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PUMPING TEST AND FLUID SAMPLING REPORT MANSFIELD NO.1 WELL PALO DURO BASIN

**REPORT OF THE GEOLOGIC PROJECT MANAGER
PERMIAN BASIN**

JULY 1983

**PREPARED FOR:
OFFICE OF NUCLEAR WASTE ISOLATION
BATTELL MEMORIAL INSTITUTE
CONTRACT NO.E512-05000**

**STONE & WEBSTER ENGINEERING CORPORATION
245 SUMMER STREET
BOSTON, MASSACHUSETTS**

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**Pumping Test and Fluid Sampling Report
Mansfield No. 1 Well
Palo Duro Basin**

July 1983

**Stone & Webster Engineering Corporation
245 Summer Street
Boston, MA 02107**

MASTER

This report was prepared by Stone & Webster Engineering Corporation under Subcontract E512-05000 with Battelle Memorial Institute, Project Management Division, under Contract DE-AC06-76 with the Department of Energy. The Subcontract was administered by the Battelle Project Management Division.

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TECHNICAL STATUS

This technical report is being archived in advance of DOE technical review because of Congressional shutdown of the Salt Repository Project. Because of project termination, DOE has expedited the report clearance process to ensure availability of project data. A summary of the review status of this report is attached.

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1 INTRODUCTION AND SUMMARY

Drilling and testing of the Mansfield No. 1 well were completed as part of a nationwide program by the U.S. Department of Energy (DOE) to identify potential locations for a nuclear waste repository in deep geologic formations. Stone & Webster Engineering Corporation (SWEC) is responsible for the management of geological studies within the Permian Basin of Texas under a contract with DOE's Program Manager - Battelle Memorial Institute, Office of Nuclear Waste Isolation (ONWI). SWEC is working in cooperation with the Texas Bureau of Economic Geology (TBEG), which is also undertaking geologic studies in the Texas Panhandle area under separate contract to DOE.

This report describes pumping test and fluid sampling activities performed at the Mansfield No. 1 well in Oldham County about 10 miles north of Vega, Texas (Figure 1-1). The well site was selected by TBEG and is located along the northern margin of the Palo Duro Basin in an area of active dissolution within the Permian salt section.

The objectives of the pumping test and fluid sampling program were to collect data to determine the hydrologic characteristics (formation pressure and permeability) of deep water bearing formations, and to obtain formation fluid samples for analyses (gas and fluid chemistry) in order to evaluate fluid migration and age relationships in the Permian Basin.

The Field Activity Plan used for pumping test and fluid sampling activities is included in Appendix C. Subcontractors retained by SWEC and the services, equipment, or materials they provided for pumping test and fluid sampling activities are listed in Table 1-1.

Drilling of the Mansfield No. 1 well started in October 1981 and was completed in March 1982. Zone isolation for pumping tests was accomplished in June and July 1982. Pumping tests, sampling, and associated activities commenced in July 1982 and were completed in October 1982. A description of drilling, coring, logging, and drill stem testing activities and the data obtained are provided in the Well Completion Report, Mansfield No. 1, Palo Duro Basin (SWEC, 1982). The configuration of the Mansfield No. 1 well at the completion of drilling and prior to zone isolation, pumping tests, and fluid sampling activities is shown on Figure 1-2.

Two zones were perforated for testing, as shown on detailed drawings in Appendixes D.1 and D.2 (Figures D.1-1, D.1-2, and D.2-1). Starting at the deepest zone, they are a lower section of the Permian Wolfcamp (Test Zone No. 1) and an upper section of the Permian Wolfcamp (Test Zone No. 2). Instrumented pumping tests were conducted in both test zones. Surface and downhole formation fluid samples were collected from both test intervals. Depths referenced in this report were measured from the Kelly Bushing, Elevation 3,701.6 feet, unless stated otherwise. After completion of pumping tests and fluid sampling activities in each zone, plugs were set above the perforations (Figure 1-3).

The Mansfield No. 1 well was plugged and abandoned in accordance with the requirements of the Texas Railroad Commission on October 6, 1982. Final plugging consisted of an Otis Perma-Trieve production packer and seal plug (retrievable bridge plug) set at a depth of 4,477 feet (Section 3.4), followed by two cement plugs (4,477 to 4,307 feet and 1,900 to 1,320 feet), a drillable bridge plug (1,160 feet), and three cement plugs (1,160 to 951 feet, 600 to 475 feet, and 30 to 5 feet). The 5 1/2-inch casing was cut off 1,200 feet below grade and removed. The surface casing was cut 2 feet below grade and the wellhead assembly was removed. A steel cap was welded to the top of the surface casing. The entire drill pad area will be final-graded. The configuration of the well at completion of testing and plugging is shown on Figure 1-3.

The purpose of this report is to present representative data obtained during pumping tests at the Mansfield No. 1 well, and to provide a description of how the data were obtained. Preliminary interpretation of the selected test data is presented in Appendixes D.1 and D.2, and summarized in Table 1-2. Recommendations to enhance the quality of data obtained in future hydrologic test wells are presented in Section 7. The information contained herein will provide the basis for future analyses by SWEC and other program participants.

②

Table 1-1. Subcontractors and Services
Provided for Mansfield No. 1 Pumping Test and Fluid Sampling Activities

Subcontractor	Service
Anchor Sales & Service	Workover Rig Anchors
Baker & Taylor Drilling Co.	Site Grading, Well Abandonment, and Site Cleanup
Ben & A.F. Moore	Diesel Fuel Supplies
Bruce & Son	Hot Shot Services
Bull Rogers, Inc.	Casing Crew
DOTCO	Blowout Preventor
E & F Service Co.	Tracer Program Maintenance
FMC Corp.	Well Head Assembly and Equipment
Ford Tool	Blowout Preventor, Reverse Circulation, Power Swivel, and Rock Bits
Groneman Shamrock Service	Truck Fuel
Guinn Tank Truck Service	Fluid Hauling and Disposal
Halliburton Services	Cementing Services and Bridge Plugs
Johnston-Macco	Downhole Instrumentation, Computer System, Pump Jack, and Fluid Sampling Apparatus
KMA Well Service	Workover Rig and Crew
L & S Rental & Supply	Swab Cups
Monte Carlo	Site Trailer
Nicholson, John	Drilling Consultant
Otis Engineering Co.	Perma-Trieve Packer
Pampa C & C Oil	Fluid Hauling and Disposal
Patton & Patton	Water Tank Rental
Paul Cameron Jr., Inc.	Drill Rig Engineers
Plains Communication	Mobile Phone
Roark Hardware	Miscellaneous Supplies
Schlumberger Well Services	Well Logging, Perforation, and Bridge Plug Installation
Service Tool & Supply	Generator
Superior Supply Co.	Pup Joints
Tesoro Land & Marine	Blowout Preventor
Thermal Scientific	Lab Supplies
Thompson, Glenn	Tracer Consultant
W-B Pump Supply	Pup Joints
Welding Equipment & Supply	Liquid Nitrogen
Well Tech, Inc.	Workover Rig and Crew

Notes: Depths measured from Kelly Bushing.

Contractor deepened 7 $\frac{7}{8}$ -inch diameter hole to 7400 feet and plugged well back to 5180 feet.

As-Built Drawing of Mansfield No.1 Well
Prior to Testing and Sampling

Figure 1-2

Table 1-2. Formation Pressure, Permeability, and Fluid Temperature

Perforated Zone	Pressure (psia)	Permeability (md)	Fluid Temperature (deg F)
Test Zone No. 1			
Lower Permian Wolfcamp	1,407	4.3	102 - 106
Test Zone No. 2			
Upper Permian Wolfcamp	1,245	0.52	101.7 - 103.5

Note: The data and methods used to obtain the above values are presented in Appendix D.

2 EQUIPMENT

2.1 DOWNHOLE EQUIPMENT

Fluid was pumped through 2 7/8-inch tubing installed inside the 5 1/2-inch well casing. Each test zone was isolated from the annular space between the tubing and casing using a triple element, dual slip Otis Perma-Trieve Packer in place of a single element, single slip tension packer (Section 7.1). The tubing string was suspended under tension to minimize horizontal deflection thus reducing sucker rod and tubing wear while pumping.

Sucker rods were attached to the pump jack horsehead located over the wellhead at ground surface to the downhole pump installed inside the tubing string approximately 250 feet above the test zone. Detailed drawings showing the location of downhole equipment in each test zone are presented in Appendixes D.1 and D.2.

2.2 SURFACE EQUIPMENT

Surface equipment consisted of a walking-beam pump jack and a diesel-engine primary driver. The oscillating action of the pump jack operated the attached sucker rod string and pump plunger. The stroke length on the pump jack could be set from 72 to 96 inches. Interchangeable sheaves between the primary driver and the gear reducer allowed the stroke rate to be adjusted between approximately 0.5 to 10 strokes per minute. Pump discharge could therefore be varied from approximately 10 to 200 standard tank barrels (STB) per day. This wide discharge range permitted testing in relatively low and high yield formations.

2.3 INSTRUMENTATION

Transducers ported to both the test zone and to the annulus, as shown on detailed drawings in Appendixes D.1 and D.2, measured fluid pressure and temperature during testing and sampling. The test zone transducer measured formation pressure and temperature changes. The annulus transducer, which

measured annular fluid column pressure changes, was used to detect leaks across the packer seal or through the tubing sections. Signals from both transducers were transmitted to ground surface through two instrument cables to a data collection and processing system.

2.4 DATA COLLECTION AND PROCESSING SYSTEM

Pressure and temperature signals were received by a portable onsite surface data collection and processing system. The signals were automatically corrected using calibration constants that were digitized and recorded on tape by computer. Resulting pressure, temperature, real time, and elapsed test time data could be printed, or plotted, to facilitate field test monitoring and evaluation.

3 TEST WELL PREPARATION AND COMPLETION

Preparations for the pumping test and fluid sampling program included use of a fluid tracer program during drilling and coring (SWEC, 1982). This and other activities, including test zone isolation and test zone perforating, are discussed below.

3.1 FLUID TRACER PROGRAM

A drilling fluid tracer program was initiated at the start of the drilling operation. Thiocyanate (SCN^-) was added, at concentrations of approximately 100 ppm, to the drilling mud and any other fluid (including cementing water) that was introduced into the well.

Reduction in the level of SCN^- in the samples collected from the test zones is interpreted to indicate a reduction in contamination of the natural formation fluids by materials (such as drilling mud) used during drilling, coring, and testing activities. Tracer concentration levels for Test Zones No. 1 and No. 2 sampling programs are discussed in Section 5.1 and Appendix A.4.

3.2 ZONE ISOLATION

Cement bond logs for the Mansfield No. 1 well indicated that the primary casing cement job would not adequately prevent fluid communication between test zones. Remedial test zone isolation was performed (Figure 3-1) using the standard oilfield practice of perforating the casing and pumping a cement slurry through the perforations (cement-squeezing). After drilling out the cement retainers and performing water pressure holding tests, a cement bond log (Figure 3-2) was run again to verify that the test zones were adequately isolated.

A cement-squeeze (145 sacks) was performed at 5,031 feet above the cement plug at the bottom of the production casing at a depth of 5,180 feet. Test Zone No. 1 (4,890 to 4,818 feet) was cement-squeezed at 4,917 feet and 4,803 feet with 110 and 90 sacks of cement, respectively. Test Zone No. 2 (4,638 to 4,514 feet) was cement-squeezed at 4,671 feet and

4,497 feet with 145 and 70 sacks of cement, respectively. Based on pressure test results, it was necessary to cement-squeeze Test Zone No. 2 at 4,671 feet with an additional 55 sacks of cement.

3.3 TEST ZONE PERFORATING AND DEVELOPMENT

Perforations for pumping were made by firing explosive shots through the casing with a retrievable hollow carrier gun. Four radial perforations per foot were made in the 5 1/2-inch casing.

Swabbing results indicated that each zone was producing expected fluid yields; therefore, neither test zone was acidized.

3.4 TEST ZONE ABANDONMENT/PLUGGING

Two methods were used to plug a completed test zone prior to moving up hole to the next test location. To minimize contamination of fluid samples through contact with cement, Test Zone No. 1 was plugged using two mechanical bridge plugs spaced approximately 10 feet apart (Figure 1-3). The standard procedure of placing cement above a single mechanical bridge plug was followed for plugging Test Zone No. 2 (Figure 1-3).

Well datum 0.0 feet at Kelly Bushing, Elevation 3701.6 feet
 Ground Surface, Elevation 3692.6 feet

Location of Perforations for
 Cement-Squeezing
 Mansfield No. 1 Well

Figure 3-1

2

4 PUMPING TESTS

Drawdown tests measured formation pressure and temperature in the test zone while pumping continued at a constant stroke rate. Drawdown tests were generally continued until the rate of pressure decrease approached equilibrium.

Recovery tests measured formation pressure buildup in the test zone following termination of a drawdown test. Recovery tests were continued until the straight line segment of a Horner plot could be extrapolated to the initial formation pressure (PI).

Representative pumping test data for each test zone are presented in Appendixes D.1 and D.2.

5 FLUID SAMPLING

Detailed procedures for determination of thiocyanate (SCN^-) tracer concentration levels and for collection and transfer of fluid samples are included in Appendix A.

5.1 TRACER PROGRAM

Fluid samples were collected from the surface discharge lines during drawdown tests and analyzed onsite for SCN^- concentration on a daily basis (Appendix A.2). When SCN^- concentration levels (Section 3.1) fell below field detection limits (~ 10 ppm), samples were sent for laboratory analysis to SWEC's consultant, Dr. Glenn Thompson, at the University of Arizona (Appendix A.1). Each test zone was pumped until SCN^- concentration levels were determined to be at the lowest practical level prior to surface and downhole sampling. At the time of sampling Test Zone No. 1, SCN^- concentration levels ranged from 0.29 to 0.31 ppm. At the time of sampling Test Zone No. 2, SCN^- concentration levels ranged from 4.71 to 5.38 ppm. The laboratory records for tracer analysis of samples collected from Test Zones No. 1 and No. 2 are presented in Appendix A.4.

5.2 SURFACE SAMPLING

Surface samples for laboratory analysis were collected at the wellhead and surface discharge line prior to downhole sampling. These samples were transported to the SWEC Amarillo Field Office and then shipped to designated agencies and subcontractors. The number, volume, and distribution of surface samples collected from each test zone are presented in Appendixes D.1 and D.2.

5.3 DOWNHOLE SAMPLING

A stainless steel Flopetrol Bottom Hole Sampler (Type 04-05-DB) was run downhole on a wire line to collect fluid samples at formation pressure and temperature. Before the sampler was used for each trip, at least 50 feet

of the wire line connecting to the sampler was cleaned with methanol to reduce possible sample contamination. Upon reaching the planned sampling depth, a pre-set internal clock activated closure of the sampler valves. Three to four 600-cc downhole samples were collected from each test zone. The number, volume, and distribution of downhole samples collected from each test zone are presented in Appendixes D.1 and D.2. Procedures for the collection of fluid samples were provided by the University of Arizona (Appendix A.3).

5.4 SAMPLE TRANSFER

Following the collection of each downhole sample, formation fluids were transferred in the field under pressure from the sampler chamber to sample bottles. The transfer was made using a portable transfer bench on which the sampler chamber and sample bottles were connected to a mercury displacement pump. With the required pressures maintained by the pump, formation fluids were displaced from the sampler chamber through a series of lines and valves into the appropriate sample bottles. Procedures for the transfer of fluid samples were provided by the University of Arizona (Appendix A.3).

6 TEST ZONES

Selection of test zones and the sequence of pumping tests were determined by TBEG and SWEC based on the detailed well stratigraphy from core logs (SWEC, 1982), geophysical logs (Figures 6-1 and 6-2), and hydrologic data obtained from drill stem tests (SWEC, 1982). The generalized well stratigraphy is shown on Figure 6-3. Progress Reports are presented in Appendix B. Drawings showing the location of downhole equipment, discharge data, representative pressure drawdown and recovery plots, preliminary interpretation of representative data, and sample collection and distribution information for each test zone are presented in Appendixes D.1 and D.2. Modifications made to surface and downhole testing equipment, which improved testing procedures and results, are discussed in Section 7.

6.1 TEST ZONE NO. 1 LOWER PERMIAN WOLFCAMP

The lower Permian Wolfcamp was perforated from 4,890 to 4,818 feet. Evaluation of selected Test Zone No. 1 data are presented in Appendix D.1. These results are summarized as follows:

- Formation pressure (PI) = 1,407 psia
- Formation thickness (H) = 72 ft
- Formation fluid temperature (T) = 102-106 F
- Formation fluid discharge (Q) = 190 STB/day
- Shut-in pressure recovery (M) = 114 psi/log cycle
- Formation permeability (K) = 4.3 millidarcies (md)

6.2 TEST ZONE NO. 2 UPPER PERMIAN WOLFCAMP

The upper Permian Wolfcamp was perforated from 4,638 to 4,514 feet. Evaluation of selected Test Zone No. 2 data are presented in Appendix D.2.

These results are summarized as follows:

- $PI = 1,245 \text{ psia}$
- $H = 124 \text{ ft}$
- $T = 101.7\text{-}103.5 \text{ F}$
- $Q = 62 \text{ STB/day}$
- $M = 180 \text{ psi/log cycle}$
- $K = 0.52 \text{ md}$

DUAL LATEROLOG MICRO-SFL GAMMA RAY & CALIPER

BOREHOLE COMPENSATED SONIC LOG

ZONE
0.1
18 FT. TO
890 FT.

DUAL LATEROLOG MICRO-SFL GAMMA RAY & CALIPER

BOREHOLE COMPENSATED SONIC LOG

COMPE

Age	Depth (feet)	Formation/Group	Lithology
Triassic	0 - 496	Dockum	Interbedded reddish brown siltstone, sandstone and shale
Permian	496 - 528	Dewey Lake	Redish brown silty shale
	528 - 556	Alibates	Whitish arenaceous dolomite
	556 - 612	Salado	Reddish brown siltstone and shale; base is anhydrite
	612 - 655	Yates	Reddish brown siltstone and shale
	655 - 687	Upper Seven Rivers	Reddish brown siltstone and shale with some thin beds of salt
	687 - 770	Lower Seven Rivers	Reddish brown siltstone
	770 - 985	Queen / Grayburg	Reddish brown sandstone, siltstone and shale with thin beds of salt and anhydrite
	985 - 1373	Upper San Andres	Brown and gray salt with thin interbeds of shale, siltstone and anhydrite; basal thick beds of anhydrite
	1373 - 1546	Lower San Andres Unit 5	Brown and gray salt with thin interbeds of shale, siltstone and anhydrite, basal thick beds of anhydrite
	1546 - 1815	Lower San Andres Unit 4	Brown and gray salt with thin interbeds of shale; base is thick beds of dolomite and anhydrite with basal black shale
	1815 - 1940	Lower San Andres Unit 3	Brown and gray salt with thin interbeds of shale and sandstone with basal anhydrite and dolomitic shale
	1940 - 1978	Lower San Andres Unit 2	Brown and gray salt with thin interbeds of shale with basal anhydrite and shale
	1978 - 2001	Lower San Andres Unit 1	Gray dolomite and anhydrite with a basal shale
	2001 - 2550	Glorieta	Interbedded red brown salt, sandstone, siltstone and shale
	2550 - 3065	Upper Clear Fork	Interbedded brown salt, siltstone, and shale with basal dolomite
	3066 - 3187	Tubb	Red brown and gray siltstone
	3187 - 3381	Lower Clear Fork	Interbedded gray brown salt, siltstone, shale and gray anhydrite
	3381 - 4081	Red Cave	Reddish brown, brown and gray siltstone and shale with some sandstone; basal portion also has thin beds of anhydrite
	4081 - 4515	Wichita	Interbedded gray anhydrite, shale and limestone
	4515 - 6550	Wolfcamp	Upper dolomite capping thick sequence of limestone with shale at base
Penn.	6550 - 7379	Pennsylvanian	Interbedded arkosic sandstone, limestone and shale
PG	7379 - T.D.	Precambrian	Rhyolite

Notes: Total depth of well: 7400 feet.

Depths measured from

Kelly Bushing, Elevation 3701.6 feet.

Stratigraphy of
Mansfield No.1 Well

Figure 6-3

7 RECOMMENDATIONS FOR FUTURE ACTIVITIES

7.1 PACKERS

Following initial equipment set up in Test Zone No. 1, the single slip tension packer released. The tension packer was removed, and a dual slip Otis Perma-Trieve Packer was installed and successfully used for the pumping tests in Test Zones No. 1 and No. 2. The Otis Perma-Trieve Packers used at the Mansfield No. 1 well are recommended for use during future pumping tests. These triple seal, dual slip packers can be set in a compression, neutral, or tension mode and can be plugged following testing to seal off the test zone. Unlike the single seal, single slip tension packers, the use of the dual slip packers eliminated the tendency of the tension packer to release when subjected to a combination of high stroke rates and pressure differentials. The triple seal, fabricated with a softer element sandwiched between two harder elements, eliminated leakage problems that were encountered while using single element packers.

7.2 TUBING COMPLETION

The test wells require that tubing strings be manipulated and suspended under tension to improve pumping efficiency and to reduce sucker rod/tubing wear. The tubing hanger and threaded head used at the Sawyer No. 1 well required exact spacing out of the string in order to attain both the desired packer set and the tubing tension. This effort occasionally resulted in a less effective packer seal and/or packer shear-ring shear. As a result, the above wellhead equipment was replaced with a flange slip-type attachment. With this modification, the string could be pulled through the wellhead attachment and suspended from the slips at the desired point of tension. SWEC recommends using slip-type attachments for tubing completions on future test wells.

7.3 CABLE REEL ASSEMBLY

To facilitate installation of the two transducer cables at the Mansfield No. 1 well, the cable reel assembly was modified so that each cable could be spooled independently. This modification reduced the possibility of a slack cable snagging or a taut cable disconnecting or possibly breaking. SWEC recommends this procedure when it is necessary to run multiple instrument cables into a test well.

7.4 ELECTRICAL GENERATORS

Due to the remoteness of the Mansfield site, it was necessary to use a portable, engine-driven generator to provide electrical power requirements. The equipment supplied provided satisfactory results. However, for the purpose of conducting long term tests under similar conditions, SWEC recommends that a backup generator be on standby in addition to the backup equipment previously recommended. Refer to the Pumping Test and Fluid Sampling Report, Sawyer No. 1 Well, Palo Duro Basin, Section 7.4 (SWEC, 1983).

7.5 FLUID SAMPLE SHIPMENT

Two of the downhole fluid samples from Test Zone No. 2 were lost in shipment from the Amarillo Field Office to the University of Arizona. To avoid future problems, the shipment procedure was amended. Recipients of fluid sample shipments shall be notified that samples have been collected and forwarded. If samples are not received, the Amarillo Field Office should be notified by the recipients in a timely manner.

8 REFERENCES

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APPENDIX A

TRACER ANALYSIS PROCEDURES
AND RECORD OF TRACER
ANALYSIS AT MANSFIELD NO. 1 WELL

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APPENDIX A.1

THIOCYANATE ANALYSIS LABORATORY PROCEDURE
DIRECT INJECTION

PROCEDURE 1 REV 1

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SSW J.O. #13697

DATE 5/12/82

PREPARED BY

APPROVED BY

THIOCYANATE ANALYSIS LABORATORY PROCEDURE
DIRECT INJECTION

EQUIPMENT:

1. Spectra-Physics 8700 HPLC
2. Hitachi Model 155-40 Variable Wavelength UV Absorption Detector
3. Spectra-Physics Model 4100 Computing Integrator
4. One Helium Tank for degassing solvents
5. 25 cm by 4.6 mm ID Column packed with Whatman 10 μ m strong anion exchange (SAX) stationary phase

PROCEDURE:

1. Power supply must remain on or allow one hour warm-up if inadvertently turned off.
2. Turn on detector and allow 15 minutes to stabilize.
3. Check detector at 200 nm (wavelength).
4. Turn pumps on.
5. Set flow rate on pumps at 3 ml/min.
6. Allow column to equilibrate with mobile-phase solvents for approximately 15 minutes.
7. Set detector absorbance at its most sensitive setting = .01 AUFS (absorbance units full scale).
8. Set attenuation on integrator: all attenuations are set on the integrator to keep peaks on scale. This allows the operator to adjust the attenuation without affecting actual peak height and area counts.
9. Run programs on integrator producing printouts of information initially put into integrator:
 - a. setting of parameters for samples,
 - b. input for peak height, and
 - c. annotations of chromatograms for each run.
10. Run tracer standard to ensure normal function of HPLC and integrator.
11. Record standard response in laboratory notebook.
12. Install the 10 μ l sample loop.

PROCEDURE 1 REV 1Page 2 of 4
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13. Filter sample through a 0.45 μ m pore size filter:

- a. syringe filter: draw sample up through the syringe and expel it through the filter on end of syringe.
- b. pressurized millipore system: for filtering large quantities.

These two filtering methods may be used interchangeably. If the samples are very viscous, then the pressurized millipore system is necessary. If samples have a low viscosity, the syringe filter system is preferred because it is more expedient.

14. Fill a clean 1 ml syringe sample.

15. Insert syringe in place on injection valve.

16. With the injection valve in load position, fill the sample loop by slowly depressing the syringe plunger.

17. When the sample loop is full, return injection valve to injection position while simultaneously pressing the inject-standby key on the integrator.

18. The Spectra-Physics Model 4100 Computing Integrator provides retention time, peak area, and peak height measurements.

19. Record sample analysis data in laboratory notebook.

20. The QA Officer shall collect the laboratory notebooks upon completion of sample analysis for a well site to check results and transfer calibration results to the "Calibration Check Sheet - HPLC" (Form 1) Attachment-1, and the sample analytical results to the "Record of Tracer Analysis" (Form 2 Series) Attachment-2.

PROCEDURE 1

REV 1 37

Page 3 of 4

DATE 5/12/82

STONE & WEBSTER
CALIBRATION CHECK - HPLC
J.O. NO. 13697

FORM-1

[illegible]

PROCEDURE 1 REV 1

DATE 5/12/82

STONE & WEBSTER PERMIAN BASIN,
RECORD OF TRACER ANALYSIS
J.O. #13697

[illegible]

TYPES OF ANALYSIS:

1. Direct Injection
2. Concentration on Reverse Phase
3. Solvent Extraction/LC Direct Injection

Laboratory Supervisor

Date

APPENDIX A.2

FIELD TEST FOR SCN^- CONCENTRATION IN FORMATION WATER

40/41

PROCEDURE 8 REV 1

DATE 5/12/82

Page 1 of 2
S&W J.O. #13697

PREPARED BY Glenn Thompson
APPROVED BY John Busse

FIELD TEST FOR SCN^- CONCENTRATION IN FORMATION WATER

Responsibility for conducting field tests of SCN^- concentrations rests with the mud engineer or other site personnel as directed by the S&W site geologist. A field test for SCN^- concentration in formation water must be performed on each sample sent to Glenn Thompson for laboratory analysis.

- 1) Collect the water sample (10 ml or greater).
- 2) Filter sample through a buchner funnel and vacuum flask if the sample is not clear water. If sample is clear, no filtration is required.
- 3) Transfer approximately 10 ml of water sample to test tube using pipettes provided, if necessary.
- 4) Add 8 drops of FeCl_3 solution to water sample in test tube and shake.
- 5) Prepare standards by same method (Steps 3 and 4 above). Transfer 10 mls of each standard to test tube; add 8 drops of FeCl_3 . Prepare only standards that bracket the color intensity of the sample*.
- 6) Compare the sample to the color standards. The tracer concentration in the sample is considered to be the same as the standard that it most matches.
- 7) Record SCN^- concentrations on Attachment-1 (Form 15) "Log of Samples and Field Concentrations in Formation Fluid".

*No color standard should be used if it is more than four days old because the red color is not stable for long periods of time.

If the fluid to be tested is formation water from the production zones, use the standards made up in distilled water. The standards must be used in test tubes that are exactly the same as the test tube containing the fluid to be tested.

APPENDIX A.3

PROCEDURE FOR COLLECTION OF DEEP FORMATION SAMPLES USING
JOHNSTON-MACCO SAMPLER

PROCEDURE 9 REV 0Page 1 of 5
S&W J.O. #13697DATE 1/12/82

PREPARED BY

Glenn Thompson

APPROVED BY

Mike DassePROCEDURE FOR COLLECTION OF DEEP FORMATION SAMPLES
USING JOHNSON-MACCO SAMPLER

I. CLEANING:

- A. Down-Hole Sampler: All metal parts of the sampler are cleaned first in methanol and then in hexane before each new formation is sampled. Particular attention must be paid to metal parts inside the bore of the sample chamber because this provides the greatest surface for contaminating the water sample. The exterior of the sampler must be cleaned before each trip down the hole because of the grease build-up from handling.
- B. Wire Line: The first 250 ft of the wire line should be wiped clean with methanol before it is allowed to go down the hole regardless of the purpose for which it is going down-hole. Cleaning by wiping with a methanol-soaked rag is not effective at normal descent speeds if the wire line is very dirty. The initial cleaning should be slow and deliberate enough to ensure the first 250 ft of line going in the water is bright, clean wire. Subsequent cleaning should require only that the line be passed through two or three sections of dry or damp rags wrapped around the wire.
- C. O-Rings: Considering the numerous other sources of contamination, special cleaning of new (unlubricated) o-rings is probably unnecessary. The initial trials demonstrated that the sampler can be assembled and operated without problems using only distilled water to lubricate the o-rings during assembly. Therefore, unless special problems arise, no lubricant should be used on any o-rings that go down-hole. If problems occur and a special lubricant is required, a very thin application of silicone vacuum grease should be applied to the o-ring. If lubrication is necessary, the grease should be applied before the o-ring is put in place on the sampler to avoid getting any excess grease on the sampler. After grease is applied to the o-ring it is wiped as clean as possible with a dry rag or paper towel after which sufficient grease will remain on the o-ring to provide lubrication. The light hydrocarbon oil that was used should be avoided in the future in preference to the vacuum grease because the grease is much less soluble in water than the oil. Thus, the grease would dissolve less and contaminate the water sample less. No lubricants should be used on any o-rings of the sample transfer equipment that might contact the water sample.
- D. Connecting Tubing: All tubing between the Johnson-Macco sampler and the sample storage bottle should be rinsed with methanol and hexane before each new formation is sampled.

PROCEDURE 9 REV 0Page 2 of 5
S&W J.O. #13697DATE 1/12/82

- E. Sample Storage Bottles: The stainless steel storage bottles must be rinsed with distilled water, methanol, and hexane. After which they are baked at 150°C for three hours with a clean carrier gas purging through them at a rate of 30 mls per minute or greater. After bakeout they are evacuated for storage. The bottles are evacuated as a means of assuring that they have no leaks. If the bottle is not still under vacuum at the time it is opened for use then it is not suitable for sample collection.

II. SAMPLE COLLECTION

Except for the cleaning and lubrication practices noted above, the down-hole sample collection is performed exactly according to Johnson-Macco procedures.

III. SAMPLE TRANSFER

A schematic diagram of the transfer system is given in Attachment-1. The steps in the transfer are detailed below:

- A. The sample chamber is disconnected from the wire line and submerged in a trough of water for leak checking. If leaks are observed, the sampler must be fitted with new o-rings and the sample re-collected.
- B. After leak checking, the sample chamber is prepared for attachment to the transfer bench according to the standard Johnson-Macco procedure except that no mercury is placed in the upper outlet end of the sample chamber.
- C. The sampler is connected to the mercury pumping system of the transfer bench in the manner indicated in Attachment-1. (No mercury is present between the top of the sampler and the sample bottle). The sample bottle is positioned vertically above the sampler with no loops in the connecting tubing that would raise the mercury above the mercury/water interface.
- D. Valves #1, #2, and #3 are opened to the vacuum.
- E. After 26 or 27 inched (Hg) of vacuum is indicated on the gauge, close valve #3 to the vacuum and open valve #4 to the sample bottle. If the gauge registers an increase in pressure (loss of vacuum) upon opening the bottle which should be under an equivalent vacuum, the sample bottle should be replaced.
- F. Leak test the evacuated volume by observing the vacuum gauge for one or two minutes with valve #3 closed. No change should be perceptible in this time.

PROCEDURE 9 REV 0Page 3 of 5
S&W J.O. #13697DATE 1/12/82

- G. If no leaks are present, close valve #2 to prevent sample access to the interior of the vacuum gauge and the system is ready for sample transfer.
- H. The sample chamber is opened using the standard Johnson-Macco procedure and the water in the sampler is displaced upward into the sample bottle.
- I. Mercury is pumped upward through the sample chamber until it becomes invisible in the sight glass at which time the bottle is closed by valve #4.
- J. Observe the pressure reading on the pressure gauge when all of the water is in the bottle and record this information on the label of the bottle.
- K. Information on sample bottle label:
 - date, sample sequence number
 - well name,
 - formation name,
 - depth of sampling interval, and
 - approximate maximum pressure in bottle.
- L. Shipment of sample bottles to the U of A for analysis shall require accompaniment of "Gas Sample Field Log" (Form 13) Attachment-2.

PROCEDURE 9 REV 0DATE 1/12/82Page 4 of 5
Attachment-1
S&W J.O. No. 13697

GAS SAMPLE FIELD TRANSFER LOG
SWEC J.O. #13697

[illegible]

Condition

Program Director
Date

APPENDIX A.4

RECORD OF TRACER ANALYSIS AT MANSFIELD NO. 1 WELL

FORM 4A

STONE & WEBSTER PERMIAN BASIN, MANSFIELD #1
 RECORD OF TRACER ANALYSIS
 J.O. #13697

12/10/82

PRODUCTION ZONE ANALYSES (PZ)

Sample	Date Collected	Individual Measurement	Mean	Date of Calibration Analysis	Date of Analysis	Type of Analysis	Analyst
Mansfield #1 1st PZ	8/8/82 6:10 pm	2.17, 2.22	2.2	8/10/82	8/10/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/9/82 6:30 pm	1.69, 1.69	1.7	8/11/82	8/11/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/10/82 3:20 pm	1.28, 1.31, 1.28	1.3	8/12/82	8/12/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/11/82 1:30 pm	1.11, 1.11	1.1	8/13/82	8/13/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/12/82 5:30 pm	0.87, 0.85	0.9	8/15/82	8/15/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/13/82 3:30 pm	0.85, 0.80, 0.79	0.8*	8/19/82	8/19/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/14/82 12:00 pm	0.67, 0.89	0.7*	8/19/82	8/19/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/18/82 3:30 pm	0.60, 0.62	0.6*	8/19/82	8/19/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/19/82 4:00 pm	0.54, 0.56	0.55*	8/21/82	8/21/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/20/82 2:45 pm	0.51, 0.51	0.5*	8/21/82	8/21/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/21/82 2:45 pm	0.52, 0.51	0.5*	8/22/82	8/22/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/22/82 1:30 pm	0.41, 0.43	0.4*	8/23/82 A	8/23/82A	1	W.E. Thompson
Mansfield #1 1st PZ	8/23/82 11:00 am	0.43, 0.44	0.45*	8/23/82 B	8/23/82B	1	W.E. Thompson
Mansfield #1 1st PZ	8/24/82 3:45 pm	0.35, 0.32	0.35*	8/25/82	8/25/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/25/82 3:45 pm	0.29, 0.31	0.30*	8/27/82	8/27/82	1	W.E. Thompson
Mansfield #1 1st PZ	8/26/82 10:00 am	0.29, 0.30	0.30*	8/30/82	8/30/82	1	W.E. Thompson
Mansfield #1 2nd PZ	9/17/82 2:18 pm	9.85, 10.00	9.9*	9/20/82	9/20/82	1	W.E. Thompson
Mansfield #1 2nd PZ	9/18/82 12:00 pm	9.70, 9.56	9.6*	9/20/82	9/20/82	1	W.E. Thompson
Mansfield #1 2nd PZ	9/20/82 3:45 pm	8.65, 8.42	8.5*	9/21/82	9/21/82	1	W.E. Thompson
Mansfield #1 2nd PZ	9/21/82 3:00 pm	7.58, 7.79	7.7*	9/22/82	9/22/82	1	W.E. Thompson
Mansfield #1 2nd PZ	9/22/82 4:30 pm	7.41, 6.95, 7.40, 7.13	7.2*	9/23/82	9/23/82	1	W.E. Thompson
Mansfield #1 2nd PZ	9/23/82	6.91, 6.87	6.9*	9/28/82	9/28/82	1	W.E. Thompson

TYPES OF ANALYSIS:

*Rounded to ± 0.05 ppm

1. Direct Injection
2. Concentration on Reverse Phase
3. Solvent Extraction/LC Direct Injection

This form can be applied to other future wells
 as approved by Glenn Thompson.

Glenn Thompson 12/9/82
 Laboratory Supervisor Date

FORM 4A

STONE & WEBSTER PERMIAN BASIN, MANSFIELD #1
RECORD OF TRACER ANALYSIS
J.O. #13697

12/10/82

PRODUCTION ZONE ANALYSES

[illegible]

TYPES OF ANALYSIS: *Rounded to + 0.05 ppm

1. Direct Injection
2. Concentration on Reverse Phase
3. Solvent Extraction/LC Direct Injection

This form can be applied to other future wells

Glen Thompson 12/9/02
Laboratory Supervisor Date

APPENDIX B

PROGRESS REPORTS

TABLE OF CONTENTS

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APPENDIX B.1

DAILY REPORTS

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

1

DATE 6/16/82

SITE REPRESENTATIVE

L. Ford

DETAILS OF OPERATIONS

**LAPSED
TIME**

TO

TIME

Temperature profiling conducted in late afternoon.

KMA crew delivers workover rig to site

Ford Tool scheduled to deliver pump, tank, 5'6" scraper, and blow out preventer to site at 12:00 p.m. 6/17/82

U.S.

6/17/82

WELL NAME & NO.

1999

WELL MADE & NO.
Mansfield No. 1

R. Ford.

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

3

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE	J.S. NO. 13697	DATE 6/18/82
WELL NAME & NO. Manafield No. 1	SITE REPRESENTATIVE R. Ford	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 A.M.			R. Penn, Tool Tool Service Eng, KMA crew and workover rig on site. Rig up and run into well with 4 3/4" bit, 5 1/2" scraper, and tubing.
9:00 A.M.			J. Michelson on site to discuss cementing/squeezing operation with R. Penn & S.W. Attempt will be made to establish primary circulation to surface. Additional cementing operation will be required at 5,100 ± ft to close off borehole annulus. If primary circulation is established it may be possible to reduce the number of separate cementing operations. Determined the very little if any cement is present in borehole annulus.
9:30 A.M.			Schlumberger Rep on site to schedule cementing operation.
10:30 A.M.			Stop run in well with tubing for delivery of additional tubing.
2:00 P.M.			Additional tubing, 2000 lb torque, tracer, fresh water delivered to site.
2:15 P.M.			Complete run in well with tubing. Tag bottom @ 5,128'.
2:30 P.M.			Tag freshwater with tracer to 110 ± ppm.
3:00 P.M.			Hook up for circulation of fresh water from well with tracer water. Circulate 119 bbl.
			Informed by T. Annarstone that a total of three logs (gamma ray, bond, thermal decay) would be required.
	4:00 P.M.		
4:30 P.M.	5:30 P.M.		Scrap well with 5 1/2" scraper. Call out Halliburton for 6/19/82.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

10/2
REPORT NO. 4

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE	J.O. NO. 13697	DATE 6/17/82
WELL NAME & NO. Monaheld No. 1	SITE REPRESENTATIVE R. Ford	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 A.M.			R. Penn, KMA, Ford Tool Egn, Schlumberger, Halliburton on site. Rigged up Schlumberger.
7:30 A.M.			Run into well with 3 3/8" casing gun.
8:00 A.M.			Perforate 2' zone - 4 shots/ft; 90° phase from 5,030' to 5,032'.
9:00 A.M.			Rig up Halliburton 5 1/2" cement retainer and run into well on Schlumberger wire line.
10:00 A.M.			Set retainer (top) at 5,004.
10:15 A.M.			Run out of well and rig down Schlumberger.
10:30 A.M.			Rig up Halliburton ^{retainer} cement stinger.
10:45 A.M.			Run into well with tubing & stinger.
11:30 A.M.			Set stinger into retainer. Hook up Halliburton line to well head.
11:45 A.M.			Pump fresh + tracer into well annulus and pressure up to 500 psi. Pump fresh + tracer into tubing at 1 bbl/min and pressure up to 600 psi. Increase to 3 bbl/min and pressure up to 1,000 psi. Total take into wellbore annulus / formation 10 bbl.
12:30 P.M.			Terminate pumping. Immediate pressure drop to 0. Primary circulation not established.
1:45 P.M.			Cement delivered to site: 150 sacks Portland Class H. Additives: Salt @ 10%, CEF-2 @ 2% Bilonite @ 5#/sack.
2:20 P.M.			Pull stinger out of retainer. Commence pumping cement down tubing - displacing water out annulus.
2:30 P.M.			Pump 145 sacks to bottom of tubing & set stinger. Pump 50 sacks at 1 bbl/min; 100 psi until tubing goes on vacuum taking 85 sacks.
2:45 P.M.			

[illegible]

5

10. 20. 13697

DATE 6/21/82

WILL NAME & NO.

CITY OF PHOENIX/AVP

Mansfield No. 1

R. Ford

[illegible]

 

6

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

13697

6/22/82

WELL NAME & NO.

ELL NAME & NO. -
Mansfield Ab. 1

CITY REPRESENTATIVE

K. Fard

[illegible]

10. 11. 13697

DATE 6/23/82

WELL NAME & NO.
Mansfield No. 1

CITY REPRESENTATIVE
R. Ford

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

8

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JO. NO.

13697

DATE

6/24/82

WELL NAME & NO.

Mansfield No. 1

SITE REPRESENTATIVE

R. Ford

TIME LOG

FROM

TO

ELAPSED
TIME

DETAILS OF OPERATIONS

Runoff from heavy rains wash out
 main silt road. Crews not able
 to reach well to complete cementing.
 No work performed at site.

9

WELL NAME & NO.	SITE REPRESENTATIVE
Mrs. No. 1	R. Ford

7:00 A.M.			R Penn. Schlumberger, Halliburton, KMA
-----------	--	--	--

			new travel to site via Alamosa
--	--	--	--------------------------------

			Ranch road - Detours and temporary repairs
--	--	--	--

to main site road, enable 'access' to

9:00 A.M.	well site.
-----------	------------

9:00 A.M.	10:30 A.M.	Run in well with 3 $\frac{3}{8}$ " casing gun.
-----------	------------	--

10:30 A.M.	Perforate 2 ft zone at 4 shots/ft
------------	-----------------------------------

11:00 A.M.	90° phase, from 4,496' to 4,498'.
------------	-----------------------------------

11:00 A.M.	12:00 A.M.	Set 5 1/2" returns @ 4,488 (top)
------------	------------	----------------------------------

12:00 P.M.		Run in well with tubing and stinger
------------	--	-------------------------------------

1:15 P.M.	By sup Halliburton class and equipment.
-----------	---

1:15 P.M.			Emment gone with 70 sacks of cement.

		Cement. Commerce pumping sd Oper
		+ 110000 sd Profit

going to 1,100 psi at completion.

		Concrete mix: Class II + salt @ 10%,
11/20/03		BSA 2 B 13 B 14 it's B 5 #1 each

	4.00 P.M.	CRK-2 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2
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Guest: Learning completed.

creating / organizing companies:

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DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

10

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

6/26/82

WELL NAME & NO.

Mansfield No. 1

SITE REPRESENTATIVE

R. Ford

TIME LOG

FROM

TO

ELAPSED
TIME

DETAILS OF OPERATIONS

Runoff from heavy rains wash out
 main site road. Damage extensive
 in several areas. Crews not able
 to reach well to commence drilling.
 No work performed at site.

Work is underway on the roads

11

DATE 6/28/82

SITE REPRESENTATIVE

Russell Fontaine

[illegible]

CLIENT	JO. NO.	DATE
ONWI-BATTELLE MEMORIAL INSTITUTE	13697	6/29/92
WELL NAME & NO.	WELL REPRESENTATIVE	
Manstfield no. 1	R. Fontaine	

[illegible]

REPORT NO. 43

10. 55. 13697

WILL NAME & NO.

STATE DEPARTMENTATION

MANSFIELD NO. 1

R. FONTAINE

[illegible]

REPORT NO.
14

CLIENT		WELL NAME & NO.		DATE	WELL NO.	DATE
ONWI-BATTELLE MEMORIAL INSTITUTE		MANSFIELD NO. 1		13697	7/1/82	
TIME LOG		ELAPSED TIME		SITE REPRESENTATIVE		
FROM	TO			R. FONTAINE		
				DETAILS OF OPERATIONS		
7:00 AM				KMA crew, Halliburton, Bob Penn at site		
				Wait on pump & cement truck. RIH w/		
				2 7/8" tubing, Retainer for 5 1/2" casing - 15 1/2		
				161 ft		
8:00 AM				Cement & Pump truck arrives with		
				150 sacks - Class H cement and 10% SOH		
9:00 AM				All rods in hole - set Retainer at		
				4647' mechanically w/ tubing - insert		
	9:30 AM	2 1/2 hr.		Stinger		
9:30 AM				Pressure test perf's again @ 4672' - 70'		
				Run flow test - 1 bbl/min @ 1500 psi		
				Bob Penn decided to put in only 75		
				sacks cement		
9:50 AM				Lift stinger out of Retainer - mix 75 sacks		
				with 15 bbl of water and pump in		
10:05 AM				Insert stinger - pump 11 bbl of water		
				behind cement @ 100 psi		
10:30 AM				Cement @ Perf's level - pressure		
				built up to 2000 psi		
11:30 AM				Finished squeeze job - reversed out		
	12:00 PM	2 1/2 hrs.		above Retainer		
12:00 PM	2:00 PM	2 hrs.		Pull 2 7/8" tubing out of hole		
2:00 PM				Closed BOP - Released KMA crew		

REPORT NO. 15

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

16

CLIENT: ONWI-BATTELLE MEMORIAL INSTITUTE

13697

DATE 7/3/82

WELL NAME & NO.

DATE OF PRESENTATION

MANSFIELD NO. 1

R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 AM.			Schlumberger & KMA CREW ARRIVES
	9:15 AM.	2 1/4 hr.	-rigging up for bond log.
9:15 AM.			Run Cement Bag - Gamma ray tool in
	10:00 AM.	3/4 hr.	hole
10:00 AM.			Trail run to calibrate depths - bottom
			should be at 4908 - actually 4898'
			according to Schlumberger - Bob Penn
			said probably some cuttings fell back
	10:30 AM.	1/2 hr.	in hole.
10:30 AM.	11:30 AM.	1 hr.	Run log 4898' - 4200'
11:30 AM.			Field print - Cement Bond log - checked
			O.K. - all zones cemented well
	1:35 P.M.	2 1/2 hr.	Begin calibrating TDT tool
1:35 P.M.			Put TDT tool in hole - tool giving false
	4:00 P.M.	2 5/12 hr.	readings - recalibrate
4:00 P.M.			Put new TDT tool in hole - run two
	7:00 P.M.	3 hr.	passes 4898 - 4400'
7:00 P.M.	7:30 P.M.	1/2 hr.	Lower block - demobilize
7:30 P.M.			Release KMA & Schlumberger crew
Note 11:00 a.m. Guin dropped off 150 bbl clean water			
E & F service tagged it			

REPORT NO. 17
~~SECRET~~

CLIENT	IS NO.	DATE
ONWI-BATTELLE MEMORIAL INSTITUTE	13697	7/5/82 (MON.)
WELL NAME & NO.	SITE REPRESENTATIVE	

[illegible]

REPORT NO. 18
7/6/82 (TUE)

CLIENT	LS. NO.	DATE
ONWI-BATTELLE MEMORIAL INSTITUTE	13697	7/6/92 (TUE)
WELL NAME & NO.	WELL REPRESENTATIVE	
MANSFIELD No. 1	R. FONTAINE	

[illegible]

19

13697

7/7/02 (WED)

STATE REPRESENTATIVE

R. FONTAINE

[illegible]

CLIENT		WELL NAME & NO.		DATE	
ONWI-BATTELLE MEMORIAL INSTITUTE		MANSFIELD NO. 1		7/9/82 (THUR.)	
TIME LOG		ELAPSED TIME		DETAILS OF OPERATIONS	
FROM	TO				
7:00 AM				KMA crew, and Ford Tool Co. operator, and Rig Engineer on site - Scrape out TD of casing and circulate out	
	9:30 AM			ROOH w/ 2 7/8" tubing	
9:30 AM				Ford Tool brings in trucks to remove pumping unit and water tank - Schlumberger	
				repairs perforating head and rigs up for perforating	
12:10	1:15 PM			Perforate zone 4865-4890'	
1:15	2:15 PM			Rig up second gun	
2:15 PM	3:00 PM			Perforate zone 4840'-4865'	
3:00 PM	4:30 PM			Rig up third gun	
4:30 PM	5:30 PM			Perforate zone 4818'-4840'	
5:30 PM				Perforating completed 4 shots/foot - 90° phase from 4890' to 4818'	
	6:00 PM			Rig down - close BOP - release Schlumberger and KMA crew	

Report no. 21

ONWI - BATTELLE MEMORIAL INSTITUTE - 13697

7/9/92 (FRI)

MANSFIELD NO. 1

SITE REP - R. FONTAINE

FROM	TO	ELAPSED TIME	DETAILS OF OPERATIONS
8:00 AM.			Arrived at site. Condition of roads O.K. Notified Johnston-Macco and Dick Darrah of S&W. Rick Hulsey of Halliburton showed up to deliver ticket for last week's work.
9:00 AM.	12:00 AM.	5 hrs.	Baker and Taylor was scheduled to show up on site at 9:00 a.m. - Didn't show until 12:00 PM.
12:00 PM.	2:00 P.M.	2 hrs.	Baker finally showed up with D-8 bulldozer. The other area on the side of the rig was leveled for the sucker rods, drainage ditches were dug, a level road made for vacuum trucks, and filled in washed out spots on access road.
2:00 P.M.	3:00 P.M.	3 hrs.	Johnston-Macco crew showed up. (The crew originally was schedule to show up at 12:00 PM.)
3:00 P.M.	3:30 P.M.	1/2 hr.	Hotshot truck carrying sucker rods showed up - got caught in conductor pipe while turning around - took half an hour to dig out.
3:30 P.M.	5:30 P.M.	2 hrs.	Driver drove hotshot truck into wash-out and broke axle - took 2 hours for KMA crew to unload sucker rods, pipe, and move over to well head.

Report no. 21

ONWI-BATTELLE MEMORIAL INSTITUTE-13697

7/9/82 (FRI)

MANFIELD NO. 1

SITE REP. - R. FONTAINE

FROM	TO	ELAPSED TIME	DETAILS OF OPERATIONS
5:30 A.M.			Determined setup of downhole equipment w/ Bob Penn (Paul Cameron) and Bob Cruger (Johnston-Macco). Johnston said they had 3 combination collars to change from 2 7/8" to 2 3/8" tubing but when they opened the package they discovered they only had one. Therefore, only the setup to the transducers could be made.
7:00 A.M.	7:00 P.M.		Close BOP and arrange to meet on site at 6:00 a.m. tomorrow
			<u>NOTES:</u> 1. Monte Carlo delivered site trailer at 12:00 P.M. and blocked it, leveled it, anchored it, and tied it down 2. Bob Penn says all the water in the mud pit is fresh - no reason why we can't pump it out. 3. Bob Cruger (Johnston) asked Bob Penn if they could set up the pump jack without the sucker rods in the hole - This is in direct contradiction to the reason they gave for not working 7/5/82.

Report no. 22

ONWI - BATTELLE MEMORIAL INSTITUTE - 13697

7/10/82 (SAT)

MANSEFIELD NO. 1

SITE REP - R. FONTAINE

FROM	TO	ELAPSED TIME	DETAILS OF OPERATIONS
6:00 AM.			Johnston - Macco arrived on site - waiting on KMA crew
7:05 AM.			Tom Annaratone (SWEC) arrived at site
7:15 AM.			KMA crew finally showed up - set up transducers
	11:00 AM.		and go down hole.
11:00 AM.			After setting about 7 strings of 2 7/8" tubing in the hole above the tubing Johnston discovered a short in one of their cables - Had to send out for new cable
12:00 P.M.			F.A. Munden of E & F Service showed up to hook up 3 & 1/2 w trailer to Johnstons 50 kw generator - not putting out enough power to hook up - F.A. said Johnston's generator will have to be replaced.
1:00 P.M.			Johnston said it would take about 3 hours to get new cable and about 2 hours to manually wind it on reel. Decided to release KMA crew - removed transducer - put tubing in hole - close BOP
	1:00 PM	7 hrs.	

Report no. 23

7/10/82 (SAT)

ONWI-BATTELLE MEMORIAL INSTITUTE

MANSEFIELD NO. 1 SITE AER-R. FONTAINE

FROM	TO	ELAPSED TIME	DETAILS OF OPERATIONS
2:00 P.M.	2:00 P.M.		Johnston discovered short location and repaired it
2:30 P.M.			Had meeting w/ Tom Annaratore (SWEC), Bob Penn (Paul Cameron), and Bob Cruger (Johnston) Decided on new schedule next week Mon. - Go down hole w/ instrumentation Tue. - Set up pump jack, swab Wed. - Swab, Evaluation meeting w/ TBEG
4:00 A.M.		3 hrs.	Bob Moore delivered 1050 gal. Diesel tank for generator.
4:00 A.M.	6:00 P.M.	2 hrs.	Tom Annaratore (SWEC) and R. Fontaine (SWEC) discussed various aspects of the job at the site.

7/12/82 (MON.)

R. FONTAINE

R. FONTAINE

TIME LOG			DETAILS OF OPERATIONS
FROM	TO	ELAPSED TIME	
7:00 AM.			KMA crew arrived - opened BOP and raised transducers. Ben Penn (Rig Engineer) on site.
7:45 AM.	7:45 AM.	0.75 hr.	J-M crew arrived - Set up transducers
	10:20 AM.	2.58 hr.	for going down hole
10:20 AM.	3:00 PM.	4.67 hr.	RTH w/ J-M transducers and 2 7/8" tubing
3:00 PM.	4:00 PM.	1.00 hr.	Reel up new cable to spool & connect
4:00 PM.	5:30 PM.	1.50 hr.	Continue RTH w/ cable and 2 7/8" tubing
5:30 PM.			All tubing in hole - removed deck and cut transducer cable
	6:00 PM.	0.50 hr.	Remove BOP - Set packer at 4779' w/ 10,000 lbs. of tension
6:00 PM.	7:00 P.M.	1.00 hr.	Release KMA crew - J-M crew set up instrumentation
	9:00 A.M.	2.00 hrs.	Release J-M crew
9:00 AM.			Note: Around 7:00 p.m., a hotshot truck arrived on site w/ rental generator for J-M. J-M refused delivery since it was broken. - J-M ordered a 35 kW generator from Ford Tool Co.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO
24

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

IS NO
13697

DATE
7/13/92 (TUE)

WELL NAME & NO

MANFIELD NO. 1

DIVE REPRESENTATIVE

R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
9:00 AM			KMA, J-M, and J-M's pump crew on site.
1			Bob Penn (Rip Engineer) on site
10:00 AM			J-M's pump crew set up sand base for pump jack and leveled w/ backhoe. Set foundation for pump jack and began set up using a hotshot truck winch and
			cherry picker.
1:00 PM	2:30 PM	1 1/2 hr	Pump crew broke for lunch
2:30 PM			Pump crew returned. While pump crew continued to set up pump jack, KMA set up 2" line from well head to fiberglass tank. - Also set up by-pass for 55 gal
			drum.
	5:00 AM	2 1/2 hr	
5:00 PM			Pump jack set up - Bob Penn said it will have to be moved because it is at least
			1 foot off.
	5:30 PM	1/2 hr	
5:30 PM			J-M hooked transducer cable to computer and began recording pressure. - Annulus
			transducer not working
	6:10 PM	0.67 hr	
6:10 PM			Had J-M go to every 5 sec recording interval and began swabbing. Initial fluid level 1500'. Drew level down to 2800'
			depth in 6 mins swabbing 45 barrels total
	7:30 PM	1.33 hr	
7:30 PM			Go to 5 min recording interval - Release KMA and J-M crew
			NOTE: Ford Tool delivered J-M's rental generator at 9:00 am. FA Alundon of E & F Service hooked up 55 gal trailer at 10:00 am.

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
9:00 AM.			KMA, Bob Penn (Rig Engineer), Andy Smith (TREG), John Beck, and Paul Archer on site for evaluation meeting
9:00 AM.			Steve Weirather (J-M) arrived and ran Horner & Ramey plots for evaluation meeting. - He located a bad connector for annulus transducer and bypassed - Annulus transducer working O.K.
9:00 AM.			Evaluation meeting held on swabbing - Recovery results, acidizing, and schedule of work.
10:30 AM.	10:30 AM.	2.50 hr.	Continue swabbing - swabbed 5G bbls in 2 1/2 hours - pulled fluid level down only 500 ft
1:15 P.M.	1:15 P.M.	2.75 hr.	Slips came loose on packer - Rubber on packer bad
2:00 P.M.	2:30 P.M.	2.25 hr.	Rigged up so tubing could be removed in the morning
2:30 P.M.			Release KMA and J-M crew.
3:00 P.M.	3:30 P.M.	1.00 hr.	Guin vacuum truck pump 100 bbls of brine out of fiberglass tank and haul.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

26

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
8:00AM			KMA crew, Bob Penn on site. Ford Tool arrived with pump to pump fresh water out of mud pit. Set up on crest of pit.
9:00AM			J-M crew arrived - began taking instrumentation out of hole.
10:15AM			A man from Nante Carlo trailer rental arrived with stains, new air conditioner.
2:30PM			All tubing out of hole up to transducers. Bob Penn told Ford Tool to take their pump off site since they never got it to work.
4:00PM			All tubing and packer out of hole. Release KMA and J-M crew.
			<u>Note:</u>
			1. All day Bob Penn and I searched for a dual rubber tension packer. None were available. We ordered a R-T packer (single rubber) from Halliburton.
			2. When packer was out of the hole, Bob Penn determined the slips were bad and that's the reason it failed.
			3. J-M had another packer similar to Halliburton w/ new slips so cancelled order from Halliburton.

REPORT NO
27

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE	LAB. NO. 13697	DATE 7/16/82 (FRI)
WELL NAME & NO. MANFIELD NO. 1	WELL REPRESENTATIVE R. FONTAINE	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
10:00 AM			KMA, J-M crew, and Bob Penn arrived.
			Work started later today due to the delay caused by J-M making new clamps for cable. When setting up downhole equipment replaced 10.26' pup it above drifter w/ a 6.0' pup it. Replaced drifter.
11:00 AM			Gary Jacobs arrived at site (Environmental Division - S&W)
1:00 PM			Gary Jacobs explained to R. Fontaine what was needed for restoration of site
2:00 PM	2:00 P.M.	4.00 hrs.	Transducers were all hooked up and ready to go. BTH w/ 2 7/8" tubing and J-M's cable
8:00 PM	8:00 P.M.	6.00 hrs.	Tubing halfway in hole. Release KMA and J-M crew.
			NOTE: At end of day, both KMA and J-M crew agreed to work Sunday since we could not continue surbbing until late Saturday.

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
28CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
7/17/82 (SAT.)

WELL NAME & NO.

SITE REPRESENTATIVE

MANFIELD NO. 1

R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00AM.			KMA, J-M crew, and Bob Penn on site.
			Continue RTH w/ 2 7/8" tubing and J-M cable.
			J-M start two men in crew
12:00PM.			All tubing and cable in hole. Set packer
			- Put 25,000 lb tension on packer w/
			42,000 lb shear pin and shear pin
			sheared. KMA and J-M proceeded to
			come out of hole
4:00PM.			Tubing about 3/4 of the way out of hole.
			Release KMA and J-M crew. No work
			Sunday since surging cannot be done.
			NOTES:
			1. on 7/14/82, Packer came loose because slips
			were worn out. This time the shear pin sheared
			2. No tension packers w/ dual rubbers were
			available
			3. Bob Penn finally pinned down why we
			are having so much trouble w/ packers
			- we have the wrong kind of well head
			4. What we have now is 10x6 tubing spool
			What we need is casing tubing head.
			5. With Dick Corrao's help, we located
			a KTH attachment from EMC Corporation
			that would allow us to set the packer
			without putting more tension than
			required.

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
29CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
7/19/82

WELL NAME & NO.

SITE REPRESENTATIVE

MANFIELD NO. 1

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

7:00 AM

KMA, J-M, and Bob Penn on site.
Come out of hole w/ downhole
instrumentation.

9:00 AM

Out of hole. FMC Corporation
(OCT Division) arrived w/ KTH
attachment for well head.

10:00 AM

Put redressed packer back in
hole and 9 jts. of 2 7/8" tubing
up to transducers. Waiting on
J-M crew to arrive w/ clamps.

11:30 AM

J-M crew arrived w/ clamps.
Rebuilt clamps for going down
hole.

1:30 PM

Clamps ready. Run in hole w/
tubing and downhole instrumentation

5:00 PM

About halfway in hole. Release
KMA & J-M crew for the day.

[illegible]

3.

DATE 7/21/82

DATE REPRESENTATIVE
R. FONTAINE

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE	LOG NO. 13697	REPORT NO. 32
WELL NAME & NO. MANFIELD NO. 1	DATE REPRESENTATIVE 7/22/82 R. FONTAINE	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 AM			KMA, J-M engineer, and Bob Penn on site. Start rigging up for swab.
8:00 AM			Start swabbing
10:00 AM			Stopped swabbing. Something wrong w/ annulus pressure readings
11:00 AM			Steve Weimather (J-M) called Bob Cruger (J-M) and ordered another computer for annulus due to potential faulty computer
2:30 P.M.			Bob Cruger (J-M) arrived w/ new computer. Hooked up to annulus transducer - still getting erratic readings
4:30 P.M.			Release KMA and J-M crew. J-M Computer Engineer will be on site 10:00 AM tomorrow.
			Note ① Checked tracer concentration 9:45 a.m. - 8 PPM
			② Swabbed 15 bbls in 1 hour
			③ Leo Martin (SWEC) visited the site today from 12:00 - 1:00
			④ Guinn vacuum truck picked up 150 lb fluid from process tank

NOTES:

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		DATE 1969	REPORT NO. 34
WELL NAME & NO. MANSFIELD NO. 1		DATE REPRESENTATIVE 7/26/82 (MON) R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 AM			KMA crew arrive at site. Standby for J-M crew
9:00 AM			R. Fontaine & Roy Darden (Paul Cameron Rig Engineer) arrive at site.
11:30 AM			J-M (3 men) crew arrived. Waiting on hotshot truck w/ new spool of cable
1:00 PM			Hotshot truck arrives w/ J-M spool & packer. KMA run in hole w/ tension packer, tail jt., and 9 jts. of 2 7/8" tubing
1:30 PM			KMA on standby. Waiting on J-M computer engineer to arrive.
			While waiting, Steve Weirather of J-M mentioned the reason the annulus transducer failed last week was because there was no O-ring in it to prevent the passage of water.
3:00 PM			Since no O-ring was available for the annulus transducer and J-M computer engineer was not on site, shut down for the day. Release KMA crew
4:30 PM			Hotshot truck from Pomer arrived w/ O-rings. J-M crew set up transducers.
7:00 PM			Transducer hookup complete. J-M done for the day.
			NOTES:
			1. Sp'w Work Bench delivered to site
			2. Roy Darden recommends backcharging J-M
			transducer for run time

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
35

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

LOG NO.
13697

DATE
7/27/82 (TUE)

WELL NAME & NO.

MANSFIELD No. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00AM			KMA, J-M, and Roy Darden on site.
			Checked tubing gage. Connection bad.
			Rebrazed before going down hole.
8:30AM			Add 2 7/8" 10' pup jt. above seat nipple
			and run in hole w/ 2 7/8" tubing & J-M
			cable
10:00AM			About 13 stands of tubing in hole above
			seat nipple. Tubing gage reading 450 psi.
			This reading impossible. Tubing gage
			bad.
10:30AM			Came out of the hole w/ 13 stands
			of tubing.
11:00AM			J-M computer engineer determined
			tubing & annulus transducer
			connections bad. Redress both connections.
2:00PM			Run in hole again w/ tubing and
			cable.
5:30PM			41 stands of tubing in hole above
			seat nipple. Release KMA and J-M
			crew for the day.
			NOTES:
			① Because J-M did not have computer
			engineer on site Monday, transducers
			were backed up incorrectly, causing
			a day's delay.
			② Bob Penn recommended pressure
			testing each transducer.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
36

CLIENT: ONWI-BATTELLE MEMORIAL INSTITUTE
WELL NAME & NO: MANSFIELD NO. 1
DATE: 7/29/82 (WED)
SITE REPRESENTATIVE: R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 AM			KMA, J-M, and Ray Darden on site.
			Continue running in hole w/ tubing & cable.
9:45 AM			Waiting on J-M to make more chmps.
10:30 AM			Continue running in hole.
12:00 PM			All tubing in hole. Ray Darden checked measurements. Bottom of packer at 4782'.
12:30 PM			Set packer & hung tubing w/ 18,000 lb tension.
1:00 PM			J-M took up cable to computers. KMA rigged up for swabbing.
1:30 PM			Shut in.
3:15 AM			Tubing transducer reading 1228.24 psi. Annulus transducer reading 1245.04 psi.
2:15 PM			Start swabbing.
5:00 PM			Completed 9 swabbing runs. Recovered 36 bbl of brine from zone. Noted annulus pressure dropped to 1077 psi during swabbing. Ray Darden said probably seat is bad. Release KMA crew.
6:00 PM			Release J-M crew. Decide to put more tension on packer in the morning.
			NOTE:
			(1) J-M put a 30,000 lb shear pin in the packer.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
37

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		DATE 1982	DATE 7/29/82 (THU)
WELL NAME & NO. MANSFIELD No. 1		SITE REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00AM			J-M, Roy Darden on site. Waiting on KMA crew.
8:00AM			KMA crew arrived. Loosened slips on well head KTH attachment and put 4000 lb more tension on packer.
			Now 21,000 lb total tension on packer
8:15AM			KMA operator hit 2" outlet plug on well head w/ snubbing unit and broke it off. Delayed 45 min.
9:00AM			Continue snubbing.
10:00AM			Noted annulus pressure dropped again from 1077 psi to 986 psi (It stayed at 1077 psi overnight)
10:30AM			Called Bob Penn. Told us to check for vacuum on annulus. Continued snubbing. Vacuum felt on annulus. Packer seat bad
11:00AM			Call Dick Ford (SWEC). His opinion was packer seat was healing itself during snubbing - so continued to snub
1:30 P.M.			Annulus press. dropped to 788 psi. Stopped snubbing. Release KMA and J-M crew for the day due to heavy rains. Snubbed 90 bbls. fluid total.
			NOTE:
			① @ 9:00 a.m. - Tracer level - 20 ppm
			② @ 1:30 p.m. - Tracer level - 15 ppm

13697

7/30/82 (FRI)

WELL NAME & NO

NOTE ON PRESENTATION

MANFIELD NO. 1

R. FONTAINE

TIME LOG	
FROM	TO

ELAPSED
TIME

DETAILS OF OPERATIONS

Heavy rains prevented access to well site.

KMA and J-M charged & hour standby
time today.

KMA agreed not to charge standby time over the weekend. Released KMA for the weekend.

Requested J-M check computers
over weekend.

Had Guinn truck show up at 7:00 a.m. but had to send back.

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
39CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13897DATE
7/31/82 (SAT)

WELL NAME & NO.

MANSFIELD No. 1

WELL OPERATOR

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

J-M not able to gain access to
site due to heavy rains.

REPORT NO. 88-40
1/22/82 (scm)

13697

8/1/82 (scm)

WILL BLAKE & CO.

STATE REPRESENTATIVE

MANSFIELD No. 1

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

to

TIME

12:00 PM

J-M arrived at site. Generator had run out of gas ~ 1:00 p.m. Sat.

Refueled generator and brought computer up to gather data.

3:30 P.M.

J-M off site.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
41

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

WELL NO.
13697

DATE
8/2/82 (MON.)

WELL NAME & NO.

MANSFIELD NO. 1

WELL REPRESENTATIVE

R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 A.M.			Ray Darden (Rig Engineer) on site.
7:15 A.M.			KMA crew arrived.
7:30 A.M.			J-M (3 men) crew arrived. Came out of hole w/ tubing & downhole instrumentation
8:00 A.M.			R. Fontaine dropped off heavy truck at Plains Chevrolet in Amarillo. Used rental car to arrive at site @ 9:30 A.M.
12:00 A.M.			Out of hole. Packer rubber element was O.K.
1:30 P.M.			R. Fontaine returned from Vega. Let J-M and KMA know will set new packer tomorrow
			KMA crew oiled rig.
			J-M made clamps
2:30 P.M.			KMA left for day
			NOTES: ① Bob Cruger (J-M) dropped off vacuum gauge for annulus today.
			② A Baker Retriever D Packer was considered but required too many turns to release
			③ An Otis Perma-Trieve Packer was chosen because it only required a 1/4 turn to release.
			④ No mobile phone available today.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

CLIENT		JOB NO.		REPORT NO.
ONWI-BATTELLE MEMORIAL INSTITUTE		13697		42
WELL NAME & NO.		DATE		
MANSFIELD NO. 1		9/3/82 (TUE)		
		SITE REPRESENTATIVE		
		R. FONTAINE		
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS	
FROM	TO			
7:00 AM.			KMA crew, Ray Darden on site.	
7:20 AM.			Schlumberger arrived. Bigged up to set packer on wireline.	
7:30 AM.			Otis Service Engineer arrived w/ Otis Perma-Trieve Packer.	
8:15 AM.			Run in hole w/ packer. Check depths against casing collar log.	
9:00 AM.			Set packer w/ charge @ 4760'. Rig down wireline.	
9:30 AM.			Run in hole w/ Otis Seal assembly and 9 jts. of 2 7/8" tubing.	
10:00 AM.			Up to transducers. Found short in U-M's cable. Schlumberger left site & Guinn Vacuum Truck arrived to haul 150 bbl of brine.	
10:30 AM.			U-M computer engineer showed up to troubleshoot cable.	
11:00 AM.			U-M went to Vega to call aboard cable.	
1:00 PM.			U-M returned to site. Need new cable. U-M will hotshot a new one in the morning. Released KMA crew.	
1:30 PM.			Ray Darden (Paul Cameron Rig Engineer) completed his assignment today. Bob Penn will return tonight.	
			NOTES: ① No mobile phone today	
			② KMA repaired Idler on scrub unit 7:30 - 9:30 a.m.	

45

8/4/82 (wed)

DATE OF PRESENTATION

R. FONTAINE

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

To

TIME

5:30 A.M.

J-M on site to set up to run in hole
w/ new cable

7:00 AM

KMA, Bob Penn on site. Run in
hole w/ tubing & cable.

5:00 P.M.

Back in hole w/ all tubing. Hatch
seal assembly into Perme-Tricue Packer.
J-M made well head connections &
put computers descending circy 5 mi
overnight.
Released KMA crew

NOTES: ① R. Fontaine picked up Chevy Truck this morning. No shocks were available for replacement.

② J-M modified the speed overnight to have dual speeds

③ Liwong Chu (EA-SWEE)
showed up to audit J-M
and Tab books. (11:00-6:30)

② J-M charged battery & ac pump unit overnight.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

44

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

8/5/82 (THUR)

WELL NAME & NO.

MAASFIELD No. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 AM.			KMA crew, Bob Penn on site. Install downhole pump & sucker rods. KMA threaded some rods & oiled.
9:00 AM.			J-M, & pump hoistout crew showed up. Started pump engine.
10:00 AM.			Called Baker & Taylor Shop. Can't hook up generator to diesel tank until tomorrow. Decided to have KMA crew hook it up. Obtained the bases & necessary fittings from Rock Hardware in Vegas.
3:00 PM.			All sucker rods in hole. Put polish rod, stuffing box on.
3:30 PM.			KMA crew lifted horsehead onto pump unit. Pump Roistobart crew adjusted pump.
4:30 PM.			Crew finished adjusting pump. Had to shut down for day since J-M had the wrong size stuffing box.
			NOTES: ① Al Easter (SWES), and Andy Smith (TBEG) on site 2:30-4:30
			② Bob Penn said crew did not adjust pump jack properly
			③ No gas screen was on downhole pump.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

45

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

8/6/82 (FRI)

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

7:00 A.M.

KMA, J-M, & Bob Penn on site.

J-M installed new stuffing box

8:00 A.M.

Started pumping, & monitoring.

9:20 A.M.

Fluid level at surface. Shut pump
off so KMA crew could rig down.

10:20 A.M.

Start pumping again.

1:00 P.M.

Shut off pump to adjust horse head.
under direction of Bob Penn

1:15 P.M.

Continue pumping

4:00 P.M.

Released KMA crew & workover
rig. Returned rig to Knot City.

NOTES: ① 10 strokes per minute

② Discharge 7 bbl/hour

③ Tracer concentrations:

10:20 a.m. 40 ppm

3:30 p.m. 20 ppm

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

46

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
8/7/82 (SAT)

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

8:00 AM

Bob Penn, Steve Weirather (J-M) on site.
Checked pumping unit - O.K.
Guinn vacuum truck arrived and
hauled 130.5 bbls of brine.

9:00 AM

off site

NOTES: ① @ 8:00 a.m. 8/7/82

168.4 bbls pumped so far

13" - 39 bbls left in tank

② 8:15 - 8:18 a.m. Stopped pump
unit to tighten screw on
stuffing box

③ Pressures:

Tubing 790-940 psi

Annulus 1232 psi

5:00 PM

Guinn vacuum truck hauled 48 bbls of
fluid.

NOTES: ④ @ 5:00 a.m. 8/7/82

216.4 bbls pumped so far

0" left in tank

⑤ Pumping rate: 10 spm

⑥ Discharge: 7 bbl/hr.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

47

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTELAB NO.
19697DATE
8/8/82 (SUN)

WELL NAME & NO.

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

10:15 AM

Guion Vacuum truck arrived. Hauled
 120 bbl of brine.

5:00 PM

R. Fontaine on site. Checked pumping
 unit. Water leaking on well head
 - Stuffing box loose.

6:10 PM

Steve Weirather (J-M) arrived. Tightened
 stuffing box & checked computers

NOTES: ① @ 10:15 am.

• 336.4 bbls pumped so far

• 0" left in tank

② Stroke rate: 10 spm

③ Discharge: 7 bbl/hr

④ Checked tracer @ 5:00 p.m.

< 500 ppb

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		U.S. NO. 13697	REPORT NO. 48
WELL NAME & NO. MANSFIELD No. 1		DATE 8/9/82 (MON)	
		SITE REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
6:50 AM.			Guina Vacuum truck arrived. Hauled 135 bbls total.
8:30 AM.			R. Fontaine, Steve Weirther on site. Checked computers of pumping unit - OK.
10:24 AM.			Stopped generators to hook up to large diesel tank
10:36 AM.			Generators running again last data on tubing from 10:36-11:00 a.m.
4:30 PM.			Guina vacuum truck arrived. Hauled 79.5 bbls of fluid.
6:30 PM.			Took fluid sample for lab testing
			NOTES: ① Tubing Press. 720-870 psi
			② Annulus Press. 1244 psi
			③ Pumping rate - 9.5 spm
			④ Discharge - 190 bbl/day
			5.6 gal/min
			⑤ Tracer Concentration @ 6:10 PM.
			- 1.7 PPM
			⑥ Cumulative Barrels @ 6:10 PM.
			- 602 BBLs

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

49

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
8/10/82 (TUE)

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

8:00 AM.

Steve Walcother, R. Fontaine on site.

Computers, pump O.K.

3:15 P.M.

Guinn Vacuum Truck arrived. Hauled
150 bbls of fluid.

3:20 P.M.

Took fluid sample

NOTES: ① Pressures: Tubing 710-810 psi

Annulus 1244 psi

② Pumping Rate - 9.5 spm

③ Discharge - 190 bbl/day

5.6 gal/min

④ @ 3:20 p.m.

Tracer Concentration - 1.3 PPM

762 cumulative bbls.

CLIENT
ONWI - BATTELLE MEMORIAL INSTITUTE

13697

8/11/82 (wed)

WE'LL NAME A BOY

CITY REPRESENTATION

MANSFIELD NO. 1

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM	TO
------	----

8:00 AM.

R. Fontaine, Steve Weirather on site.

Computers, pumping unit - O.K.

10:10 AM.

Guyon Vacuum Truck arrived and
hauled 150 bbls

1:30 P.M.

Took fluid sample for lab

3:30 PM

Off location

NOTES: ① Pressures: Tubing - 700-800 psi

Annulus 1244 esi

② Pumping Rate: 9.5 s.p.m

③ Discharge = 190 bbl/day.

5.6 gal/min

④ @ 1:30 P.M.

Tracer Results - 1.1 PPM

Comm BRIs - 938 BRIs.

DAILY REPORT FORM STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

51

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
8/12/92 (THUR)

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

5:00 AM.

Guinn Vacuum truck arrived. Hauled
150 bbl of fluid

8:00 AM.

R. Fontaine, Steve Weirather on site.
Computers, Pumping Unit - OK

4:45 PM.

Guinn Vacuum Truck arrived. Hauled
120 bbls of fluid

5:30 P.M.

Took fluid sample

NOTES: ① Pressures: Tubing 675-820

Annulus 1244

② Pumping Rate: 9.5 SPM

③ Discharge: 190 bbl/day
5.6 gal/min

④ @ 5:30 P.M.

Tracer - 0.9 PPM

Cum Barrels - 1138 BBL

⑤ Super Appliance Service

repaired air conditioner

in SWEC trailer today @ 4:30 P.M.

⑥ Ran drawdown Plots @ 4:00 P.M.

to determine if equilibrium
was reached.

43. 55 03697

8/13/82 (FR)

WILL NAME & NO

DATE OF PRESENTATION

NANSFIELD NO. 1

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM	TO
------	----

40

TIME

8:00 AM

B. Features inside:

10:00 AM.

Steve Weirather of J-M showed up
and ran semi-log plot on Prawn
Made decision to continue pumping
over weekend.

12:00 P.M.

Gumbo Vacuum truck arrived and hauled 150 bbls of fluid

3:30 P.M.

Took Fluid Sample

NOTES: ① Pressures: Tubing 670-815
Annulus 1244

② Pumping Rate: 10 cm

③ Discharge: 190 BBG/DAY
5.6 GAL/MIN

④ @ 3:30 P.M.

Tracer concentration -

Cum. Barrels - 1315 BBL

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

53

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

9/14/82 (SAT)

WELL NAME & NO.

MANSFIELD No. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED

TIME

DETAILS OF OPERATIONS

FROM

TO

9:00 AM.

Steve Weirather (J-M) on location

Checked computers, pumping unit - O.K.

Guano vacuum truck arrived @

8:00 AM. and hauled 150 bbl of fluid.

12:00 P.M.

Took fluid sample for lab

NOTES ① Pumping Rate - 9.5 SPM

② Discharge - 190 BBL/DAY

5.6 GAL/MIN

③ @ 12:00 P.M.

Tracer Concentration

Cumulative Barrels - 1476 BBL

④ At 11:52 P.M., the Pumping
unit stopped running.

Begin Recovery

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO

54

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

8/15/82(SUN)

WELL NAME & NO

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

6:00AM.

Guido Vacuum Truck arrived. Driver
 noted Pumping unit stopped operating
 sometime last evening. Hauled 145 bbl's
 total.

8:00AM.

Steve Weinother on site. Noted
 pumping unit went down about
 11:52 p.m. 8/14/82. Computers
 recording recovery

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

55

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

8/16/82 (MON)

WELL NAME & NO.

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

FROM

TO

ELAPSED
TIME

DETAILS OF OPERATIONS

8:00 AM

R. Fontaine arrived and picked 8/13
 and 8/14 fluid samples and mailed
 them to University of Arizona.

12:00 PM

Steve Weirather at J-M non plots for
 recovery

NOTES: ① Status of Well - Shut in

② Discussed recovery w/ TBEG
 & SWEC - Decided to continue
 Shut in

56

DATE 8/17/82 (TUE)

SITE REPRESENTATIVE

R. FONTAINE

ELAPSED

DETAILS OF OPERATIONS

FROM

10

TIME

8:30 AM

R. Fontaine, Broadt Reagon (J-M) on site.

V-M and recovery plots. Shut in all day

NOTES: (1) Status of well: Shut in

② Discussed Recovery w/ TBEG

§ SWEC - Decided to Shut in overnight and continue pumping in the morning.

57

8/18/82 (WED)

TYPE OF REPRESENTATIVE

R. FONTAINE

DETAILS OF OPERATIONS

FROM

TO

TIME

8:00 AM

Steve Weintraub (J-M), Emmett Reagan (J-M)
on site. Start pumping engine and let
idle.

9:00 AM.

R. Foothine on site

9:25 AM.

Start pumping for tracer removal
Rate: 9.0 strokes/min - Pumping rate
slowed down because throttle slipped

12:50 PM

Rate: 7.5 SPM

1:10 P.M.

Adjusted throttle on pump engine
Rate: 9.0 sgm

3:30 PM

Took fluid sample and put on Greyhound bus to Tuscon

NOTES: ① Contacted Otis, Halliburton, and Schlumberger about Changeover

② Contacted Ben Strong - Railroad Comm

③ Contacted J.C. Howell, Tony Z., TBEG, and E.F.F. Service about sampling next time.

④ Contacted Bob Penn

13697

8/19/82 (THUR)

WELL NAME & NO.

DATE RECEIVED

MANFIELD NO. 1

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

To

TIME

9:00 AM.

R. Fontaine on site.

10:00 AM

Guinn Vacuum Truck arrived and hauled
150 bbl's.

10:30 AM

John Peck (SWEC) on site to check
embankment on lower Pond.

11:00 AM.

Steve Weirather (J-M) on site

4:00 AM

Took fluid sample and put on Greyhound Bus.

NOTES: ① Pressures: Tubing 740-940 psi
Annulus 1244 psi

② Pumping rate: 9.0 SPM

③ Discharge: 185 bbl/day

④ Notified by Dick Darrah that KMA will supply workover rig & crew again - DOTCO will supply the BOP unit.

11:00 P.M.

Guan Vacuum Truck arrived and hauled 150 bbl

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

59

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
8/20/82 (FRI)

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

8:30 AM

R. Fontaine on site. Brandt Reagan (J-M)
showed up unexpectedly.

2:45 PM

Took fluid sample - Put on American
Airlines Priority Package Service to
Tucson.

2:00 PM

Guinn Vacuum truck arrived and
hauled 150 bbl.NOTES: ① Pressures: Tubing 71.5 - 960 psi
Annulus 1244 psi

② Pumping Rate: 9.0 gpm

③ Discharge: 18.5 bbl/day

④ Received Tracer Results

today: 8/13 - 0.8 PPM

8/14 - 0.65 PPM

8/18 - 0.60 PPM

10. 22 13697

8/24/82 (SAT)

WILL NAME A NO

FOUR REPRESENTATIONS

R. Ford

MANSFIELD NO. 1

[illegible]

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

61

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

JOB NO.

13697

DATE

8/22/82 (SUN)

WELL NAME & NO.

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FORD

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

8:00

A.M.

J-M ON SITE WORKING ON COMP. SYS.

11:00

A.M.

BULLMAN HAULS 150 BBL'S FLUID FROM
SITE FOR DISPOSAL.

12:15

P.M.

COMP. SYS. BACK ON LINE

1:30

P.M.

SAMPLE TAKEN FOR TACER ANALYSIS
AND SHIPPED TO TUCSON (PLANE)

NOTE:

FLOW RATE 180± BBL/DAY

STROKE RATE 9/MIN

TUBING P 750± psig

ANNULUS P 1244 psig

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
62

ONWI-BATTELLE MEMORIAL INSTITUTE

13697

8/23/82

WELL NAME & NO

UNIT 2: THE PRESIDENTIAL CAMPAIGN

MAUSFIELD No. 1

R. FONTAINE R. Ford

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		SWU, JOHNSTON MACK ON SITE; CONTINUED PUMPING FOR TRACER REMOVAL. TRACER LEVEL FOR SWOBY (8/22/82) 0.45 PPM. SAMPLING PROGRAM SCHEDULED FOR 8/25/82.
	10:00 A.M.		QUINN HAULS 150 BBL'S FROM SITE FOR DISPOSAL.
	11:00 A.M.		SAMPLE TAKEN FOR TRACER ANALYSIS AND SHIPPED TO TUNSON (PLANE).
	1:00 P.M.		BLOW OUT PREVENTER DELIVERED TO SITE.
	5:00 P.M.		SWU (P. FORD / R. FORTAINE) MEET WITH P. PERIN TO SCHEDULE CHANGEOVER ACTIVITIES.
			NOTE: J.C. LAUL TO REQUIRE LARGE VOLUME SAMPLE. TENTATIVELY SCHEDULED TO FOLLOW REGULAR SAMPLING PROGRAM. FLOW RATE: 180± BBL/DAY STROKE RATE: 9/MIN TUBING P: 750± psia ANNULUS P: 1249 psia

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TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		SLW, JOHNSTON - MACCO ON SITE. CONTINUE PUMPING FOR TRACER REMOVAL.
	9:00 A.M.		WEEKLY REPORTS PREPARED.
	1:00 P.M.		IN RESPONSE TO SLW INQUIRY, J-M NOTIFIES SLW THAT REPLACEMENT PARTS FOR DOWNHOLE SAMPLERS HAVE NOT BEEN RECEIVED.
	8:00 P.M.		SLW NOTIFIED BY J-M THAT ORIGINAL PARTS WOULD BE REPAIRED FOR THURSDAY.
	4:00 P.M.		SLW AND TBEG NOTIFIED OF SAMPLER SITUATION. SAMPLING PROGRAM RE-SCHEDULED FOR THURSDAY 8/26/82. BATTERLEE'S (J.C. LAUL) SAMPLING PROGRAM SCHEDULED FOR WEDNESDAY 8/25/82. SAMPLE TAKEN FOR TRACER ANALYSIS & SHIPPED TO TUCSON (PLANE).
	6:00 P.M.		KMA CREW DELIVERS RIG TO SITE.
	8:00 P.M.		SLW MEETS WITH J.C. LAUL / B. CHRISTENSEN TO SCHEDULE SAMPLING PROGRAM. TRACER LEVEL FOR MONDAY (8/23/82) 0.35 OR 0.40 PPM.
			NOTE: THE HTA OVERALL GUINN HAS 15000 LBS OF RIGID FOR DISPOSAL IN EARLY AM. AND LATE P.M. FLOW RATE: 180 ± BBL/DAY STROKE RATE: 9/MIN TOBING P: 750 ± PSIG ANALYSIS P: 1244 PSIG

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO
 64

CLIENT ONWI - BATTELLE MEMORIAL INSTITUTE	LOG NO 13697	DATE 8/25/82
WELL NAME & NO MANFIELD NO. 1	SITE REPRESENTATIVE R. FONTAINE / R. FORD	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	7:30 A.M.		SAW MEETS WITH J.C. LAUL / B. CHRISTENSEN
			AT AMARILLO FIELD OFFICE TO MOBILIZE
			SAMPLING EQUIPMENT TO MANFIELD SITE.
	8:00 A.M.		P. PENN, KMA CREW & RIG ON SITE. REPAIRS
			MADE TO RIG.
	9:30 A.M.		SAW, BATTELLE ON SITE. COMMENCE EQUIPMENT
			SET UP FOR SURFACE SAMPLING PROGRAM.
			TRACER LEVEL FOR TUESDAY (8124182) 0.35 P.P.M.
	11:30 P.M.		COMMENCE SAMPLING PROGRAM.
	4:00 P.M.		SAMPLE TAKEN FOR TRACER ANALYSIS AND
			SHIPPED TO TUCSON.
	5:00 P.M.		CONTINUE WITH J.C. LAUL'S SURFACE SAMPLING
			PROGRAM. TEMPORARY DELAYS EXPERIENCED
			DUE TO EQUIPMENT MALFUNCTION / IMPROPER
			ELECTRICAL HOOKUPS.
	9:30 P.M.		GUINAI HAULS ^{300*} 800 GAL OF FLUID FOR DISPOSAL.
	11:00 P.M.		SAMPLING PROGRAM CONTINUED THROUGH NIGHT
			FOR COMPLETION THURSDAY MORNING.
	11:30 P.M.		SAW OFF SITE.
			NOTE: CONTINUED PUMPING FOR TRACER REMOVAL.
			SEM NOTIFIED SAW THAT REPAIRED SAMPLER ^{ER}
			PARTS WOULD BE READY FOR THURSDAYS
			DOWNHOLE SAMPLING PROGRAM.
			FLOW RATE: 180 ± BBL/DAY
			STROKE RATE: 9 / MIN
			TUBING P: 750 ± PSIG
			ANNULAR P: 1244 PSIG
			ERF SERVICE ONSITE TO MODIFY ELECTRICAL SYSTEM.

* AMARILLO DAILY IN BOS

REPORT NO.
65

ONWI-BATTELLE MEMORIAL INSTITUTE

13697

8/26/82

WILL NAME A BOY

CITY REPRESENTATIVE

MADSFIELD No. 1

~~R. Fontaine~~ / R. Foen

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	7:00 A.M.		END SERVICE SEW, TBEG ON SITE TO COMMENCE REGULAR SURFACE SAMPLING PROGRAM. J.C. LACK, B. CHRISTENSEN (BATTELLE) ONSITE THROUGH NIGHT TO COMPLETE THEIR PROGRAM.
	8:00 A.M.		R. PENN, KMA CREW & RIG ON SITE TO PREPARE FOR DOWNHOLE SAMPLING.
	9:00 A.M.		CRUICKSHANK - MACCO COMMENCES SETUP OF TRANSFER BENCH AND DOWNHOLE SAMPLING EQUIPMENT.
	10:45 P.M.		S. FISCHER (TBEG) COMPLETES ON SITE SAMPLING. SHUT IN WELL AND COMMENCE SETTING UP WORKOVER RIG.
	12:15 P.M.		COMMENCE REMOVING SICKER RODS FROM WELL. J-M GENERATOR DOWN TEMPORARILY.
	2:00 P.M.		COMPLETE REMOVAL OF SICKER RODS. J-M MAKES RUN DOWN WELL WITH GAUGE RING AND RIGS UP SICK LINE UNIT.
	2:45 P.M.		TBEG OFF SITE. COMMENCE DOWNHOLE SAMPLING.
	6:00 P.M.		THREE ATTEMPTS TO COLLECT DOWNHOLE SAMPLES FAIL DUE TO SAMPLER MALFUNCTIONS.
			NOTE: TRACER LEVEL FOR WEDNESDAY (8/25/82) 0.30 PPM

CLIENT	IS. NO.	DATE
ONWI-BATTELLE MEMORIAL INSTITUTE	13697	8/27/82
WELL NAME & NO.	SITE REPRESENTATIVE	
MANFIELD NO. 1	R. Foen	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		JOHNSTON-MACCO CREW & SAMPLING EQUIPMENT ON SITE TROUBLE SHOOTING EQUIPMENT - F.A. MUNDEN (EOP SERVICE) ASSISTING. R. PENN, KMA CREW & PIG ON STANDBY. INSPECTION OF SAMPLER MECHANISMS INDICATE EXCESSIVE WEAR ON CENTRALIZERS. BEST PARTS SELECTED FOR USE IN ONE SAMPLER.
	1:00 P.M.		FIRST SUCCESSFUL SEM DOWNHOLE SAMPLE RUN MADE. FLUID COLLECTED TRANSFERRED TO CONTAINERS.
	3:15 P.M.		SECOND SUCCESSFUL DOWNHOLE SAMPLE RUN MADE. FLUID COLLECTED TRANSFERRED TO CONTAINERS.
	5:15 P.M.		THIRD SUCCESSFUL SAMPLE RUN MADE. FLUID COLLECTED TRANSFERRED TO CONTAINERS.
	7:15 P.M.		SAMPLES TRANSFERRED TO AMARILLO FIELD OFFICE.
			NOTE: TRACER LEVEL FOR THURSDAY 8/26/82 030 P.M. RESOLUTION OF TESTING / SAMPLING EQUIPMENT PROBLEMS DISCUSSED WITH P. CRUGER OF JOHNSTON-MACCO. KMA PUSHER ON SITE IN A.M. TO SWITCH DRILLERS.

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ONWI-BATTELLE MEMORIAL INSTITUTE

13697

DATE 8/28/82

WILL MAKE A COPY

OUTLINE

R. Foen

MANSFIELD NO. 1

[illegible]

CLIENT		JOB NO.		DATE
ONWI-BATTELLE MEMORIAL INSTITUTE		13697		8/30/82
WELL NAME & NO.		SITE REPRESENTATIVE		
MANFIELD NO. 1		R. FONTAINE / R. FORD		
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS	
FROM	TO			
	8:00 A.M.		SOW, R. PENN, KMA CREW AND RIG ON SITE	
			TO SET UP FOR INSTALLATION OF PLUG INTO PERMA-TRIEVE PACKER.	
	9:00 A.M.		OTIS ENGR. ON SITE WITH PLUG AND TOOLS	
			RIG UP PLUG AND TOOL TO TUBING.	
	10:00 A.M.		COMMENCE RUNNING IN WELL WITH PLUG,	
			TOOL, AND TUBING.	
	12:00 P.M.		SET PLUG AND COMMENCE RUNNING OUT	
			OF WELL WITH TUBING.	
	1:00 P.M.		COMPLETE RUN OUT OF WELL WITH TUBING.	
	1:30 P.M.		SECURE SITE. SCHLUMBERGER NOT AVAILABLE	
			TO SET BRIDGE PLUG AND PERFORATE UNTIL	
			TUES MORNING.	
	2:00 A.M.		MEET WITH R. FONTAINE TO PREPARE	
			WEEKLY AND DAILY PROGRESS REPORTS,	
	6:00 P.M.		AND WEEKLY COST REPORT.	
			NOTE:	
			TRACER LEVEL SUMMARY	
			8/23 - 0.35 OR 0.40 PPM	
			8/24 - 0.35 PPM	
			8/25 - 0.30 PPM	
			8/26 - 0.30 PPM.	

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

69

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTELOG NO.
13697DATE
8/31/82

WELL NAME & NO.

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE / P. FORD

TIME LOG		STOPPED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		SOW, R. PENN, KMA CREW & RIG, SCHLUMBERGER, AND HALLIBURTON ON SITE. RIG UP TO SET BRIDGE PLUG OFF WIRE LINE.
	9:30 A.M.		SET BRIDGE PLUG AT 4,664'. RIG UP SCHLUMBERGER TO PERFORATE 2ND PRODUCTION ZONE 4,638' TO 4,514' - 4 SHOTS / ET - 90° PHASE.
	11:00 A.M.		JOHNSTON-MACCO ON SITE TO WORK ON FUEL SUPPLY SYSTEM, WELL HEAD LOOKUPS, AND PICKUP DOWNHOLE PUMP FOR REDRESSING AT PAMPA SHOP.
			COMMENCE PERFORATING FIRST OF SIX RUNS
	11:00 A.M.		1ST RUN 4638 - 4613
	12:30 P.M.		2ND RUN 4613 - 4603 TOP GUN MISFIRES
	2:00 P.M.		3RD RUN 4603 - 4578 TOP GUN MISFIRES
	4:00 P.M.		4TH RUN 4578 - 4564
	6:00 P.M.		5TH RUN 4564 - 4528
			SWITCHES MALFUNCTION ON RUN #2, RUN #4. SWITCHES REQUIRED REPAIR PRIOR TO RUN #5.
	6:00 P.M.		RIG DOWN AND SECURE SITE
	6:30 P.M.		OFF SITE.
			NOTE: FLUID LEVEL DEPTH IN WELL PRIOR TO EACH PERFORATION
			RUN #1 2,200'
			RUN #2 2,100'
			RUN #3 2,090'
			RUN #4 2,075'
			RUN #5 2,045'
			RUN #6 2,010 (9/1/82)

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

70

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTEJOB NO.
13697DATE
9/1/82

WELL NAME & NO.

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE / R. FORD

TIME LOG
FROM TO ELAPSED TIME

DETAILS OF OPERATIONS

7:00 A.M.

S.W., R. PENN., KMA CREW/REG. SCHUMBERGER
ON SITE. RIG UP TO COMPLETE PERFORATING
2ND PRODUCTION ZONE.

8:50 A.M.

COMPLETE 6TH PERFORATION RUN 4,529' TO
4,514'. RIG UP TO SET OTIS PERMA-TREUF
PACKER.

9:00 A.M.

COMMENCE RUN IN HOLE WITH OTIS PACKER
OFF SCHUMBERGER WIRE LINE.

9:45 A.M.

SET PACKER AT 4,477'.

10:00 A.M.

SCHUMBERGER OUT OF WELL. COMMENCE
SET UP TO RUN IN WELL WITH TRANSDUCERS,
CABLE, & TUBING.

10:15 A.M.

SCHUMBERGER AND OTIS ENG. OFF SITE.

12:00 P.M.

COMPLETE RUNNING 4 JOINTS OF TUBING
INTO WELL. COMMENCE HOOK UP OFF T-M
TRANSDUCERS & CABLE.

1:00 P.M.

COMPLETE TRANSDUCER HOOK UP. CONTINUE
RUNNING IN WELL WITH TUBING, TRANSDUCERS,
AND CABLES.

2:45 P.M.

COMPLETE RUNNING 44 TUBING STANDS
IN WELL.

6:00 P.M.

SECURE SITE. OFF SITE.

REPORT ON
71

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

13697

9/2/82

WILL NAME A NO

STATE REPRESENTATIVE

R. FORD

MANSFIELD NO. 1

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		SEC W, P. PENN, JOHNSTON - MACCO, KMA CREW AND RIG ON SITE. CONTINUE RUNNING IN WELL WITH TUBING, TRANSDUCERS, AND CABLE
	12:00 P.M.		COMPLETE INSTALLATION OF TUBING, TRANSDUCERS & CABLE; LATCH INTO OTIS PACKER WITH TUBING STRING, NANG TUBING, AND ROLL 8,000 LBS TENSION.
	12:30 P.M.		COMMENCE SURFACE HOOKUP OF WELL HEAD CONNECTIONS, SURFACE CABLES, AND COMPUTER SYSTEMS.
	3:30 P.M.		ALL SYSTEMS ON LINE AND OPERATING. COMMENCE MONITORING OPEN HOLE PRESSURE DROP AS DISPLACED FLUIDS INJECT INTO FORMATION.
	6:00 P.M.		MONITOR PRESSURE DROP FROM 1,204 psia @ 3:30 P.M. TO 1,168 psia @ 6:00 P.M. AND DROPPING SLOWLY. TO CONTINUE RECORDING PRESSURE DROP OVERNIGHT.
	6:30 P.M.		SECURE SITE
			NOTE: KMA MECHANIC ON SITE AT 4:30 P.M. TO REPAIR RIG

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ONWI-BATTELLE MEMORIAL INSTITUTE

13697

DATE 9/3/82

WELL NAME & NO.
MANSFIELD NO. 1

R. FORD

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	7:00 A.M.		SWD, R. PENN., KMACREW & RIG, JOHNSTON - MACCO ON SITE. CONTINUED MONITORING PRESSURE DROP DURING INJECTION OF DISPLACED FLUIDS. OPEN HOLE PRESSURE APPROACHING EQUILIBRIUM AT 1,148 psia; HORNER PLOT EXTRAPOLATES TO A INITIAL FORMATION PRESSURE OF 1,190 psia.
	8:15 A.M.		PIG UP AND COMMENCE SWABBING WELL.
	12:35 P.M.		COMPLETED 11 SWAB RUNS RECOVERING 25.5 BBL'S OF THE FLUID. INITIAL TRACER CONCENTRATIONS AT 30-40 PPM. AVERAGE PRESSURE DROP DURING SWABBING FROM 1,148 psia to 300 $\pm$ psia. ALLOWED PRESSURE BUILDUP TO 860 psia PRIOR TO RUNNING PUMP AND SUCKER RODS.
	1:45 P.M.		COMMENCE INSTALLATION OF PUMP AND RODS.
	3:35 P.M.		COMPLETE HOOR UP OF PUMPING UNIT. COMMENCE PUMPING FLUID TO SURFACE AT 5 STROKES/MIN. PRESSURE DROPS FROM 860 psia to 200 $\pm$ psia. PUMP
	6:55 P.M.		FLUID PUMPED TO SURFACE. PUMP DISCHARGE 3.8 BBL/HR AT TANK. TRACER 30-40 PPM.
	8:00 P.M.		TERMINATE PUMPING. SHUT IN WELL.
	9:00 P.M.		MONITOR PRESSURE BUILDUP TO 1,000 psia. CONTINUE RECORDING PRESSURE BUILDUP DATA SECURE SITE.

REPORT NO.
73

ONWI-BATTELLE MEMORIAL INSTITUTE

13697

9/4/82

WELL NAME & NO.

1997

R. FORD

MANFIELD NO. 1

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	6:00 AM		P. PENN, KMACREW RIG DOWN) WORKOVER
	8:30 A.M.		RIG. RIG AND CREW OFFSITE.
	9:00 A.M.		SKW, JOHNSTON - MACCO ON SITE. MONITOR
			PRESSURE BUILDUP.
	3:00 P.M.		PRESSURE BUILDUP REACHES 1,105 psia.
			HORNER PLOT EXTRAPOLATES TO INITIAL
			FORMATION PRESSURE OF 1,130 psia AS
			DURING FLUID INJECTION 9/3/82. TBEG
			INFORMED. CONCUR THAT FIRST DRAWDOWN
			SHOULD BE INITIATED.
	3:35 P.M.		COMMENCE FIRST DRAWDOWN AT 5.2
			STROKES/MIN AND MONITOR TUBING
			AND ANNULAR PRESSURES.
	5:00 P.M.		TUBING PRESSURE AT 225 psia AND
			DECREASING SLOWLY. ANNULAR PRESSURE
			AT 1240 ^{PSIA} AND HOLDING STEADY.
			TRACER LEVEL 30-35 ppm.
	6:00 A.M.		CONTINUE RECORDING DATA OVERNIGHT
	6:15 P.M.		SECURE SITE

REPORT NO.
74

CLIENT	FILE NO.	DATE
ONWI-BATTELLE MEMORIAL INSTITUTE	13697	9/5/82
WELL NAME & NO.	SITE REPRESENTATIVE	
MANSEFIELD NO. 1	R. FORD	

MANSFIELD NO. 1

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		R. PENN AND JOHNSTON - MACCO ON SITE.
			CONTINUE PUMPING FOR DATA COLLECTION AND TRACER REMOVAL.
	9:00 A.M.		GUMMI HAILS 150 BBL OF FLUID FROM SITE FOR DISPOSAL.
	12:00 A.M.		SEW MEETS WITH R. PENN. FINAL CHECK OF PUMPING EQUIP. INDICATES ALL EQUIPMENT OPERATING OK.
	1:00 A.M.		SEW MEETS WITH JOHNSTON-MACCO. DRAWDOWN PRESSURE AND 75 psia AND DROPPING SLOWLY. ANNULUS PRESSURE AT 1240 psia AND HOLDING.
	2:00 A.M.		T-M OFF SITE. R. PENN RELEASED.
			NOTE:
			TUBING PRESSURE 75 psia
			ANNULUS PRESSURE 1240 psia
			TRACER CONC. 32+ ppm
			STROKE RATE 5.2/min
			DISCHARGE 3.8 BBL/LHR.

REPORT NO.
75

ONWI-BATTELLE MEMORIAL INSTITUTE

11 02 13697

9/6/82

WILL MAKE A NO.

CITY REPRESENTATIVE
R. FORD

MANFIELD NO. 1

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	10:00 A.M.		SAW ON SITE. CONT. PUMPING 1ST DRAWDOWN FOR DATA COLLECTION AND TRACER REMOVAL. JOHNSTON-MACCO GENERATOR AND COMPUTER SYSTEMS DOWN. CALL OUT JOHNSTON-MACCO.
	12:00 P.M.		COLLECT 5 GAL. FLUID SAMPLE FROM RESERVE PIT. JOHNSTON-MACCO COMP. TECH. ON SITE.
	12:30 P.M.		GENERATOR AND COMPUTER SYSTEMS ON LINE. CONTINUE TO MONITOR DRAWDOWN. SYSTEMS DOWN FROM 6:00 A.M. TO 12:30 P.M.
			NOTE:
			TUBING PRESSURE : 30 psig
			ANNULAR PRESSURE : 1240 psig
			PUMP DISCHARGE : 3.2 BBL/HR
			STROKE RATE : 5.2 SPM
			TRACER CONC : 30 PPM
	5:00 P.M.		TUBING PRESSURE AT 30 PPM. SHUT IN WELL FOR 2ND RECOVERY. MONITOR PRESSURE BUILD UP FROM 30 TO 900 psig. OVER 3 HRS. COMPUTER SYSTEM DOWN FOR 40 MIN. TO REGAIN DATA PRINTOUT CAPABILITY.
	8:00 P.M.		SAW AND J-M OFF SITE.

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DATE 9/7/82

WIT REPRESENTATIVE
R. FORD

MANFIELD NO. 1

[illegible]

77

ONWI-BATTELLE MEMORIAL INSTITUTE

03697

9/8/82

WILL NAME & NO.

NOTE THE FOLLOWING

R. FORD

MANFIELD NO. 1

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	8:00 A.M.		S&W AND JOHNSTON - MACCO ON SITE.
			CONTINUE MONITORING 2ND RECOVERY TEST.
	11:30 A.M.		MONITOR RECOVERY TO 1,040 PSIA.
	11:32 A.M.		COMMENCE 2ND DRAWDOWN TEST.
	4:00 P.M.		CONTINUE MONITORING 2ND DRAWDOWN.
			NOTE:
			TUBING PRESSURE : 1,040 TO 400 PSIA OVER 4 HRS.
			ANNULAR PRESSURE : 1,240 PSIA.
			PUMP DISCHARGE : 2.9 TO 2.7 BBL/HR OVER 2 HRS.
			STROKE RATE : 3.7 SPM
			TRACER CONC : 30 PPM.
	4:30 P.M.		S&W AND J-M OFF SITE.

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[illegible]

9/10/82

13697

SITE REPRESENTATIVE
R. FORD

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.
80

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

13697

DATE
9/11/82

WELL NAME & NO

DATE REPRESENTATIVE
R. FORD

MANFIELD NO. 1

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
	10:00 A.M.		SAW ON SITE. CONTINUE MONITORING 2ND DRAWDOWN TEST FOR DATA COLLECTION AND TRACER REMOVAL. GUINN HAULS 150 BALS FLUID FROM SITE FOR DISPOSAL. DEISEL GENERATOR CONTINUES TO LEAK FUEL.
	11:00 A.M.		JOHNSTON-MACCO ON SITE WITH MECHANIC. UNABLE TO MAKE REPAIRS WITHOUT NEW PART.
	11:30 A.M.		DEISEL GENERATOR AND COMPUTER SYSTEMS DOWN.
	3:00 P.M.		MECHANIC UNABLE TO LOCATE NECESSARY PARTS FOR GENERATOR. J-M CALLS OUT TO FORD TOOL FOR RENTAL REPLACEMENT.
	8:00 P.M.		REPLACEMENT GENERATOR DELIVERED TO SITE FROM PERRYTON.
	8:30 P.M.		GENERATOR AND COMPUTER SYSTEMS ON LINE. CONTINUE MONITORING DATA COLLECTION
			NOTE:
			TUBING PRESSURE 150 psig
			ANNULAR PRESSURE 1,240 psig
			PUMP DISCHARGE 2.6 GAL/HR
			STROKE RATE 3.75/PM
			TRACER CONC. 20 PPM
			COMPUTER SYSTEMS DOWN 9 HRS.

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

81

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

IS NO.

13697

DATE

9/12/82

WELL NAME & NO.

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FORD

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM

TO

10:00 A.M.

SEW AND JOHNSTON-MACCO ON SITE. CONTINUE
 MONITORING ZND DRAWDOWN FOR DATA COLLECTION
 AND TRACER REMOVAL. ALL EQUIPMENT AND
 COMPUTER SYSTEMS OPERATING.

NOTE:

TUBING PRESSURE 120 psia

ANNULAR PRESSURE 1,240 psia

PUMP DISCHARGE 2.6 BBL/HR

STROKE RATE 3.7 SPM

TRACER CONC. 15-20 SPM

2:00 P.M.

SEW AND JOHNSTON-MACCO OFF SITE.

82

ONWI-BATTELLE MEMORIAL INSTITUTE

10. 62. 13697

DATE 9/13/82

WILLIAM A. B. B.

DIVISION REPRESENTATIVE
R. FORD

MANFIELD NO. 1

[illegible]

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

83

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

LAB. NO.

13697

DATE

9/14/82

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FORD

TIME LOG

FROM

TO

ELAPSED
TIME

DETAILS OF OPERATIONS

SOW ON SITE. CONTINUE MONITORING

2ND DRAWDOWN FOR DATA COLLECTION

AND TRACER REMOVAL. ALL EQUIPMENT

AND COMPUTER SYSTEMS OPERATING.

THE FOLLOWING WERE RECORDED:

TUBING PRESSURE: 85 PSIG

ANNULAR PRESSURE: 1240 PSIG

TEMP. DISCHARGE: 103°F

PUMP DISCHARGE: 2.47 BBL/HR

TRACER CONC. : 153 PPM

STROKE RATE : 3.7 SPM

GUINN HAULS 150 BBL DISCHARGE

FLUID FROM SITE.

13697

9/15/82

MANSEFIELD NO. 1

CITY REPRESENTATIVE
R. FORD

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

85

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

LAB NO.

13697

DATE

9/16/82

WELL NAME & NO.

MANSFIELD NO. 1

SITE REPRESENTATIVE

R. FORD

TIME LOG

FROM

TO

ELAPSED
TIME

DETAILS OF OPERATIONS

JOHNSTON-MACCO ON SITE. CONTINUE
MONITORING 2ND DRAWDOWN FOR
DATA COLLECTION AND TRACER REMOVAL.
ALL EQUIPMENT AND COMPUTER SYSTEMS
OPERATING. THE FOLLOWING WERE
RECORDED:

TUBING PRESSURE: 65 $\pm$ psia

ANNULAR PRESSURE: 1240 psia

GUINIA HAYS 150 PPK DISCHARGE FLUID
FROM SITE FOR DISPOSAL.

SNW SITE REP ATTENDED CLIENT
MEETING AT AMARILLO FIELD OFFICE.

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE	J.O. NO. 13697	DATE 9/18/82
WELL NAME & NO.	SITE REPRESENTATIVE R. Amos	

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
8:00 ^{Am}	12:55		Johnston Macco on site to continue monitor drawdown for data collection. all equipment operating.
12:55	4:00		Monitoring Shutin of well for pressure-recovery data.
	4:30		final flow pressure 84 psia Tubing pressure 829 psia
			During the morning heavy rains resulted in some belt slipping. an pressure increse spike is shown on the plot of P vs Time.
	6:00		Sample of formation fluid shipped to University of Arizona lab.

82

[illegible]

00 00

0697

9/20/82

WILLIAMS & SON

DATE OF BIRTH

MANFIELD NO. 1

T.L. Annor tone

[illegible]

DATE 9/21

R. KIRANES

DETAILS OF OPERATIONS

[illegible]

90

ONWI-BATTELLE MEMORIAL INSTITUTE

13 25 1969

9/22

WILL NAME A BO

STATE OF ARIZONA

R. KRAVES

MANFIELD NO. 1

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

91

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE

J.O. NO. 13697

DATE	9/23/82
------	---------

[illegible]

MANUSFIELD #1

SITE REPRESENTATIVE

P. KRANES

TIME LOG

FROM	TO
------	----

**ELAPSED
TIME**

DETAILS OF OPERATIONS

9:00

S+W REP ON SITE, MONITORING DRAWDOWN

✓ SAMPLING

10:00

2:15

9:15

TUBING PRESSURE: 40

39.9

40

ANNUAL " : 1246

1244.2

1243.9

PumpJack SPM : 3.93

• **_____**

DISCHARGE — 1.66 GPM

166

170

1. — 56.82 BBL/day ³⁶⁴³ 58.46

36A3

SR 11

2.37 b/w

2.37 E/I

2.94

TRALER < 20 ppm sample yellowish not orange

< 20 ppm

sample yellowish not

orang

COLLECT 1 GAL. ^{well} SAMPLE add 5ml acid

well

1 GAL STOCK FOND SAMPLE

1 LITER SAMPLE - SEND TO MARC MALINSON

via Grayhound Exp. 6:00 bus- to Tucson

J.M. (BRANDT REMAN) Removes 43KV Gen (Ford Tool)
from side w/ J.M. vehicle

92

DATE 9/24/82

R. KRAVETS

[illegible]

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

93

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		LOG NO. 13697	DATE 9/25/82
WELL NAME & NO. MANUSFIELD #1		SITE REPRESENTATIVE R. Krane	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
* 9:00			J-M rep on site 5:30 - 6:30 AM. collect data + check equipment, released for remainder of day
9:30			S+W rep. on site to collect data, check equipment collect samples + do reports.
			data collected
		9:45	1:15
		ANNULAR PRES : 1244.6	1245.4
		TUBING PRES: 36.4	38.6
		SPM : 3.9	3.9
		GPM : 1.65	1.65
		bbf/day : 56.57 (2.36 bbf)	54.7 (2.28 bbf)
		Tracer appears the same as before with field testing - No sample sent	
		Gallon sample taken - 5 ml acid added stored on site for J.C. LQU	
2:30			Secured Site
* 8:45			STOP AT FIELD OFFICE, Amarillo. to copy report forms, drop off material for D. Gillespie to be used at Sawyer site and drop of liquid nitrogen container for upcoming sampling

94

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

94

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

J.O. NO.

13697

DATE _____

9/26/82

[illegible]

NAME & NO. MANSFIELD #1

SITE REPRESENTATIVE

R. Krane

TIME LOG

**ELAPSED
TIME**

DETAILS OF OPERATIONS

FROM

TO

TIME

9:30

S+W rep on site, check of equipment finds generator to J-M van off - clock in van reads 2:35 - computers down

10:00

J-W rep. (Brandt Reagan) contacted
Daily data collection

10:10

1220

Annular Pres: —

Tubing Pres: —

S.P.M. 5.91 3.75

discharge		
GPM	: 1.62	1.615

$$\frac{bbl/d}{(2.32 b/h)} : \frac{55.63}{(2.31)} = 55.39$$

10:45

Stroke rate on pump: jack skewed to 3.79-3.75

2:00

GENERATOR + COMPUTERS back on line at 2:00 - all systems OK.

1 222

REPORT NO.

96

TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
9:00 AM			Rick Krnes and R. Fontaine arrived at site. Johnston-Macco's generator went down sometime last night.
			J.C. haul of Battelle arrived this morning and began setting up testing equipment.
12:00 PM			Brandt Reagon from Johnston-Macco arrived and started up generator and brought up computers but went out again.
3:00 PM			J.C. haul arrived at site and began setting up equipment. Rick Krnes obtained a 5 kw portable generator to run J.C.'s pumps.
10:00 PM			J.C. completed one 60 gallon flow through test.
			<u>NOTES:</u>
			1. Pumping rate - 3.7 strokes/min
			2. Discharge - 53.0 barrels/day
			3. No pressure readings today because J-M's generator out of commission
			4. Sample taken for tracer @ 7:00 pm

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

97

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		J.O. NO. 13697	DATE 9/28/82 (TUE)
WELL NAME & NO. MANFIELD NO. 1		SITE REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
8:00 AM			J.C. Kaul, Tony Zaitkowski (Bendix), and F.A. Munden (E & F) on site. F.A. helped Mr. Zaitkowski set up nodon tests at well head.
9:00 AM			Bob Penn on site.
12:00 PM			Mr. Hubbard of Battelle arrived.
3:00 PM			Johnston-Marco's generator was serviced and computers back on line.
6:00 PM			J.C. Kaul completed his testing today with 2 more 60 gallon flow through tests and 1 - 270 gallon flow-through test.
			Bendix completed 2 nodon pressure tests.
			NOTES:
			1. Bendix Corp ordered more material for their experiment at Rock Hardware in Uega and put it on S&W's account.
			2. A 55 gal drum filled w/ regular gas and the necessary hose & connections to hook it up to S&W's mental generator was obtained from Rock Hardware today.
			3. Tracer sample taken at 5:00 pm. Put 9/27 and 9/28 samples on evening bus to Tucson.
			4. Bob Penn and R. Fontaine went over plans for plugging Mansfield well today.
			5. Pump rate - 3.7 strokes/min
			6. Discharge - 53 barrels/day
			7. J. Nicholson was contacted about plugging well

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

98

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		J.O. NO. 13697	DATE 9/29/82 (WED)
WELL NAME & NO. MANSFIELD No. 1		SITE REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
8:00AM			Tony Zaitkowski, Norman Hubbard,
			Johnston-McCoo, and Steve Fischer (TBEG)
			on site. Began testing of surface samples
12:00PM			BOP unit from Tesons Land & Marine
			arrived.
1:00 PM.			Well Tech workover rig & crew arrived.
2:00 PM.			R. Fontaine took 12 - 5 gallon jerry
			can samples for sub contractors and
			one 500 ml sample for tracer testing.
			In addition, a sample of the mud pit
			water was taken for tracer testing
3:00 AM			Shut pump down so Well Tech crew
			could rig up.
4:00 PM.			Bob Penn on site to check workover
			rig set up.
4:30 AM.			Workover Rig set up complete. Start
			pumping unit.
5:00 PM			Release Well Tech crew
6:00 PM			Steve Fischer (TBEG) completed tests
			including one flow through test for EH.
			He took 11-500 ml samples off site and
			1-250 ml sample. 2 - 5 gallon jerry cans
			were given to S&W.
			Bendix completed 5 Madon tests today
			NOTES:
			1. Pump rate - 3.7 spm / Discharge 53 bbl/day
			2. 9/29 tracer samples went on evening bus to Tucson
			3. Tracer results received today:
			9/23-6.9 ppm / 9/24-6.4 ppm / 9/26-5.75 ppm

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		LAB NO. 13697	REPORT NO. 99
WELL NAME & NO. MANSFIELD NO. 1		DATE 9/30/82 (THUR)	
		SITE REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
7:00 AM			Well Tech, Bob Penn, Tony Raikowski, F.A., Norman Hubbard on site
7:30 AM			Well Tech crew set up coming out of the hole w/ sucker rods
8:30 AM			Well Tech crew removed horse head, bridle, etc. from pumping unit. J-M showed up
9:00 AM			Came out of the hole w/ sucker rods. Bob Penn called off site to check problem of Sawyer well. Johnston-Nirco got downhole sampler & slick line set up while Bendix set up equipment for experiment
12:30 PM			All sucker rods out of hole. J-M set up for sampling.
1:15 PM			Run in hole w/ downhole sample
2:00 PM			Took sample #1 and came out of hole. Sample taken at 4470'. Water level in hole at 3450'. Began transfer.
3:00 PM			Began Bendix experiment
3:30 PM			Released Well Tech crew
4:45 PM			1st transfer completed successfully to one 450 ml container & 2 - 25 ml containers
5:30 PM			Bendix experiment failed because not enough pressure to close sampler. Off site
			NOTES:
			1. R. Fontaine visited w/ Mr. Mansfield this morning about plugging well.
			2. T. Annaratone and J. Nicholson were contacted about plugging well

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO
100

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		IS NO 13697	DATE 10/1/82 (FRI)
WELL NAME & NO. MANSFIELD No. 1		SITE REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
8:00 AM			Well Tech, Johnston-Macco; Bob Penn on site. EA Muddon on site
8:45 AM			RTI for Sample #2
9:30 AM			Took sample #2 - began transfer
10:00 AM			RTI for Sample #3
10:45 AM			Took sample #3 - Brass valve on transfer bench broke - delayed transfer
11:30 AM			2nd transfer complete. Begin 3rd transfer
12:15 PM			RTI for Sample #4
1:00 PM			Took Sample #4
1:30 PM			Completed 3rd transfer. Start 4th transfer but failed because valve mistripped
3:00 PM			RTI for Sample #5
3:30 PM			Took Sample #5 - Begin 5th transfer. Well Tech rigged up for coming out of the hole tomorrow
5:00 PM			Off site
NOTES:			
1. Transfers:			
2ND - (1) - 500 ml / (2) - 25 ml			
3RD - (1) - 600 ml sample			
4TH - (Unsuccessful transfer			
5TH - (1) - 450 ml / (1) - 25 ml			

[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

CLIENT ONWI - BATTELLE MEMORIAL INSTITUTE		LOG NO. 13697	DATE 10/4/82 (MON)
WELL NAME & NO. MANFIELD NO. 1		WELL REPRESENTATIVE R. FONTAINE	
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS
FROM	TO		
8:00 AM			Halliburton, Well Tech, Bob Penn on site.
			Rig up to set cement plugs.
8:30 AM			G.P. Guinn arrived w/ 100 bbl of
			Fresh water. Added 40 bbls of water
			to fill up well.
9:00 AM			Spot 20 sacks of Class H cement on
			top of Otis Packer @ 947'. Mix with
			2.6 bbls of water.
9:30 AM			Completed 1ST PLUG - 447' - 430'
			Pull 20 stands of tubing & set up to
			place 2ND PLUG.
10:00 AM			Spot 70 sacks of Class H cement
			from 1900' - 1320'. Added 3/10 of 1%
			calcium chloride & 9 bbls of water
			during mixing.
10:30 AM			Completed placing 2ND plug - Halliburton
			nipped down & off site. Johnston-Macco
			showed up to run plots & demobilize
11:00 AM			Well Tech crew began to lay down &
			count 2 7/8" tubing.
3:00 PM			All tubing out of hole except for 20
			stands. Well Tech removed BOP unit
			and 9 x 6 tubing spool.
4:00 PM			Baker & Taylor welder arrived. Weld on
			4' long piece of 5 1/2" casing on existing
			casing.
5:00 PM			Off site

DAILY REPORT FORM

STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

102

CLIENT		LOG NO.		DATE
ONWI-BATTELLE MEMORIAL INSTITUTE		13697		10/5/82 (TUE)
WELL NAME & NO.		SITE REPRESENTATIVE		
MANSFIELD NO. 1		R. FONTAINE		
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS	
FROM	TO			
8:00 AM			Bob Penn, Schlumberger, Well Tech, and Bull Rogers Casing Crew on site. Schlumberger Nipped up to cut casing w/ jet cutter. Run in hole w/ cutting & casing collar locator.	
9:30 AM			Cut 5 1/2" casing @ 1200 ft.	
10:00 AM			Well Tech & Bull Rogers removed casing and lay down joints. Put protectors on threads.	
11:00 AM			All casing out of hole. Bull Rogers rigged down and off site. Johnston-Marco on site.	
11:15 AM			Hotshot picked up Teson land & Marine BOP unit.	
12:00 PM			Otis Engineering dropped by to pick up setting tool	
12:15 PM			Halliburton arrived w/ 9 5/8" gage ring and bridge plug. Rig up to go in hole	
12:30 PM			Schlumberger ran in hole w/ junk basket & gage ring. Well Tech took apart pipe to tank.	
12:45 PM			Set up Halliburton bridge plug & setting tool and ran in hole.	
1:30 PM			Set bridge plug at 1160'. Schlumberger and Halliburton rig down and off site. Well Tech put 20 stands of tubing in hole.	

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[illegible]

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

PAGE 1 OF 2

CLIENT		J.O. NO.		DATE
ONWI-BATTELLE MEMORIAL INSTITUTE		13697		10/6/82 (WED)
WELL NAME & NO.		SITE REPRESENTATIVE		
MANSFIELD NO. 1		R. FONTAINE		
TIME LOG		ELAPSED TIME	DETAILS OF OPERATIONS	
FROM	TO			
7:30 AM			Guinn vacuum truck arrived w/ 50 bbls of fresh water. Bob Penn on site. Waiting on Halliburton	
9:00 AM			Well Tech on site. Bob Penn had crew begin tearing down equipment for demobilization, such as, the line pipe to the green tank, hose & fittings etc. R. Fontaine contacted Halliburton as to why they were not on site. Halliburton had delay ^{due} to broken air hose on truck and will be on site within 3 hours.	
9:00 AM			FMC on site. Load up tubing hangers on truck.	
10:40 AM			Halliburton arrived. Begin to rig up for setting final cement plug.	
11:30 AM			Spot 80 sacks of Class H cement @ 1160'	
11:45 AM			Plugging completed 1160'-951'	
12:00 AM			Bob Wood of the Texas Railroad Commission on site. After witnessing plugging Mr. Wood decided that we need 2 more plugs - one at 600' (50 sacks) and one at the surface (10 sacks). Called out Halliburton and Guinn again	
2:15 AM			Halliburton & Guinn on site. Set up to set final plugs.	
3:00 P.M.			Spotted 50 sacks of Class H at 600'. Remove tubing to surface. (Plug from 600 to 475')	
			Spotted 10 sacks of Class H 5' to 30'	
3:30 PM			Baker & Taylor welder arrived to weld on plate. Halliburton, Guinn off site	
			Well Tech crew dug 2' around well	

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ONWI-BATTELLE MEMORIAL INSTITUTE

13697

10/7/82 (THUR)

SITE REPRESENTATIVE

MANSFIELD NO. 1

R. FONTAINE

TIME LOG

**ELAPSED
TIME**

DETAILS OF OPERATIONS

FROM

TO

TIME

8:00 AM

Well Tech crew rigged down & moved
worker rig off site.

No other work at site today.

DATE 10/8/82 (FRI)

MANSELD NO. 1

R. FONTAINE

TIME LOG

**ELAPSED
TIME**

DETAILS OF OPERATIONS

FROM	TO
------	----

8:00 AM

R. Fontaine on site. Packed material from SWEC trailer for shipping over to Zeepk well.

10:00 AM.

AERO Cargo Truck arrived. Loaded up extra pumps, lines & connections to green tank, hoses for generator, KTH well head attachment, well head cover, and other misc. equipment for transfer to Zeek No. 1 well.

LOOPM

Arrived at Zesck and unloaded equipment

107

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

10. NO.

13697

DATE _____

10/9/82 (SAT)

MANFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG	
FROM	

**ELAPSED
TIME**

DETAILS OF OPERATIONS

JOHNSTON-MACCO loaded up sucker rods
and moved computer van off site.

No other work at site today.

In addition, T-M loaded up cable, spool, and generator.

REPORT NO.

108/

CLIENT
ONWI-BATTELLE MEMORIAL INSTITUTE

I.O. NO. 13697

DATE 10/11/82 (MON.)

[illegible]**SITE REPRESENTATIVE**

MANSFIELD NO. 1

R. FONTAINE

TIME LOG

**ELAPSED
TIME**

DETAILS OF OPERATIONS

FROM

TO

TIME

6:00 AM

United Fiberglass on site to dismantle green tank. Baker & Taylor on site to load up 155 jts. of 2 $\frac{7}{8}$ " tubing, 6 jts. of 2 $\frac{3}{8}$ " tubing, 3 jts. of 2" line pipe, and 31 jts. of 5 $\frac{1}{2}$ " casing w/ 2 cut off pieces.

10:00 AM

United Fiberglass split green tank, loaded it up & went over to Baker & Taylor Vega Shop to clean it up.

1:00 PM.

Baker & Taylor left site to transfer pipe to Amarillo Pipe Yard.

3:00 PM

United Fiberglass arrived at Zeek
Site to set up tank

NOTE:

① Taboston - Macco on site to transfer sucker rods, cable spool, & generator back to Pampa shop.

RECEIVED

~~OCT 19 1982~~

**STONE & WEBSTER
ENGINEERING CORP.**

DAILY REPORT FORM
STONE & WEBSTER ENGINEERING CORP.

REPORT NO.

109

CLIENT

ONWI-BATTELLE MEMORIAL INSTITUTE

J.O. NO.

13697

DATE

10/12/82 (TUE)

WELL NAME & NO.

MANSEFIELD NO. 1

SITE REPRESENTATIVE

R. FONTAINE

TIME LOG

ELAPSED
TIME

DETAILS OF OPERATIONS

FROM TO

Johnston-Macco moved pump jack
off site today.

NOTE: Demobilization at the
Manfield site is nearly complete. The
only thing left is the Monte Carlo Trailer
and Chem-Toi Porta-John.

RECEIVED

OCT 19 1982

STONE & WEBSTER
ENGINEERING CORP.

APPENDIX B.2

WEEKLY PROGRESS REPORTS

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	J.O. NO.	DATE
ONW-1 - BATTELLE MEMORIAL TRUST.	13697.07	6/20/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANFIELD NO. 1	R. Ford	6/14/82 TO 6/30/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

- 6/16/82: Workover rig delivered to Mansfield Site. Temperature profiling conducted during late afternoon.
- 6/17/82: Workover rig set up; 2 $\frac{7}{8}$ " tubing removed from well. Pump Jack delivered to site. Blowout preventer, re-circ. pump, and tank delivered to site. Blowout preventer installed.
- 6/18/82: Rig up and run into well with 4 $\frac{3}{4}$ " bit and 5 $\frac{1}{2}$ " scraper. J. Nicholson, R. Penn, Halliburton and Schlumberger reps on site to discuss cementing operation. Fresh water delivered to site and tagged with tracer. Additional re-circ tank and tubing delivered to site. Bottom of well/mud tagged at 5,128'. Rig up and reverse circulate well with trace water (119 bbl). Remove tubing, bit, scraper from well.
- 6/19/82: Rig up Schlumberger and run into well with 3 $\frac{3}{8}$ " casing gun. Perforate 2' zone, 4 shots/foot, 90° phase from 5,030' to 5,032'. Rig up Halliburton 5 $\frac{1}{2}$ " cement retainer. Run into hole with Schlumberger wire line truck and setting tool. Set retainer at 5,004'. Rig up and run into well with tubing and stinger. Hook up circulation lines. Pressure up on annulus to 500 psi and hold. Pressure up on tubing and pump into zone 1 bbl/min at 600 psi and 3 bbl/min at 1,000 psi a total of 10 bbl. Terminate pumping. Immediate pressure drop to 0 psi. Primary circulation to surface not established. Cement zone with 150 sacks Class H. Flush out tubing and run out of well with tubing.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	ID. NO.	DATE
ONW-1-Battelle Memorial Inst.	13697.07	6/28/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
Mansfield No. 1	R. Ford	6/21/82 TO 6/27/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

- 6/21/82: Perforated from 4,918' to 4,916' at 4 shots/ft
90° phase. Set 5½" cement retainer at 4,908'(top)
Cement gone with 110 sacks of Class H cement
- 6/22/82: Perforate from 4,802' to 4,804' at 4 shots/ft
90° phase. Set 5½" cement retainer at 4,790'(top)
Cement gone with 90 sacks of Class H cement
- 6/23/82: Perforate from 4,670' to 4,672' at 4 shots/ft.
90° phase. Set 5½" cement retainer at 4,662' top.
- 6/24/82: Runoff from heavy rains wash out site road.
Not able to reach site. No work performed.
- 6/25/82: Perforate from 4,496' to 4,498' at 4 shots/ft
90° phase. Set 5½" cement retainer at 4,488'(top)
Cement gone with 70 sacks Class H cement.
- 6/26/82: Runoff from heavy rains wash out site road.
Damage to roads extensive in several places.
Not able to reach site. No work performed.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

Darrak

DATE 7/5/82

CLIENT	LOG NO.	PERIOD
ONCH - BATHURST MEMORIAL INSTITUTE	13697.07	6/29/82 TO 7/4/82
WELL NAME & NO.	SITE REPRESENTATIVE	
DARRFIELD NO.	R. FONTAINE	

SUMMARY OF DRILLING/TESTING ACTIVITIES

6/28/82: Runoff from heavy rain washed out access road.
Road work underway. No work performed at site.

6/29/82: Drilled out retainer @ 4484' w/ 4 3/4" bit. Drilled out
cement 4486'-4499'. Tested Perfs 4499-56'-O.K.

6/30/82: Drilled out retainer @ 4658' w/ 4 3/4" bit. Drilled
out cement 4660'-4672'. Test Perfs - no good.

7/1/82: Set 5 1/2" cement retainer @ 4647' - Cement zone
@ 4670-72' w/ 75 sacks Class H cement.

7/2/82: Drilled retainer @ 4647' w/ 4 3/4" bit. Drilled out
cement 4649'-4672'. Tested Perfs @ 4670-72' - O.K.
Drilled retainer @ 4790' w/ 4 3/4" bit. Drilled out
cement 4792'-4804'. Tested Perfs 4804-02' - O.K.

7/3/82: Run cement bond log (Scribnerberger) 4898'-4200'
Run TD log 4898'-4400'. Guide dropped off
150 bbl of water and E & F service tagged it.

WEEKLY PROGRESS REPORT

STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
ORNL - BATTELLE MEMORIAL INSTITUTE	13697.07	7/12/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FONTAINE	7/5/82 TO 7/11/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

7/5/82 (MON): KMA, Schlumberger crew off for holiday. Ford Tool

Removed the following from the 2-1/2" Power Swivel (S9) its

of 2 1/2" tubing, 120-3 1/2" drill collars, & other misc. items

7/6/82 (TUE): KMA & Schlumberger on site. Ran two passes of TPT

log from 4400 to surface and one pass from 4899-4400'

7/7/82 (WED): KMA and Schlumberger on site. Ran one pass TPT

log from 4600' to surface. RTH w/ casing scraper

Left site early due to heavy rains

7/8/82 (THUR): KMA, Ford Tool Operator on site. Run scraper

4899' to surface. Ford tool removed NC&RSC

circulating unit and water truck. Schlumberger

perforated 4890'-18' 4 shots/ft. - 90° phase

7/9/82 (FRI): Baker & Taylor showed up w/ D-8 Dozer and leveled

area around rig for sucker rods. J-M delivered

sucker rods. Hotshot Truck broke axle. J-M

began to set up transducers

7/10/82 (SAT): J-M, KMA on site. Tom Arrandine (SWEC) on site

J-M discovered short in cable after 7 strings

of 2 1/2" tubing in hole - came out 3rd hole with

tubing - Sent KMA home for weekend. FA Munden

tried to hook J-M's generator to SWEC trailer but

it's pulling out enough power

7/11/82 (SUN): No work

WEEKLY PROGRESS REPORT STONE & WEBSTER ENGINEERING CORP.

CLIENT	JOB NO.	PERIOD
ONW/1 - BATTIE MEMORIAL INSTITUTE	13697-07	7/2/82 TO 7/12/82
WELL NAME & NO.	SITE REPRESENTATIVE	
MANFIELD NO. 1	R. FONTAINE	

SUMMARY OF DRILLING/TESTING ACTIVITIES

7/2/82 (MON): KMA, J-M, and Bob Penn on site. RTH w/ 2 7/8" tubing and

J-M's cooke & transducers - Set packer @ 4720'

7/3/82 (TUE): KMA, Bob Penn and J-M's pump crew on site. Pump

crew set up pump jack. Start swabbing @ 6:10 p.m.

Swabbed 45 barrels fluid in one hour. Total pressure

reading was taken before swabbing. Ford tool delivered J-M's
KMA's Derrick - FA hooked it up to slick trailer.

7/4/82 (WED): KMA, J-M, and Bob Penn on site. In addition, Andy

Smith (P&G), John Pock (SWC), and Paul Archer (C&G)

showed up for the evaluation meeting. Decided not

to acidize, pump or increase rate during 7 day drawdown

test, and let it come to complete recovery. Continued

Swabbing - Swabbed 56 barrels in 2 1/2 hours - slips

came loose on packer

7/5/82 (THUR): KMA, J-M, and Bob Penn on site. Ford tool showed

up w/ pump for mud pit that was inoperable

Came out of hole w/ tubing and transducers.

Mark Carlo delivered stairs and new air conditioner

for SWC trailer. Examination of packer revealed

Bob Penn's suspicions that the slips were no good

7/6/82 (FRI): KMA, J-M, and Bob Penn on site. Replaced packer

and RTH w/ downhole instrumentation. Tubing

hookway in hole. Both crews agreed to work

Sunday swabbing

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	ID. NO.	DATE
ONLUI-BATTELLE MEMORIAL INSTITUTE	1369707	7/19/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MAN. FIELD NO. 1	R. FONTAINE	7/12/82 TO 7/18/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

7/17/82 (SAT) - KAMA, J-N, and Bob Penn on site. Continue RTH
 w/ downhole instrumentation. Set backer w/
 25,000 lb - the shear pin noted at 42,000 lb sheared.
 Brought tubing 3/4 of the way out of hole
 and released crews for the weekend

7/18/82 (SUN): No work since it was not possible to sub.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
ONWI - BATTELLE MEMORIAL	13697.07	7/26/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FONTAINE	7/19/82 TO 7/23/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

7/19/82 (MON): KMA, J-M, & Bob Penn on site. Come out of hole w/ downhole instrumentation. FMC Corp delivered KIH Attachment for well head. Put Hedressed packer back in hole. About halfway in hole w/ downhole instrumentation.

7/20/82 (TUE): KMA, J-M, and Bob Penn on site. Completed running in hole w/ downhole instrumentation. Set packer & hung tubing w/ 18,000 lb tension. Recorded pressures overnight.

7/21/82 (WED): Surbbed 123 bbls. in 8 hours. Brought tracer concentration down to 10 PPM.

7/22/82 (THUR): KMA, J-M, and Bob Penn on site. (Surbbing 15 bbls in one hour. Guinn vacuum truck hauled 150 bbls from site. Stopped surbbing because of erratic readings on annulus transducer. J-M replaced annulus computer but still obtaining erratic readings. Leo Martin (SWEC) visited the site.

7/23/82 (FRI): Computer Engineer (J-M) determined problem was downhole. Released packer and came all the way out of the hole w/ downhole instrumentation.

NO WORK 7/24/82 (SAT) OR 7/25/82 (SUN)

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	J.O. NO.	DATE
ONWI - BATTELLE	13697.07	8/2/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FONTAINE	7/26/82 TO 8/1/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

7/26/82 (MON): KMA, J-M, & Roy Darden (Paul Cameron Rig Engineer) on site. Waited on J-M most of day. Hotshot truck delivered spool & packer. J-M had to hotshot out O-ring for new annulus transducer which arrived today. Ran in hole w/ packer, tail jt., and 9 jts. of tubing. J-M hooked up transducers.

7/27/82 (TUE): KMA, J-M, and Roy Darden on site. Resoldered tubing gage before going down hole. After 13 stands of tubing in hole determined transducer still bad. Came out of the hole & resoldered both transducers. Ran in hole w/ 41 stands of tubing & cable.

7/28/82 (WED): KMA, J-M, & Roy Darden on site. Completed running in hole. Set packer & hung tubing w/ 17,000 lb tension. Shut in for 1 1/2 hour. Started swabbing. Made 9 swabbing runs - recovered 36 bbls. Determined packer seat bad because annulus pressure dropped 150 ps.

7/29/82 (THUR): KMA, J-M, & Roy Darden on site. Loosened slips on KTH attachment and put 4000 lb more tension on packer. Continued swabbing. Annulus pressure continued to drop. Shut down early due to heavy rains.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	PERIOD
ONWI-BATTELLE	13697.07	8/2/82
WELL NAME & NO.	SITE REPRESENTATIVE	7/26/82 TO 8/1/82
MANSFIELD NO. 1	R. FONTAINE	

SUMMARY OF DRILLING/TESTING ACTIVITIES

7/30/82 (FR): Heavy rains prevented access to well
Site Released KMA crew for the weekend.

7/31/82 (SAT): Heavy rains continued. J-M could not
gain access to site.

8/1/82 (SUN): J-M arrived at site around 12:00.
Determined generator ran out of gas
around 1:00 p.m. Sat. Refueled generator
and brought up cement.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
ONWI - BATTELLE MEMORIAL INSTITUTE	13697.07	8/9/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANFIELD NO. 1	R. FONTAINE	8/2/82 TO 8/8/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

8/2/82 (MON): KMA, J-M, Ray Darden (Rig Engineer) on site. Came out of hole w/ downhole instrumentation, Packer, & tubing.

8/3/82 (TUE): KMA, Schlumberger, Otis, & Ray Darden on site (& J-M). Set Otis Perma-Tricore Packer at 4760'. Ran in hole w/ seal assembly and 9 jts of 2 7/8" tubing. Shut down for day because of short in cable.

NOTE: Guinn hauled 150 bbl today

8/4/82 (WED): KMA, J-M, Bob Penn (Rig Engineer) on site. Ran in hole w/ tubing & cable. Latched into packer w/ seal assembly. Connected transducers & began recording.

8/5/82 (THUR): KMA, J-M, Raustabaut crew for pump, and Bob Penn on site. Put sucker rods & downhole pump in hole. Raustabaut crew adjusted pump. Had to shut down because J-M had wrong size stuffing box.

8/6/82 (FRI): Started pumping today. In 1 hr. 20 min the fluid level reached the surface. Shut off pump 9:20-10:20 a.m. to let KMA crew rig down. Also shut pump off 1:00-1:15 p.m. to adjust horsehead. Released KMA crew. Pumping rate - 10 gpm. Discharge - 7 bbl. Tracer down to 20 ppm.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	PERIOD
ONWI - BATTELLE MEMORIAL INSTITUTE	13697.07	8/2/82 TO 8/8/82
WELL NAME & NO.	SITE REPRESENTATIVE	
MANSFIELD NO. 1	R. FONTAINE	

SUMMARY OF DRILLING/TESTING ACTIVITIES

8/2/82 (SAT): Bob Penn, Steve Weirather (J-M) on site to check
computers & pumping unit. Guion hauled 130.5 bbls
@ 8:00 a.m. and 99 bbls @ 5:00 p.m. ^{8:15-8:19 a.m.} Tighten stuffing box

Pumping rate - 10 spm Discharge - 7 bbl/hr.

8/8/82 (SUN): R. Fontaine, Steve Weirather on site to check

computers & pumping unit. Guion vacuum
truck hauled 120 bbl of brine off site.

Stroke rate: 10 spm / Discharge 7 bbl/hr.

Tracer < 500 ppb

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	JOB NO.	DATE
OWUL - BATTELLE MEMORIAL INST.	13967.07	8/16/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANFIELD NO. 1	R. FONTAINE	8/9/82 TO 8/15/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

8/9/82 (MON): R. Fontaine, Steve Weirather on site. Pumping unit, Computers O.K. Guinn vacuum truck hauled 135 bbls of fluid @ 6:50 a.m. and 79.5 bbls @ 4:30 p.m.

8/10/82 (TUE): R. Fontaine, Steve Weirather on site. Pumping unit, Computers O.K. Guinn vacuum truck hauled 150 bbls of fluid @ 3:15 p.m.

8/11/82 (WED): R. Fontaine, Steve Weirather on site. Pumping unit, Computers O.K. Guinn vacuum truck hauled 150 bbls @ 10:10 a.m.

8/12/82 (THUR): R. Fontaine, Steve Weirather on site. Pumping unit, Computers O.K. Guinn vacuum truck hauled 150 bbls @ 5:00 a.m. and 120 bbls @ 4:45 p.m.

8/13/82 (FRI): R. Fontaine, Steve Weirather on site. Guinn vacuum truck hauled 150 bbls of fluid at 12:00 p.m.

8/14/82 (SAT): Steve Weirather on site. Pumping unit, Computers O.K. Guinn vacuum truck hauled 150 bbl of fluid @ 12:00 p.m. Pumping unit went down 11:52 p.m.

8/15/82 (SUN): Steve Weirather on site. Discovered pumping unit went down. Computers O.K. - monitoring recovery. Guinn Vacuum Truck hauled 145 bbls of fluid @ 6:00 a.m.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
ONW1 - BATTELLE MEMORIAL INSTITUTE	13697.07	8/24/82
WELL NAME & NO.	SITE REPRESENTATIVE	18/10/82 TO 8/22/82
MANFIELD NO. 1	R. FONTAINE / R. FORD	

SUMMARY OF DRILLING/TESTING ACTIVITIES

8/16/82 (MON): R. Fontaine, Steve Weinrather (J-M) on site. Shut-in all day. Put 8/13 and 8/14 fluid samples in mail.

8/17/82 (TUE): R. Fontaine, Brandt Reagan (J-M) on site. Shut in all day.

8/18/82 (WED): R. Fontaine, Steve Weinrather (J-M), and Brandt Reagan (J-M) on site. Start pumping for Tracer Removal @ 9:25 AM. Put today's sample on bus.

8/19/82 (THUR): R. Fontaine, Steve Weinrather (J-M), and John Peck (SWC) on site. Pumping for Tracer Removal. Put today's sample on bus. Guinn vacuum truck arrived and hauled 150 bbls at 10:00 AM and 11:00 AM.

8/20/82 (FRI): R. Fontaine, Brandt Reagan on site. Pumping for Tracer Removal. Put today's sample on airplane to Tucson. Guinn vacuum truck arrived at 7:00 P.M. & hauled 150 bbls.

8/21/82 (SAT) R. Ford, Brandt Reagan on site. CONT. PUMPING FOR TRACER REMOVAL. GUINN HAULS 150 BBL FLUID FROM SITE @ 3:00 P.M. SAMPLE TAKEN FOR TRACER ANALYSIS AND SHIPPED TO TUCSON (RAVE). J-M GENERATOR DOWN. REPLACEMENT DELIVERED. COMP. NOT OPERATING AT EOS.

8/22/82 (SUN) R. Ford, Brandt Reagan on site. CONT. PUMPING FOR TRACER REMOVAL. GUINN HAULS 150 BBL OF FLUID FROM SITE.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	JOB NO.	PERIOD
OKWU - BATTELLE MEMORIAL INSTITUTE	13697.07	8/16/82 TO 8/22/82
WELL NAME & NO.	SITE REPRESENTATIVE	
MANSFIELD NO. 1	R. FOMTINE / R. FORD	

SUMMARY OF DRILLING/TESTING ACTIVITIES

FOR DISPOSAL. SAMPLE TAKEN FOR TRACER ANALYSIS AND SHIPPED
TO TEXSON. J-M COMP SYS OPERATING AT 12:00 P.M.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	ALB. NO.	DATE
ONWI - BATTELLE MEMORIAL INSTITUTE	13697.07	8/30/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FORD / R. FONTAINE	8/23/82 TO 8/29/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

8/23/82 (MON): S&W, ~~PAUL CAMERON~~, JOHNSTON-MACCO ON SITE

CONTINUED PUMPING FOR TRACER REMOVAL. GUINN

HAULED 150 BBL OFF SITE @ 10:00AM. DOTCO BLOW

OUT PREVENTER DELIVERED TO SITE.

8/24/82 (TUE): ^{R. PENN} S&W, ~~PAUL CAMERON~~, JOHNSTON-MACCO ON SITE. CONTINUE

PUMPING FOR TRACER REMOVAL. GUINN HAULED

150 BBL OFF SITE IN EARLY A.M. AND LATE P.M.

S&W NOTIFIED BY JOHNSTON-MACCO THAT PARTS

FOR DOWNHOLE SAMPLER NOT RECEIVED AS YET.

WILL REPAIR ORIGINAL PARTS AND SAMPLE ON THURSDAY

KMA CREW DELIVERS RIG TO SITE. S&W MET W/

J.C. LAUL TO DISCUSS SAMPLING

8/25/82 (WED): S&W, ^{R. PENN} ~~BOB PENN~~, BATTELLE ON SITE. BEGAN J.C. LAUL'S

SURFACE SAMPLING PROGRAM. TEMPORARY DELAYS

DUE TO EQUIPMENT MALFUNCTION/IMPROPER HOOKUPS.

GUINN HAULED & DISPOSED 150 BBL SAMPLING

PROGRAM CONTINUED THROUGH THE NIGHT

8/26/82 (THUR): S&W, TBEG, E&F SERVICE, R. PENN, BATTELLE, AND

JOHNSTON-MACCO ON SITE. J.C. LAUL COMPLETED

RECEIVED

HIS SAMPLING PROGRAM EARLY, TBEG TOOK OVER

AUG 31 1982

AND COLLECTED SURFACE SAMPLES. FA MUNDON

STONE & WEBSTER
ENGINEERING CORP.

COLLECTED DR THOMPSON'S SAMPLES. JOHNSTON

MACCO SET UP TRANSFER BENCH AND DOWNHOLE

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	JA. NO.	DATE
OWW - BATTELLE MEMORIAL INSTITUTE	13697.07	9/30/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FORD / R. FONTAINE	9/23/82 TO 9/29/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

9/26/82 (THUR): (CONTINUED) ... SAMPLING EQUIPMENT. REMOVED

SUCKER RODS FROM HOLE. RAN DOWN TUBING W/

GAGE RING AND RIGGED UP SUCK LINE UNIT. THREE

ATTEMPTS TO COLLECT DOWNHOLE SAMPLES FAILED

DUE TO EQUIPMENT FAILURE

9/27/82 (FRI): JOHNSTON-MACCO, FA MUNDAN (E.S.F.S.F.), S.W. ON

SITE TROUBLESHOOTING SAMPLING EQUIPMENT.

R. PENN, KMA ON STANDBY. INSPECTION OF DOWNHOLE

SAMPLER INDICATED EXCESSIVE WEAR ON

CENTRALIZERS. MADE THREE SUCCESSFUL RUNS

WITH SAMPLER AFTER REPAIR.

9/28/82 (SAT): S.W., R. PENN, KMA, JOHNSTON-MACCO ON SITE

TO COMMENCE CHANGEOVER. CAME OUT OF HOLE

OF DOWNHOLE EQUIPMENT

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
OWU - BATTTELLE MEMORIAL INSTITUTE	13697.07	9/7/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	P. FORD	8/30/82 TO 9/5/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

8/30/82: SSW, PIG ENG., WORKOVER RIG, OTIS ENG. ON SITE. RIG UP AND RUN PACKER PLUG INTO WELL OFF TUBING. SET PLUG INTO OTIS PACKER AND RUN OUT OF WELL. COMPLETE DAILY/WEEKLY REPORTS.

8/31/82: SSW, PIG ENG., WORKOVER RIG, SCHLUMBERGER, HALLIBURTON ON SITE. RIG UP AND RUN INTO WELL WITH BRIDGE PLUG OFF WIRE LINE. SET B.P. AT 4,664' AND RUN OUT OF WELL. RIG UP AND RUN INTO WELL WITH CASING GUN OFF WIRE LINE TO PERFORATE 2ND PRODUCTION ZONE. COMPLETE 5 RUNS PERFORATING FROM 4,638' TO 4,528'. JOHNSTON-MACCO ON SITE TO SERVICE EQUIP.

9/1/82: SSW, PIG ENG., WORKOVER RIG, SCHLUMBERGER, OTIS ENG., JOHNSTON-MACCO ON SITE. RIG UP AND RUN INTO WELL TO COMPLETE PERFORATING. PERFORATE FROM 4,529' - 4,514' AND RUN OUT OF WELL. RIG UP AND RUN INTO WELL WITH OTIS PACKER OFF WIRE LINE. SET PACKER AT 4,477' AND RUN OUT OF WELL. RIG UP AND RUN INTO WELL WITH 44 TUBING STANDS, TRANSDUCERS, AND CABLES.

9/2/82: SSW, PIG ENG., WORKOVER RIG, JOHNSTON-MACCO ON SITE. RIG UP AND COMPLETE RUNNING INTO WELL WITH 24 TUBING STANDS, TRANSDUCERS, AND CABLES. LATCH INTO OTIS PACKER. HANG AND PULL 8,000 LBS TENSION ON TUBING STRING. COMPLETE SURFACE INSTRUMENTATION / COMPUTER SYSTEM HOOKUPS. COMMENCE MONITORING OPEN HOLE PRESSURES. DISPLACED FLUIDS FROM TUBING RUN. INJECTING INTO FORMATION FROM 1,204 PSIA TO 1,168 PSIA OVER 2.5 HOURS.

9/3/82: SSW, PIG ENG., WORKOVER RIG, JOHNSTON-MACCO ON SITE. CONTINUE MONITORING OPEN HOLE PRESSURE DROP TO ESTABLISH INITIAL FORMATION PRESSURE AT 1,130 PSIA USING HENNER PLOT. RIG UP AND COMMENCE SWABBING WELL. COMPLETE 11 RUNS AND RECOVER 25.5 BBLs OF FLUID, WHILE MONITORING

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	J.B. NO.	DATE
ONWU - BATTELLE MEMORIAL INSTITUTE	13697.07	242 9/7/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FORD	8/30/82 TO 9/5/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

9/3/82 CONT.: OPEN HOLE PRESSURE DROPS FROM 1,148 TO 300 psia. FOLLOWED BY RECOVERY TO 860 psia UPON COMPLETION OF SWABBING. RUN INTO WELL WITH DOWNHOLE PUMP AND SUCKER RODS. COMPLETE HOOKUP OF PUMPING EQUIP. COMMENCE PUMPING FLUID TO SURFACE AT 5 STROKES/MIN WHILE MONITORING A PRESSURE DROP FROM 860 TO 200 psia. FLUID TO SURFACE IN 4 HOURS AT A DISCHARGE OF 3.8 BBL/HR. ALLOWED TO FLOW 1 HR. TRACER CONCENTRATION 30-40 PPM. SHUT IN WELL AND MONITOR PRESSURE RECOVERY TO 1,000 psia AT EOS. 9/4/82: SWU, RIG ENG., JOHNSTON-MACCO ON SITE. WORKOVER RIG RELEASED. CONTINUE MONITORING PRESSURE RECOVERY TO 1,105 psia. HORNER PLOT EXTRAPOLATES TO 1,130 psia. CONTACT SWU/TREG. COMMENCE FIRST DRAWDOWN TEST AT 5 STROKE/MIN; 3.8 BBL/HR. DISCHARGE. MONITOR TUBING PRESSURE DROP TO 225 psia AND ANNULUS PRESSURE HOLDING AT 1240 psia. TRACER LEVEL 30-35 PPM.

9/5/82: RIG ENG., JOHNSTON-MACCO ON SITE IN A.M. CONTINUE PUMPING FOR DATA COLLECTION AND TRACER REMOVAL. TUBING PRESSURE DROPPING TO 75 psia. ANNULUS PRESSURE HOLDING AT 1240 psia. TRACER CONCENTRATION 30-35 PPM.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
OWNER - BATTELLE MEMORIAL INSTITUTE	13697.07	9/13/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. Ford	9/6/82 TO 9/12/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

9/6/82: CONTINUE MONITORING 1ST DRAWDOWN TEST FOR DATA COLLECTION

AND TRACER REMOVAL. GENERATOR AND COMPUTER SYSTEMS DOWN FOR

UNKNOWN REASONS FROM 6:00 A.M. TO 1:00 P.M.. THE FOLLOWING WERE

RECORDED: TUBING PRESSURE 30 psia, ANNULAR PRESSURE 1,240 psia,

PUMP DISCHARGE 3.2 BBL/HR, STROKE RATE 5.2 SPM, TRACER CONC. 30 PPM.

COMMENCE 2ND RECOVERY TEST AT 5:00 P.M. MONITOR PRESSURE

BUILDUP FROM 30 TO 900 psia OVER 3 HRS.

9/7/82: CONTINUE MONITORING 2ND RECOVERY FOR DATA COLLECTION

MODIFY PUMPING EQUIPMENT TO REDUCE STROKE RATE.

MONITOR PRESSURE RECOVERY TO 1,005 psia.

9/8/82: CONTINUE MONITORING 2ND RECOVERY FOR DATA COLLECTION.

MONITOR PRESSURE BUILDUP TO 1,040 psia AT 11:30 A.M. COMMENCE

2ND DRAWDOWN TEST. THE FOLLOWING WERE RECORDED: TUBING

PRESSURE 1,040 TO 400 psia OVER 4 HOURS, ANNULAR PRESSURE 1,240 psia,

PUMP DISCHARGE 2.9 TO 2.7 BBL/HR OVER 2 HOURS, TRACER CONC. 30 PPM.

9/9/82: CONTINUE MONITORING 2ND DRAWDOWN TEST FOR DATA COLLECTION

AND TRACER REMOVAL. THE FOLLOWING WERE RECORDED: TUBING

PRESSURE 300 psia, ANNULAR PRESSURE 1,240 psia, PUMP DISCHARGE

2.65 BBL/HR, TRACER CONC. 25-30 PPM.

9/10/82: CONTINUE MONITORING 2ND DRAWDOWN FOR DATA COLLECTION

AND TRACER REMOVAL. THE FOLLOWING WERE RECORDED: TUBING

PRESSURE 200 psia, ANNULAR PRESSURE 1,240 psia, PUMP DISCHARGE

2.60 BBL/HR, STROKE RATE 3.7 SPM, TRACER CONC. 20-25 PPM.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	LOG NO.	DATE
ONWU - BATTELLE MEMORIAL INSTITUTE	13697.07	242 9/13/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FORD	9/6/82 TO 9/12/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

9/11/82: CONTINUE MONITORING 2ND DRAWDOWN FOR DATA COLLECTION
AND TRACER REMOVAL. GENERATOR AND COMPUTER SYSTEMS DOWN FOR
9 HOURS DUE TO FUEL LINE PROBLEMS. GENERATOR REPLACED AND
COMPUTER SYSTEMS BACK ONLINE. THE FOLLOWING WERE RECORDED:

TUBING PRESSURE. 150 psia, ANNULAR PRESSURE. 1240 psia, PUMP
DISCHARGE 2.6 BBL/DAY, STROKE RATE 3.7 SPM, TRACER CONC. 20PPM.

9/12/82: CONTINUE MONITORING 2ND DRAWDOWN FOR DATA COLLECTION
AND TRACER REMOVAL. THE FOLLOWING WERE RECORDED: TUBING
PRESSURE. 120 psia, ANNULAR PRESSURE 1,240 psia, PUMP
DISCHARGE 2.6 BBL/HOUR, STROKE RATE 3.7 SPM, TRACER
CONC. 15-20 PPM.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	JOB NO.	DATE
DAWID - BATTELLE MEMORIAL INSTITUTE	13697.07	9/20/82
WELL NAME & NO.	SITE REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	T.L. Annaratone	9/13/82 TO 9/19/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

9/13/82. CONTINUE MONITORING 2ND Drawdown for data collection and tracer removal. The following were recorded
TUBING PRESSURE: 100 PSIA, ANNULUS PRESSURE 1240 PSIA,
DISCHARGE 2.5 BBL/HR. TRACER CONC. 17 $\pm$ PPM.

9/14/82: CONTINUE MONITORING 2ND Drawdown following
were recorded: TUBING PRESSURE 85 PSIA, ANNULUS PRESSURE
1240 PSIA, DISCHARGE 2.5 BBL/HR. TRACER CONC. 15 $\pm$ PPM

9/15/82. CONTINUE MONITORING 2ND Drawdown. Following
were recorded: TUBING PRESSURE 65 PSIA ANNULUS PRESSURE
1240 PSIA. TRACER 15 $\pm$ PPM.

T.L. Annaratone and E.M. Washer were on site.

9/16/82: CONTINUED 2ND drawdown following Recorded:
TUBING PRESSURE 65 $\pm$ PSIA, ANNULUS PRESSURE 1240 psia

9/17/82 Continued 2ND Drawdown following recorded
TUBING PRESSURE 53 $\pm$ PSIA, ANNULUS PRESSURE 1240 PSIA
TRACER 15 PPM. C sample shipped to UNIV. AZ LAB)

9/18/82. COMMENCED RECOVERY TEST at 12:55 PM
Signal flow pressure at 84 PSIA, Recovered to
778 psia in first hour.

9/19/82 CONTINUED TO MONITOR RECOVERY TEST.
Pressure recovered to 934 PSIA in 26 hours.

WEEKLY PROGRESS REPORT

STONE & WEBSTER ENGINEERING CORP.

CLIENT	DATE
ONWU - BATTILLE MEMORIAL INSTITUTE	9/26
WELL NAME & NO.	PERIOD
MANFIELD NO. 1	9/20 TO 9/26
	WIRE REPRESENTATIVE
	T. ANNARATONE / R. KRAVES

SUMMARY OF DRILLING/TESTING ACTIVITIES

- 9/20 Completed recovery test, Started pumping at 10:45 AM, Pump Jack stroke rate set at 39 SPM, Tubing pres @ 969.51 Annular Pres @ 1246, discharge 2.8 bbl/hr, 3:30 PM Tubing @ 164.61, Annular @ 1246, Tracer ~15 sample sent to M. Makinson (TLA)
- 9/21 Continue monitoring pumping. - Pumping for tracer, SPM 39, Tubing @ 45 psi Annular @ 1246 psi discharge = 2.6 bbl/hr, tracer @ ~15 ppm - sample sent, R. Kraves on site - briefed by T.L. Annaratone, Guinn hauls 150 bbl brine, J-M delivers new generator to site
- 9/22 Continue pumping & monitoring: SPM 39, Tubing = 46 psi, Annular 1245 psi discharge: 2.43 bbl/hr, tracer @ ~15 sample sent, change to new generator J-M Dist. Manager on site
- 9/23 Continue pumping & monitoring: SPM 39, Tubing: 40 psi, Annular: 1245 psi discharge: 2.39 bbl/hr, tracer ~15 sample sent, 1 gal well water collected + 5 ml acid added, J-M removes deactivated generator from site
- 9/24 Continue pumping & monitoring: SPM 39, Tubing: 38 psi, Annular 1246 psi, discharge: 2.4 bbl/hr, tracer ~15 sample sent, Stock pond water sampled: 1 Gal.
- 9/25 Continue pumping & monitoring: SPM 39, Tubing ~37 psi Annular pres ~1245, tracer same, no sample sent, 1 Gal brine sampled and acid added (J.C. Laul)
- 9/26 Continue pumping & monitoring: SPM 39 Tubing & Annular pressures not taken, generator off, discharge 2.3 bbl/hr, J-M rep. (B. Reagan) reports to site to get generator & computers on-line. 2:00 PM S+W rep. slows pump rate to 3.75 SPM, tubing pressure up to 40.6 Annular 1244.7 discharge

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT DAVUL - BATTELLE MEMORIAL INSTITUTE	DATE 10/1/82
WELL NAME & NO. MANSFIELD NO. 1	DATE 9/27/82 TO 10/3/82
	SITE REPRESENTATIVE R. FONTAINE

SUMMARY OF DRILLING/TESTING ACTIVITIES

9/27/82 (MON): Rick Krues, R. Fontaine (SWEC), Arnold Aegon (J-M),
 & J.C. Kaul (Battelle) on site. J-M's generator went down.
 J.C. Kaul completed 1 test. SWEC rented a portable
 generator for sub-contractors. Tracer sample sent to lab.

9/28/82 (TUE): J.C. Kaul, Tony Zaikowski, Norm Hubbard (Battelle), and
 F.A. Munden on site for surface tests. Bob Penn on
 site. Johnston-Macca serviced generator & brought
 computers up at 5:29 pm. J.C. ran 3 more tests and
 T. Zaikowski completed 2 radon tests. Tracer sample taken.

9/29/82 (WED): Tony Zaikowski, Norman Hubbard, Bob Penn,
 Johnston-Macca, and Steve Fischer on site. Steve
 Fischer (TBEG) completed surface sampling & tests.
 R. Fontaine took 14-5 gallon jerry can surface samples
 and T. Zaikowski completed 5 more radon tests.
 Well Tech Workover rig & crew arrived in the afternoon
 & set up along w/ BOP unit from Teson Road & Marine.
 Johnston-Macca arrived w/ downhole samplers &
 transfer bench. A tracer sample was taken along with
 a sample of the mud pit water for testing.

9/30/82 (THUR): Well Tech, Bob Penn, Tony Zaikowski, F.A. Munden,
 & Norm Hubbard on site. Johnston-Macca brought in
 slick line. The sucker rods were pulled in the morning.
 Downhole sample #1 was taken & Bendix experiment ran.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT OAKUI - BATTIE MEMORIAL INSTITUTE	IA NO 13697.07	DATE 10/4/82
WELL NAME & NO. MANSFIELD NO. 1	SITE REPRESENTATIVE R. FONTAINE	PERIOD 9/27/82 TO 10/3/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

10/1/82 (FRI): Well Tech, Johnston-Macco, EA Muddon, and Bob Penn on site. Ran 1 unsuccessful and 3 successful downhole samples & transfers. Put Aeridix Corp. samples on airplane to Grand Junction, Colo.

10/2/82 (SAT): Well Tech, Bob Penn, Johnston-Macco on site. Come out of the hole w/ tubing, cable, and transducers. Inserted Otis JP seal plug in Perm-Trieve packer. Guinn hauled 150 bbls of brine off site.

10/3/82 (SUN): No work today

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	WELL NO.	DATE
CAUW1 - BATTELLE MEMORIAL INSTITUTE	13697.07	10/11/82
WELL NAME & NO.	WELL REPRESENTATIVE	PERIOD
MANSFIELD NO. 1	R. FONTAINE	10/4/82 TO 10/10/82

SUMMARY OF DRILLING/TESTING ACTIVITIES

10/4/82 (MON): Halliburton, Well Tech, Guinn, Johnston-Macco, Bob Penn on site. Spot 20 sacks of Class H cement on top of Otis Baker @ 4477' and 70 sacks between 1900' and 1320' within 5 1/8" casing.

J-M on site to run plots & data. Baker & Taylor welded on a 4' long piece of 5 1/8" casing on top of well. Well Tech laid down 100 fts. of 2 7/8" tubing.

10/5/82 (TUE): Bob Penn, Schlumberger, Well Tech, Halliburton, Otis, Johnston-Macco, and Bull Rogers Casing Crew on site. Schlumberger ran in hole w/ cutting tool & collar locator - Cut 5 1/8" casing at 1200 ft. Well Tech & Bull Rogers pulled & laid down 31 fts. of 5 1/8" casing. Halliburton supplied 9 5/8" gage ring and bridge plug.

Schlumberger ran in hole w/ junk basket & gage ring and set bridge plug at 1160'. Well Tech put 20 stands of tubing in hole and took apart pipe to green tank. Otis picked up seal plug setting tool. Teson Land & Marine picked up BOP unit.

10/6/82 (WED): Bob Penn, Halliburton, Guinn, and Well Tech on site. Well Tech tore down SUEC owned tubing on Halliburton.

WEEKLY PROGRESS REPORT
STONE & WEBSTER ENGINEERING CORP.

CLIENT	IS NO.	DATE
DAKUI - BATTIE MEMORIAL INSTITUTE	13697.07	10/11/82
WELL NAME & NO.	SITE REPRESENTATIVE	10/4/82 TO 10/10/82
MANSFIELD NO. 1	R. FONTAINE	

SUMMARY OF DRILLING/TESTING ACTIVITIES

10/6/82(WED)... (continued)... Halliburton arrived and spot 80 sacks of Class H cement on top of bridge plug from 1160'-951'. Bob Wood of the Texas Railroad Commission arrived and required two more plugs. Spot 50 sacks of Class H cement from 600' to 475' and 10 sacks from 30' to 5' within 95/8" casing. Well Tech crew dug down 2' around well so Baker & Taylor welder could cut off well head and weld on plate on top of 95/8" casing. FMC loaded up 9x6 tubing spool, casing hanger, and braden head to return to shop for cleaning & storage.

10/7/82(THUR): Well Tech crew rigged down and moved workover rig off site.

10/8/82(FRI): AERO Corp Truck loaded up pup jts., lines & connections to green tank, well head attachment & cover, and other misc. equipment for transfer to Zeck no. 1 well.

10/9/82(SAT): Johnston-Macca loaded up sucker rods, cable spool, and generator, and moved computer van off site.

APPENDIX C

FIELD ACTIVITY PLAN

206/207

J.O. No. 13697.07
ONWI Permian Basin

June 30, 1982

PERMIAN BASIN STUDY

FIELD ACTIVITY PLAN

SWEC MANSFIELD NO. 1 WELL
PUMP TESTING AND FLUID SAMPLING

Prepared for

Office of Nuclear Waste Isolation

Battelle Memorial Institute

Columbus, Ohio

APPROVED

Exploration Geologist
Environmental Engineer
Independent Tech Review
Asst. Proj. Manager - Technical
Proj. Q.A. Manager
Project Manager

Name

Date

<u>Dr. J. M. M. M.</u>	<u>6/30/82</u>
<u>M. H. Jacobson</u>	<u>6/30/82</u>
<u>J. H. Jacobson</u>	<u>6-30-82</u>
<u>C. A. Foster</u>	<u>6-30-82</u>
<u>W. H. Jacobson</u>	<u>6-30-82</u>
<u>S. M. White</u>	<u>6-30-82</u>

Stone & Webster Engineering Corporation
Boston, Massachusetts

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3.0	PARTICIPANTS	
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4.2	Pump Testing	
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PUMP TESTING AND FLUID SAMPLING

1.0 INTRODUCTION

The Mansfield Test Well was drilled in the Palo Duro Basin of the Texas Panhandle to provide subsurface data necessary to determine the feasibility of siting a nuclear waste repository at depth in bedded salt. The well is located in Oldham County (see Attachment 1). Production casing (5 1/2 in.) was installed to 5,180 ft. Information on deep ground water systems will be obtained from pump testing and formation fluid sampling.

This Activity Plan outlines the testing and sampling program planned for the Mansfield Well. Two zones will be pump tested and sampled. The two zones were selected by TBEG, ONWI, and SWEC based on an evaluation of the rock core logs, geophysical well logs, and drillstem testing data. The two zones are in the Permian Wolfcamp, at 4818-4890 ft and 4514-4638 ft (see Attachment 2).

Detailed plans for pump testing fluid sampling activities for a given zone shall be developed in the evaluation meetings in accordance with Section 6.0.

Test zones will be isolated by the cement bond in the annulus space between the 5 1/2 in. casing and the well borehole. The bond will be checked using cement bond logs. Where zone isolation is not adequate, remedial perforation and pressure grouting (cement squeezing) operations will be conducted before pump testing. Cement bond logs will be run and pressure testing will be conducted to re-check zone isolation. Drilling and scraping of cement in the casing will be performed as required.

This AP is a proposed plan that will be modified as required by conditions encountered to enhance the data or data collection effort. Modifications shall be documented in the Well Completion Report (Section 7.2), and shall be made in accordance with Section 5.2.

This AP supercedes that described in Section 4.6 of the Field Test Plan for TBEG Exploratory Wells.

2.0 OBJECTIVES

The objectives of the pump testing and fluid sampling program are to collect data necessary to determine the hydrologic characteristics of deep subsurface formations, and to obtain formation fluid samples for laboratory chemical analysis.

3.0 PARTICIPANTS

This work is being undertaken as part of a nationwide program by the U.S. Department of Energy (DOE) to identify potential locations for a nuclear waste repository in deep geologic formations. Stone & Webster Engineering Corporation (SWEC) is responsible for management of geological studies within the Permian Basin under a contract with DOE's Program Manager; Battelle Memorial Institute - Office of Nuclear Waste Isolation. SWEC is working in cooperation with the Texas Bureau of Economic Geology which is also undertaking geologic studies in the Texas Panhandle under contract to DOE.

SWEC is the Geologic Project Manager (GPM) for the Permian Basin Study and is responsible for all aspects of scheduling, cost, and quality assurance associated with the Pump Testing and Fluid Sampling of the Mansfield Test Well. Lines of communication for SWEC field supervisory personnel are shown on the Field Organization Chart (Attachment 3). Specific responsibilities assigned to SWEC Site Representative are described in Project Procedure 9-1. Subcontractors have been obtained by SWEC to provide the services, equipment, and materials necessary for testing and sampling. A list of the subcontracts, the service/materials they are to provide are given in Attachment 4.

4.0 TESTING AND SAMPLING PROCEDURES AND EQUIPMENT

Project Technical Procedures (PTPs) and Project Procedures (PPs) developed for specific pump testing and fluid sampling and supervisory activities are listed in Attachment 5. These procedures supplement the technical and quality assurance requirements contained in the applicable Engineering Service Scope of Work (ESSOWs), Purchase Orders (POs) (Attachment 4), and as committed to in the Stone & Webster Permian Basin Project Quality Assurance Plan.

4.1 Pump Test Preparation

The sequence of proposed activities preceding the Pump Testing and Fluid Sampling of the well is summarized below: (see PTP 4, and ESSOW 13697 - G101L)

1. Installation of two permanent bridge plugs in the casing between each production zone, or bottom of the casing as required by the Texas Railroad Commission
2. ~~Perforation of the test zone~~ (see ESSOW 13697 - G101B)
3. ~~Acidizing, flushing, and testing operations as necessary~~ to enhance formation flow through the perforated casing and cement

4. The mixing of SCN tracer with all fluids used in preparation of the test zone i.e. acidizing, cementing, and flushing
5. Modification of pumping equipment to obtain desired pumping rate and discharge for each zone
6. Installation, setting, and adjustment of a back pressure valve in the well head discharge line as required
7. Installation and/or removal of all test equipment including pumping equipment, tubing, packer, temperature and pressure transducers, and required cables in the test zone
8. Checkout of the general operating condition of the pumping equipment, downhole instrumentation, cables, surface portable computer system, and integrity of the packer prior to conducting each Pump Test.

A schematic drawing of the as-built test well is shown on Attachment 6, and a schematic of the downhole assembly is shown on Attachment 7.

4.2 Pump Testing

Pump Testing will be performed following completion of the activities listed in Section 4.1 (see PTP 4 and ESSOW 13697 - G101L).

The plots of the first complete phase of the drawdown/recovery tests for a given zone will be reviewed by TBEG and SWEC. The need for any additional tests, or modifications to the zone testing plans developed in the evaluation meeting will be based on the review of the results of this first drawdown/recovery test.

During drawdown and recovery phases the SWEC Site Representative shall observe and monitor the performance of the following:

Formation Pressure and Fluid Temperature Data

Drawdown/recovery pressures and fluid temperatures will be registered by downhole transducers ported to the test zone and annulus above the packer seal. Signals will be transmitted to the surface through cables to a Portable Computer System (PCS) capable of performing the required data processing and plotting functions.

Each drawdown and recovery test shall continue until sufficient data has been obtained as determined by the SWEC Field Representative, in cooperation with TBEG representative.

Drawdown Tests

The objective will be to collect required pressure drawdown data by pumping at a constant rate. Following completion of the activities described in Section 4.1, or completion of a preceding recovery test, the SWEC Site Representative shall direct the Responsible Contractor to commence pumping.

Recovery Tests

The objective will be to collect required pressure recovery data. Following completion of a preceding drawdown test the SWEC Field Representative shall direct the Responsible Contractor to terminate pumping.

Multiple Drawdown and Recovery Test

In some formations the SWEC Field Representative may elect to perform a series of drawdown and recovery tests.

Tracer Removal and Fluid Sampling

Pumping shall continue until SCN tracer concentrations determined in accordance with ESSOW G112D, Mud Tracer Consultant, reach a level suitable for fluid sampling as determined by TBEG and in cooperation with SWEC, ONWI, and ONWI subcontractors.

4.3 Fluid Sampling

The SWEC Field Representative shall coordinate the downhole and surface sampling program for each zone with TBEG, ONWI, ONWI subcontractors, and the Responsible Contractors, in accordance with PTP - 13697 - 4.

4.4 Distribution of Field Test Data and Samples

The SWEC Site Representative is responsible for the distribution of Field Test Data and samples. Copies of field data and samples shall be distributed by the Site representative as indicated below:

<u>Item</u>	<u>SWEC Proj. Explor. Geologist</u>	<u>TBEG Project Manager</u>	<u>ONWI Project Manager</u>	<u>ONWI Sub- tractor</u>	<u>SWEC Con- sultants</u>	<u>SWEC Field Office Manager</u>
Perfor- ating Services						
Reports	X	X	X		X	
Pump Test & Fluid Data						
Sampling	X	X	X		X	X
Fluid Samples		X		X		

5.0 QUALITY ASSURANCE

The Permian Basin Quality Assurance Plan describes how SWEC's Quality Assurance Program is applied to the Pump Testing and Fluid Sampling activities performed by or for SWEC. Specific QA requirements for the testing and sampling activities covered by this AP are contained in the applicable ESSOWs, POs and supplemented by PTPs, and PPs.

SWEC Engineering Assurance Personnel will conduct unscheduled surveillances of the work covered by this AP as determined necessary by the Project Quality Assurance Manager.

Performance audits will be conducted by Engineering Assurance for the applicable testing and sampling activities. For all audits, corrective action follow up will be performed as necessary.

On going inspections will be performed by Geotechnical personnel for the applicable testing and sampling activities detailed in the ESSOW, POs. Also were applicable, receiving inspections will be conducted by Geotechnical Personnel as designated in PP-9-2-2.

The surveillance, audit, and inspection activities are shown on Attachment 8.

5.1 Calibration of Test Equipment

Calibration requirements for well test equipment are described in the appropriate ESSOW, PO, or PTP (Attachments 4 and 5) A generic list of the types of equipment to be calibrated for the various testing activities identified under Section 4.0 is summarized below:

1. Downhole Instrumentation: Calibration reports for downhole pressure transducers

2. Surface Recording Instrumentation: Calibration reports for Portable Computer Systems

5.2 Modification and Programmatic Changes to Scope

Modifications within the scope of this AP shall be approved by the Project Exploration Geologist. The SWEC Site Representative shall approve all modifications to the zone testing plans as developed in the evaluation meetings. Documentation of modifications shall be filed on site (eg, telecons, notes of meetings, daily reports) by the Site Representative.

Programmatic changes to the scope of this AP, which include the number of zones, types of tests and other major modifications, are not allowed unless incorporated into an approved revision of this AP.

All changes to this AP shall be included in the Well Completion Report (see Section 7.2). The SWEC Site Representative shall ensure that a copy of this AP with all changes there to are readily available where work covered by this plan is in progress.

The Assistant Project Manager - Technical shall review and approve any modifications to this Test Plan after discussions with the Project Exploration Geologist and ONWI.

The testing and sampling activities may be interrupted in the field by the SWEC Site Representative due to a deviation or nonconformance with ESSOWs, POs and PTPs. For a nonscheduled interruption, correspondence shall be telecopied to the Project Exploration Geologist with the following information:

1. Reason for stoppage of work
2. Estimated delay
3. Corrective actions and background information.

The Assistant Project Manager - Data Acquisition, the Project QA Manager, TBEG, and ONWI Project Manager, and ONWI Quality Assurance Department shall be notified of any unscheduled stoppage, and upon restart of operations.

6.0 EVALUATION MEETINGS

Evaluation meetings are scheduled prior to the testing and sampling of a given zone. The primary purpose of these meetings will be to develop specific zone testing plans and make recommendations to improve the testing and sampling program. The meeting shall define the goals for testing a given zone and shall develop a pumping and shut-in schedule with anticipated pumping and discharge rates. The meetings shall be scheduled to coincide with normal breaks in the testing and sampling activities. The meetings shall take place at the end of the zone change over, specifically during swabbing the well.

The evaluation meetings will be held at the well site and shall involve the following personnel:

Mandatory

SWEC Site Representative

SWEC Consultants as applicable (Includes Drill Rig Engineer)

TBEG Project Representative

Optional

SWEC Technical Advisor

SWEC Asst. Project Manager - Data Acquisition

SWEC Project Exploration Geologist

ONWI Project Representative

SWEC Project Quality Assurance Manager

Contractor's Field Representative as necessary

7.0 REPORTS

7.1 Progress Reports

The Site Representative will prepare a weekly progress report summarizing the weeks progress, Monday through Sunday. The report will outline the key activities completed, difficulties encountered, modifications to the test program, and a prognosis for the coming week.

The first weekly progress report will be submitted at the end of the first calendar week following the start of testing. Subsequent weekly report submittals will be made on the Monday following the week reported.

Distribution of the report will be as follows:

- 1 telecopy to the ONWI Project Manager
- 1 copy to the SWEC Office in Amarillo, Texas
- 1 telecopy to the SWEC Project Exploration Geologist, Boston, Massachusetts
- 1 telecopy to the SWEC Project Quality Assurance Manager, Boston, Massachusetts
- 1 copy to the TBEG Project Manager

1 copy to the SWEC Consultants

7.2 Well Completion Report

A supplement to the Mansfield Well Completion Report shall be prepared to describe the pump testing and fluid sampling work as it was actually performed at the well. Situations encountered during drilling, testing, and sampling activities will be addressed, along with suggestions, to expedite and enhance the quality of future work.

Included will be a well data summary report which lists, in chronological order, daily activities vital to testing and sampling activities.

Attached to the report will be appendices containing the following information:

- Drilling Activity Summary (update of Attachment 7)
- Diagram of Completed Hole showing test zones
- Daily Reports
- Pumping Logs
- Cementing Services Report
- Pump Test Data
- Fluid Sampling Field Records

Distribution of the report for comment will be as follows:

- ONWI Project Manager (5 copies)
- TBEG Project Manager (3 copies)

8.0 SCHEDULE

The schedule of the pump test and fluid sampling activities is shown on Attachment 8. The SWEC site representative will maintain an updated plot of actual progress on a similar form at the well site.

9.0 ATTACHMENTS

<u>No. - Rev</u>	<u>Title</u>
1-0	Location of Test Wells
2-0	Well Stratigraphy
3-0	Field Organization Chart

- 4-0 List of Subcontractors
- 5-0 Project Technical Procedures (PTPs)
and Project Procedures (PPS)
- 6-0 As-Built Drawing of Mansfield Well
- 7-0 Schematic of Downhole Assembly
- 8-0 Pump Testing and Fluid Sampling Activities Schedule

ATTACHMENT 1-0 FIELD ACTIVITY PLAN LOCATION OF TEST WELLS

- LEGEND
- (DOTTED OR IN PROGRESS) NUTS PROGRAM TEST WELLS
 - (TO BE DRILLED 1982) PROPOSED WELL LOCATIONS

AGE	DEPTH	FORMATION/GROUP	LITHOLOGY
TRIASSIC	0 - 496'	DOCKUM	INTERBEDDED REDDISH BROWN SILTSTONE, SANDSTONE AND SHALE
PERMAN	496 - 528'	DEWEY LAKE	REDDISH BROWN SILTY SHALE
	528 - 556'	ALIBATES	WHITISH ARENACEOUS DOLOMITE
	556 - 612'	SALADO	REDDISH BROWN SILTSTONE AND SHALE: BASE IS ANHYDRITE
	612 - 655'	YATES	REDDISH BROWN SILTSTONE AND SHALE
	655 - 687'	UPPER SEVEN RIVERS	REDDISH BROWN SILTSTONE AND SHALE WITH SOME THIN BEDS OF SALT
	687 - 770'	LOWER SEVEN RIVERS	REDDISH BROWN SILTSTONE
	770 - 985'	QUEEN/GRAYBURG	REDDISH BROWN SANDSTONE, SILTSTONE AND SHALE WITH THIN BEDS OF SALT AND ANHYDRITE
	985 - 1373'	UPPER SAN ANTOES	BROWN AND GRAY SALT WITH THIN INTERBEDS OF SHALE, SILTSTONE AND ANHYDRITE: BASAL THICK BEDS OF ANHYDRITE
	1373 - 1546'	LOWER SAN ANTOES #5	BROWN AND GRAY SALT WITH THIN INTERBEDS OF SHALE, SILTSTONE AND ANHYDRITE: BASAL THICK BEDS OF ANHYDRITE
	1546 - 1815'	LOWER SAN ANTOES #4	BROWN AND GRAY SALT WITH THIN INTERBEDS OF SHALE: BASE IS THICK BEDS OF DOLOMITE AND ANHYDRITE WITH BASAL BLACK SHALE
	1815 - 1940'	LOWER SAN ANTOES #3	BROWN AND GRAY SALT WITH THIN INTERBEDS OF SHALE AND SANDSTONE WITH BASAL ANHYDRITE AND DOLOMITIC SHALE
	1940 - 1978'	LOWER SAN ANTOES #2	BROWN AND GRAY SALT WITH THIN INTERBEDS OF SHALE WITH BASAL ANHYDRITE AND SHALE
	1978 - 2001'	LOWER SAN ANTOES #1	GRAY DOLOMITE AND ANHYDRITE WITH A BASAL SHALE
	2001 - 2550'	GLORIETA	INTERBEDDED RED BROWN SALT, SANDSTONE, SILTSTONE AND SHALE
	2550 - 3065	UPPER CLEAR FORK	INTERBEDDED BROWN SALT, SILTSTONE, AND SHALE WITH BASAL DOLOMITE
	3065 - 3187'	TUBB	RED BROWN AND GRAY SILTSTONE
	3187 - 3381'	LOWER CLEAR FORK	INTERBEDDED GRAY BROWN SALT, SILTSTONE, SHALE AND GRAY ANHYDRITE
PENN.	6550 - 7379'	PENNSYLVANIAN	INTERBEDDED ARKOSIC SANDSTONE, LIMESTONE AND SHALE
P-6	7379 - T.D.	PRECAMBRIAN	RHYOLITE

NOTES:

1. TOTAL DEPTH OF WELL: 7409'
2. KELLY BUSHING ELEVATION: 3701.7'

ATTACHMENT 2-0
WELL STRATIGRAPHY
MANSFIELD NO. 1

ATTACHMENT 4
FIELD ACTIVITY PLAN
SWEC MANSFIELD NO. 1 WELL
PUMP TESTING AND FLUID SAMPLING

LIST OF SUBCONTRACTORS

<u>Contractor</u>	<u>Description of Services</u>	<u>Contract Essow or P.O. NO.</u>
Design Space International	Site Trailer	*
Dresser Industries	Rock Bits	*
Edward Sawyer	Water Supplier	*
F & F Service Co.	Tracer Program Electrical Work	*
FMC Corp.	Well Head Assembly	*
Ford Tool	Fishing Tools and Services, BOP	*
Ford Well Service	Workover Rig	*
Glen Thompson	Tracer Consultant	G112D
Greenbelt Electric	Electricity	*
Co-op., Inc.		
Halliburton Services	Cementing Services, Acidizing, Packers, Bridge/Plugs	*
John Nicholson	Drilling Consultant	G112A
Johnston-Macco	Downhole Instrumentation, Computer System, Pump Jack Fluid Sampling Apparatus	G101L
KMA	Workover Rigs	*
Miraglio Pontiac	Light Tower	*
NL Acme Tool	Well Circulation, BOP, Tools	*

LIST OF SUBCONTRACTORS

<u>Contractor</u>	<u>Description of Services</u>	<u>Contract Essow or P.O. NO.</u>
Pampa C&C Oil Field Serv., Inc	Reserve Pit Disposal Services	*
Patton & Patton	Water Tank Rental	*
Paul Cameron, Inc	Drill Rig Engineers	G112C
Schlumberger Well Services	Well Logging and Perforation	G103B
Superior Supply Co.	Misc. Tools, Storage Tank	*
Tesoro Land & Marine	Blowout Preventor	*
Well Tech, Inc.	Workover Rigs	*
Worsham Grading Contrs.	Site Grading	*
W. Texas Gas, Inc.	Diesel Fuel Supplies	*
*Field Purchase Orders		

ATTACHMENT 5-0
FIELD ACTIVITY PLAN
SWEC MANSFIELD NO. 1 WELL
PUMP TESTING AND FLUID SAMPLING

SWEC PROJECT TECHNICAL PROCEDURES (PTPs)
AND PROJECT PROCEDURES (PPs)

<u>NO/REV.</u>	<u>TITLE/DESCRIPTION</u>
PTP 13697-4-3	Pump Testing and Fluid Sampling
PP 9-1-2	Responsibilities of SWEC Site Geologist
PP-9-2-2	Receiving Equipment and Materials

ATTACHMENT 8
FIELD ACTIVITY PLAN
MANSFIELD NO. 1 WELL
PUMP TESTING AND FLUID
SAMPLING ACTIVITIES

APPENDIX D

TEST ZONE EVALUATIONS

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TEST ZONE NO. 1 LOWER PERMIAN WOLFCAMP

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APPENDIX D.1

TEST ZONE NO. 1 LOWER PERMIAN WOLFCAMP

As-built sketches of the test zone are shown on Figures D.1-1 and D.1-2; a summary of tests is shown in Table D.1-1; and a test zone pressure (PW) versus elapsed time (ET) plot of testing activities is presented on Figure D.1-3. Pumping and recovery tests were conducted from August 6 to August 26, 1982. The representative pumping test evaluation presented in this Appendix is summarized in Section 6.1.

The 5 1/2-inch casing was perforated from 4,890 to 4,818 feet (72 feet) on July 8, 1982. The perforation pattern was radial at 4 perforations per foot. A formation thickness (H) of 72 feet was used to calculate a permeability (K) value in millidarcies (md).

The test zone was swabbed approximately 20 hours, from July 13 to July 29, 1982, for the purpose of developing the formation and estimating formation yield. Following removal of residual fluids, swabbing yielded 5 standard tank barrels (STB) per run. Based on fluid level measurements in the yard tank, an average inflow rate of 14 gallons per minute (gpm) was estimated. Testing was conducted at approximately 6 gpm.

Test zone pressure data were measured at the tubing transducer, located approximately 380 and 387 feet above the mid point of the casing perforations, as shown on Figures D.1-1 and D.1-2, respectively. Using an approximate conversion factor of 0.50 psi/ft, based on formation fluid laboratory analyses conducted by Dr. Glenn Thompson, University of Arizona, pressure readings were corrected for static head differentials, as required. Pressure readings to determine initial formation pressure (PI) were corrected for a static head equivalent to a mid-perforation depth (4,854 feet) minus a transducer depth (4,474 feet) times 0.50 psi/ft or 190 psi. Pressure readings to calculate a K value were corrected, as required, for a static head equivalent to a mid perforation depth (4,854 feet) minus a transducer depth (4,467 feet) times 0.50 psi/ft or 193 psi.

The formation was intermittently produced from July 13 through August 26, 1982. The term total production time (TP), used for analyzing recovery data to determine PI or to calculate a K value, was generally based on production time that had elapsed following a complete shut-in

recovery or an accumulative production time, if a full recovery was not achieved, or if significant reservoir depletion was evident. Periods of fluid inflow during recovery periods under open-hole conditions can be included in determining a TP value.

Preliminary drawdown and recovery tests were conducted prior to testing for the purpose of determining PI. A data listing is shown in Table D.1-2; a Horner plot, $\text{Log} [(TP + DT)/DT]$, where DT equals elapsed time for a particular recovery, is presented on Figure D.1-4. Based on an extrapolation of the Horner plot, the PI was estimated to be 1,407 psia. Subsequent recovery tests were generally continued until the linear portion of a Horner plot could be extrapolated to the PI value for the purpose of calculating a K value.

Fluid discharge rate was monitored volumetrically during drawdown tests for the purpose of determining an average discharge (Q) in STB per day for the purpose of calculating a K value. Average discharge rates measured during drawdown tests are presented in Table D.1-3, and are also indicated on drawdown curves presented in this Appendix when applicable.

The positive or negative slope of the linear portion of a semilog plot of pressure transient data in psi per log cycle (M) (Earlougher, 1977; Matthews and Russell, 1967) is determined by the drawdown and recovery tests. Following a review of all information collected during testing of this zone, SWEC selected Recovery Test No. 10 to determine the most representative M for the purpose of calculating a preliminary K value using the H and Q previously determined. A data listing is shown in Table D.1-4; a plot of Recovery Test No. 10 is shown on Figure D.1-5. The calculation, using standard analytical techniques to approximate a K value (Earlougher, 1977), is presented on Figure D.1-6.

Following completion of pumping tests and tracer dissipation (Section 3.1 and Appendix A.4), surface and downhole fluid samples were collected and transferred, as required (Section 5). The distribution of fluid samples is presented in Table D.1-5. A plot of downhole pressures during sampling is shown on Figure D.1-7.

Formation fluid temperature was recorded during testing and sampling. A fluid temperature summary listing temperatures at the start and end of each flow period is presented in Table D.1-1. Fluid temperatures from Test

Zone No. 1 ranged from approximately 102 to 106 degrees Fahrenheit, characterized by a warming trend during pumping periods and a cooling trend during shut-in periods.

Note: Depths measured from
Kelly Bushing.

(a) Perforation pattern: 4 shots
per foot, 90° phase

As-Built Drawing of Mansfield No.1 Well
Test Zone No.1 Lower Permian Wolfcamp
Johnston-Macco Packer Installation Plan

Figure D.1-1

Well datum 0.0 feet at Kelly Bushing, Elevation 3701.6 feet
 Ground Surface,
 Elevation 3692.6 feet

Notes: Depths measured from Kelly Bushing.

(a) Perforation pattern: 4 shots
 per foot, 90° phase.

As-Built Drawing of Mansfield No. 1 Well
 Test Zone No. 1 Lower Permian Wolfcamp
 Otis Perma-Trieve Packer Installation Plan

Figure D.1-2

Table D.1-1. Summary of Tests

Test Zone No. 1 Lower Permian Wolfcamp

 * WELL TEST DATA PRINTOUT *

FIELD REPORT # : STONEW
 COMPANY : STONE & WEBSTER
 WELL : Mansfield #1
 Zone #1

INSTRUMENT # : 1299
 CAPACITY [PSI] : 10000.
 DEPTH [FT] : 4467.0
 PORT OPENING : INSIDE

LABEL POINT INFORMATION

	TIME			BOT HOLE	BOT HOLE
	OF DAY	DATE		ELAPSED	PRESSURE
#	HH:MM:SS	DD-MM	EXPLANATION	TIME, MIN	PSIA
					DEG F
***	*****	*****	*****	*****	*****
1	18: 0:11	13-JY	START FLOW	30.75	1282.61
2	19:11:16	13-JY	END FLOW & START SHUT-IN	101.83	89.68
3	10:35:36	14-JY	END SHUT-IN & START FLOW	1026.17	1216.78
4	12:14:51	14-JY	END FLOW & START SHUT-IN	1125.42	25.01
5	9:30:31	15-JY	END SHUT-IN	2401.08	1208.87
6	8:22:46	21-JY	START FLOW	10973.33	1228.10
7	8:26: 1	21-JY	END FLOW & START SHUT-IN	10976.58	808.14
8	8:53:41	21-JY	END SHUT-IN & START FLOW	11004.25	1182.06
9	16:14:16	21-JY	END FLOW & START SHUT-IN	11444.83	473.20
10	7:17: 6	22-JY	END SHUT-IN & START FLOW	12347.67	1213.64
11	9:25:51	22-JY	END FLOW & START SHUT-IN	12476.42	454.52
12	10:32: 6	23-JY	END SHUT-IN	13982.67	1189.07
13	15:18:36	28-JY	START FLOW	21469.17	1228.72
14	17: 0:36	28-JY	END FLOW & START SHUT-IN	21571.17	502.90
15	8:46:46	29-JY	END SHUT-IN & START FLOW	22517.33	1268.46
16	13: 8:46	29-JY	END FLOW & START SHUT-IN	22779.33	106.38
17	6:45:41	2-AU	END SHUT-IN	28156.25	1214.56
18	7:50:42	6-AU	START FLOW	33981.27	1212.45
19	9:16:12	6-AU	END FLOW & START SHUT-IN	34066.77	943.54
20	10:21:42	6-AU	END SHUT-IN & START FLOW	34132.27	1198.73
21	12:50:37	6-AU	END FLOW & START SHUT-IN	34281.18	861.89
22	13:16:37	6-AU	END SHUT-IN & START FLOW	34307.18	1165.26
23	23:44:52	14-AU	END FLOW & START SHUT-IN	46455.43	791.48
24	8:44:37	18-AU	END SHUT-IN & START FLOW	51315.18	1161.31
25	10:43:42	26-AU	END FLOW & START SHUT-IN	62954.27	681.57
26	7:30:47	28-AU	END SHUT-IN	65641.35	1126.22

DEPTH: 4467 FT
CAPACITY: 10000 PSI
PORT OPENING: INSIDE

Pressure Versus Elapsed Time Plot
Test Zone No. 1 Lower Permian Wolfcamp

Figure D.1-3

Table D.1-2. Test Data Listing to Determine PI

Test Zone No. 1 Lower Permian Wolfcamp

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
19:11:16	13-JY	101.83	0.00	104.6	89.68	0.00	
19:11:21	13-JY	101.92	0.09	104.6	81.23	-8.45	2.898
19:11:26	13-JY	102.00	0.17	104.6	86.44	-3.24	2.622
19:11:31	13-JY	102.08	0.25	104.6	91.36	1.68	2.455
19:11:36	13-JY	102.17	0.34	104.6	96.06	6.38	2.322
19:11:41	13-JY	102.25	0.42	104.6	100.41	10.73	2.231
19:11:46	13-JY	102.33	0.50	104.6	104.38	14.70	2.156
19:11:51	13-JY	102.42	0.59	104.6	108.42	18.74	2.084
19:11:56	13-JY	102.50	0.67	104.6	112.44	22.76	2.030
19:12: 1	13-JY	102.58	0.75	104.6	116.11	26.43	1.981
19:12: 6	13-JY	102.67	0.84	104.6	120.31	30.63	1.933
19:12:11	13-JY	102.75	0.92	104.6	123.90	34.22	1.894
19:12:16	13-JY	102.83	1.00	104.6	127.82	38.14	1.858
19:12:21	13-JY	102.92	1.09	104.6	131.48	41.80	1.821
19:12:26	13-JY	103.00	1.17	104.6	135.25	45.57	1.791
19:12:31	13-JY	103.08	1.25	104.6	138.85	49.17	1.762
19:12:36	13-JY	103.17	1.34	104.6	142.53	52.85	1.733
19:12:41	13-JY	103.25	1.42	104.6	146.23	56.55	1.708
19:12:46	13-JY	103.33	1.50	104.6	149.91	60.23	1.685
19:12:51	13-JY	103.42	1.59	104.6	153.61	63.93	1.660
19:12:56	13-JY	103.50	1.67	104.6	156.99	67.31	1.639
19:13: 1	13-JY	103.58	1.75	104.6	160.41	70.73	1.619
19:13: 6	13-JY	103.67	1.84	104.6	164.24	74.56	1.598
19:13:11	13-JY	103.75	1.92	104.6	167.78	78.10	1.580
19:13:16	13-JY	103.83	2.00	104.6	171.07	81.39	1.563
19:13:21	13-JY	103.92	2.09	104.6	174.36	84.68	1.544
19:13:26	13-JY	104.00	2.17	104.6	178.26	88.58	1.528
19:13:31	13-JY	104.08	2.25	104.7	181.42	91.74	1.513
19:13:36	13-JY	104.17	2.34	104.7	184.71	95.03	1.497
19:13:41	13-JY	104.25	2.42	104.7	187.81	98.13	1.482
19:13:46	13-JY	104.33	2.50	104.7	191.77	102.09	1.469
19:13:51	13-JY	104.42	2.59	104.7	194.79	105.11	1.454
19:13:56	13-JY	104.50	2.67	104.7	198.79	109.11	1.441
19:14: 1	13-JY	104.58	2.75	104.7	202.21	112.53	1.429
19:14: 6	13-JY	104.67	2.84	104.7	205.54	115.86	1.415
19:14:11	13-JY	104.75	2.92	104.7	209.32	119.64	1.404
19:14:16	13-JY	104.83	3.00	104.7	212.35	122.67	1.393
19:14:21	13-JY	104.92	3.09	104.7	216.41	126.73	1.380
19:14:26	13-JY	105.00	3.17	104.7	219.45	129.77	1.370
19:14:31	13-JY	105.08	3.25	104.7	222.42	132.74	1.359
19:14:36	13-JY	105.17	3.34	104.7	225.19	135.51	1.348
19:14:41	13-JY	105.25	3.42	104.7	228.61	138.93	1.338
19:14:46	13-JY	105.33	3.50	104.7	231.21	141.53	1.329
19:14:51	13-JY	105.42	3.59	104.7	235.02	145.34	1.318
19:14:56	13-JY	105.50	3.67	104.7	239.18	149.50	1.309
19:15: 1	13-JY	105.58	3.75	104.7	241.15	151.47	1.300
19:15: 6	13-JY	105.67	3.84	104.7	245.62	155.94	1.290
19:15:11	13-JY	105.75	3.92	104.7	247.55	157.87	1.282

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
19:15:16	13-JY	105.83	4.00	104.7	251.12	161.44	1.273
19:15:21	13-JY	105.92	4.09	104.7	254.87	165.19	1.264
19:15:26	13-JY	106.00	4.17	104.7	256.86	167.18	1.256
19:15:31	13-JY	106.08	4.25	104.7	261.38	171.70	1.249
19:15:36	13-JY	106.17	4.34	104.7	263.73	174.05	1.240
19:15:41	13-JY	106.25	4.42	104.7	266.13	176.45	1.233
19:15:46	13-JY	106.33	4.50	104.7	270.32	180.64	1.225
19:15:51	13-JY	106.42	4.59	104.7	273.64	183.96	1.217
19:15:56	13-JY	106.50	4.67	104.7	275.53	185.85	1.210
19:16: 1	13-JY	106.58	4.75	104.7	279.27	189.59	1.203
19:16: 6	13-JY	106.67	4.84	104.7	282.54	192.86	1.196
19:16:11	13-JY	106.75	4.92	104.7	284.40	194.72	1.189
19:16:16	13-JY	106.83	5.00	104.7	288.32	198.64	1.182
19:16:21	13-JY	106.92	5.09	104.8	291.89	202.21	1.175
19:16:26	13-JY	107.00	5.17	104.8	293.62	203.94	1.169
19:16:31	13-JY	107.08	5.25	104.8	297.04	207.36	1.163
19:16:36	13-JY	107.17	5.34	104.8	300.14	210.46	1.156
19:16:41	13-JY	107.25	5.42	104.8	304.31	214.63	1.150
19:16:46	13-JY	107.33	5.50	104.8	306.51	216.83	1.144
19:16:51	13-JY	107.42	5.59	104.8	310.31	220.63	1.137
19:16:56	13-JY	107.50	5.67	104.8	312.79	223.11	1.131
19:17: 1	13-JY	107.58	5.75	104.8	316.08	226.40	1.126
19:17: 6	13-JY	107.67	5.84	104.8	318.08	228.40	1.120
19:17:11	13-JY	107.75	5.92	104.8	320.84	231.16	1.114
19:17:16	13-JY	107.83	6.00	104.8	325.30	235.62	1.109
19:17:21	13-JY	107.92	6.09	104.8	327.40	237.72	1.103
19:17:26	13-JY	108.00	6.17	104.8	329.70	240.02	1.098
19:17:31	13-JY	108.08	6.25	104.8	332.72	243.04	1.092
19:17:36	13-JY	108.17	6.34	104.8	335.98	246.30	1.087
19:17:41	13-JY	108.25	6.42	104.8	338.63	248.95	1.082
19:17:46	13-JY	108.33	6.50	104.8	341.50	251.82	1.077
19:17:51	13-JY	108.42	6.59	104.8	344.80	255.12	1.071
19:17:56	13-JY	108.50	6.67	104.8	347.46	257.78	1.067
19:18: 1	13-JY	108.58	6.75	104.8	350.78	261.10	1.062
19:18: 6	13-JY	108.67	6.84	104.8	354.14	264.46	1.057
19:18:11	13-JY	108.75	6.92	104.8	358.08	268.40	1.052
19:18:16	13-JY	108.83	7.00	104.8	361.87	272.19	1.047
19:18:21	13-JY	108.92	7.09	104.8	366.11	276.43	1.042
19:18:26	13-JY	109.00	7.17	104.8	370.01	280.33	1.038
19:18:31	13-JY	109.08	7.25	104.8	373.93	284.25	1.034
19:18:36	13-JY	109.17	7.34	104.8	377.94	288.26	1.029
19:18:41	13-JY	109.25	7.42	104.8	381.77	292.09	1.024
19:18:46	13-JY	109.33	7.50	104.8	385.84	296.16	1.020
19:18:51	13-JY	109.42	7.59	104.8	389.53	299.85	1.016
19:18:56	13-JY	109.50	7.67	104.8	393.30	303.62	1.011
19:19: 1	13-JY	109.58	7.75	104.8	396.69	307.01	1.007
19:19: 6	13-JY	109.67	7.84	104.8	399.92	310.24	1.003
19:19:11	13-JY	109.75	7.92	104.8	402.65	312.97	0.999

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19:19:16	13-JY	109.83	8.00	104.8	405.85	316.17	0.995
19:19:21	13-JY	109.92	8.09	104.8	408.48	318.80	0.991
19:19:26	13-JY	110.00	8.17	104.8	411.37	321.69	0.987
19:19:31	13-JY	110.08	8.25	104.9	413.95	324.27	0.983
19:19:36	13-JY	110.17	8.34	104.9	416.69	327.01	0.979
19:19:41	13-JY	110.25	8.42	104.9	419.44	329.76	0.975
19:19:46	13-JY	110.33	8.50	104.9	422.27	332.59	0.971
19:19:51	13-JY	110.42	8.59	104.9	424.61	334.93	0.967
19:19:56	13-JY	110.50	8.67	104.9	427.24	337.56	0.964
19:20: 1	13-JY	110.58	8.75	104.9	429.78	340.10	0.960
19:20: 6	13-JY	110.67	8.84	104.9	432.47	342.79	0.956
19:20:11	13-JY	110.75	8.92	104.9	435.22	345.54	0.953
19:20:16	13-JY	110.83	9.00	104.9	437.88	348.20	0.949
19:20:21	13-JY	110.92	9.09	104.9	440.41	350.73	0.945
19:20:26	13-JY	111.00	9.17	104.9	443.14	353.46	0.942
19:20:31	13-JY	111.08	9.25	104.9	445.62	355.94	0.939
19:20:36	13-JY	111.17	9.34	104.9	448.09	358.41	0.935
19:20:41	13-JY	111.25	9.42	104.9	450.80	361.12	0.932
19:20:46	13-JY	111.33	9.50	104.9	453.42	363.74	0.929
19:20:51	13-JY	111.42	9.59	104.9	455.81	366.13	0.925
19:20:56	13-JY	111.50	9.67	104.9	458.19	368.51	0.922
19:21: 1	13-JY	111.58	9.75	104.9	460.54	370.86	0.919
19:21: 6	13-JY	111.67	9.84	104.9	463.20	373.52	0.915
19:21:11	13-JY	111.75	9.92	104.9	465.65	375.97	0.912
19:21:16	13-JY	111.83	10.00	104.9	468.05	378.37	0.909
19:21:21	13-JY	111.92	10.09	104.9	470.26	380.58	0.906
19:21:26	13-JY	112.00	10.17	104.9	472.54	382.86	0.903
19:21:31	13-JY	112.08	10.25	104.9	474.76	385.08	0.900
19:21:36	13-JY	112.17	10.34	104.9	478.95	389.27	0.896
19:21:41	13-JY	112.25	10.42	104.9	484.01	394.33	0.893
19:21:46	13-JY	112.33	10.50	104.9	488.40	398.72	0.890
19:21:51	13-JY	112.42	10.59	104.9	493.19	403.51	0.887
19:21:56	13-JY	112.50	10.67	104.9	496.75	407.07	0.884
19:22: 1	13-JY	112.58	10.75	104.9	499.95	410.27	0.882
19:22: 6	13-JY	112.67	10.84	104.9	503.00	413.32	0.878
19:22:11	13-JY	112.75	10.92	104.9	506.13	416.45	0.876
19:22:16	13-JY	112.83	11.00	104.9	509.10	419.42	0.873
19:22:21	13-JY	112.92	11.09	104.9	512.02	422.34	0.870
19:22:26	13-JY	113.00	11.17	104.9	514.79	425.11	0.867
19:22:31	13-JY	113.08	11.25	104.9	517.56	427.88	0.864
19:22:36	13-JY	113.17	11.34	104.9	520.36	430.68	0.861
19:22:41	13-JY	113.25	11.42	104.9	523.53	433.85	0.859
19:22:46	13-JY	113.33	11.50	104.9	526.73	437.05	0.856
19:22:51	13-JY	113.42	11.59	104.9	529.53	439.85	0.853
19:22:56	13-JY	113.50	11.67	104.9	532.49	442.81	0.851
19:23: 1	13-JY	113.58	11.75	104.9	535.41	445.73	0.848
19:23: 6	13-JY	113.67	11.84	104.9	538.32	448.64	0.845
19:23:11	13-JY	113.75	11.92	104.9	541.16	451.48	0.843

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19:23:16	13-JY	113.83	12.00	104.9	544.01	454.33	0.840
19:23:21	13-JY	113.92	12.09	104.9	546.98	457.30	0.838
19:23:26	13-JY	114.00	12.17	104.9	549.77	460.09	0.835
19:23:31	13-JY	114.08	12.25	104.9	552.47	462.79	0.833
19:23:36	13-JY	114.17	12.34	104.9	555.00	465.32	0.830
19:23:41	13-JY	114.25	12.42	104.9	557.72	468.04	0.828
19:23:46	13-JY	114.33	12.50	104.9	560.48	470.80	0.825
19:23:51	13-JY	114.42	12.59	104.9	563.42	473.74	0.823
19:23:56	13-JY	114.50	12.67	104.9	565.76	476.08	0.820
19:24: 1	13-JY	114.58	12.75	104.9	568.12	478.44	0.818
19:24: 6	13-JY	114.67	12.84	104.9	570.79	481.11	0.815
19:24:11	13-JY	114.75	12.92	104.9	573.40	483.72	0.813
19:24:16	13-JY	114.83	13.00	105.0	575.87	486.19	0.811
19:24:21	13-JY	114.92	13.09	105.0	578.28	488.60	0.808
19:24:26	13-JY	115.00	13.17	105.0	580.65	490.97	0.806
19:24:31	13-JY	115.08	13.25	105.0	583.14	493.46	0.804
19:24:36	13-JY	115.17	13.34	105.0	585.57	495.89	0.801
19:24:41	13-JY	115.25	13.42	105.0	588.17	498.49	0.799
19:24:46	13-JY	115.33	13.50	105.0	590.47	500.79	0.797
19:24:51	13-JY	115.42	13.59	105.0	592.78	503.10	0.795
19:24:56	13-JY	115.50	13.67	105.0	595.23	505.55	0.792
19:25: 1	13-JY	115.58	13.75	105.0	597.67	507.99	0.790
19:25: 6	13-JY	115.67	13.84	105.0	600.04	510.36	0.788
19:25:11	13-JY	115.75	13.92	105.0	602.34	512.66	0.786
19:25:16	13-JY	115.83	14.00	105.0	604.79	515.11	0.784
19:25:21	13-JY	115.92	14.09	105.0	606.92	517.24	0.781
19:25:26	13-JY	116.00	14.17	105.0	609.15	519.47	0.779
19:25:31	13-JY	116.08	14.25	105.0	611.33	521.65	0.777
19:25:36	13-JY	116.17	14.34	105.0	613.74	524.06	0.775
19:25:41	13-JY	116.25	14.42	105.0	616.22	526.54	0.773
19:25:46	13-JY	116.33	14.50	105.0	618.56	528.88	0.771
19:25:51	13-JY	116.42	14.59	105.0	620.60	530.92	0.769
19:25:56	13-JY	116.50	14.67	105.0	622.62	532.94	0.767
19:26: 1	13-JY	116.58	14.75	105.0	625.06	535.38	0.765
19:26: 6	13-JY	116.67	14.84	105.0	627.27	537.59	0.763
19:26:11	13-JY	116.75	14.92	105.0	629.55	539.87	0.761
19:26:16	13-JY	116.83	15.00	105.0	631.82	542.14	0.759
19:26:21	13-JY	116.92	15.09	105.0	634.21	544.53	0.757
19:26:26	13-JY	117.00	15.17	105.0	636.15	546.47	0.755
19:26:31	13-JY	117.08	15.25	105.0	638.66	548.98	0.753
19:26:36	13-JY	117.17	15.34	105.0	640.63	550.95	0.751
19:26:41	13-JY	117.25	15.42	105.0	642.73	553.05	0.749
19:26:46	13-JY	117.33	15.50	105.0	644.65	554.97	0.747
19:26:51	13-JY	117.42	15.59	105.0	646.83	557.15	0.745
19:26:56	13-JY	117.50	15.67	105.0	648.93	559.25	0.743
19:27: 1	13-JY	117.58	15.75	105.0	650.93	561.25	0.741
19:27: 6	13-JY	117.67	15.84	105.0	652.92	563.24	0.739
19:27:11	13-JY	117.75	15.92	105.0	654.98	565.30	0.738

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORN TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19:27:16	13-JY	117.83	16.00	105.0	656.88	567.20	0.736
19:27:21	13-JY	117.92	16.09	105.0	658.79	569.11	0.734
19:27:26	13-JY	118.00	16.17	105.0	660.98	571.30	0.732
19:27:31	13-JY	118.08	16.25	105.0	662.81	573.13	0.730
19:27:36	13-JY	118.17	16.34	105.0	664.71	575.03	0.728
19:27:41	13-JY	118.25	16.42	105.0	666.64	576.96	0.727
19:27:46	13-JY	118.33	16.50	105.0	668.43	578.75	0.725
19:27:51	13-JY	118.42	16.59	105.0	670.31	580.63	0.723
19:27:56	13-JY	118.50	16.67	105.0	672.29	582.61	0.721
19:28: 1	13-JY	118.58	16.75	105.0	673.93	584.25	0.720
19:28: 6	13-JY	118.67	16.84	105.0	686.60	596.92	0.718
19:28:11	13-JY	118.75	16.92	105.0	686.22	596.54	0.716
19:28:16	13-JY	118.83	17.00	105.0	675.99	586.31	0.714
19:28:21	13-JY	118.92	17.09	105.0	680.88	591.20	0.713
19:28:26	13-JY	119.00	17.17	105.0	681.83	592.15	0.711
19:28:31	13-JY	119.08	17.25	105.0	684.40	594.72	0.709
19:28:36	13-JY	119.17	17.34	105.0	685.51	595.83	0.708
19:28:41	13-JY	119.25	17.42	105.0	687.85	598.17	0.706
19:28:46	13-JY	119.33	17.50	105.0	689.14	599.46	0.704
19:28:51	13-JY	119.42	17.59	105.0	691.02	601.34	0.703
19:28:56	13-JY	119.50	17.67	105.0	692.65	602.97	0.701
19:29: 1	13-JY	119.58	17.75	105.0	694.43	604.75	0.699
19:29: 6	13-JY	119.67	17.84	105.0	696.10	606.42	0.698
19:29:11	13-JY	119.75	17.92	105.0	697.66	607.98	0.696
19:29:16	13-JY	119.83	18.00	105.0	699.43	609.75	0.695
19:29:21	13-JY	119.92	18.09	105.0	700.81	611.13	0.693
19:29:26	13-JY	120.00	18.17	105.0	702.61	612.93	0.691
19:29:31	13-JY	120.08	18.25	105.0	704.17	614.49	0.690
19:29:36	13-JY	120.17	18.34	105.0	705.78	616.10	0.688
19:29:41	13-JY	120.25	18.42	105.0	707.43	617.75	0.687
19:29:46	13-JY	120.33	18.50	105.0	709.04	619.36	0.685
19:29:51	13-JY	120.42	18.59	105.0	710.49	620.81	0.683
19:29:56	13-JY	120.50	18.67	105.0	712.12	622.44	0.682
19:30: 1	13-JY	120.58	18.75	105.0	713.66	623.98	0.680
19:30: 6	13-JY	120.67	18.84	105.0	715.26	625.58	0.679
19:30:11	13-JY	120.75	18.92	105.0	716.78	627.10	0.677
19:30:16	13-JY	120.83	19.00	105.0	718.35	628.67	0.676
19:30:21	13-JY	120.92	19.09	105.0	719.80	630.12	0.674
19:30:26	13-JY	121.00	19.17	105.1	721.41	631.73	0.673
19:30:31	13-JY	121.08	19.25	105.1	722.89	633.21	0.671
19:35:31	13-JY	126.08	24.25	105.1	806.62	716.94	0.595
19:40:31	13-JY	131.08	29.25	105.1	874.51	784.83	0.535
19:45:31	13-JY	136.08	34.25	105.1	943.86	854.18	0.488
19:50:31	13-JY	141.08	39.25	105.0	992.53	902.85	0.449
19:55:31	13-JY	146.08	44.25	105.0	1023.23	933.55	0.416
20: 0:31	13-JY	151.08	49.25	104.9	1048.60	958.92	0.388
20: 5:31	13-JY	156.08	54.25	104.8	1069.70	980.02	0.364
20:10:31	13-JY	161.08	59.25	104.7	1087.61	997.93	0.342

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
20:15:31	13-JY	166.08	64.25	104.7	1102.77	1013.09	0.324
20:20:31	13-JY	171.08	69.25	104.6	1115.68	1026.00	0.307
20:25:31	13-JY	176.08	74.25	104.5	1126.70	1037.02	0.292
20:30:31	13-JY	181.08	79.25	104.4	1136.36	1046.68	0.278
20:35:31	13-JY	186.08	84.25	104.4	1144.56	1054.88	0.266
20:40:31	13-JY	191.08	89.25	104.3	1151.47	1061.79	0.254
20:45:31	13-JY	196.08	94.25	104.3	1157.49	1067.81	0.244
20:50:31	13-JY	201.08	99.25	104.2	1162.78	1073.10	0.235
20:55:31	13-JY	206.08	104.25	104.1	1167.40	1077.72	0.226
21: 0:31	13-JY	211.08	109.25	104.1	1171.30	1081.62	0.218
21: 5:31	13-JY	216.08	114.25	104.0	1174.80	1085.12	0.210
21:10:31	13-JY	221.08	119.25	103.9	1177.71	1088.03	0.203
21:15:31	13-JY	226.08	124.25	103.9	1180.62	1090.94	0.196
21:20:31	13-JY	231.08	129.25	103.8	1182.92	1093.24	0.190
21:25:31	13-JY	236.08	134.25	103.8	1184.95	1095.27	0.185
21:30:31	13-JY	241.08	139.25	103.7	1186.85	1097.17	0.179
21:35:31	13-JY	246.08	144.25	103.7	1188.38	1098.70	0.174
21:40:31	13-JY	251.08	149.25	103.6	1189.93	1100.25	0.169
21:45:31	13-JY	256.08	154.25	103.6	1191.32	1101.64	0.165
21:50:31	13-JY	261.08	159.25	103.5	1192.41	1102.73	0.160
21:55:31	13-JY	266.08	164.25	103.5	1193.63	1103.95	0.156
22: 0:31	13-JY	271.08	169.25	103.4	1194.55	1104.87	0.152
22: 5:31	13-JY	276.08	174.25	103.4	1195.42	1105.74	0.149
22:10:31	13-JY	281.08	179.25	103.4	1196.28	1106.60	0.145
22:15:31	13-JY	286.08	184.25	103.3	1197.01	1107.33	0.142
22:20:31	13-JY	291.08	189.25	103.3	1197.74	1108.06	0.138
22:25:31	13-JY	296.08	194.25	103.3	1198.33	1108.65	0.135
22:30:31	13-JY	301.08	199.25	103.2	1199.04	1109.36	0.132
22:35:31	13-JY	306.08	204.25	103.2	1199.52	1109.84	0.130
22:40:31	13-JY	311.08	209.25	103.2	1200.15	1110.47	0.127
22:45:31	13-JY	316.08	214.25	103.2	1200.61	1110.93	0.124
22:50:31	13-JY	321.08	219.25	103.1	1201.08	1111.40	0.122
22:55:31	13-JY	326.08	224.25	103.1	1201.54	1111.86	0.120
23: 0:31	13-JY	331.08	229.25	103.1	1201.94	1112.26	0.117
23: 5:31	13-JY	336.08	234.25	103.1	1202.40	1112.72	0.115
23:10:31	13-JY	341.08	239.25	103.0	1202.77	1113.09	0.113
23:15:31	13-JY	346.08	244.25	103.0	1203.03	1113.35	0.111
23:20:31	13-JY	351.08	249.25	103.0	1203.34	1113.66	0.109
23:25:31	13-JY	356.08	254.25	102.9	1203.69	1114.01	0.107
23:30:31	13-JY	361.08	259.25	102.9	1204.02	1114.34	0.105
23:35:31	13-JY	366.08	264.25	102.9	1204.37	1114.69	0.103
23:40:31	13-JY	371.08	269.25	102.9	1204.70	1115.02	0.102
23:45:31	13-JY	376.08	274.25	102.9	1204.85	1115.17	0.100
23:50:31	13-JY	381.08	279.25	102.8	1205.10	1115.42	0.098
23:55:31	13-JY	386.08	284.25	102.8	1205.44	1115.76	0.097
0: 0:31	14-JY	391.08	289.25	102.8	1205.55	1115.87	0.095
0: 5:31	14-JY	396.08	294.25	102.8	1205.87	1116.19	0.094
0:10:31	14-JY	401.08	299.25	102.8	1206.09	1116.41	0.093

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
0:15:31	14-JY	406.08	304.25	102.8	1206.35	1116.67	0.091
0:20:31	14-JY	411.08	309.25	102.8	1206.45	1116.77	0.090
0:25:31	14-JY	416.08	314.25	102.7	1206.70	1117.02	0.089
0:30:31	14-JY	421.08	319.25	102.7	1206.79	1117.11	0.087
0:35:31	14-JY	426.08	324.25	102.7	1207.05	1117.37	0.086
0:40:31	14-JY	431.08	329.25	102.7	1207.33	1117.65	0.085
0:45:31	14-JY	436.08	334.25	102.7	1207.48	1117.80	0.084
0:50:31	14-JY	441.08	339.25	102.7	1207.61	1117.93	0.083
0:55:31	14-JY	446.08	344.25	102.7	1207.81	1118.13	0.082
1: 0:31	14-JY	451.08	349.25	102.7	1208.00	1118.32	0.080
1: 5:31	14-JY	456.08	354.25	102.6	1208.10	1118.42	0.079
1:10:31	14-JY	461.08	359.25	102.6	1208.34	1118.66	0.078
1:15:31	14-JY	466.08	364.25	102.6	1208.47	1118.79	0.077
1:20:31	14-JY	471.08	369.25	102.6	1208.54	1118.86	0.076
1:25:31	14-JY	476.08	374.25	102.6	1208.71	1119.03	0.076
1:30:31	14-JY	481.08	379.25	102.6	1208.86	1119.18	0.075
1:35:31	14-JY	486.08	384.25	102.6	1209.08	1119.40	0.074
1:40:31	14-JY	491.08	389.25	102.6	1209.16	1119.48	0.073
1:45:31	14-JY	496.08	394.25	102.5	1209.26	1119.58	0.072
1:50:31	14-JY	501.08	399.25	102.5	1209.30	1119.62	0.071
1:55:31	14-JY	506.08	404.25	102.5	1209.41	1119.73	0.070
2: 0:31	14-JY	511.08	409.25	102.5	1209.49	1119.81	0.070
2: 5:31	14-JY	516.08	414.25	102.5	1209.73	1120.05	0.069
2:10:31	14-JY	521.08	419.25	102.5	1209.86	1120.18	0.068
2:15:31	14-JY	526.08	424.25	102.5	1209.93	1120.25	0.067
2:20:31	14-JY	531.08	429.25	102.5	1210.04	1120.36	0.067
2:25:31	14-JY	536.08	434.25	102.5	1210.07	1120.39	0.066
2:30:31	14-JY	541.08	439.25	102.5	1210.38	1120.70	0.065
2:35:31	14-JY	546.08	444.25	102.5	1210.44	1120.76	0.064
2:40:31	14-JY	551.08	449.25	102.5	1210.42	1120.74	0.064
2:45:31	14-JY	556.08	454.25	102.5	1210.53	1120.85	0.063
2:50:31	14-JY	561.08	459.25	102.4	1210.74	1121.06	0.062
2:55:31	14-JY	566.08	464.25	102.4	1210.71	1121.03	0.062
3: 0:31	14-JY	571.08	469.25	102.4	1210.91	1121.23	0.061
3: 5:31	14-JY	576.08	474.25	102.4	1210.99	1121.31	0.061
3:10:31	14-JY	581.08	479.25	102.4	1211.13	1121.45	0.060
3:15:31	14-JY	586.08	484.25	102.4	1211.24	1121.56	0.059
3:20:31	14-JY	591.08	489.25	102.4	1211.37	1121.69	0.059
3:25:31	14-JY	596.08	494.25	102.4	1211.45	1121.77	0.058
3:30:31	14-JY	601.08	499.25	102.4	1211.54	1121.86	0.058
3:35:31	14-JY	606.08	504.25	102.4	1211.62	1121.94	0.057
3:40:31	14-JY	611.08	509.25	102.4	1211.68	1122.00	0.057
3:45:31	14-JY	616.08	514.25	102.4	1211.76	1122.08	0.056
3:50:31	14-JY	621.08	519.25	102.4	1211.91	1122.23	0.056
3:55:31	14-JY	626.08	524.25	102.4	1211.97	1122.29	0.055
4: 0:31	14-JY	631.08	529.25	102.4	1211.96	1122.28	0.055
4: 5:31	14-JY	636.08	534.25	102.4	1212.13	1122.45	0.054
4:10:31	14-JY	641.08	539.25	102.3	1212.21	1122.53	0.054

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY	DATE	ELAPSED	DELTA	BOT HOLE TEMP.	BOT HOLE PRESSURE	DELTA P	LOG HORNER
HH:MM:SS	DD-MM	TIME, MIN	TIME, MIN	DEG F	PSIA	PSI	TIME
*****	*****	*****	*****	*****	*****	*****	*****
4:15:31	14-JY	646.08	544.25	102.3	1212.27	1122.59	0.053
4:20:31	14-JY	651.08	549.25	102.3	1212.38	1122.70	0.053
4:25:31	14-JY	656.08	554.25	102.3	1212.40	1122.72	0.052
4:30:31	14-JY	661.08	559.25	102.3	1212.49	1122.81	0.052
4:35:31	14-JY	666.08	564.25	102.3	1212.54	1122.86	0.052
4:40:31	14-JY	671.08	569.25	102.3	1212.57	1122.89	0.051
4:45:31	14-JY	676.08	574.25	102.3	1212.71	1123.03	0.051
4:50:31	14-JY	681.08	579.25	102.3	1212.81	1123.13	0.050
4:55:31	14-JY	686.08	584.25	102.3	1212.81	1123.13	0.050
5: 0:31	14-JY	691.08	589.25	102.3	1212.79	1123.11	0.049
5: 5:31	14-JY	696.08	594.25	102.3	1212.98	1123.30	0.049
5:10:31	14-JY	701.08	599.25	102.3	1213.03	1123.35	0.049
5:15:31	14-JY	706.08	604.25	102.3	1213.12	1123.44	0.048
5:20:31	14-JY	711.08	609.25	102.3	1213.14	1123.46	0.048
5:25:31	14-JY	716.08	614.25	102.3	1213.20	1123.52	0.048
5:30:31	14-JY	721.08	619.25	102.3	1213.28	1123.60	0.047
5:35:31	14-JY	726.08	624.25	102.3	1213.35	1123.67	0.047
5:40:31	14-JY	731.08	629.25	102.3	1213.52	1123.84	0.046
5:45:31	14-JY	736.08	634.25	102.3	1213.56	1123.88	0.046
5:50:31	14-JY	741.08	639.25	102.3	1213.63	1123.95	0.046
5:55:31	14-JY	746.08	644.25	102.3	1213.60	1123.92	0.045
6: 0:31	14-JY	751.08	649.25	102.3	1213.58	1123.90	0.045
6: 5:31	14-JY	756.08	654.25	102.3	1213.70	1124.02	0.045
6:10:31	14-JY	761.08	659.25	102.3	1213.85	1124.17	0.044
6:15:31	14-JY	766.08	664.25	102.3	1213.89	1124.21	0.044
6:20:31	14-JY	771.08	669.25	102.3	1213.88	1124.20	0.044
6:25:31	14-JY	776.08	674.25	102.3	1213.96	1124.28	0.044
6:30:31	14-JY	781.08	679.25	102.3	1214.02	1124.34	0.043
6:35:31	14-JY	786.08	684.25	102.3	1214.03	1124.35	0.043
6:40:31	14-JY	791.08	689.25	102.2	1214.06	1124.38	0.043
6:45:31	14-JY	796.08	694.25	102.2	1214.11	1124.43	0.042
6:50:31	14-JY	801.08	699.25	102.2	1214.26	1124.58	0.042
6:55:31	14-JY	806.08	704.25	102.2	1214.31	1124.63	0.042
7: 0:31	14-JY	811.08	709.25	102.2	1214.40	1124.72	0.041
7: 5:31	14-JY	816.08	714.25	102.2	1214.37	1124.69	0.041
7:10:31	14-JY	821.08	719.25	102.2	1214.43	1124.75	0.041
7:15:31	14-JY	826.08	724.25	102.2	1214.62	1124.94	0.041
7:20:31	14-JY	831.08	729.25	102.2	1214.51	1124.83	0.040
7:25:31	14-JY	836.08	734.25	102.2	1214.56	1124.88	0.040
7:30:31	14-JY	841.08	739.25	102.2	1214.61	1124.93	0.040
7:35:31	14-JY	846.08	744.25	102.2	1214.69	1125.01	0.040
7:40:31	14-JY	851.08	749.25	102.2	1214.75	1125.07	0.039
7:45:31	14-JY	856.08	754.25	102.2	1214.88	1125.20	0.039
7:50:31	14-JY	861.08	759.25	102.2	1214.86	1125.18	0.039
7:55:31	14-JY	866.08	764.25	102.2	1214.98	1125.30	0.039
8: 0:31	14-JY	871.08	769.25	102.2	1214.97	1125.29	0.038
8: 5:31	14-JY	876.08	774.25	102.2	1214.97	1125.29	0.038
8:10:31	14-JY	881.08	779.25	102.2	1214.98	1125.30	0.038

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
8:15:31	14-JY	886.08	784.25	102.2	1215.18	1125.50	0.038
8:20:31	14-JY	891.08	789.25	102.2	1215.13	1125.45	0.037
8:25:31	14-JY	896.08	794.25	102.2	1215.26	1125.58	0.037
8:30:31	14-JY	901.08	799.25	102.2	1215.26	1125.58	0.037
8:35:31	14-JY	906.08	804.25	102.2	1215.31	1125.63	0.037
8:40:31	14-JY	911.08	809.25	102.2	1215.35	1125.67	0.037
8:45:31	14-JY	916.08	814.25	102.2	1215.39	1125.71	0.036
8:50:31	14-JY	921.08	819.25	102.2	1215.44	1125.76	0.036
8:55:31	14-JY	926.08	824.25	102.2	1215.52	1125.84	0.036
9: 0:31	14-JY	931.08	829.25	102.2	1215.47	1125.79	0.036
9: 5:31	14-JY	936.08	834.25	102.2	1215.60	1125.92	0.036
9:10:31	14-JY	941.08	839.25	102.2	1215.63	1125.95	0.035
9:15:31	14-JY	946.08	844.25	102.2	1215.61	1125.93	0.035
9:20:31	14-JY	951.08	849.25	102.2	1215.61	1125.93	0.035
9:25:31	14-JY	956.08	854.25	102.2	1215.69	1126.01	0.035
9:30:31	14-JY	961.08	859.25	102.2	1215.72	1126.04	0.035
9:35:31	14-JY	966.08	864.25	102.2	1215.66	1125.98	0.034
9:40:31	14-JY	971.08	869.25	102.2	1215.66	1125.98	0.034
9:45:31	14-JY	976.08	874.25	102.2	1215.80	1126.12	0.034
9:50:31	14-JY	981.08	879.25	102.2	1215.85	1126.17	0.034
9:55:31	14-JY	986.08	884.25	102.2	1215.80	1126.12	0.034
10: 0:31	14-JY	991.08	889.25	102.2	1215.92	1126.24	0.033
10: 5:31	14-JY	996.08	894.25	102.2	1215.86	1126.18	0.033
10:10:31	14-JY	1001.08	899.25	102.2	1215.87	1126.19	0.033
10:15:31	14-JY	1006.08	904.25	102.2	1215.97	1126.29	0.033
10:20:31	14-JY	1011.08	909.25	102.2	1215.93	1126.25	0.033
10:25:31	14-JY	1016.08	914.25	102.2	1216.09	1126.41	0.033
10:28:41	14-JY	1019.25	917.42	102.2	1216.01	1126.33	0.032
10:28:46	14-JY	1019.33	917.50	102.2	1216.04	1126.36	0.032
10:28:51	14-JY	1019.42	917.59	102.2	1216.07	1126.39	0.032
10:28:56	14-JY	1019.50	917.67	102.2	1216.03	1126.35	0.032
10:29: 1	14-JY	1019.58	917.75	102.2	1216.06	1126.38	0.032
10:29: 6	14-JY	1019.67	917.84	102.2	1216.06	1126.38	0.032
10:29:11	14-JY	1019.75	917.92	102.2	1216.04	1126.36	0.032
10:29:16	14-JY	1019.83	918.00	102.2	1216.03	1126.35	0.032
10:29:21	14-JY	1019.92	918.09	102.2	1216.08	1126.40	0.032
10:29:26	14-JY	1020.00	918.17	102.2	1216.05	1126.37	0.032
10:29:31	14-JY	1020.08	918.25	102.2	1216.04	1126.36	0.032
10:29:36	14-JY	1020.17	918.34	102.2	1216.09	1126.41	0.032
10:29:41	14-JY	1020.25	918.42	102.2	1216.08	1126.40	0.032
10:29:46	14-JY	1020.33	918.50	102.2	1216.06	1126.38	0.032
10:29:51	14-JY	1020.42	918.59	102.2	1216.10	1126.42	0.032
10:29:56	14-JY	1020.50	918.67	102.2	1216.11	1126.43	0.032
10:30: 1	14-JY	1020.58	918.75	102.2	1216.02	1126.34	0.032
10:30: 6	14-JY	1020.67	918.84	102.2	1216.02	1126.34	0.032
10:30:11	14-JY	1020.75	918.92	102.2	1215.97	1126.29	0.032
10:30:16	14-JY	1020.83	919.00	102.2	1216.00	1126.32	0.032
10:30:21	14-JY	1020.92	919.09	102.2	1216.02	1126.34	0.032

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
10:30:26	14-JY	1021.00	919.17	102.2	1216.07	1126.39	0.032
10:30:31	14-JY	1021.08	919.25	102.2	1216.09	1126.41	0.032
10:30:36	14-JY	1021.17	919.34	102.2	1216.02	1126.34	0.032
10:30:41	14-JY	1021.25	919.42	102.2	1216.06	1126.38	0.032
10:30:46	14-JY	1021.33	919.50	102.2	1216.01	1126.33	0.032
10:30:51	14-JY	1021.42	919.59	102.2	1216.01	1126.33	0.032
10:30:56	14-JY	1021.50	919.67	102.2	1216.01	1126.33	0.032
10:31: 1	14-JY	1021.58	919.75	102.2	1216.02	1126.34	0.032
10:31: 6	14-JY	1021.67	919.84	102.2	1216.03	1126.35	0.032
10:31:11	14-JY	1021.75	919.92	102.2	1216.08	1126.40	0.032
10:31:16	14-JY	1021.83	920.00	102.2	1216.12	1126.44	0.032
10:31:21	14-JY	1021.92	920.09	102.2	1216.20	1126.52	0.032
10:31:26	14-JY	1022.00	920.17	102.2	1216.06	1126.38	0.032
10:31:31	14-JY	1022.08	920.25	102.2	1216.05	1126.37	0.032
10:31:36	14-JY	1022.17	920.34	102.2	1216.02	1126.34	0.032
10:31:41	14-JY	1022.25	920.42	102.2	1215.97	1126.29	0.032
10:31:46	14-JY	1022.33	920.50	102.2	1215.99	1126.31	0.032
10:31:51	14-JY	1022.42	920.59	102.2	1216.04	1126.36	0.032
10:31:56	14-JY	1022.50	920.67	102.2	1216.04	1126.36	0.032
10:32: 1	14-JY	1022.58	920.75	102.2	1215.99	1126.31	0.032
10:32: 6	14-JY	1022.67	920.84	102.2	1215.99	1126.31	0.032
10:32:11	14-JY	1022.75	920.92	102.2	1216.02	1126.34	0.032
10:32:16	14-JY	1022.83	921.00	102.2	1216.04	1126.36	0.032
10:32:21	14-JY	1022.92	921.09	102.2	1216.04	1126.36	0.032
10:32:26	14-JY	1023.00	921.17	102.2	1215.99	1126.31	0.032
10:32:31	14-JY	1023.08	921.25	102.2	1216.04	1126.36	0.032
10:32:36	14-JY	1023.17	921.34	102.2	1216.03	1126.35	0.032
10:32:41	14-JY	1023.25	921.42	102.2	1216.03	1126.35	0.032
10:32:46	14-JY	1023.33	921.50	102.2	1216.06	1126.38	0.032
10:32:51	14-JY	1023.42	921.59	102.2	1216.00	1126.32	0.032
10:32:56	14-JY	1023.50	921.67	102.2	1216.00	1126.32	0.032
10:33: 1	14-JY	1023.58	921.75	102.2	1215.99	1126.31	0.032
10:33: 6	14-JY	1023.67	921.84	102.2	1216.03	1126.35	0.032
10:33:11	14-JY	1023.75	921.92	102.2	1216.05	1126.37	0.032
10:33:16	14-JY	1023.83	922.00	102.2	1216.02	1126.34	0.032
10:33:21	14-JY	1023.92	922.09	102.2	1216.00	1126.32	0.032
10:33:26	14-JY	1024.00	922.17	102.2	1216.03	1126.35	0.032
10:33:31	14-JY	1024.08	922.25	102.2	1216.09	1126.41	0.032
10:33:36	14-JY	1024.17	922.34	102.2	1216.07	1126.39	0.032
10:33:41	14-JY	1024.25	922.42	102.2	1216.01	1126.33	0.032
10:33:46	14-JY	1024.33	922.50	102.2	1216.05	1126.37	0.032
10:33:51	14-JY	1024.42	922.59	102.2	1216.00	1126.32	0.032
10:33:56	14-JY	1024.50	922.67	102.2	1215.98	1126.30	0.032
10:34: 1	14-JY	1024.58	922.75	102.2	1216.04	1126.36	0.032
10:34: 6	14-JY	1024.67	922.84	102.2	1216.16	1126.48	0.032
10:34:11	14-JY	1024.75	922.92	102.2	1216.25	1126.57	0.032
10:34:16	14-JY	1024.83	923.00	102.2	1216.44	1126.76	0.032
10:34:21	14-JY	1024.92	923.09	102.2	1216.60	1126.92	0.032

Table D.1-2. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 1

FINAL FLOW PRESSURE [PSIA] = 89.68

PRODUCING TIME [MIN] = 71.08

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM						
10:34:26	14-JY	1025.00	923.17	102.2	1216.73	1127.05	0.032
10:34:31	14-JY	1025.08	923.25	102.2	1216.66	1126.98	0.032
10:34:36	14-JY	1025.17	923.34	102.2	1216.87	1127.19	0.032
10:34:41	14-JY	1025.25	923.42	102.2	1216.90	1127.22	0.032
10:34:46	14-JY	1025.33	923.50	102.2	1216.89	1127.21	0.032
10:34:51	14-JY	1025.42	923.59	102.2	1216.99	1127.31	0.032
10:34:56	14-JY	1025.50	923.67	102.2	1217.27	1127.59	0.032
10:35: 1	14-JY	1025.58	923.75	102.2	1216.81	1127.13	0.032
10:35: 6	14-JY	1025.67	923.84	102.2	1216.33	1126.65	0.032
10:35:11	14-JY	1025.75	923.92	102.2	1216.64	1126.96	0.032
10:35:16	14-JY	1025.83	924.00	102.2	1216.82	1127.14	0.032
10:35:21	14-JY	1025.92	924.09	102.2	1216.97	1127.29	0.032
10:35:26	14-JY	1026.00	924.17	102.2	1216.93	1127.25	0.032
10:35:31	14-JY	1026.08	924.25	102.2	1216.94	1127.26	0.032
10:35:36	14-JY	1026.17	924.34	102.2	1216.78	1127.10	0.032

TEST PHASE : FLOW PERIOD # 2

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	
HH:MM:SS	DD-MM					
10:35:36	14-JY	1026.17	0.00	102.2	1216.78	
10:35:41	14-JY	1026.25	0.08	102.2	1265.48	End recovery
10:35:46	14-JY	1026.33	0.16	102.2	1213.58	
10:35:51	14-JY	1026.42	0.25	102.2	1223.89	
10:35:56	14-JY	1026.50	0.33	102.2	1257.63	
10:36: 1	14-JY	1026.58	0.41	102.2	1260.76	
10:36: 6	14-JY	1026.67	0.50	102.2	1261.24	
10:36:11	14-JY	1026.75	0.58	102.2	1262.60	
10:36:16	14-JY	1026.83	0.66	102.2	1263.02	
10:36:21	14-JY	1026.92	0.75	102.2	1230.69	
10:36:26	14-JY	1027.00	0.83	102.2	1222.94	
10:36:31	14-JY	1027.08	0.91	102.2	1223.39	
10:36:36	14-JY	1027.17	1.00	102.2	1244.57	
10:36:41	14-JY	1027.25	1.08	102.2	1266.94	
10:36:46	14-JY	1027.33	1.16	102.2	1266.94	
10:36:51	14-JY	1027.42	1.25	102.2	1269.37	
10:36:56	14-JY	1027.50	1.33	102.2	1269.31	
10:37: 1	14-JY	1027.58	1.41	102.2	1270.25	
10:37: 6	14-JY	1027.67	1.50	102.2	1272.90	
10:37:11	14-JY	1027.75	1.58	102.2	1273.29	
10:37:16	14-JY	1027.83	1.66	102.2	1274.41	
10:37:21	14-JY	1027.92	1.75	102.2	1273.01	
10:37:26	14-JY	1028.00	1.83	102.2	1276.47

SHUTIN No. 1: FINAL FLOW PRESSURE (P_{WF}): 90 PSIA
 PLOT ELAPSED TIME RANGE: 101.9 TO 1026.2 MIN
 PLOT ΔT TIME RANGE: 0.1 TO 924.3 MIN
 PRODUCING TIME (T_P): 71.1 MIN

Horner Plot to Determine PI
 Test Zone No. 1 Lower Permian Wolfcamp

Figure D.1-4

Table D.1-3. Summary of Average Discharge Rates
Test Zone No. 1 Lower Permian Wolfcamp

Date (1982)	Elapsed Time (Min)	STB/Day	SWEC Drawdown
			No.
August 6 - August 14	34,307.18 to 46,455.43	192	1
August 18 - August 26	51,315.18 to 62,954.27	180	2

Average Daily Discharge
Drawdown No. 1

	<u>GPM</u>	
August 6	5.6	192
August 7	5.6	192
August 8	5.6	192
August 9	5.6	192
August 10	5.6	192
August 11	5.6	192
August 12	5.6	192
August 13	5.6	192
August 14	5.6	192

Table D.1-4. Recovery Test No. 10 Data Listing to Determine K
Test Zone No. 1 Lower Permian Wolfcamp

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10
 FINAL FLOW PRESSURE [PSIA] = 791.48
 PRODUCING TIME [MIN] = 13489.57

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
23:44:52	14-AU	46455.43	0.00	105.6	791.48	0.00	
23:59:52	14-AU	46470.43	15.00	105.5	978.60	187.12	2.954
0:14:52	15-AU	46485.43	30.00	105.3	990.08	198.60	2.654
0:29:52	15-AU	46500.43	45.00	105.2	996.56	205.08	2.478
0:44:52	15-AU	46515.43	60.00	105.0	1001.18	209.70	2.354
0:59:52	15-AU	46530.43	75.00	104.9	1004.84	213.36	2.257
1:14:52	15-AU	46545.43	90.00	104.8	1008.06	216.58	2.179
1:29:52	15-AU	46560.43	105.00	104.7	1010.84	219.36	2.112
1:44:52	15-AU	46575.43	120.00	104.6	1013.19	221.71	2.055
1:59:52	15-AU	46590.43	135.00	104.5	1015.56	224.08	2.004
2:14:52	15-AU	46605.43	150.00	104.4	1017.57	226.09	1.959
2:29:52	15-AU	46620.43	165.00	104.3	1019.57	228.09	1.918
2:44:52	15-AU	46635.43	180.00	104.3	1021.43	229.95	1.880
2:59:52	15-AU	46650.43	195.00	104.2	1023.28	231.80	1.846
3:14:52	15-AU	46665.43	210.00	104.2	1024.86	233.38	1.814
3:29:52	15-AU	46680.43	225.00	104.1	1026.59	235.11	1.785
3:44:52	15-AU	46695.43	240.00	104.1	1028.10	236.62	1.757
3:59:52	15-AU	46710.43	255.00	104.0	1029.60	238.12	1.732
4:14:52	15-AU	46725.43	270.00	104.0	1031.03	239.55	1.707
4:29:52	15-AU	46740.43	285.00	103.9	1032.47	240.99	1.684
4:44:52	15-AU	46755.43	300.00	103.9	1033.88	242.40	1.662
4:59:52	15-AU	46770.43	315.00	103.8	1035.15	243.67	1.642
5:14:52	15-AU	46785.43	330.00	103.8	1036.61	245.13	1.622
5:29:52	15-AU	46800.43	345.00	103.8	1037.92	246.44	1.603
5:44:52	15-AU	46815.43	360.00	103.8	1039.12	247.64	1.585
5:59:52	15-AU	46830.43	375.00	103.7	1040.30	248.82	1.568
6:14:52	15-AU	46845.43	390.00	103.7	1041.62	250.14	1.551
6:29:52	15-AU	46860.43	405.00	103.7	1042.68	251.20	1.535
6:44:52	15-AU	46875.43	420.00	103.7	1044.01	252.53	1.520
6:59:52	15-AU	46890.43	435.00	103.6	1045.11	253.63	1.505
7:14:52	15-AU	46905.43	450.00	103.6	1046.27	254.79	1.491
7:29:52	15-AU	46920.43	465.00	103.6	1047.20	255.72	1.477
7:44:52	15-AU	46935.43	480.00	103.6	1048.39	256.91	1.464
7:59:52	15-AU	46950.43	495.00	103.5	1049.45	257.97	1.451
8:14:52	15-AU	46965.43	510.00	103.5	1050.40	258.92	1.439
8:29:52	15-AU	46980.43	525.00	103.5	1051.44	259.96	1.426
8:44:52	15-AU	46995.43	540.00	103.5	1052.61	261.13	1.415
8:59:52	15-AU	47010.43	555.00	103.5	1053.44	261.96	1.403
9:14:52	15-AU	47025.43	570.00	103.4	1054.36	262.88	1.392
9:29:52	15-AU	47040.43	585.00	103.4	1055.54	264.06	1.381
9:44:52	15-AU	47055.43	600.00	103.4	1056.45	264.97	1.371
9:59:52	15-AU	47070.43	615.00	103.4	1057.47	265.99	1.360
10:14:52	15-AU	47085.43	630.00	103.4	1058.39	266.91	1.350
10:29:52	15-AU	47100.43	645.00	103.4	1059.28	267.80	1.341
10:44:52	15-AU	47115.43	660.00	103.4	1060.21	268.73	1.331
10:59:52	15-AU	47130.43	675.00	103.4	1061.21	269.73	1.322
11:14:52	15-AU	47145.43	690.00	103.3	1062.10	270.62	1.313
11:29:52	15-AU	47160.43	705.00	103.3	1062.97	271.49	1.304

Table D.1-4. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10

FINAL FLOW PRESSURE [PSIA] = 791.48

PRODUCING TIME [MIN] = 13489.57

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
11:44:52	15-AU	47175.43	720.00	103.3	1063.76	272.28	1.295
11:59:52	15-AU	47190.43	735.00	103.3	1064.07	272.59	1.287
12:14:52	15-AU	47205.43	750.00	103.3	1065.43	273.95	1.278
12:29:52	15-AU	47220.43	765.00	103.3	1066.24	274.76	1.270
12:44:52	15-AU	47235.43	780.00	103.3	1067.06	275.58	1.262
12:59:52	15-AU	47250.43	795.00	103.3	1067.91	276.43	1.255
13:14:52	15-AU	47265.43	810.00	103.3	1068.69	277.21	1.247
13:29:52	15-AU	47280.43	825.00	103.3	1069.57	278.09	1.239
13:44:52	15-AU	47295.43	840.00	103.3	1070.36	278.88	1.232
13:59:52	15-AU	47310.43	855.00	103.2	1071.17	279.69	1.225
14:14:52	15-AU	47325.43	870.00	103.2	1071.94	280.46	1.218
14:29:52	15-AU	47340.43	885.00	103.2	1072.73	281.25	1.211
14:44:52	15-AU	47355.43	900.00	103.2	1073.49	282.01	1.204
14:59:52	15-AU	47370.43	915.00	103.2	1074.36	282.88	1.197
15:14:52	15-AU	47385.43	930.00	103.2	1075.04	283.56	1.190
15:29:52	15-AU	47400.43	945.00	103.2	1075.65	284.17	1.184
15:44:52	15-AU	47415.43	960.00	103.2	1076.48	285.00	1.178
15:59:52	15-AU	47430.43	975.00	103.2	1077.24	285.76	1.171
16:14:52	15-AU	47445.43	990.00	103.2	1077.98	286.50	1.165
16:29:52	15-AU	47460.43	1005.00	103.2	1078.57	287.09	1.159
16:44:52	15-AU	47475.43	1020.00	103.2	1079.36	287.88	1.153
16:59:52	15-AU	47490.43	1035.00	103.2	1080.05	288.57	1.147
17:14:52	15-AU	47505.43	1050.00	103.1	1080.68	289.20	1.141
17:29:52	15-AU	47520.43	1065.00	103.1	1081.45	289.97	1.136
17:44:52	15-AU	47535.43	1080.00	103.1	1082.04	290.56	1.130
17:59:52	15-AU	47550.43	1095.00	103.1	1082.79	291.31	1.124
18:14:52	15-AU	47565.43	1110.00	103.1	1083.47	291.99	1.119
18:29:52	15-AU	47580.43	1125.00	103.1	1083.97	292.49	1.114
18:44:52	15-AU	47595.43	1140.00	103.1	1084.63	293.15	1.108
18:59:52	15-AU	47610.43	1155.00	103.1	1085.38	293.90	1.103
19:14:52	15-AU	47625.43	1170.00	103.1	1085.92	294.44	1.098
19:29:52	15-AU	47640.43	1185.00	103.1	1086.53	295.05	1.093
19:44:52	15-AU	47655.43	1200.00	103.1	1087.12	295.64	1.088
19:59:52	15-AU	47670.43	1215.00	103.1	1087.79	296.31	1.083
20:14:52	15-AU	47685.43	1230.00	103.1	1088.49	297.01	1.078
20:29:52	15-AU	47700.43	1245.00	103.1	1089.05	297.57	1.073
20:44:52	15-AU	47715.43	1260.00	103.1	1089.72	298.24	1.068
20:59:52	15-AU	47730.43	1275.00	103.1	1090.32	298.84	1.064
21:14:52	15-AU	47745.43	1290.00	103.1	1090.87	299.39	1.059
21:29:52	15-AU	47760.43	1305.00	103.1	1091.45	299.97	1.054
21:44:52	15-AU	47775.43	1320.00	103.1	1091.97	300.49	1.050
21:59:52	15-AU	47790.43	1335.00	103.0	1092.61	301.13	1.046
22:14:52	15-AU	47805.43	1350.00	103.0	1093.04	301.56	1.041
22:29:52	15-AU	47820.43	1365.00	103.0	1093.80	302.32	1.037
22:44:52	15-AU	47835.43	1380.00	103.0	1094.24	302.76	1.032
22:59:52	15-AU	47850.43	1395.00	103.0	1094.80	303.32	1.028
23:14:52	15-AU	47865.43	1410.00	103.0	1095.32	303.84	1.024
23:29:52	15-AU	47880.43	1425.00	103.0	1095.91	304.43	1.020

Table D.1-4. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10

FINAL FLOW PRESSURE [PSIA] = 791.48

PRODUCING TIME [MIN] = 13489.57

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
23:44:52	15-AU	47895.43	1440.00	103.0	1096.58	305.10	1.016
23:59:52	15-AU	47910.43	1455.00	103.0	1097.12	305.64	1.012
0:14:52	16-AU	47925.43	1470.00	103.0	1097.53	306.05	1.008
0:29:52	16-AU	47940.43	1485.00	103.0	1098.18	306.70	1.004
0:44:52	16-AU	47955.43	1500.00	103.0	1098.68	307.20	1.000
0:59:52	16-AU	47970.43	1515.00	103.0	1099.23	307.75	0.996
1:14:52	16-AU	47985.43	1530.00	103.0	1099.73	308.25	0.992
1:29:52	16-AU	48000.43	1545.00	103.0	1100.28	308.80	0.988
1:44:52	16-AU	48015.43	1560.00	103.0	1100.77	309.29	0.984
1:59:52	16-AU	48030.43	1575.00	103.0	1101.21	309.73	0.981
2:14:52	16-AU	48045.43	1590.00	103.0	1101.81	310.33	0.977
2:29:52	16-AU	48060.43	1605.00	103.0	1102.29	310.81	0.973
2:44:52	16-AU	48075.43	1620.00	103.0	1102.80	311.32	0.970
2:59:52	16-AU	48090.43	1635.00	103.0	1103.41	311.93	0.966
3:14:52	16-AU	48105.43	1650.00	103.0	1103.76	312.28	0.963
3:29:52	16-AU	48120.43	1665.00	103.0	1104.24	312.76	0.959
3:44:52	16-AU	48135.43	1680.00	102.9	1104.86	313.38	0.956
3:59:52	16-AU	48150.43	1695.00	102.9	1105.29	313.81	0.952
4:14:52	16-AU	48165.43	1710.00	102.9	1105.75	314.27	0.949
4:29:52	16-AU	48180.43	1725.00	102.9	1106.28	314.80	0.945
4:44:52	16-AU	48195.43	1740.00	102.9	1106.72	315.24	0.942
4:59:52	16-AU	48210.43	1755.00	102.9	1107.15	315.67	0.939
5:14:52	16-AU	48225.43	1770.00	102.9	1107.69	316.21	0.936
5:29:52	16-AU	48240.43	1785.00	102.9	1108.10	316.62	0.932
5:44:52	16-AU	48255.43	1800.00	102.9	1108.63	317.15	0.929
5:59:52	16-AU	48270.43	1815.00	102.9	1109.06	317.58	0.926
6:14:52	16-AU	48285.43	1830.00	102.9	1109.37	317.89	0.923
6:29:52	16-AU	48300.43	1845.00	102.9	1109.79	318.31	0.920
6:44:52	16-AU	48315.43	1860.00	102.9	1110.26	318.78	0.917
6:59:52	16-AU	48330.43	1875.00	102.9	1110.75	319.27	0.914
7:14:52	16-AU	48345.43	1890.00	102.9	1111.19	319.71	0.910
7:29:52	16-AU	48360.43	1905.00	102.9	1111.58	320.10	0.907
7:44:52	16-AU	48375.43	1920.00	102.9	1111.98	320.50	0.904
7:59:52	16-AU	48390.43	1935.00	102.9	1112.43	320.95	0.902
8:14:52	16-AU	48405.43	1950.00	102.9	1112.83	321.35	0.899
8:29:52	16-AU	48420.43	1965.00	102.9	1113.30	321.82	0.896
8:44:52	16-AU	48435.43	1980.00	102.9	1113.67	322.19	0.893
8:59:52	16-AU	48450.43	1995.00	102.9	1114.16	322.63	0.890
9:14:52	16-AU	48465.43	2010.00	102.9	1114.48	323.00	0.887
9:29:52	16-AU	48480.43	2025.00	102.9	1114.89	323.41	0.884
9:44:52	16-AU	48495.43	2040.00	102.9	1115.22	323.74	0.882
9:59:52	16-AU	48510.43	2055.00	102.9	1115.62	324.14	0.879
10:14:52	16-AU	48525.43	2070.00	102.9	1116.10	324.62	0.876
10:29:52	16-AU	48540.43	2085.00	102.9	1116.40	324.92	0.873
10:44:52	16-AU	48555.43	2100.00	102.9	1116.84	325.36	0.871
10:59:52	16-AU	48570.43	2115.00	102.9	1117.26	325.78	0.868
11:14:52	16-AU	48585.43	2130.00	102.9	1117.61	326.13	0.865
11:29:52	16-AU	48600.43	2145.00	102.9	1118.00	326.52	0.863

Table D.1-4. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10

FINAL FLOW PRESSURE [PSIA] = 791.48

PRODUCING TIME [MIN] = 13489.57

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
11:44:52	16-AU	48615.43	2160.00	102.9	1118.35	326.87	0.860
11:59:52	16-AU	48630.43	2175.00	102.9	1118.76	327.28	0.857
12:14:52	16-AU	48645.43	2190.00	102.9	1119.28	327.80	0.855
12:29:52	16-AU	48660.43	2205.00	102.9	1119.64	328.16	0.852
12:44:52	16-AU	48675.43	2220.00	102.9	1119.94	328.46	0.850
12:59:52	16-AU	48690.43	2235.00	102.8	1120.31	328.83	0.847
13:14:52	16-AU	48705.43	2250.00	102.8	1120.69	329.21	0.845
13:29:52	16-AU	48720.43	2265.00	102.8	1121.02	329.54	0.842
13:44:52	16-AU	48735.43	2280.00	102.8	1121.49	330.01	0.840
13:59:52	16-AU	48750.43	2295.00	102.8	1121.85	330.37	0.837
14:14:52	16-AU	48765.43	2310.00	102.8	1122.11	330.63	0.835
14:29:52	16-AU	48780.43	2325.00	102.8	1122.45	330.97	0.833
14:44:52	16-AU	48795.43	2340.00	102.8	1122.96	331.48	0.830
14:59:52	16-AU	48810.43	2355.00	102.8	1123.35	331.87	0.828
15:14:52	16-AU	48825.43	2370.00	102.8	1123.55	332.07	0.826
15:29:52	16-AU	48840.43	2385.00	102.8	1124.03	332.55	0.823
15:44:52	16-AU	48855.43	2400.00	102.8	1124.32	332.84	0.821
15:59:52	16-AU	48870.43	2415.00	102.8	1124.67	333.19	0.819
16:14:52	16-AU	48885.43	2430.00	102.8	1125.07	333.59	0.816
16:29:52	16-AU	48900.43	2445.00	102.8	1125.42	333.94	0.814
16:44:52	16-AU	48915.43	2460.00	102.8	1125.73	334.25	0.812
16:59:52	16-AU	48930.43	2475.00	102.8	1126.10	334.62	0.810
17:14:52	16-AU	48945.43	2490.00	102.8	1126.34	334.86	0.807
17:29:52	16-AU	48960.43	2505.00	102.8	1126.75	335.27	0.805
17:44:52	16-AU	48975.43	2520.00	102.8	1127.04	335.56	0.803
17:59:52	16-AU	48990.43	2535.00	102.8	1127.38	335.90	0.801
18:14:52	16-AU	49005.43	2550.00	102.8	1127.65	336.17	0.799
18:29:52	16-AU	49020.43	2565.00	102.8	1127.99	336.51	0.797
18:44:52	16-AU	49035.43	2580.00	102.8	1128.35	336.87	0.794
18:59:52	16-AU	49050.43	2595.00	102.8	1128.64	337.16	0.792
19:14:52	16-AU	49065.43	2610.00	102.8	1128.89	337.41	0.790
19:29:52	16-AU	49080.43	2625.00	102.8	1129.27	337.79	0.788
19:44:52	16-AU	49095.43	2640.00	102.8	1129.64	338.16	0.786
19:59:52	16-AU	49110.43	2655.00	102.8	1129.87	338.39	0.784
20:14:52	16-AU	49125.43	2670.00	102.8	1130.10	338.62	0.782
20:29:52	16-AU	49140.43	2685.00	102.8	1130.53	339.05	0.780
20:44:52	16-AU	49155.43	2700.00	102.8	1130.82	339.34	0.778
20:59:52	16-AU	49170.43	2715.00	102.8	1131.08	339.60	0.776
21:14:52	16-AU	49185.43	2730.00	102.8	1131.48	340.00	0.774
21:29:52	16-AU	49200.43	2745.00	102.8	1131.73	340.25	0.772
21:44:52	16-AU	49215.43	2760.00	102.8	1132.07	340.59	0.770
21:59:52	16-AU	49230.43	2775.00	102.8	1132.37	340.89	0.768
22:14:52	16-AU	49245.43	2790.00	102.8	1132.59	341.11	0.766
22:29:52	16-AU	49260.43	2805.00	102.8	1132.92	341.44	0.764
22:44:52	16-AU	49275.43	2820.00	102.8	1133.31	341.83	0.762
22:59:52	16-AU	49290.43	2835.00	102.8	1133.44	341.96	0.760
23:14:52	16-AU	49305.43	2850.00	102.8	1133.82	342.34	0.758
23:29:52	16-AU	49320.43	2865.00	102.8	1134.12	342.64	0.757

Table D.1-4. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10

FINAL FLOW PRESSURE [PSIA] = 791.48

PRODUCING TIME [MIN] = 13489.57

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
23:44:52	16-AU	49335.43	2880.00	102.8	1134.30	342.82	0.755
23:59:52	16-AU	49350.43	2895.00	102.8	1134.60	343.12	0.753
0:14:52	17-AU	49365.43	2910.00	102.8	1135.01	343.53	0.751
0:29:52	17-AU	49380.43	2925.00	102.8	1135.21	343.73	0.749
0:44:52	17-AU	49395.43	2940.00	102.8	1135.47	343.99	0.747
0:59:52	17-AU	49410.43	2955.00	102.8	1135.72	344.24	0.745
1:14:52	17-AU	49425.43	2970.00	102.8	1136.02	344.54	0.744
1:29:52	17-AU	49440.43	2985.00	102.8	1136.30	344.82	0.742
1:44:52	17-AU	49455.43	3000.00	102.8	1136.50	345.02	0.740
1:59:52	17-AU	49470.43	3015.00	102.8	1136.86	345.38	0.738
2:14:52	17-AU	49485.43	3030.00	102.8	1137.15	345.67	0.737
2:29:52	17-AU	49500.43	3045.00	102.8	1137.40	345.92	0.735
2:44:52	17-AU	49515.43	3060.00	102.8	1137.59	346.11	0.733
2:59:52	17-AU	49530.43	3075.00	102.8	1137.93	346.45	0.731
3:14:52	17-AU	49545.43	3090.00	102.8	1138.19	346.71	0.730
3:29:52	17-AU	49560.43	3105.00	102.8	1138.48	347.00	0.728
3:44:52	17-AU	49575.43	3120.00	102.8	1138.75	347.27	0.726
3:59:52	17-AU	49590.43	3135.00	102.8	1138.96	347.48	0.725
4:14:52	17-AU	49605.43	3150.00	102.7	1139.28	347.80	0.723
4:29:52	17-AU	49620.43	3165.00	102.7	1139.54	348.06	0.721
4:44:52	17-AU	49635.43	3180.00	102.7	1139.74	348.26	0.719
4:59:52	17-AU	49650.43	3195.00	102.7	1140.10	348.62	0.718
5:14:52	17-AU	49665.43	3210.00	102.7	1140.32	348.84	0.716
5:29:52	17-AU	49680.43	3225.00	102.7	1140.55	349.07	0.715
5:44:52	17-AU	49695.43	3240.00	102.7	1140.81	349.33	0.713
5:59:52	17-AU	49710.43	3255.00	102.7	1141.06	349.58	0.711
6:14:52	17-AU	49725.43	3270.00	102.7	1141.23	349.75	0.710
6:29:52	17-AU	49740.43	3285.00	102.7	1141.47	349.99	0.708
6:44:52	17-AU	49755.43	3300.00	102.7	1141.80	350.32	0.707
6:59:52	17-AU	49770.43	3315.00	102.7	1141.90	350.42	0.705
7:14:52	17-AU	49785.43	3330.00	102.7	1142.21	350.73	0.703
7:29:52	17-AU	49800.43	3345.00	102.7	1142.36	350.83	0.702
7:44:52	17-AU	49815.43	3360.00	102.7	1142.67	351.19	0.700
7:59:52	17-AU	49830.43	3375.00	102.7	1142.87	351.39	0.699
8:14:52	17-AU	49845.43	3390.00	102.7	1143.07	351.59	0.697
8:29:52	17-AU	49860.43	3405.00	102.7	1143.38	351.90	0.696
8:44:52	17-AU	49875.43	3420.00	102.7	1143.54	352.06	0.694
8:59:52	17-AU	49890.43	3435.00	102.7	1143.87	352.39	0.693
9:14:52	17-AU	49905.43	3450.00	102.7	1143.98	352.50	0.691
9:29:52	17-AU	49920.43	3465.00	102.7	1144.24	352.76	0.690
9:44:52	17-AU	49935.43	3480.00	102.7	1144.48	353.00	0.688
9:59:52	17-AU	49950.43	3495.00	102.7	1144.67	353.19	0.687
10:14:52	17-AU	49965.43	3510.00	102.7	1145.00	353.52	0.685
10:29:52	17-AU	49980.43	3525.00	102.7	1145.21	353.73	0.684
10:44:52	17-AU	49995.43	3540.00	102.7	1145.41	353.93	0.682
10:59:52	17-AU	50010.43	3555.00	102.7	1145.69	354.21	0.681
11:14:52	17-AU	50025.43	3570.00	102.7	1145.83	354.35	0.679
11:29:52	17-AU	50040.43	3585.00	102.7	1145.99	354.51	0.678

Table D.1-4. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10

FINAL FLOW PRESSURE [PSIA] = 791.48

PRODUCING TIME [MIN] = 13489.57

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
11:44:52	17-AU	50055.43	3600.00	102.7	1146.26	354.78	0.676
11:59:52	17-AU	50070.43	3615.00	102.7	1146.47	354.99	0.675
12:14:52	17-AU	50085.43	3630.00	102.7	1146.72	355.24	0.674
12:29:52	17-AU	50100.43	3645.00	102.7	1146.96	355.48	0.672
12:44:52	17-AU	50115.43	3660.00	102.7	1147.25	355.77	0.671
12:59:52	17-AU	50130.43	3675.00	102.7	1147.42	355.94	0.669
13:14:52	17-AU	50145.43	3690.00	102.7	1147.55	356.07	0.668
13:29:52	17-AU	50160.43	3705.00	102.7	1147.92	356.44	0.667
13:44:52	17-AU	50175.43	3720.00	102.7	1147.95	356.47	0.665
13:59:52	17-AU	50190.43	3735.00	102.7	1148.15	356.67	0.664
14:14:52	17-AU	50205.43	3750.00	102.7	1148.25	356.77	0.662
14:29:52	17-AU	50220.43	3765.00	102.7	1148.58	357.10	0.661
14:44:52	17-AU	50235.43	3780.00	102.7	1148.88	357.40	0.660
14:59:52	17-AU	50250.43	3795.00	102.7	1148.99	357.51	0.658
15:14:52	17-AU	50265.43	3810.00	102.7	1149.25	357.77	0.657
15:29:52	17-AU	50280.43	3825.00	102.7	1149.37	357.89	0.656
15:44:52	17-AU	50295.43	3840.00	102.7	1149.68	358.20	0.654
15:59:52	17-AU	50310.43	3855.00	102.7	1149.84	358.36	0.653
16:14:52	17-AU	50325.43	3870.00	102.7	1149.90	358.42	0.652
16:29:52	17-AU	50340.43	3885.00	102.7	1150.31	358.83	0.651
16:44:52	17-AU	50355.43	3900.00	102.7	1150.52	359.04	0.649
16:59:52	17-AU	50370.43	3915.00	102.7	1150.66	359.18	0.648
17:14:52	17-AU	50385.43	3930.00	102.7	1150.83	359.35	0.647
17:29:52	17-AU	50400.43	3945.00	102.7	1151.04	359.56	0.645
17:44:52	17-AU	50415.43	3960.00	102.7	1151.30	359.82	0.644
17:59:52	17-AU	50430.43	3975.00	102.7	1151.55	360.07	0.643
18:14:52	17-AU	50445.43	3990.00	102.7	1151.67	360.19	0.642
18:29:52	17-AU	50460.43	4005.00	102.7	1151.81	360.33	0.640
18:44:52	17-AU	50475.43	4020.00	102.7	1151.85	360.37	0.639
18:59:52	17-AU	50490.43	4035.00	102.7	1152.10	360.62	0.638
19:14:52	17-AU	50505.43	4050.00	102.7	1152.42	360.94	0.637
19:29:52	17-AU	50520.43	4065.00	102.7	1152.55	361.07	0.635
19:44:52	17-AU	50535.43	4080.00	102.7	1152.72	361.24	0.634
19:59:52	17-AU	50550.43	4095.00	102.7	1152.90	361.42	0.633
20:14:52	17-AU	50565.43	4110.00	102.7	1153.08	361.60	0.632
20:29:52	17-AU	50580.43	4125.00	102.7	1153.29	361.81	0.630
20:44:52	17-AU	50595.43	4140.00	102.7	1153.55	362.07	0.629
20:59:52	17-AU	50610.43	4155.00	102.7	1153.61	362.13	0.628
21:14:52	17-AU	50625.43	4170.00	102.7	1153.79	362.31	0.627
21:29:52	17-AU	50640.43	4185.00	102.7	1154.05	362.57	0.626
21:44:52	17-AU	50655.43	4200.00	102.7	1154.20	362.72	0.624
21:59:52	17-AU	50670.43	4215.00	102.7	1154.44	362.96	0.623
22:14:52	17-AU	50685.43	4230.00	102.7	1154.48	363.00	0.622
22:29:52	17-AU	50700.43	4245.00	102.7	1154.76	363.28	0.621
22:44:52	17-AU	50715.43	4260.00	102.7	1154.89	363.41	0.620
22:59:52	17-AU	50730.43	4275.00	102.7	1155.12	363.64	0.619
23:14:52	17-AU	50745.43	4290.00	102.7	1155.35	363.87	0.617
23:29:52	17-AU	50760.43	4305.00	102.7	1155.38	363.90	0.616

Table D.1-4. (Continued)

FIELD REPORT # : STONEW

TEST PHASE : SHUTIN PERIOD # 10

FINAL FLOW PRESSURE [PSIA] = 791.48

PRODUCING TIME [MIN] = 13489.57

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
23:44:52	17-AU	50775.43	4320.00	102.7	1155.60	364.12	0.615
23:59:52	17-AU	50790.43	4335.00	102.7	1155.79	364.31	0.614
0:14:52	18-AU	50805.43	4350.00	102.7	1155.88	364.40	0.613
0:29:52	18-AU	50820.43	4365.00	102.7	1156.07	364.59	0.612
0:44:52	18-AU	50835.43	4380.00	102.7	1156.20	364.72	0.611
0:59:52	18-AU	50850.43	4395.00	102.7	1156.42	364.94	0.610
1:14:52	18-AU	50865.43	4410.00	102.7	1156.55	365.07	0.608
1:29:52	18-AU	50880.43	4425.00	102.7	1156.80	365.32	0.607
1:44:52	18-AU	50895.43	4440.00	102.7	1156.99	365.51	0.606
1:59:52	18-AU	50910.43	4455.00	102.7	1157.17	365.69	0.605
2:14:52	18-AU	50925.43	4470.00	102.7	1157.22	365.74	0.604
2:29:52	18-AU	50940.43	4485.00	102.6	1157.38	365.90	0.603
2:44:52	18-AU	50955.43	4500.00	102.6	1157.65	366.17	0.602
2:59:52	18-AU	50970.43	4515.00	102.6	1157.91	366.43	0.601
3:14:52	18-AU	50985.43	4530.00	102.6	1157.88	366.40	0.600
3:29:52	18-AU	51000.43	4545.00	102.6	1158.09	366.61	0.599
3:44:52	18-AU	51015.43	4560.00	102.6	1158.35	366.87	0.598
3:59:52	18-AU	51030.43	4575.00	102.6	1158.52	367.04	0.596
4:14:52	18-AU	51045.43	4590.00	102.6	1158.50	367.02	0.595
4:29:52	18-AU	51060.43	4605.00	102.6	1158.72	367.24	0.594
4:44:52	18-AU	51075.43	4620.00	102.6	1158.92	367.44	0.593
4:59:52	18-AU	51090.43	4635.00	102.6	1159.05	367.57	0.592
5:14:52	18-AU	51105.43	4650.00	102.6	1159.27	367.79	0.591
5:29:52	18-AU	51120.43	4665.00	102.6	1159.39	367.91	0.590
5:44:52	18-AU	51135.43	4680.00	102.6	1159.61	368.13	0.589
5:59:52	18-AU	51150.43	4695.00	102.6	1159.74	368.26	0.588
6:14:52	18-AU	51165.43	4710.00	102.6	1159.88	368.40	0.587
6:29:52	18-AU	51180.43	4725.00	102.6	1160.05	368.57	0.586
6:44:52	18-AU	51195.43	4740.00	102.6	1160.22	368.74	0.585
6:59:52	18-AU	51210.43	4755.00	102.6	1160.25	368.77	0.584
7:14:52	18-AU	51225.43	4770.00	102.6	1160.42	368.94	0.583
7:29:52	18-AU	51240.43	4785.00	102.6	1160.59	369.11	0.582
7:44:52	18-AU	51255.43	4800.00	102.6	1160.68	369.20	0.581
7:59:52	18-AU	51270.43	4815.00	102.6	1160.79	369.31	0.580
8:14:52	18-AU	51285.43	4830.00	102.6	1161.01	369.53	0.579
8:29:52	18-AU	51300.43	4845.00	102.6	1161.08	369.60	0.578
8:44:17	18-AU	51314.85	4859.42	102.6	1161.28	369.80	0.577
8:44:27	18-AU	51315.02	4859.59	102.6	1161.30	369.82	0.577
8:44:37	18-AU	51315.18	4859.75	102.6	1161.31	369.83	0.577

PLOT START TIME: 244HR 34 MIN 20 SEC
PLOT STOP TIME: 325HR 34 MIN 5 SEC
PERIOD START TIME: 244HR 34 MIN 20 SEC
TP = 13387. MIN

Recovery Test No. 10
Horner Plot to Determine K
Test Zone No. 1 Lower Permian Wolfcamp

Figure D.1-5

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		LOG NO. 13697.07
WELL NAME AND NO. Mansfield No. 1 Well		
ZONE NO. 1	PERFORATED DEPTHS 4,890 to 4,818 feet	

DETERMINE ZONE THICKNESS, H (PERFORATED INTERVAL): 72 FT.

DETERMINE AVERAGE FLOW DURING DRAWDOWN, Q: 190 BBL/DAY

DETERMINE SLOPE, M, ON A DRAWDOWN PLOT OF P_w vs. LOG DT, OR HORNER
PLOT. M = 114 PSI/LOG CYCLE (M, FOR DRAWDOWN)

CALCULATE K: $K = \frac{162.6 \times Q \times B \times V}{H \times M}$

FOR FIELD CALCULATIONS:

B = 1.0

V = 1.15

K = 4.3 MD

Test Zone Permeability
Test Zone No. 1 Lower Permian Wolfcamp

Figure D.1-6

Table D.1-5. Distribution of Fluid Samples
Test Zone No. 1 Lower Permian Wolfcamp

Type	No. and Size	Date Collected	Recipient
Surface	1 - 0.8 liter	8/25/82	F. A. Munden Clarendon, TX
Surface	1 - 0.25 liter	8/25/82	Dr. Anthony Zaikowski
	3 - 0.5 liter		Bendix Field Engineering
	9 - 0.5 liter		Grand Junction, CO
Surface	2 - 5 gallon	8/25/82	SWEC (Extra)
Surface	4 - 5 gallon	8/26/82	Dr. Donald Langmuir Golden, CO
Surface	2 - 5 gallon	8/26/82	Dr. Jeffrey Means Battelle Laboratories Columbus, OH
Surface	3 - 5 gallon	8/26/82	Texas Bureau of Economic Geology
	1 - 1 liter		Austin, TX
	9 - 0.5 liter		
	2 - 0.25 liter		
	1 - 1.25 liter		
Surface	1 - 5 gallon	8/26/82	Dr. J.C. Laul
	1 - 0.5 gallon		Battelle Pacific Northwest Laboratories Richland, WA

Table D.1-5. (Continued)

Type	No. and Size	Date Collected	Recipient
Surface	1 - 5 gallon	8/26/82	Dr. Paul Knauth Arizona State University Tempe, AZ
Surface	1 - 5 gallon	8/26/82	Dr. Harold Bentley Hydro-Geo-Chem Tucson, AZ
Surface	2 - 5 gallon	8/26/82	Jeffrey Cleveland U.S. Geol. Survey
Surface	1 - 0.65 liter	8/26/82	Dr. Glenn Thompson University of Arizona Tucson, AZ
Downhole	5 - 0.25 liter 1 - 0.45 liter	8/27/82	Dr. Anthony Zaikowski
Downhole	1 - 0.5 liter 2 - 0.65 liter	8/27/82	Dr. Glenn Thompson

SHUTIN No.11: FINAL FLOW PRESSURE (P_{WF}): 682 PSIA
PLOT ELAPSED TIME RANGE: 62954.3 TO 65641.3 MIN
PLOT ΔT TIME RANGE: 0.0 TO 2687.1 MIN

Downhole Pressures During Sampling
Test Zone No.1 Lower Permian Wolfcamp

Figure D.1-7

APPENDIX D.2

TEST ZONE NO. 2 UPPER PERMIAN WOLFCAMP

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APPENDIX D.2

TEST ZONE NO. 2 UPPER PERMIAN WOLFCAMP

An as-built sketch of the test zone is shown on Figure D.2-1; a summary of tests is shown in Table D.2-1; and a test zone pressure (PW) versus elapsed time (ET) plot of testing activities is presented on Figure D.2-2. Pumping and recovery tests were conducted from September 4 to September 29, 1982. The pumping test evaluation presented in this Appendix is summarized in Section 6.2.

The 5 1/2-inch casing was perforated from 4,638 to 4,514 feet (124 feet) on August 31 and September 1, 1982. The perforation pattern was radial at 4 perforations per foot. A formation thickness (H) of 124 feet was used to calculate a permeability (K) value in millidarcies (md).

The test zone was swabbed approximately 4.3 hours on September 3, 1982, for the purpose of developing the formation and estimating formation yield. Following removal of residual fluids, swabbing yielded approximately 2.5 standard tank barrels (STB) per run. Based on fluid level measurements in the tubing and yard tank, an average inflow rate of 4 gallons per minute (gpm) was estimated. Testing was conducted at approximately 2 gpm.

Test zone pressure data were measured at the tubing transducer, located approximately 229 feet above the casing perforations, as shown on Figure D.2-1. Using an approximate conversion factor of 0.50 psi/ft, based on formation fluid laboratory analyses conducted by Dr. Glenn Thompson, University of Arizona, pressure readings were corrected for a static head differential (mid-perforation depth (4,576) minus transducer depth (4,347) times 0.50 psi/ft) of 115 psi, as required.

The formation was intermittently produced from September 4 through September 30, 1982. The term total production time (TP), used for analyzing recovery data to determine initial formation pressure (PI) or to calculate a K value, was generally based on production time that had elapsed following a complete shut-in recovery or an accumulative production time, if a full recovery was not achieved, or if significant reservoir depletion was evident. Periods of fluid inflow during recovery periods under open-hole conditions can be included in the TP value.

Preliminary drawdown and recovery tests were conducted prior to testing for the purpose of determining PI. A data listing is shown in Table D.2-2; a Horner plot, $\text{Log} [(TP + DT)/DT]$, where DT equals elapsed time for a particular recovery, is presented on Figure D.2-3. Based on an extrapolation of the Horner plot, the PI was estimated to be 1,245 psia. Subsequent recovery tests were generally continued until the linear portion of a Horner plot could be extrapolated to the PI value for the purpose of calculating a K value.

Fluid discharge rate was monitored volumetrically during drawdown tests for the purpose of determining an average discharge (Q) in STB per day for the purpose of calculating a K value. Average discharge rates measured during drawdown tests are presented in Table D.2-3, and are also indicated on drawdown curves presented in this Appendix when applicable.

The positive or negative slope of the linear portion of a semilog plot of pressure transient data in psi per log cycle (M) (Earlougher, 1977; Matthews and Russell, 1967) is determined by the drawdown and recovery tests. Following a review of all information collected during testing of this zone, SWEC selected Recovery Test No. 4 to determine the most representative M for the purpose of calculating a preliminary K value using the H and Q previously determined. A data listing is shown in Table D.2-4; a plot of Recovery Test No. 4 is shown on Figure D.2-4. The calculation, using standard analytical techniques to approximate a K value (Earlougher, 1977), is presented on Figure D.2-5.

Following completion of pumping tests and tracer dissipation (Section 3.1 and Appendix A.4), surface and downhole fluid samples were collected and transferred, as required (Section 5). The distribution of fluid samples is presented in Table D.2-5. A plot of downhole pressures during sampling is shown on Figure D.2-6.

Formation fluid temperature was recorded during testing and sampling. A fluid temperature summary listing temperatures at the start and end of each flow period is presented in Table D.2-1. Fluid temperatures from Test Zone No. 2 ranged from approximately 101.7 to 103.5 degrees Fahrenheit, characterized by a warming trend during pumping periods and a cooling trend during shut-in periods.

Table D.2-1. Summary of Tests
Test Zone No. 2 Upper Permian Wolfcamp

 * WELL TEST DATA PRINTOUT *

FIELD REPORT # : WOLFCP

INSTRUMENT # : 81266
 CAPACITY [PSI] : 10000.
 DEPTH [FT] : 4346.0
 PORT OPENING : INSIDE

COMPANY : BATTELLE MEMORIAL INSTITUTE
 WELL : MANSFIELD # 1

LABEL POINT INFORMATION

	TIME			BOT HOLE	BOT HOLE	
	OF DAY	DATE		PRESSURE	TEMP.	
#	HH:MM:SS	DD-MM	EXPLANATION	TIME, MIN	PSIA	DEG F
***	*****	*****	*****	*****	*****	*****
1	7:51:55	3-SP	START FLOW	1110.58	650.69	101.7
2	12: 7:35	3-SP	END FLOW & START SHUT-IN	1366.25	240.10	102.9
3	14:56:15	3-SP	END SHUT-IN & START FLOW	1534.92	853.47	102.7
4	19:49:10	3-SP	END FLOW & START SHUT-IN	1827.83	196.81	103.3
5	15:27:10	4-SP	END SHUT-IN & START FLOW	3005.83	1106.62	101.8
6	17: 0:10	4-SP	END FLOW & START SHUT-IN	5978.83	29.40	103.5
7	11:34:35	8-SP	END SHUT-IN & START FLOW	8533.25	1041.90	101.8
8	12:56:25	18-SP	END FLOW & START SHUT-IN	23015.08	84.10	103.3
9	10:53:10	20-SP	END SHUT-IN & START FLOW	25771.83	969.51	101.8
10	15: 0:10	29-SP	END FLOW & START SHUT-IN	38978.83	40.33	103.3
11	16:28:25	29-SP	END SHUT-IN & START FLOW	39067.08	779.24	102.9
12	7:44:45	30-SP	END FLOW & START SHUT-IN	39983.42	451.42	103.3
13	14:54:45	1-OC	END SHUT-IN	41853.42	930.55	101.9

DEPTH: 4346 FT
CAPACITY: 10000 PSI
PORT OPENING: INSIDE

Pressure Versus Elapsed Time Plot
Test Zone No. 2 Upper Permian Wolfcamp

Figure D.2-2

Table D.2-2. Test Data Listing to Determine PI
Test Zone No. 2 Upper Permian Wolfcamp

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2
 FINAL FLOW PRESSURE [PSIA] = 196.81
 PRODUCING TIME [MIN] = 548.58

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
19:49:10	3-SP	1827.83	0.00	103.3	196.81	0.00	
19:49:15	3-SP	1827.92	0.09	103.3	207.52	10.71	3.785
19:49:20	3-SP	1828.00	0.17	103.3	232.95	36.14	3.509
19:49:25	3-SP	1828.08	0.25	103.3	260.17	63.36	3.341
19:49:30	3-SP	1828.17	0.34	103.3	288.35	91.54	3.208
19:49:35	3-SP	1828.25	0.42	103.3	317.25	120.44	3.116
19:49:40	3-SP	1828.33	0.50	103.3	346.85	150.04	3.041
19:49:45	3-SP	1828.42	0.59	103.3	376.49	179.68	2.969
19:49:50	3-SP	1828.50	0.67	103.3	405.84	209.03	2.914
19:49:55	3-SP	1828.58	0.75	103.3	434.69	237.88	2.865
19:50: 0	3-SP	1828.67	0.84	103.3	462.87	266.06	2.816
19:50: 5	3-SP	1828.75	0.92	103.3	489.71	292.90	2.776
19:50:10	3-SP	1828.83	1.00	103.3	515.08	318.27	2.740
19:50:15	3-SP	1828.92	1.09	103.3	538.97	342.16	2.703
19:50:20	3-SP	1829.00	1.17	103.3	561.37	364.56	2.672
19:50:25	3-SP	1829.08	1.25	103.3	582.25	385.44	2.643
19:50:30	3-SP	1829.17	1.34	103.3	601.52	404.71	2.613
19:50:35	3-SP	1829.25	1.42	103.3	619.14	422.33	2.588
19:50:40	3-SP	1829.33	1.50	103.3	635.45	438.64	2.564
19:50:45	3-SP	1829.42	1.59	103.3	650.39	453.58	2.539
19:50:50	3-SP	1829.50	1.67	103.3	664.13	467.32	2.518
19:50:55	3-SP	1829.58	1.75	103.3	676.74	479.93	2.498
19:51: 0	3-SP	1829.67	1.84	103.3	688.37	491.56	2.476
19:51: 5	3-SP	1829.75	1.92	103.3	699.05	502.24	2.457
19:51:10	3-SP	1829.83	2.00	103.3	708.92	512.11	2.440
19:51:15	3-SP	1829.92	2.09	103.3	717.97	521.16	2.421
19:51:20	3-SP	1830.00	2.17	103.3	726.37	529.56	2.404
19:51:25	3-SP	1830.08	2.25	103.3	734.09	537.28	2.389
19:51:30	3-SP	1830.17	2.34	103.3	741.14	544.33	2.372
19:51:35	3-SP	1830.25	2.42	103.3	747.81	551.00	2.357
19:51:40	3-SP	1830.33	2.50	103.3	753.98	557.17	2.343
19:51:45	3-SP	1830.42	2.59	103.3	759.73	562.92	2.328
19:51:50	3-SP	1830.50	2.67	103.3	765.12	568.31	2.315
19:51:55	3-SP	1830.58	2.75	103.4	770.21	573.40	2.302
19:52: 0	3-SP	1830.67	2.84	103.4	774.98	578.17	2.288
19:52: 5	3-SP	1830.75	2.92	103.4	779.50	582.69	2.276
19:52:10	3-SP	1830.83	3.00	103.4	783.76	586.95	2.264
19:52:15	3-SP	1830.92	3.09	103.4	787.83	591.02	2.252
19:52:20	3-SP	1831.00	3.17	103.4	791.68	594.87	2.241
19:52:25	3-SP	1831.08	3.25	103.4	795.31	598.50	2.230
19:52:30	3-SP	1831.17	3.34	103.4	798.84	602.03	2.218
19:52:35	3-SP	1831.25	3.42	103.4	802.18	605.37	2.208
19:52:40	3-SP	1831.33	3.50	103.4	805.34	608.53	2.198
19:52:45	3-SP	1831.42	3.59	103.4	808.39	611.58	2.187
19:52:50	3-SP	1831.50	3.67	103.4	811.32	614.51	2.177
19:52:55	3-SP	1831.58	3.75	103.4	814.13	617.32	2.168
19:53: 0	3-SP	1831.67	3.84	103.4	816.76	619.95	2.158
19:53: 5	3-SP	1831.75	3.92	103.4	819.36	622.55	2.149

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19:53:10	3-SP	1831.83	4.00	103.4	821.81	625.00	2.140
19:53:15	3-SP	1831.92	4.09	103.4	824.19	627.38	2.131
19:53:20	3-SP	1832.00	4.17	103.4	826.49	629.68	2.122
19:53:25	3-SP	1832.08	4.25	103.4	828.71	631.90	2.114
19:53:30	3-SP	1832.17	4.34	103.4	830.88	634.07	2.105
19:53:35	3-SP	1832.25	4.42	103.4	832.90	636.09	2.097
19:53:40	3-SP	1832.33	4.50	103.4	834.88	638.07	2.090
19:53:45	3-SP	1832.42	4.59	103.4	836.82	640.01	2.081
19:53:50	3-SP	1832.50	4.67	103.4	838.70	641.89	2.074
19:53:55	3-SP	1832.58	4.75	103.4	840.51	643.70	2.066
19:54: 0	3-SP	1832.67	4.84	103.4	842.29	645.48	2.058
19:54: 5	3-SP	1832.75	4.92	103.4	844.01	647.20	2.051
19:54:10	3-SP	1832.83	5.00	103.4	845.67	648.86	2.044
19:54:15	3-SP	1832.92	5.09	103.4	847.37	650.56	2.037
19:54:20	3-SP	1833.00	5.17	103.4	849.07	652.26	2.030
19:54:25	3-SP	1833.08	5.25	103.4	850.63	653.82	2.023
19:54:30	3-SP	1833.17	5.34	103.4	852.19	655.38	2.016
19:54:35	3-SP	1833.25	5.42	103.4	853.69	656.88	2.010
19:54:40	3-SP	1833.33	5.50	103.4	855.17	658.36	2.003
19:54:45	3-SP	1833.42	5.59	103.4	856.58	659.77	1.996
19:54:50	3-SP	1833.50	5.67	103.4	857.97	661.16	1.990
19:54:55	3-SP	1833.58	5.75	103.4	859.26	662.45	1.984
19:55: 0	3-SP	1833.67	5.84	103.4	860.58	663.77	1.977
19:55: 5	3-SP	1833.75	5.92	103.4	861.85	665.04	1.972
19:55:10	3-SP	1833.83	6.00	103.4	862.99	666.18	1.966
19:55:15	3-SP	1833.92	6.09	103.4	865.86	668.05	1.959
19:55:20	3-SP	1834.00	6.17	103.4	707.70	510.89	1.954
19:55:25	3-SP	1834.08	6.25	103.4	741.38	544.57	1.948
19:55:30	3-SP	1834.17	6.34	103.4	765.96	569.15	1.942
19:55:35	3-SP	1834.25	6.42	103.4	784.78	587.97	1.937
19:55:40	3-SP	1834.33	6.50	103.4	799.50	602.69	1.931
19:55:45	3-SP	1834.42	6.59	103.4	811.41	614.60	1.926
19:55:50	3-SP	1834.50	6.67	103.4	821.14	624.33	1.920
19:55:55	3-SP	1834.58	6.75	103.4	829.13	632.32	1.915
19:56: 0	3-SP	1834.67	6.84	103.4	835.84	639.03	1.910
19:56: 5	3-SP	1834.75	6.92	103.4	841.54	644.73	1.905
19:56:10	3-SP	1834.83	7.00	103.4	846.37	649.56	1.900
19:56:15	3-SP	1834.92	7.09	103.4	850.56	653.75	1.894
19:56:20	3-SP	1835.00	7.17	103.4	854.23	657.42	1.889
19:56:25	3-SP	1835.08	7.25	103.4	857.43	660.62	1.885
19:56:30	3-SP	1835.17	7.34	103.4	860.29	663.48	1.879
19:56:35	3-SP	1835.25	7.42	103.4	862.85	666.04	1.875
19:56:40	3-SP	1835.33	7.50	103.4	865.18	668.37	1.870
19:56:45	3-SP	1835.42	7.59	103.4	867.29	670.48	1.865
19:56:50	3-SP	1835.50	7.67	103.4	869.28	672.47	1.860
19:56:55	3-SP	1835.58	7.75	103.4	871.10	674.29	1.856
19:57: 0	3-SP	1835.67	7.84	103.4	872.75	675.94	1.851
19:57: 5	3-SP	1835.75	7.92	103.4	874.31	677.50	1.847

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19:57:10	3-SP	1835.83	8.00	103.4	875.78	678.97	1.842
19:57:15	3-SP	1835.92	8.09	103.4	877.20	680.39	1.838
19:57:20	3-SP	1836.00	8.17	103.4	878.53	681.72	1.833
19:57:25	3-SP	1836.08	8.25	103.4	879.77	682.96	1.829
19:57:30	3-SP	1836.17	8.34	103.4	880.98	684.17	1.825
19:57:35	3-SP	1836.25	8.42	103.4	882.21	685.40	1.821
19:57:40	3-SP	1836.33	8.50	103.4	883.24	686.43	1.816
19:57:45	3-SP	1836.42	8.59	103.4	884.35	687.54	1.812
19:57:50	3-SP	1836.50	8.67	103.4	885.39	688.58	1.808
19:57:55	3-SP	1836.58	8.75	103.4	886.36	689.55	1.804
19:58: 0	3-SP	1836.67	8.84	103.4	887.39	690.58	1.800
19:58: 5	3-SP	1836.75	8.92	103.4	888.31	691.50	1.796
19:58:10	3-SP	1836.83	9.00	103.4	889.23	692.42	1.792
19:58:15	3-SP	1836.92	9.09	103.4	890.10	693.29	1.788
19:58:20	3-SP	1837.00	9.17	103.4	890.99	694.18	1.784
19:58:25	3-SP	1837.08	9.25	103.4	891.83	695.02	1.780
19:58:30	3-SP	1837.17	9.34	103.4	892.63	695.82	1.776
19:58:35	3-SP	1837.25	9.42	103.4	893.48	696.67	1.773
19:58:40	3-SP	1837.33	9.50	103.4	894.24	697.43	1.769
19:58:45	3-SP	1837.42	9.59	103.4	895.05	698.24	1.765
19:58:50	3-SP	1837.50	9.67	103.4	895.81	699.00	1.761
19:58:55	3-SP	1837.58	9.75	103.4	896.49	699.68	1.758
19:59: 0	3-SP	1837.67	9.84	103.4	897.27	700.46	1.754
19:59: 5	3-SP	1837.75	9.92	103.4	897.99	701.18	1.751
19:59:10	3-SP	1837.83	10.00	103.4	898.66	701.85	1.747
19:59:15	3-SP	1837.92	10.09	103.4	899.37	702.56	1.743
19:59:20	3-SP	1838.00	10.17	103.4	900.00	703.19	1.740
19:59:25	3-SP	1838.08	10.25	103.4	900.66	703.85	1.737
19:59:30	3-SP	1838.17	10.34	103.4	901.36	704.55	1.733
19:59:35	3-SP	1838.25	10.42	103.4	902.03	705.22	1.730
19:59:40	3-SP	1838.33	10.50	103.4	902.64	705.83	1.726
19:59:45	3-SP	1838.42	10.59	103.4	903.29	706.48	1.723
19:59:50	3-SP	1838.50	10.67	103.4	903.88	707.07	1.719
19:59:55	3-SP	1838.58	10.75	103.4	904.48	707.67	1.716
20: 0: 0	3-SP	1838.67	10.84	103.4	905.09	708.28	1.713
20: 0: 5	3-SP	1838.75	10.92	103.4	905.70	708.89	1.710
20: 0:10	3-SP	1838.83	11.00	103.4	906.25	709.44	1.706
20: 0:15	3-SP	1838.92	11.09	103.4	906.85	710.04	1.703
20: 0:20	3-SP	1839.00	11.17	103.4	907.42	710.61	1.700
20: 0:25	3-SP	1839.08	11.25	103.3	907.99	711.18	1.697
20: 0:30	3-SP	1839.17	11.34	103.3	908.57	711.76	1.694
20: 0:35	3-SP	1839.25	11.42	103.3	909.12	712.31	1.691
20: 0:40	3-SP	1839.33	11.50	103.3	909.65	712.84	1.688
20: 0:45	3-SP	1839.42	11.59	103.3	910.14	713.33	1.684
20: 0:50	3-SP	1839.50	11.67	103.3	910.66	713.85	1.681
20: 0:55	3-SP	1839.58	11.75	103.3	911.22	714.41	1.678
20: 1: 0	3-SP	1839.67	11.84	103.3	911.70	714.89	1.675
20: 1: 5	3-SP	1839.75	11.92	103.3	912.23	715.42	1.672

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM						
*****	*****	*****	*****	*****	*****	*****	*****
20: 1:10	3-SF	1839.83	12.00	103.3	912.73	715.92	1.669
20: 1:15	3-SP	1839.92	12.09	103.3	913.26	716.45	1.666
20: 1:20	3-SP	1840.00	12.17	103.3	913.74	716.93	1.663
20: 1:25	3-SP	1840.08	12.25	103.3	914.23	717.42	1.661
20: 1:30	3-SP	1840.17	12.34	103.3	914.70	717.89	1.658
20: 1:35	3-SP	1840.25	12.42	103.3	915.19	718.38	1.655
20: 1:40	3-SP	1840.33	12.50	103.3	915.64	718.83	1.652
20: 1:45	3-SP	1840.42	12.59	103.3	916.10	719.29	1.649
20: 1:50	3-SP	1840.50	12.67	103.3	916.57	719.76	1.646
20: 1:55	3-SP	1840.58	12.75	103.3	917.03	720.22	1.644
20: 2: 0	3-SP	1840.67	12.84	103.3	917.51	720.70	1.641
20: 2: 5	3-SP	1840.75	12.92	103.3	917.94	721.13	1.638
20: 2:10	3-SP	1840.83	13.00	103.3	918.36	721.55	1.635
20: 2:15	3-SP	1840.92	13.09	103.3	918.82	722.01	1.633
20: 2:20	3-SP	1841.00	13.17	103.3	919.24	722.43	1.630
20: 2:25	3-SP	1841.08	13.25	103.3	919.69	722.88	1.627
20: 2:30	3-SP	1841.17	13.34	103.3	920.11	723.30	1.625
20: 2:35	3-SP	1841.25	13.42	103.3	920.54	723.73	1.622
20: 2:40	3-SP	1841.33	13.50	103.3	920.94	724.13	1.619
20: 2:45	3-SP	1841.42	13.59	103.3	921.39	724.58	1.617
20: 2:50	3-SP	1841.50	13.67	103.3	921.78	724.97	1.614
20: 2:55	3-SP	1841.58	13.75	103.3	922.21	725.40	1.612
20: 3: 0	3-SP	1841.67	13.84	103.3	922.60	725.79	1.609
20: 3: 5	3-SP	1841.75	13.92	103.3	923.03	726.22	1.606
20: 3:10	3-SP	1841.83	14.00	103.3	923.42	726.61	1.604
20: 3:15	3-SP	1841.92	14.09	103.3	923.82	727.01	1.601
20: 3:20	3-SP	1842.00	14.17	103.3	924.18	727.37	1.599
20: 3:25	3-SP	1842.08	14.25	103.3	924.59	727.78	1.597
20: 3:30	3-SP	1842.17	14.34	103.3	924.95	728.14	1.594
20: 3:35	3-SP	1842.25	14.42	103.3	925.32	728.51	1.592
20: 3:40	3-SP	1842.33	14.50	103.3	925.73	728.92	1.589
20: 3:45	3-SP	1842.42	14.59	103.3	926.09	729.28	1.587
20: 3:50	3-SP	1842.50	14.67	103.3	926.46	729.65	1.584
20: 3:55	3-SP	1842.58	14.75	103.3	926.85	730.04	1.582
20: 4: 0	3-SP	1842.67	14.84	103.3	927.21	730.40	1.579
20: 4: 5	3-SP	1842.75	14.92	103.3	927.60	730.79	1.577
20: 4:10	3-SP	1842.83	15.00	103.3	927.92	731.11	1.575
20: 4:15	3-SP	1842.92	15.09	103.3	928.28	731.47	1.572
20: 4:20	3-SP	1843.00	15.17	103.3	928.64	731.83	1.570
20: 4:25	3-SP	1843.08	15.25	103.3	929.00	732.19	1.568
20: 4:30	3-SP	1843.17	15.34	103.3	929.33	732.52	1.565
20: 4:35	3-SP	1843.25	15.42	103.3	929.69	732.88	1.563
20: 4:40	3-SP	1843.33	15.50	103.3	930.04	733.23	1.561
20: 4:45	3-SP	1843.42	15.59	103.3	930.35	733.54	1.559
20: 4:50	3-SP	1843.50	15.67	103.3	930.72	733.91	1.556
20: 4:55	3-SP	1843.58	15.75	103.3	931.07	734.26	1.554
20: 5: 0	3-SP	1843.67	15.84	103.3	931.37	734.56	1.552
20: 5: 5	3-SP	1843.75	15.92	103.3	931.71	734.90	1.550

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 2
 FINAL FLOW PRESSURE [PSIA] = 196.81
 PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
20: 5:10	3-SP	1843.83	16.00	103.3	932.04	735.23	1.548
20: 5:15	3-SP	1843.92	16.09	103.3	932.40	735.59	1.545
20: 5:20	3-SP	1844.00	16.17	103.3	932.69	735.88	1.543
20: 5:25	3-SP	1844.08	16.25	103.3	933.01	736.20	1.541
20: 5:30	3-SP	1844.17	16.34	103.3	933.37	736.56	1.539
20: 5:35	3-SP	1844.25	16.42	103.3	933.68	736.87	1.537
20: 5:40	3-SP	1844.33	16.50	103.3	934.01	737.20	1.535
20: 5:45	3-SP	1844.42	16.59	103.3	934.31	737.50	1.532
20: 5:50	3-SP	1844.50	16.67	103.3	934.64	737.83	1.530
20: 5:55	3-SP	1844.58	16.75	103.3	934.94	738.13	1.528
20: 6: 0	3-SP	1844.67	16.84	103.3	935.23	738.42	1.526
20: 6: 5	3-SP	1844.75	16.92	103.3	935.55	738.74	1.524
20: 6:10	3-SP	1844.83	17.00	103.3	935.87	739.06	1.522
20: 6:15	3-SP	1844.92	17.09	103.3	936.15	739.34	1.520
20: 6:20	3-SP	1845.00	17.17	103.3	936.45	739.64	1.518
20: 6:25	3-SP	1845.08	17.25	103.3	936.73	739.92	1.516
20: 6:30	3-SP	1845.17	17.34	103.3	937.05	740.24	1.514
20: 6:35	3-SP	1845.25	17.42	103.3	937.35	740.54	1.512
20: 6:40	3-SP	1845.33	17.50	103.3	937.66	740.85	1.510
20: 6:45	3-SP	1845.42	17.59	103.3	937.94	741.13	1.508
20: 6:50	3-SP	1845.50	17.67	103.3	938.25	741.44	1.506
20: 6:55	3-SP	1845.58	17.75	103.3	938.53	741.72	1.504
20: 7: 0	3-SP	1845.67	17.84	103.3	938.81	742.00	1.502
20: 7: 5	3-SP	1845.75	17.92	103.3	939.10	742.29	1.500
20: 7:10	3-SP	1845.83	18.00	103.3	939.40	742.59	1.498
20: 7:15	3-SP	1845.92	18.09	103.3	939.66	742.85	1.496
20: 7:20	3-SP	1846.00	18.17	103.3	939.94	743.13	1.494
20: 7:25	3-SP	1846.08	18.25	103.3	940.20	743.39	1.492
20: 7:30	3-SP	1846.17	18.34	103.3	940.50	743.69	1.490
20: 7:35	3-SP	1846.25	18.42	103.3	940.75	743.94	1.488
20: 7:40	3-SP	1846.33	18.50	103.3	941.03	744.22	1.486
20: 7:45	3-SP	1846.42	18.59	103.3	941.29	744.48	1.484
20: 7:50	3-SP	1846.50	18.67	103.3	941.59	744.78	1.483
20: 7:55	3-SP	1846.58	18.75	103.3	941.87	745.06	1.481
20: 8: 0	3-SP	1846.67	18.84	103.3	942.15	745.34	1.479
20: 8: 5	3-SP	1846.75	18.92	103.3	942.39	745.58	1.477
20: 8:10	3-SP	1846.83	19.00	103.3	942.63	745.82	1.475
20: 8:15	3-SP	1846.92	19.09	103.3	942.90	746.09	1.473
20: 8:20	3-SP	1847.00	19.17	103.3	943.17	746.36	1.472
20: 8:25	3-SP	1847.08	19.25	103.3	943.44	746.63	1.470
20: 8:30	3-SP	1847.17	19.34	103.3	943.66	746.85	1.468
20: 8:35	3-SP	1847.25	19.42	103.3	943.95	747.14	1.466
20: 8:40	3-SP	1847.33	19.50	103.3	944.21	747.40	1.464
20: 8:45	3-SP	1847.42	19.59	103.3	944.47	747.66	1.462
20: 8:50	3-SP	1847.50	19.67	103.3	944.71	747.90	1.461
20: 8:55	3-SP	1847.58	19.75	103.3	944.95	748.14	1.459
20: 9: 0	3-SP	1847.67	19.84	103.3	945.20	748.39	1.457
20: 9: 5	3-SP	1847.75	19.92	103.3	945.47	748.66	1.455

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED	DELTA	BOT HOLE TEMP.	BOT HOLE PRESSURE	DELTA P	LOG HORNER
HH:MM:SS	DD-MM	TIME, MIN	TIME, MIN	DEG F	PSIA	PSI	TIME
*****	*****	*****	*****	*****	*****	*****	*****
20: 9:10	3-SP	1847.83	20.00	103.3	945.69	748.88	1.454
20: 9:15	3-SP	1847.92	20.09	103.3	945.96	749.15	1.452
20: 9:20	3-SP	1848.00	20.17	103.3	946.21	749.40	1.450
20: 9:25	3-SP	1848.08	20.25	103.3	946.47	749.66	1.449
20: 9:30	3-SP	1848.17	20.34	103.3	946.67	749.86	1.447
20: 9:35	3-SP	1848.25	20.42	103.3	946.89	750.08	1.445
20: 9:40	3-SP	1848.33	20.50	103.3	947.15	750.34	1.443
20: 9:45	3-SP	1848.42	20.59	103.3	947.41	750.60	1.442
20: 9:50	3-SP	1848.50	20.67	103.3	947.64	750.83	1.440
20: 9:55	3-SP	1848.58	20.75	103.3	947.91	751.10	1.438
20:10: 0	3-SP	1848.67	20.84	103.3	948.10	751.29	1.437
20:10: 5	3-SP	1848.75	20.92	103.3	948.32	751.51	1.435
20:11: 5	3-SP	1849.75	21.92	103.3	951.05	754.24	1.415
20:12: 5	3-SP	1850.75	22.92	103.3	953.67	756.86	1.397
20:13: 5	3-SP	1851.75	23.92	103.3	956.11	759.30	1.379
20:14: 5	3-SP	1852.75	24.92	103.3	958.42	761.61	1.362
20:15: 5	3-SP	1853.75	25.92	103.3	960.57	763.76	1.346
20:16: 5	3-SP	1854.75	26.92	103.2	962.68	765.87	1.330
20:17: 5	3-SP	1855.75	27.92	103.2	964.71	767.90	1.315
20:18: 5	3-SP	1856.75	28.92	103.2	966.60	769.79	1.300
20:23: 5	3-SP	1861.75	33.92	103.2	975.12	778.31	1.235
20:28: 5	3-SP	1866.75	38.92	103.2	982.30	785.49	1.179
20:33: 5	3-SP	1871.75	43.92	103.1	988.42	791.61	1.130
20:38: 5	3-SP	1876.75	48.92	103.1	993.72	796.91	1.087
20:43: 5	3-SP	1881.75	53.92	103.1	998.43	801.62	1.048
20:48: 5	3-SP	1886.75	58.92	103.0	1002.60	805.79	1.013
20:53: 5	3-SP	1891.75	63.92	103.0	1006.41	809.60	0.981
20:58: 5	3-SP	1896.75	68.92	102.9	1009.86	813.05	0.952
21: 3: 5	3-SP	1901.75	73.92	102.9	1013.04	816.23	0.925
21: 8: 5	3-SP	1906.75	78.92	102.9	1015.94	819.13	0.900
21:13: 5	3-SP	1911.75	83.92	102.9	1018.64	821.83	0.877
21:18: 5	3-SP	1916.75	88.92	102.8	1021.15	824.34	0.855
21:23: 5	3-SP	1921.75	93.92	102.8	1023.51	826.70	0.835
21:28: 5	3-SP	1926.75	98.92	102.8	1025.67	828.86	0.816
21:33: 5	3-SP	1931.75	103.92	102.8	1027.76	830.95	0.798
21:38: 5	3-SP	1936.75	108.92	102.8	1029.72	832.91	0.781
21:43: 5	3-SP	1941.75	113.92	102.7	1031.56	834.75	0.765
21:48: 5	3-SP	1946.75	118.92	102.7	1033.35	836.54	0.749
21:53: 5	3-SP	1951.75	123.92	102.7	1035.01	838.20	0.735
21:58: 5	3-SP	1956.75	128.92	102.7	1036.62	839.81	0.721
22: 3: 5	3-SP	1961.75	133.92	102.6	1038.13	841.32	0.707
22: 8: 5	3-SP	1966.75	138.92	102.6	1039.61	842.80	0.695
22:13: 5	3-SP	1971.75	143.92	102.6	1040.97	844.16	0.682
22:18: 5	3-SP	1976.75	148.92	102.6	1042.29	845.48	0.671
22:23: 5	3-SP	1981.75	153.92	102.6	1043.59	846.78	0.659
22:28: 5	3-SP	1986.75	158.92	102.6	1044.79	847.98	0.649
22:33: 5	3-SP	1991.75	163.92	102.6	1045.98	849.17	0.638
22:38: 5	3-SP	1996.75	168.92	102.5	1047.14	850.33	0.628

Table D.2 -2. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
22:43: 5	3-SP	2001.75	173.92	102.5	1048.21	851.40	0.618
22:48: 5	3-SP	2006.75	178.92	102.5	1049.32	852.51	0.609
22:53: 5	3-SP	2011.75	183.92	102.5	1050.33	853.52	0.600
22:58: 5	3-SP	2016.75	188.92	102.5	1051.35	854.54	0.591
23: 3: 5	3-SP	2021.75	193.92	102.4	1052.32	855.51	0.583
23: 8: 5	3-SP	2026.75	198.92	102.4	1053.23	856.42	0.575
23:13: 5	3-SP	2031.75	203.92	102.4	1054.16	857.35	0.567
23:18: 5	3-SP	2036.75	208.92	102.4	1055.01	858.20	0.559
23:23: 5	3-SP	2041.75	213.92	102.4	1055.88	859.07	0.552
23:28: 5	3-SP	2046.75	218.92	102.4	1056.70	859.89	0.545
23:33: 5	3-SP	2051.75	223.92	102.4	1057.53	860.72	0.538
23:38: 5	3-SP	2056.75	228.92	102.4	1058.30	861.49	0.531
23:43: 5	3-SP	2061.75	233.92	102.4	1059.10	862.29	0.524
23:48: 5	3-SP	2066.75	238.92	102.3	1059.82	863.01	0.518
23:53: 5	3-SP	2071.75	243.92	102.3	1060.54	863.73	0.512
23:58: 5	3-SP	2076.75	248.92	102.3	1061.25	864.44	0.506
0: 3: 5	4-SP	2081.75	253.92	102.3	1061.92	865.11	0.500
0: 8: 5	4-SP	2086.75	258.92	102.3	1062.61	865.80	0.494
0:13: 5	4-SP	2091.75	263.92	102.3	1063.29	866.48	0.488
0:18: 5	4-SP	2096.75	268.92	102.3	1063.94	867.13	0.483
0:23: 5	4-SP	2101.75	273.92	102.3	1064.57	867.76	0.478
0:28: 5	4-SP	2106.75	278.92	102.3	1065.22	868.41	0.472
0:33: 5	4-SP	2111.75	283.92	102.3	1065.77	868.96	0.467
0:38: 5	4-SP	2116.75	288.92	102.3	1066.35	869.54	0.462
0:43: 5	4-SP	2121.75	293.92	102.3	1066.95	870.14	0.457
0:48: 5	4-SP	2126.75	298.92	102.2	1067.49	870.68	0.453
0:53: 5	4-SP	2131.75	303.92	102.2	1068.08	871.27	0.448
0:58: 5	4-SP	2136.75	308.92	102.2	1068.59	871.78	0.443
1: 3: 5	4-SP	2141.75	313.92	102.2	1069.15	872.34	0.439
1: 8: 5	4-SP	2146.75	318.92	102.2	1069.67	872.86	0.435
1:13: 5	4-SP	2151.75	323.92	102.2	1070.24	873.43	0.430
1:18: 5	4-SP	2156.75	328.92	102.2	1070.73	873.92	0.426
1:23: 5	4-SP	2161.75	333.92	102.2	1071.22	874.41	0.422
1:28: 5	4-SP	2166.75	338.92	102.2	1071.65	874.84	0.418
1:33: 5	4-SP	2171.75	343.92	102.2	1072.18	875.37	0.414
1:38: 5	4-SP	2176.75	348.92	102.2	1072.67	875.86	0.410
1:43: 5	4-SP	2181.75	353.92	102.2	1073.12	876.31	0.407
1:48: 5	4-SP	2186.75	358.92	102.2	1073.58	876.77	0.403
1:53: 5	4-SP	2191.75	363.92	102.1	1074.01	877.20	0.399
1:58: 5	4-SP	2196.75	368.92	102.1	1074.45	877.64	0.396
2: 3: 5	4-SP	2201.75	373.92	102.1	1074.89	878.08	0.392
2: 8: 5	4-SP	2206.75	378.92	102.1	1075.32	878.51	0.389
2:13: 5	4-SP	2211.75	383.92	102.1	1075.73	878.92	0.385
2:18: 5	4-SP	2216.75	388.92	102.1	1076.16	879.35	0.382
2:23: 5	4-SP	2221.75	393.92	102.1	1076.53	879.72	0.379
2:28: 5	4-SP	2226.75	398.92	102.1	1076.94	880.13	0.376
2:33: 5	4-SP	2231.75	403.92	102.1	1077.34	880.53	0.373
2:38: 5	4-SP	2236.75	408.92	102.1	1077.66	880.85	0.370

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2
 FINAL FLOW PRESSURE [PSIA] = 196.81
 PRODUCING TIME [MIN] = 548.58

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
2:43: 5	4-SP	2241.75	413.92	102.1	1078.09	881.28	0.366
2:48: 5	4-SP	2246.75	418.92	102.1	1078.45	881.64	0.364
2:53: 5	4-SP	2251.75	423.92	102.1	1078.88	882.07	0.361
2:58: 5	4-SP	2256.75	428.92	102.1	1079.21	882.40	0.358
3: 3: 5	4-SP	2261.75	433.92	102.1	1079.59	882.78	0.355
3: 8: 5	4-SP	2266.75	438.92	102.1	1079.92	883.11	0.352
3:13: 5	4-SP	2271.75	443.92	102.1	1080.27	883.46	0.349
3:18: 5	4-SP	2276.75	448.92	102.1	1080.61	883.80	0.347
3:23: 5	4-SP	2281.75	453.92	102.1	1080.96	884.15	0.344
3:28: 5	4-SP	2286.75	458.92	102.1	1081.31	884.50	0.342
3:33: 5	4-SP	2291.75	463.92	102.0	1081.65	884.84	0.339
3:38: 5	4-SP	2296.75	468.92	102.0	1081.94	885.13	0.336
3:43: 5	4-SP	2301.75	473.92	102.0	1082.28	885.47	0.334
3:48: 5	4-SP	2306.75	478.92	102.0	1082.59	885.78	0.332
3:53: 5	4-SP	2311.75	483.92	102.0	1082.90	886.09	0.329
3:58: 5	4-SP	2316.75	488.92	102.0	1083.21	886.40	0.327
4: 3: 5	4-SP	2321.75	493.92	102.0	1083.49	886.68	0.324
4: 8: 5	4-SP	2326.75	498.92	102.0	1083.80	886.99	0.322
4:13: 5	4-SP	2331.75	503.92	102.0	1084.11	887.30	0.320
4:18: 5	4-SP	2336.75	508.92	102.0	1084.40	887.59	0.318
4:23: 5	4-SP	2341.75	513.92	102.0	1084.71	887.90	0.315
4:28: 5	4-SP	2346.75	518.92	102.0	1084.96	888.15	0.313
4:33: 5	4-SP	2351.75	523.92	102.0	1085.26	888.45	0.311
4:38: 5	4-SP	2356.75	528.92	102.0	1085.54	888.73	0.309
4:43: 5	4-SP	2361.75	533.92	102.0	1085.83	889.02	0.307
4:48: 5	4-SP	2366.75	538.92	102.0	1086.11	889.30	0.305
4:53: 5	4-SP	2371.75	543.92	102.0	1086.37	889.56	0.303
4:58: 5	4-SP	2376.75	548.92	102.0	1086.69	889.88	0.301
5: 3: 5	4-SP	2381.75	553.92	102.0	1086.89	890.08	0.299
5: 8: 5	4-SP	2386.75	558.92	102.0	1087.19	890.38	0.297
5:13: 5	4-SP	2391.75	563.92	102.0	1087.43	890.62	0.295
5:18: 5	4-SP	2396.75	568.92	102.0	1087.69	890.88	0.293
5:23: 5	4-SP	2401.75	573.92	102.0	1087.93	891.12	0.291
5:28: 5	4-SP	2406.75	578.92	102.0	1088.20	891.39	0.289
5:33: 5	4-SP	2411.75	583.92	102.0	1088.45	891.64	0.288
5:38: 5	4-SP	2416.75	588.92	102.0	1088.69	891.88	0.286
5:43: 5	4-SP	2421.75	593.92	102.0	1088.98	892.17	0.284
5:48: 5	4-SP	2426.75	598.92	102.0	1089.20	892.39	0.282
5:53: 5	4-SP	2431.75	603.92	102.0	1089.44	892.63	0.281
5:58: 5	4-SP	2436.75	608.92	101.9	1089.69	892.88	0.279
6: 3: 5	4-SP	2441.75	613.92	101.9	1089.88	893.07	0.277
6: 8: 5	4-SP	2446.75	618.92	102.0	1090.13	893.32	0.276
6:13: 5	4-SP	2451.75	623.92	102.0	1090.37	893.56	0.274
6:18: 5	4-SP	2456.75	628.92	101.9	1090.60	893.79	0.272
6:23: 5	4-SP	2461.75	633.92	101.9	1090.85	894.04	0.271
6:28: 5	4-SP	2466.75	638.92	101.9	1091.04	894.23	0.269
6:33: 5	4-SP	2471.75	643.92	101.9	1091.27	894.46	0.268
6:38: 5	4-SP	2476.75	648.92	101.9	1091.44	894.63	0.266

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
6:43: 5	4-SP	2481.75	653.92	101.9	1091.67	894.86	0.265
6:48: 5	4-SP	2486.75	658.92	101.9	1091.93	895.12	0.263
6:53: 5	4-SP	2491.75	663.92	101.9	1092.12	895.31	0.262
6:58: 5	4-SP	2496.75	668.92	101.9	1092.36	895.55	0.260
7: 3: 5	4-SP	2501.75	673.92	101.9	1092.52	895.71	0.259
7: 8: 5	4-SP	2506.75	678.92	101.9	1092.76	895.95	0.257
7:13: 5	4-SP	2511.75	683.92	101.9	1092.95	896.14	0.256
7:18: 5	4-SP	2516.75	688.92	101.9	1093.12	896.31	0.254
7:23: 5	4-SP	2521.75	693.92	101.9	1093.36	896.55	0.253
7:28: 5	4-SP	2526.75	698.92	101.9	1093.56	896.75	0.252
7:33: 5	4-SP	2531.75	703.92	101.9	1093.74	896.93	0.250
7:38: 5	4-SP	2536.75	708.92	101.9	1093.90	897.09	0.249
7:43: 5	4-SP	2541.75	713.92	101.9	1094.10	897.29	0.248
7:48: 5	4-SP	2546.75	718.92	101.9	1094.30	897.49	0.246
7:53: 5	4-SP	2551.75	723.92	101.9	1094.48	897.67	0.245
7:58: 5	4-SP	2556.75	728.92	101.9	1094.72	897.91	0.244
8: 3: 5	4-SP	2561.75	733.92	101.9	1094.90	898.09	0.242
8: 8: 5	4-SP	2566.75	738.92	101.9	1095.08	898.27	0.241
8:13: 5	4-SP	2571.75	743.92	101.9	1095.21	898.40	0.240
8:18: 5	4-SP	2576.75	748.92	101.9	1095.43	898.62	0.239
8:23: 5	4-SP	2581.75	753.92	101.9	1095.61	898.80	0.237
8:28: 5	4-SP	2586.75	758.92	101.9	1095.75	898.94	0.236
8:33: 5	4-SP	2591.75	763.92	101.9	1095.94	899.13	0.235
8:38: 5	4-SP	2596.75	768.92	101.9	1096.11	899.30	0.234
8:43: 5	4-SP	2601.75	773.92	101.9	1096.29	899.48	0.233
8:48: 5	4-SP	2606.75	778.92	101.9	1096.44	899.63	0.232
8:53: 5	4-SP	2611.75	783.92	101.9	1096.65	899.84	0.230
8:58: 5	4-SP	2616.75	788.92	101.9	1096.83	900.02	0.229
9: 3: 5	4-SP	2621.75	793.92	101.9	1096.95	900.14	0.228
9: 8: 5	4-SP	2626.75	798.92	101.9	1097.13	900.32	0.227
9:13: 5	4-SP	2631.75	803.92	101.9	1097.26	900.45	0.226
9:18: 5	4-SP	2636.75	808.92	101.9	1097.47	900.66	0.225
9:23: 5	4-SP	2641.75	813.92	101.9	1097.61	900.80	0.224
9:28: 5	4-SP	2646.75	818.92	101.9	1097.79	900.98	0.223
9:33: 5	4-SP	2651.75	823.92	101.9	1097.92	901.11	0.222
9:38: 5	4-SP	2656.75	828.92	101.9	1098.07	901.26	0.221
9:43: 5	4-SP	2661.75	833.92	101.9	1098.21	901.40	0.220
9:48: 5	4-SP	2666.75	838.92	101.9	1098.38	901.57	0.219
9:53: 5	4-SP	2671.75	843.92	101.9	1098.50	901.69	0.217
9:58: 5	4-SP	2676.75	848.92	101.9	1098.71	901.90	0.216
10: 3: 5	4-SP	2681.75	853.92	101.9	1098.82	902.01	0.215
10: 8: 5	4-SP	2686.75	858.92	101.9	1099.02	902.21	0.214
10:13: 5	4-SP	2691.75	863.92	101.9	1099.14	902.33	0.214
10:18: 5	4-SP	2696.75	868.92	101.9	1099.31	902.50	0.213
10:23: 5	4-SP	2701.75	873.92	101.8	1099.40	902.59	0.212
10:28: 5	4-SP	2706.75	878.92	101.9	1099.54	902.73	0.211
10:33: 5	4-SP	2711.75	883.92	101.8	1099.71	902.90	0.210
10:38: 5	4-SP	2716.75	888.92	101.9	1099.86	903.05	0.209

Table D.2-2. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
10:43: 5	4-SP	2721.75	893.92	101.9	1100.01	903.20	0.208
10:48: 5	4-SP	2726.75	898.92	101.8	1100.12	903.31	0.207
10:53: 5	4-SP	2731.75	903.92	101.8	1100.29	903.48	0.206
10:58: 5	4-SP	2736.75	908.92	101.8	1100.42	903.61	0.205
10: 3: 5	4-SP	2741.75	913.92	101.8	1100.60	903.79	0.204
10: 8: 5	4-SP	2746.75	918.92	101.8	1100.70	903.89	0.203
11:13: 5	4-SP	2751.75	923.92	101.8	1100.81	904.00	0.202
11:18: 5	4-SP	2756.75	928.92	101.8	1100.97	904.16	0.202
11:23: 5	4-SP	2761.75	933.92	101.8	1101.10	904.29	0.201
11:28: 5	4-SP	2766.75	938.92	101.8	1101.24	904.43	0.200
11:33: 5	4-SP	2771.75	943.92	101.8	1101.34	904.53	0.199
11:38: 5	4-SP	2776.75	948.92	101.8	1101.50	904.69	0.198
11:43: 5	4-SP	2781.75	953.92	101.8	1101.60	904.79	0.197
11:48: 5	4-SP	2786.75	958.92	101.8	1101.76	904.95	0.196
11:53: 5	4-SP	2791.75	963.92	101.8	1101.86	905.05	0.196
11:58: 5	4-SP	2796.75	968.92	101.8	1102.00	905.19	0.195
12: 3: 5	4-SP	2801.75	973.92	101.8	1102.12	905.31	0.194
12: 8: 5	4-SP	2806.75	978.92	101.8	1102.23	905.42	0.193
12:13: 5	4-SP	2811.75	983.92	101.8	1102.34	905.53	0.192
12:18: 5	4-SP	2816.75	988.92	101.8	1102.47	905.66	0.192
12:23: 5	4-SP	2821.75	993.92	101.8	1102.59	905.78	0.191
12:28: 5	4-SP	2826.75	998.92	101.8	1102.75	905.94	0.190
12:33: 5	4-SP	2831.75	1003.92	101.8	1102.84	906.03	0.189
12:38: 5	4-SP	2836.75	1008.92	101.8	1102.96	906.15	0.189
12:43: 5	4-SP	2841.75	1013.92	101.8	1103.04	906.23	0.188
12:48: 5	4-SP	2846.75	1018.92	101.8	1103.20	906.39	0.187
12:53: 5	4-SP	2851.75	1023.92	101.8	1103.36	906.55	0.186
12:58: 5	4-SP	2856.75	1028.92	101.8	1103.42	906.61	0.186
13: 3: 5	4-SP	2861.75	1033.92	101.8	1103.51	906.70	0.185
13: 8: 5	4-SP	2866.75	1038.92	101.8	1103.69	906.88	0.184
13:13: 5	4-SP	2871.75	1043.92	101.8	1103.78	906.97	0.183
13:18: 5	4-SP	2876.75	1048.92	101.8	1103.92	907.11	0.183
13:23: 5	4-SP	2881.75	1053.92	101.8	1104.05	907.24	0.182
13:38: 5	4-SP	2896.75	1068.92	101.8	1104.34	907.53	0.180
13:53: 5	4-SP	2911.75	1083.92	101.8	1104.69	907.88	0.178
14: 8: 5	4-SP	2926.75	1098.92	101.8	1104.99	908.18	0.176
14:23: 5	4-SP	2941.75	1113.92	101.8	1105.32	908.51	0.174
14:38: 5	4-SP	2956.75	1128.92	101.8	1105.66	908.85	0.172
14:53: 5	4-SP	2971.75	1143.92	101.8	1105.96	909.15	0.170
15: 8: 5	4-SP	2986.75	1158.92	101.8	1106.31	909.50	0.168
15:22:35	4-SP	3001.25	1173.42	101.8	1106.63	909.82	0.167
15:22:40	4-SP	3001.33	1173.50	101.8	1106.60	909.79	0.167
15:22:45	4-SP	3001.42	1173.59	101.8	1106.58	909.77	0.167
15:22:50	4-SP	3001.50	1173.67	101.8	1106.62	909.81	0.167
15:22:55	4-SP	3001.58	1173.75	101.8	1106.62	909.81	0.167
15:23: 0	4-SP	3001.67	1173.84	101.8	1106.63	909.82	0.167
15:23: 5	4-SP	3001.75	1173.92	101.8	1106.62	909.81	0.167
15:23:15	4-SP	3001.92	1174.09	101.8	1106.61	909.80	0.167

Table D.2-2. (Continued)

FIELD REPORT #: WOLFCEP

TEST PHASE : SHUTIN PERIOD # 2

FINAL FLOW PRESSURE [PSIA] = 196.81

PRODUCING TIME [MIN] = 548.58

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
15:26:35	4-SP	3005.25	1177.42	101.8	1106.66	909.85	0.166
15:26:40	4-SP	3005.33	1177.50	101.8	1106.67	909.86	0.166
15:26:45	4-SP	3005.42	1177.59	101.8	1106.68	909.87	0.166
15:26:50	4-SP	3005.50	1177.67	101.8	1106.69	909.88	0.166
15:26:55	4-SP	3005.58	1177.75	101.8	1106.70	909.89	0.166
15:27: 0	4-SP	3005.67	1177.84	101.8	1106.65	909.84	0.166
15:27: 5	4-SP	3005.75	1177.92	101.8	1106.56	909.75	0.166
15:27:10	4-SP	3005.83	1178.00	101.8	1106.62	909.81	0.166

TEST PHASE : FLOW PERIOD # 3

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA
HH:MM:SS	DD-MM	*****	*****	*****	*****
15:27:10	4-SP	3005.83	0.00	101.8	1106.62
15:27:15	4-SP	3005.92	0.09	101.8	866.83
15:27:20	4-SP	3006.00	0.17	101.8	915.72
15:27:25	4-SP	3006.08	0.25	101.8	824.63
15:27:30	4-SP	3006.17	0.34	101.8	784.79
15:27:35	4-SP	3006.25	0.42	101.8	837.08
15:27:40	4-SP	3006.33	0.50	101.8	684.34
15:27:45	4-SP	3006.42	0.59	101.8	765.15
15:27:50	4-SP	3006.50	0.67	101.8	623.53
15:27:55	4-SP	3006.58	0.75	101.8	694.05
15:28: 0	4-SP	3006.67	0.84	101.8	643.56
15:28: 5	4-SP	3006.75	0.92	101.8	631.98
15:28:10	4-SP	3006.83	1.00	101.8	692.03
15:28:15	4-SP	3006.92	1.09	101.8	574.04
15:28:20	4-SP	3007.00	1.17	101.8	653.51
15:28:25	4-SP	3007.08	1.25	101.8	542.30
15:28:30	4-SP	3007.17	1.34	101.8	606.44
15:28:35	4-SP	3007.25	1.42	101.8	578.03
15:28:40	4-SP	3007.33	1.50	101.8	561.76
15:28:45	4-SP	3007.42	1.59	101.8	626.94
15:28:50	4-SP	3007.50	1.67	101.8	517.29
15:28:55	4-SP	3007.58	1.75	101.8	594.39
15:29: 0	4-SP	3007.67	1.84	101.8	500.54
15:29: 5	4-SP	3007.75	1.92	101.8	556.51
15:29:10	4-SP	3007.83	2.00	101.8	544.20
15:29:20	4-SP	3008.00	2.17	101.8	586.12
15:29:30	4-SP	3008.17	2.34	101.8	555.99
15:29:40	4-SP	3008.33	2.50	101.8	523.19
15:29:50	4-SP	3008.50	2.67	101.8	490.27
15:30: 0	4-SP	3008.67	2.84	101.8	457.22

PLOT START TIME: 30HR 27 MIN 35 SEC
 PLOT STOP TIME: 50HR 5 MIN 50 SEC
 PERIOD START TIME: 30HR 27 MIN 35 SEC
 TP = 559. MIN

Horner Plot to Determine PI
 Test Zone No. 2 Upper Permian Wolfcamp

Figure D.2-3

Table D.2-3. Summary of Average Discharge Rates
Test Zone No. 2 Upper Permian Wolfcamp

Date (1982)	Elapsed Time (Min)	STB/Day	SWEC Drawdown	
			No.	
September 3	1,534.92 to 1,827.83	91	Preliminary	
September 4 - September 6	3,005.83 to 5,978.83	85	1	
September 8 - September 18	8,533.25 to 23,015.08	62	2	
September 20 - September 29	25,771.83 to 38,978.83	57	3	

Average Daily Discharge
Drawdown No. 2

	<u>GPM</u>	
September 8	2.0	67
September 9	1.90	65
September 10	1.80	62
September 11	1.80	62
September 12	1.80	62
September 13	1.75	60
September 14	1.75	60
September 15	1.75	60
September 16	1.75	60
September 17	1.75	60
September 18	1.75	60

Table D.2-4. Recovery Test No. 4 Data Listing to Determine K
Test Zone No. 2 Upper Permian Wolfcamp

FIELD REPORT # : WOLFCP

TEST PHASE : FLOW PERIOD # 4

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA
HH:MM:SS	DD-MM				
12:55:00	18-SP	23013.67	14480.42	103.3	110.51
12:55:05	18-SP	23013.75	14480.50	103.3	109.81
12:55:10	18-SP	23013.83	14480.58	103.3	118.64
12:55:15	18-SP	23013.92	14480.67	103.3	108.95
12:55:20	18-SP	23014.00	14480.75	103.3	100.46
12:55:25	18-SP	23014.08	14480.83	103.3	109.74
12:55:30	18-SP	23014.17	14480.92	103.3	109.59
12:55:35	18-SP	23014.25	14481.00	103.3	92.42
12:55:40	18-SP	23014.33	14481.08	103.3	102.37
12:55:45	18-SP	23014.42	14481.17	103.3	109.00
12:55:50	18-SP	23014.50	14481.25	103.3	87.45
12:55:55	18-SP	23014.58	14481.33	103.3	95.81
12:56:00	18-SP	23014.67	14481.42	103.3	104.13
12:56:05	18-SP	23014.75	14481.50	103.3	84.90
12:56:10	18-SP	23014.83	14481.58	103.3	89.72
12:56:15	18-SP	23014.92	14481.67	103.3	97.97
12:56:20	18-SP	23015.00	14481.75	103.3	85.59
12:56:25	18-SP	23015.08	14481.83	103.3	84.10

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM						
12:56:25	18-SP	23015.08	0.00	103.3	84.10	0.00	
12:56:30	18-SP	23015.17	0.09	103.3	92.28	8.18	5.302
12:56:35	18-SP	23015.25	0.17	103.3	100.27	16.17	5.025
12:56:40	18-SP	23015.33	0.25	103.3	108.36	24.26	4.857
12:56:45	18-SP	23015.42	0.34	103.3	116.73	32.63	4.724
12:56:50	18-SP	23015.50	0.42	103.3	125.12	41.02	4.632
12:56:55	18-SP	23015.58	0.50	103.3	133.76	49.66	4.556
12:57:00	18-SP	23015.67	0.59	103.3	142.61	58.51	4.485
12:57:05	18-SP	23015.75	0.67	103.3	151.71	67.61	4.429
12:57:10	18-SP	23015.83	0.75	103.3	161.07	76.97	4.380
12:57:15	18-SP	23015.92	0.84	103.3	170.62	86.52	4.331
12:57:20	18-SP	23016.00	0.92	103.3	180.45	96.35	4.292
12:57:25	18-SP	23016.08	1.00	103.3	190.54	106.44	4.255
12:57:30	18-SP	23016.17	1.09	103.3	200.78	116.68	4.218
12:57:35	18-SP	23016.25	1.17	103.3	211.25	127.15	4.187
12:57:40	18-SP	23016.33	1.25	103.3	221.94	137.84	4.158
12:57:45	18-SP	23016.42	1.34	103.3	232.72	148.62	4.128
12:57:50	18-SP	23016.50	1.42	103.3	243.63	159.53	4.103
12:57:55	18-SP	23016.58	1.50	103.3	254.64	170.54	4.079
12:58:00	18-SP	23016.67	1.59	103.3	265.75	181.65	4.054

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4
 FINAL FLOW PRESSURE [PSIA] = 84.10
 PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
12:58: 5	18-SP	23016.75	1.67	103.3	276.89	192.79	4.033
12:58:10	18-SP	23016.83	1.75	103.3	287.99	203.89	4.012
12:58:15	18-SP	23016.92	1.84	103.3	299.11	215.01	3.991
12:58:20	18-SP	23017.00	1.92	103.3	310.13	226.03	3.972
12:58:25	18-SP	23017.08	2.00	103.3	321.11	237.01	3.954
12:58:30	18-SP	23017.17	2.09	103.3	331.99	247.89	3.935
12:58:35	18-SP	23017.25	2.17	103.3	342.76	258.66	3.919
12:58:40	18-SP	23017.33	2.25	103.3	353.38	269.28	3.903
12:58:45	18-SP	23017.42	2.34	103.3	363.76	279.66	3.886
12:58:50	18-SP	23017.50	2.42	103.3	373.99	289.89	3.872
12:58:55	18-SP	23017.58	2.50	103.3	384.01	299.91	3.857
12:59: 0	18-SP	23017.67	2.59	103.3	393.83	309.73	3.842
12:59: 5	18-SP	23017.75	2.67	103.3	403.43	319.33	3.829
12:59:10	18-SP	23017.83	2.75	103.3	412.80	328.70	3.816
12:59:15	18-SP	23017.92	2.84	103.3	421.97	337.87	3.802
12:59:20	18-SP	23018.00	2.92	103.3	430.87	346.77	3.790
12:59:25	18-SP	23018.08	3.00	103.3	439.59	355.49	3.778
12:59:30	18-SP	23018.17	3.09	103.3	447.98	363.88	3.765
12:59:35	18-SP	23018.25	3.17	103.3	456.19	372.09	3.754
12:59:40	18-SP	23018.33	3.25	103.3	464.14	380.04	3.744
12:59:45	18-SP	23018.42	3.34	103.3	471.79	387.69	3.732
12:59:50	18-SP	23018.50	3.42	103.3	479.26	395.16	3.721
12:59:55	18-SP	23018.58	3.50	103.3	486.43	402.33	3.711
13: 0: 0	18-SP	23018.67	3.59	103.3	493.37	409.27	3.700
13: 0: 5	18-SP	23018.75	3.67	103.3	500.09	415.99	3.691
13: 0:10	18-SP	23018.83	3.75	103.3	506.54	422.44	3.681
13: 0:15	18-SP	23018.92	3.84	103.3	512.81	428.71	3.671
13: 0:20	18-SP	23019.00	3.92	103.3	518.82	434.72	3.662
13: 0:25	18-SP	23019.08	4.00	103.3	524.61	440.51	3.653
13: 0:30	18-SP	23019.17	4.09	103.3	530.20	446.10	3.644
13: 0:35	18-SP	23019.25	4.17	103.3	535.53	451.43	3.635
13: 0:40	18-SP	23019.33	4.25	103.3	540.71	456.61	3.627
13: 0:45	18-SP	23019.42	4.34	103.3	545.69	461.59	3.618
13: 0:50	18-SP	23019.50	4.42	103.3	550.52	466.42	3.610
13: 0:55	18-SP	23019.58	4.50	103.3	555.09	470.99	3.602
13: 1: 0	18-SP	23019.67	4.59	103.3	559.52	475.42	3.594
13: 1: 5	18-SP	23019.75	4.67	103.3	563.78	479.68	3.586
13: 1:10	18-SP	23019.83	4.75	103.3	567.88	483.78	3.579
13: 1:15	18-SP	23019.92	4.84	103.3	571.83	487.73	3.571
13: 1:20	18-SP	23020.00	4.92	103.3	575.64	491.54	3.564
13: 1:25	18-SP	23020.08	5.00	103.3	579.32	495.22	3.557
13: 1:30	18-SP	23020.17	5.09	103.3	582.84	498.74	3.549
13: 1:35	18-SP	23020.25	5.17	103.3	586.26	502.16	3.542
13: 1:40	18-SP	23020.33	5.25	103.3	589.56	505.46	3.535
13: 1:45	18-SP	23020.42	5.34	103.3	592.72	508.62	3.528
13: 1:50	18-SP	23020.50	5.42	103.3	595.80	511.70	3.521
13: 1:55	18-SP	23020.58	5.50	103.3	598.75	514.65	3.515
13: 2: 0	18-SP	23020.67	5.59	103.3	601.59	517.49	3.508

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
13: 2: 5	18-SP	23020.75	5.67	103.3	604.34	520.24	3.502
13: 2:10	18-SP	23020.83	5.75	103.3	607.03	522.93	3.496
13: 2:15	18-SP	23020.92	5.84	103.3	609.61	525.51	3.489
13: 2:20	18-SP	23021.00	5.92	103.3	612.09	527.99	3.483
13: 2:25	18-SP	23021.08	6.00	103.3	614.53	530.43	3.477
13: 2:30	18-SP	23021.17	6.09	103.3	616.87	532.77	3.471
13: 2:35	18-SP	23021.25	6.17	103.3	619.16	535.06	3.465
13: 2:40	18-SP	23021.33	6.25	103.3	621.36	537.26	3.460
13: 2:45	18-SP	23021.42	6.34	103.3	623.51	539.41	3.453
13: 2:50	18-SP	23021.50	6.42	103.3	625.57	541.47	3.448
13: 2:55	18-SP	23021.58	6.50	103.3	627.60	543.50	3.443
13: 3: 0	18-SP	23021.67	6.59	103.3	629.57	545.47	3.437
13: 3: 5	18-SP	23021.75	6.67	103.3	631.49	547.39	3.431
13: 3:10	18-SP	23021.83	6.75	103.3	633.34	549.24	3.426
13: 3:15	18-SP	23021.92	6.84	103.3	635.13	551.03	3.420
13: 3:20	18-SP	23022.00	6.92	103.3	636.87	552.77	3.415
13: 3:25	18-SP	23022.08	7.00	103.3	638.57	554.47	3.410
13: 3:30	18-SP	23022.17	7.09	103.3	640.27	556.17	3.405
13: 3:35	18-SP	23022.25	7.17	103.3	641.88	557.78	3.400
13: 3:40	18-SP	23022.33	7.25	103.3	643.47	559.37	3.395
13: 3:45	18-SP	23022.42	7.34	103.3	645.01	560.91	3.390
13: 3:50	18-SP	23022.50	7.42	103.3	646.47	562.37	3.385
13: 3:55	18-SP	23022.58	7.50	103.3	647.99	563.89	3.380
13: 4: 0	18-SP	23022.67	7.59	103.3	649.38	565.28	3.375
13: 4: 5	18-SP	23022.75	7.67	103.3	650.78	566.68	3.371
13: 4:10	18-SP	23022.83	7.75	103.3	652.14	568.04	3.366
13: 4:15	18-SP	23022.92	7.84	103.3	653.47	569.37	3.361
13: 4:20	18-SP	23023.00	7.92	103.3	654.74	570.64	3.357
13: 4:25	18-SP	23023.08	8.00	103.3	656.03	571.93	3.352
13: 4:30	18-SP	23023.17	8.09	103.3	657.26	573.16	3.348
13: 4:35	18-SP	23023.25	8.17	103.3	658.45	574.35	3.343
13: 4:40	18-SP	23023.33	8.25	103.3	659.65	575.55	3.339
13: 4:45	18-SP	23023.42	8.34	103.3	660.81	576.71	3.334
13: 4:50	18-SP	23023.50	8.42	103.3	661.93	577.83	3.330
13: 4:55	18-SP	23023.58	8.50	103.3	663.04	578.94	3.326
13: 5: 0	18-SP	23023.67	8.59	103.3	664.10	580.00	3.322
13: 5: 5	18-SP	23023.75	8.67	103.3	665.18	581.08	3.318
13: 5:10	18-SP	23023.83	8.75	103.3	666.22	582.12	3.314
13: 5:15	18-SP	23023.92	8.84	103.3	667.24	583.14	3.309
13: 5:20	18-SP	23024.00	8.92	103.3	668.24	584.14	3.305
13: 5:25	18-SP	23024.08	9.00	103.3	669.21	585.11	3.301
13: 5:30	18-SP	23024.17	9.09	103.3	670.19	586.09	3.297
13: 5:35	18-SP	23024.25	9.17	103.3	671.14	587.04	3.293
13: 5:40	18-SP	23024.33	9.25	103.3	672.03	587.93	3.289
13: 5:45	18-SP	23024.42	9.34	103.3	672.94	588.84	3.285
13: 5:50	18-SP	23024.50	9.42	103.3	673.85	589.75	3.282
13: 5:55	18-SP	23024.58	9.50	103.3	674.72	590.62	3.278
13: 6: 0	18-SP	23024.67	9.59	103.3	675.56	591.46	3.274

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
13: 6: 5	18-SP	23024.75	9.67	103.3	676.40	592.30	3.270
13: 6:10	18-SP	23024.83	9.75	103.3	677.24	593.14	3.267
13: 6:15	18-SP	23024.92	9.84	103.3	678.07	593.97	3.263
13: 6:20	18-SP	23025.00	9.92	103.3	678.85	594.75	3.259
13: 6:25	18-SP	23025.08	10.00	103.3	679.63	595.53	3.256
13: 6:30	18-SP	23025.17	10.09	103.3	680.41	596.31	3.252
13: 6:35	18-SP	23025.25	10.17	103.3	681.17	597.07	3.248
13: 6:40	18-SP	23025.33	10.25	103.3	681.93	597.83	3.245
13: 6:45	18-SP	23025.42	10.34	103.3	682.61	598.51	3.241
13: 6:50	18-SP	23025.50	10.42	103.3	683.33	599.23	3.238
13: 6:55	18-SP	23025.58	10.50	103.3	684.02	599.92	3.234
13: 7: 0	18-SP	23025.67	10.59	103.3	684.74	600.64	3.231
13: 7: 5	18-SP	23025.75	10.67	103.3	685.45	601.35	3.227
13: 7:10	18-SP	23025.83	10.75	103.3	686.10	602.00	3.224
13: 7:15	18-SP	23025.92	10.84	103.3	686.78	602.68	3.221
13: 7:20	18-SP	23026.00	10.92	103.3	687.42	603.32	3.217
13: 7:25	18-SP	23026.08	11.00	103.3	688.07	603.97	3.214
13: 7:30	18-SP	23026.17	11.09	103.3	688.71	604.61	3.211
13: 7:35	18-SP	23026.25	11.17	103.3	689.35	605.25	3.208
13: 7:40	18-SP	23026.33	11.25	103.3	689.95	605.85	3.204
13: 7:45	18-SP	23026.42	11.34	103.3	690.57	606.47	3.201
13: 7:50	18-SP	23026.50	11.42	103.3	691.16	607.06	3.198
13: 7:55	18-SP	23026.58	11.50	103.3	691.76	607.66	3.195
13: 8: 0	18-SP	23026.67	11.59	103.3	692.27	608.17	3.192
13: 8: 5	18-SP	23026.75	11.67	103.3	692.90	608.80	3.189
13: 8:10	18-SP	23026.83	11.75	103.3	693.46	609.36	3.186
13: 8:15	18-SP	23026.92	11.84	103.3	694.01	609.91	3.182
13: 8:20	18-SP	23027.00	11.92	103.3	694.56	610.46	3.179
13: 8:25	18-SP	23027.08	12.00	103.3	695.09	610.99	3.176
13: 8:30	18-SP	23027.17	12.09	103.3	695.64	611.54	3.173
13: 8:35	18-SP	23027.25	12.17	103.3	696.14	612.04	3.170
13: 8:40	18-SP	23027.33	12.25	103.3	696.67	612.57	3.168
13: 8:45	18-SP	23027.42	12.34	103.3	697.18	613.08	3.164
13: 8:50	18-SP	23027.50	12.42	103.3	697.69	613.59	3.162
13: 8:55	18-SP	23027.58	12.50	103.3	698.18	614.08	3.159
13: 9: 0	18-SP	23027.67	12.59	103.3	698.70	614.60	3.156
13: 9: 5	18-SP	23027.75	12.67	103.3	699.19	615.09	3.153
13: 9:10	18-SP	23027.83	12.75	103.3	699.63	615.53	3.150
13: 9:15	18-SP	23027.92	12.84	103.3	700.11	616.01	3.147
13: 9:20	18-SP	23028.00	12.92	103.3	700.60	616.50	3.144
13: 9:25	18-SP	23028.08	13.00	103.3	701.07	616.97	3.142
13: 9:30	18-SP	23028.17	13.09	103.3	701.51	617.41	3.139
13: 9:35	18-SP	23028.25	13.17	103.3	701.94	617.84	3.136
13: 9:40	18-SP	23028.33	13.25	103.3	702.39	618.29	3.133
13: 9:45	18-SP	23028.42	13.34	103.3	702.84	618.74	3.131
13: 9:50	18-SP	23028.50	13.42	103.3	703.31	619.21	3.128
13: 9:55	18-SP	23028.58	13.50	103.3	703.71	619.61	3.125
13:10: 0	18-SP	23028.67	13.59	103.2	704.17	620.07	3.122

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED	DELTA	BOT HOLE TEMP.	BOT HOLE PRESSURE	DELTA P	LOG HORNER
HH:MM:SS	DD-MM	TIME, MIN	TIME, MIN	DEG F	PSIA	PSI	TIME
*****	*****	*****	*****	*****	*****	*****	*****
13:10: 5	18-SP	23028.75	13.67	103.2	704.58	620.48	3.120
13:10:10	18-SP	23028.83	13.75	103.2	704.98	620.88	3.117
13:10:15	18-SP	23028.92	13.84	103.2	705.39	621.29	3.115
13:10:20	18-SP	23029.00	13.92	103.2	705.81	621.71	3.112
13:10:25	18-SP	23029.08	14.00	103.2	706.17	622.07	3.110
13:10:30	18-SP	23029.17	14.09	103.2	706.63	622.53	3.107
13:10:35	18-SP	23029.25	14.17	103.2	706.98	622.88	3.104
13:10:40	18-SP	23029.33	14.25	103.2	707.41	623.31	3.102
13:10:45	18-SP	23029.42	14.34	103.2	707.78	623.68	3.099
13:10:50	18-SP	23029.50	14.42	103.2	708.18	624.08	3.097
13:10:55	18-SP	23029.58	14.50	103.2	708.54	624.44	3.094
13:11: 0	18-SP	23029.67	14.59	103.2	708.92	624.82	3.092
13:11: 5	18-SP	23029.75	14.67	103.2	709.33	625.23	3.089
13:11:10	18-SP	23029.83	14.75	103.2	709.64	625.54	3.087
13:11:15	18-SP	23029.92	14.84	103.2	710.02	625.92	3.084
13:11:20	18-SP	23030.00	14.92	103.2	710.40	626.30	3.082
13:11:25	18-SP	23030.08	15.00	103.2	710.72	626.62	3.080
13:11:30	18-SP	23030.17	15.09	103.2	711.10	627.00	3.077
13:11:35	18-SP	23030.25	15.17	103.2	711.44	627.34	3.075
13:11:40	18-SP	23030.33	15.25	103.2	711.81	627.71	3.072
13:11:45	18-SP	23030.42	15.34	103.2	712.13	628.03	3.070
13:11:50	18-SP	23030.50	15.42	103.2	712.44	628.34	3.068
13:11:55	18-SP	23030.58	15.50	103.2	712.80	628.70	3.065
13:12: 0	18-SP	23030.67	15.59	103.2	713.14	629.04	3.063
13:12: 5	18-SP	23030.75	15.67	103.2	713.46	629.36	3.061
13:12:10	18-SP	23030.83	15.75	103.2	713.77	629.67	3.058
13:12:15	18-SP	23030.92	15.84	103.2	714.11	630.01	3.056
13:12:20	18-SP	23031.00	15.92	103.2	714.45	630.35	3.054
13:12:25	18-SP	23031.08	16.00	103.2	714.75	630.65	3.052
13:12:30	18-SP	23031.17	16.09	103.2	715.09	630.99	3.049
13:12:35	18-SP	23031.25	16.17	103.2	715.41	631.31	3.047
13:12:40	18-SP	23031.33	16.25	103.2	715.71	631.61	3.045
13:12:45	18-SP	23031.42	16.34	103.2	716.01	631.91	3.043
13:12:50	18-SP	23031.50	16.42	103.2	716.33	632.23	3.040
13:12:55	18-SP	23031.58	16.50	103.2	716.66	632.56	3.038
13:13: 0	18-SP	23031.67	16.59	103.2	716.93	632.83	3.036
13:13: 5	18-SP	23031.75	16.67	103.2	717.23	633.13	3.034
13:13:10	18-SP	23031.83	16.75	103.2	717.51	633.41	3.032
13:13:15	18-SP	23031.92	16.84	103.2	717.85	633.75	3.029
13:13:20	18-SP	23032.00	16.92	103.2	718.13	634.03	3.027
13:13:25	18-SP	23032.08	17.00	103.2	718.42	634.32	3.025
13:13:30	18-SP	23032.17	17.09	103.2	718.70	634.60	3.023
13:13:35	18-SP	23032.25	17.17	103.2	719.02	634.92	3.021
13:13:40	18-SP	23032.33	17.25	103.2	719.27	635.17	3.019
13:13:45	18-SP	23032.42	17.34	103.2	719.56	635.46	3.017
13:13:50	18-SP	23032.50	17.42	103.2	719.82	635.72	3.015
13:13:55	18-SP	23032.58	17.50	103.2	720.11	636.01	3.013
13:14: 0	18-SP	23032.67	17.59	103.2	720.41	636.31	3.011

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
13:14:5	18-SP	23032.75	17.67	103.2	720.65	636.55	3.009
13:14:10	18-SP	23032.83	17.75	103.2	720.91	636.81	3.007
13:14:15	18-SP	23032.92	17.84	103.2	721.23	637.13	3.004
13:14:20	18-SP	23033.00	17.92	103.2	721.51	637.41	3.002
13:14:25	18-SP	23033.08	18.00	103.2	721.74	637.64	3.001
13:14:30	18-SP	23033.17	18.09	103.2	721.99	637.89	2.998
13:14:35	18-SP	23033.25	18.17	103.2	722.26	638.16	2.996
13:14:40	18-SP	23033.33	18.25	103.2	722.53	638.43	2.995
13:14:45	18-SP	23033.42	18.34	103.2	722.76	638.66	2.992
13:14:50	18-SP	23033.50	18.42	103.2	723.04	638.94	2.991
13:14:55	18-SP	23033.58	18.50	103.2	723.31	639.21	2.989
13:15:0	18-SP	23033.67	18.59	103.2	723.57	639.47	2.987
13:15:5	18-SP	23033.75	18.67	103.2	723.80	639.70	2.985
13:15:10	18-SP	23033.83	18.75	103.2	724.07	639.97	2.983
13:15:15	18-SP	23033.92	18.84	103.2	724.28	640.18	2.981
13:15:20	18-SP	23034.00	18.92	103.2	724.52	640.42	2.979
13:15:25	18-SP	23034.08	19.00	103.2	724.80	640.70	2.977
13:15:30	18-SP	23034.17	19.09	103.2	725.04	640.94	2.975
13:15:35	18-SP	23034.25	19.17	103.2	725.28	641.18	2.973
13:15:40	18-SP	23034.33	19.25	103.2	725.55	641.45	2.971
13:15:45	18-SP	23034.42	19.34	103.2	725.74	641.64	2.969
13:15:50	18-SP	23034.50	19.42	103.2	726.01	641.91	2.968
13:15:55	18-SP	23034.58	19.50	103.2	726.22	642.12	2.966
13:16:0	18-SP	23034.67	19.59	103.2	726.48	642.38	2.964
13:16:5	18-SP	23034.75	19.67	103.2	726.73	642.63	2.962
13:16:10	18-SP	23034.83	19.75	103.2	726.97	642.87	2.960
13:16:15	18-SP	23034.92	19.84	103.2	727.17	643.07	2.958
13:16:20	18-SP	23035.00	19.92	103.2	727.42	643.32	2.957
13:16:25	18-SP	23035.08	20.00	103.2	727.63	643.53	2.955
13:16:30	18-SP	23035.17	20.09	103.2	727.86	643.76	2.953
13:16:35	18-SP	23035.25	20.17	103.2	728.08	643.98	2.951
13:16:40	18-SP	23035.33	20.25	103.2	728.30	644.20	2.949
13:16:45	18-SP	23035.42	20.34	103.2	728.54	644.44	2.947
13:16:50	18-SP	23035.50	20.42	103.2	728.72	644.62	2.946
13:16:55	18-SP	23035.58	20.50	103.2	728.94	644.84	2.944
13:17:0	18-SP	23035.67	20.59	103.2	729.20	645.10	2.942
13:17:5	18-SP	23035.75	20.67	103.2	729.42	645.32	2.941
13:17:10	18-SP	23035.83	20.75	103.2	729.62	645.52	2.939
13:17:15	18-SP	23035.92	20.84	103.2	729.83	645.73	2.937
13:17:20	18-SP	23036.00	20.92	103.2	730.05	645.95	2.935
13:17:25	18-SP	23036.08	21.00	103.2	730.28	646.18	2.934
13:17:30	18-SP	23036.17	21.09	103.2	730.46	646.36	2.932
13:17:35	18-SP	23036.25	21.17	103.2	730.68	646.58	2.930
13:17:40	18-SP	23036.33	21.25	103.2	730.91	646.81	2.929
13:17:45	18-SP	23036.42	21.34	103.2	731.08	646.98	2.927
13:17:50	18-SP	23036.50	21.42	103.2	731.31	647.21	2.925
13:17:55	18-SP	23036.58	21.50	103.2	731.50	647.40	2.923
13:18:0	18-SP	23036.67	21.59	103.2	731.71	647.61	2.922

Table D.2-4. (Continued)

FIELD REPORT # : WOLF CP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORN TIME
HH:MM:SS	DD-MM	TIME, MIN	TIME, MIN	DEG F	PSIA	PSI	TIME
*****	*****	*****	*****	*****	*****	*****	*****
13:18: 5	18-SP	23036.75	21.67	103.2	731.91	647.81	2.920
13:18:10	18-SP	23036.83	21.75	103.2	732.13	648.03	2.918
13:18:15	18-SP	23036.92	21.84	103.2	732.31	648.21	2.917
13:18:20	18-SP	23037.00	21.92	103.2	732.52	648.42	2.915
13:18:25	18-SP	23037.08	22.00	103.2	732.72	648.62	2.913
13:18:30	18-SP	23037.17	22.09	103.2	732.93	648.83	2.912
13:18:35	18-SP	23037.25	22.17	103.2	733.08	648.98	2.910
13:18:40	18-SP	23037.33	22.25	103.2	733.31	649.21	2.909
13:18:45	18-SP	23037.42	22.34	103.2	733.50	649.40	2.907
13:18:50	18-SP	23037.50	22.42	103.2	733.70	649.60	2.905
13:18:55	18-SP	23037.58	22.50	103.2	733.90	649.80	2.904
13:19: 0	18-SP	23037.67	22.59	103.2	734.07	649.97	2.902
13:19: 5	18-SP	23037.75	22.67	103.2	734.27	650.17	2.900
13:19:10	18-SP	23037.83	22.75	103.2	734.46	650.36	2.899
13:19:15	18-SP	23037.92	22.84	103.2	734.66	650.56	2.897
13:19:20	18-SP	23038.00	22.92	103.2	734.86	650.76	2.896
13:19:25	18-SP	23038.08	23.00	103.2	735.01	650.91	2.894
13:19:30	18-SP	23038.17	23.09	103.2	735.20	651.10	2.892
13:19:35	18-SP	23038.25	23.17	103.2	735.36	651.26	2.891
13:19:40	18-SP	23038.33	23.25	103.2	735.56	651.46	2.889
13:19:45	18-SP	23038.42	23.34	103.2	735.77	651.67	2.888
13:19:50	18-SP	23038.50	23.42	103.2	735.93	651.83	2.886
13:19:55	18-SP	23038.58	23.50	103.2	736.12	652.02	2.885
13:20: 0	18-SP	23038.67	23.59	103.2	736.30	652.20	2.883
13:20: 5	18-SP	23038.75	23.67	103.2	736.48	652.38	2.882
13:20:10	18-SP	23038.83	23.75	103.2	736.65	652.55	2.880
13:20:15	18-SP	23038.92	23.84	103.2	736.88	652.78	2.879
13:20:20	18-SP	23039.00	23.92	103.2	737.02	652.92	2.877
13:20:25	18-SP	23039.08	24.00	103.2	737.19	653.09	2.876
13:20:30	18-SP	23039.17	24.09	103.2	737.39	653.29	2.874
13:20:35	18-SP	23039.25	24.17	103.2	737.52	653.42	2.873
13:20:40	18-SP	23039.33	24.25	103.2	737.72	653.62	2.871
13:20:45	18-SP	23039.42	24.34	103.2	737.93	653.83	2.870
13:20:50	18-SP	23039.50	24.42	103.2	738.08	653.98	2.868
13:20:55	18-SP	23039.58	24.50	103.2	738.22	654.12	2.867
13:21: 0	18-SP	23039.67	24.59	103.2	738.41	654.31	2.865
13:21: 5	18-SP	23039.75	24.67	103.2	738.59	654.49	2.864
13:21:10	18-SP	23039.83	24.75	103.2	738.76	654.66	2.862
13:21:15	18-SP	23039.92	24.84	103.2	738.92	654.82	2.861
13:21:20	18-SP	23040.00	24.92	103.2	739.09	654.99	2.859
13:21:25	18-SP	23040.08	25.00	103.2	739.26	655.16	2.858
13:21:30	18-SP	23040.17	25.09	103.2	739.44	655.34	2.856
13:21:35	18-SP	23040.25	25.17	103.2	739.59	655.49	2.855
13:21:40	18-SP	23040.33	25.25	103.2	739.71	655.61	2.854
13:21:45	18-SP	23040.42	25.34	103.2	739.89	655.79	2.852
13:21:50	18-SP	23040.50	25.42	103.2	740.08	655.98	2.851
13:21:55	18-SP	23040.58	25.50	103.2	740.25	656.15	2.849
13:22: 0	18-SP	23040.67	25.59	103.2	740.37	656.27	2.848

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
13:22: 5	18-SP	23040.75	25.67	103.2	740.57	656.47	2.847
13:22:10	18-SP	23040.83	25.75	103.2	740.69	656.59	2.845
13:22:15	18-SP	23040.92	25.84	103.2	740.88	656.78	2.844
13:22:20	18-SP	23041.00	25.92	103.2	741.05	656.95	2.842
13:22:25	18-SP	23041.08	26.00	103.2	741.23	657.13	2.841
13:22:30	18-SP	23041.17	26.09	103.2	741.32	657.22	2.840
13:22:35	18-SP	23041.25	26.17	103.2	741.49	657.39	2.838
13:22:40	18-SP	23041.33	26.25	103.2	741.66	657.56	2.837
13:22:45	18-SP	23041.42	26.34	103.2	741.81	657.71	2.835
13:22:50	18-SP	23041.50	26.42	103.2	741.98	657.88	2.834
13:22:55	18-SP	23041.58	26.50	103.2	742.12	658.02	2.833
13:23: 0	18-SP	23041.67	26.59	103.2	742.27	658.17	2.831
13:23: 5	18-SP	23041.75	26.67	103.2	742.42	658.32	2.830
13:23:10	18-SP	23041.83	26.75	103.2	742.57	658.47	2.829
13:23:15	18-SP	23041.92	26.84	103.2	742.74	658.64	2.827
13:23:20	18-SP	23042.00	26.92	103.2	742.89	658.79	2.826
13:23:25	18-SP	23042.08	27.00	103.2	743.05	658.95	2.825
13:23:30	18-SP	23042.17	27.09	103.2	743.21	659.11	2.823
13:23:35	18-SP	23042.25	27.17	103.2	743.35	659.25	2.822
13:23:40	18-SP	23042.33	27.25	103.2	743.46	659.36	2.821
13:23:45	18-SP	23042.42	27.34	103.2	743.63	659.53	2.819
13:23:50	18-SP	23042.50	27.42	103.2	743.77	659.67	2.818
13:23:55	18-SP	23042.58	27.50	103.2	743.91	659.81	2.817
13:24: 0	18-SP	23042.67	27.59	103.2	744.08	659.98	2.815
13:24: 5	18-SP	23042.75	27.67	103.2	744.23	660.13	2.814
13:24:10	18-SP	23042.83	27.75	103.2	744.40	660.30	2.813
13:24:15	18-SP	23042.92	27.84	103.2	744.48	660.38	2.811
13:24:20	18-SP	23043.00	27.92	103.2	744.65	660.55	2.810
13:24:25	18-SP	23043.08	28.00	103.2	744.78	660.68	2.809
13:24:30	18-SP	23043.17	28.09	103.2	744.92	660.82	2.807
13:24:35	18-SP	23043.25	28.17	103.2	745.08	660.98	2.806
13:24:40	18-SP	23043.33	28.25	103.2	745.23	661.13	2.805
13:24:45	18-SP	23043.42	28.34	103.2	745.40	661.30	2.804
13:24:50	18-SP	23043.50	28.42	103.2	745.51	661.41	2.802
13:24:55	18-SP	23043.58	28.50	103.2	745.63	661.53	2.801
13:25: 0	18-SP	23043.67	28.59	103.2	745.79	661.69	2.800
13:25: 5	18-SP	23043.75	28.67	103.2	745.93	661.83	2.799
13:25:10	18-SP	23043.83	28.75	103.2	746.09	661.99	2.797
13:25:15	18-SP	23043.92	28.84	103.2	746.19	662.09	2.796
13:25:20	18-SP	23044.00	28.92	103.2	746.33	662.23	2.795
13:25:25	18-SP	23044.08	29.00	103.2	746.47	662.37	2.794
13:25:55	18-SP	23044.58	29.50	103.2	747.29	663.19	2.786
13:26:25	18-SP	23045.08	30.00	103.2	748.10	664.00	2.779
13:26:55	18-SP	23045.58	30.50	103.2	748.86	664.76	2.772
13:27:25	18-SP	23046.08	31.00	103.2	749.64	665.54	2.765
13:27:55	18-SP	23046.58	31.50	103.2	750.35	666.25	2.758
13:28:25	18-SP	23047.08	32.00	103.2	751.08	666.98	2.751
13:28:55	18-SP	23047.58	32.50	103.2	751.83	667.73	2.744

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
13:29:25	18-SP	23048.08	33.00	103.2	752.50	668.40	2.738
13:29:55	18-SP	23048.58	33.50	103.2	753.19	669.09	2.731
13:30:25	18-SP	23049.08	34.00	103.1	753.86	669.76	2.725
13:30:55	18-SP	23049.58	34.50	103.1	754.52	670.42	2.718
13:31:25	18-SP	23050.08	35.00	103.1	755.21	671.11	2.712
13:31:55	18-SP	23050.58	35.50	103.1	755.86	671.76	2.706
13:32:25	18-SP	23051.08	36.00	103.1	756.46	672.36	2.700
13:32:55	18-SP	23051.58	36.50	103.1	757.06	672.96	2.694
13:33:25	18-SP	23052.08	37.00	103.1	757.70	673.60	2.688
13:33:55	18-SP	23052.58	37.50	103.1	758.27	674.17	2.682
13:34:25	18-SP	23053.08	38.00	103.1	758.88	674.78	2.676
13:34:55	18-SP	23053.58	38.50	103.1	759.47	675.37	2.671
13:35:25	18-SP	23054.08	39.00	103.1	760.05	675.95	2.665
13:35:55	18-SP	23054.58	39.50	103.1	760.60	676.50	2.660
13:36:25	18-SP	23055.08	40.00	103.1	761.18	677.08	2.654
13:36:55	18-SP	23055.58	40.50	103.1	761.72	677.62	2.649
13:37:25	18-SP	23056.08	41.00	103.1	762.25	678.15	2.644
13:37:55	18-SP	23056.58	41.50	103.1	762.77	678.67	2.638
13:38:25	18-SP	23057.08	42.00	103.1	763.30	679.20	2.633
13:38:55	18-SP	23057.58	42.50	103.1	763.84	679.74	2.628
13:39:25	18-SP	23058.08	43.00	103.1	764.32	680.22	2.623
13:39:55	18-SP	23058.58	43.50	103.1	764.82	680.72	2.618
13:40:25	18-SP	23059.08	44.00	103.1	765.34	681.24	2.613
13:40:55	18-SP	23059.58	44.50	103.1	765.82	681.72	2.608
13:41:25	18-SP	23060.08	45.00	103.1	766.33	682.23	2.603
13:41:55	18-SP	23060.58	45.50	103.1	766.77	682.67	2.598
13:42:25	18-SP	23061.08	46.00	103.1	767.25	683.15	2.594
13:42:55	18-SP	23061.58	46.50	103.1	767.72	683.62	2.589
13:43:25	18-SP	23062.08	47.00	103.1	768.18	684.08	2.584
13:43:55	18-SP	23062.58	47.50	103.1	768.65	684.55	2.580
13:44:25	18-SP	23063.08	48.00	103.1	769.06	684.96	2.575
13:44:55	18-SP	23063.58	48.50	103.1	769.53	685.43	2.571
13:45:25	18-SP	23064.08	49.00	103.1	769.95	685.85	2.566
13:45:55	18-SP	23064.58	49.50	103.1	770.39	686.29	2.562
13:46:25	18-SP	23065.08	50.00	103.1	770.79	686.69	2.558
13:46:55	18-SP	23065.58	50.50	103.1	771.23	687.13	2.553
13:47:25	18-SP	23066.08	51.00	103.1	771.66	687.56	2.549
13:47:55	18-SP	23066.58	51.50	103.1	772.05	687.95	2.545
13:48:25	18-SP	23067.08	52.00	103.1	772.45	688.35	2.541
13:48:55	18-SP	23067.58	52.50	103.1	772.83	688.73	2.536
13:49:25	18-SP	23068.08	53.00	103.1	773.29	689.19	2.532
13:49:55	18-SP	23068.58	53.50	103.1	773.65	689.55	2.528
13:50:25	18-SP	23069.08	54.00	103.0	774.02	689.92	2.524
13:50:55	18-SP	23069.58	54.50	103.0	774.43	690.33	2.520
13:51:25	18-SP	23070.08	55.00	103.0	774.78	690.68	2.516
13:51:55	18-SP	23070.58	55.50	103.0	775.17	691.07	2.512
13:52:25	18-SP	23071.08	56.00	103.0	775.55	691.45	2.509
13:52:55	18-SP	23071.58	56.50	103.0	775.93	691.83	2.505

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
13:53:25	18-SP	23072.08	57.00	103.0	776.31	692.21	2.501
13:53:55	18-SP	23072.58	57.50	103.0	776.69	692.59	2.497
13:54:25	18-SP	23073.08	58.00	103.0	777.03	692.93	2.493
13:54:55	18-SP	23073.58	58.50	103.0	777.38	693.28	2.490
13:55:25	18-SP	23074.08	59.00	103.0	777.71	693.61	2.486
13:55:55	18-SP	23074.58	59.50	103.0	778.05	693.95	2.482
13:56:25	18-SP	23075.08	60.00	103.0	778.40	694.30	2.479
13:56:55	18-SP	23075.58	60.50	103.0	778.79	694.69	2.475
13:57:25	18-SP	23076.08	61.00	103.0	779.06	694.96	2.471
13:57:55	18-SP	23076.58	61.50	103.0	779.47	695.37	2.468
13:58:25	18-SP	23077.08	62.00	103.0	779.76	695.66	2.464
13:58:55	18-SP	23077.58	62.50	103.0	780.08	695.98	2.461
13:59:25	18-SP	23078.08	63.00	103.0	780.41	696.31	2.458
13:59:55	18-SP	23078.58	63.50	103.0	780.75	696.65	2.454
14: 0:25	18-SP	23079.08	64.00	103.0	781.07	696.97	2.451
14: 0:55	18-SP	23079.58	64.50	103.0	781.38	697.28	2.447
14: 1:25	18-SP	23080.08	65.00	103.0	781.70	697.60	2.444
14: 1:55	18-SP	23080.58	65.50	103.0	782.00	697.90	2.441
14: 2:25	18-SP	23081.08	66.00	103.0	782.31	698.21	2.437
14: 2:55	18-SP	23081.58	66.50	103.0	782.63	698.53	2.434
14: 3:25	18-SP	23082.08	67.00	103.0	782.94	698.84	2.431
14: 3:55	18-SP	23082.58	67.50	103.0	783.26	699.16	2.428
14: 4:25	18-SP	23083.08	68.00	103.0	783.57	699.47	2.424
14: 4:55	18-SP	23083.58	68.50	103.0	783.84	699.74	2.421
14: 5:25	18-SP	23084.08	69.00	103.0	784.12	700.02	2.418
14: 5:55	18-SP	23084.58	69.50	103.0	784.43	700.33	2.415
14: 6:25	18-SP	23085.08	70.00	103.0	784.71	700.61	2.412
14: 6:55	18-SP	23085.58	70.50	103.0	785.00	700.90	2.409
14: 7:25	18-SP	23086.08	71.00	103.0	785.30	701.20	2.406
14: 7:55	18-SP	23086.58	71.50	103.0	785.64	701.54	2.403
14: 8:25	18-SP	23087.08	72.00	103.0	785.85	701.75	2.400
14: 8:55	18-SP	23087.58	72.50	103.0	786.15	702.05	2.397
14: 9:25	18-SP	23088.08	73.00	103.0	786.40	702.30	2.394
14: 9:55	18-SP	23088.58	73.50	103.0	786.69	702.59	2.391
14:10:25	18-SP	23089.08	74.00	102.9	786.99	702.89	2.388
14:10:55	18-SP	23089.58	74.50	102.9	787.23	703.13	2.385
14:11:25	18-SP	23090.08	75.00	102.9	787.52	703.42	2.382
14:11:55	18-SP	23090.58	75.50	102.9	787.78	703.68	2.379
14:16:55	18-SP	23095.58	80.50	102.9	790.36	706.26	2.351
14:21:55	18-SP	23100.58	85.50	102.9	792.81	708.71	2.325
14:26:55	18-SP	23105.58	90.50	102.9	795.06	710.96	2.301
14:31:55	18-SP	23110.58	95.50	102.9	797.21	713.11	2.278
14:36:55	18-SP	23115.58	100.50	102.8	799.22	715.12	2.256
14:41:55	18-SP	23120.58	105.50	102.8	801.14	717.04	2.235
14:46:55	18-SP	23125.58	110.50	102.8	802.95	718.85	2.215
14:51:55	18-SP	23130.58	115.50	102.8	804.72	720.62	2.196
14:56:55	18-SP	23135.58	120.50	102.8	806.36	722.26	2.177
15: 1:55	18-SP	23140.58	125.50	102.8	808.00	723.90	2.160

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED	DELTA	BOT HOLE TEMP.	BOT HOLE PRESSURE	DELTA P	LOG HORNER
HH:MM:SS	DD-MM	TIME, MIN	TIME, MIN	DEG F	PSIA	PSI	TIME
*****	*****	*****	*****	*****	*****	*****	*****
15: 6:55	18-SP	23145.58	130.50	102.8	809.53	725.43	2.143
15:11:55	18-SP	23150.58	135.50	102.7	811.03	726.93	2.127
15:16:55	18-SP	23155.58	140.50	102.7	812.46	728.36	2.111
15:21:55	18-SP	23160.58	145.50	102.7	813.85	729.75	2.096
15:26:55	18-SP	23165.58	150.50	102.7	815.20	731.10	2.081
15:31:55	18-SP	23170.58	155.50	102.7	816.52	732.42	2.067
15:36:55	18-SP	23175.58	160.50	102.7	817.77	733.67	2.054
15:41:55	18-SP	23180.58	165.50	102.7	819.00	734.90	2.041
15:46:55	18-SP	23185.58	170.50	102.6	820.21	736.11	2.028
15:51:55	18-SP	23190.58	175.50	102.6	821.35	737.25	2.015
15:56:55	18-SP	23195.58	180.50	102.6	822.51	738.41	2.003
16: 1:55	18-SP	23200.58	185.50	102.6	823.61	739.51	1.991
16: 6:55	18-SP	23205.58	190.50	102.6	824.67	740.57	1.980
16:11:55	18-SP	23210.58	195.50	102.6	825.71	741.61	1.969
16:16:55	18-SP	23215.58	200.50	102.6	826.79	742.69	1.958
16:21:55	18-SP	23220.58	205.50	102.6	827.75	743.65	1.947
16:26:55	18-SP	23225.58	210.50	102.6	828.78	744.68	1.937
16:31:55	18-SP	23230.58	215.50	102.5	829.74	745.64	1.927
16:36:55	18-SP	23235.58	220.50	102.5	830.69	746.59	1.917
16:41:55	18-SP	23240.58	225.50	102.5	831.58	747.48	1.908
16:46:55	18-SP	23245.58	230.50	102.5	832.50	748.40	1.898
16:51:55	18-SP	23250.58	235.50	102.5	833.40	749.30	1.889
16:56:55	18-SP	23255.58	240.50	102.5	834.28	750.18	1.880
17: 1:55	18-SP	23260.58	245.50	102.5	835.16	751.06	1.871
17: 6:55	18-SP	23265.58	250.50	102.5	836.01	751.91	1.863
17:11:55	18-SP	23270.58	255.50	102.5	836.83	752.73	1.854
17:16:55	18-SP	23275.58	260.50	102.4	837.67	753.57	1.846
17:21:55	18-SP	23280.58	265.50	102.4	838.46	754.36	1.838
17:26:55	18-SP	23285.58	270.50	102.4	839.23	755.13	1.830
17:31:55	18-SP	23290.58	275.50	102.4	840.07	755.97	1.822
17:36:55	18-SP	23295.58	280.50	102.4	840.82	756.72	1.814
17:41:55	18-SP	23300.58	285.50	102.4	841.62	757.52	1.807
17:46:55	18-SP	23305.58	290.50	102.4	842.36	758.26	1.799
17:51:55	18-SP	23310.58	295.50	102.4	843.05	758.95	1.792
17:56:55	18-SP	23315.58	300.50	102.4	843.83	759.73	1.785
18: 1:55	18-SP	23320.58	305.50	102.4	844.50	760.40	1.778
18: 6:55	18-SP	23325.58	310.50	102.4	845.21	761.11	1.771
18:11:55	18-SP	23330.58	315.50	102.4	845.95	761.85	1.764
18:16:55	18-SP	23335.58	320.50	102.4	846.66	762.56	1.757
18:21:55	18-SP	23340.58	325.50	102.4	847.36	763.26	1.751
18:26:55	18-SP	23345.58	330.50	102.3	848.02	763.92	1.744
18:31:55	18-SP	23350.58	335.50	102.3	848.66	764.56	1.738
18:36:55	18-SP	23355.58	340.50	102.3	849.34	765.24	1.731
18:41:55	18-SP	23360.58	345.50	102.3	849.99	765.89	1.725
18:46:55	18-SP	23365.58	350.50	102.3	850.60	766.50	1.719
18:51:55	18-SP	23370.58	355.50	102.3	851.31	767.21	1.713
18:56:55	18-SP	23375.58	360.50	102.3	851.83	767.73	1.707
19: 1:55	18-SP	23380.58	365.50	102.3	852.46	768.36	1.701

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19: 6:55	18-SP	23385.58	370.50	102.3	853.10	769.00	1.695
19:11:55	18-SP	23390.58	375.50	102.3	853.69	769.59	1.690
19:16:55	18-SP	23395.58	380.50	102.3	854.29	770.19	1.684
19:21:55	18-SP	23400.58	385.50	102.3	854.89	770.79	1.679
19:26:55	18-SP	23405.58	390.50	102.3	855.51	771.41	1.673
19:31:55	18-SP	23410.58	395.50	102.3	856.10	772.00	1.668
19:36:55	18-SP	23415.58	400.50	102.3	856.67	772.57	1.662
19:41:55	18-SP	23420.58	405.50	102.3	857.19	773.09	1.657
19:46:55	18-SP	23425.58	410.50	102.3	857.79	773.69	1.652
19:51:55	18-SP	23430.58	415.50	102.3	858.40	774.30	1.647
19:56:55	18-SP	23435.58	420.50	102.3	858.92	774.82	1.642
20: 1:55	18-SP	23440.58	425.50	102.3	859.47	775.37	1.637
20: 6:55	18-SP	23445.58	430.50	102.3	860.00	775.90	1.632
20:11:55	18-SP	23450.58	435.50	102.3	860.52	776.42	1.627
20:16:55	18-SP	23455.58	440.50	102.2	861.11	777.01	1.622
20:21:55	18-SP	23460.58	445.50	102.2	861.63	777.53	1.617
20:26:55	18-SP	23465.58	450.50	102.2	862.17	778.07	1.612
20:31:55	18-SP	23470.58	455.50	102.2	862.71	778.61	1.608
20:36:55	18-SP	23475.58	460.50	102.2	863.21	779.11	1.603
20:41:55	18-SP	23480.58	465.50	102.2	863.74	779.64	1.599
20:46:55	18-SP	23485.58	470.50	102.2	864.26	780.16	1.594
20:51:55	18-SP	23490.58	475.50	102.2	864.76	780.66	1.590
20:56:55	18-SP	23495.58	480.50	102.2	865.29	781.19	1.585
21: 1:55	18-SP	23500.58	485.50	102.2	865.77	781.67	1.581
21: 6:55	18-SP	23505.58	490.50	102.2	866.27	782.17	1.576
21:11:55	18-SP	23510.58	495.50	102.2	866.76	782.66	1.572
21:16:55	18-SP	23515.58	500.50	102.2	867.25	783.15	1.568
21:21:55	18-SP	23520.58	505.50	102.2	867.72	783.62	1.564
21:26:55	18-SP	23525.58	510.50	102.2	868.19	784.09	1.560
21:31:55	18-SP	23530.58	515.50	102.2	868.65	784.55	1.555
21:36:55	18-SP	23535.58	520.50	102.2	869.16	785.06	1.551
21:41:55	18-SP	23540.58	525.50	102.2	869.59	785.49	1.547
21:46:55	18-SP	23545.58	530.50	102.2	870.09	785.99	1.543
21:51:55	18-SP	23550.58	535.50	102.2	870.56	786.46	1.539
21:56:55	18-SP	23555.58	540.50	102.2	871.02	786.92	1.535
22: 1:55	18-SP	23560.58	545.50	102.2	871.43	787.33	1.532
22: 6:55	18-SP	23565.58	550.50	102.2	871.89	787.79	1.528
22:11:55	18-SP	23570.58	555.50	102.2	872.32	788.22	1.524
22:16:55	18-SP	23575.58	560.50	102.2	872.79	788.69	1.520
22:21:55	18-SP	23580.58	565.50	102.2	873.23	789.13	1.516
22:26:55	18-SP	23585.58	570.50	102.2	873.66	789.56	1.513
22:31:55	18-SP	23590.58	575.50	102.2	874.09	789.99	1.509
22:36:55	18-SP	23595.58	580.50	102.1	874.53	790.43	1.505
22:41:55	18-SP	23600.58	585.50	102.1	874.96	790.86	1.502
22:46:55	18-SP	23605.58	590.50	102.1	875.39	791.29	1.498
22:51:55	18-SP	23610.58	595.50	102.1	875.80	791.70	1.495
22:56:55	18-SP	23615.58	600.50	102.1	876.26	792.16	1.491
23: 1:55	18-SP	23620.58	605.50	102.1	876.65	792.55	1.488

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
23: 6:55	18-SP	23625.58	610.50	102.1	877.04	792.94	1.484
23:11:55	18-SP	23630.58	615.50	102.1	877.47	793.37	1.481
23:16:55	18-SP	23635.58	620.50	102.1	877.89	793.79	1.477
23:21:55	18-SP	23640.58	625.50	102.1	878.31	794.21	1.474
23:26:55	18-SP	23645.58	630.50	102.1	878.71	794.61	1.471
23:31:55	18-SP	23650.58	635.50	102.1	879.10	795.00	1.467
23:36:55	18-SP	23655.58	640.50	102.1	879.49	795.39	1.464
23:41:55	18-SP	23660.58	645.50	102.1	879.86	795.76	1.461
23:46:55	18-SP	23665.58	650.50	102.1	880.26	796.16	1.458
23:51:55	18-SP	23670.58	655.50	102.1	880.63	796.53	1.454
23:56:55	18-SP	23675.58	660.50	102.1	881.03	796.93	1.451
0: 1:55	19-SP	23680.58	665.50	102.1	881.41	797.31	1.448
0: 6:55	19-SP	23685.58	670.50	102.1	881.82	797.72	1.445
0:11:55	19-SP	23690.58	675.50	102.1	882.23	798.13	1.442
0:16:55	19-SP	23695.58	680.50	102.1	882.60	798.50	1.439
0:21:55	19-SP	23700.58	685.50	102.1	883.00	798.90	1.436
0:26:55	19-SP	23705.58	690.50	102.1	883.41	799.31	1.433
0:31:55	19-SP	23710.58	695.50	102.1	883.76	799.66	1.430
0:36:55	19-SP	23715.58	700.50	102.1	884.15	800.05	1.427
0:41:55	19-SP	23720.58	705.50	102.1	884.49	800.39	1.424
0:46:55	19-SP	23725.58	710.50	102.1	884.88	800.78	1.421
0:51:55	19-SP	23730.58	715.50	102.1	885.22	801.12	1.418
0:56:55	19-SP	23735.58	720.50	102.1	885.58	801.48	1.415
1: 1:55	19-SP	23740.58	725.50	102.1	885.93	801.83	1.412
1: 6:55	19-SP	23745.58	730.50	102.1	886.32	802.22	1.409
1:11:55	19-SP	23750.58	735.50	102.1	886.69	802.59	1.406
1:16:55	19-SP	23755.58	740.50	102.1	887.05	802.95	1.403
1:21:55	19-SP	23760.58	745.50	102.1	887.44	803.34	1.401
1:26:55	19-SP	23765.58	750.50	102.1	887.79	803.69	1.398
1:31:55	19-SP	23770.58	755.50	102.1	888.17	804.07	1.395
1:36:55	19-SP	23775.58	760.50	102.1	888.51	804.41	1.392
1:41:55	19-SP	23780.58	765.50	102.1	888.86	804.76	1.389
1:46:55	19-SP	23785.58	770.50	102.1	889.20	805.10	1.387
1:51:55	19-SP	23790.58	775.50	102.1	889.58	805.48	1.384
1:56:55	19-SP	23795.58	780.50	102.1	889.94	805.84	1.381
2: 1:55	19-SP	23800.58	785.50	102.1	890.25	806.15	1.379
2: 6:55	19-SP	23805.58	790.50	102.1	890.64	806.54	1.376
2:11:55	19-SP	23810.58	795.50	102.1	890.93	806.83	1.373
2:16:55	19-SP	23815.58	800.50	102.1	891.28	807.18	1.371
2:21:55	19-SP	23820.58	805.50	102.1	891.58	807.48	1.368
2:26:55	19-SP	23825.58	810.50	102.1	891.90	807.80	1.366
2:31:55	19-SP	23830.58	815.50	102.1	892.27	808.17	1.363
2:36:55	19-SP	23835.58	820.50	102.0	892.59	808.49	1.361
2:41:55	19-SP	23840.58	825.50	102.0	892.93	808.83	1.358
2:46:55	19-SP	23845.58	830.50	102.0	893.24	809.14	1.356
2:51:55	19-SP	23850.58	835.50	102.0	893.59	809.49	1.353
2:56:55	19-SP	23855.58	840.50	102.0	893.90	809.80	1.351
3: 1:55	19-SP	23860.58	845.50	102.0	894.22	810.12	1.348

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME H:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
3: 8:55	19-SP	23865.58	850.50	102.0	894.58	810.48	1.346
3:11:55	19-SP	23870.58	855.50	102.0	894.96	810.86	1.343
3:16:55	19-SP	23875.58	860.50	102.0	895.28	811.18	1.341
3:21:55	19-SP	23880.58	865.50	102.0	895.54	811.44	1.338
3:26:55	19-SP	23885.58	870.50	102.0	895.86	811.76	1.336
3:31:55	19-SP	23890.58	875.50	102.0	896.18	812.08	1.334
3:36:55	19-SP	23895.58	880.50	102.0	896.54	812.44	1.331
3:41:55	19-SP	23900.58	885.50	102.0	896.84	812.74	1.329
3:46:55	19-SP	23905.58	890.50	102.0	897.13	813.03	1.327
3:51:55	19-SP	23910.58	895.50	102.0	897.43	813.33	1.324
3:56:55	19-SP	23915.58	900.50	102.0	897.74	813.64	1.322
4: 1:55	19-SP	23920.58	905.50	102.0	898.07	813.97	1.320
4: 6:55	19-SP	23925.58	910.50	102.0	898.35	814.25	1.318
4:11:55	19-SP	23930.58	915.50	102.0	898.72	814.62	1.315
4:16:55	19-SP	23935.58	920.50	102.0	899.02	814.92	1.313
4:21:55	19-SP	23940.58	925.50	102.0	899.29	815.19	1.311
4:26:55	19-SP	23945.58	930.50	102.0	899.63	815.53	1.309
4:31:55	19-SP	23950.58	935.50	102.0	899.92	815.82	1.306
4:36:55	19-SP	23955.58	940.50	102.0	900.20	816.10	1.304
4:41:55	19-SP	23960.58	945.50	102.0	900.58	816.48	1.302
4:46:55	19-SP	23965.58	950.50	102.0	900.87	816.77	1.300
4:51:55	19-SP	23970.58	955.50	102.0	901.20	817.10	1.298
4:56:55	19-SP	23975.58	960.50	102.0	901.49	817.39	1.295
5: 1:55	19-SP	23980.58	965.50	102.0	901.79	817.69	1.293
5: 6:55	19-SP	23985.58	970.50	102.0	902.05	817.95	1.291
5:11:55	19-SP	23990.58	975.50	102.0	902.41	818.31	1.289
5:16:55	19-SP	23995.58	980.50	102.0	902.65	818.55	1.287
5:21:55	19-SP	24000.58	985.50	102.0	902.94	818.84	1.285
5:26:55	19-SP	24005.58	990.50	102.0	903.23	819.13	1.283
5:31:55	19-SP	24010.58	995.50	102.0	903.52	819.42	1.281
5:36:55	19-SP	24015.58	1000.50	102.0	903.83	819.73	1.279
5:41:55	19-SP	24020.58	1005.50	102.0	904.15	820.05	1.277
5:46:55	19-SP	24025.58	1010.50	102.0	904.41	820.31	1.275
5:51:55	19-SP	24030.58	1015.50	102.0	904.70	820.60	1.273
5:56:55	19-SP	24035.58	1020.50	102.0	904.97	820.87	1.270
6: 1:55	19-SP	24040.58	1025.50	102.0	905.28	821.18	1.268
6: 6:55	19-SP	24045.58	1030.50	102.0	905.52	821.42	1.266
6:11:55	19-SP	24050.58	1035.50	102.0	905.87	821.77	1.264
6:16:55	19-SP	24055.58	1040.50	102.0	906.11	822.01	1.263
6:21:55	19-SP	24060.58	1045.50	102.0	906.41	822.31	1.261
6:26:55	19-SP	24065.58	1050.50	102.0	906.70	822.60	1.259
6:31:55	19-SP	24070.58	1055.50	102.0	907.01	822.91	1.257
6:36:55	19-SP	24075.58	1060.50	102.0	907.27	823.17	1.255
6:41:55	19-SP	24080.58	1065.50	102.0	907.55	823.45	1.253
6:46:55	19-SP	24085.58	1070.50	102.0	907.78	823.68	1.251
6:51:55	19-SP	24090.58	1075.50	102.0	908.07	823.97	1.249
6:56:55	19-SP	24095.58	1080.50	102.0	908.35	824.25	1.247
7: 1:55	19-SP	24100.58	1085.50	102.0	908.63	824.53	1.245

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCF

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
7: 6:55	19-SP	24105.58	1090.50	102.0	908.90	824.80	1.243
7:11:55	19-SP	24110.58	1095.50	102.0	909.17	825.07	1.241
7:16:55	19-SP	24115.58	1100.50	102.0	909.43	825.33	1.240
7:21:55	19-SP	24120.58	1105.50	102.0	909.71	825.61	1.238
7:26:55	19-SP	24125.58	1110.50	102.0	909.97	825.87	1.236
7:31:55	19-SP	24130.58	1115.50	102.0	910.26	826.16	1.234
7:36:55	19-SP	24135.58	1120.50	102.0	910.55	826.45	1.232
7:41:55	19-SP	24140.58	1125.50	102.0	910.71	826.61	1.230
7:46:55	19-SP	24145.58	1130.50	102.0	911.03	826.93	1.229
7:51:55	19-SP	24150.58	1135.50	102.0	911.31	827.21	1.227
7:56:55	19-SP	24155.58	1140.50	102.0	911.55	827.45	1.225
8: 1:55	19-SP	24160.58	1145.50	102.0	911.85	827.75	1.223
8: 6:55	19-SP	24165.58	1150.50	102.0	912.08	827.98	1.221
8:11:55	19-SP	24170.58	1155.50	102.0	912.35	828.25	1.220
8:16:55	19-SP	24175.58	1160.50	102.0	912.61	828.51	1.218
8:21:55	19-SP	24180.58	1165.50	102.0	912.89	828.79	1.216
8:26:55	19-SP	24185.58	1170.50	102.0	913.11	829.01	1.214
8:31:55	19-SP	24190.58	1175.50	102.0	913.42	829.32	1.213
8:36:55	19-SP	24195.58	1180.50	102.0	913.66	829.56	1.211
8:41:55	19-SP	24200.58	1185.50	102.0	913.92	829.82	1.209
8:46:55	19-SP	24205.58	1190.50	102.0	914.15	830.05	1.207
8:51:55	19-SP	24210.58	1195.50	102.0	914.41	830.31	1.206
8:56:55	19-SP	24215.58	1200.50	102.0	914.68	830.58	1.204
9: 1:55	19-SP	24220.58	1205.50	101.9	914.90	830.80	1.202
9: 6:55	19-SP	24225.58	1210.50	101.9	915.14	831.04	1.201
9:11:55	19-SP	24230.58	1215.50	101.9	915.42	831.32	1.199
9:16:55	19-SP	24235.58	1220.50	101.9	915.65	831.55	1.197
9:21:55	19-SP	24240.58	1225.50	101.9	915.90	831.80	1.196
9:26:55	19-SP	24245.58	1230.50	101.9	916.15	832.05	1.194
9:31:55	19-SP	24250.58	1235.50	101.9	916.40	832.30	1.192
9:36:55	19-SP	24255.58	1240.50	101.9	916.65	832.55	1.191
9:41:55	19-SP	24260.58	1245.50	101.9	916.90	832.80	1.189
9:46:55	19-SP	24265.58	1250.50	101.9	917.13	833.03	1.187
9:51:55	19-SP	24270.58	1255.50	101.9	917.39	833.29	1.186
9:56:55	19-SP	24275.58	1260.50	101.9	917.59	833.49	1.184
10: 1:55	19-SP	24280.58	1265.50	101.9	917.83	833.73	1.183
10: 6:55	19-SP	24285.58	1270.50	101.9	918.11	834.01	1.181
10:11:55	19-SP	24290.58	1275.50	101.9	918.37	834.27	1.179
10:16:55	19-SP	24295.58	1280.50	101.9	918.56	834.46	1.178
10:21:55	19-SP	24300.58	1285.50	101.9	918.79	834.69	1.176
10:26:55	19-SP	24305.58	1290.50	101.9	919.05	834.95	1.175
10:31:55	19-SP	24310.58	1295.50	101.9	919.29	835.19	1.173
10:36:55	19-SP	24315.58	1300.50	101.9	919.53	835.43	1.172
10:41:55	19-SP	24320.58	1305.50	101.9	919.75	835.65	1.170
10:46:55	19-SP	24325.58	1310.50	101.9	919.97	835.87	1.168
10:51:55	19-SP	24330.58	1315.50	101.9	920.21	836.11	1.167
10:56:55	19-SP	24335.58	1320.50	101.9	920.46	836.36	1.165
11: 1:55	19-SP	24340.58	1325.50	101.9	920.70	836.60	1.164

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED	DELTA	BOT HOLE TEMP.	BOT HOLE PRESSURE	DELTA P	LOG HORNER
HH:MM:SS	DD-MM	TIME, MIN	TIME, MIN	DEG F	PSIA	PSI	TIME
*****	*****	*****	*****	*****	*****	*****	*****
11: 6:55	19-SP	24345.58	1330.50	101.9	920.94	836.84	1.162
11:11:55	19-SP	24350.58	1335.50	101.9	921.16	837.06	1.161
11:16:55	19-SP	24355.58	1340.50	101.9	921.34	837.24	1.159
11:21:55	19-SP	24360.58	1345.50	101.9	921.58	837.48	1.158
11:26:55	19-SP	24365.58	1350.50	101.9	921.86	837.76	1.156
11:31:55	19-SP	24370.58	1355.50	101.9	922.05	837.95	1.155
11:36:55	19-SP	24375.58	1360.50	101.9	922.29	838.19	1.153
11:41:55	19-SP	24380.58	1365.50	101.9	922.55	838.45	1.152
11:46:55	19-SP	24385.58	1370.50	101.9	922.73	838.63	1.150
11:51:55	19-SP	24390.58	1375.50	101.9	922.97	838.87	1.149
11:56:55	19-SP	24395.58	1380.50	101.9	923.18	839.08	1.147
12: 1:55	19-SP	24400.58	1385.50	101.9	923.41	839.31	1.146
12: 6:55	19-SP	24405.58	1390.50	101.9	923.62	839.52	1.144
12:11:55	19-SP	24410.58	1395.50	101.9	923.87	839.77	1.143
12:16:55	19-SP	24415.58	1400.50	101.9	924.08	839.98	1.142
12:21:55	19-SP	24420.58	1405.50	101.9	924.30	840.20	1.140
12:26:55	19-SP	24425.58	1410.50	101.9	924.51	840.41	1.139
12:31:55	19-SP	24430.58	1415.50	101.9	924.75	840.65	1.137
12:36:55	19-SP	24435.58	1420.50	101.9	924.94	840.84	1.136
12:41:55	19-SP	24440.58	1425.50	101.9	925.21	841.11	1.134
12:46:55	19-SP	24445.58	1430.50	101.9	925.40	841.30	1.133
12:51:55	19-SP	24450.58	1435.50	101.9	925.63	841.53	1.132
12:56:55	19-SP	24455.58	1440.50	101.9	925.83	841.73	1.130
13: 1:55	19-SP	24460.58	1445.50	101.9	926.03	841.93	1.129
13: 6:55	19-SP	24465.58	1450.50	101.9	926.27	842.17	1.127
13:11:55	19-SP	24470.58	1455.50	101.9	926.48	842.38	1.126
13:16:55	19-SP	24475.58	1460.50	101.9	926.71	842.61	1.125
13:21:55	19-SP	24480.58	1465.50	101.9	926.93	842.83	1.123
13:26:55	19-SP	24485.58	1470.50	101.9	927.15	843.05	1.122
13:31:55	19-SP	24490.58	1475.50	101.9	927.36	843.26	1.121
13:36:55	19-SP	24495.58	1480.50	101.9	927.55	843.45	1.119
13:41:55	19-SP	24500.58	1485.50	101.9	927.75	843.65	1.118
13:46:55	19-SP	24505.58	1490.50	101.9	927.99	843.89	1.117
13:51:55	19-SP	24510.58	1495.50	101.9	928.16	844.06	1.115
13:56:55	19-SP	24515.58	1500.50	101.9	928.39	844.29	1.114
14: 1:55	19-SP	24520.58	1505.50	101.9	928.61	844.51	1.113
14: 6:55	19-SP	24525.58	1510.50	101.9	928.84	844.74	1.111
14:11:55	19-SP	24530.58	1515.50	101.9	929.06	844.96	1.110
14:16:55	19-SP	24535.58	1520.50	101.9	929.21	845.11	1.109
14:21:55	19-SP	24540.58	1525.50	101.9	929.46	845.36	1.107
14:26:55	19-SP	24545.58	1530.50	101.9	929.66	845.56	1.106
14:31:55	19-SP	24550.58	1535.50	101.9	929.83	845.73	1.105
14:36:55	19-SP	24555.58	1540.50	101.9	930.08	845.98	1.103
14:41:55	19-SP	24560.58	1545.50	101.9	930.26	846.16	1.102
14:46:55	19-SP	24565.58	1550.50	101.9	930.49	846.39	1.101
14:51:55	19-SP	24570.58	1555.50	101.9	930.66	846.56	1.099
14:56:55	19-SP	24575.58	1560.50	101.9	930.91	846.81	1.098
15: 1:55	19-SP	24580.58	1565.50	101.9	931.10	847.00	1.097

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
15: 6:55	19-SP	24585.58	1570.50	101.9	931.31	847.21	1.096
15:11:55	19-SP	24590.58	1575.50	101.9	931.50	847.40	1.094
15:16:55	19-SP	24595.58	1580.50	101.9	931.70	847.60	1.093
15:21:55	19-SP	24600.58	1585.50	101.9	931.92	847.82	1.092
15:26:55	19-SP	24605.58	1590.50	101.9	932.10	848.00	1.091
15:31:55	19-SP	24610.58	1595.50	101.9	932.28	848.18	1.089
15:36:55	19-SP	24615.58	1600.50	101.9	932.53	848.43	1.088
15:41:55	19-SP	24620.58	1605.50	101.9	932.75	848.65	1.087
15:46:55	19-SP	24625.58	1610.50	101.9	932.90	848.80	1.086
15:51:55	19-SP	24630.58	1615.50	101.9	933.14	849.04	1.084
15:56:55	19-SP	24635.58	1620.50	101.9	933.36	849.26	1.083
16: 1:55	19-SP	24640.58	1625.50	101.9	933.52	849.42	1.082
16: 6:55	19-SP	24645.58	1630.50	101.9	933.72	849.62	1.081
16:11:55	19-SP	24650.58	1635.50	101.9	933.94	849.84	1.079
16:16:55	19-SP	24655.58	1640.50	101.9	934.09	849.99	1.078
16:21:55	19-SP	24660.58	1645.50	101.9	934.33	850.23	1.077
16:26:55	19-SP	24665.58	1650.50	101.9	934.53	850.43	1.076
16:31:55	19-SP	24670.58	1655.50	101.9	934.72	850.62	1.075
16:36:55	19-SP	24675.58	1660.50	101.9	934.94	850.84	1.073
16:41:55	19-SP	24680.58	1665.50	101.9	935.11	851.01	1.072
16:46:55	19-SP	24685.58	1670.50	101.9	935.31	851.21	1.071
16:51:55	19-SP	24690.58	1675.50	101.9	935.48	851.38	1.070
16:56:55	19-SP	24695.58	1680.50	101.9	935.70	851.60	1.069
17: 1:55	19-SP	24700.58	1685.50	101.9	935.89	851.79	1.067
17: 6:55	19-SP	24705.58	1690.50	101.9	936.08	851.98	1.066
17:11:55	19-SP	24710.58	1695.50	101.9	936.31	852.21	1.065
17:16:55	19-SP	24715.58	1700.50	101.9	936.48	852.38	1.064
17:21:55	19-SP	24720.58	1705.50	101.9	936.68	852.58	1.063
17:26:55	19-SP	24725.58	1710.50	101.9	936.82	852.72	1.062
17:31:55	19-SP	24730.58	1715.50	101.9	937.06	852.96	1.060
17:36:55	19-SP	24735.58	1720.50	101.9	937.21	853.11	1.059
17:41:55	19-SP	24740.58	1725.50	101.9	937.44	853.34	1.058
17:46:55	19-SP	24745.58	1730.50	101.9	937.62	853.52	1.057
17:51:55	19-SP	24750.58	1735.50	101.9	937.79	853.69	1.056
17:56:55	19-SP	24755.58	1740.50	101.9	937.96	853.86	1.055
18: 1:55	19-SP	24760.58	1745.50	101.9	938.18	854.08	1.054
18: 6:55	19-SP	24765.58	1750.50	101.9	938.35	854.25	1.052
18:11:55	19-SP	24770.58	1755.50	101.9	938.52	854.42	1.051
18:16:55	19-SP	24775.58	1760.50	101.9	938.72	854.62	1.050
18:21:55	19-SP	24780.58	1765.50	101.9	938.92	854.82	1.049
18:26:55	19-SP	24785.58	1770.50	101.9	939.15	855.05	1.048
18:31:55	19-SP	24790.58	1775.50	101.9	939.34	855.24	1.047
18:36:55	19-SP	24795.58	1780.50	101.9	939.54	855.44	1.046
18:41:55	19-SP	24800.58	1785.50	101.9	939.70	855.60	1.045
18:46:55	19-SP	24805.58	1790.50	101.9	939.88	855.78	1.044
18:51:55	19-SP	24810.58	1795.50	101.9	940.08	855.98	1.042
18:56:55	19-SP	24815.58	1800.50	101.9	940.26	856.16	1.041
19: 1:55	19-SP	24820.58	1805.50	101.9	940.45	856.35	1.040

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
19: 6:55	19-SP	24825.58	1810.50	101.9	940.65	856.55	1.039
19:11:55	19-SP	24830.58	1815.50	101.9	940.81	856.71	1.038
19:16:55	19-SP	24835.58	1820.50	101.9	941.01	856.91	1.037
19:21:55	19-SP	24840.58	1825.50	101.9	941.19	857.09	1.036
19:26:55	19-SP	24845.58	1830.50	101.9	941.38	857.28	1.035
19:31:55	19-SP	24850.58	1835.50	101.9	941.53	857.43	1.034
19:36:55	19-SP	24855.58	1840.50	101.9	941.74	857.64	1.033
19:41:55	19-SP	24860.58	1845.50	101.9	941.90	857.80	1.032
19:46:55	19-SP	24865.58	1850.50	101.9	942.10	858.00	1.031
19:51:55	19-SP	24870.58	1855.50	101.9	942.29	858.19	1.029
19:56:55	19-SP	24875.58	1860.50	101.9	942.48	858.38	1.028
20: 1:55	19-SP	24880.58	1865.50	101.9	942.64	858.54	1.027
20: 6:55	19-SP	24885.58	1870.50	101.9	942.81	858.71	1.026
20:11:55	19-SP	24890.58	1875.50	101.9	942.98	858.88	1.025
20:16:55	19-SP	24895.58	1880.50	101.9	943.14	859.04	1.024
20:21:55	19-SP	24900.58	1885.50	101.9	943.37	859.27	1.023
20:26:55	19-SP	24905.58	1890.50	101.9	943.53	859.43	1.022
20:31:55	19-SP	24910.58	1895.50	101.9	943.69	859.59	1.021
20:36:55	19-SP	24915.58	1900.50	101.9	943.86	859.76	1.020
20:41:55	19-SP	24920.58	1905.50	101.9	944.05	859.95	1.019
20:46:55	19-SP	24925.58	1910.50	101.9	944.20	860.10	1.018
20:51:55	19-SP	24930.58	1915.50	101.9	944.41	860.31	1.017
20:56:55	19-SP	24935.58	1920.50	101.9	944.56	860.46	1.016
21: 1:55	19-SP	24940.58	1925.50	101.9	944.75	860.65	1.015
21: 6:55	19-SP	24945.58	1930.50	101.9	944.94	860.84	1.014
21:11:55	19-SP	24950.58	1935.50	101.9	945.12	861.02	1.013
21:16:55	19-SP	24955.58	1940.50	101.9	945.29	861.19	1.012
21:21:55	19-SP	24960.58	1945.50	101.9	945.43	861.33	1.011
21:26:55	19-SP	24965.58	1950.50	101.9	945.61	861.51	1.010
21:31:55	19-SP	24970.58	1955.50	101.9	945.79	861.69	1.009
21:36:55	19-SP	24975.58	1960.50	101.9	945.97	861.87	1.008
21:41:55	19-SP	24980.58	1965.50	101.9	946.11	862.01	1.007
21:46:55	19-SP	24985.58	1970.50	101.9	946.31	862.21	1.006
21:51:55	19-SP	24990.58	1975.50	101.9	946.47	862.37	1.005
21:56:55	19-SP	24995.58	1980.50	101.9	946.68	862.58	1.004
22: 1:55	19-SP	25000.58	1985.50	101.9	946.81	862.71	1.003
22: 6:55	19-SP	25005.58	1990.50	101.9	946.96	862.86	1.002
22:11:55	19-SP	25010.58	1995.50	101.9	947.09	862.99	1.001
22:16:55	19-SP	25015.58	2000.50	101.9	947.32	863.22	1.000
22:21:55	19-SP	25020.58	2005.50	101.9	947.48	863.38	0.999
22:26:55	19-SP	25025.58	2010.50	101.9	947.66	863.56	0.998
22:31:55	19-SP	25030.58	2015.50	101.9	947.81	863.71	0.997
22:36:55	19-SP	25035.58	2020.50	101.9	947.98	863.88	0.996
22:41:55	19-SP	25040.58	2025.50	101.9	948.16	864.06	0.995
22:46:55	19-SP	25045.58	2030.50	101.9	948.35	864.25	0.994
22:51:55	19-SP	25050.58	2035.50	101.9	948.47	864.37	0.993
22:56:55	19-SP	25055.58	2040.50	101.9	948.65	864.55	0.992
23: 1:55	19-SP	25060.58	2045.50	101.9	948.80	864.70	0.991

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
23: 6:55	19-SP	25065.58	2050.50	101.9	948.97	864.87	0.990
23:11:55	19-SP	25070.58	2055.50	101.9	949.14	865.04	0.989
23:16:55	19-SP	25075.58	2060.50	101.9	949.30	865.20	0.988
23:21:55	19-SP	25080.58	2065.50	101.9	949.48	865.38	0.987
23:26:55	19-SP	25085.58	2070.50	101.9	949.66	865.56	0.987
23:31:55	19-SP	25090.58	2075.50	101.9	949.80	865.70	0.986
23:36:55	19-SP	25095.58	2080.50	101.9	949.93	865.83	0.985
23:41:55	19-SP	25100.58	2085.50	101.9	950.08	865.98	0.984
23:46:55	19-SP	25105.58	2090.50	101.9	950.24	866.14	0.983
23:51:55	19-SP	25110.58	2095.50	101.9	950.41	866.31	0.982
23:56:55	19-SP	25115.58	2100.50	101.9	950.55	866.45	0.981
0: 1:55	20-SP	25120.58	2105.50	101.8	950.76	866.66	0.980
0: 6:55	20-SP	25125.58	2110.50	101.8	950.89	866.79	0.979
0:11:55	20-SP	25130.58	2115.50	101.8	951.03	866.93	0.978
0:16:55	20-SP	25135.58	2120.50	101.8	951.20	867.10	0.977
0:21:55	20-SP	25140.58	2125.50	101.8	951.38	867.28	0.976
0:26:55	20-SP	25145.58	2130.50	101.8	951.53	867.43	0.975
0:31:55	20-SP	25150.58	2135.50	101.8	951.70	867.60	0.975
0:36:55	20-SP	25155.58	2140.50	101.8	951.79	867.69	0.974
0:41:55	20-SP	25160.58	2145.50	101.8	951.97	867.87	0.973
0:46:55	20-SP	25165.58	2150.50	101.8	952.18	868.08	0.972
0:51:55	20-SP	25170.58	2155.50	101.8	952.32	868.22	0.971
0:56:55	20-SP	25175.58	2160.50	101.8	952.47	868.37	0.970
1: 1:55	20-SP	25180.58	2165.50	101.8	952.65	868.55	0.969
1: 6:55	20-SP	25185.58	2170.50	101.8	952.79	868.69	0.968
1:11:55	20-SP	25190.58	2175.50	101.8	952.95	868.85	0.967
1:16:55	20-SP	25195.58	2180.50	101.8	953.10	869.00	0.966
1:21:55	20-SP	25200.58	2185.50	101.8	953.24	869.14	0.966
1:26:55	20-SP	25205.58	2190.50	101.8	953.38	869.28	0.965
1:31:55	20-SP	25210.58	2195.50	101.8	953.52	869.42	0.964
1:36:55	20-SP	25215.58	2200.50	101.8	953.71	869.61	0.963
1:41:55	20-SP	25220.58	2205.50	101.8	953.88	869.78	0.962
1:46:55	20-SP	25225.58	2210.50	101.8	953.99	869.89	0.961
1:51:55	20-SP	25230.58	2215.50	101.8	954.17	870.07	0.960
1:56:55	20-SP	25235.58	2220.50	101.8	954.34	870.24	0.959
2: 1:55	20-SP	25240.58	2225.50	101.8	954.47	870.37	0.959
2: 6:55	20-SP	25245.58	2230.50	101.8	954.65	870.55	0.958
2:11:55	20-SP	25250.58	2235.50	101.8	954.80	870.70	0.957
2:16:55	20-SP	25255.58	2240.50	101.8	954.93	870.83	0.956
2:21:55	20-SP	25260.58	2245.50	101.8	955.13	871.03	0.955
2:26:55	20-SP	25265.58	2250.50	101.8	955.27	871.17	0.954
2:31:55	20-SP	25270.58	2255.50	101.8	955.40	871.30	0.953
2:36:55	20-SP	25275.58	2260.50	101.8	955.52	871.42	0.953
2:41:55	20-SP	25280.58	2265.50	101.8	955.71	871.61	0.952
2:46:55	20-SP	25285.58	2270.50	101.8	955.87	871.77	0.951
2:51:55	20-SP	25290.58	2275.50	101.8	956.00	871.90	0.950
2:56:55	20-SP	25295.58	2280.50	101.8	956.15	872.05	0.949
3: 1:55	20-SP	25300.58	2285.50	101.8	956.32	872.22	0.948

Table D.2-4. (Continued)

FIELD REPORT # : WOLFCEP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY HH:MM:SS	DATE DD-MM	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
*****	*****	*****	*****	*****	*****	*****	*****
3: 6:55	20-SP	25305.58	2290.50	101.8	956.46	872.36	0.947
3:11:55	20-SP	25310.58	2295.50	101.8	956.59	872.49	0.947
3:16:55	20-SP	25315.58	2300.50	101.8	956.76	872.66	0.946
3:21:55	20-SP	25320.58	2305.50	101.8	956.91	872.81	0.945
3:26:55	20-SP	25325.58	2310.50	101.8	957.07	872.97	0.944
3:31:55	20-SP	25330.58	2315.50	101.8	957.22	873.12	0.943
3:36:55	20-SP	25335.58	2320.50	101.8	957.36	873.26	0.942
3:41:55	20-SP	25340.58	2325.50	101.8	957.53	873.43	0.942
3:46:55	20-SP	25345.58	2330.50	101.8	957.67	873.57	0.941
3:51:55	20-SP	25350.58	2335.50	101.8	957.83	873.73	0.940
3:56:55	20-SP	25355.58	2340.50	101.8	957.97	873.87	0.939
4: 1:55	20-SP	25360.58	2345.50	101.8	958.09	873.99	0.938
4: 6:55	20-SP	25365.58	2350.50	101.8	958.25	874.15	0.937
4:11:55	20-SP	25370.58	2355.50	101.8	958.39	874.29	0.937
4:16:55	20-SP	25375.58	2360.50	101.8	958.50	874.40	0.936
4:21:55	20-SP	25380.58	2365.50	101.8	958.66	874.56	0.935
4:26:55	20-SP	25385.58	2370.50	101.8	958.78	874.68	0.934
4:31:55	20-SP	25390.58	2375.50	101.8	958.98	874.88	0.933
4:36:55	20-SP	25395.58	2380.50	101.8	959.10	875.00	0.933
4:41:55	20-SP	25400.58	2385.50	101.8	959.27	875.17	0.932
4:46:55	20-SP	25405.58	2390.50	101.8	959.42	875.32	0.931
4:51:55	20-SP	25410.58	2395.50	101.8	959.54	875.44	0.930
4:56:55	20-SP	25415.58	2400.50	101.8	959.72	875.62	0.929
5: 1:55	20-SP	25420.58	2405.50	101.8	959.83	875.73	0.929
5: 6:55	20-SP	25425.58	2410.50	101.8	959.99	875.89	0.928
5:11:55	20-SP	25430.58	2415.50	101.8	960.16	876.06	0.927
5:16:55	20-SP	25435.58	2420.50	101.8	960.28	876.18	0.926
5:21:55	20-SP	25440.58	2425.50	101.8	960.41	876.31	0.925
5:26:55	20-SP	25445.58	2430.50	101.8	960.56	876.46	0.925
5:31:55	20-SP	25450.58	2435.50	101.8	960.74	876.64	0.924
5:36:55	20-SP	25455.58	2440.50	101.8	960.83	876.73	0.923
5:41:55	20-SP	25460.58	2445.50	101.8	961.01	876.91	0.922
5:46:55	20-SP	25465.58	2450.50	101.8	961.14	877.04	0.922
5:51:55	20-SP	25470.58	2455.50	101.8	961.28	877.18	0.921
5:56:55	20-SP	25475.58	2460.50	101.8	961.45	877.35	0.920
6: 1:55	20-SP	25480.58	2465.50	101.8	961.61	877.51	0.919
6: 6:55	20-SP	25485.58	2470.50	101.8	961.69	877.59	0.918
6:11:55	20-SP	25490.58	2475.50	101.8	961.89	877.79	0.918
6:16:55	20-SP	25495.58	2480.50	101.8	962.01	877.91	0.917
6:21:55	20-SP	25500.58	2485.50	101.8	962.18	878.08	0.916
6:26:55	20-SP	25505.58	2490.50	101.8	962.30	878.20	0.915
6:31:55	20-SP	25510.58	2495.50	101.8	962.46	878.36	0.915
6:36:55	20-SP	25515.58	2500.50	101.8	962.57	878.47	0.914
6:41:55	20-SP	25520.58	2505.50	101.8	962.73	878.63	0.913
6:46:55	20-SP	25525.58	2510.50	101.8	962.86	878.76	0.912
6:51:55	20-SP	25530.58	2515.50	101.8	963.01	878.91	0.912
6:56:55	20-SP	25535.58	2520.50	101.8	963.17	879.07	0.911
7: 1:55	20-SP	25540.58	2525.50	101.8	963.30	879.20	0.910

Table D.2-4. (Continued)

FIELD REPORT # : WOLFPCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME, MIN	DELTA TIME, MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORNER TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
7: 6:55	20-SP	25545.58	2530.50	101.8	963.45	879.35	0.909
7:11:55	20-SP	25550.58	2535.50	101.8	963.56	879.46	0.909
7:16:55	20-SP	25555.58	2540.50	101.8	963.74	879.64	0.908
7:21:55	20-SP	25560.58	2545.50	101.8	963.88	879.78	0.907
7:26:55	20-SP	25565.58	2550.50	101.8	964.01	879.91	0.906
7:31:55	20-SP	25570.58	2555.50	101.8	964.15	880.05	0.906
7:36:55	20-SP	25575.58	2560.50	101.8	964.28	880.18	0.905
7:41:55	20-SP	25580.58	2565.50	101.8	964.42	880.32	0.904
7:46:55	20-SP	25585.58	2570.50	101.8	964.56	880.46	0.903
7:51:55	20-SP	25590.58	2575.50	101.8	964.68	880.58	0.903
7:56:55	20-SP	25595.58	2580.50	101.8	964.84	880.74	0.902
8: 1:55	20-SP	25600.58	2585.50	101.8	964.98	880.88	0.901
8: 6:55	20-SP	25605.58	2590.50	101.8	965.16	881.06	0.900
8:11:55	20-SP	25610.58	2595.50	101.8	965.24	881.14	0.900
8:16:55	20-SP	25615.58	2600.50	101.8	965.41	881.31	0.899
8:21:55	20-SP	25620.58	2605.50	101.8	965.53	881.43	0.898
8:26:55	20-SP	25625.58	2610.50	101.8	965.65	881.55	0.897
8:31:55	20-SP	25630.58	2615.50	101.8	965.79	881.69	0.897
8:36:55	20-SP	25635.58	2620.50	101.8	965.92	881.82	0.896
8:41:55	20-SP	25640.58	2625.50	101.8	966.04	881.94	0.895
8:46:55	20-SP	25645.58	2630.50	101.8	966.20	882.10	0.895
8:51:55	20-SP	25650.58	2635.50	101.8	966.34	882.24	0.894
8:56:55	20-SP	25655.58	2640.50	101.8	966.48	882.38	0.893
9: 1:55	20-SP	25660.58	2645.50	101.8	966.61	882.51	0.892
9: 6:55	20-SP	25665.58	2650.50	101.8	966.73	882.63	0.892
9:11:55	20-SP	25670.58	2655.50	101.8	966.89	882.79	0.891
9:16:55	20-SP	25675.58	2660.50	101.8	967.03	882.93	0.890
9:21:55	20-SP	25680.58	2665.50	101.8	967.13	883.03	0.890
9:26:55	20-SP	25685.58	2670.50	101.8	967.27	883.17	0.889
9:31:55	20-SP	25690.58	2675.50	101.8	967.41	883.31	0.888
9:36:55	20-SP	25695.58	2680.50	101.8	967.55	883.45	0.887
9:41:55	20-SP	25700.58	2685.50	101.8	967.65	883.55	0.887
9:46:55	20-SP	25705.58	2690.50	101.8	967.81	883.71	0.886
9:51:55	20-SP	25710.58	2695.50	101.8	967.95	883.85	0.885
9:56:55	20-SP	25715.58	2700.50	101.8	968.05	883.95	0.885
10: 1:55	20-SP	25720.58	2705.50	101.8	968.18	884.08	0.884
10: 6:55	20-SP	25725.58	2710.50	101.8	968.34	884.24	0.883
10:11:55	20-SP	25730.58	2715.50	101.8	968.45	884.35	0.883
10:16:55	20-SP	25735.58	2720.50	101.8	968.57	884.47	0.882
10:21:55	20-SP	25740.58	2725.50	101.8	968.72	884.62	0.881
10:26:55	20-SP	25745.58	2730.50	101.8	968.83	884.73	0.880
10:31:55	20-SP	25750.58	2735.50	101.8	968.97	884.87	0.880
10:36:55	20-SP	25755.58	2740.50	101.8	969.11	885.01	0.879
10:42: 0	20-SP	25760.67	2745.59	101.8	969.24	885.14	0.878
10:42:10	20-SP	25760.83	2745.75	101.8	969.25	885.15	0.878
10:42:20	20-SP	25761.00	2745.92	101.8	969.24	885.14	0.878
10:42:30	20-SP	25761.17	2746.09	101.8	969.26	885.16	0.878
10:42:40	20-SP	25761.33	2746.25	101.8	969.23	885.13	0.878

Table D.2-4. (Continued)

FIELD REPORT # : WOLFPCP

TEST PHASE : SHUTIN PERIOD # 4

FINAL FLOW PRESSURE [PSIA] = 84.10

PRODUCING TIME [MIN] = 18003.41

TIME OF DAY	DATE	ELAPSED TIME-MIN	DELTA TIME-MIN	BOT HOLE TEMP. DEG F	BOT HOLE PRESSURE PSIA	DELTA P PSI	LOG HORN TIME
HH:MM:SS	DD-MM	*****	*****	*****	*****	*****	*****
10:42:50	20-SP	25761.50	2746.42	101.8	969.26	885.16	0.878
10:43:00	20-SP	25761.67	2746.59	101.8	969.23	885.13	0.878
10:43:10	20-SP	25761.83	2746.75	101.8	969.27	885.17	0.878
10:43:20	20-SP	25762.00	2746.92	101.8	969.27	885.17	0.878
10:43:30	20-SP	25762.17	2747.09	101.8	969.26	885.16	0.878
10:43:40	20-SP	25762.33	2747.25	101.8	969.28	885.18	0.878
10:43:50	20-SP	25762.50	2747.42	101.8	969.21	885.11	0.878
10:44:00	20-SP	25762.67	2747.59	101.8	969.26	885.16	0.878
10:44:10	20-SP	25762.83	2747.75	101.8	969.25	885.15	0.878
10:44:20	20-SP	25763.00	2747.92	101.8	969.26	885.16	0.878
10:44:30	20-SP	25763.17	2748.09	101.8	969.28	885.18	0.878
10:44:40	20-SP	25763.33	2748.25	101.8	969.29	885.19	0.878
10:44:50	20-SP	25763.50	2748.42	101.8	969.26	885.16	0.878
10:45:00	20-SP	25763.67	2748.59	101.8	969.31	885.21	0.878
10:45:10	20-SP	25763.83	2748.75	101.8	969.29	885.19	0.878
10:45:20	20-SP	25764.00	2748.92	101.8	969.33	885.23	0.878
10:45:30	20-SP	25764.17	2749.09	101.8	969.32	885.22	0.878
10:45:40	20-SP	25764.33	2749.25	101.8	969.33	885.23	0.878
10:45:50	20-SP	25764.50	2749.42	101.8	969.34	885.24	0.878
10:46:00	20-SP	25764.67	2749.59	101.8	969.32	885.22	0.878
10:46:10	20-SP	25764.83	2749.75	101.8	969.31	885.21	0.878
10:46:20	20-SP	25765.00	2749.92	101.8	969.36	885.26	0.878
10:46:30	20-SP	25765.17	2750.09	101.8	969.39	885.29	0.878
10:46:40	20-SP	25765.33	2750.25	101.8	969.34	885.24	0.878
10:46:50	20-SP	25765.50	2750.42	101.8	969.33	885.23	0.878
10:47:00	20-SP	25765.67	2750.59	101.8	969.33	885.23	0.878
10:47:10	20-SP	25765.83	2750.75	101.8	969.36	885.26	0.878
10:47:20	20-SP	25766.00	2750.92	101.8	969.37	885.27	0.878
10:47:30	20-SP	25766.17	2751.09	101.8	969.34	885.24	0.878
10:47:40	20-SP	25766.33	2751.25	101.8	969.38	885.28	0.878
10:47:50	20-SP	25766.50	2751.42	101.8	969.37	885.27	0.878
10:48:00	20-SP	25766.67	2751.59	101.8	969.39	885.29	0.878
10:48:10	20-SP	25766.83	2751.75	101.8	969.41	885.31	0.878
10:48:20	20-SP	25767.00	2751.92	101.8	969.38	885.28	0.877
10:48:30	20-SP	25767.17	2752.09	101.8	969.40	885.30	0.877
10:48:40	20-SP	25767.33	2752.25	101.8	969.38	885.28	0.877
10:48:50	20-SP	25767.50	2752.42	101.8	969.35	885.25	0.877
10:49:00	20-SP	25767.67	2752.59	101.8	969.40	885.30	0.877
10:49:10	20-SP	25767.83	2752.75	101.8	969.42	885.32	0.877
10:49:20	20-SP	25768.00	2752.92	101.8	969.44	885.34	0.877
10:49:30	20-SP	25768.17	2753.09	101.8	969.44	885.34	0.877
10:49:40	20-SP	25768.33	2753.25	101.8	969.41	885.31	0.877
10:49:50	20-SP	25768.50	2753.42	101.8	969.41	885.31	0.877
10:50:00	20-SP	25768.67	2753.59	101.8	969.45	885.35	0.877
10:52:40	20-SP	25771.33	2756.25	101.8	969.53	885.43	0.877
10:52:50	20-SP	25771.50	2756.42	101.8	969.50	885.40	0.877
10:53:00	20-SP	25771.67	2756.59	101.8	969.51	885.41	0.877
10:53:10	20-SP	25771.83	2756.75	101.8	969.51	885.41	0.877

PLOT START TIME: 383HR 35 MIN 5 SEC
PLOT STOP TIME: 426HR 30 MIN 0 SEC
PERIOD START TIME: 383HR 35 MIN 5 SEC
TP = 17894. MIN

Recovery Test No. 4
Horner Plot to Determine k
Test Zone No. 2 Upper Permian Wolfcamp

Figure D.2-4

CLIENT ONWI-BATTELLE MEMORIAL INSTITUTE		LOG NO. 13697.07
WELL NAME AND NO. Mansfield No. 1 Well		
ZONE NO. 2	PERFORATED DEPTH 4,638 to 4,514 Feet	

DETERMINE ZONE THICKNESS, H (PERFORATED INTERVAL): 124 FT.

DETERMINE AVERAGE FLOW DURING DRAWDOWN, Q: 62 BBL/DAY

DETERMINE SLOPE, M, ON A DRAWDOWN PLOT OF P_w vs. LOG DT, OR HORNER
PLOT. M = 180 PSI/LOG CYCLE (M, FOR DRAWDOWN)

TYPE OF PLOT: Horner

CALCULATE K: $K = \frac{162.6 \times Q \times B \times V}{H \times M}$

FOR FIELD CALCULATIONS:
B = 1.0
V = 1.15

K = 0.52 MD

Test Zone Permeability Test Zone No. 2 Upper Permian Wolfcamp
Figure D.2-5

Table D.2-5. Distribution of Fluid Samples
Test Zone No. 2 Upper Permian Wolfcamp

Type	No. and Size	Date	
		Collected	Recipient
Surface	4 - 5 gallon	9/29/82	Dr. Donald Langmuir Golden, CO
Surface	2 - 5 gallon	9/29/82	Dr. Jeffrey Means Battelle Laboratories Columbus, OH
Surface	1 - 5 gallon	9/29/82	Dr. Paul Knauth Arizona State University Tempe, AZ
Surface	1 - 5 gallon	9/29/82	Dr. Harold Bentley Hydro-Geo-Chem Tucson, AZ
Surface	2 - 5 gallon	9/29/82	Jeffrey Cleveland U.S. Geol. Survey
Surface	2 - 5 gallon	9/29/82	SWEC (Extra)
Surface	2 - 5 gallon	9/29/82	Texas Bureau of Economic Geology Austin, TX
	11 - 0.5 liter		
	1 - 0.25 liter		
Downhole	2 - 0.25 liter	9/30/82	Dr. Anthony Zaikowski
Downhole	1 - 0.45 liter		Bendix Field Engineering
	3 - 0.25 liter	10/01/82	Grand Junction, CO
	1 - 0.45 liter		
Downhole	1 - 0.5 liter	10/01/82	Dr. Glenn Thompson
	1 - 0.6 liter		University of Arizona Tucson, AZ

PLOT START TIME: 666 HR 23 MIN 25 SEC
PLOT STOP TIME: 697 HR 37 MIN 0 SEC

Downhole Pressures During Sampling
Test Zone No. 2 Upper Permian Wolfcamp

Figure D.2-6