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SOUTH PLUME REMOVAL ACTION PUMPING TEST REPORT OPERABLE UNIT 5 REV 0 AUGUST 1993

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South Plume Removal Action Pumping Test Report Operable Unit 5 Project Order 37

Fernald Environmental Management Project
August 1993
Revision No. 0

Submitted by:
U.S. Department of Energy
Fernald Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705

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001

South Plume Removal Action
Pumping Test Report

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LIST OF ACRONYMS AND ABBREVIATIONS

BGS	Below Ground Surface
CERCLA	Comprehensive Environmental, Response, Compensation, and Liability Act
CRT	Constant Rate Test
DO	Dissolved Oxygen
DOE	United States Department of Energy
FEMP	Fernald Environmental Management Project
FERMCO	Fernald Environmental Restoration Management Corporation
ft^3/sec	cubic feet per second
GMA	Great Miami Aquifer
gpm	gallons per minute
HDPE	high-density polyethylene
id	Inside Diameter
MH	Manhole
MTC	Modern Technologies Corporation
NPDES	National Pollutant Discharge Elimination System
RCRA	Resource Conservation and Recovery Act
RW	Recovery Well
SC	Specific Capacity
SOWC	Southwestern Ohio Water Company
SWRB	Stormwater Retention Basin
WATEC	Waste Abatement Technology, Inc.

SECTION 1

INTRODUCTION

1.1 Background

The Fernald Environmental Management Project (FEMP) is a United States Department of Energy (DOE) facility which formerly produced uranium metal products. The FEMP is currently undergoing remediation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Fernald Environmental Restoration Management Corporation (FERMCO) is conducting site remediation as the Environmental Restoration Management Contractor. One area of concern for the remediation process is a plume of uranium contamination in the groundwater south of the site. This contamination is known as the south plume. The South Plume Removal Action (DOE 1990c) included the recommendation for construction of a groundwater recovery system to provide a barrier to further plume migration. Additionally, a groundwater model for the regional aquifer (Great Miami Aquifer) underlying the FEMP has been developed to further understand the regional groundwater system.

A pumping test was performed at a location south of the FEMP from May 25, 1993, through June 5, 1993, as part of the design confirmation program for the South Plume Groundwater Recovery System - Design, Monitoring, and Evaluation Program Plan. The detailed requirements of the pumping test are described in the *South Plume Groundwater Recovery System Pump Test Work Plan*, Revision 2, March 1993 (PARSONS 1993). The purpose of the pumping test is to collect data pertaining to the aquifer characteristics. Results of the pumping test will be used to verify the design (change if necessary) and improve the operation of the South Plume recovery system and to recalibrate the groundwater model.

1.2 Content of the Pumping Test Report

This document includes the following:

1) Local hydrology and hydrogeology
2) Aquifer test design
3) Pumping rates and field procedures
4) Pumping test implementation
5) Data reduction and analytical methods
6) Groundwater sampling and chemical analysis
7) Conclusions
8) Recommendations for additional activities to support the South Plume Recovery System

1.3 Personnel

The primary participants in the pumping test and their responsibilities were as follows:

1) **Department of Energy**: Provided overall project supervision, policy and procedural guidance.

   Pete Yerace, Manager, CERCLA/RCRA Unit 5
   Kathi Nickel, Technical Support
   William Sidle, Technical Support
   John Kappa, Technical Support (MTC)

2) **FERMCO CRU-5**: Provided overall project coordination and construction management as the Environmental Remediation Management Contractor. Monitored the operation of the South Plume Recovery System and discharge to the Great Miami River during the pumping test.

   Gileno Braga, Project Engineer
   Ken Broberg, Technical Lead
   Andy Simmons, Technical Oversight

3) **FERMCO Groundwater Monitoring**: Collected manual water elevations from the secondary monitoring wells and water samples from the test well discharge.

   Allan Lydic, Manager
   Dean Shanklin, Technical Oversight

4) **PARSONS**: Pumping Test Designer, provided technical assistance and data interpretation during the pumping test.

   Tom Naymik, Senior Technical Advisor (Battelle)
   Paul Frink, Task Leader

5) **WATEC**: Pumping Test Contractor, responsible for equipment procurement, test well and piezometer construction, and field implementation of the pumping test and primary data collection.

   David Kelting, Project Manager
   Rusty Woods, Supervisor (Contract Dewatering)
   John Benedik, Field Technician (In-Situ, Inc.)

6) **Observers**:
   Mike Proffit, Ohio EPA

SECTION 2

HYDROGEOLOGY

A summary of the local hydrogeology is provided for background information. This information is not intended to be comprehensive, but rather to provide a convenient overview for the reader. For a more detailed discussion, see other FEMP reports (DOE 1990a, DOE 1990b, DOE 1993a).

2.1 Hydrology

The FEMP is located within the Great Miami River basin drainage system above the present elevation of the contemporary flood plain of the river. Figure 2-1 provides a general view of the regional surface water features. The Great Miami River is the main surface water feature in the vicinity of the FEMP. It flows to the southwest and drains an area of approximately 3,300 square miles at the Hamilton gage, which is located 10 miles upstream from the FEMP discharge outfall. The river exhibits meandering patterns that result in sharp directional changes over distances of less than 3,000 feet. It flows westward 1.2 miles due south of the pumping test site.

The average discharge of the Great Miami River at the FEMP is estimated at 3,460 ft^3/sec, based on drainage area scaling. The maximum discharge ever recorded for the Great Miami River at Hamilton occurred on March 26, 1913, and was estimated to be 352,000 ft^3/sec. Since the construction of five retarding basins located approximately 7 miles upstream of Ross, the maximum discharge was estimated to have been 108,000 ft^3/sec for the site reach. The minimum daily discharge was estimated to have occurred on September 27, 1941, and translates to 280 ft^3/sec at the site reach.

Natural surface drainage from the FEMP is primarily to Paddy's Run which originates north of the site and drains southward along the west side of the FEMP and the pumping test site. It is an intermittent stream that flows primarily between January and May, with an estimated discharge for this period ranging between 0.2 and 4.0 ft^3/sec. Paddy's Run enters the Great Miami River approximately 1.5 miles south of the site. As shown on Figure 2-1, the stream loses flow to the underlying Great Miami Aquifer along some reaches due to the highly permeable channel which has eroded into the aquifer. Paddy's Run is normally ungauged. Paddy's Run flows 1,200 feet west of the pumping test site.

The Storm Sewer Outfall Ditch, a tributary to Paddy's Run, is a principal drainage feature of the FEMP. This drainage course originates east of the Production Area, flows southwest across the southern portion of the site, and enters Paddy's Run near the southwest corner of the property. The Storm Sewer Outfall Ditch is generally dry throughout most of the year, with flow occurring during and immediately after precipitation.

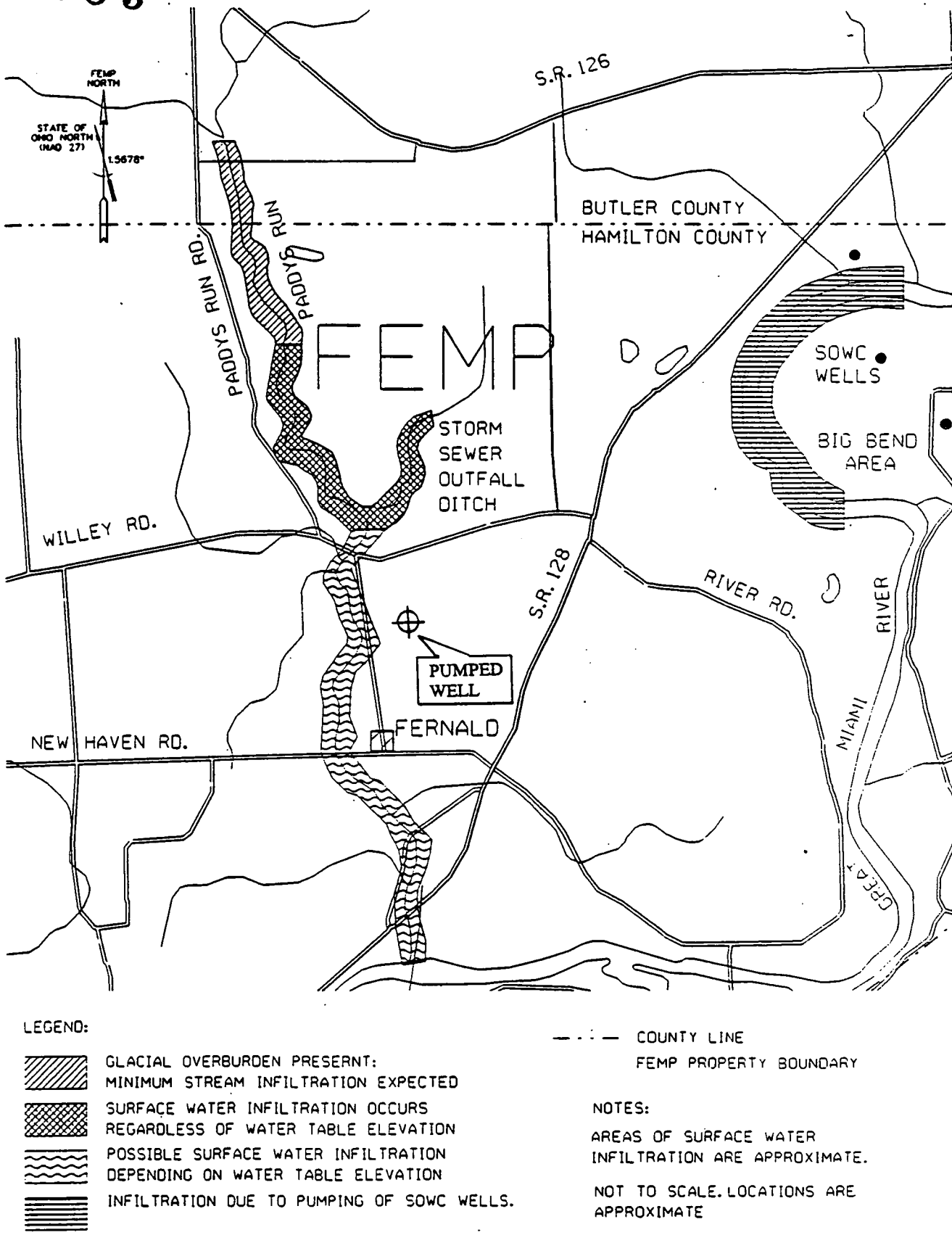


Figure 2-1 - Local Surface Water Features

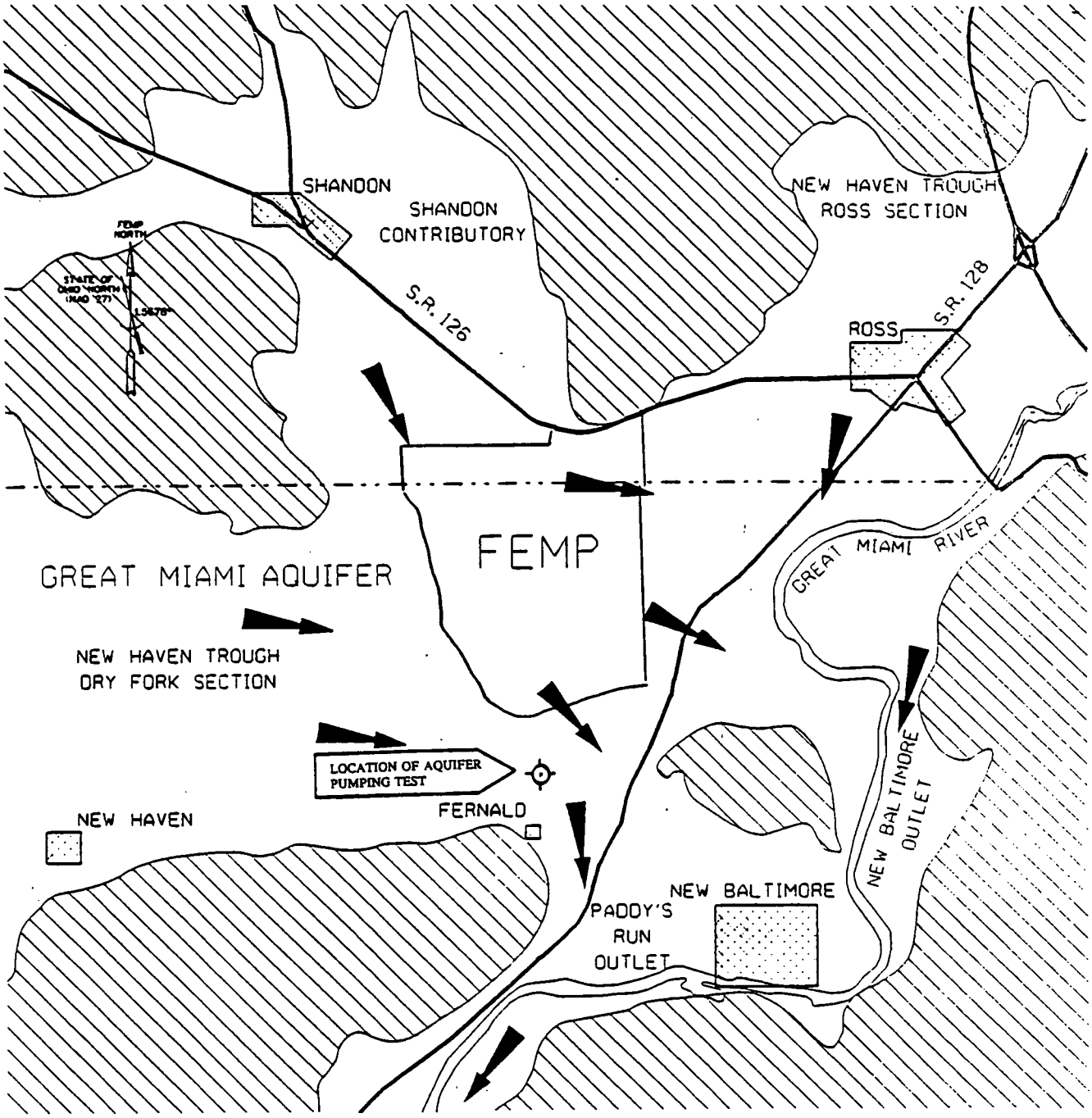
The Storm Sewer Outfall Ditch historically conveyed surface water runoff from the Production Area directly to Paddy's Run when the capacity of the storm sewer system was exceeded. Stormwater retention basins were constructed in October 1986 and December 1989 at the head of the Storm Sewer Outfall Ditch. Stormwater runoff from the production area is now conveyed to these retention basins and pumped to the Great Miami River via the FEMP's main effluent line.

2.2 Hydrogeology

The portion of the Great Miami Aquifer that underlies the FEMP and South Plume areas consists primarily of glaciofluvial sand and gravel outwash deposited during the last two Pleistocene glaciations. Within the coarse-grained sediments of the Great Miami Aquifer is an interbedded clay layer that underlies most of the FEMP and the area north of the pumping test site. The top of the clay interbed lies about 100 to 125 feet below the surface and generally about 60 to 80 feet below the water table. It ranges from 5 to 15 feet in thickness and acts as an aquitard within the Great Miami Aquifer. Because of this interbed, the aquifer is divided into upper and lower halves.

Figure 2-2 shows the generalized groundwater flow pattern in the Great Miami Aquifer underlying the FEMP study area. Groundwater enters the study area from three directions. In the northeast, groundwater moves south-southwest from the Ross area into the portion of the New Haven Trough now occupied by the Great Miami River. The second source of groundwater is the Shandon Tributary which enters the New Haven Trough to the north of the FEMP. The majority of the groundwater from the Shandon Tributary flows under the FEMP site and travels under the eastern boundary of the FEMP toward the Great Miami River. The third source of groundwater is from the west. The recharge from the Dry Fork area of the Whitewater River, located about 2 miles west of the FEMP, causes groundwater to move to the east toward the FEMP. This flow runs southward under the southern part of the FEMP through the pumping test site and flows toward the Great Miami River in the glaciofluvial deposits under the southern part of Paddy's Run, termed the Paddy's Run Outlet. A portion of the groundwater from the Shandon Tributary also reaches the Great Miami River via Paddy's Run Outlet.

The geomorphic setting of the Great Miami River and Paddy's Run provides for interaction between the surface water and groundwater. Both surface water systems have eroded through the low permeability glacial overburden material to the Great Miami Aquifer. This contact allows for infiltration of surface water to the Great Miami Aquifer.



LEGEND:

GENERALIZED GROUNDWATER FLOW DIRECTION.

BEDROCK OUTSIDE GREAT MIAMI AQUIFER

POPULATED AREAS

NOTES:

* DIRECTION OF GROUNDWATER FLOW BASED ON APRIL 1986 WATER LEVEL CONTOURS AND GROUNDWATER MODELING OUTPUT (3DPART07.OUT)
* NOT TO SCALE.LOCATIONS ARE APPROXIMATE.

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Figure 2-2 - Aquifer Flow Patterns

A portion of flow from the Great Miami River originates from surface water while a portion also comes from the aquifer beneath the river. This relationship varies with changing river and groundwater elevations and is also affected by nearby pumping wells. At times when the groundwater elevation is above the river, flow is from the aquifer to the river. Conversely, when groundwater elevations are below the river elevations, flow is from the river to the aquifer and the river loses water. The natural groundwater flow is generally from the aquifer to the river, that is, groundwater discharges into the river. However, pumping of two large capacity collector wells owned by the Southwestern Ohio Water Company (SOWC), which are located close to the river (Figure 2-1), induces recharge to the aquifer by river infiltration. This occurs by creating a local hydraulic gradient, which causes flow from the river to the aquifer. This induced infiltration allows the collector wells to maintain a higher yield from the aquifer than could be achieved if the river were not present.

Paddy's Run also interacts with the Great Miami Aquifer in several different ways that affect groundwater flow and discharge. The stream has eroded through the glacial overburden and into the Great Miami Aquifer from its confluence with the Great Miami River to approximately 15,000 feet upstream. It is directly connected with the Great Miami Aquifer in this reach. South of the FEMP, the elevation of the water table is close to or above the elevation of the stream bottom and the stream receives groundwater in this reach. In the vicinity of the FEMP, however, the stream is above the water table and loses water to the regional aquifer. Paddy's Run is generally dry, except during runoff periods following rainfall and snow-melt events. These runoff periods have been found to cause transient groundwater fluctuations which may influence contaminant transport along the western side of the FEMP. Sustained flow has been reported in Paddy's Run during the winter and spring by Dames and Moore (1985) and by stream gauging stations monitored during the Remedial Investigation. Relatively little recharge to the Great Miami Aquifer occurs where Paddy's Run is on the clayey till 15,000 feet north of its confluence with the Great Miami River.

SECTION 3

AQUIFER TEST DESIGN

3.1 Pumping System Installation

As discussed in the *South Plume Groundwater Removal Action Pump Test Work Plan* (DOE 1993b), the pumping system for the aquifer test consisted of two basic components:

1) The permanent South Plume Recovery System including the test well

2) The temporary pumping test components including temporary piping, valves, pump, and instrumentation installed specifically for the pumping test

3.1.1 South Plume Recovery System

The South Plume Removal Action (pumping and discharge system) provides for the design and installation of five recovery wells, a discharge force main, and gravity pipeline to transport water from the recovery wells to the Great Miami River. When complete, the line of recovery wells (oriented about 25 degrees north of due east) will be located approximately perpendicular to the axis of the south plume, approximately 1,600 feet south of Willey Road and just east of Paddy's Run Road. The line of wells will be approximately 1,200 feet long from the first to the fifth well, with each spaced approximately 300 feet apart.

Recovery Well 4 (RW-4) (FEMP Well Number 3927) was completed prior to construction of the other recovery wells for use during the pump test. The water table was encountered at 70 feet below ground surface (BGS). RW-4 was drilled using a 36-inch bucket auger rig to set a 26-inch temporary casing. The well was completed with a 16-inch inside diameter (id) galvanized steel casing to a depth of 114 feet and was screened from 74 feet to 114 feet BGS with a 16-inch id Johnson stainless steel continuous slot screen with a 0.050-inch slot size. The well screen slot size and the sand pack were selected based on data from the formation grain-size analysis (Appendix E) that was conducted during well construction. A pre-graded filter pack (#4 quartz sand) was placed within the annular space between the screen and the outer casing to prevent formation material from entering the screen. A filter pack was selected over a natural formation to reduce the time required to complete well development. The filter pack was placed from 69 to 114 feet BGS. The outer casing was subsequently withdrawn to expose the screen and filter pack to the formation. An 18-inch seal of bentonite pellets was placed above the filter pack. The remainder of the annular space was filled with a cement grout slurry to a depth of approximately 15 feet BGS where the pitless adaptor will be installed for the permanent system following completion of the pumping test. The well log for the test well is included in Appendix F.

Following well construction, but prior to grouting, the test pump and temporary piping was installed. The well was developed by pumping at 400-600 gallons per minute (gpm) and surging the water column with a pump. A check valve, used during the actual pumping test, was not initially installed on the pump discharge to allow this surging. Starting and running the pump caused a drop in the water level in the well and a subsequent rapid rise when the pump was stopped. Well development continued for approximately 3 hours. The well was then pumped steadily at approximately 400 gpm for 24 hours. The discharge water was free of visible turbidity for all but the initial portion of this period.

During well development and system shakedown, it was determined that the test well could not sustain a steady discharge rate of greater then approximately 600 gpm. This is much less than the 900-1,200 gpm anticipated by the pumping test work plan. This effect was partially due to the uppermost GMA being less permeable than previously anticipated due to a higher percentage of fines than originally estimated by field geologists. Additionally, as discussed in Subsections 5.2 and 7.4, the test well efficiency was somewhat lower than expected resulting in greater water level drawdown during pumping due to well losses. This reduced capacity required changes to the proposed pumping rates for the step test. An alternate pump (Table 3-1) was installed in the test well to allow better control of the pump test at the lower discharge rates.

During the pumping test, groundwater from the south plume was conveyed from the test well and discharged to the Great Miami River by a combination of a force main and gravity sewer. Figure 3-1 presents a simplified representation of the recovery system. The underground piping is constructed of high-density polyethylene (HDPE) plastic. A 20-inch force main runs from the South Plume well field north across Willey Road to the western corner of the Active Fly Ash Pile, and then turns northeast and runs along the South Construction Road to the Stormwater Retention Basin (SWRB). From the SWRB, a 24-inch force main runs 1,400 feet east and follows the sewage treatment plant access road to the northeast. At a location just south of the existing sewage treatment plant, the force main discharges into an effluent aeration facility where the dissolved oxygen level of the water can be raised to meet existing NPDES discharge limits. The outlet of the facility discharges to a new gravity pipeline at Manhole (MH) 176B and passes through a Parshall Flume. The gravity pipeline then continues in a easterly direction to the Great Miami River (a total of 4,000 linear feet).

3.1.2 Pumping Test Temporary Components

Table 3-1 provides a description of the pumping test temporary components, and Figure 3-2 provides a diagram of the temporary piping. During the pumping test, the RW-4 test well pump discharged to an 8-inch HDPE temporary pipeline which was run from the test well approximately 500 feet north where it tapped into a completed portion of the force main. The test pump was positioned in the RW-4 test well with the inlet approximately 7 feet above the base of the screen. The pump discharged to a 90 degree

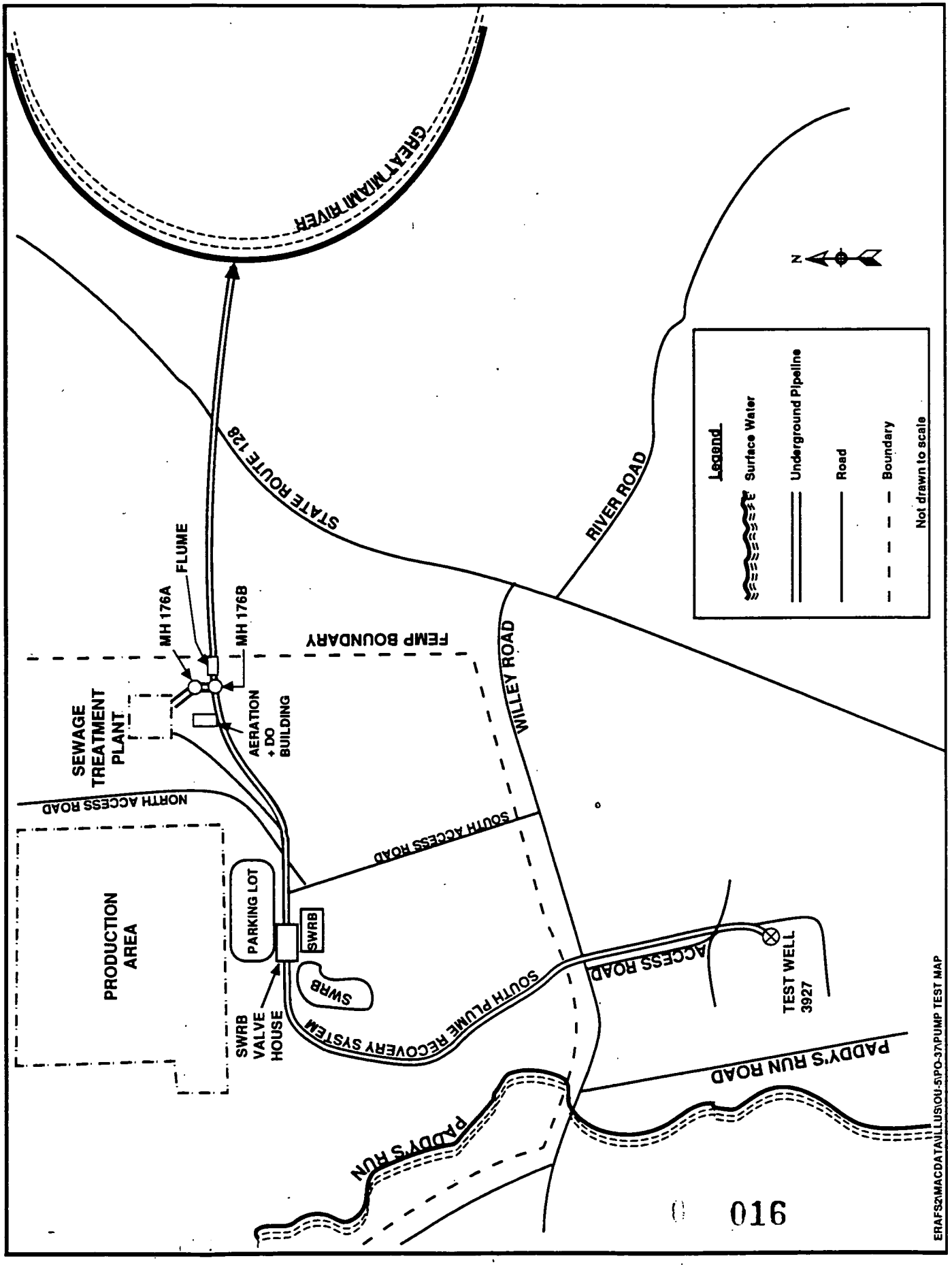

Figure 3-1 - South Plume Recovery System

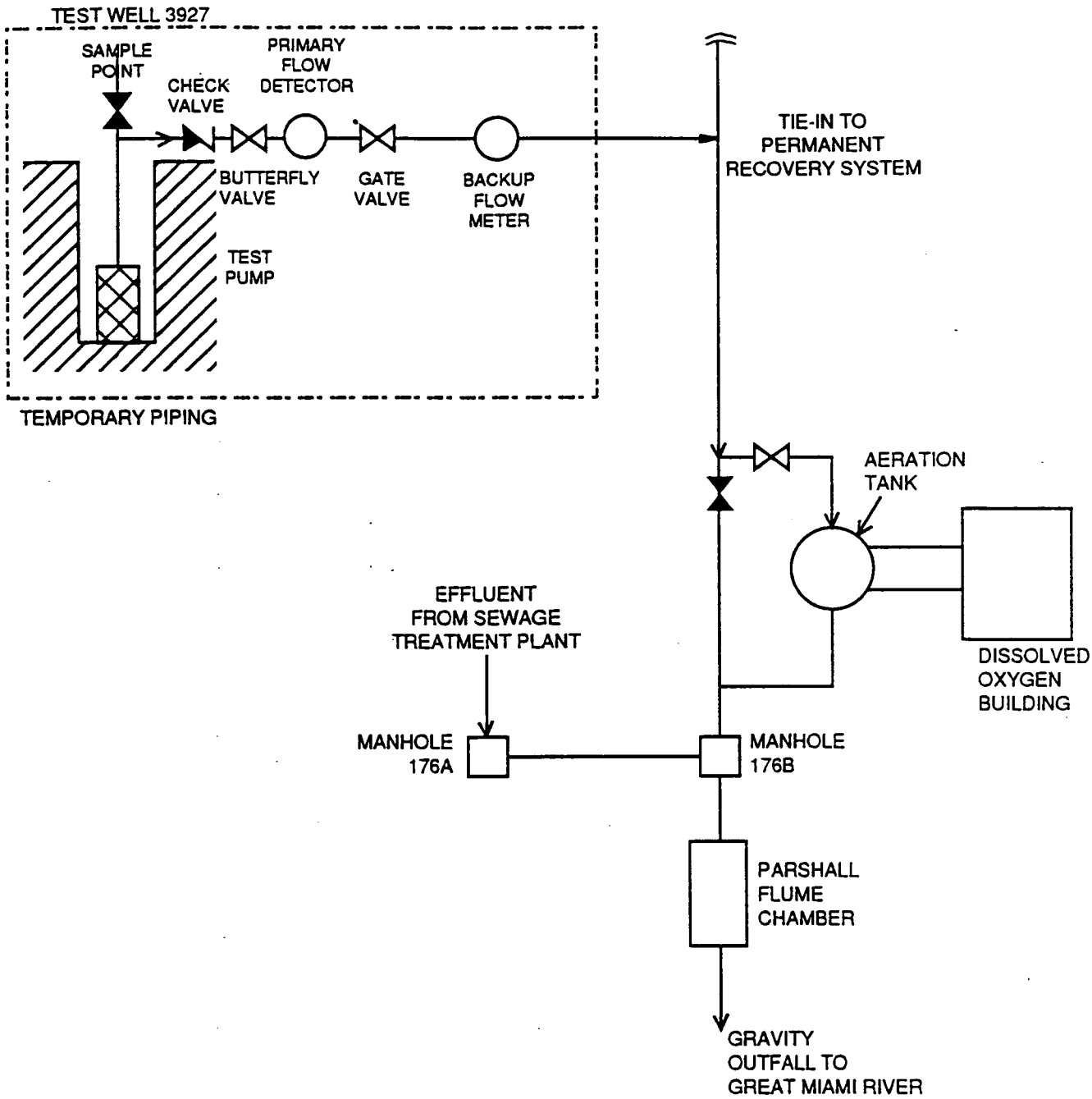

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Figure 3-2 - Simplified Piping Diagram

Table 3-1 - Pumping Test Components

Component	Description
Test Pump	WORTHINGTON Model 10H7S, 600-900 gpm submersible pump with a 60 horsepower, 460 volt, 3-phase motor
Primary Flow Meter/Totalizer	YOKOGAWA - Johnson Model YF115 - ALSAIA-S3S3*C/FMF 6-inch Voltex flow meter
Secondary Flow Meter/Totalizer	McCROMETER, mechanical flow meter with totalizer
Diesel Generator	300 KW
Throttle Valve	8-inch gate manual valve

elbow at the top of the well casing. Mounted on the top of the elbow was a 1/2-inch combination air vent and sampling port. A check valve was located downstream of the elbow, followed by (in order) a butterfly valve for isolation, the primary flow detector, a gate valve (to throttle flow), and the secondary flow meter.

3.2 Monitoring System Installation

The effects of pumping the RW-4 test well were observed using a series of observation wells consisting of piezometers and monitoring wells. The observation wells are classified as either primary or secondary wells based on their proximity to the test well and the significance of their performance to the pumping test analysis. Table 3-2 provides information on the pumping test monitoring wells.

3.2.1 Primary Wells

Primary wells included the observation wells closest to the test well and consisted of 10 piezometers, a stilling well in the test well, three monitoring wells which were constructed for the recovery system, and two existing monitoring wells. The purpose of these primary wells was to calculate hydraulic properties of the aquifer including hydraulic conductivity, storage coefficient, the extent of anistropy and in the surrounding aquifer. Water elevation in these wells was measured automatically during the pumping test using either a data logger or float recorder. Back-up measurements were taken throughout the pump test with manual electric sounders. The data received from these wells was used for curve-matching analysis

and parameter estimation. Two of these wells, Monitoring Wells 2015 and 2385, served as the control (background) wells.

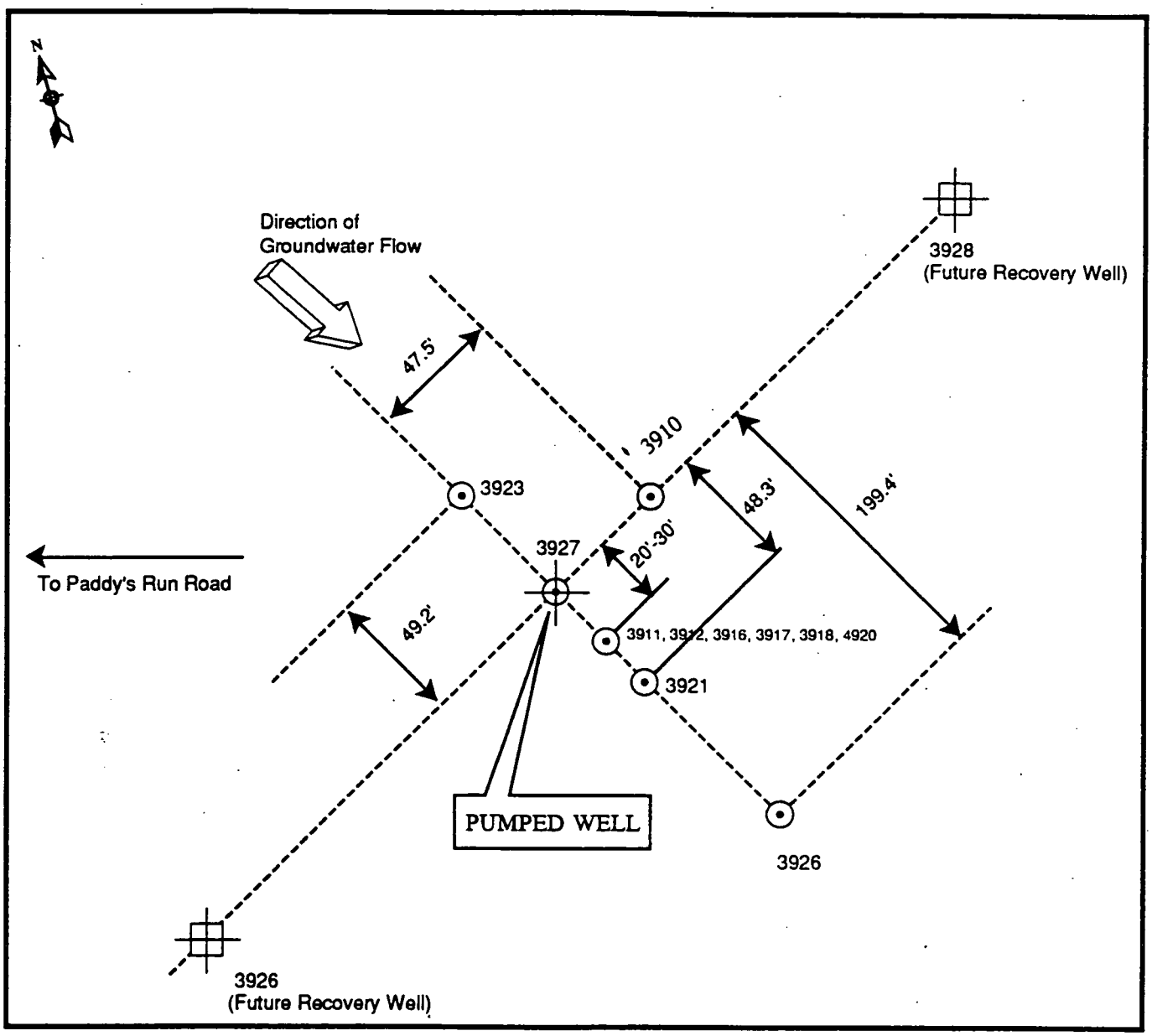
Ten piezometers (see Figure 3-3) were installed in the immediate vicinity of the test well. Five of these piezometers were drilled to a depth of 110 feet at distances varying between 19.9 to 199.4 feet from the test well. An additional five piezometers were drilled in a cluster to depths between 120 feet and 166 feet (top of bedrock). This cluster was centered approximately 25 feet from the test well.

Each of the piezometers was drilled using a 4-1/4 inch id hollow stem auger. The 2-inch id piezometers were set through the hollow stem and the auger raised to allow the aquifer to settle in around the screen, thus forming a natural sand pack. At the base of each piezometer is a 5-foot screened interval with a slot size of 0.010 inches. A seal was formed above the screened interval using bentonite pellets and the remaining depth was grouted. Figure 3-3 shows the arrangement of the piezometers around the test well. Well logs are located in Appendix F.

3.2.2 Secondary Wells

Those monitoring wells located far enough from the test site to preclude detailed analysis of their response were considered secondary wells. Secondary wells were utilized to identify background trends and more qualitative tendencies caused by the pumping test. Secondary wells consisted of nine of the monitoring wells being specifically installed for the recovery system, staff gages at two locations in Paddy's Run, and a large number of existing monitoring wells at various distances from the test site. Elevations in these wells were measured manually with electric sounders before and during the pumping test. Staff gages (SG-1, 2, and 3) located in Paddy's Run were monitored at the same frequency as secondary wells.

Table 3-2 lists the monitored wells during the pumping test along with their classification, distance to the test well, and method of observation. Table 3-3 shows the various water level measurement instruments and their method of operation. Figure 3-4 shows the locations of the monitoring wells used during the pump test.



Piezometer

Future recovery well location

Bearing line

Test well

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Figure 3-3 - Piezometer Arrangement

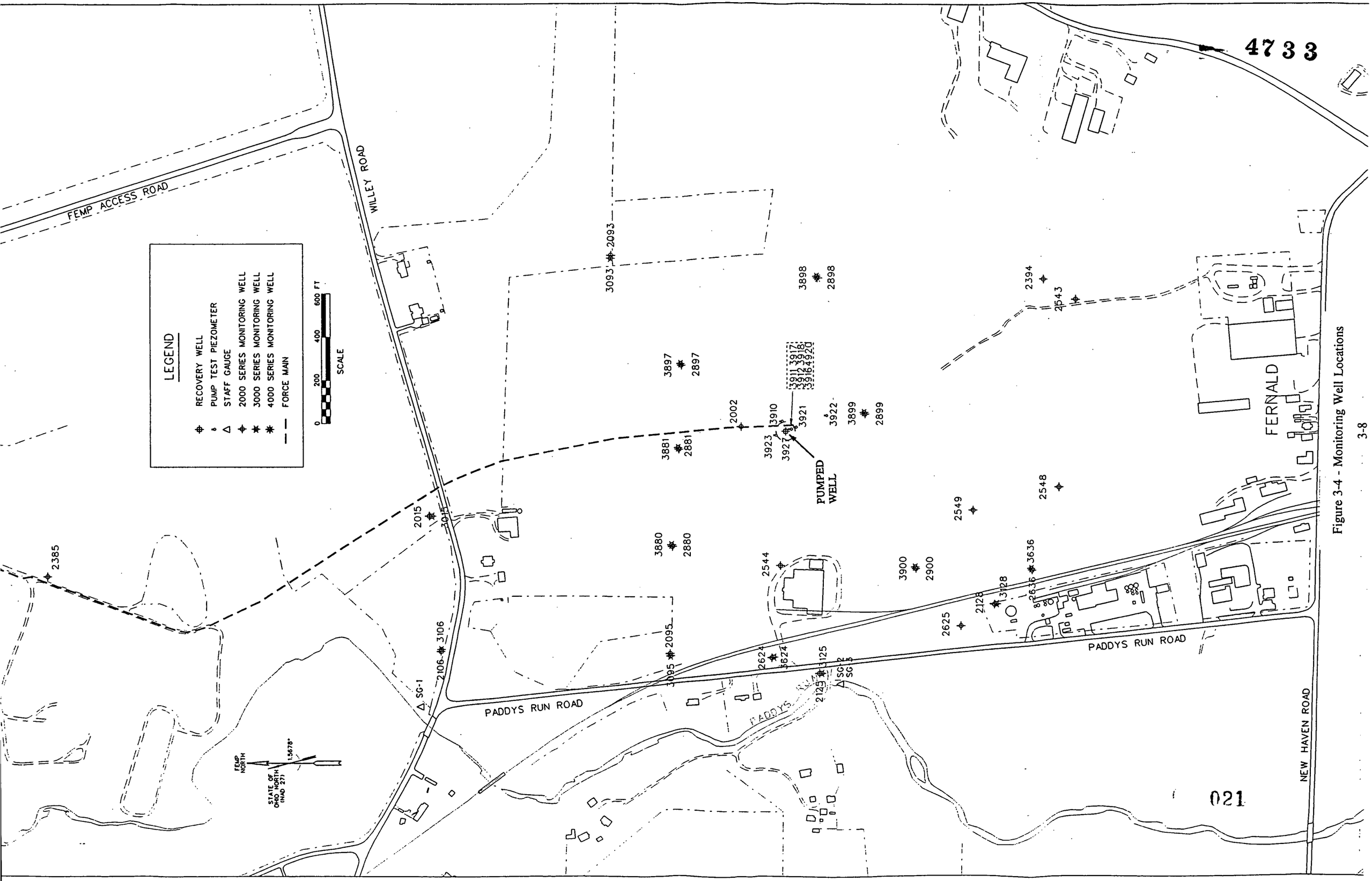

Figure 3-4 - Monitoring Well Locations

Table 3-2 - Pumping Test Monitoring Well Information

FEMP Well No.	Well Type (Previous designation)	Class	Depth (feet)	Distance to RW-4 (feet)	Method of Observation	Notes
3927	Stilling Well, inside RW-4	Primary	110	n/a	Data logger	
3910	Piezometer (SPPZ-1)	Primary	110	47.5	Data logger	
3911	Piezometer (SPPZ-2A)	Primary	110	19.9	Data logger	
3912	Piezometer (SPPZ-2B)	Primary	120	24.2	Data logger	
3916	Piezometer (SPPZ-2C)	Primary	130	29.2	Data logger	
3917	Piezometer (SPPZ-2D)	Primary	140	25.1	Data logger	
3918	Piezometer (SPPZ-2E)	Primary	150	24.3	Data logger	
4919	Piezometer (SPPZ-2F)	Primary	n/a	n/a	n/a	B
4920	Piezometer (SPPZ-2G)	Primary	166	29.7	Data logger	
3921	Piezometer (SPPZ-3)	Primary	110	48.3	Data logger	
3922	Piezometer (SPPZ-4)	Primary	110	199.4	Data logger	
3923	Piezometer (SPPZ-5)	Primary	110	49.2	Data logger	
2002	monitoring	Primary	83.0	208.1	Data logger	
2880	monitoring (SPM 2001)	Primary	73	741.5	Float Recorder	A
2897	monitoring (SPM 2003)	Primary	79	559.7	Float Recorder	A
2899	monitoring (SPM 2005)	Primary	82	386.7	Float Recorder	A
2015	monitoring	Primary	83.0	1,683.8	Float Recorder	F
2385	monitoring	Primary	75.0	3440.8	Data logger	
3880	monitoring (SPM 3001)	Secondary	G	741.1	Manual Level	A
3881	monitoring (SPM 3002)	Secondary	G	505.7	Manual Level	A

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Table 3-2 - Pumping Test Monitoring Well Information (Continued)

FEMP Well No.	Well Type (Previous designation)	Class	Depth (feet)	Distance to RW-4 (feet)	Method of Observation	Notes
3897	monitoring (SPM 3003)	Secondary	G	565.0	Manual Level	A
3900	monitoring (SPM 3004)	Secondary	G	880.7	Manual Level	A
3899	monitoring (SPM 3005)	Secondary	G	383.5	Manual Level	A
3898	monitoring (SPM 3006)	Secondary	G	719.7	Manual Level	A
2881	monitoring (SPM 2002)	Secondary	G	505.7	Manual Level	A
2900	monitoring (SPM 2004)	Secondary	G	880.7	Manual Level	A
2898	monitoring (SPM 2006)	Secondary	G	719.7	Manual Level	A
2128	monitoring	Secondary	28.0	1,249.9	Manual Level	
3128	monitoring	Secondary	85.0	1,256.1	Manual Level	
2636	monitoring	Secondary	15.45	1,303.5	Manual Level	
3636	monitoring	Secondary	78.34	1,297.1	Manual Level	
2548	monitoring	Secondary	19.0	1,287.5	Manual Level	
2549	monitoring	Secondary	16.5	938.5	Manual Level	
2543	monitoring	Secondary	22.0	1,471.7	Manual Level	
2394	monitoring	Secondary	46.5	1,378.7	Manual Level	
2093	monitoring	Secondary	81.0	1,140.1	Manual Level	
3093	monitoring	Secondary	155.0	1,161.5	Manual Level	
3015	monitoring	Secondary	136.5	1,671.9	Manual Level	
2106	monitoring	Secondary	35.0	1,882.4	Manual Level	
3106	monitoring	Secondary	105.0	1,875.3	Manual Level	

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Table 3-2 - Pumping Test Monitoring Well Information (Continued)

FEMP Well No.	Well Type (Previous designation)	Class	Depth (feet)	Distance to RW-4 (feet)	Method of Observation	Notes
2095	monitoring	Secondary	28.0	1,160.7	Manual Level	
3095	monitoring	Secondary	87.0	1,169.8	Manual Level	
2544	monitoring	Secondary	26.0	621.2	n/a	C
2624	monitoring	Secondary	17.0	1,046.7	Manual Level	
3624	monitoring	Secondary	80.83	1,042.9	Manual Level	
2125	monitoring	Secondary	25.0	1,127.7	Manual Level	
3125	monitoring	Secondary	86.5	1,128.8	Manual Level	
2625	monitoring	Secondary	14.5	1,208.7	Manual Level	
SG-1	staff gage	Secondary	n/a	1,350	Manual Level	
SG-2	staff gage	Secondary	n/a	1,200	Manual Level	D
SG-3	staff gage	Secondary	n/a	1,200	Manual Level	E

Notes:

A New monitoring well installed as part of the 12 well program to support the South Plume Recovery System
B Requirement for piezometer cancelled during construction
C Well site not accessible during the pumping test, no measurements taken
D Staff gage removed, lost, or stolen after 5/16/93
E Replaced SG-2 on 5/18/93
F Used for background trend
G Data not available

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Table 3-3 - Water Level Measurement Instruments

Type of Measurement	Description
Automatic Level	In Situ HERMIT Model SE 2000 16 Channel data logger
Continuous Level	Stevens Type F Float recorder with quartz multi-speed timer
Manual Level	RST Model 3001 Water level meter (steel tape with sounder)
Automatic Level	In Situ HERMIT Model SE 1000C 2-channel data logger
Manual Level	Staff Gage (3) in Paddy's Run

SECTION 4

PUMPING TEST IMPLEMENTATION

4.1 Step Drawdown Test

Table 4-1 provides a chronology for the step drawdown test. The step test began on May 18, 1993. The purpose of the step test was to identify well yield and determine the optimum pumping rate for the constant rate pumping test. This step test consisted of six steps (or intervals) of pumping at increasing rates. Prior to initiation of the step test, it was determined that the test steps could be reduced to less then 2 hours if a steady drawdown rate was achieved during this period. The first step was determined to have established a steady rate after the 100 minute data point. Steady rates for the other steps were also evident within the same time frame, thus reducing the basic step interval to approximately 100 minutes.

Table 4-1 - Step Drawdown Test Chronology

Step Drawdown Test Chronology	
May 18, 1993 1:45 p.m.	Commenced first step of step drawdown test. Due to improperly positioned throttle valve, initial flow rate exceeded 800 gpm. Secured the test pump and the step test.
2:25 p.m	Following aquifer recovery, the step drawdown test was re-initiated at the beginning of the first step (Discharge [Q] = 200 gpm). Start and completion times of the individual steps are given below.
4:14 p.m.	Completed Step 1 (Q = 200 gpm). Initiated Step 2 (Q = 275 gpm). Step 1 duration: 109 minutes.
6:13 p.m.	Completed Step 2 (Q = 275 gpm). Initiated Step 3 (Q = 350 gpm). Step 2 duration: 119 minutes.
7:52 p.m.	Completed Step 3 (Q = 350 gpm). Initiated Step 4 (Q = 425 gpm). Step 3 duration: 99 minutes.
9:31 p.m.	Completed Step 4 (Q = 425 gpm). Initiated Step 5 (Q = 575 gpm). Step 4 duration: 99 minutes.
11:10 p.m.	Completed Step 5 (Q = 575 gpm). Initiated Step 6 (Q = 750 gpm). Step 5 duration: 99 minutes.
May 19, 1993 00:49 a.m.	Terminated Step 6, pump cavitation evident, well water level correlates to pump inlet elevation. Step 6 duration: 59 minutes.

During the step test, levels in the test well and the local piezometers were recorded using a 16-channel data logger. At the beginning of each test, the data logger was stepped to shift it into the logarithmic sampling cycle shown in Table 4-2.

Table 4-2 - Logarithmic Sampling Cycle

Log Cycle	Elapsed Time	Measurement Interval
1	0-20 seconds	0.5 seconds
2	20-60 seconds	1 second
3	1-10 minutes	12 seconds
4	10-100 minutes	2 minutes
5	> 100 minutes	20 minutes

Appendix A contains data from manual measurements and the data logger. Manual levels were obtained hourly for each piezometer to verify operation of the data logger.

4.2 Constant Rate Test

Table 4-3 provides a chronology for the constant rate test (CRT). Following completion of the step test, the aquifer was allowed to recover to the pre-step test levels for 7 days before beginning the CRT. A CRT was commenced on May 25, 1993, in the RW-4 test well. The discharge rate for the CRT was established as 425 gpm as discussed in Subsection 5.2.4. Except for the initial minute of the test when flow was being adjusted and the 20-second loss of the test pump on May 28, the discharge rate was maintained within ± 5 percent of 425 gpm for the duration of the CRT. Drawdown in the test well and piezometers was recorded using a 16-channel data logger. Downloaded data from the data logger are located in Appendix A. Figure 4-1 shows a time-drawdown plot for the CRT.

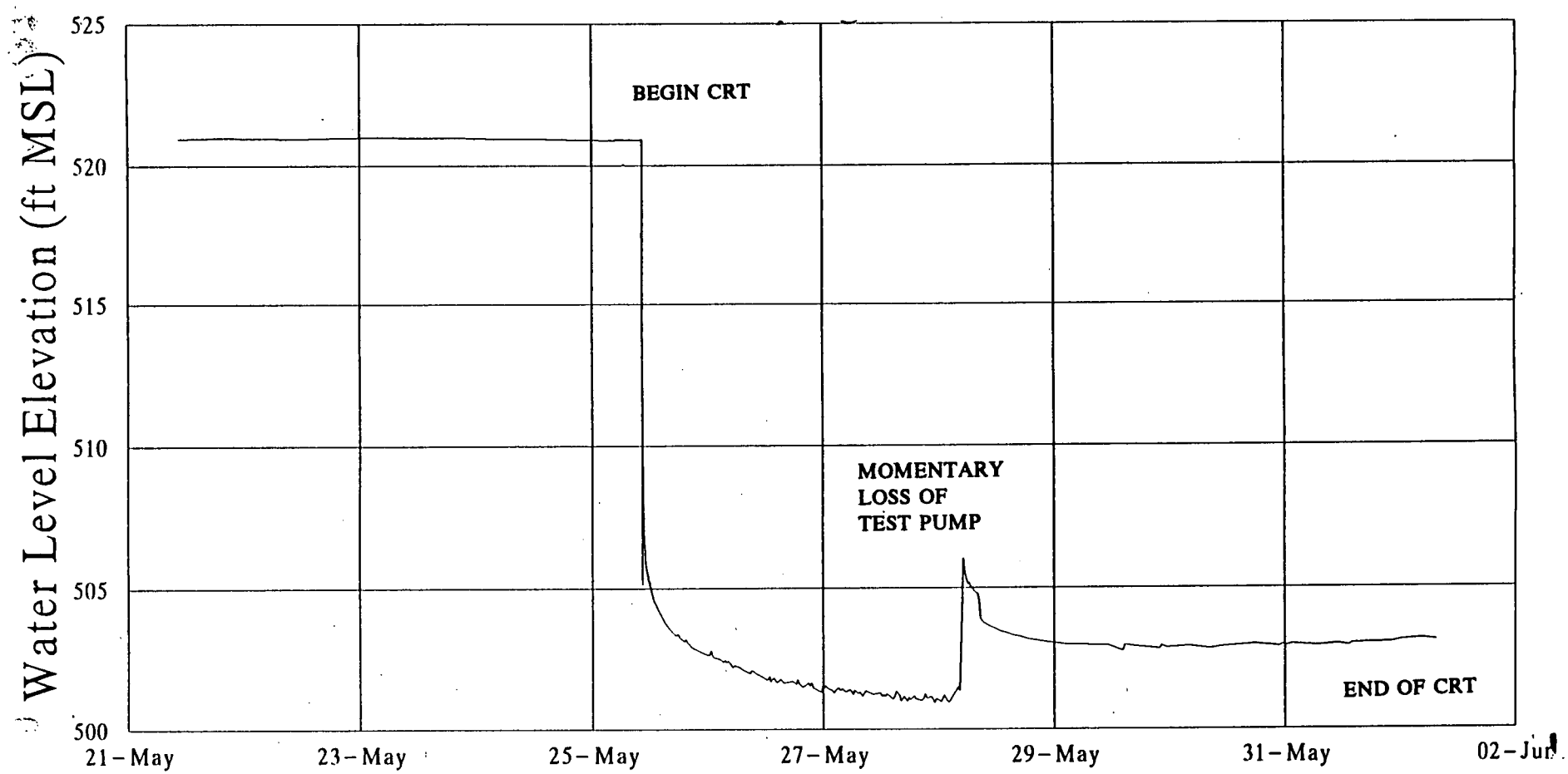

Figure 4-1 - Water Level in the Pumped Well during the CRT

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Table 4-3 - Constant Rate Test and Recovery Period Chronology

May 25, 1993 10:10 a.m.	Commenced CRT, initial flow rate of 600-700 gpm throttled to a steady discharge rate of 425 gpm within 1 minute.
May 28, 1993 4:55 a.m.	Test pump was inadvertently shut down for approximately 20 seconds following an electrical anomaly involving the light plant which shared a common power source (diesel generator). During that period, the test well recovered approximately 5 feet of level.
May 29, 1993	The water level in the test well stabilizes approximately 2 feet higher than it was prior to the pump shutdown.
May 30, 1993 8:00 a.m.	The data logger indicated level in the test well has deviated from manual levels by a total of 0.9 feet.
9:00 a.m.	A two channel data logger (Hermit 1000) is set up to read the water level in the test well to allow direct comparison with Hermit 2000 data in order to troubleshoot the deviation noted above. Noted that Hermit 2000 time has drifted from real time.
2:50 p.m.	Due to its availability, the Hermit 1000 is set up to monitor the water level in SPPZ-3 on its second channel to gather redundant data logger data in the event that Hermit 2000 data is bad or unrecoverable.
June 1, 1993 4:48 p.m.	Completed Constant Rate Test, stopped the test pump. Started the recovery period, began collecting recovery data.
June 5, 1993 7:28 a.m.	Terminated data collection for the recovery period.

4.3 Recovery Period

The logarithmic data collection cycle on the data loggers was re-initiated simultaneously with pump shutdown from the CRT to record water level recovery measurements. The purpose of the water level recovery measurements was to provide a basis for comparison between aquifer parameters calculated from the CRT and the recovery period. Table 4-3 shows the recovery period chronology. Data logger data and manual levels for the test well and piezometers are located in Appendix A.

SECTION 5

PUMPING TEST RESULTS AND ANALYSIS

5.1 Water Level Analysis

Background trend, data logger clock times, and transducer cable slippage affected water level measurements significantly. River stages, surface loading, barometric pressure, and the effects of other wells were determined not to have a significant effect on the test results.

5.1.1 Background Trend

The water table in the region surrounding the pumping test area experiences seasonal variations of 6 to 10 feet (DOE 1990a), making it necessary to correct for water level changes observed during the test which should not be attributed to the test pump. The seasonal low occurs in the fall months and the seasonal high occurs in the spring. During the period of the pumping test, the water table appeared to be at its approximate seasonal mid-point, declining towards the fall low.

Figure 5-1 presents weather data collected during the pumping test from the FEMP weather station. A precipitation event (0.46") occurred on May 18 during the step test. Several small rainfall events (<0.1 inches) occurred during the remainder of the pumping test through June 4, when a rainfall of 0.81 inches occurred. A review of the secondary well hydrographs indicates that the seasonal water table decline was approximately constant between May 17 and June 5. Hydrographs show only a small reaction to these two significant rainfall events, indicating that these events had little impact on the seasonal trend. The level changes measured in wells 3897, 2093, and 3093 were selected to quantify this background trend at the test well and its associated piezometers based on proximity and similar hydrogeological setting. Table 5-1 provides well measurements for these locations. Wells 2385 and 2015 were originally selected to serve as background wells for the pumping test; however, 2385 was too distant and its trend was significantly different than the more local conditions. Sufficient pretest data was available for Wells 3897, 2093, and 3093 for them to be substituted.

A background trend of 0.015 ft/day was subtracted from the drawdown measured by each of the piezometers and the test well during the CRT to correct for this factor. The recovery period data was adjusted by this same correction factor. Due to the short interval for performance of the step test, background trend corrections were not necessary.

Table 5-1 - Daily Change in Water Table

Date	3897		2093		3093	
	DTW[1]	Change[2]	DTW[1]	Change[2]	DTW[1]	Change[2]
5/17	68.40		66.88		66.60	
5/18	68.34	0.06	66.80	0.08	66.52	0.08
5/19	68.47	-0.13	66.90	-0.10	66.62	-0.10
5/20	68.42	0.05	66.88	0.02	66.60	0.02
5/21	68.58	-0.16	66.92	-0.04	66.70	-0.10
5/22	68.46	0.12	66.94	-0.02	66.66	0.04
5/23	68.36	0.10	66.84	0.10	66.54	0.12
5/24	68.44	-0.08	66.90	-0.06	66.60	-0.06
5/25	68.52	-0.08	67.00	-0.10	66.71	-0.11
Average Daily Change (ft/day)		-0.0150		-0.0150		-0.0138

Notes:

1 DTW = depth to water level measured from top of casing (ft)

2 Change = change in water level over the previous day (ft)

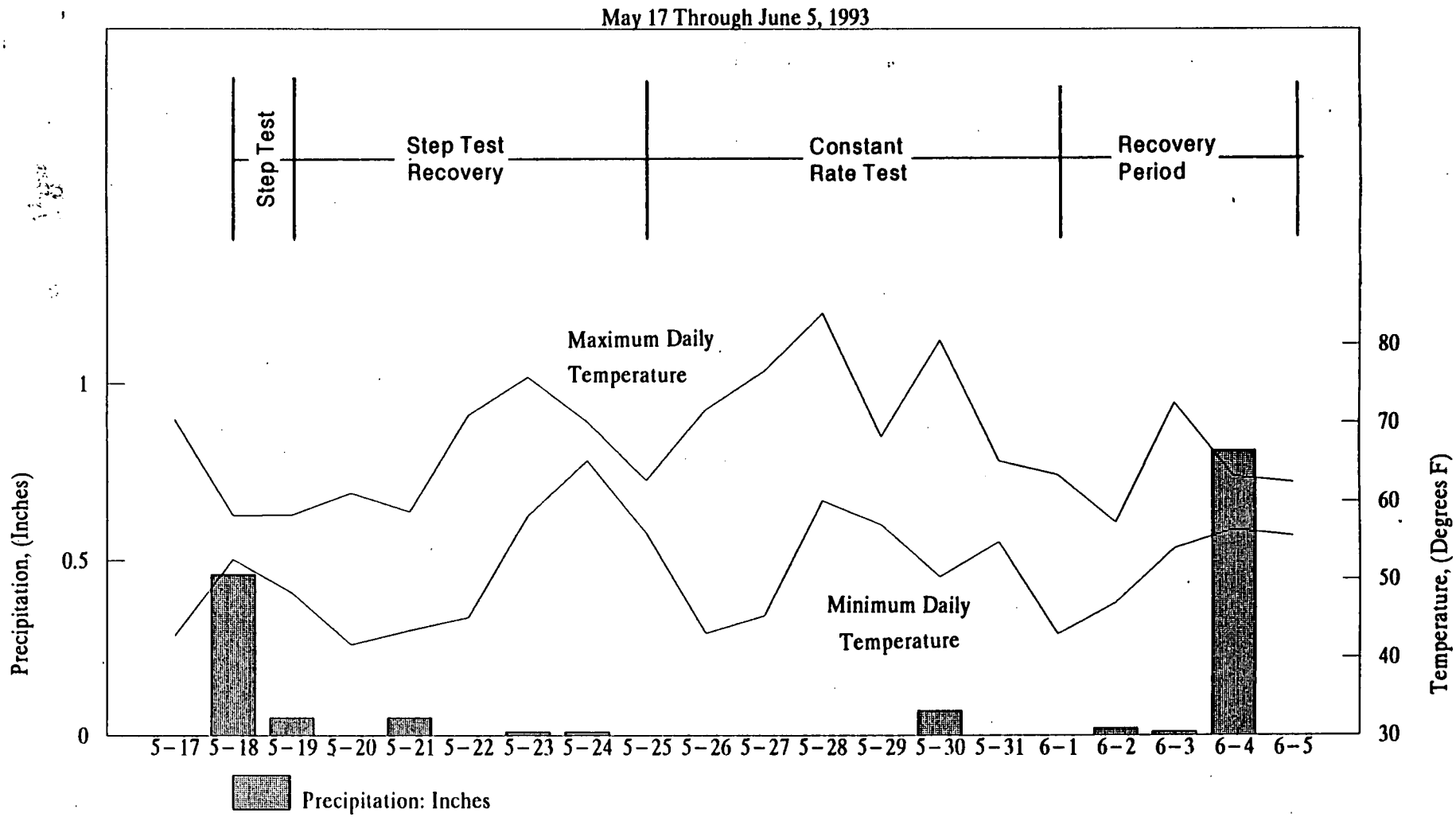

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Figure 5-1 - Weather Data

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5.1.2 Transducer Cable Slippage

Prior to the pumping test, the transducers for the Hermit 2000 data logger were lowered into the test well, Well 2002, and each of the 10 piezometers. The depth of each transducer was maintained by taping a loop in the cable at the top of the casing to prevent the traducers from descending any further in to the well. On June 1, 1993, it was observed that the data logger level for the test well had deviated from the manual levels by approximately 0.9 feet. Investigation revealed that the loop on the cable for the transducer for the test well had become noticeably smaller than when it was first installed. A plot of the difference between data logger level and manual level indicates that the largest portion of cable slippage occurred on May 28 when the test pump was inadvertently stopped. The discrepancy between the data logger level and manual reading of 0.9 feet corresponds to the change in size of the retaining loop at the top of the RW-4 test well casing. All transducer cables were subsequently checked and retaped, no others appeared to have slipped; and a comparison of data logger level to manual levels also failed to indicate slippage on any of the other transducers. A correction to account for this slippage for the test well transducer was made during calibration, prior to final pumping test analysis.

5.1.3 Data Logger Time

On May 30, 1993, about 6,800 minutes into the CRT, it was observed that the 16-channel data logger (Hermit 2000) clock time was different then actual time. Investigation revealed that the data logger time was approximately 65 minutes ahead of actual time. The Hermit 2000 clock was reset to actual time at the beginning of the recovery period and again drifted at a constant rate. Subsequent evaluation of the instrument, by the manufacturer's service department (Appendix I) following completion of the pumping test, revealed that the "real-time" clock crystal in the unit was oscillating at an incorrect frequency. The function of the real-time clock is limited to powering up the unit for data collection at the programmed time and has no effect on the accuracy of the collected data other then indicating the time at which it was taken. Comparison of actual time to clock time over the remainder of the CRT determined that the time error was constant and the deviation was linear. Prior to analysis, the data logger time data from the Hermit 2000 for the CRT was adjusted by a factor of 0.8466 seconds per minute from the beginning of the CRT. Figure 5-2 provides a comparison of the Hermit 1000 and Hermit 2000 indicated time. The recovery period data was also adjusted to account for the discrepancy prior to analysis for this report. The step test data was not adjusted due to the short period of each step test.

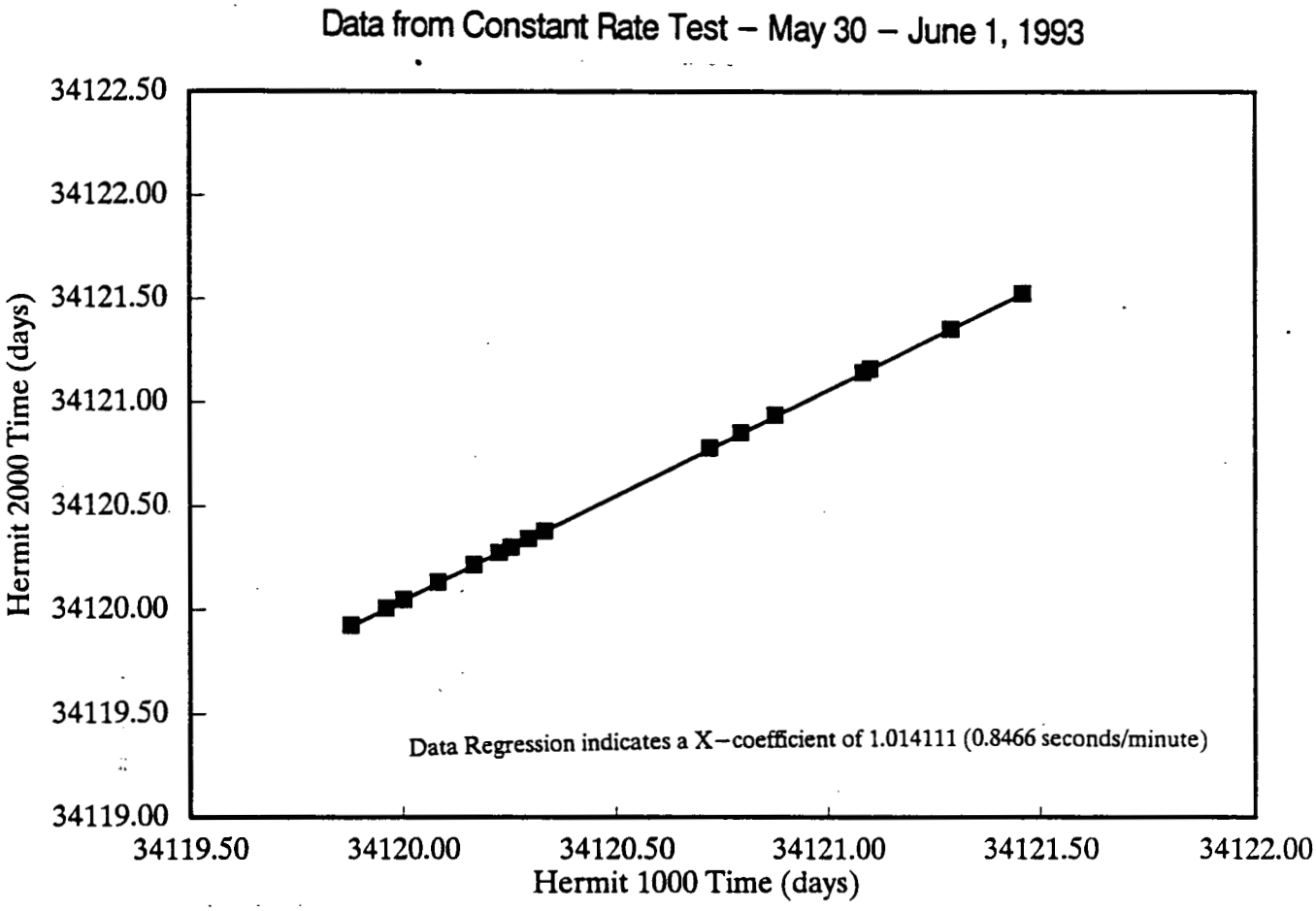

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Figure 5-2 - Hermit 1000 Time vs. Hermit 2000 Time

5.1.4 Other Effects

Other factors which have been known to affect the indicated hydraulic head during a pumping test are:

1) River stage - Due to its distance from the pumping test site (1.2 miles), the Great Miami River is removed from consideration as a possible influence to the test data. Paddy's Run was gauged during the pumping test so that recharge to the aquifer following a large precipitation event (i.e., > 1 inch/ 24 hours) could be included in the data analysis. Due to the lack of precipitation, its fairly constant level, and low flow during this period, Paddy's Run is also not considered an influence.

2) Surface Loading - The Great Miami Aquifer is an unconfined unit, so there would be very little effect from a change in surface load during the pumping test. Additionally, other than vehicular traffic at the test site, there were no known local changes in surface loading during the pumping test. Surface loading is not considered a factor influencing the test results.

3) Other pumping wells - Several other supply wells are in the area although data on them is limited. The only active wells during this period which are close enough to influence the pumping test are those at Delta Steel located approximately 1,000 feet southeast of the test area. These wells are pumped intermittently and do not exceed a pumping rate of 50 gpm. This pumping capacity is not large enough to be significant.

5.1.5 Non-Equalization

During portions of the pump test, piezometers SPPZ-2B and SPPZ-2G (3912 and 4920) exhibited erratic water level measurements. This was first noted during the step drawdown test when the piezometers exhibited relatively poor communication with the surrounding aquifer and response to pumping when compared to the other piezometers in the depth cluster (SPPZ-2A through 2G). In response to concern over communication of these two piezometers with the surrounding aquifer, all of the piezometers were bailed 3 days prior to the CRT to help ensure proper development. At the time the CRT was initiated, these two piezometers had not equalized (recovered from bailing). Based on non-equalization, the data from these piezometers will not provide interpretable results and are not analyzed for this report. Figure 5-3 provides hydrographs for these piezometers along with SPPZ-2D which recovered quickly from the bailing.

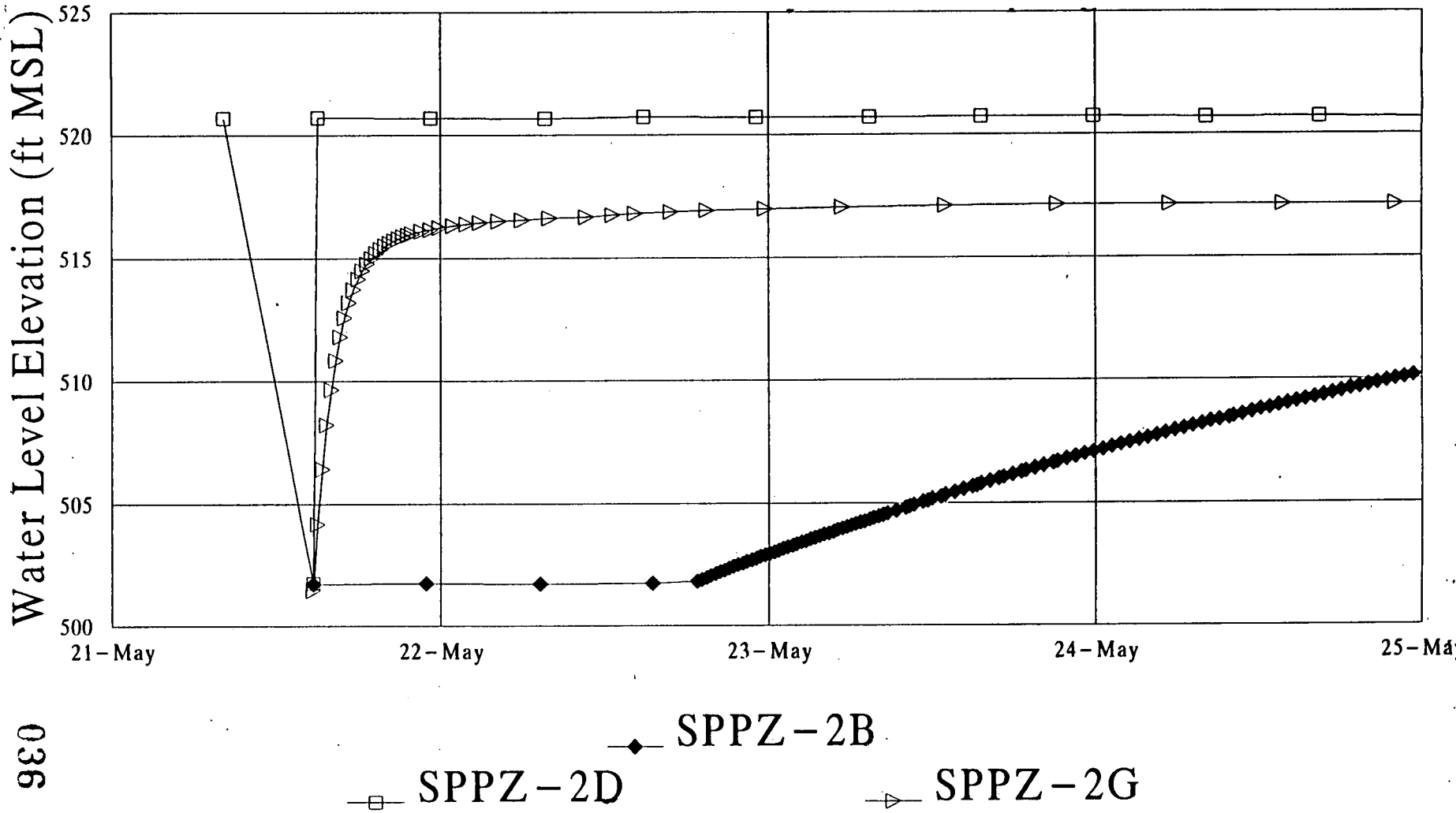

Figure 5-3 - Piezometer Hydrographs

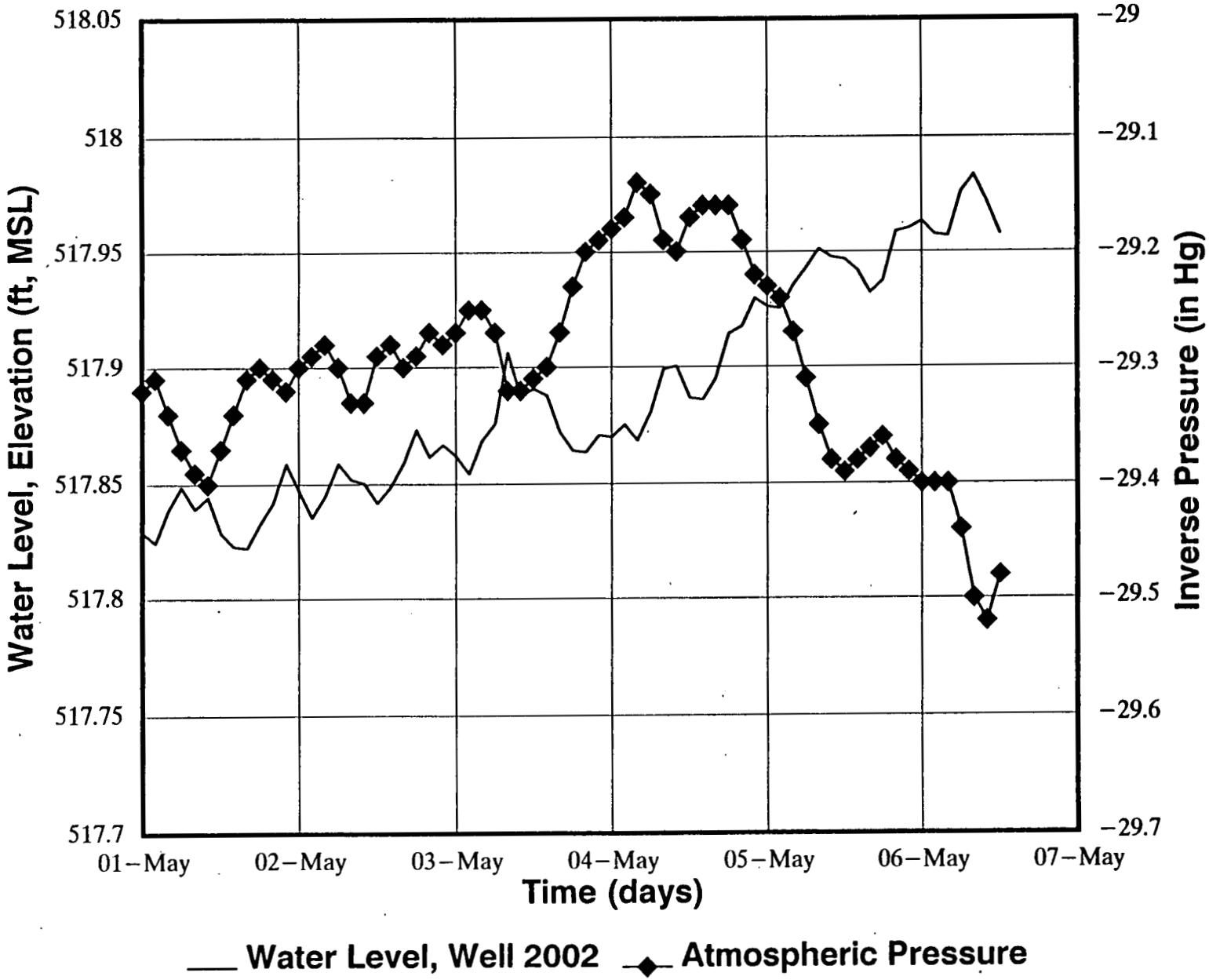

Figure 5.4 Elevation and Inverse Pr

5.1.6 Barometric Pressure

Changes in atmospheric pressure can produce large fluctuations in wells or piezometers which penetrate confined aquifers. This is an inverse relationship; increasing atmospheric pressure creates a decline in observed water levels. Although the Great Miami Aquifer is unconfined, changes in atmospheric pressure have, on occasion, created small fluctuations in the water table of some unconfined aquifers. To analyze for this possible effect, the inverse of the observed barometric pressure is plotted over time along with the indicated water level in well 2002 during the period May 1 to May 7 prior to the pumping test. There were no precipitation events during this period. Figure 5-4 does not show a positive relationship between inverse pressure and well elevation; therefore, barometric pressure is not considered to have an influence on the water table in this region.

5.2 Step Drawdown Test Analysis

The results of the step drawdown test were used to calculate the specific capacity (SC) of the well to predict well efficiency and well yield versus available drawdown. Figure 5-5 provides a time-drawdown plot for the entire step test.

5.2.1 Constant Discharge Rate Evaluation

Evaluation of the step test data resulted in the decision to perform the constant rate test at a discharge rate of 425 gpm. The decision was based on two considerations.

First, a discharge rate of 425 gpm represents the highest pumping rate which resulted in a drawdown rate in the pumping well small enough to allow the CRT to run a minimum of 7 days if steady state conditions were not reached. For each step discharge rate, the well water level will continue to drawdown until steady state conditions are reached. The rate of this drawdown will plot as a straight line continuation of the shallow portion of the step curve in Figure 5-5. The CRT was scheduled to run for a minimum of 72 hours and a maximum of 12 days (17,280 minutes) with a projected duration of 7 days. To determine the length of time which the well can be pumped at each discharge rate before uncovering the pump inlet (if steady state conditions are not reached), the elevation line for each step is extended until it crosses the level at the termination of step six (pump inlet). The time on the x-axis of this intersection indicates the length of time of predicted pumping. It can be seen in Figure 5-5 that step four (425 gpm) uncovers the pump inlet at sufficiently greater then 100,000 minutes, while step five (575 gpm) uncovers the pump inlet at approximately 2,000 minutes.

Second, the surrounding piezometers experienced a drawdown, at the selected discharge rate of 425 gpm, which indicated that the aquifer would be sufficiently stressed during the CRT to provide acceptable data

for evaluation. Table 5-2 lists the observed drawdown at various distances from the test well following the fourth step of the test. A 0.50-foot drawdown at 50 feet following 4 hours of pumping is considered adequate response.

Table 5-2 - Observed Drawdown

Distance from Test Well	25 Feet (SPPZ-2A, 2C, 2D)	50 Feet (SPPZ-1, 3, 5)	200 Feet (SPPZ-4)
Observed average drawdown following step four (425 gpm)	.558	.635 feet	.267 feet

5.2.2 Specific Capacity

SC was calculated according to the following relation:

$$SC = Q/s$$

where:

Q = pumping discharge (gpm)
s = drawdown (feet)
SC = specific capacity (gpm/ft)

Table 5-3 presents the SC at each pumping rate step. An SC of 28.0 gpm for each foot of drawdown was realized in the test well (3927) at a pumping rate of 425 gpm.

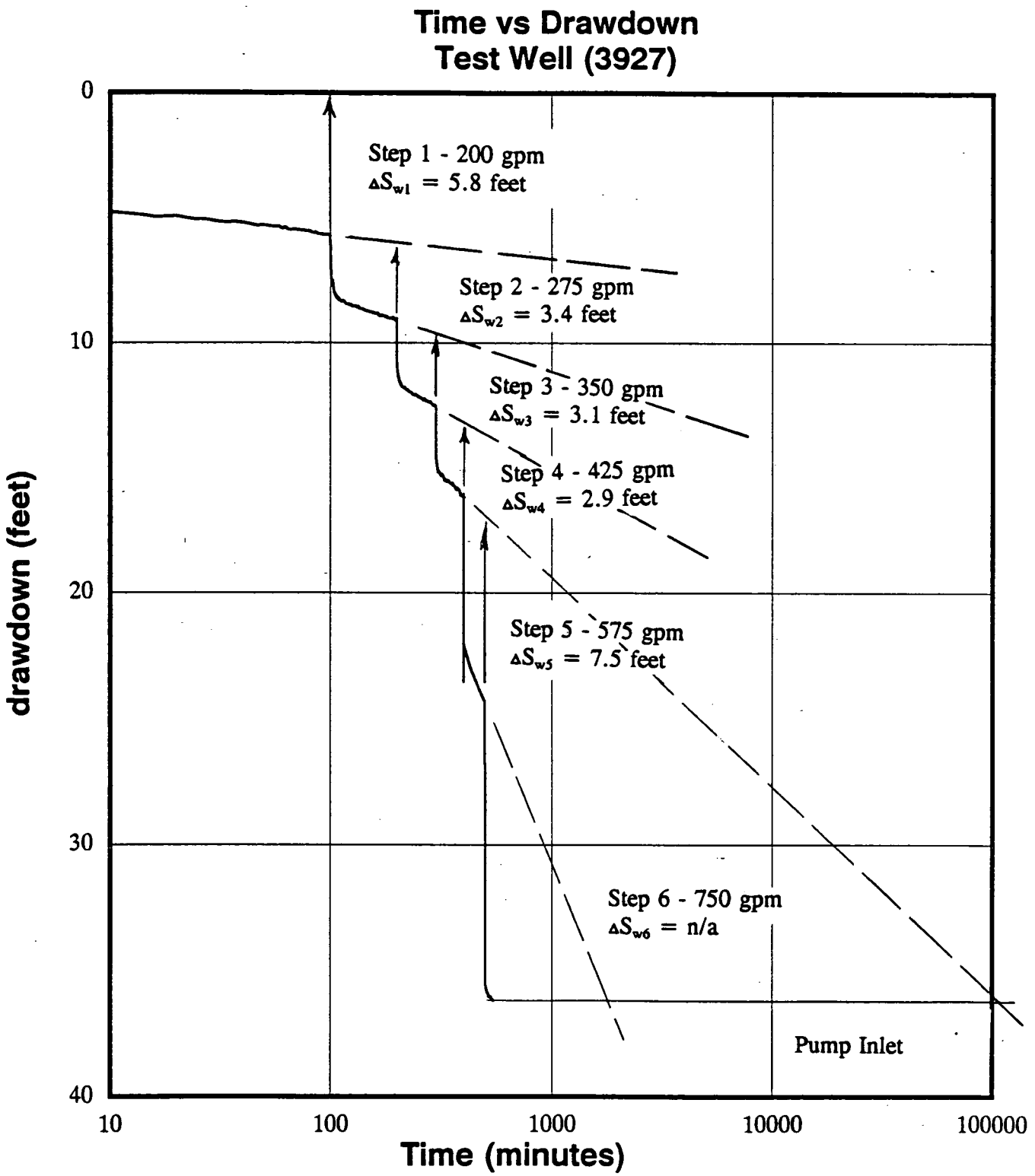

Figure 5-5 - Step Test-Time Drawdown

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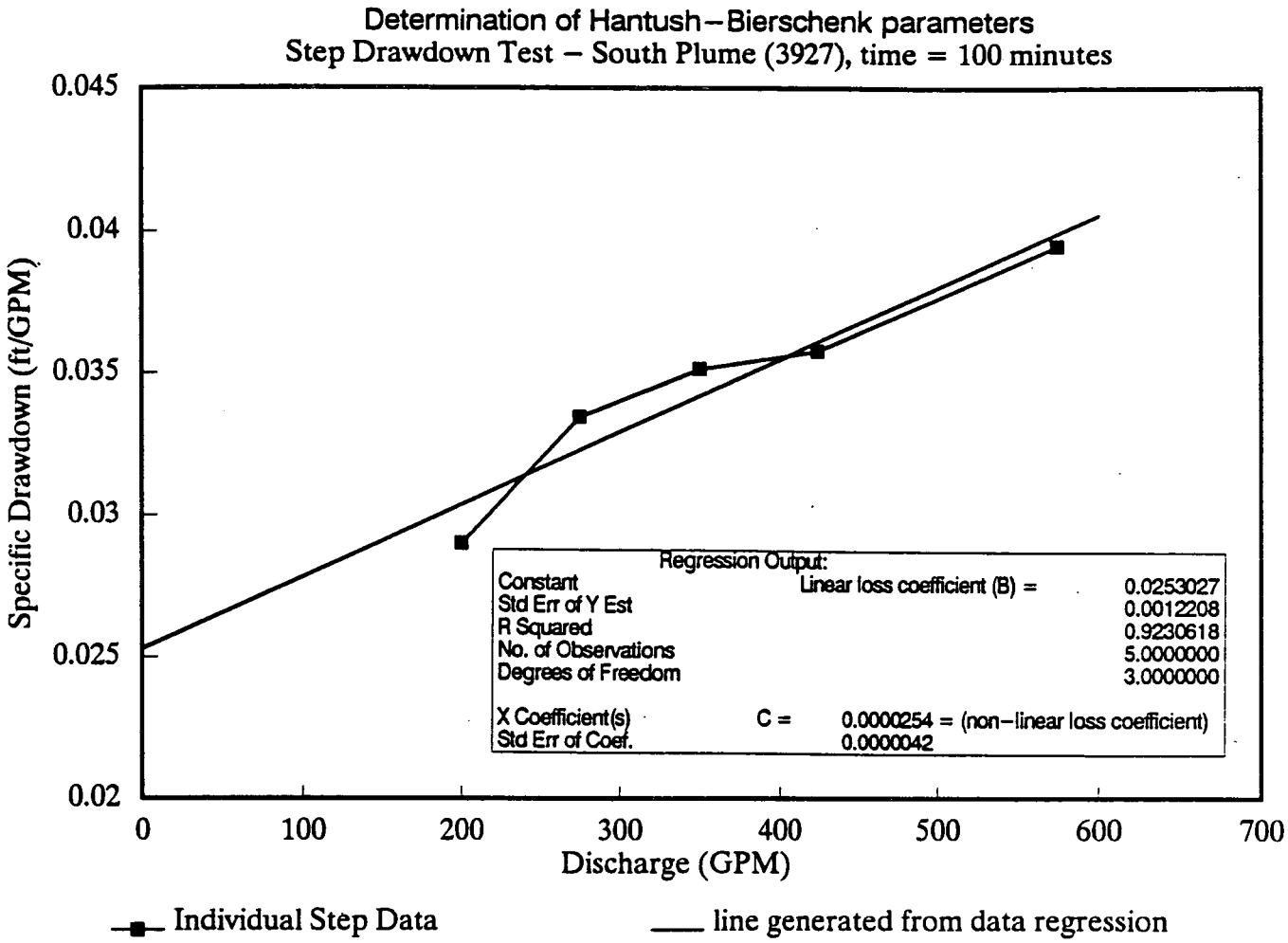

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Figure 5-6 - Determination of Hantush-Bierschenk Parameters

Table 5-3 - Summary of Specific Capacities

Step	Pumping Rate (gpm) Q	Incremental Drawdown, ΔS_w (ft)	Drawdown, s (feet)	Specific Capacity, Q/s (gpm)
1	200	5.8	5.8	34.5
2	275	3.4	9.2	29.9
3	350	3.1	12.3	28.5
4	425	2.9	15.2	28.0
5	575	7.5	22.7	25.3

5.2.3 Well Efficiency

Well Efficiency from Step Test Data

Specific Capacity (SC) was also estimated by an evaluation of the ratio of theoretical aquifer transmissivity to a factor that corresponds to aquifer type. According to Driscoll (1986), the theoretical SC of an unconfined aquifer can be estimated by the relation:

$$SC = \frac{Q}{s} = \frac{T}{264 \log \frac{.3Tt}{r^2 s}}$$

where:

T = Transmissivity = 298,400 gpd/ft (CRT)
t = Time of pumping = .07 days
r = Radius of the well = 1 ft
S = Storage coefficient of the aquifer = .2

Therefore SC (theoretical) = 251 gpm/ft.

True well efficiency (E_w) can then be calculated for the conditions experienced during the step test by comparing the ratio of actual specific capacity (Table 5-3) to theoretical specific capacity (calculated above) for a pumping time of 100 minutes and a discharge rate of 425 gpm. It should be noted that this method does not account for the effects of partial penetration.

[1]at pumping time = 100 minutes and discharge = 425 gpm

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$$E_w^1 = \frac{\frac{Q}{S}_{actual}}{\frac{Q}{S}} = \frac{28}{251} * 1DO = 11.15\%$$

Well Efficiency from Constant Rate Test Data

An alternate method of determining well efficiency compares the ratio of theoretical drawdown to actual drawdown where theoretical drawdown for a 100 percent efficient well is derived by extrapolating the straight line fit from a Jacob distance drawdown plot to a radius equal to the well radius.

After 5 days of pumping the straight line Jacobs distance-drawdown fit is described by:

$$S_t = m \log x + b$$

where:

m = slope of the line = .7112 (ft/decade)
x = distance from the pumping well (ft)
b = constant = 2.34 (ft)
S_t = theoretical drawdown = 2.34 (ft)
S_a = actual drawdown in the test well after 5 days of pumping (ft)
S_t = .7112 log 1 = 2.34 = 2.34

To correct for the effects of partial penetration, additional drawdown is added to the theoretical drawdown to account for partial penetration impacts. The additional drawdown was calculated using a computer program "PT2" written by W.C. Walton (Walton 1985).

$S'_t = S_t + S_{pp}$ $\quad S'_t = 2.34 + 1.72 = 4.06$

where

S_t' = theoretical drawdown corrected for partial penetration
S_t = theoretical drawdown with full penetration = 2.34 feet
S_{pp} = drawdown due to partial penetration impacts (Appendix K)

Well efficiency during the constant rate test can then be calculated:

$$E_w^2 = \frac{S'_t}{S_a} * 100$$

$$E_w^2 = \frac{4.06}{14.35} * 100 = 28.3 \textit{ percent}$$

This calculated value for well efficiency provides a good estimate of the actual well performance.

[2]at pumping time = 5 days and discharge = 425 gpm

Well Efficiency Estimated by Well Losses

Well construction efficiency can be evaluated by an estimation of well losses. A value for well losses was obtained from the step drawdown data by the Hantush-Bierschenk (1963, 1964) method. This technique employs both graphic and analytic methods to provide a value for well loss components.

$$Sw = BQ + CQ^2$$

where:

B = Linear well loss coefficient = 0.0254 (Figure 5-1)
C = Nonlinear well loss coefficient = 2.5×10^{-5}
Q = Discharge - 425 gpm
S_w = Well drawdown

Data from Table 5-3 was used to construct a linear plot (Figure 5-6) of discharge (Q) versus specific drawdown (s/Q). A value for B is obtained from where the line intercepted the s/Q axis at Q=0.

The value for C is obtained from the slope of the line from the regression analysis in Figure 5-6:

$$C = 2.5 \times 10^{-5}$$

The ratio of the laminar head loss to the total head loss can then be evaluated by the following relation:

$$L = [\frac{BQ}{BQ + CQ^2}] * 100 = 70 \textit{ percent}$$

This statement indicates the 70 percent of the total head losses are attributable to laminar flow. This is not, however, an indication of true well efficiency as the turbulent flow may occur within the well and well screen or in the undisturbed formation around the well.

5.3 Constant Rate Test Analysis

During the constant rate test, the aquifer acted as an unconfined (water table) aquifer by exhibiting three distinct time-drawdown relations. Initially, the aquifer behaved as an artesian aquifer and time-drawdown data corresponded to the Theis non-equilibrium curve for storativity equal to the elastic storativity of the aquifer. Flow in the aquifer during this period was primarily horizontal. During the second phase, the rate of decline lessened as discharge was derived through gravity drainage from the aquifer. During this phase, there were both horizontal and vertical components of flow. In the third phase, due to gravity drainage effects, the drawdown rate in the well decreased and flow again became primarily horizontal. During this phase, time-discharge data followed a Theis curve with a storativity equal to the specific yield of the aquifer.

Three basic methods were used to analyze the constant rate test data for this report. The Jacob distance drawdown method is based on graphical analysis of the plotted test data while two other methods use the best fit of the plotted test data to type curves representing well functions. The two separate curve-fitting methods have been developed by Streltsova and Neuman, respectively (Kruseman and de Ridder 1990) to analyze the constant rate test data for the conditions of unsteady flow in an unconfined, anisotropic aquifer using a partially penetrating well, while the Jacob method considers unsteady flow to a fully penetrating well in a confined aquifer. The applicability of Jacob's method will be described in the following subsection. A third curve-fitting method by Boulton and Streltsova (Kruseman and de Ridder 1990) was applied to several of the piezometers to assess the effect of well storage on the early time data.

5.3.1 Jacob Distance-Drawdown Method

In aquifer tests where there are at least three observation wells located at different distances from the pumping well, drawdown can be analyzed using the Jacob method to determine aquifer transmissivity and storage coefficient. The Jacob distance-drawdown method (Copper and Jacob 1946) graphs simultaneous drawdown in the observation wells, at specific times during unsteady flow against the distance of each well from the pumping well. The method is based on the fact that individual well data points will plot along a straight line on semi-log graph paper. The slope of the line is then used to calculate the parameters of interest.

Several considerations are necessary to determine the validity of the Jacob calculations for this pumping test. First, the Theis equation on which the Jacob method is based is valid for confined aquifers and fully penetrating wells. It can be used for unconfined aquifers, if the aquifer is not fine grained and dewatering of the aquifer is not significant (Heath 1987).

The Great Miami Aquifer is a sand and gravel aquifer and is not considered to be fine grained. The aquifer thickness in the test area is approximately 96 feet. Drawdown in piezometers located 20 feet from the test well experienced less then 1.6 feet of drawdown. Approximately 0.9 feet of drawdown was experienced at 200 feet from the test well. If necessary, the effect of dewatering can be corrected for with the following equation (Jacob 1944) as shown for well 3911 below.

$$s' = s - \left(\frac{s_2}{2D}\right)$$

$$s' = 1.517 - \left(\frac{1.517^2}{(2)(96)}\right) = 1.505 \; feet$$

Drawdown corrections were calculated for the near and far piezometers to determine the magnitude of the required dewatering correction (see Table 5-4). These calculations show that the ratio of maximum drawdown to the initial saturated thickness is less than 0.02, and it is not necessary to correct drawdown data for dewatering (Papadopulos and Cooper 1967) and that a less than 1 percent change in the observed drawdown occurs due to dewatering.

Table 5-4 - Sample Drawdown Calculations for Unconfined Conditions

Well No.	Distance (ft)	Drawdown (ft)	Correction Factor (Drawdown divided by Initial saturated thickness)	Corrected Drawdown (ft)	Change (%)
3911	19.9	1.517	0.0158	1.505	0.8
3922	199.4	0.879	0.0092	0.875	0.5

Another consideration in using the Jacob distance-drawdown method is that the Theis equation does not account for the vertical flow components introduced in the aquifer in the region adjacent to the test well which are caused by partially penetrating conditions. The effects of partial penetration are strongest at the well face and decrease with increasing distance from the well. Depending on the amount of penetration, the effect becomes insignificant at a distance which is 1.5 to 2 times the thickness of the saturated aquifer (Dawson and Istok 1991). The pumping well is screened over 40 feet of the total 96 feet of saturated aquifer thickness. The effects of partial penetration therefore become negligible at approximately 190 feet from the pumping well.

The data from five wells were selected to be analyzed by the Jacob distance-drawdown method. This calculation assumes that the aquifer is homogeneous and isotropic, which allows the drawdown in three of the piezometers located along a line to the south of the test well (3911, 3921, and 3922) to be analyzed with the observed drawdown from two other observation wells (3097 and 3093) located on a line generally northeast of the test well.

Using Jacob's method, drawdown values are obtained for the wells of interest, and drawdown versus distance is plotted in semi-log format for 1, 3, 5, and 7 days from the start of constant rate pumping. To determine the best straight line fit, data regression is performed for each time period. Sample calculations are shown for time = 5 days.

Transmissivity (T) can be calculated as:

$$T = \frac{528 * Q}{\Delta s}$$

$$T = \frac{528 * 425}{.7112} = 315{,}510 \ gpd/feet$$ (Driscoll 1986, page 236)

Horizontal conductivity (K_h) is calculated:

$$K_h = \frac{315{,}500}{96 * 7.48} = 439 \ feet/day$$

$$K_h = \frac{T}{D * 7.48}$$

Zero-drawdown intercept (r_0) is calculated:

$$r_0 = 10^{\frac{.7112}{2.337}} = 1{,}932 \ feet$$

$$r_0 = 10^{\left(\frac{y\text{-}intercept}{\Delta s}\right)}$$

The storage coefficient (S) is then calculated:

$$S = \frac{0.3 * 315{,}510 * 5}{1{,}932^2} = 0.127$$ (Driscoll 1986, pg. 237)

$$s = \frac{.3\,Tt}{r^2_0}$$

$$u = \frac{1.87\,r^2 S}{Tt}$$ (Driscoll 1986, pg. 218)

When the values of T and S are determined, they are introduced into the equation for u (below) to check whether u < 0.1, which is a practical condition for the applicability of the Jacob method (Kruseman and de Ridder, page 67). Calculation for Well 3897 at time = 5 days is shown below. The dimensionless well parameter (u) is then calculated:

$$u = \frac{(1.87)\,(575)^2\ .127}{315{,}510} * 5 = 0.0498$$

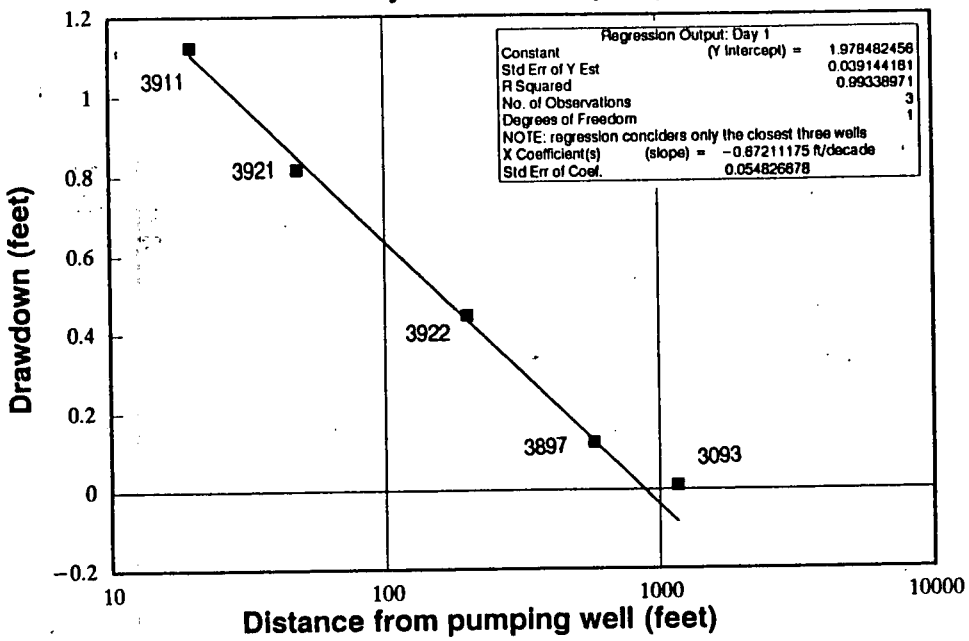
Time-distance data with "u" values >0.1 were neglected from regression, and a new regression was performed for that time period.

where:

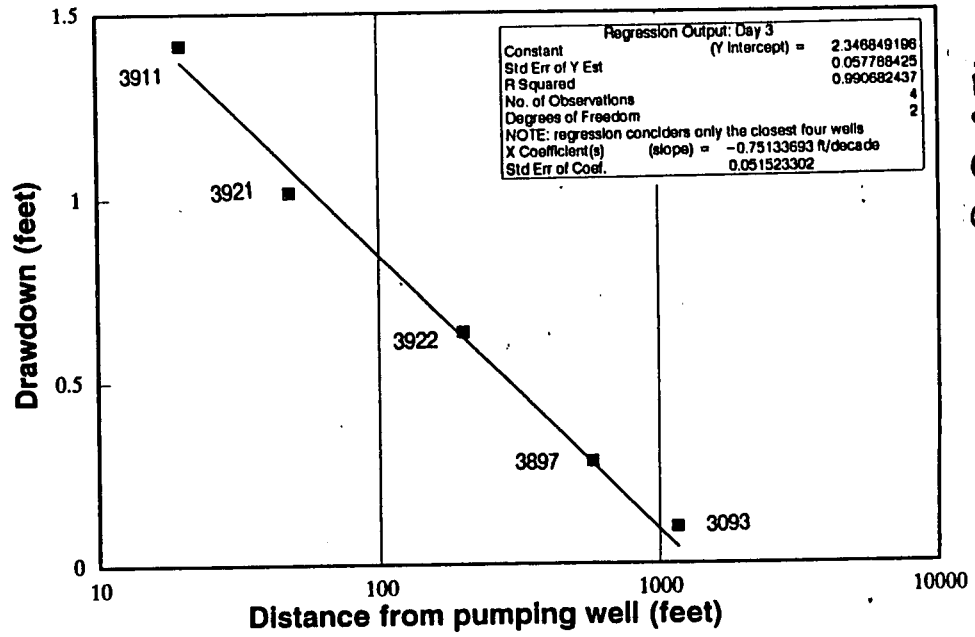
s' = corrected drawdown (if there had been no dewatering) (ft)
s = observed drawdown (ft)
D = original aquifer saturated thickness = 96 feet
T = transmissivity (gpd/ft)
Q = discharge = 425 (gpm)
Δs = graph slope taken as the x-coefficient from the data regression (ft/log cycle)
K_h = horizontal hydraulic conductivity (ft/day)
y-intercept = constant calculated from the regression analysis
r_0 = distance to which the steady-shape cone of depression extends (x intercept)
t = time (days)
u = well parameter (dimensionless)

Figure 5-7 shows the distance drawdown plots for each time period. It can be seen from these plots that well 3093 at 1, 3, and 5 days is outside the steady shape cone of depression. Additionally, it can be seen that the two wells with the poorest fit on the straight line are the two closest wells (3911 and 3921) at distances of 19.9 and 48.3 feet. Both of the wells are located within a distance 2 times the saturated aquifer thickness, so the non-linearity is likely due to the effects of partial penetration discussed earlier. Table 5-5 presents the results from the Jacob distance drawdown analysis.

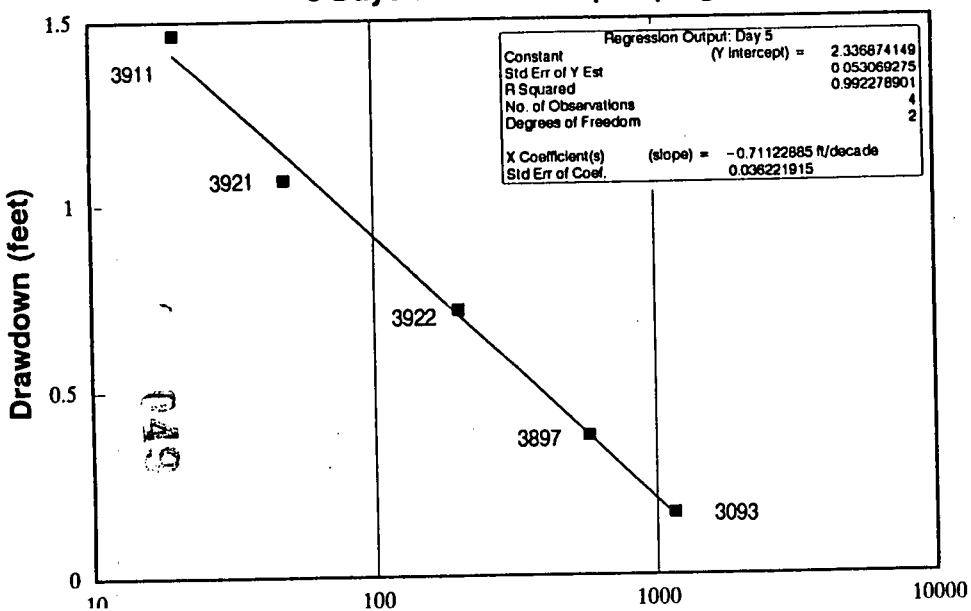
Distance vs Drawdown
1 Day after start of pumping



Distance vs Drawdown
3 Days after start of pumping



Distance vs Drawdown
5 Days after start of pumping



Distance vs Drawdown
7 Days after start of pumping

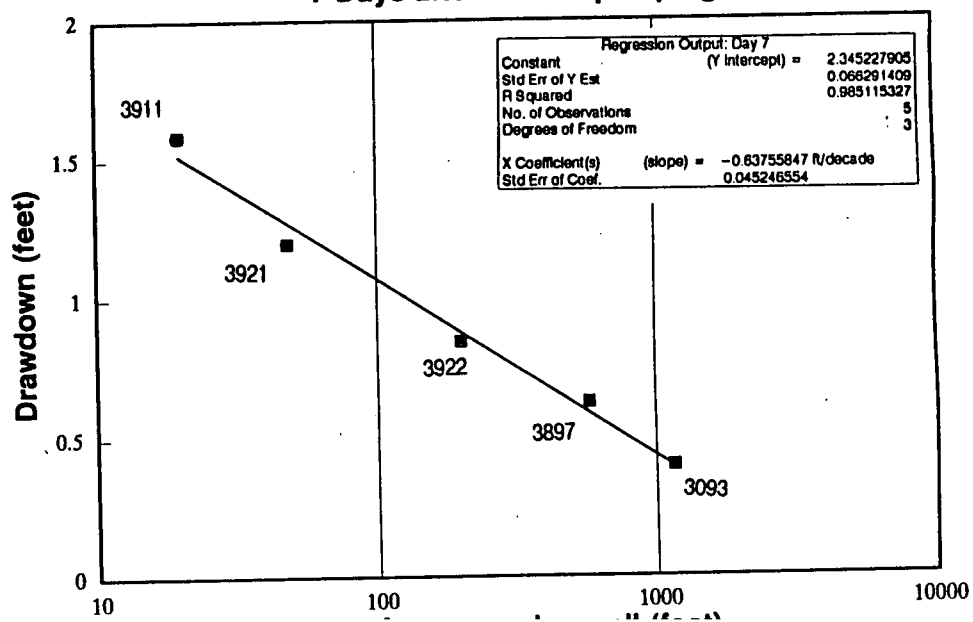


Table 5-5 - Results of Jacob Distance Drawdown Analysis

Time Pumping (days)	delta s (feet)	Transmissivity (gpd/ft)	Horizontal Conductivity (ft/day)	0-drawdown intercept, r_o (feet)	Storativity	Values of u				
						Well 3911	Well 3921	Well 3922	Well 3897	Well 3093
1	0.672	333,870	465	878	0.130	2.9E-04	1.6E-03	0.029	0.240	0.978
3	0.751	298670	416	1329	0.152	1.3E-04	7.4E-04	0.013	0.105	0.427
5	0.711	315510	439	1930	0.127	5.9E-05	3.5E-04	0.006	0.0498	0.202
7	0.637	351970	490	4769	0.032	9.89E-06	5.7E-05	9.8E-04	0.008	0.033

Notes:

Original saturated aquifer thickness = 96 feet

Discharge rate = 425 gpm

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5.3.2 Streltsova Curve Fitting Method

The Streltsova curve-fitting method was used primarily to analyze the late time data from the piezometers which were screened at 110 feet. The Streltsova method considers the effects of partial penetration by both the test well and observation wells. Since the method requires generation of specific type curves for each specific arrangement of partial penetrations, the Streltsova analysis was limited to those piezometers which shared the same set of type curves (at a depth of 110 feet). Elevation data for each well, corrected for background trend, was graphed and compared to plots of Streltsova Type B curves generated from tables (Kruseman and de Ridder 1990). The curves were fit to the test data by overlaying an acetate copy of the type curves. A match point was selected and match point values of W, $1/\mu$, t, s, and B are recorded. Estimated aquifer parameters were then calculated using the values obtained at the match point from both plots. Piezometer curves and type curves are located in Appendix H.

Early time data analyzed in this report by the Streltsova method was not carried forward for the purposes of parameter estimation due to the effects of well storage (discussed in Subsection 5.3.9) and due to adjustments which were made to the test discharge rate during the first minute of the CRT. A summary of late time analysis by Streltsova is presented in Table 5-6.

Table 5-6 - Late Time Analysis Using Streltsova (1974)

FEMP Well Number	Previous Designation	Distance from test well, r	Curve Parameter, B	Draw down, s	time, t	$1/u_b$	W_b	K_hD	K_h	K_v/K_h	S_y
3910	SPPZ-1	47.5	0.20	0.550	0.0771	100	1.74	49,435	515	0.82	0.676
3911	SPPZ-2A	19.9	0.10	0.505	0.0025	10	1.46	45,176	471	2.3	0.1141
3921	SPPZ-3	48.3	0.20	0.505	0.0799	100	1.74	53,840	561	0.79	0.0736
3922	SPPZ-4	199.4	0.50	0.230	0.1840	10	0.774	52,585	548	0.12	0.973
3923	SPPZ-5	49.2	0.20	0.550	0.0854	100	1.74	49,435	515	0.76	0.698

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The following calculations were performed for Streltsova analysis. Sample calculations are shown for Well 3923 (Kruseman and de Ridder 1990, pg. 170-171):

$$Q = \frac{425\ gal}{\min} * \frac{ft^3}{7.48\ gal} * \frac{1{,}440\ \min}{day} = 81{,}818\ ft^3/day$$

$$K_h = \frac{Q\,W_B}{4\pi\,(b_1/D)\,sD}$$

$$K_h = \frac{81818 X 1.74}{4 * \pi * .417 * .550 * 96} = 510$$

$$S_y = \frac{4 K_h D t}{r^2\,(1/u_B)}$$

$$S_y = \frac{4 * 49435 * 0.854}{(49.2)^2 * 100} = 0.698$$

$$\frac{K_V}{K_h} = \frac{BD^2}{r^2}$$

$$\frac{K_v}{K_h} = \frac{.20 * (96)^2}{(49.2)^2} = .76$$

$$\frac{b1}{D} = 40 ft/96 ft = .417$$

where:

K_v = vertical hydraulic conductivity (ft/day)
K_h = horizontal hydraulic conductivity (ft/day)
D = original saturated aquifer thickness (ft)
W_B = well functions for late and early time
Q = discharge rate = 81,818 ft^3/day
S_y = specific yield
r = distance to test well (ft)
b_1 = depth of pumping well (ft)
b_2 = depth of monitoring well (ft)
s = match point drawdown (ft)

t = match point time
$1/\mu_B$ = match point value
W_B = match point well function value

5.3.3 Neuman Curve Fitting Method

For drawdown in an unconfined anisotropic aquifer pumped by a partially penetrating well, Neuman (Neuman 1974) developed a curve-fitting method based on the following equation:

$$s = \frac{Q}{4\pi K_h D} W\left(u_{a,b}, B, S_A/S_y, \frac{b}{D}, \frac{d}{D}, \frac{z}{D}\right)$$

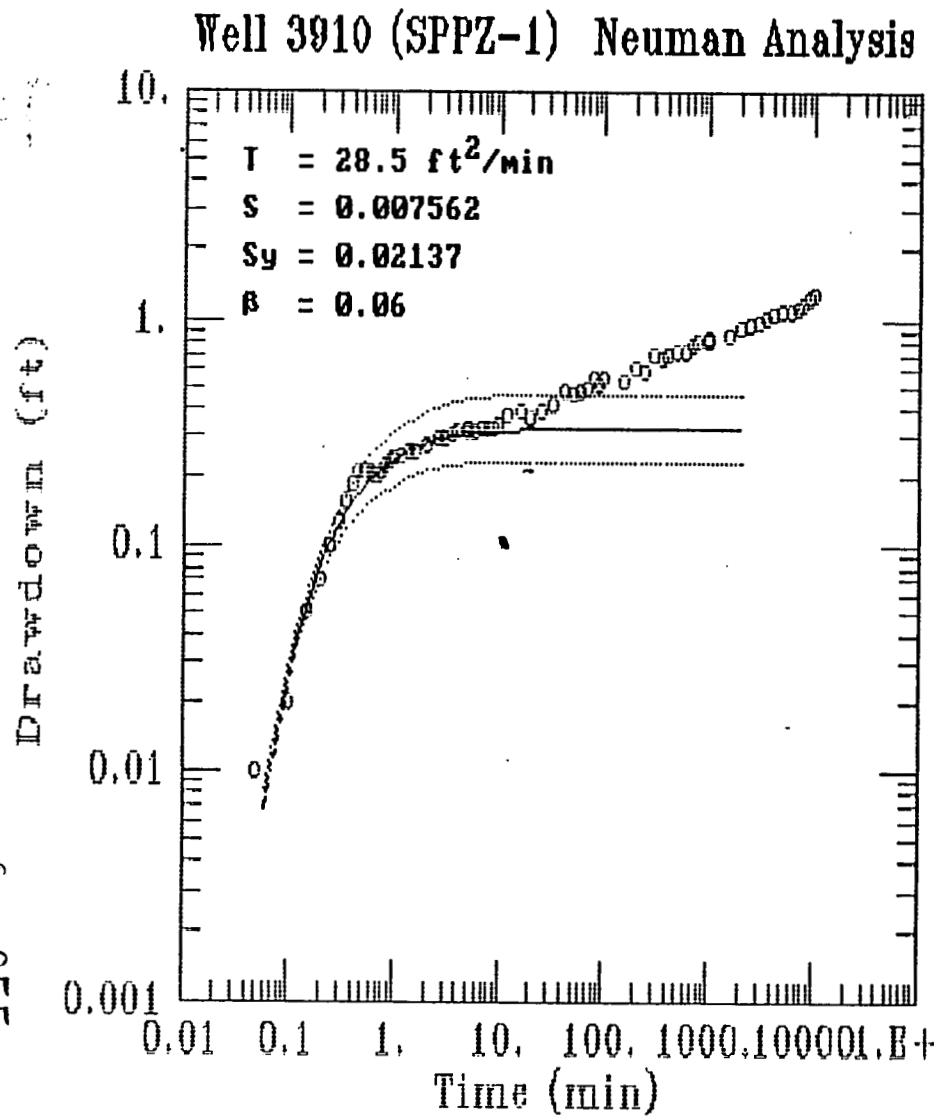
$$u_a = \frac{r^2 S_A}{4K_h Dt}, \quad u_b = \frac{r^2 S_y}{4K_h Dt}$$

where:

s = drawdown (ft)
Q = discharge (ft^3/day)
t = time
K_h = horizontal hydraulic conductivity (ft/day)
$W(u_a, \ldots)$ = Well function based on six independent dimensionless parameters
S_y = specific yield (dimensionless)
S_A = storativity (dimensionless)
b = distance, water table to bottom pumping well screen (ft)
d = distance, water table to top of pumping well screen (ft)
D = original saturated aquifer thickness (ft)
Z = distance from bottom of monitor well to bottom of aquifer (ft)
T = transmissivity (ft^2/min)
K_v = vertical hydraulic conductivity (ft/day)
r = distance to the test well (ft)
B = curve parameter (dimensionless)

The well function (W) shown above is a function of six dimensionless parameters. If the aquifer thickness and screen locations of all the wells are known and aquifer specific yield can be assumed to be much greater then storativity, the method of analysis can be greatly simplified. Drawdown data is analyzed in two parts: early data and late data as shown in Figure 5-8. Type A curves are used to analyze the early data where the effects of elastic storage are dominant and Type B curves are used to analyze the late data when storage from gravity drainage becomes important (Dawson and Istok 1991).

Visual Curve Matching - Early Time Type Curve



Visual Curve Matching - Late Time Type Curve

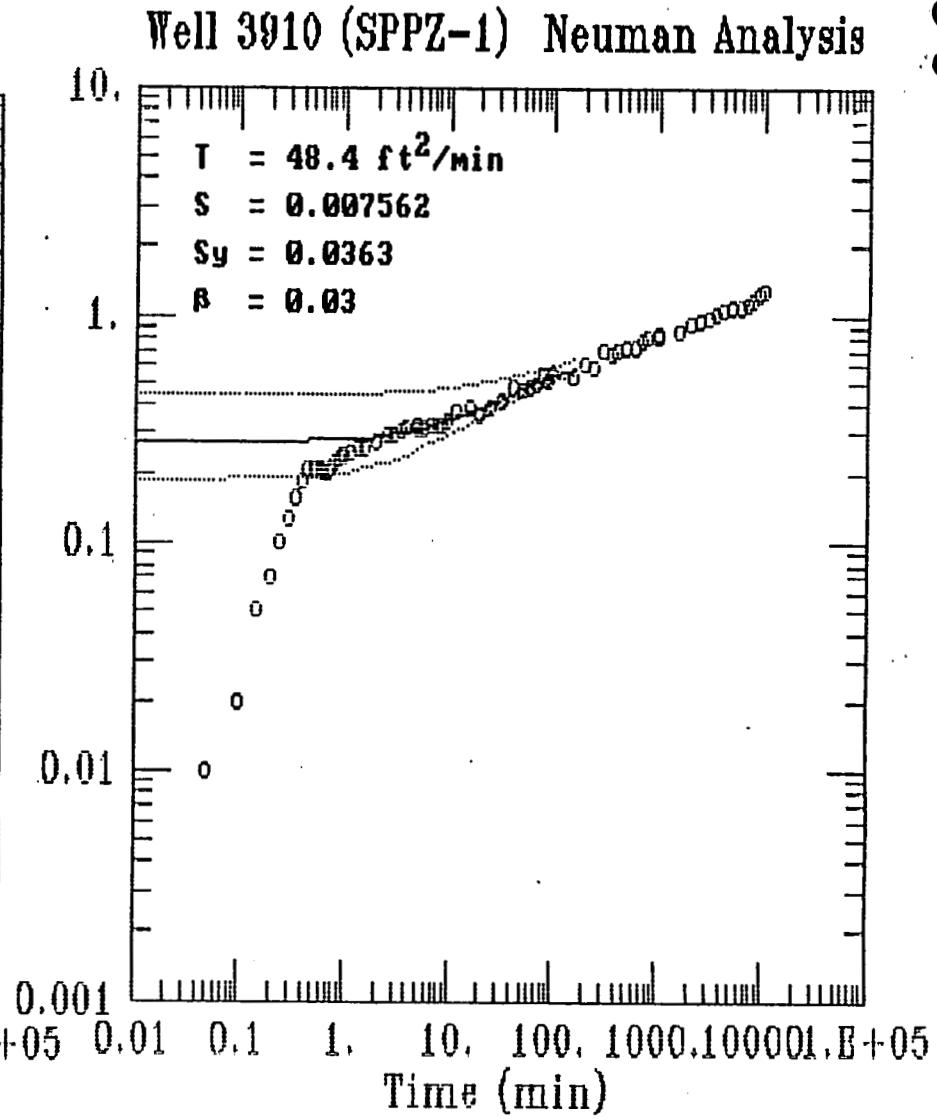


Figure 5-8 - Type A and B Curve Matching

Neuman analysis allows the generation of individual type curves for each piezometer based on piezometer depth and distance from the test well. Neuman curve fitting was performed using the AQTESOLV (Aquifer Test Solver) software package, Version 1.10 by Geraghty & Miller, Inc. AQTESOLV allows interactive visual curve matching as well as automatic hydraulic parameter estimation. AQTESOLV computes the best type curves for any particular data set and thus increases the accuracy of the graphical hydraulic parameter estimation by eliminating the need for interpolation between widely spaced type curves. Neuman curve matching was performed on each of the pumping test piezometers using corrected drawdowns from the calibrated data base.

The total number of data points in each piezometer's data set was reduced to decrease computation run time. Seven regularly spaced data points per log cycle of test time were selected, reducing the file size to between 45 to 80 data points while maintaining the overall shape of the curve.

Parameter estimation was performed by two methods. Initially parameters were estimated by adjusting the type curves manually on the computer screen to achieve the best visual fit. These fits used the estimated parameters from the other methods of analysis (Jacobs distance drawdown, Theis recovery) as a starting point. In performing the visual fit, late time data was preferred. Early time data points were not required to fit as tightly to the type curves as the late time data. This preference for late time data was based on two effects: (1) during the first minute of the CRT the pump discharge rate was reduced from an initial flow of approximately 600 gpm to the desired constant flow rate of 425 gpm, and (2) the effects of well storage, which are described in section 5.3.4, are significant in the early portion of the CRT as water level in the well casing is initially lowered. This effect is greatest at the beginning of the CRT and becomes negligible after the first 39 minutes.

The second method of parameter estimation was performed using the AQTESOLV's automatic estimation procedure. This procedure uses a nonlinear least-squares parameter estimation algorithm to converge on a solution which minimizes the residual error. Starting guesses for the parameters were supplied from the visual estimates generated previously. The software was thus allowed to "improve upon" the visual fit.

AQTESOLV allows the use of a weighting factor to be applied to each data point. This weighting factor influences how the error generated by each individual data point is considered when the program determines the quality of the current fit. All data points within the first minute of the CRT were assigned a weighting factor of 0.25 and all the data points between 1 minute and 10 minutes were assigned a weighting factor of 0.50. These two weighting factors were used to account for the effects of well storage and flow adjustment discussed above.

Table 5-7 provides the results for the Neuman analysis for each piezometer.

Aquifer parameter estimates are calculated by AQTESOLV and printed on the final matched curves for each parameter. The only manual calculations are conversion of transmissivity to horizontal conductivity and the ratio of vertical to horizontal conductivity (K_v/K_h) which are shown for Well 3910 below:

$$K_h = \frac{T * 1440}{D}$$

$$K_h = \frac{(28.93)(1440)}{96} = .434 \; feet/day$$

$$\frac{K_v}{K_h} = B\left[\frac{D}{r}\right]^2$$

$$\frac{K_v}{K_h} - 0.047\left[\frac{96}{47.5}\right]^2 = .1825$$

Both the manual visual fit and automatic estimation fits are presented. Figure 5-8 shows the Type A and Type B curve matching screens used for the visual estimation. The fitted curves for all the piezometers for both visual and automatic estimation are located in Appendix J along with the input and output files for the AQTESOLV software.

Table 5-7 - Visual and Computer Curve Matching Results

Computer Curve Matching Results

FEMP Well Number	Previous Desig-nation	Distance to RW-4, r (ft)	Depth (ft)	Transmissivity T (ft^2/min)	Storativity S	Specific Yield Sy	Beta B	Calculated K_v/K_h	Calculated K_h (ft/day)
3910	SPPZ-1	47.5	110	28.93	0.0118	0.25977	0.0447	0.1825	434.0
3921	SPPZ-3	48.3	110	30.33	0.0185	0.31208	0.0414	0.1636	455.0
3923	SPPZ-5	49.2	110	28.93	0.0110	0.24212	0.0447	0.1701	434.0
3911	SPPZ-2A	19.9	110	28.43	0.0182	0.3500	0.0248	0.5778	426.5
3922	SPPZ-4	199.4	110	29.64	0.0974	0.1200	0.0500	0.0116	444.6
3916	SPPZ-2C	29.2	130	31.34	0.001025	0.04401	0.0064	0.0692	470.1
3917	SPPZ-2D	25.1	140	35.97	0.000776	0.02167	0.0100	0.1458	539.6
3918	SPPZ-2E	24.3	150	44.81	0.00000	0.001771	0.01697	0.2649	672

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Table 5-7 - Visual and Computer Curve Matching Results (Continued)

Visual Curve Matching Results

FEMP Well Number	Previous Desig-nation	Distance to RW-4, r (ft)	Depth (ft)	Transmissivity T (ft^2/min)	Storativity S	Specific Yield Sy	Beta B	Calculated K_v/K_h	Calculated K_h (ft/day)
3910	SPPZ-1	47.5	110	29.75	0.009057	0.21630	0.04	0.1634	446.3
3921	SPPZ-3	48.3	110	34.79	0.006153	0.14780	0.06	0.2370	521.9
3923	SPPZ-5	49.2	110	29.66	0.008483	0.20490	0.04	0.1523	444.9
3911	SPPZ-2A	19.9	110	28.57	0.011070	0.22030	0.03	0.6982	428.6
3922	SPPZ-4	199.4	110	29.71	0.004804	0.12490	0.60	0.1391	445.7
3916	SPPZ-2C	29.2	130	28.68	0.001009	0.11370	0.01	0.10181	430.2
3917	SPPZ-2D	25.1	140	23.01	0.001094	0.14340	0.01	0.1463	345.2
3918	SPPZ-2E	24.3	150	21.61	0.0001171	0.12928	0.01	0.1561	324.2

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5.3.4 Boulton-Streltsova Method

The test well was installed with a 16-inch diameter casing and a filter pack which extends the effective well radius to approximately 1 foot. Because the well is screened in the top portion of the aquifer, this well bore size is large enough that the effects of well storage may be significant in the early time data. To assess the effect of well storage, the Boulton-Streltsova method was used to analyze the three monitoring wells screened at 110 feet in depth and located approximately 50 feet from the test well. Early time data from these same three wells were also analyzed by the previously mentioned Streltsova method which does not consider well storage. The Boulton-Streltsova curve-fitting method uses the same equations as those for Streltsova which are previously listed.

The effects of storage on drawdown can be neglected if:

$$t > \frac{2.5x10^3 r_c^2 (1440)}{T}$$ (Papadopulos and Cooper 1967)

$$t > (2.5 \ x \ 10^3)(.67)^2 \frac{(1,440)}{40,320} = 39 \ minutes$$

where:

t = pumping time (minutes)
T = transmissivity = 40,320 ft^2/day (assumed)
r_c^2 = well casing radius = .67 feet (conservative)

This means that well storage will affect early time results for the first 39 minutes of the constant rate test.

Because of the limited curves available for Boulton-Streltsova, curves were selected with values closest to pumping test conditions. Table 5-8 shows the selected curve values and actual values.

Table 5-8 - Comparison of Condition Values (Boulton-Streltsova)

Value	Parameter Used for Curve	Definition	Actual Test Condition
b_1/D	0.4	Well Depth / Aquifer Thickness	0.417
d/D	0	TOW* to TOS* / Aquifer Thickness	0
b_2/D	0.2	Monitor Well Depth / Aquifer Thickness	0.417
r/r_{ew}	50	Distance to Monitor Well / Radius at Pumped Well**	50

* TOW - top of water table; TOS - top of screen
** ~ 1 foot

The best B value on the Boulton-Streltsova curves was 0.5. When analyzing for early time by Streltsova, B=0.5 values were used to curve match so a direct comparison could be made between the two methods. As shown in Table 5-9, Streltsova values for conductivity were consistently lower than the Boulton-Streltsova values at early times as a result of the effects of well storage.

Table 5-9 - Comparison of Early Time Analysis for Streltsova and Boulton-Streltsova

Monitoring Well	Previous Designation	Distance	Horizontal Conductivity (ft/day)	
			Streltsova	Boulton-Streltsova
3910	SPPZ-1	47.5	102	342
3921	SPPZ-3	48.4	131	376
3923	SPPZ-5	49.2	120	229

5.4 Recovery Period

At the conclusion of the constant rate pumping test, the final drawdown was recorded at the test well and all of the observation wells, the pump was then shut down, and the aquifer began recovery.

When the pump is shut down following a pumping test, the water levels in the well and piezometers will start to rise. Residual drawdown is expressed as the difference between the original water before the start of pumping and the water level measured at a time (t') after pumping stopped.

Recovery-test measurements allow the transmissivity (and therefore, hydraulic conductivity) of the aquifer to be calculated, thereby providing an independent check on the results of the pumping test. Residual drawdown data is more reliable than pumping test data because recovery occurs at a constant rate, whereas constant discharge during pumping is often difficult to achieve in the field (Kruseman and de Ridder 1990).

During the recovery period, potentiometric head data was collected (referred to as residual drawdown) for 11 observation wells and the test well with transducer/data loggers and manual soundings. The residual drawdown data was used to calculate a value for hydraulic conductivity using the following equation derived by C.V. Theis in 1935 (Kruseman and de Ridder 1990 and Driscoll 1986):
where:

$$S' = \frac{(15.32)Q}{T}\,[W_{(u)} - W_{(u')}]$$

s' = residual drawdown (feet)
$\Delta s'$ = change in residual drawdown (feet per log cycle of t/t')
Q = rate of recharge = rate of discharge (gpm)
T = transmissivity of the aquifer (ft^2/day)
$W(u)$ = Theis well function of drawdown (dimensionless)
$W(u')$ = Theis well function of residual drawdown (dimensionless)

The Theis recovery method is valid for confined aquifers which are fully penetrated by a well that is pumped at a constant rate. As discussed in Kruseman and de Ridder (1990), the Theis recovery method is also applicable in unconfined aquifers for late-time recovery data and can be used if the well is only partially penetrating if:

$$t', t_p > 10D^2S/T = .457 days$$ (Uffink 1982)

where:

T = transmissivity = 40,320 ft^2/day
D = aquifer thickness (original) = 96 feet
S = storativity = .20

Using the Theis recovery method, a graphical relationship (Figure 5-6) exists such that:

$$\Delta s' = \frac{35.29 * Q}{T}$$

$$T = \frac{35.29 * 425}{.3499} = 42{,}869\ ft^2/day\ (for\ Well\ 3921)$$

Figure 5-9 is a semi-logarithmic plot of residual drawdown versus the ratio of t/t' for SPPZ-3 and is presented as an example for determining T from recovery data. The plot yields a straight line through the late-time recovery data. The slope of the straight line is Δs' which is the change in drawdown over one log cycle.

Once T is determined, K can be calculated from the equation:

$$K_h = T/D$$

$$K_h = \frac{42{,}869}{96} = 446\ ft/day\ (for\ Well\ 3921)$$

Table 5-10 summarizes the calculations for T and K from the recovery data using the Theis recovery method.

Table 5-10 - Results of Theis Recovery Method

Well Number	Previous Designation	Δs'	Transmissivity ft^2/day	Hydraulic Conductivity ft/day
2002		0.3024	49,570	516
3910	SPPZ-1	0.3783	39,622	413
3911	SPPZ-2A	0.2612	57,383	598
3916	SPPZ-2C	0.3974	37,722	393
3917	SPPZ-2D	0.3674	40,798	425
3918	SPPZ-2E	0.5340	28,069	292
3921	SPPZ-3	0.3499	42,839	446
3922	SPPZ-4	0.3649	41,083	428
3923	SPPZ-5	0.3518	42,613	444
3927	RW-4	0.3175	47,215	492

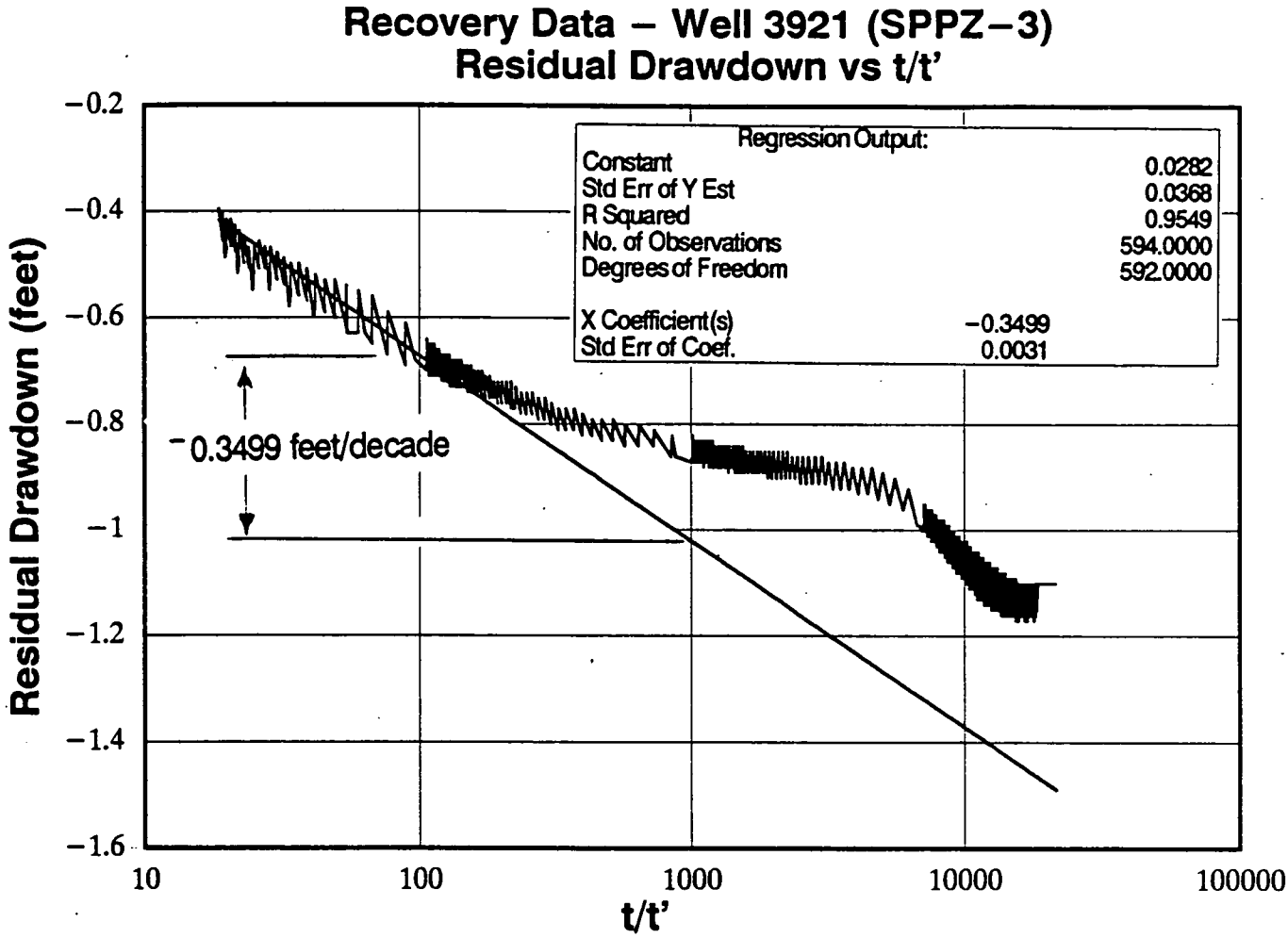

Figure 5-9 - Theis Recovery Data Plot for SPPZ-3

SECTION 6

GROUNDWATER QUALITY

During the CRT, groundwater samples were collected from the discharge of the test pump four times during the first day of pumping and twice daily through the duration of the CRT. These samples were field analyzed for temperature, pH, dissolved oxygen, and specific conductance. Additional samples, taken at the same time, were sent to the FEMP analytical laboratory to be analyzed for total uranium content. Appendix B contains the results of these analysis.

6.1 Dissolved Oxygen

Dissolved oxygen was measured during the pumping test because the pumped groundwater was discharged to the Great Miami River. Low dissolved oxygen levels could impact the Great Miami River water quality.

Dissolved oxygen (DO) in the discharge of the test well was initially measured using QED Model FC1000 which is a flow-through cell and meter system. Indicated DO levels by this method were quite low (0.1-0.3 ppm) as can be expected when pumping groundwater. Following the initial 24 hours of the test, DO was measured using an Horiba Model U-10 meter which requires collection of the sample in a stainless steel container for measurement. DO levels measured by this method were significantly higher (~3. ppm) due to exposure of the sample to the atmosphere. Over the next 6 days of pumping, the DO content rose slightly (see Figure 6-1). It is possible that the rise in oxygen content is caused by aeration from cascading groundwater flow into the well. The amount of cascading increases over time as the water level is drawn down during the pump test. DO levels in the combined site discharge at the Parshall Flume were consistently higher due to both dilution with the normal FEMP discharge and aeration which took place in Manhole 176B.

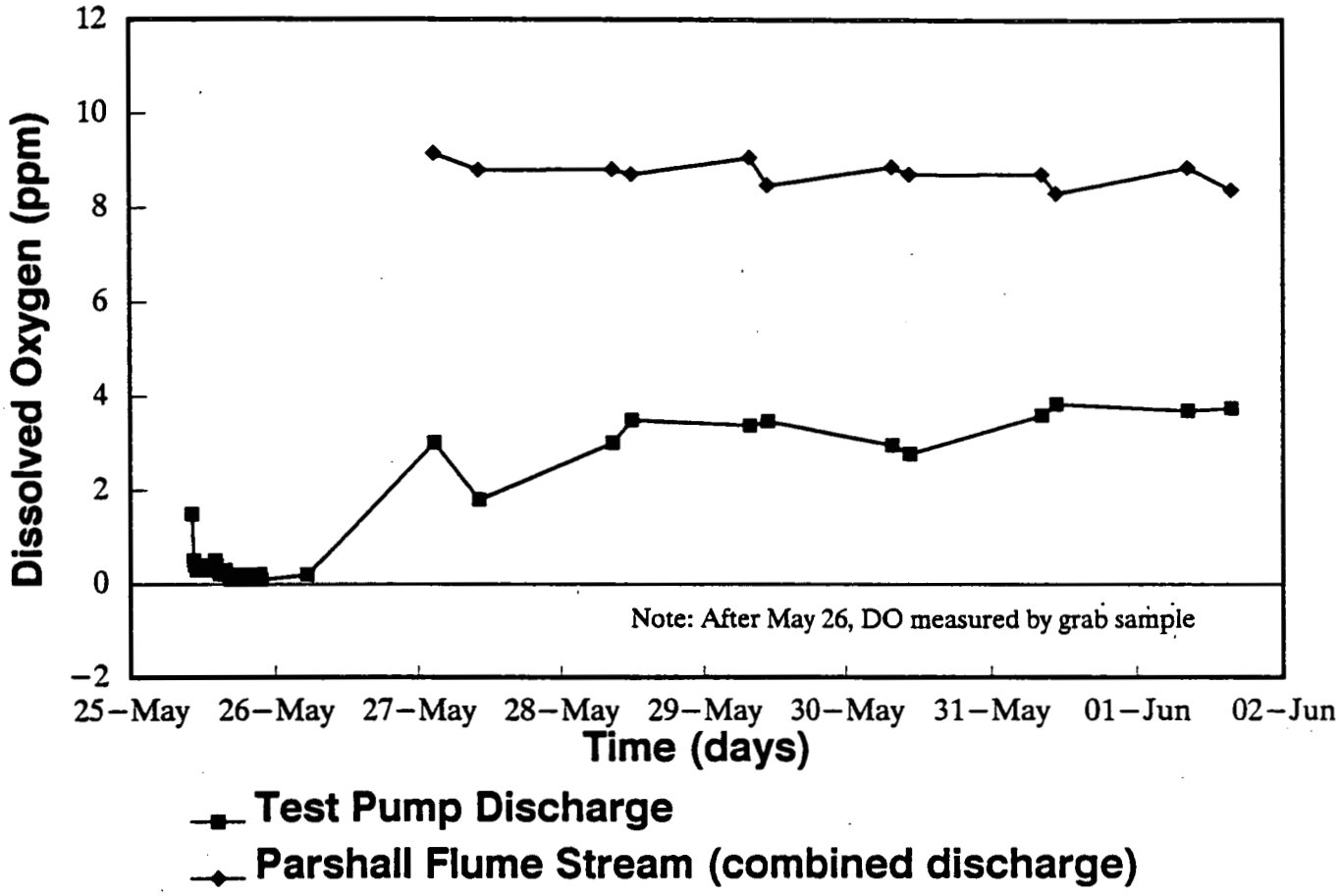

Figure 6-1 - Dissolved Oxygen vs. Time

6.2 Total Uranium

The filtered and unfiltered results for total uranium were very similar. At times the filtered samples exhibited higher concentrations than the unfiltered samples. As indicated by Figure 6-2, levels exhibited a slight decrease over the period of pumping with an average value of approximately 5 μg/l towards the conclusion of the CRT. Although slightly lower, this value is of the same order of magnitude as the values predicted by the groundwater model. The pumping values are also consistent with samples taken from each of the test piezometers prior to the pump test. The results of the total analysis performed on samples taken on May 21, 1993, from the piezometers are shown in Table 6-1.

Table 6-1 - Total Uranium Measurements

Well	Previous Designation	Depth (feet)	Distance from Test Well (feet)	Total Uranium Unfiltered (μg/l)	Total Uranium Filtered (μg/l)
3910	SPPZ-1	110	47.5	14.0	10.0
3911	SPPZ-2A	110	19.9	11.0	5.3
3912	SPPZ-2B	120	24.2	3.8	0.8
3916	SPPZ-2C	130	29.2	32.0	17.0
3917	SPPZ-2D	140	25.1	24.0	22.0
3918	SPPZ-2E	150	24.3	5.5	2.0
4920	SPPZ-2G	166	29.7	12.0	0.9
3921	SPPZ-3	110	48.3	9.9	7.0
3922	SPPZ-4	110	199.4	3.4	2.8
3923	SPPZ-5	110	49.2	8.3	7.0

6.3 Temperature, pH, and Specific Conductance

Test pump discharge temperature, pH, and specific conductance were fairly constant throughout the pump test with values of 12°F, 7, and 775 uS respectively. Figure 6-3 shows indicated values over the course of the pump test.

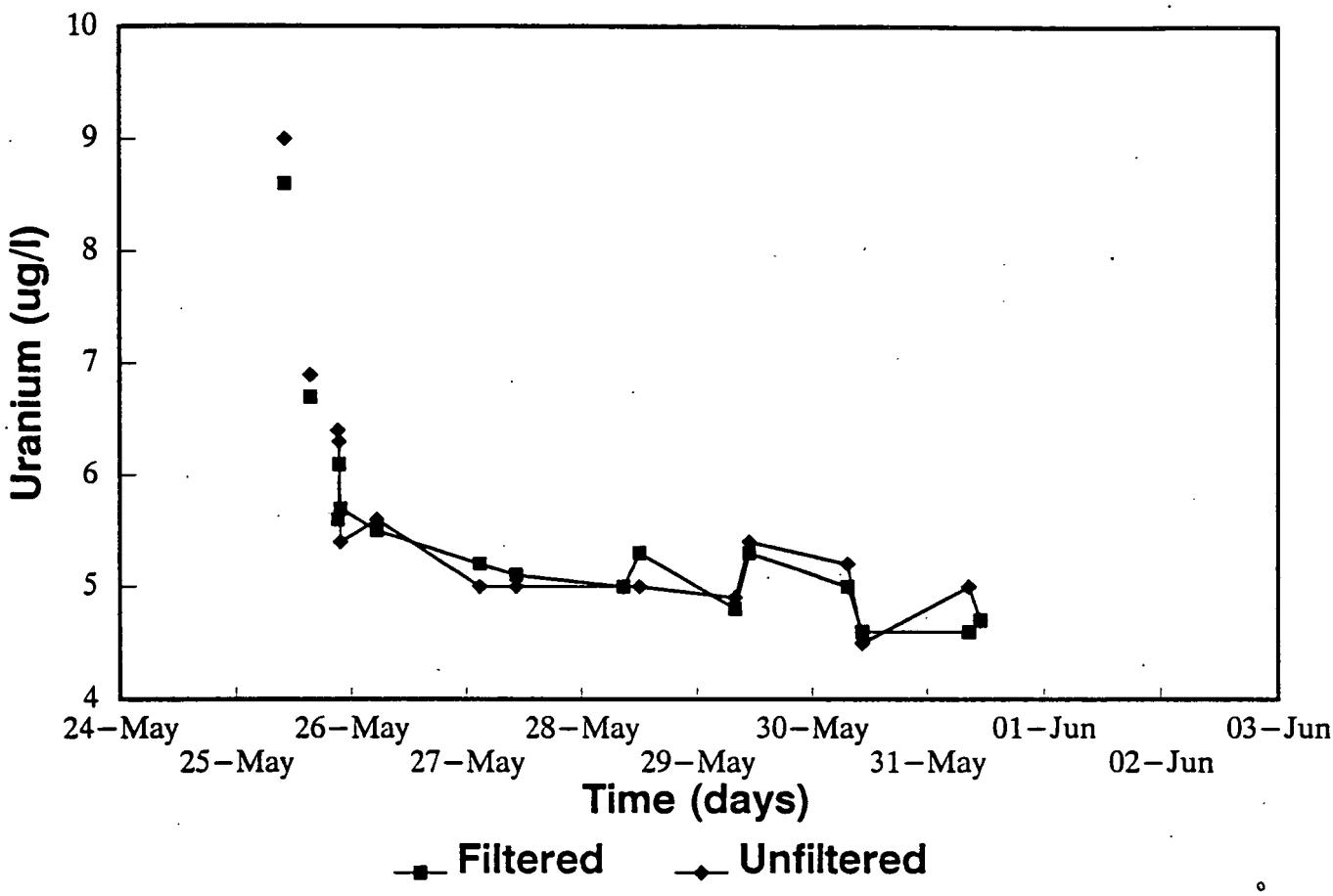

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Figure 6-2 - Total Uranium Concentration Versus Time

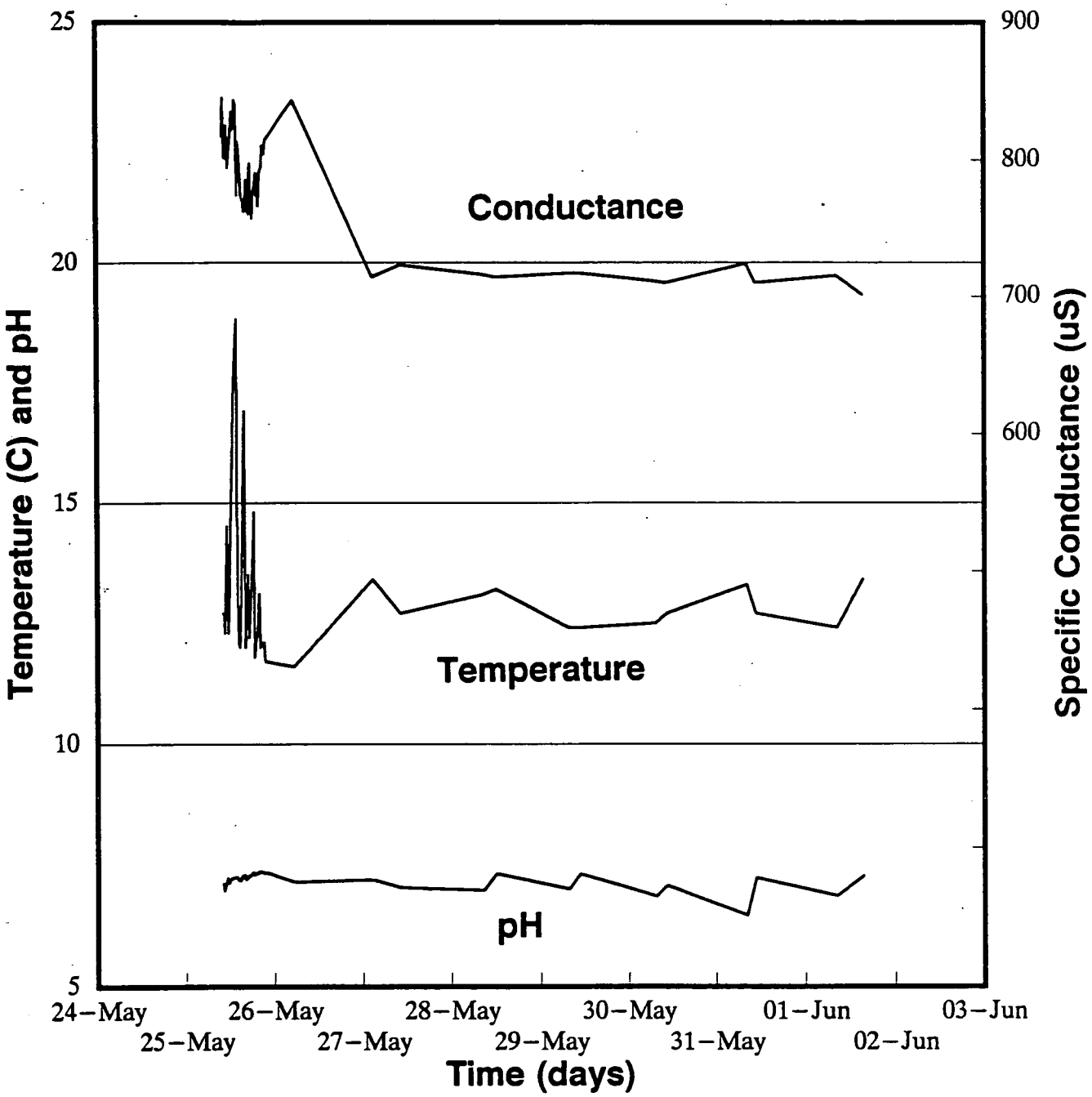

Figure 6-3 - Field Analysis Versus Time

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SECTION 7

SUMMARY AND CONCLUSIONS

The overall objective of the pump test was to collect data and calculate hydraulic properties of the Great Miami Aquifer. Specifically, the objectives were to determine the hydraulic conductivity, storage capability (specific yield), and the extent of anisotropic conditions in the vicinity of the recovery system well field. Of the four methods of analysis applied, the Streltsova method and the Neuman method were the most applicable as they modeled a partially penetrating well in an anisotropic unconfined aquifer. The Theis recovery and Jacob methods applied simpler assumptions of fully penetrating wells in an isotropic confined aquifer. These methods were also shown to have applicability for the test conditions. There is not sufficient information available for a detailed statistical analysis of the differences between these four methods, nor are there enough data points within each method to provide an elaborate statistical analysis of each individual method. The geometric mean of hydraulic conductivity is provided for each method of analysis as well as the sample geometric standard deviation based on an assumed lognormal distribution. Values for K_v/K_h and specific yield have normal rather than log normal distributions and their means and standard deviations are calculated arithmetically (Domenico and Schwartz 1990). Conclusions are based on general observations of the results and simple statistical methods of mean and coefficient of variation. For a series of measurements (x), the coefficient of variation is defined as the difference between the maximum and minimum values divided by the average value.

$$\delta = \frac{X_{max} - X_{min}}{X_{ave}}$$

where

X_{max} = maximum value
X_{min} = minimum value
X_{ave} = average value
δ = coefficient of variation

A summary of the calculated results is provided in Subsections 7.1 through 7.4.

7.1 Horizontal Hydraulic Conductivity

Hydraulic conductivity was calculated by the Jacob (distance) method, Streltsova and Neuman techniques, and by the Theis recovery method. Using 96 feet as an average thickness, the horizontal hydraulic conductivity ranges from 292 to 678 ft/day.

There was a very tight correlation between the values of K_h generated for wells 3910, 3921, and 3922 which represents the three 110-feet-deep wells located approximately 50 feet from the test well in three orthogonal directions (r = 50 feet). The values generated by Theis recovery, Neuman and Jacob methods ranged between 413 and 490 ft/day. The Streltsova method generated results that were generally higher but also tightly correlated. Given the consistent behavior of these wells and the tight range of these values, the first three methods appear to provide the best estimate of horizontal hydraulic conductivity in the immediate vicinity of the test well at a depth of 110 feet. A hydraulic conductivity of 444 feet/day equates to a transmissivity of approximately 320,000 gpd/foot, which is in relative agreement with results from the previous pumping test in the area of 300,000 gpd/foot and 370,000 gpd/foot (Speiker 1968c)

Transverse Isotropy

There is no significant anisotropy with respect to horizontal conductivity; and the coefficient of variation between the calculated values of horizontal conductivity for any of the three wells by either of the two methods (Theis recovery and Neuman) is less than 0.096 for wells 3910, 3521, and 3922 (SPPZ-1, 3, and 5).

Variation with Depth

The Neuman analysis indicated that the horizontal hydraulic conductivity at depths of 130, 140, and 150 feet BGS to be 470, 525, and 672 ft/day respectively. These results are consistent with both the boring samples from the pump test which, at greater depths, contained a coarser sand and gravel mixture with a smaller percentage of fines and the general lithology of the Great Miami Aquifer in which the uppermost layers are gradational into deeper well sorted materials at increasing depth. Based on confidence in the Neuman analysis for calculating these values at depth, it is felt that the geometric mean (Domenic and Schwartz 1990) of these three values (549 ft/day) provides the best estimate of horizontal hydraulic conductivity in the immediate vicinity of the test well at a depths between 120 and bedrock.

Table 7-1 - Horizontal Hydraulic Conductivity (feet/day)

FEMP Well Number (s)	Previous designation or time of analysis	Distance (feet)	Jacob Distance-Drawdown	Streltsova	Neuman	Theis Recovery
3911	SPPZ-2A	19.9		470	426	598
3916	SPPZ-2C	29.2			470	393
3917	SPPZ-2D	25.1			525	425
3918	SPPZ-2E	24.3			672	292
3910	SPPZ-1	47.5		514	434	413
3921	SPPZ-3	48.3		560	455	446
3923	SPPZ-5	49.2		514	434	444
3922	SPPZ-4	199.4		547	445	428
3911	1 day	19.9 - 1,160	465			
3921 3922	3 day		416			
3897	5 day		439			
3093	7 day		490			
Analysis Method Geometric Mean			451	520	477	423
Analysis Method Geometric Sample Standard Deviation			1.07	1.07	1.17	1.22

7.2 Vertical Hydraulic Conductivity

Two of the methods of analysis used in this report calculated the vertical anisotropy of the aquifer with respect to hydraulic conductivity. These two methods (Neuman and Streltsova) showed a high level of correlation for the values of K_v/K_h generated for the r = 50 foot wells (3910, 3921, and 3922), but the values generated by Streltsova (average 0.79) were 4-5 times higher then those generated by the Neuman method (average 0.17). Based on the consistency of the Neuman analysis across all calculated parameters and its agreement with previously documented studies, a ratio of K_v/K_h between 0.05 and 0.19 is

representative of this area. The r = 50 foot wells (3910, 3921, and 3922) yielded a value of 0.172 with a coefficient of variation of 0.110.

It is noted that 3911 showed the highest ratio of K_v/K_h at 0.5778 by Neuman while 3922 had the lowest calculated value of 0.0116. These values are correlated by the Streltsova analysis. The relatively large range in K_v/K_h values is a result of the variable nature of the aquifer material. This variation may be explained by localized areas (lenses), containing higher concentrations finer grained material with lower permeability. These areas may be due to the braiding and meandering of the ancestral Great Miami River. There is no conclusive evidence to support the presence of a low permeability confining clay layer separating upper and lower portions of the Great Miami Aquifer in this region as seen further north near the site. These areas of lower permeability are considered to be of limited areal extent and do not create confining conditions.

Table 7-2 - Ratio, Vertical Conductivity to Horizontal Conductivity (K_v/K_h)

FEMP Well Number	Previous designation	Distance (feet)	Streltsova	Neuman
3911	SPPZ-2A	19.9	2.3	0.5778
3916	SPPZ-2C	29.2		0.0692
3917	SPPZ-2D	25.1		0.1458
3918	SPPZ-2E	24.3		0.2649
3910	SPPZ-1	47.5	0.82	0.1825
3921	SPPZ-3	48.3	0.79	0.1636
3923	SPPZ-5	49.2	0.76	0.1701
3922	SPPZ-4	199.4	0.12	0.0116
Analysis Method Mean			0.958	0.198
Analysis Method Sample Standard Deviation			0.804	0.171

7.3 Specific Yield

Values of specific yield in the aquifer ranged from approximately 0.02 to 0.49. The aquifer responded as an unconfined aquifer with resultingly large storage coefficients (specific yields). Although there was a fairly wide range of values calculated, these responses are consistent with the erratic presence of siltier layers of the Great Miami Aquifer which have been observed in boring samples throughout the test area.

The specific yield in this area was previously determined to be between 0.1 and 0.2 (Speiker 1968c). Based on the consistency of Neuman and Jacob analysis across all calculated parameters and relative agreement with previously determined values, the Jacob results are averaged with the Neuman values for the r = 50 foot wells (SPPZ-1, 3, and 5) for a value of 0.179 and a coefficient of variation of 1.56.

Table 7-3 - Specific Yield

FEMP Well Number(s)	Previous designation or time of analysis	Distance (feet)	Jacob Distance-Drawdown	Streltsova	Neuman
3911	SPPZ-2A	19.9		0.1141	0.49
3916	SPPZ-2C	29.2			0.0440
3917	SPPZ-2D	25.1			0.0217
3918	SPPZ-2E	24.3			0.0177
3910	SPPZ-1	47.5		0.0676	0.2598
3921	SPPZ-3	48.3		0.0736	0.3121
3923	SPPZ-5	49.2		0.0698	0.2421
3922	SPPZ-4	199.4		0.0973	0.1200
3911	1 day	19.9 - 1,160	0.130		
3921 3922	3 day		0.152		
3897	5 day		0.127		
3093	7day		0.032		
Analysis Method Mean			0.110	0.0845	0.188
Analysis Method Sample Standard Deviation			0.0533	0.0204	0.168

7.4 Well Efficiency

As discussed in Subsection 5.2.3, when the effects of partial penetration are considered, the best estimate of well efficiency is 28.3 percent. This is relatively inefficient for a recovery well which is expected to be operated over many years. The efficiency of the test well is most easily evidenced by comparing the drawdown in the piezometers to the drawdown in the test well. The drawdown exhibited by the piezometers is consistent with distance in that it plots as a straight line on semi-log paper (Subsection 5.3.1). Based on the performance of the aquifer, a predicted drawdown at a distance of 1 foot from the test well (approximately equal to the well's effective radius) should be approximately 2.3 feet. During the pumping test, however, the test well exhibited drawdown of up to 15 feet. This excessive drawdown is attributable to head loss in either the sand pack, the well screen, or to flow within the well itself. Because the test well was constructed without a piezometer in the sand pack, it is not possible to determine whether the excessive drawdown is attributable specifically to the screen or the sand pack. Of additional note is the fact that, following the momentary loss of the test pump on May 27, during the CRT, the level in the test well never again achieved the full drawdown it had been exhibiting. It is possible that the surging of the well on the loss of the test pump caused additional development of the well.

SECTION 8

RECOMMENDATIONS

The data received from the south plume pump test are to be used for two basic purposes: first, to verify the design of the South Plume Recovery System; secondly to provide information which will be incorporated into the groundwater model improvement plan.

8.1 Recovery System Recommendations

The South Plume Vertical Capture Letter Report (Harvey 1993b and Harvey 1993c) provided recommendations (see Appendix D) on the construction and operation of the South Plume Recovery System based on preliminary results on the pump test. The basic recommendations were:

1) The remaining four recovery wells should be constructed with a 40-foot screened interval. The top of the screen should be set 6 feet below the mid-point of the water table seasonal level variation.

2) The total initial pumping rate for the South Plume Recovery System should be 2,000 gpm for the entire well field (all five recovery wells).

3) That additional testing be performed during the construction of the four remaining recovery wells to confirm the presence or absence of a layer of low permeability in the vicinity of the well field.

8.2 Groundwater Model Recommendations

Results of the pump test indicate that the values of horizontal conductivity in the groundwater model are reasonable. Both boring logs and data analysis indicate that horizontal hydraulic conductivity in the upper two layers of the model is between 400 and 500 ft/day. Conductivity will increase with depth with values between 500 and 700 ft/day being a reasonable value for layers four and five of the groundwater model in this area.

Pump test data indicate that the aquifer is anisotropic in this area however the ratio of vertical to horizontal conductivity varies with location. General values are 0.14 - 0.17 with localized areas of 0.07 - 0.10 or greater due to siltier, fine-grained material.

There is no indication that the confining layer of blue clay modeled as layer three in the groundwater model extends as far south as the pump test location. Consistent with published values for a sand and gravel aquifer and previously published studies of the area, the storage coefficient is in the range of 0.1 to 0.2.

SECTION 9

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A

APPENDIX A

DRAWDOWN/RECOVERY DATA

This appendix contains raw data from all three portions of the pumping test. Printouts of electronic data down-loaded from the Hermit 2000 data logger are provided as described in the table below. Manual levels taken on the primary wells as backup data during the pumping test are also provided.

Test No.	Step No.	Description	Date	Time	Appendix Page
1	0	Step #1 (200 gpm)	5-18-93	14:25	Step1
1	1	Step #2 (275 gpm)	5-18-93	16:14	Step5
1	2	Step #3 (350 gpm)	5-18-93	18:13	Step9
1	3	Step #4 (425 gpm)	5-18-93	19:52	Step13
1	4	Step #6 (575 gpm)	5-18-93	21:31	Step17
2	0	Step #6 (750 gpm)	5-18-93	23:10	Step21
0	0	Constant Rate Test	5-25-93	10:17	Crt1
1	0	Recovery Period	6-1-93	16:48	Recovery1

SE2000
Environmental Logger
05/19 14:47

Unit# 148 Test 1

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.440	73.410	72.085	71.780	74.670	71.940	66.200	69.120	73.640	70.300	70.760	71.030
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 0 05/18 14:25:06

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	69.980	73.469	72.097	71.783	74.673	71.962	66.212	69.135	73.570	70.331	70.842	71.030
0.0083	69.980	73.469	72.094	71.786	74.676	71.962	66.212	69.135	73.547	70.328	70.848	71.026
0.0166	69.980	73.473	72.094	71.786	74.682	71.962	66.215	69.132	73.541	70.331	70.848	71.026
0.0250	69.980	73.473	72.094	71.786	74.679	71.962	66.215	69.132	73.538	70.341	70.854	71.026
0.0333	69.980	73.473	72.097	71.786	74.682	71.962	66.215	69.132	73.535	70.319	70.851	71.026
0.0416	69.980	73.473	72.094	71.789	74.682	71.962	66.215	69.132	73.535	70.331	70.851	71.026
0.0500	69.996	73.476	72.097	71.789	74.679	71.962	66.215	69.132	73.535	70.341	70.854	71.030
0.0583	69.980	73.473	72.097	71.792	74.688	71.962	66.215	69.132	73.531	70.325	70.854	71.030
0.0666	69.980	73.473	72.097	71.792	74.682	71.962	66.215	69.132	73.535	70.338	70.854	71.030
0.0750	69.980	73.473	72.097	71.789	74.685	71.962	66.215	69.132	73.531	70.325	70.851	71.030
0.0833	69.980	73.476	72.097	71.792	74.685	71.962	66.215	69.123	73.535	70.335	70.851	71.023
0.0916	70.582	73.476	72.097	71.792	74.688	71.981	66.215	69.138	73.544	70.338	70.854	71.036
0.1000	70.139	73.473	72.097	71.792	74.688	71.962	66.215	69.132	73.531	70.319	70.858	71.026
0.1083	69.711	73.476	72.097	71.795	74.685	71.962	66.215	69.129	73.535	70.335	70.848	71.033
0.1166	70.170	73.476	72.097	71.792	74.682	71.962	66.215	69.132	73.538	70.338	70.861	71.030
0.1250	70.534	73.476	72.097	71.795	74.685	71.965	66.215	69.132	73.535	70.331	70.851	71.030
0.1333	70.424	73.476	72.097	71.792	74.688	71.962	66.218	69.129	73.541	70.325	70.858	71.030
0.1416	70.455	73.476	72.097	71.792	74.688	71.965	66.215	69.126	73.544	70.331	70.848	71.026
0.1500	70.519	73.479	72.097	71.792	74.682	71.962	66.218	69.132	73.547	70.338	70.854	71.026
0.1583	70.582	73.476	72.097	71.792	74.688	71.959	66.218	69.132	73.547	70.322	70.861	71.030
0.1666	70.661	73.476	72.097	71.795	74.685	71.965	66.218	69.129	73.547	70.335	70.854	71.030
0.1750	70.677	73.479	72.097	71.792	74.685	71.965	66.218	69.129	73.550	70.335	70.851	71.033
0.1833	70.756	73.479	72.097	71.792	74.692	71.965	66.218	69.129	73.550	70.322	70.861	71.026
0.1916	70.756	73.479	72.100	71.795	74.682	71.965	66.218	69.132	73.554	70.335	70.861	71.030
0.2000	70.819	73.479	72.097	71.795	74.688	71.965	66.218	69.132	73.550	70.325	70.858	71.023
0.2083	70.914	73.479	72.097	71.795	74.685	71.965	66.218	69.132	73.554	70.335	70.854	71.033
0.2166	70.899	73.482	72.097	71.795	74.685	71.965	66.218	69.132	73.557	70.341	70.864	71.030
0.2250	70.962	73.482	72.097	71.795	74.692	71.968	66.218	69.132	73.560	70.325	70.854	71.026

STEP1

0.2333	70.994	73.482	72.097	71.795	74.692	71.965	66.218	69.132	73.560	70.335	70.854	71.030
0.2416	71.025	73.482	72.097	71.795	74.685	71.965	66.218	69.135	73.563	70.338	70.864	71.026
0.2500	71.057	73.485	72.097	71.795	74.685	71.968	66.218	69.132	73.566	70.328	70.858	71.030
0.2583	71.057	73.485	72.097	71.795	74.688	71.968	66.222	69.132	73.570	70.325	70.864	71.030
0.2666	71.136	73.485	72.097	71.798	74.685	71.971	66.222	69.132	73.573	70.335	70.854	71.033
0.2750	71.168	73.488	72.097	71.798	74.685	71.971	66.222	69.135	73.576	70.341	70.858	71.030
0.2833	71.199	73.488	72.097	71.795	74.692	71.971	66.222	69.132	73.576	70.328	70.861	71.033
0.2916	71.199	73.488	72.097	71.798	74.685	71.974	66.222	69.132	73.579	70.335	70.858	71.030
0.3000	71.279	73.492	72.097	71.798	74.685	71.974	66.218	69.138	73.582	70.335	70.854	71.026
0.3083	71.263	73.488	72.097	71.795	74.688	71.974	66.218	69.135	73.582	70.325	70.867	71.030
0.3166	71.294	73.492	72.100	71.801	74.685	71.978	66.218	69.135	73.585	70.338	70.854	71.030
0.3250	71.310	73.492	72.097	71.798	74.682	71.978	66.218	69.138	73.589	70.344	70.861	71.026
0.3333	71.310	73.492	72.097	71.798	74.688	71.974	66.218	69.138	73.589	70.325	70.867	71.030
0.3500	71.405	73.492	72.097	71.801	74.679	71.981	66.218	69.142	73.598	70.341	70.864	71.036
0.3666	71.469	73.495	72.100	71.798	74.682	71.984	66.218	69.142	73.601	70.331	70.864	71.030
0.3833	71.500	73.498	72.097	71.798	74.679	71.987	66.215	69.145	73.611	70.351	70.870	71.030
0.4000	71.595	73.501	72.097	71.798	74.685	71.987	66.215	69.148	73.611	70.335	70.873	71.026
0.4166	71.611	73.504	72.100	71.801	74.679	71.990	66.215	69.151	73.614	70.354	70.873	71.030
0.4333	71.643	73.507	72.097	71.801	74.682	71.993	66.215	69.151	73.624	70.341	70.876	71.026
0.4500	71.706	73.511	72.097	71.805	74.679	71.997	66.215	69.157	73.630	70.357	70.880	71.030
0.4666	71.785	73.511	72.097	71.805	74.682	71.997	66.215	69.161	73.630	70.341	70.883	71.030
0.4833	71.769	73.514	72.100	71.808	74.679	72.000	66.215	69.161	73.633	70.354	70.880	71.030
0.5000	71.785	73.517	72.100	71.808	74.682	72.003	66.215	69.164	73.636	70.347	70.886	71.030
0.5166	71.817	73.517	72.100	71.808	74.679	72.006	66.215	69.167	73.643	70.360	70.886	71.033
0.5333	71.864	73.520	72.100	71.811	74.682	72.006	66.215	69.170	73.649	70.354	70.886	71.026
0.5500	71.896	73.520	72.100	71.814	74.679	72.006	66.215	69.173	73.649	70.363	70.886	71.033
0.5666	71.896	73.523	72.100	71.814	74.682	72.009	66.218	69.173	73.649	70.351	70.892	71.030
0.5833	71.959	73.529	72.100	71.817	74.679	72.016	66.215	69.176	73.655	70.370	70.886	71.033
0.6000	71.944	73.529	72.100	71.814	74.682	72.012	66.215	69.180	73.659	70.357	70.895	71.030
0.6166	71.975	73.529	72.100	71.820	74.676	72.016	66.215	69.186	73.659	70.376	70.899	71.033
0.6333	72.007	73.533	72.100	71.820	74.682	72.019	66.215	69.186	73.659	70.363	70.892	71.033
0.6500	71.959	73.536	72.100	71.820	74.679	72.022	66.218	69.189	73.665	70.376	70.902	71.030
0.6666	72.039	73.536	72.100	71.823	74.679	72.019	66.218	69.189	73.665	70.360	70.899	71.030
0.6833	72.023	73.542	72.103	71.827	74.676	72.025	66.215	69.192	73.671	70.376	70.889	71.026
0.7000	72.054	73.542	72.100	71.827	74.676	72.025	66.215	69.195	73.671	70.376	70.895	71.030
0.7166	72.070	73.542	72.103	71.830	74.676	72.025	66.215	69.192	73.668	70.379	70.895	71.033
0.7333	72.102	73.545	72.103	71.830	74.676	72.028	66.215	69.199	73.678	70.379	70.895	71.030
0.7500	72.086	73.545	72.100	71.833	74.676	72.028	66.215	69.199	73.678	70.386	70.895	71.030
0.7666	72.070	73.545	72.100	71.833	74.679	72.028	66.215	69.202	73.674	70.379	70.905	71.030
0.7833	72.134	73.548	72.103	71.836	74.676	72.031	66.218	69.202	73.678	70.386	70.902	71.030
0.8000	72.134	73.552	72.103	71.836	74.676	72.031	66.218	69.205	73.681	70.386	70.899	71.026
0.8166	72.134	73.552	72.103	71.836	74.676	72.031	66.215	69.205	73.681	70.392	70.908	71.033
0.8333	72.134	73.552	72.103	71.836	74.679	72.031	66.215	69.208	73.681	70.379	70.911	71.030
0.8500	72.213	73.555	72.103	71.839	74.676	72.035	66.215	69.208	73.687	70.398	70.918	71.026
0.8666	72.213	73.555	72.103	71.839	74.679	72.035	66.215	69.208	73.684	70.392	70.911	71.030
0.8833	72.308	73.558	72.103	71.839	74.673	72.038	66.215	69.211	73.684	70.405	70.911	71.030
0.9000	72.355	73.558	72.103	71.839	74.679	72.035	66.218	69.211	73.687	70.392	70.918	71.030
0.9166	72.419	73.561	72.103	71.845	74.676	72.041	66.218	69.214	73.690	70.395	70.908	71.030
0.9333	72.545	73.561	72.103	71.845	74.676	72.041	66.218	69.214	73.690	70.402	70.905	71.030
0.9500	72.640	73.561	72.103	71.842	74.676	72.041	66.218	69.218	73.697	70.389	70.914	71.030
0.9666	72.688	73.564	72.103	71.849	74.673	72.041	66.218	69.221	73.697	70.408	70.918	71.033
0.9833	72.783	73.564	72.106	71.845	74.679	72.044	66.218	69.221	73.697	70.392	70.918	71.026

STEP2

4733

1.0000	72.862	73.564	72.103	71.849	74.676	72.044	66.218	69.221	73.706	70.408	70.918	71.030
1.2000	73.179	73.580	72.106	71.858	74.660	72.060	66.215	69.243	73.729	70.421	70.933	71.026
1.4000	73.337	73.589	72.103	71.864	74.660	72.076	66.215	69.252	73.741	70.430	70.930	71.026
1.6000	73.416	73.602	72.103	71.874	74.660	72.085	66.215	69.268	73.754	70.443	70.937	71.026
1.8000	73.479	73.605	72.103	71.877	74.660	72.089	66.215	69.271	73.754	70.437	70.949	71.026
2.0000	73.527	73.608	72.106	71.886	74.654	72.092	66.218	69.278	73.760	70.453	70.949	71.030
2.2000	73.622	73.608	72.103	71.886	74.651	72.095	66.218	69.281	73.757	70.456	70.949	71.026
2.4000	73.717	73.618	72.109	71.893	74.660	72.098	66.218	69.281	73.760	70.456	70.952	71.030
2.6000	73.812	73.618	72.109	71.896	74.657	72.104	66.222	69.287	73.767	70.459	70.952	71.030
2.8000	73.923	73.618	72.109	71.896	74.657	72.108	66.222	69.290	73.770	70.456	70.949	71.030
3.0000	73.923	73.621	72.112	71.896	74.654	72.108	66.222	69.290	73.770	70.465	70.962	71.030
3.2000	73.970	73.621	72.112	71.899	74.657	72.108	66.222	69.290	73.776	70.462	70.965	71.030
3.4000	74.049	73.621	72.112	71.899	74.654	72.111	66.222	69.294	73.776	70.456	70.962	71.030
3.6000	74.144	73.624	72.109	71.902	74.654	72.114	66.222	69.294	73.776	70.468	70.952	71.030
3.8000	74.144	73.624	72.109	71.902	74.651	72.111	66.225	69.297	73.773	70.472	70.965	71.030
4.0000	74.144	73.624	72.109	71.902	74.647	72.111	66.222	69.297	73.773	70.478	70.965	71.030
4.2000	74.239	73.627	72.109	71.902	74.654	72.117	66.225	69.300	73.776	70.478	70.956	71.030
4.4000	74.255	73.627	72.112	71.905	74.654	72.114	66.225	69.300	73.779	70.465	70.962	71.026
4.6000	74.303	73.627	72.112	71.902	74.654	72.114	66.225	69.300	73.776	70.462	70.968	71.026
4.8000	74.319	73.627	72.112	71.908	74.657	72.120	66.225	69.303	73.776	70.468	70.962	71.033
5.0000	74.334	73.627	72.112	71.908	74.651	72.120	66.225	69.300	73.783	70.475	70.959	71.030
5.2000	74.382	73.624	72.112	71.905	74.651	72.117	66.225	69.303	73.776	70.478	70.971	71.033
5.4000	74.382	73.630	72.112	71.905	74.651	72.117	66.225	69.303	73.776	70.488	70.971	71.033
5.6000	74.429	73.627	72.112	71.908	74.651	72.123	66.225	69.306	73.779	70.475	70.962	71.030
5.8000	74.509	73.627	72.112	71.905	74.654	72.114	66.225	69.303	73.779	70.468	70.978	71.030
6.0000	74.477	73.627	72.112	71.908	74.651	72.120	66.225	69.303	73.776	70.481	70.962	71.030
6.2000	74.477	73.630	72.116	71.911	74.651	71.974	66.225	69.309	73.779	70.481	70.965	71.033
6.4000	74.509	73.630	72.116	71.911	74.647	72.130	66.228	69.309	73.789	70.472	70.968	71.033
6.6000	74.493	73.630	72.116	71.911	74.644	72.127	66.228	69.313	73.795	70.484	70.974	71.036
6.8000	74.556	73.630	72.116	71.911	74.651	72.127	66.228	69.313	73.792	70.475	70.978	71.036
7.0000	74.540	73.634	72.116	71.911	74.647	72.127	66.228	69.309	73.792	70.481	70.974	71.033
7.2000	74.572	73.630	72.112	71.915	74.651	72.127	66.228	69.313	73.779	70.472	70.974	71.033
7.4000	74.572	73.634	72.116	71.915	74.651	72.127	66.228	69.309	73.789	70.488	70.971	71.033
7.6000	74.619	73.630	72.116	71.915	74.651	72.123	66.228	69.313	73.786	70.478	70.971	71.030
7.8000	74.635	73.630	72.116	71.911	74.651	72.127	66.225	69.313	73.786	70.475	70.974	71.030
8.0000	74.619	73.634	72.116	71.915	74.651	72.127	66.228	69.313	73.789	70.478	70.974	71.036
8.2000	74.635	73.634	72.116	71.911	74.654	72.127	66.228	69.309	73.789	70.475	70.978	71.036
8.4000	74.667	73.634	72.116	71.915	74.657	72.130	66.228	69.313	73.792	70.478	70.984	71.033
8.6000	74.651	73.634	72.116	71.915	74.654	72.130	66.228	69.309	73.795	70.481	70.987	71.033
8.8000	74.667	73.637	72.116	71.915	74.654	72.133	66.228	69.313	73.792	70.488	70.984	71.036
9.0000	74.699	73.640	72.112	71.918	74.654	72.133	66.231	69.313	73.792	70.494	70.978	71.033
9.2000	74.699	73.640	72.116	71.918	74.654	72.133	66.228	69.316	73.795	70.484	70.981	71.036
9.4000	74.683	73.640	72.112	71.918	74.657	72.136	66.228	69.313	73.795	70.488	70.981	71.036
9.6000	74.714	73.640	72.112	71.918	74.657	72.133	66.228	69.316	73.792	70.491	70.987	71.036
9.8000	74.699	73.640	72.112	71.918	74.654	72.133	66.228	69.316	73.792	70.468	71.000	71.036
10.0000	74.746	73.646	72.116	71.921	74.663	72.133	66.231	69.319	73.795	70.481	70.987	71.033
12.0000	74.794	73.646	72.116	71.921	74.657	72.133	66.228	69.322	73.808	70.488	70.993	71.033
14.0000	74.857	73.646	72.116	71.924	74.660	72.136	66.228	69.325	73.818	70.478	70.993	71.017
16.0000	74.936	73.653	72.112	71.921	74.666	72.136	66.225	69.319	73.818	70.494	71.006	71.004
18.0000	74.920	73.662	72.112	71.921	74.676	72.136	66.225	69.325	73.827	70.494	71.003	70.995
20.0000	74.904	73.678	72.109	71.921	74.682	72.139	66.225	69.325	73.837	70.494	71.009	70.963
22.0000	74.968	73.681	72.112	71.902	74.679	72.139	66.218	69.319	73.846	70.481	71.019	70.960

STEP3

085

4733

24.0000	75.031	73.684	72.109	71.902	74.685	72.139	66.222	69.313	73.795	70.484	71.038	70.960
26.0000	75.015	73.697	72.109	71.902	74.692	72.146	66.218	69.319	73.799	70.481	71.035	70.960
28.0000	75.047	73.700	72.106	71.899	74.698	72.139	66.215	69.319	73.808	70.491	71.041	70.957
30.0000	75.110	73.703	72.106	71.902	74.698	72.142	66.206	69.322	73.814	70.488	71.050	70.957
32.0000	75.126	73.703	72.109	71.902	74.698	72.142	66.209	69.322	73.811	70.491	71.047	70.954
34.0000	75.142	73.703	72.097	71.905	74.688	72.142	66.212	69.325	73.814	70.497	71.050	70.954
36.0000	75.110	73.703	72.100	71.908	74.688	72.149	66.212	69.328	73.795	70.504	71.044	70.951
38.0000	75.142	73.703	72.103	71.852	74.688	72.155	66.215	69.328	73.795	70.500	71.054	70.951
40.0000	75.158	73.709	72.112	71.858	74.685	72.155	66.218	69.335	73.799	70.497	71.044	70.944
42.0000	75.205	73.716	72.109	71.861	74.685	72.158	66.225	69.335	73.805	70.510	71.054	70.941
44.0000	75.237	73.706	72.112	71.867	74.679	72.165	66.228	69.341	73.799	70.513	71.054	70.938
46.0000	75.284	73.703	72.116	71.871	74.676	72.168	66.231	69.344	73.802	70.520	71.054	70.941
48.0000	75.253	73.703	72.122	71.871	74.673	72.171	66.231	69.344	73.802	70.510	71.050	70.941
50.0000	75.269	73.706	72.122	71.871	74.676	72.171	66.231	69.347	73.805	70.523	71.066	70.938
52.0000	75.300	73.716	72.122	71.874	74.676	72.180	66.237	69.351	73.814	70.520	71.060	70.938
54.0000	75.316	73.725	72.128	71.877	74.685	72.177	66.234	69.351	73.821	70.516	71.079	70.941
56.0000	75.316	73.725	72.122	71.871	74.682	72.177	66.237	69.351	73.818	70.523	71.082	70.938
58.0000	75.300	73.741	72.128	71.877	74.692	72.184	66.237	69.354	73.830	70.516	71.076	70.941
60.0000	75.411	73.757	72.128	71.880	74.704	72.187	66.241	69.360	73.840	70.520	71.095	70.941
62.0000	75.332	73.776	72.128	71.883	74.717	72.190	66.244	69.360	73.862	70.539	71.085	70.938
64.0000	75.443	73.788	72.131	71.880	74.720	72.190	66.244	69.363	73.875	70.535	71.028	70.938
66.0000	75.459	73.788	72.128	71.883	74.720	72.190	66.237	69.363	73.875	70.532	71.031	70.932
68.0000	75.427	73.788	72.131	71.883	74.717	72.187	66.241	69.360	73.878	70.523	71.031	70.928
70.0000	75.443	73.782	72.128	71.880	74.710	72.190	66.237	69.363	73.868	70.542	71.022	70.919
72.0000	75.459	73.779	72.137	71.886	74.707	72.193	66.247	69.366	73.868	70.542	71.038	70.922
74.0000	75.490	73.779	72.140	71.889	74.707	72.196	66.247	69.370	73.872	70.548	71.035	70.925
76.0000	75.474	73.773	72.134	71.889	74.698	72.196	66.247	69.366	73.868	70.542	71.041	70.922
78.0000	75.506	73.763	72.137	71.889	74.698	72.199	66.247	69.370	73.862	70.548	71.031	70.925
80.0000	75.490	73.757	72.144	71.896	74.685	72.203	66.253	69.373	73.856	70.545	71.038	70.922
82.0000	75.538	73.757	72.147	71.899	74.682	72.206	66.260	69.376	73.853	70.551	71.050	70.925
84.0000	75.569	73.760	72.153	71.902	74.688	72.209	66.263	69.382	73.859	70.558	71.044	70.919
86.0000	75.554	73.760	72.153	71.905	74.682	72.215	66.266	69.385	73.856	70.545	71.057	70.919
88.0000	75.617	73.757	72.156	71.908	74.676	72.218	66.266	69.389	73.856	70.551	71.050	70.919
90.0000	75.617	73.760	72.156	71.915	74.679	72.215	66.269	69.389	73.853	70.558	71.060	70.922
92.0000	75.633	73.760	72.159	71.911	74.682	72.218	66.272	69.392	73.859	70.567	71.063	70.922
94.0000	75.664	73.766	72.156	71.908	74.685	72.218	66.266	69.389	73.849	70.564	71.063	70.922
96.0000	75.617	73.773	72.156	71.911	74.685	72.218	66.269	69.389	73.824	70.567	71.066	70.919
98.0000	75.664	73.773	72.156	71.915	74.685	72.218	66.269	69.392	73.824	70.564	71.066	70.919
100.000	75.680	73.773	72.159	71.915	74.679	72.225	66.266	69.392	73.824	70.555	71.054	70.913
110.000	75.728	73.776	72.172	71.915	74.679	72.238	66.278	69.408	73.834	70.558	71.076	70.903

STEP4

SE2000
Environmental Logger
05/19 14:59

Unit# 148 Test 1

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.440	73.410	72.085	71.780	74.670	71.940	66.200	69.120	73.640	70.300	70.760	71.030
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 1 05/18 16:22:44

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	75.759	73.773	72.172	71.908	74.673	72.234	66.278	69.404	73.830	70.561	71.079	70.900
0.0083	75.791	73.776	72.168	71.908	74.673	72.238	66.278	69.401	73.808	70.567	71.076	70.900
0.0166	75.839	73.776	72.168	71.911	74.676	72.241	66.278	69.404	73.799	70.571	71.076	70.903
0.0250	75.759	73.776	72.172	71.911	74.679	72.234	66.278	69.398	73.792	70.564	71.091	70.903
0.0333	75.823	73.776	72.168	71.911	74.676	72.238	66.278	69.404	73.792	70.571	71.085	70.900
0.0416	75.823	73.779	72.168	71.915	74.676	72.238	66.278	69.404	73.792	70.574	71.082	70.903
0.0500	75.870	73.776	72.168	71.911	74.679	72.234	66.282	69.398	73.783	70.561	71.085	70.900
0.0583	75.854	73.779	72.172	71.911	74.676	72.238	66.278	69.398	73.786	70.574	71.079	70.900
0.0666	75.870	73.779	72.168	71.915	74.679	72.238	66.282	69.404	73.783	70.574	71.085	70.903
0.0750	75.870	73.776	72.168	71.911	74.682	72.234	66.282	69.398	73.783	70.564	71.091	70.900
0.0833	75.934	73.776	72.168	71.911	74.679	72.238	66.282	69.401	73.786	70.571	71.085	70.903
0.0916	75.918	73.782	72.172	71.915	74.679	72.238	66.282	69.404	73.783	70.574	71.085	70.900
0.1000	75.918	73.776	72.168	71.915	74.682	72.234	66.282	69.401	73.783	70.558	71.088	70.903
0.1083	75.934	73.779	72.172	71.918	74.679	72.238	66.282	69.398	73.783	70.574	71.082	70.906
0.1166	75.918	73.779	72.168	71.915	74.676	72.234	66.282	69.401	73.783	70.577	71.091	70.906
0.1250	75.949	73.779	72.168	71.915	74.679	72.238	66.282	69.401	73.783	70.561	71.082	70.906
0.1333	75.949	73.779	72.172	71.915	74.682	72.234	66.282	69.398	73.783	70.564	71.091	70.903
0.1416	75.981	73.779	72.172	71.915	74.679	72.241	66.282	69.401	73.786	70.574	71.076	70.903
0.1500	75.949	73.779	72.172	71.918	74.679	72.238	66.282	69.401	73.789	70.577	71.095	70.903
0.1583	75.981	73.782	72.172	71.915	74.679	72.241	66.282	69.401	73.789	70.564	71.082	70.900
0.1666	75.949	73.782	72.172	71.915	74.682	72.238	66.282	69.398	73.789	70.571	71.091	70.900
0.1750	75.965	73.779	72.168	71.918	74.682	72.241	66.282	69.398	73.789	70.574	71.082	70.906
0.1833	75.997	73.782	72.172	71.918	74.679	72.238	66.282	69.401	73.792	70.574	71.098	70.903
0.1916	75.949	73.782	72.168	71.918	74.682	72.241	66.282	69.401	73.792	70.571	71.082	70.900
0.2000	76.029	73.782	72.172	71.918	74.685	72.238	66.285	69.398	73.792	70.564	71.095	70.900
0.2083	76.029	73.779	72.172	71.918	74.679	72.241	66.282	69.401	73.795	70.567	71.085	70.900
0.2166	76.013	73.782	72.172	71.918	74.679	72.241	66.285	69.404	73.795	70.571	71.088	70.900
0.2250	76.029	73.782	72.168	71.918	74.682	72.238	66.285	69.398	73.795	70.571	71.095	70.903

STEP5

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4 7 3 3

0.2333	76.060	73.779	72.172	71.918	74.679	72.241	66.285	69.401	73.795	70.571	71.088	70.903
0.2416	76.076	73.782	72.172	71.918	74.682	72.244	66.282	69.401	73.799	70.571	71.082	70.900
0.2500	76.029	73.782	72.172	71.918	74.682	72.238	66.285	69.401	73.799	70.564	71.091	70.903
0.2583	76.076	73.785	72.168	71.918	74.682	72.244	66.285	69.401	73.799	70.574	71.082	70.903
0.2666	76.060	73.782	72.172	71.921	74.679	72.241	66.285	69.401	73.805	70.577	71.098	70.900
0.2750	76.045	73.785	72.172	71.918	74.679	72.244	66.285	69.404	73.805	70.564	71.085	70.903
0.2833	76.060	73.782	72.172	71.918	74.679	72.241	66.285	69.401	73.802	70.571	71.091	70.900
0.2916	76.076	73.782	72.172	71.921	74.679	72.241	66.285	69.398	73.802	70.574	71.082	70.903
0.3000	76.045	73.785	72.172	71.918	74.676	72.241	66.285	69.404	73.802	70.580	71.095	70.900
0.3083	76.092	73.782	72.172	71.918	74.682	72.241	66.285	69.401	73.802	70.561	71.095	70.900
0.3166	76.140	73.785	72.172	71.921	74.682	72.241	66.285	69.398	73.802	70.574	71.088	70.903
0.3250	76.140	73.782	72.172	71.921	74.679	72.241	66.285	69.401	73.802	70.577	71.095	70.903
0.3333	76.203	73.785	72.172	71.921	74.679	72.244	66.285	69.404	73.805	70.571	71.082	70.900
0.3500	76.171	73.782	72.172	71.918	74.676	72.244	66.285	69.401	73.808	70.574	71.085	70.903
0.3666	76.235	73.785	72.168	71.918	74.676	72.247	66.285	69.401	73.814	70.571	71.082	70.903
0.3833	76.250	73.785	72.172	71.918	74.676	72.247	66.282	69.401	73.814	70.574	71.082	70.903
0.4000	76.298	73.785	72.172	71.918	74.673	72.244	66.282	69.408	73.814	70.577	71.085	70.903
0.4166	76.298	73.785	72.172	71.921	74.676	72.244	66.282	69.404	73.814	70.574	71.088	70.903
0.4333	76.361	73.785	72.172	71.921	74.673	72.247	66.282	69.408	73.818	70.580	71.088	70.903
0.4500	76.345	73.785	72.172	71.918	74.673	72.247	66.282	69.404	73.821	70.574	71.082	70.900
0.4666	76.409	73.785	72.168	71.921	74.676	72.247	66.282	69.408	73.818	70.567	71.085	70.903
0.4833	76.440	73.785	72.172	71.921	74.673	72.247	66.282	69.401	73.821	70.577	71.082	70.906
0.5000	76.425	73.785	72.172	71.921	74.673	72.247	66.282	69.408	73.824	70.571	71.085	70.903
0.5166	76.488	73.788	72.172	71.921	74.673	72.253	66.282	69.408	73.827	70.577	71.085	70.903
0.5333	76.520	73.791	72.172	71.921	74.670	72.250	66.285	69.411	73.827	70.580	71.095	70.900
0.5500	76.567	73.791	72.172	71.921	74.676	72.250	66.285	69.408	73.824	70.577	71.095	70.906
0.5666	76.567	73.791	72.172	71.924	74.673	72.253	66.282	69.411	73.830	70.577	71.088	70.903
0.5833	76.662	73.791	72.172	71.924	74.673	72.253	66.282	69.411	73.830	70.577	71.091	70.903
0.6000	76.710	73.791	72.172	71.924	74.673	72.253	66.282	69.411	73.834	70.583	71.098	70.900
0.6166	76.741	73.791	72.172	71.921	74.676	72.250	66.282	69.411	73.830	70.571	71.101	70.903
0.6333	76.805	73.791	72.172	71.924	74.673	72.253	66.285	69.414	73.834	70.583	71.091	70.903
0.6500	76.820	73.795	72.172	71.924	74.676	72.253	66.282	69.414	73.834	70.571	71.098	70.906
0.6666	76.884	73.795	72.172	71.924	74.670	72.253	66.282	69.414	73.840	70.590	71.101	70.903
0.6833	76.884	73.798	72.172	71.921	74.676	72.253	66.285	69.414	73.837	70.574	71.104	70.900
0.7000	76.900	73.798	72.172	71.927	74.670	72.257	66.282	69.417	73.840	70.590	71.101	70.906
0.7166	76.947	73.801	72.172	71.924	74.673	72.257	66.282	69.417	73.843	70.580	71.104	70.903
0.7333	76.963	73.801	72.172	71.927	74.670	72.260	66.282	69.420	73.846	70.593	71.101	70.903
0.7500	77.010	73.801	72.172	71.930	74.673	72.260	66.282	69.417	73.843	70.590	71.095	70.903
0.7666	76.995	73.804	72.172	71.927	74.670	72.260	66.282	69.423	73.843	70.590	71.101	70.903
0.7833	76.995	73.804	72.172	71.927	74.673	72.260	66.285	69.420	73.849	70.580	71.107	70.900
0.8000	77.090	73.804	72.168	71.927	74.673	72.263	66.285	69.420	73.849	70.593	71.095	70.903
0.8166	77.121	73.807	72.172	71.930	74.676	72.266	66.285	69.423	73.853	70.586	71.098	70.906
0.8333	77.137	73.807	72.172	71.933	74.673	72.266	66.282	69.423	73.853	70.590	71.098	70.903
0.8500	77.153	73.807	72.172	71.930	74.676	72.266	66.282	69.427	73.849	70.580	71.107	70.903
0.8666	77.169	73.807	72.172	71.930	74.673	72.269	66.285	69.423	73.856	70.593	71.101	70.906
0.8833	77.216	73.814	72.172	71.933	74.670	72.269	66.285	69.427	73.856	70.596	71.104	70.906
0.9000	77.185	73.814	72.168	71.930	74.673	72.269	66.282	69.427	73.859	70.593	71.104	70.903
0.9166	77.216	73.814	72.172	71.937	74.670	72.269	66.285	69.433	73.859	70.593	71.101	70.906
0.9333	77.232	73.814	72.172	71.933	74.673	72.269	66.285	69.430	73.859	70.593	71.114	70.906
0.9500	77.280	73.814	72.172	71.933	74.670	72.269	66.282	69.433	73.859	70.599	71.117	70.906
0.9666	77.280	73.814	72.175	71.933	74.676	72.269	66.285	69.430	73.862	70.586	71.114	70.906
0.9833	77.264	73.817	72.172	71.937	74.670	72.272	66.285	69.436	73.865	70.602	71.117	70.903

STEP6

088

1.0000	77.311	73.817	72.172	71.937	74.676	72.272	66.282	69.433	73.862	70.593	71.114	70.906
1.2000	77.422	73.820	72.172	71.937	74.660	72.282	66.282	69.446	73.875	70.609	71.117	70.903
1.4000	77.485	73.826	72.172	71.943	74.666	72.285	66.282	69.446	73.878	70.606	71.117	70.906
1.6000	77.549	73.829	72.175	71.946	74.666	72.285	66.282	69.452	73.884	70.599	71.123	70.903
1.8000	77.691	73.833	72.172	71.949	74.663	72.291	66.282	69.455	73.888	70.618	71.110	70.906
2.0000	77.707	73.836	72.175	71.952	74.663	72.295	66.282	69.455	73.891	70.618	71.110	70.906
2.2000	77.580	73.836	72.172	71.952	74.663	72.295	66.282	69.458	73.891	70.622	71.123	70.906
2.4000	77.533	73.836	72.175	71.952	74.663	72.295	66.282	69.458	73.884	70.609	71.117	70.909
2.6000	77.470	73.836	72.175	71.949	74.663	72.288	66.282	69.455	73.881	70.615	71.123	70.906
2.8000	77.485	73.833	72.175	71.949	74.663	72.288	66.282	69.458	73.881	70.625	71.126	70.906
3.0000	77.565	73.833	72.175	71.952	74.663	72.288	66.285	69.452	73.878	70.615	71.117	70.906
3.2000	77.580	73.829	72.175	71.949	74.666	72.288	66.282	69.452	73.875	70.609	71.123	70.906
3.4000	77.707	73.833	72.175	71.949	74.666	72.288	66.282	69.455	73.884	70.615	71.117	70.909
3.6000	77.818	73.833	72.175	71.949	74.663	72.295	66.282	69.458	73.888	70.622	71.126	70.906
3.8000	77.865	73.836	72.175	71.952	74.660	72.295	66.285	69.461	73.891	70.622	71.129	70.906
4.0000	77.897	73.839	72.175	71.952	74.666	72.295	66.282	69.458	73.891	70.618	71.129	70.906
4.2000	77.961	73.839	72.175	71.955	74.666	72.298	66.285	69.464	73.894	70.615	71.117	70.906
4.4000	77.945	73.842	72.175	71.955	74.663	72.298	66.285	69.468	73.897	70.625	71.129	70.909
4.6000	78.008	73.842	72.178	71.955	74.663	72.301	66.285	69.464	73.894	70.625	71.120	70.906
4.8000	78.008	73.839	72.175	71.955	74.666	72.298	66.285	69.468	73.894	70.612	71.133	70.906
5.0000	78.008	73.842	72.175	71.962	74.660	72.304	66.285	69.468	73.897	70.631	71.133	70.909
5.2000	78.040	73.842	72.175	71.962	74.663	72.301	66.285	69.468	73.894	70.628	71.129	70.913
5.4000	78.024	73.845	72.178	71.962	74.666	72.304	66.285	69.464	73.894	70.622	71.133	70.913
5.6000	78.087	73.845	72.175	71.962	74.666	72.304	66.285	69.468	73.897	70.628	71.129	70.909
5.8000	78.024	73.845	72.178	71.962	74.663	72.307	66.285	69.468	73.897	70.628	71.126	70.913
6.0000	78.135	73.842	72.178	71.962	74.666	72.304	66.285	69.468	73.900	70.631	71.133	70.909
6.2000	78.071	73.842	72.175	71.962	74.666	72.301	66.285	69.468	73.894	70.625	71.133	70.906
6.4000	78.119	73.842	72.178	71.962	74.663	72.301	66.285	69.471	73.894	70.634	71.136	70.913
6.6000	78.087	73.845	72.178	71.962	74.666	72.301	66.285	69.468	73.894	70.622	71.136	70.913
6.8000	78.166	73.845	72.178	71.965	74.666	72.304	66.285	69.471	73.894	70.628	71.126	70.913
7.0000	78.151	73.842	72.181	71.965	74.666	72.304	66.285	69.471	73.897	70.628	71.129	70.913
7.2000	78.166	73.845	72.178	71.962	74.670	72.301	66.285	69.468	73.897	70.618	71.136	70.913
7.4000	78.198	73.845	72.178	71.962	74.666	72.307	66.285	69.471	73.897	70.628	71.123	70.913
7.6000	78.166	73.842	72.178	71.962	74.663	72.304	66.285	69.471	73.897	70.631	71.133	70.916
7.8000	78.166	73.845	72.181	71.962	74.670	72.304	66.285	69.471	73.900	70.622	71.139	70.913
8.0000	78.214	73.845	72.181	71.962	74.666	72.307	66.285	69.471	73.903	70.634	71.136	70.913
8.2000	78.214	73.845	72.178	71.965	74.666	72.310	66.285	69.471	73.900	70.631	71.120	70.913
8.4000	78.198	73.848	72.181	71.962	74.666	72.314	66.285	69.471	73.900	70.625	71.126	70.916
8.6000	78.166	73.848	72.178	71.965	74.663	72.310	66.285	69.474	73.897	70.637	71.133	70.916
8.8000	78.261	73.845	72.178	71.962	74.666	72.310	66.288	69.471	73.900	70.625	71.129	70.916
9.0000	78.277	73.848	72.181	71.965	74.666	72.310	66.285	69.471	73.900	70.622	71.123	70.909
9.2000	78.246	73.845	72.181	71.965	74.666	72.307	66.285	69.474	73.897	70.625	71.129	70.913
9.4000	78.198	73.848	72.178	71.965	74.663	72.307	66.288	69.474	73.900	70.631	71.126	70.916
9.6000	78.230	73.848	72.181	71.965	74.663	72.304	66.288	69.471	73.900	70.641	71.139	70.913
9.8000	78.246	73.848	72.181	71.965	74.666	72.307	66.288	69.471	73.897	70.631	71.126	70.916
10.0000	78.261	73.848	72.181	71.971	74.673	72.304	66.288	69.474	73.897	70.634	71.139	70.916
12.0000	78.341	73.848	72.181	71.971	74.670	72.304	66.285	69.477	73.872	70.634	71.126	70.909
14.0000	78.293	73.851	72.184	71.971	74.666	72.307	66.282	69.480	73.868	70.637	71.126	70.913
16.0000	78.356	73.858	72.184	71.971	74.670	72.310	66.285	69.480	73.875	70.631	71.133	70.906
18.0000	78.436	73.855	72.184	71.959	74.673	72.310	66.288	69.480	73.888	70.634	71.139	70.900
20.0000	78.436	73.858	72.184	71.959	74.670	72.314	66.291	69.474	73.888	70.634	71.145	70.900
22.0000	78.467	73.861	72.184	71.962	74.666	72.317	66.291	69.477	73.891	70.637	71.139	70.900

STEP7

24.0000	78.451	73.864	72.187	71.965	74.670	72.320	66.291	69.480	73.891	70.644	71.139	70.897
26.0000	78.515	73.861	72.187	71.965	74.670	72.320	66.294	69.477	73.900	70.644	71.145	70.900
28.0000	78.499	73.858	72.187	71.965	74.663	72.317	66.294	69.480	73.897	70.634	71.142	70.897
30.0000	78.499	73.845	72.190	71.965	74.654	72.317	66.297	69.480	73.888	70.631	71.145	70.894
32.0000	78.562	73.842	72.190	71.971	74.654	72.323	66.301	69.483	73.891	70.634	71.145	70.897
34.0000	78.515	73.842	72.193	71.968	74.660	72.323	66.301	69.487	73.891	70.644	71.148	70.897
36.0000	78.610	73.839	72.193	71.968	74.657	72.320	66.301	69.483	73.888	70.641	71.158	70.897
38.0000	78.626	73.836	72.190	71.971	74.657	72.323	66.301	69.483	73.884	70.637	71.148	70.897
40.0000	78.626	73.842	72.193	71.974	74.663	72.326	66.304	69.487	73.894	70.634	71.161	70.897
42.0000	78.657	73.845	72.193	71.974	74.663	72.329	66.304	69.490	73.897	70.647	71.164	70.897
44.0000	78.689	73.842	72.196	71.977	74.663	72.329	66.304	69.493	73.897	70.644	71.164	70.894
46.0000	78.689	73.842	72.193	71.977	74.663	72.333	66.307	69.493	73.900	70.647	71.167	70.894
48.0000	78.705	73.845	72.196	71.977	74.663	72.336	66.307	69.496	73.907	70.644	71.170	70.894
50.0000	78.736	73.845	72.203	71.981	74.657	72.333	66.313	69.493	73.907	70.657	71.174	70.891
52.0000	78.752	73.842	72.206	71.987	74.654	72.342	66.316	69.499	73.907	70.653	71.167	70.887
54.0000	78.752	73.848	72.206	71.990	74.657	72.339	66.316	69.502	73.910	70.660	71.174	70.891
56.0000	78.768	73.845	72.206	71.990	74.663	72.342	66.316	69.506	73.913	70.660	71.177	70.887
58.0000	78.816	73.848	72.206	71.990	74.663	72.339	66.313	69.502	73.910	70.657	71.183	70.891
60.0000	78.784	73.851	72.206	71.993	74.663	72.348	66.316	69.506	73.919	70.653	71.170	70.894
62.0000	78.816	73.855	72.209	71.993	74.663	72.348	66.320	69.506	73.923	70.653	71.170	70.891
64.0000	78.784	73.858	72.212	71.996	74.663	72.348	66.323	69.509	73.875	70.657	71.170	70.891
66.0000	78.863	73.861	72.212	71.996	74.666	72.345	66.323	69.509	73.859	70.660	71.189	70.891
68.0000	78.926	73.867	72.215	71.999	74.673	72.352	66.323	69.515	73.868	70.669	71.186	70.891
70.0000	78.863	73.870	72.218	71.996	74.670	72.352	66.313	69.515	73.868	70.673	71.183	70.887
72.0000	78.895	73.867	72.218	72.002	74.670	72.361	66.316	69.515	73.865	70.679	71.186	70.891
74.0000	78.911	73.867	72.221	72.002	74.663	72.358	66.320	69.515	73.872	70.673	71.196	70.884
76.0000	78.911	73.874	72.221	72.006	74.670	72.364	66.320	69.521	73.872	70.682	71.186	70.891
78.0000	78.958	73.874	72.221	72.006	74.663	72.361	66.320	69.518	73.878	70.679	71.196	70.891
80.0000	78.926	73.880	72.224	72.009	74.666	72.364	66.320	69.521	73.881	70.673	71.199	70.891
82.0000	78.990	73.877	72.224	72.009	74.673	72.367	66.323	69.521	73.881	70.682	71.193	70.887
84.0000	79.006	73.880	72.224	72.012	74.673	72.367	66.323	69.525	73.881	70.682	71.202	70.894
86.0000	79.006	73.883	72.228	72.012	74.673	72.367	66.323	69.528	73.884	70.685	71.196	70.891
88.0000	79.006	73.886	72.228	72.012	74.670	72.367	66.323	69.525	73.888	70.685	71.212	70.887
90.0000	79.021	73.889	72.228	72.012	74.679	72.371	66.323	69.528	73.894	70.682	71.208	70.884
92.0000	78.958	73.892	72.228	72.018	74.676	72.374	66.323	69.528	73.894	70.676	71.199	70.891
94.0000	78.990	73.896	72.231	72.018	74.682	72.374	66.323	69.528	73.900	70.676	71.202	70.894
96.0000	79.069	73.899	72.231	72.018	74.685	72.374	66.323	69.534	73.903	70.688	71.205	70.894
98.0000	79.037	73.902	72.228	72.018	74.682	72.374	66.320	69.531	73.903	70.688	71.199	70.891
100.000	79.021	73.899	72.228	72.018	74.682	72.374	66.320	69.528	73.900	70.679	71.202	70.891
110.000	79.132	73.899	72.237	72.021	74.673	72.377	66.332	69.537	73.900	70.692	71.224	70.887
120.000	79.132	73.899	72.252	72.040	74.666	72.393	66.338	69.556	73.910	70.708	71.227	70.884

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SE2000
Environmental Logger
05/19 15:13

Unit# 148 Test 1

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.440	73.410	72.085	71.780	74.670	71.940	66.200	69.120	73.640	70.300	70.760	71.030
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 2 05/18 18:24:05

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	79.196	73.889	72.249	72.031	74.654	72.396	66.338	69.550	73.907	70.704	71.231	70.884
0.0083	79.132	73.892	72.249	72.037	74.654	72.393	66.342	69.550	73.884	70.708	71.237	70.884
0.0166	79.132	73.892	72.252	72.034	74.663	72.390	66.342	69.547	73.875	70.698	71.243	70.887
0.0250	79.164	73.892	72.249	72.037	74.660	72.393	66.342	69.547	73.875	70.708	71.237	70.887
0.0333	79.132	73.896	72.252	72.037	74.660	72.390	66.338	69.550	73.872	70.711	71.250	70.887
0.0416	79.196	73.892	72.249	72.037	74.663	72.393	66.338	69.550	73.868	70.701	71.234	70.887
0.0500	79.164	73.899	72.249	72.034	74.666	72.393	66.338	69.544	73.868	70.708	71.240	70.887
0.0583	79.148	73.896	72.252	72.037	74.663	72.393	66.338	69.547	73.868	70.714	71.246	70.884
0.0666	79.132	73.896	72.249	72.037	74.663	72.396	66.342	69.547	73.862	70.704	71.240	70.887
0.0750	79.164	73.892	72.249	72.037	74.666	72.393	66.338	69.547	73.859	70.698	71.240	70.887
0.0833	79.227	73.896	72.249	72.037	74.666	72.393	66.338	69.544	73.859	70.704	71.246	70.887
0.0916	79.433	73.892	72.249	72.037	74.660	72.393	66.338	69.547	73.862	70.708	71.246	70.891
0.1000	79.354	73.896	72.249	72.037	74.663	72.393	66.342	69.547	73.865	70.714	71.250	70.887
0.1083	79.164	73.899	72.252	72.040	74.666	72.396	66.342	69.547	73.865	70.704	71.243	70.887
0.1166	79.338	73.896	72.252	72.040	74.666	72.390	66.342	69.547	73.859	70.698	71.250	70.884
0.1250	79.512	73.899	72.249	72.040	74.663	72.393	66.342	69.544	73.859	70.708	71.240	70.887
0.1333	79.449	73.896	72.252	72.037	74.660	72.390	66.342	69.547	73.859	70.711	71.250	70.887
0.1416	79.544	73.899	72.249	72.040	74.663	72.396	66.342	69.550	73.862	70.708	71.240	70.884
0.1500	79.655	73.896	72.249	72.037	74.666	72.390	66.342	69.547	73.865	70.701	71.250	70.884
0.1583	79.687	73.899	72.249	72.040	74.663	72.396	66.342	69.544	73.868	70.708	71.237	70.887
0.1666	79.671	73.899	72.252	72.043	74.660	72.396	66.342	69.547	73.868	70.714	71.253	70.884
0.1750	79.782	73.899	72.249	72.040	74.663	72.396	66.345	69.547	73.868	70.711	71.240	70.887
0.1833	79.797	73.899	72.249	72.040	74.666	72.393	66.345	69.544	73.868	70.704	71.250	70.891
0.1916	79.877	73.899	72.249	72.040	74.666	72.396	66.345	69.544	73.868	70.711	71.240	70.891
0.2000	79.892	73.902	72.252	72.043	74.663	72.393	66.345	69.550	73.872	70.711	71.256	70.891
0.2083	79.987	73.899	72.249	72.040	74.666	72.396	66.345	69.547	73.872	70.701	71.240	70.887
0.2166	80.019	73.902	72.252	72.043	74.666	72.396	66.345	69.544	73.872	70.708	71.246	70.887
0.2250	80.035	73.899	72.252	72.043	74.666	72.396	66.345	69.544	73.875	70.711	71.243	70.887

STEP9

0.2333	80.114	73.902	72.249	72.043	74.663	72.396	66.345	69.550	73.878	70.711	71.246	70.884
0.2416	80.130	73.899	72.252	72.043	74.666	72.396	66.345	69.547	73.881	70.701	71.243	70.887
0.2500	80.162	73.902	72.252	72.043	74.666	72.396	66.345	69.544	73.881	70.708	71.250	70.891
0.2583	80.209	73.899	72.249	72.043	74.666	72.399	66.345	69.547	73.881	70.714	71.243	70.891
0.2666	80.241	73.902	72.249	72.043	74.663	72.399	66.345	69.550	73.884	70.714	71.250	70.891
0.2750	80.272	73.899	72.249	72.043	74.666	72.399	66.345	69.550	73.884	70.701	71.243	70.891
0.2833	80.336	73.902	72.249	72.043	74.663	72.399	66.345	69.547	73.884	70.711	71.243	70.891
0.2916	80.352	73.902	72.249	72.043	74.660	72.396	66.345	69.550	73.884	70.717	71.253	70.887
0.3000	80.399	73.902	72.249	72.043	74.663	72.402	66.345	69.550	73.888	70.708	71.243	70.887
0.3083	80.383	73.905	72.252	72.043	74.666	72.399	66.348	69.547	73.888	70.708	71.253	70.891
0.3166	80.463	73.902	72.252	72.046	74.663	72.402	66.348	69.550	73.891	70.717	71.246	70.891
0.3250	80.510	73.908	72.252	72.043	74.663	72.402	66.348	69.553	73.894	70.717	71.250	70.891
0.3333	80.447	73.905	72.252	72.043	74.670	72.402	66.348	69.547	73.891	70.708	71.256	70.887
0.3500	80.558	73.902	72.249	72.046	74.660	72.406	66.345	69.550	73.900	70.717	71.243	70.887
0.3666	80.605	73.905	72.249	72.043	74.660	72.406	66.342	69.556	73.903	70.708	71.246	70.884
0.3833	80.637	73.908	72.252	72.043	74.660	72.409	66.342	69.553	73.907	70.714	71.250	70.887
0.4000	80.668	73.905	72.252	72.043	74.657	72.409	66.342	69.559	73.913	70.724	71.259	70.887
0.4166	80.716	73.908	72.252	72.043	74.663	72.412	66.342	69.556	73.913	70.708	71.256	70.894
0.4333	80.795	73.911	72.252	72.046	74.660	72.412	66.342	69.559	73.919	70.720	71.250	70.891
0.4500	80.795	73.915	72.252	72.046	74.654	72.415	66.342	69.566	73.923	70.724	71.259	70.887
0.4666	80.827	73.915	72.252	72.046	74.660	72.412	66.342	69.559	73.926	70.717	71.262	70.891
0.4833	80.827	73.918	72.252	72.046	74.657	72.418	66.342	69.566	73.932	70.727	71.265	70.887
0.5000	80.827	73.918	72.252	72.046	74.663	72.418	66.342	69.566	73.929	70.714	71.265	70.891
0.5166	80.890	73.918	72.252	72.050	74.657	72.421	66.342	69.569	73.932	70.730	71.262	70.891
0.5333	80.890	73.918	72.252	72.053	74.660	72.421	66.342	69.569	73.935	70.714	71.259	70.887
0.5500	80.906	73.924	72.252	72.053	74.657	72.425	66.342	69.569	73.935	70.724	71.262	70.894
0.5666	80.938	73.927	72.252	72.053	74.657	72.428	66.342	69.575	73.942	70.730	71.262	70.891
0.5833	80.906	73.927	72.252	72.053	74.660	72.425	66.342	69.572	73.942	70.724	71.275	70.887
0.6000	80.938	73.930	72.256	72.056	74.657	72.428	66.342	69.575	73.945	70.739	71.269	70.891
0.6166	80.890	73.930	72.252	72.056	74.663	72.425	66.342	69.575	73.942	70.727	71.275	70.891
0.6333	80.890	73.930	72.252	72.059	74.657	72.431	66.342	69.582	73.945	70.739	71.272	70.894
0.6500	80.906	73.930	72.256	72.059	74.660	72.431	66.338	69.578	73.945	70.724	71.272	70.891
0.6666	80.890	73.930	72.252	72.059	74.657	72.431	66.342	69.578	73.948	70.739	71.265	70.894
0.6833	80.906	73.934	72.252	72.062	74.657	72.434	66.342	69.582	73.951	70.733	71.269	70.887
0.7000	80.874	73.937	72.252	72.062	74.657	72.434	66.342	69.582	73.951	70.736	71.265	70.891
0.7166	80.858	73.937	72.252	72.062	74.657	72.434	66.342	69.585	73.951	70.746	71.272	70.891
0.7333	80.874	73.937	72.252	72.065	74.660	72.434	66.342	69.582	73.948	70.736	71.272	70.894
0.7500	80.922	73.940	72.256	72.062	74.657	72.437	66.342	69.588	73.954	70.743	71.269	70.891
0.7666	80.827	73.937	72.256	72.068	74.660	72.431	66.342	69.585	73.948	70.736	71.281	70.894
0.7833	80.858	73.940	72.256	72.068	74.657	72.437	66.342	69.588	73.954	70.749	71.278	70.891
0.8000	80.843	73.937	72.256	72.068	74.660	72.434	66.342	69.588	73.951	70.736	71.278	70.891
0.8166	80.858	73.937	72.256	72.068	74.654	72.434	66.342	69.591	73.951	70.749	71.278	70.894
0.8333	80.874	73.940	72.252	72.068	74.657	72.437	66.342	69.591	73.951	70.739	71.272	70.894
0.8500	80.890	73.940	72.252	72.068	74.657	72.437	66.342	69.591	73.951	70.746	71.272	70.897
0.8666	80.843	73.940	72.256	72.072	74.654	72.434	66.342	69.594	73.954	70.755	71.281	70.894
0.8833	80.858	73.940	72.256	72.068	74.660	72.437	66.342	69.591	73.951	70.739	71.281	70.891
0.9000	80.858	73.940	72.256	72.072	74.654	72.437	66.342	69.591	73.958	70.752	71.284	70.891
0.9166	80.874	73.940	72.252	72.068	74.657	72.437	66.342	69.591	73.954	70.739	71.278	70.891
0.9333	80.938	73.943	72.252	72.072	74.660	72.440	66.342	69.591	73.954	70.746	71.275	70.891
0.9500	80.906	73.943	72.252	72.072	74.657	72.437	66.345	69.597	73.958	70.752	71.284	70.891
0.9666	80.969	73.943	72.252	72.072	74.657	72.437	66.342	69.594	73.951	70.752	71.278	70.894
0.9833	80.922	73.946	72.256	72.075	74.657	72.440	66.342	69.594	73.954	70.759	71.278	70.891

STEP10

1.0000	80.922	73.946	72.256	72.075	74.657	72.444	66.342	69.591	73.958	70.749	71.275	70.891
1.2000	80.922	73.943	72.252	72.072	74.647	72.440	66.342	69.597	73.954	70.746	71.281	70.891
1.4000	81.033	73.943	72.252	72.075	74.644	72.447	66.345	69.601	73.951	70.749	71.275	70.891
1.6000	81.096	73.940	72.256	72.075	74.647	72.444	66.345	69.601	73.954	70.743	71.278	70.887
1.8000	81.159	73.946	72.256	72.075	74.647	72.440	66.345	69.601	73.954	70.752	71.284	70.891
2.0000	81.175	73.946	72.256	72.075	74.647	72.447	66.345	69.604	73.954	70.759	71.275	70.894
2.2000	81.223	73.949	72.256	72.078	74.647	72.447	66.345	69.604	73.961	70.755	71.284	70.897
2.4000	81.286	73.949	72.259	72.081	74.644	72.450	66.345	69.607	73.961	70.765	71.284	70.894
2.6000	81.238	73.949	72.259	72.081	74.651	72.450	66.345	69.607	73.961	70.752	71.287	70.897
2.8000	81.302	73.949	72.259	72.081	74.651	72.450	66.345	69.607	73.958	70.749	71.281	70.897
3.0000	81.381	73.952	72.256	72.081	74.647	72.453	66.348	69.610	73.958	70.755	71.278	70.897
3.2000	81.270	73.952	72.256	72.081	74.644	72.453	66.348	69.610	73.961	70.759	71.284	70.891
3.4000	81.349	73.952	72.259	72.078	74.647	72.453	66.348	69.607	73.967	70.759	71.281	70.897
3.6000	81.365	73.956	72.256	72.081	74.647	72.456	66.348	69.610	73.964	70.765	71.284	70.897
3.8000	81.413	73.956	72.259	72.081	74.647	72.456	66.348	69.613	73.961	70.762	71.278	70.894
4.0000	81.397	73.952	72.259	72.081	74.651	72.450	66.348	69.607	73.964	70.752	71.287	70.894
4.2000	81.444	73.952	72.259	72.081	74.647	72.450	66.348	69.607	73.964	70.759	71.287	70.894
4.4000	81.444	73.949	72.259	72.081	74.647	72.450	66.348	69.607	73.964	70.762	71.281	70.897
4.6000	81.476	73.952	72.259	72.081	74.651	72.482	66.348	69.607	73.958	70.759	71.287	70.897
4.8000	81.413	73.952	72.259	72.078	74.651	72.450	66.345	69.607	73.961	70.759	71.284	70.900
5.0000	81.492	73.952	72.259	72.081	74.647	72.456	66.348	69.610	73.964	70.768	71.291	70.900
5.2000	81.476	73.956	72.259	72.084	74.647	72.456	66.348	69.613	73.964	70.762	71.278	70.900
5.4000	81.539	73.949	72.259	72.081	74.654	72.450	66.345	69.607	73.961	70.752	71.291	70.900
5.6000	81.492	73.952	72.259	72.081	74.647	72.453	66.345	69.610	73.964	70.768	71.287	70.897
5.8000	81.539	73.952	72.259	72.081	74.651	72.450	66.348	69.610	73.961	70.755	71.291	70.897
6.0000	81.539	73.952	72.259	72.084	74.647	72.456	66.345	69.610	73.964	70.762	71.275	70.897
6.2000	81.524	73.956	72.259	72.084	74.651	72.453	66.345	69.610	73.961	70.765	71.281	70.903
6.4000	81.555	73.956	72.256	72.084	74.651	72.456	66.348	69.610	73.964	70.762	71.278	70.903
6.6000	81.571	73.956	72.259	72.084	74.647	72.453	66.348	69.613	73.961	70.762	71.278	70.900
6.8000	81.555	73.956	72.259	72.081	74.647	72.453	66.345	69.610	73.961	70.762	71.281	70.900
7.0000	81.619	73.952	72.259	72.084	74.651	72.453	66.345	69.610	73.961	70.762	71.281	70.900
7.2000	81.603	73.956	72.259	72.084	74.651	72.453	66.345	69.607	73.961	70.762	71.281	70.897
7.4000	81.571	73.956	72.259	72.081	74.647	72.447	66.345	69.610	73.958	70.765	71.294	70.897
7.6000	81.666	73.956	72.259	72.081	74.647	72.453	66.345	69.613	73.958	70.755	71.281	70.900
7.8000	81.619	73.956	72.259	72.081	74.651	72.447	66.345	69.610	73.961	70.752	71.291	70.900
8.0000	81.603	73.956	72.259	72.081	74.651	72.450	66.345	69.607	73.964	70.759	71.291	70.897
8.2000	81.666	73.956	72.259	72.084	74.651	72.453	66.345	69.613	73.964	70.755	71.284	70.903
8.4000	81.682	73.959	72.256	72.081	74.651	72.453	66.345	69.610	73.964	70.762	71.291	70.900
8.6000	81.603	73.956	72.259	72.081	74.651	72.450	66.348	69.610	73.958	70.759	71.287	70.900
8.8000	81.666	73.959	72.259	72.084	74.651	72.450	66.348	69.607	73.958	70.762	71.284	70.900
9.0000	81.634	73.959	72.259	72.081	74.644	72.450	66.348	69.613	73.935	70.765	71.294	70.897
9.2000	81.682	73.956	72.259	72.084	74.647	72.453	66.345	69.610	73.929	70.765	71.284	70.900
9.4000	81.698	73.959	72.259	72.084	74.647	72.456	66.345	69.613	73.932	70.762	71.281	70.900
9.6000	81.682	73.959	72.259	72.081	74.647	72.453	66.345	69.610	73.935	70.762	71.284	70.900
9.8000	81.698	73.956	72.259	72.084	74.647	72.453	66.345	69.613	73.935	70.768	71.287	70.900
10.0000	81.745	73.959	72.262	72.090	74.654	72.456	66.351	69.613	73.935	70.771	71.284	70.900
12.0000	81.793	73.962	72.265	72.090	74.651	72.456	66.351	69.616	73.932	70.771	71.284	70.897
14.0000	81.761	73.962	72.265	72.094	74.651	72.456	66.351	69.623	73.932	70.768	71.291	70.840
16.0000	81.824	73.965	72.265	72.094	74.654	72.459	66.351	69.616	73.932	70.762	71.294	70.894
18.0000	81.777	73.962	72.265	72.094	74.651	72.463	66.351	69.620	73.935	70.771	71.287	70.887
20.0000	81.888	73.965	72.265	72.097	74.651	72.463	66.354	69.620	73.938	70.768	71.300	70.887
22.0000	81.904	73.962	72.268	72.094	74.638	72.463	66.354	69.626	73.938	70.781	71.294	70.884

STEP11

24.0000	81.888	73.956	72.268	72.100	74.638	72.466	66.357	69.626	73.932	70.768	71.306	70.884
26.0000	81.904	73.959	72.271	72.103	74.635	72.469	66.357	69.632	73.929	70.778	71.306	70.884
28.0000	81.967	73.956	72.274	72.103	74.635	72.472	66.361	69.629	73.935	70.775	71.310	70.884
30.0000	81.967	73.962	72.277	72.109	74.638	72.478	66.364	69.632	73.935	70.775	71.316	70.887
32.0000	81.983	73.962	72.277	72.109	74.635	72.478	66.364	69.639	73.938	70.794	71.316	70.887
34.0000	82.030	73.962	72.277	72.109	74.641	72.478	66.364	69.635	73.945	70.784	71.310	70.887
36.0000	82.078	73.962	72.274	72.106	74.635	72.478	66.361	69.639	73.942	70.791	71.313	70.884
38.0000	82.062	73.962	72.277	72.109	74.638	72.475	66.361	69.632	73.942	70.784	71.306	70.884
40.0000	82.109	73.959	72.277	72.112	74.638	72.478	66.364	69.635	73.942	70.781	71.310	70.887
42.0000	82.078	73.962	72.277	72.112	74.641	72.478	66.361	69.635	73.945	70.781	71.313	70.884
44.0000	82.078	73.959	72.277	72.112	74.638	72.478	66.364	69.635	73.942	70.784	71.306	70.884
46.0000	82.109	73.962	72.277	72.116	74.638	72.485	66.364	69.639	73.945	70.787	71.313	70.884
48.0000	82.173	73.962	72.277	72.112	74.632	72.482	66.364	69.642	73.942	70.794	71.322	70.881
50.0000	82.125	73.962	72.277	72.112	74.635	72.485	66.364	69.642	73.938	70.794	71.319	70.884
52.0000	82.189	73.962	72.277	72.112	74.638	72.485	66.364	69.639	73.942	70.778	71.322	70.884
54.0000	82.204	73.962	72.280	72.119	74.635	72.478	66.364	69.639	73.942	70.791	71.306	70.881
56.0000	82.189	73.962	72.280	72.122	74.632	72.485	66.364	69.648	73.910	70.794	71.319	70.884
58.0000	82.220	73.962	72.284	72.122	74.632	72.491	66.367	69.645	73.907	70.787	71.319	70.884
60.0000	82.236	73.959	72.280	72.122	74.638	72.488	66.364	69.645	73.903	70.787	71.322	70.884
62.0000	82.300	73.962	72.284	72.122	74.635	72.491	66.367	69.648	73.910	70.800	71.322	70.875
64.0000	82.315	73.965	72.284	72.122	74.638	72.491	66.367	69.645	73.910	70.794	71.319	70.872
66.0000	82.284	73.968	72.280	72.119	74.641	72.488	66.364	69.642	73.916	70.781	71.329	70.875
68.0000	82.252	73.971	72.284	72.122	74.638	72.491	66.364	69.645	73.913	70.803	71.316	70.868
70.0000	82.347	73.971	72.280	72.125	74.641	72.494	66.364	69.642	73.916	70.787	71.322	70.872
72.0000	82.315	73.984	72.280	72.125	74.638	72.491	66.367	69.645	73.913	70.787	71.329	70.868
74.0000	82.363	73.975	72.284	72.125	74.632	72.497	66.370	69.654	73.910	70.803	71.325	70.872
76.0000	82.331	73.971	72.284	72.128	74.629	72.494	66.370	69.648	73.913	70.794	71.329	70.872
78.0000	82.379	73.975	72.290	72.134	74.625	72.501	66.373	69.658	73.916	70.803	71.335	70.875
80.0000	82.395	73.971	72.287	72.134	74.629	72.504	66.373	69.654	73.913	70.800	71.332	70.872
82.0000	82.395	73.975	72.293	72.134	74.625	72.504	66.376	69.661	73.913	70.813	71.338	70.875
84.0000	82.363	73.975	72.293	72.138	74.619	72.507	66.380	69.664	73.913	70.813	71.341	70.872
86.0000	82.458	73.971	72.296	72.141	74.622	72.510	66.380	69.658	73.916	70.813	71.335	70.875
88.0000	82.458	73.971	72.299	72.144	74.616	72.513	66.383	69.667	73.910	70.813	71.338	70.868
90.0000	82.474	73.971	72.302	72.147	74.616	72.513	66.386	69.667	73.916	70.810	71.344	70.875
92.0000	82.521	73.971	72.302	72.150	74.613	72.513	66.386	69.667	73.900	70.816	71.341	70.868
94.0000	82.490	73.971	72.302	72.153	74.613	72.520	66.386	69.670	73.884	70.816	71.344	70.872
96.0000	82.490	73.975	72.305	72.153	74.616	72.520	66.386	69.670	73.891	70.816	71.348	70.878
98.0000	82.521	73.978	72.302	72.150	74.616	72.520	66.386	69.670	73.894	70.813	71.348	70.868
100.000	82.553	73.981	72.302	72.191	74.613	72.523	66.386	69.670	73.888	70.816	71.351	70.868

STEP12

094

SE2000
Environmental Logger
05/19 15:25

Unit# 148 Test 1

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.440	73.410	72.085	71.780	74.670	71.940	66.200	69.120	73.640	70.300	70.760	71.030
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 3 05/18 20:11:10

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	83.456	73.987	72.302	72.153	74.613	72.523	66.380	69.670	73.916	70.819	71.354	70.872
0.0083	83.440	73.990	72.299	72.156	74.616	72.526	66.383	69.670	73.894	70.819	71.354	70.872
0.0166	83.471	73.987	72.299	72.156	74.619	72.523	66.383	69.670	73.884	70.810	71.351	70.872
0.0250	83.519	73.993	72.302	72.156	74.622	72.523	66.383	69.667	73.881	70.816	71.367	70.872
0.0333	83.519	73.993	72.302	72.156	74.619	72.526	66.383	69.667	73.881	70.819	71.354	70.872
0.0416	83.582	73.993	72.302	72.156	74.619	72.526	66.383	69.667	73.881	70.826	71.363	70.868
0.0500	83.582	73.997	72.302	72.160	74.622	72.526	66.383	69.673	73.878	70.822	71.357	70.872
0.0583	83.598	73.993	72.302	72.156	74.625	72.523	66.383	69.667	73.878	70.816	71.370	70.872
0.0666	83.646	73.997	72.299	72.160	74.625	72.526	66.383	69.667	73.875	70.822	71.357	70.875
0.0750	83.661	73.993	72.302	72.160	74.622	72.526	66.383	69.667	73.878	70.826	71.363	70.872
0.0833	83.677	73.997	72.302	72.160	74.622	72.526	66.383	69.670	73.881	70.826	71.360	70.868
0.0916	83.756	73.997	72.302	72.160	74.625	72.526	66.386	69.670	73.881	70.810	71.360	70.872
0.1000	83.709	74.000	72.302	72.156	74.625	72.523	66.386	69.667	73.881	70.819	71.370	70.872
0.1083	83.788	73.997	72.302	72.156	74.622	72.526	66.386	69.667	73.884	70.826	71.360	70.872
0.1166	83.788	74.003	72.302	72.160	74.622	72.532	66.386	69.673	73.884	70.822	71.360	70.872
0.1250	83.788	74.000	72.302	72.160	74.625	72.526	66.386	69.670	73.888	70.816	71.370	70.872
0.1333	83.852	73.997	72.302	72.160	74.625	72.529	66.386	69.670	73.891	70.826	71.363	70.872
0.1416	83.899	74.003	72.302	72.163	74.625	72.529	66.386	69.673	73.891	70.819	71.357	70.872
0.1500	83.867	74.000	72.302	72.160	74.625	72.529	66.386	69.673	73.891	70.819	71.367	70.875
0.1583	83.899	74.003	72.302	72.163	74.625	72.529	66.386	69.670	73.891	70.826	71.363	70.872
0.1666	83.962	74.003	72.302	72.163	74.622	72.532	66.386	69.673	73.894	70.832	71.370	70.872
0.1750	83.962	74.003	72.299	72.163	74.625	72.532	66.386	69.677	73.897	70.822	71.357	70.875
0.1833	83.931	74.003	72.302	72.163	74.629	72.532	66.386	69.670	73.897	70.822	71.373	70.872
0.1916	84.042	74.003	72.302	72.163	74.625	72.532	66.386	69.670	73.900	70.829	71.363	70.872
0.2000	83.994	74.006	72.302	72.166	74.622	72.536	66.386	69.677	73.903	70.832	71.370	70.872
0.2083	84.042	74.006	72.302	72.163	74.629	72.532	66.386	69.677	73.903	70.816	71.367	70.872
0.2166	84.073	74.009	72.299	72.163	74.625	72.539	66.389	69.673	73.907	70.829	71.363	70.872
0.2250	84.057	74.009	72.302	72.166	74.622	72.536	66.386	69.677	73.907	70.832	71.373	70.872

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0.2333	84.073	74.009	72.302	72.163	74.625	72.536	66.386	69.680	73.907	70.819	71.367	70.868
0.2416	84.137	74.006	72.302	72.163	74.625	72.536	66.386	69.677	73.907	70.822	71.376	70.868
0.2500	84.152	74.009	72.302	72.166	74.625	72.536	66.386	69.673	73.907	70.829	71.367	70.875
0.2583	84.121	74.009	72.302	72.166	74.622	72.536	66.386	69.680	73.907	70.838	71.379	70.872
0.2666	84.152	74.012	72.302	72.169	74.622	72.539	66.386	69.680	73.910	70.826	71.367	70.872
0.2750	84.152	74.009	72.302	72.166	74.625	72.536	66.386	69.677	73.913	70.822	71.376	70.872
0.2833	84.184	74.012	72.302	72.166	74.625	72.539	66.389	69.677	73.913	70.832	71.367	70.872
0.2916	84.184	74.009	72.302	72.166	74.622	72.539	66.389	69.677	73.916	70.838	71.370	70.875
0.3000	84.232	74.016	72.302	72.166	74.622	72.542	66.389	69.683	73.916	70.835	71.370	70.872
0.3083	84.216	74.012	72.302	72.169	74.629	72.539	66.389	69.680	73.913	70.822	71.376	70.875
0.3166	84.247	74.012	72.302	72.169	74.625	72.539	66.389	69.680	73.913	70.829	71.373	70.875
0.3250	84.279	74.012	72.302	72.169	74.622	72.542	66.389	69.680	73.916	70.835	71.373	70.872
0.3333	84.216	74.016	72.302	72.169	74.622	72.542	66.389	69.683	73.923	70.838	71.382	70.872
0.3500	84.295	74.012	72.302	72.166	74.622	72.542	66.386	69.686	73.926	70.829	71.373	70.875
0.3666	84.342	74.012	72.302	72.169	74.619	72.545	66.386	69.683	73.926	70.835	71.370	70.868
0.3833	84.374	74.016	72.302	72.169	74.619	72.548	66.386	69.689	73.932	70.832	71.376	70.875
0.4000	84.374	74.016	72.302	72.169	74.622	72.548	66.386	69.686	73.932	70.835	71.379	70.872
0.4166	84.406	74.016	72.302	72.169	74.616	72.548	66.383	69.689	73.932	70.842	71.379	70.875
0.4333	84.453	74.019	72.302	72.169	74.622	72.551	66.383	69.692	73.935	70.829	71.376	70.872
0.4500	84.469	74.022	72.302	72.172	74.622	72.551	66.383	69.689	73.935	70.842	71.376	70.878
0.4666	84.453	74.022	72.302	72.175	74.616	72.551	66.383	69.692	73.938	70.842	71.379	70.875
0.4833	84.501	74.025	72.302	72.172	74.619	72.555	66.383	69.699	73.942	70.842	71.376	70.875
0.5000	84.517	74.025	72.302	72.175	74.619	72.555	66.383	69.692	73.942	70.845	71.379	70.875
0.5166	84.517	74.028	72.305	72.178	74.616	72.555	66.383	69.699	73.945	70.851	71.392	70.872
0.5333	84.580	74.028	72.302	72.175	74.619	72.555	66.383	69.699	73.948	70.838	71.382	70.875
0.5500	84.580	74.028	72.302	72.178	74.619	72.555	66.383	69.699	73.948	70.848	71.382	70.875
0.5666	84.580	74.028	72.302	72.178	74.616	72.555	66.383	69.702	73.951	70.854	71.392	70.875
0.5833	84.564	74.028	72.302	72.178	74.622	72.555	66.383	69.699	73.948	70.842	71.389	70.875
0.6000	84.580	74.031	72.302	72.178	74.616	72.558	66.383	69.702	73.954	70.851	71.385	70.872
0.6166	84.580	74.035	72.302	72.178	74.616	72.561	66.383	69.708	73.954	70.854	71.389	70.875
0.6333	84.612	74.035	72.302	72.178	74.622	72.558	66.383	69.702	73.958	70.848	71.395	70.875
0.6500	84.580	74.035	72.302	72.178	74.616	72.564	66.383	69.705	73.961	70.861	71.395	70.872
0.6666	84.596	74.035	72.302	72.182	74.619	72.561	66.383	69.708	73.961	70.848	71.385	70.872
0.6833	84.612	74.038	72.302	72.182	74.619	72.564	66.383	69.705	73.961	70.854	71.385	70.875
0.7000	84.675	74.038	72.302	72.185	74.619	72.564	66.383	69.711	73.961	70.854	71.382	70.875
0.7166	84.548	74.038	72.305	72.188	74.619	72.561	66.383	69.708	73.961	70.851	71.392	70.872
0.7333	84.612	74.038	72.302	72.185	74.616	72.564	66.386	69.708	73.961	70.861	71.392	70.878
0.7500	84.643	74.038	72.302	72.188	74.619	72.567	66.383	69.711	73.961	70.851	71.389	70.875
0.7666	84.612	74.041	72.305	72.185	74.616	72.564	66.383	69.708	73.961	70.861	71.389	70.875
0.7833	84.643	74.044	72.305	72.188	74.619	72.570	66.383	69.715	73.964	70.861	71.389	70.878
0.8000	84.612	74.041	72.302	72.188	74.619	72.564	66.383	69.708	73.964	70.857	71.398	70.875
0.8166	84.596	74.041	72.302	72.188	74.616	72.567	66.383	69.715	73.964	70.867	71.398	70.872
0.8333	84.612	74.044	72.302	72.191	74.616	72.567	66.383	69.715	73.964	70.864	71.389	70.878
0.8500	84.406	74.044	72.302	72.188	74.619	72.567	66.383	69.711	73.967	70.861	71.398	70.875
0.8666	84.612	74.044	72.302	72.191	74.616	72.567	66.383	69.715	73.964	70.867	71.398	70.875
0.8833	84.628	74.044	72.302	72.191	74.616	72.567	66.383	69.718	73.967	70.857	71.389	70.875
0.9000	84.628	74.047	72.302	72.188	74.606	72.567	66.383	69.715	73.967	70.861	71.395	70.872
0.9166	84.723	74.047	72.302	72.191	74.603	72.570	66.383	69.715	73.967	70.870	71.398	70.872
0.9333	84.469	74.047	72.305	72.191	74.606	72.567	66.383	69.718	73.967	70.857	71.392	70.872
0.9500	84.723	74.047	72.305	72.191	74.610	72.567	66.383	69.711	73.964	70.861	71.401	70.875
0.9666	84.707	74.047	72.305	72.194	74.603	72.567	66.383	69.718	73.967	70.870	71.401	70.875
0.9833	84.770	74.050	72.302	72.194	74.603	72.570	66.383	69.721	73.967	70.864	71.395	70.875

STEP14

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1.0000	84.691	74.047	72.302	72.191	74.603	72.574	66.383	69.715	73.967	70.867	71.392	70.872
1.2000	84.865	74.047	72.305	72.194	74.597	72.570	66.380	69.718	73.964	70.867	71.392	70.875
1.4000	84.675	74.044	72.305	72.194	74.597	72.570	66.380	69.721	73.964	70.857	71.395	70.872
1.6000	84.691	74.047	72.302	72.191	74.597	72.574	66.383	69.721	73.967	70.867	71.389	70.878
1.8000	84.675	74.044	72.302	72.194	74.594	72.570	66.383	69.718	73.961	70.870	71.392	70.872
2.0000	84.643	74.044	72.305	72.194	74.594	72.570	66.383	69.721	73.961	70.873	71.398	70.875
2.2000	84.754	74.047	72.302	72.194	74.594	72.574	66.383	69.724	73.961	70.870	71.389	70.878
2.4000	84.881	74.047	72.302	72.194	74.594	72.574	66.383	69.721	73.961	70.873	71.395	70.875
2.6000	84.691	74.047	72.302	72.191	74.597	72.570	66.383	69.721	73.961	70.864	71.398	70.875
2.8000	84.754	74.047	72.305	72.197	74.594	72.574	66.383	69.721	73.967	70.873	71.392	70.875
3.0000	84.754	74.047	72.305	72.194	74.594	72.574	66.383	69.721	73.964	70.873	71.395	70.875
3.2000	84.913	74.050	72.305	72.194	74.597	72.574	66.383	69.721	73.961	70.864	71.395	70.878
3.4000	84.928	74.050	72.305	72.197	74.594	72.570	66.383	69.724	73.964	70.873	71.395	70.872
3.6000	84.960	74.050	72.305	72.197	74.597	72.574	66.383	69.724	73.961	70.867	71.392	70.878
3.8000	84.928	74.050	72.302	72.197	74.597	72.574	66.383	69.727	73.961	70.867	71.389	70.875
4.0000	84.960	74.047	72.302	72.194	74.600	72.574	66.383	69.724	73.961	70.864	71.398	70.878
4.2000	84.976	74.050	72.305	72.197	74.597	72.577	66.383	69.721	73.964	70.867	71.389	70.875
4.4000	84.960	74.050	72.305	72.194	74.597	72.577	66.383	69.721	73.964	70.867	71.389	70.878
4.6000	85.182	74.047	72.305	72.197	74.597	72.574	66.383	69.724	73.964	70.867	71.398	70.881
4.8000	84.944	74.047	72.305	72.194	74.597	72.574	66.383	69.724	73.961	70.870	71.398	70.878
5.0000	84.976	74.053	72.305	72.194	74.597	72.577	66.383	69.727	73.964	70.873	71.389	70.878
5.2000	85.039	74.053	72.305	72.194	74.597	72.577	66.383	69.727	73.964	70.867	71.392	70.878
5.4000	85.023	74.050	72.305	72.197	74.597	72.589	66.383	69.727	73.964	70.870	71.389	70.881
5.6000	85.039	74.050	72.305	72.197	74.597	72.593	66.383	69.724	73.964	70.864	71.385	70.878
5.8000	85.071	74.050	72.305	72.197	74.600	72.574	66.383	69.724	73.961	70.861	71.404	70.881
6.0000	85.039	74.050	72.305	72.197	74.603	72.574	66.383	69.724	73.961	70.864	71.404	70.878
6.2000	85.103	74.050	72.305	72.197	74.600	72.577	66.383	69.724	73.958	70.867	71.395	70.884
6.4000	85.103	74.053	72.305	72.200	74.600	72.577	66.383	69.721	73.961	70.870	71.392	70.881
6.6000	85.119	74.053	72.302	72.197	74.600	72.577	66.383	69.724	73.958	70.870	71.395	70.884
6.8000	85.119	74.053	72.308	72.200	74.600	72.574	66.383	69.724	73.958	70.864	71.401	70.878
7.0000	85.119	74.053	72.305	72.200	74.597	72.577	66.383	69.727	73.961	70.870	71.395	70.881
7.2000	85.166	74.053	72.305	72.197	74.597	72.577	66.383	69.727	73.961	70.877	71.398	70.881
7.4000	85.134	74.050	72.305	72.197	74.597	72.580	66.383	69.721	73.964	70.873	71.392	70.878
7.6000	85.134	74.053	72.305	72.197	74.600	72.574	66.383	69.724	73.961	70.864	71.408	70.878
7.8000	85.182	74.050	72.305	72.197	74.600	72.577	66.383	69.727	73.961	70.864	71.395	70.881
8.0000	85.150	74.053	72.308	72.200	74.600	72.577	66.383	69.727	73.958	70.864	71.395	70.881
8.2000	85.150	74.053	72.305	72.200	74.600	72.580	66.383	69.730	73.954	70.870	71.395	70.881
8.4000	85.119	74.057	72.308	72.197	74.597	72.574	66.383	69.724	73.964	70.870	71.401	70.884
8.6000	85.119	74.053	72.308	72.200	74.600	72.577	66.383	69.724	73.961	70.867	71.404	70.881
8.8000	85.166	74.057	72.305	72.197	74.600	72.577	66.383	69.724	73.961	70.873	71.398	70.881
9.0000	85.134	74.053	72.305	72.197	74.600	72.577	66.383	69.727	73.958	70.864	71.404	70.881
9.2000	85.134	74.057	72.308	72.200	74.600	72.577	66.383	69.724	73.958	70.870	71.398	70.884
9.4000	85.134	74.057	72.308	72.200	74.597	72.580	66.383	69.724	73.958	70.857	71.395	70.881
9.6000	85.182	74.053	72.308	72.200	74.597	72.577	66.383	69.727	73.964	70.857	71.404	70.884
9.8000	85.182	74.057	72.308	72.200	74.594	72.577	66.383	69.730	73.961	70.880	71.408	70.881
10.0000	85.166	74.057	72.308	72.207	74.606	72.577	66.386	69.727	73.958	70.870	71.398	70.884
12.0000	85.214	74.060	72.312	72.207	74.603	72.583	66.389	69.734	73.980	70.870	71.395	70.878
14.0000	85.245	74.063	72.312	72.204	74.600	72.583	66.389	69.730	73.983	70.877	71.398	70.862
16.0000	85.324	74.063	72.315	72.207	74.597	72.583	66.392	69.734	73.983	70.877	71.404	70.859
18.0000	85.309	74.066	72.318	72.210	74.600	72.583	66.389	69.734	73.993	70.870	71.414	70.862
20.0000	85.261	74.072	72.312	72.207	74.600	72.586	66.389	69.740	73.989	70.883	71.414	70.859
22.0000	85.324	74.069	72.308	72.207	74.603	72.580	66.386	69.737	73.996	70.877	71.411	70.862

STEP15

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24.0000	85.340	74.072	72.308	72.207	74.606	72.583	66.386	69.734	73.999	70.873	71.411	70.862
26.0000	85.372	74.072	72.308	72.204	74.603	72.580	66.386	69.734	73.996	70.873	71.408	70.856
28.0000	85.530	74.072	72.308	72.204	74.603	72.580	66.383	69.734	73.999	70.877	71.408	70.856
30.0000	85.451	74.069	72.312	72.207	74.597	72.586	66.386	69.737	73.996	70.870	71.417	70.859
32.0000	85.514	74.066	72.315	72.210	74.591	72.589	66.389	69.740	73.993	70.880	71.414	70.856
34.0000	85.562	74.066	72.318	72.216	74.588	72.596	66.389	69.743	73.993	70.886	71.417	70.862
36.0000	85.514	74.069	72.318	72.216	74.591	72.596	66.392	69.746	73.996	70.883	71.420	70.862
38.0000	85.514	74.069	72.318	72.216	74.591	72.599	66.392	69.746	73.993	70.883	71.430	70.859
40.0000	85.514	74.069	72.321	72.219	74.588	72.602	66.395	69.749	73.996	70.883	71.423	70.862
42.0000	85.514	74.079	72.324	72.222	74.588	72.605	66.395	69.756	73.999	70.905	71.436	70.862
44.0000	85.609	74.076	72.324	72.225	74.584	72.605	66.395	69.753	74.002	70.905	71.423	70.862
46.0000	85.594	74.079	72.327	72.229	74.584	72.608	66.398	69.759	73.999	70.902	71.433	70.859
48.0000	85.609	74.076	72.327	72.229	74.584	72.608	66.398	69.753	73.999	70.896	71.430	70.859
50.0000	85.609	74.076	72.330	72.232	74.575	72.608	66.398	69.762	73.996	70.908	71.436	70.856
52.0000	85.673	74.079	72.333	72.235	74.578	72.612	66.402	69.759	73.993	70.899	71.442	70.859
54.0000	85.673	74.076	72.333	72.235	74.569	72.615	66.405	69.765	73.996	70.905	71.442	70.859
56.0000	85.689	74.076	72.333	72.235	74.569	72.618	66.405	69.765	73.993	70.915	71.439	70.859
58.0000	85.625	74.079	72.336	72.241	74.575	72.615	66.405	69.765	73.996	70.899	71.446	70.859
60.0000	85.736	74.072	72.333	72.241	74.572	72.621	66.405	69.768	73.993	70.908	71.436	70.856
62.0000	85.705	74.076	72.336	72.241	74.565	72.618	66.405	69.768	73.993	70.912	71.442	70.859
64.0000	85.752	74.076	72.336	72.241	74.569	72.621	66.405	69.765	73.996	70.905	71.446	70.859
66.0000	85.752	74.072	72.336	72.244	74.562	72.621	66.405	69.771	73.996	70.915	71.446	70.862
68.0000	85.784	74.076	72.343	72.247	74.562	72.627	66.408	69.768	73.996	70.908	71.449	70.862
70.0000	85.879	74.069	72.343	72.251	74.556	72.624	66.408	69.775	73.986	70.915	71.442	70.859
72.0000	85.831	74.069	72.343	72.251	74.550	72.631	66.411	69.778	73.983	70.924	71.458	70.859
74.0000	85.784	74.069	72.346	72.257	74.553	72.627	66.411	69.778	73.983	70.912	71.458	70.865
76.0000	85.815	74.066	72.346	72.254	74.540	72.634	66.411	69.781	73.983	70.928	71.455	70.856
78.0000	85.910	74.063	72.349	72.257	74.540	72.631	66.411	69.775	73.980	70.918	71.449	70.853
80.0000	85.879	74.063	72.349	72.254	74.534	72.634	66.414	69.781	73.977	70.931	71.458	70.853
82.0000	85.879	74.063	72.352	72.254	74.537	72.637	66.414	69.778	73.977	70.918	71.461	70.853
84.0000	85.958	74.057	72.349	72.257	74.531	72.637	66.414	69.781	73.970	70.931	71.452	70.853
86.0000	86.116	74.057	72.355	72.257	74.525	72.637	66.417	69.787	73.967	70.937	71.465	70.849
88.0000	85.990	74.053	72.355	72.260	74.525	72.640	66.417	69.787	73.967	70.931	71.458	70.849
90.0000	86.069	74.050	72.361	72.266	74.518	72.643	66.421	69.787	73.964	70.931	71.455	70.853
92.0000	86.116	74.053	72.358	72.263	74.518	72.643	66.421	69.787	73.964	70.928	71.468	70.849
94.0000	86.132	74.053	72.358	72.266	74.509	72.646	66.421	69.790	73.964	70.940	71.468	70.853
96.0000	86.116	74.057	72.358	72.269	74.515	72.643	66.421	69.787	73.964	70.931	71.461	70.853
98.0000	86.085	74.060	72.361	72.269	74.509	72.650	66.421	69.794	73.964	70.944	71.471	70.856
100.000	86.053	74.057	72.364	72.273	74.502	72.653	66.424	69.797	73.961	70.953	71.468	70.853

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SE2000
Environmental Logger
05/19 17:20

Unit# 148 Test 1

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.440	73.410	72.085	71.780	74.670	71.940	66.200	69.120	73.640	70.300	70.760	71.030
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 4 05/18 22:00:25

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	86.180	74.057	72.377	72.285	74.474	72.666	66.433	69.809	74.088	70.953	71.480	70.849
0.0083	86.861	74.057	72.377	72.285	74.484	72.666	66.436	69.806	74.069	70.950	71.480	70.853
0.0166	86.734	74.053	72.377	72.282	74.487	72.659	66.436	69.800	74.059	70.953	71.496	70.853
0.0250	87.399	74.053	72.377	72.285	74.487	72.666	66.436	69.800	74.056	70.956	71.483	70.853
0.0333	87.526	74.057	72.374	72.285	74.484	72.666	66.436	69.803	74.053	70.963	71.490	70.853
0.0416	87.874	74.053	72.374	72.288	74.490	72.662	66.436	69.803	74.050	70.950	71.487	70.856
0.0500	88.096	74.053	72.377	72.288	74.490	72.659	66.440	69.803	74.053	70.947	71.496	70.856
0.0583	88.524	74.060	72.377	72.288	74.490	72.666	66.440	69.803	74.053	70.956	71.483	70.853
0.0666	88.888	74.057	72.377	72.285	74.490	72.666	66.440	69.803	74.056	70.963	71.493	70.853
0.0750	89.015	74.057	72.377	72.288	74.490	72.666	66.440	69.803	74.056	70.953	71.487	70.856
0.0833	89.522	74.060	72.377	72.288	74.490	72.666	66.440	69.803	74.056	70.956	71.493	70.853
0.0916	89.648	74.057	72.377	72.288	74.490	72.669	66.440	69.803	74.059	70.959	71.493	70.853
0.1000	90.028	74.063	72.374	72.288	74.490	72.669	66.440	69.806	74.059	70.959	71.487	70.856
0.1083	90.314	74.060	72.377	72.288	74.493	72.669	66.440	69.806	74.059	70.950	71.490	70.856
0.1166	90.424	74.063	72.377	72.288	74.493	72.669	66.440	69.803	74.059	70.953	71.493	70.856
0.1250	90.773	74.060	72.377	72.291	74.490	72.672	66.443	69.800	74.069	70.959	71.483	70.856
0.1333	91.026	74.066	72.377	72.291	74.490	72.672	66.443	69.809	74.072	70.956	71.487	70.856
0.1416	91.185	74.063	72.377	72.288	74.493	72.672	66.443	69.806	74.078	70.950	71.499	70.856
0.1500	91.343	74.066	72.377	72.291	74.493	72.675	66.443	69.806	74.082	70.959	71.493	70.853
0.1583	91.692	74.066	72.377	72.288	74.490	72.675	66.443	69.803	74.088	70.963	71.493	70.856
0.1666	91.707	74.072	72.377	72.291	74.490	72.678	66.443	69.813	74.088	70.963	71.493	70.853
0.1750	91.993	74.066	72.377	72.288	74.493	72.678	66.443	69.809	74.094	70.953	71.496	70.853
0.1833	92.103	74.072	72.377	72.288	74.493	72.678	66.443	69.809	74.097	70.956	71.499	70.856
0.1916	92.040	74.069	72.377	72.291	74.493	72.681	66.443	69.809	74.104	70.963	71.499	70.856
0.2000	92.341	74.076	72.377	72.291	74.490	72.681	66.443	69.813	74.110	70.966	71.502	70.853
0.2083	92.246	74.076	72.377	72.291	74.493	72.681	66.443	69.813	74.113	70.950	71.502	70.853
0.2166	92.357	74.082	72.377	72.291	74.493	72.685	66.443	69.813	74.120	70.963	71.499	70.856
0.2250	92.531	74.079	72.377	72.291	74.490	72.685	66.443	69.816	74.120	70.966	71.499	70.853

STEP17

0.2333	92.341	74.082	72.377	72.291	74.490	72.688	66.446	69.819	74.126	70.972	71.509	70.856
0.2416	92.579	74.085	72.377	72.291	74.490	72.691	66.443	69.822	74.132	70.969	71.509	70.853
0.2500	92.531	74.085	72.377	72.295	74.493	72.694	66.446	69.822	74.136	70.959	71.499	70.856
0.2583	92.563	74.088	72.377	72.295	74.496	72.694	66.443	69.822	74.136	70.963	71.502	70.856
0.2666	92.547	74.088	72.377	72.295	74.496	72.694	66.446	69.819	74.139	70.966	71.509	70.849
0.2750	92.547	74.091	72.377	72.295	74.496	72.697	66.443	69.822	74.145	70.972	71.502	70.853
0.2833	92.594	74.091	72.377	72.298	74.490	72.697	66.446	69.825	74.148	70.975	71.518	70.856
0.2916	92.626	74.098	72.380	72.301	74.493	72.704	66.446	69.828	74.152	70.972	71.506	70.856
0.3000	92.594	74.095	72.377	72.298	74.496	72.700	66.446	69.825	74.152	70.966	71.518	70.856
0.3083	92.674	74.098	72.377	72.301	74.493	72.704	66.446	69.828	74.155	70.972	71.512	70.853
0.3166	92.674	74.098	72.377	72.301	74.490	72.704	66.446	69.832	74.158	70.982	71.515	70.859
0.3250	92.705	74.101	72.377	72.301	74.490	72.707	66.446	69.835	74.161	70.972	71.509	70.856
0.3333	92.721	74.104	72.377	72.301	74.496	72.707	66.446	69.832	74.161	70.975	71.518	70.856
0.3500	92.848	74.104	72.380	72.304	74.487	72.713	66.443	69.838	74.177	70.985	71.509	70.856
0.3666	92.990	74.110	72.380	72.307	74.484	72.719	66.443	69.844	74.187	70.991	71.525	70.856
0.3833	93.181	74.117	72.380	72.307	74.487	72.723	66.443	69.851	74.190	70.991	71.521	70.856
0.4000	93.323	74.117	72.377	72.307	74.490	72.726	66.443	69.854	74.196	70.982	71.525	70.856
0.4166	93.339	74.120	72.380	72.313	74.487	72.726	66.443	69.857	74.202	70.998	71.528	70.859
0.4333	93.386	74.126	72.380	72.313	74.484	72.729	66.443	69.863	74.209	71.004	71.544	70.856
0.4500	93.466	74.129	72.380	72.317	74.484	72.735	66.443	69.870	74.215	71.004	71.537	70.856
0.4666	93.450	74.132	72.380	72.320	74.487	72.735	66.443	69.870	74.221	70.998	71.544	70.856
0.4833	93.513	74.139	72.383	72.323	74.487	72.745	66.443	69.873	74.228	71.014	71.534	70.859
0.5000	93.418	74.142	72.380	72.326	74.484	72.745	66.440	69.879	74.234	71.014	71.550	70.856
0.5166	93.418	74.145	72.380	72.326	74.484	72.748	66.443	69.882	74.237	71.017	71.547	70.856
0.5333	93.402	74.145	72.380	72.329	74.487	72.748	66.443	69.889	74.241	71.010	71.547	70.856
0.5500	93.371	74.148	72.380	72.332	74.487	72.751	66.443	69.889	74.244	71.020	71.556	70.859
0.5666	93.355	74.151	72.383	72.335	74.484	72.751	66.443	69.892	74.247	71.030	71.559	70.856
0.5833	93.323	74.154	72.383	72.339	74.484	72.754	66.443	69.895	74.253	71.036	71.563	70.856
0.6000	93.307	74.161	72.383	72.342	74.484	72.761	66.443	69.898	74.253	71.033	71.553	70.856
0.6166	93.276	74.158	72.383	72.342	74.487	72.757	66.443	69.898	74.256	71.030	71.569	70.853
0.6333	93.276	74.161	72.383	72.345	74.484	72.761	66.443	69.901	74.260	71.039	71.566	70.856
0.6500	93.260	74.164	72.383	72.348	74.484	72.767	66.443	69.908	74.266	71.036	71.569	70.859
0.6666	93.181	74.167	72.386	72.345	74.487	72.761	66.443	69.904	74.263	71.033	71.575	70.856
0.6833	93.165	74.167	72.386	72.348	74.484	72.767	66.443	69.908	74.269	71.046	71.572	70.856
0.7000	93.149	74.170	72.383	72.354	74.484	72.770	66.443	69.914	74.269	71.046	71.566	70.856
0.7166	93.101	74.173	72.386	72.354	74.487	72.767	66.443	69.911	74.269	71.046	71.578	70.856
0.7333	93.086	74.170	72.383	72.357	74.487	72.770	66.443	69.914	74.269	71.049	71.569	70.856
0.7500	93.038	74.177	72.386	72.357	74.480	72.770	66.443	69.917	74.272	71.055	71.575	70.856
0.7666	92.990	74.173	72.383	72.357	74.490	72.770	66.443	69.917	74.269	71.046	71.581	70.856
0.7833	93.022	74.173	72.383	72.361	74.487	72.770	66.443	69.917	74.272	71.058	71.569	70.859
0.8000	92.911	74.177	72.383	72.361	74.484	72.773	66.443	69.923	74.272	71.058	71.581	70.856
0.8166	92.911	74.173	72.386	72.364	74.490	72.773	66.443	69.920	74.272	71.049	71.581	70.859
0.8333	92.895	74.177	72.386	72.364	74.487	72.773	66.443	69.920	74.272	71.055	71.572	70.862
0.8500	92.848	74.180	72.386	72.367	74.484	72.773	66.443	69.927	74.276	71.065	71.588	70.859
0.8666	92.848	74.177	72.386	72.367	74.487	72.776	66.443	69.927	74.276	71.055	71.575	70.859
0.8833	92.785	74.180	72.383	72.367	74.487	72.776	66.443	69.927	74.282	71.052	71.578	70.859
0.9000	92.753	74.183	72.386	72.370	74.487	72.780	66.443	69.923	74.279	71.061	71.575	70.859
0.9166	92.690	74.183	72.386	72.370	74.484	72.776	66.443	69.930	74.279	71.065	71.581	70.859
0.9333	92.642	74.180	72.386	72.370	74.487	72.776	66.443	69.930	74.279	71.055	71.581	70.862
0.9500	92.626	74.183	72.386	72.370	74.484	72.780	66.443	69.927	74.279	71.065	71.578	70.859
0.9666	92.579	74.186	72.386	72.373	74.484	72.780	66.443	69.933	74.279	71.065	71.575	70.856
0.9833	92.515	74.183	72.386	72.373	74.487	72.776	66.443	69.930	74.279	71.061	71.588	70.859

STEP18

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1.0000	92.499	74.183	72.386	72.373	74.484	72.780	66.446	69.927	74.282	71.068	71.575	70.859
1.2000	92.246	74.180	72.386	72.373	74.474	72.776	66.440	69.933	74.272	71.077	71.588	70.862
1.4000	92.119	74.180	72.386	72.373	74.474	72.780	66.443	69.933	74.269	71.074	71.585	70.856
1.6000	92.119	74.177	72.386	72.373	74.474	72.780	66.443	69.933	74.263	71.065	71.569	70.859
1.8000	92.072	74.180	72.386	72.373	74.471	72.776	66.443	69.933	74.263	71.071	71.581	70.856
2.0000	92.088	74.177	72.386	72.376	74.474	72.773	66.443	69.927	74.256	71.065	71.572	70.859
2.2000	92.103	74.177	72.386	72.376	74.474	72.776	66.443	69.933	74.256	71.065	71.569	70.862
2.4000	92.119	74.173	72.386	72.373	74.474	72.773	66.446	69.927	74.253	71.068	71.572	70.862
2.6000	92.135	74.173	72.386	72.373	74.471	72.773	66.446	69.927	74.250	71.065	71.569	70.859
2.8000	92.103	74.177	72.389	72.370	74.474	72.773	66.446	69.930	74.253	71.061	71.581	70.862
3.0000	92.151	74.173	72.389	72.373	74.471	72.773	66.446	69.927	74.250	71.061	71.569	70.862
3.2000	92.183	74.173	72.386	72.373	74.468	72.776	66.446	69.933	74.250	71.058	71.569	70.862
3.4000	92.167	74.173	72.389	72.373	74.468	72.773	66.446	69.927	74.253	71.065	71.572	70.862
3.6000	92.183	74.173	72.389	72.373	74.468	72.776	66.446	69.933	74.250	71.061	71.569	70.862
3.8000	92.151	74.173	72.389	72.373	74.465	72.776	66.446	69.933	74.250	71.071	71.578	70.859
4.0000	92.198	74.173	72.389	72.376	74.465	72.776	66.449	69.933	74.250	71.068	71.575	70.862
4.2000	92.230	74.170	72.389	72.373	74.468	72.776	66.449	69.930	74.244	71.068	71.572	70.862
4.4000	92.214	74.170	72.389	72.376	74.465	72.776	66.449	69.933	74.247	71.061	71.572	70.862
4.6000	92.214	74.167	72.389	72.376	74.461	72.776	66.449	69.930	74.247	71.071	71.575	70.862
4.8000	92.183	74.170	72.389	72.373	74.465	72.773	66.449	69.930	74.247	71.065	71.581	70.865
5.0000	92.230	74.167	72.392	72.379	74.465	72.780	66.449	69.933	74.247	71.071	71.578	70.862
5.2000	92.230	74.170	72.392	72.379	74.461	72.780	66.449	69.933	74.250	71.058	71.575	70.862
5.4000	92.246	74.170	72.392	72.376	74.461	72.780	66.452	69.933	74.247	71.071	71.585	70.862
5.6000	92.278	74.173	72.392	72.379	74.458	72.780	66.449	69.936	74.247	71.068	71.575	70.865
5.8000	92.246	74.170	72.396	72.379	74.465	72.780	66.449	69.936	74.241	71.065	71.581	70.865
6.0000	92.262	74.167	72.392	72.376	74.458	72.783	66.449	69.933	74.244	71.068	71.575	70.862
6.2000	92.262	74.167	72.392	72.376	74.458	72.783	66.449	69.933	74.244	71.074	71.578	70.862
6.4000	92.294	74.167	72.392	72.379	74.458	72.783	66.452	69.933	74.244	71.074	71.575	70.862
6.6000	92.294	74.167	72.392	72.379	74.458	72.783	66.449	69.933	74.244	71.077	71.578	70.865
6.8000	92.278	74.167	72.396	72.379	74.455	72.783	66.452	69.936	74.244	71.074	71.581	70.865
7.0000	92.294	74.170	72.396	72.379	74.458	72.786	66.452	69.936	74.241	71.071	71.585	70.872
7.2000	92.309	74.170	72.392	72.379	74.455	72.789	66.452	69.936	74.247	71.071	71.575	70.868
7.4000	92.294	74.170	72.392	72.379	74.452	72.783	66.452	69.939	74.244	71.077	71.591	70.872
7.6000	92.294	74.170	72.396	72.383	74.452	72.802	66.452	69.939	74.241	71.081	71.588	70.868
7.8000	92.357	74.170	72.396	72.386	74.455	72.789	66.452	69.939	74.247	71.074	71.578	70.868
8.0000	92.341	74.173	72.396	72.383	74.455	72.789	66.452	69.939	74.241	71.071	71.591	70.865
8.2000	92.373	74.170	72.396	72.383	74.452	72.795	66.452	69.942	74.247	71.071	71.585	70.868
8.4000	92.325	74.173	72.396	72.383	74.452	72.789	66.452	69.942	74.244	71.081	71.594	70.868
8.6000	92.325	74.173	72.396	72.383	74.452	72.789	66.452	69.939	74.244	71.081	71.594	70.868
8.8000	92.373	74.170	72.396	72.386	74.455	72.789	66.452	69.939	74.244	71.071	71.581	70.868
9.0000	92.389	74.177	72.396	72.386	74.452	72.789	66.452	69.942	74.241	71.077	71.588	70.868
9.2000	92.373	74.173	72.399	72.386	74.455	72.786	66.452	69.939	74.241	71.084	71.594	70.872
9.4000	92.341	74.173	72.396	72.383	74.458	72.789	66.455	69.939	74.241	71.074	71.591	70.868
9.6000	92.389	74.177	72.396	72.386	74.455	72.789	66.452	69.942	74.247	71.074	71.585	70.868
9.8000	92.389	74.173	72.396	72.386	74.452	72.789	66.452	69.939	74.241	71.084	71.594	70.868
10.0000	92.373	74.180	72.399	72.389	74.458	72.789	66.455	69.946	74.241	71.084	71.585	70.868
12.0000	92.420	74.183	72.402	72.392	74.452	72.792	66.455	69.949	74.260	71.084	71.585	70.865
14.0000	92.499	74.183	72.402	72.392	74.458	72.792	66.458	69.952	74.263	71.084	71.594	70.865
16.0000	92.547	74.183	72.402	72.395	74.446	72.799	66.462	69.955	74.263	71.090	71.597	70.868
18.0000	92.626	74.180	72.405	72.395	74.443	72.802	66.462	69.955	74.263	71.084	71.600	70.859
20.0000	92.690	74.180	72.408	72.398	74.439	72.805	66.465	69.942	74.266	71.087	71.600	70.862
22.0000	92.737	74.186	72.411	72.401	74.436	72.811	66.465	69.939	74.266	71.090	71.604	70.865

STEP19

4233

24.0000	92.816	74.189	72.405	72.398	74.439	72.808	66.465	69.939	74.272	71.087	71.607	70.862
26.0000	92.832	74.192	72.405	72.398	74.436	72.805	66.465	69.939	74.272	71.090	71.604	70.859
28.0000	92.880	74.192	72.408	72.401	74.433	72.808	66.465	69.949	74.269	71.100	71.604	70.859
30.0000	92.943	74.192	72.411	72.405	74.436	72.815	66.468	69.946	74.269	71.090	71.616	70.859
32.0000	92.990	74.196	72.417	72.411	74.430	72.818	66.471	69.952	74.269	71.100	71.616	70.865
34.0000	93.038	74.192	72.417	72.411	74.424	72.821	66.474	69.955	74.272	71.113	71.619	70.862
36.0000	93.117	74.196	72.420	72.417	74.420	72.821	66.474	69.955	74.269	71.100	71.619	70.862
38.0000	93.165	74.196	72.424	72.420	74.417	72.827	66.477	69.958	74.269	71.103	71.626	70.865
40.0000	93.181	74.199	72.420	72.417	74.414	72.827	66.477	69.958	74.266	71.109	71.629	70.856
42.0000	93.228	74.202	72.424	72.420	74.414	72.824	66.474	69.965	74.269	71.109	71.626	70.862
44.0000	93.291	74.196	72.420	72.423	74.417	72.834	66.474	69.961	74.266	71.109	71.626	70.865
46.0000	93.323	74.202	72.420	72.420	74.414	72.830	66.474	69.961	74.269	71.116	71.619	70.862
48.0000	93.371	74.202	72.424	72.423	74.414	72.834	66.474	69.965	74.269	71.122	71.629	70.859
50.0000	93.402	74.208	72.424	72.427	74.411	72.834	66.477	69.968	74.263	71.122	71.629	70.862
52.0000	93.450	74.208	72.427	72.430	74.411	72.837	66.477	69.968	74.266	71.116	71.638	70.862
54.0000	93.466	74.214	72.427	72.427	74.408	72.837	66.477	69.974	74.266	71.122	71.635	70.862
56.0000	93.497	74.218	72.430	72.430	74.411	72.840	66.481	69.971	74.269	71.128	71.632	70.862
58.0000	93.592	74.221	72.430	72.433	74.414	72.843	66.484	69.974	74.272	71.116	71.645	70.865
60.0000	93.640	74.233	72.430	72.436	74.408	72.843	66.481	69.980	74.276	71.132	71.642	70.865
62.0000	93.656	74.237	72.436	72.439	74.411	72.846	66.484	69.980	74.276	71.128	71.642	70.862
64.0000	93.703	74.240	72.433	72.439	74.414	72.849	66.481	69.977	74.279	71.125	71.648	70.862
66.0000	93.735	74.246	72.433	72.439	74.411	72.853	66.481	69.984	74.282	71.128	71.645	70.865
68.0000	93.751	74.249	72.430	72.439	74.417	72.846	66.477	69.977	74.282	71.128	71.635	70.865
70.0000	93.846	74.249	72.433	72.436	74.411	72.849	66.477	69.984	74.276	71.132	71.645	70.868
72.0000	93.830	74.252	72.433	72.439	74.414	72.849	66.477	69.980	74.282	71.128	71.648	70.865
74.0000	93.893	74.252	72.439	72.445	74.411	72.856	66.481	69.984	74.276	71.128	71.651	70.865
76.0000	93.925	74.255	72.439	72.448	74.405	72.856	66.484	69.990	74.276	71.138	71.645	70.865
78.0000	93.925	74.255	72.439	72.448	74.405	72.862	66.484	69.990	74.276	71.141	71.645	70.865
80.0000	93.973	74.259	72.442	72.452	74.402	72.862	66.487	69.996	74.279	71.144	71.657	70.872
82.0000	94.052	74.262	72.445	72.452	74.398	72.865	66.487	69.996	74.276	71.144	71.661	70.868
84.0000	94.036	74.262	72.445	72.458	74.402	72.865	66.490	69.996	74.279	71.148	71.648	70.872
86.0000	94.083	74.265	72.448	72.455	74.398	72.868	66.490	69.999	74.272	71.151	71.657	70.868
88.0000	94.163	74.262	72.448	72.458	74.398	72.868	66.490	69.996	74.279	71.144	71.661	70.875
90.0000	94.163	74.262	72.445	72.458	74.398	72.872	66.490	69.996	74.272	71.141	71.664	70.865
92.0000	94.163	74.265	72.445	72.458	74.398	72.872	66.490	69.999	74.272	71.151	71.654	70.872
94.0000	94.242	74.265	72.445	72.461	74.392	72.868	66.490	69.999	74.272	71.148	71.657	70.872
96.0000	94.258	74.268	72.448	72.461	74.392	72.872	66.490	70.003	74.266	71.151	71.654	70.872
98.0000	94.289	74.268	72.448	72.458	74.392	72.872	66.490	69.999	74.266	71.154	71.664	70.872
100.000	94.353	74.265	72.448	72.464	74.389	72.875	66.490	69.999	74.256	71.148	71.673	70.862

STEP20

SE2000
Environmental Logger
05/19 17:33

Unit# 148 Test 2

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.440	73.410	72.085	71.780	74.670	71.940	66.200	69.120	73.640	70.300	70.760	71.030
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 0 05/18 23:46:39

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	94.416	74.268	72.442	72.458	74.383	72.875	66.490	69.974	74.269	71.144	71.661	70.865
0.0083	94.670	74.265	72.445	72.458	74.389	72.875	66.490	69.971	74.244	71.148	71.673	70.865
0.0166	94.400	74.271	72.445	72.458	74.389	72.875	66.490	69.971	74.234	71.154	71.670	70.868
0.0250	94.796	74.268	72.448	72.458	74.386	72.872	66.493	69.971	74.231	71.160	71.673	70.868
0.0333	94.638	74.271	72.445	72.461	74.386	72.875	66.493	69.974	74.231	71.157	71.673	70.865
0.0416	95.050	74.268	72.445	72.458	74.392	72.872	66.493	69.971	74.231	71.148	71.676	70.868
0.0500	94.986	74.271	72.445	72.458	74.392	72.872	66.493	69.968	74.228	71.154	71.676	70.865
0.0583	95.398	74.271	72.445	72.461	74.392	72.875	66.493	69.968	74.225	71.160	71.670	70.868
0.0666	95.335	74.271	72.445	72.461	74.392	72.872	66.493	69.971	74.225	71.160	71.686	70.868
0.0750	95.731	74.271	72.445	72.461	74.392	72.875	66.493	69.971	74.225	71.154	71.670	70.868
0.0833	95.810	74.271	72.442	72.461	74.398	72.875	66.496	69.971	74.225	71.151	71.673	70.868
0.0916	96.016	74.271	72.445	72.458	74.398	72.872	66.496	69.968	74.225	71.154	71.679	70.868
0.1000	96.238	74.271	72.445	72.461	74.395	72.875	66.496	69.968	74.225	71.160	71.673	70.868
0.1083	96.349	74.271	72.445	72.461	74.395	72.872	66.496	69.968	74.225	71.164	71.683	70.872
0.1166	96.428	74.274	72.445	72.464	74.395	72.875	66.496	69.971	74.228	71.157	71.673	70.868
0.1250	96.713	74.274	72.445	72.464	74.395	72.875	66.496	69.971	74.234	71.151	71.673	70.868
0.1333	96.681	74.271	72.445	72.461	74.398	72.875	66.496	69.971	74.228	71.154	71.679	70.868
0.1416	96.982	74.274	72.445	72.461	74.398	72.878	66.496	69.968	74.234	71.164	71.670	70.868
0.1500	96.967	74.274	72.445	72.461	74.395	72.875	66.496	69.971	74.234	71.167	71.683	70.872
0.1583	97.109	74.274	72.445	72.464	74.395	72.878	66.496	69.971	74.241	71.154	71.673	70.872
0.1666	97.173	74.274	72.445	72.461	74.402	72.878	66.496	69.968	74.244	71.151	71.679	70.868
0.1750	97.268	74.278	72.442	72.461	74.398	72.881	66.496	69.968	74.244	71.160	71.673	70.868
0.1833	97.331	74.274	72.445	72.464	74.398	72.881	66.496	69.971	74.247	71.167	71.679	70.868
0.1916	97.394	74.278	72.445	72.461	74.395	72.881	66.496	69.974	74.247	71.167	71.686	70.868
0.2000	97.553	74.281	72.445	72.464	74.395	72.881	66.496	69.974	74.250	71.157	71.673	70.868
0.2083	97.553	74.278	72.445	72.461	74.402	72.881	66.496	69.974	74.250	71.157	71.683	70.872
0.2166	97.648	74.284	72.445	72.461	74.402	72.881	66.496	69.971	74.253	71.160	71.683	70.868
0.2250	97.711	74.278	72.445	72.461	74.398	72.884	66.496	69.974	74.256	71.164	71.686	70.868

STEP21

0.2333	97.806	74.284	72.445	72.464	74.395	72.884	66.496	69.977	74.253	71.167	71.679	70.868
0.2416	97.901	74.281	72.445	72.464	74.398	72.884	66.496	69.974	74.260	71.154	71.679	70.872
0.2500	97.885	74.284	72.445	72.464	74.402	72.884	66.500	69.974	74.256	71.157	71.686	70.872
0.2583	97.980	74.281	72.442	72.467	74.398	72.887	66.500	69.974	74.263	71.167	71.676	70.868
0.2666	97.980	74.284	72.445	72.464	74.398	72.887	66.496	69.977	74.263	71.167	71.689	70.865
0.2750	98.155	74.287	72.445	72.464	74.398	72.887	66.500	69.977	74.266	71.160	71.676	70.872
0.2833	98.139	74.287	72.445	72.464	74.402	72.884	66.500	69.977	74.263	71.160	71.686	70.868
0.2916	98.250	74.287	72.445	72.467	74.398	72.891	66.500	69.977	74.266	71.167	71.683	70.868
0.3000	98.297	74.290	72.445	72.467	74.398	72.891	66.500	69.984	74.266	71.167	71.686	70.872
0.3083	98.392	74.290	72.445	72.467	74.398	72.891	66.500	69.984	74.269	71.160	71.679	70.868
0.3166	98.424	74.290	72.445	72.464	74.402	72.891	66.500	69.980	74.269	71.160	71.692	70.868
0.3250	98.519	74.290	72.445	72.467	74.398	72.894	66.500	69.980	74.272	71.167	71.686	70.868
0.3333	98.567	74.290	72.445	72.467	74.398	72.894	66.500	69.980	74.276	71.173	71.689	70.868
0.3500	98.820	74.293	72.445	72.467	74.392	72.897	66.496	69.990	74.279	71.167	71.683	70.868
0.3666	99.105	74.290	72.445	72.470	74.392	72.897	66.496	69.990	74.282	71.164	71.679	70.868
0.3833	99.375	74.297	72.445	72.467	74.395	72.900	66.496	69.990	74.285	71.167	71.689	70.872
0.4000	99.628	74.293	72.445	72.470	74.392	72.900	66.496	69.993	74.291	71.176	71.692	70.868
0.4166	99.787	74.300	72.445	72.470	74.392	72.900	66.493	69.996	74.298	71.179	71.698	70.872
0.4333	100.040	74.300	72.445	72.474	74.395	72.903	66.493	69.999	74.301	71.170	71.692	70.868
0.4500	100.183	74.306	72.445	72.474	74.392	72.906	66.493	69.999	74.304	71.176	71.695	70.868
0.4666	100.357	74.303	72.448	72.477	74.392	72.910	66.493	70.003	74.311	71.186	71.702	70.868
0.4833	100.515	74.306	72.445	72.477	74.392	72.910	66.493	70.006	74.314	71.176	71.698	70.872
0.5000	100.690	74.312	72.445	72.477	74.395	72.913	66.493	70.006	74.317	71.183	71.702	70.872
0.5166	100.880	74.312	72.448	72.480	74.392	72.916	66.493	70.009	74.320	71.192	71.695	70.872
0.5333	101.101	74.319	72.445	72.480	74.389	72.922	66.493	70.015	74.323	71.192	71.702	70.868
0.5500	101.323	74.319	72.448	72.483	74.395	72.919	66.493	70.015	74.326	71.186	71.711	70.872
0.5666	101.624	74.319	72.445	72.483	74.392	72.922	66.493	70.015	74.333	71.199	71.708	70.872
0.5833	101.862	74.325	72.445	72.486	74.389	72.929	66.493	70.022	74.339	71.202	71.708	70.868
0.6000	102.052	74.328	72.448	72.489	74.389	72.929	66.493	70.028	74.342	71.192	71.705	70.872
0.6166	102.115	74.331	72.448	72.489	74.395	72.929	66.493	70.025	74.346	71.199	71.711	70.872
0.6333	102.179	74.328	72.448	72.496	74.389	72.932	66.493	70.031	74.349	71.208	71.717	70.872
0.6500	102.258	74.331	72.448	72.496	74.389	72.935	66.493	70.034	74.355	71.195	71.711	70.868
0.6666	102.274	74.334	72.448	72.492	74.395	72.935	66.493	70.034	74.361	71.202	71.724	70.872
0.6833	102.416	74.338	72.448	72.496	74.389	72.938	66.493	70.037	74.365	71.211	71.721	70.868
0.7000	102.480	74.344	72.448	72.499	74.389	72.941	66.493	70.044	74.371	71.211	71.730	70.872
0.7166	102.733	74.341	72.448	72.502	74.392	72.941	66.493	70.044	74.374	71.208	71.721	70.868
0.7333	102.955	74.344	72.448	72.502	74.392	72.948	66.496	70.047	74.374	71.215	71.717	70.872
0.7500	103.145	74.347	72.452	72.505	74.389	72.948	66.493	70.050	74.377	71.227	71.730	70.872
0.7666	103.351	74.350	72.448	72.505	74.392	72.951	66.493	70.053	74.381	71.215	71.721	70.872
0.7833	103.367	74.353	72.448	72.505	74.395	72.948	66.493	70.053	74.384	71.221	71.733	70.872
0.8000	103.415	74.353	72.448	72.508	74.395	72.951	66.496	70.056	74.387	71.221	71.736	70.872
0.8166	103.399	74.353	72.452	72.514	74.389	72.954	66.493	70.060	74.390	71.234	71.740	70.875
0.8333	103.494	74.356	72.448	72.511	74.389	72.957	66.493	70.063	74.393	71.221	71.730	70.872
0.8500	103.510	74.360	72.452	72.514	74.395	72.960	66.493	70.063	74.393	71.234	71.736	70.872
0.8666	103.573	74.363	72.448	72.518	74.389	72.964	66.493	70.069	74.400	71.234	71.733	70.872
0.8833	103.605	74.363	72.452	72.518	74.392	72.960	66.496	70.066	74.403	71.227	71.746	70.872
0.9000	103.763	74.366	72.452	72.518	74.395	72.964	66.496	70.069	74.400	71.240	71.736	70.872
0.9166	103.874	74.366	72.452	72.521	74.389	72.964	66.496	70.072	74.403	71.246	71.746	70.868
0.9333	103.985	74.366	72.452	72.521	74.395	72.964	66.496	70.075	74.409	71.237	71.743	70.872
0.9500	104.112	74.366	72.452	72.524	74.392	72.967	66.493	70.075	74.409	71.243	71.740	70.872
0.9666	104.096	74.372	72.452	72.524	74.389	72.970	66.496	70.082	74.412	71.250	71.749	70.872
0.9833	104.159	74.369	72.452	72.527	74.395	72.970	66.496	70.078	74.415	71.237	71.746	70.872

STEP22

1.0000	104.175	74.379	72.452	72.530	74.395	72.970	66.496	70.082	74.415	71.250	71.740	70.875
1.2000	104.476	74.379	72.452	72.536	74.386	72.983	66.493	70.097	74.428	71.262	71.749	70.872
1.4000	104.698	74.391	72.452	72.543	74.386	72.989	66.493	70.107	74.435	71.269	71.759	70.868
1.6000	104.888	74.398	72.452	72.549	74.380	72.998	66.493	70.116	74.444	71.278	71.755	70.872
1.8000	105.189	74.401	72.455	72.555	74.383	72.995	66.493	70.120	74.447	71.275	71.762	70.872
2.0000	105.395	74.404	72.455	72.558	74.380	73.002	66.496	70.123	74.454	71.288	71.768	70.875
2.2000	105.570	74.410	72.455	72.562	74.386	73.005	66.496	70.126	74.454	71.288	71.765	70.875
2.4000	105.601	74.413	72.455	72.565	74.386	73.008	66.496	70.129	74.457	71.291	71.765	70.872
2.6000	105.570	74.410	72.458	72.568	74.383	73.008	66.496	70.129	74.460	71.297	71.771	70.875
2.8000	105.649	74.416	72.458	72.568	74.386	73.008	66.496	70.132	74.457	71.291	71.771	70.875
3.0000	105.601	74.413	72.458	72.568	74.383	73.008	66.496	70.135	74.460	71.288	71.774	70.875
3.2000	105.617	74.413	72.458	72.565	74.383	73.008	66.496	70.135	74.457	71.288	71.777	70.875
3.4000	105.665	74.416	72.458	72.568	74.386	73.014	66.496	70.135	74.463	71.297	71.762	70.878
3.6000	105.665	74.413	72.458	72.571	74.383	73.011	66.496	70.139	74.457	71.288	71.768	70.878
3.8000	105.617	74.420	72.458	72.571	74.383	73.008	66.496	70.139	74.460	71.304	71.784	70.878
4.0000	105.633	74.416	72.461	72.571	74.386	73.008	66.500	70.135	74.460	71.301	71.781	70.878
4.2000	105.680	74.416	72.458	72.568	74.386	73.008	66.496	70.135	74.460	71.288	71.774	70.878
4.4000	105.665	74.416	72.458	72.568	74.383	73.011	66.496	70.135	74.457	71.297	71.777	70.878
4.6000	105.680	74.420	72.458	72.571	74.383	73.011	66.496	70.139	74.457	71.294	71.771	70.878
4.8000	105.696	74.420	72.458	72.568	74.386	73.008	66.496	70.135	74.460	71.291	71.774	70.878
5.0000	105.680	74.416	72.458	72.568	74.383	73.011	66.496	70.135	74.457	71.301	71.768	70.878
5.2000	105.665	74.420	72.458	72.568	74.383	73.008	66.496	70.139	74.457	71.297	71.774	70.875
5.4000	105.696	74.420	72.461	72.568	74.383	73.011	66.496	70.135	74.457	71.301	71.781	70.878
5.6000	105.728	74.416	72.458	72.568	74.386	73.008	66.496	70.135	74.450	71.297	71.771	70.881
5.8000	105.712	74.423	72.458	72.571	74.380	73.011	66.496	70.139	74.454	71.297	71.768	70.878
6.0000	105.728	74.416	72.461	72.571	74.383	73.008	66.496	70.135	74.454	71.301	71.777	70.881
6.2000	105.712	74.423	72.461	72.568	74.386	73.011	66.496	70.135	74.450	71.297	71.774	70.878
6.4000	105.728	74.420	72.458	72.571	74.380	73.011	66.496	70.139	74.454	71.294	71.771	70.881
6.6000	105.680	74.423	72.458	72.568	74.383	73.008	66.496	70.135	74.454	71.297	71.784	70.881
6.8000	105.696	74.423	72.461	72.568	74.380	73.011	66.496	70.139	74.447	71.304	71.781	70.881
7.0000	105.775	74.420	72.458	72.568	74.383	73.011	66.500	70.132	74.450	71.301	71.768	70.881
7.2000	105.791	74.420	72.458	72.571	74.376	73.011	66.496	70.139	74.454	71.294	71.771	70.878
7.4000	105.712	74.423	72.458	72.571	74.380	73.011	66.496	70.139	74.450	71.297	71.781	70.881
7.6000	105.775	74.416	72.461	72.571	74.383	73.011	66.496	70.132	74.447	71.297	71.771	70.878
7.8000	105.775	74.416	72.458	72.571	74.383	73.008	66.496	70.135	74.450	71.288	71.781	70.881
8.0000	105.760	74.420	72.461	72.571	74.380	73.014	66.496	70.139	74.447	71.304	71.774	70.881
8.2000	105.791	74.423	72.458	72.571	74.386	73.014	66.496	70.135	74.447	71.297	71.774	70.884
8.4000	105.791	74.423	72.461	72.571	74.380	73.011	66.496	70.139	74.450	71.301	71.771	70.878
8.6000	105.775	74.420	72.464	72.571	74.383	73.011	66.496	70.135	74.444	71.301	71.774	70.881
8.8000	105.775	74.423	72.461	72.571	74.386	73.011	66.496	70.135	74.447	71.301	71.774	70.881
9.0000	105.807	74.423	72.461	72.574	74.380	73.017	66.500	70.142	74.444	71.301	71.777	70.881
9.2000	105.807	74.423	72.461	72.571	74.383	73.017	66.500	70.135	74.450	71.301	71.771	70.881
9.4000	105.839	74.420	72.461	72.571	74.383	73.014	66.500	70.139	74.447	71.307	71.784	70.881
9.6000	105.775	74.420	72.461	72.571	74.386	73.011	66.500	70.139	74.447	71.294	71.784	70.881
9.8000	105.791	74.420	72.464	72.574	74.380	73.011	66.500	70.139	74.447	71.307	71.784	70.884
10.0000	105.871	74.426	72.464	72.577	74.386	73.011	66.503	70.139	74.447	71.297	71.774	70.884
12.0000	105.871	74.426	72.467	72.577	74.376	73.017	66.503	70.142	74.470	71.310	71.774	70.881
14.0000	105.871	74.426	72.467	72.580	74.380	73.017	66.506	70.142	74.492	71.301	71.784	70.884
16.0000	106.013	74.426	72.470	72.584	74.380	73.021	66.506	70.145	74.489	71.313	71.784	70.881
18.0000	106.029	74.426	72.470	72.584	74.376	73.021	66.506	70.148	74.492	71.304	71.781	70.881
20.0000	105.997	74.429	72.476	72.590	74.386	73.021	66.509	70.148	74.476	71.301	71.796	70.891
22.0000	106.045	74.429	72.473	72.587	74.376	73.024	66.512	70.151	74.498	71.304	71.787	70.881

STEP23

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24.0000	106.061	74.432	72.480	72.590	74.373	73.027	66.512	70.154	74.498	71.317	71.800	70.881
26.0000	106.045	74.435	72.483	72.596	74.376	73.030	66.515	70.154	74.505	71.307	71.806	70.881
28.0000	106.077	74.435	72.486	72.599	74.367	73.036	66.518	70.161	74.505	71.323	71.812	70.881
30.0000	106.029	74.442	72.489	72.602	74.370	73.036	66.522	70.164	74.508	71.320	71.803	70.881
32.0000	106.108	74.445	72.489	72.602	74.370	73.040	66.525	70.164	74.501	71.320	71.800	70.884
34.0000	106.156	74.451	72.492	72.602	74.370	73.040	66.525	70.164	74.498	71.320	71.809	70.884
36.0000	106.156	74.448	72.492	72.606	74.487	73.052	66.525	70.164	74.514	71.317	71.815	70.884
38.0000	106.140	74.454	72.492	72.606	74.521	73.065	66.528	70.164	74.517	71.320	71.819	70.884
40.0000	106.203	74.461	72.498	72.612	74.521	73.065	66.528	70.164	74.524	71.326	71.812	70.881
42.0000	106.187	74.457	72.498	72.612	74.518	73.068	66.531	70.170	74.517	71.336	71.812	70.881
44.0000	106.187	74.461	72.504	72.615	74.518	73.078	66.534	70.177	74.520	71.336	71.828	70.881

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SE2000
Environmental Logger
06/02 09:30

Unit# 148 Test 0

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.550	73.555	72.250	71.950	73.890	72.100	66.350	69.270	73.810	70.470	70.915	81.040
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 0 05/25 10:17:38

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	73.764	73.561	72.237	71.953	73.886	72.125	66.378	69.266	73.736	70.473	70.933	81.036
0.0083	70.185	73.555	72.237	71.953	73.886	72.128	66.378	69.263	73.733	70.476	70.940	81.036
0.0166	70.898	73.558	72.237	71.953	73.886	72.128	66.378	69.266	73.730	70.470	70.933	81.036
0.0250	73.716	73.555	72.237	71.953	73.886	72.125	66.378	69.263	73.733	70.470	70.940	81.036
0.0333	74.286	73.558	72.237	71.953	73.886	72.128	66.378	69.263	73.733	70.470	70.937	81.036
0.0416	74.191	73.555	72.237	71.953	73.886	72.128	66.378	69.263	73.743	70.473	70.937	81.036
0.0500	75.252	73.561	72.237	71.953	73.886	72.131	66.375	69.266	73.746	70.470	70.933	81.036
0.0583	75.964	73.558	72.234	71.953	73.883	72.131	66.375	69.263	73.752	70.473	70.943	81.036
0.0666	76.297	73.558	72.234	71.950	73.883	72.131	66.375	69.266	73.759	70.473	70.940	81.033
0.0750	76.835	73.564	72.234	71.953	73.883	72.134	66.375	69.270	73.768	70.470	70.940	81.036
0.0833	77.358	73.564	72.234	71.953	73.883	72.134	66.375	69.266	73.775	70.470	70.943	81.033
0.0916	77.880	73.570	72.234	71.953	73.883	72.144	66.375	69.266	73.784	70.473	70.937	81.033
0.1000	78.292	73.567	72.234	71.953	73.883	72.144	66.375	69.266	73.797	70.476	70.943	81.033
0.1083	78.736	73.570	72.234	71.953	73.886	72.144	66.375	69.270	73.800	70.470	70.943	81.033
0.1166	79.163	73.570	72.234	71.953	73.883	72.150	66.375	69.270	73.813	70.473	70.943	81.033
0.1250	79.670	73.580	72.234	71.953	73.886	72.153	66.372	69.273	73.822	70.482	70.946	81.033
0.1333	79.923	73.583	72.234	71.956	73.886	72.157	66.372	69.273	73.832	70.470	70.940	81.033
0.1416	80.351	73.586	72.234	71.953	73.886	72.160	66.372	69.273	73.841	70.479	70.949	81.033
0.1500	79.955	73.586	72.234	71.953	73.883	72.166	66.372	69.276	73.851	70.482	70.949	81.030
0.1583	81.459	73.592	72.234	71.956	73.886	72.172	66.372	69.279	73.860	70.479	70.943	81.030
0.1666	81.808	73.596	72.234	71.956	73.886	72.172	66.372	69.282	73.870	70.476	70.956	81.033
0.1750	82.457	73.599	72.234	71.956	73.886	72.179	66.368	69.285	73.883	70.482	70.952	81.030
0.1833	83.075	73.608	72.234	71.956	73.883	72.185	66.368	69.292	73.892	70.479	70.959	81.030
0.1916	82.980	73.608	72.234	71.959	73.886	72.185	66.368	69.292	73.902	70.485	70.965	81.030
0.2000	83.185	73.611	72.234	71.959	73.883	72.195	66.368	69.295	73.914	70.485	70.959	81.030
0.2083	83.787	73.621	72.231	71.959	73.886	72.201	66.368	69.301	73.921	70.485	70.965	81.030
0.2166	83.835	73.621	72.234	71.962	73.886	72.201	66.368	69.304	73.934	70.485	70.971	81.030
0.2250	83.550	73.627	72.231	71.962	73.883	72.207	66.368	69.307	73.946	70.495	70.968	81.030

CRT1

0.2333	84.500	73.633	72.231	71.965	73.883	72.217	66.368	69.311	73.956	70.495	70.965	81.030
0.2416	84.373	73.640	72.231	71.965	73.886	72.217	66.365	69.314	73.965	70.495	70.978	81.030
0.2500	84.262	73.643	72.231	71.968	73.883	72.223	66.365	69.320	73.978	70.498	70.987	81.027
0.2583	84.405	73.649	72.231	71.968	73.883	72.229	66.365	69.326	73.988	70.495	70.981	81.027
0.2666	85.118	73.652	72.231	71.971	73.886	72.229	66.365	69.326	73.994	70.501	70.990	81.030
0.2750	84.532	73.659	72.231	71.971	73.883	72.236	66.365	69.333	74.003	70.505	70.987	81.030
0.2833	83.676	73.662	72.234	71.975	73.883	72.242	66.365	69.339	74.016	70.511	71.000	81.030
0.2916	84.056	73.668	72.231	71.975	73.883	72.245	66.365	69.345	74.023	70.508	70.994	81.030
0.3000	85.973	73.674	72.231	71.978	73.883	72.249	66.362	69.345	74.035	70.508	71.000	81.030
0.3083	85.371	73.681	72.234	71.981	73.883	72.258	66.362	69.352	74.045	70.514	71.000	81.027
0.3166	83.771	73.684	72.234	71.981	73.883	72.261	66.362	69.355	74.054	70.524	71.009	81.027
0.3250	85.925	73.693	72.231	71.984	73.883	72.268	66.362	69.364	74.064	70.521	71.006	81.027
0.3333	83.851	73.693	72.231	71.987	73.883	72.268	66.362	69.368	74.070	70.524	71.019	81.027
0.3500	84.674	73.709	72.234	71.993	73.883	72.280	66.359	69.383	74.099	70.536	71.031	81.027
0.3666	84.342	73.722	72.234	72.003	73.883	72.290	66.359	69.396	74.115	70.543	71.035	81.027
0.3833	83.882	73.731	72.234	72.006	73.883	72.302	66.359	69.412	74.128	70.559	71.050	81.027
0.4000	83.154	73.747	72.231	72.019	73.883	72.309	66.359	69.425	74.143	70.562	71.057	81.024
0.4166	82.188	73.763	72.234	72.025	73.880	72.318	66.356	69.437	74.159	70.578	71.073	81.024
0.4333	81.523	73.769	72.234	72.034	73.883	72.325	66.356	69.450	74.163	70.591	71.076	81.024
0.4500	80.509	73.782	72.234	72.041	73.883	72.331	66.356	69.463	74.172	70.600	71.085	81.024
0.4666	80.240	73.788	72.234	72.050	73.883	72.334	66.353	69.469	74.178	70.613	71.088	81.024
0.4833	79.432	73.791	72.234	72.056	73.883	72.334	66.353	69.482	74.172	70.610	71.095	81.024
0.5000	79.036	73.801	72.234	72.063	73.883	72.334	66.353	69.488	74.175	70.635	71.107	81.021
0.5166	78.831	73.801	72.237	72.072	73.880	72.334	66.350	69.491	74.169	70.642	71.107	81.021
0.5333	78.577	73.807	72.237	72.078	73.883	72.334	66.350	69.501	74.163	70.645	71.111	81.024
0.5500	78.260	73.810	72.234	72.081	73.883	72.334	66.350	69.501	74.159	70.645	71.111	81.021
0.5666	78.340	73.810	72.234	72.088	73.880	72.331	66.350	69.507	74.153	70.651	71.114	81.024
0.5833	78.387	73.807	72.234	72.091	73.883	72.331	66.346	69.504	74.143	70.658	71.111	81.024
0.6000	78.577	73.810	72.237	72.094	73.880	72.331	66.346	69.510	74.140	70.661	71.114	81.021
0.6166	78.514	73.804	72.237	72.097	73.883	72.328	66.346	69.507	74.134	70.654	71.117	81.021
0.6333	78.751	73.807	72.234	72.103	73.880	72.328	66.346	69.507	74.137	70.667	71.123	81.021
0.6500	78.989	73.807	72.237	72.103	73.880	72.325	66.346	69.510	74.131	70.664	71.114	81.017
0.6666	79.258	73.810	72.237	72.103	73.880	72.321	66.343	69.507	74.131	70.670	71.117	81.021
0.6833	79.527	73.807	72.237	72.107	73.880	72.325	66.346	69.510	74.131	70.670	71.114	81.021
0.7000	79.781	73.807	72.237	72.107	73.880	72.325	66.343	69.510	74.128	70.670	71.114	81.017
0.7166	80.113	73.810	72.237	72.110	73.880	72.325	66.343	69.513	74.131	70.674	71.117	81.017
0.7333	80.351	73.813	72.237	72.110	73.880	72.325	66.343	69.510	74.137	70.674	71.117	81.017
0.7500	80.493	73.813	72.237	72.113	73.880	72.328	66.343	69.513	74.140	70.680	71.114	81.017
0.7666	80.636	73.813	72.237	72.113	73.880	72.325	66.343	69.513	74.140	70.670	71.120	81.017
0.7833	80.778	73.813	72.237	72.116	73.877	72.334	66.343	69.516	74.147	70.677	71.114	81.017
0.8000	81.079	73.820	72.237	72.116	73.880	72.331	66.343	69.516	74.150	70.683	71.120	81.017
0.8166	81.238	73.820	72.237	72.116	73.883	72.337	66.343	69.520	74.153	70.680	71.120	81.014
0.8333	81.285	73.820	72.237	72.119	73.880	72.334	66.343	69.526	74.156	70.680	71.129	81.017
0.8500	81.507	73.823	72.237	72.119	73.880	72.337	66.343	69.526	74.163	70.680	71.129	81.017
0.8666	81.538	73.826	72.237	72.122	73.877	72.344	66.343	69.529	74.169	70.689	71.129	81.014
0.8833	81.602	73.829	72.240	72.122	73.880	72.347	66.343	69.529	74.172	70.689	71.129	81.014
0.9000	81.649	73.832	72.240	72.122	73.880	72.347	66.343	69.535	74.178	70.693	71.133	81.014
0.9166	81.649	73.839	72.240	72.125	73.880	72.350	66.343	69.535	74.185	70.693	71.133	81.014
0.9333	81.523	73.835	72.240	72.125	73.880	72.353	66.343	69.542	74.185	70.689	71.126	81.014
0.9500	81.602	73.842	72.240	72.129	73.877	72.356	66.343	69.542	74.191	70.699	71.139	81.014
0.9666	81.523	73.845	72.240	72.132	73.877	72.356	66.343	69.545	74.197	70.689	71.139	81.014
0.9833	81.728	73.848	72.240	72.132	73.880	72.356	66.343	69.548	74.194	70.699	71.148	81.014

CRT2

4783

1.0000	81.633	73.848	72.240	72.135	73.880	72.363	66.346	69.551	74.201	70.705	71.145	81.011
1.2000	81.475	73.864	72.246	72.151	73.880	72.375	66.346	69.570	74.207	70.721	71.155	81.014
1.4000	81.443	73.870	72.250	72.163	73.877	72.378	66.350	69.583	74.207	70.737	71.164	81.014
1.6000	81.491	73.876	72.253	72.169	73.880	72.385	66.353	69.586	74.213	70.744	71.167	81.014
1.8000	81.618	73.880	72.256	72.172	73.880	72.388	66.353	69.592	74.213	70.747	71.171	81.017
2.0000	81.681	73.883	72.256	72.176	73.883	72.391	66.356	69.596	74.220	70.753	71.174	81.017
2.2000	81.665	73.886	72.256	72.182	73.883	72.394	66.359	69.602	74.223	70.747	71.180	81.017
2.4000	81.871	73.889	72.256	72.182	73.883	72.401	66.359	69.605	74.226	70.760	71.180	81.021
2.6000	81.950	73.892	72.259	72.185	73.883	72.407	66.362	69.608	74.229	70.769	71.183	81.021
2.8000	82.014	73.892	72.262	72.188	73.883	72.407	66.362	69.605	74.236	70.769	71.186	81.021
3.0000	82.172	73.892	72.265	72.191	73.883	72.410	66.365	69.608	74.236	70.766	71.193	81.021
3.2000	82.251	73.892	72.268	72.191	73.880	72.413	66.365	69.611	74.242	70.772	71.186	81.021
3.4000	82.409	73.895	72.268	72.191	73.880	72.420	66.365	69.611	74.245	70.772	71.190	81.017
3.6000	82.409	73.899	72.268	72.191	73.883	72.420	66.365	69.618	74.245	70.776	71.193	81.017
3.8000	82.489	73.902	72.265	72.198	73.880	72.426	66.368	69.618	74.248	70.779	71.193	81.017
4.0000	82.552	73.905	72.265	72.198	73.880	72.426	66.368	69.621	74.245	70.779	71.199	81.017
4.2000	82.473	73.908	72.268	72.198	73.880	72.429	66.368	69.621	74.248	70.779	71.196	81.017
4.4000	82.520	73.908	72.271	72.204	73.880	72.426	66.368	69.624	74.252	70.782	71.205	81.017
4.6000	82.568	73.908	72.271	72.204	73.880	72.426	66.372	69.627	74.248	70.785	71.209	81.021
4.8000	82.663	73.918	72.274	72.204	73.883	72.432	66.372	69.627	74.252	70.785	71.205	81.024
5.0000	82.695	73.918	72.274	72.207	73.886	72.436	66.375	69.633	74.255	70.788	71.202	81.024
5.2000	82.631	73.911	72.274	72.207	73.883	72.432	66.375	69.630	74.252	70.785	71.209	81.027
5.4000	82.790	73.918	72.274	72.210	73.883	72.432	66.375	69.633	74.258	70.788	71.205	81.030
5.6000	82.742	73.914	72.277	72.210	73.886	72.436	66.378	69.630	74.261	70.792	71.215	81.027
5.8000	82.790	73.914	72.281	72.210	73.886	72.436	66.378	69.630	74.258	70.788	71.205	81.027
6.0000	82.805	73.918	72.281	72.210	73.883	72.432	66.378	69.630	74.258	70.785	71.218	81.027
6.2000	82.948	73.921	72.284	72.210	73.883	72.436	66.378	69.633	74.258	70.795	71.218	81.027
6.4000	82.980	73.921	72.293	72.216	73.886	72.439	66.381	69.640	74.264	70.798	71.227	81.033
6.6000	82.869	73.921	72.296	72.216	73.886	72.442	66.381	69.637	74.264	70.795	71.221	81.033
6.8000	83.027	73.921	72.290	72.213	73.886	72.436	66.381	69.633	74.261	70.792	71.224	81.030
7.0000	82.995	73.918	72.284	72.213	73.883	72.439	66.378	69.633	74.258	70.785	71.224	81.027
7.2000	83.027	73.924	72.281	72.213	73.883	72.439	66.378	69.637	74.261	70.788	71.212	81.027
7.4000	83.011	73.921	72.277	72.216	73.880	72.442	66.378	69.637	74.264	70.792	71.221	81.021
7.6000	83.090	73.924	72.277	72.216	73.880	72.439	66.378	69.637	74.261	70.788	71.227	81.024
7.8000	83.059	73.927	72.274	72.216	73.880	72.445	66.381	69.640	74.264	70.788	71.212	81.024
8.0000	83.138	73.924	72.277	72.216	73.880	72.442	66.381	69.637	74.261	70.795	71.227	81.024
8.2000	83.154	73.924	72.277	72.216	73.880	72.445	66.378	69.637	74.264	70.798	71.215	81.021
8.4000	83.280	73.930	72.277	72.216	73.883	72.442	66.381	69.637	74.264	70.795	71.221	81.017
8.6000	83.233	73.927	72.271	72.220	73.880	72.445	66.378	69.640	74.264	70.792	71.224	81.021
8.8000	83.360	73.933	72.277	72.220	73.880	72.448	66.381	69.643	74.267	70.801	71.218	81.021
9.0000	83.312	73.930	72.281	72.220	73.883	72.448	66.381	69.643	74.271	70.801	71.231	81.017
9.2000	83.328	73.933	72.284	72.223	73.880	72.451	66.381	69.643	74.274	70.801	71.231	81.017
9.4000	83.312	73.930	72.284	72.223	73.886	72.451	66.381	69.646	74.271	70.814	71.227	81.021
9.6000	83.360	73.933	72.287	72.226	73.883	72.458	66.384	69.649	74.274	70.811	71.227	81.021
9.8000	83.423	73.933	72.287	72.226	73.886	72.458	66.387	69.646	74.274	70.814	71.224	81.024
10.0000	83.423	73.940	72.287	72.232	73.890	72.464	66.400	69.652	74.277	70.811	71.243	81.027
12.0000	83.629	73.952	72.333	72.254	73.905	72.505	66.428	69.681	74.322	70.839	71.272	81.065
14.0000	83.851	73.962	72.324	72.257	73.899	72.515	66.425	69.678	74.322	70.839	71.272	81.040
16.0000	83.882	73.965	72.321	72.264	73.899	72.508	66.416	69.684	74.331	70.843	71.288	81.040
18.0000	84.262	73.977	72.296	72.260	73.905	72.505	66.410	69.681	74.341	70.839	71.288	81.017
20.0000	84.357	73.968	72.265	72.248	73.874	72.480	66.365	69.671	74.318	70.830	71.269	80.979
22.0000	84.437	73.981	72.296	72.257	73.877	72.486	66.381	69.681	74.331	70.833	71.275	80.976

CRT3

4733

24.0000	84.611	73.987	72.327	72.276	73.893	72.512	66.416	69.703	74.356	70.865	71.291	81.005
26.0000	84.611	73.993	72.324	72.276	73.890	72.515	66.410	69.700	74.363	70.855	71.300	80.992
28.0000	84.674	74.003	72.358	72.298	73.915	72.566	66.457	69.722	74.388	70.884	71.335	81.036
30.0000	84.817	74.006	72.312	72.279	73.886	72.515	66.400	69.703	74.360	70.865	71.303	80.976
32.0000	84.896	74.009	72.312	72.286	73.886	72.527	66.416	69.709	74.366	70.855	71.313	80.976
34.0000	84.975	74.022	72.365	72.320	73.918	72.575	66.473	69.744	74.401	70.894	71.351	80.998
36.0000	85.023	74.022	72.355	72.311	73.915	72.572	66.454	69.741	74.401	70.903	71.351	80.986
38.0000	84.991	74.025	72.333	72.298	73.896	72.543	66.403	69.722	74.382	70.878	71.341	80.951
40.0000	85.070	74.025	72.309	72.289	73.880	72.521	66.413	69.713	74.360	70.868	71.329	80.916
42.0000	85.118	74.044	72.377	72.333	73.915	72.588	66.470	69.757	74.417	70.909	71.376	80.973
44.0000	85.133	74.041	72.337	72.314	73.893	72.553	66.438	69.735	74.391	70.903	71.357	80.935
46.0000	85.149	74.044	72.377	72.336	73.912	72.588	66.460	69.760	74.420	70.919	71.376	80.954
48.0000	85.323	74.044	72.343	72.330	73.905	72.581	66.454	69.754	74.414	70.922	71.363	80.942
50.0000	85.260	74.050	72.346	72.323	73.899	72.566	66.435	69.744	74.401	70.909	71.370	80.923
52.0000	85.323	74.053	72.358	72.330	73.902	72.578	66.451	69.754	74.407	70.922	71.370	80.923
54.0000	85.339	74.060	72.365	72.336	73.908	72.585	66.454	69.760	74.426	70.922	71.382	80.929
56.0000	85.418	74.056	72.361	72.333	73.905	72.588	66.444	69.754	74.414	70.922	71.386	80.926
58.0000	85.339	74.060	72.361	72.339	73.905	72.585	66.454	69.763	74.426	70.925	71.379	80.916
60.0000	85.355	74.066	72.368	72.345	73.908	72.591	66.466	69.763	74.420	70.929	71.386	80.916
62.0000	85.514	74.063	72.371	72.345	73.912	72.597	66.460	69.766	74.430	70.925	71.386	80.913
64.0000	85.577	74.063	72.393	72.348	73.915	72.616	66.473	69.773	74.433	70.929	71.398	80.929
66.0000	85.577	74.066	72.377	72.345	73.908	72.604	66.460	69.766	74.426	70.925	71.395	80.910
68.0000	85.498	74.066	72.368	72.345	73.908	72.600	66.460	69.770	74.430	70.938	71.389	80.904
70.0000	85.529	74.075	72.374	72.352	73.912	72.613	66.479	69.776	74.436	70.941	71.405	80.904
72.0000	85.609	74.082	72.402	72.370	73.927	72.638	66.501	69.792	74.455	70.951	71.423	80.929
74.0000	85.609	74.085	72.414	72.383	73.937	72.654	66.517	69.804	74.471	70.973	71.433	80.938
76.0000	85.719	74.079	72.352	72.345	73.902	72.604	66.444	69.766	74.433	70.938	71.408	80.875
78.0000	85.735	74.079	72.365	72.352	73.905	72.600	66.451	69.776	74.436	70.945	71.395	80.872
80.0000	85.783	74.091	72.421	72.389	73.937	72.661	66.520	69.811	74.477	70.976	71.439	80.929
82.0000	85.799	74.075	72.377	72.355	73.905	72.629	66.457	69.776	74.446	70.948	71.408	80.882
84.0000	85.767	74.088	72.368	72.358	73.905	72.604	66.454	69.776	74.436	70.954	71.411	80.863
86.0000	85.719	74.094	72.383	72.367	73.908	72.623	66.476	69.789	74.449	70.957	71.427	80.872
88.0000	85.830	74.091	72.389	72.358	73.915	72.629	66.473	69.792	74.452	70.951	71.414	80.872
90.0000	85.799	74.091	72.383	72.364	73.915	72.626	66.470	69.789	74.452	70.948	71.423	80.863
92.0000	85.894	74.097	72.389	72.367	73.918	72.632	66.476	69.792	74.446	70.964	71.420	80.856
94.0000	85.846	74.097	72.386	72.370	73.918	72.632	66.479	69.795	74.455	70.957	71.433	80.856
96.0000	85.957	74.097	72.386	72.373	73.918	72.638	66.482	69.801	74.458	70.973	71.430	80.856
98.0000	85.941	74.104	72.402	72.386	73.927	72.654	66.498	69.811	74.465	70.980	71.442	80.869
100.000	85.925	74.094	72.393	72.380	73.924	72.657	66.492	69.804	74.468	70.973	71.446	80.866
120.000	86.147	74.123	72.414	72.402	73.937	72.670	66.507	69.827	74.509	70.999	71.455	80.831
140.000	86.321	74.132	72.421	72.408	73.949	72.686	66.511	69.839	74.525	71.008	71.458	80.790
160.000	86.432	74.148	72.433	72.417	73.959	72.696	66.520	69.852	74.541	71.015	71.468	80.758
180.000	86.464	74.157	72.439	72.430	73.959	72.708	66.520	69.858	74.560	71.027	71.468	80.727
200.000	86.686	74.170	72.452	72.443	73.965	72.727	66.536	69.871	74.576	71.034	71.487	80.705
220.000	86.781	74.186	72.461	72.455	73.965	72.740	66.542	69.884	74.589	71.040	71.499	80.676
240.000	86.828	74.192	72.470	72.465	73.968	72.749	66.548	69.893	74.601	71.066	71.509	80.651
260.000	87.034	74.205	72.470	72.471	73.968	72.759	66.558	69.899	74.614	71.072	71.509	80.613
280.000	87.129	74.211	72.483	72.483	73.968	72.762	66.561	69.912	74.614	71.094	71.531	80.582
300.000	87.081	74.227	72.511	72.499	73.978	72.806	66.586	69.931	74.643	71.101	71.550	80.585
320.000	87.161	74.227	72.498	72.499	73.984	72.791	66.574	69.931	74.646	71.104	71.544	80.540
340.000	87.351	74.227	72.492	72.496	73.965	72.778	66.571	69.925	74.636	71.088	71.534	80.484
360.000	87.382	74.239	72.514	72.515	73.975	72.797	66.590	69.940	74.649	71.114	71.544	80.468

CRT4

380.000	87.446	74.243	72.520	72.521	73.978	72.803	66.590	69.947	74.662	71.110	71.559	80.439
400.000	87.509	74.252	72.520	72.527	74.009	72.816	66.593	69.956	74.662	71.126	71.563	80.424
420.000	87.588	74.252	72.529	72.531	73.990	72.816	66.599	69.956	74.662	71.123	71.559	80.389
440.000	87.509	74.262	72.536	72.540	73.997	72.822	66.605	69.966	74.681	71.136	71.582	80.360
460.000	87.699	74.252	72.529	72.534	73.997	72.819	66.602	69.959	74.671	71.120	71.569	80.322
480.000	87.699	74.268	72.542	72.549	74.000	72.835	66.615	69.975	74.687	71.142	71.575	80.304
500.000	87.731	74.277	72.548	72.553	74.003	72.841	66.621	69.982	74.700	71.152	71.601	80.278
520.000	87.794	74.277	72.545	72.553	74.000	72.841	66.618	69.978	74.690	71.145	71.582	80.250
540.000	87.715	74.281	72.551	72.556	73.997	72.848	66.624	69.982	74.703	71.152	71.588	80.228
560.000	87.763	74.287	72.557	72.559	74.003	72.857	66.627	69.988	74.709	71.158	71.601	80.196
580.000	87.794	74.290	72.567	72.568	74.009	72.864	66.637	70.001	74.725	71.165	71.610	80.177
600.000	87.873	74.299	72.570	72.574	74.003	72.870	66.643	70.004	74.713	71.171	71.607	80.146
620.000	88.016	74.306	72.579	72.584	74.009	72.886	66.653	70.013	74.735	71.177	71.626	80.120
640.000	88.063	74.309	72.589	72.590	74.009	72.892	66.659	70.023	74.751	71.180	71.638	80.095
660.000	88.048	74.315	72.589	72.593	74.009	72.892	66.665	70.023	74.751	71.187	71.626	80.067
680.000	88.048	74.318	72.592	72.596	74.009	72.895	66.665	70.023	74.757	71.190	71.632	80.038
700.000	88.111	74.322	72.598	72.600	74.009	72.898	66.672	70.029	74.764	71.200	71.635	80.013
720.000	88.111	74.334	72.604	72.609	74.006	72.908	66.678	70.035	74.764	71.200	71.638	79.985
740.000	88.143	74.337	72.604	72.609	74.009	72.905	66.678	70.035	74.773	71.196	71.661	79.959
760.000	88.190	74.340	72.610	72.615	74.009	72.908	66.684	70.042	74.783	71.209	71.664	79.934
780.000	88.190	74.337	72.610	72.618	74.012	72.914	66.684	70.045	74.789	71.212	71.651	79.909
800.000	88.158	74.344	72.613	72.622	74.012	72.917	66.687	70.048	74.795	71.206	71.661	79.887
820.000	88.158	74.344	72.610	72.618	74.012	72.914	66.684	70.045	74.792	71.209	71.667	79.858
840.000	88.190	74.350	72.617	72.622	74.016	72.917	66.687	70.048	74.795	71.219	71.664	79.836
860.000	88.190	74.356	72.620	72.628	74.012	72.921	66.691	70.051	74.792	71.216	71.664	79.808
880.000	88.380	74.353	72.626	72.631	74.012	72.930	66.697	70.058	74.805	71.216	71.680	79.782
900.000	88.412	74.356	72.626	72.634	74.019	72.930	66.697	70.061	74.808	71.222	71.680	79.760
920.000	88.396	74.359	72.626	72.634	74.016	72.933	66.697	70.058	74.811	71.225	71.676	79.738
940.000	88.412	74.366	72.629	72.637	74.022	72.930	66.700	70.058	74.814	71.231	71.680	79.722
960.000	88.349	74.369	72.632	72.628	74.022	72.936	66.703	70.061	74.811	71.231	71.676	79.697
980.000	88.475	74.372	72.635	72.640	74.019	72.936	66.706	70.067	74.824	71.228	71.695	79.672
1000.00	88.428	74.375	72.641	72.644	74.022	72.946	66.716	70.070	74.837	71.241	71.689	79.650
1020.00	88.507	74.382	72.645	72.647	74.022	72.946	66.716	70.080	74.843	71.244	71.695	79.624
1040.00	88.428	74.385	72.648	72.650	74.019	72.955	66.719	70.077	74.837	71.247	71.692	79.599
1060.00	88.523	74.385	72.651	72.653	74.022	72.959	66.719	70.077	74.843	71.241	71.699	79.577
1080.00	88.459	74.394	72.654	72.656	74.031	72.962	66.722	70.083	74.849	71.257	71.695	79.549
1100.00	88.428	74.397	72.660	72.666	74.034	72.962	66.728	70.086	74.856	71.257	71.708	79.527
1120.00	88.634	74.397	72.660	72.666	74.034	72.962	66.728	70.083	74.856	71.260	71.711	79.501
1140.00	88.697	74.397	72.660	72.662	74.034	72.968	66.728	70.089	74.853	71.260	71.705	79.479
1160.00	88.618	74.397	72.663	72.666	74.034	72.968	66.732	70.086	74.859	71.257	71.711	79.451
1180.00	88.618	74.410	72.673	72.675	74.041	72.971	66.738	70.096	74.868	71.273	71.721	79.432
1200.00	88.713	74.416	72.676	72.678	74.038	72.981	66.744	70.102	74.849	71.279	71.724	79.406
1220.00	88.745	74.419	72.679	72.688	74.038	72.987	66.751	70.105	74.853	71.279	71.730	79.384
1240.00	88.776	74.423	72.685	72.688	74.041	72.987	66.754	70.108	74.865	71.289	71.736	79.365
1260.00	88.792	74.432	72.688	72.688	74.047	72.997	66.760	70.115	74.878	71.289	71.746	79.340
1280.00	88.824	74.435	72.694	72.700	74.047	73.003	66.766	70.118	74.888	71.292	71.749	79.315
1300.00	88.760	74.435	72.691	72.700	74.047	73.000	66.763	70.118	74.881	71.302	71.736	79.296
1320.00	88.792	74.435	72.694	72.700	74.053	73.003	66.766	70.124	74.888	71.302	71.743	79.271
1340.00	88.840	74.441	72.697	72.710	74.050	73.013	66.773	70.127	74.875	71.308	71.759	79.255
1360.00	88.919	74.441	72.710	72.713	74.057	73.025	66.776	70.130	74.891	71.308	71.762	79.239
1380.00	88.824	74.454	72.704	72.716	74.053	73.022	66.785	70.130	74.894	71.314	71.759	79.208
1400.00	88.871	74.457	72.710	72.722	74.053	73.025	66.785	70.140	74.900	71.321	71.771	79.198

CRT5

4733

1420.00	88.887	74.457	72.716	72.719	74.047	73.028	66.788	70.130	74.881	71.321	71.778	79.166
1440.00	88.998	74.457	72.710	72.719	74.050	73.028	66.785	70.130	74.894	71.314	71.768	79.147
1460.00	89.045	74.451	72.704	72.713	74.053	73.022	66.782	70.124	74.884	71.318	71.765	79.122
1480.00	88.998	74.448	72.701	72.706	74.050	73.025	66.773	70.111	74.872	71.305	71.759	79.100
1500.00	88.966	74.454	72.713	72.716	74.053	73.019	66.779	70.111	74.888	71.314	71.774	79.072
1520.00	89.093	74.451	72.710	72.713	74.053	73.022	66.773	70.111	74.888	71.321	71.768	79.050
1540.00	89.077	74.441	72.688	72.694	74.034	72.987	66.744	70.086	74.868	71.289	71.743	78.986
1560.00	89.125	74.441	72.688	72.700	74.044	73.000	66.751	70.096	74.881	71.302	71.755	78.986
1580.00	89.109	74.460	72.722	72.725	74.060	73.032	66.788	70.118	74.891	71.333	71.781	78.990
1600.00	88.966	74.454	72.704	72.706	74.047	73.006	66.763	70.099	74.881	71.314	71.752	78.952
1620.00	89.172	74.457	72.732	72.732	74.072	73.054	66.801	70.121	74.916	71.327	71.790	78.986
1640.00	89.156	74.445	72.716	72.713	74.050	73.028	66.763	70.099	74.894	71.305	71.759	78.920
1660.00	89.030	74.460	72.713	72.719	74.060	73.025	66.773	70.105	74.903	71.314	71.768	78.898
1680.00	89.045	74.454	72.716	72.713	74.060	73.025	66.773	70.102	74.897	71.314	71.765	78.876
1700.00	89.236	74.460	72.716	72.722	74.060	73.035	66.776	70.108	74.894	71.311	71.774	78.866
1720.00	89.236	74.454	72.707	72.713	74.057	73.013	66.763	70.099	74.891	71.305	71.765	78.838
1740.00	89.109	74.464	72.719	72.719	74.057	73.028	66.773	70.108	74.913	71.318	71.774	78.816
1760.00	89.140	74.464	72.716	72.716	74.057	73.025	66.773	70.102	74.900	71.314	71.771	78.791
1780.00	89.251	74.457	72.716	72.719	74.060	73.025	66.769	70.105	74.903	71.314	71.778	78.775
1800.00	89.236	74.454	72.707	72.710	74.060	73.022	66.769	70.096	74.891	71.308	71.765	78.743
1820.00	89.251	74.460	72.710	72.716	74.057	73.025	66.766	70.102	74.897	71.311	71.755	78.718
1840.00	89.220	74.460	72.713	72.716	74.060	73.022	66.769	70.105	74.897	71.314	71.759	78.705
1860.00	89.267	74.464	72.716	72.719	74.057	73.028	66.769	70.105	74.900	71.311	71.765	78.683
1880.00	89.251	74.464	72.719	72.725	74.060	73.032	66.779	70.108	74.907	71.321	71.778	78.664
1900.00	89.188	74.467	72.729	72.725	74.057	73.028	66.782	70.111	74.903	71.324	71.778	78.639
1920.00	89.220	74.470	72.729	72.735	74.057	73.032	66.785	70.115	74.913	71.321	71.771	78.620
1940.00	89.362	74.473	72.729	72.735	74.057	73.038	66.785	70.118	74.916	71.318	71.781	78.601
1960.00	89.204	74.476	72.732	72.738	74.053	73.041	66.788	70.121	74.923	71.330	71.778	78.576
1980.00	89.346	74.486	72.744	72.750	74.053	73.054	66.801	70.130	74.935	71.340	71.784	78.551
2000.00	89.346	74.486	72.744	72.747	74.057	73.051	66.798	70.130	74.932	71.343	71.787	78.535
2020.00	89.410	74.492	72.750	72.754	74.057	73.063	66.804	70.134	74.938	71.340	71.790	78.513
2040.00	89.394	74.495	72.753	72.757	74.057	73.057	66.807	70.137	74.945	71.343	71.806	78.490
2060.00	89.346	74.492	72.750	72.757	74.053	73.060	66.807	70.137	74.945	71.340	71.787	78.472
2080.00	89.315	74.505	72.760	72.766	74.053	73.066	66.817	70.143	74.948	71.353	71.812	78.453
2100.00	89.283	74.505	72.760	72.766	74.053	73.070	66.817	70.143	74.948	71.356	71.800	78.430
2120.00	89.410	74.514	72.769	72.775	74.053	73.079	66.826	70.153	74.961	71.359	71.828	78.412
2140.00	89.315	74.520	72.772	72.782	74.053	73.082	66.833	70.162	74.970	71.369	71.812	78.389
2160.00	89.473	74.524	72.778	72.782	74.053	73.085	66.836	70.162	74.970	71.372	71.831	78.370
2180.00	89.426	74.524	72.778	72.782	74.053	73.085	66.836	70.162	74.970	71.375	71.831	78.348
2200.00	89.473	74.527	72.785	72.788	74.053	73.089	66.845	70.172	74.980	71.378	71.831	78.329
2220.00	89.457	74.533	72.788	72.794	74.053	73.098	66.848	70.175	74.989	71.381	71.834	78.307
2240.00	89.394	74.536	72.788	72.794	74.057	73.098	66.852	70.175	74.989	71.385	71.831	78.288
2260.00	89.536	74.533	72.788	72.794	74.053	73.104	66.848	70.175	74.980	71.375	71.831	78.269
2280.00	89.331	74.530	72.781	72.788	74.057	73.095	66.845	70.168	74.980	71.378	71.822	78.247
2300.00	89.457	74.527	72.781	72.785	74.057	73.092	66.842	70.165	74.980	71.369	71.815	78.228
2320.00	89.362	74.530	72.781	72.788	74.053	73.089	66.842	70.165	74.980	71.378	71.822	78.209
2340.00	89.457	74.524	72.778	72.785	74.057	73.085	66.836	70.162	74.980	71.369	71.828	78.190
2360.00	89.521	74.530	72.785	72.791	74.057	73.092	66.842	70.168	74.986	71.372	71.834	78.168
2380.00	89.426	74.536	72.785	72.794	74.057	73.095	66.845	70.172	74.986	71.381	71.834	78.146
2400.00	89.552	74.530	72.785	72.794	74.057	73.098	66.845	70.168	74.989	71.375	71.828	78.124
2420.00	89.568	74.536	72.791	72.794	74.057	73.104	66.848	70.172	74.996	71.381	71.828	78.115
2440.00	89.457	74.542	72.791	72.797	74.057	73.101	66.848	70.175	74.986	71.388	71.838	78.092

CRT6

2460.00	89.410	74.546	72.794	72.804	74.057	73.108	66.852	70.175	74.996	71.391	71.825	78.074
2480.00	89.426	74.549	72.797	72.804	74.060	73.104	66.855	70.178	75.008	71.400	71.841	78.051
2500.00	89.536	74.542	72.797	72.801	74.060	73.104	66.855	70.178	75.005	71.391	71.844	78.029
2520.00	89.473	74.542	72.797	72.801	74.060	73.108	66.855	70.181	75.005	71.394	71.834	78.007
2540.00	89.521	74.546	72.797	72.807	74.060	73.111	66.855	70.181	75.008	71.394	71.834	77.988
2560.00	89.568	74.555	72.809	72.816	74.060	73.117	66.867	70.194	75.018	71.410	71.857	77.969
2580.00	89.536	74.555	72.809	72.816	74.060	73.139	66.867	70.191	75.021	71.407	71.857	77.954
2600.00	89.584	74.561	72.816	72.819	74.063	73.127	66.874	70.197	75.028	71.407	71.860	77.931
2620.00	89.536	74.568	72.819	72.826	74.060	73.130	66.880	70.200	75.031	71.416	71.860	77.906
2640.00	89.600	74.568	72.819	72.826	74.060	73.139	66.880	70.203	75.031	71.420	71.857	77.890
2660.00	89.663	74.568	72.822	72.826	74.063	73.133	66.883	70.206	75.034	71.416	71.869	77.875
2680.00	89.505	74.565	72.816	72.823	74.063	73.127	66.877	70.200	75.031	71.416	71.863	77.852
2700.00	89.457	74.574	72.831	72.829	74.066	73.136	66.883	70.206	75.043	71.426	71.863	77.837
2720.00	89.631	74.580	72.831	72.835	74.069	73.146	66.893	70.219	75.050	71.436	71.882	77.821
2740.00	89.568	74.580	72.834	72.841	74.069	73.152	66.899	70.216	75.056	71.432	71.879	77.811
2760.00	89.521	74.580	72.831	72.838	74.069	73.146	66.896	70.216	75.043	71.429	71.869	77.789
2780.00	89.679	74.580	72.831	72.838	74.072	73.146	66.893	70.213	75.047	71.429	71.888	77.786
2800.00	89.568	74.558	72.822	72.823	74.069	73.133	66.883	70.203	75.034	71.429	71.872	77.767
2820.00	89.489	74.568	72.822	72.826	74.069	73.136	66.883	70.203	75.034	71.426	71.866	77.751
2840.00	89.584	74.580	72.834	72.838	74.072	73.152	66.893	70.216	75.050	71.439	71.882	77.736
2860.00	89.568	74.587	72.837	72.841	74.069	73.155	66.896	70.219	75.050	71.436	71.885	77.720
2880.00	89.568	74.587	72.834	72.838	74.075	73.152	66.889	70.216	75.047	71.442	71.882	77.701
2900.00	89.727	74.568	72.822	72.832	74.072	73.146	66.889	70.210	75.037	71.420	71.872	77.691
2920.00	89.695	74.577	72.834	72.832	74.079	73.152	66.896	70.213	75.047	71.432	71.888	77.679
2940.00	89.774	74.568	72.806	72.819	74.069	73.139	66.871	70.194	75.028	71.420	71.869	77.647
2960.00	89.711	74.571	72.822	72.826	74.075	73.136	66.880	70.200	75.034	71.429	71.885	77.641
2980.00	89.695	74.565	72.822	72.823	74.072	73.146	66.880	70.197	75.024	71.416	71.872	77.628
3000.00	89.600	74.574	72.813	72.826	74.075	73.136	66.877	70.197	75.031	71.426	71.872	77.606
3020.00	89.742	74.565	72.816	72.823	74.072	73.133	66.874	70.194	75.028	71.420	71.863	77.584
3040.00	89.647	74.558	72.819	72.819	74.066	73.130	66.861	70.187	75.021	71.410	71.853	77.562
3060.00	89.742	74.568	72.816	72.819	74.063	73.120	66.861	70.191	75.028	71.420	71.860	77.533
3080.00	89.631	74.565	72.816	72.819	74.069	73.127	66.867	70.194	75.028	71.420	71.853	77.524
3100.00	89.631	74.565	72.825	72.819	74.079	73.139	66.874	70.194	75.028	71.404	71.857	77.524
3120.00	89.742	74.577	72.828	72.832	74.075	73.152	66.880	70.203	75.043	71.432	71.882	77.518
3140.00	89.647	74.571	72.816	72.816	74.072	73.133	66.861	70.184	75.024	71.413	71.866	77.543
3160.00	89.742	74.568	72.813	72.816	74.072	73.133	66.864	70.184	75.024	71.407	71.866	77.521
3180.00	89.631	74.577	72.837	72.832	74.082	73.149	66.880	70.203	75.037	71.429	71.885	77.518
3200.00	89.536	74.574	72.822	72.823	74.069	73.133	66.871	70.194	75.024	71.416	71.866	77.477
3220.00	89.584	74.565	72.813	72.816	74.066	73.130	66.874	70.184	75.021	71.413	71.857	77.454
3240.00	89.679	74.577	72.825	72.826	74.079	73.143	66.874	70.197	75.040	71.423	71.882	77.454
3260.00	89.758	74.574	72.828	72.826	74.075	73.143	66.880	70.194	75.037	71.426	71.876	77.426
3280.00	89.790	74.577	72.822	72.826	74.082	73.146	66.877	70.197	75.040	71.416	71.879	77.429
3300.00	89.568	74.577	72.828	72.829	74.075	73.146	66.880	70.197	75.043	71.429	71.879	77.407
3320.00	89.600	74.568	72.816	72.819	74.072	73.133	66.874	70.191	75.037	71.410	71.860	77.385
3340.00	89.822	74.571	72.825	72.823	74.075	73.136	66.874	70.194	75.037	71.420	71.869	77.369
3360.00	89.679	74.580	72.831	72.832	74.072	73.146	66.877	70.197	75.043	71.420	71.869	77.350
3380.00	89.774	74.571	72.825	72.826	74.069	73.139	66.877	70.194	75.043	71.413	71.872	77.338
3400.00	89.758	74.574	72.828	72.829	74.072	73.139	66.877	70.197	75.047	71.423	71.869	77.322
3420.00	89.616	74.584	72.834	72.835	74.072	73.149	66.883	70.203	75.059	71.429	71.872	77.306
3440.00	89.695	74.587	72.841	72.841	74.072	73.152	66.886	70.206	75.062	71.429	71.876	77.290
3460.00	89.727	74.593	72.841	72.845	74.072	73.152	66.889	70.206	75.066	71.432	71.891	77.271
3480.00	89.742	74.596	72.847	72.848	74.072	73.158	66.896	70.213	75.075	71.436	71.885	77.259

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3500.00	89.647	74.602	72.853	72.854	74.072	73.162	66.902	70.219	75.085	71.445	71.891	77.243
3520.00	89.727	74.612	72.853	72.854	74.069	73.165	66.905	70.219	75.072	71.445	71.901	77.227
3540.00	89.663	74.612	72.853	72.854	74.069	73.162	66.902	70.216	75.085	71.448	71.898	77.211
3560.00	89.647	74.609	72.856	72.854	74.072	73.168	66.908	70.222	75.091	71.448	71.891	77.199
3580.00	89.822	74.615	72.862	72.860	74.072	73.174	66.912	70.229	75.097	71.451	71.901	77.183
3600.00	89.853	74.621	72.869	72.870	74.072	73.181	66.921	70.235	75.110	71.455	71.917	77.170
3620.00	89.790	74.625	72.869	72.867	74.072	73.177	66.921	70.235	75.110	71.461	71.920	77.154
3640.00	89.711	74.625	72.865	72.863	74.069	73.181	66.921	70.232	75.110	71.458	71.907	77.139
3660.00	89.727	74.621	72.865	72.863	74.072	73.177	66.918	70.232	75.110	71.458	71.910	77.126
3680.00	89.822	74.621	72.865	72.870	74.075	73.177	66.918	70.232	75.110	71.455	71.920	77.113
3700.00	89.663	74.625	72.872	72.873	74.072	73.184	66.921	70.235	75.120	71.461	71.904	77.094
3720.00	89.679	74.637	72.878	72.879	74.072	73.193	66.934	70.244	75.123	71.474	71.917	77.082
3740.00	89.727	74.640	72.884	72.885	74.072	73.196	66.940	70.251	75.129	71.477	71.932	77.069
3760.00	89.790	74.647	72.887	72.889	74.072	73.200	66.943	70.251	75.136	71.480	71.939	77.056
3780.00	89.758	74.647	72.887	72.892	74.072	73.206	66.946	70.254	75.142	71.480	71.939	77.041
3800.00	89.695	74.647	72.887	72.892	74.072	73.203	66.946	70.254	75.142	71.474	71.929	77.025
3820.00	89.663	74.643	72.887	72.889	74.075	73.203	66.943	70.254	75.142	71.480	71.926	77.012
3840.00	89.869	74.647	72.890	72.892	74.075	73.206	66.946	70.257	75.148	71.480	71.945	77.000
3860.00	89.837	74.650	72.893	72.895	74.075	73.209	66.949	70.260	75.152	71.483	71.945	76.990
3880.00	89.742	74.643	72.884	72.889	74.072	73.200	66.943	70.254	75.152	71.477	71.929	76.968
3900.00	89.727	74.637	72.881	72.885	74.072	73.200	66.937	70.247	75.142	71.467	71.932	76.955
3920.00	89.727	74.637	72.881	72.885	74.075	73.200	66.937	70.247	75.142	71.467	71.920	76.943
3940.00	89.727	74.640	72.884	72.885	74.075	73.200	66.940	70.251	75.148	71.474	71.926	76.930
3960.00	89.742	74.637	72.881	72.882	74.075	73.193	66.937	70.247	75.142	71.474	71.932	76.914
3980.00	89.695	74.643	72.887	72.889	74.072	73.200	66.940	70.251	75.152	71.477	71.929	76.902
4000.00	89.837	74.643	72.890	72.889	74.075	73.203	66.943	70.254	75.158	71.480	71.932	76.886
4020.00	89.837	74.647	72.893	72.898	74.075	73.209	66.949	70.260	75.161	71.480	71.936	76.873
4040.00	85.118	74.647	72.900	72.892	74.075	73.196	66.956	70.251	75.148	71.480	71.936	76.857
4060.00	85.371	74.647	72.903	72.889	74.075	73.200	66.965	70.247	75.152	71.474	71.936	76.848
4080.00	85.624	74.637	72.900	72.885	74.075	73.196	66.959	70.241	75.148	71.471	71.932	76.839
4100.00	85.735	74.643	72.903	72.892	74.079	73.206	66.962	70.247	75.155	71.467	71.939	76.826
4120.00	85.672	74.643	72.906	72.889	74.079	73.203	66.965	70.247	75.155	71.477	71.932	76.810
4140.00	85.799	74.640	72.906	72.889	74.079	73.203	66.962	70.247	75.155	71.477	71.936	76.797
4160.00	85.894	74.653	72.912	72.898	74.079	73.206	66.972	70.251	75.158	71.483	71.951	76.788
4180.00	85.862	74.656	72.915	72.895	74.082	73.209	66.975	70.254	75.161	71.487	71.948	76.775
4200.00	85.894	74.656	72.918	72.901	74.082	73.215	66.978	70.257	75.158	71.487	71.948	76.763
4220.00	85.941	74.653	72.915	72.901	74.085	73.215	66.978	70.257	75.158	71.490	71.951	76.756
4240.00	86.020	74.653	72.915	72.901	74.094	73.219	66.975	70.257	75.158	71.487	71.970	76.744
4260.00	86.733	74.675	72.921	72.914	74.091	73.234	66.978	70.279	75.187	71.512	71.974	76.728
4280.00	86.781	74.678	72.925	72.920	74.088	73.238	66.984	70.282	75.187	71.509	71.980	76.718
4300.00	86.796	74.685	72.925	72.926	74.091	73.247	66.990	70.289	75.196	71.515	71.986	76.712
4320.00	86.828	74.685	72.928	72.926	74.088	73.241	66.984	70.285	75.196	71.515	71.986	76.693
4340.00	86.891	74.688	72.925	72.926	74.091	73.257	66.994	70.282	75.196	71.509	71.986	76.677
4360.00	86.955	74.685	72.925	72.920	74.091	73.247	66.994	70.285	75.196	71.522	71.986	76.671
4380.00	86.971	74.685	72.931	72.926	74.094	73.250	66.994	70.285	75.202	71.531	71.983	76.665
4400.00	86.971	74.681	72.925	72.917	74.088	73.244	66.984	70.279	75.190	71.518	71.970	76.636
4420.00	87.050	74.681	72.921	72.920	74.091	73.250	66.984	70.282	75.196	71.518	71.983	76.633
4440.00	87.097	74.685	72.921	72.920	74.091	73.247	66.994	70.279	75.190	71.518	71.989	76.617
4460.00	87.097	74.678	72.921	72.920	74.091	73.244	66.984	70.273	75.193	71.518	71.986	76.605
4480.00	87.066	74.678	72.909	72.914	74.088	73.228	66.968	70.270	75.183	71.509	71.967	76.579
4500.00	87.081	74.672	72.915	72.907	74.088	73.244	66.975	70.263	75.180	71.502	71.964	76.576
4520.00	87.192	74.672	72.912	72.907	74.088	73.231	66.972	70.260	75.177	71.506	71.974	76.557

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4540.00	87.176	74.669	72.912	72.907	74.088	73.231	66.972	70.260	75.177	71.493	71.961	76.548
4560.00	87.161	74.662	72.912	72.898	74.082	73.222	66.956	70.254	75.174	71.499	71.955	76.532
4580.00	87.176	74.666	72.909	72.901	74.091	73.225	66.965	70.257	75.177	71.499	71.948	76.523
4600.00	87.176	74.675	72.906	72.904	74.088	73.238	66.975	70.266	75.183	71.502	71.961	76.519
4620.00	87.208	74.662	72.909	72.892	74.088	73.219	66.956	70.257	75.177	71.493	71.955	76.501
4640.00	87.240	74.666	72.912	72.904	74.094	73.231	66.972	70.263	75.183	71.496	71.964	76.504
4660.00	87.256	74.666	72.912	72.898	74.091	73.231	66.968	70.260	75.183	71.506	71.974	76.488
4680.00	87.240	74.672	72.912	72.904	74.094	73.231	66.972	70.266	75.190	71.499	71.967	76.472
4700.00	87.256	74.675	72.921	72.911	74.094	73.241	66.975	70.270	75.187	71.512	71.983	76.466
4720.00	87.240	74.678	72.918	72.907	74.091	73.241	66.978	70.266	75.190	71.509	71.974	76.453
4740.00	87.256	74.672	72.918	72.901	74.088	73.234	66.972	70.266	75.187	71.506	71.964	76.431
4760.00	87.303	74.672	72.915	72.901	74.088	73.225	66.972	70.263	75.183	71.502	71.961	76.415
4780.00	87.287	74.675	72.921	72.904	74.088	73.228	66.975	70.266	75.183	71.509	71.958	76.403
4800.00	87.319	74.675	72.921	72.907	74.088	73.234	66.978	70.266	75.190	71.506	71.958	76.393
4820.00	87.335	74.672	72.925	72.904	74.085	73.231	66.984	70.266	75.187	71.509	71.974	76.384
4840.00	87.303	74.681	72.925	72.911	74.088	73.241	66.981	70.273	75.193	71.512	71.961	76.374
4860.00	87.351	74.678	72.928	72.914	74.088	73.247	66.984	70.273	75.193	71.509	71.974	76.365
4880.00	87.351	74.688	72.937	72.920	74.088	73.247	66.990	70.279	75.209	71.525	71.986	76.352
4900.00	87.351	74.694	72.940	72.926	74.088	73.253	66.994	70.285	75.209	71.522	71.989	76.336
4920.00	87.351	74.700	72.943	72.929	74.085	73.257	67.000	70.289	75.215	71.528	71.974	76.324
4940.00	87.351	74.694	72.940	72.926	74.088	73.253	66.997	70.285	75.209	71.528	71.977	76.317
4960.00	87.367	74.688	72.934	72.923	74.088	73.247	66.990	70.279	75.202	71.518	71.977	76.305
4980.00	87.367	74.685	72.934	72.920	74.088	73.247	66.990	70.279	75.202	71.522	71.970	76.292
5000.00	87.398	74.691	72.937	72.923	74.088	73.253	66.994	70.282	75.206	71.525	71.983	76.286
5020.00	87.398	74.697	72.943	72.929	74.088	73.260	67.000	70.289	75.215	71.522	71.993	76.270
5040.00	87.398	74.703	72.946	72.936	74.088	73.260	67.003	70.289	75.218	71.531	71.986	76.257
5060.00	87.430	74.710	72.959	72.942	74.088	73.269	67.016	70.301	75.231	71.544	72.008	76.254
5080.00	87.430	74.722	72.962	72.951	74.088	73.276	67.022	70.308	75.234	71.550	72.005	76.235
5100.00	87.414	74.729	72.971	72.961	74.085	73.285	67.035	70.317	75.241	71.553	72.011	76.223
5120.00	87.446	74.732	72.974	72.961	74.088	73.292	67.038	70.320	75.250	71.560	72.024	76.216
5140.00	87.462	74.754	72.990	72.983	74.094	73.311	67.057	70.336	75.266	71.579	72.030	76.185
5160.00	87.462	74.754	72.993	72.986	74.085	73.311	67.063	70.342	75.276	71.585	72.034	76.188
5180.00	87.462	74.748	72.987	72.976	74.088	73.307	67.057	70.336	75.260	71.579	72.037	76.181
5200.00	87.462	74.751	72.996	72.986	74.088	73.317	67.066	70.342	75.269	71.585	72.046	76.169
5220.00	87.462	74.760	73.002	72.995	74.088	73.323	67.073	70.352	75.272	71.589	72.046	76.163
5240.00	87.462	74.763	73.002	72.995	74.091	73.323	67.073	70.349	75.276	71.592	72.046	76.150
5260.00	87.430	74.754	72.993	72.986	74.091	73.317	67.063	70.342	75.266	71.589	72.037	76.137
5280.00	87.462	74.738	72.984	72.973	74.088	73.301	67.050	70.327	75.253	71.573	72.034	76.131
5300.00	87.446	74.738	72.981	72.967	74.088	73.298	67.044	70.327	75.247	71.569	72.018	76.118
5320.00	87.430	74.735	72.981	72.967	74.088	73.292	67.041	70.323	75.250	71.566	72.018	76.106
5340.00	87.446	74.738	72.987	72.967	74.094	73.311	67.047	70.333	75.256	71.573	72.030	76.153
5360.00	87.477	74.748	72.990	72.973	74.098	73.314	67.054	70.336	75.260	71.589	72.037	76.140
5380.00	87.462	74.738	72.984	72.967	74.098	73.304	67.047	70.330	75.253	71.579	72.034	76.131
5400.00	87.446	74.748	72.987	72.973	74.094	73.307	67.050	70.336	75.256	71.576	72.034	76.118
5420.00	87.462	74.748	72.990	72.970	74.094	73.307	67.054	70.336	75.260	71.585	72.037	76.106
5440.00	87.446	74.751	72.993	72.976	74.094	73.314	67.057	70.339	75.266	71.582	72.046	76.096
5460.00	87.462	74.754	72.993	72.976	74.094	73.311	67.057	70.342	75.263	71.592	72.040	76.087
5480.00	87.477	74.748	72.993	72.973	74.094	73.307	67.057	70.339	75.263	71.585	72.040	76.077
5500.00	87.477	74.754	72.996	72.976	74.104	73.317	67.060	70.342	75.269	71.585	72.034	76.065
5520.00	87.462	74.751	72.993	72.976	74.098	73.314	67.057	70.342	75.269	71.585	72.043	76.049
5540.00	87.493	74.757	72.999	72.980	74.098	73.320	67.063	70.346	75.269	71.595	72.049	76.039
5560.00	87.493	74.760	72.999	72.983	74.094	73.317	67.066	70.349	75.266	71.592	72.043	76.024

CRT9

4738

5580.00	87.509	74.760	73.005	72.986	74.094	73.323	67.069	70.352	75.276	71.589	72.046	76.017
5600.00	87.477	74.767	73.009	72.992	74.098	73.323	67.076	70.352	75.279	71.604	72.062	76.008
5620.00	87.477	74.757	72.999	72.986	74.094	73.323	67.069	70.349	75.272	71.585	72.056	75.995
5640.00	87.493	74.773	73.015	73.002	74.098	73.336	67.082	70.361	75.288	71.604	72.068	75.986
5660.00	87.509	74.776	73.012	72.998	74.094	73.333	67.082	70.361	75.285	71.608	72.062	75.976
5680.00	87.493	74.773	73.015	72.998	74.104	73.330	67.079	70.358	75.282	71.611	72.065	75.970
5700.00	87.525	74.770	73.015	72.995	74.110	73.333	67.079	70.358	75.285	71.601	72.059	75.957
5720.00	87.493	74.770	73.012	72.995	74.110	73.330	67.076	70.358	75.282	71.608	72.062	75.951
5740.00	87.477	74.773	73.015	72.998	74.110	73.333	67.082	70.361	75.282	71.611	72.072	75.945
5760.00	87.477	74.776	73.018	72.998	74.110	73.336	67.082	70.365	75.285	71.611	72.068	75.935
5780.00	87.493	74.779	73.015	72.995	74.107	73.336	67.082	70.365	75.285	71.611	72.056	75.919
5800.00	87.493	74.776	73.018	72.995	74.110	73.336	67.085	70.365	75.288	71.608	72.065	75.913
5820.00	87.525	74.770	73.015	72.998	74.110	73.333	67.079	70.361	75.282	71.604	72.072	75.907
5840.00	87.525	74.773	73.018	72.998	74.110	73.336	67.085	70.361	75.285	71.604	72.056	75.897
5860.00	87.509	74.770	73.012	72.995	74.110	73.330	67.079	70.358	75.279	71.598	72.059	75.885
5880.00	87.525	74.773	73.012	72.989	74.101	73.323	67.073	70.358	75.282	71.601	72.053	75.866
5900.00	87.525	74.770	73.015	72.995	74.104	73.326	67.076	70.358	75.276	71.601	72.065	75.866
5920.00	87.525	74.770	73.009	72.992	74.107	73.330	67.073	70.355	75.272	71.601	72.065	75.856
5940.00	87.525	74.770	73.012	72.995	74.107	73.330	67.073	70.358	75.276	71.601	72.062	75.850
5960.00	87.541	74.773	73.012	72.995	74.104	73.330	67.073	70.361	75.276	71.598	72.056	75.834
5980.00	87.541	74.776	73.015	72.998	74.110	73.333	67.079	70.365	75.279	71.614	72.056	75.821
6000.00	87.525	74.773	73.015	72.998	74.107	73.336	67.082	70.361	75.282	71.604	72.059	75.821
6020.00	87.525	74.763	73.015	72.992	74.110	73.330	67.073	70.358	75.276	71.595	72.062	75.812
6040.00	87.509	74.757	72.990	72.976	74.101	73.314	67.054	70.342	75.266	71.592	72.053	75.796
6060.00	87.731	74.754	72.987	72.976	74.101	73.295	67.038	70.339	75.253	71.585	72.040	75.780
6080.00	87.525	74.757	73.005	72.976	74.110	73.326	67.050	70.339	75.260	71.585	72.040	75.790
6100.00	87.493	74.754	73.005	72.976	74.113	73.317	67.050	70.342	75.260	71.589	72.046	75.780
6120.00	87.493	74.741	72.977	72.961	74.104	73.295	67.035	70.327	75.247	71.576	72.030	75.755
6140.00	87.493	74.741	72.981	72.961	74.094	73.285	67.028	70.320	75.237	71.573	72.034	75.746
6160.00	87.493	74.748	72.987	72.970	74.110	73.314	67.038	70.336	75.253	71.579	72.037	75.752
6180.00	87.477	74.748	72.993	72.970	74.110	73.307	67.041	70.336	75.250	71.573	72.037	75.736
6200.00	87.493	74.744	72.990	72.967	74.107	73.298	67.038	70.330	75.250	71.579	72.034	75.723
6220.00	87.493	74.751	72.993	72.973	74.107	73.311	67.044	70.336	75.253	71.585	72.043	75.720
6240.00	87.525	74.751	72.993	72.967	74.104	73.307	67.044	70.333	75.253	71.582	72.030	75.705
6260.00	87.493	74.748	72.996	72.973	74.104	73.311	67.050	70.339	75.250	71.582	72.046	75.701
6280.00	87.509	74.757	73.002	72.980	74.104	73.317	67.054	70.349	75.266	71.595	72.040	75.689
6300.00	87.541	74.754	72.999	72.976	74.101	73.314	67.047	70.339	75.260	71.585	72.034	75.676
6320.00	87.541	74.748	72.996	72.973	74.107	73.311	67.047	70.336	75.253	71.585	72.043	75.667
6340.00	87.509	74.754	73.002	72.980	74.104	73.314	67.054	70.342	75.260	71.589	72.040	75.657
6360.00	87.525	74.757	73.002	72.980	74.104	73.317	67.054	70.346	75.266	71.589	72.049	75.651
6380.00	87.525	74.754	73.005	72.983	74.107	73.317	67.054	70.346	75.266	71.592	72.049	75.648
6400.00	87.525	74.763	73.012	72.989	74.104	73.326	67.063	70.355	75.276	71.592	72.056	75.635
6420.00	87.525	74.767	73.015	72.989	74.101	73.326	67.066	70.355	75.269	71.595	72.049	75.622
6440.00	87.525	74.763	73.012	72.989	74.101	73.326	67.063	70.355	75.272	71.598	72.056	75.613
6460.00	87.525	74.773	73.015	72.992	74.101	73.330	67.069	70.358	75.276	71.601	72.049	75.603
6480.00	87.525	74.767	73.015	72.995	74.101	73.330	67.069	70.358	75.272	71.595	72.059	75.600
6500.00	87.557	74.776	73.021	72.998	74.101	73.342	67.079	70.365	75.288	71.611	72.065	75.588
6520.00	87.557	74.779	73.027	73.002	74.101	73.342	67.082	70.368	75.288	71.611	72.072	75.578
6540.00	87.462	74.789	73.033	73.011	74.101	73.345	67.092	70.377	75.298	71.617	72.078	75.572
6560.00	87.477	74.789	73.033	73.011	74.101	73.349	67.092	70.377	75.298	71.614	72.075	75.562
6580.00	87.477	74.792	73.037	73.014	74.101	73.352	67.095	70.377	75.301	71.620	72.072	75.553
6600.00	87.446	74.786	73.033	73.011	74.104	73.345	67.092	70.374	75.298	71.620	72.081	75.550

CRT10

4733

6620.00	87.446	74.782	73.027	73.005	74.101	73.342	67.085	70.371	75.291	71.617	72.078	75.537
6640.00	87.446	74.779	73.027	73.002	74.104	73.339	67.082	70.368	75.291	71.614	72.081	75.534
6660.00	87.382	74.779	73.021	72.998	74.101	73.336	67.079	70.365	75.285	71.611	72.072	75.518
6680.00	87.382	74.782	73.027	73.005	74.101	73.339	67.082	70.371	75.291	71.608	72.072	75.512
6700.00	87.367	74.776	73.024	72.998	74.101	73.336	67.079	70.365	75.288	71.608	72.059	75.502
6720.00	87.382	74.776	73.024	73.002	74.101	73.339	67.079	70.368	75.295	71.604	72.068	75.496
6740.00	87.382	74.779	73.027	73.005	74.101	73.342	67.082	70.371	75.298	71.608	72.072	75.490
6760.00	87.367	74.773	73.015	72.992	74.101	73.326	67.073	70.361	75.285	71.604	72.053	75.477
6780.00	87.351	74.773	73.015	72.995	74.101	73.326	67.073	70.361	75.288	71.598	72.062	75.480
6800.00	87.351	74.776	73.021	72.998	74.101	73.333	67.076	70.361	75.291	71.614	72.065	75.474
6820.00	87.351	74.779	73.027	73.005	74.101	73.339	67.079	70.371	75.301	71.608	72.072	75.464
6840.00	87.335	74.779	73.027	73.002	74.101	73.336	67.082	70.371	75.298	71.617	72.075	75.458
6860.00	87.335	74.773	73.021	72.998	74.101	73.333	67.076	70.365	75.295	71.611	72.075	75.449
6880.00	87.319	74.770	73.018	72.995	74.101	73.330	67.069	70.358	75.288	71.601	72.059	75.439
6900.00	87.335	74.773	73.021	72.995	74.101	73.330	67.073	70.361	75.295	71.604	72.053	75.433
6920.00	87.319	74.770	73.021	72.995	74.098	73.333	67.073	70.361	75.295	71.601	72.065	75.423
6940.00	87.303	74.770	73.018	72.992	74.101	73.330	67.069	70.361	75.288	71.604	72.062	75.414
6960.00	87.335	74.776	73.021	72.998	74.104	73.330	67.073	70.361	75.291	71.601	72.059	75.395
6980.00	87.303	74.770	73.021	72.995	74.101	73.330	67.073	70.361	75.288	71.608	72.059	75.389
7000.00	87.319	74.776	73.027	73.002	74.104	73.336	67.079	70.365	75.295	71.614	72.068	75.379
7020.00	87.319	74.782	73.030	73.005	74.104	73.336	67.082	70.371	75.295	71.614	72.075	75.376
7040.00	87.303	74.782	73.030	73.002	74.101	73.339	67.082	70.368	75.298	71.617	72.072	75.367
7060.00	87.319	74.779	73.030	73.008	74.104	73.342	67.085	70.371	75.298	71.614	72.078	75.357
7080.00	87.335	74.792	73.040	73.017	74.107	73.349	67.095	70.380	75.311	71.627	72.097	75.357
7100.00	87.319	74.789	73.037	73.011	74.107	73.352	67.092	70.380	75.307	71.627	72.081	75.348
7120.00	87.319	74.789	73.043	73.017	74.104	73.355	67.101	70.384	75.304	71.630	72.091	75.338
7140.00	87.319	74.795	73.040	73.011	74.110	73.358	67.098	70.380	75.307	71.627	72.094	75.335
7160.00	87.351	74.786	73.037	73.011	74.110	73.355	67.095	70.380	75.298	71.620	72.087	75.332
7180.00	87.335	74.792	73.040	73.014	74.110	73.355	67.098	70.384	75.307	71.630	72.084	75.325
7200.00	87.319	74.789	73.037	73.008	74.104	73.349	67.088	70.377	75.295	71.624	72.078	75.316
7220.00	87.319	74.792	73.040	73.011	74.107	73.349	67.085	70.374	75.295	71.627	72.078	75.310
7240.00	87.335	74.786	73.040	73.008	74.110	73.349	67.085	70.374	75.291	71.624	72.078	75.307
7260.00	87.335	74.786	73.033	73.002	74.104	73.342	67.082	70.371	75.285	71.611	72.078	75.288
7280.00	87.319	74.786	73.027	72.998	74.104	73.336	67.073	70.368	75.282	71.620	72.068	75.278
7300.00	87.335	74.779	73.024	72.992	74.104	73.333	67.073	70.361	75.282	71.611	72.065	75.272
7320.00	87.303	74.770	73.015	72.989	74.110	73,333	67.073	70.352	75.272	71.608	72.072	75.275
7340.00	87.303	74.763	73.015	72.983	74.107	73.330	67.063	70.355	75.269	71.598	72.065	75.262
7360.00	87.319	74.763	73.009	72.986	74.107	73.323	67.060	70.352	75.272	71.601	72.059	75.253
7380.00	87.319	74.767	73.012	72.980	74.107	73.323	67.047	70.349	75.269	71.598	72.056	75.243
7400.00	87.319	74.763	73.005	72.976	74.098	73.323	67.050	70.349	75.266	71.595	72.056	75.224
7420.00	87.319	74.770	73.027	72.992	74.107	73.342	67.076	70.361	75.279	71.614	72.072	75.234
7440.00	87.319	74.770	73.021	72.986	74.101	73.326	67.063	70.358	75.272	71.608	72.062	75.215
7460.00	87.335	74.773	73.030	72.995	74.113	73.349	67.079	70.365	75.282	71.608	72.072	75.224
7480.00	87.303	74.763	73.021	72.983	74.107	73.336	67.063	70.349	75.269	71.595	72.059	75.202
7500.00	87.319	74.767	73.012	72.983	74.110	73.336	67.060	70.352	75.272	71.595	72.059	75.202
7520.00	87.319	74.757	72.999	72.973	74.101	73.320	67.047	70.342	75.260	71.592	72.053	75.183
7540.00	87.303	74.754	73.002	72.967	74.104	73.311	67.035	70.339	75.256	71.582	72.037	75.180
7560.00	87.303	74.757	73.005	72.970	74.104	73.311	67.041	70.339	75.256	71.585	72.049	75.171
7580.00	87.303	74.754	72.999	72.973	74.107	73.317	67.044	70.342	75.260	71.585	72.049	75.164
7600.00	87.303	74.744	72.993	72.961	74.104	73.311	67.038	70.333	75.247	71.585	72.040	75.158
7620.00	87.287	74.741	72.990	72.958	74.101	73.304	67.035	70.330	75.247	71.582	72.040	75.145
7640.00	87.287	74.741	72.993	72.958	74.101	73.301	67.032	70.327	75.244	71.582	72.027	75.133

CRT11

7660.00	87.272	74.748	72.996	72.967	74.107	73.311	67.038	70.336	75.253	71.585	72.037	75.130
7680.00	87.272	74.744	72.993	72.958	74.101	73.298	67.032	70.330	75.241	71.579	72.027	75.117
7700.00	87.256	74.741	72.990	72.961	74.107	73.304	67.028	70.327	75.244	71.573	72.027	75.117
7720.00	87.287	74.748	72.999	72.970	74.104	73.314	67.041	70.336	75.253	71.592	72.043	75.111
7740.00	87.287	74.751	73.009	72.973	74.113	73.317	67.047	70.339	75.256	71.592	72.037	75.108
7760.00	87.272	74.751	73.005	72.970	74.101	73.320	67.047	70.342	75.266	71.589	72.053	75.095
7780.00	87.256	74.751	73.002	72.970	74.104	73.320	67.044	70.339	75.256	71.592	72.043	75.089
7800.00	87.272	74.760	73.015	72.983	74.104	73.330	67.057	70.352	75.282	71.598	72.049	75.079
7820.00	87.272	74.767	73.021	72.986	74.101	73.336	67.069	70.352	75.285	71.611	72.059	75.073
7840.00	87.272	74.770	73.024	72.992	74.107	73.345	67.069	70.358	75.285	71.614	72.065	75.066
7860.00	87.272	74.776	73.027	72.995	74.107	73.345	67.073	70.361	75.285	71.614	72.065	75.054
7880.00	87.287	74.779	73.030	73.002	74.110	73.345	67.076	70.365	75.288	71.617	72.072	75.051
7900.00	87.287	74.779	73.037	73.002	74.110	73.355	67.082	70.371	75.317	71.627	72.078	75.038
7920.00	87.287	74.786	73.040	73.008	74.113	73.361	67.088	70.377	75.320	71.624	72.078	75.038
7940.00	87.287	74.782	73.037	73.002	74.113	73.358	67.082	70.371	75.314	71.627	72.068	75.025
7960.00	87.303	74.792	73.043	73.011	74.110	73.364	67.088	70.377	75.320	71.633	72.078	75.019
7980.00	87.303	74.798	73.049	73.017	74.113	73.374	67.098	70.384	75.326	71.643	72.097	75.013
8000.00	87.303	74.798	73.049	73.017	74.113	73.371	67.098	70.387	75.326	71.633	72.091	75.003
8020.00	87.319	74.817	73.068	73.036	74.113	73.390	67.120	70.403	75.339	71.662	72.116	74.997
8040.00	87.335	74.811	73.058	73.030	74.113	73.380	67.114	70.399	75.339	71.649	72.097	74.991
8060.00	87.287	74.801	73.049	73.030	74.113	73.371	67.114	70.387	75.320	71.646	72.091	74.984
8080.00	87.303	74.808	73.055	73.027	74.113	73.380	67.114	70.396	75.330	71.655	72.103	74.978
8100.00	87.303	74.804	73.052	73.020	74.113	73.380	67.110	70.393	75.330	71.649	72.091	74.972
8120.00	87.287	74.798	73.046	73.014	74.113	73.374	67.104	70.387	75.323	71.646	72.087	74.962
8140.00	87.319	74.798	73.052	73.020	74.116	73.377	67.104	70.390	75.330	71.646	72.100	74.956
8160.00	87.319	74.795	73.049	73.014	74.116	73.371	67.101	70.387	75.323	71.636	72.091	74.950
8180.00	87.287	74.795	73.046	73.011	74.113	73.364	67.098	70.384	75.320	71.636	72.081	74.943
8200.00	87.287	74.789	73.043	73.008	74.116	73.361	67.095	70.380	75.320	71.640	72.094	74.937
8220.00	87.287	74.786	73.040	73.005	74.113	73.361	67.088	70.377	75.314	71.624	72.087	74.931
8240.00	87.272	74.782	73.037	73.002	74.113	73.352	67.092	70.377	75.314	71.627	72.084	74.921
8260.00	87.287	74.789	73.043	73.008	74.113	73.364	67.095	70.380	75.317	71.636	72.084	74.918
8280.00	87.287	74.786	73.043	73.008	74.113	73.358	67.095	70.380	75.320	71.633	72.091	74.909
8300.00	87.303	74.789	73.046	73.008	74.110	73.361	67.095	70.380	75.320	71.630	72.084	74.902
8320.00	87.303	74.789	73.046	73.008	74.110	73.361	67.098	70.380	75.323	71.636	72.087	74.896
8340.00	87.319	74.789	73.046	73.008	74.110	73.358	67.098	70.380	75.323	71.633	72.091	74.890
8360.00	87.319	74.798	73.055	73.014	74.110	73.368	67.107	70.390	75.333	71.646	72.094	74.883
8380.00	87.319	74.808	73.061	73.024	74.110	73.380	67.114	70.399	75.339	71.652	72.103	74.874
8400.00	87.319	74.808	73.065	73.027	74.110	73.380	67.120	70.403	75.336	71.659	72.116	74.871
8420.00	87.303	74.808	73.061	73.020	74.110	73.377	67.117	70.399	75.339	71.655	72.109	74.867
8440.00	87.319	74.814	73.068	73.027	74.107	73.387	67.123	70.406	75.349	71.659	72.106	74.861
8460.00	87.303	74.823	73.077	73.036	74.110	73.396	67.133	70.412	75.355	71.668	72.116	74.852
8480.00	87.319	74.830	73.083	73.042	74.110	73.399	67.142	70.422	75.361	71.671	72.125	74.849
8500.00	87.351	74.833	73.083	73.046	74.107	73.402	67.145	70.425	75.365	71.678	72.128	74.842
8520.00	87.319	74.827	73.080	73.042	74.110	73.393	67.142	70.422	75.361	71.675	72.132	74.836
8540.00	87.319	74.823	73.077	73.036	74.107	73.396	67.139	70.418	75.358	71.671	72.119	74.830
8560.00	87.319	74.836	73.086	73.046	74.107	73.406	67.148	70.425	75.368	71.671	72.132	74.823
8580.00	87.319	74.842	73.093	73.049	74.110	73.393	67.151	70.431	75.371	71.684	72.132	74.814
8600.00	87.335	74.855	73.105	73.064	74.107	73.425	67.170	70.447	75.380	71.703	72.147	74.804
8620.00	87.351	74.858	73.105	73.064	74.110	73.422	67.174	70.444	75.377	71.694	72.157	74.798
8640.00	87.351	74.864	73.111	73.071	74.107	73.428	67.183	70.453	75.384	71.710	72.166	74.795
8660.00	87.351	74.874	73.117	73.077	74.110	73.437	67.186	70.460	75.387	71.716	72.170	74.792
8680.00	87.351	74.868	73.117	73.074	74.107	73.437	67.186	70.456	75.387	71.713	72.160	74.785

CRT12

4233

8700.00	87.351	74.874	73.121	73.080	74.110	73.437	67.193	70.463	75.387	71.722	72.173	74.782
8720.00	87.351	74.871	73.124	73.080	74.107	73.441	67.196	70.460	75.390	71.719	72.173	74.776
8740.00	87.367	74.877	73.127	73.080	74.110	73.450	67.199	70.466	75.393	71.722	72.176	74.773
8760.00	87.319	74.880	73.127	73.080	74.110	73.437	67.193	70.466	75.387	71.722	72.173	74.763
8780.00	87.335	74.883	73.121	73.083	74.110	73.453	67.202	70.472	75.393	71.726	72.176	74.760
8800.00	87.319	74.874	73.105	73.068	74.104	73.422	67.177	70.456	75.371	71.706	72.170	74.741
8820.00	87.303	74.861	73.086	73.046	74.085	73.396	67.133	70.434	75.352	71.678	72.147	74.716
8840.00	87.319	74.877	73.121	73.077	74.110	73.437	67.193	70.466	75.380	71.719	72.176	74.744
8860.00	87.319	74.877	73.121	73.080	74.107	73.441	67.196	70.469	75.384	71.713	72.176	74.732
8880.00	87.303	74.871	73.093	73.061	74.094	73.402	67.148	70.450	75.365	71.700	72.151	74.703
8900.00	87.351	74.883	73.142	73.093	74.120	73.469	67.221	70.482	75.396	71.729	72.189	74.741
8920.00	87.335	74.883	73.142	73.086	74.116	73.456	67.218	70.475	75.387	71.722	72.179	74.725
8940.00	87.335	74.883	73.130	73.090	74.104	73.444	67.202	70.475	75.387	71.722	72.182	74.700
8960.00	87.319	74.883	73.130	73.090	74.107	73.444	67.202	70.475	75.390	71.722	72.185	74.697
8980.00	87.319	74.883	73.130	73.090	74.104	73.447	67.205	70.472	75.384	71.716	72.179	74.697
9000.00	87.319	74.883	73.130	73.083	74.107	73.450	67.199	70.469	75.380	71.722	72.179	74.691
9020.00	87.303	74.883	73.133	73.086	74.101	73.447	67.205	70.469	75.387	71.722	72.176	74.681
9040.00	87.303	74.887	73.130	73.086	74.104	73.450	67.205	70.472	75.390	71.713	72.179	74.681
9060.00	87.319	74.890	73.130	73.090	74.107	73.453	67.208	70.475	75.390	71.719	72.185	74.675
9080.00	87.287	74.890	73.133	73.086	74.107	73.453	67.205	70.472	75.390	71.719	72.179	74.672
9100.00	87.287	74.887	73.133	73.086	74.107	73.453	67.199	70.472	75.390	71.713	72.182	74.668
9120.00	87.287	74.883	73.127	73.080	74.107	73.447	67.196	70.469	75.387	71.716	72.176	74.665
9140.00	87.303	74.883	73.130	73.083	74.107	73.444	67.196	70.466	75.387	71.713	72.176	74.659
9160.00	87.287	74.883	73.130	73.083	74.104	73.447	67.196	70.469	75.384	71.716	72.182	74.653
9180.00	87.303	74.890	73.136	73.086	74.110	73.453	67.208	70.475	75.393	71.719	72.192	74.646
9200.00	87.287	74.887	73.136	73.086	74.107	73.453	67.205	70.475	75.390	71.722	72.185	74.643
9220.00	87.272	74.880	73.121	73.077	74.104	73.444	67.193	70.463	75.377	71.710	72.166	74.627
9240.00	87.272	74.887	73.133	73.083	74.107	73.450	67.202	70.472	75.390	71.719	72.182	74.627
9260.00	87.256	74.887	73.133	73.083	74.110	73.450	67.202	70.472	75.387	71.722	72.189	74.627
9280.00	87.256	74.893	73.139	73.086	74.107	73.456	67.208	70.475	75.396	71.719	72.182	74.618
9300.00	87.240	74.896	73.145	73.093	74.104	73.463	67.215	70.479	75.390	71.729	72.192	74.615
9320.00	87.256	74.899	73.145	73.093	74.104	73.463	67.218	70.482	75.400	71.732	72.192	74.608
9340.00	87.272	74.899	73.145	73.093	74.104	73.460	67.215	70.482	75.400	71.732	72.198	74.605
9360.00	87.272	74.905	73.149	73.099	74.104	73.469	67.221	70.488	75.406	71.729	72.198	74.599
9380.00	87.272	74.909	73.155	73.102	74.104	73.472	67.227	70.494	75.409	71.732	72.201	74.593
9400.00	87.287	74.912	73.155	73.105	74.104	73.475	67.230	70.494	75.415	71.735	72.211	74.586
9420.00	87.272	74.915	73.158	73.105	74.107	73.479	67.230	70.494	75.415	71.742	72.204	74.583
9440.00	87.287	74.915	73.161	73.105	74.107	73.479	67.234	70.498	75.419	71.745	72.217	74.577
9460.00	87.272	74.921	73.161	73.108	74.104	73.482	67.237	70.501	75.422	71.748	72.207	74.574
9480.00	87.256	74.918	73.161	73.108	74.104	73.479	67.237	70.501	75.422	71.748	72.214	74.567
9500.00	87.272	74.918	73.161	73.105	74.120	73.479	67.234	70.501	75.422	71.745	72.207	74.555
9520.00	87.256	74.909	73.158	73.093	74.116	73.472	67.227	70.491	75.409	71.738	72.207	74.555
9540.00	87.256	74.909	73.158	73.096	74.120	73.475	67.227	70.494	75.415	71.738	72.204	74.548
9560.00	87.240	74.902	73.152	73.090	74.120	73.466	67.221	70.488	75.412	71.735	72.192	74.539
9580.00	87.208	74.902	73.155	73.090	74.120	73.463	67.221	70.488	75.412	71.738	72.201	74.539
9600.00	87.208	74.902	73.152	73.083	74.120	73.469	67.218	70.485	75.412	71.729	72.192	74.536
9620.00	87.192	74.896	73.149	73.083	74.120	73.460	67.211	70.482	75.406	71.726	72.195	74.529
9640.00	87.176	74.899	73.149	73.080	74.116	73.460	67.211	70.482	75.412	71.729	72.195	74.520
9660.00	87.192	74.896	73.152	73.083	74.116	73.456	67.215	70.485	75.412	71.729	72.198	74.520
9680.00	87.161	74.893	73.142	73.074	74.123	73.453	67.208	70.475	75.406	71.722	72.182	74.517
9700.00	87.161	74.893	73.142	73.074	74.120	73.453	67.205	70.475	75.403	71.726	72.185	74.511
9720.00	87.161	74.893	73.145	73.077	74.120	73.456	67.208	70.479	75.409	71.726	72.195	74.504

CRT13

9740.00	87.161	74.890	73.139	73.074	74.123	73.453	67.205	70.475	75.406	71.719	72.189	74.501
9760.00	87.161	74.890	73.142	73.074	74.123	73.453	67.205	70.475	75.406	71.722	72.192	74.498
9780.00	87.161	74.893	73.145	73.074	74.123	73.463	67.208	70.479	75.415	71.726	72.185	74.495
9800.00	87.161	74.890	73.139	73.071	74.120	73.453	67.202	70.475	75.406	71.716	72.192	74.485
9820.00	87.145	74.893	73.145	73.074	74.120	73.460	67.208	70.479	75.412	71.722	72.189	74.482
9840.00	87.161	74.896	73.149	73.074	74.120	73.463	67.211	70.482	75.415	71.729	72.195	74.476
9860.00	87.145	74.893	73.149	73.074	74.120	73.460	67.208	70.482	75.412	71.722	72.195	74.469
9880.00	87.161	74.896	73.145	73.071	74.123	73.460	67.208	70.479	75.409	71.722	72.189	74.466
9900.00	87.145	74.902	73.155	73.080	74.126	73.466	67.215	70.485	75.422	71.729	72.204	74.463
9920.00	87.145	74.912	73.161	73.086	74.126	73.475	67.224	70.491	75.428	71.732	72.204	74.457
9940.00	87.161	74.912	73.164	73.090	74.126	73.479	67.230	70.498	75.435	71.742	72.214	74.457
9960.00	87.161	74.918	73.173	73.096	74.123	73.485	67.240	70.507	75.444	71.751	72.226	74.454
9980.00	87.145	74.921	73.177	73.099	74.126	73.488	67.243	70.507	75.441	71.751	72.223	74.447
10000.0	87.176	74.928	73.183	73.105	74.126	73.501	67.249	70.513	75.447	71.754	72.233	74.447
10020.0	87.161	74.931	73.183	73.108	74.129	73.504	67.252	70.520	75.444	71.767	72.233	74.441
10040.0	87.192	74.934	73.192	73.108	74.129	73.504	67.265	70.523	75.447	71.770	72.242	74.441
10060.0	87.176	74.940	73.186	73.108	74.129	73.507	67.256	70.523	75.447	71.770	72.236	74.438
10080.0	87.161	74.937	73.186	73.112	74.135	73.507	67.265	70.526	75.450	71.780	72.245	74.438
10100.0	87.161	74.946	73.183	73.108	74.129	73.510	67.256	70.523	75.438	71.773	72.239	74.425
10120.0	87.161	74.934	73.145	73.096	74.110	73.472	67.218	70.510	75.419	71.751	72.223	74.384
10140.0	87.192	74.943	73.195	73.115	74.135	73.513	67.265	70.529	75.444	71.773	72.239	74.425
10160.0	87.161	74.937	73.189	73.105	74.123	73.501	67.259	70.520	75.435	71.767	72.230	74.403
10180.0	87.192	74.934	73.186	73.102	74.129	73.501	67.252	70.520	75.435	71.767	72.233	74.409
10200.0	87.192	74.934	73.180	73.099	74.129	73.498	67.256	70.520	75.435	71.767	72.239	74.413
10220.0	87.176	74.931	73.183	73.099	74.135	73.501	67.259	70.520	75.438	71.761	72.239	74.422
10240.0	87.176	74.931	73.186	73.102	74.142	73.501	67.262	70.517	75.425	71.770	72.239	74.413
10260.0	87.161	74.921	73.177	73.096	74.132	73.494	67.252	70.510	75.425	71.757	72.230	74.397
10280.0	87.161	74.931	73.170	73.096	74.139	73.498	67.240	70.513	75.431	71.767	72.239	74.406
10300.0	87.145	74.915	73.158	73.077	74.123	73.482	67.234	70.501	75.409	71.748	72.211	74.378
10320.0	87.129	74.915	73.149	73.068	74.116	73.488	67.227	70.488	75.403	71.738	72.207	74.372
10340.0	87.161	74.912	73.164	73.077	74.123	73.485	67.230	70.498	75.409	71.742	72.211	74.368
10360.0	87.161	74.915	73.167	73.074	74.126	73.485	67.224	70.494	75.412	71.742	72.214	74.375
10380.0	87.113	74.896	73.149	73.061	74.116	73.466	67.202	70.482	75.396	71.738	72.192	74.353
10400.0	87.129	74.905	73.152	73.068	74.126	73.472	67.215	70.488	75.403	71.735	72.204	74.362
10420.0	87.129	74.909	73.152	73.068	74.132	73.475	67.211	70.488	75.393	71.732	72.207	74.359
10440.0	87.097	74.893	73.142	73.055	74.123	73.466	67.205	70.475	75.387	71.722	72.192	74.353
10460.0	87.097	74.893	73.142	73.055	74.129	73.450	67.199	70.479	75.390	71.722	72.192	74.349
10480.0	87.081	74.887	73.133	73.046	74.123	73.447	67.199	70.475	75.387	71.719	72.182	74.343
10500.0	87.066	74.880	73.139	73.039	74.123	73.447	67.196	70.469	75.380	71.713	72.185	74.327
10520.0	87.081	74.887	73.139	73.046	74.129	73.456	67.196	70.472	75.387	71.716	72.192	74.337
10540.0	87.097	74.890	73.142	73.049	74.129	73.456	67.199	70.475	75.390	71.722	72.195	74.337
10560.0	87.050	74.893	73.149	73.052	74.129	73.460	67.202	70.482	75.390	71.729	72.192	74.321

SE2000
Environmental Logger
06/05 08:44

Unit# 148 Test 1

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC	TOC
I.D.	RW4	SPPZ-1	SPPZ-4	SPPZ-2E	SPPZ-2G	SPPZ-5	2002	SPPZ-2C	SPPZ-2A	SPPZ-2D	SPPZ-3	SPPZ-2B
Reference	70.550	73.555	72.250	71.950	73.890	72.100	66.350	69.270	73.810	70.470	70.915	81.040
SG	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Linearity	-0.065	0.021	0.004	0.006	0.006	0.003	0.068	0.006	0.005	0.023	0.010	0.000
Scale factor	50.159	9.957	9.840	9.929	9.974	10.037	9.915	10.014	10.073	10.069	10.006	10.013
Offset	-0.089	0.024	-0.065	-0.016	-0.148	-0.021	-0.063	0.046	-0.086	0.062	-0.004	-0.049
Delay mSEC	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000	50.000

Step 0 06/01 16:48:34

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5	INPUT 6	INPUT 7	INPUT 8	INPUT 9	INPUT 10	INPUT 11	INPUT 12
0.0000	87.050	74.887	73.136	73.046	74.126	73.456	67.196	70.475	75.384	71.713	72.192	74.324
0.0083	87.050	74.887	73.139	73.046	74.126	73.456	67.196	70.469	75.342	71.722	72.201	74.327
0.0166	87.050	74.890	73.139	73.046	74.126	73.453	67.196	70.472	75.330	71.726	72.207	74.327
0.0250	87.050	74.887	73.139	73.046	74.129	73.453	67.196	70.469	75.320	71.716	72.201	74.327
0.0333	87.034	74.890	73.139	73.046	74.129	73.453	67.196	70.469	75.317	71.722	72.201	74.327
0.0416	85.355	74.890	73.139	73.046	74.129	73.453	67.196	70.469	75.317	71.719	72.204	74.327
0.0500	87.398	74.893	73.136	73.046	74.129	73.456	67.196	70.469	75.326	71.719	72.207	74.327
0.0583	86.147	74.893	73.139	73.049	74.132	73.453	67.196	70.469	75.330	71.722	72.207	74.327
0.0666	85.339	74.890	73.139	73.046	74.132	73.450	67.196	70.469	75.339	71.722	72.207	74.327
0.0750	86.131	74.893	73.136	73.046	74.132	73.453	67.196	70.469	75.349	71.719	72.204	74.327
0.0833	84.737	74.887	73.139	73.046	74.132	73.453	67.196	70.469	75.352	71.726	72.201	74.327
0.0916	84.706	74.890	73.139	73.046	74.132	73.450	67.196	70.469	75.352	71.722	72.204	74.324
0.1000	84.516	74.890	73.139	73.046	74.132	73.447	67.196	70.466	75.358	71.722	72.207	74.327
0.1083	83.851	74.890	73.139	73.046	74.132	73.450	67.196	70.469	75.361	71.719	72.204	74.324
0.1166	83.708	74.890	73.139	73.049	74.129	73.447	67.196	70.469	75.361	71.716	72.207	74.327
0.1250	83.249	74.887	73.136	73.046	74.129	73.447	67.196	70.469	75.361	71.722	72.204	74.327
0.1333	82.885	74.887	73.136	73.046	74.129	73.444	67.196	70.466	75.361	71.726	72.204	74.327
0.1416	82.663	74.887	73.139	73.046	74.129	73.444	67.199	70.466	75.365	71.716	72.204	74.327
0.1500	82.283	74.883	73.139	73.046	74.132	73.441	67.196	70.466	75.361	71.726	72.201	74.324
0.1583	82.014	74.880	73.139	73.042	74.129	73.437	67.196	70.466	75.358	71.716	72.201	74.327
0.1666	81.760	74.880	73.139	73.046	74.132	73.437	67.196	70.463	75.361	71.722	72.201	74.327
0.1750	81.459	74.883	73.139	73.046	74.132	73.434	67.196	70.466	75.361	71.719	72.201	74.327
0.1833	81.238	74.877	73.139	73.046	74.135	73.434	67.196	70.463	75.361	71.716	72.201	74.327
0.1916	81.000	74.877	73.139	73.046	74.132	73.431	67.196	70.463	75.358	71.719	72.201	74.327
0.2000	80.762	74.877	73.139	73.042	74.132	73.428	67.196	70.463	75.358	71.719	72.198	74.324
0.2083	80.557	74.874	73.139	73.046	74.132	73.428	67.196	70.460	75.358	71.716	72.198	74.327
0.2166	80.335	74.871	73.139	73.042	74.132	73.425	67.196	70.460	75.358	71.719	72.195	74.327
0.2250	80.145	74.868	73.139	73.042	74.132	73.422	67.196	70.460	75.358	71.710	72.195	74.327

RECOVERY1

0.2333	79.955	74.868	73.139	73.042	74.132	73.422	67.196	70.456	75.358	71.719	72.195	74.327
0.2416	79.765	74.868	73.136	73.042	74.132	73.418	67.196	70.456	75.355	71.713	72.195	74.324
0.2500	79.591	74.868	73.139	73.039	74.129	73.415	67.196	70.456	75.358	71.716	72.195	74.327
0.2583	79.432	74.864	73.139	73.042	74.129	73.412	67.196	70.453	75.355	71.716	72.192	74.324
0.2666	79.242	74.861	73.139	73.042	74.132	73.412	67.196	70.453	75.352	71.716	72.192	74.324
0.2750	79.084	74.858	73.139	73.042	74.129	73.409	67.196	70.450	75.349	71.703	72.189	74.327
0.2833	78.989	74.855	73.136	73.039	74.132	73.409	67.196	70.447	75.349	71.716	72.185	74.321
0.2916	78.831	74.852	73.139	73.039	74.132	73.406	67.196	70.447	75.349	71.703	72.185	74.327
0.3000	78.704	74.852	73.139	73.039	74.132	73.406	67.196	70.444	75.346	71.713	72.185	74.324
0.3083	78.561	74.849	73.136	73.036	74.132	73.399	67.196	70.444	75.339	71.703	72.182	74.324
0.3166	78.435	74.845	73.136	73.036	74.129	73.399	67.196	70.441	75.339	71.710	72.185	74.324
0.3250	78.324	74.845	73.139	73.036	74.129	73.396	67.196	70.441	75.339	71.700	72.182	74.324
0.3333	78.213	74.845	73.139	73.036	74.132	73.396	67.196	70.437	75.336	71.706	72.182	74.321
0.3500	77.912	74.833	73.139	73.033	74.132	73.387	67.196	70.434	75.330	71.697	72.173	74.327
0.3666	77.627	74.827	73.139	73.030	74.132	73.380	67.196	70.428	75.311	71.694	72.170	74.324
0.3833	77.358	74.820	73.139	73.024	74.129	73.377	67.196	70.425	75.295	71.691	72.166	74.327
0.4000	77.089	74.814	73.136	73.024	74.129	73.368	67.196	70.415	75.276	71.687	72.157	74.321
0.4166	76.835	74.808	73.139	73.020	74.132	73.364	67.196	70.412	75.263	71.684	72.154	74.324
0.4333	76.582	74.801	73.139	73.017	74.129	73.358	67.196	70.403	75.253	71.681	72.151	74.324
0.4500	76.344	74.798	73.136	73.011	74.129	73.352	67.196	70.403	75.241	71.675	72.147	74.330
0.4666	76.123	74.792	73.136	73.011	74.126	73.349	67.196	70.393	75.231	71.671	72.144	74.327
0.4833	75.917	74.786	73.136	73.005	74.129	73.342	67.196	70.387	75.218	71.665	72.138	74.321
0.5000	75.711	74.779	73.136	73.005	74.129	73.336	67.196	70.377	75.209	71.662	72.135	74.324
0.5166	75.521	74.770	73.136	72.998	74.129	73.333	67.196	70.374	75.196	71.655	72.128	74.324
0.5333	75.331	74.773	73.136	72.992	74.132	73.326	67.196	70.371	75.187	71.646	72.125	74.321
0.5500	75.141	74.767	73.136	72.989	74.129	73.323	67.196	70.365	75.177	71.646	72.122	74.327
0.5666	74.967	74.754	73.136	72.986	74.132	73.320	67.193	70.358	75.167	71.640	72.116	74.324
0.5833	74.793	74.751	73.136	72.983	74.126	73.314	67.193	70.352	75.158	71.640	72.113	74.321
0.6000	74.634	74.748	73.136	72.976	74.129	73.311	67.193	70.349	75.148	71.633	72.109	74.324
0.6166	74.476	74.741	73.136	72.980	74.132	73.304	67.193	70.342	75.139	71.633	72.103	74.324
0.6333	74.302	74.735	73.136	72.973	74.132	73.298	67.193	70.336	75.132	71.624	72.100	74.324
0.6500	74.144	74.732	73.133	72.964	74.126	73.295	67.193	70.330	75.120	71.620	72.097	74.321
0.6666	73.985	74.722	73.133	72.961	74.132	73.292	67.193	70.327	75.113	71.614	72.094	74.321
0.6833	73.779	74.722	73.133	72.961	74.129	73.288	67.193	70.320	75.107	71.611	72.087	74.321
0.7000	73.574	74.719	73.130	72.954	74.126	73.282	67.193	70.314	75.097	71.604	72.084	74.324
0.7166	73.399	74.710	73.133	72.951	74.129	73.279	67.193	70.308	75.088	71.598	72.081	74.321
0.7333	73.241	74.707	73.133	72.951	74.126	73.276	67.193	70.304	75.078	71.595	72.078	74.318
0.7500	73.083	74.703	73.130	72.942	74.126	73.266	67.193	70.301	75.072	71.592	72.075	74.318
0.7666	72.940	74.697	73.130	72.942	74.126	73.266	67.193	70.295	75.062	71.585	72.068	74.324
0.7833	72.798	74.691	73.130	72.939	74.126	73.260	67.193	70.289	75.056	71.582	72.065	74.318
0.8000	72.671	74.685	73.133	72.936	74.123	73.257	67.193	70.285	75.047	71.579	72.065	74.321
0.8166	72.560	74.681	73.130	72.929	74.126	73.253	67.189	70.279	75.040	71.573	72.059	74.321
0.8333	72.449	74.678	73.130	72.929	74.126	73.250	67.193	70.276	75.034	71.569	72.056	74.321
0.8500	72.354	74.672	73.127	72.923	74.129	73.244	67.189	70.270	75.024	71.566	72.053	74.318
0.8666	72.244	74.672	73.130	72.920	74.129	73.244	67.193	70.266	75.018	71.563	72.049	74.321
0.8833	72.164	74.662	73.127	72.917	74.129	73.241	67.193	70.263	75.012	71.560	72.046	74.318
0.9000	72.085	74.666	73.127	72.914	74.126	73.238	67.193	70.260	75.005	71.553	72.043	74.324
0.9166	71.990	74.659	73.127	72.914	74.126	73.234	67.189	70.254	74.999	71.547	72.040	74.321
0.9333	71.927	74.656	73.127	72.907	74.126	73.228	67.189	70.251	74.993	71.550	72.037	74.321
0.9500	71.879	74.653	73.127	72.904	74.129	73.228	67.189	70.247	74.989	71.541	72.037	74.318
0.9666	71.816	74.653	73.127	72.901	74.129	73.225	67.189	70.244	74.983	71.541	72.030	74.315
0.9833	71.737	74.647	73.124	72.901	74.126	73.222	67.189	70.241	74.977	71.538	72.027	74.318

RECOVERY2

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1.0000	71.689	74.643	73.124	72.898	74.129	73.222	67.189	70.235	74.970	71.534	72.027	74.318
1.2000	71.341	74.612	73.124	72.870	74.123	73.196	67.186	70.210	74.913	71.506	72.002	74.318
1.4000	71.135	74.599	73.124	72.857	74.120	73.187	67.189	70.187	74.891	71.487	71.989	74.318
1.6000	71.024	74.593	73.121	72.845	74.126	73.181	67.189	70.178	74.875	71.477	71.980	74.321
1.8000	70.929	74.590	73.121	72.841	74.126	73.177	67.189	70.172	74.859	71.464	71.974	74.321
2.0000	70.882	74.580	73.121	72.838	74.126	73.174	67.189	70.162	74.853	71.461	71.970	74.327
2.2000	70.834	74.577	73.117	72.829	74.126	73.168	67.189	70.162	74.843	71.458	71.964	74.324
2.4000	70.803	74.571	73.114	72.829	74.126	73.168	67.189	70.153	74.837	71.451	71.961	74.321
2.6000	70.771	74.568	73.114	72.826	74.126	73.165	67.189	70.149	74.827	71.448	71.958	74.327
2.8000	70.755	74.565	73.111	72.819	74.129	73.165	67.189	70.149	74.821	71.445	71.955	74.330
3.0000	70.755	74.561	73.114	72.819	74.126	73.162	67.186	70.143	74.818	71.442	71.951	74.327
3.2000	70.739	74.565	73.111	72.816	74.129	73.162	67.186	70.143	74.811	71.442	71.951	74.327
3.4000	70.739	74.561	73.111	72.816	74.132	73.162	67.186	70.143	74.814	71.439	71.948	74.334
3.6000	70.724	74.555	73.108	72.813	74.129	73.158	67.186	70.140	74.805	71.439	71.951	74.334
3.8000	70.724	74.558	73.108	72.813	74.129	73.155	67.186	70.137	74.799	71.436	71.945	74.330
4.0000	70.724	74.552	73.105	72.810	74.126	73.152	67.183	70.134	74.792	71.429	71.945	74.330
4.2000	70.708	74.552	73.105	72.807	74.126	73.149	67.183	70.134	74.792	71.429	71.942	74.330
4.4000	70.708	74.542	73.102	72.804	74.126	73.146	67.180	70.130	74.783	71.429	71.939	74.330
4.6000	70.708	74.539	73.102	72.804	74.126	73.143	67.180	70.127	74.783	71.426	71.939	74.327
4.8000	70.708	74.546	73.102	72.801	74.126	73.139	67.180	70.127	74.779	71.426	71.936	74.327
5.0000	70.708	74.536	73.102	72.801	74.126	73.149	67.180	70.124	74.776	71.426	71.936	74.330
5.2000	70.692	74.539	73.102	72.797	74.123	73.136	67.180	70.124	74.770	71.423	71.932	74.330
5.4000	70.692	74.533	73.102	72.797	74.123	73.136	67.180	70.121	74.770	71.420	71.932	74.327
5.6000	70.692	74.533	73.105	72.797	74.126	73.136	67.177	70.121	74.767	71.423	71.929	74.327
5.8000	70.692	74.533	73.102	72.794	74.123	73.136	67.180	70.118	74.754	71.420	71.932	74.330
6.0000	70.692	74.536	73.102	72.794	74.126	73.133	67.177	70.118	74.767	71.416	71.929	74.327
6.2000	70.692	74.533	73.102	72.788	74.126	73.133	67.177	70.118	74.764	71.416	71.926	74.334
6.4000	70.692	74.533	73.099	72.788	74.126	73.130	67.177	70.118	74.764	71.410	71.926	74.330
6.6000	70.676	74.533	73.096	72.788	74.126	73.130	67.174	70.115	74.760	71.451	71.926	74.334
6.8000	70.676	74.530	73.096	72.788	74.126	73.133	67.174	70.111	74.751	71.413	71.926	74.330
7.0000	70.676	74.527	73.096	72.788	74.129	73.133	67.174	70.115	74.757	71.410	71.923	74.334
7.2000	70.676	74.527	73.096	72.788	74.129	73.130	67.174	70.111	74.744	71.410	71.926	74.334
7.4000	70.676	74.524	73.096	72.788	74.139	73.130	67.174	70.111	74.741	71.413	71.923	74.334
7.6000	70.676	74.527	73.096	72.785	74.135	73.127	67.174	70.111	74.744	71.410	71.923	74.334
7.8000	70.676	74.524	73.096	72.782	74.129	73.127	67.170	70.108	74.744	71.407	71.920	74.334
8.0000	70.676	74.520	73.096	72.782	74.129	73.124	67.170	70.105	74.738	71.407	71.920	74.327
8.2000	70.676	74.524	73.096	72.782	74.129	73.120	67.170	70.108	74.741	71.407	71.920	74.318
8.4000	70.676	74.517	73.096	72.779	74.129	73.124	67.170	70.105	74.738	71.404	71.917	74.340
8.6000	70.676	74.514	73.096	72.782	74.126	73.120	67.170	70.105	74.735	71.404	71.917	74.346
8.8000	70.660	74.517	73.096	72.779	74.126	73.120	67.170	70.102	74.725	71.404	71.913	74.343
9.0000	70.660	74.517	73.093	72.779	74.126	73.120	67.170	70.102	74.725	71.400	71.917	74.343
9.2000	70.676	74.514	73.093	72.775	74.129	73.117	67.170	70.099	74.722	71.397	71.913	74.340
9.4000	70.660	74.511	73.093	72.775	74.132	73.117	67.167	70.099	74.719	71.397	71.910	74.349
9.6000	70.660	74.508	73.093	72.775	74.126	73.111	67.167	70.096	74.716	71.397	71.910	74.349
9.8000	70.660	74.511	73.093	72.769	74.129	73.111	67.167	70.099	74.716	71.397	71.907	74.340
10.0000	70.676	74.508	73.093	72.744	74.126	73.111	67.167	70.096	74.709	71.394	71.907	74.343
12.0000	70.660	74.501	73.083	72.763	74.126	73.101	67.164	70.086	74.706	71.385	71.898	74.337
14.0000	70.644	74.492	73.080	72.757	74.123	73.095	67.161	70.077	74.703	71.378	71.885	74.340
16.0000	70.644	74.483	73.077	72.750	74.120	73.082	67.158	70.070	74.694	71.369	71.879	74.327
18.0000	70.644	74.479	73.074	72.747	74.123	73.079	67.155	70.067	74.694	71.365	71.876	74.334
20.0000	70.629	74.476	73.074	72.741	74.123	73.073	67.155	70.061	74.684	71.359	71.869	74.334
22.0000	70.629	74.460	73.071	72.735	74.123	73.066	67.151	70.054	74.681	71.353	71.866	74.330

RECOVERY3

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24.0000	70.613	74.464	73.068	72.728	74.120	73.063	67.148	70.051	74.678	71.349	71.860	74.334
26.0000	70.597	74.460	73.068	72.728	74.123	73.057	67.145	70.048	74.675	71.346	71.857	74.327
28.0000	70.597	74.451	73.071	72.725	74.126	73.054	67.145	70.042	74.668	71.340	71.850	74.330
30.0000	70.581	74.448	73.058	72.719	74.123	73.051	67.142	70.039	74.665	71.340	71.850	74.327
32.0000	70.581	74.445	73.061	72.716	74.123	73.047	67.142	70.035	74.662	71.333	71.847	74.327
34.0000	70.581	74.441	73.058	72.713	74.126	73.044	67.142	70.032	74.659	71.330	71.844	74.327
36.0000	70.581	74.429	73.058	72.706	74.120	73.035	67.139	70.026	74.652	71.324	71.834	74.321
38.0000	70.565	74.426	73.052	72.703	74.123	73.028	67.136	70.020	74.646	71.324	71.831	74.327
40.0000	70.565	74.419	73.049	72.697	74.123	73.025	67.133	70.013	74.640	71.311	71.825	74.321
42.0000	70.565	74.416	73.043	72.691	74.120	73.019	67.126	70.010	74.636	71.311	71.822	74.324
44.0000	70.550	74.410	73.040	72.688	74.120	73.016	67.126	70.007	74.636	71.308	71.819	74.321
46.0000	70.550	74.410	73.040	72.684	74.120	73.013	67.123	70.004	74.627	71.302	71.815	74.321
48.0000	70.534	74.397	73.033	72.678	74.116	73.003	67.120	69.994	74.620	71.295	71.806	74.315
50.0000	70.534	74.394	73.040	72.675	74.120	72.994	67.120	69.994	74.617	71.289	71.803	74.308
52.0000	70.518	74.388	73.030	72.669	74.116	72.990	67.117	69.985	74.611	71.286	71.800	74.308
54.0000	70.518	74.385	73.024	72.662	74.120	72.984	67.110	69.985	74.605	71.282	71.800	74.312
56.0000	70.518	74.382	73.021	72.662	74.116	72.984	67.110	69.982	74.605	71.279	71.793	74.312
58.0000	70.502	74.375	73.024	72.659	74.116	72.978	67.107	69.975	74.598	71.273	71.790	74.318
60.0000	70.502	74.375	73.021	72.653	74.120	72.975	67.104	69.972	74.595	71.273	71.790	74.318
62.0000	70.502	74.369	73.015	72.653	74.120	72.975	67.101	69.972	74.595	71.270	71.787	74.312
64.0000	70.502	74.369	73.012	72.650	74.120	72.971	67.101	69.969	74.592	71.267	71.784	74.315
66.0000	70.502	74.366	73.009	72.647	74.123	72.968	67.098	69.963	74.589	71.263	71.784	74.315
68.0000	70.502	74.359	73.009	72.644	74.123	72.965	67.095	69.959	74.585	71.260	71.781	74.315
70.0000	70.486	74.359	73.012	72.640	74.123	72.959	67.095	69.959	74.582	71.257	71.781	74.315
72.0000	70.486	74.356	73.009	72.637	74.123	72.959	67.092	69.956	74.579	71.254	71.774	74.315
74.0000	70.486	74.353	73.002	72.634	74.123	72.955	67.092	69.953	74.576	71.251	71.774	74.315
76.0000	70.470	74.350	73.002	72.631	74.123	72.952	67.088	69.950	74.573	71.251	71.771	74.312
78.0000	70.470	74.347	72.999	72.628	74.123	72.949	67.088	69.947	74.570	71.247	71.771	74.312
80.0000	70.470	74.347	72.996	72.625	74.123	72.952	67.085	69.947	74.570	71.247	71.768	74.312
82.0000	70.470	74.344	72.996	72.622	74.123	72.946	67.082	69.940	74.566	71.244	71.768	74.312
84.0000	70.470	74.340	72.993	72.618	74.123	72.943	67.082	69.937	74.563	71.241	71.765	74.312
86.0000	70.470	74.334	72.996	72.618	74.123	72.940	67.082	69.937	74.560	71.235	71.762	74.312
88.0000	70.455	74.334	72.993	72.615	74.126	72.936	67.076	69.934	74.557	71.235	71.759	74.312
90.0000	70.455	74.331	72.993	72.612	74.126	72.936	67.076	69.931	74.554	71.231	71.755	74.308
92.0000	70.439	74.325	72.987	72.606	74.123	72.930	67.069	69.925	74.547	71.225	71.752	74.308
94.0000	70.439	74.322	72.984	72.603	74.123	72.927	67.069	69.921	74.544	71.222	71.749	74.308
96.0000	70.439	74.318	72.977	72.600	74.123	72.924	67.066	69.918	74.538	71.219	71.746	74.308
98.0000	70.439	74.315	72.977	72.600	74.126	72.917	67.063	69.915	74.538	71.219	71.746	74.308
100.000	70.439	74.315	72.974	72.596	74.126	72.917	67.063	69.915	74.535	71.219	71.743	74.305
120.000	70.423	74.303	72.971	72.587	74.132	72.908	67.060	69.909	74.544	71.203	71.727	74.293
140.000	70.407	74.293	72.965	72.574	74.139	72.895	67.054	69.896	74.538	71.193	71.708	74.289
160.000	70.391	74.271	72.953	72.556	74.142	72.876	67.041	69.877	74.519	71.171	71.686	74.283
180.000	70.375	74.258	72.940	72.546	74.145	72.864	67.032	69.865	74.506	71.161	71.667	74.277
200.000	70.375	74.252	72.940	72.540	74.145	72.860	67.032	69.858	74.503	71.155	71.657	74.274
220.000	70.360	74.239	72.928	72.524	74.145	72.841	67.022	69.842	74.490	71.139	71.638	74.264
240.000	70.344	74.236	72.921	72.518	74.145	72.835	67.019	69.839	74.487	71.136	71.629	74.261
260.000	70.328	74.224	72.912	72.509	74.142	72.822	67.009	69.827	74.474	71.123	71.613	74.255
280.000	70.328	74.217	72.912	72.502	74.142	72.819	67.009	69.823	74.474	71.120	71.607	74.252
300.000	70.312	74.208	72.903	72.490	74.142	72.806	67.003	69.814	74.468	71.110	71.597	74.245
320.000	70.312	74.202	72.903	72.487	74.148	72.800	67.000	69.811	74.465	71.107	71.591	74.239
340.000	70.296	74.192	72.890	72.477	74.139	72.787	66.990	69.798	74.449	71.098	71.578	74.233
360.000	70.296	74.189	72.887	72.471	74.139	72.784	66.990	69.795	74.452	71.091	71.572	74.229

RECOVERY4

380.000	70.280	74.180	72.881	72.461	74.139	72.775	66.981	69.785	74.442	71.082	71.563	74.220
400.000	70.280	74.170	72.872	72.452	74.135	72.765	66.972	69.773	74.426	71.072	71.553	74.217
420.000	70.265	74.164	72.869	72.446	74.139	72.759	66.968	69.770	74.433	71.066	71.547	74.210
440.000	70.265	74.170	72.872	72.449	74.132	72.765	66.975	69.776	74.439	71.072	71.553	74.204
460.000	70.265	74.170	72.872	72.449	74.135	72.765	66.978	69.773	74.436	71.072	71.553	74.207
480.000	70.265	74.161	72.865	72.439	74.135	72.756	66.972	69.766	74.439	71.066	71.544	74.201
500.000	70.249	74.145	72.850	72.424	74.135	72.740	66.956	69.751	74.465	71.050	71.528	74.195
520.000	70.249	74.142	72.847	72.417	74.132	72.734	66.953	69.744	74.411	71.040	71.521	74.198
540.000	70.233	74.129	72.837	72.408	74.132	72.727	66.943	69.735	74.414	71.034	71.515	74.191
560.000	70.217	74.123	72.831	72.402	74.132	72.718	66.937	69.728	74.407	71.024	71.506	74.185
580.000	70.217	74.116	72.825	72.392	74.135	72.711	66.930	69.722	74.395	71.018	71.503	74.179
600.000	70.217	74.107	72.819	72.383	74.135	72.702	66.924	69.716	74.398	71.012	71.493	74.173
620.000	70.201	74.101	72.816	72.377	74.132	72.696	66.915	69.709	74.391	70.999	71.487	74.166
640.000	70.201	74.101	72.813	72.373	74.139	72.692	66.915	69.706	74.388	71.002	71.487	74.163
660.000	70.217	74.110	72.822	72.380	74.139	72.702	66.924	69.716	74.401	71.012	71.493	74.160
680.000	70.201	74.097	72.809	72.370	74.139	72.692	66.915	69.703	74.391	70.999	71.480	74.154
700.000	70.201	74.091	72.806	72.364	74.139	72.686	66.908	69.700	74.388	70.996	71.477	74.147
720.000	70.185	74.082	72.797	72.355	74.139	72.673	66.899	69.690	74.382	70.986	71.468	74.144
740.000	70.170	74.069	72.785	72.339	74.135	72.664	66.886	69.675	74.366	70.973	71.455	74.138
760.000	70.154	74.066	72.769	72.326	74.135	72.651	66.874	69.662	74.356	70.960	71.439	74.131
780.000	70.154	74.050	72.769	72.323	74.132	72.648	66.867	69.659	74.353	70.957	71.439	74.125
800.000	70.154	74.044	72.763	72.317	74.132	72.642	66.864	69.652	74.350	70.951	71.433	74.122
820.000	70.154	74.053	72.772	72.323	74.132	72.648	66.871	69.662	74.356	70.960	71.439	74.116
840.000	70.154	74.047	72.766	72.317	74.132	72.642	66.864	69.656	74.350	70.954	71.436	74.113
860.000	70.154	74.056	72.775	72.326	74.129	72.651	66.877	69.665	74.363	70.964	71.446	74.103
880.000	70.154	74.050	72.769	72.317	74.132	72.645	66.874	69.659	74.360	70.957	71.436	74.103
900.000	70.154	74.050	72.766	72.314	74.129	72.645	66.874	69.656	74.356	70.954	71.436	74.097
920.000	70.154	74.050	72.769	72.317	74.135	72.642	66.874	69.659	74.363	70.954	71.439	74.094
940.000	70.138	74.041	72.760	72.295	74.132	72.635	66.864	69.649	74.347	70.948	71.430	74.097
960.000	70.154	74.044	72.763	72.298	74.132	72.638	66.867	69.649	74.347	70.951	71.433	74.094
980.000	70.154	74.041	72.760	72.295	74.132	72.635	66.864	69.649	74.347	70.951	71.430	74.087
1000.00	70.138	74.037	72.753	72.289	74.132	72.629	66.855	69.643	74.344	70.935	71.420	74.075
1020.00	70.154	74.044	72.766	72.301	74.135	72.645	66.874	69.656	74.356	70.954	71.436	74.075
1040.00	70.154	74.044	72.769	72.298	74.135	72.648	66.874	69.656	74.353	70.954	71.433	74.071
1060.00	70.154	74.041	72.763	72.295	74.135	72.642	66.877	69.652	74.353	70.951	71.433	74.068
1080.00	70.138	74.037	72.753	72.289	74.129	72.632	66.864	69.646	74.344	70.945	71.427	74.056
1100.00	70.138	74.031	72.750	72.282	74.132	72.629	66.861	69.640	74.341	70.941	71.417	74.059
1120.00	70.138	74.037	72.753	72.286	74.129	72.632	66.861	69.646	74.347	70.945	71.420	74.046
1140.00	70.138	74.034	72.750	72.282	74.132	72.632	66.861	69.640	74.341	70.938	71.420	74.040
1160.00	70.138	74.037	72.753	72.289	74.129	72.632	66.864	69.643	74.350	70.941	71.423	74.034
1180.00	70.138	74.031	72.753	72.282	74.129	72.632	66.864	69.640	74.347	70.938	71.423	74.030
1200.00	70.138	74.031	72.744	72.279	74.123	72.626	66.861	69.637	74.344	70.935	71.417	74.018
1220.00	70.138	74.037	72.753	72.286	74.126	72.632	66.867	69.646	74.360	70.941	71.423	74.015
1240.00	70.122	74.012	72.725	72.264	74.126	72.610	66.848	69.624	74.347	70.922	71.401	74.008
1260.00	70.122	74.012	72.735	72.264	74.123	72.616	66.848	69.627	74.350	70.922	71.401	74.002
1280.00	70.106	74.003	72.725	72.254	74.123	72.604	66.839	69.618	74.341	70.913	71.392	73.996
1300.00	70.106	74.012	72.729	72.257	74.123	72.610	66.839	69.621	74.337	70.913	71.395	73.989
1320.00	70.106	73.996	72.716	72.245	74.120	72.597	66.829	69.608	74.318	70.900	71.389	73.986
1340.00	70.090	73.987	72.707	72.235	74.116	72.588	66.823	69.599	74.312	70.894	71.379	73.980
1360.00	70.090	73.977	72.701	72.226	74.120	72.578	66.811	69.589	74.302	70.884	71.370	73.974
1380.00	70.075	73.974	72.694	72.220	74.116	72.569	66.804	69.583	74.296	70.878	71.363	73.967
1400.00	70.075	73.971	72.691	72.216	74.116	72.569	66.801	69.583	74.293	70.884	71.360	73.967

RECOVERY5

4733

1420.00	70.075	73.977	72.697	72.223	74.116	72.575	66.807	69.586	74.299	70.881	71.363	73.961
1440.00	70.075	73.968	72.691	72.213	74.116	72.566	66.798	69.577	74.290	70.874	71.357	73.951
1460.00	70.075	73.968	72.691	72.213	74.113	72.566	66.798	69.577	74.293	70.874	71.357	73.945
1480.00	70.075	73.965	72.688	72.210	74.113	72.562	66.798	69.577	74.290	70.871	71.354	73.939
1500.00	70.075	73.971	72.691	72.216	74.113	72.569	66.801	69.580	74.293	70.878	71.360	73.936
1520.00	70.075	73.981	72.697	72.220	74.113	72.578	66.811	69.589	74.302	70.884	71.370	73.932
1540.00	70.075	73.981	72.697	72.220	74.113	72.575	66.811	69.586	74.299	70.884	71.370	73.926
1560.00	70.075	73.981	72.697	72.220	74.113	72.575	66.814	69.586	74.302	70.884	71.370	73.920
1580.00	70.075	73.977	72.691	72.216	74.113	72.572	66.811	69.583	74.302	70.881	71.363	73.914
1600.00	70.059	73.977	72.691	72.213	74.113	72.572	66.807	69.583	74.302	70.878	71.363	73.907
1620.00	70.075	73.971	72.685	72.207	74.110	72.562	66.804	69.577	74.296	70.871	71.357	73.901
1640.00	70.075	73.971	72.685	72.204	74.110	72.566	66.801	69.577	74.296	70.871	71.357	73.895
1660.00	70.059	73.965	72.679	72.201	74.110	72.562	66.798	69.570	74.290	70.868	71.351	73.888
1680.00	70.059	73.965	72.682	72.201	74.110	72.562	66.795	69.570	74.293	70.868	71.354	73.885
1700.00	70.059	73.965	72.682	72.201	74.107	72.566	66.798	69.573	74.296	70.868	71.354	73.879
1720.00	70.059	73.965	72.682	72.198	74.110	72.559	66.798	69.570	74.296	70.868	71.354	73.876
1740.00	70.059	73.965	72.679	72.198	74.107	72.559	66.798	69.570	74.293	70.865	71.354	73.872
1760.00	70.059	73.962	72.679	72.194	74.107	72.559	66.795	69.567	74.293	70.865	71.351	73.863
1780.00	70.059	73.968	72.682	72.198	74.107	72.559	66.798	69.570	74.299	70.865	71.354	73.860
1800.00	70.059	73.971	72.688	72.204	74.104	72.566	66.807	69.580	74.302	70.874	71.360	73.854
1820.00	70.075	73.977	72.691	72.207	74.104	72.569	66.814	69.583	74.309	70.874	71.363	73.847
1840.00	70.075	73.977	72.691	72.207	74.104	72.569	66.814	69.580	74.309	70.878	71.363	73.844
1860.00	70.059	73.974	72.688	72.204	74.107	72.569	66.811	69.580	74.309	70.874	71.360	73.838
1880.00	70.059	73.968	72.682	72.198	74.104	72.562	66.804	69.573	74.302	70.868	71.357	73.831
1900.00	70.059	73.965	72.676	72.191	74.104	72.556	66.801	69.567	74.296	70.865	71.351	73.825
1920.00	70.059	73.962	72.676	72.188	74.104	72.553	66.798	69.567	74.296	70.862	71.348	73.819
1940.00	70.043	73.952	72.666	72.179	74.104	72.547	66.788	69.558	74.287	70.852	71.338	73.812
1960.00	70.043	73.952	72.669	72.179	74.104	72.547	66.788	69.558	74.287	70.852	71.338	73.809
1980.00	70.043	73.952	72.666	72.176	74.101	72.543	66.785	69.558	74.287	70.852	71.338	73.806
2000.00	70.043	73.949	72.663	72.172	74.101	72.543	66.782	69.551	74.283	70.849	71.335	73.800
2020.00	70.043	73.949	72.663	72.172	74.101	72.543	66.782	69.554	74.287	70.849	71.335	73.793
2040.00	70.027	73.943	72.657	72.169	74.104	72.537	66.779	69.548	74.283	70.846	71.329	73.790
2060.00	70.027	73.940	72.657	72.163	74.101	72.534	66.776	69.545	74.277	70.846	71.329	73.784
2080.00	70.011	73.930	72.648	72.154	74.104	72.521	66.763	69.535	74.267	70.833	71.319	73.781
2100.00	70.027	73.936	72.654	72.160	74.101	72.531	66.773	69.545	74.277	70.843	71.325	73.778
2120.00	70.027	73.933	72.651	72.157	74.101	72.527	66.769	69.542	74.274	70.836	71.322	73.768
2140.00	70.011	73.930	72.651	72.157	74.101	72.527	66.766	69.539	74.271	70.836	71.319	73.768
2160.00	70.027	73.927	72.645	72.151	74.101	72.524	66.763	69.535	74.267	70.830	71.316	73.762
2180.00	70.027	73.927	72.648	72.151	74.098	72.524	66.763	69.532	74.271	70.833	71.316	73.756
2200.00	70.027	73.933	72.651	72.154	74.098	72.527	66.769	69.539	74.277	70.836	71.322	73.749
2220.00	70.027	73.933	72.654	72.157	74.104	72.531	66.776	69.542	74.280	70.839	71.322	73.743
2240.00	70.027	73.933	72.651	72.157	74.104	72.527	66.773	69.542	74.277	70.836	71.322	73.740
2260.00	70.027	73.936	72.654	72.157	74.104	72.534	66.773	69.542	74.277	70.839	71.325	73.733
2280.00	70.027	73.943	72.660	72.163	74.104	72.540	66.782	69.551	74.287	70.849	71.332	73.727
2300.00	70.027	73.940	72.660	72.163	74.104	72.543	66.785	69.548	74.287	70.846	71.332	73.724
2320.00	70.027	73.940	72.657	72.160	74.104	72.537	66.779	69.548	74.283	70.843	71.329	73.721
2340.00	70.027	73.933	72.654	72.157	74.101	72.537	66.779	69.545	74.277	70.839	71.325	73.718
2360.00	70.027	73.936	72.657	72.160	74.101	72.537	66.779	69.545	74.280	70.843	71.329	73.708
2380.00	70.011	73.927	72.645	72.151	74.104	72.527	66.769	69.532	74.267	70.833	71.316	73.708
2400.00	70.027	73.936	72.657	72.157	74.104	72.540	66.779	69.545	74.299	70.843	71.329	73.708
2420.00	70.043	73.946	72.660	72.166	74.098	72.543	66.788	69.551	74.280	70.849	71.338	73.696
2440.00	70.043	73.949	72.663	72.166	74.101	72.547	66.792	69.554	74.290	70.852	71.338	73.696

RECOVERY6

47 33

2460.00	70.027	73.940	72.654	72.157	74.101	72.534	66.782	69.545	74.277	70.843	71.329	73.689
2480.00	70.027	73.930	72.651	72.151	74.098	72.531	66.776	69.539	74.271	70.836	71.319	73.683
2500.00	70.027	73.933	72.651	72.151	74.098	72.531	66.776	69.542	74.274	70.839	71.325	73.680
2520.00	70.027	73.924	72.641	72.141	74.098	72.521	66.769	69.535	74.271	70.830	71.316	73.673
2540.00	70.027	73.927	72.648	72.147	74.101	72.527	66.773	69.535	74.271	70.833	71.319	73.673
2560.00	70.027	73.924	72.651	72.147	74.107	72.553	66.779	69.539	74.271	70.833	71.332	73.686
2580.00	70.027	73.924	72.645	72.141	74.091	72.518	66.769	69.535	74.261	70.833	71.316	73.655
2600.00	70.011	73.921	72.635	72.132	74.091	72.508	66.754	69.523	74.245	70.820	71.307	73.648
2620.00	70.011	73.914	72.629	72.125	74.091	72.499	66.751	69.520	74.245	70.817	71.303	73.648
2640.00	70.011	73.911	72.626	72.119	74.088	72.502	66.747	69.516	74.239	70.814	71.297	73.639
2660.00	70.011	73.911	72.626	72.119	74.088	72.474	66.732	69.513	74.239	70.811	71.300	73.629
2680.00	70.011	73.921	72.629	72.129	74.091	72.502	66.747	69.523	74.248	70.820	71.307	73.636
2700.00	70.011	73.918	72.635	72.129	74.088	72.512	66.760	69.526	74.248	70.823	71.307	73.629
2720.00	70.011	73.908	72.632	72.125	74.094	72.518	66.760	69.520	74.245	70.814	71.303	73.639
2740.00	70.011	73.905	72.623	72.116	74.091	72.496	66.744	69.513	74.239	70.811	71.294	73.623
2760.00	70.011	73.902	72.629	72.119	74.094	72.508	66.751	69.516	74.242	70.811	71.297	73.626
2780.00	70.011	73.908	72.626	72.119	74.091	72.505	66.751	69.516	74.242	70.814	71.300	73.617
2800.00	70.011	73.908	72.629	72.122	74.091	72.521	66.754	69.520	74.245	70.814	71.303	73.613
2820.00	70.011	73.914	72.629	72.122	74.094	72.515	66.754	69.523	74.252	70.817	71.307	73.607
2840.00	70.011	73.905	72.620	72.110	74.085	72.489	66.744	69.507	74.239	70.820	71.291	73.604
2860.00	70.011	73.905	72.626	72.113	74.088	72.499	66.751	69.513	74.239	70.811	71.294	73.591
2880.00	69.995	73.899	72.620	72.107	74.088	72.499	66.744	69.510	74.236	70.807	71.291	73.588
2900.00	69.995	73.895	72.613	72.103	74.085	72.489	66.738	69.507	74.232	70.804	71.288	73.579
2920.00	69.995	73.892	72.613	72.100	74.088	72.493	66.735	69.501	74.229	70.798	71.284	73.582
2940.00	69.995	73.889	72.613	72.100	74.088	72.493	66.732	69.501	74.229	70.801	71.284	73.572
2960.00	69.980	73.880	72.601	72.088	74.085	72.480	66.719	69.488	74.213	70.785	71.272	73.566
2980.00	69.980	73.883	72.604	72.091	74.085	72.483	66.725	69.491	74.220	70.788	71.275	73.563
3000.00	69.995	73.889	72.607	72.094	74.082	72.483	66.732	69.497	74.226	70.798	71.281	73.553
3020.00	69.980	73.886	72.604	72.091	74.082	72.483	66.725	69.494	74.223	70.792	71.278	73.553
3040.00	69.980	73.883	72.604	72.088	74.082	72.480	66.722	69.491	74.220	70.788	71.272	73.547
3060.00	69.980	73.883	72.604	72.088	74.079	72.480	66.722	69.488	74.217	70.788	71.275	73.541
3080.00	69.995	73.892	72.610	72.097	74.079	72.489	66.735	69.501	74.229	70.798	71.284	73.534
3100.00	69.995	73.899	72.620	72.103	74.079	72.493	66.741	69.507	74.239	70.804	71.288	73.531
3120.00	69.995	73.895	72.617	72.097	74.079	72.493	66.738	69.504	74.236	70.801	71.284	73.528
3140.00	69.995	73.905	72.620	72.103	74.079	72.496	66.744	69.507	74.239	70.807	71.294	73.522
3160.00	69.995	73.911	72.626	72.113	74.079	72.505	66.754	69.516	74.248	70.814	71.300	73.519
3180.00	70.011	73.924	72.638	72.122	74.079	72.518	66.766	69.529	74.261	70.827	71.310	73.516
3200.00	70.011	73.927	72.638	72.122	74.079	72.521	66.769	69.529	74.264	70.827	71.313	73.509
3220.00	70.011	73.924	72.635	72.122	74.075	72.518	66.769	69.526	74.261	70.823	71.310	73.503
3240.00	70.011	73.924	72.635	72.122	74.075	72.518	66.769	69.529	74.261	70.827	71.310	73.500
3260.00	70.011	73.921	72.632	72.119	74.075	72.512	66.766	69.526	74.258	70.823	71.307	73.493
3280.00	70.011	73.924	72.635	72.119	74.072	72.518	66.769	69.526	74.261	70.823	71.310	73.490
3300.00	70.011	73.924	72.635	72.119	74.072	72.515	66.769	69.529	74.264	70.820	71.307	73.484
3320.00	70.011	73.924	72.635	72.119	74.072	72.515	66.769	69.526	74.258	70.823	71.310	73.484
3340.00	69.995	73.918	72.629	72.113	74.072	72.508	66.763	69.520	74.258	70.817	71.303	73.478
3360.00	69.995	73.921	72.632	72.113	74.072	72.515	66.766	69.523	74.261	70.820	71.307	73.471
3380.00	70.011	73.918	72.629	72.113	74.069	72.512	66.763	69.520	74.258	70.817	71.303	73.468
3400.00	69.995	73.914	72.629	72.110	74.069	72.508	66.763	69.520	74.258	70.814	71.303	73.462
3420.00	69.995	73.911	72.626	72.110	74.069	72.505	66.760	69.516	74.258	70.814	71.300	73.456
3440.00	69.995	73.914	72.626	72.110	74.069	72.508	66.760	69.516	74.258	70.814	71.300	73.456
3460.00	69.995	73.905	72.620	72.100	74.069	72.499	66.751	69.510	74.252	70.807	71.294	73.452
3480.00	69.980	73.895	72.613	72.091	74.072	72.493	66.744	69.504	74.245	70.798	71.288	73.446

RECOVERY7

3500.00	69.980	73.892	72.610	72.085	74.072	72.486	66.738	69.497	74.236	70.795	71.281	73.443
3520.00	69.980	73.895	72.617	72.091	74.069	72.489	66.741	69.501	74.245	70.798	71.288	73.437
3540.00	69.980	73.892	72.610	72.085	74.072	72.489	66.738	69.497	74.242	70.795	71.284	73.433
3560.00	69.980	73.892	72.610	72.085	74.069	72.486	66.735	69.497	74.242	70.795	71.281	73.427
3580.00	69.980	73.886	72.604	72.078	74.069	72.483	66.732	69.491	74.239	70.792	71.275	73.424
3600.00	69.964	73.886	72.604	72.078	74.069	72.480	66.728	69.491	74.239	70.788	71.275	73.418
3620.00	69.980	73.895	72.617	72.088	74.066	72.493	66.741	69.504	74.252	70.798	71.284	73.414
3640.00	69.980	73.895	72.613	72.088	74.066	72.493	66.744	69.504	74.252	70.798	71.284	73.411
3660.00	69.980	73.899	72.617	72.088	74.066	72.496	66.744	69.504	74.252	70.798	71.288	73.405
3680.00	69.964	73.892	72.610	72.085	74.069	72.489	66.738	69.497	74.232	70.795	71.284	73.405
3700.00	69.964	73.883	72.601	72.075	74.066	72.480	66.728	69.491	74.236	70.788	71.275	73.399
3720.00	69.964	73.880	72.598	72.069	74.066	72.480	66.725	69.485	74.232	70.782	71.269	73.395
3740.00	69.964	73.889	72.607	72.078	74.066	72.486	66.735	69.494	74.242	70.795	71.278	73.389
3760.00	69.995	73.908	72.626	72.097	74.063	72.508	66.757	69.516	74.261	70.811	71.297	73.386
3780.00	69.980	73.908	72.626	72.097	74.063	72.508	66.757	69.513	74.261	70.814	71.297	73.383
3800.00	69.995	73.899	72.613	72.088	74.060	72.499	66.754	69.504	74.267	70.804	71.288	73.377
3820.00	69.980	73.911	72.629	72.100	74.063	72.518	66.763	69.520	74.293	70.817	71.300	73.377
3840.00	69.932	73.867	72.589	72.056	74.063	72.470	66.713	69.472	74.239	70.776	71.259	73.377
3860.00	69.932	73.864	72.585	72.056	74.063	72.474	66.713	69.472	74.236	70.776	71.259	73.373
3880.00	69.900	73.826	72.551	72.019	74.063	72.436	66.675	69.434	74.194	70.737	71.221	73.370
3900.00	69.932	73.867	72.595	72.059	74.063	72.480	66.719	69.478	74.232	70.795	71.265	73.364
3920.00	69.964	73.892	72.610	72.081	74.069	72.502	66.741	69.497	74.252	70.807	71.284	73.361
3940.00	69.948	73.873	72.595	72.063	74.066	72.483	66.722	69.478	74.239	70.788	71.265	73.354
3960.00	69.948	73.876	72.598	72.069	74.069	72.493	66.728	69.485	74.242	70.795	71.272	73.354
3980.00	69.932	73.870	72.592	72.059	74.066	72.483	66.722	69.478	74.248	70.785	71.265	73.345
4000.00	69.900	73.839	72.564	72.031	74.069	72.461	66.694	69.450	74.217	70.763	71.234	73.345
4020.00	69.900	73.842	72.567	72.031	74.063	72.455	66.691	69.450	74.217	70.760	71.237	73.332
4040.00	69.948	73.858	72.585	72.050	74.063	72.477	66.713	69.463	74.226	70.776	71.253	73.335
4060.00	69.948	73.905	72.626	72.094	74.060	72.521	66.760	69.507	74.271	70.823	71.300	73.335
4080.00	69.932	73.880	72.598	72.063	74.063	72.496	66.732	69.482	74.245	70.795	71.272	73.326
4100.00	69.980	73.936	72.657	72.141	74.063	72.556	66.792	69.539	74.302	70.858	71.332	73.320
4120.00	69.980	73.886	72.604	72.075	74.063	72.512	66.747	69.488	74.252	70.807	71.281	73.301
4140.00	69.900	73.858	72.582	72.047	74.072	72.480	66.716	69.466	74.229	70.782	71.256	73.285
4160.00	69.885	73.823	72.548	72.015	74.079	72.455	66.678	69.434	74.197	70.747	71.221	73.279
4180.00	69.900	73.842	72.573	72.034	74.082	72.470	66.694	69.453	74.217	70.772	71.243	73.269
4200.00	69.916	73.848	72.576	72.037	74.082	72.470	66.694	69.456	74.217	70.772	71.246	73.260
4220.00	69.932	73.864	72.589	72.053	74.075	72.486	66.716	69.472	74.229	70.788	71.259	73.250
4240.00	69.948	73.873	72.601	72.063	74.072	72.496	66.725	69.482	74.239	70.798	71.269	73.247
4260.00	69.964	73.883	72.607	72.072	74.072	72.505	66.741	69.491	74.252	70.807	71.281	73.244
4280.00	69.948	73.870	72.595	72.056	74.066	72.493	66.725	69.478	74.239	70.792	71.265	73.241
4300.00	69.932	73.845	72.570	72.031	74.063	72.467	66.700	69.453	74.213	70.769	71.243	73.234
4320.00	69.932	73.839	72.570	72.028	74.063	72.464	66.694	69.450	74.210	70.766	71.240	73.231
4340.00	69.948	73.858	72.582	72.044	74.057	72.477	66.713	69.466	74.226	70.782	71.256	73.225
4360.00	69.948	73.854	72.582	72.044	74.053	72.474	66.713	69.466	74.226	70.782	71.253	73.219
4380.00	69.964	73.858	72.582	72.044	74.047	72.470	66.709	69.466	74.223	70.782	71.256	73.215
4400.00	69.964	73.851	72.579	72.037	74.044	72.464	66.706	69.459	74.220	70.779	71.250	73.212
4420.00	69.964	73.851	72.579	72.037	74.041	72.464	66.706	69.463	74.223	70.776	71.250	73.206
4440.00	69.964	73.858	72.582	72.044	74.041	72.474	66.713	69.466	74.229	70.782	71.256	73.203
4460.00	69.980	73.864	72.589	72.047	74.038	72.480	66.722	69.472	74.236	70.788	71.262	73.200
4480.00	69.995	73.873	72.601	72.059	74.031	72.483	66.732	69.485	74.245	70.798	71.272	73.193
4500.00	69.995	73.886	72.607	72.069	74.028	72.496	66.744	69.494	74.255	70.807	71.281	73.190
4520.00	69.980	73.864	72.589	72.047	74.025	72.474	66.725	69.475	74.236	70.788	71.262	73.184

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4540.00	69.964	73.842	72.567	72.028	74.022	72.455	66.700	69.453	74.213	70.766	71.240	73.181
4560.00	69.964	73.858	72.579	72.037	74.016	72.464	66.713	69.463	74.287	70.782	71.250	73.181
4580.00	69.948	73.839	72.567	72.022	74.019	72.455	66.697	69.450	74.267	70.766	71.240	73.178
4600.00	69.948	73.845	72.573	72.031	74.019	72.461	66.703	69.456	74.271	70.772	71.246	73.174
4620.00	69.948	73.835	72.567	72.022	74.016	72.451	66.694	69.450	74.255	70.766	71.237	73.168
4640.00	69.948	73.845	72.573	72.031	74.019	72.467	66.703	69.459	74.264	70.776	71.246	73.168
4660.00	69.964	73.854	72.582	72.037	74.016	72.477	66.713	69.466	74.271	70.782	71.256	73.162
4680.00	69.995	73.873	72.601	72.069	74.012	72.496	66.738	69.485	74.290	70.801	71.272	73.162
4700.00	69.948	73.854	72.585	72.041	74.016	72.480	66.716	69.469	74.274	70.785	71.259	73.155
4720.00	69.948	73.842	72.573	72.025	74.022	72.470	66.703	69.456	74.261	70.772	71.246	73.152
4740.00	69.964	73.854	72.585	72.041	74.022	72.480	66.716	69.469	74.277	70.788	71.256	73.143
4760.00	69.964	73.848	72.582	72.034	74.025	72.480	66.713	69.466	74.274	70.782	71.253	73.140
4780.00	69.948	73.839	72.570	72.025	74.025	72.467	66.703	69.459	74.264	70.772	71.243	73.133
4800.00	69.964	73.848	72.579	72.031	74.022	72.474	66.709	69.463	74.267	70.782	71.250	73.127
4820.00	69.964	73.845	72.579	72.028	74.022	72.470	66.706	69.459	74.264	70.779	71.250	73.124
4840.00	69.964	73.848	72.582	72.034	74.019	72.474	66.713	69.466	74.274	70.782	71.253	73.121
4860.00	69.980	73.854	72.585	72.037	74.019	72.480	66.719	69.469	74.274	70.788	71.259	73.118
4880.00	69.980	73.848	72.579	72.031	74.016	72.470	66.709	69.463	74.267	70.782	71.250	73.114
4900.00	69.980	73.845	72.576	72.025	74.012	72.464	66.706	69.459	74.264	70.776	71.246	73.108
4920.00	69.995	73.854	72.585	72.037	74.009	72.477	66.719	69.472	74.277	70.788	71.259	73.105
4940.00	69.995	73.864	72.592	72.044	74.006	72.483	66.728	69.478	74.283	70.795	71.265	73.099
4960.00	70.011	73.873	72.604	72.056	74.006	72.493	66.741	69.491	74.296	70.807	71.278	73.095
4980.00	70.027	73.880	72.604	72.059	74.000	72.496	66.747	69.494	74.299	70.811	71.278	73.092
5000.00	70.027	73.886	72.613	72.066	73.997	72.505	66.754	69.501	74.306	70.817	71.288	73.086
5020.00	70.027	73.889	72.613	72.066	73.997	72.502	66.757	69.504	74.306	70.820	71.291	73.083
5040.00	70.043	73.889	72.617	72.069	73.994	72.505	66.760	69.504	74.309	70.820	71.291	73.080
5060.00	70.027	73.889	72.613	72.069	73.994	72.502	66.760	69.504	74.309	70.820	71.291	73.076
5080.00	70.043	73.892	72.620	72.069	73.990	72.505	66.763	69.507	74.309	70.823	71.294	73.070
5100.00	70.043	73.895	72.623	72.075	73.987	72.512	66.766	69.513	74.315	70.827	71.297	73.067
5120.00	70.059	73.911	72.635	72.088	73.987	72.521	66.782	69.523	74.315	70.839	71.310	73.067
5140.00	70.059	73.911	72.632	72.088	73.984	72.521	66.782	69.526	74.315	70.839	71.310	73.061
5160.00	70.059	73.914	72.638	72.091	73.984	72.527	66.788	69.529	74.322	70.843	71.313	73.057
5180.00	70.075	73.927	72.648	72.103	73.981	72.534	66.801	69.539	74.337	70.855	71.325	73.054
5200.00	70.075	73.930	72.648	72.103	73.981	72.537	66.801	69.539	74.334	70.855	71.325	73.048
5220.00	70.075	73.936	72.654	72.110	73.981	72.547	66.811	69.548	74.344	70.862	71.332	73.045
5240.00	70.090	73.940	72.660	72.113	73.978	72.550	66.814	69.551	74.347	70.868	71.338	73.042
5260.00	70.090	73.943	72.660	72.113	73.978	72.550	66.817	69.551	74.350	70.865	71.338	73.039

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MANUAL WATER LEVELS AND FLOW DATA

PROJECT : FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
BACKGROUND				
SPPZ-5	05/05/93	2:07 p	71.85'	T/CASING
SPPZ-2a	05/05/93	2:15 p	73.57'	T/CASING
SPPZ-2d	05/05/93	2:12 p	70.22'	T/CASING
SPPZ-2g	05/05/93	2:10 p	73.66'	T/CASING
SPPZ-2c	05/05/93	2:17 p	69.0'	T/CASING
SPPZ-2b	05/05/93	----	--------	----------
SPPZ-2e	05/05/93	----	--------	----------
SPPZ-3	05/05/93	----	--------	----------
SPPZ-4	05/05/93	2:30 p	71.86'	T/CASING
SPPZ-1	05/05/93	2:23 p	73.31'	T/CASING
2897	05/05/93	2:48 p	68.195'	T/CASING
2899	05/05/93	----	--------	----------
2880	05/05/93	2:55 p	63.29'	T/CASING
2015	05/05/93	3:05 p	57.12'	T/CASING
BACKGROUND				
SPPZ-5	05/06/93	2:30 p	71.84'	T/CASING
SPPZ-2a	05/06/93	2:32 p	73.55'	T/CASING
SPPZ-2d	05/06/93	2:35 p	70.2'	T/CASING
SPPZ-2g	05/06/93	2:40 p	73.69'	T/CASING
SPPZ-2c	05/06/93	2:42 p	69.0'	T/CASING
SPPZ-2b	05/06/93	----	--------	----------
SPPZ-2e	05/06/93	----	--------	----------
SPPZ-3	05/06/93	----	--------	----------
SPPZ-4	05/06/93	2:48 p	73.295'	----------
SPPZ-1	05/06/93	2:44 p	71.86'	----------
2897	05/06/93	----	--------	----------
2899	05/06/93	----	--------	----------
2880	05/06/93	----	--------	----------
2015	05/06/93	----	--------	----------
BACKGROUND				
SPPZ-5	05/07/93	3:00 p	71.84'	T/CASING
SPPZ-2a	05/07/93	3:00 p	73.56'	T/CASING
SPPZ-2d	05/07/93	3:00 p	70.56'	T/CASING
SPPZ-2g	05/07/93	3:00 p	73.52'	T/CASING
SPPZ-2c	05/07/93	3:00 p	69.015'	T/CASING
SPPZ-2b	05/07/93	----	--------	----------
SPPZ-2e	05/07/93	----	--------	----------
SPPZ-3	05/07/93	3:00 p	70.68'	T/CASING
SPPZ-4	05/07/93	3:00 p	71.86'	T/CASING
SPPZ-1	05/07/93	3:00 p	73.3'	T/CASING
2897	05/07/93	----	--------	----------
2899	05/07/93	----	--------	----------
2880	05/07/93	----	--------	----------
2015	05/07/93	----	--------	----------

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
BACKGROUND				
SPPZ-5	05/08/93	3:42 p	71.85'	T/CASING
SPPZ-2a	05/08/93	3:55 p	73.575'	T/CASING
SPPZ-2d	05/08/93	3:58 p	70.21'	T/CASING
SPPZ-2g	05/08/93	4:00 p	73.44'	T/CASING
SPPZ-2c	05/08/93	4:02 p	69.025'	T/CASING
SPPZ-2b	05/08/93	----	--------	----------
SPPZ-2e	05/08/93	----	--------	----------
SPPZ-3	05/08/93	4:04 p	70.69'	T/CASING
SPPZ-4	05/08/93	4:08 p	72.25'	T/CAP
SPPZ-1	05/08/93	4:15 p	73.32'	T/CASING
2897	05/08/93	----	--------	----------
2899	05/08/93	----	--------	----------
2880	05/08/93	----	--------	----------
2015	05/08/93	----	--------	----------
BACKGROUND				
SPPZ-5	05/09/93	1:36 p	71.89'	T/CASING
SPPZ-2a	05/09/93	1:39 p	73.60'	T/CASING
SPPZ-2d	05/09/93	1:41 p	70.26'	T/CASING
SPPZ-2g	05/09/93	1:42 p	73.37'	T/CASING
SPPZ-2c	05/09/93	1:45 p	69.065'	T/CASING
SPPZ-2b	05/09/93	----	--------	----------
SPPZ-2e	05/09/93	----	--------	----------
SPPZ-3	05/09/93	1:46 p	70.73'	T/CASING
SPPZ-4	05/09/93	1:49 p	71.92'	T/CASING
SPPZ-4	05/09/93	1:49 p	72.06'	T/CAP
SPPZ-1	05/09/93	1:54 p	73.35'	T/CASING
2897	05/09/93	----	--------	----------
2899	05/09/93	----	--------	----------
2880	05/09/93	----	--------	----------
2015	05/09/93	----	--------	----------
BACKGROUND				
SPPZ-5	05/10/93	6:32 p	71.91'	T/CASING
SPPZ-2a	05/10/93	6:40 p	73.62'	T/CASING
SPPZ-2d	05/10/93	6:43 p	70.285'	T/CASING
SPPZ-2g	05/10/93	6:50 p	73.3'	T/CASING
SPPZ-2c	05/10/93	6:55 p	65.095'	T/CASING
SPPZ-2b	05/10/93	----	--------	----------
SPPZ-2e	05/10/93	----	--------	----------
SPPZ-3	05/10/93	6:57 p	70.73'	
SPPZ-4	05/10/93	7:01 p	72.06'	T/CAP
SPPZ-1	05/10/93	7:08 p	73.37'	T/CASING
2897	05/10/93	----	--------	----------
2899	05/10/93	----	--------	----------
2880	05/10/93	----	--------	----------
2015	05/10/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
BACKGROUND				
SPPZ-5	05/11/93	7:18 p	71.89'	T/CASING
SPPZ-2a	05/11/93	7:20 p	73.99'	T/CASING
SPPZ-2d	05/11/93	7:24 p	70.26'	T/CASING
SPPZ-2g	05/11/93	7:26 p	73.99'	T/CASING
SPPZ-2c	05/11/93	7:33 p	69.09'	T/CASING
SPPZ-2b	05/11/93	----	--------	----------
SPPZ-2e	05/11/93	----	--------	----------
SPPZ-3	05/11/93	7:36 p	70.73'	T/CASING
SPPZ-4	05/11/93	7:38 p	72.07'	T/CAP
SPPZ-1	05/11/93	7:41 p	73.35'	T/CASING
2897	05/11/93	----	--------	----------
2899	05/11/93	----	--------	----------
2880	05/11/93	----	--------	----------
2015	05/11/93	----	--------	----------
BACKGROUND				
SPPZ-5	05/12/93	8:45 a	71.92'	T/CASING
SPPZ-2a	05/12/93	8:52 a	73.64'	T/CASING
SPPZ-2d	05/12/93	8:56 a	70.28'	T/CASING
SPPZ-2g	05/12/93	9:00 a	73.89'	T/CASING
SPPZ-2c	05/12/93	9:06 a	69.1'	T/CASING
SPPZ-2b	05/12/93	----	--------	----------
SPPZ-2e	05/12/93	----	--------	----------
SPPZ-3	05/12/93	9:09 a	70.75'	T/CASING
SPPZ-4	05/12/93	9:14 a	72.07'	T/CAP
SPPZ-1	05/12/93	9:29 a	73.375'	T/CASING
2897	05/12/93	----	--------	----------
2899	05/12/93	----	--------	----------
2880	05/12/93	----	--------	----------
2015	05/12/93	----	--------	----------
AFTER PUMPING FOR 1 HOUR (APPX. 350 GPM)				
SPPZ-5	05/12/93	5:50 p	72.15'	T/CASING
SPPZ-2a	05/12/93	5:52 p	74.05'	T/CASING
SPPZ-2d	05/12/93	5:54 p	70.5'	T/CASING
SPPZ-2g	05/12/93	5:56 p	74.94'	T/CASING
SPPZ-2c	05/12/93	5:57 p	69.34'	T/CASING
SPPZ-2b	05/12/93	----	--------	----------
SPPZ-2e	05/12/93	----	--------	----------
SPPZ-3	05/12/93	6:00 p	71.94'	T/CASING
SPPZ-4	05/12/93	----	--------	----------
SPPZ-1	05/12/93	6:03 p	73.64'	T/CASING
2897	05/12/93	----	--------	----------
2899	05/12/93	----	--------	----------
2880	05/12/93	----	--------	----------
2015	05/12/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
SPPZ-5	05/13/93	----	--------	----------
SPPZ-2a	05/13/93	----	--------	----------
SPPZ-2d	05/13/93	----	--------	----------
SPPZ-2g	05/13/93	----	--------	----------
SPPZ-2c	05/13/93	----	--------	----------
SPPZ-2b	05/13/93	----	--------	----------
SPPZ-2e	05/13/93	----	--------	----------
SPPZ-3	05/13/93	----	--------	----------
SPPZ-4	05/13/93	----	--------	----------
SPPZ-1	05/13/93	----	--------	----------
2897	05/13/93	5:20 p	68.245'	T/CASING
2899	05/13/93	3:35 p	71.39'	T/CASING
2880	05/13/93	5:30 p	62.31'	T/CASING
2015	05/13/93	----	--------	----------
SPPZ-5	05/13/93	5:50 p	71.895'	T/CASING
SPPZ-2a	05/13/93	5:53 p	73.61'	T/CASING
SPPZ-2d	05/13/93	5:55 p	70.26'	T/CASING
SPPZ-2g	05/13/93	5:59 p	73.75'	T/CASING
SPPZ-2c	05/13/93	6:02 p	69.06'	T/CASING
SPPZ-2b	05/13/93	----	--------	----------
SPPZ-2e	05/13/93	----	--------	----------
SPPZ-3	05/13/93	6:04 p	70.73'	T/CASING
SPPZ-4	05/13/93	6:08 p	72.05'	T/CAP
SPPZ-1	05/13/93	6:11 p	73.36'	T/CASING
2897	05/13/93	----	--------	----------
2899	05/13/93	----	--------	----------
2880	05/13/93	----	--------	----------
2015	05/13/93	----	--------	----------
SPPZ-5	05/14/93	9:30 a	71.87'	T/CASING
SPPZ-2a	05/14/93	9:52 a	73.58'	T/CASING
SPPZ-2d	05/14/93	9:54 a	70.24'	T/CASING
SPPZ-2g	05/14/93	9:56 a	73.63'	T/CASING
SPPZ-2c	05/14/93	9:58 a	69.03'	T/CASING
SPPZ-2b	05/14/93	----	--------	----------
SPPZ-2e	05/14/93	----	--------	----------
SPPZ-3	05/14/93	10:00 a	70.7'	T/CASING
SPPZ-4	05/14/93	10:03 a	72.03'	T/CAP
SPPZ-1	05/14/93	10:06 a	73.33'	T/CASING
2897	05/14/93	----	--------	----------
2899	05/14/93	----	--------	----------
2880	05/14/93	----	--------	----------
2015	05/14/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED PUMPING @ 1:50 p (405 to 415 GPM)				
SPPZ-5	05/14/93	2:32 p	72.23'	T/CASING
SPPZ-2a	05/14/93	2:35 p	74.16'	T/CASING
SPPZ-2d	05/14/93	2:37 p	70.6'	T/CASING
SPPZ-2g	05/14/93	2:40 p	73.62'	T/CASING
SPPZ-2c	05/14/93	2:41 p	69.47'	T/CASING
SPPZ-2b	05/14/93	----	--------	----------
SPPZ-2e	05/14/93	----	--------	----------
SPPZ-3	05/14/93	2:43 p	71.05'	T/CASING
SPPZ-4	05/14/93	2:45 p	72.11'	T/CAP
SPPZ-1	05/14/93	2:49 p	73.77'	T/CASING
2897	05/14/93	----	--------	----------
2899	05/14/93	----	--------	----------
2880	05/14/93	----	--------	----------
2015	05/14/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/14/93	4:32 p	72.35'	T/CASING
SPPZ-2a	05/14/93	4:35 p	74.31'	T/CASING
SPPZ-2d	05/14/93	4:36 p	70.73'	T/CASING
SPPZ-2g	05/14/93	4:37 p	73.62'	T/CASING
SPPZ-2c	05/14/93	4:38 p	69.59'	T/CASING
SPPZ-2b	05/14/93	----	--------	----------
SPPZ-2e	05/14/93	----	--------	----------
SPPZ-3	05/14/93	4:40 p	71.16'	T/CASING
SPPZ-4	05/14/93	4:42 p	72.17'	T/CAP
SPPZ-1	05/14/93	4:46 p	73.89'	T/CASING
2897	05/14/93	----	--------	----------
2899	05/14/93	----	--------	----------
2880	05/14/93	----	--------	----------
2015	05/14/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/15/93	8:20 a	72.8'	T/CASING
SPPZ-2a	05/15/93	8:23 a	74.795'	T/CASING
SPPZ-2d	05/15/93	8:25 a	71.13'	T/CASING
SPPZ-2g	05/15/93	8:27 a	73.66'	T/CASING
SPPZ-2c	05/15/93	8:28 a	70.02'	T/CASING
SPPZ-2b	05/15/93	----	--------	----------
SPPZ-2e	05/15/93	----	--------	----------
SPPZ-3	05/15/93	8:29 a	71.56'	T/CASING
SPPZ-4	05/15/93	8:32 a	72.465'	T/CAP
SPPZ-1	05/15/93	8:34 a	74.32'	T/CASING
2897	05/15/93	9:30 a	68.34'	T/CASING
2899	05/15/93	9:30 a	71.55'	T/CASING
2880	05/15/93	9:30 a	62.34'	T/CASING
2015	05/15/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STILL PUMPING				
SPPZ-5	05/14/93	9:30 a	71.73'	T/CASING
SPPZ-2a	05/14/93		73.48'	T/CASING
SPPZ-2d	05/14/93		70.2'	T/CASING
SPPZ-2g	05/14/93		73.53'	T/CASING
SPPZ-2c	05/14/93		69.0'	T/CASING
SPPZ-2b	05/14/93	----	-------	----------
SPPZ-2e	05/14/93	----	-------	----------
SPPZ-3	05/14/93		71.58'	T/CASING
SPPZ-4	05/14/93		72.03'	T/CAP
SPPZ-1	05/14/93	10:00 a	73.28'	T/CASING
2897	05/14/93	----	-------	----------
2899	05/14/93	----	-------	----------
2880	05/14/93	----	-------	----------
2015	05/14/93	----	-------	----------
BEFORE PUMPING				
SPPZ-5	05/14/93	----	-------	----------
SPPZ-2a	05/14/93	1:00 p	73.58'	T/CASING
SPPZ-2d	05/14/93		72.24'	T/CASING
SPPZ-2g	05/14/93		73.68'	T/CASING
SPPZ-2c	05/14/93	----	-------	----------
SPPZ-2b	05/14/93	----	-------	----------
SPPZ-2e	05/14/93	----	-------	----------
SPPZ-3	05/14/93		70.78'	T/CASING
SPPZ-4	05/14/93	----	-------	----------
SPPZ-1	05/14/93	1:30 p	73.64'	T/CASING
2897	05/14/93	----	-------	----------
2899	05/14/93	----	-------	----------
2880	05/14/93	----	-------	----------
2015	05/14/93	----	-------	----------
STILL PUMPING				
SPPZ-5	05/14/93	2:30 p	72.19'	T/CASING
SPPZ-2a	05/14/93		74.13'	T/CASING
SPPZ-2d	05/14/93		71.5'	T/CASING
SPPZ-2g	05/14/93		73.52'	T/CASING
SPPZ-2c	05/14/93		69.04'	T/CASING
SPPZ-2b	05/14/93	----	-------	----------
SPPZ-2e	05/14/93	----	-------	----------
SPPZ-3	05/14/93		71.04'	T/CASING
SPPZ-4	05/14/93		72.09'	T/CAP
SPPZ-1	05/14/93	2:50 p	73.74'	T/CASING
2897	05/14/93	----	-------	----------
2899	05/14/93	----	-------	----------
2880	05/14/93	----	-------	----------
2015	05/14/93	----	-------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STILL PUMPING				
SPPZ-5	05/14/93	4:30 p	72.29'	T/CASING
SPPZ-2a	05/14/93		74.26'	T/CASING
SPPZ-2d	05/14/93		70.61'	T/CASING
SPPZ-2g	05/14/93		73.52'	T/CASING
SPPZ-2c	05/14/93		69.39'	T/CASING
SPPZ-2b	05/14/93	----	--------	----------
SPPZ-2e	05/14/93	----	--------	----------
SPPZ-3	05/14/93		71.13'	T/CASING
SPPZ-4	05/14/93	----	--------	----------
SPPZ-1	05/14/93	5:00 p	72.14'	T/CASING
2897	05/14/93	----	--------	----------
2899	05/14/93	----	--------	----------
2880	05/14/93	----	--------	----------
2015	05/14/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/14/93	5:40 p	72.42'	T/CASING
SPPZ-2a	05/14/93	----	--------	----------
SPPZ-2d	05/14/93	----	--------	----------
SPPZ-2g	05/14/93	----	--------	----------
SPPZ-2c	05/14/93	----	--------	----------
SPPZ-2b	05/14/93	----	--------	----------
SPPZ-2e	05/14/93	----	--------	----------
SPPZ-3	05/14/93	----	--------	----------
SPPZ-4	05/14/93	5:40 p	72.18'	T/CAP
SPPZ-1	05/14/93	----	--------	----------
2897	05/14/93	----	--------	----------
2899	05/14/93	----	--------	----------
2880	05/14/93	----	--------	----------
2015	05/14/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/14/93	8:20 p	72.16'	T/CASING
SPPZ-2a	05/14/93		73.89'	T/CASING
SPPZ-2d	05/14/93		70.46'	T/CASING
SPPZ-2g	05/14/93		73.68'	T/CASING
SPPZ-2c	05/14/93		69.69'	T/CASING
SPPZ-2b	05/14/93	----	--------	----------
SPPZ-2e	05/14/93	----	--------	----------
SPPZ-3	05/14/93		70.99'	T/CASING
SPPZ-4	05/14/93	8:40 p	72.25'	T/CAP
SPPZ-1	05/14/93	----	--------	----------
2897	05/14/93	----	--------	----------
2899	05/14/93	----	--------	----------
2880	05/14/93	----	--------	----------
2015	05/14/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STILL PUMPING				
SPPZ-5	05/15/93	7:29 a	72.83'	T/CASING
SPPZ-2a	05/15/93		74.86'	T/CASING
SPPZ-2d	05/15/93		71.16'	T/CASING
SPPZ-2g	05/15/93		73.70'	T/CASING
SPPZ-2c	05/15/93		70.05'	T/CASING
SPPZ-2b	05/15/93	----	--------	----------
SPPZ-2e	05/15/93	----	--------	----------
SPPZ-3	05/15/93		71.58'	T/CASING
SPPZ-4	05/15/93		72.48'	T/CAP
SPPZ-1	05/15/93	7:44 a	74.36'	T/CASING
2897	05/15/93	----	--------	----------
2899	05/15/93	----	--------	----------
2880	05/15/93	----	--------	----------
2015	05/15/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/15/93	10:20 a	72.8'	T/CASING
SPPZ-2a	05/15/93	10:21 a	74.78'	T/CASING
SPPZ-2d	05/15/93	10:23 a	71.13'	T/CASING
SPPZ-2g	05/15/93	10:24 a	73.66'	T/CASING
SPPZ-2c	05/15/93	10:26 a	70.0'	T/CASING
SPPZ-2b	05/15/93	----	--------	----------
SPPZ-2e	05/15/93	----	--------	----------
SPPZ-3	05/15/93	10:28 a	71.57'	T/CASING
SPPZ-4	05/15/93	10:30 a	72.48'	T/CAP
SPPZ-1	05/15/93	10:33 a	74.3'	T/CASING
2897	05/15/93	----	--------	----------
2899	05/15/93	----	--------	----------
2880	05/15/93	----	--------	----------
2015	05/15/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/15/93	12:35 p	72.78'	T/CASING
SPPZ-2a	05/15/93	12:37 p	74.75'	T/CASING
SPPZ-2d	05/15/93	12:38 p	71.12'	T/CASING
SPPZ-2g	05/15/93	12:40 p	73.665'	T/CASING
SPPZ-2c	05/15/93	12:41 p	70.0'	T/CASING
SPPZ-2b	05/15/93	----	--------	----------
SPPZ-2e	05/15/93	----	--------	----------
SPPZ-3	05/15/93	12:43 p	71.55'	T/CASING
SPPZ-4	05/15/93	12:45 p	72.485'	T/CAP
SPPZ-1	05/15/93	12:47 p	74.3'	T/CASING
2897	05/15/93	----	--------	----------
2899	05/15/93	----	--------	----------
2880	05/15/93	----	--------	----------
2015	05/15/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STILL PUMPING				
SPPZ-5	05/15/93	1:59 p	72.76'	T/CASING
SPPZ-2a	05/15/93	2:01 p	74.73'	T/CASING
SPPZ-2d	05/15/93	2:02 p	71.11'	T/CASING
SPPZ-2g	05/15/93	2:04 p	73.67'	T/CASING
SPPZ-2c	05/15/93	2:05 p	70.0'	T/CASING
SPPZ-2b	05/15/93	----	--------	----------
SPPZ-2e	05/15/93	----	--------	----------
SPPZ-3	05/15/93	2:06 p	71.55'	T/CASING
SPPZ-4	05/15/93	2:08 p	72.49'	T/CAP
SPPZ-1	05/15/93	2:10 p	74.29'	T/CASING
2897	05/15/93	----	--------	----------
2899	05/15/93	----	--------	----------
2880	05/15/93	----	--------	----------
2015	05/15/93	----	--------	----------
STILL PUMPING				
SPPZ-5	05/15/93	12:08 p	72.82'	T/CASING
SPPZ-2a	05/15/93		74.79'	T/CASING
SPPZ-2d	05/15/93		71.14'	T/CASING
SPPZ-2g	05/15/93		73.70'	T/CASING
SPPZ-2c	05/15/93		70.05'	T/CASING
SPPZ-2b	05/15/93	----	--------	----------
SPPZ-2e	05/15/93	----	--------	----------
SPPZ-3	05/15/93		71.59'	T/CASING
SPPZ-4	05/15/93		72.52'	T/CAP
SPPZ-1	05/15/93		74.33'	T/CASING
2897	05/15/93	----	--------	----------
2899	05/15/93	----	--------	----------
2880	05/15/93	----	--------	----------
2015	05/15/93	----	--------	----------
NO PUMPING (RECOVERY)				
RW #4	05/16/93	8:23 a	68.60'	T/CASING
SPPZ-5	05/16/93	8:20 a	72.02'	T/CASING
SPPZ-2a	05/16/93	8:25 a	73.73'	T/CASING
SPPZ-2d	05/16/93	8:26 a	70.38'	T/CASING
SPPZ-2g	05/16/93	8:27 a	73.64'	T/CASING
SPPZ-2c	05/16/93	8:29 a	69.2'	T/CASING
SPPZ-2b	05/16/93	----	--------	----------
SPPZ-2e	05/16/93	----	--------	----------
SPPZ-3	05/16/93	8:30 a	70.845'	T/CASING
SPPZ-4	05/16/93	8:32 a	72.175'	T/CAP
SPPZ-1	05/16/93	8:34 a	73.485'	T/CASING
2897	05/16/93	----	--------	----------
2899	05/16/93	----	--------	----------
2880	05/16/93	----	--------	----------
2015	05/16/93	----	--------	----------

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
NO PUMPING (RECOVERY)				
RW #4	05/16/93	----	68.56'	T/CASING
SPPZ-5	05/16/93	1:36 p	72.01'	T/CASING
SPPZ-2a	05/16/93	1:39 p	74.71'	T/CASING
SPPZ-2d	05/16/93	1:40 p	70.37'	T/CASING
SPPZ-2g	05/16/93	1:41 p	73.63'	T/CASING
SPPZ-2c	05/16/93	1:43 p	69.2'	T/CASING
SPPZ-2b	05/16/93	----	--------	----------
SPPZ-2e	05/16/93	----	--------	----------
SPPZ-3	05/16/93	1:45 p	70.83'	T/CASING
SPPZ-4	05/16/93	----	--------	----------
SPPZ-1	05/16/93	----	--------	----------
2897	05/16/93	----	--------	----------
2899	05/16/93	----	--------	----------
2880	05/16/93	----	--------	----------
2015	05/16/93	----	--------	----------
WATER LEVELS BEFORE STEP DRAWDOWN TEST				
RW #4	05/17/93	----	--------	----------
SPPZ-5	05/17/93	8:46 p	71.94'	T/CASING
SPPZ-2a	05/17/93	8:48 p	73.64'	T/CASING
SPPZ-2d	05/17/93	8:49 p	70.30'	T/CASING
SPPZ-2g	05/17/93	8:50 p	74.67'	T/CASING
SPPZ-2c	05/17/93	8:57 p	69.12'	T/CASING
SPPZ-2b	05/17/93	8:58 p	71.03'	T/CASING
SPPZ-2e	05/17/93	8:56 p	71.78'	T/CASING
SPPZ-3	05/17/93	8:59 p	70.76'	T/CASING
SPPZ-4	05/17/93	----	--------	----------
SPPZ-1	05/17/93	9:01 p	73.41'	T/CASING
2002	05/17/93	9:03 p	66.20'	T/CASING
2897	05/17/93	----	--------	----------
2899	05/17/93	----	--------	----------
2880	05/17/93	----	--------	----------
2015	05/17/93	----	--------	----------
STEP 1: STEP DRAWDOWN TEST (2:25 p;200 GPM)				
RW #4	05/18/93	2:52 p	74.75'	T/CASING
SPPZ-5	05/18/93	2:31 p	72.11'	T/CASING
SPPZ-2a	05/18/93	2:34 p	73.94'	T/CASING
SPPZ-2d	05/18/93	2:35 p	70.47'	T/CASING
SPPZ-2g	05/18/93	2:36 p	74.54'	T/CASING
SPPZ-2c	05/18/93	2:46 p	69.35'	T/CASING
SPPZ-2b	05/18/93	----	--------	----------
SPPZ-2e	05/18/93	2:46 p	71.93'	T/CASING
SPPZ-3	05/18/93	2:56 p	70.92'	T/CASING
SPPZ-4	05/18/93	2:29 p	72.11'	T/CAP
SPPZ-1	05/18/93	----	--------	----------
2002	05/18/93	2:53 p	66.18'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STEP 1: STEP DRAWDOWN TEST (2:25 p ;200 GPM)				
RW #4	05/18/93	2:58 p	75.52'	T/CASING
SPPZ-5	05/18/93	2:57 p	72.13'	T/CASING
SPPZ-2a	05/18/93	3:00 p	73.96'	T/CASING
SPPZ-2d	05/18/93	3:01 p	70.50'	T/CASING
SPPZ-2g	05/18/93	3:02 p	74.53'	T/CASING
SPPZ-2c	05/18/93	3:05 p	69.33'	T/CASING
SPPZ-2b	05/18/93	3:04 p	70.94'	T/CASING
SPPZ-2e	05/18/93	3:03 p	71.94'	T/CASING
SPPZ-3	05/18/93	3:06 p	70.94'	T/CASING
SPPZ-4	05/18/93	3:08 p	72.13'	T/CAP
SPPZ-1	05/18/93	3:10 p	73.63'	T/CASING
2002	05/18/93	3:14 p	66.20'	T/CASING
STEP 1: STEP DRAWDOWN TEST (2:25 p ; 200 GPM)				
RW #4	05/18/93	3:56 p	76.01'	T/CASING
SPPZ-5	05/18/93	3:53 p	72.20'	T/CASING
SPPZ-2a	05/18/93	3:59 p	74.03'	T/CASING
SPPZ-2d	05/18/93	4:02 p	70.55'	T/CASING
SPPZ-2g	05/18/93	4:05 p	74.50'	T/CASING
SPPZ-2c	05/18/93	4:12 p	69.40'	T/CASING
SPPZ-2b	05/18/93	4:10 p	70.60'	T/CASING
SPPZ-2e	05/18/93	4:07 p	72.02'	T/CASING
SPPZ-3	05/18/93	4:14 p	71.02'	T/CASING
SPPZ-4	05/18/93	4:17 p	72.18'	T/CAP
SPPZ-1	05/18/93	4:20 p	73.70'	T/CASING
2002	05/18/93	4:23 p	66.25'	T/CASING
STEP 2: STEP DRAWDOWN TEST (4:27 p ; 275 GPM)				
RW #4	05/18/93	4:31 p	78.53'	T/CASING
SPPZ-5	05/18/93	4:29 p	72.285'	T/CASING
SPPZ-2a	05/18/93	4:32 p	74.155'	T/CASING
SPPZ-2d	05/18/93	4:34 p	70.62'	T/CASING
SPPZ-2g	05/18/93	4:35 p	74.24'	T/CASING
SPPZ-2c	05/18/93	4:38 p	69.48'	T/CASING
SPPZ-2b	05/18/93	4:37 p	70.60'	T/CASING
SPPZ-2e	05/18/93	4:38 p	72.085'	T/CASING
SPPZ-3	05/18/93	4:40 p	71.08'	T/CASING
SPPZ-4	05/18/93	4:41 p	72.20'	T/CAP
SPPZ-1	05/18/93	4:44 p	73.78'	T/CASING
2002	05/18/93	4:47 p	66.28'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STEP 2: STEP DRAWDOWN TEST (4:27 p ; 275 GPM)				
RW #4	05/18/93	5:19 p	79.17'	T/CASING
SPPZ-5	05/18/93	5:12 p	72.32'	T/CASING
SPPZ-2a	05/18/93	5:22 p	74.20'	T/CASING
SPPZ-2d	05/18/93	5:24 p	70.67'	T/CASING
SPPZ-2g	05/18/93	5:26 p	74.47'	T/CASING
SPPZ-2c	05/18/93	5:30 p	69.53'	T/CASING
SPPZ-2b	05/18/93	5:27 p	70.94'	T/CASING
SPPZ-2e	05/18/93	5:28 p	72.125'	T/CASING
SPPZ-3	05/18/93	5:31 p	71.12'	T/CASING
SPPZ-4	05/18/93	5:33 p	72.235'	T/CAP
SPPZ-1	05/18/93	5:35 p	73.825'	T/CASING
2002	05/18/93	5:36 p	66.30'	T/CASING
STEP 2: STEP DRAWDOWN TEST (4:27 p ; 275 GPM)				
RW #4	05/18/93	5:56 p	79.43'	T/CASING
SPPZ-5	05/18/93	5:55 p	72.35'	T/CASING
SPPZ-2a	05/18/93	5:58 p	74.225'	T/CASING
SPPZ-2d	05/18/93	5:58 p	70.70'	T/CASING
SPPZ-2g	05/18/93	5:59 p	74.45'	T/CASING
SPPZ-2c	05/18/93	6:03 p	69.55'	T/CASING
SPPZ-2b	05/18/93	6:01 p	70.94'	T/CASING
SPPZ-2e	05/18/93	6:02 p	72.145'	T/CASING
SPPZ-3	05/18/93	6:04 p	71.145'	T/CASING
SPPZ-4	05/18/93	6:06 p	72.250'	T/CAP
SPPZ-1	05/18/93	6:08 p	73.850'	T/CASING
2002	05/18/93	6:10 p	66.32'	T/CASING
STEP 3: STEP DRAWDOWN TEST (6:20 p ; 350 GPM)				
RW #4	05/18/93	6:24 p	81.81'	T/CASING
SPPZ-5	05/18/93	6:22 p	72.43'	T/CASING
SPPZ-2a	05/18/93	6:26 p	74.345'	T/CASING
SPPZ-2d	05/18/93	6:28 p	70.79'	T/CASING
SPPZ-2g	05/18/93	6:29 p	74.435'	T/CASING
SPPZ-2c	05/18/93	6:32 p	69.64'	T/CASING
SPPZ-2b	05/18/93	6:30 p	70.94'	T/CASING
SPPZ-2e	05/18/93	6:31 p	72.215'	T/CASING
SPPZ-3	05/18/93	6:33 p	71.22'	T/CASING
SPPZ-4	05/18/93	6:35 p	72.275'	T/CAP
SPPZ-1	05/18/93	6:42 p	73.95'	T/CASING
2002	05/18/93	6:39 p	66.35'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STEP 3: STEP DRAWDOWN TEST (6:20 p ; 350 GPM)				
RW #4	05/18/93	7:07 p	82.58'	T/CASING
SPPZ-5	05/18/93	7:05 p	72.47'	T/CASING
SPPZ-2a	05/18/93	7:09 p	74.38'	T/CASING
SPPZ-2d	05/18/93	7:11 p	70.80'	T/CASING
SPPZ-2g	05/18/93	7:14 p	74.43'	T/CASING
SPPZ-2c	05/18/93	7:19 p	69.67'	T/CASING
SPPZ-2b	05/18/93	7:16 p	70.95'	T/CASING
SPPZ-2e	05/18/93	7:17 p	72.25'	T/CASING
SPPZ-3	05/18/93	7:21 p	71.25'	T/CASING
SPPZ-4	05/18/93	7:24 p	72.30'	T/CAP
SPPZ-1	05/18/93	7:27 p	73.97'	T/CASING
2002	05/18/93	7:29 p	66.35'	T/CASING
STEP 3: STEP DRAWDOWN TEST (6:20 p ; 350 GPM)				
RW #4	05/18/93	7:43 p	82.85'	T/CASING
SPPZ-5	05/18/93	7:42 p	72.50'	T/CASING
SPPZ-2a	05/18/93	7:46 p	74.41'	T/CASING
SPPZ-2d	05/18/93	7:48 p	70.84'	T/CASING
SPPZ-2g	05/18/93	7:50 p	74.43'	T/CASING
SPPZ-2c	05/18/93	7:56 p	69.69'	T/CASING
SPPZ-2b	05/18/93	7:51 p	70.95'	T/CASING
SPPZ-2e	05/18/93	7:54 p	72.28'	T/CASING
SPPZ-3	05/18/93	7:57 p	71.275'	T/CASING
SPPZ-4	05/18/93	7:56 p	72.315'	T/CAP
SPPZ-1	05/18/93	----	------	-------
2002	05/18/93	----	------	-------
STEP 4: STEP DRAWDOWN TEST (8:00 p ; 425 GPM)				
RW #4	05/18/93	8:06 p	85.60'	T/CASING
SPPZ-5	05/18/93	8:05 p	72.55'	T/CASING
SPPZ-2a	05/18/93	8:07 p	74.50'	T/CASING
SPPZ-2d	05/18/93	8:09 p	70.89'	T/CASING
SPPZ-2g	05/18/93	8:09 p	74.41'	T/CASING
SPPZ-2c	05/18/93	8:13 p	69.755'	T/CASING
SPPZ-2b	05/18/93	8:11 p	70.95'	T/CASING
SPPZ-2e	05/18/93	8:12 p	72.325'	T/CASING
SPPZ-3	05/18/93	8:14 p	71.325'	T/CASING
SPPZ-4	05/18/93	8:16 p	72.33'	T/CAP
SPPZ-1	05/18/93	8:17 p	74.05'	T/CASING
2002	05/18/93	8:19 p	66.38'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STEP 4: STEP DRAWDOWN TEST (8:00 p ; 425 GPM)				
RW #4	05/18/93	9:06 p	86.295'	T/CASING
SPPZ-5	05/18/93	9:04 p	72.60'	T/CASING
SPPZ-2a	05/18/93	9:07 p	74.555'	T/CASING
SPPZ-2d	05/18/93	9:09 p	70.94'	T/CASING
SPPZ-2g	05/18/93	9:10 p	74.38'	T/CASING
SPPZ-2c	05/18/93	9:16 p	69.80'	T/CASING
SPPZ-2b	05/18/93	9:14 p	70.96'	T/CASING
SPPZ-2e	05/18/93	9:15 p	72.37'	T/CASING
SPPZ-3	05/18/93	9:17 p	71.37'	T/CASING
SPPZ-4	05/18/93	9:19 p	72.375'	T/CAP
SPPZ-1	05/18/93	9:21 p	74.11'	T/CASING
2002	05/18/93	9:24 p	66.42'	T/CASING
STEP 4: STEP DRAWDOWN TEST (8:00 p ; 425 GPM)				
RW #4	05/18/93	9:55 p	92.88'	T/CASING
SPPZ-5	05/18/93	9:53 p	72.765'	T/CASING
SPPZ-2a	05/18/93	9:56 p	74.895'	T/CASING
SPPZ-2d	05/18/93	9:57 p	71.10'	T/CASING
SPPZ-2g	05/18/93	9:58 p	74.365'	T/CASING
SPPZ-2c	05/18/93	10:04 p	69.99'	T/CASING
SPPZ-2b	05/18/93	10:01 p	70.965'	T/CASING
SPPZ-2e	05/18/93	10:02 p	72.56'	T/CASING
SPPZ-3	05/18/93	10:05 p	71.53'	T/CASING
SPPZ-4	05/18/93	10:07 p	72.42'	T/CAP
SPPZ-1	05/18/93	10:10 p	74.29'	T/CASING
2002	05/18/93	10:14 p	66.475'	T/CASING
STEP 4: STEP DRAWDOWN TEST (8:00 p ; 425 GPM)				
RW #4	05/18/93	11:14 p	94.71'	T/CASING
SPPZ-5	05/18/93	11:12 p	72.84'	T/CASING
SPPZ-2a	05/18/93	11:15 p	74.87'	T/CASING
SPPZ-2d	05/18/93	11:17 p	71.175'	T/CASING
SPPZ-2g	05/18/93	11:18 p	74.35'	T/CASING
SPPZ-2c	05/18/93	11:21 p	70.06'	T/CASING
SPPZ-2b	05/18/93	11:19 p	70.98'	T/CASING
SPPZ-2e	05/18/93	11:20 p	72.58'	T/CASING
SPPZ-3	05/18/93	11:22 p	71.595'	T/CASING
SPPZ-4	05/18/93	11:24 p	72.46'	T/CAP
SPPZ-1	05/18/93	11:26 p	74.48'	T/CASING
2002	05/18/93	11:29 p	66.505'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (5/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	8:27 a	70.55'	T/CASING
SPPZ-5	05/25/93	8:25 a	72.10'	T/CASING
SPPZ-2a	05/25/93	8:30 a	73.81'	T/CASING
SPPZ-2d	05/25/93	8:31 a	70.47'	T/CASING
SPPZ-2g	05/25/93	8:32 a	73.89'	T/CASING
SPPZ-2c	05/25/93	8:41 a	69.27'	T/CASING
SPPZ-2b	05/25/93	9:55 a	81.04'	T/CASING
SPPZ-2e	05/25/93	8:39 a	71.95'	T/CASING
SPPZ-3	05/25/93	8:42 a	70.915'	T/CASING
SPPZ-4	05/25/93	8:50 a	72.25'	T/CAP
SPPZ-1	05/25/93	8:44 a	73.555'	T/CASING
2002	05/25/93	8:23 a	66.35'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	10:47 a	84.80'	T/CASING
SPPZ-5	05/25/93	10:45 a	72.485'	T/CASING
SPPZ-2a	05/25/93	10:48 a	74.45'	T/CASING
SPPZ-2d	05/25/93	10:49 a	70.855'	T/CASING
SPPZ-2g	05/25/93	10:50 a	73.91'	T/CASING
SPPZ-2c	05/25/93	10:54 a	69.72'	T/CASING
SPPZ-2b	05/25/93	10:52 a	80.95'	T/CASING
SPPZ-2e	05/25/93	10:53 a	72.295'	T/CASING
SPPZ-3	05/25/93	10:55 a	71.295'	T/CASING
SPPZ-4	05/25/93	10:57 a	72.33'	T/CAP
SPPZ-1	05/25/93	11:01 a	74.03'	T/CASING
2002	05/25/93	11:02 a	66.40'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	11:13 a	85.52'	T/CASING
SPPZ-5	05/25/93	11:12 a	72.55'	T/CASING
SPPZ-2a	05/25/93	11:15 a	74.51'	T/CASING
SPPZ-2d	05/25/93	11:16 a	70.91'	T/CASING
SPPZ-2g	05/25/93	11:18 a	73.92'	T/CASING
SPPZ-2c	05/25/93	11:20 a	69.765'	T/CASING
SPPZ-2b	05/25/93	11:17 a	80.91'	T/CASING
SPPZ-2e	05/25/93	11:19 a	72.34'	T/CASING
SPPZ-3	05/25/93	11:21 a	71.34'	T/CASING
SPPZ-4	05/25/93	11:23 a	72.37'	T/CAP
SPPZ-1	05/25/93	11:27 a	74.965'	T/CASING
2002	05/25/93	11:25 a	66.42'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	11:38 a	85.87'	T/CASING
SPPZ-5	05/25/93	11:36 a	72.59'	T/CASING
SPPZ-2a	05/25/93	11:39 a	74.54'	T/CASING
SPPZ-2d	05/25/93	11:40 a	70.94'	T/CASING
SPPZ-2g	05/25/93	11:42 a	73.925'	T/CASING
SPPZ-2c	05/25/93	11:45 a	69.795'	T/CASING
SPPZ-2b	05/25/93	11:43 a	80.87'	T/CASING
SPPZ-2e	05/25/93	11:44 a	72.375'	T/CASING
SPPZ-3	05/25/93	11:46 a	71.38'	T/CASING
SPPZ-4	05/25/93	11:48 a	72.39'	T/CAP
SPPZ-1	05/25/93	11:53 a	74.10'	T/CASING
2002	05/25/93	11:51 a	66.44'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	12:09 p	86.175'	T/CASING
SPPZ-5	05/25/93	12:07 p	72.61'	T/CASING
SPPZ-2a	05/25/93	12:11 p	74.57'	T/CASING
SPPZ-2d	05/25/93	12:12 p	70.97'	T/CASING
SPPZ-2g	05/25/93	12:13 p	73.93'	T/CASING
SPPZ-2c	05/25/93	12:19 p	69.83'	T/CASING
SPPZ-2b	05/25/93	12:17 p	80.83'	T/CASING
SPPZ-2e	05/25/93	12:18 p	72.41'	T/CASING
SPPZ-3	05/25/93	12:20 p	71.405'	T/CASING
SPPZ-4	05/25/93	12:22 p	72.41'	T/CAP
SPPZ-1	05/25/93	12:26 p	74.13'	T/CASING
2002	05/25/93	12:24 p	66.455'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	12.52 p	86.49'	T/CASING
SPPZ-5	05/25/93	12:51 p	72.655'	T/CASING
SPPZ-2a	05/25/93	12:53 p	74.60'	T/CASING
SPPZ-2d	05/25/93	12:54 p	71.005'	T/CASING
SPPZ-2g	05/25/93	12:55 p	73.94'	T/CASING
SPPZ-2c	05/25/93	12:59 p	69.885'	T/CASING
SPPZ-2b	05/25/93	12:57 p	80.765'	T/CASING
SPPZ-2e	05/25/93	12:58 p	72.43'	T/CASING
SPPZ-3	05/25/93	1:00 p	71.425'	T/CASING
SPPZ-4	05/25/93	1:02 p	72.425'	T/CAP
SPPZ-1	05/25/93	1:06 p	74.155'	T/CASING
2002	05/25/93	1:04 p	66.475'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	1:24 p	86.70'	T/CASING
SPPZ-5	05/25/93	1:22 p	72.675'	T/CASING
SPPZ-2a	05/25/93	1:25 p	74.625'	T/CASING
SPPZ-2d	05/25/93	1:26 p	71.03'	T/CASING
SPPZ-2g	05/25/93	1:27 p	73.95'	T/CASING
SPPZ-2c	05/25/93	1:31 p	69.88'	T/CASING
SPPZ-2b	05/25/93	1:28 p	80.72'	T/CASING
SPPZ-2e	05/25/93	1:30 p	72.455'	T/CASING
SPPZ-3	05/25/93	1:32 p	71.45'	T/CASING
SPPZ-4	05/25/93	1:34 p	72.445'	T/CAP
SPPZ-1	05/25/93	1:37 p	74.18'	T/CASING
2002	05/25/93	1:35 p	66.49'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	1:53 p	86.95'	T/CASING
SPPZ-5	05/25/93	1:52 p	72.695'	T/CASING
SPPZ-2a	05/25/93	1:54 p	74.645'	T/CASING
SPPZ-2d	05/25/93	1:56 p	71.05'	T/CASING
SPPZ-2g	05/25/93	1:57 p	73.95'	T/CASING
SPPZ-2c	05/25/93	2:00 p	69.90'	T/CASING
SPPZ-2b	05/25/93	1:58 p	80.65'	T/CASING
SPPZ-2e	05/25/93	1:59 p	72.47'	T/CASING
SPPZ-3	05/25/93	2:01 p	71.47'	T/CASING
SPPZ-4	05/25/93	2:02 p	72.46'	T/CAP
SPPZ-1	05/25/93	2:05 p	74.20'	T/CASING
2002	05/25/93	2:04 p	66.50'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	2:26 p	87.105'	T/CASING
SPPZ-5	05/25/93	2:25 p	72.71'	T/CASING
SPPZ-2a	05/25/93	2:28 p	79.655'	T/CASING
SPPZ-2d	05/25/93	2:29 p	71.055'	T/CASING
SPPZ-2g	05/25/93	2:30 p	73.955'	T/CASING
SPPZ-2c	05/25/93	2:34 p	69.925'	T/CASING
SPPZ-2b	05/25/93	2:32 p	80.68'	T/CASING
SPPZ-2e	05/25/93	2:33 p	72.495'	T/CASING
SPPZ-3	05/25/93	2:36 p	71.50'	T/CASING
SPPZ-4	05/25/93	2:37 p	72.48'	T/CAP
SPPZ-1	05/25/93	2:40 p	74.215'	T/CASING
2002	05/25/93	2:38 p	66.52'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	3:14 p	87.33'	T/CASING
SPPZ-5	05/25/93	3:12 p	72.745'	T/CASING
SPPZ-2a	05/25/93	3:15 p	74.695'	T/CASING
SPPZ-2d	05/25/93	3:17 p	71.09'	T/CASING
SPPZ-2g	05/25/93	3:18 p	73.96'	T/CASING
SPPZ-2c	05/25/93	3:21 p	69,94'	T/CASING
SPPZ-2b	05/25/93	3:19 p	80.56'	T/CASING
SPPZ-2e	05/25/93	3:20 p	72.52'	T/CASING
SPPZ-3	05/25/93	3:22 p	71.515'	T/CASING
SPPZ-4	05/25/93	3:23 p	72.50'	T/CAP
SPPZ-1	05/25/93	3:26 p	74..24'	T/CASING
2002	05/25/93	3:24 p	66.53'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	3:46 p	87.42'	T/CASING
SPPZ-5	05/25/93	3:45 p	72.76'	T/CASING
SPPZ-2a	05/25/93	3:47 p	74.708'	T/CASING
SPPZ-2d	05/25/93	3:49 p	71.10'	T/CASING
SPPZ-2g	05/25/93	3:50 p	73.97'	T/CASING
SPPZ-2c	05/25/93	3:53 p	69.955'	T/CASING
7	05/25/93	3:51 p	80.515'	T/CASING
SPPZ-2e	05/25/93	3:52 p	72.53'	T/CASING
SPPZ-3	05/25/93	3:54 p	71.54'	T/CASING
SPPZ-4	05/25/93	3:56 p	72.505'	T/CAP
SPPZ-1	05/25/93	3:58 p	74.255'	T/CASING
2002	05/25/93	3:57 p	66.545'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	4:50 p	87.65'	T/CASING
SPPZ-5	05/25/93	4:48 p	72.78'	T/CASING
SPPZ-2a	05/25/93	4:51 p	74.73'	T/CASING
SPPZ-2d	05/25/93	4:52 p	71.12'	T/CASING
SPPZ-2g	05/25/93	4:53 p	74.00'	T/CASING
SPPZ-2c	05/25/93	4:57 p	69.97'	T/CASING
SPPZ-2b	05/25/93	4:55 p	80.425'	T/CASING
SPPZ-2e	05/25/93	4:56 p	72.55'	T/CASING
SPPZ-3	05/25/93	4:58 p	71.555'	T/CASING
SPPZ-4	05/25/93	4:59 p	72.52'	T/CAP
SPPZ-1	05/25/93	5:03 p	74.27'	T/CASING
2002	05/25/93	5:01 p	66.565'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	5:20 p	87.73'	T/CASING
SPPZ-5	05/25/93	5:18 p	72.79'	T/CASING
SPPZ-2a	05/25/93	5:22 p	74.72'	T/CASING
SPPZ-2d	05/25/93	5:24 p	71.125'	T/CASING
SPPZ-2g	05/25/93	5:26 p	74.00'	T/CASING
SPPZ-2c	05/25/93	5:31 p	69.99'	T/CASING
SPPZ-2b	05/25/93	5:28 p	80.38'	T/CASING
SPPZ-2e	05/25/93	5:30 p	72.56'	T/CASING
SPPZ-3	05/25/93	5:33 p	71.57'	T/CASING
SPPZ-4	05/25/93	5:35 p	72.53'	T/CAP
SPPZ-1	05/25/93	5:40 p	74.29'	T/CASING
2002	05/25/93	5:38 p	66.58	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	5:58 p	87.80'	T/CASING
SPPZ-5	05/25/93	5:47 p	72.795'	T/CASING
SPPZ-2a	05/25/93	5:50 p	74.74'	T/CASING
SPPZ-2d	05/25/93	5:52 p	71.12'	T/CASING
SPPZ-2g	05/25/93	5:54 p	73.995'	T/CASING
SPPZ-2c	05/25/93	6:00 p	69.990'	T/CASING
SPPZ-2b	05/25/93	5:58 p	80.34'	T/CASING
SPPZ-2e	05/25/93	5:59 p	72.56'	T/CASING
SPPZ-3	05/25/93	6:02 p	71.58'	T/CASING
SPPZ-4	05/25/93	6:04 p	72.53'	T/CAP
SPPZ-1	05/25/93	6:09 p	74.29'	T/CASING
2002	05/25/93	6:06 p	66.575'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	6:17 p	87.88'	T/CASING
SPPZ-5	05/25/93	6:16 p	72.815'	T/CASING
SPPZ-2a	05/25/93	6:19 p	74.755'	T/CASING
SPPZ-2d	05/25/93	6:21 p	71.14'	T/CASING
SPPZ-2g	05/25/93	6:22 p	73.990'	T/CASING
SPPZ-2c	05/25/93	6:27 p	70.00'	T/CASING
SPPZ-2b	05/25/93	6:24 p	80.295'	T/CASING
SPPZ-2e	05/25/93	6:26 p	72.58'	T/CASING
SPPZ-3	05/25/93	6:28 p	71.58'	T/CASING
SPPZ-4	05/25/93	6:30 p	72.54'	T/CAP
SPPZ-1	05/25/93	6:35 p	74.295'	T/CASING
2002	05/25/93	6:33 p	66.59'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	6:48 p	87.95'	T/CASING
SPPZ-5	05/25/93	6:46 p	72.82'	T/CASING
SPPZ-2a	05/25/93	6:50 p	74.765'	T/CASING
SPPZ-2d	05/25/93	6:51 p	71.145'	T/CASING
SPPZ-2g	05/25/93	6:53 p	74.00'	T/CASING
SPPZ-2c	05/25/93	6:58 p	70.01'	T/CASING
SPPZ-2b	05/25/93	6:55 p	80.27'	T/CASING
SPPZ-2e	05/25/93	6:57 p	72.575'	T/CASING
SPPZ-3	05/25/93	6:59 p	71.59'	T/CASING
SPPZ-4	05/25/93	7:01 p	72.54'	T/CAP
SPPZ-1	05/25/93	7:06 p	74.30'	T/CASING
2002	05/25/93	7:04 p	66.59'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	7:17 p	87.990'	T/CASING
SPPZ-5	05/25/93	7:16 p	72.83'	T/CASING
SPPZ-2a	05/25/93	7:19 p	74.765'	T/CASING
SPPZ-2d	05/25/93	7:21 p	71.16'	T/CASING
SPPZ-2g	05/25/93	7:22 p	74.00'	T/CASING
SPPZ-2c	05/25/93	7:29 p	70.02'	T/CASING
SPPZ-2b	05/25/93	7:26 p	80.23'	T/CASING
SPPZ-2e	05/25/93	7:27 p	72.59'	T/CASING
SPPZ-3	05/25/93	7:30 p	71.60'	T/CASING
SPPZ-4	05/25/93	7:32 p	72.55'	T/CAP
SPPZ-1	05/25/93	7:38 p	74.31'	T/CASING
2002	05/25/93	7:35 p	66.60'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	7:48 p	88.04'	T/CASING
SPPZ-5	05/25/93	7:47 p	72.835'	T/CASING
SPPZ-2a	05/25/93	7:50 p	74.78'	T/CASING
SPPZ-2d	05/25/93	7:51 p	71.17'	T/CASING
SPPZ-2g	05/25/93	7:53 p	74.01'	T/CASING
SPPZ-2c	05/25/93	7:59 p	70.025'	T/CASING
SPPZ-2b	05/25/93	7:55 p	80.185'	T/CASING
SPPZ-2e	05/25/93	7:57 p	72.60'	T/CASING
SPPZ-3	05/25/93	8:00 p	71.60'	T/CASING
SPPZ-4	05/25/93	8:02 p	72.56'	T/CAP
SPPZ-1	05/25/93	8:08 p	74.33'	T/CASING
2002	05/25/93	8:05 p	66.61'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	8:20 p	88.11'	T/CASING
SPPZ-5	05/25/93	8:19 p	72.85'	T/CASING
SPPZ-2a	05/25/93	8:22 p	74.795'	T/CASING
SPPZ-2d	05/25/93	8:23 p	71.18'	T/CASING
SPPZ-2g	05/25/93	8:24 p	74.01'	T/CASING
SPPZ-2c	05/25/93	8:30 p	70.04'	T/CASING
SPPZ-2b	05/25/93	8:27 p	80.145'	T/CASING
SPPZ-2e	05/25/93	8:28 p	72.61'	T/CASING
SPPZ-3	05/25/93	8:31 p	71.62'	T/CASING
SPPZ-4	05/25/93	8:33 p	72.57'	T/CAP
SPPZ-1	05/25/93	8:38 p	74.34'	T/CASING
2002	05/25/93	8:36 p	66.625'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	8:48 p	88.15'	T/CASING
SPPZ-5	05/25/93	8:47 p	72.86'	T/CASING
SPPZ-2a	05/25/93	8:50 p	74.805'	T/CASING
SPPZ-2d	05/25/93	8:51 p	71.19'	T/CASING
SPPZ-2g	05/25/93	8:52 p	74.01'	T/CASING
SPPZ-2c	05/25/93	8:58 p	70.145'	T/CASING
SPPZ-2b	05/25/93	8:54 p	80.11'	T/CASING
SPPZ-2e	05/25/93	8:56 p	72.62'	T/CASING
SPPZ-3	05/25/93	8:59 p	71.625'	T/CASING
SPPZ-4	05/25/93	9:01 p	72.58'	T/CAP
SPPZ-1	05/25/93	9:06 p	74.345'	T/CASING
2002	05/25/93	9:04 p	66.64'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	10:19 p	88.29'	T/CASING
SPPZ-5	05/25/93	10:18 p	72.885'	T/CASING
SPPZ-2a	05/25/93	10:22 p	74.82'	T/CASING
SPPZ-2d	05/25/93	10:24 p	71.22'	T/CASING
SPPZ-2g	05/25/93	10:26 p	74.01'	T/CASING
SPPZ-2c	05/25/93	10:32 p	70.06'	T/CASING
SPPZ-2b	05/25/93	10:29 p	79,98'	T/CASING
SPPZ-2e	05/25/93	10:30 p	72.65'	T/CASING
SPPZ-3	05/25/93	10:34 p	71.65'	T/CASING
SPPZ-4	05/25/93	10:36 p	72.60'	T/CAP
SPPZ-1	05/25/93	10:44 p	74.37'	T/CASING
2002	05/25/93	10:39 p	66.66'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
WATER LEVELS JUST PRIOR TO CONSTANT RATE PUMP TEST				
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
SPPZ-5	05/25/93	10:47 p	72.89'	T/CASING
SPPZ-2a	05/25/93	10:51 p	74.83'	T/CASING
SPPZ-2d	05/25/93	10:53 p	71.22'	T/CASING
SPPZ-2g	05/25/93	10:54 p	74.01'	T/CASING
SPPZ-2c	05/25/93	11:00 p	70.06'	T/CASING
SPPZ-2b	05/25/93	10:56 p	79.955'	T/CASING
SPPZ-2e	05/25/93	10:59 p	72.65'	T/CASING
SPPZ-3	05/25/93	11:03 p	71.66'	T/CASING
SPPZ-4	05/25/93	11:05 p	72.61'	T/CAP
SPPZ-1	05/25/93	11:11 p	74.38'	T/CASING
2002	05/25/93	11:08 p	66.66'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	11:17 p	88.38'	T/CASING
SPPZ-5	05/25/93	11:15 p	72.89'	T/CASING
SPPZ-2a	05/25/93	11:19 p	74.83'	T/CASING
SPPZ-2d	05/25/93	11:20 p	71.21'	T/CASING
SPPZ-2g	05/25/93	11:21 p	70.02'	T/CASING
SPPZ-2c	05/25/93	11:25 p	70.09'	T/CASING
SPPZ-2b	05/25/93	11:23 p	79.93'	T/CASING
SPPZ-2e	05/25/93	11:24 p	72.66'	T/CASING
SPPZ-3	05/25/93	11:26 p	71.66'	T/CASING
SPPZ-4	05/25/93	11:29 p	72.62'	T/CAP
SPPZ-1	05/25/93	11:36 p	74.38'	T/CASING
2002	05/25/93	11:33 p	66.66'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/25/93	11:50 p	88.41'	T/CASING
SPPZ-5	05/25/93	11:49 p	72.90'	T/CASING
SPPZ-2a	05/25/93	11:54 p	74.835'	T/CASING
SPPZ-2d	05/25/93	11:56 p	71.21'	T/CASING
SPPZ-2g	05/25/93	11:57 p	70.02'	T/CASING
SPPZ-2c	05/25/93	12:02 a	70.08'	T/CASING
SPPZ-2b	05/25/93	11:59 p	79.88'	T/CASING
SPPZ-2e	05/26/93	12:01 a	72.66'	T/CASING
SPPZ-3	05/26/93	12:03 a	71.65'	T/CASING
SPPZ-4	05/26/93	12:05 a	72.62'	T/CAP
SPPZ-1	05/26/93	12:10 a	74.38'	T/CASING
2002	05/26/93	12:08 a	66.66'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	12:26 a	72.89'	T/CASING
SPPZ-5	05/26/93	12:27 a	88.45'	T/CASING
SPPZ-2a	05/25/93	12:00 p	74.845'	T/CASING
SPPZ-2d	05/26/93	12:30 a	71.23'	T/CASING
SPPZ-2g	05/26/93	12:31 a	74.02'	T/CASING
SPPZ-2c	05/26/93	12:35 a	70.08'	T/CASING
SPPZ-2b	05/26/93	12:33 a	79.84 '	T/CASING
SPPZ-2e	05/26/93	12:34 a	72.66'	T/CASING
SPPZ-3	05/26/93	12:36 a	71.67'	T/CASING
SPPZ-4	05/26/93	12:38 a	72.62'	T/CAP
SPPZ-1	05/26/93	12:44 a	74.39'	T/CASING
2002	05/26/93	12:41 a	66.67'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	1:05 a	88.50'	T/CASING
SPPZ-5	05/26/93	1:02 a	72.91'	T/CASING
SPPZ-2a	05/26/93	1:07 a	74.85'	T/CASING
SPPZ-2d	05/26/93	1:09 a	71.24'	T/CASING
SPPZ-2g	05/26/93	1:11 a	74.035'	T/CASING
SPPZ-2c	05/26/93	1:18 a	70.10'	T/CASING
SPPZ-2b	05/26/93	1:14 a	79.78'	T/CASING
SPPZ-2e	05/26/93	1:15 a	72.675'	T/CASING
SPPZ-3	05/26/93	1:20 a	71.68'	T/CASING
SPPZ-4	05/26/93	1:23 a	72.625'	T/CAP
SPPZ-1	05/26/93	1:28 a	74.40'	T/CASING
2002	05/26/93	1:26 a	66.67'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	1:34 a	88.54'	T/CASING
SPPZ-5	05/26/93	1:32 a	72.91'	T/CASING
SPPZ-2a	05/26/93	1:36 a	74.85'	T/CASING
SPPZ-2d	05/26/93	1:39 a	71.24'	T/CASING
SPPZ-2g	05/26/93	1:41 a	74.03'	T/CASING
SPPZ-2c	05/26/93	1:46 a	70.10'	T/CASING
SPPZ-2b	05/26/93	1:42 a	79.75'	T/CASING
SPPZ-2e	05/26/93	1:44 a	72.68'	T/CASING
SPPZ-3	05/26/93	1:48 a	71.68'	T/CASING
SPPZ-4	05/26/93	1:50 a	72.63'	T/CAP
SPPZ-1	05/26/93	1:57 a	74.40'	T/CASING
2002	05/26/93	1:54 a	66.675'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	2:03 a	88.57'	T/CASING
SPPZ-5	05/26/93	2:01 a	72.915'	T/CASING
SPPZ-2a	05/26/93	2:05 a	74.86'	T/CASING
SPPZ-2d	05/26/93	2:07 a	71.245'	T/CASING
SPPZ-2g	05/26/93	2:09 a	74.03'	T/CASING
SPPZ-2c	05/26/93	2:14 a	70.105'	T/CASING
SPPZ-2b	05/26/93	2:11 a	79.71'	T/CASING
SPPZ-2e	05/26/93	2:12 a	72.685'	T/CASING
SPPZ-3	05/26/93	2:15 a	71.685'	T/CASING
SPPZ-4	05/26/93	2:17 a	72.635'	T/CAP
SPPZ-1	05/26/93	2:23 a	74.405'	T/CASING
2002	05/26/93	2:20 a	66.68'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	2:34 a	88.605'	T/CASING
SPPZ-5	05/26/93	2:32 a	72.92'	T/CASING
SPPZ-2a	05/26/93	2:37 a	74.865'	T/CASING
SPPZ-2d	05/26/93	2:39 a	71.25'	T/CASING
SPPZ-2g	05/26/93	2:41 a	74.03'	T/CASING
SPPZ-2c	05/26/93	2:47 a	70.12'	T/CASING
SPPZ-2b	05/26/93	2:43 a	79.67'	T/CASING
SPPZ-2e	05/26/93	2:44 a	72.69'	T/CASING
SPPZ-3	05/26/93	2:49 a	71.69'	T/CASING
SPPZ-4	05/26/93	2:50 a	72.64'	T/CAP
SPPZ-1	05/26/93	2:56 a	74.41'	T/CASING
2002	05/26/93	2:53 a	66.69'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	3:01 a	88.62'	T/CASING
SPPZ-5	05/26/93	3:00 a	72.925'	T/CASING
SPPZ-2a	05/26/93	3:03 a	74.88'	T/CASING
SPPZ-2d	05/26/93	3:06 a	71.255'	T/CASING
SPPZ-2g	05/26/93	3:08 a	74.03'	T/CASING
SPPZ-2c	05/26/93	3:12 a	70.12'	T/CASING
SPPZ-2b	05/26/93	3:09 a	79.645'	T/CASING
SPPZ-2e	05/26/93	3:11 a	72.70'	T/CASING
SPPZ-3	05/26/93	3:14 a	71.70'	T/CASING
SPPZ-4	05/26/93	3:16 a	72.65'	T/CAP
SPPZ-1	05/26/93	3:21 a	74.41'	T/CASING
2002	05/26/93	3:19 a	66.69'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	3:33 a	88.67'	T/CASING
SPPZ-5	05/26/93	3:31 a	72.93'	T/CASING
SPPZ-2a	05/26/93	3:35 a	74.875'	T/CASING
SPPZ-2d	05/26/93	3:37 a	71.26'	T/CASING
SPPZ-2g	05/26/93	3:35 a	74.035'	T/CASING
SPPZ-2c	05/26/93	3:34 a	70.13'	T/CASING
SPPZ-2b	05/26/93	3:39 a	79.61'	T/CASING
SPPZ-2e	05/26/93	3:41 a	72.70'	T/CASING
SPPZ-3	05/26/93	3:44 a	71.70'	T/CASING
SPPZ-4	05/26/93	3:46 a	72.65'	T/CAP
SPPZ-1	05/26/93	3:51 a	74.415'	T/CASING
2002	05/26/93	3:49 a	66.69'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	4:03 a	88.715'	T/CASING
SPPZ-5	05/26/93	4:01 a	72.94'	T/CASING
SPPZ-2a	05/26/93	4:05 a	74.88'	T/CASING
SPPZ-2d	05/26/93	4:07 a	71.27'	T/CASING
SPPZ-2g	05/26/93	4:09 a	74.035'	T/CASING
SPPZ-2c	05/26/93	4:16 a	70.14'	T/CASING
SPPZ-2b	05/26/93	4:11 a	79.575'	T/CASING
SPPZ-2e	05/26/93	4:14 a	72.75'	T/CASING
SPPZ-3	05/26/93	4:18 a	71.71'	T/CASING
SPPZ-4	05/26/93	4:20 a	72.66'	T/CAP
SPPZ-1	05/26/93	4:25 a	74.425'	T/CASING
2002	05/26/93	4:23 a	66.70'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	4:33 a	88.72'	T/CASING
SPPZ-5	05/26/93	4:31 a	72.945'	T/CASING
SPPZ-2a	05/26/93	4:35 a	74.89'	T/CASING
SPPZ-2d	05/26/93	4:37 a	71.27'	T/CASING
SPPZ-2g	05/26/93	4:39 a	74.04'	T/CASING
SPPZ-2c	05/26/93	4:44 a	70.135'	T/CASING
SPPZ-2b	05/26/93	4:40 a	79.545'	T/CASING
SPPZ-2e	05/26/93	4:42 a	72.715'	T/CASING
SPPZ-3	05/26/93	4:45 a	71.715'	T/CASING
SPPZ-4	05/26/93	4:47 a	72.665'	T/CAP
SPPZ-1	05/26/93	4:53 a	74.43'	T/CASING
2002	05/26/93	4:50 a	66.71'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	5:04 a	88.765'	T/CASING
SPPZ-5	05/26/93	5:01 a	72.945'	T/CASING
SPPZ-2a	05/26/93	5:05 a	74.895'	T/CASING
SPPZ-2d	05/26/93	5:07 a	71.27'	T/CASING
SPPZ-2g	05/26/93	5:09 a	74.04'	T/CASING
SPPZ-2c	05/26/93	5:13 a	70.15'	T/CASING
SPPZ-2b	05/26/93	5:10 a	79.495'	T/CASING
SPPZ-2e	05/26/93	5:12 a	72.72'	T/CASING
SPPZ-3	05/26/93	5:15 a	71.715'	T/CASING
SPPZ-4	05/26/93	5:17 a	72.67'	T/CAP
SPPZ-1	05/26/93	5:22 a	74.48'	T/CASING
2002	05/26/93	5:19 a	66.71'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	5:33 a	88.83'	T/CASING
SPPZ-5	05/26/93	5:31 a	72.95'	T/CASING
SPPZ-2a	05/26/93	5:35 a	74.89'	T/CASING
SPPZ-2d	05/26/93	5:37 a	71.275'	T/CASING
SPPZ-2g	05/26/93	5:39 a	74.04'	T/CASING
SPPZ-2c	05/26/93	5:44 a	70.15'	T/CASING
SPPZ-2b	05/26/93	5:41 a	79.47'	T/CASING
SPPZ-2e	05/26/93	5:43 a	72.715'	T/CASING
SPPZ-3	05/26/93	5:45 a	71.72'	T/CASING
SPPZ-4	05/26/93	5:47 a	72.67'	T/CAP
SPPZ-1	05/26/93	5:54 a	74.44'	T/CASING
2002	05/26/93	5:52 a	66.715'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	6:02 a	88.85'	T/CASING
SPPZ-5	05/26/93	6:00 a	72.96'	T/CASING
SPPZ-2a	05/26/93	6:04 a	74.90'	T/CASING
SPPZ-2d	05/26/93	6:06 a	71.28'	T/CASING
SPPZ-2g	05/26/93	6:07 a	74.045'	T/CASING
SPPZ-2c	05/26/93	6:14 a	70.16'	T/CASING
SPPZ-2b	05/26/93	6:09 a	79.44'	T/CASING
SPPZ-2e	05/26/93	6:11 a	72.73'	T/CASING
SPPZ-3	05/26/93	6:15 a	71.735'	T/CASING
SPPZ-4	05/26/93	6:18 a	72.69'	T/CAP
SPPZ-1	05/26/93	6:23 a	74.45'	T/CASING
2002	05/26/93	6:21 a	66.73'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	6:35 a	88.89'	T/CASING
SPPZ-5	05/26/93	6:32 a	72.97'	T/CASING
SPPZ-2a	05/26/93	6:38 a	74.915'	T/CASING
SPPZ-2d	05/26/93	6:39 a	71.295'	T/CASING
SPPZ-2g	05/26/93	6:41 a	74.045'	T/CASING
SPPZ-2c	05/26/93	6:45 a	70.165'	T/CASING
SPPZ-2b	05/26/93	6:42 a	79.395'	T/CASING
SPPZ-2e	05/26/93	6:44 a	72.735'	T/CASING
SPPZ-3	05/26/93	6:47 a	71.74'	T/CASING
SPPZ-4	05/26/93	6:49 a	72.695'	T/CAP
SPPZ-1	05/26/93	6:56 a	74.455'	T/CASING
2002	05/26/93	6:54 a	66.735'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	7:05 a	88.92'	T/CASING
SPPZ-5	05/26/93	7:03 a	72.98'	T/CASING
SPPZ-2a	05/26/93	7:06 a	74.915'	T/CASING
SPPZ-2d	05/26/93	7:08 a	71.30'	T/CASING
SPPZ-2g	05/26/93	7:09 a	74.05'	T/CASING
SPPZ-2c	05/26/93	7:13 a	70.17'	T/CASING
SPPZ-2b	05/26/93	7:10 a	79.365'	T/CASING
SPPZ-2e	05/26/93	7:12 a	72.74'	T/CASING
SPPZ-3	05/26/93	7:15 a	71.745'	T/CASING
SPPZ-4	05/26/93	7:19 a	72.70'	T/CAP
SPPZ-1	05/26/93	7:22 a	74.465'	T/CASING
2002	05/26/93	7:19 a	66.75'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	7:33 a	88.965'	T/CASING
SPPZ-5	05/26/93	7:31 a	72.99'	T/CASING
SPPZ-2a	05/26/93	7:35 a	74.925'	T/CASING
SPPZ-2d	05/26/93	7:36 a	71.30'	T/CASING
SPPZ-2g	05/26/93	7:38 a	74.06'	T/CASING
SPPZ-2c	05/26/93	7:45 a	70.17'	T/CASING
SPPZ-2b	05/26/93	7:39 a	79.33'	T/CASING
SPPZ-2e	05/26/93	7:41 a	72.75'	T/CASING
SPPZ-3	05/26/93	7:46 a	71.75'	T/CASING
SPPZ-4	05/26/93	7:48 a	72.705'	T/CAP
SPPZ-1	05/26/93	7:56a	74.465'	T/CASING
2002	05/26/93	7:53 a	66.745'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	8:04 a	89.00'	T/CASING
SPPZ-5	05/26/93	8:02 a	72.985'	T/CASING
SPPZ-2a	05/26/93	8:05 a	74.925'	T/CASING
SPPZ-2d	05/26/93	8:07 a	71.32'	T/CASING
SPPZ-2g	05/26/93	8:08 a	74.06'	T/CASING
SPPZ-2c	05/26/93	8:12 a	70.18'	T/CASING
SPPZ-2b	05/26/93	8:10 a	79.30'	T/CASING
SPPZ-2e	05/26/93	8:11 a	72.75'	T/CASING
SPPZ-3	05/26/93	8:14 a	71.75'	T/CASING
SPPZ-4	05/26/93	8:16 a	72.705'	T/CAP
SPPZ-1	05/26/93	8:23 a	74.765'	T/CASING
2002	05/26/93	8:21 a	66.74'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	9:24 a	89.09'	T/CASING
SPPZ-5	05/26/93	9:21 a	73.0'	T/CASING
SPPZ-2a	05/26/93	9:26 a	74.935'	T/CASING
SPPZ-2d	05/26/93	9:27 a	71.32'	T/CASING
SPPZ-2g	05/26/93	9:28 a	74.06'	T/CASING
SPPZ-2c	05/26/93	9:32 a	70.18'	T/CASING
SPPZ-2b	05/26/93	9:30 a	79.20'	T/CASING
SPPZ-2e	05/26/93	9:31 a	72.765'	T/CASING
SPPZ-3	05/26/93	9:33 a	71.77'	T/CASING
SPPZ-4	05/26/93	9:35 a	72.705'	T/CAP
SPPZ-1	05/26/93	9:44 a	74.48'	T/CASING
2002	05/26/93	9:37 a	66.75'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	10:28 a	89.13'	T/CASING
SPPZ-5	05/26/93	10:27 a	73.0'	T/CASING
SPPZ-2a	05/26/93	10:30 a	74.93'	T/CASING
SPPZ-2d	05/26/93	10:31 a	71.32'	T/CASING
SPPZ-2g	05/26/93	10:32 a	74.05'	T/CASING
SPPZ-2c	05/26/93	10:35 a	70.17'	T/CASING
SPPZ-2b	05/26/93	10:33 a	79.13'	T/CASING
SPPZ-2e	05/26/93	10:34 a	72.75'	T/CASING
SPPZ-3	05/26/93	10:37 a	71.76'	T/CASING
SPPZ-4	05/26/93	10:38 a	72.705'	T/CAP
SPPZ-1	05/26/93	10:45 a	74.47'	T/CASING
2002	05/26/93	10:42 a	66.74'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	12:06 p	89.20'	T/CASING
SPPZ-5	05/26/93	12:05 p	72.99'	T/CASING
SPPZ-2a	05/26/93	12:08 p	74.935'	T/CASING
SPPZ-2d	05/26/93	12:09 p	71.32'	T/CASING
SPPZ-2g	05/26/93	12:10 p	74.055'	T/CASING
SPPZ-2c	05/26/93	12:14 p	70.18'	T/CASING
SPPZ-2b	05/26/93	12:11 p	79.02'	T/CASING
SPPZ-2e	05/26/93	12:13 p	72.755'	T/CASING
SPPZ-3	05/26/93	12:16 p	71.765'	T/CASING
SPPZ-4	05/26/93	12:17 p	72.721'	T/CAP
SPPZ-1	05/26/93	12:22 p	74.48'	T/CASING
2002	05/26/93	12:20 p	66.74'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	1:02 p	89.25'	T/CASING
SPPZ-5	05/26/93	1:00 p	72.99'	T/CASING
SPPZ-2a	05/26/93	1:03 p	74.935'	T/CASING
SPPZ-2d	05/26/93	1:05 p	71.32'	T/CASING
SPPZ-2g	05/26/93	1:05 p	74.06'	T/CASING
SPPZ-2c	05/26/93	1:10 p	70.18'	T/CASING
SPPZ-2b	05/26/93	1:07 p	78.96'	T/CASING
SPPZ-2e	05/26/93	1:08 p	72.76'	T/CASING
SPPZ-3	05/26/93	1:11 p	71.77'	T/CASING
SPPZ-4	05/26/93	1:13 p	72.71'	T/CAP
SPPZ-1	05/26/93	1:17 p	74.47'	T/CASING
2002	05/26/93	1:15 p	66.74'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	2:03 p	89.28'	T/CASING
SPPZ-5	05/26/93	2:01 p	72.99'	T/CASING
SPPZ-2a	05/26/93	2:04 p	74.935'	T/CASING
SPPZ-2d	05/26/93	2:05 p	71.32'	T/CASING
SPPZ-2g	05/26/93	2:07 p	74.055'	T/CASING
SPPZ-2c	05/26/93	2:11 p	70.18'	T/CASING
SPPZ-2b	05/26/93	2:08 p	78.89'	T/CASING
SPPZ-2e	05/26/93	2:11 p	70.18'	T/CASING
SPPZ-3	05/26/93	2:12 p	71.765'	T/CASING
SPPZ-4	05/26/93	2:14 p	72.72'	T/CAP
SPPZ-1	05/26/93	2:19 p	74.48'	T/CASING
2002	05/26/93	2:17 p	66.74'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	4:04 p	89.35'	T/CASING
SPPZ-5	05/26/93	4:03 p	72.99'	T/CASING
SPPZ-2a	05/26/93	4:05 p	75.93'	T/CASING
SPPZ-2d	05/26/93	4:06 p	71.32'	T/CASING
SPPZ-2g	05/26/93	4:08 p	74.065'	T/CASING
SPPZ-2c	05/26/93	4:14 p	70.18'	T/CASING
SPPZ-2b	05/26/93	4:11 p	78.76'	T/CASING
SPPZ-2e	05/26/93	4:13 p	72.76'	T/CASING
SPPZ-3	05/26/93	4:15 p	71.77'	T/CASING
SPPZ-4	05/26/93	4:17 p	72.725'	T/CAP
SPPZ-1	05/26/93	4:22 p	74.485'	T/CASING
2002	05/26/93	4:19 p	66.745'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	5:06 p	89.395'	T/CASING
SPPZ-5	05/26/93	5:04 p	72.995'	T/CASING
SPPZ-2a	05/26/93	5:07 p	74.94'	T/CASING
SPPZ-2d	05/26/93	5:09 p	71.33'	T/CASING
SPPZ-2g	05/26/93	5:10 p	74.05'	T/CASING
SPPZ-2c	05/26/93	5:16 p	70.19'	T/CASING
SPPZ-2b	05/26/93	5:13 p	78.695'	T/CASING
SPPZ-2e	05/26/93	5:15 p	72.77'	T/CASING
SPPZ-3	05/26/93	5:19 p	71.795'	T/CASING
SPPZ-4	05/26/93	5:21 p	72.73'	T/CAP
SPPZ-1	05/26/93	5:27 p	74.485'	T/CASING
2002	05/26/93	5:24 p	66.75'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	6:04 p	89.44'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	7:03 p	89.49'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	8:02 p	89.525'	T/CASING
SPPZ-5	05/26/93	8:06 p	73.04'	T/CASING
SPPZ-2a	05/26/93	8:08 p	74.97'	T/CASING
SPPZ-2d	05/26/93	8:10 p	71.36'	T/CASING
SPPZ-2g	05/26/93	8:12 p	74.06'	T/CASING
SPPZ-2c	05/26/93	8:16 p	70.22'	T/CASING
SPPZ-2b	05/26/93	8:13 p	78.51'	T/CASING
SPPZ-2e	05/26/93	8:15 p	72.80'	T/CASING
SPPZ-3	05/26/93	8:18 p	71.805'	T/CASING
SPPZ-4	05/26/93	8:20 p	72.75'	T/CAP
SPPZ-1	05/26/93	8:23 p	74.52'	T/CASING
2002	05/26/93	8:26 p	66.79'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	9:03 p	89.56'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	10:02 p	89.57'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	11:03 p	89.61'	T/CASING
SPPZ-5	05/26/93	11:09 p	73.095'	T/CASING
SPPZ-2a	05/26/93	11:11 p	75.02'	T/CASING
SPPZ-2d	05/26/93	11:12 p	71.40'	T/CASING
SPPZ-2g	05/26/93	11:14 p	74.06'	T/CASING
SPPZ-2c	05/26/93	11:20 p	70.26'	T/CASING
SPPZ-2b	05/26/93	11:16 p	78.33'	T/CASING
SPPZ-2e	05/26/93	11:19 p	72.84'	T/CASING
SPPZ-3	05/26/93	11:25 p	71.85'	T/CASING
SPPZ-4	05/26/93	11:27 p	72.80'	T/CAP
SPPZ-1	05/26/93	11:30 p	74.565'	T/CASING
2002	05/26/93	11:32 p	66.88'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/26/93	12:03 a	89.63'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	1:03 a	89.67'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	2:06 a	89.66'	T/CASING
SPPZ-5	05/27/93	2:04 a	73.985'	T/CASING
SPPZ-2a	05/27/93	2:08 a	75.02'	T/CASING
SPPZ-2d	05/27/93	2:10 a	71.40'	T/CASING
SPPZ-2g	05/27/93	2:11 a	74.07'	T/CASING
SPPZ-2c	05/27/93	2:16 a	70.27'	T/CASING
SPPZ-2b	05/27/93	2:13 a	78.145'	T/CASING
SPPZ-2e	05/27/93	2:14 a	72.84'	T/CASING
SPPZ-3	05/27/93	2:24 a	71.855'	T/CASING
SPPZ-4	05/27/93	2:27 a	72.80'	T/CAP
SPPZ-1	05/27/93	2:29 a	74.56'	T/CASING
2002	05/27/93	2:33 a	66.835'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	2:58 a	89.685'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	4:00 a	89.72'	T/CASING

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	04:58 a	89.745'	T/CASING
SPPZ-5	05/27/93	5:04 a	73.12'	T/CASING
SPPZ-2a	05/27/93	5:06 a	75.045'	T/CASING
SPPZ-2d	05/27/93	5:08 a	71.435'	T/CASING
SPPZ-2g	05/27/93	5:10 a	74.07'	T/CASING
SPPZ-2c	05/27/93	5:15 a	70.29'	T/CASING
SPPZ-2b	05/27/93	5:12 a	77.965'	T/CASING
SPPZ-2e	05/27/93	5:14 a	72.87'	T/CASING
SPPZ-3	05/27/93	5:17 a	71.875'	T/CASING
SPPZ-4	05/27/93	5:20 a	72.825'	T/CAP
SPPZ-1	05/27/93	5:22 a	74.59'	T/CASING
2002	05/27/93	5:25 a	66.86'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	6:00 a	89.775'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	7:00 a	89.78'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	8:04 a	89.79'	T/CASING
SPPZ-5	05/27/93	8:08 a	73.13'	T/CASING
SPPZ-2a	05/27/93	8:10 a	75.065'	T/CASING
SPPZ-2d	05/27/93	8:11 a	71.445'	T/CASING
SPPZ-2g	05/27/93	8:13 a	74.075'	T/CASING
SPPZ-2c	05/27/93	8:20 a	70.30'	T/CASING
SPPZ-2b	05/27/93	8:17 a	77.80'	T/CASING
SPPZ-2e	05/27/93	8:18 a	72.85'	T/CASING
SPPZ-3	05/27/93	8:21 a	71.89'	T/CASING
SPPZ-4	05/27/93	8:03 a	72.84'	T/CAP
SPPZ-1	05/27/93	8:25 a	74.60'	T/CASING
2002	05/27/93	8:27 a	66.87'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	11:01 a	89.85'	T/CASING
SPPZ-5	05/27/93	11:03 a	73.12'	T/CASING
SPPZ-2a	05/27/93	11:04 a	75.05'	T/CASING
SPPZ-2d	05/27/93	11:05 a	71.43'	T/CASING
SPPZ-2g	05/27/93	11:06 a	74.08'	T/CASING
SPPZ-2c	05/27/93	11:10 a	70.29'	T/CASING
SPPZ-2b	05/27/93	11:08 a	77.65'	T/CASING
SPPZ-2e	05/27/93	11:09 a	72.87'	T/CASING
SPPZ-3	05/27/93	11:11 a	71.88'	T/CASING
SPPZ-4	05/27/93	11:12 a	72.82'	T/CAP
SPPZ-1	05/27/93	11:17 a	74.59'	T/CASING
2002	05/27/93	11:14 a	66.895'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	12:01 p	89.87'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	1:01 p	89.90'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	2:00 p	89.89'	T/CASING
SPPZ-5	05/27/93	2:02 p	73.12'	T/CASING
SPPZ-2a	05/27/93	2:03 p	75.05'	T/CASING
SPPZ-2d	05/27/93	2:05 p	71.43'	T/CASING
SPPZ-2g	05/27/93	2:06 p	74.085'	T/CASING
SPPZ-2c	05/27/93	2:10 p	70.28'	T/CASING
SPPZ-2b	05/27/93	2:07 p	77.49'	T/CASING
SPPZ-2e	05/27/93	2:09 p	72.87'	T/CASING
SPPZ-3	05/27/93	2:11 p	71.87'	T/CASING
SPPZ-4	05/27/93	2:13 p	72.83'	T/CAP
SPPZ-1	05/27/93	2:17 p	74.59'	T/CASING
2002	05/27/93	2:15 p	66.84'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	3:07 p	89.89'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	4:02 p	89.92'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	5:02 p	89.93'	T/CASING
SPPZ-5	05/27/93	5:05 p	73.11'	T/CASING
SPPZ-2a	05/27/93	5:06 p	75.06'	T/CASING
SPPZ-2d	05/27/93	5:08 p	71.43'	T/CASING
SPPZ-2g	05/27/93	5:09 p	74.07'	T/CASING
SPPZ-2c	05/27/93	5:14 p	70.28'	T/CASING
SPPZ-2b	05/27/93	5:11 p	77.395'	T/CASING
SPPZ-2e	05/27/93	5:13 p	72.87'	T/CASING
SPPZ-3	05/27/93	5:16 p	71.875'	T/CASING
SPPZ-4	05/27/93	5:17 p	72.83'	T/CAP
SPPZ-1	05/27/93	5:20 p	74.585'	T/CASING
2002	05/27/93	5:22 p	66.85'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	7:02 p	89.98'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	8:03 p	90.00'	T/CASING
SPPZ-5	05/27/93	8:05 p	73.14'	T/CASING
SPPZ-2a	05/27/93	8:07 p	75.08'	T/CASING
SPPZ-2d	05/27/93	8:09 p	71.46'	T/CASING
SPPZ-2g	05/27/93	8:11 p	74.08'	T/CASING
SPPZ-2c	05/27/93	8:16 p	70.32'	T/CASING
SPPZ-2b	05/27/93	8:13 p	77.26'	T/CASING
SPPZ-2e	05/27/93	8:14 p	72.91'	T/CASING
SPPZ-3	05/27/93	8:17 p	71.91'	T/CASING
SPPZ-4	05/27/93	8:19 p	72.86'	T/CAP
SPPZ-1	05/27/93	8:21 p	74.625'	T/CASING
2002	05/27/93	8:24 p	66.88'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	9:03 p	90.00'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	10:01 p	90.00'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/27/93	11:03 p	90.02'	T/CASING
SPPZ-5	05/27/93	11:05 p	73.17'	T/CASING
SPPZ-2a	05/27/93	11:07 p	75.10'	T/CASING
SPPZ-2d	05/27/93	11:09 p	71.48'	T/CASING
SPPZ-2g	05/27/93	11:10 p	74.08'	T/CASING
SPPZ-2c	05/27/93	11:15 p	70.33'	T/CASING
SPPZ-2b	05/27/93	11:12 p	77.12'	T/CASING
SPPZ-2e	05/27/93	11:13 p	72.93'	T/CASING
SPPZ-3	05/27/93	11:17 p	71.92'	T/CASING
SPPZ-4	05/27/93	11:19 p	72.86'	T/CAP
SPPZ-1	05/27/93	11:22 p	74.635'	T/CASING
2002	05/27/93	11:24 p	66.895'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	12:02 a	90.04'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	1:01 a	90.05'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	2:04 a	90.06'	T/CASING
SPPZ-5	05/28/93	2:06 a	73.195'	T/CASING
SPPZ-2a	05/28/93	2:08 a	75.13'	T/CASING
SPPZ-2d	05/28/93	2:10 a	71.51'	T/CASING
SPPZ-2g	05/28/93	2:12 a	74.08'	T/CASING
SPPZ-2c	05/28/93	2:18 a	70.36'	T/CASING
SPPZ-2b	05/28/93	2:14 a	76.995'	T/CASING
SPPZ-2e	05/28/93	2:16 a	72.945'	T/CASING
SPPZ-3	05/28/93	2:20 a	71.95'	T/CASING
SPPZ-4	05/28/93	2:22 a	72.90'	T/CAP
SPPZ-1	05/28/93	2:25 a	74.67'	T/CASING
2002	05/28/93	2:28 a	66.93'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	3:04 a	90.05'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	4:02 a	90.06'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	5:05 a	85.145'	T/CASING
SPPZ-5	05/28/93	5:08 a	73.18'	T/CASING
SPPZ-2a	05/28/93	5:11 a	75.12'	T/CASING
SPPZ-2d	05/28/93	5:13 a	71.50'	T/CASING
SPPZ-2g	05/28/93	5:14 a	74.09'	T/CASING
SPPZ-2c	05/28/93	5:21 a	70.365'	T/CASING
SPPZ-2b	05/28/93	5:17 a	76.88'	T/CASING
SPPZ-2e	05/28/93	5:19 a	72.955'	T/CASING
SPPZ-3	05/28/93	5:25 a	71.955'	T/CASING
SPPZ-4	05/28/93	5:29 a	72.92'	T/CAP
SPPZ-1	05/28/93	5:31 a	74.67'	T/CASING
2002	05/28/93	5:33 a	66.945'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	6:02 a	85.855'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	7:05 a	86.115'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	8:07 a	86.30'	T/CASING
SPPZ-5	05/28/93	8:10 a	73.20'	T/CASING
SPPZ-2a	05/28/93	8:12 a	75.12'	T/CASING
SPPZ-2d	05/28/93	8:13 a	71.51'	T/CASING
SPPZ-2g	05/28/93	8:15 a	74.09'	T/CASING
SPPZ-2c	05/28/93	8:20 a	70.37'	T/CASING
SPPZ-2b	05/28/93	8:16 a	76.775'	T/CASING
SPPZ-2e	05/28/93	8:18 a	73.96'	T/CASING
SPPZ-3	05/28/93	8:21 a	71.96'	T/CASING
SPPZ-4	05/28/93	8:23 a	72.925'	T/CAP
SPPZ-1	05/28/93	8:26 a	74.675'	T/CASING
2002	05/28/93	8:28 a	76.955'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	11:07 a	87.48'	T/CASING
SPPZ-5	05/28/93	11:08 a	73.23'	T/CASING
SPPZ-2a	05/28/93	11:10 a	75.15'	T/CASING
SPPZ-2d	05/28/93	11:11 a	71.545'	T/CASING
SPPZ-2g	05/28/93	11:12 a	74.09'	T/CASING
SPPZ-2c	05/28/93	11:18 a	70.40'	T/CASING
SPPZ-2b	05/28/93	11:16 a	76.635'	T/CASING
SPPZ-2e	05/28/93	11:17 a	72.98'	T/CASING
SPPZ-3	05/28/93	11:19 a	71.98'	T/CASING
SPPZ-4	05/28/93	11:21 a	72.945'	T/CAP
SPPZ-1	05/28/93	11:25 a	74.71'	T/CASING
2002	05/28/93	11:23 a	66.96'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	12:01 p	87.54'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	1:00 p	87.64'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	2:01 p	87.69'	T/CASING
SPPZ-5	05/28/93	2:02 p	73.21'	T/CASING
SPPZ-2a	05/28/93	2:03 p	75.114'	T/CASING
SPPZ-2d	05/28/93	2:05 p	71.52'	T/CASING
SPPZ-2g	05/28/93	2:06 p	74.10'	T/CASING
SPPZ-2c	05/28/93	2:11 p	70.39'	T/CASING
SPPZ-2b	05/28/93	2:08 p	76.58'	T/CASING
SPPZ-2e	05/28/93	2:10 p	72.97'	T/CASING
SPPZ-3	05/28/93	2:12 p	71.98'	T/CASING
SPPZ-4	05/28/93	2:14 p	72.935'	T/CAP
SPPZ-1	05/28/93	2:19 p	74.70'	T/CASING
2002	05/28/93	2:16 p	66.90'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	3:02 p	87.74'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	4:00 p	87.78'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	4:38 p	87.80'	T/CASING
SPPZ-5	05/28/93	4:39 p	73.225'	T/CASING
SPPZ-2a	05/28/93	4:40 p	75.15'	T/CASING
SPPZ-2d	05/28/93	4:41 p	71.54'	T/CASING
SPPZ-2g	05/28/93	4:42 p	74.095'	T/CASING
SPPZ-2c	05/28/93	4:46 p	70.39'	T/CASING
SPPZ-2b	05/28/93	4:44 p	76.445'	T/CASING
SPPZ-2e	05/28/93	4:45 p	73.975'	T/CASING
SPPZ-3	05/28/93	4:47 p	71.98'	T/CASING
SPPZ-4	05/28/93	4:49 p	72.94'	T/CAP
SPPZ-1	05/28/93	4:53 p	74.70'	T/CASING
2002	05/28/93	4:51 p	66.95'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	6:03 p	87.85'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	7:03 p	87.92'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	8:03 p	87.965'	T/CASING
SPPZ-5	05/28/93	8:04 p	73.24'	T/CASING
SPPZ-2a	05/28/93	8:06 p	75.17'	T/CASING
SPPZ-2d	05/28/93	8:07 p	71.55'	T/CASING
SPPZ-2g	05/28/93	8:09 p	74.09'	T/CASING
SPPZ-2c	05/28/93	8:13 p	70.40'	T/CASING
SPPZ-2b	05/28/93	8:10 p	76.325'	T/CASING
SPPZ-2e	05/28/93	8:11 p	72.99'	T/CASING
SPPZ-3	05/28/93	8:15 p	71.99'	T/CASING
SPPZ-4	05/28/93	8:16 p	72.95'	T/CAP
SPPZ-1	05/28/93	8:18 p	74:71'	T/CASING
2002	05/28/93	8:21 p	66.97'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	9:02 p	87.98'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	10:03 p	88.01'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/28/93	11:04 p	88.05'	T/CASING
SPPZ-5	05/28/93	11:06 p	78.305'	T/CASING
SPPZ-2a	05/28/93	11:08 p	75.24'	T/CASING
SPPZ-2d	05/28/93	11:09 p	71.61'	T/CASING
SPPZ-2g	05/28/93	11:11 p	74.09'	T/CASING
SPPZ-2c	05/28/93	11:16 p	70.47'	T/CASING
SPPZ-2b	05/28/93	11:12 p	76.225'	T/CASING
SPPZ-2e	05/28/93	11:14 p	73.05'	T/CASING
SPPZ-3	05/28/93	11:18 p	72.06'	T/CASING
SPPZ-4	05/28/93	11:21 p	73.02'	T/CAP
SPPZ-1	05/28/93	11:24 p	74.78'	T/CASING
2002	05/28/93	11:26 p	67.04'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	12:01 a	88.06'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	1:02 a	88.06'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	2:02 a	88.05'	T/CASING
SPPZ-5	05/29/93	2:07 a	73.25'	T/CASING
SPPZ-2a	05/29/93	2:10 a	75.215'	T/CASING
SPPZ-2d	05/29/93	2:12 a	71.60'	T/CASING
SPPZ-2g	05/29/93	2:14 a	74.10'	T/CASING
SPPZ-2c	05/29/93	2:24 a	70.465'	T/CASING
SPPZ-2b	05/29/93	2:07 a	76.15'	T/CASING
SPPZ-2e	05/29/93	2:21 a	73.055'	T/CASING
SPPZ-3	05/29/93	2:24 a	72.055'	T/CASING
SPPZ-4	05/29/93	2:26 a	73.01'	T/CAP
SPPZ-1	05/29/93	2:27 a	74.78'	T/CASING
2002	05/29/93	2:30 a	67.035'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	2:35 a	88.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	3:01 a	88.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	4:06 a	88.085'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	5:01 a	88.095'	T/CASING
SPPZ-5	05/29/93	5:05 a	73.305'	T/CASING
SPPZ-2a	05/29/93	5:07 a	75.23'	T/CASING
SPPZ-2d	05/29/93	5:09 a	71.615'	T/CASING
SPPZ-2g	05/29/93	5:10 a	74.105'	T/CASING
SPPZ-2c	05/29/93	5:15 a	70.48'	T/CASING
SPPZ-2b	05/29/93	5:12 a	76.08'	T/CASING
SPPZ-2e	05/29/93	5:14 a	73.07'	T/CASING
SPPZ-3	05/29/93	5:17 a	72.07'	T/CASING
SPPZ-4	05/29/93	5:19 a	73.02'	T/CAP
SPPZ-1	05/29/93	5:21 a	74.79'	T/CASING
2002	05/29/93	5:24 a	67.05'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	6:01 a	88.11'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	7:04 a	88.11'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	8:01 a	88.12'	T/CASING
SPPZ-5	05/29/93	8:06 a	73.32'	T/CASING
SPPZ-2a	05/29/93	8:08 a	75.25'	T/CASING
SPPZ-2d	05/29/93	8:09 a	71.64'	T/CASING
SPPZ-2g	05/29/93	8:11 a	74.11'	T/CASING
SPPZ-2c	05/29/93	8:16 a	70.49'	T/CASING
SPPZ-2b	05/29/93	8:13 a	75.985'	T/CASING
SPPZ-2e	05/29/93	8:15 a	73.09'	T/CASING
SPPZ-3	05/29/93	8:17 a	72.09'	T/CASING
SPPZ-4	05/29/93	8:19 a	73.04'	T/CAP
SPPZ-1	05/29/93	8:23 a	74.80'	T/CASING
2002	05/29/93	8:26 a	67.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	9:00 a	88.12'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	10:00 a	88.13'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	11:00 a	88.15'	T/CASING
SPPZ-5	05/29/93	11:01 a	73.32'	T/CASING
SPPZ-2a	05/29/93	11:03 a	75.25'	T/CASING
SPPZ-2d	05/29/93	11:04 a	71.63'	T/CASING
SPPZ-2g	05/29/93	11:05 a	74.10'	T/CASING
SPPZ-2c	05/29/93	11:09 a	70.49'	T/CASING
SPPZ-2b	05/29/93	11:07 a	75.90'	T/CASING
SPPZ-2e	05/29/93	11:08 a	73.08'	T/CASING
SPPZ-3	05/29/93	11:10 a	72.08'	T/CASING
SPPZ-4	05/29/93	11:12 a	73.03'	T/CAP
SPPZ-1	05/29/93	11:16 a	74.80'	T/CASING
2002	05/29/93	11:14 a	67.06'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	12:01 p	88.16'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	1:00 p	88.16'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	2:00 p	88.15'	T/CASING
SPPZ-5	05/29/93	2:02 p	73.315'	T/CASING
SPPZ-2a	05/29/93	2:03 p	75.235'	T/CASING
SPPZ-2d	05/29/93	2:04 p	71.61'	T/CASING
SPPZ-2g	05/29/93	2:05 p	74.11'	T/CASING
SPPZ-2c	05/29/93	2:09 p	70.48'	T/CASING
SPPZ-2b	05/29/93	2:07 p	75.815'	T/CASING
SPPZ-2e	05/29/93	2:08 p	73.065'	T/CASING
SPPZ-3	05/29/93	2:11 p	72.075'	T/CASING
SPPZ-4	05/29/93	2:12 p	73.02'	T/CAP
SPPZ-1	05/29/93	217 p	74.785'	T/CASING
2002	05/29/93	2:14 p	67.045'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	3:00 p	88.13'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	4:00 p	88.14'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	5:00 p	88.15'	T/CASING
SPPZ-5	05/29/93	5:02 p	73.30'	T/CASING
SPPZ-2a	05/29/93	5:03 p	75.23'	T/CASING
SPPZ-2d	05/29/93	5:04 p	71.615'	T/CASING
SPPZ-2g	05/29/93	5:05 p	74.115'	T/CASING
SPPZ-2c	05/29/93	5:09 p	70.465'	T/CASING
SPPZ-2b	05/29/93	5:07 p	75.73'	T/CASING
SPPZ-2e	05/29/93	5:08 p	73.06'	T/CASING
SPPZ-3	05/29/93	5:11 p	72.06'	T/CASING
SPPZ-4	05/29/93	5:12 p	73.02'	T/CAP
SPPZ-1	05/29/93	5:17 p	74.78'	T/CASING
2002	05/29/93	5:14 p	67.03'	T/CASING

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	6:00 p	88.18'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	7:00 p	88.18'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	8:00 p	88.18'	T/CASING
SPPZ-5	05/29/93	8:02 p	73.32'	T/CASING
SPPZ-2a	05/29/93	8:03 p	75.245'	T/CASING
SPPZ-2d	05/29/93	8:04 p	71.63'	T/CASING
SPPZ-2g	05/29/93	8:05 p	74.10'	T/CASING
SPPZ-2c	05/29/93	8:09 p	70.49'	T/CASING
SPPZ-2b	05/29/93	8:07 p	75.65'	T/CASING
SPPZ-2e	05/29/93	8:09 p	73.08'	T/CASING
SPPZ-3	05/29/93	8:10 p	72.08'	T/CASING
SPPZ-4	05/29/93	8:12 p	73.04'	T/CAP
SPPZ-1	05/29/93	8:17 p	74.80'	T/CASING
2002	05/29/93	8:14 p	67.05'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	9:02 p	88.18'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	10:02 p	88.215'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/29/93	11:03 p	88.215'	T/CASING
SPPZ-5	05/29/93	11:08 p	73.35'	T/CASING
SPPZ-2a	05/29/93	11:10 p	75.27'	T/CASING
SPPZ-2d	05/29/93	11:11 p	71.655'	T/CASING
SPPZ-2g	05/29/93	11:13 p	74.10'	T/CASING
SPPZ-2c	05/29/93	11:17 p	70.51	T/CASING
SPPZ-2b	05/29/93	11:14 p	75.57'	T/CASING
SPPZ-2e	05/29/93	11:16 p	73.11'	T/CASING
SPPZ-3	05/29/93	11:18 p	72.10'	T/CASING
SPPZ-4	05/29/93	11:21 p	73.055'	T/CAP
SPPZ-1	05/29/93	11:23 p	74.82'	T/CASING
2002	05/29/93	11:26 p	67.09'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	12:02 a	88.20'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	1:01 a	88.185'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	2:02 a	88.185'	T/CASING
SPPZ-5	05/30/93	2:08 a	73.33'	T/CASING
SPPZ-2a	05/30/93	2:10 a	75.255'	T/CASING
SPPZ-2d	05/30/93	2:12 a	71.64'	T/CASING
SPPZ-2g	05/30/93	2:13 a	74.11'	T/CASING
SPPZ-2c	05/30/93	2:17 a	70.50'	T/CASING
SPPZ-2b	05/30/93	2:15 a	75.50'	T/CASING
SPPZ-2e	05/30/93	2:16 a	73.095'	T/CASING
SPPZ-3	05/30/93	2:19 a	72.095'	T/CASING
SPPZ-4	05/30/93	2:21 a	73.05'	T/CAP
SPPZ-1	05/30/93	2:23 a	74.81'	T/CASING
2002	05/30/93	2:25 a	67.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	3:02 a	88.20'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	4:01 a	88.195'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	4:59 a	88.195'	T/CASING
SPPZ-5	05/30/93	5:04 a	73.33'	T/CASING
SPPZ-2a	05/30/93	5:05 a	75.26'	T/CASING
SPPZ-2d	05/30/93	5:07 a	71.645'	T/CASING
SPPZ-2g	05/30/93	5:08 a	74.11'	T/CASING
SPPZ-2c	05/30/93	5:12 a	70.50'	T/CASING
SPPZ-2b	05/30/93	5:10 a	75.43'	T/CASING
SPPZ-2e	05/30/93	5:11 a	73.10'	T/CASING
SPPZ-3	05/30/93	5:13 a	72.095'	T/CASING
SPPZ-4	05/30/93	5:16 a	73.055'	T/CAP
SPPZ-1	05/30/93	5:18 a	74.81'	T/CASING
2002	05/30/93	5:22 a	67.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	6:01 a	88.21'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	7:02 a	88.19'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	8:01 a	88.195'	T/CASING
SPPZ-5	05/30/93	8:07 a	73.345'	T/CASING
SPPZ-2a	05/30/93	8:09 a	75.28'	T/CASING
SPPZ-2d	05/30/93	8:10 a	71.665'	T/CASING
SPPZ-2g	05/30/93	8:12 a	74.115'	T/CASING
SPPZ-2c	05/30/93	8:16 a	70.52'	T/CASING
SPPZ-2b	05/30/93	8:13 a	75.35'	T/CASING
SPPZ-2e	05/30/93	8:14 a	73.11'	T/CASING
SPPZ-3	05/30/93	8:17 a	72.11'	T/CASING
SPPZ-4	05/30/93	8:19 a	73.065'	T/CAP
SPPZ-1	05/30/93	8:21 a	74.83'	T/CASING
2002	05/30/93	8:23 a	67.09'	T/CASING

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
* RW #4	05/30/93	9:00 a	88.28'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
* RW #4	05/30/93	10:03 a	88.25'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
RW #4	05/30/93	11:00 a	88.25'	T/CASING
SPPZ-5	05/30/93	11:02 a	73.32'	T/CASING
SPPZ-2a	05/30/93	11:03 a	75.25'	T/CASING
SPPZ-2d	05/30/93	11:04 a	71.645'	T/CASING
SPPZ-2g	05/30/93	11:05 a	74.105'	T/CASING
SPPZ-2c	05/30/93	11:10 a	70.49'	T/CASING
SPPZ-2b	05/30/93	11:00 a	75.275'	T/CASING
SPPZ-2e	05/30/93	11:09 a	73.088'	T/CASING
SPPZ-3	05/30/93	11:12 a	72.08'	T/CASING
SPPZ-4	05/30/93	11:14 a	73.03'	T/CAP
SPPZ-1	05/30/93	11:18 a	74.805'	T/CASING
2002	05/30/93	11:15 a	67.05'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
* RW #4	05/30/93	12:00 p	88.20'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
* RW #4	05/30/93	1:00 p	88.20'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	2:01 p	87.303'	T/CASING
* RW #4	05/30/93	2:01 p	88.22'	T/CASING
SPPZ-5	05/30/93	2:03 p	73.31'	T/CASING
SPPZ-2a	05/30/93	2:05 p	75.235'	T/CASING
SPPZ-2d	05/30/93	2:06 p	71.62'	T/CASING
SPPZ-2g	05/30/93	2:07 p	74.11'	T/CASING
SPPZ-2c	05/30/93	2:11 p	70.48'	T/CASING
SPPZ-2b	05/30/93	2:08 p	75.20'	T/CASING
SPPZ-2e	05/30/93	2:10 p	73.07'	T/CASING
SPPZ-3	05/30/93	2:12 p	72.08'	T/CASING
SPPZ-4	05/30/93	2:13 p	73.04'	T/CAP
SPPZ-1	05/30/93	2:18 p	74.80'	T/CASING
2002	05/30/93	2:16 p	62.04'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	3:00 p	87.303'	T/CASING
* RW #4	05/30/93	3:00 p	88.22'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	4:01 p	87.272'	T/CASING
* RW #4	05/30/93	4:01 p	88.15'	T/CASING

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	5:00 p	87.272'	T/CASING
* RW #4	05/30/93	5:00 p	88.15'	T/CASING
SPPZ-5	05/30/93	5:03 p	73.295'	T/CASING
SPPZ-2a	05/30/93	5:04 p	75.22'	T/CASING
SPPZ-2d	05/30/93	5:05 p	71.61'	T/CASING
SPPZ-2g	05/30/93	5:06 p	74.11'	T/CASING
SPPZ-2c	05/30/93	5:11 p	70.46'	T/CASING
SPPZ-2b	05/30/93	5:09 p	75.14'	T/CASING
SPPZ-2e	05/30/93	5:10 p	73.06'	T/CASING
SPPZ-3	05/30/93	5:12 p	72.06'	T/CASING
SPPZ-4	05/30/93	5:14 p	73.025'	T/CAP
SPPZ-1	05/30/93	5:19 p	74.785'	T/CASING
2002	05/30/93	5:16 p	66.03'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	6:00 p	87.272'	T/CASING
* RW #4	05/30/93	6:00 p	88.15'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	7:00 p	87.240'	T/CASING
* RW #4	05/30/93	7:00 p	88.14'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	8:00 p	87.240"	T/CASING
* RW #4	05/30/93	8:00 p	88.15'	T/CASING
SPPZ-5	05/30/93	8:03 p	73.335'	T/CASING
SPPZ-2a	05/30/93	8:04 p	75.26'	T/CASING
SPPZ-2d	05/30/93	8:05 p	71.645'	T/CASING
SPPZ-2g	05/30/93	8:06 p	74.11'	T/CASING
SPPZ-2c	05/30/93	8:14 p	70.50'	T/CASING
SPPZ-2b	05/30/93	8:12 p	----	T/CASING
SPPZ-2e	05/30/93	8:13 p	73.085'	T/CASING
SPPZ-3	05/30/93	8:15 p	72.095'	T/CASING
SPPZ-4	05/30/93	8:17 p	73.05'	T/CAP
SPPZ-1	05/30/93	8:22 p	74.825'	T/CASING
2002	05/30/93	8:20 p	67.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	9:02 p	87.272'	T/CASING
* RW #4	05/30/93	9:02 p	88.17'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	10:00 p	87.287'	T/CASING
* RW #4	05/30/93	10:00 p	88.17'	T/CASING

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/30/93	11:02 p	87.335'	T/CASING
* RW #4	05/30/93	11:02 p	88.20'	T/CASING
SPPZ-5	05/30/93	11:08 p	73.37'	T/CASING
SPPZ-2a	05/30/93	11:09 p	75.295'	T/CASING
SPPZ-2d	05/30/93	11:11 p	71.68'	T/CASING
SPPZ-2g	05/30/93	11:12 p	74.11'	T/CASING
SPPZ-2c	05/30/93	11:16 p	70.54'	T/CASING
SPPZ-2b	05/30/93	11:14 p	75.00'	T/CASING
SPPZ-2e	05/30/93	11:15 p	73.13'	T/CASING
SPPZ-3	05/30/93	11:17 p	72.13'	T/CASING
SPPZ-4	05/30/93	11:19 p	73.085'	T/CAP
SPPZ-1	05/30/93	11:21 p	74.85'	T/CASING
2002	05/30/93	11:24 p	67.10'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	12:02 a	87.287'	T/CASING
* RW #4	05/31/93	12:02 a	88.15'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	1:12 a	87.287'	T/CASING
* RW #4	05/31/93	1:12 a	88.17'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	2:01 a	87.282'	T/CASING
* RW #4	05/31/93	2:01 a	88.12'	T/CASING
SPPZ-5	05/31/93	2:10 a	75.35'	T/CASING
SPPZ-2a	05/31/93	2:07 a	75.28'	T/CASING
SPPZ-2d	05/31/93	2:12 a	71.66'	T/CASING
SPPZ-2g	05/31/93	2:13 a	74.12'	T/CASING
SPPZ-2c	05/31/93	2:18 a	70.52'	T/CASING
SPPZ-2b	05/31/93	2:15 a	74.945'	T/CASING
SPPZ-2e	05/31/93	2:17 a	73.11	T/CASING
SPPZ-3	05/31/93	2:19 a	72.115'	T/CASING
SPPZ-4	05/31/93	2:22 a	73.07'	T/CAP
SPPZ-1	05/31/93	2:26 a	74.83'	T/CASING
2002	05/31/93	2:30 a	67.09'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	2:33 a	87.272'	T/CASING
* RW #4	05/31/93	2:33 a	88.10'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	3:09 a	87.287'	T/CASING
* RW #4	05/31/93	3:09 a	88.12'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	4:03 a	87.319'	T/CASING
* RW #4	05/31/93	4:03 a	88.12'	T/CASING

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	5:00 a	87.335'	T/CASING
* RW #4	05/31/93	5:00 a	88.15'	T/CASING
SPPZ-5	05/31/93	5:04 a	73.375'	T/CASING
SPPZ-2a	05/31/93	5:09 a	75.30'	T/CASING
SPPZ-2d	05/31/93	5:10 a	71.69'	T/CASING
SPPZ-2g	05/31/93	5:12 a	74.12'	T/CASING
SPPZ-2c	05/31/93	5:16 a	70.545'	T/CASING
SPPZ-2b	05/31/93	5:14 a	74.87'	T/CASING
SPPZ-2e	05/31/93	5:15 a	73.145'	T/CASING
SPPZ-3	05/31/93	5:17 a	72.14'	T/CASING
SPPZ-4	05/31/93	5:21 a	73.095'	T/CAP
SPPZ-1	05/31/93	5:24 a	74.86'	T/CASING
2002	05/31/93	5:26 a	67.11'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	5:29 a	87.303'	T/CASING
* RW #4	05/31/93	5:29 a	88.12'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	6:07 a	87.303'	T/CASING
* RW #4	05/31/93	6:07 a	88.15'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	7:05 a	87.319'	T/CASING
* RW #4	05/31/93	7:05 a	88.15'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	8:00 a	87.319'	T/CASING
* RW #4	05/31/93	8:00 a	88.14'	T/CASING
SPPZ-5	05/31/93	8:08 a	73.41'	T/CASING
SPPZ-2a	05/31/93	8:09 a	75.33'	T/CASING
SPPZ-2d	05/31/93	8:11 a	71.72'	T/CASING
SPPZ-2g	05/31/93	8:12 a	74.12'	T/CASING
SPPZ-2c	05/31/93	8:16 a	70.58'	T/CASING
SPPZ-2b	05/31/93	8:13 a	74.805'	T/CASING
SPPZ-2e	05/31/93	8:14 a	73.18'	T/CASING
SPPZ-3	05/31/93	8:17 a	72.18'	T/CASING
SPPZ-4	05/31/93	8:19 a	73.14'	T/CAP
SPPZ-1	05/31/93	8:21 a	74.905'	T/CASING
2002	05/31/93	8:24 a	67.16'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	9:01 a	87.335'	T/CASING
* RW #4	05/31/93	9:01 a	88.15'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	10:01 a	87.351'	T/CASING
* RW #4	05/31/93	10:01 a	88.18'	T/CASING

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	11:05 a	87.319'	T/CASING
* RW #4	05/31/93	11:05 a	88.14'	T/CASING
SPPZ-5	05/31/93	11:06 a	73.445'	T/CASING
SPPZ-2a	05/31/93	11:07 a	75.37'	T/CASING
SPPZ-2d	05/31/93	11:08 a	71.76'	T/CASING
SPPZ-2g	05/31/93	11:09 a	74.12'	T/CASING
SPPZ-2c	05/31/93	11:13 a	70.60'	T/CASING
SPPZ-2b	05/31/93	11:11 a	74.775'	T/CASING
SPPZ-2e	05/31/93	11:12 a	73.20'	T/CASING
SPPZ-3	05/31/93	11:14 a	72.20'	T/CASING
SPPZ-4	05/31/93	11:16 a	73.155'	T/CAP
SPPZ-1	05/31/93	11:20 a	74.93'	T/CASING
2002	05/31/93	11:18 a	67.19'	T/CASING
HERMIT 2000 READINGS				
RW #4	05/31/93	11:21 a	87.351'	T/CASING
SPPZ-5	05/31/93	----	73.463'	T/CASING
SPPZ-2a	05/31/93	----	75.393'	T/CASING
SPPZ-2d	05/31/93	----	71.732'	T/CASING
SPPZ-2g	05/31/93	----	74.10'	T/CASING
SPPZ-2c	05/31/93	----	70.479'	T/CASING
SPPZ-2b	05/31/93	----	74.773'	T/CASING
SPPZ-2e	05/31/93	----	73.083'	T/CASING
SPPZ-3	05/31/93	----	72.185'	T/CASING
SPPZ-4	05/31/93	----	73.142'	T/CAP
SPPZ-1	05/31/93	----	74.887'	T/CASING
2002	05/31/93	11:22 a	67.215'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	12:01 p	87.139'	T/CASING
* RW #4	05/31/93	12:01 p	88.14'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	1:01 p	87.303'	T/CASING
* RW #4	05/31/93	1:01 p	88.14'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	2:02 p	87.319'	T/CASING
* RW #4	05/31/93	2:02 p	88.15'	T/CASING
SPPZ-5	05/31/93	2:02 p	73.40'	T/CASING
SPPZ-2a	05/31/93	2:08 p	75.38'	T/CASING
SPPZ-2d	05/31/93	2:06 p	71.765'	T/CASING
SPPZ-2g	05/31/93	2:07 p	74.115'	T/CASING
SPPZ-2c	05/31/93	2:11 p	70.615'	T/CASING
SPPZ-2b	05/31/93	2:09 p	74.775'	T/CASING
SPPZ-2e	05/31/93	2:10 p	73.20'	T/CASING
SPPZ-3	05/31/93	2:13 p	72.22'	T/CASING
SPPZ-4	05/31/93	2:15 p	73.175'	T/CAP
SPPZ-1	05/31/93	2:20 p	74.94'	T/CASING
2002	05/31/93	2:17 p	67.20'	T/CASING
HERMIT 2000 READINGS				
RW #4	05/31/93	2:21 p	87.319'	T/CASING
SPPZ-5	05/31/93	----	73.463'	T/CASING
SPPZ-2a	05/31/93	----	75.400'	T/CASING
SPPZ-2d	05/31/93	----	71.738'	T/CASING
SPPZ-2g	05/31/93	----	74.116'	T/CASING
SPPZ-2c	05/31/93	----	70.485'	T/CASING
SPPZ-2b	05/31/93	----	74.725'	T/CASING
SPPZ-2e	05/31/93	----	73.099'	T/CASING
SPPZ-3	05/31/93	----	72.182'	T/CASING
SPPZ-4	05/31/93	----	73.145'	T/CAP
SPPZ-1	05/31/93	----	74.893'	T/CASING
2002	05/31/93	2:22 p	67.218'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	3:01 p	87.303'	T/CASING
* RW #4	05/31/93	3:01 p	88.10'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	4:01 p	87,287'	T/CASING
* RW #4	05/31/93	4:01 p	88.10'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	5:15 p	87.287'	T/CASING
* RW #4	05/31/93	5:15 p	88.09'	T/CASING
SPPZ-5	05/31/93	5:01 p	73.45'	T/CASING
SPPZ-2a	05/31/93	5:02 p	75.37'	T/CASING
SPPZ-2d	05/31/93	5:03 p	71.76'	T/CASING
SPPZ-2g	05/31/93	5:04 p	74.12'	T/CASING
SPPZ-2c	05/31/93	5:07 p	70.61'	T/CASING
SPPZ-2b	05/31/93	5:05 p	74.67'	T/CASING
SPPZ-2e	05/31/93	5:06 p	73.205'	T/CASING
SPPZ-3	05/31/93	5:08 p	72.21'	T/CASING
SPPZ-4	05/31/93	5:10 p	73.165'	T/CAP
SPPZ-1	05/31/93	5:14 p	74.935'	T/CASING
2002	05/31/93	5:12 p	67.19'	T/CASING
HERMIT 2000 READINGS				
SPPZ-5	05/31/93	5:15 p	73.450'	T/CASING
SPPZ-2a	05/31/93	----	75.380'	T/CASING
SPPZ-2d	05/31/93	----	71.716'	T/CASING
SPPZ-2g	05/31/93	----	74.107'	T/CASING
SPPZ-2c	05/31/93	----	60.466'	T/CASING
SPPZ-2b	05/31/93	----	74.659'	T/CASING
SPPZ-2e	05/31/93	----	73.083'	T/CASING
SPPZ-3	05/31/93	----	72.173'	T/CASING
SPPZ-4	05/31/93	----	73.130'	T/CAP
SPPZ-1	05/31/93	----	74.883'	T/CASING
2002	05/31/93	5:16 p	67.193'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	6:00 p	87.256'	T/CASING
* RW #4	05/31/93	6:00 p	88.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	7:00 p	87.256'	T/CASING
* RW #4	05/31/93	7:00 p	86.06'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	8:00 p	87.240'	T/CASING
* RW #4	05/31/93	8:00 p	88.07'	T/CASING
SPPZ-5	05/31/93	8:01 p	73.465'	T/CASING
SPPZ-2a	05/31/93	8:03 p	75.385'	T/CASING
SPPZ-2d	05/31/93	8:04 p	71.775'	T/CASING
SPPZ-2g	05/31/93	8:05 p	74.115'	T/CASING
SPPZ-2c	05/31/93	8:08 p	70.63'	T/CASING
SPPZ-2b	05/31/93	8:06 p	74.68'	T/CASING
SPPZ-2e	05/31/93	8:07 p	73.225'	T/CASING
SPPZ-3	05/31/93	8:09 p	72.225'	T/CASING
SPPZ-4	05/31/93	8:10 p	73.185'	T/CAP
SPPZ-1	05/31/93	8:15 p	74.96'	T/CASING
2002	05/31/93	8:13 p	67.215'	T/CASING
HERMIT 2000 READINGS				
SPPZ-5	05/31/93	8:16 p	73.463'	T/CASING
SPPZ-2a	05/31/93	----	75.403'	T/CASING
SPPZ-2d	05/31/93	----	71.729'	T/CASING
SPPZ-2g	05/31/93	----	74.107'	T/CASING
SPPZ-2c	05/31/93	----	70.485'	T/CASING
SPPZ-2b	05/31/93	----	74.608'	T/CASING
SPPZ-2e	05/31/93	----	73.096'	T/CASING
SPPZ-3	05/31/93	----	72.189'	T/CASING
SPPZ-4	05/31/93	----	73.145'	T/CAP
SPPZ-1	05/31/93	----	74.902'	T/CASING
2002	05/31/93	8:17 p	67.218'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	8:59 p	87.256'	T/CASING
* RW #4	05/31/93	8:59 p	88.07'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	9:59 p	87.272'	T/CASING
* RW #4	05/31/93	9:59 p	88.09'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	10:59 p	87.256'	T/CASING
* RW #4	05/31/93	10:59 p	88.06'	T/CASING
SPPZ-5	05/31/93	11:04 p	73.48'	T/CASING
SPPZ-2a	05/31/93	11:06 p	75.405'	T/CASING
SPPZ-2d	05/31/93	11:08 p	71.79'	T/CASING
SPPZ-2g	05/31/93	11:09 p	71.145'	T/CASING
SPPZ-2c	05/31/93	11:13 p	70.65'	T/CASING
SPPZ-2b	05/31/93	11:10 p	74.58'	T/CASING
SPPZ-2e	05/31/93	11:12 p	73.25'	T/CASING
SPPZ-3	05/31/93	11:15 p	74.125'	T/CASING
SPPZ-4	05/31/93	11:17 p	73.97'	T/CAP
SPPZ-1	05/31/93	11:18 p	74.97'	T/CASING
2002	05/31/93	11:21 p	67.23'	T/CASING
HERMIT 2000 READINGS				
SPPZ-5	05/31/93	11:24 p	73.472'	T/CASING
SPPZ-2a	05/31/93	----	75.415'	T/CASING
SPPZ-2d	05/31/93	----	71.732'	T/CASING
SPPZ-2g	05/31/93	----	74.123'	T/CASING
SPPZ-2c	05/31/93	----	70.488'	T/CASING
SPPZ-2b	05/31/93	----	74.558'	T/CASING
SPPZ-2e	05/31/93	----	73.093'	T/CASING
SPPZ-3	05/31/93	----	72.198'	T/CASING
SPPZ-4	05/31/93	----	73.155'	T/CAP
SPPZ-1	05/31/93	----	74.905'	T/CASING
2002	05/31/93	11:25 p	67.224'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	05/31/93	11:59 p	87.240'	T/CASING
* RW #4	05/31/93	11:59 p	88.06'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	1:06 a	87.192'	T/CASING
* RW #4	06/01/93	1:06 a	87.99'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	2:00 a	87.176'	T/CASING
* RW #4	06/01/93	2:00 a	87.99'	T/CASING

* In-Situ Hermit 1000
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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
SPPZ-5	06/01/93	2:04 a	73.47'	T/CASING
SPPZ-2a	06/01/93	2:05 a	75.49'	T/CASING
SPPZ-2d	06/01/93	2:06 a	71.78'	T/CASING
SPPZ-2g	06/01/93	2:08 a	74.135'	T/CASING
SPPZ-2c	06/01/93	2:12 a	70.63'	T/CASING
SPPZ-2b	06/01/93	2:09 a	74.53'	T/CASING
SPPZ-2e	06/01/93	2:10 a	73.23'	T/CASING
SPPZ-3	06/01/93	2:13 a	72.225'	T/CASING
SPPZ-4	06/01/93	2:15 a	73.78'	T/CAP
SPPZ-1	06/01/93	2:17 a	74.95'	T/CASING
2002	06/01/93	2:19 a	67.21'	T/CASING
HERMIT 2000 READINGS				
RW #4	06/01/93	2:23 a	87.161'	T/CASING
SPPZ-5	06/01/93	----	73.453'	T/CASING
SPPZ-2a	06/01/93	----	75.409'	T/CASING
SPPZ-2d	06/01/93	----	71.726'	T/CASING
SPPZ-2g	06/01/93	----	74.126'	T/CASING
SPPZ-2c	06/01/93	----	70.479'	T/CASING
SPPZ-2b	06/01/93	----	74.514'	T/CASING
SPPZ-2e	06/01/93	----	73.077'	T/CASING
SPPZ-3	06/01/93	----	72.179'	T/CASING
SPPZ-4	06/01/93	----	73.145'	T/CAP
SPPZ-1	06/01/93	----	74.896'	T/CASING
2002	06/01/93	2:24 a	67.208'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	3:00 a	87.161'	T/CASING
* RW #4	06/01/93	3:00 a	87.96'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	3:59 a	87.145'	T/CASING
* RW #4	06/01/93	3:59 a	87.95'	T/CASING

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** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	5:01 a	87.129'	T/CASING
* RW #4	06/01/93	5:01 a	87.93'	T/CASING
SPPZ-5	06/01/93	5:05 a	73.465'	T/CASING
SPPZ-2a	06/01/93	5:07 a	75.49'	T/CASING
SPPZ-2d	06/01/93	5:08 a	71.78'	T/CASING
SPPZ-2g	06/01/93	5:09 a	74.14'	T/CASING
SPPZ-2c	06/01/93	5:13 a	70.635'	T/CASING
SPPZ-2b	06/01/93	5:10 a	74.49'	T/CASING
SPPZ-2e	06/01/93	5:12 a	73.235'	T/CASING
SPPZ-3	06/01/93	5:14 a	72.23'	T/CASING
SPPZ-4	06/01/93	5:16 a	73.185'	T/CAP
SPPZ-1	06/01/93	5:18 a	74.95'	T/CASING
2002	06/01/93	5:21 a	67.21'	T/CASING
HERMIT 2000 READINGS				
RW #4	06/01/93	5:21 a	87.145'	T/CASING
SPPZ-5	06/01/93	----	74.463'	T/CASING
SPPZ-2a	06/01/93	----	75.422'	T/CASING
SPPZ-2d	06/01/93	----	71.722'	T/CASING
SPPZ-2g	06/01/93	----	74.126'	T/CASING
SPPZ-2c	06/01/93	----	70.482'	T/CASING
SPPZ-2b	06/01/93	----	74.473'	T/CASING
SPPZ-2e	06/01/93	----	73.077'	T/CASING
SPPZ-3	06/01/93	----	72.182'	T/CASING
SPPZ-4	06/01/93	----	73.149'	T/CAP
SPPZ-1	06/01/93	----	74.896'	T/CASING
2002	06/01/93	5:23 a	67.211'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	6:03 a	87.145'	T/CASING
* RW #4	06/01/93	6:03 a	87.95'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	7:00 a	87.161'	T/CASING
* RW #4	06/01/93	7:00 a	87.96'	T/CASING

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** In-Situ Hermit 2000

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WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	8:04 a	87.176'	T/CASING
* RW #4	06/01/93	8:04 a	87.99'	T/CASING
SPPZ-5	06/01/93	8:09 a	73.50'	T/CASING
SPPZ-2a	06/01/93	8:11 a	75.425'	T/CASING
SPPZ-2d	06/01/93	8:13 a	71.82'	T/CASING
SPPZ-2g	06/01/93	8:14 a	74.145'	T/CASING
SPPZ-2c	06/01/93	8:18 a	70.67'	T/CASING
SPPZ-2b	06/01/93	8:15 a	74.445'	T/CASING
SPPZ-2e	06/01/93	8:16 a	73.26'	T/CASING
SPPZ-3	06/01/93	8:19 a	72.265'	T/CASING
SPPZ-4	06/01/93	8:21 a	73.215'	T/CAP
SPPZ-1	06/01/93	8:22 a	74.99'	T/CASING
2002	06/01/93	8:25 a	67.25'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	9:02 a	87.176'	T/CASING
* RW #4	06/01/93	9:02 a	87.99'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	10:01 a	87.176'	T/CASING
* RW #4	06/01/93	10:01 a	87.99'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	11:01 a	87.176'	T/CASING
* RW #4	06/01/93	11:01 a	87.95'	T/CASING
SPPZ-5	06/01/93	11:02 a	73.495'	T/CASING
SPPZ-2a	06/01/93	11:04 a	75.415'	T/CASING
SPPZ-2d	06/01/93	11:05 a	71.80'	T/CASING
SPPZ-2g	06/01/93	11:06 a	74.135'	T/CASING
SPPZ-2c	06/01/93	11:10 a	70.655'	T/CASING
SPPZ-2b	06/01/93	11:07 a	74.41'	T/CASING
SPPZ-2e	06/01/93	11:08 a	73.25'	T/CASING
SPPZ-3	06/01/93	11:11 a	72.255'	T/CASING
SPPZ-4	06/01/93	11:12 a	73.21'	T/CAP
SPPZ-1	06/01/93	11:16 a	74.975'	T/CASING
2002	06/01/93	11:14 a	67.23'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READINGS				
SPPZ-5	06/01/93	11:17 a	73.504'	T/CASING
SPPZ-2a	06/01/93	----	75.432'	T/CASING
SPPZ-2d	06/01/93	----	71.757'	T/CASING
SPPZ-2g	06/01/93	----	74.129'	T/CASING
SPPZ-2c	06/01/93	----	70.517'	T/CASING
SPPZ-2b	06/01/93	----	74.400'	T/CASING
SPPZ-2e	06/01/93	----	73.093'	T/CASING
SPPZ-3	06/01/93	----	72.223'	T/CASING
SPPZ-4	06/01/93	----	73.177'	T/CAP
SPPZ-1	06/01/93	----	74.924'	T/CASING
2002	06/01/93	11:18 a	67.246'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	12:02 p	87.161'	T/CASING
* RW #4	06/01/93	12:02 p	87.96'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	1:01 p	87.129'	T/CASING
* RW #4	06/01/93	1:01 p	87.93'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	2:01 p	87.097'	T/CASING
* RW #4	06/01/93	2:01 p	87.92'	T/CASING
SPPZ-5	06/01/93	2:02 p	73.87'	T/CASING
SPPZ-2a	06/01/93	2:03 p	75.39'	T/CASING
SPPZ-2d	06/01/93	2:05 p	71.78'	T/CASING
SPPZ-2g	06/01/93	2:06 p	74.14'	T/CASING
SPPZ-2c	06/01/93	2:09 p	70.63'	T/CASING
SPPZ-2b	06/01/93	2:07 p	74.37'	T/CASING
SPPZ-2e	06/01/93	2:08 p	73.22'	T/CASING
SPPZ-3	06/01/93	2:12 p	72.23'	T/CASING
SPPZ-4	06/01/93	2:10 p	73.19'	T/CAP
SPPZ-1	06/01/93	2:16 p	74.96'	T/CASING
2002	06/01/93	2:14 p	67.20'	T/CASING
HERMIT 2000 READINGS				
SPPZ-5	06/01/93	2:17 p	73.482'	T/CASING
SPPZ-2a	06/01/93	----	75.412'	T/CASING
SPPZ-2d	06/01/93	----	71.738'	T/CASING
SPPZ-2g	06/01/93	----	74.139'	T/CASING
SPPZ-2c	06/01/93	----	70.494'	T/CASING
SPPZ-2b	06/01/93	----	74.368'	T/CASING
SPPZ-2e	06/01/93	----	73.074'	T/CASING
SPPZ-3	06/01/93	----	72.207'	T/CASING
SPPZ-4	06/01/93	----	73.161'	T/CAP
SPPZ-1	06/01/93	----	74.912'	T/CASING
2002	06/01/93	2:18 p	67.215'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	3:01 p	87.081'	T/CASING
* RW #4	06/01/93	3:01 p	87.88'	T/CASING
CONSTANT RATE PUMPING (05/25/93 10:21 a ; 425 GPM)				
** RW #4	06/01/93	4:01 p	87.066'	T/CASING
* RW #4	06/01/93	4:01 p	87.88'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
SPPZ-5	06/01/93	4:53 P	73.145'	T/CASING
SPPZ-2a	06/01/93	4:54 p	74.85'	T/CASING
SPPZ-2d	06/01/93	4:55 p	71.46'	T/CASING
SPPZ-2g	06/01/93	4:56 p	74.14'	T/CASING
SPPZ-2c	06/01/93	4:59 p	70.235'	T/CASING
SPPZ-2b	06/01/93	4:57 p	74.34'	T/CASING
SPPZ-2e	06/01/93	4:59 p	72.935'	T/CASING
SPPZ-3	06/01/93	4:00 p	71.905'	T/CASING
SPPZ-4	06/01/93	4:02 p	73.115'	T/CAP
SPPZ-1	06/01/93	4:04 p	74.52'	T/CASING
2002	06/01/93	4:07 p	67.145'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	5:50 p	70.502'	T/CASING
* RW #4	06/01/93	5:50p	71.37'	T/CASING
SPPZ-5	06/01/93	5:30 p	73.05'	T/CASING
SPPZ-2a	06/01/93	5:31 p	74.77'	T/CASING
SPPZ-2d	06/01/93	5:32 p	71.35'	T/CASING
SPPZ-2g	06/01/93	5:33 p	74.135'	T/CASING
SPPZ-2c	06/01/93	5:34 p	70.145'	T/CASING
SPPZ-2b	06/01/93	5:45 p	74.33'	T/CASING
SPPZ-2e	06/01/93	5:46 p	72.82'	T/CASING
SPPZ-3	06/01/93	5:35 p	71.815'	T/CASING
SPPZ-4	06/01/93	5:37 p	73.07'	T/CAP
SPPZ-1	06/01/93	5:43 p	74.43'	T/CASING
2002	06/01/93	5:38 p	67.10'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	6:15 p	70.445'	T/CASING
* RW #4	06/01/93	6:15 p	71.31'	T/CASING
SPPZ-5	06/01/93	6:00 p	72.96'	T/CASING
SPPZ-2a	06/01/93	6:01 p	74.66'	T/CASING
SPPZ-2d	06/01/93	6:03 p	71.295'	T/CASING
SPPZ-2g	06/01/93	6:04 p	74.14'	T/CASING
SPPZ-2c	06/01/93	6:08 p	70.095'	T/CASING
SPPZ-2b	06/01/93	6:06 p	74.32'	T/CASING
SPPZ-2e	06/01/93	6:07 p	72.79'	T/CASING
SPPZ-3	06/01/93	6:09 p	71.76'	T/CASING
SPPZ-4	06/01/93	6:10 p	73.03'	T/CAP
SPPZ-1	06/01/93	6:14 p	74.385'	T/CASING
2002	06/01/93	6:12 p	67.07'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
**RW #4	06/01/93	6:44 p	70.432'	T/CASING
* RW #4	06/01/93	6:44 p	71.27'	T/CASING
SPPZ-5	06/01/93	6:30 p	72.91'	T/CASING
SPPZ-2a	06/01/93	6:31 p	74.62'	T/CASING
SPPZ-2d	06/01/93	6:32 p	71.255'	T/CASING
SPPZ-2g	06/01/93	6:33 p	71.14'	T/CASING
SPPZ-2c	06/01/93	6:37 p	70.06'	T/CASING
SPPZ-2b	06/01/93	6:34 p	74.315'	T/CASING
SPPZ-2e	06/01/93	6:36 p	72.76'	T/CASING
SPPZ-3	06/01/93	6:38 p	71.725'	T/CASING
SPPZ-4	06/01/93	6:39 p	73.01'	T/CAP
SPPZ-1	06/01/93	6:43 p	74.35'	T/CASING
2002	06/01/93	6:41 p	67.045'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
**RW #4	06/01/93	7:14 p	70.391'	T/CASING
* RW #4	06/01/93	7:14 p	71.26'	T/CASING
SPPZ-5	06/01/93	7:00 p	72.895'	T/CASING
SPPZ-2a	06/01/93	7:02 p	74.605'	T/CASING
SPPZ-2d	06/01/93	7:03 p	71.24'	T/CASING
SPPZ-2g	06/01/93	7:04 p	74.135'	T/CASING
SPPZ-2c	06/01/93	7:07 p	70.04'	T/CASING
SPPZ-2b	06/01/93	7:05 p	74.305'	T/CASING
SPPZ-2e	06/01/93	7:06 p	72.74'	T/CASING
SPPZ-3	06/01/93	7:08 p	71.71'	T/CASING
SPPZ-4	06/01/93	7:09 p	73.00'	T/CAP
SPPZ-1	06/01/93	7:13 p	74.33'	T/CASING
2002	06/01/93	7:11 p	67.04'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	7:44 p	70.375'	T/CASING
* RW #4	06/01/93	7:44 p	71.23'	T/CASING
SPPZ-5	06/01/93	7:30 p	72.865'	T/CASING
SPPZ-2a	06/01/93	7:31 p	74.58'	T/CASING
SPPZ-2d	06/01/93	7:32 p	74.22'	T/CASING
SPPZ-2g	06/01/93	7:33 p	74.135'	T/CASING
SPPZ-2c	06/01/93	7:36 p	70.01'	T/CASING
SPPZ-2b	06/01/93	7:34 p	74.295'	T/CASING
SPPZ-2e	06/01/93	7:35 p	72.71'	T/CASING
SPPZ-3	06/01/93	7:37 p	71.675'	T/CASING
SPPZ-4	06/01/93	7:39 p	72.97	T/CAP
SPPZ-1	06/01/93	7:42 p	74.31'	T/CASING
2002	06/01/93	7:41 p	67.025'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	8:13 p	70.360'	T/CASING
* RW #4	06/01/93	8:13 p	71.21'	T/CASING
SPPZ-5	06/01/93	8:00 p	72.855'	T/CASING
SPPZ-2a	06/01/93	8:01 p	74.565'	T/CASING
SPPZ-2d	06/01/93	8:01 p	71.21'	T/CASING
SPPZ-2g	06/01/93	8:02 p	74.135'	T/CASING
SPPZ-2c	06/01/93	8:05 p	70.01'	T/CASING
SPPZ-2b	06/01/93	8:03 p	74.29'	T/CASING
SPPZ-2e	06/01/93	8:04 p	72.70'	T/CASING
SPPZ-3	06/01/93	8:06 p	71.67'	T/CASING
SPPZ-4	06/01/93	8:08 p	72.97'	T/CAP
SPPZ-1	06/01/93	8:11 p	74.30'	T/CASING
2002	06/01/93	8:10 p	67.025'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	9:00 p	73.280'	T/CASING
* RW #4	06/01/93	9:00 p	71.18'	T/CASING
SPPZ-5	06/01/93	9:02 p	72.82'	T/CASING
SPPZ-2a	06/01/93	9:03 p	74.53'	T/CASING
SPPZ-2d	06/01/93	9:05 p	71.18'	T/CASING
SPPZ-2g	06/01/93	9:06 p	74.14'	T/CASING
SPPZ-2c	06/01/93	9:09 p	69.98'	T/CASING
SPPZ-2b	06/01/93	9:07 p	74.72'	T/CASING
SPPZ-2e	06/01/93	9:08 p	72.68'	T/CASING
SPPZ-3	06/01/93	9:11 p	71.64'	T/CASING
SPPZ-4	06/01/93	9:13 p	72.94'	T/CAP
SPPZ-1	06/01/93	9:15 p	74.265'	T/CASING
2002	06/01/93	9:17 p	67.005'	T/CASING
HERMIT 2000 READING				
SPPZ-5	06/01/93	9:00 p	72.819'	T/CASING
SPPZ-2a	06/01/93	----	74.477'	T/CASING
SPPZ-2d	06/01/93	----	71.120'	T/CASING
SPPZ-2g	06/01/93	----	74.145'	T/CASING
SPPZ-2c	06/01/93	----	69.823'	T/CASING
SPPZ-2b	06/01/93	----	74.252'	T/CASING
SPPZ-2e	06/01/93	----	72:502'	T/CASING
SPPZ-3	06/01/93	----	71.604'	T/CASING
SPPZ-4	06/01/93	----	72.915'	T/CAP
SPPZ-1	06/01/93	----	74.221'	T/CASING
2002	06/01/93	9:03 p	67.009'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	10:00 p	70.296'	T/CASING
* RW #4	06/01/93	10:00 p	71.15'	T/CASING
SPPZ-5	06/01/93	10:01 p	72.80'	T/CASING
SPPZ-2a	06/01/93	10:03 p	74.515'	T/CASING
SPPZ-2d	06/01/93	10:05 p	71.16'	T/CASING
SPPZ-2g	06/01/93	10:06 p	74.14'	T/CASING
SPPZ-2c	06/01/93	10:10 p	69.97'	T/CASING
SPPZ-2b	06/01/93	10:07 p	74.255'	T/CASING
SPPZ-2e	06/01/93	10:09 p	72.665'	T/CASING
SPPZ-3	06/01/93	10:11 p	71.62'	T/CASING
SPPZ-4	06/01/93	10:13 p	72.93'	T/CAP
SPPZ-1	06/01/93	10:15 p	74.25'	T/CASING
2002	06/01/93	10:17 p	66.99'	T/CASING
HERMIT 2000 READING				
SPPZ-5	06/01/93	10:00 p	72.794'	T/CASING
SPPZ-2a	06/01/93	----	74.458'	T/CASING
SPPZ-2d	06/01/93	----	71.101'	T/CASING
SPPZ-2g	06/01/93	----	74.145'	T/CASING
SPPZ-2c	06/01/93	----	69.804'	T/CASING
SPPZ-2b	06/01/93	----	74.236'	T/CASING
SPPZ-2e	06/01/93	----	72.480'	T/CASING
SPPZ-3	06/01/93	----	71.575'	T/CASING
SPPZ-4	06/01/93	----	72.897'	T/CAP
SPPZ-1	06/01/93	----	74.198'	T/CASING
2002	06/01/93	10:01 p	66.994'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/01/93	10:58 p	70.280'	T/CASING
* RW #4	06/01/93	10:58 p	71.13'	T/CASING
SPPZ-5	06/01/93	11:01 p	72.78'	T/CASING
SPPZ-2a	06/01/93	11:03 p	74.49'	T/CASING
SPPZ-2d	06/01/93	11:04 p	71.14'	T/CASING
SPPZ-2g	06/01/93	11:05 p	74.14'	T/CASING
SPPZ-2c	06/01/93	11:09 p	69.94'	T/CASING
SPPZ-2b	06/01/93	11:06 p	74.24'	T/CASING
SPPZ-2e	06/01/93	11:08 p	72.64'	T/CASING
SPPZ-3	06/01/93	11:11 p	71.595'	T/CASING
SPPZ-4	06/01/93	11:13 p	72.91'	T/CAP
SPPZ-1	06/01/93	11:14 p	74.235'	T/CASING
2002	06/01/93	11:17 p	66.97'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/01/93	10:58 p	70.280'	T/CASING
* RW #4	06/01/93	----	71.13'	T/CASING
SPPZ-5	06/01/93	----	72.772'	T/CASING
SPPZ-2a	06/01/93	----	74.439'	T/CASING
SPPZ-2d	06/01/93	----	71.078'	T/CASING
SPPZ-2g	06/01/93	----	74.142'	T/CASING
SPPZ-2c	06/01/93	----	69.779'	T/CASING
SPPZ-2b	06/01/93	----	74.142'	T/CASING
SPPZ-2e	06/01/93	----	74.220'	T/CASING
SPPZ-3	06/01/93	----	71.553'	T/CASING
SPPZ-4	06/01/93	----	72.878'	T/CAP
SPPZ-1	06/01/93	----	74.176'	T/CASING
2002	06/01/93	11:17 p	66.978'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	11:59 p	70.265'	T/CASING
* RW #4	06/01/93	11:59 p	71.12'	T/CASING
SPPZ-5	06/02/93	12:01 a	72.77'	T/CASING
SPPZ-2a	06/02/93	12:03 a	74.48'	T/CASING
SPPZ-2d	06/02/93	12:04 a	71.13'	T/CASING
SPPZ-2g	06/02/93	12:05 a	74.14'	T/CASING
SPPZ-2c	06/02/93	12:10 a	69.93'	T/CASING
SPPZ-2b	06/02/93	12:07 a	74.225'	T/CASING
SPPZ-2e	06/02/93	12:08 a	72.63'	T/CASING
SPPZ-3	06/02/93	12:11 a	71.59'	T/CASING
SPPZ-4	06/02/93	12:14 a	72.90'	T/CAP
SPPZ-1	06/02/93	12:16 a	74.22'	T/CASING
2002	06/02/93	12:19 a	66.97'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	11:59 p	70.265'	T/CASING
* RW #4	06/01/93	----	71.12'	T/CASING
SPPZ-5	06/02/93	----	72.765'	T/CASING
SPPZ-2a	06/02/93	----	74.449'	T/CASING
SPPZ-2d	06/02/93	----	71.075'	T/CASING
SPPZ-2g	06/02/93	----	74.139'	T/CASING
SPPZ-2c	06/02/93	----	69.779'	T/CASING
SPPZ-2b	06/02/93	----	74.207'	T/CASING
SPPZ-2e	06/02/93	----	72.452'	T/CASING
SPPZ-3	06/02/93	----	71.547'	T/CASING
SPPZ-4	06/02/93	----	72.875'	T/CAP
SPPZ-1	06/02/93	----	74.173'	T/CASING
2002	06/02/93	12:00 a	66.978'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	1:01 a	70.249'	T/CASING
* RW #4	06/02/93	1:01 a	71.09'	T/CASING
SPPZ-5	06/02/93	1:03 a	72.745'	T/CASING
SPPZ-2a	06/02/93	1:05 a	74.45'	T/CASING
SPPZ-2d	06/02/93	1:06 a	71.10'	T/CASING
SPPZ-2g	06/02/93	1:08 a	71.145'	T/CASING
SPPZ-2c	06/02/93	1:12 a	69.905'	T/CASING
SPPZ-2b	06/02/93	1:09 a	74.215'	T/CASING
SPPZ-2e	06/02/93	1:11 a	72.61'	T/CASING
SPPZ-3	06/02/93	1:14 a	71.56'	T/CASING
SPPZ-4	06/02/93	1:17 a	72.88'	T/CAP
SPPZ-1	06/02/93	1:18 a	74.19'	T/CASING
2002	06/02/93	1:21 a	66.95'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	1:01 a	70.249'	T/CASING
* RW #4	06/02/93	----	71.09'	T/CASING
SPPZ-5	06/02/93	----	72.734'	T/CASING
SPPZ-2a	06/02/93	----	74.426'	T/CASING
SPPZ-2d	06/02/93	----	71.043'	T/CASING
SPPZ-2g	06/02/93	----	74.135'	T/CASING
SPPZ-2c	06/02/93	----	69.747'	T/CASING
SPPZ-2b	06/02/93	----	74.198'	T/CASING
SPPZ-2e	06/02/93	----	72.417'	T/CASING
SPPZ-3	06/02/93	----	71.518'	T/CASING
SPPZ-4	06/02/93	----	74.817'	T/CAP
SPPZ-1	06/02/93	----	74.142'	T/CASING
2002	06/02/93	1:02 a	66.949'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	2:02 a	70.233'	T/CASING
* RW #4	06/02/93	2:02 a	71.07'	T/CASING
SPPZ-5	06/02/93	2:04 a	72.72'	T/CASING
SPPZ-2a	06/02/93	2:05 a	74.44'	T/CASING
SPPZ-2d	06/02/93	2:07 a	71.09'	T/CASING
SPPZ-2g	06/02/93	2:08 a	74.14'	T/CASING
SPPZ-2c	06/02/93	2:12 a	69.88'	T/CASING
SPPZ-2b	06/02/93	2:10 a	74.20'	T/CASING
SPPZ-2e	06/02/93	2:11 a	72.58'	T/CASING
SPPZ-3	06/02/93	2:13 a	71.535'	T/CASING
SPPZ-4	06/02/93	2:16 a	72.855'	T/CAP
SPPZ-1	06/02/93	2:18 a	74.17'	T/CASING
2002	06/02/93	2:20 a	66.925'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/02/93	2:02 a	70.233'	T/CASING
* RW #4	06/02/93	----	71.07'	T/CASING
SPPZ-5	06/02/93	----	72.708'	T/CASING
SPPZ-2a	06/02/93	----	74.407'	T/CASING
SPPZ-2d	06/02/93	----	71.018'	T/CASING
SPPZ-2g	06/02/93	----	74.139'	T/CASING
SPPZ-2c	06/02/93	----	69.722'	T/CASING
SPPZ-2b	06/02/93	----	74.182'	T/CASING
SPPZ-2e	06/02/93	----	72.392'	T/CASING
SPPZ-3	06/02/93	----	71.496'	T/CASING
SPPZ-4	06/02/93	----	72.825'	T/CAP
SPPZ-1	06/02/93	----	74.116'	T/CASING
2002	06/02/93	2:03 a	66.930'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	3:00 a	70.201'	T/CASING
* RW #4	06/02/93	3:00 a	71.05'	T/CASING
SPPZ-5	06/02/93	3:03 a	72.70'	T/CASING
SPPZ-2a	06/02/93	3:04 a	74.41'	T/CASING
SPPZ-2d	06/02/93	3:05 a	71.065'	T/CASING
SPPZ-2g	06/02/93	3:06 a	74.145'	T/CASING
SPPZ-2c	06/02/93	3:10 a	69.865'	T/CASING
SPPZ-2b	06/02/93	3:08 a	74.185'	T/CASING
SPPZ-2e	06/02/93	3:09 a	72.57'	T/CASING
SPPZ-3	06/02/93	3:12 a	71.52'	T/CASING
SPPZ-4	06/02/93	3:14 a	72.845'	T/CAP
SPPZ-1	06/02/93	3:15 a	74.15'	T/CASING
2002	06/02/93	3:17 a	66.915'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	3:00 a	70.201'	T/CASING
* RW #4	06/02/93	----	71.05'	T/CASING
SPPZ-5	06/02/93	----	72.696'	T/CASING
SPPZ-2a	06/02/93	----	74.398'	T/CASING
SPPZ-2d	06/02/93	----	71.005'	T/CASING
SPPZ-2g	06/02/93	----	74.142'	T/CASING
SPPZ-2c	06/02/93	----	69.709'	T/CASING
SPPZ-2b	06/02/93	----	74.166'	T/CASING
SPPZ-2e	06/02/93	----	72.373'	T/CASING
SPPZ-3	06/02/93	----	71.480'	T/CASING
SPPZ-4	06/02/93	----	72.816'	T/CAP
SPPZ-1	06/02/93	----	74.101'	T/CASING
2002	06/02/93	3:01 a	66.915'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	4:04 a	70.201'	T/CASING
* RW #4	06/02/93	4:04 a	71.04'	T/CASING
SPPZ-5	06/02/93	4:06 a	72.70'	T/CASING
SPPZ-2a	06/02/93	4:09 a	74.405'	T/CASING
SPPZ-2d	06/02/93	4:10 a	71.055'	T/CASING
SPPZ-2g	06/02/93	4:11 a	74.14'	T/CASING
SPPZ-2c	06/02/93	4:15 a	69.86'	T/CASING
SPPZ-2b	06/02/93	4:12 a	74.17'	T/CASING
SPPZ-2e	06/02/93	4:14 a	72.55'	T/CASING
SPPZ-3	06/02/93	4:16 a	71.51'	T/CASING
SPPZ-4	06/02/93	4:19 a	72.83'	T/CAP
SPPZ-1	06/02/93	4:21 a	74.14'	T/CASING
2002	06/02/93	4:23 a	66.905'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	4:04 a	70.201'	T/CASING
* RW #4	06/02/93	----	71.04'	T/CASING
SPPZ-5	06/02/93	----	72.689'	T/CASING
SPPZ-2a	06/02/93	----	74.388'	T/CASING
SPPZ-2d	06/02/93	----	70.999'	T/CASING
SPPZ-2g	06/02/93	----	74.139'	T/CASING
SPPZ-2c	06/02/93	----	69.703'	T/CASING
SPPZ-2b	06/02/93	----	74.147'	T/CASING
SPPZ-2e	06/02/93	----	72.36'	T/CASING
SPPZ-3	06/02/93	----	71.477'	T/CASING
SPPZ-4	06/02/93	----	72.809'	T/CAP
SPPZ-1	06/02/93	----	74.094'	T/CASING
2002	06/02/93	4:05 a	66.912'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	5:03 a	70.170'	T/CASING
* RW #4	06/02/93	5:03 a	71.01'	T/CASING
SPPZ-5	06/02/93	5:05 a	72.66'	T/CASING
SPPZ-2a	06/02/93	5:07 a	74.38'	T/CASING
SPPZ-2d	06/02/93	5:08 a	71.02'	T/CASING
SPPZ-2g	06/02/93	5:09 a	74.145'	T/CASING
SPPZ-2c	06/02/93	5:19 a	69.820'	T/CASING
SPPZ-2b	06/02/93	5:16 a	74.15'	T/CASING
SPPZ-2e	06/02/93	5:18 a	72.525'	T/CASING
SPPZ-3	06/02/93	5:20 a	71.475'	T/CASING
SPPZ-4	06/02/93	5:22 a	72.80'	T/CAP
SPPZ-1	06/02/93	5:24 a	74.11'	T/CASING
2002	06/02/93	5:27 a	66.87'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/02/93	5:03 a	70.170'	T/CASING
* RW #4	06/02/93	----	71.01'	T/CASING
SPPZ-5	06/02/93	----	72.654'	T/CASING
SPPZ-2a	06/02/93	----	74.363'	T/CASING
SPPZ-2d	06/02/93	----	70.964'	T/CASING
SPPZ-2g	06/02/93	----	74.135'	T/CASING
SPPZ-2c	06/02/93	----	69.665'	T/CASING
SPPZ-2b	06/02/93	----	74.131'	T/CASING
SPPZ-2e	06/02/93	----	72.330'	T/CASING
SPPZ-3	06/02/93	----	71.439'	T/CASING
SPPZ-4	06/02/93	----	72.775'	T/CAP
SPPZ-1	06/02/93	----	74.060'	T/CASING
2002	06/02/93	5:04 a	66.874'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	6:03 a	70.138'	T/CASING
* RW #4	06/02/93	6:03 a	70.99'	T/CASING
SPPZ-5	06/02/93	6:04 a	72.645'	T/CASING
SPPZ-2a	06/02/93	6:06 a	74.355'	T/CASING
SPPZ-2d	06/02/93	6:08 a	71.105'	T/CASING
SPPZ-2g	06/02/93	6:10 a	74.145'	T/CASING
SPPZ-2c	06/02/93	6:14 a	69.82'	T/CASING
SPPZ-2b	06/02/93	6:11 a	74.13'	T/CASING
SPPZ-2e	06/02/93	6:12 a	72.51'	T/CASING
SPPZ-3	06/02/93	6:15 a	71.47'	T/CASING
SPPZ-4	06/02/93	6:17 a	72.80'	T/CAP
SPPZ-1	06/02/93	6:20 a	74.105'	T/CASING
2002	06/02/93	6:22 a	66.875'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	6:03 a	70.138'	T/CASING
* RW #4	06/02/93	----	70.99'	T/CASING
SPPZ-5	06/02/93	----	72.648'	T/CASING
SPPZ-2a	06/02/93	----	74.347'	T/CASING
SPPZ-2d	06/02/93	----	70.960'	T/CASING
SPPZ-2g	06/02/93	----	74.132'	T/CASING
SPPZ-2c	06/02/93	----	69.662'	T/CASING
SPPZ-2b	06/02/93	----	74.119'	T/CASING
SPPZ-2e	06/02/93	----	72.323'	T/CASING
SPPZ-3	06/02/93	----	71.433'	T/CASING
SPPZ-4	06/02/93	----	72.772'	T/CAP
SPPZ-1	06/02/93	----	74.053'	T/CASING
2002	06/02/93	6:04 a	66.871'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	7:05 a	70.154'	T/CASING
* RW #4	06/02/93	7:05 a	70.99'	T/CASING
SPPZ-5	06/02/93	7:07 a	72.65'	T/CASING
SPPZ-2a	06/02/93	7:18 a	74.36'	T/CASING
SPPZ-2d	06/02/93	7:19 a	71.01'	T/CASING
SPPZ-2g	06/02/93	7:20 a	74.145'	T/CASING
SPPZ-2c	06/02/93	7:25 a	69.82'	T/CASING
SPPZ-2b	06/02/93	7:22 a	74.12'	T/CASING
SPPZ-2e	06/02/93	7:23 a	72.51'	T/CASING
SPPZ-3	06/02/93	7:26 a	71.47'	T/CASING
SPPZ-4	06/02/93	7:28 a	72.80'	T/CAP
SPPZ-1	06/02/93	7:30 a	74.105'	T/CASING
2002	06/02/93	7:32 a	66.87'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	7:05 a	70.154'	T/CASING
* RW #4	06/02/93	----	70.99'	T/CASING
SPPZ-5	06/02/93	----	72.648'	T/CASING
SPPZ-2a	06/02/93	----	74.366'	T/CASING
SPPZ-2d	06/02/93	----	70.957'	T/CASING
SPPZ-2g	06/02/93	----	74.132'	T/CASING
SPPZ-2c	06/02/93	----	69.662'	T/CASING
SPPZ-2b	06/02/93	----	74.100'	T/CASING
SPPZ-2e	06/02/93	----	72.317'	T/CASING
SPPZ-3	06/02/93	----	71.436'	T/CASING
SPPZ-4	06/02/93	----	72.769'	T/CAP
SPPZ-1	06/02/93	----	74.050'	T/CASING
2002	06/02/93	7:06 a	66.874'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
RW #4	06/02/93	8:26 a	70.98'	T/CASING
SPPZ-5	06/02/93	8:03 a	72.645'	T/CASING
SPPZ-2a	06/02/93	8:05 a	74.355'	T/CASING
SPPZ-2d	06/02/93	8:07 a	71.00'	T/CASING
SPPZ-2g	06/02/93	8:08 a	74.15'	T/CASING
SPPZ-2c	06/02/93	8:13 a	70.80'	T/CASING
SPPZ-2b	06/02/93	8:10 a	74.10'	T/CASING
SPPZ-2e	06/02/93	8:12 a	72.495'	T/CASING
SPPZ-3	06/02/93	8:15 a	71.46'	T/CASING
SPPZ-4	06/02/93	8:17 a	72.79'	T/CAP
SPPZ-1	06/02/93	8:20 a	74.10'	T/CASING
2002	06/02/93	8:22 a	66.86'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
RW #4	06/02/93	8:43 a	70.154'	T/CASING
SPPZ-5	06/02/93	----	72.645'	T/CASING
SPPZ-2a	06/02/93	----	74.360'	T/CASING
SPPZ-2d	06/02/93	----	70.954'	T/CASING
SPPZ-2g	06/02/93	----	74.135'	T/CASING
SPPZ-2c	06/02/93	----	67.656'	T/CASING
SPPZ-2b	06/02/93	----	74.097'	T/CASING
SPPZ-2e	06/02/93	----	72.304'	T/CASING
SPPZ-3	06/02/93	----	71.433'	T/CASING
SPPZ-4	06/02/93	----	72.769'	T/CAP
SPPZ-1	06/02/93	----	74.050'	T/CASING
2002	06/02/93	8:46 a	66.874'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	10:04 a	70.138'	T/CASING
* RW #4	06/02/93	10:04 a	70.99	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	11:13 a	70.138'	T/CASING
* RW #4	06/02/93	11:13 a	70.98'	T/CASING
SPPZ-5	06/02/93	11:00 a	72.625'	T/CASING
SPPZ-2a	06/02/93	11:01 a	74.335'	T/CASING
SPPZ-2d	06/02/93	11:02 a	70.99'	T/CASING
SPPZ-2g	06/02/93	11:03 a	74.14'	T/CASING
SPPZ-2c	06/02/93	11:06 a	69.785'	T/CASING
SPPZ-2b	06/02/93	11:04 a	74.06'	T/CASING
SPPZ-2e	06/02/93	11:05 a	72.49'	T/CASING
SPPZ-3	06/02/93	11:08 a	71.455'	T/CASING
SPPZ-4	06/02/93	11:09 a	72.78'	T/CAP
SPPZ-1	06/02/93	11:13 a	74.09'	T/CASING
2002	06/02/93	11:11 a	66.855'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	11:13 a	70.138'	T/CASING
* RW #4	06/02/93	----	70.98'	T/CASING
SPPZ-5	06/02/93	----	72.632'	T/CASING
SPPZ-2a	06/02/93	----	74.350'	T/CASING
SPPZ-2d	06/02/93	----	70.941'	T/CASING
SPPZ-2g	06/02/93	----	74.129'	T/CASING
SPPZ-2c	06/02/93	----	69.646'	T/CASING
SPPZ-2b	06/02/93	----	74.040'	T/CASING
SPPZ-2e	06/02/93	----	72,289'	T/CASING
SPPZ-3	06/02/93	----	71.420'	T/CASING
SPPZ-4	06/02/93	----	72.753'	T/CAP
SPPZ-1	06/02/93	----	74.037'	T/CASING
2002	06/02/93	11:15 a	66.867'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	12:01 p	70.138'	T/CASING
* RW #4	06/02/93	12:01 p	70.98	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	1:00 p	70.122'	T/CASING
* RW #4	06/02/93	1:00 p	70.96'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	2:16 p	70.106'	T/CASING
* RW #4	06/02/93	2:16 p	70.94'	T/CASING
SPPZ-5	06/02/93	2:00 p	72.605'	T/CASING
SPPZ-2a	06/02/93	2:01 p	74.31'	T/CASING
SPPZ-2d	06/02/93	2:02 p	70.97'	T/CASING
SPPZ-2g	06/02/93	2:03 p	74.135'	T/CASING
SPPZ-2c	06/02/93	2:07 p	69.765'	T/CASING
SPPZ-2b	06/02/93	2:05 p	74.00'	T/CASING
SPPZ-2e	06/02/93	2:06 p	72.465'	T/CASING
SPPZ-3	06/02/93	2:08 p	71.425'	T/CASING
SPPZ-4	06/02/93	2:11 p	72.755'	T/CAP
SPPZ-1	06/02/93	2:15 p	74.06'	T/CASING
2002	06/02/93	2:13 p	66.885'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	2:16 p	70.106'	T/CASING
* RW #4	06/02/93	----	70.94'	T/CASING
SPPZ-5	06/02/93	----	72.600'	T/CASING
SPPZ-2a	06/02/93	----	74.331'	T/CASING
SPPZ-2d	06/02/93	----	70.906'	T/CASING
SPPZ-2g	06/02/93	----	74.120'	T/CASING
SPPZ-2c	06/02/93	----	69.614'	T/CASING
SPPZ-2b	06/02/93	----	73.986'	T/CASING
SPPZ-2e	06/02/93	----	72.251'	T/CASING
SPPZ-3	06/02/93	----	71.386'	T/CASING
SPPZ-4	06/02/93	----	72.722'	T/CAP
SPPZ-1	06/02/93	----	74.003'	T/CASING
2002	06/02/93	2:18 p	66.836'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	3:07 p	70.075'	T/CASING
* RW #4	06/02/93	3:07 p	70.93'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	4:00 p	70.075'	T/CASING
* RW #4	06/02/93	4:00 p	70.91'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	5:33 p	70.075'	T/CASING
* RW #4	06/02/93	5:33 p	70.93'	T/CASING
SPPZ-5	06/02/93	5:00 p	72.565'	T/CASING
SPPZ-2a	06/02/93	5:02 p	74.275'	T/CASING
SPPZ-2d	06/02/93	5:04 p	70.925'	T/CASING
SPPZ-2g	06/02/93	5:05 p	74.13'	T/CASING
SPPZ-2c	06/02/93	5:10 p	69.73'	T/CASING
SPPZ-2b	06/02/93	5:07 p	73.96'	T/CASING
SPPZ-2e	06/02/93	5:09 p	72.42'	T/CASING
SPPZ-3	06/02/93	5:12 p	71.37'	T/CASING
SPPZ-4	06/02/93	5:13 p	72.71'	T/CAP
SPPZ-1	06/02/93	5:16 p	74.02'	T/CASING
2002	06/02/93	5:18 p	66.79'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	5:33 p	70.075'	T/CASING
* RW #4	06/02/93	5:33 p	70.93'	T/CASING
SPPZ-5	06/02/93	5:26 p	72.575'	T/CASING
SPPZ-2a	06/02/93	----	74.302'	T/CASING
SPPZ-2d	06/02/93	----	70.881'	T/CASING
SPPZ-2g	06/02/93	----	74.113'	T/CASING
SPPZ-2c	06/02/93	----	69.583'	T/CASING
SPPZ-2b	06/02/93	----	73.936'	T/CASING
SPPZ-2e	06/02/93	----	72.220'	T/CASING
SPPZ-3	06/02/93	----	71.360'	T/CASING
SPPZ-4	06/02/93	----	72.697'	T/CAP
SPPZ-1	06/02/93	----	73.977'	T/CASING
2002	06/02/93	5:28 p	66.807'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	6:02 p	70.075'	T/CASING
* RW #4	06/02/93	6:02 p	70.91'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	7:01 p	70.075'	T/CASING
* RW #4	06/02/93	7:01 p	70.91'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	8:19 p	70.059'	T/CASING
* RW #4	06/02/93	8:19 p	70.90'	T/CASING
SPPZ-5	06/02/93	8:00 p	72.56'	T/CASING
SPPZ-2a	06/02/93	8:02 p	74.275'	T/CASING
SPPZ-2d	06/02/93	8:04 p	70.92'	T/CASING
SPPZ-2g	06/02/93	8:06 p	74.12'	T/CASING
SPPZ-2c	06/02/93	8:10 p	69.72'	T/CASING
SPPZ-2b	06/02/93	8:08 p	73.905'	T/CASING
SPPZ-2e	06/02/93	8:09 p	72.42'	T/CASING
SPPZ-3	06/02/93	8:12 p	71.38'	T/CASING
SPPZ-4	06/02/93	8:13 p	72.70'	T/CAP
SPPZ-1	06/02/93	8:15 p	74.02'	T/CASING
2002	06/02/93	8:17 p	66.79'	T/CASING
HERMIT 2000 READING				
**RW #4	06/02/93	8:19 p	70.059'	T/CASING
* RW #4	06/02/93	8:19 p	70.90'	T/CASING
SPPZ-5	06/02/93	8:03 p	72.559'	T/CASING
SPPZ-2a	06/02/93	----	74.293'	T/CASING
SPPZ-2d	06/02/93	----	70.865'	T/CASING
SPPZ-2g	06/02/93	----	74.107'	T/CASING
SPPZ-2c	06/02/93	----	69.570'	T/CASING
SPPZ-2b	06/02/93	----	73.872'	T/CASING
SPPZ-2e	06/02/93	----	72.198'	T/CASING
SPPZ-3	06/02/93	----	71.344'	T/CASING
SPPZ-4	06/02/93	----	72.679'	T/CAP
SPPZ-1	06/02/93	----	73.965'	T/CASING
2002	06/02/93	8:20 p	66.798'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	9:01 p	70.059'	T/CASING
* RW #4	06/02/93	9:01 p	70.90'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	10:01 p	70.059'	T/CASING
* RW #4	06/02/93	10:01 p	70.90'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/02/93	11:20 p	70.059'	T/CASING
* RW #4	06/02/93	11:20 p	70.90'	T/CASING
SPPZ-5	06/02/93	11:00 p	72.57'	T/CASING
SPPZ-2a	06/02/93	11:02 p	74.275'	T/CASING
SPPZ-2d	06/02/93	11:03 p	70.92	T/CASING
SPPZ-2g	06/02/93	11:05 p	74.12'	T/CASING
SPPZ-2c	06/02/93	11:09 p	69.72'	T/CASING
SPPZ-2b	06/02/93	11:06 p	73.86'	T/CASING
SPPZ-2e	06/02/93	11:07 p	72.425'	T/CASING
SPPZ-3	06/02/93	11:10 p	71.375'	T/CASING
SPPZ-4	06/02/93	11:12 p	72.70'	T/CAP
SPPZ-1	06/02/93	11:15 p	74.02'	T/CASING
2002	06/02/93	11:18 p	66.80'	T/CASING
HERMIT 2000 READING				
** RW #4	06/02/93	11:20 p	70.059'	T/CASING
* RW #4	06/02/93	----	70.90'	T/CASING
SPPZ-5	06/02/93	----	72.569'	T/CASING
SPPZ-2a	06/02/93	----	74.302'	T/CASING
SPPZ-2d	06/02/93	----	70.874'	T/CASING
SPPZ-2g	06/02/93	----	74.107'	T/CASING
SPPZ-2c	06/02/93	----	69.72'	T/CASING
SPPZ-2b	06/02/93	----	73.838'	T/CASING
SPPZ-2e	06/02/93	----	72.201'	T/CASING
SPPZ-3	06/02/93	----	71.354'	T/CASING
SPPZ-4	06/02/93	----	72.688'	T/CAP
SPPZ-1	06/02/93	----	73.974'	T/CASING
2002	06/02/93	11:23 p	66.811'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	12:01 a	70.059'	T/CASING
* RW #4	06/03/93	12:01 a	70.90'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	1:00 a	70.043'	T/CASING
* RW #4	06/03/93	1:00 a	70.88'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	2:00 a	70.027'	T/CASING
* RW #4	06/03/93	2:00 a	70.86'	T/CASING
SPPZ-5	06/03/93	2:03 a	72.55'	T/CASING
SPPZ-2a	06/03/93	2:05 a	74.26'	T/CASING
SPPZ-2d	06/03/93	2:06 a	70.915'	T/CASING
SPPZ-2g	06/03/93	2:07 a	74.12'	T/CASING
SPPZ-2c	06/03/93	2:11 a	69.71'	T/CASING
SPPZ-2b	06/03/93	2:09 a	73.80'	T/CASING
SPPZ-2e	06/03/93	2:10 a	72.405'	T/CASING
SPPZ-3	06/03/93	2:13 a	71.36'	T/CASING
SPPZ-4	06/03/93	2:16 a	72.69'	T/CAP
SPPZ-1	06/03/93	2:18 a	73.995'	T/CASING
2002	06/03/93	2:20 a	66.775'	T/CASING
HERMIT 2000 READING				
** RW #4	06/03/93	2:23 a	70.027'	T/CASING
* RW #4	06/03/93	----	70.86'	T/CASING
SPPZ-5	06/03/93	----	72.534'	T/CASING
SPPZ-2a	06/03/93	----	74.277'	T/CASING
SPPZ-2d	06/03/93	----	70.846'	T/CASING
SPPZ-2g	06/03/93	----	74.104'	T/CASING
SPPZ-2c	06/03/93	----	69.548'	T/CASING
SPPZ-2b	06/03/93	----	73.790'	T/CASING
SPPZ-2e	06/03/93	----	72.166'	T/CASING
SPPZ-3	06/03/93	----	71.322'	T/CASING
SPPZ-4	06/03/93	----	72.657'	T/CAP
SPPZ-1	06/03/93	----	73.943'	T/CASING
2002	06/03/93	2:25 a	66.776'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	2:58 a	70.011'	T/CASING
* RW #4	06/03/93	2:58 a	70.86'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	3:59 a	70.011'	T/CASING
* RW #4	06/03/93	3:59 a	70.86'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	5:00 a	70.027'	T/CASING
* RW #4	06/03/93	5:00 a	70.86'	T/CASING
SPPZ-5	06/03/93	5:02 a	72.54'	T/CASING
SPPZ-2a	06/03/93	5:04 a	74.245'	T/CASING
SPPZ-2d	06/03/93	5:06 a	70.90'	T/CASING
SPPZ-2g	06/03/93	5:07 a	74.15'	T/CASING
SPPZ-2c	06/03/93	5:11 a	69.70'	T/CASING
SPPZ-2b	06/03/93	5:09 a	73.755'	T/CASING
SPPZ-2e	06/03/93	5:10 a	72.40'	T/CASING
SPPZ-3	06/03/93	5:13 a	71.35'	T/CASING
SPPZ-4	06/03/93	5:15 a	72.685'	T/CAP
SPPZ-1	06/03/93	5:16 a	73.99'	T/CASING
2002	06/03/93	5:19 a	66.77'	T/CASING
HERMIT 2000 READING				
** RW #4	06/03/93	5:22 a	70.027'	T/CASING
* RW #4	06/03/93	----	70.86'	T/CASING
SPPZ-5	06/03/93	----	72.537'	T/CASING
SPPZ-2a	06/03/93	----	74.280'	T/CASING
SPPZ-2d	06/03/93	----	70.843'	T/CASING
SPPZ-2g	06/03/93	----	74.107'	T/CASING
SPPZ-2c	06/03/93	----	69.548'	T/CASING
SPPZ-2b	06/03/93	----	73.746'	T/CASING
SPPZ-2e	06/03/93	----	72.163'	T/CASING
SPPZ-3	06/03/93	----	71.322'	T/CASING
SPPZ-4	06/03/93	----	62.660'	T/CAP
SPPZ-1	06/03/93	----	73.940'	T/CASING
2002	06/03/93	5:24 a	66.776'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	6:00 a	70.027'	T/CASING
* RW #4	06/03/93	6:00 a	70.86'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	6:59 a	70.027'	T/CASING
* RW #4	06/03/93	6:59 a	70.86'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
SPPZ-5	06/03/93	8:01 a	72.53'	T/CASING
SPPZ-2a	06/03/93	8:03 a	74.23'	T/CASING
SPPZ-2d	06/03/93	8:04 a	70.885'	T/CASING
SPPZ-2g	06/03/93	8:06 a	74.115'	T/CASING
SPPZ-2c	06/03/93	8:10 a	69.69'	T/CASING
SPPZ-2b	06/03/93	8:07 a	73.72'	T/CASING
SPPZ-2e	06/03/93	8:07 a	72.39'	T/CASING
SPPZ-3	06/03/93	8:11 a	71.345'	T/CASING
SPPZ-4	06/03/93	8:13 a	72.68'	T/CAP
SPPZ-1	06/03/93	8:17 a	73.99'	T/CASING
2002	06/03/93	8:21 a	66.78'	T/CASING
HERMIT 2000 READING				
SPPZ-5	06/03/93	8:23 a	72.537'	T/CASING
SPPZ-2a	06/03/93	----	74.287'	T/CASING
SPPZ-2d	06/03/93	----	70.849'	T/CASING
SPPZ-2g	06/03/93	----	74.101'	T/CASING
SPPZ-2c	06/03/93	----	69.548'	T/CASING
SPPZ-2b	06/03/93	----	73.702'	T/CASING
SPPZ-2e	06/03/93	----	72.163'	T/CASING
SPPZ-3	06/03/93	----	71.329'	T/CASING
SPPZ-4	06/03/93	----	72.663'	T/CAP
SPPZ-1	06/03/93	----	73.943'	T/CASING
2002	06/03/93	8:25 a	66.782'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	8:59 a	70.043'	T/CASING
* RW #4	06/03/93	8:59 a	70.88'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	10:15 a	70.011'	T/CASING
* RW #4	06/03/93	10:15 a	70.86'	T/CASING
SPPZ-5	06/03/93	11:09 a	72.54'	T/CASING
SPPZ-2a	06/03/93	11:10 a	72.24'	T/CASING
SPPZ-2d	06/03/93	11:11 a	70.895'	T/CASING
SPPZ-2g	06/03/93	11:12 a	74.105'	T/CASING
SPPZ-2c	06/03/93	11: 16 a	69.68'	T/CASING
SPPZ-2b	06/03/93	11:14 a	73.67'	T/CASING
SPPZ-2e	06/03/93	11:15 a	72.38'	T/CASING
SPPZ-3	06/03/93	11:17 a	71.34'	T/CASING
SPPZ-4	06/03/93	11:18 a	72.67'	T/CAP
SPPZ-1	06/03/93	11:22 a	73.975'	T/CASING
2002	06/03/93	11:20 a	66.755'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/03/93	11:23 a	70.011'	T/CASING
* RW #4	06/03/93	----	70.86'	T/CASING
SPPZ-5	06/03/93	----	72.569'	T/CASING
SPPZ-2a	06/03/93	----	74.283'	T/CASING
SPPZ-2d	06/03/93	----	70.849'	T/CASING
SPPZ-2g	06/03/93	----	74.116'	T/CASING
SPPZ-2c	06/03/93	----	69.554'	T/CASING
SPPZ-2b	06/03/93	----	73.702'	T/CASING
SPPZ-2e	06/03/93	----	72.151'	T/CASING
SPPZ-3	06/03/93	----	71.335'	T/CASING
SPPZ-4	06/03/93	----	72.657'	T/CAP
SPPZ-1	06/03/93	----	73.927'	T/CASING
2002	06/03/93	11:25 a	66.814'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	11:23 a	70.027'	T/CASING
* RW #4	06/03/93	11:23 a	70.86'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	12:01 p	70.011'	T/CASING
* RW #4	06/03/93	12:01 p	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	1:00 p	70.011'	T/CASING
* RW #4	06/03/93	1:00 p	70.85'	T/CASING
SPPZ-5	06/03/93	2:00 p	72,.50'	T/CASING
SPPZ-2a	06/03/93	2:02 p	74.21'	T/CASING
SPPZ-2d	06/03/93	2:03 p	70.87'	T/CASING
SPPZ-2g	06/03/93	2:04 p	74.10'	T/CASING
SPPZ-2c	06/03/93	2:10 p	69.66'	T/CASING
SPPZ-2b	06/03/93	2:08 p	73.64'	T/CASING
SPPZ-2e	06/03/93	2:09 p	72.36'	T/CASING
SPPZ-3	06/03/93	2:11 p	71.32'	T/CASING
SPPZ-4	06/03/93	2:13 p	72.65'	T/CAP
SPPZ-1	06/03/93	2:17 p	73.96'	T/CASING
2002	06/03/93	2:15 p	66.735'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/03/93	2:18 p	70.011'	T/CASING
* RW #4	06/03/93	----	70.85'	T/CASING
SPPZ-5	06/03/93	----	72.499'	T/CASING
SPPZ-2a	06/03/93	----	74.239'	T/CASING
SPPZ-2d	06/03/93	----	70.811'	T/CASING
SPPZ-2g	06/03/93	----	74.091'	T/CASING
SPPZ-2c	06/03/93	----	69.513'	T/CASING
SPPZ-2b	06/03/93	----	73.613'	T/CASING
SPPZ-2e	06/03/93	----	72.116'	T/CASING
SPPZ-3	06/03/93	----	71.288'	T/CASING
SPPZ-4	06/03/93	----	72.623'	T/CAP
SPPZ-1	06/03/93	----	73.905'	T/CASING
2002	06/03/93	2:20 p	66.744'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	2:18 p	69.995'	T/CASING
* RW #4	06/03/93	2:18 p	70.83'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	3:00 p	70.011'	T/CASING
* RW #4	06/03/93	3:00 p	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	4:06 p	69.995'	T/CASING
* RW #4	06/03/93	4:06 p	70.85'	T/CASING
SPPZ-5	06/03/93	5:02 p	72.47'	T/CASING
SPPZ-2a	06/03/93	5:04 p	74.19'	T/CASING
SPPZ-2d	06/03/93	5:06 p	70.845'	T/CASING
SPPZ-2g	06/03/93	5:08 p	74.10'	T/CASING
SPPZ-2c	06/03/93	5:13 p	69.65'	T/CASING
SPPZ-2b	06/03/93	5:11 p	73.585'	T/CASING
SPPZ-2e	06/03/93	5:12 p	72.345'	T/CASING
SPPZ-3	06/03/93	5:15 p	71.30'	T/CASING
SPPZ-4	06/03/93	5:17p	72.63'	T/CAP
SPPZ-1	06/03/93	5:19 p	73.935'	T/CASING
2002	06/03/93	5:21 p	66.71'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/03/93	5:24 p	69.995'	T/CASING
* RW #4	06/03/93	----	70.85'	T/CASING
SPPZ-5	06/03/93	----	72.477'	T/CASING
SPPZ-2a	06/03/93	----	74.223'	T/CASING
SPPZ-2d	06/03/93	----	70.788'	T/CASING
SPPZ-2g	06/03/93	----	74.082'	T/CASING
SPPZ-2c	06/03/93	----	69.491'	T/CASING
SPPZ-2b	06/03/93	----	73.547'	T/CASING
SPPZ-2e	06/03/93	----	72.088'	T/CASING
SPPZ-3	06/03/93	----	71.269'	T/CASING
SPPZ-4	06/03/93	----	72.604'	T/CAP
SPPZ-1	06/03/93	----	73.883'	T/CASING
2002	06/03/93	5:26 p	66.722'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	5:24 p	69.980'	T/CASING
* RW #4	06/03/93	5:24 p	70.82'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	6:01 p	69.980'	T/CASING
* RW #4	06/03/93	6:01 p	70.83'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	7:01 p	69.980'	T/CASING
* RW #4	06/03/93	7:01 p	70.82'	T/CASING
SPPZ-5	06/03/93	8:00 p	72.485'	T/CASING
SPPZ-2a	06/03/93	8:02 p	74.195'	T/CASING
SPPZ-2d	06/03/93	8:03 p	70.850'	T/CASING
SPPZ-2g	06/03/93	8:05 p	74.09'	T/CASING
SPPZ-2c	06/03/93	8:09 p	69.65'	T/CASING
SPPZ-2b	06/03/93	8:06 p	73.54'	T/CASING
SPPZ-2e	06/03/93	8:08 p	72.345'	T/CASING
SPPZ-3	06/03/93	8:10 p	71.31'	T/CASING
SPPZ-4	06/03/93	8:12 p	72.64'	T/CAP
SPPZ-1	06/03/93	8:15 p	73.95'	T/CASING
2002	06/03/93	8:17 p	66.73'	T/CASING

*** In-Situ Hermit 1000**
**** In-Situ Hermit 2000**

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	7:01 p	69.980'	T/CASING
* RW #4	06/03/93	7:01 p	70.82'	T/CASING
SPPZ-5	06/03/93	8:00 p	72.499'	T/CASING
SPPZ-2a	06/03/93	8:02 p	74.245'	T/CASING
SPPZ-2d	06/03/93	8:03 p	70.807'	T/CASING
SPPZ-2g	06/03/93	8:05 p	74.079'	T/CASING
SPPZ-2c	06/03/93	8:09 p	69.510	T/CASING
SPPZ-2b	06/03/93	8:06 p	73.528'	T/CASING
SPPZ-2e	06/03/93	8:08 p	72.103'	T/CASING
SPPZ-3	06/03/93	8:10 p	71.288'	T/CASING
SPPZ-4	06/03/93	8:12 p	72.620'	T/CAP
SPPZ-1	06/03/93	8:15 p	73.902'	T/CASING
2002	06/03/93	8:17 p	66.744'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	8:19 p	69.980'	T/CASING
* RW #4	06/03/93	8:19 p	70.83'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	9:00 p	70.011'	T/CASING
* RW #4	06/03/93	9:00 p	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/03/93	10:01 p	70.011'	T/CASING
* RW #4	06/03/93	10:01 p	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
SPPZ-5	06/03/93	11:02 p	72.53'	T/CASING
SPPZ-2a	06/03/93	11:04 p	74.22'	T/CASING
SPPZ-2d	06/03/93	11:06 p	70.87'	T/CASING
SPPZ-2g	06/03/93	11:07 p	74.09'	T/CASING
SPPZ-2c	06/03/93	11:12 p	69.685'	T/CASING
SPPZ-2b	06/03/93	11:09 p	73.51'	T/CASING
SPPZ-2e	06/03/93	11:11 p	72.375'	T/CASING
SPPZ-3	06/03/93	11:14 p	71.32'	T/CASING
SPPZ-4	06/03/93	11:16 p	72.66'	T/CAP
SPPZ-1	06/03/93	11:18 p	73.975'	T/CASING
2002	06/03/93	11:11 p	66.76'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000READING				
** RW #4	06/03/93	11:24 p	70.011'	T/CASING
* RW #4	06/03/93	----	70.85'	T/CASING
SPPZ-5	06/03/93	----	72.515'	T/CASING
SPPZ-2a	06/03/93	----	74.267'	T/CASING
SPPZ-2d	06/03/93	----	70.823'	T/CASING
SPPZ-2g	06/03/93	----	74.072'	T/CASING
SPPZ-2c	06/03/93	----	69.529'	T/CASING
SPPZ-2b	06/03/93	----	73.484'	T/CASING
SPPZ-2e	06/03/93	----	72.119'	T/CASING
SPPZ-3	06/03/93	----	71.307'	T/CASING
SPPZ-4	06/03/93	----	72.635'	T/CAP
SPPZ-1	06/03/93	----	73.921'	T/CASING
2002	06/03/93	11:28 p	66.766'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	11:26 p	69.995'	T/CASING
* RW #4	06/03/93	11:26 p	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	12:01 a	69.995'	T/CASING
* RW #4	06/04/93	12:01 a	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	1:01 a	69.995'	T/CASING
* RW #4	06/04/93	1:01 a	70.85'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	2:00 a	69.980'	T/CASING
* RW #4	06/04/93	2:00 a	70.83'	T/CASING
SPPZ-5	06/04/93	2:05 a	72.50'	T/CASING
SPPZ-2a	06/04/93	2:06 a	74.21'	T/CASING
SPPZ-2d	06/04/93	2:08 a	70.865'	T/CASING
SPPZ-2g	06/04/93	2:09 a	74.08'	T/CASING
SPPZ-2c	06/04/93	2:13 a	69.67'	T/CASING
SPPZ-2b	06/04/93	2:11 a	73.465'	T/CASING
SPPZ-2e	06/04/93	2:12 a	72.36'	T/CASING
SPPZ-3	06/04/93	2:14 a	71.32'	T/CASING
SPPZ-4	06/04/93	2:16 a	72.65'	T/CAP
SPPZ-1	06/04/93	2:19 a	73.945'	T/CASING
2002	06/04/93	2:21 a	66.735	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/04/93	2:24 a	69.980'	T/CASING
* RW #4	06/04/93	----	70.83'	T/CASING
SPPZ-5	06/04/93	----	72.489'	T/CASING
SPPZ-2a	06/04/93	----	74.248'	T/CASING
SPPZ-2d	06/04/93	----	70.795'	T/CASING
SPPZ-2g	06/04/93	----	74.075'	T/CASING
SPPZ-2c	06/04/93	----	69.501'	T/CASING
SPPZ-2b	06/04/93	----	73.443'	T/CASING
SPPZ-2e	06/04/93	----	72.088'	T/CASING
SPPZ-3	06/04/93	----	71.215'	T/CASING
SPPZ-4	06/04/93	----	72.613'	T/CAP
SPPZ-1	06/04/93	----	73.895'	T/CASING
2002	06/04/93	2:26 a	66.741'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	2:59 a	69.980'	T/CASING
* RW #4	06/04/93	2:59 a	70.82'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	4:00 a	69.964'	T/CASING
* RW #4	06/04/93	4:00 a	70.80'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	5:06 a	69.980'	T/CASING
* RW #4	06/04/93	5:06 a	70.82'	T/CASING
SPPZ-5	06/04/93	5:10 a	72.50'	T/CASING
SPPZ-2a	06/04/93	5:12 a	74.20'	T/CASING
SPPZ-2d	06/04/93	5:14 a	70.86'	T/CASING
SPPZ-2g	06/04/93	5:15 a	74.08'	T/CASING
SPPZ-2c	06/04/93	5:19 a	69.67'	T/CASING
SPPZ-2b	06/04/93	5:16 a	73.42'	T/CASING
SPPZ-2e	06/04/93	5:18 a	72.36'	T/CASING
SPPZ-3	06/04/93	5:20 a	71.315'	T/CASING
SPPZ-4	06/04/93	5:22 a	72.645'	T/CAP
SPPZ-1	06/04/93	5:24 a	73.94'	T/CASING
2002	06/04/93	5:26 a	66.745'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
HERMIT 2000 READING				
** RW #4	06/04/93	5:28 a	69.980'	T/CASING
* RW #4	06/04/93	----	70.82'	T/CASING
SPPZ-5	06/04/93	----	72.489'	T/CASING
SPPZ-2a	06/04/93	----	74.248'	T/CASING
SPPZ-2d	06/04/93	----	70.795'	T/CASING
SPPZ-2g	06/04/93	----	74.009'	T/CASING
SPPZ-2c	06/04/93	----	69.497'	T/CASING
SPPZ-2b	06/04/93	----	73.405'	T/CASING
SPPZ-2e	06/04/93	----	72.085'	T/CASING
SPPZ-3	06/04/93	----	71.275'	T/CASING
SPPZ-4	06/04/93	----	72.610'	T/CAP
SPPZ-1	06/04/93	----	73.892'	T/CASING
2002	06/04/93	5:30 a	66.738'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	6:02 a	69.964'	T/CASING
* RW #4	06/04/93	6:02 a	70.80'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	6:59 a	69.980'	T/CASING
* RW #4	06/04/93	6:59 a	70.83'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	7:58 a	69.916'	T/CASING
* RW #4	06/04/93	7:58 a	69.916	T/CASING
SPPZ-5	06/04/93	8:02 a	72.475'	T/CASING
SPPZ-2a	06/04/93	8:04 a	74.185'	T/CASING
SPPZ-2d	06/04/93	8:05 a	70.84'	T/CASING
SPPZ-2g	06/04/93	8:06 a	74.08'	T/CASING
SPPZ-2c	06/04/93	8:11 a	69.64'	T/CASING
SPPZ-2b	06/04/93	8:09 a	73.38'	T/CASING
SPPZ-2e	06/04/93	8:09 a	72.33	T/CASING
SPPZ-3	06/04/93	8:12 a	71.29'	T/CASING
SPPZ-4	06/04/93	8:14 a	72.62'	T/CAP
SPPZ-1	06/04/93	8:16 a	73.92'	T/CASING
2002	06/04/93	8:20 a	66.725'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	9:00 a	69.932'	T/CASING
* RW #4	06/04/93	9:00 a	70.79'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

WELL NO.	DATE	TIME	DEPTH TO WATER	ELEV. @ TOP OF WELL CASING/CAP
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	10:09 a	69.932'	T/CASING
* RW #4	06/04/93	10:09 a	70.80'	T/CASING
SPPZ-5	06/04/93	11:00 a	72.445'	T/CASING
SPPZ-2a	06/04/93	11:02 a	74.15'	T/CASING
SPPZ-2d	06/04/93	----		T/CASING
SPPZ-2g	06/04/93	----		T/CASING
SPPZ-2c	06/04/93	----		T/CASING
SPPZ-2b	06/04/93	----		T/CASING
SPPZ-2e	06/04/93	----		T/CASING
SPPZ-3	06/04/93	----		T/CASING
SPPZ-4	06/04/93	----		T/CAP
SPPZ-1	06/04/93	----		T/CASING
2002	06/04/93	----		T/CASING
HERMIT 2000 READING				
SPPZ-5	06/04/93	11:29 a	72.512'	T/CASING
SPPZ-2a	06/04/93	----	74.271'	T/CASING
SPPZ-2d	06/04/93	----	70.830'	T/CASING
SPPZ-2g	06/04/93	----	74.057'	T/CASING
SPPZ-2c	06/04/93	----	69.510'	T/CASING
SPPZ-2b	06/04/93	----	73.326'	T/CASING
SPPZ-2e	06/04/93	----	72.088'	T/CASING
SPPZ-3	06/04/93	----	71.300'	T/CASING
SPPZ-4	06/04/93	----	72.620'	T/CAP
SPPZ-1	06/04/93	----	73.892'	T/CASING
2002	06/04/93	11:30 a	66.754'	T/CASING
STARTED RECOVERY AT 4:48:34 P ON 6/1/93				
** RW #4	06/04/93	11:31 a	69.964'	T/CASING
* RW #4	06/04/93	11:31 a	79.79'	T/CASING

* In-Situ Hermit 1000
** In-Situ Hermit 2000

APPENDIX B

WATER QUALITY DATA

South Plume Pump Test
Analysis Results
note: all analysis except Total Uranium are field analysis

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		Test Well Discharge						Parshall Flume Stream			
Date	Time	Temp (C)	pH	Spec Cond (mS)	DO (ppm)	Uranium (ug/l) Filtered	Unfiltered	Temp (C)	pH	Spec Cond (mS)	DO (ppm)
25-May	10:07 AM	12.7	7.12	817	1.5						
25-May	10:22 AM	12.7	6.97	845	0.5						
25-May	10:37 AM	12.3	7.07	802	0.4	8.6	9				
25-May	10:52 AM	13.4	7.12	801	0.3						
25-May	11:10 AM	14.5	7.23	809	0.3						
25-May	11:22 AM	13.6	7.18	825	0.3						
25-May	11:40 AM	12.3	7.13	794	0.3						
25-May	11:55 AM	13.3	7.2	802	0.3						
25-May	12:25 PM	15.5	7.23	819	0.3						
25-May	12:40 PM	16.3	7.24	835	0.3						
25-May	12:55 PM	17.1	7.24	822	0.4						
25-May	01:10 PM	17.8	7.25	824	0.4						
25-May	01:25 PM	18.3	7.25	843	0.4						
25-May	01:55 PM	18.8	7.25	840	0.5						
25-May	02:10 PM	13.1	7.21	774	0.4						
25-May	02:25 PM	12.1	7.17	813	0.3						
25-May	02:40 PM	12	7.18	805	0.2						
25-May	02:55 PM	12.5	7.23	793	0.2						
25-May	03:10 PM	13.2	7.24	783	0.2						
25-May	03:25 PM	14.2	7.29	771	0.2						
25-May	03:40 PM	15.7	7.29	771	0.3						
25-May	03:55 PM	16.9	7.29	762	0.2	6.7	6.9				
25-May	04:10 PM	12	7.21	762	0.2						
25-May	04:25 PM	12.3	7.24	769	0.1						
25-May	04:40 PM	12.7	7.25	785	0.1						
25-May	04:55 PM	13.5	7.27	770	0.2						
25-May	05:10 PM	12.2	7.28	760	0.2						
25-May	05:25 PM	12.4	7.28	787	0.1						
25-May	05:40 PM	12.9	7.31	797	0.1						
25-May	05:55 PM	13.4	7.34	771	0.2						
25-May	06:10 PM	14	7.34	757	0.2						
25-May	06:25 PM	14.8	7.3	773	0.2						
25-May	06:40 PM	11.8	7.31	776	0.1						
25-May	06:55 PM	12	7.32	781	0.1						
25-May	07:10 PM	12.2	7.32	790	0.1						
25-May	07:25 PM	12.3	7.35	774	0.1						
25-May	07:40 PM	12.8	7.34	789	0.2						
25-May	07:55 PM	13.1	7.36	766	0.2						
25-May	08:10 PM	12	7.35	790	0.1						
25-May	08:25 PM	12.1	7.35	793	0.1						
25-May	08:40 PM	12.1	7.35	794	0.1						
25-May	08:55 PM	12.1	7.34	810	0.1						
25-May	09:10 PM	12.1	7.33	805	0.2						
25-May	09:25 PM	11.7	7.32	804	0.2						
25-May	09:40 PM	11.7	7.34	814	0.1	5.6	6.4				
26-May	05:17 AM	11.6	7.15	843	0.2	6.1	6.3				
27-May	02:45 AM	13.4	7.19	714	3.01	5.7	5.4	14.1	7.41	1.03	9.15
27-May	10:15 AM	12.7	7.04	723	1.8	5.5	5.6	13.6	7.41	695	8.79
28-May	08:38 AM	13.1	6.98	716	3.02	5.2	5	13.6	7.38	702	8.81
28-May	11:55 AM	13.2	7.32	714	3.5	5.1	5	14.4	7.47	678	8.7
29-May	07:44 AM	12.4	7	717	3.38	5	5	12.9	7.48	717	9.05
29-May	10:45 AM	12.4	7.31	717	3.47	5.3	5	16.2	7.53	735	8.47
30-May	07:40 AM	12.5	6.85	711	2.96	4.8	4.9	13.5	7.19	712	8.86
30-May	10:37 AM	12.7	7.08	710	2.78	5.3	5.4	14.8	7.43	685	8.7
31-May	08:23 AM	13.3	6.47	724	3.6	5	5.2	13.6	7.25	706	8.72
31-May	10:45 AM	12.7	7.24	710	3.84	4.6	4.5	17.1	7.45	745	8.31
01-Jun	08:18 AM	12.4	6.87	715	3.7	4.6	5	13.5	7.33	693	8.86
01-Jun	03:23 PM	13.4	7.27	701	3.75	4.7	4.7	16.4	7.45	672	8.38

APPENDIX C

WEATHER DATA

Completed: 06/02/93
Revised: 06/18/93

FERMCO CLIMATOLOGICAL DATA
Monthly Summary: May 1993

Latitude: 39° 17' N
Longitude: 84° 41' W
Elevation: 573 Feet

Date	Temperature (°F) Max	Min	Average	Normal	Dew Point (°F) Average	Weather Types 1 Fog 2 Haze 3 Snow 4 Hail 5 Thunderstorm	Precipitation (in) Rain	Snow	Pressure (in) Average	Wind (10 meter level) (mph) Resultant Direction	Resultant Speed	Average Speed	Peak Speed	Peak Direction
01	78	52	65	59			0.00	0.0	29.34	85	2.4	3.7	7.4	87
02	76	56	64	59			0.04	0.0	29.30	166	1.4	3.2	6.2	222
03	67	60	64	59			0.05	0.0	29.26	148	5.5	5.7	10.7	171
04	73	59	64	59			0.18	0.0	29.18	177	4.6	5.5	10.8	163
05	73	59	66	60			0.00	0.0	29.34	258	3.6	3.8	6.0	222
06	77	52	64	60		1	0.00	0.0	29.43	61	1.0	2.2	5.6	57
07	78	50	65	60		1	0.00	0.0	29.37	92	2.3	2.9	7.1	78
08	85	51	69	61		1	0.00	0.0	29.34	90	1.5	2.2	4.3	97
09	85	56	71	61		1	0.00	0.0	29.40	217	1.7	2.1	4.6	181
10	86	58	72	61		1	0.00	0.0	29.37	168	0.7	1.9	4.4	83
11	81	60	70	61	58	1	0.00	0.0	29.30	277	1.6	2.1	4.7	273
12	75	57	65	62	58	5	1.17	0.0	29.04	243	2.4	3.2	8.1	215
13	61	47	54	62	40		0.38	0.0	29.04	24	5.2	6.0	9.4	32
14	72	41	58	62	42	1	0.00	0.0	29.06	233	3.3	3.5	6.4	235
15	78	55	66	63	51	5	0.52	0.0	29.09	231	4.8	5.0	8.8	237
16	70	50	59	63	49		0.00	0.0	29.20	326	2.4	2.8	8.7	336
17	71	42	58	63	42		0.00	0.0	29.21	253	1.3	1.8	3.2	227
18	58	52	56	64	48		0.46	0.0	29.02	73	1.6	2.8	6.6	99
19	59	43	52	64	40		0.05	0.0	29.06	332	4.7	4.9	9.6	339
20	62	41	51	64	37		0.00	0.0	29.14	343	1.4	2.3	5.2	5
21	61	42	51	64	40	5	0.05	0.0	29.18	257	1.1	2.7	6.2	318
22	71	45	59	65	41		0.00	0.0	29.28	207	1.7	2.0	3.8	203
23	76	57	67	65	46		0.01	0.0	29.16	197	6.3	6.5	10.9	197
24	70	64	67	65	54		0.01	0.0	29.12	221	6.7	6.8	8.9	234
25	63	50	59	66	47		0.00	0.0	29.31	302	4.1	4.4	8.5	332
26	72	42	58	66	44	1	0.00	0.0	29.40	272	1.8	2.2	4.8	310
27	77	44	63	66	47	1	0.00	0.0	29.33	210	2.6	2.9	7.0	199
28	84	60	73	67	55		0.00	0.0	29.25	244	4.5	5.0	8.8	7
29	68	55	61	67	47		0.00	0.0	29.31	36	5.1	5.4	7.2	57
30	81	50	66	67	52	5	0.07	0.0	29.19	158	2.9	4.2	7.8	193
	65	47	59	68	50		0.00	0.0	29.05	300	5.1	6.4	11.9	315
	SUM	SUM	SUM		SUM	NUMBER OF DAYS:	TOTAL	TOTAL	AVG	FOR THE MONTH:				
	2253	1597	1936		988		2.99	0.00	29.23	239	1.1	3.7	11.9	315
	AVG.	AVG.	AVG.	NORM.	AVG.	Precipitation	NORM.	NORM.	MAX					
	72.7	51.5	62.5	63.0	47.0	≥ 0.01 in 12	3.84	T	29.52					
	MAX	MIN				Snow ≥ 1.0 in 0			MIN					
	86	41				Thunderstorms 4			28.93					
	NUMBER OF DAYS:					Fog 9	PRECIPITATION YEAR TO DATE:			Total Hours Possible	Total Hours Recovered	Percent Data Recovered	Total Hours Wind Speed > 12.0 mph	
	Max Temperature ≥ 90	≤ 32	Min Temperature ≤ 32	≤ 0			TOTAL	NORM						
	0	0	0	0			16.40	17.23		744	742	99.7	0	

1. T Trace amount
2. Blank entries denote missing or unreported data.
3. Daily values are based on hourly averages and sums.
4. Data recovery is based on the ratio of the total number of records possible less the number of invalid data records, i.e. only records with all fields invalidated, to the total number of records possible.
5. Resultant wind is the vector sum of wind speeds and directions divided by the number of observations.
6. NORMs are obtained through the NWS Climatological Summaries (i.e. Greater Cincinnati Airport).

NOTES:
Ten meter wind speeds may be low due to interference of trees on winds around the Meteorological Tower.
The maximum average pressure of 29.52 inches occurred on 05/06/93 during the 10th hour.
The minimum average pressure of 28.93 inches occurred on 05/12/93 during the 18th hour.
Pressure readings appear to be low by about 0.16 inches, on average, from the 1st to the 31th.

4733

Completed: 07/08/93
Revised: 07/08/93

FERMCO CLIMATOLOGICAL DATA
Monthly Summary: June 1993

Latitude: 39° 17' N
Longitude: 84° 41' W
Elevation: 577.1 Feet

Date	Temperature (°F) Max	Min	Average	Normal	Dew Point (°F) Average	Weather Types 1 Fog 2 Haze 3 Snow 4 Hail 5 Thunderstorm	Precipitation (in) Rain	Snow	Pressure (in) Average	Wind (10 meter level) (mph) Resultant Direction	Resultant Speed	Average Speed	Peak Speed	Peak Direction
01	64	42	53	68	38	1	0.00	0.0	29.23	331	2.6	2.9	6.7	338
02	58	47	54	68	44		0.02	0.0	29.17	53	2.0	2.9	6.3	58
03	73	54	62	68	51		0.01	0.0	29.09	47	2.9	3.1	4.8	55
04	64	56	60	69	54	5	0.81	0.0	29.00	68	3.6	4.5	7.6	59
05	63	50	58	69	49		0.00	0.0	29.19	289	4.7	5.0	7.9	287
06	71	44	60	69	48		0.00	0.0	29.36	229	1.8	2.2	4.3	219
07	84	52	75	70	59	2	0.00	0.0	29.23	206	2.1	2.5	5.8	200
08	88	71	80	70	65	2	0.00	0.0	29.11	217	5.2	5.3	9.6	208
09	77	67	72	70	63	5	0.14	0.0	29.15	219	5.4	5.6	7.5	217
10	84	65	72	70	62	5	0.31	0.0	29.26	220	2.2	2.5	4.9	217
11	79	64	71	71	64	1	T	0.0	29.34	234	0.9	1.2	1.9	243
12	77	64	69	71	63	5	0.15	0.0	29.34	71	1.5	2.4	6.9	101
13	83	61	72	71	63	1	0.00	0.0	29.31	174	0.6	1.7	3.2	202
14	85	63	70	71	62	2 4 5	2.94	0.0	29.26	218	2.4	3.0	6.5	287
15	77	54	67	71	56	1	0.00	0.0	29.29	294	2.1	2.5	4.8	309
16	81	55	68	72	55		0.00	0.0	29.38	200	0.9	2.0	3.7	176
17	87	57	73	72	61	1	0.00	0.0		218	1.7	2.2	4.7	230
18	89	67	74	72	66	1 2 5	0.45	0.0		247	2.2	3.0	6.6	240
19	87	64	76	72	64		0.00	0.0		226	2.5	2.6	6.1	229
20	74	69	71	73	65		0.13	0.0		227	2.3	2.8	5.4	222
21	80	63	72	73	62		0.00	0.0		272	4.3	5.3	9.9	313
22	81	58	70	73	59	1	0.00	0.0		313	0.6	1.4	3.2	358
23	86	61	74	73	62	1 2	0.00	0.0		111	1.1	1.9	4.0	155
24	89	64	77	73	63	1 2	0.00	0.0		188	2.7	3.5	9.3	227
25	83	69	74	73	65	5	0.18	0.0		200	4.4	4.7	8.8	197
26	83	63	73	74	58		0.00	0.0		248	2.0	2.3	4.3	255
27	84	60	73	74	60		T	0.0		221	2.1	3.4	5.8	218
28	82	63	73	74		2 5	0.40	0.0		246	1.1	2.7	8.7	320
29	81	65	73	74			0.00	0.0		340	1.5	2.9	5.0	343
30	86	65	74	74			0.00	0.0		5	0.9	4.5	7.5	301
	SUM	SUM	SUM		SUM	NUMBER OF DAYS:	TOTAL	TOTAL	AVG	FOR THE MONTH:				
	2380	1797	2090		1581		5.54	0.0	29.23	234	1.2	3.1	9.9	313
	AVG.	AVG.	AVG.	NORM.	AVG.	Precipitation	NORM.	NORM.	MAX					
	79.3	59.9	69.7	71.4	58.6	≥ 0.01 in 11	4.09	0.0	29.47					
	MAX	MIN				Snow ≥ 1.0 in 0			MIN					
	89	42				Thunderstorms 8			28.92					
	NUMBER OF DAYS: Max Temperature ≥ 90	≤ 32	Min Temperature ≤ 32	≤ 0		Fog 9	PRECIPITATION YEAR TO DATE: TOTAL	NORM		Total Hours Possible	Total Hours Recovered	Percent Data Recovered	Total Hours Wind Speed > 12.0 mph	
	0	0	0	0			21.94	21.18		720	719	99.9	0	

1. T Trace amount
2. Blank entries denote missing or unreported data.
3. Daily values are based on hourly averages and sums.
4. Data recovery is based on the ratio of the total number of records possible less the number of invalid data records, i.e. only records with all fields invalidated, to the total number of records possible.
5. Resultant wind is the vector sum of wind speeds and directions divided by the number of observations.
6. NORMs are obtained through the NWS Climatological Summaries.

NOTES:
Ten meter wind speeds may be low due to interference of trees on winds around the Meteorological Tower.
Pressure readings appear to be low by about 0.16 inches, on average, from the 1st to the 17th.
The maximum average pressure of 29.47 inches occurred on 06/17/93 during the 13th hour.
The minimum average pressure of 28.92 inches occurred on 06/05/93 during the 1st hour.
Precipitation totals for the 10th were taken from an alternate gage due to problems with the primary gage.
Precipitation totals for the 14th are questionable due to equipment limitations during this heavy rain event.
Calibration checks on the primary rain gage were performed on the 16th, 17th, 18th, and 21st.
Pressure data is inaccurate, and therefore is not reported from the evening of the 17th through the 30th.
The Dew Point sensor was disconnected for repairs (i.e. recharging) on the 28th.
The record high for June occurred in 1988 at 102 °F.
The record low for June occurred in 1972 at 39 °F.
The highest recorded rainfall amount for June is 7.36 inches, measured in 1977.
The lowest recorded rainfall amount for June is 0.95 inches, measured in 1965.

APPENDIX D

VERTICAL CAPTURE LETTER REPORT

4739

PARSONS

6120 South Gilmore Road
Fairfield Executive Center
Fairfield, OH 45014
(513) 870-0300
Fax (513) 870-0444

June 14, 1993
PARSONS ID#:05:037:100:0457-93

Mr. Arthur K. Bomberger
CERCLA/RCRA Unit 5 Director
Fernald Environmental
Restoration Management Corporation
P. O. Box 398704
Cincinnati, Ohio 45239-8704

Subject: South Plume Recovery System Vertical Capture Letter Report
Project Order 37
Technical and Project Management Support for CRU-5
FERMCO Subcontract #2-21487
PARSONS Environmental Remedial Action Project

Dear Mr. Bomberger:

This letter, submitted ahead of schedule, provides PARSONS recommendations for completion of the South Plume Recovery System well field. This letter assesses preliminary pump test results, and recommends an initial pumping rate for the South Plume Recovery System. This letter, also, confirms the previously recommended lengths and depths of the screened interval for the remaining four South Plume recovery wells.

Based on preliminary calculations of the data received during the constant rate test and the recovery period portions of the South Plume pump test, the horizontal hydraulic conductivity (K_h) in the vicinity of well 3927 is approximately 350-700 ft/day. This value is within the approximate upper and lower bounds (787 and 315 ft/day) established (by the SWIFT computer code) for K_h to provide for capture of the South Plume at a combined total pumping rate of 2000 gpm as presented in the South Plume Removal Action Groundwater Modeling Report (SPMR). Calculations for K_h were performed on the constant rate test data using Streltsova's curve matching method, and on data from the recovery period using the Theis recovery method. These calculations are sufficient to make the following recommendations.

1) The remaining four recovery wells should be constructed with a 40 foot screened interval. The top of the screen should be 6 feet below the current water level at each of the recovery well locations. This placement accounts for drawdown associated with steady state pumping in the well during recovery operations and fluctuations in the local water table due to seasonal variations.

2) Establish an initial pumping rate of 2000 gpm (400 gpm per recovery well) for the well field.

The final pump test report, to be issued in early August, will include the complete results of all the analysis by these and other methods, a comparison of the results, and conclusions.

During the installation of recovery well #4 (3927), and the piezometers for the pump test, there were indications of a layer (or interbed) of material exhibiting a substantially lower conductivity at a depth of approximately 110 feet which may be 5-10 feet in thickness. Although the existence, areal extent, and continuity of this layer has not been confirmed, PARSONS recommends that the following steps be taken at each of the remaining four recovery well locations.

1) Drill a pilot hole to bedrock
2) Obtain a continuous sample from the pilot hole
3) Perform natural gamma logging on the pilot hole
4) Perform sieve analysis and grain size estimation of hydraulic conductivity on the continuous sample.

These steps will allow a comparison of the lithography at each recovery well with the lithologic data obtained during installation of well 3927, the piezometers, and local monitoring wells. These comparisons will be useful in confirming the lithologic conditions, predicted hydraulic conductivity, and the presence (or absence) of a potential confining layer in the vicinity of each recovery well. These steps will provide additional information concerning the ability of the recovery system to intercept the South Plume as discussed above.

If you have any additional questions concerning this report they can be directed to Steve Harrington at 870-8180 or Paul Frink at 870-8339.

Very truly yours,

Brent F. Harvey
Project Manager, CRU-5
ERA Project

FERMCO:

D. Brettschneider
G. Braga
K. Broberg
M. Cherry
J. D. Chiou -Pitts.
M. Griffin
B. Copsey
B. Hertel
J. Hughes
R. Ninesteel-Pitts.
C. L. North
A. Sinagoga-Pitts.
J. Skridulis
D. C. Wright
CRU-5 Project Files

PARSONS

6120 South Gilmore Road
Fairfield Executive Center
Fairfield, OH 45014
(513) 870-0300
Fax (513) 870-0444

June 16, 1993
PARSONS ID#:05:037:100:0471-93

Mr. Arthur K. Bomberger
CERCLA/RCRA Unit 5 Director
Fernald Environmental
Restoration Management Corporation
P. O. Box 398704
Cincinnati, Ohio 45239-8704

Subject: Additional Information, South Plume Recovery System Vertical Capture Letter Report
Project Order 37
Technical and Project Management Support for CRU-5
FERMCO Subcontract #2-21487
PARSONS Environmental Remedial Action Project

Reference: PARSONS letter ID#05:037:100:0457-93 dated June 14, 1993

Dear Mr. Bomberger:

On June 15th, Mr Gil Braga of your staff requested that PARSONS provide additional backup information on the referenced Vertical Capture Letter Report. Specifically, FERMCO requested information on the recommendation to set the screens in the four remaining recovery wells 6 feet below the current static water level. The recommendation was based on the overall objective of maintaining maximum flexibility in the future operation of the recovery system. The recommendation was based on consideration of the following:

1) Table 5-1 of the South Plume Removal Action Groundwater Modeling Report (SPMR) referenced the static water level for placement of the screen but did not specify a specific point in the seasonal cycle.

2) Exposure of a large portion of well screen during normal pumping operations (not submerged) is unproductive and undesirable from the standpoint of increased corrosion, reduction in effective penetration and reduced capacity.

3) Although the largest concentration of contamination appears to be in the upper region of the aquifer, it is desirable to be able to increase capture from the lower portions of the aquifer.

4) Drawdown during the pump test was greater than predicted by the groundwater model.

5) The current well design sets the pump bowl 7 feet above the screen bottom which reduces the amount of available drawdown in the well prior to exposing the pump inlet.

Discussion

A review of the water elevations from well 2002 for the period of 6-89 through 12-91 and other monitoring well water level data from the area of the FEMP suggest that water level fluctuations have a seasonal variation of up to 10 feet. The approximate mid-point of these fluctuations in monitoring well 2002 is 520 feet MSL.

Conservative estimates of drawdown for the recovery wells during recovery operations show a net drawdown due to pumping of 4.8 feet by the SWIFT code (Figure 4-26 of the SPMR) and 6 feet by the analytical model (Theis Equation). Both these simulations used a horizontal hydraulic conductivity of 450 ft/day. Although RW-4 (3927) experienced a larger drawdown during the pump test (in feet), a value of 6 feet of drawdown is initially considered.

Combining the effects discussed above, setting the screen 6 feet below the current static water level will expose 5 feet of screen during low water level periods and will leave 5 feet of water over the top of the screen during high water level periods. The fact that the screen does not extend above the top of the water table at all times does not preclude the recovery system from achieving sufficient vertical capture. The seasonal variation of 10 feet is a projected maximum variation, with the 6 feet of drawdown referenced to the mid-point of these variations. A smaller seasonal variation will produce both smaller exposures and submergences of the screen. Additionally, since the estimated drawdown is conservative, the actual exposure/submergence cycle will probably favor exposure over submergence.

Additionally, items 4 and 5 above tend to limit the capacity of the recovery wells. Lowering the screened interval will regain some of this lost capacity.

PARSONS considers that this approach provides the greatest flexibility in future operation of the recovery wells and will maximize their overall performance. This recommendation is based on the most current information available, however, if borings taken at each recovery well location during installation or at the final RW-4 piezometer (SPPZ-2F) location indicate the presence of a low conductivity layer or other lithologic conditions different from those anticipated, re-evaluation of pumping rates, screen depths and lengths may be necessary.

If you have any additional questions concerning this report they can be directed to Steve Harrington at 870-8180 or Paul Frink at 870-8339.

Very truly yours,

Brent F. Harvey
Project Manager, CRU-5
ERA Project

FERMCO:

D. Brettschneider
G. Braga
K. Broberg
M. Cherry
J. D. Chiou -Pitts.
M. Griffin
B. Copsey
B. Hertel
J. Hughes
R. Ninesteel-Pitts.
C. L. North
A. Sinagoga-Pitts.
J. Skridulis
D. C. Wright
CRU-5 Project Files

APPENDIX E

SIEVE ANALYSIS

4733

Johnson
Filtration Systems Inc.

Donald M. Baron
District Manager

612/638-3900
FAX 612/638-3132
P.O. Box 64118
St. Paul, MN 55164

***** Facsimile Transmission *****

Date : April 23, 1993

Pages :

To : DAVID KELTING

Fax Phone : -

From : DON BARON

Subject : DESIGN FOR 16"X24" DIAMETER WELL

DAVID,

PER OUR TELEPHONE CONVERSATION TODAY, I AM ENCLOSING THE RECOMMENDATION LETTER WHICH WE DISCUSSED AND I AM ALSO SENDING A DUPLICATE COPY TO BRIAN WALKER OF GLOBAL. I HOPE THAT THIS INFORMATION WILL BE BENEFICIAL TO YOU.

I AM ENCLOSING THE SIEVE ANALYSIS FROM JOHNSON (ST. PAUL) AND ALSO THE GLOBAL FILTER MEDIA CURVES FOR YOUR INSPECTION.

CALL ME IF I CAN BE OF ANY FURTHER ASSISTANCE.

Don Baron

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A Wheelabrator Technologies Inc. Company

4733

Johnson
Filtration Systems Inc.

Donald M. Baron
District Manager

612/636-3900
FAX 612/638-3132
P.O. Box 64118
St. Paul, MN 55164

April 23, 1993

Brian Walker
Global Drilling Supplier, Inc.
12101 Centron Place
Cincinnati, OH 45246-1704

Dear Brian:

I have reviewed the sieve analysis provided by our St. Paul facility for the Fernco Project. Enclosed with this letter are copies of those graphs.

It is my understanding that the total depth of this proposed well will be 114' and aquifer material is present between 70' and 114'. Below the 114' depth interval, fine to medium sand is present. Dry, yellow sand and gravel is present between approximately 50' to 70' and clay is present above this dry sand. The static water level in this saturated aqufier is 70'. I feel that this water bearing formation should be considered a water table aquifer.

I recommend that you install 40' of 16" pipe size type 304 stainless steel Johnson well screen set between the depths of 74' and 114' from the ground surface. It is my understanding that 24" diameter casing will be driven and cleaned out to 114' and 16" diameter casing and screen assembly will be telescoped inside this temporary 24" casing. I strongly recommend that you install a #50 (0.050") slot screen opening for the above mentioned well screen and install a Global #4 filter media sand between the 114' and the 65' depth interval. It is imperative that centralizers are used to center this well screen inside the 24" casing. I determine that approximately 82 cubic feet of filter media material may be needed to fill that annular space. Above that filter media, I recommend a few feet of finer filter pack and appropriate grouting techniques to the surface as the 24" casing is completely extracted during the installation procedure

I recommend a filter packed design rather than a naturally developed design for a #60 (0.060") slot which was recommended from our St. Paul office could be installed but about .5 hours to 1.5 hours should be set aside for development per foot of well screen in a naturally developed and constructed well system. This means that 20 to possibly 60 hours of development should be considered standard for naturally developed wells with 40' of screen in a well. If this this well screen were centered in the 24" casing and filter media is installed, this well would pump dirty water initially but should clean up within a one day development schedule. This 4" filter around the well screen would significantly reduce the development time needed to make this sytem a sand free installation.

4733

A Johnson well screen with the above slot configuration has adequate open inlet area to transmit 3,108 gpm with an average entrance velocity of 0.1 fps through the screen slot openings. If this well is pumped at the 1,500 gpm rate during the pumping test, the average entrance velocity will be in the range of 0.05 fps during that test. Based upon my estimates of the aquifer's permeability from the sieve analysis graphs, it appears that the permeability may be in the range of 2,000 - 3,000 gpd/ftft or greater. If I use the above mentioned information, I can then enter this information into a modified Jacob's water table formula, P x M/1,500 = Q/s. The P = permeability (gpd/ftft), M = formation thickness (ft), Q = well capacity (gpm), and s = drawdown (ft). After entering the above mentioned data, the specific capacity or Q/s should average approximately 120 gpm/ft of drawdown. With water table wells, the specific capacity will decrease with drawdown for one must consider the dewatering effect which occurs during pumping. If we assume a 50% total efficiency, the actual drawdown may be in the range of 60 gpm/ft. Therefore, when pumping 1,500 gpm, the drawdown should then be approximately 25' of a pumping water level in the range of 95'. If the permeability is higher than I estimated, the drawdown would then be less and the pumping water level would be higher than my initial estimates. Based upon the above information, I do believe that 1,500 gpm should be feasible when the above recommended design is installed at this job site location.

Thank you for giving me the opportunity of helping with the details of this design. If you have any questions or if I can be of any future service, please feel free to contact me anytime.

Sincerely,

Don Baron

DON BARON
DISTRICT MANAGER

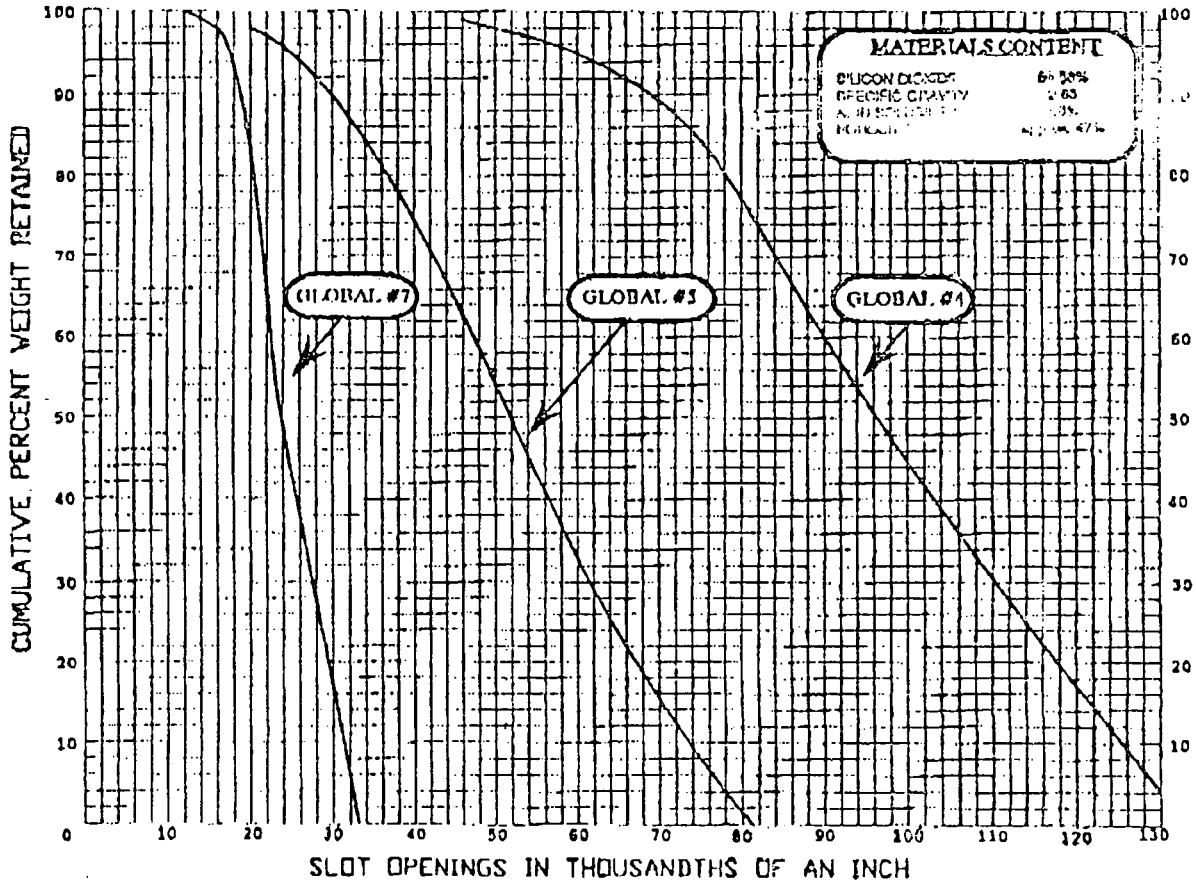
12101 Carpton Pl. Cincinnati, OH 45240 (513) 671-8700 (800) 356-6400
9100 Louisiana St. Unit C-1 Merrillville, IN 46410 (219) 738-1678 (800) 252-5279
4407-B Empire Way Lansing, MI 48917 (517) 322-0744 (800) 344-1278

GLOBAL DRILLING SUPPLIERS, INC.

GLOBAL FILTER PACK

Silica Quartz Sand Pack for Water Wells, Monitoring Wells, & Underdrains

99.6% PURE QUARTZ SILICA --- WASHED and DRIED SAND



GLOBAL #7
EFFECTIVE SIZE:
80% RETAINED 0.0188"
U.C. = 1.33

GLOBAL #5
EFFECTIVE SIZE:
90% RETAINED 0.0348"
U.C. = 1.67

GLOBAL #4
EFFECTIVE SIZE:
60% RETAINED 0.0740"
U.C. = 1.82

PACKAGED IN 7 MIL PLASTIC BAGS.....50 LB. EACH
50 LBS. YIELDS APPROX. 1/2 CUBIC FOOT OR 3.75 GALLONS
Also Available in Bulk Dump Truck Loads

CALL TOLL-FREE FOR ADDITIONAL INFORMATION AND PRICING
1-800-356-6400

The size distribution of representative grades of GLOBAL filter material is shown above. Sizes of individual batches may vary. FORM GND-041692

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4733

Johnson Filtration Systems Inc.
World Leader through Talent & Technology™
P.O. Box 64110 • St. Paul, Minnesota 55164-0110
612-636-3900 or 1-800-833-9473 • FAX 612-636-0689 or 1-800-477-0039
SEND SAMPLES TO: 1950 OLD HWY 8, NEW BRIGHTON, MN 55112

SAND ANALYSIS (COARSE)

BY:

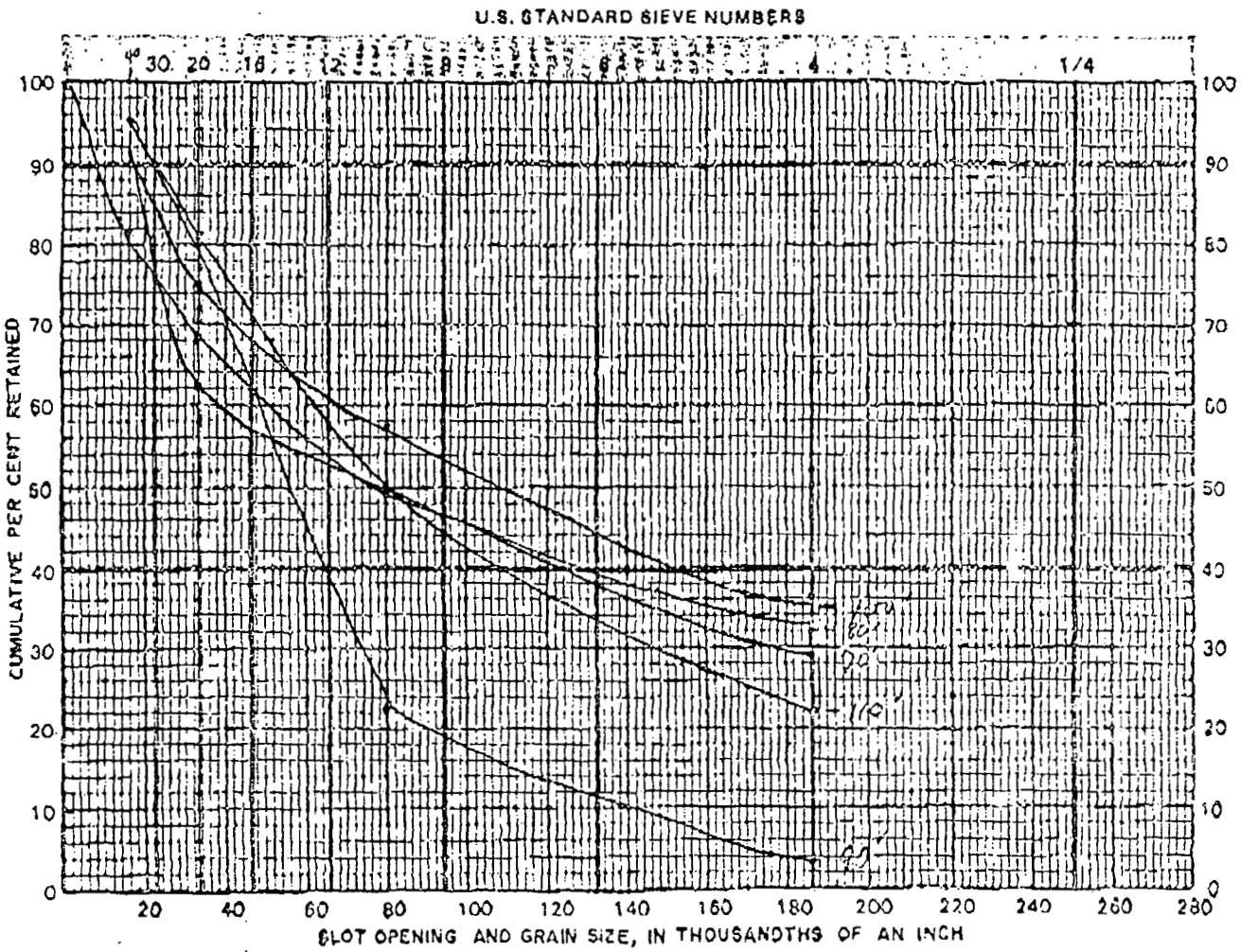
Job Name ATEC Date

City State Zip

Driller Phone

Engineer Phone

Remarks



U.S. SIEVE NO	SIEVE OPENING INCHES	SIEVE OPENING MM	CUMULATIVE % RETAINED		
¼	.250	6.35			
4	.187	4.76			
6	.132	3.36			
8	.094	2.38			
12	.066	1.68			
16	.047	1.19			
20	.033	0.84			
30	.023	0.60			

Notes:

Recommended Slot Opening: 70-80 .100 / 80-100 .060 / 100-110 .100 — 70' Sand

Recommended Screen: Dia In. Length Ft.

By:

DO MANY CONSIDERATIONS ENTER INTO THE MAKING OF A GOOD WELL THAT, WHILE WE BELIEVE SLOT SIZES FURNISHED OR RECOMMENDED FROM SAND SAMPLES ARE CORRECT WE ASSUME NO RESPONSIBILITY FOR THE SUCCESSFUL OPERATION OF JOHNSON WELL SCREENS.

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APPENDIX F

WELL LOGS/BORING LOGS

WELL LOG

4733

ĀTEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

CLIENT F.E.R.M.C.O.
GEOLOGIST J. Wasserbauer
PROJECT NAME South Plume Package 2D
PROJECT LOCATION Fernald, OH

BORING # RW-4
JOB # 86-05-93-00002
DRAWN BY D. Treleaven
APPROVED BY D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/18/93	Hammer Wt.	lbs.
Date Completed	4/18/93	Casing Length	74.5 ft.
Drill Foreman		Casing Diameter	16 in.
Inspector	JW	Screen Length.	40 ft.
Boring Method	Air Rotary	Screen Diameter	16 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
										Galvanized Pipe Elevation 589.294' Steel Casing Elevation 590.710'. Stick-up 2.00± Ground Elevation 588.710'± Borehole Diameter 36": 0 to 38' Casing Diameter 24"
Yellowish orange SILTY SANDY CLAY (CL); moist.		5, 10		CU		M				
Changes to greenish gray, trace of gravel.		15		CU		M				
		20		CU		M				
				CU		M				
	25.0	25		CU		M				
Yellowish orange SAND and GRAVEL with fines, well-graded (GM); moist.		30								Grout
		35								Bottom of 24" casing
		40		CU		M				
		45								
		50		CU		M				Riser: Galvanized Pipe 16" diameter
		55								

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 70.0 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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WELL LOG

ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: RW-4
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/18/93	Hammer Wt.		lbs.
Date Completed	4/18/93	Casing Length	74.5	ft.
Drill Foreman		Casing Diameter	16	in.
Inspector	JW	Screen Length.	40	ft.
Boring Method	Air Rotary	Screen Diameter	16	in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		65		CU		M				
	70.0	70		CU		W		▽		Bentonite
Yellowish orange SAND with gravel, poorly graded (SP); wet.		75								
	80.0	80		CU		W				
Yellowish orange SAND and GRAVEL with fines, well-grade (GM); wet.		85								
	90.0	90		CU		W				
Olive gray GRAVEL, trace fines, poorly graded (GP); wet.		95								#4 Quartz Sand
		100		CU		W				
Olive gray SAND and GRAVEL, trace fines, well-graded (GP); wet.		105								Screen: 0.050 Inch Slot Stainless Steel
		110		CU		W				
Same as above.										
	114.5			CU		W				
Same as above.										
Boring terminated at 114 feet.										

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 70.0 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

WELL LOG

4733

ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-1
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/17/93	Hammer Wt.	lbs.
Date Completed	4/17/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
										Survey 594.109'
										Stick-up 3.32 ±
										Ground Elevation 590.789' ±
		5								
Olive gray SILTY CLAY (CL); moist.		10		CU		M	–			
Light gray SILTY SANDY CLAY (CL); moist.		15		CU		M	–			
		20		CU		M	–			
		25								Riser: Schedule 40 PVC
		30		CU		M	–			
		35								
Yellowish orange SAND and GRAVEL with fines, well-graded (GM); moist.	38.0	40		CU		M	–			
		45								Grout
		50								
		55		CU		M	–			
		60		CU		M	–			
		65								
		70		CU		W	–	▽		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 70.0 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

231

4733

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-1
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/17/93	Hammer Wt.	lbs.
Date Completed	4/17/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
Yellowish orange SAND and GRAVEL with fines, well-graded (GM); moist.		80, 85, 90, 95, 100		CU		W	-			Bentonite
Olive gray SAND and GRAVEL, trace fines, well-graded (GP); wet.	105.0	105		CU		W				Screen: 0.010 Inch Slot PVC
Boring terminated at 111 feet.	110.0	110		CU		W				Natural Formation Filter Pack

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. =
Cal. Date. =

Groundwater
At Completion 70.0 ft.
After hours ft.
Water on Rods ft.
At Survey ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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WELL LOG

4733

ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2A
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
						0.0	0			Survey 594.249'
		5								Stick-up 5.14±
		10								Ground Elevation 589.109'±
		15								
		20								
		25								Riser: Stainless Steel
		30								
		35								
		40								
		45								
		50								Grout
		55								
		60								
		65								
		70								

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 73.7 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

4733

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2A
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		80, 85, 90, 95, 100, 105, 110								Grout; Bentonite; Screen: 0.010 Inch Slot PVC; Natural Formation Filer Pack
Boring terminated at 110.0 feet.	110.0									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 73.7 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

WELL LOG

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2B
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	115 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
						0.0	0			Survey 592.004'
										Stick-up 2.69 ±
										Ground Elevation 589.314' ±
		5								
		10								
		15								
		20								Riser: Stainless Steel
		25								
		30								
		35								
		40								
		45								
		50								Grout
		55								
		60								
		65								
		70								

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 73.6 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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WELL LOG

ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 452[illegible]
(513) 771-2112

4733

CLIENT	F.E.R.M.C.O.	BORING #	SPPZ-2B
GEOLOGIST	J. Wasserbauer	JOB #	86-05-93-00002
PROJECT NAME	South Plume Package 2D	DRAWN BY	D. Treleaven
PROJECT LOCATION	Fernald, OH	APPROVED BY	D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	115 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		80								
		85								
		90								Grout
		95								
		100								
		105								
		110								
		115								Bentonite
										Stainless Steel Screen 10 Slot
	120.0	120								
Boring terminated at 120. feet.										Natural Formation Filter Pack

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. =
Cal. Date. =

Groundwater
At Completion 73.6 ft.
After hours ft.
Water on Rods ft.
At Survey ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2C
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	125 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
						0.0	0			Survey 589.856'
		5								Stick-up 1.03 ±
		10								Ground Elevation 588.826' ±
		15								
		20								Riser: Stainless Steel
		25								
		30								
		35								Grout
		40								
		45								
		50								
		55								
		60								
		65								
		70						▽		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 69.3 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

4733

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2C
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	125 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130								Grout; Bentonite; Stainless Steel Screen 10 Slot; Natural Formation Filter Pack
Boring terminated at 130.0 feet.	130.0									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 69.3 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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WELL LOG

4733

ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2D
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	135 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
						0.0	0			Survey 591.071'
										Stick-up 1.30±
		5								Ground Elevation 589.771'±
		10								
		15								
		20								Riser: Stainless Steel
		25								
		30								
		35								Grout
		40								
		45								
		50								
		55								
		60								
		65								
		70						▽		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 70.3 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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4733

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2D
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	135 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		80								
		85								
		90								
		95								Grout
		100								
		105								
		110								
		115								
		120								
		125								
		130								
		135								Bentonite
										Stainless Steel Screen 10 Slot
	140.0	140								
Boring terminated at 140.0 feet.										Natural Formation Filter Pacl

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 70.3 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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WELL LOG 4733

ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2E
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	145 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
						0.0	0			Survey 592.101'
		5								Stick-up 3.22'
										Ground Elevation 588.881'
		10								
		15								
		20								Riser: Stainless Steel
		25								
		30								
		35								
		40								Grout
		45								
		50								
		55								
		60								
		65								
		70								

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. =
Cal. Date. =

Groundwater
At Completion 73.3 ft.
After hours ft.
Water on Rods ft.
At Survey ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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4733

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2E
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	145 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		65								
		70								
		75								
		80								
		85								
		90								
		95								
		100								Grout
		105								
		110								
		115								

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 73.3 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC ENVIRONMENTAL
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

4733

CLIENT F.E.R.M.C.O.
GEOLOGIST J. Wasserbauer
PROJECT NAME South Plume Package 2D
PROJECT LOCATION Fernald, OH

BORING # SPPZ-2E
JOB # 86-05-93-00002
DRAWN BY D. Treleaven
APPROVED BY D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started		Hammer Wt.	lbs.
Date Completed		Casing Length	145 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector		Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		125, 130, 135, 140, 145, 150								Bentonite; Stainless Steel Screen 10 Slot; Natural Formation Filter Pack
Boring terminated at 150.00 feet.	150.0									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. =
Cal. Date. =

Groundwater
At Completion 73.3 ft.
After hours ft.
Water on Rods ft.
At Survey ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG 4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2G
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/16/93	Hammer Wt.	140 lbs.
Date Completed	4/16/93	Casing Length	161 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
										Survey 592.086'
										Stick-up 2.44 ±
		5								Ground Elevation 589.646' ±
Yellowish orange SILTY SANDY CLAY (CL); moist.		10		CU		M	-			
Changes to light gray, trace gravel; moist.		15		CU		M	-			
		20		CU		M	-			Riser: Stainless Steel
	25.0	25								
Yellowish orange SAND and GRAVEL with fines, well-graded (GM); moist.		30								
	32.0									
Yellowish orange SILTY SAND and GRAVEL with fines, poorly graded (GM)		35		CU		M	-			Grout
		40		CU		M	-			
		45								
	50.0	50	1A	CU		M	-			
Yellowish orange SAND, poorly graded (SP); moist.		55								
			1B	CU						
Yellowish orange SAND, trace gravel, poorly graded (SP).		60	2A	CU		M	-			
		65								
	70.0		2B	CU				▽		
Light brown SAND and GRAVEL, well-graded (GP); moist to wet.		70	3A	CU		M	-			

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 70.0 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

4733

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2G
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/16/93	Hammer Wt.	140 lbs.
Date Completed	4/16/93	Casing Length	161 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
Light brown SAND and GRAVEL, well-graded (GP); wet.	80.1	80	3B	CU						
			4A	CU		W	-			
Changes to yellowish orange with fines, well-grade (GM); wet.		85								
			4B	CU						
		90	5A	CU		W				
		95								
	100.0		5B	CU						
Olive gray SAND, trace gravel, poorly graded (SP); wet.		100	6A	CU		W				
		105								Grout
	109.0		6B	CU						
Olive gray SAND and GRAVEL, well-graded (GP); wet.		110	7A	CU		W				
	114.9	115								
	119.0		7B	CU		W				
Olive gray SAND, trace gravel, poorly graded (SP); wet.	121.0	120	8A	CU		W				
Olive gray SAND and GRAVEL, well-graded (GP); wet.		125								
	129.0		8B	CU		W				
Olive gray SAND, trace gravel, poorly graded (SP); wet.		130								
		135								
			9A	CU						
	140.0	140	9B	CU						
Olive gray SILTY SAND, trace gravel, poorly graded (GM); wet.		145								
	150.0		10A	CU		W				

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 70.0 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

WELL LOG

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-2G
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/16/93	Hammer Wt.	140 lbs.
Date Completed	4/16/93	Casing Length	161 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
Olive gray SAND and GRAVEL, poorly graded (GP); wet.			10B	CU						
		155								
			11A	CU						Bentonite
		160	12A	CU		W				Stainless Steel Screen 10 Slot
	164.9	165	12B	CU		W				
Light gray SILTY SANDY CLAY with gravel (limestone fragments) (CL); wet.	166.0									Natural Formation Filter Pack

Boring terminated at 166 feet, auger refusal at bedrock.

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 70.0 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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WELL LOG

ATEC ENVIRONMENTAL

11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

- 4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-3
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/19/93	Hammer Wt.	lbs.
Date Completed	4/20/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW/DTT	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		5								Survey 591.486'
										Stick-up 2.14 ±
										Ground Elevation 589.346' ±
Yellowish orange SILTY SANDY CLAY (CL); moist.		10		CU		M	–			Riser: Schedule 40 PVC
Greenish gray SILTY SANDY CLAY, trace gravel (CL); moist.		15		CU		M	–			
		20								Grout
		25								
		30								
	35.0	35		CU		M	–			
Yellowish orange SAND and GRAVEL with fines, poorly graded (GM); moist.		40								
		45								
Yellowish orange SAND and GRAVEL with fines, well-graded (GM); moist.		50		CU		M	–			
		55								
Same as above.		60		CU		M	–			
		65								Bentonite
Same as above.		70		CU		M	–	▽		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 72.0 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

WELL LOG

ATEC ENVIRONMENTAL
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4733

CLIENT	F.E.R.M.C.O.	BORING #	SPPZ-3
GEOLOGIST	J. Wasserbauer	JOB #	86-05-93-00002
PROJECT NAME	South Plume Package 2D	DRAWN BY	D. Treleaven
PROJECT LOCATION	Fernald, OH	APPROVED BY	D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/19/93	Hammer Wt.	lbs.
Date Completed	4/20/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW/DTT	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
Olive gray SAND and GRAVEL trace fines, well-graded (GP); wet.	80.0	80		CU		W	-			
		85								
Same as above.		90								Natural Formation Filter Pack
		95								
Same as above.		100		CU		W	-			
Same as above.		105		CU		W	-			
Same as above.	110.0	110		CU		W	-			Screen: 0.010 Inch Slot PVC
Boring terminated @ 110 feet.										

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
At Completion 72.0 ft.
After _____ hours _____ ft.
Water on Rods _____ ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC ENVIRONMENTAL

11121 Canal Road
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(513) 771-2112

WELL LOG

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-4
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/19/93	Hammer Wt.	lbs.
Date Completed	4/19/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
		5								Survey 592.631' Stick-up 3.35 ± Ground Elevation 589.281' ±
Yellowish orange SILTY SANDY CLAY, trace gravel, poorly graded (CL); moist.		10		CU		W	--			
Gray SILTY SANDY CLAY with gravel, poorly graded (CL); moist.		15		CU		W	--			
Olive gray SILTY SANDY CLAY, poorly graded (CL); moist.		20		CU		W	--			Riser: Schedule 40 PVC
		25								
Yellowish orange SILTY CLAYEY SAND with gravel, poorly graded (SC); moist.	30.0	30		CU		M	--			
		35								
Yellowish orange SAND and GRAVEL with fines, poorly graded (GM).	40.0	40								
		45								
Same as above.		50		CU		M	--			Grout
		55								
Light brown SAND and GRAVEL with fines, well-graded (GM); moist.		60		CU		M	--			
		65								
Yellowish orange SAND and GRAVEL with fines, well-graded (GM); moist.		70		CU		M	--	▽		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 72.0 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC ENVIRONMENTAL

11121 Canal Road
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WELL LOG

CLIENT	F.E.R.M.C.O.	BORING #	SPPZ-4
GEOLOGIST	J. Wasserbauer	JOB #	86-05-93-00002
PROJECT NAME	South Plume Package 2D	DRAWN BY	D. Treleaven
PROJECT LOCATION	Fernald, OH	APPROVED BY	D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/19/93	Hammer Wt.		lbs.
Date Completed	4/19/93	Casing Length	105	ft.
Drill Foreman		Casing Diameter	2	in.
Inspector	JW	Screen Length.	5	ft.
Boring Method	Air Rotary	Screen Diameter	2	in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
	80.0	80		CU		W	--			
Light brown SAND and GRAVEL, trace fines, well-graded (GP); wet.		85								Grout
		90		CU		W	--			
Olive gray SAND and GRAVEL, trace fines, well-graded (GP); wet.		95								
		100		CU		W	--			Bentonite
Same as above.		105		CU		W	--			Screen: 0.010 Inch Slot PVC
Same as above.	110.0	110		CU		W	--			Natrual Formation Filter Pack
Same as above.										
Boring terminated @ 110 feet.										

Sample Type	PID	Groundwater	Boring Method
SS - Driven Split Spoon	Span Pot. =	At Completion 72.0 ft.	HSA - Hollow Stem Augers
ST - Pressed Shelby Tube	Cal. Date. =	After hours ft.	CFA - Continuous Flight Augers
CA - Continuous Flight Auger		Water on Rods ft.	DC - Driving Casing
RC - Rock Core		At Survey ft.	MD - Mud Drilling
CU - Cuttings			
CT - Continuous Tube			

WELL LOG 4733

ATEC ENVIRONMENTAL

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Cincinnati, Ohio 45241
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CLIENT F.E.R.M.C.O.
GEOLOGIST J. Wasserbauer
PROJECT NAME South Plume Package 2D
PROJECT LOCATION Fernald, OH

BORING # SPPZ-5
JOB # 86-05-93-00002
DRAWN BY D. Treleaven
APPROVED BY D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/18/93	Hammer Wt.	lbs.
Date Completed	4/18/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water.	Well Completion	Remarks
										Survey 592.750' Stick-up 3.80± Ground Elevation 588.950'±
		5								
Yellowish orange SILTY SANDY CLAY, (CL); moist.		10		CU		M	–			
Gray SILTY SANDY CLAY with gravel, poorly graded (CL); moist.		15		CU		M	–			
		20								Riser: Schedule 40 PVC
		25								
		30								
	35.0	35		CU		M	–			
Yellowish orange SAND and GRAVEL with fines (GM); moist.										
Same as above.		40		CU		M	–			
		45								
		50								Grout
		55								
Yellowish orange SAND and GRAVEL with fines (GM); moist.		60		CU		M	–			
		65								
Same as above.		70		CU		W	–	▽		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. = _____
Cal. Date. = _____

Groundwater
▽ At Completion 70.0 ft.
▼ After _____ hours _____ ft.
● Water on Rods _____ ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC ENVIRONMENTAL

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WELL LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: SPPZ-5
JOB #: 86-05-93-00002
DRAWN BY: D. Treleaven
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	4/18/93	Hammer Wt.	lbs.
Date Completed	4/18/93	Casing Length	105 ft.
Drill Foreman		Casing Diameter	2 in.
Inspector	JW	Screen Length.	5 ft.
Boring Method	Air Rotary	Screen Diameter	2 in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	PID (PPM)	Standard Penetration Test N, Blows/6 inches	Ground Water	Well Completion	Remarks
	80.0	80		CU		W	-			
Olive gray SAND and GRAVEL, trace of fines, well-graded (GP); wet.		85								Grout
		90		CU		W	-			
Same as above.		95								
		100								Bentonite
Same as above.		105								Natural Formation Filter Pac
	109.5									Screen: 0.010 Inch Slot PVC
Olive gray SAND and GRAVEL, trace of fines, well-graded (GP				CU		W	--			
Boring terminated @ 110 feet.										

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

PID
Span Pot. =
Cal. Date. =

Groundwater
At Completion 70.0 ft.
After hours ft.
Water on Rods ft.
At Survey ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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SOIL BORING LOG

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: B-1
JOB #: 86-95-93-00002
DRAWN BY: J. Wasserbauer
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION / SURFACE ELEVATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
		5									Description of lithology begins at 60 feet
		10									
		15									
		20									

Sample Type
S - Driven Split Spoon
T - Pressed Shelby Tube
A - Continuous Flight Auger
C - Rock Core
U - Cuttings
T - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
Water on Rods 70.0 ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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SOIL BORING LOG

CLIENT	F.E.R.M.C.O.	BORING #	B-1
GEOLOGIST	J. Wasserbauer	JOB #	86-95-93-00002
PROJECT NAME	South Plume Package 2D	DRAWN BY	J. Wasserbauer
PROJECT LOCATION	Fernald, OH	APPROVED BY	D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
		25									Description of lithology begins at 60 feet
		30									
		35									
		40									
		45									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
Water on Rods 70.0 ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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SOIL BORING LOG 4733

CLIENT F.E.R.M.C.O.
GEOLOGIST J. Wasserbauer
PROJECT NAME South Plume Package 2D
PROJECT LOCATION Fernald, OH

BORING # B-1
JOB # 86-95-93-00002
DRAWN BY J. Wasserbauer
APPROVED BY D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
		50									Description of lithology begins at 60 feet
		55									
Very dense, light brown to yellowish orange, coarse to fine SAND, trace of gravel and fines, iron staining; dry (SW).	60.0	60	1	SS		96		D	50 18 102 85		
Very dense, light brown to yellowish orange, medium to fine SAND, trace of gravel and fines; dry to moist (SP).	62.0		2	SS		100		D-M	38 62 58 65		
Same as above, with iron staining; dry (SP).	64.0	65	3	SS		81		D	68 90 74 105		
Very dense, brown to light brown, coarse to fine SAND, trace of fines and cobbles, iron staining bands; moist (SW).	66.0		4	SS		75		M	64 57 49 65		
Very dense, light gray to greenish gray, medium to fine SAND with fines, trace of gravel, iron staining bands; moist (SP).	68.0		5	SS		100		M	64 83 89 100+		
Very dense, light gray to greenish gray, coarse to medium SAND with fines, trace of gravel; wet (SP).	70.0	70	6	SS		100	●	W	83 70 71 100+		Water on the rods at 70.0 feet.
	72.0										

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
● Water on Rods 70.0 ft.
+ At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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SOIL BORING LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: B-1
JOB #: 86-95-93-00002
DRAWN BY: J. Wasserbauer
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
Dense, olive gray to yellowish orange SILTY SAND and GRAVEL, iron staining; wet (GM).	74.0		7	SS		100		W	20 48 45 53		
Same as above; wet (GM).	76.0	75	8	SS		83		W	18 46 43 33		
Dense, dark brown to olive gray, medium to coarse SAND, trace of gravel and fines; wet (SP).	78.0		9	SS		100		W	42 29 27 32		
Very dense, dark brown coarse SAND, trace of gravel, grades to SANDY GRAVEL, trace of fines; wet (GM).	80.0	80	10	SS		81		W	70 119 50 52		
Dense, dark brown medium to fine SAND, grades to SANDY GRAVEL with fines; wet (GM).	82.0		11	SS		85		W	67 42 44 33		
Very dense, olive gray, medium to coarse SAND with gravel, trace of fines; wet (SP).	84.0		12	SS		100		W	110 49 41 54		
Very dense, olive gray, medium SAND with fines, trace of gravel; wet (SP).	86.0	85	13	SS		100		W	84 44 54 70		Stopped driling at 18:00 5/20/93
Very dense, olive gray to dark brown coarse SILTY SAND, trace of gravel; wet (SP).	88.0		14	SS		66		W	100+ 100+ 42 55		Start drilling at 7:35 5/21/93
Very dense, olive gray coarse SANDY GRAVEL, trace of fines; wet (GM).	90.0	90	15	SS		13		W	100 166 155/4		
Medium dense to dense, coarse to medium SILTY SAND with gravel, changes to SANDY GRAVEL; wet (SM/GM).	92.0		16	SS		87		W	35 26 31 27		Possible contact between 91.5 - 91.7 feet
Very dense, olive gray medium to coarse SILTY SAND, trace of gravel; wet (SM).	94.0		17	SS		66		W	52 40 42 47		
Very dense, olive gray, fine to coarse SAND, trace of gravel; wet (SP).	96.0	95	18	SS		100		W	30 60 32 30		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
Water on Rods 70.0 ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

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ATEC Associates, Inc.
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SOIL BORING LOG

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: B-1
JOB #: 86-95-93-00002
DRAWN BY: J. Wasserbauer
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
No Recovery.	98.0		19	SS		0		-	74 37 48 51		
Very dense, olive gray, medium SILTY SAND, trace of gravel and cobbles; wet (SM).	100.0	100	20	SS		45		W	45 24 31 25		Stopped drilling at 16:15 5/21/93
Very dense, fine to coarse SAND, trace of fines and cobbles; wet (SP).	102.0		21	SS		29		W	82 43 57 50		Start driling at 8:46
Very dense, olive gray, SILTY SAND, trace of gravel; wet (SM).	104.0		22	SS		45		W	71 38 34 36		
Very dense to dense, light gray SILTY SAND and GRAVEL, trace of limestone cobbles; wet (SM).	106.0	105	23	SS		54		W	79 50 22 23		
No Recovery.	108.0		24	SS		0		-	100 100/3		
Very dense, olive gray fine SILTY SAND, trace of coarse sand; wet (SM).	110.0	110	25	SS		50		W	97 200 54 32		
Very dense, olive gray GRAVELLY SAND, trace of fines; wet (SW).	112.0		26	SS		50		W	72 155 100/3		
Same as above (SW).	114.0		27	SS		50		W	66 26 18 21		Stopped drilling at 14:00, augers seized up
Dense, olive greenish gray SILTY CLAYEY SAND, trace of gravel; wet (SC).	116.0	115		SS		100		W	25 19 22 18		Resumed drilling 6/16/93, stored samples in core boxes
Same as above; wet (SC).	118.0			SS		0		W	26 15 14 19		
Dense, olive greenish gray, SILTY CLAYEY SAND; wet (SC).	119.0			SS		100		W	19 23		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
Water on Rods 70.0 ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

4733

ATEC Associates, Inc.
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

SOIL BORING LOG

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: B-1
JOB #: 86-95-93-00002
DRAWN BY: J. Wasserbauer
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
Dense, olive gray, SILTY CLAYEY SAND, trace of gravel; wet (SC).	122.0			SS		75		W	6 17 19 23		Stopped drilling 15:35
Dense, light greenish gray, fine SILTY CLAYEY SAND; wet (SC).	124.0			SS		83		W	8 10 8 18		
	125.0	125									Core Boxes to store samples
Same as above (SC).	127.0			SS		100		W	14 17 20 50		
	128.0										
Same as above (SC).	130.0	130		SS		95		W	4 6 9 18		
Same as above (SC).	132.0			SS		100		W	4 4 5 18		
Dense, grayish green to light brown, fine SILTY CLAYEY SAND; wet (SC).	134.0			SS		75		W	- 4 6 34		
	135.0	135									
Same as above (SC).	137.0			SS		100		W	9 13 34		
	138.0										
Medium dense, greenish gray to light brown, medium to fine SILTY CLAYEY SAND; wet (SC).	140.0	140		SS		100		W	6 7 13 7		
	141.0										
Same as above (SC).	143.0			SS		100		W	7 12 13 15		
Same as above (SC).				SS		100		W	6 6		

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
Water on Rods 70.0 ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

ATEC Associates, Inc.
11121 Canal Road
Cincinnati, Ohio 45241
(513) 771-2112

SOIL BORING LOG

4733

CLIENT: F.E.R.M.C.O.
GEOLOGIST: J. Wasserbauer
PROJECT NAME: South Plume Package 2D
PROJECT LOCATION: Fernald, OH

BORING #: B-1
JOB #: 86-95-93-00002
DRAWN BY: J. Wasserbauer
APPROVED BY: D. Kelting

DRILLING and SAMPLING INFORMATION

Date Started	5/20/93	Hammer Wt.	140	lbs.
Date Completed	6/16/93	Hammer Drop	30	in.
Drill Foreman	CDS	Spoon Sampler OD	2	in.
Inspector	JW	Rock Core Dia.		in.
Boring Method	HSA	Shelby Tube OD		in.

TEST DATA

SOIL CLASSIFICATION	Stratum Depth	Depth Scale	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Recovery %	Ground Water	Moisture Content	Standard Penetration Test N, Blows/6 inches	Total Photoionizable Vapors (ppm)	Remarks
Same as above (SC).	145.0	145							7 6		
Same as above (SC).	147.0			SS		100		W	5 5 2 16		
	148.0										
Same as above (SC).	150.0			SS		100		W	5 2 5 6		
Dense, olive gray fine SILTY CLAYEY SAND, wet (SC).	152.0	150		SS		56		W	10 12 12 8		
Boring terminated at 152.0 feet. Augers locked up at depth.											

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Moisture Content
D = Dry
M = Moist
W = Wet

Groundwater
At Completion _____ ft.
After _____ hours _____ ft.
Water on Rods 70.0 ft.
At Survey _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

G

APPENDIX G

GAMMA LOGS

ATEC Associates, Inc.
Corporate Office
8665 Bash Street
P.O. Box 501970
Indianapolis, Indiana 46250-1970
(317) 577-1761 FAX (317) 842-7308

June 26, 1993

Mr. David Kelting
WATEC
2646 Highway Avenue
Highland, IN 46322-1613

RE: Natural Gamma Ray Logs
WATEC Project No. 86-05-93-00002
South Plume Pumping Test
Fernald Environmental Management Project
Fernald, Ohio
ATEC Geophysics Project No. 11-03-93-33013

Dear Mr. Kelting:

Attached you will find, at a scale of 1" = 10', natural gamma ray logs for the following installations: Well No. RW-4; Piezometer Nos. SPPZ-1, SPPZ-2G, SPPZ-3, SPPZ-4, and SPPZ-5; and Boring No. B-1. In addition, please also find a 3½" floppy disk containing the processed log data corresponding to the hard copies in ASCII text format.

Also attached to this letter you will find the following additional information: 1) equipment specifications; 2) logging parameters; 3) processing parameters; and 4) quality control information including duplicate run and calibration data. Please note that additional information can also be found on the log headers.

It has been a pleasure working with you on this project and we look forward to working with you in the future. If you have any questions or require further information, please do not hesitate to call me at (317) 577-1761 extension 4744.

Sincerely,

ATEC Associates, Inc.

Gregory B. Byer

Gregory B. Byer, P.E., C.P.G.
Senior Geological Scientist
Director of Geological Sciences

attachments

A Subsidiary of American Testing and Engineering Corporation
Offices in Major U.S. Cities/Since 1958

Consulting Environmental, Geotechnical and Materials Engineers

EQUIPMENT SPECIFICATIONS

ITEM	MODEL	COMMENTS
Logging Control Unit including winch, cable, and electronics	Mount Sopris Model MGX-200 Single Conductor Digital Logging System	Integrated lightweight, semi-portable unit. Controlled by external PC through serial RS-232 link.
Natural Gamma Logging Tools	1) Mount Sopris Stratigraphic Gamma/SP/SPR Single Conductor Model HLP-2375/S	Used on all holes except B-1. 0.875"x3" NaI Crystal. Tool dimensions: 1.26" diameter, 49" length, 6.5 lb. weight
	2) Mount Sopris Small Mining Gamma/SP/SPR Single Conductor Model HLP-2375/1	Used on B-1 because of diameter restrictions of hole (1.375" ID). Crystal size unknown, much smaller than above. Tool dimensions: 1" diameter, 49" length, 6.0 lb. weight
Portable Power Source	Honda Model EX-1000	1000 watt clean power source
Computer	Compaq Laptop Model 3/25 Contura	
Printer	Epson Model LQ-850	
Data Acquisition Software	Mount Sopris Digital Acquire System	Analog data from logging tool and depth encoder is digitized within the logging control unit and is transmitted to the PC.

LOGGING PARAMETERS

ITEM	PARAMETER	COMMENTS
Logging Speed	1) 15 ft/min with large, stratigraphic tool	All holes except B-1
	2) 5 ft/min with small, mining tool	B-1 only. Slower because of small crystal giving only 20% of the response the large tool gives.
Logging Direction	Upwards	
Depth Reference	Top of Riser Pipe	Converted to elevation at final processing for common reference datum.
Probe Reference Point	Top of Cablehead Spring	
Digitization Interval	0.1 feet	
Stacked Runs (small tool only)	5 consecutive logging runs	Multiple runs were necessary to improve comparison between B-1 results and other holes. Stacking also greatly improves the signal to noise ratio.
Compensation for large diameter steel casing in RW-4	Logging tool decentralized to edge of 26" steel casing.	Tool was also run in annular space outside steel casing down to about 40 feet where 36" hole ended for comparison.

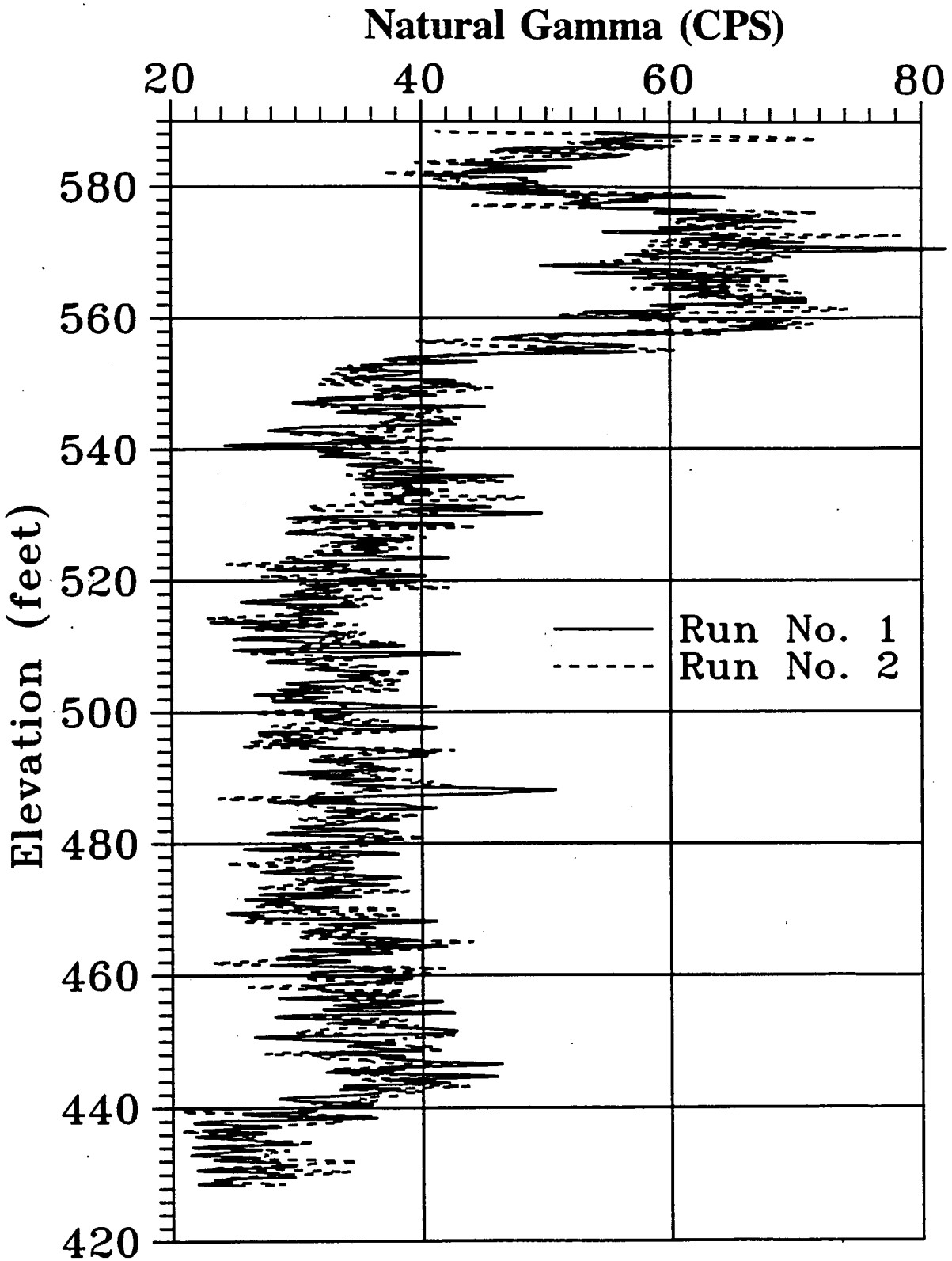
PROCESSING PARAMETERS

ITEM	PARAMETER	COMMENT
Software Packages Used - Various	Primary Log Data Processing: Mount Sopris Plot Utilities	Those used: INTERPD, HMERGE, WLCHECK, WLHEAD, PRNPLOT, PRNHEAD
	For Gamma Calibration	GAM-CAL, a BASIC program written by ATEC
	Additional Data Manipulation	Smartware II Spreadsheet
Interpolation and filtering	Interpolate to every 0.1 feet Data smoothed with triangular 5 point weighted average	Program: INTERPD
Correction for steel, water, and large diameter in RW-4	Multiplied data by 3.0 in plotting stage. Raw data is not amplified.	Comparison of RW-4 data inside steel casing revealed that on average the total CPS was one third as great as adjacent holes nearby.
Correction for small crystal in Boring No. B-1 to make results comparable to other holes logged with larger tool	Averaged 5 consecutive logging runs, multiplied by 5.12 and subtracted 0.04.	See QA/QC information for origin of correction equation.
Conversion to elevation	At plotting stage.	

4733

QUALITY CONTROL INFORMATION

DUPLICATE RUN DATA - SPPZ-2G



QUALITY CONTROL INFORMATION

CALIBRATION[1] DATA - STANDARD STRATIGRAPHIC (LARGE) TOOL

DATE	BACKGROUND[2]	STANDARD[3]	DIFFERENCE
BENCH MARK[4]	30.09	193.49	163.40
MAY 4, 1993	28.98	181.97	153.00
MAY 11, 1993 (AM)	29.30	187.15	157.85
MAY 11, 1993 (PM)	31.00	189.37	158.37
JUNE 22, 1993	34.10	180.45	146.35

1 Calibration is performed with logging system in "time drive" while tool is held stationary. A data point is digitized every second for a minimum of 120 seconds. The data are then averaged, as summarized below.

2 That is, logging tool lying stationary on floor of logging truck.

3 Standard consists of a snug-fitting neoprene sleeve which has a slug of radioactive material attached against it. The radioactive material consists of ashed gas lantern mantles containing trace amounts of Thorium.

4 Bench mark test performed at designated calibration area and is standard by which all subsequent calibration runs are compared.

QUALITY CONTROL INFORMATION

COMPARATIVE CALIBRATION DATA LARGE VS. SMALL GAMMA TOOL[1]
JUNE 22, 1993

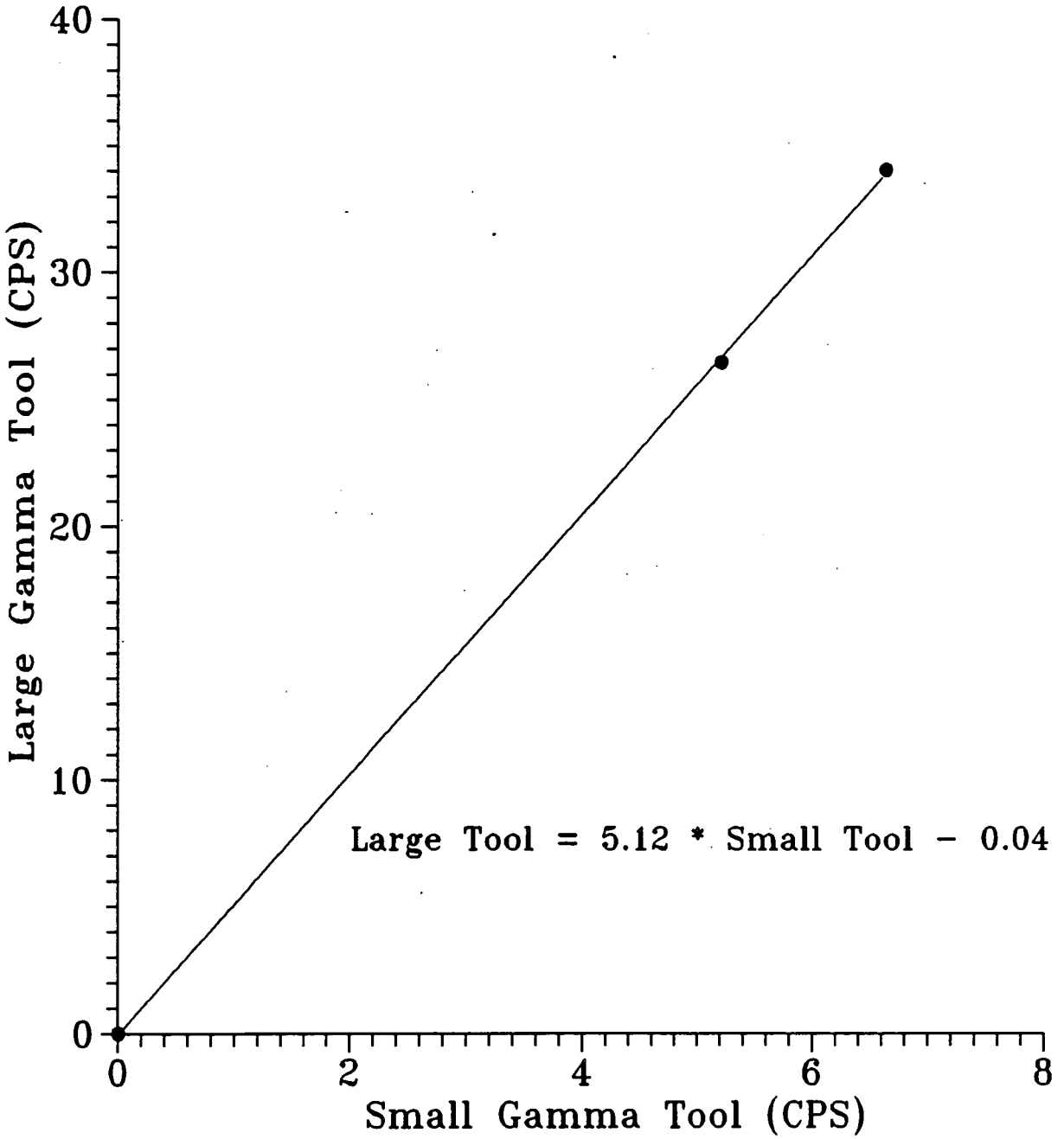
LARGE TOOL	SMALL TOOL	LARGE/SMALL	MEDIUM
26.46	5.22	5.07	WATER FROM SPPZ-1[2]
34.10	6.64	5.14	BACKGROUND
180.45	54.69	3.30	STANDARD

[1] Both logging tools were calibrated in the same manner to facilitate comparison. These data are also shown graphically on the next page.

[2] Tools were placed in water bailed from SPPZ-1 for two reasons. First, the gamma ray attenuation caused by water gives a valuable comparative calibration point, and second, this test was run to determine whether the trace concentration of Uranium in the groundwater would cause an undesirable noise factor in the logs (it does not).

QUALITY CONTROL INFORMATION

COMPARISON OF LARGE VS. SMALL GAMMA TOOL



ATEC GEOPHYSICAL SERVICES

WATEC PROJECT NO. 86-05-93-00002

FILE NUMBER: 1[illegible]03-33013 4733

GEOPHYSICAL WELL LOG: Natural Gamma Ray	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Top of Riser ELEVATION 591.725 ft	OTHER SERVICES:

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Boring No. B-1

COUNTY: Hamilton STATE: Ohio

COORDINATES:
N: 474435.3
E: 1380633.9
ELEVATION: KB: n/a
DF: n/a
GL: 590.[illegible] ft.

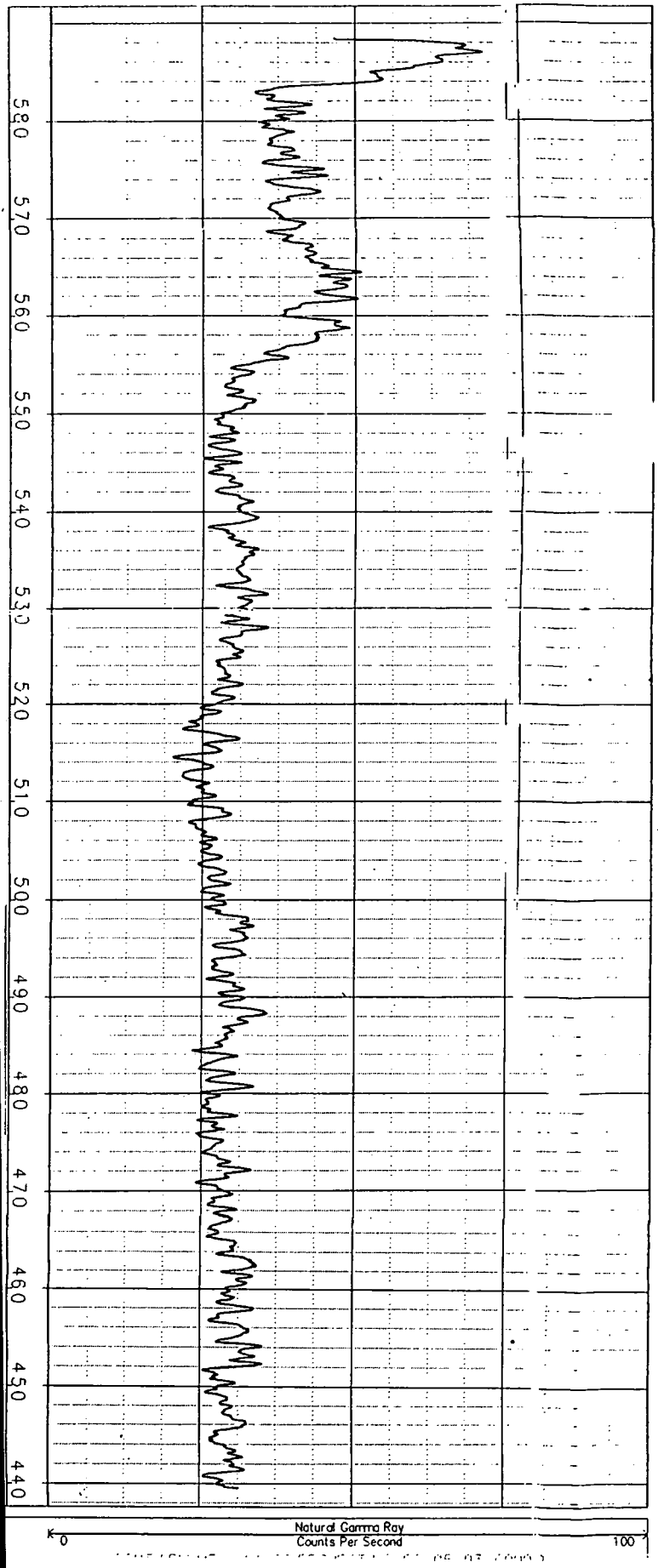
COMPANY NO:
WELL: Boring No. B-1
LOCATION: approx. [illegible] ft. NE of [illegible]

	Run No. 1		Run No. 1
Date	June 22, 1993	Fluid Level	70.3 feet
Bottom logged Int.	152.2 feet	Fluid Nature	Ground Water
Top Logged Int.	3.2 feet	Fluid Viscosity	n/a
Footage Logged	149 feet	Fl. Resistivity	
Bottom (Driller)	153 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Casing (Driller)		Circulation Temp	
Casing Size	1.375" ID PVC	Bottom Hole Temp	
Bit Size	7.75 inches		
		LOGGED BY:	Gregory Bye[illegible]
		WITNESSED BY:	Dave Keltin[illegible]

REMARKS: Top of riser stick-up about 12" above ground level.

Logged from top of riser.

NOTE: LOGGED WITH SM[illegible]LL 1" [illegible] GAMMA TOOL AT 5 FT/MIN, 5 R[illegible]NS TOTAL TO REACH EQUIVALENT CPS [illegible] AS OTHER HOLES



Boring No. B-1

4733

ATEC GEOPHYSICAL SERVICES

WATEC PROJECT NO. 86-05-93-00002

FILE NUMBER:11-03-93-33013

GEOPHYSICAL WELL LOG: Natural Gamma Ray	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Top of Riser ELEVATION 592.750 ft	OTHER SERVICES:

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Piezometer No. SPPZ-5 3923

COUNTY: Hamilton STATE: Ohio

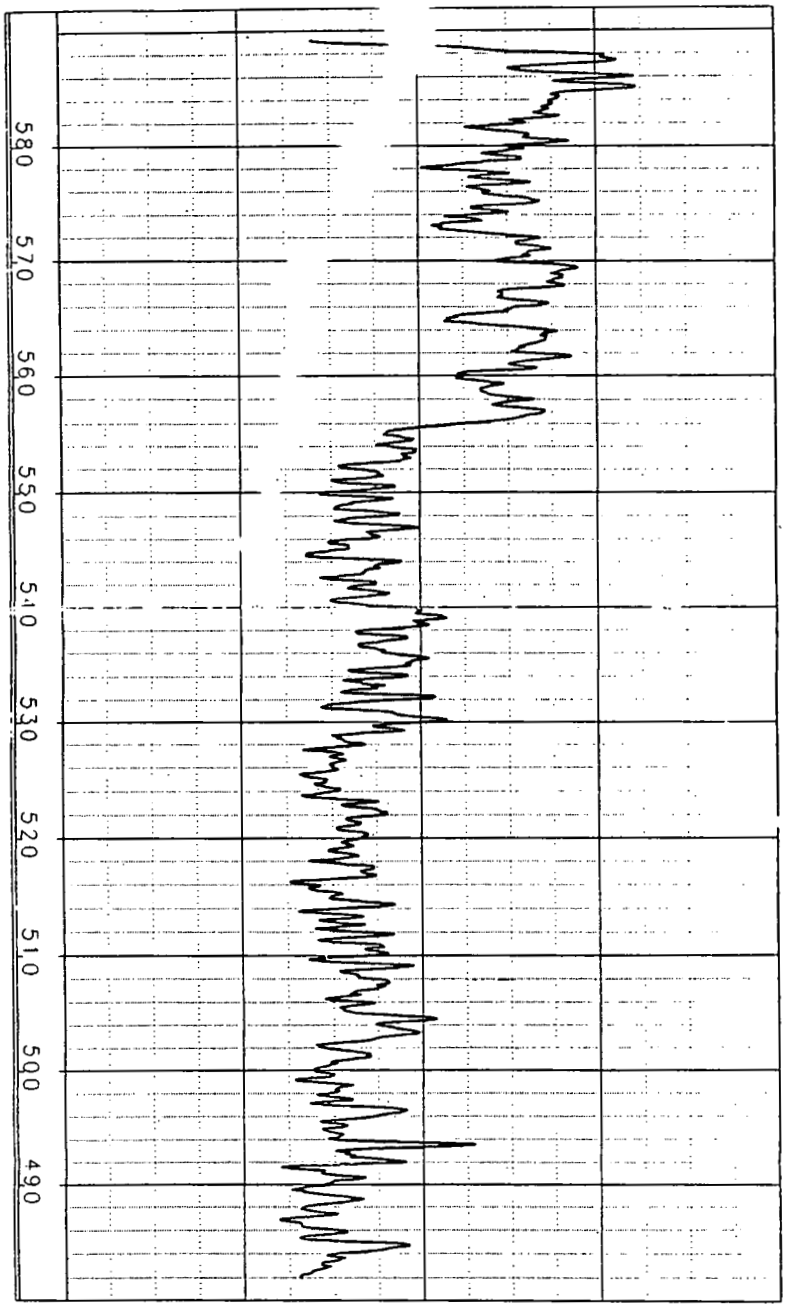
COORDINATES:
N: 474557.30
E: 1380576.61
ELEVATION: KB: n/a
DF: n/a
GL: 588.6 ft.

WELL: Piezometer No. SPPZ-5 3923
LOCATION: approx. 50 ft NW of RW-4

	Run No. 1		Run No. 1
Date	May 4, 1993	Fluid Level	71.85 feet
Bottom logged Int.	110.8 feet	Fluid Nature	Ground Water
Top Logged Int.	3.5 feet	Fluid Viscosity	n/a
Footage Logged	107.3 feet	Fl. Resistivity	
Bottom (Driller)	110 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Ca:		Circulation Temp	
C:	PVC	Bottom Hole Temp	
		LOGGED BY:	Gregory Byer
		WITNESSED BY:	Dave Kelting

REMARKS: Top of riser stick-up about 50" above ground level.

Logged from top of riser.



Natural Gamma Ray
0 Counts Per Second 100

SOUTH PLUME – WATEC PROJECT NO. 86-05-93-00002

3923 (SPPZ-5)

ATEC GEOPHYSICAL SERVICES

WATEC PROJECT NO. 86-05-93-00002

FILE NUMBER: 11-03-93-330[illegible] **4733**

GEOPHYSICAL WELL LOG: Natural Gamma Ray	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Top of Riser ELEVATION 592.631 ft	OTHER SERVICES:

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Piezometer No. SPPZ-4 3922
COUNTY: Hamilton STATE: Ohio

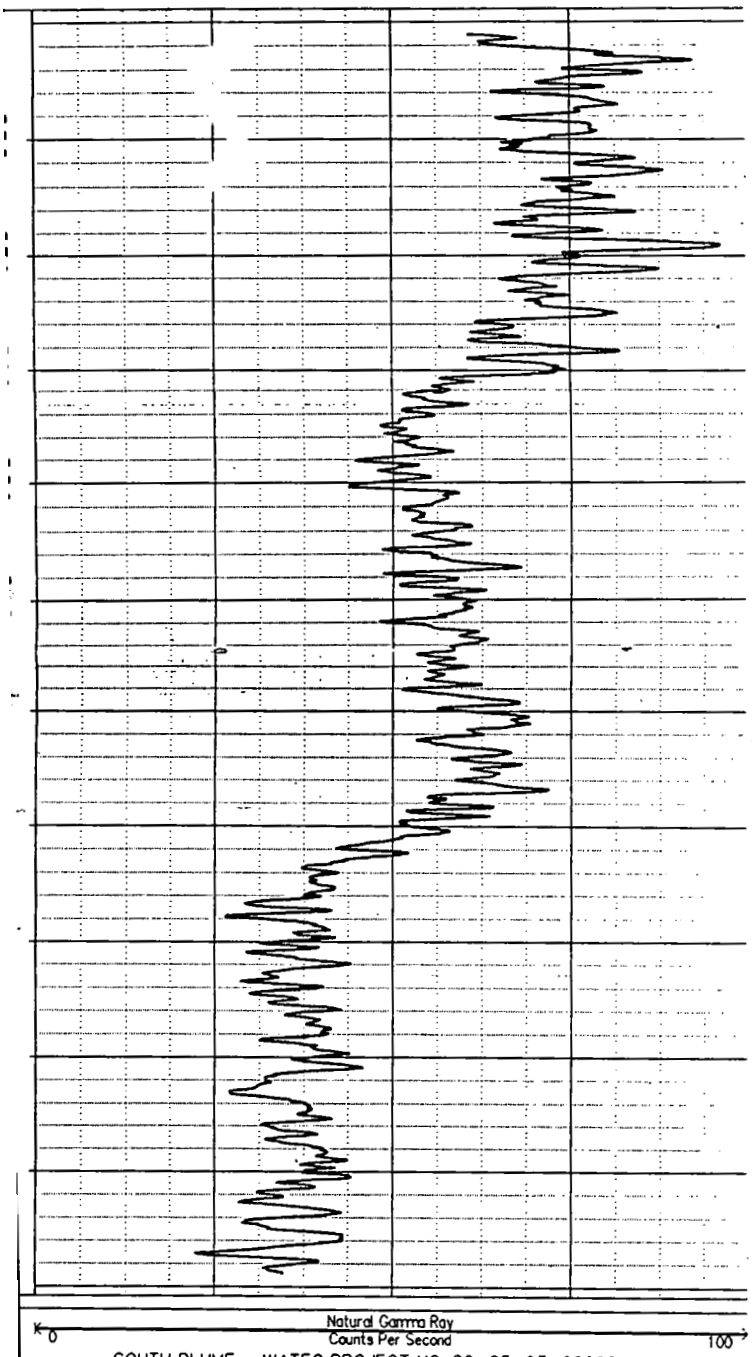
COORDINATES:
N: 474325.58
E: 1380666.55
ELEVATION: KB: n/a
DF: n/a
GL: 589.7 ft.

COMPANY NO:
WELL: Piezometer No. SPPZ-4 3922
LOCATION: approx. 200 ft SE of RW-4

	Run No. 1		Run No. 1
Date	May 4, 1993	Fluid Level	71.85 feet
Bottom logged Int.	111.5 feet	Fluid Nature	Ground Water
Top Logged Int.	3.6 feet	Fluid Viscosity	n/a
Footage Logged	107.9 feet	Fl. Resistivity	
Bottom (Driller)	110 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Casing (Driller)		Circulation Temp	
Casing Size	2 in. PVC	Bottom Hole Temp	
Bit Size	7.75 inches		
		LOGGED BY:	Gregory Byer
		WITNESSED BY:	Dave Kelting

REMARKS: Top of Riser stick up about 35" above ground level.

Logged from top of riser.



SOUTH PLUME - WATEC PROJECT NO. 86-05-93-00002

3922 (SPPZ-4)

4733

ATEC GEOPHYSICAL SERVICES

ATEC PROJECT NO. 86-05-93-00002

FILE NUMBER:11-03-93-3[illegible]013

GEOPHYSICAL WELL LOG: Natural Gamma Ray	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Top of Riser ELEVATION 591.486	OTHER SERVICES:

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Piezometer No. SPPZ-3 3921
COUNTY: Hamilton STATE: Ohio

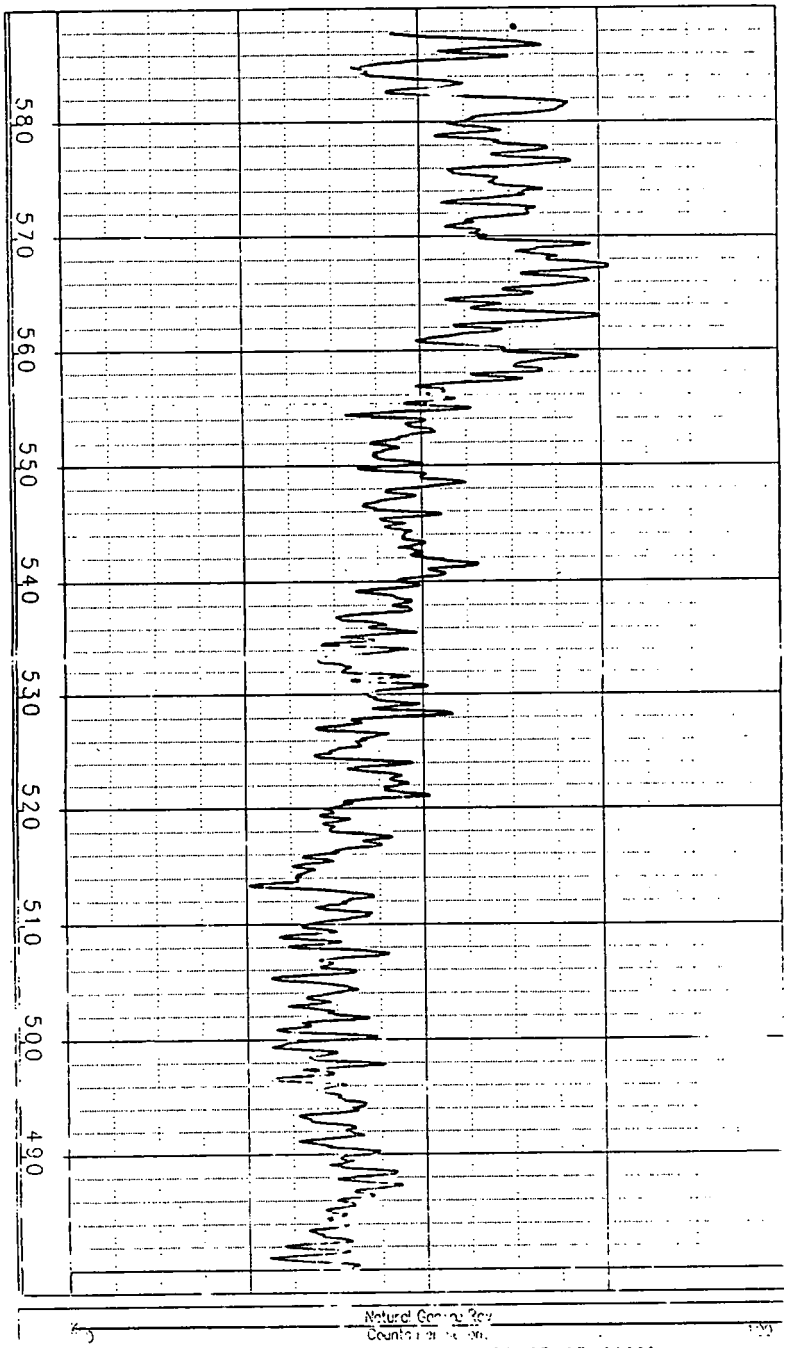
COORDINATES:
N: 474467.18
E: 1380614.03
ELEVATION: KB: n/a
DF: n/a
GL: 588.7

WELL: Piezometer No. SPPZ-3 3921
LOCATION: approx. 50 feet SE of RW-4

	Run No. 1		Run No. 1
Date	May 4, 1993	Fluid Level	70.65 feet
Bottom logged Int.	111.5 feet	Fluid Nature	Ground Water
Top Logged Int.	3.6 feet	Fluid Viscosity	n/a
Footage Logged	107.9 feet	Fl. Resistivity	
Bottom (Driller)	110 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Casing (Driller)		Circulation Temp	
Casing Size	2 in. PVC	Bottom Hole Temp	
Bit Size	7.75 inches		
		LOGGED BY:	Gregory Byer
		WITNESSED BY:	Dave K[illegible]ing

REMARKS: Top of riser stick-up about 34" above ground level.

Logged from top of riser.



SOUTH PLUME - WATEC PROJECT NO. 86-05-93-00002

3921 (SPPZ-3)

ATEC GEOPHYSICAL SERVICES

WATEC PROJECT NO. 86-05-93-00002

FILE NUMBER: 14-03-93-33613

4733

GEOPHYSICAL WELL LOG: Natural Gamma Ray	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Top of Riser ELEVATION 594.109 ft	OTHER SERVICES:

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Piezometer No. SPPZ-1 3910

COUNTY: Hamilton STATE: Ohio

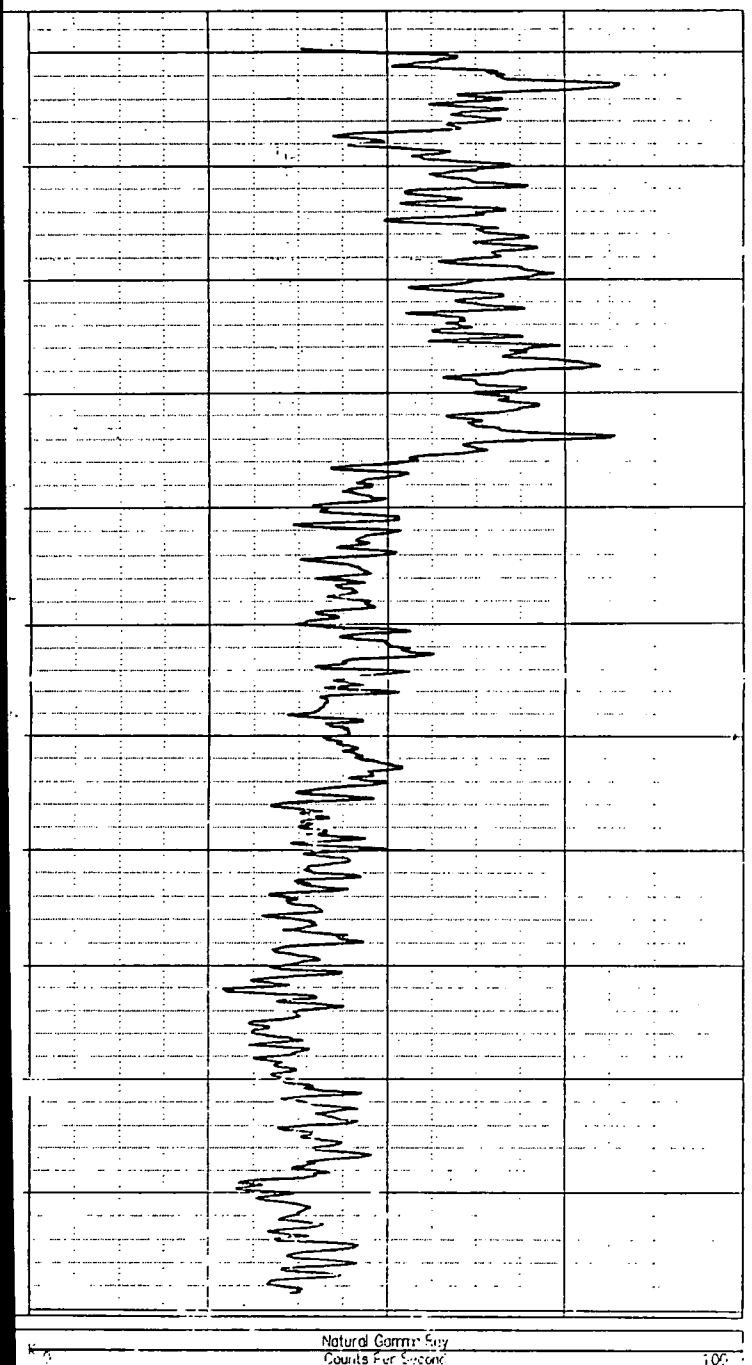
COORDINATES:
N: 474528.62
E: 1380640.63
ELEVATION: KB: n/a
DF: n/a
GL: 590.7 ft.

COMPANY NO:
WELL: Piezometer No. SPPZ-1 3910
LOCATION: approx. 50 ft. NE of RW-4

	Run No. 1		Run No. 1
Date	May 4, 1993	Fluid Level	73.28 feet
Bottom logged Int.	112.7 feet	Fluid Nature	Ground Water
Top Logged Int.	3.7 feet	Fluid Viscosity	n/a
Footage Logged	109 feet	Fl. Resistivity	
Bottom (Driller)	110 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Casing (Driller)		Circulation Temp	
Casing Size	2 in. PVC	Bottom Hole Temp	
Bit Size	7.75 inches		
		LOGGED BY:	Gregory Byer
		WITNESSED BY:	Dave Kelting

REMARKS: Top of riser stick-up about 41" above ground level.

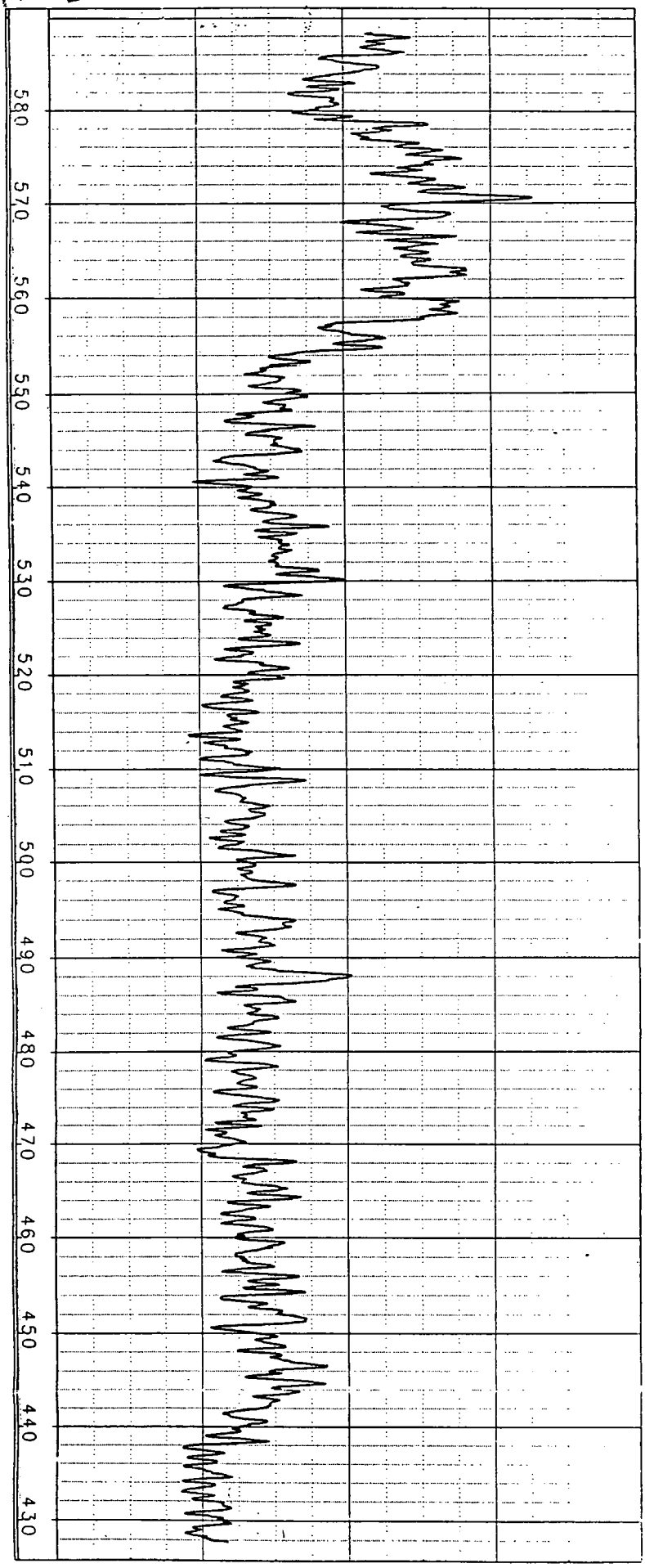
Logged from top of riser.



SOUTH PLUME - WATEC PROJECT NO. 86-05-93-00002

3910 (SPPZ-1)

4733



Natural Gamma Ray
Counts Per Second
0 100

SOUTH PLUME – WATEC PROJECT NO. 86-05-93-00002

ATEC GEOPHYSICAL SERVICES

WATEC PROJECT NO. 86-05-93-00002

FILE NUMBER: 11-03-93-33013

GEOPHYSICAL WELL LOG:	PERMANENT DATUM: Mean Sea Level	OTHER SERVICES:
Natural Gamma Ray	LOG MEASURED FROM: Top of Riser ELEVATION 592.086 ft	

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Piezometer No. SPPZ-2g4920

COUNTY: Hamilton STATE: Ohio

COORDINATES:
N: 474492.18
E: 1380596.30
ELEVATION: KB: n/a
DF: n/a
GL: 589.3 ft.

COMPANY NO.:
WELL: Piezometer No. SPPZ-2g4920
LOCATION: approx. 25 ft SE of RW-4

	Run No. 1		Run No. 1
Date	May 11, 1993	Fluid Level	73.38 feet
Bottom logged Int.	164.4 feet	Fluid Nature	Ground Water
Top Logged Int.	3.7 feet	Fluid Viscosity	n/a
Footage Logged	160.7 feet	Fl. Resistivity	
Bottom (Driller)	166 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Casing (Driller)		Circulation Temp	
Casing Size	2 in. Stainless	Bottom Hole Temp	
Bit Size	7.75 inches		
		LOGGED BY:	Gregory Byer
		WITNESSED BY:	Dave Kelling

REMARKS: Top of riser stick-up about 33" above ground level

Logged from top of riser

4920 (SPPZ-2G)

ATEC Geophysical Service 4733

WATEC PROJECT NO. 86-05-93-00002

FILE NUMBER: 11-03-93-33013

GEOPHYSICAL WELL LOG: Natural Gamma Ray	PERMANENT DATUM: Mean Sea Level LOG MEASURED FROM: Top of 26" Csg. ELEVATION 590.71 ft.	OTHER SERVICES:

COMPANY: FERMCO/DOE
PROJECT: South Plume Test Wells
WELL IDENTIFICATION: Recovery Well No. RW-4 3927

COUNTY: Hamilton STATE: Ohio

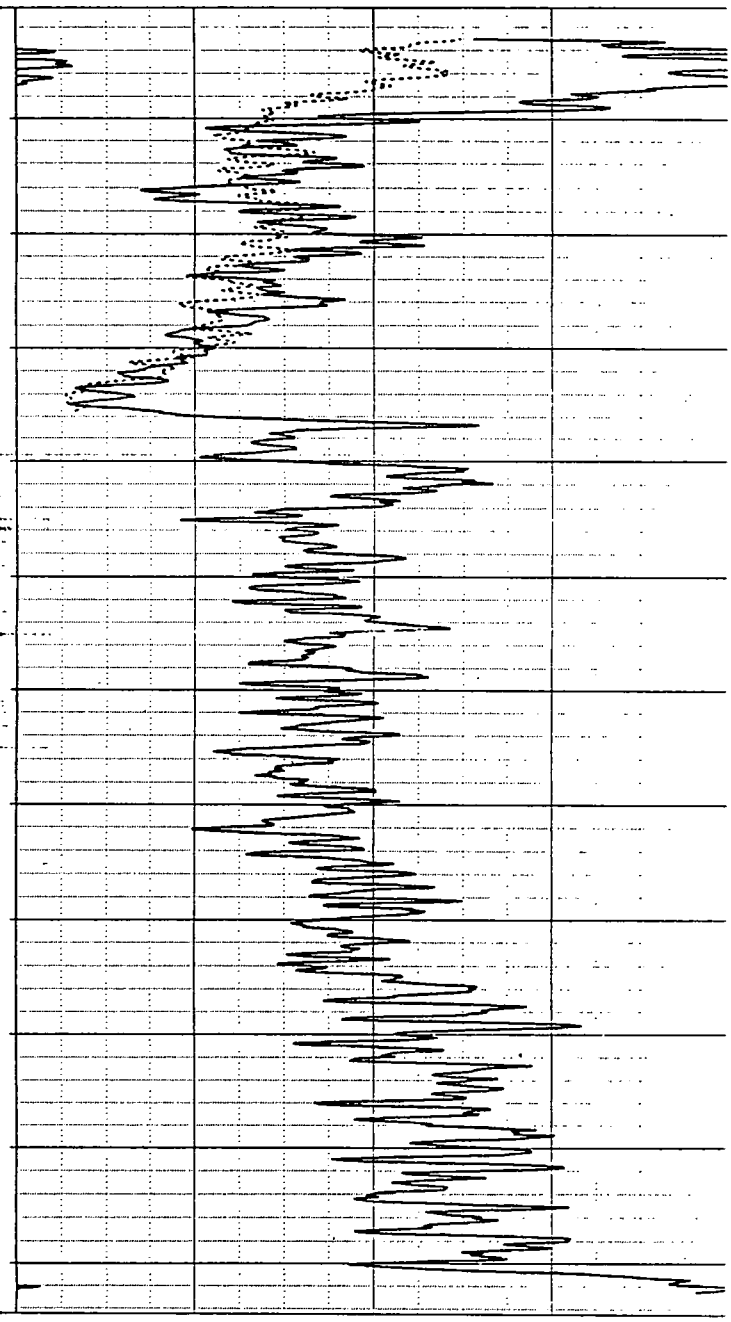
COORDINATES:
N: 474512.1
E: 1380596.1
ELEVATION: KB: n/a
DF: n/a
GL:

COMPANY NO:
WELL: Recovery Well No. RW-4 3927
LOCATION:

	Run No. 1		Run No. 1
Date	May 11, 1993	Fluid Level	
Bottom logged Int.	113.3 feet	Fluid Nature	Ground Water
Top Logged Int.	3.7 feet	Fluid Viscosity	n/a
Footage Logged	109.6 feet	Fl. Resistivity	
Bottom (Driller)	115 ft	Fl. Res. at BHT	
Casing (from Log)		Fluid pH	
Casing (Driller)		Circulation Temp	
Casing Size.	26 in. steel	Bottom Hole Temp	
Bit Size	26 in. bucket		
		LOGGED BY:	Gregory Byer
		WITNESSED BY:	Dave Kelting

REMARKS: Logged from top of 26" steel casing before well was installed. Ran tool along edge of steel casing (decentralized). Made 2nd run in 5" annular space outside of steel to approx. 36 feet where 36" hole ended.

Hole standing full of water.



SOUTH PLUME – WATEC PROJECT NO. 86-05-93-00002

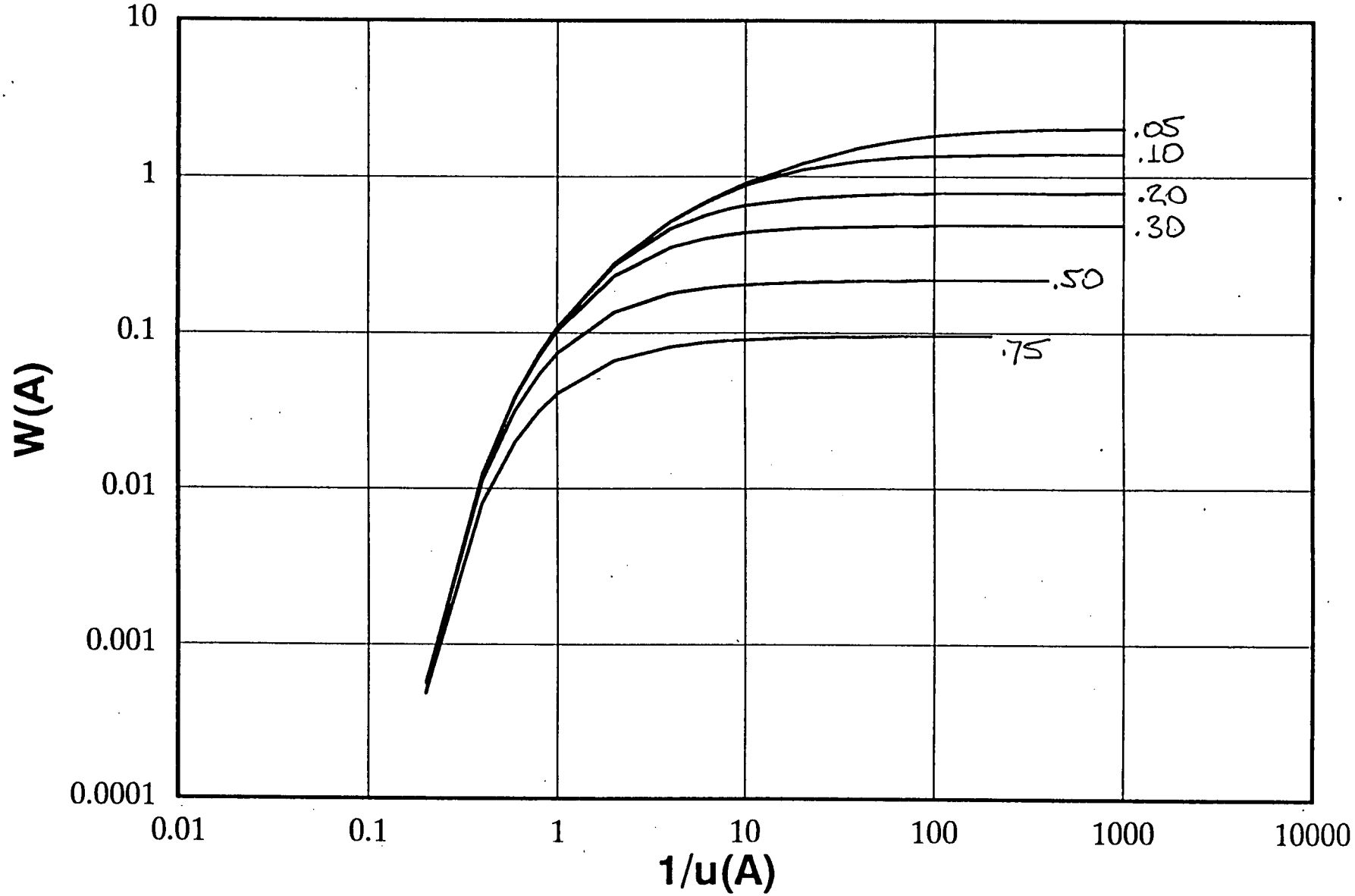
3927 (RW-4)

H

APPENDIX H

STRELTSOVA PLOTTED CURVES

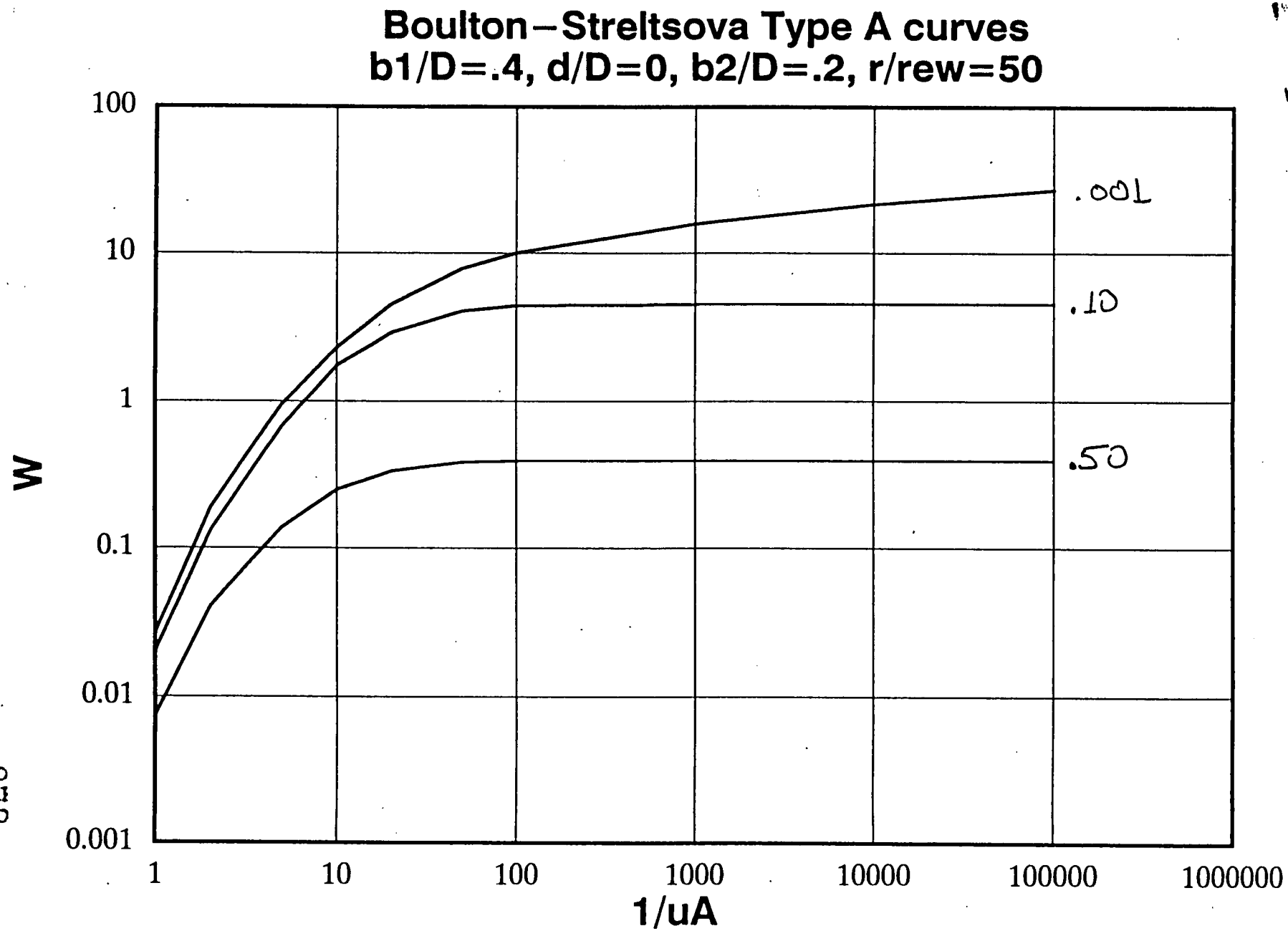
Streltsova – Type A Curves
Values for b1/D=0.4 and b2/D=.4



277

4733

7/21
7.13.93



4733

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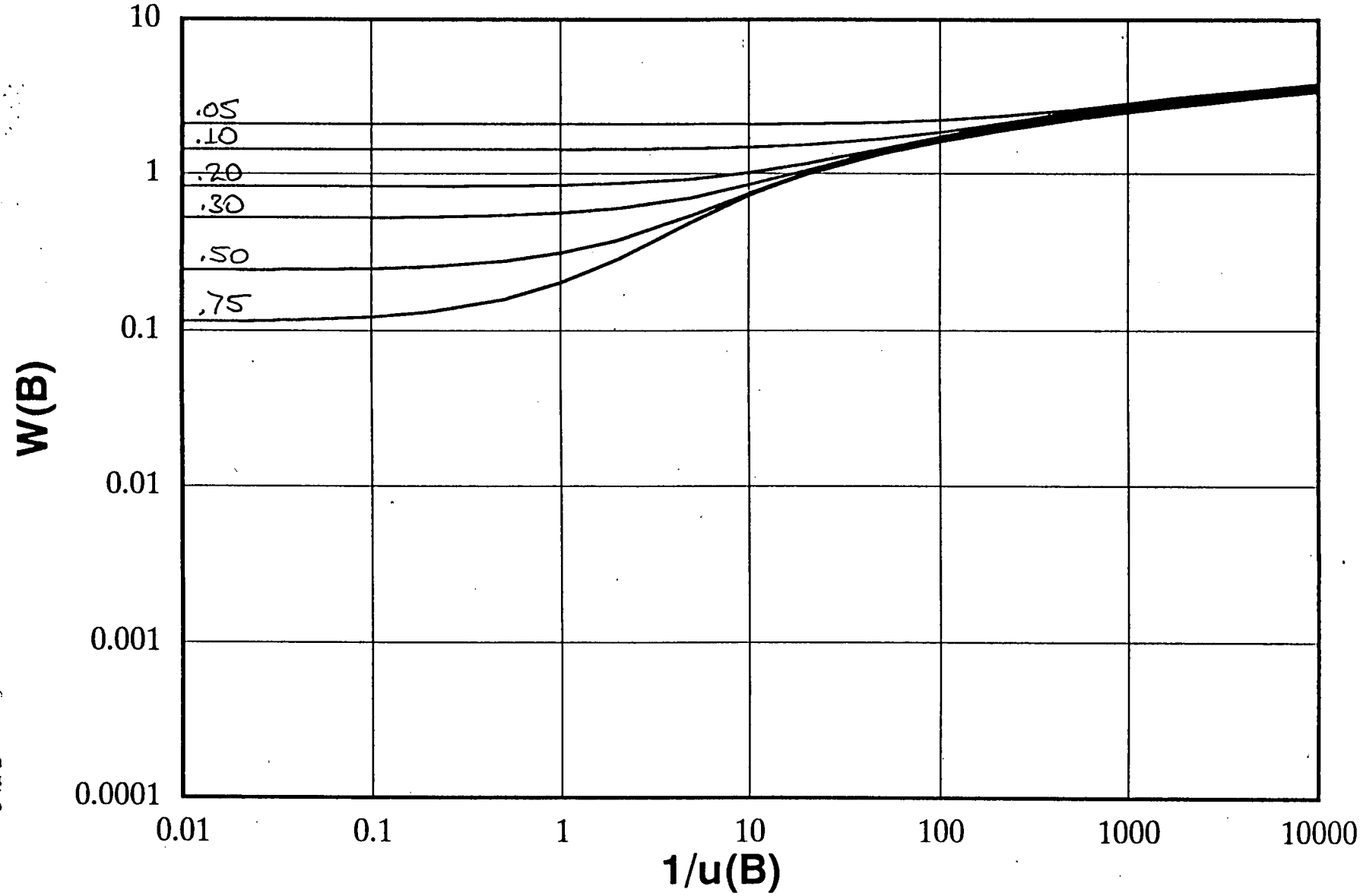
8/21
7-15

Streltsova – Type B Curves
Valuse for b1/D=0.4 and b2/D=0.4

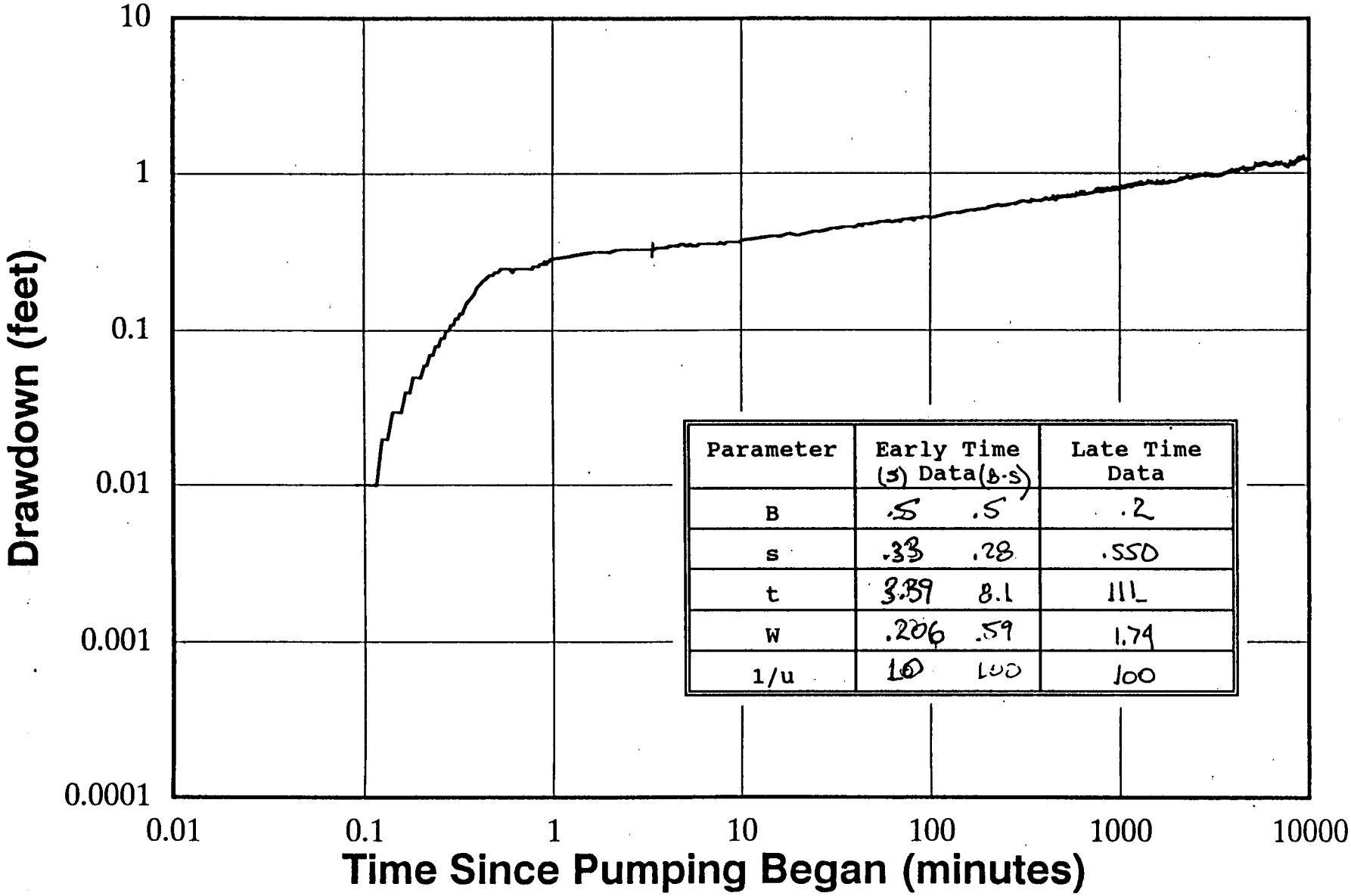


279

9/21
7-8-93

42383

Constant Rate Data – Well 3910 (SPPZ–1)
Time vs Drawdown (log/log)



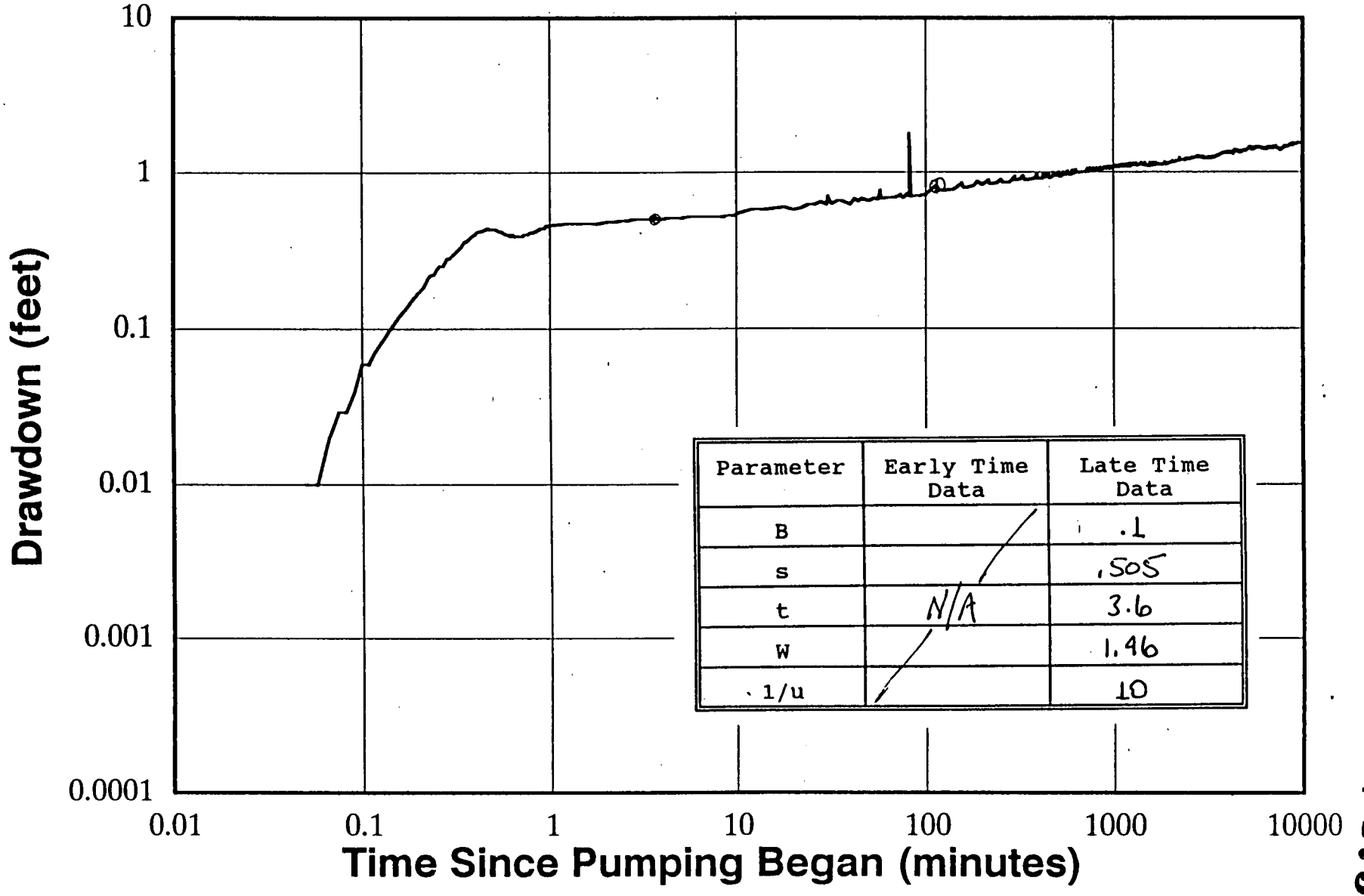
Parameter	Early Time (s) Data (B.S)		Late Time Data
B	.5	.5	.2
s	.33	.28	.550
t	3.39	8.1	111
W	.206	.59	1.74
1/u	10	100	100

4733

280

7-13-

Constant Rate Data – Well 3911 (SPPZ–2A)
Time vs Drawdown (log/log)



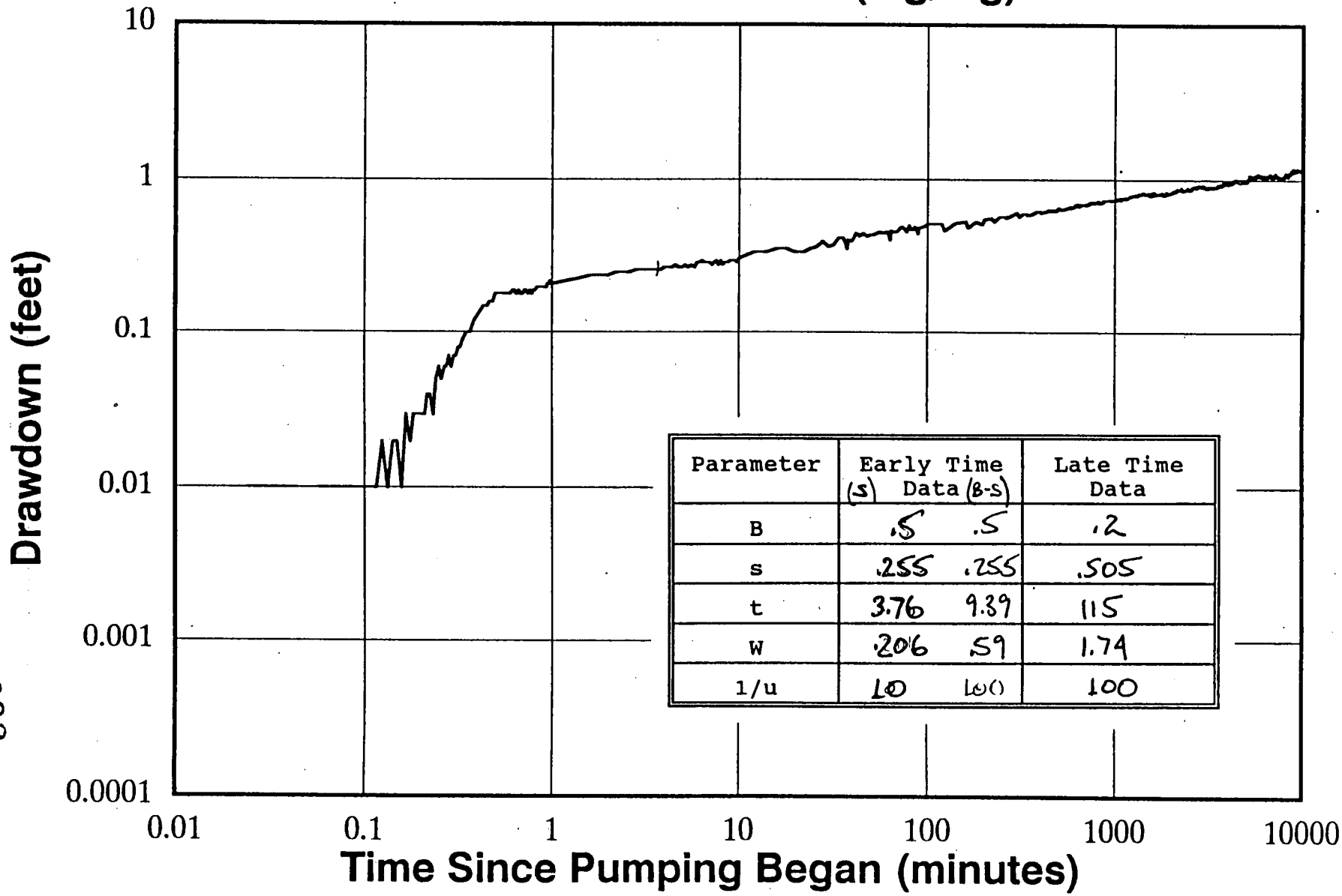
Parameter	Early Time Data	Late Time Data
B		.1
s		.505
t	N/A	3.6
W		1.46
1/u		10

281

7-13-93

4233

Constant Rate Data – Well 3921 (SPPZ–3)
Time vs Drawdown (log/log)



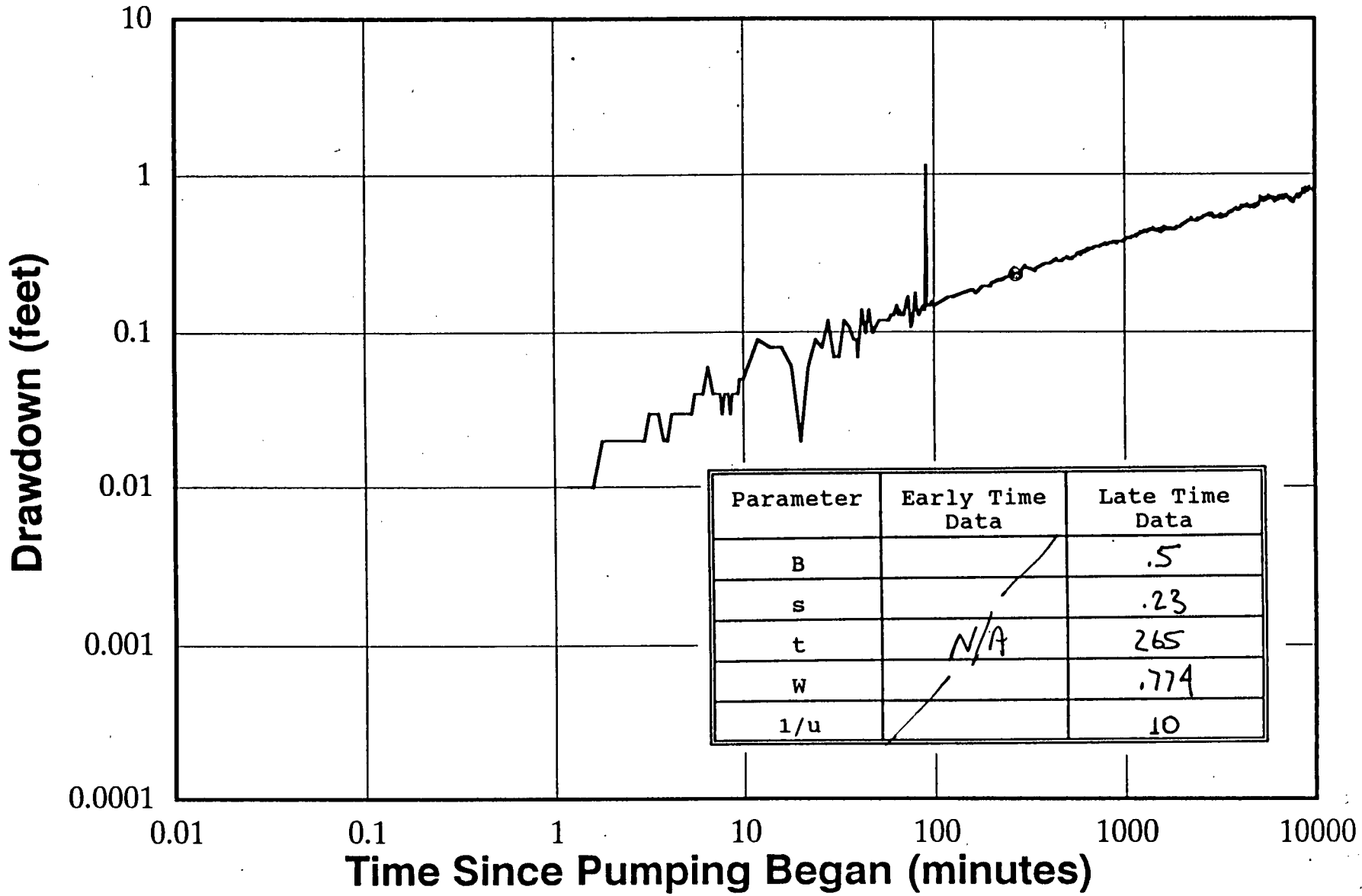
Parameter	Early Time Data (s)	(B-s)	Late Time Data
B	.5	.5	.2
s	.255	.255	.505
t	3.76	9.39	115
W	.206	.59	1.74
1/u	10	100	100

4733

282

7-18

Constant Rate Data – Well 3922 (SPPZ–4)
Time vs Drawdown (log/log)



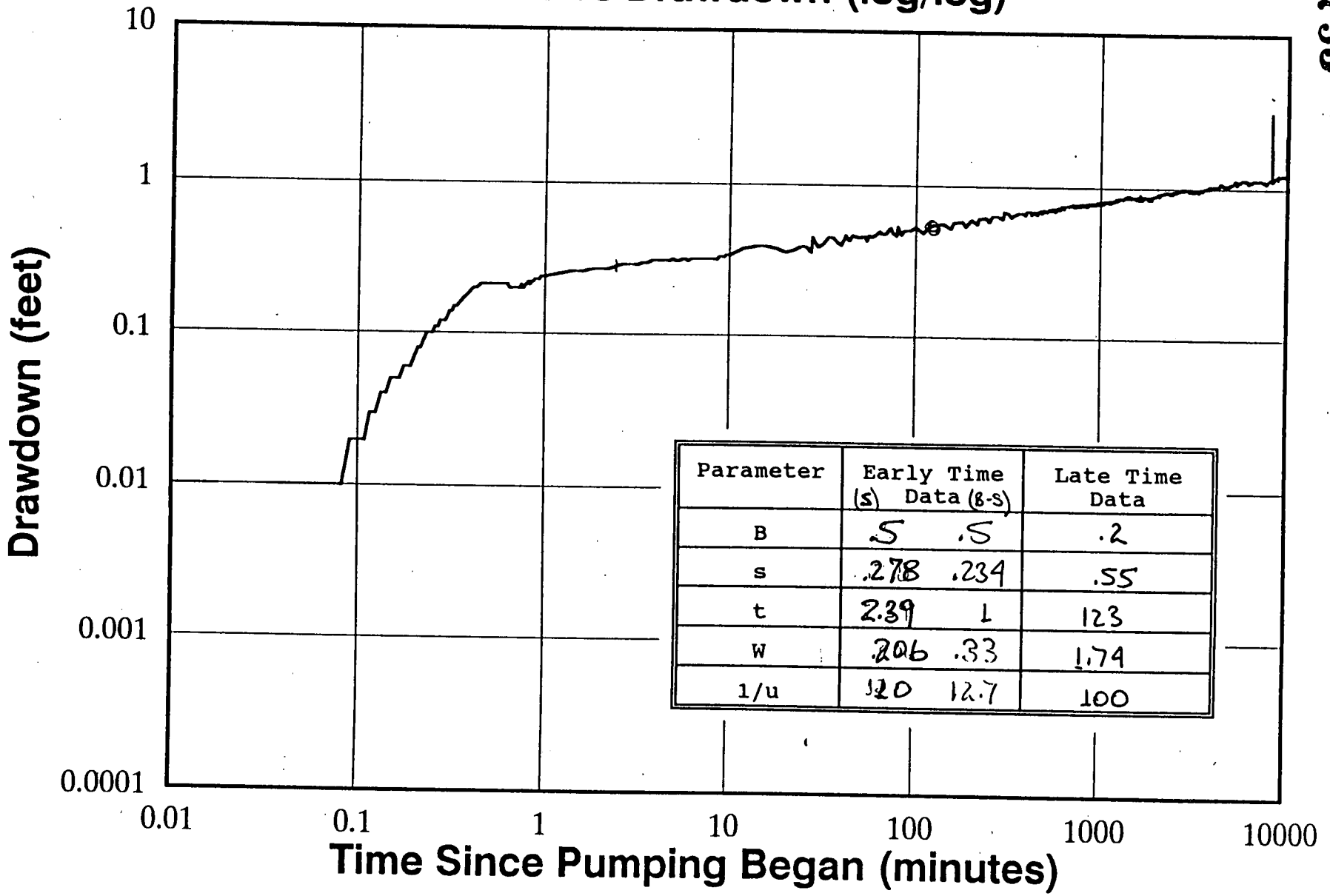
Parameter	Early Time Data	Late Time Data
B		.5
s		.23
t	N/A	265
W		.774
1/u		10

283

13/21

4738

Constant Rate Data – Well 3923 (SPPZ–5)
Time vs Drawdown (log/log)



Parameter	Early Time Data (s)	Early Time Data (s-s)	Late Time Data
B	.5	.5	.2
s	.278	.234	.55
t	2.39	1	123
W	.206	.33	1.74
1/u	120	12.7	100

4733

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APPENDIX I

LETTER: IN SITU TO WATEC DATED JUNE 10, 1993

In-Situ Inc.
210 S. Third Street
P.O. Box 1
Laramie, WY 82070-0920 USA
Tel: (307) 742-8213
(800) 446-7488 (4IN-SITU)
FAX: (307) 721-7598

10 June 93

David B. Kelting
WATEC
2646 Highland Avenue
Highland Indiana 46322

Dave,

Enclosed you will find a letter reporting to you what was wrong with the HERMIT 2000. As I had stated in the field to you and Paul, that the internal clock has nothing to do with the water level measurements. The internal clock only tells the HERMIT when to wake-up and take a data point.

If you have any questions please call at 307-742-8213.

Sincerely,

John E. Benedik Jr.

John E. Benedik Jr.
Manager, Metlab

4733

In-Situ Inc.
210 S. Third Street
P.O. Box 1
Laramie, WY 82070-0920 USA
Tel: (307) 742-8213
(800) 446-7488 (4IN-SITU)
FAX: (307) 721-7598

June 10, 1993

David B. Kelting
WATEC
2646 Highland Avenue
Highland Indiana 46322

Mr. Kelting,

In-Situ data logger model Hermit 2000 #148 has been evaluated and repaired by our Product Service department. The internal clock was found to be keeping inaccurate time and sent in for maintenance.

The real-time clock crystal in the unit was oscillating at the incorrect frequency of 30 KHz instead of 32.768 KHz. The failure was believed to be caused by the age of the crystal. The faulty crystal has been replaced and timed to be within design specifications.

The real-time clock is used for the purpose of powering up the unit for data collection at the programmed time and has no other function. Collected data is not affected by the real-time clock.

If you have any further questions regarding your unit, please feel free to call John Benedik or our Product Service department at 1-800-446-7488.

Sincerely,

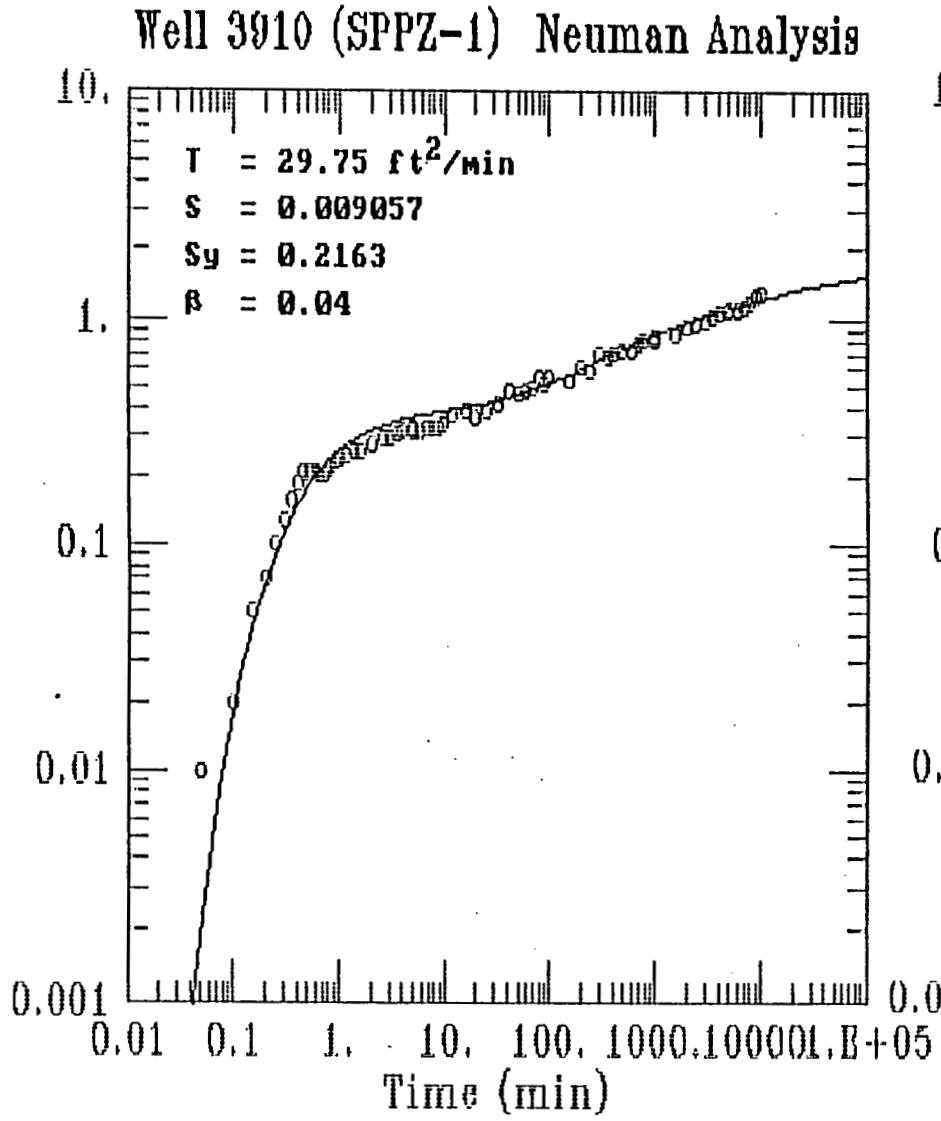
Brent Glover

Brent Glover
Electronics Maintenance Technician

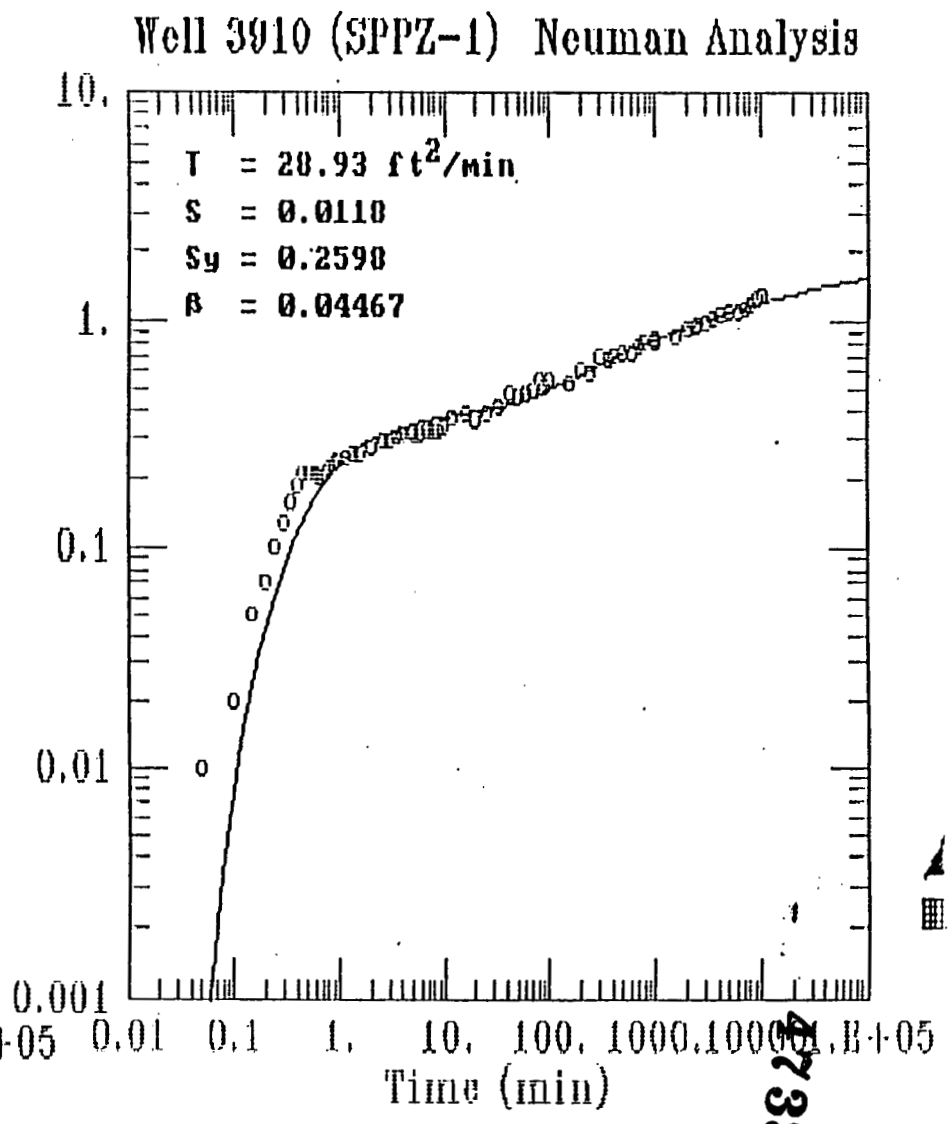
APPENDIX J

NEUMAN PLOTTED CURVES

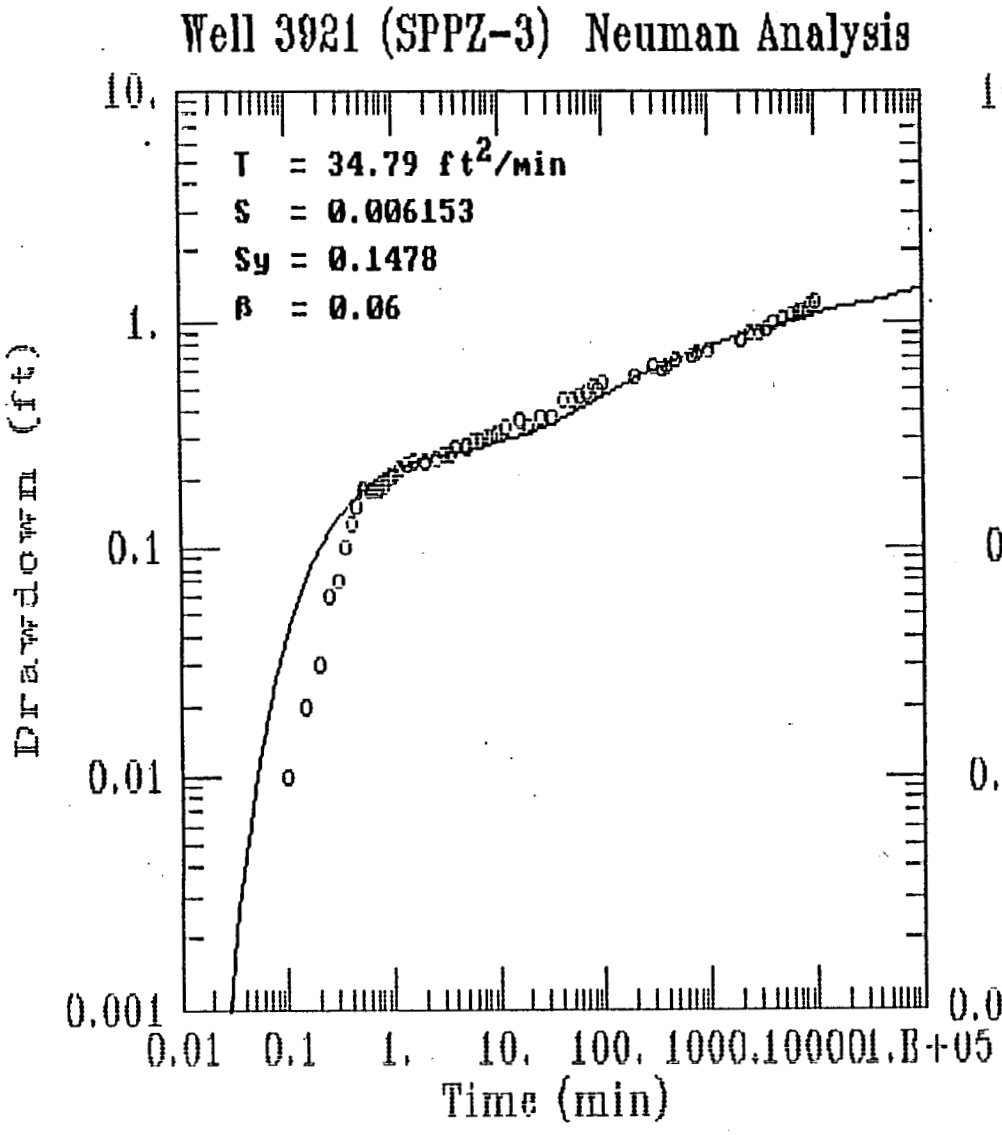
Visual Curve Matching



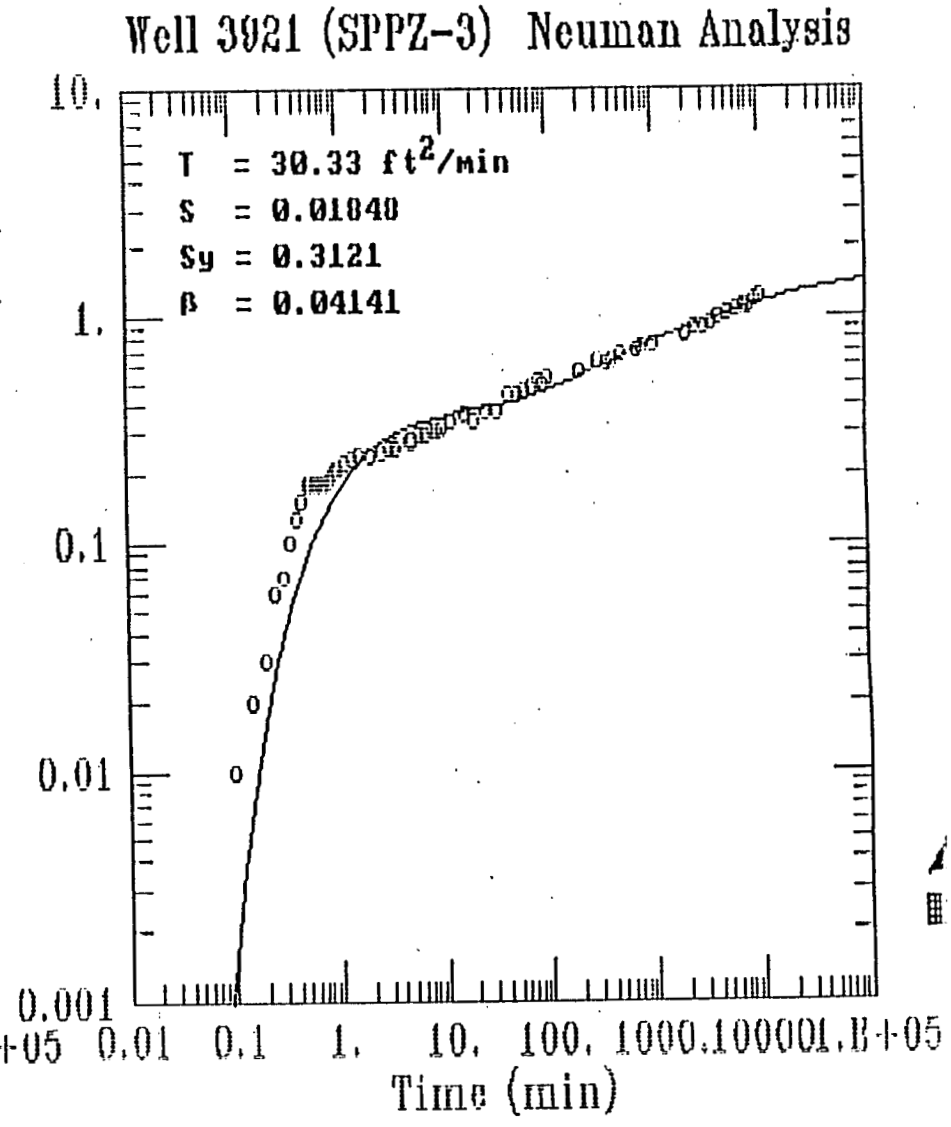
Computer Curve Matching



Visual Curve Matching



Computer Curve Matching



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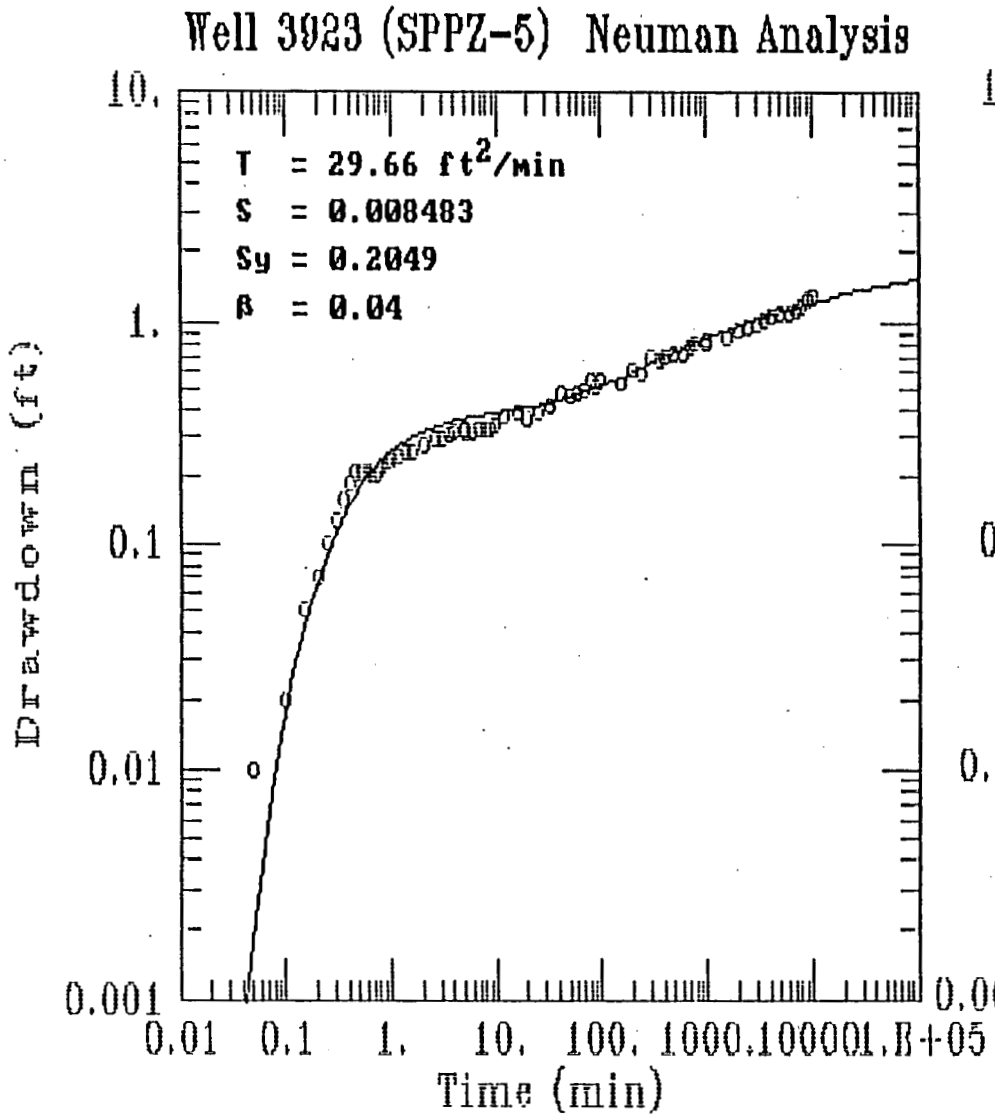
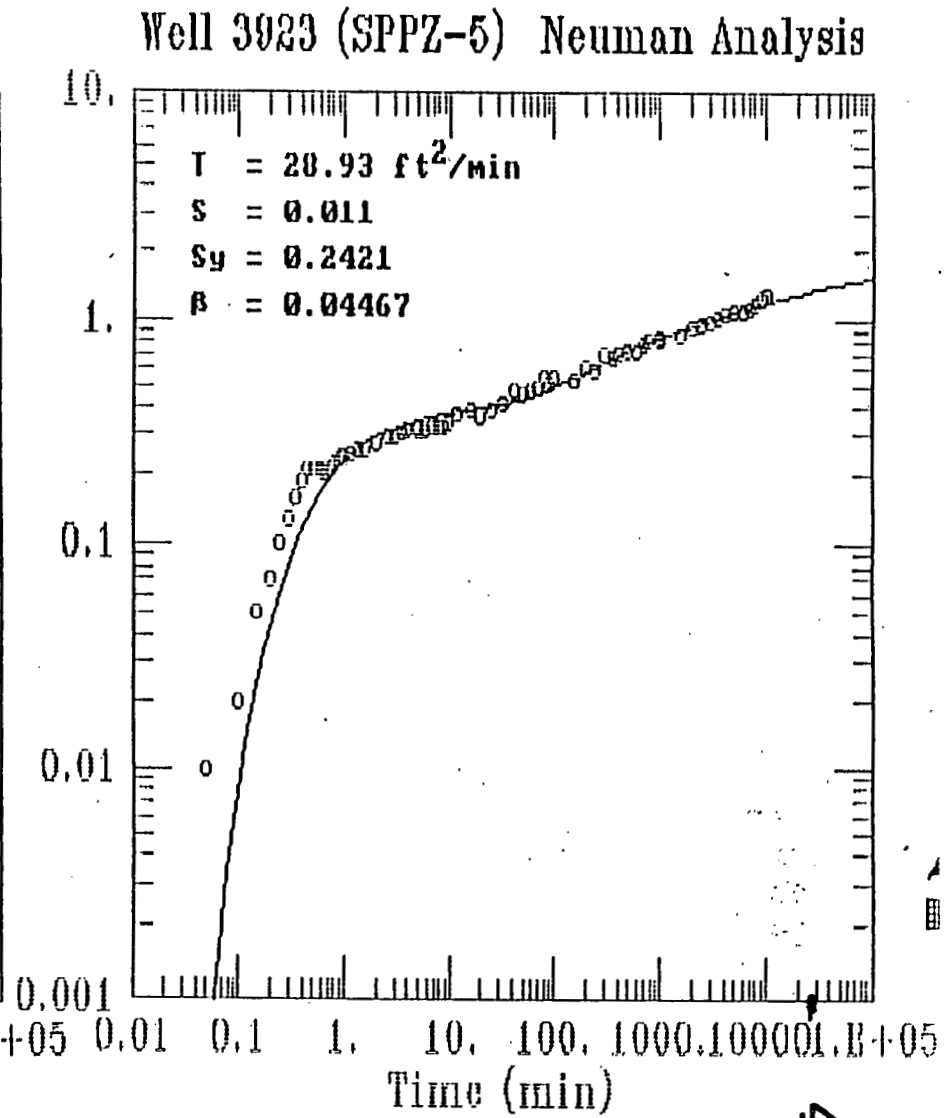
Visual Curve Matching



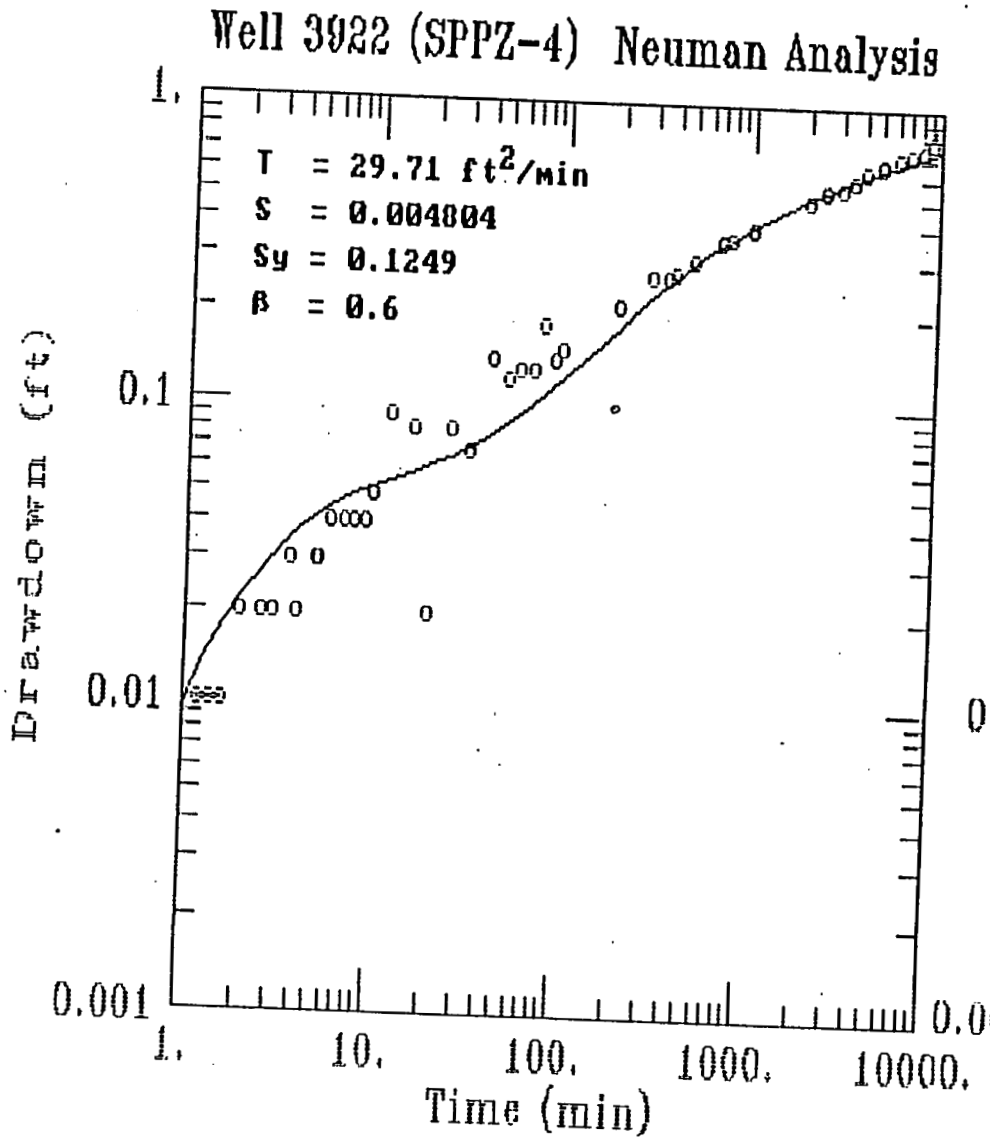
19148

Computer Curve Matching



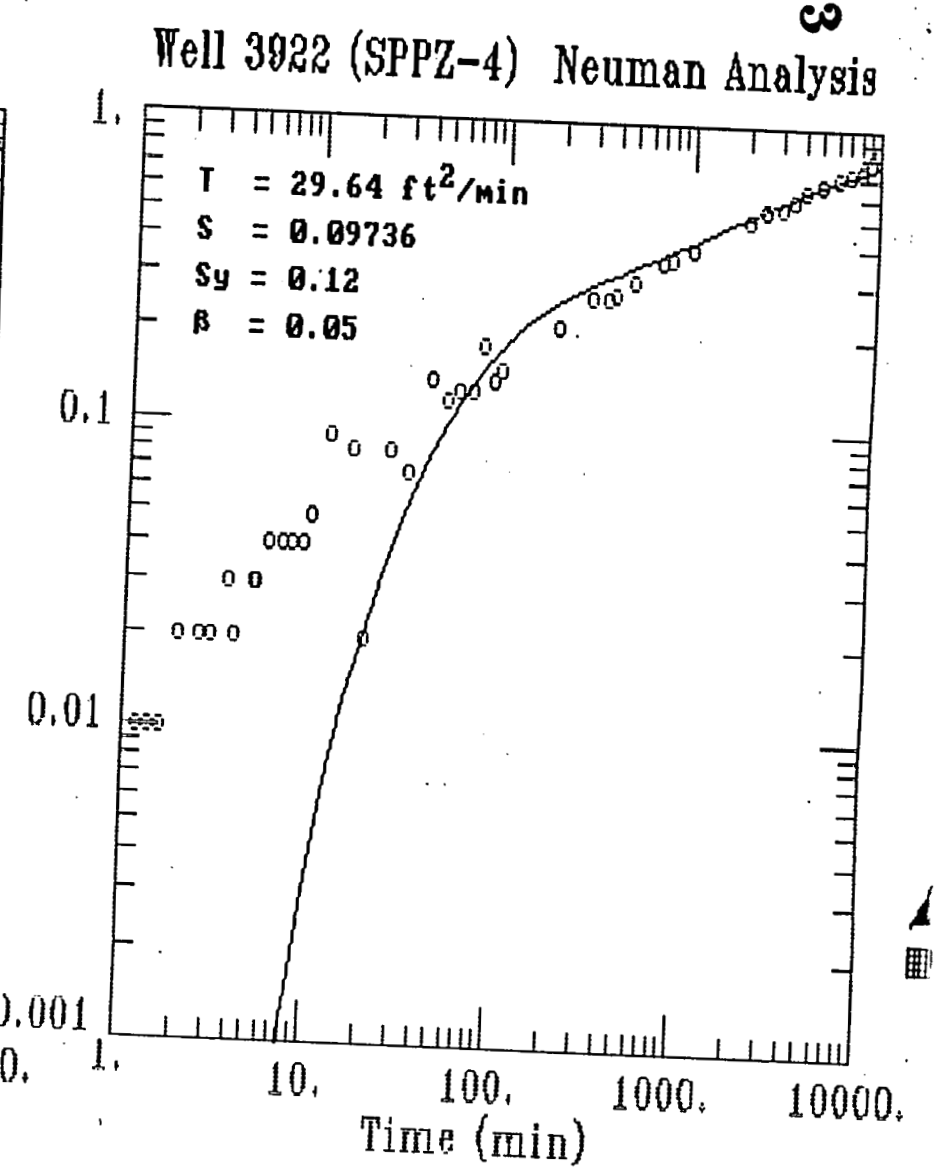
4783

Visual Curve Matching



21148

Computer Curve Matching



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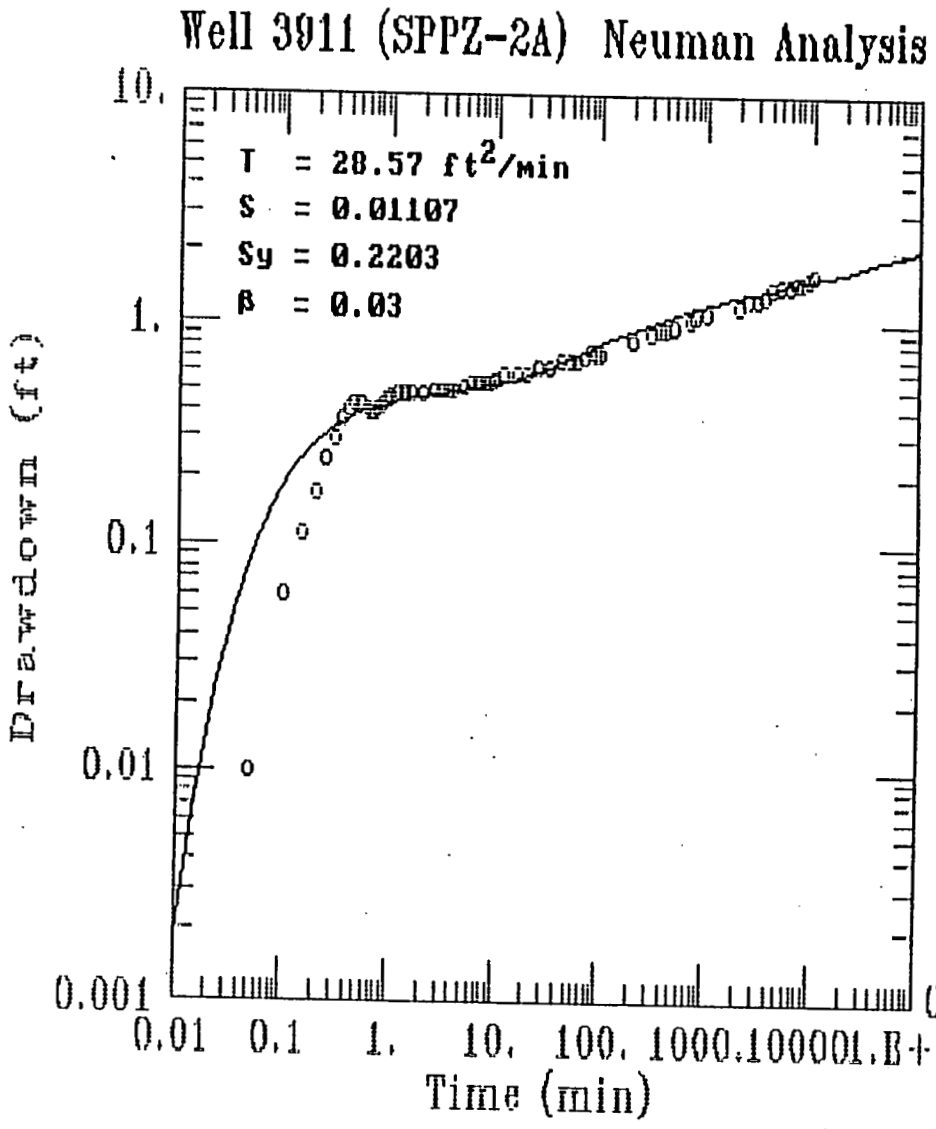
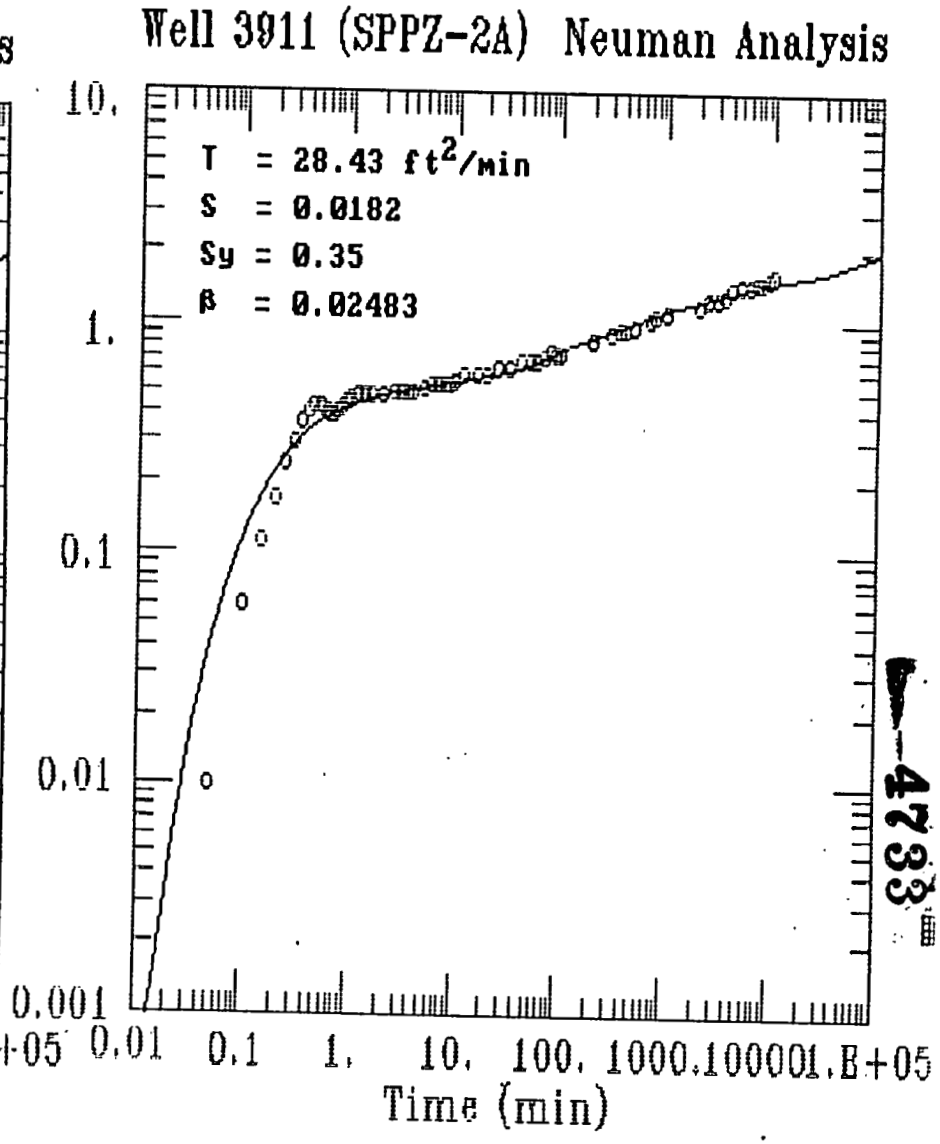
Visual Curve Matching

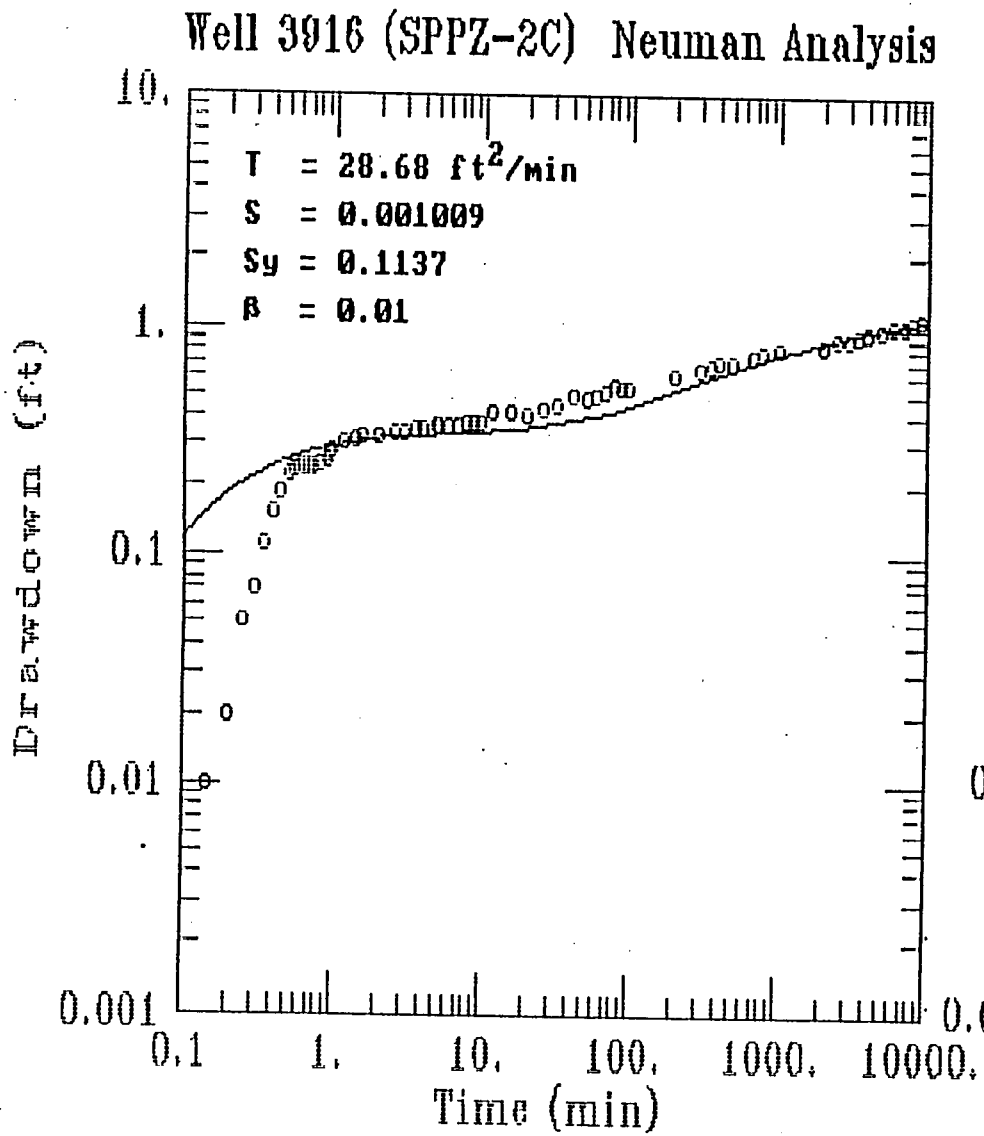


Computer Curve Matching

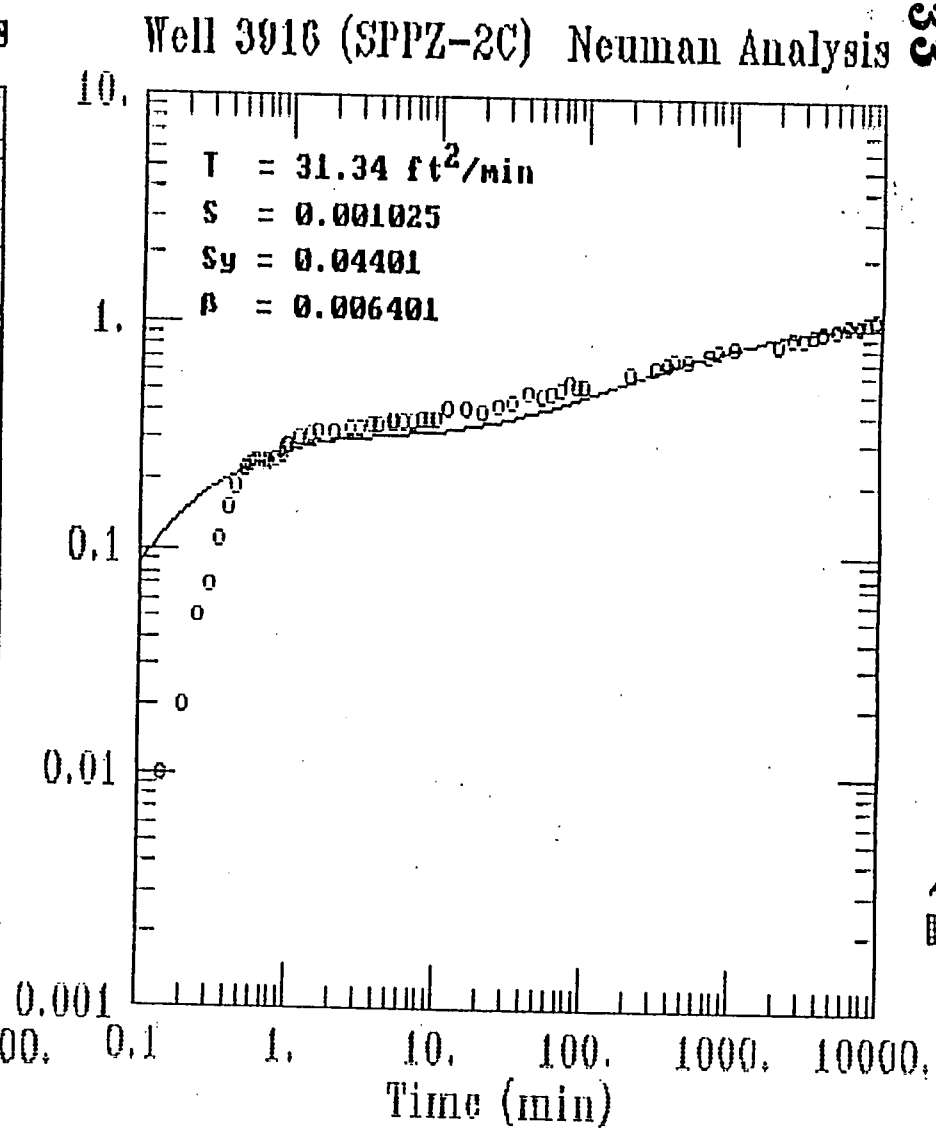


4733

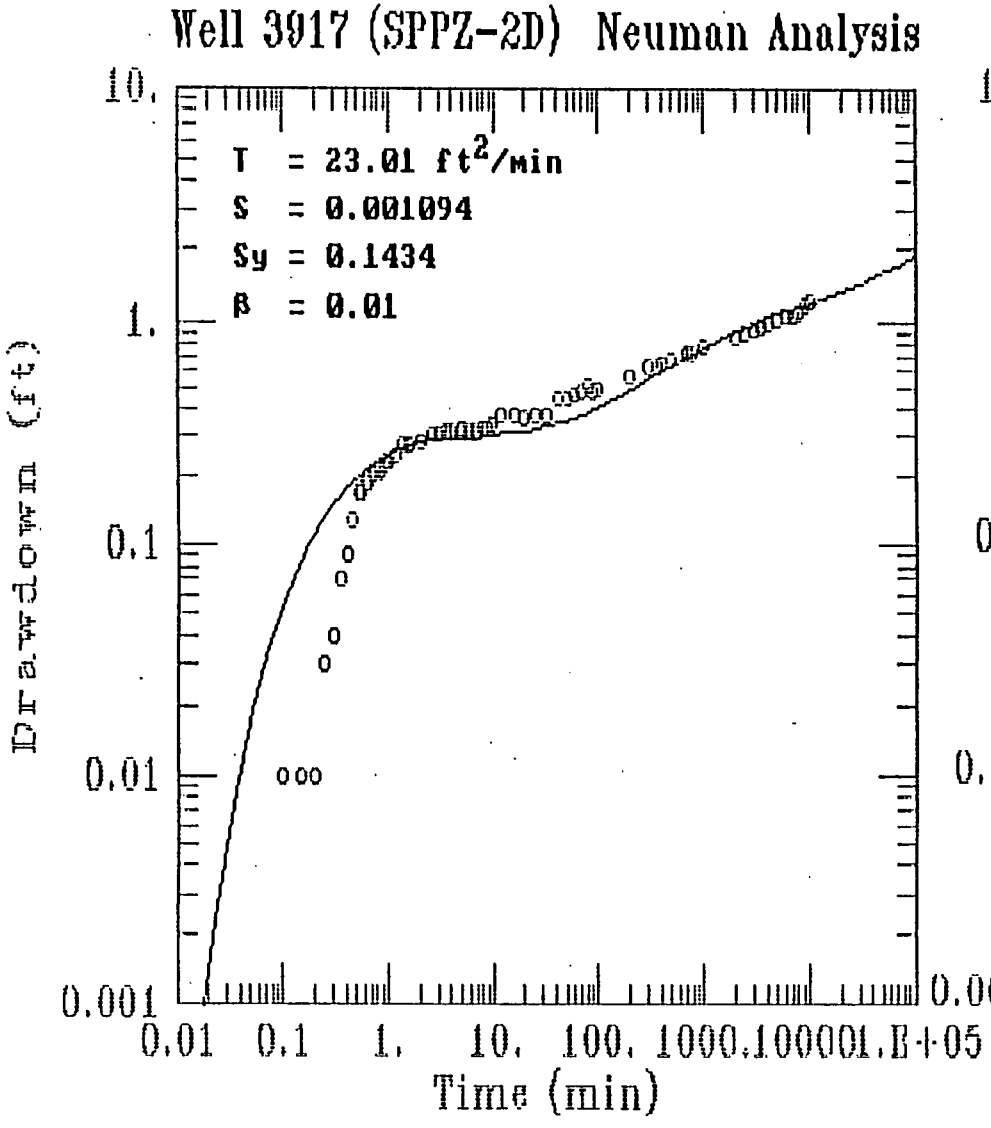
Visual Curve Matching



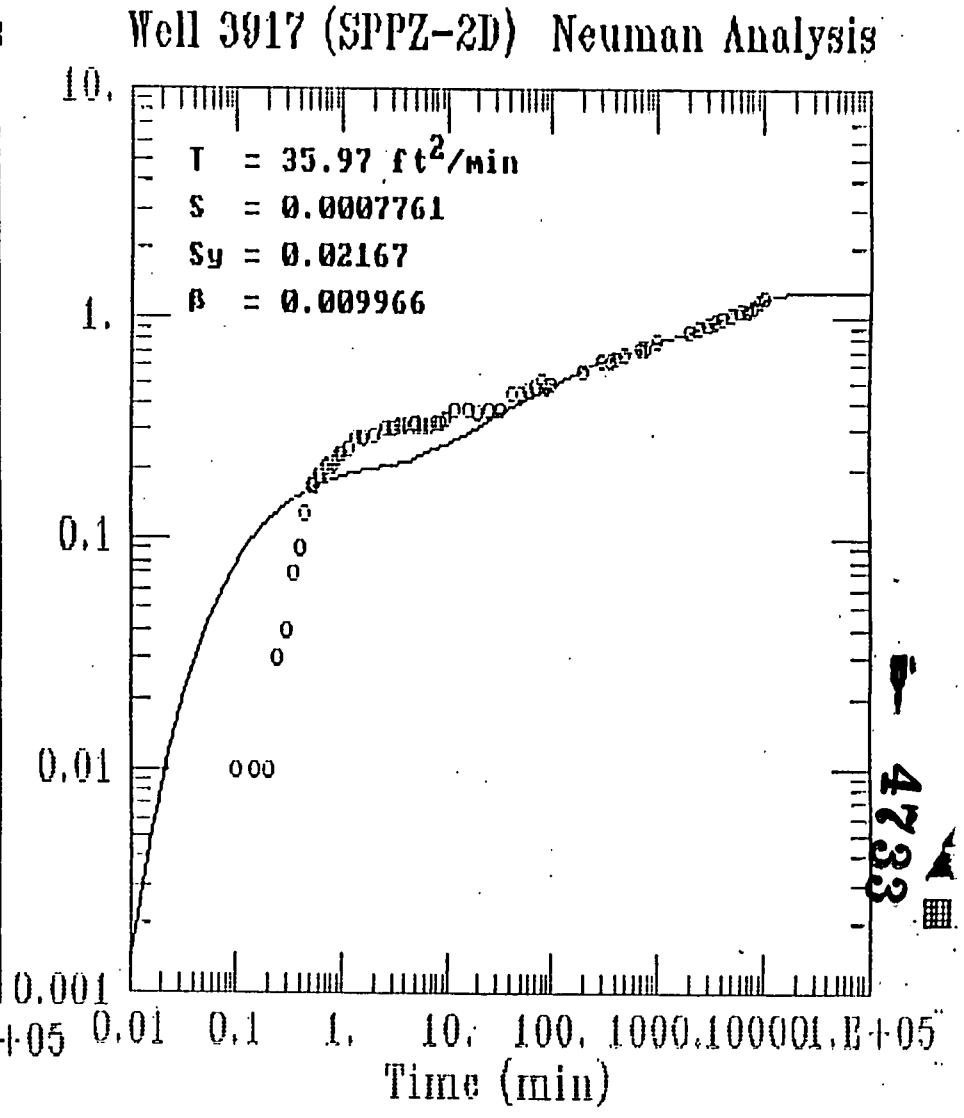
Computer Curve Matching



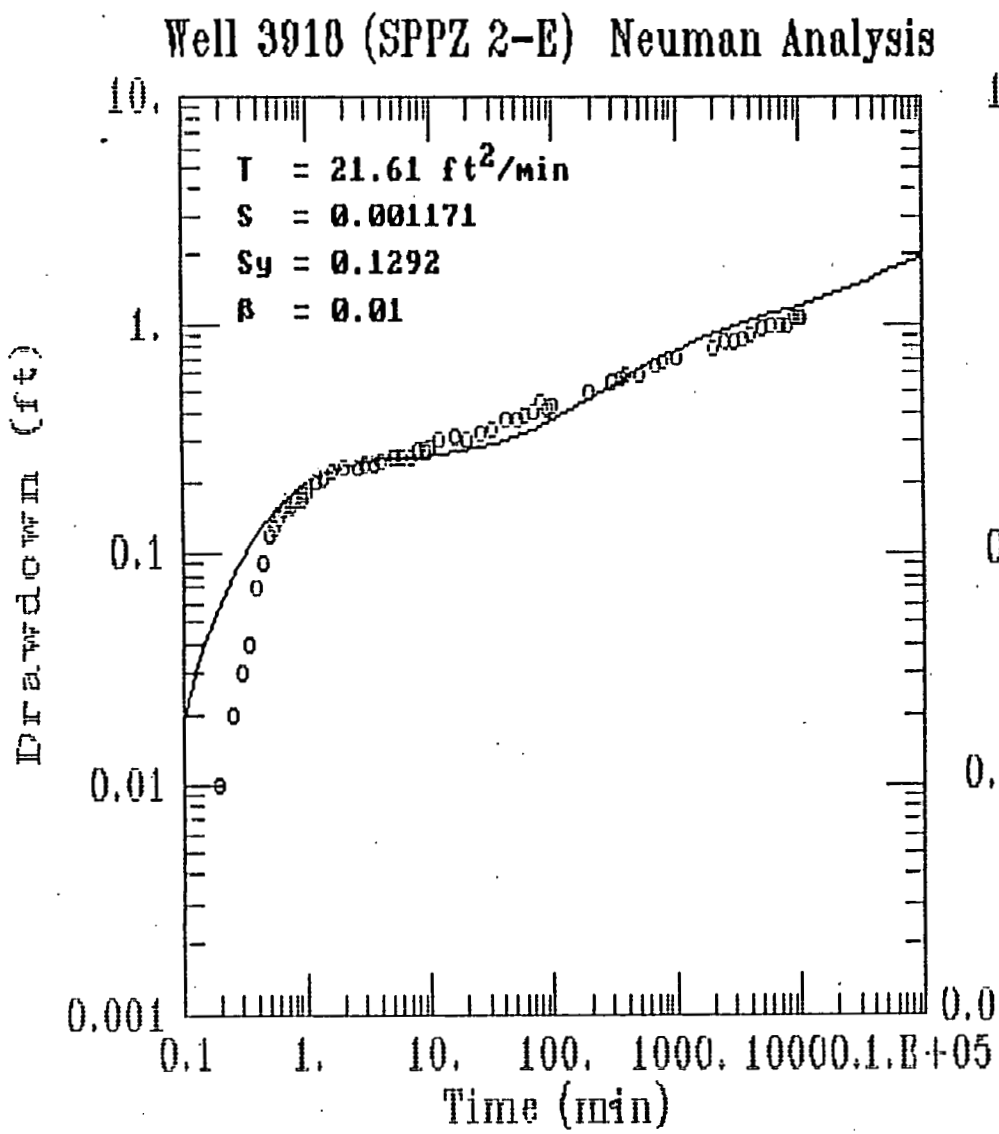
Visual Curve Matching



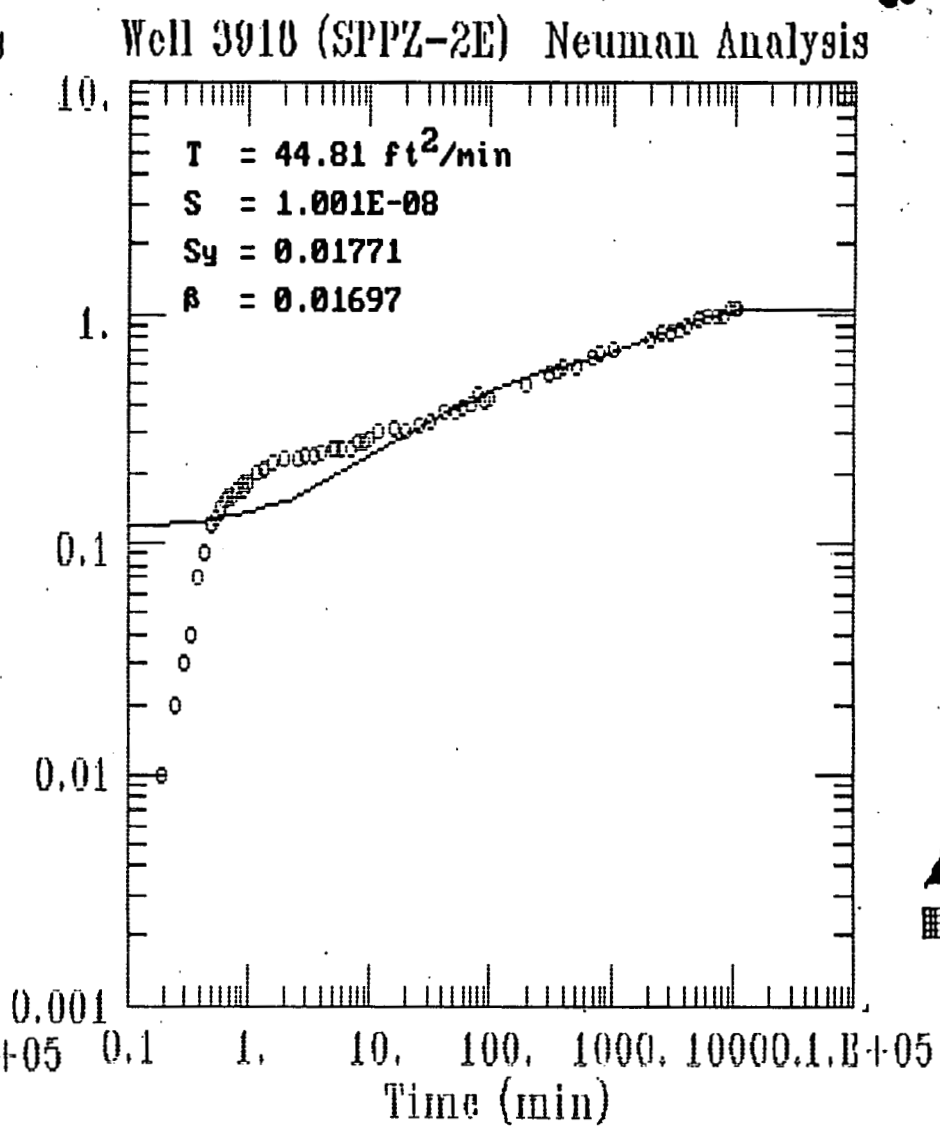
Computer Curve Matching



Visual Curve Matching



Computer Curve Matching



4733

4733 25/48

A Q T E S O L V

A Program for Automatic Estimation of Aquifer Coefficients From Aquifer Test Data

By:

Glenn M. Duffield
and
James O. Rumbaugh, III

Geraghty & Miller Modeling Group
1895 Preston White Drive, Suite 301
Reston, VA 22091

(703) 476 - 0335

A Q T E S O L V is a user-friendly program designed to analyze data from aquifer tests automatically. Aquifer coefficients for a variety of aquifer test conditions can be estimated by A Q T E S O L V, including the following:

- confined aquifers, unconfined aquifers, and leaky aquifers
- pumping tests, injection tests, recovery tests, and slug tests

Features:

- Interactive, menu-driven program design
- Nonlinear least-squares estimation of aquifer coefficients
- Statistical analysis of results
- Complete graphical display of results

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4733

A Q T E S O L V   R E S U L T S
Version 1.10

08/10/93 23:04:

==========

TEST DESCRIPTION

Data set........... 3910.d2
Data set title..... Well 3910 (SPPZ-1) Neuman Analysis

Knowns and Constants:
No. of data points.................. 71
Pumping rate........................ 56.82
Radius (distance) to obs. well...... 47.5
Aquifer saturated thickness......... 96

Partial Penetration Data:
Depth of top of well screen......... 4
Depth of bottom of well screen...... 44
Depth of top of obs. well screen..... 4
Depth of bottom of obs. well screen.. 44
Hyd. conductivity ratio (Kz/Kr)..... 0.15

==========

ANALYTICAL METHOD

Neuman (Unconfined Aquifer)

==========

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	2.8931E+001	+/-	7.2808E-001
S =	1.1803E-002	+/-	2.1264E-003
Sy =	2.5977E-001	+/-	3.0252E-002
ß =	4.4673E-002	+/-	2.8518E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 71
Number of estimated parameters.... 4
Degrees of freedom................ 67
Residual mean..................... 0.0001791
Residual standard deviation....... 0.02591
Residual variance................. 0.0006712

odel Residuals:

Time	Observed	Calculated	Residual	Weight
0.05	0.0099995	0.00045353	0.009546	0.25
0.099	0.019999	0.0090328	0.010966	0.25
0.148	0.049999	0.02565	0.024348	0.25
0.199	0.069998	0.045801	0.024197	0.25
0.248	0.099997	0.06536	0.034637	0.25
0.298	0.13	0.08419	0.045807	0.25
0.347	0.16	0.10156	0.058433	0.25
0.397	0.19	0.11773	0.072263	0.25
0.446	0.21	0.1322	0.077791	0.25
0.513	0.21	0.14978	0.060211	0.25
0.546	0.20999	0.15776	0.052237	0.25
0.595	0.20999	0.16875	0.041246	0.25
0.645	0.19999	0.17905	0.020948	0.25
0.694	0.19999	0.18828	0.011713	0.25
0.744	0.20999	0.19695	0.013046	0.25
0.809	0.21999	0.20753	0.012463	0.25
0.909	0.22999	0.22138	0.0086159	0.25
0.942	0.23999	0.2255	0.01449	0.25
0.992	0.23999	0.23138	0.0086119	0.25
1.189	0.24999	0.25091	-0.00091924	0.5
1.388	0.25999	0.26616	-0.0061785	0.5
1.587	0.25998	0.27825	-0.018269	0.5
1.983	0.26998	0.29607	-0.02609	0.5
2.578	0.28997	0.31373	-0.02376	0.5
2.975	0.28997	0.3221	-0.032132	0.5
3.57	0.29996	0.33111	-0.031146	0.5
3.966	0.30996	0.33623	-0.026271	0.5
4.958	0.31995	0.34628	-0.026333	0.5
5.157	0.30995	0.34796	-0.03801	0.5
5.95	0.30994	0.35382	-0.043886	0.5
6.941	0.31993	0.35981	-0.03988	0.5
7.933	0.31992	0.36477	-0.04485	0.5
8.924	0.32991	0.36897	-0.039065	0.5
9.916	0.3399	0.37263	-0.032728	0.5
11.899	0.37988	0.37872	0.0011528	1
15.864	0.38984	0.3882	0.0016319	1
19.832	0.35979	0.39581	-0.036014	1
25.78	0.38973	0.40563	-0.0159	1
31.73	0.40967	0.41458	-0.0049105	1
41.646	0.46957	0.42845	0.041119	1
51.562	0.45946	0.4415	0.017968	1
59.494	0.46938	0.45141	0.017971	1
69.409	0.48928	0.46333	0.025947	1
79.325	0.53917	0.47471	0.064468	1
89.241	0.50907	0.48558	0.023495	1
99.157	0.53897	0.49597	0.042994	1
153.37	0.5284	0.54577	-0.017363	1
198.31	0.60793	0.57989	0.028049	1
247.37	0.58742	0.61302	-0.025593	1
297.47	0.6869	0.6409	0.046005	1
356.96	0.67628	0.6694	0.0068829	1
396.63	0.69587	0.68614	0.0097254	1
495.78	0.71484	0.7223	-0.007463	1
596.37	0.72379	0.75257	-0.028783	1

694.1	0.77277	0.77753	-0.0047649	1
793.25	0.79174	0.79949	-0.0077497	1
1002.4	0.78956	0.83782	-0.048264	1
1011.4	0.81947	0.83929	-0.019826	1
1547.4	0.85388	0.90851	-0.054625	1
2003	0.91914	0.95012	-0.030986	1
2498.8	0.96397	0.98558	-0.021607	1
2994.5	0.97881	1.0145	-0.035653	1
3450.7	1.0041	1.037	-0.03295	1
4005.9	1.0383	1.0607	-0.022398	1
4997.5	1.0879	1.0956	-0.0076546	1
6008.9	1.1074	1.1246	-0.017198	1
7000.5	1.1471	1.1487	-0.0015769	1
7992	1.1668	1.1696	-0.0028321	1
9003.4	1.2362	1.1885	0.0477	1
9995	1.2859	1.2052	0.080654	1
10193	1.2738	1.2084	0.065431	1

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A Q T E S O L V   R E S U L T S
Version 1.10

8/14/93 08:57:31

===

TEST DESCRIPTION

ata set........... 3911.dat
ata set title..... Well 3911 (SPPZ-2A) Neuman Analysis

nowns and Constants:
- No. of data points.................. 66
- Pumping rate........................ 56.82
- Radius (distance) to obs. well...... 19.9
- Aquifer saturated thickness......... 96

artial Penetration Data:
- Depth of top of well screen......... 4
- Depth of bottom of well screen...... 44
- Depth of top of obs. well screen..... 4
- Depth of bottom of obs. well screen.. 44
- Hyd. conductivity ratio (Kz/Kr)..... 0.15

===

ANALYTICAL METHOD

euman (Unconfined Aquifer)

===

RESULTS FROM STATISTICAL CURVE MATCHING

TATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	2.8430E+001	+/-	6.2051E-001
S =	1.8199E-002	+/-	4.8041E-003
Sy =	3.5000E-001	+/-	4.9246E-002
ß =	2.4826E-002	+/-	2.1372E-003

NALYSIS OF MODEL RESIDUALS

esidual = calculated - observed
eighted residual = residual * weight

eighted Residual Statistics:
- Number of residuals............... 66
- Number of estimated parameters.... 4
- Degrees of freedom................ 62
- Residual mean..................... -0.001631
- Residual standard deviation....... 0.03429
- Residual variance................. 0.001176

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.05	0.0099995	0.043473	-0.033473	0.25
0.099	0.059999	0.11876	-0.058758	0.25
0.148	0.11	0.17784	-0.067839	0.25
0.199	0.17	0.22548	-0.055484	0.25
0.248	0.24	0.26087	-0.020871	0.25
0.298	0.29	0.28967	0.00032606	0.25
0.347	0.36	0.31269	0.047306	0.25
0.397	0.4	0.33208	0.067916	0.25
0.446	0.43	0.34737	0.082624	0.25
0.513	0.43	0.36539	0.064606	0.25
0.546	0.41999	0.37299	0.047004	0.25
0.595	0.39999	0.38302	0.016971	0.25
0.645	0.38999	0.39196	-0.0019709	0.25
0.694	0.38999	0.39968	-0.0096826	0.25
0.744	0.39999	0.40665	-0.0066587	0.25
0.809	0.40999	0.4146	-0.0046089	0.25
0.909	0.43999	0.42488	0.015114	0.25
0.942	0.44999	0.42785	0.022144	0.25
0.992	0.45999	0.43201	0.027978	0.25
1.189	0.46999	0.44539	0.024601	0.5
1.388	0.46999	0.4555	0.01449	0.5
1.587	0.46998	0.46344	0.0065461	0.5
1.983	0.47998	0.47534	0.0046415	0.5
2.578	0.48997	0.48784	0.0021303	0.5
2.975	0.49997	0.49415	0.0058158	0.5
3.57	0.49996	0.50181	-0.0018502	0.5
3.966	0.49996	0.50604	-0.0060776	0.5
4.958	0.50995	0.51475	-0.0048054	0.5
5.157	0.50995	0.51626	-0.0063119	0.5
5.95	0.51994	0.52168	-0.0017464	0.5
6.941	0.51993	0.52753	-0.007597	0.5
7.933	0.51992	0.53267	-0.012756	0.5
8.924	0.52991	0.53735	-0.0074403	0.5
9.916	0.5399	0.5417	-0.0018005	0.5
11.899	0.57988	0.54974	0.030135	1
15.864	0.58984	0.56433	0.025502	1
19.832	0.57979	0.57776	0.002034	1
25.78	0.61973	0.59658	0.023148	1
31.73	0.62967	0.61544	0.01423	1
41.646	0.67957	0.64209	0.037481	1
51.562	0.66946	0.66605	0.0034138	1
59.494	0.67938	0.68357	-0.0041921	1
69.409	0.69928	0.7037	-0.0044278	1
79.325	0.73917	0.72213	0.017045	1
89.241	0.70907	0.73908	-0.030011	1
99.157	0.72897	0.75475	-0.02578	1
198.31	0.83793	0.86595	-0.028016	1
297.47	0.8969	0.93406	-0.037163	1
356.96	0.90628	0.96471	-0.058426	1
396.63	0.91587	0.98239	-0.066523	1
495.78	0.95484	1.0197	-0.064843	1
694.1	1.0128	1.0753	-0.062516	1
793.25	1.0417	1.0972	-0.055498	1
1011.4	1.0895	1.1369	-0.047486	1
2003	1.1791	1.2477	-0.068533	1

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2498.8	1.234	1.2838	-0.049798	1
2994.5	1.2588	1.3136	-0.054744	1
3450.7	1.2941	1.3369	-0.042876	1
4005.9	1.3683	1.3614	0.0068705	1
4997.5	1.4279	1.3968	0.031126	1
6008.9	1.4474	1.425	0.022421	1
7000.5	1.4871	1.4472	0.039921	1
7992	1.4968	1.4655	0.031228	1
9003.4	1.5562	1.4815	0.074741	1
9995	1.6059	1.4952	0.11073	1
10193	1.5838	1.4977	0.086104	1

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                         A Q T E S O L V   R E S U L T S
                                 Version  1.10

08/10/93                                                                   23:01

================================================================================
                                TEST DESCRIPTION

Data set........... 3916.d2
Data set title..... Well 3916 (SPPZ-2C)  Neuman Analysis

Knowns and Constants:
   No. of data points.................... 62
   Pumping rate.......................... 56.82
   Radius (distance) to obs. well...... 29.2
   Aquifer saturated thickness......... 96

Partial Penetration Data:
   Depth of top of well screen......... 4
   Depth of bottom of well screen...... 44
   Depth of top of obs. well screen..... 4
   Depth of bottom of obs. well screen.. 44
   Hyd. conductivity ratio (Kz/Kr)..... 0.15

================================================================================
                                ANALYTICAL METHOD

Neuman (Unconfined Aquifer)

================================================================================
                      RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

          Estimate            Std. Error
   T  =   3.1339E+001 +/-    1.5307E+000
   S  =   1.0252E-003 +/-    4.9948E-004
   Sy =   4.4012E-002 +/-    9.6958E-003
   ß  =   6.4014E-003 +/-    8.9690E-004

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals............... 62
   Number of estimated parameters.... 4
   Degrees of freedom................ 58
   Residual mean..................... 0.01084
   Residual standard deviation....... 0.03875
   Residual variance................. 0.001502
```

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.148	0.0099985	0.12027	-0.11027	0.25
0.199	0.019998	0.14717	-0.12717	0.25
0.248	0.049997	0.16703	-0.11703	0.25
0.298	0.069997	0.18305	-0.11305	0.25
0.347	0.11	0.19577	-0.085777	0.25
0.397	0.15	0.20649	-0.056498	0.25
0.446	0.19	0.21538	-0.025382	0.25
0.513	0.22	0.2255	-0.0055024	0.25
0.546	0.22999	0.22982	0.00017331	0.25
0.595	0.23999	0.2356	0.0043981	0.25
0.645	0.23999	0.24083	-0.00083267	0.25
0.694	0.23999	0.24541	-0.0054196	0.25
0.744	0.23999	0.24963	-0.0096405	0.25
0.809	0.24999	0.25454	-0.0045442	0.25
0.909	0.25999	0.26104	-0.001054	0.25
0.942	0.26999	0.26296	0.0070293	0.25
0.992	0.27999	0.26568	0.014311	0.25
1.189	0.29999	0.27463	0.02536	0.5
1.388	0.30999	0.28156	0.028424	0.5
1.587	0.31998	0.28703	0.032951	0.5
1.983	0.32998	0.29503	0.03495	0.5
2.578	0.33997	0.30282	0.037151	0.5
2.975	0.33997	0.30641	0.033559	0.5
3.57	0.34996	0.31043	0.039533	0.5
3.966	0.34996	0.31253	0.037429	0.5
4.958	0.35995	0.31666	0.043285	0.5
5.157	0.35995	0.31737	0.042578	0.5
5.95	0.35994	0.31994	0.040003	0.5
6.941	0.35993	0.3228	0.037129	0.5
7.933	0.36992	0.32546	0.04446	0.5
8.924	0.36991	0.32794	0.041966	0.5
9.916	0.3799	0.33041	0.049489	0.5
11.899	0.40988	0.3352	0.074681	1
15.864	0.40984	0.34437	0.065462	1
19.832	0.39979	0.35315	0.046646	1
25.78	0.42973	0.36564	0.064096	1
31.73	0.43967	0.37747	0.062197	1
41.646	0.48957	0.39571	0.093861	1
51.562	0.47946	0.41241	0.067053	1
59.494	0.48938	0.42481	0.064569	1
69.409	0.50928	0.43926	0.07002	1
79.325	0.53917	0.45267	0.086506	1
89.241	0.51907	0.46516	0.053907	1
99.157	0.52897	0.47685	0.05212	1
198.31	0.59793	0.56357	0.034367	1
297.47	0.6569	0.61968	0.037219	1
356.96	0.66628	0.64563	0.020656	1
396.63	0.68587	0.66075	0.025116	1
495.78	0.70484	0.69306	0.011781	1
694.1	0.75277	0.74231	0.010462	1
793.25	0.77174	0.76188	0.0098523	1
1011.4	0.79947	0.79725	0.0022194	1
2003	0.83914	0.88949	-0.050356	1
2498.8	0.88397	0.91647	-0.032501	1
2994.5	0.88881	0.93842	-0.049615	1

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3050.7	0.90406	0.95617	-0.05211	1
4005.9	0.93827	0.97594	-0.037663	1
4997.5	0.96794	1.0084	-0.040435	1
6008.9	1.0074	1.0391	-0.031686	1
7000.5	1.0271	1.0674	-0.040362	1
7992	1.0368	1.0942	-0.057485	1
9003.4	1.1062	1.1201	-0.013867	1

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A Q T E S O L V   R E S U L T S
Version 1.10

8/10/93 22:54:34

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TEST DESCRIPTION

ata set........... 3917.d2
ata set title..... Well 3917 (SPPZ-2D) Neuman Analysis

nowns and Constants:
No. of data points................. 65
Pumping rate....................... 56.82
Radius (distance) to obs. well...... 25.1
Aquifer saturated thickness......... 96

artial Penetration Data:
Depth of top of well screen......... 4
Depth of bottom of well screen...... 44
Depth of top of obs. well screen..... 4
Depth of bottom of obs. well screen.. 44
Hyd. conductivity ratio (Kz/Kr)..... 0.15

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ANALYTICAL METHOD

euman (Unconfined Aquifer)

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RESULTS FROM STATISTICAL CURVE MATCHING

TATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	3.5973E+001	+/-	1.5530E+000
S =	7.7606E-004	+/-	6.1081E-004
Sy =	2.1665E-002	+/-	4.3354E-003
ß =	9.9658E-003	+/-	2.9378E-003

NALYSIS OF MODEL RESIDUALS

esidual = calculated - observed
eighted residual = residual * weight

eighted Residual Statistics:
Number of residuals.............. 65
Number of estimated parameters.... 4
Degrees of freedom............... 61
Residual mean.................... 0.009628
Residual standard deviation....... 0.03353
Residual variance................ 0.001124

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.099	0.009999	0.079202	-0.069203	0.25
0.148	0.0099985	0.10374	-0.093741	0.25
0.199	0.0099979	0.12122	-0.11123	0.25
0.248	0.029997	0.13346	-0.10346	0.25
0.298	0.039997	0.14298	-0.10299	0.25
0.347	0.069996	0.15034	-0.080347	0.25
0.397	0.089996	0.15638	-0.066384	0.25
0.446	0.13	0.16124	-0.031243	0.25
0.513	0.17	0.16663	0.0033698	0.25
0.546	0.16999	0.16887	0.0011289	0.25
0.595	0.18999	0.17179	0.018201	0.25
0.645	0.18999	0.17438	0.015616	0.25
0.694	0.19999	0.17659	0.023406	0.25
0.744	0.20999	0.17862	0.031376	0.25
0.809	0.20999	0.18087	0.029124	0.25
0.909	0.21999	0.18377	0.036223	0.25
0.942	0.22999	0.18461	0.045384	0.25
0.992	0.22999	0.18578	0.044206	0.25
1.189	0.24999	0.18961	0.060375	0.5
1.388	0.26999	0.19263	0.077359	0.5
1.587	0.26998	0.19515	0.074837	0.5
1.983	0.27998	0.19939	0.080586	0.5
2.578	0.29997	0.20494	0.095038	0.5
2.975	0.29997	0.20839	0.091576	0.5
3.57	0.30996	0.21339	0.096573	0.5
3.966	0.30996	0.21662	0.093335	0.5
4.958	0.31995	0.22447	0.095481	0.5
5.157	0.30995	0.226	0.083947	0.5
5.95	0.30994	0.23198	0.077961	0.5
6.941	0.30993	0.23918	0.070755	0.5
7.933	0.31992	0.2461	0.073824	0.5
8.924	0.32991	0.25275	0.077164	0.5
9.916	0.3399	0.25915	0.080747	0.5
11.899	0.36988	0.27128	0.098598	1
15.864	0.36984	0.29314	0.076696	1
19.832	0.35979	0.31238	0.047408	1
25.78	0.37973	0.33737	0.042358	1
31.73	0.37967	0.35878	0.020892	1
41.646	0.43957	0.3886	0.050964	1
51.562	0.44946	0.41313	0.036331	1
59.494	0.45938	0.43	0.029377	1
69.409	0.46928	0.44847	0.020805	1
79.325	0.50917	0.46467	0.044504	1
89.241	0.47907	0.47908	-9.6763E-006	1
99.157	0.49897	0.49205	0.0069151	1
198.31	0.55793	0.579	-0.021069	1
297.47	0.6269	0.63071	-0.0038071	1
356.96	0.63628	0.65359	-0.017307	1
396.63	0.65587	0.66652	-0.010651	1
495.78	0.67484	0.69288	-0.018045	1
694.1	0.72277	0.7297	-0.00693	1
793.25	0.73174	0.74362	-0.011885	1
1011.4	0.75946	0.76908	-0.0096187	1
2003	0.84914	0.85705	-0.0079103	1
2498.8	0.89397	0.89449	-0.0005225	1

2994.5	0.91881	0.92883	-0.010026	1
3450.7	0.93406	0.95792	-0.023865	1
4005.9	0.96827	0.99036	-0.022092	1
4997.5	1.0079	1.0411	-0.033133	1
6008.9	1.0474	1.0846	-0.037146	1
7000.5	1.0671	1.1204	-0.053311	1
7992	1.0968	1.1506	-0.053817	1
9003.4	1.1562	1.1764	-0.020234	1
9995	1.2059	1.1978	0.0080747	1
10193	1.1938	1.2017	-0.007838	1

A Q T E S O L V   R E S U L T S
Version 1.10

08/17/93 14:58

TEST DESCRIPTION

Data set........... 3918.dat
Data set title..... Well 3918 (SPPZ-2E) Neuman Analysis

Knowns and Constants:
- No. of data points................... 63
- Pumping rate......................... 56.82
- Radius (distance) to obs. well...... 24.3
- Aquifer saturated thickness......... 96

Partial Penetration Data:
- Depth of top of well screen......... 4
- Depth of bottom of well screen...... 44
- Depth of top of obs. well screen..... 4
- Depth of bottom of obs. well screen.. 44
- Hyd. conductivity ratio (Kz/Kr)..... 0.15

ANALYTICAL METHOD

Neuman (Unconfined Aquifer)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	4.4811E+001	+/-	8.1759E-001
S =	1.0001E-008	+/-	3.0365E-004
Sy =	1.7710E-002	+/-	2.1046E-003
Ã =	1.6965E-002	+/-	4.4531E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 63
- Number of estimated parameters.... 4
- Degrees of freedom................ 59
- Residual mean..................... 0.006112
- Residual standard deviation....... 0.02244
- Residual variance................. 0.0005037

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.199	0.0099979	0.12077	-0.11078	0.25
0.248	0.019997	0.12168	-0.10168	0.25
0.298	0.029997	0.12259	-0.092597	0.25
0.347	0.039996	0.12349	-0.083491	0.25
0.397	0.069996	0.1244	-0.054401	0.25
0.446	0.089995	0.12528	-0.035288	0.25
0.513	0.12	0.12649	-0.0064927	0.25
0.546	0.12999	0.12708	0.002916	0.25
0.595	0.13999	0.12795	0.012043	0.25
0.645	0.14999	0.12884	0.021156	0.25
0.694	0.15999	0.1297	0.030292	0.25
0.744	0.15999	0.13058	0.029415	0.25
0.809	0.16999	0.13171	0.038277	0.25
0.909	0.16999	0.13344	0.036549	0.25
0.942	0.17999	0.13401	0.045982	0.25
0.992	0.17999	0.13486	0.045129	0.25
1.189	0.19999	0.13818	0.06181	0.5
1.388	0.20999	0.14146	0.06853	0.5
1.587	0.21998	0.14466	0.07532	0.5
1.983	0.22998	0.15084	0.079136	0.5
2.578	0.22997	0.15964	0.070329	0.5
2.975	0.23997	0.16523	0.074736	0.5
3.57	0.23996	0.17321	0.066752	0.5
3.966	0.24996	0.17827	0.071686	0.5
4.958	0.25995	0.19018	0.069771	0.5
5.157	0.25995	0.19244	0.067505	0.5
5.95	0.25994	0.20109	0.058843	0.5
6.941	0.25993	0.21114	0.048783	0.5
7.933	0.26992	0.22046	0.049458	0.5
8.924	0.26991	0.22911	0.040796	0.5
9.916	0.2799	0.23719	0.042706	0.5
11.899	0.29988	0.25187	0.048009	1
15.864	0.30984	0.27657	0.033263	1
19.832	0.29979	0.2968	0.0029886	1
25.78	0.32973	0.32144	0.0082915	1
31.73	0.33967	0.34141	-0.0017445	1
41.646	0.37957	0.36798	0.011585	1
51.562	0.37946	0.38907	-0.0096039	1
59.494	0.38938	0.40327	-0.013893	1
69.409	0.39928	0.41865	-0.019368	1
79.325	0.43917	0.43203	0.0071448	1
89.241	0.40907	0.4439	-0.034827	1
99.157	0.42897	0.45457	-0.025604	1
198.31	0.48793	0.52554	-0.037603	1
297.47	0.5469	0.56469	-0.017788	1
356.96	0.55628	0.58089	-0.024608	1
396.63	0.57587	0.58988	-0.014015	1
495.78	0.59484	0.60843	-0.01359	1
694.1	0.64277	0.63725	0.0055222	1
793.25	0.66174	0.64983	0.01191	1
1011.4	0.68947	0.6755	0.013964	1
2003	0.77914	0.77226	0.0068766	1
2498.8	0.82397	0.81106	0.012915	1
2994.5	0.83881	0.84462	-0.0058147	1
3450.7	0.86406	0.87149	-0.007434	1

4005.9	0.89827	0.89972	-0.0014454	1
4997.5	0.93794	0.94003	-0.002083	1
6008.9	0.96741	0.97072	-0.0033098	1
7000.5	0.98708	0.99317	-0.0060915	1
7992	0.99675	1.01	-0.013228	1
9003.4	1.0462	1.0228	0.023436	1
9995	1.0559	1.0321	0.023753	1
10193	1.0438	1.0337	0.010115	1

AQTESOLV RESULTS
Version 1.10

)8/10/93 22:47:11

TEST DESCRIPTION

)ata set........... 3921.d2
)ata set title..... Well 3921 (SPPZ-3) Neuman Analysis

<nowns and Constants:
No. of data points.................. 65
Pumping rate........................ 56.82
Radius (distance) to obs. well...... 48.3
Aquifer saturated thickness......... 96

?artial Penetration Data:
Depth of top of well screen......... 4
Depth of bottom of well screen...... 44
Depth of top of obs. well screen..... 4
Depth of bottom of obs. well screen.. 44
Hyd. conductivity ratio (Kz/Kr)..... 0.15

ANALYTICAL METHOD

Jeuman (Unconfined Aquifer)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	3.0332E+001	+/-	1.0143E+000
S =	1.8475E-002	+/-	3.1312E-003
Sy =	3.1208E-001	+/-	4.9148E-002
ß =	4.1412E-002	+/-	3.1829E-003

NALYSIS OF MODEL RESIDUALS

esidual = calculated - observed
eighted residual = residual * weight

eighted Residual Statistics:
Number of residuals............... 65
Number of estimated parameters.... 4
Degrees of freedom................ 61
Residual mean..................... 0.0009423
Residual standard deviation....... 0.02841
Residual variance................. 0.000807

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.099	0.009999	0.0017915	0.0082075	0.25
0.148	0.019999	0.0079924	0.012006	0.25
0.199	0.029998	0.018059	0.011939	0.25
0.248	0.059997	0.029525	0.030472	0.25
0.298	0.069997	0.041965	0.028031	0.25
0.347	0.099996	0.054323	0.045674	0.25
0.397	0.13	0.066627	0.063369	0.25
0.446	0.15	0.078181	0.071814	0.25
0.513	0.18	0.093379	0.086616	0.25
0.546	0.17999	0.10045	0.07954	0.25
0.595	0.17999	0.1105	0.069494	0.25
0.645	0.17999	0.12018	0.059812	0.25
0.694	0.17999	0.12912	0.050875	0.25
0.744	0.17999	0.13757	0.042424	0.25
0.809	0.18999	0.14804	0.04195	0.25
0.909	0.19999	0.16274	0.037255	0.25
0.942	0.20999	0.16722	0.042768	0.25
0.992	0.20999	0.17371	0.036276	0.25
1.189	0.21999	0.19646	0.023526	0.5
1.388	0.22999	0.21498	0.015008	0.5
1.587	0.23998	0.23025	0.0097298	0.5
1.983	0.23998	0.25377	-0.013789	0.5
2.578	0.24997	0.278	-0.028024	0.5
2.975	0.25997	0.28959	-0.029618	0.5
3.57	0.25996	0.30275	-0.04279	0.5
3.966	0.26996	0.30961	-0.039653	0.5
4.958	0.26995	0.32206	-0.052112	0.5
5.157	0.27995	0.32417	-0.044227	0.5
5.95	0.28994	0.33147	-0.041532	0.5
6.941	0.28993	0.33876	-0.048836	0.5
7.933	0.29992	0.34471	-0.044796	0.5
8.924	0.29991	0.34972	-0.049816	0.5
9.916	0.3099	0.35405	-0.04415	0.5
11.899	0.33988	0.36124	-0.021363	1
15.864	0.35984	0.37206	-0.012223	1
19.832	0.33979	0.38017	-0.040381	1
25.78	0.36973	0.38985	-0.020118	1
31.73	0.37967	0.39794	-0.018272	1
41.646	0.44957	0.40973	0.039834	1
51.562	0.43946	0.42043	0.019033	1
59.494	0.45938	0.42852	0.030863	1
69.409	0.46928	0.43819	0.031087	1
79.325	0.50917	0.44746	0.061715	1
89.241	0.48907	0.45637	0.0327	1
99.157	0.51897	0.4649	0.054066	1
198.31	0.55793	0.53637	0.021566	1
297.47	0.6169	0.59076	0.02614	1
356.96	0.60628	0.61676	-0.010475	1
396.63	0.62587	0.63225	-0.0063772	1
495.78	0.66484	0.6659	-0.0010621	1
694.1	0.69277	0.71808	-0.025311	1
793.25	0.72174	0.73902	-0.017282	1
1011.4	0.74947	0.77716	-0.027695	1
2003	0.83914	0.88353	-0.044395	1
2498.8	0.87397	0.91756	-0.043591	1

2994.5	0.89881	0.94527	-0.046463	1
3450.7	0.91406	0.96689	-0.052836	1
4005.9	0.96827	0.98958	-0.021303	1
4997.5	1.0079	1.0231	-0.015116	1
6008.9	1.0474	1.0508	-0.0034232	1
7000.5	1.0771	1.0738	0.0032908	1
7992	1.0768	1.0937	-0.01694	1
9003.4	1.1562	1.1116	0.044583	1
9995	1.2059	1.1274	0.078479	1
10193	1.2038	1.1304	0.073432	1

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A Q T E S O L V   R E S U L T S

Version 1.10

08/15/93 07:49:

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TEST DESCRIPTION

Data set........... 3922.dat
Data set title..... Well 3922 (SPPZ-4) Neuman Analysis

Knowns and Constants:
No. of data points................. 46
Pumping rate....................... 56.82
Radius (distance) to obs. well...... 199.4
Aquifer saturated thickness......... 96

Partial Penetration Data:
Depth of top of well screen......... 4
Depth of bottom of well screen...... 44
Depth of top of obs. well screen..... 4
Depth of bottom of obs. well screen.. 44
Hyd. conductivity ratio (Kz/Kr)..... 0.15

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ANALYTICAL METHOD

Neuman (Unconfined Aquifer)

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RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

		Estimate		Std. Error
T	=	2.9641E+001	+/-	3.7019E+000
S	=	9.7355E-002	+/-	1.2485E-002
Sy	=	1.1999E-001	+/-	7.2018E-002
ß	=	5.0000E-002	+/-	1.2424E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals.............. 46
Number of estimated parameters.... 4
Degrees of freedom............... 42
Residual mean.................... 0.005686
Residual standard deviation....... 0.03244
Residual variance................ 0.001053

Model Residuals:

Time	Observed	Calculated	Residual	Weight
1.189	0.0099876	0.00016032	0.0098273	0.5
1.388	0.0099855	-0.00016494	0.01015	0.5
1.587	0.0099835	-0.00025741	0.010241	0.5
1.983	0.019979	-0.0001695	0.020149	0.5
2.578	0.019973	0	0.019973	0.5
2.975	0.019969	0	0.019969	0.5
3.57	0.029963	0	0.029963	0.5
3.966	0.019959	0	0.019959	0.5
4.958	0.029948	0	0.029948	0.5
5.157	0.029946	0	0.029946	0.5
5.95	0.039938	0.00024714	0.039691	0.5
6.941	0.039928	0.00054155	0.039386	0.5
7.933	0.039917	0.0010406	0.038877	0.5
8.924	0.039907	0.0017436	0.038164	0.5
9.916	0.049897	0.0026861	0.047211	0.5
11.899	0.089876	0.0052387	0.084637	1
15.864	0.079835	0.01257	0.067265	1
19.832	0.019793	0.021863	-0.0020694	1
25.78	0.079732	0.037542	0.042189	1
31.73	0.06967	0.053671	0.015998	1
41.646	0.13957	0.07927	0.060296	1
51.562	0.11946	0.10252	0.016946	1
59.494	0.12938	0.119	0.010379	1
69.409	0.12928	0.13712	-0.0078395	1
79.325	0.17917	0.15317	0.026006	1
89.241	0.13907	0.16731	-0.028245	1
99.157	0.14897	0.17987	-0.0309	1
198.31	0.20793	0.25554	-0.047605	1
297.47	0.2669	0.29346	-0.026556	1
356.96	0.26628	0.30993	-0.043644	1
396.63	0.27587	0.31951	-0.043644	1
495.78	0.30484	0.33971	-0.034876	1
694.1	0.35277	0.37382	-0.021053	1
793.25	0.36174	0.38848	-0.026742	1
1011.4	0.38947	0.41709	-0.027628	1
2003	0.48914	0.50995	-0.020811	1
2498.8	0.53397	0.54319	-0.0092147	1
2994.5	0.54881	0.57114	-0.02233	1
3450.7	0.57406	0.59456	-0.020508	1
4005.9	0.61827	0.61816	0.00010878	1
4997.5	0.65794	0.65335	0.0045944	1
6008.9	0.68741	0.68273	0.0046752	1
7000.5	0.71708	0.70705	0.010031	1
7992	0.72675	0.72809	-0.0013351	1
9003.4	0.79621	0.74694	0.049274	1
9995	0.84589	0.76344	0.082443	1

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A Q T E S O L V R E S U L T S
Version 1.10

08/11/93 07:40:

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TEST DESCRIPTION

Data set........... 3923.D2
Data set title..... Well 3923 (SPPZ-5) Neuman Analysis

Knowns and Constants:
No. of data points.................. 71
Pumping rate........................ 56.82
Radius (distance) to obs. well...... 49.2
Aquifer saturated thickness......... 96

Partial Penetration Data:
Depth of top of well screen......... 4
Depth of bottom of well screen...... 44
Depth of top of obs. well screen..... 4
Depth of bottom of obs. well screen.. 44
Hyd. conductivity ratio (Kz/Kr)..... 0.15

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ANALYTICAL METHOD

Neuman (Unconfined Aquifer)

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RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	2.8932E+001	+/-	7.2811E-001
S =	1.0995E-002	+/-	1.9812E-003
Sy =	2.4212E-001	+/-	2.8196E-002
ß =	4.4672E-002	+/-	2.8515E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 71
Number of estimated parameters.... 4
Degrees of freedom................ 67
Residual mean..................... 0.0001742
Residual standard deviation....... 0.02591
Residual variance................. 0.0006712

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.05	0.0099995	0.0004553	0.0095442	0.25
0.099	0.019999	0.0090484	0.010951	0.25
0.148	0.049999	0.025682	0.024316	0.25
0.199	0.069998	0.045846	0.024152	0.25
0.248	0.099997	0.065414	0.034583	0.25
0.298	0.13	0.08425	0.045747	0.25
0.347	0.16	0.10163	0.058368	0.25
0.397	0.19	0.1178	0.072195	0.25
0.446	0.21	0.13227	0.077721	0.25
0.513	0.21	0.14985	0.06014	0.25
0.546	0.20999	0.15783	0.052167	0.25
0.595	0.20999	0.16882	0.041176	0.25
0.645	0.19999	0.17911	0.020878	0.25
0.694	0.19999	0.18835	0.011645	0.25
0.744	0.20999	0.19701	0.012978	0.25
0.809	0.21999	0.20759	0.012397	0.25
0.909	0.22999	0.22144	0.0085526	0.25
0.942	0.23999	0.22556	0.014428	0.25
0.992	0.23999	0.23144	0.0085509	0.25
1.189	0.24999	0.25096	-0.00097474	0.5
1.388	0.25999	0.26621	-0.0062289	0.5
1.587	0.25998	0.2783	-0.018315	0.5
1.983	0.26998	0.29611	-0.026129	0.5
2.578	0.28997	0.31376	-0.023791	0.5
2.975	0.28997	0.32213	-0.03216	0.5
3.57	0.29996	0.33113	-0.03117	0.5
3.966	0.30996	0.33625	-0.026293	0.5
4.958	0.31995	0.3463	-0.026352	0.5
5.157	0.30995	0.34797	-0.038028	0.5
5.95	0.30994	0.35384	-0.043903	0.5
6.941	0.31993	0.35982	-0.039895	0.5
7.933	0.31992	0.36478	-0.044864	0.5
8.924	0.32991	0.36898	-0.039077	0.5
9.916	0.3399	0.37264	-0.032739	0.5
11.899	0.37988	0.37873	0.001144	1
15.864	0.38984	0.38821	0.001626	1
19.832	0.35979	0.39581	-0.036018	1
25.78	0.38973	0.40563	-0.015903	1
31.73	0.40967	0.41458	-0.0049126	1
41.646	0.46957	0.42845	0.041118	1
51.562	0.45946	0.4415	0.017966	1
59.494	0.46938	0.45141	0.01797	1
69.409	0.48928	0.46333	0.025945	1
79.325	0.53917	0.47471	0.064466	1
89.241	0.50907	0.48558	0.023493	1
99.157	0.53897	0.49597	0.042992	1
153.37	0.5284	0.54577	-0.017364	1
198.31	0.60793	0.57989	0.028048	1
247.37	0.58742	0.61302	-0.025593	1
297.47	0.6869	0.6409	0.046005	1
356.96	0.67628	0.6694	0.0068835	1
396.63	0.69587	0.68614	0.0097263	1
495.78	0.71484	0.7223	-0.0074613	1
596.37	0.72379	0.75257	-0.028781	1
694.1	0.77277	0.77753	-0.0047619	1

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793.25	0.79174	0.79948	-0.0077462	1
1002.4	0.78956	0.83782	-0.048259	1
1011.4	0.81947	0.83929	-0.019822	1
1547.4	0.85388	0.9085	-0.054619	1
2003	0.91914	0.95011	-0.030978	1
2498.8	0.96397	0.98557	-0.021598	1
2994.5	0.97881	1.0145	-0.035644	1
3450.7	1.0041	1.037	-0.03294	1
4005.9	1.0383	1.0607	-0.022388	1
4997.5	1.0879	1.0956	-0.0076436	1
6008.9	1.1074	1.1246	-0.017187	1
7000.5	1.1471	1.1486	-0.0015646	1
7992	1.1668	1.1696	-0.0028193	1
9003.4	1.2362	1.1885	0.047713	1
9995	1.2859	1.2052	0.080667	1
10193	1.2738	1.2084	0.065445	1

K

APPENDIX K

WALTON PARTIAL PENETRATION IMPACT

Academic Press,Inc.New York

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For details on equations and assumptions see
lton,W.C.1985.2nd edition.Practical aspects of
groundwater modeling.NATIONAL WATER WELL ASSOC.
Pages 163-170,339

DATA BASE:

Enter Y to calculate partial penetration
impacts or N to continue? y

PRODUCTION WELL DISCHARGE RATE (GPM)=? 425
AQUIFER STORATIVITY (DIM)=? .2
TIME AFTER PUMPING STARTED (MIN)=? 7200
DRAWDOWN WITH FULL PENETRATION (FT)=? 2.34
AQUIFER HORIZ. HYDR. CONDUCTIVITY (GPD/SQ FT)=? 3291
AQUIFER VERT. HYDR. CONDUCTIVITY (GPD/SQ FT)=? 658
RADIAL DISTANCE TO WELL (FT)=? 1
AQUIFER THICKNESS (FT)=? 96
DISTANCE FROM AQUIFER TOP TO BOTTOM OF PROD. WELL (FT)=? 40
DIST. FROM AQUIFER TOP TO TOP OF PROD.WELL SCREEN (FT)=? 0
DISTANCE FROM AQUIFER TOP TO BOTTOM OF OBS. WELL (FT)=? 40
DIST. FROM AQUIFER TOP TO TOP OF OBS. WELL SCREEN (FT)=? 0

DIST. FROM AQUIFER TOP TO TOP OF OBS. WELL SCREEN(FT)= 0.0000E+00

COMPUTATION RESULTS:

LL FUNCTION= 1.1163E+01
DRAWDOWN DUE TO PART. PENETR. IMPACTS (FT)= 1.72
DRAWDOWN WITH PART. PENETR. (FT)= 4.06

COMPUTATION RESULTS:

WELL FUNCTION= 1.1163E+01
DRAWDOWN DUE TO PART. PENETR. IMPACTS (FT)= 1.72
DRAWDOWN WITH PART. PENETR. (FT)= 4.06

Enter Y for another computation with a
new data base or N to end program?