

11.01.1.2

PHASE I REMEDIAL INVESTIGATION REPORT

LOCKHEED MARTIN TACTICAL DEFENSE SYSTEMS DIVISION
(Former Unisys Corp. Site)

Great Neck, New York
NYSDEC Site No.130045

APPENDIX D

Prepared for:

New York State

Department of Environmental Conservation

On behalf of:

Lockheed Martin Tactical Defense Systems Division of
Lockheed Martin Tactical Systems, Inc.

DECEMBER 1996

APPENDIX D

LLOYD WELL N1802 INVESTIGATION

**Phase I Remedial Investigation
Great Neck, NY Facility**

REPORT ON RESULTS OF THE HYDROGEOLOGICAL
INVESTIGATION CONDUCTED
ON THE MANHASSET - LAKEVILLE
WATER DISTRICT WELL N-1802
GREAT NECK, NEW YORK

Prepared for:

UNISYS CORPORATION
365 Lakeville Road
Great Neck, New York 11020

June 1993

Prepared by:

EARTH DATA INCORPORATED
Whiteland Technology Center
916 Springdale Drive
Exton, Pennsylvania 19341

W.O. # 1328

TABLE OF CONTENTS

1.0 BACKGROUND	1
2.0 DOWNHOLE TELEVISION SURVEY	2
3.0 DOWNHOLE GEOPHYSICAL LOGGING	4
3.1 Introduction	4
3.2 Observations	6
3.3 Discussion	10
4.0 PACKER TESTING	13
4.1 Introduction	13
4.2 Packer Testing System	14
4.3 Zone #1 - Composite Sample of Well N-1802	15
4.4 Zone #2 - Interval: Surface - 256.0'	16
5.0 CONCLUSIONS	18

1.0 BACKGROUND

This report presents the data obtained during the hydrogeological investigation of the Manhasset-Lakeville Water District (MLWD) Well N-1802 conducted by Earth Data Incorporated ("Earth Data") on behalf of Unisys Corporation ("Unisys"). The well is located in the community of Great Neck, Nassau County, New York.

The investigation of MHLWD Well N-1802 conducted by Unisys at the request of the New York State Department of Environmental Conservation (NYSDEC) sought to determine whether a relationship exists between the Volatile Organic Compound (VOC) contamination of Well N-1802 and the VOC contamination known to exist in the Magothy Formation within the vicinity of the well.

Well N-1802 was completed in 1941 during the Federally managed construction of the Great Neck facility. The well screen is reported to be set at a depth of 641 feet to 691 feet in the Lloyd Formation. The formation is reportedly separated from the overlying Magothy Formation by an aquitard consisting of approximately 150 feet of impermeable clay. As reported in N-1802's well construction specification summary, prepared by Layne-New York Co., Inc. and provided to Unisys and Earth Data by the MLWD, the outer 20 inch steel casing was installed to a depth of 415 feet, five to ten feet above the 150 foot layer of impermeable clay.

The methodologies utilized as part of this investigation were selected by Unisys in consultation with Earth Data, MLWD and NYSDEC and approved by MLWD at the project meeting of May 3, 1993. Segments of the well to be packer tested, pumping rates, purge duration, sampling times and laboratory analysis were determined by Unisys based on available well construction data, color downhole television surveying and geophysical logging performed on Well N-1802.

Portions of Earth Data's field work were observed by representatives of the NYSDEC and MLWD.

All downhole equipment utilized during the investigation was steam cleaned prior to and following it's use in Well N-1802.

2.0 DOWNHOLE TELEVISION SURVEY

A color downhole television survey was conducted on MLWD Well N-1802 on April 13, 1993. The purpose of the survey was to obtain well construction information to aid in evaluating the condition of the well screen and casing sections. The following observations were made from the survey:

- The static water level in the well was approximately 117 feet.
- A layer of dark, non-aqueous liquid was present at the water/air

interface.

- The fluid column within the well contained a high amount of suspended solids.
- Below the water table, the well casing became increasingly incrustated with depth.
- At approximately 223 feet, the well diameter decreased.
- A build up of sediment at 223 feet prevented inspection of the annular space between the inner and outer casings.
- Many casing joints were not visible due to incrustation however, of those visible, no separations were apparent.
- The first screen section was encountered at approximately 636 feet.
- The well screens were highly incrustated.
- The well screen section extended to a depth of 684 feet.
- No perforation or cracks were visible in the casing or well screen sections.
- The total depth surveyed was 684 feet.
- Fill material was present at the bottom of the well.

3.0 DOWNHOLE GEOPHYSICAL LOGGING

3.1 Introduction

Geophysical logging was performed on Well N-1802 on April 13, 1993. The purpose of the logging was to obtain well construction information, including, information which would assist in determining the presence or absence of any grout material between the inner and outer well casings. For this purpose, the following logging suite was run:

- Caliper
- Natural Gamma
- Temperature
- Full Waveform Sonic consisting of a Variable Density Log (VDL), Transit Time and Amplitude Log.

The caliper log is a measurement of the average diameter of the borehole or well at a given depth. The caliper tool collects and transmits data as the tool ascends the borehole. Three spring loaded arms, acting in conjunction with one another, measure the average diameter of the borehole. The caliper tool is used to locate fractures, determine casing intervals and to record changes in well or borehole diameters.

The natural gamma log is a measurement of the total gamma radiation emitted from

the borehole materials within a selected energy range. The most significant, naturally occurring, gamma-emitting radioisotopes are Potassium-40 and daughter products of the Uranium & Thorium-decay series. These radioisotopes tend to be concentrated in fine-grained, detrital sediments with an abundance of clay giving them high gamma counts. Mature sands and gravels on the other hand, contain an abundance of silica, a stable substance, and therefore emit very low levels of radiation. The natural gamma log can provide useful data under a variety of borehole conditions. Careful interpretation should be made however, to account for well construction materials, changes in the borehole diameter or foreign radioisotopes from outside sources which could effect the integrity of the logs.

The temperature log records the water temperature, in the vicinity of the probe sensor, as the probe descends the borehole. Temperature logs can sometimes indicate where water is entering or leaving a well or borehole. Also, they can be used to monitor the movement of injected water or waste. In new wells, temperature logs can be used to indicate the locations of fresh cement or grout.

As a supplement to the temperature log, the differential temperature log is a record of the rate of change in temperature as depth increases. The differential temperature log is sometimes more sensitive for locating temperature changes than the temperature log itself. The differential temperature log is recorded using a specialized tool or it is mathematically calculated from the temperature log.

The full waveform sonic log or, one type of acoustic log, consists of a VDL and its corresponding transit time and amplitude logs. Acoustic logs measure the travel time and the attenuation of an acoustic signal created by an electromechanical source in the borehole. The acoustic signal can then be recorded in various ways once it reaches the receiver. For instance; a record of the signal's transit time or travel time from the transmitter to the receiver, the signal's amplitude or strength, and a three dimensional graphical representation or VDL of the signal can all be recorded. Interpreted in conjunction with one another, the data obtained can sometimes provide fracture and porosity information, information about specific rock properties, lithologic information as well as information regarding the integrity of a cement bond. The logs should be interpreted carefully however, recognizing any extraneous effects caused by well construction materials, transmitter to receiver distances and fluid properties.

The system utilized in this investigation consisted of a "Well Reconnaissance" (model No. 3309) unit and a "Mount Sopris" (Model No. CLP-4681) unit. The gamma, caliper and temperature logs were recorded using the Well Reconnaissance unit and the full waveform sonic log was recorded using the Mount Sopris unit.

3.2 Observations

CALIPER LOG

- The well diameter decreased from approximately 20 - 20.5 inches to

approximately 12 inches at an approximate depth of 226 feet below the measuring point.

- ▶ A slight increase in the borehole diameter was recorded at approximately 643 feet.
- ▶ There appeared to be a slight decrease in the well diameter between approximately 644 feet and 684 feet.

NATURAL GAMMA LOG

- ▶ The natural gamma log displayed continuous changes in the amounts of total gamma radiation detected throughout the well.
- ▶ The highest gamma readings were located between approximately 410 feet and 482 feet.
- ▶ The lowest gamma readings were located between approximately 620 and 684 feet.
- ▶ Additional high gamma counts were located between approximately 82 and 120 feet and between approximately 230 and 242 feet.

- ▶ Additional low gamma counts were located between approximately 120 and 124 feet, at 269 feet, between 379 and 386 feet and at 540 feet.

TEMPERATURE LOG

- ▶ The temperature log recorded a decrease in temperature between approximately 122 feet and 150 feet. The greatest slope or, rate of change of temperature appeared to exist between approximately 122 and 140 feet.
- ▶ The fluid temperature appeared to increase between approximately 150 feet and 224 feet with the greatest slope or, rate of change, located between approximately 152 and 162 feet.
- ▶ Between approximately 224 feet and the total depth of the well or approximately 684 feet, the temperature log displayed a constant increase in temperature of approximately 0.8 degrees Fahrenheit over 457 feet. This slope is nearly vertical and constant as displayed on the log.

FULL WAVEFORM SONIC TRANSIT TIME LOG

- ▶ The majority of the transit time record for the full waveform sonic log appears to be fairly constant with only some minor fluctuations.
- ▶ Two abrupt changes in the transit time log appeared to occur. The first is

located between approximately 248 and 266 feet when the magnitude of the log increases by approximately 90-100 usec/ft. The second abrupt shift occurs between approximately 632 feet and the total depth of the well or, 684 feet.

FULL WAVEFORM SONIC AMPLITUDE LOG

- ▶ Slight increasing fluctuations in the signal's amplitude occurred between approximately 129 to 140 feet, 226 to 232 feet, 306 to 406 feet, 490 to 506 and 638 feet to total depth or, 684 feet.
- ▶ A decrease in the signal's amplitude appears to occur between approximately 262 feet to 302 feet.

FULL WAVEFORM SONIC VDL

- ▶ The signal appears to be low on the VDL between approximately 120 and 300 microseconds throughout the total depth of the well.
- ▶ The signal appears to be moderately strong with some void or channel areas between approximately 120 and 220 feet.
- ▶ A void area in the signal appears to exist between approximately 220 and 226 feet.

- ▶ Between approximately 226 and 415 feet, the signal appears to be moderately strong to moderately weak with indications of "chevron" type wave distortions.
- ▶ A moderately strong to moderately weak signal appears between approximately 415 feet and 638 feet however, this section appears to contain less of the chevron-type wave distortions.
- ▶ A weak signal appears between approximately 638 feet and 684 feet in the 120 to 300 microsecond range.

3.3 Discussion

Based on the observations made from the geophysical logs run on Well No. N-1802, it appears that a change in diameter occurs at approximately 226 feet below the measuring point. The apparent decrease in the well diameter between approximately 641 feet to 684 feet appears to be due to the inner diameter of the well screen section being slightly less than that of the casing. The apparent increase in diameter located at approximately 643 feet most likely represents the section where the well screen recouples to the casing.

The observed fluctuations in the natural gamma log indicate interbedded layers of clay, silt, sand and gravel containing varying amounts of radioactive, detrital sediments. The highest gamma counts, located between approximately 410 feet to 482 feet, are most

likely indicative of a formation clay layer. The lowest gamma readings located between approximately 620 to 656 feet indicates the presence of a formation sand or gravel with some fines in the matrix. Other high gamma layers most likely contain a larger percentage of clay sediments than the rest of the wellbore while other low gamma layers most likely contain a larger amount of sand and gravel than the rest of the wellbore. An increase in the total gamma radiation greater than that of the formation does not appear to exist between 226 to 415 feet where any type of bentonite/cement seal could be present.

The decrease in the fluid temperature reading between approximately 122 feet to 150 feet is most likely a reflection of the sensor reading the change from air temperature to fluid temperature. Once the temperature sensor is submersed in the water, a period is required to stabilize the sensor. Normally, if no vertical flow is present in a well or borehole, the temperature gradient would increase at a constant rate with increases in depth due to the natural geothermal gradient present in the earth. Based on the log, the abrupt change in the slope of the temperature gradient, located at approximately 224 feet, is most likely indicative of water entering or leaving the borehole. The temperature log between 224 feet and 681 feet is indicative of no apparent vertical flow at rates large enough to alter the natural gradient.

The full waveform sonic log indicates a fairly competent mass behind the well casing with only some areas of voids or channels between 120 and 220 feet. This is most likely

indicative of a fairly competent bond between the casing and the cement grout with some channel areas created during the grouting process or, possibly fractured over time. Some of the more apparent channel areas appear to be located at approximately 143 feet, 145 feet, 167 feet and 190 feet.

The anomaly located between 221 and 225 feet on the VDL could indicate a void or channel area in the cement behind the outer casing. However, considering the proximity of the anomaly to the top of the inner casing, the possibility exists that either the reading is a function of the material observed to be resting on the 12 inch lap (via downhole television) or the use of the two different geophysical logging systems resulted in a measurement error. In the latter case, the anomaly would be caused by open space left between the inner and outer casings.

Between 226 feet and 415 feet, the chevron-type wave distortions could be indicative of a gravel or sand pack material with a high percentage of void area. A lack of competent material will prevent the signal from displaying a more parallel type appearance as seen between approximately 122 and 134 feet. It did not appear as if a cement or bentonite slurry had filled the annular space between the well casings as, each of these would be more competent and more elastic than a gravel or sand pack. A more competent elastic substance would most likely increase the signals transit time and amplitude which in turn, would display high amplitude, parallel banding.

Between 415 and 638 feet, the log most likely represents the interbedded, detrital sediments with their corresponding degrees of porosity. The screen section, located between 644 to 684 feet is well defined by the increases in transit time and amplitude.

4.0 PACKER TESTING

4.1 Introduction

Packer testing was performed on Well N-1802 from May 10 through May 13, 1993. The purpose of the testing was to determine the presence of possible water sources within the well other than the screened segment. Additional sources discovered were to be isolated, purged and sampled for VOC's following NYSDEC standard sampling protocol.

Pursuant to a detailed review of all available well construction information and downhole television and geophysical data, the following tasks were set down as part of the investigation's packer testing program:

1. Withdraw a composite water quality sample.
2. Test packer seal by pumping segment of well below an inflated packer and monitoring water levels in both well segments.
3. Perform slug test on upper segment of N-1802, including 20 inch diameter casing and annulus.
4. Provided that task 3 reveals the upper segment of the well

to be free of leaks to the outer formations, continue to test for leaks within the 12 inch segment of N-1802 utilizing a double packer inflation.

All depth to water level measurements taken during the testing were made from the top of the 20 inch steel casing.

4.2 Packer Testing System

The packer testing system used in N-1802 utilized a straddle packer assembly. The following describes the components of the system:

Packers

Two inflatable packers set on 2.0 inch schedule 40 galvanized lift pipe (steam cleaned) to isolate discrete intervals within the borehole.

Packer length: 4.75 feet

Packer diameter: 10.25 inches (uninflated)

13.0 inches (maximum inflated)

Water Pump

- .5 H.P. Grundfos submersible pump
- 1.5 H.P. Goulds submersible pump

Pressure Transducers

Three pressure transducers (20 mA at 200 psi) calibrated to read depth to water, allowed for the continuous monitoring of water levels above, within and below the isolated interval. The upper transducer was set above the upper packer. The middle transducer was set between the two packers, just below the submersible pump intake. The lower transducer was set below the lower packer.

Data Collection System

The transducer signal was directed (via a center core array) to a digital data logger where it was calibrated to read depth to water. The data logger output was directed to a lap top computer which provided a graphic display of the water level data.

4.3 Zone #1 - Composite Sample of Well N-1802

Zone 1 was tested on May 12, 1993. A composite water quality sample was withdrawn from N-1802 using a Goulds 1.5 h.p. submersible pump located between two uninflated 10.25 inch diameter packers. Prior to the pumping of N-1802 the static water level was 123.0 feet.

The well was pumped at a rate of 19 gallons per minute (gpm). A total of 1286 gallons were evacuated before a water quality sample was taken. Following 68 minutes of pumping, the water level in N-1802 was 124.06 feet. Approximately 13 minutes following the cessation of pumping N-1802, the water level had recovered to it's

original prepumping level.

4.4 Zone #2 - Interval: Surface - 256.0'

Zone 2 was tested on May 12, 1993. The segment of the well from the static water level to 256.0 feet was tested by inflating the top packer only. Prior to the inflation of the top packer, the two transducers monitoring the water levels above and below the top packer were reading approximately 123 feet (122.96' and 123.00' respectively), the composite, static water level of N-1802. After inflation was complete, the water level above the packer rose approximately 22 feet while the water level below the inflated packer remained at the pre-inflation, static water level of N-1802. This information indicated flow was entering the well above 256 feet.

Based on this information, a slug test of the interval was not performed.

A 1.8 inch diameter Grundfos submersible pump was lowered into the well segment located above the inflated packer, to a depth of 150 feet. Prior to pumping the interval, water levels above and below the inflated packer were 101.34' and 123.05' respectively.

Zone 2 was pumped for a period of 106 minutes at an average rate of 4.2 gpm. At the cessation of pumping, the water levels above and below the inflated packer were 108.8' and 123.00' respectively. The zone was allowed to recover ten minutes at which time

the cased section of N-1802 (including the annulus space between inner and outer casings) from 256 feet to the surface, recovered 1.62 feet to 106.46 feet.

In order to facilitate the efficient removal of the purge water necessary to sample, the Grundfos pump was removed from the lift pipe and the larger Goulds submersible pump (previously installed in the system between the packers) was put into service. In order to utilize the 1.5 H.P. Goulds submersible pump, the top packer was deflated and the bottom packer was inflated, expanding the zone to be tested. The interval consisted of Well N-1802 from the surface to 272.95 feet below the top of casing.

Pumping resumed at 16:05 using the 1.5 H.P. Goulds submersible pump. The zone was pumped for an additional 155 minutes at a varied rate.

<u>Elapsed Time</u>	<u>Pumping Rate</u>
4 minutes	9.8 gpm
53 minutes	15.0 gpm
98 minutes	10.0 gpm

At the cessation of pumping, water levels above and below the inflated packer were 145.63 feet and 123.42 feet respectively. Samples were obtained prior to the end of pumping.

5.0 CONCLUSIONS

Based on the analysis of the data obtained during Earth Data's segment of the investigation of N-1802, it would appear that a water source of considerable influence within the well, other than the well's screened interval, is contributing water of unknown quality and/or constituents at a rate of approximately 4 gpm.

Data of particular interest are listed below:

- The well construction summary prepared by Layne-New York Co., Inc. indicates that the 20-inch outer casing does not penetrate the 150 foot clay aquitard.
- The downhole television survey performed did not reveal any apparent damage to N-1802's casing or screen.
- Abrupt change in the slope of temperature gradient located approximately at 224 feet indicates a possible point of water flow.
- The high gamma readings located between approximately 410 feet and 482 feet are indicative of a formation clay layer.
- Presence of wave distortions on the full wave form sonic log between 226 and 415 feet, indicating possible gravel or sand pack material with a high percentage of void area.

- A head differential of approximately 22 feet observed between upper and lower portions of N-1802 following the inflation of a packer.
- Following the initial pumping of the upper unscreened interval, a period of ten minutes allowed for the recovery of 1.62 feet within the column of water.

REFERENCES

1. COLOG Inc., 1990. Full Waveform Sonic Applications to Lithology, Fracture Analyses and Permeability. COLOG Inc. Technical Notes, Vol. 1, No. 4, page 3.
2. COLOG Inc., 1989. Geotechnical Log Applications for a Proposed Hydroelectric Pumped Storage Project. COLOG Inc. Technical Notes, Vol.1, No.1, page 3.
3. Crowder, R.E., LoCoco, J.J., and Yearsley, E.N. 1991. Applications of Full Waveform Borehole Sonic Logs to Environmental and Subsurface Engineering Investigations. Proceedings of the Symposium on the Application of Geophysics to Environmental and Engineering Problems.
4. Driscoll, F.G., 1989. Groundwater and Wells. Johnson Division, St. Paul, Minnesota.
5. Keys, W.S., 1989. Borehole Geophysics Applied to Groundwater Investigations. National Water Well Association, Dublin, Ohio.
6. Yearsley, E.N., Crowder, R.E., Irons, L.A. Monitoring Well Completion Evaluations with Borehole Geophysical Density Logging. COLOG Inc., Golden, Colorado.

WELL N-1802/ZONE 2

WELL N-1802

WELL N-1802/COMPOSITE

WELL N-1802

WELL N-1802

WELL N-1802/COMPOSITE

WELL N-1802

PACKER TESTING
ADMINISTRATIVE DATA
FOR EACH WELL

Project: Unisys, Long Island

Well: N-1802

W.: 1328

Purpose of Testing: To determine the distribution of head in Well N-1802; and to collect water samples.

History of Testing:

Description of Measuring Point: Top of 20" steel casing

G.S. to M.P.:

Re-test open hole water level: 23'

Date: 5-10-93

Time:

PUMPING EQUIPMENT

Comp S/N: 20-0775 HP: 1.5 Volts: 230 Phase: 1 Starter ☒ Y or N

Minimal Diameter of Lift Pipe: 2.0 Type Pipe: Schedule 40 galvanized

Method of Flow Measurement: Totalizing flow meter

Disposition of Discharge: Discharge contained in tanks provided by Unisys

TIME MEASUREMENT

How Measured: Laptop clock

Date start 5-10-93

Date end 5-13-93

PACKER EQUIPMENT

For Wells: 12 ins in dia. Uninflated diameter: 10.25 ins. Max inflated dia: 13.0'

Length of bladder: 4.75 ft. Spread: 12.2 ft. Bladder material: nat. rubber

Progen pressure start: psi stop: psi Amount used: 440 psi

TRANSDUCERS AND DATA LOGGER

Data Logger:

Transducers	upper	middle	lower		
Serial Numbers	161 - 0869	2698 DJ	161-D-0869		
Range	200 psi	500 psi	200 psi		

Remarks:

INTERVALS TESTED

	From	To	SWL	PWL	GPM	Spec Cap	Remarks/Samples
1	open hole		123.0'	124.06'	19		Sample obtained
2a	surface	256.00'	101.34'	108.08'	4.5'		
2b	surface	272.95'	106.50'	145.63'			Sample obtained
3							
4							
5							
6							
7							
8							

Personnel on test: M. Kirsch, M. Keown, J. Sobelman

Truck: 10T Smeal

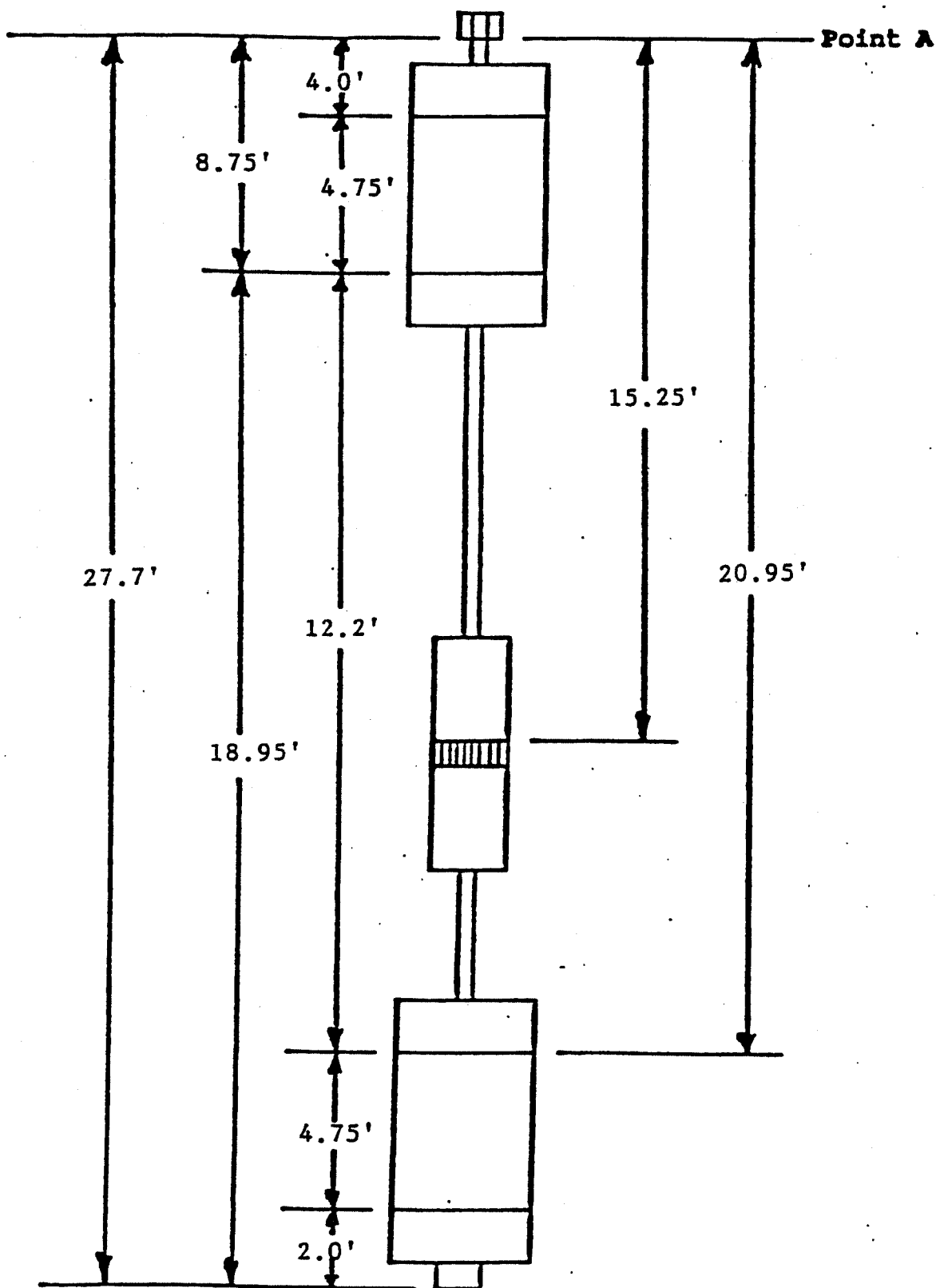
Generator KW: 5

Support Vehicle: F-250

W. 1328.f1

Earth Data Incorporated

**STRADDLE PACKER DIMENSIONS
(uninflated)**



O. 1328
Well N-1802

Dates: from 5-10-93 to 5--13-93

Form 31b

Diameter Packers 10.25 in.

Diameter of Pump 4.5 in.

Diameter Lift Pipe 2.0 in.

Earth Data Incorporated

WELL N-1802/COMPOSITE

PACKER TESTING FIELD INFORMATION
EACH TEST

5-12-93

WELL/ZONE: N-1802/Composite

PERSONNEL: M. Kirsch, M. Keown,
J. Sobelman

PROJECT: Unisys, Long Island

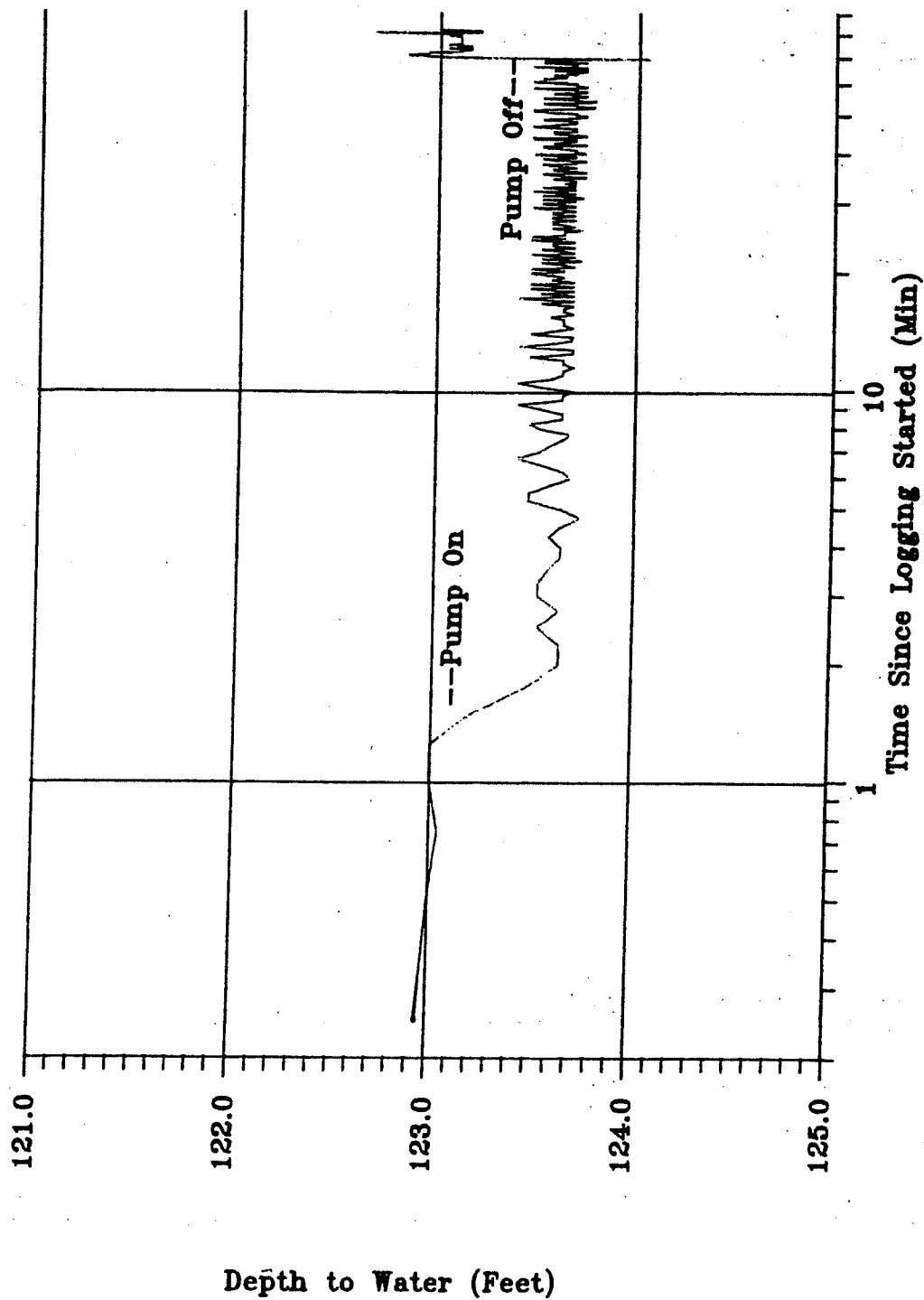
W.O.: 1328

SETTING DEPTHS		DATA COLLECTION CALIBRATION		
Point A	252.0'	Top of interval TO bottom of interval current mA=static water level (FT) 4mA=transducer depth (FT)	CONFIGURATION FILENAME	
Top Packer Top	256.0'			
Top Packer Bottom	260.75'			
Pump Intake	267.25'			
Bottom Packer Top	272.95'	Channel 1	Channel 2	Channel 3
Bottom Packer Bottom	277.70'	TO	TO	TO
Assembly Bottom	279.70'	mA = ' 6.236	mA = 123.0'	= ' 1
PACKER INFLATION Bottom		mA = ' 4.018	mA = 269.85'	= ' 1
		Additional Calibration Notes		

TEST SEQUENCE		HYDRAULIC HEAD DISTRIBUTION					
Logging - 9:54:00		Open Hole Static Water Level:					
Inflation -			Pre-inflation	Post-inflation	Pre-Pumping	Pumping Level	Recovery
Pumping - 9:55		1			123.00'	124.06'	123.00'
Pumping - 11:03		2					
Packer Prior - 91990		3					
Packer Post - 93276		4					
Logging - 11:16							
PUMPING RECORD		COMPUTER DATA RECORD					
Pumping Zone 1		Test Code: PRN Filename:					
Pumping Rate @ 19 gpm		Copy to Client Date and Name:					
Pumping Duration 68 min.		SLUG TEST SEQUENCE					
Packer Drawdown 1.06'			Time		Water Level		
Specific Capacity		Start					
Rate of Discharge		Peak					
Time of Recovery 11:15		Recovery					
Adjustments							

SUMMARY

Figure 1
WELL N-1802
Composite Sample



TEST START DATE: 5-12-93
TEST START TIME: 9:54
TEST LOCATION: Unisys Long Island, NY
EMPLOYEE NAME: Kirsch
EMPLOYEE NUMBER: ----
DEPARTMENT: ----
COMMENT FIELD 1: Open Hole Sampling of
COMMENT FIELD 2: L&M Well N-1802
NUMERIC CODES: ----

ROSONICS dl-714 SN 1781 V2.3 07/91

CURRENT DATE: 05/12/93
CURRENT TIME: 11:22:24

TEST STARTING DATE: 5/12/93
TEST STARTING TIME: 9:54:00

ELAPSED TIME: 0 DAYS 1:24:21
SAMPLE RATE: 4/min

TIME	water level ft	
5/12/93		
9:54:00	122.95	
9:54:15	123.00	
9:54:30	123.05	
9:54:45	123.00	
9:55:00	123.00	Pump On
9:55:15	123.21	
9:55:30	123.48	
9:55:45	123.64	
9:56:00	123.64	
9:56:15	123.53	
9:56:30	123.64	
9:56:45	123.53	
9:57:00	123.53	
9:57:15	123.58	
9:57:30	123.64	
9:57:45	123.64	
9:58:00	123.58	
9:58:15	123.64	
9:58:30	123.74	
9:58:45	123.64	
9:59:00	123.48	
9:59:15	123.48	
9:59:30	123.58	
9:59:45	123.69	
10:00:00	123.64	
10:00:15	123.53	
10:00:30	123.42	

0:00:45	123.53
0:01:00	123.58
0:01:15	123.64
0:01:30	123.69
0:01:45	123.53
0:02:00	123.48
0:02:15	123.64
0:02:30	123.64
0:02:45	123.53
0:03:00	123.42
0:03:15	123.64
0:03:30	123.64
0:03:45	123.69
0:04:00	123.53
0:04:15	123.42
0:04:30	123.58
0:04:45	123.64
0:05:00	123.64
0:05:15	123.69
0:05:30	123.64
0:05:45	123.64
0:06:00	123.48
0:06:15	123.69
0:06:30	123.69
0:06:45	123.42
0:07:00	123.58
0:07:14	123.69
0:07:29	123.69
0:07:44	123.48
0:07:59	123.58
0:08:14	123.69
0:08:29	123.64
0:08:44	123.64
0:08:59	123.64
0:09:14	123.58
0:09:29	123.69
0:09:44	123.64
0:09:59	123.64
0:10:14	123.69
0:10:29	123.53
0:10:44	123.69
0:10:59	123.42
0:11:14	123.69
0:11:29	123.53
0:11:44	123.69
0:11:59	123.48
0:12:14	123.69
0:12:29	123.48
0:12:44	123.69
0:12:59	123.58
0:13:14	123.64
0:13:29	123.58
0:13:44	123.48
0:13:59	123.64

) 14:14	123.48
0:14:29	123.69
4:44	123.64
4:59	123.53
0:15:14	123.74
0:15:29	123.53
) 15:44	123.69
0:15:59	123.48
0:16:14	123.69
) 16:29	123.64
) 16:44	123.53
0:16:59	123.69
0:17:14	123.58
) 17:29	123.58
0:17:44	123.69
0:17:59	123.48
) 18:14	123.64
0:18:29	123.48
0:18:44	123.64
0:18:59	123.64
) 19:14	123.64
0:19:29	123.74
0:19:44	123.58
) 19:59	123.69
0:20:14	123.64
0:20:29	123.58
) 20:44	123.58
0:20:59	123.69
1:14	123.58
0:21:29	123.58
) 21:44	123.69
0:21:59	123.58
0:22:14	123.58
) 22:29	123.69
0:22:44	123.64
0:22:59	123.48
0:23:14	123.69
0:23:29	123.64
0:23:44	123.53
0:23:59	123.64
0:24:14	123.69
0:24:29	123.53
0:24:44	123.74
4:59	123.69
5:14	123.53
0:25:29	123.69
0:25:44	123.64
5:59	123.48
0:26:14	123.69
0:26:29	123.69
6:44	123.53
0:26:59	123.69
0:27:14	123.69
7:29	123.64

00:27:44	123.69
00:27:59	123.69
10:28:14	123.64
10:28:29	123.58
10:28:44	123.74
10:28:59	123.64
10:29:14	123.58
10:29:29	123.53
10:29:44	123.74
10:29:59	123.69
10:30:14	123.58
10:30:29	123.58
10:30:44	123.69
10:30:59	123.64
10:31:14	123.58
10:31:29	123.53
10:31:44	123.69
10:31:59	123.69
10:32:14	123.74
10:32:29	123.58
10:32:44	123.53
10:32:59	123.69
10:33:13	123.69
10:33:28	123.58
10:33:43	123.48
10:33:58	123.74
00:34:13	123.69
10:34:28	123.69
10:34:43	123.69
10:34:58	123.64
10:35:13	123.58
10:35:28	123.53
10:35:43	123.53
10:35:58	123.74
10:36:13	123.64
10:36:28	123.58
10:36:43	123.64
10:36:58	123.69
10:37:13	123.69
10:37:28	123.48
10:37:43	123.48
10:37:58	123.69
00:38:13	123.74
00:38:28	123.69
00:38:43	123.64
00:38:58	123.58
00:39:13	123.58
00:39:28	123.69
00:39:43	123.69
00:39:58	123.69
00:40:13	123.69
00:40:28	123.58
00:40:43	123.48
00:40:58	123.53

) 41:13	123.58
0 41:28	123.64
1 41:43	123.69
1 41:58	123.69
0 42:13	123.69
0 42:28	123.64
) 42:43	123.53
) 42:58	123.58
0 43:13	123.69
0 43:28	123.74
) 43:43	123.74
0 43:58	123.69
0 44:13	123.69
) 44:28	123.69
) 44:43	123.58
0 44:58	123.53
) 45:13	123.48
) 45:28	123.48
0 45:43	123.53
0 45:58	123.69
) 46:13	123.79
) 46:28	123.74
0 46:43	123.69
) 46:58	123.69
) 47:13	123.58
0 47:28	123.53
) 47:43	123.64
) 47:58	123.74
1 48:13	123.79
0 48:28	123.69
) 48:43	123.69
) 48:58	123.58
0 49:13	123.53
) 49:28	123.69
) 49:43	123.74
0 49:58	123.74
0 50:13	123.69
) 50:28	123.64
0 50:43	123.58
0 50:58	123.64
) 51:13	123.74
) 51:28	123.69
0 51:43	123.69
) 51:58	123.69
) 52:13	123.58
0 52:28	123.48
0 52:43	123.69
) 52:58	123.74
0 53:13	123.69
0 53:28	123.69
) 53:43	123.69
) 53:58	123.69
0 54:13	123.58
1 54:28	123.64

10:54:43	123.48	
10:54:58	123.53	
10:55:13	123.53	
10:55:28	123.53	
10:55:43	123.53	
10:55:58	123.58	
10:56:13	123.64	
10:56:28	123.64	
10:56:43	123.58	
10:56:58	123.64	
10:57:13	123.58	
10:57:28	123.69	
10:57:43	123.64	
10:57:58	123.64	
10:58:13	123.69	
10:58:28	123.74	
10:58:43	123.58	
10:58:58	123.58	
10:59:12	123.74	
10:59:27	123.69	
10:59:42	123.58	
10:59:57	123.74	
11:00:12	123.48	
11:00:27	123.69	
11:00:42	123.69	
11:00:57	123.69	
11:01:12	123.69	
11:01:27	123.69	
11:01:42	123.53	
11:01:57	123.74	
11:02:12	123.64	
11:02:27	123.53	
11:02:42	123.53	
11:02:57	123.58	
11:03:12	123.53	
11:03:27	124.06	Pump Off
11:03:42	123.26	
11:03:57	123.05	
11:04:12	122.95	
11:04:27	122.89	
11:04:42	122.84	
11:04:57	122.84	
11:05:12	122.89	
11:05:27	122.95	
11:05:42	122.95	
11:05:57	122.95	
11:06:12	123.11	
11:06:27	123.11	
11:06:42	123.11	
11:06:57	123.16	
11:07:12	123.16	
11:07:27	123.11	
11:07:42	123.05	
11:07:57	123.11	

1	08:12	123.16
1	08:27	123.16
	08:42	123.11
	08:57	123.11
1	09:12	123.05
1	09:27	123.11
1	09:42	123.11
1	09:57	123.11
1	10:12	123.11
1	10:27	123.11
1	10:42	123.11
1	10:57	123.11
1	11:12	123.11
1	11:27	123.11
1	11:42	123.11
1	11:57	123.11
1	12:12	123.11
1	12:27	123.11
1	12:42	123.11
1	12:57	123.11
1	13:12	123.05
1	13:27	123.11
1	13:42	123.11
1	13:57	123.11
1	14:12	123.11
1	14:27	122.68
1	14:42	123.21
1	14:57	123.21
	15:12	123.21
	15:27	123.21
1	15:42	123.11
1	15:57	123.00

WELL N-1802/ZONE 2

PACKER TESTING FIELD INFORMATION
EACH TEST

5-12-93

WELL/ZONE: N-1802/Zone 2b

NEL: M. Kirsch, M. Keown,
J. Sobelman

PROJECT: Unisys, Long Island

W.O.: 1328

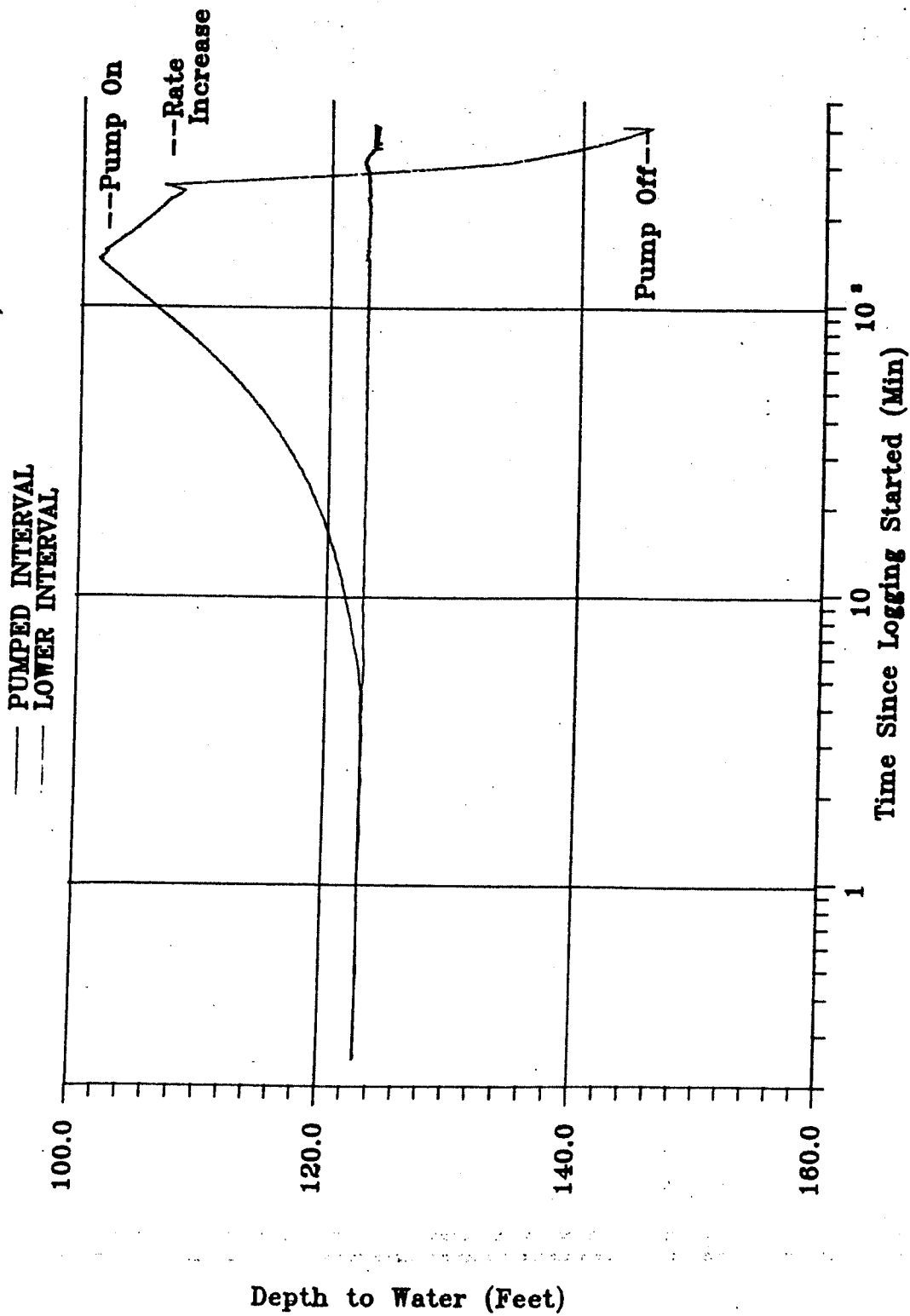
SETTING DEPTHS		DATA COLLECTION CALIBRATION		
Point A	252.0'	Top of interval TO bottom of interval current mA=static water level (FT) 4mA=transducer depth (FT)	CONFIGURATION FILENAME	
Packer Top	256.0'			
Packer Bottom	260.75'			
Pump Intake	267.25'			
Bottom Packer Top	272.95'	Channel 1	Channel 2	Channel 3
Packer Bottom	277.70'	TO	TO	TO
Assembly Bottom	279.70'	5.148mA = 123.0'	mA =	9.710 mA = 123.0'
PACKER INFLATION Bottom 440		3.924mA = 150.0'	mA =	4.130 mA = 269.85'
		Additional Calibration Notes		

TEST SEQUENCE	HYDRAULIC HEAD DISTRIBUTION				
Logging -	Open Hole Static Water Level:				
Inflation - @ 15:55		Pre-inflation	Post-inflation	Pre-Pumping	Pumping Level
Pumping - 16:05:16	1			106.50'	145.63'
Pumping - 18:40:17	2				
Prior -	3			123.05'	123.42'
Filter Post - 94955	4				
Logging - 18:42:33					

PUMPING RECORD		COMPUTER DATA RECORD		
Pumping Zone		2b	Test Code: PRN Filename:	
Pumping Rate		Varied	Copy to Client Date and Name:	
Pumping Duration		155 min.	SLUG TEST SEQUENCE	
Pump Drawdown		39.13'		Time Water Level
Specific Capacity			Start	
Flow of Discharge			Peak	
Flow Recovery			Recovery	
Adjustments		Start 9.8 gpm; increased rate to 15 gpm at 16:09; decreased rate to 10 gpm at 17:02		

SUMMARY

Figure 2
WELL N-1802
ZONE 2 (Surface-272.95')



START DATE: 5-12-93
START TIME: 11:46
TEST LOCATION: Unisys, Long Island NY
EMPLOYEE NAME: Kirsch
EMPLOYEE NUMBER: ----
DEPARTMENT: ----
INSTRUMENT FIELD 1: Zn2 (swl- 256'), (swl-272)
INSTRUMENT FIELD 2: swtchd pckr infltd
NUMERIC CODES: ----

PROSONICS dl-714 SN 1781 V2.3 07/91

CURRENT DATE: 05/12/93
CURRENT TIME: 18:46:24

TEST STARTING DATE: 5/12/93
TEST STARTING TIME: 11:46:36

ELAPSED TIME: 0 DAYS 6:55:59
SAMPLE RATE: 4/min

	upper zone ft	lower zone ft
5/12/93		
16:36	122.96	123.00
16:51	123.00	123.05
17: 6	123.00	123.00
17:21	122.96	122.95
17:36	122.96	123.00
17:47:51	123.00	123.05
18: 6	122.96	123.00
18:21	122.96	123.00
18:48:36	123.00	123.05
18:48:51	122.96	122.95
19: 6	122.96	123.00
19:21	122.96	123.00
19:49:36	122.96	123.05
19: 9:51	122.96	123.00
20: 6	122.91	122.95
20:50:21	122.96	123.00
20:36	122.91	123.00
20:51	122.91	123.00
21: 6	122.91	122.95
21:21	122.82	123.05
21:36	122.78	123.05
21:51	122.74	123.05
22: 6	122.65	123.11
22:21	122.60	123.05
22:36	122.51	123.05
22:51	122.43	123.00
23: 6	122.34	123.00

Packer Inflation

11:53:21	122.29	123.00
11:53:36	122.25	123.00
11:53:51	122.16	123.00
11:54: 6	122.07	122.95
11:54:21	122.03	123.00
11:54:36	121.99	123.00
11:54:51	121.90	123.00
11:55: 6	121.81	122.95
11:55:21	121.76	122.89
11:55:36	121.72	122.95
11:55:51	121.63	122.95
11:56: 6	121.59	122.95
11:56:21	121.54	123.00
11:56:36	121.50	122.95
11:56:51	121.41	122.95
11:57: 6	121.37	123.00
11:57:21	121.28	122.95
11:57:36	121.28	123.00
11:57:51	121.24	122.95
11:58: 6	121.15	123.00
11:58:21	121.10	122.95
11:58:36	121.06	123.00
11:58:51	120.97	122.95
11:59: 6	120.93	123.00
11:59:21	120.88	123.00
11:59:36	120.79	122.95
11:59:51	120.71	122.95
2: 0: 6	120.66	122.95
2: 0:21	120.66	122.95
2: 0:36	120.62	122.95
2: 0:51	120.49	122.95
2: 1: 6	120.49	122.95
2: 1:21	120.40	123.00
2: 1:36	120.35	122.95
2: 1:51	120.26	122.95
2: 2: 6	120.26	123.00
2: 2:21	120.18	122.95
2: 2:36	120.13	123.00
2: 2:51	120.09	123.00
2: 3: 6	120.04	123.00
2: 3:21	119.96	122.95
2: 3:36	119.91	122.95
2: 3:51	119.82	122.95
2: 4: 6	119.82	122.95
2: 4:21	119.74	122.95
2: 4:36	119.74	122.95
2: 4:51	119.65	122.95
2: 5: 6	119.60	123.00
2: 5:21	119.56	123.00
2: 5:36	119.47	122.95
2: 5:51	119.43	123.00
2: 6: 6	119.38	122.95
2: 6:21	119.29	122.95
2: 6:36	119.25	122.95

6:51	119.16	122.95
7: 6	119.12	122.95
7:21	119.07	123.00
7:36	119.03	122.95
7:51	118.94	123.00
8: 6	118.94	123.00
8:21	118.85	122.95
8:36	118.81	123.00
8:51	118.76	122.95
9: 6	118.68	122.95
9:21	118.68	123.00
9:36	118.63	123.00
9:51	118.59	123.00
10: 6	118.50	122.95
10:21	118.50	123.00
10:36	118.46	123.00
10:51	118.37	123.00
11: 6	118.28	122.95
11:21	118.24	123.00
11:36	118.19	123.00
11:51	118.10	122.95
12: 6	118.10	122.95
12:21	118.01	123.00
12:36	117.97	122.95
12:51	117.93	122.95
13: 6	117.88	122.95
13:21	117.88	123.00
13:36	117.84	123.00
13:51	117.75	122.95
14: 6	117.66	122.95
14:21	117.62	122.95
14:36	117.57	123.00
14:51	117.49	122.95
15: 6	117.49	123.00
15:21	117.40	123.00
15:36	117.35	123.00
15:51	117.31	123.00
16: 6	117.26	123.00
16:21	117.22	123.00
16:36	117.18	122.95
16:51	117.09	123.00
17: 6	117.09	122.95
17:21	117.04	123.00
17:36	116.96	123.00
17:51	116.91	123.00
18: 6	116.91	123.00
18:21	116.78	123.00
18:36	116.78	122.95
18:51	116.74	122.95
19: 6	116.65	122.95
19:21	116.65	123.00
19:36	116.56	122.95
19:51	116.51	123.00
20: 6	116.47	122.95

12:20:21	116.43	122.95
12:20:36	116.38	123.00
12:20:51	116.34	123.00
12:21: 6	116.25	123.00
12:21:21	116.25	122.95
12:21:36	116.16	122.95
12:21:51	116.07	122.95
12:22: 6	116.07	123.00
12:22:21	116.03	123.00
12:22:36	115.99	123.00
12:22:51	115.99	123.00
12:23: 6	115.85	122.95
12:23:21	115.85	123.00
12:23:36	115.81	122.95
12:23:51	115.72	123.00
12:24: 6	115.68	122.95
12:24:21	115.63	123.00
12:24:36	115.59	123.00
12:24:51	115.54	123.00
12:25: 6	115.50	123.00
12:25:21	115.41	123.00
12:25:36	115.41	123.00
12:25:51	115.37	123.00
12:26: 6	115.28	123.00
12:26:21	115.24	123.00
12:26:36	115.19	122.95
12:26:51	115.19	123.00
12:27: 6	115.10	122.95
12:27:21	115.06	123.00
12:27:36	114.97	122.95
12:27:51	114.97	123.00
12:28: 6	114.93	122.95
12:28:21	114.84	122.95
12:28:36	114.79	122.95
12:28:51	114.79	123.00
12:29: 6	114.71	122.95
12:29:21	114.71	122.95
12:29:36	114.66	123.00
12:29:51	114.62	122.95
12:30: 6	114.57	123.00
12:30:21	114.49	123.00
12:30:36	114.44	123.00
12:30:51	114.40	123.05
12:31: 6	114.35	123.00
12:31:21	114.31	123.00
12:31:36	114.26	122.95
12:31:51	114.22	122.95
12:32: 6	114.13	123.00
12:32:21	114.09	122.95
12:32:36	114.09	122.95
12:32:51	114.04	123.00
12:33: 6	114.00	123.05
12:33:21	113.91	123.00
12:33:36	113.87	123.00

13:51	113.82	122.95
2:34: 6	113.82	122.95
4:21	113.74	123.00
4:36	113.74	122.95
2:34:51	113.65	123.00
2:35: 6	113.60	123.00
5:21	113.56	123.00
5:36	113.51	123.00
2:35:51	113.47	122.95
6: 6	113.47	123.00
6:21	113.43	122.95
2:36:36	113.38	122.95
2:36:51	113.34	123.00
7: 6	113.25	122.95
7:21	113.21	122.95
2:37:36	113.16	123.00
7:51	113.12	123.00
8: 6	113.07	123.00
2:38:21	113.03	123.00
8:36	112.99	123.00
8:51	112.94	123.00
2:39: 6	112.90	123.00
2:39:21	112.85	123.00
9:36	112.81	123.00
9:51	112.81	122.95
2:40: 6	112.76	123.00
10:21	112.72	123.00
10:36	112.63	123.00
10:51	112.59	123.00
2:41: 6	112.54	122.95
11:21	112.50	123.00
2:41:36	112.46	122.95
2:41:51	112.46	122.95
12: 6	112.37	123.00
12:21	112.32	122.95
2:42:36	112.32	123.00
12:51	112.24	122.95
13: 6	112.19	123.00
2:43:21	112.19	123.00
2:43:36	112.15	122.95
13:51	112.10	123.00
14: 6	112.01	122.95
2:44:21	112.01	123.00
14:36	111.97	123.00
14:51	111.93	122.95
2:45: 6	111.88	123.00
15:21	111.79	123.00
15:36	111.79	122.95
2:45:51	111.71	123.00
16: 6	111.71	123.00
16:21	111.62	123.00
2:46:36	111.62	123.00
16:51	111.57	123.00
17: 6	111.49	122.95

2:47:21	111.49	123.00
2:47:36	111.44	123.00
2:47:51	111.40	122.95
2:48: 6	111.35	123.00
2:48:21	111.35	123.00
2:48:36	111.26	122.95
2:48:51	111.22	123.00
2:49: 6	111.18	123.00
2:49:21	111.13	123.00
2:49:36	111.09	122.95
2:49:51	111.04	123.00
2:50: 6	111.04	123.00
2:50:21	111.00	122.95
2:50:36	110.96	122.95
2:50:51	110.87	122.95
2:51: 6	110.87	123.00
2:51:21	110.82	122.95
2:51:36	110.78	122.95
2:51:51	110.74	123.00
2:52: 6	110.69	123.00
2:52:21	110.69	123.00
2:52:36	110.60	122.95
2:52:51	110.56	123.00
2:53: 6	110.51	122.95
2:53:21	110.47	122.95
2:53:36	110.47	123.00
2:53:51	110.43	122.95
2:54: 6	110.34	123.00
2:54:21	110.34	123.00
2:54:36	110.29	123.00
2:54:51	110.21	123.00
2:55: 6	110.25	123.00
2:55:21	110.16	123.00
2:55:36	110.12	123.00
2:55:51	110.07	123.00
2:56: 6	110.07	123.00
2:56:21	110.03	123.00
2:56:36	109.99	123.00
2:56:51	109.94	123.00
2:57: 6	109.90	122.95
2:57:21	109.85	123.00
2:57:36	109.85	123.00
2:57:51	109.81	123.00
2:58: 6	109.72	123.00
2:58:21	109.72	123.00
2:58:36	109.68	123.00
2:58:51	109.63	123.00
2:59: 6	109.59	123.00
2:59:21	109.59	123.00
2:59:36	109.50	123.00
2:59:51	109.46	123.00
3: 0: 6	109.41	122.95
3: 0:21	109.37	122.95
3: 0:36	109.32	123.00

0:51	109.32	123.00
1: 6	109.24	123.00
1:21	109.24	123.00
1:36	109.19	123.00
1:51	109.19	123.00
2: 6	109.15	122.95
2:21	109.15	123.00
2:36	109.06	123.00
2:51	109.01	123.00
3: 6	108.97	122.95
3:21	108.93	122.95
3:36	108.88	123.00
3:51	108.88	123.00
4: 6	108.79	123.00
4:21	108.79	123.00
4:36	108.75	123.00
4:51	108.66	123.00
5: 6	108.66	123.00
5:21	108.66	123.00
5:36	108.57	123.00
5:51	108.57	123.00
6: 6	108.53	123.00
6:21	108.49	123.00
6:36	108.44	123.00
6:51	108.40	123.00
7: 6	108.40	123.00
7:21	108.35	122.95
7:36	108.26	123.00
7:51	108.26	122.95
8: 6	108.22	123.00
8:21	108.22	123.00
8:36	108.13	123.00
8:51	108.13	123.00
9: 6	108.09	123.00
9:21	108.04	123.00
9:36	108.04	123.00
9:51	108.00	123.00
10: 6	107.96	123.00
10:21	107.91	122.95
10:36	107.87	122.95
11: 0:51	107.82	123.00
11: 1: 6	107.78	123.00
11:21	107.78	123.00
11:36	107.74	123.00
11:51	107.74	123.00
12: 6	107.65	123.00
12:21	107.65	123.00
12:36	107.60	123.00
12:51	107.56	122.95
13: 6	107.51	122.95
13:21	107.51	123.00
13:36	107.47	123.00
13:51	107.43	122.95
14: 6	107.38	123.00

3:14:21	107.34	123.00
3:14:36	107.34	122.95
3:14:51	107.25	123.00
3:15: 6	107.25	123.00
3:15:21	107.21	123.00
3:15:36	107.21	123.05
3:15:51	107.16	123.00
3:16: 6	107.12	123.05
3:16:21	107.12	123.05
3:16:36	107.03	123.00
3:16:51	107.03	123.00
3:17: 6	106.94	123.00
3:17:21	106.94	122.95
3:17:36	106.90	123.00
3:17:51	106.90	123.00
3:18: 6	106.85	123.00
3:18:21	106.81	123.00
3:18:36	106.76	122.95
3:18:51	106.72	123.00
3:19: 6	106.68	123.00
3:19:21	106.68	123.00
3:19:36	106.63	123.00
3:19:51	106.59	123.00
3:20: 6	106.59	123.00
3:20:21	106.54	123.05
3:20:36	106.50	123.00
3:20:51	106.46	123.00
3:21: 6	106.46	123.00
3:21:21	106.46	123.05
3:21:36	106.41	123.05
3:21:51	106.37	123.00
3:22: 6	106.32	123.05
3:22:21	106.28	123.00
3:22:36	106.24	123.00
3:22:51	106.19	123.00
3:23: 6	106.19	123.00
3:23:21	106.19	122.95
3:23:36	106.10	123.00
3:23:51	106.10	123.00
3:24: 6	106.06	123.00
3:24:21	106.01	123.05
3:24:36	106.01	122.95
3:24:51	105.97	123.00
3:25: 6	105.93	123.00
3:25:21	105.88	123.00
3:25:36	105.88	123.00
3:25:51	105.84	123.00
3:26: 6	105.79	123.00
3:26:21	105.79	123.00
3:26:36	105.75	123.00
3:26:51	105.75	123.00
3:27: 6	105.71	122.95
3:27:21	105.66	123.00
3:27:36	105.66	123.00

3:27:51	105.62	123.05
3:28: 6	105.57	123.05
3:28:21	105.53	123.00
3:28:36	105.49	123.00
3:28:51	105.44	123.00
3:29: 6	105.49	123.05
3:29:21	105.44	123.00
3:29:36	105.40	123.00
3:29:51	105.35	123.05
3:30: 6	105.35	123.05
3:30:21	105.26	123.00
3:30:36	105.22	123.00
3:30:51	105.22	122.95
3:31: 6	105.22	123.00
3:31:21	105.22	123.05
3:31:36	105.13	123.00
3:31:51	105.13	123.00
3:32: 6	105.09	123.00
3:32:21	105.09	123.00
3:32:36	104.96	123.00
3:32:51	105.00	123.00
3:33: 6	105.00	123.00
3:33:21	104.91	123.00
3:33:36	104.91	123.00
3:33:51	104.87	123.00
3:34: 6	104.82	123.00
3:34:21	104.82	123.05
3:34:36	104.82	123.05
3:34:51	104.78	123.00
3:35: 6	104.74	123.00
3:35:21	104.69	123.00
3:35:36	104.65	122.95
3:35:51	104.60	122.95
3:36: 6	104.60	123.00
3:36:21	104.56	123.00
3:36:36	104.56	123.00
3:36:51	104.56	123.00
3:37: 6	104.51	123.00
3:37:21	104.43	123.00
3:37:36	104.47	123.05
3:37:51	104.38	123.00
3:38: 6	104.38	123.00
3:38:21	104.38	123.00
3:38:36	104.34	123.00
3:38:51	104.29	123.00
3:39: 6	104.29	123.00
3:39:21	104.25	123.00
3:39:36	104.21	123.00
3:39:51	104.21	123.00
3:40: 6	104.16	123.00
3:40:21	104.16	123.00
3:40:36	104.12	123.00
3:40:51	104.12	123.00
3:41: 6	104.07	123.05

13:41:21	104.03	123.00
13:41:36	103.99	123.05
13:41:51	103.99	123.00
13:42: 6	103.94	123.00
13:42:21	103.90	123.05
13:42:36	103.94	123.05
13:42:51	103.90	123.05
13:43: 6	103.85	123.05
13:43:21	103.81	123.05
13:43:36	103.76	123.05
13:43:51	103.76	123.05
13:44: 6	103.76	123.00
13:44:21	103.72	123.05
13:44:36	103.68	123.00
13:44:51	103.68	123.00
13:45: 6	103.68	123.00
13:45:21	103.59	123.00
13:45:36	103.54	123.00
13:45:51	103.54	123.00
13:46: 6	103.54	123.05
13:46:21	103.54	123.00
13:46:36	103.50	123.00
13:46:51	103.41	123.00
13:47: 6	103.46	123.05
13:47:21	103.37	123.00
13:47:36	103.37	123.00
13:47:51	103.37	123.05
13:48: 6	103.32	123.05
13:48:21	103.28	123.00
13:48:36	103.28	123.05
13:48:51	103.28	123.00
13:49: 6	103.19	123.00
13:49:21	103.19	123.00
13:49:36	103.19	123.05
13:49:51	103.10	123.00
13:50: 6	103.10	123.00
13:50:21	103.10	123.00
13:50:36	103.06	123.05
13:50:51	103.06	123.05
13:51: 6	103.06	123.00
13:51:21	102.97	123.00
13:51:36	102.97	123.00
13:51:51	102.97	123.05
13:52: 6	102.93	123.00
13:52:21	102.88	123.05
13:52:36	102.93	123.00
13:52:51	102.84	123.00
13:53: 6	102.84	123.05
13:53:21	102.84	123.00
13:53:36	102.75	123.00
13:53:51	102.75	122.95
13:54: 6	102.71	123.05
13:54:21	102.75	123.05
13:54:36	102.66	123.05

4:51	102.66	123.00
55: 6	102.66	123.05
5:21	102.62	123.05
5:36	102.62	123.00
55:51	102.57	123.00
56: 6	102.53	123.00
6:21	102.53	123.00
6:36	102.49	123.05
56:51	102.49	123.05
7: 6	102.44	123.00
7:21	102.44	123.00
57:36	102.40	123.00
57:51	102.35	123.00
8: 6	102.35	123.05
58:21	102.35	123.05
58:36	102.31	123.00
8:51	102.26	123.00
9: 6	102.26	123.00
59:21	102.22	123.05
59:36	102.22	123.00
9:51	102.18	123.05
0: 6	102.13	123.05
0:21	102.13	123.05
0:36	102.13	123.00
0:51	102.09	123.05
1: 6	102.09	123.05
1:21	102.04	123.00
1:36	102.00	123.00
:51	102.04	123.05
2: 6	102.00	123.00
2:21	101.96	123.00
2:36	101.91	123.05
2:51	101.87	122.95
3: 6	101.87	123.05
3:21	101.82	123.00
3:36	101.78	123.00
3:51	101.82	123.05
4: 6	101.78	123.05
4:21	101.74	123.00
4:36	101.74	123.05
4:51	101.69	123.11
5: 6	101.69	123.05
5:21	101.69	123.00
5:36	101.65	123.00
5:51	101.65	123.05
6: 6	101.60	123.05
6:21	101.56	123.05
6:36	101.60	123.00
6:51	101.56	123.05
7: 6	101.47	123.00
:21	101.51	123.00
7:36	101.51	123.05
7:51	101.47	123.05
: 6	101.47	123.05

4: 8:21	101.38	123.00
4: 8:36	101.43	123.00
4: 8:51	101.38	123.00
4: 9: 6	101.34	123.00
4: 9:21	101.34	123.05
4: 9:36	101.43	122.84
4: 9:51	101.60	122.79
4:10: 6	101.47	122.79
4:10:21	101.43	122.84
4:10:36	101.29	123.05
4:10:51	101.38	122.84
4:11: 6	101.38	122.95
4:11:21	101.38	122.95
4:11:36	101.43	122.95
4:11:51	101.47	122.89
4:12: 6	101.47	122.95
4:12:21	101.51	122.89
4:12:36	101.51	122.89
4:12:51	101.56	122.89
4:13: 6	101.56	122.89
4:13:21	101.56	122.89
4:13:36	101.56	122.89
4:13:51	101.65	122.84
4:14: 6	101.69	122.89
4:14:21	101.69	122.95
4:14:36	101.69	122.95
4:14:51	101.69	122.89
4:15: 6	101.74	122.84
4:15:21	101.74	122.89
4:15:36	101.78	122.84
4:15:51	101.82	122.89
4:16: 6	101.78	122.95
4:16:21	101.82	122.95
4:16:36	101.82	122.89
4:16:51	101.87	122.95
4:17: 6	101.87	122.89
4:17:21	101.87	122.95
4:17:36	101.91	122.95
4:17:51	101.91	122.95
4:18: 6	101.96	122.95
4:18:21	101.96	122.95
4:18:36	101.96	122.95
4:18:51	102.00	123.00
4:19: 6	102.00	123.00
4:19:21	101.96	123.00
4:19:36	101.87	123.00
4:19:51	101.78	123.05
4:20: 6	101.91	122.84
4:20:21	101.82	122.95
4:20:36	101.87	122.95
4:20:51	101.91	122.95
4:21: 6	101.91	122.95
4:21:21	101.96	122.95
4:21:36	102.00	122.89

Pump On (4-4.5gpm)

21:51	101.96	122.95
22: 6	102.00	122.95
2:21	102.04	122.95
2:36	102.04	122.95
22:51	102.09	122.95
23: 6	102.09	122.95
23:21	102.13	122.95
23:36	102.13	122.95
23:51	102.18	122.95
24: 6	102.22	122.95
24:21	102.22	123.00
24:36	102.26	122.95
24:51	102.31	122.95
25: 6	102.26	122.95
25:21	102.31	122.95
25:36	102.35	123.05
25:51	102.35	122.95
26: 6	102.35	122.95
26:21	102.40	123.00
26:36	102.40	122.95
26:51	102.44	122.95
27: 6	102.44	122.95
27:21	102.44	122.95
27:36	102.49	123.00
27:51	102.49	123.00
28: 6	102.53	122.95
28:21	102.53	122.95
28:36	102.57	122.95
28:51	102.57	122.95
29: 6	102.62	122.95
29:21	102.62	123.00
29:36	102.62	123.00
29:51	102.66	122.95
30: 6	102.66	122.95
30:21	102.71	123.00
30:36	102.71	122.95
30:51	102.75	123.00
31: 6	102.75	122.95
31:21	102.75	122.95
31:36	102.84	122.95
31:51	102.79	122.89
32: 6	102.79	123.00
32:21	102.84	123.00
32:36	102.88	122.95
32:51	102.93	122.95
33: 6	102.93	122.89
33:21	102.97	122.95
33:36	102.97	123.00
33:51	102.97	122.95
34: 6	103.01	122.95
34:21	103.01	122.95
34:36	103.01	123.00
34:51	103.06	122.95
35: 6	103.15	123.00

4:35:21	103.15	123.00
4:35:36	103.10	122.95
4:35:51	103.15	122.95
4:36: 6	103.19	122.95
4:36:21	103.19	123.00
4:36:36	103.19	122.95
4:36:51	103.24	123.00
4:37: 6	103.24	122.95
4:37:21	103.28	123.00
4:37:36	103.32	123.00
4:37:51	103.24	123.00
4:38: 6	103.32	123.00
4:38:21	103.37	123.00
4:38:36	103.37	123.05
4:38:51	103.32	123.00
4:39: 6	103.37	123.00
4:39:21	103.41	123.05
4:39:36	103.46	123.11
4:39:51	103.50	123.05
4:40: 6	103.54	123.05
4:40:21	103.54	123.00
4:40:36	103.59	123.05
4:40:51	103.59	123.05
4:41: 6	103.63	123.05
4:41:21	103.63	123.05
4:41:36	103.68	123.11
4:41:51	103.72	123.11
4:42: 6	103.72	123.11
4:42:21	103.68	123.05
4:42:36	103.76	123.05
4:42:51	103.81	123.05
4:43: 6	103.76	123.05
4:43:21	103.85	123.05
4:43:36	103.85	123.05
4:43:51	103.85	123.00
4:44: 6	103.90	123.05
4:44:21	103.90	123.11
4:44:36	103.94	123.05
4:44:51	103.94	123.05
4:45: 6	103.94	123.05
4:45:21	103.94	123.05
4:45:36	103.94	123.00
4:45:51	104.03	123.00
4:46: 6	103.99	123.05
4:46:21	104.03	123.05
4:46:36	104.03	123.05
4:46:51	104.07	123.05
4:47: 6	104.07	123.05
4:47:21	104.07	123.05
4:47:36	104.12	123.00
4:47:51	104.16	123.05
4:48: 6	104.12	123.05
4:48:21	104.16	123.05
4:48:36	104.16	123.00

48:51	104.21	123.05
4:49: 6	104.16	123.05
49:21	104.25	123.11
49:36	104.25	123.05
4:49:51	104.29	123.05
4:50: 6	104.29	123.00
4:50:21	104.29	123.05
4:50:36	104.34	123.11
4:50:51	104.29	123.00
4:51: 6	104.38	123.00
4:51:21	104.38	123.05
4:51:36	104.43	123.05
4:51:51	104.43	123.05
4:52: 6	104.43	123.00
4:52:21	104.43	123.00
4:52:36	104.43	123.00
4:52:51	104.47	123.05
4:53: 6	104.47	123.00
4:53:21	104.51	123.05
4:53:36	104.51	123.05
4:53:51	104.51	123.05
4:54: 6	104.51	123.05
4:54:21	104.56	123.05
4:54:36	104.56	123.05
4:54:51	104.60	123.11
4:55: 6	104.60	123.05
4:55:21	104.60	123.05
4:55:36	104.65	123.05
4:55:51	104.65	123.05
4:56: 6	104.65	123.05
4:56:21	104.65	123.05
4:56:36	104.69	123.05
4:56:51	104.74	123.05
4:57: 6	104.78	123.11
4:57:21	104.74	123.05
4:57:36	104.78	123.05
4:57:51	104.78	123.05
4:58: 6	104.78	123.05
4:58:21	104.82	123.05
4:58:36	104.82	123.05
4:58:51	104.82	123.05
4:59: 6	104.82	123.00
4:59:21	104.87	123.11
4:59:36	104.87	123.05
4:59:51	104.87	123.05
5: 0: 6	104.91	123.05
5: 0:21	104.96	123.05
5: 0:36	104.96	123.05
5: 0:51	105.00	123.05
5: 1: 6	105.00	123.05
5: 1:21	105.00	123.05
5: 1:36	105.00	123.05
5: 1:51	105.00	123.00
5: 2: 6	105.04	123.00

5:15:51	105.88	123.05
5:16: 6	105.88	123.05
5:16:21	105.93	123.05
5:16:36	105.93	123.11
5:16:51	105.93	123.11
5:17: 6	105.93	123.05
5:17:21	105.97	123.05
5:17:36	105.97	123.05
5:17:51	105.97	123.05
5:18: 6	105.97	123.05
5:18:21	105.97	123.05
5:18:36	106.01	123.05
5:18:51	106.01	123.05
5:19: 6	106.01	123.05
5:19:21	106.01	123.05
5:19:36	106.06	123.05
5:19:51	106.06	123.05
5:20: 6	106.06	123.05
5:20:21	106.10	123.05
5:20:36	106.10	123.05
5:20:51	106.10	123.05
5:21: 6	106.10	123.05
5:21:21	106.19	123.05
5:21:36	106.19	123.05
5:21:51	106.19	123.05
5:22: 6	106.19	123.05
5:22:21	106.24	123.05
5:22:36	106.24	123.11
5:22:51	106.19	123.05
5:23: 6	106.28	123.05
5:23:21	106.28	123.05
5:23:36	106.28	123.05
5:23:51	106.28	123.05
5:24: 6	106.28	123.05
5:24:21	106.32	123.11
5:24:36	106.32	123.11
5:24:51	106.32	123.05
5:25: 6	106.37	123.05
5:25:21	106.41	123.05
5:25:36	106.37	123.05
5:25:51	106.41	123.05
5:26: 6	106.41	123.11
5:26:21	106.37	123.05
5:26:36	106.41	123.00
5:26:51	106.41	123.11
5:27: 6	106.41	123.05
5:27:21	106.41	123.05
5:27:36	106.46	123.05
5:27:51	106.46	123.11
5:28: 6	106.46	123.05
5:28:21	106.50	123.05
5:28:36	106.50	123.05
5:28:51	106.54	122.95
5:29: 6	106.54	122.95

5:29:21	106.54	123.00
5:29:36	106.54	123.05
5:29:51	106.54	123.05
5:30: 6	106.54	123.00
5:30:21	106.59	123.05
5:30:36	106.59	123.00
5:30:51	106.59	123.00
5:31: 6	106.63	123.05
5:31:21	106.59	123.00
5:31:36	106.63	123.00
5:31:51	106.63	123.05
5:32: 6	106.63	123.05
5:32:21	106.63	123.00
5:32:36	106.63	123.00
5:32:51	106.68	123.00
5:33: 6	106.68	122.95
5:33:21	106.68	123.00
5:33:36	106.72	122.95
5:33:51	106.76	123.00
5:34: 6	106.76	123.00
5:34:21	106.76	123.00
5:34:36	106.76	123.00
5:34:51	106.81	122.95
5:35: 6	106.76	122.95
5:35:21	106.76	122.95
5:35:36	106.81	122.95
5:35:51	106.76	122.95
5:36: 6	106.76	122.89
5:36:21	106.81	122.95
5:36:36	106.85	122.95
5:36:51	106.85	122.89
5:37: 6	106.85	122.95
5:37:21	106.90	122.89
5:37:36	106.85	122.95
5:37:51	106.90	122.89
5:38: 6	106.90	122.95
5:38:21	106.94	122.95
5:38:36	106.94	122.95
5:38:51	106.94	122.95
5:39: 6	106.94	122.95
5:39:21	106.99	123.00
5:39:36	106.94	122.95
5:39:51	106.99	122.84
5:40: 6	106.99	123.00
5:40:21	107.03	122.95
5:40:36	107.07	122.95
5:40:51	107.16	122.89
5:41: 6	107.12	122.95
5:41:21	107.21	123.00
5:41:36	107.21	123.11
5:41:51	107.25	123.05
5:42: 6	107.25	123.11
5:42:21	107.25	123.05
5:42:36	107.34	123.05

42:51	107.34	123.11
5:43: 6	107.34	123.05
3:21	107.34	123.05
3:36	107.38	123.05
5:43:51	107.38	123.05
5:44: 6	107.38	123.00
44:21	107.43	123.05
44:36	107.47	123.11
5:44:51	107.47	123.05
45: 6	107.47	123.05
45:21	107.51	123.05
5:45:36	107.51	123.05
5:45:51	107.56	123.05
46: 6	107.56	123.05
46:21	107.60	123.00
5:46:36	107.56	123.00
46:51	107.60	123.05
47: 6	107.65	123.05
5:47:21	107.69	123.05
47:36	107.60	123.00
47:51	107.65	123.05
5:48: 6	107.69	123.05
5:48:21	107.69	123.05
48:36	107.69	123.00
48:51	107.74	123.00
5:49: 6	107.74	123.00
49:21	107.74	123.05
49:36	107.78	123.00
49:51	107.78	123.00
5:50: 6	107.78	123.05
50:21	107.82	123.00
5:50:36	107.82	123.00
5:50:51	107.82	123.00
51: 6	107.82	123.00
51:21	107.87	123.00
5:51:36	107.87	123.05
51:51	107.87	123.00
52: 6	107.91	123.00
5:52:21	107.87	123.00
5:52:36	107.91	123.05
52:51	107.91	123.00
53: 6	107.91	123.00
5:53:21	107.96	123.00
53:36	107.96	123.05
53:51	107.96	123.00
54: 6	107.96	123.00
54:21	107.96	123.05
54:36	108.04	123.00
54:51	108.00	123.00
55: 6	108.00	123.05
55:21	108.00	123.00
55:36	108.00	123.00
55:51	107.96	123.00 Pump Off
56: 6	107.87	123.00

5:56:21	107.78	123.00	
5:56:36	107.74	123.00	
5:56:51	107.65	122.95	
5:57: 6	107.65	123.00	
5:57:21	107.60	123.05	
5:57:36	107.60	123.00	
5:57:51	107.56	123.00	
5:58: 6	107.47	123.00	
5:58:21	107.47	123.00	
5:58:36	107.43	123.00	
5:58:51	107.38	122.95	
5:59: 6	107.34	123.00	
5:59:21	107.34	123.00	
5:59:36	107.29	123.00	
5:59:51	107.25	123.00	
5: 0: 6	107.21	123.00	
5: 0:21	107.16	122.95	
5: 0:36	107.12	123.00	
5: 0:51	107.07	123.00	
5: 1: 6	107.12	123.00	
5: 1:21	107.03	123.00	
5: 1:36	107.03	123.00	
5: 1:51	106.99	123.00	
5: 2: 6	106.94	123.00	
5: 2:21	106.85	123.05	
5: 2:36	106.85	123.00	
5: 2:51	106.81	123.00	
5: 3: 6	106.81	123.00	
5: 3:21	106.72	123.00	
5: 3:36	106.68	123.00	
5: 3:51	106.68	123.00	
5: 4: 6	106.68	122.95	
5: 4:21	106.54	122.95	
5: 4:36	106.50	122.95	
5: 4:51	106.50	123.00	
5: 5: 6	106.46	123.00	
5: 5:21	106.68	123.00	Pump On(9.8gpm)
5: 5:36	106.99	123.00	
5: 5:51	107.38	123.00	
5: 6: 6	107.47	123.00	
5: 6:21	107.56	123.00	
5: 6:36	107.65	122.95	
5: 6:51	107.78	123.00	
5: 7: 6	107.96	122.95	
5: 7:21	108.04	123.00	
5: 7:36	108.09	123.00	
5: 7:51	108.22	123.00	
5: 8: 6	108.31	122.95	
5: 8:21	108.44	123.00	
5: 8:36	108.49	123.00	
5: 8:51	108.66	123.00	(15gpm)
5: 9: 6	108.84	123.00	
5: 9:21	109.01	123.00	
5: 9:36	109.28	123.00	

6. 9:51	109.32	123.00
6:10: 6	109.46	123.00
10:21	109.54	123.00
10:36	109.72	123.00
6:10:51	109.81	123.00
6:11: 6	110.07	122.95
6:11:21	110.21	123.00
6:11:36	110.43	122.89
6:11:51	110.51	123.00
6:12: 6	110.74	123.00
6:12:21	110.87	123.05
6:12:36	111.04	122.95
6:12:51	111.22	122.95
6:13: 6	111.40	123.00
6:13:21	111.62	122.95
6:13:36	111.75	123.00
6:13:51	111.79	123.05
6:14: 6	112.06	123.00
6:14:21	112.24	122.89
6:14:36	112.41	123.00
6:14:51	112.50	123.00
6:15: 6	112.72	122.89
6:15:21	112.81	122.95
6:15:36	112.94	123.00
6:15:51	113.16	123.05
6:16: 6	113.34	123.00
6:16:21	113.47	123.00
6:16:36	113.60	123.00
6:16:51	113.74	123.00
6:17: 6	113.91	123.00
6:17:21	114.04	123.00
6:17:36	114.22	123.00
6:17:51	114.35	123.00
6:18: 6	114.53	122.95
6:18:21	114.66	122.95
6:18:36	114.88	122.95
6:18:51	114.97	122.95
6:19: 6	115.10	122.95
6:19:21	115.28	122.89
6:19:36	115.46	122.89
6:19:51	115.59	122.89
6:20: 6	115.72	122.95
6:20:21	115.90	122.95
6:20:36	115.99	123.00
6:20:51	116.21	122.95
6:21: 6	116.34	123.00
6:21:21	116.51	123.00
6:21:36	116.65	123.00
6:21:51	116.74	122.89
6:22: 6	116.87	122.95
6:22:21	117.00	122.95
6:22:36	117.18	122.95
6:22:51	117.35	122.95
6:23: 6	117.57	122.95

6:23:21	117.62	122.89
6:23:36	117.71	122.95
6:23:51	117.84	122.89
6:24: 6	117.97	122.95
6:24:21	118.19	123.00
6:24:36	118.32	123.00
6:24:51	118.46	122.95
6:25: 6	118.59	122.95
6:25:21	118.72	122.95
6:25:36	118.85	122.89
6:25:51	118.99	122.95
6:26: 6	119.12	122.95
6:26:21	119.29	122.89
6:26:36	119.43	122.95
6:26:51	119.56	122.89
6:27: 6	119.74	122.95
6:27:21	119.82	122.89
6:27:36	120.04	122.95
6:27:51	120.09	122.95
6:28: 6	120.22	122.95
6:28:21	120.40	122.89
6:28:36	120.53	122.89
6:28:51	120.62	122.89
6:29: 6	120.79	122.89
6:29:21	120.97	122.89
6:29:36	121.06	122.95
6:29:51	121.15	122.95
6:30: 6	121.32	122.95
6:30:21	121.46	122.89
6:30:36	121.50	122.95
6:30:51	121.72	122.95
6:31: 6	121.76	122.89
6:31:21	121.94	122.95
6:31:36	122.07	122.89
6:31:51	122.16	122.89
6:32: 6	122.29	122.95
6:32:21	122.43	122.95
6:32:36	122.51	122.89
6:32:51	122.74	122.89
6:33: 6	122.78	122.89
6:33:21	122.96	122.95
6:33:36	123.00	122.89
6:33:51	123.13	122.89
6:34: 6	123.35	122.89
6:34:21	123.44	122.95
6:34:36	123.62	122.95
6:34:51	123.71	122.89
6:35: 6	123.79	122.89
6:35:21	123.93	122.95
6:35:36	124.06	122.95
6:35:51	124.19	122.95
6:36: 6	124.28	122.95
6:36:21	124.41	122.95
6:36:36	124.54	122.89

36:51	124.68	122.89
37: 6	124.81	122.89
37:21	124.90	122.79
37:36	125.03	122.79
37:51	125.12	122.79
38: 6	125.25	122.74
38:21	125.34	122.74
38:36	125.47	122.79
38:51	125.60	122.74
39: 6	125.69	122.79
39:21	125.82	122.84
39:36	125.96	122.89
39:51	126.04	122.84
40: 6	126.18	122.84
40:21	126.26	122.84
40:36	126.35	122.84
40:51	126.49	122.79
41: 6	126.62	122.79
41:21	126.75	122.84
41:36	126.84	122.79
41:51	126.93	122.74
42: 6	127.10	122.84
42:21	127.19	122.74
42:36	127.37	122.79
42:51	127.37	122.74
43: 6	127.50	122.68
43:21	127.68	122.79
43:36	127.72	122.89
43:51	127.85	122.74
44: 6	127.94	122.79
44:21	128.07	122.68
44:36	128.12	122.74
44:51	128.25	122.74
45: 6	128.38	122.68
45:21	128.51	122.74
45:36	128.51	122.74
45:51	128.74	122.74
46: 6	128.82	122.79
46:21	128.91	122.68
46:36	129.00	122.79
46:51	129.18	122.68
47: 6	129.22	122.79
47:21	129.31	122.79
47:36	129.44	122.68
47:51	129.53	122.74
48: 6	129.71	122.74
48:21	129.79	122.74
48:36	129.84	122.68
48:51	129.93	122.74
49: 6	130.10	122.74
49:21	130.19	122.68
49:36	130.28	122.74
49:51	130.32	122.68
50: 6	130.46	122.68

6:50:21	130.54	122.68
6:50:36	130.68	122.68
6:50:51	130.72	122.68
6:51: 6	130.85	122.63
6:51:21	130.99	122.68
6:51:36	131.07	122.68
6:51:51	131.16	122.68
6:52: 6	131.25	122.68
6:52:21	131.38	122.63
6:52:36	131.38	122.63
6:52:51	131.51	122.63
6:53: 6	131.69	122.63
6:53:21	131.74	122.68
6:53:36	131.82	122.68
6:53:51	131.91	122.68
6:54: 6	132.00	122.63
6:54:21	132.09	122.63
6:54:36	132.18	122.68
6:54:51	132.35	122.63
6:55: 6	132.40	122.68
6:55:21	132.53	122.68
6:55:36	132.57	122.68
6:55:51	132.71	122.68
6:56: 6	132.79	122.68
6:56:21	132.88	122.63
6:56:36	132.97	122.68
6:56:51	133.06	122.63
6:57: 6	133.10	122.63
6:57:21	133.24	122.68
6:57:36	133.32	122.68
6:57:51	133.46	122.68
6:58: 6	133.54	122.68
6:58:21	133.63	122.68
6:58:36	133.68	122.68
6:58:51	133.81	122.68
6:59: 6	133.85	122.68
6:59:21	133.94	122.68
6:59:36	134.03	122.63
6:59:51	134.07	122.63
7: 0: 6	134.16	122.63
7: 0:21	134.29	122.63
7: 0:36	134.43	122.74
7: 0:51	134.43	122.74
7: 1: 6	134.43	122.68
7: 1:21	134.43	122.74
7: 1:36	134.43	122.74
7: 1:51	134.47	122.68
7: 2: 6	134.56	122.79
7: 2:21	134.56	122.74
7: 2:36	134.60	122.74
7: 2:51	134.65	122.68
7: 3: 6	134.65	122.74
7: 3:21	134.69	122.74
7: 3:36	134.78	122.79

(10gpm)

3:51	134.78	122.74
4: 6	134.82	122.68
4:21	134.91	122.74
4:36	134.87	122.74
4:51	134.91	122.74
5: 6	135.00	122.79
5:21	135.00	122.74
5:36	135.09	122.79
5:51	135.18	122.79
6: 6	135.22	122.79
6:21	135.22	122.79
6:36	135.26	122.79
6:51	135.31	122.79
7: 6	135.35	122.79
7:21	135.44	122.74
7:36	135.44	122.84
7:51	135.49	122.79
8: 6	135.53	122.79
8:21	135.57	122.84
8:36	135.57	122.84
8:51	135.66	122.79
9: 6	135.66	122.84
9:21	135.75	122.84
9:36	135.79	122.84
9:51	135.79	122.84
10: 6	135.88	122.84
10:21	135.88	122.84
10:36	135.93	122.84
10:51	136.01	122.89
11: 6	136.10	122.89
11:21	136.06	122.89
11:36	136.10	122.89
11:51	136.19	122.89
12: 6	136.19	122.89
12:21	136.24	122.89
12:36	136.28	122.89
12:51	136.37	122.89
13: 6	136.37	122.89
13:21	136.41	122.95
13:36	136.46	122.95
13:51	136.54	122.95
14: 6	136.54	122.95
14:21	136.63	122.95
14:36	136.59	122.95
14:51	136.68	122.95
15: 6	136.68	122.89
15:21	136.72	122.95
15:36	136.76	122.95
15:51	136.85	123.00
16: 6	136.94	122.95
16:21	136.90	123.00
16:36	136.94	123.00
16:51	136.94	123.00
17: 6	136.99	123.00

7:17:21	137.07	123.00
7:17:36	137.12	123.05
7:17:51	137.12	123.00
7:18: 6	137.16	123.00
7:18:21	137.25	123.05
7:18:36	137.25	123.00
7:18:51	137.25	123.05
7:19: 6	137.34	123.16
7:19:21	137.38	123.11
7:19:36	137.43	123.11
7:19:51	137.47	123.05
7:20: 6	137.51	123.11
7:20:21	137.51	123.16
7:20:36	137.56	123.16
7:20:51	137.60	123.11
7:21: 6	137.65	123.16
7:21:21	137.69	123.11
7:21:36	137.74	123.11
7:21:51	137.74	123.11
7:22: 6	137.78	123.11
7:22:21	137.82	123.16
7:22:36	137.87	123.21
7:22:51	137.87	123.16
7:23: 6	137.96	123.16
7:23:21	137.96	123.21
7:23:36	138.00	123.16
7:23:51	138.04	123.21
7:24: 6	138.09	123.26
7:24:21	138.09	123.21
7:24:36	138.13	123.21
7:24:51	138.18	123.21
7:25: 6	138.26	123.21
7:25:21	138.26	123.16
7:25:36	138.31	123.26
7:25:51	138.31	123.16
7:26: 6	138.35	123.21
7:26:21	138.44	123.21
7:26:36	138.44	123.21
7:26:51	138.49	123.16
7:27: 6	138.53	123.26
7:27:21	138.57	123.32
7:27:36	138.62	123.32
7:27:51	138.66	123.26
7:28: 6	138.66	123.26
7:28:21	138.71	123.26
7:28:36	138.75	123.26
7:28:51	138.79	123.32
7:29: 6	138.79	123.26
7:29:21	138.84	123.32
7:29:36	138.88	123.37
7:29:51	138.88	123.37
7:30: 6	138.93	123.37
7:30:21	138.97	123.42
7:30:36	139.06	123.42

0:51	139.06	123.42
1: 6	139.10	123.32
1:21	139.15	123.37
1:36	139.10	123.47
2:31:51	139.24	123.84
2: 6	139.19	123.95
2:21	139.28	123.84
2:32:36	139.28	123.68
2:32:51	139.32	123.63
3: 6	139.37	123.63
3:21	139.41	123.58
3:33:36	139.41	123.53
3:51	139.41	123.58
4: 6	139.46	123.53
4:34:21	139.54	123.68
4:34:36	139.54	123.74
4:51	139.59	123.68
5: 6	139.68	123.58
5:35:21	139.72	123.63
5:36	139.68	123.53
5:51	139.72	123.47
6:36: 6	139.72	123.58
6:36:21	139.81	123.42
6:36	139.76	123.37
6:36:51	139.81	123.37
7:37: 6	139.85	123.42
7: 7:21	139.90	123.37
7:36	139.94	123.47
7:51	139.94	123.47
8: 6	140.03	123.37
8:21	140.03	123.42
8:38:36	140.16	123.47
8:38:51	140.12	123.37
9: 6	140.12	123.37
9:39:21	140.12	123.42
9:39:36	140.21	123.58
9:51	140.21	123.32
10: 6	140.25	123.42
10:40:21	140.25	123.37
10:36	140.29	123.37
10:51	140.38	123.42
11:41: 6	140.34	123.42
11:41:21	140.43	123.37
11:41:36	140.47	123.42
11:41:51	140.47	123.42
12:42: 6	140.51	123.42
12:42:21	140.51	123.37
12:42:36	140.51	123.42
12:42:51	140.60	123.42
13:43: 6	140.60	123.47
13:43:21	140.60	123.42
13:43:36	140.69	123.53
13:43:51	140.74	123.42
14: 6	140.74	123.42

7:44:21	140.74	123.42
7:44:36	140.78	123.47
7:44:51	140.87	123.53
7:45: 6	140.87	123.47
7:45:21	140.91	123.53
7:45:36	140.96	123.74
7:45:51	141.00	123.89
7:46: 6	140.91	123.47
7:46:21	141.00	123.53
7:46:36	141.04	123.47
7:46:51	141.09	123.42
7:47: 6	141.04	123.63
7:47:21	141.13	123.37
7:47:36	141.18	123.58
7:47:51	141.13	123.53
7:48: 6	141.18	123.42
7:48:21	141.22	123.95
7:48:36	141.26	123.32
7:48:51	141.31	123.58
7:49: 6	141.31	123.42
7:49:21	141.31	123.37
7:49:36	141.35	123.47
7:49:51	141.40	123.47
7:50: 6	141.44	123.63
7:50:21	141.44	123.37
7:50:36	141.49	123.47
7:50:51	141.49	123.53
7:51: 6	141.53	123.47
7:51:21	141.57	123.42
7:51:36	141.57	123.42
7:51:51	141.66	123.47
7:52: 6	141.62	123.47
7:52:21	141.62	123.47
7:52:36	141.66	123.47
7:52:51	141.66	123.37
7:53: 6	141.75	123.47
7:53:21	141.79	123.47
7:53:36	141.75	123.47
7:53:51	141.84	123.47
7:54: 6	141.88	123.58
7:54:21	141.84	123.58
7:54:36	141.93	123.53
7:54:51	141.93	123.42
7:55: 6	142.01	123.58
7:55:21	141.97	123.63
7:55:36	141.97	123.47
7:55:51	141.97	123.32
7:56: 6	142.06	123.58
7:56:21	142.10	123.47
7:56:36	142.10	123.47
7:56:51	142.15	123.47
7:57: 6	142.15	123.53
:57:21	142.19	123.42
7:57:36	142.10	123.47

7 57:51	142.28	123.53
7:58: 6	142.24	123.42
7:58:21	142.24	123.37
7:58:36	142.28	123.53
7:58:51	142.32	123.58
7:59: 6	142.32	123.42
7:59:21	142.37	123.68
7:59:36	142.37	123.58
7:59:51	142.41	123.37
8: 0: 6	142.41	123.37
8: 0:21	142.41	123.47
8: 0:36	142.50	123.42
8: 0:51	142.50	123.42
8: 1: 6	142.54	123.47
8: 1:21	142.59	123.47
8: 1:36	142.59	123.42
8: 1:51	142.63	123.47
8: 2: 6	142.59	123.58
8: 2:21	142.63	123.42
8: 2:36	142.72	123.42
8: 2:51	142.68	123.53
8: 3: 6	142.68	123.47
8: 3:21	142.72	123.47
8: 3:36	142.81	123.53
8: 3:51	142.81	123.63
8: 4: 6	142.81	123.68
8: 4:21	142.85	123.47
8: 4:36	142.90	123.58
8: 4:51	142.85	123.68
8: 5: 6	142.90	123.58
8: 5:21	142.90	123.68
8: 5:36	142.94	123.58
8: 5:51	142.99	123.42
8: 6: 6	143.03	123.63
8: 6:21	142.99	123.47
8: 6:36	143.03	123.47
8: 6:51	143.07	123.47
8: 7: 6	143.12	123.42
8: 7:21	143.16	123.53
8: 7:36	143.16	123.47
8: 7:51	143.12	123.37
8: 8: 6	143.16	123.58
8: 8:21	143.21	123.47
8: 8:36	143.21	123.47
8: 8:51	143.21	123.42
8: 9: 6	143.29	123.47
8: 9:21	143.25	123.47
8: 9:36	143.29	123.47
8: 9:51	143.25	123.37
8:10: 6	143.34	123.47
8:10:21	143.34	123.42
8:10:36	143.34	123.42
8:10:51	143.38	123.37
8:11: 6	143.43	123.42

8:11:21	143.51	123.47
8:11:36	143.43	123.37
8:11:51	143.56	123.58
8:12: 6	143.56	123.47
8:12:21	143.47	123.37
8:12:36	143.56	123.53
8:12:51	143.51	123.53
8:13: 6	143.56	123.74
8:13:21	143.60	123.74
8:13:36	143.65	123.74
8:13:51	143.65	123.42
8:14: 6	143.65	123.47
8:14:21	143.69	123.42
8:14:36	143.69	123.42
8:14:51	143.74	123.47
8:15: 6	143.82	123.42
8:15:21	143.78	123.42
8:15:36	143.78	123.47
8:15:51	143.78	123.47
8:16: 6	143.82	123.42
8:16:21	143.87	123.42
8:16:36	143.87	123.53
8:16:51	143.91	123.53
8:17: 6	143.96	123.47
8:17:21	144.00	123.47
8:17:36	143.96	123.42
8:17:51	144.00	123.47
8:18: 6	143.96	123.42
8:18:21	143.96	123.53
8:18:36	144.04	123.53
8:18:51	144.09	123.47
8:19: 6	144.09	123.63
8:19:21	144.09	123.42
8:19:36	144.13	123.79
8:19:51	144.18	123.53
8:20: 6	144.13	123.47
8:20:21	144.22	123.47
8:20:36	144.18	123.37
8:20:51	144.18	123.37
8:21: 6	144.22	123.47
8:21:21	144.22	123.47
8:21:36	144.26	123.47
8:21:51	144.31	123.47
8:22: 6	144.26	123.53
8:22:21	144.35	123.47
8:22:36	144.35	123.58
8:22:51	144.40	123.63
8:23: 6	144.40	123.63
8:23:21	144.40	123.47
8:23:36	144.44	123.74
8:23:51	144.44	123.53
8:24: 6	144.49	123.53
8:24:21	144.53	123.53
8:24:36	144.53	123.53

24:51	144.53	123.58
25: 6	144.53	123.42
25:21	144.53	123.53
25:36	144.57	123.58
26:51	144.62	123.79
26: 6	144.62	123.63
26:21	144.66	123.47
26:36	144.66	123.47
26:51	144.66	123.53
27: 6	144.71	123.42
27:21	144.75	123.58
27:36	144.75	123.47
27:51	144.75	123.58
28: 6	144.84	123.53
28:21	144.79	123.53
28:36	144.84	123.42
28:51	144.79	123.42
29: 6	144.84	123.68
29:21	144.88	123.74
29:36	144.88	123.47
29:51	144.93	123.79
30: 6	144.88	123.53
30:21	144.97	123.58
30:36	144.97	123.47
30:51	144.97	123.42
31: 6	144.97	123.47
31:21	145.01	123.47
31:36	145.01	123.37
31:51	145.01	123.42
32: 6	145.06	123.53
32:21	145.10	123.42
32:36	145.15	123.53
32:51	145.10	123.47
33: 6	145.15	123.47
33:21	145.15	123.42
33:36	145.15	123.53
33:51	145.24	123.47
34: 6	145.24	123.47
34:21	145.24	123.63
34:36	145.19	123.63
34:51	145.28	123.84
35: 6	145.32	123.42
35:21	145.32	123.47
35:36	145.32	123.79
35:51	145.37	123.74
36: 6	145.37	123.79
36:21	145.41	123.74
36:36	145.41	123.42
36:51	145.46	123.58
37: 6	145.41	123.47
37:21	145.46	123.47
37:36	145.50	123.53
37:51	145.54	123.47
38: 6	145.50	123.47

18:38:21	145.50	123.42	
18:38:36	145.54	123.47	
18:38:51	145.59	123.53	
18:39: 6	145.59	123.37	
18:39:21	145.63	123.47	
18:39:36	145.63	123.37	
18:39:51	145.63	123.47	
18:40: 6	145.68	123.47	Pump Off
18:40:21	145.37	123.47	
18:40:36	145.01	123.47	
18:40:51	144.71	123.42	
18:41: 6	144.44	123.37	
18:41:21	144.18	123.47	
18:41:36	143.91	123.42	
18:41:51	143.65	123.42	
18:42: 6	143.47	123.42	
18:42:21	143.29	123.42	

PACKER TESTING FIELD INFORMATION
EACH TEST

TE: 5-12-93

WELL/ZONE: N-1802/Zone 2a

S NNEL: M. Kirsch, M. Keown,
J. Sobelman

PROJECT: Unisys, Long Island

W.O.: 1328

SETTING DEPTHS		DATA COLLECTION CALIBRATION		
Point A	252.0'	Top of interval TO bottom of interval current mA=static water level (FT) 4mA=transducer depth (FT)	CONFIGURATION FILENAME	
Top Packer Top	256.0'			
Top Packer Bottom	260.75'			
* Pump Intake	150.00'			
Bottom Packer Top	272.95'	Channel 1	Channel 2	Channel 3
Bottom Packer Bottom	277.70'	TO	TO	TO
Assembly Bottom	279.70'	5.148mA = 123.0'	mA =	9.710 mA = 123.0'
		3.924mA = 150.0'	mA =	4.130 mA = 269.85'
PACKER INFLATION Bottom		Additional Calibration Notes		

TEST SEQUENCE		HYDRAULIC HEAD DISTRIBUTION					
Begin Logging - 11:46:36		Open Hole Static Water Level:					
Inflation - 11:48			Pre-inflation	Post-inflation	Pre-Pumping	Pumping Level	Recovery
Begin Pumping - 14:09		1	123.00'		101.34'	108.08'	
Pumping - 15:55		2					
Calibrator Prior - 93276		3	123.00'		123.05'	123.00'	
Calibrator Post -		4					
Logging -							
PUMPING RECORD							
Pumping Zone	2a						
Pumping Rate	Varied						
Pumping Duration	106 min.						
Minimum Drawdown	6.74'						
Specific Capacity							
Pressure of Discharge							
Time of Recovery							
Pressure Adjustments	Start 4 gpm; increased rate to 4.2 gpm at 14:18; increased rate to 4.5 gpm at 14:35						

COMPUTER DATA RECORD		
Test Code:	PRN Filename:	
Copy to Client Date and Name:		
SLUG TEST SEQUENCE		
	Time	Water Level
Start		
Peak		
Recovery		

SUMMARY

Redi-flow, Grundfos submersible pump was lowered through the 2 inch diameter lift pipe to a depth of 150.00'. Midway point in test, EDI deflated the top packer and inflated the bottom packer to allow the use of a 1.5 h. p. submersible pump.