Marco Lakes ASR Expansion Project ASR-6 Well Completion Report

January, 2006
Volume II

Prepared by:

Water Resource Solutions, Inc

428 Pine Island Road, S.W.
Cape Coral, FL 33991

LIST OF APPENDICES

APPENDIX 1.1

FDEP WELL CONSTRUCTION PERMIT

Department of Environmental Protection

Jeb Bush
Governor

South District
P.O. Box 2549
Fort Myers, Florida 33902-2549

Colleen Castille
Secretary

BY ELECTRONIC MAIL:

June 2, 2005

In the Matter of an
Application for Permit by:

Mr. Jake Rohrich, Utility Director
Marco Island Utilities
960 N. Collier Blvd.
Marco Island, Florida 34145
jrohrich@cityofmarcoisland.com

Collier County- UIC
FDEP File No. 141218-024-UC through
141218-031-UC
Marco Lakes ASR-2 through ASR-9
Class V Injection Aquifer Storage and Recovery (ASR)

NOTICE OF PERMIT ISSUANCE

Enclosed are Permit Numbers 141218-024-UC through 141218-031-UC to renew the construction permits for eight (8) Class V Group Seven Aquifer Storage and Recovery (ASR) injection wells and associated monitor wells, issued pursuant to Section(s) 403.087, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Fort Myers, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Jon M. Iglehart
Acting Director of
District Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this PERMIT and all copies were mailed before the close of business on June 2, 2005 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section.120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Rose Ann J. LaBarbera 06/02/05

Clerk Date

JMI/JBM/rjl

Enclosure

Copies furnished to:

Nancy Marsh marsh.nancy@epamail.epa.gov
Steve Anderson sanderso@sfwmd.gov
Joe Haberfeld joe.haberfeld@dep.state.fl.us
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Department of Environmental Protection

Jeb Bush
Governor

South District
P.O. Box 2549
Fort Myers, Florida 33902-2549

Colleen Castille
Secretary

BY ELECTRONIC MAIL:

PERMIT

PERMITTEE:

Marco Island Utilities
960 N. Collier Blvd.
Marco Island, FL 34145

Collier County – UIC
Permit File Number: 141218-024-UC
through 141218-031-UC
Date of Issue: June 2, 2005
Expiration Date: June 1, 2010
County: Collier
Latitude: 26° 04' 01" N
Longitude: 81° 41' 33" W
Section/Town/Range: 34/50S/26E
Project: Marco Lakes Surface Water
Class V ASR Injection Wells ASR-2
through ASR-9

This permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.) and rules 62-4, 62-520, 62-528, and 62-550 of the Florida Administrative Code. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Renew the construction permits for eight (8) Class V Group Seven Aquifer Storage and Recovery (ASR) injection wells including two (2) existing wells (ASR-2 and ASR-3), one (1) existing dual zone monitor well, one (1) existing storage zone (upper Suwannee) monitoring well, one (1) existing mid-Hawthorn Zone II monitor well, and an existing on-site ASR-1 well under a separate permit. The purpose is to store, in the upper Suwannee aquifer, partially treated raw surface water from the Marco Lakes to be recovered during periods of increased seasonal demands. The basic well design will consist of 16-inch diameter injection wells to a proposed total depth of approximately 780 feet below land surface and cased to approximately 736 feet below land surface (bls). Each of the ASR wells is designed to inject a maximum of 1.5 million gallons per day. This project is depicted on the Marco Island Utilities application and associated documents submitted in support of this project. The location for this project is on County Road 951 near the intersection with Route 41, Collier County, Florida.

Subject to Specific Conditions 1-19.

SPECIFIC CONDITI ONS:

1. General Criteria:

a. The terms, conditions, requirements, limitations and restrictions set forth in this permit are "permit conditions" and are binding and enforceable pursuant to section 403.141, F.S.

b. This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings, exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action.

c. As provided in subsection 403.087(7), F.S., the issuance of this permit does not convey any vested rights or exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor infringement of federal, state, or local laws or regulations. This permit is not a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in this permit.

d. This permit conveys no title to land, water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

e. This permit does not relieve the permittee from liability for harm to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefrom; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

f. The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed and used by the permittee to achieve compliance with the conditions of this permit, or are required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

g. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at reasonable times, access to the premises where the permitted activity is located or conducted to:

(1) Have access to and copy any records that must be kept under conditions of this permit;

(2) Inspect the facility, equipment, practices, or operations regulated or required under this permit; and

(3) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

(4) Reasonable time will depend on the nature of the concern being investigated.

h. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee should immediately provide the Department with the following information:

(1) A description of and cause of noncompliance; and

(2) The period of noncompliance, including dates and times; or, if not corrected the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent the recurrence of the

SPECIFIC CONDITI ONS:

noncompliance. The permittee shall be responsible for any and all damages that may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

i. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is proscribed by sections 403.111 and 403.73, F.S. Such evidence shall only be used to the extent it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

j. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance; provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

k. This permit is transferable only upon Department approval in accordance with rules 62-4.120 and 62-528.350, F.A.C. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

l. This permit or a copy thereof shall be kept at the work site of the permitted activity.

m. The permittee shall comply with the following;

(1) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records shall be extended automatically unless the Department determines that the records are no longer required.

(2) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.

(3) Records of monitoring information shall include:

(a) the date, exact place, and time of sampling or measurements;

(b) the person responsible for performing the sampling or measurements;

(c) the dates analyses were performed;

(d) the person responsible for performing the analyses;

(e) the analytical techniques or methods used;

(f) the results of such analyses.

(4) The permittee shall furnish to the Department, within the time requested in writing, any information which the Department requests to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.

(5) If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

SPECIFIC CONDITI ONS:

n. All applications, reports, or information required by the Department shall be certified as being true, accurate, and complete.

o. Reports of compliance or noncompliance with, or any progress reports on, requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled date.

p. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

q. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

r. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

s. This permit may be modified, revoked and reissued, or terminated for cause, as provided in 40 C.F.R. sections 144.39(a), 144.40(a), and 144.41 (1998). The filing of a request by the permittee for a permit modification, revocation or reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

t. The permittee shall retain all records of all monitoring information concerning the nature and composition of injected fluid until five years after completion of any plugging and abandonment procedures specified under rule 62-528.435, F.A.C. The permittee shall deliver the records to the Department office that issued the permit at the conclusion of the retention period unless the permittee elects to continue retention of the records.

u. All reports and other submittals required to comply with this permit shall be signed by a person authorized under rules 62-528.340(1) or (2), F.A.C. All reports shall contain the certification required in rule 62-528.340(4), F.A.C.

v. The permittee shall notify the Department as soon as possible of any planned physical alterations or additions to the permitted facility. In addition, prior approval is required for activities described in rule 62-528.410(1)(h).

w. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or injection activity that may result in noncompliance with permit requirements.

x. The permittee shall report any noncompliance which may endanger health or the environment including:

(1) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or

(2) Any noncompliance with a permit condition or malfunction of the injection system that may cause fluid migration into or between underground sources of drinking water.

(3) Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

SPECIFIC CONDITI ONS:

y. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.

z. No underground injection is allowed that causes or allows movement of fluid into an underground source of drinking water if such fluid movement may cause a violation of any primary drinking water standard or may otherwise adversely affect the health of persons.

2. Signatories and Certification Requirements. All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C.

In accordance with Rule 62-528.340(4), F.A.C., all reports shall contain the following certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

3. Drawings, plans, documents or specifications submitted by the Permittee, not attached hereto, but retained on file at the South Florida District Office, are made a part hereof. Any changes, except as provided elsewhere in this permit, must be approved by the Department before implementation.

4. The injection and monitor wells at the site shall be abandoned when posing a potential threat to the quality of the waters of the State. In the event a well must be plugged or abandoned, the permittee shall obtain a permit from the Department as required by Chapter 62-528, F.A.C. The permittee shall notify the Department and obtain approval prior to any well work or modification.

5. The permittee shall notify the Department in the event that any of the conditions of the permit cannot be met, including an emergency discharge, due to breakdown of equipment, power outages or damages by hazard of fires, wind or other causes in accordance with the following:

a. Notification shall be made in person, email, or by telephone within 24 hours of the event.

b. A written report shall be submitted within 5 days which describes the nature and cause of the breakdown or malfunction, the steps being taken to correct the problem and prevent its recurrence, emergency procedures in use pending correction of the problem and the time when the facility will again be operating in compliance with permit conditions.

6. Prior to the commencement of any work, the name of the Florida-registered driller(s) supervising the drilling operations and the driller's registration number shall be submitted to the Department. The permittee or the engineer of record shall provide the Department with copies of all required federal, state or local permits prior to spudding the wells.

7. The permittee shall retain the engineer of record or obtain the services of any professional engineer registered in the State of Florida for the inspection of the construction of this project. Upon completion the engineer shall inspect for conformity to construction permit applications and associated documents. The Department shall be notified immediately of any change of engineer.

SPECIFIC CONDITI ONS:

8. The specifications for temporary containment structures around the boreholes during the drilling of the ASR wells and storage monitoring wells shall be submitted to and approved by the Department prior to the ASR well construction.

9. Pumping fluids other than the potable water from the Collier County Utilities public water supply system into the injection wells will constitute a violation of this permit and shall constitute cause for revocation.

10. Operational Testing

a. Prior to operational testing:

(1) The permittee shall submit the following information to each member of the TAC and the U.S. EPA:

(a) A draft well completion report with certification of well construction completion by the Professional Engineer of Record;

(b) Geophysical logs;

(c) Injection test data;

(d) Mechanical integrity test data;

(e) Confining zone data;

(f) Natural background ground water quality samples shall be obtained from the new ASR test wells and each new monitor well for primary and secondary standards (Chapter 62-550.310 and .320, F.A.C.), excluding dioxin and asbestos. The analysis shall also include giardia lamblia and cryptosporidium (count and viability testing, where applicable), dissolved oxygen, total iron, total uranium, E. coli, enteroccoci, and fecal coliform. "Natural background" means the condition of waters in the absence of man-induced alterations based on the best scientific information available to the Department (Rule 62-520.200(12), F.A.C.). The samples shall be taken after final completion and clearance of drilling fluids from each well, and prior to the initiation of any injection tests;

(g) Surface water samples from the Marco Lakes will be taken bimonthly for a one year period and analyzed for the following parameters: Giardia lamblia and Cryptosporidium (count and viability), E. coli, and enterococci. One sample shall be taken within 60 days before initiating cycle testing.

(h) As-built well construction specifications;

(i) Other data obtained during well construction;

(j) An updated well inventory and physically verify all wells deeper than 300 feet below land surface that are within a 0.50-mile radius of the ASR test wells. Operational status, existing use, depth of final casing, and total depth of the well shall be determined and submitted with the above-mentioned information.

b. Written authorization for each new ASR well shall be obtained from the Department prior to cycle testing or operational testing (see specific conditions 17 and 18).

SPECIFIC CONDITI ONS:

c. Operational Testing Conditions – ASR Well

Proposed Class V Test Injection (ASR) Wells

Well Number	Casing Diameter (OD)	Depth (bls) Cased/Total	Open Hole (bls)
ASR-4 thru 9	16" PVC	736'/ 780'	736'- 780'

Existing Class V ASR Wells under this permit

Well Number	Casing Diameter (OD)	Depth (bls) Cased/Total	Open Hole (bls)
ASR-2 & 3	16" PVC	736'/ 780'	736' - 780'

The injection well system shall be monitored in accordance with rule 62-528.615, F.A.C. The following injection well performance data shall be recorded and reported from the injection well instrumentation in the Monthly Operating Report as indicated below during each recharge and recovery cycle. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. During recharge activity, only one sample is necessary; whereas, during recovery activity, samples from each ASR well must be obtained. A cycle testing schedule shall be submitted to the FDEP for review and final authorization when the new wells have been constructed and when operational testing is requested. Injection well pressure and flow rates shall be recorded continuously.

Parameters	Reporting Frequency
Injection Pressure (p.s.i)	
Maximum Injection Pressure	Daily/Monthly
Minimum Injection Pressure	Daily/Monthly
Average Injection Pressure	Daily/Monthly
Average Flow Rate	Daily/Monthly
Maximum Flow Rate	Daily/Monthly
Total Volume recharged (Gals.)	Daily/Monthly
Total Volume recovered (Gals.)	Daily/Monthly
Net Storage Volume (MG)	Monthly *
Gross Alpha (pCi/L)	Monthly – Recovery only
Total Trihalomethanes (mg/L)	Weekly
Dissolved Oxygen (mg/L)	Weekly
Total Iron (mg/L)	Weekly
Arsenic (µg/L)	Weekly **
Total Dissolved Solids (mg/L)	Weekly
Specific Conductivity (µmhos/cm)	Weekly
Total Alkalinity (mg/L)	Weekly
pH (std. units)	Weekly
Chloride (mg/L)	Weekly
Sulfate (mg/L)	Weekly
Field Temperature (°C)	Weekly
Color (color units)	Weekly
Total Coliform (colonies/100 ml)	Weekly

SPECIFIC CONDITI ONS:

Fecal Coliform (colonies/100 ml)	Weekly
Primary and Secondary Drinking Water Standards (Recharge Water Only)	Annually ***
Cryptosporidium	Annually
Giardia lamblia	Annually

* Monthly net storage volume per ASR well and total ASR wellfield.
** Twice weekly during recovery.
*** Plus all included parameters of specific condition 10.a.(1)(f), and excluding dioxin and asbestos.

d. Operational Testing Conditions - Monitor Well System

Monitor Wells

Well Number	Casing Dia. (OD)	Depth (bls) Cased/Total	Group or Formation	Monitoring Interval (bls)
Tamiami	4" PVC	30'/ 50'	Tamiami	30'- 50'
DMW- 1	10" PVC	293' / 350'	Mid-Hawthorn I	293 - 350' (Upper Zone)
ASR1MW	6.625" Steel	745'/ 814'	Suwannee	745- 814' (Lower Zone)
MHZ2MW	6.9" PVC	440' / 470'	Mid-Hawthorn II	440 - 470'
ASR2MW	6.9" PVC	725' / 774'	Suwannee	725 – 774'

The Tamiami (off-site well) monitor well shall be monitored monthly for water level, chloride, specific conductance, and pH. The Dual-Zone monitor well is comprised of DMW-1 (Upper Zone) and ASR1MMMW (Lower Zone). Monitor Well DMW-1 (formerly SZ-1), which is the upper zone of the dual-zone monitor well, will be plugged and abandoned as detailed on page TS-20 in Part III of the application. The Department shall be notified at least 48 hours prior to commencement of work. Monitoring is to continue until that zone is plugged and abandoned.

All monitor wells shall be monitored in accordance with rule 62-528.615, F.A.C. The following monitor well performance data shall be recorded and reported from the monitor well instrumentation in the Monthly Operating Report as indicated below during all recharge, storage and recovery cycles of the injection/production wells. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. During extended storage periods (greater than 30 days), the monitor well water quality parameters listed below may be sampled and analyzed monthly.

Parameters	Reporting Frequency
Pressure (psi or feet NGVD)	
DMW-1	
Daily Pressure/Water Level	Daily/Monthly
ASR1MW. MHZ2MW, ASR2MW	
Maximum Water Level or Pressure	Daily/ Monthly
Minimum Water Level or Pressure	Daily/ Monthly
Average Water Level or Pressure	Daily/ Monthly
Gross Alpha (pCi/L)	Monthly

SPECIFIC CONDITI ONS:

Total Trihalomethanes (mg/L)	Weekly
Dissolved Oxygen (mg/L)	Weekly
Total Iron (mg/L)	Weekly
Arsenic (µg/L)	Weekly
Total Dissolved Solids (mg/L)	Weekly
Specific Conductivity (µmhos/cm)	Weekly
Total Alkalinity (mg/L)	Weekly
pH (std. units)	Weekly
Chloride (mg/L)	Weekly
Sulfate (mg/L)	Weekly
Field Temperature (°C)	Weekly
pH (std. units)	Monthly
Color (color units)	Weekly
Total Coliform (colonies/100 ml)	Weekly
Fecal Coliform	Weekly

e. A qualified representative of the Engineer of Record must be present for the start-up operations and the Department must be notified in writing of the date operational testing began for the subject wells.

f. Before authorizing operational testing the Department shall conduct an inspection of the facility to determine if the conditions of the permit have been met.

g. The permittee shall calibrate all pressure gauge(s), flow meter(s), chart recorder(s), and other related equipment associated with the injection well system on a semi-annual basis. The permittee shall maintain all monitoring equipment and shall ensure that the monitoring equipment is calibrated and in proper operating condition at all times. Laboratory equipment, methods, and quality control will follow EPA guidelines as expressed in Standard Methods for the Examination of Water and Wastewater. The pressure gauge(s), flow meter(s), and chart recorder(s) shall be calibrated using standard engineering methods.

h. If injection is to continue beyond the expiration date of this permit, the permittee shall apply for and obtain an operation permit or authorization to use as per Rule 62-528.635(4). If necessary to complete the operational testing period, the permittee shall apply for renewal of the construction permit at least 60 days prior to the expiration date of this permit.

i. The permittee shall submit monthly to the Department the results of all injection well and monitor well data required by this permit no later than the last day of the month immediately following the month of record. The annual sample results for the injection wells shall also be submitted no later than the last day of the month immediately following the month of record. The results shall be sent to the Department of Environmental Protection, P.O. Box 2549, Fort Myers, Florida 33902-2549. A copy of this report shall also be sent to the Department of Environmental Protection, Underground Injection Control Program, MS 3530, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

11. This project will be monitored by the Department with the assistance of the U.S. Environmental Protection Agency (USEPA), Region 4, and the Technical Advisory Committee (TAC) that consists of representatives of the following agencies:

Department of Environmental Protection - Fort Myers
Department of Environmental Protection - Tallahassee
U.S. Geological Survey - Miami
South Florida Water Management District – West Palm Beach

SPECIFIC CONDITI ONS:

12. The permittee shall provide copies of all construction-related correspondence relative to this permit to each member of the TAC and the USEPA. Such correspondence includes but is not limited to reports, schedules, analyses and geophysical logs required by the Department under the terms of this permit. The permittee is not required to provide specific correspondence to any TAC member who submits to the permittee a written request to be omitted as a recipient of specific correspondence.

13. During the construction period allowed by this permit, daily progress reports shall be submitted to the Department, the USEPA, and the Technical Advisory Committee each week. The reporting period shall run Friday through Thursday and reports shall be mailed on Friday of each week. The report shall include, but is not limited to the following:

a. Description of daily footage drilled by diameter of bit or size of hole opener or reamer being used;

b. Description of work during installation and cementing of casing, including amounts of casing and cement used;

c. Description of formation and depth encountered;

d. Lithological description of drill cuttings collected every ten feet or at every formation change;

e. Description of work and type of testing accomplished including geophysical logging and pumping tests;

f. Description of any construction problems that develop and their status;

g. Copies of the driller's logs; and

h. Accurate records of the amount and type of any material used during construction to kill the flow of the wells.

14. No drilling operations shall begin without an approved disposal site for drill cuttings, fluids or waste. It shall be the Drilling Contractor's responsibility to obtain any necessary Department and local agency approval for disposal prior to the start of construction.

15. After completion of construction and testing, a final report shall be submitted to the Department and the TAC. The report shall include, but not be limited to, all information and data collected under Sections 62-528.605, 62-528.610, 62-528.615 and 62-528.620, F.A.C., with appropriate interpretations. Mill certificates for the casing(s) shall be included in this report. To the extent possible, the transmissivity and storativity of the injection zone and the maximum capacity within safe pressure limits shall be estimated. This report shall also be signed and sealed by a Florida licensed professional engineer and professional geologist.

16. The permittee shall operate under the conditions of Water Quality Criteria Exemption OGC File 99-0601, which is in effect for the duration of this permit.

17. The permittee shall submit an updated operational testing schedule prior to each new ASR well being put on line.

18. The permittee is reminded of the necessity to comply with the pertinent regulations of any other regulatory agency, as well as any county, municipal, and federal regulations applicable to the project. These regulations may include, but are not limited to, those of the Federal Emergency Management Agency in implementing flood control measures. This permit should not be construed to imply compliance with the rules and regulations of other regulatory agencies.

PERMITTEE

Marco Island Utilities

Permit/Certification Nos:
141218-024-UC through 141218-024-UC
Date of Issue: June 2, 2005
Date of Expiration: June 1, 2010

SPECIFIC CONDITI ONS:

19. The permittee shall be aware of and operate under General Conditions F.A.C. Rule 62-528.307(1)(a) through (z). General Conditions are binding upon the permittee and enforceable pursuant to Chapter 403 of the Florida Statutes.

Note: In the event of an emergency the permittee shall contact the Department by calling (800) 320-0519. During normal business hours, the permittee shall call (239) 332-6975.

Issued this ___ day of _____ 2005.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

Jon M. Iglehart
Acting Director of
District Management

JMI/JBM/rjl

APPENDIX 1.2

COLLIER COUNTY PERMIT APPLICATION AND PERMIT FOR ASR-6

STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT, REPAIR, MODIFY, OR ABANDON A WELL

☐ Southwest
☐ Northwest
☐ St. Johns River
☐ South Florida
☐ Suwannee River
X Collier

CHECK BOX FOR APPROPRIATE DISTRICT. ADDRESS ON BACK OF PERMIT FORM. 10453

THIS FORM *MUST* BE FILLED OUT COMPLETELY.

The water well contractor is responsible for completing this form and forwarding the permit to the appropriate delegated county where applicable.

Permit No. 200502223.95
Florida Unique I.D. _____
Permit Stipulations Required (See attached)
62-524 well ☐
CUP/WUP Application No. CC02235-I

ABOVE THIS LINE FOR OFFICIAL USE ONLY

1. City of Marco Island (Owner, Legal Name of Entity if Corporation) 50 Bald Eagle Drive (Address) Marco Island (City) 34145 (Zip) (239) 389-5000 (Telephone Number)
2. Marco Lakes, 7130 Collier Boulevard, Naples, FL (Well Location — Address, Road Name or Number, City)
3. Southern Well Services, Inc. (Well Drilling Contractor) 9037 (License No.) 26134 (727) 531-7559 (Telephone No.)
   P.O. Box 8145 (Address)
   Clearwater (City) FL (State) 33758-8145 (Zip)
4. SW (smallest) 1/4 of SE (biggest) 1/4 of Section 34 (Indicate Well on Chart)
5. Township 50s Range 26e

NW NE SW SE — X

6. Collier (County) | (Subdivision Name) | (Lot) | (Block) | (Unit)

7. Number of proposed wells 1 Check the use of well: (See back of permit for additional choices) _____ Domestic Monitor (type) _____
   _____ (See Back) Irrigation (type) Public Water Supply (type) ASR (See Back) List Other _____
   Distance from septic system _____ ft. Description of facility Wellfield Estimated start of construction date 2-24-05

8. Application for: X New Construction _____ Repair/Modify _____ Abandonment _____ (Reason for Abandonment)

Date Stamp

Estimated: Well Depth 785' Casing Depth 740' Screen Interval from _____ to _____
Casing Material: Blk-Steel / Gal / (PVC) Casing Diameter 16" Seal Material Neat Cement

10. If applicable: Proposed Grouting Interval From 745' to LS Seal Material Neat Cement
    From _____ to _____ Seal Material _____
    From _____ to _____ Seal Material _____

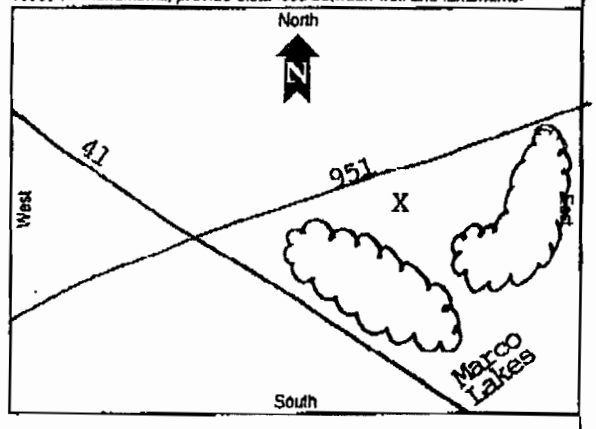
11. Telescope Casing _____ or Liner _____ (check one) Diameter _____
    Blk-Steel / Galvanized / PVC Other (specify): _____

12. Method of Construction: X Rotary _____ Cable Tool _____ Combination
    _____ Auger _____ Other (specify:) _____)

13. Indicate total No. of wells on site 3. List number of unused wells on site 0.

14. Is this well or any other well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP) or CUP/WUP Application? ___No X Yes
    (If yes, complete the following) CUP/WUP No. 11-00080-W
    District well I.D. No. 8 Lat and Long are set for two decimal places.
    Latitude 260403 Longitude 814138
    Data obtained from GPS ___ or map ___ or survey ___ (*map datum NAD 27*___ *NAD 83*___)

Draw a map of well location and indicate well site with an "X". Identify known roads and landmarks; provide distances between well and landmarks.



15. I hereby certify that I will comply with the applicable rules of Title 40, Florida Administrative Code, and that a water use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well construction. I further certify that all information provided on this application is accurate and that I will obtain necessary approval from other federal, state, or local governments, if applicable. I agree to provide a well completion report to the District within 30 days after drilling or the permit expiration, whichever occurs first.

Signature of Contractor — License No. 9037

I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well; or, I certify that I am the agent for the owner, that the information provided is accurate, and that I have informed the owner of his responsibilities as stated above. Owner consents to personnel of the WMD or a representative access to the well site.

Owner's or Agent's Signature — Date 2/11/05

DO NOT WRITE BELOW THIS LINE — FOR OFFICIAL USE ONLY

Approval Granted By: _____ Issue Date: _____ Hydrologist Approval _____ (Initials)

Owner Number: _____ Fee Received: $ _____ Receipt No.: _____ Check No.: _____

THIS PERMIT NOT VALID UNTIL PROPERLY SIGNED BY AN AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD. IT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL DRILLING OPERATIONS. ***This permit is valid for 90 days from date of issue.***

WHITE: ORIGINAL FILE
YELLOW: DRILLING CONTRACTOR
PINK: OWNER

FORM 41.10 – 410 (1) REV. 4/95

COLLIER COUNTY
BOARD OF COUNTY COMMISSIONERS

PERMIT

RMIT #: 2005022395 PERMIT TYPE: WELL VALID #: 395
SUED: 02-24-05 APPLIED DATE: 02-23-05 APPROVAL DATE: 02-23-05
STER #: COA #:

B ADDRESS: 7130 COLLIER BLVD
B DESCRIPTION: CC02235- I ASR- PUBLIC SUPPLY WELL 7 JOB PHONE: (727)531-7559

BDIVISION #: 100 - acreage BLOCK: 006 LOT: .000
OOD MAP: 0605 ZONE: AE-7 ELEVATION:
LIO #: 00300000448000303 SECTION-TOWNSHIP-RANGE 34 50 26

NER INFORMATION:
TY OF MARCO ISLAND
CITY MANAGER CITY HALL
) BALD EAGLE DR
RCO ISLAND, FLR0080 341453528

CONTRACTOR INFORMATION:
SOUTHERN WELL SERVICES, INC.
P.O. BOX 8145
CLEARWATER,FL 33758-8145

CERTIFICATE #: 26134 PHONE: (727)531-7559

C CODE: 800 - WELLS
ONSTRUCTION CODE: 10 / OTHER
OB VALUE: TOTAL SQFT:

ETBACKS FRONT: REAR: LEFT: RIGHT:
EW SEPTIC WATER: WELL
ONTACT NAME: SOUTHERN WELL SERV.
ONTACT PHONE: (727)531-7559

Per Collier County Ordinance No. 2002 01, as it may be amended, all work must comply with all applicable laws, codes, ordinances, and any additional stipulations or conditions of this permit. This permit expires if work authorized by the permit is not commenced within six (6) months from the date of issuance of the permit. Additional fees for failing to obtain permits prior to the commencement of construction may be imposed. Permittee(s) further understands that any contractor that may be employed must be a licensed contractor and that the structure must not be used or occupied until a Certificate of Occupancy is issued.

OTICE: PRIOR TO THE REMOVAL OF ASBESTOS PRODUCTS OR THE DEMOLITION OF A STRUCTURE, FEDERAL ND STATE LAWS REQUIRE THE PERMITTEE (EITHER THE OWNER OR CONTRACTOR) TO SUBMIT A NOTICE OF HE INTENDED WORK TO THE STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP). FOR MORE NFORMATION, CONTACT DEP AT (239) 332-6975.

addition to the conditions of this permit, there may be additional restrictions applicable to this property that may be found in he public records of this county, and there may be additional permits required from other governmental entities such as water anagement districts, state agencies, or federal agencies.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

CDPR2020

APPENDIX 2.1

GEOPHYSICAL LOGS AND VIDEO SURVEY

ASR WELL 6 – 25-INCH REAMED HOLE

- XY Caliper/Natural Gamma Ray
- Dual Induction
- Sonic/VDL

ASR WELL 6 – CASED HOLE

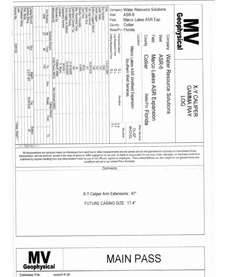
- Cement Top Log

ASR WELL 6 – 15-INCH OPEN HOLE

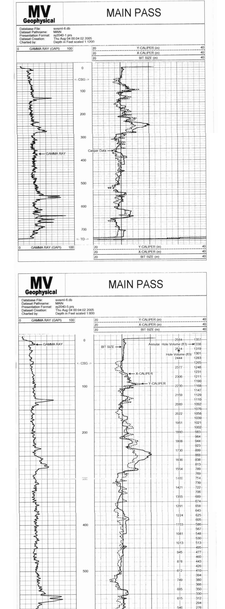
- XY Caliper/Natural Gamma Ray
- Fluid Resistivity
- Flowmeter
- Dual Induction
- Sonic/VDL
- Video Survey

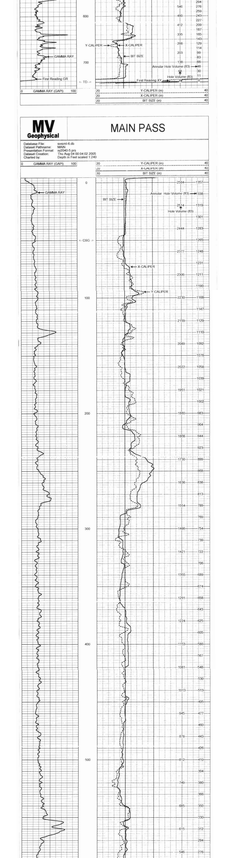
ASR WELL 6 – ADDITIONAL LOGGING OF LINER/OPEN HOLE

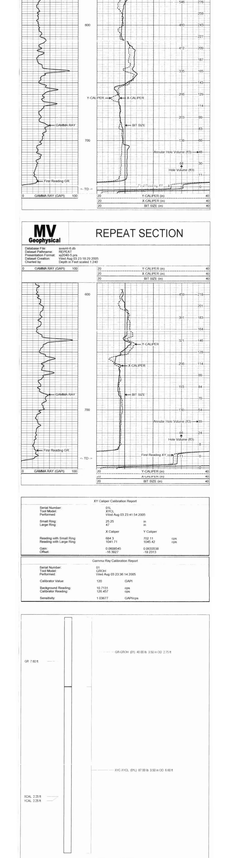
- XY Caliper/Natural Gamma Ray
- Flowmeter
- Cement Top Log (Liner)
- Video Survey



X-Y Caliper Arm Extension: 47"







MV Geophysical

DUAL INDUCTION
LL3 / SP
LOG

Company Water Resource Solutions
Well ASR-6
Field Marco Lakes ASR Expansion
County Collier State/Prv Florida
Location Marco Lakes ASR Wellfield Expansion, Southern Well Services

Other Services: XY/GR, BHC/VDL

Company Water Resource Solutions
Well ASR-6
Field Marco Lakes ASR Exp.
County Collier
State/Prv Florida

Permanent Datum G.L.
Log Measured From G.L.
Drilling Measured From G.L.

Date 3-AUG-2005
Run Number ONE
Depth Driller 742
Depth Logger 742
Bottom Logged Interval 742
Top Log Interval 50
Open Hole Size 25"
Type Fluid MUD
Density / Viscosity 9.4/60
Estimated Cement Top NA
Time Well Ready 21:30 8/3/05
Time Logger on Bottom 00:00 8/4/05
Equipment Number MVGS-1
Location Ft. Myers
Recorded By S.Miller/D.Miller
Witnessed By A. McThenia (WRS) Wm. Schmidt (SWS)

Run Number	Bit	From	To
ONE	25"	48'	743'

	Size	Wgt/Ft	Top	Bottom
Casing Record				
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String				
Production String				
Liner				

Invoice No. 2060138

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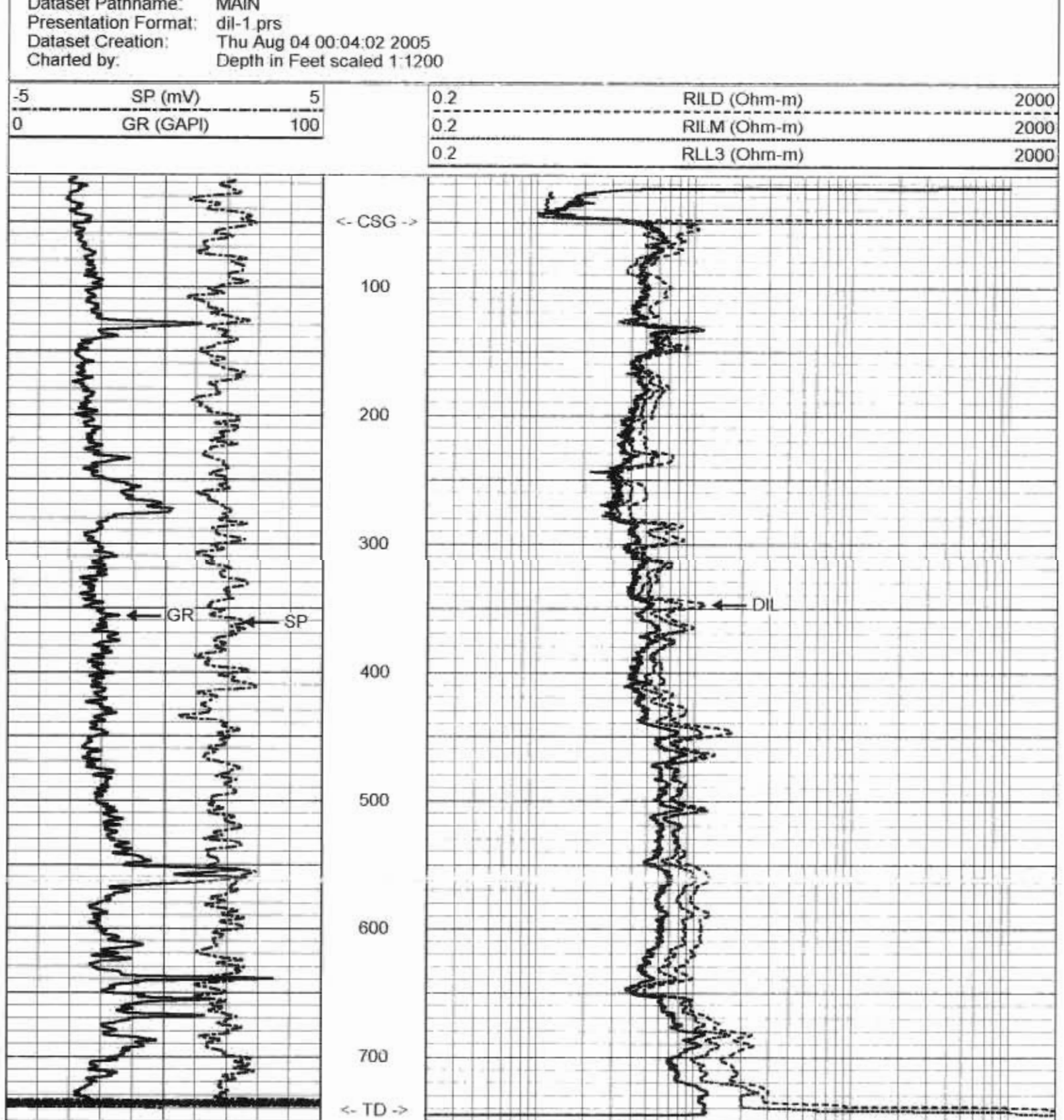
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Rm=3.114 ohm-m @ 81.1 degF

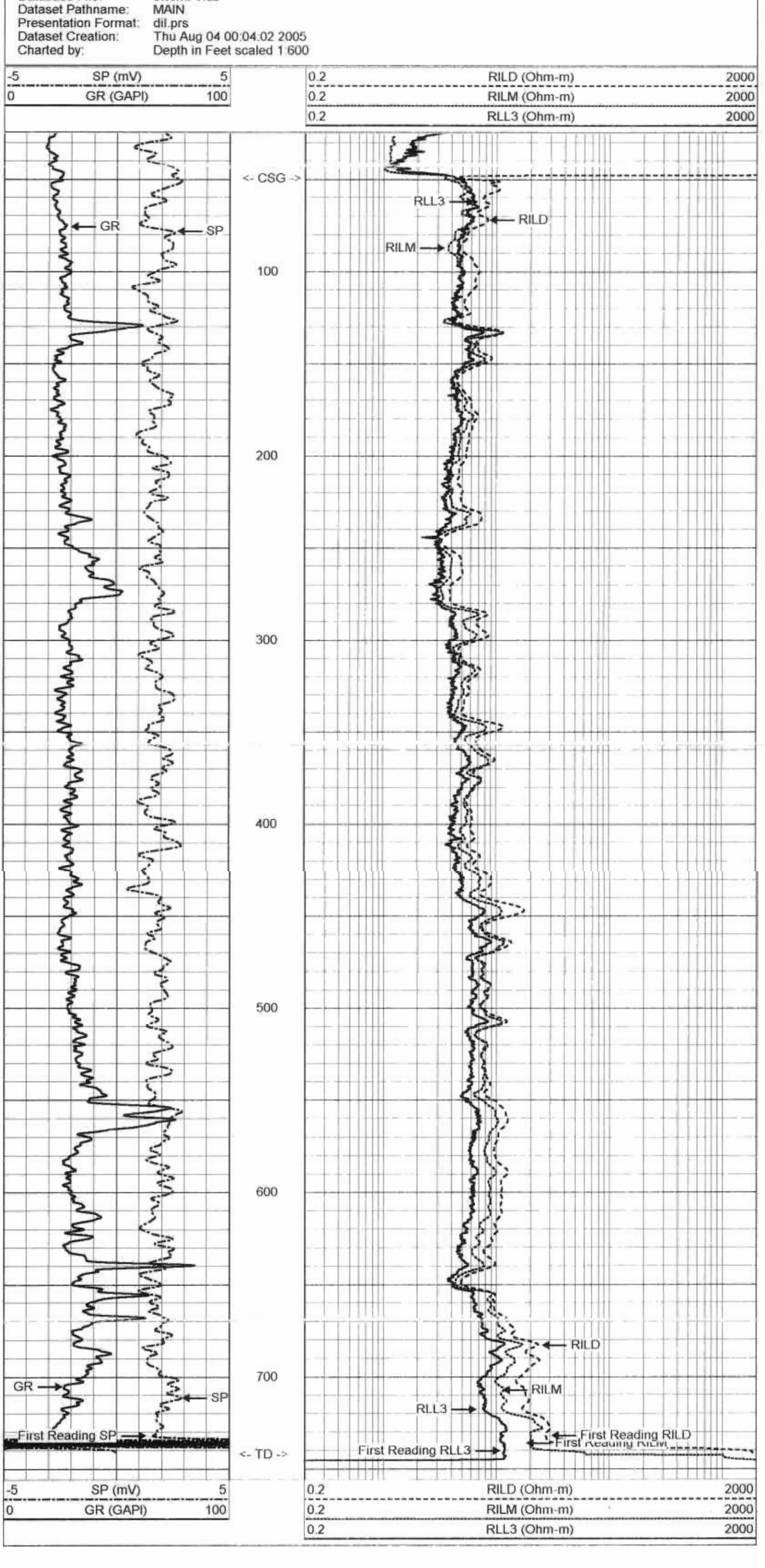
MAIN PASS

Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: dil-1.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:1200



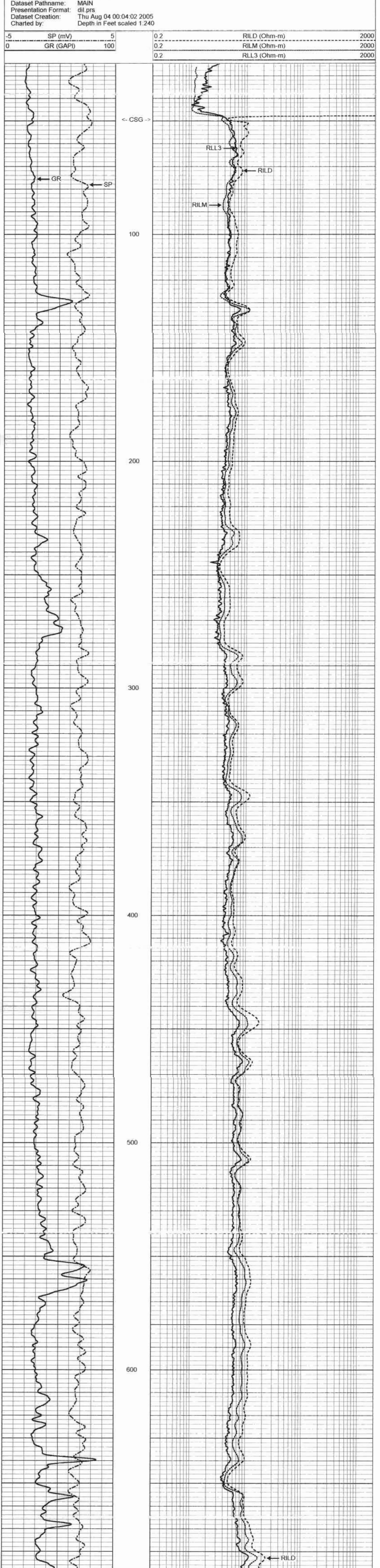
MAIN PASS

Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: dil.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:600



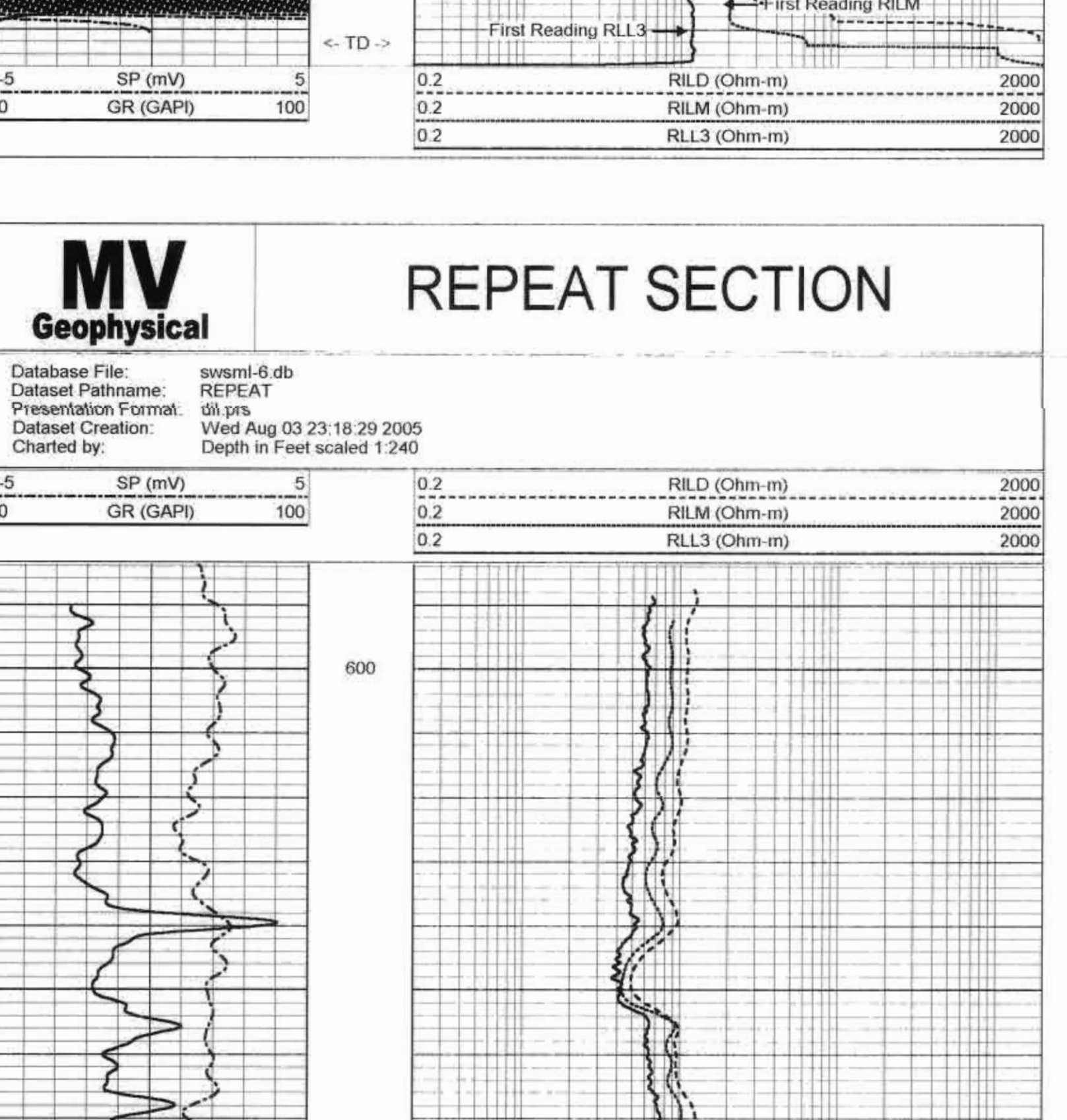
MAIN PASS

Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: dil.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:240



REPEAT SECTION

Database File: swsml-6.db
Dataset Pathname: REPEAT
Presentation Format: dil.prs
Dataset Creation: Wed Aug 03 23:18:29 2005
Charted by: Depth in Feet scaled 1:240



Dual Induction Calibration Report

Serial-Model: 5390-R
Surface Cal Performed: Sun Jan 16 21:49:43 2005
Downhole Cal Performed: Wed Aug 03 23:56:13 2005
After Survey Verification Performed: Thu Aug 04 00:41:27 2005

Surface Calibration

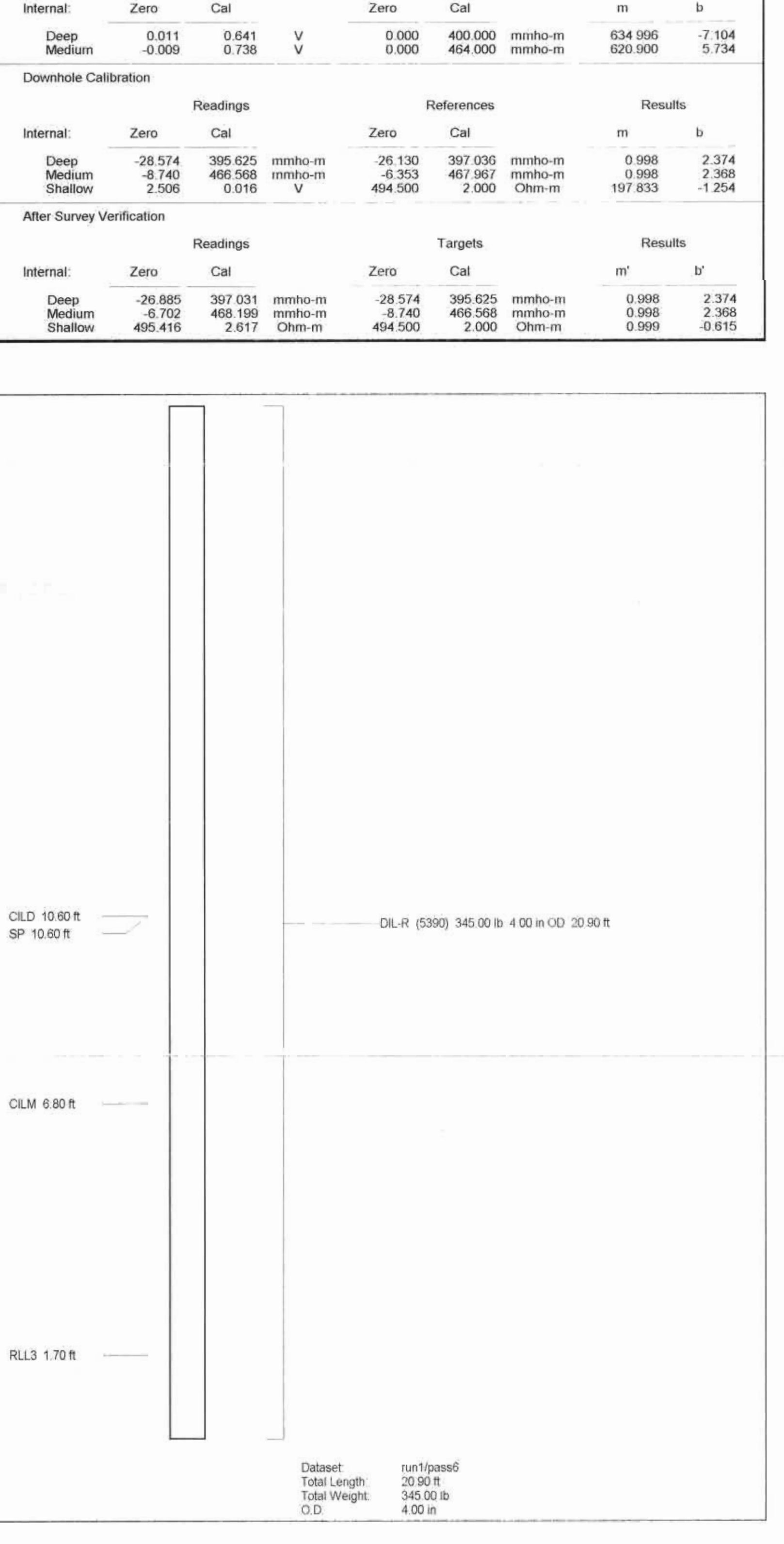
	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.050	0.646	V	0.000	400.000	mmho-m	671.771	-33.646
Medium	0.001	0.732	V	0.000	464.000	mmho-m	634.710	-0.492
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.011	0.641	V	0.000	400.000	mmho-m	634.996	-7.104
Medium	-0.009	0.738	V	0.000	464.000	mmho-m	620.900	5.734

Downhole Calibration

	Readings			References			Results	
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	-28.574	395.625	mmho-m	-26.130	397.036	mmho-m	0.998	2.374
Medium	-8.740	466.568	mmho-m	-6.353	467.967	mmho-m	0.998	2.368
Shallow	2.506	0.016	V	494.500	2.000	Ohm-m	197.833	-1.254

After Survey Verification

	Readings			Targets			Results	
Internal:	Zero	Cal		Zero	Cal		m'	b'
Deep	-26.885	397.031	mmho-m	-28.574	395.625	mmho-m	0.998	2.374
Medium	-6.702	468.199	mmho-m	-8.740	466.568	mmho-m	0.998	2.368
Shallow	495.416	2.617	Ohm-m	494.500	2.000	Ohm-m	0.999	-0.615



Dataset: run1/pass6
Total Length: 20.90 ft
Total Weight: 345.00 lb
O.D.: 4.00 in

MV Geophysical

BOREHOLE COMPENSATED SONIC w/ VARIABLE DENSITY LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Exp.
County	Collier
State/Prv	Florida

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion, Southern Well Services
Other Services	XY/GR, DIL/SP

			Elevation
Permanent Datum	G.L.	Elevation	K.B.
Log Measured From	G.L.		D.F.
Drilling Measured From	G.L.		G.L.

Date	3-AUG-2005
Run Number	ONE
Depth Driller	743'
Depth Logger	742'
Bottom Logged Interval	734'
Top Log Interval	35'
Open Hole Size	25"
Type Fluid	MUD
Density / Viscosity	9.4/60
Max. Recorded Temp.	na
Estimated Cement Top	NA
Time Well Ready	21:30 8/3/05
Time Logger on Bottom	01:00 8/4/05
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller/C.Miller
Witnessed By	A.McThenia (WRS) Wm.Schmidt (SWS)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String				
Production String				
Liner				

Invoice No. 2005138

* FINAL PRINT *

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

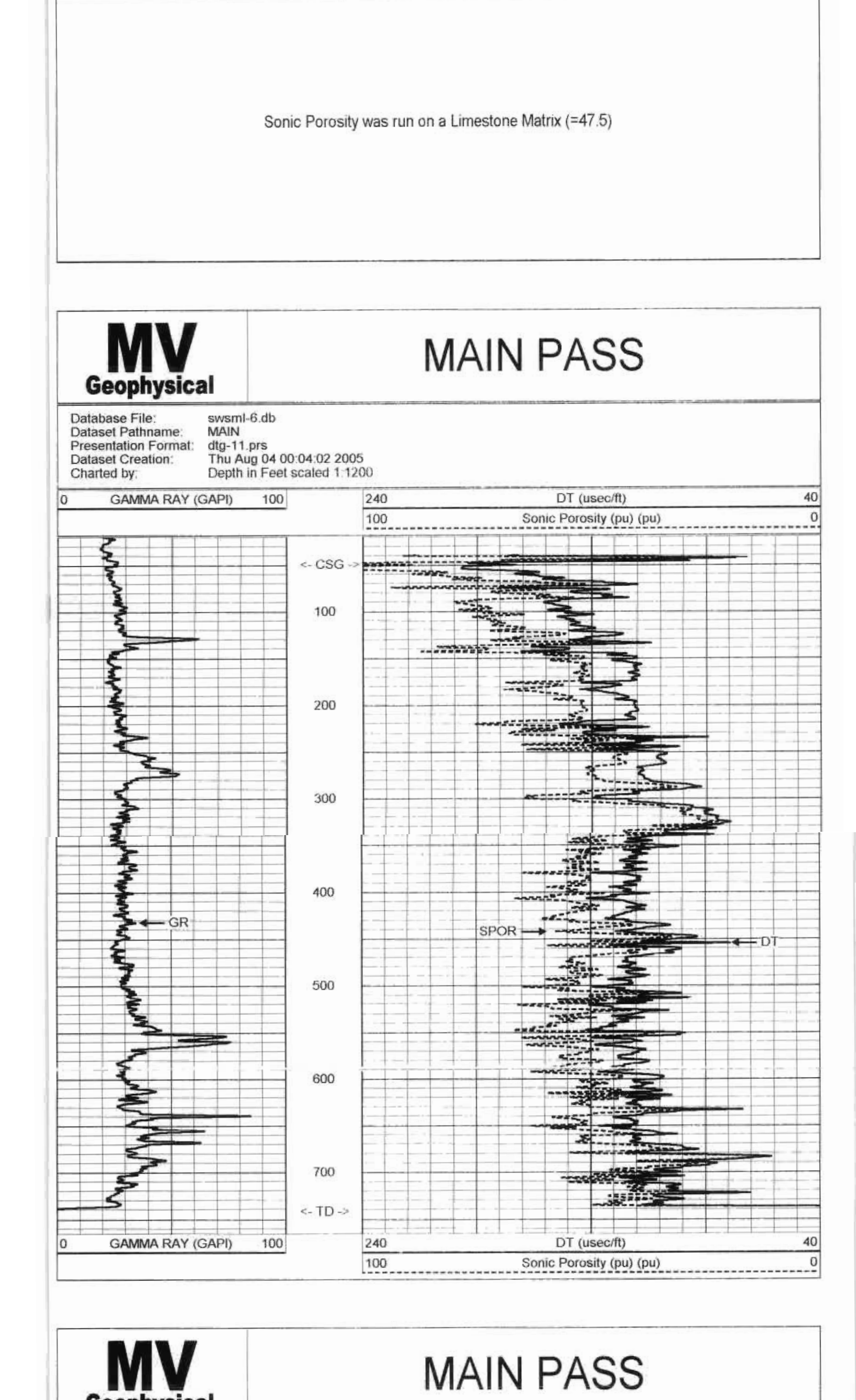
Comments

Sonic Porosity was run on a Limestone Matrix (=47.5)

MV Geophysical

MAIN PASS

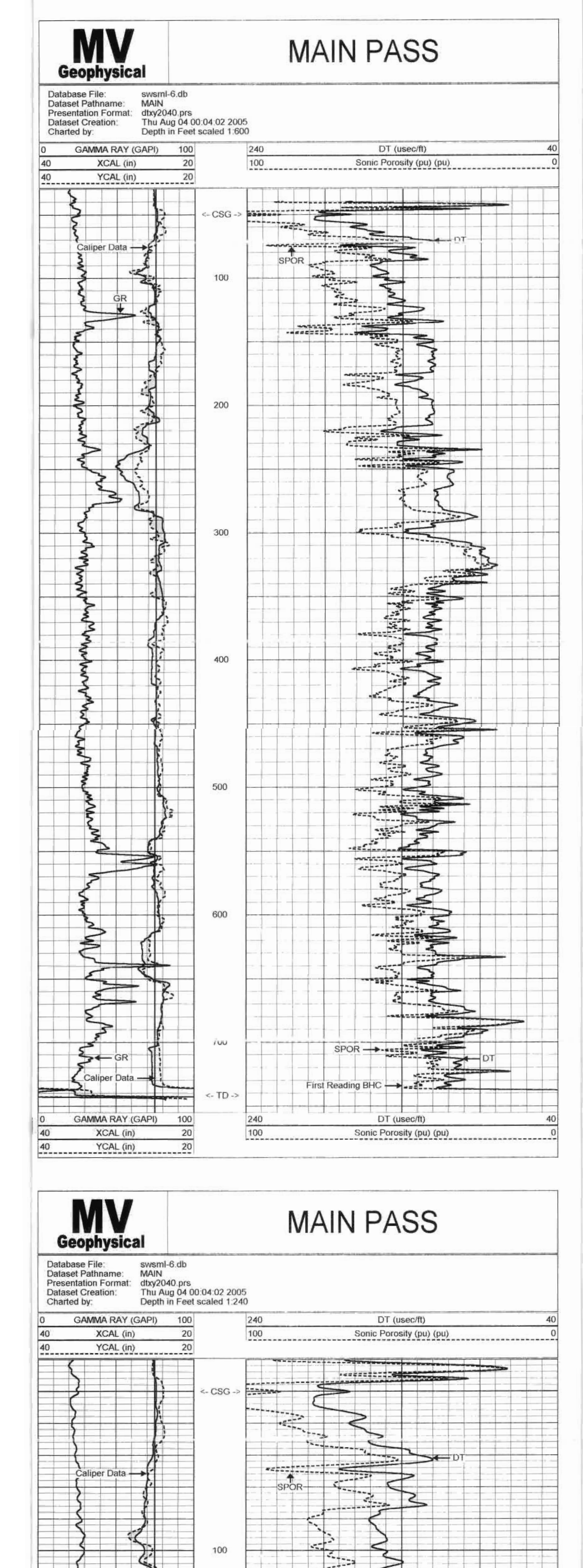
Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: dtg-11.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:1200



MV Geophysical

MAIN PASS

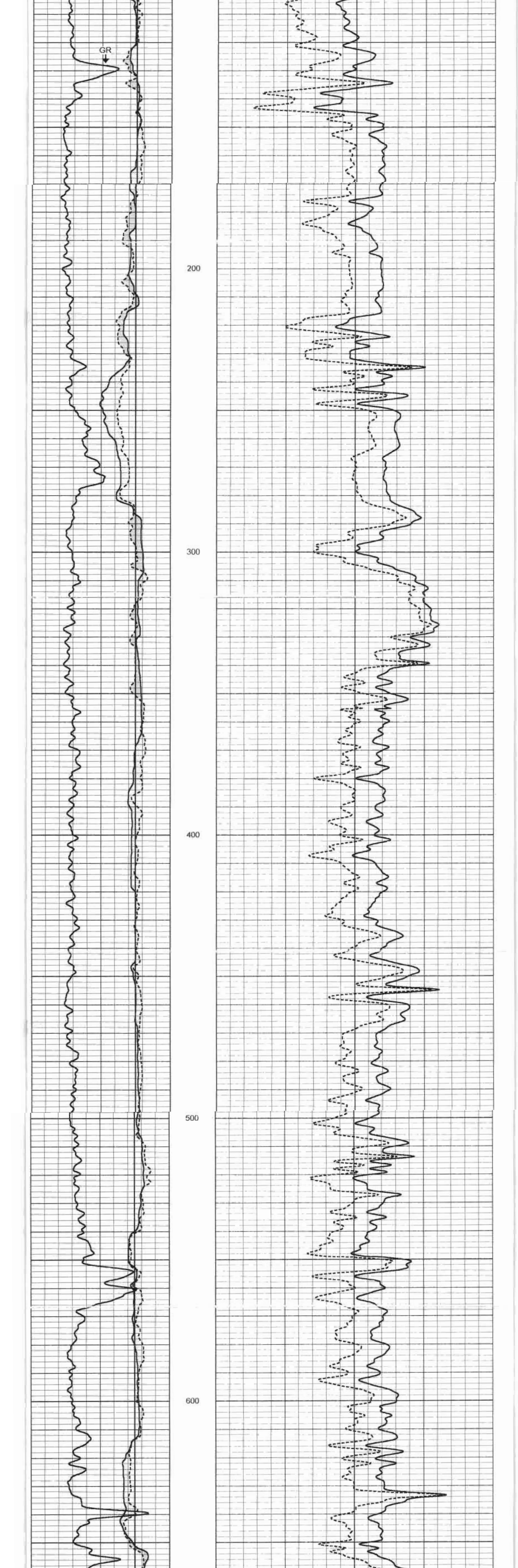
Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: dtxy2040.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:600



MV Geophysical

MAIN PASS

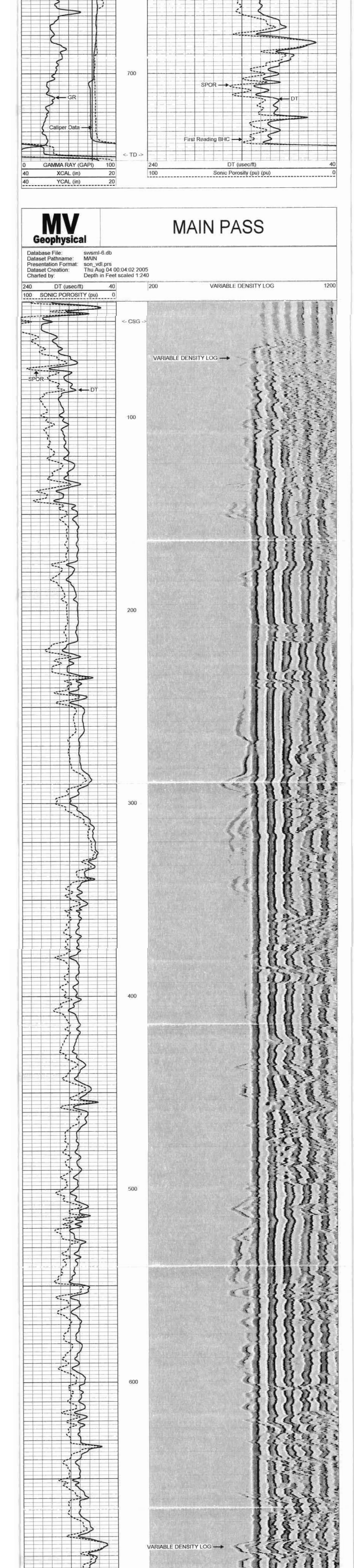
Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: dtxy2040.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:240



MV Geophysical

MAIN PASS

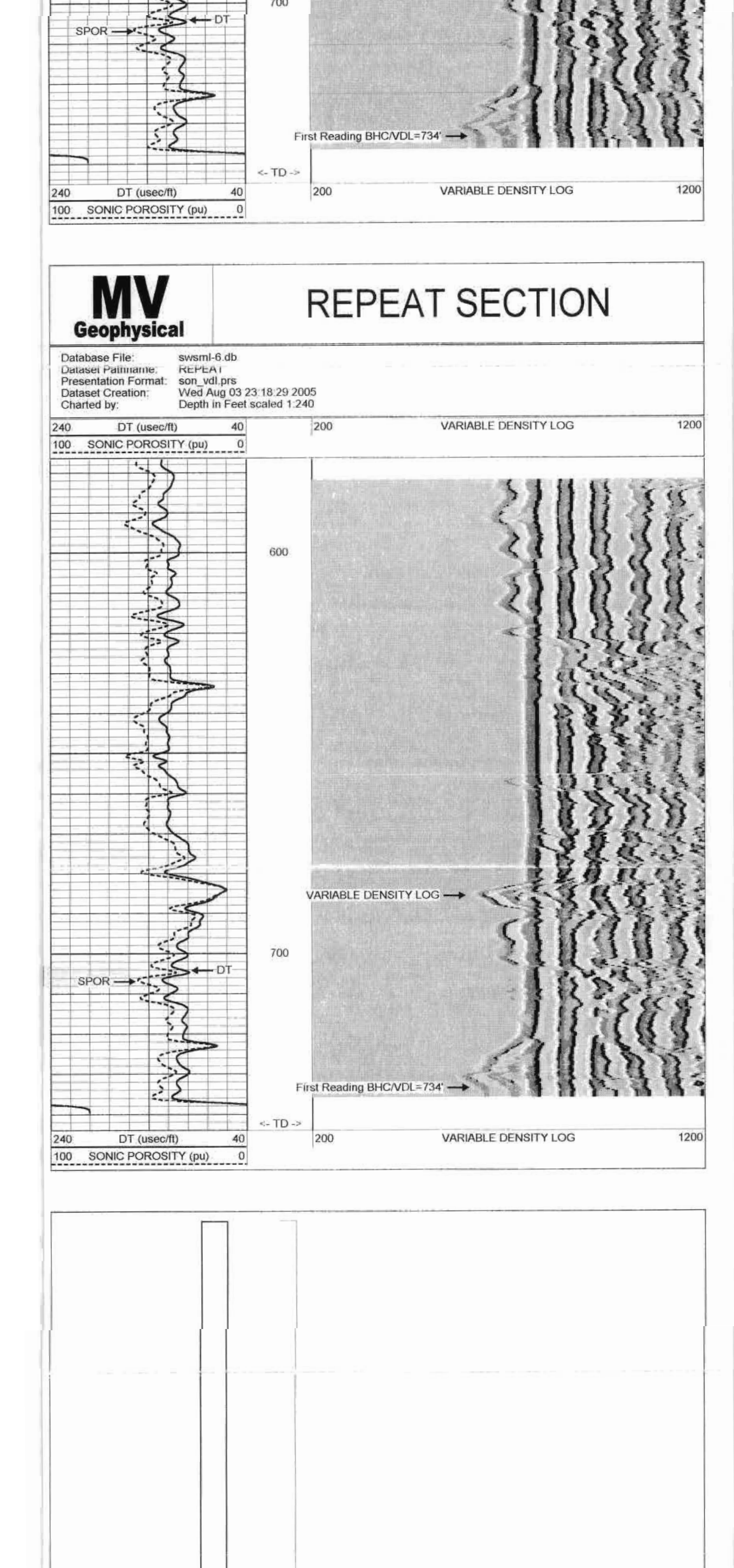
Database File: swsml-6.db
Dataset Pathname: MAIN
Presentation Format: son_vdl.prs
Dataset Creation: Thu Aug 04 00:04:02 2005
Charted by: Depth in Feet scaled 1:240

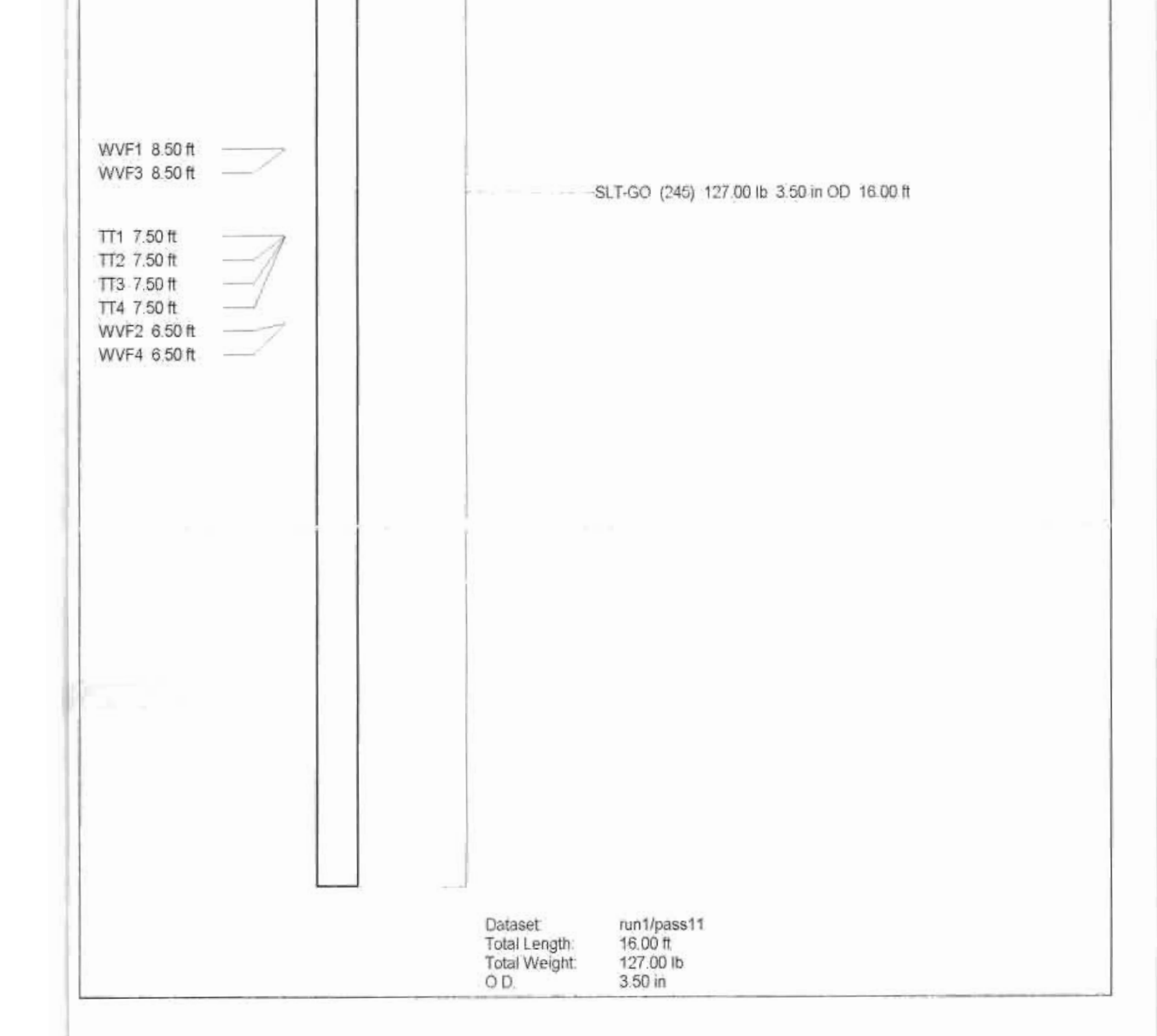


MV Geophysical

REPEAT SECTION

Database File: swsml-6.db
Dataset Pathname: REPEAT
Presentation Format: son_vdl.prs
Dataset Creation: Wed Aug 03 23:18:29 2005
Charted by: Depth in Feet scaled 1:240





Dataset: run1/pass11
Total Length: 16.00 ft
Total Weight: 127.00 lb
O.D.: 3.50 in

MV Geophysical

CEMENT TOP LOG
HIGH RESOLUTION TEMPERATURE
GAMMA RAY

Company: Water Resource Solutions
Well: ASR-6
Field: Marco Lakes ASR Exp.
County: Collier
State/Prv: Florida

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	NONE

		Elevation	Elevation
Permanent Datum	G.L.		K.B.
Log Measured From	G.L.		D.F.
Drilling Measured From	G.L.		G.L.

Date	6-AUG-2005	10-AUG-2005
Run Number	TWO-1	TWO-2
Depth Driller	743'	
Depth Logger	693' CMT PLG	693' CMT PLG
Bottom Logged Interval	693'	
Top Log Interval	SURFACE	
Open Hole Size	25"	
Type Fluid	WATER	
Density / Viscosity	NA/NA	
Max. Recorded Temp.	na	
Estimated Cement Top	NA	
Time Well Ready	08:30 8/6/05	07:30 8/10/05
Time Logger on Bottom	08:30 8/6/05	08:00 8/10/05
Equipment Number	MVGS-1	
Location	Ft. Myers	
Recorded By	S.Miller	
Witnessed By	A.McThenia (WRS)	Wm.Schmidt (SWS)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				
Invoice No.	2005141	2005142		* FINAL PRINT *

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Comments

Cement Tops

Stage	CTL	TAG
1	530'	
2	215'	

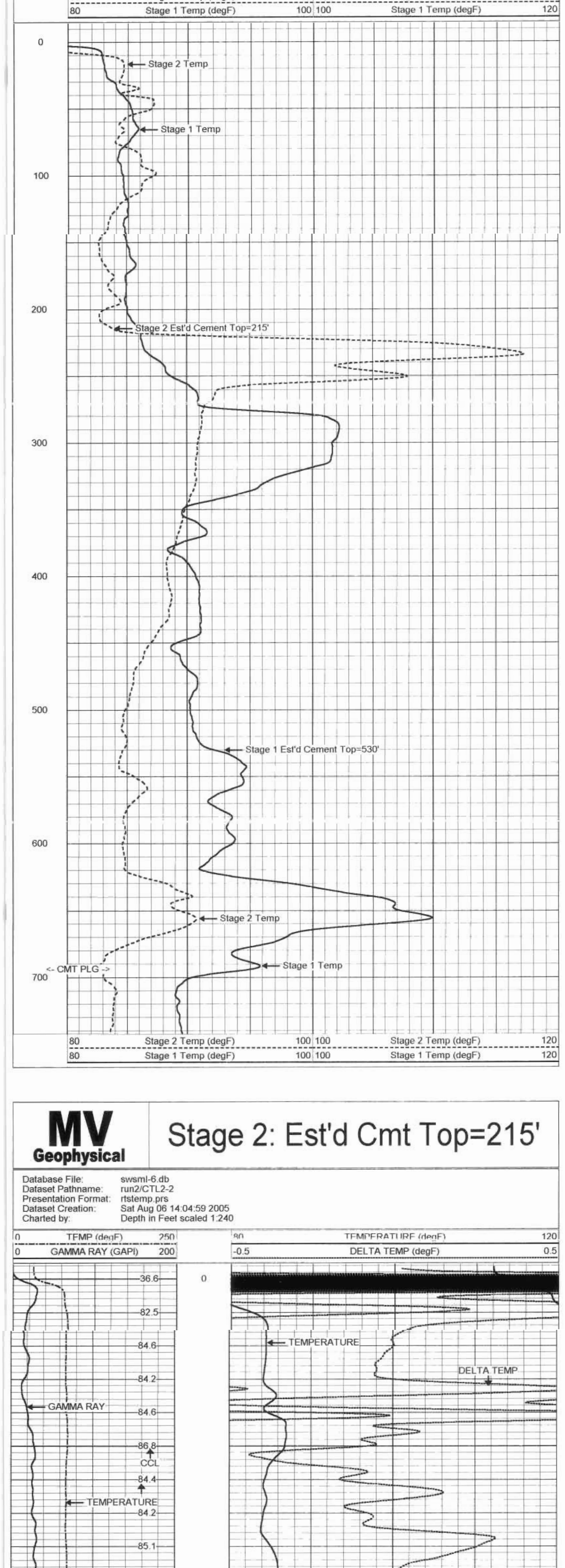
TEMPERATURE CALIBRATION REPORT
(Performed: 22-JUL-05 12:15)

DEG-F	CPS
34.5	143.144
148.5	2694.25

MV Geophysical

Merged Cement Tops

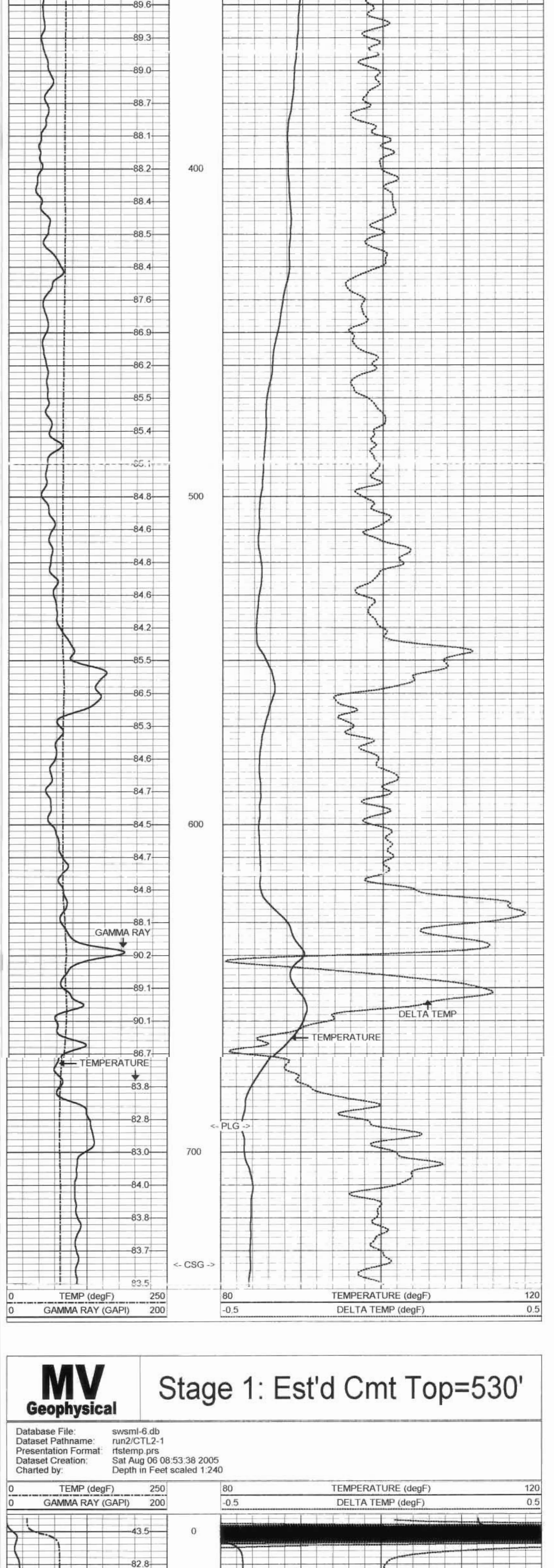
Database File: swsml-6.db
Dataset Pathname: run2/CTL2-MRG
Presentation Format: ctlmrg2.prs
Dataset Creation: Mon Dec 12 14:00:39 2005
Charted by: Depth in Feet scaled 1:600



MV Geophysical

Stage 2: Est'd Cmt Top=215'

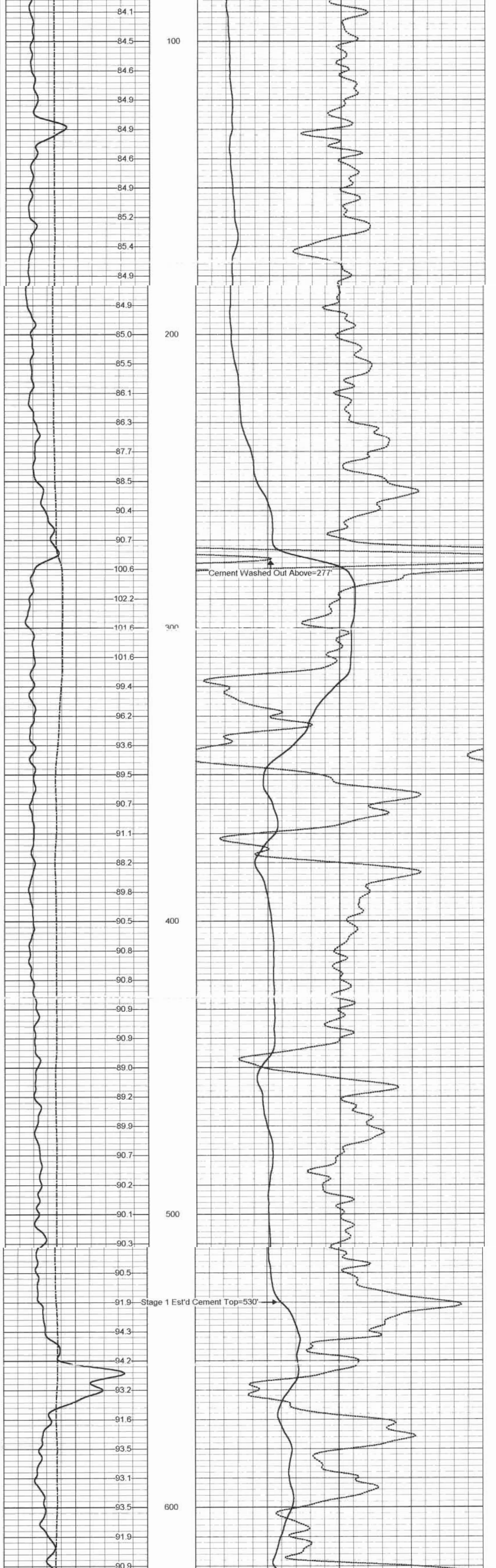
Database File: swsml-6.db
Dataset Pathname: run2/CTL2-2
Presentation Format: rtstemp.prs
Dataset Creation: Sat Aug 06 14:04:59 2005
Charted by: Depth in Feet scaled 1:240



MV Geophysical

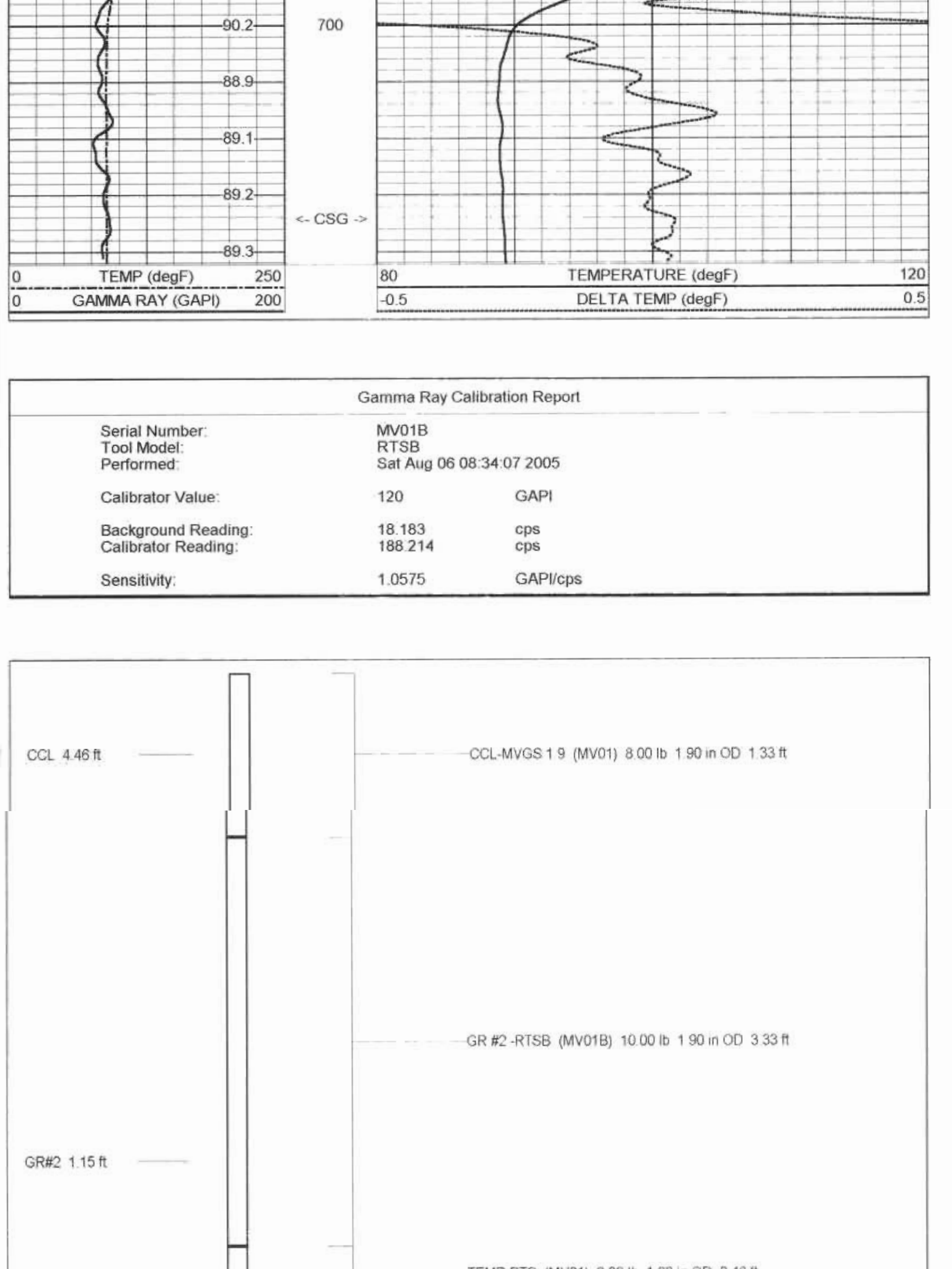
Stage 1: Est'd Cmt Top=530'

Database File: swsml-6.db
Dataset Pathname: run2/CTL2-1
Presentation Format: rtstemp.prs
Dataset Creation: Sat Aug 06 08:53:38 2005
Charted by: Depth in Feet scaled 1:240



Gamma Ray Calibration Report

Serial Number:	MV01B	
Tool Model:	RTSB	
Performed:	Sat Aug 06 08:34:07 2005	
Calibrator Value:	120	GAPI
Background Reading:	18.183	cps
Calibrator Reading:	188.214	cps
Sensitivity:	1.0575	GAPI/cps



Dataset: run2/pass1.1
Total Length: 5.12 ft
Total Weight: 20.00 lb
O.D.: 1.90 in

MV Geophysical

X-Y CALIPER GAMMA RAY LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	BHC,DIL FLOW,FCT VIDEO
Permanent Datum	G.L.
Log Measured From	G.L.
Drilling Measured From	G.L.
Elevation	K.B. / D.F. / G.L.

Company Water Resource Solutions
Well ASR-6
Field Marco Lakes ASR Exp.
County Collier
State/Prv Florida

Date	23-AUG-2005
Run Number	THREE
Depth Driller	776'
Depth Logger	776'
Bottom Logged Interval	776'
Top Log Interval	SURFACE
Open Hole Size	15"
Type Fluid	WATER
Density / Viscosity	NA/NA
Max. Recorded Temp.	na
Estimated Cement Top	NA
Time Well Ready	08:00 8/23/05
Time Logger on Bottom	09:30 8/23/05
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	F.Procta (WRS) J.Bair (SWS)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				

Invoice No. 2005154

* FINAL PRINT *

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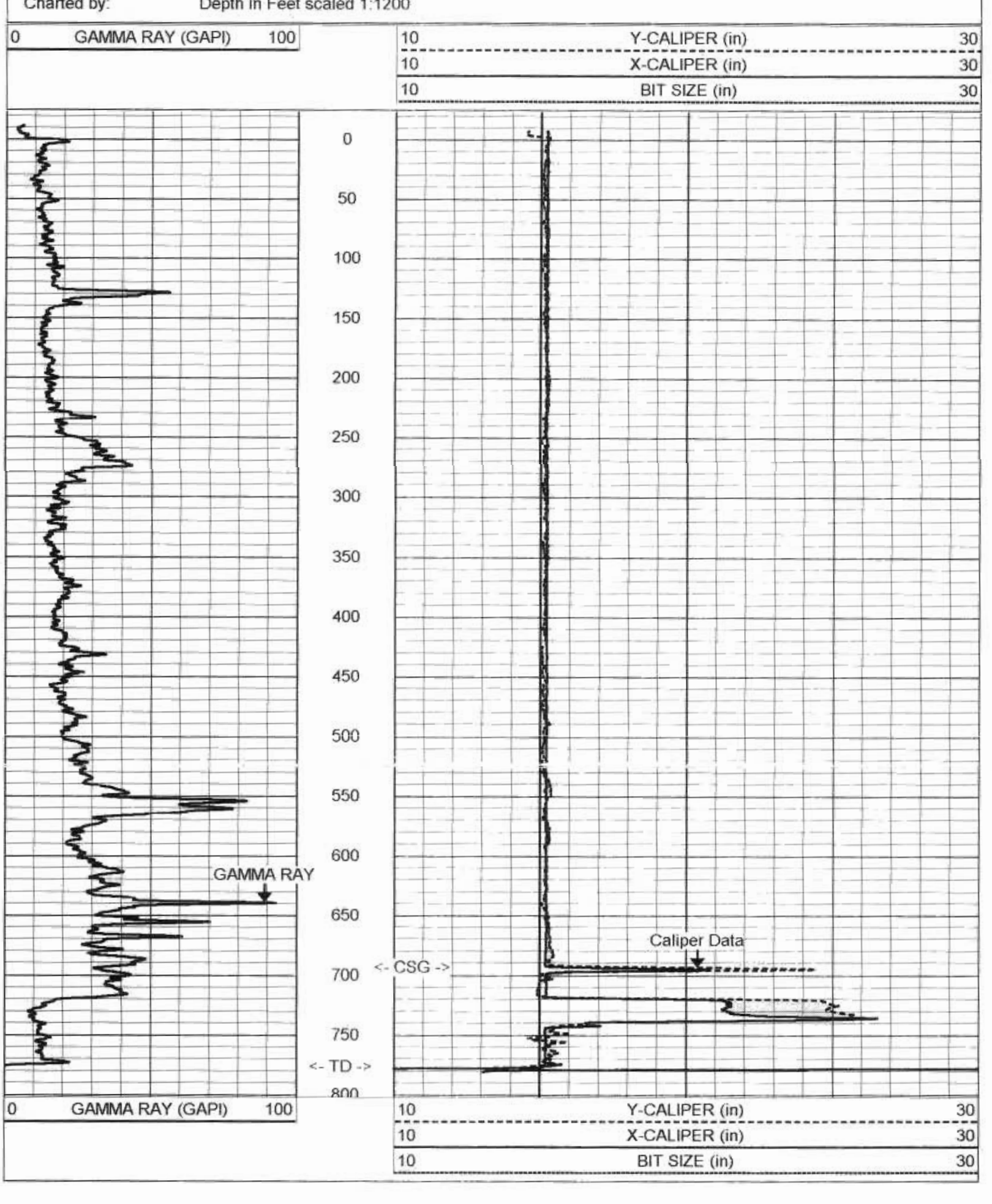
Comments

X-Y Caliper Arm Extensions: 33"

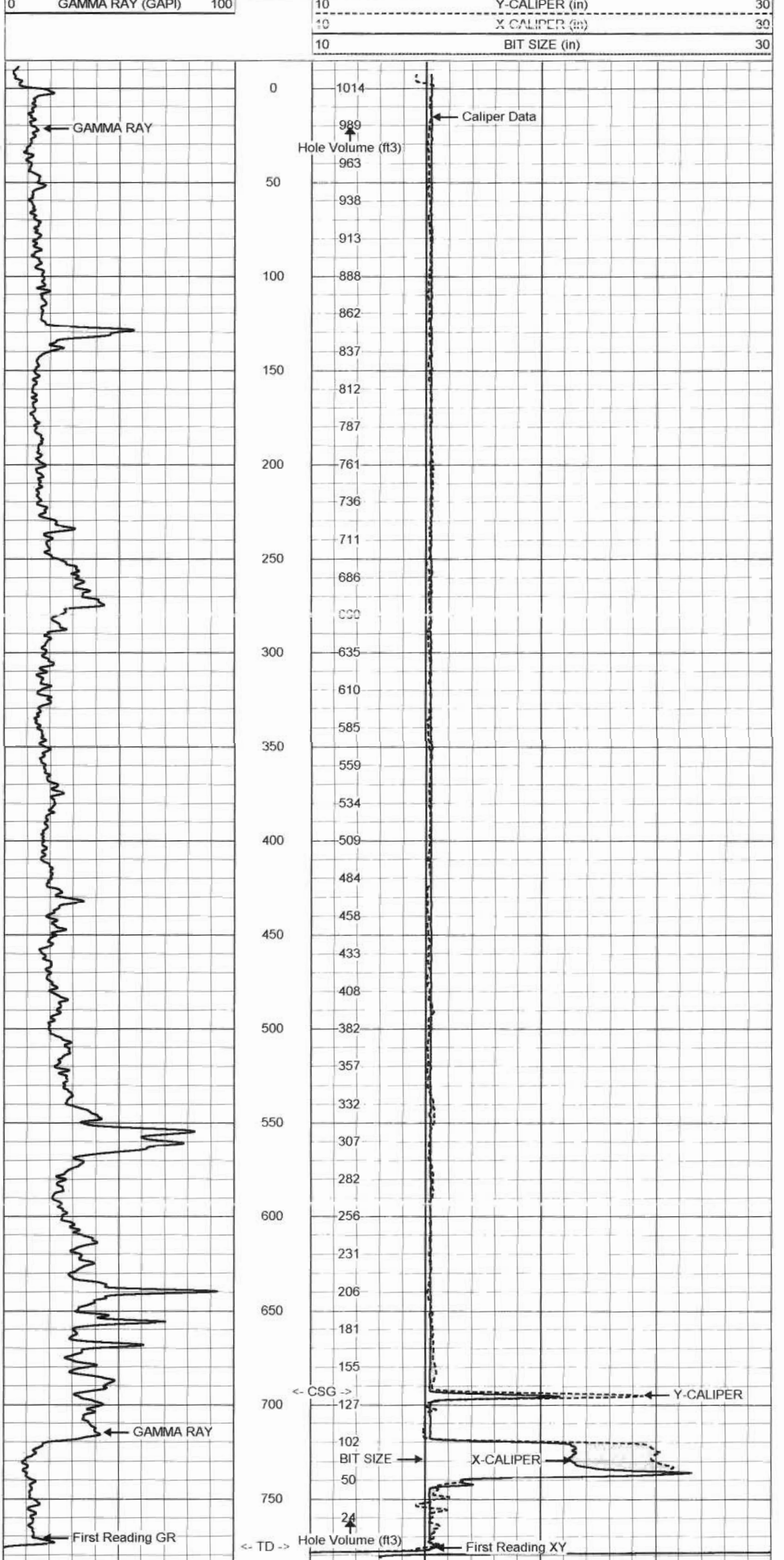
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: xy1030-1.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:1200



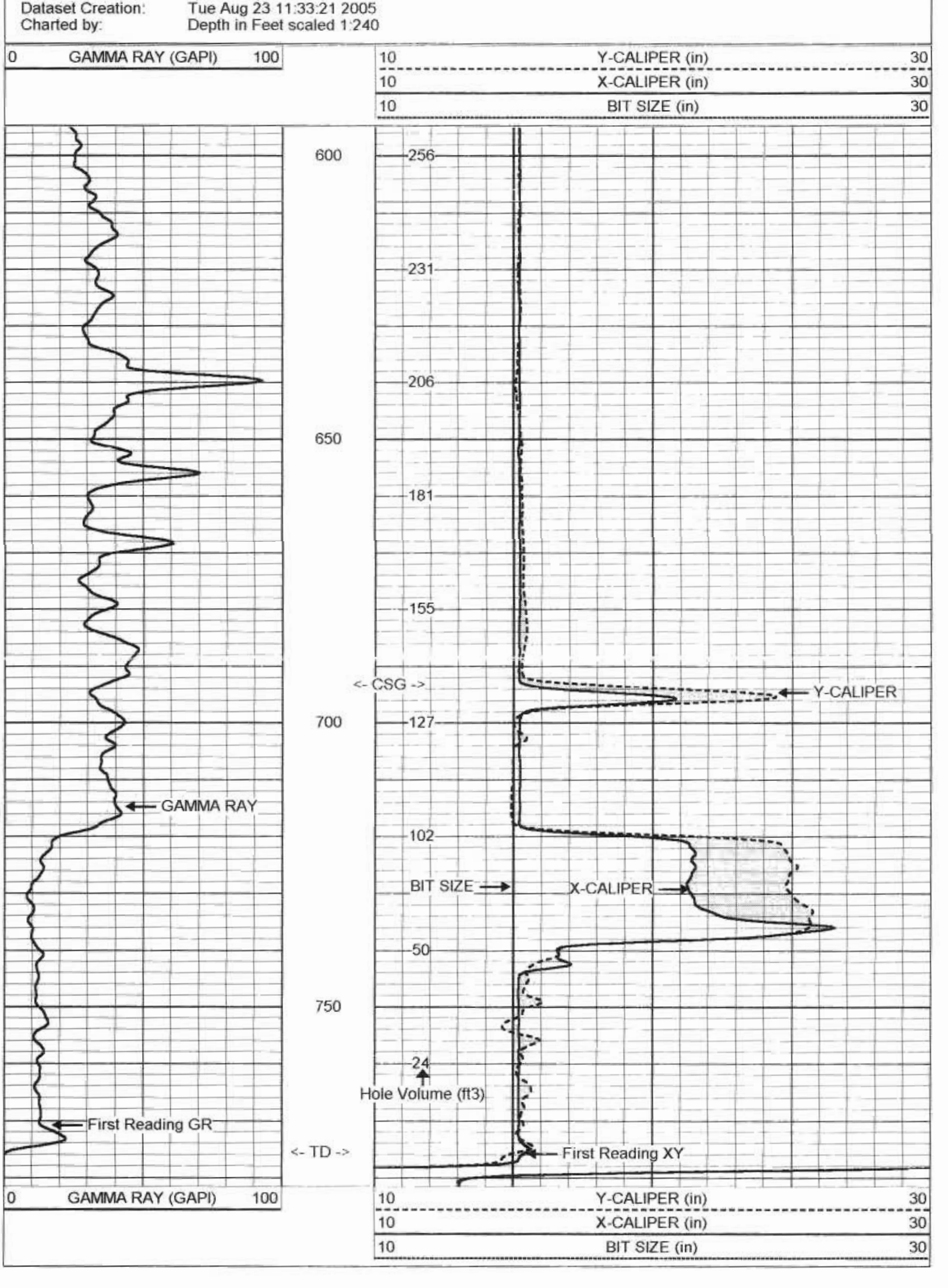
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: xy1030-5.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:600



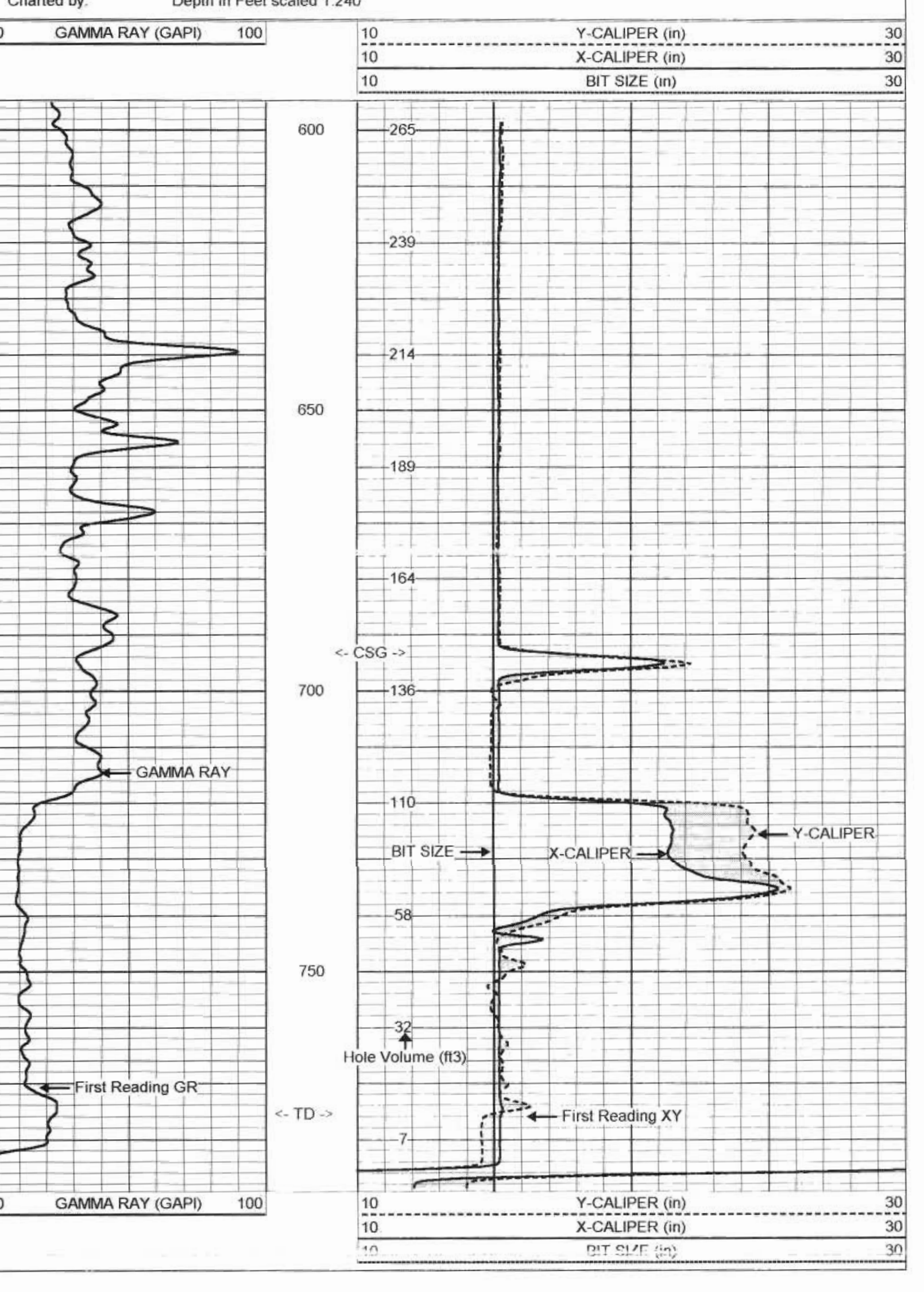
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: xy1030-5.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:240



MV Geophysical — REPEAT SECTION

Database File: swsml-6.db
Dataset Pathname: run3/REPEAT
Presentation Format: xy1030-5.prs
Dataset Creation: Tue Aug 23 10:44:52 2005
Charted by: Depth in Feet scaled 1:240

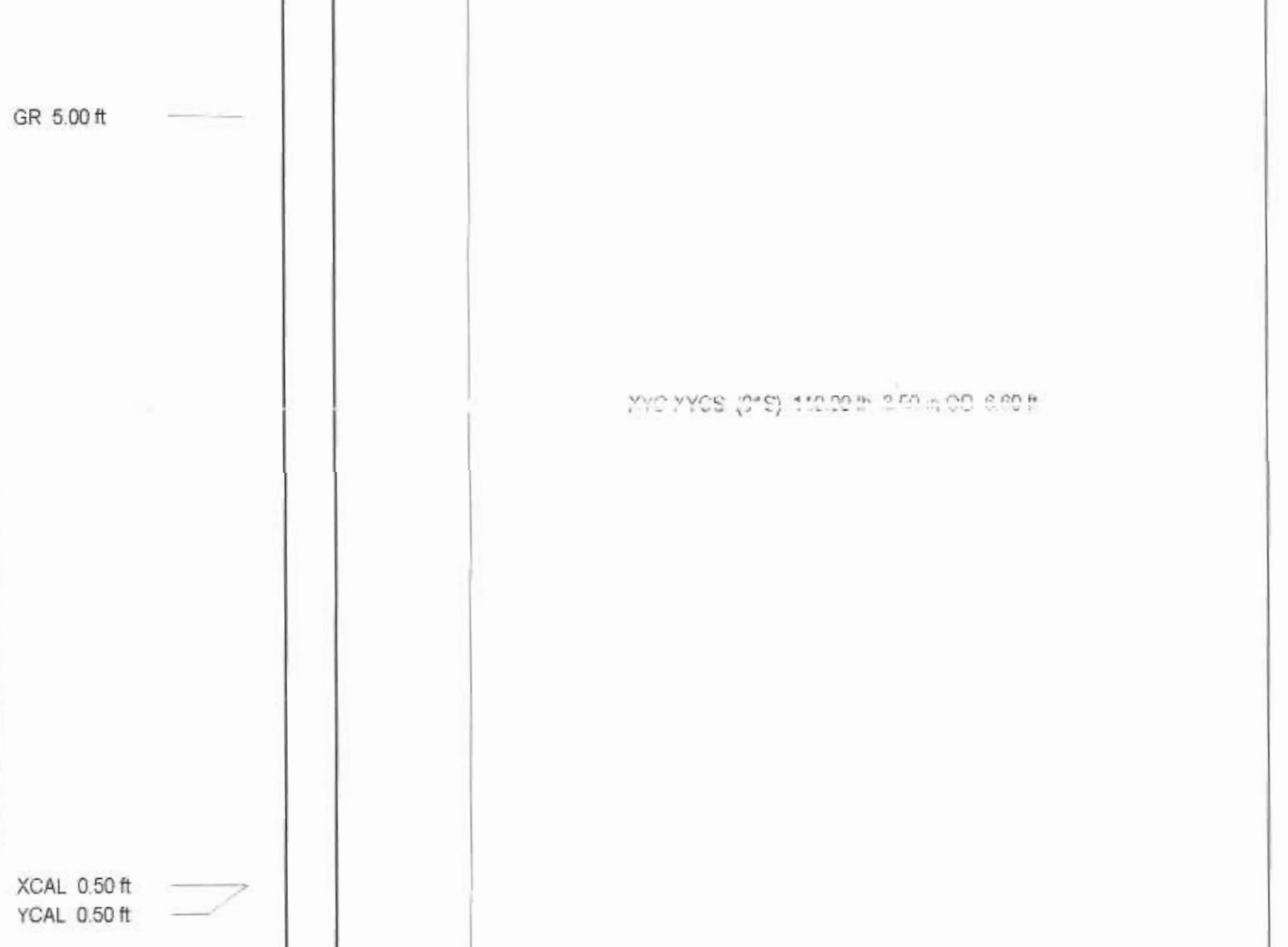


XY Caliper Calibration Report

Serial Number:	01S		
Tool Model:	XYCS		
Performed:	Tue Aug 23 10:36:24 2005		
Small Ring:	15.2	in	
Large Ring:	33	in	
	X Caliper	Y Caliper	
Reading with Small Ring:	500.9	480.5	cps
Reading with Large Ring:	886.2	883.5	cps
Gain:	0.0461978	0.0441687	
Offset:	-7.94046	-6.02308	

Gamma Ray Calibration Report

Serial Number:	01	
Tool Model:	GROH	
Performed:	Fri Aug 19 10:18:16 2005	
Calibrator Value:	120	GAPI
Background Reading:	10.719	cps
Calibrator Reading:	126.41	cps
Sensitivity:	1.03725	GAPI/cps



Dataset: run3/pass5
Total Length: 9.35 ft
Total Weight: 150.00 lb
O.D. 3.50 in

Company Water Resource Solutions
Well ASR-6
Field Marco Lakes ASR Exp.
County Collier
State/Prv Florida

MV Geophysical

FLUID CONDUCTIVITY TEMPERATURE LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida

Location: Marco Lakes ASR Wellfield Expansion, Southern Well Services

Other Services: XY/GR,DIL, FLOW,BHC, VIDEO

		Elevation	
Permanent Datum	G.L.		K.B.
Log Measured From	G.L.		D.F.
Drilling Measured From	G.L.		G.L.

Date	23-AUG-2005		
Run Number	THREE		
Depth Driller	776'		
Depth Logger	776'		
Bottom Logged Interval	776'		
Top Log Interval	595'		
Open Hole Size	15"		
Type Fluid	WATER		
Density / Viscosity	NA/NA		
Max. Recorded Temp.	na		
Estimated Cement Top	NA		
Time Well Ready	08:00 8/23/05		
Time Logger on Bottom	08:30 8/23/05		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S Miller		
Witnessed By	F.Procta (WRS)	J.Bair (SWS)	

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				
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Comments

DYNAMIC and STATIC DOWN passes were performed.
Cw=2223 uS/cm @ 82.5 degF (Dynamic Sample). Q =~720 gpm.
FLUID RESISTIVITY CALIBRATION REPORT (Performed: 11-AUG-05 14:45)

OHM-M	CPS
2333.3	4001.54
2819.5	3799.52
3524.2	3490.14

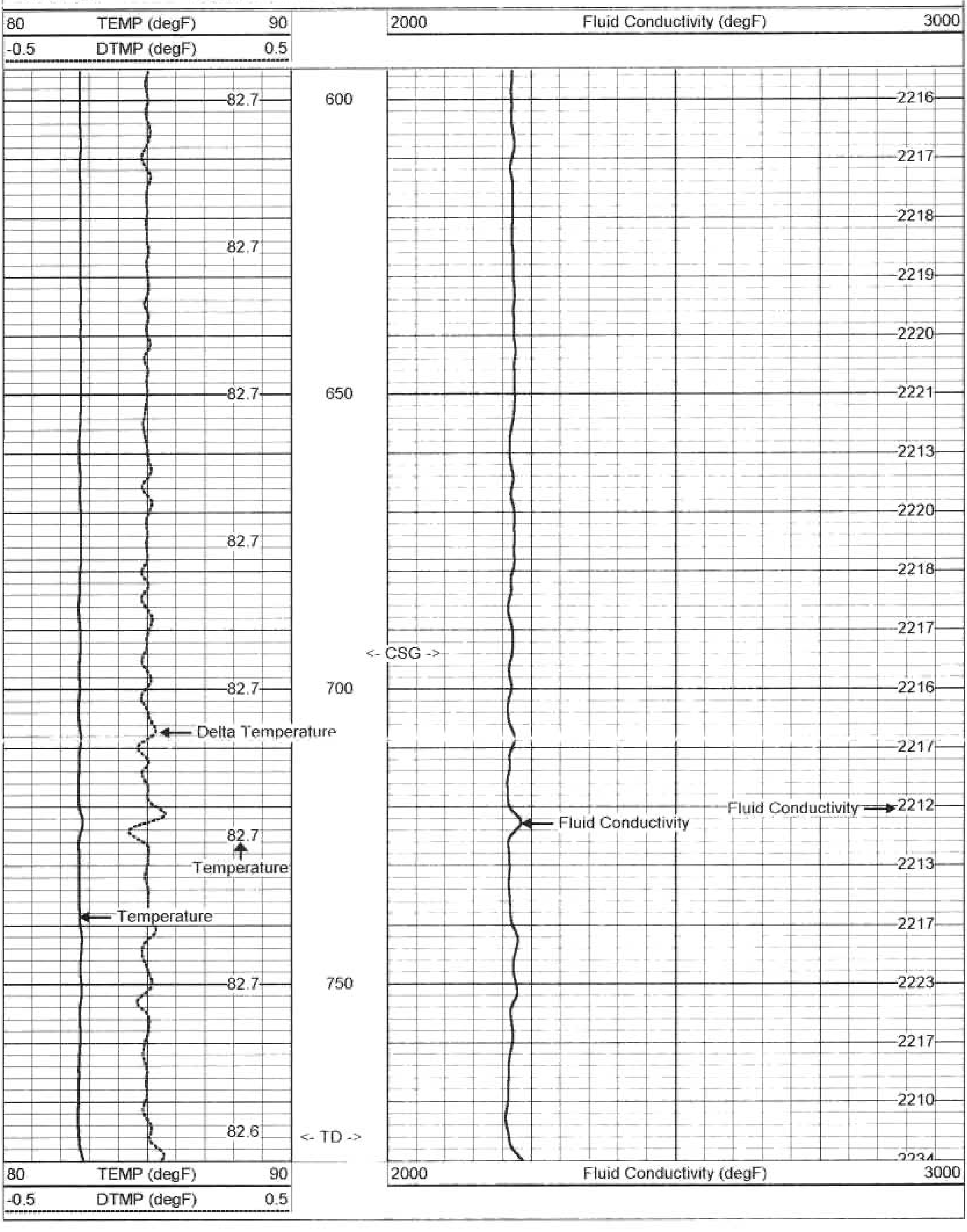
TEMPERATURE CALIBRATION REPORT (Performed: 11-AUG-05 13:15)

DEG-F	CPS
34.6	2340.14
144.9	6953.47

MV Geophysical

DYNAMIC FCT DOWN

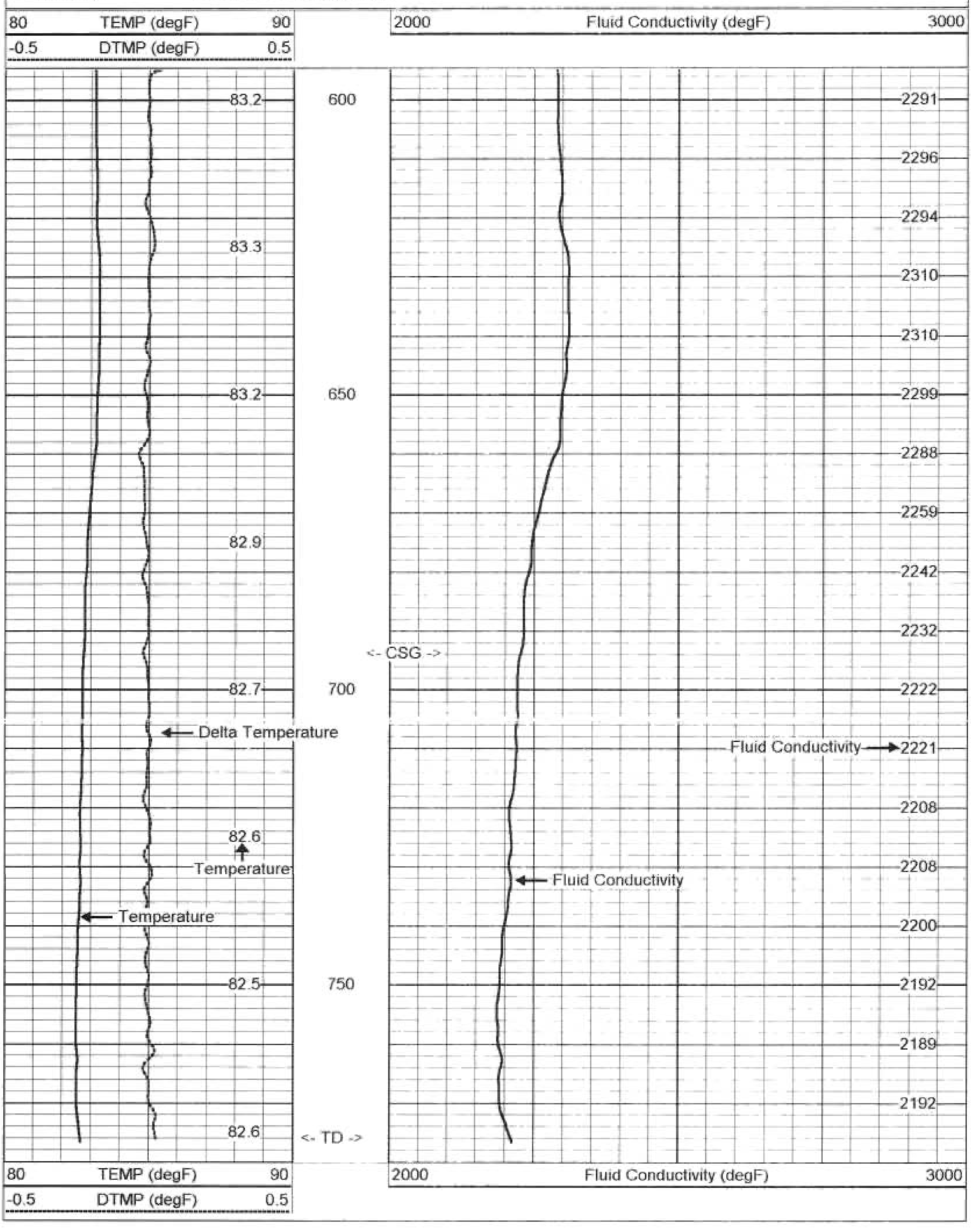
Database File: swsml-6.db
Dataset Pathname: run3/DFCT
Presentation Format: fct6ml.prs
Dataset Creation: Tue Aug 23 17:27:30 2005
Charted by: Depth in Feet scaled 1:240

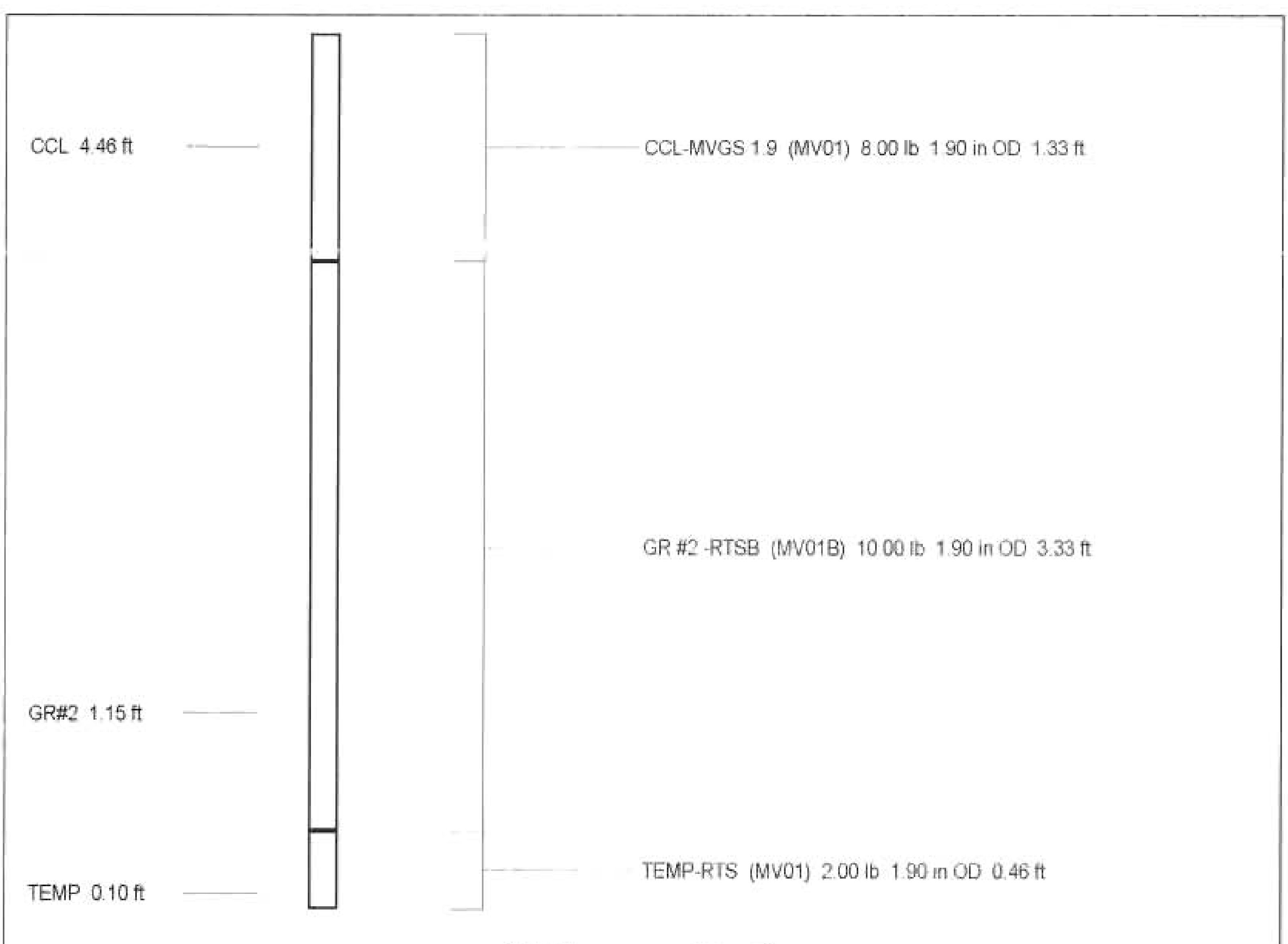


MV Geophysical

STATIC FCT DOWN

Database File: swsml-6.db
Dataset Pathname: run3/SFCT
Presentation Format: fct6ml.prs
Dataset Creation: Tue Aug 23 17:26:31 2005
Charted by: Depth in Feet scaled 1:240





Dataset:	run3/pass18
Total Length:	5.12 ft
Total Weight:	20.00 lb
O.D.:	1.90 in

MV Geophysical

FLOWMETER LOG

Company	Water Resource Solutions		
Well	ASR-6		
Field	Marco Lakes ASR Exp.		
County	Collier		
State/Prv	Florida		

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion, Southern Well Services
Other Services	DIL/SP,XY/GR, BHC/VDL,FCT, VIDEO
Permanent Datum	G.L.
Log Measured From	G.L.
Drilling Measured From	G.L.
Elevation	K.B. / D.F. / G.L.

Date	23-AUG-2005		
Run Number	THREE		
Depth Driller	776'		
Depth Logger	776'		
Bottom Logged Interval	776'		
Top Log Interval	645'		
Open Hole Size	15"		
Type Fluid	WATER		
Density / Viscosity	NA/NA		
Max. Recorded Temp.	na		
Estimated Cement Top	NA		
Time Well Ready	08:00 8/23/05		
Time Logger on Bottom	13:00 8/23/05		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	F.Procta (WRS)	J.Bair (SWS)	

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				

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Comments

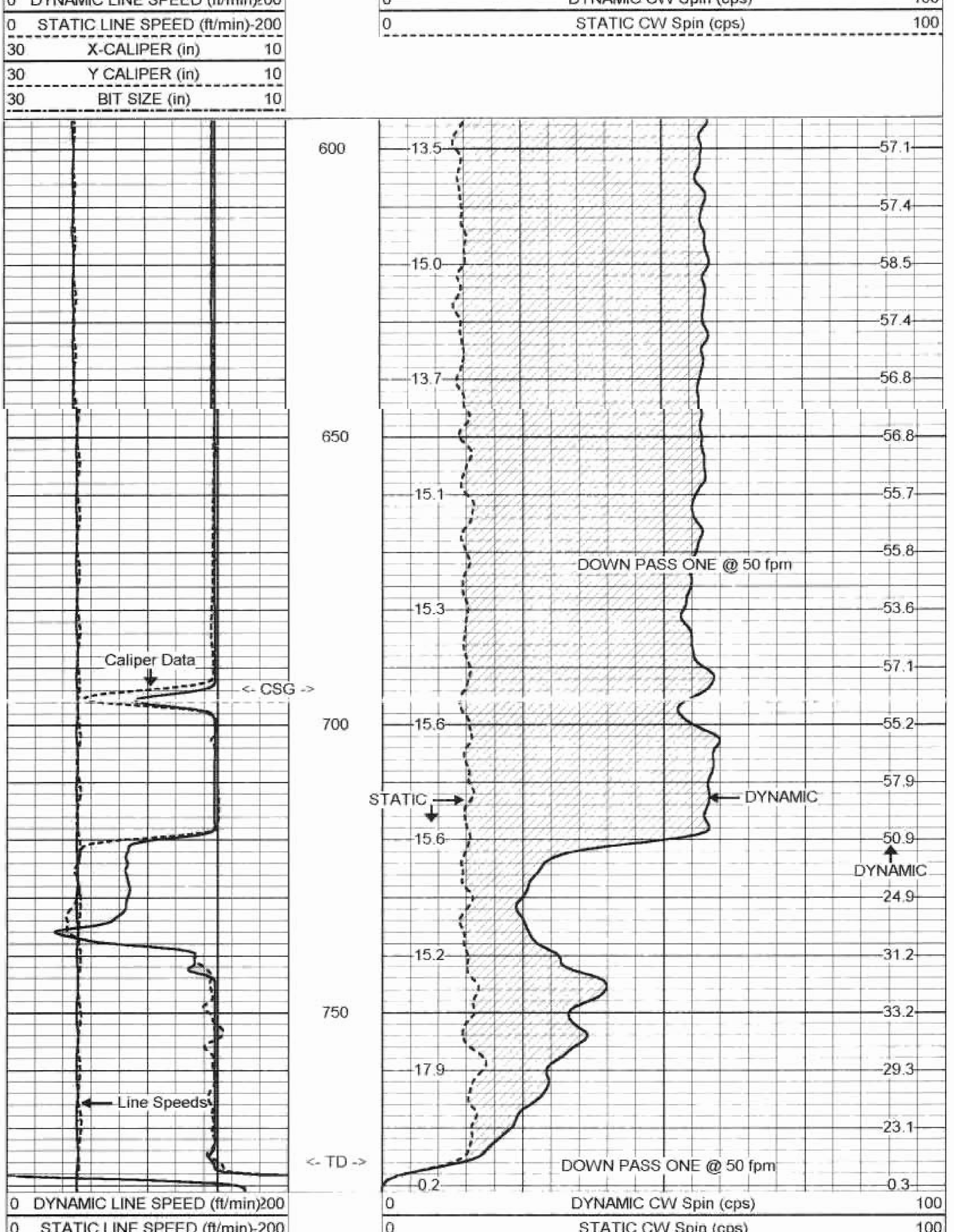
A STATIC and DYNAMIC down passes were made at 50 fpm.

4 Stations were performed.

Q =~720 gpm

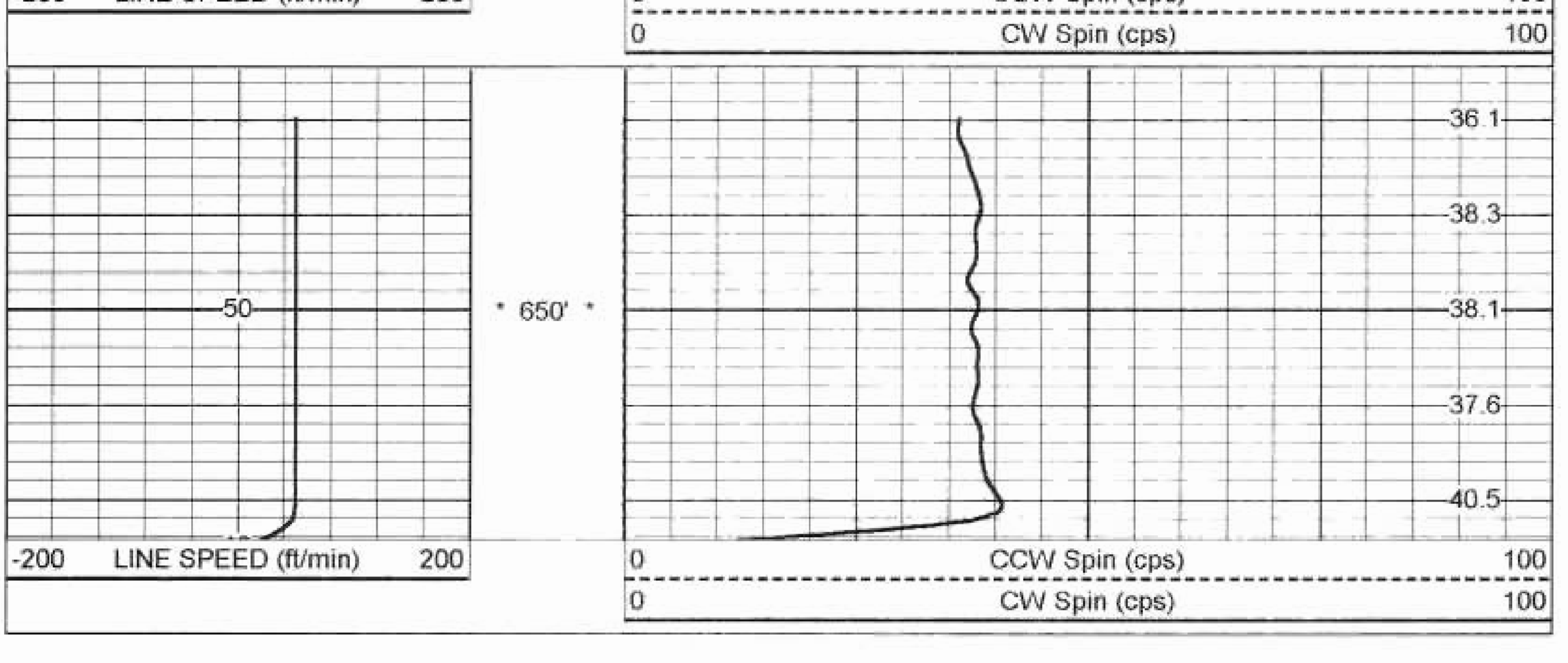
MV Geophysical — S/D DOWN @ 50 fpm

Database File: swsml-6.db
Dataset Pathname: run3/SD50
Presentation Format: qml6.prs
Dataset Creation: Tue Aug 23 14:31:07 2005
Charted by: Depth in Feet scaled 1:240



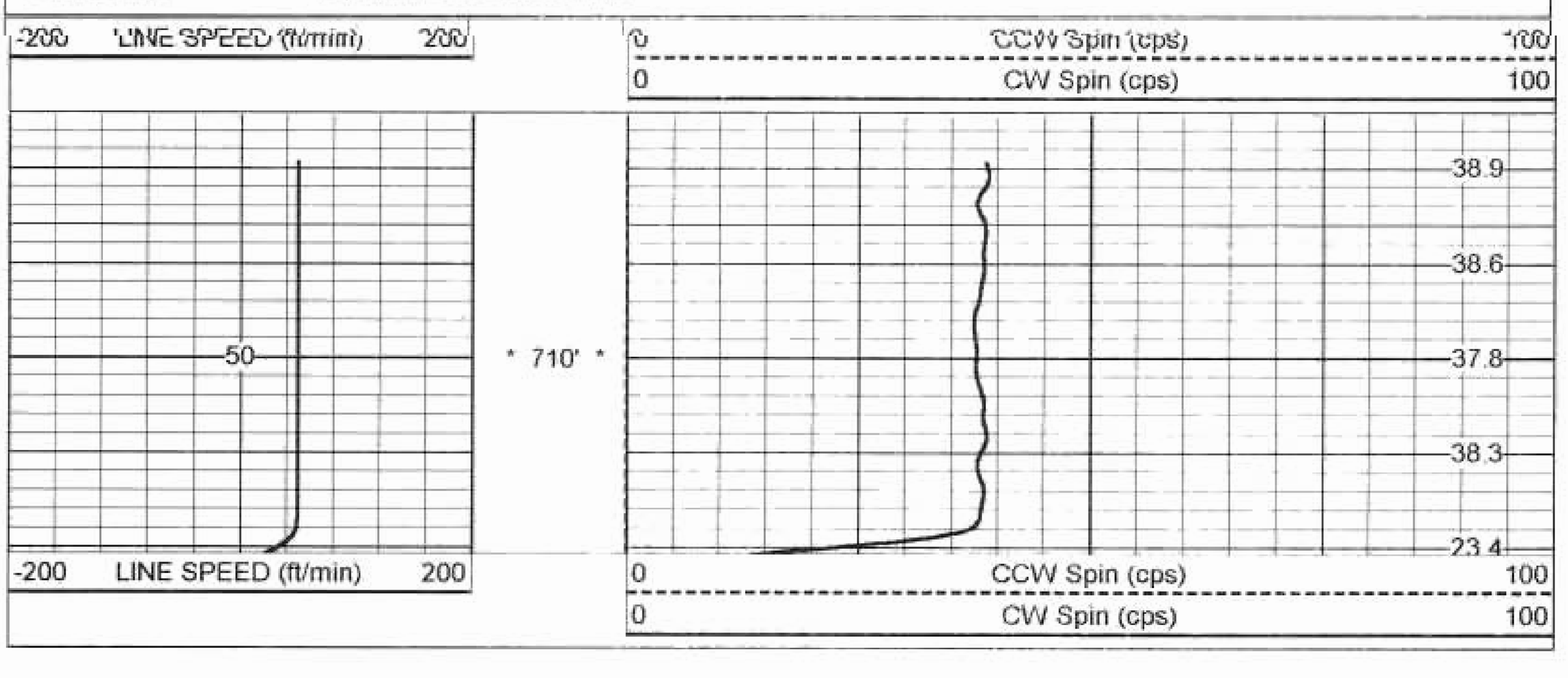
MV Geophysical — Station #4: 650'

Database File: swsml-6.db
Dataset Pathname: run3/pass17
Presentation Format: flow.prs
Dataset Creation: Tue Aug 23 16:02:03 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240



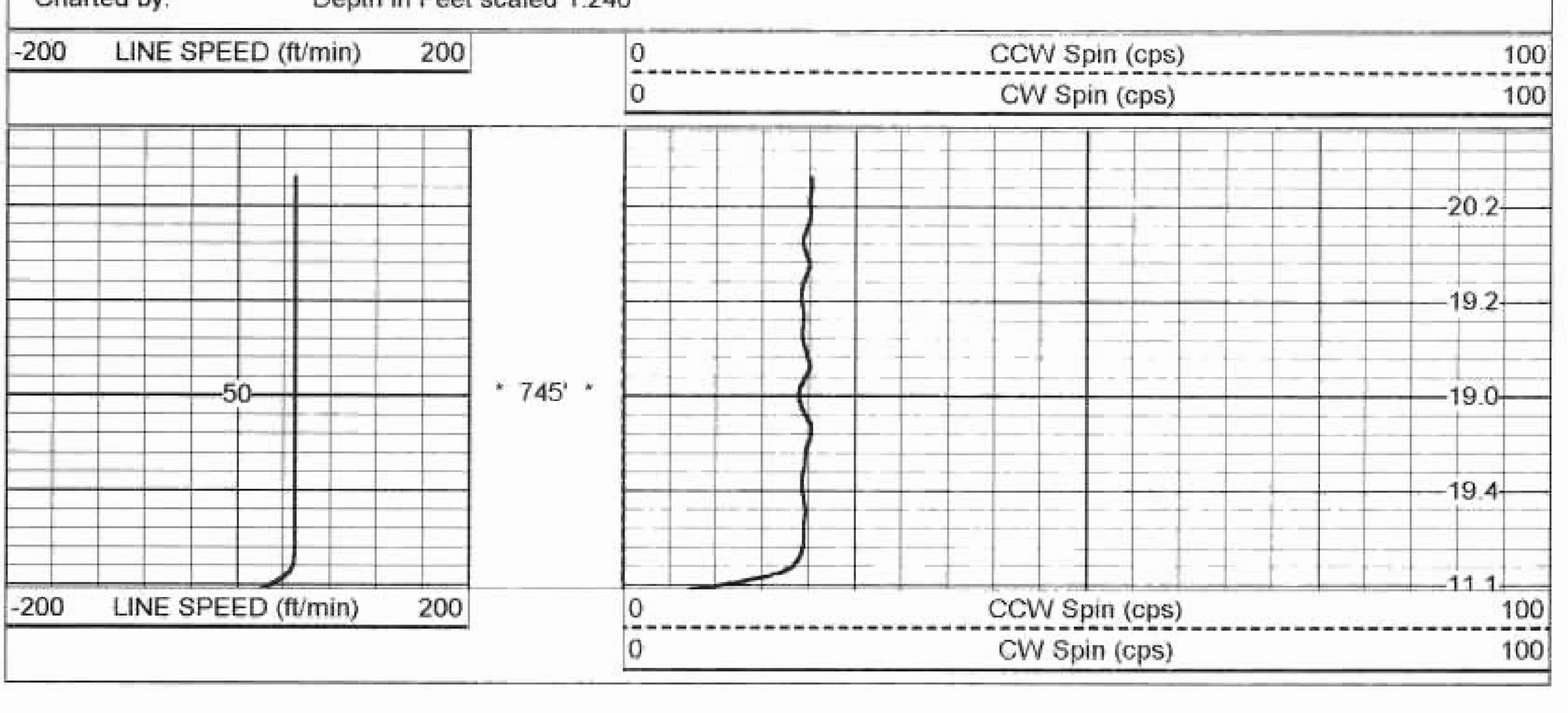
MV Geophysical — Station #3: 710'

Database File: swsml-6.db
Dataset Pathname: run3/pass16
Presentation Format: flow.prs
Dataset Creation: Tue Aug 23 16:00:06 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240



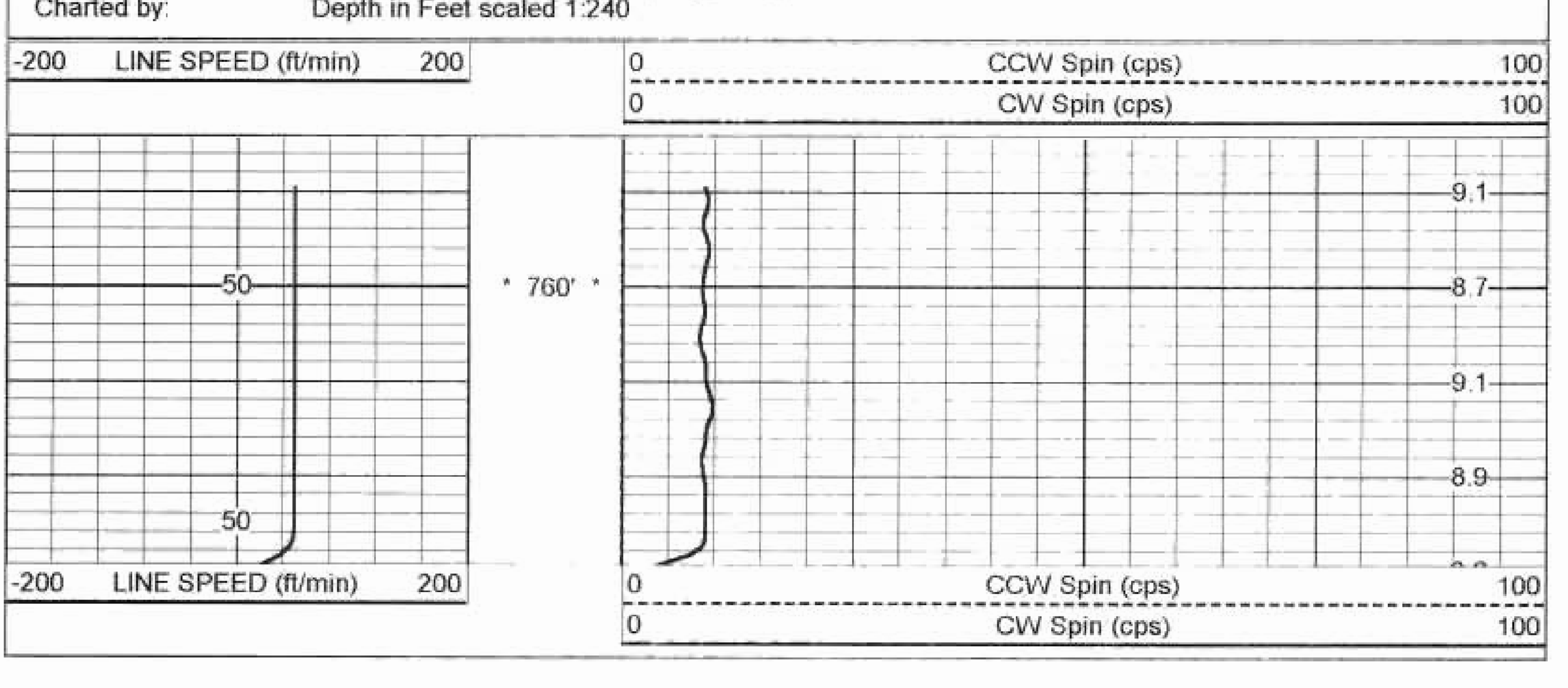
MV Geophysical — Station #2: 745'

Database File: swsml-6.db
Dataset Pathname: run3/pass15
Presentation Format: flow.prs
Dataset Creation: Tue Aug 23 15:58:05 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240



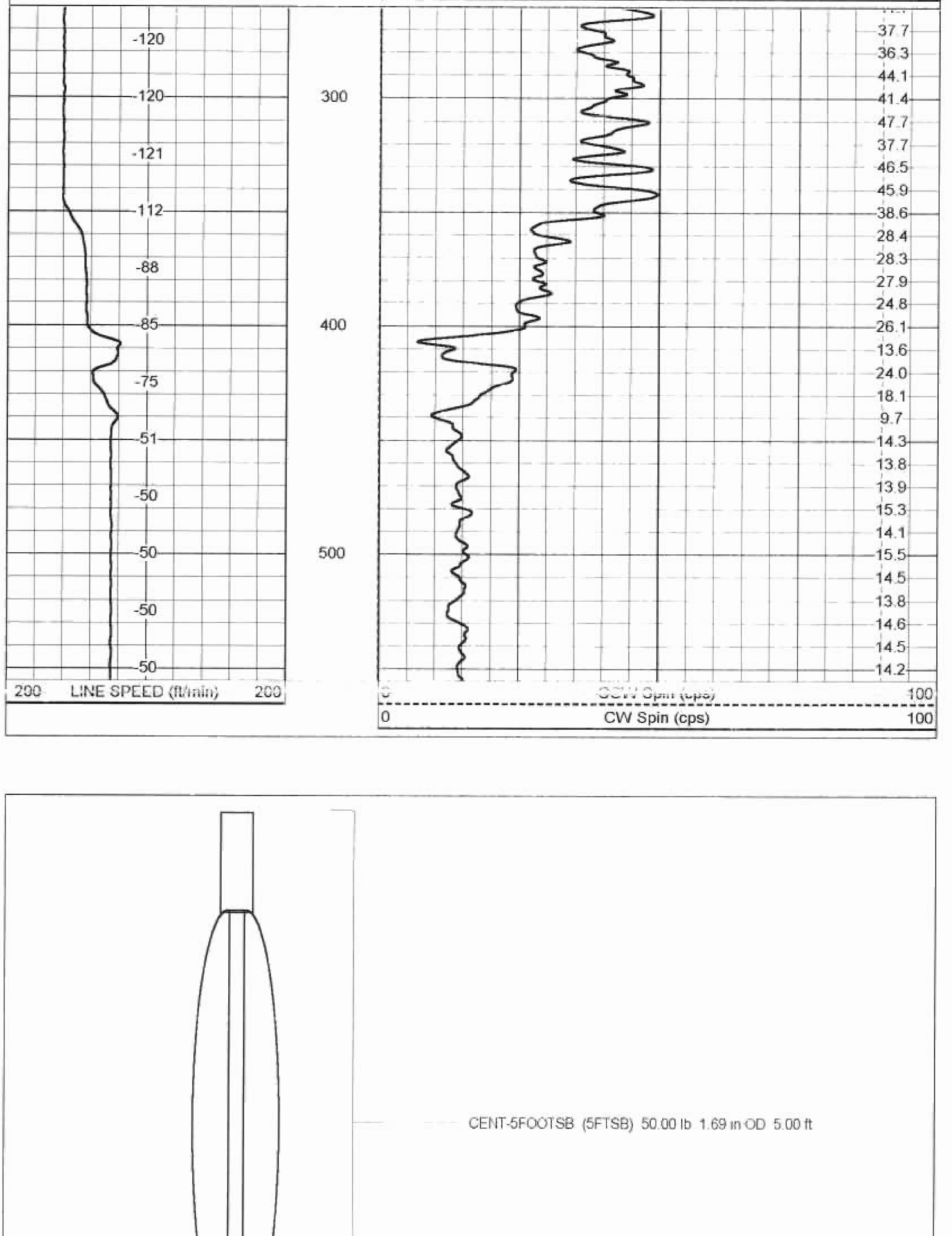
MV Geophysical — Station #1: 760'

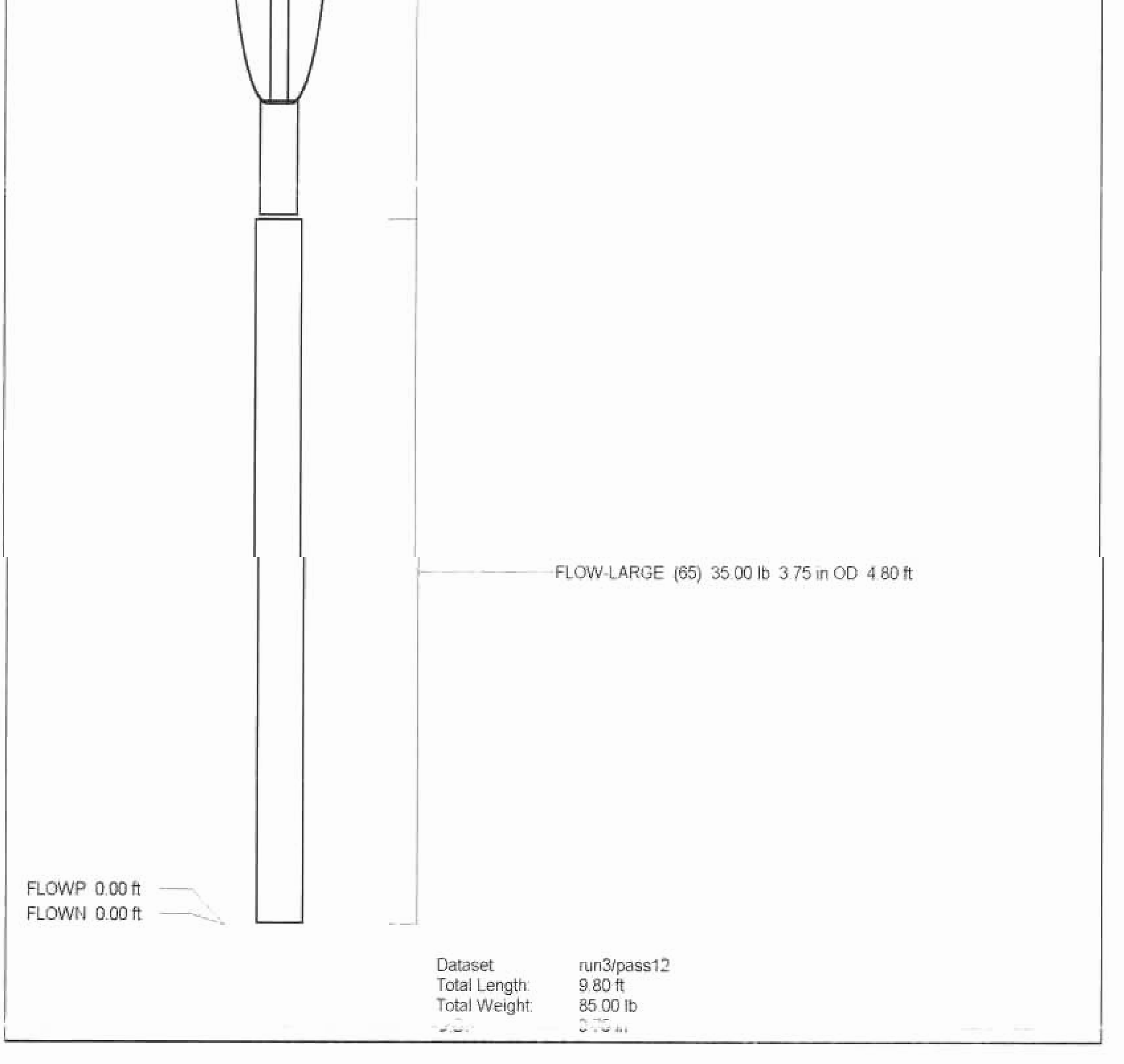
Database File: swsml-6.db
Dataset Pathname: run3/pass14
Presentation Format: flow.prs
Dataset Creation: Tue Aug 23 15:55:5[illegible] 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240



MV Geophysical — Q Calibration Down

Database File: swsml-6.db
Dataset Pathname: run3/pass12
Presentation Format: flow.prs
Dataset Creation: Tue Aug 23 13:04:34 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:600





Dataset: run3/pass12
Total Length: 9.80 ft
Total Weight: 85.00 lb

MV Geophysical

FLOWMETER INTERPRETATION

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida

Location: Marco Lakes ASR Wellfield Expansion, Southern Well Services

Other Services: DIL/SP,XY/GR BHC/VDL,FCT FLOW,VIDEO

		Elevation	Elevation
Permanent Datum	G.L.		K.B
Log Measured From	G.L.		D.F
Drilling Measured From	G.L.		G.L.

Date	23-AUG-2005		
Run Number	THREE		
Depth Driller	776'		
Depth Logger	776'		
Bottom Logged Interval	776'		
Top Log Interval	645'		
Open Hole Size	15"		
Type Fluid	WATER		
Density / Viscosity	NA/NA		
Max. Recorded Temp.	na		
Estimated Cement Top	NA		
Time Well Ready	08:00 8/23/05		
Time Logger on Bottom	13:00 8/23/05		
Equipment Number	MVGS-1		
Location	Ft. Myers		
Recorded By	S.Miller		
Witnessed By	F.Procta (WRS)	J.Bair (SWS)	

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				
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Comments

Q, %Q & Fluid Velocity presentations include a regular Line Speed and Caliper corrected only format, and an interpretative "LOGICAL" format.

"LOGICAL" Q, %Q & Fluid Velocity passes assume no thief zones (Q & %Q can only increase).

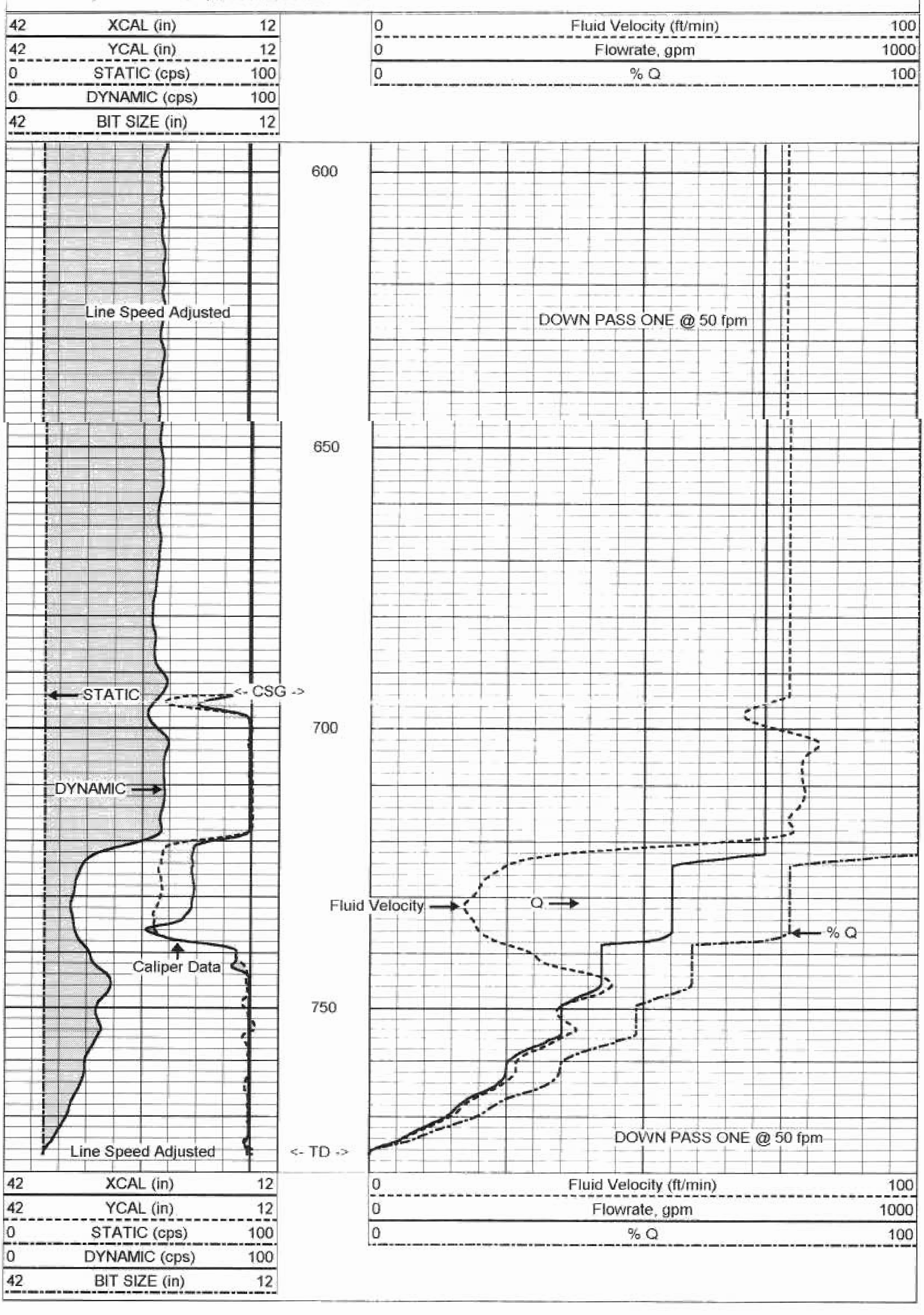
A DYNAMIC down pass was made at 50 fpm.

4 Stations were performed.

Q =~720 gpm

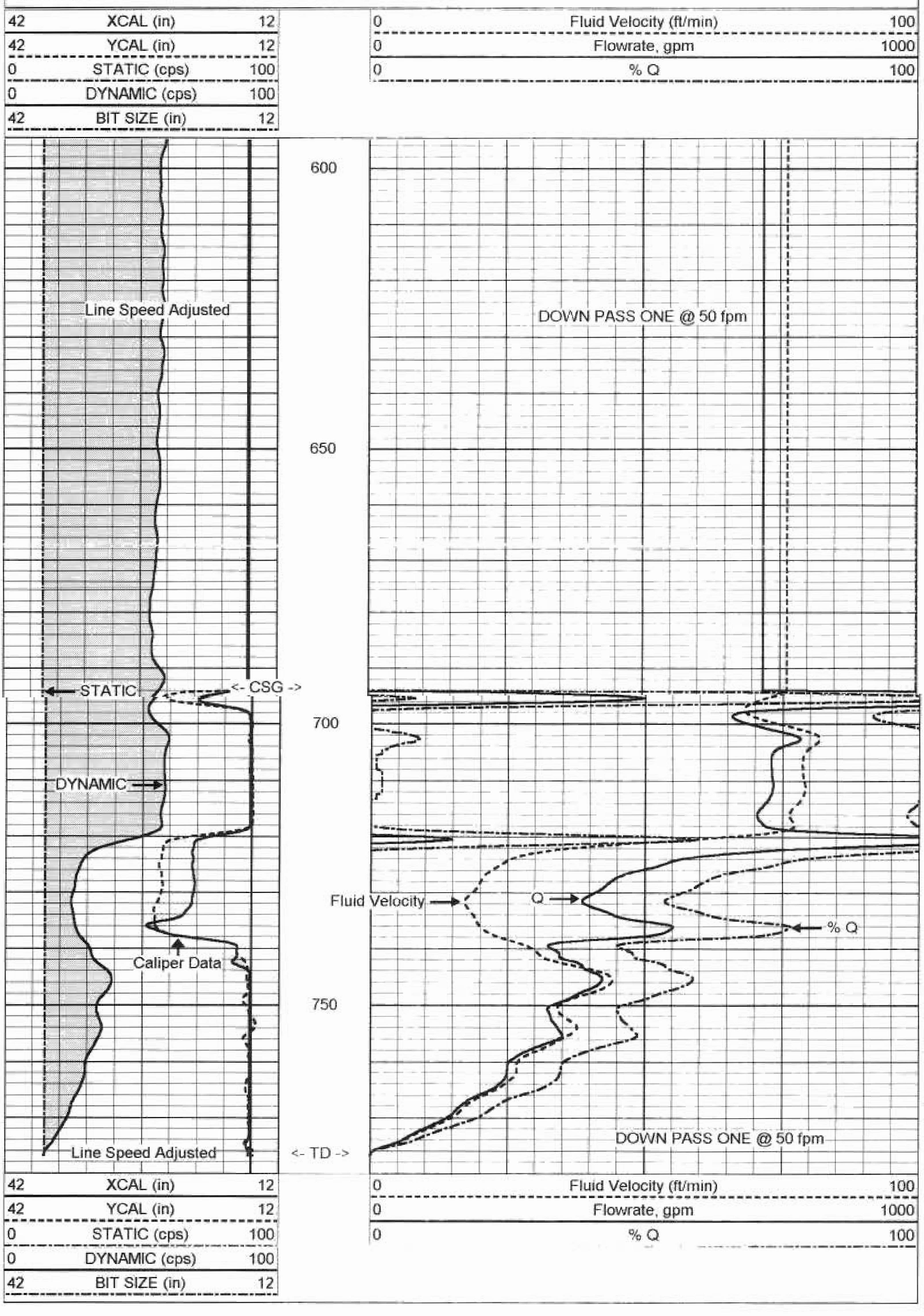
MV Geophysical "Logical" Q, %Q & F.Vel.

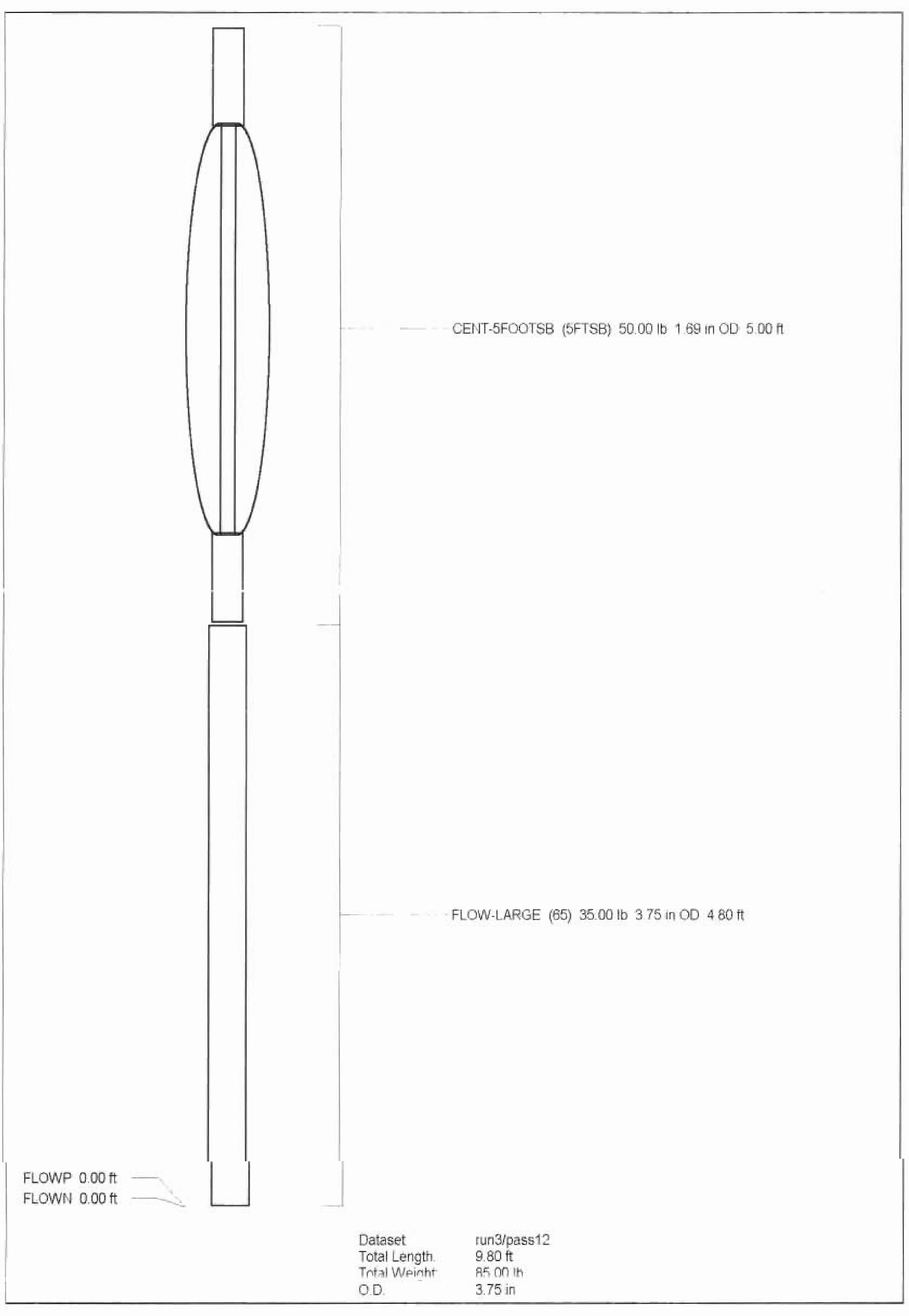
Database File: swsml-6.db
Dataset Pathname: run3/lq50
Presentation Format: lpvqml.prs
Dataset Creation: Wed Dec 14 17:02:01 2005
Charted by: Depth in Feet scaled 1:240



MV Geophysical "RAW" Q, %Q & F.Vel.

Database File: swsml-6.db
Dataset Pathname: run3/q50
Presentation Format: pvqml6.prs
Dataset Creation: Wed Dec 14 17:14:04 2005
Charted by: Depth in Feet scaled 1:240





Dataset run3/pass12
Total Length 9.80 ft
Total Weight 85.00 lb
O.D. 3.75 in

MV Geophysical

DUAL INDUCTION LL3 / SP LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Exp.
County	Collier
State/Prv	Florida

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	BHC,XY/GR FLOW,FCT VIDEO

		Elevation	Elevation
Permanent Datum	G.L.		K.B.
Log Measured From	G.L.		D.F.
Drilling Measured From	G.L.		G.L.

Date	23-AUG-2005
Run Number	THREE
Depth Driller	776'
Depth Logger	776'
Bottom Logged Interval	774'
Top Log Interval	694'
Open Hole Size	15"
Type Fluid	WATER
Density / Viscosity	NA/NA
Max. Recorded Temp.	na
Estimated Cement Top	NA
Time Well Ready	08:00 8/23/05
Time Logger on Bottom	11:00 8/23/05
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	F.Procta (WRS) / J.Bair (SWS)

Borehole Record / Tubing Record

Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				

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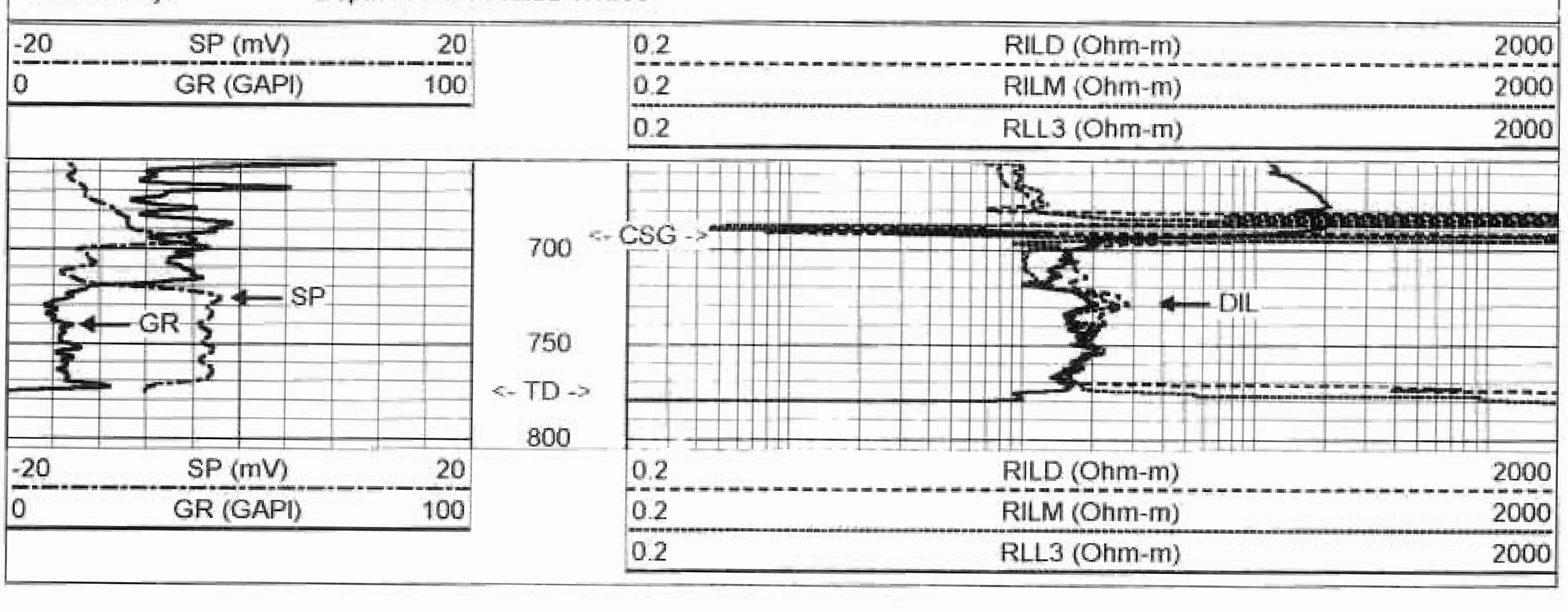
Comments

Rw=4.498 ohm-m @ 82.5 degF (DYNAMIC SAMPLE)

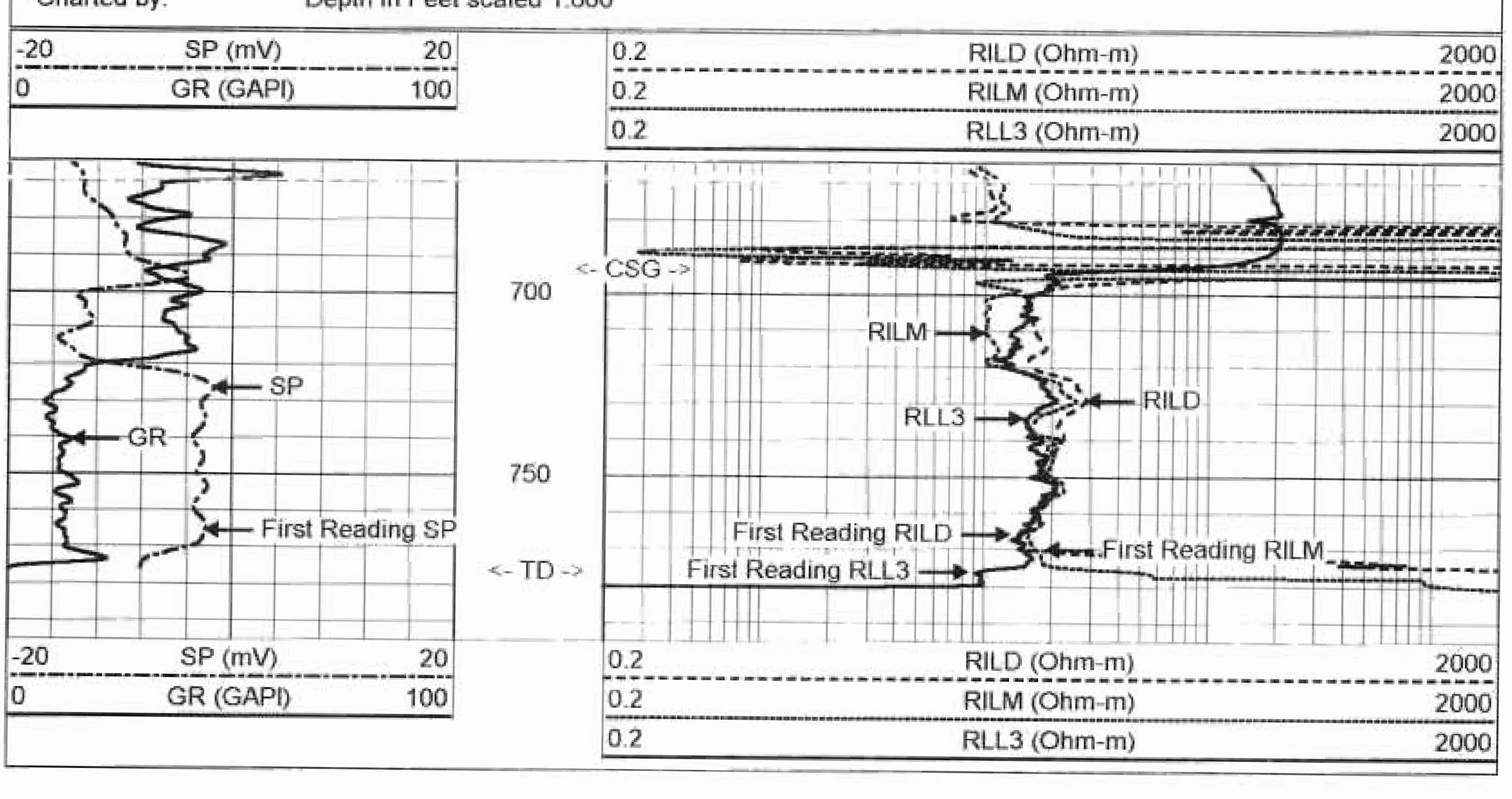
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: dil-1.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:1200



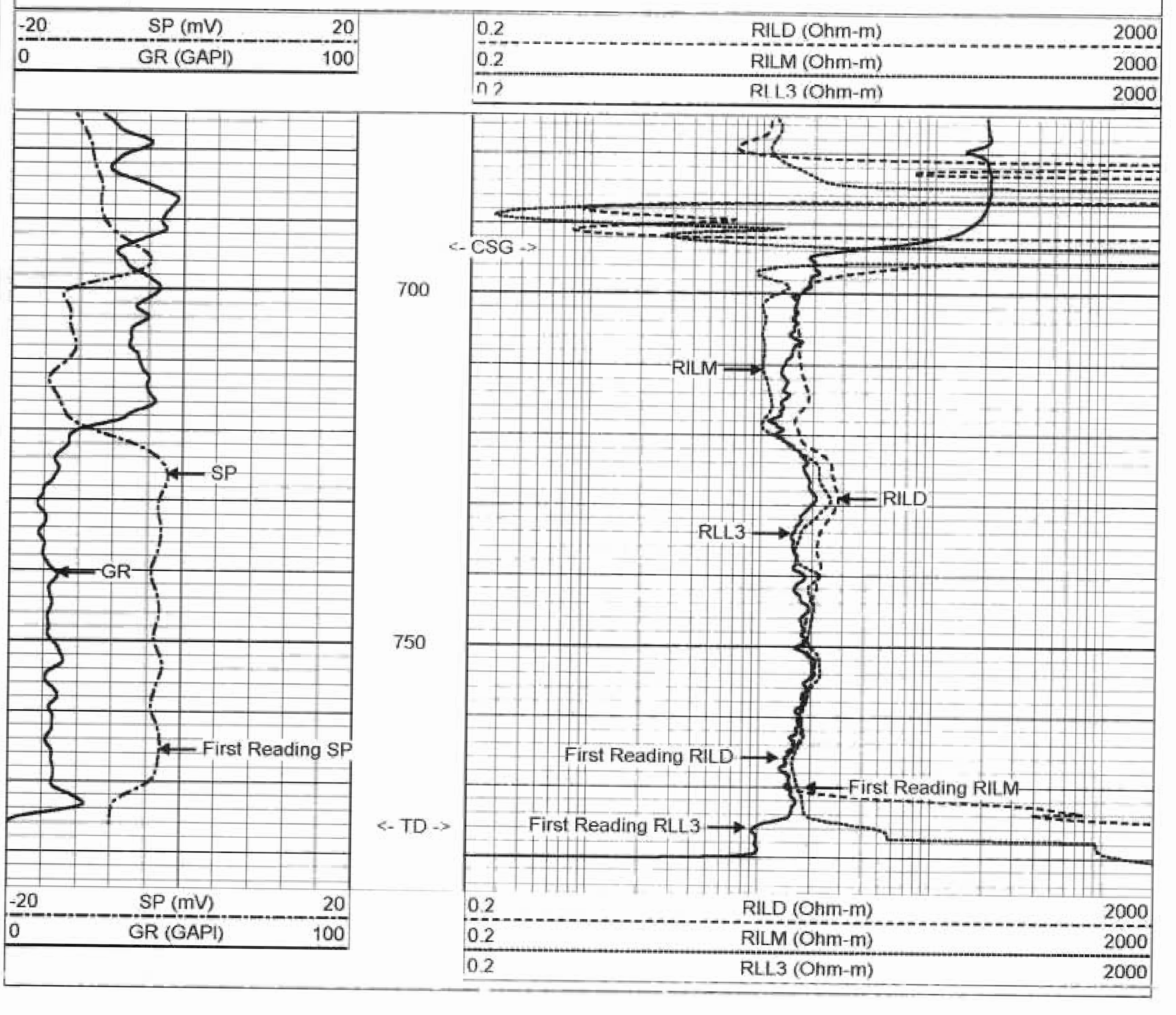
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: dil.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:600



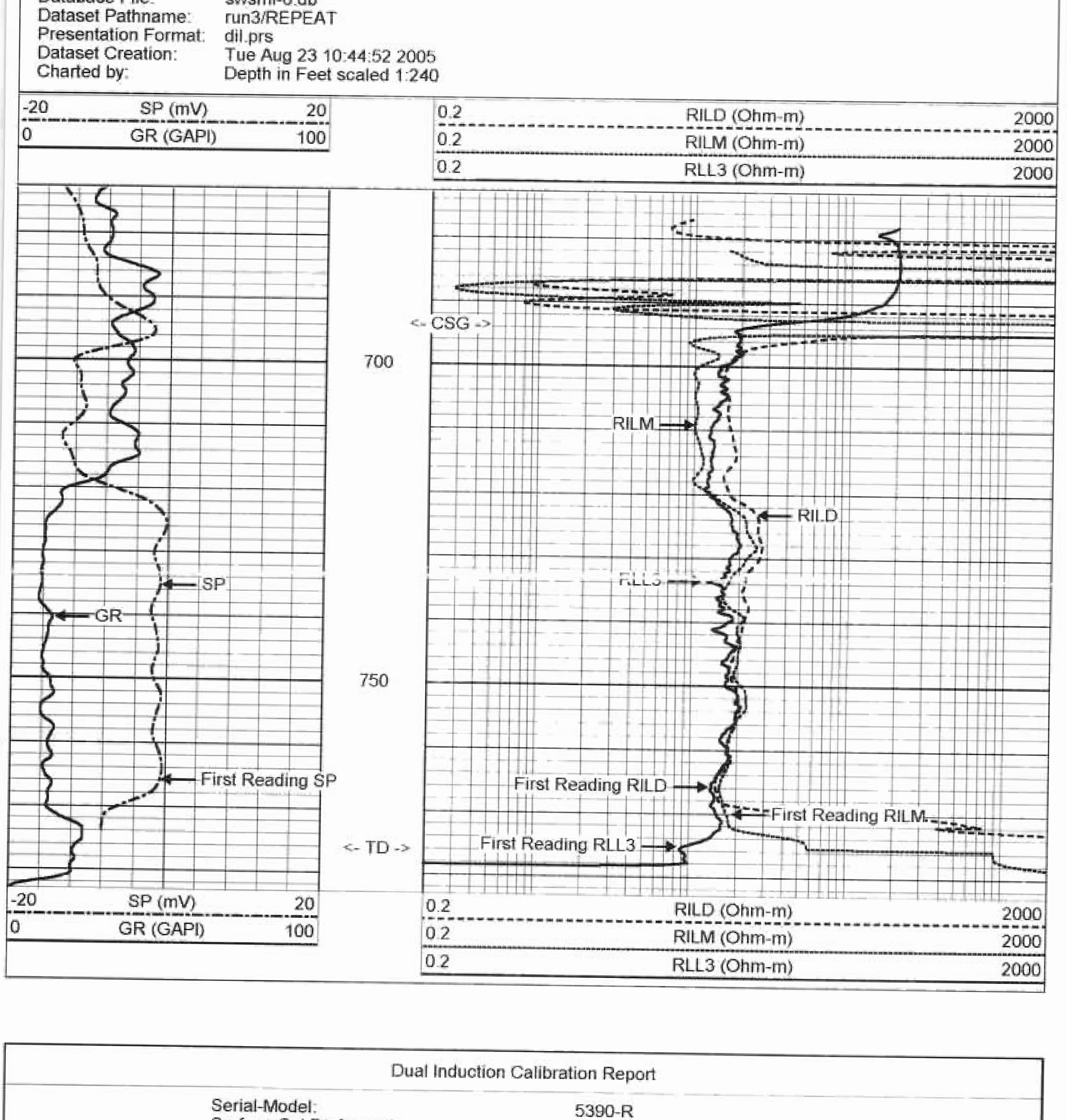
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: dil.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:240



MV Geophysical — REPEAT SECTION

Database File: swsml-6.db
Dataset Pathname: run3/REPEAT
Presentation Format: dil.prs
Dataset Creation: Tue Aug 23 10:44:52 2005
Charted by: Depth in Feet scaled 1:240



Dual Induction Calibration Report

Serial-Model: 5390-R
Surface Cal Performed: Sun Jan 16 21:49:43 2005
Downhole Cal Performed: Tue Aug 23 11:18:33 2005
After Survey Verification Performed: Tue Aug 23 11:53:36 2005

Surface Calibration

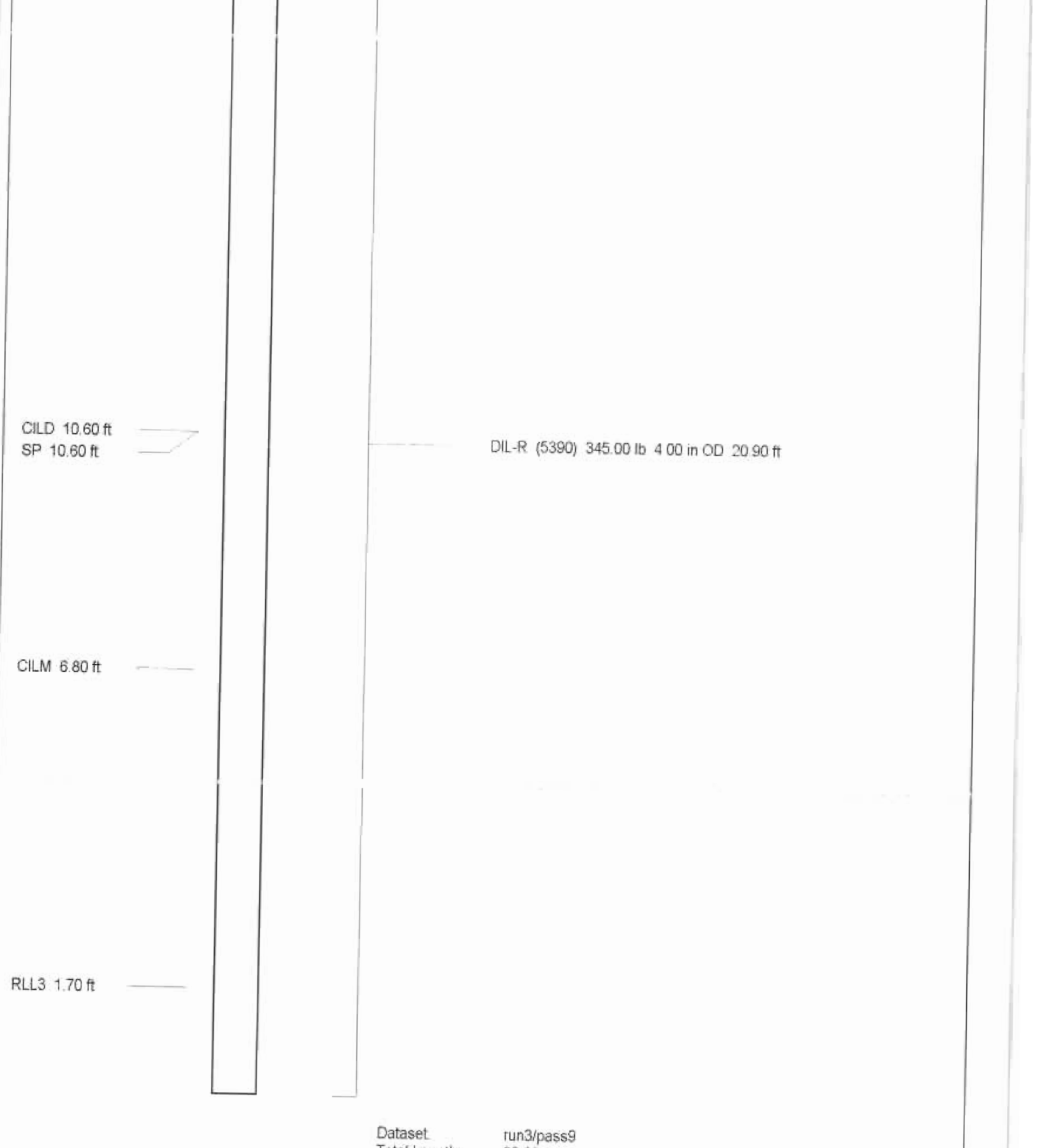
Loop:	Readings Air	Readings Loop		References Air	References Loop		Results m	Results b
Deep	0.050	0.646	V	0.000	400.000	mmho-m	671.771	-33.646
Medium	0.001	0.732	V	0.000	464.000	mmho-m	634.710	-0.492
Internal:	**Zero**	**Cal**		**Zero**	**Cal**		**m**	**b**
Deep	0.011	0.641	V	0.000	400.000	mmho-m	634.996	-7.104
Medium	-0.009	0.738	V	0.000	464.000	mmho-m	620.900	5.734

Downhole Calibration

Internal:	Readings Zero	Readings Cal		References Zero	References Cal		Results m	Results b
Deep	-28.066	395.592	mmho-m	-26.130	397.036	mmho-m	0.999	1.903
Medium	-8.038	466.979	mmho-m	-6.353	467.967	mmho-m	0.999	1.673
Shallow	2.508	0.017	V	494.500	2.000	Ohm-m	197.754	-1.378

After Survey Verification

Internal:	Readings Zero	Readings Cal		Targets Zero	Targets Cal		Results m'	Results b'
Deep	-27.537	396.609	mmho-m	-28.066	395.592	mmho-m	0.999	1.903
Medium	-7.484	467.773	mmho-m	-8.038	466.979	mmho-m	0.999	1.673
Shallow	494.096	2.034	Ohm-m	494.500	2.000	Ohm-m	1.001	-0.036



Dataset: run3/pass9
Total Length: 20.90 ft
Total Weight: 345.00 lb
O.D. 4.00 in

MV Geophysical

BOREHOLE COMPENSATED SONIC w/ VARIABLE DENSITY LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Exp.
County	Collier
State/Prv	Florida

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	DIL/SP,XY/GR FLOW,FCT VIDEO

		Elevation
Permanent Datum	G.L.	K.B.
Log Measured From	G.L.	D.F.
Drilling Measured From	G.L.	G.L.

Date	23-AUG-2005
Run Number	THREE
Depth Driller	776'
Depth Logger	776'
Bottom Logged Interval	768'
Top Log Interval	650'
Open Hole Size	15"
Type Fluid	WATER
Density / Viscosity	NA/NA
Max. Recorded Temp.	na
Estimated Cement Top	NA
Time Well Ready	08:00 8/23/05
Time Logger on Bottom	11:45 8/23/05
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	F.Procta (WRS) / J.Bair (SWS)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String				
Liner				

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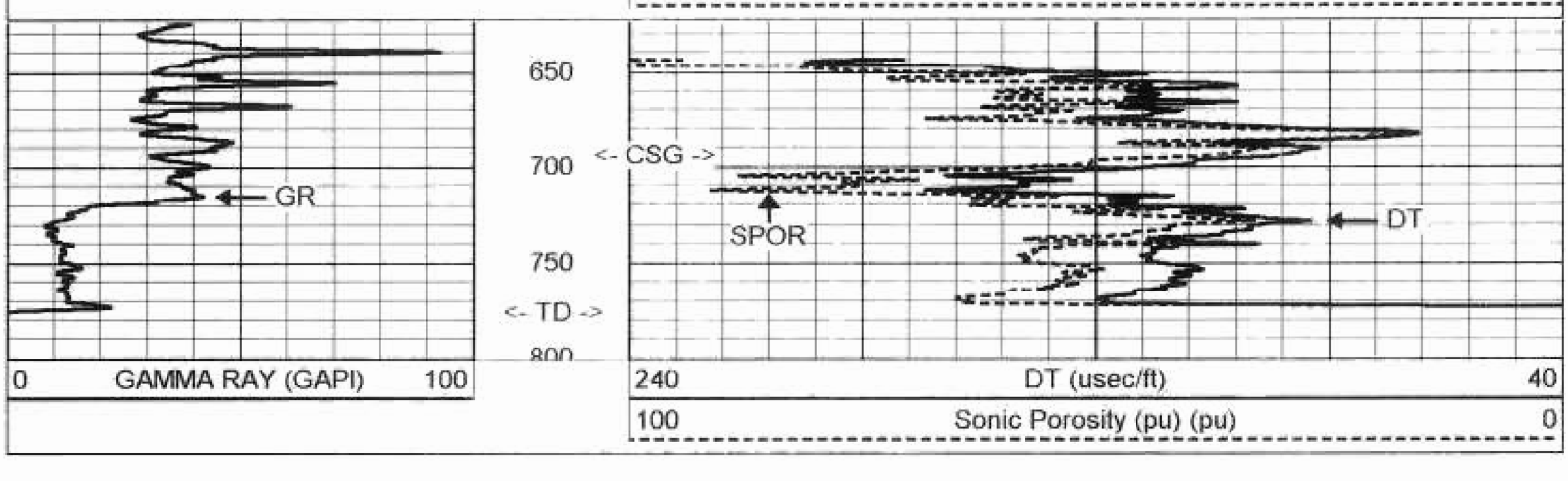
Comments

Sonic Porosity was run on a Limestone Matrix (=47.5)

MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: dtg-11.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:1200

0 GAMMA RAY (GAPI) 100 | 240 DT (usec/ft) 40
100 Sonic Porosity (pu) (pu) 0

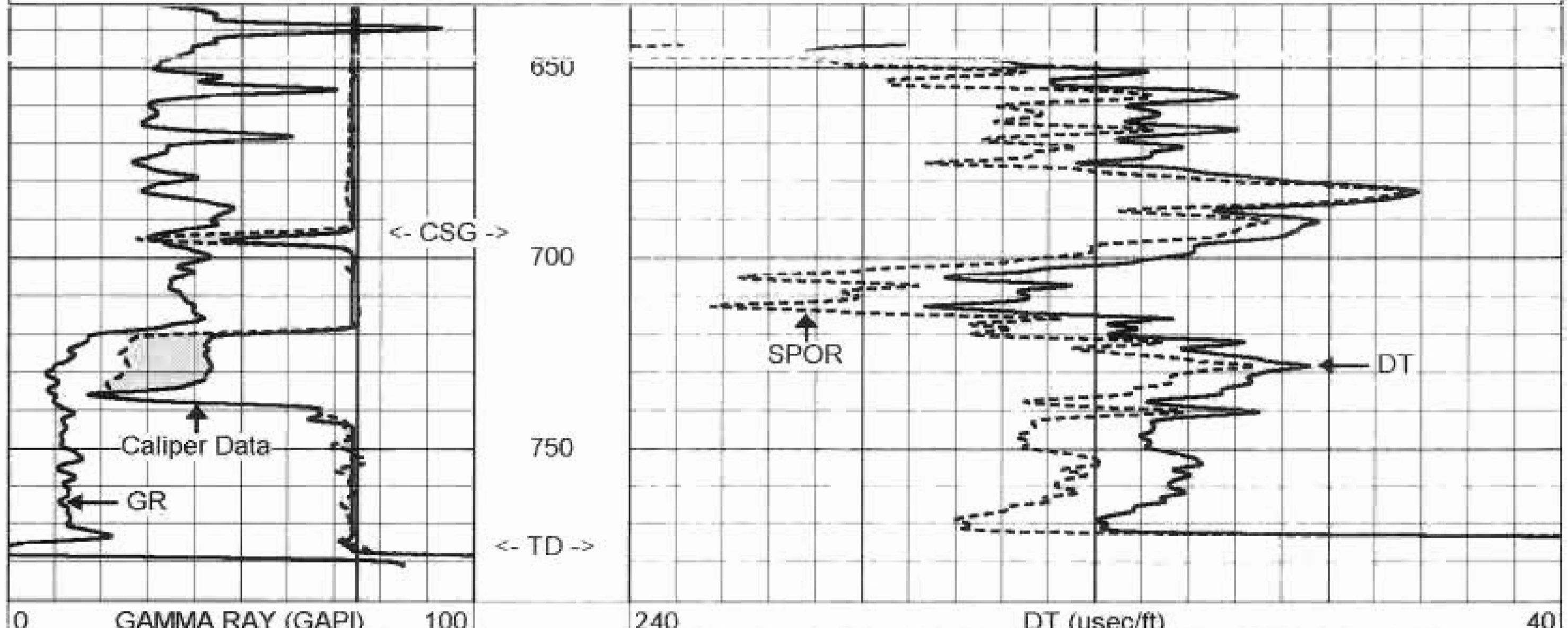


0 GAMMA RAY (GAPI) 100 | 240 DT (usec/ft) 40
100 Sonic Porosity (pu) (pu) 0

MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: dtxy1030.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:600

0 GAMMA RAY (GAPI) 100 | 240 DT (usec/ft) 40
30 XCAL (in) 10 | 100 Sonic Porosity (pu) (pu) 0
30 YCAL (in) 10

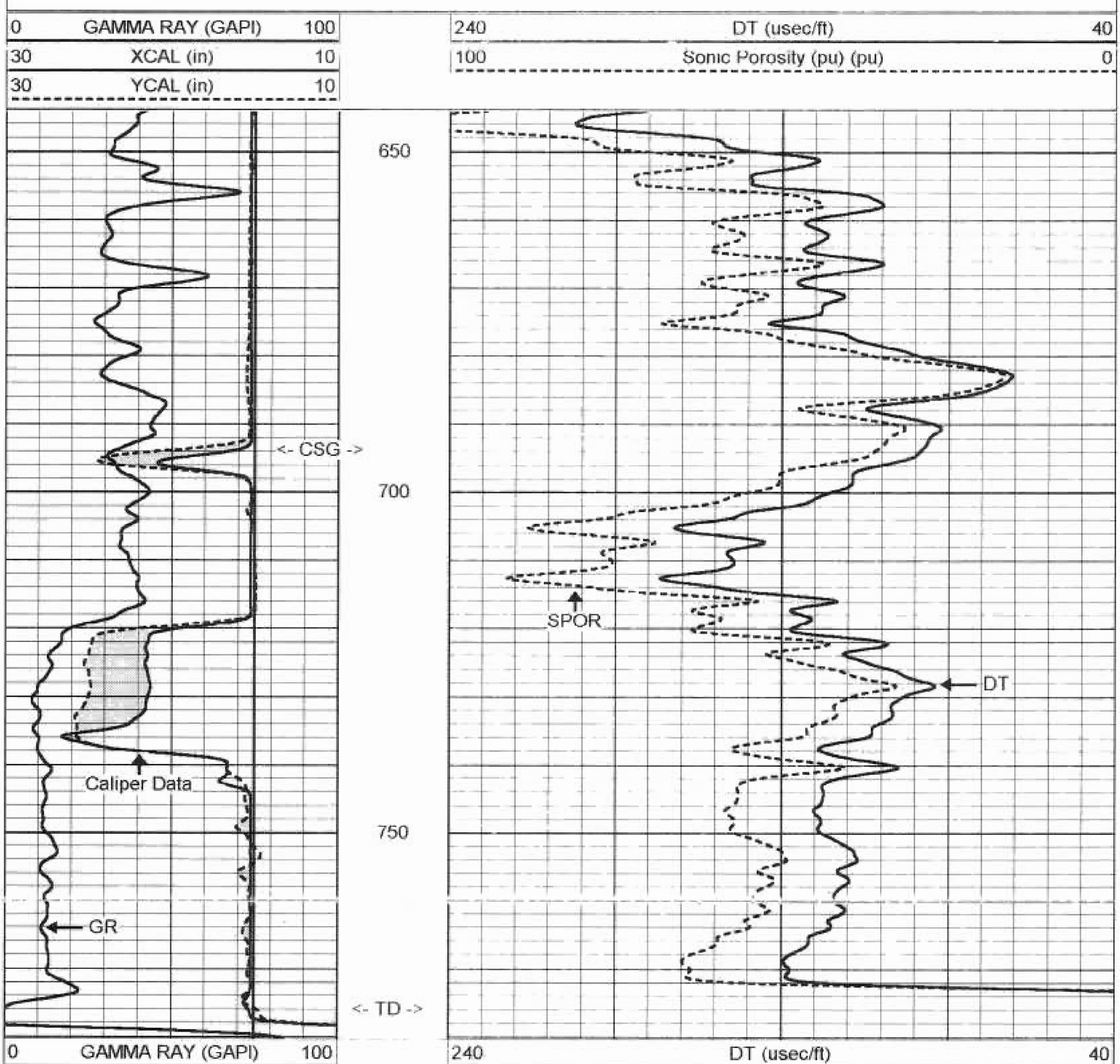


0 GAMMA RAY (GAPI) 100 | 240 DT (usec/ft) 40
30 XCAL (in) 10 | 100 Sonic Porosity (pu) (pu) 0
30 YCAL (in) 10

MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: dtxy1030.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:240

0 GAMMA RAY (GAPI) 100 | 240 DT (usec/ft) 40
30 XCAL (in) 10 | 100 Sonic Porosity (pu) (pu) 0
30 YCAL (in) 10

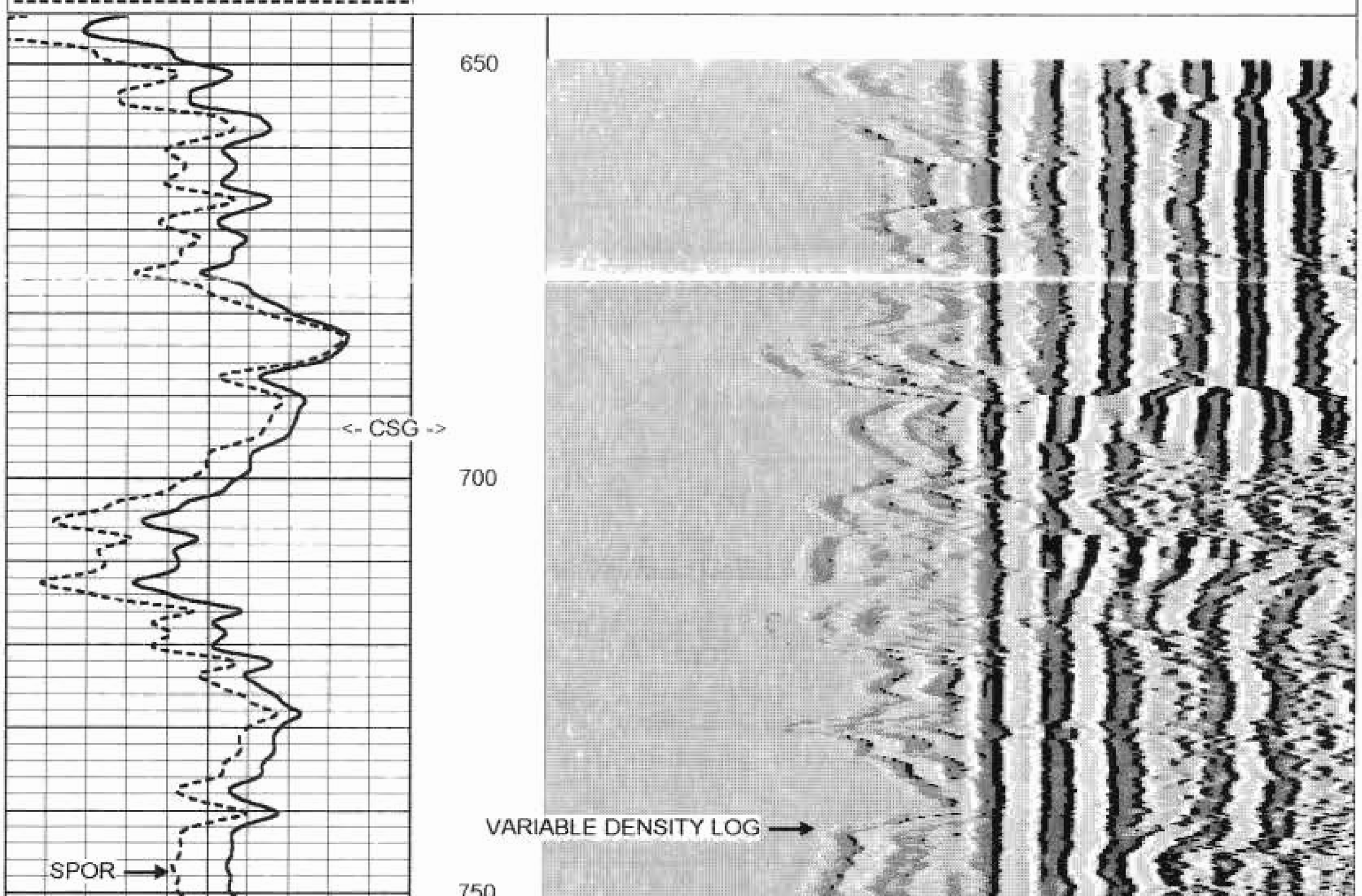


0 GAMMA RAY (GAPI) 100 | 240 DT (usec/ft) 40
30 XCAL (in) 10 | 100 Sonic Porosity (pu) (pu) 0
30 YCAL (in) 10

MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run3/MAIN
Presentation Format: son_vdl.prs
Dataset Creation: Tue Aug 23 11:33:21 2005
Charted by: Depth in Feet scaled 1:240

240 DT (usec/ft) 40 | 200 VARIABLE DENSITY LOG 1200
100 SONIC POROSITY (pu) 0

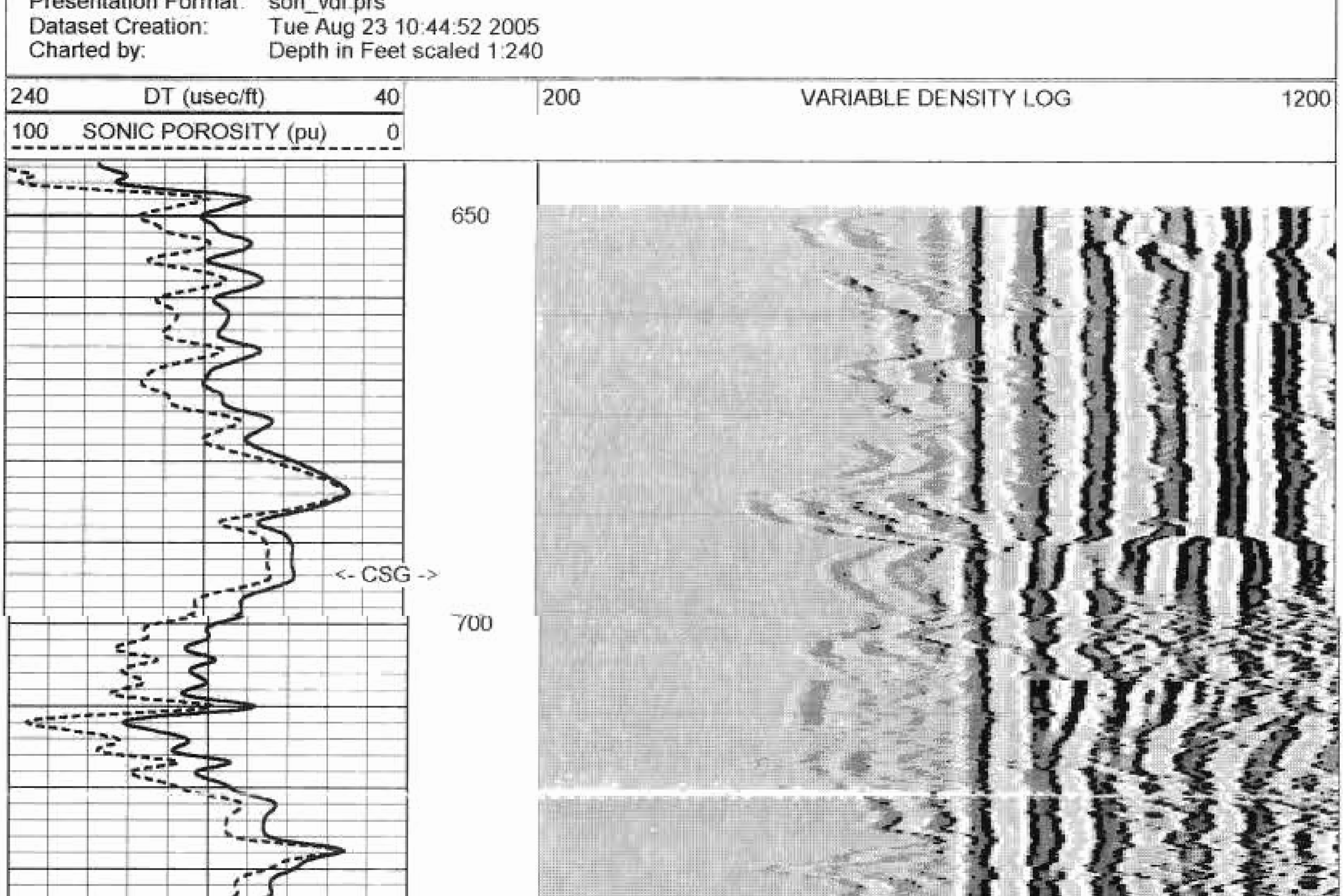


240 DT (usec/ft) 40 | 200 VARIABLE DENSITY LOG 1200
100 SONIC POROSITY (pu) 0

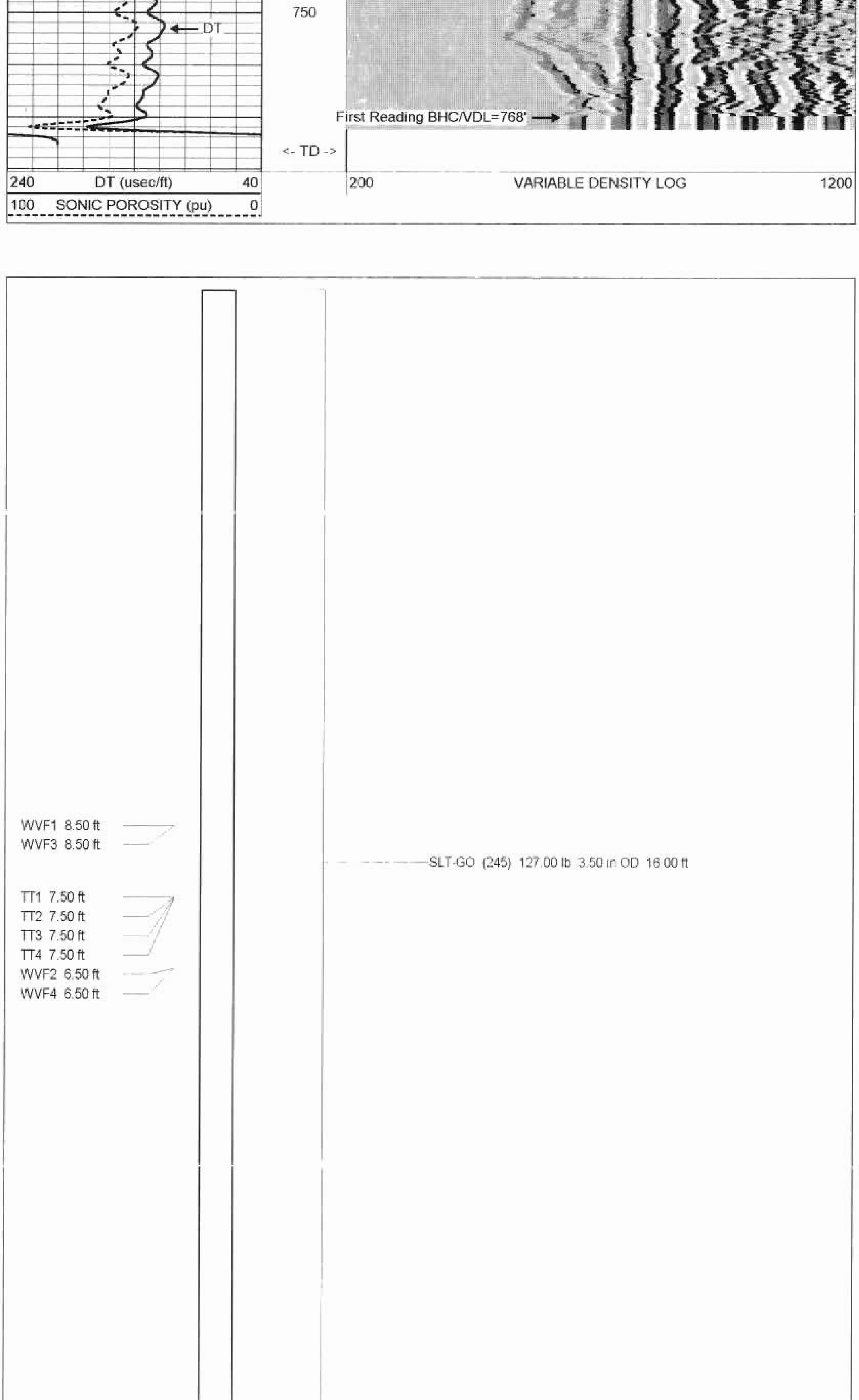
MV Geophysical — REPEAT SECTION

Database File: swsml-6.db
Dataset Pathname: run3/REPEAT
Presentation Format: son_vdl.prs
Dataset Creation: Tue Aug 23 10:44:52 2005
Charted by: Depth in Feet scaled 1:240

240 DT (usec/ft) 40 | 200 VARIABLE DENSITY LOG 1200
100 SONIC POROSITY (pu) 0



240 DT (usec/ft) 40 | 200 VARIABLE DENSITY LOG 1200
100 SONIC POROSITY (pu) 0



Dataset: run3/pass11
Total Length: 16.00 ft
Total Weight: 127.00 lb
O.D. 3.50 in

MV Geophysical

X-Y CALIPER GAMMA RAY LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	FLOW VIDEO
Permanent Datum	G.L.
Log Measured From	G.L.
Drilling Measured From	G.L.
Elevation	K.B. / D.F. / G.L.

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Exp.
County	Collier
State/Prv	Florida

Date	5-DEC-2005				
Run Number	FIVE				
Depth Driller	775'				
Depth Logger	777'				
Bottom Logged Interval	777'				
Top Log Interval	SURFACE				
Open Hole Size	7.875"				
Type Fluid	WATER				
Density / Viscosity	NA/NA				
Max. Recorded Temp.	NA				
Estimated Cement Top	NA				
Time Well Ready	14:00 12/5/05				
Time Logger on Bottom	14:00 12/5/05				
Equipment Number	MVGS-1				
Location	Ft. Myers				
Recorded By	S.Miller				
Witnessed By	F.Procta (WRS)	B.Schmidt (SWS)			
Borehole Record			Tubing Record		
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'		
TWO	15"	694'	776'		
THREE	7.875"	746'	777'		
Casing Record	Size	Wgt/Ft	Top	Bottom	
Surface String	26"	0.375" WT	SURFACE	50'	
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'	
Production String	8" PVC Liner	8" ID	594'	746'	
Liner					
Invoice No.	2005231			* FINAL PRINT *	

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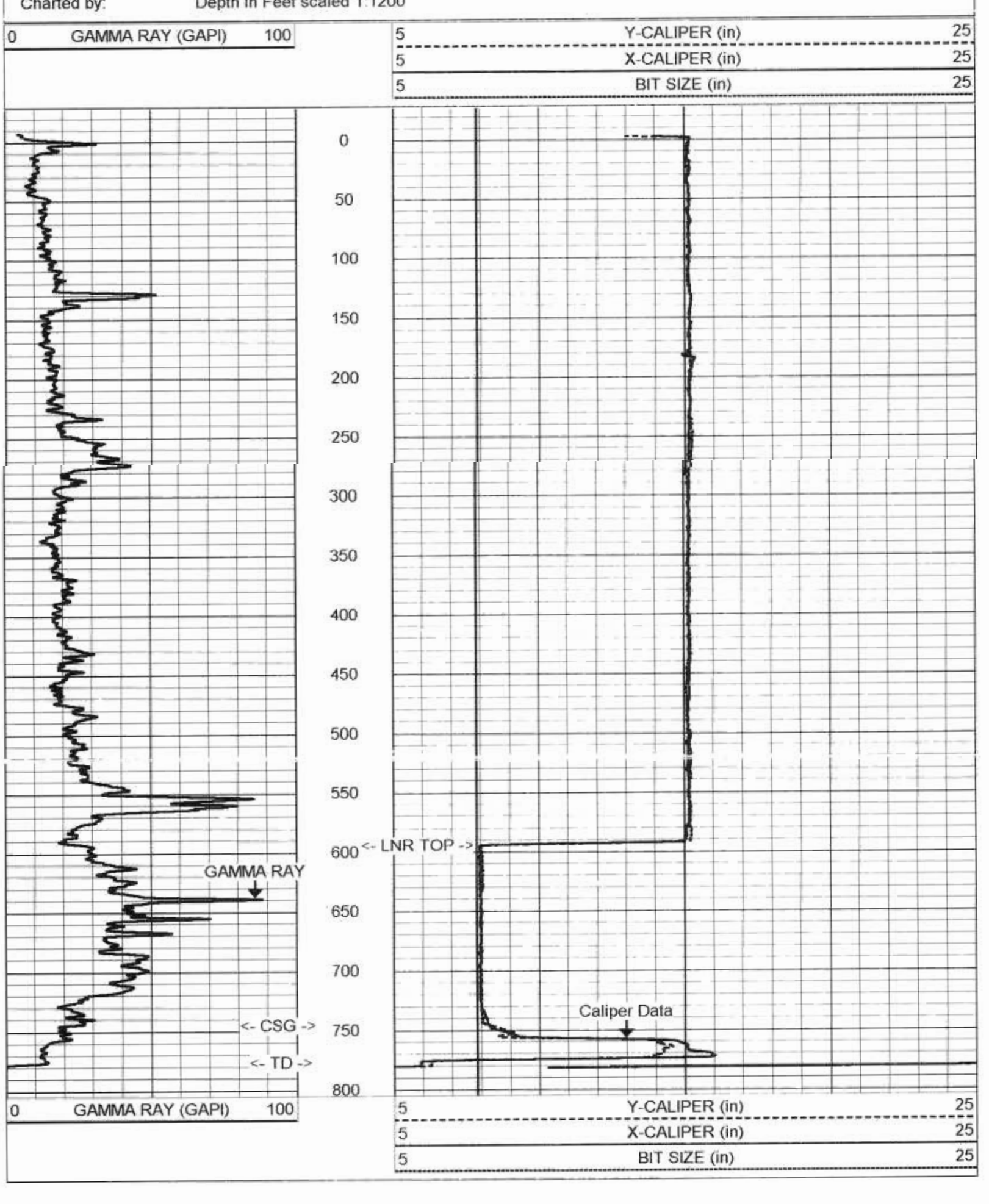
Comments

X-Y Caliper Arm Extensions: 33"

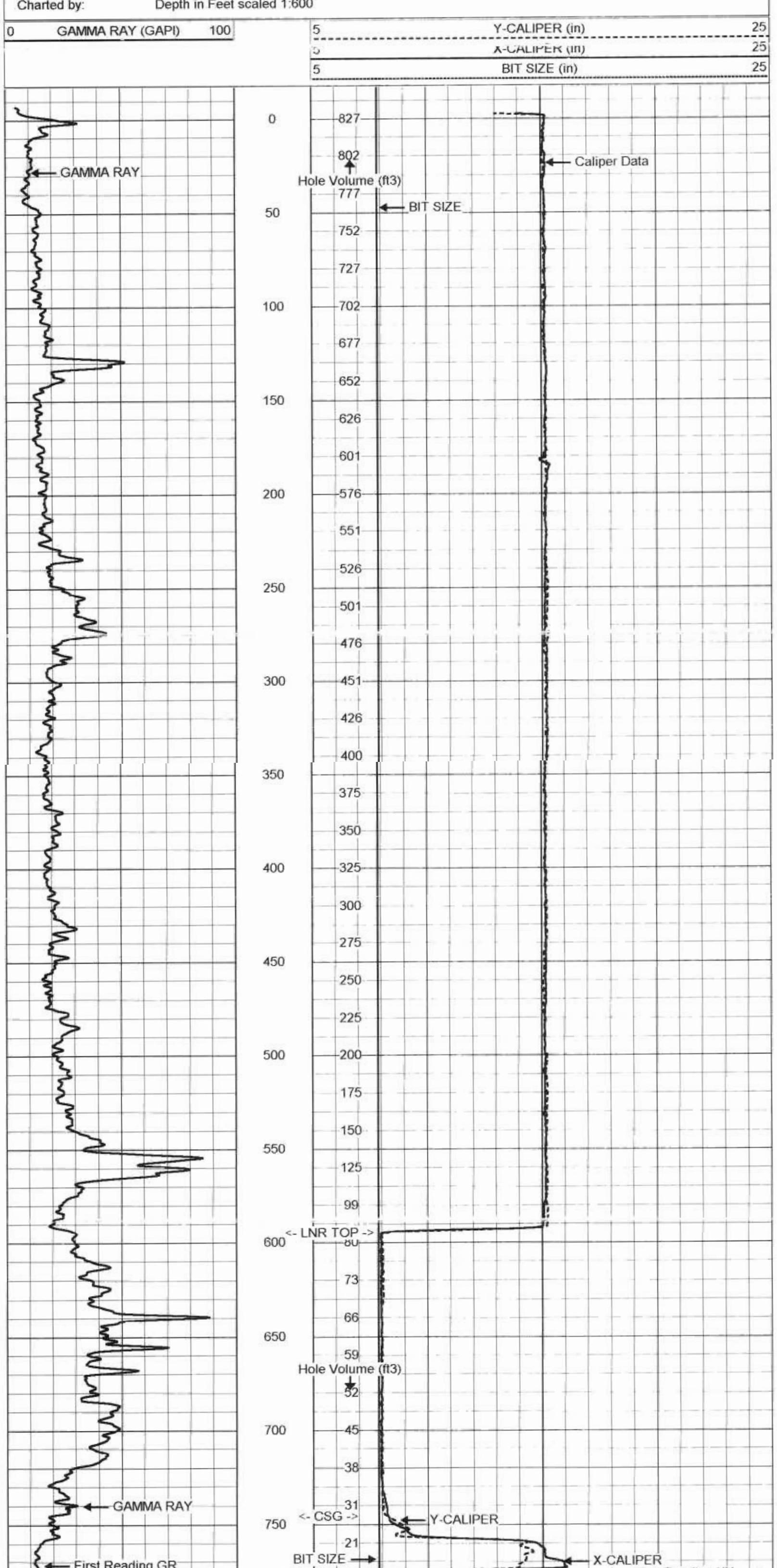
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run5/MAIN
Presentation Format: xy525-1.prs
Dataset Creation: Mon Dec 05 16:28:52 2005
Charted by: Depth in Feet scaled 1:1200



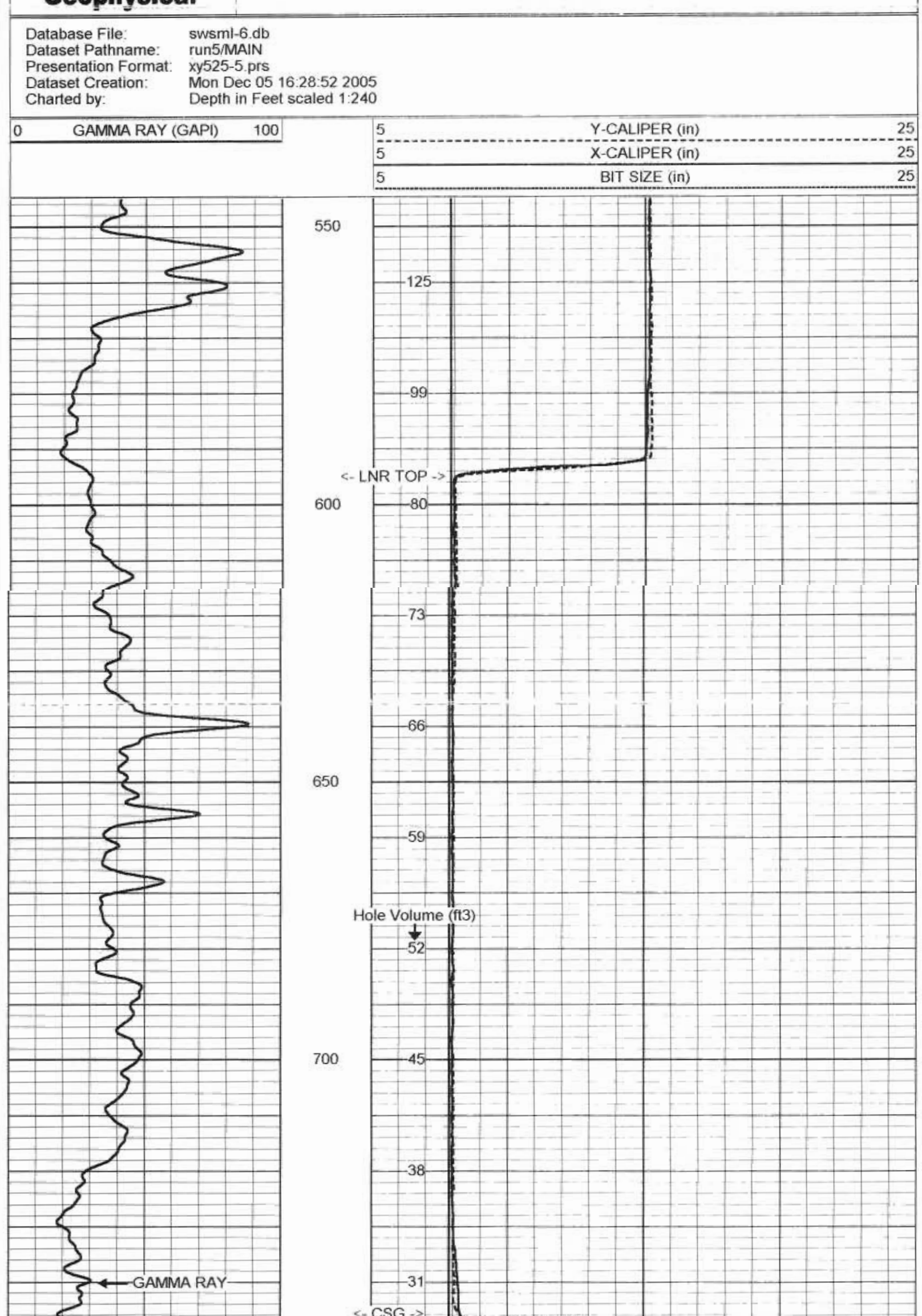
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run5/MAIN
Presentation Format: xy525-5.prs
Dataset Creation: Mon Dec 05 16:28:52 2005
Charted by: Depth in Feet scaled 1:600



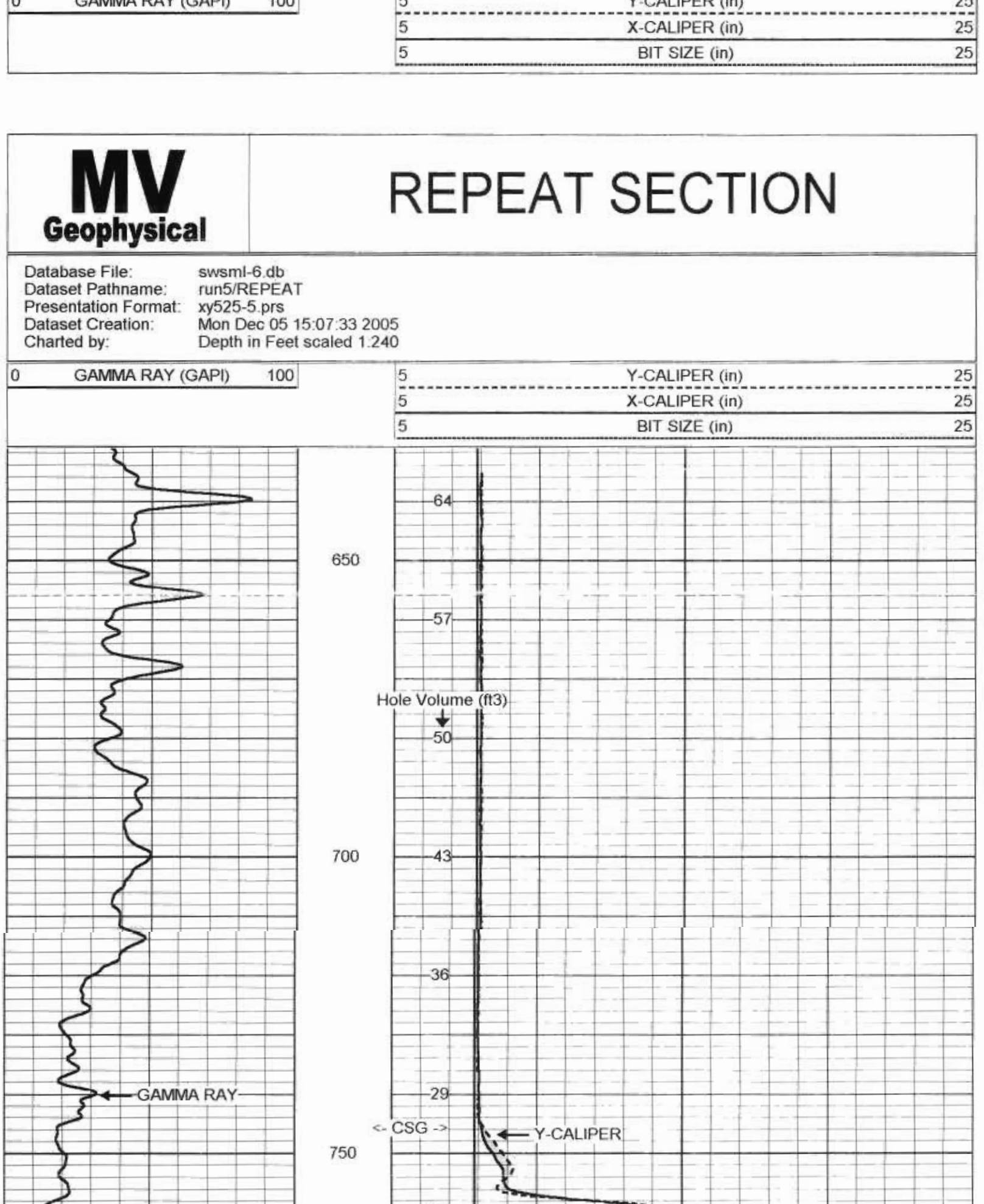
MV Geophysical — MAIN PASS

Database File: swsml-6.db
Dataset Pathname: run5/MAIN
Presentation Format: xy525-5.prs
Dataset Creation: Mon Dec 05 16:28:52 2005
Charted by: Depth in Feet scaled 1:240



MV Geophysical — REPEAT SECTION

Database File: swsml-6.db
Dataset Pathname: run5/REPEAT
Presentation Format: xy525-5.prs
Dataset Creation: Mon Dec 05 15:07:33 2005
Charted by: Depth in Feet scaled 1:240

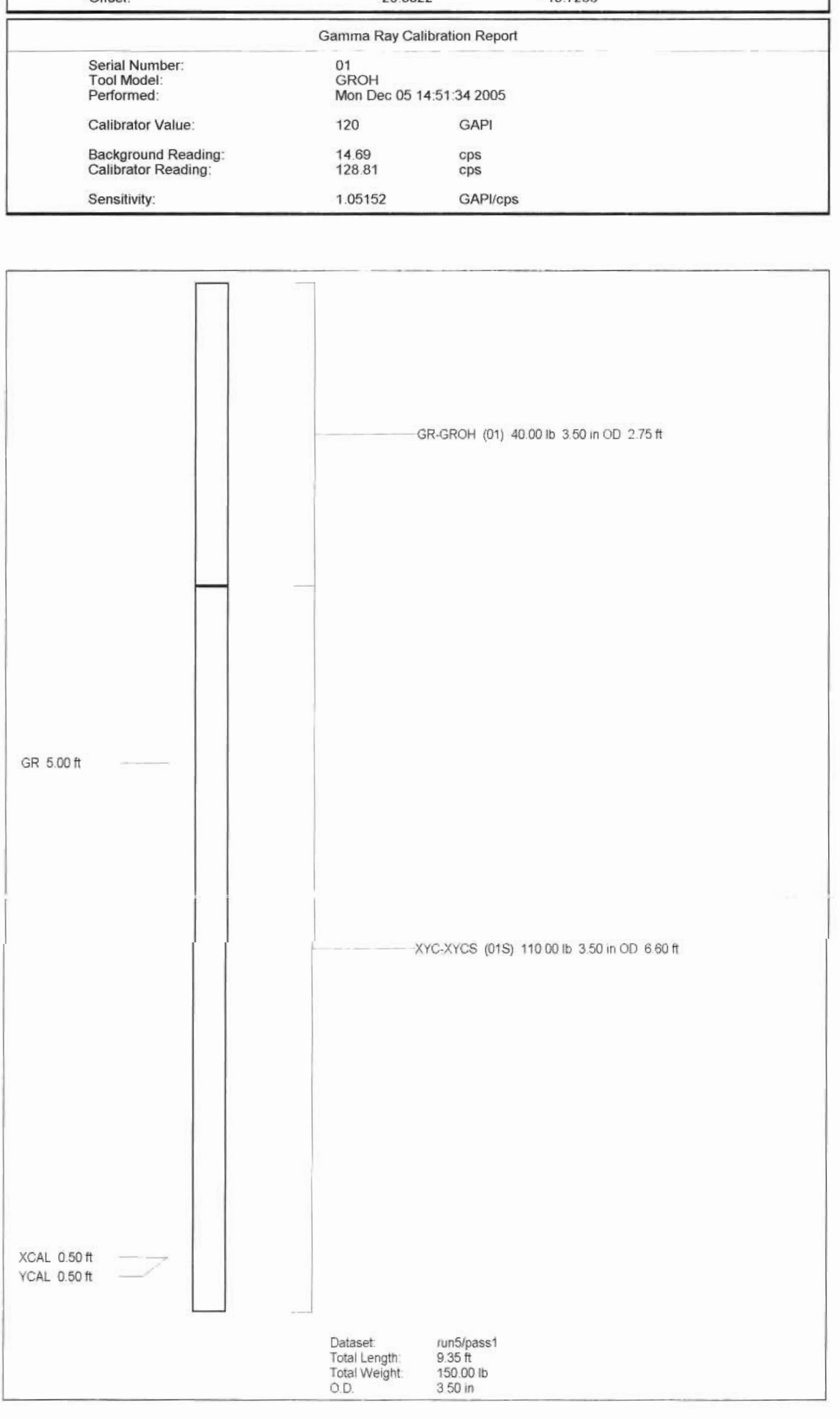


XY Caliper Calibration Report

Serial Number:	01S		
Tool Model:	XYCS		
Performed:	Mon Dec 05 14:51:04 2005		
Small Ring:	8	in	
Large Ring:	33	in	
	X Caliper	Y Caliper	
Reading with Small Ring:	597.1	575.6	cps
Reading with Large Ring:	1113.94	1094.62	cps
Gain:	0.0483709	0.0481677	
Offset:	-20.8822	-19.7253	

Gamma Ray Calibration Report

Serial Number:	01	
Tool Model:	GROH	
Performed:	Mon Dec 05 14:51:34 2005	
Calibrator Value:	120	GAPI
Background Reading:	14.69	cps
Calibrator Reading:	128.81	cps
Sensitivity:	1.05152	GAPI/cps



Dataset: run5/pass1
Total Length: 9.35 ft
Total Weight: 150.00 lb
O.D. 3.50 in

MV Geophysical

FLOWMETER LOG

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Exp.
County	Collier
State/Prv	Florida

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	XY/GR VIDEO

		Elevation	Elevation
Permanent Datum	G.L.		K.B.
Log Measured From	G.L.		D.F.
Drilling Measured From	G.L.		G.L.

Date	5-DEC-2005
Run Number	FIVE
Depth Driller	775'
Depth Logger	777'
Bottom Logged Interval	777'
Top Log Interval	SURFACE
Open Hole Size	7.875"
Type Fluid	WATER
Density / Viscosity	NA/NA
Max. Recorded Temp.	NA
Estimated Cement Top	NA
Time Well Ready	14:00 12/5/05
Time Logger on Bottom	16:00 12/5/05
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	F.Procta (WRS) / B.Schmidt (SWS)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				
THREE	7.875"	746'	777'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String	8" PVC Liner	8" ID	594'	746'
Liner				
Invoice No.	2005231			

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Comments

STATIC and DYNAMIC down passes were made at 50 fpm.

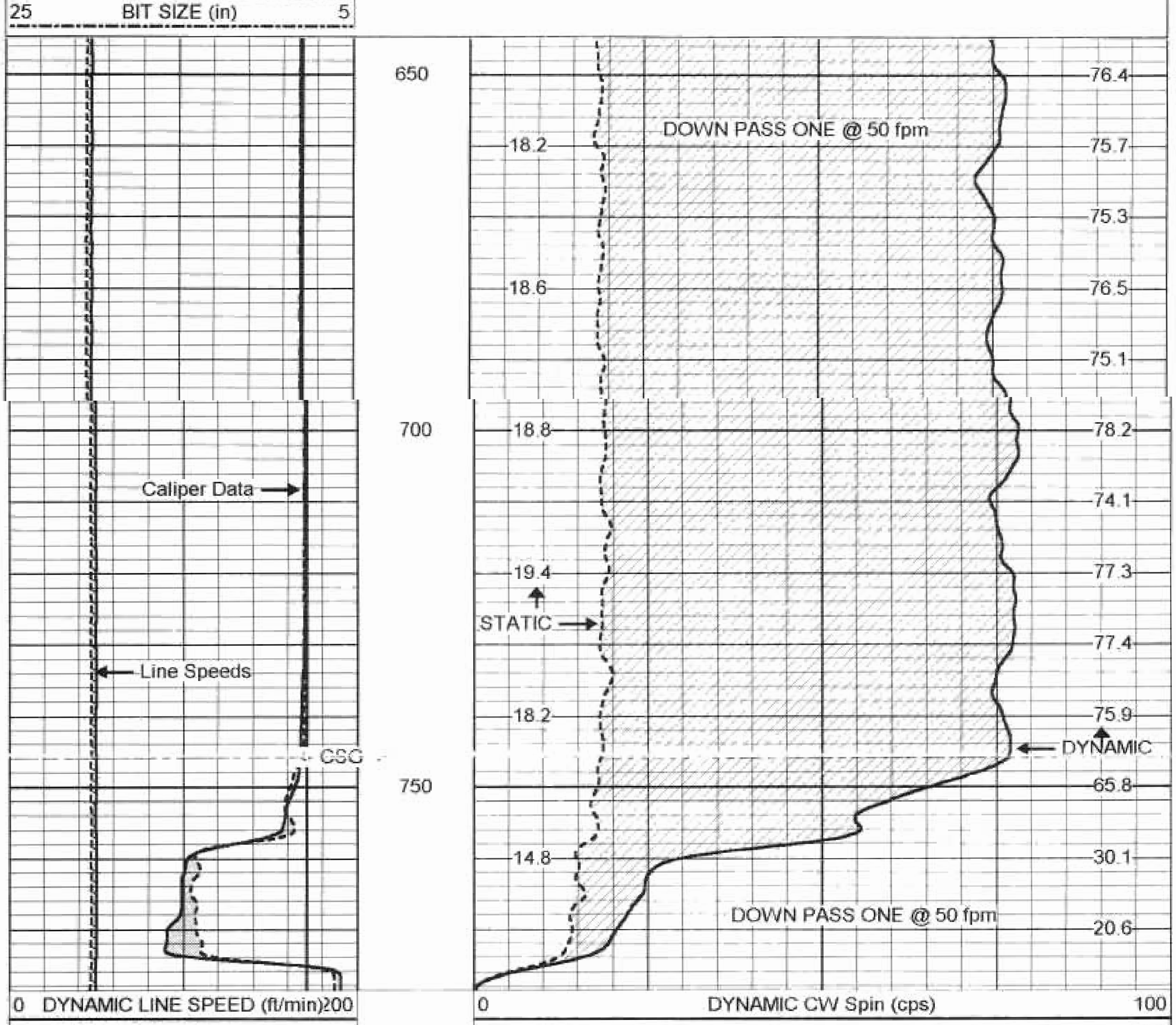
5 Stations were performed.

Q =~640 gpm

MV Geophysical — S/D DOWN @ 50 fpm

Database File: swsml-6.db
Dataset Pathname: run5/SD50
Presentation Format: qml6-2.prs
Dataset Creation: Mon Dec 05 16:56:11 2005
Charted by: Depth in Feet scaled 1:240

0 DYNAMIC LINE SPEED (ft/min) 200	0 DYNAMIC CW Spin (cps) 100
0 STATIC LINE SPEED (ft/min) -200	0 STATIC CW Spin (cps) 100
25 X-CALIPER (in) 5	
25 Y CALIPER (in) 5	
25 BIT SIZE (in) 5	

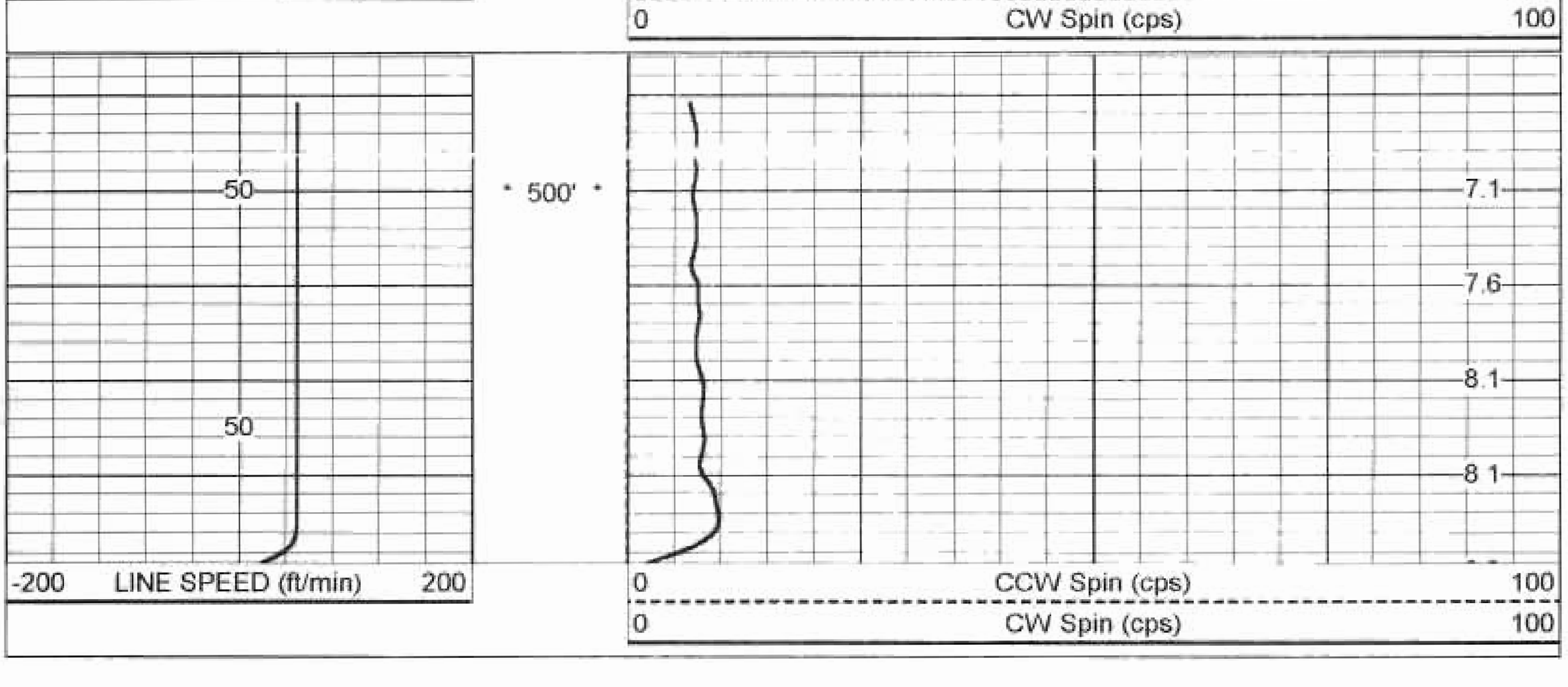


0 DYNAMIC LINE SPEED (ft/min) 200	0 DYNAMIC CW Spin (cps) 100
0 STATIC LINE SPEED (ft/min) -200	0 STATIC CW Spin (cps) 100
25 X-CALIPER (in) 5	
25 Y CALIPER (in) 5	
25 BIT SIZE (in) 5	

MV Geophysical — Station #5: 500'

Database File: swsml-6.db
Dataset Pathname: run5/pass10
Presentation Format: flow.prs
Dataset Creation: Mon Dec 05 17:19:00 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240

-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

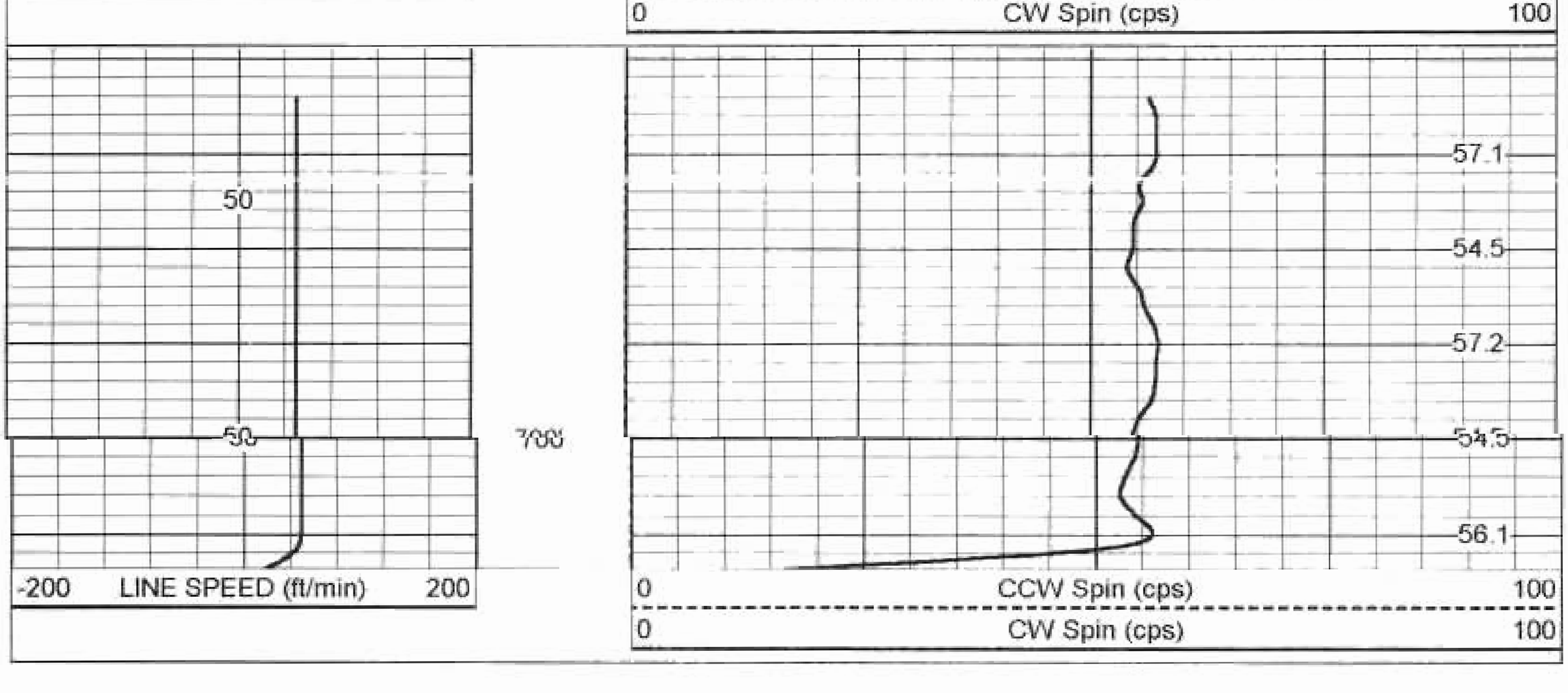


-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

MV Geophysical — Station #4: 700'

Database File: swsml-6.db
Dataset Pathname: run5/pass9
Presentation Format: flow.prs
Dataset Creation: Mon Dec 05 17:14:28 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240

-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

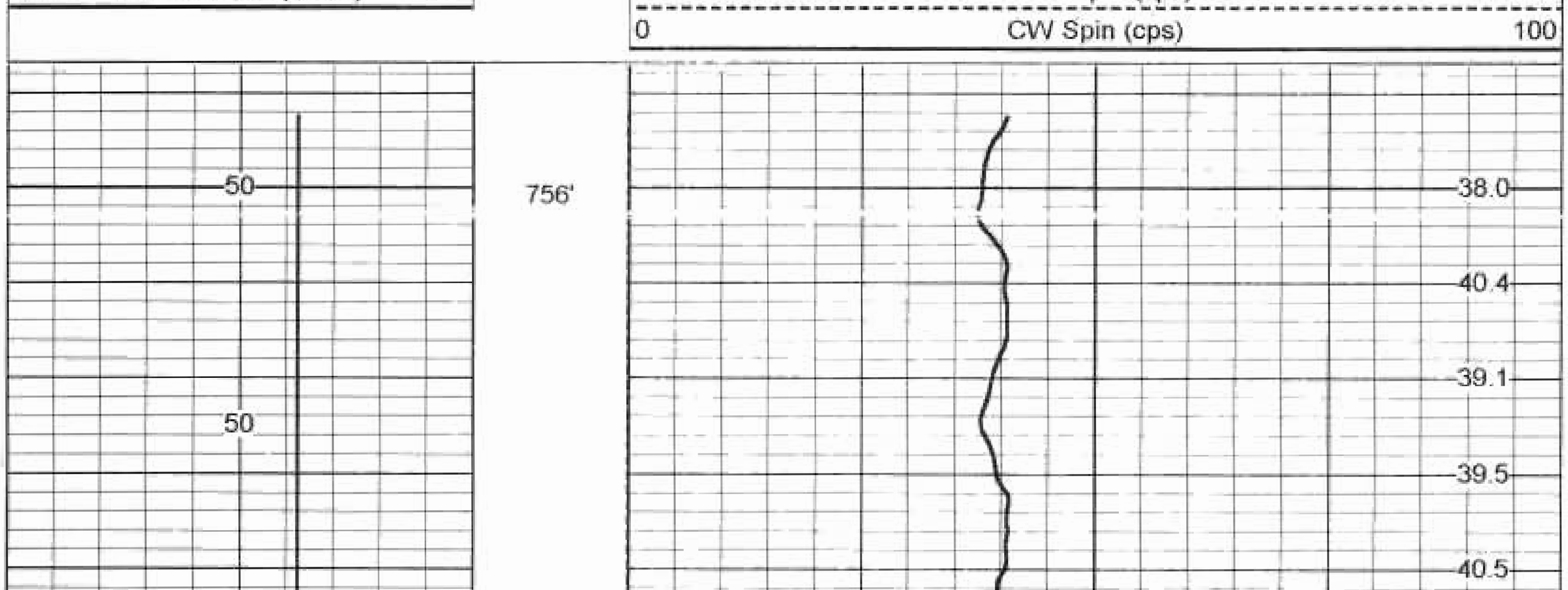


-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

MV Geophysical — Station #3: 756'

Database File: swsml-6.db
Dataset Pathname: run5/pass8
Presentation Format: flow.prs
Dataset Creation: Mon Dec 05 17:11:44 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240

-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

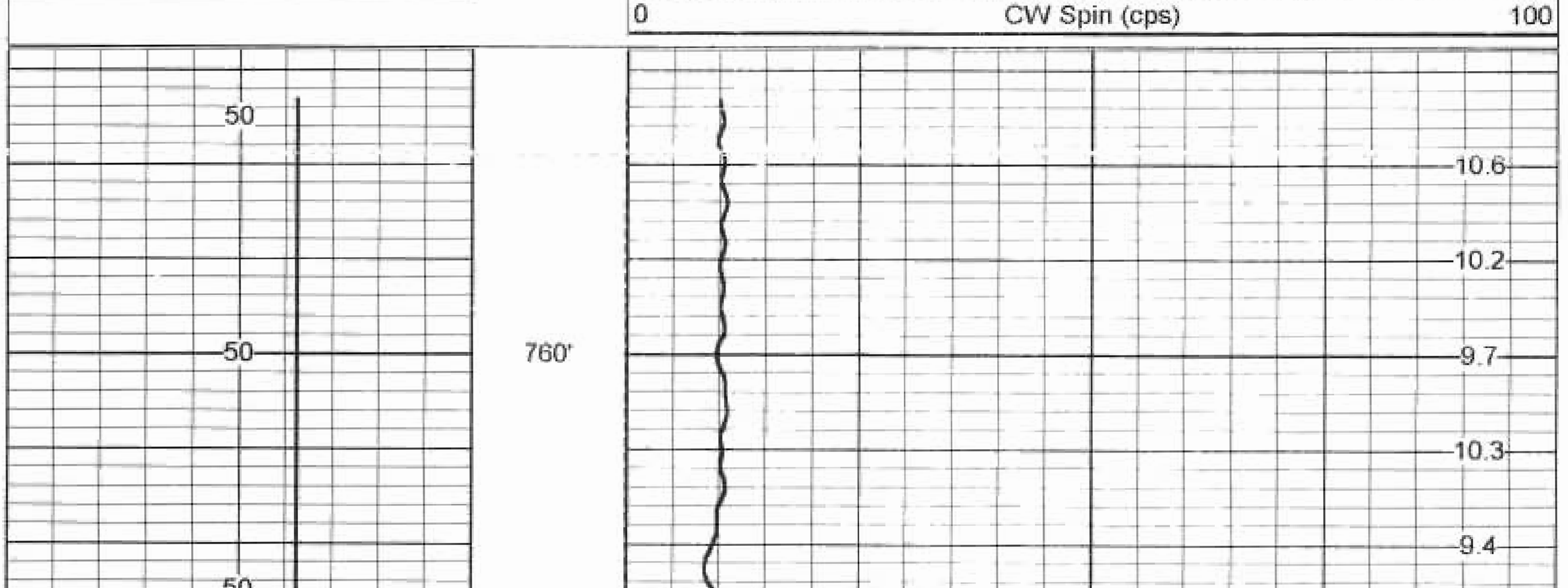


-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

MV Geophysical — Station #2: 760'

Database File: swsml-6.db
Dataset Pathname: run5/pass7
Presentation Format: flow.prs
Dataset Creation: Mon Dec 05 17:10:05 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240

-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

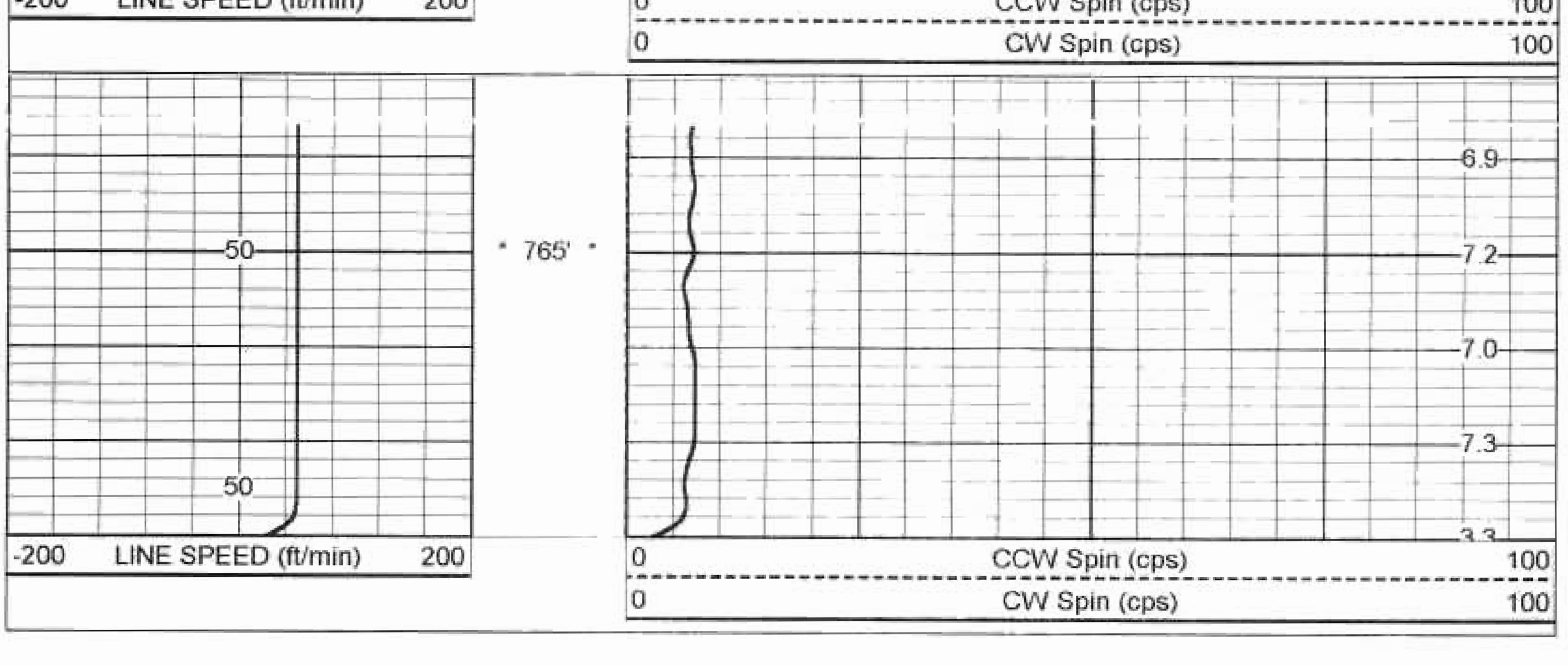


-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

MV Geophysical — Station #1: 765'

Database File: swsml-6.db
Dataset Pathname: run5/pass6
Presentation Format: flow.prs
Dataset Creation: Mon Dec 05 17:05:03 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:240

-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

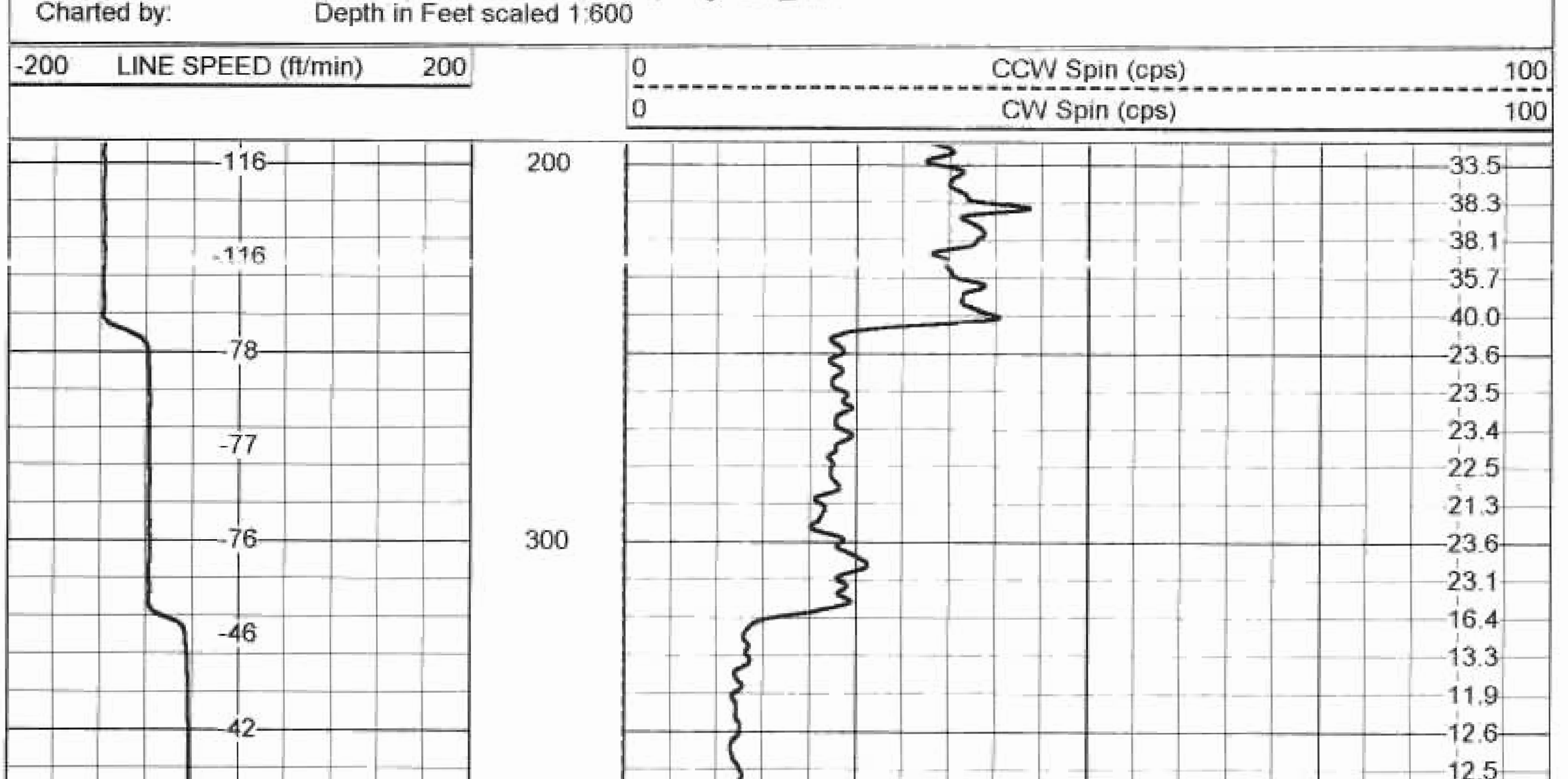


-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100

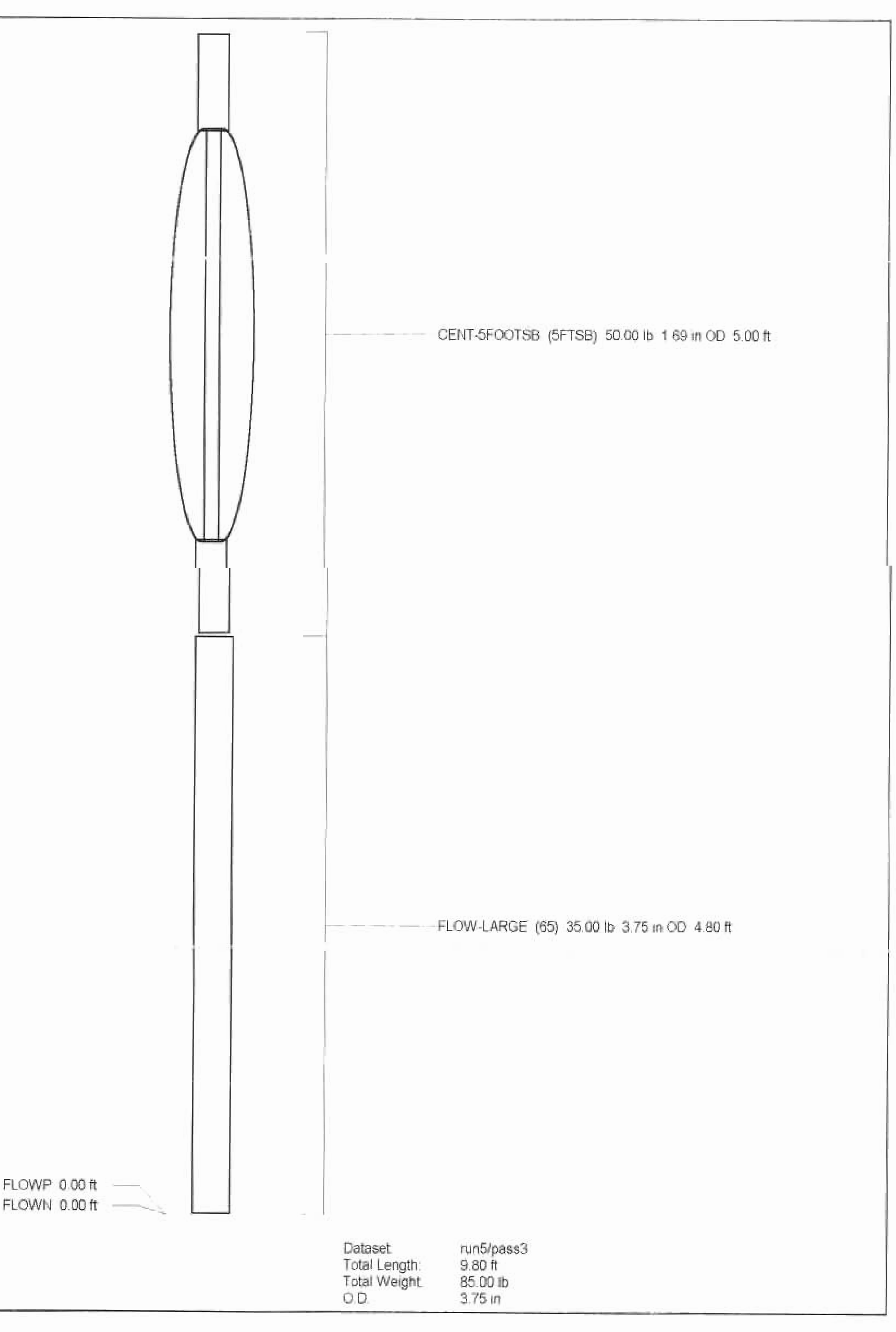
MV Geophysical — Q Calibration Down

Database File: swsml-6.db
Dataset Pathname: run5/pass3
Presentation Format: flow.prs
Dataset Creation: Mon Dec 05 16:08:50 2005 by Log VER_5.3
Charted by: Depth in Feet scaled 1:600

-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100



-200 LINE SPEED (ft/min) 200	0 CCW Spin (cps) 100
	0 CW Spin (cps) 100



Dataset	run5/pass3
Total Length	9.80 ft
Total Weight	85.00 lb
O.D.	3.75 in

CEMENT TOP LOG
HIGH RESOLUTION TEMPERATURE GAMMA RAY

MV Geophysical

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Expansion
County	Collier
State/Prv	Florida
Location	Marco Lakes ASR Wellfield Expansion Southern Well Services
Other Services	NONE

Permanent Datum	G.L	Elevation	K.B
Log Measured From	G.L		D.F
Drilling Measured From	G.L		G.L

Company	Water Resource Solutions
Well	ASR-6
Field	Marco Lakes ASR Exp.
County	Collier
State/Prv	Florida

Date	15-OCT-2005
Run Number	FOUR-1
Depth Driller	746'
Depth Logger	740'
Bottom Logged Interval	740'
Top Log Interval	495'
Open Hole Size	15"
Type Fluid	WATER
Density / Viscosity	NA/NA
Max. Recorded Temp.	SEE LOG
Estimated Cement Top	686'
Time Well Ready	11:00 10/15/05
Time Logger on Bottom	11:00 10/15/05
Equipment Number	MVGS-1
Location	Ft. Myers
Recorded By	S.Miller
Witnessed By	A.McThenia (WRS) B.Schmidt (SWS)

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
ONE	25"	48'	743'				
TWO	15"	694'	776'				

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	26"	0.375" WT	SURFACE	50'
Prot. String	17.4" PVC	15.2" ID	SURFACE	694'
Production String	8" PVC Liner	8" ID	595'	746'
Liner				
Invoice No.	2005190			*FINAL PRINT*

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Comments

Cement Tops

Stage	CTL	TAG
1	686'	686'

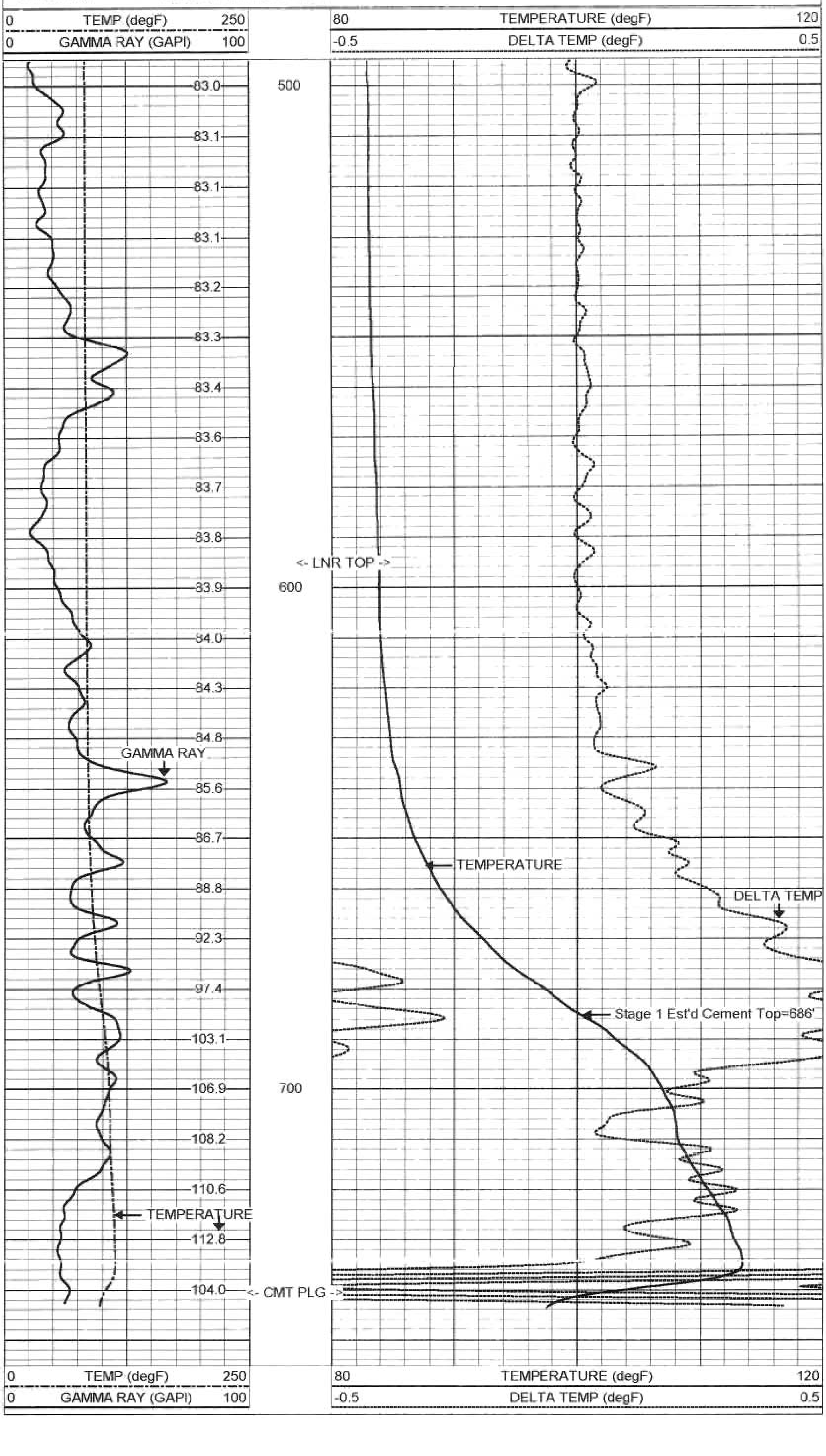
TEMPERATURE CALIBRATION REPORT
(Performed: 5-OCT-05 12:15)

DEG-F	CPS
34.5	143.144
148.5	2694.25

MV Geophysical

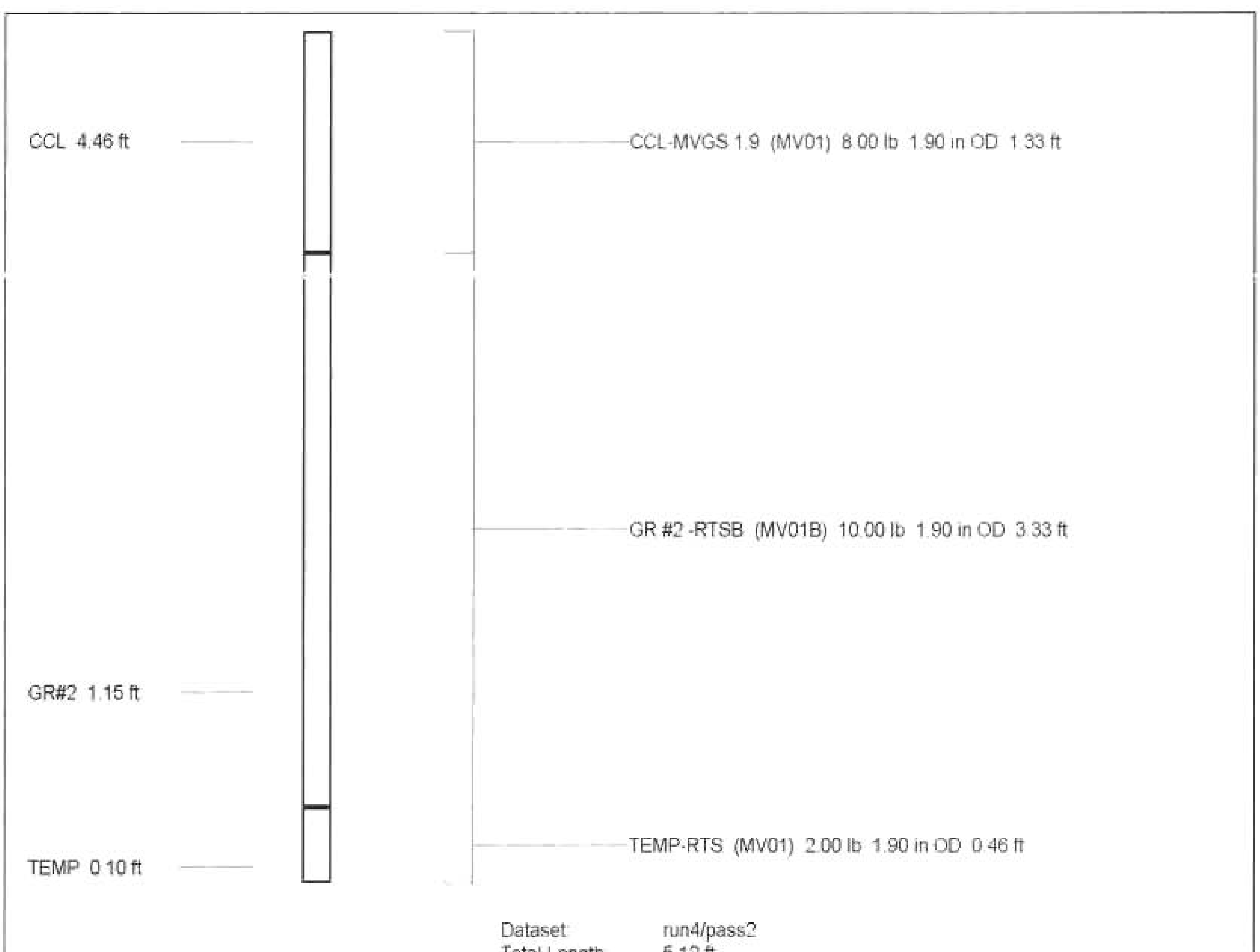
Stage 1 Top: 686'

Database File:	swsml-6.db
Dataset Pathname:	run4/pass2
Presentation Format:	rtstemp.prs
Dataset Creation:	Sat Oct 15 10:51:52 2005 by Log VER_5.3
Charted by:	Depth in Feet scaled 1:240



Gamma Ray Calibration Report

Serial Number:	MV01B	
Tool Model:	RTSB	
Performed:	Sat Oct 15 07:58:23 2005	
Calibrator Value:	120	GAPI
Background Reading:	18.1832	cps
Calibrator Reading:	188.214	cps
Sensitivity:	0.705754	GAPI/cps



Dataset:	run4/pass2
Total Length:	5.12 ft
Total Weight:	20.00 lb
O.D.:	1.90 in

APPENDIX 2.2

LITHOLOGIC LOG

WATER RESOURCE SOLUTIONS, INC.

MARCO LAKES ASR WELL NO. 6
LITHOLOGIC LOG

Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia

Depth	Lithology
0-2	Quartz sand, very light gray (N8), very fine to fine, well sorted, well rounded to sub-rounded, polished grains, abundant organic material, excellent intergranular porosity, excellent apparent permeability
2-4	Clay, dark yellowish orange (10YR 6/6), calcareous, stiff, sandy, abundant quartz sand, low porosity, poor apparent permeability
4-8	Limestone, very pale orange (10YR 8/2) to pale yellowish brown (10YR 6/2), packstone to grainstone, excellent induration, abundant bivalve shells, common quartz sand, fair moldic porosity, fair apparent permeability
8-30	Shell fragments, yellowish gray (5Y 8/1) to medium light gray (N6), loose, unconsolidated, abundant fine quartz sand, trace fine phosphate, excellent intergranular porosity, excellent apparent permeability
30-50	Same as above except decreasing quartz sand and increasing consolidation.
50-75	Limestone, yellowish gray (5Y 8/1), packstone, fair to good induration, abundant bivalve shell fragments, trace fine phosphate, common casts and pinpoint vugs, good moldic porosity, good apparent permeability.
75-100	Limestone, light gray (N7), yellowish gray (5Y 7/2) to pale olive (10Y 6/2), packstone to wackestone, friable, abundant shell fragments, molds and casts, and very fine phosphate, excellent moldic porosity, excellent apparent permeability
100-112	Limestone, yellowish gray (5Y 8/1), packstone to wackestone, friable to fair induration, common fine phosphate, common shell fragments, excellent intergranular porosity and excellent apparent permeability
112-120	Limestone, yellowish gray (5Y 7/2) to dusky yellow (5Y 6/4), packstone, friable, abundant fine phosphatic sand and granules, good intergranular porosity and good apparent permeability
120-130	Limestone as above except abundant clay, pale olive (10Y 6/2) to dusky yellow green (5GY 5/2), soft, sticky, poor porosity and apparent permeability

WATER RESOURCE SOLUTIONS, INC.

MARCO LAKES ASR WELL NO. 6
LITHOLOGIC LOG

Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia

130-140	Phosphatic sand, black (N1), unconsolidated, coarse to fine, poorly sorted, sub-rounded to angular, common limestone, yellowish gray (5Y 8/1), packstone to wackestone, well indurated, abundant clay, pale olive (10Y 6/2) to dusky yellow green (5GY 5/2), soft, sticky, poor porosity and apparent permeability
140-145	Limestone, yellowish gray (5Y 7/2), packstone, poor induration, abundant fine phosphate, abundant shell fragments, common fine to medium quartz sand, good intergranular porosity and good apparent permeability
145-150	Siltstone, moderate yellowish brown (10YR 5/4), friable, abundant bivalve molds, poor porosity and apparent permeability
150-153	Mudstone, medium light gray (N6), friable unconsolidated, poor porosity and permeability
153-160	Quartz sand, light gray (N7), fine to coarse poorly sorted, sub-rounded to sub-angular, trace fine phosphate and shell fragments, excellent intergranular porosity and excellent apparent permeability
160-188	Quartz sand, light olive gray (5Y 6/1), fine to medium, well sorted, rounded to sub-angular, occasional shell fragments, trace fine phosphate, excellent intergranular porosity, excellent apparent permeability
188-195	Same as above except grain size very fine to fine
195-200	Marl, yellowish gray (5Y 8/1), soft, sticky, poor porosity, poor apparent permeability
195-218	Clay, dusky yellow green (5GY 5/2) to pale olive (10Y 6/2), stiff, sticky, common phosphate, black (N1), sand to granules, rounded, occasional quartz, very pale blue (5B 8/2), to light greenish gray (5G 8/1), coarse sand to granules, well rounded, discoidal, poor porosity, poor apparent permeability
218-235	Clay, dusky yellow green (5GY 5/2), stiff, sticky, common phosphate, common fine quartz sand, common limestone, yellowish gray (5Y 7/2), wackestone, well indurated, poor porosity, poor apparent permeability

WATER RESOURCE SOLUTIONS, INC.

MARCO LAKES ASR WELL NO. 6
LITHOLOGIC LOG

Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia

235-250	Clay, dusky yellow green (5GY 5/2) to grayish olive (10Y 4/2), stiff, sticky, abundant fine quartz sand, abundant fine phosphate, common limestone, yellowish gray (5Y 7/2), wackestone, common marl, yellowish gray (5Y 8/1), poor porosity, poor apparent permeability
250-280	Same as above except increasingly softer with depth.
280-293	Dolosilt, dusky yellow green (5GY 5/2) to greenish gray (5GY 6/1), soft, sticky, occasional fine phosphate, poor porosity, poor apparent permeability
293-305	Limestone, yellowish gray (5Y 8/1), packstone, friable, abundant dolosilt, dusky yellow green (5GY 5/2), soft, sticky, abundant molds and casts, poor porosity, poor apparent permeability
305-312	Limestone, yellowish gray (5Y 8/1), packstone to wackestone, friable to moderate induration, cavities or voids present, trace fine phosphate, excellent moldic porosity, excellent apparent permeability. Lost circulation in this zone.
312-320	Limestone, yellowish gray (5Y 8/1) to yellowish gray (5Y 7/2), wackestone, friable, abundant dolosilt, greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1), poor porosity, poor apparent permeability
320-340	Limestone, yellowish gray (5Y 8/1), packstone to wackestone, friable to moderate induration, abundant dolosilt, yellowish gray (5Y 7/2), soft, sticky, common phosphatic granules, poor porosity, poor apparent permeability
340-350	Limestone yellowish gray (5Y 7/2) to very pale orange (10YR 8/2), packstone, friable, abundant molds and casts, excellent moldic porosity, excellent apparent permeability
350-370	Limestone as above except occasional thin layers of finely phosphatic dolosilt, greenish gray (5GY 6/1)
370-380	Limestone, yellowish gray (5Y 8/1), packstone, friable to moderate induration, abundant bivalve shells and shell fragments, common fine phosphate, common casts and molds, excellent moldic porosity, excellent apparent permeability

WATER RESOURCE SOLUTIONS, INC.

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Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

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Prepared by: Andy McThenia

380-390	Limestone, yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), wackestone to packstone, friable to moderate induration, abundant shell fragments, abundant molds and casts, abundant dolosilt, yellowish gray (5Y 7/2), soft, silky, poor porosity, poor apparent permeability
390-400	Limestone, yellowish gray (5Y 7/2) to yellowish gray (5Y 8/1), packstone, friable, abundant shell fragments, common dolosilt, pale olive (10Y 6/2), soft, sticky, fair moldic porosity, fair apparent permeability
400-405	Marly limestone, yellowish gray (5Y 7/2), wackestone, friable, abundant shell fragments, abundant dolosilt, dusky yellow green (5GY 5/2), to light olive gray (5Y 5/2), soft, silky, abundant fine phosphate, poor porosity, poor apparent permeability
405-410	Limestone, yellowish gray (5Y 7/2) to yellowish gray (5Y (8/1), packstone, friable to fair induration, abundant very fine phosphatic sand, abundant molds and casts, fair moldic porosity, fair apparent permeability.
410-415	Same as above except occasional clay, dusky yellow green (5GY 5/2), stiff and sticky, poor porosity and poor apparent permeability.
415-425	Limestone, yellowish gray (5Y 7/2), packstone, fair induration, abundant fine phosphatics, abundant shell fragments, abundant molds and casts, good moldic porosity, good apparent permeability.
425-435	Liimestone, yellowish gray (5Y 8/1)-grayish orange (10YR 7/4), packstone to wackestone, friable to fair induration, abundant fine phosphatics, abundant shell fragments, common fossil echinoderm spines, fair porosity, fair apparent permeability.
435-437	Same as above except occasional dolosilt, pale olive (10Y 6/2) to greenish gray (5GY 6/1)
437-445	Limestone, yellowish gray (5Y 8/1), packstone, good to excellent induration, abundant pinpoint vugs, abundant fine phosphatics, abundant gastropod casts, common molds, poor moldic and vuggy porosity, poor apparent permeability.
445-450	Limestone as above except occasional coarse granular phosphatics.

WATER RESOURCE SOLUTIONS, INC.

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LITHOLOGIC LOG

Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia

450-455	Limestone, yellowish gray (5Y 7/2), packstone, good to excellent induration, abundant dolostone, moderate olive brown (5Y 4/4) to light olive gray (5Y 5/2), abundant shell fragments and fossil shells, common molds and casts, fair moldic porosity, fair apparent permeability.
455-460	Limestone, yellowish gray (5Limestone, yellowish gray (5Y 8/1) to pale greenish yellow (10Y 8/2), packstone, fair induration, abundant molds and casts, good moldic porosity and good apparent permeability.
460-470	Limestone as above except occasional dolostone, moderate olive brown, (5Y4/4), well indurated, sucrosic.
470-475	Limestone, yellowish gray, (5Y 8/1), packstone, friable, abundant molds and casts, occasional dolostone as above, trace clay, light olive gray (5Y 5/2), fair moldic porosity, fair apparent permeability.
475-480	Limestone, moderate greenish yellow (10Y 7/4), packstone to wackestone, friable, abundant molds and casts, trace dolosilt, dusky yellow (5Y 6/4), fair moldic porosity, fair apparent permeability.
480-486	Limestone, moderate greenish yellow, (10Y 7/4), packstone-wackestone, friable, abundant molds and cast, trace of dolosilt
486-500	Limestone, yellowish gray, (5Y 8/1) fossil packstone, moderately to well indurated, variably silty, moldic and phosphatic, shelly, fair moldic porosity, fair to poor apparent permeability
500-517	Same as above
517-528	Same as above
528-535	Limestone, yellowish gray, (5Y 7/2) fossil packstone, poorly indurate to friable, variably silty, variably chalky and phosphatic, poor moldic porosity, poor apparent permeability.
535-537	Limestone, yellowish gray, (5Y 7/2) wackestone, poorly indurate, chalky, very finely phosphatic, minor molds, common shell fragments, poor porosity, poor apparent permeability.
537-543	Limestone, yellowish gray, (5Y 8/1), fossil packstone, poorly indurated, variably chalky/silty, finely phosphatic, variably moldic, fair moldic porosity, fair to poor apparent permeability, minor lime mud.
543-550	Limestone as above interbedded with lime mud.

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LITHOLOGIC LOG

Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia

550 -565	Dolosilt, yellowish gray (5Y 7/2) to light olive gray (5Y 5/2), soft, sticky, abundant (~10%) phosphatic sand, common limestone, yellowish gray (5Y 7/2) packstone, poor porosity and apparent permeability
565-570	Dolosilt, yellowish gray (5Y 7/2) to light olive gray (5Y 5/2), soft, sticky, abundant (~30 %) limestone clasts, yellowish gray (5Y 7/2) packstone, common phosphatic sand, poor porosity and apparent permeability
570-605	Limestone, yellowish gray (5Y 7/2) wackestone, marly, friable, abundant molds and casts, abundant (~40%) dolomitic clay (5Y 6/1) common fine phosphate, poor porosity and apparent permeability
605-620	Dolosilt, yellowish gray (5Y 7/2) to light olive gray (5Y 5/2), soft, sticky, abundant (~30 %) limestone clasts, yellowish gray (5Y 7/2) packstone, common phosphatic sand, poor porosity and apparent permeability
620-625	Limestone, yellowish gray (5Y 7/2) wackestone, marly, friable, abundant molds and casts, abundant (~40%) dolomitic clay (5Y 6/1) common fine phosphate, poor porosity and apparent permeability
625-650	Clay, yellowish gray (5Y 8/1) to light greenish gray (5GY 8/1), hard, stiff, sticky, occasional fine gravel to very fine phosphatic grains, black (N8), rounded to well rounded, occasional limestone clasts (packstone to grainstone, yellowish gray (5Y 7/2) to white (N7), poor porosity and apparent permeability
650-660	Clay, light greenish gray (5GY 8/1), hard, stiff, sticky, lumpy, occasional fine gravel to very fine phosphatic grains, black (N8), rounded to well rounded, poor porosity and apparent permeability.
660-665	Limestone, yellowish gray (5Y 7/2) to white (N7), wackestone, marly, friable, abundant molds and casts, abundant (~40%) dolomitic clay, light olive gray, (5Y 6/1), common fine phosphate, poor porosity and apparent permeability
665-670	Clay, yellowish gray (5Y 7/2) to light olive gray (5Y 5/2), soft, sticky, poor porosity and apparent permeability, abundant (~30 %) limestone clasts, yellowish gray (5Y 7/2), packstone to wackestone, well indurated, common phosphatic sand, good moldic porosity and apparent permeability

WATER RESOURCE SOLUTIONS, INC.

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LITHOLOGIC LOG

Marco Island Utilities
Marco Lakes ASR Expansion Project **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia

670-695	Limestone, yellowish gray (5Y 7/2), packstone to wackestone, friable, abundant molds and casts, common fine phosphatic sand, excellent moldic porosity and excellent apparent permeability, abundant (~30%) marl, white, (N7), poor porosity and apparent permeability
695-710	Marl, white (N5) to very light gray (N8), soft, sticky, low porosity and apparent permeability, common very fine phosphatic sand, abundant (~20%) clasts of limestone, yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), packstone, fair moldic porosity
710 720	Limestone, yellowish gray (5Y 8/1), packstone to wackestone, fair to good induration, trace fine phosphatic sand, good moldic porosity, good apparent permeability, occasional (~10%) marl, white (N7) soft, sticky, poor porosity and apparent permeability, common clasts of dolostone, light olive gray, (5Y 5/2), microcrystaline, well indurated, poor porosity and apparent permeability
720-730	Limestone, very pale orange, (10YR 8/2), wackestone, fair to good induration, trace fine phosphatic sand, abundant bivalve and gastropod molds, excellent moldic porosity and excellent apparent permeability, occasional marl, white (N7) soft sticky, low porosity and apparent permeability
730-735	Limestone, yellowish gray (5Y 7/2) to yellowish gray (5Y 8/1) to white (N9), marly, soft, sticky, poor porosity, poor apparent permeability
735-743	Limestone, yellowish gray (5Y 7/2) to grayish orange (10YR 7/4), packstone to wackestone, trace marl, trace fine phosphatics, abundant molds, fair to good moldic porosity, fair apparent permeability.
743-750	Limestone, very pale orange (10YR 8/2) to gray orange (10YR 7/4), packstone, well indurated, abundant molds and casts, excellent moldic porosity and excellent apparent permeability.
750-755	Limestone, very pale orange (10YR 8/2), packstone, friable to poor induration, abundant molds and casts, predominantly bivalve casts, excellent moldic porosity, excellent apparent permeability.
755-760	Limestone, yellowish gray (5Y 8/1), packstone to wackestone friable to poor induration, abundant molds and casts, excellent moldic porosity, excellent apparent permeability.

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760-763	Limestone, yellowish gray (5Y 8/1), packstone to wackestone, friable to poor induration, occasional marl in rock matrix, common molds and casts, poor to fair moldic porosity, fair apparent permeability.
763-765	Limestone, yellowish gray (5Y 8/1) to grayish orange (10YR 7/4), packstone, excellent induration, common pinpoint vugs, common molds, good to excellent intergranular, vuggy, and moldic porosity, excellent apparent permeability.
765-770	Limestone, very pale orange (10YR 8/2) to grayish orange (10YR 7/4), packstone, friable to fair induration, abundant molds and casts, common pinpoint vugs, trace marl, good to excellent moldic and vuggy porosity, excellent apparent permeability.
770-775	Limestone, yellowish gray (5Y 8/1) to very pale orange (10YR 8/2), packstone, fair to good induration, abundant pinpoint vugs, abundant molds, common marl, poor to fair vuggy and moldic porosity, poor apparent permeability.

APPENDIX 2.3

ANALYSIS OF FORMATION WATER BASED ON PRIMARY AND SECONDARY DRINKING WATER STANDARDS

HARBOR BRANCH
ENVIRONMENTAL
LABORATORIES, INC.
5500 U.S. 1 North, Fort Pierce FL 34946
Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

Date issued: December 23, 2005

To: Susan Pollard

PO Box 8145
Clearwater, FL 33758

Client: .
Workorder ID: Marco Lakes ASR #6 DW Scan **[2023142]**
Received: 12/02/05 10:40

Dear Susan Pollard;

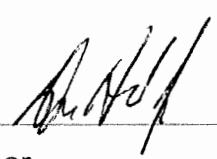
Analytical results presented in this report have been reviewed for compliance with the HARBOR BRANCH Environmental Laboratories Inc.'s (HBEL) Quality Systems Manual and have been determined to meet applicable Method guidelines and Standards referenced in the July 2003 National Environmental Laboratory Accreditation Program (NELAP) Quality Manual unless otherwise noted. The Analytical Results within these report pages reflect the values obtained from tests performed on Samples As Received by the laboratory unless indicated differently.

FDOH Safe Drinking Water Act, Clean Water Act and RCRA Certification #'s:

E96080, E83509, E85370, E84418

Questions regarding this report should be directed to the Report Signatory at (772) 465-2400, Ext. 285 referencing the HBEL Workorder ID [Number].

Respectfully submitted,



Cindy Cromer
Technical Director or Designee

Note: This report is not to be copied, except in full, without the expressed written consent of the HARBOR BRANCH Environmental Laboratories, Inc.

HARBOR BRANCH
ENVIRONMENTAL
LABORATORIES, INC.
500 U.S. I North, Fort Pierce FL 34946
Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

Quality Control Summary

Client: .
Workorder ID: Marco Lakes ASR #6 DW Scan **[2023142]**
Received: 12/02/05 10:40

MB=Method Blank LCS=Laboratory Control Sample LCSD=Laboratory Control Sample Duplicate MS=Matrix Spike MSD=Matrix Spike Duplicate DUP=Sample Duplicate

Method Narratives (If Applicable)

HBEL Sample Number	Sample ID	Analytical Method	Description

Quality Control Summary

Method	HBEL Batch	Analyte	Analytical Issue
EPA 200.9			
	META7767		
	2023142001	Selenium	Accuracy - Outside acceptance limits in the MS.
	2023142001	Selenium	Accuracy - Outside acceptance limits in the MSD.
	META7771		
	2023142001	Antimony	Accuracy - Outside acceptance limits in the MS.
	2023142001	Antimony	Precision - Outside acceptance limits between the MS and MSD.

.ıe above due to matrix effects. Accuracy/Precision demonstrated with other QC samples.

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Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

CERTIFICATE OF ANALYSIS

[2023142]

Client: .

Workorder ID: Marco Lakes ASR #6 DW Scan

Laboratory ID: **2023142001**
Sample ID: **ASR #6 Grab**

Sampled: 12/01/05 14:00 *Received:* 12/02/05 10:40
Matrix: Water
Results reported on Wet Weight Basis

Parameter	Qualifier	Result [1]	Units	Reporting Limit	Method	Laboratory Batch	Prep Date/Time	Analyzed Date/Time	Analyst	Lab ID
pH	Q	**7.80**	SU	0.200	EPA 150.1	WCGE24668		12/3/05 20:17	GS	E96080
Aluminum		**0.020 U**	mg/L	0.020	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Arsenic		**0.0026 U**	mg/L	0.0026	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Barium		**0.015**	mg/L	0.0018	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Beryllium		**0.00010 U**	mg/L	0.00010	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Cadmium		**0.00070 U**	mg/L	0.00070	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Chromium		**0.0018 U**	mg/L	0.0018	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Copper		**0.0014 U**	mg/L	0.0014	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Iron		**0.040**	mg/L	0.025	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Manganese		**0.0038 U**	mg/L	0.0038	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Nickel		**0.0020 U**	mg/L	0.0020	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Silver		**0.0010 U**	mg/L	0.0010	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Sodium		**190**	mg/L	0.50	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Zinc		**0.010 U**	mg/L	0.010	EPA 200.7	META7755	12/8/05 10:17	12/9/05 14:01	DM	E96080
Antimony		**0.0010 U**	mg/L	0.0010	EPA 200.9	META7771	12/12/05 10:24	12/19/05 23:12	DM	E96080
·ead		**0.00061 U**	mg/L	0.00061	EPA 200.9	META7761	12/12/05 10:24	12/14/05 13:53	DM	E96080
.lenium		**0.0020 U**	mg/L	0.0020	EPA 200.9	META7767	12/12/05 10:24	12/16/05 14:50	DM	E96080
Thallium		**0.0010 U**	mg/L	0.0010	EPA 200.9	META7764	12/12/05 10:24	12/15/05 16:44	DM	E96080
Mercury		**0.000060 U**	mg/L	0.000060	EPA 245.1	META7759	12/12/05 11:49	12/13/05 15:00	DM	E96080
Chloride		**260**	mg/L	5.0	EPA 300.0	IC6591		12/6/05 8:23	RS	E96080
Fluoride		**0.81**	mg/L	0.011	EPA 300.0	IC6588		12/2/05 17:30	JL	E96080
Nitrate as N		**0.0030 U**	mg/L	0.0030	EPA 300.0	IC6588		12/2/05 17:30	JL	E96080
Nitrite as N		**0.0022 U**	mg/L	0.0022	EPA 300.0	IC6588		12/2/05 17:30	JL	E96080
Sulfate		**150**	mg/L	1.4	EPA 300.0	IC6591		12/6/05 8:23	RS	E96080
Total Kjeldahl Nitrogen		**0.30**	mg/L	0.045	EPA 351.2	AUTO14157	12/7/05 8:50	12/7/05 16:17	JL	E96080
1,2-Dibromo-3-chloropropane		**0.0020 U**	ug/L	0.0020	EPA 504.1	PEST4613	12/5/05 9:01	12/6/05 1:34	RS	E96080
1,2-Dibromoethane		**0.0047 U**	ug/L	0.0047	EPA 504.1	PEST4613	12/5/05 9:01	12/6/05 1:34	RS	E96080
Chlordane		**0.13 U**	ug/L	0.13	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
Endrin		**0.10 U**	ug/L	0.10	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
gamma-BHC (Lindane)		**0.020 U**	ug/L	0.020	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
Heptachlor		**0.035 U**	ug/L	0.035	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
Heptachlor epoxide		**0.027 U**	ug/L	0.027	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
Methoxychlor		**0.043 U**	ug/L	0.043	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
PCB		**0.14 U**	ug/L	0.14	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
Toxaphene		**0.59 U**	ug/L	0.59	EPA 505	PEST4614	12/5/05 9:01	12/6/05 19:42	RS	E96080
2,4,5-TP		**0.19 U**	ug/L	0.19	EPA 515.1	PEST4616	12/8/05 7:41	12/13/05 19:52	RS	E96080
2,4-D		**0.22 U**	ug/L	0.22	EPA 515.1	PEST4616	12/8/05 7:41	12/13/05 19:52	RS	E96080
Dalapon		**2.3 U**	ug/L	2.3	EPA 515.1	PEST4616	12/8/05 7:41	12/13/05 19:52	RS	E96080
Dinoseb		**0.23 U**	ug/L	0.23	EPA 515.1	PEST4616	12/8/05 7:41	12/13/05 19:52	RS	E96080
ıtachlorophenol		**0.39 U**	ug/L	0.39	EPA 515.1	PEST4616	12/8/05 7:41	12/13/05 19:52	RS	E96080
ricloram		**0.23 U**	ug/L	0.23	EPA 515.1	PEST4616	12/8/05 7:41	12/13/05 19:52	RS	E96080

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CERTIFICATE OF ANALYSIS

[2023142]

Client: .

Workorder ID: Marco Lakes ASR #6 DW Scan

Parameter	Qualifier	Result [1]	Units	Reporting Limit	Method	Laboratory Batch	Prep Date/Time	Analyzed Date/Time	Analyst	Lab ID
1,1,1-Trichloroethane		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,1,2-Trichloroethane		**0.44 U**	ug/L	0.44	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,1-Dichloroethene		**0.23 U**	ug/L	0.23	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,2,4-Trichlorobenzene		**0.41 U**	ug/L	0.41	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,2-Dichlorobenzene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,2-Dichloroethane		**0.29 U**	ug/L	0.29	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,2-Dichloropropane		**0.40 U**	ug/L	0.40	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
1,4-Dichlorobenzene		**0.23 U**	ug/L	0.23	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Benzene		**0.20 U**	ug/L	0.20	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Carbon tetrachloride		**0.24 U**	ug/L	0.24	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Chlorobenzene		**0.30 U**	ug/L	0.30	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
cis-1,2-Dichloroethene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Ethylbenzene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Methylene chloride		**0.23 U**	ug/L	0.23	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Styrene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Tetrachloroethene		**0.24 U**	ug/L	0.24	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Toluene		**0.22 U**	ug/L	0.22	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Total Xylenes		**0.46 U**	ug/L	0.46	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
trans-1,2-Dichloroethene		**0.35 U**	ug/L	0.35	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Trichloroethene		**0.36 U**	ug/L	0.36	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Vinyl chloride		**0.32 U**	ug/L	0.32	EPA 524.2	VOC2568		12/7/05 5:38	WR	E96080
Alachlor		**0.60 U**	ug/L	0.60	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Atrazine		**0.48 U**	ug/L	0.48	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Benzo(a)pyrene		**0.069 U**	ug/L	0.069	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
bis(2-ethylhexyl)phthalate		**0.84 U**	ug/L	0.84	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Di(2-ethylhexyl)adipate		**0.67 U**	ug/L	0.67	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Hexachlorobenzene		**0.30 U**	ug/L	0.30	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Hexachlorocyclopentadiene		**0.23 U**	ug/L	0.23	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Simazine		**0.62 U**	ug/L	0.62	EPA 525.2	SVOC2376	12/12/05 10:51	12/18/05 16:41	WR	E96080
Carbofuran		**0.18 U**	ug/L	0.18	EPA 531.1	HPLC2264		12/12/05 13:17	JJM	E96080
Oxamyl		**0.41 U**	ug/L	0.41	EPA 531.1	HPLC2264		12/12/05 13:17	JJM	E96080
Glyphosate		**26 U**	ug/L	26	EPA 547	HPLC2262		12/7/05 8:54	JJM	E96080
Endothall		**2.8 U**	ug/L	2.8	EPA 548.1	SVOC2377	12/6/05 7:49	12/19/05 11:52	WR	E96080
Diquat		**4.8 U**	ug/L	4.8	EPA 549.2	HPLC2263	12/6/05 8:06	12/7/05 11:45	JJM	E96080
Gross Alpha		**10.8 +/- 2.4**	pCi/L		EPA 900 0	KNL1326		12/12/05 8:00	KNL	E84025
Radium 226		**3.0 +/- 0.9**	pCi/L		EPA 903.1	KNL1326		12/13/05 14:00	KNL	E84025
Radium 228		**0.4 +/- 0.7**	pCi/L		EPA Alter.	KNL1326		12/19/05 13:00	KNL	E84025
Color		**4.0**	CU	1.8	SM2120 B	WCGE24666		12/2/05 16:30	TCL	E96080
Odor		**1.8**	T.O.N.	1.0	SM2150 B	WCGE24665		12/2/05 11:23	GG	E96080
Total Dissolved Solids		**940**	mg/L	16	SM2540 C	WCGE24669		12/8/05 9:15	SP	E96080
Cyanide		**0.0027 U**	mg/L	0.0027	SM4500CN E	EVM1009		12/13/07 17:07	SUB	E83079
Surfactants as LAS, Mwt.340		**0.022 U**	mg/L	0.022	SM5540 C	WCGE24704	12/2/05 14:35	12/2/05 16:40	SP	E96080

HARBOR BRANCH
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Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

CERTIFICATE OF ANALYSIS

[2023142]

Client: . *Workorder ID:* Marco Lakes ASR #6 DW Scan

Parameter	Qualifier	Result[1]	Units	Reporting Limit	Method	Laboratory Batch	Prep Date/Time	Analyzed Date/Time	Analyst	Lab ID
Laboratory ID: ***2023142002***					*Sampled:* *12/01/05 0:00*		*Received:* *12/02/05 10:40*			
Sample ID: ***Trip Blank***					*Matrix:* *Water*		Results reported on Wet Weight Basis			
1,1,1-Trichloroethane		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,1,2-Trichloroethane		**0.44 U**	ug/L	0.44	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,1-Dichloroethene		**0.23 U**	ug/L	0.23	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,2,4-Trichlorobenzene		**0.41 U**	ug/L	0.41	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,2-Dichlorobenzene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,2-Dichloroethane		**0.29 U**	ug/L	0.29	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,2-Dichloropropane		**0.40 U**	ug/L	0.40	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
1,4-Dichlorobenzene		**0.23 U**	ug/L	0.23	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Benzene		**0.20 U**	ug/L	0.20	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Carbon tetrachloride		**0.24 U**	ug/L	0.24	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Chlorobenzene		**0.30 U**	ug/L	0.30	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
cis-1,2-Dichloroethene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Ethylbenzene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Methylene chloride		**0.23 U**	ug/L	0.23	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Styrene		**0.21 U**	ug/L	0.21	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Tetrachloroethene		**0.24 U**	ug/L	0.24	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Toluene		**0.22 U**	ug/L	0.22	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Total Xylenes		**0.46 U**	ug/L	0.46	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
trans-1,2-Dichloroethene		**0.35 U**	ug/L	0.35	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Trichloroethene		**0.36 U**	ug/L	0.36	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080
Vinyl chloride		**0.32 U**	ug/L	0.32	EPA 524.2	VOC2568		12/7/05 6:12	WR	E96080

[1]Result Qualifiers: U = Not Detected I = Analyte detected between the Laboratory Method Detection Limit and Laboratory Reporting Limit
Applicable Florida Department of Environmental Protection Qualifiers defined below. Statement of Estimated Uncertainty available upon request.

Q Sample held beyond the accepted holding time.

HARBOR BRANCH ENVIRONMENTAL LABORATORIES, INC.

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Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

Chain-of-Custody

and

Agreement to Perform Services

USE BALL POINT PEN
PRESS HARD
COMPLETELY FILL OUT
ALL NON GREYED AREAS
PRINT LEGIBLY

Laboratory not responsible for omitted information

___FDOH # E96080
5600 U S. 1 North
Fort Pierce, FL 34946

___FDOH # E85370
307 Coolidge Avenue
Lehigh Acres, FL 33936

___FDOH # E83509
255 Enterprise Rd., Suite 1
Deltona, FL 32725

___FDOH # E84418
2514 Osawaw Blvd.
Spring Hill, FL 34607

Company: Southern Well Services
Address: P.O. Box 8145
Clearwater, FL Zip: 33758
Phone: (727) 531-7559 Fax: 535-8532
Client Contact: B. Schmidt
Project Name: Marco Lakes ASR
Sampled By: B. Schmidt

Method(s) of Shipment: Fed X

e-mail:

X Standard Laboratory Turn Around Time

Or

Rush in ___ Business Days
Requires Laboratory Approval

For Lab Use Only

Temperature Checked (Y) N
Custody Seals Intact Y (N)
pH Checked Y N

LAB # 2023142

PRESERVATIVE

X	$NaOH$	H_2SO_4	X	$Na_2S_2O_3$	MCAA/B	$NH_2S_2O_3$	HCl

ANALYSES REQUESTED

F	B	U	C	O	N	T	H
MBAS	CN	TKN	NO_3 NO_2 cl 504 F	Glyphosate 547	Carbamates 531.1	Endothall 548	VOC

Preservation Key

H=Hydrochloric Acid P=Phosphoric Acid
N=Nitric Acid ST=Sodium
S=Sulfuric Acid Thiosulfate
SH=Sodium Hydroxide U=Unpreserved

LAB ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE DESCRIPTION As Will Appear On Report	MBAS	CN	TKN	NO_3 NO_2 cl 504 F	Glyphosate 547	Carbamates 531.1	Endothall 548	VOC	COMMENTS
	12-1-05	14:00	G	GW		ASR #6	X								
								X							
									X						
										X					
001											X				
												X			
													X		5 sample X 3
														X	Sample X 3
002			V	V		Trip Blk								X	

* Sample Type: G=Grab C=Composite

** Matrix: S=Solid SL=Sludge DW=Drinking Water GW=Ground Water SW=Surface Water WW=Wastewater M=Marine

Report Page 6 of 6

RELINQUISHED BY	RELINQUISHED BY	RELINQUISHED BY
DATE/TIME 12-1-05	DATE/TIME	DATE/TIME
RECEIVED BY	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY
DATE/TIME	DATE/TIME	DATE/TIME 12-2-05 1040

Distribution: WHITE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for SAMPLER

CHAIN PAGE 1 of 3

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Chain-of-Custody

and

Agreement to Perform Services

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ALL NON GREYED AREAS
PRINT LEGIBLY

Laboratory not responsible for omitted information

____FDOH # E96080 5600 U.S. 1 North Fort Pierce, FL 34946

____FDOH # E85370 307 Coolidge Avenue Lehigh Acres, FL 33936

____FDOH # E83509 255 Enterprise Rd., Suite 1 Deltona, FL 32725

____FDOH # E84418 2514 Osawaw Blvd. Spring Hill, FL 34607

Company: Southern Well Services

Address: PO Box 8145 Clw. Fl.

Zip: 33758

Phone: (727) 531-7559 Fax: (727) 535-5532

Client Contact: B. Schmidt

Project Name: Mosaic Lakes ASR

Sampled By: B. Schmidt

Method(s) of Shipment: Fed X

e-mail:

X Standard Laboratory Turn Around Time

Or

Rush in ____ Business Days

Requires Laboratory Approval

For Lab Use Only

Temperature Checked (Y) N

Custody Seals Intact Y (N)

pH Checked Y N

LAB # 202342

LAB ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE DESCRIPTION As Will Appear On Report	PRESERVATIVE								COMMENTS
							HNO3	H2SO4	NaS2O3	NaHSO3	X	NaOH S2O3	X	HNO3	
							√	Q	R	S	E	T	D	A	
							Gross Alfa	Diquat 549	505	525.2	ODor	515.1	pH, color, T.D.S.	Metals 1° and 2°	
	12-1-05	14:00	G	GW		ASR # 6	X								
								X							
									X						
										X					
061											X				
												X			
													X		
														X	

* Sample Type: G=Grab C=Composite

** Matrix: S=Solid SL=Sludge DW=Drinking Water GW=Ground Water SW=Surface Water WW=Wastewater M=Marine

Preservation Key

H=Hydrochloric Acid P=Phosphoric Acid
N=Nitric Acid ST=Sodium Thiosulfate
S=Sulfuric Acid
SH=Sodium Hydroxide U=Unpreserved

RELINQUISHED BY		RELINQUISHED BY	RELINQUISHED BY
DATE/TIME	12-1-05	DATE/TIME	DATE/TIME
RECEIVED BY		RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY
DATE/TIME		DATE/TIME	DATE/TIME 12 2 05 1040

Report Page 6A of 6

Distribution: WHITE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for SAMPLER

CHAIN PAGE 2 of 3

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5600 US I North, Fort Pierce, FL 34946
Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

Chain-of-Custody *and* Agreement to Perform Services

USE BALL POINT PEN
PRESS HARD
COMPLETELY FILL OUT ALL NON GREYED AREAS
PRINT LEGIBLY

Laboratory not responsible for omitted information

___FDOH # E96080 5600 U.S. 1 North Fort Pierce, FL 34946
___FDOH # E85370 307 Coolidge Avenue Lehigh Acres, FL 33936
___FDOH # E83509 255 Enterprise Rd., Suite 1 Deltona, FL 32725
___FDOH # E84418 2514 Osawaw Blvd. Spring Hill, FL 34607

ACCREDITED IN ACCORDANCE WITH nelac

Company: Southern well Serv.
Address: PO BOX 8145
Clw / Fl. Zip: 33758
Phone (727) 531-7559 Fax: 535-8532
Client Contact: B. Schmidt
Project Name: Marco Lakes ASR
Sampled By: B. Schmidt

Method(s) of Shipment: ______
e-mail: ______

X Standard Laboratory Turn Around Time
Or
Rush in ____ Business Days
Requires Laboratory Approval

For Lab Use Only

Temperature Checked: (Y) N
Custody Seals Intact: Y (N)
pH Checked: Y N

LAB # 2023142

PRESERVATIVE: NA2S2O3 | NA2S2O3

ANALYSES REQUESTED: R 508 | EDB/DBCP 504 | Gross Alpha

Preservation Key
H=Hydrochloric Acid, P=Phosphoric Acid, N=Nitric Acid, ST=Sodium Thiosulfate, S=Sulfuric Acid, SH=Sodium Hydroxide, U=Unpreserved

LAB ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE DESCRIPTION As Will Appear On Report	508	EDB/DBCP 504	Gross Alpha						COMMENTS
001	12-1-05	14:00	G	GW		ASR # 6	X								Sample X3
	↓		↓	↓		↓		X							Sample X3
									X						

* Sample Type: G=Grab C=Composite
** Matrix: S=Solid SL=Sludge DW=Drinking Water GW=Ground Water SW=Surface Water WW=Wastewater M=Marine

RELINQUISHED BY [signature]	RELINQUISHED BY	RELINQUISHED BY
DATE/TIME 12-1-05	DATE/TIME	DATE/TIME
RECEIVED BY	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY
DATE/TIME	DATE/TIME	DATE/TIME

Report Page 68 of 68

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CHAIN PAGE 3 of 3

Florida Department of Environmental Protection
Safe Drinking Water Program Laboratory Reporting Format

PUBLIC WATER SYSTEM INFORMATION (to be completed by sampler - Please type or print legibly)

System Name: _____ PWS I.D. #: [ ][ ][ ][ ][ ][ ][ ]

System Type (check one) [ ] Community [ ] Nontransient Noncommunity [ ] Transient Noncommunity

Address: _____

_____

City: _____ State: _____ ZIP Code: _____

Phone #: _____ Fax #: _____

E-Mail Address: _____

SAMPLE INFORMATION (to be completed by sampler)

Sample Number: _____ Location Code (if known): _____

Sample Date: 12/01/05 Sample Time: 2:00 PM

Sample Location (be specific): ASR #6 Grab

Disinfectant Residual (Required when reporting results for trihalomethanes and haloacetic acids): _____ mg/L Field pH: _____

Sample Type (Check Only One)

- [ ] Distribution
- [ ] Entry Point (to Distribution)
- [ ] Plant Tap not for compliance with 62-550)
- [ ] Raw (at well or intake)
- [ ] Max Residence Time
- [ ] Ave Residence Time
- [ ] Near First Customer

Reason(s) for Sample (Check all that apply)

- [ ] Routine Compliance (with 62-550)
- [ ] Confirmation of MCL Exceedence*
- [ ] Composite of Multiple Sites**
- [ ] Clearance (permitting)
- [ ] Other: _____
- [ ] Quarterly (Which Qtr? _____)
- [ ] Special (not for compliance with 62-550)
- [ ] Violation Resolution
- [ ] Replacement (of Invalidated Sample)

Sampling Procedure Used or Other Comments: _____

*See 62-550.500(6) for requirements and restrictions.
Note: See 62-550.512(3) for additional requirements for Nitrate or Nitrite MCL exceedences.

** See 62-550.550(4) for requirements and attach a results page for each site.

Sampler's Name: _____

Sampler's Phone #: _____ Sampler's Fax #: _____

Sampler's E-Mail Address: _____

CERTIFICATION (to be completed by sampler)

I, _____ (Print Name), _____ (Print Title)

'o HEREBY CERTIFY that the above public water system and sample collection information is ;ompleted and correct.

Signature: _____ Date: _____

Florida Department of Environmental Protection
Safe Drinking Water Program Laboratory Reporting Format

LABORATORY CERTIFICATION INFORMATION (to be completed by lab - Please type or print legibly)

ATTACH A CURRENT DOH ANALYTE SHEET

Lab Name: Harbor Branch Environmental Laboratories, Inc. Florida Certification #: E96080

Address: 5600 US 1 North Certification Expiration Date: 06/30/2006

Fort Pierce, FL 34946 Phone #: (772) 465-2400 Ext. 285

ANALYSIS INFORMATION (to be completed by lab) Date Sample(s) Received:: 12/2/05

PWS ID (From Page 1): Sample Number (From Page 1):

Lab Assigned Report Number or Job ID: 2023142001

Group(s) Analyzed and Results attached for compliance with Chapter 62-550, F.A.C. (Check all that apply):

Inorganics	Synthetic Organics	Volatile Organics	Disinfection Byproducts
☐ All 17	☐ All 30	☒ All 21	☐ Trihalomethanes
☒ Partial	☒ All Except Dioxin	☐ Partial	☐ Haloacetic Acids
☐ Nitrate	☐ Partial		☐ Bromate
☐ Nitrite	☐ Dioxin Only	Radionuclides	☐ Chlorite
☐ Asbestos Only		☒ Single Sample	
		☐ Qtrly Composite**	Secondaries
			☒ All 14
			☐ Partial

Were any analyses subcontracted? X Yes ___ No

If yes, please provide DOH certification numbers: E84025, E83079

ATTACH DOH ANALYTE SHEET FOR EACH SUBCONTRACTED LAB

CERTIFICATION

I, Cindy Cromer (Print Name), Laboratory Director (Print Title)

do HEREBY CERTIFY that all attached analytical data are correct and unless noted meet all requirements of the National Environmental Laboratory Accreditation Conference (NELAC).

Signature Cindy Cromer Date: 23-Dec-05

* Failure to provide a valid and current Florida DOH lab certification number and a current Analyte Sheet for the attached analysis results will result in rejection of the report, possible enforcement against the public water system for failure to sample, and may result in notification of the DOH Bureau of Laboratory Services.

** Please provide radiological sample dates locations for each quarter.

COMPLIANCE DETERMINATION (to be completed by DEP or DOH)

Sample Collection Info Satisfactory: ☐ Yes ☐ No Sample Analysis Info Satisfactory: ☐ Yes ☐ No

☐ Replacement Sample(s) Requested (circle or highlight group(s) above) ☐ Revised Report Requested (circle or highlight group(s) above)

☐ Additional Monitoring Required (circle or highlight group(s) above)

Reason(s): ☐ MCL(s) Exceeded ☐ Detection(s) ☐ Incomplete Report
☐ Missing Analyte Sheet(s) ☐ Location Unsatisfactory ☐ Analysis Unsatisfactory
☐ Other:

Person Notified: Date Notified:

Comments:

Date Reviewed: DEP/DOH Reviewing Official:

HARBOR BRANCH
ENVIRONMENTAL
LABORATORIES, INC.
[illegible] U.S. I North, Fort Pierce FL 34946
: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

INORGANIC CONTAMINANTS

62 - 550.310 (1)

Client: .

Workorder: Marco Lakes ASR #6 DW Scan

Sample Location: ASR #6 Grab

Sample Number: 2023142001

Sampling Date: 12/01/05 14:00

Date Received: 12/02/05 10:40

ID	Parameter	MCL	Result	Units	Qual*	Method	MDL	Date/Time	Lab ID
1040	Nitrate as N	[10]	**0.0030 U**	mg/L		EPA 300.0	0.0030	12/02/05 17:30	E96080
1041	Nitrite as N	[1]	**0.0022 U**	mg/L		EPA 300.0	0.0022	12/02/05 17:30	E96080
1005	Arsenic	[0.01]	**0.0026 U**	mg/L		EPA 200.7	0.0026	12/09/05 14:01	E96080
1010	Barium	[2]	**0.015**	mg/L		EPA 200.7	0.0018	12/09/05 14:01	E96080
1015	Cadmium	[0.005]	**0.00070 U**	mg/L		EPA 200.7	0.00070	12/09/05 14:01	E96080
)	Chromium	[0.1]	**0.0018 U**	mg/L		EPA 200.7	0.0018	12/09/05 14:01	E96080
1024	Cyanide	[0.2]	**0.0027 U**	mg/L		SM4500CN E	0.0027	12/13/07 17:07	E83079
1025	Fluoride	[4]	**0.81**	mg/L		EPA 300.0	0.011	12/02/05 17:30	E96080
1030	Lead	[0.015]	**0.00061 U**	mg/L		EPA 200.9	0.00061	12/14/05 13:53	E96080
1035	Mercury	[0.002]	**0.000060 U**	mg/L		EPA 245.1	0.000060	12/13/05 15:00	E96080
1036	Nickel	[0.1]	**0.0020 U**	mg/L		EPA 200.7	0.0020	12/09/05 14:01	E96080
1045	Selenium	[0.05]	**0.0020 U**	mg/L		EPA 200.9	0.0020	12/16/05 14:50	E96080
1052	Sodium	[160]	**190**	mg/L		EPA 200.7	0.50	12/09/05 14:01	E96080
1074	Antimony	[0.006]	**0.0010 U**	mg/L		EPA 200.9	0.0010	12/19/05 23:12	E96080
1075	Beryllium	[0.004]	**0.00010 U**	mg/L		EPA 200.7	0.00010	12/09/05 14:01	E96080
1085	Thallium	[0.002]	**0.0010 U**	mg/L		EPA 200.9	0.0010	12/15/05 16:44	E96080

Reporting Format 62-550.730
Effective January 1995, Revised January 2004

* s must be reported with appropriate qualifiers in accordance with Florida Administrative Code Rule 62-160, Table 1. Results Qualified with A, F, H, N, O, T, Z, ?, *, are u. ptable for compliance with 62-550. Results qualified with a J, Q, R, or Y must be accompanied by written justification and will be evaluated on a case by case basis. To avoid a monitoring violation, unacceptable results must be replaced with acceptable results from samples collected during the same monitoring peri

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SECONDARY CONTAMINANTS

62 - 550.320

Client: .

Workorder: Marco Lakes ASR #6 DW Scan

Sample Location: ASR #6 Grab

Sample Number: 2023142001

Sampling Date: 12/01/05 14:00

Date Received: 12/02/05 10:40

ID	Parameter	MCL	Result	Units	Qual.*	Method	MDL	Date/Time	Lab ID
1002	Aluminum	[0.2]	**0.020 U**	mg/L		EPA 200.7	0.020	12/09/05 14:01	E96080
1017	Chloride	[250]	**260**	mg/L		EPA 300.0	5.0	12/06/05 8:23	E96080
1022	Copper	[1]	**0.0014 U**	mg/L		EPA 200.7	0.0014	12/09/05 14:01	E96080
1025	Fluoride	[2]	**0.81**	mg/L		EPA 300.0	0.011	12/02/0512/02/	E96080
3	Iron	[0.3]	**0.040**	mg/L		EPA 200.7	0.025	12/09/05 14:01	E96080
1032	Manganese	[0.05]	**0.0038 U**	mg/L		EPA 200.7	0.0038	12/09/05 14:01	E96080
1050	Silver	[0.1]	**0.0010 U**	mg/L		EPA 200.7	0.0010	12/09/05 14:01	E96080
1055	Sulfate	[250]	**150**	mg/L		EPA 300.0	1.4	12/06/05 8:23	E96080
1095	Zinc	[5]	**0.010 U**	mg/L		EPA 200.7	0.010	12/09/05 14:01	E96080
1905	Color	[15]	**4.0**	CU		SM2120 B	1.8	12/02/05 16:30	E96080
1920	Odor	[3]	**1.8**	T.O.N.		SM2150 B	1.0	12/02/05 11:23	E96080
1925	pH	[6.5-8.5]	**7.80**	SU	Q	EPA 150.1	0.200	12/03/05 20:17	E96080
1930	Total Dissolved Solids	[500]	**940**	mg/L		SM2540 C	16	12/08/05 9:15	E96080
2905	Foaming Agents	[0.5]	**0.022 U**	mg/L		SM5540 C	0.022	12/02/05 16:40	E96080

Reporting Format 62-550.730
Effective January 1995, Revised January 2004

* 'ts must be reported with appropriate qualifiers in accordance with Florida Administrative Code Rule 62-160, Table 1. Results Qualified with A, F, H, N, O, T, Z, ?, *, are ι ptable for compliance with 62-550. Results qualified with a J, Q, R, or Y must be accompanied by written justification and will be evaluated on a case by case basis. To avoid a monitoring violation, unacceptable results must be replaced with acceptable results from samples collected during the same monitoring peri

HARBOR BRANCH
ENVIRONMENTAL
LABORATORIES, INC.
5600 U.S. 1 North, Fort Pierce FL 34946
Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

VOLATILE ORGANICS
62 - 550.310 (4) (a)

Client: .

Workorder: Marco Lakes ASR #6 DW Scan

Sample Location: ASR #6 Grab

Sample Number: 2023142001

Sampling Date: 12/01/05 14:00

Date Received: 12/02/05 10:40

ID	Parameter	MCL	Result	Units	Qual.*	Method	MDL	Date/Time	Lab ID
2378	1,2,4-Trichlorobenzene	[70]	**0.41 U**	ug/L		EPA 524.2	0.41	12/07/05 5:38	E96080
2380	cis-1,2-Dichloroethene	[70]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 5:38	E96080
2955	Total Xylenes	[10000]	**0.46 U**	ug/L		EPA 524.2	0.46	12/07/05 5:38	E96080
2964	Methylene chloride	[5]	**0.23 U**	ug/L		EPA 524.2	0.23	12/07/05 5:38	E96080
2968	1,2-Dichlorobenzene	[600]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 5:38	E96080
2969	1,4-Dichlorobenzene	[75]	**0.23 U**	ug/L		EPA 524.2	0.23	12/07/05 5:38	E96080
	Vinyl chloride	[1]	**0.32 U**	ug/L		EPA 524.2	0.32	12/07/05 5:38	E96080
2977	1,1-Dichloroethene	[7]	**0.23 U**	ug/L		EPA 524.2	0.23	12/07/05 5:38	E96080
2979	trans-1,2-Dichloroethene	[100]	**0.35 U**	ug/L		EPA 524.2	0.35	12/07/05 5:38	E96080
2980	1,2-Dichloroethane	[3]	**0.29 U**	ug/L		EPA 524.2	0.29	12/07/05 5:38	E96080
2981	1,1,1-Trichloroethane	[200]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 5:38	E96080
2982	Carbon tetrachloride	[3]	**0.24 U**	ug/L		EPA 524.2	0.24	12/07/05 5:38	E96080
2983	1,2-Dichloropropane	[5]	**0.40 U**	ug/L		EPA 524.2	0.40	12/07/05 5:38	E96080
2984	Trichloroethene	[3]	**0.36 U**	ug/L		EPA 524.2	0.36	12/07/05 5:38	E96080
2985	1,1,2-Trichloroethane	[5]	**0.44 U**	ug/L		EPA 524.2	0.44	12/07/05 5:38	E96080
2987	Tetrachloroethene	[3]	**0.24 U**	ug/L		EPA 524.2	0.24	12/07/05 5:38	E96080
2989	Chlorobenzene	[100]	**0.30 U**	ug/L		EPA 524.2	0.30	12/07/05 5:38	E96080
2990	Benzene	[1]	**0.20 U**	ug/L		EPA 524.2	0.20	12/07/05 5:38	E96080
2991	Toluene	[1000]	**0.22 U**	ug/L		EPA 524.2	0.22	12/07/05 5:38	E96080
2992	Ethylbenzene	[700]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 5:38	E96080
2996	Styrene	[70]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 5:38	E96080

Reporting Format 62-550.730
Effective January 1995, Revised January 2004

' ts must be reported with appropriate qualifiers in accordance with Florida Administrative Code Rule 62-160, Table 1. Results Qualified with A, F, H, N, O, T, Z, ?, *, u. eptable for compliance with 62-550. Results qualified with a J, Q, R, or Y must be accompanied by written justification and will be evaluated on a case by case basis. avoid a monitoring violation, unacceptable results must be replaced with acceptable results from samples collected during the same monitoring peri

HARBOR BRANCH
ENVIRONMENTAL
LABORATORIES, INC.
5600 U.S. 1 North, Fort Pierce FL 34946
Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

VOLATILE ORGANICS
62 - 550.310 (4) (a)

Client: .

Workorder: Marco Lakes ASR #6 DW Scan

Sample Location: Trip Blank

Sample Number: 2023142002

Sampling Date: 12/01/05 0:00

Date Received: 12/02/05 10:40

ID	Parameter	MCL	Result	Units	Qual*	Method	MDL	Date/Time	Lab ID
2378	1,2,4-Trichlorobenzene	[70]	**0.41 U**	ug/L		EPA 524.2	0.41	12/07/05 6:12	E96080
2380	cis-1,2-Dichloroethene	[70]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 6:12	E96080
2955	Total Xylenes	[10000]	**0.46 U**	ug/L		EPA 524.2	0.46	12/07/05 6:12	E96080
2964	Methylene chloride	[5]	**0.23 U**	ug/L		EPA 524.2	0.23	12/07/05 6:12	E96080
2968	1,2-Dichlorobenzene	[600]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 6:12	E96080
2969	1,4-Dichlorobenzene	[75]	**0.23 U**	ug/L		EPA 524.2	0.23	12/07/05 6:12	E96080
)	Vinyl chloride	[1]	**0.32 U**	ug/L		EPA 524.2	0.32	12/07/05 6:12	E96080
2977	1,1-Dichloroethene	[7]	**0.23 U**	ug/L		EPA 524.2	0.23	12/07/05 6:12	E96080
2979	trans-1,2-Dichloroethene	[100]	**0.35 U**	ug/L		EPA 524.2	0.35	12/07/05 6:12	E96080
2980	1,2-Dichloroethane	[3]	**0.29 U**	ug/L		EPA 524.2	0.29	12/07/05 6:12	E96080
2981	1,1,1-Trichloroethane	[200]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 6:12	E96080
2982	Carbon tetrachloride	[3]	**0.24 U**	ug/L		EPA 524.2	0.24	12/07/05 6:12	E96080
2983	1,2-Dichloropropane	[5]	**0.40 U**	ug/L		EPA 524.2	0.40	12/07/05 6:12	E96080
2984	Trichloroethene	[3]	**0.36 U**	ug/L		EPA 524.2	0.36	12/07/05 6:12	E96080
2985	1,1,2-Trichloroethane	[5]	**0.44 U**	ug/L		EPA 524.2	0.44	12/07/05 6:12	E96080
2987	Tetrachloroethene	[3]	**0.24 U**	ug/L		EPA 524.2	0.24	12/07/05 6:12	E96080
2989	Chlorobenzene	[100]	**0.30 U**	ug/L		EPA 524.2	0.30	12/07/05 6:12	E96080
2990	Benzene	[1]	**0.20 U**	ug/L		EPA 524.2	0.20	12/07/05 6:12	E96080
2991	Toluene	[1000]	**0.22 U**	ug/L		EPA 524.2	0.22	12/07/05 6:12	E96080
2992	Ethylbenzene	[700]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 6:12	E96080
2996	Styrene	[70]	**0.21 U**	ug/L		EPA 524.2	0.21	12/07/05 6:12	E96080

Reporting Format 62-550.730
Effective January 1995, Revised January 2004

* 's must be reported with appropriate qualifiers in accordance with Florida Administrative Code Rule 62-160, Table 1. Results Qualified with A, F, H, N, O, T, Z, ?, *, u .ptable for compliance with 62-550. Results qualified with a J, Q, R, or Y must be accompanied by written justification and will be evaluated on a case by case basis. avoid a monitoring violation, unacceptable results must be replaced with acceptable results from samples collected during the same monitoring peri

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5600 U.S. 1 North, Fort Pierce FL 34946
Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

SYNTHETIC ORGANICS 62 - 550.310 (4) (b)

Client: . Workorder: Marco Lakes ASR #6 DW Scan

Sample Location: ASR #6 Grab

Sample Number: 2023142001

Sampling Date: 12/01/05 14:00

Date Received: 12/02/05 10:40

ID	Parameter	MCL	Result	Units	Qual*	Method	MDL	Extracted Date	Analyzed Date/Time	Lab ID
2005	Endrin	[2]	**0.10 U**	ug/L		EPA 505	0.10	12/05/05	12/06/05 19:42	E96080
2010	gamma-BHC (Lindane)	[0.2]	**0.020 U**	ug/L		EPA 505	0.020	12/05/05	12/06/05 19:42	E96080
2015	Methoxychlor	[40]	**0.043 U**	ug/L		EPA 505	0.043	12/05/05	12/06/05 19:42	E96080
2020	Toxaphene	[3]	**0.59 U**	ug/L		EPA 505	0.59	12/05/05	12/06/05 19:42	E96080
2031	Dalapon	[200]	**2.3 U**	ug/L		EPA 515.1	2.3	12/08/05	12/13/05 19:52	E96080
2032	Diquat	[20]	**4.8 U**	ug/L		EPA 549.2	4.8	12/06/05	12/07/05 11:45	E96080
2033	Endothall	[100]	**2.8 U**	ug/L		EPA 548.1	2.8	12/06/05	12/19/05 11:52	E96080
2034	Glyphosate	[700]	**26 U**	ug/L		EPA 547	26		12/07/05 8:54	E96080
2035	Di(2-ethylhexyl)adipate	[400]	**0.67 U**	ug/L		EPA 525.2	0.67	12/12/05	12/18/05 16:41	E96080
2036	Oxamyl	[200]	**0.41 U**	ug/L		EPA 531.1	0.41		12/12/05 13:17	E96080
2037	Simazine	[4]	**0.62 U**	ug/L		EPA 525.2	0.62	12/12/05	12/18/05 16:41	E96080
	bis(2-ethylhexyl)phthalate	[6]	**0.84 U**	ug/L		EPA 525.2	0.84	12/12/05	12/18/05 16:41	E96080
2040	Picloram	[500]	**0.23 U**	ug/L		EPA 515.1	0.23	12/08/05	12/13/05 19:52	E96080
2041	Dinoseb	[7]	**0.23 U**	ug/L		EPA 515.1	0.23	12/08/05	12/13/05 19:52	E96080
2042	Hexachlorocyclopentadiene	[50]	**0.23 U**	ug/L		EPA 525.2	0.23	12/12/05	12/18/05 16:41	E96080
2046	Carbofuran	[40]	**0.18 U**	ug/L		EPA 531.1	0.18		12/12/05 13:17	E96080
2050	Atrazine	[3]	**0.48 U**	ug/L		EPA 525.2	0.48	12/12/05	12/18/05 16:41	E96080
2051	Alachlor	[2]	**0.60 U**	ug/L		EPA 525.2	0.60	12/12/05	12/18/05 16:41	E96080
2065	Heptachlor	[0.4]	**0.035 U**	ug/L		EPA 505	0.035	12/05/05	12/06/05 19:42	E96080
2067	Heptachlor epoxide	[.2]	**0.027 U**	ug/L		EPA 505	0.027	12/05/05	12/06/05 19:42	E96080
2105	2,4-D	[70]	**0.22 U**	ug/L		EPA 515.1	0.22	12/08/05	12/13/05 19:52	E96080
2110	2,4,5-TP	[50]	**0.19 U**	ug/L		EPA 515.1	0.19	12/08/05	12/13/05 19:52	E96080
2274	Hexachlorobenzene	[1]	**0.30 U**	ug/L		EPA 525.2	0.30	12/12/05	12/18/05 16:41	E96080
2306	Benzo(a)pyrene	[.2]	**0.069 U**	ug/L		EPA 525.2	0.069	12/12/05	12/18/05 16:41	E96080
2326	Pentachlorophenol	[1]	**0.39 U**	ug/L		EPA 515.1	0.39	12/08/05	12/13/05 19:52	E96080
2383	PCB	[.5]	**0.14 U**	ug/L		EPA 505	0.14	12/05/05	12/06/05 19:42	E96080
2931	1,2-Dibromo-3-chloropropane	[.2]	**0.0020 U**	ug/L		EPA 504.1	0.0020	12/05/05	12/06/05 1:34	E96080
2946	1,2-Dibromoethane	[.02]	**0.0047 U**	ug/L		EPA 504.1	0.0047	12/05/05	12/06/05 1:34	E96080
2959	Chlordane	[2]	**0.13 U**	ug/L		EPA 505	0.13	12/05/05	12/06/05 19:42	E96080

Reporting Format 62-550.730
Effective January 1995, Revised January 2004

NOTE: Effective 1/1/2004, results indicating a non-detection with a reported MDL >50% of the MCL will not be accepted for compliance work with 62-550.310(4)(b

* ; must be reported with appropriate qualifiers in accordance with Florida Administrative Code Rule 62-160, Table 1. Results Qualified with A, F, H, N, O, T, Z, ?, *, are ur, ptable for compliance with 62-550. Results qualified with a J, Q, R, or Y must be accompanied by written justification and will be evaluated on a case by case basis. To avoid a monitoring violation, unacceptable results must be replaced with acceptable results from samples collected during the same monitoring peri

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Phone: (772) 465-2400, Ext. 285 Fax: (772) 467-1584

RADIOCHEMICAL ANALYSIS

62-550.310 (5)

(PWS033)

Client: . Workorder: Marco Lakes ASR #6 DW Scan

Sample Location: ASR #6 Grab

Sample Number: 2023142001

Sampling Date: 12/01/05 14:00

Preservative: Nitric Acid

Date Received: 12/02/05 10:40

ID	Parameter	Result		Method	Error	Date	Lab ID
4000	Gross Alpha	**10.8 +/- 2.4**	pCi/L	EPA 900.0		12/12/05	E84025
4020	Radium 226	**3.0 +/- 0.9**	pCi/L	EPA 903.1		12/13/05	E84025
4030	Radium 228	**0.4 +/- 0.7**	pCi/L	EPA Alter.		12/19/05	E84025

Florida Department of Environmental Protection
Safe Drinking Water Program Laboratory Reporting Format

PUBLIC WATER SYSTEM INFORMATION (to be completed by sampler - Please type or print legibly)

System Name: _____ PWS I.D. #: | | | | | | | |

System Type (check one) ☐ Community ☐ Nontransient Noncommunity ☐ Transient Noncommunity

Address: _____

_____

City: _____ State: _____ ZIP Code: _____

Phone #: _____ Fax #: _____

E-Mail Address: _____

SAMPLE INFORMATION (to be completed by sampler)

Sample Number: _____ Location Code (if known): _____

Sample Date: 12/01/05 Sample Time: 12:00 AM

Sample Location (be specific): Trip Blank

Disinfectant Residual (Required when reporting results for trihalomethanes and haloacetic acids): _____ mg/L Field pH: _____

Sample Type (Check Only One)

- ☐ Distribution
- ☐ Entry Point (to Distribution)
- ☐ Plant Tap not for compliance with 62-550)
- ☐ Raw (at well or intake)
- ☐ Max Residence Time
- ☐ Ave Residence Time
- ☐ Near First Customer

Reason(s) for Sample (Check all that apply)

- ☐ Routine Compliance (with 62-550)
- ☐ Confirmation of MCL Exceedence*
- ☐ Composite of Multiple Sites**
- ☐ Clearance (permitting)
- ☐ Other: _____
- ☐ Quarterly (Which Qtr? _____)
- ☐ Special (not for compliance with 62-550)
- ☐ Violation Resolution
- ☐ Replacement (of Invalidated Sample)

Sampling Procedure Used or Other Comments: _____

*See 62-550.500(6) for requirements and restrictions.
Note: See 62-550.512(3) for additional requirements for Nitrate or Nitrite MCL exceedences.

** See 62-550.550(4) for requirements and attach a results page for each site.

Sampler's Name: _____

Sampler's Phone #: _____ Sampler's Fax #: _____

Sampler's E-Mail Address: _____

CERTIFICATION (to be completed by sampler)

I, _____ (Print Name), _____ (Print Title)

ɔ HEREBY CERTIFY that the above public water system and sample collection information is completed and correct.

Signature: _____ Date: _____

Florida Department of Environmental Protection
Safe Drinking Water Program Laboratory Reporting Format

LABORATORY CERTIFICATION INFORMATION (to be completed by lab - Please type or print legibly)

ATTACH A CURRENT DOH ANALYTE SHEET

Lab Name: Harbor Branch Environmental Laboratories, Inc. Florida Certification #: E96080

Address: 5600 US 1 North Certification Expiration Date: 06/30/2006

Fort Pierce, FL 34946 Phone #: (772) 465-2400 Ext. 285

ANALYSIS INFORMATION (to be completed by lab) Date Sample(s) Received:: 12/2/05

PWS ID (From Page 1): Sample Number (From Page 1):

Lab Assigned Report Number or Job ID: 2023142002

Group(s) Analyzed and Results attached for compliance with Chapter 62-550, F.A.C. (Check all that apply):

Inorganics	Synthetic Organics	Volatile Organics	Disinfection Byproducts
☐ All 17	☐ All 30	☑ All 21	☐ Trihalomethanes
☐ Partial	☐ All Except Dioxin	☐ Partial	☐ Haloacetic Acids
☐ Nitrate	☐ Partial		☐ Bromate
☐ Nitrite	☐ Dioxin Only	Radionuclides	☐ Chlorite
☐ Asbestos Only		☐ Single Sample	
		☐ Qtrly Composite**	Secondaries
			☐ All 14
			☐ Partial

Were any analyses subcontracted? X Yes ___ No

.f yes, please provide DOH certification numbers: E84025, E83079

ATTACH DOH ANALYTE SHEET FOR EACH SUBCONTRACTED LAB

CERTIFICATION

I, Cindy Cromer (Print Name), Laboratory Director (Print Title)

do HEREBY CERTIFY that all attached analytical data are correct and unless noted meet all requirements of the National Environmental Laboratory Accreditation Conference (NELAC).

Signature Cindy Cromer Date: 23-Dec-05

* Failure to provide a valid and current Florida DOH lab certification number and a current Analyte Sheet for the attached analysis results will result in rejection of the report, possible enforcement against the public water system for failure to sample, and may result in notification of the DOH Bureau of Laboratory Services.

** Please provide radiological sample dates locations for each quarter.

COMPLIANCE DETERMINATION (to be completed by DEP or DOH)

Sample Collection Info Satisfactory: ☐ Yes ☐ No Sample Analysis Info Satisfactory: ☐ Yes ☐ No

☐ Replacement Sample(s) Requested (circle or highlight group(s) above) ☐ Revised Report Requested (circle or highlight group(s) above)

☐ Additional Monitoring Required (circle or highlight group(s) above)

Reason(s): ☐ MCL(s) Exceeded ☐ Detection(s) ☐ Incomplete Report
☐ Missing Analyte Sheet(s) ☐ Location Unsatisfactory ☐ Analysis Unsatisfactory
☐ Other:

Person Notified: Date Notified:

Comments:

Date Reviewed: DEP/DOH Reviewing Official:

DOH Certification #E84025
DEP COMPQAP # 870251

KNL LABORATORY SERVICES
2742 N. Florida Ave.
P.O. Box 1833
Tampa, Florida 33601
(813) 229-2879
Fax (813) 229-0002

Report Date: December 23, 2005

Harbor Branch Environmental Labs
5600 U.S. 1 North
Ft. Pierce, FL 34946

Attn: Eric Charest

Field Custody: Client
Client/Field ID: 2023142001
Sample Collection: 12-1-05

Lab ID No: 9052
Lab Custody Date: 12-6-05
Sample description: Groundwater

CERTIFICATE OF ANALYSIS

Parameter	Units	Results			Analysis Date	Method	Detection Limit
Gross Alpha	pCi/l	10.8	±	2.4	12-12-05/0800	EPA 900.0	2.6
Radium-226	pCi/l	3.0	±	0.9	12-13-05/1400	EPA 903.0	0.8
Radium-228	pCi/l	0.4	±	0.7	12-19-05/1300	EPA Ra-05	1.0

Alpha Standard: Th-230

James W. Hayes
Laboratory Manager

Test results meet all requirements of the NELAC standards.
Contact person: Jim Hayes (813)229-2879.

From: Heather Cote 8132290002 Date: 12/23/2005 Time: 11:13 am Page: 4 of 4

HARBOR BRANCH ENVIRONMENTAL LABORATORY

5600 U. S. 1 North, Ft. Pierce, FL 34946, 772-465-2400 ext. 292
Fax: (772) 467-1584

CHAIN OF CUSTODY RECORD

Receiving Laboratory: KNL

The samples are to be shipped by Fed-Ex **to arrive on** 12/6/05. **TAT:** STD

HARBOR BRANCH ENVIRONMENTAL LABORATORY

PROJECT NAME: Marco Lakes

ANALYSIS REQUIRED: Gross Alpha, Rad 226/228

PRESERVATIVE: N

COLLECTION REMARKS: 9052

SAMPLE TYPE: Composite = C, Grab = G,

Preservative: HCl = H, HNO_3 = N, $Na_2S_2O_3$ = ST, H_2SO_4 = S, NaOH = SH, Unpreserved = U

MATRIX: Drinking Water = DW, Groundwater = GW, Surface Water = SW, Wastewater = WW, Soil or solids = S, Waste = W, Oil = O

Client Code	MATRIX	COLLECTION DATE	COLLECTION TIME	TYPE	HBEL SAMPLE ID	# Bottles	Gross Alpha, Rad 226/228						SAMPLE COMMENTS
	GW	12/01	14:00	G	202 3142 001	1	✓						

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[signature]	11/5/05	16:30			
RELINQUISHED BY	DATE	TIME	LABORATORY NAME AND RECEIVED BY: KNL: [signature]	12/6/05	0930

ELAB, Inc. 8 East Tower Cr., Ormond Beach, FL 32174-8759 **Date:** *20-Dec-05*

Analytical Report

CLIENT: Harbor Branch Environmental Laboratory
Client Sample ID: 2023142001
Lab Order: F05120354
Collection Date: 12/1/2005 2:00:00 PM
Project:
Sample Description: CMI
Lab ID: F05120354-001
Matrix: Groundwater

Analyses	Result	Qual	MDL	RL	Units	DF	Date Analyzed	Batch ID
CYANIDE, TOTAL		**E335.3**	PrepDate: **12/13/2005 1:00:00**				Analyst: **JHI**	
Cyanide	0.0027	U	0.0027	0.010	mg/L	1	12/13/05 17:06	32380

Data Qualifier Code Key:
I Analyte detected below quantitation limits
U Not Detected Above the MDL

F0512 54

Harbor Branch
Environmental Laboratory

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U. S. 1 North, Ft. Pierce, FL 34946, 772-465-2400 ext. 292
Fax: (772) 467-1584
CHAIN OF CUSTODY RECORD

Subcontracting Form 001A
REV 001
Effective Date 12/05/2002

Receiving Laboratory: Elab

The samples are to be shipped by Fed · Ex **to arrive on** 12·9·05 . **TAT:** Std.

HARBOR BRANCH ENVIRONMENTAL LABORATORY

PROJECT NAME:

SAMPLE TYPE: Composite = C, Grab = G,

Preservative: HCl = H, HNO_3 = N, $Na_2S_2O_3$ = ST, H_2SO_4 = S, NaOH = SH, Unpreserved = U

MATRIX: Drinking Water = DW, Groundwater = GW, Surface Water = SW, Wastewater = WW, Soil or solids = S, Waste = W, Oil =O

Client Code	MATRIX	COLLECTION DATE	COLLECTION TIME	TYPE	HBEL SAMPLE ID	# Bottles	ANALYSIS REQUIRED / PRESERVATIVE						COLLECTION REMARKS / SAMPLE COMMENTS
							SH						
							CN						
CMI	GW	12/1	1400	G	2023142 001	1	↓						
AAG	WW	12/2	0600	G	2023145 002	1	↓						
VC	WW	12/1	1040	G	2123980 001	1	↓						
SEM	DW	12/6	1430	G	2123999 001	1	↓						

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
B Nath	12·8·05	1600	A. Rau	12·9·05	10:35
RELINQUISHED BY	DATE	TIME	LABORATORY NAME AND RECEIVED BY	DATE	TIME

APPENDIX 3.1

WEEKLY CONSTRUCTION SUMMARY REPORTS

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date:** 12/16/05 **Week #74**

Date	Description of Activities
Friday 12/9/05	SWS crew installed finished wellhead including bolting on a 12-inch valve provided by others. Wright Construction provided assistance to SWS in coordinating the valve orientation before installation.
Saturday 12/10/05	No site activity.
Sunday 12/11/05	No site activity.
Monday 12/12/05	SWS crew performed general demobilization operations which included moving their drill pipe from the drilling site to the front gate of the project site. Pad monitoring well #1 was purged at a rate of approximately 15 gpm using a trash pump. WRS confirmed that the top of the finished wellhead was level and photographed the wellhead.
Tuesday 12/13/05	SWS crew transported their mud collection tank, dog house, generator, and miscellaneous smaller equipment from the drill site to the front of the project site. The drill site was then graded allowing for Wright Construction to begin their trenching operations. WRS purged and sampled water from the pad monitoring wells and performed required field-testing.
Wednesday 12/14/05	Demobilization operations continued as the mud collection tank and trailer holding drill pipe were transported off the site.
Thursday 12/15/05	No site activity.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 12/9/05** **Week #73**

Date	Description of Activities
Friday 12/2/05	SWS crew pumped out water from pad monitoring well #1 at an approximate rate of 50 gpm for 4 hours. The remaining day was spent performing general site cleanup and rig maintenance before leaving the site at noon. WRS was not at the site today.
Saturday 12/3/05	No site activity.
Sunday 12/4/05	No site activity.
Monday 12/5/05	SWS killed the well pumping approximately 2,250 gallons of brine and tripped out the submersible pump. MV Geophysical performed a suite of geophysical logs to include caliper/natural gamma ray, dynamic flow log, and a video survey of the liner and open-hole section of the well. After the caliper/natural gamma ray logging run was completed, the well was brought alive by pumping the brine out of the well and into the collection tank. The dynamic flow log was performed at an average flow rate of 660 gpm. During the flow log, 26,445 gallons of water was pumped and conveyed to the wasteline and Henderson Creek. Performed a video survey in the downview mode of the lowermost production casing, liner, and open hole. The logger advanced the camera to a depth of 774 feet bpl before encountering fine sediments as fill in the open hole. Of note, the casing, liner, and open-hole section of the well appeared undamaged and in good condition. After logging was completed, the well was mechanically shut-in by a 6-inch valve on the top of the test header.
Tuesday 12/6/05	SWS crew pumped water, using a trash pump, from pad monitoring well #1 to the collection tank in an attempt to remove the local brine plume. WRS purged and sampled water from both of the pad monitoring wells and performed required field testing on each water sample.
Wednesday 12/7/05	SWS crew killed the well by pumping approximately 2,250 gallons of brine solution chlorinated to an approximate concentration of 100-ppm chlorine. SWS performed a plumbness and alignment test within the upper 250 feet of well casing. The distance between the apex and the top of the well

WATER RESOURCE SOLUTIONS, INC.

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MARCO LAKES ASR
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ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 12/9/05** **Week #73**

Date	Description of Activities
	casing was measured at 16.6 feet. The length of the plummet was measured at 1.80 feet, and the outside diameter measured at 1.22 feet. Horizontal deviation measurements from the plumb line to the well center were measured in two planes perpendicular to one another and recorded at 10-foot depth intervals as the plummet was lowered down the well casing. Test results proved satisfactory as the greatest deviation value in any plane measured no more than ½ inch. SWS crew pumped water out of pad monitoring well #1 at an average pumping rate of 15 gpm using a trash pump. The remaining day was spent performing rig maintenance and early demobilization activities including moving the drilling rig off the hole.
Thursday 12/8/05	SWS crew begin demobilization activities to include moving the drilling rig off the hole and dismantling equipment.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 12/2/05** **Week #72**

Date	Description of Activities
Friday 11/25/05	No site activity due to Thanksgiving holiday.
Saturday 11/26/05	No site activity.
Sunday 11/27/05	No site activity.
Monday 11/28/05	SWS crew trip in the submersible pump and reset the 100-psi transducer in the well. The generator repeatedly cuts off as the breaker, which supplies electricity to the pump, is turned on. Of note, the pump motor had been working when tested at the surface but fails downhole. SWS plan on troubleshooting the electrical circuit to the pump tomorrow. The crew leaves the site for the east coast to pick up a truck to be used to move a flatbed trailer on the site, which will allow for trenching to continue between wells ASR#8 and ASR#5.
Tuesday 11/29/05	SWS crew move their flatbed trailer to allow for local trenching to continue. Heavy rain cancels planned troubleshooting work on the submersible pump. WRS samples and tests water collected from the pad monitoring wells after performing required well purging.
Wednesday 11/30/05	SWS set a submersible pump inside the well casing at 100 feet bpl. A 100-psi transducer was set inside the well casing above the pump intake at 41.3 feet bpl. Approximately 5,800 gallons of brine was pumped from the well into the collection tank, followed by allowing approximately 1,000 gallons of brine water flow by natural flow from the annulus, above the pump intake, into the collection tank. A 1,000-gallon flow meter was field-tested during the pumpout. A 4-step drawdown test was initiated by allowing natural flow to discharge through an in-line flow meter and out to Henderson Creek. Before starting the test, water from the test pump discharge and annulus was field-tested for conductivity recording values of 3,800 uS/cm and 3,600 uS/cm, respectively. A pre-test pressure reading of 30.7 psi was recorded from the pressure transducer set in the pumping well. Pressure transducers and data recorders (miniTROLL) were set in wells ASR#5 and DZ-2 and each of these had scheduled test

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 12/2/05** **Week #72**

Date	Description of Activities
	starts (data recording) activated before the start of the pump test. Average pumping rates for the four steps were run at 250, 512, 667, and 848 gpm. Water levels were recorded manually using an electronic water-level indicator during the last test step as drawdown in the pumping well fell below the transducer. A total of 100,730 gallons of water was pumped during the 3-hour pump test. SWS crew shut-in the well before leaving the site.
Thursday 12/1/05	WRS stopped the tests, extracted the pump test data, and removed the miniTROLL units set at ASR#5 and DZ-2. Approximately 53,000 gallons of water was pumped to Henderson Creek before collecting water samples from the discharge line for analysis of Primary and Secondary Drinking Water standard parameters. Water samples collected from the pump discharge were field-tested for conductivity (recorded at 1,521 uS/cm) to confirm stabilization of formation water before sampling. Additional field-tested parameters of the formation water included temperature (recorded at 26.8 degrees C) and pH (recorded at 7.31). The submersible pump was shut-in before sampling was initiated as natural well flow, recorded at a rate of 210 gpm, provided the water for the samples which were collected from a sampling port installed upstream of the flowmeter. The water samples were collected, packaged, stored in an ice-filled cooler and sent express mail to Harbor Branch Environmental Laboratories, Inc. located in Fort Pierce, Florida. SWS left the submersible pump set in the well and mechanically shut-in the well before leaving the site.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 11/23/05** **Week #71**

Date	Description of Activities
Friday 11/18/05	SWS crew set a submersible pump inside the well to a depth (intake depth) of 100 feet bpl using 6-inch Certa Lok. SWS crew mechanically shut in the well before leaving the site. WRS was not at the site today.
Saturday 11/19/05	No site activity.
Sunday 11/20/05	No site activity.
Monday 11/21/05	SWS crew install an in-line flow meter (1000-gallon gauge) between the well's discharge stream and the collection tank. A 100-psi pressure transducer and data recorder (Minitroll) is set inside the well casing. The submersible pump (test pump) is supplied electricity by a mobile electrical generator but the pump doesn't operate. WRS set 15-psi pressure transducers/data recorders (Minitrolls) in wells ASR-5 and DZ-2 in preparation for the 4-step drawdown test at ASR-6.
Tuesday 11/22/05	SWS crew trip out the submersible pump and examine the inside of the pump. Of note, it is soon seen that the pump's impellers are locked up. SWS decide to leave the site for the shortened week after mechanically shutting in the well. WRS purge and sample water from the pad monitoring wells and perform required field-testing.
Wednesday 11/23/05	No site activity.
Thursday 11/24/05	No site activity.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 11/18/05** **Week #70**

Date	Description of Activities
Friday 11/11/05	SWS crew performed general site cleanup. WRS was not at the site today.
Saturday 11/12/05	No site activity.
Sunday 11/13/05	No site activity.
Monday 11/14/05	No site activity as SWS cannot find a generator, which is needed to run the test pump.
Tuesday 11/15/05	No site activity.
Wednesday 11/16/05	WRS purges and samples the pad monitoring wells and performs required field-testing.
Thursday 11/17/05	SWS crew kill the well pumping approximately 2400 gallons of brine down the well and drill string. The crew trips out the string and shut in the well.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 11/11/05** **Week #69**

Date	Description of Activities
Friday 11/4/05	SWS crew performed general site cleanup. WRS was not at the site today.
Saturday 11/5/05	No site activity.
Sunday 11/6/05	No site activity.
Monday 11/7/05	SWS crew break down bit and sub combinations and prepare bottom hole assembly in preparation for reverse-air drilling and drilling out the cement plug inside the liner. WRS was not at the site today.
Tuesday 11/8/05	SWS crew prepare their bottom hole assembly to include a 0.90-foot-long, 7-inch diameter, 3-blade drag bit (overall BHA length of 2.68 feet) and install their BOP. The crew trip in the drill string in preparation for reverse-air drilling planned for tomorrow. WRS purge and sample the pad monitoring wells. Each sample is field tested for required parameters.
Wednesday 11/9/05	SWS crew drill out the cement plug inside the liner by reverse-air circulation and continue drilling to the termination depth of the open hole at 776 feet bpl. Cement and shavings of the cap are seen in the discharge stream. Formation water was conveyed to the waste line and Henderson Creek after confirming that each monitoring well was isolated from the waste line to Henderson Creek.
Thursday 11/10/05	SWS crew develop the well by reverse-air pumping after repairing a U-joint on the rig. WRS was not at the site today.

WATER RESOURCE SOLUTIONS, INC.

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MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 11/4/05** **Week #68**

Date	Description of Activities
Friday 10/28/05	No site activity as there is limited power in the area.
Saturday 10/29/05	No site activity.
Sunday 10/30/05	No site activity.
Monday 10/31/05	SWS crew trip out the drill string that was previously attached to the liner string. The crew change out the o-ring and gasket to the well header and riser and install leveler bolts to level the steel header inside the well riser.
Tuesday 11/1/05	SWS crew replace the pvc coupling (well riser) with a new coupling of the same dimensions. The annulus of the production casing is washed and tagged at 25 feet bpl. The annulus is cemented to the surface by the tremie grouting method using 30 sacks (approx. 37.2 cubic feet or 278 gals.) of neat cement ("Cemex" – Type I Portland). The well is shut in before leaving the site and well testing activities are suspended for 24 hours before pressurizing the well casing.
Wednesday 11/2/05	SWS crew performs trial casing pressure tests at a starting pressure of 110 psi, 24 hours after yesterday's cementing event. Results of three successive trial tests showed continued reduced pressure loss but not equal to or less than the 5-percent loss requirement. The fourth pressure test is a passing test with a 4.5-psi loss (4.4%) over 60 minutes. The starting pressure of this fourth test was 103 psi and the ending pressure recorded at 98.5 psi. Immediately after the official test, a post-test procedure was conducted as 25 gallons of water was released from the system dropping the pressure to zero. The frac tank was hauled away from the site during the afternoon. WRS purged and sampled water from the pad monitoring wells and performed required field-testing.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 11/4/05** **Week #68**

Date	Description of Activities
Thursday 11/3/05	SWS crew performs general site cleanup. WRS is not at the site today.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: F. Procta **Date: 10/28/05** **Week #67**

Date	Description of Activities
Friday 10/21/05	No site activity due to Hurricane Wilma.
Saturday 10/22/05	No site activity.
Sunday 10/23/05	No site activity.
Monday 10/24/05	No site activity due to Hurricane Wilma.
Tuesday 10/25/05	SWS crew and WRS inspect the well site for any storm damage. There appears no damage to the well or rig. SWS crew leave the site, as there isn't any power in the area.
Wednesday 10/26/05	No site activity as there isn't any power in the area.
Thursday 10/27/05	SWS crew perform general site cleanup. WRS measures pad monitoring well water levels before purging the wells, collecting water samples from each well, and performing required field testing of each water sample.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: A. McThenia/F. Procta **Date: 10/21/05** **Week #66**

Date	Description of Activities
Friday 10/14/05	SWS tripped 1&1/4-inch tremie pipe down between the liner and the casing and tagged the top of the second stage of cement at 728 feet bpl. SWS then raised the tremie based to 713 feet to pump the third cement stage. SWS mixed 16 sks of cement with approximately 100 gallons of water in a steel tank using an air powered diaphragm pump and then pumped the neat cement grout down the annulus between the casing and the liner. SWS then mixed and pumped another batch containing 14 sks of cement with approximately 85 gallons of water. SWS tripped the tremie pipe up to 600 feet bpl and shut the well in. After 7.5 hours, SWS tagged the top of the third stage of cement at 724 feet bpl feet and then pumped another two-batch stage of neat cement grout consisting of 30 sks. of cement mixed with approximately 190 gallons of water. SWS tripped the tremie pipe up to 600 feet bpl and shut the well in for the night.
Saturday 10/15/05	SWS tripped 1&1/4-inch tremie pipe down between the liner and the casing and tagged the top of the fourth stage of cement at 686 feet bpl. SWS prepared for another cement stage. MVGS performed a temperature log through the drill string and inside the liner. The temperature log indicated a cement top also at 686 by the location of the maximum differential temperature. After attempting to pump a preflush of water down the tremie, SWS tripped all of the tremie pipe to the surface and determined that six pipe lengths totaling approximately 126 feet were clogged with cement. The well was shut in for the weekend.
Sunday 10/16/05	No site activity.
Monday 10/17/05	SWS tagged annular cement (STAGE #4) at 687 feet bpl. Pumped a 30-sack stage of neat cement (STAGE #5) by tremie, flushing with approximately 120 gallons of water.
Tuesday 10/18/05	SWS tagged annular cement (STAGE #5) at 641 feet bpl. Crew poured 80 gallons (16 5-gallon buckets) of neat cement down the tremie pipe, flushing with 30 gallons of freshwater. After waiting approximately 4 hours, the annular cement (STAGE #6) was tagged at 619.6 feet bpl.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
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ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: A. McThenia/F. Procta **Date: 10/21/05** **Week #66**

Date	Description of Activities
	Crew poured 60 gallons (12 5-gallon buckets) of neat cement down the tremie pipe, flushing with 30 gallons of freshwater. WRS purged and sampled water from pad monitoring well #2.
Wednesday 10/19/05	SWS tagged annular cement (STAGE #7) at 601 feet bpl. The crew tripped out the 1-1/4-inch tremie pipe and rigged the wellhead for pressure testing by linking the well annulus and drill pipe with a 2-inch steel pipe with 90-degree elbows and T. A trial casing pressure test was performed, using formation water stored in the on-site collection tank, at a starting pressure of 103 psi. The result of the test indicated a 23-psi pressure loss over the first two minutes of elapsed test time. A leak was observed at one of the 90-degree elbows, however, there was likely pressure loss downhole as well. SWS crew shut-in the well before leaving the site for the week. WRS purged and sampled water from pad monitoring well #1.
Thursday 10/20/05	No site activity.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 10/14/05** **Week #65**

Date	Description of Activities
Friday 10/7/05	No site activity.
Saturday 10/8/05	No site activity.
Sunday 10/9/05	No site activity.
Monday 10/10/05	Drillers work on fixing drilling rig clutch.
Tuesday 10/11/05	SWS mixed two batches of brine solution containing 2000 lbs. of salt and approximately 600 gallons of water and pumped both batches into the top of the wellhead to suppress artesian flow. SWS removed the existing header from the well and tripped in drill pipe to tag the gravel in the well at 735 feet bpl. SWS installed the drill through rubber header and inserted 200 feet of 1-inch PVC airline into the drill string. SWS airlifted gravel from the well from 735 to 749 feet bpl and shut the well in for the night.
Wednesday 10/12/05	SWS tripped the entire drill string from the well and retallied each drill pipe. SWS assembled a liner tailpiece consisting of 11.7 feet of 8&5/8-inch OD Certalok well casing with a PVC cap glued onto the bottom and 3 cement baskets mounted around the lower half of the pipe one atop the other. After filling each basket with ¾-inch Bentonite Hole Plug, SWS connected and installed 7 additional 20-foot sections of 8&5/8-inch Certalok PVC well casing for a total liner length of 151.7 feet. Steel centralizers were installed at the top of the uppermost section of liner. The uppermost female coupling on the liner was connected to the male end of a stainless steel adaptor via a spline fitted into a Certalok style groove machined on the outer surface of the adaptor. The top of the adaptor, which had been machined with female left hand buttress threads, was screwed over a drill pipe sub with identical male threads. This sub was connected to the drill string and the liner assembly was lowered down the well by connecting the previously measured drill pipe. The sub and drill string will be unscrewed from the liner after final grouting is completed. The liner was installed with it's base at 746.1 feet bpl in the open hole and it's top at 594.4 feet below pad level inside the existing 17.4 inch PVC well casing. The well was shut in for the night.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 10/14/05 **Week #65**

Date	Description of Activities
Thursday 10/13/05	SWS installed 1&1/4-inch tremie pipe alonside the drill string inside the 17.4 inch casing to a depth of 737.5 feet; at which point the bottom of the tremie tagged the bentonite filled top basket of the liner tailpiece. SWS then raised the tremie base to 733 feet bpl and began mixing cement. SWS mixed 20 sks of cement with 50 lbs of bentonite and approxmatly 120 gallons of water in a steel tank using an air powered diaphram pump and then pumped the cement grout down the annulus between the casing and the liner. After 6 hours, SWS tagged the cement top at 733.5 feet and then pumped another stage of neat cement grout consisting of 20 sks. of cement mixed with 120 gallons of water. SWS tripped the tremie pipe up to 630 feet bpl and shut the well in for the night. The static water levels were measured in the four pad monitor wells at ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

WATER RESOURCE SOLUTIONS, INC.

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EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 10/7/05** **Week #64**

Date	Description of Activities
Friday 09/30/05	The crew shut-in the well and perform general site clean up before leaving the site.
Saturday 10/1/05	No site activity.
Sunday 10/2/05	No site activity.
Monday 10/3/05	SWS crew pump approximately 2,100 gallons of brine to kill the well before removing the single packer from the well. Approximately 25 cubic feet of 3/8-inch limestone gravel is poured down the well casing partially filling the open-hole section of the well. The well is shut-in before leaving the site.
Tuesday 10/4/05	SWS crew trip in drill pipe and tag the top of gravel in the open hole at 768 feet bpl. The crew pour an additional 20 cubic feet of gravel down the open-hole section of the well. Tag the gravel top at approximately 741 feet bpl. This tag is above the planned target depth of 748 feet bpl. The crew buy supplies including 200 feet of 1-inch PVC to be used as an airline as part of the gravel fill will have to be removed by reverse-air pumping. WRS staff purges and samples water from pad monitoring well #2 and field-tests the samples for conductivity, pH, temperature, and chloride concentration.
Wednesday 10/5/05	SWS crew spends the day fabricating an 18-inch reducer well flange with conical rubber to be fitted to the wellhead allowing for reverse-air drilling and flow control. WRS staff purges and samples water from pad monitoring well #1 and field-tests the samples for conductivity, pH, temperature, and chloride concentration. Of note, the chloride result indicates impact to the surficial aquifer at this pad monitoring well location and will require pumping/purging the pad well until the chloride level approaches background levels.

WATER RESOURCE SOLUTIONS, INC.

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MARCO LAKES ASR
EXPANSION PROJECT
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Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 10/7/05** **Week #64**

Date	Description of Activities
Thursday 10/6/05	SWS crew change out the newly fabricated 18-inch reducer well flange with the original 16-inch blind flange and shut-in the well before leaving the site for the week. Of note, heavy flooding rains caused site operations to end early in the day. SWS crew will not return to the site until Monday, October 10th, as the weather forecast calls for more rain tomorrow.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 09/30/05** **Week #63**

Date	Description of Activities
Friday 09/23/05	SWS crew perform trial casing pressure tests without success. The crew shut-in the well and perform general site clean up before leaving the site.
Saturday 09/24/05	No site activity.
Sunday 09/25/05	No site activity.
Monday 09/26/05	SWS crew load a centrifugal pump at the well site and plan to deliver it to another site later today. The well is never accessed today. SWS crew leave the site in the early afternoon.
Tuesday 09/27/05	SWS crew spends the day gathering supplies needed to run the liner inside the well casing planned for later this week. Cement tubing and cement baskets are delivered to the site.
Wednesday 09/28/05	SWS crew partially trip out the packer string and pump approximately 700 gallons of brine to control well flow. The crew mechanically shut-in the well before leaving the site. WRS staff purges the pad monitoring wells and then collects water samples and field-tests the water samples for chloride concentration, conductivity, temperature, and pH. Water levels were measured/recorded at the pad monitoring wells before the start of well purging.
Thursday 09/29/05	SWS crew receive a delivery of crushed rock from "Rinker" to be used in partially filling the open-hole section of the well. The well is never accessed today. SWS crew leave the site in the early afternoon.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 09/23/05** **Week #62**

Date	Description of Activities
Friday 09/16/05	SWS crew prepare the original steel header and plan to replace the PVC riser currently on the well casing with the steel header. Early in the day operations end due to a radiator hose on the rig failing.
Saturday 09/17/05	No site activity.
Sunday 09/18/05	No site activity.
Monday 09/19/05	SWS crew kill the well with approximately 1,400 gallons of brine and seat the steel header inside the well casing. The packer is pressurized (using nitrogen gas) to 500 psi and later the pressure increased to 600 psi. The centerline of the packer had been set last week at a depth of 665 feet bpl. The crew shut-in the well for the night.
Tuesday 09/20/05	SWS crew tighten bolts on header plates at the wellheads of ASR#5 and ASR#8. The crew performs trial casing pressure tests pressurizing the casing (using lake water) in the range of 100 to 110 psi. The packer is pressurized using nitrogen gas in the range of 550 to 675 psi. Results of all tests indicate immediate pressure loss in the casing. The crew shut-in the well for the night.
Wednesday 09/21/05	SWS crew kill the well with approximately 700 gallons of brine and trip out the packer string. After numerous weather delays due to Tropical Storm Rita, the crew shut-in the well. WRS staff purges and samples water from pad monitoring wells #1 and #2 at ASR#6. Perform required field testing of the water samples.
Thursday 09/22/05	SWS crew pump approximately 700 gallons of brine down the well to lower the water level to approximately six feet bpl. A third single packer is tripped in the well casing and set at a depth of 665.75 feet bpl. The packer was previously tested just inside the well casing at a pressure of 100 psi. SWS crew then perform trial casing pressure tests pressurizing

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Marco Island Utilities
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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 09/23/05** **Week #62**

Date	Description of Activities
	the casing in the range of 100 to 110 psi. The packer is pressurized using nitrogen gas in the range of 550 to 650 psi. Results of all tests indicate rapid pressure loss in the packer/casing annulus. The crew shut-in the well for the night.

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ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 09/16/05** **Week #61**

Date	Description of Activities
Friday 09/9/05	SWS crew recover packer string using a fishing tool after first killing the well with approximately 1,500 gallons of brine. Shut in the well using a 6-inch blind flange on an 8-inch reducer.
Saturday 09/10/05	No site activity.
Sunday 09/11/05	No site activity.
Monday 09/12/05	SWS crew spend the day preparing equipment to include steel caps to the newly fabricated header. The wellhead is never accessed.
Tuesday 09/13/05	SWS crew trip in the packer string and set the centerline of packer at a depth of 664 feet bpl and pressure up the bladder using nitrogen gas to 525 psi. Fill the drill pipe and casing with water pumped from the lake and seal the top of the string. Pump approximately 1,000 gallons of lake water down the well using an air diaphragm pump and record zero pressure response on the casing pressure gauge. The crew mechanically shut-in the well for the night.
Wednesday 09/14/05	SWS crew deflate the packer and trip the packer string out of the well. The packer is tested at the surface using water and observed to be leaking water from the steel section of the packer below the bladder. SWS determine that the packer has been too damaged to repair in the short term and decide to transport an alternate packer to the site. Later that day the alternate packer arrives on site. WRS staff purge/sample the pad monitoring wells #1 and #2 and field-test water samples for chloride, conductivity, pH, and temperature. Water levels are measured in each pad monitoring well before the start of well purging.

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Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date:** 09/16/05 **Week #61**

Date	Description of Activities
Thursday 09/15/05	SWS crew trip in the alternate single packer using drill pipe after first killing the well by pumping approximately 1,400 gallons of brine. The centerline of the packer is set at a depth of 665 feet bpl. A trial pressure test is conducted but soon after pressuring up the casing to 60 psi, water is seen leaking from splines that connect the well casing to a PVC riser. The associated O-ring sealing the two was the cause of the leak. The well was mechanically shut-in with the packer remaining pressurized downhole before leaving the site.

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Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 09/9/05** **Week #60**

Date	Description of Activities
Friday 09/2/05	SWS crew perform general site cleanup and check to see that the well is properly shut-in before leaving the site for the long weekend.
Saturday 09/3/05	No site activity.
Sunday 09/4/05	No site activity.
Monday 09/5/05	No site activity due to Labor Day holiday.
Tuesday 09/6/05	No site activity. SWS crew are not on site but at their shop redesigning their header and building a fishing tool for the purpose of retrieving the packer.
Wednesday 09/7/05	No site activity. SWS crew are not on site but at their shop redesigning their header and building a fishing tool for the purpose of retrieving the packer.
Thursday 09/8/05	SWS crew pump approximately 3,000 gallons of brine down the well in an attempt to kill the well but there remained positive pressure at the wellhead. The crew shut-in the well before leaving the site for the day.

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ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 09/2/05** **Week #59**

Date	Description of Activities
Friday 08/26/05	No site activity due to Hurricane Katrina. WRS staff visits the site to secure equipment and check for flooding and damages. Note: There appears no damage to the well or drill rig and no flooding.
Saturday 08/27/05	No site activity.
Sunday 08/28/05	No site activity.
Monday 08/29/05	SWS crew flow 19,940 gallons of well water to the waste line and Henderson Creek in preparation for NPDES sampling. Well water stabilizes after flowing just over three well volumes as confirmed by field-tested conductivity measurements. Water samples are collected, packaged on ice, and sent express mail for analysis. SWS crew secure the well before leaving the site.
Tuesday 08/30/05	SWS perform rig maintenance and general site cleanup. Crew wait on packer delivery.
Wednesday 08/31/05	SWS kill the well by pumping approximately 7,500 gallons of brine solution held in the mud collection tank. SWS crew hang a 10-inch-diameter, 14.2-foot-long single packer with attached sub and one joint of 2-inch-diameter, schedule 40 steel tubing inside the well. A cementing header holds the packer string and secures the well. WRS staff collects water samples from the two pad monitoring wells (ASR #6) and field-tests samples for required parameters.
Thursday 09/1/05	SWS crew trip in the packer and set the centerline of the packer element at a depth of 684.8 feet bpl. The packer is inflated to just over 300 psi using nitrogen gas. SWS crew begin to pressure up the casing with water pumped from the lake when suddenly the steel tubing separates high up on the string. SWS decide not to trip out the severed tubing string but secure the well with the cementing header and leave the airline intact.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date:** 09/2/05 **Week #59**

Date	Description of Activities
	The packer remains inflated (holding pressure at 300 psi) and is believed to be positioned at the approximate setting depth. All wellhead valves are closed and the well shut-in for the upcoming long weekend as SWS will design/build a fishing tool over the break. SWS crew will arrive back on site Tuesday, September 6th.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 08/26/05** **Week #58**

Date	Description of Activities
Friday 08/19/05	SWS performed maintenance work on the ASR-6 well pad berm and had a subcontractor haul offsite approximately 8000 gallons of recovered salt solution. ASR-6 remained shut in.
Saturday 08/20/05	SWS tripped the 15-inch bit assembly from 633 feet to a depth of 695 feet bpl and circulated fluid from the borehole. The drill string tagged hard bottom at 695 feet bpl. SWS reverse-air drilled from 695 to a total depth of 775 feet bpl using the 15-inch bit assembly. Cuttings initially consisted of cement from 695 feet 720 feet bpl. From 723 feet to 743 feet cuttings consisted of loose marly limestone and fluid returns were mainly thick drilling mud. Cuttings are likely settled solids from previously drilled material. Drilling from 743 to 773 was through very porous limestone until the formation became marly with clay from 773 to 775. Cuttings samples were collected every 5 feet from 745 to 775. Reverse-air water samples were collected at 750, 760, 770, and after the return fluid had cleared at the TD of 775 feet bpl. Samples were analyzed for conductivity and chlorides.
Sunday 08/21/05	SWS perform rig maintenance and general site cleanup.
Monday 08/22/05	SWS crew kill the well pumping approximately 3500 gallons of brine solution (weight of 9.8 lbs./gal.) using 250 bags of salt. The drill string is tripped out to the first heavyweight pipe and the well shut-in.
Tuesday 08/23/05	SWS crew work with logger (MV Geo) and perform full suite of geophysical logs to include: caliper, natural gamma ray, dual induction, fluid conductivity/temperature, borehole-compensated sonic, static and dynamic flow logs, and video survey. The bottom of the open-hole section is tagged at 776 feet bpl. Production casing is visually confirmed at a depth of 694 feet bpl. Of note, before performing the dynamic flow log, approximately 7000 gallons of brine was pumped to the mud collection tank before conveying the flow from the well to the waste line (Henderson

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 08/26/05** **Week #58**

Date	Description of Activities
	Creek). Before flowing water to Henderson Creek, samples of well water were collected and field-tested to confirm stabilization and background conditions (conductivity reading recorded at 2200 uS/cm). A centrifugal pump was used during the dynamic flow log and video survey. A total volume of 139,450 gallons of water was pumped (and conveyed to Henderson Creek) at a pumping rate ranging between 720 and 750 gpm during these last two logging events. SWS crew secured the wellhead after all logging was completed.
Wednesday 08/24/05	SWS crew disengage the hose connecting the wellhead to the flow meter and waste line and secure the well. WRS staff purge and sample the pad monitoring wells.
Thursday 08/25/05	No site activity.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 08/19/05** **Week #57**

Date	Description of Activities
Friday 08/12/05	No site activity.
Saturday 08/13/05	No site activity.
Sunday 08/14/05	No site activity.
Monday 08/15/05	SWS removed the cementing header from ASR-6 and tripped open ended drill pipe to a reported tag depth of 670 feet bpl. SWS flushed drilling mud from the inside of the casing.
Tuesday 08/16/05	SWS tripped the drill string out of the well and observed the well start to flow from artesian pressure. SWS installed the drill through rubber system on the wellhead. SWS mixed two batches of approximately 200 gallons of water combined with 850 lbs. of salt. Both batches were pumped down a single 30 foot long section of open ended drill pipe inserted into the top of the well through the drill through rubber. After this operation failed to suppress the well, SWS tripped the open ended drill pipe to 190 feet bpl. SWS mixed three batches of 700 gallons of water and 2000 lbs. of salt each and pumped each batch into the wellhead from the top while allowing fluid to be released from the well up through the drillstring. An artesian head of 17 feet apl was measured at the wellhead. The well was shut in for the night.
Wednesday 08/17/05	SWS reported that artesian pressure was suppressed upon their arrival to the site. SWS removed the drill through rubber system and tripped in a 15-inch bit assembly. SWS reinstalled the drill through rubber system and tripped the drill string to a depth of 598 feet bpl. SWS installed 240 feet of 1-inch PVC airline inside the drill string and configured the discharge piping for reverse-air drilling. SWS circulated while lowering and raising the bit through a section of casing from 598 to 633 feet bpl. Air compressor problems delayed further site activity. The well was shut in for the night.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 08/19/05 **Week #57**

Date	Description of Activities
Thursday 08/18/05	SWS repaired the malfunctioning air compressor and reconfigured the discharge piping to Henderson Creek. ASR-6 remained shut in. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 08/12/05** **Week #56**

Date	Description of Activities
Friday 08/05/05	Southern Well Services advanced 1 ¼-inch tremie line to 480 ft. in the ASR-6 annulus. SWS added a mixture of 600 gals. of water and 100 lbs. of bentonite to a 14.3 lb/gal wt. slurry containing 308 sks. of neat cement delivered by Rinker. SWS positioned the tremie at successively higher depths of 457, 415, 373, and 331 ft. bpl. and pumped 4 cement stages of approximately 77 sks. each. Cement weights of 13.8, 13.9, 13.5, and 13.7 lbs./gal. were measured for the 4 stages. Cement returns were observed at the end of the 4rth stage. SWS raised the tremie to 273 ft. and circulated approximately 7000 gals. of drilling fluid down the annulus. Fluid returns at the surface consisted of cement mixed with drilling solids and were pumped to waste. SWS tripped out the tremie pipe and shut the well in for the night.
Saturday 08/06/05	A temperature log was run which indicated an estimated cement top from the initial pressure grouting at 530 ft. and a tremie grout top at 277 ft.
Sunday 08/07/05	No site activity
Monday 08/08/05	SWS attached a swivel header to the 1 ¼-inch tremie pipe and jetted it down to 189 feet bpl. while circulating water.
Tuesday 08/09/05	SWS washed the tremie to 280 ft. then pulled it up to 252 ft. before pumping a 14.5 lb./gal. wt. neat cement slurry of 154 sks. prepared by Rinker. Cement returns were observed at the surface.
Wednesday 08/10/05	A temperature log of the well was performed. The well was shut in for the weekend.
Thursday 08/11/05	No site activity by SWS. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 08/08/05** **Week #55**

Date	Description of Activities
Friday 07/29/05	No site activity
Saturday 07/30/05	No site activity
Sunday 07/31/05	No site activity
Monday 08/01/05	Southern Well Services arrived at the well and observed positive pressure on the wellhead. SWS delivered drilling mud to the jobsite and began mixing drilling fluid. The well remained shut in.
Tuesday 08/02/05	SWS pumped heavy drilling fluid down the drill string with the bit positioned at 360 feet bpl. After pumping approximately 14,000 gallons of mud the well was suppressed. SWS reamed and tripped the 25-inch drill string to the bottom of the borehole at 738 feet bpl. SWS drilled an additional 5 feet of borehole to a depth of 743 feet bpl. SWS began tripping the drill string from the well. Operations continued overnight.
Wednesday 08/03/05	After the drill string was tripped entirely from the well, geophysical logging was attempted. The logging tool could not be lowered deeper than 393 feet bpl. SWS reamed and tripped the drill string back to the bottom of borehole and conditioned the drilling mud. After the drill string was tripped from the borehole, three geophysical logging tools were lowered to 742 feet bpl. XY Caliper, Natural Gamma, Dual Induction, and Borehole Compensated Sonic logs were recorded. Logging operations continued throughout the night.
Thursday 08/04/05	The geophysical logs were evaluated and a casing depth was determined. The logs and drilling data were submitted to FDEP for casing setting approval. After FDEP approval was received, SWS installed 734 feet of 17.4-inch O.D. SDR 17 PVC well casing in the 25-inch borehole. SWS installed a pressure header on the PVC casing and tripped 714 feet of 1.25 inch diameter tremie pipe through

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 08/08/05** **Week #55**

Date	Description of Activities
Thursday 08/04/05	the header into the casing. SWS pressure grouted the first cement stage. SWS mixed and pumped a 235 sack neat portland cement slurry down the tremie. Cement weights ranged from 13.5 to 14.8 lbs/gal during the pressure grouting operation. Following cementing, SWS pumped a displacement slug of 300 gallons of water down the tremie and immediately sealed the casing under pressure. After 4 hours, the pressure was relieved and the tremie pipe was tripped from the casing. The well was then shut in. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 07/29/05** **Week #54**

Date	Description of Activities
Friday 07/22/05	SWS cleaned the 25-inch borehole from 340 feet to 425 feet then reamed cement from 425 feet to 455 feet. SWS drilled original 25-inch borehole from 455 feet through this night. SWS collected two bacteriological clearance samples from ASR-8.
Saturday 07/23/05	SWS continued drilling the 25-inch borehole to a total depth of 738 feet bpl. Drilling fluid weights between 10 and 10.8 lbs. per gallon were recorded. SWS circulated the drilling fluid through this night. SWS collected two bacteriological clearance samples from ASR-8.
Sunday 07/24/05	SWS tripped the drillstring up to 135 feet and noted resistance to lifting the bit in sections of the borehole. SWS conditioned the drilling fluid and re-reamed the borehole through this night. SWS collected two bacteriological clearance samples from ASR-8.
Monday 07/25/05	SWS finished re-reaming to 738 feet bpl. and reported resistance to reaming in sections of the borehole. SWS continued circulating drilling fluid through this night. SWS collected two bacteriological clearance samples from ASR-8.
Tuesday 07/26/05	SWS tripped out the drillstring and reported additional drag on the bit through sections of the borehole. Geophysical logging was aborted after the caliper/gamma tool could not penetrate below 156 feet bpl. SWS re-reamed the borehole and reported that sections of the borehole required cutting. SWS decided to entirely replace the drilling fluid and tripped the drillstring up. The well was shut in with the bit assembly inside the surface casing. SWS collected two bacteriological clearance samples from ASR-8. Total trihalomethane samples were collected from ASR-8.
Wednesday 07/27/05	SWS collected two bacteriological clearance samples from ASR-8. ASR-6 remained shut in and suppressed.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 07/29/05** **Week #54**

Date	Description of Activities
Thursday 07/28/05	SWS collected two bacteriological clearance samples from ASR-8. ASR-6 remained shut in; however, fluid suppression deteriorated and a hydrostatic head of 20 feet apl was measured at the wellhead. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 07/22/05** **Week #53**

Date	Description of Activities
Friday 07/15/05	SWS prepared 12 batches of 750 gallons each of 100 ppm chlorine solution using sodium hypochlorite and water and injected the solution into the ASR-8 wellhead. ASR-6 remained shut in.
Saturday 07/16/05	No site activity
Sunday 07/17/05	No site activity
Monday 07/18/05	SWS cleared ASR-8 for bacteriological testing. SWS stirred the mud in the mud system at ASR-6. ASR-6 remained shut in.
Tuesday 07/19/05	SWS collected two bacteriological clearance samples from ASR-8. ASR-6 remained shut in.
Wednesday 07/20/05	SWS collected two bacteriological clearance samples from ASR-8. SWS had another 21K gallon fluid storage tank delivered to the site.
Thursday 07/21/05	SWS prepared 14,000 gallons of drilling mud weighing 9.5 lbs. per gallon and pumped this mud into a storage tank. SWS mixed another 7000 gallons of drilling mud weighing 9.5 pounds per gallon in the active mud system. SWS tripped the drill string into ASR-6 and tagged fill material at 340 feet bpl. in the 425-foot borehole. SWS raised the bit to 322 feet and circulated drilling mud downhole. Fluid returns were initially pumped into a storage tank for disposal. After 14,000 gallons of fluid had been pumped downhole, fluid returns reached a weight of 9.2 lbs. per gallon and SWS routed the returns into the active mud system. Artesian flow at ASR-6 was suppressed by filling the borehole with weighted drilling fluid. SWS began reaming ASR-6 and worked continuously through the night. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 07/15/05** **Week #52**

Date	Description of Activities
Friday 07/08/05	SWS reconfigured and reinforced the berm around ASR-6. SWS moved the replacement mud trailer into position. SWS performed general site cleanup and rig maintainence. The well remained shut in.
Saturday 07/09/05	No site activity
Sunday 07/10/05	No site activity
Monday 07/11/05	SWS transported a skid mounted centrifugal pump to the job site and connected the mud system. Water samples were collected from ASR-5 and from Marco Lakes raw water for giardia/cryptosporidum analysis, e. coli, enterrococci, and fecal coliform analysis.
Tuesday 07/12/05	SWS completed the assembly of the mud system and began to prepare drilling fluid.
Wednesday 07/13/05	SWS pumped approximately 7300 gallons of 9.4 lb. per gallon drilling mud into ASR-6 through a 2-inch port at the wellhead. The drill string at 230 feet bpl discharged to a storage tank. The well remained suppressed for approximately 1 hour before it came alive. SWS prepared a second batch of drilling mud weighing 9.4 lbs per gallon and then pumped approximately 4000 gallons down the string with the bit located at 260 feet bpl. Returns were routed back to the mud tank. The return rate exceeded the pumping rate and the mud system overflowed. SWS stopped pumping after approximately 10 minutes and failed to suppress the well. A reading of aprroximately 15 feet above pad level was observed on the manometer 5 minutes after pumping was stopped. The well was shut in for the night.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 07/15/05** **Week #52**

Date	Description of Activities
Thursday 07/14/05	SWS added weighting material to the drilling mud in the system. ASR-6 remained shut in. SWS pumped approximately 100,000 gallons of water from ASR-8 to Henderson Creek in order to completely flush the well before disinfection. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 07/08/05** **Week #51**

Date	Description of Activities
Friday 07/01/05	No site activity. Southern Well Services worked off-site in preparation to adapt their mud treatment system.
Saturday 07/02/05	No site activity
Sunday 07/03/05	No site activity
Monday 07/04/05	No site activity
Tuesday 07/05/05	SWS removed the trailer mounted drilling mud treatment system from the jobsite. ASR-6 remained shut in.
Wednesday 07/06/05	No site activity
Thursday 07/07/05	SWS delivered a replacement trailer mounted drilling mud treatment system to the jobsite. The well remained shut in. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 07/01/05 **Week #50**

Date	Description of Activities
Friday 06/24/05	Southern Well Services reamed the borehole with the 25-inch bit from 362 to 424 feet bpl. Drilling fluid circulation and flow suppression were maintained throughout the day's activities. The well was shut in for the weekend.
Saturday 06/25/05	No site activity
Sunday 06/26/05	No site activity
Monday 06/27/05	When SWS arrived on site, there was approximately 10-psi pressure at the wellhead. SWS pumped approximately 5000 gallons of drilling fluid (9.3 lbs. per gallon) through the drill string with the bit positioned between 170 and 200 feet bpl without suppressing the wellhead pressure. SWS next positioned the bit at 260 feet bpl and pumped approximately 2500 gallons of drilling fluid (9.7 lbs per gallon). This operation failed to suppress artesian pressure at the wellhead. SWS then tripped the drill string down to 385 feet bpl and pumped approximately 2500 gallons of drilling fluid down the casing from the top through a 2-inch port. The drill string was left open during this operation and no fluid returned from the drill string. The bit was tripped up to 196 feet bpl and the well was shut in for the night.
Tuesday 06/28/05	No site activity
Wednesday 06/29/05	No site activity

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WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 07/01/05 **Week #50**

Date	Description of Activities
Thursday 06/30/05	SWS delivered drilling mud products to the site and cleaned out the mud system and 21,000 gallon storage tank. A subcontractor hauled three 4800-gallon loads of drilling fluid and semisolids from the site. The well remained shut in. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 06/24/05** **Week #49**

Date	Description of Activities
Friday 06/17/05	Southern Well Services tripped the drill string in to tag the top of the cement pumped on Wednesday 6/15. The top of the cement was tagged at 300 feet bpl. SWS reamed from 300 to 400 feet bpl. The bit was tripped up to 135 feet bpl and the well was shut in for the night.
Saturday 06/18/05	No site activity
Sunday 06/19/05	No site activity
Monday 06/20/05	When SWS arrived in the morning, there was positive pressure on the wellhead. SWS pumped heavy drilling fluid (9.8 lbs. per gallon) through the drill string with the bit positioned at 264 feet bpl. After pumping approximately 3000 gallons of drilling mud and not getting any returns at the surface, SWS tripped the drill string down to 392 feet bpl and pumped another 3000 gallons of drilling mud with no circulation or returns. SWS then pumped a total of 7 cubic yards (154 sacks) of neat Portland cement grout at two separate depths. The bit was initially positioned at 351 feet bpl and 3.5 yards were pumped. The bit was then tripped up to 322 feet where the remaining grout was pumped. No fluid returned at the surface during this cementing operation. The bit was tripped up to 196 feet bpl and the well was shut in for the night.
Tuesday 06/21/05	The fluid level in the well was below the top of the casing when SWS arrived on site. After encountering resistance in the borehole while attempting to trip in the drill string to tag the cement, SWS attempted to circulate drilling mud but could get no returns. SWS then tripped the drill string entirely out of the well. However, when tripping out, drilling fluid would occasionally flow from the wellhead. The drilling fluid returning was due to suction of the withdrawing drill string. Periodically while tripping the drill sting, SWS would ream to enlarge the borehole to prevent creating suction. However, SWS was unable to re-establish drilling fluid circulation during the reaming or while

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ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 06/24/05** **Week #49**

Date	Description of Activities
Tuesday 06/21/05 (cont.)	removing the drill string. After removing the drill string and inspecting the bit assembly, SWS cleaned the borehole by repeatedly reaming from the base of the surface casing down to 165 feet bpl. Circulation was restored during this operation. The well was shut in for the night.
Wednesday 06/22/05	SWS continued to circulate drilling fluid and clean the borehole down to the top of the cement. The cement was tagged 305 feet bpl. SWS reamed the cement from 300 to 325 feet bpl where circulation was lost. SWS pumped a total of 7 cubic yards of neat Portland cement grout in two separate slugs at 290 and 225 feet bpl. No fluid returns were noted at the surface during cementing. The drill string was tripped up to 170 feet bpl and the well was shut in for the night.
Thursday 06/23/05	SWS tagged the top of the cement at 285 feet bpl and reamed the borehole to 362 feet bpl. Circulation was maintained during this operation and the well remained suppressed. The well was shut in for the night. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 06/17/05** **Week #48**

Date	Description of Activities
Friday 6/10/05	No site activity due to flooding rains from tropical storm.
Saturday 6/11/05	No site activity.
Sunday 6/12/05	No site activity.
Monday 6/13/05	Southern Well Services (SWS) arrives at the well site to discover positive pressure on the wellhead. Heavy drilling fluid (9.5 lbs/gal) is pumped down the well from the top to suppress the artesian flow. Reaming operations resume to the last reamed depth of 455 feet bpl where circulation is lost. SWS pumps a 7-cubic yard (154 sacks) neat Portland cement slug down the drill string with the bit positioned at a depth of 420 feet bpl. Recorded cement weight values range from 14.7 to 15.3 pounds per gallon. Approximately 1,700 gallons of water is pumped down the drill string as flush water immediately following the cementing. The drill string is tripped out to the first heavyweight pipe and the well mechanically shut in for the night.
Tuesday 6/14/05	SWS arrives on site to discover the well no positive pressure on the manometer or water flow from the opened 10-inch valve. Heavy mud is mixed and circulated as reaming operations resume. Circulation is lost while cleaning out the previously reamed hole at a depth of 362 feet bpl. SWS prepares to pump a 7-cubic yard slug of neat cement when the air compressor fails while pumping the freshwater pre-flush. The drill string is tripped out to the first heavyweight pipe and the well mechanically shut in for the night. Static water levels are measured at pad monitor wells MW-1 and MW-2 at the ASR Well 6 site. Water is sampled from each well immediately following required well purging and field tested for pH, temperature, conductivity, and chloride concentration. The pad monitor wells at the ASR Well 8 site were not sampled due to flooded conditions.

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WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Frank Procta **Date: 06/17/05** **Week #48**

Date	Description of Activities
Wednesday 6/15/05	SWS arrives on site to discover the well no positive pressure on the manometer or water flow from the opened 10-inch valve. SWS pumps a 7-cubic yard (154 sacks) neat Portland cement slug down the drill string with the bit positioned at a depth of 327 feet bpl. Approximately 1,700 gallons of water is pumped down the drill string as flush water immediately following the cementing. The drill string is tripped out to the first heavyweight pipe and the well mechanically shut in for the night.
Thursday 06/16/05	SWS circulates mud and trips in drill pipe to a depth of 299 feet bpl. Operations are suspended as repairs are made to linkage to the rig's transmission. The rest of the day is spent with other repairs including changing out bearings to the main mud pump.

WATER RESOURCE SOLUTIONS, INC.

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EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 06/10/05** **Week #47**

Date	Description of Activities
Friday 06/03/05	The ASR-6 borehole was observed to be under artesian pressure. The contractor performed site cleanup. The well was left shut in for the weekend.
Saturday 06/04/05	No site activity
Sunday 06/05/05	No site activity
Monday 06/06/05	The contractor delivered materials to the site. The well remained shut in.
Tuesday 06/07/05	SWS circulated a drilling mud weighing 9.8 lbs per gallon but was unable to suppress the artesian flow of the well. SWS pumped a neat cement slurry prepared and delivered by Rinker containing 154 sacks of portland. The slurry volume was 7 cubic yards and weighed 14.4 lbs. per gallon. The bit was positioned at 295 feet bpl as the cement was pumped down the drill string. Artesian flow of the well was suppressed by the cement. The well was shut in for the night.
Wednesday 06/08/05	SWS tagged the top of the cement at 310 feet bpl and reamed the cement from the 25-inch borehole to 330 feet. The well was shut in for the night.
Thursday 06/09/05	SWS reamed the previously cemented 12.5-inch pilot hole from 330 feet to a depth of 405 feet using the 25-inch bit. SWS continued drilling beyond the original pilot hole to a depth of 455 feet bpl. SWS performed deviation surveys at 360 and 450 feet bpl. Both surveys recorded inclination angles of 0.5 degrees from the vertical. SWS trimmed off the top of the surface casing at ASR-8 and topped off the annular cement. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 06/03/05 **Week #46**

Date	Description of Activities
Friday 05/27/05	The ASR-6 borehole was observed to be under artesian pressure. SWS pumped a slurry containing a total of 154 sacks of portland cement that had been prepared by Rinker. The bit was positioned at approximately 270 feet bpl while SWS pumped the first 80 sacks of cement down the drillstring. The bit was raised to approximately 230 feet and SWS pumped the remaining 74 sacks. The drill string was flushed with approximately 3000 gallons fresh water and the bit was raised to approximately 140 feet. The well was shut in for the weekend.
Saturday 05/28/05	No site activity
Sunday 05/29/05	No site activity
Monday 05/30/05	No site activity
Tuesday 05/31/05	SWS tagged the top of cement in the 25-inch borehole at 280 feet bpl. SWS reamed out the cemented hole from 280 to 330 feet bpl. SWS performed an inclination survey at 270 feet bpl and measured a deviation of 0.75 degrees from the vertical. The well was shut in for the night.
Wednesday 06/01/05	No site activity due to rain. Artesian pressure was evident at the wellhead.
Thursday 06/02/05	Artesian head of approximately 20 feet apl was observed at the wellhead. SWS reamed the pilot hole from 330 to 333 feet and was unable to suppress artesian flow from the well during drilling. The well was shut in for the night. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELLS 6 & 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005 &7-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 05/27/05** **Week #45**

Date	Description of Activities
Friday 05/20/05	The ASR-6 reamed 25-inch borehole to 299 feet was observed to be under artesian pressure. SWS was unable to suppress the artesian pressure by circulation of drilling fluid. SWS pumped a slurry containing a total of 230 sacks of portland cement into the borehole. The bit was positioned at approximately 270 feet bpl while SWS pumped the first 130 sacks of cement down the drillstring. The bit was raised to approximately 180 feet and SWS pumped the remaining 100 sacks. The drill string was flushed with fresh water and the bit was raised to approximately 120 feet. Drilling mud was circulated through the borehole for 10 minutes and the well was shut in for the weekend. Artesian flow was suppressed.
Saturday 05/21/05	No site activity
Sunday 05/22/05	No site activity
Monday 05/23/05	SWS prepared drilling mud for reaming the cemented borehole.
Tuesday 05/24/05	SWS tagged the top of cement in the 25-inch borehole at 197 feet bpl. SWS reamed out the cemented hole from 197 to 265 feet bpl. The well was shut in for the night.
Wednesday 05/25/05	SWS reamed the borehole from 265 to 295 feet bpl. The well exhibited artesian flow at the surface and was shut in for the night.
Thursday 05/26/05	SWS began reaming the pilot hole from 295 feet and lost circulation of drilling fluid. SWS stopped reaming at 297 feet bpl and shut the well in for the night. At ASR-8, SWS performed a rough grading of the well site. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELLS 6 & 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005 &7-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 05/20/05** **Week #44**

Date	Description of Activities
Friday 05/13/05	Southern Well Services (SWS) continued to work on the drill rig. ASR-6 was left shut in for the weekend.
Saturday 05/14/05	No site activity
Sunday 05/15/05	No site activity
Monday 05/16/05	At ASR-8, SWS adjusted the wellhead so that the discharge is aligned with ASR-5 and ASR-2. SWS introduced 250 lbs of salt to the wellhead to suppress artesian flow. SWS leveled the wellhead and attached a 12-inch butterfly valve to the horizontal discharge port of the wellhead. SWS jetted drilling mud from the upper annulus and then tremie grouted 30 sacks of portland cement slurry into the annulus until cement returned at the surface. At ASR-6, SWS cemented the pilot borehole with 160 sacks of neat portland cement. SWS pumped an initial cement stage containing 100 sacks through the drill string with the bit at 370 feet bpl. The string was then raised to 246 feet and another stage of cement was pumped containing 60 sacks of cement. ASR-6 was shut in for the night.
Tuesday 05/17/05	SWS tagged the top of cement in ASR-6 at 280 feet bpl. SWS tripped the entire drill string from the well and assembled a 25-inch bit and stabilizer assembly. ASR-6 was shut in for the night using a capped length of drill pipe through the drill-through rubber bolted to the wellhead.
Wednesday 05/18/05	SWS began reaming the 12-inch pilot hole with the 25-inch diameter bit assembly. SWS reamed the pilot hole to 205 feet bpl and performed an inclination survey at 90 feet bpl. The inclination survey measured a deviation of 0.5 degrees from the vertical. The well was

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ASR WELLS 6 & 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005 &7-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 05/20/05 **Week #44**

Date	Description of Activities
	shut in for the night with the drill string in the drill-through rubber.
Thursday 05/19/05	SWS performed an inclination survey at 180 feet and measured a deviation of 0.0 degrees from the vertical. SWS reamed the pilot hole from 205 to 299 feet bpl. Cement was encountered at 280 feet bpl. The well was shut in for the night. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit Nos. 141218-005 &7-UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 05/12/05** **Week #43**

Date	Description of Activities
Friday 05/06/05	Southern Well Services (SWS) delivered a stainless steel adapter to connect the 16-inch PVC casing to the permanent wellhead at ASR-8. SWS continued to fix the drill rig at ASR-6 with the derrick down. The well was left shut in for the weekend.
Saturday 05/07/05	No site activity
Sunday 05/08/05	No site activity
Monday 05/09/05	SWS tagged the annular cement at 25 feet below pad level at ASR-8. SWS jetted drilling mud from the annulus and cut and dressed the top surface of the 26-inch surface casing.
Tuesday 05/10/05	SWS welded an extension on the 26-inch surface casing at ASR-8 and then attached the adapter and the permanent well head to the PVC casing.
Wednesday 05/11/05	SWS set up the cement pumping rig at ASR-8 and continued to work on the drilling rig at ASR-6
Thursday 05/12/05	SWS continued to work on the drilling rig at ASR-6. The well at ASR-6 remained shut in. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 05/06/05** **Week #42**

Date	Description of Activities
Friday 04/29/05	Southern Well Services (SWS) tagged the top of the cement backfill in the pilot hole at 305 feet bpl. The artesian head was measured at 7 feet above the pad level. SWS pumped 70 sacks of cement through the drill string with the bit at 272 feet bpl. The drill string was partially tripped from the borehole and the cement was chased. The well was shut in for the weekend.
Saturday 04/30/05	No site activity
Sunday 05/01/05	No site activity
Monday 05/02/05	SWS tagged the top of the cement with the drill bit at 208 feet bpl. SWS drilled out the pilot hole cement backfill to a depth of 270 feet bpl. SWS pumped approximately 3000 gallons of cement contaminated drilling mud to a storage tank. The well was shut in for the night.
Tuesday 05/03/05	SWS drilled out the cement in the pilot hole from 270 feet to 312 feet bpl. The 12.5-inch pilot hole was then advanced to 405 feet bpl. Mechanical problems with the drilling rig precluded further drilling. The drill string was tripped partially from the borehole, the mast was lowered, and the well was shut in.
Wednesday 05/04/05	SWS worked on mechanical problems with the drill rig. ASR-6 remained shut in.
Thursday 05/05/05	Artesian pressure was observed at the wellhead at ASR-6. SWS continued to work on the drill rig. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6 and 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 & -008 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/29/05** **Week #41**

Date	Description of Activities
Friday 04/22/05	Southern Well Services (SWS) advanced the 12.5-inch pilot borehole from 157 to 281 feet bpl. Drilling fluid loss was noticed during the course of drilling. Additional drilling fluid was added. Mud weights of 8.9, 9.0, 8.6, and 9.1 lbs/gal were measured. An inclination survey was performed at 180 feet. A deviation of 0.5 degrees was measured. The drill string was partially tripped from the borehole and the bit was left at 122 feet bpl. The well was shut in for the weekend.
Saturday 04/23/05	No site activity
Sunday 04/24/05	No site activity
Monday 04/25/05	SWS tripped the drill string to the bottom of the borehole at 281 feet bpl, circulated drilling mud, and tripped back up in the borehole. The well was shut in for the night. An electrician was onsite to work on an electric motor on the mud system.
Tuesday 04/26/05	SWS advanced the 12.5-inch pilot borehole to 312.5 feet below pad level. Circulation was lost after the bit dropped quickly through the interval from 300-306 feet bpl. Circulation was regained briefly and the borehole was advanced to 310. The borehole was advanced with no returns from 310 to 312.5 feet bpl. Drilling mud began to flow from the borehole within 20 minutes of the end of drilling. The drill string was partially tripped out and then the well was shut in for the night. A fluid level of 7.1 feet above pad level was recorded.
Wednesday 04/27/05	SWS considered pumping cement to seal off the lost circulation zone. However, the cementing was postponed, as sufficient cement was not available on site. The fluid level was measured at 23 feet above pad level. The well was left shut in for the night.

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ASR WELL 6 and 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 & -008 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/29/05** **Week #41**

Date	Description of Activities
Thursday 04/28/05	SWS pumped 120 sacks of cement through the drill string into the pilot hole. The bit was initially positioned at 280 feet bpl and 50 sacks of cement were pumped. The drill string was then raised to 250 feet bpl and an additional 70 sacks of cement were pumped. The flow from the well was suppressed after pumping the initial 50 sacks of cement. The bit was raised to 210 feet bpl and approximately 300 gallons of drilling mud was pumped to displace the cement in the drill string. The bit was tripped up to 122 feet bpl and the well was shut in. After approximately 5 hours, the fluid level at the ASR-6 wellhead was 7.2 feet above pad level. The well was left shut in for the night. Metron Surveyors of Fort Myers determined the 8-foot NGVD elevation at ASR-8. The elevation was marked on a stake next to the well. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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FDEP Permit No. 141218-005 & -008 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/22/05** **Week #40**

Date	Description of Activities
Friday 04/15/05	Southern Well Services (SWS) repaired the mud system centrifugal pump. A subcontractor pumped approximately 15,000 gallons of salt water from the storage tank and hauled it off site.
Saturday 04/16/05	No site activity
Sunday 04/17/05	No site activity
Monday 04/18/05	SWS cut off the 4-inch PVC casings of the monitor wells at ASR-8 and placed manhole enclosures over the wellheads. SWS began jetting mud from the storage tank.
Tuesday 04/19/05	SWS constructed concrete pads measuring 2'x2'x6" around the pad monitor well enclosures at ASR-8. The top of casing elevations were adjusted to account for the removed portions of the casings. The new TOC elevations are recorded on the monitor well water quality form. SWS jetted mud from the storage tank and a subcontractor hauled approximately 5000 gallons of mud off site for disposal.
Wednesday 04/20/05	SWS installed a new centrifugal pump and cleaned out clogged desilter cones on the mud system.
Thursday 04/21/05	SWS drilled the 12.5-inch pilot hole for ASR-6 from 50 feet to 157 feet bpl. Limestone was encountered from 50 to 130 feet. Clay, phosphatic sand, siltstone, and quartz sand were observed from 130 to 157 feet. An inclination survey was conducted at 90 feet bpl. The measured deviation was 0.5 degrees. SWS attached the drill through rubber to the wellhead, and shut the well in for the night. The static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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EXPANSION PROJECT
ASR WELL 6 and 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 & -008 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/15/05** **Week #39**

Date	Description of Activities
Friday 04/08/05	Southern Well Services (SWS) serviced the drilling rig.
Saturday 04/09/05	No site activity
Sunday 04/10/05	No site activity
Monday 04/11/05	SWS flushed ASR-8 at approximately 240 gpm for 2 hours before collecting water samples for all primary and secondary drinking water parameters plus TKN. The samples were shipped overnight to Harbor Branch laboratories for analysis. A single NPDES compliance sample was also collected for hexavalent chromium and shipped to Sanders Laboratories.
Tuesday 04/12/05	SWS suppressed the artesian flow at ASR-8 by pumping 1400 gallons of 9.8 lb/gal brine containing 4000 lbs of salt. SWS cut the header from the surface casing at ASR-8 and then reinstalled it on the surface casing at ASR-6. SWS installed a temporary steel header on the PVC casing at ASR-8. At DZ-1, SWS flowed 9200 gallons to discharge to flush residual salt solution from the well. The flow rate stabilized at 74 gpm and conductivity was 3560 µS/cm yet still decreasing when the well was shut in.
Wednesday 04/13/05	SWS flowed 60,000 gallons of water from DZ-1. Conductivity was measured at 2570, 2280, and 2020 µS/cm over the course of the day. At ASR-6, SWS connected a skid mounted centrifugal pump to the mud system. The contractor started drilling the pilot hole but stopped after 2 feet due to a leaking kelly swivel. The contractor replaced the swivel packing and worked on the mud system. SWS adjusted the wellhead piping at DZ-1 to allow for the vault lid to shut without hitting the piping.

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ASR WELL 6 and 8

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FDEP Permit No. 141218-005 & -008 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/15/05** **Week #39**

Date	Description of Activities
Thursday 04/14/05	SWS flowed 21,400 gallons of water from DZ-1 to discharge. An initial conductivity of 1880 µS/cm was measured with a conductivity of 1659 µS/cm recorded after flowing 16,600 gallons. A final conductivity of 1674 µS/cm was recorded when the well was shut in. SWS continued to work on maintenance and repairs of the centrifugal pumps on the mud system. Static water levels were measured in the pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

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Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 & -007 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/08/05** **Week #38**

Date	Description of Activities
Friday 04/01/05	Southern Well Services (SWS) moved the trailer mounted mud system to the site of ASR-6 and connected the piping and power for the system. SWS connected a 14.75-inch lead bit to a 35-inch hole opener in preparation for setting surface casing at ASR-6.
Saturday 04/02/05	No site activity
Sunday 04/03/05	No site activity
Monday 04/04/05	Southern Well Services (SWS) installed the precast concrete well vault and lid at the DZMW. SWS cut the 6-inch casing down to approximately 2 feet above pad level and installed a 10"X10"x4" schedule 80 PVC tee. The well remained suppressed and was shut in for the night. At ASR-6, SWS mixed drilling mud and drilled a 35-inch borehole to 7 feet bpl.
Tuesday 04/05/05	SWS pumped approximately 2,000 gallons of brine from the top of ASR-8 into a storage tank, then flowed 6000 gallons to storage under artesian pressure. After conductivity reached 3.65 mS/cm, flow was directed through a meter to the Henderson Creek discharge line. Conductivity stabilized at 3.51 mS/cm and ASR-8 was shut in after 31,520 gallons of water was discharged to Henderson Creek.. SWS installed a 6-inch riser to 24 feet above the wellhead to facilitate geophysical logging. MVGS performed a video survey and caliper/gamma log of the entire well; then borehole compensated sonic and dual induction logs on the open hole section only, all under static conditions. Flowmeter and fluid resistivity logging was performed under static and flowing conditions. ASR-8 was shut in for the night. At ASR-6, SWS drilled a 35-inch borehole from 7 to 50 feet bpl. and welded a cementing header to the 26-inch surface casing.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 6 and 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-005 & -007 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date:** 04/08/05 **Week #38**

Date	Description of Activities
Wednesday 04/06/05	SWS installed 50 feet of 26-inch OD X 0.375-inch wall steel suface casing to 47 feet bpl. SWS then pressure grouted this casing in place using 5 cubic yards or 100 sacks of neat cement mixed and delivered by Rinker. The casing was left pressurized for 4 hours prior to removal of the cementing tubing. Two representatives from Baroid, one from Petro Equipment International, and one from WaterBoyz International were onsite. At the DZMW the sample tap piping was completed and the well vault position was adjusted. DZMW remained suppressed and was shut in for the night.
Thursday 04/07/05	At ASR-6, SWS cut the cementing header off of the surface casing and tripped in a 25-inch bit with a 14.75-inch lead stinger. The cement top was tagged at 43 feet then drilled out to 52 feet. After the surface piping was completed, DZ-1 was flowed and artesian head restored.. The static water levels were measured in the four pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-007 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/01/05** **Week #37**

Date	Description of Activities
Friday 03/25/05	Southern Well Services (SWS) removed the DZMW wellhead and ran ½-inch tremie pipe to 90 feet below pad level to tag the top of the cement in the shallow zone portion of the well. SWS then pumped approximately 16 sacks of 13.8 lbs/gal neat cement to complete the well plugging. Cement returns were observed at the surface. The contractor replaced the existing wellhead and shut all valves.
Saturday 03/26/05	No site activity
Sunday 03/27/05	No site activity
Monday 03/28/05	SWS purged ASR-8 for close to 1.5 hours at approximately 250 gpm. NPDES permit compliance samples were collected at the end of purging. SWS mixed and pumped a saturated brine solution containing 2,100 lbs of salt into ASR-8. SWS mixed and pumped another brine solution containing 2,100 pounds of salt into ASR-8 to suppress the well. SWS removed the test pump from the well and then mechanically shut the well in for the night.
Tuesday 03/29/05	SWS lowered the derrick on the drill rig and moved it off the ASR-8 site. The rig substructure and the sump were also removed from ASR-8. SWS continued to prepare the pad at ASR-6.
Wednesday 03/30/05	SWS finished pad preparations at ASR-6. The drill rig was moved onto the pad and spotted over the well location previously staked by Metro Surveyors. The contractor moved the doghouse to the site of ASR-6 and set it up inside the drilling pad adjacent to the drilling rig. SWS removed the mud system from the pad area at ASR-8.

WATER RESOURCE SOLUTIONS, INC.

WEEKLY REPORT
MARCO LAKES ASR
EXPANSION PROJECT
ASR WELL 8

Marco Island Utilities
Marco Lakes ASR Expansion **Project No. 01-04773.HO**

FDEP Permit No. 141218-007 UC **Contractor: Southern Well Services**

Prepared by: Andy McThenia **Date: 04/01/05** **Week #37**

Date	Description of Activities
Thursday 03/31/05	SWS used lake water to flush drill cuttings from the mud system. These cuttings are to be used as fill during the final site grading at ASR-8. The contractor then towed the mud system trailer to the ASR-6 site and positioned it adjacent to the drill rig just outside of the drilling pad. The static water levels were measured in the four pad monitor wells at ASR-8 and ASR-6. The wells were then purged and sampled. Field water quality analyses were performed for the following parameters: pH, temperature, conductivity, and chloride concentration.

APPENDIX 3.2
COLLIER COUNTY APPLICATION AND PERMIT FOR PAD MONITOR WELLS

orig to Jeff Bau 2/25/05 TO Tom @ Marco

STATE OF FLORIDA PERMIT APPLICATION TO CONSTRUCT, REPAIR, MODIFY, OR ABANDON A WELL

- ☐ Southwest
- ☐ Northwest
- ☐ St. Johns River
- ☐ South Florida
- ☐ Suwannee River

CHECK BOX FOR APPROPRIATE DISTRICT. ADDRESS ON BACK OF PERMIT FORM.

X Collier

THIS FORM MUST BE FILLED OUT COMPLETELY.

The water well contractor is responsible for completing this form and forwarding the permit to the appropriate delegated county where applicable.

10453

Permit No. 20050223 92
Florida Unique I.D. ____
Permit Stipulations Required (See attached)
62-524 well ☐
CUP/WUP Application No. CC02235-H
ABOVE THIS LINE FOR OFFICIAL USE ONLY

1. City of Marco Island — 50 Bald Eagle Drive — Marco Island — 34145 — (239)389-5000
Owner, Legal Name of Entity if Corporation / Address / City / Zip / Telephone Number

2. Marco Lakes, 7130 Collier Boulevard, Naples, FL
Well Location — Address, Road Name or Number, City

3. Southern Well Services, Inc. — 9037 — 26134 — (727)531-7559
Well Drilling Contractor / License No. / Telephone No.

P.O. Box 8145
Address

Clearwater — FL — 33758-8145
City / State / Zip

4. SW 1/4 of SE 1/4 of Section 34 (smallest) (biggest) (Indicate Well on Chart)

5. Township 50s Range 26e

NW NE SW SE X

6. Collier — Subdivision Name — Lot — Block — Unit
County

7. Number of proposed wells 2 Check the use of well: (See back of permit for additional choices) ____ Domestic Monitor (type) ASR Zone & Zone II
____ Irrigation (type) (See Back) Public Water Supply (type) ____ (See Back) List Other ____
Distance from septic system ____ ft. Description of facility Wellfield Estimated start of construction date 2-24-05

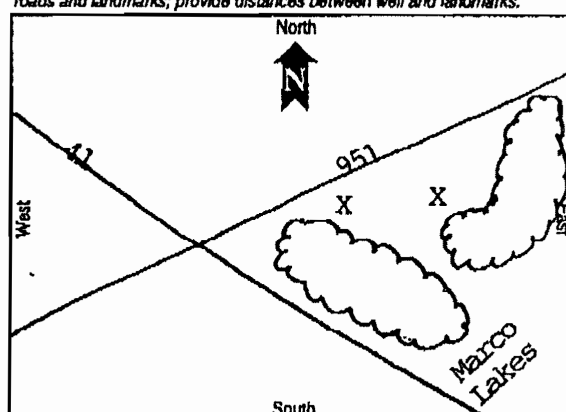
8. Application for: X New Construction ____ Repair/Modify ____ Abandonment ____ (Reason for Abandonment)

Date Stamp

Estimated: Well Depth 20' Casing Depth 10' Screen Interval from 10' to 15'
Casing Material. Blk-Steel / Gal / (PVC) Casing Diameter 4" Seal Material Neat Cement

10. If applicable: Proposed Grouting Interval
From 20' to LS Seal Material Neat Cement
From ____ to ____ Seal Material ____
From ____ to ____ Seal Material ____

Draw a map of well location and indicate well site with an "X". Identify known roads and landmarks; provide distances between well and landmarks.



11. Telescope Casing ____ or Liner ____ (check one) Diameter ____
Blk-Steel / Galvanized / PVC Other (specify: ____

12. Method of Construction: X Rotary ____ Cable Tool ____ Combination
____ Auger ____ Other (specify:) ____)

13. Indicate total No. of wells on site 3 List number of unused wells on site 0

14. Is this well or any other well or water withdrawal on the owner's contiguous property covered under a Consumptive/Water Use Permit (CUP/WUP) or CUP/WUP Application? ____ No X Yes
(If yes, complete the following) CUP/WUP No. 11-00080-W
District well I.D. No. ____ Lat and Long are set for two decimal places.
Latitude ____ Longitude ____
Data obtained from GPS ____ or map ____ or survey ____ (*map datum NAD 27* ____ *NAD 83* ____)

15. I hereby certify that I will comply with the applicable rules of Title 40, Florida Administrative Code, and that a water use permit or artificial recharge permit, if needed, has been or will be obtained prior to commencement of well construction. I further certify that all information provided on this application is accurate and that I will obtain necessary approval from other federal, state, or local governments, if applicable. I agree to provide a well completion report to the District within 30 days after drilling or the permit expiration, whichever occurs first.

I certify that I am the owner of the property, that the information provided is accurate, and that I am aware of my responsibilities under Chapter 373, Florida Statutes, to maintain or properly abandon this well; or, I certify that I am the agent for the owner, that the information provided is accurate, and that I have informed the owner of his responsibilities as stated above. Owner consents to personnel of the WMD or a representative access to the well site.

[signature] 9037 [signature] 2/14/05
Signature of Contractor / License No. / Owner's or Agent's Signature / Date

DO NOT WRITE BELOW THIS LINE — FOR OFFICIAL USE ONLY

Approval Granted By: ____ Issue Date: ____ Hydrologist Approval ____ Initials
Owner Number: ____ Fee Received: $ ____ Receipt No.: ____ Check No.: ____

THIS PERMIT NOT VALID UNTIL PROPERLY SIGNED BY AN AUTHORIZED OFFICER OR REPRESENTATIVE OF THE WMD. IT SHALL BE AVAILABLE AT THE WELL SITE DURING ALL DRILLING OPERATIONS. ***This permit is valid for 90 days from date of issue.***

WHITE: ORIGINAL FILE
YELLOW: DRILLING CONTRACTOR
PINK: OWNER

FORM 41.10 – 410 (1) REV. 4/95

Fold at this line in order that address is visible through envelope window

Mar 15 05 01:05p SOUTHERN WELL SVCS, INC. 727-531-7559 p.4

COLLIER COUNTY
BOARD OF COUNTY COMMISSIONERS

PERMIT

MIT #: 2005022392 PERMIT TYPE: WELL VALID #: 392
UED: 02-24-05 APPLIED DATE: 02-23-05 APPROVAL DATE: 02-24-05
TER #: 2005022392 COA #:

ADDRESS: 7130 COLLIER BLVD
DESCRIPTION: CC02235- H MONITOR WELLS 20' X 4" JOB PHONE: (727)531-7559

DIVISION #: 100 - acreage BLOCK: 006 LOT: .000
OD MAP: 0605 ZONE: AE-7 ELEVATION:
IO #: 0000000448000303 SECTION-TOWNSHIP-RANGE 34 50 26

ER INFORMATION:
Y OF MARCO ISLAND
ITY MANAGER CITY HALL
BALD EAGLE DR
CO ISLAND, FLR0080 341453528

CONTRACTOR INFORMATION:
SOUTHERN WELL SERVICES, INC.
P.O. BOX 8145
CLEARWATER,FL 33758-8145

CERTIFICATE #: 26134 PHONE: (727)531-7559

CODE: 800 - WELLS
STRUCTION CODE: 10 / OTHER
VALUE: TOTAL SQFT:

BACKS FRONT: REAR: LEFT: RIGHT:
EI SEPTIC WATER: WELL
TACT NAME: SOUTHERN WELL SERV.
TACT PHONE: (727)531-7559

r Collier County Ordinance No. 2002 01, as it may be amended, all work must comply with all applicable laws, codes, ordinances, and any additional pulations or conditions of this permit. This permit expires if work authorized by the permit is not commenced within six (6) months from the date of uance of the permit. Additional fees for failing to obtain permits prior to the commencement of construction may be imposed. Permittee(s) further derstands that any contractor that may be employed must be a licensed contractor and that the structure must not be used or occupied until a Certificate of ccupancy is issued.

TICE: PRIOR TO THE REMOVAL OF ASBESTOS PRODUCTS OR THE DEMOLITION OF A STRUCTURE, FEDERAL D STATE LAWS REQUIRE THE PERMITTEE (EITHER THE OWNER OR CONTRACTOR) TO SUBMIT A NOTICE OF E INTENDED WORK TO THE STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP). FOR MORE FORMATION, CONTACT DEP AT (239) 332-6975.

ddition to the conditions of this permit, there may be additional restrictions applicable to this property that may be found in public records of this county, and there may be additional permits required from other governmental entities such as water nagement districts, state agencies, or federal agencies.

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF OMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO OUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

CDPR2020

APPENDIX 3.3

26-INCH SURFACE CASING MILL CERTIFICATE

Bodycote MATERIALS TESTING • METALLON LABORATORY
METAL TECHNOLOGY
BODYCOTE OMNITEST, INC. • 2524 SUTHERLAND • HOUSTON, TEXAS 77023 • TEL 713/923-7761 • FAX 713/923-1679

DATE : 10/12/98
REPORT NO: 122712.0
CUST ACCT: 16140

MECHANICAL TEST REPORT

CUSTOMER JOB: PPLC-26.375
MATERIAL : 26" OD x .375" Wall Pipe
IDENT. :

TENSILE TEST RESULTS

NO	SIZE [IN]	YIELD [PSI]	TENSILE [PSI]	ELONG. [%]	R OF A [%]	HARDNESS
1 0	1.507x.350 .5% Total Ext	61,200	76,400	38.00		

Unless otherwise stated, yield stress is .2% offset. Gage length is 2 in. for 1/2 in. bars, 1 4 in for 3/8 in. bars, or 1 in. for 1/4 in. bars

CHEMICAL TEST RESULTS

1. C:0.05 MN:0.82 P:0.009 S:0.004 SI:0.04 CR:0.02 MO:<.010
NI:0.03 CU:0.08 NB:<.005 V:0.027 AL:0.038 TI:<.001

Chemical results are reported in percent by weight

COMMENTS: Transverse tensile specimen tested per ASTM A370.
Analysis by Argon Discharge Optical Emission Vacuum Spectroscopy.

Respectfully submitted,

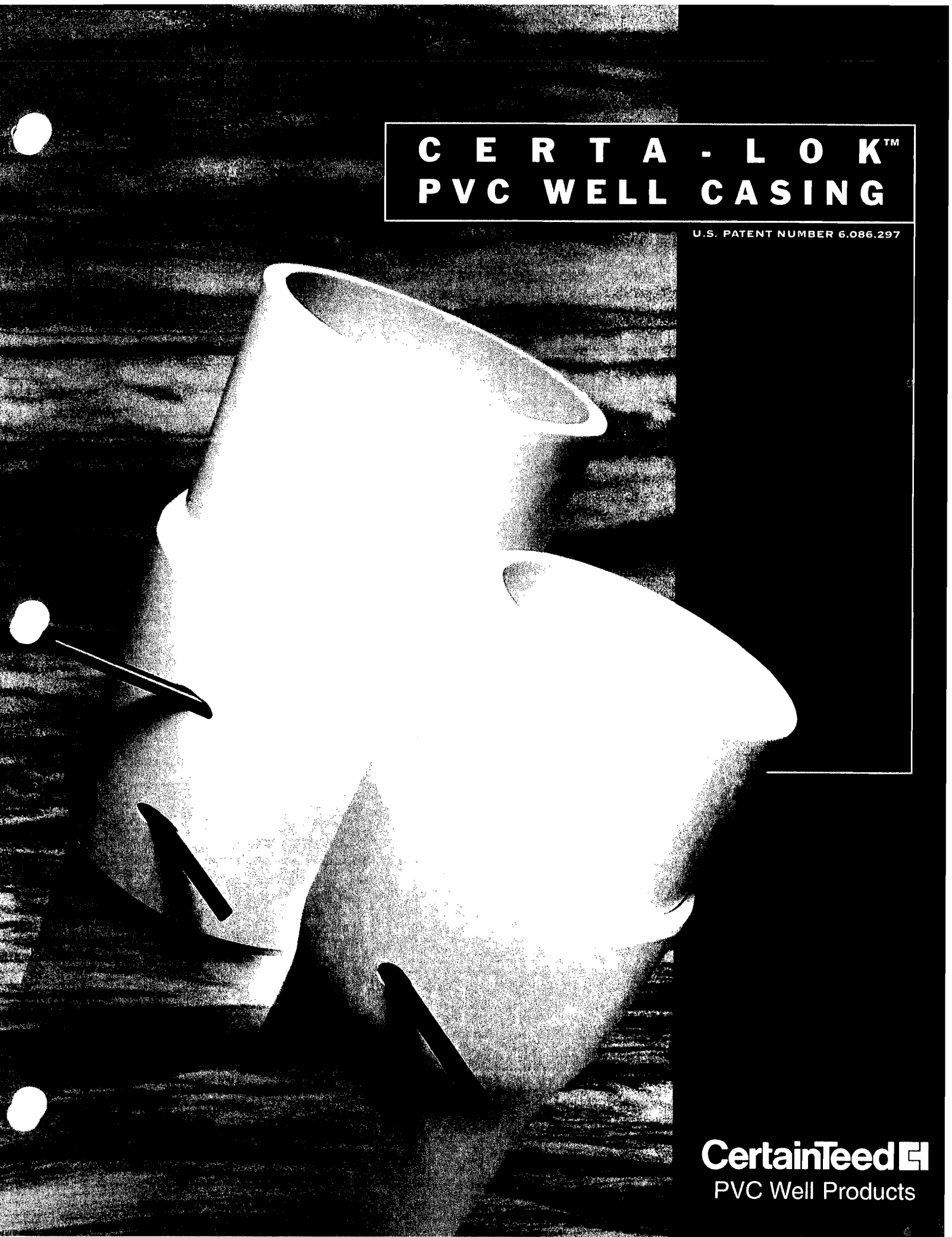
BY: James M Mason

Bodycote Omnitest Inc.

Our letters and reports are for the exclusive use of our client to whom they are addressed. Our name may be used only with our prior written approval. Our letters and reports apply only to the sample tested and/or inspected, and do not necessarily represent the quality of other apparently similar or identical materials.

APPENDIX 3.4

17.4-INCH CERTAINTEED ASR WELL CASING SPECIFICATIONS



CERTA-LOK™ PVC WELL CASING

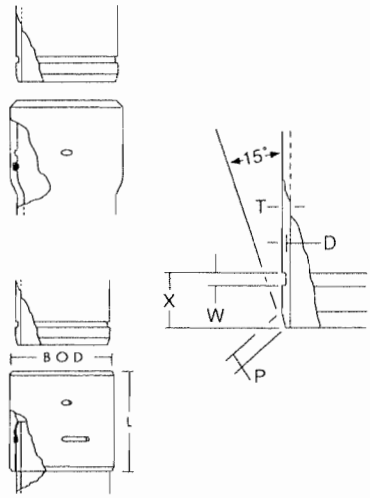
U.S. PATENT NUMBER 6,086,297

CertainTeed

PVC Well Products

O.D. SIZE	X	W	D MIN.	D MAX.	P	BELL DEPTH
INTEGRAL BELL JOINT						
4.500"	1.313	.375	.125	.130	.25	3.00
4.950"	1.313	.375	.125	.130	.25	3.00
5.563"	1.313	.375	.125	.130	.25	3.00
6.625"	1.313	.375	.125	.130	.25	3.00
6.900"	1.313	.375	.125	.130	.25	3.00
8.625"	3.163	.500	.135	.140	.66	5.00

O.D. SIZE	X	W	D MIN.	D MAX.	P	L	COUPLING B.O.D.
COUPLED JOINT							
10.750"	3.500	.500	.205	.215	.66	12.00	12.438
12.750"	3.500	.500	.205	.215	.66	12.00	14.000
14.000"	3.500	.500	.205	.215	.66	12.00	15.300
16.000"	3.500	.500	.205	.215	.66	12.00	17.400
17.400"	3.500	.500	.205	.215	.66	12.00	18.701



NOMINAL SIZE DESIGNATION	O.D. SIZE	CLASS	T MIN. WALL	I.D. MIN.	I.D. MAX.	BELL O.D.	R.H.C.P. (PSI)	MAX. TENSILE PULL (LBS.)	MAX. INTERNAL PRESSURE (PSI)	APPROX. WEIGHT LBS./FT.	PART NO.
INTEGRAL BELL JOINT											
4"	4.500"	SCH40	.237	3.968	4.026	5.07	158	4,900	115	2.06	653001
4½"	4.950"	SDR26	.190	4.502	4.570	5.53	59	4,500	115	1.86	653100
		SCH40	.248	4.379	4.454	5.56	134	4,700	130	2.37	653025
		SDR17	.291	4.288	4.368	5.63	224	6,300	160	2.75	653018
5"	5.563"	SDR21*	.265	4.941	5.033	6.21	115	6,300	130	2.86	653032
		SDR17	.327	4.810	4.909	6.33	224	8,500	180	3.49	653049
6"	6.625"	SCH40	.280	5.961	6.065	7.34	79	8,500	130	3.63	653070
		SDR21	.316	5.885	5.993	7.38	115	8,800	150	4.06	653056
		SDR17	.390	5.728	5.845	7.54	224	10,000	200	4.95	653063
6.9" O.D.	6.900"	SDR21	.329	6.128	6.242	7.69	115	7,400	160	4.47	653209
		SDR17	.406	5.964	6.088	7.81	224	9,400	200	5.22	653087
8"	8.625"	SDR17	.508	7.458	7.609	9.75	224	17,000	140	8.38	653094
COUPLED JOINT (INCLUDES CASING AND COUPLING)											
10"	10.750"	SDR17	.632	9.310	9.486		224	26,000	300	13.27	654015
12"	12.750"	SDR17	.750	11.040	11.250		224	30,800	150	18.89	657016
14"	14.000"	SDR17	.823	12.105	12.354		224	36,440	150	22.55	657115
16"	16.000"	SDR26	.616	14.544	14.768		59	35,200	150	20.48	652813
		SDR21	.762	14.235	14.476		115	35,200	150	24.59	654817
		SDR17	.941	13.855	14.118		224	35,200	150	31.66	654718
17.4" O.D	17.400"	SDR17	1.024	15.079	15.352		224	37,000	125	34.43	657214

* Equivalent to SCH40

R.H.C.P. = Resistance to Hydraulic Collapse Pressure (predicted failure point at room temperature – no safety factor included). See brochure on the Selection of PVC Well Casing Based on Hydraulic Collapse Considerations, Literature Code 40-37-02, for additional details.

Notes: Dimensions in all tables are in inches. All dimensions and weights are subject to manufacturing tolerances.
Standard laying length = 20'. Short-term pressure ratings shown apply to well casing installation only.
Max. tensile pull values include a minimum 1.5:1 safety factor.

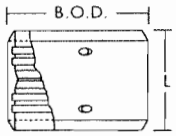
O.D. SIZE	CLASS	FEET PER FAST-PAK	FAST-PAKS PER T/L	FEET PER T/L	LBS. PER T/L
4.500"	SCH40	580	28	16240	33454
4.950"	SDR26	520	24	12480	23213
	SCH40	520	24	12480	29578
	SDR17	520	24	12480	34320
5.563"	SDR21/SCH40	460	24	11040	31574
	SDR17	460	24	11040	38530
6.625"	SCH40	400	20	8000	29040
	SDR21	400	20	8000	32560
	SDR17	400	20	8000	39680
6.900"	SDR21	340	20	6800	29512
	SDR17	340	20	6800	35972
8.625"	SDR17	280	16	4480	39245
10.750"	SDR17	80	32	2560	33971
12.750"	SDR17	80	28	2240	42314
14.000"	SDR17	120	12	1440	32472
16.000"	SDR26	120	12	1440	29491
	SDR21	120	12	1440	35410
	SDR17	120	12	1440	45590
17.400"	SDR17	60/40	10/10	1000	34430

COUPLING

INCLUDES GASKETS AND SPLINES

O.D. SIZE	PART NUMBER	L	B.O.D.
4.500"	707032	6.00	4.950
4.950"	707049	6.00	5.563
5.563"	707056	6.00	6.180
6.625"	707063	6.00	7.600
6.900"	707278	6.00	7.840
6.900" x 6.625"*	707285	6.00	7.840
8.625"	707087	10.00	9.854
10.750"	707124	12.00	12.438
12.750"	707094	12.00	14.000
14.000"	707100	12.00	15.300
16.000"	707117	12.00	17.400
17.400"	707193	12.00	18.700

*Reducing

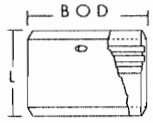


COUPLING

CERTA-LOK BELL BY SOLVENT WELD BELL
INCLUDES GASKET AND SPLINE

O.D. SIZE	SOLVENT O.D. SIZE	PART NUMBER	L	B.O.D.
4.500"	4.500"	717031	6.00	4.950
4.950"	4.950"	717048	6.00	5.563
5.563"	5.563"	717055	6.13	6.180
6.625"	6.625"	717062	6.63	7.600
6.900"	6.900"	717130	6.63	7.840
6.900"	6.625"*	717147	6.63	7.840
8.625"	8.625"	717079	10.00	9.854
10.750"	10.750"	717109	12.00	12.438
12.750"	12.750"	717116	12.00	14.000

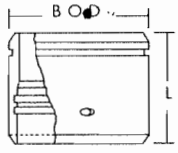
*Reducing



REDUCER BUSHING

CERTA-LOK SPIGOT BY CERTA-LOK BELL
INCLUDES GASKET AND SPLINE

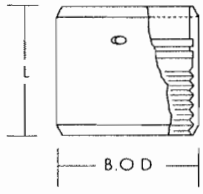
O.D. SIZE	PART NUMBER	L	B.O.D.
8.625" x 6.625"	712258	8.25	8.625
8.625" x 6.900"	712203	8.25	8.625
10.750" x 8.625"	712272	10.00	10.750
12.750" x 10.750"	712296	12.00	12.750
14.000" x 12.750"	712302	12.00	14.000
16.000" x 14.000"	712326	12.00	16.000
17.400" x 16.000"	712319	12.00	17.400



THREAD ADAPTER

CERTA-LOK FEMALE X FIPT
INCLUDES GASKET AND SPLINE

O.D. SIZE	FEMALE THREAD SIZE	PART NUMBER	L	B.O.D.
4.500"	4"	810770	7.00	5.470
4.950"	4"	810787	6.00	5.563
5.563"	5"	810794	6.13	6.180
6.625"	6"	810800	6.63	7.600
6.900"	6"	810862	6.63	7.840
8.625"	8"	810824	10.00	9.854
10.750"	10"	810848	12.00	12.438
12.750"	12"	810855	12.00	14.000



SPLINE

O-RING (GASKET)

O.D. SIZE	SPLINE PART NUMBER	LENGTH	SIZE	O-RING PART NUMBER	C/S	COLOR
4.500"	864797	18.4	.250③	861239	.210	Brown
4.950"	864797	18.4	.250③	861284	.210	Brown
5.563"	864797	18.4	.250③	861246	.210	Brown
6.625"	864636	24	.250①	861253	.210	Brown
6.900"	864636	24	.250①	861796	.210	Brown
8.625"	864643	32	.313②	862717	.375	Blue
10.750"	864650	39	.375②	861963	.375	Green
12.750"	864667	46	.375②	861789	.375	Green
14.000"	864902	48	.375②	861710	.375	Green
16.000"	864919	53	.375②	861727	.375	Green
17.400"	864926	60	.375②	861734	.407	Green

① Round Spline, Extruded
② Square Spline, Extruded
③ Round Spline, Injection molded

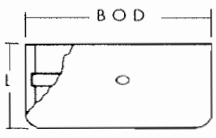
C/S = Ring Cross-Section Diameter

Material 4.5"- 6.9" NBR
8.625" & up Poly Isoprene

CASING & SCREEN CAP

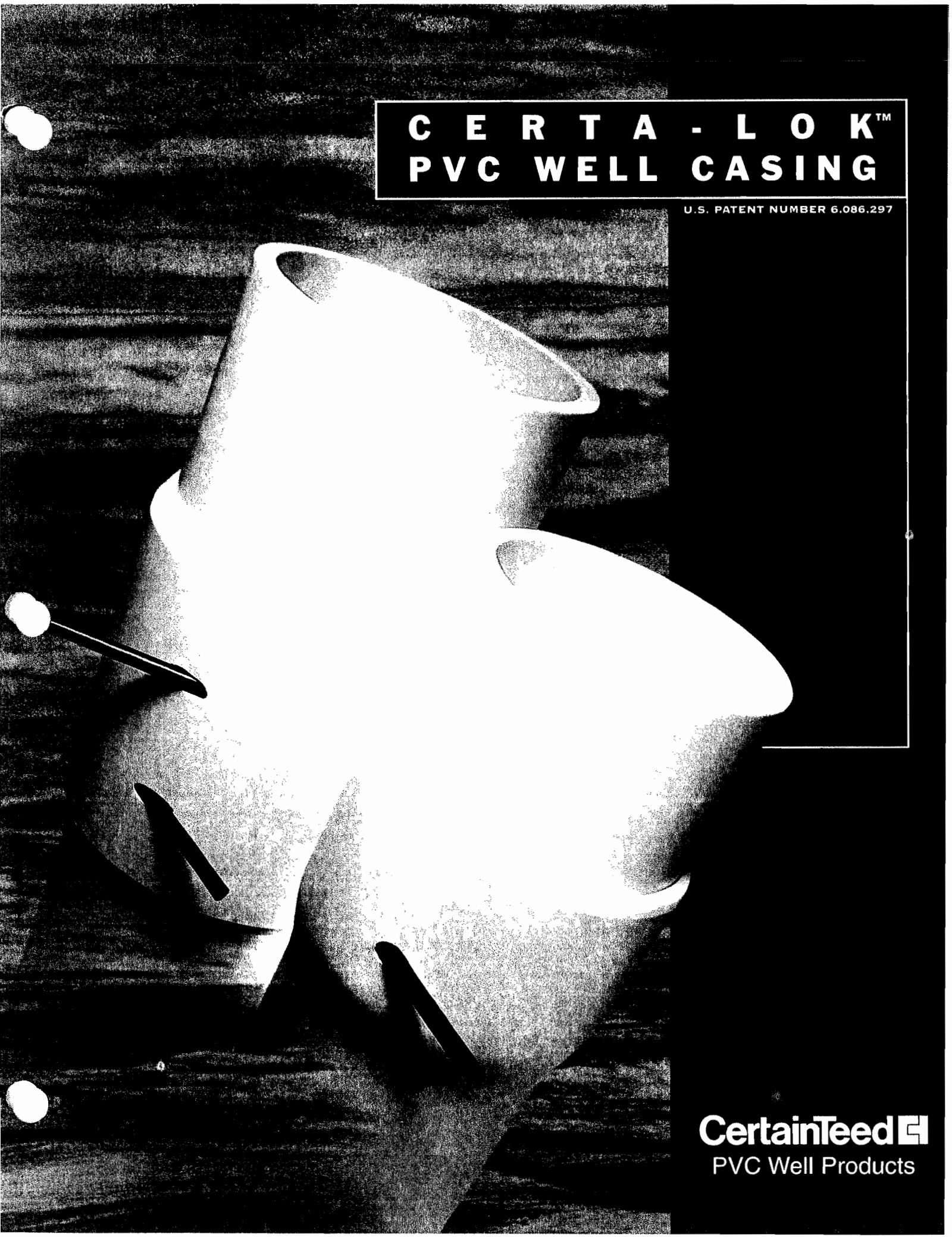
CERTA-LOK BELL
INCLUDES SPLINE

O.D. SIZE	PART NUMBER	L	B.O.D.
4.500"	810619	4.00	4.950
4.950"	810626	4.00	5.563
5.563"	810633	4.25	6.180
6.625"	810640	4.25	7.600
6.900"	810602	4.25	7.600
8.625"	810664	4.50	9.854
10.750"	810688	5.00	11.600
12.750"	810695	5.00	14.000
14.000"	810701	5.00	15.300
16.000"	810718	5.25	17.400
17.400"	810725	5.50	18.700



APPENDIX 3.5

8 5/8-INCH CERTAINTEED ASR WELL LINER SPECIFICATIONS



CERTA-LOK™ PVC WELL CASING

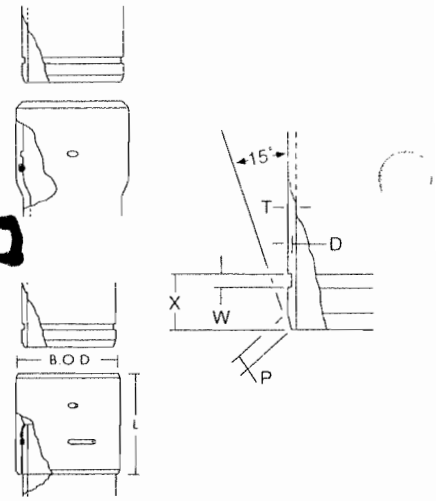
U.S. PATENT NUMBER 6.086.297

CertainTeed

PVC Well Products

O.D. SIZE	X	W	D MIN.	D MAX.	P	BELL DEPTH
INTEGRAL BELL JOINT						
4.500"	1.313	.375	.125	.130	.25	3.00
4.950"	1.313	.375	125	130	.25	3.00
5.563"	1.313	.375	125	.130	.25	3.00
6.625"	1.313	.375	.125	130	.25	3.00
6.900"	1.313	.375	.125	.130	.25	3.00
8.625"	3.163	.500	.135	.140	.66	5.00

O.D. SIZE	X	W	D MIN.	D MAX.	P	L	COUPLING B.O.D.
COUPLED JOINT							
10.750"	3.500	.500	.205	.215	.66	12.00	12.438
12.750"	3.500	.500	.205	.215	.66	12.00	14.000
14.000"	3.500	.500	.205	.215	.66	12.00	15.300
16.000"	3.500	.500	.205	.215	.66	12.00	17.400
17.400"	3.500	.500	.205	.215	.66	12.00	18.701



NOMINAL SIZE DESIGNATION	O.D. SIZE	CLASS	T MIN. WALL	I.D. MIN.	I.D. MAX.	BELL O.D.	R.H.C.P. (PSI)	MAX. TENSILE PULL (LBS.)	MAX. INTERNAL PRESSURE (PSI)	APPROX. WEIGHT LBS./FT.	PART NO.
INTEGRAL BELL JOINT											
4"	4.500"	SCH40	.237	3.968	4.026	5.07	158	4,900	115	2.06	653001
4½"	4.950"	SDR26	.190	4.502	4.570	5.53	59	4,500	115	1.86	653100
		SCH40	.248	4.379	4.454	5.56	134	4,700	130	2.37	653025
		SDR17	.291	4.288	4.368	5.63	224	6,300	160	2.75	653018
5"	5.563"	SDR21*	.265	4.941	5.033	6.21	115	6,300	130	2.86	653032
		SDR17	.327	4.810	4.909	6.33	224	8,500	180	3.49	653049
6"	6.625"	SCH40	.280	5.961	6.065	7.34	79	8,500	130	3.63	653070
		SDR21	.316	5.885	5.993	7.38	115	8,800	150	4.06	653056
		SDR17	.390	5.728	5.845	7.54	224	10,000	200	4.95	653063
6.9" O.D.	6.900"	SDR21	.329	6.128	6.242	7.69	115	7,400	160	4.47	653209
		SDR17	.406	5.964	6.088	7.81	224	9,400	200	5.22	653087
8"	8.625"	SDR17	.508	7.458	7.609	9.75	224	17,000	140	8.38	653094
COUPLED JOINT (INCLUDES CASING AND COUPLING)											
10"	10.750"	SDR17	.632	9.310	9.486		224	26,000	300	13.27	654015
12"	12.750"	SDR17	.750	11.040	11.250		224	30,800	150	18.89	657016
14"	14.000"	SDR17	.823	12.105	12.354		224	36,440	150	22.55	657115
16"	16.000"	SDR26	.616	14.544	14.768		59	35,200	150	20.48	652813
		SDR21	.762	14.235	14.476		115	35,200	150	24.59	654817
		SDR17	.941	13.855	14.118		224	35,200	150	31.66	654718
17.4" O.D	17.400"	SDR17	1.024	15.079	15.352		224	37,000	125	34.43	657214

* Equivalent to SCH40

R.H.C.P. = Resistance to Hydraulic Collapse Pressure (predicted failure point at room temperature – no safety factor included) See brochure on the Selection of PVC Well Casing Based on Hydraulic Collapse Considerations, Literature Code 40-37-02, for additional details.

Notes: Dimensions in all tables are in inches. All dimensions and weights are subject to manufacturing tolerances.
Standard laying length = 20'. Short-term pressure ratings shown apply to well casing installation only.
Max. tensile pull values include a minimum 1.5 1 safety factor.

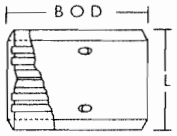
O.D. SIZE	CLASS	FEET PER FAST-PAK	FAST-PAKS PER T/L	FEET PER T/L	LBS. PER T/L
4.500"	SCH40	580	28	16240	33454
4.950"	SDR26	520	24	12480	23213
	SCH40	520	24	12480	29578
	SDR17	520	24	12480	34320
5.563"	SDR21/SCH40	460	24	11040	31574
	SDR17	460	24	11040	38530
6.625"	SCH40	400	20	8000	29040
	SDR21	400	20	8000	32560
	SDR17	400	20	8000	39680
6.900"	SDR21	340	20	6800	29512
	SDR17	340	20	6800	35972
8.625"	SDR17	280	16	4480	39245
10.750"	SDR17	80	32	2560	33971
12.750"	SDR17	80	28	2240	42314
14.000"	SDR17	120	12	1440	32472
16.000"	SDR26	120	12	1440	29491
	SDR21	120	12	1440	35410
	SDR17	120	12	1440	45590
17.400"	SDR17	60/40	10/10	1000	34430

COUPLING

INCLUDES GASKETS AND SPLINES

O.D. SIZE	PART NUMBER	L	B.O.D.
4.500"	707032	6.00	4.950
4.950"	707049	6.00	5.563
5.563"	707056	6.00	6.180
6.625"	707063	6.00	7.600
6.900"	707278	6.00	7.840
6.900" x 6.625"*	707285	6.00	7.840
8.625"	707087	10.00	9.854
10.750"	707124	12.00	12.438
12.750"	707094	12.00	14.000
14.000"	707100	12.00	15.300
16.000"	707117	12.00	17.400
17.400"	707193	12.00	18.700

*Reducing

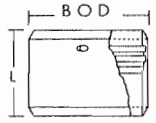


COUPLING

CERTA-LOK BELL BY SOLVENT WELD BELL
INCLUDES GASKET AND SPLINE

O.D. SIZE	SOLVENT O.D. SIZE	PART NUMBER	L	B.O.D.
4.500"	4.500"	717031	6.00	4.950
4.950"	4.950"	717048	6.00	5.563
5.563"	5.563"	717055	6.13	6.180
6.625"	6.625"	717062	6.63	7.600
6.900"	6.900"	717130	6.63	7.840
6.900"	6.625"*	717147	6.63	7.840
8.625"	8.625"	717079	10.00	9.854
10.750"	10.750"	717109	12.00	12.438
12.750"	12.750"	717116	12.00	14.000

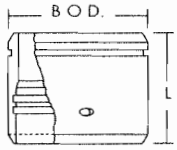
*Reducing



REDUCER BUSHING

CERTA-LOK SPIGOT BY CERTA-LOK BELL
INCLUDES GASKET AND SPLINE

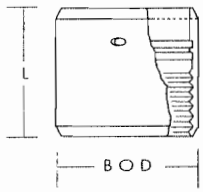
O.D. SIZE	PART NUMBER	L	B.O.D.
8.625" x 6.625"	712258	8.25	8.625
8.625" x 6.900"	712203	8.25	8.625
10.750" x 8.625"	712272	10.00	10.750
12.750" x 10.750"	712296	12.00	12.750
14.000" x 12.750"	712302	12.00	14.000
16.000" x 14.000"	712326	12.00	16.000
17.400" x 16.000"	712319	12.00	17.400



THREAD ADAPTER

CERTA-LOK FEMALE X FIPT
INCLUDES GASKET AND SPLINE

O.D. SIZE	FEMALE THREAD SIZE	PART NUMBER	L	B.O.D.
4.500"	4"	810770	7.00	5.470
4.950"	4"	810787	6.00	5.563
5.563"	5"	810794	6.13	6.180
6.625"	6"	810800	6.63	7.600
6.900"	6"	810862	6.63	7.840
8.625"	8"	810824	10.00	9.854
10.750"	10"	810848	12.00	12.438
12.750"	12"	810855	12.00	14.000



SPLINE

O-RING (GASKET)

O.D. SIZE	SPLINE PART NUMBER	LENGTH	SIZE	O-RING PART NUMBER	C/S	COLOR
4.500"	864797	18.4	.250③	861239	.210	Brown
4.950"	864797	18.4	.250③	861284	.210	Brown
5.563"	864797	18.4	.250③	861246	.210	Brown
6.625"	864636	24	.250①	861253	.210	Brown
6.900"	864636	24	.250①	861796	.210	Brown
8.625"	864643	32	.313②	862717	.375	Blue
10.750"	864650	39	.375②	861963	.375	Green
12.750"	864667	46	.375②	861789	.375	Green
14.000"	864902	48	.375②	861710	.375	Green
16.000"	864919	53	.375②	861727	.375	Green
17.400"	864926	60	.375②	861734	.407	Green

① Round Spline, Extruded
② Square Spline, Extruded
③ Round Spline, Injection molded

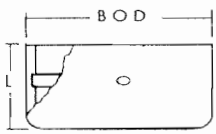
C/S = Ring Cross-Section Diameter

Material 4.5"- 6.9" NBR
8.625" & up Poly Isoprene

CASING & SCREEN CAP

CERTA-LOK BELL
INCLUDES SPLINE

O.D. SIZE	PART NUMBER	L	B.O.D.
4.500"	810619	4.00	4.950
4.950"	810626	4.00	5.563
5.563"	810633	4.25	6.180
6.625"	810640	4.25	7.600
6.900"	810602	4.25	7.600
8.625"	810664	4.50	9.854
10.750"	810688	5.00	11.600
12.750"	810695	5.00	14.000
14.000"	810701	5.00	15.300
16.000"	810718	5.25	17.400
17.400"	810725	5.50	18.700



APPENDIX 3.6

CASING PRESSURE TEST RECORD

WATER RESOURCE SOLUTIONS, INC.

CASING/LINER PRESSURE TEST SUMMARY

Marco Island Utilities
Marco Lakes ASR Expansion

FDEP Permit No. 141218-005-UC Contractor: Southern Well Services

Prepared by: F. Procta Date: 11/02/05

Well No.: ASR Well #6

Starting Date/Time: 11-2-05/16:15 Starting Pressure: 103 psi

Casing Inside Diameter: 15.3 inches Ending Pressure: 98.5 psi

Actual Time	Elapsed Time (minutes)	Casing/Liner Pressure (psi)	Pressure Change (psi)
16:15	0	103	-
16:20	5	102	1.0
16:25	10	101	2.0
16:30	15	101	2.0
16:35	20	100	3.0
16:40	25	100	3.0
16:45	30	100	3.0
16:50	35	100	3.0
16:55	40	99	4.0
17:00	45	99	4.0
17:05	50	98.5	4.5
17:10	55	98.5	4.5
17:15	60	98.5	4.5

Test Result: 4.5-psi pressure loss (4.4%) over sixty minute test period.

Witnessed by:

Frank Procta
Name

Water Resource Solutions
Firm/Organization

11-2-05 Mardo Lakes ASRAC

CASING/LINER PRESSURE TEST

Actual Time	Test Duration (min)	Casing Pressure (psi)
16:15	0	103
16:20	5	102
16:25	10	101
16:30	15	101
16:35	20	100
16;40	25	100
16;45	30	100
16 50	35	100
16 55	40	99
17:00	45	99
17 05	50	98.5
17. 10	55	98.5
17:15	60	98.5

Result : 4.5-psi loss over 60 minutes (4.4% loss).

POST TEST PROCEDURE

Cumulative Gallons Returned	Casing Pressure (psi)
5	73
10	52
15	35
20	17
25	0

Wm Schmidt, SWS 11-2-05

Tim C. Pruett (WRS) 11-2-05

APPENDIX 3.7

PRESSURE GAUGE TEST REPORT

Epperson & Company

SALES SERVICE SINCE 1932

5202 Shadowlawn
Tampa, FL 33610
813-626-6125
800-886-6125
Fax # 813-626-8806

8180 Normandy Blvd.
Jacksonville, FL 32221-6649
904-781-3669
800-372-6529
Fax # 904-781-5688

CERTIFIED CALIBRATION CHART

CUSTOMER Southern Well Services

CUSTOMER ORDER NO. _____ DATE 8/11/05 GAUGE NO. TEST # 2187.

GAUGE DESCRIPTION 25-1009SW-02L 300#

TRUE VALUE	INDICATED VALUE
0	0
50	50
100	100
150	150
200	200
250	250
300	300

CALIBRATION STANDARD Dead Weight Tester SERIAL NO. 1HA38443

TESTED BY R. T. Rodgers DATE 8/11/05

THIS IS TO CERTIFY THAT THIS GAUGE HAS BEEN INSPECTED AND TESTED AGAINST PRESSURE STANDARD DEADWEIGHT TESTER TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY. ACCURACY TEST REFERENCE NO. 821/257176-96 & 38126 COMPENSATED TO LOCAL ACCELERATION DUE TO GRAVITY.

APPENDIX 4.1

SUMMARY OF STEP-DRAWDOWN TEST DATA

APPENDIX 4.1 Summary of ASR-6 Step Drawdown Test

Time	Elapsed Time (min.)	ASR-6 Drawdown (ft.)	Totalizer in Gallons	Calculated flow Rate (gpm) between readings
15:36	**0**	**0.00**	**81531200**	
15:37	1	13.69		
15:38	2	13.84		
15:39	3	14.28		
15:40	4	14.65		
15:41	5	15.07		
15:42	6	15.19		
15:43	7	15.43		
15:44	8	15.51		
15:45	9	15.63		
15:46	10	15.72		
15:47	11	15.58		
15:48	12	15.98		
15:49	13	15.97		
15:50	14	16.18		
15:51	15	16.27		
15:52	16	16.32		
15:53	17	16.38		
15:54	18	16.48		
15:55	19	16.54		
15:56	20	16.64		
15:57	21	16.72		
15:58	22	16.82		
15:59	23	16.87		
16:00	24	16.91		
16:01	25	16.95		
16:02	26	16.97		
16:03	27	17.00		
16:04	28	17.07		
16:05	29	16.98		
16:06	30	17.05		
16:07	31	17.01		
16:08	32	17.07		
16:09	33	17.10		
16:10	34	17.24		
16:11	35	17.21		
16:12	36	17.19		
16:13	37	17.21		
16:14	**38**	**63.27**	**81540650**	**255**
16:15	39	73.75		
16:16	40	71.88		
16:17	41	62.64		
16:18	42	57.47		
16:19	43	46.16		
16:20	44	42.87		
16:21	45	42.76		
16:22	46	43.12		
16:23	47	42.65		
16:24	48	42.67		
16:25	49	42.77		
16:26	50	42.46		
16:27	51	38.51		
16:28	52	41.79		
16:29	53	42.46		

APPENDIX 4.1 Summary of ASR-6 Step Drawdown Test

Time	Elapsed Time (min.)	ASR-6 Drawdown (ft.)	Totalizer in Gallons	Calculated flow Rate (gpm) between readings
16:30	54	42.67		
16:31	55	42.73		
16:32	56	42.24		
16:33	57	41.81		
16:34	58	41.82		
16:35	59	41.83		
16:36	60	41.92		
16:37	61	41.93		
16:38	62	42.00		
16:39	63	41.84		
16:40	64	41.94		
16:41	65	41.75		
16:42	66	41.69		
16:43	67	41.67		
16:44	68	41.76		
16:45	69	41.78		
16:46	**70**	**41.89**	**81558000**	**542**
16:47	71	42.07		
16:48	72	51.49		
16:49	73	54.24		
16:50	74	54.91		
16:51	75	55.49		
16:52	76	56.78		
16:53	77	58.81		
16:54	78	59.29		
16:55	79	59.18		
16:56	80	59.18		
16:57	81	59.08		
16:58	82	59.01		
16:59	83	58.90		
17:00	84	58.76		
17:01	85	58.79		
17:02	86	58.80		
17:03	87	58.71		
17:04	88	58.69		
17:05	89	58.78		
17:06	90	58.74		
17:07	91	58.71		
17:08	92	58.69		
17:09	93	58.70		
17:10	94	58.60		
17:11	95	58.66		
17:12	96	58.64		
17:13	97	58.60		
17:14	98	58.62		
17:15	99	58.61		
17:16	100	58.69		
17:17	101	58.72		
17:18	102	58.68		
17:19	103	58.54		
17:20	104	58.54		
17:21	105	58.60		
17:22	106	58.54		
17:23	107	58.49		

APPENDIX 4.1 Summary of ASR-6 Step Drawdown Test

Time	Elapsed Time (min.)	ASR-6 Drawdown (ft.)	Totalizer in Gallons	Calculated flow Rate (gpm) between readings
17:24	108	58.50		
17:25	109	58.51		
17:26	110	58.42		
17:27	111	58.47		
17:28	112	58.43		
17:29	113	58.42		
17:30	114	58.40		
17:31	115	58.28		
17:32	116	58.31		
17:33	117	58.22		
17:34	118	58.14		
17:35	119	58.26		
17:36	120	58.15		
17:37	121	58.05		
17:38	122	58.10		
17:39	123	57.75		
17:40	124	57.89		
17:41	125	58.00		
17:42	126	58.17		
17:43	127	58.06		
17:44	128	58.05		
17:45	129	58.10		
17:46	130	58.06		
17:47	**131**	**58.08**	**81598000**	**656**
17:48	132	58.14		
17:49	133	62.22		
17:50	134	64.19		
17:51	135	67.32		
17:52	136	67.95		
17:53	137	68.10		
17:54	138	68.11		
17:55	139	68.19		
17:56	140	68.16		
17:57	141	68.17		
17:58	142	70.94		
17:59	143	70.94		
18:00	144	70.94		
18:05	149	70.94		
18:10	154	70.95		
18:17	161	70.94		
18:21	165	70.94		
18:23	167	70.95		
18:28	**172**	70.95	**81631930**	**828**