Appendix A - *Summary of Field Program Oversight*

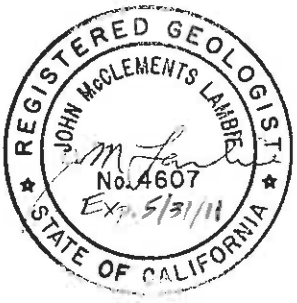
E-PUR
Safe Water for All

A Division of SoundEarth Strategies, Inc.

M E M O R A N D U M

TO: Leslie Dumas, RMC

FROM: Gary Moore
John Lambie, PE, PG, CEG



DATE: October 21, 2010

PROJ. NO. E102-001-01

SUBJECT: Summary of: (1) Field Drilling Oversight and Soil and Water Sampling Activities for Town of Windsor Exploratory Borehole Drilling and Replacement Production, and (2) Well Installation for Bluebird Well Site and Esposti Park Well

E-PUR provided field oversight in support of RMC Water and Environment (RMC) for the installation of two boreholes and the construction of two replacement groundwater supply wells for the Town of Windsor. Field work oversight was initiated on February 4, 2010, with exploratory borehole drilling at the Bluebird well site. As a result of complications encountered at the Bluebird well site, on February 23, 2010, the team moved to the Esposti Park site. The Esposti Park site well was completed on March 27, 2010, and the field work performed and overseen by E-PUR was concluded on April 27, 2010, with the partial construction of the production well at the Bluebird well site. Additional work is documented for purposes of continuity herein as completed by WDC and RMC based upon project teleconference records after our field phase ended.

The scope of services provided by E-PUR included:

- Overseeing the work performed by the Town of Windsor's borehole and well drilling contractor (WDC Exploration and Wells).
- Logging of the exploratory boreholes by a California licensed geologist.
- Collecting borehole groundwater quality samples.
- Collecting, preparing, and archiving conjunctive use groundwater quality samples.

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121 Southwest Salmon Street, Suite 900
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- Collecting and archiving soil samples for conjunctive use testing and further lithologic description.
- Collecting and archiving total matrix samples of soil and water from the exploratory boreholes.
- Preparing lithologic logs for exploratory boreholes.
- Preparing well design and subsequent construction diagrams.
- Incorporating geophysical logging into the well construction design.
- Summarizing the information within this technical memorandum.

The Town of Windsor contracted WDC Exploration and Wells (WDC) of Zamora, California as the well installation and drilling contractor to advance two exploratory boreholes and construct two 10-inch-diameter, steel-cased, water production wells. Following construction, WDC would hydraulically develop the wells, perform stepped-discharge tests, and perform aquifer hydraulic testing.

SUMMARY OF ACTIVITIES BY LOCATION

Two exploratory boreholes were advanced, logged, and sampled for borehole water quality and conjunctive use water quality. One of the borings, which was advanced to 870 feet below ground surface (bgs), was completed as a production well to a depth of 750 bgs to replace the existing Bluebird production well. The second boring, which was advanced to 1,040 feet bgs, was completed as a production well to a depth of 655 feet bgs to replace the existing Esposti Park production well. The Esposti Park well was initially developed by air-lifting and surging; E-PUR did not fully oversee the development of the Esposti Park well. The Bluebird well was constructed, and E-PUR withdrew from the field prior to the well's hydraulic development.

Bluebird Well Site

Field activities were initiated at the Bluebird well site on January 25, 2010. Heavy rains had created unworkable field conditions with an unstable ground surface, delaying the well installation activities by more than 1 week. WDC revised their initial plan to lay gravel across the site to instead stabilize the ground with steel plates. WDC vendors stabilized the site using steel plates on February 2 and 3, 2010, and WDC's drill rig, equipment truck and supporting air compressors, water processing tanks/filters, and solids handling roll-off bins were mobilized to the site on February 3 and 4, 2010. However, because WDC could not acquire the proper lead drill bit until Saturday, February 6, 2010, drilling was delayed until February 8, 2010. The initial exploratory borehole was drilled with reverse-air-circulation dual-tube drilling equipment to enable simultaneous collection of water and lithologic samples.

Bluebird Exploratory Borehole Drilling and Logging

Drilling proceeded fitfully between February 8 and 22, 2010, due to difficult drilling conditions. The highly variable subsurface lithology resulted in significant damage and breakage of several of the drilling components on the reverse-air-circulation rig, particularly at the torque transfer-sub. This was in part due to rapid changes from dense clay to clean gravel clogging the drill bit, as well as heaving/flowing sand and gravel coming up the bit during routine drill-rod additions in coarse intervals. WDC made equipment modifications on February 19, 2010, using a bladder below the transfer sub that prevented

further difficulties with the formation grinding away the transfer sub and other key components. However, drilling conditions remained difficult due to the dense clay and loose sand and gravel layers, and progress was erratic. On February 22, 2010, a collective decision was made between the Town of Windsor, WDC, and the RMC team to cease exploratory drilling at the Bluebird well site using reverse-air circulation technology at the then-achieved depth of 795 feet bgs. Because the total depth was less than the target of 1,000 feet bgs and as geologic logging indicated the beginnings of what could be a prominent water-bearing zone, the team decided to take advantage of the conventional mud-rotary drilling rig (which was scheduled for the final well construction borehole size and depth borehole reaming) to explore the geology below 795 feet in depth. While less accurate lithologic samples would be collected with the mud rotary drilling technique, a temporary well casing could be constructed for the purposes of borehole purging and water-quality testing if water-producing aquifer materials were encountered below 795 feet bgs.

Drilling at the Bluebird well site resumed on April 2, 2010, using a mud rotary drill rig. This technique included the installation of a temporary steel casing to stabilize the ground for the mud rotary rig. Drilling advanced slowly, and drill collars were used to stabilize and ensure the plumbness of the borehole. The 6-inch-diameter borehole was reamed to 10 3/4-inch diameter to allow drilling to proceed below 795 bgs. The primary depth of 795 feet bgs was achieved via reaming on April 7, 2010. Drilling then proceeded normally until 820 feet bgs, at which point drilling slowed considerably to 25 minutes per foot on what was logged as welded volcanic tuff. Because certain portions of the water-producing Glen Ellen Formation consist of welded or partially lithified volcanic layers, drilling proceeded to evaluate whether a productive unit might be found below the tuff. On April 8, 2010, a collective decision was made with the Town of Windsor to cease drilling at 867 feet bgs as the bottom of the borehole appeared to be within the unproductive sediments and welded ash of the Sonoma Volcanics Formation.

The lithology logged for the exploratory borehole at the Bluebird well site is presented in detail on the attached Bluebird boring log, Figure 1.

Bluebird Borehole Lithologic and Water Sampling

Two types of water quality samples were collected from the Bluebird borehole: those for general mineral and metals analyses to evaluate potential potability issues and those for isotope analysis to evaluate potential water quality potability issues. These were termed, respectively, borehole water quality (BHWQ) samples and conjunctive use water quality (CUWQ) samples in the field notes and lab records. Both types of water-quality samples were to be collected for major water-producing units, with an expected frequency of one sample every 100 feet of borehole depth. The CUWQ samples were collected to provide a baseline on the groundwater age and genesis for creation of an aquifer mixing model for conjunctive use (i.e., storage of surface water into the aquifer and subsequent retrieval), while the BHWQ samples provided for an assessment of current potability expectations.

BHWQ and CUWQ Sample Collection Protocol

A written sampling protocol for collection of BHWQ and CUWQ samples provided a means for the consistent application of sampling procedures by multiple work-shift teams throughout the duration of the exploratory drilling. The protocol was printed on waterproof paper, bound, and kept at the worksite as a ready reference to be followed by all work-shift teams. For the BHWQ portion of the sampling, the protocol was developed in consultation with Ms. Ann Hill, Manager of Brelje and Race Laboratory, the

Town of Windsor's contract laboratory in Santa Rosa, California. The portion of the sampling protocol for CUWQ sampling was developed in cooperation with Mr. Loren Metzger, Hydrologist, California Water Science Center, United States Geological Survey in Sacramento, California. The sampling protocol included the following key components:

- Definition of sampling groups (i.e., BHWQ and CUWQ) and respective sampling objectives.
- Site naming convention and abbreviations.
- Labeling convention and ID format for samples.
- Order of sample collection.
- Instructions on the collection of field parameters (i.e., pH, temperature, dissolved oxygen, conductivity and Eh, and depth to water measurements).
- Detailed, step-wise sampling and borehole purging procedures for the collection of each analyte in the BHWQ and CUWQ groups.
- Instructions to complete a Chain of Custody form to provide a means of tracking each sample from the field to the laboratory.

A summary of procedures used for the collection of BHWQ samples, organized by analyte is presented below.

Summary of BHWQ Sampling Requirements

Analytes	Collection Procedure Summary	Container
calcium, magnesium, sodium, potassium, iron, manganese, arsenic, chromium, mercury	1. Using the Groundwater Filtration Protocol developed by Merced County, Division of Environmental Heath placed 1 gallon of sample in temporary holding container in an iced cooler and let rest for 12 hours. 2. Next, filtered supernatant from cooled holding container through a 0.45 micron filter and placed it an unpreserved container (sample preservation was performed in the laboratory). 3. Stored each filtered sample in an iced cooler at approximately 4 degrees Celsius and out of direct sunlight. 4. Recorded each sample on the Chain of Custody.	1 x 1/2 gallon, plastic bottle

Analytes	Collection Procedure Summary	Container
pH, total alkalinity, bicarbonate, boron, total dissolved solids, hardness	1. Carefully poured the sample into the 1/2 quart bottle. 2. Stored each sample in an iced cooler at approximately 4 degrees Celsius and out of direct sunlight. 3. Recorded each sample on the Chain of Custody form.	1 x 1/2 quart, plastic bottle
chloride, fluoride, sulfate, nitrate	1. Carefully poured the sample into the 1/2 quart bottle. 2. Stored each sample in an iced cooler at approximately 4 degrees Celsius. 3. Recorded each sample on the Chain of Custody form.	1 x 1/2 pint plastic bottle
total organic carbon	1. Carefully poured the sample water into two, pre-preserved (with phosphoric acid) 40 milliliter VOA vial. 2. Stored each sample in an iced cooler at approximately 4 degrees Celsius. 3. Recorded each sample on the Chain of Custody form.	2 x 40 milliliter VOA

VOA = volatile organic analysis

To profile the quality of water being used in the drilling process at the Bluebird borehole, a sample of water was collected from the holding tank on the drilling rig using its side-mounted spigot.

As soon as practicable following collection, each sample was recorded on the Chain of Custody (COC) form in the field. The COC form allowed custody tracking of each sample, from the time of collection, through transport, and to final release of custody to the laboratory. The COC form documents the date and time of sample collection, name of the person(s) collecting the samples, matrix type, total number of containers submitted, and the analyses requested. The COC form was signed and dated each time the custody of the samples changed.

BHWQ samples were collected at depths of:

- 180 feet bgs
- 220 feet bgs
- 320 feet bgs
- 340 feet bgs
- 440 feet bgs
- 700 feet bgs

Although sampling was attempted at other intervals, field conditions did not yield sufficient water for sampling. Results for BHWQ samples were compiled by RMC and are provided in Table 1.

Summary of CUWQ Sampling Requirements

Analytes	Collection Procedure Summary	Container
alkalinity	1. Conditioned filter and sampling tubing with 25 milliliters of sample water and pre-rinsed sample bottle and cap three times. 2. Filtered each sample through a 0.45 micron filter and bottom-filled the bottle to at least the shoulder. 3. Stored each sample in an iced cooler at approximately 4 degrees Celsius. 4. Recorded each sample on the Chain of Custody form.	1 x 500 milliliter plastic bottle
carbon-14	1. Conditioned filter and sampling tubing with 25 milliliters of sample water and pre-rinsed sample bottle and cap three times. 2. Filtered each sample through a 0.45 micron filter and bottom-filled the bottle to at least the shoulder. 3. Minimized atmospheric exposure of Carbon-14 samples by using air tight sample tube and filter connections. 4. Allowed three volumes of filtered sample to overflow bottle before capping. 5. Stored each sample in an iced cooler at approximately 4 degrees Celsius. 6. Recorded each sample on the Chain of Custody form.	2 x 500 milliliter safety-coated glass bottle
tritium	1. Wrist watches with luminescent dials were not worn during sampling. 2. Collected the raw, unfiltered sample by bottom filling the sample bottle to the shoulder. 3. Stored the samples at ambient temperature and out of direct sunlight.	1 x 1,000 milliliter plastic bottle
stable isotopes	1. Collected raw, unfiltered water in unrinsed bottle. 2. Filled the bottle almost to capacity and secured cap with electrical tape. 3. O18/O16 samples were stored at ambient temperature and out of direct sunlight. 4. S32/S34 samples were collected and stored in general accordance with *Methods for collection of dissolved sulfate and sulfide and analysis of their sulfur isotopic composition*, 1998, USGS OFR 97-234.	1 x 60 milliliter glass bottle (O18/O16) 1 x 1 liter plastic bottle (S32/S34)

CUWQ samples were collected at depths of:

- 180 feet bgs
- 320 feet bgs
- 340 feet bgs
- 700 feet bgs

Although sampling was attempted at other intervals, field conditions did not yield sufficient water for sampling. CUWQ samples were properly purged for stable isotopes of sulfur, hydrogen, oxygen, and carbon in the field and were placed on hold at Brelje & Race Laboratories, Inc. of Santa Rosa, California. Samples hold times are between 6 and 12 months.

Lithologic samples were collected approximately every 10 feet of borehole using the three methodologies described below:

1. Primary samples of sediment and water were placed in mason jars for the purposes of providing a total matrix sample. The samples were collected from a bucket placed beneath the cyclone separator that separates the drilling air from the water and solids driven to the surface inside the drill string. The mason jar lids were labeled according to borehole and depth interval in the field.

2. Secondary soil/sediment samples were collected using a combination of fine-meshed, stainless steel screens suspended under the cyclone separator by a long metal pole for safety. These samples excluded the finest-grain-size clays in the materials coming out the bottom of the cyclone separator. The samples were preserved in small canvas bags and labeled according to borehole and depth interval.

3. Tertiary samples were then created from these secondary samples by centrifuging the samples to remove water and more fine-grained material; these tertiary samples were then dried under a heat lamp and observed under low-power optical microscopes to examine grain textures and colors. The samples were preserved in small sample packets and labeled according to borehole and depth interval.

Bluebird Geophysical Logging

Once the total depth of 867 feet bgs was reached, the borehole was reamed by WDC using the mud rotary bit to a nominal diameter of 10 3/4-inch and conditioned for geophysical logging. A sophisticated suite of geophysical logs of the borehole were completed by Schlumberger, Limited in accordance with the drilling specification. The suite of geophysical logs to be run were specified as:

- Gamma
- Open Hole Sonic Logging
- Single Arm Caliper
- Spontaneous Potential
- Induction Resistivity with Borehole Fluid Resistivity
- Micro-Resistivity

- Magnetic Resonance Logging for:
    - Porosity
    - Bound Water
    - Free Water
    - Relative Permeability

The graphical results of some of the more useful geophysical logs were depicted and correlated by depth to the lithologic logs in Figure 2. Additional geophysical logging for parameters such as temperature were conducted by WDC but are not correlated or provided herein. In addition to the geophysical logging parameters specified, WDC also ran a plumbness and alignment check on the conditioned borehole at Bluebird.

Bluebird Well Design and Construction

The lithology of the borehole was reviewed alongside the raw geophysical logs and the BHWQ laboratory sample results for the Bluebird exploratory borehole. The BHWQ showed an improving manganese trend with depth, as well as an interval of concern for arsenic at 440 feet bgs and one for mercury at 320 feet bgs. At 700 feet bgs, the BHWQ sample indicated a modest exceedance of only the secondary maximum contaminant level (MCL) for manganese. The borehole lithology and geophysics indicated the presence of water-producing aquifer materials from 695 to 750 feet bgs, as shown on Figure 2. The geophysical logs for Bound Fluid Cutoff were compared to the Free Fluid Porosity and both showed an increase over this interval. The well was therefore designed to contain a single well screen set from 695 to 745 feet bgs that would retain the formation materials but maximize yield from the production well. The design was submitted to RMC on April 10, 2010, and approved for construction on April 12, 2010.

The well was installed by WDC under their well construction contract with the Town of Windsor. The well was constructed between April 12 and May 5, 2010. The exploratory borehole was sealed with cement/bentonite grout from 867 feet bgs up to 765 feet bgs with grout tremied in from the bottom. After setting a surface casing and sanitary seal using a larger drill bit, the lower exploratory borehole was reamed using a 17-inch-diameter tri-cone drill bit with 4-bit collars above the bit to aid with well borehole plumbness. The well borehole plumbness and alignment were checked frequently and were within contract specifications at the total depth of 765 feet bgs with an allowed deviation of 0.55 degrees from vertical; the well borehole was measured to be 0.5 degrees from vertical. The replacement Bluebird water production well was then constructed. Placement of the sanitary surface seal was performed in the presence of a representative from the Sonoma County Health Department. Well construction details are depicted in Figure 3.

Bluebird Well Development, Aquifer Testing and Well Water Quality Sampling

The Bluebird well was hydraulically developed from May 3 to May 7, 2010, by WDC according to telephone conference records, using air-lift pumping to develop the gravel pack and remove drilling materials and fine-grained formation materials near the well borehole. The Bluebird well was sampled from the discharge line on May 7, 2010 by RMC. These samples were analyzed for total and dissolved arsenic along with other drinking water constituents. Lab analysis of the May 7th sample reported elevated concentrations of arsenic, (420 parts per billion [ppb]). The well was further developed and resampled on May 12, 2010, by staff for the Town of Windsor. Analytical data from the subsequent

sampling event also indicated that the water within the well contained elevated concentrations arsenic (400 ppb to 420 ppb total in the sample). These results contradicted the borehole water quality data at the well screen-depth-interval which detected no arsenic at a limit of 1 ppb. Assuming an error was not made in sample collection technique (e.g., acidifying the sample in the field), the elevated concentrations of arsenic most likely resulted from a sudden change in the oxidation conditions of the groundwater near the well from the air-lift development activity. Such a condition can be alleviated by completing development of the well to remove fine-grained turbidity from the extracted water and then extracting water using conventional pumping rather than air-lift techniques. As the groundwater returns toward its natural oxidation condition, arsenic concentrations should decrease substantially.

Esposti Park Well Site

Field activities were initiated at the Esposti Park well site on February 23, 2010, with the erection of the sound barrier and security perimeter by WDC. The initial exploratory borehole was drilled with reverse-air-circulation, dual-tube drilling equipment using a 6-inch bit. The equipment and supporting air compressors, water processing tanks/filters, and solids handling roll-off bins were set up at the Esposti Park well site on February 23 and 24, 2010. Exploratory drilling was initiated on February 25 and reached the borehole total depth on February 26, 2010.

Esposti Park Exploratory Borehole Drilling and Logging

Drilling proceeded smoothly at the Esposti Park well site with no significant delays due to inclement weather, drill-bit clogging, or minor equipment breakdowns. On February 26, 2010, a collective decision was made between the Town of Windsor, WDC, and the RMC team to cease exploratory drilling at the Esposti Park site using reverse-air circulation at the then-achieved depth of 960 feet bgs as difficult drilling conditions had been encountered from 920 to 940 feet bgs. This was less than the target of 1,000 feet bgs.

On February 28, 2010, drilling at Esposti Park site resumed using mud rotary drilling to ream the borehole to 10 3/4-inch in diameter and to condition the hole for geophysical surveys . This technique included the installation of a temporary steel casing to stabilize the ground for the mud rotary technique. Drilling advanced slowly, and drill collars were used to stabilize and ensure the plumbness of the borehole to the total depth of 960 feet. The borehole was advanced past 960 feet bgs to 1,040 feet bgs on March 2, 2010, to provide room for the geophysical tool string to log the bottom of the borehole; this extension of the boring was logged as it encountered loose flowing sands at a depth of 1,020 feet.

The lithology logged for the exploratory borehole at the Esposti Park well site was recorded in detail on the attached Esposti Park boring log in Figure 4.

Esposti Park Borehole Lithologic and Water Sampling

Both types of water quality samples were collected from the Esposti Park borehole, BHWQ and CUWQ, as described above for Bluebird well site sampling. Both types of water-quality samples were to be collected for major water-producing units, with an expected frequency of one of every 100 feet of borehole depth.

BHWQ samples were collected at the Esposti Park exploratory borehole at depths of:

- 200 feet bgs

- 285 feet bgs
- 400 feet bgs
- 600 feet bgs
- 736 feet bgs

Although sampling was attempted at other intervals, field conditions did not yield sufficient water for sampling. Procedures used to collect BHWQ samples are summarized above. Results for BHWQ samples were compiled by RMC and are provided in Table 2.

CUWQ samples were collected at depths of:

- 600 feet bgs
- 736 feet bgs

Although sampling was attempted at other intervals, field conditions did not yield sufficient water for sampling. CUWQ samples were properly purged for stable isotopes of sulfur, hydrogen, oxygen, and carbon in the field and were placed on hold at Brelje & Race Laboratories, Inc. of Santa Rosa, California. The same procedures used at the Bluebird well site were used to collect CUWQ samples at Esposti Park. Samples hold times are between 6 and 12 months.

Lithologic samples were collected approximately every 10 feet of borehole using the three methodologies described above.

Esposti Park Geophysical Logging

Once the total depth of 1,040 feet bgs was reached, the borehole was reamed by WDC using a 10 3/4-inch diameter mud rotary bit and conditioned for geophysical logging. The suite of geophysical logs for the borehole was completed in accordance with the drilling specification with no additional plumbness by geophysical tool. The graphical results of some of the more useful geophysical logs were depicted and correlated by depth to the lithologic logs in Figure 5. Additional geophysical logging types for parameters such as temperature were conducted by WDC but are not correlated or provided herein.

Esposti Park Well Design and Construction

The lithology of the borehole was reviewed alongside the raw geophysical logs and the BHWQ lab sample results for the Esposti Park exploratory borehole. The BHWQ showed an improving manganese trend with depth and a degrading arsenic trend with depth. However, manganese was above the secondary MCL at all locations sampled. Arsenic and iron exceeded their respective MCLs at 736 feet bgs but exhibited potable water quality in all four depth intervals sampled above 736 feet bgs. The borehole lithology and geophysics indicated water-producing aquifer materials from 380 to 655 feet bgs based upon sand and gravel texture combined with high Bound Fluid Cutoff readings and higher resistivity, all good indications of water production with lower dissolved solids. A well design was prepared utilizing six individual well screens between 380 and 655 feet in depth that would retain the formation materials but maximize yield from the production well. Blank stainless steel casing was specified between the screen intervals. The initial design was submitted to RMC on March 3, 2010, and after discussion and review by RMC and WDC, the final design plan was submitted to RMC on March 10, 2010, and approved on March 10, 2010, for construction by WDC.

The well was constructed between March 11 and March 27, 2010. The exploratory borehole was sealed with cement/bentonite grout from 1,040 feet bgs up to 670 feet bgs with grout tremied in from the bottom. After setting a surface casing and sanitary seal using a larger drill bit, the lower exploratory borehole was reamed using a 17-inch-diameter tri-cone drill bit with 4-bit collars above the bit to aid with well borehole plumbness. The well borehole plumbness and alignment were checked frequently; alignments were found to be above contract specifications (contract specifications allowed up to 0.55 degrees of deviation from vertical). The well borehole was found to be off at 3.25 degrees when checked at ~500 feet bgs. Well borehole plumbness improved continuously with depth as WDC proceeded slowly and worked back over intervals to fan out the hole toward a more vertical alignment. The borehole alignment reached 1.8 degrees from vertical at the total depth of 765 feet bgs on March 23, 2010; this was presented by WDC and reviewed by the RMC team and judged to be acceptable as the deviation is relatively uniform. Acceptance was provided by RMC on March 23, 2010 to WDC. The replacement Esposti Park water production well was then constructed over the following few days. Esposti Park replacement well construction details are depicted in Figure 6.

Esposti Park Well Development, Aquifer Testing and Well Water Quality Sampling

The Esposti Park well was hydraulically developed from March 27 to April 9, 2010, using air-lift pumping to develop the gravel pack and remove drilling materials and fine-grained formation materials near the well borehole. The Esposti Park well was step-discharge tested on April 28, 2010. RMC conducted a short-duration aquifer test concurrent with dynamic well testing by BESST on April 29, 2010. Water quality samples were collected from the Esposti Park well when the initial discharge test was performed. Results were reportedly in the range of 40 ppb arsenic. Again, if an error was not made in sample collection technique, then the elevated concentrations of arsenic most likely resulted from a sudden change in the oxidation conditions of the groundwater near the well from the air-lift development activity. Such a condition can be alleviated by completing development of the well to remove fine-grained turbidity from the extracted water and then extracting water using conventional pumping rather than air-lift techniques. As the groundwater returns toward its natural oxidation condition, arsenic concentrations should decrease substantially.

Attachments: Figure 1, Boring Log: Bluebird
Figure 2, Boring Log: Bluebird (with geophysics)
Figure 3, Well Construction Diagram (Bluebird)
Figure 4, Boring Log: Esposti Park
Figure 5, Boring Log: Esposti Park (with geophysics)
Figure 6, Well Construction Diagram (Esposti Park)
Table 1, Bluebird Borehole Water Quality Sample Results
Table 2, Esposti Park Borehole Water Quality Sample Results

JML:ame

FIGURES

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

FIGURE 1: BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Start Date:	2/6/2010
End Date:	5/5/2010
Latitude:	N 38° 53' 91"
Longitude:	W 122° 80' 13"

Drilling Company: WDC Exploration and Wells

Driller: J. Chavez

Drilling Equipment: Reverse Circulation Air (0'-795'), Mud Rotary (795'-867')

Depth In Feet	Sample Interval	Sample ID	Graphic	USCS	Description
0				SC	Clayey SAND (SC) - varicolored (tan to brown, clear to frosted quartz with some red-pink), poorly sorted, fine to coarse sand, subrounded to subangular; clay soft, plastic; trace varicolored (tan to brown), fine to coarse gravel
10				CL	Sandy CLAY (CL) - mostly soft, plastic clay with fine to coarse sand, trace fine to coarse gravel; trace quartz, little volcanics of clear to frosted white, pink, red, brown, black (obsidian)
20					
30				GC	GRAVEL (GC) - varicolored, poorly sorted fine to coarse gravel; little clay; poorly sorted coarse to medium, subangular to subrounded sand; rare obsidian clast
40				CL	Sandy CLAY (CL) - mostly dry, stiff clay; few varicolored, poorly sorted coarse sand, trace fine angular to subrounded sand; trace quartz sand; trace cobble; gravel layer from 41.0 feet to 42.5 feet
50					
60					
70					
80					
90					
100					
110				SW	Gravelly SAND (SW) - varicolored, coarse to medium, subrounded to angular sand; minor fine gravel; no sample (no return circulation) from 110 feet to 120 feet (sand?)
120				CL	CLAY (CL) - varicolored (gray to tan), stiff clay; varicolored (tan, pale, buff, orange) fine to coarse, subangular to angular gravel; moderately well sorted coarse sand; rare green fine gravel
130				GP	Gravel and Sand (GP) - varicolored (predominately dark green but some gray) coarse gravel; medium to coarse, subangular to subrounded sand; clay layer from 170 to 171 which clogged bit
140					
150					
160					
170					
180		BBT01-20100209-180			
190				CL	Sandy CLAY (CL) - dense gray clay with sand
200				CL	Sandy CLAY (CL) - dense brown clay with sand
210				SW/GW	Gravelly SAND to Sandy GRAVEL (SW/GW) - predominately gray-green but some varicolored, fine to coarse, angular to subangular sand; coarse gravel; repeating coarse to fine bedding
220		BBT01-20100210-220			

Well: See Well Construction Diagram for More Detail

Surface Seal:	Sanitary Seal (Grout)	0 to 60	feet bgs	Screened Interval:	695 to 745 feet bgs
Annulous Seal:	Grout	0 to 665	feet bgs	Casing Diameter:	10.0 inches
Filter Pack:	SRI 1/4 inch Gravel	675 to 765	feet bgs	Total Boring Depth:	867.0 feet
Monument Type:	Temporary well cap	to	feet bgs	Total Well Depth:	765.0 feet

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

FIGURE 1: BORING LOG: Bluebird
Bluebird Replacement Well Test Hole

Start Date:	2/6/2010
End Date:	5/5/2010
Latitude:	N 38° 53' 91"
Longitude:	W 122° 80' 13"

Drilling Company: WDC Exploration and Wells
Driller: J. Chavez
Drilling Equipment: Reverse Circulation Air (0'-795'), Mud Rotary (795'-867')

Depth In Feet	Sample Interval	Sample ID	Graphic	USCS	Description	Well
230						
240						
250						
260						
270						
280						
290						
300						
310						
320		BBT01-20100216-320				
330						
340		BBT01-20100216-340				
350				CL	Sandy CLAY (CL) - light gray clay; sand; trace cobble	
360				SP/SW	SAND (SP/SW) - green gray, mostly fine sand, little medium sand, rounded to subrounded; trace coarse sand; volcanics	
370				CL	Sandy CLAY (CL) - dark gray clay, some sand; trace cobble	
380				SP	Sand (SP) - varicolored, mostly fine sand, little medium sand, subrounded to rounded	
390				CL	Sandy CLAY (CL) - dark gray clay; sand; mostly fine sand layer from 394 feet to 395.5 feet	
400				SP	SAND (SP) - poorly sorted, fine to coarse sand, subangular to rounded, abundant fine, well rounded quartz sand; gray to buff clast	
410				CL	Sandy CLAY (CL) - dark gray clay; fine sand; mostly fine sand layer 418 feet to 419 feet	
420				GM/GP	SAND and GRAVEL (GM/GP) - varicolored (buff, gray, red, orange, pink) fine to coarse, angular sand; some moderately poorly sorted, fine, subrounded to subangular gravel; predominately volcanics (contains trace ash)	
430						
440		BBT01-20100216-440				
450				CL	Sandy CLAY (CL) - varicolored gray to tan, stiff, clay; little fine to coarse, subangular to angular sand and gravel	
460						

Project	Well Installation	**FIGURE 1:** BORING LOG: Bluebird	
Location:	Windsor, CA	Bluebird Replacement Well Test Hole	
E-PUR PN:	E102-001-01, Task 200		
Logged by:	B. Gulbranson, J. Buchowski, G. Moore		
Surface Conditions:	Grass Covered	Start Date:	2/6/2010
Sampler Type:	Grab	End Date:	5/5/2010
		Latitude:	N 38° 53' 91"
		Longitude:	W 122° 80' 13"

Drilling Company: WDC Exploration and Wells
Driller: J. Chavez
Drilling Equipment: Reverse Circulation Air (0'-795'), Mud Rotary (795'-867')

Depth In Feet	Sample Interval	Sample ID	Graphic	USCS	Description	Well
470				SM	Silty SAND (SM) - varicolored (predominately dark) medium sand with some coarse sand; varicolored, poorly sorted, fine to coarse gravel; abundant, gray, friable (ash)	
480				SP	SAND (SP) - sand with minor gravel; no ash	
490						
500						
510				CL	CLAY (CL) - mostly soft gray clay; some gray but increasing in green sand; little fine to coarse gravel	
520				SW	Gravelly SAND (SW) - varicolored (gray, red, orange, and green), moderately poorly sorted, predominately fine to medium sand with some coarse sand, subrounded to subangular, with some varicolored (gray, green) fine to coarse gravel; trace “clumps” of gray clay (probably thin layers; clay “clumps” turn from gray to brown 560 feet to 575 feet	
530						
540						
550						
560						
570						
580				CL	CLAY (CL) - soft gray clay	
590				SM	SAND (SM) - mostly gray-green, predominately fine but some medium to coarse, subrounded to subangular sand; few gray soft clay/silt; few gray, fine, gravel	
600						
610				SC/CL	Sandy CLAY (SC/CL) - gray clay; some fine to coarse, poorly sorted sand; few fine gravel but some black, coarse, “chert like” clasts	
620						
630						
640						
650				SM	Silty SAND (SM) - light gray, fine, predominately well rounded quartz sand; trace clay/silt layers; abundant ash tuff	
660						
670						
680						
690				CH	CLAY (CH) - dark gray, plastic, clay; little fine, rounded to subangular sand layers, some quartz; abundant ash tuff including fine sand at base with iron staining of quartz	
700		BBT01-20100220-700		SW/SM	SAND (SW/SM) - varicolored (predominately dark gray to green gray to brown), poorly to moderately sorted, coarse to fine, subrounded to subangular sand; little brown, fine gravel; abundant friable ash; rare smokey black obsidian	
710						

Project	Well Installation		
Location:	Windsor, CA		
E-PUR PN:	E102-001-01, Task 200		
Logged by:	B. Gulbranson, J. Buchowski, G. Moore		
Surface Conditions:	Grass Covered	Start Date:	2/6/2010
Sampler Type:	Grab	End Date:	5/5/2010
		Latitude:	N 38° 53' 91"
		Longitude:	W 122° 80' 13"

FIGURE 1: BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Drilling Company: WDC Exploration and Wells

Driller: J. Chavez

Drilling Equipment: Reverse Circulation Air (0'-795'), Mud Rotary (795'-867')

Depth In Feet	Sample Interval	Sample ID	Graphic	USCS	Description	Well
710						
720						
730						
740						
750				CL	CLAY (CL) - dark gray clay, plastic, strong desiccant; well rounded to angular, fine sand; fine sand layer with fine gravel 767 feet to 768 feet	
760						
770						
780						
790				SW	Gravelly SAND (SW) - varicolored (predominately pale dark green and clear/frosted white quartz with some medium dark gray, trace red-yellow), poorly sorted, fine to coarse, subangular to angular trace subrounded sand; little gray, subrounded gravel; rare obsidian, some ash tuff	
800				CL	Sandy CLAY (CL) - gray/brown, soft, clay; interbedded, varicolored (but predominately light to dark green), fine to medium, rounded to subrounded sand; abundant red, white, orange chert, milky quartz; trace obsidian; trace ash	
810						
820				CL	Sandy CLAY (CL) - light gray, clay; interbedded, light gray, sand; abundant obsidian some quartz, chert, and salmon pink quartzite (drills extremely hard); welded ash	
830						
840						
850						
860				CL	CLAY (CL) - dark gray green, clay (ash); fine sand with abundant obsidian, some chert, rhyolite, dacite, andesite; welded ash Bottom of Boring	

E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE: 2

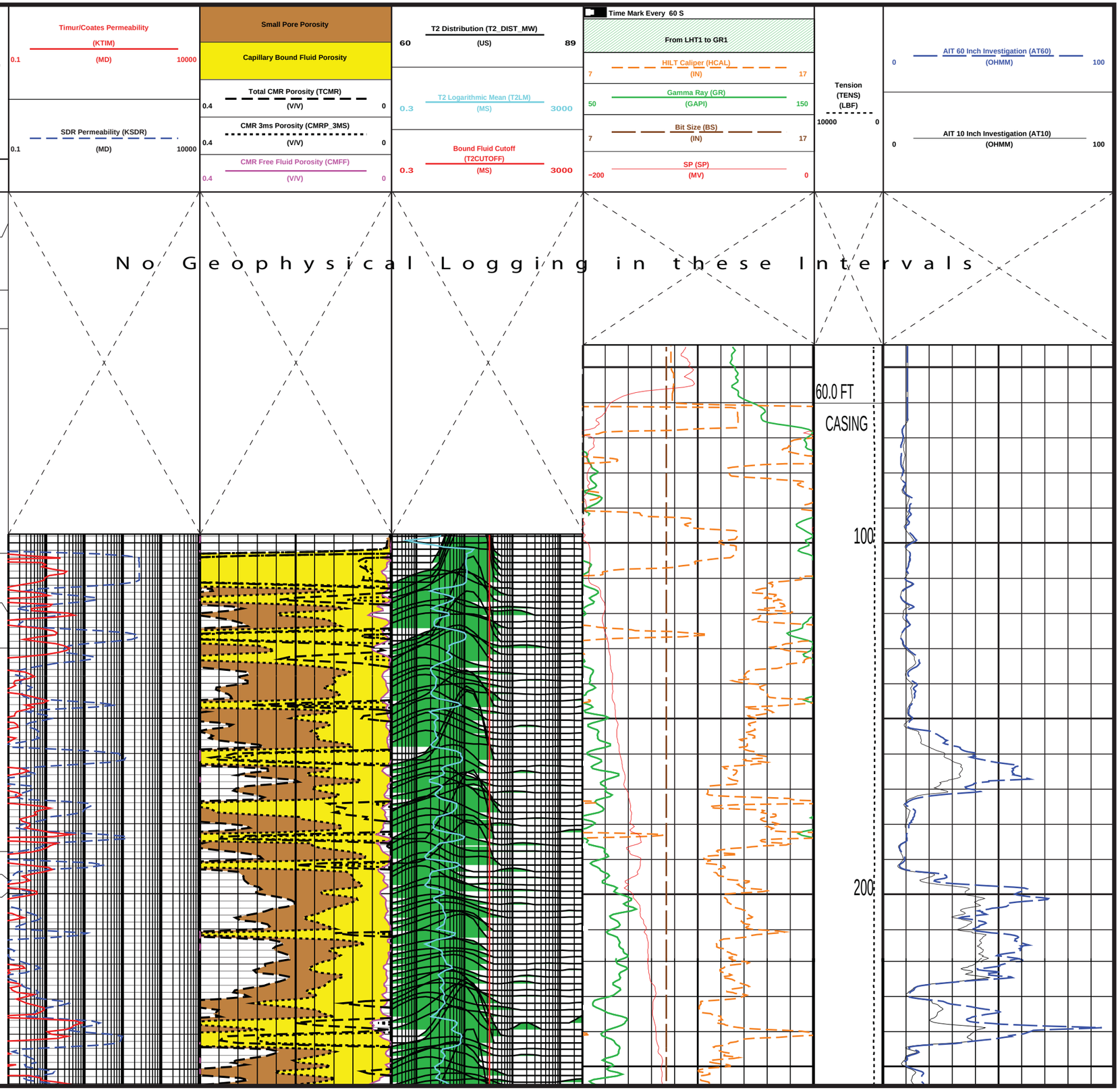
BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
0		SC	Clayey SAND (SC) - varicolored (tan to brown, clear to frosted quartz with some red-pink), poorly sorted, fine to coarse sand, subrounded to subangular; clay soft, plastic; trace varicolored (tan to brown), fine to coarse gravel
10		CL	Sandy CLAY (CL) - mostly soft, plastic clay with fine to coarse sand, trace fine to coarse gravel; trace quartz, little volcanics of clear to frosted white, pink, red, brown, black (obsidian)
30		GC	GRAVEL (GC) - varicolored, poorly sorted fine to coarse gravel; little clay; poorly sorted coarse to medium, subangular to subrounded sand; rare obsidian clast
40		CL	Sandy CLAY (CL) - mostly dry, stiff clay; few varicolored, poorly sorted coarse sand, trace fine angular to subrounded sand; trace quartz sand; trace cobble; gravel layer from 41.0 feet to 42.5 feet
100		SW	Gravelly SAND (SW) - varicolored, coarse to medium, subrounded to angular sand; minor fine gravel; no sample (no return circulation) from 110 feet to 120 feet (sand?)
120		CL	CLAY (CL) - varicolored (gray to tan), stiff clay; varicolored (tan, pale, buff, orange) fine to coarse, subangular to angular gravel; moderately well sorted coarse sand; rare green fine gravel
130		GP	Gravel and Sand (GP) - varicolored (predominately dark green but some gray) coarse gravel; medium to coarse, subangular to subrounded sand; clay layer from 170 to 171 which clogged bit
190		CL	Sandy CLAY (CL) - dense gray clay with sand
200		CL	Sandy CLAY (CL) - dense brown clay with sand
210		SW/GW	Gravelly SAND to Sandy GRAVEL (SW/GW) - predominately gray-green but some varicolored, fine to coarse, angular to subangular sand; coarse gravel; repeating coarse to fine bedding



E-PUR, llc

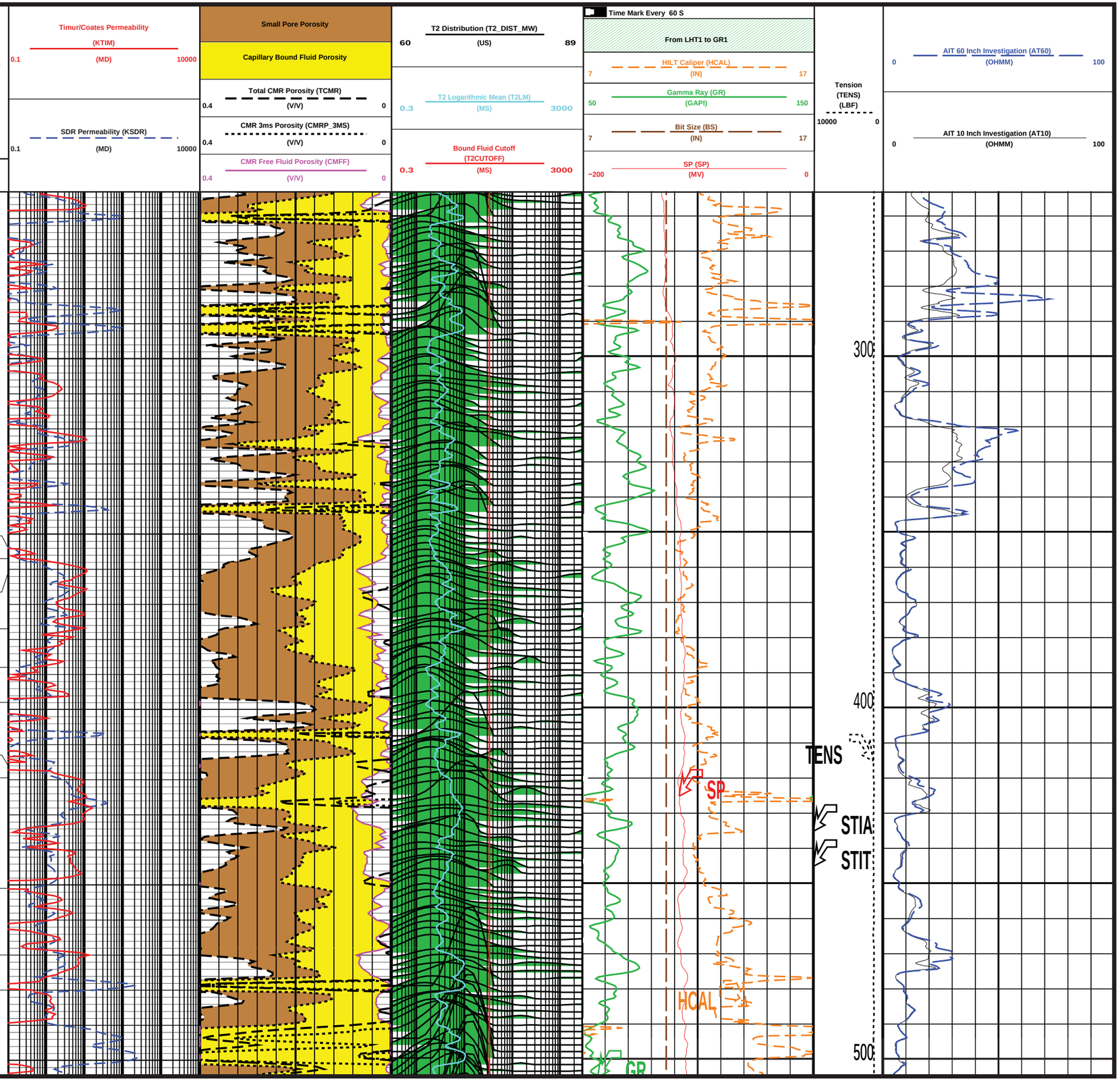
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE: 2
BORING LOG: Bluebird
Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
350		CL	Sandy CLAY (CL) - light gray clay; sand; trace cobble
360		SP/SW	SAND (SP/SW) - green gray, mostly fine sand, little medium sand, rounded to subrounded; trace coarse sand; volcanics
370		CL	Sandy CLAY (CL) - dark gray clay, some sand; trace cobble
380		SP	Sand (SP) - varicolored, mostly fine sand, little medium sand, subrounded to rounded
390		CL	Sandy CLAY (CL) - dark gray clay; sand; mostly fine sand layer from 394 feet to 395.5 feet
400		SP	SAND (SP) - poorly sorted, fine to coarse sand, subangular to rounded, abundant fine, well rounded quartz sand; gray to buff clast
410		CL	Sandy CLAY (CL) - dark gray clay; fine sand; mostly fine sand layer 418 feet to 419 feet
420		GM/GP	SAND and GRAVEL (GM/GP) - varicolored (buff, gray, red, orange, pink) fine to coarse, angular sand; some moderately poorly sorted, fine, subrounded to subangular gravel; predominately volcanics (contains trace ash)
450		CL	Sandy CLAY (CL) - varicolored gray to tan, stiff, clay; little fine to coarse, subangular to angular sand and gravel
470		SM	Silty SAND (SM) - varicolored (predominately dark) medium sand with some coarse sand; varicolored, poorly sorted, fine to coarse gravel; abundant, gray, friable (ash)
480		SP	SAND (SP) - sand with minor gravel; no ash



E-PUR, llc

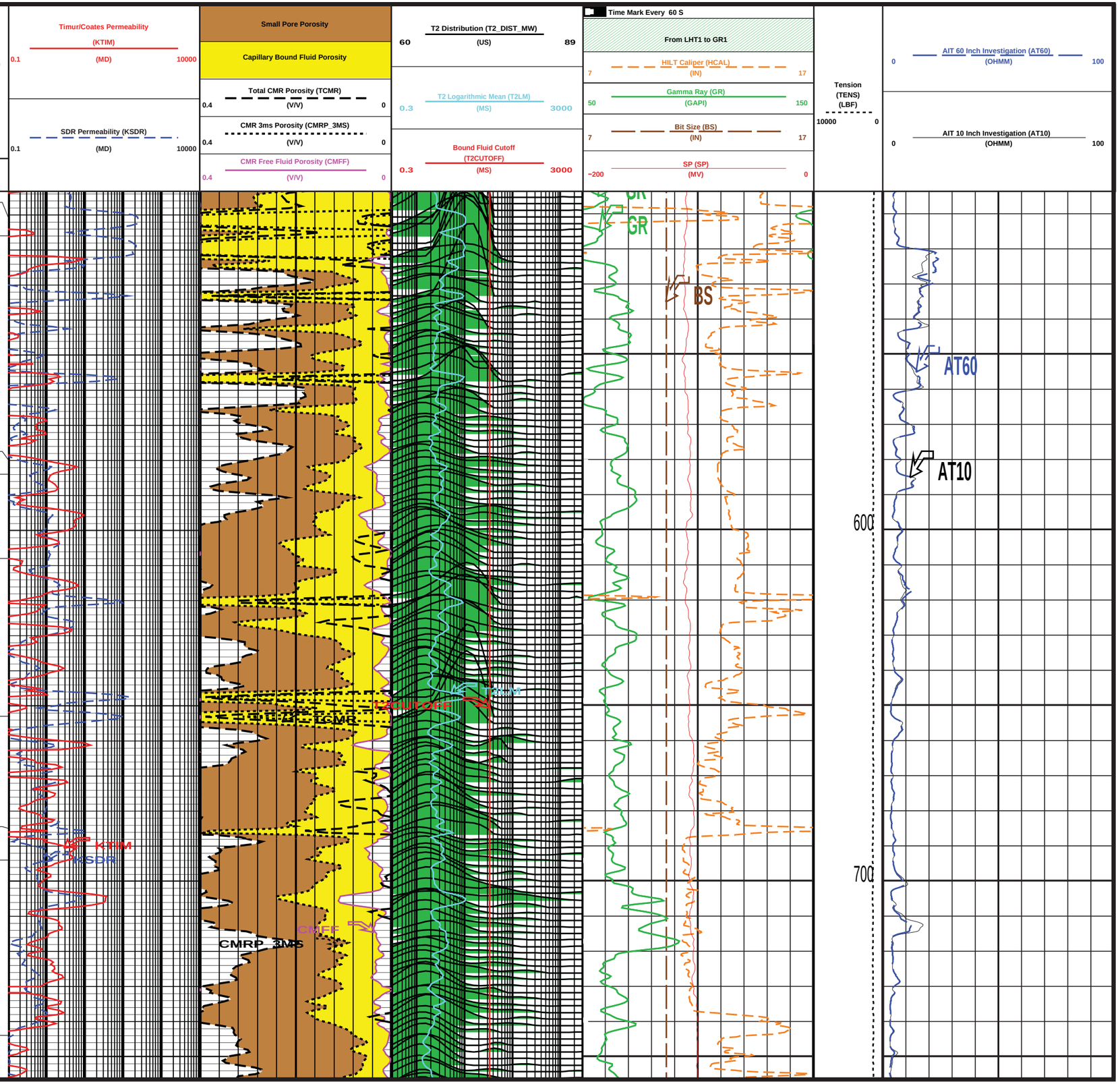
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE: 2
BORING LOG: Bluebird
Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
510		CL	CLAY (CL) - mostly soft gray clay; some gray but increasing in green sand; little fine to coarse gravel
520		SW	Gravelly SAND (SW) - varicolored (gray, red, orange, and green), moderately poorly sorted, predominately fine to medium sand with some coarse sand, subrounded to subangular, with some varicolored (gray, green) fine to coarse gravel; trace “clumps” of gray clay (probably thin layers; clay “clumps” turn from gray to brown 560 feet to 575 feet
530			
540			
550			
560			
570			
580		CL	CLAY (CL) - soft gray clay
590		SM	SAND (SM) - mostly gray-green, predominately fine but some medium to coarse, subrounded to subangular sand; few gray soft clay/silt; few gray, fine, gravel
600			
610		SC/CL	Sandy CLAY (SC/CL) - gray clay; some fine to coarse, poorly sorted sand; few fine gravel but some black, coarse, “chert like” clasts
620			
630			
640			
650			
660		SM	Silty SAND (SM) - light gray, fine, predominately well rounded quartz sand; trace clay/silt layers; abundant ash tuff
670			
680			
690		CH	CLAY (CH) - dark gray, plastic, clay; little fine, rounded to subangular sand layers, some quartz; abundant ash tuff including fine sand at base with iron staining of quartz
700		SW/SM	SAND (SW/SM) - varicolored (predominately dark gray to green gray to brown), poorly to moderately sorted, coarse to fine, subrounded to subangular sand; little brown, fine gravel; abundant friable ash; rare smokey black obsidian
710			
720			
730			
740			
750		CL	CLAY (CL) - dark gray clay, plastic, strong desiccant; well rounded to angular, fine sand; fine sand layer with fine gravel 767 feet to 768 feet



E-PUR, llc

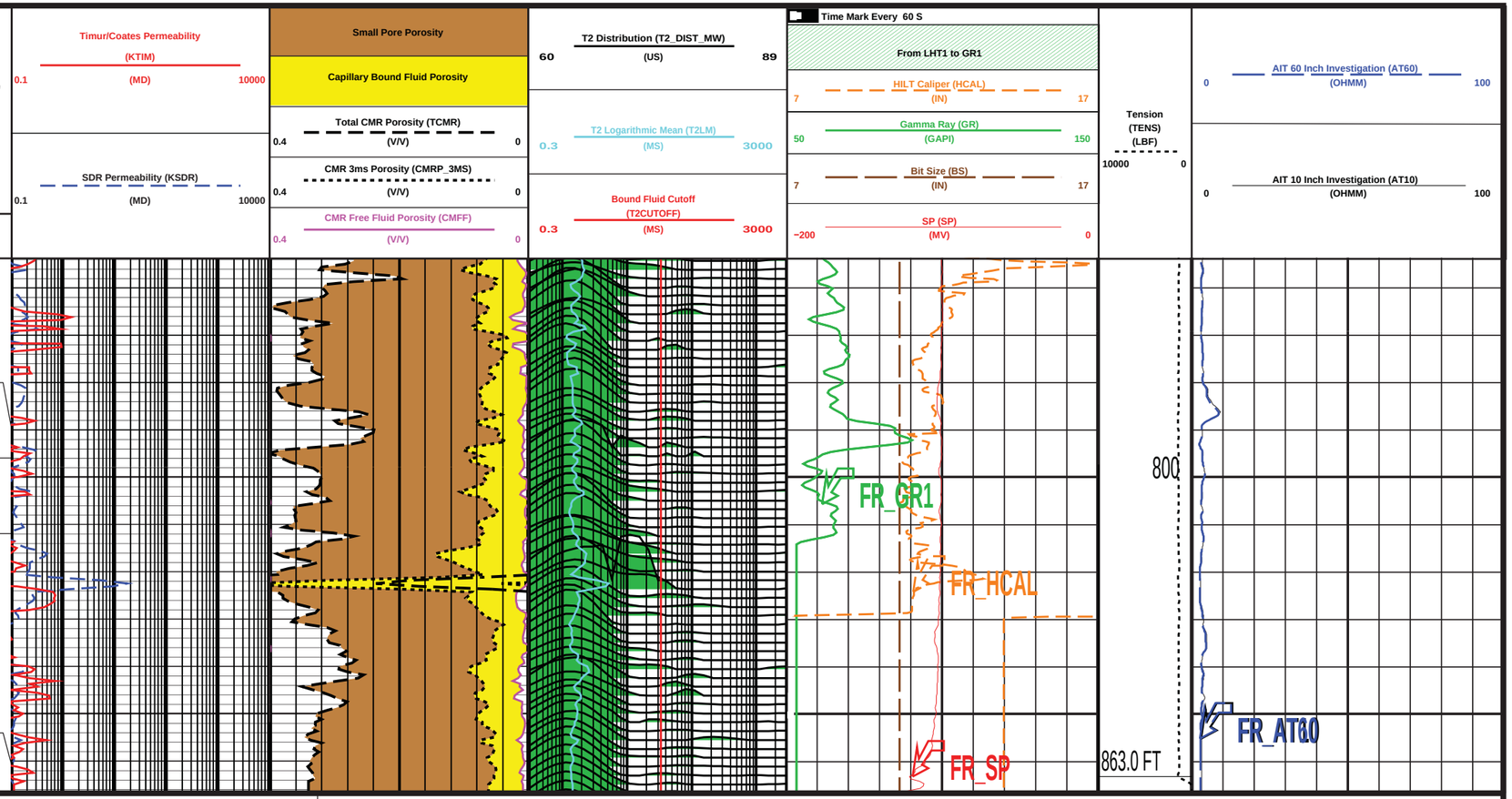
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE: 2
BORING LOG: Bluebird
Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
760			
770			
780			
790		SW	Gravelly SAND (SW) - varicolored (predominately pale dark green and clear/frosted white quartz with some medium dark gray, trace red-yellow), poorly sorted, fine to coarse, subangular to angular trace subrounded sand; little gray, subrounded gravel; rare obsidian, some ash tuff
800		CL	Sandy CLAY (CL) - gray/brown, soft, clay; interbedded, varicolored (but predominately light to dark green), fine to medium, rounded to subrounded sand; abundant red, white, orange chert, milky quartz; trace obsidian; trace ash
810			
820		CL	Sandy CLAY (CL) - light gray, clay; interbedded, light gray, sand; abundant obsidian some quartz, chert, and salmon pink quartzite (drills extremely hard); welded ash
830			
840			
850			
860		CL	CLAY (CL) - dark gray green, clay (ash); fine sand with abundant obsidian, some chert, rhyolite, dacite, andesite; welded ash Bottom of Boring



Page 4/4

Surface Seal:	Sanitary Seal (Grout)	0 to 60	feet bgs	Screened Interval:	695 to 745	feet bgs
Annulous Seal:	Grout	0 to 665	feet bgs	Casing Diameter:	10.0 inches	
Filter Pack:	SRI 1/4 inch Gravel	675 to 765	feet bgs	Total Boring Depth:	867.0 feet	
Monument Type:	Temporary well cap	to	feet bgs	Total Well Depth:	765.0 feet	

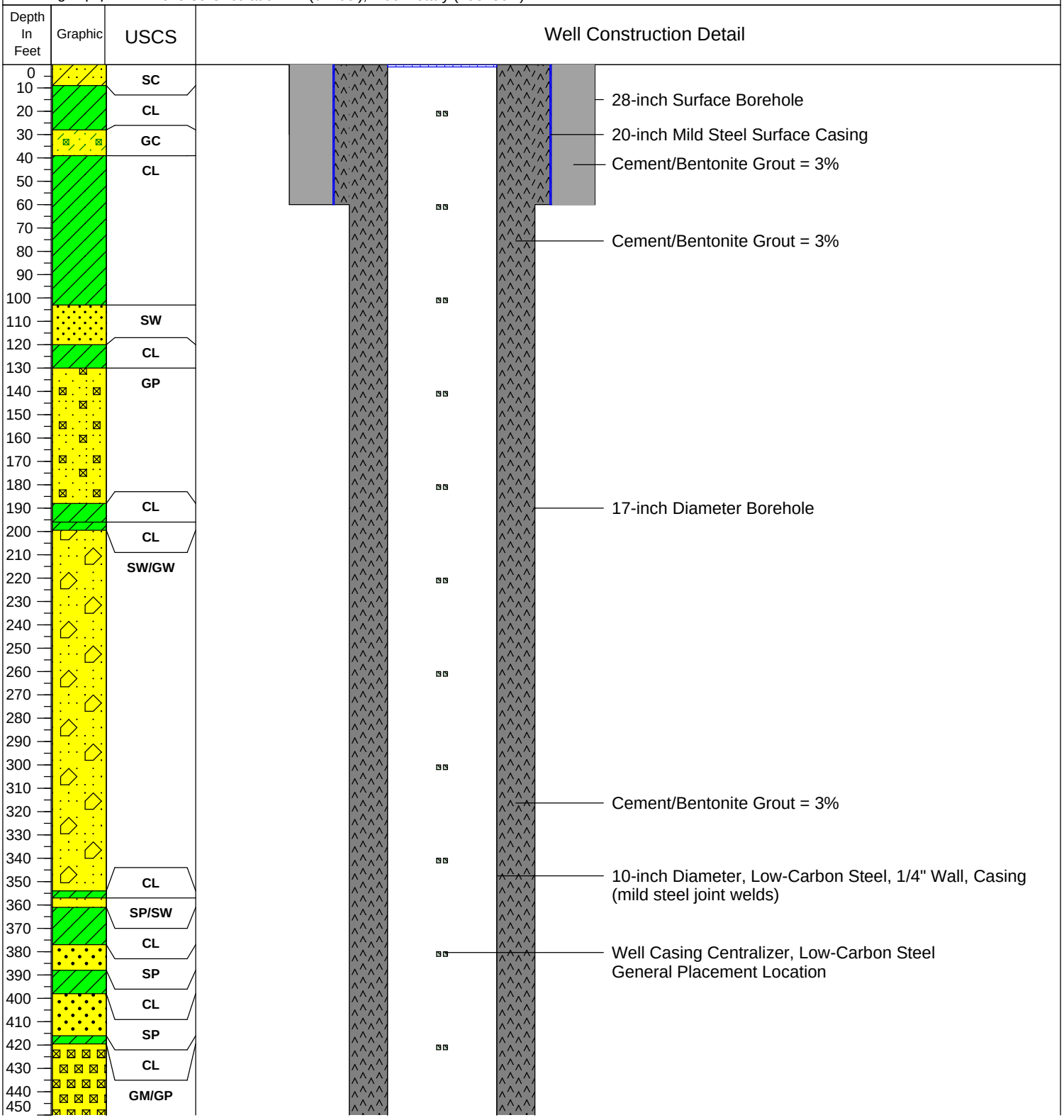
Lithologic Log Notes:
UCS Unified Soil Classification System (Visual-Manual Method)

Geophysical Log Notes:
Geophysical logging by Schlumberger (Bakersfield, CA)
CMR - Combinable Magnetic Resonance Tool
SP - Spontaneous Potential

FIGURE 3:WELL CONSTRUCTION DIAGRAM
Bluebird Replacement Well Test Hole

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab from Cyclone
Start Date:	2/6/2010
End Date:	5/5/2010
Latitude:	N 38° 53' 91"
Longitude:	W 122° 80' 13"

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation Air (0'-795'), Mud Rotary (795'-867')

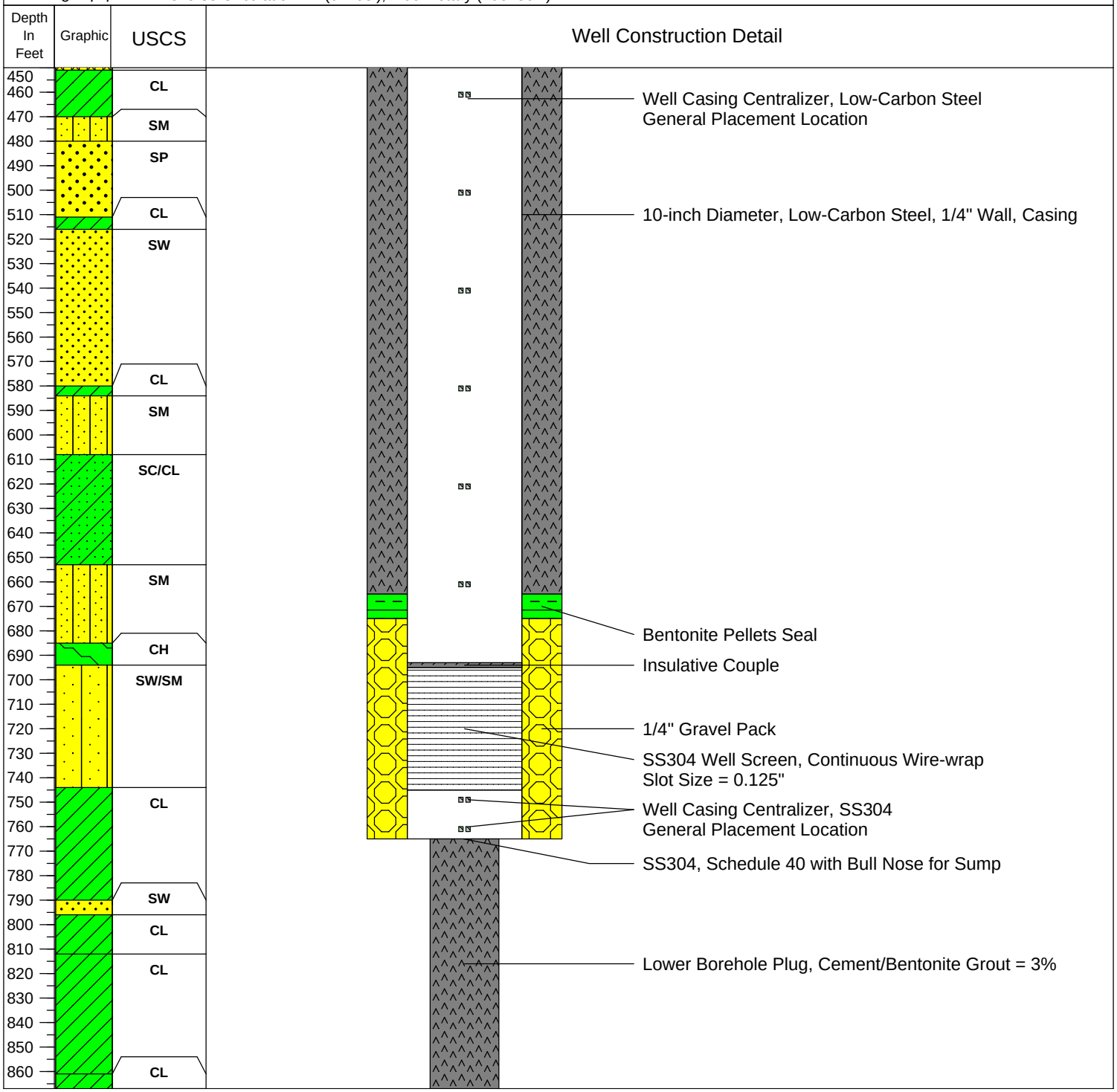


Sanitary Seal:	Cement/Bentonite Grout	0 to 60	feet bgs	Surface Casing:	20-inch Steel	0 to 60	feet bgs
Annular Seal:	Cement/Bentonite Grout	0 to 665	feet bgs	Screened Interval:	695 to 745		feet bgs
Filter Pack:	SRI 1/4" Gravel	675 to 765	feet bgs	Casing Diameter:	10.0 inches		
Monument Type:	Concrete Pedestal with Steel Well Cap			Total Well Depth:	765.0 feet		

Project	Well Installation		
Location:	Windsor, CA		
E-PUR PN:	E102-001-01, Task 200		
Logged by:	B. Gulbranson, J. Buchowski, G. Moore		
Surface Conditions:	Grass Covered	Start Date:	2/6/2010
Sampler Type:	Grab from Cyclone	End Date:	5/5/2010
		Latitude:	N 38° 53' 91"
		Longitude:	W 122° 80' 13"

FIGURE 3: WELL CONSTRUCTION DIAGRAM
Bluebird Replacement Well Test Hole

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation Air (0'-795'), Mud Rotary (795'-867')



Project	Exploratory Borehole for Replacement
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered

FIGURE 4: BORING LOG:Esposti Park

Esposti Park Test Hole

Start Date:	2/24/2010
End Date:	3/2/2010
Latitude:	N 38° 31' 35.4"
Longitude:	W 122° 46' 46.5"
Location Address:	SW Corner of Esposti Park near Public Restrooms

Depth In Feet	Sample Interval	Water Sample ID	Graphic	USCS	Description
0				CL	Sandy CLAY (CL) - medium to light brown, soft, plastic clay; varicolored, poorly sorted, fine to coarse, subangular to angular sand; poorly sorted, rounded fine to coarse gravel
20				CL	Gravelly CLAY (CL) and Sandy CLAY (CL) - light brown, very fine to coarse grained sand, subangular to angular; gravel units, fine to coarse, subangular to subrounded.
60				SW	SAND (SW) - varicolored, poorly sorted, fine to coarse, subrounded to subangular sand with silty sand and silty gravel 70-71 feet; some metamorphosed quartz and feldspars.
80				CL	Sandy CLAY (CL) - light gray clay with sand
90				GM	Gravelly SAND (GM) - varicolored, poorly sorted, fine to medium, angular to subrounded sand; some, varicolored, poorly sorted, fine to coarse, angular to subrounded gravel; little silt. Gravel clasts metasedimentary sandstone to quartzite
110				GM	Sandy GRAVEL (GM) - varicolored changing to green/gray, poorly sorted, fine to medium, rounded to subangular gravel; some sand; little silt. Green fine grained basalt clasts
120				CL	Silty CLAY (CL) - dark gray/green, plastic clay; with silt and fine sand
140				SM	Silty SAND (SM) - gray/green, poorly sorted, rounded to subrounded, fine sand; fine, subangular to subrounded gravel; with rare cobble
150				GM	Silty GRAVEL (GM) - as above with fine gravel to coarse sand, varicolored
160				CL	Sandy CLAY (CL) - light brown, clay; sand
170				GM	Silty GRAVEL (GM) - varicolored, unsorted to poorly sorted, fine, subangular to subrounded gravel; with rare cobble; units of silty sand, fine to medium grained, angular to subrounded.
180				SP	SAND (SP) - varicolored, subrounded to rounded, fine to medium sand; abundant well rounded and frosted quartz
190				SW	Sand (SW) - fine to coarse sand, well graded, similar in angularity and color to above.
200		EPT01-20100225-200			
220				SP	Sand (SP) - varicolored, fine to medium, poorly graded sand

Well: See Well Construction Diagram for More Detail

Drilling Company:	WDC Exploration and Wells
Driller:	Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment:	Reverse Circulation Air (0'-965'), Mud Rotary (965'-1040')
Lithology Sampler Type:	Grab from Cyclone
Water Sampler Type:	Clean Bailer
Boring Diameter:	6 inches
Total Boring Depth:	1040.0 feet
Total Well Depth:	670.0 feet
Well Screened Interval:	380-420, 430-450, 460-470, 480-510, 545-565, 615-655 feet bgs

Project	Exploratory Borehole for Replacement	**FIGURE 4:** BORING LOG:Esposti Park	
Location:	Windsor, CA	Esposti Park Test Hole	
E-PUR PN:	E102-001-01, Task 200	Start Date:	2/24/2010
Logged by:	B. Gulbranson, J. Buchowski, G. Moore	End Date:	3/2/2010
Surface Conditions:	Grass Covered	Latitude:	N 38° 31' 35.4"
		Longitude:	W 122° 46' 46.5"
		Location Address:	SW Corner of Esposti Park near Public Restrooms

Depth In Feet	Sample Interval	Water Sample ID	Graphic	USCS	Description	Well
230				CL	Silty CLAY (CL) - light gray clay; with silt	
240				SM	Silty SAND (SM) - varicolored, poorly sorted, rounded to subrounded to subangular sand; few to little silt (ash); some gravel units	
250						
260				SW	Sand (SW) - varicolored, poorly sorted, fine to coarse grained, subrounded to subangular sand	
270				GW	GRAVEL (GW) - red stained gravel with sand, poorly sorted, subrounded to subangular, few obsidian clasts	
280						
		EPT01-20100225-285		CL	Sandy CLAY (CL) - light gray clay; fine sand	
290				SM	Silty SAND (SM) - gray, rounded to subrounded, fine sand, abundant milky frosted quartz; abundant rhyolite with red staining on some grains; increasing coarseness to gravel with depth	
300				GM	Silty GRAVEL (GM) - as above with fine gravel and some sand	
310						
320						
330						
				CL	Sandy CLAY (CL) - light gray clay; sand	
340				ML/CL	SILT and CLAY (ML/CL) - light brown, tan/buff, friable, fine ash; trace fine gravel	
350				GP	GRAVEL with SAND (GP) - varicolored, subrounded to rounded to subangular, fine to medium gravel; moderately well sorted, fine to coarse, subangular to subrounded sand	
360						
370						
				ML/CL	SILT and CLAY (ML/CL) - light green gray, ash, some clear to frosted sand, pale green fine sand	
380				GW/GM	GRAVEL with SAND (GW/GM) - varicolored, moderately well sorted, fine to coarse, subrounded gravel; some angular to subangular sand	
390						
400		EPT01-20100225-400			Abundant volcanics at 400 feet	
410						
420						
430						
440						
				SW	SAND (SW) - well graded sand, with little ash; stringer of clay at 450 feet	
450				GW/SW	Sandy GRAVEL (GW) to Gravelly SAND (SW) - varicolored, fine to coarse grained sand and gravel	
460					Stringer of clay at 465 feet	

Project	Exploratory Borehole for Replacement	**FIGURE 4:** BORING LOG:Esposti Park	
Location:	Windsor, CA	Esposti Park Test Hole	
E-PUR PN:	E102-001-01, Task 200	Start Date:	2/24/2010
Logged by:	B. Gulbranson, J. Buchowski, G. Moore	End Date:	3/2/2010
Surface Conditions:	Grass Covered	Latitude:	N 38° 31' 35.4"
		Longitude:	W 122° 46' 46.5"
		Location Address:	SW Corner of Esposti Park near Public Restrooms

Depth In Feet	Sample Interval	Water Sample ID	Graphic	USCS	Description	Well
470						
480					Trace of clay at 480 feet	
490						
500						
510					Interbedded clay unit with sand and gravel at 510 to 513 feet	
520					Trace obsidian at 520 feet	
530						
540					Lost circulation at 545 feet	
550						
560						
570						
580					Trace of clay at 580 feet;	
590						
600		EPT01-20100225-600		ML	Sandy SILT (ML) - gray, friable, silt (ash); light gray, angular to subrounded, medium sand;	
610						
620						
630						
640				SP/GP	SAND and GRAVEL (SP/GP) - varicolored, moderately sorted, fine to medium, subrounded to subangular sand; some varicolored, subrounded, fine to medium gravel; interbedded gray, soft clay	
650				CL	Silty CLAY (CL) - light gray clay and silt (ash) with interbedded gray, soft clay; some fine sand	
660						
670				SM/ML	Silty SAND/Sandy SILT (SM/ML) - gray to varicolored, fine to coarse, subrounded to subangular sand; abundant gray to varicolored silt (ash); red and yellow, fine to medium gravel; no clay	
680				CL	CLAY (CL) - light tan, soft, occasionally stiff clay; abundant fine sand	
690						
700				GW/SW	GRAVEL to SAND (GW/SW) - dark gray to varicolored, subrounded, medium to large gravel; varicolored, moderately poorly sorted, subrounded to subangular, medium to coarse with some fine sand	
710						

Project	Exploratory Borehole for Replacement	**FIGURE 4:** BORING LOG:Esposti Park	
Location:	Windsor, CA	Esposti Park Test Hole	
E-PUR PN:	E102-001-01, Task 200	Start Date:	2/24/2010
Logged by:	B. Gulbranson, J. Buchowski, G. Moore	End Date:	3/2/2010
Surface Conditions:	Grass Covered	Latitude:	N 38° 31' 35.4"
		Longitude:	W 122° 46' 46.5"
		Location Address:	SW Corner of Esposti Park near Public Restrooms

Depth In Feet	Sample Interval	Water Sample ID	Graphic	USCS	Description	Well
710						
720				GM/SM	Silty GRAVEL (GM) to Silty SAND (SM) - color and texture as above	
730				SW	SAND (SW) - dark green gray, very fine to medium grained sand, rounded to subrounded, poorly sorted; few gravel	
740		EPT01-20100226-736		CL	Silty CLAY (CL) - dark gray, soft clay; with micaceous silt	
750				SC/CL	Clayey SAND (SC/CL) - gray green, poorly sorted, rounded to subangular, fine to medium sand; alternating light gray clay/silt (ash) and sand with gravel beds; yellow to orange staining abundant	
760						
770						
780						
790						
800						
810				SP	SAND (SP) - gray green, rounded to subrounded, moderately sorted sand; abundant silt (ash)	
820				GM	Silty GRAVEL (GM) with Sand - gray green, rounded to subrounded, medium to coarse gravel; predominantly volcanics, intermediate to felsic rhyolite clasts	
830				CL	Sandy CLAY (CL) - light gray clay with sand	
840				GW/SW	Silty GRAVEL (GW) to SAND (SW) - varicolored, fine to medium, subrounded to rounded sand; angular to subrounded, medium to coarse gravel	
850				CH	CLAY (CH) - dark gray to brown, plastic clay	
860				SP	SAND (SP) - gray green to varicolored, moderately sorted, subrounded to angular sand; little gray green to varicolored gravel	
870				CH/CL	CLAY (CH/CL) - dark gray, fat clay grading to a light gray brown, plastic clay with sand	
880				SP	SAND (SP) - sand with gravel and cobbles	
890				CL	CLAY (CL) - light gray, plastic clay with occasional interbedded sand stringers	
900				CH	CLAY (CH) - dark gray to brown, dense plastic clay	
910				CL	Sandy CLAY (CL) - brown clay, with sand	
920				SP	SAND (SP) - light gray, fine sand with silt	
930				CH	CLAY (CH) - gray brown to green gray, highly plastic clay; minor fine sand/silt, obsidian; hard slow drilling	
940				CL	Sandy CLAY (CL) - gray green	
950				CH	CLAY (CH) - green gray, fat clay, some silt, plastic clay with small obsidian	

Project	Exploratory Borehole for Replacement	**FIGURE 4:** BORING LOG:Esposti Park	
Location:	Windsor, CA	Esposti Park Test Hole	
E-PUR PN:	E102-001-01, Task 200	Start Date:	2/24/2010
Logged by:	B. Gulbranson, J. Buchowski, G. Moore	End Date:	3/2/2010
Surface Conditions:	Grass Covered	Latitude:	N 38° 31' 35.4"
		Longitude:	W 122° 46' 46.5"
		Location Address:	SW Corner of Esposti Park near Public Restrooms

Depth In Feet	Sample Interval	Water Sample ID	Graphic	USCS	Description	Well
950						
960				CL	Sandy CLAY (CL) - tan brown clay, sand	
970				SM	Silty SAND (SM) - green gray, fine sand with silt (ash)	
980						
990				SM/SP	SAND (SM/SP) - moderately sorted, rounded sand with silt (ash); minor clay layer; trace coarse sand at 980 feet; flowing sand	
1000				CL	Sandy CLAY (CL) - light gray, soft clay, minor fine sand; becoming very dense with depth	
1010				SC/GC	Sand CLAY and Clayey Gravel (SC/GC) - gray, rounded to subrounded, fine sand; minor fine gravel; some clay; intercalated, hard slow drilling	
1020						
1030				CL	Sandy CLAY (CL) - soft clay; some sand; intercalated, hard slow drilling; Bottom of Boring	
1040						

E-PUR, llc

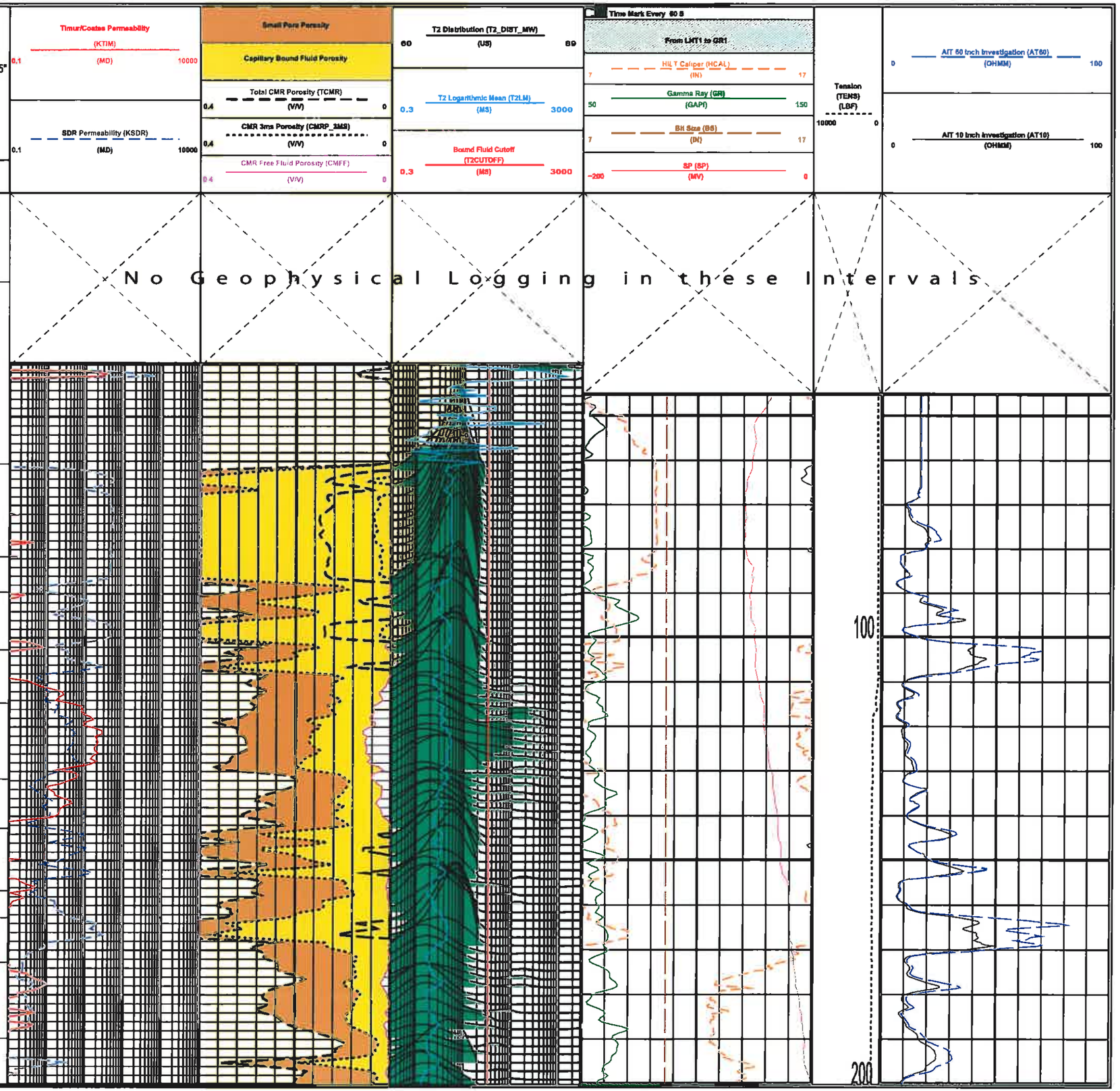
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE 5:
BORING LOG: Esposti Park
Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
0		CL	Sandy CLAY (CL) - medium to light brown, soft, plastic clay: varicolored, poorly sorted, fine to coarse, subangular to angular sand; poorly sorted, rounded fine to coarse gravel
10			
20		CL	Gravelly CLAY (CL) and Sandy CLAY (CL) - light brown, very fine to coarse grained sand, subangular to angular; gravel units, fine to coarse, subangular to subrounded.
30			
40			
50			
60		SW	SAND (SW) - varicolored, poorly sorted, fine to coarse, subrounded to subangular sand with silty sand and silty gravel 70-71 feet; some metamorphosed quartz and feldspars.
70			
80		CL	Sandy CLAY (CL) - light gray clay with sand
90		GM	Gravelly SAND (GM) - varicolored, poorly sorted, fine to medium, angular to subrounded sand: some, varicolored, poorly sorted, fine to coarse, angular to subrounded gravel; little silt. Gravel clasts metasedimentary sandstone to quartzite
100			
110		GM	Sandy GRAVEL (GM) - varicolored changing to green/gray, poorly sorted, fine to medium, rounded to subangular gravel; some sand; little silt. Green fine grained basalt clasts
120		CL	Silty CLAY (CL) - dark gray/green, plastic clay; with silt and fine sand
130			
140		SM	Silty SAND (SM) - gray/green, poorly sorted, rounded to subrounded, fine sand; fine, subangular to subrounded gravel; with rare cobble
150		GM	Silty GRAVEL (GM) - as above with fine gravel to coarse sand, varicolored
160		CL	Sandy CLAY (CL) - light brown, clay; sand
170		GM	Silty GRAVEL (GM) - varicolored, unsorted to poorly sorted, fine, subangular to subrounded gravel; with rare cobble; units of silty sand, fine to medium grained, angular to subrounded.
180		SP	SAND (SP) - varicolored, subrounded to rounded, fine to medium sand; abundant well rounded and frosted quartz
190		SW	Sand (SW) - fine to coarse sand, well graded, similar in angularity and color to above.
200			



E-PUR, llc

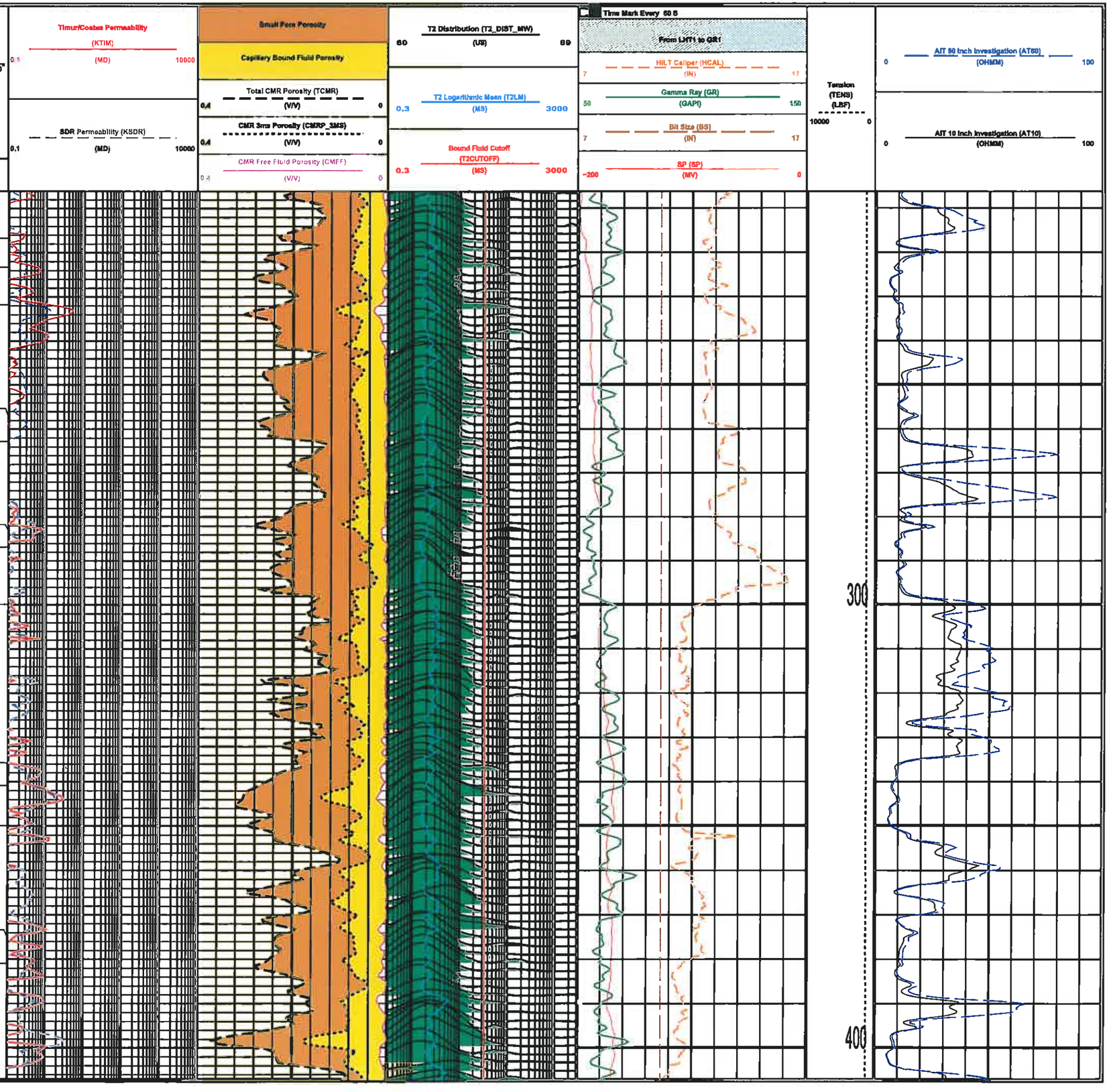
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE 5:
BORING LOG: Esposti Park
Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
210			
220		SP	Sand (SP) - varicolored, fine to medium, poorly graded sand
230		CL	Silty CLAY (CL) - light gray clay; with silt
240		SM	Silty SAND (SM) - varicolored, poorly sorted, rounded to subrounded to subangular sand; few to little silt (ash); some gravel units
250			
260		SW	Sand (SW) - varicolored, poorly sorted, fine to coarse grained, subrounded to subangular sand
270		GW	GRAVEL (GW) - red stained gravel with sand, poorly sorted, subrounded to subangular, few obsidian clasts
280		CL	Sandy CLAY (CL) - light gray clay; fine sand
290		SM	Silty SAND (SM) - gray, rounded to subrounded, fine sand, abundant milky frosted quartz; abundant rhyolite with red staining on some grains; increasing coarseness to gravel with depth
300		GM	Silty GRAVEL (GM) - as above with fine gravel and some sand
310			
320			
330			
340		CL	Sandy CLAY (CL) - light gray clay; sand
		ML/CL	SILT and CLAY (ML/CL) - light brown, tan/buff, friable, fine ash; trace fine gravel
350		GP	GRAVEL with SAND (GP) - varicolored, subrounded to rounded to subangular, fine to medium gravel; moderately well sorted, fine to coarse, subangular to subrounded sand
360			
370			
380		ML/CL	SILT and CLAY (ML/CL) - light green gray, ash, some clear to frosted sand, pale green fine sand
		GW/GM	GRAVEL with SAND (GW/GM) - varicolored, moderately well sorted, fine to coarse, subrounded gravel; some angular to subangular sand
390			
400			Abundant volcanics at 400 feet



E-PUR.llc

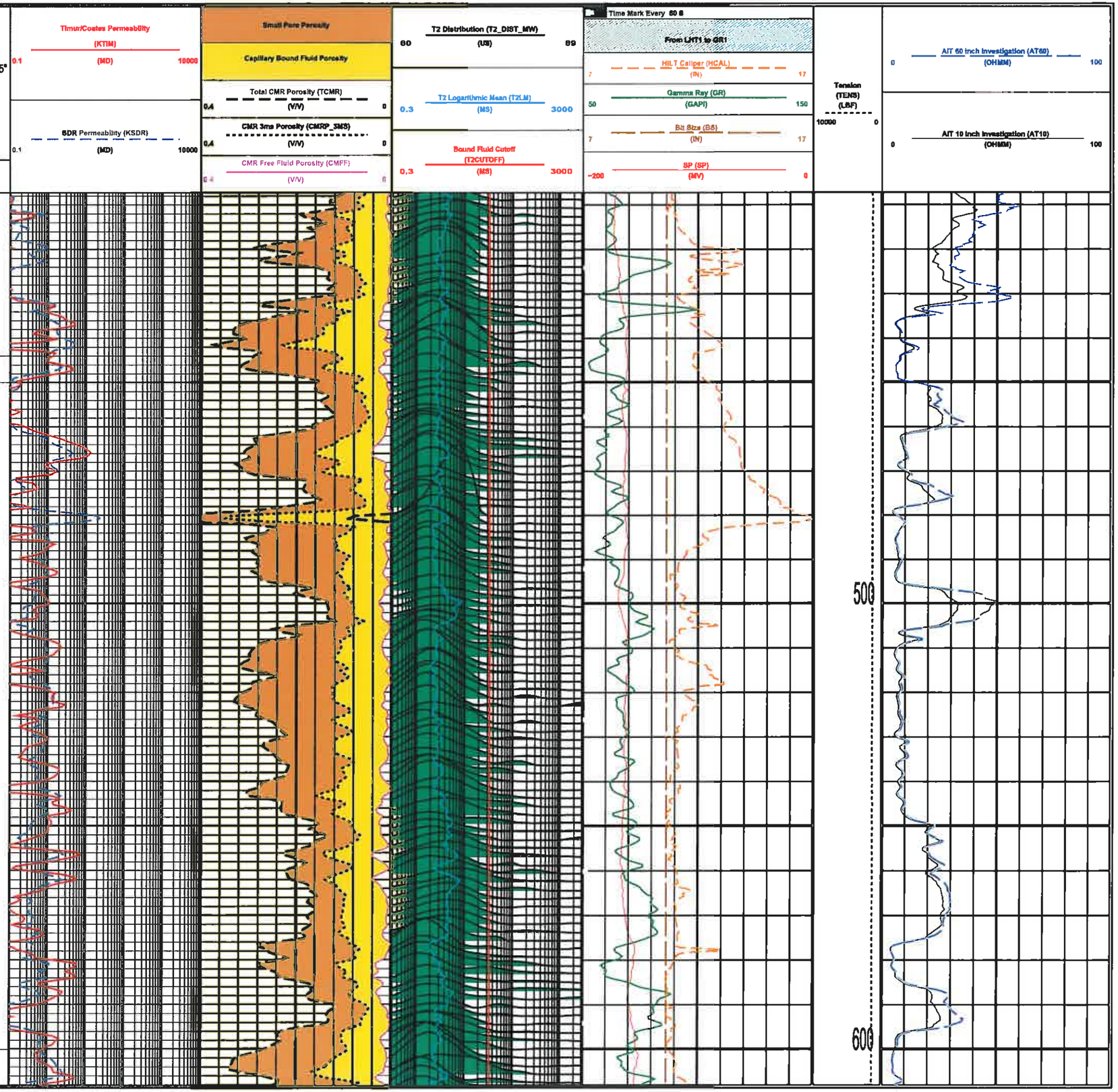
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE 5:
BORING LOG: Esposti Park
Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
410			
420			
430			
440			
450		SW	SAND (SW) - well graded sand, with little ash; stringer of clay at 450 feet
460		GW/SW	Sandy GRAVEL (GW) to Gravelly SAND (SW) - varicolored, fine to coarse grained sand and gravel
470			Stringer of clay at 465 feet
480			Trace of clay at 480 feet
490			
500			
510			Interbedded clay unit with sand and gravel at 510 to 513 feet
520			Trace obsidian at 520 feet
530			
540			Lost circulation at 545 feet
550			
560			
570			
580			Trace of clay at 580 feet;
590			
600		ML	Sandy SILT (ML) - gray, friable, silt (ash); light gray, angular to subrounded, medium sand



E-PUR, llc

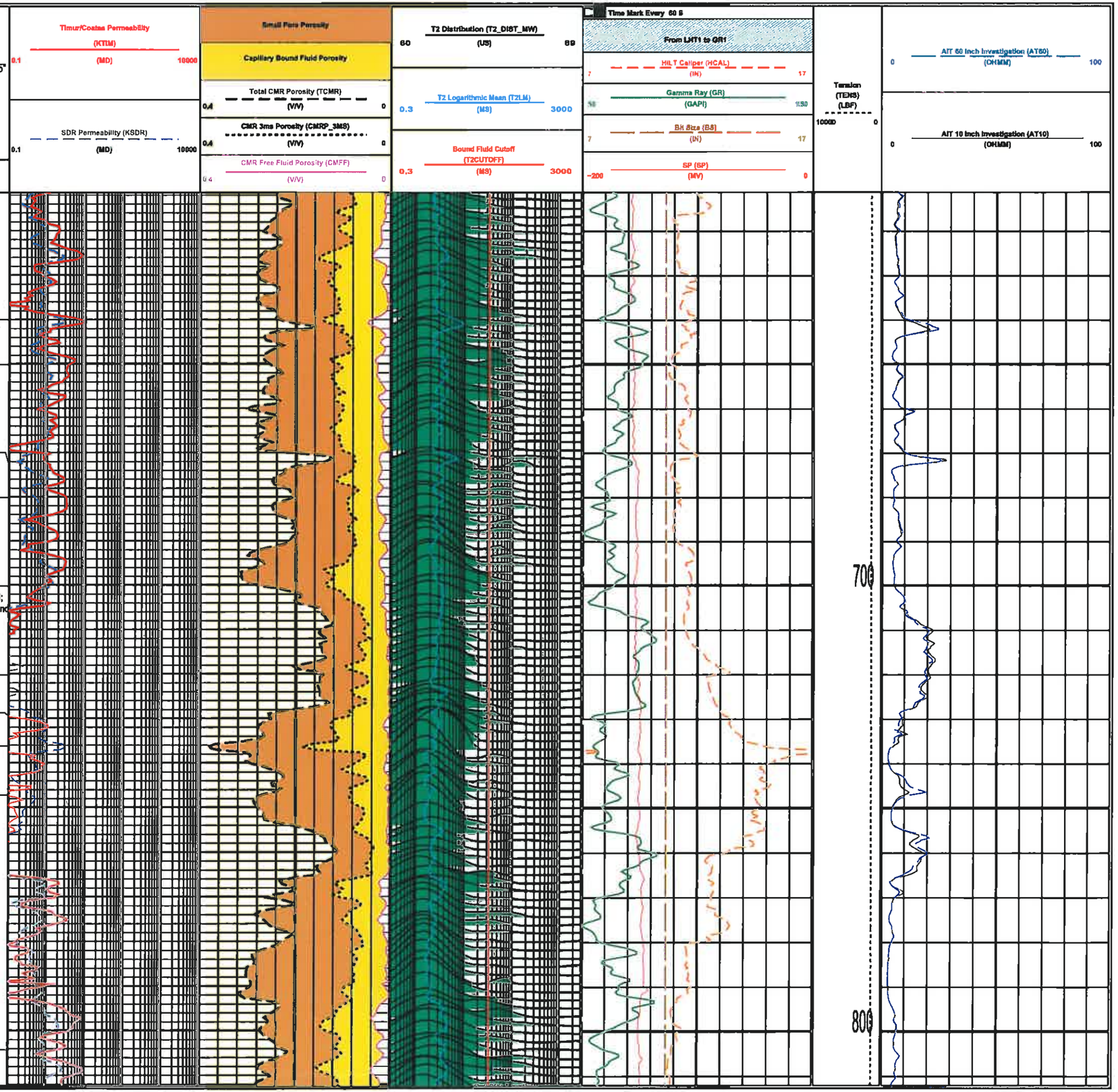
Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE 5:
BORING LOG: Esposti Park
Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
620			
630			
640		SP/GP	SAND and GRAVEL (SP/GP) - varicolored, moderately sorted, fine to medium, subrounded to subangular sand; some varicolored, subrounded, fine to medium gravel; interbedded gray, soft clay
650		CL	Silty CLAY (CL) - light gray clay and silt (ash) with interbedded gray, soft clay; some fine sand
660			
670		SM/ML	Silty SAND/Sandy SILT (SM/ML) - gray to varicolored, fine to coarse, subrounded to subangular sand; abundant gray to varicolored silt (ash); red and yellow, fine to medium gravel; no clay
680		CL	CLAY (CL) - light tan, soft, occasionally stiff clay; abundant fine sand
690			
700		GW/SW	GRAVEL to SAND (GW/SW) - dark gray to varicolored, subrounded, medium to large gravel; varicolored, moderately poorly sorted, subrounded to subangular, medium to coarse with some fine sand
710			
720		GM/SM	Silty GRAVEL (GM) to Silty SAND (SM) - color and texture as above
730		SW	SAND (SW) - dark green gray, very fine to medium grained sand, rounded to subrounded, poorly sorted; few gravel
740		CL	Silty CLAY (CL) - dark gray, soft clay; with micaceous silt
750		SC/CL	Clayey SAND (SC/CL) - gray green, poorly sorted, rounded to subangular, fine to medium sand; alternating light gray clay/silt (ash) and sand with gravel beds; yellow to orange staining abundant
760			
770			
780			
790			
800			
810		SP	SAND (SP) - gray green, rounded to subrounded, moderately sorted sand; abundant silt (ash)



E-PUR, llc

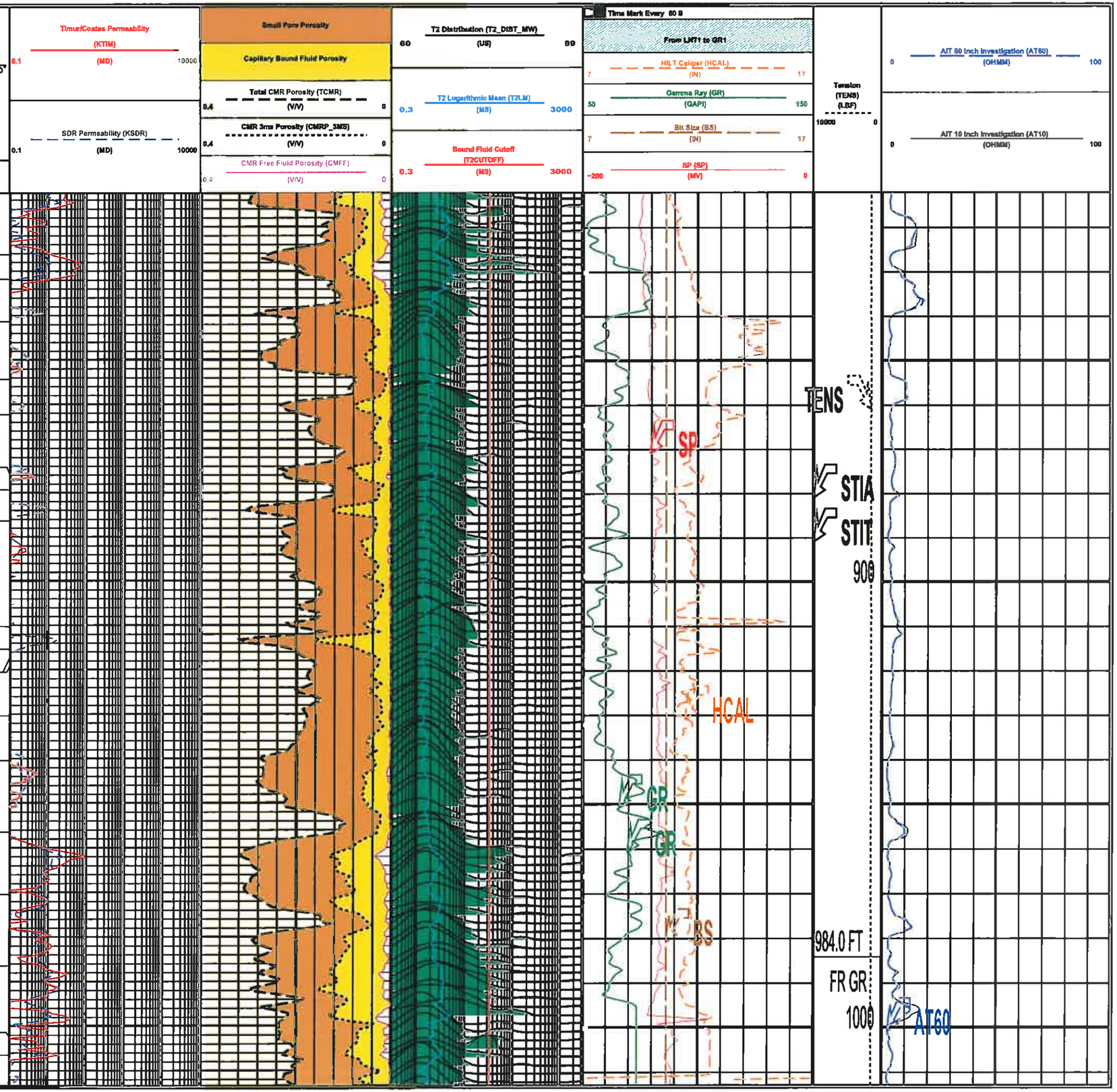
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Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE 5:
BORING LOG: Esposti Park
Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
820		GM	Silty GRAVEL (GM) with Sand - gray green, rounded to subrounded, medium to coarse gravel; predominantly volcanics, intermediate to felsic rhyolite clasts
830		CL	Sandy CLAY (CL) - light gray clay with sand
840		GW/SW	Silty GRAVEL (GW) to SAND (SW) - varicolored, fine to medium, subrounded to rounded sand; angular to subrounded, medium to coarse gravel
850		CH	CLAY (CH) - dark gray to brown, plastic clay
860		SP	SAND (SP) - gray green to varicolored, moderately sorted, subrounded to angular sand; little gray green to varicolored gravel
870		CH/CL	CLAY (CH/CL) - dark gray, fat clay grading to a light gray brown, plastic clay with sand
880		SP	SAND (SP) - sand with gravel and cobbles
890		CL	CLAY (CL) - light gray, plastic clay with occasional interbedded sand stringers
900		CH	CLAY (CH) - dark gray to brown, dense plastic clay
910		CL	Sandy CLAY (CL) - brown clay, with sand
920		SP	SAND (SP) - light gray, fine sand with silt
930		CH	CLAY (CH) - gray brown to green gray, highly plastic clay; minor fine sand/silt, obsidian; hard slow drilling
940		CL	Sandy CLAY (CL) - gray green
950		CH	CLAY (CH) - green gray, fat clay, some silt, plastic clay with small obsidian
960		CL	Sandy CLAY (CL) - tan brown clay, sand
970		SM	Silty SAND (SM) - green gray, fine sand with silt (ash)
980		SM/SP	SAND (SM/SP) - moderately sorted, rounded sand with silt (ash); minor clay layer; trace coarse sand at 980 feet; flowing sand
990		CL	Sandy CLAY (CL) - light gray, soft clay, minor fine sand; becoming very dense with depth
1000		SC/GC	Sand CLAY and Clayey Gravel (SC/GC) - gray, rounded to subrounded, fine sand; minor fine gravel; some clay; intercalated, hard slow drilling
1010			



E-PUR.llc

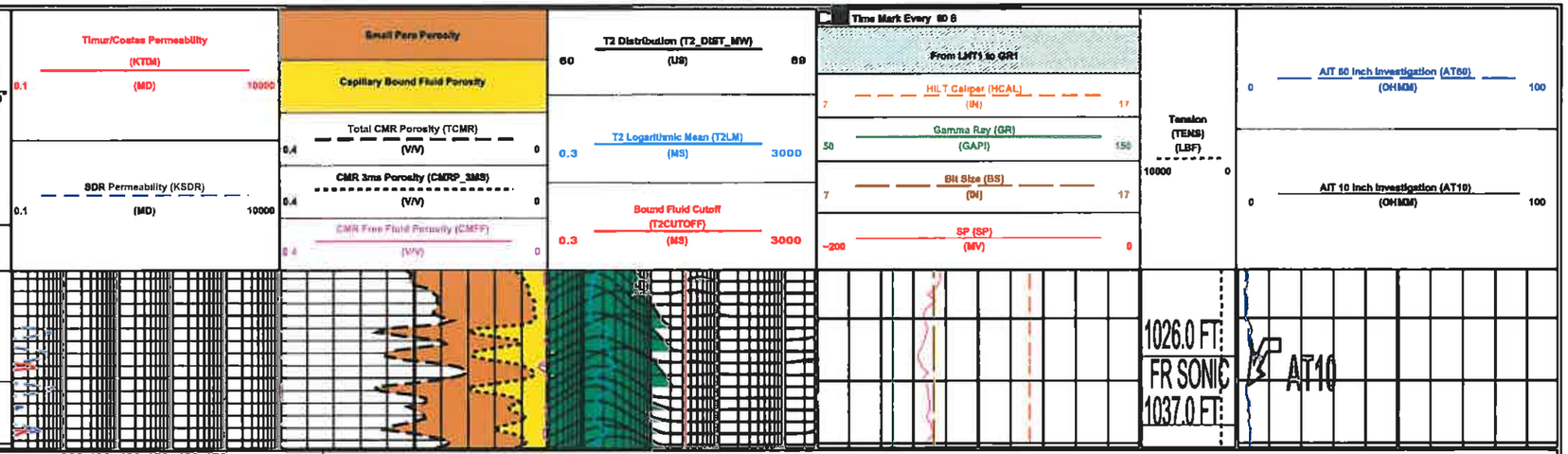
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Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

FIGURE 5:
BORING LOG: Esposti Park
Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
1020			
1030		CL	Sandy CLAY (CL) - soft clay; some sand; intercalated, hard slow drilling; Bottom of Boring
1040			



Page 6/6

Surface Seal:	Sanitary Seal (Grout)	0 to 60	feet bgs
Annulous Seal:	Grout	0 to 370	feet bgs
Filter Pack:	SRI 1/4 Inch Gravel	375 to 670	feet bgs
Monument Type:	Temporary well cap	to	feet bgs

Screened Interval:	380-420, 430-450, 460-470, 480-510, 545-565, 615-655 feet bgs
Casing Diameter:	10.0 inches
Total Boring Depth:	1040.0 feet
Total Well Depth:	670.0 feet

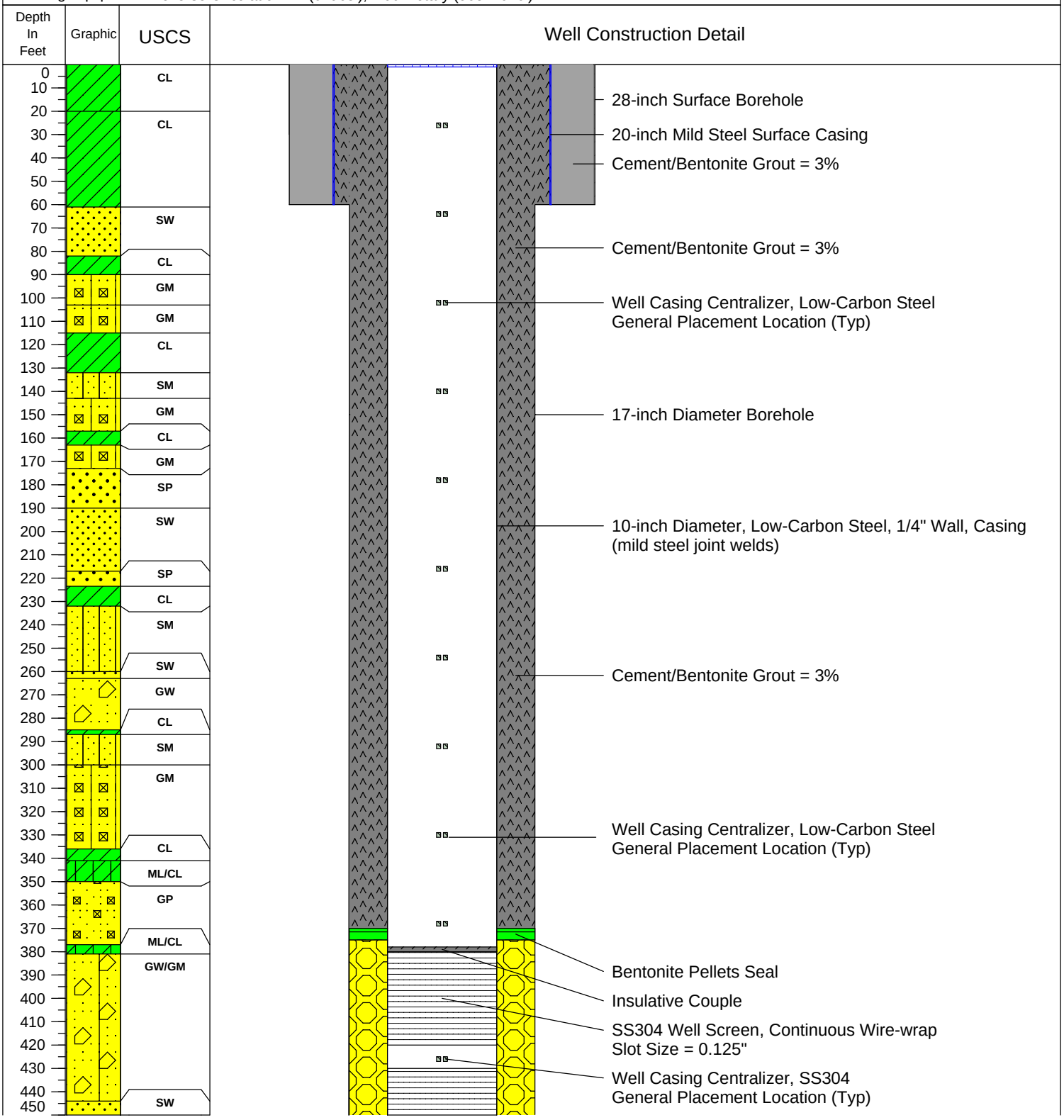
Geophysical Log Notes:
Geophysical logging by Schlumberger (Bakersfield, CA)
CMR - Combinable Magnetic Resonance Tool
SP - Spontaneous Potential

Lithologic Log Notes:
UCS Unified Soil Classification System (Visual-Manual Method)

FIGURE 6: WELL CONSTRUCTION DIAGRAM
Esposti Park Test Hole

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab from Cyclone
Start Date:	2/24/2010
End Date:	3/27/2010
Latitude:	N 38° 31' 35.4"
Longitude:	W 122° 46' 46.5"

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation Air (0'-965'), Mud Rotary (965'-1040')



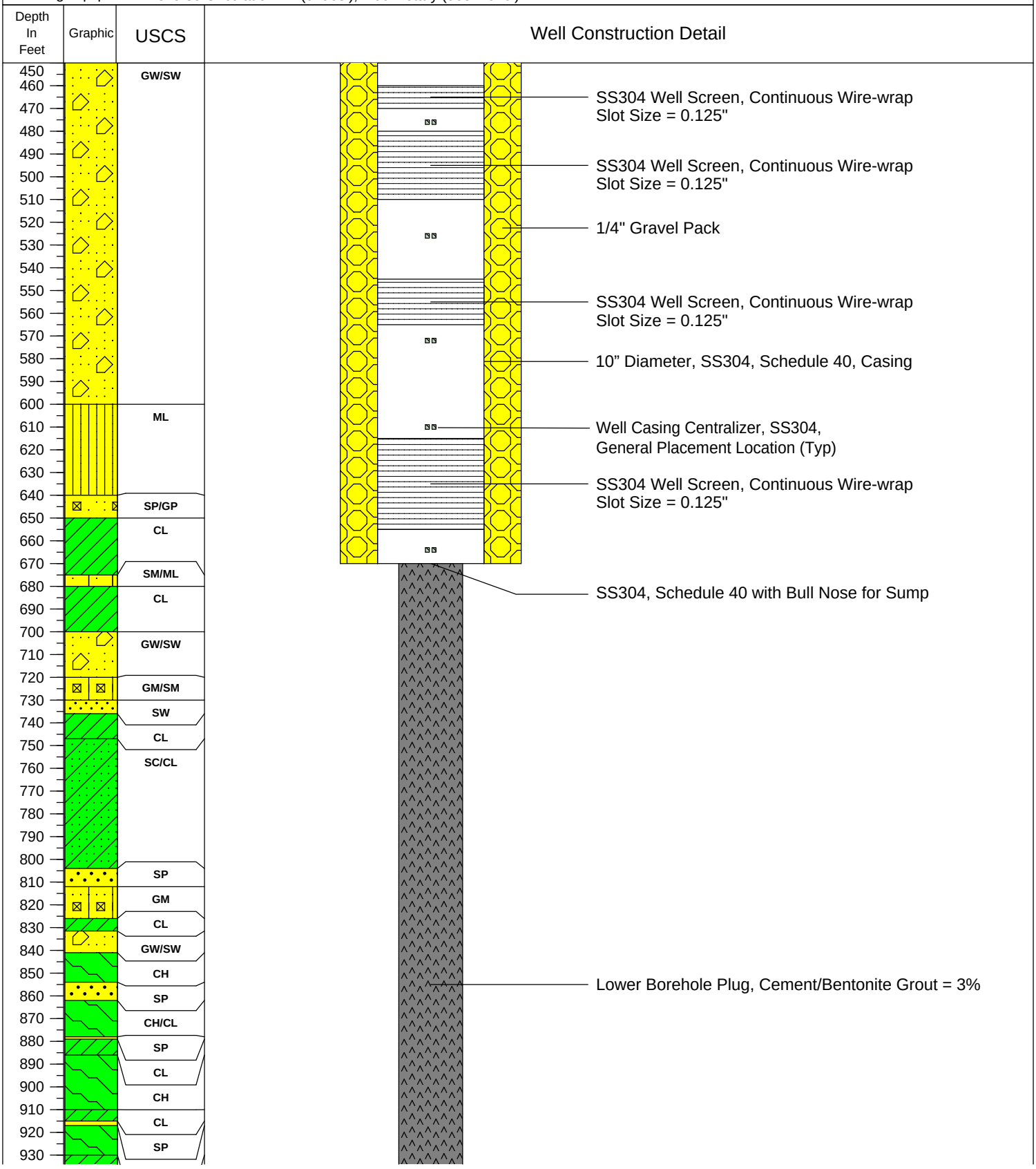
Sanitary Seal:	Cement/Bentonite Grout	0 to 60	feet bgs	Surface Casing:	0 to 60	feet bgs
Annular Seal:	Cement/Bentonite Grout	0 to 370	feet bgs	Screened Interval:	380-420, 430-450, 460-470, 480-510, 545-565, 615-655	feet bgs
Filter Pack:	SRI 1/4 inch Gravel	375 to 670	feet bgs	Casing Diameter:	10.0 inches	
Monument Type:	Concrete Pedestal w/ Temp. Locking Steel Cap			Total Well Depth:	670.0 feet	

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab from Cyclone

FIGURE 6: WELL CONSTRUCTION DIAGRAM
Esposti Park Test Hole

Start Date:	2/24/2010
End Date:	3/27/2010
Latitude:	N 38° 31' 35.4"
Longitude:	W 122° 46' 46.5"

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation Air (0'-965'), Mud Rotary (965'-1040')



Project	Well Installation		
Location:	Windsor, CA		
E-PUR PN:	E102-001-01, Task 200		
Logged by:	B. Gulbranson, J. Buchowski, G. Moore		
Surface Conditions:	Grass Covered	Start Date:	2/24/2010
Sampler Type:	Grab from Cyclone	End Date:	3/27/2010
		Latitude:	N 38° 31' 35.4"
		Longitude:	W 122° 46' 46.5"

FIGURE 6: WELL CONSTRUCTION DIAGRAM
Esposti Park Test Hole

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation Air (0'-965'), Mud Rotary (965'-1040')



TABLES

Table 1
Bluebird Borehole Water Quality Sample Results

Analyte	Units	MCL	Depth (feet below ground surface)						Field Blank*
			180	220	320	340	440	700	
Hardness as $CaCO_3$	mg/L	-	97	100	93	87	73	130	170
Calcium	mg/L	-	14	15	16	15	14	23	30
Magnesium	mg/L	-	15	16	13	12	9.2	17	22
Sodium	mg/L	-	22	23	30	39	54	19	13
Potassium	mg/L	-	3	4.3	9.1	12	20	6.1	11
Total Alkalinity as $CaCO_3$	mg/L	-	83	120	140	150	180	180	160
Bicarbonate	mg/L	-	100	150	170	190	220	220	190
Sufate	mg/L	250/500/600	5.3	2.5	7.2	3.7	6.9	14	16
Chloride	mg/L	250/500/600	39	21	20	20	21	14	11
Nitrate as N	mg/L	10	8.5	<2.0	8.6	<2.0	<2.0	9.5	10
Fluoride	mg/L	2	0.51	0.36	0.38	0.35	0.31	0.27	0.25
pH	unitless	-	6.6	7.2	7.6	7.6	7.8	8	7
Total Dissolved Solids	mg/L	500/1,000/1,500	220	240	220	250	300	280	200
Boron	mg/L	-	<0.1	0.18	0.33	0.16	0.32	0.29	0.17
Arsenic	mg/L	10	<2.0	<2.0	<2.0	9	16	<2.0	<2.0
Chromium	mg/L	50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Iron	mg/L	300	3200	<100	<100	<100	360	<100	<100
Maganese	mg/L	50	1800	850	760	460	480	440	<20
Mercury	mg/L	2; 0.05	0.024	0.038	0.058	0.014	<0.012	0.018	0.013
Total Organic Carbon	mg/L	-	1.1	0.56	1.5	0.31	0.54	1.4	0.36

Notes:

- Secondary MCL

For mercury, MCL is 2 ppb; however water quality objective under the California Toxics Rules is 0.05 ppb.

Data compiled by RMC Water and Environment.

* = listed as 710 ft sample in lab report

$CaCO_3$ - calcium carbonate

ft = foot, feet

MCL = Maximum Contaminant Level

mg/L = milligrams per liter (parts per million)

ppb = parts per billion (micrograms per liter)

Table 2
Esposti Park Borehole Water Quality Sample Results

Analyte	Units	MCL	Depth (feet below ground surface)				
			200	285	400	600	736
Hardness as $CaCO_3$	mg/L	-	150	99	140	120	110
Calcium	mg/L	-	23	15	24	23	22
Magnesium	mg/L	-	23	15	20	16	14
Sodium	mg/L	-	42	40	51	54	87
Potassium	mg/L	-	8	6.9	14	19	27
Total Alkalinity as $CaCO_3$	mg/L	-	210	160	230	230	290
Bicarbonate	mg/L	-	260	190	280	280	350
Sufate	mg/L	250/500/600	12	8.4	17	12	18
Chloride	mg/L	250/500/600	20	25	25	14	21
Nitrate as N	mg/L	10	<2.0	<2.0	<2.0	8.5	8.5
Fluoride	mg/L	2	0.4	0.39	0.36	0.33	0.3
pH	unitless	-	7.2	7.5	7.9	7.9	8
Total Dissolved Solids	mg/L	500/1,000/1,500	300	260	360	310	430
Boron	mg/L	-	0.14	0.13	0.28	0.31	0.45
Arsenic	mg/L	10	<2.0	<2.0	2.1	7.3	39
Chromium	mg/L	50	<1.0	<1.0	<1.0	<1.0	2.1
Iron	mg/L	300	<100	<100	<100	<100	1200
Maganese	mg/L	50	1600	910	860	580	440
Mercury	mg/L	2	0.17	<0.012	0.014	0.014	0.017
Total Organic Carbon	mg/L	-	3.9	0.74	0.33	0.4	0.66

Notes:

- Secondary MCL

For mercury, MCL is 2 ppb; however water quality objective under the CA Toxics Rules is 0.05 ppb

Data compiled by RMC Water and Environment

$CaCO_3$ - calcium carbonate

ft = foot, feet

MCL = Maximum Contaminant Level

mg/L = milligrams per liter (parts per million)

ppb = parts per billion (micrograms per liter)

Appendix B - Detailed Boring Logs and Geophysical Survey Results

E/PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

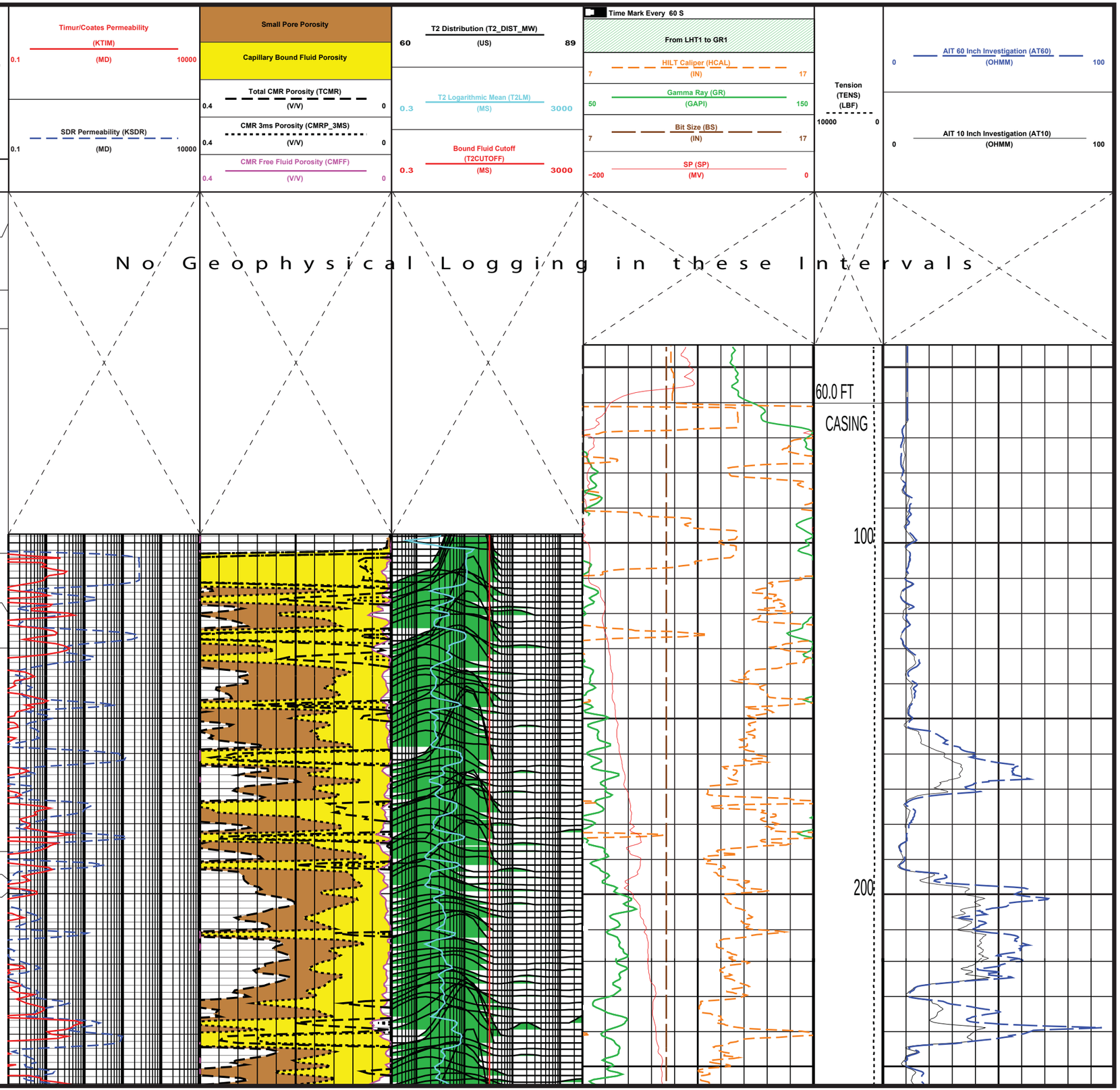
BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
0		SC	Clayey SAND (SC) - varicolored (tan to brown, clear to frosted quartz with some red-pink), poorly sorted, fine to coarse sand, subrounded to subangular; clay soft, plastic; trace varicolored (tan to brown), fine to coarse gravel
10		CL	Sandy CLAY (CL) - mostly soft, plastic clay with fine to coarse sand, trace fine to coarse gravel; trace quartz, little volcanics of clear to frosted white, pink, red, brown, black (obsidian)
30		GC	GRAVEL (GC) - varicolored, poorly sorted fine to coarse gravel; little clay; poorly sorted coarse to medium, subangular to subrounded sand; rare obsidian clast
40		CL	Sandy CLAY (CL) - mostly dry, stiff clay; few varicolored, poorly sorted coarse sand, trace fine angular to subrounded sand; trace quartz sand; trace cobble; gravel layer from 41.0 feet to 42.5 feet
100		SW	Gravelly SAND (SW) - varicolored, coarse to medium, subrounded to angular sand; minor fine gravel; no sample (no return circulation) from 110 feet to 120 feet (sand?)
120		CL	CLAY (CL) - varicolored (gray to tan), stiff clay; varicolored (tan, pale, buff, orange) fine to coarse, subangular to angular gravel; moderately well sorted coarse sand; rare green fine gravel
130		GP	Gravel and Sand (GP) - varicolored (predominately dark green but some gray) coarse gravel; medium to coarse, subangular to subrounded sand; clay layer from 170 to 171 which clogged bit
190		CL	Sandy CLAY (CL) - dense gray clay with sand
200		CL	Sandy CLAY (CL) - dense brown clay with sand
210		SW/GW	Gravelly SAND to Sandy GRAVEL (SW/GW) - predominately gray-green but some varicolored, fine to coarse, angular to subangular sand; coarse gravel; repeating coarse to fine bedding



E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

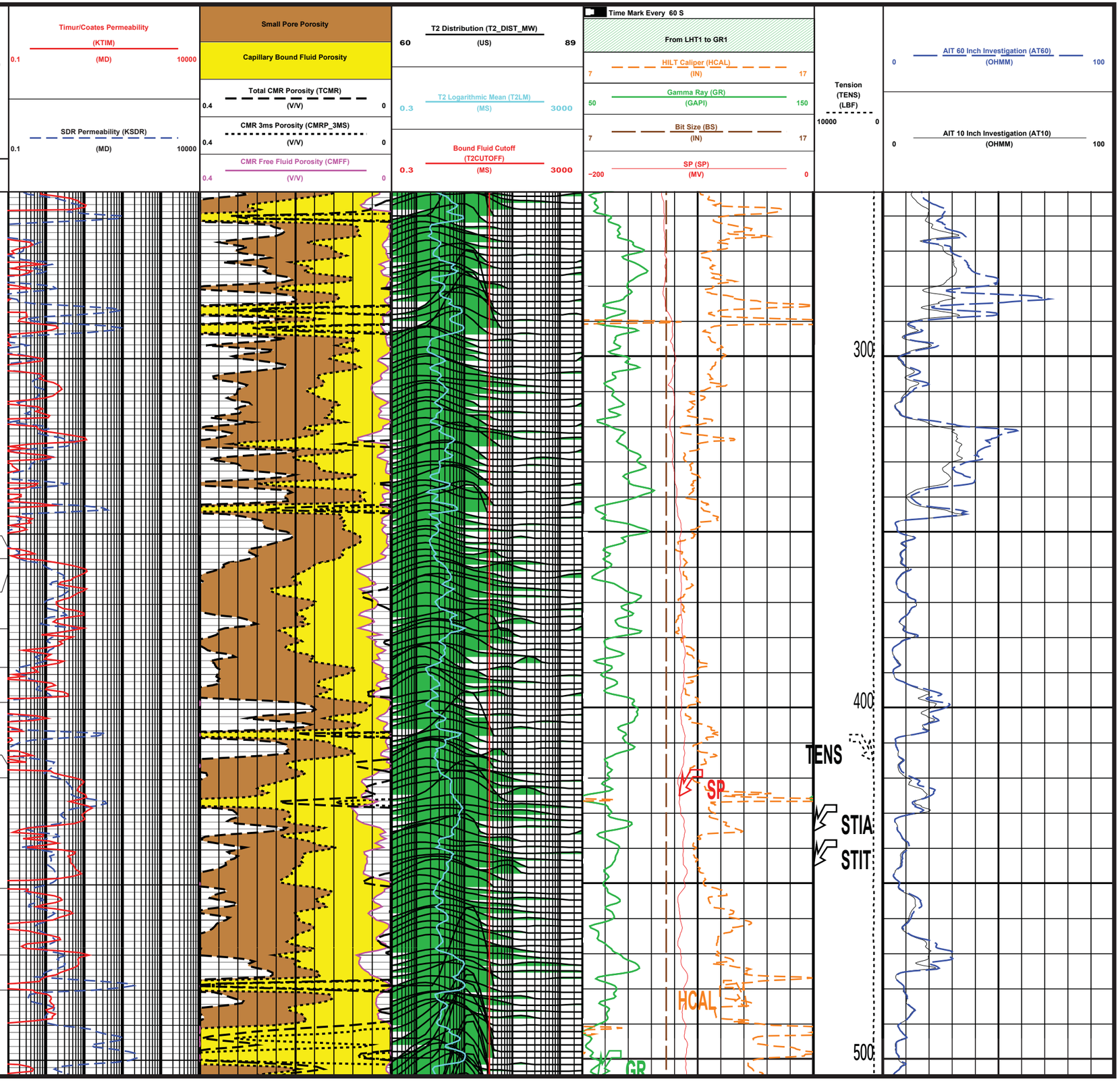
BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
350		CL	Sandy CLAY (CL) - light gray clay; sand; trace cobble
360		SP/SW	SAND (SP/SW) - green gray, mostly fine sand, little medium sand, rounded to subrounded; trace coarse sand; volcanics
370		CL	Sandy CLAY (CL) - dark gray clay, some sand; trace cobble
380		SP	Sand (SP) - varicolored, mostly fine sand, little medium sand, subrounded to rounded
390		CL	Sandy CLAY (CL) - dark gray clay; sand; mostly fine sand layer from 394 feet to 395.5 feet
400		SP	SAND (SP) - poorly sorted, fine to coarse sand, subangular to rounded, abundant fine, well rounded quartz sand; gray to buff clast
410		CL	Sandy CLAY (CL) - dark gray clay; fine sand; mostly fine sand layer 418 feet to 419 feet
420		GM/GP	SAND and GRAVEL (GM/GP) - varicolored (buff, gray, red, orange, pink) fine to coarse, angular sand; some moderately poorly sorted, fine, subrounded to subangular gravel; predominately volcanics (contains trace ash)
450		CL	Sandy CLAY (CL) - varicolored gray to tan, stiff, clay; little fine to coarse, subangular to angular sand and gravel
470		SM	Silty SAND (SM) - varicolored (predominately dark) medium sand with some coarse sand; varicolored, poorly sorted, fine to coarse gravel; abundant, gray, friable (ash)
480		SP	SAND (SP) - sand with minor gravel; no ash



E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

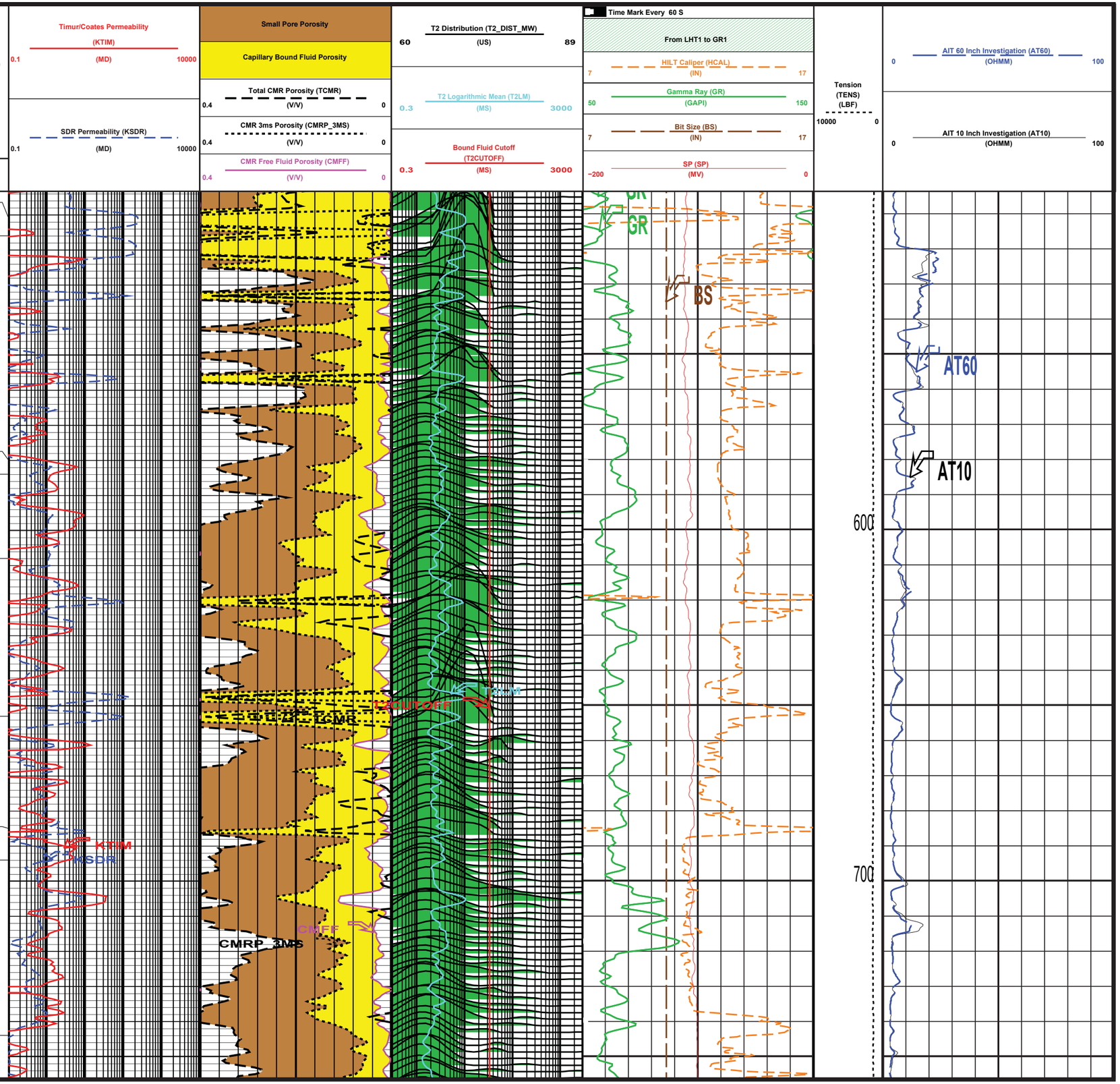
BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
510		CL	CLAY (CL) - mostly soft gray clay; some gray but increasing in green sand; little fine to coarse gravel
520		SW	Gravelly SAND (SW) - varicolored (gray, red, orange, and green), moderately poorly sorted, predominately fine to medium sand with some coarse sand, subrounded to subangular, with some varicolored (gray, green) fine to coarse gravel; trace “clumps” of gray clay (probably thin layers; clay “clumps” turn from gray to brown 560 feet to 575 feet
530			
540			
550			
560			
570			
580		CL	CLAY (CL) - soft gray clay
590		SM	SAND (SM) - mostly gray-green, predominately fine but some medium to coarse, subrounded to subangular sand; few gray soft clay/silt; few gray, fine, gravel
600			
610		SC/CL	Sandy CLAY (SC/CL) - gray clay; some fine to coarse, poorly sorted sand; few fine gravel but some black, coarse, “chert like” clasts
620			
630			
640			
650			
660		SM	Silty SAND (SM) - light gray, fine, predominately well rounded quartz sand; trace clay/silt layers; abundant ash tuff
670			
680			
690		CH	CLAY (CH) - dark gray, plastic, clay; little fine, rounded to subangular sand layers, some quartz; abundant ash tuff including fine sand at base with iron staining of quartz
700		SW/SM	SAND (SW/SM) - varicolored (predominately dark gray to green gray to brown), poorly to moderately sorted, coarse to fine, subrounded to subangular sand; little brown, fine gravel; abundant friable ash; rare smokey black obsidian
710			
720			
730			
740			
750		CL	CLAY (CL) - dark gray clay, plastic, strong desiccant; well rounded to angular, fine sand; fine sand layer with fine gravel 767 feet to 768 feet



E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallid, John Chavez
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

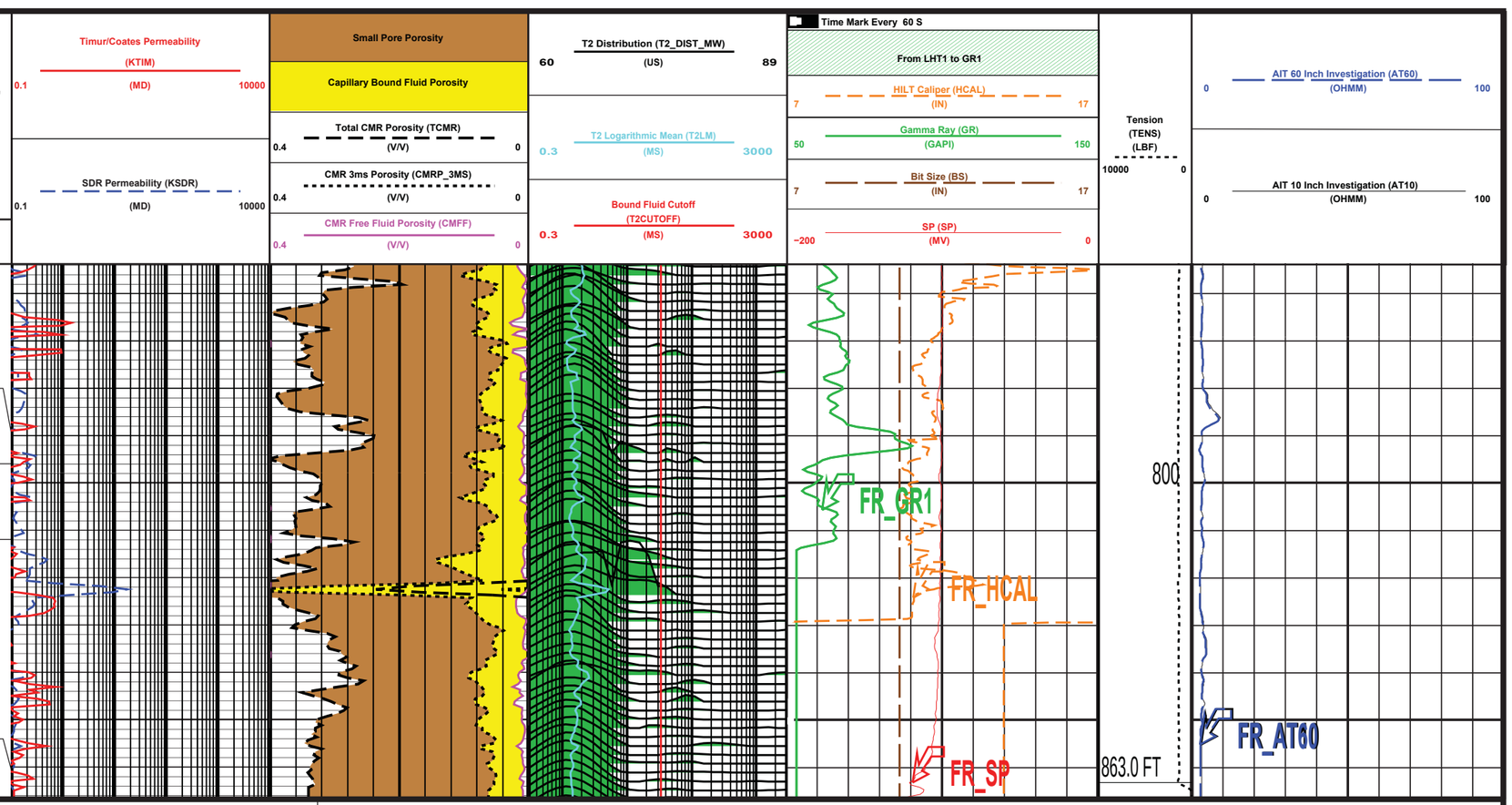
BORING LOG: Bluebird

Bluebird Replacement Well Test Hole

Start Date: 2/6/2010
End Date: 5/5/2010
Latitude: N 38° 53' 91"
Longitude: W 122° 80' 13"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
760			
770			
780			
790		SW	Gravelly SAND (SW) - varicolored (predominately pale dark green and clear/frosted white quartz with some medium dark gray, trace red-yellow), poorly sorted, fine to coarse, subangular to angular trace subrounded sand; little gray, subrounded gravel; rare obsidian, some ash tuff
800		CL	Sandy CLAY (CL) - gray/brown, soft, clay; interbedded, varicolored (but predominately light to dark green), fine to medium, rounded to subrounded sand; abundant red, white, orange chert, milky quartz; trace obsidian; trace ash
810			
820		CL	Sandy CLAY (CL) - light gray, clay; interbedded, light gray, sand; abundant obsidian some quartz, chert, and salmon pink quartzite (drills extremely hard); welded ash
830			
840			
850			
860		CL	CLAY (CL) - dark gray green, clay (ash); fine sand with abundant obsidian, some chert, rhyolite, dacite, andesite; welded ash Bottom of Boring



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Surface Seal:	Sanitary Seal (Grout)	0 to 60	feet bgs	Screened Interval:	695 to 745	feet bgs
Annulous Seal:	Grout	0 to 665	feet bgs	Casing Diameter:	10.0 inches	
Filter Pack:	SRI 1/4 inch Gravel	675 to 765	feet bgs	Total Boring Depth:	867.0 feet	
Monument Type:	Temporary well cap	to	feet bgs	Total Well Depth:	765.0 feet	

Geophysical Log Notes:

Geophysical logging by Schlumberger (Bakersfield, CA)
CMR - Combinable Magnetic Resonance Tool
SP - Spontaneous Potential

Lithologic Log Notes:

UCS Unified Soil Classification System (Visual-Manual Method)

E/PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

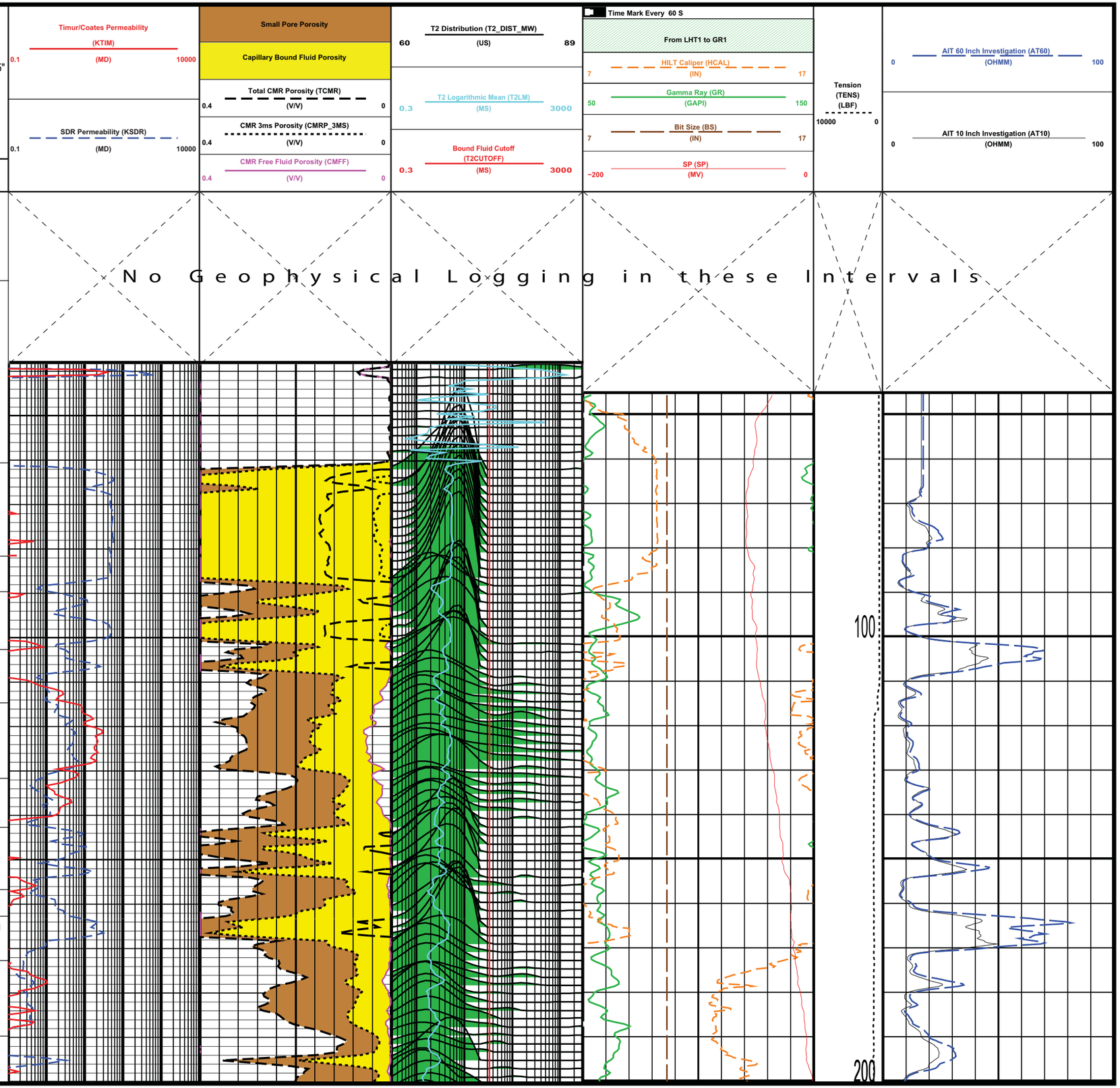
BORING LOG: Esposti Park

Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
0		CL	Sandy CLAY (CL) - medium to light brown, soft, plastic clay; varicolored, poorly sorted, fine to coarse, subangular to angular sand; poorly sorted, rounded fine to coarse gravel
20		CL	Gravelly CLAY (CL) and Sandy CLAY (CL) - light brown, very fine to coarse grained sand, subangular to angular; gravel units, fine to coarse, subangular to subrounded.
60		SW	SAND (SW) - varicolored, poorly sorted, fine to coarse, subrounded to subangular sand with silty sand and silty gravel 70-71 feet; some metamorphosed quartz and feldspars.
80		CL	Sandy CLAY (CL) - light gray clay with sand
90		GM	Gravelly SAND (GM) - varicolored, poorly sorted, fine to medium, angular to subrounded sand; some, varicolored, poorly sorted, fine to coarse, angular to subrounded gravel; little silt. Gravel clasts metasedimentary sandstone to quartzite
100		GM	Sandy GRAVEL (GM) - varicolored changing to green/gray, poorly sorted, fine to medium, rounded to subangular gravel; some sand; little silt. Green fine grained basalt clasts
110		CL	Silty CLAY (CL) - dark gray/green, plastic clay; with silt and fine sand
120		SM	Silty SAND (SM) - gray/green, poorly sorted, rounded to subrounded, fine sand; fine, subangular to subrounded gravel; with rare cobble
130		GM	Silty GRAVEL (GM) - as above with fine gravel to coarse sand, varicolored
140		CL	Sandy CLAY (CL) - light brown, clay; sand
150		GM	Silty GRAVEL (GM) - varicolored, unsorted to poorly sorted, fine, subangular to subrounded gravel; with rare cobble; units of silty sand, fine to medium grained, angular to subrounded.
160		SP	SAND (SP) - varicolored, subrounded to rounded, fine to medium sand; abundant well rounded and frosted quartz
170		SW	Sand (SW) - fine to coarse sand, well graded, similar in angularity and color to above.
180			
190			
200			



E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

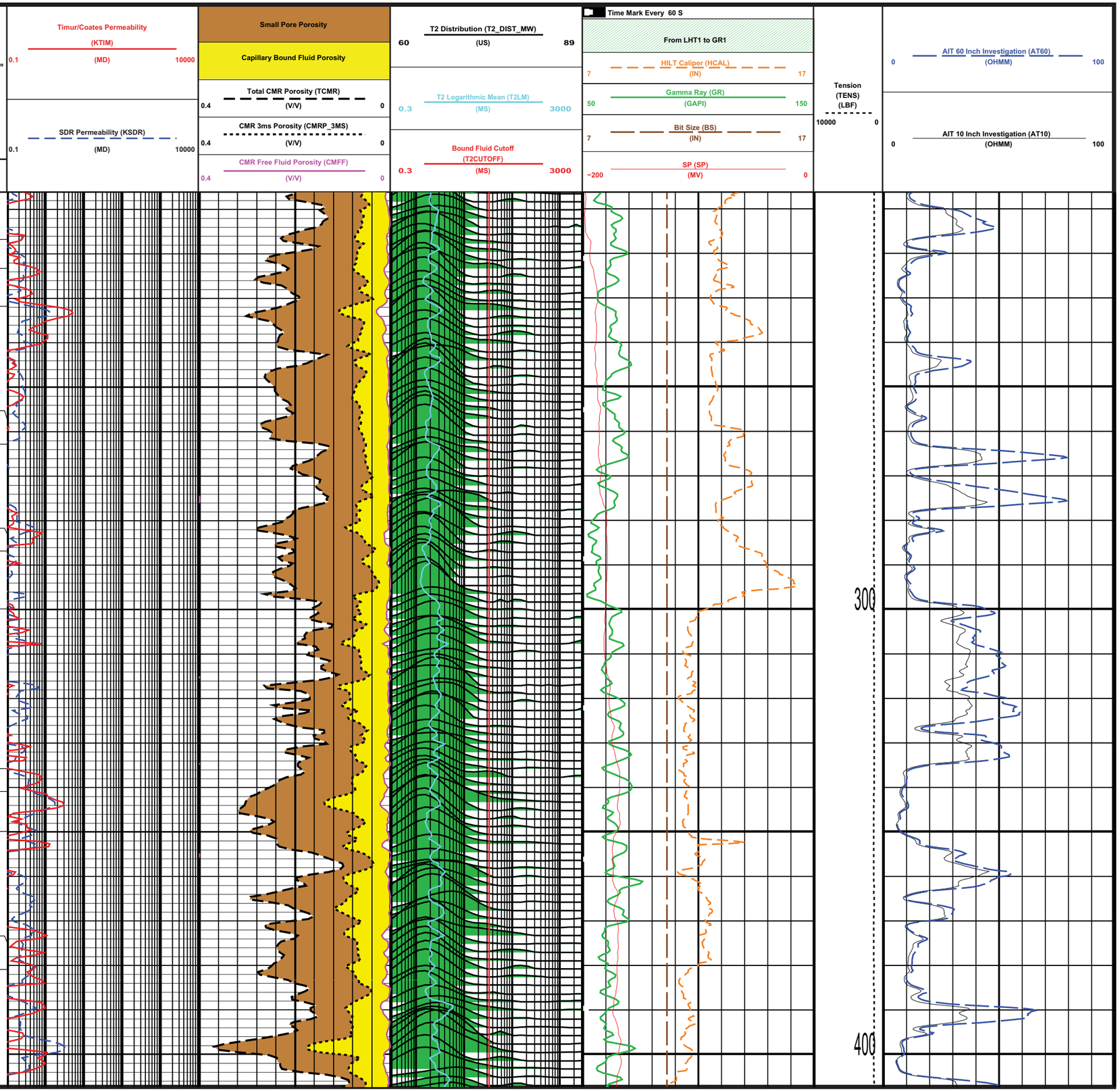
BORING LOG: Esposti Park

Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
210			
220		SP	Sand (SP) - varicolored, fine to medium, poorly graded sand
230		CL	Silty CLAY (CL) - light gray clay; with silt
240		SM	Silty SAND (SM) - varicolored, poorly sorted, rounded to subrounded to subangular sand; few to little silt (ash); some gravel units
250			
260		SW	Sand (SW) - varicolored, poorly sorted, fine to coarse grained, subrounded to subangular sand
270		GW	GRAVEL (GW) - red stained gravel with sand, poorly sorted, subrounded to subangular, few obsidian clasts
280		CL	Sandy CLAY (CL) - light gray clay; fine sand
290		SM	Silty SAND (SM) - gray, rounded to subrounded, fine sand, abundant milky frosted quartz; abundant rhyolite with red staining on some grains; increasing coarseness to gravel with depth
300		GM	Silty GRAVEL (GM) - as above with fine gravel and some sand
310			
320			
330			
340		CL	Sandy CLAY (CL) - light gray clay; sand
350		ML/CL	SILT and CLAY (ML/CL) - light brown, tan/buff, friable, fine ash; trace fine gravel
360		GP	GRAVEL with SAND (GP) - varicolored, subrounded to rounded to subangular, fine to medium gravel; moderately well sorted, fine to coarse, subangular to subrounded sand
370			
380		ML/CL	SILT and CLAY (ML/CL) - light green gray, ash, some clear to frosted sand, pale green fine sand
390		GW/GM	GRAVEL with SAND (GW/GM) - varicolored, moderately well sorted, fine to coarse, subrounded gravel; some angular to subangular sand
400			Abundant volcanics at 400 feet



E-PUR, llc

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Air (0'-795'), Mud Rotary (795'-867')

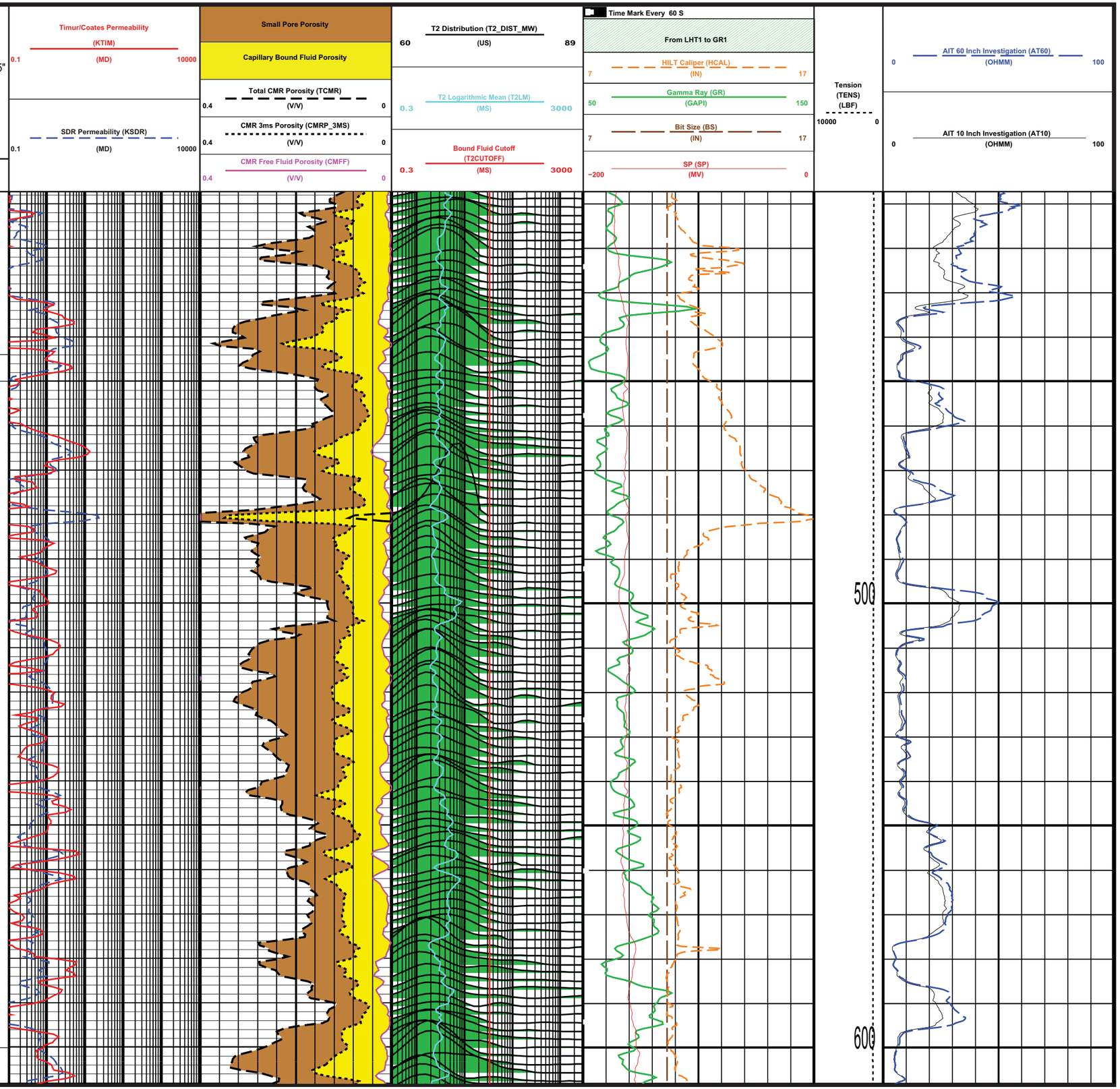
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Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
410			
420			
430			
440			
450		SW	SAND (SW) - well graded sand, with little ash; stringer of clay at 450 feet
460		GW/SW	Sandy GRAVEL (GW) to Gravelly SAND (SW) - varicolored, fine to coarse grained sand and gravel Stringer of clay at 465 feet
470			
480			Trace of clay at 480 feet
490			
500			
510			Interbedded clay unit with sand and gravel at 510 to 513 feet
520			Trace obsidian at 520 feet
530			
540			Lost circulation at 545 feet
550			
560			
570			
580			Trace of clay at 580 feet;
590			
600		ML	Sandy SILT (ML) - gray, friable, silt (ash); light gray, angular to subrounded, medium sand



E-PUR, llc

Drilling Company: WDC Exploration and Wells
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Air (0'-795'), Mud Rotary (795'-867')

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E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
620			
630			
640		SP/GP	SAND and GRAVEL (SP/GP) - varicolored, moderately sorted, fine to medium, subrounded to subangular sand; some varicolored, subrounded, fine to medium gravel; interbedded gray, soft clay
650		CL	Silty CLAY (CL) - light gray clay and silt (ash) with interbedded gray, soft clay; some fine sand
660			
670		SM/ML	Silty SAND/Sandy SILT (SM/ML) - gray to varicolored, fine to coarse, subrounded to subangular sand; abundant gray to varicolored silt (ash); red and yellow, fine to medium gravel; no clay
680		CL	CLAY (CL) - light tan, soft, occasionally stiff clay; abundant fine sand
690			
700		GW/SW	GRAVEL to SAND (GW/SW) - dark gray to varicolored, subrounded, medium to large gravel; varicolored, moderately poorly sorted, subrounded to subangular, medium to coarse with some fine sand
710			
720		GM/SM	Silty GRAVEL (GM) to Silty SAND (SM) - color and texture as above
730		SW	SAND (SW) - dark green gray, very fine to medium grained sand, rounded to subrounded, poorly sorted; few gravel
740		CL	Silty CLAY (CL) - dark gray, soft clay; with micaceous silt
750		SC/CL	Clayey SAND (SC/CL) - gray green, poorly sorted, rounded to subangular, fine to medium sand; alternating light gray clay/silt (ash) and sand with gravel beds; yellow to orange staining abundant
760			
770			
780			
790			
800			
810		SP	SAND (SP) - gray green, rounded to subrounded, moderately sorted sand; abundant silt (ash)

Timur/Coates Permeability (KTIM) 0.1 (MD) 10000

SDR Permeability (KSDR) 0.1 (MD) 10000

Small Pore Porosity

Capillary Bound Fluid Porosity

Total CMR Porosity (TCMR) 0.4 (V/V) 0

CMR 3ms Porosity (CMRP_3MS) 0.4 (V/V) 0

CMR Free Fluid Porosity (CMFF) 0.4 (V/V) 0

T2 Distribution (T2_DIST_MW) 60 (US) 89

T2 Logarithmic Mean (T2LM) 0.3 (MS) 3000

Bound Fluid Cutoff (T2CUTOFF) 0.3 (MS) 3000

Time Mark Every 60 S

From LHT1 to GR1

HILT Caliper (HCAL) 7 (IN) 17

Gamma Ray (GR) 50 (GAPI) 150

Bit Size (BS) 7 (IN) 17

SP (SP) −200 (MV) 0

Tension (TENS) (LBF) 10000 0

AIT 60 Inch Investigation (AT60) 0 (OHMM) 100

AIT 10 Inch Investigation (AT10) 0 (OHMM) 100

E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

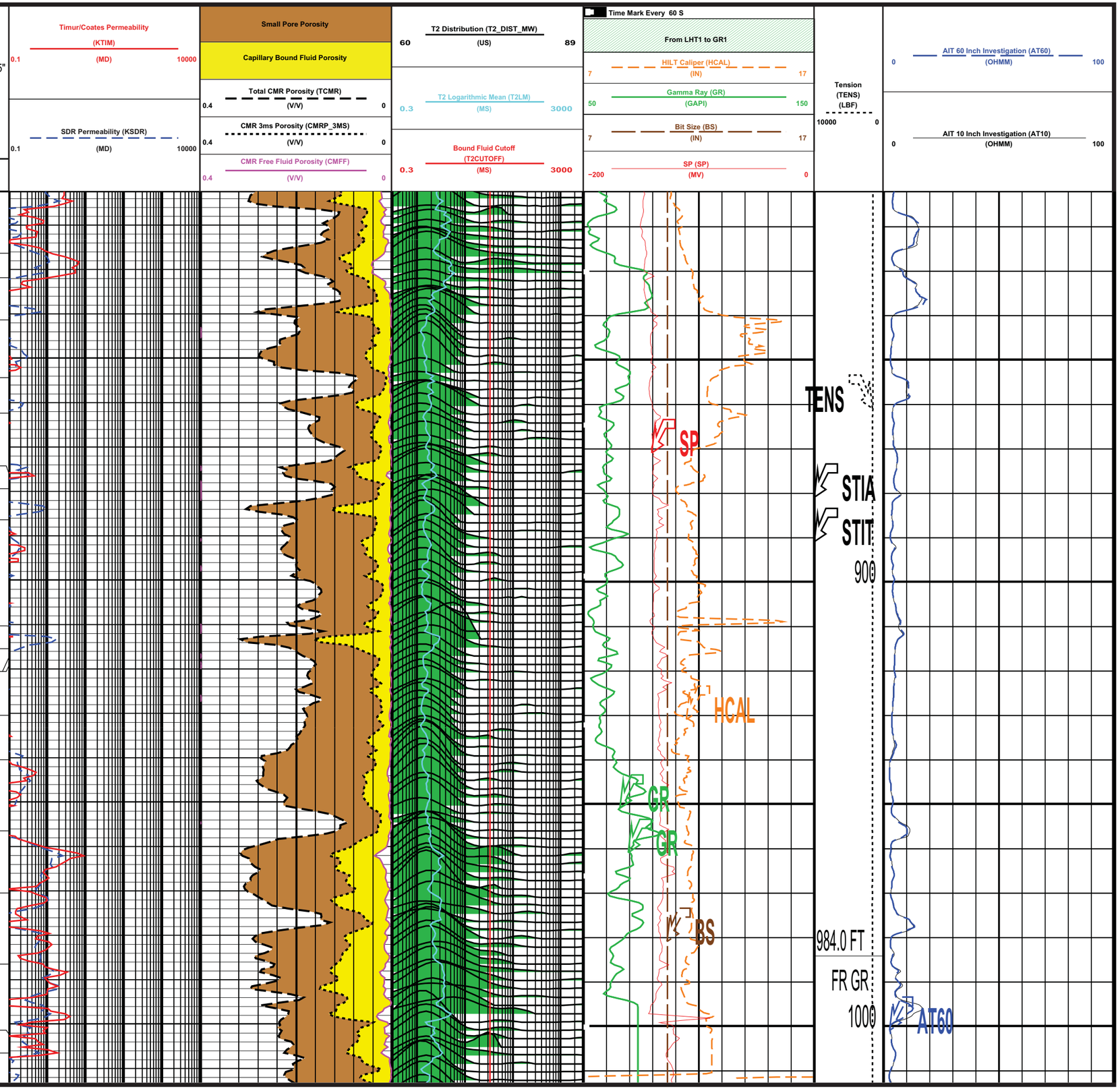
BORING LOG: Esposti Park

Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
820		GM	Silty GRAVEL (GM) with Sand - gray green, rounded to subrounded, medium to coarse gravel; predominantly volcanics, intermediate to felsic rhyolite clasts
830		CL	Sandy CLAY (CL) - light gray clay with sand
840		GW/SW	Silty GRAVEL (GW) to SAND (SW) - varicolored, fine to medium, subrounded to rounded sand; angular to subrounded, medium to coarse gravel
850		CH	CLAY (CH) - dark gray to brown, plastic clay
860		SP	SAND (SP) - gray green to varicolored, moderately sorted, subrounded to angular sand; little gray green to varicolored gravel
870		CH/CL	CLAY (CH/CL) - dark gray, fat clay grading to a light gray brown, plastic clay with sand
880		SP	SAND (SP) - sand with gravel and cobbles
890		CL	CLAY (CL) - light gray, plastic clay with occasional interbedded sand stringers
900		CH	CLAY (CH) - dark gray to brown, dense plastic clay
910		CL	Sandy CLAY (CL) - brown clay, with sand
920		SP	SAND (SP) - light gray, fine sand with silt
930		CH	CLAY (CH) - gray brown to green gray, highly plastic clay; minor fine sand/silt, obsidian; hard slow drilling
940		CL	Sandy CLAY (CL) - gray green
950		CH	CLAY (CH) - green gray, fat clay, some silt, plastic clay with small obsidian
960		CL	Sandy CLAY (CL) - tan brown clay, sand
970		SM	Silty SAND (SM) - green gray, fine sand with silt (ash)
980		SM/SP	SAND (SM/SP) - moderately sorted, rounded sand with silt (ash); minor clay layer; trace coarse sand at 980 feet; flowing sand
990		CL	Sandy CLAY (CL) - light gray, soft clay, minor fine sand; becoming very dense with depth
1000		SC/GC	Sand CLAY and Clayey Gravel (SC/GC) - gray, rounded to subrounded, fine sand; minor fine gravel; some clay; intercalated, hard slow drilling
1010			



E-PUR, llc

Drilling Company: WDC Exploration and Wells
Driller: Gary Eldred, Greg Gallio, John Chaves
Drilling Equipment: Reverse Circulation
Air (0'-795'), Mud Rotary (795'-867')

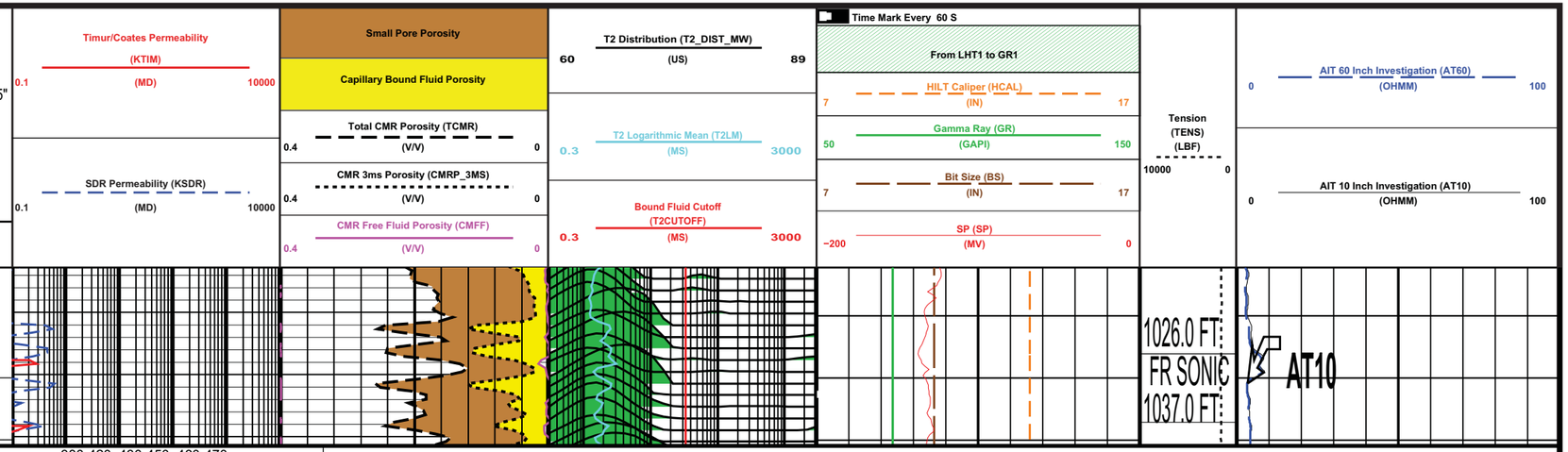
BORING LOG: Esposti Park

Esposti Park Well Test Hole

Start Date: 2/24/2010
End Date: 3/3/2010
Latitude: N 38° 31' 35.4"
Longitude: W 122° 46' 46.5"

Project	Well Installation
Location:	Windsor, CA
E-PUR PN:	E102-001-01, Task 200
Logged by:	B. Gulbranson, J. Buchowski, G. Moore
Surface Conditions:	Grass Covered
Sampler Type:	Grab

Depth (feet)	Graphic	USCS	Description
1020			
1030		CL	Sandy CLAY (CL) - soft clay; some sand; intercalated, hard slow drilling; Bottom of Boring
1040			



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Surface Seal:	Sanitary Seal (Grout)	0 to 60	feet bgs
Annulous Seal:	Grout	0 to 370	feet bgs
Filter Pack:	SRI 1/4 inch Gravel	375 to 670	feet bgs
Monument Type:	Temporary well cap	to	feet bgs

Screened Interval:	380-420, 430-450, 460-470, 480-510, 545-565, 615-655 feet bgs
Casing Diameter:	10.0 inches
Total Boring Depth:	1040.0 feet
Total Well Depth:	670.0 feet

Geophysical Log Notes:

Geophysical logging by Schlumberger (Bakersfield, CA)
CMR - Combinable Magnetic Resonance Tool
SP - Spontaneous Potential

Lithologic Log Notes:

UCS Unified Soil Classification System (Visual-Manual Method)

Appendix C - Geophysical Survey Results

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Bluebird Ct Well #2**

Field: **Windsor**

County: **Sonoma** State: **California**

County: Sonoma
Field: Windsor
Location: LAT N 38.53.91
Well: Bluebird Ct Well #2
Company: WDC Exploration & Wells

LOG QUALITY CONTROL
ARRAY INDUCTION / GR / SP
MCFL / CALIPER

LOCATION

LAT N 38.53.91
LONG W 122.80.13

Elev.: K.B.
G.L.
D.F.

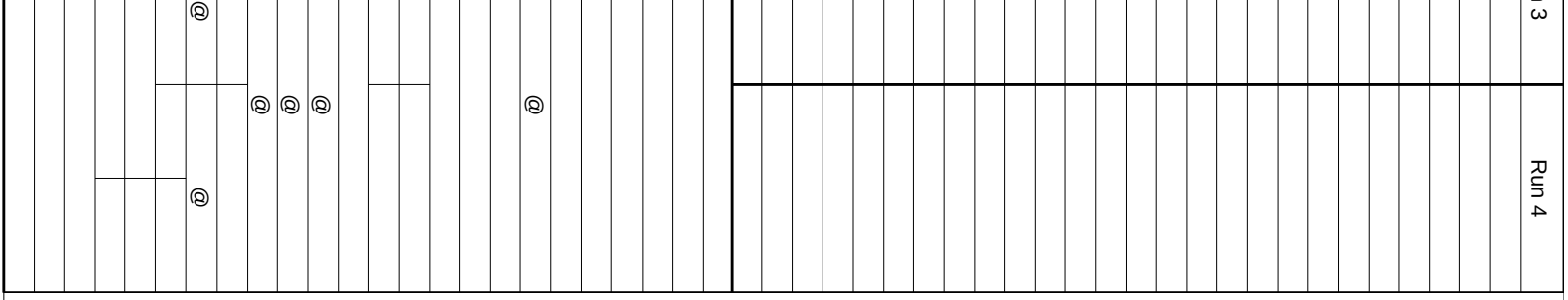
Permanent Datum: GROUND LEVEL
Log Measured From: GROUND LEVEL
Drilling Measured From: GROUND LEVEL

Elev.: _____ above Perm. Datum

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run
Logging Date	9−Apr−2010		
Run Number	ONE		
Depth Driller	867 ft		
Schlumberger Depth	863 ft		
Bottom Log Interval	855 ft		
Top Log Interval	60 ft		
Casing Driller Size @ Depth	11.750 in @ 60 ft	@	@
Casing Schlumberger	60 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	1.110 ohm.m @ 71 degF	@	@
RMF @ Measured Temperature	2.890 ohm.m @ 71 degF	@	@
RMC @ Measured Temperature	3.430 ohm.m @ 71 degF	@	@
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	0.861 @ 93 / 2.241 @ 93	@ / @	@ / @
Maximum Recorded Temperatures	93 degF		
Circulation Stopped / Time	9−Apr−2010 / 12:30		
Logger On Bottom / Time	9−Apr−2010 / 1400		
Unit Number / Location	2223 / BAKERSFIELD		
Recorded By	JARROD LONG		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 9−APR−2010 16:49:53

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46ZV XS
Serial Number:	6106	Serial Number:	1214	Serial Number:	708251
Calibration Date:	4−JAN−2010	Calibration Date:	21−MAR−2010	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46ZV XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−9	Calibration RMS:	16	Rig Type:	LAND
Wheel Correction 2:	−7	Calibration Peak Error:	30		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	1.00 FT
Tool Zero Check At Surface:	−0.10 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED.
2. IDW USED AS PRIMARY DEPTH REFERENCE, Z−CHART USED AS SECONDARY.
3.
4.
5.
6.

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: BHC	OS1:
OS2: CMR	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST LOG IN WELL	
TWO 1.5" STANDOFFS RAN ON INDUCTION TOOL	
TWO 0.125" WEAR RINGS RAN ON NEUTRON TOOL	
BOWSPRING RAN ON NEUTRON TOOL	
MATRIX: SANDSTONE DENSITY: 2.65 G/CC	
MAX TEMP = 93 DEGF	
ICV NOT NEEDED BY CLIENT	

MUD CHLORIDES, PH, AND FLUID LOSS DATA NOT GIVEN BY CLIENT	
AVAILABLE LOCATION DATA PROVIDED IN HEADER	
NO API# PROVIDED	
CALIPER CHECK IN CASING = 10.8"	
CREW: J.CORONADO, J.BAUTISTA	
THANK YOU FOR CHOOSING SCHLUMBERGER!	

RUN 1		RUN 2	
SERVICE ORDER #:	AUYB−00169	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

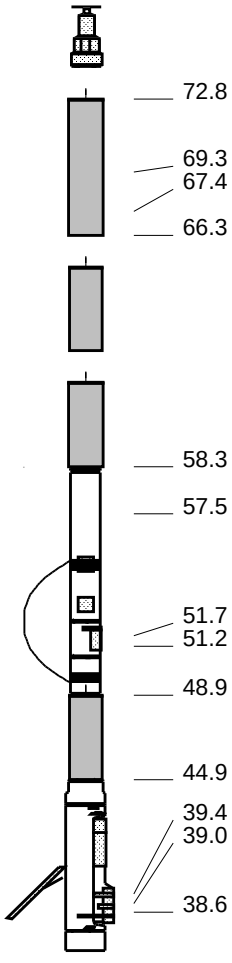
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
NCS−VB
WITM (EDTS)−A

DOWNHOLE EQUIPMENT



LEH−QT — 75.7
LEH−QT 2190

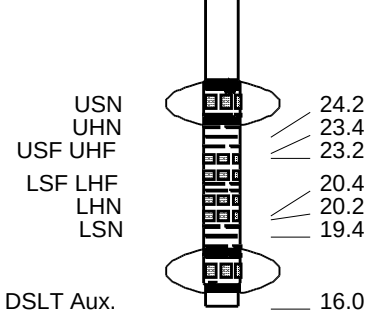
EDTC−B — 72.8
EDTH−B
EDTC−B
EDTG−A/B

AH−SPACER — 66.3
AH−SPACER 753

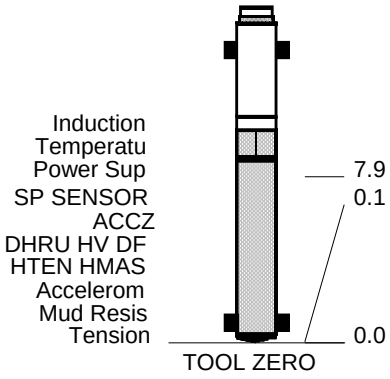
GPIT−F — 62.3
GPIH−B 1929
GPIC−F 958

HILTB−FTB — 58.3
HGNSD−B 3972
HMCA
HGNH 3738
NLS−KL
NSR−F
HACCZ
HCNT
HGR
HRCC−B 1919
HRMS−B 4781
HRGD−B 4837
GLS−VJ
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
NPV−N

DSLT−FTB — 36.6
DSLC−B 8134
ECH−KH 8634
SLS−W 330



AIT−M
AMIS−A 1057
AMRM−A



16.0
1.5 IN
Standoff

1.5 IN
Standoff

MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					60.0	11.750		Casing Shoe
					60.0	10.625		Borehole Segment

						867.0	10.625	Borehole Segment Bottom

ALL DEPTHS ARE
DRILLERS DEPTHS

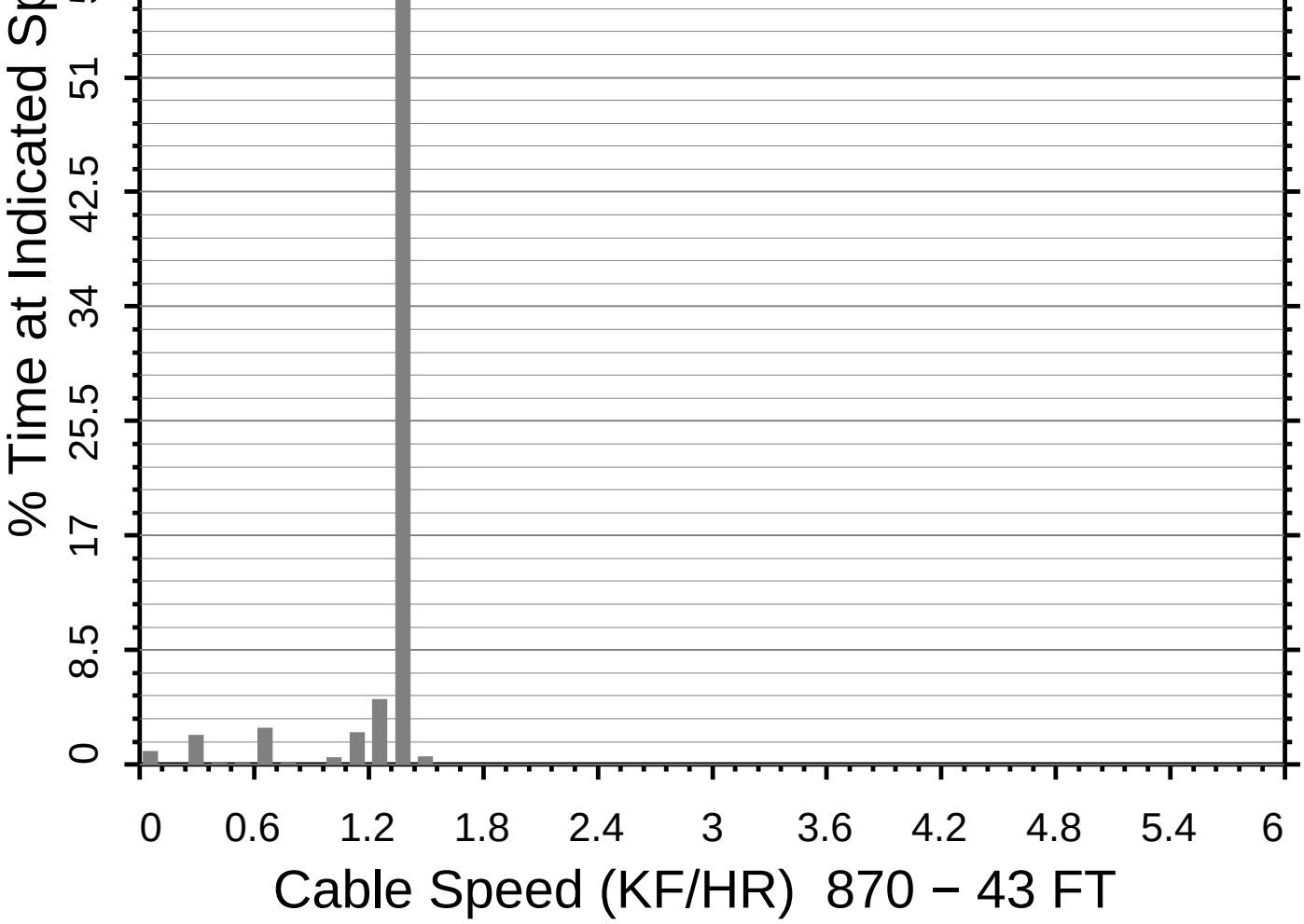
Schlumberger

CABLE SPEED HISTOGRAM

MAXIS Field Log

Sequence # 022 (Apr 09 17:00:08 2010)





Schlumberger

JOB EVENT SUMMARY

MAXIS Field Log

Schlumberger Job Event Summary

	Time	Elapsed Time	Depth (FT)		File
Circulation Stopped	9–Apr–2010 12:30				
Rig Up Started	9–Apr–2010 14:45				
Before Calibration Completed	9–Apr–2010 15:36				
Descent 1: AITM/DSLT–BB/HILTD/GPIT–F/EDTCB/LEHQT					
Begin Descent	9–Apr–2010 15:40				
Log Pass (down)	9–Apr–2010 15:42	000:26	0.0 –	837.7	AIT_SONIC_TLD_MCFL_017LDP
Log Pass (up)	9–Apr–2010 16:09	000:38	870.0 –	43.5	AIT_SONIC_TLD_MCFL_018LUP

Schlumberger

LOG QUALITY CONTROL

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Bluebird Ct Well #2**

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59	870.0 FT	43.5 FT

HRDD Processing Flags Statistical Analysis:

Percentages computed on interval 827.2 to 70.0 ft (252.1 to 21.3 m)

Pef Flags Up	100.0 %
Density Flags Up	100.0 %

	Window 1	Window 2	Window 3	Window 4
BS Average Reconstruction Error	37.64 %	14.27 %	27.57 %	
SS Average Reconstruction Error	4224.35 %	−55.41 %	770.66 %	7330.06 %
LS Average Reconstruction Error	2196.25 %	446.94 %	1739.33 %	1582.48 %

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

PIP SUMMARY

Time Mark Every 60 S

Std. Res. Resistivity Standoff (RSOZ) 2.5 (IN) 0		Pe Correction (HPRA) −3 (−−−−) 3
HGNS Deviation (GDEV) −5 (DEG) 45		BS Delta Rho (HDRB) −0.5 (G/C3) 0.5
Gamma Ray (ECGR) 0 (GAPI) 150		Density Correction (HDRA) −0.25 (G/C3) 0.25
Std. Res. Density Standoff (DSOZ) 2.5 (IN) 0		Hdrx (HDRX) 0.5 (−−−−) 1.5
Bit Size (BS) 6 (IN) 16	Stuck Stretch (STIT) 0 (F) 50	Delta Neutron Porosity (DNPH) −0.1 (V/V) 0.1
HILT Caliper (HCAL) 6 (IN) 16	Tension (TENS) (LBF) 10000 0	GR Borehole Correction Factor (CFGR) 0.5 (−−−−) 1.5

*** Flag Tracks ***

White = Absent Green = Good Yellow = Warn Red/Black = Bad

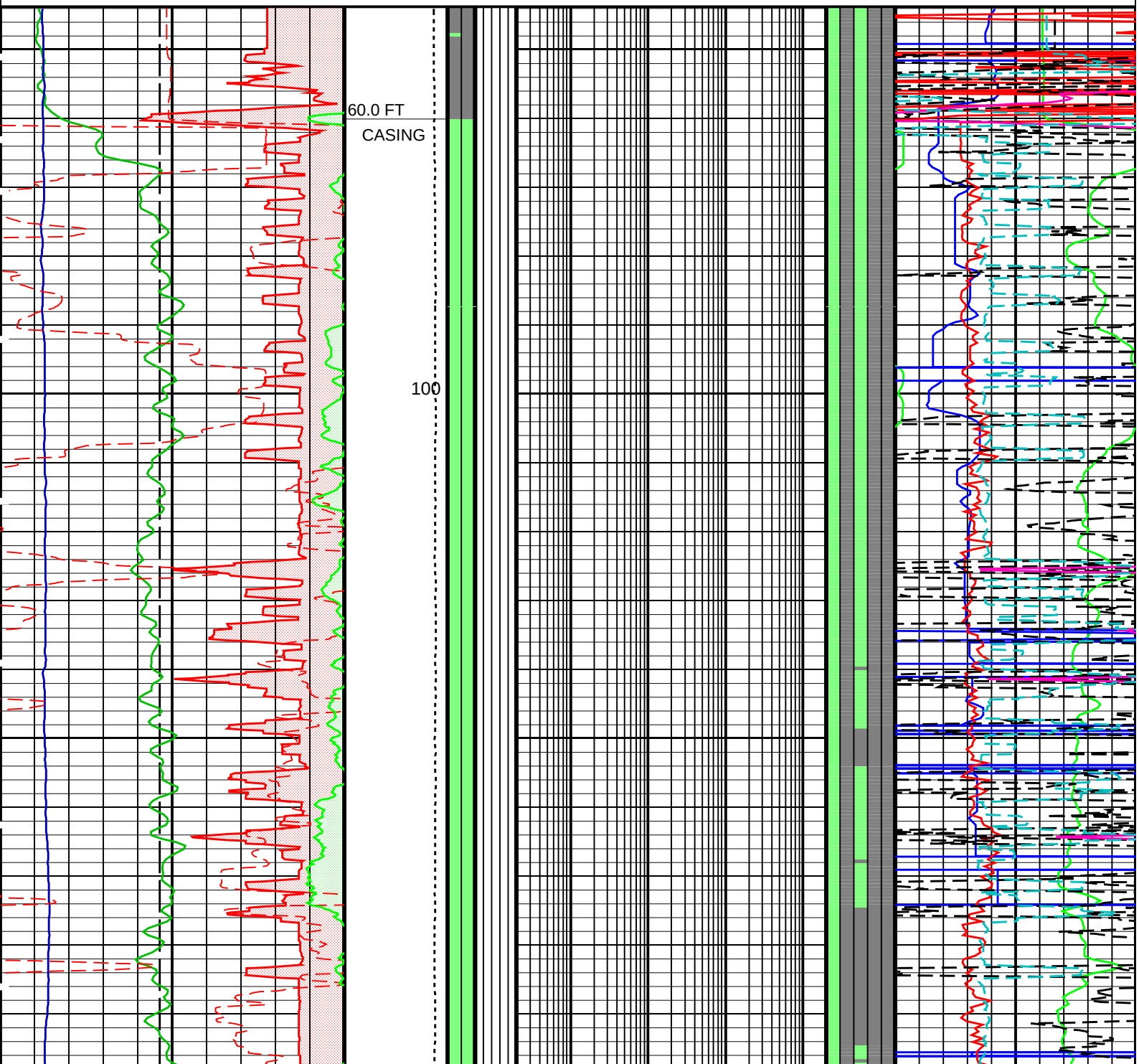
White = Absent Green = Good Yellow = Warn Red/Black = Bad

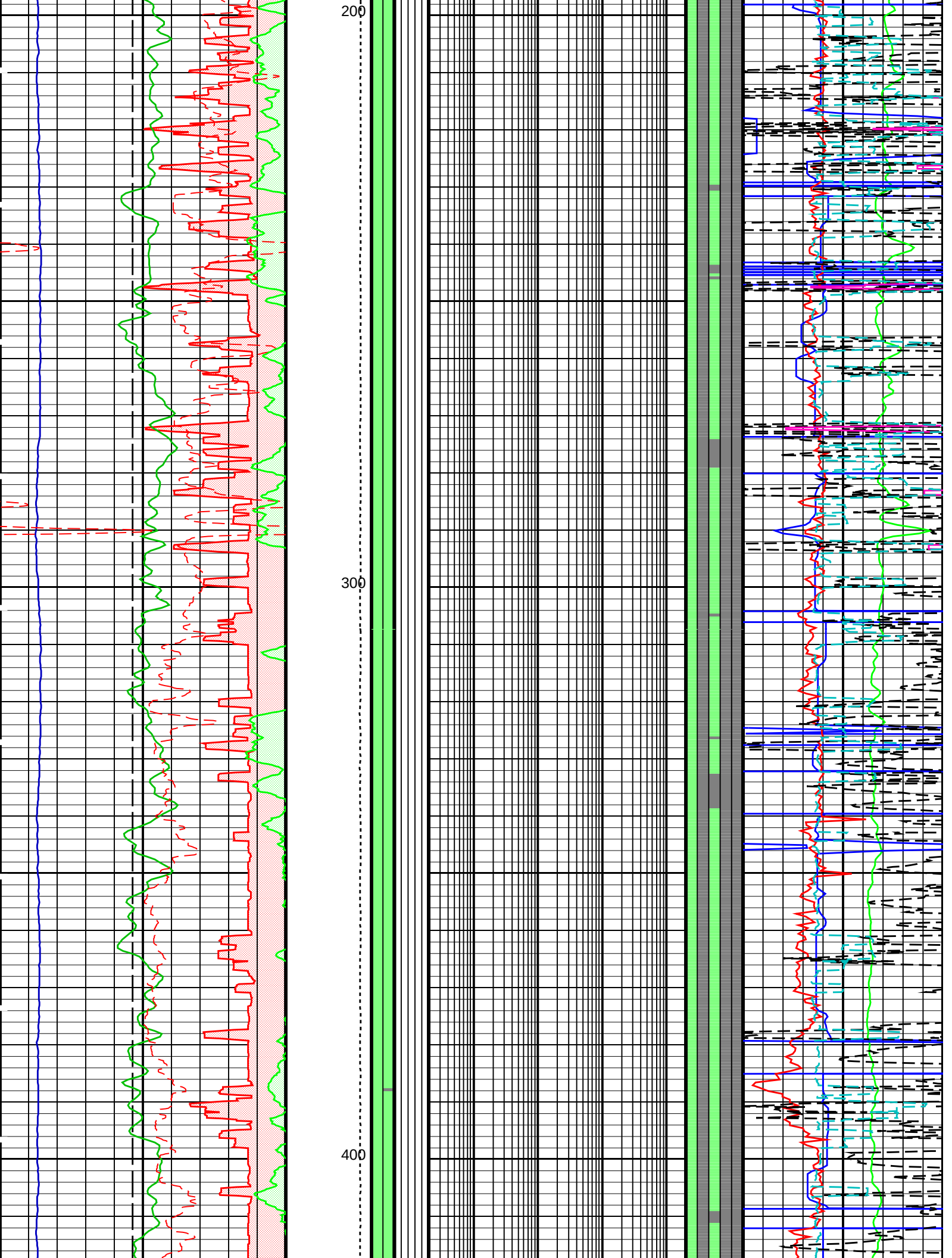
RESISTIVITY TRACK :

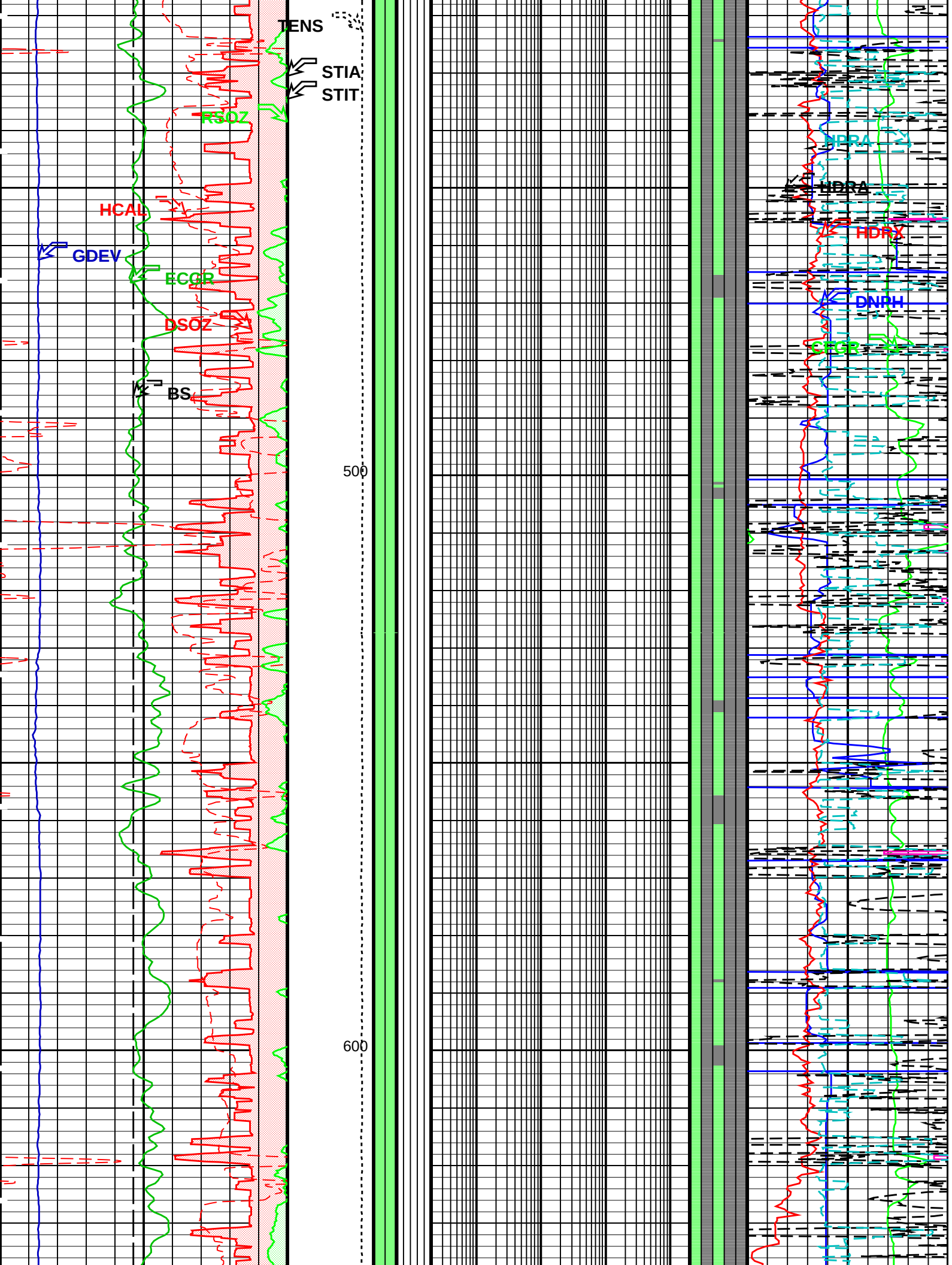
1. MCFL Hardware
2. RXO Processing
3. HAIT Hardware
4. HAIT Array[1−2]
5. HAIT Array[3−4]
6. HAIT Array[5−6]
7. HAIT Array[7−8]

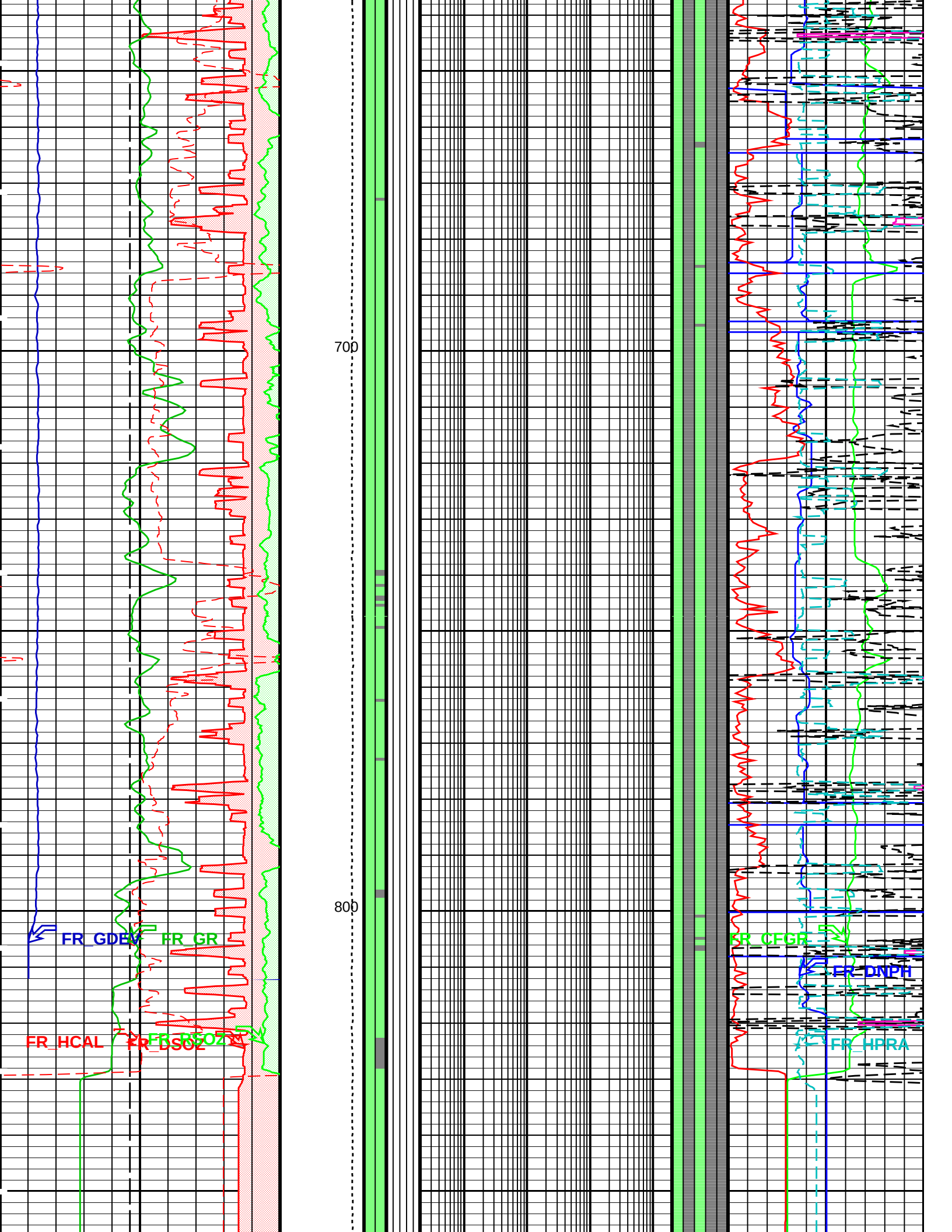
NUCLEAR TRACK :

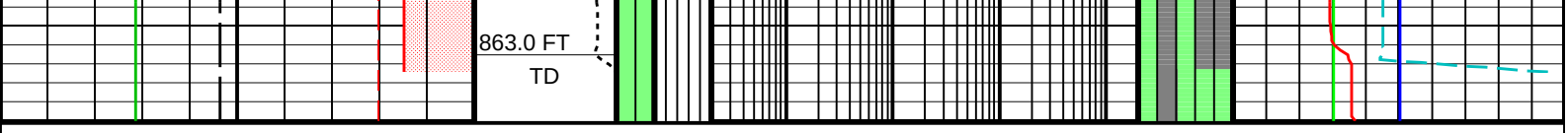
1. Accelerometer
2. Density Detector
3. Neutron Porosity
4. Density Computation
5. Pef Computation




200
300
400


TENS
STIA
STIT
RSOZ
HCAL
GDEV
ECGR
DSOZ
BS
HPRA
HDRA
HDRX
DNPH
CFGR
500
600


700
800
FR_GDEV
FR_GR
FR_HCAL
FR_DSOZ
FR_RSOZ
FR_CFGR
FR_DNPH
FR_HPRA



*** Flag Tracks ***

White = Absent Green = Good Yellow = Warn Red/Black = Bad

RESISTIVITY TRACK :

1. MCFL Hardware
2. RXO Processing
3. HAIT Hardware
4. HAIT Array[1−2]
5. HAIT Array[3−4]
6. HAIT Array[5−6]
7. HAIT Array[7−8]

NUCLEAR TRACK :

1. Accelerometer
2. Density Detector
3. Neutron Porosity
4. Density Computation
5. Pef Computation

HILT Caliper (HCAL) 6 (IN) 16	Tension (TENS) (LBF) 10000 0	GR Borehole Correction Factor (CFGR) 0.5 (−−−−) 1.5
Bit Size (BS) 6 (IN) 16	Stuck Stretch (STIT) 0 (F) 50	Delta Neutron Porosity (DNPH) −0.1 (V/V) 0.1
Std. Res. Density Standoff (DSOZ) 2.5 (IN) 0		Hdrx (HDRX) 0.5 (−−−−) 1.5
Gamma Ray (ECGR) 0 (GAPI) 150		Density Correction (HDRA) −0.25 (G/C3) 0.25
HGNS Deviation (GDEV) −5 (DEG) 45		BS Delta Rho (HDRB) −0.5 (G/C3) 0.5
Std. Res. Resistivity Standoff (RSOZ) 2.5 (IN) 0		Pe Correction (HPRA) −3 (−−−−) 3

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	87	DEGF
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHFL	Borehole Fluid Type	WATER	
BHFL_TLD	HILT Nuclear Mud Base	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DHC	Density Hole Correction	BS	
FSAL	Formation Salinity	−50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCLF	Germany Coal−like Formation Option	NO	

GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MPOF	MCFL Processing Operation Mode	ON	
MWCO	Mud Weight Correction Option	NO	
NAAC	HRDD APS Activation Correction	OFF	
NMT	HILT Nuclear Mud Type	NOBARITE	
NPRM	HRDD Processing Mode	StdRes	
NSAR	HRDD Depth Sampling Rate	1	IN
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	87	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	YES	
EDTC−B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
HSCO	Hole Size Correction Option	YES	
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	NATU	
MWCO	Mud Weight Correction Option	NO	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	87	DEGF
SOCN	Standoff Distance	0.125	IN
SOCO	Standoff Correction Option	YES	
DIR: Directional Survey Computation			
SPVD	TVD of Starting Point	0	FT
TIMD	Along−hole depth of Tie−in Point	0	FT
TIVD	TVD of Tie−in Point	0	FT
HOLEV: Integrated Hole/Cement Volume			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
MATR	Rock Matrix for Neutron Porosity Corrections	SANDSTONE	
SHT	Surface Hole Temperature	87	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	867.00	FT
TDL	Total Depth − Logger	863.00	FT
System and Miscellaneous			
BS	Bit Size	10.625	IN
BSAL	Borehole Salinity	−50000.00	PPM
CSIZ	Current Casing Size	11.750	IN
DFD	Drilling Fluid Density	9.80	LB/G
DO	Depth Offset for Playback	0.0	FT
MST	Mud Sample Temperature	70.60	DEGF
PP	Playback Processing	RECOMPUTE	
RMFS	Resistivity of Mud Filtrate Sample	2.8900	OHMM

Format: Hilt_IndLQC Vertical Scale: 5" per 100’ Graphics File Created: 09−Apr−2010 16:59

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59	870.0 FT	43.5 FT

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

PIP SUMMARY

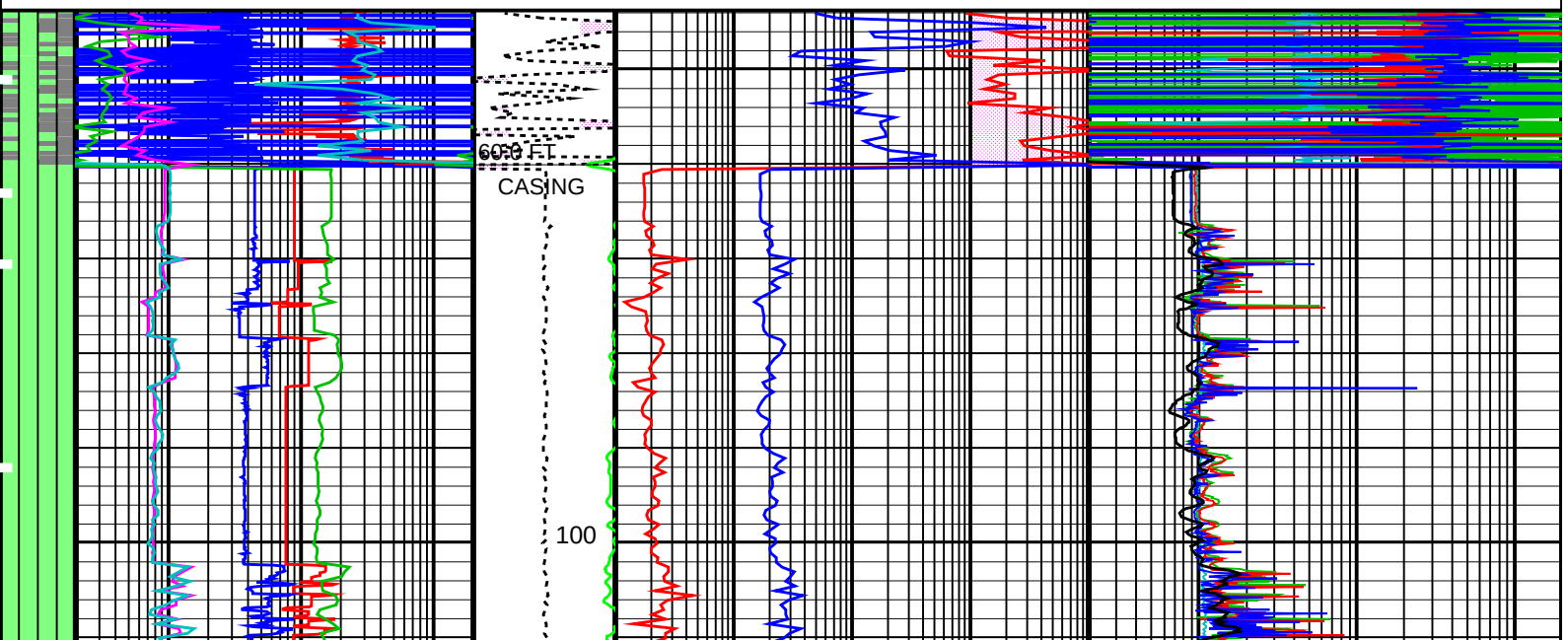
Time Mark Every 60 S

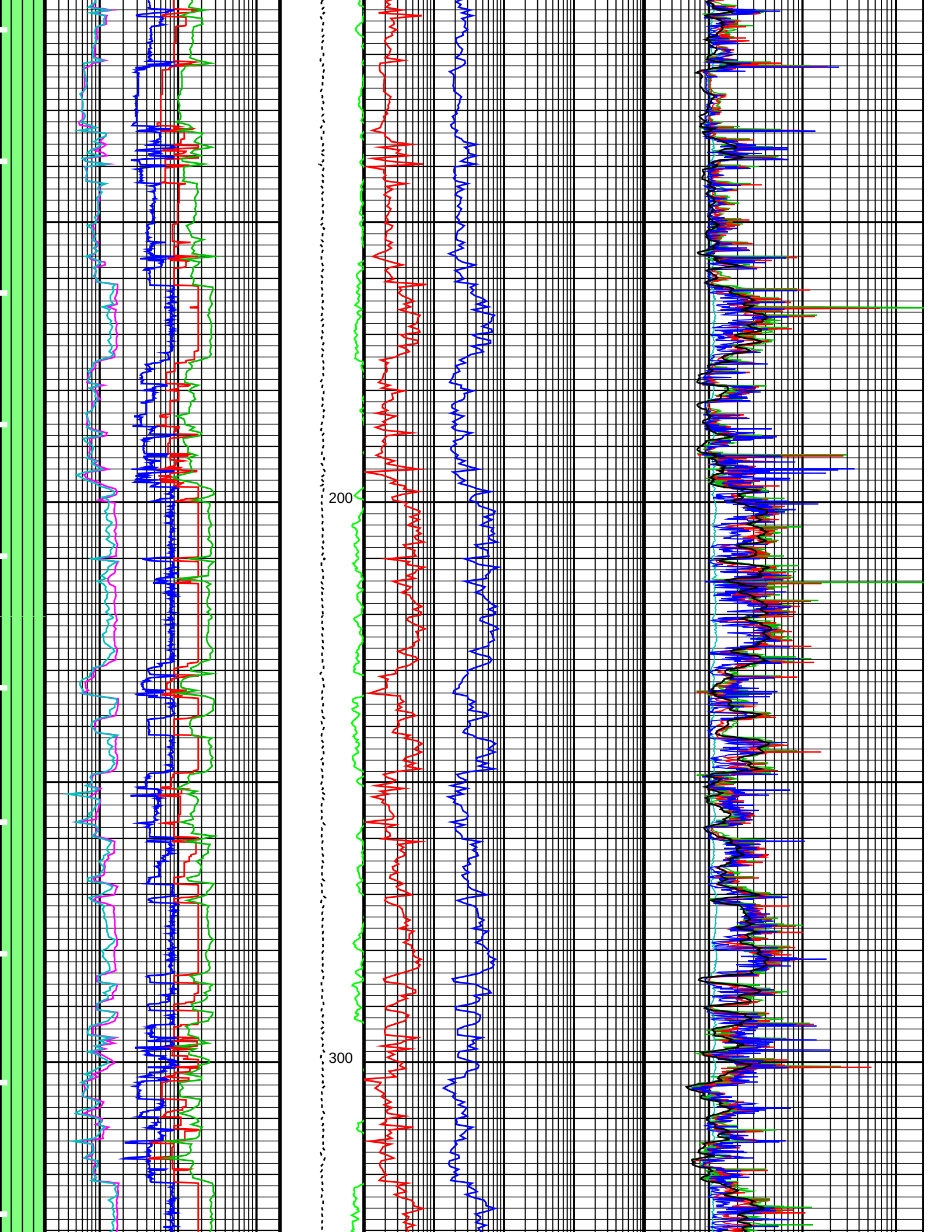
Bucking (A1) Current (RXIB) 2 (MA) 2000			H. Res. Invaded Zone Resistivity (RXO8) 2 (OHMM) 2000
Global (A0) Current (RXIG) 2 (MA) 2000			Raw B2 Resistivity (RVSR) 2 (OHMM) 2000
Bucking (A1) Voltage (RXVB) 2 (MV) 2000			Raw B1 Resistivity (RVDR) 2 (OHMM) 2000
MCFL Vertical Voltage (RVV) 2 (MV) 2000	Monitoring to Rxo Voltage Ratio (MVRA) (−−−−) −0.01 0.01	Global to B0 Current Ratio (RXIGI0) 10 (−−−−) 100000	Global Current Based Resistivity (RXGR) 2 (OHMM) 2000
Rxo (A0) Voltage (RXV) 2 (MV) 2000	H. Res. Resistivity Standoff (RSO8) 2.5 (IN) 0	MCFL Hardware Contrast Indicator (CTRM) 10 (−−−−) 100000	Raw B0 Resistivity (RXR) 2 (OHMM) 2000

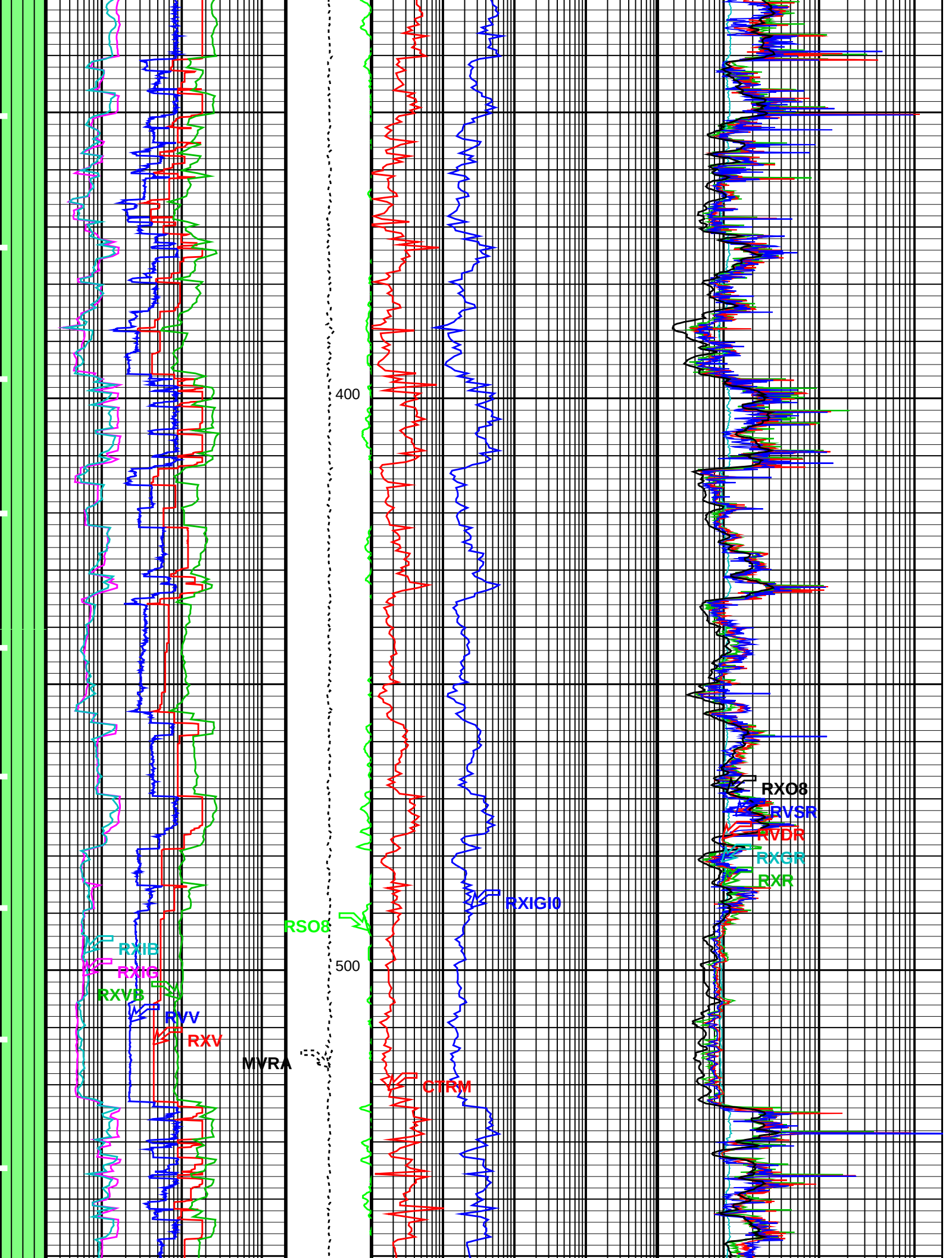
*** Flag Tracks ***

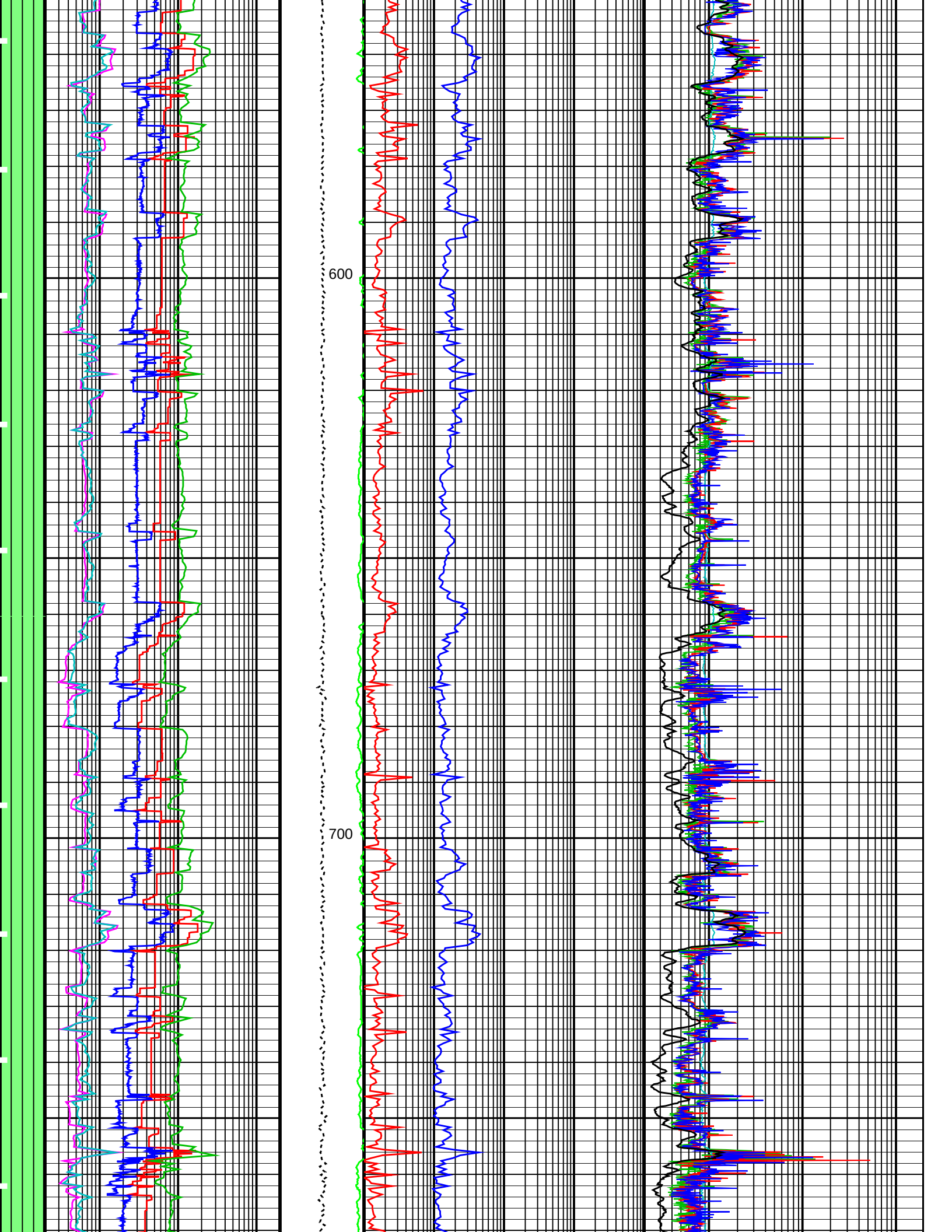
Black areas show that the corresponding error flag is set.

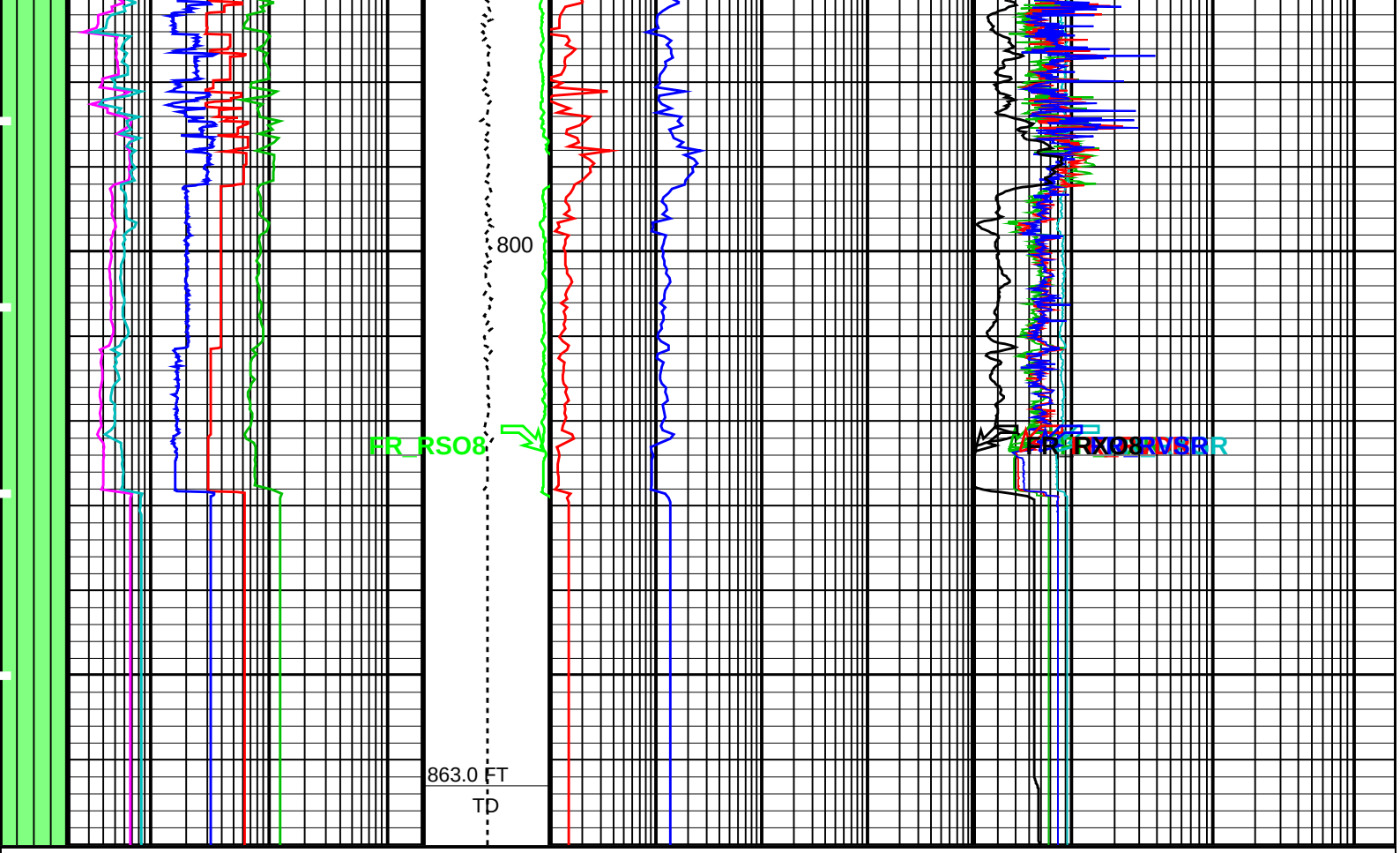
1. Principal Button Current Overload
2. Shuttle Link Feedback Error
3. Monitoring Voltage Ratio Error
4. Contrast/Rm Indicator Too Large




200
300


400
500
RXO8
RVSR
RVDR
RXGR
RXR
RXIGI0
RSO8
RXIB
RXIG
RXVB
RVV
RXV
MVRA
CTRM


600
700



***** Flag Tracks *****

Black areas show that the corresponding error flag is set.

1. **Principal Button Current Overload**
2. **Shuttle Link Feedback Error**
3. **Monitoring Voltage Ratio Error**
4. **Contrast/Rm Indicator Too Large**

Rxo (A0) Voltage (RXV) 2 (MV) 2000	H. Res. Resistivity Standoff (RSO8) 2.5 (IN) 0	MCFL Hardware Contrast Indicator (CTRM) 10 (----) 100000	Raw B0 Resistivity (RXR) 2 (OHMM) 2000
MCFL Vertical Voltage (RVV) 2 (MV) 2000	Monitoring to Rxo Voltage Ratio (MVRA) (----) -0.01 0.01	Global to B0 Current Ratio (RXIGI0) 10 (----) 100000	Global Current Based Resistivity (RXGR) 2 (OHMM) 2000
Bucking (A1) Voltage (RXVB) 2 (MV) 2000			Raw B1 Resistivity (RVDR) 2 (OHMM) 2000
Global (A0) Current (RXIG) 2 (MA) 2000			Raw B2 Resistivity (RVSR) 2 (OHMM) 2000
Bucking (A1) Current (RXIB) 2 (MA) 2000			H. Res. Invaded Zone Resistivity (RXO8) 2 (OHMM) 2000

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
	HILTB-ETB: High resolution Integrated Logging Tool-DTS	

MPOF		MCFL Processing Operation Mode	ON	
	DIR: Directional Survey Computation			
SPVD		TVD of Starting Point	0	FT
TIMD		Along−hole depth of Tie−in Point	0	FT
TIVD		TVD of Tie−in Point	0	FT
	STI: Stuck Tool Indicator			
LBFR		Trigger for MAXIS First Reading Label	TDL	
TDD		Total Depth − Driller	867.00	FT
TDL		Total Depth − Logger	863.00	FT
	System and Miscellaneous			
BS		Bit Size	10.625	IN
DO		Depth Offset for Playback	0.0	FT
PP		Playback Processing	RECOMPUTE	

Format: McflHwLqc Vertical Scale: 5" per 100' Graphics File Created: 09−Apr−2010 16:59

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59		

Company: WDC Exploration & Wells Well: Bluebird Ct Well #2

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59	870.0 FT	43.5 FT

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

AITM Boosted Borehole Corrected Average Conductivities

Average performed from depth 770.00 ft/ 234.70 m with 801 samples

A1: 213.557 A2: 218.116 A3: 219.084 A4: 223.760

A5: 221.132 A6: 222.151 A7: 225.344 A8: 233.887

Casing shoe depth estimated from AITM induction measurements: 57.00 +/−.5 ft

PIP SUMMARY

Time Mark Every 60 S

	AIT Bhole/Form Signal Ratio (ABFR)
	0 (−−−−) 25
	AIT Input Bhole Diameter (AIBD)
	6 (IN) 16



Magnetic Mud Flag (tenth small division): White=No Magnetic Mud,

Yellow=Magnetic Mud Detected and Magnetic Mud Processing, Red=Magnetic Mud Detected and Non−Magnetic Processing (U−AIT_AEMF)
(−−−−)

1.0000 2.0000 3.0000

AIT ECLP Flags: White=1 FT, Yellow=2 FT, Green=4 FT Black=OR (Chart Flag: eleventh small division; Hole Flag: twelfth small division; Resolution Flag: thirteenth small division) (U−AIT_AEFL)
(−−−−)

Tool/Tot. Drag From D3T to STIA

1.0000 2.0000

Tool Electronics Monitor (ninth small division, from ADES Channel): White=Normal, Blue=Warning, Red=Failure (AQTI)
(−−−−)

Cable Drag From STIA to STIT

Tension (TENS)
6000 (LBF) 1000

0.5000 0.6000 0.7000 0.8000 0.9000 1.0000 1.1000 1.2000 1.3000 1.4000 1.5000

AIT Array Ratio Monitor: Green=Normal (Array One to Array Eight: first to eighth small divisions) (AQRI)
(−−−−)

Stuck Stretch (STIT)
0 (F) 50

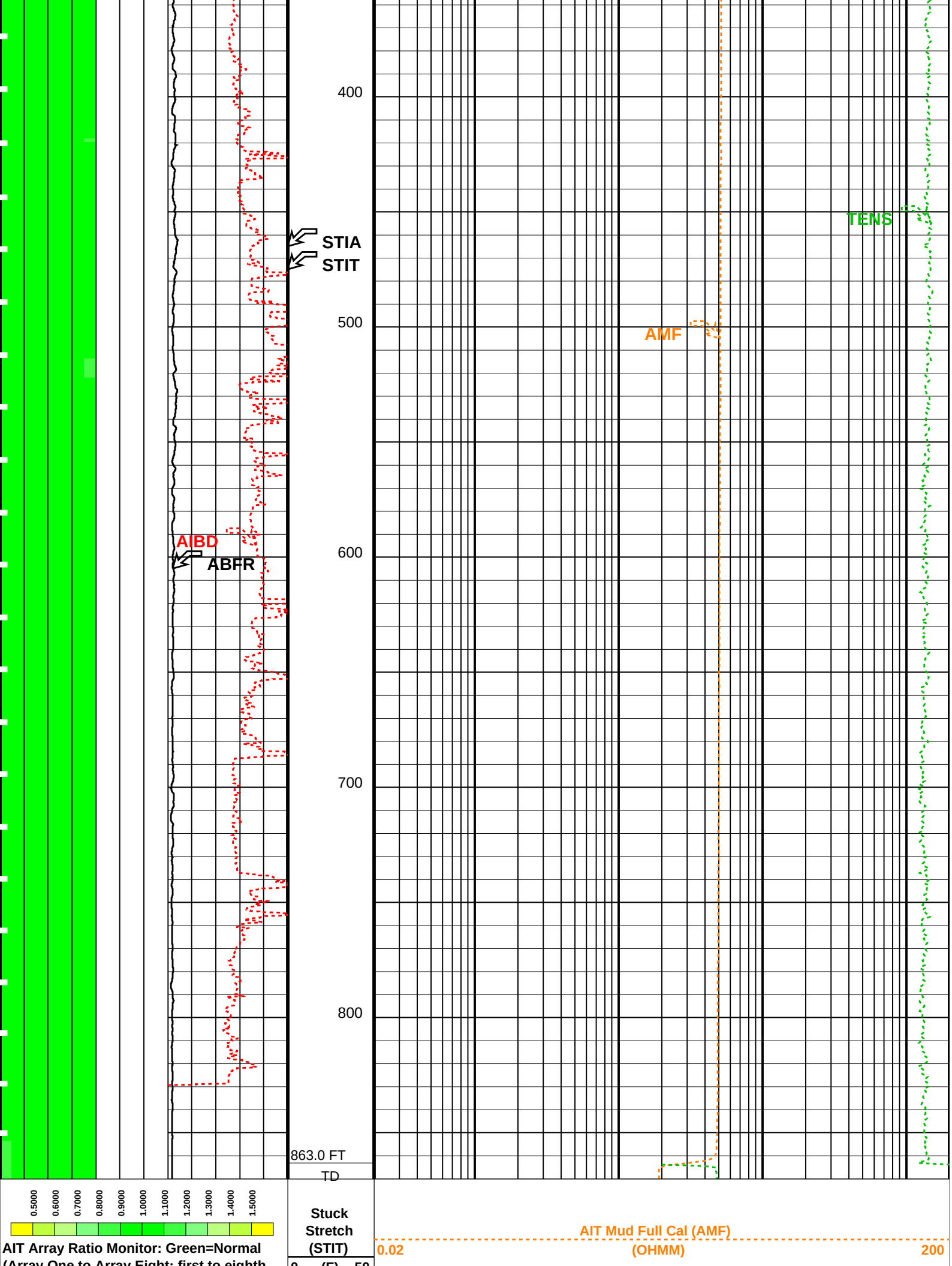
AIT Mud Full Cal (AMF)
0.02 (OHMM) 200

60.0 FT
CASING

100

200

300


400
500
600
700
800
STIA
STIT
AIBD
ABFR
TENS
AMF
863.0 FT
TD
0.5000
0.6000
0.7000
0.8000
0.9000
1.0000
1.1000
1.2000
1.3000
1.4000
1.5000
AIT Array Ratio Monitor: Green=Normal
Stuck Stretch (STIT)
AIT Mud Full Cal (AMF)
0.02
(OHMM)
200

(Array One to Array Eight: first to eighth small divisions) (AQRI)
(−−−−)

0 (F) 50

1.0000 2.0000

Tool Electronics Monitor (ninth small division, from ADES Channel): White=Normal, Blue=Warning, Red=Failure (AQTI)
(−−−−)

Cable Drag From STIA to STIT

Tension (TENS)
6000 (LBF) 1000

1.0000 2.0000 3.0000

AIT ECLP Flags: White=1 FT, Yellow=2 FT, Green=4 FT Black=OR (Chart Flag: eleventh small division; Hole Flag: twelfth small division; Resolution Flag: thirteenth small division) (U−AIT_AEFL)
(−−−−)

Tool/Tot. Drag From D3T to STIA

1.0000 2.0000

Magnetic Mud Flag (tenth small division): White=No Magnetic Mud, Yellow=Magnetic Mud Detected and Magnetic Mud Processing, Red=Magnetic Mud Detected and Non−Magnetic Processing (U−AIT_AEMF)
(−−−−)

AIT Input Bhole Diameter (AIBD)
6 (IN) 16

AIT Bhole/Form Signal Ratio (ABFR)
0 (−−−−) 25

PIP SUMMARY

Time Mark Every 60 S

AITM Answer Product Processing Summary. Data taken with sonde # 1057

***** Bhole Correction *****

Effective Tool Standoff computed. Borehole diameter and mud res. taken as input (see GCSE and GRSE parameters)

Tool is run in ECCENTERED mode with a tool stand−off of 1.50 IN. Bit Size is 10.63 IN.

***** Input Selections to AITM Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AITM Answer Product processing *****

Surface Hole Temperature (SHT)	87.000 DEGF	Bottom Temperature (BHT)	93.000 DEGF
Total Depth (TD)	863.000 FT		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	2.890 OHMM	Mud Filtrate Sample Temperature (MFST)	70.600 DEGF
Resitivity Connate Water (RW)	1.000 OHMM		

***** AITM Answer Product processing control parameters *****

Playback Mode: RECOMPUTE

(AEBC): Yes (AEBL): Yes (AERP): Yes

(ABHM): 2_ComputeStandoff (ABLM): 6_One_Two_and_Four (ARPM): 6_One_Two_and_Four

Parameters

DLIS Name	Description	Value
	AIT−M: Array Induction Tool − M	
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff

ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−50000	FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	1.5	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
HILTB−FTB: High resolution Integrated Logging Tool−DTS			
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
EDTC−B: Enhanced DTS Cartridge			
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
DIR: Directional Survey Computation			
SPVD	TVD of Starting Point	0	FT
TIMD	Along−hole depth of Tie−in Point	0	FT
TIVD	TVD of Tie−in Point	0	FT
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	867.00	FT
TDL	Total Depth − Logger	863.00	FT
System and Miscellaneous			
BS	Bit Size	10.625	IN
DFD	Drilling Fluid Density	9.80	LB/G
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	−50000.00	FT
MST	Mud Sample Temperature	70.60	DEGF
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	863	FT

Format: AITM_QualityControlImage Vertical Scale: 2" per 100' Graphics File Created: 09−Apr−2010 16:59

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT **AIT_SONIC_TLD_MCFL_022PUP** **FN:21** **PRODUCER** **09−Apr−2010 16:59**

Schlumberger

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Thru Cal Mag. & Phase							
Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49							
Thru Cal Magnitude − 0	0	0.5944	0.5943	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.218	1.218	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6053	0.6050	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.6816	0.6814	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.277	1.277	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.859	1.859	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.861	1.861	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.340	1.339	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	192.1	194.3	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	191.0	193.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	187.5	189.7	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	186.7	188.9	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	180.6	182.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	179.0	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	179.0	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	178.2	180.3	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary							
Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49							
Array Induction SPA Plus	991.0	991.6	991.8	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.1995	0.2149	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9184	0.9186	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0002014	0.0002180	N/A	N/A	N/A	V
Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction							
Master: 10−Jan−2010 17:00							
Test Loop Gain Correctio − 0	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.009	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	0.9914	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	0.9839	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.041	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.5551	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.6233	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	0.08833	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	0.008389	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	0.07837	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	0.03849	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.6174	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	0.4741	N/A	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Sonde Error Correction							
Master: 10−Jan−2010 17:00							
R Sonde Error Correction − 0	0	−26.58	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	163.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	108.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	65.10	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	23.32	N/A	N/A	N/A	N/A	MM/M

R Sonde Error Correction − 4	0	23.52	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	14.68	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	10.38	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−1.904	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	179.0	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	49.26	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−83.51	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−83.84	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	−8.484	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−2.228	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	−0.7255	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	7.881	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − M Wellsite Calibration − Mud Gain Correction
Master: 10−Jan−2010 17:00

Coarse − Mag, Real, Imag − 0	0	0.9426	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	0.9426	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	0.9426	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	0.9358	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	0.9358	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	0.9358	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 8−Apr−2010 15:53

BS Window Ratio	0.7386	N/A	0.7381	N/A	N/A	N/A	
BS Window Sum	30790	N/A	30790	N/A	N/A	N/A	CPS
SS Window Ratio	0.4798	N/A	0.4803	N/A	N/A	N/A	
SS Window Sum	12280	N/A	12240	N/A	N/A	N/A	CPS
LS Window Ratio	0.2918	N/A	0.2906	N/A	N/A	N/A	
LS Window Sum	1435	N/A	1433	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 8−Apr−2010 15:53

BS PM High Voltage (Command)	1769	N/A	1771	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1606	N/A	1628	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1377	N/A	1373	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 8−Apr−2010 15:53

BS Crystal Resolution	11.43	N/A	11.42	N/A	N/A	N/A	%
SS Crystal Resolution	8.348	N/A	8.545	N/A	N/A	N/A	%
LS Crystal Resolution	8.865	N/A	8.977	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 8−Apr−2010 15:53

Raw B0 Resistivity	3875	N/A	3891	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3830	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3823	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 8−Apr−2010 15:48

HILT Caliper Zero Measurement	8.000	N/A	7.966	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.09	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 8−Apr−2010 15:48

Gamma Ray Background	30.00	N/A	56.04	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	166.4	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 14−Jan−2010 16:39 Before: 8−Apr−2010 15:49

CNTC Background	24.38	24.38	24.92	N/A	N/A	3.657	CPS
CFTC Background	27.29	27.29	26.52	N/A	N/A	4.094	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 14−Jan−2010 16:39

Thermal Near Corr. (Tank)	5800	5315	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2267	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.345	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 9−Apr−2010 15:36

Z−Axis Acceleration	32.19	N/A	32.12	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 29−Mar−2010 17:12

Rho Aluminum	2.596	2.598	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.687	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.511	−−	−−	−−	−−	
Pe Magnesium	2.650	2.665	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary

Master: 29−Mar−2010 17:12							
BS Average Deviation	0	0.5040	−−	−−	−−	−−	%
BS Max Deviation	0	1.085	−−	−−	−−	−−	%
SS Average Deviation	0	0.2841	−−	−−	−−	−−	%
SS Max Deviation	0	0.9145	−−	−−	−−	−−	%
LS Average Deviation	0	0.4565	−−	−−	−−	−−	%
LS Max Deviation	0	0.7775	−−	−−	−−	−−	%

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 72.0 DEGF.
Thermal Housing Size 3.375 IN.
NSR−F serial number 0

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	1057

Auxiliary Equipment:

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.5944		0.6100	192.1		197.0
	Before	0.5943			194.3		
1	Master	1.218		1.270	191.0		196.0
	Before	1.218			193.2		
2	Master	0.6053		0.6200	187.5		192.0
	Before	0.6050			189.7		
3	Master	0.6816		0.7000	186.7		191.0
	Before	0.6814			188.9		
4	Master	1.277		1.340	180.6		185.0
	Before	1.277			182.8		
5	Master	1.859		1.960	179.0		182.0
	Before	1.859			181.2		
6	Master	1.861		1.960	179.0		181.0
	Before	1.861			181.2		
7	Master	1.340		1.410	178.2		175.0
	Before	1.339			180.3		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value
Master		991.6
Before		991.8
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		0.1995
Before		0.2149
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value

Phase	Array Induction Temperature Zero V	Value

Master		0.9184	Master		0.0002014
Before		0.9186	Before		0.0002180
0.8710 (Minimum)	0.9170 (Nominal)	0.9630 (Maximum)	−0.05000 (Minimum)	0 (Nominal)	0.05000 (Maximum)

Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase DEG		
0	1.012				0.5551			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.012				0.6233			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.011				0.08833			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.009				0.008389			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9914				0.07837			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9839				0.03849			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.011				0.6174			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.041				0.4741			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−26.58				179.0			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	163.3				49.26			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	108.6				−83.51			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	65.10				−83.84			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.32				−8.484			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.68				−2.228			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.38				−0.7255			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.904				7.881			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag	Value	Fine − Mag, Real, Imag
0	0.9426		0.9358	
	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	
1	0.9426		0.9358	
	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	
2	0.9426		0.9358	
	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)		0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.5944		0.6100	192.1		197.0
1	Master	1.218		1.270	191.0		196.0
2	Master	0.6053		0.6200	187.5		192.0
3	Master	0.6816		0.7000	186.7		191.0
4	Master	1.277		1.340	180.6		185.0
5	Master	1.859		1.960	179.0		182.0
6	Master	1.861		1.960	179.0		181.0
7	Master	1.340		1.410	178.2		175.0
		60.00 % (Minimum) (Nominal) 140.0 % (Maximum)			Nom −60.00 (Minimum) (Nominal) Nom + 60.00 (Maximum)		

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		991.6	Master		0.1995
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)			−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	
Phase	Array Induction Temperature Plus V	Value	Phase	Array Induction Temperature Zero V	Value
Master		0.9184	Master		0.0002014
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)			−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.012		0.5551	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
1	1.012		0.6233	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
2	1.011		0.08833	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
3	1.009		0.008389	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
4	0.9914		0.07837	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
5	0.9839		0.03849	
	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)	
6	1.011		0.6174	

		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.041				0.4741			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−26.58				179.0			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	163.3				49.26			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	108.6				−83.51			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	65.10				−83.84			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.32				−8.484			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.68				−2.228			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.38				−0.7255			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.904				7.881			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 10−Jan−2010 17:00

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT high−Resolution Mechanical Sonde	HRMS − B	4781
HILT Rxo Gamma−ray Device	HRGD − B	4837
HILT Micro Cylindrically Focused Log Dev	MCFL −	
GR Logging Source	GLS − VJ	
HILT High Res. Control Cartridge	HRCC − B	1919
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	3972
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	
HGNS Housing	HGNH −	3738

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.7381	Before		0.4803	Before		0.2906
0.7016 (Minimum)	0.7386 (Nominal)	0.7755 (Maximum)	0.4558 (Minimum)	0.4798 (Nominal)	0.5038 (Maximum)	0.2773 (Minimum)	0.2918 (Nominal)	0.3064 (Maximum)
Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		30790	Before		12240	Before		1433
29250 (Minimum)	30790 (Nominal)	32330 (Maximum)	11670 (Minimum)	12280 (Nominal)	12890 (Maximum)	1363 (Minimum)	1435 (Nominal)	1506 (Maximum)

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1771	Before		1628	Before		1373
1669 (Minimum)	1769 (Nominal)	1869 (Maximum)	1506 (Minimum)	1606 (Nominal)	1706 (Maximum)	1277 (Minimum)	1377 (Nominal)	1477 (Maximum)

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		11.42	Before		8.545	Before		8.977
10.43 (Minimum)	11.43 (Nominal)	12.43 (Maximum)	7.348 (Minimum)	8.348 (Nominal)	9.348 (Maximum)	7.865 (Minimum)	8.865 (Nominal)	9.865 (Maximum)

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3891	Before		3830	Before		3823
3565 (Minimum)	3875 (Nominal)	4185 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	3524 (Minimum)	3830 (Nominal)	4136 (Maximum)

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		7.966	Before		12.09
6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)	9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)

Before: 8−Apr−2010 15:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		56.04	Before		166.4
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	157.1 (Minimum)	165.0 (Nominal)	206.3 (Maximum)

Before: 8−Apr−2010 15:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		24.38	Master		27.29
Before		24.92	Before		26.52
5.000 (Minimum)	24.38 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	27.29 (Nominal)	40.00 (Maximum)

Master: 14−Jan−2010 16:39 Before: 8−Apr−2010 15:49

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value

Master		5315	Master		2267	Master		2.345
4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 14−Jan−2010 16:39

High resolution Integrated Logging Tool−DTS
Wellsite Calibration
Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.12
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 9−Apr−2010 15:36

High resolution Integrated Logging Tool−DTS Master Calibration
Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.598	Master		1.687
2.586 (Minimum)	2.596 (Nominal)	2.606 (Maximum)	1.676 (Minimum)	1.686 (Nominal)	1.696 (Maximum)
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.511	Master		2.665
2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)	2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)

Master: 29−Mar−2010 17:12

High resolution Integrated Logging Tool−DTS Master Calibration
Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.5040	Master		0.2841	Master		0.4565
−0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	−1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	−1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		**1.085**	**Master**		**0.9145**	**Master**		**0.7775**
−1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	−2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	−3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

Master: 29−Mar−2010 17:12

High resolution Integrated Logging Tool−DTS Master Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		24.38	Master		27.29
5.000 (Minimum)	24.38 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	27.29 (Nominal)	40.00 (Maximum)

Master: 14−Jan−2010 16:39

High resolution Integrated Logging Tool−DTS Master Calibration
Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5315	Master		2267	Master		2.345
4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 14−Jan−2010 16:39

General Purpose Inclinometer / Equipment Identification

Primary Equipment:
GPIT Cartridge − F — GPIC − F — 958

Auxiliary Equipment:
GPIT Housing − F — GPIH − B — 1929

Company:	**WDC Exploration & Wells**
Well:	**Bluebird Ct Well #2**
Field:	**Windsor**
County:	**Sonoma**
State:	**California**

Schlumberger

LOG QUALITY CONTROL
ARRAY INDUCTION / GR / SP
MCFL / CALIPER

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Bluebird Ct Well #2**
Field: **Windsor**
County: **Sonoma** State: **California**

ARRAY INDUCTION / GR / SP
MCFL / CALIPER

County: Sonoma
Field: Windsor
Location: LAT N 38.53.91
Well: Bluebird Ct Well #2
Company: WDC Exploration & Wells

LOCATION

LAT N 38.53.91
LONG W 122.80.13

Elev.: K.B.
G.L.
D.F.

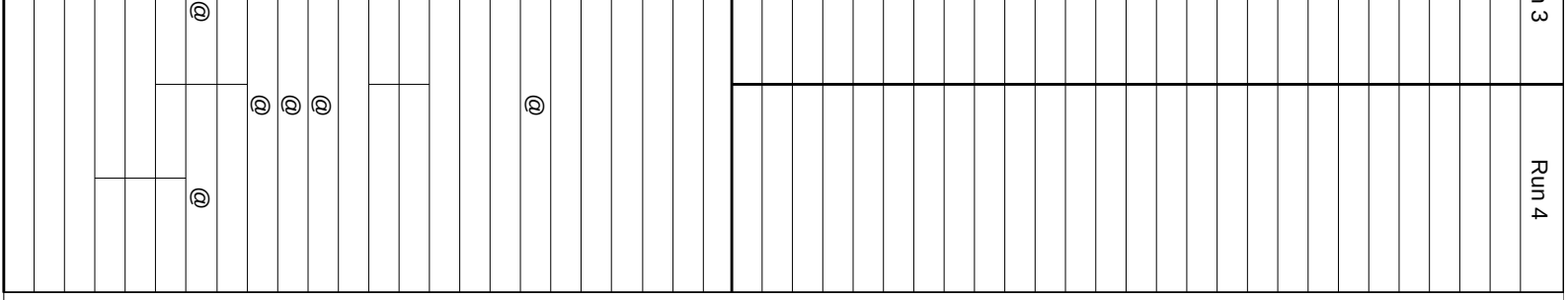
Permanent Datum: GROUND LEVEL
Log Measured From: GROUND LEVEL
Drilling Measured From: GROUND LEVEL

Elev.: _____ above Perm. Datum

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run
Logging Date	9−Apr−2010		
Run Number	ONE		
Depth Driller	867 ft		
Schlumberger Depth	863 ft		
Bottom Log Interval	855 ft		
Top Log Interval	60 ft		
Casing Driller Size @ Depth	11.750 in @ 60 ft	@	
Casing Schlumberger	60 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	1.110 ohm.m @ 71 degF	@	
RMF @ Measured Temperature	2.890 ohm.m @ 71 degF	@	
RMC @ Measured Temperature	3.430 ohm.m @ 71 degF	@	
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	0.861 @ 93 / 2.241 @ 93	@ / @	
Maximum Recorded Temperatures	93 degF		
Circulation Stopped / Time	9−Apr−2010 / 12:30		
Logger On Bottom / Time	9−Apr−2010 / 1400		
Unit Number / Location	2223 / BAKERSFIELD		
Recorded By	JARROD LONG		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 9−APR−2010 16:49:53

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46ZV XS
Serial Number:	6106	Serial Number:	1214	Serial Number:	708251
Calibration Date:	4−JAN−2010	Calibration Date:	21−MAR−2010	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46ZV XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−9	Calibration RMS:	16	Rig Type:	LAND
Wheel Correction 2:	−7	Calibration Peak Error:	30		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	1.00 FT
Tool Zero Check At Surface:	−0.10 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED.
2. IDW USED AS PRIMARY DEPTH REFERENCE, Z−CHART USED AS SECONDARY.
3.
4.
5.
6.

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: BHC	OS1:
OS2: CMR	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST LOG IN WELL	
TWO 1.5" STANDOFFS RAN ON INDUCTION TOOL	
TWO 0.125" WEAR RINGS RAN ON NEUTRON TOOL	
BOWSPRING RAN ON NEUTRON TOOL	
MATRIX: SANDSTONE DENSITY: 2.65 G/CC	
MAX TEMP = 93 DEGF	
ICV NOT NEEDED BY CLIENT	

MUD CHLORIDES, PH, AND FLUID LOSS DATA NOT GIVEN BY CLIENT	
AVAILABLE LOCATION DATA PROVIDED IN HEADER	
NO API# PROVIDED	
CALIPER CHECK IN CASING = 10.8"	
CREW: J.CORONADO, J.BAUTISTA	
THANK YOU FOR CHOOSING SCHLUMBERGER!	

RUN 1		RUN 2	
SERVICE ORDER #:	AUYB−00169	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

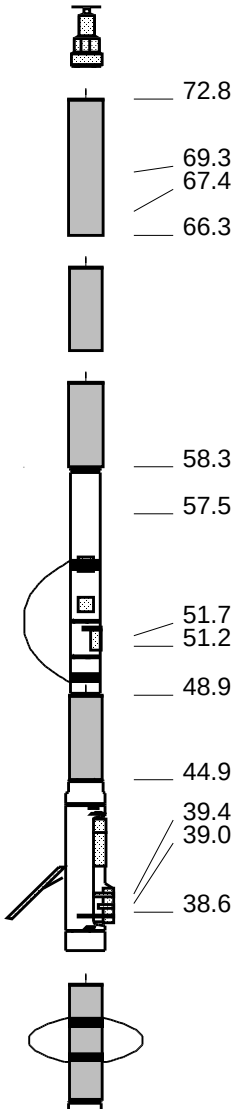
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
NCS−VB
WITM (EDTS)−A

DOWNHOLE EQUIPMENT



LEH−QT
LEH−QT 2190
75.7

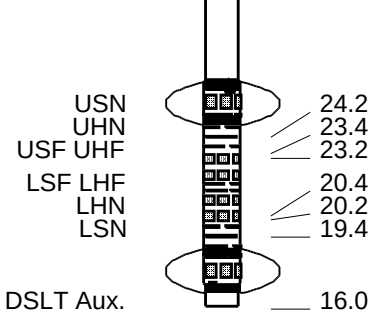
EDTC−B
EDTH−B
EDTC−B
EDTG−A/B
72.8

AH−SPACER
AH−SPACER 753
66.3

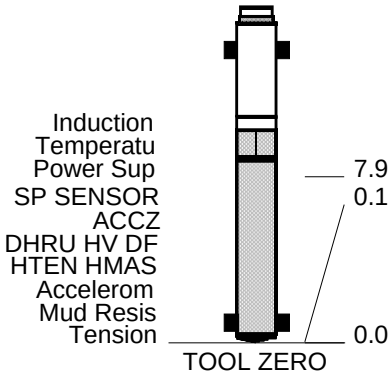
GPIT−F
GPIH−B 1929
GPIC−F 958
62.3

HILTB−FTB
HGNSD−B 3972
HMCA
HGNH 3738
NLS−KL
NSR−F
HACCZ
HCNT
HGR
HRCC−B 1919
HRMS−B 4781
HRGD−B 4837
GLS−VJ
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
NPV−N
58.3

DSLT−FTB
DSLC−B 8134
ECH−KH 8634
SLS−W 330
36.6



AIT−M
AMIS−A 1057
AMRM−A



16.0
1.5 IN
Standoff

1.5 IN
Standoff

MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					60.0	11.750		Casing Shoe
					60.0	10.625		Borehole Segment

						867.0	10.625	Borehole Segment Bottom

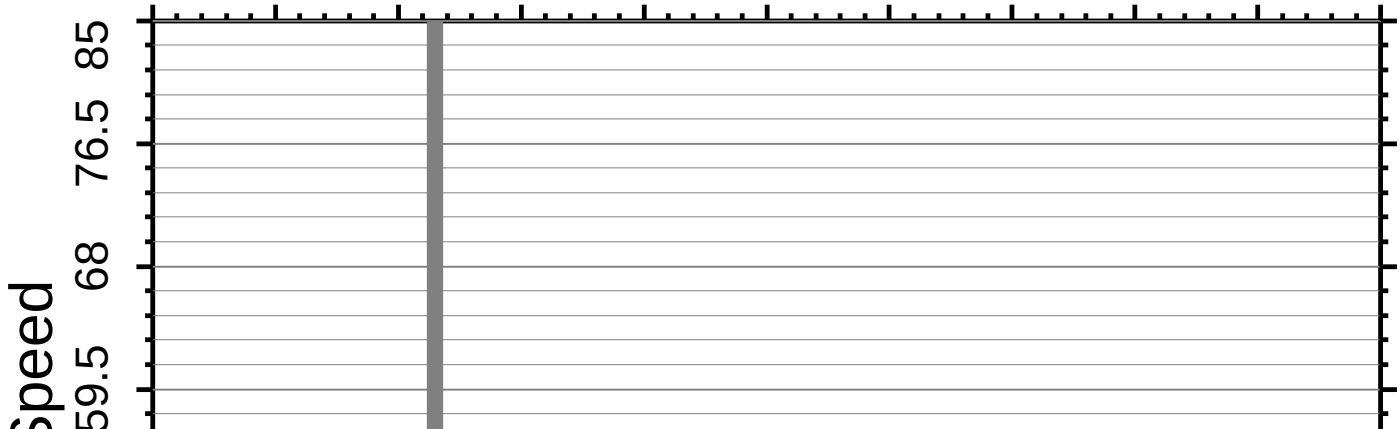
ALL DEPTHS ARE
DRILLERS DEPTHS

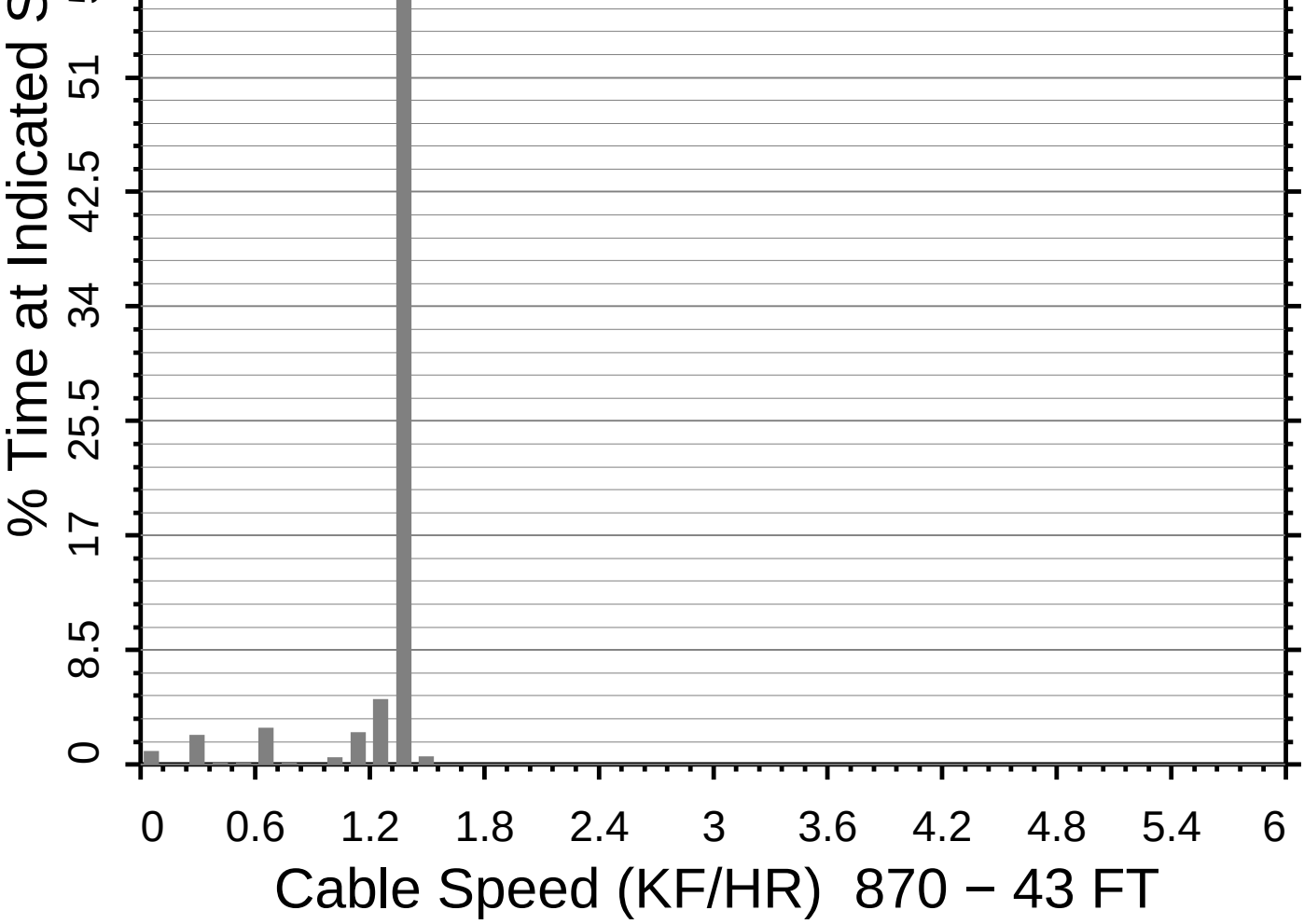
Schlumberger

CABLE SPEED HISTOGRAM

MAXIS Field Log

Sequence # 022 (Apr 09 17:00:08 2010)





Schlumberger

JOB EVENT SUMMARY

MAXIS Field Log

Schlumberger Job Event Summary

	Time	Elapsed Time	Depth (FT)		File
Circulation Stopped	9−Apr−2010 12:30				
Rig Up Started	9−Apr−2010 14:45				
Before Calibration Completed	9−Apr−2010 15:36				
Descent 1: AITM/DSLT−BB/HILTD/GPIT−F/EDTCB/LEHQT					
Begin Descent	9−Apr−2010 15:40				
Log Pass (down)	9−Apr−2010 15:42	000:26	0.0 −	837.7	AIT_SONIC_TLD_MCFL_017LDP
Log Pass (up)	9−Apr−2010 16:09	000:38	870.0 −	43.5	AIT_SONIC_TLD_MCFL_018LUP

Schlumberger

MAIN PASS 2 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Bluebird Ct Well #2**

Input DLIS Files

AIT_SONIC_TLD_MCFL_022PUP	FN:21	09−Apr−2010 22:03	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_002PUP	FN:1	PRODUCER	15−Jul−2010 14:22	870.0 FT	43.5 FT

OP System Version: 18C0−147

AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	GPIT−F	18C0−147
EDTC−B	18C0−147		

PIP SUMMARY

Time Mark Every 60 S

GR BACKUP
From LHT1 to GR1

HILT Caliper (HCAL)
7 (IN) 17

Gamma Ray (GR)
50 (GAPI) 150

Bit Size (BS)
7 (IN) 17

SP (SP)
−200 (MV) 0

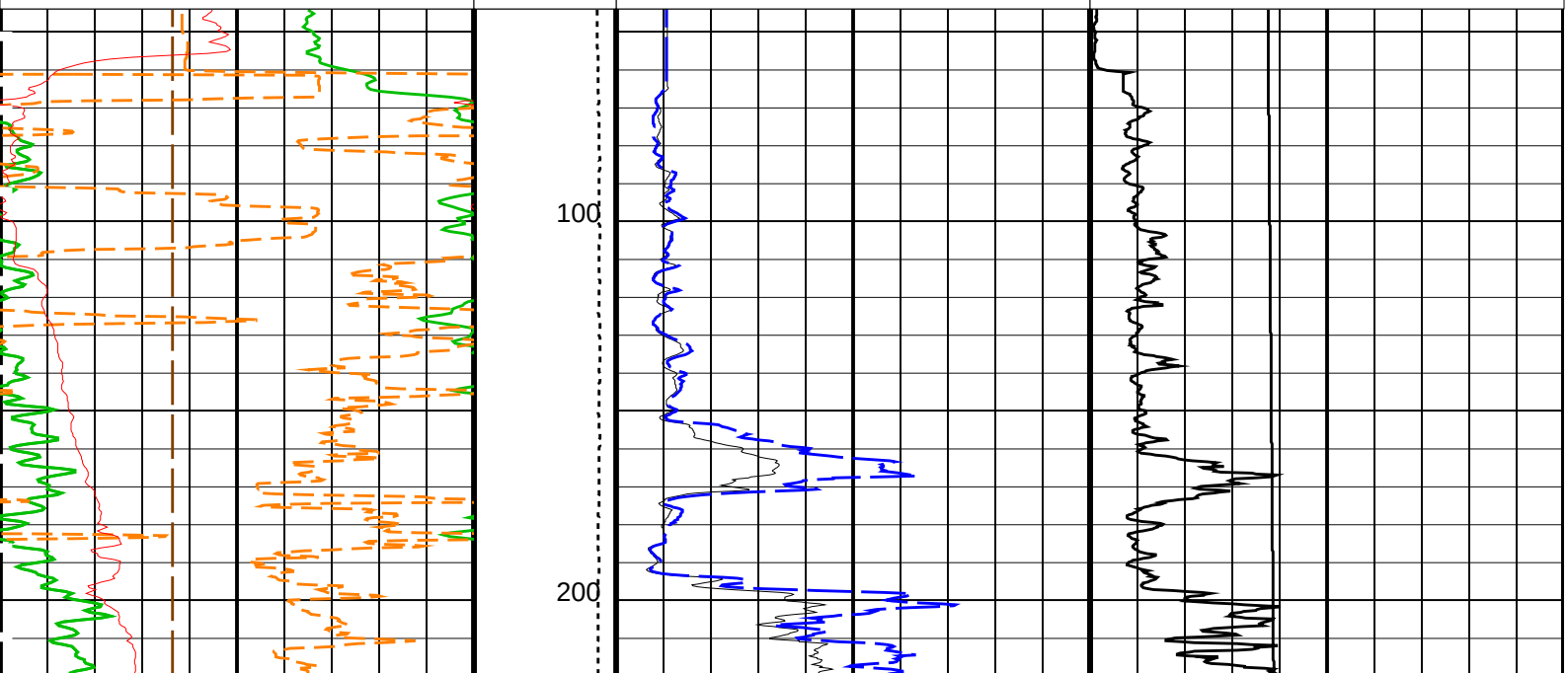
Tension (TENS) (LBF)
10000 0

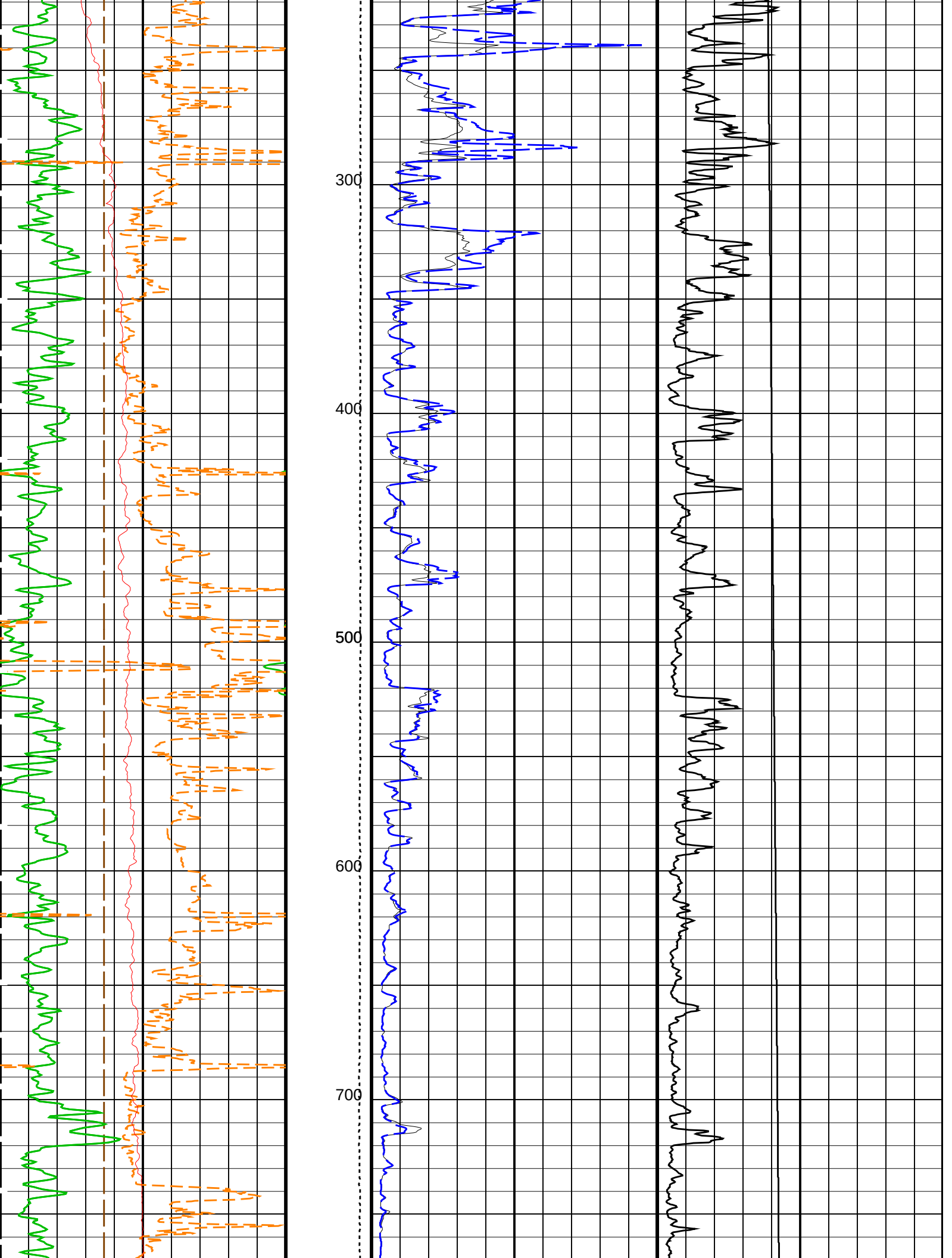
AIT 60 Inch Investigation (AT60)
0 (OHMM) 100

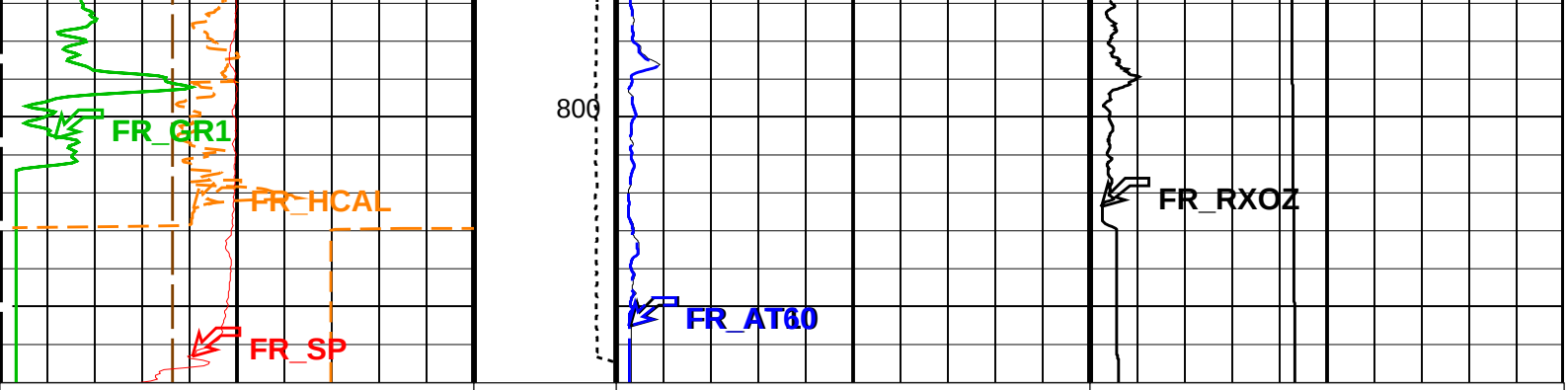
AIT 10 Inch Investigation (AT10)
0 (OHMM) 100

Std. Res. Invaded Zone Resistivity (RXOZ)
0 (OHMM) 100

HTC Cartridge Temperature (GTEM)
50 (DEGF) 150




300
400
500
600
700



SP (SP)	Tension (TENS)	AIT 10 Inch Investigation (AT10)	HTC Cartridge Temperature (GTEM)
−200 (MV) 0	10000 (LBF) 0	0 (OHMM) 100	50 (DEGF) 150
Bit Size (BS)		**AIT 60 Inch Investigation (AT60)**	**Std. Res. Invaded Zone Resistivity (RXOZ)**
7 (IN) 17		0 (OHMM) 100	0 (OHMM) 100
Gamma Ray (GR)			
50 (GAPI) 150			
HILT Caliper (HCAL)			
7 (IN) 17			
GR BACKUP From LHT1 to GR1			

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−50000	FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	1.5	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
SPNV	SP Next Value	0	MV
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	

MPOF	MCFL Processing Operation Mode	ON	
SHT	Surface Hole Temperature	87	DEGF
	EDTC−B: Enhanced DTS Cartridge		
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
	DIR: Directional Survey Computation		
SPVD	TVD of Starting Point	0	FT
TIMD	Along−hole depth of Tie−in Point	0	FT
TIVD	TVD of Tie−in Point	0	FT
	HOLEV: Integrated Hole/Cement Volume		
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	867.00	FT
TDL	Total Depth − Logger	863.00	FT
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DFD	Drilling Fluid Density	9.80	LB/G
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	−50000.00	FT
MST	Mud Sample Temperature	70.60	DEGF
PP	Playback Processing	NORMAL	
TD	Total Depth	863	FT

Format: S2 **Vertical Scale: 2" per 100'** **Graphics File Created: 15−Jul−2010 14:22**

OP System Version: 18C0−147

AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	GPIT−F	18C0−147
EDTC−B	18C0−147		

Input DLIS Files

	AIT_SONIC_TLD_MCFL_022PUP	FN:21	09−Apr−2010 22:03	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_002PUP	FN:1	PRODUCER	15−Jul−2010 14:22	

Schlumberger

MAIN PASS 5 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Bluebird Ct Well #2**

Input DLIS Files

	AIT_SONIC_TLD_MCFL_022PUP	FN:21	09−Apr−2010 22:03	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_002PUP	FN:1	PRODUCER	15−Jul−2010 14:22	870.0 FT	43.5 FT

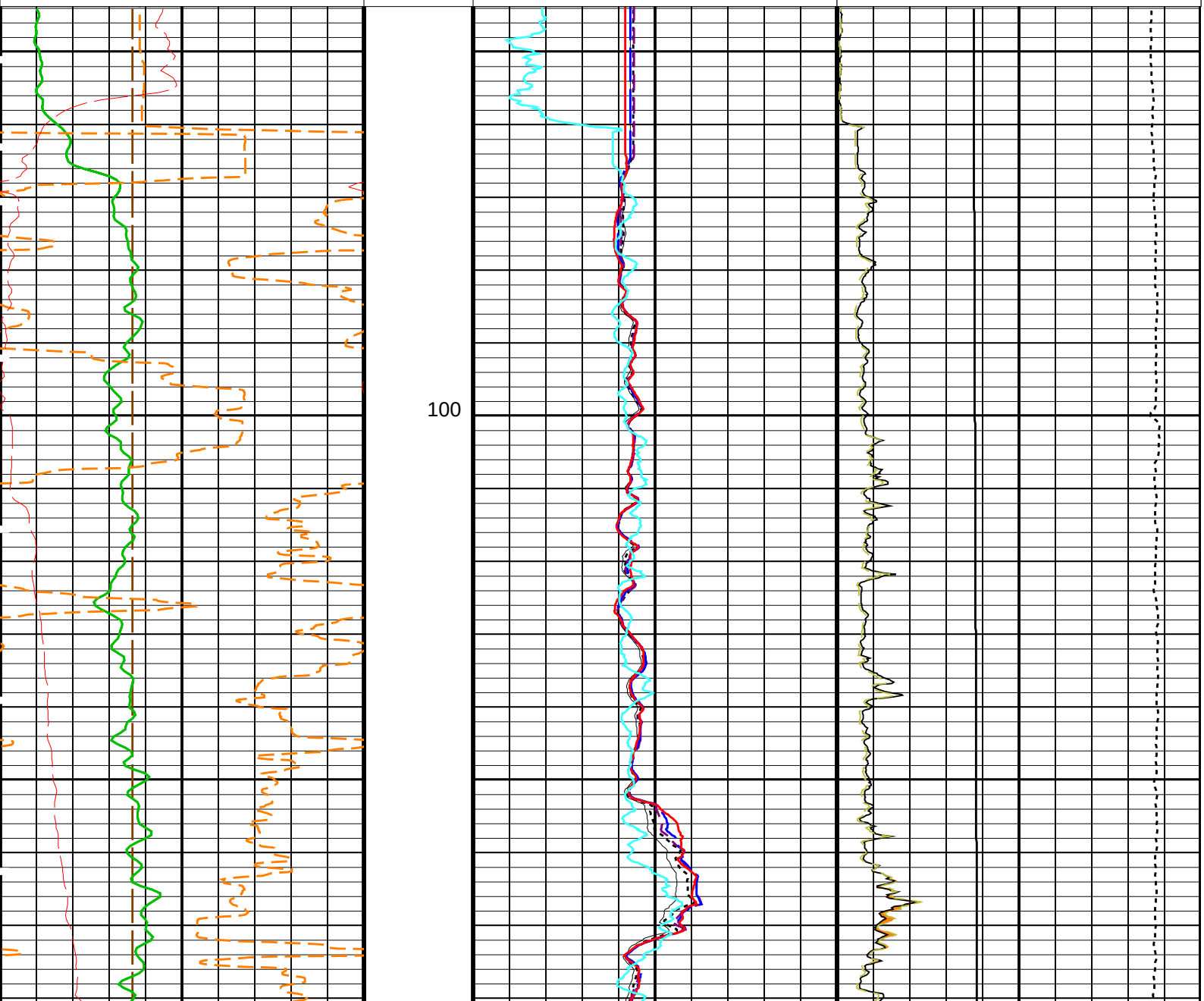
OP System Version: 18C0−147

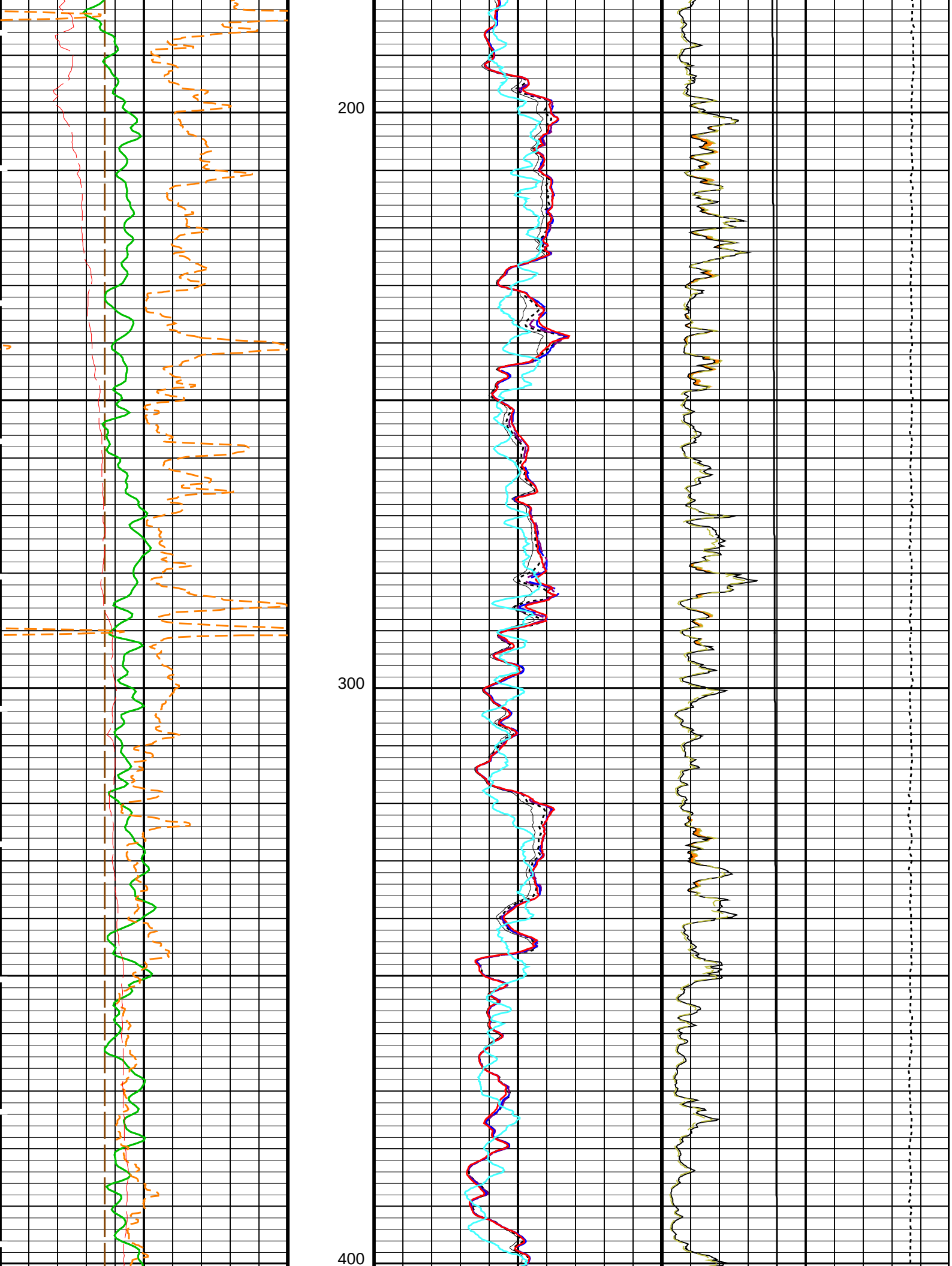
AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	GPIT−F	18C0−147
EDTC−B	18C0−147		

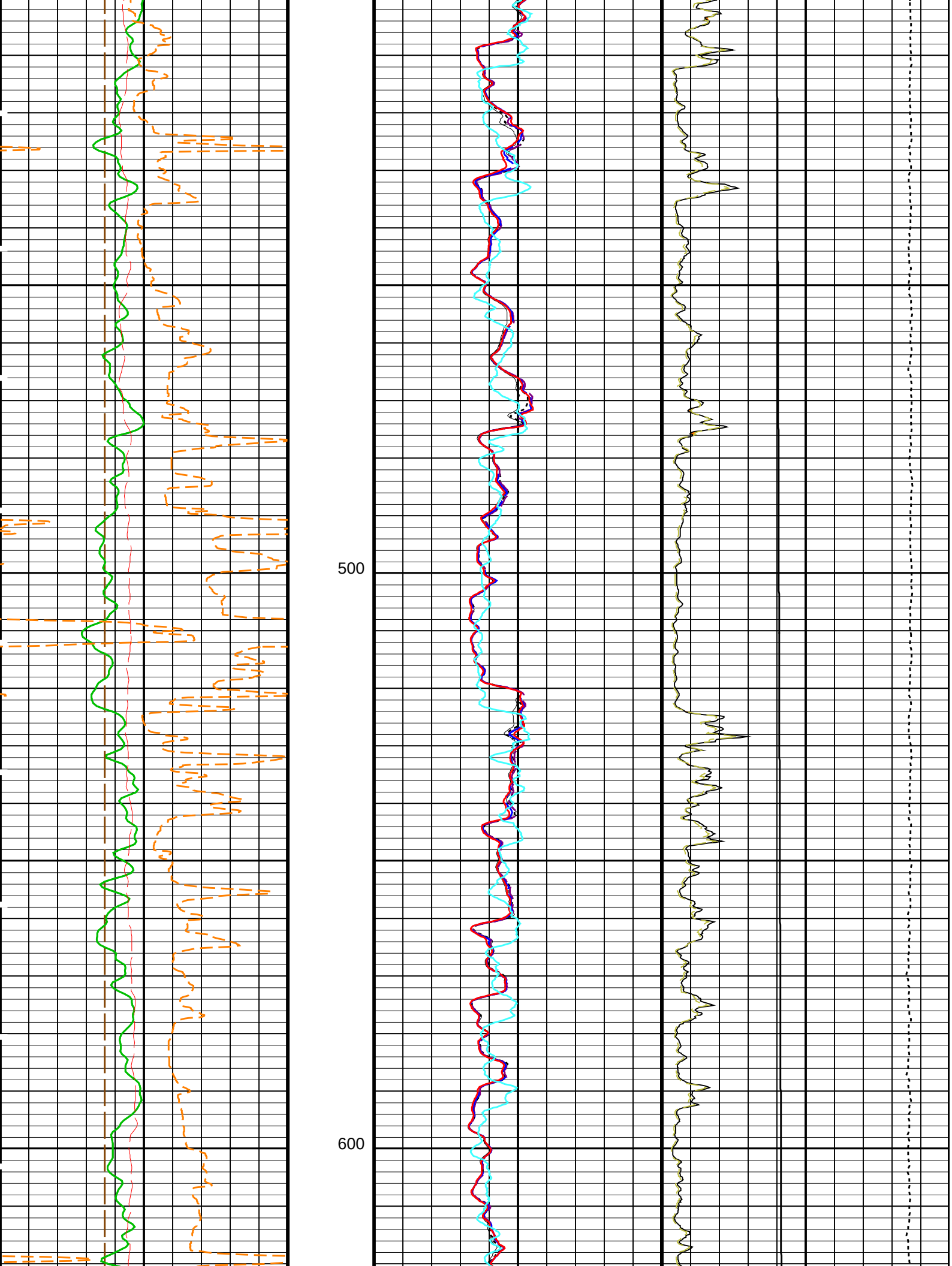
PIP SUMMARY

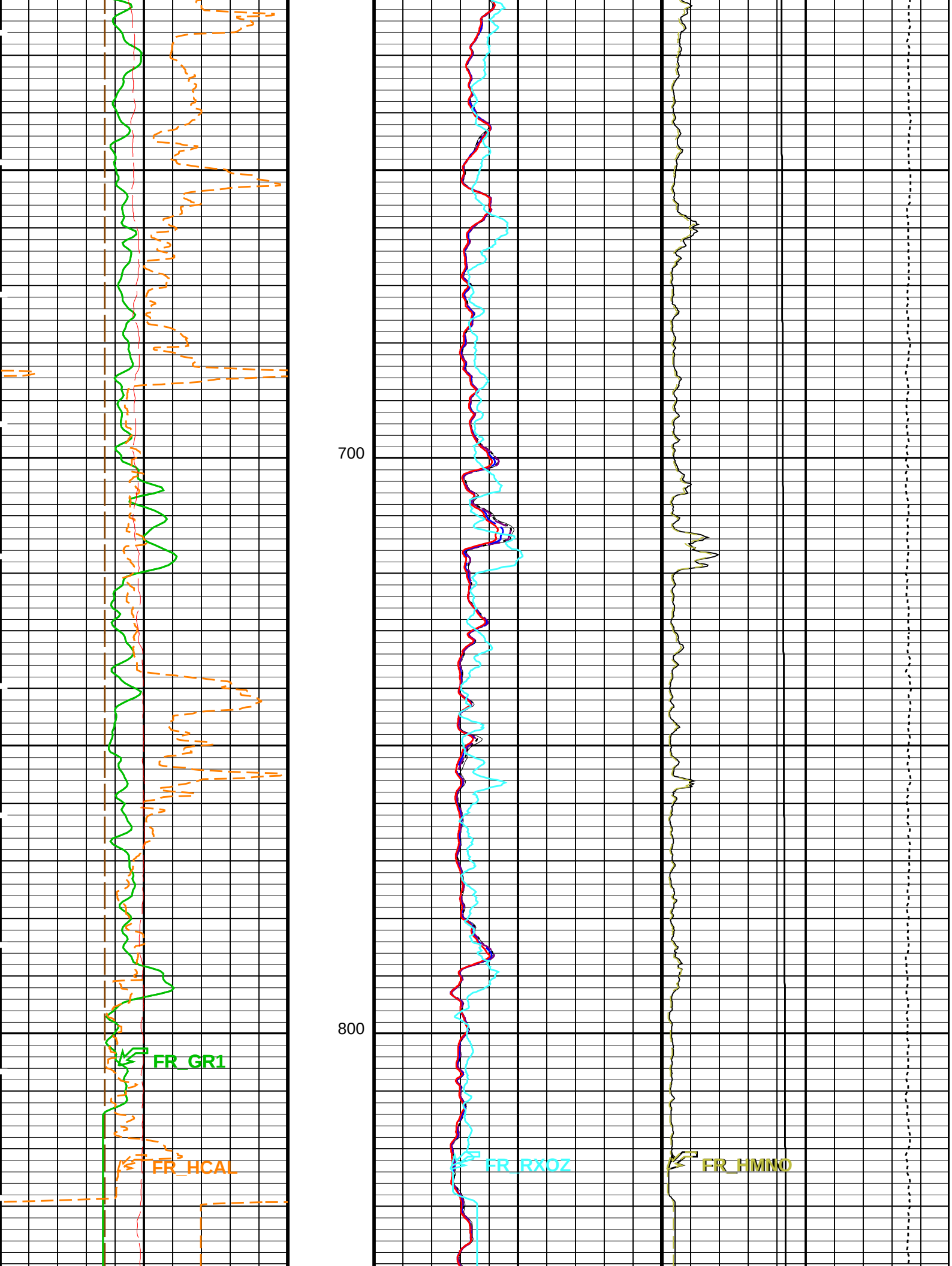
Time Mark Every 60 S

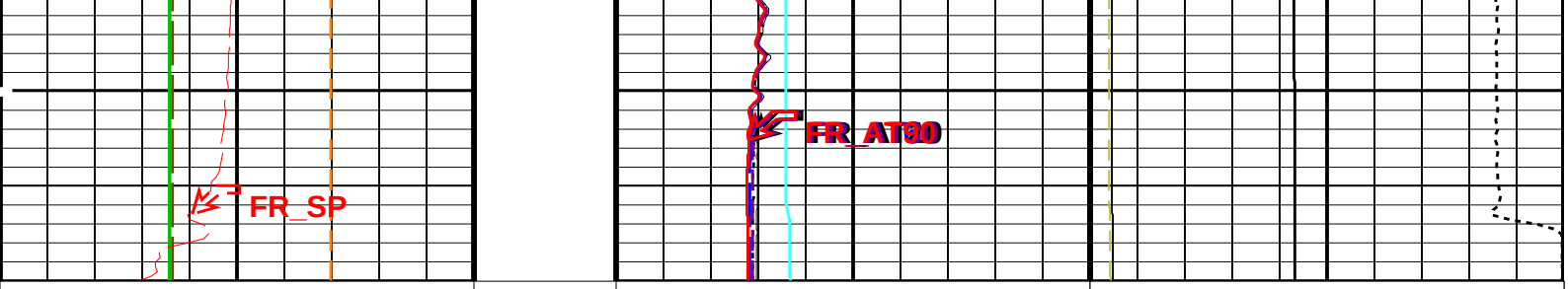
	Micro−Resistivity (RXOZ) 0.2 (OHMM) 2000	
GR BACKUP From LHT1 to GR1	AIT 90 Inch Investigation (AT90) 0.2 (OHMM) 2000	Perm Indicator From HMIN to HMNO
HILT Caliper (HCAL) 7 (IN) 17	AIT 60 Inch Investigation (AT60) 0.2 (OHMM) 2000	Tension (TENS) 10000 (LBF) 0
Gamma Ray (GR) 0 (GAPI) 150	AIT 30 Inch Investigation (AT30) 0.2 (OHMM) 2000	HTC Cartridge Temperature (GTEM) 50 (DEGF) 150
Bit Size (BS) 7 (IN) 17	AIT 20 Inch Investigation (AT20) 0.2 (OHMM) 2000	Computed Micro Normal (HMNO) 0 (OHMM) 100
SP (SP) −200 (MV) 0	AIT 10 Inch Investigation (AT10) 0.2 (OHMM) 2000	Computed Micro Inverse (HMIN) 0 (OHMM) 100




200
300
400


500
600


700
800
FR_GR1
FR_HCAL
FR_RXOZ
FR_HMNO



SP (SP)	AIT 10 Inch Investigation (AT10)	Computed Micro Inverse (HMIN)
−200 (MV) 0	0.2 (OHMM) 2000	0 (OHMM) 100
Bit Size (BS)	AIT 20 Inch Investigation (AT20)	Computed Micro Normal (HMNO)
7 (IN) 17	0.2 (OHMM) 2000	0 (OHMM) 100
Gamma Ray (GR)	AIT 30 Inch Investigation (AT30)	HTC Cartridge Temperature (GTEM)
0 (GAPI) 150	0.2 (OHMM) 2000	50 (DEGF) 150
HILT Caliper (HCAL)	AIT 60 Inch Investigation (AT60)	Tension (TENS)
7 (IN) 17	0.2 (OHMM) 2000	10000 (LBF) 0
GR BACKUP From LHT1 to GR1	AIT 90 Inch Investigation (AT90)	Perm Indicator From HMIN to HMNO
	0.2 (OHMM) 2000	
	Micro−Resistivity (RXOZ)	
	0.2 (OHMM) 2000	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−50000	FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	1.5	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
SPNV	SP Next Value	0	MV
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
MPOF	MCFL Processing Operation Mode	ON	
SHT	Surface Hole Temperature	87	DEGF
	EDTC−B: Enhanced DTS Cartridge		
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF

GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
DIR: Directional Survey Computation			
SPVD	TVD of Starting Point	0	FT
TIMD	Along−hole depth of Tie−in Point	0	FT
TIVD	TVD of Tie−in Point	0	FT
HOLEV: Integrated Hole/Cement Volume			
BHT	Bottom Hole Temperature (used in calculations)	93	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
SHT	Surface Hole Temperature	87	DEGF
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	867.00	FT
TDL	Total Depth − Logger	863.00	FT
System and Miscellaneous			
BS	Bit Size	10.625	IN
DFD	Drilling Fluid Density	9.80	LB/G
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	−50000.00	FT
MST	Mud Sample Temperature	70.60	DEGF
PP	Playback Processing	NORMAL	
TD	Total Depth	863	FT

Format: S5 **Vertical Scale: 5" per 100'** **Graphics File Created: 15−Jul−2010 14:22**

OP System Version: 18C0−147

AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	GPIT−F	18C0−147
EDTC−B	18C0−147		

Input DLIS Files

	AIT_SONIC_TLD_MCFL_022PUP	FN:21	09−Apr−2010 22:03	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_002PUP	FN:1	PRODUCER	15−Jul−2010 14:22

Schlumberger

MCFL CHECK

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Bluebird Ct. Well 2**

Output DLIS Files

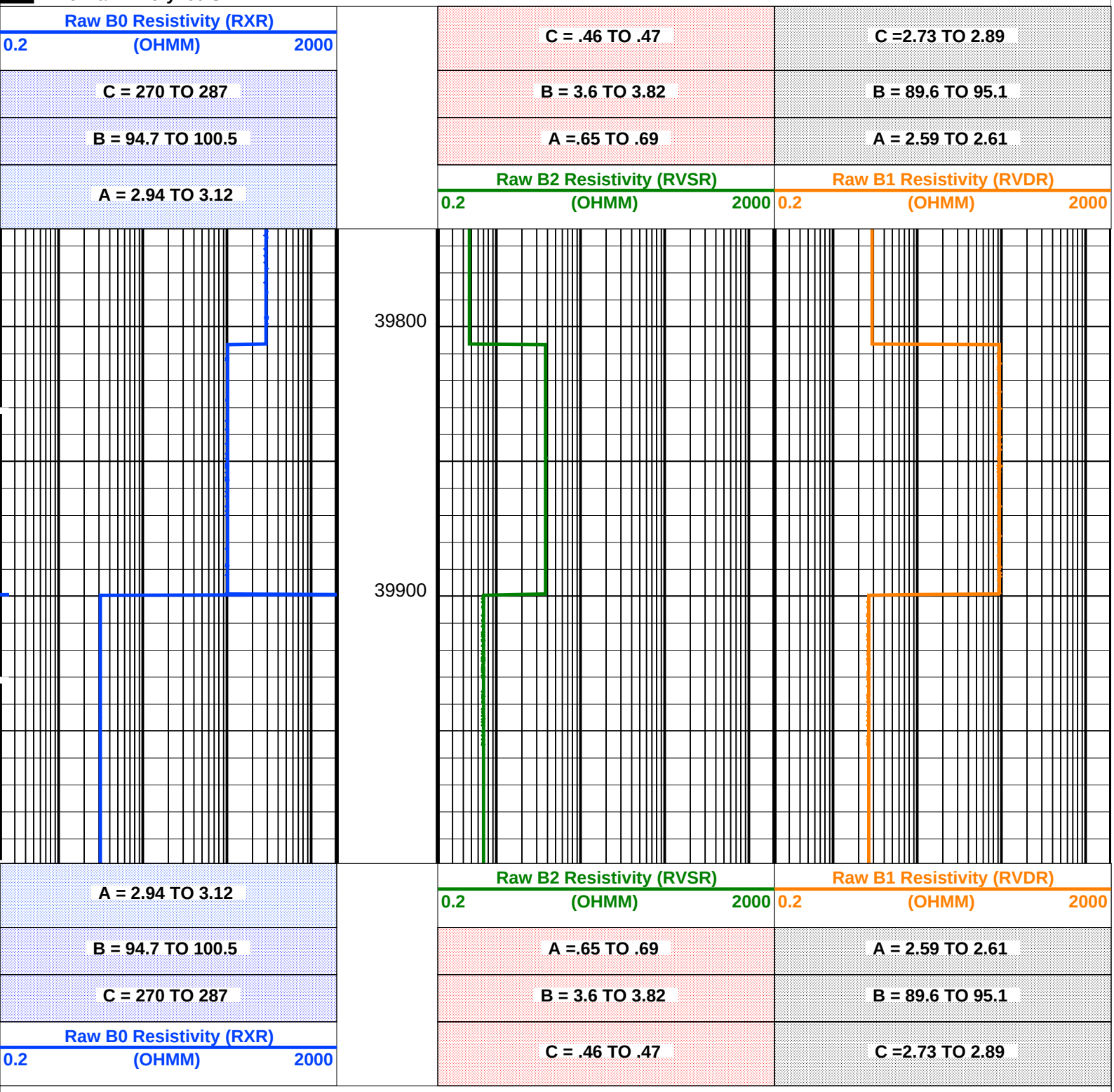
DEFAULT	AIT_SONIC_TLD_MCFL_006LUP	FN:5	PRODUCER	06−Apr−2010 10:56	39999.0 FT	39763.5 FT

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
DTC−H	17C0−154		

PIP SUMMARY

Time Mark Every 60 S



PIP SUMMARY

Time Mark Every 60 S

Format: MCFL BOX CHECK Vertical Scale: 2" per 100' Graphics File Created: 06−Apr−2010 10:56

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
DTC−H	17C0−154		

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_006LUP	FN:5	PRODUCER	06−Apr−2010 10:56

Schlumberger

SP BATTERY CHECK

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Bluebird Ct. Well 2**

Output DLIS Files

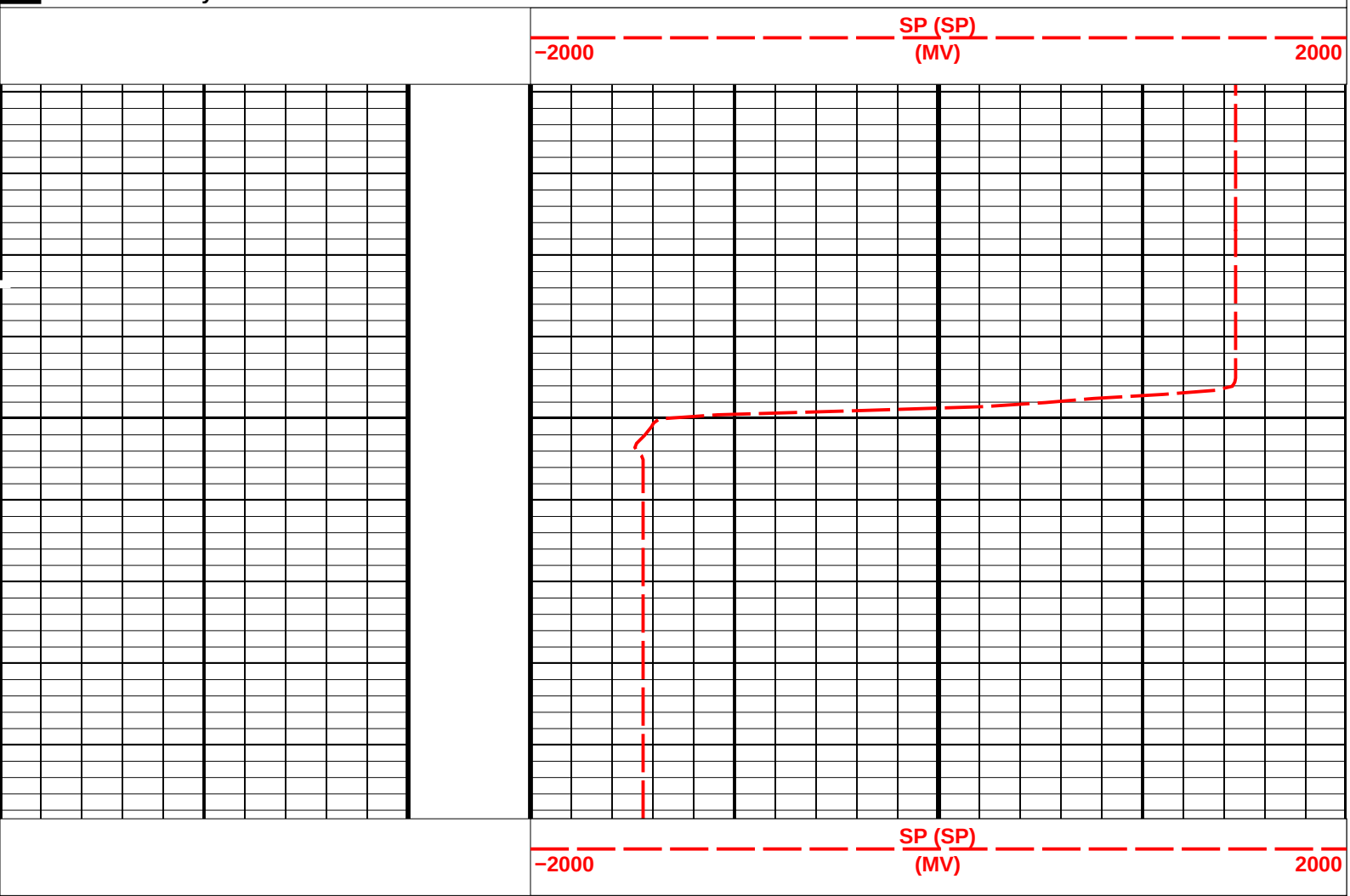
DEFAULT	AIT_SONIC_TLD_MCFL_004LUP	FN:3	PRODUCER	06−Apr−2010 10:51	39999.0 FT	39908.6 FT

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
DTC−H	17C0−154		

PIP SUMMARY

Time Mark Every 60 S



PIP SUMMARY

Time Mark Every 60 S

Format: SP−Check **Vertical Scale: 5" per 100'** **Graphics File Created: 06−Apr−2010 10:51**

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154

DTC−H	**17C0−154**		

Output DLIS Files

DEFAULT	**AIT_SONIC_TLD_MCFL_004LUP**	**FN:3**	**PRODUCER**	**06−Apr−2010 10:51**

Schlumberger

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Thru Cal Mag. & Phase							
Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49							
Thru Cal Magnitude − 0	0	0.5944	0.5943	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.218	1.218	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6053	0.6050	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.6816	0.6814	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.277	1.277	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.859	1.859	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.861	1.861	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.340	1.339	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	192.1	194.3	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	191.0	193.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	187.5	189.7	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	186.7	188.9	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	180.6	182.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	179.0	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	179.0	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	178.2	180.3	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary							
Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49							
Array Induction SPA Plus	991.0	991.6	991.8	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.1995	0.2149	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9184	0.9186	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0002014	0.0002180	N/A	N/A	N/A	V
Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction							
Master: 10−Jan−2010 17:00							
Test Loop Gain Correctio − 0	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.009	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	0.9914	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	0.9839	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.041	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.5551	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.6233	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	0.08833	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	0.008389	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	0.07837	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	0.03849	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.6174	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	0.4741	N/A	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Sonde Error Correction							
Master: 10−Jan−2010 17:00							
R Sonde Error Correction − 0	0	−26.58	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	163.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	108.6	N/A	N/A	N/A	N/A	MM/M

R Sonde Error Correction − 3	0	65.10	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	23.32	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	14.68	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	10.38	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−1.904	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	179.0	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	49.26	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−83.51	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−83.84	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	−8.484	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−2.228	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	−0.7255	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	7.881	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − M Wellsite Calibration − Mud Gain Correction
Master: 10−Jan−2010 17:00

Coarse − Mag, Real, Imag − 0	0	0.9426	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	0.9426	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	0.9426	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	0.9358	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	0.9358	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	0.9358	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 8−Apr−2010 15:53

BS Window Ratio	0.7386	N/A	0.7381	N/A	N/A	N/A	
BS Window Sum	30790	N/A	30790	N/A	N/A	N/A	CPS
SS Window Ratio	0.4798	N/A	0.4803	N/A	N/A	N/A	
SS Window Sum	12280	N/A	12240	N/A	N/A	N/A	CPS
LS Window Ratio	0.2918	N/A	0.2906	N/A	N/A	N/A	
LS Window Sum	1435	N/A	1433	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 8−Apr−2010 15:53

BS PM High Voltage (Command)	1769	N/A	1771	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1606	N/A	1628	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1377	N/A	1373	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 8−Apr−2010 15:53

BS Crystal Resolution	11.43	N/A	11.42	N/A	N/A	N/A	%
SS Crystal Resolution	8.348	N/A	8.545	N/A	N/A	N/A	%
LS Crystal Resolution	8.865	N/A	8.977	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 8−Apr−2010 15:53

Raw B0 Resistivity	3875	N/A	3891	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3830	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3823	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 8−Apr−2010 15:48

HILT Caliper Zero Measurement	8.000	N/A	7.966	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.09	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 8−Apr−2010 15:48

Gamma Ray Background	30.00	N/A	56.04	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	166.4	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 14−Jan−2010 16:39 Before: 8−Apr−2010 15:49

CNTC Background	24.38	24.38	24.92	N/A	N/A	3.657	CPS
CFTC Background	27.29	27.29	26.52	N/A	N/A	4.094	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 14−Jan−2010 16:39

Thermal Near Corr. (Tank)	5800	5315	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2267	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.345	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 9−Apr−2010 15:36

Z−Axis Acceleration	32.19	N/A	32.12	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 29−Mar−2010 17:12

Rho Aluminum	2.596	2.598	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.687	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.511	−−	−−	−−	−−	
Pe Magnesium	2.650	2.665	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary

Master: 29−Mar−2010 17:12

BS Average Deviation	0	0.5040	−−	−−	−−	−−	%
BS Max Deviation	0	1.085	−−	−−	−−	−−	%
SS Average Deviation	0	0.2841	−−	−−	−−	−−	%
SS Max Deviation	0	0.9145	−−	−−	−−	−−	%
LS Average Deviation	0	0.4565	−−	−−	−−	−−	%
LS Max Deviation	0	0.7775	−−	−−	−−	−−	%

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 72.0 DEGF.
Thermal Housing Size 3.375 IN.
NSR−F serial number 0

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	1057

Auxiliary Equipment:

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.5944		0.6100	192.1		197.0
	Before	0.5943			194.3		
1	Master	1.218		1.270	191.0		196.0
	Before	1.218			193.2		
2	Master	0.6053		0.6200	187.5		192.0
	Before	0.6050			189.7		
3	Master	0.6816		0.7000	186.7		191.0
	Before	0.6814			188.9		
4	Master	1.277		1.340	180.6		185.0
	Before	1.277			182.8		
5	Master	1.859		1.960	179.0		182.0
	Before	1.859			181.2		
6	Master	1.861		1.960	179.0		181.0
	Before	1.861			181.2		
7	Master	1.340		1.410	178.2		175.0
	Before	1.339			180.3		
		60.00 % (Minimum)	140.0 % (Maximum)	(Nominal)	Nom −60.00 (Minimum)	Nom + 60.00 (Maximum)	(Nominal)

Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		991.6	Master		0.1995
Before		991.8	Before		0.2149
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)			−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9184
Before		0.9186
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		0.0002014
Before		0.0002180
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.012	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.5551	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.012	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.6233	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.011	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.08833	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.009	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.008389	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9914	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.07837	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9839	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.03849	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.011	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.6174	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.041	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.4741	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	−26.58	−231.0 (Minimum) −56.00 (Nominal) 119.0 (Maximum)	179.0	−2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	163.3	114.0 (Minimum) 159.0 (Nominal) 204.0 (Maximum)	49.26	−625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	108.6	66.00 (Minimum) 111.0 (Nominal) 156.0 (Maximum)	−83.51	−350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)
3	65.10	39.00 (Minimum) 64.00 (Nominal) 89.30 (Maximum)	−83.84	−250.0 (Minimum) 0 (Nominal) 250.0 (Maximum)
4	23.32	15.00 (Minimum) 25.00 (Nominal) 35.00 (Maximum)	−8.484	−63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	14.68	4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)	−2.228	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)
6	10.38	5.000 (Minimum) 10.00 (Nominal) 15.00 (Maximum)	−0.7255	−30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)
7	−1.904	−5.000 (Minimum) 0 (Nominal) 5.000 (Maximum)	7.881	−30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag	Value	Fine − Mag, Real, Imag
0	0.9426	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	0.9358	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)
1	0.9426	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	0.9358	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)
2	0.9426	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)	0.9358	0.8000 (Minimum) 1.000 (Nominal) 1.200 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.5944		0.6100	192.1		197.0
1	Master	1.218		1.270	191.0		196.0
2	Master	0.6053		0.6200	187.5		192.0
3	Master	0.6816		0.7000	186.7		191.0
4	Master	1.277		1.340	180.6		185.0
5	Master	1.859		1.960	179.0		182.0
6	Master	1.861		1.960	179.0		181.0
7	Master	1.340		1.410	178.2		175.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	991.6	Master	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	0.1995
Phase	Array Induction Temperature Plus V	Value	Phase	Array Induction Temperature Zero V	Value
Master	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	0.9184	Master	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	0.0002014

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.012	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.5551	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.012	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.6233	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.011	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.08833	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.009	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.008389	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9914	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.07837	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9839	0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)	0.03849	−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Idx	Value				Value			
6	1.011				0.6174			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	
7	1.041				0.4741			
	0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)	

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−26.58				179.0			
	−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)	
1	163.3				49.26			
	114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)	
2	108.6				−83.51			
	66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)	
3	65.10				−83.84			
	39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)	
4	23.32				−8.484			
	15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)	
5	14.68				−2.228			
	4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)	
6	10.38				−0.7255			
	5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	
7	−1.904				7.881			
	−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)	

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.9426				0.9358			
	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	
1	0.9426				0.9358			
	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	
2	0.9426				0.9358			
	0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)	

Master: 10−Jan−2010 17:00

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT high−Resolution Mechanical Sonde	HRMS − B	4781
HILT Rxo Gamma−ray Device	HRGD − B	4837
HILT Micro Cylindrically Focused Log Dev	MCFL −	
GR Logging Source	GLS − VJ	
HILT High Res. Control Cartridge	HRCC − B	1919
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	3972
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	
HGNS Housing	HGNH −	3738

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio	Value	Phase	SS Window Ratio	Value	Phase	LS Window Ratio	Value
Before		0.7381	Before		0.4803	Before		0.2906
	0.7016 (Minimum) 0.7386 (Nominal) 0.7755 (Maximum)			0.4558 (Minimum) 0.4798 (Nominal) 0.5038 (Maximum)			0.2773 (Minimum) 0.2918 (Nominal) 0.3064 (Maximum)	

Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		30790	Before		12240	Before		1433
	29250 (Minimum) 30790 (Nominal) 32330 (Maximum)			11670 (Minimum) 12280 (Nominal) 12890 (Maximum)			1363 (Minimum) 1435 (Nominal) 1506 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1771	Before		1628	Before		1373
	1669 (Minimum) 1769 (Nominal) 1869 (Maximum)			1506 (Minimum) 1606 (Nominal) 1706 (Maximum)			1277 (Minimum) 1377 (Nominal) 1477 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		11.42	Before		8.545	Before		8.977
	10.43 (Minimum) 11.43 (Nominal) 12.43 (Maximum)			7.348 (Minimum) 8.348 (Nominal) 9.348 (Maximum)			7.865 (Minimum) 8.865 (Nominal) 9.865 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		**3891**	**Before**		**3830**	**Before**		**3823**
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		7.966	Before		12.09
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 8−Apr−2010 15:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		56.04	Before		166.4
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 8−Apr−2010 15:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		24.38	Master		27.29
Before		24.92	Before		26.52
	5.000 (Minimum) 24.38 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 27.29 (Nominal) 40.00 (Maximum)	

Master: 14−Jan−2010 16:39 Before: 8−Apr−2010 15:49

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr (Tank) CPS	Value	Phase	Thermal Far Corr (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5315	Master		2267	Master		2.345
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 14−Jan−2010 16:39

High resolution Integrated Logging Tool−DTS
Wellsite Calibration
Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.12
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 9−Apr−2010 15:36

High resolution Integrated Logging Tool−DTS Master Calibration
Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.598	Master		1.687
	2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum)			1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum)	
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.511	Master		2.665
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.550 (Minimum) 2.650 (Nominal) 2.750 (Maximum)	

Master: 29−Mar−2010 17:12

High resolution Integrated Logging Tool−DTS Master Calibration
Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.5040	Master		0.2841	Master		0.4565
	−0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			−1.500 (Minimum) 0 (Nominal) 1.500 (Maximum)	
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		1.085	Master		0.9145	Master		0.7775
	−1.600 (Minimum) 0 (Nominal) 1.600 (Maximum)			−2.500 (Minimum) 0 (Nominal) 2.500 (Maximum)			−3.500 (Minimum) 0 (Nominal) 3.500 (Maximum)	

Master: 29−Mar−2010 17:12

High resolution Integrated Logging Tool−DTS Master Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		24.38	Master		27.29
	5.000 (Minimum) 24.38 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 27.29 (Nominal) 40.00 (Maximum)	

Master: 14−Jan−2010 16:39

High resolution Integrated Logging Tool−DTS Master Calibration
Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5315	Master		2267	Master		2.345
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 14−Jan−2010 16:39

General Purpose Inclinometer / Equipment Identification

Primary Equipment:
GPIT Cartridge − F — GPIC − F — 958

Auxiliary Equipment:
GPIT Housing − F — GPIH − B — 1929

Company:	**WDC Exploration & Wells**
Well:	**Bluebird Ct Well #2**
Field:	**Windsor**
County:	**Sonoma**
State:	**California**

Schlumberger

ARRAY INDUCTION / GR / SP
MCFL / CALIPER

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Bluebird Ct Well #2**

Field: **Windsor**

County: **Sonoma** State: **California**

BOREHOLE COMPENSATED SONIC

County: Sonoma
Field: Windsor
Location: LAT N 38.53.91
Well: Bluebird Ct Well #2
Company: WDC Exploration & Wells

LOCATION

LAT N 38.53.91
LONG W 122.80.13

Elev.: K.B.
G.L.
D.F.

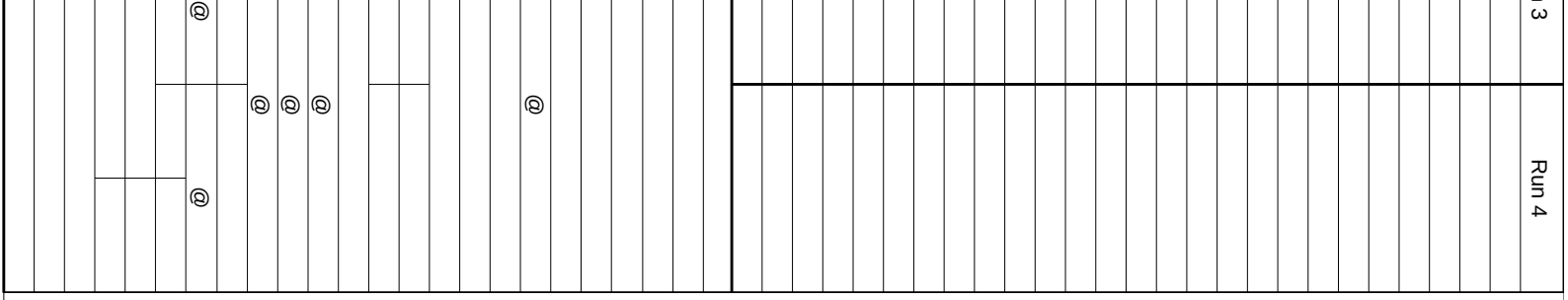
Permanent Datum: GROUND LEVEL
Log Measured From: GROUND LEVEL
Drilling Measured From: GROUND LEVEL

Elev.: _____ above Perm. Datum

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run
Logging Date	9−Apr−2010		
Run Number	ONE		
Depth Driller	867 ft		
Schlumberger Depth	863 ft		
Bottom Log Interval	855 ft		
Top Log Interval	60 ft		
Casing Driller Size @ Depth	11.750 in @ 60 ft	@	@
Casing Schlumberger	60 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	1.110 ohm.m @ 71 degF	@	@
RMF @ Measured Temperature	2.890 ohm.m @ 71 degF	@	@
RMC @ Measured Temperature	3.430 ohm.m @ 71 degF	@	@
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	0.861 @ 93 / 2.241 @ 93	@ / @	@ / @
Maximum Recorded Temperatures	93 degF		
Circulation Stopped / Time	9−Apr−2010 / 12:30		
Logger On Bottom / Time	9−Apr−2010 / 1400		
Unit Number / Location	2223 / BAKERSFIELD		
Recorded By	JARROD LONG		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 9−APR−2010 16:49:53

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46ZV XS
Serial Number:	6106	Serial Number:	1214	Serial Number:	708251
Calibration Date:	4−JAN−2010	Calibration Date:	21−MAR−2010	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46ZV XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−9	Calibration RMS:	16	Rig Type:	LAND
Wheel Correction 2:	−7	Calibration Peak Error:	30		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	1.00 FT
Tool Zero Check At Surface:	−0.10 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED.
2. IDW USED AS PRIMARY DEPTH REFERENCE, Z−CHART USED AS SECONDARY.
3.
4.
5.
6.

DISCLAIMER
THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: AIT−CAL−SP−GR−MCFL	OS1:
OS2: CMR	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST LOG IN WELL	
TWO 1.5" STANDOFFS RAN ON INDUCTION TOOL	
TWO 0.125" WEAR RINGS RAN ON NEUTRON TOOL	
3 CMEZ RAN FOR SONIC CENTRALIZATION	
MATRIX: SANDSTONE DENSITY: 2.65 G/CC	
MAX TEMP = 93 DEGF	
ICV NOT NEEDED BY CLIENT	

MUD CHLORIDES, PH, AND FLUID LOSS DATA NOT GIVEN BY CLIENT	
AVAILABLE LOCATION DATA PROVIDED IN HEADER	
NO API# PROVIDED	
SONIC CHECK IN CASING = 57 us/m	
CREW: J.CORONADO, J.BAUTISTA	
THANK YOU FOR CHOOSING SCHLUMBERGER!	

RUN 1		RUN 2	
SERVICE ORDER #:	AUYB−00169	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

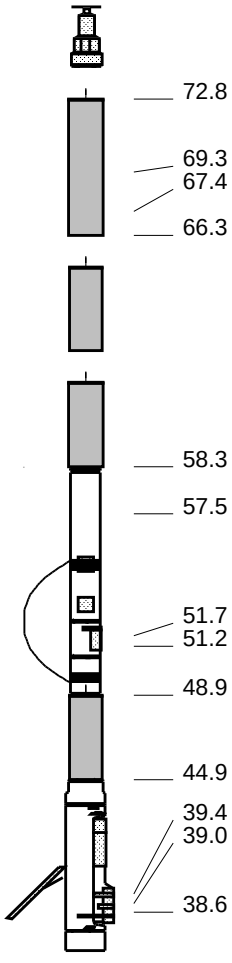
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
NCS−VB
WITM (EDTS)−A

DOWNHOLE EQUIPMENT



LEH−QT — 75.7
LEH−QT 2190

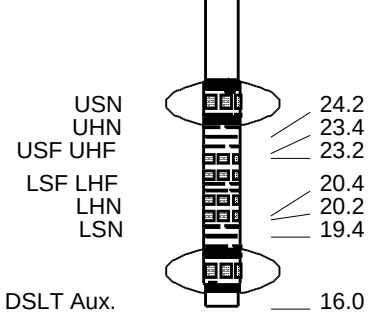
EDTC−B — 72.8
EDTH−B
EDTC−B
EDTG−A/B

AH−SPACER — 66.3
AH−SPACER 753

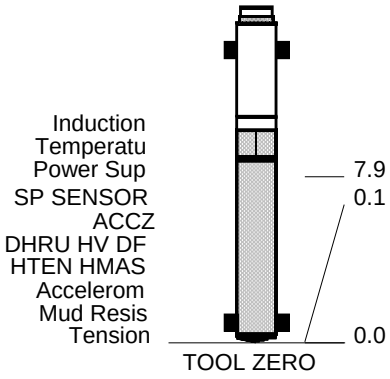
GPIT−F — 62.3
GPIH−B 1929
GPIC−F 958

HILTB−FTB — 58.3
HGNSD−B 3972
HMCA
HGNH 3738
NLS−KL
NSR−F
HACCZ
HCNT
HGR
HRCC−B 1919
HRMS−B 4781
HRGD−B 4837
GLS−VJ
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
NPV−N

DSLT−FTB — 36.6
DSLC−B 8134
ECH−KH 8634
SLS−W 330



AIT−M
AMIS−A 1057
AMRM−A



16.0
1.5 IN
Standoff

1.5 IN
Standoff

MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					60.0	11.750		Casing Shoe
					60.0	10.625		Borehole Segment

						867.0	10.625	Borehole Segment Bottom

ALL DEPTHS ARE
DRILLERS DEPTHS

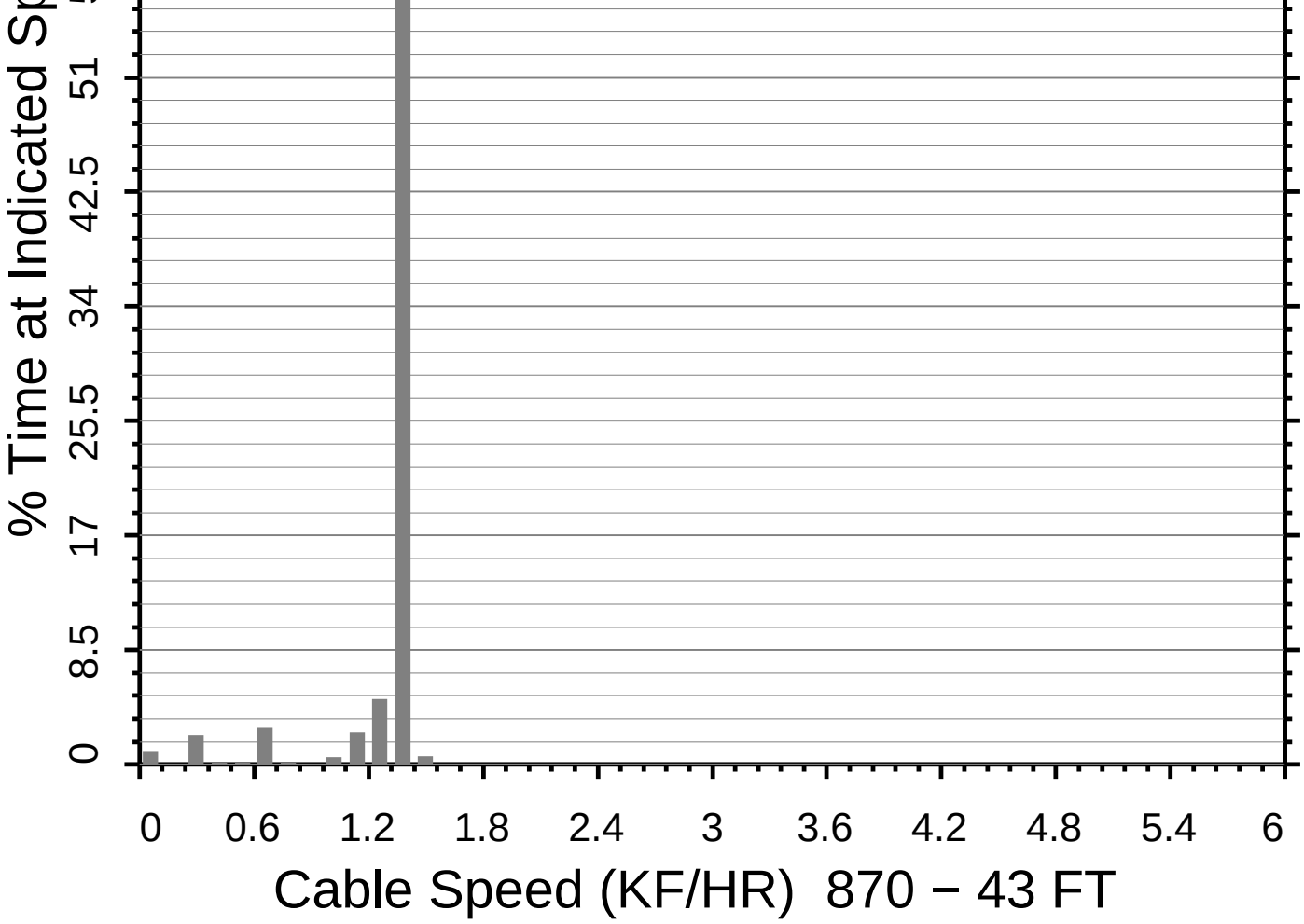
Schlumberger

CABLE SPEED HISTOGRAM

MAXIS Field Log

Sequence # 022 (Apr 09 17:00:08 2010)





Schlumberger

JOB EVENT SUMMARY

MAXIS Field Log

Schlumberger Job Event Summary

	Time	Elapsed Time	Depth (FT)		File
Circulation Stopped	9–Apr–2010 12:30				
Rig Up Started	9–Apr–2010 14:45				
Before Calibration Completed	9–Apr–2010 15:36				
Descent 1: AITM/DSLT–BB/HILTD/GPIT–F/EDTCB/LEHQT					
Begin Descent	9–Apr–2010 15:40				
Log Pass (down)	9–Apr–2010 15:42	000:26	0.0 –	837.7	AIT_SONIC_TLD_MCFL_017LDP
Log Pass (up)	9–Apr–2010 16:09	000:38	870.0 –	43.5	AIT_SONIC_TLD_MCFL_018LUP

Schlumberger

MAIN PASS 5 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells | **Well: Bluebird Ct Well #2**

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59	870.0 FT	43.5 FT

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

PIP SUMMARY

Time Mark Every 60 S

Transit Time 4 (TT4)		
1200	(US)	200
Transit Time 3 (TT3)		
1200	(US)	200
Transit Time 2 (TT2)		
1200	(US)	200
Transit Time 1 (TT1)		
1200	(US)	200
Sonic Velocity (SVEL)		
5000	(FT/S)	25000
Gamma Ray (GR)		
0	(GAPI)	150
Bit Size (BS)		
6	(IN)	16
SP (SP)		
−80	(MV)	20

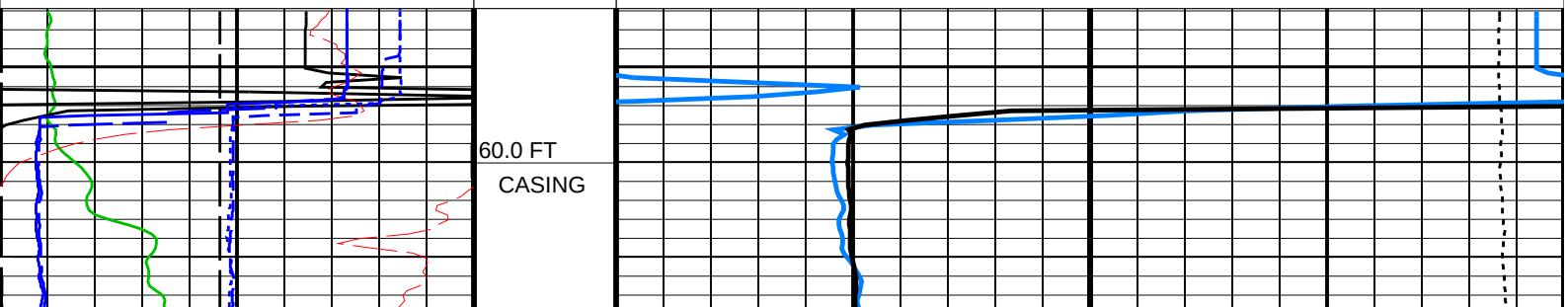
Tool/Tot. Drag From D3T to STIA

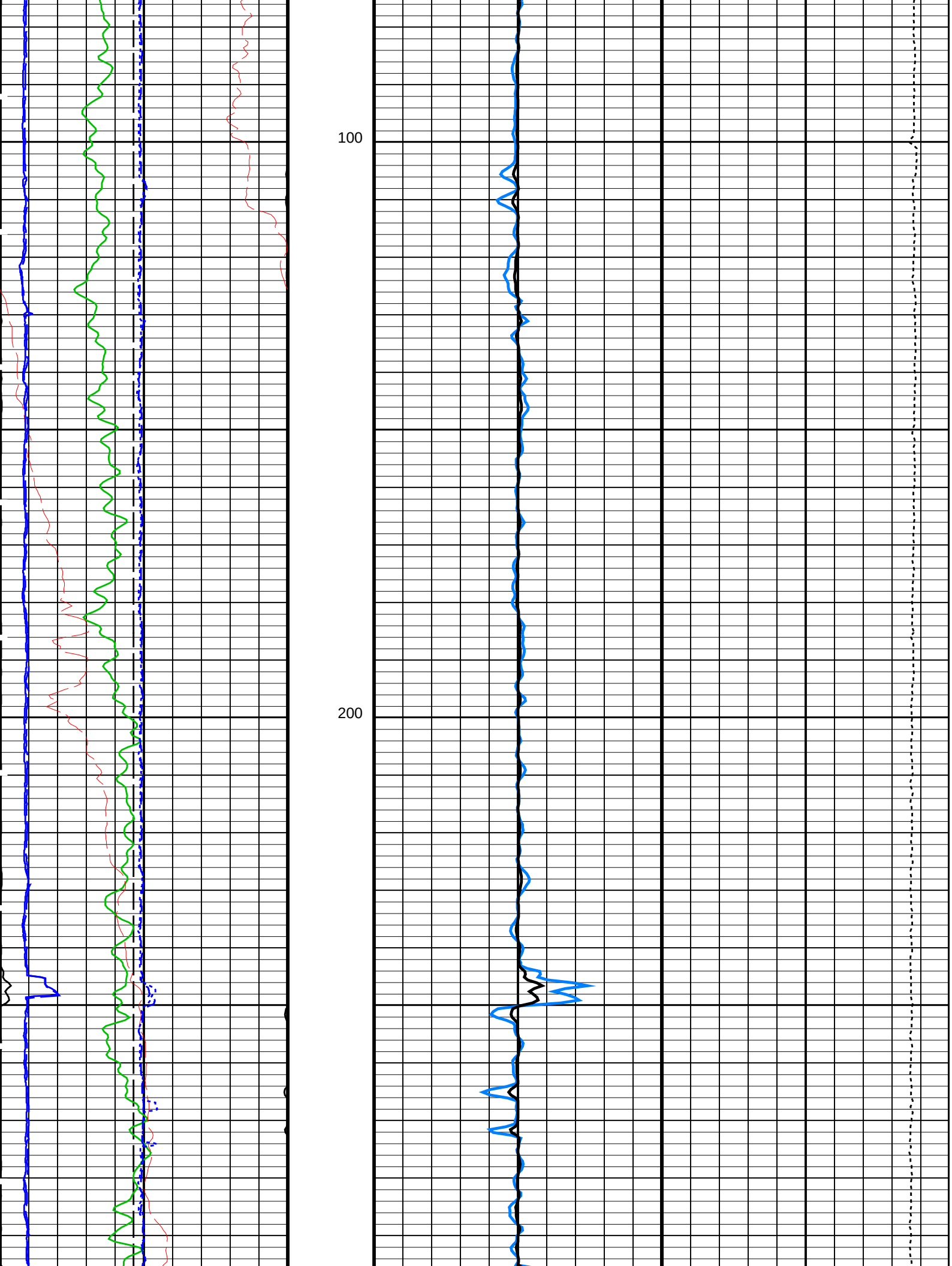
Cable Drag From STIA to STIT

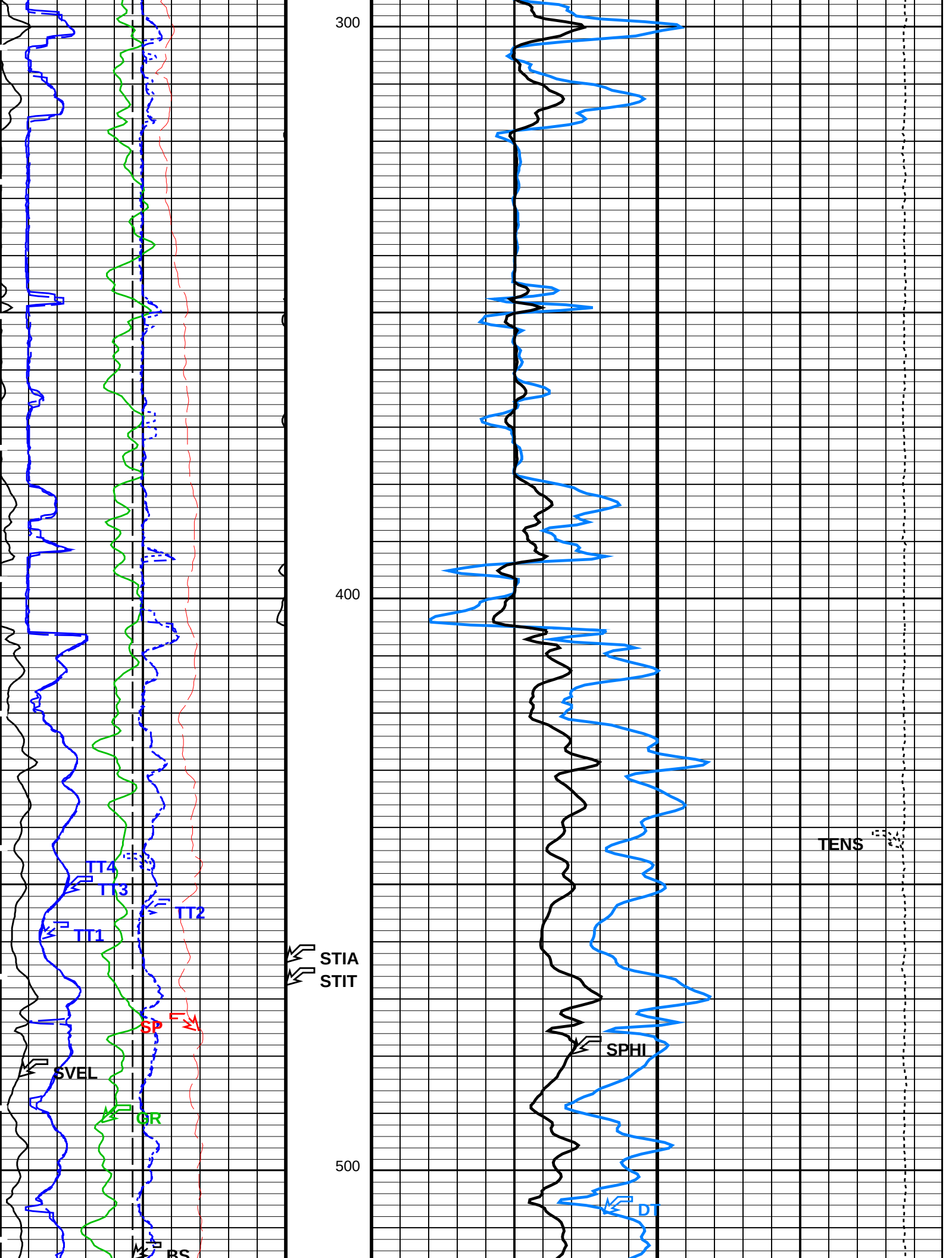
Stuck Stretch (STIT)

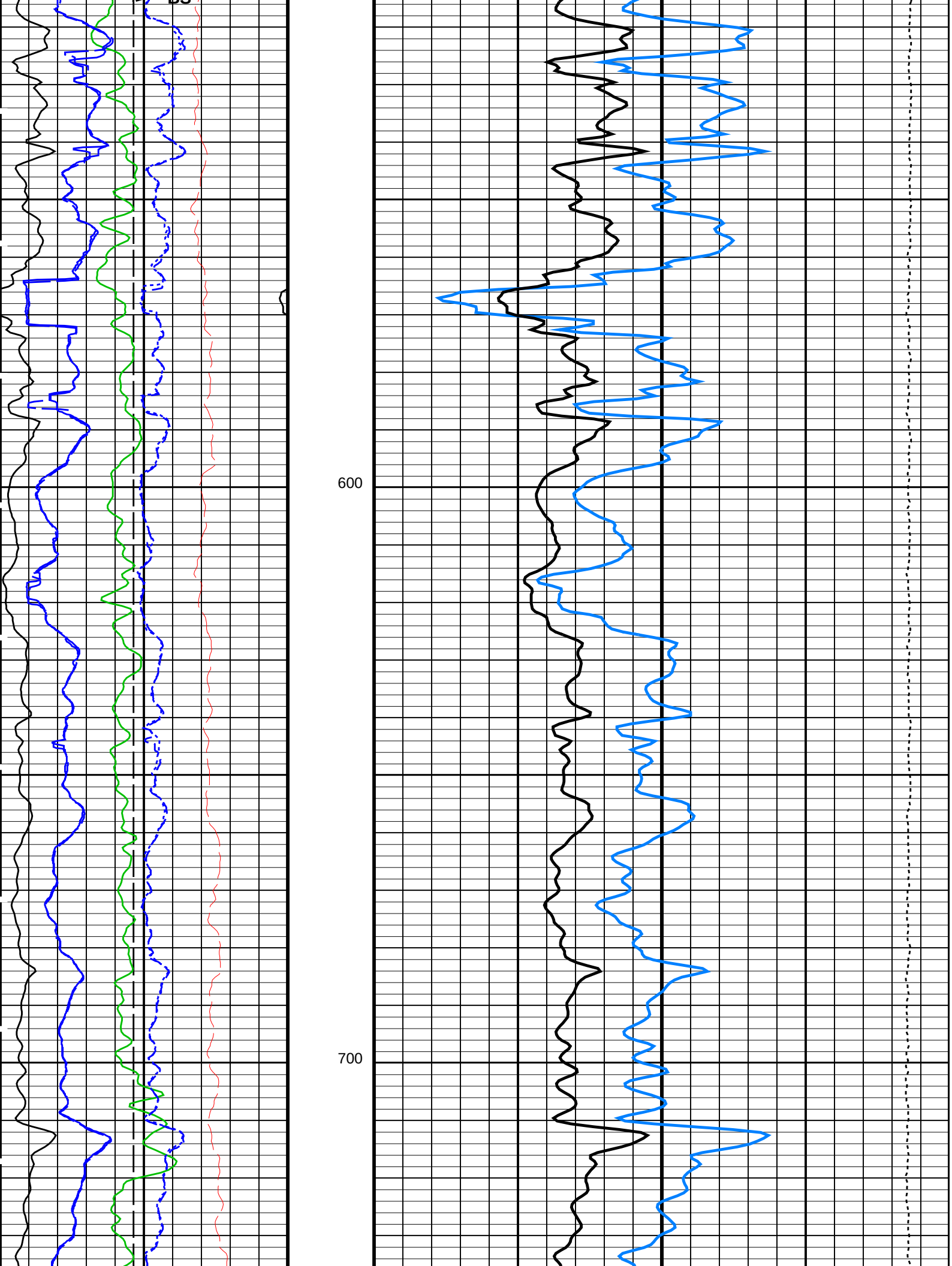
0 (F) 50

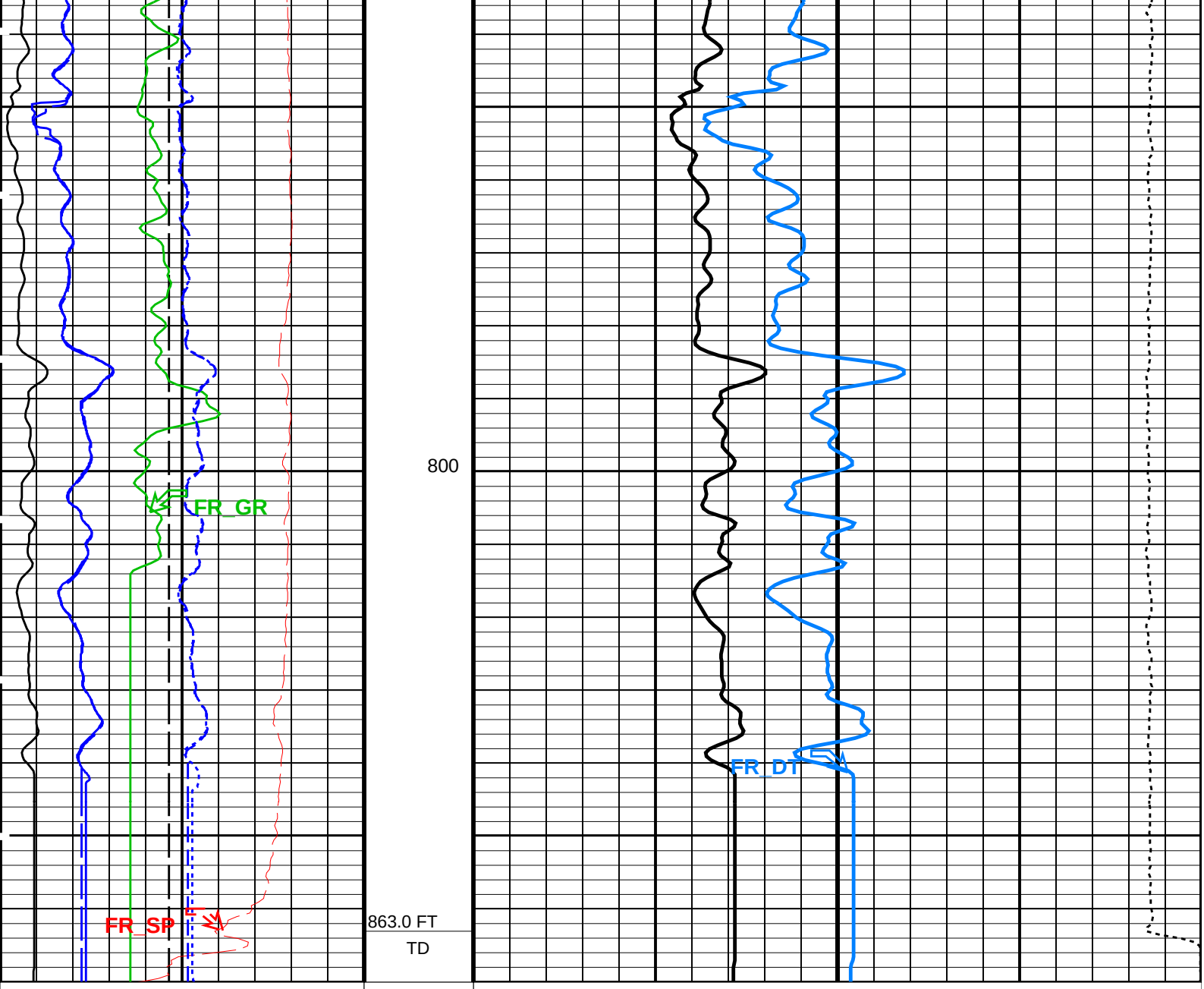
Tension (TENS)		
10000	(LBF)	0
Sonic Porosity (SPHI)		
0.6	(V/V)	0
Delta−T (DT)		
250	(US/F)	50




100
200


300
400
500
TT4
TT3
TT2
TT1
STIA
STIT
SP
SVEL
GR
IBS
SPHI
TENS
DT


600
700



SP (SP)
−80 (MV) 20

Stuck Stretch (STIT)
0 (F) 50

Delta−T (DT)
250 (US/F) 50

Bit Size (BS)
6 (IN) 16

Cable Drag From STIA to STIT

Sonic Porosity (SPHI)
0.6 (V/V) 0

Gamma Ray (GR)
0 (GAPI) 150

Tool/Tot. Drag From D3T to STIA

Tension (TENS)
10000 (LBF) 0

Sonic Velocity (SVEL)
5000 (FT/S) 25000

Transit Time 1 (TT1)
1200 (US) 200

Transit Time 2 (TT2)
1200 (US) 200

Transit Time 3 (TT3)
1200 (US) 200

Transit Time 4 (TT4)

1200 (US) 200

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
SPNV	SP Next Value	0	MV
	DSLT−FTB: Digitizing Sonic Logging Tool		
	DSLT Firing Mode	BHC	
	Telemetry Mode	DSLC_FTB	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	1	
CBLG	CBL Gate Width	45	US
CDTS	C−Delta−T Shale	100	US/F
DDEL	Digitizing Delay	0	US
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	130	
DSIN	Digitizing Sample Interval	10	
DTF	Delta−T Fluid	189	US/F
DTFS	DSLC Telemetry Frame Size	296	
DTM	Delta−T Matrix	56	US/F
DWCO	Digitizing Word Count	130	
GAI	Manual Gain	40	
MAHTR	Manual High Threshold Reference	1351	
MGAI	Maximum Gain	60	
MNHTR	Minimum High Threshold Reference	500	
NMSG	Near Minimum Sliding Gate	204	US
NMXG	Near Maximum Sliding Gate	778	US
RATE	Firing Rate	R7	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGCL	Sliding Gate Closing Delta−T	196	US/F
SGDT	Sliding Gate Delta−T	0	US/F
SGW	Sliding Gate Width	80	US
SLEV	Signal Level for AGC	6000	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DT	
WAGC	Waveform AGC Allow/Disallow	OFF	
WMOD	Waveform Firing Mode	FULL	
	DIR: Directional Survey Computation		
SPVD	TVD of Starting Point	0	FT
TIMD	Along−hole depth of Tie−in Point	0	FT
TIVD	TVD of Tie−in Point	0	FT
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	867.00	FT
TDL	Total Depth − Logger	863.00	FT
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: SONI Vertical Scale: 5" per 100’ Graphics File Created: 09−Apr−2010 16:59

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59

Schlumberger

LOG QUALITY CONTROL

Schlumberger

LOG QUALITY CONTROL

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Bluebird Ct Well #2**

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09−Apr−2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09−Apr−2010 16:59	870.0 FT	43.5 FT

OP System Version: 17C0−154

AIT−M	17C0−154	DSLT−FTB	17C0−154
HILTB−FTB	17C0−154	GPIT−F	17C0−154
EDTC−B	SRPC−3912−Q4_2009_OP17		

PIP SUMMARY

Time Mark Every 60 S

DSLT Delta−T (DT) (US/F) 140 40				
Tension (TENS) (LBF) 10000 0	Amplitude of First Arrival 4 (AMF4) 0 (−−−−) 2000	Noise Amplitude in Waveform Baseline 4 (NAM4) 80 (−−−−) 0	Transit Time 4 (TT4) 1600 (US) 0	First Arrival Detection Gain 4 (DGA4) 0 (−−−−) 2000
Gamma Ray (GR) (GAPI) 0 150	Amplitude of First Arrival 3 (AMF3) 0 (−−−−) 2000	Noise Amplitude in Waveform Baseline 3 (NAM3) 80 (−−−−) 0	Transit Time 3 (TT3) 1600 (US) 0	First Arrival Detection Gain 3 (DGA3) 0 (−−−−) 2000
Bit Size (BS) 6 (IN) 16	Amplitude of First Arrival 2 (AMF2) 0 (−−−−) 2000	Noise Amplitude in Waveform Baseline 2 (NAM2) 80 (−−−−) 0	Transit Time 2 (TT2) 1600 (US) 0	First Arrival Detection Gain 2 (DGA2) 0 (−−−−) 2000
SP (SP) (MV) −80 20	Amplitude of First Arrival 1 (AMF1) 0 (−−−−) 2000	Noise Amplitude in Waveform Baseline 1 (NAM1) 80 (−−−−) 0	Transit Time 1 (TT1) 1600 (US) 0	First Arrival Detection Gain 1 (DGA1) 0 (−−−−) 2000

****** DSLT LQC Flag Tracks ******

* Signal to Noise Ratio (SNR) flags *

White = Absent Data_Channel

Green = Good

Yellow = Warning

Red = Bad

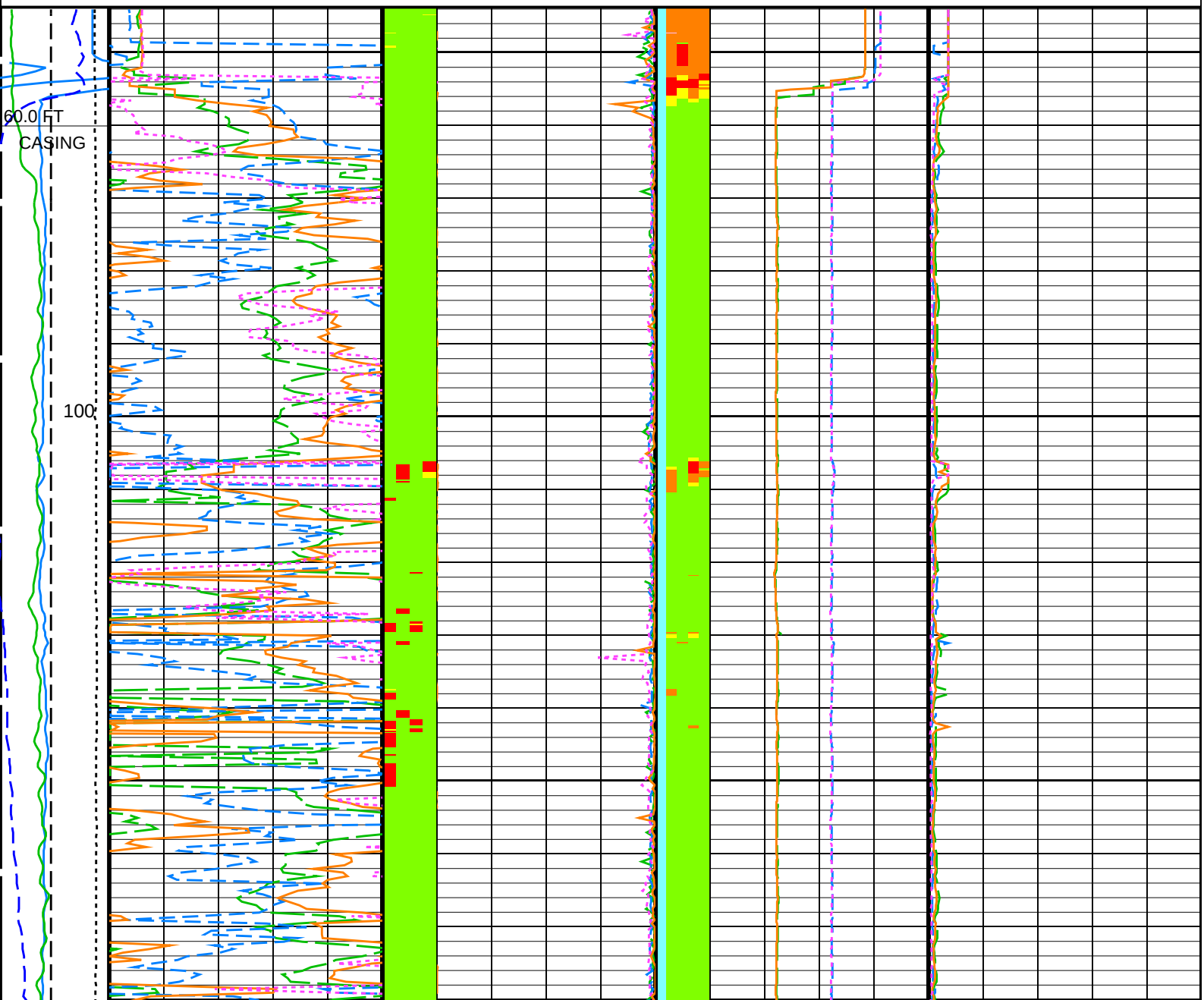
1. SNR1
2. SNR2
3. SNR3
4. SNR4

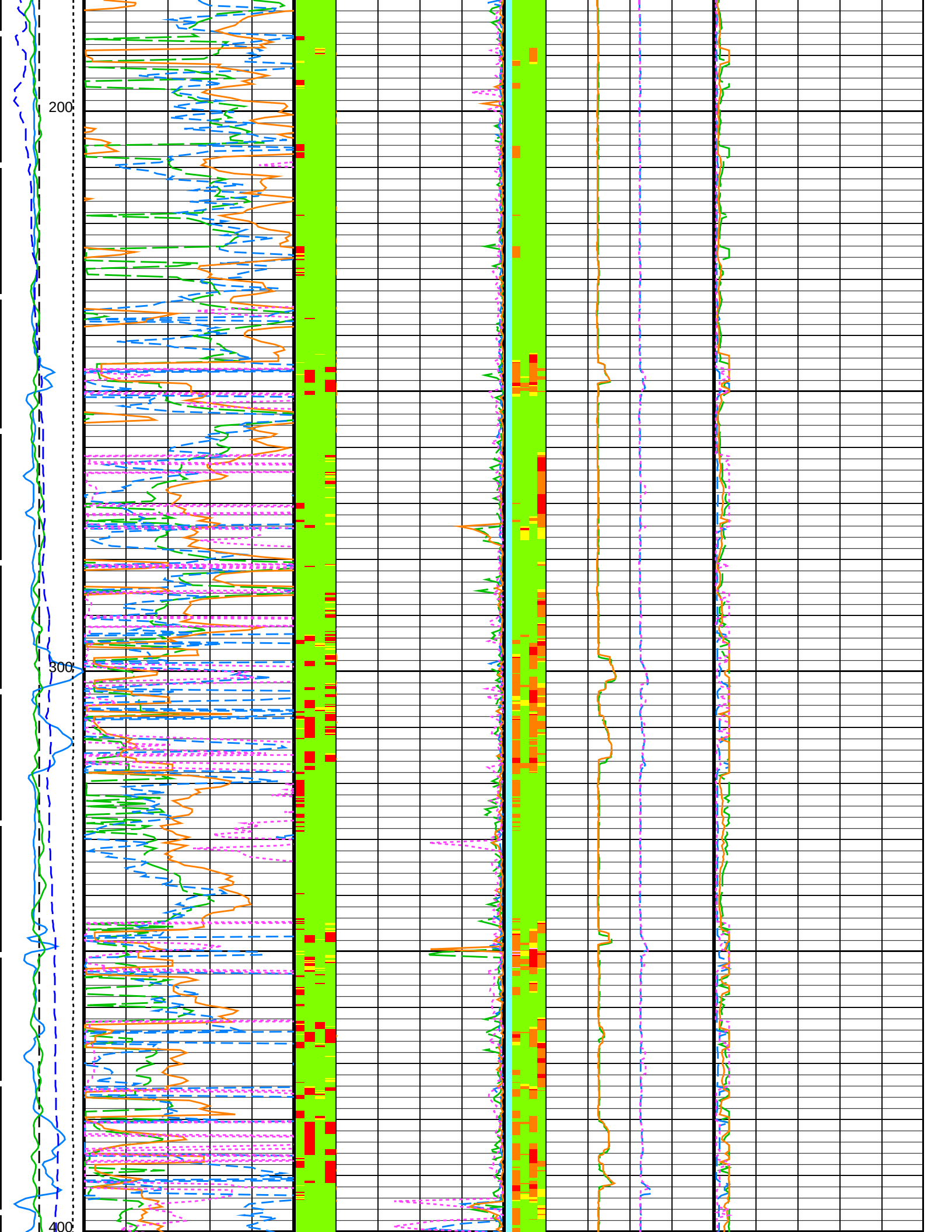
* Hardware State flag *

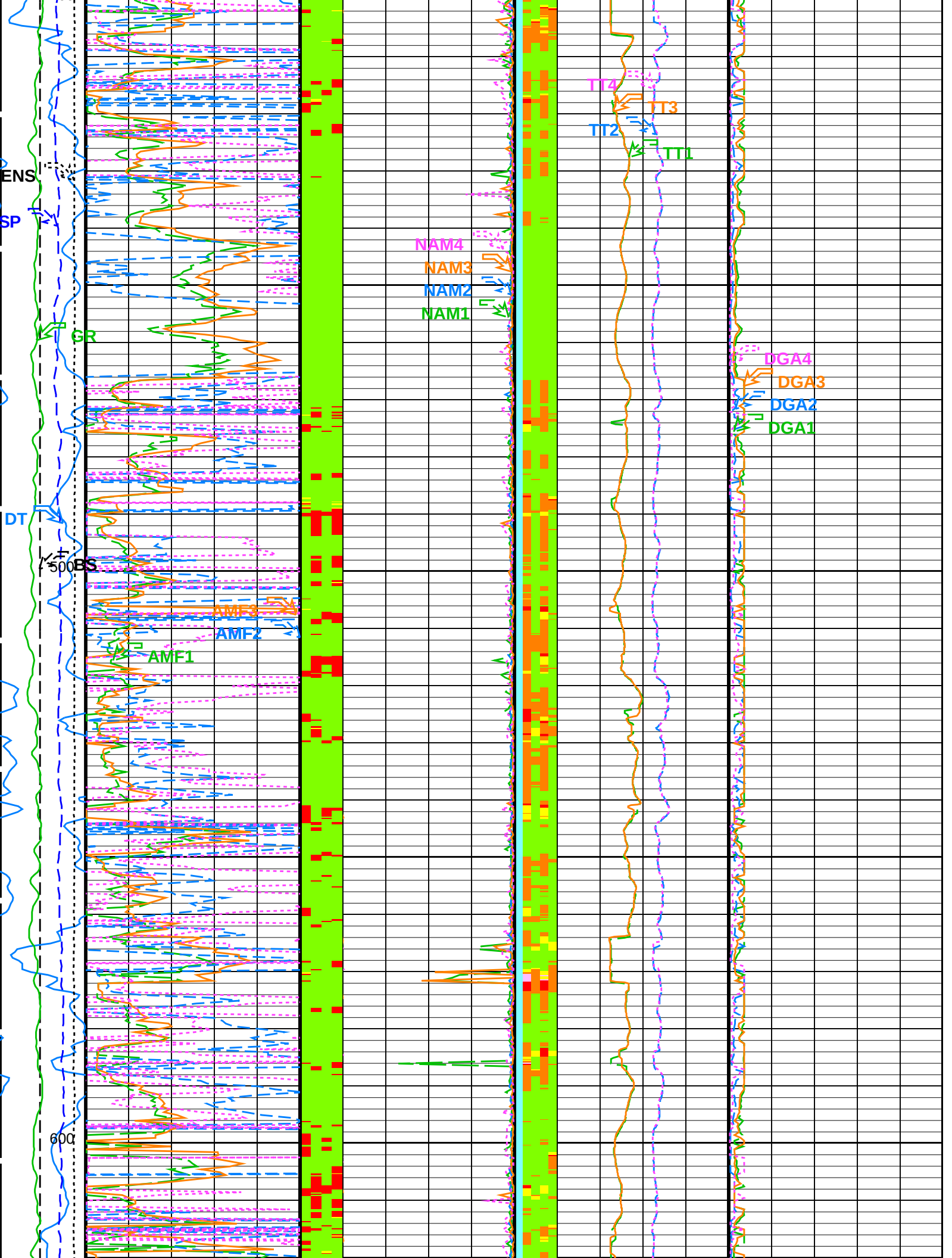
White = Absent Data_Channel

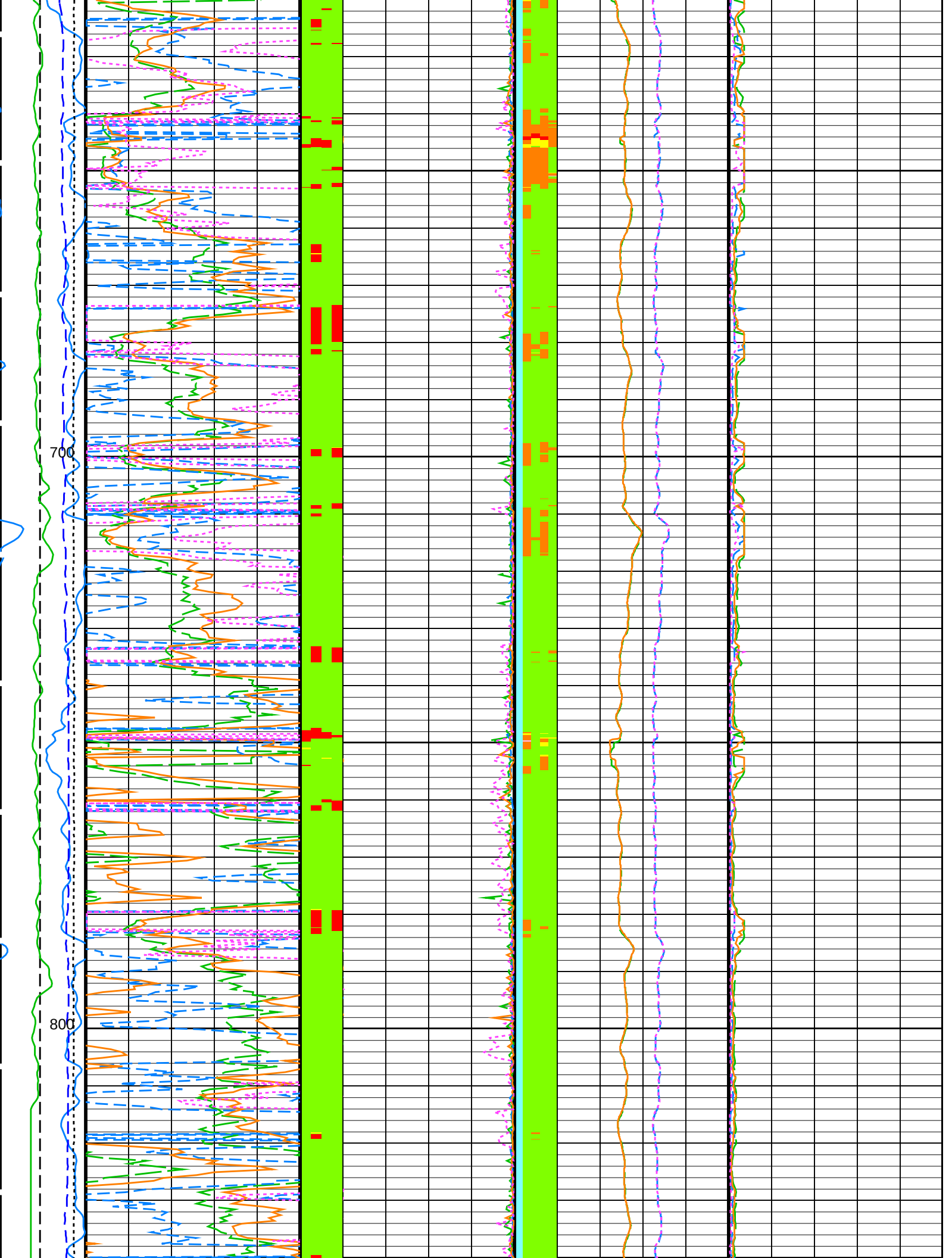
Cyan = Good
Yellow = Telemetry Status Error
Orange = Analog Board Error
Pink = High Voltage Error
Red = Sonic Handshake Error
Black = Transmitter Error
1. DSLT status (DSTT)

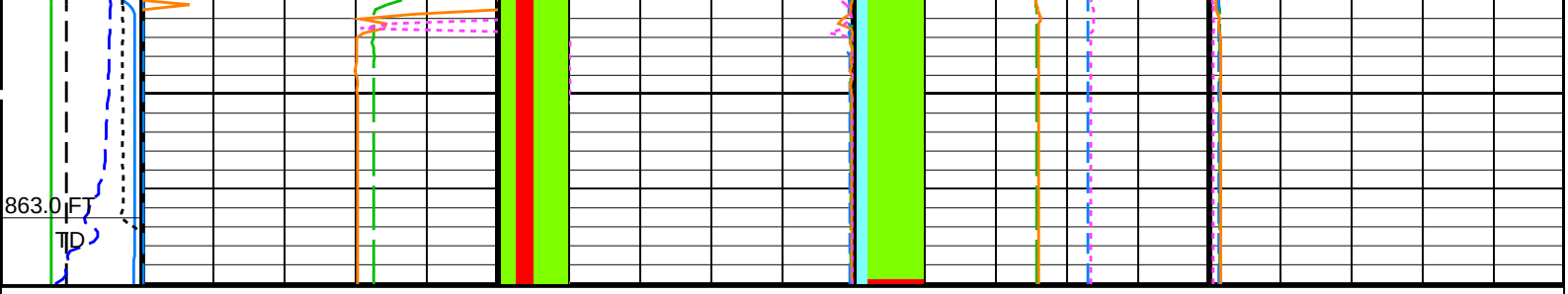
* Software State flags *
White = Absent Data_Channel
Green = Good
Brown = Saturated WF samples during measurement
Yellow = Other Warning
Orange = Detection gain at maximum
Pink = Medium noise
Red = Detection algorithm lost
Black = High noise
1. DFAD Detection status (DST1)
2. DFAD Detection status (DST2)
3. DFAD Detection status (DST3)
4. DFAD Detection status (DST4)




200
300
400


ENS
SP
GR
DT
500
BS
600
AMF3
AMF2
AMF1
NAM4
NAM3
NAM2
NAM1
TT4
TT3
TT2
TT1
DGA4
DGA3
DGA2
DGA1


700
800



****** DSLT LQC Flag Tracks ******

* Signal to Noise Ratio (SNR) flags *

White = Absent Data_Channel

Green = Good

Yellow = Warning

Red = Bad

1. SNR1
2. SNR2
3. SNR3
4. SNR4

* Hardware State flag *

White = Absent Data_Channel

Cyan = Good

Yellow = Telemetry Status Error

Orange = Analog Board Error

Pink = High Voltage Error

Red = Sonic Handshake Error

Black = Transmitter Error

1. DSLT status (DSTT)

* Software State flags *

White = Absent Data_Channel

Green = Good

Brown = Saturated WF samples during measurement

Yellow = Other Warning

Orange = Detection gain at maximum

Pink = Medium noise

Red = Detection algorithm lost

Black = High noise

1. DFAD Detection status (DST1)
2. DFAD Detection status (DST2)
3. DFAD Detection status (DST3)
4. DFAD Detection status (DST4)

SP (SP) (MV) −80 20	Amplitude of First Arrival 1 (AMF1) 0 (----) 2000	Noise Amplitude in Waveform Baseline 1 (NAM1) 80 (----) 0	Transit Time 1 (TT1) 1600 (US) 0	First Arrival Detection Gain 1 (DGA1) 0 (----) 2000
Bit Size (BS) 6 (IN) 16	Amplitude of First Arrival 2 (AMF2) 0 (----) 2000	Noise Amplitude in Waveform Baseline 2 (NAM2) 80 (----) 0	Transit Time 2 (TT2) 1600 (US) 0	First Arrival Detection Gain 2 (DGA2) 0 (----) 2000
Gamma Ray (GR) (GAPI) 0 150	Amplitude of First Arrival 3 (AMF3) 0 (----) 2000	Noise Amplitude in Waveform Baseline 3 (NAM3) 80 (----) 0	Transit Time 3 (TT3) 1600 (US) 0	First Arrival Detection Gain 3 (DGA3) 0 (----) 2000
Tension (TENS)	Amplitude of First Arrival 4	Noise Amplitude in Waveform Baseline 4	Transit Time 4 (TT4)	First Arrival Detection Gain 4

(TENS)
(LBF)
10000 0

(AMF4)
0 (----) 2000

(NAM4)
80 (----) 0

1600 (US) 0

(DGA4)
0 (----) 2000

DSLT
Delta-T
(DT)
(US/F)
140 40

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT-M: Array Induction Tool - M		
SPNV	SP Next Value	0	MV
	DSLT-FTB: Digitizing Sonic Logging Tool		
	DSLT Firing Mode	BHC	
	Telemetry Mode	DSLC_FTB	
AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	1	
CBLG	CBL Gate Width	45	US
DDEL	Digitizing Delay	0	US
DETE	Delta-T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	130	
DSIN	Digitizing Sample Interval	10	
DTFS	DSLC Telemetry Frame Size	296	
DWCO	Digitizing Word Count	130	
GAI	Manual Gain	40	
MAHTR	Manual High Threshold Reference	1351	
MGAI	Maximum Gain	60	
MIGA	Minimum Gain	1	
MNHTR	Minimum High Threshold Reference	500	
NMSG	Near Minimum Sliding Gate	204	US
NMXG	Near Maximum Sliding Gate	778	US
NUMP	Number of Detection Passes	2	
RATE	Firing Rate	R7	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta-T	196	US/F
SGCW	Sliding Gate Closing Width	25	US
SGDT	Sliding Gate Delta-T	0	US/F
SGW	Sliding Gate Width	80	US
SLEV	Signal Level for AGC	6000	
WAGC	Waveform AGC Allow/Disallow	OFF	
WMOD	Waveform Firing Mode	FULL	
	DIR: Directional Survey Computation		
SPVD	TVD of Starting Point	0	FT
TIMD	Along-hole depth of Tie-in Point	0	FT
TIVD	TVD of Tie-in Point	0	FT
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: DSLT_LogQuality Vertical Scale: 5" per 100' Graphics File Created: 09-Apr-2010 16:59

OP System Version: 17C0-154

AIT-M	17C0-154	DSLT-FTB	17C0-154
HILTB-FTB	17C0-154	GPIT-F	17C0-154
EDTC-B	SRPC-3912-Q4_2009_OP17		

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_018LUP	FN:17	PRODUCER	09-Apr-2010 16:09	870.0 FT	43.5 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_022PUP	FN:21	PRODUCER	09-Apr-2010 16:59

Schlumberger

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Thru Cal Mag. & Phase							
Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49							
Thru Cal Magnitude − 0	0	0.5944	0.5943	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.218	1.218	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6053	0.6050	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.6816	0.6814	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.277	1.277	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.859	1.859	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.861	1.861	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.340	1.339	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	192.1	194.3	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	191.0	193.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	187.5	189.7	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	186.7	188.9	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	180.6	182.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	179.0	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	179.0	181.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	178.2	180.3	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary							
Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49							
Array Induction SPA Plus	991.0	991.6	991.8	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	0.1995	0.2149	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9184	0.9186	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	0.0002014	0.0002180	N/A	N/A	N/A	V
Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction							
Master: 10−Jan−2010 17:00							
Test Loop Gain Correctio − 0	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.012	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.009	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	0.9914	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	0.9839	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	1.011	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.041	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.5551	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.6233	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	0.08833	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	0.008389	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	0.07837	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	0.03849	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.6174	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	0.4741	N/A	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Sonde Error Correction							
Master: 10−Jan−2010 17:00							
R Sonde Error Correction − 0	0	−26.58	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	163.3	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	108.6	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	65.10	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	23.32	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	14.68	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	10.38	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−1.904	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	179.0	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	49.26	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−83.51	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−83.84	N/A	N/A	N/A	N/A	MM/M

X Sonde Error Correction − 3	0	−35.54	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 4	0	−8.484	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−2.228	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	−0.7255	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	7.881	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − M Wellsite Calibration − Mud Gain Correction
Master: 10−Jan−2010 17:00

Coarse − Mag, Real, Imag − 0	0	0.9426	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	0.9426	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	0.9426	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	0.9358	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	0.9358	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	0.9358	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 8−Apr−2010 15:53

BS Window Ratio	0.7386	N/A	0.7381	N/A	N/A	N/A	
BS Window Sum	30790	N/A	30790	N/A	N/A	N/A	CPS
SS Window Ratio	0.4798	N/A	0.4803	N/A	N/A	N/A	
SS Window Sum	12280	N/A	12240	N/A	N/A	N/A	CPS
LS Window Ratio	0.2918	N/A	0.2906	N/A	N/A	N/A	
LS Window Sum	1435	N/A	1433	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 8−Apr−2010 15:53

BS PM High Voltage (Command)	1769	N/A	1771	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1606	N/A	1628	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1377	N/A	1373	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 8−Apr−2010 15:53

BS Crystal Resolution	11.43	N/A	11.42	N/A	N/A	N/A	%
SS Crystal Resolution	8.348	N/A	8.545	N/A	N/A	N/A	%
LS Crystal Resolution	8.865	N/A	8.977	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 8−Apr−2010 15:53

Raw B0 Resistivity	3875	N/A	3891	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3830	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3823	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 8−Apr−2010 15:48

HILT Caliper Zero Measurement	8.000	N/A	7.966	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.09	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 8−Apr−2010 15:48

Gamma Ray Background	30.00	N/A	56.04	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	166.4	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 14−Jan−2010 16:39 Before: 8−Apr−2010 15:49

CNTC Background	24.38	24.38	24.92	N/A	N/A	3.657	CPS
CFTC Background	27.29	27.29	26.52	N/A	N/A	4.094	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 14−Jan−2010 16:39

Thermal Near Corr. (Tank)	5800	5315	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2267	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.345	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 9−Apr−2010 15:36

Z−Axis Acceleration	32.19	N/A	32.12	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 29−Mar−2010 17:12

Rho Aluminum	2.596	2.598	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.687	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.511	−−	−−	−−	−−	
Pe Magnesium	2.650	2.665	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary
Master: 29−Mar−2010 17:12

BS Average Deviation	0	0.5040	−−	−−	−−	−−	%
BS Max Deviation	0	1.085	−−	−−	−−	−−	%
SS Average Deviation	0	0.2841	−−	−−	−−	−−	%
SS Max Deviation	0	0.9145	−−	−−	−−	−−	%
LS Average Deviation	0	0.4565	−−	−−	−−	−−	%
LS Max Deviation	0	0.7775	−−	−−	−−	−−	%

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 72.0 DEGF.
Thermal Housing Size 3.375 IN.
NSR−F serial number 0

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	1057

Auxiliary Equipment:

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.5944		0.6100	192.1		197.0
	Before	0.5943			194.3		
1	Master	1.218		1.270	191.0		196.0
	Before	1.218			193.2		
2	Master	0.6053		0.6200	187.5		192.0
	Before	0.6050			189.7		
3	Master	0.6816		0.7000	186.7		191.0
	Before	0.6814			188.9		
4	Master	1.277		1.340	180.6		185.0
	Before	1.277			182.8		
5	Master	1.859		1.960	179.0		182.0
	Before	1.859			181.2		
6	Master	1.861		1.960	179.0		181.0
	Before	1.861			181.2		
7	Master	1.340		1.410	178.2		175.0
	Before	1.339			180.3		
		60.00 % (Minimum)	140.0 % (Maximum)		Nom −60.00 (Minimum)	Nom + 60.00 (Maximum)	

Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value
Master		991.6
Before		991.8
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		0.1995
Before		0.2149
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9184
Before		0.9186
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		0.0002014
Before		0.0002180
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 10−Jan−2010 17:00 Before: 8−Apr−2010 15:49

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase DEG		
0	1.012				0.5551			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.012				0.6233			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.011				0.08833			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.009				0.008389			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9914				0.07837			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	0.9839				0.03849			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	1.011				0.6174			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.041				0.4741			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−26.58				179.0			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	163.3				49.26			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	108.6				−83.51			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	65.10				−83.84			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.32				−8.484			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.68				−2.228			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.38				−0.7255			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.904				7.881			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9426				0.9358			

		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.5944		0.6100	192.1		197.0
1	Master	1.218		1.270	191.0		196.0
2	Master	0.6053		0.6200	187.5		192.0
3	Master	0.6816		0.7000	186.7		191.0
4	Master	1.277		1.340	180.6		185.0
5	Master	1.859		1.960	179.0		182.0
6	Master	1.861		1.960	179.0		181.0
7	Master	1.340		1.410	178.2		175.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)		Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		991.6	Master		0.1995
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)			−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	
Phase	**Array Induction Temperature Plus V**	**Value**	**Phase**	**Array Induction Temperature Zero V**	**Value**
Master		**0.9184**	**Master**		**0.0002014**
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)			−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.012		0.5551	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.012		0.6233	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.011		0.08833	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.009		0.008389	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	0.9914		0.07837	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	0.9839		0.03849	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.011		0.6174	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.041		0.4741	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		−3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−26.58				179.0			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	163.3				49.26			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	108.6				−83.51			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	65.10				−83.84			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	23.32				−8.484			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.68				−2.228			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	10.38				−0.7255			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.904				7.881			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 10−Jan−2010 17:00

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9426				0.9358			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 10−Jan−2010 17:00

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT high−Resolution Mechanical Sonde	HRMS − B	4781
HILT Rxo Gamma−ray Device	HRGD − B	4837
HILT Micro Cylindrically Focused Log Dev	MCFL −	
GR Logging Source	GLS − VJ	
HILT High Res. Control Cartridge	HRCC − B	1919
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	3972
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	
HGNS Housing	HGNH −	3738

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before				0.7381	Before				0.4803	Before				0.2906
	0.7016 (Minimum)	0.7386 (Nominal)	0.7755 (Maximum)			0.4558 (Minimum)	0.4798 (Nominal)	0.5038 (Maximum)			0.2773 (Minimum)	0.2918 (Nominal)	0.3064 (Maximum)	

Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		30790	Before		12240	Before		1433
	29250 (Minimum) 30790 (Nominal) 32330 (Maximum)			11670 (Minimum) 12280 (Nominal) 12890 (Maximum)			1363 (Minimum) 1435 (Nominal) 1506 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1771	Before		1628	Before		1373
	1669 (Minimum) 1769 (Nominal) 1869 (Maximum)			1506 (Minimum) 1606 (Nominal) 1706 (Maximum)			1277 (Minimum) 1377 (Nominal) 1477 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		11.42	Before		8.545	Before		8.977
	10.43 (Minimum) 11.43 (Nominal) 12.43 (Maximum)			7.348 (Minimum) 8.348 (Nominal) 9.348 (Maximum)			7.865 (Minimum) 8.865 (Nominal) 9.865 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3891	Before		3830	Before		3823
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: 8−Apr−2010 15:53

High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		7.966	Before		12.09
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 8−Apr−2010 15:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		56.04	Before		166.4
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 8−Apr−2010 15:48

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		24.38	Master		27.29
Before		24.92	Before		26.52
	5.000 (Minimum) 24.38 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 27.29 (Nominal) 40.00 (Maximum)	

Master: 14−Jan−2010 16:39 Before: 8−Apr−2010 15:49

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5315	Master		2267	Master		2.345
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 14−Jan−2010 16:39

High resolution Integrated Logging Tool−DTS

Wellsite Calibration

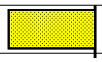
Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.12
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 9−Apr−2010 15:36

High resolution Integrated Logging Tool−DTS Master Calibration

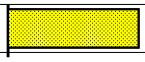
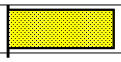
Inversion results

Phase	Rho Aluminum G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master		2.598	Master		1.687
	2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum)			1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum)	
Phase	Pe Aluminum	Value	Phase	Pe Magnesium	Value
Master		2.511	Master		2.665
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.550 (Minimum) 2.650 (Nominal) 2.750 (Maximum)	

Master: 29−Mar−2010 17:12

High resolution Integrated Logging Tool−DTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master		0.5040	Master		0.2841	Master		0.4565
	−0.6000 (Minimum) 0 (Nominal) 0.6000 (Maximum)			−1.000 (Minimum) 0 (Nominal) 1.000 (Maximum)			−1.500 (Minimum) 0 (Nominal) 1.500 (Maximum)	
Phase	BS Max Deviation %	Value	Phase	SS Max Deviation %	Value	Phase	LS Max Deviation %	Value
Master		1.085	Master		0.9145	Master		0.7775
	−1.600 (Minimum) 0 (Nominal) 1.600 (Maximum)			−2.500 (Minimum) 0 (Nominal) 2.500 (Maximum)			−3.500 (Minimum) 0 (Nominal) 3.500 (Maximum)	

Master: 29−Mar−2010 17:12

High resolution Integrated Logging Tool−DTS Master Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		24.38	Master		27.29
	5.000 (Minimum) 24.38 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 27.29 (Nominal) 40.00 (Maximum)	

Master: 14−Jan−2010 16:39

High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5315	Master		2267	Master		2.345
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 14−Jan−2010 16:39

General Purpose Inclinometer / Equipment Identification

Primary Equipment:		
GPIT Cartridge − F	GPIC − F	958
Auxiliary Equipment:		
GPIT Housing − F	GPIH − B	1929

Company: **WDC Exploration & Wells**

Schlumberger

Well: **Bluebird Ct Well #2**
Field: **Windsor**
County: **Sonoma**
State: **California**

BOREHOLE COMPENSATED SONIC

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Esposti Park 1**
Field: **Windsor**
County: **Sonoma** State: **California**

ARRAY INDUCTION / GR / SP
MCFL / CALIPER

County: Sonoma
Field: Windsor
Location: LAT N 38.31.35.4
Well: Esposti Park 1
Company: WDC Exploration & Wells

LOCATION

LAT N 38.31.35.4
LONG W 122.46.46.5

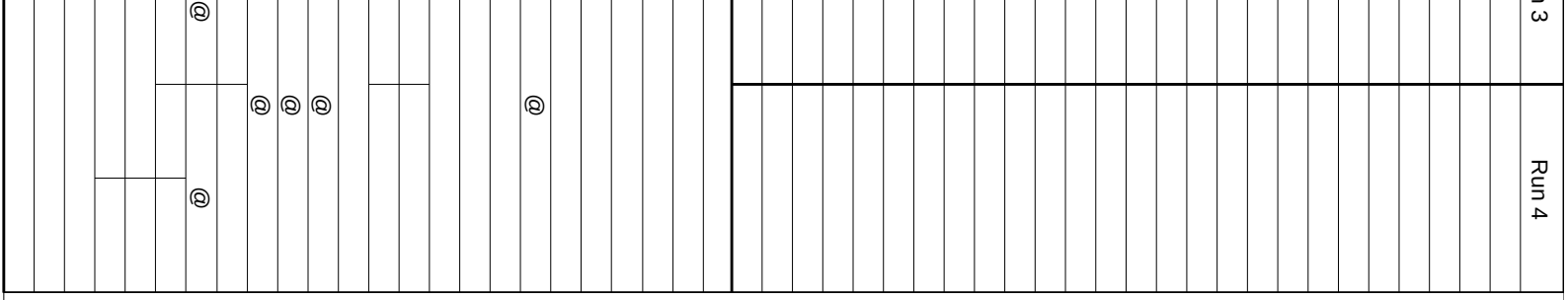
Elev.: K.B. 139.00 ft
G.L. 137.00 ft
D.F.

Permanent Datum: GROUND LEVEL Elev.: 137.00 ft
Log Measured From: GROUND LEVEL 0.00 ft above Perm. Datum
Drilling Measured From: GROUND LEVEL

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run 3
Logging Date	3−Mar−2010		
Run Number	ONE		
Depth Driller	1040 ft		
Schlumberger Depth	1045 ft		
Bottom Log Interval	1037 ft		
Top Log Interval	40 ft		
Casing Driller Size @ Depth	11.750 in @ 40 ft	@	@
Casing Schlumberger	40 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	8.400 ohm.m @ 64 degF	@	@
RMF @ Measured Temperature	8.620 ohm.m @ 67 degF	@	@
RMC @ Measured Temperature	6.470 ohm.m @ 66 degF	@	@
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	5.729 @ 97 / 6.103 @ 97	@ / @	@ / @
Maximum Recorded Temperatures	97 degF		
Circulation Stopped Time	3−Mar−2010		
Logger On Bottom Time	3−Mar−2010 20:53		
Unit Number / Location	7008 BAKERSFIELD		
Recorded By	BRADY ARCHER		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped Time			
Logger On Bottom Time			
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 3−MAR−2010 23:08:25

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46A XS
Serial Number:	2732	Serial Number:	2968	Serial Number:	6353
Calibration Date:	11−JANUARY−2(	Calibration Date:	24−FEB−2010	Length:	11000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46A XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−7	Calibration RMS:	18	Rig Type:	LAND
Wheel Correction 2:	−3	Calibration Peak Error:	35		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	1.00 FT
Tool Zero Check At Surface:	−0.10 FT

Depth Control Remarks

1. All Schlumberger depth policy procedures applied.
2. IDW used as primary depth reference, Z−chart used as secondary.
3.
4.
5.
6.

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: BHC	OS1:
OS2: CMR	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
TWO 1.5" STANDOFFS RUN ON INDUCTION TOOL	
MATRIX : SANDSTONE & DENSITY : 2.65 G/CC	
MAX TEMP = 97 DEGF AT 1045 FT	
ICV NOT NEEDED BY CLIENT	
MUD CHLORIDES, PH AND FLUID LOSS DATA NOT PROVIDED BY CLIENT	
LOCATION DATA THAT WAS AVAILABLE IS IN THE HEADER	
NO API# PROVIDED	

RUN 1		RUN 2	
SERVICE ORDER #:	AZ5H−00110	SERVICE ORDER #:	
PROGRAM VERSION:	18C0−147	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP

LOGGED INTERVAL	START	STOP

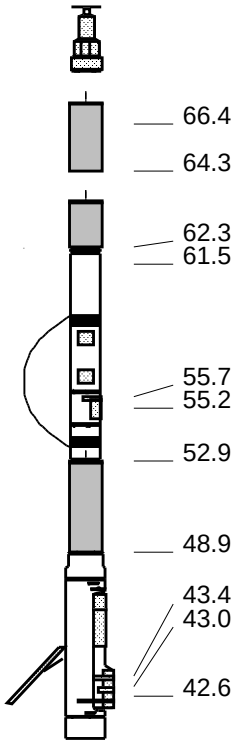
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U 61
NCT−B
CNB−AB
NCS−VB
WITM (DTS)−A

DOWNHOLE EQUIPMENT



LEH−QT — 70.2
LEH−QT 2975

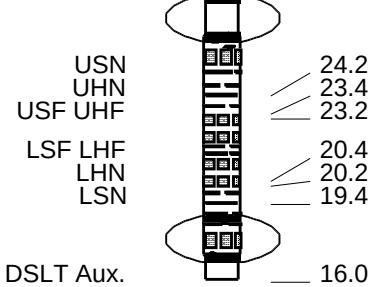
DTC−H — 67.3
ECH−KC 10500
DTCH0−A 9410

HILTB−FTB — 64.3
HGNSD−B 4832
HSTS
HMCA
HGNH 3949
NLS−KL
NSR−F 1441
HACCZ 6303
HCNT
HGR
HRCC−B 4769
HRMS−B 4773
HRGD−B 829
GLS−VJ 5375
MCFL Device
HILT Nucl. LS 42767
HILT Nucl. SS 42767
HILT Nucl. BS 42767
BOW−SPR
NPV−N

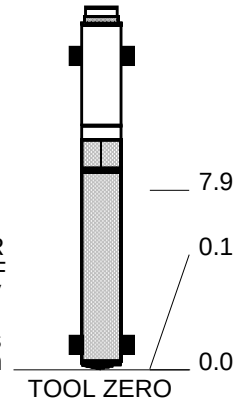
AH−107 — 40.6
AH−107

AH−107 — 38.6
AH−107

DSLT−FTB — 36.6
DSLC−B 8236
ECH−KH 8678
SLS−W 389



AIT−M
AMIS−A 2562
AMRM−A

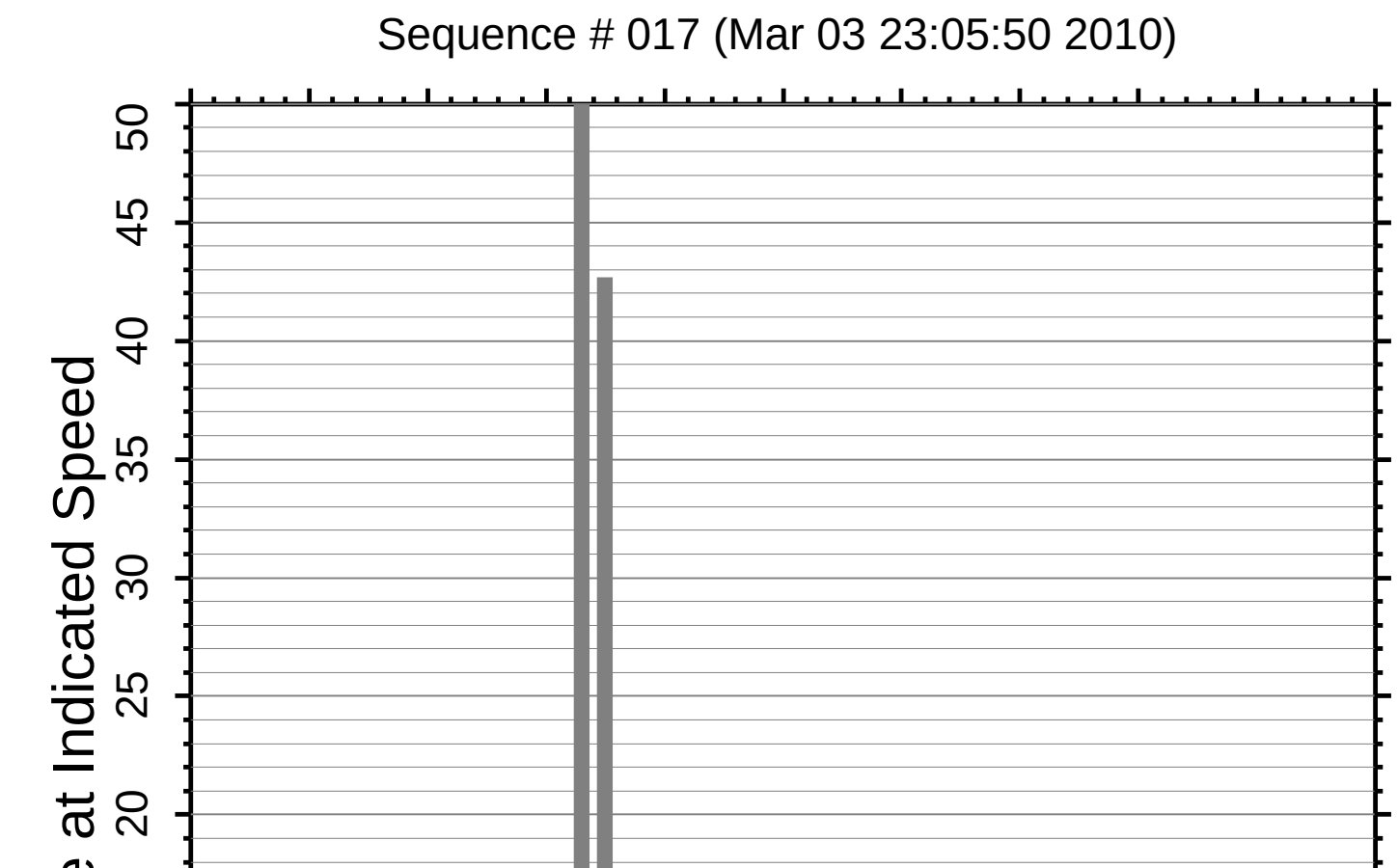


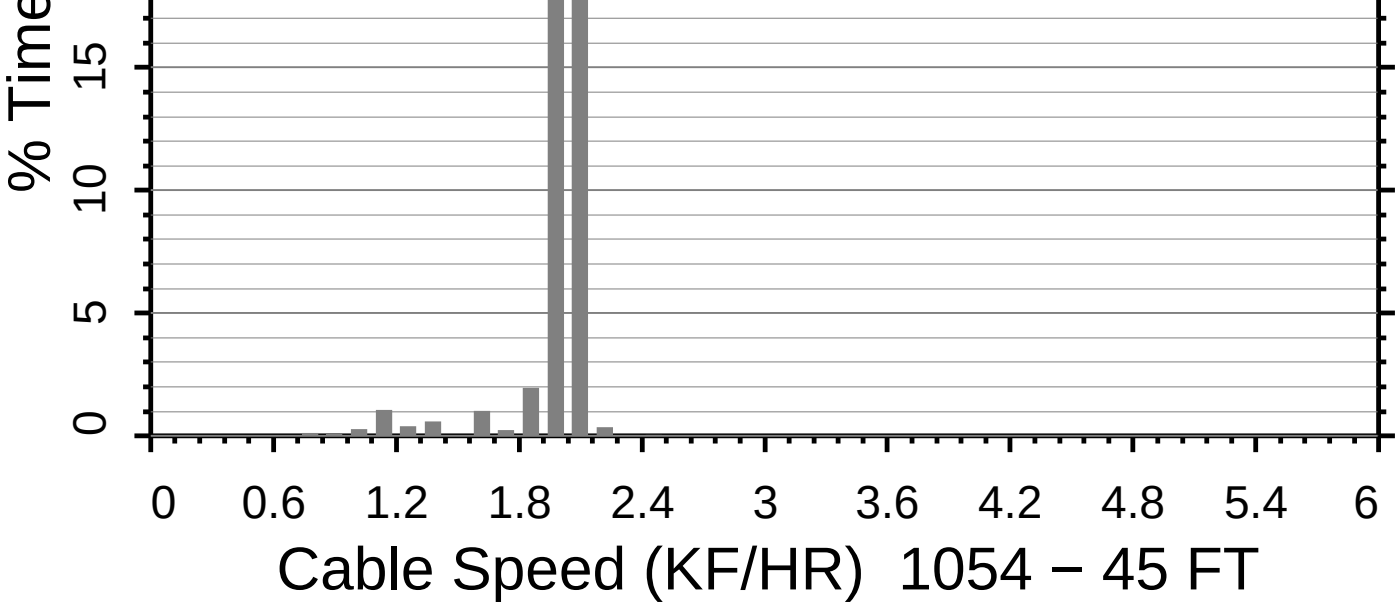
MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					40.0	11.750		Casing Shoe
					40.0	10.625		Borehole Segment

						1040.0	10.625	Borehole Segment Bottom

ALL DEPTHS ARE DRILLERS DEPTHS





Schlumberger Job Event Summary

	Time	Elapsed Time	Depth (FT)	File
Log Pass (down)	3−Mar−2010 22:10	000:07	697.5 − 948.0	AIT_SONIC_TLD_MCFL_011LDP
Log Pass (up)	3−Mar−2010 22:17	000:32	1054.5 − 44.7	AIT_SONIC_TLD_MCFL_012LUP

Schlumberger

MAIN PASS 2 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Esposti Park 1**

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03−Mar−2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03−Mar−2010 23:05	1054.5 FT	45.0 FT

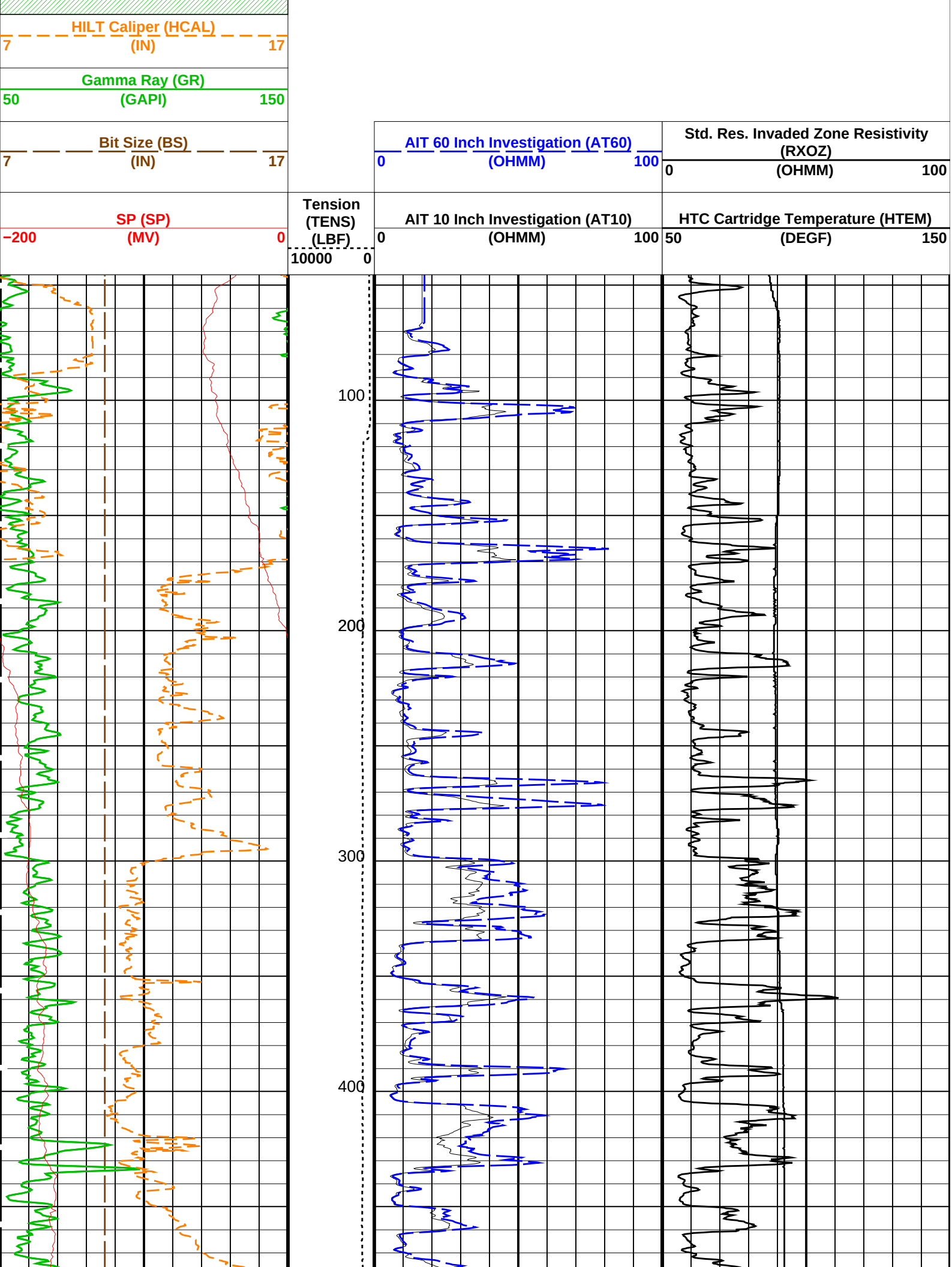
OP System Version: 18C0−147

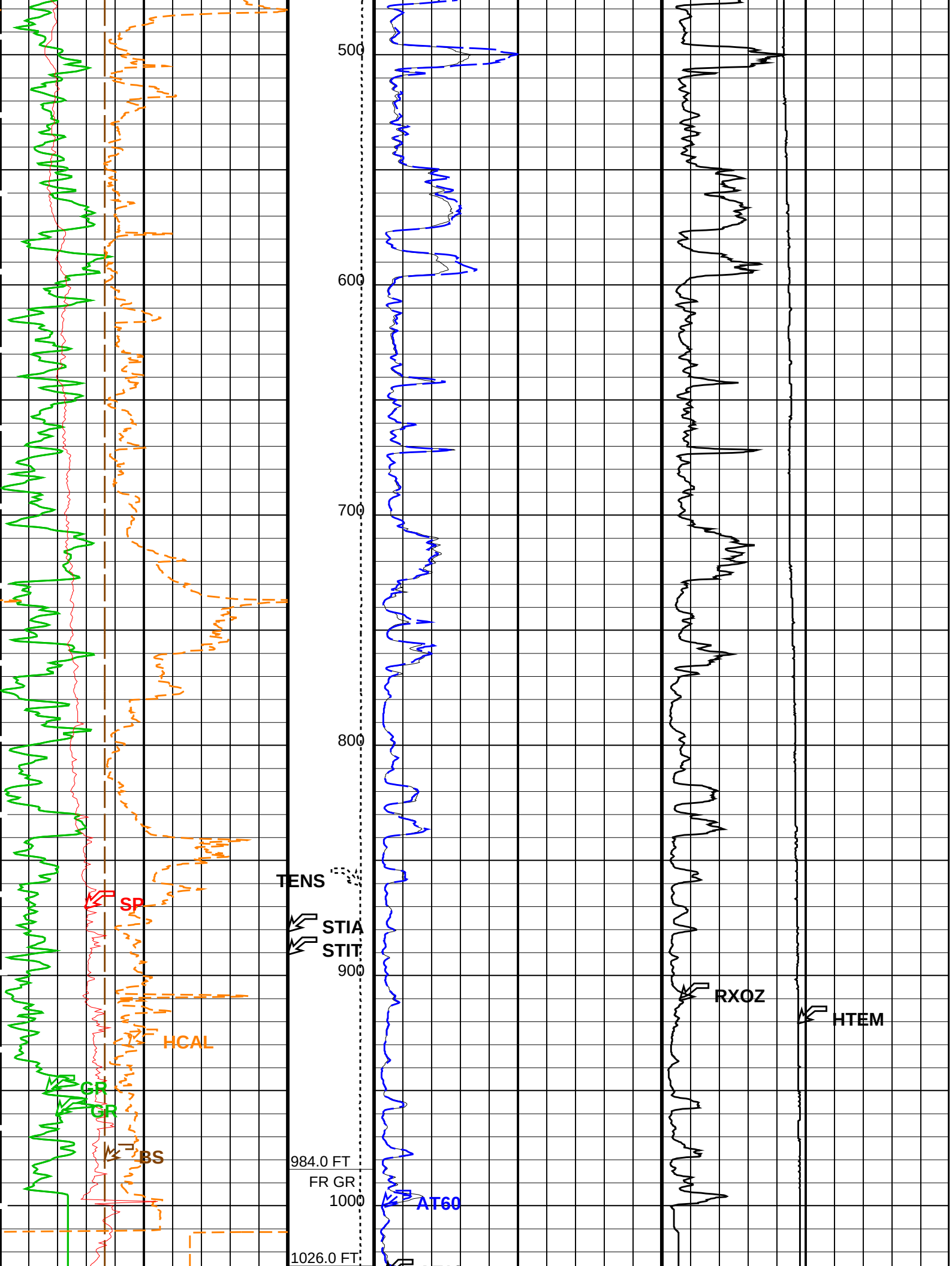
AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	DTC−H	18C0−147

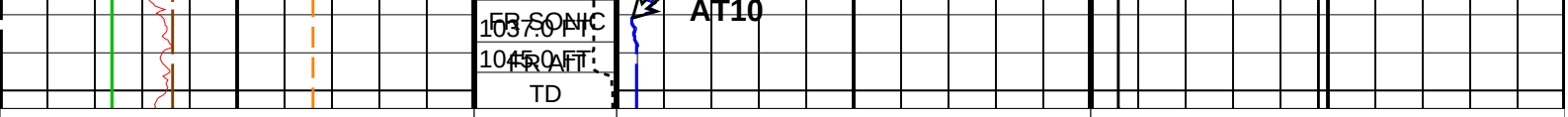
PIP SUMMARY

Time Mark Every 60 S

GR BACKUP
From LHT1 to GR1


HILT Caliper (HCAL)
7
(IN)
17
Gamma Ray (GR)
50
(GAPI)
150
Bit Size (BS)
7
(IN)
17
SP (SP)
−200
(MV)
0
Tension
(TENS)
(LBF)
10000
0
AIT 60 Inch Investigation (AT60)
0
(OHMM)
100
AIT 10 Inch Investigation (AT10)
0
(OHMM)
100
Std. Res. Invaded Zone Resistivity
(RXOZ)
0
(OHMM)
100
HTC Cartridge Temperature (HTEM)
50
(DEGF)
150
100
200
300
400


500
600
700
800
900
1000
TENS
SP
STIA
STIT
HCAL
GR
GR
BS
RXOZ
HTEM
984.0 FT
FR GR
AT60
1026.0 FT



SP (SP)	Tension (TENS)	AIT 10 Inch Investigation (AT10)	HTC Cartridge Temperature (HTEM)
−200 (MV) 0	10000 (LBF) 0	0 (OHMM) 100	50 (DEGF) 150
Bit Size (BS)		**AIT 60 Inch Investigation (AT60)**	**Std. Res. Invaded Zone Resistivity (RXOZ)**
7 (IN) 17		0 (OHMM) 100	0 (OHMM) 100
Gamma Ray (GR)			
50 (GAPI) 150			
HILT Caliper (HCAL)			
7 (IN) 17			
GR BACKUP From LHT1 to GR1			

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−50000	FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	1.5	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHT	Bottom Hole Temperature (used in calculations)	97	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	83	DEGF
SPNV	SP Next Value	0	MV
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHT	Bottom Hole Temperature (used in calculations)	97	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MPOF	MCFL Processing Operation Mode	ON	
SHT	Surface Hole Temperature	83	DEGF
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	1040.00	FT
TDL	Total Depth − Logger	1045.00	FT
	HOLEV: Integrated Hole/Cement Volume		
BHT	Bottom Hole Temperature (used in calculations)	97	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG

GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	83	DEGF
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	−50000.00	FT
MST	Mud Sample Temperature	64.00	DEGF
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	1045	FT

Format: S2 **Vertical Scale: 2" per 100'** **Graphics File Created: 03−Mar−2010 23:05**

OP System Version: 18C0−147

AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	DTC−H	18C0−147

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03−Mar−2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03−Mar−2010 23:05		

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MAIN PASS 5 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Esposti Park 1**

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03−Mar−2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03−Mar−2010 23:05	1054.5 FT	45.0 FT

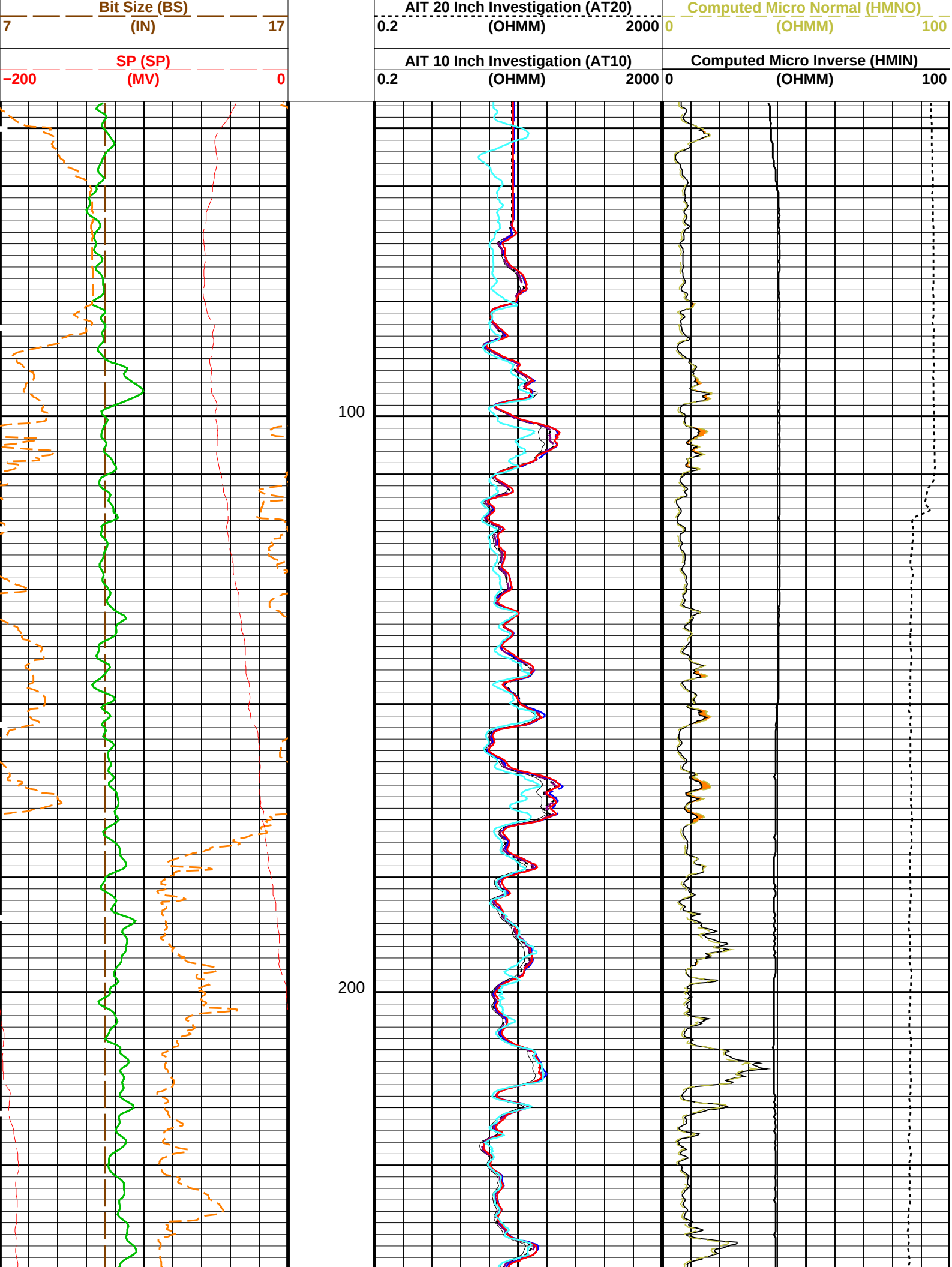
OP System Version: 18C0−147

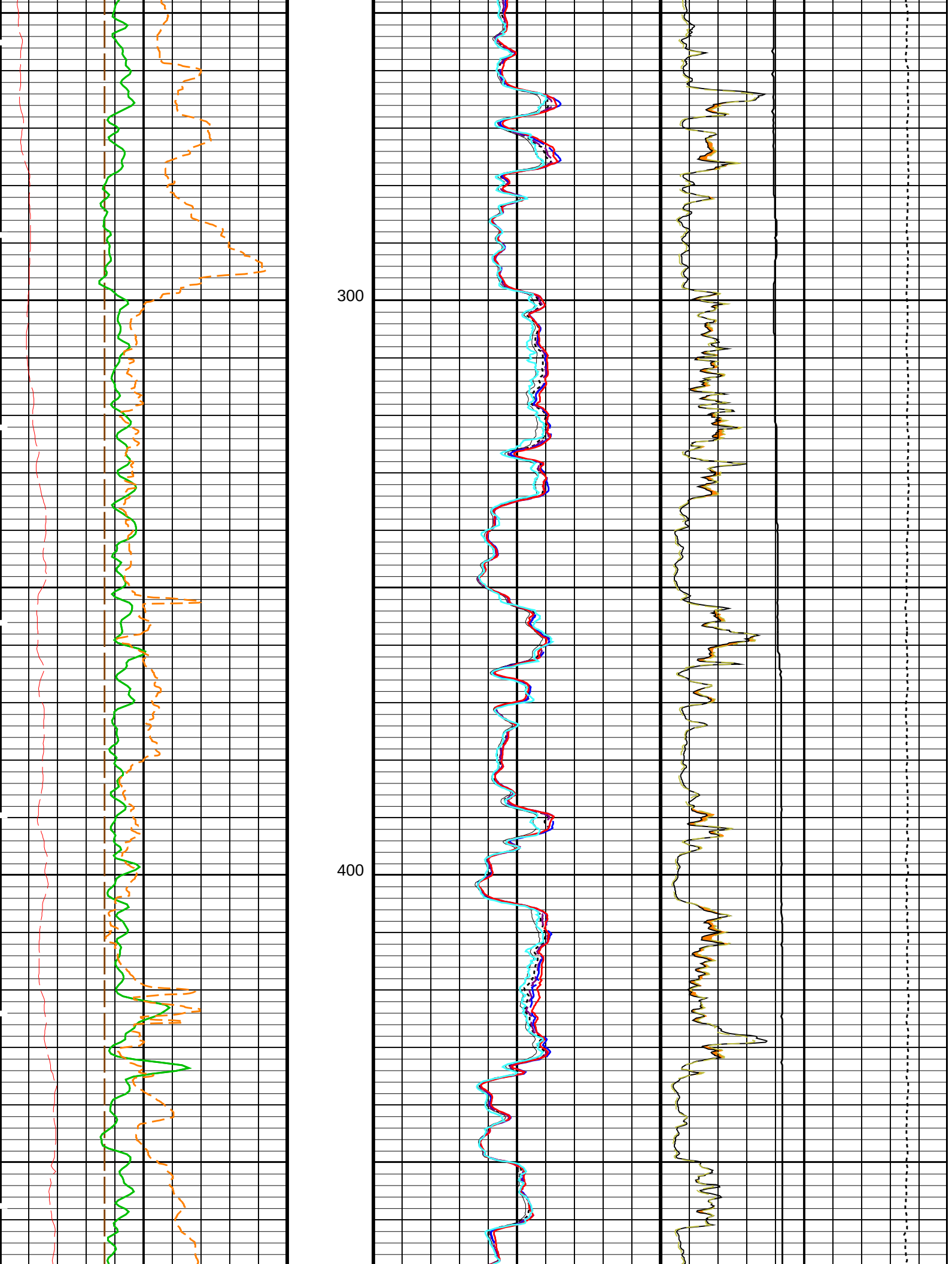
AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	DTC−H	18C0−147

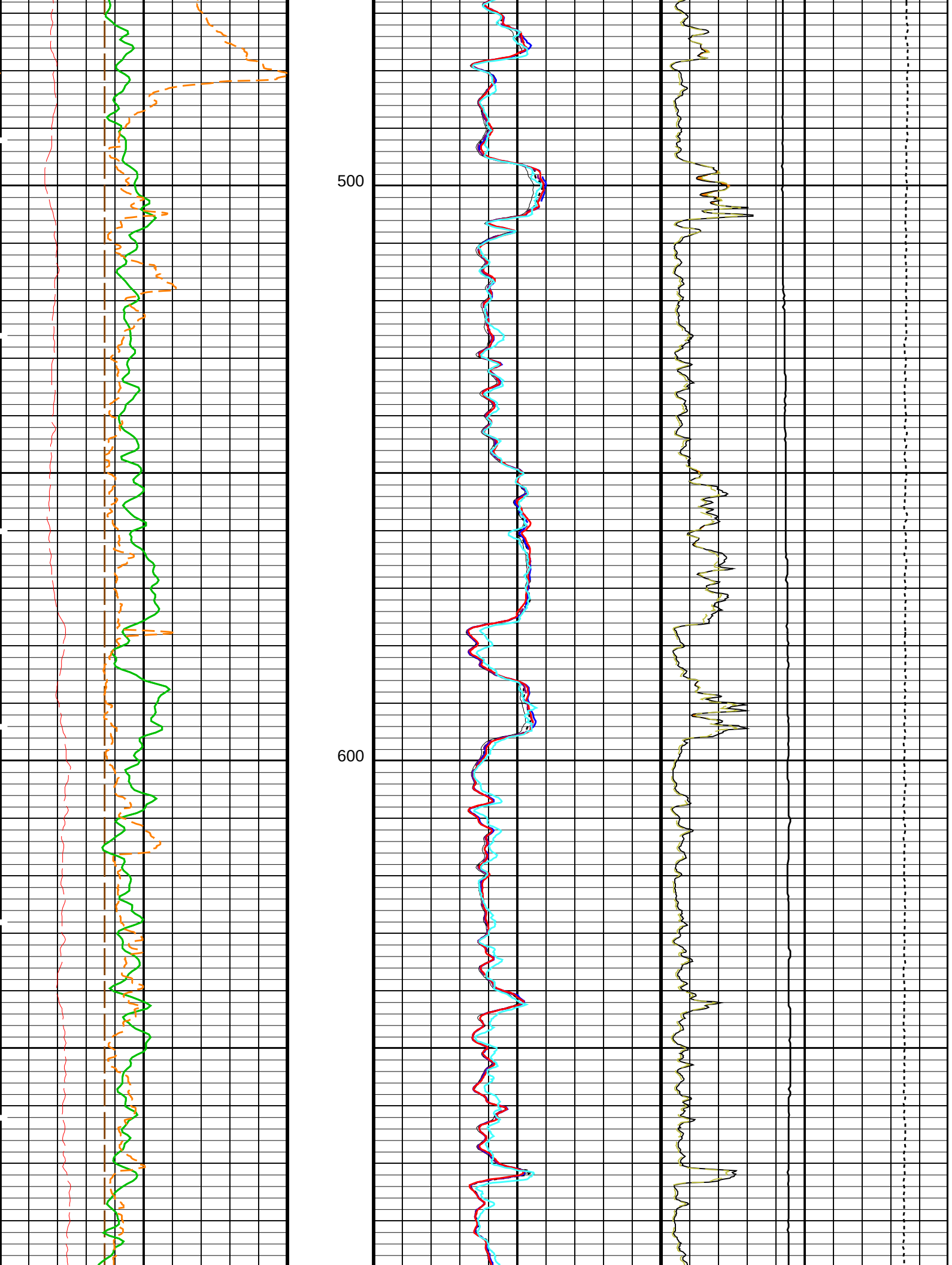
PIP SUMMARY

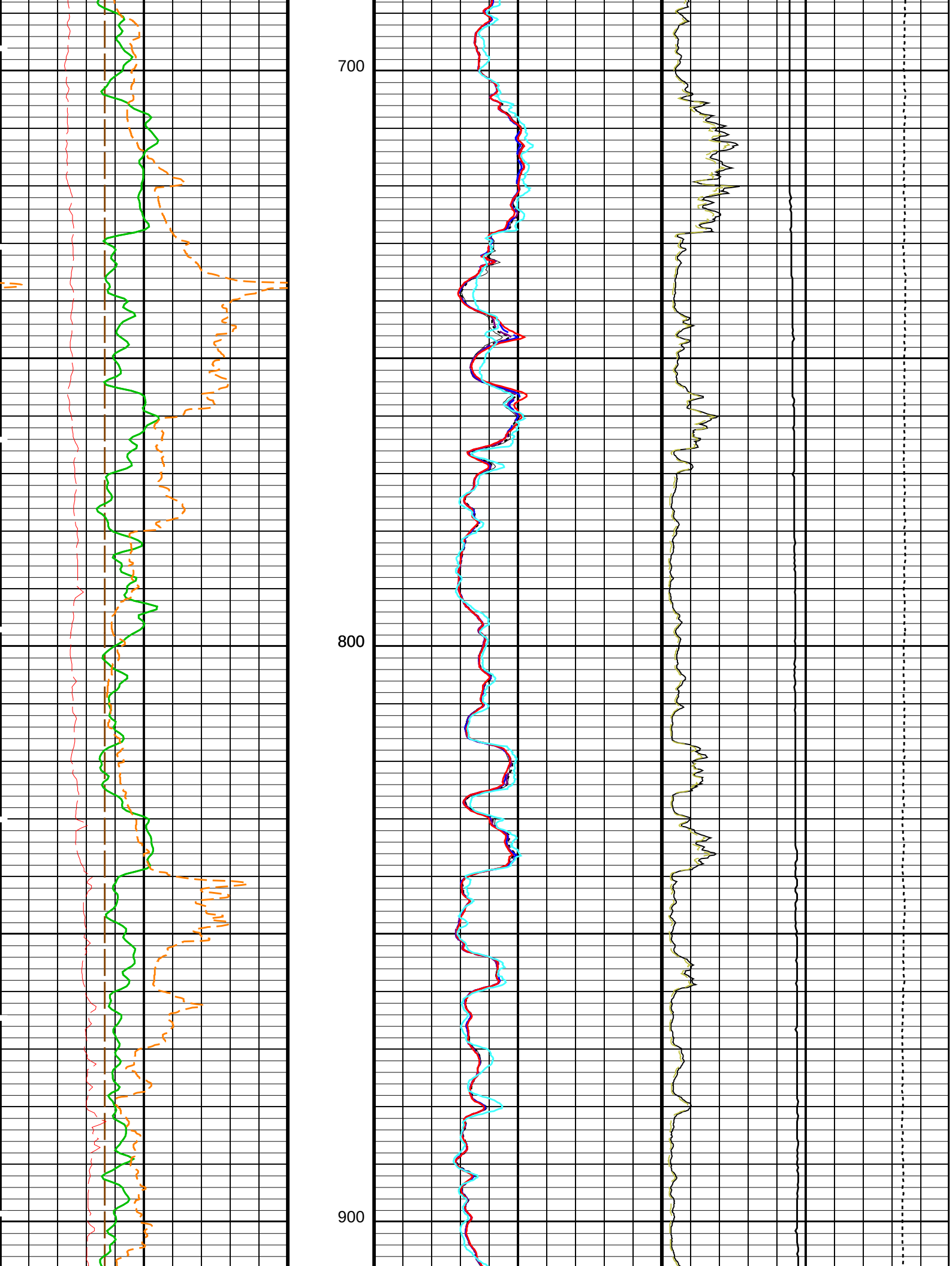
Time Mark Every 60 S

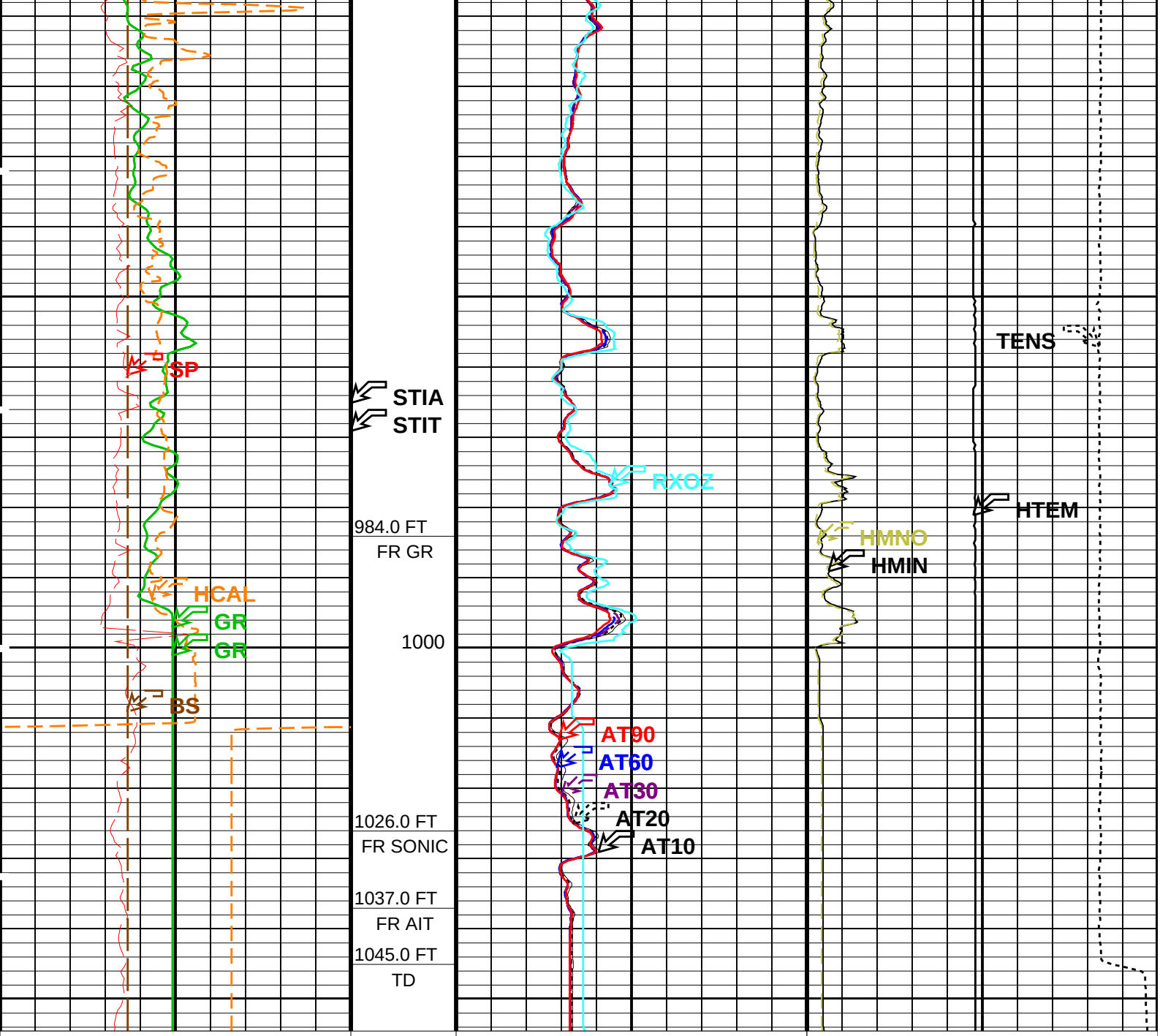
	Micro−Resistivity (RXOZ) 0.2 (OHMM) 2000	
GR BACKUP From LHT1 to GR1	AIT 90 Inch Investigation (AT90) 0.2 (OHMM) 2000	Perm Indicator From HMIN to HMNO
HILT Caliper (HCAL) 7 (IN) 17	AIT 60 Inch Investigation (AT60) 0.2 (OHMM) 2000	Tension (TENS) 10000 (LBF) 0
Gamma Ray (GR) 0 (GAPI) 150	AIT 30 Inch Investigation (AT30) 0.2 (OHMM) 2000	HTC Cartridge Temperature (HTEM) 50 (DEGF) 150


Bit Size (BS)
7
(IN)
17
SP (SP)
−200
(MV)
0
AIT 20 Inch Investigation (AT20)
0.2
(OHMM)
2000
AIT 10 Inch Investigation (AT10)
0.2
(OHMM)
2000
Computed Micro Normal (HMNO)
0
(OHMM)
100
Computed Micro Inverse (HMIN)
0
(OHMM)
100
100
200


300
400


500
600


700
800
900



SP (SP)	AIT 10 Inch Investigation (AT10)	Computed Micro Inverse (HMIN)
−200 (MV) 0	0.2 (OHMM) 2000	0 (OHMM) 100
Bit Size (BS)	AIT 20 Inch Investigation (AT20)	Computed Micro Normal (HMNO)
7 (IN) 17	0.2 (OHMM) 2000	0 (OHMM) 100
Gamma Ray (GR)	AIT 30 Inch Investigation (AT30)	HTC Cartridge Temperature (HTEM)
0 (GAPI) 150	0.2 (OHMM) 2000	50 (DEGF) 150
HILT Caliper (HCAL)	AIT 60 Inch Investigation (AT60)	Tension (TENS)
7 (IN) 17	0.2 (OHMM) 2000	10000 (LBF) 0
GR BACKUP From LHT1 to GR1	AIT 90 Inch Investigation (AT90)	Perm Indicator From HMIN to HMNO
	0.2 (OHMM) 2000	
	Micro−Resistivity (RXOZ)	
	0.2 (OHMM) 2000	

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
ABHM	Array Induction Borehole Correction Mode	2_ComputeStandoff	
ABHV	Array Induction Borehole Correction Code Version Number	900	
ABLM	Array Induction Basic Logs Mode	6_One_Two_and_Four	
ABLV	Array Induction Basic Logs Code Version Number	223	
ACDE	Array Induction Casing Detection Enable	Yes	
ACEN	Array Induction Tool Centering Flag (in Borehole)	Eccentered	
ACSED	Array Induction Casing Shoe Estimated Depth	−50000	FT
AETP	Array Induction Enable Sonde Error Temp&Pres Corr	Yes	
AFRSV	Array Induction Response Set Version for Four ft Resolution	41.70.24.20	
AIGS	Array Induction Select Akima Interpolation Gating	On	
AMRF	Array Induction Mud Resistivity Factor	1	
AORSV	Array Induction Response Set Version for One ft Resolution	41.70.24.20	
ARFV	Array Induction Radial Profiling Code Version Number	701	
ARPV	Array Induction Radial Parametrization Code Version Number	232	
ASTA	Array Induction Tool Standoff	1.5	IN
ATRSV	Array Induction Response Set Version for Two ft Resolution	41.70.24.20	
ATSE	Array Induction Temperature Selection(Sonde Error Correction)	Internal	
AULV	Array Induction User Level Control	Normal	
AZRSV	Array Induction Response Set Version for Z Resolution	00.10.25.00	
BHT	Bottom Hole Temperature (used in calculations)	97	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	83	DEGF
SPNV	SP Next Value	0	MV
	HILTB−FTB: High resolution Integrated Logging Tool−DTS		
BHT	Bottom Hole Temperature (used in calculations)	97	DEGF
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
MPOF	MCFL Processing Operation Mode	ON	
SHT	Surface Hole Temperature	83	DEGF
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	1040.00	FT
TDL	Total Depth − Logger	1045.00	FT
	HOLEV: Integrated Hole/Cement Volume		
BHT	Bottom Hole Temperature (used in calculations)	97	DEGF
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	AITM_RESIST	
GTSE	Generalized Temperature Selection	HSTS_HTEM	
SHT	Surface Hole Temperature	83	DEGF
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
FLEV	Fluid Level	−50000.00	FT
MST	Mud Sample Temperature	64.00	DEGF
PP	Playback Processing	RECOMPUTE	
TD	Total Depth	1045	FT

Format: S5 **Vertical Scale: 5" per 100'** **Graphics File Created: 03−Mar−2010 23:05**

OP System Version: 18C0−147

AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	DTC−H	18C0−147

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03−Mar−2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03−Mar−2010 23:05

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CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Thru Cal Mag. & Phase							
Master: 8−Jan−2010 17:05 Before: 2−Mar−2010 15:43							
Thru Cal Magnitude − 0	0	0.6281	0.6285	N/A	N/A	N/A	V
Thru Cal Magnitude − 1	0	1.286	1.287	N/A	N/A	N/A	V
Thru Cal Magnitude − 2	0	0.6375	0.6377	N/A	N/A	N/A	V
Thru Cal Magnitude − 3	0	0.7193	0.7197	N/A	N/A	N/A	V
Thru Cal Magnitude − 4	0	1.345	1.346	N/A	N/A	N/A	V
Thru Cal Magnitude − 5	0	1.963	1.964	N/A	N/A	N/A	V
Thru Cal Magnitude − 6	0	1.963	1.964	N/A	N/A	N/A	V
Thru Cal Magnitude − 7	0	1.414	1.415	N/A	N/A	N/A	V
Thru Cal Phase − 0	0	182.3	182.9	N/A	N/A	N/A	DEG
Thru Cal Phase − 1	0	181.2	181.8	N/A	N/A	N/A	DEG
Thru Cal Phase − 2	0	177.6	178.2	N/A	N/A	N/A	DEG
Thru Cal Phase − 3	0	176.8	177.4	N/A	N/A	N/A	DEG
Thru Cal Phase − 4	0	170.6	171.1	N/A	N/A	N/A	DEG
Thru Cal Phase − 5	0	168.9	169.5	N/A	N/A	N/A	DEG
Thru Cal Phase − 6	0	168.9	169.5	N/A	N/A	N/A	DEG
Thru Cal Phase − 7	0	168.1	168.6	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Electronics Calibration Check − Auxiliary							
Master: 8−Jan−2010 17:05 Before: 2−Mar−2010 15:43							
Array Induction SPA Plus	991.0	992.6	992.9	N/A	N/A	N/A	MV
Array Induction SPA Zero	0	−0.06404	−0.07205	N/A	N/A	N/A	MV
Array Induction Temperature Pl	0.9170	0.9192	0.9195	N/A	N/A	N/A	V
Array Induction Temperature Ze	0	−0.00006343	−0.00007143	N/A	N/A	N/A	V
Array Induction Tool − M Wellsite Calibration − Test Loop Gain Correction							
Master: 8−Jan−2010 17:05							
Test Loop Gain Correctio − 0	0	1.034	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 1	0	1.019	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 2	0	1.013	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 3	0	1.010	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 4	0	0.9918	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 5	0	1.003	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 6	0	0.9971	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 7	0	1.010	N/A	N/A	N/A	N/A	V
Test Loop Gain Correctio − 0	0	0.6010	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 1	0	0.7319	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 2	0	0.1104	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 3	0	0.1849	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 4	0	0.1431	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 5	0	0.3326	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 6	0	0.5176	N/A	N/A	N/A	N/A	DEG
Test Loop Gain Correctio − 7	0	0.2188	N/A	N/A	N/A	N/A	DEG
Array Induction Tool − M Wellsite Calibration − Sonde Error Correction							
Master: 8−Jan−2010 17:05							
R Sonde Error Correction − 0	0	−25.69	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 1	0	163.5	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 2	0	110.5	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 3	0	58.46	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 4	0	25.99	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 5	0	14.54	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 6	0	9.541	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction − 7	0	−1.904	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 0	0	−1756	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 1	0	−89.36	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 2	0	−179.3	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 3	0	−76.10	N/A	N/A	N/A	N/A	MM/M

X Sonde Error Correction − 4	0	−1.657	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 5	0	−2.662	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 6	0	−1.450	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction − 7	0	9.338	N/A	N/A	N/A	N/A	MM/M

Array Induction Tool − M Wellsite Calibration − Mud Gain Correction
Master: 8−Jan−2010 17:05

Coarse − Mag, Real, Imag − 0	0	0.9539	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 1	0	0.9540	N/A	N/A	N/A	N/A	
Coarse − Mag, Real, Imag − 2	0	0.9540	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 0	0	0.9448	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 1	0	0.9448	N/A	N/A	N/A	N/A	
Fine − Mag, Real, Imag − 2	0	0.9448	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Stab Measurement Summary
Before: 2−Mar−2010 15:46

BS Window Ratio	0.7575	N/A	0.7587	N/A	N/A	N/A	
BS Window Sum	9138	N/A	9194	N/A	N/A	N/A	CPS
SS Window Ratio	0.4856	N/A	0.4831	N/A	N/A	N/A	
SS Window Sum	11930	N/A	11920	N/A	N/A	N/A	CPS
LS Window Ratio	0.2979	N/A	0.2968	N/A	N/A	N/A	
LS Window Sum	1191	N/A	1182	N/A	N/A	N/A	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Photo−multiplier High Voltages Calibrations
Before: 2−Mar−2010 15:46

BS PM High Voltage (Command)	1618	N/A	1631	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1498	N/A	1507	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1357	N/A	1366	N/A	N/A	N/A	V

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Crystal Quality Resolutions Calibration
Before: 2−Mar−2010 15:46

BS Crystal Resolution	12.14	N/A	12.31	N/A	N/A	N/A	%
SS Crystal Resolution	9.569	N/A	9.515	N/A	N/A	N/A	%
LS Crystal Resolution	8.737	N/A	8.674	N/A	N/A	N/A	%

High resolution Integrated Logging Tool−DTS Wellsite Calibration − MCFL Calibration
Before: 2−Mar−2010 15:47

Raw B0 Resistivity	3875	N/A	3851	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3818	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3828	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool−DTS Wellsite Calibration − HILT Caliper Calibration
Before: 2−Mar−2010 15:41

HILT Caliper Zero Measurement	8.000	N/A	7.429	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	11.69	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration
Before: 2−Mar−2010 15:42

Gamma Ray Background	30.00	N/A	64.58	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	169.1	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement
Master: 22−Jan−2010 15:29 Before: 2−Mar−2010 15:43

CNTC Background	25.94	25.94	25.43	N/A	N/A	3.891	CPS
CFTC Background	24.68	24.68	27.65	N/A	N/A	3.702	CPS

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement
Master: 22−Jan−2010 15:29

Thermal Near Corr. (Tank)	5800	5504	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2322	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.370	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 3−Mar−2010 20:19

Z−Axis Acceleration	32.19	N/A	32.10	N/A	N/A	N/A	F/S2

High resolution Integrated Logging Tool−DTS Master Calibration − Inversion results
Master: 5−Feb−2010 22:29

Rho Aluminum	2.596	2.598	−−	−−	−−	−−	G/C3
Rho Magnesium	1.686	1.688	−−	−−	−−	−−	G/C3
Pe Aluminum	2.570	2.518	−−	−−	−−	−−	
Pe Magnesium	2.650	2.636	−−	−−	−−	−−	

High resolution Integrated Logging Tool−DTS Master Calibration − Deviation Summary
Master: 5−Feb−2010 22:29

BS Average Deviation	0	0.4033	−−	−−	−−	−−	%
BS Max Deviation	0	0.9639	−−	−−	−−	−−	%
SS Average Deviation	0	0.3706	−−	−−	−−	−−	%
SS Max Deviation	0	1.078	−−	−−	−−	−−	%
LS Average Deviation	0	0.4415	−−	−−	−−	−−	%
LS Max Deviation	0	1.647	−−	−−	−−	−−	%

The GLS−VJ source activity is acceptable.

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature 55.0 DEGF.
Thermal Housing Size 3.379 IN.
NSR−F serial number 1441

Array Induction Tool − M / Equipment Identification

Primary Equipment:

Rm/SP Bottom Nose	AMRM − A	
Array Induction Sonde	AMIS − A	2562

Auxiliary Equipment:

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6281		0.6100	182.3		197.0
	Before	0.6285			182.9		
1	Master	1.286		1.270	181.2		196.0
	Before	1.287			181.8		
2	Master	0.6375		0.6200	177.6		192.0
	Before	0.6377			178.2		
3	Master	0.7193		0.7000	176.8		191.0
	Before	0.7197			177.4		
4	Master	1.345		1.340	170.6		185.0
	Before	1.346			171.1		
5	Master	1.963		1.960	168.9		182.0
	Before	1.964			169.5		
6	Master	1.963		1.960	168.9		181.0
	Before	1.964			169.5		
7	Master	1.414		1.410	168.1		175.0
	Before	1.415			168.6		
			60.00 % (Minimum) (Nominal) 140.0 % (Maximum)			Nom −60.00 (Minimum) (Nominal) Nom + 60.00 (Maximum)	

Master: 8−Jan−2010 17:05 Before: 2−Mar−2010 15:43

Array Induction Tool − M Wellsite Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value
Master		992.6
Before		992.9
	941.0 (Minimum) 991.0 (Nominal) 1040 (Maximum)	

Phase	Array Induction SPA Zero MV	Value
Master		−0.06404
Before		−0.07205
	−50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	

Phase	Array Induction Temperature Plus V	Value
Master		0.9192
Before		0.9195
	0.8710 (Minimum) 0.9170 (Nominal) 0.9630 (Maximum)	

Phase	Array Induction Temperature Zero V	Value
Master		−6.343E−00
Before		−7.143E−00
	−0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: 8−Jan−2010 17:05 Before: 2−Mar−2010 15:43

Array Induction Tool − M Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V			Value	Test Loop Gain Correction Phase DEG		
0	1.034				0.6010			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
1	1.019				0.7319			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
2	1.013				0.1104			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
3	1.010				0.1849			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
4	0.9918				0.1431			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
5	1.003				0.3326			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
6	0.9971				0.5176			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)
7	1.010				0.2188			
		0.9500 (Minimum)	1.000 (Nominal)	1.050 (Maximum)		−3.000 (Minimum)	0 (Nominal)	3.000 (Maximum)

Master: 8−Jan−2010 17:05

Array Induction Tool − M Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−25.69				−1756			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	163.5				−89.36			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.5				−179.3			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	58.46				−76.10			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.99				−1.657			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.54				−2.662			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.541				−1.450			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.904				9.338			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 8−Jan−2010 17:05

Array Induction Tool − M Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.9539				0.9448			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9540				0.9448			

		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9540				0.9448			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 8−Jan−2010 17:05

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Thru Cal Phase DEG	Nominal
0	Master	0.6281		0.6100	182.3		197.0
1	Master	1.286		1.270	181.2		196.0
2	Master	0.6375		0.6200	177.6		192.0
3	Master	0.7193		0.7000	176.8		191.0
4	Master	1.345		1.340	170.6		185.0
5	Master	1.963		1.960	168.9		182.0
6	Master	1.963		1.960	168.9		181.0
7	Master	1.414		1.410	168.1		175.0
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)		Nom −60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: 8−Jan−2010 17:05

Array Induction Tool − M Master Calibration

Electronics Calibration Check − Auxiliary

Phase	Array Induction SPA Plus MV	Value	Phase	Array Induction SPA Zero MV	Value
Master		992.6	Master		−0.06404
	941.0 (Minimum) / 991.0 (Nominal) / 1040 (Maximum)			−50.00 (Minimum) / 0 (Nominal) / 50.00 (Maximum)	
Phase	Array Induction Temperature Plus V	Value	Phase	Array Induction Temperature Zero V	Value
Master		**0.9192**	**Master**		**−6.343E−00**
	0.8710 (Minimum) / 0.9170 (Nominal) / 0.9630 (Maximum)			−0.05000 (Minimum) / 0 (Nominal) / 0.05000 (Maximum)	

Master: 8−Jan−2010 17:05

Array Induction Tool − M Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Correction Magnitude V	Value	Test Loop Gain Correction Phase DEG
0	1.034		0.6010	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
1	1.019		0.7319	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
2	1.013		0.1104	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
3	1.010		0.1849	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
4	0.9918		0.1431	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
5	1.003		0.3326	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
6	0.9971		0.5176	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)
7	1.010		0.2188	
		0.9500 (Minimum) / 1.000 (Nominal) / 1.050 (Maximum)		−3.000 (Minimum) / 0 (Nominal) / 3.000 (Maximum)

Master: 8−Jan−2010 17:05

Array Induction Tool − M Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M			Value	X Sonde Error Correction MM/M		
0	−25.69				−1756			
		−231.0 (Minimum)	−56.00 (Nominal)	119.0 (Maximum)		−2250 (Minimum)	0 (Nominal)	2250 (Maximum)
1	163.5				−89.36			
		114.0 (Minimum)	159.0 (Nominal)	204.0 (Maximum)		−625.0 (Minimum)	0 (Nominal)	625.0 (Maximum)
2	110.5				−179.3			
		66.00 (Minimum)	111.0 (Nominal)	156.0 (Maximum)		−350.0 (Minimum)	0 (Nominal)	350.0 (Maximum)
3	58.46				−76.10			
		39.00 (Minimum)	64.00 (Nominal)	89.30 (Maximum)		−250.0 (Minimum)	0 (Nominal)	250.0 (Maximum)
4	25.99				−1.657			
		15.00 (Minimum)	25.00 (Nominal)	35.00 (Maximum)		−63.00 (Minimum)	0 (Nominal)	63.00 (Maximum)
5	14.54				−2.662			
		4.000 (Minimum)	14.00 (Nominal)	24.00 (Maximum)		−50.00 (Minimum)	0 (Nominal)	50.00 (Maximum)
6	9.541				−1.450			
		5.000 (Minimum)	10.00 (Nominal)	15.00 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)
7	−1.904				9.338			
		−5.000 (Minimum)	0 (Nominal)	5.000 (Maximum)		−30.00 (Minimum)	0 (Nominal)	30.00 (Maximum)

Master: 8−Jan−2010 17:05

Array Induction Tool − M Master Calibration

Mud Gain Correction

Idx	Value	Coarse − Mag, Real, Imag			Value	Fine − Mag, Real, Imag		
0	0.9539				0.9448			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
1	0.9540				0.9448			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)
2	0.9540				0.9448			
		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)		0.8000 (Minimum)	1.000 (Nominal)	1.200 (Maximum)

Master: 8−Jan−2010 17:05

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT high−Resolution Mechanical Sonde	HRMS − B	4773
HILT Rxo Gamma−ray Device	HRGD − B	829
HILT Micro Cylindrically Focused Log Dev	MCFL −	
GR Logging Source	GLS − VJ	5375
HILT High Res. Control Cartridge	HRCC − B	4769
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	4832
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	
Auxiliary Equipment:		
HGNS Housing	HGNH −	3949
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U	61

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before				0.7587	Before				0.4831	Before				0.2968
	0.7196 (Minimum)	0.7575 (Nominal)	0.7954 (Maximum)			0.4613 (Minimum)	0.4856 (Nominal)	0.5099 (Maximum)			0.2830 (Minimum)	0.2979 (Nominal)	0.3128 (Maximum)	

Phase	BS Window Sum CPS	Value	Phase	SS Window Sum CPS	Value	Phase	LS Window Sum CPS	Value
Before		9194	Before		11920	Before		1182
	8681 (Minimum) 9138 (Nominal) 9595 (Maximum)			11330 (Minimum) 11930 (Nominal) 12530 (Maximum)			1132 (Minimum) 1191 (Nominal) 1251 (Maximum)	

Before: 2−Mar−2010 15:46

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Photo−multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V	Value	Phase	SS PM High Voltage (Command) V	Value	Phase	LS PM High Voltage (Command) V	Value
Before		1631	Before		1507	Before		1366
	1518 (Minimum) 1618 (Nominal) 1718 (Maximum)			1398 (Minimum) 1498 (Nominal) 1598 (Maximum)			1257 (Minimum) 1357 (Nominal) 1457 (Maximum)	

Before: 2−Mar−2010 15:46

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %	Value	Phase	SS Crystal Resolution %	Value	Phase	LS Crystal Resolution %	Value
Before		12.31	Before		9.515	Before		8.674
	11.14 (Minimum) 12.14 (Nominal) 13.14 (Maximum)			8.569 (Minimum) 9.569 (Nominal) 10.57 (Maximum)			7.737 (Minimum) 8.737 (Nominal) 9.737 (Maximum)	

Before: 2−Mar−2010 15:46

High resolution Integrated Logging Tool−DTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM	Value	Phase	Raw B1 Resistivity OHMM	Value	Phase	Raw B2 Resistivity OHMM	Value
Before		3851	Before		3818	Before		3828
	3565 (Minimum) 3875 (Nominal) 4185 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)			3524 (Minimum) 3830 (Nominal) 4136 (Maximum)	

Before: 2−Mar−2010 15:47

High resolution Integrated Logging Tool−DTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN	Value	Phase	HILT Caliper Plus Measurement IN	Value
Before		7.429	Before		11.69
	6.000 (Minimum) 8.000 (Nominal) 10.00 (Maximum)			9.000 (Minimum) 12.00 (Nominal) 15.00 (Maximum)	

Before: 2−Mar−2010 15:41

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		64.58	Before		169.1
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 2−Mar−2010 15:42

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.94	Master		24.68
Before		25.43	Before		27.65
	5.000 (Minimum) 25.94 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 24.68 (Nominal) 40.00 (Maximum)	

Master: 22−Jan−2010 15:29 Before: 2−Mar−2010 15:43

High resolution Integrated Logging Tool−DTS Wellsite Calibration

Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5504	Master		2322	Master		2.370
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 22−Jan−2010 15:29

High resolution Integrated Logging Tool−DTS Wellsite Calibration

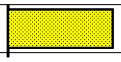
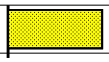
Wellsite Calibration

Accelerometer Calibration			
Phase	Z−Axis Acceleration F/S2		Value
Before			32.10
	31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 3−Mar−2010 20:19

High resolution Integrated Logging Tool−DTS Master Calibration								
Inversion results								
Phase	Rho Aluminum G/C3		Value	Phase	Rho Magnesium G/C3		Value	
Master			2.598	Master			1.688	
	2.586 (Minimum)	2.596 (Nominal)	2.606 (Maximum)		1.676 (Minimum)	1.686 (Nominal)	1.696 (Maximum)	
Phase	Pe Aluminum		Value	Phase	Pe Magnesium		Value	
Master			2.518	Master			2.636	
	2.470 (Minimum)	2.570 (Nominal)	2.670 (Maximum)		2.550 (Minimum)	2.650 (Nominal)	2.750 (Maximum)	

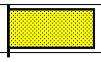
Master: 5−Feb−2010 22:29

High resolution Integrated Logging Tool−DTS Master Calibration											
Deviation Summary											
Phase	BS Average Deviation %		Value	Phase	SS Average Deviation %		Value	Phase	LS Average Deviation %		Value
Master			0.4033	Master			0.3706	Master			0.4415
	−0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)		−1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)		−1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	BS Max Deviation %		Value	Phase	SS Max Deviation %		Value	Phase	LS Max Deviation %		Value
Master			0.9639	Master			1.078	Master			1.647
	−1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)		−2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)		−3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

Master: 5−Feb−2010 22:29

High resolution Integrated Logging Tool−DTS Master Calibration								
Zero Measurement								
Phase	CNTC Background CPS		Value	Phase	CFTC Background CPS		Value	
Master			25.94	Master			24.68	
	5.000 (Minimum)	25.94 (Nominal)	40.00 (Maximum)		5.000 (Minimum)	24.68 (Nominal)	40.00 (Maximum)	

Master: 22−Jan−2010 15:29

High resolution Integrated Logging Tool−DTS Master Calibration											
Tank Measurement											
Phase	Thermal Near Corr. (Tank) CPS		Value	Phase	Thermal Far Corr. (Tank) CPS		Value	Phase	CNTC/CFTC (Tank)		Value
Master			5504	Master			2322	Master			2.370
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)		1900 (Minimum)	2400 (Nominal)	2900 (Maximum)		2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 22−Jan−2010 15:29

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC−H Auxiliary Cartridge	DTCH − A	
DTC−H Telemetry Cartridge	DTCH − A	9410
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH − KC	10500

Company: **WDC Exploration & Wells**

Schlumberger

Well: **Esposti Park 1**
Field: **Windsor**
County: **Sonoma**
State: **California**

ARRAY INDUCTION / GR / SP
MCFL / CALIPER

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Bluebird Ct Well #2**

Field: **Windsor**

County: **Sonoma** State: **California**

DIRECTIONAL SURVEY

County: Sonoma
Field: Windsor
Location: LAT N 38.53.91
Well: Bluebird Ct Well #2
Company: WDC Exploration & Wells

LOCATION

LAT N 38.53.91
LONG W 122.80.13

Elev.: K.B.
G.L.
D.F.

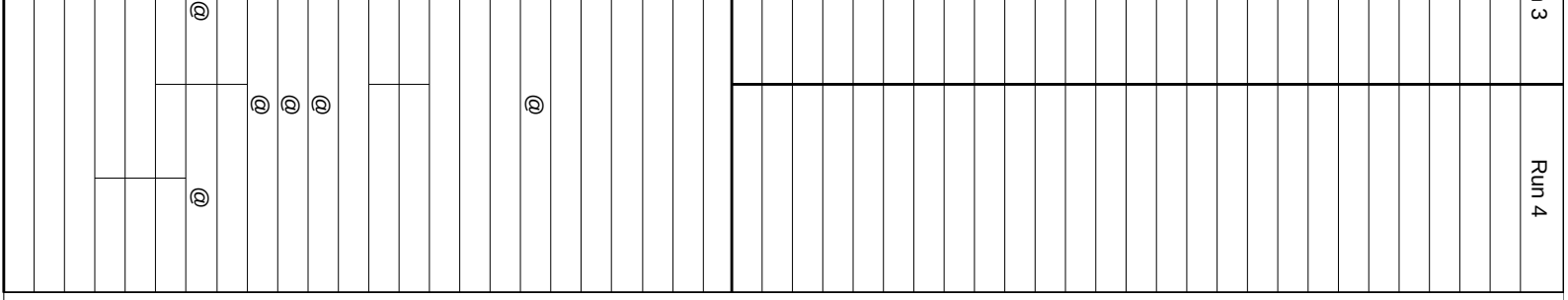
Permanent Datum: GROUND LEVEL
Log Measured From: GROUND LEVEL
Drilling Measured From: GROUND LEVEL

Elev.: _____ above Perm. Datum

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run
Logging Date	9−Apr−2010		
Run Number	ONE		
Depth Driller	867 ft		
Schlumberger Depth	863 ft		
Bottom Log Interval	855 ft		
Top Log Interval	60 ft		
Casing Driller Size @ Depth	11.750 in @ 60 ft	@	@
Casing Schlumberger	60 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	1.110 ohm.m @ 71 degF	@	@
RMF @ Measured Temperature	2.890 ohm.m @ 71 degF	@	@
RMC @ Measured Temperature	3.430 ohm.m @ 71 degF	@	@
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	0.861 @ 93 / 2.241 @ 93	@ / @	@ / @
Maximum Recorded Temperatures	93 degF		
Circulation Stopped / Time	9−Apr−2010 / 12:30		
Logger On Bottom / Time	9−Apr−2010 / 1400		
Unit Number / Location	2223 / BAKERSFIELD		
Recorded By	JARROD LONG		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time	/		
Logger On Bottom / Time	/		
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 9−APR−2010 16:49:53

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46ZV XS
Serial Number:	6106	Serial Number:	1214	Serial Number:	708251
Calibration Date:	4−JAN−2010	Calibration Date:	21−MAR−2010	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46ZV XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−9	Calibration RMS:	16	Rig Type:	LAND
Wheel Correction 2:	−7	Calibration Peak Error:	30		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	1.00 FT
Tool Zero Check At Surface:	−0.10 FT

Depth Control Remarks

1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES FOLLOWED.
2. IDW USED AS PRIMARY DEPTH REFERENCE, Z−CHART USED AS SECONDARY.
3.
4.
5.
6.

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: AIT−CAL−SP−GR−MCFL	OS1:
OS2: BHC	OS2:
OS3: CMR	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
FIRST LOG IN WELL	
TWO 1.5" STANDOFFS RAN ON INDUCTION TOOL	
TWO 0.125" WEAR RINGS RAN ON NEUTRON TOOL	
3 CMEZ RAN FOR SONIC CENTRALIZATION	
MATRIX: SANDSTONE DENSITY: 2.65 G/CC	
MAX TEMP = 93 DEGF	
ICV NOT NEEDED BY CLIENT	

MUD CHLORIDES, PH, AND FLUID LOSS DATA NOT GIVEN BY CLIENT	
AVAILABLE LOCATION DATA PROVIDED IN HEADER	
NO API# PROVIDED	
CREW: J.CORONADO, J.BAUTISTA	
THANK YOU FOR CHOOSING SCHLUMBERGER!	

RUN 1		RUN 2	
SERVICE ORDER #:	AUYB−00169	SERVICE ORDER #:	
PROGRAM VERSION:	17C0−154	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

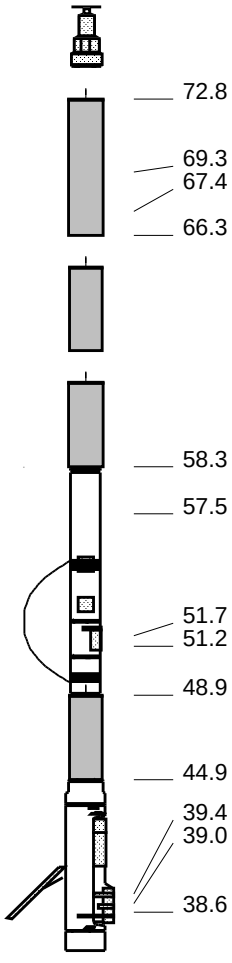
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
NCS−VB
WITM (EDTS)−A

DOWNHOLE EQUIPMENT



LEH−QT — 75.7
LEH−QT 2190

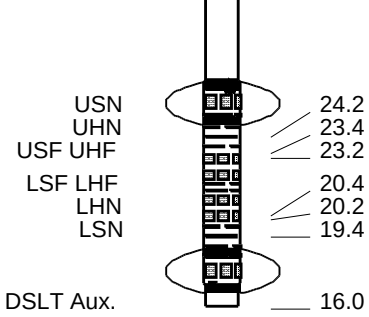
EDTC−B — 72.8
EDTH−B
EDTC−B
EDTG−A/B

AH−SPACER — 66.3
AH−SPACER 753

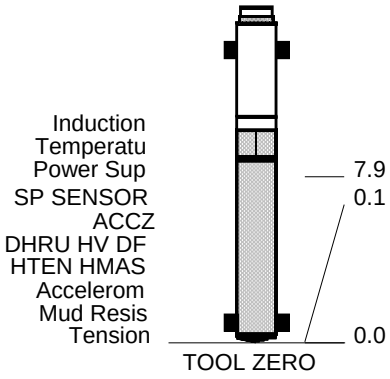
GPIT−F — 62.3
GPIH−B 1929
GPIC−F 958

HILTB−FTB — 58.3
HGNSD−B 3972
HMCA
HGNH 3738
NLS−KL
NSR−F
HACCZ
HCNT
HGR
HRCC−B 1919
HRMS−B 4781
HRGD−B 4837
GLS−VJ
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
BOW−SPR
NPV−N

DSLT−FTB — 36.6
DSLC−B 8134
ECH−KH 8634
SLS−W 330



AIT−M
AMIS−A 1057
AMRM−A

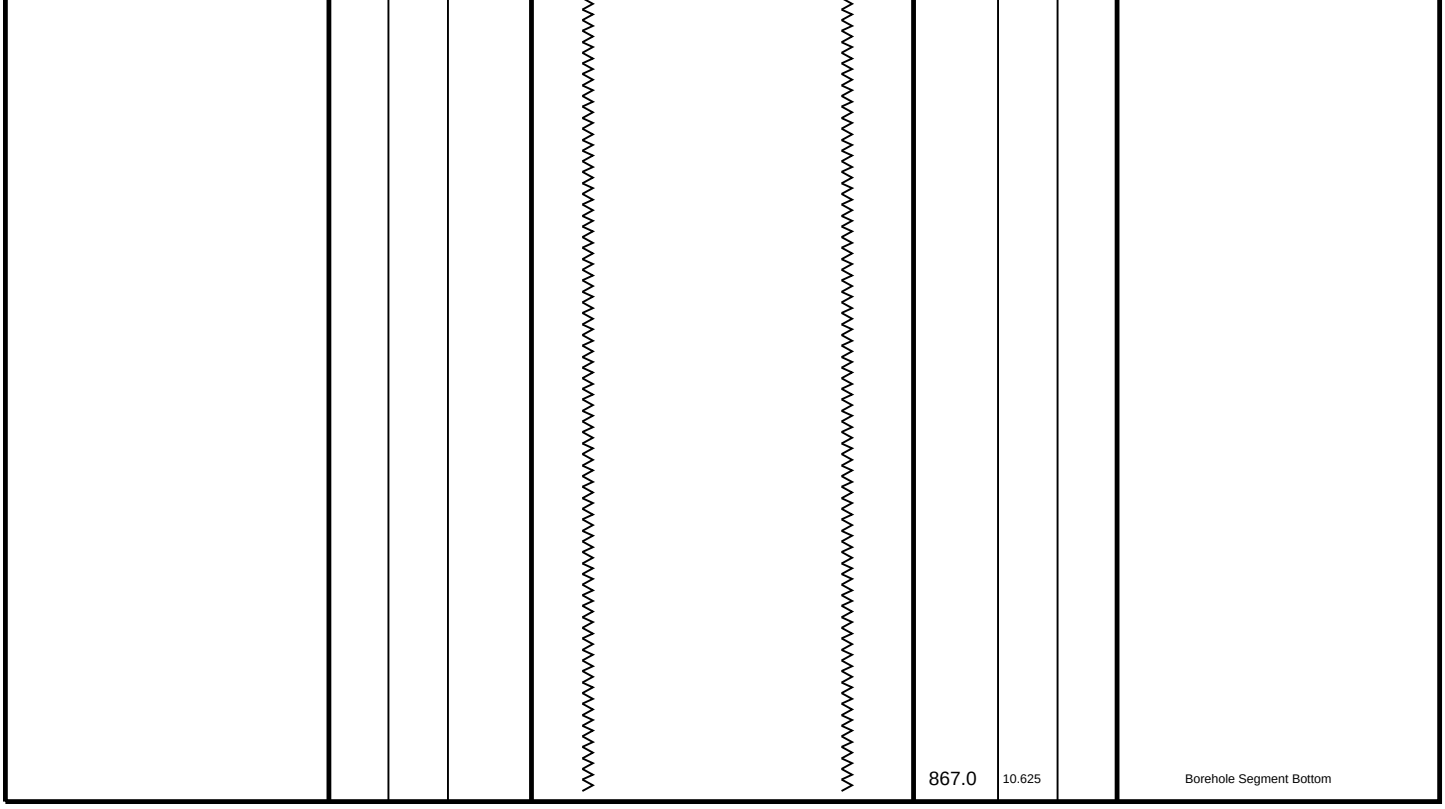


16.0
1.5 IN
Standoff

1.5 IN
Standoff

MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					60.0	11.750		Casing Shoe
					60.0	10.625		Borehole Segment



ALL DEPTHS ARE
DRILLERS DEPTHS

Schlumberger

DIRECTIONAL SURVEY

MAXIS Field Log

Directional Survey Manually−Entered Inclinometry Summary

Tie In Point :	Measured Depth	True Vertical Depth	North Departure	East Departure
	0.00 FT	0.00 FT	0.00 FT	0.00 FT

Depth	Deviation	Azimuth	True Vertical Depth	North Departure	East Departure
45.00 FT	0.20 DEG	291.28 DEG	45.00 FT	0.06 FT	−0.14 FT
50.00 FT	0.18 DEG	284.49 DEG	50.00 FT	0.06 FT	−0.16 FT
55.00 FT	0.18 DEG	277.19 DEG	55.00 FT	0.06 FT	−0.17 FT
60.00 FT	0.20 DEG	337.17 DEG	60.00 FT	0.07 FT	−0.19 FT
65.00 FT	0.32 DEG	328.22 DEG	65.00 FT	0.09 FT	−0.20 FT
70.00 FT	0.23 DEG	300.03 DEG	70.00 FT	0.11 FT	−0.22 FT
75.00 FT	0.17 DEG	265.62 DEG	75.00 FT	0.12 FT	−0.23 FT
80.00 FT	0.10 DEG	193.97 DEG	80.00 FT	0.11 FT	−0.24 FT

85.00 FT	0.17 DEG	160.32 DEG	85.00 FT	0.10 FT	−0.24 FT
90.00 FT	0.19 DEG	155.82 DEG	90.00 FT	0.08 FT	−0.23 FT
95.00 FT	0.21 DEG	149.34 DEG	95.00 FT	0.07 FT	−0.23 FT
100.00 FT	0.20 DEG	130.03 DEG	100.00 FT	0.05 FT	−0.21 FT
105.00 FT	0.18 DEG	121.84 DEG	105.00 FT	0.04 FT	−0.20 FT
110.00 FT	0.13 DEG	169.03 DEG	110.00 FT	0.03 FT	−0.19 FT
115.00 FT	0.15 DEG	211.13 DEG	115.00 FT	0.02 FT	−0.20 FT
120.00 FT	0.06 DEG	269.49 DEG	120.00 FT	0.02 FT	−0.20 FT
125.00 FT	0.17 DEG	287.34 DEG	125.00 FT	0.02 FT	−0.21 FT
130.00 FT	0.24 DEG	265.84 DEG	130.00 FT	0.02 FT	−0.23 FT
135.00 FT	0.23 DEG	250.45 DEG	135.00 FT	0.02 FT	−0.25 FT
140.00 FT	0.26 DEG	239.52 DEG	140.00 FT	0.01 FT	−0.27 FT
145.00 FT	0.24 DEG	235.63 DEG	145.00 FT	−0.01 FT	−0.29 FT
150.00 FT	0.32 DEG	212.02 DEG	150.00 FT	−0.02 FT	−0.30 FT
155.00 FT	0.41 DEG	202.33 DEG	155.00 FT	−0.05 FT	−0.32 FT
160.00 FT	0.40 DEG	199.16 DEG	160.00 FT	−0.08 FT	−0.33 FT
165.00 FT	0.44 DEG	200.84 DEG	165.00 FT	−0.12 FT	−0.34 FT
170.00 FT	0.50 DEG	196.74 DEG	170.00 FT	−0.16 FT	−0.36 FT
175.00 FT	0.60 DEG	192.88 DEG	175.00 FT	−0.20 FT	−0.37 FT
180.00 FT	0.69 DEG	188.80 DEG	180.00 FT	−0.26 FT	−0.38 FT
185.00 FT	0.76 DEG	188.19 DEG	185.00 FT	−0.32 FT	−0.39 FT
190.00 FT	0.81 DEG	188.53 DEG	190.00 FT	−0.39 FT	−0.40 FT
195.00 FT	0.93 DEG	185.18 DEG	195.00 FT	−0.47 FT	−0.41 FT
200.00 FT	0.92 DEG	183.93 DEG	200.00 FT	−0.55 FT	−0.42 FT
205.00 FT	0.88 DEG	182.89 DEG	205.00 FT	−0.62 FT	−0.42 FT
210.00 FT	0.88 DEG	182.70 DEG	209.99 FT	−0.70 FT	−0.42 FT
215.00 FT	0.80 DEG	181.99 DEG	214.99 FT	−0.77 FT	−0.43 FT
220.00 FT	0.81 DEG	180.98 DEG	219.99 FT	−0.85 FT	−0.43 FT
225.00 FT	0.89 DEG	181.27 DEG	224.99 FT	−0.92 FT	−0.43 FT
230.00 FT	0.92 DEG	180.19 DEG	229.99 FT	−1.00 FT	−0.43 FT
235.00 FT	0.93 DEG	179.46 DEG	234.99 FT	−1.08 FT	−0.43 FT
240.00 FT	1.00 DEG	180.26 DEG	239.99 FT	−1.16 FT	−0.43 FT
245.00 FT	1.02 DEG	180.28 DEG	244.99 FT	−1.25 FT	−0.43 FT
250.00 FT	1.05 DEG	181.08 DEG	249.99 FT	−1.34 FT	−0.43 FT
255.00 FT	1.07 DEG	182.40 DEG	254.99 FT	−1.43 FT	−0.43 FT
260.00 FT	1.04 DEG	183.54 DEG	259.99 FT	−1.53 FT	−0.44 FT
265.00 FT	1.01 DEG	184.57 DEG	264.99 FT	−1.62 FT	−0.45 FT
270.00 FT	0.93 DEG	183.17 DEG	269.99 FT	−1.70 FT	−0.45 FT
275.00 FT	0.91 DEG	179.62 DEG	274.99 FT	−1.78 FT	−0.45 FT
280.00 FT	0.92 DEG	179.34 DEG	279.99 FT	−1.86 FT	−0.45 FT
285.00 FT	0.92 DEG	176.43 DEG	284.98 FT	−1.94 FT	−0.45 FT
290.00 FT	0.90 DEG	176.51 DEG	289.98 FT	−2.02 FT	−0.44 FT
295.00 FT	0.90 DEG	179.03 DEG	294.98 FT	−2.10 FT	−0.44 FT
300.00 FT	0.94 DEG	181.43 DEG	299.98 FT	−2.18 FT	−0.44 FT
305.00 FT	0.95 DEG	182.24 DEG	304.98 FT	−2.26 FT	−0.44 FT
310.00 FT	0.93 DEG	181.58 DEG	309.98 FT	−2.34 FT	−0.45 FT
315.00 FT	0.92 DEG	179.15 DEG	314.98 FT	−2.42 FT	−0.45 FT
320.00 FT	0.90 DEG	177.18 DEG	319.98 FT	−2.50 FT	−0.45 FT
325.00 FT	0.87 DEG	175.03 DEG	324.98 FT	−2.58 FT	−0.44 FT
330.00 FT	0.85 DEG	176.30 DEG	329.98 FT	−2.65 FT	−0.43 FT
335.00 FT	0.81 DEG	175.33 DEG	334.98 FT	−2.72 FT	−0.43 FT
340.00 FT	0.71 DEG	174.38 DEG	339.98 FT	−2.79 FT	−0.42 FT
345.00 FT	0.62 DEG	176.73 DEG	344.98 FT	−2.85 FT	−0.42 FT
350.00 FT	0.60 DEG	182.15 DEG	349.98 FT	−2.90 FT	−0.42 FT
355.00 FT	0.56 DEG	186.59 DEG	354.98 FT	−2.95 FT	−0.42 FT

360.00 FT	0.44 DEG	188.51 DEG	359.98 FT	−3.00 FT	−0.43 FT
365.00 FT	0.36 DEG	188.45 DEG	364.98 FT	−3.03 FT	−0.43 FT
370.00 FT	0.32 DEG	193.56 DEG	369.98 FT	−3.06 FT	−0.44 FT
375.00 FT	0.25 DEG	195.28 DEG	374.98 FT	−3.08 FT	−0.45 FT
380.00 FT	0.15 DEG	201.43 DEG	379.98 FT	−3.10 FT	−0.45 FT
385.00 FT	0.13 DEG	201.23 DEG	384.98 FT	−3.11 FT	−0.46 FT
390.00 FT	0.12 DEG	189.31 DEG	389.98 FT	−3.12 FT	−0.46 FT
395.00 FT	0.09 DEG	194.07 DEG	394.98 FT	−3.13 FT	−0.46 FT
400.00 FT	0.05 DEG	237.18 DEG	399.98 FT	−3.14 FT	−0.46 FT
405.00 FT	0.05 DEG	319.67 DEG	404.98 FT	−3.14 FT	−0.47 FT
410.00 FT	0.05 DEG	316.08 DEG	409.98 FT	−3.13 FT	−0.47 FT
415.00 FT	0.12 DEG	294.75 DEG	414.98 FT	−3.13 FT	−0.48 FT
420.00 FT	0.24 DEG	293.62 DEG	419.98 FT	−3.12 FT	−0.49 FT
425.00 FT	0.29 DEG	292.71 DEG	424.98 FT	−3.11 FT	−0.51 FT
430.00 FT	0.33 DEG	289.83 DEG	429.98 FT	−3.10 FT	−0.54 FT
435.00 FT	0.32 DEG	284.85 DEG	434.98 FT	−3.09 FT	−0.56 FT
440.00 FT	0.34 DEG	282.46 DEG	439.98 FT	−3.09 FT	−0.59 FT
445.00 FT	0.37 DEG	281.87 DEG	444.98 FT	−3.08 FT	−0.62 FT
450.00 FT	0.33 DEG	272.66 DEG	449.98 FT	−3.08 FT	−0.65 FT
455.00 FT	0.32 DEG	267.09 DEG	454.98 FT	−3.08 FT	−0.68 FT
460.00 FT	0.34 DEG	265.59 DEG	459.98 FT	−3.08 FT	−0.71 FT
465.00 FT	0.36 DEG	269.56 DEG	464.98 FT	−3.08 FT	−0.74 FT
470.00 FT	0.39 DEG	273.99 DEG	469.98 FT	−3.08 FT	−0.77 FT
475.00 FT	0.43 DEG	279.74 DEG	474.98 FT	−3.08 FT	−0.81 FT
480.00 FT	0.43 DEG	279.96 DEG	479.98 FT	−3.07 FT	−0.84 FT
485.00 FT	0.43 DEG	277.24 DEG	484.98 FT	−3.06 FT	−0.88 FT
490.00 FT	0.44 DEG	280.01 DEG	489.97 FT	−3.06 FT	−0.92 FT
495.00 FT	**0.43 DEG**	**281.95 DEG**	**494.97 FT**	**−3.05 FT**	**−0.96 FT**
500.00 FT	0.42 DEG	282.08 DEG	499.97 FT	−3.04 FT	−0.99 FT
505.00 FT	0.44 DEG	285.38 DEG	504.97 FT	−3.03 FT	−1.03 FT
510.00 FT	0.46 DEG	279.71 DEG	509.97 FT	−3.03 FT	−1.07 FT
515.00 FT	0.47 DEG	276.07 DEG	514.97 FT	−3.02 FT	−1.11 FT
520.00 FT	0.45 DEG	276.09 DEG	519.97 FT	−3.02 FT	−1.15 FT
525.00 FT	0.47 DEG	272.65 DEG	524.97 FT	−3.01 FT	−1.19 FT
530.00 FT	0.48 DEG	270.12 DEG	529.97 FT	−3.01 FT	−1.23 FT
535.00 FT	0.42 DEG	276.68 DEG	534.97 FT	−3.01 FT	−1.27 FT
540.00 FT	0.41 DEG	278.69 DEG	539.97 FT	−3.00 FT	−1.30 FT
545.00 FT	0.46 DEG	272.02 DEG	544.97 FT	−3.00 FT	−1.34 FT
550.00 FT	0.45 DEG	259.92 DEG	549.97 FT	−3.00 FT	−1.38 FT
555.00 FT	0.49 DEG	263.77 DEG	554.97 FT	−3.01 FT	−1.42 FT
560.00 FT	0.53 DEG	268.15 DEG	559.97 FT	−3.01 FT	−1.46 FT
565.00 FT	0.56 DEG	274.90 DEG	564.97 FT	−3.01 FT	−1.51 FT
570.00 FT	0.56 DEG	276.90 DEG	569.97 FT	−3.01 FT	−1.56 FT
575.00 FT	0.56 DEG	277.95 DEG	574.97 FT	−3.00 FT	−1.61 FT
580.00 FT	0.57 DEG	273.98 DEG	579.97 FT	−2.99 FT	−1.66 FT
585.00 FT	0.60 DEG	269.34 DEG	584.97 FT	−2.99 FT	−1.71 FT
590.00 FT	0.60 DEG	265.72 DEG	589.97 FT	−3.00 FT	−1.76 FT
595.00 FT	0.58 DEG	270.93 DEG	594.97 FT	−3.00 FT	−1.81 FT
600.00 FT	0.55 DEG	277.54 DEG	599.97 FT	−2.99 FT	−1.86 FT
605.00 FT	0.56 DEG	279.72 DEG	604.97 FT	−2.99 FT	−1.91 FT
610.00 FT	0.57 DEG	282.61 DEG	609.97 FT	−2.98 FT	−1.96 FT
615.00 FT	0.58 DEG	283.57 DEG	614.97 FT	−2.97 FT	−2.01 FT
620.00 FT	0.59 DEG	283.63 DEG	619.97 FT	−2.95 FT	−2.06 FT
625.00 FT	0.58 DEG	283.89 DEG	624.97 FT	−2.94 FT	−2.11 FT
630.00 FT	0.57 DEG	283.53 DEG	629.97 FT	−2.93 FT	−2.15 FT

635.00 FT	0.56 DEG	282.24 DEG	634.97 FT	−2.92 FT	−2.20 FT
640.00 FT	0.52 DEG	280.28 DEG	639.97 FT	−2.91 FT	−2.25 FT
645.00 FT	0.51 DEG	276.23 DEG	644.97 FT	−2.90 FT	−2.29 FT
650.00 FT	0.54 DEG	276.33 DEG	649.97 FT	−2.90 FT	−2.34 FT
655.00 FT	0.57 DEG	271.80 DEG	654.97 FT	−2.89 FT	−2.39 FT
660.00 FT	0.56 DEG	270.17 DEG	659.97 FT	−2.89 FT	−2.44 FT
665.00 FT	0.55 DEG	274.48 DEG	664.97 FT	−2.89 FT	−2.48 FT
670.00 FT	0.57 DEG	273.65 DEG	669.97 FT	−2.89 FT	−2.53 FT
675.00 FT	0.54 DEG	271.15 DEG	674.97 FT	−2.88 FT	−2.58 FT
680.00 FT	0.53 DEG	269.32 DEG	679.97 FT	−2.88 FT	−2.63 FT
685.00 FT	0.55 DEG	271.64 DEG	684.97 FT	−2.88 FT	−2.67 FT
690.00 FT	0.57 DEG	263.44 DEG	689.97 FT	−2.89 FT	−2.72 FT
695.00 FT	0.61 DEG	262.13 DEG	694.97 FT	−2.89 FT	−2.77 FT
700.00 FT	0.57 DEG	264.75 DEG	699.97 FT	−2.90 FT	−2.83 FT
705.00 FT	0.59 DEG	258.39 DEG	704.97 FT	−2.90 FT	−2.88 FT
710.00 FT	0.58 DEG	250.82 DEG	709.97 FT	−2.92 FT	−2.92 FT
715.00 FT	0.57 DEG	247.59 DEG	714.97 FT	−2.94 FT	−2.97 FT
720.00 FT	0.62 DEG	243.59 DEG	719.96 FT	−2.96 FT	−3.02 FT
725.00 FT	0.63 DEG	242.46 DEG	724.96 FT	−2.98 FT	−3.07 FT
730.00 FT	0.53 DEG	243.30 DEG	729.96 FT	−3.01 FT	−3.11 FT
735.00 FT	0.54 DEG	243.02 DEG	734.96 FT	−3.03 FT	−3.15 FT
740.00 FT	0.58 DEG	243.55 DEG	739.96 FT	−3.05 FT	−3.20 FT
745.00 FT	0.59 DEG	244.51 DEG	744.96 FT	−3.07 FT	−3.24 FT
750.00 FT	0.59 DEG	247.00 DEG	749.96 FT	−3.09 FT	−3.29 FT
755.00 FT	0.60 DEG	248.39 DEG	754.96 FT	−3.11 FT	−3.34 FT
760.00 FT	0.59 DEG	246.19 DEG	759.96 FT	−3.13 FT	−3.39 FT
765.00 FT	0.58 DEG	246.46 DEG	764.96 FT	−3.15 FT	−3.43 FT
770.00 FT	**0.54 DEG**	**248.23 DEG**	**769.96 FT**	**−3.17 FT**	**−3.48 FT**
771.00 FT	0.54 DEG	247.76 DEG	770.96 FT	−3.17 FT	−3.49 FT
774.00 FT	0.56 DEG	244.39 DEG	773.96 FT	−3.19 FT	−3.51 FT
775.00 FT	0.56 DEG	244.28 DEG	774.96 FT	−3.19 FT	−3.52 FT
777.00 FT	0.58 DEG	245.14 DEG	776.96 FT	−3.20 FT	−3.54 FT
780.00 FT	0.59 DEG	251.02 DEG	779.96 FT	−3.21 FT	−3.57 FT
783.00 FT	0.57 DEG	257.07 DEG	782.96 FT	−3.22 FT	−3.60 FT
785.00 FT	0.56 DEG	258.60 DEG	784.96 FT	−3.22 FT	−3.62 FT
786.00 FT	0.55 DEG	258.63 DEG	785.96 FT	−3.23 FT	−3.63 FT
789.00 FT	0.53 DEG	255.93 DEG	788.96 FT	−3.23 FT	−3.66 FT
790.00 FT	0.53 DEG	255.25 DEG	789.96 FT	−3.23 FT	−3.66 FT
792.00 FT	0.54 DEG	254.46 DEG	791.96 FT	−3.24 FT	−3.68 FT
795.00 FT	0.56 DEG	254.43 DEG	794.96 FT	−3.25 FT	−3.71 FT
798.00 FT	0.58 DEG	255.36 DEG	797.96 FT	−3.25 FT	−3.74 FT
800.00 FT	0.58 DEG	256.31 DEG	799.96 FT	−3.26 FT	−3.76 FT
801.00 FT	0.59 DEG	256.94 DEG	800.96 FT	−3.26 FT	−3.77 FT
804.00 FT	0.59 DEG	257.92 DEG	803.96 FT	−3.27 FT	−3.80 FT
805.00 FT	0.60 DEG	257.90 DEG	804.96 FT	−3.27 FT	−3.81 FT
807.00 FT	0.59 DEG	256.76 DEG	806.96 FT	−3.28 FT	−3.83 FT
810.00 FT	0.61 DEG	252.96 DEG	809.96 FT	−3.28 FT	−3.86 FT
813.00 FT	0.64 DEG	248.96 DEG	812.96 FT	−3.29 FT	−3.89 FT
815.00 FT	0.66 DEG	246.27 DEG	814.96 FT	−3.30 FT	−3.91 FT
816.00 FT	0.66 DEG	244.99 DEG	815.96 FT	−3.31 FT	−3.92 FT
819.00 FT	0.67 DEG	242.53 DEG	818.96 FT	−3.32 FT	−3.95 FT
820.00 FT	0.68 DEG	241.96 DEG	819.96 FT	−3.33 FT	−3.96 FT
822.00 FT	0.68 DEG	241.52 DEG	821.96 FT	−3.34 FT	−3.98 FT
825.00 FT	0.70 DEG	241.06 DEG	824.96 FT	−3.36 FT	−4.02 FT
828.00 FT	0.70 DEG	240.82 DEG	827.96 FT	−3.37 FT	−4.05 FT

830.00 FT	0.69 DEG	241.05 DEG	829.96 FT	−3.39 FT	−4.07 FT
831.00 FT	0.68 DEG	241.41 DEG	830.96 FT	−3.39 FT	−4.08 FT
834.00 FT	0.67 DEG	242.32 DEG	833.96 FT	−3.41 FT	−4.11 FT
835.00 FT	0.67 DEG	242.51 DEG	834.96 FT	−3.41 FT	−4.12 FT
837.00 FT	0.68 DEG	241.59 DEG	836.96 FT	−3.43 FT	−4.14 FT
840.00 FT	0.68 DEG	241.58 DEG	839.96 FT	−3.44 FT	−4.17 FT
843.00 FT	0.66 DEG	242.65 DEG	842.96 FT	−3.46 FT	−4.21 FT
845.00 FT	0.65 DEG	243.39 DEG	844.96 FT	−3.47 FT	−4.23 FT
846.00 FT	0.65 DEG	243.49 DEG	845.96 FT	−3.47 FT	−4.24 FT
849.00 FT	0.66 DEG	242.97 DEG	848.96 FT	−3.49 FT	−4.27 FT
850.00 FT	0.67 DEG	242.47 DEG	849.96 FT	−3.49 FT	−4.28 FT
852.00 FT	0.68 DEG	241.77 DEG	851.96 FT	−3.50 FT	−4.30 FT
855.00 FT	0.68 DEG	241.79 DEG	854.96 FT	−3.52 FT	−4.33 FT
858.00 FT	0.67 DEG	243.03 DEG	857.96 FT	−3.54 FT	−4.36 FT
860.00 FT	0.66 DEG	242.80 DEG	859.96 FT	−3.55 FT	−4.38 FT
861.00 FT	0.66 DEG	241.86 DEG	860.96 FT	−3.55 FT	−4.39 FT
864.00 FT	0.68 DEG	238.19 DEG	863.96 FT	−3.57 FT	−4.42 FT
865.00 FT	0.69 DEG	236.82 DEG	864.96 FT	−3.58 FT	−4.43 FT
867.00 FT	0.71 DEG	233.64 DEG	866.96 FT	−3.59 FT	−4.45 FT
870.00 FT	0.73 DEG	232.40 DEG	869.96 FT	−3.61 FT	−4.48 FT

Schlumberger

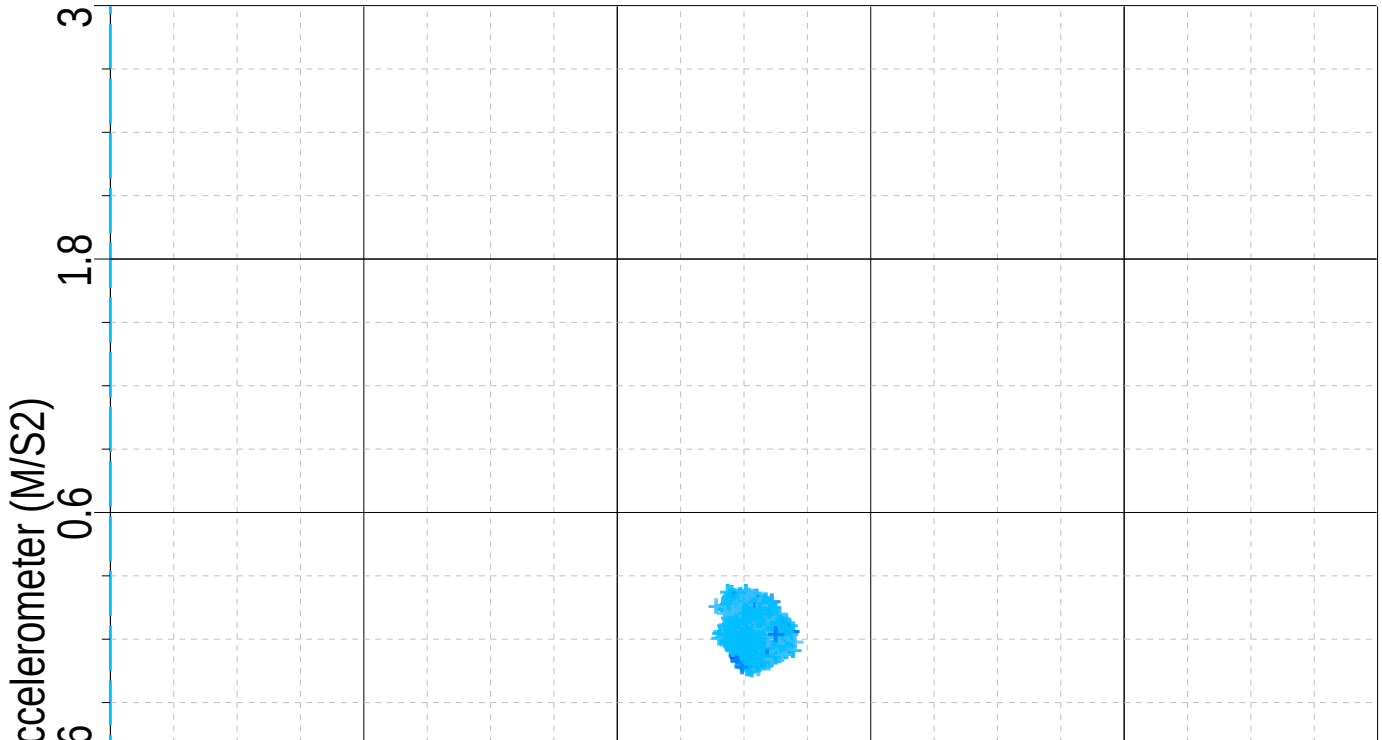
LOG QUALITY CONTROL

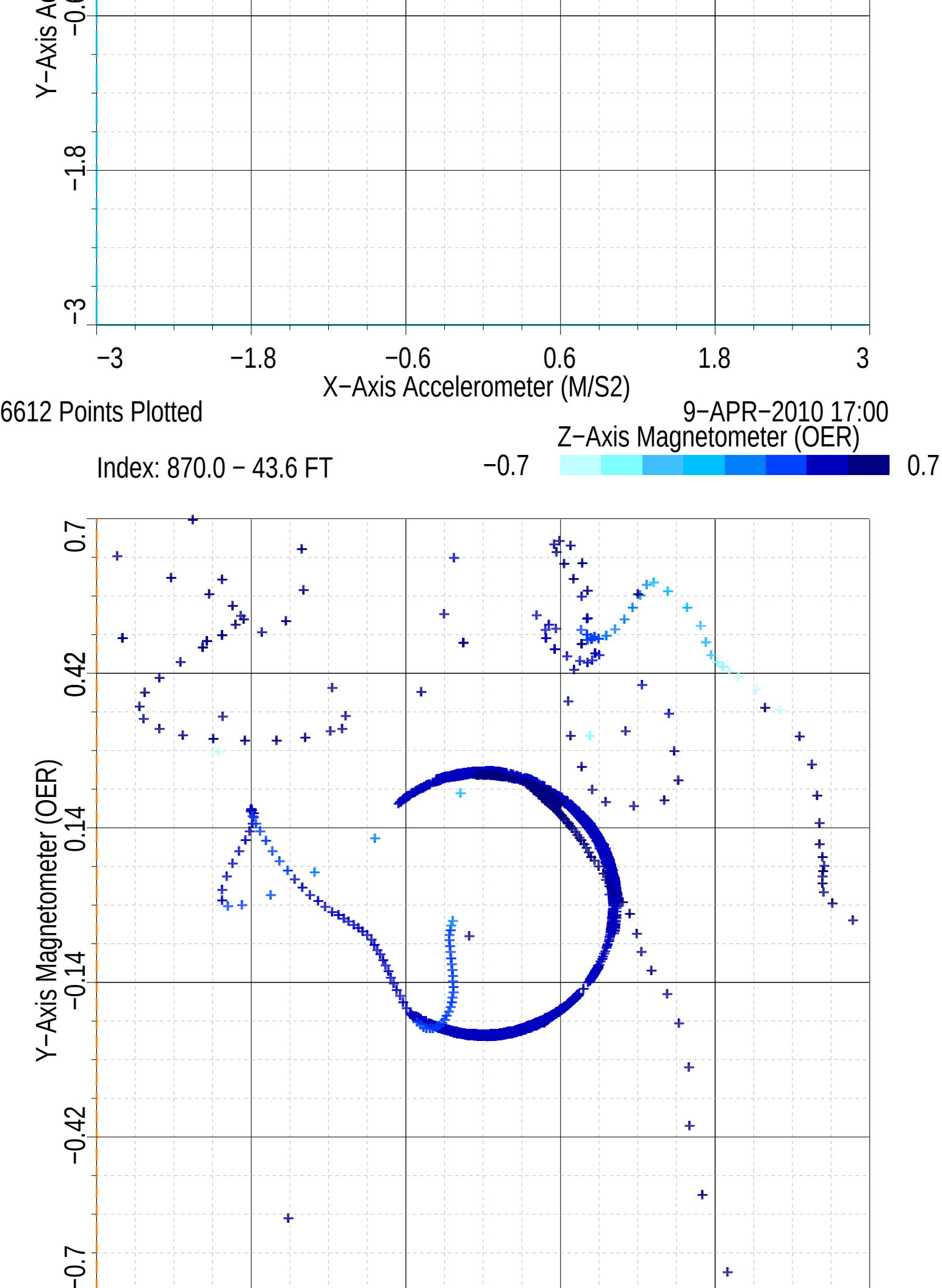
MAXIS Field Log

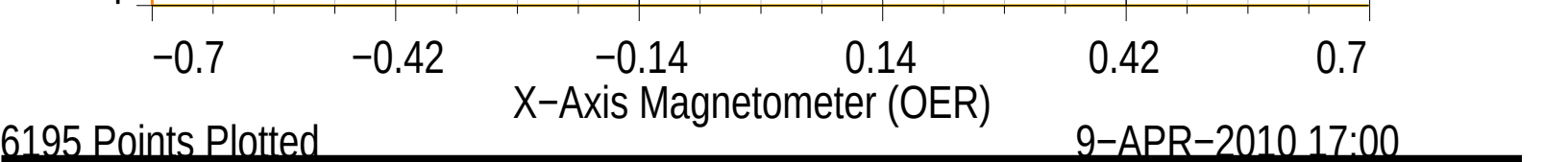
Index: 870.0 − 43.6 FT

Z−Axis Accelerometer (M/S2)

9. 11.




Y−Axis Ac
−0.6
−1.8
−3
−3
−1.8
−0.6
0.6
1.8
3
X−Axis Accelerometer (M/S2)
6612 Points Plotted
9−APR−2010 17:00
Z−Axis Magnetometer (OER)
Index: 870.0 − 43.6 FT
−0.7
0.7
Y−Axis Magnetometer (OER)
0.7
0.42
0.14
−0.14
−0.42
−0.7



6195 Points Plotted 9−APR−2010 17:00

Company: **WDC Exploration & Wells**

Schlumberger

Well: **Bluebird Ct Well #2**
Field: **Windsor**
County: **Sonoma**
State: **California**

DIRECTIONAL SURVEY

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Esposti Park 1**
Field: **Windsor**
County: **Sonoma** State: **California**

BOREHOLE COMPENSATED SONIC

County: Sonoma
Field: Windsor
Location: LAT N 38.31.35.4
Well: Esposti Park 1
Company: WDC Exploration & Wells

LOCATION

LAT N 38.31.35.4
LONG W 122.46.46.5

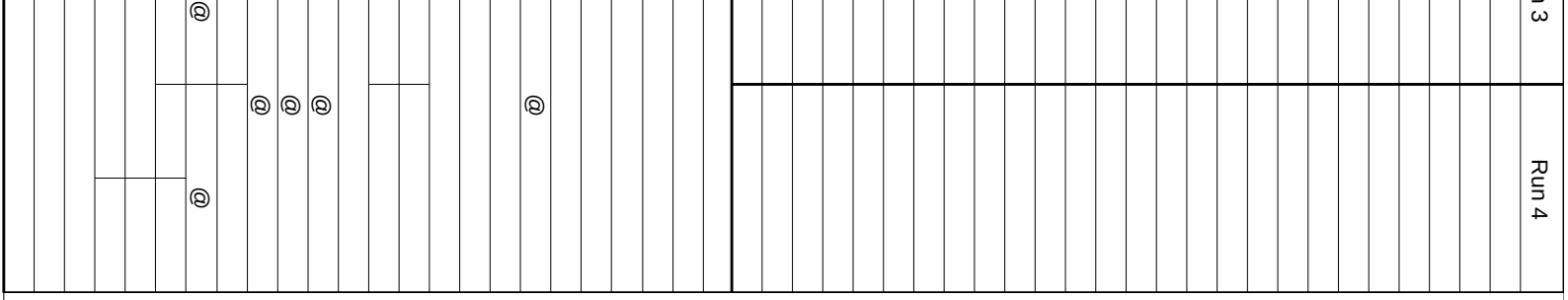
Elev.: K.B. 139.00 ft
G.L. 137.00 ft
D.F.

Permanent Datum: GROUND LEVEL Elev.: 137.00 ft
Log Measured From: GROUND LEVEL 0.00 ft above Perm. Datum
Drilling Measured From: GROUND LEVEL

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run 3
Logging Date	3−Mar−2010		
Run Number	ONE		
Depth Driller	1040 ft		
Schlumberger Depth	1045 ft		
Bottom Log Interval	1037 ft		
Top Log Interval	40 ft		
Casing Driller Size @ Depth	11.750 in @ 40 ft	@	@
Casing Schlumberger	40 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	8.400 ohm.m @ 64 degF	@	@
RMF @ Measured Temperature	8.620 ohm.m @ 67 degF	@	@
RMC @ Measured Temperature	6.470 ohm.m @ 66 degF	@	@
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	5.729 @ 97 / 6.103 @ 97	@ / @	@ / @
Maximum Recorded Temperatures	97 degF		
Circulation Stopped Time	3−Mar−2010		
Logger On Bottom Time	3−Mar−2010 20:53		
Unit Number / Location	7008 BAKERSFIELD		
Recorded By	BRADY ARCHER		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped Time			
Logger On Bottom Time			
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 3−MAR−2010 23:08:25

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46A XS
Serial Number:	2732	Serial Number:	2968	Serial Number:	6353
Calibration Date:	11−JANUARY−2(	Calibration Date:	24−FEB−2010	Length:	11000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46A XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−7	Calibration RMS:	18	Rig Type:	LAND
Wheel Correction 2:	−3	Calibration Peak Error:	35		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	0.00 FT
Rig Up Length At Bottom:	0.00 FT
Rig Up Length Correction:	0.00 FT
Stretch Correction:	1.00 FT
Tool Zero Check At Surface:	−0.10 FT

Depth Control Remarks

1. All Schlumberger depth policy procedures applied.
2. IDW used as primary depth reference, Z−chart used as secondary.
3.
4.
5.
6.

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: BHC	OS1:
OS2: CMR	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
3 CME−Z'S RAN ON SONIC FOR CENTRALIZATION	
MATRIX : SANDSTONE & DENSITY : 2.65 G/CC	
MAX TEMP = 97 DEGF AT 1045 FT	
ICV NOT NEEDED BY CLIENT	
MUD CHLORIDES, PH AND FLUID LOSS DATA NOT PROVIDED BY CLIENT	
LOCATION DATA THAT WAS AVAILABLE IS IN THE HEADER	
NO API# PROVIDED	

RUN 1		RUN 2	
SERVICE ORDER #:	AZ5H−00110	SERVICE ORDER #:	
PROGRAM VERSION:	18C0−147	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP

LOGGED INTERVAL	START	STOP

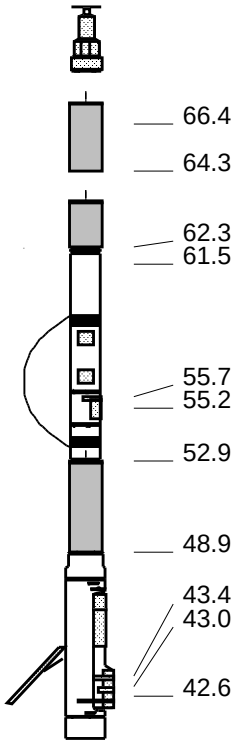
EQUIPMENT DESCRIPTION

RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U 61
NCT−B
CNB−AB
NCS−VB
WITM (DTS)−A

DOWNHOLE EQUIPMENT



LEH−QT — 70.2
LEH−QT 2975

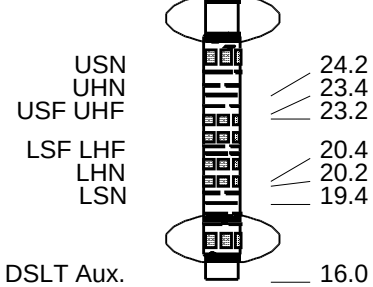
DTC−H — 67.3
ECH−KC 10500
DTCH0−A 9410

HILTB−FTB — 64.3
HGNSD−B 4832
HSTS
HMCA
HGNH 3949
NLS−KL
NSR−F 1441
HACCZ 6303
HCNT
HGR
HRCC−B 4769
HRMS−B 4773
HRGD−B 829
GLS−VJ 5375
MCFL Device
HILT Nucl. LS 42767
HILT Nucl. SS 42767
HILT Nucl. BS 42767
BOW−SPR
NPV−N

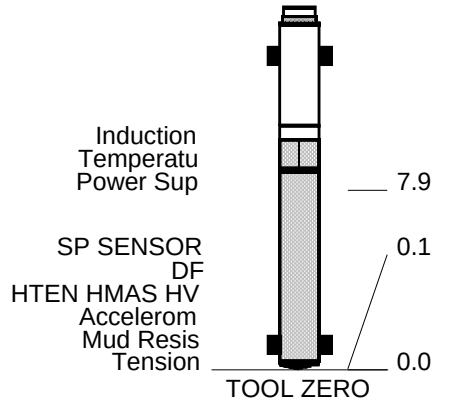
AH−107 — 40.6
AH−107

AH−107 — 38.6
AH−107

DSLT−FTB — 36.6
DSLC−B 8236
ECH−KH 8678
SLS−W 389



AIT−M
AMIS−A 2562
AMRM−A

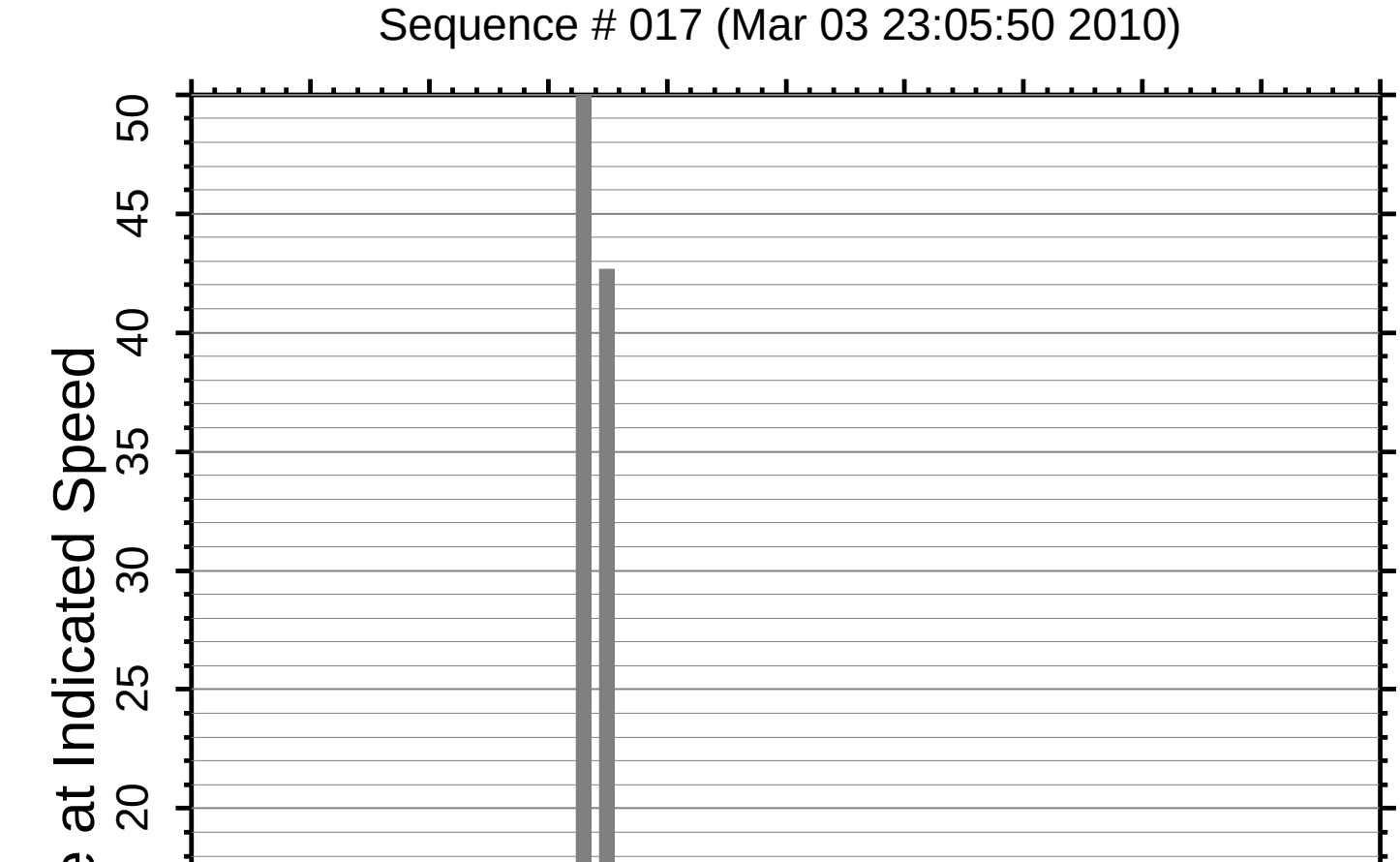


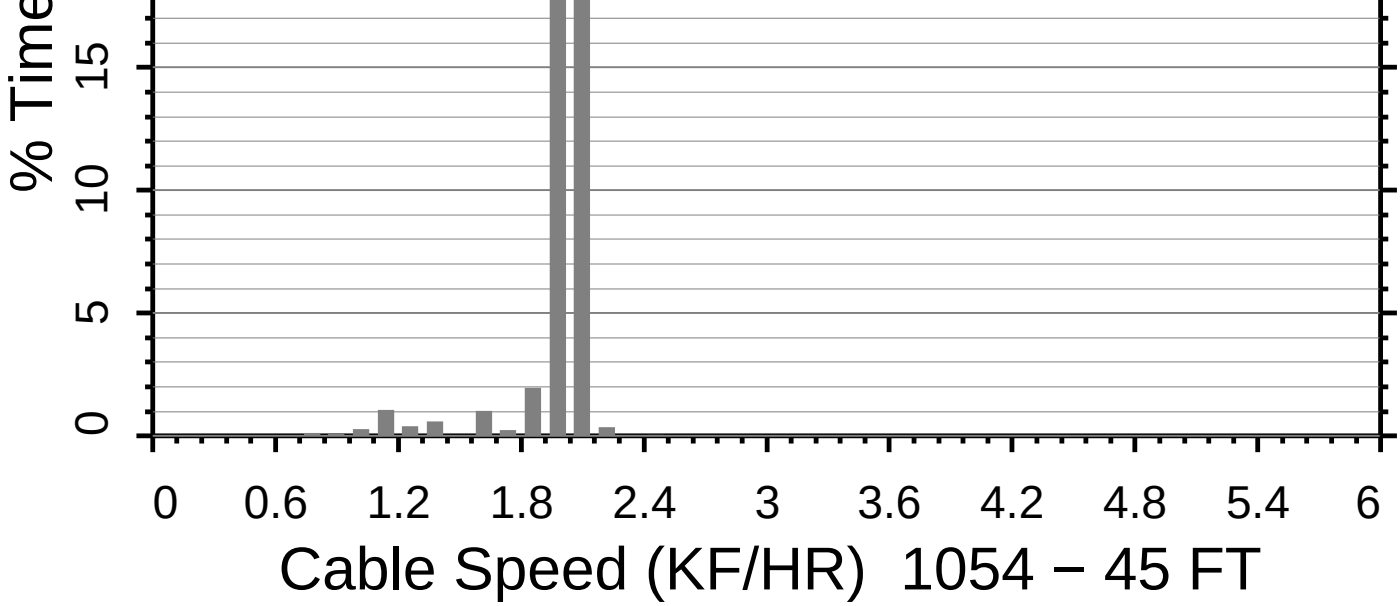
MAXIMUM STRING DIAMETER 6.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					40.0	11.750		Casing Shoe
					40.0	10.625		Borehole Segment

					1040.0	10.625	Borehole Segment Bottom

ALL DEPTHS ARE DRILLERS DEPTHS





Schlumberger Job Event Summary

	Time	Elapsed Time	Depth (FT)	File
Log Pass (down)	3−Mar−2010 22:10	000:07	697.5 − 948.0	AIT_SONIC_TLD_MCFL_011LDP
Log Pass (up)	3−Mar−2010 22:17	000:32	1054.5 − 44.7	AIT_SONIC_TLD_MCFL_012LUP

Schlumberger

MAIN PASS 5 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Esposti Park 1**

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03−Mar−2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03−Mar−2010 23:05	1054.5 FT	45.0 FT

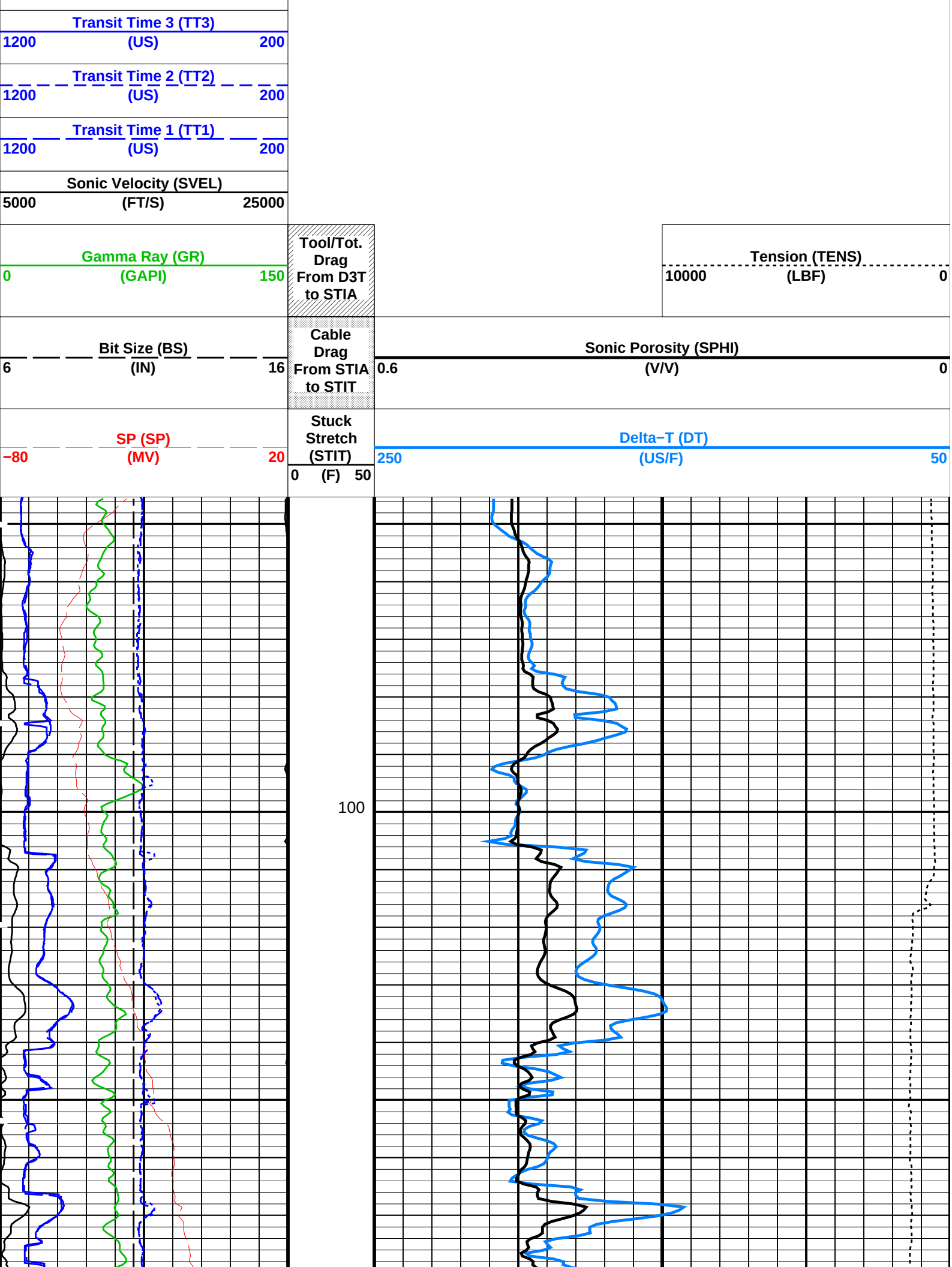
OP System Version: 18C0−147

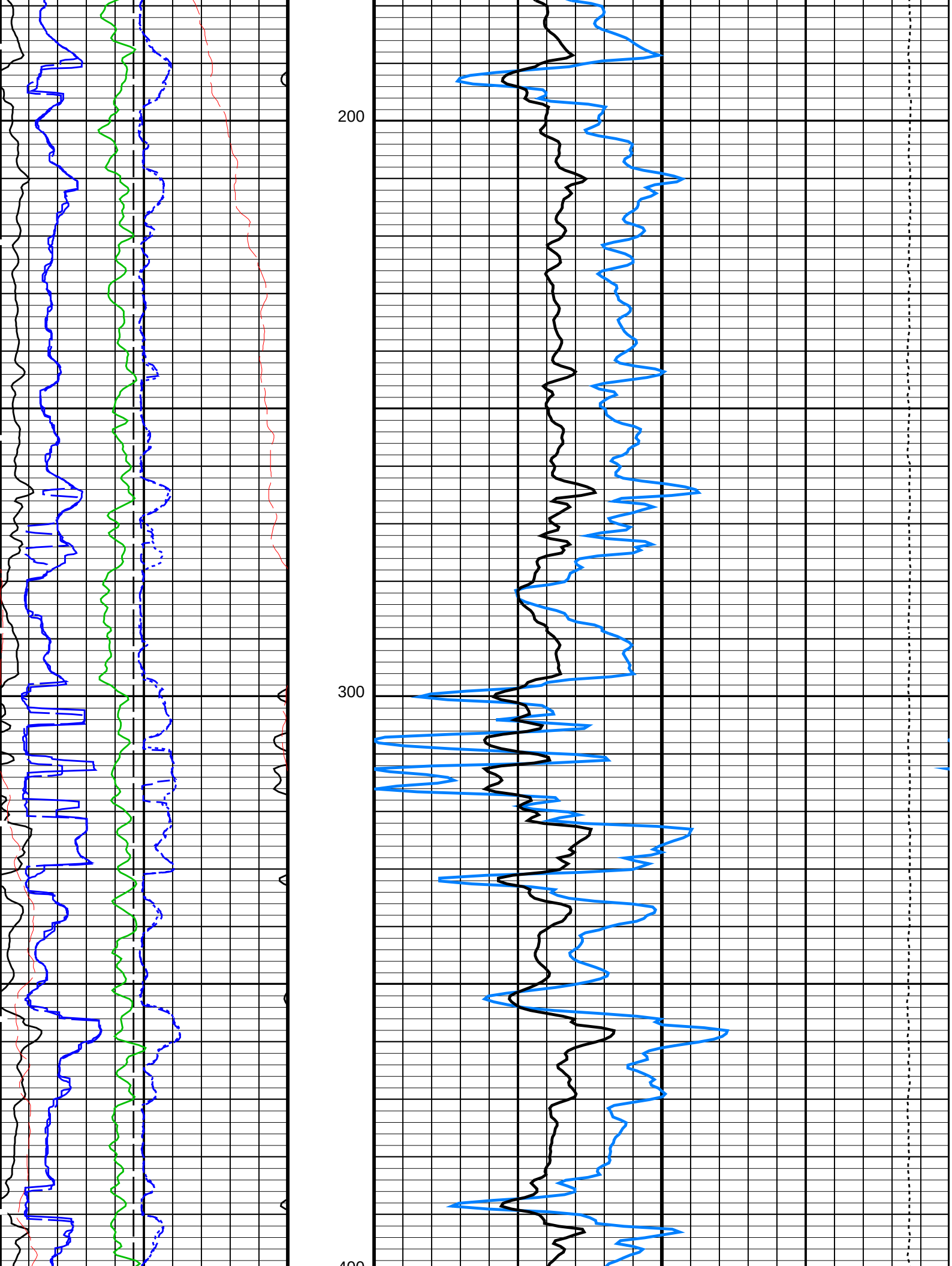
AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	DTC−H	18C0−147

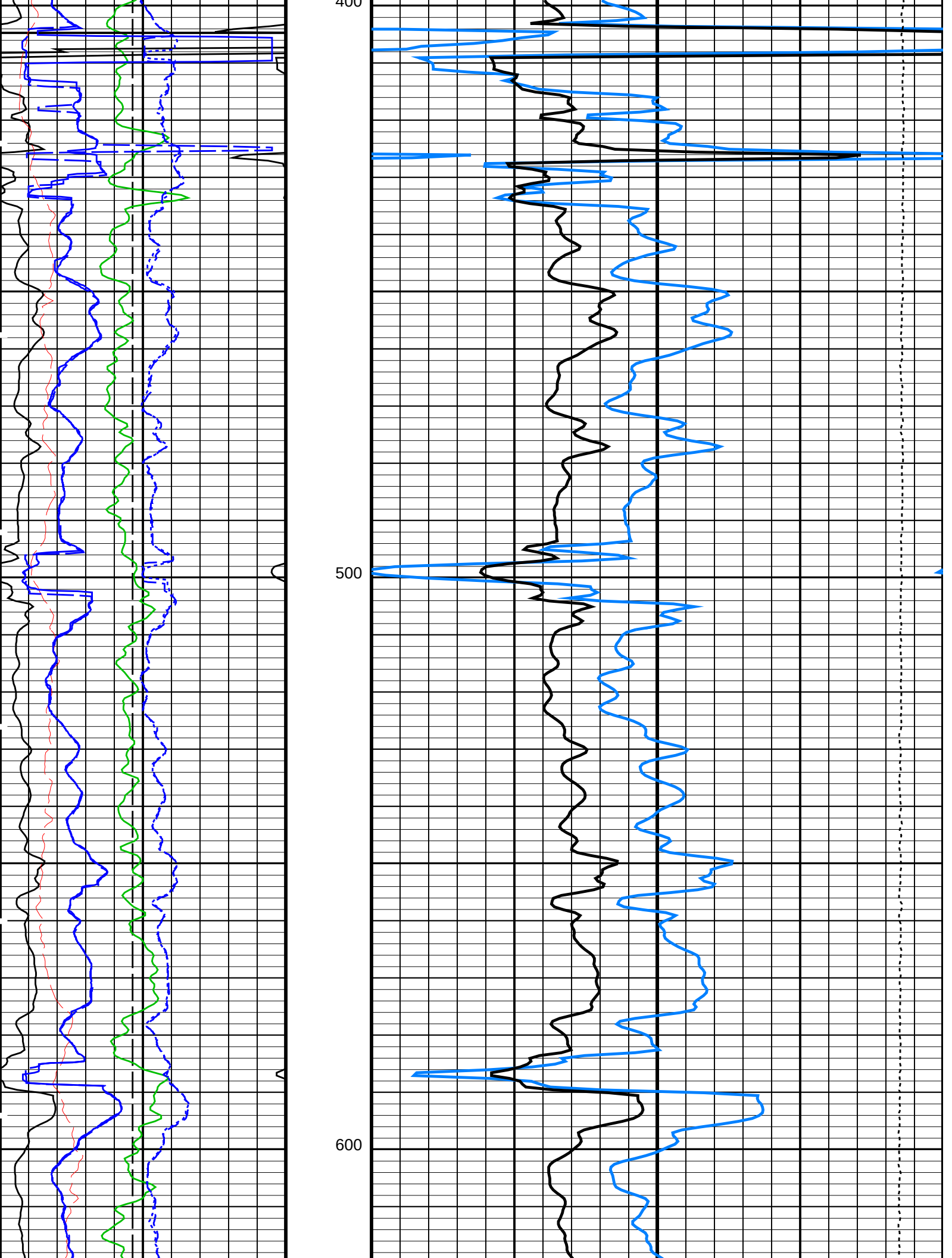
PIP SUMMARY

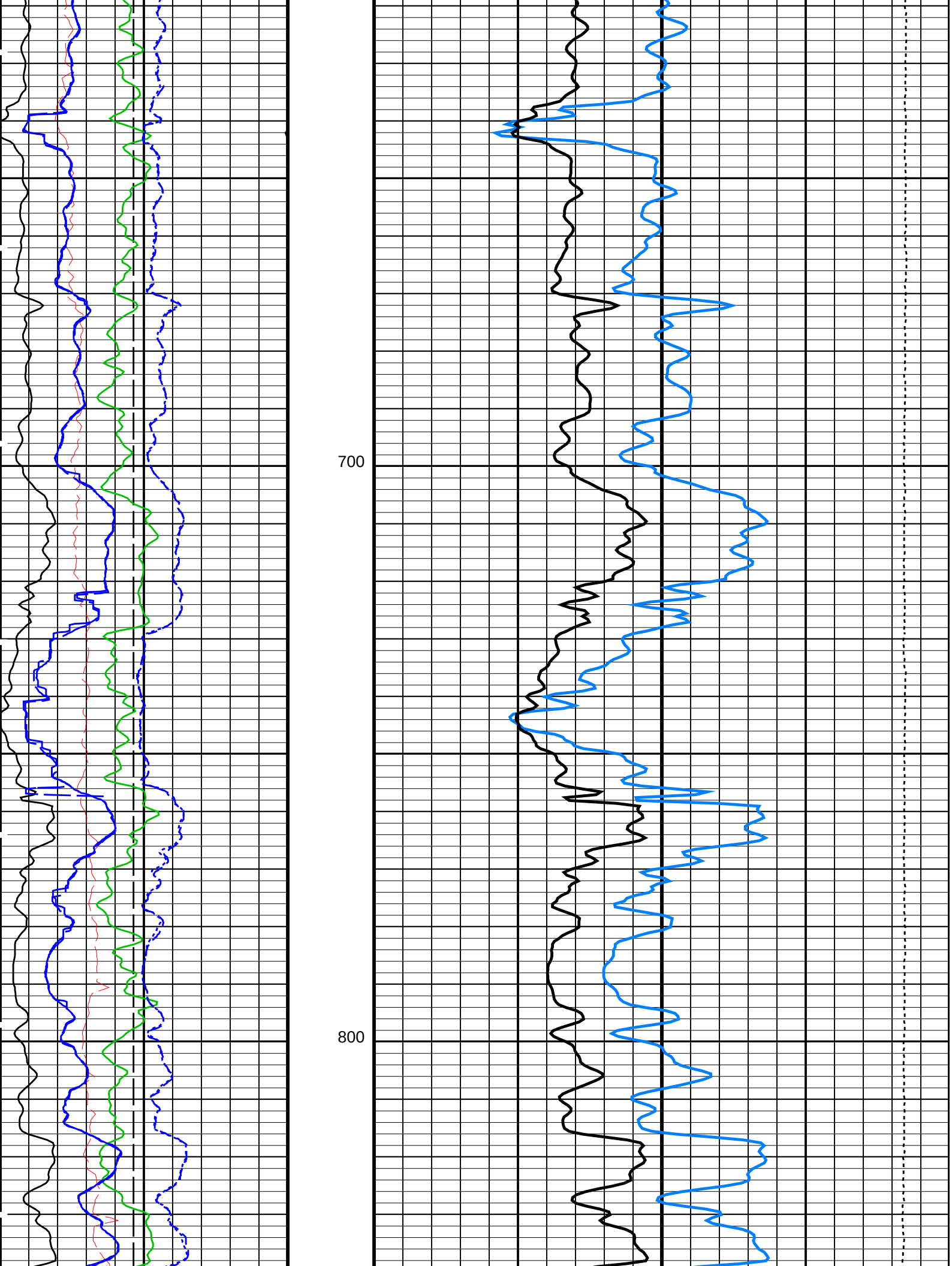
Time Mark Every 60 S

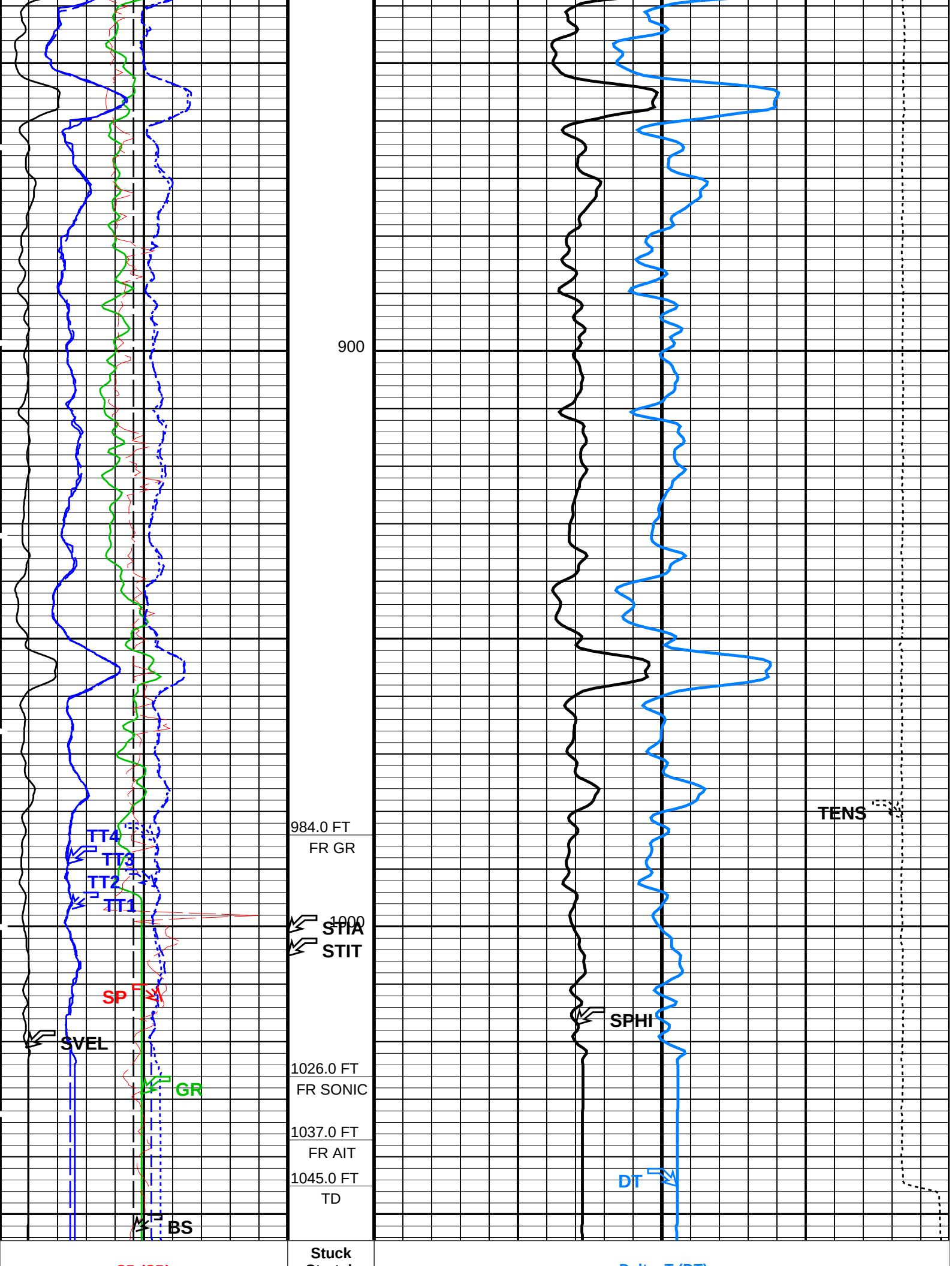
Transit Time 4 (TT4)		
1200	(US)	200

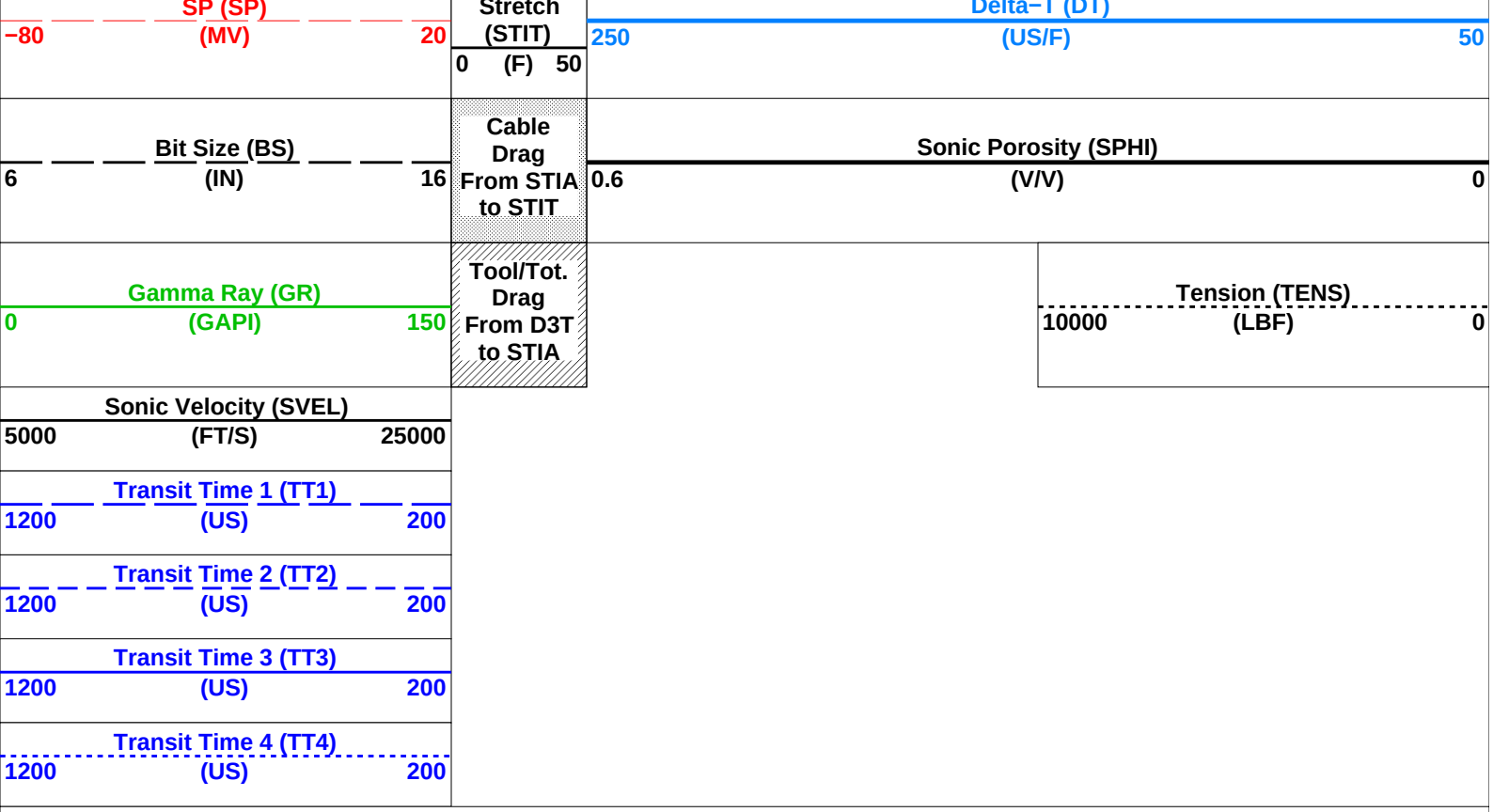

Transit Time 3 (TT3)
1200 (US) 200
Transit Time 2 (TT2)
1200 (US) 200
Transit Time 1 (TT1)
1200 (US) 200
Sonic Velocity (SVEL)
5000 (FT/S) 25000
Gamma Ray (GR)
0 (GAPI) 150
Tool/Tot. Drag From D3T to STIA
Tension (TENS)
10000 (LBF) 0
Bit Size (BS)
6 (IN) 16
Cable Drag From STIA to STIT
Sonic Porosity (SPHI)
0.6 (V/V) 0
SP (SP)
−80 (MV) 20
Stuck Stretch (STIT)
0 (F) 50
Delta−T (DT)
250 (US/F) 50
100


200
300
400


400
500
600


700
800


900
984.0 FT
FR GR
1000
STIA
STIT
1026.0 FT
FR SONIC
1037.0 FT
FR AIT
1045.0 FT
TD
Stuck
TT4
TT3
TT2
TT1
SP
SVEL
GR
BS
SPHI
DT
TENS



Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
SPNV	SP Next Value	0	MV
	DSLT−FTB: Digitizing Sonic Logging Tool		
	Telemetry Mode	DSLC_FTB	
	DSLT Firing Mode	BHC	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	1	
CBLG	CBL Gate Width	45	US
CDTS	C−Delta−T Shale	100	US/F
DDEL	Digitizing Delay	0	US
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	130	
DSIN	Digitizing Sample Interval	10	
DTF	Delta−T Fluid	189	US/F
DTFS	DSLC Telemetry Frame Size	296	
DTM	Delta−T Matrix	56	US/F
DWCO	Digitizing Word Count	130	
GAI	Manual Gain	40	
MAHTR	Manual High Threshold Reference	1000	
MGAI	Maximum Gain	60	
MNHTR	Minimum High Threshold Reference	742	
NMSG	Near Minimum Sliding Gate	150	US
NMXG	Near Maximum Sliding Gate	738	US
RATE	Firing Rate	R7	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGCL	Sliding Gate Closing Delta−T	196	US/F
SGDT	Sliding Gate Delta−T	50	US/F
SGW	Sliding Gate Width	80	US
SLEV	Signal Level for AGC	6000	
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DT	
WAGC	Waveform AGC Allow/Disallow	OFF	
WMOD	Waveform Firing Mode	FULL	
	STI: Stuck Tool Indicator		
LBFR	Trigger for MAXIS First Reading Label	STI	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	1040.00	FT
TDL	Total Depth − Logger	1045.00	FT
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
PR	Playback Processing	RECOMPUTE	

PP Playback Processing RECOMPUTE

Format: SONI Vertical Scale: 5" per 100' Graphics File Created: 03-Mar-2010 23:05

OP System Version: 18C0-147

AIT-M	18C0-147	DSLT-FTB	18C0-147
HILTB-FTB	18C0-147	DTC-H	18C0-147

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03-Mar-2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03-Mar-2010 23:05		

Schlumberger

LOG QUALITY CONTROL

MAXIS Field Log

Company: WDC Exploration & Wells Well: Esposti Park 1

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03-Mar-2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_017PUP	FN:16	PRODUCER	03-Mar-2010 23:05	1054.5 FT	45.0 FT

OP System Version: 18C0-147

AIT-M	18C0-147	DSLT-FTB	18C0-147
HILTB-FTB	18C0-147	DTC-H	18C0-147

PIP SUMMARY

Time Mark Every 60 S

DSLT Delta-T (DT) (US/F) 140 40				
Tension (TENS) (LBF) 10000 0	Amplitude of First Arrival 4 (AMF4) 0 (----) 2000	Noise Amplitude in Waveform Baseline 4 (NAM4) 80 (----) 0	Transit Time 4 (TT4) 1600 (US) 0	First Arrival Detection Gain 4 (DGA4) 0 (----) 2000
Gamma Ray (GR) (GAPI) 0 150	Amplitude of First Arrival 3 (AMF3) 0 (----) 2000	Noise Amplitude in Waveform Baseline 3 (NAM3) 80 (----) 0	Transit Time 3 (TT3) 1600 (US) 0	First Arrival Detection Gain 3 (DGA3) 0 (----) 2000
Bit Size (BS) 6 (IN) 16	Amplitude of First Arrival 2 (AMF2) 0 (----) 2000	Noise Amplitude in Waveform Baseline 2 (NAM2) 80 (----) 0	Transit Time 2 (TT2) 1600 (US) 0	First Arrival Detection Gain 2 (DGA2) 0 (----) 2000
		Noise Amplitude in		

SP (SP) (MV)
−80 20

Amplitude of First Arrival 1 (AMF1)
0 (−−−−) 2000

Noise Amplitude in Waveform Baseline 1 (NAM1)
80 (−−−−) 0

Transit Time 1 (TT1)
1600 (US) 0

First Arrival Detection Gain 1 (DGA1)
0 (−−−−) 2000

****** DSLT LQC Flag Tracks ******

* Signal to Noise Ratio (SNR) flags *

White = Absent Data_Channel
Green = Good
Yellow = Warning
Red = Bad

1. SNR1
2. SNR2
3. SNR3
4. SNR4

* Hardware State flag *

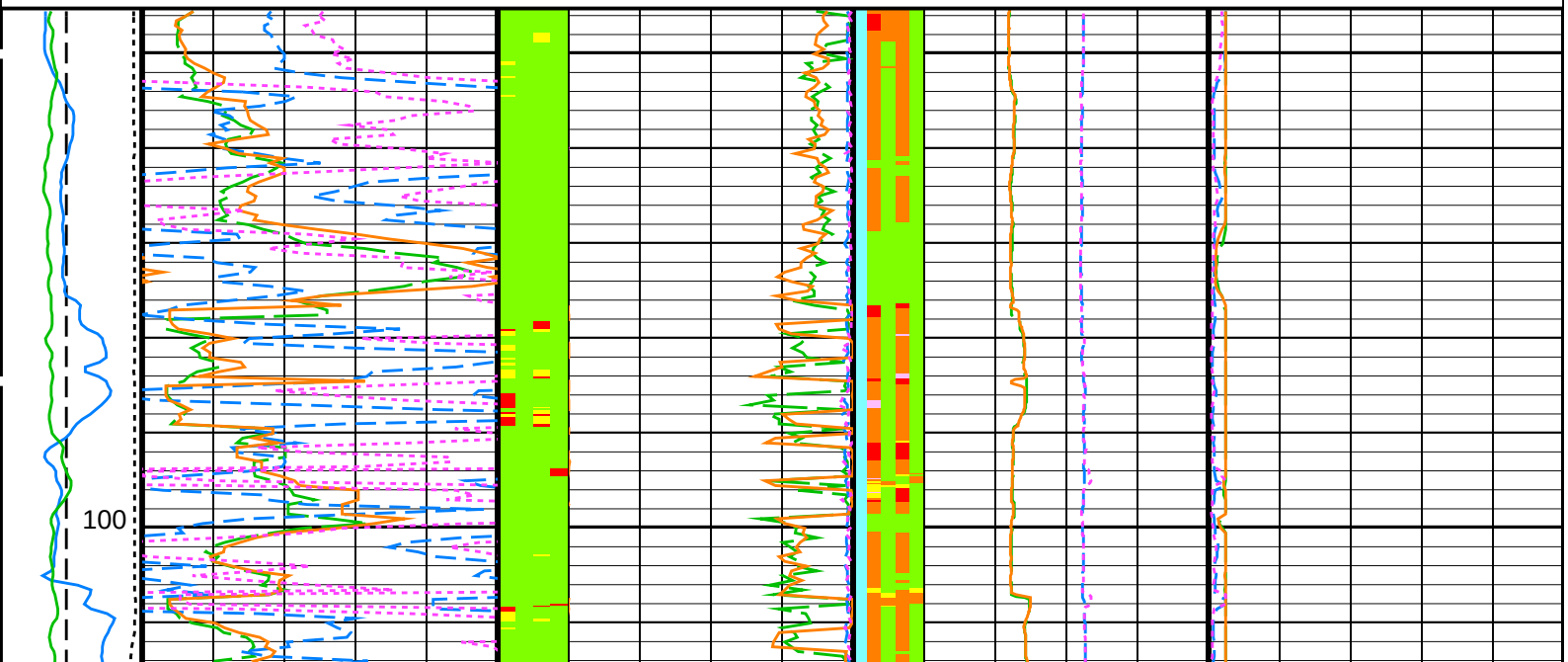
White = Absent Data_Channel
Cyan = Good
Yellow = Telemetry Status Error
Orange = Analog Board Error
Pink = High Voltage Error
Red = Sonic Handshake Error
Black = Transmitter Error

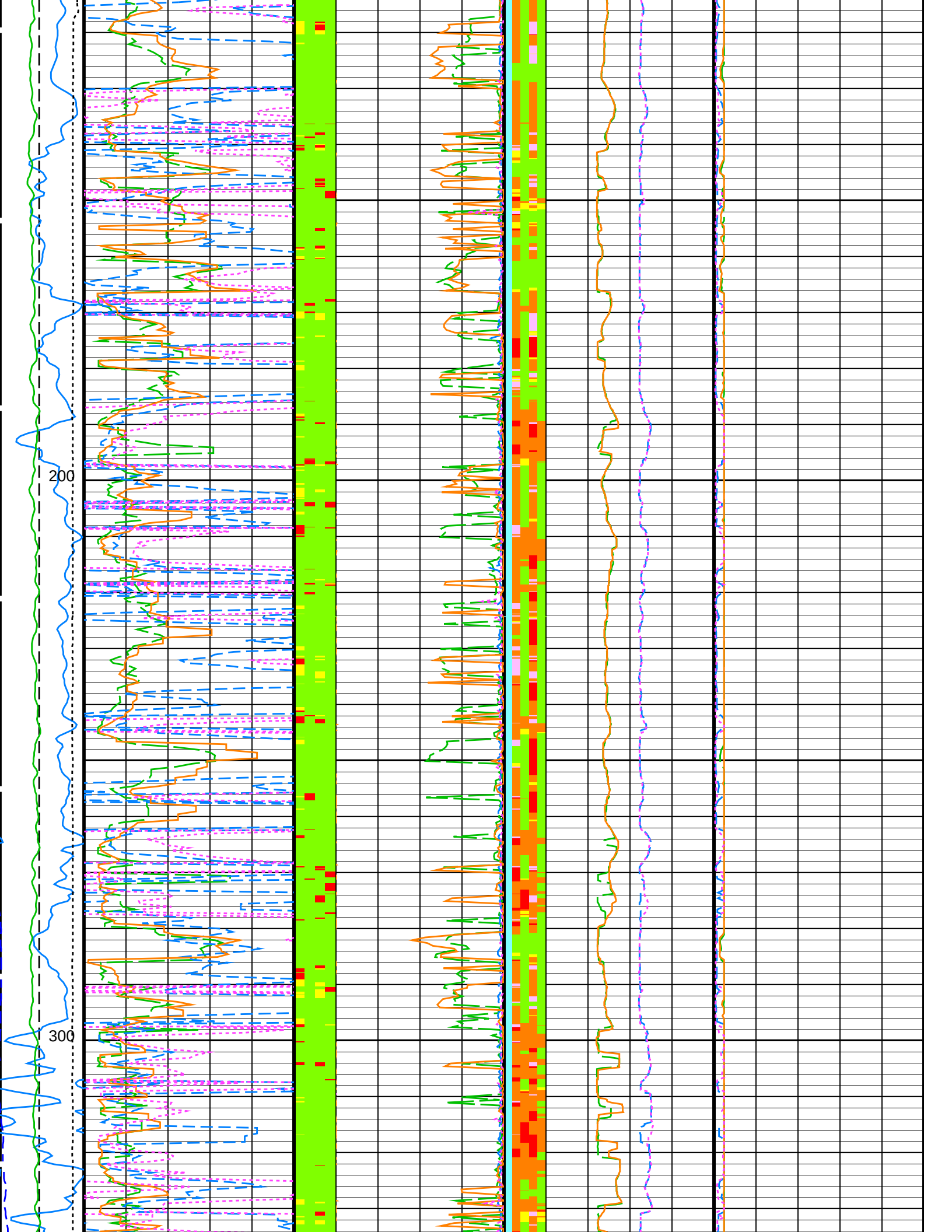
1. DSLT status (DSTT)

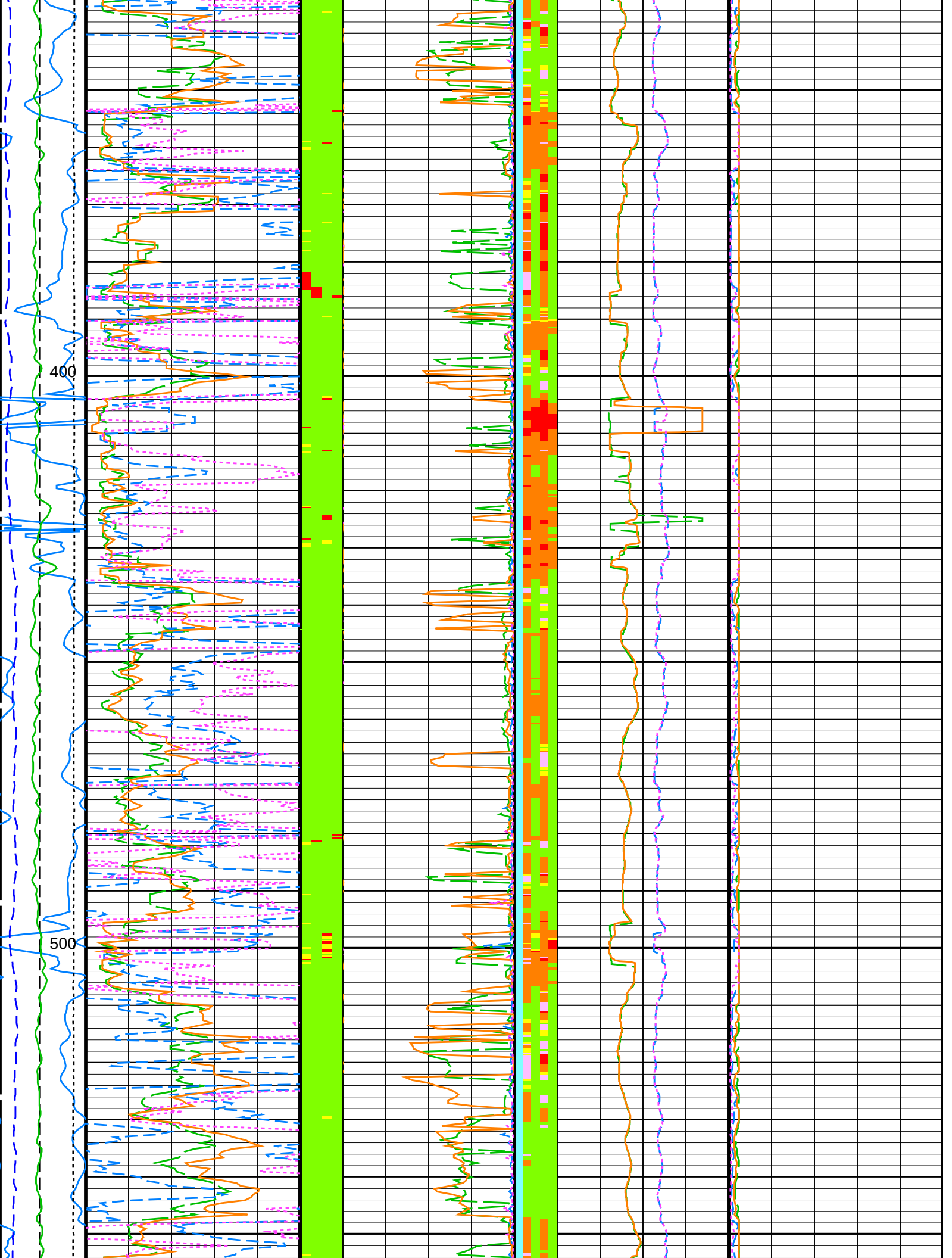
* Software State flags *

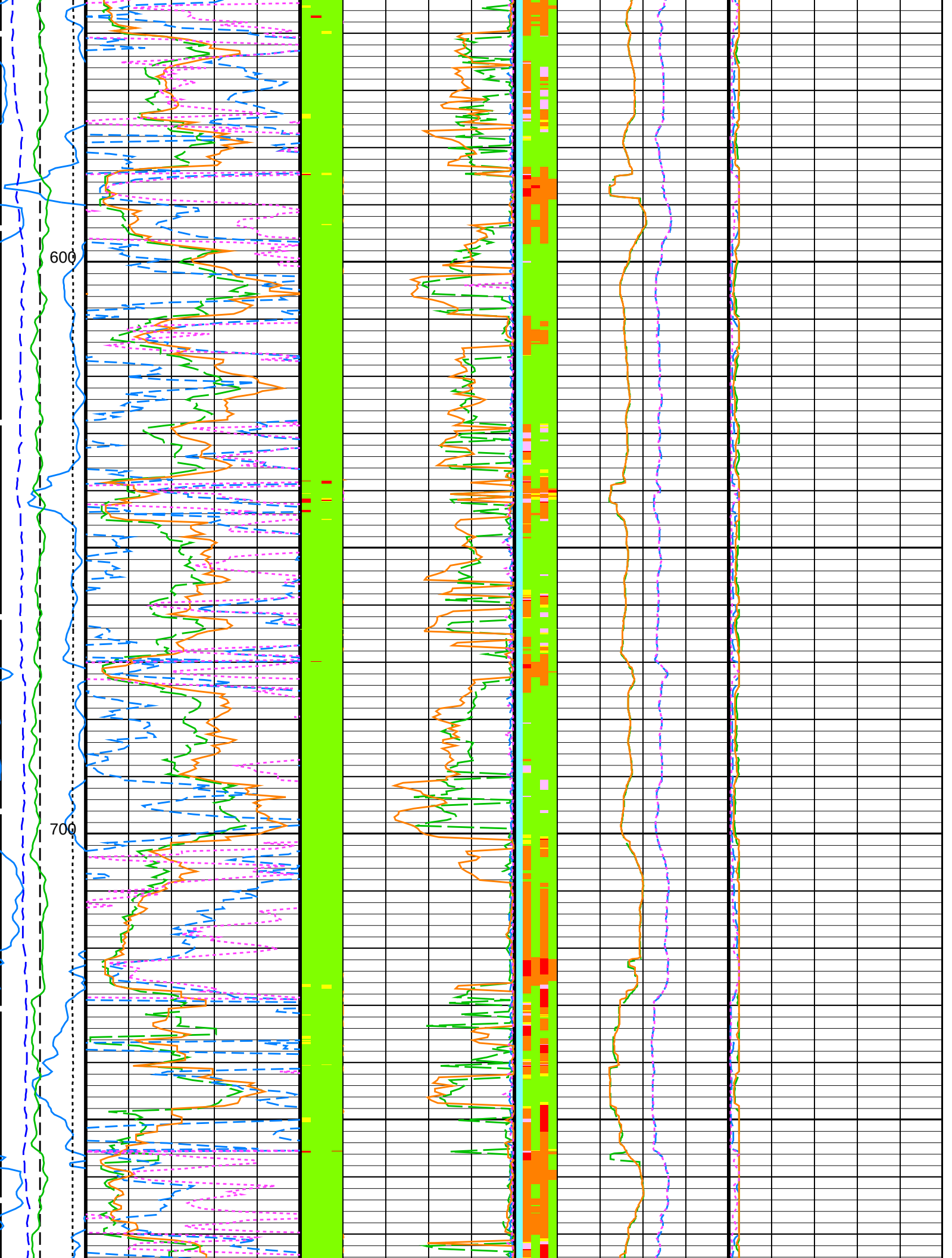
White = Absent Data_Channel
Green = Good
Brown = Saturated WF samples during measurement
Yellow = Other Warning
Orange = Detection gain at maximum
Pink = Medium noise
Red = Detection algorithm lost
Black = High noise

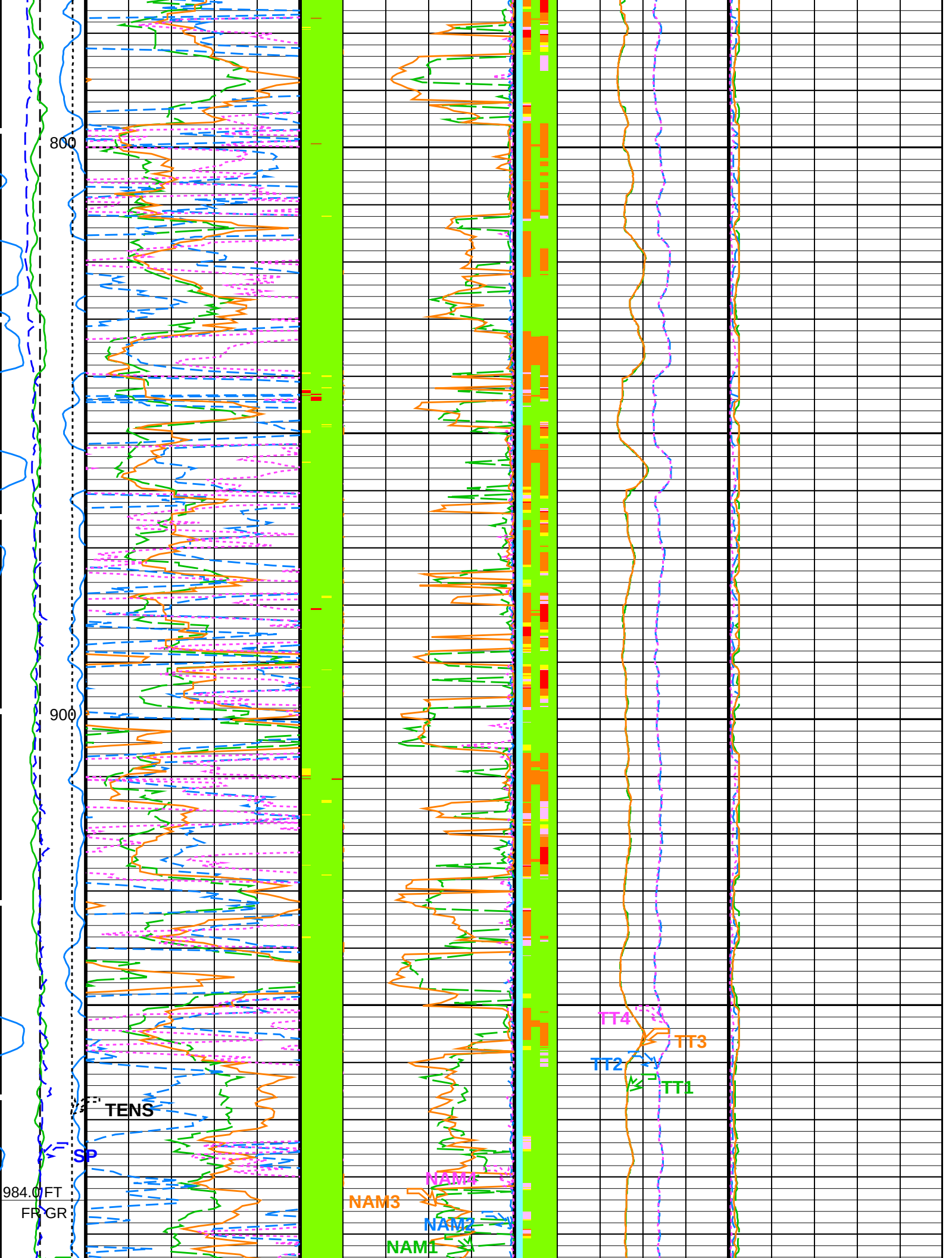
1. DFAD Detection status (DST1)
2. DFAD Detection status (DST2)
3. DFAD Detection status (DST3)
4. DFAD Detection status (DST4)

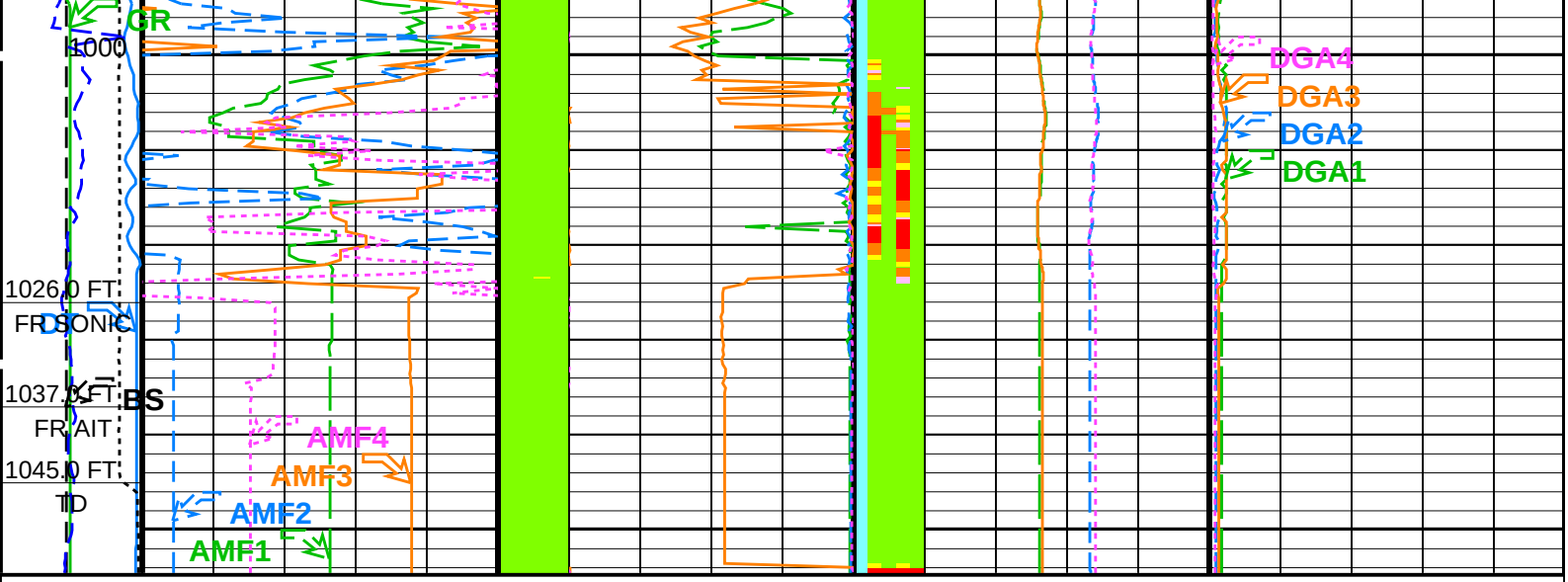



200
300


400
500


600
700


800
900
TENS
SP
984.0FT
FR GR
NAM4
NAM3
NAM2
NAM1
TT4
TT3
TT2
TT1



****** DSLT LQC Flag Tracks ******

* Signal to Noise Ratio (SNR) flags *

White = Absent Data_Channel
Green = Good
Yellow = Warning
Red = Bad

1. SNR1
2. SNR2
3. SNR3
4. SNR4

* Hardware State flag *

White = Absent Data_Channel
Cyan = Good
Yellow = Telemetry Status Error
Orange = Analog Board Error
Pink = High Voltage Error
Red = Sonic Handshake Error
Black = Transmitter Error

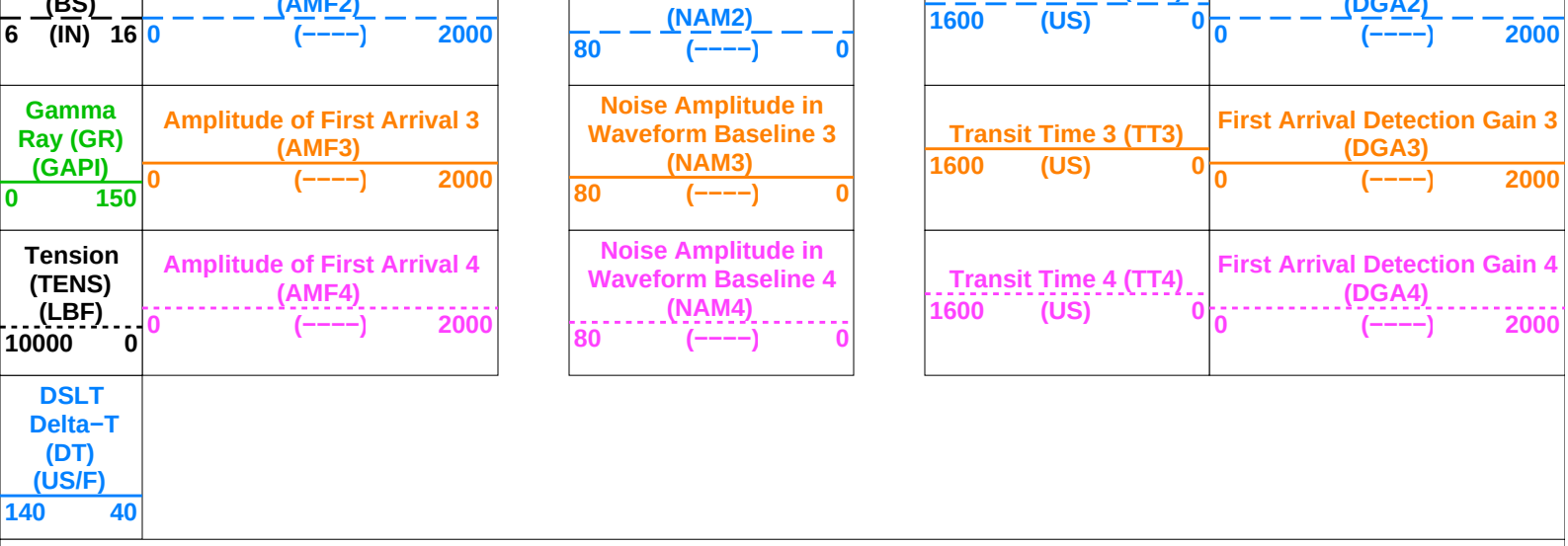
1. DSLT status (DSTT)

* Software State flags *

White = Absent Data_Channel
Green = Good
Brown = Saturated WF samples during measurement
Yellow = Other Warning
Orange = Detection gain at maximum
Pink = Medium noise
Red = Detection algorithm lost
Black = High noise

1. DFAD Detection status (DST1)
2. DFAD Detection status (DST2)
3. DFAD Detection status (DST3)
4. DFAD Detection status (DST4)

SP (SP) (MV) −80 20	Amplitude of First Arrival 1 (AMF1) 0 (----) 2000		Noise Amplitude in Waveform Baseline 1 (NAM1) 80 (----) 0	Transit Time 1 (TT1) 1600 (US) 0	First Arrival Detection Gain 1 (DGA1) 0 (----) 2000
Bit Size (BS)	Amplitude of First Arrival 2 (AMF2)		Noise Amplitude in Waveform Baseline 2	Transit Time 2 (TT2)	First Arrival Detection Gain 2 (DGA2)



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	AIT−M: Array Induction Tool − M		
SPNV	SP Next Value	0	MV
	DSLT−FTB: Digitizing Sonic Logging Tool		
	Telemetry Mode	DSLC_FTB	
	DSLT Firing Mode	BHC	
AGC	Automatic Gain Control Status	ON	
AMSG	Auxiliary Minimum Sliding Gate	140	US
CBAF	CBL Adjustment Factor	1	
CBLG	CBL Gate Width	45	US
DDEL	Digitizing Delay	0	US
DETE	Delta−T Detection	E2	
DFAD	Digital First Arrival Detection Switch	HOST	
DIVL	DSLT Depth Sampling Interval	20	
DRCS	DSLT DLIS Recording Size	130	
DSIN	Digitizing Sample Interval	10	
DTFS	DSLC Telemetry Frame Size	296	
DWCO	Digitizing Word Count	130	
GAI	Manual Gain	40	
MAHTR	Manual High Threshold Reference	1000	
MGAI	Maximum Gain	60	
MIGA	Minimum Gain	1	
MNHTR	Minimum High Threshold Reference	742	
NMSG	Near Minimum Sliding Gate	150	US
NMXG	Near Maximum Sliding Gate	738	US
NUMP	Number of Detection Passes	2	
RATE	Firing Rate	R7	
SFAF	Sonic Formation Attenuation Factor	0	DB/F
SGAD	Sliding Gate Status	ON	
SGAI	Selectable Acquisition Gain	AUTO	
SGCL	Sliding Gate Closing Delta−T	196	US/F
SGCW	Sliding Gate Closing Width	43	US
SGDT	Sliding Gate Delta−T	50	US/F
SGW	Sliding Gate Width	80	US
SLEV	Signal Level for AGC	6000	
WAGC	Waveform AGC Allow/Disallow	OFF	
WMOD	Waveform Firing Mode	FULL	
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: DSLT_LogQuality **Vertical Scale: 5" per 100'** **Graphics File Created: 03−Mar−2010 23:05**

OP System Version: 18C0−147

AIT−M	18C0−147	DSLT−FTB	18C0−147
HILTB−FTB	18C0−147	DTC−H	18C0−147

Input DLIS Files

DEFAULT	AIT_SONIC_TLD_MCFL_012LUP	FN:11	PRODUCER	03−Mar−2010 22:17	1054.5 FT	44.7 FT

Output DLIS Files

DEFAULT **AIT_SONIC_TLD_MCFL_017PUP** **FN:16** **PRODUCER** **03−Mar−2010 23:05**

Company: **WDC Exploration & Wells**

Schlumberger

Well: **Esposti Park 1**
Field: **Windsor**
County: **Sonoma**
State: **California**

BOREHOLE COMPENSATED SONIC

Schlumberger

Company: **WDC Exploration & Wells**

Well: **Esposti Park 1**

Field: **Windsor**

County: **Sonoma** State: **California**

COMBINEABLE MAGNETIC RESONANCE

GAMMA RAY TIE−IN

County: Sonoma
Field: Windsor
Location: LAT N 38.31.35.4
Well: Esposti Park 1
Company: WDC Exploration & Wells

LOCATION

LAT N 38.31.35.4
LONG W 122.46.46.5

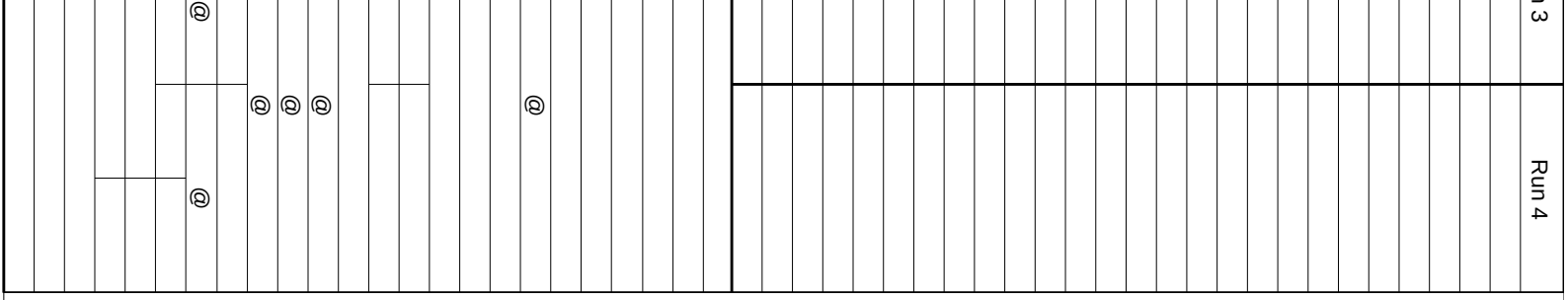
Elev.: K.B. 139.00 ft
G.L. 137.00 ft
D.F.

Permanent Datum: GROUND LEVEL Elev.: 137.00 ft
Log Measured From: GROUND LEVEL 0.00 ft above Perm. Datum
Drilling Measured From: GROUND LEVEL

API Serial No.	Section	Township	Range

	Run 1	Run 2	Run 3
Logging Date	4−Mar−2010		
Run Number	ONE		
Depth Driller	1040 ft		
Schlumberger Depth	1045 ft		
Bottom Log Interval	1037 ft		
Top Log Interval	40 ft		
Casing Driller Size @ Depth	11.750 in @ 40 ft	@	@
Casing Schlumberger	40 ft		
Bit Size	10.625 in		
Type Fluid In Hole	GEL		
MUD Density / Viscosity	9.8 lbm/gal / 40 s		
MUD Fluid Loss / PH	/		
MUD Source Of Sample	MUD PIT		
RM @ Measured Temperature	8.400 ohm.m @ 64 degF	@	@
RMF @ Measured Temperature	8.620 ohm.m @ 67 degF	@	@
RMC @ Measured Temperature	6.470 ohm.m @ 66 degF	@	@
Source RMF / RMC	MUD PRESS / MUD PRESS		
RM @ MRT / RMF @ MRT	5.729 @ 97 / 6.103 @ 97	@ / @	@ / @
Maximum Recorded Temperatures	97 degF		
Circulation Stopped / Time	3−Mar−2010		
Logger On Bottom / Time	3−Mar−2010 / 2:10		
Unit Number / Location	7008 / BAKERSFIELD		
Recorded By	BRADY ARCHER		
Witnessed By	BRIAN GULBRANSON		

	Run 1	Run 2	Run 3
Logging Date			
Run Number			
Depth Driller			
Schlumberger Depth			
Bottom Log Interval			
Top Log Interval			
Casing Driller Size @ Depth	@		
Casing Schlumberger			
Bit Size			
Type Fluid In Hole			
MUD Density / Viscosity	/		
MUD Fluid Loss / PH	/		
MUD Source Of Sample			
RM @ Measured Temperature	@		
RMF @ Measured Temperature	@		
RMC @ Measured Temperature	@		
Source RMF / RMC	/		
RM @ MRT / RMF @ MRT	@ / @		
Maximum Recorded Temperatures			
Circulation Stopped / Time			
Logger On Bottom / Time			
Unit Number / Location	/		
Recorded By			
Witnessed By			



DEPTH SUMMARY LISTING

Date Created: 4−MAR−2010 2:36:02

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46A XS
Serial Number:	2732	Serial Number:	2968	Serial Number:	6353
Calibration Date:	11−JANUARY−2(	Calibration Date:	24−FEB−2010	Length:	11000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	185		
Calibration Cable Type:	7−46A XS	Number of Calibration Points:	10	Conveyance Method:	Wireline
Wheel Correction 1:	−7	Calibration RMS:	18	Rig Type:	LAND
Wheel Correction 2:	−3	Calibration Peak Error:	35		

Depth Control Parameters

Log Sequence: Subsequent Log In the Well

Reference Log Name: AIT/GR/SP/MCFL
Reference Log Run Number: 1
Reference Log Date: 03−MAR−2010

Depth Control Remarks

1. All Schlumberger depth policy procedures applied.
2. IDW used as primary depth reference, Z−chart used as secondary.
3.
4.
5.
6.

DISCLAIMER
THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: BHC	OS1:
OS2: AIT/GR/SP/MCFL/HCAL	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
LOG CORRELATED TO AIT/SP/GR/MCFL DATED 3−3−2010	
CMR TUNED AT 738'	
MAX TEMP = 97 DEGF AT 1045 FT	
ICV NOT NEEDED BY CLIENT	
MUD CHLORIDES, PH AND FLUID LOSS DATA NOT PROVIDED BY CLIENT	
LOCATION DATA THAT WAS AVAILABLE IS IN THE HEADER	
NO API# PROVIDED	

CMR TURNED OFF BELOW CASING

RIG : GEFCO 50 K #122

THANK YOU FOR CHOOSING SCHLUMBERGER!

RUN 1		RUN 2	
SERVICE ORDER #:	AZ5H−00110	SERVICE ORDER #:	
PROGRAM VERSION:	18C0−147	PROGRAM VERSION:	
FLUID LEVEL:		FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

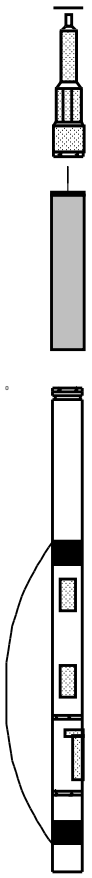
RUN 1 RUN 2

SURFACE EQUIPMENT

GSR−U 61
NCT−B
CNB−AB
NCS−VB

WITM (DTS)−A

DOWNHOLE EQUIPMENT

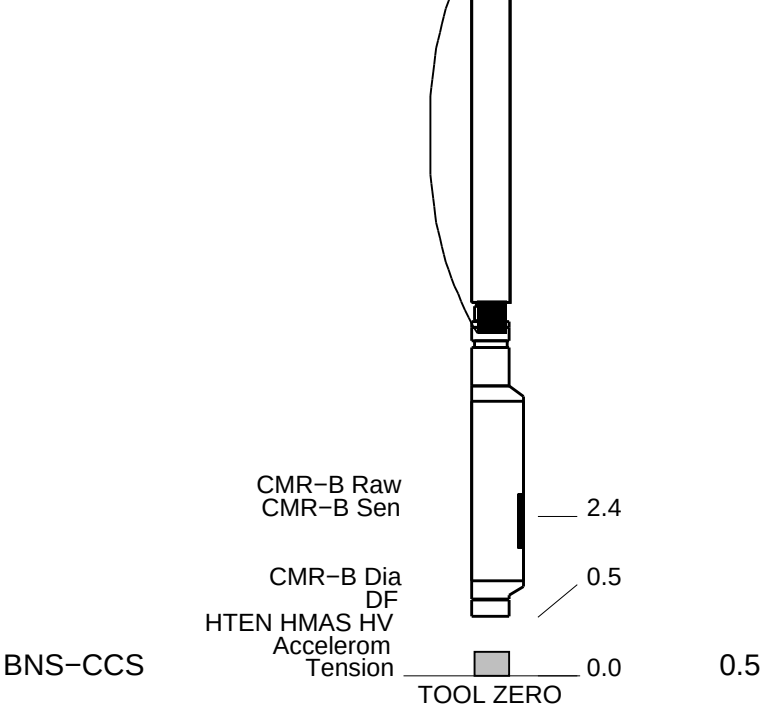


LEH−QT 31.4
LEH−QT 2975

DTC−H 28.5
ECH−KC 10500
DTCH0−A 9410
DTCH1−A

HILTB−FTB 25.5
HGNSD−B 4832
HMCA
HGNH 3949
NLS−KL
NSR−F 1441
HACCZ 6303
HCNT
HGR
BOW−SPR
NPV−N

CMRT−B 16.0
CMRH−AA 68
CMRC−B 68
CMRS−BA 49
EME−F

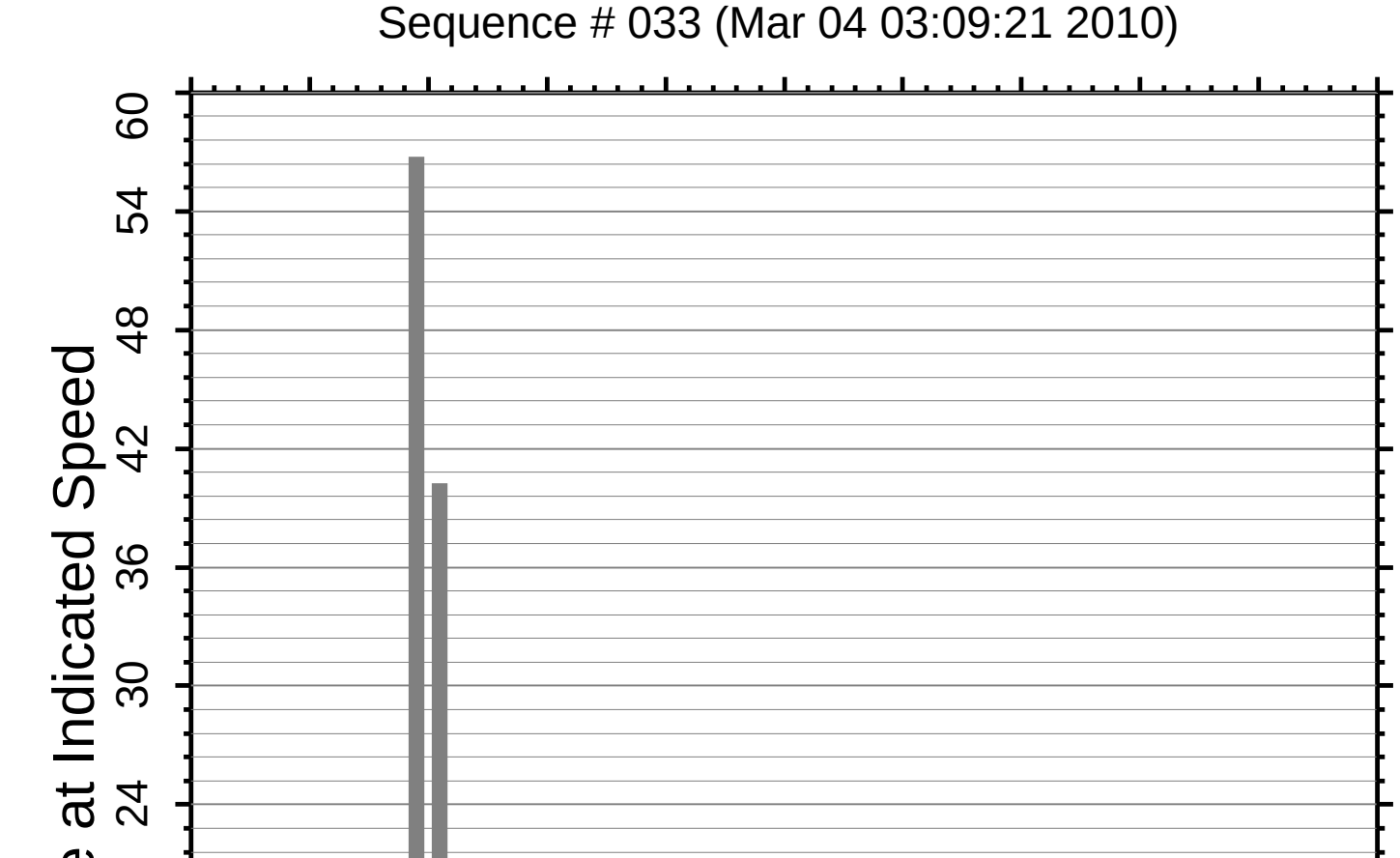


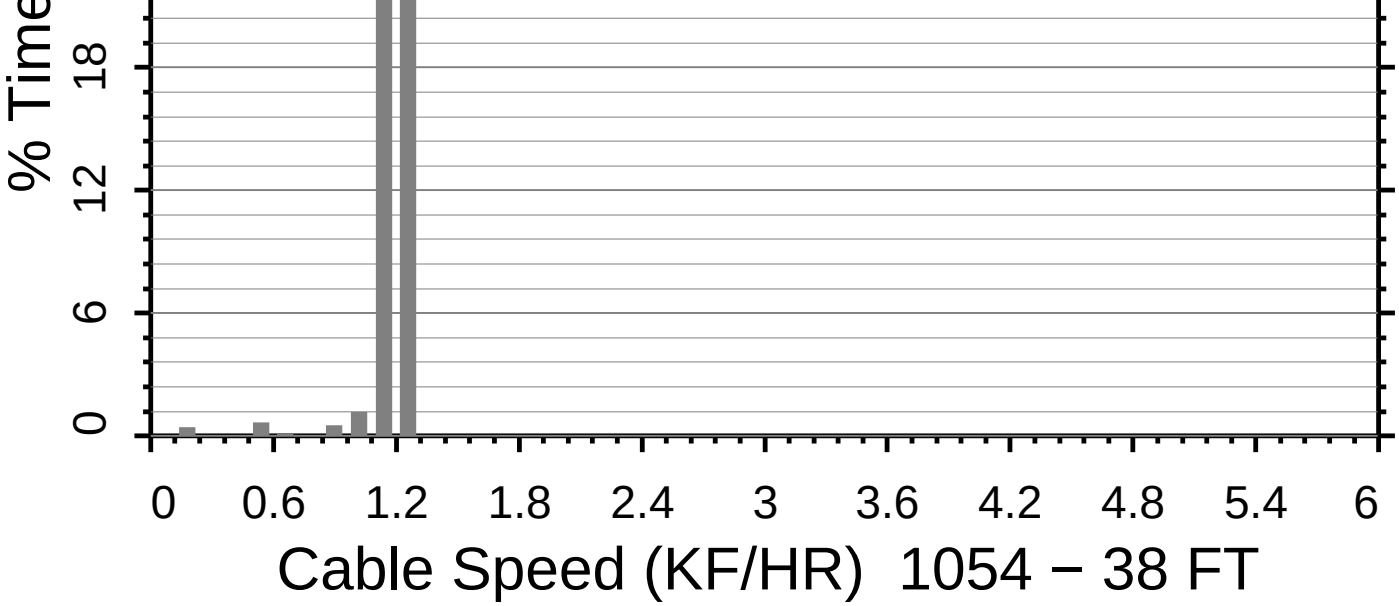
MAXIMUM STRING DIAMETER 6.60 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					0.0	11.750		Casing String
					40.0	11.750		Casing Shoe
					40.0	10.625		Borehole Segment

						1040.0	10.625	Borehole Segment Bottom

ALL DEPTHS ARE DRILLERS DEPTHS





Schlumberger Job Event Summary

	Time	Elapsed Time	Depth (FT)		File
Before Calibration Completed	3−Mar−2010 20:19				
Descent 1: AITM/DSLT−BB/HILTD/DTCH/LEHQT					
Begin Descent	3−Mar−2010 20:30				
Log Pass (down)	3−Mar−2010 22:10	000:07	697.5 −	948.0	AIT_SONIC_TLD_MCFL_011LDP
Log Pass (up)	3−Mar−2010 22:17	000:32	1054.5 −	44.7	AIT_SONIC_TLD_MCFL_012LUP
Descent 2: CMR−B/HILTD/DTCH/LEHQT					
Begin Descent	4−Mar−2010 1:30				
Log Pass (up)	4−Mar−2010 2:10	000:53	1054.4 −	37.9	CMR_TLD_MCFL_CNL_027LUP

Schlumberger

MAIN PASS 5 IN=100 FT

MAXIS Field Log

Company: WDC Exploration & Wells **Well: Esposti Park 1**

Input DLIS Files

DEFAULT	**CMR_TLD_MCFL_CNL_027LUP**	**FN:26**	**PRODUCER**	**04−Mar−2010 02:10**	**1054.4 FT**	**37.9 FT**

Output DLIS Files

DEFAULT	**CMR_TLD_MCFL_CNL_033PUP**	**FN:32**	**PRODUCER**	**04−Mar−2010 03:08**	**1054.5 FT**	**38.0 FT**

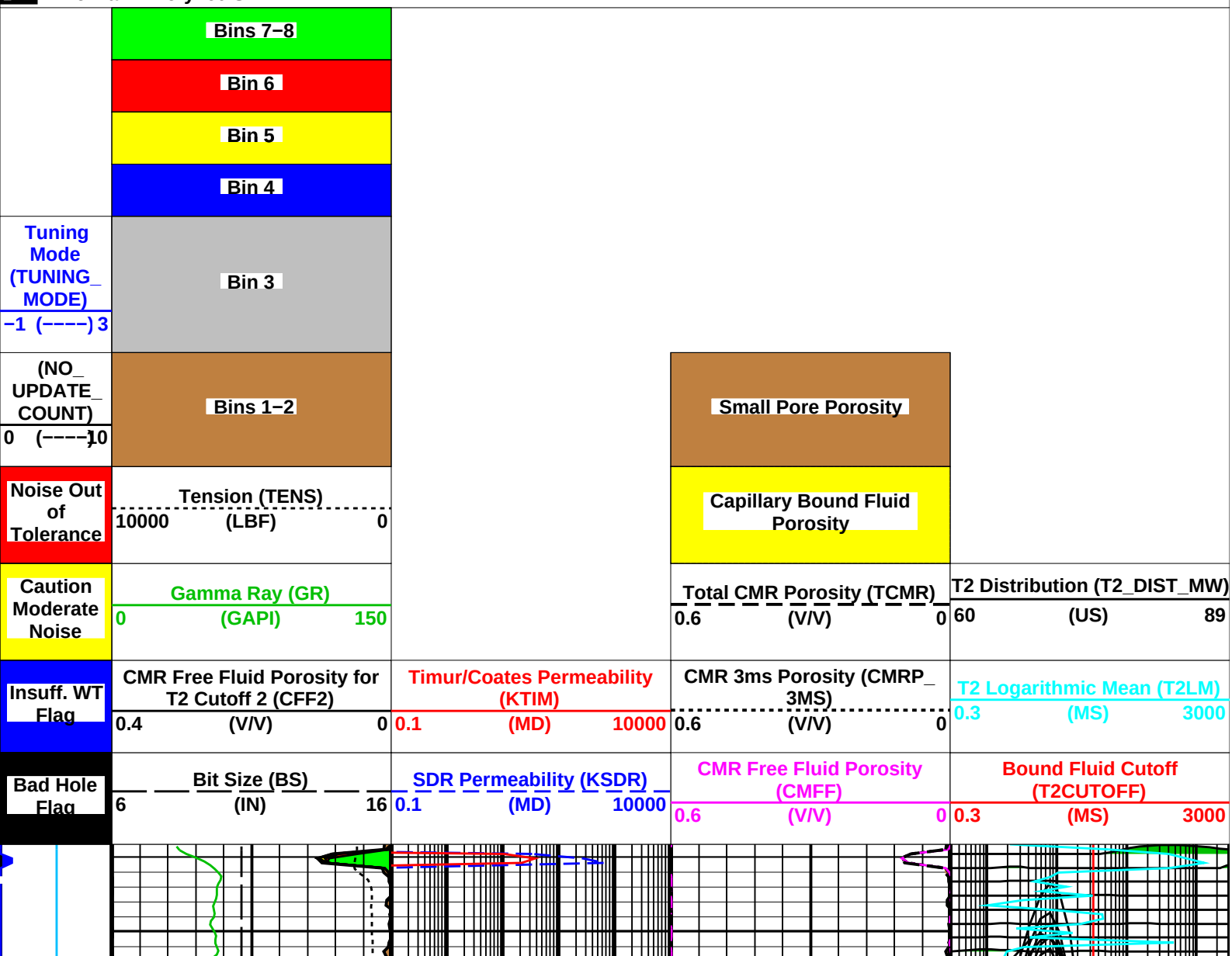
CMR DEPTH LOG REPORT

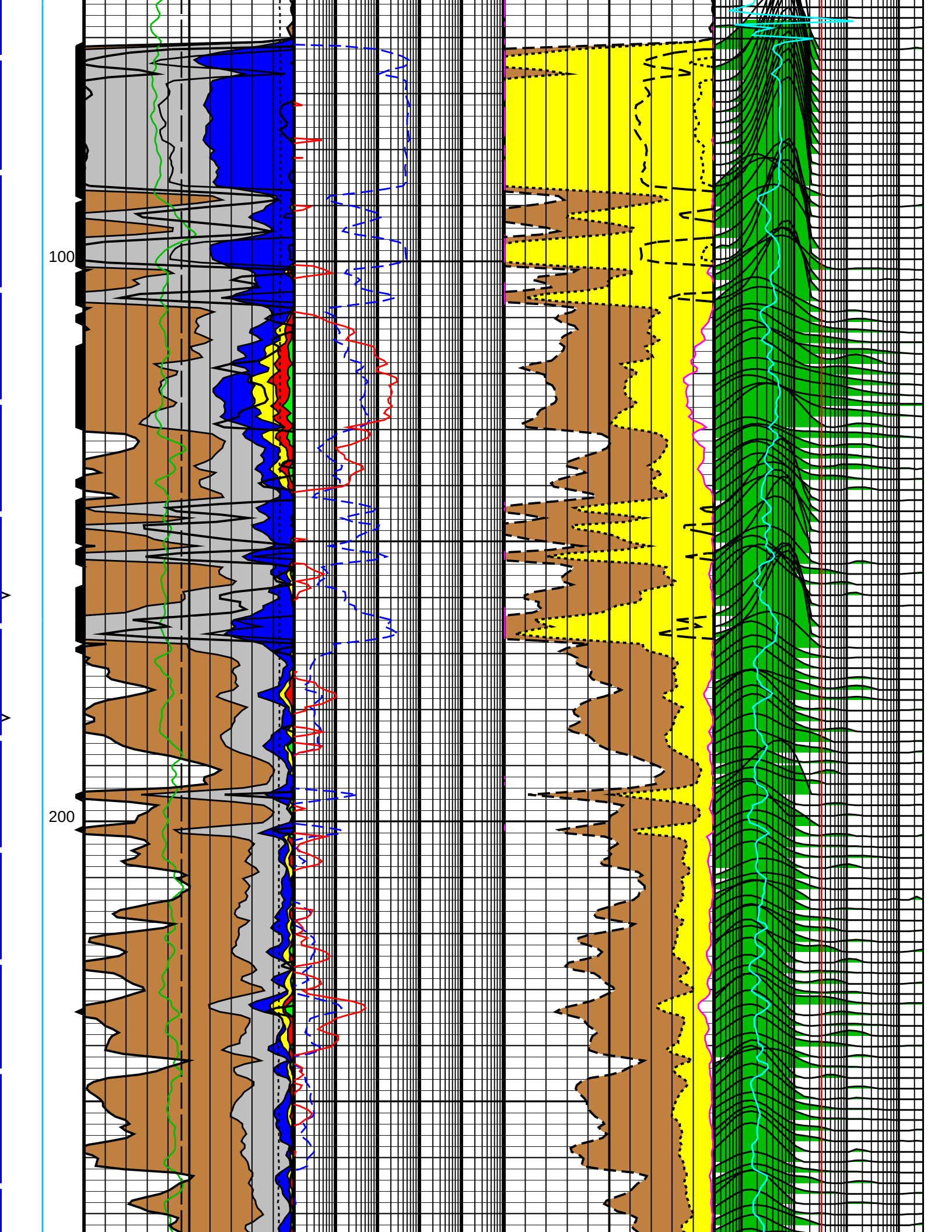
PARAMETER SUMMARY

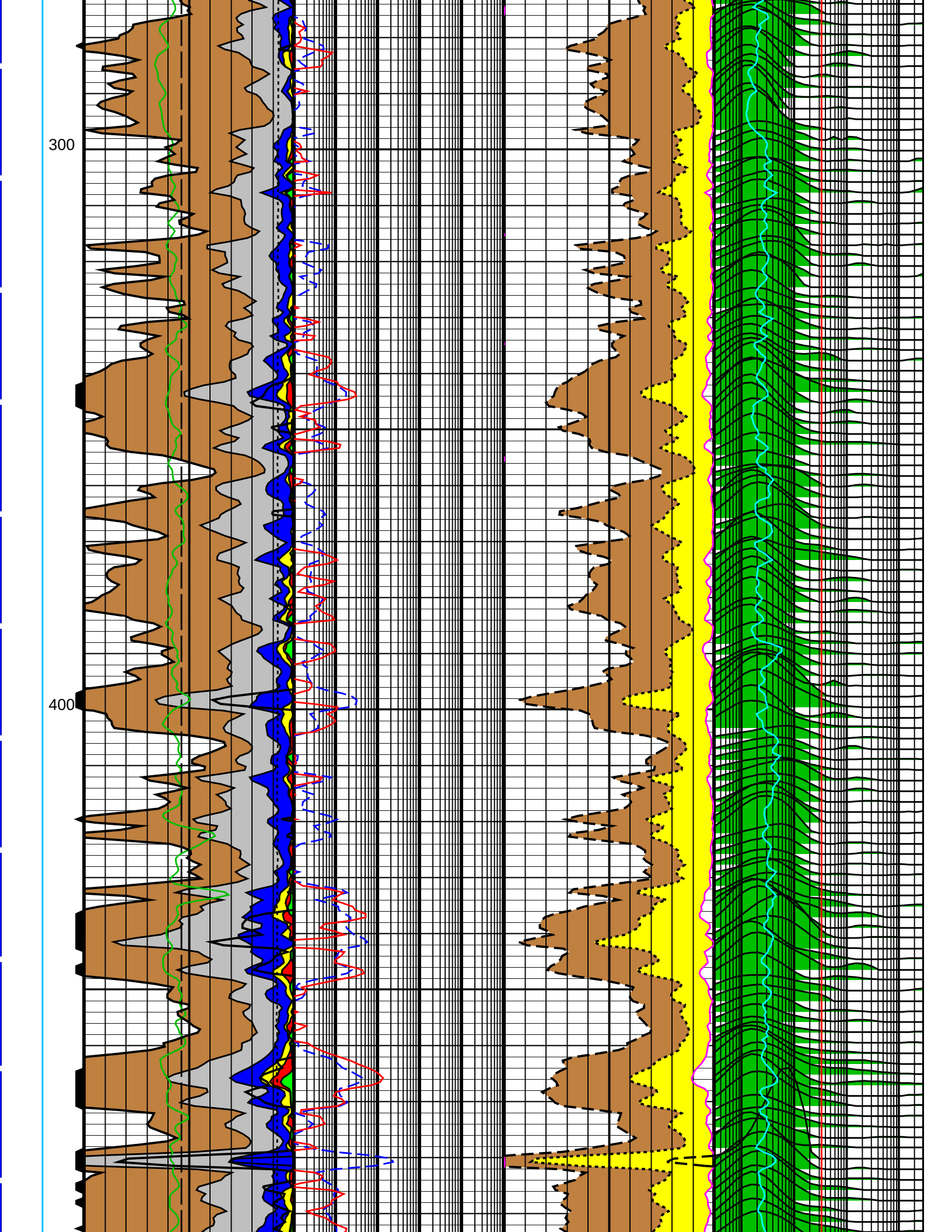
Tool Type: CMR−Plus	Cart. Number: 68	Sonde Number: 49	
Kit Number: 28	DHC Version : 16.4	DSP Version : 13	SP Version : 10182006
Mode: Sandstone Depth Log − B Mode		LFST Freq(khz) : 2172	LFST Temp(degc) : 29.09
Log Direction: Up	Polarization Correction: On	EPM: Yes	EPM T1/T2: Auto
Despiking: Off	High Res: Off	KBFV: Off	DMRP: Off
Echo Spacing(us):	(200 200)		
Polarization Times(sec) for:	T1=1s: (infinity 0.02)	T1=3s: (4.299 0.02)	T1=5s: (4.225 0.02)
Number of Echoes:	(1200 30)		
Repetition:	(1 10)	Duty Cycle (highest): 0.0282	
Regularization:	Auto		
T2 Min(msec): 0.3	T2 Max(msec): 3000	T2 Cutoff(msec): 33	T1/T2: 2
Number of Components: 30	Downhole Stacking: 3	Uphole Stacking: 1	First Echo Used: No
Multiple T2 Cutoffs(msec):	(0.3 1 3 10 33 100 300 1000 3000)		
Sample Int.(in): 7.5	Req Log Speed (f/h): 1400		

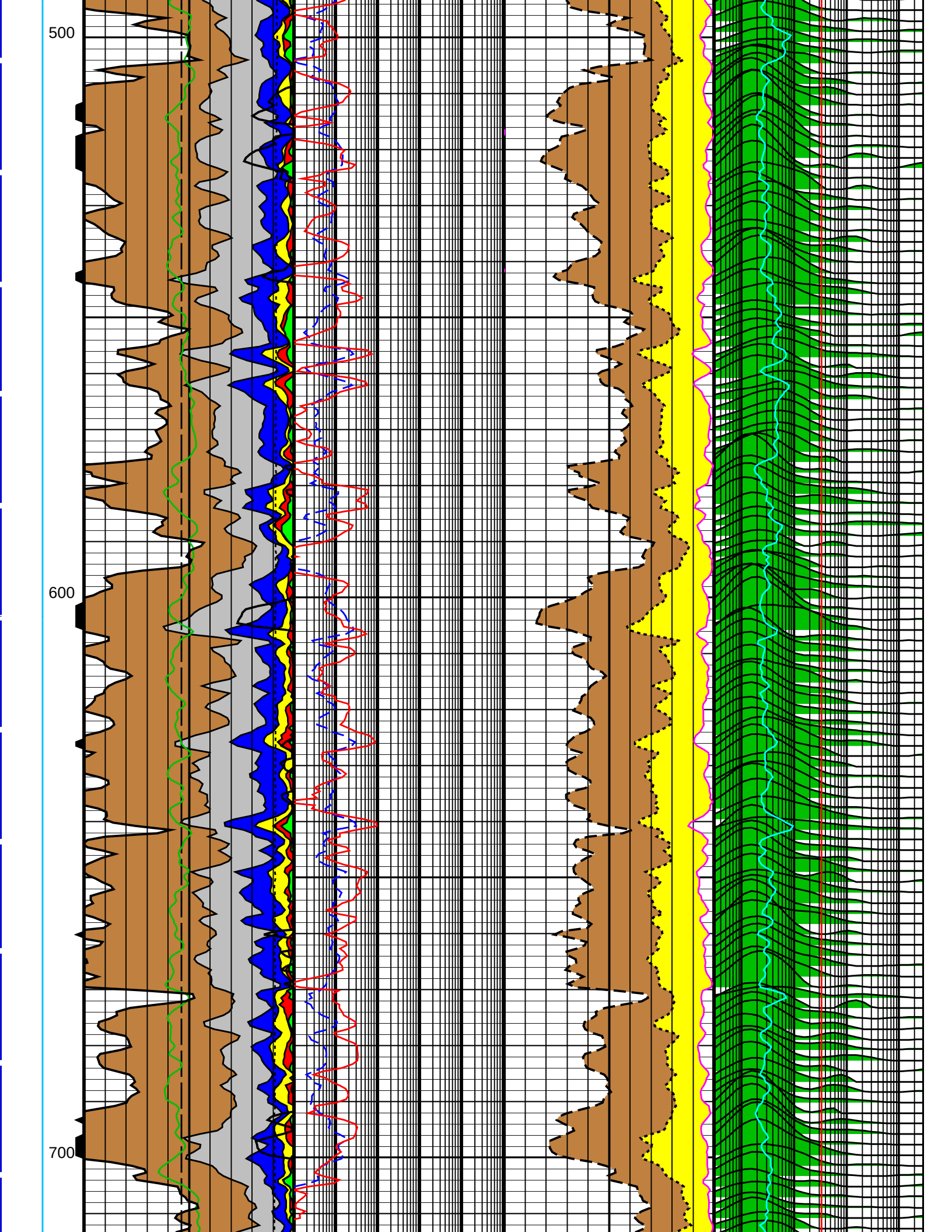
PIP SUMMARY

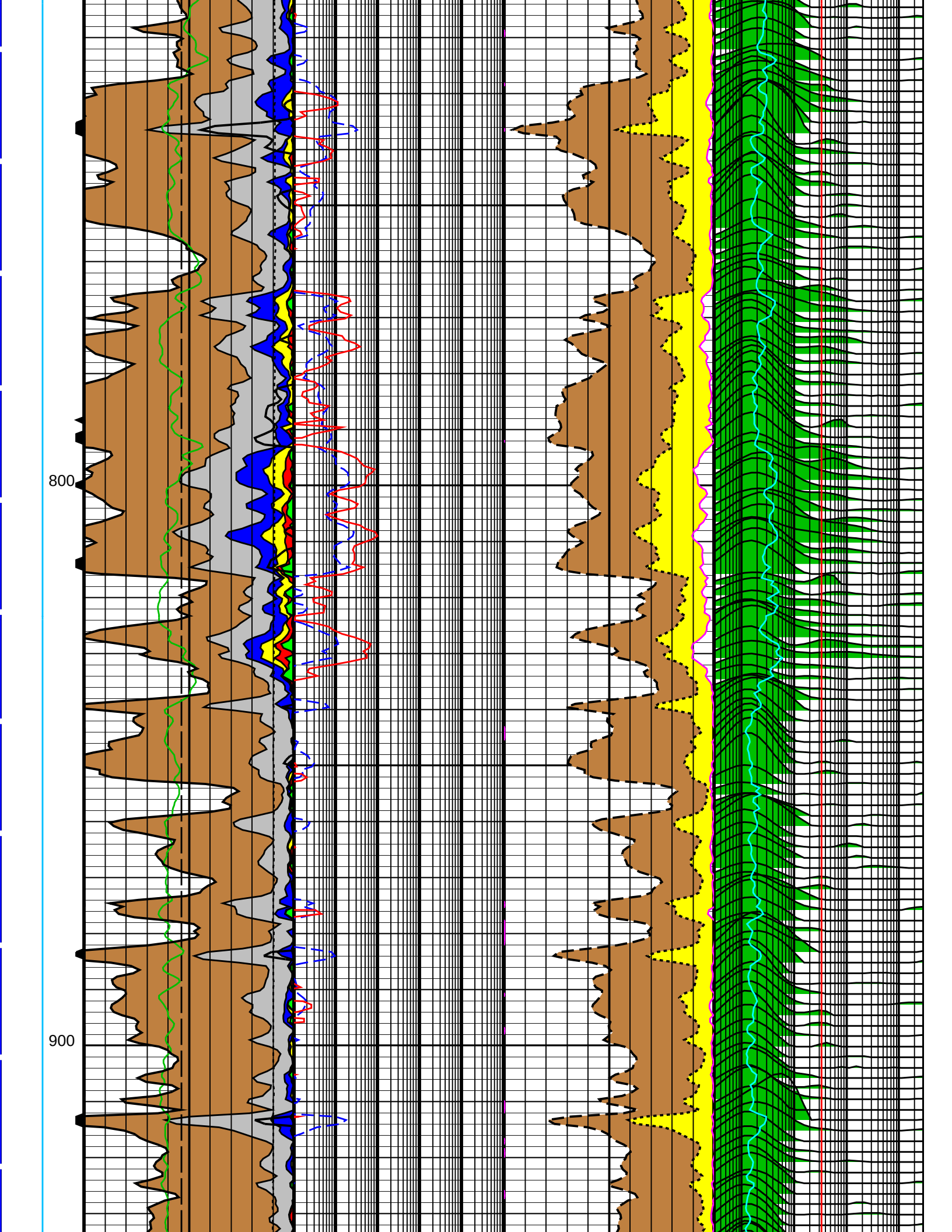
Time Mark Every 60 S

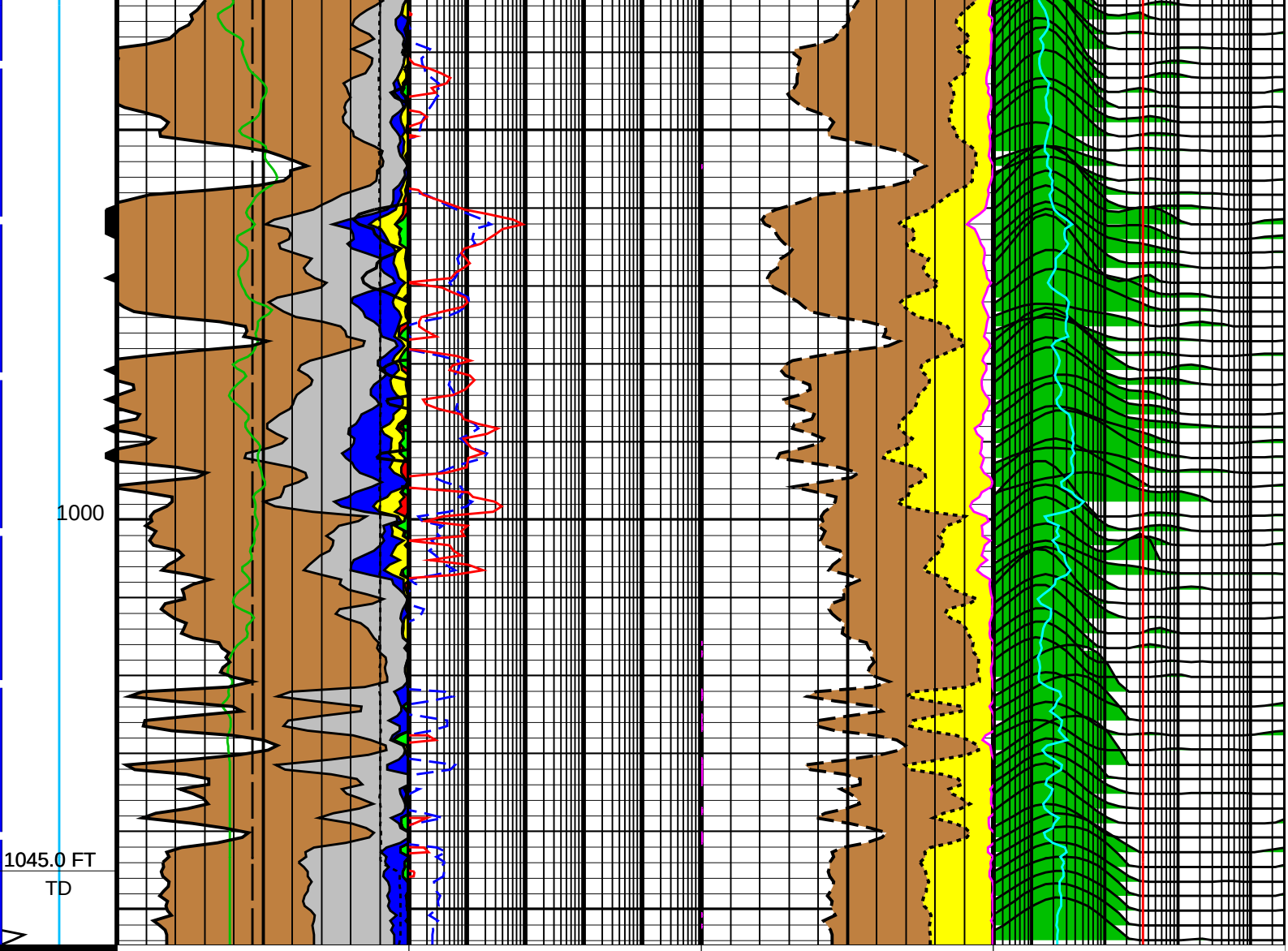



100
200


300
400


500
600
700


800
900



Bad Hole Flag	Bit Size (BS) 6 (IN) 16	SDR Permeability (KSDR) 0.1 (MD) 10000	CMR Free Fluid Porosity (CMFF) 0.6 (V/V) 0
			Bound Fluid Cutoff (T2CUTOFF) 0.3 (MS) 3000
Insuff. WT Flag	CMR Free Fluid Porosity for T2 Cutoff 2 (CFF2) 0.4 (V/V) 0	Timur/Coates Permeability (KTIM) 0.1 (MD) 10000	CMR 3ms Porosity (CMRP_3MS) 0.6 (V/V) 0
			T2 Logarithmic Mean (T2LM) 0.3 (MS) 3000
Caution Moderate Noise	Gamma Ray (GR) 0 (GAPI) 150		Total CMR Porosity (TCMR) 0.6 (V/V) 0
			T2 Distribution (T2_DIST_MW) 60 (US) 89
Noise Out of Tolerance	Tension (TENS) 10000 (LBF) 0		Capillary Bound Fluid Porosity
(NO_UPDATE_COUNT) 0 (----) 10	Bins 1–2		Small Pore Porosity
Tuning Mode (TUNING_MODE) −1 (----) 3	Bin 3		
	Bin 4		
	Bin 5		



PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value	
	System and Miscellaneous		
BS	Bit Size	10.625	IN
DO	Depth Offset for Playback	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: CMRT_BIN_POR_DEPTH_LOG **Vertical Scale: 5" per 100'** **Graphics File Created: 04−Mar−2010 03:08**

OP System Version: 18C0−147

CMRT−B	18C0−147	HILTB−FTB	18C0−147
DTC−H	18C0−147		

Input DLIS Files

DEFAULT	CMR_TLD_MCFL_CNL_027LUP	FN:26	PRODUCER	04−Mar−2010 02:10	1054.4 FT	37.9 FT

Output DLIS Files

DEFAULT	CMR_TLD_MCFL_CNL_033PUP	FN:32	PRODUCER	04−Mar−2010 03:08

Schlumberger

CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration							
Before: 2−Mar−2010 15:42							
Gamma Ray Background	30.00	N/A	64.58	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	169.1	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement							
Master: 22−Jan−2010 15:29 Before: 2−Mar−2010 15:43							
CNTC Background	25.94	25.94	25.43	N/A	N/A	3.891	CPS
CFTC Background	24.68	24.68	27.65	N/A	N/A	3.702	CPS
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement							
Master: 22−Jan−2010 15:29							
Thermal Near Corr. (Tank)	5800	5504	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2322	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.159	2.370	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration							
Before: 3−Mar−2010 20:19							
Z−Axis Acceleration	32.19	N/A	32.10	N/A	N/A	N/A	F/S2

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature	55.0	DEGF.
Thermal Housing Size	3.379	IN.
NSR−F serial number	1441	

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − B	4832
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT −	
Z−Axis Accelerometer	HACC −	6303
Neutron Logging Source	NLS − KL	
Neutron Source Radioactive	NSR − F	1441
HTBC Communication Assembly DTS Mode	HMCA −	
Compensated Neutron Box	CNB − AB	
Auxiliary Equipment:		
HGNS Housing	HGNH −	3949
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U	61

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		64.58	Before		169.1
	0 (Minimum) 30.00 (Nominal) 120.0 (Maximum)			157.1 (Minimum) 165.0 (Nominal) 206.3 (Maximum)	

Before: 2−Mar−2010 15:42

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.94	Master		24.68
Before		25.43	Before		27.65
	5.000 (Minimum) 25.94 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 24.68 (Nominal) 40.00 (Maximum)	

Master: 22−Jan−2010 15:29 Before: 2−Mar−2010 15:43

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5504	Master		2322	Master		2.370
	4700 (Minimum) 5800 (Nominal) 6900 (Maximum)			1900 (Minimum) 2400 (Nominal) 2900 (Maximum)			2.120 (Minimum) 2.159 (Nominal) 2.540 (Maximum)	

Master: 22−Jan−2010 15:29

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.10
	31.53 (Minimum) 32.19 (Nominal) 32.84 (Maximum)	

Before: 3−Mar−2010 20:19

High resolution Integrated Logging Tool−DTS Master Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		25.94	Master		24.68
	5.000 (Minimum) 25.94 (Nominal) 40.00 (Maximum)			5.000 (Minimum) 24.68 (Nominal) 40.00 (Maximum)	

Master: 22−Jan−2010 15:29

High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS			Value	Phase	Thermal Far Corr. (Tank) CPS			Value	Phase	CNTC/CFTC (Tank)			Value
Master				5504	Master				2322	Master				2.370
	4700 (Minimum)	5800 (Nominal)	6900 (Maximum)			1900 (Minimum)	2400 (Nominal)	2900 (Maximum)			2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)	

Master: 22−Jan−2010 15:29

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC−H Auxiliary Cartridge	DTCH − A	
DTC−H Telemetry Cartridge	DTCH − A	9410
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH − KC	10500

CMRT LARMOR FREQUENCY SEARCH REPORT − Thu Mar 04 02:06:09 2010

Search Accepted

ALF Offset: value, std dev (deg): 0.1 , 0.48
Offset relative to master value (deg): −6.9

Search Results:

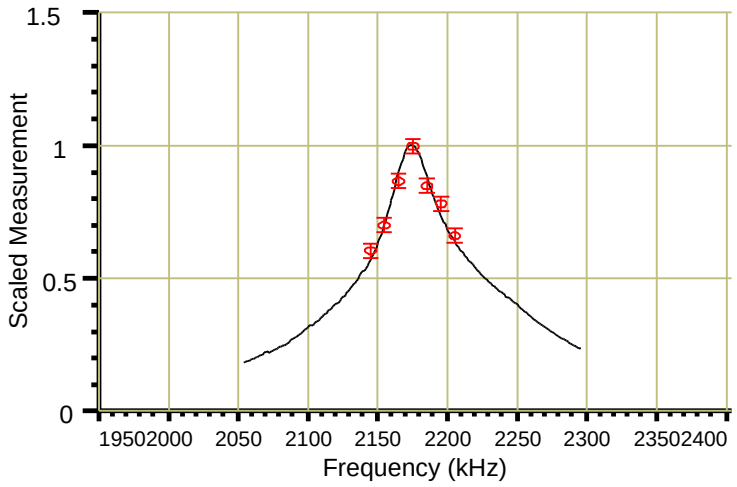
Larmor Frequency (kHz): **2172**
Temperature (degc): **28.7**

Search Parameters:

Central Frequency (kHz): 2173
Central Frequency Selection: Current Freq
Echo Count Used: 32

Measured Data:

Frequency	Amplitude	RMS Noise	Std Deviation
2143	106.00	10.38	9.6497
2153	123.00	10.00	9.6266
2163	152.00	7.49	9.5943
2173	175.00	11.50	9.6226
2183	149.00	7.68	9.5947
2193	137.00	9.12	9.6661
2203	116.00	10.52	9.6444



Related Data:

Depth(ft):	738.0
Average Cable Speed (ft/h):	0.0
Delta Temperature (degc):	0.2
Measurement Time (sec):	25.2
HV Peak Current (mA):	3563.1
Previous LFST Freq (at Temp):	2165
Frequency Std Deviation (kHz):	1.49
Number of Echoes:	300
Polarization Time (sec):	0.400
Echo Spacing (usec):	200.0

Freq estimate from Temp (kHz):	2144
Tune Table Offset (kHz):	1.3
Sonde Number:	49
Cartridge Number:	68
System Gain:	0.902

CMRT TUNE WORD SEARCH REPORT − Thu Mar 04 02:04:27 2010

Search Results:

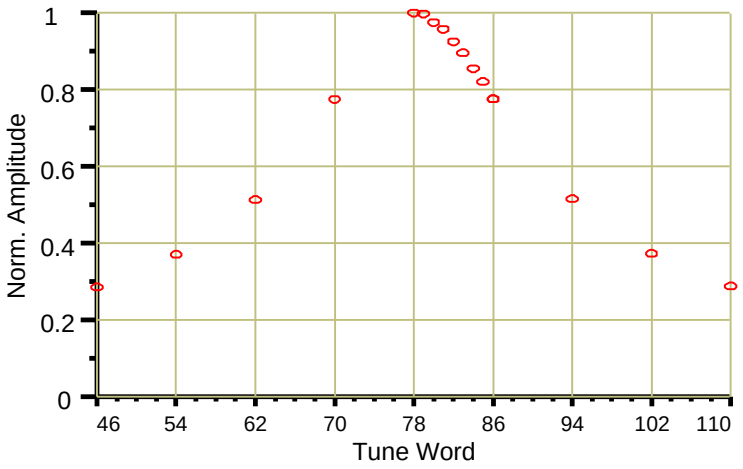
Tune Word:	**79**
Tune Word Offset:	**1**
Maximum Amplitude:	2431.0
Temperature(degF):	82.7
Depth (ft):	738.0

Related Data:

Master Cal Test Loop Amp:	2451.8
Current LF Estimate (kHz):	2166
Sonde Number:	49
Cartridge Number:	68

Search Parameters:

Search Frequency (kHz):	2166
Search Mode:	Auto



Company: **WDC Exploration & Wells**

Schlumberger

Well: **Esposti Park 1**
Field: **Windsor**
County: **Sonoma**
State: **California**

COMBINEABLE MAGNETIC RESONANCE
GAMMA RAY TIE−IN

Appendix D - Grain Size Analysis

ETS Environmental Technical Services

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Company:	E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR		Date Collected: unk
Attn:	John Lambie	Lab Director: G.Conrad PhD; Supervisor D. Jacobson	Date Received: 02/17/10
Project:	Bluebird, Windsor	Analysts: D. Salinas; S. Santos; A. Perez	Date of Report: 02/26/10
	California	**Hydrometer and Sieve Analysis Report**	

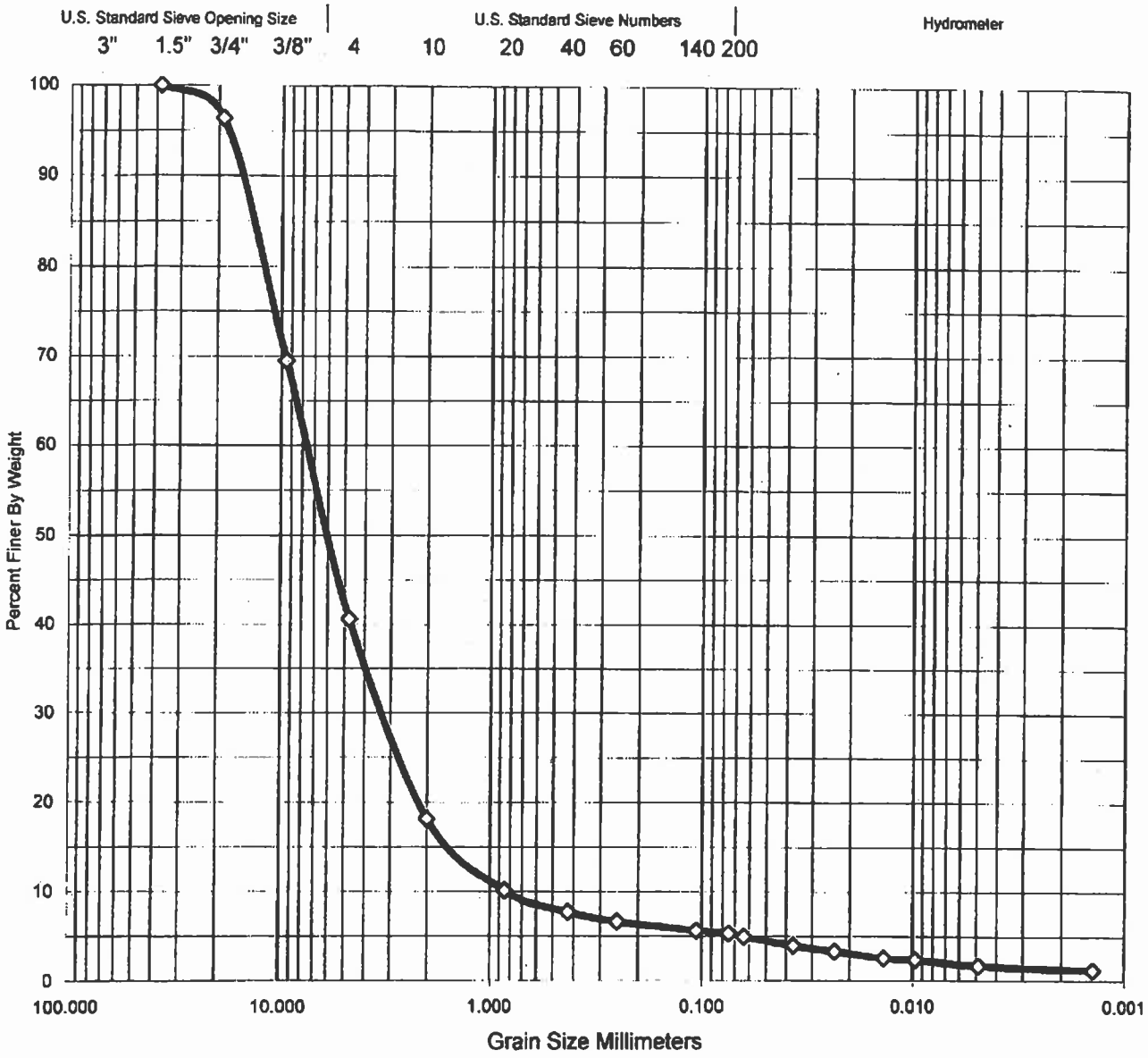
Lab Number / Sample ID		3892-1 / Bluebird #1 160-166'			3892-2 / Bluebird #2 199-220'			3892-3 / Bluebird #3 240-260'		
Sieve Size Screen #	ASTM System	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained
3/4" Sieve	Coarse Gravel		96.40	3.60		100.00	0.00		100.00	0.00
3/8" Sieve	Fine Gravel		69.49	26.91		93.52	6.48		93.50	6.50
Sieve #4			40.57	28.91		77.22	16.30		77.55	15.96
Sieve #10	Coarse Sand		18.18	22.40		37.83	39.39		49.80	27.74
Sieve #20	Medium Sand		10.12	8.05		10.61	27.21		24.46	25.34
Sieve #40			7.72	2.40		2.98	7.64		11.31	13.15
Sieve #60	Fine Sand		6.63	1.09		1.13	1.85		4.44	6.87
Sieve #140			5.63	1.00		1.02	0.11		1.39	3.05
Sieve #200			5.32	0.32		0.90	0.12		1.01	0.38
Silt (0.074)	Mud (Silt+Clay)	3.65			0.49			0.78		
Clay (0.005)		1.67			0.41			0.23		
			Gravel->	59.43		*Gravel->*	22.78		*Gravel->*	22.46
			Sand->	35.26		*Sand->*	76.32		*Sand->*	76.53
			Fines->	5.32		*Fines->*	0.90		*Fines->*	1.01
PLATE #:		**1**	*Total->*	100.00	**2**	*Total->*	100.00	**3**	*Total->*	100.00

Comments

Two of these samples are predominantly sand while one is mostly gravel; mud is very minor to insignificant. As a result, engineering nomenclatures follow this pattern of dominant texture as do other nomenclatural systems for the most part. Mud (i.e., silt and clay) content of the first sample is high enough that it does modify classification of this sample. The other two in this part of the set have inconsequential mud content at roughly one percent. Thus, classifications in the standard engineering system (ASTM) are as follows: gravel with silt and sand, and sand with gravel; in other systems they classifiy as gravel and gravelly sand (USGS); or very to extremely gravelly sand (USDA). The gravel may represent lowermost sand bar or possibly a small channel lag deposit or even overbank splay materials, while the more sandy samples seem to be more mid-level sand bar or levee materials. Certainly, the gravel should be representative of a moderately high energy regime such as a fast flowing stream or possibly a rapid flow flood event, while the sand samples seem to represent more of a moderate energy regime but one in which more or less continuous scour occurred as there is little mud content. It certainly seems that these mateials also should exhibit rapid to very rapid hydraulic conductivities considering their coarse textures, thus water production should be more of a matter of the areal extent, unit thickness, and level of saturation. The sand units obviously should be 'tighter' than the two sand units.

\\ Notes: Samples are dried, disaggregated, and screened through a nested set of sieves. Consolidated samples are wet sieved while unconsolidated samples (e.g., beach sand) can be dry sieved. Different organizations, e.g. USGS, USDA, CSSC, ISSS, ASTM, AASHTO, etc., have different divisions for the various fractions. The divisions listed above usually reflect either ASTM or client specifications. Depending on specs, anywhere from 2-12 hydrometer points are taken over a 2 to 24 hour period. The hydrometer (i.e., settling) tubes are 17" x 2.375" polycarbonate cylinders; dispersion device is stainless steel.

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	3.60
3/8"	26.91
#4	28.91
#10	22.40
#20	8.05
#40	2.40
#60	1.09
#140	1.00
#200	0.31

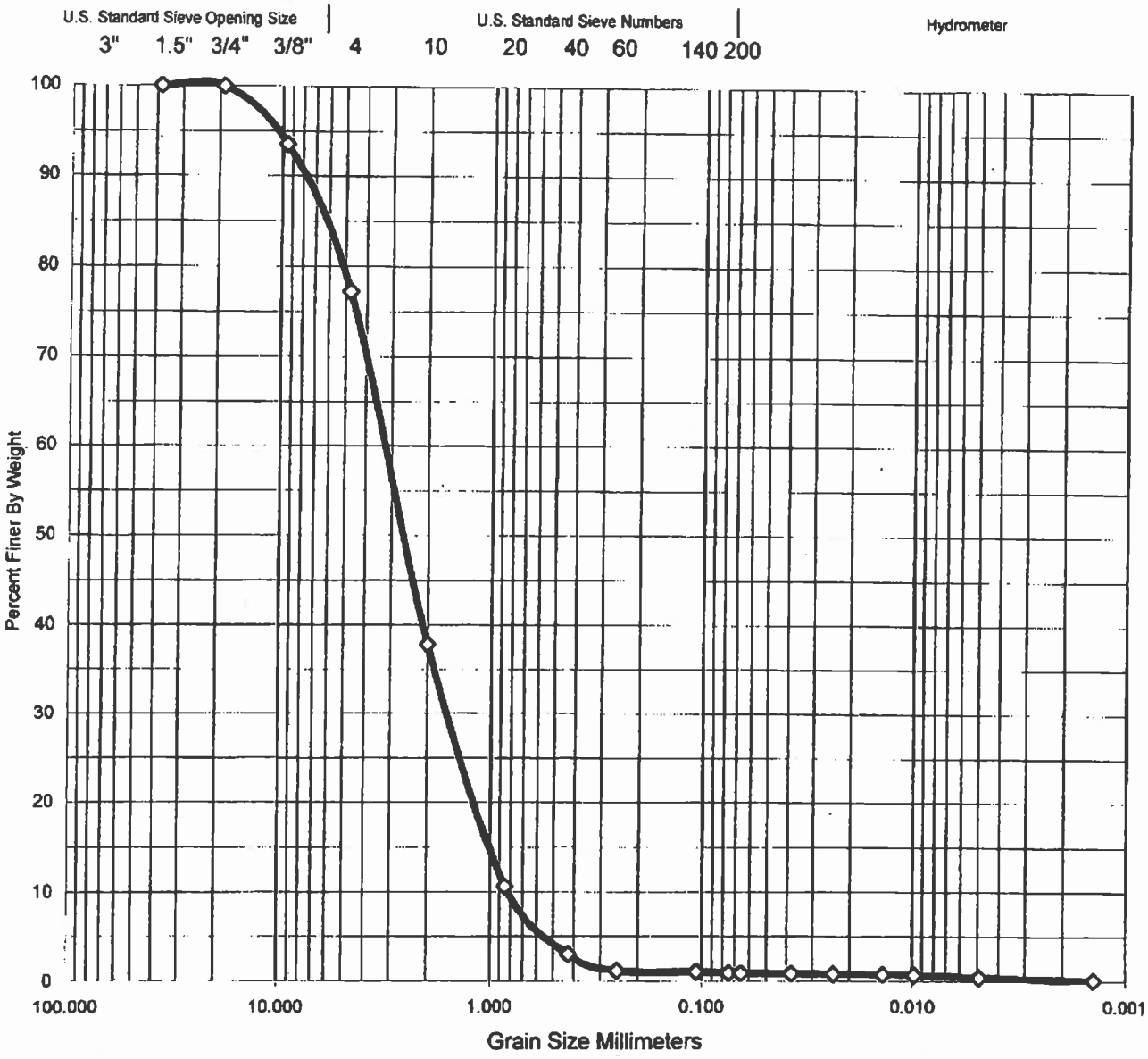
Textural Classes & Percentages	
Gravel Total	59.43
Coarse Sand	22.40
Medium Sand	10.45
Fine Sand	2.41
Sand Total	35.26
Silt	3.65
Clay	1.67
Fines Total	5.32
Grand Total	100.00

ASTM Classification
Lt Brown Gravel w/ Silt & Sand (GP-GM)
USDA Classification
Lt Brown Extremely Gravelly Sand
USGS Classification
Lt. Brown Gravel

Lab Number: 03892-1		Location: Windsor, California	
Project ID: Bluebird		Sample ID: Bluebird #1 160-166'	
Plate: 1	Client:	E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10

E T S

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

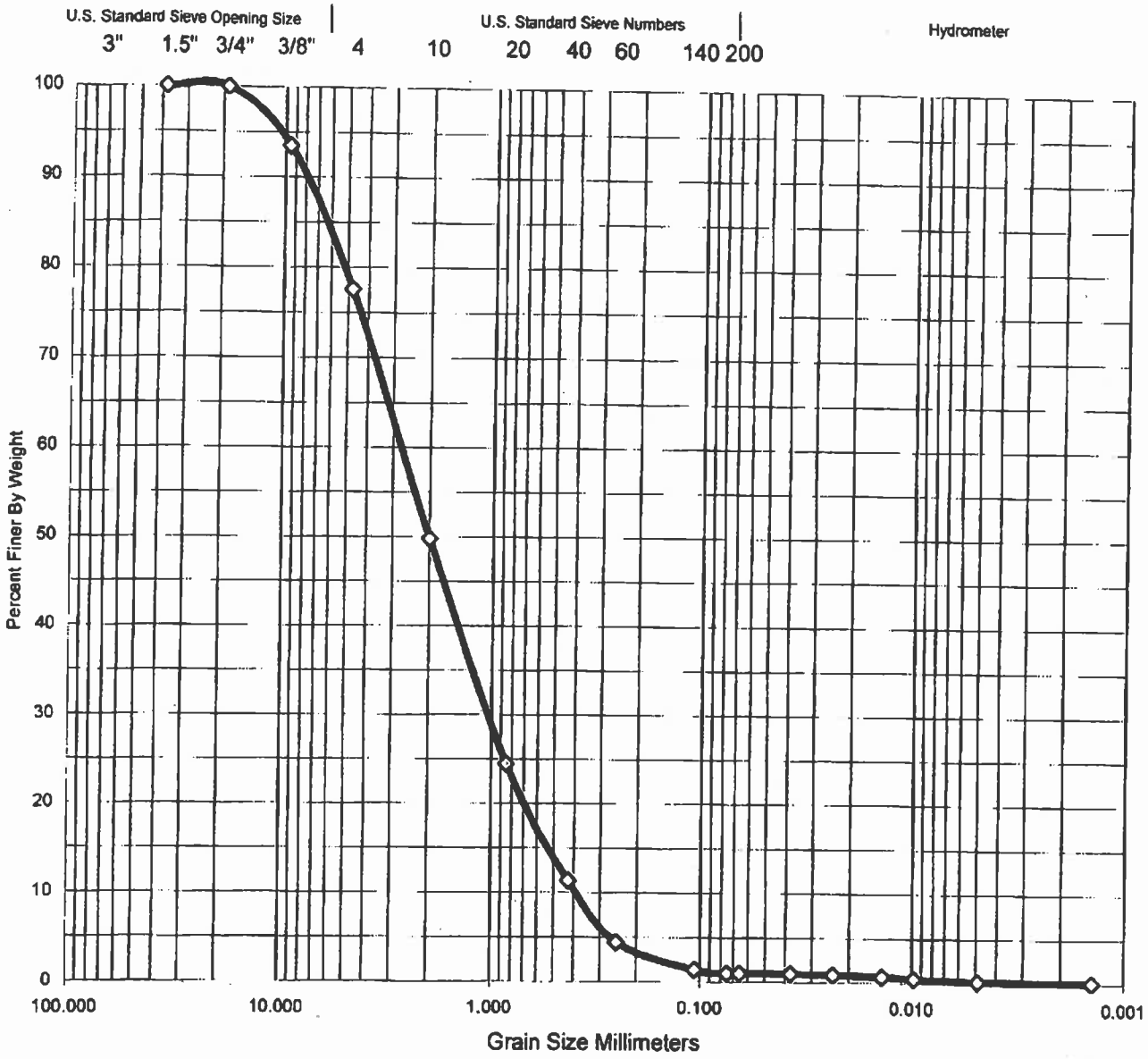
Sieve No.	% Fraction
3/4"	0.00
3/8"	6.48
#4	16.30
#10	39.39
#20	27.21
#40	7.64
#60	1.85
#140	0.11
#200	0.12

Textural Classes & Percentages	
Gravel Total	22.78
Coarse Sand	39.39
Medium Sand	34.85
Fine Sand	2.08
Sand Total	76.32
Silt	0.49
Clay	0.41
Fines Total	0.90
Grand Total	100.00

ASTM Classification
Gray Sand w/ Gravel (SP)
USDA Classification
Gray Extremely Gravelly Sand
USGS Classification
Gray Gravelly Sand

Lab Number: 03892-2	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #1 199-220'		
Plate: 2	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	0.00
3/8"	6.50
#4	15.96
#10	27.74
#20	25.34
#40	13.15
#60	6.87
#140	3.05
#200	0.38

Textural Classes & Percentages	
Gravel Total	22.46
Coarse Sand	27.74
Medium Sand	38.49
Fine Sand	10.30
Sand Total	76.53
Silt	0.78
Clay	0.23
Fines Total	1.01
Grand Total	100.00

ASTM Classification
Gray Sand w/ Gravel (SP)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Gravelly Sand

Lab Number: 03892-3	Location: Windsor, California	E T S
Project ID: Bluebird	Sample ID: Bluebird #1 240-260'	
Plate: 3	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10

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Company: E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR
Attn: John Lambie
Project: Bluebird, Windsor California
Lab Director: G.Conrad PhD; Supervisor D. Jacobson
Analysts: D. Salinas; S. Santos; A. Perez
Date Collected: unk
Date Received: 02/17/10
Date of Report: 02/26/10

Hydrometer and Sieve Analysis Report

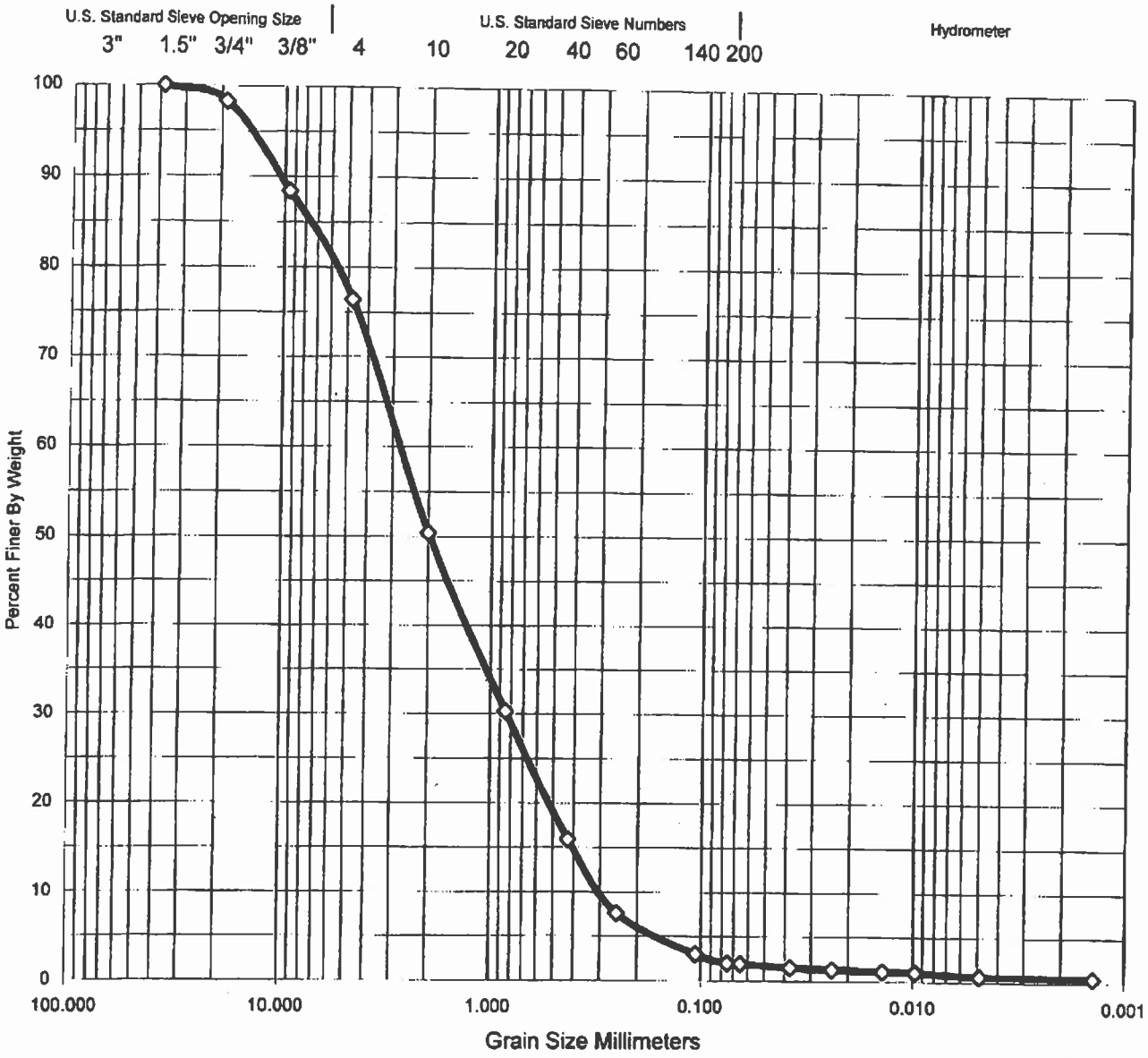
Lab Number / Sample ID		3892-4 / Bluebird #4 280-320'			3892-5 / Bluebird #5 330-340'			3892-6 / Bluebird #6 340-354'		
Sieve Size Screen #	ASTM System	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained
3/4" Sieve	Coarse Gravel		98.32	1.68		100.00	0.00		100.00	0.00
3/8" Sieve	Fine Gravel		88.44	9.88		99.10	0.90		97.25	2.75
Sieve #4			76.41	12.03		91.91	7.19		81.25	16.00
Sieve #10	Coarse Sand		50.38	26.03		64.07	27.84		37.28	43.97
Sieve #20	Medium Sand		30.32	20.06		37.77	26.30		8.43	28.85
Sieve #40			15.93	14.39		11.85	25.92		3.15	5.28
Sieve #60	Fine Sand		7.63	8.30		4.68	7.17		2.32	0.83
Sieve #140			3.00	4.63		2.59	2.09		2.02	0.30
Sieve #200			2.00	1.00		2.08	0.51		1.98	0.04
Silt (0.074)	Mud (Silt+Clay)	1.30			1.01			1.32		
Clay (0.005)		0.70			1.07			0.66		
			Gravel->	23.59		*Gravel->*	8.09		*Gravel->*	18.75
			Sand->	74.41		*Sand->*	89.83		*Sand->*	79.27
			Fines->	2.00		*Fines->*	2.08		*Fines->*	1.98
PLATE #:		**4**	*Total->*	100.00	**5**	*Total->*	100.00	**6**	*Total->*	100.00

Comments

All three of these samples are predominantly sand but two have enough gravel to modify their classifications; mud should be essentially insignificant. As a result, engineering nomenclatures follow this pattern of dominant texture as do other nomenclatural systems, for the most part. Mud (i.e., silt and clay) content is so low that it plays no role in nomenclature, and should not affect physical properties. Thus, classifications in the standard engineering system (ASTM) are as follows: sand with gravel, and sand; in other systems they classifiy as sandy gravel (USGS); or very to extremely gravelly sand (USDA). The sand with gravel samples may represent lower sand bar or proximal overbank deposits, while the sand seems to be more mid-level sand bar to mid-distant overbank materials. These materials appear to represent moderate energy flow regimes, varying up the energy scale some with the more gravelly samples, and scour seems to be exihibited by the very low mud content. It would seem that these materials also should have high moderate to modertately rapid hydraulic conductivites considering their somewhat coarse textures, thus water production could be more of a matter of areal extent, unit thickness, and level of saturation. But putting the more gross issues aside, specific textural compositions do differ significantly. For example, unit #6 is mostly coarse sand with nil fine sand, thus it would be expected to have a somehat greater perm rate than the other two (other gross properties and conditions being the same).

\\ Notes: Samples are dried, disaggregated, and screened through a nested set of sieves. Consolidated samples are wet sieved while unconsolidated samples (e.g., beach sand) can be dry sieved. Different organizations, e.g. USGS, USDA, CSSC, ISSS, ASTM, AASHTO, etc., have different divisions for the various fractions. The divisions listed above usually reflect either ASTM or client specifications. Depending on specs, anywhere from 2-12 hydrometer points are taken over a 2 to 24 hour period. The hydrometer (i.e., settling) tubes are 17" x 2.375" polycarbonate cylinders; dispersion device is stainless steel.

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

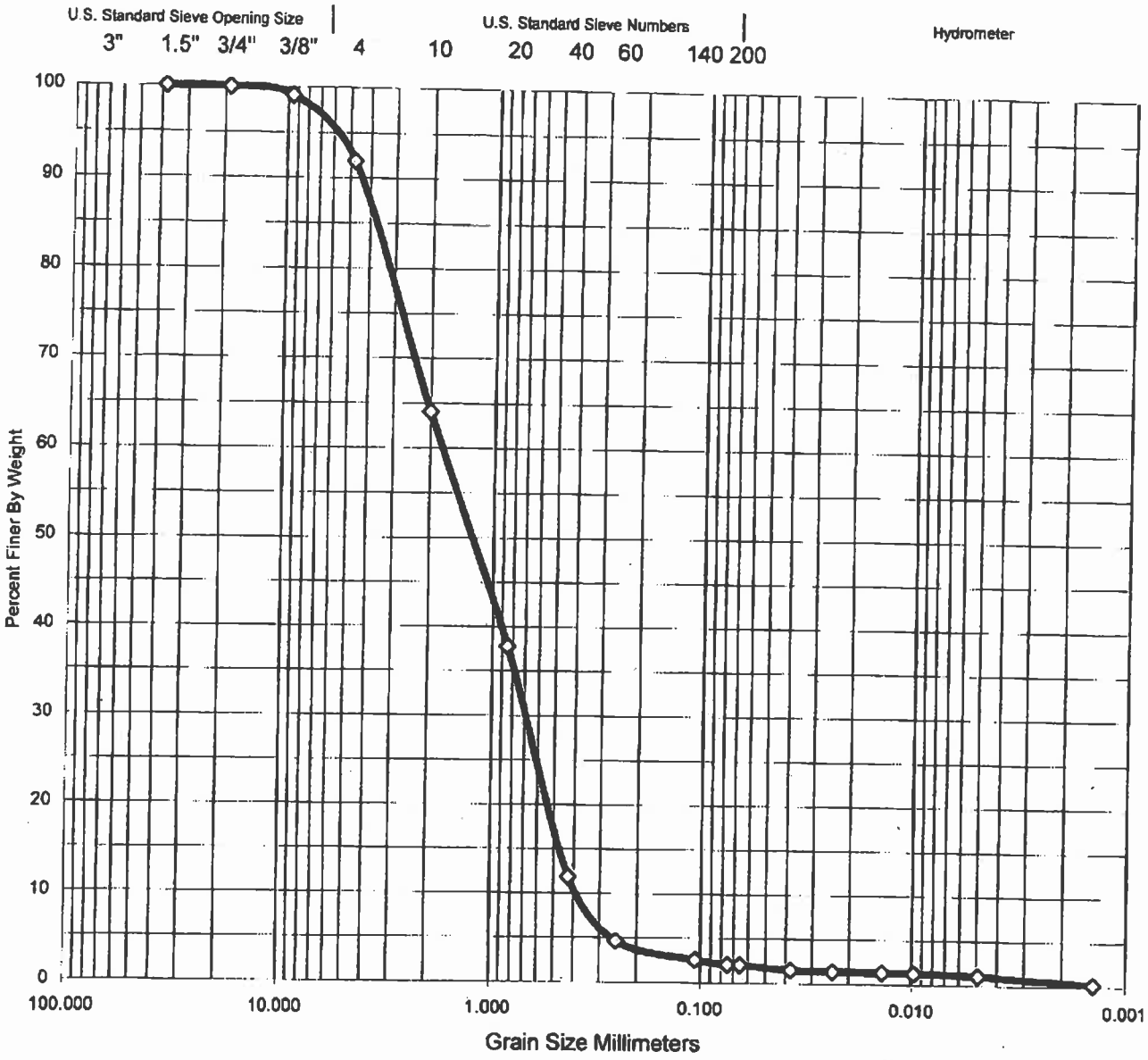
Sieve No.	% Fraction
3/4"	1.68
3/8"	9.88
#4	12.03
#10	26.03
#20	20.06
#40	14.39
#60	8.30
#140	4.63
#200	1.00

Textural Classes & Percentages	
Gravel Total	23.59
Coarse Sand	26.03
Medium Sand	34.45
Fine Sand	13.93
Sand Total	74.41
Silt	1.30
Clay	0.70
Fines Total	2.00
Grand Total	100.00

ASTM Classification
Gray Sand w/ Gravel (SP)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03892-4	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #4 280-320'		
Plate: 4	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

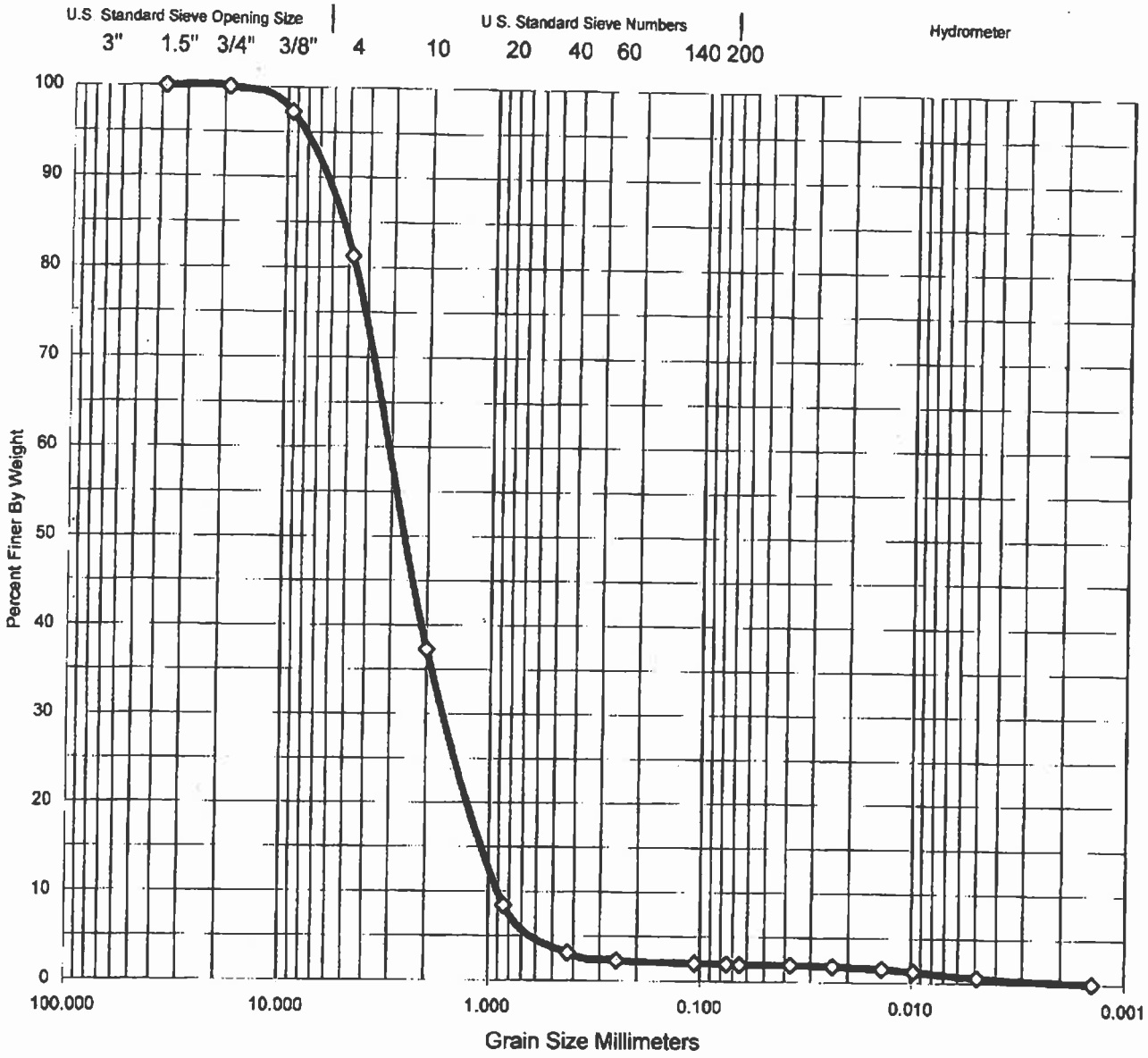
Sieve No.	% Fraction
3/4"	0.00
3/8"	0.90
#4	7.19
#10	27.84
#20	26.30
#40	25.92
#60	7.17
#140	2.09
#200	0.51

Textural Classes & Percentages	
Gravel Total	8.09
Coarse Sand	27.84
Medium Sand	52.22
Fine Sand	9.77
Sand Total	89.83
Silt	1.01
Clay	1.07
Fines Total	2.08
Grand Total	100.00

ASTM Classification
Gray Sand (SP)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03892-5	Location: Windsor, California	E T S
Project ID: Bluebird	Sample ID: Bluebird #5 330-340'	
Plate: 5	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	0.00
3/8"	2.75
#4	16.00
#10	43.97
#20	28.85
#40	5.28
#60	0.83
#140	0.30
#200	0.04

Textural Classes & Percentages	
Gravel Total	18.75
Coarse Sand	43.97
Medium Sand	34.13
Fine Sand	1.17
Sand Total	79.27
Silt	1.32
Clay	0.66
Fines Total	1.98
Grand Total	100.00

ASTM Classification
Gray Sand w/ Gravel (SP)
USDA Classification
Gray Extremely Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03892-6	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #6 340-354'		
Plate: 6	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

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Company: E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR
Attn: John Lambie
Project: Bluebird, Windsor California
Lab Director: G.Conrad PhD; Supervisor D. Jacobson
Analysts: D. Salinas; S. Santos; A. Perez
Date Collected: unk
Date Received: 02/17/10
Date of Report: 02/26/10

Hydrometer and Sieve Analysis Report

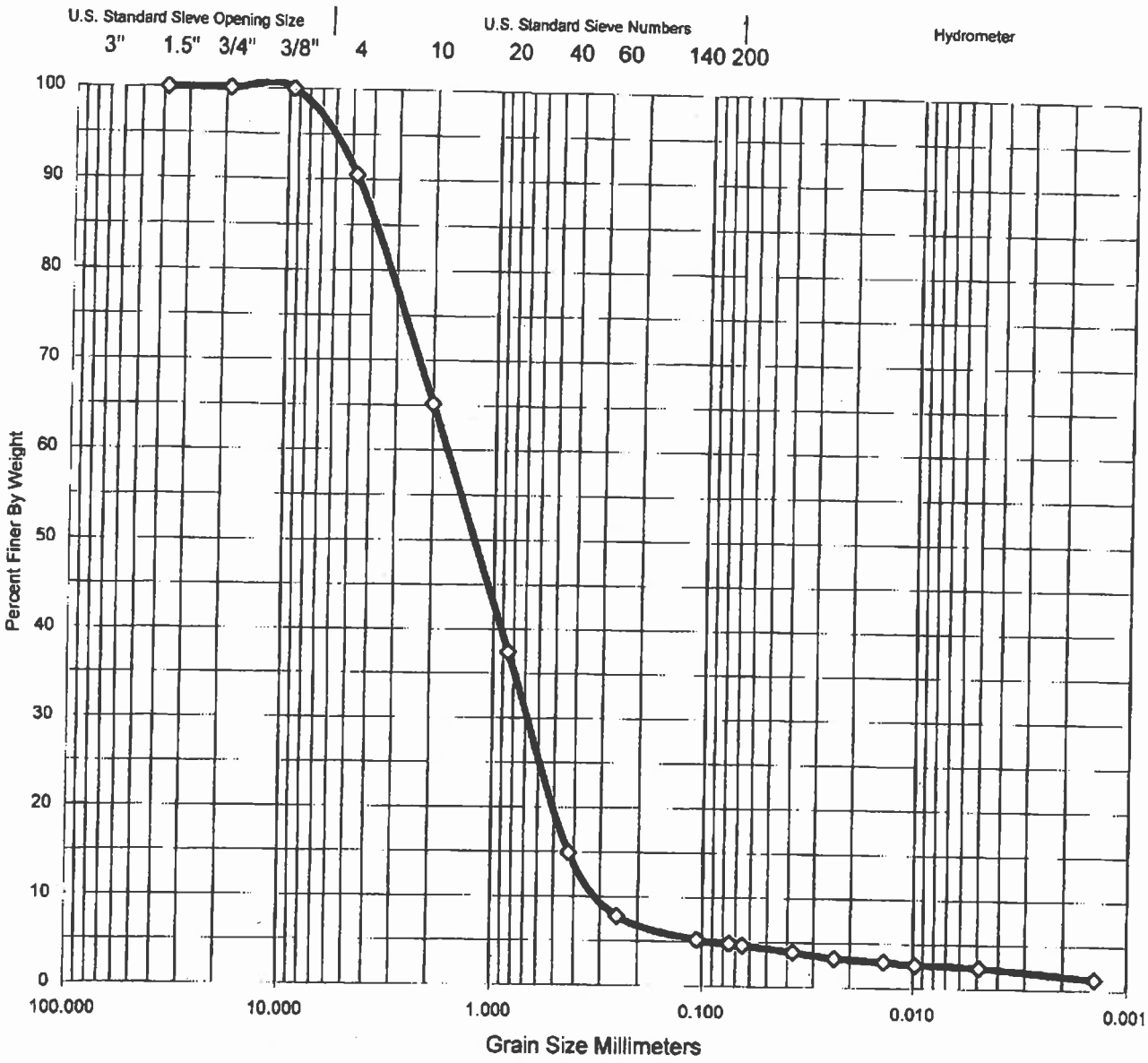
Lab Number / Sample ID		3892-7 / Bluebird #7 398-410'			3892-8 / Bluebird #8 439-451'			3892-9 / Bluebird #9 460-480'		
Sieve Size Screen #	ASTM System	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained
3/4" Sieve	Coarse Gravel		100.00	0.00		100.00	0.00		100.00	0.00
3/8" Sieve	Fine Gravel		100.00	0.00		98.70	1.30		99.72	0.28
Sieve #4			90.50	9.50		89.60	9.10		89.27	10.45
Sieve #10	Coarse Sand		65.18	25.32		63.87	25.73		62.20	27.07
Sieve #20	Medium Sand		37.45	27.73		38.86	25.01		35.18	27.02
Sieve #40			14.91	22.54		10.73	28.13		9.91	25.27
Sieve #60	Fine Sand		7.81	7.10		6.74	3.99		3.99	5.92
Sieve #140			5.22	2.59		3.82	2.92		2.59	1.40
Sieve #200			4.85	0.37		2.95	0.87		2.09	0.50
Silt (0.074)	Mud (Silt+Clay)	2.44			1.99			1.51		
Clay (0.005)		2.41			0.96			0.58		
			Gravel->	9.50		*Gravel->*	10.40		*Gravel->*	10.73
			Sand->	85.65		*Sand->*	86.65		*Sand->*	87.18
			Fines->	4.85		*Fines->*	2.95		*Fines->*	2.09
PLATE #:		**7**	*Total->*	100.00	**8**	*Total->*	100.00	**9**	*Total->*	100.00

Comments

All three of these samples are predominantly sand and they all have roughly the same gravel content (@ ≈10%, i.e., <15%) which is not enough gravel to modify their engineeering classifications; mud should be very minor to inconsequential (one is nearly, but not quite 5%). As a result, engineering nomenclatures follow this pattern of dominant texture as do other nomenclatural systems, for the most part. Mud (i.e., silt and clay) content is so low that it plays no role in nomenclature, and should have minimal to no affect on physical properties. So, classification in the standard engineering system (ASTM) is as follows: sand; in other systems they classifiy as sandy gravel (USGS); or very gravelly sand (USDA). These sediments may represent mid-level sand bar or more distal overbank deposits, or similar. These materials appear to represent moderate energy flow regimes; some scour seems to have kept mud content fairly low. It would seem that these materials also should have moderate rate hydraulic conductivites considering their moderately coarse textures, but water production could be as much a matter of areal extents, unit thicknesses, and levels of saturation. In this set specific textural compositions are fairly similar which argues for similar hydraulic behavior (i.e., properties).

\\ Notes: Samples are dried, disaggregated, and screened through a nested set of sieves. Consolidated samples are wet sieved while unconsolidated samples (e.g., beach sand) can be dry sieved. Different organizations, e.g. USGS, USDA, CSSC, ISSS, ASTM, AASHTO, etc., have different divisions for the various fractions. The divisions listed above usually reflect either ASTM or client specifications. Depending on specs, anywhere from 2-12 hydrometer points are taken over a 2 to 24 hour period. The hydrometer (i.e., settling) tubes are 17" x 2.375" polycarbonate cylinders; dispersion device is stainless steel.

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

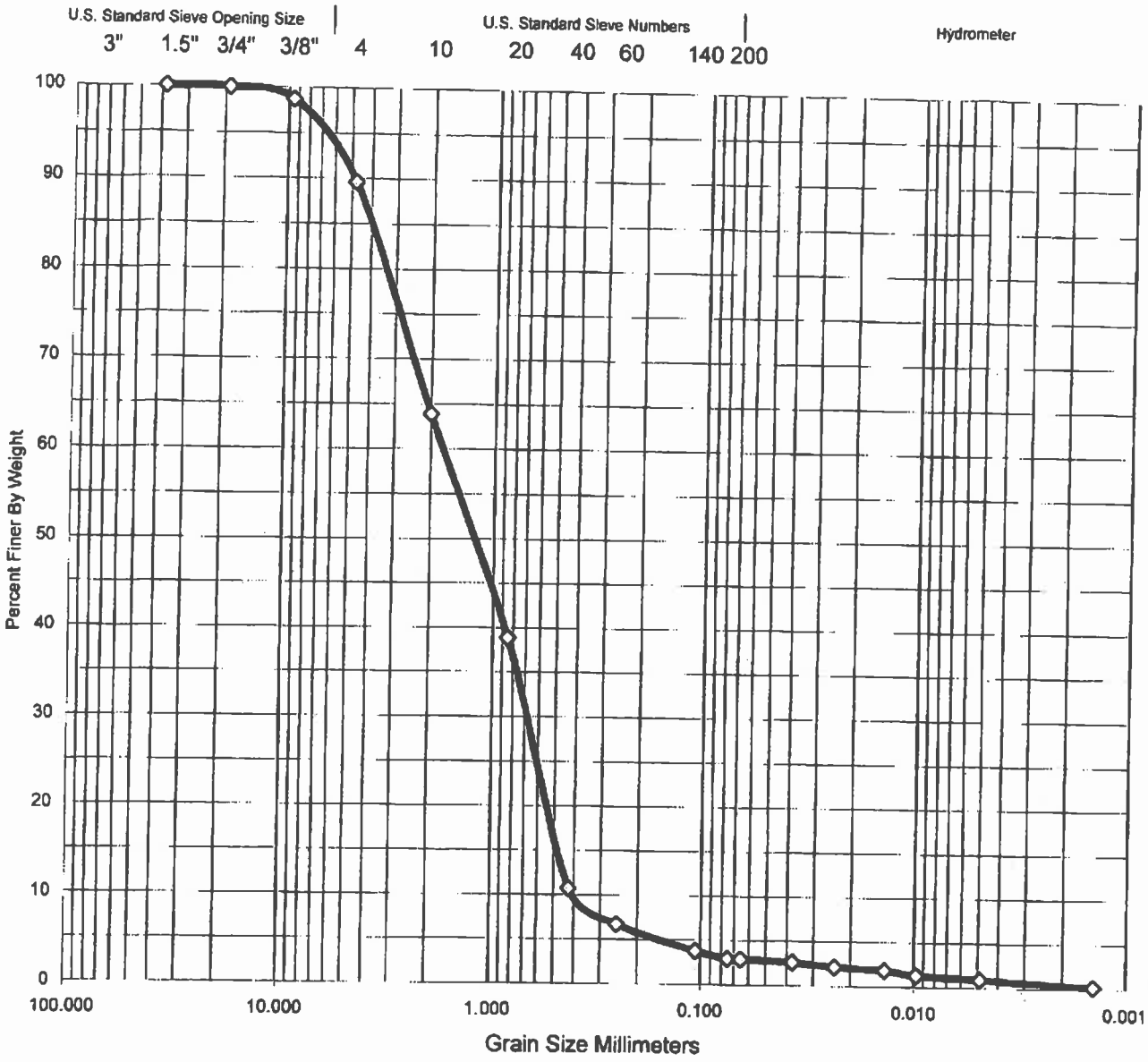
Sieve No.	% Fraction
3/4"	0.00
3/8"	0.00
#4	9.50
#10	25.32
#20	27.73
#40	22.54
#60	7.10
#140	2.59
#200	0.37

Textural Classes & Percentages	
Gravel Total	9.50
Coarse Sand	25.32
Medium Sand	50.27
Fine Sand	10.06
Sand Total	85.65
Silt	2.44
Clay	2.41
Fines Total	4.85
Grand Total	100.00

ASTM Classification
Gray Sand (SP)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03892-7	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #7 398-410'		
Plate: 7	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

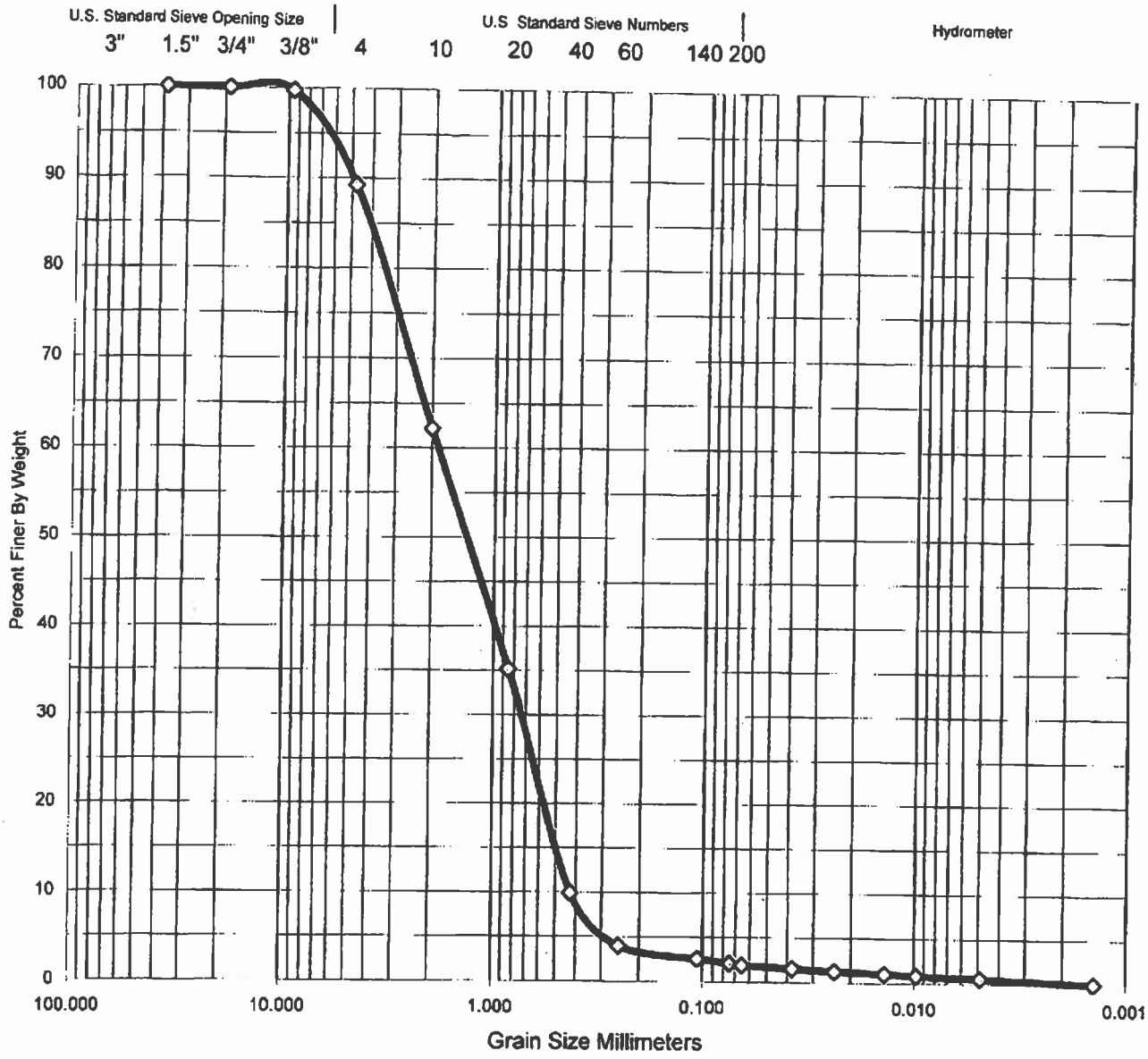
Sieve No.	% Fraction
3/4"	0.00
3/8"	1.30
#4	9.10
#10	25.73
#20	25.01
#40	28.13
#60	3.99
#140	2.92
#200	0.87

Textural Classes & Percentages	
Gravel Total	10.40
Coarse Sand	25.73
Medium Sand	53.14
Fine Sand	7.78
Sand Total	86.65
Silt	1.99
Clay	0.96
Fines Total	2.95
Grand Total	100.00

ASTM Classification
Gray Sand (SP)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03892-8	Location: Windsor, California		
Project ID: Bluebird	Sample ID: Bluebird #8 439-451'		
Plate: 8	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	E T S

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	0.00
3/8"	0.28
#4	10.45
#10	27.07
#20	27.02
#40	25.27
#60	5.92
#140	1.40
#200	0.50

Textural Classes & Percentages	
Gravel Total	10.73
Coarse Sand	27.07
Medium Sand	52.29
Fine Sand	7.82
Sand Total	87.18
Silt	1.51
Clay	0.58
Fines Total	2.09
Grand Total	100.00

ASTM Classification
Lt. Gray Sand (SP)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03892-9	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #9 460-480'		
Plate: 9	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

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Company:	E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR		Date Collected: unk
Attn:	John Lambie	Lab Director: G.Conrad PhD; Supervisor D. Jacobson	Date Received: 02/17/10
Project:	Bluebird, Windsor California	Analysts: D. Salinas; S. Santos; A. Perez	Date of Report: 02/26/10

Hydrometer and Sieve Analysis Report

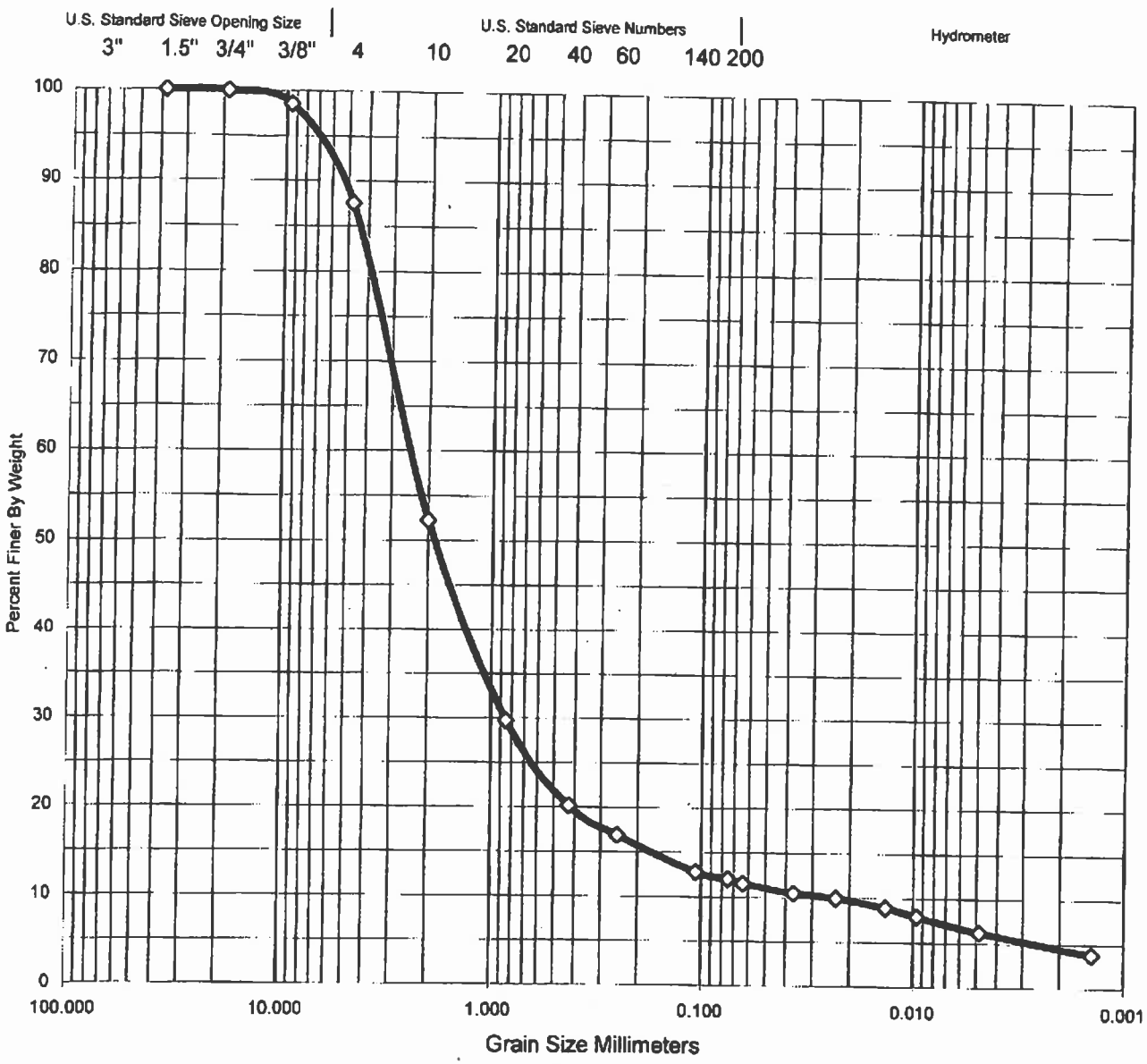
Lab Number / Sample ID		3892-10 / Bluebird #10 500-520'			3892-11 / Bluebird #11 520-540'			3892-12 / Bluebird #12 560-580'		
Sieve Size Screen #	ASTM System	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained
3/4" Sieve	Coarse Gravel		100.00	0.00		100.00	0.00		100.00	0.00
3/8" Sieve	Fine Gravel		98.56	1.44		98.58	1.42		97.58	2.42
Sieve #4			87.56	11.00		88.25	10.33		88.01	9.57
Sieve #10	Coarse Sand		52.23	35.33		54.83	33.42		58.21	29.80
Sieve #20	Medium Sand		29.74	22.49		26.47	28.35		22.70	35.52
Sieve #40			20.18	9.56		14.09	12.38		11.95	10.75
Sieve #60	Fine Sand		16.88	3.30		8.02	6.07		6.72	5.23
Sieve #140			12.79	4.09		4.19	3.84		4.29	2.43
Sieve #200			12.05	0.74		3.59	0.60		3.70	0.59
Silt (0.074)	Mud (Silt+Clay)	5.75			1.47			2.48		
Clay (0.005)		6.30			2.12			1.22		
			Gravel->	12.44		*Gravel->*	11.75		*Gravel->*	11.99
			Sand->	75.52		*Sand->*	84.66		*Sand->*	84.31
			Fines->	12.05		*Fines->*	3.59		*Fines->*	3.70
PLATE #:		**10**	*Total->*	100.00	**11**	*Total->*	100.00	**12**	*Total->*	100.00

Comments

All three of these samples are predominantly sand and they all have roughly the same gravel content (@ ≈12%, i.e., <15%) which is not enough gravel to modify their engineeering classifications; mud should be inconsequential in two, but of some significance in one (@ >12%). As a result, engineering nomenclatures follow this pattern of dominant texture as do other nomenclatural systems, for the most part. While mud (i.e., silt and clay) content plays no role in nomenclature in two samples, it does in one where it also would be expected to have some affect on physical properties. So, classifications in the standard engineering system (ASTM) are as follows: silty clayey sand and sand; in other systems they classifiy as muddy sandy gravel, and sandy gravel (USGS); or very gravelly sand (USDA). These sediments may represent mid-level sand bar or more distal overbank deposits, or similar. These materials appear to represent moderate energy flow regimes; scour is more lacking in the higher mud content sample. It would seem that these materials also should have moderate rate hydraulic conductivites considering their moderately coarse textures, but water production could be as much a matter of areal extents, unit thicknesses, and levels of saturation. In this set specific textural compositions are fairly similar in two samples which suggests they should have more or less similar hydraulic properties, however the higher mud contetn sample would be expected to diverge somewhat in its transmissivity rate due to the higher mud content, i.e., its rate could be moderately slow/low.

\\ Notes: Samples are dried, disaggregated, and screened through a nested set of sieves. Consolidated samples are wet sieved while unconsolidated samples (e.g., beach sand) can be dry sieved. Different organizations, e.g. USGS, USDA, CSSC, ISSS, ASTM, AASHTO, etc., have different divisions for the various fractions. The divisions listed above usually reflect either ASTM or client specifications. Depending on specs, anywhere from 2-12 hydrometer points are taken over a 2 to 24 hour period. The hydrometer (i.e., settling) tubes are 17" x 2.375" polycarbonate cylinders; dispersion device is stainless steel.

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

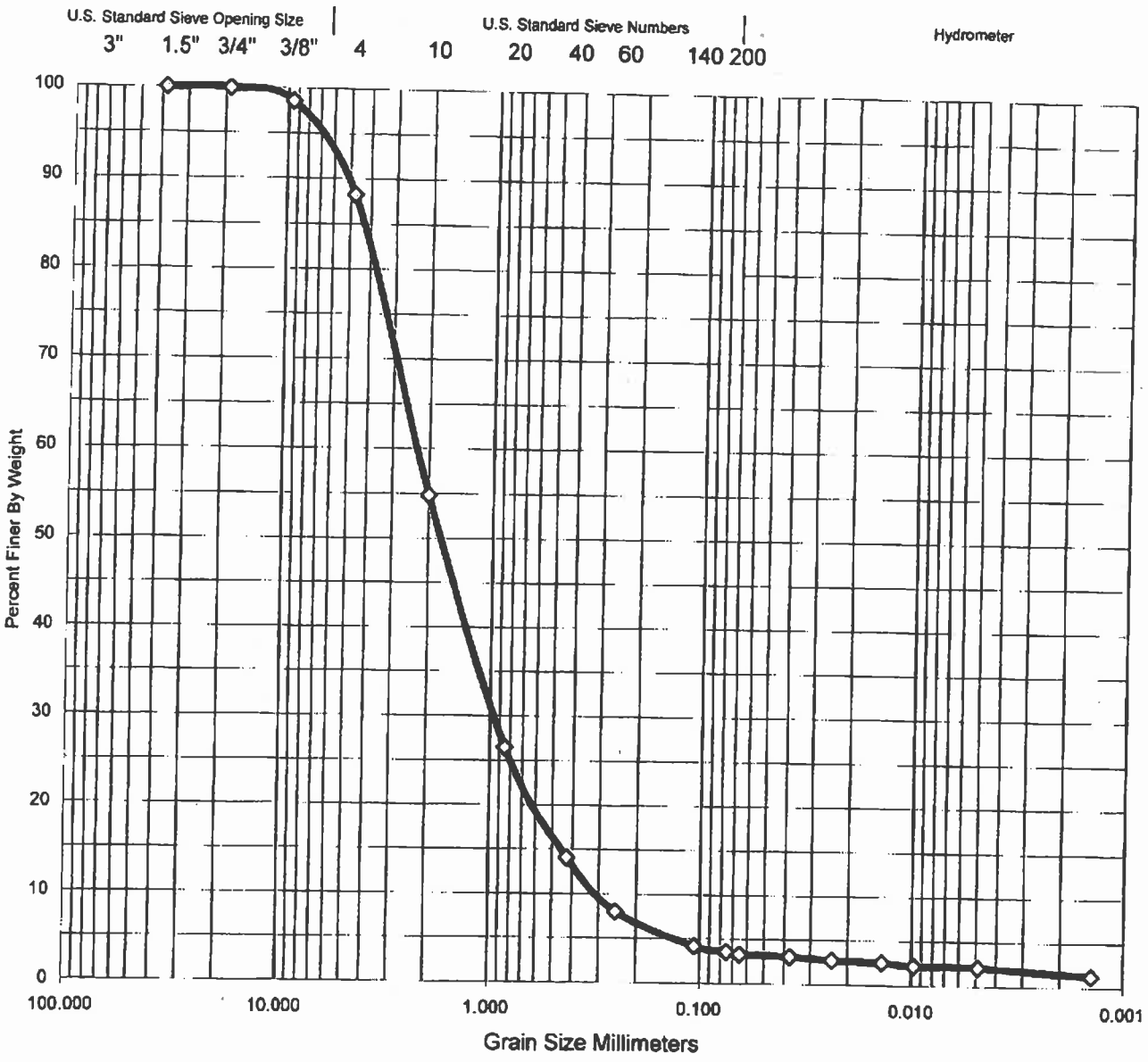
Sieve No.	% Fraction
3/4"	0.00
3/8"	1.44
#4	11.00
#10	35.33
#20	22.49
#40	9.56
#60	3.30
#140	4.09
#200	0.74

Textural Classes & Percentages	
Gravel Total	12.44
Coarse Sand	35.33
Medium Sand	32.05
Fine Sand	8.13
Sand Total	75.52
Silt	5.75
Clay	6.30
Fines Total	12.05
Grand Total	100.00

ASTM Classification
Lt. Gray Silty Clayey Sand (SC-SM)
USDA Classification
Lt. Gray Very Gravelly Sand
USGS Classification
Lt. Gray Muddy Sandy Gravel

Lab Number: 03892-10	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #10 500-520'		
Plate: 10	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

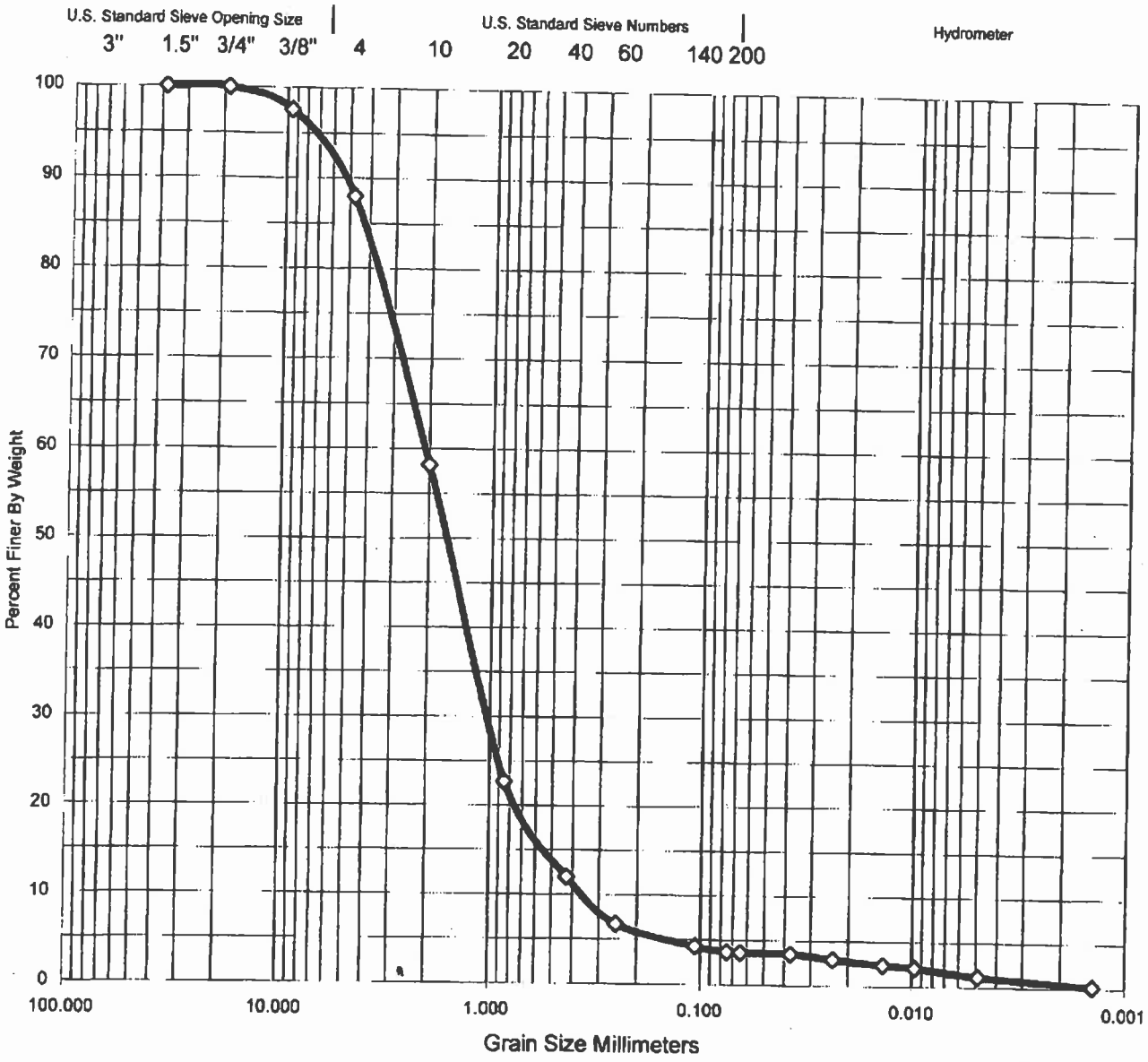
Sieve No.	% Fraction
3/4"	0.00
3/8"	1.42
#4	10.33
#10	33.42
#20	28.35
#40	12.38
#60	6.07
#140	3.84
#200	0.60

Textural Classes & Percentages	
Gravel Total	11.75
Coarse Sand	33.42
Medium Sand	40.73
Fine Sand	10.51
Sand Total	84.66
Silt	1.47
Clay	2.12
Fines Total	3.59
Grand Total	100.00

ASTM Classification
Lt. Gray Sand (SP)
USDA Classification
Lt. Gray Very Gravelly Sand
USGS Classification
Lt. Gray Sandy Gravel

Lab Number: 03892-11	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #11 520-540'		
Plate: 11	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	0.00
3/8"	2.42
#4	9.57
#10	29.80
#20	35.52
#40	10.75
#60	5.23
#140	2.43
#200	0.59

Textural Classes & Percentages	
Gravel Total	11.99
Coarse Sand	29.80
Medium Sand	46.27
Fine Sand	8.25
Sand Total	84.31
Silt	2.48
Clay	1.22
Fines Total	3.70
Grand Total	100.00

ASTM Classification
Lt. Gray Sand (SP)
USDA Classification
Lt. Gray Very Gravelly Sand
USGS Classification
Lt. Gray Sandy Gravel

Lab Number: 03892-12	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #12 560-580'		
Plate: 12	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Feb-10	

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Company: E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR
Attn: John Lambie
Project: Bluebird, Windsor California
Lab Director: G.Conrad PhD; Supervisor D. Jacobson
Analysts: D. Salinas; S. Santos; A. Perez
Date Collected: unk
Date Received: 02/22/10
Date of Report: 03/02/10

Hydrometer and Sieve Analysis Report

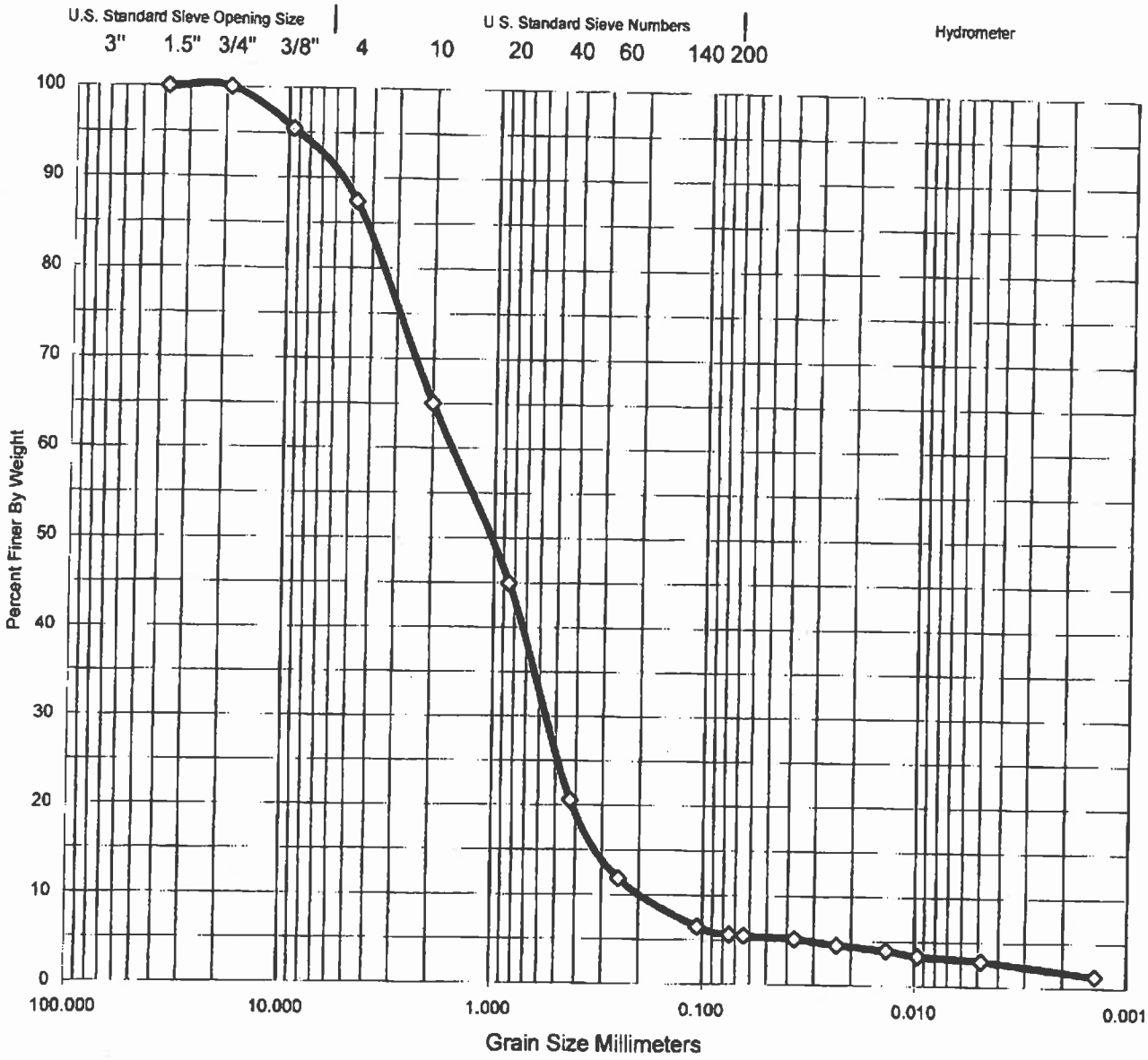
Lab Number / Sample ID		3896-1 / Bluebird #13 710-740'						3896-2 / Bluebird #14 @ 790'		
Sieve Size Screen #	ASTM System	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained	Hydrometer Percentage	Percent Passing	Percent Retained
3/4" Sieve	Coarse Gravel		100.00	0.00					100.00	0.00
3/8" Sieve	Fine Gravel		95.43	4.57					98.42	1.58
Sieve #4			87.36	8.07					86.78	11.64
Sieve #10	Coarse Sand		65.02	22.34					61.39	25.39
Sieve #20	Medium Sand		44.94	20.07					34.77	26.62
Sieve #40			20.55	24.39					20.42	14.35
Sieve #60	Fine Sand		11.83	8.72					11.34	9.08
Sieve #140			6.47	5.36					6.36	4.97
Sieve #200			5.62	0.85					5.73	0.63
Silt (0.074)	Mud (Silt+Clay)	2.75						2.93		
Clay (0.005)		2.87						2.80		
			Gravel->	12.64		*Gravel->*	0.00		*Gravel->*	13.22
			Sand->	81.74		*Sand->*	0.00		*Sand->*	81.05
			Fines->	5.62		*Fines->*	0.00		*Fines->*	5.73
PLATE #:		**1**	*Total->*	100.00		*Total->*	0.00	**2**	*Total->*	100.00

Comments

Both of these samples are predominantly sand and both have very similar proportions of gravel content (@ ≈13%, i.e., <15%) which is not enough gravel to modify their engineeering classifications; mud content is minor, but both have enough to modify their nomenclatures. As a result, engineering nomenclatures follow this pattern of dominant texture as do other nomenclatural systems, for the most part. Mud (i.e., silt and clay) content may be high enough to have an impact and effect on physical properties. Therefore, classification in the standard engineering system (ASTM) is as follows: sand with silty clay; in other systems they classifiy as sandy gravel (USGS); or very gravelly sand (USDA). [Please note: engineering classification is tentative as plasticity data (i.e., Atterbergs) are unknown; either could be sand with silt or sand with clay.] These sediments may represent something like mid-level sand bar or more distal (i.e., intermediate) overbank deposits, or similar. These materials appear to represent moderate energy flow regimes; some scour seems to have kept mud content fairly low. It would seem that these materials also should have moderate rate hydraulic conductivites considering their moderately coarse textures, but water production could be as much a matter of areal extents, unit thicknesses, and levels of saturation. In this set, specific textural compositions are quite similar which argues for similar hydraulic behavior (i.e., properties).

\\ Notes: Samples are dried, disaggregated, and screened through a nested set of sieves. Consolidated samples are wet sieved while unconsolidated samples (e.g., beach sand) can be dry sieved. Different organizations, e.g. USGS, USDA, CSSC, ISSS, ASTM, AASHTO, etc., have different divisions for the various fractions. The divisions listed above usually reflect either ASTM or client specifications. Depending on specs, anywhere from 2-12 hydrometer points are taken over a 2 to 24 hour period. The hydrometer (i.e., settling) tubes are 17" x 2.375" polycarbonate cylinders; dispersion device is stainless steel.

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

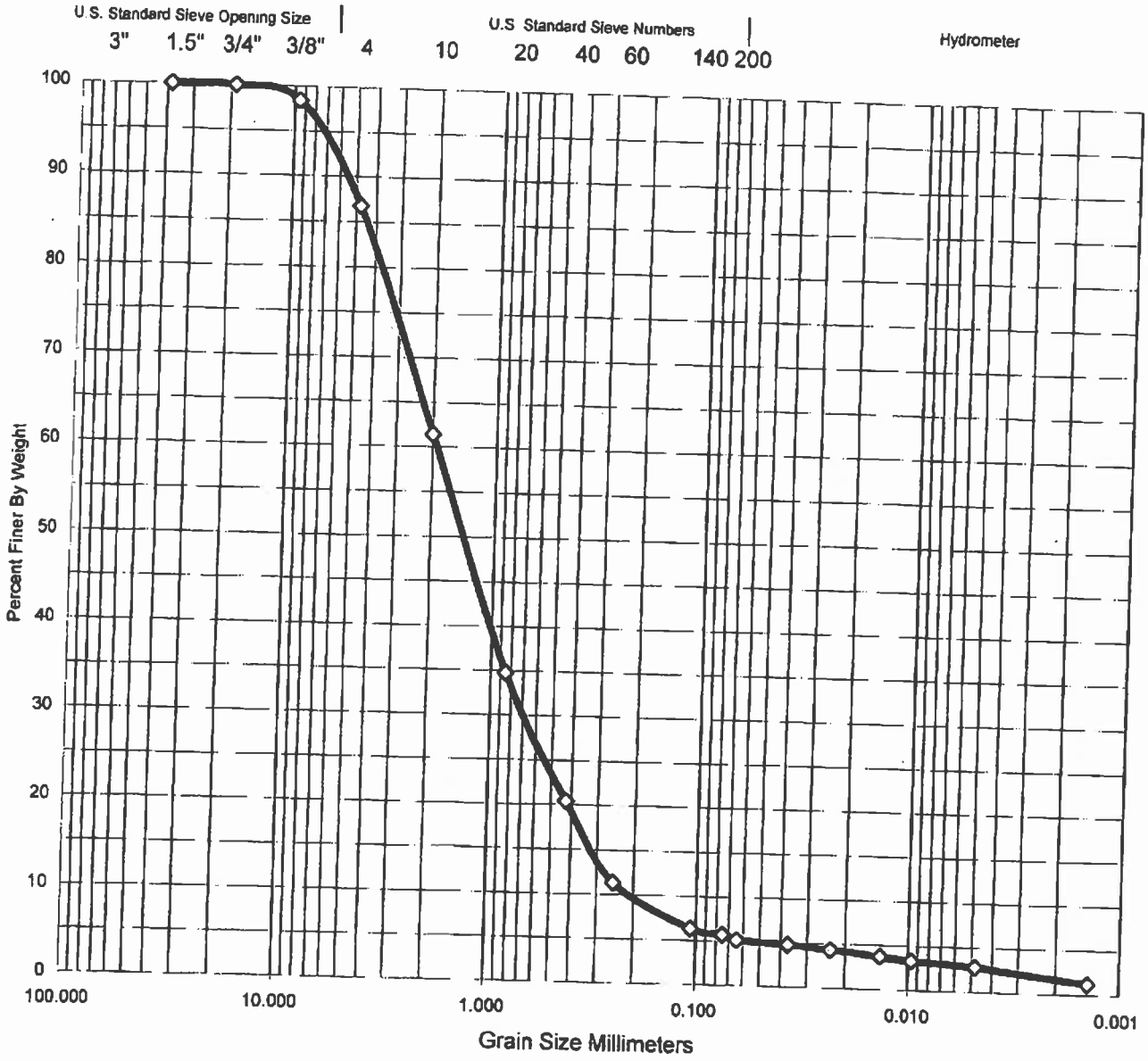
Sieve No.	% Fraction
3/4"	0.00
3/8"	4.57
#4	8.07
#10	22.34
#20	20.07
#40	24.39
#60	8.72
#140	5.36
#200	0.85

Textural Classes & Percentages	
Gravel Total	12.64
Coarse Sand	22.34
Medium Sand	44.46
Fine Sand	14.93
Sand Total	81.74
Silt	2.75
Clay	2.87
Fines Total	5.62
Grand Total	100.00

ASTM Classification
Gray Sand w/ Silty Clay (SP-SC)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03896-1	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #13 @ 710-740'		
Plate: 1	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Mar-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

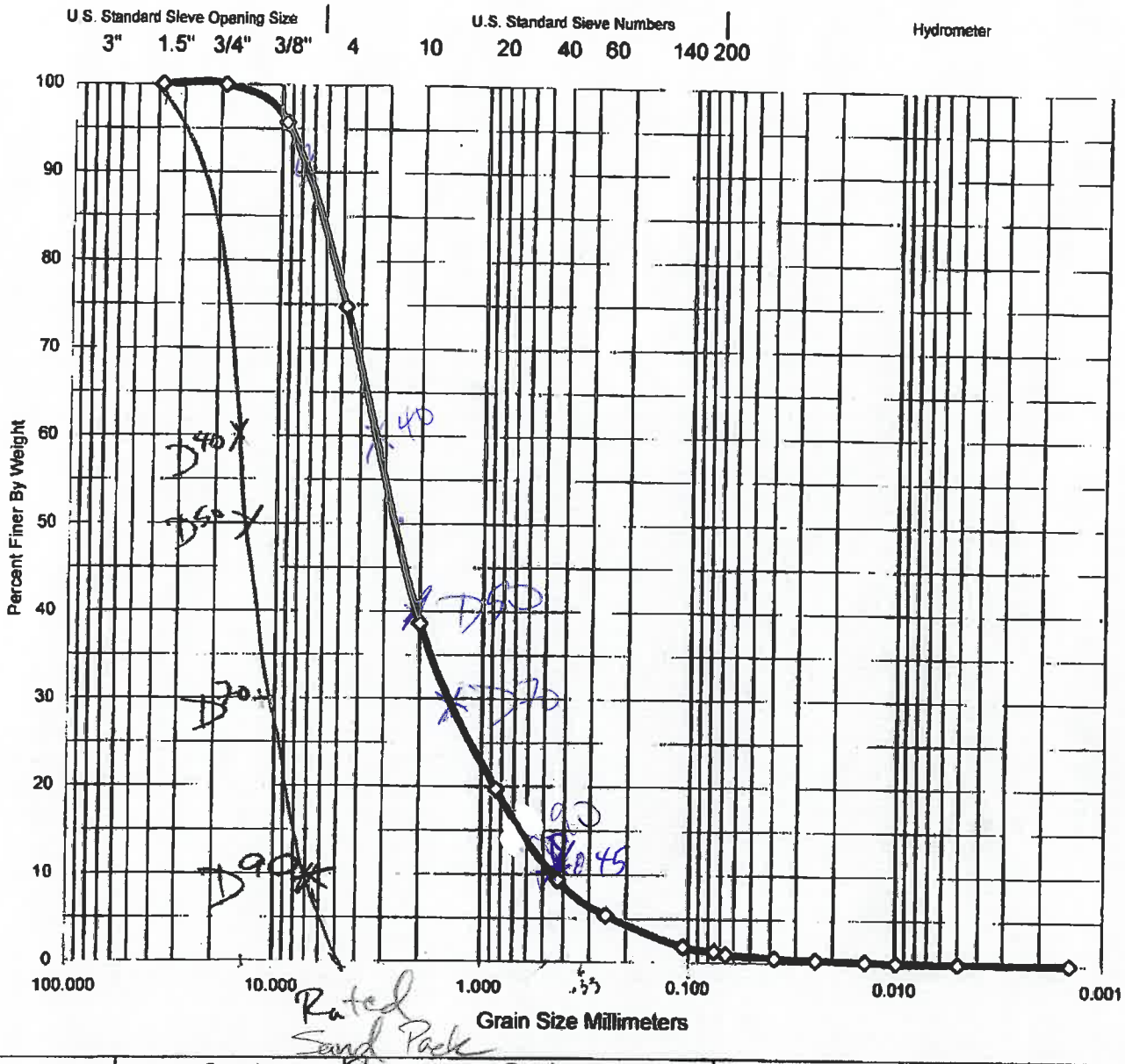
Sieve No.	% Fraction
3/4"	0.00
3/8"	1.58
#4	11.64
#10	25.39
#20	26.62
#40	14.35
#60	9.08
#140	4.97
#200	0.63

Textural Classes & Percentages	
Gravel Total	13.22
Coarse Sand	25.39
Medium Sand	40.97
Fine Sand	14.68
Sand Total	81.05
Silt	2.93
Clay	2.80
Fines Total	5.73
Grand Total	100.00

ASTM Classification
Gray Sand w/ Silty Clay (SP-SC)
USDA Classification
Gray Very Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03896-2	Location: Windsor, California		E T S
Project ID: Bluebird	Sample ID: Bluebird #14 @ 790'		
Plate: 2	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Mar-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

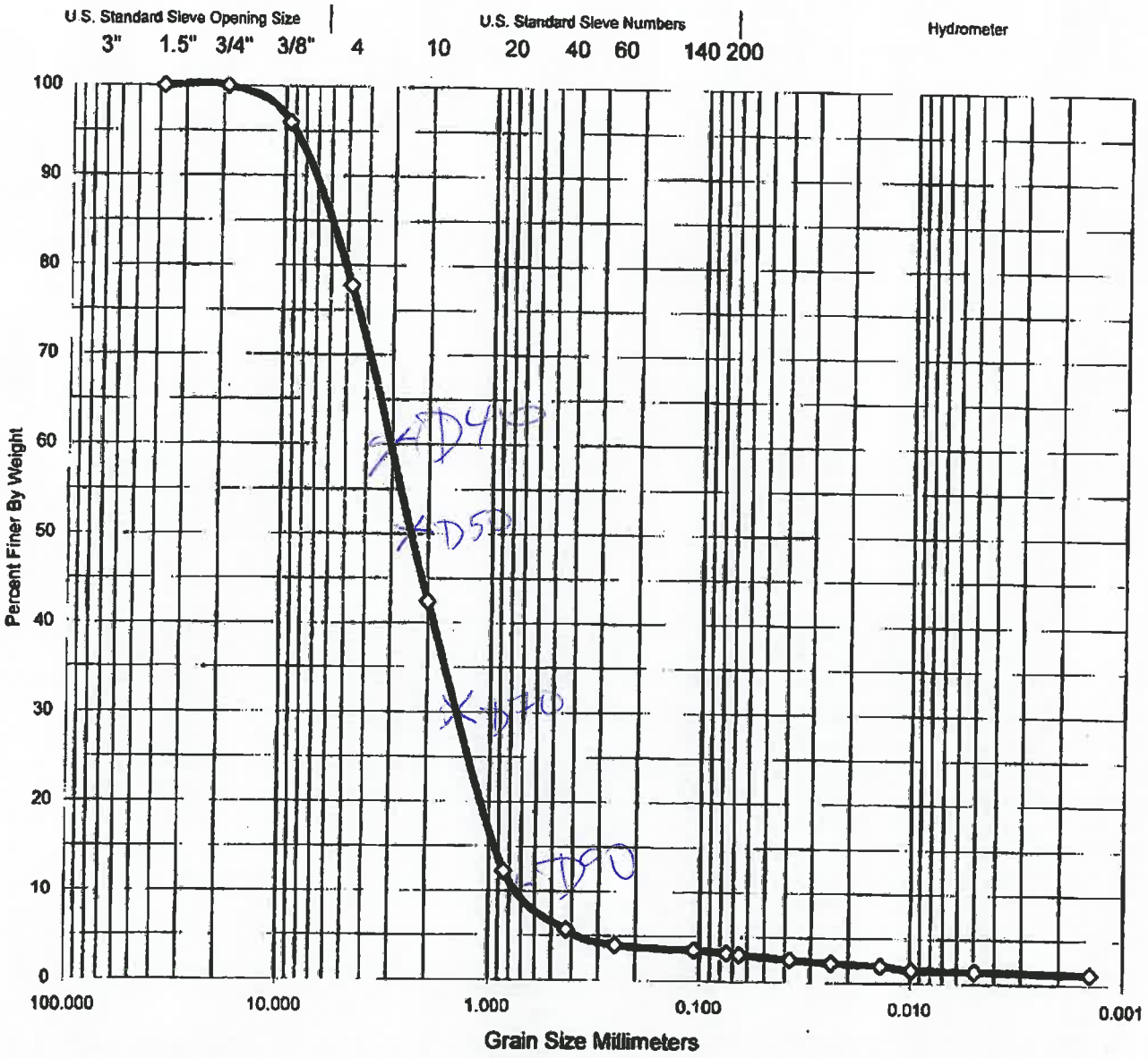
Sieve No.	% Fraction
3/4"	0.00
3/8"	4.30
#4	20.98
#10	36.11
#20	18.92
#40	10.32
#60	3.98
#140	3.59
#200	0.51

Textural Classes & Percentages	
Gravel Total	25.28
Coarse Sand	36.11
Medium Sand	29.24
Fine Sand	8.08
Sand Total	73.43
Silt	1.24
Clay	0.05
Fines Total	1.29
Grand Total	100.00

ASTM Classification
Grayish Brown Sand w/ Gravel (SP)
USDA Classification
Grayish Brown Extremely Gravelly Sand
USGS Classification
Grayish Brown Sandy Gravel

Lab Number: 03896-6	Location: Windsor, California		
Project ID: Esposti Park	Sample ID: Esposti #6 @ 390-400'		
Plate: 6	Client: E-Pur, LLC, 121 SW Street, Suite 900, Portland, OR 97204	Date: Mar-10	E T S

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

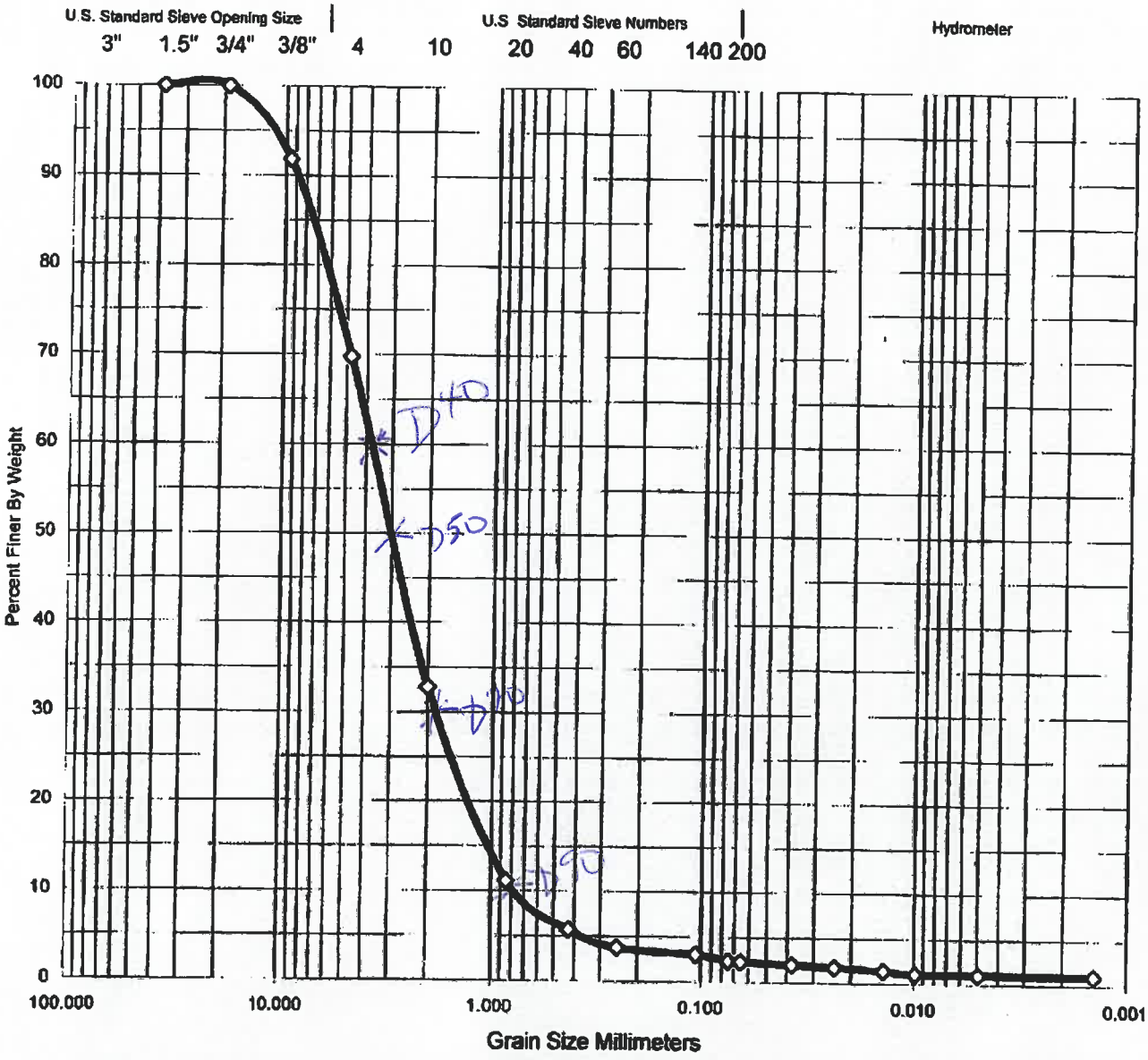
Sieve No.	% Fraction
3/4"	0.00
3/8"	4.05
#4	18.20
#10	35.32
#20	30.20
#40	6.57
#60	1.68
#140	0.53
#200	0.27

Textural Classes & Percentages	
Gravel Total	22.25
Coarse Sand	35.32
Medium Sand	36.76
Fine Sand	2.48
Sand Total	74.56
Silt	1.82
Clay	1.37
Fines Total	3.19
Grand Total	100.00

ASTM Classification
Dk. Grayish Brown Sand w/ Gravel (SP)
USDA Classification
Dk. Grayish Brown Extremely Gravelly Sand
USGS Classification
Dk. Grayish Brown Sandy Gravel

Lab Number: 03901-7	Location: Windsor, Califronia		E T S
Project ID: Esposti Park	Sample ID: Esposti #7 @ 400-420'		
Plate: 7	Client: E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR	Date: Mar-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	0.00
3/8"	8.19
#4	22.03
#10	36.99
#20	21.66
#40	5.40
#60	1.97
#140	0.73
#200	0.65

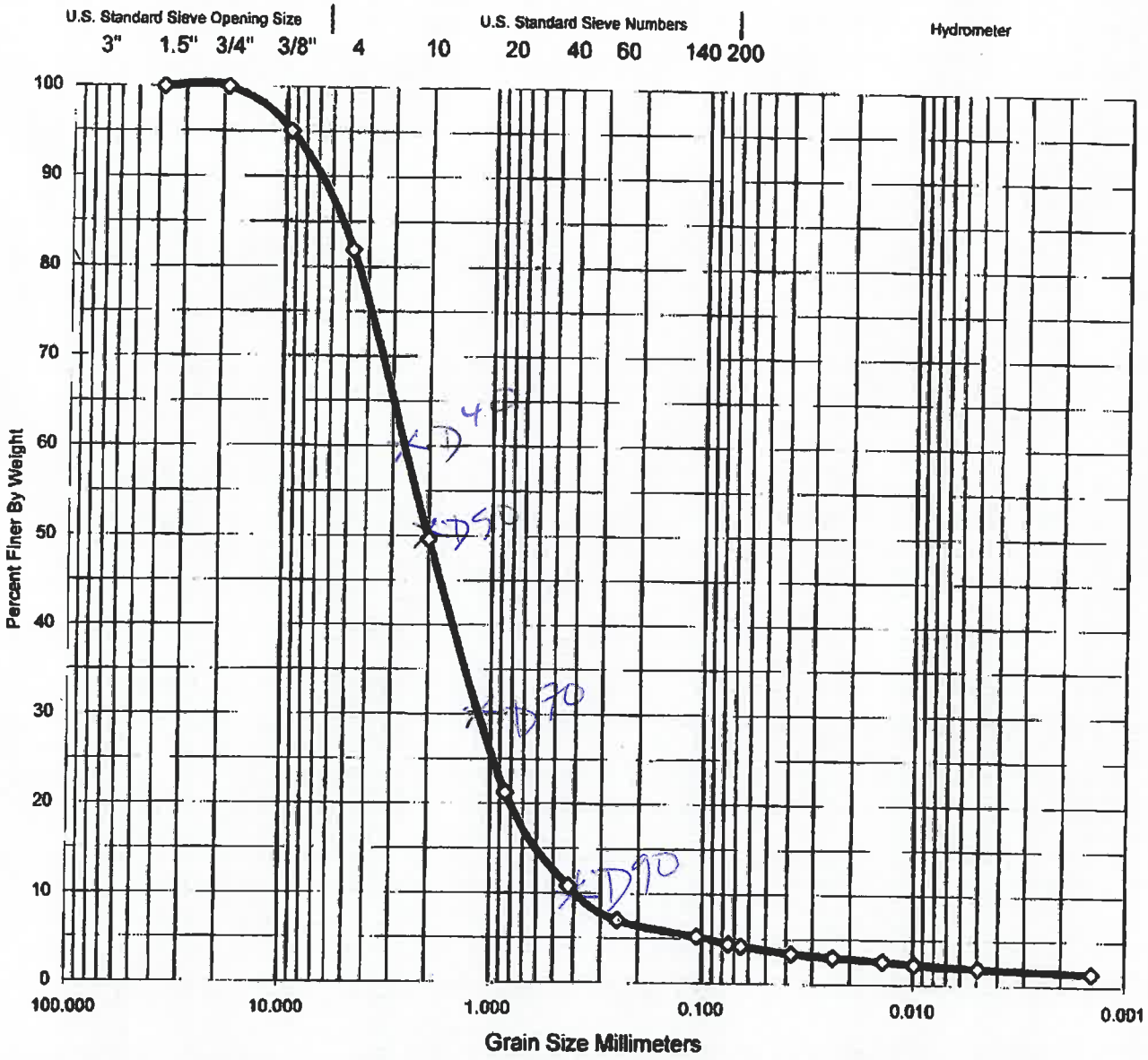
Textural Classes & Percentages	
Gravel Total	30.22
Coarse Sand	36.99
Medium Sand	27.06
Fine Sand	3.35
Sand Total	67.40
Silt	1.33
Clay	1.05
Fines Total	2.38
Grand Total	100.00

ASTM Classification
Grayish Brown Sand w/ Grave (SP)
USDA Classification
Grayish Brown Extremely Gravelly Sand
USGS Classification
Grayish Brown Sandy Gravel

Lab Number: 03901-8		Location: Windsor, Califronia	
Project ID: Esposti Park		Sample ID: Esposti #8 @ 420-440'	
Plate: 8	Client:	E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR	Date: Mar-10

E T S

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

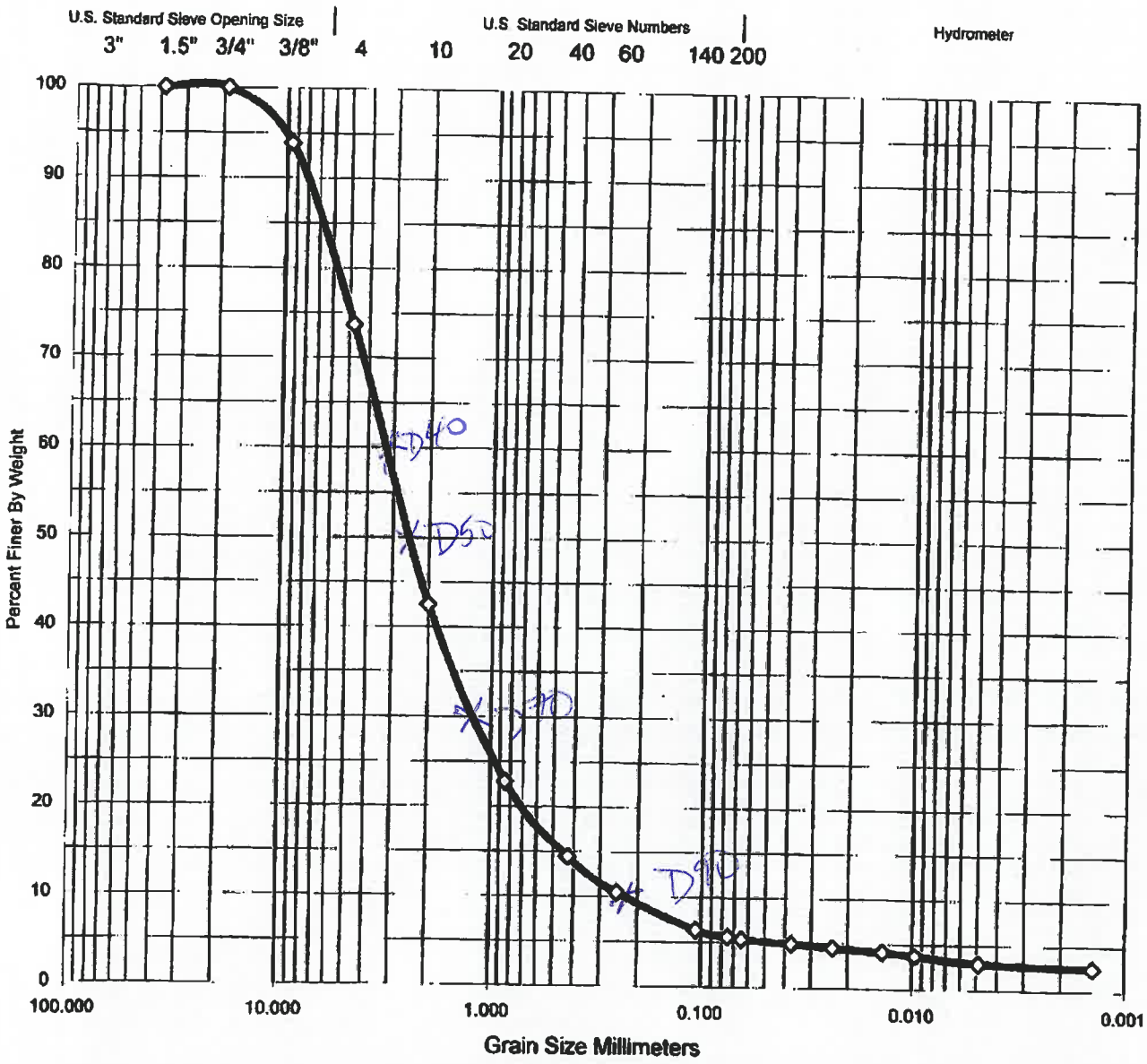
Sieve No.	% Fraction
3/4"	0.00
3/8"	4.94
#4	13.20
#10	32.28
#20	28.31
#40	10.44
#60	3.82
#140	1.78
#200	0.80

Textural Classes & Percentages	
Gravel Total	18.14
Coarse Sand	32.28
Medium Sand	38.76
Fine Sand	6.40
Sand Total	77.43
Silt	2.54
Clay	1.89
Fines Total	4.43
Grand Total	100.00

ASTM Classification
Gray Sand w/ Gravel (SP)
USDA Classification
Gray Extremely Gravelly Sand
USGS Classification
Gray Sandy Gravel

Lab Number: 03901-10	Location: Windsor, Califronia		E T S
Project ID: Esposti Park	Sample ID: Esposti #10 @ 550-580'		
Plate: 10	Client: E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR	Date: Mar-10	

Particle Size Analysis



Cobbles	Gravel		Sand			Silt	Clay
	Coarse	Fine	Coarse	Medium	Fine		

Sieve No.	% Fraction
3/4"	0.00
3/8"	6.08
#4	20.25
#10	31.16
#20	19.71
#40	8.36
#60	3.95
#140	4.13
#200	0.72

Textural Classes & Percentages	
Gravel Total	26.33
Coarse Sand	31.16
Medium Sand	28.07
Fine Sand	8.79
Sand Total	68.02
Silt	2.65
Clay	3.00
Fines Total	5.65
Grand Total	100.00

ASTM Classification
Gray Sand w/ Clay & Gravel (SP-SC)
USDA Classification
Gray Extremely Gravelly Sand
USGS Classification
Gray Muddy Sandy Gravel

Lab Number: 03901-11	Location: Windsor, Califronia		
Project ID: Esposti Park	Sample ID: Esposti #11 @ 580-600'		
Plate: 11	Client: E-Pur, LLC, 121 SW Salmon Street, Suite 900, Portland, OR	Date: Mar-10	E T S

BCJ
SAND & ROCK INC.

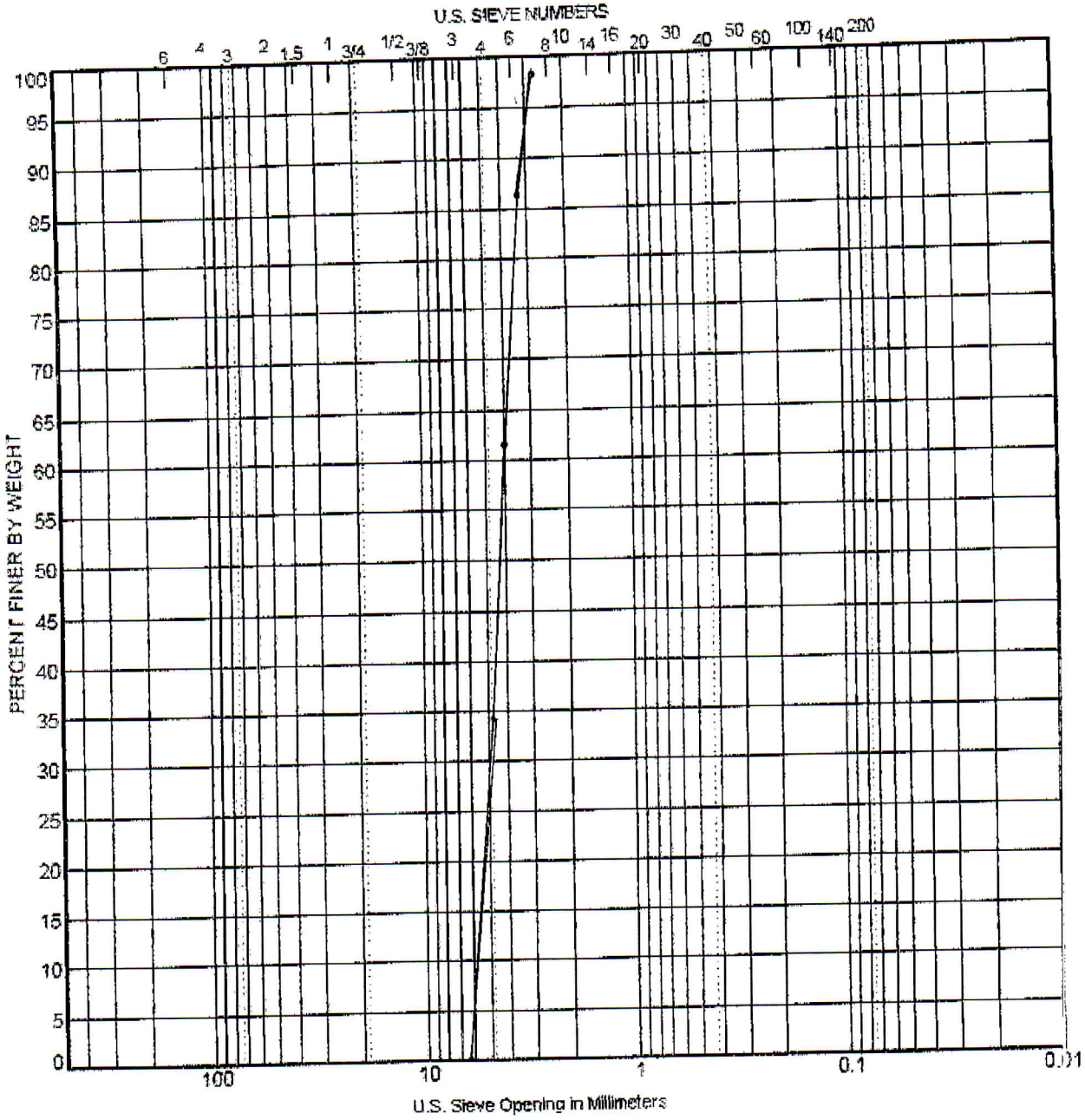
PRODUCT: 1/4" FM DATE: 2/24/2010 LAB TECH: Ted Hale

OPENING MICRON	OPENING INCHES	STANDARD SIEVE	WEIGHT	% RETAINED	% PASSED		SPEC.	OTHER
37500	1.5	1 1/2"						
25000	1	1"						
19000	0.75	3/4"						
16000	0.625	5/8"						
12500	0.5	1/2"						
9500	0.375	3/8"						
6300	0.25	1/4"	1	0.2%	99.8%			
4750	0.187	#4	185	34.2%	65.8%			
4000	0.157	#5	334	61.7%	38.3%			
3350	0.132	#6	465	86.0%	14.0%			
2800	0.11	#7	530	98.0%	2.0%			
2360	0.0937	#8						
2000	0.0787	#10						
1700	0.0661	#12						
1400	0.0555	#14						
1180	0.0469	#16						
1000	0.0394	#18						
850	0.0331	#20						
710	0.0278	#25						
600	0.0234	#30						
500	0.0197	#35						
425	0.0165	#40						
355	0.0139	#45						
300	0.0117	#50						
250	0.0098	#60						
212	0.0083	#70						
180	0.007	#80						
150	0.0059	#100						
106	0.0041	#140						
75	0.0029	#200						
PAN	PAN	PAN	541	100.0%	0.0%			

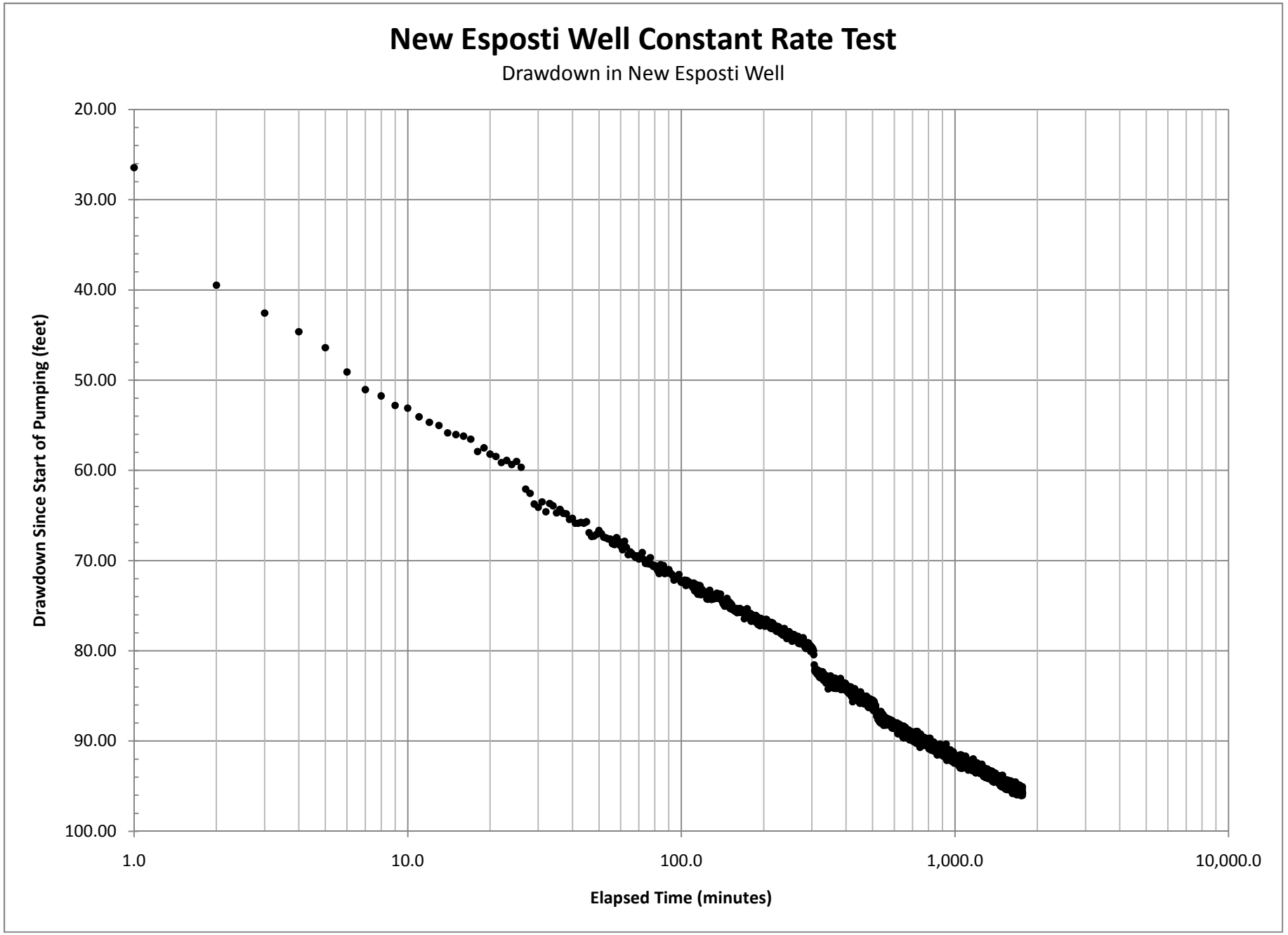
COMMENTS:

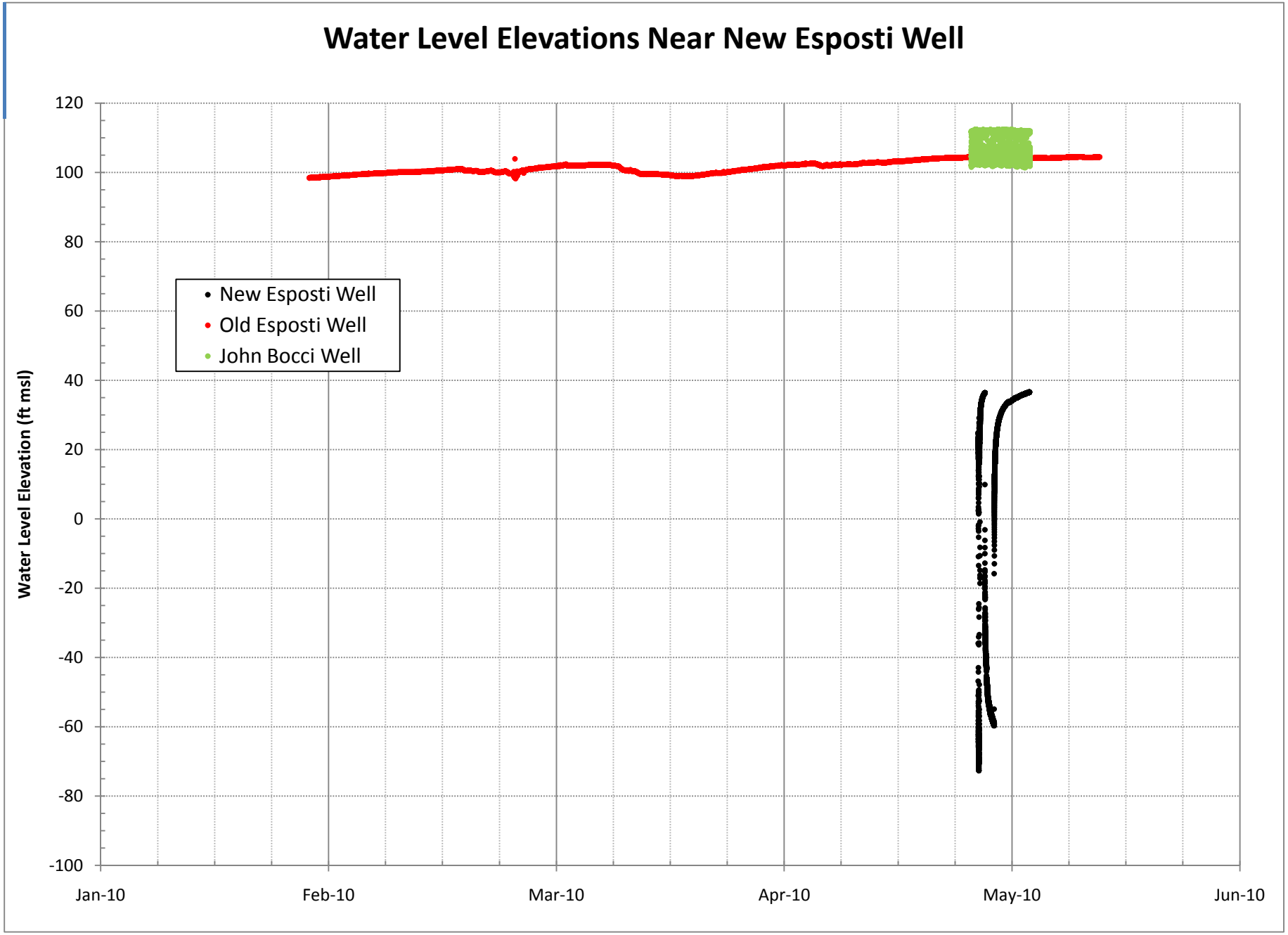
BCJ
SAND & ROCK INC.

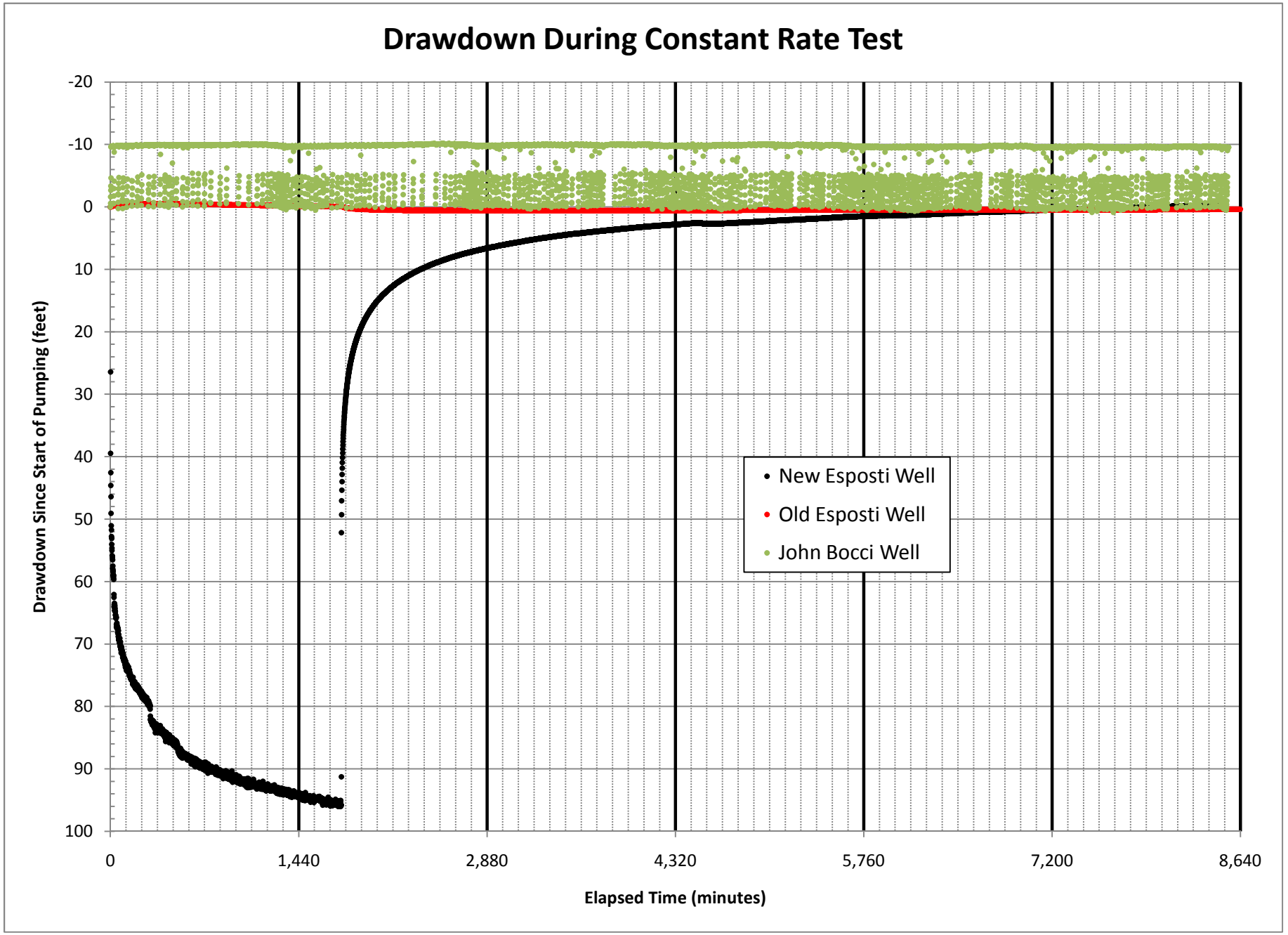
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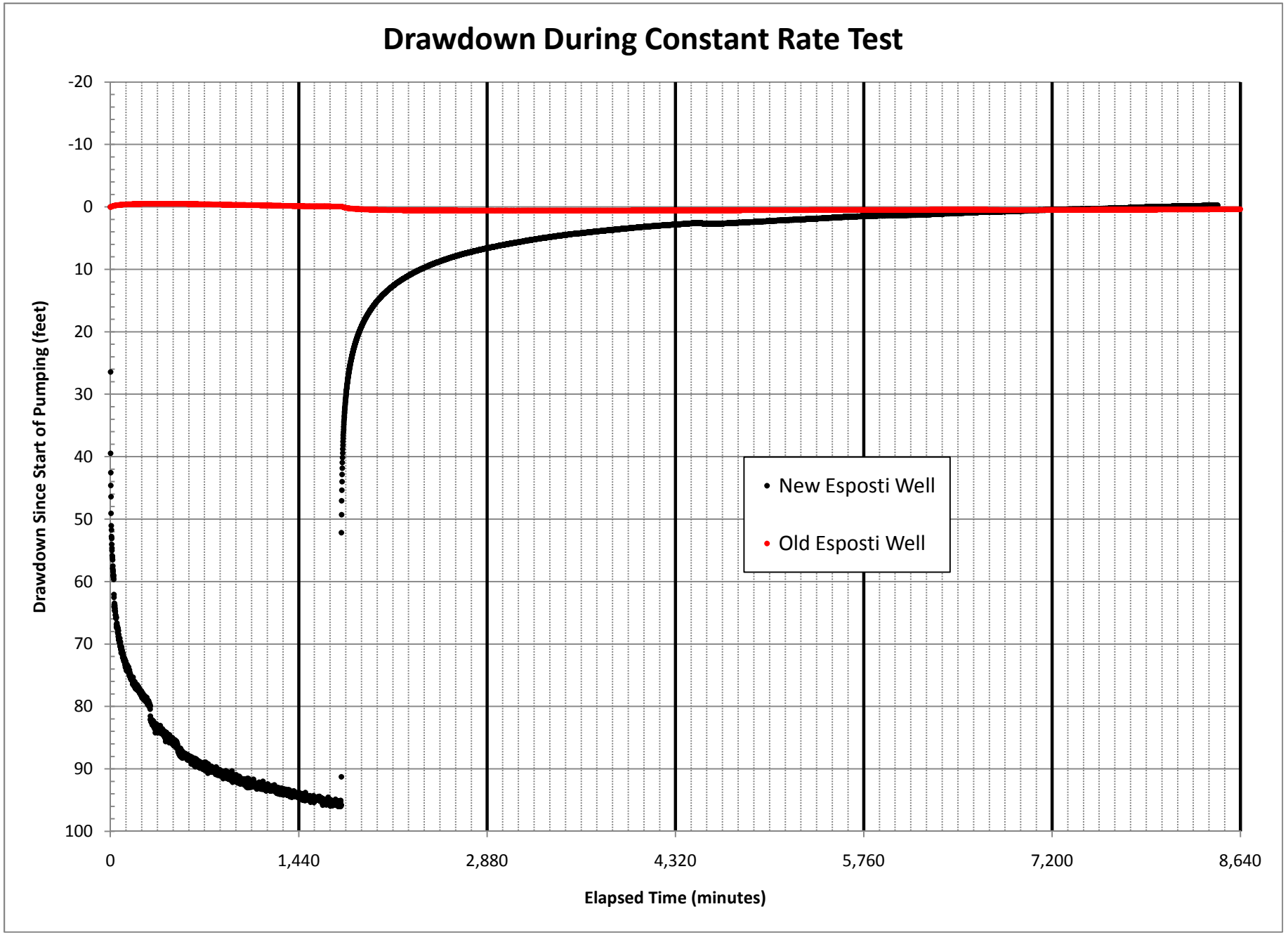


Appendix E - Aquifer Pump Test Field Data


New Esposti Well Constant Rate Test
Drawdown in New Esposti Well
Drawdown Since Start of Pumping (feet)
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
1.0
10.0
100.0
1,000.0
10,000.0
Elapsed Time (minutes)


Water Level Elevations Near New Esposti Well
Water Level Elevation (ft msl)
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
Jan-10
Feb-10
Mar-10
Apr-10
May-10
Jun-10
New Esposti Well
Old Esposti Well
John Bocci Well


Drawdown During Constant Rate Test
-20
-10
0
10
20
30
40
50
60
70
80
90
100
Drawdown Since Start of Pumping (feet)
0
1,440
2,880
4,320
5,760
7,200
8,640
Elapsed Time (minutes)
New Esposti Well
Old Esposti Well
John Bocci Well


Drawdown During Constant Rate Test
-20
-10
0
10
20
30
40
50
60
70
80
90
100
Drawdown Since Start of Pumping (feet)
0
1,440
2,880
4,320
5,760
7,200
8,640
Elapsed Time (minutes)
New Esposti Well
Old Esposti Well

Appendix F - Analytical Laboratory Reports

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

Brelje and Race Laboratories
425 South E. Street
Santa Rosa, CA 95404
Phone: 707-544-8807
Fax: 707-544-5736

Fax

To: Leslie / Jerry From: Lan

Fax: Date: 3/2/10

Phone: Pages: 3

Re: CC:

☐ Urgent ☐ For Review x Please Comment ☐ Please Reply ☐ Please Recycle

•Comments:

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 2, 2010

Sample Collected: 02/20/10
Sample Received: 02/22/10
Collected By : GM

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-3672-4**
Sample Description: BB T01-20100220-710

ANALYSIS		
Calculated Hardness as $CaCO_3$	mg/L (Std. Mthds. 20th ed. 2340 C)	170.
Calcium	mg/L (Std. Mthds. 20th ed. 3111 B)	30.
Magnesium	mg/L (Std. Mthds. 20th ed. 3111 B)	22.
Sodium	mg/L (Std. Mthds. 20th ed. 3111 B)	13.
Potassium	mg/L (Std. Mthds. 20th ed. 3111 B)	11.
Total Alkalinity as $CaCO_3$	mg/L (Std. Mthds. 20th ed. 2320 B)	160.
Bicarbonate	mg/L	190.
Sulfate	mg/L (EPA Mthd. 300.0)	16.
Chloride	mg/L (EPA Mthd. 300.0)	11.
Nitrate	mg/L (EPA Mthd. 300.0)	10.
Fluoride	mg/L (EPA Mthd. 300.0)	0.25
pH	Std. units (Std. Mthds. 20th ed. 4500-H^+ B)	7.0
Total Dissolved Solids	mg/L (Std. Mthds. 20th ed. 2450 C)	200.
Boron	mg/L (Azomethine H)	0.17
Arsenic	µg/L (Std. Mthds. 20th ed. 3113 B)	<2.0
Chromium	µg/L (Std. Mthds. 20th ed. 3113 B)	<1.0
Iron	µg/L (Std. Mthds. 20th ed. 3111 B)	<100.
Manganese	µg/L (Std. Mthds. 20th ed. 3111 B)	<20.
Mercury	µg/L (Std. Mthds. 20th ed. 3112 B)	0.013

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 2, 2010

Sample Collected: 02/20/10
Sample Received: 02/22/10
Collected By : GM

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-3668-70**
Sample Description: BB T01-20100220-700

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	130.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	23.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	17.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	6.1
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	180.
Bicarbonate	mg/L		220.
Sulfate	mg/L	(EPA Mthd. 300.0)	14.
Chloride	mg/L	(EPA Mthd. 300.0)	14.
Nitrate	mg/L	(EPA Mthd. 300.0)	9.5
Fluoride	mg/L	(EPA Mthd. 300.0)	0.27
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	8.0
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	280.
Boron	mg/L	(Azomethine H)	0.29
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	<2.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	440.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	0.018

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

Brelje and Race Laboratories
425 South E. Street
Santa Rosa, CA 95404
Phone: 707-544-8807
Fax: 707-544-5736

Fax

To: Leslie / Gary **From:** Dan

Fax: **Date:** 3/3/10

Phone: **Pages:** 3

Re: **CC:**

☐ **Urgent** ☐ **For Review** x **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-6807**

March 2, 2010

Sample Collected: 02/20/10
Sample Received: 02/22/10
Collected By : GM

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-3675**
Sample Description: BB T01-20100220-710

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	0.36

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 2, 2010

Sample Collected: 02/20/10
Sample Received: 02/22/10
Collected By : GM

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-3671**
Sample Description: BB T01-20100220-700

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	1.4

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

Brelje and Race Laboratories
425 South E. Street
Santa Rosa, CA 95404
Phone: 707-544-8807
Fax: 707-544-5736

Fax

To: Leslie **From:** Ann

Fax: **Date:** 3/3/10

Phone: **Pages:** 6

Re: **CC:**

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•Comments:

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 3, 2010

Sample Collected: 02/25/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4221-3**
Sample Description: EP T01-20100225-200

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	150.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	23.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	23.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	42.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	8.0
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	210.
Bicarbonate	mg/L		260.
Sulfate	mg/L	(EPA Mthd. 300.0)	12.
Chloride	mg/L	(EPA Mthd. 300.0)	20.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Fluoride	mg/L	(EPA Mthd. 300.0)	0.40
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.2
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	300.
Boron	mg/L	(Azomethine H)	0.14
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	<2.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	1600.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	0.17

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 3, 2010

Sample Collected: 02/25/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: 210-4225-7
Sample Description: EP T01-20100225-285

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	99.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	15.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	15.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	40.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	6.9
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	160.
Bicarbonate	mg/L		190.
Sulfate	mg/L	(EPA Mthd. 300.0)	8.4
Chloride	mg/L	(EPA Mthd. 300.0)	25.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Fluoride	mg/L	(EPA Mthd. 300.0)	0.39
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.5
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	260.
Boron	mg/L	(Azomethine H)	0.13
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	<2.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	910.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<0.012

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 3, 2010

Sample Collected: 02/25/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4229-31**
Sample Description: EP T01-20100225-400

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	140.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	24.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	20.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	51.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	14.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	230.
Bicarbonate	mg/L		280.
Sulfate	mg/L	(EPA Mthd. 300.0)	17.
Chloride	mg/L	(EPA Mthd. 300.0)	25.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Fluoride	mg/L	(EPA Mthd. 300.0)	0.36
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.9
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	360.
Boron	mg/L	(Azomethine H)	0.28
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	2.1
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	860.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	0.014

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 3, 2010

Sample Collected: 02/26/10
Sample Received: 02/26&03/01/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4233-4,381**
Sample Description: EP T01-20100226-600

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	120.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	23.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	16.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	54.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	230.
Bicarbonate	mg/L		280.
Sulfate	mg/L	(EPA Mthd. 300.0)	12.
Chloride	mg/L	(EPA Mthd. 300.0)	14.
Nitrate	mg/L	(EPA Mthd. 300.0)	8.5
Fluoride	mg/L	(EPA Mthd. 300.0)	0.33
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.9
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	310.
Boron	mg/L	(Azomethine H)	0.31
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	7.3
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	580.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	0.014

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 3, 2010

Sample Collected: 02/26/10
Sample Received: 02/26&03/01/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4236-7,382**
Sample Description: EP T01-20100226-736

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	110.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	22.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	14.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	87.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	27.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	290.
Bicarbonate	mg/L		350.
Sulfate	mg/L	(EPA Mthd. 300.0)	18.
Chloride	mg/L	(EPA Mthd. 300.0)	21.
Nitrate	mg/L	(EPA Mthd. 300.0)	8.5
Fluoride	mg/L	(EPA Mthd. 300.0)	0.30
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	8.0
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	430.
Boron	mg/L	(Azomethine H)	0.45
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	39.
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	2.1
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	1200.
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	440.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	0.017

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 8, 2010

Sample Collected: 02/25/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4224**
Sample Description: EP T01-20100225-200

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	3.9

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 8, 2010

Sample Collected: 02/25/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4228**
Sample Description: EP T01-20100225-285

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	0.74

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 8, 2010

Sample Collected: 02/25/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4232**
Sample Description: EP T01-20100225-400

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	0.33

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 8, 2010

Sample Collected: 02/26/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4235**
Sample Description: EP T01-20100226-600

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	0.40

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

March 8, 2010

Sample Collected: 02/26/10
Sample Received: 02/26/10
Collected By : Client

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **210-4238**
Sample Description: EP T01-20100226-736

ANALYSIS

Total Organic Carbon mg/L (Std. Mthds. 20th ed. 5310 C)	0.66

Analyses performed by an approved outside laboratory.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

Brelje and Race Laboratories
425 South E. Street
Santa Rosa, CA 95404
Phone: 707-544-8807
Fax: 707-544-5736

Fax

To: Leslie Duman **From:** Ann

Fax: **Date:** 5/24/10

Phone: **Pages:**

Re: Winton **CC:**

☐ **Urgent** ☐ **For Review** x **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER:	**410-9359**	**410-9443**
Sample Description	Esposti Well	Esposti Comp. 2
ANALYSIS:		
Perchlorate µg/L (EPA Mthd. 314.0)	Please see attached reports.	

Analyses performed by approved outside laboratories.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER

AH:ljc

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Brelje & Race
Contact: Anne Hill
Address: 425 South E Street
Santa Rosa, CA 95404

Report Date: 14-May-2010

Analytical Report: Page 2 of 5
Project Name: No Project
Project Number: No Project

Work Order Number: A0E0769

Received on Ice (Y/N): Yes Temp: 6 °C

Laboratory Reference Number
A0E0769-01

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
410-9359	Water	04/29/10 00:00	05/06/10 9:22

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
General Inorganics							
Perchlorate	ND	4.0	ug/L	EPA 314.0	05/11/10 20:48	ss	

E.S.BABCOCK&Sons,Inc.
Environmental Laboratories est 1906

Client Name: Brelje & Race
Contact: Anne Hill
Address: 425 South E Street
Santa Rosa, CA 95404

Report Date: 14-May-2010

Analytical Report: Page 3 of 5
Project Name: No Project
Project Number: No Project

Work Order Number: A0E0769

Received on Ice (Y/N): Yes Temp: 6 °C

Laboratory Reference Number
A0E0769-02

Sample Description	Matrix	Sampled Date/Time	Received Date/Time
410-9443	Water	04/29/10 00:00	05/06/10 9:22

Analyte(s)	Result	RDL	Units	Method	Analysis Date	Analyst	Flag
General Inorganics							
Perchlorate	ND	4.0	ug/L	EPA 314.0	05/11/10 21:04	ss	

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER:	**410-9358**	**410-9441**
Sample Description	Esposti Well	Esposti Comp. 2
ANALYSIS: Asbestos MFL (EPA Mthd. 100.2)	Please see attached reports.	

Analyses performed by approved outside laboratories.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER

AH:ljc

EMSL Analytical, Inc
2235 Polvorosa Ave , Suite 230, San Leandro, CA 94577
Phone: (510) 895-3675 Fax: (510) 895-3680 Email: milpitaslab@emsl.com

Attn: **Linda Crossen**
Brelje & Race Laboratories, Inc.
425 South E Street
Santa Rosa, CA 95404
Fax: (707) 544-5736 Phone: (707) 544-8807

Customer ID: BREL78
Customer PO:
Received: 05/04/10 11:30 AM
EMSL Order: 091004021
EMSL Proj:
Analysis Date: 5/13/2010

Test Report: Determination of Asbestos Structures in Water Performed by the 100.2 Method (EPA/600/R-94/134)

Sample ID	Sample Prep Date	# Fibers Asbestos	# Fibers Non-Asbestos	Type(s) Of Asbestos	Analytical Sensitivity (MFL)	Confidence Limits	Concentration Of Asbestos Fibers (MFL)	Comments
410-9358 TOW - Asbestos *091004021-0001*	05-07	0	0		0.20	0.00-0.73	<0.20	CA ELAP Notes: Aliquot 1000:100 ml; EFA 1288.25 sq mm; Area examined 0.13 sq mm.
410-9441 TOW - Asbestos *091004021-0002*	05-07	0	0		0.20	0.00-0.73	<0.20	CA ELAP Notes: Aliquot 1000:100 ml; EFA 1288.25 sq mm; Area Examined 0.13 sq mm.

Analyst(s)
Rui Cindy Geng (2)

Baojia Ke, Laboratory Manager
or other approved signatory

Sample collection and containers provided by the client, acceptable bottle blank level is defined as <=0.01MFL>10um. ND=None Detected. This report may not be reproduced, except in full, without written permission by EMSL Analytical, Inc. This report relates only to those items tested.Samples received in good condition unless otherwise noted.
Samples analyzed by EMSL Analytical, Inc 2235 Polvorosa Ave , Suite 230, San LeandroCA CA ELAP 1620, HI reciprocity, ID CA 01477, WA C2007

THIS IS THE LAST PAGE OF THE REPORT.

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9316-20**
Sample Description: DP-1

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	120.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	23.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	16.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	50.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	17.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	240.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		290.
Sulfate	mg/L	(EPA Mthd. 300.0)	13.
Chloride	mg/L	(EPA Mthd. 300.0)	18.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.39
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	8.0
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	360.
Boron	mg/L	(Azomethine H)	0.31
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	87.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.1
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	0.30

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9316-7**
Sample Description: DP-1

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	45.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	200.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	800.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9324-8**
Sample Description: DP-2

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	93.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	11.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	52.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	230.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		280.
Sulfate	mg/L	(EPA Mthd. 300.0)	9.9
Chloride	mg/L	(EPA Mthd. 300.0)	11.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.43
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.8
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	340.
Boron	mg/L	(Azomethine H)	0.36
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	91.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.5
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	<0.20

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9324-8**
Sample Description: DP-2

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	94.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	160.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	630.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9332-6**
Sample Description: DP-3

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	93.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	11.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	52.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	230.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		280.
Sulfate	mg/L	(EPA Mthd. 300.0)	10.
Chloride	mg/L	(EPA Mthd. 300.0)	11.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.38
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.9
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	340.
Boron	mg/L	(Azomethine H)	0.35
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	92.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.5
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	0.30

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9332-6**
Sample Description: DP-3

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	83.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	170.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	630.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9340-4**
Sample Description: DP-4

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	95.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	20.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	11.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	54.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	20.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	230.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		280.
Sulfate	mg/L	(EPA Mthd. 300.0)	9.8
Chloride	mg/L	(EPA Mthd. 300.0)	11.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.36
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	8.0
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	340.
Boron	mg/L	(Azomethine H)	0.35
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	93.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.1
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	<0.20

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9340-4**
Sample Description: DP-4

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	84.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	170.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	650.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9407-11**
Sample Description: DP-5

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	93.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	19.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	11.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	54.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	20.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	240.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		290.
Sulfate	mg/L	(EPA Mthd. 300.0)	11.
Chloride	mg/L	(EPA Mthd. 300.0)	11.
Nitrate	mg/L	(EPA Mthd. 300.0)	8.3
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.35
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.9
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	340.
Boron	mg/L	(Azomethine H)	0.34
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	91.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.1
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	<0.20

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9407-11**
Sample Description: DP-5

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	97.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	170.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	630.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9415-9**
Sample Description: DP-6

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	95.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	20.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	11.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	80.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	24.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	280.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		340.
Sulfate	mg/L	(EPA Mthd. 300.0)	18.
Chloride	mg/L	(EPA Mthd. 300.0)	16.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.36
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.5
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	420.
Boron	mg/L	(Azomethine H)	0.40
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	96.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.1
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	<0.20

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9415-9**
Sample Description: DP-6

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	100.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	200.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	680.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 21, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9423-7**
Sample Description: Duplicate - 4

ANALYSIS

Calculated Hardness as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2340 C)	95.
Calcium	mg/L	(Std. Mthds. 20th ed. 3111 B)	20.
Magnesium	mg/L	(Std. Mthds. 20th ed. 3111 B)	11.
Sodium	mg/L	(Std. Mthds. 20th ed. 3111 B)	54.
Potassium	mg/L	(Std. Mthds. 20th ed. 3111 B)	21.
Total Alkalinity as $CaCO_3$	mg/L	(Std. Mthds. 20th ed. 2320 B)	230.
Hydroxide	mg/L		<1.0
Carbonate	mg/L		<1.0
Bicarbonate	mg/L		280.
Sulfate	mg/L	(EPA Mthd. 300.0)	9.8
Chloride	mg/L	(EPA Mthd. 300.0)	11.
Nitrate	mg/L	(EPA Mthd. 300.0)	<2.0
Nitrite N	mg/L	(EPA Mthd. 300.0)	<0.40
Fluoride	mg/L	(EPA Mthd. 300.0)	0.61
pH	Std. units	(Std. Mthds. 20th ed. 4500-H^+ B)	7.7
Total Dissolved Solids	mg/L	(Std. Mthds. 20th ed. 2450 C)	340.
Boron	mg/L	(Azomethine H)	0.35
Silica	mg/L	(Std. Mthds.20th ed. 4500-Si D)	93.
Total Kjeldahl N	mg/L	(Std. Mthds. 4500-NH_3 C)	1.1
Ammonia N	mg/L	(Std. Mthds. 4500-NH_3 C)	<0.20

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER: **410-9423-7**
Sample Description: Duplicate-4

ANALYSIS

Aluminum	µg/L	(Std. Mthds. 20th ed. 3111 D)	<50.
Antimony	µg/L	(Std. Mthds. 20th ed. 3113 B)	<6.0
Arsenic	µg/L	(Std. Mthds. 20th ed. 3113 B)	85.
Barium	µg/L	(Std. Mthds. 20th ed. 3111 D)	170.
Beryllium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Cadmium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Chromium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<1.0
Copper	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.
Iron	µg/L	(Std. Mthds. 20th ed. 3111 B)	<100.
Lead	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Manganese	µg/L	(Std. Mthds. 20th ed. 3111 B)	660.
Mercury	µg/L	(Std. Mthds. 20th ed. 3112 B)	<1.0
Nickel	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Selenium	µg/L	(Std. Mthds. 20th ed. 3113 B)	<5.0
Silver	µg/L	(Std. Mthds. 20th ed. 3113 B)	<10.
Thallium	µg/L	(EPA Mthd. 200.9)	<1.0
Zinc	µg/L	(Std. Mthds. 20th ed. 3111 B)	<50.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER
AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER	Sample Description	Bromide mg/L
410-9322	DP-1	0.086
410-9330	DP-2	0.070
410-9338	DP-3	0.068
410-9346	DP-4	0.074
410-9413	DP-5	0.067
410-9421	DP-6	0.085
410-9429	Duplicate 4	0.070

(EPA Mthd. 300.1)

Analyses performed by approved outside laboratories.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER

AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

Brelje and Race Laboratories
425 South E. Street
Santa Rosa, CA 95404
Phone: 707-544-8807
Fax: 707-544-5736

Fax

To: Leslie Dumas **From:** Jan

Fax: **Date:** 5/27/10

Phone: **Pages:** 3

Re: Windsor **CC:**

☐ **Urgent** ☐ **For Review** x **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

-Comments:

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER:	**410-9321**	**410-9329**	**410-9337**	**410-9345**
Sample Description	DP-1	DP-2	DP-3	DP-4
ANALYSIS:				
Cobalt µg/L	<0.50	<0.50	<0.50	<0.50
Molybdenum µg/L	6.7	8.8	9.0	8.9
Strontium µg/L	150.	120.	120.	120.
Tin µg/L (EPA Mthd. 200.8)	<0.50	<0.50	<0.50	<0.50

Analyses performed by approved outside laboratories.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER

AH:ljc

BRELJE AND RACE

LABORATORIES, INC. **425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807**

May 24, 2010

Sample Collected: 04/29/10
Sample Received: 04/29/10
Collected By : RMC

Town of Windsor
8400 Windsor Road
Windsor, CA. 95492

LOG NUMBER:	410-9412	410-9420	410-9428
Sample Description	DP-5	DP-6	Duplicate 4
ANALYSIS:			
Cobalt µg/L	<0.50	<0.50	<0.50
Molybdenum µg/L	9.3	13.	9.4
Strontium µg/L	120.	130.	120.
Tin µg/L (EPA Mthd. 200.8)	<0.50	<0.50	<0.50

Analyses performed by approved outside laboratories.

VERY TRULY YOURS,

BRELJE AND RACE LABORATORIES, INC.

ANN HILL, LABORATORY MANAGER

AH:ljc

BRELJE AND RACE

LABORATORIES, INC.

425 SOUTH E STREET • SANTA ROSA, CALIFORNIA 95404 • (707) 544-8807

Brelje and Race Laboratories
425 South E. Street
Santa Rosa, CA 95404
Phone: 707-544-8807
Fax: 707-544-5736

Fax

To: Leslie Dumas **From:** Ann Heil

Fax: **Date:** 5/20/10

Phone: **Pages:** 9

Re: Windsor **CC:**

☐ **Urgent** ☐ **For Review** x **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

EX

GENERAL MINERAL & PHYSICAL & INORGANIC ANALYSIS (9/99)

Date of Report: 10/05/18
Sample ID No.410-9348-51
Laboratory
Signature Lab Director:
Name: BRELJE & RACE LABORATORIES, INC
Employed By: TOWN OF WINDSOR
Name of Sampler:RMC
Date/Time Sample Collected:10/04/29/0000
Date/Time Sample Received @ Lab:10/04/29/0000
Date Analyses Completed:10/05/17

System Name:WINDSOR, TOWN OF
System Number: 4910017
Name or Number of Sample Source:ESPOSTI WELL - NEW

* User ID: RXR
* Date/Time of Sample: |10|04|29|0000| YY MM DD TTTT
Station Number:
Laboratory Code: 9534
YY MM DD
Date Analysis completed: |10|05|17|
Phone #:
* Submitted by:

MCL	REPORTING UNITS	CHEMICAL	ENTRY #	ANALYSES RESULTS		DLR
	mg/L	Total Hardness (as CaCO3) (mg/L)	00900	120.		
	mg/L	Calcium (Ca) (mg/L)	00916	22.		
	mg/L	Magnesium (Mg) (mg/L)	00927	15.		
	mg/L	Sodium (NA) (mg/L)	00929	54.		
	mg/L	Potassium (K) (mg/L)	00937			
Total Cations		Meq/L Value:				
	mg/L	Total Alkalinity (AS CaCO3) (mg/L)	00410	230.		
	mg/L	Hydroxide (OH) (mg/L)	71830	1.0	<	
	mg/L	Carbonate (CO3) (mg/L)	00445	1.0	<	
	mg/L	Bicarbonate (HCO3) (mg/L)	00440	280.		
*	mg/L+	Sulfate (SO4) (mg/L)	00945	12.		.5
*	mg/L+	Chloride (Cl) (mg/L)	00940	17.		
45	mg/L	Nitrate (as NO3) (mg/L)	71850	2.0	<	2.0
2 .	mg/L	Fluoride (F) (Natural-Source)	00951	0.37		.1
Total Anions		Meq/L Value:				
	Std.Units+	PH (Laboratory) (Std.Units)	00403	7.6		
***	umho/cm+	Specific Conductance (E.C.) (umhos/cm)	00095	510.		
****	mg/L+	Total Filterable Residue@180C(TDS) (mg/L)	70300	340.		
15	Units	Apparent Color (Unfiltered) (Units)	00081	5.0		
3	TON	Odor Threshold at 60 C (TON)	00086	1.0	<	1.
5	NTU	Lab Turbidity (NTU)	82079	0.21		
0.5	mg/L+	MBAS (mg/L)	38260	0.05	<	

* 250-500-600 ** 0.6-1.7 *** 900-1600-2200 **** 500-1000-1500

PAGE 2 OF 2 INORGANIC CHEMICALS 410-9348-51

MCL	REPORTING UNITS	CHEMICAL	ENTRY #	ANALYSES RESULTS	DLR
1000	ug/L	Aluminum (Al) (ug/L)	01105	< 50.0	50.0
6	ug/L	Antimony (ug/L)	01097	< 6.0	6.0
10	ug/L	Arsenic (As) (ug/L)	01002	56.0	2.0
1000	ug/L	Barium (Ba) (ug/L)	01007	200.0	100.0
4	ug/L	Beryllium (ug/L)	01012	< 1.0	1.0
5	ug/L	Cadmium (Cd) (ug/L)	01027	< 1.0	1.0
50	ug/L	Chromium (Total Cr) (ug/L)	01034	< 1.0	10.0
1000	ug/L+	Copper (Cu) (ug/L)	01042	< 50.0	50.0
300	ug/L+	Iron (Fe) (ug/L)	01045	< 100.0	100.0
	ug/L	Lead (Pb) (ug/L)	01051	< 5.0	5.0
50	ug/L+	Manganese (Mn) (ug/L)	01055	750.0	20.0
2	ug/L	Mercury (Hg) (ug/L)	71900	< 1.0	1.0
100	ug/L	Nickel (ug/L)	01067	< 10.0	10.0
50	ug/L	Selenium (Se) (ug/L)	01147	< 5.0	5.0
100	ug/L+	Silver (Ag) (ug/L)	01077	< 10.0	10.0
2	ug/L	Thallium (ug/L)	01059	< 1.0	1.0
5000	ug/L	Zinc (Zn) (ug/L)	01092	< 50.0	50.0

ADDITIONAL ANALYSES

1000	ug/L	Nitrite as Nitrogen(N) (ug/L)	00620	< 400	400

+ Indicates Secondary Drinking Water Standards

EX

ORGANIC CHEMICAL ANALYSIS (9/99)

Date of Report: 10/05/18 Sample ID No.410-9352

Laboratory Signature Lab

Name: BRELJE & RACE LABORATORIES, INC Director:

Name of Sampler:RMC Employed By: TOWN OF WINDSOR

Date/Time Sample Collected:10/04/29/0000 | Date/Time Sample Received @ Lab:10/04/29/0000 | Date Analyses Completed:10/05/01

System Name:WINDSOR, TOWN OF | System Number: 4910017

Name or Number of Sample Source:ESPOSTI WELL - NEW

* User ID: RXR Station Number: *

* Date/Time of Sample: |10|04|29|0000| Laboratory Code: 9534 *

* YY MM DD TTTT YY MM DD *

* Date Analysis completed: |10|05|01| *

* Submitted by: Phone #: *

Page 1 of 2 REGULATED ORGANIC CHEMICALS

TEST METHOD	CHEMICAL ALL CHEMICALS REPORTED ug/L	ENTRY #	ANALYSES RESULTS	MCL ug/L	DLR ug/L
524.2	Total Trihalomethanes (TTHMs)	82080	ND	80	
524.2	Bromodichloromethane	32101	ND		1.0
524.2	Bromoform	32104	ND		1.0
524.2	Chloroform (Trichloromethane)	32106	ND		1.0
524.2	Dibromochloromethane	32105	ND		1.0
524.2	Benzene	34030	ND	1	.50
524.2	Carbon Tetrachloride	32102	ND	.5	.50
524.2	1,2-Dichlorobenzene (o-DCB)	34536	ND	600	.50
524.2	1,4-Dichlorobenzene (p-DCB)	34571	ND	5	.50
524.2	1,1-Dichloroethane (1,1-DCA)	34496	ND	5	.50
524.2	1,2-Dichloroethane (1,2-DCA)	34531	ND	.5	.50
524.2	1,1-Dichloroethylene (1,1-DCE)	34501	ND	6	.50
524.2	cis-1,2-Dichloroethylene (c-1,2-DCE)	77093	ND	6	.50
524.2	trans-1,2-Dichloroethylene (t-1,2-DCE)	34546	ND	10	.50
524.2	Dichloromethane (Methylene Chloride)	34423	ND	5	.50
524.2	1,2-Dichloropropane	34541	ND	5	.50
524.2	Total 1,3-Dichloropropene	34561	ND	.5	.50
524.2	Ethyl Benzene	34371	ND	300	.50
524.2	Methyl tert-Butyl Ether(MTBE)	46491	ND	5	3.00
524.2	Monochlorobenzene (Chlorobenzene)	34301	ND	70	.50
524.2	Styrene	77128	ND	100	.50
524.2	1,1,2,2-Tetrachloroethane	34516	ND	1	.50
524.2	Tetrachloroethylene (PCE)	34475	ND	5	.50
524.2	Toluene	34010	ND	150	.50
524.2	1,2,4-Trichlorobenzene	34551	ND	5	.50
524.2	1,1,1-Trichloroethane (1,1,1-TCA)	34506	ND	200	.50
524.2	1,1,2-Trichloroethane (1,1,2-TCA)	34511	ND	5	.50
524.2	Trichloroethylene (TCE)	39180	ND	5	.50
524.2	Trichlorofluoromethane (FREON 11)	34488	ND	150	5.00

REGULATED ORGANIC CHEMICALS CONTINUED 410-9352

TEST METHOD	CHEMICAL ALL CHEMICALS REPORTED ug/L	ENTRY #	ANALYSES RESULTS	MCL ug/L	DLR ug/L
524.2	Trichlorotrifluoroethane (FREON 113)	81611	ND	1200	10.00
524.2	Vinyl Chloride (VC)	39175	ND	.5	.50
524.2	m-Xylene	81710	ND		.50
524.2	m,p-Xylene	A-014	ND		.50
524.2	o-Xylene	77135	ND		.50
524.2	p-Xylene	78132	ND		.50
524.2	Total Xylenes (m,p, & o)	81551	ND	1750	
	UNREGULATED ORGANIC CHEMICALS				
524.2	tert-Amyl Methyl Ether (TAME)	A-034	ND		3.00
524.2	Bromobenzene	81555	ND		.50
524.2	Bromochloromethane	A-012	ND		.50
524.2	Bromomethane (Methyl Bromide)	34413	ND		.50
524.2	tert-Butyl Alcohol (TBA)	77035	ND		2.00
524.2	n-Butylbenzene	A-010	ND		.50
524.2	sec-Butylbenzene	77350	ND		.50
524.2	tert-Butylbenzene	77353	ND		.50
524.2	Chloroethane	34311	ND		.50
524.2	2-Chloroethylvinyl Ether	34576	ND		
524.2	Chloromethane (Methyl Chloride)	34418	ND		.50
524.2	2-Chlorotoluene	A-008	ND		.50
524.2	4-Chlorotoluene	A-009	ND		.50
524.2	Dibromomethane	77596	ND		.50
524.2	1,3-Dichlorobenzene (m-DCB)	34566	ND		.50
524.2	Dichlorodifluoromethane (Freon 12)	34668	ND		0.50
524.2	1,3-Dichloropropane	77173	ND		.50
524.2	2,2-Dichloropropane	77170	ND		.50
524.2	1,1-Dichloropropene	77168	ND		.50
524.2	Ethyl tert-Butyl Ether (ETBE)	A-033	ND		3.00
524.2	Hexachlorobutadiene	34391	ND		.50
524.2	Isopropylbenzene (Cumene)	77223	ND		.50
524.2	p-Isopropyltoluene	A-011	ND		
524.2	n-Propylbenzene	77224	ND		.50
524.2	1,1,1,2-Tetrachloroethane	77562	ND		.50
524.2	1,2,3-Trichlorobenzene	77613	ND		.50
524.2	1,2,3-Trichloropropane	77443	< 0.50		.005
524.2	1,2,4-Trimethylbenzene	77222	ND		.50
524.2	1,3,5-Trimethylbenzene	77226	ND		.50

EX

GENERAL MINERAL & PHYSICAL & INORGANIC ANALYSIS (9/99)

Date of Report: 10/05/18
Laboratory Name: BRELJE & RACE LABORATORIES, INC
Name of Sampler:RMC
Date/Time Sample Collected:10/04/29/0000
Sample ID No.410-9431-4
Signature Lab Director:
Employed By: TOWN OF WINDSOR
Date/Time Sample Received @ Lab:10/04/29/0000
Date Analyses Completed:10/05/17

System Name:WINDSOR, TOWN OF
System Number: 4910017
Name or Number of Sample Source:ESPOSTI WELL - COMP 2

* User ID: RXR
* Date/Time of Sample: |10|04|29|0000| YY MM DD TTTT
Station Number:
Laboratory Code: 9534
Date Analysis completed: |10|05|17| YY MM DD
* Submitted by:
Phone #:

MCL	REPORTING UNITS	CHEMICAL	ENTRY #	ANALYSES RESULTS		DLR
	mg/L	Total Hardness (as CaCO3) (mg/L)	00900	110.		
	mg/L	Calcium (Ca) (mg/L)	00916	20.		
	mg/L	Magnesium (Mg) (mg/L)	00927	14.		
	mg/L	Sodium (NA) (mg/L)	00929	48.		
	mg/L	Potassium (K) (mg/L)	00937			
Total Cations		Meq/L Value:				
	mg/L	Total Alkalinity (AS CaCO3) (mg/L)	00410	230.		
	mg/L	Hydroxide (OH) (mg/L)	71830		< 1.0	
	mg/L	Carbonate (CO3) (mg/L)	00445		< 1.0	
	mg/L	Bicarbonate (HCO3) (mg/L)	00440	280.		
*	mg/L+	Sulfate (SO4) (mg/L)	00945	12.		.5
*	mg/L+	Chloride (Cl) (mg/L)	00940	16.		
45	mg/L	Nitrate (as NO3) (mg/L)	71850		< 2.0	2.0
2 .	mg/L	Fluoride (F) (Natural-Source)	00951	0.39		.1
Total Anions		Meq/L Value:				
	Std.Units+	PH (Laboratory) (Std.Units)	00403	7.6		
***	umho/cm+	Specific Conductance (E.C.) (umhos/cm)	00095	500.		
****	mg/L+	Total Filterable Residue@180C(TDS) (mg/L)	70300	340.		
15	Units	Apparent Color (Unfiltered) (Units)	00081	5.0		
3	TON	Odor Threshold at 60 C (TON)	00086		< 1.0	1.
5	NTU	Lab Turbidity (NTU)	82079	0.47		
0.5	mg/L+	MBAS (mg/L)	38260		< 0.05	

* 250-500-600 ** 0.6-1.7 *** 900-1600-2200 **** 500-1000-1500

INORGANIC CHEMICALS

410-9431-4

MCL	REPORTING UNITS	CHEMICAL	ENTRY #	ANALYSES RESULTS	DLR
1000	ug/L	Aluminum (Al) (ug/L)	01105	< 50.0	50.0
6	ug/L	Antimony (ug/L)	01097	< 6.0	6.0
10	ug/L	Arsenic (As) (ug/L)	01002	61.0	2.0
1000	ug/L	Barium (Ba) (ug/L)	01007	200.0	100.0
4	ug/L	Beryllium (ug/L)	01012	< 1.0	1.0
5	ug/L	Cadmium (Cd) (ug/L)	01027	< 1.0	1.0
50	ug/L	Chromium (Total Cr) (ug/L)	01034	< 1.0	10.0
1000	ug/L+	Copper (Cu) (ug/L)	01042	< 50.0	50.0
300	ug/L+	Iron (Fe) (ug/L)	01045	< 100.0	100.0
	ug/L	Lead (Pb) (ug/L)	01051	< 5.0	5.0
50	ug/L+	Manganese (Mn) (ug/L)	01055	790.0	20.0
2	ug/L	Mercury (Hg) (ug/L)	71900	< 1.0	1.0
100	ug/L	Nickel (ug/L)	01067	< 10.0	10.0
50	ug/L	Selenium (Se) (ug/L)	01147	< 5.0	5.0
100	ug/L+	Silver (Ag) (ug/L)	01077	< 10.0	10.0
2	ug/L	Thallium (ug/L)	01059	< 1.0	1.0
5000	ug/L	Zinc (Zn) (ug/L)	01092	< 50.0	50.0

ADDITIONAL ANALYSES

1000	ug/L	Nitrite as Nitrogen(N) (ug/L)	00620	< 400	400

+ Indicates Secondary Drinking Water Standards

EX

ORGANIC CHEMICAL ANALYSIS (9/99)

Date of Report: 10/05/18
Laboratory Name: BRELJE & RACE LABORATORIES, INC
Name of Sampler:RMC
Date/Time Sample Collected:10/04/29/0000
Sample ID No.410-9435
Signature Lab Director:
Employed By: TOWN OF WINDSOR
Date/Time Sample Received @ Lab:10/04/29/0000
Date Analyses Completed:10/05/01

System Name:WINDSOR, TOWN OF
System Number: 4910017
Name or Number of Sample Source:ESPOSTI WELL - COMP 2

* User ID: RXR
* Date/Time of Sample: |10|04|29|0000| YY MM DD TTTT
* Station Number:
* Laboratory Code: 9534
* Date Analysis completed: YY MM DD |10|05|01|
* Submitted by:
* Phone #:

REGULATED ORGANIC CHEMICALS

TEST METHOD	CHEMICAL ALL CHEMICALS REPORTED ug/L	ENTRY #	ANALYSES RESULTS	MCL ug/L	DLR ug/L
524.2	Total Trihalomethanes (TTHMs)	82080	ND	80	
524.2	Bromodichloromethane	32101	ND		1.0
524.2	Bromoform	32104	ND		1.0
524.2	Chloroform (Trichloromethane)	32106	ND		1.0
524.2	Dibromochloromethane	32105	ND		1.0
524.2	Benzene	34030	ND	1	.50
524.2	Carbon Tetrachloride	32102	ND	.5	.50
524.2	1,2-Dichlorobenzene (o-DCB)	34536	ND	600	.50
524.2	1,4-Dichlorobenzene (p-DCB)	34571	ND	5	.50
524.2	1,1-Dichloroethane (1,1-DCA)	34496	ND	5	.50
524.2	1,2-Dichloroethane (1,2-DCA)	34531	ND	.5	.50
524.2	1,1-Dichloroethylene (1,1-DCE)	34501	ND	6	.50
524.2	cis-1,2-Dichloroethylene (c-1,2-DCE)	77093	ND	6	.50
524.2	trans-1,2-Dichloroethylene (t-1,2-DCE)	34546	ND	10	.50
524.2	Dichloromethane (Methylene Chloride)	34423	ND	5	.50
524.2	1,2-Dichloropropane	34541	ND	5	.50
524.2	Total 1,3-Dichloropropene	34561	ND	.5	.50
524.2	Ethyl Benzene	34371	ND	300	.50
524.2	Methyl tert-Butyl Ether(MTBE)	46491	ND	5	3.00
524.2	Monochlorobenzene (Chlorobenzene)	34301	ND	70	.50
524.2	Styrene	77128	ND	100	.50
524.2	1,1,2,2-Tetrachloroethane	34516	ND	1	.50
524.2	Tetrachloroethylene (PCE)	34475	ND	5	.50
524.2	Toluene	34010	ND	150	.50
524.2	1,2,4-Trichlorobenzene	34551	ND	5	.50
524.2	1,1,1-Trichloroethane (1,1,1-TCA)	34506	ND	200	.50
524.2	1,1,2-Trichloroethane (1,1,2-TCA)	34511	ND	5	.50
524.2	Trichloroethylene (TCE)	39180	ND	5	.50
524.2	Trichlorofluoromethane (FREON 11)	34488	ND	150	5.00

REGULATED ORGANIC CHEMICALS CONTINUED 410-9435

TEST METHOD	CHEMICAL ALL CHEMICALS REPORTED ug/L	ENTRY #	ANALYSES RESULTS	MCL ug/L	DLR ug/L
524.2	Trichlorotrifluoroethane (FREON 113)	81611	ND	1200	10.00
524.2	Vinyl Chloride (VC)	39175	ND	.5	.50
524.2	m-Xylene	81710	ND		.50
524.2	m,p-Xylene	A-014	ND		.50
524.2	o-Xylene	77135	ND		.50
524.2	p-Xylene	78132	ND		.50
524.2	Total Xylenes (m,p, & o)	81551	ND	1750	
	UNREGULATED ORGANIC CHEMICALS				
524.2	tert-Amyl Methyl Ether (TAME)	A-034	ND		3.00
524.2	Bromobenzene	81555	ND		.50
524.2	Bromochloromethane	A-012	ND		.50
524.2	Bromomethane (Methyl Bromide)	34413	ND		.50
524.2	tert-Butyl Alcohol (TBA)	77035	ND		2.00
524.2	n-Butylbenzene	A-010	ND		.50
524.2	sec-Butylbenzene	77350	ND		.50
524.2	tert-Butylbenzene	77353	ND		.50
524.2	Chloroethane	34311	ND		.50
524.2	2-Chloroethylvinyl Ether	34576	ND		
524.2	Chloromethane (Methyl Chloride)	34418	ND		.50
524.2	2-Chlorotoluene	A-008	ND		.50
524.2	4-Chlorotoluene	A-009	ND		.50
524.2	Dibromomethane	77596	ND		.50
524.2	1,3-Dichlorobenzene (m-DCB)	34566	ND		.50
524.2	Dichlorodifluoromethane (Freon 12)	34668	ND		0.50
524.2	1,3-Dichloropropane	77173	ND		.50
524.2	2,2-Dichloropropane	77170	ND		.50
524.2	1,1-Dichloropropene	77168	ND		.50
524.2	Ethyl tert-Butyl Ether (ETBE)	A-033	ND		3.00
524.2	Hexachlorobutadiene	34391	ND		.50
524.2	Isopropylbenzene (Cumene)	77223	ND		.50
524.2	p-Isopropyltoluene	A-011	ND		
524.2	n-Propylbenzene	77224	ND		.50
524.2	1,1,1,2-Tetrachloroethane	77562	ND		.50
524.2	1,2,3-Trichlorobenzene	77613	ND		.50
524.2	1,2,3-Trichloropropane	77443	< 0.50		.005
524.2	1,2,4-Trimethylbenzene	77222	ND		.50
524.2	1,3,5-Trimethylbenzene	77226	ND		.50

Analytical Sciences
P.O. Box 750336, Petaluma, CA 94975-0336
110 Liberty Street, Petaluma, CA 94952
(707) 769-3128
Fax (707) 769-8093

McCampbell Analytical, Inc.
1534 Willow Pass Rd.
Pittsburg, CA
94565-1701
Tel: 925-252-9262

CHAIN OF CUSTODY

Lab Project Number: _____
Client's Project Name: Windsor Well Development (Bluebird)
Client's Project Number: 143-022

RUSH

GeoTracker Required Yes (No)
GeoTracker Number:

1005180

Page 1 of 1

CLIENT INFORMATION

Company Name: RMC Water and Environment
Address: 2001 North Main St, Suite 400
Walnut Creek, CA 94596
Contact: Leslie Dumas
Phone #: (925) 627-4100
Fax #: (925) 627-4101
e-mail: ldumas@rmcwater.com

TURNAROUND TIME (check one)

Same Day _____
48 Hours _____ 24 Hours ✓
5 Days _____ Normal _____

ANALYSIS

Item	Client Sample ID	Date Sampled	Time	Matrix	# Cont.	Presv. Y/N	Total Cyanide	Sb, As, Ba, Be, Cd	Cu, Pb, Hg, Ni, Se	Tl, Zn, Hardness	Nitrate as N, Cr+6		Total Dissolved Metals (Sb, As, BA, Be, Cd, Cu, Pb, Hg, Ni, Se, Tl, Zn, Hardness)	Total Dissolved Metals (Filtered in lab)				Comments	Lab Sample #
																		J Flag (all)	
✓	Field Blank	5/7/10	10:20			see bottles	✓	✓	✓	✓	✓		✓					J Flag	
2	Well Sample	5/7/10	10:10			"	✓	✓	✓	✓	✓		✓					J Flag see note 1	
3	Well Duplicate	5/7/10	10:10			"	✓	✓	✓	✓	✓		✓					J Flag see note 1	
4																			
5																			
6																			
7																			
8																			
9																			
10	rec@mccampbell by: M-R Vall	5/7/10	2:30pm																

ICE/t 8.0°C
GOOD CONDITION ✓ APPROPRIATE
HEAD SPACE ABSENT ___ CONTAINERS ✓
DECHLORINATED IN LAB ___ PRESERVED IN LAB
PRESERVATION VOAS O&G METALS OTHER

SIGNATURES

Sampled By: Nishant Parulekar

Relinquished By: N.S. Parulekar — Signature
5/7/10 12:40pm — Date Time

Received By: _____ — Signature
5/7/10 12:40 — Date Time

SIGN OFF 5/7/10

contact Leslie if you have questions →

Note 1: we need well sample for metals such that one test for total metals is unfiltered and another test for total metals is filtered in lab (can't be

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1005180 **ClientCode: RMCW**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Report to:
Leslie Dumas
RMC Water&Environment
2001 North Main Street, STE. 400
Walnut Creek, CA 94596
925-627-4113 FAX

Email: ldumas@rmcwater.com
cc:
PO:
ProjectNo: #143-022; Windsor Well Development (Bluebird)

Bill to:
Leslie Dunas
RMC Water&Environment
2001 North Main Street, STE. 400
Walnut Creek, CA 94596

Requested TAT: 1 day

Date Received: **05/07/2010**
Date Printed: **05/07/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1005180-001	Field Blank	Water	5/7/2010 10:20	☐	B	B	A	B	C	B	C	B				
1005180-002	Well Sample	Water	5/7/2010 10:10	☐	B	B	A	B	C	B	C	B				
1005180-003	Well Duplicate	Water	5/7/2010 10:10	☐	B	B	A	B	C	B	C	B				

Test Legend:

1	218_6_W	2	300_1_W	3	CN_TOTAL_W	4	HARD_DISS	5	HARD_W
6	METALSMS_DISS	7	METALSMS_W	8	PRDISSOLVED	9		10	
11		12							

Prepared by: Melissa Valles

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **RMC Water&Environment** Date and Time Received: **5/7/2010 2:50:21 PM**

Project Name: **#143-022; Windsor Well Development (Bluebird)** Checklist completed and reviewed by: Melissa Valles

WorkOrder N°: **1005180** Matrix Water Carrier: Courier

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 8°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☑	No ☐	NA ☐
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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Telephone: 877-252-9262 Fax: 925-252-9269

RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/07/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/07/10

Hexachrome by IC*

Analytical Method: E218.6 Work Order: 1005180

Lab ID	Client ID	Matrix	Hexachrome	DF	Comments
1005180-001B	Field Blank	W	ND	1	
1005180-002B	Well Sample	W	ND	1	
1005180-003B	Well Duplicate	W	ND	1	

Reporting Limit for DF = 1; ND means not detected at or above the reporting limit/method detection limit	RL	0.2 µg/L	
	MDL	0.2 µg/L	

* water samples are reported in µg/L.

N/A means surrogate not applicable to this analysis; # surrogate diluted out of range or surrogate coelutes with another peak.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/07/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/07/10

Inorganic Anions by IC*

Extraction method: E300.1 Analytical methods: E300.1 Work Order: 1005180

Lab ID	Client ID	Matrix	Nitrate as N	Nitrate as $NO3^-$	DF	% SS	Comments
1005180-001B	Field Blank	W	ND	ND	1	103	
1005180-002B	Well Sample	W	ND	ND	1	104	
1005180-003B	Well Duplicate	W	ND	ND	1	109	

Reporting Limit for DF =1; ND means not detected at or above the RL/MDL	RL	0.1	0.45	mg/L
	MDL	0.1	0.45	mg/L

* water samples are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in mg/wipe, product/oil/non-aqueous liquid samples in mg/L.

* [Nitrate as $NO3^-$] = 4.4286 x [Nitrate as N]

surrogate diluted out of range or surrogate coelutes with another peak; N/A means surrogate not applicable to this analysis.

DHS ELAP Certification 1644

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RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/10/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/10/10

Cyanide, Total*^

Analytical Method: Kelada-01 Work Order: 1005180

Lab ID	Client ID	Matrix	Total Cyanide	DF	Comments
1005180-001A	Field Blank	W	ND	1	
1005180-002A	Well Sample	W	ND	1	
1005180-003A	Well Duplicate	W	ND	1	

Reporting Limit for DF = 1; ND means not detected at or above the reporting limit/method detection limit	RL	1.0 µg/L	
	MDL	1.0 µg/L	

* water samples are reported in ug/L; soil/sludge/solid samples in mg/kg; wipe samples in µg/wipe.

^ All water samples are screened for sulfide interference prior to analysis and treated to remove sulfide if it is present. All soil samples are treated to remove sulfide, nitrate and nitrite interference prior to analysis.

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RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/07/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/07/10

Hardness*

Extraction method: SM2340B & 200.7 Analytical methods: SM2340B & 200.7 Work Order: 1005180

Lab ID	Client ID	Matrix	Extraction Type	Hardness	DF	% SS	Comments
1005180-001B	Field Blank	W	DISS.	ND	1	N/A	
1005180-002B	Well Sample	W	DISS.	32.0	1	N/A	
1005180-003B	Well Duplicate	W	DISS.	27.0	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the Reporting Limit/Method Detection Limit	RL	DISS.	1.0	mg CaCO3/L
	MDL	DISS.	1.0	mg CaCO3/L

*water samples are reported in mg CaCO3/L.

means surrogate diluted out of range; ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument.

TOTAL = Hot acid digestion of a representative sample aliquot.
TRM = Total recoverable metals is the "direct analysis" of a sample aliquot taken from its acid-preserved container.
DISS = Dissolved metals by direct analysis of 0.45 µm filtered and acidified sample.

DHS ELAP Certification 1644

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RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/07/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/10/10

Hardness*

Extraction method: SM2340B & 200.7 Analytical methods: SM2340B & 200.7 Work Order: 1005180

Lab ID	Client ID	Matrix	Extraction Type	Hardness	DF	% SS	Comments
1005180-001C	Field Blank	W	TOTAL	ND	1	118	
1005180-002C	Well Sample	W	TOTAL	46	2	105	
1005180-003C	Well Duplicate	W	TOTAL	41	2	106	

Reporting Limit for DF =1; ND means not detected at or above the Reporting Limit/Method Detection Limit	RL	TOTAL	1.0	mg CaCO3/L
	MDL	TOTAL	1.0	mg CaCO3/L

* water samples are reported in mg CaCO3/L.

ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument.

Analytical Methods: EPA 6010C/200.7 for all elements except: 200.9 (water- Sb, As, Pb, Se, Tl); 245.1 (Hg); 130.2 (Hardness); 7010 (sludge/soil/solid/oil/product/wipes - As, Se, Tl); 7471B (Hg).

TOTAL = Hot acid digestion of a representative sample aliquot.
TRM = Total recoverable metals is the "direct analysis" of a sample aliquot taken from its acid-preserved container.
DISS = Dissolved metals by direct analysis of 0.45 µm filtered and acidified sample.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/07/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/07/10-05/10/10

Metals*

Extraction Method: E200.8 Analytical Method: E200.8 Work Order: 1005180

Lab ID	1005180-001B	1005180-002B	1005180-003B		Reporting Limit for DF =1	
Client ID	Field Blank	Well Sample	Well Duplicate			
Matrix	Water	Water	Water			
DF	1	1	1			
Extraction Type	DISS.	DISS.	DISS.		RL	MDL
Compound	**Concentration**				µg/L	µg/L
Antimony	ND	0.26,J	0.27,J		0.5	0.1
Arsenic	ND	410	420		0.5	0.1
Barium	ND	61	46		5.0	1.0
Beryllium	ND	ND	ND		0.5	0.1
Cadmium	ND	ND	ND		0.25	0.1
Copper	ND	ND	ND		0.5	0.1
Lead	ND	0.10,J	ND		0.5	0.1
Mercury	ND	0.031	0.027		0.025	0.012
Nickel	ND	0.29,J	0.25,J		0.5	0.1
Selenium	ND	0.13,J	0.14,J		0.5	0.1
Thallium	ND	ND	ND		0.5	0.1
Zinc	ND	11	5.8		5.0	1.0
Surrogate Recoveries (%)						
%SS:	N/A	N/A	N/A			
Comments						

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument.

TOTAL = Hot acid digestion of a representative sample aliquot.
TRM = Total recoverable metals is the "direct analysis" of a sample aliquot taken from its acid-preserved container.
DISS = Dissolved metals by direct analysis of 0.45 µm filtered and acidified sample.

J) analyte detected below quantitation limits

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

RMC Water&Environment	Client Project ID: #143-022; Windsor Well Development (Bluebird)	Date Sampled: 05/07/10
		Date Received: 05/07/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/07/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/10/10

Metals*

Extraction Method: E200.8 Analytical Method: E200.8 Work Order: 1005180

Lab ID	1005180-001C	1005180-002C	1005180-003C		Reporting Limit for DF =1	
Client ID	Field Blank	Well Sample	Well Duplicate			
Matrix	Water	Water	Water			
DF	1	1	1			
Extraction Type	TOTAL	TOTAL	TOTAL		RL	MDL
Compound	**Concentration**				µg/L	µg/L
Antimony	ND	0.32,J	0.33,J		0.5	0.1
Arsenic	ND	440	450		0.5	0.5
Barium	ND	82	83		5.0	1.0
Beryllium	ND	ND	ND		0.5	0.1
Cadmium	ND	ND	ND		0.25	0.1
Copper	ND	6.7	3.2		0.5	0.1
Lead	ND	1.9	1.5		0.5	0.1
Mercury	ND	0.066	0.050		0.025	0.012
Nickel	ND	7.5	5.2		0.5	0.1
Selenium	ND	0.23,J	0.22,J		0.5	0.1
Thallium	ND	ND	ND		0.5	0.1
Zinc	ND	35	38		5.0	2.5
Surrogate Recoveries (%)						
%SS:	102	109	108			
Comments						

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / WET / DI WET / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument.

TOTAL = Hot acid digestion of a representative sample aliquot.
TRM = Total recoverable metals is the "direct analysis" of a sample aliquot taken from its acid-preserved container.
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Telephone: 877-252-9262 Fax: 925-252-9269

RMC Water&Environment	Client Project ID: #143-022.02; Windsor Well Development	Date Sampled: 05/12/10
		Date Received: 05/12/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Reported: 05/13/10
Walnut Creek, CA 94596	Client P.O.:	Date Completed: 05/13/10

WorkOrder: 1005271

May 13, 2010

Dear Leslie:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#143-022.02; Windsor Well Develop**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,



Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

100527 1 results by noon per Cindy

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☒ RUSH ☒ 24 HR ☐ ☐ ☐

☐ GeoTracker EDF ☒ PDF ☐ Excel ☐ Write On (DW)

Report To: Leslie Dumas	Bill To: Leslie Dumas
Company: RMC Water & Environment	
2001 N. Main Street, Suite 400	
Walnut Creek, CA 94596	E-Mail: LDumas@rmcwater.com
Tele: (925-627-4100)	Fax: (925-627-4101)
Project #: 143-022.02	Project Name: Windsor Well Development
Project Location: Bluebird Well, Town of Windsor, California	
Sampler Signature:	

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING		# Containers	Type Containers	MATRIX					METHOD PRESERVED				Analysis Request																						Other			Comments
		Date	Time			Water	Soil	Air	Sludge	Other	ICE	HCL	HNO_3	Other	Mercury (total & diss per LTD)	Arsenic																							
BB-1	Bluebird Well, Windsor	5/12/10	8:00 AM	1		X									X	X																					No
BB-2	Bluebird Well, Windsor	5/12/10	8:00 AM	1		X									X	X																					Yes

Relinquished By: C. Scott	Date: 5/12/10	Time: 10:43	Received By:
Relinquished By:	Date: 5/12/10	Time: 12:42	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° n/a ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT
DECHLORINATED IN LAB
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2 ✓	

COMMENTS: J Flag results

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1005271 **ClientCode: RMCW**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Report to:
Leslie Dumas
RMC Water&Environment
2001 North Main Street, STE. 400
Walnut Creek, CA 94596
925-627-4113 FAX

Email: ldumas@rmcwater.com
cc:
PO:
ProjectNo: #143-022.02; Windsor Well Development

Bill to:
Leslie Dunas
RMC Water&Environment
2001 North Main Street, STE. 400
Walnut Creek, CA 94596

Requested TAT: 1 day

Date Received: **05/12/2010**
Date Printed: **05/12/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1005271-001	BB-1	Water	5/12/2010 8:00	☐	B	A	B									
1005271-002	BB-2	Water	5/12/2010 8:00	☐	B	A	B									

Test Legend:

1	METALSMS_DISS	2	METALSMS_W	3	PRDISSOLVED	4		5	
6		7		8		9		10	
11		12							

Prepared by: Melissa Valles

Comments: Results by Noon

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Sample Receipt Checklist

Client Name: **RMC Water&Environment** Date and Time Received: **5/12/2010 1:09:53 PM**

Project Name: **#143-022.02; Windsor Well Development** Checklist completed and reviewed by: Melissa Valles

WorkOrder N°: **1005271** Matrix Water Carrier: Courier

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☐	No ☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp:		NA ☑
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☑	NA ☐
Samples Received on Ice?	Yes ☐	No ☑	

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments: Total Metals preserved in lab upon receipt.

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Telephone: 877-252-9262 Fax: 925-252-9269

RMC Water&Environment	Client Project ID: #143-022.02; Windsor Well Development	Date Sampled: 05/12/10
		Date Received: 05/12/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/12/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/12/10

Metals*

Extraction method E200.8 Analytical methods E200.8 Work Order: 1005271

Lab ID	Client ID	Matrix	Extraction Type	Arsenic	Mercury	DF	% SS	Comments
001B	BB-1	W	DISS.	360	0.073	1	N/A	
002B	BB-2	W	DISS.	340	0.060	1	N/A	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit/method detection limit	RL	DISS.	0.5	0.025	µg/L
	MDL	DISS.	0.1	0.012	µg/L

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

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DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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RMC Water&Environment	Client Project ID: #143-022.02; Windsor Well Development	Date Sampled: 05/12/10
		Date Received: 05/12/10
2001 North Main Street, STE. 400	Client Contact: Leslie Dumas	Date Extracted: 05/12/10
Walnut Creek, CA 94596	Client P.O.:	Date Analyzed: 05/13/10

Metals*

Extraction method E200.8 Analytical methods E200.8 Work Order: 1005271

Lab ID	Client ID	Matrix	Extraction Type	Arsenic	Mercury	DF	% SS	Comments
001A	BB-1	W	TOTAL	400	0.16	1	109	
002A	BB-2	W	TOTAL	420	0.19	1	107	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit/method detection limit	RL	TOTAL	0.5	0.025	µg/L
	MDL	TOTAL	0.1	0.012	µg/L

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / WET / DI WET / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit/method detection limit; N/A means not applicable to this sample or instrument.

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Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR E200.8

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 50479 WorkOrder: 1005271

EPA Method: E200.8 **Extraction: E200.8** **Spiked Sample ID: 1005001-005A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Arsenic	2.3	10	95.7	94.1	1.36	96.7	95.7	0.974	70 - 130	20	85 - 115	20
Mercury	ND	0.25	97.9	93.1	5.07	97.2	94	3.39	70 - 130	20	85 - 115	20
%SS:	97	750	103	97	5.76	91	91	0	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 50479 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1005271-001A	05/12/10 8:00 AM	05/12/10	05/13/10 11:13 AM	1005271-001A	05/12/10 8:00 AM	05/12/10	05/13/10 11:26 AM
1005271-001B	05/12/10 8:00 AM	05/12/10	05/12/10 2:48 PM	1005271-001B	05/12/10 8:00 AM	05/12/10	05/12/10 3:15 PM
1005271-002A	05/12/10 8:00 AM	05/12/10	05/13/10 11:20 AM	1005271-002A	05/12/10 8:00 AM	05/12/10	05/13/10 11:33 AM
1005271-002B	05/12/10 8:00 AM	05/12/10	05/12/10 2:57 PM	1005271-002B	05/12/10 8:00 AM	05/12/10	05/12/10 3:21 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not applicable to this method.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

DHS ELAP Certification 1644

QA/QC Officer

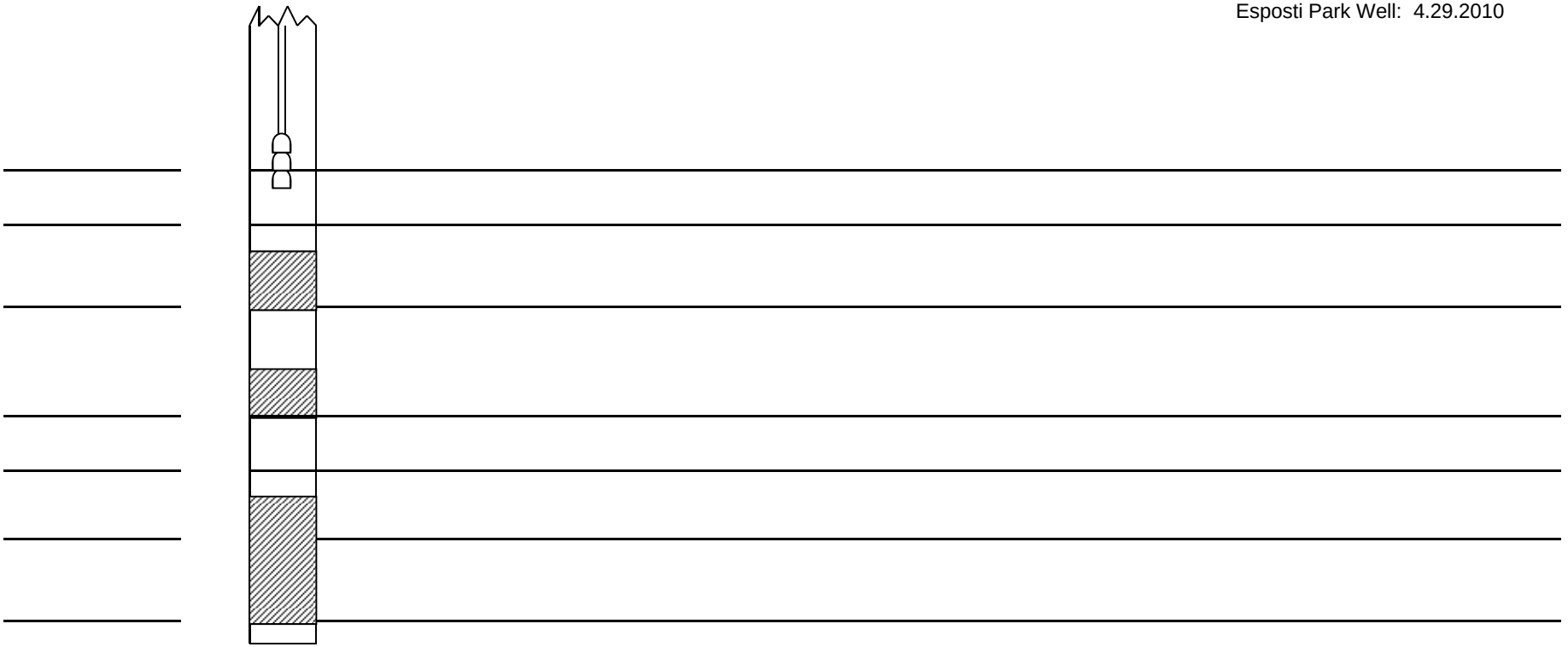
Appendix G - BESST, Inc. Dynamic Profiling Report

BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

50 Tiburon Street Suite 7
San Rafael , CA 94901
Toll Free.866.298.8701
Phone.415.453.2501
Fax.415.453.2509

Final Report: Dynamic Flow Profile and Chemical Analysis
City of Windsor Esposti Park Well

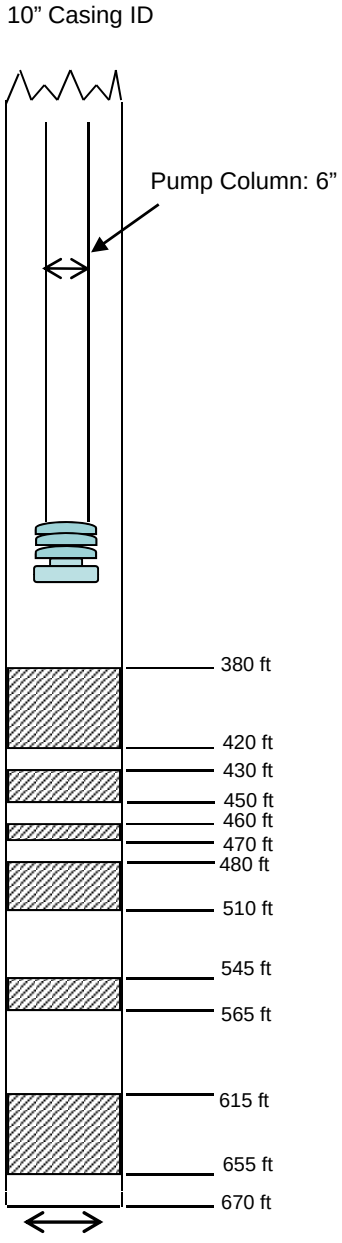
Profiled
Esposti Park Well: 4.29.2010

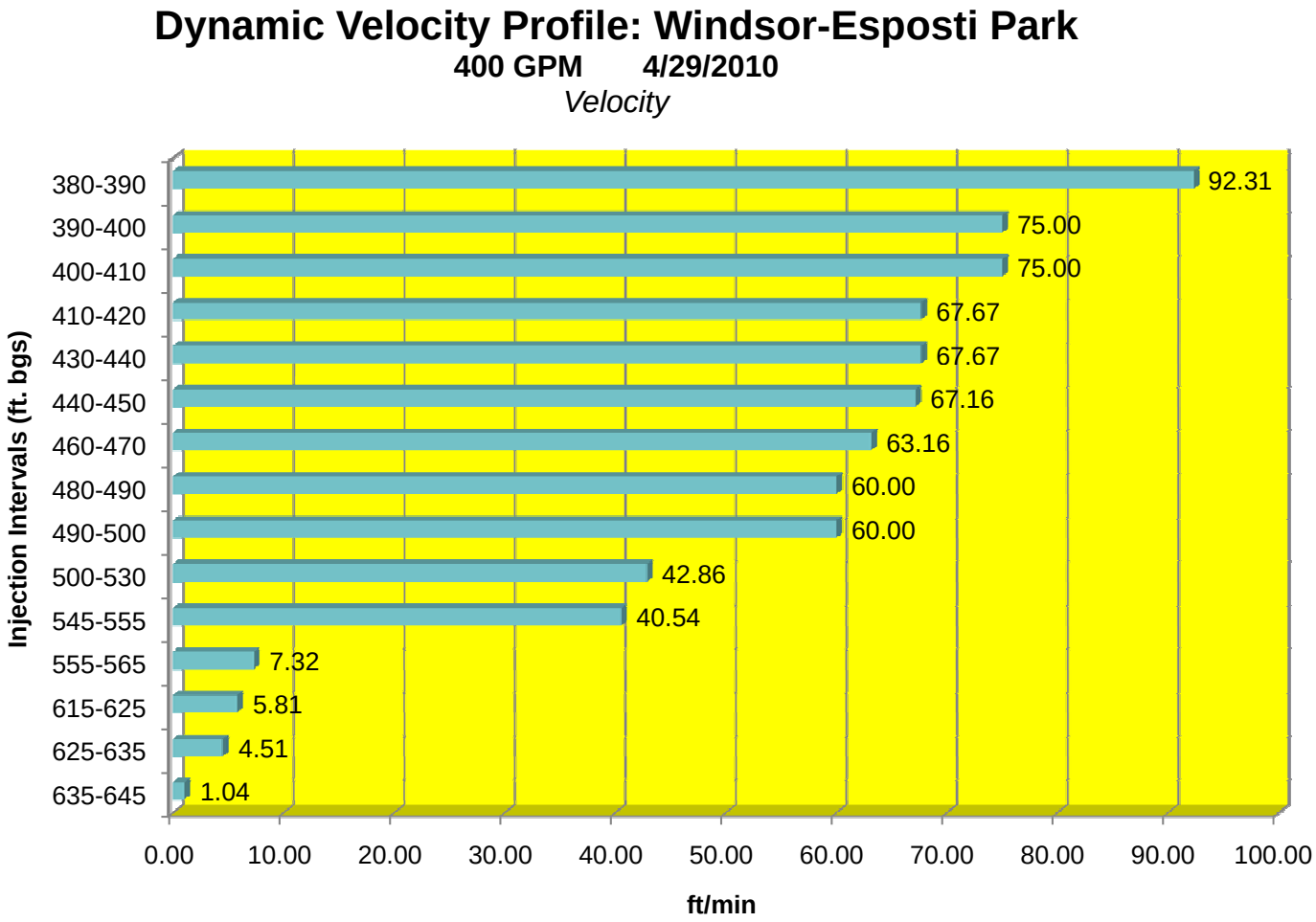


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Chemical Mass Balance Analyses: Fluoride	11
Chemical Mass Balance Analyses: Arsenic	12
Chemical Mass Balance Analyses: Nitrate	13
City of Windsor: Esposti Park Information	

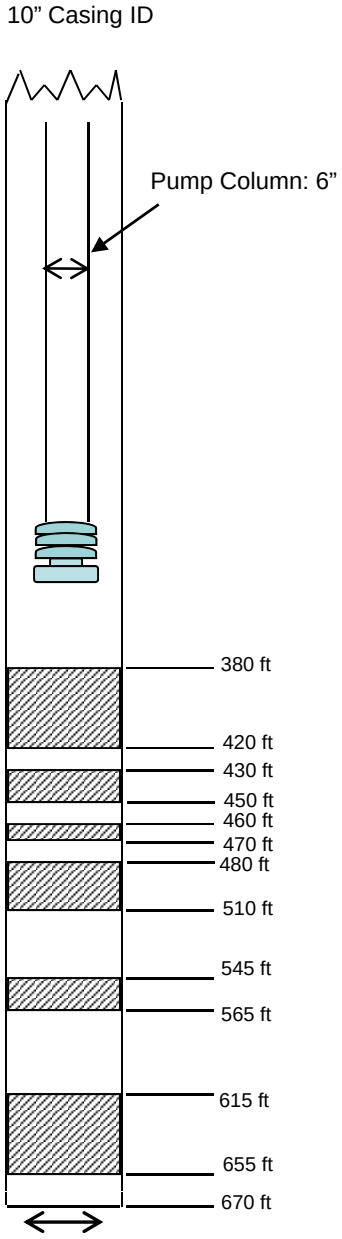
Dynamic Flow Velocity By Depth and Screen Intervals

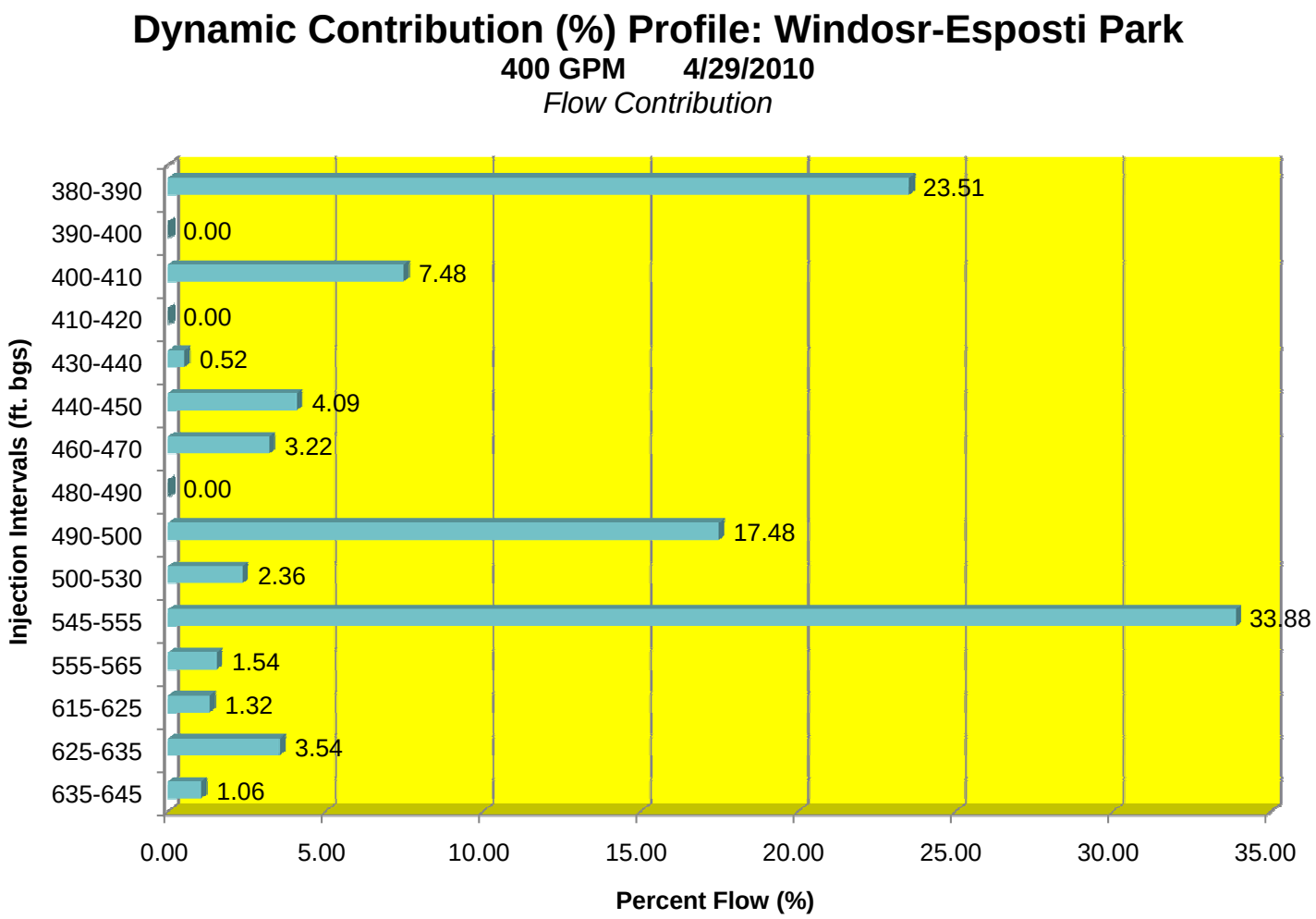




BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

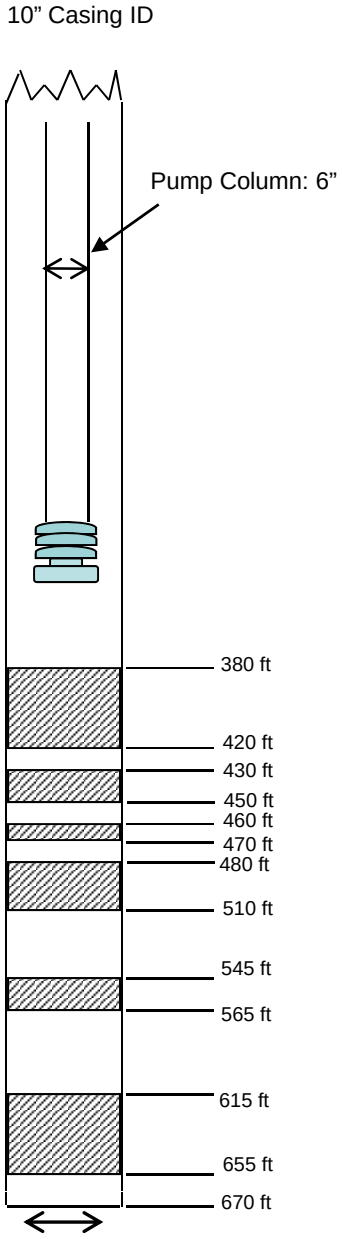
Dynamic Flow Contribution **(%)** By Depth and Screen Intervals



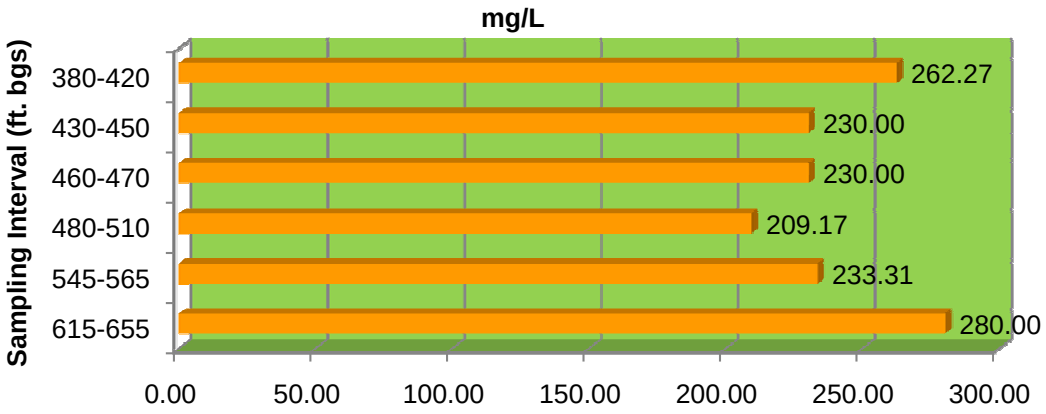


BESST INC.
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Chemical Mass Balance Analysis: Total Alkalinity as CaCO3

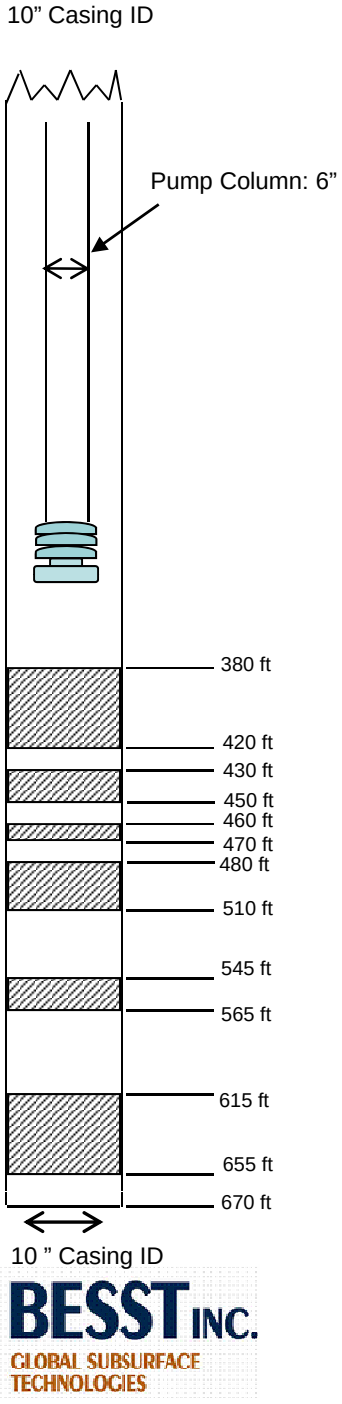


Alkalinity, Total(as CaCO3)	ft. bgs	ft. bgs	GPM	mg/L	GPM	mg/L
	Sample Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	240	123.94	262.27
	425	430-450	276.06	230	18.40	230.00
	455	460-470	257.66	230	12.88	230.00
	475	480-510	244.78	230	79.39	209.17
	530	545-565	165.39	240	141.70	233.31
	580	615-655	23.69	280	23.69	280.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			



BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Chemical Mass Balance Analysis: Hardness as CaCO3

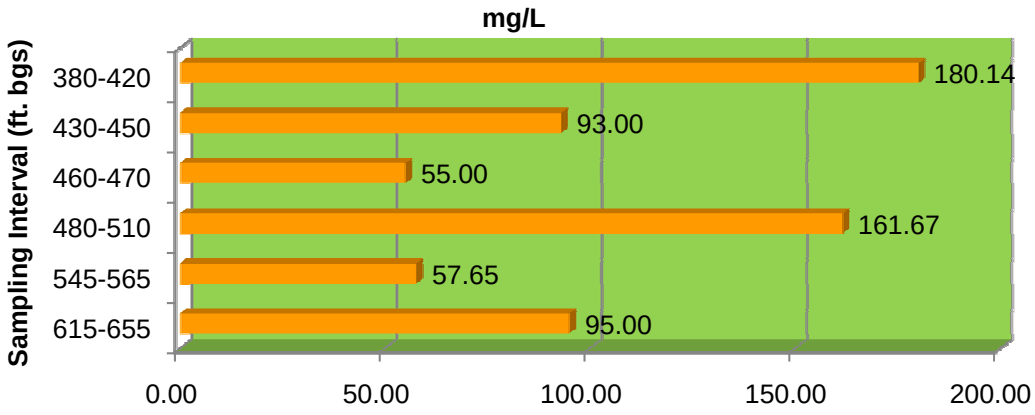


Hardness as CaCO3	ft. bgs	ft. bgs	GPM	mg/L	GPM	mg/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	120	123.94	180.14
	425	430-450	276.06	93	18.40	93.00
	455	460-470	257.66	93	12.88	55.00
	475	480-510	244.78	95	79.39	161.67
	530	545-565	165.39	63	141.70	57.65
	580	615-655	23.69	95	23.69	95.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			

Dynamic Chemical Profile: Esposti Park Well

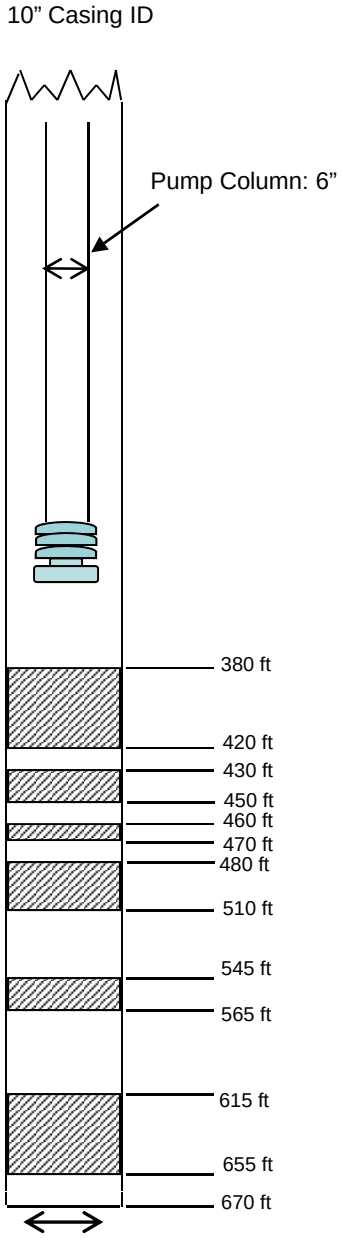
400 GPM 4/29/2010

Hardness as CaCO3

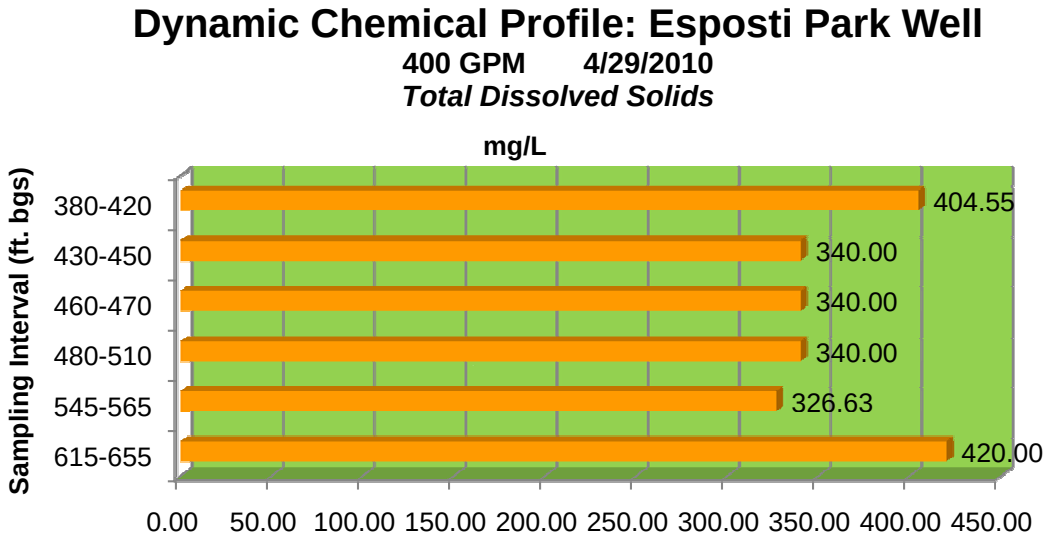


BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Chemical Mass Balance Analysis: Total Dissolved Solids

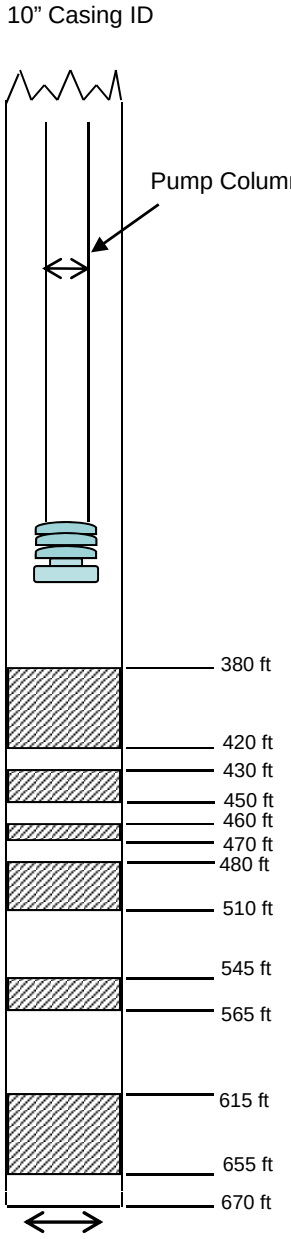


Total Dissolved Solids	ft. bgs	ft. bgs	GPM	mg/L	GPM	mg/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	360	123.94	404.55
	425	430-450	276.06	340	18.40	340.00
	455	460-470	257.66	340	12.88	340.00
	475	480-510	244.78	340	79.39	340.00
	530	545-565	165.39	340	141.70	326.63
	580	615-655	23.69	420	23.69	420.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			



BESST INC.
GLOBAL SUBSURFACE TECHNOLOGIES

Chemical Mass Balance Analysis: Manganese

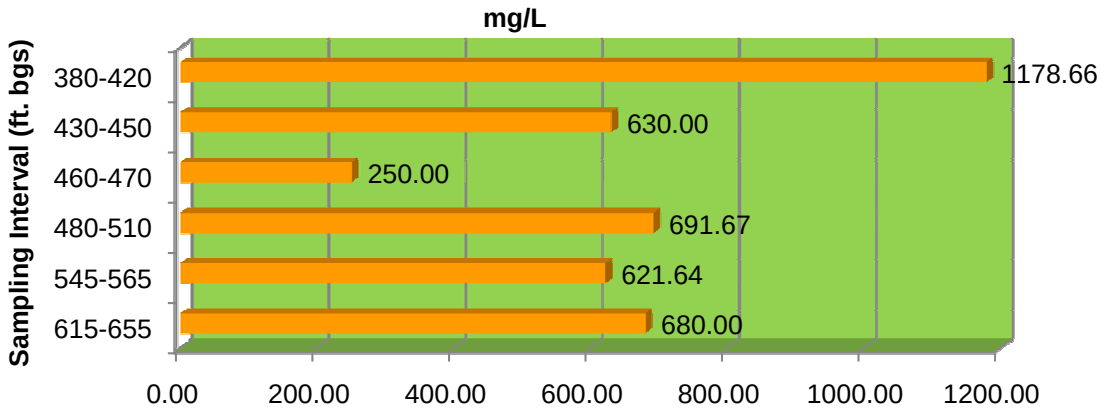


Manganese	ft. bgs	ft. bgs	GPM	ug/L	GPM	ug/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	800	123.94	1178.66
	425	430-450	276.06	630	18.40	630.00
	455	460-470	257.66	630	12.88	250.00
	475	480-510	244.78	650	79.39	691.67
	530	545-565	165.39	630	141.70	621.64
	580	615-655	23.69	680	23.69	680.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			

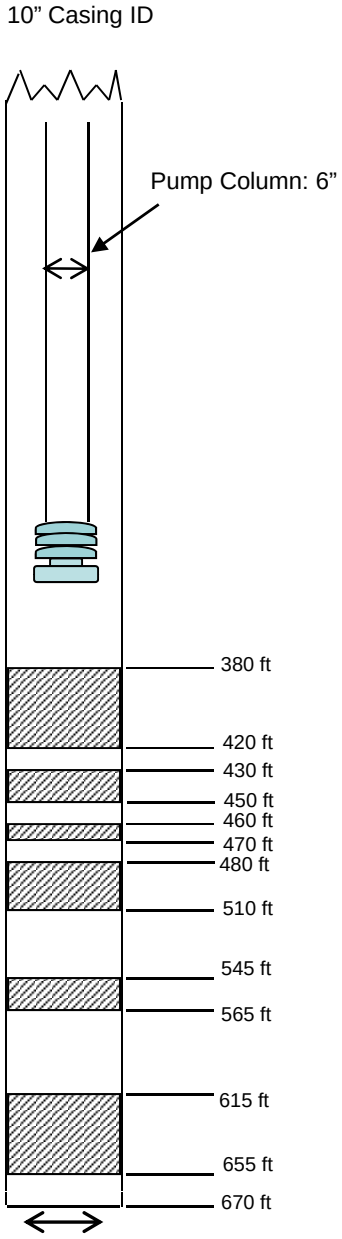
Dynamic Chemical Profile: Esposti Park Well

400 GPM 4/29/2010

Manganese



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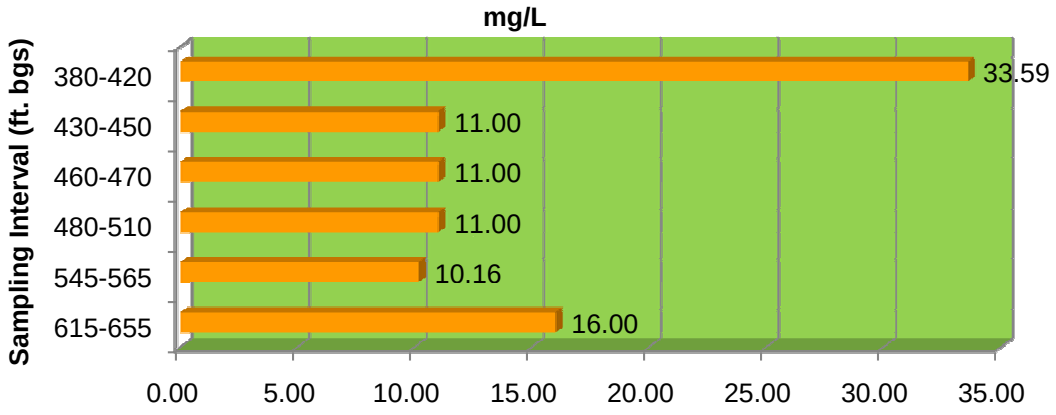
Chemical Mass Balance Analysis: Chloride

Chloride	ft. bgs	ft. bgs	GPM	mg/L	GPM	mg/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	18	123.94	33.59
	425	430-450	276.06	11	18.40	11.00
	455	460-470	257.66	11	12.88	11.00
	475	480-510	244.78	11	79.39	11.00
	530	545-565	165.39	11	141.70	10.16
	580	615-655	23.69	16	23.69	16.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			

Dynamic Chemical Profile: Esposti Park Well

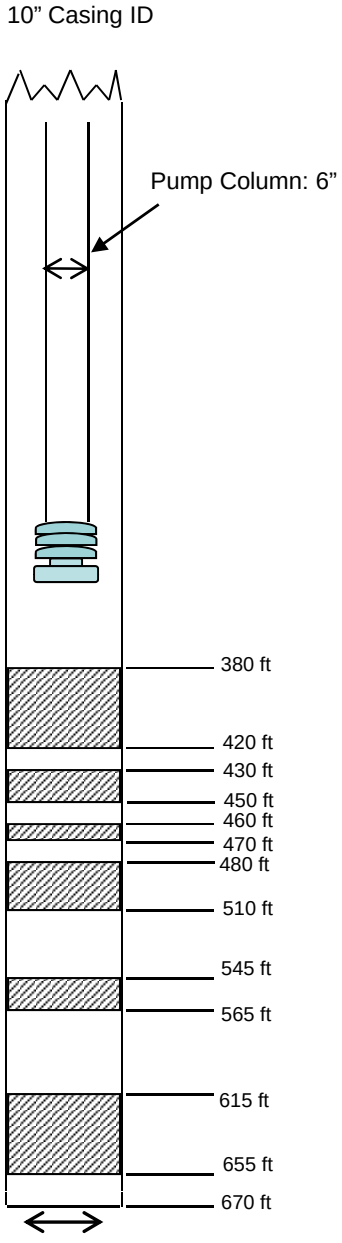
400 GPM 4/29/2010

Chloride



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Chemical Mass Balance Analysis: Fluoride

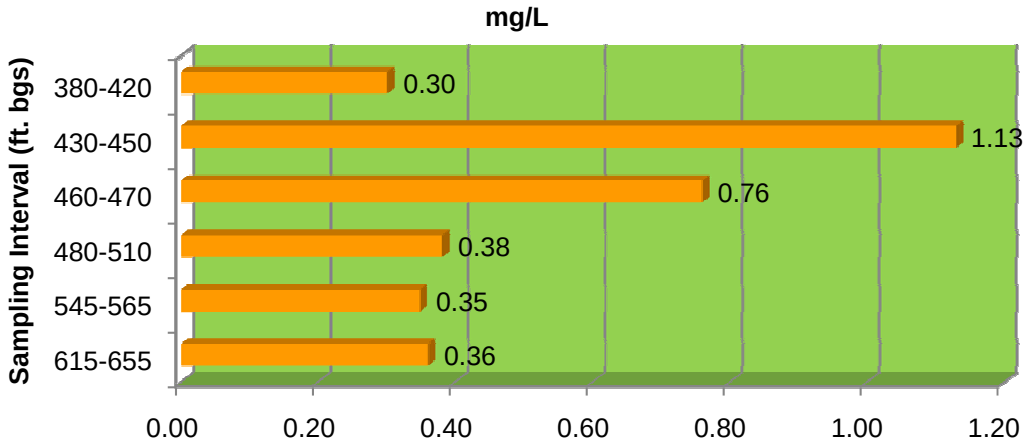


Fluoride	ft. bgs	ft. bgs	GPM	mg/L	GPM	mg/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	0.39	123.94	0.30
	425	430-450	276.06	0.43	18.40	1.13
	455	460-470	257.66	0.38	12.88	0.76
	475	480-510	244.78	0.36	79.39	0.38
	530	545-565	165.39	0.35	141.70	0.35
	580	615-655	23.69	0.36	23.69	0.36
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			

Dynamic Chemical Profile: Esposti Park Well

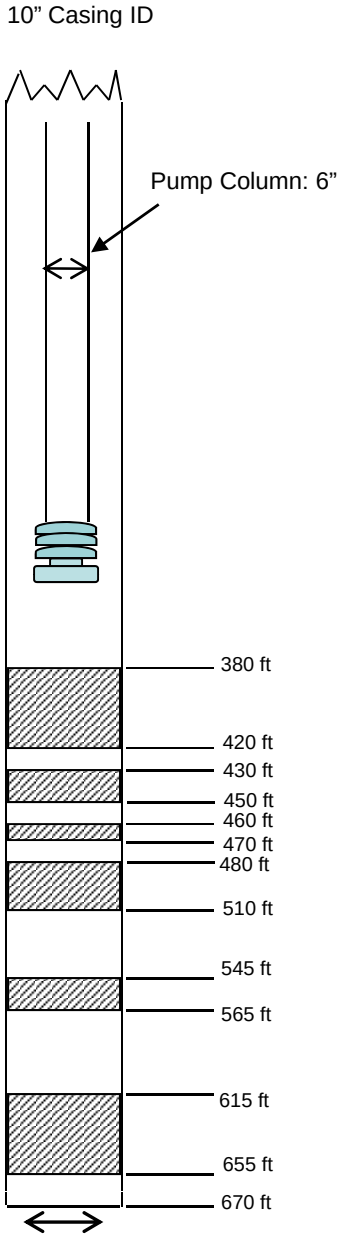
400 GPM 4/29/2010

Fluoride

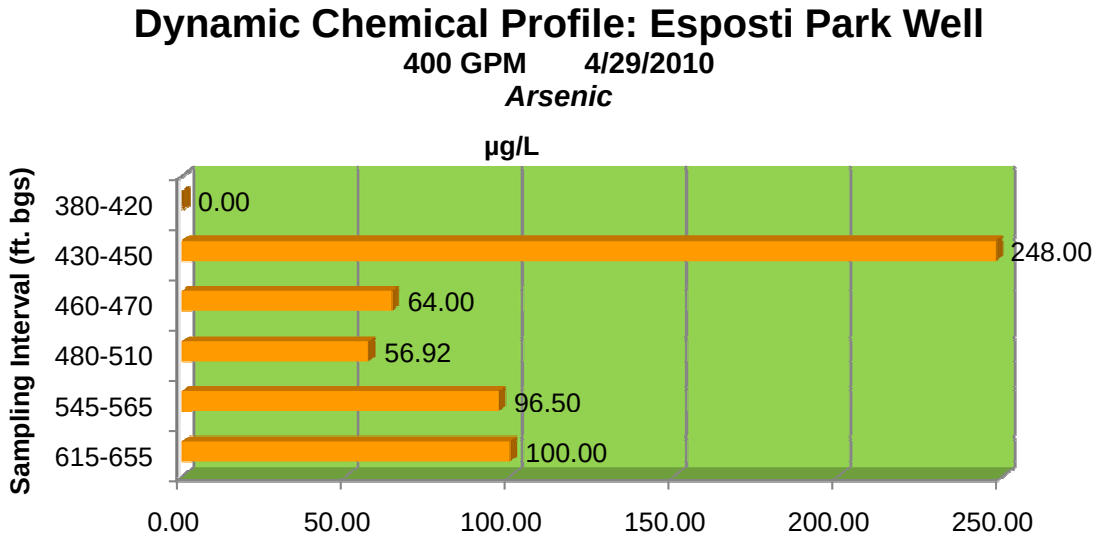


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Chemical Mass Balance Analysis: Arsenic

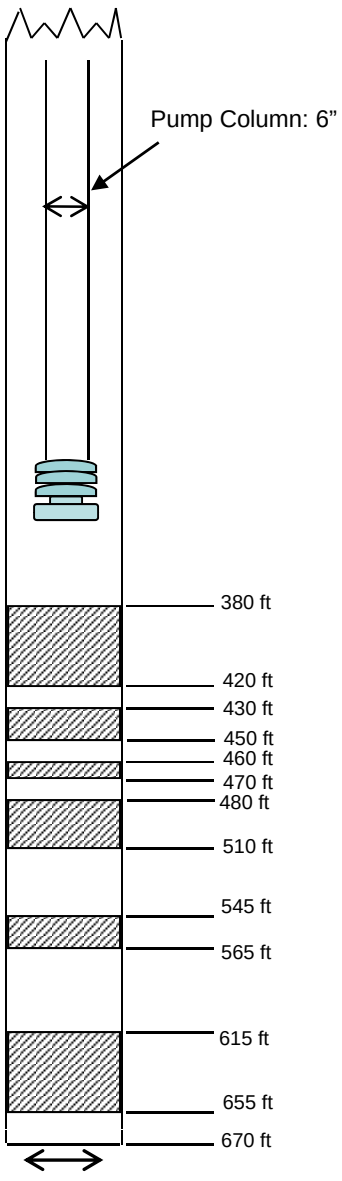


Arsenic	ft. bgs	ft. bgs	GPM	µg/L	GPM	µg/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	45	123.94	0.00
	425	430-450	276.06	94	18.40	248.00
	455	460-470	257.66	83	12.88	64.00
	475	480-510	244.78	84	79.39	56.92
	530	545-565	165.39	97	141.70	96.50
	580	615-655	23.69	100	23.69	100.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			



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Chemical Mass Balance Analysis: Nitrate

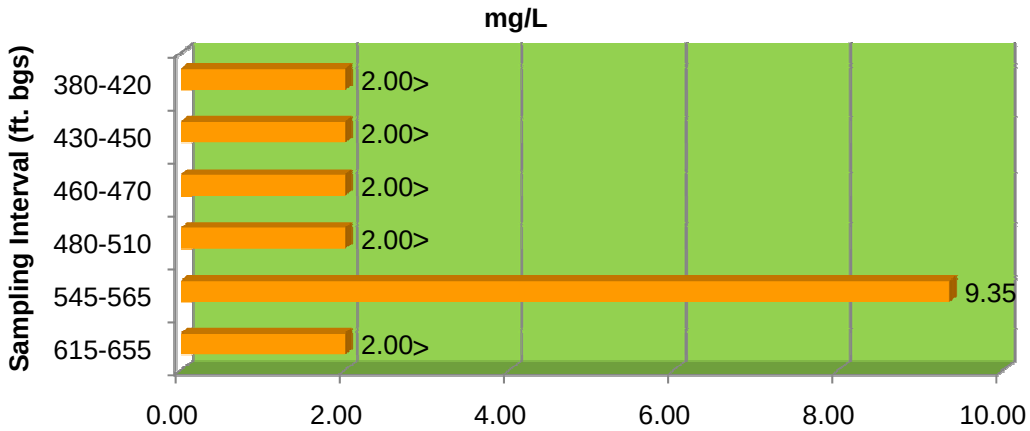


Nitrate	ft. bgs	ft. bgs	GPM	mg/L	GPM	mg/L
	Depth	Interval	Cumulative Flow	Measured Concentration	Incremental Flow	Incremental Concentration
	375	380-420	400.00	<2.0	123.94	<2.00
	425	430-450	276.06	<2.0	18.40	<2.00
	455	460-470	257.66	<2.0	12.88	<2.00
	475	480-510	244.78	<,2.0	79.39	<2.00
	530	545-565	165.39	8	141.70	9.35
	580	615-655	23.69	<2.0	23.69	<2.00
	Tap 1	Cumulative	400.00			
	Tap 2	Cumulative	400.00			

Dynamic Chemical Profile: Esposti Park Well

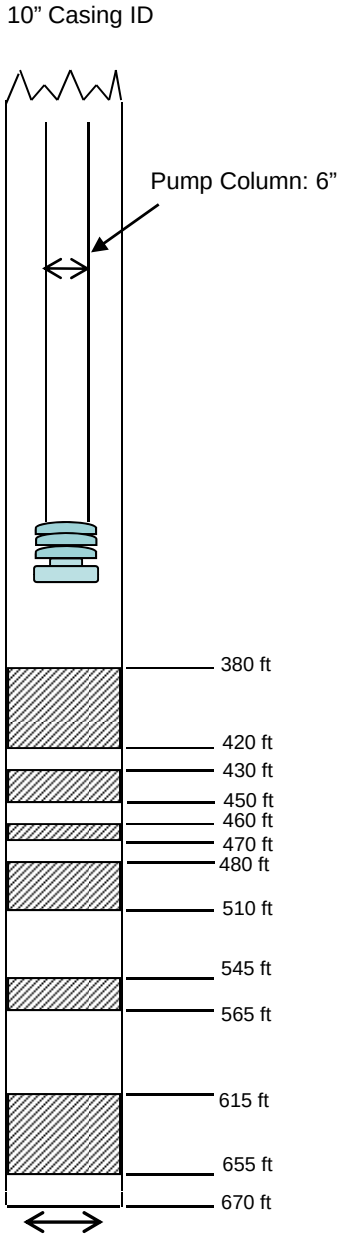
400 GPM 4/29/2010

Nitrate



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Well Information



Windsor: Esposti Park Well

Pump Intake Setting Depth (ft. bgs)	above screened sections
Well Diameter (in)	10”
Pump Column Diameter (in)	6”
Cross Sectional Area of well (ft^2)	.5454
Measured Well Bottom (ft. bgs)	670’
Measured Discharge (gpm)	400
Pumping Water Level (ft. bgs)	135.2’

Screen Intervals:

<u>Feet below ground surface (cement padded floor)</u>

380’-420’
430’-450’
460’-470’
480’-510’
545’-565’
615’-655’

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Appendix H - Winzler and Kelly Survey Report

WINZLER & KELLY

Ref: 02520-09001
(RMC# 143.012B)

July 7, 2010

Craig Scott
Town of Windsor
P.O. Box 100
Windsor, CA 95492

Re: Windsor Well Installation –Well Locations-Bluebird Site and Esposti Park Site

Dear Mr. Scott:

As requested, Winzler & Kelly performed a field survey utilizing GPS equipment on June 28, 2010 to establish the locations of two new wells. This field survey established a benchmark at each pump pedestal of the new wells, one located at the Bluebird Site and one located at the Esposti Park Site.

The basis for the survey of the positions is the map titled "CONTROL SURVEY 1996 A.R.M. MONITORING PROGRAM FOR THE RUSSIAN RIVER" filed August 28, 1996 in Book 554 of Maps, at Pages 28-32, Sonoma County Records. Point E coordinate values and elevation were held for the survey. Listed benchmark elevations are NAVD '88. Coordinate values are California State Plane Coordinates Zone 2 (NAD '83).

Bluebird Site Well
Chiseled square at N'ly corner well head slab.
N 1959115.4041 E 6332436.6130 Elev. = 118.34
Lat = 38° 32' 20.306185" N Long = 122° 48' 05.144352" W

Esposti Park Site Well
Chiseled square at N'ly corner well head slab.
N 1954509.6739 E 6338689.6507 Elev. = 140.93
Lat = 38° 31' 35.316839" N Long = 122° 46' 45.948870" W

Winzler & Kelly appreciates the opportunity to provide surveying services for the Town of Windsor for this project and we look forward to serving the Town in the future..

Sincerely,
WINZLER & KELLY

Richard Maddock, PLS 8131

♦ 495 Tesconi Circle, Santa Rosa, CA 95401-4696 ♦
tel 707.523.1010 fax 707.527.8679
www.w-and-k.com
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