8.03	11.98	0.0765	0.0207	0.431	2.93	6.59E+04
09-Dec-86	08:01:21	200.02	183.20	19.72	0.696	8.09	11.63	0.0742	0.0209	0.424	2.92	6.58E+04
09-Dec-86	08:31:21	200.52	182.84	19.47	0.639	8.03	11.45	0.0731	0.0207	0.422	2.94	6.33E+04
09-Dec-86	09:01:23	201.02	183.38	19.83	0.696	8.13	11.71	0.0747	0.0210	0.424	2.91	6.57E+04
09-Dec-86	09:31:22	201.52	183.38	19.80	0.696	8.13	11.68	0.0745	0.0210	0.424	2.91	6.57E+04
09-Dec-86	10:01:23	202.02	183.20	19.75	0.662	8.09	11.66	0.0744	0.0209	0.424	2.92	6.41E+04
09-Dec-86	10:31:22	202.52	182.84	20.01	0.662	8.03	11.98	0.0765	0.0207	0.431	2.93	6.43E+04
09-Dec-86	11:01:21	203.02	183.20	19.81	0.639	8.09	11.72	0.0748	0.0209	0.425	2.92	6.30E+04
09-Dec-86	11:31:21	203.52	183.38	19.79	0.662	8.13	11.66	0.0744	0.0210	0.423	2.91	6.40E+04
09-Dec-86	12:01:24	204.02	183.20	19.51	0.639	8.09	11.42	0.0729	0.0209	0.420	2.93	6.31E+04
09-Dec-86	12:25:26	204.42	183.38	19.87	0.696	8.13	11.75	0.0749	0.0210	0.425	2.91	6.56E+04
09-Dec-86	12:49:25	204.82	183.20	19.78	0.696	8.09	11.69	0.0746	0.0209	0.425	2.92	6.58E+04
09-Dec-86	13:37:25	205.62	183.20	19.73	0.719	8.09	11.64	0.0743	0.0209	0.424	2.92	6.69E+04
09-Dec-86	14:01:26	206.02	183.20	19.78	0.639	8.09	11.69	0.0746	0.0209	0.425	2.92	6.30E+04
09-Dec-86	14:25:26	206.42	183.38	19.81	0.696	8.13	11.68	0.0745	0.0210	0.424	2.91	6.57E+04

DATE	CLOCK TIME	TEST TIME	T2 (DEG F)	PO (PSIA)	DELP (PSI)	P H2O (PSI)	Peff (PSI)	RHO CO2 Lbm/FT^3	RHO H2O Lbm/FT^3	QUALITY	Spc Vol FT^3/Lbm	W Lbm/Hr
09-Dec-86	14:49:25	206.82	183.20	19.70	0.639	8.09	11.61	0.0741	0.0209	0.423	2.92	6.30E+04
09-Dec-86	15:37:26	207.62	182.84	19.38	0.639	8.03	11.35	0.0725	0.0207	0.420	2.95	6.33E+04
09-Dec-86	16:01:25	208.02	182.84	19.85	0.639	8.03	11.82	0.0755	0.0207	0.428	2.93	6.32E+04
09-Dec-86	16:30:22	208.51	182.84	19.68	0.639	8.03	11.66	0.0744	0.0207	0.426	2.94	6.32E+04
09-Dec-86	17:01:21	209.02	183.20	19.49	0.696	8.09	11.39	0.0727	0.0209	0.420	2.93	6.59E+04
09-Dec-86	17:34:22	209.57	182.84	19.53	0.662	8.03	11.51	0.0735	0.0207	0.423	2.94	6.44E+04

constant definitions:

C=	0.73	2*g=	64.40
Y=	0.97	RHO water=	62.40
A=	0.19	liquid ratio	7.20
C*Y*A=	0.13		

****

APPENDIX G

DOWNHOLE OPERATORS LOG AND DATA SHEETS

Dec 15 1986

Ascension #1

Down Hole Surveys.

I Summary.

There were 13 down hole surveys done in the Ascension #1 well, during Nov 19 through Dec 9 1986. The first four profile surveys were run through the drill pipe. Only temperatures were recorded, as the drill pipe had no openings to the well bore for pressure readings. Nine tandum temperature and pressure surveys were performed through the liner pipe and into the open hole. all surveys produced data, but runs #7 and 8 were unable to get past the 4610 ft depth. At this depth the well bore reduces from $10\frac{3}{4}$" to $6\frac{3}{4}$" hole, thus leaving a ledge which the downhole instruments couldn't get past. Sinker bar runs to 4610' was done to break up the ledge with some success. Although the ledge was still there the other surveys got through only by hitting the ledge hard and bouncing off into the small hole. This impact did cause the recorders and clocks some problems in two surveys. Over all the temperature element 58°–588°F range was a good choice, The pressure elements 0–3825 psi and 0–3475 psi ranges were high. except for run #13 where the maximum pressure of 1028 psi was recorded, Because of the general low pressure readings a dead weight tester was used to check the accuracy of the Kuster pressure element. The results was between 2–6% error, within acceptable limits for this instrument. A new pressure element of 800 psi range, was ordered, but didn't arrive in time for the logging operation.

In General, the Kuster Temperature and Pressure instruments performed well down hole.

II Purpose of Instruments

To measure the temperature and pressure down hole under static or dynamic conditions

Continued.

III Specification of Kuster Instruments

Accuracy ± 0.2% of full scale – pressure

± 1°C absolute – temperature

Sensitivity 1 part in 2000.

IV Results Temperature and Pressure measurements

All temperature and Pressure data in each survey was given to the EG & G representative. No record of data was kept as the hole was considered tight.

V Operations Field Survey.

Attached are the undivided Survey details Runs 1 through 13.

ASCENSION #1

OPERATIONS

FIELD SURVEY DETAILS

RUN #2

Date Nov 20, 1986

(SURVEY INSIDE DRILL PIPE)

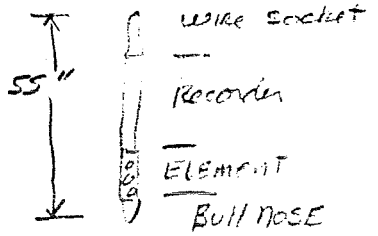
I ELEMENT # 23314 (58–588°F RANGE)
RECORDER # 14465
Clock # 14318 (12 HRS)
Clock START 9:35pm
Clock ENGAGED 9:35pm
ENTER IN HOLE 9:54 PM

II LANDED @ 8300' at 10:28pm
OH 11:28 PM
PULL to Surface 11:56 PM

III Comments.
All MEASUREMENT FROM K.B = 19' above Ground Level.
No PRESSURE SURVEY
Flowing well.

IV Results
Good CHART - good SURVEY.

V KUSTER INSTRUMENT



Lee Waddle

Ascension #1

Operations
Field Survey Details

Run # 3,
Date Nov 21 1986

(Survey Inside Drill Pipe)

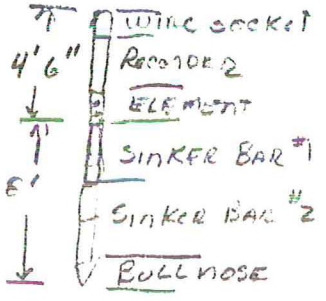
I

Element # 23341 (58-588°)
Recorder # 14465
Clock # 14318 (12 Hrs)
Clock Started 8:56 AM
Enter in Hole 9:15 PM

II

Landed	8000' @	9:43 PM
Off		10:02 PM
Landed	8100 @	10:03 PM
Off		10:23 PM
Landed	8200' @	10:24 PM
Off		10:44 PM
Landed	8300' @	10:45 PM
Off		11:05 PM
Landed	8400' @	11:06 PM
Off		11:26 PM
Landed	8500' @	11:27 PM
Off		11:47 PM
Landed	8600 @	11:48 PM
Off		12:08 PM
Landed	8640 @	12:10 PM
Off		1:10 AM 11-22-86
Pull To	Surface	2:00 PM

III Comments No pressure survey - Drill Bit Set @ 8660', Flowing
IV Results - Good Chart
V Kuster Instrument



Ascension #1

Page 4 of 16

Operations
Field Survey Detail

RUN # 4
DATE 11-24-86

(SURVEY INSIDE DRILL PIPE)

I ELEMENT # 23341 (5E-588°F Range)
RECORDER # 14468
Clock # 14318 (12 HRS)
Clock START 200 AM
Clock Engaged 204 AM
Enter in HOLE 3:28 AM

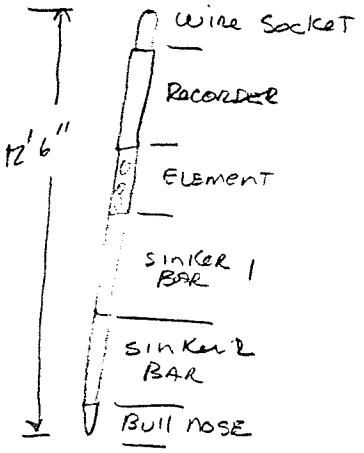
II

Landed	500' @	3:30 AM
off		3:50 AM
Landed	1000' @	3:52 AM
off		4:12 AM
Landed	4000' @	4:22 AM
Off		4.42 AM
Landed	4500' @	4:45 AM
off		5:05 AM
LANDED	5000' @	5:07 AM
Off		5:27 AM
LANDED	5500' @	5:29 AM
off		5:49 AM
Landed	6000' @	5:53 AM
off		6:12 AM
Landed	6500' @	6:14 AM
Off		6:39 AM
Landed	7000' @	6:37 AM
Off		6:57 AM
Landed	7500' @	6:59 AM
Off		7:19 AM
Landed	7930'	7:20 AM
Off		?
Pull out of Hole		7:42 AM

III Comments.
No Pressure Survey, Flowing Well

IV Results
Good Chart

V KUSTER INSTRUMENT Detail



L. Walls

Operations
Field Survey Detail

Run #5
Date Nov 26, 1986

I (Open Hole Survey)

	Temp °F	Pressure
Element No#	23341 (58-588°F)	#22768 (3825 psi)
Recorder	14465	#14816
Clock	#14318 (12 Hr)	#25211 (12 Hr)
Clock Start	1:25 pm	1.52 pm
Clock Engaged		1.53 pm
Enter In Hole	2:25 pm	

Linner Top 1408'
4410'
Shoe 4543'

II
Landed 500' @ 2.28 pm
Off 2:48 pm
Landed 1000' @ 2:50 pm
Off 3.10 pm
Landed 2000' 3:18 pm
Off 3:38 pm
Landed 3000' 3.43 pm
Off 4 03 pm
Landed 4000' 4.09 pm
Off 4:29 pm

(*) At ~4610' couldn't get pass- Took three passes to get through. Hole goes from 10 3/4" to 6 3/4".

Landed 5000' 4:47 pm
Off 5.07 pm
Landed 6000' @ 5.13 pm
Off 5:43 pm
Landed 7000' @ 5.50 pm
Off 6.10 pm
Landed 7500' @ 6:15 pm
Off 6:35 pm
Landed 7750' @ 6:37 pm
Off 6:57 pm
Landed 8000 @ 7.02 pm
off 7:32 pm

(Continued)

Operations
Field Survey Details

(Continued Run #5)

II

Landed	8250' @	7:25pm
Off		745pm
Landed	8500'	7.30pm
Off		8:10pm
LANDED	8600'	8:12pm
off		8:32pm
POH		
Landed	3000' @	9:15pm Ascending Stop.
Off		9:20pm

III Comments.

DUE TO IMPACT AT 4610' depth, TEMPERATURE Clock Disingaged letting The CHART CARRIER Forward, Thus Lost Time Reference. after 4000'

TESTED PRESSURE ELEMENT W/ DEAD WEIGHT TESTER. 12-28-86
R. #22768

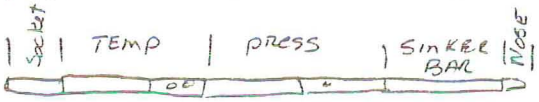
Dead Wt TESTER (~80°F TEMP) Applied wt.	KUSTER press Defl	press (PSI)
25 lbs	.010	19.7 psi
500 lbs	.026	513
100 lbs	.0520	103
100 lbs	.0495	97
500 lbs	.0259	511
50 lbs	.0240	47
25 lbs	.009	18
25 lbs	.0115	22

Working AT Low End of pressure Range (3825 psi)

IV Results

Good Pressure chart, Lost Temperature chart after 4000' due to impact @ 4610' PRESSURE ELEMENT SEEMS TO be Working ok. AT The Lower end of the range.

V



Operations
Field Survey Details

RUN# 6
DATE Nov 28, 1986

(Open Hole Survey)

I

	TEMP (58-588°F)	PRESSURE (8825 psi)
ELEMENT	#2 3341	# 22768
RECORDER	14465	14816
CLOCK	14316 (12 Hrs)	2511 (12 Hr)
CLOCK START	3:25 pm	3:12 pm.
ENTER IN HOLE	5:42 pm.	

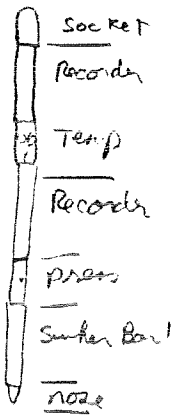
II

Landed 1000' @	5:47 pm	
off	5:52 pm	
Landed 2000' @	6:00 pm	
off	6:20 pm	
Landed 3000' @	6:27 pm	
off	6:47 pm	
Landed 4000' @	6:55 pm	
off	7:15 pm	
Landed 4500 @	7:20 pm	
off	7:45 pm.	
LANDED 3000' @	8:00 pm	(Ascending Stop.)
off	8:20 pm	
P.O.H.		

III Comment. -

IV RESULTS - CHARTS OK-

V KUSTER Instrument Setup



Lee Waldie

Operations
Field Survey Detail

RUN #7
Date Nov 29, 1986

(OPEN HOLE SURVEY)

I

	TEMPERATURE	PRESSURE
ELEMENT	# 23341 (58-586°F)	22768 (3825 psi)
RECORDER	14465	14816
CLOCK	24318 (12 HRS)	14316 (12 HRS)
CLOCK START	10:35 AM	10.40 AM
CLOCK ENGAGED	10:38 AM	
ENTER IN HOLE (EIH)	11:00 AM	

II

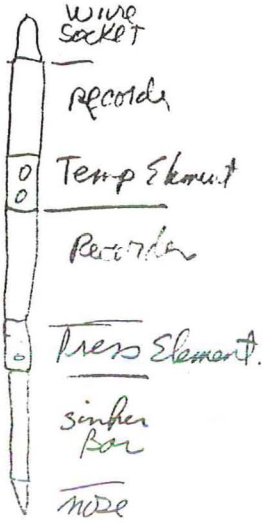
LANDED	4000'	@	11:25 AM
OFF			12:35 AM
LANDED	4500'	@	12:40 AM
OFF			1.00 PM.

(*) Unable to get pass 4610'-20'. Cancelled the remaining survey-

III Comment-
Only Two depths Reached-

IV Result. good Charts

V Kuster Instrument Setup.



L Wells

Operations
Field Survey Details.

RUN #8
Date Nov 30, 1986

I

	TEMP	PRESS.
ELEMENT	23341 (558-588°F)	22768 (3325PSI)
RECORDER	14465	14816
CLOCK	2511 (12HRS)	14316 (12HRS)
CLOCK START	8:10 PM	
EIH.	9.34 AM	

II

Landed 9000' @	9.52 AM
OFF	10:12 AM
Landed 4500' @	10.14 AM
OFF	10:30 AM

(*) (*) 4610' TOOLS HANGING UP. NOT able to get deeper

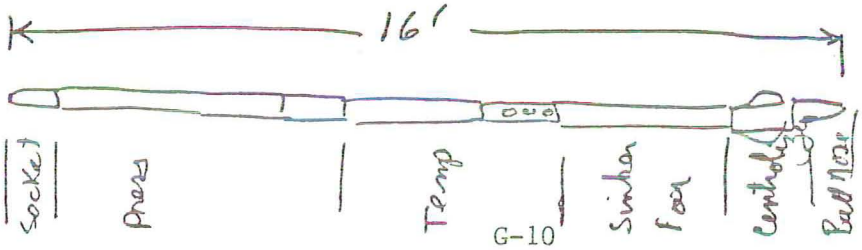
Landed 3000' @	11.00 AM Ascending Stop.
OFF	11.20 AM
POLL OUT of Hole	

III Comment-
The problem is where the Hole changes from 10 3/4" to 6 3/4" - Liner is approx 50 ft above.
Open Hole of 50' of 10 3/4" diameter and ~no Tapping into 6 3/4" Hole
- Added one Centrolizer to better hit the 6 3/4" hole. but it didn't help.

T

IV Results - Recorded only three depths.
Charts OK.

V Kuster Instrument Set up.



Lee Wells

Operations
Field Survey Details

(SINKER BAR RUN)

Run # 8A.
TWO - 3 foot Sinker Bars
DATE Dec 1, 1986
TRIED TO Break through into $6\frac{3}{4}$ hole. Only way to get pass is to hit at high speed..

Run #9
DATE 12-1-86

THREE WELL HEAD PRESSURES
Condition I = 12 PSIG 4:25 pm
Condition II = 45 PSIG 9:10 pm
Condition III = 115 PSIG 12:30pm

I	TEMP (58-58°F)	PRESS (3825 psi)
ELEMENT	23341	#22768
RECORDER	14465	14816
CLOCK	26018 (12HRS)	14318 (12 HRS)
CLOCK START	300 PM	320 PM
EIH		

II			
Landed	4000' @	4:25PM	condition I
Off		4:50pm	" "
Landed	7500' @	512pm	" "
Off		6.02pm	" "
Landed	7750' @	6:04pm	" "
Off		6.12pm	" "
Landed	8000' @	6.25pm	" "
Off		6:45pm	" "
Landed	8250' @	6:46pm	" "
Off		7:06pm	" "
Landed	8600 @	7.07pm	" "
Off		8.07pm	Condition I

* Pulled Up To 7000' Then BACK Down To 7500' @ 8:23pm

Lee Wade

Operations
Field Survey Details

(Run #9 Continued)

II

landed	7500 @	8:23 pm	STABLIZed PRESS ~ 8:52pm.-9:10p
off		9:20pm	Condition II = 45 psig.
Landed	7750 @	9:22pm	condition II
Off		9:42pm	" "
Landed	8000' @	9:44 pm	" "
off		10.04pm	" "
landed	8250' @	10,07pm	" "
Off		10:27pm	" "
Landed	8600'	10:30pm	Condition II
Off		11;30pm	

* pull up to 7000' Then Back to 7500' @ 11:43,pm

Landed	7500' @	11:43 pm	STABLIZED 12:30pm CONDITION III
Off		12:30pm	CONDITION III = 115-51G
Landed	8000' @	12:56pm	
Off		1.16 Am	12-2-86
Landed	8250' @	1.20 Am	
Off	"	1.40Am	
Landed	8600' @	1.42 AM	
Off		2.42 AM	CONDITION III

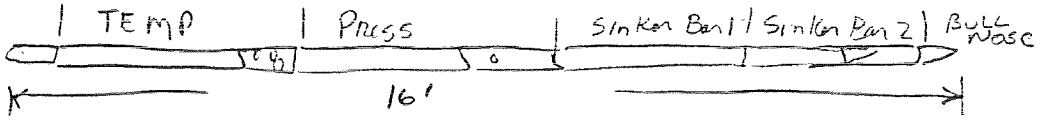
III Comment.

PRESSURE RECORDER stopped after 40000' (IMPACT @ 4610') No PRESSURE DATA after That point. TOOK THREE ATTEMPTS To get PASS 4610'

IV Results

Good temperature Chart, Pressure only for 40000'

V Kuster Instrument Setup.



Operations
Field Survey Details

RUN # 10
Date 12-4-86

Open Hole Survey

I

	TEMP (58-588°F)	PRESS (3975psi)
ELEMENT	#23341	22407 (New Tool)
RECORDER	14465	14946
CLOCK	26018	26017
CLOCK START	2:16 pm	1.50pm
ENGAGED CLOCK	2:17pm	1.52pm
E.I.H.	2.45pm	

II

Landed 500' @	2:47pm
Off	3.05pm
Landed 1000' @	3.07pm
Off	3:27 pm
Landed 4000' @	3:38pm
Off	4.03pm
Landed 7000' @	4:16pm
Off	4:36pm
Landed 7500' @	4:40pm
Off	5.00pm
Landed 7750' @	5.02pm
Off	5.22 pm
Landed 9000' @	5.23pm
Off	6:05pm
Landed 8250' @	6.07pm
Off	6:27pm
Landed 8500' @	6:30pm
Off	6.50pm
Landed 8600 @	6.51 pm
Off	7:11 pm
POH	7:12 pm

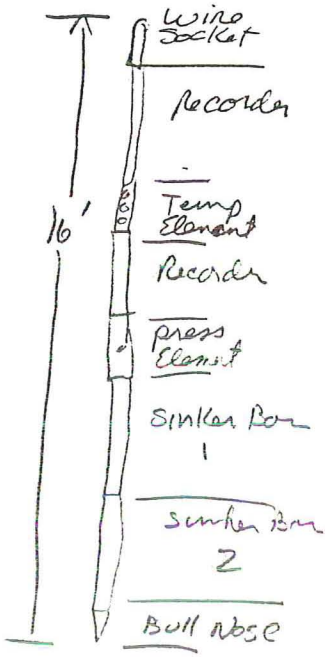
III Comment

Impact @ 4610' Knock off Clock From Chart Carrier lost Time reference but still was able to pick up the Steps.

IV Results -

Good Temp Chart -
Lost Time reference on pressure Chart.

VI Kuster Instrument Setup.



Operations
Field Survey Details

Run # 11
Date Dec 5 1986

THREE WELLHEAD PRESSURES.
CONDITION I = 7 PSIG
" II = 49 PSIG
" III = 100 PSIG

I	TEMP (58-588°F)	PRESS (3975 PSI)
ELEMENT	# 23341	22407
RECORDER	14465	14946
CLOCK	26017 (12HR)	26018 (12HR)
CLOCK START	8:32 AM	9.00 AM
Engage Clock	8:32 AM	900 AM
EIH	9:53 AM	

II

Landed 4000' @	10:08 AM	Condition I
Off	10.28 AM	
Landed 7500' @	10.45 AM	
Off	11.05 AM	
LAnded 7750 @	11:08 AM	
Off	11:28 AM	
LANDED 8000' @	11:30 AM	
Off	11:45 AM	
Landed 8250' @	11:46 AM	
Off	12.05 PM	
Landed 8600' @	12.12 PM	Condition I
Off	1.05 pm	Condition II

* at 8600' change Condition I to Condition II @ 1250pm pulled to 7000' Then BACK down to 7500'

Landed 7500 @	1.15pm	condition II
off	1.35pm	
Landed 7750' @	1.38pm	
off	1.58pm	
Landed 8000' @	2.01pm	
Off	2:23pm	
Landed 8250' @	2:25pm	
Off	245pm	
Landed 8600 @	247pm	
Off	3:05pm	condition II

* Changed to Condition II to III 3:22pm

Sue Walden

Operations
Field Survey Details

Run #11 (Continued)
Date 12-5-86

★ POH 4:14pm to 7000' Then back to 7500'

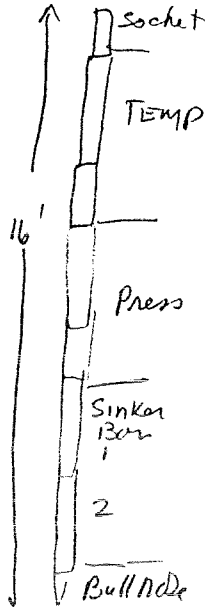
II

Landed 7500 @	3.54pm	Condition III = 115PSI Wellhead Press.
Off	4.14pm	
Landed 7750'@	4:15pm	
Off	4:35pm	
Landed 8000' @	4:37pm	
Off	4.59pm	
Landed 8250'@	5.01pm	
Off	5.21pm	
Landed 8600' @	5:23pm	
Off	6:12pm	Condition III
POH.		

III Comment

IV Result
Good Charts but temperature chart lost time reference point

V Kuster Instruments Set Up.



Operations
Field Survey Data

Run #12
Date 12-6-86

(Open Hole Survey)

I

	Temp (58-588°F)	Pressure (8975 psi)
Element #	23341	22407
Recorder	14465	14946
Clock	25211 (12hs)	26018 (14HR)
Clock Start	9:03 AM	8:40 AM
Clock Engage	9:04 AM	8:42 AM
EIH	9:31 AM	

II

Landed 4000' @ 9:43 AM
Off 10.03 AM

Landed 4148' @ 10.05 AM
Off 10.08 AM

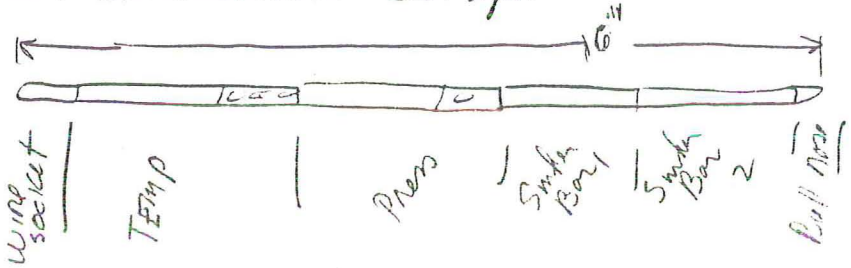
Landed 8120' @ 10.25 AM
Off 6.07 PM

III Comment

Condition	I	8 psig	— 11.28
Condition	II	50 psig	11:28 — 2:35 pm
Condition	III	100 psig	2:35 — 6.02 pm

IV Results Good charts

V Kuster Instrument Set Up.



Joe Watts

Ascension #/
Operation
Field Survey Details.

Run # 13
Date 12-9-86

I Temperature (58-588°F) Pressure (8975 psi)

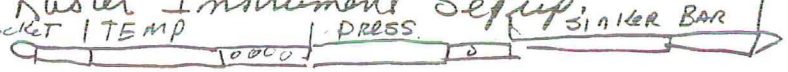
Element No#
Recorder No#
Clock No#
Clock Start
Clock Engaged
Enter in Hole

II
Landed 600' @	11:59 AM	
Off	12:52 AM	
Landed 10000' @	12:54 AM	
Off	1:15 PM	
Landed 4000' @	1:24 PM	
Off	1:47 PM	
Landed 4670' @	1:50 PM	(motor problems on Wireline spool)
Off	1:52 PM	
Landed 7500' @	2:06 PM	
Off	2:26 PM	
Landed 7750' @	2:27 PM	
Off	2:47 PM	
Landed 8000' @	2:49 PM	
Off	3.10 PM	
Landed 8250' @	3:12 PM	
Off	3:32 PM	
Landed 8600' @	3:35 PM	
Off	8:12 AM — 12-10-86	
Pull out of Hole		

III Comments - Looks like Water in well Bore. SHUT-in Well @ 4:04 p.m. Well Head Pressure = 281 PSIG - New Low pressure element not arrived yet.

IV Results - Good Charts

V Kuster Instrument Setup



Total Length 16 ft.

Ascension #1

OPERATIONS.

FIELD SURVEY DETAILS.

RUN #1

Date Nov 19, 1986,

(SURVEY INSIDE DRILL PIPE. (NO PRESSURE SURVEY)

I ELEMENT #23314 (58-588°F RANGE)
RECORDER # 14465
CLOCK # 25211 (12 HRS)
CLOCK START 8:12 PM
ENTER IN HOLE 8:35 pm

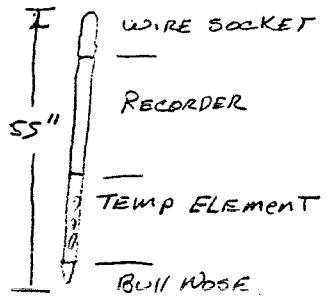
II

LANDED @ 4500'	9:00 PM
OFF	9:20 pm
LANDED @ 5400'	9:25 pm
OFF	9:45 pm
LANDED @ 6240'	9:50 pm
OFF	11.10 PM
PULL TO SURFACE	

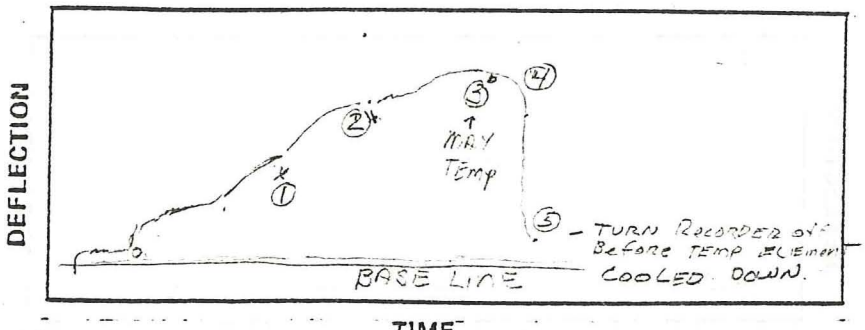
III COMMENT-
No PRESSURE possible AS DRILL PIPE NOT OPEN TO WELL BORE, , FLOWING WELL

IV RESULTS
Good CHART - RECOVERED TOOLS.
SEE CHART DATA SHEET FOR TEMPERATURE MEASUREMENT

V KUSTER INSTRUMENT



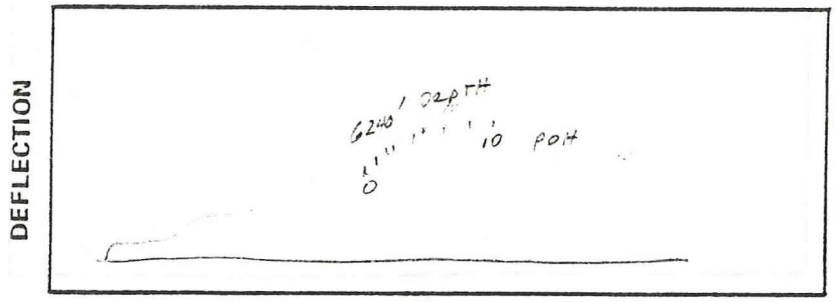
Leo Wolfe



RAN #1

TEST DESCRIPTION TEMPERATURE PROFILE Ascension #4 STATIC (INSIDE Drill pipe)

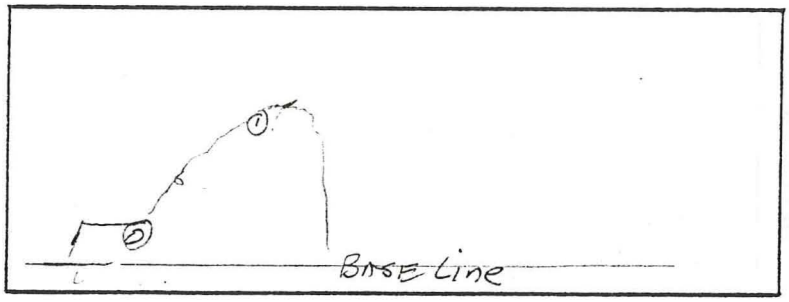
ELEM. TEMP	READ LOC.	TEST NO.	DATE	ELAPSE TIME MIN	ELAPSE TIME HOURS	REAL TIMES	TIME DEPF	TEMP DEPF	TEMP °F	DEPTH ft	REMARKS
#23314	0	1	11-19-86	0		8:35 PM	0	—	—	SURFACE RIG FLOOR	ENTER IN HOLE
	(1)	1	11-19-86	(20" TEST)		9.20 P	.2800	.4940	198	4500'	NOTE- BASE LINE DIFFICULT TO
	(2)	1	11-19-86	(20" TEST)		9.45 P	.4500	.6160	229	5400'	determine, but Selected the
	(3)	1	11-19-86	(90" TEST)		11.15 P	1.072	.9219	308	6240'	Bottom Line, as it looks like
	(4)	1	11-20-86	—		—	—	—	—	PULLING OUT.	the proper Line
	(5)	1	11-20-86			12.00 AM	—	—	—	SURFACE	ALL DEPTHS
											ARE MEASURED DEPTHS.
			ELAPSE TIME From Enter into Hole								ACCORDING TO RIG MEASURE
EIH	(0)			MIN 0	IN HRS 0					Surface	D.F. = 19' above G.L.
	(1)			45"	.75					4500'	BIT SET @ 6243'
	(2)			70"	1.2					5400'	
	(3)			160"	2.7					6240'	
	(4)			POH.	@ 2.5					POH	
											LL WALDEN
											11-20-86.



TEST DESCRIPTION Run #1 Ascension #1 Temp Rate @ 6240' Nov 19 '66

ELEM. 233/4	READ LOC.	TEST NO.	DATE 1966	ELAPSE TIME MIN	ELAPSE TIME HOURS	REAL TIMES	TIME DEPF	TEMP DEPF	TEMP °F	DEPTH ft	REMARKS
Temp.	0	1	11-19	0	0	7:51 hr	0.6525	.6409	235.7	[illegible]	LANDED @ 6240'
	1	1	"	1"	.02		0.6594	.6420	236.1	"	
	2	1	"	2"	.03		0.6663	.6460	237.1	"	
	3	1	"	3	.05		0.6731	.6500	238	"	
	4	1	"	4	.06		0.6800	.6550	239	"	
	5	1	"	5	.08		0.6869	.6598	240.6	"	
	6	1	"	10	.166		0.7213	.6845	246.	"	
	7	1	"	20	.33		0.7901	.7310	259	"	
	8	1	"	30	.50		0.8589	.7755	270.3	"	[illegible]
	9	1	"	60	1.0		1.0653	.8680	294	"	
	10	1	11-19	[illegible]	1.4	11:15 p	1.231	.9219	307.8	"	10'
											1 min = .0[illegible]28
											5 min = .0[illegible]44
											30 mm = 0.2064

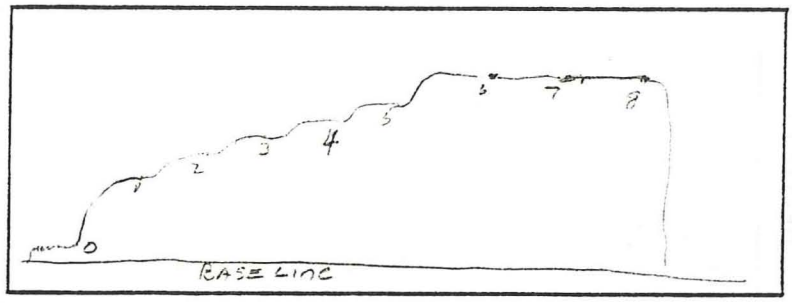
RGI E273



TEST DESCRIPTION Ascension #1 Run 2 Flowing Temp. 11-24-86.

ELEM. 23314	READ LOC.	TEST NO.	DATE	ELAPSE TIME MIN	ELAPSE TIME HOURS	REAL TIMES	TIME DEPF	TEMP DEPF	TEMP °F	DEPTH ft	REMARKS
EIH	0	2	11-24-86			9:54pm	0	—	—	Surface	
	1	2	"			11.28pm	.6390	1.029	335	8300	
	2	2	"			See note					(#2)
											① Note!
											difficulty
											just as pooh.
											94" / .6390
			Calculated Time / Temp.								30" = .2039
	6			0		10:28	.2039	.5790	220	6300	
	4			15			.3058	.7620	267	8300	
	3	2		① 30			.4077	.8910	300	8300	30 minutes
	4	2		45		11.28	.5096	.9740	321	8300	after Landing
										8300	at 8300.

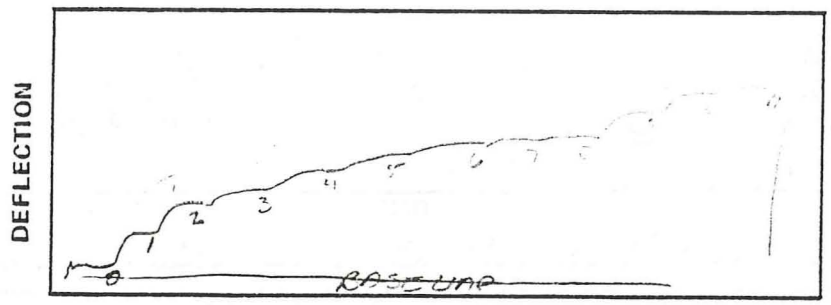
RGI E273



TEST DESCRIPTION Ascension #1 Run 3 Temp Profile #23314 Element 11-25-86

ELEM. 23314	READ LOC.	TEST NO.	DATE 1986	ELAPSE TIME MIN	ELAPSE TIME HOURS	REAL TIMES	TIME DEPF	TEMP DEPF	TEMP °F	DEPTH ft	REMARKS
EIH	0	3	11-25	—		9:15PM	0	—	—	Surface	
	1	3	"	20"		10:02 PM	.3170	.9595	317.6	8000	
	2	3	"	20		10.23 PM	.4655	.9695	320.2	8100	
	3	3	"	20		10.44 PM	.6145	.9760	321.8	8200	
	4	3	"	20		11.05 PM	.7550	.9935	326.3	8300	
	5	3	"	20		11.26 PM	.9000	1.0120	331.1	8400	
	6	3	"	20		11.47 PM	1.0230	1.198	378.5	8500	
	7	3	"	20		12.08 PM	1.1705	1.198	378.5	8600	
	8	3	"	60		1.10	1.590	1.228	386.1	8640	1 Hour Survey @ 2 Min
POH											
			✱	ELAPSE	Time						Unit Time
				0	—		1.180	1.199	378.5	8640	60 min / .4100
				20	ELAPSE		1.3169	1.2110	381.8	8640	20" = .1369
				40			1.45738	1.2210	384.4	8640	40" = .2738
				60			1.590	1.2280	386.1	8640	
											Note! ✱
											Points may be masked
											by element. Reference Time
											at initial
											~~LANDING~~
											Therefore a
											20 min. Time
											allows element
											To stabilize To Temperature

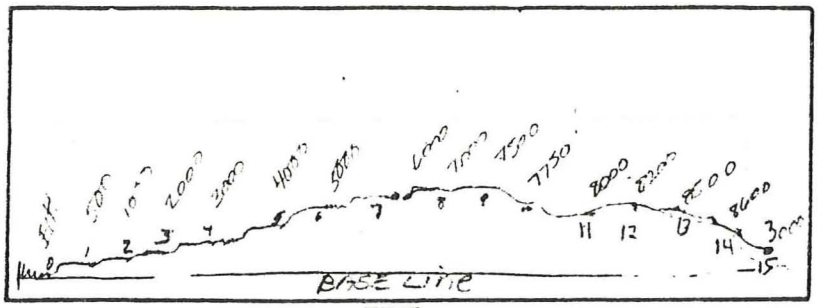
RGI E273



TEST DESCRIPTION Ascension #1 Run #4 Temp. Profile 11-26-86

ELEM. J3341	READ LOC.	TEST NO.	DATE 1986	ELAPSE TIME MIN	ELAPSE TIME HOURS	REAL TIMES	TIME DEPF	TEMP DEPF	TEMP °F	DEPTH ft	REMARKS
E.I H	0	4	11-26	20 Stops		3.28AM	—	—	—	Surface	In Side On 11 Pipe
	1	4	11	20		3.50AM	1440'	.3385	158.3	500	
	2	4	11	20		4.12AM	.280	4275	181	1000	
	3	4	11	20		4.42AM	.510	.7820	272	4000	
	4	4	11	20		5.05AM	.6690	.8055	278	4500	
	5	4	11	20		5.27AM	.8220	.8230	282.5	5000	
	6	4	11	20		5.49AM	.9750	.8320	285	5500	
	7	4	11	20		6:12AM	1.130	.840	287	6000	
	8	4	11	20		6.34AM	1.276	.8475	288.8	6500	
	9	4	11	20		6.57AM	1.437	.8525	290.1	7000	
	10	4	11	20		7.19AM	1.587	.8600	298.7	7500	
	11	4	11-26	20		7.42AM	1.7425	.8700	322.9	7950	

RGI E273

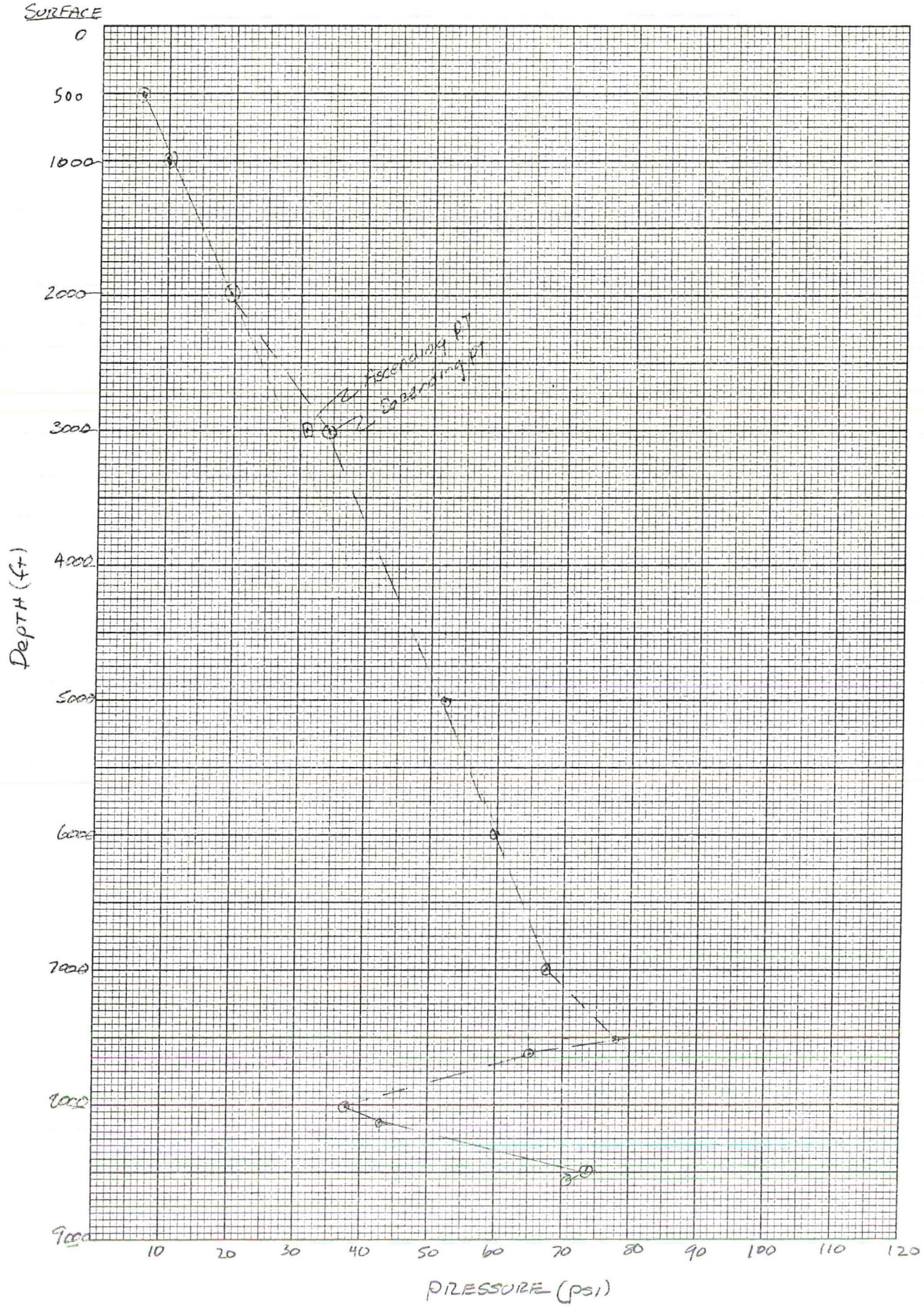


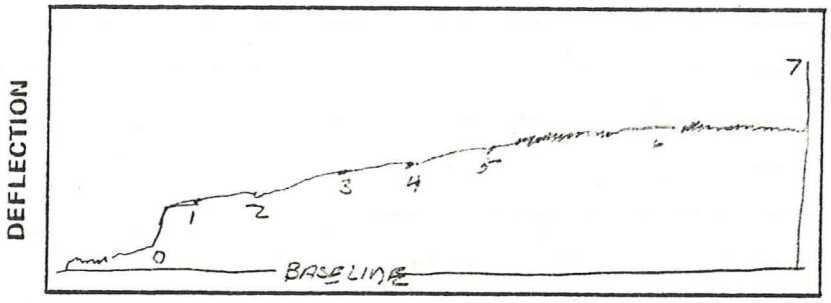
TEST DESCRIPTION Ascension #1 RUN #5 Pass (Flowing) # ELEMENT #22768 (3825psi)

ELEM. NO.		DATE	ELAPSE TIME		REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F 550°F	ADJUSTMENTS FACTORS		ADJUSTED		DEPTHS MEASURE	REMARKS
READ NO.	TEST NO.	1986	MIN.	HR.					- °F	DEPL	DEPL	PSI		
	5	11-26				0							Surface	Clock Engaged ZERO pt.
	5	"				.1425	—						Surface	
0	5	"				.275	.003	6					Surface	?
1	5	"	20 TEST			.364	.003	6					500	
2	5	"				.540	.005	10					1000	
3	5	"				.700	.010	19.7					2000	
4	5	"				.8800	.017	33.6					3000	(*) Descending
5	5	"				1.071	.023	45.5					4000	
6	5	"				1.320	.0265	52					5000	
7	5	"	30 TEST			1548	.030	59					6000	
8	5	"				1.748	.034	67					7000	
9	5	"				1.923	.0395	78					7500	
10	5	"				2.078	.0330	65					7750	
11	5	"				2.042	.019	38					8000	
12	5	"				2.1[illegible]	.0225	43					8250	
13	5	"				2.464	.0375	74					8500	
14	5	"				2.4776	.036	71					8600	
15	5	11-26				2.[illegible]	.016	31					3000	(*) Ascending

(*) Reference pts Difficult to Tell EIH.

No Temp Adjust. due to Low psi recorded.

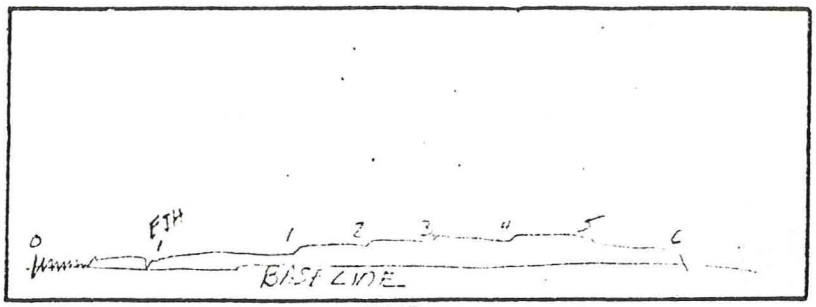




TEST DESCRIPTION Ascension #1 Run #5 TEMP & Press Flow. Survey Profile 11-26-86

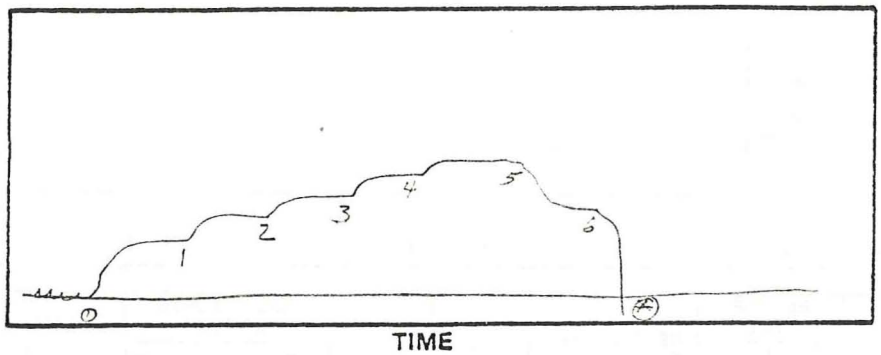
ELEM. #23341	READ LOC.	TEST NO.	DATE 1968	ELAPSE TIME MIN	ELAPSE TIME HOURS	REAL TIMES	TIME DEPF	TEMP DEPF	TEMP °F	DEPTH ft	REMARKS
	0	5	11-26			2:25 pm	0	—	—	SURFACE	EIH.
	1	5	"			2:46 pm	.1525	.3765	168°F	500	
	2	5	"			3:10 pm	.3025	.3910	172°F	1000	
	3	5	"			3:38 pm	.4880	.478	194°F	2000	
	4	5	"			4:03 pm	.6635	.568	217°F	3000	
	5	5	"			4:29 pm	.8440	.611	228°F	4000	shoe @ 4546' (Assuming)
	6	5	"				1.310	.636	234°F	?	
	7	5	"			8:32 pm	4.434	1.078	348°F	8600	
											NOTE - Between
											4500 - 4600.
											Hit Shoe - Had
											to try several
											times to get
											5½ - Instrument
											(TEMP.) Lost
											Clock control
											NO Time reference
											after 4000 ft, but
											Recorded
											max TEMP -
											@ 8600 ?)

RGI E273



TEST DESCRIPTION Accession #1 Run #6 Pressure (Flow) Element #22768 (3825PSI)

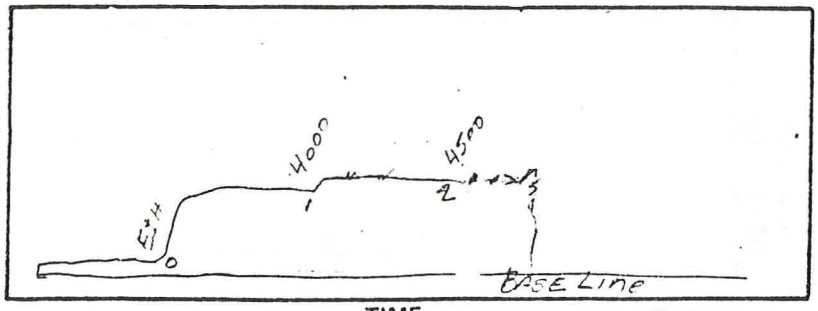
ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE 1986	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F 550	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
0	6	11-28				0	0		Reference	psi			Surface	ENGAGE CLOCK
1	6	"				1.134	.0065	12	No	Temp	Correction		1000'	
2	6	"				1.295	.0099	18					2000'	
3	6	"				1.485	.0135	30					3000'	
4	6	"				1.689	.0190	37					4000'	
5	6	"				1884	.0210	41.5					4500'	
6	6	"				2.134	.0150	30					3000'	Accordion



TEST DESCRIPTION Ascension #1 Run #6 TEMP (Flooding) 11-28-86 ELEMENT # 23341

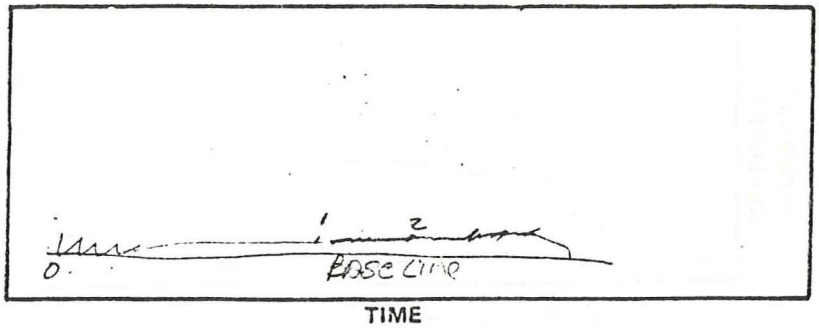
ELEM. 23341	READ LOC.	TEST NO.	DATE 11-28-86	ELAPSE TIME MIN.	ELAPSE TIME HOURS	REAL TIMES	TIME DEPL	TEMP DEPL CORRECTED	TEMP #	DEPTH ft.	REMARKS
EIH	0	6	11-28			5.42p	.0	0	—	SURFACE	EIH.
	1	6	"			5.52p	.510	.511	202°F	1000	
	2	6	"			6.20p	.697	1553	213	2000	
	3	6	"			6.47p	.890	.623	231	3000	
	4	6	"			7.15p	1.082	.649	238	4000	
	5	6	"			7.45p	1.283	.660	241	4500	
	6	6	"			7.20p	1.516	.607	227	3000	Ascending
											⊛ BASELINE
											CORRECTION = +.054" (Lowest
											TO SET TEMP. BASE)
											Add .054" Deflection To
											ALL Depl Readings for TEMP DEP

RGI E274



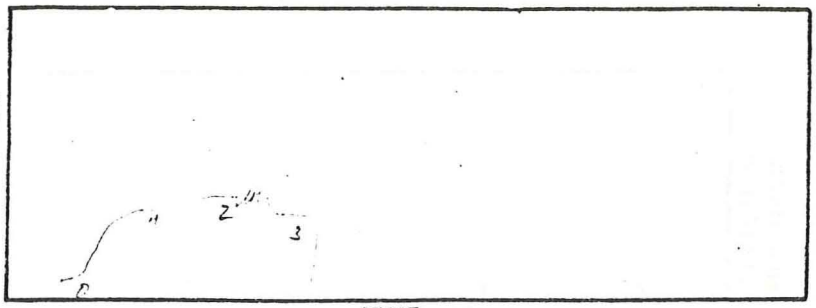
TEST DESCRIPTION Ascension #1 Run #7 Temp #23341 11-29-86

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE 1986	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	TEMP PSI DEPL INCH	TEMP PSI @ °F	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
0	7	11-29	0		11:00 Fm	0	0	—					surface	E.T.H.
1	7	11-29	70"		12:35	.842	.662	241					4000'	
2	7	11-29	20		1:00 Fm	1.029	663	242					4500'	
													POH	unable to go deeper! 4610-20'



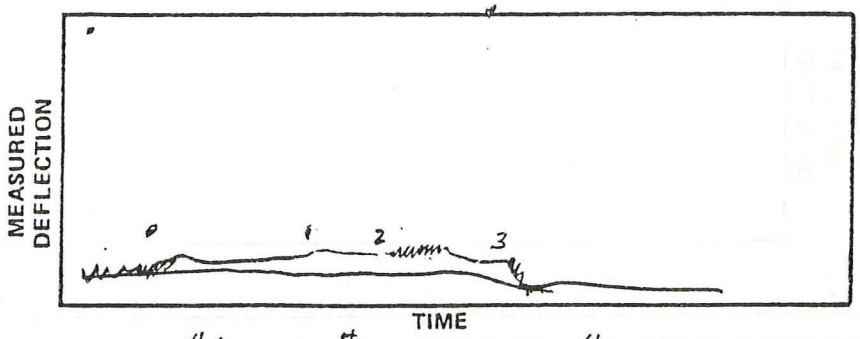
TEST DESCRIPTION ASCENSION #1 PRESSURE SURVEY Nov 29-1986 Run #7

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE 1986	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
0	7	11-29			10:38 AM	0	—	—					Surface	ENGAGE CLOCK
1	7	11-29			12:35 PM	1.053	.0179	34.5					4000'	
2	7	11-29			1:00 PM	1.207	0185	36.5					4500'	
3	7	11-29				POH (*)								(*) UNABLE
														TO GET
														DEEPER
														POH



TEST DESCRIPTION ASCENSION #1 Run 8 TEMP 23241 11-30-86

ELEM. NO.		DATE	ELAPSE TIME		REAL TIME	TIME DEPL INCH	TEMP PSI DEPL INCH	TEMP PSI @ °F	ADJUSTMENTS FACTORS		ADJUSTED		DEPTHS MEASURE	REMARKS
READ NO.	TEST NO.	1986	MIN.	HR.					°F	DEPL	DEPL	PSI		
0	8	11-30				0	—	—					Surface	
1	8	11-30				.433	.641	235					4000	
2	8	11-30				.433	.652	238					4500	
3	8	11-30				.810	.611	228	Ascending				3000	Note Base line Very Faint
											0			



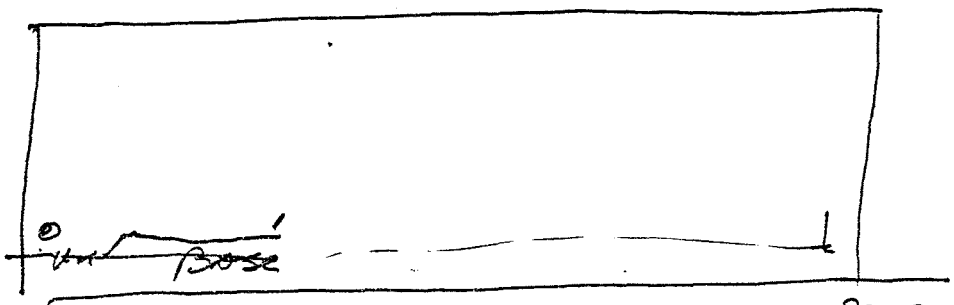
TEST DESCRIPTION Ascension #1 Run #8 Press # 22768 11-30-86 (2825 psi)

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F 550	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
D	8				9:34 AM	0	—						Surface	EIH
1	8				10:15 AM	.1560	.0070	14					4000	
2	8				10:30 AM	.2510	.0080	16					4500	
3	8				11:20 AM	.3740	NO READ *	—					3000	(*) Ascending
														No Reading Due To pos damage in RECORDER from Impact @ 4610'
														Unable to pass in into 6¾ Hole

ASCENSION #1

Run #9 PRESSURE SURVEY

12-1-86



READ	TEST	DATE	Real TIME	TIME DEPT	PRESS DEPT	PRESS PSI	DEPTH ft Surface	Remark Clock Engaged
0	9	12-1-86	3.20	0	0	—		
1	9	12-1-86	4:50p	0466	.612	24psi	4000'	—

Remark

After 4000' Recorder failed, found water in Recorder after Survey. Impact @ 4610+ft. may have caused failure, Will change over to New instrument Next survey.

Lee Weldon
12-2-86

Ascension #1 12-1-86 TEMP Profile
Run #9 (#23341) 69 – 596 °F

FLOWING

I · WELLHEAD PRESS. (12 psig)

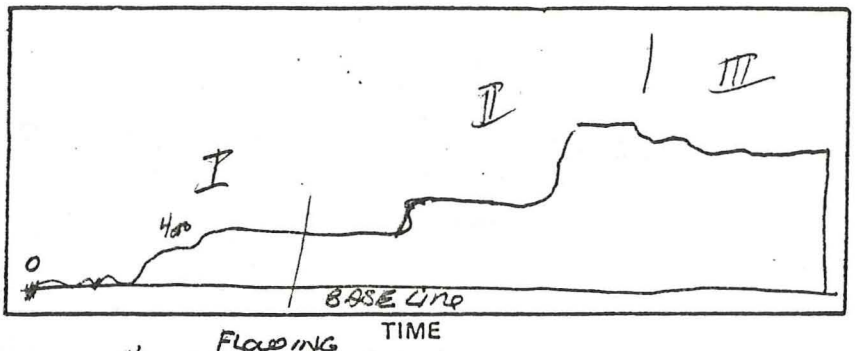
DEPTHS	TEMP °F
4000'	217 °F
7500	226 °F
7750	231 °F
8000	231 °F
8250	232 °F
8600	237 °F

II WELLHEAD PRESS (45 psig)

DEPTHS	TEMP °F
7500	278
7750	278 °F
8000	277 °F
8250	277 °F
8600	~~285~~ 343 °F

III WELL HEAD PRESS. (115 psig)

DEPTHS	TEMP °F
7500	259 °F
7750	255 °F
8000	242 °F
8250	237 °F
8600	237 °F



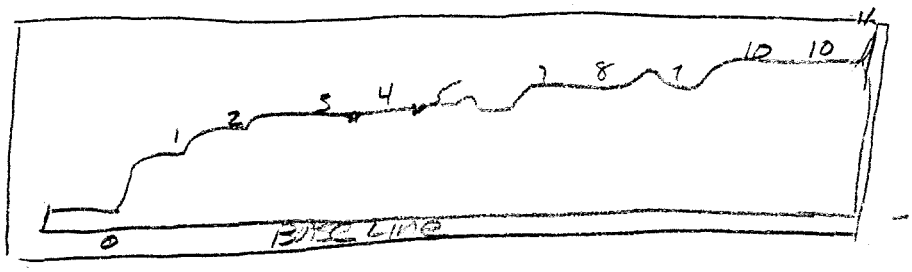
TEST DESCRIPTION Ascension #1 Flowing Temp Profile, Run 9 12-1-86 ELEMENT # 23341

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE 1986	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	TEMP DEPL INCH	TEMP @ °F	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
0	9	12-1	0		3:00 PM	0	—	—		CONDITION I			Surface	ENGAGED CLOCKS.
1	9		110		4.50	.770	.5685	217°F		Well Head press			4000'	CONDITION I.
2	9		182		6.02	1.274	.601	226°F		12 PSIG			7500'	Well Head Press
3	9		204		6:24	1.428	.6255	231°F					7750'	12 PSIG
4	9		225		6:45	1.575	.6255	231°F					8000'	
5	9		246		7:06	1.722	6265	232°F					8250	
6	9		307		8.07	2.149	.6460	237°F					8600	* Unit Time 701 min / 4.88
	9		390		9.20 pm	2.660	.8075	~~°F~~	278°F	CONDITION II			7500	1 min = .007
	9		402		9:42	2.814	.805	~~°F~~	278°F	Well Head Press. 45 PSIG			7750	ALL READ
	9		424		10:04	2.968	.801	~~°F~~	277°F				8000	BASED ON UNIT TIME
	9		447		10:27	3129	.801	~~°F~~	277°F				8250	Unable to tell depth by sight.
	9		510		11:30 pm	3.670	1.059	~~°F~~	348°F				8600	
	9		570		1230	*3.990	.731	259°F		CONDITION III			7500	
	9		592		12:52 p	4.144	.7165	255°F		Well Head Press. (115 PSIG)			7750	
	9	12-2	616		1:16 Am	4.312	.664	242°F					8000	
	9		640		1.40 Am	4.480	.6475	237°F					8250	
	9		702		2:42 A	*4.871	.644	237°F					8600	
														* Adjusted to curve. For Temp deflection.

ASCENSION # 1 RUN # 10 12-4-80

TEMPERATURE SURVEY #23314

Note! Clock was knock off RECORDER while TRYING to pass Through (4610') 10 3/4 to 6 3/4" Hole. This allowed Chart to move forword without a Time Reference. Stops 500' 1000' and 4000' are OK, The rest of readings and DEPTHS are my BEST ESTIMATES.



Readings	Time Defl	Temp Defl	Temp °F	Depth (ft)	Remarks
0	0	0		Surface	Enter in Hole
1	.135	.464	190°F	500'	
2	.299	.485	196 °F	1000'	
3	.546	.624	231 °F	4000'	
4	.650	.646	237 °F	7000	(ESTimate)
5	1.239	.658	240 °F	7500	"
6	1.426	.667	242 °F	7750	"
7	1.686	.675	245 °F	8000	"
8	1.835	.702	251 °F	8250	"
9	2.638	.683	246 °F	8500	"
10	3.512	.8745	295 °F	?	" (MAX Temp)
11	END of chart 1.105		354 °F		

12-4-86

Ascension #1 RUN #10

Pressure # 22407 (New Instrument) 39

Unit Time = 295"/1.8665

1" = .0063

Time ENGAGED Clock 2:17PM

POH. (START) 7:12PM

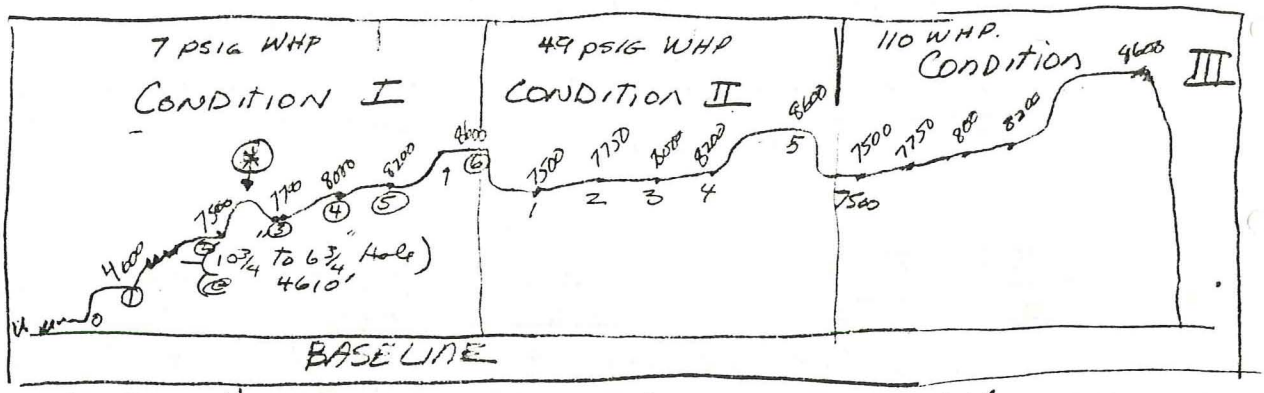
295" Time

ITEM ##	Time Defl	Press Defl	PROSS PSI	DEPTH (FT)	Remarks
1	(48')(.0063) = .3024	.0028	6 PSI	500'	Instrument FULL RANGE is 3975 psi
2	(70)(.0063) = .4410	.0030	6 PSI	1000'	
3	(106)(.0063) = .6678	.005	10 PSI	4000'	
4	(139)(.0063) = .8757	.015	31 PSI	7000'	
5	(163)(.0063) = 1.0269	.0185	37 PSI	7500'	THESE Values are Low end of TOOL.
6	(185)(.0063) = 1.1655	.026	53 PSI	7750'	
7	(225)(.0063) = 1.4364	.038	77 PSI	8000'	
8	(250)(.0063) = 1.575	.0355	72 PSI	8250'	
9	(273)(.0063) = 1.7199	.0350	71 PSI	8500	
10	(294)(.0063) = 1.8522	.0350	71 PSI	8600.	

Lee Hatch

Ascension #1 RUN #11 12-5-86 # Temp Element 23341

TEMPERATURE SURVEY WITH THREE WELLHEAD PRESSURE CONDITIONS.



Note (*) (1) Unable to explain peak, but assumed the instrumat Clock & Recorder pen disengaged; then reengaged. Lose time reference point.

(2) WHP = Well Head PRESSURE

Data

CONDITION I WHP = 7 psig

Reread	READING #	DEFLECTIONS TIME -	TEMP	TEMP °F	DEPTHS (ft)	REMARKS
0	0	0	0	—	SURFACE	ENTER IN HOLE
1	1	.205	.6725	244 °F	4000'	@ 4610' Hole goes From 10¾" – 6¾".
2	2	.408	.767	268 °F	7500'	
3	3	.618	.783	272 °F	7750'	
4	4	.773	.9305	310 °F	8000'	
5	5	.850	.9315	310°	8250'	
	6	1.049	1.190	376 °F	8600' ← II	change over
6		.961	1.1825	374 °F	8600' ← I	(ONLY Spent 16' at 8600 Cond. I)

CONDITION II WHP = 49 psig

1	1.049	1.199	376°F	8600'	change over to II
1	0 ↙ 1.284	1.115	357 °F	7500'	
2	0 ↙ 1.434	1.1685	370 °F	7750'	
3	0 ↙ 1.601	1.165	370 °F	8000'	
4	0 ↙ 1.748	1.183	374 °F	8250'	
5	0 ↙ 2.122	1.503	457 °F	8600'	SEEMS High?

CONDITION III WHP = 110 psig

1	2.205	1.024	334°F	7500'	DIFFICULT TO LOCATE ← Best Estimate –
2	2.332	1.0455	339 °F	7750'	
3	2394	1.0605	343°F	8000'	
4	2555	1.129	361 °F	8250'	
5	2.794	1.3875	429°F	8600'	

Ascension #1 Run 11 12-5-86 ELEMENT # 22407

PRESSURE SURVEY WITH THREE WELLHEAD PRESSURE. #22407 ELEMENT (3975 PSI)

(DEPTH - LOCATIONS BASED ON TIME)

Unit Time =

ENGAGED CLOCKS. 9:00 AM — READ (TIME) 0

POH 6:12 pm — 5006

9 HRS 12 MIN

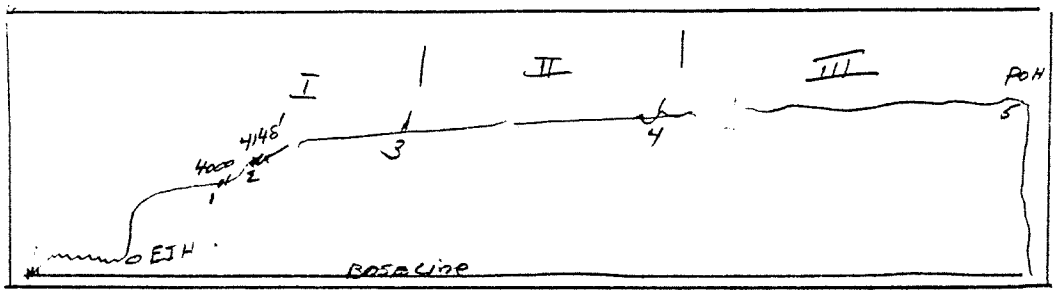
552 min

552 min / 5.005"

1 min = .009

REAL TIME	READ #	DEFLECTION TIME FACTOR (.009)	PRESS	PRESS (PSI)	DEPTHS (FT)	Remarks.
						WELL HEAD PRESS = WHP
9.00 AM	0	0	0	—	SURFACE	CONDITION I ENGAGED CLOCKS.
10.28 AM	1	(88)(.009) = .792	.001	2 PSI	4000'	CONDITION I (7 PSI WHP
11.05 AM	2	(125)(.009) = 1.125	.0155	31 PSI	7500'	I
11.28 AM	3	(149)(.009) = 1.341	.0160	325 PSI	7750'	I
11:45 AM	4	(169)(.009) = 1.521	.035	71 PSI	8000'	I
12:05 PM	5	(185)(.009) 1.665	.064	132 PSI	8200'	I
1:05 pm	6	(245)(.009) 2.205	.044	(89.4 PSI)	8600' II	I
12,28	(5A)	(208)(.009) 1.872	.049	99.6 PSI	8600 I REREAP	
1:35 pm	7	(275)(.009) = 2475	.059	120 PSI	7500'	CONDITION II (49 PSIG WHP
1:58 pm	8	(298)(.009) = 2.682	.067	136 PSI	7750'	II
2.23 pm	9	(323)(.009) 2.907	.080	163 PSI	8000'	II
2.45 pm	10	(345)(.009) 3.105	.1095	221 PSI	8250'	II
3,05 pm	11	(365)(.009) 3.285	.082	166 PSI	8600'	II
						CONDITION III (110 PSIG WHP.
4:14 pm	12	(434)(.009) = 3.906	.1430	291 PSI	7500'	
4:35 pm	13	(455)(.009) = 4.095	.137	278 PSI	7750'	
4:59 pm	14	(479)(.009) = 4.266	.1305	265 PSI	8000'	
5:21 pm	15	(501)(.009) = 4.509	.145	295 PSI	8250'	
6:12 pm	16	(552)(.009) = 4.968	.1810	368 PSI	8600'	

Ascension #4 Run #12 Temperature Survey #2334/
12-6-86 (58-588°F)



Data

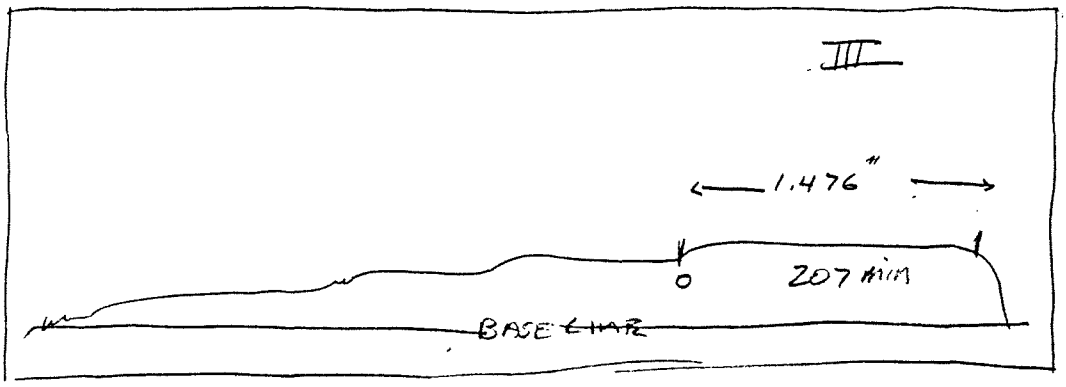
Condition I WHP = 8 psig
" II WHP = 50 psig
" III WHP = 100 psig

Read Deflections

Real Time	#	Time	Temp	Temp °F	Depths ft	Remarks
9:31 AM	0	0	0	—	Surface	EIH Enter in Hole.
11:03 AM	1	(32)(.0068) .2176	0.520	217°F	4000'	Condition I
11:08 AM	2	(36)(.0068) = .2448	0.57150	219 °F	4146'	Condition I
11:28 AM	3	(117)(.0068 = .7956	.7485	263 °F	8120'	Condition I
2:35 pm	4	(304)(.0068)=2.0672	.8335	285°F	8120'	Condition II
6:02 pm	5	(511)(.0068) 3.4748	.9285	309°F	8120'	Condition III (POH.) pull out Hole

Unit Time
5'1 min 13.46'
1 min = 100.68
(EIH to POH)

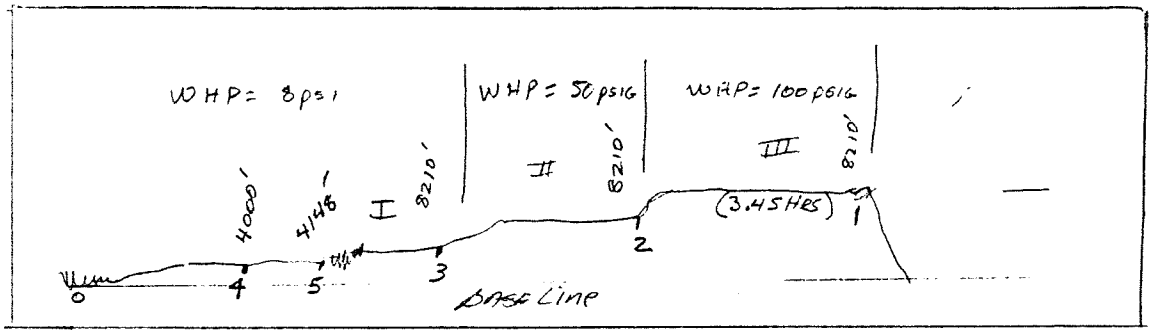
ASCENSION 1 Run 12 PRESS / TIME 12-6-86



READ	Real Time	ELAPSE TIME			DEFLECTION TIME	DEFLECTION PRESS	PRESS PSI	Remarks
								UNIT TIME .007 min = .007
	III 2:35 pm	> 2:07"						207 min / 1.476"
	III 6.02 pm							
		min.		FACTOR	TIME READ			CONDITION III
1	START 2.35 pm III	0	X	(.007) =	0	.121	246 psi	W.H.P = 100psi
2		1	X	(.007) = .007		.1215	247	
3		2	X	(.007) = .014		.1220	248	
4		3	X	(.007) = .021		.1240	252	
5		4	X	(.007) = .028		.1290	262	
6		5	X	(.007 = .035		.1350	274	
7		10	X	(.007) = .070		.164	330	
8		15	X	(.007) = .105		.175	356	
9		25	X	(.007) = .1750		.1825	371	
10		40	X	(.007) = .280		.1850	376	
11		55	X	(.007) = .385		.1865	379	
12		85	X	(.007) = .595		.1905	387	
13		115	X	(.007) = .805		.199	404	
14		145	X	(.007) = 1.015		.212	431	
15		175	X	(.007) = 1.225		.2385	485	
16		205	X	(.007) = 1.4350		.2595	527	
17	6.02 pm	207	X	(.007) = 1449		.261	530	

Ascension #1 Run # 12 12-6-86. Press # 22407

Pressure Survey



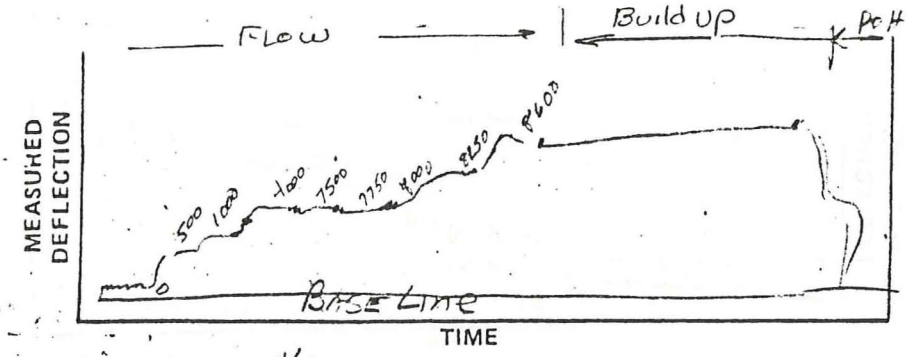
Unit of time .007"/minute. (4770 – 8,239 III)
(207"/1.459 = .007)

READ

Condition I = 8 psig Well Head Pressure
Condition II = 50 psig " "
Condition III = 100 psig " "

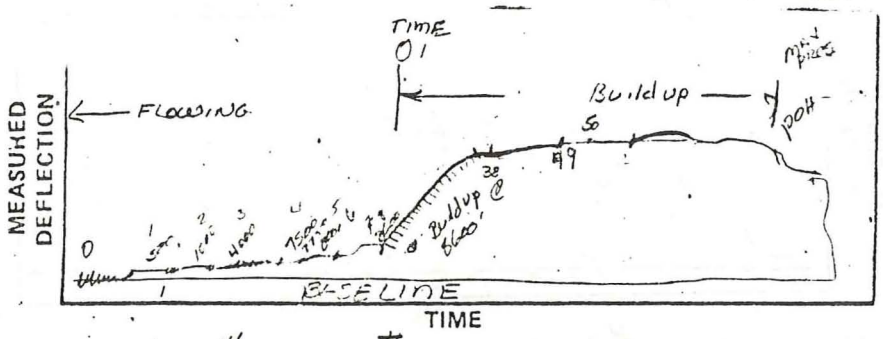
DATA

Real Time	Read #	Deflection Time	Press	Press PSI	Depth (Ft)	Remark
9:31 AM EIH	0	0	0	—	Surface	Engaged Clock.
6:02 pm (1)	6.770 – 8,239		0.26	529 psi	8120'	Condition III
2:35 pm (2)	5,813 – 6.770		0,121	245 psi	8120'	II
11:28 Am (3)	5532 – 5813		0,052	106 psi	8120'	I
11:08 Am (4)	5,410 – 5532		.0230	47 psi	4148'	I
11:03 Am (5)	5,086 – 5361		.0210	43 psi	4000'	I



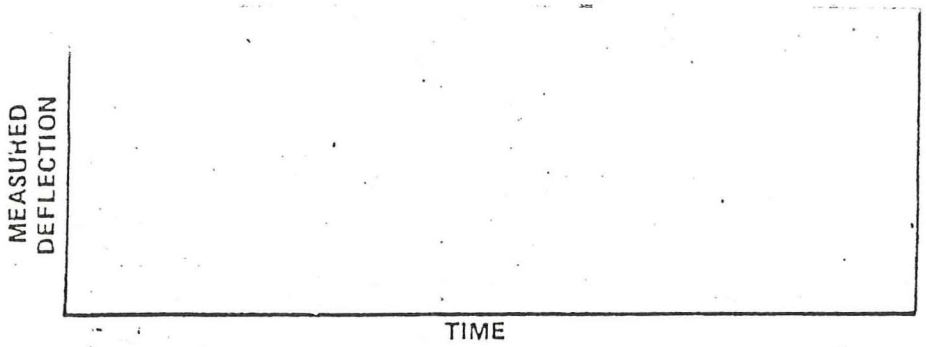
TEST DESCRIPTION Ascension #1 Run 13 Temperature #23341 Dec 9-1986

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE 1986	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
0	13	12-9			11:40 AM	0	0	—					surface	EIH.
1	13					.282	.470	192°F					500'	
2	13					.358	.481	195°F					1000'	
3	13					.463	.624	231°F					4000'	
4	13					.585	.709	253°F					7500'	
5	13					620	710	259°F					7750'	
6	13					.750	.7165	255°F					8000'	
7	13					.814	.8345	285°F					8250'	
8	13					.8934	1.119	358°F					8600'	
													8600'	
						Temp Buildup-								
		4	0	0	4:04 PM	.8939	1.119	358°F					8600'	Unit Time
			60	1		1.0979	1.140	364°F						4.248-.845
			120	2		1.3019	1.158	368°F						1 Min = .0034
			180	3		1.5059	1.171	372°F						1 HR = .204
			240	4		1.7099	1.1815	374°F						
			300	5		1.9139	1.191	377°F						
			360	6		2.1179	1.1985	378°F						
			420	7		2.3219	1.2055	380°F						
			480	8		2.5259	1.211	382°F						
			540	9		2.7299	1.217	383°F						
			600	10		2.9339	1.2235	385°F						1.575
			660	11		3.1379	1.217	386°F						
			720	12		3.3419	1.2305	387°F						
			780	13		3.5459	1.234	388°F						
			840	14		3.7499	1.2375	386.4°F						
			900	15		3.9539	1.241	389°F						
			960	16		4.248	1.2445	390°F						



TEST DESCRIPTION Ascension #1 Run #13 DEC 9-1986 Press # 22407 (3975

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE 1986	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F 550	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
0	13	12-9			11:22 AM	0	—	—					Surface	ENGAGED CLOCK
1	13				12:52 AM	.293	.0002	4					500'	
2	13				1:15 PM	370	.0030	6					1000	
3	13				1:47 PM	481	.0120	24					4000	
4	13				2:26 pm	614	.0350	71					7500	
5	13				2:47 pm	686	.0365	74					7750	
6	13				3:10 pm	770	.0375	75					8000	
7	13				3:32 pm	839	.0380	77					8250	
8	13				4:04 pm	960	.0557	116					8600	
			Elapse Time		Build up Time									
			0	0	4:04 pm	960	.1057	116					8600	
			.1	.017	4:05	.9634	.0595	120					8600	Unit Time
			.2	.03	406	.9669	.1064	130					8600	.00345"
			.3	.05	407	.9703	.0695	141					8600	per min.
			.4	.07	408	.9738	.0755	153					8600	
			.5	.08	409	.9772	.0815	165					8600	
			.6	.1	410	.9807	.0869	176					8600	
			.7	.12	411	.98415	.0920	187					8600	
			.8	.13	412	.9876	.0970	197					8600	
			.9	.15	413	.9910	.1025	208					8600	
			.10	.16	414	.9945	.1060	215					8600	
			.15	.25	419	1.0117	.1320	268					8600	
			.20	.33	4.24	1.029	.156	317					8600	
			.25	.42	4.29	1.046	.1790	364					8600	
			.30	.5	4.34	1.063	.201	408					8600	
			.31	.52	4.35	1.0669	.2045	409					8600	
			.32	.53	436	1.070	.209	425					8600	
			.33	.55	4.37	1.073	.2135	433					8600	



TEST DESCRIPTION Ascension #1 Run 13 DEC 9,10 1986 Buildup Data Pressure #2 407

ELEM. NO. READ NO.	ELEM. NO. TEST NO.	DATE	ELAPSE TIME MIN.	ELAPSE TIME HR.	REAL TIME	TIME DEPL INCH	PSI DEPL INCH	PSI @ °F 550	ADJUSTMENTS FACTORS °F	ADJUSTMENTS FACTORS DEPL	ADJUSTED DEPL	ADJUSTED PSI	DEPTHS MEASURE	REMARKS
			34	.57	438	1.077	.218	443					8600	Buildup.
			35	.58	439	1.080	.222	451					8600	
			36	.60	440	1.084	.227	461					8600	
			37	.62	441	1.087	.230	467					8600	
			37.5	.625	441.5	1089	2315	.470					8600	
			38	.63	442	1.091	.232	471					8600	
			49	.82	453	1.130	.2385	484						
			50	.83	454	1.1334	.2390	486						
			77.4	1.29		1.227	.2390	486						
			94.5	1.58		1.286	.250	506						
			112.1	1.87		1.349	.251	510						
			1304	2.17		1.410	.2585	524						
			156.5	2.6		1.500	.2715	549						
			197.1	3.28		1.640	.289	584						
			232.	3.87		1.761	.3035	613						
			247.	4.1		1.812	.323	652						
			277	4.6		1.917	.340	685						
			307	5.1		2.020	.3525	709						
			365	6.0		2.220	.374	752						
			367	6.1		2.226	.379	762						
			406	6.8		2360	.3992	801						
			469	7.8		2577	.418	838						
			525	8.75		2.770	.437	876						
			640	10.7		3.170	.481	963						
MAX	X		848	14.1		3.884	.515	1029						MAX. Press
			875	14.6		3,980	.497	994						
			960	16.0		4274	.456	913					8600	
			—	—		POH	—	—					Pull out of Hole.	

1/31/87

Ascension #1 · Kuster Run # 14
Press element · 0-3975 psig S/N 22407
Temp element · 64°-596°F S/N 23314

Well on vent through 3" WHP 2.4 psig
Start in hole @ 0933 hrs

Depth	Time	Temp Defl (in)	°F Temp	Press Defl	Corr. Defl.	Press PSIG	Remarks
1,000'	0955	.563	216	.027	.015	30	Ambient temp for Kuster element = 86°F
2,000'	1017	.720	256	.066	.055	112	
3,000'	1039	.836	286	.108	.097	197	
4,000'	1102	.929	310	.149	.138	290	
4,500'	1118	1.035	337	.174	.164	333	
5,000'	1135	—	—	.200	.190	386	Hit obstruction @ 5,100' and worked through
5,500'	1203	1.071	346	.229	.220	447	Temp reading for 5,000' was obliterated
6,000'	1219	1.105	355	.260	.251	510	
6,500'	1235	1.128	361	.292	.284	575	
7,000'	251	1.150	366	.320	.313	632	
7,500'	1307	1.161	369	.356	.349	703	
7,900'	1323	1.167	371	.385	.379	762	
8,000'	1339	1.156	368	.394	.388	780	Hit obstruction @ 8,005' Could not work through T.O.H. @ 1345 hrs

Ascension #1 - Kuster Run #15 - 2/1/87

Well on Vent

Pressure element S/N 9696 0-800 psig

Temp element S/N 23314 64° - 596° F

Depth	Time	Temp Defl	Temp °F	Press. Defl.	Press. PSIG	Remarks
1000 ft	1308	—	—	.001	0.4	Start in hole @ 1300 hrs
2000	1316	.560	215	.007	2.7	Temp tool not stable @
3000	1324	.592	223	.018	6.9	1000 ft
4000	1347	.626	232	.030	11.6	
4500	1354	.637	235	.038	14.7	
5000	1401	.662	241	.050	19.3	
5500	1409	.681	246	.062	23.9	Tools hung up at 5,100' & fell through
6000	1416	.711	254	.087	33.6	
6500	1423	.748	263	.124	47.8	
7000	1431	.791	274	.171	66.0	
7500	1438	.810	279	.221	85.2	
7600	1444	.819	282	.233	89.9	
7700	1450	.840	287	.245	94.5	
7800	1456	.832	285	.256	98.7	
7900	1502	.852	290	.270	104.4	A fairly large temperature reversa was noted between 7,900-8,000'
8000	1508	.848	289	.282	109.3	
8100	1532	.874	296	.302	117.4	Tagged bridge @ 8,140' & Pulled up to 8,100'. POH @ 1532 hr

Note: This pressure element was not provided with a useful temp. correction Table so no corrections were made.

Ascension #1 - Kuster Run # 16 - 2/2/87

Well on Vent - throttled to 81 - WHP at Start

Pressure element S/N 9696 0-800 psig

Temp element S/N 23314 64°-596°F

Depth	Time	Temp. Defl.	Temp °F	Press. Defl.	Press. PSIG	Grad. PSI/Ft	Remarks
1000 ft	1253	—	—	.197	76	—	Start in hole @ 1245 hrs
2000	1303	—	—	.202	78	.002	Temp tool was not
3000	1312	.682	246	.211	81	.003	stabilized at 1000' & 2000'
4000	1330	.707	253	.228	88	.007	
5000	1343	.785	273	.360	141	.053	Tools hung up @ 4760'
6000	1352	.871	295	.571	226	.085	& fell thru
7000	1402	.953	316.	.835	334	.108	
7500	1410	.976	322	.986	395	.122	A steady pressure
7600	1416	.984	324	1.029	413	.180	increase was observed
7700	1422	.989	325	1.063	427	.140	at all depths.
7800	1428	1.010	331	1.094	440	.130	WHP was declining.
7900	1434	.999	328	1.135	456	.160	
7950	1440	1.009	330	1.160	467	.220	A large temp. reversal was
8000	1446	.996	327	1.182	476	.180	observed between 7900'-8000'
8100	1448	—	—	1.221	491	.150	on previous Survey - there
8100	1505	1.016	332	1.251	504	—	anomoly was not as large
							here due to overall increase
							in temp.

APPENDIX H

CHEMICAL ANALYSES

Note: Analyses of samples collected during the flow test are shown on pages H-1 through H-66.
Replicate analyses of condensed samples from the flow line are shown on pages H-67 through H-75.
Analyses of liquid and gas samples collected between 1-27-87 and 2-5-87 are shown on pages H-76 through H-113.

ASCENSION
CONDENSED FLIUD 11/28/86

ID #: A:AS112856
DATE: 09-29-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	7782.50	1	1.25	.339E+00
K	563.25	1	2.50	.144E-01
Ca	4117.50	1	.50	.103E+00
Mg	16.17	1	1.00	.665E-03
Fe	126.88	1	.05	.227E-02
Al	N.D.	1	1.25	< .463E-04
SiO2	205.37	1	1.08	.342E-02
B	21.61	1	.25	.200E-02
Li	3.09	1	.10	.445E-03
Sr	79.90	1	.02	.912E-03
Zn	.33	1	.25	.499E-05
Ag	N.D.	1	.10	< .927E-06
As	N.D.	1	1.25	< .167E-04
Au	N.D.	1	.20	< .102E-05
Ba	2.20	1	1.25	.160E-04
Be	N.D.	1	.00	< .277E-06
Bi	N.D.	1	5.00	< .239E-04
Cd	N.D.	1	.13	< .111E-05
Ce	N.D.	1	.50	< .357E-05
Co	N.D.	1	.05	< .848E-06
Cr	N.D.	1	.10	< .192E-05
Cu	N.D.	1	.13	< .197E-05
La	.79	1	.25	.567E-05
Mn	3.31	1	.50	.602E-04
Mo	N.D.	1	2.50	< .261E-04
Ni	.34	1	.25	.576E-05
Pb	N.D.	1	.50	< .241E-05
Sn	N.D.	1	.25	< .211E-05
Sb	N.D.	1	1.50	< .123E-04
Te	N.D.	1	2.50	< .196E-04
Th	N.D.	1	3.00	< .215E-04
Ti	N.D.	1	.25	< .522E-05
U	N.D.	1	12.50	< .525E-04
V	N.D.	1	2.50	< .491E-04
W	N.D.	1	.25	< .136E-05
Zr	N.D.	1	.25	< .274E-05

ASCENSION
CONDENSED FLUID 11/28/%

ID #: A:AS;12864
DATE: 09-29-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	240.00	2	1.00	.393E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	18900.00	2	1.00	.533E+00
F	.50	5	.05	.263E-04
SO4	132.00	4	1.00	.137E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	3.78	< .397E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	32590.00	4	4.00	
CALCULATED	32073.73	6		
100*MEAS/CALC	101.61			
pH	5.28	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

TRILINEAR DIAGRAM COORDINATES

ASCENSION
CONDENSED FLIUD 11/28/86

ID #: A:AS112886
DATE: 09-29-86

	Meq / L	Percent (Meq / L)
CATIONS		
Na	338.53870	60.48207
K	14.40230	2.57306
Ca	205.46320	36.70730
Mg	1.32973	.23757
TOTAL	559.73400	100.00000
ANIONS		
HCO3	3.93360	.72865
CO3	.00000	.00000
SO4	2.74624	.50907
Cl	533.16900	98.76228
TOTAL	539.85060	100.00000

ASCENSION
CONDENSED FLUID 11/26/86

ID #: A:AS112886
DATE. 09-29-86

	Milliequivalents/Liter
CATIONS	
Na	338.53870
K	14.40230
Ca	205.46320
Mg	1.32973
Fe	4.54339
Li	.44527
Sr	1.82412
Zn	.00998
Ba	.03197
La	.02046
Mn	.24100
Ni	.01152
SUM OF CATIONS:	566.86170
ANIONS	
HCO3	3.93360
Cl	533.16900
F	.02632
SO4	2.74824
SUM OF ANIONS:	539.87710
CATION-ANION BALANCE	26.98456
BALANCE DIFF. CATION - ANION	2.44

GEOTHERMOMETERS

ASCENSION
CONDENSED FLUID 11/28/86

ID #: A:AS112886
DATE: 09-29-86

Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	182.		Fournier (1981)
Quartz (maximum steam loss)	170.		Fournier (1981)
Chalcedony	161.		Fournier (1981)
alpha-Cristobalite	132.		Fournier (1981)
beta-Cristobalite	82.		Fournier (1981)
Amorphous Silica	58.		Fournier (1981)
Na/K (Fournier)	191.		Fournier (1979)
Na/K (Truesdell)	155.		Fournier (1981)
Na-K-Ca	184.	beta= .33	Fournier and Truesdell(1974)
Na-K-Ca with Mg correction	177.	R= .60	Fournier and Potter (1979)
Na/Li	-9.		Fouillac and Michard(1981)

ASCENSION
SLUG AFTER THROTTLE 12/2/86

ID #: A:AS12286
DATE: 09-29-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	3281.80	1	.61	.143E+00
K	249.00	1	1.22	.637E-02
Ca	1662.86	1	.24	.415E-01
Mg	5.85	1	.49	.241E-03
Fe	24.01	1	.02	.430E-03
Al	N.D.	1	.61	< .226E-04
SiO2	70.76	1	.52	.118E-02
B	7.88	1	.12	.729E-03
Li	1.87	1	.05	.270E-03
Sr	34.09	1	.01	.389E-03
Zn	N.D.	1	.12	< .187E-05
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	.78	1	.61	.569E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.06	< .543E-06
Ce	N.D.	1	.24	< .174E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	.33	1	.12	.237E-05
Mn	1.52	1	.24	.276E-04
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .255E-05
U	~~17~~ CO_2 does this	1	6.10	.573E-04
V	N.D.	1	1.22	< .279E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

ASCENSION
SLUG AFTER THROTTLE 12/2/86

ID #: A:AS12284
DATE: 09-29-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	217.00	2	1.00	.356E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	7700.00	2	1.00	.217E+00
F	.70	5	.05	.368E-04
SO4	53.00	4	1.00	.552E-03
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.84	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	13530.00	4	4.00	
CALCULATED	13214.77	6		
100*MEAS/CALC	102.39			
pH	5.20	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

TRILINEAR DIAGRAM COORDINATES

ASCENSION
SLUG AFTER THROTTLE 12/2/86

ID #: A:AS12286
DATE: 09-29-86

	Meq / L	Percent (Meq / L)
CATIONS		
Na	142.75830	61.37943
K	6.36698	2.73751
Ca	82.97672	35.67613
Mg	.48131	.20694
TOTAL	232.58330	100.00000
ANIONS		
HCO3	3.55663	1.60297
CO3	.00000	.00000
SO4	1.10346	.49733
Cl	217.21700	97.89970
TOTAL	221.87710	100.00000

	Milliequivalents/Liter
CATIONS	
Na	142.75830
K	6.36698
Ca	82.97672
Mg	.48131
Fe	.85978
Li	.26986
Sr	.77820
Ba	.01138
La	.00856
Mn	.11050
U	.54510
SUM OF CATIONS:	235.16670
ANIONS	
HCO3	3.55663
Cl	217.21700
F	.03685
SO4	1.10346
SUM OF ANIONS:	221.91390
CATION-ANION BALANCE	13.25275
BALANCE DIFF. CATION + ANION	2.90

GEOTHERMOMETERS

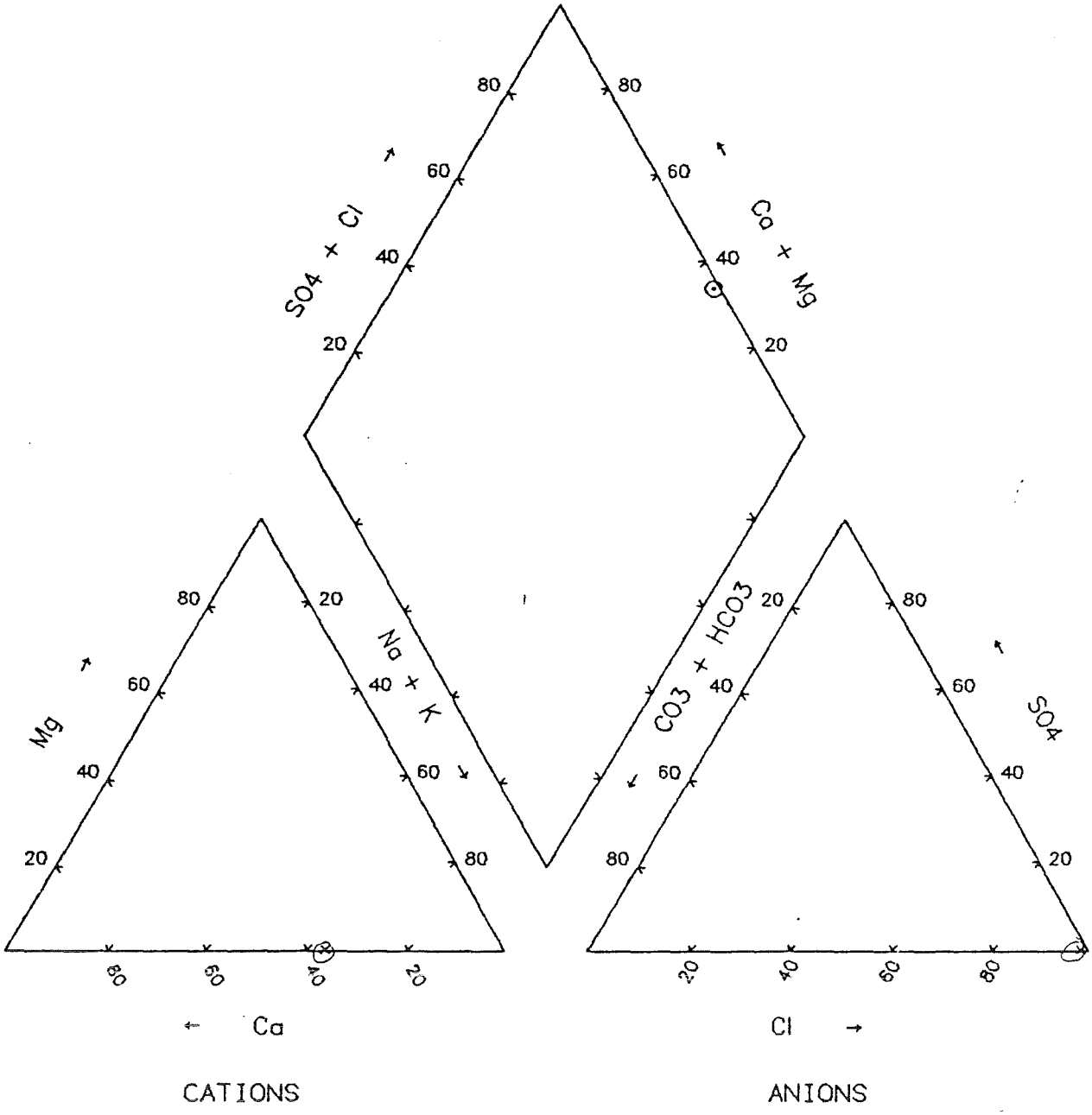
ASCENSION
SLUG AFTER THROTTLE 12/2/86

ID #: A:AS12286
DATE: 09-29-86

Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	119.		Fournier (1981)
Quartz (maximum steam loss)	117.		Fournier (1981)
Chalcedony	90.		Fournier (1981)
alpha-Cristobalite	68.		Fournier (1981)
beta-Cristobalite	20.		Fournier (1981)
Amorphous Silica	1.		Fournier (1981)
Na/K (Fournier)	194.		Fournier (1979)
Na/K (Truesdell)	160.		Fournier (1981)
Na-K-Ca	179.	beta= .33	Fournier and Truesdell(1974)
Na-K-Ca with Mg correction	170.	R= .54	Fournier and Potter (1979)
Na/Li	3.		Fouillac and Michard(1981)

ASCENSION
SLUG AFTER THROTTLE 12/2/86

UURI ID# A:AS12286
DATE: 09-29-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
WATER FROM WELL 12/4/86

ID #: A:AS12466
DATE: 09-29-86

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	6830.00	1	1.25	.384E+00
K	701.00	1	2.50	.179E-01
Ca	4792.50	1	.50	.120E+00
Mg	8.77	1	1.00	.361E-03
Fe	75.43	1	.05	.135E-02
Al	N.D.	1	1.25	< .463E-04
SiO2	204.79	1	1.08	.341E-02
B	27.50	1	.25	.254E-02
Li	5.39	1	.10	.777E-03
Sr	92.75	1	.02	.106E-02
Zn	N.D.	1	.25	< .382E-05
Ag	N.D.	1	.10	< .927E-06
As	N.D.	1	1.25	< .167E-04
Au	N.D.	1	.20	< .102E-05
Ba	2.43	1	1.25	.177E-04
Be	N.D.	1	.00	< .277E-06
Bi	N.D.	1	5.00	< .239E-04
Cd	N.D.	1	.13	< .111E-05
Ce	N.D.	1	.50	< .357E-05
Co	N.D.	1	.05	< .848E-06
Cr	N.D.	1	.10	< .192E-05
Cu	N.D.	1	.13	< .197E-05
La	.81	1	.25	.582E-05
Mn	1.85	1	.50	.337E-04
Mo	N.D.	1	2.50	< .261E-04
Ni	N.D.	1	.25	< .426E-05
Pb	N.D.	1	.50	< .241E-05
Sn	N.D.	1	.25	< .211E-05
Sb	N.D.	1	1.50	< .123E-04
Te	N.D.	1	2.50	< .196E-04
Th	N.D.	1	5.00	< .215E-04
Ti	N.D.	1	.25	< .522E-05
U	N.D.	1	10.50	< .525E-04
V	N.D.	1	2.50	< .491E-04
W	N.D.	1	.25	< .136E-05
Zr	N.D.	1	.25	< .274E-05

ASCENSION:
WATER FROM WELL 12/4/86

ID #: A:A8124B6
DATE: 09-29-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	327.00	2	1.00	.536E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	21600.00	2	1.00	.609E+00
F	.65	5	.05	.342E-04
SO4	143.00	4	1.00	.149E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	3.78	< .397E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	37690.00	4	4.00	
CALCULATED	36647.64	6		
100*MEAS/CALC	102.84			
pH	5.80	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

ASCENSION
WATER FROM WELL 12/4/85

ID #: A:AS12485
DATE: 09-29-86

	Milliequivalents/Liter
CATIONS	
Na	384.10500
K	17.92457
Ca	239.14580
Mg	.72101
Fe	2.70097
Li	.77706
Sr	2.11748
Ba	.03538
La	.02103
Mn	.13468
SUM OF CATIONS:	647.68300
ANIONS	
HCO3	5.35953
Cl	609.33600
F	.03422
SO4	2.97726
SUM OF ANIONS:	617.70700
CATION-ANION BALANCE	29.97595
BALANCE DIFF. CATION + ANION	2.37

TRILINEAR DIAGRAM COORDINATES

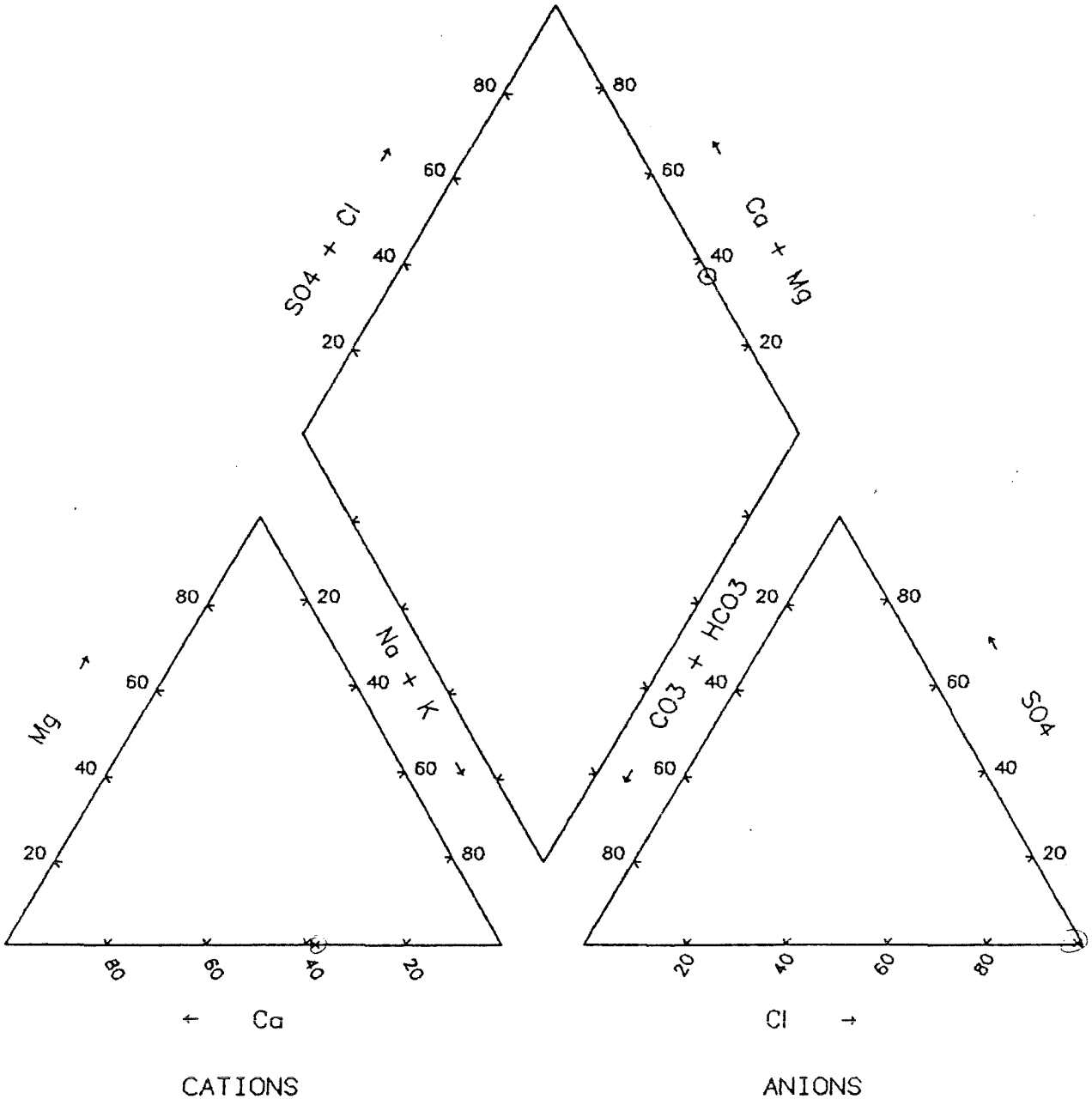
ASCENSION
WATER FROM WELL 12/4/86

ID #: A:AS12486
DATE: 09-29-86

	Meq / L	Percent (Meq / L)
CATIONS		
Na	384.10500	59.83910
K	17.92457	2.79244
Ca	239.14580	37.25613
Mg	.72101	.11232
TOTAL	641.89630	100.00000
ANIONS		
HCO3	5.35953	.86770
CO3	.00000	.00000
SO4	2.97726	.48201
Cl	609.33600	98.65029
TOTAL	617.67280	100.00000

ASCENSION
WATER FROM WELL 12/4/86

UURI ID# A:AS12486
DATE: 09-29-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
12/5/86 1330

ID #: A:A1251330
DATE: 10-02-86

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	142.00	1	.61	.618E-02
K	11.00	1	1.22	.281E-03
Ca	87.00	1	.24	.217E-02
Mg	N.D.	1	.49	< .201E-04
Fe	.71	1	.02	.127E-04
Al	N.D.	1	.61	< .226E-04
SiO2	13.00	1	.52	.216E-03
B	.70	1	.12	.648E-04
Li	.09	1	.05	.130E-04
Sr	1.62	1	.01	.185E-04
Zn	.20	1	.12	.306E-05
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	N.D.	1	.61	< .444E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.06	< .547E-06
Ce	N.D.	1	.50	< .714E-06
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	N.D.	1	.12	< .878E-06
Mn	N.D.	1	.24	< .444E-05
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	3.41	< .165E-04
Ti	N.D.	1	.12	< .253E-05
U	N.D.	1	6.10	< .256E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

SOLUTION
12/5/88 1330

DATE:

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	29.00	2	1.00	.475E-03
CO3	N.D.	2	1.00	< .167E-04
Cl	376.00	2	1.00	.106E-01
F	N.A.	5	.05	< .263E-05
SO4	N.A.	11	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.84	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	646.58	6		
pH	7.10	7		

****

ANALYTICAL METHODS

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

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	Milliequivalents/Liter
CATIONS	
Na	6.17700
K	.28127
Ca	4.34130
Fe	.02543
Li	.01297
Sr	.03698
Zn	.00612
SUM OF CATIONS:	10.88107
ANIONS	
HCO3	.47531
Cl	10.60696
SUM OF ANIONS:	11.08227
CATION-ANION BALANCE	-.20120
BALANCE DIFF. CATION + ANION	-.92

ASCENSION
12/5/86 1530

ID #: A:A1251530
DATE: 10-02-86

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	405.65	1	.61	.176E-01
K	33.11	1	1.22	.847E-03
Ca	230.58	1	.24	.575E-02
Mg	.85	1	.49	.350E-04
Fe	15.81	1	.02	.283E-03
Al	N.D.	1	.61	< .226E-04
SiO2	16.69	1	.52	.278E-03
B	1.53	1	.12	.142E-03
Li	.27	1	.05	.390E-04
Sr	4.50	1	.01	.514E-04
Zn	.31	1	.12	.476E-05
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	N.D.	1	.61	< .444E-05
Be	.00	1	.00	.212E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.24	< .214E-05
Ce	N.D.	1	.24	< .174E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	.17	1	.12	.122E-05
Mn	.30	1	.24	.543E-05
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .250E-05
U	N.D.	1	4.10	< .284E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

ASCENSION
12/5/86 1530

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	34.00	2	1.00	.557E-03
CO3	N.D.	2	1.00	< .167E-04
Cl	1100.00	2	1.00	.310E-01
F	N.A.	5	.05	< .263E-05
SO4	N.A.	4	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.84	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	1826.50	6		
pH	6.99	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	17.64577
K	.84664
Ca	11.50594
Mg	.06995
Fe	.56620
Li	.03905
Sr	.10272
Zn	.00952
Be	.00001
La	.00442
Mn	.02174
SUM OF CATIONS:	30.81195
ANIONS	
HCO3	.55726
Cl	31.03100
SUM OF ANIONS:	31.58826
CATION-ANION BALANCE	-.77630
BALANCE DIFF. CATION + ANION	-1.24

TRILINEAR DIAGRAM COORDINATES

ASCENSION
12/5/86 1530

ID #: A:A1251530
DATE: 10-02-86

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	17.64577	58.68563
K	.84664	2.81573
Ca	11.50594	38.26601
Mg	.06995	.23263
TOTAL	30.06831	100.00000
ANIONS		
HCO3	.55726	1.76414
CO3	.00000	.00000
SO4	.00000	.00000
Cl	31.03100	98.23586
TOTAL	31.58826	100.00000

GEOTHERMOMETERS

ASCENSION
12/5/86 1530

ID #: A:A1251530
DATE: 10-02-86

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Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	57.		Fournier (1981)
Quartz (maximum steam loss)	63.		Fournier (1981)
Chalcedony	24.		Fournier (1981)
alpha-Cristobalite	8.		Fournier (1981)
beta-Cristobalite	-36.		Fournier (1981)
Amorphous Silica	-51.		Fournier (1981)
Na/K (Fournier)	200.		Fournier (1979)
Na/K (Truesdell)	167.		Fournier (1981)
Na-K-Ca	164.	beta= .33	Fournier and Truesdell (1974)
Na-K-Ca with Mg correction	154.	B= .54	Fournier and Potter (1979)
Na/Li	8.		Fouillac and Michard (1981)

ASCENSION
12/5/86 1945

ID #: A:A1251945
DATE: 10-02-86

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	7.13	1	.61	.310E-03
K	N.D.	1	1.22	< .312E-04
Ca	5.59	1	.24	.139E-03
Mg	N.D.	1	.49	< .201E-04
Fe	8.16	1	.02	.146E-03
Al	N.D.	1	.61	< .226E-04
SiO2	2.07	1	.52	.345E-04
B	N.D.	1	.12	< .113E-04
Li	N.D.	1	.05	< .703E-05
Sr	.09	1	.01	.103E-05
Zn	1.11	1	.12	.170E-04
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	N.D.	1	.61	< .444E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.06	< .534E-06
Ce	N.D.	1	2.44	< .174E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	N.D.	1	.12	< .878E-06
Mn	N.D.	1	.24	< .444E-05
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .235E-05
U	N.D.	1	6.10	< .256E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	21.00	2	1.00	.344E-03
CO3	N.D.	2	1.00	< .167E-04
Cl	18.00	2	1.00	.508E-03
F	N.A.	5	.05	< .263E-05
SO4	N.D.	11	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.64	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	52.48	6		
pH	5.35	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	.31016
Ca	.27894
Fe	.29221
Sr	.00205
Zn	.03397
SUM OF CATIONS:	.91733
ANIONS	
HCO3	.34419
Cl	.50778
SUM OF ANIONS:	.85197
CATION-ANION BALANCE	.06536
BALANCE DIFF. CATION + ANION	3.69

TRILINEAR DIAGRAM COORDINATES

ASCENSION
12/5/86 1945

ID #: A:A1251945
DATE: 10-02-86

	Meq / L	Percent (Meq / L)
CATIONS		
Na	.31016	52.64931
K	.00000	.00000
Ca	.27894	47.35069
Mg	.00000	.00000
TOTAL	.58910	100.00000
ANIONS		
HCO3	.34419	40.39931
CO3	.00000	.00000
SO4	.00000	.00000
Cl	.50778	59.60069
TOTAL	.85197	100.00000

GEOTHERMOMETERS

ASCENSION
12/5/86 1945

ID #: A:A1251945
DATE: 10-02-86

Geothermometer	Temp (deg C)	Reference
Quartz (no steam loss)	-5.	Fournier (1981)
Quartz (maximum steam loss)	7.	Fournier (1981)
Chalcedony	-37.	Fournier (1981)
alpha-Cristobalite	-49.	Fournier (1981)
beta-Cristobalite	-87.	Fournier (1981)
Amorphous Silica	-99.	Fournier (1981)

ASCENSION
12/6/86 1430

ID #: A:A12614J0
DATE: 10-02-86

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	109.25	1	.61	.475E-02
K	8.39	1	1.22	.215E-03
Ca	73.44	1	.24	.183E-02
Mg	N.D.	1	.49	< .201E-04
Fe	N.D.	1	.02	< .437E-06
Al	N.D.	1	.61	< .226E-04
SiO2	18.00	1	.52	.300E-03
B	.40	1	.12	.370E-04
Li	.09	1	.05	.130E-04
Sr	1.27	1	.01	.145E-04
Zn	N.D.	1	.12	< .187E-05
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	N.D.	1	.61	< .444E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.24	< .214E-05
Ce	N.D.	1	.24	< .174E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	N.D.	1	.12	< .878E-06
Mn	N.D.	1	.24	< .444E-05
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .255E-05
U	N.D.	1	6.10	< .256E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

[illegible]
12/6/86 [illegible]

ID #: [illegible]
DATE: [illegible]

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS		CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS					
HCO3	67.00	2	1.00		.110E-02
CO3	N.D.	2	1.00	<	.167E-04
Cl	263.00	2	1.00		.742E-02
F	.32	5	.05		.168E-04
SO4	2.00	11	1.00		.208E-04
Br	N.A.	2	1.00	<	.125E-04
I	N.A.	2	.10	<	.788E-06
NO3	N.A.	9	.10	<	.161E-05
S	N.A.	2	1.00	<	.312E-04
PO4	N.D.	1	1.84	<	.194E-04

TOTAL DISSOLVED SOLIDS			
MEASURED	NOT MEAS.	4	4.00
CALCULATED	509.10	6	
pH	6.27	7	

****

ANALYTICAL METHODS

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	4.75237
K	.21453
Ca	3.66466
Li	.01297
Sr	.02599
SUM OF CATIONS:	8.67353
ANIONS	
HCO3	1.09813
Cl	7.41927
F	.01684
SO4	.04164
SUM OF ANIONS:	8.57584
CATION-ANION BALANCE	.09768
BALANCE DIFF. CATION + ANION	.57

TRILINEAR DIAGRAM COORDINATES

ASCENSION
12/6/86 1430

ID #: A:A1261430
DATE: 10-02-86

	Meq / L	Percent (Meq / L)
CATIONS		
Na	4.75237	55.05810
K	.21453	2.48544
Ca	3.66466	42.45646
Mg	.00000	.00000
TOTAL	8.63156	100.00000
ANIONS		
HCO3	1.09813	12.83012
CO3	.00000	.00000
SO4	.04164	.48651
Cl	7.41923	86.68337
TOTAL	8.55900	100.00000

GEOTHERMOMETERS

ASCENSION
12/6/86 1430

ID #: A:A1261430
DATE: 10-02-86

****

Geothermometer	Temp (deg C)	Reference
Quartz (no steam loss)	60.	Fournier (1981)
Quartz (maximum steam loss)	65.	Fournier (1981)
Chalcedony	27.	Fournier (1981)
alpha-Cristobalite	11.	Fournier (1981)
beta-Cristobalite	-33.	Fournier (1981)
Amorphous Silica	-49.	Fournier (1981)
Na/K (Fournier)	195.	Fournier (1979)
Na/K (Truesdell)	161.	Fournier (1981)
Na-K-Ca	66. beta=1.33	Fournier and Truesdell(1974)
Na/Li	16.	Fouillac and Michard(1981)

2 bottles,
no sample for EDI
on ice

ASCENSION
12/6/85 1900

ID #: A:A1261900
DATE: 10-02-86

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	39.00	1	.61	.170E-02
K	3.00	1	1.22	.767E-04
Ca	40.00	1	.24	.998E-03
Mg	.60	1	.49	.247E-04
Fe	15.20	1	.02	.272E-03
Al	N.D.	1	.61	< .226E-04
SiO2	9.00	1	.52	.150E-03
B	.20	1	.12	.185E-04
Li	N.D.	1	.05	< .703E-05
Sr	.49	1	.01	.559E-05
Zn	1.80	1	.12	.275E-04
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	N.D.	1	.61	< .444E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.04	< .356E-06
Ce	N.D.	1	.24	< .171E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	N.D.	1	.12	< .878E-06
Mn	N.D.	1	.24	< .444E-05
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .255E-05
U	N.D.	1	6.10	< .256E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

[illegible]
12/6/85 1900

ID #: [illegible]
DATE: 10-02-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	16.00	2	1.00	.262E-03
CO3	N.D.	2	1.00	< .167E-04
Cl	10.00	2	1.00	.282E-03
F	N.A.	5	.05	< .263E-05
SO4	N.D.	4	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.84	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	127.16	6		
pH	5.60	7		

****

ANALYTICAL METHOD

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	1.69650
K	.07671
Ca	1.99600
Mg	.04936
Fe	.54431
Sr	.01119
Zn	.05508
SUM OF CATIONS:	4.42914
ANIONS	
HCO3	.26224
Cl	.28210
SUM OF ANIONS:	.54434
CATION-ANION BALANCE	3.88480
BALANCE DIFF. CATION + ANION	78.11

TRILINEAR DIAGRAM COORDINATES

ASCENSION
12/6/85 1900

ID #: A:A1261900
DATE: 10-02-86

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	1.69650	44.42767
K	.07671	2.00887
Ca	1.99600	52.27093
Mg	.04936	1.29253
TOTAL	3.81857	100.00000
ANIONS		
HCO3	.26224	48.17577
CO3	.00000	.00000
SO4	.00000	.00000
Cl	.28210	51.82423
TOTAL	.54434	100.00000

GEOTHERMOMETERS

ASCENSION
12/6/85 1900

ID #: A:A1261900
DATE: 10-02-86

****

Geothermometer	Temp (deg C)	Reference
Quartz (no steam loss)	36.	Fournier (1981)
Quartz (maximum steam loss)	44.	Fournier (1981)
Chalcedony	3.	Fournier (1981)
alpha-Cristobalite	-12.	Fournier (1981)
beta-Cristobalite	-54.	Fournier (1981)
Amorphous Silica	-68.	Fournier (1981)
Na/K (Fournier)	195.	Fournier (1979)
Na/K (Truesdell)	161.	Fournier (1981)
Na-K-Ca	39. beta=1.33	Fournier and Truesdell(1974)

ASCENSION
12/6/86 1930

ID #: A:A1261930
DATE: 10-02-86

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	11125.89	1	2.08	.484E+00
K	952.99	1	4.17	.244E-01
Ca	3235.26	1	.83	.807E-01
Mg	24.29	1	1.67	.999E-03
Fe	5.27	1	.08	.943E-04
Al	N.D.	1	2.08	< .772E-04
SiO2	164.56	1	1.79	.274E-02
B	30.90	1	.42	.286E-02
Li	11.57	1	.17	.167E-02
Sr	68.30	1	.04	.779E-03
Zn	.69	1	.42	.105E-04
Ag	N.D.	1	.17	< .155E-05
As	N.D.	1	2.08	< .278E-04
Au	N.D.	1	.33	< .169E-05
Ba	3.52	1	2.08	.256E-04
Be	.00	1	.00	.531E-06
Bi	N.D.	1	5.33	< .399E-04
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ce	N.D.	1	.03	< .395E-05
Co	N.D.	1	.08	< .141E-05
Cr	N.D.	1	.17	< .321E-05
Cu	N.D.	1	.21	< .328E-05
La	1.21	1	.42	.869E-05
Mn	1.64	1	.83	.299E-04
Mo	N.D.	1	4.17	< .434E-04
Ni	N.D.	1	.42	< .710E-05
Pb	N.D.	1	.83	< .402E-05
Sn	N.D.	1	.42	< .351E-05
Sb	N.D.	1	2.50	< .205E-04
Te	N.D.	1	4.17	< .327E-04
Th	N.D.	1	8.33	< .359E-04
Ti	.54	1	.42	.114E-04
U	N.D.	1	20.83	< .875E-04
V	N.D.	1	4.17	< .818E-04
W	N.D.	1	.42	< .227E-05
Zr	N.D.	1	.42	< .457E-05

ASCENSION
12/6/86 1930

ID #: A:A12a.T30
DATE: 10-01-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	175.00	2	1.00	.287E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	24700.00	2	1.00	.697E+00
F	1.45	5	.05	.763E-04
SO4	188.00	4	1.00	.196E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	6.29	< .663E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	40602.13	6		
pH	5.46	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

ASCENSION
12/6/86 1930

ID #: G,A:261730
DATE: 10-02-86

	Milliequivalents/Liter
CATIONS	
Na	483.97620
K	24.36803
Ca	161.43940
Mg	1.99805
Fe	.18861
Li	1.66689
Sr	1.55922
Zn	.02109
Ba	.05122
Be	.00002
La	.03138
Mn	.11951
Ti	.00653
SUM OF CATIONS:	675.42610
ANIONS	
HCO3	2.86825
Cl	696.78700
F	.07633
SO4	3.91416
SUM OF ANIONS:	703.64580
CATION-ANION BALANCE	-28.21967
BALANCE DIFF. CATION + ANION	-2.05

TRILINEAR DIAGRAM COORDINATES

ASCENSION
12/6/86 1930

ID #: A:A1261930
DATE: 10-02-86

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	483.97620	72.04367
K	24.36803	3.62737
Ca	161.43940	24.03153
Mg	1.99805	.29743
TOTAL	671.78170	100.00000
ANIONS		
HCO3	2.86825	.40767
CO3	.00000	.00000
SO4	3.91416	.55633
Cl	696.78700	99.03600
TOTAL	703.56940	100.00000

GEOTHERMOMETERS

ASCENSION
12/6/86 1930

ID #: A:A1261930
DATE: 10-02-86

****

Geothermometer	Temp (deg C)	Reference
Quartz (no steam loss)	167.	Fournier (1981)
Quartz (maximum steam loss)	158.	Fournier (1981)
Chalcedony	144.	Fournier (1981)
alpha-Cristobalite	117.	Fournier (1981)
beta-Cristobalite	67.	Fournier (1981)
Amorphous Silica	44.	Fournier (1981)
Na/K (Fournier)	204.	Fournier (1979)
Na/K (Truesdell)	171.	Fournier (1981)
Na-K-Ca	203. beta= .33	Fournier and Truesdell (1974)
Na/Li	24.	Fouillac and Michard (1981)

ASCENSION
12/6/86 2030

ID #: A:A126Z030
DATE: 10-02-66

ICP only

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	6512.56	1	1.02	.283E+00
K	560.43	1	2.03	.143E-01
Ca	1890.17	1	.41	.472E-01
Mg	14.33	1	.81	.589E-03
Fe	32.15	1	.04	.576E-03
Al	N.D.	1	1.02	< .377E-04
SiO2	184.14	1	.87	.306E-02
B	18.42	1	.20	.170E-02
Li	6.73	1	.08	.970E-03
Sr	40.09	1	.02	.458E-03
Zn	2.30	1	.20	.351E-04
Ag	N.D.	1	.08	< .753E-06
As	N.D.	1	1.02	< .136E-04
Au	N.D.	1	.16	< .825E-06
Ba	2.03	1	1.02	.148E-04
Be	N.D.	1	.00	< .225E-06
Bi	N.D.	1	4.06	< .194E-04
Cd	N.D.	1	.10	< .904E-06
Ce	N.D.	1	.41	< .295E-05
Co	N.D.	1	.04	< .690E-06
Cr	N.D.	1	.08	< .156E-05
Cu	N.D.	1	.10	< .160E-05
La	.45	1	.20	.327E-05
Mn	1.06	1	.41	.193E-04
Mo	N.D.	1	2.03	< .212E-04
Ni	N.D.	1	.20	< .346E-05
Pb	N.D.	1	.41	< .196E-05
Sn	N.D.	1	.20	< .171E-05
Sb	N.D.	1	1.22	< .100E-04
Te	N.D.	1	2.03	< .159E-04
Th	N.D.	1	4.06	< .175E-04
Ti	N.D.	1	.20	< .424E-05
U	N.D.	1	10.16	< .427E-04
V	N.D.	1	2.03	< .399E-04
W	N.D.	1	.20	< .111E-05
Zr	N.D.	1	.20	< .223E-05

ASCENSION
12/4/86 2030

ID #: A:ASCN2UTA
DATE: 10-13-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	N.A.	2	1.00	< .164E-04
CO3	N.A.	2	1.00	< .167E-04
Cl	N.A.	2	1.00	< .282E-04
F	N.A.	5	.05	< .263E-05
SO4	N.A.	11	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	3.07	< .323E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	9264.85	6		
pH	.00	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

ASCENSION
12/7/86 1400

ID #: A:A1271400
DATE: 10-02-86

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	9048.00	1	2.00	.394E+00
K	656.40	1	4.00	.168E-01
Ca	4832.00	1	.80	.121E+00
Mg	9.50	1	1.60	.391E-03
Fe	25.48	1	.08	.456E-03
Al	N.D.	1	2.00	< .741E-04
SiO2	170.37	1	1.72	.284E-02
B	23.88	1	.40	.221E-02
Li	4.26	1	.16	.613E-03
Sr	91.32	1	.04	.104E-02
Zn	N.D.	1	.40	< .612E-05
Ag	N.D.	1	.16	< .148E-05
As	N.D.	1	2.00	< .267E-04
Au	N.D.	1	.32	< .162E-05
Ba	2.95	1	2.00	.215E-04
Be	.01	1	.00	.755E-06
Bi	N.D.	1	8.00	< .383E-04
[illegible]	[illegible]	1	[illegible]	[illegible]
[illegible]	[illegible]	1	[illegible]	[illegible]
Co	N.D.	1	.08	< .136E-05
Cr	N.D.	1	.16	< .308E-05
Cu	N.D.	1	.20	< .315E-05
La	1.43	1	.40	.103E-04
Mn	1.79	1	.80	.326E-04
Mo	N.D.	1	4.00	< .417E-04
Ni	N.D.	1	.40	< .682E-05
Pb	N.D.	1	.80	< .386E-05
Sn	N.D.	1	.40	< .337E-05
Sb	N.D.	1	2.40	< .197E-04
Te	N.D.	1	1.00	< .313E-04
Th	N.D.	1	8.00	< .345E-04
Ti	.55	1	.40	.115E-04
U	N.D.	1	20.00	< .840E-04
V	N.D.	1	4.00	< .785E-04
W	N.D.	1	.40	< .218E-05
Zr	N.D.	1	.40	< .439E-05

[illegible]
12/7/84 1400

[illegible]
DATE: 10-02-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	150.00	2	1.00	.246E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	22300.00	2	1.00	.629E+00
F	.64	5	.05	.337E-04
SO4	164.00	4	1.00	.171E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	6.04	< .636E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	37406.34	6		
pH	5.45	7		

****

[illegible]

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	393.58800
K	16.78415
Ca	241.11680
Mg	.78180
Fe	.91230
Li	.61329
Sr	2.08484
Ba	.04293
Be	.00003
La	.03727
Mn	.13059
Ti	.00660
SUM OF CATIONS:	656.09860
ANIONS	
HCO3	2.45850
Cl	629.08300
F	.03369
SO4	3.41448
SUM OF ANIONS:	634.98970
CATION-ANION BALANCE	21.10889
BALANCE DIFF. CATION + ANION	1.63

TRILINEAR DIAGRAM COORDINATES

ASCENSION
12/7/86 1400

ID #: A:A1271400
DATE: 10-02-86

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	393.58800	60.34120
K	16.78415	2.57319
Ca	241.11680	36.96576
Mg	.78180	.11986
TOTAL	652.27070	100.00000
ANIONS		
HCO3	2.45850	.38719
CO3	.00000	.00000
SO4	3.41448	.53775
Cl	629.08300	99.07506
TOTAL	634.95600	100.00000

GEOTHERMOMETERS

ASCENSION
12/7/86 1400

ID #: A:A1C71400
DATE: 10-02-86

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Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	169.		Fournier (1981)
Quartz (maximum steam loss)	159.		Fournier (1981)
Chalcedony	147.		Fournier (1981)
alpha-Cristobalite	119.		Fournier (1981)
beta-Cristobalite	70.		Fournier (1981)
Amorphous Silica	46.		Fournier (1981)
Na/K (Fournier)	191.		Fournier (1979)
Na/K (Truesdell)	155.		Fournier (1981)
Na-K-Ca	185.	beta= .33	Fournier and Truesdell(1974)
Na-K-Ca with Mg correction	159.	R= .30	Fournier and Potter (1979)
Na/Li	[illegible]		[illegible]

has [illegible]
5 [illegible]

ASCENSION
12/7/86 1800

ID #. [illegible]
DATE: 10-02-[illegible]

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS		CONCENTRATION (MOL/L)
Na	9302.65	1	1.91		.405E+00
K	685.60	1	3.81		.175E-01
Ca	4965.73	1	.76		.124E+00
Mg	9.76	1	1.52		.402E-03
Fe	52.93	1	.08		.948E-03
Al	N.D.	1	1.91	<	.706E-04
SiO2	223.31	1	1.64		.372E-02
B	24.97	1	.38		.231E-02
Li	4.23	1	.15		.609E-03
Sr	96.11	1	.04		.110E-02
Zn	1.30	1	.38		.198E-04
Ag	N.D.	1	.15	<	.141E-05
As	N.D.	1	1.91	<	.254E-04
Au	N.D.	1	.30	<	.155E-05
Ba	2.77	1	1.91		.202E-04
Be	N.D.	1	.00	<	.423E-06
Bi	N.D.	1	7.62	<	.365E-04
Cd	N.D.	1	.19	[illegible]	.170E-05
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Co	N.D.	1	.08	[illegible]	.129E-05
Cr	N.D.	1	.15	<	.293E-05
Cu	N.D.	1	.19	<	.300E-05
La	1.04	1	.38		.747E-05
Mn	1.98	1	.76		.361E-04
Mo	N.D.	1	3.81	<	.397E-04
Ni	N.D.	1	.38	<	.649E-05
Pb	N.D.	1	.76	<	.368E-05
Sn	N.D.	1	.38	<	.321E-05
Sb	N.D.	1	2.29	<	.188E-04
Te	N.D.	1	3.81	<	.299E-04
Th	N.D.	1	7.62	<	.328E-04
Ti	N.D.	1	.38	<	.796E-05
U	N.D.	1	19.06	<	.801E-04
V	N.D.	1	3.81	<	.748E-04
W	N.D.	1	.38	<	.207E-05
Zr	N.D.	1	.38	<	.418E-05

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	27.00	2	1.00	.442E-03
CO3	N.D.	2	1.00	< .167E-04
Cl	21800.00	2	1.00	.615E+00
F	N.A.	5	.05	< .263E-05
SO4	N.A.	11	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	5.75	< .606E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	37185.65	6		
pH	6.10	7		

****

ANALYTICAL METHOD

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	404.66530
K	17.53076
Ca	247.79010
Mg	.80286
Fe	1.89559
Li	.60902
Sr	2.19427
Zn	.03965
Ba	.04030
La	.02696
Mn	.14448
SUM OF CATIONS:	675.73930
ANIONS	
HCO3	.44253
Cl	614.97800
SUM OF ANIONS:	615.42050
CATION-ANION BALANCE	60.31879
BALANCE DIFF. CATION + ANION	4.67

ASCENSION
12/7/86 2300

ID #: A:A1272300
DATE: 10-02-86

ICP only

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	8540.45	1	1.91	.371E+00
K	615.10	1	3.81	.157E-01
Ca	4569.39	1	.76	.114E+00
Mg	9.17	1	1.52	.377E-03
Fe	52.97	1	.08	.949E-03
Al	N.D.	1	1.91	< .706E-04
SiO2	226.65	1	1.64	.377E-02
B	22.17	1	.38	.205E-02
Li	3.41	1	.15	.492E-03
Sr	88.95	1	.04	.102E-02
Zn	.93	1	.38	.142E-04
Ag	N.D.	1	.15	< .141E-05
As	N.D.	1	1.91	< .254E-04
Au	N.D.	1	.30	< .155E-05
Ba	2.51	1	1.91	.183E-04
Be	N.D.	1	.00	< .423E-06
Bi	N.D.	1	7.62	< .365E-04
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Cd	[illegible]	[illegible]	[illegible]	[illegible]
Co	N.D.	1	.08	< .129E-05
Cr	N.D.	1	.15	< .293E-05
Cu	N.D.	1	.19	< .300E-05
La	1.00	1	.38	.717E-05
Mn	1.83	1	.76	.333E-04
Mo	N.D.	1	3.81	< .397E-04
Ni	N.D.	1	.38	< .649E-05
Pb	N.D.	1	.76	< .368E-05
Sn	N.D.	1	.38	< .321E-05
Sb	N.D.	1	2.29	< .188E-04
Te	[illegible]	[illegible]	[illegible]	[illegible]
Th	N.D.	1	7.62	< .726E-04
Ti	N.D.	1	.38	< .796E-05
U	N.D.	1	19.06	< .801E-04
V	N.D.	1	3.81	< .748E-04
W	N.D.	1	.38	< .207E-05
Zr	N.D.	1	.36	< .418E-05

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	N.A.	2	1.00	< .164E-04
CO3	N.A.	2	1.00	< .167E-04
Cl	N.A.	2	1.00	< .282E-04
F-	N.A.	5	.05	< .263E-05
SO4	N.A.	11	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	5.75	< .606E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	14134.53	6		
pH	.00	7		

1. INDUCTIVELY COUPLED PLASMA SPECTROMETRY
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. SULFIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

ASCENSION
12/8/84 (PM)

ID #: A-1231900
DATE: 10-02-84

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	7835.42	1	1.90	.341E+00
K	559.07	1	3.81	.143E-01
Ca	4295.00	1	.76	.107E+00
Mg	8.43	1	1.52	.347E-03
Fe	55.41	1	.08	.992E-03
Al	N.D.	1	1.90	< .706E-04
SiO2	223.72	1	1.64	.372E-02
B	21.03	1	.38	.195E-02
Li	3.10	1	.15	.447E-03
Sr	80.98	1	.04	.924E-03
Zn	1.48	1	.38	.226E-04
Ag	N.D.	1	.15	< .141E-05
As	N.D.	1	1.90	< .254E-04
Au	N.D.	1	.30	< .155E-05
Ba	2.34	1	1.90	.170E-04
Be	N.D.	1	.00	< .433E-06
Bi	N.D.	1	7.62	< .365E-04
[illegible]	[illegible]	1	[illegible]	[illegible]
Cd	N.D.	1	[illegible]	[illegible]
Ce	N.D.	1	.08	< .119E-05
Cr	N.D.	1	.15	< .293E-05
Cu	N.D.	1	.19	< .300E-05
La	.99	1	.38	.713E-05
Mn	1.76	1	.76	.320E-04
Mo	N.D.	1	3.81	< .397E-04
Ni	N.D.	1	.38	< .649E-05
Pb	N.D.	1	.76	< .368E-05
Sn	N.D.	1	.38	< .321E-05
Sb	N.D.	1	2.29	< .188E-04
Te	N.D.	1	[illegible]	< [illegible]
Th	N.D.	1	7.61	< .328E-04
Ti	.42	1	.38	.877E-07
U	N.D.	1	19.05	< .800E-04
V	N.D.	1	3.81	< .748E-04
W	N.D.	1	.38	< .207E-05
Zr	N.D.	1	.38	< .418E-05

SPECIES	CONCENTRATION (mg/L)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	164.00	1	1.00	.269E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	19700.00	2	1.00	.556E+00
F	.53	5	.05	.279E-04
SO4	150.00	4	1.00	.156E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	5.75	< .606E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	NOT MEAS.	4	4.00	
CALCULATED	33020.32	6		
pH	5.44	7		

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

	Milliequivalents/Liter
CATIONS	
Na	340.64080
K	14.29542
Ca	214.32050
Mg	.67345
Fe	1.98423
Li	.44671
Sr	1.84877
Zn	.04529
Ba	.03407
La	.02574
Mn	.12815
Ti	.00504
SUM OF CATIONS:	574.66820
ANIONS	
HCO3	2.68796
Cl	555.73700
F	.02790
SO4	3.13300
SUM OF ANIONS:	561.58586
CATION-ANION BALANCE	13.08234
BALANCE (%) CATION - ANION	1.2

PIPER DIAGRAM COORDINATES

ACCENTION
12/8/86 1900

ID #: A:A(201900
DATE: 10-02-86

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	340.84080	59.78088
K	14.29542	2.50731
Ca	214.32050	37.59018
Mg	.69345	.12163
TOTAL	570.15010	100.00000
ANIONS		
HCO3	2.68796	.47867
CO3	.00000	.00000
SO4	3.12300	.55614
Cl	555.73700	98.96519
TOTAL	561.54796	100.00000

[illegible]

[illegible]

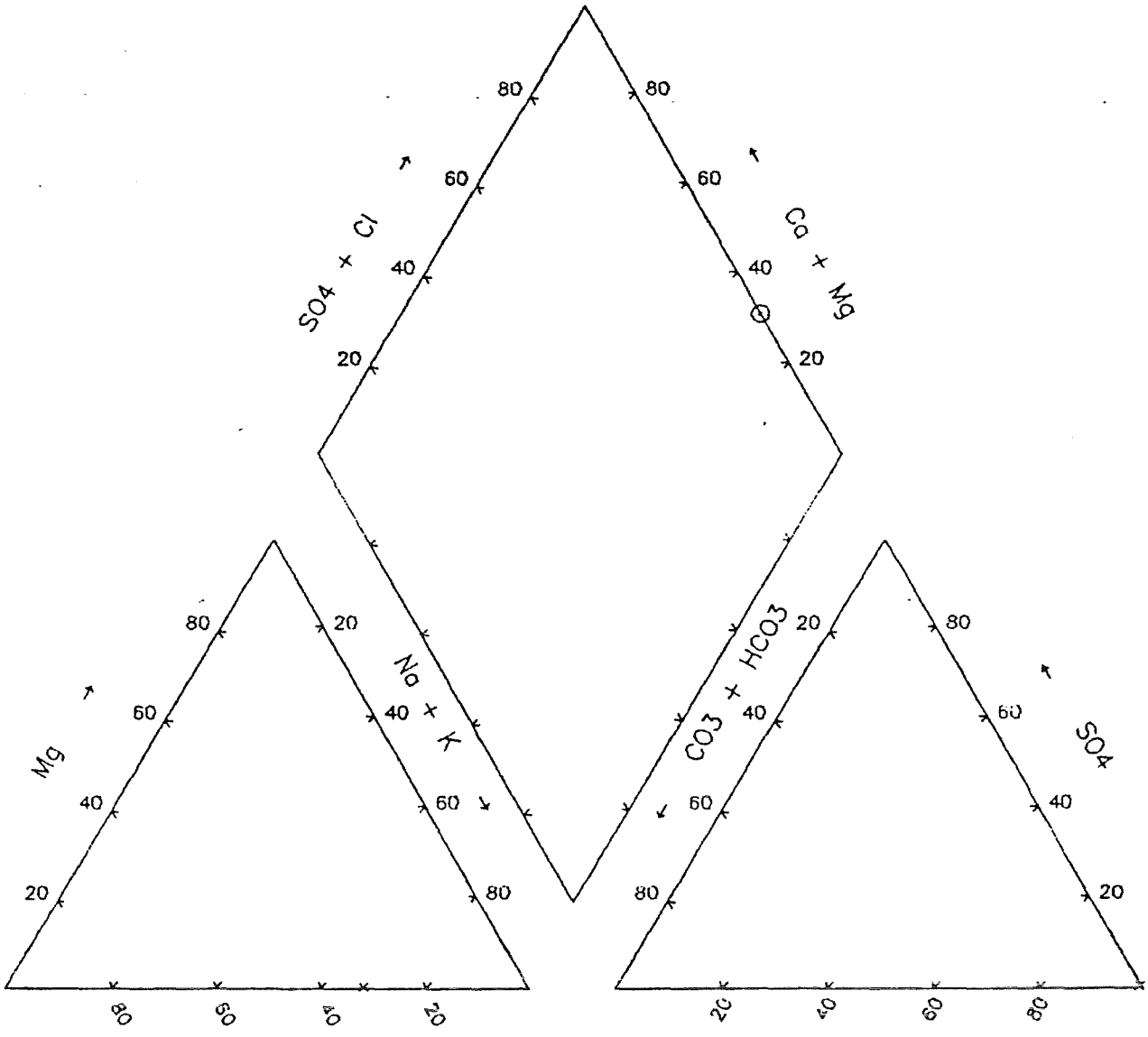
[illegible]

Geothermometer	Temp (deg C)	Reference
Quartz (no steam loss)	188.	Fournier (1981)
Quartz (maximum steam loss)	174.	Fournier (1981)
Chalcedony	168.	Fournier (1981)
alpha-Cristobalite	138.	Fournier (1981)
beta-Cristobalite	88.	Fournier (1981)
Amorphous Silica	64.	Fournier (1981)
Na/K (Fournier)	190.	Fournier (1979)
Na/K (Truesdell)	154.	Fournier (1981)
Na-K-Ca	183. beta= .33	Fournier and Truesdell(1974)
Na-K-Ca with Mg correction	151. Rb= 39	Fournier and Potter (1979)

[illegible]

ASCENSION
12/7/86 1400

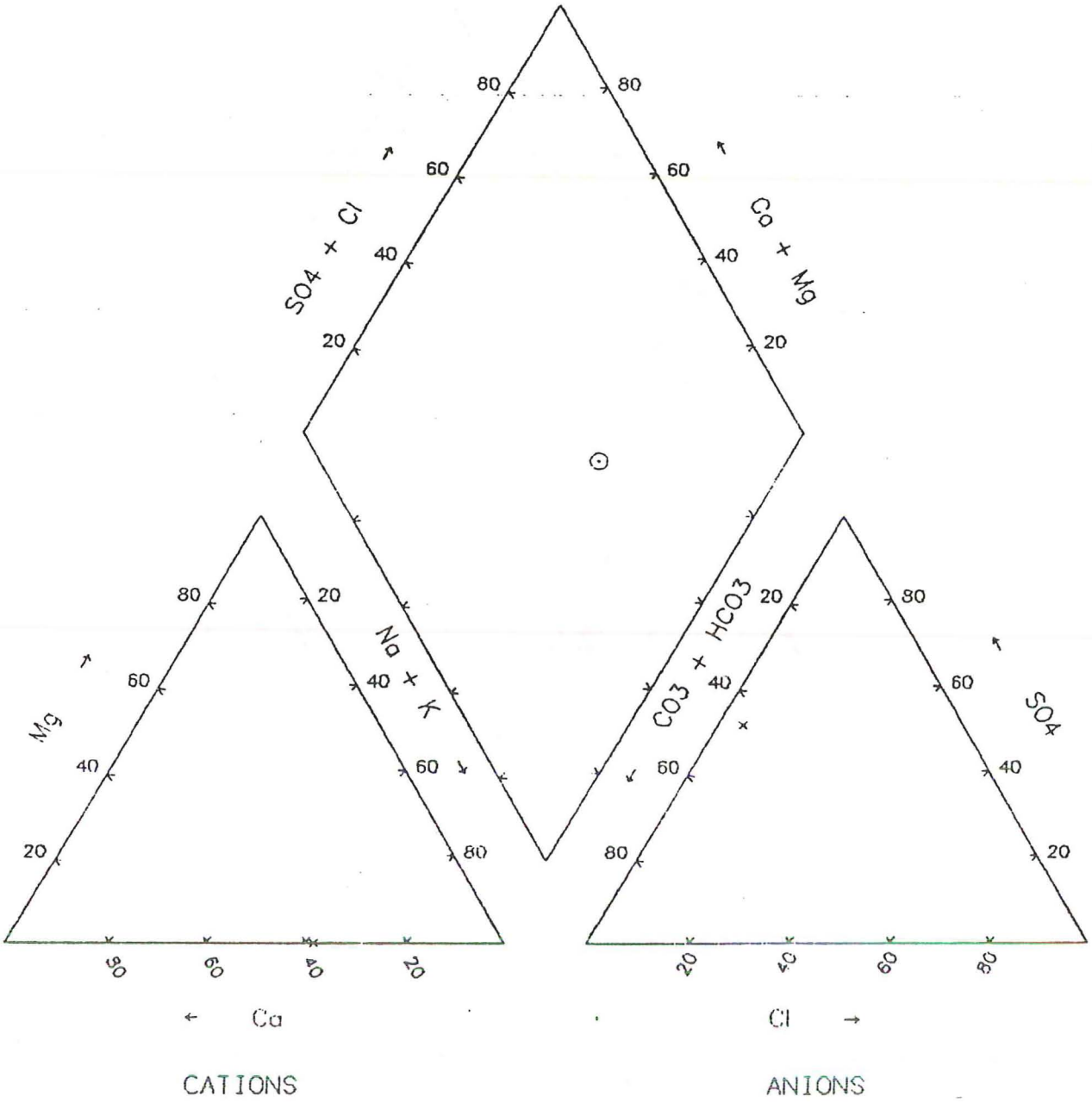
UURI ID# A:A1271400
DATE: 10-02-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
12/8/86 1900

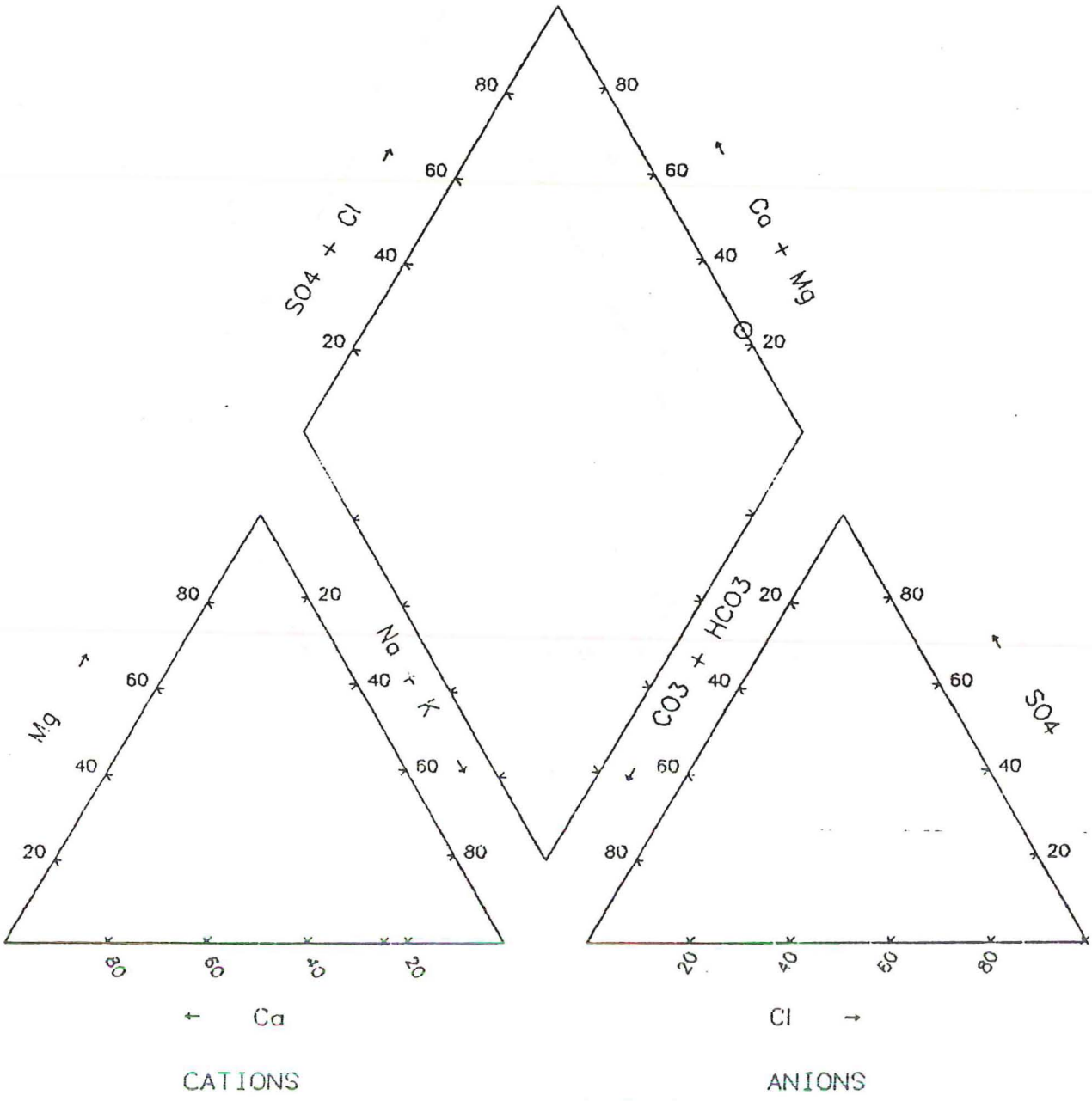
UURI ID# A:A1281900
DATE: 10-02-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
12/6/86 1930

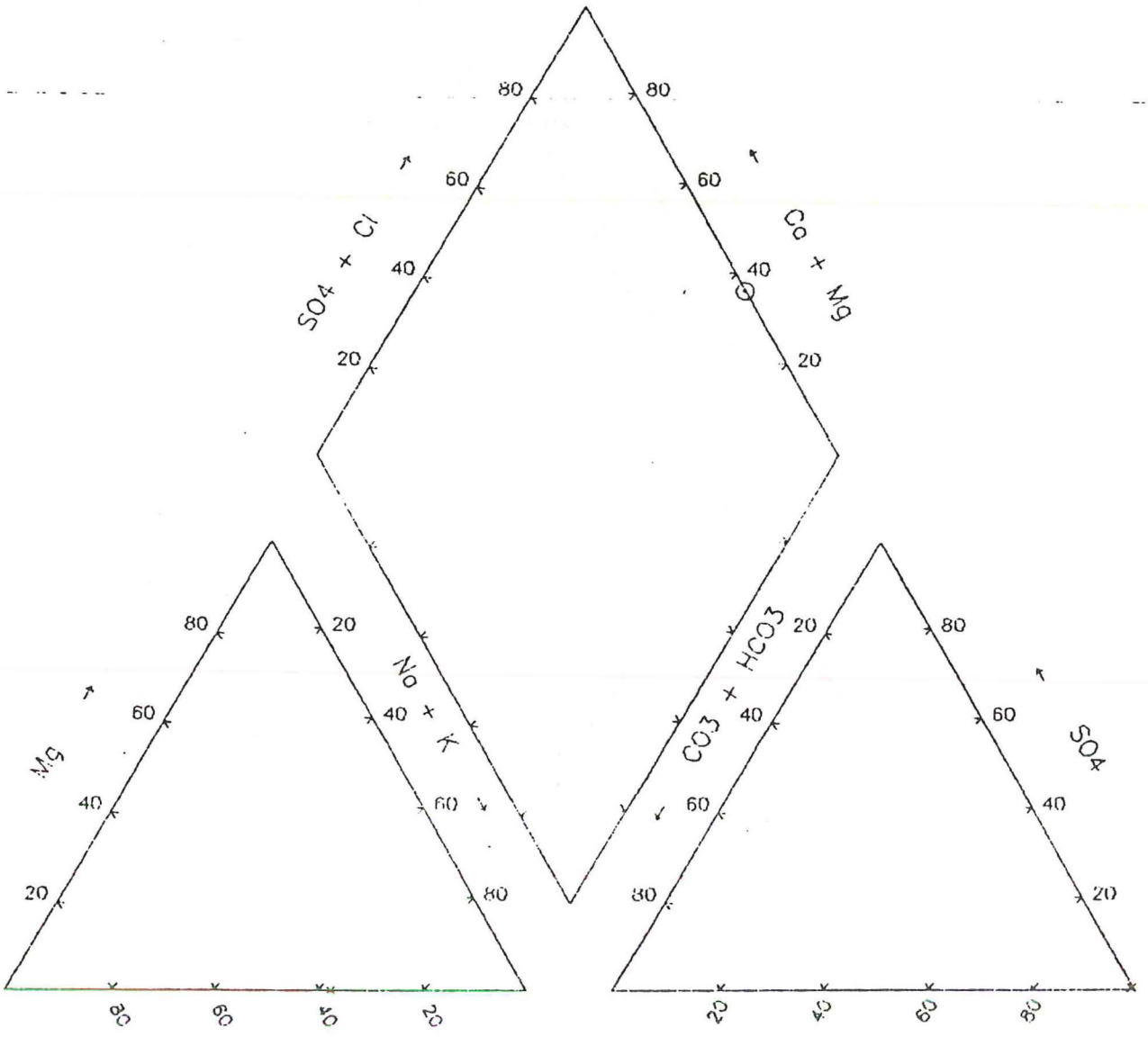
UURI ID# A:A1261930
DATE: 10-02-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
12/7/86 1400

UURI ID# A:A1271400
DATE: 10-02-86



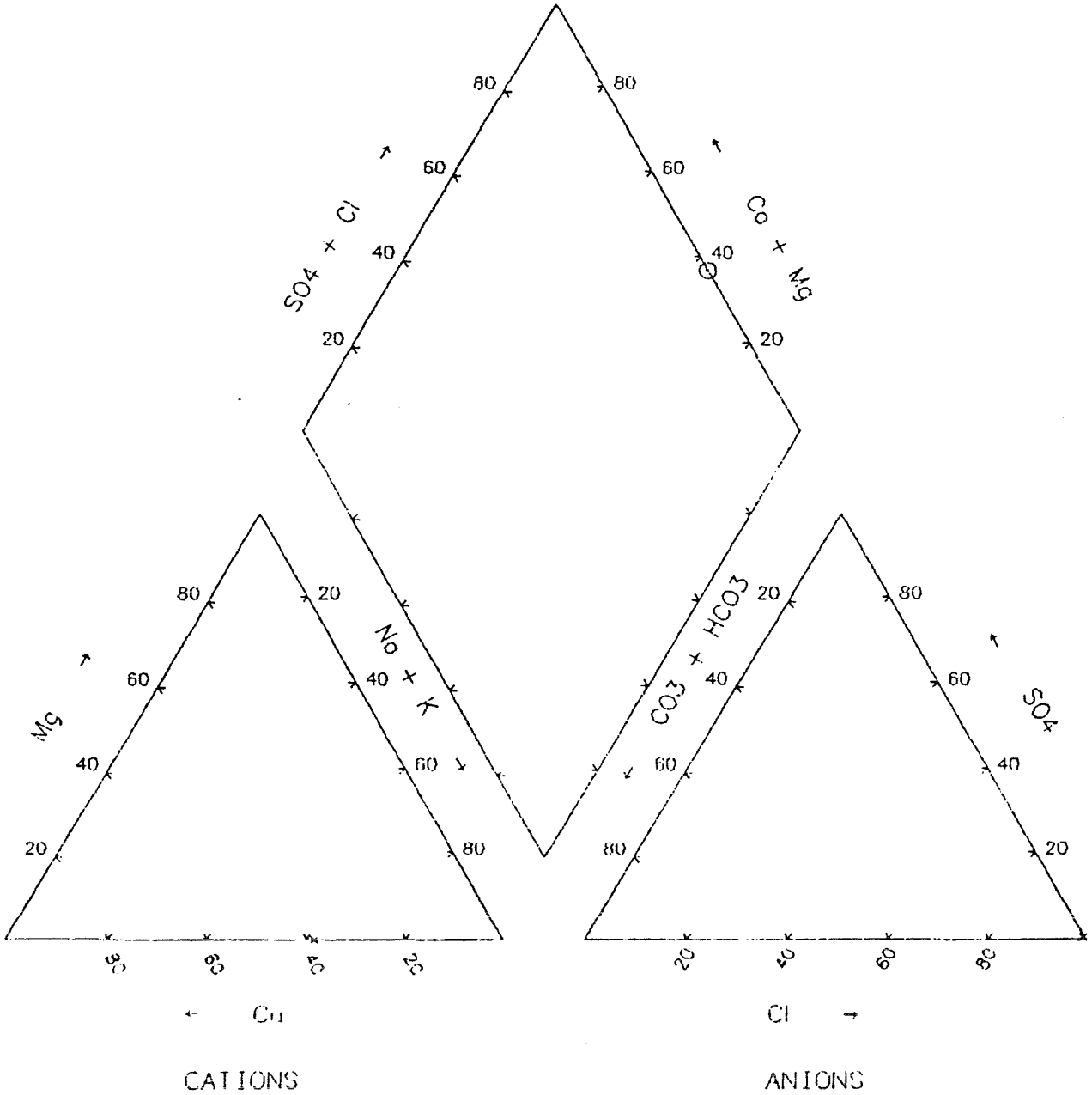
CATIONS

ANIONS

PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
12/8/86 1900

UURI ID# A:A1281900
DATE: 10-02-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

REPLICATE ANALYSES

H-67

ASSENCION WATERS

3 12/6 1430 Orig Jar

ELEMENT		CONCENTRATION (PPM)
NA		89
K		7
CA		74
MG		1
FE		20.85
AL	<	0.610
SIO2		22
TI	<	0.122
P	<	0.610
SR		1.08
BA	<	0.610
V	<	1.22
CR	<	0.049
MN		0.3
CO	<	0.024
NI	<	0.122
CU	<	0.061
MO	<	1.22
PB	<	0.244
ZN		1.6
CD	<	0.061
AG	<	0.049
AU	<	0.098
AS	<	0.366
SB	<	0.732
BI	<	2.44
U	<	6.10
TE	<	1.22
SN	<	0.122
W	<	0.122
LI		0.08
BE	<	0.005
B		0.3
ZR	<	0.122
LA	<	0.122
CE	<	0.244
TH	<	2.44

ASSENCION WATERS

4 12/6 1430 Untreated

ELEMENT		CONCENTRATION (PPM)
NA		109.25
K		8.39
CA		73.44
MG	<	0.488
FE	<	0.024
AL	<	0.610
SIO2		18
TI	<	0.122
P	<	0.610
SR		1.27
BA	<	0.610
V	<	1.22
CR	<	0.049
MN	<	0.244
CO	<	0.024
NI	<	0.122
CU	<	0.061
MO	<	1.22
PB	<	0.244
ZN	<	2.0
CD	<	0.061
AG	<	0.049
AU	<	0.098
AS	<	0.366
SB	<	0.732
BI	<	2.44
U	<	6.10
TE	<	1.22
SN	<	0.122
W	<	0.122
LI		0.09
BE	<	0.005
B		0.4
ZR	<	0.122
LA	<	0.122
CE	<	0.244
TH	<	2.44

ASSENSION

7 12/7 1400 0

ELEMENT		CONCENTRATION (PPM)
NA		9941
K		773
CA		4186
MG		16
FE		42.30
AL	<	1.91
SIO2		221
TI		0.5
P	<	1.91
SR		82.18
BA		3.1
V	<	3.81
CR	<	0.152
MN		1.8
CO	<	0.076
NI		1.2
CU	<	0.191
MO	<	3.81
PB	<	0.762
ZN		1.5
CD	<	0.191
AG	<	0.152
AU	<	0.305
AS	<	1.14
SB	<	2.29
BI	<	7.62
U	<	19.1
TE	<	3.81
SN	<	0.381
W	<	0.381
LI		7.25
BE	<	0.015
B		26.5
ZR	<	0.381
LA		1.3
CE	<	0.762
TH	<	7.62

ASSENSION

8 12/7 1400 U

ELEMENT		CONCENTRATION (PPM)
NA		9047
K		656
CA		4832
MG		10
FE		25.48
AL	<	2.00
SIO2		170
TI		0.5
P	<	2.00
SR		91.34
BA		2.9
V	<	4.00
CR	<	0.160
MN		1.8
CO	<	0.080
NI	<	0.400
CU	<	0.200
MO	<	4.00
PB	<	0.800
ZN	<	0.400
CD	<	0.200
AG	<	0.160
AU	<	0.320
AS	<	1.20
SB	<	2.40
BI	<	8.00
U	<	20.0
TE	<	4.00
SN	<	0.400
W	<	0.400
LI		4.26
BE	<	0.016
B		23.9
ZR	<	0.400
LA		1.4
CE	<	0.800
TH	<	8.00

INPUT TITLE?ASSENCION WATERS
ENTER BEGINNING NO.?1
ENTER LAST NO.?4

ASSENCION WATERS

1 12/5 1945 0

ELEMENT		CONCENTRATION (PPM)
NA		99
K		9
CA		57
MG		0.5
FE		6.45
AL	<	0.610
SIO2		13
TI	<	0.122
P	<	0.610
SR		1.10
BA	<	0.610
V	<	1.22
CR	<	0.049
MN	<	0.244
CO	<	0.024
NI	<	0.122
CU	<	0.061
MO	<	1.22
PB	<	0.244
ZN		0.7
CD	<	0.061
AG	<	0.049
AU	<	0.098
AS	<	0.366
SB	<	0.732
BI	<	2.44
U	<	6.10
TE	<	1.22
SN	<	0.122
W	<	0.122
LI		0.09
BE	<	0.005
B		0.5
ZR	<	0.122
LA	<	0.122
CE	<	0.244
TH	<	2.44

ASCENSION WATERS

2 12/5 1945 U

ELEMENT		CONCENTRATION (PPM)
NA		7.13
K	<	1.22
CA		~~4~~ 5.59
MG	<	0.488
FE		8.16
AL	<	0.610
SIO2		2.67
TI	<	0.122
P	<	0.610
SR		0.09
BA	<	0.610
V	<	1.22
CR	<	0.049
MN	<	0.244
CO	<	0.024
NI	<	0.122
CU	<	0.061
MO	<	1.22
PB	<	0.244
ZN		1.11
CD	<	0.061
AG	<	0.049
AU	<	0.098
AS	<	0.366
SB	<	0.732
BI	<	2.44
U	<	6.10
TE	<	1.22
SN	<	0.122
W	<	0.122
LI	<	0.049
BE	<	0.005
B	<	0.122
ZR	<	0.122
LA	<	0.122
CE	<	0.244
TH	<	2.44

ASSENSION

7 12/5 1530 0

ELEMENT		CONCENTRATION (PPM)
NA		3285
K		246
CA		1977
MG		4
FE		18.68
AL	<	0.617
SIO2		53
TI		0.2
P	<	0.617
SR		35.87
BA		1.1
V	<	1.23
CR	<	0.049
MN		0.9
CO	<	0.025
NI	<	0.123
CU	<	0.062
MO	<	1.23
PB	<	0.247
ZN		0.3
CD	<	0.062
AG	<	0.049
AU	<	0.099
AS	<	0.370
SB	<	0.741
BI	<	2.47
U	<	6.17
TE	<	1.23
SN	<	0.123
W	<	0.123
LI		2.12
BE	<	0.005
B		11.6
ZR	<	0.123
LA		0.5
CE	<	0.247
TH	<	2.47

ASSENSION

8 12/5 1530 U

ELEMENT		CONCENTRATION (PPM)
NA		405
K		33
CA		230
MG		0.8
FE		15.81
AL	<	0.610
SIO2		17
TI	<	0.122
P	<	0.610
SR		4.50
BA	<	0.610
V	<	1.22
CR	<	0.049
MN		0.3
CO	<	0.024
NI	<	0.122
CU	<	0.061
MO	<	1.22
PB	<	0.244
ZN		0.3
CD	<	0.061
AG	<	0.049
AU	<	0.098
AS	<	0.366
SB	<	0.732
BI	<	2.44
U	<	6.10
TE	<	1.22
SN	<	0.122
W	<	0.122
LI		0.27
BE	<	0.005
B		1.5
ZR	<	0.122
LA		0.2
CE	<	0.244
TH	<	2.44

Copy of notebook for Ascension Island trip, 1-27-87 to 2-5-87
PURPOSE--CHEMICAL SAMPLING
NOTE: electrode was dry on ph meter when we got there, slope needed calibrating---bring fresh buffers next time.

WS87-1
1/31/87
Deuterium and O-18 sample from dewpond at top of Green Mountain. Cistern was empty so only a sample of water from mixed dew-rain was taken from pond 2 m across. Pond had some vegetetation, relatively sparse lilies. Critters such as sheep and donkies were likely to have drunk out of it. Goldfish were in pond. Conductivity at 22°C (estimated) was 180 mhos. pH was 7.0 to 7.2. pH probe retained buffer pH quite a long time--effects of dehydration of electrode before we arrived? Isotope and chloride sample were taken. The high pH may indicate equilibrium with the cement that the pond was contained in.

WS87-3
2/1/87
1200 hrs
Rainwater from site, collected from tarp at test line.

WS87-4
2/1/87
1200 hrs
Gas sample from steamline of minicyclone seperator. Temperature was 185°F. Pressure should be checked with Sue Stiger, it was 3 psi. Water content of total discharge was very low, the well had been flushed out when it unloaded the day before. The mass flow in the liquid line of the seperator was low, and the conductivity was also low (300-500 mhos), so steam contamination of the liquid was suspected and no liquid sample taken.

WS87-5
2/1/87
1330 hrs
Rain sample from tarp at test line.

WS87-6
2/1/87
1347 hrs
Isotope sample from fluid dripping out of end of test pipe. Fluid had conductivity equivalent to about 120,000 ppm TDS NaCl. The main flow of the test pipe was fairly dry gas.

WS87-7
2/1/87
1403
Multielement sample from above fluid. pH = 5.3 to 5.5 at 64°C. 6.4 ml of HNO3 were added to ICP bottle, 5 ml were added to sulfate bottle.

WS87-8
2/1/87
1443 hrs
Evacuated flask used to collect gases from steam line to 1 psig. Inflow temperature was 185°F.

WS87-9
2/1/87
1443 hrs
Evacuated flask used to collect gases from steam line to 1 psig. Inflow temperature was 185°F.

WS87-10 Isotope sample from drops of condensate in steam line
2/1/87 of seperator. To be analyzed for D and ^{18}O.
1500 hrs

WS87-11 Sulfate isotope sample from high TDS fluid dripping
2/1/87 from the end of the test line.
1515 hrs

WS87-12 Isotope and chloride sample from bottom of Breakneck
2/2/87 Valley catchment pond. Pond was enclosed in
1030 hrs cement and partially covered with sheet metal.
Sparse vetetation in pond. pH = 7.5 and
conductivity = 190 mhos.

SLUG FLOW TEST--Well was shut back to 100 psi for 5 hours.
During this time the discharge is dry gas. The
liquid is prsumably built up in the well bore.
The purpose of the test is to observe chemical
changes in the fluids discharged after well is
opened back up and to correlate changes with
processes in well. Times are relative to opening
the valve after shutin.

GAS SAMPLES

WS87-13 Gas Sample in evacuated cylinder with NaOH.
2/2/87 Sample taken from steam line of seperator.
8:50-17:34 min Temperature of inflow from test line was
180°F.

WS87-14 Gas Sample in evacuated cylinder, intended for
2/2/87 Noble gases.
26:00 min Sample taken from steam line of seperator.

WS87-15 Gas Sample in evacuated cylinder with NaOH.
2/2/87 Sample taken from steam line of seperator.
35:50-27:34 min

WS87-16 Gas Sample in evacuated cylinder, intended for
2/2/87 Noble gases.
39:45 min Sample taken from steam line of seperator.

WS87-17 Gas Sample in evacuated cylinder with NaOH.
2/2/87 Sample taken from steam line of seperator.
42:0-49:30 min

CHLORIDE SAMPLES

WS87-18 Chloride sample from sample port through
2/2/87 condenser. No seperation of gas and
1551-1557 hrs liquid.

WS87-19 2/2/87 1604-1614 hrs	Chloride sample from sample port through condenser. No seperation of gas and liquid.

HIGH TDS SAMPLES FROM END OF PIPE

WS87-20 2/2/87	Multielement sample taken from dripping fluid at end of test line. Taken soon after valve opened. pH = 5.5 at ?°C. Temperature was probably about 60°C. Isotope sample was taken from untreated split, but it should'nt make any difference because the TDS is so high.
WS87-21 2/2/87	Isotope sample of above.
WS87-22 2/2/87	Multielement sample taken from dripping fluid at end of test line. Taken 20 min after last sample. pH 6.0 at ?°C. Temperature was probably about 60°C. Isotope sample was taken from untreated split, but it should'nt make any difference because the TDS is so high.
WS87-23 2/2/87	Isotope sample of above.
WS87-24 2/2/87	Isotope sample of liquid fraction of slug through seperator. View these results with caution - there is probably condensate mixed in with the liquid. Sample was exposed to about 40 mls of atmosphere overnight because there was not enough sample.
WS87-26 2/3/87 0845	Blank of rinse water, taken from melted ice in cooler. This water comes from the desalinization plant. pH = 7.9 at 5°C.
WS87-27 2/3/87 1100 hrs	Seawater from 1 m deep in English Bay. pH 7.5 -8.0.

Thermochem, Inc.
Analytical Laboratory & Consulting Service
6119 Old Redwood Hwy., Ste. A-2
Santa Rosa, CA 95401
(707) 575-1310

DESCRIPTOR : WS87-15 2/2/87

LAB NUMBER : 4460-3

SAMPLE GAS/STEAM RATIO (ft^3/lb) :	******
SAMPLE GAS/STEAM RATIO (MOLES PER 10^6 MOLES H_2O) :	944416.
SAMPLE GAS/STEAM RATIO (PPM by WEIGHT) :	697457.
PERCENT AIR IN SAMPLE :	.031
STP MLs AIR IN SAMPLE :	4.497
TOTAL WEIGHT OF CONDENSATE (GRAMS):	12.35
INITIAL HEAD SPACE PRESSURE (PSI):	.33

GAS	DRY GAS % BY VOL	MOLES PER 10^6 MOLES H_2O	PPM BY WEIGHT
WATER VAPOR	N/A	N/A	3.03E+05
CARBON DIOXIDE	9.99E+01	9.43E+05	6.97E+05
HYDROGEN SULFIDE	< 2.53E-03	< 2.39E+01	< 1.37E+01
AMMONIA	< 2.53E-04	< 2.39E+00	< 6.84E-01
ARGON	9.43E-04	8.91E+00	5.97E+00
NITROGEN	1.08E-01	1.02E+03	4.80E+02
METHANE	4.52E-03	4.27E+01	1.15E+01
HYDROGEN	1.06E-02	1.00E+02	3.39E+00

Thermochem, Inc.
Analytical Laboratory & Consulting Service
6119 Old Redwood Hwy., Ste. A-2
Santa Rosa, CA 95401
(707) 575-1310

4460 (1-4) 02-26-1987

DESCRIPTOR : WS87-13 2/2/87

LAB NUMBER : 4460-2

SAMPLE GAS/STEAM RATIO (ft^3/lb) :	******
SAMPLE GAS/STEAM RATIO (MOLES PER 10^6 MOLES H_2O) :	738069.
SAMPLE GAS/STEAM RATIO (PPM by WEIGHT) :	643089.
PERCENT AIR IN SAMPLE :	.033
STP MLs AIR IN SAMPLE :	4.462
TOTAL WEIGHT OF CONDENSATE (GRAMS):	14.73
INITIAL HEAD SPACE PRESSURE (PSI):	.25

GAS	DRY GAS % BY VOL	MOLES PER 10^6 MOLES H_2O	PPM BY WEIGHT
WATER VAPOR	N/A	N/A	3.57E+05
CARBON DIOXIDE	9.99E+01	7.37E+05	6.43E+05
HYDROGEN SULFIDE	< 2.76E-03	< 2.03E+01	< 1.37E+01
AMMONIA	< 2.76E-04	< 2.04E+00	< 6.86E-01
ARGON	1.08E-03	7.94E+00	6.28E+00
NITROGEN	7.79E-02	5.75E+02	3.19E+02
METHANE	5.10E-03	3.76E+01	1.20E+01
HYDROGEN	1.01E-02	7.49E+01	3.00E+00

Thermochem, Inc.
Analytical Laboratory & Consulting Service
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Santa Rosa, CA 95401
(707) 575-1310

4460 (1-4) 02-26-1987

DESCRIPTOR : WS87-4 2/1/87 11:20

LAB NUMBER : 4460-1

SAMPLE GAS/STEAM RATIO (ft^3/lb) :	******
SAMPLE GAS/STEAM RATIO (MOLES PER 10^6 MOLES H_2O) :	679658.
SAMPLE GAS/STEAM RATIO (PPM by WEIGHT) :	624015.
PERCENT AIR IN SAMPLE :	3.629
STP MLs AIR IN SAMPLE :	454.050
TOTAL WEIGHT OF CONDENSATE (GRAMS):	14.80
INITIAL HEAD SPACE PRESSURE (PSI):	6.90

GAS	DRY GAS % BY VOL	MOLES PER 10^6 MOLES H_2O	PPM BY WEIGHT
WATER VAPOR	N/A	N/A	3.76E+05
CARBON DIOXIDE	1.00E+02	6.79E+05	6.24E+05
HYDROGEN SULFIDE	< 2.96E-03	< 2.01E+01	< 1.43E+01
AMMONIA	< 2.81E-04	< 1.91E+00	< 6.79E-01
ARGON	7.93E-03	5.39E+01	4.49E+01
NITROGEN	1.54E-03	1.04E+01	6.11E+00
METHANE	4.87E-03	3.31E+01	1.11E+01
HYDROGEN	9.80E-03	6.66E+01	2.81E+00

Thermochem, Inc.
Analytical Laboratory & Consulting Service
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Santa Rosa, CA 95401
(707) 575-1310

4460 (1-4) 02-26-1987

Quality Control Data

Samples Received: 02-12-1987

For: Mike Adams
University of Utah Research Institute

Analyte	Percent Relative Standard Deviation[1]
Carbon Dioxide	1.0
Hydrogen Sulfide	N/A
Ammonia	N/A
Argon[2]	4.5
Nitrogen	6.9, 1.0
Methane	7.1
Hydrogen	3.1

[1] %RSD of replicate analysis results calculated as ppm by weight. Ar, N_2, CH_4 and H_2 %RSD's are determined on actual samples and not standards. The %RSD of each set of replicate measurements performed on this batch of samples is listed.

[2] Argon precision is affected by air correction procedure.

Paul Hirtz
Director of Operations

Thermochem, Inc.
Analytical Laboratory & Consulting Service
6119 Old Redwood Hwy., Ste. A-2
Santa Rosa, CA 95401
(707) 575-1310

4460 (1-4) 02-26-1987

DESCRIPTOR : WS87-17 2/2/87

LAB NUMBER : 4460-4

SAMPLE GAS/STEAM RATIO (ft^3/lb) :	******
SAMPLE GAS/STEAM RATIO (MOLES PER 10^6 MOLES H_2O) :	*******
SAMPLE GAS/STEAM RATIO (PPM by WEIGHT) :	743873.
PERCENT AIR IN SAMPLE :	.011
STP MLs AIR IN SAMPLE :	1.423
TOTAL WEIGHT OF CONDENSATE (GRAMS):	8.74
INITIAL HEAD SPACE PRESSURE (PSI):	.18

GAS	DRY GAS % BY VOL	MOLES PER 10^6 MOLES H_2O	PPM BY WEIGHT
WATER VAPOR	N/A	N/A	2.56E+05
CARBON DIOXIDE	9.99E+01	1.19E+06	7.44E+05
HYDROGEN SULFIDE	< 2.84E-03	< 3.37E+01	< 1.63E+01
AMMONIA	< 2.84E-04	< 3.37E+00	< 8.17E-01
ARGON	5.64E-04	6.71E+00	3.81E+00
NITROGEN	6.37E-02	7.58E+02	3.02E+02
METHANE	5.57E-03	6.63E+01	1.51E+01
HYDROGEN	1.27E-02	1.51E+02	4.35E+00

****

ASCENSION
WS87-7

ID #: A:WS877
DATE: 02-27-87

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	18685.51	1	3.05	.821E+00
K	1200.09	1	6.10	.307E-01
Ca	10427.58	1	1.22	.260E+00
Mg	24.45	1	2.44	.101E-02
Fe	163.06	1	.12	.292E-02
Al	N.D.	1	3.05	< .113E-03
SiO2	241.73	1	2.62	.402E-02
B	47.56	1	.61	.440E-02
Li	4.70	1	.24	.676E-03
Sr	201.72	1	.06	.230E-02
Zn	.87	1	.61	.133E-04
Ag	N.D.	1	.24	< .226E-05
As	N.D.	1	3.05	< .407E-04
Au	N.D.	1	.49	< .248E-05
Ba	5.42	1	3.05	.394E-04
Be	N.D.	1	.01	< .677E-06
Bi	N.D.	1	12.20	< .584E-04
Cd	N.D.	1	.37	< .271E-05
Ce	N.D.	1	1.22	< .870E-05
Co	N.D.	1	.12	< .207E-05
Cr	N.D.	1	.24	< .469E-05
Cu	N.D.	1	.30	< .480E-05
La	1.68	1	.61	.121E-04
Mn	4.27	1	1.22	.777E-04
Mo	N.D.	1	6.10	< .636E-04
Ni	1.94	1	.61	.330E-04
Pb	N.D.	1	1.22	< .589E-05
Sn	N.D.	1	.61	< .514E-05
Sb	N.D.	1	3.66	< .301E-04
Te	N.D.	1	6.10	< .478E-04
Th	N.D.	1	12.20	< .526E-04
Ti	N.D.	1	.61	< .127E-04
U	N.D.	1	30.49	< .128E-03
V	N.D.	1	6.10	< .120E-03
W	N.D.	1	.61	< .332E-05
Zr	N.D.	1	.61	< .668E-05

ASCENSION
WS87-7

ID #: A:WS877
DATE: 02-27-87

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	60.00	2	1.00	.983E-03
CO3	N.D.	2	1.00	< .167E-04
Cl	47100.00	2	1.00	.133E+01
F	1.04	5	.05	.547E-04
SO4	411.00	4	1.00	.428E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-03
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	9.21	< .970E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	[illegible]	4	4.00	
CALCULATED	78752.13	6		
100*MEAS/CALC	[illegible]			
pH	5.52	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

ASCENSION
WS87-7

ID #: A:WS877
DATE: 02-27-87

	Milliequivalents/Liter
CATIONS	
Na	821.51950
K	30.68621
Ca	520.33620
Mg	2.01150
Fe	5.83920
Li	.67767
Sr	4.60531
Zn	.02666
Ba	.07888
La	.04381
Mn	.31075
Ni	.06594
SUM OF CATIONS:	1386.20200
ANIONS	
HCO3	.96340
Cl	1328.69100
F	.05475
SO4	8.55702
SUM OF ANIONS:	1338.28600
CATION-ANION BALANCE	47.91565
BALANCE DIFF. CATION + ANION	1.76

****

TRILINEAR DIAGRAM COORDINATES

ASCENSION
WS87-7

ID #: A:WS877
DATE: 02-27-87

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	821.51950	59.76628
K	30.68621	2.23245
Ca	520.33620	37.85493
Mg	2.01150	.14634
TOTAL	1374.55300	100.00000
ANIONS		
HCO3	.98340	.07349
CO3	.00000	.00000
SO4	8.55702	.63943
Cl	1328.69100	99.28709
TOTAL	1338.23100	100.00000

****

GEOTHERMOMETERS

ASCENSION
WS87-7

ID #: A:WS877
DATE: 02-27-87

****

Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	193.		Fournier (1981)
Quartz (maximum steam loss)	179.		Fournier (1981)
Chalcedony	174.		Fournier (1981)
alpha-Cristobalite	144.		Fournier (1981)
beta-Cristobalite	94.		Fournier (1981)
Amorphous Silica	69.		Fournier (1981)
Na/K (Fournier)	181.		Fournier (1979)
Na/K (Truesdell)	143.		Fournier (1981)
Na-K-Ca	185.	beta= .33	Fournier and Truesdell(1974)
Na-K-Ca with Mg correction	164.	R= .36	Fournier and Potter (1979)
Na/Li	-22.		Fouillac and Michard(1981)

****

ASCENSION
WS87-20

ID #: A:WS8720
DATE: 02-27-87

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	2368.02	1	.61	.103E+00
K	179.95	1	1.22	.460E-02
Ca	1271.24	1	.24	.317E-01
Mg	6.00	1	.49	.247E-03
Fe	7.59	1	.02	.136E-03
Al	N.D.	1	.61	< .226E-04
SiO2	265.17	1	.52	.441E-02
B	7.68	1	.12	.710E-03
Li	.74	1	.05	.107E-03
Sr	26.21	1	.01	.299E-03
Zn	N.D.	1	.12	< .187E-05
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	.77	1	.61	.561E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.06	< .543E-06
Ce	N.D.	1	.24	< .174E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	.26	1	.12	.185E-05
Mn	.57	1	.24	.103E-04
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .208E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .255E-05
U	N.D.	1	6.10	< .256E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

ASCENSION
WS87-20

ID #: A:WS8720
DATE: 02-27-87

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	268.00	2	1.00	.439E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	5770.00	2	1.00	.163E+00
F	1.90	5	.05	.100E-03
SO4	56.00	4	1.00	.583E-03
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.84	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	11560.00	4	4.00	
CALCULATED	10093.87	6		
100*MEAS/CALC	114.53			
pH	7.05	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	103.00890
K	4.60132
Ca	63.43488
Mg	.49376
Fe	.27183
Li	.10659
Sr	.59827
Ba	.01122
La	.00669
Mn	.04116
SUM OF CATIONS:	172.57460
ANIONS	
HCO3	4.39252
Cl	162.77170
F	.10002
SO4	1.16592
SUM OF ANIONS:	168.43020
CATION-ANION BALANCE	4.14441
BALANCE DIFF. CATION + ANION	1.22

****

TRILINEAR DIAGRAM COORDINATES

ASCENSION
WS87-20

ID #: A:WS8720
DATE: 02-27-87

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	103.00890	60.04988
K	4.60132	2.68238
Ca	63.43488	36.97990
Mg	.49376	.28784
TOTAL	171.53880	100.00000
ANIONS		
HCO3	4.39252	2.60947
CO3	.00000	.00000
SO4	1.16592	.69264
Cl	162.77170	96.69789
TOTAL	168.33010	100.00000

****

GEOTHERMOMETERS

ASCENSION
WS87-20

ID #: A:WS8720
DATE: 02-27-87

****

Geothermometer	Temp (deg C)	Reference
Quartz (no steam loss)	200.	Fournier (1981)
Quartz (maximum steam loss)	184.	Fournier (1981)
Chalcedony	182.	Fournier (1981)
alpha-Cristobalite	151.	Fournier (1981)
beta-Cristobalite	101.	Fournier (1981)
Amorphous Silica	76.	Fournier (1981)
Na/K (Fournier)	195.	Fournier (1979)
Na/K (Truesdell)	160.	Fournier (1981)
Na-K-Ca	176. beta= .33	Fournier and Truesdell(1974)
Na-K-Ca with Mg correction	172. R= .72	Fournier and Potter (1979)
Na/Li	-16.	Fouillac and Michard(1981)

****

ASCENSION
WS87-22

ID #: A:WS8722
DATE: 10-08-86

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	7260.90	1	1.22	.316E+00
K	496.58	1	2.44	.127E-01
Ca	3675.57	1	.49	.917E-01
Mg	17.72	1	.98	.729E-03
Fe	27.10	1	.05	.485E-03
Al	N.D.	1	1.22	< .452E-04
SiO2	344.11	1	1.05	.573E-02
B	20.40	1	.24	.189E-02
Li	2.15	1	.10	.310E-03
Sr	73.12	1	.02	.835E-03
Zn	N.D.	1	.24	< .373E-05
Ag	N.D.	1	.10	< .905E-06
As	N.D.	1	1.22	< .163E-04
Au	N.D.	1	.20	< .991E-06
Ba	2.15	1	1.22	.157E-04
Be	N.D.	1	.00	< .271E-06
Bi	N.D.	1	4.88	< .234E-04
Cd	N.D.	1	.12	< .109E-05
Ce	N.D.	1	.49	< .348E-05
Co	N.D.	1	.05	< .828E-06
Cr	N.D.	1	.10	< .188E-05
Cu	N.D.	1	.12	< .192E-05
La	.64	1	.24	.461E-05
Mn	1.85	1	.49	.337E-04
Mo	N.D.	1	2.44	< .254E-04
Ni	N.D.	1	.24	< .416E-05
Pb	N.D.	1	.49	< .236E-05
Sn	N.D.	1	.24	< .206E-05
Sb	N.D.	1	1.46	< .120E-04
Te	N.D.	1	2.44	< .191E-04
Th	N.D.	1	4.88	< .210E-04
Ti	N.D.	1	.24	< .510E-05
U	N.D.	1	12.20	< .513E-04
V	N.D.	1	2.44	< .479E-04
W	N.D.	1	.24	< .133E-05
Zr	N.D.	1	.24	< .267E-05

ASCENSION
WS87-22

ID #: A:WS8722
DATE: 10-06-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	102.00	2	1.00	.167E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	17650.00	2	1.00	.498E+00
F	1.00	5	.05	.526E-04
SO4	134.00	4	1.00	.139E-02
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	3.68	< .388E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	29540.00	4	4.00	
CALCULATED	29757.44	6		
100*MEAS/CALC	99.27			
pH	6.20	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

	Milliequivalents/Liter
CATIONS	
Na	315.84920
K	12.69755
Ca	183.41090
Mg	1.45765
Fe	.97045
Li	.30981
Sr	1.66933
Ba	.03130
La	.01664
Mn	.13470
SUM OF CATIONS:	516.54750
ANIONS	
HCO3	1.67178
Cl	497.90650
F	.05264
SO4	2.78988
SUM OF ANIONS:	502.42080
CATION-ANION BALANCE	14.12674
BALANCE DIFF. CATION + ANION	1.39

****

TRILINEAR DIAGRAM COORDINATES

ASCENSION
WS87-22

ID #: A:WS8722
DATE: 10-08-86

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	315.84920	61.51923
K	12.69755	2.47315
Ca	183.41090	35.72370
Mg	1.45765	.28391
TOTAL	513.41530	100.00000
ANIONS		
HCO3	1.67178	.33278
CO3	.00000	.00000
SO4	2.78988	.55535
Cl	497.90650	99.11187
TOTAL	502.36820	99.99999

****

GEOTHERMOMETERS

ASCENSION
WS87-22

ID #: A:WS8722
DATE: 10-08-86

****

Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	220.		Fournier (1981)
Quartz (maximum steam loss)	201.		Fournier (1981)
Chalcedony	206.		Fournier (1981)
alpha-Cristobalite	173.		Fournier (1981)
beta-Cristobalite	123.		Fournier (1981)
Amorphous Silica	95.		Fournier (1981)
Na/K (Fournier)	186.		Fournier (1979)
Na/K (Truesdell)	150.		Fournier (1981)
Na-K-Ca	181.	beta= .33	Fournier and Truesdell (1974)
Na-K-Ca with Mg correction	178.	R= .74	Fournier and Potter (1979)
Na/Li	-17.		Fouillac and Michard (1981)

****

ASCENSION
WS87-26

ID #: A:WS8726
DATE: 02-27-87

****

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	.79	1	.61	.342E-04
K	N.D.	1	1.22	< .312E-04
Ca	.35	1	.24	.882E-05
Mg	N.D.	1	.49	< .201E-04
Fe	N.D.	1	.02	< .437E-06
Al	N.D.	1	.61	< .226E-04
SiO2	.97	1	.52	.162E-04
B	N.D.	1	.12	< .113E-04
Li	N.D.	1	.05	< .703E-05
Sr	N.D.	1	.01	< .139E-06
Zn	N.D.	1	.12	< .187E-05
Ag	N.D.	1	.05	< .452E-06
As	N.D.	1	.61	< .814E-05
Au	N.D.	1	.10	< .496E-06
Ba	N.D.	1	.61	< .444E-05
Be	N.D.	1	.00	< .135E-06
Bi	N.D.	1	2.44	< .117E-04
Cd	N.D.	1	.06	< .534E-06
Ce	N.D.	1	.24	< .174E-05
Co	N.D.	1	.02	< .414E-06
Cr	N.D.	1	.05	< .939E-06
Cu	N.D.	1	.06	< .960E-06
La	N.D.	1	.12	< .876E-06
Mn	N.D.	1	.24	< .444E-05
Mo	N.D.	1	1.22	< .127E-04
Ni	N.D.	1	.12	< .206E-05
Pb	N.D.	1	.24	< .118E-05
Sn	N.D.	1	.12	< .103E-05
Sb	N.D.	1	.73	< .601E-05
Te	N.D.	1	1.22	< .956E-05
Th	N.D.	1	2.44	< .105E-04
Ti	N.D.	1	.12	< .255E-05
U	N.D.	1	6.10	< .256E-04
V	N.D.	1	1.22	< .239E-04
W	N.D.	1	.12	< .664E-06
Zr	N.D.	1	.12	< .134E-05

ASCENSION
WS87-26

ID #: A:WS8726
DATE: 02-27-87

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	4.00	2	1.00	.656E-04
CO3	N.D.	2	1.00	< .167E-04
Cl	6.00	2	1.00	.169E-03
F	N.D.	5	.05	< .263E-05
SO4	N.D.	4	1.00	< .104E-04
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	1.84	< .194E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	122.00	4	4.00	
CALCULATED	10.08	6		
100*MEAS/CALC	1210.37			
pH	5.89	7		

****

ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

ASCENSION
WS87-26

ID #: A:WS8726
DATE: 02-27-87

	Milliequivalents/Liter
CATIONS	
Na	.03419
Ca	.01764
SUM OF CATIONS:	.05183
ANIONS	
HCO3	.06556
Cl	.16926
SUM OF ANIONS:	.23481
CATION-ANION BALANCE	-.18299
BALANCE DIFF. CATION + ANION	-63.84

****

TRILINEAR DIAGRAM COORDINATES

ASCENSION
WS87-26

ID #: A:WS8726
DATE: 02-27-87

****

	Meq / L	Percent (Meq / L)
CATIONS		
Na	.03419	65.96103
K	.00000	.00000
Ca	.01764	34.03896
Mg	.00000	.00000
TOTAL	.05183	99.99999
ANIONS		
HCO3	.06556	27.91926
CO3	.00000	.00000
SO4	.00000	.00000
Cl	.16926	72.08074
TOTAL	.23482	100.00000

****

GEOTHERMOMETERS

ASCENSION
WS87-26

ID #: A:WS8726
DATE: 02-27-87

****

Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	-22.		Fournier (1981)
Quartz (maximum steam loss)	-9.		Fournier (1981)
Chalcedony	-54.		Fournier (1981)
alpha-Cristobalite	-64.		Fournier (1981)
beta-Cristobalite	-100.		Fournier (1981)
Amorphous Silica	-112.		Fournier (1981)
Na/K (Fournier)	379.		Fournier (1979)
Na/K (Truesdell)	416.		Fournier (1981)
Na-K-Ca	30.	beta=1.33	Fournier and Truesdell(1974)
Na/Li	77.		Fouillac and Michard(1981)

****

ASCENSION
WS87-27

ID #: A:WS8727
DATE: 10-08-86

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SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
Na	11844.59	1	1.90	.515E+00
K	424.16	1	3.81	.108E-01
Ca	465.32	1	.76	.116E-01
Mg	1419.00	1	1.52	.584E-01
Fe	2.19	1	.08	.392E-04
Al	N.D.	1	1.90	< .706E-04
SiO2	1.76	1	1.64	.293E-04
B	4.89	1	.38	.432E-03
Li	.16	1	.15	.231E-04
Sr	9.70	1	.04	.111E-03
Zn	N.D.	1	.38	< .583E-05
Ag	N.D.	1	.15	< .141E-05
As	N.D.	1	1.90	< .254E-04
Au	N.D.	1	.30	< .155E-05
Ba	N.D.	1	1.90	< .139E-04
Be	N.D.	1	.00	< .423E-06
Bi	N.D.	1	7.62	< .365E-04
Cd	N.D.	1	.19	< .169E-05
[illegible]	N.D.	1	[illegible]	[illegible]
Co	N.D.	1	.08	< .139E-05
Cr	N.D.	1	.15	< .293E-05
Cu	N.D.	1	.19	< .300E-05
La	N.D.	1	.38	< .274E-05
Mn	N.D.	1	.76	< .139E-04
Mo	N.D.	1	3.81	< .397E-04
Ni	N.D.	1	.38	< .649E-05
Pb	N.D.	1	.76	< .368E-05
Sn	N.D.	1	.38	< .321E-05
Sb	N.D.	1	2.29	< .188E-04
Te	N.D.	1	3.81	< .299E-04
Th	N.D.	1	7.62	< .328E-04
Ti	N.D.	1	.38	< .796E-05
U	N.D.	1	19.05	< .800E-04
V	N.D.	1	3.81	< .748E-04
W	N.D.	1	.38	< .207E-05
Zr	N.D.	1	.38	< .418E-05

ASCENSION
WS87-27

ID #: A:WS8727
DATE: 10-08-86

SPECIES	CONCENTRATION (ppm)	ANALYTICAL METHOD	DETECTION LIMITS	CONCENTRATION (MOL/L)
TOTAL ALKALINITY AS				
HCO3	144.00	2	1.00	.236E-02
CO3	N.D.	2	1.00	< .167E-04
Cl	20100.00	2	1.00	.567E+00
F	1.36	5	.05	.716E-04
SO4	2865.00	4	1.00	.298E-01
Br	N.A.	2	1.00	< .125E-04
I	N.A.	2	.10	< .788E-06
NO3	N.A.	9	.10	< .161E-05
S	N.A.	2	1.00	< .312E-04
PO4	N.D.	1	5.75	< .606E-04
TOTAL DISSOLVED SOLIDS				
MEASURED	37510.00	4	4.00	
CALCULATED	37206.93	6		
100*MEAS/CALC	100.81			
pH	8.05	7		

****

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

****

ASCENSION
WS87-27

ID #: A:WS8727
DATE: 10-08-86

	Milliequivalents/Liter
CATIONS	
Na	515.23960
K	10.84577
Ca	23.21947
Mg	116.72690
Fe	.07842
Li	.02306
Sr	.22145
SUM OF CATIONS:	666.35470
ANIONS	
HCO3	[illegible]
Cl	567.02100
F	.07159
SO4	59.64930
SUM OF ANIONS:	629.10210
CATION-ANION BALANCE	37.25269
BALANCE DIFF. CATION + ANION	2.88

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TRILINEAR DIAGRAM COORDINATES

ASCENSION
WS87-27

ID #: A:WS8727
DATE: 10-08-86

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	Meq / L	Percent (Meq / L)
CATIONS		
Na	515.23960	77.35761
K	10.84577	1.62842
Ca	23.21947	3.48624
Mg	116.72690	17.52573
TOTAL	666.03180	100.00000
ANIONS		
HCO3	2.36016	.37521
CO3	.00000	.00000
SO4	59.64930	9.48274
Cl	567.02100	90.14206
TOTAL	629.03050	100.00000

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GEOTHERMOMETERS

ASCENSION
WS87-27

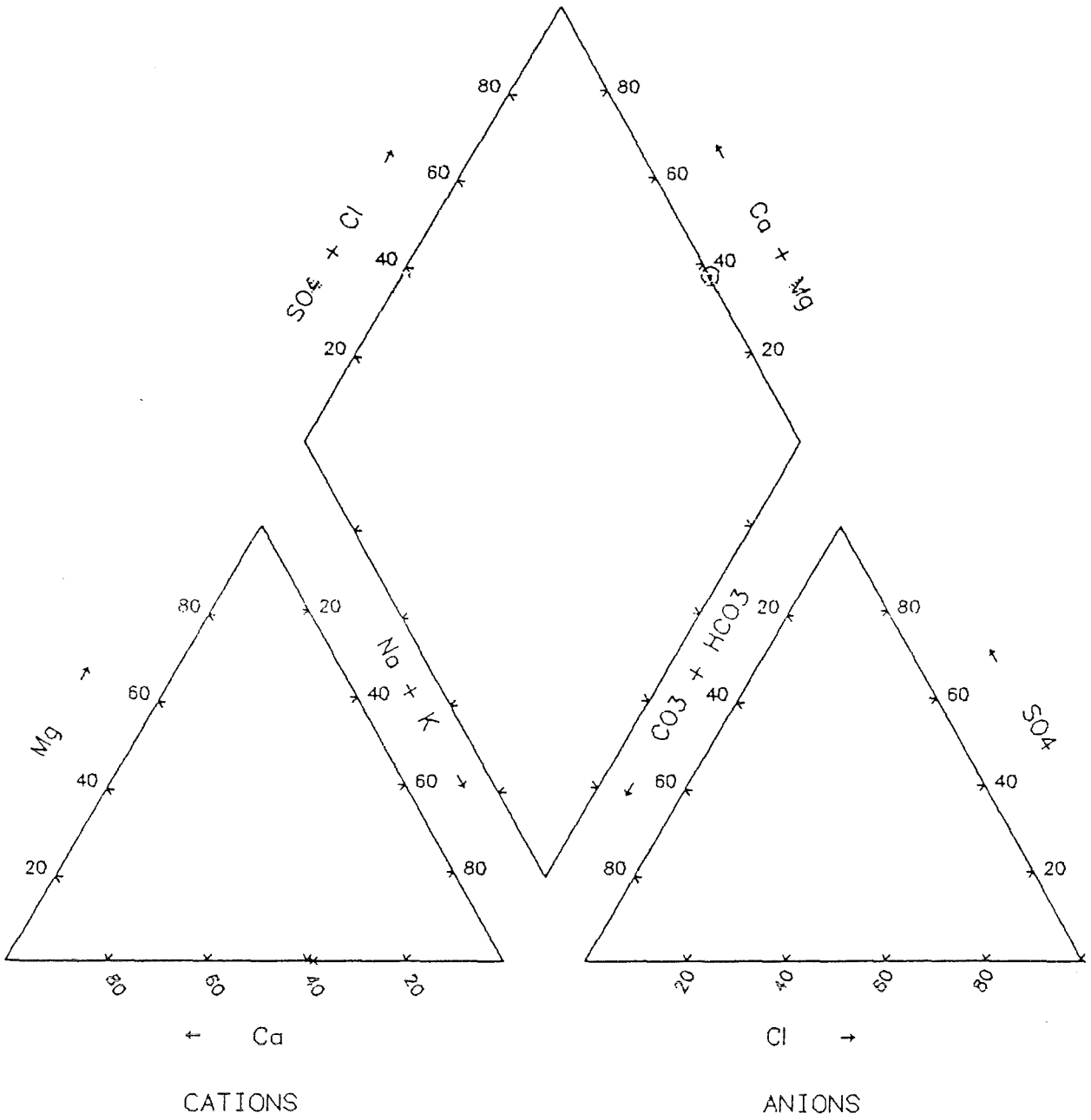
ID #: A:WS8727
DATE: 10-08-86

****

Geothermometer	Temp (deg C)		Reference
Quartz (no steam loss)	-8.		Fournier (1981)
Quartz (maximum steam loss)	3.		Fournier (1981)
Chalcedony	-41.		Fournier (1981)
alpha-Cristobalite	-53.		Fournier (1981)
beta-Cristobalite	-90.		Fournier (1981)
Amorphous Silica	-102.		Fournier (1981)
Na/K (Fournier)	142.		Fournier (1979)
Na/K (Truesdell)	98.		Fournier (1981)
Na-K-Ca	173.	beta= .33	Fournier and Truesdell(1974)
Na/Li	-83.		Fouillac and Michard(1981)

ASCENSION
WS87-7

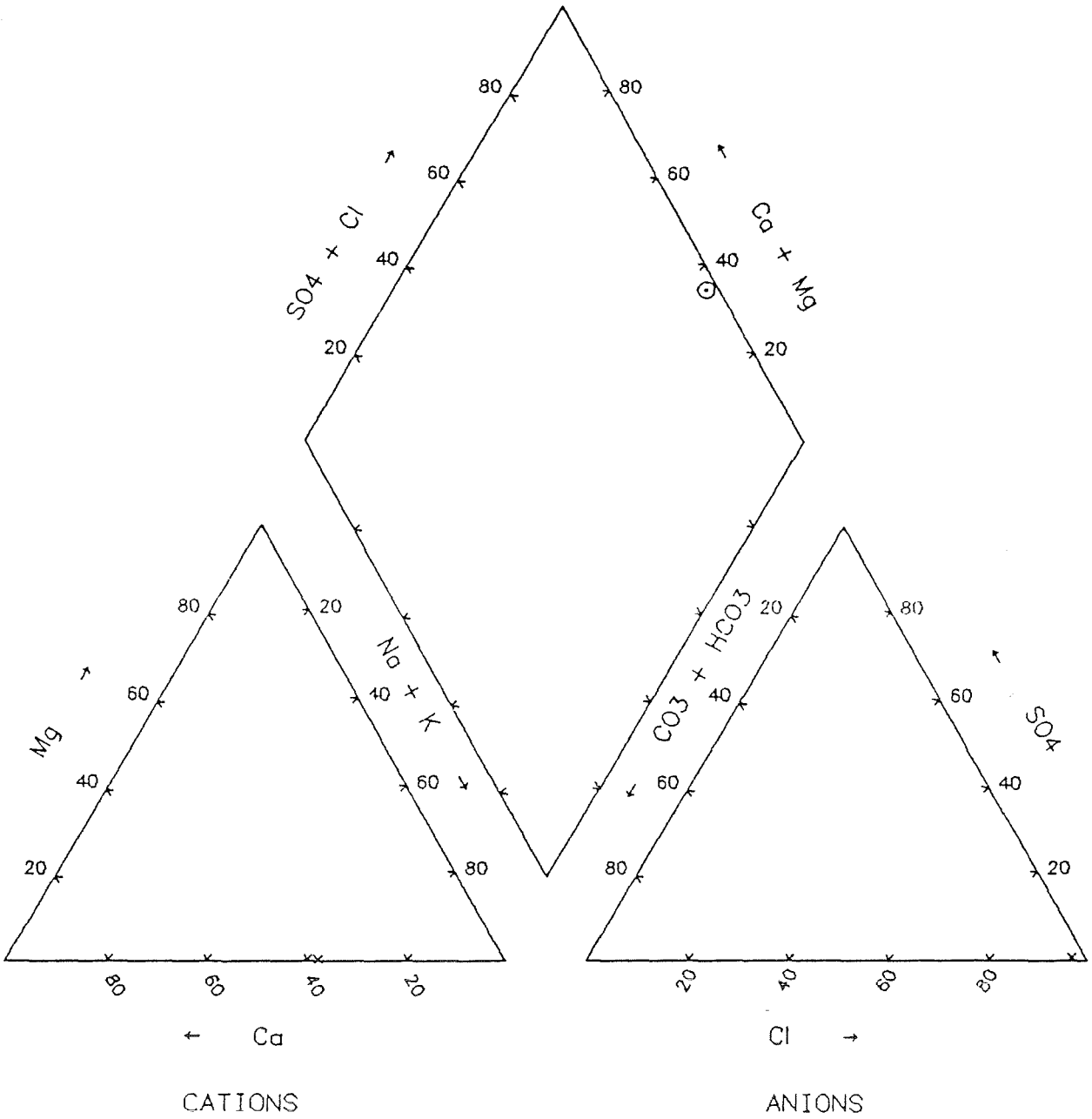
UURI ID# A:WS877
DATE: 02-27-87



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
WS87-20

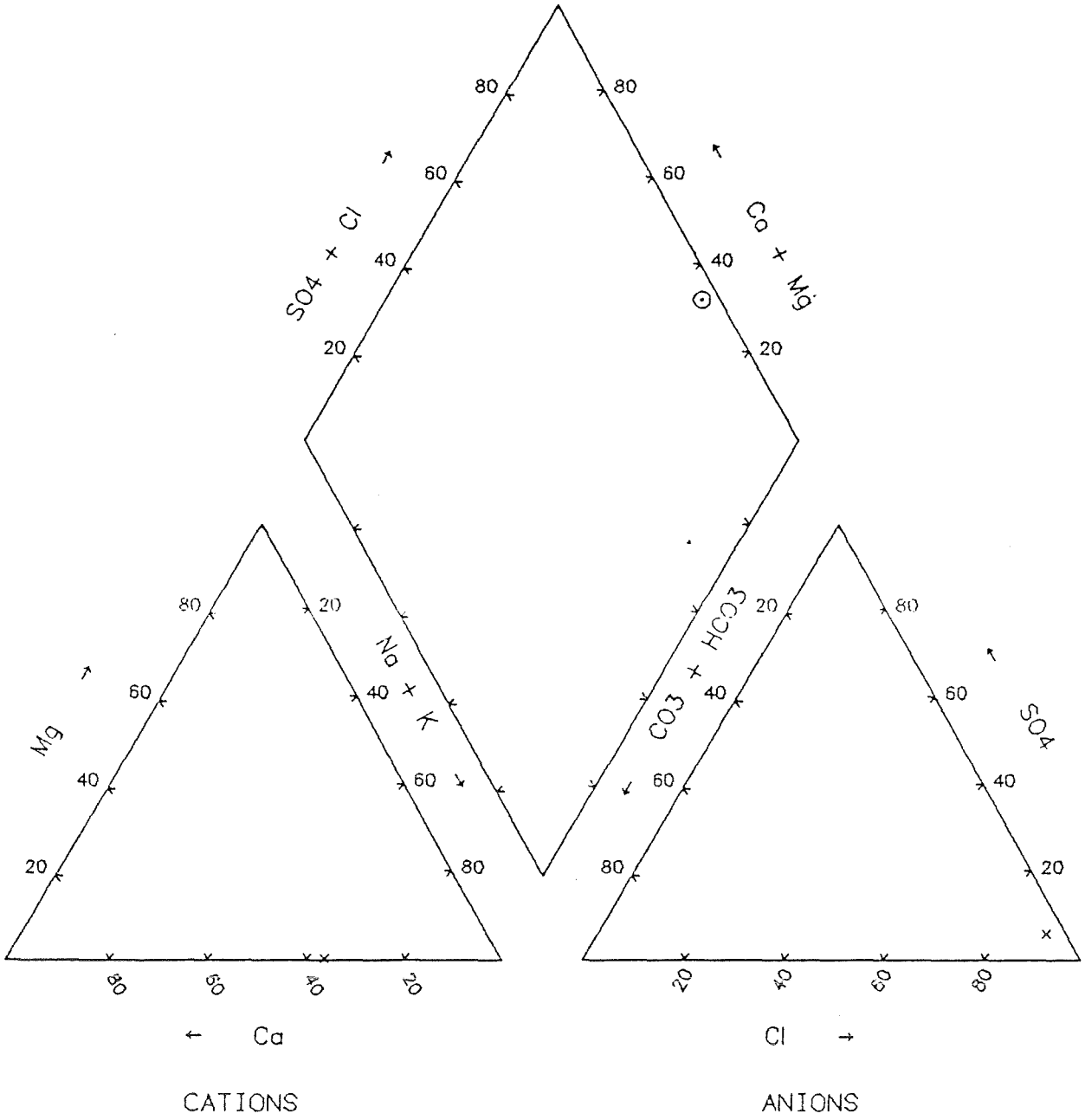
UURI ID# A:WS8720
DATE: 02-27-87



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
WS87-22

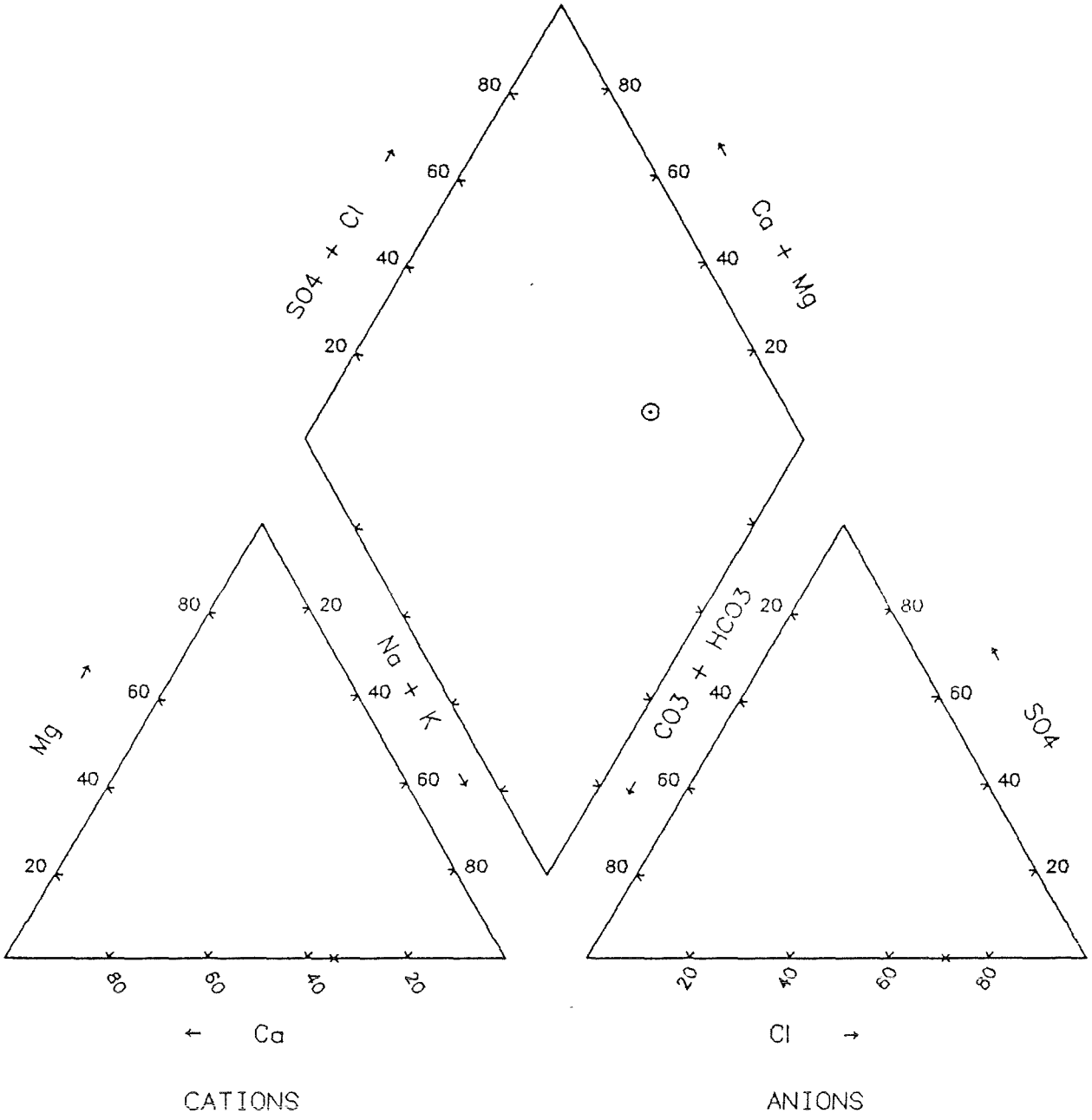
UURI ID# A:WS8722
DATE: 02-27-87



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
WS87-26

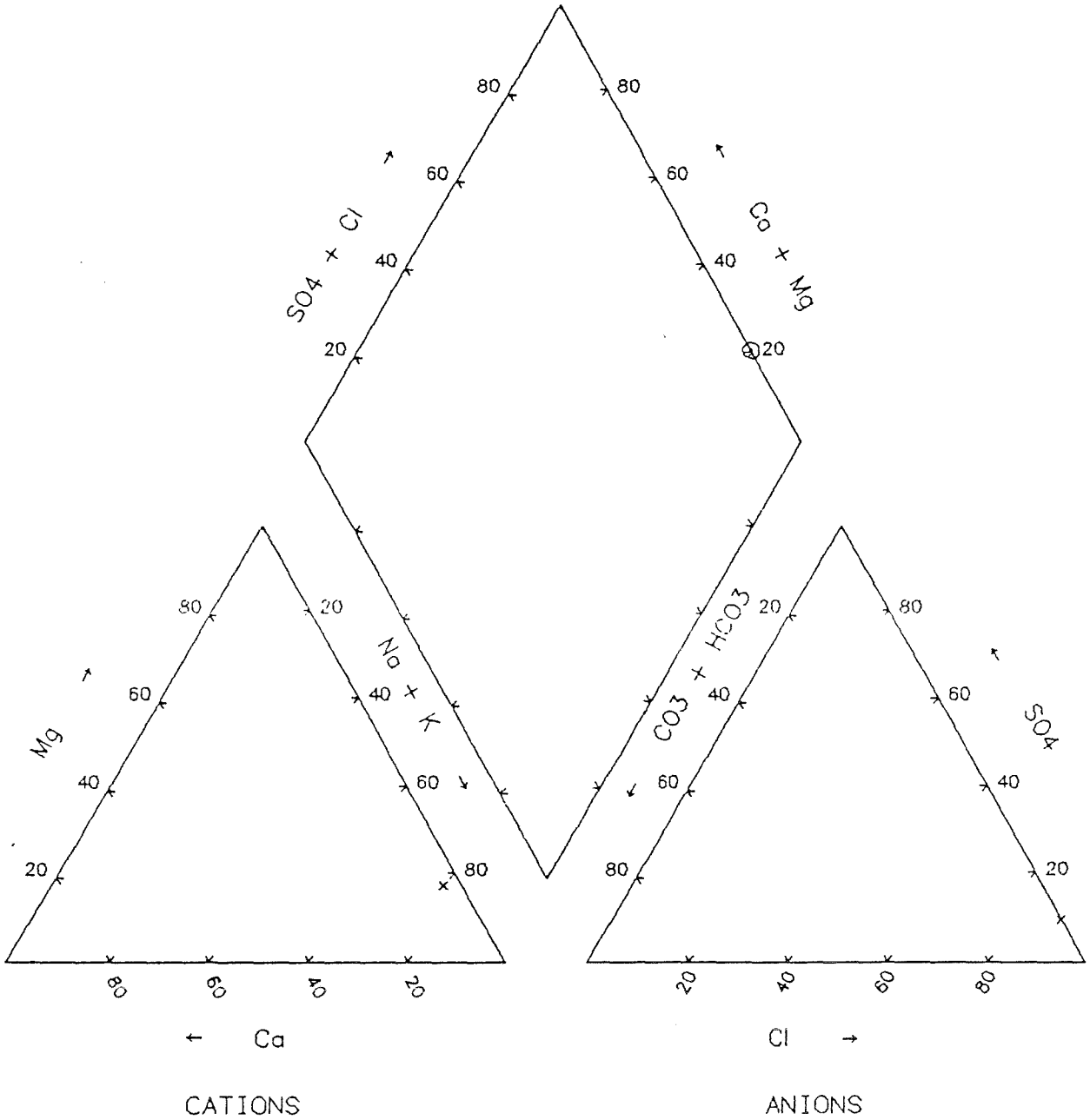
UURI ID# A:WS8726
DATE: 02-27-87



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

ASCENSION
WS87-27

UURI ID# A:WS8727
DATE: 10-08-86



PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER