

**Laramie Energy II, LLC  
Tier II Gas Wells  
Quarterly Production Monitoring Report  
Furr 16-22D and Furr 16-22B  
Rulison Field, Garfield County, Colorado  
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## 1.0 Introduction

Laramie Energy II, LLC (Laramie Energy II) is developing natural gas resources in the vicinity of Jack's Pocket on the north flank of Battlement Mesa in Garfield County, Colorado. These gas wells were originally drilled by Petrohunter Operating Co. and GSL Energy Corp. and were purchased and completed by Laramie Energy II in 2008. Laramie Energy II retained Cordilleran, a division of Olsson Associates (Olsson Associates) to collect natural gas and produced water sampling for the Furr Wells to comply with the requirements of the Colorado Oil and Gas Conservation Commission (COGCC) Sampling and Analysis Plan (SAP) requirement developed by URS Corporation (URS) for all natural gas wells within a three-mile radius of the former Project Rulison site.

The Laramie II natural gas wells discussed in this report are all located within a 3-mile radius of the Project Rulison underground nuclear test site conducted in September 1969 by the Atomic Energy Commission, a predecessor agency to the Department of Energy (DOE), and Austral Oil, a private oil company. Project Rulison was a subsurface natural gas stimulation nuclear test to produce natural gas from tight gas sands in the Cretaceous age Williams Fork Formation.

In general, the SAP requires all companies drilling or producing natural gas wells within specified zones and sectors surrounding the former Rulison site to review certain drilling data (gamma ray logs) and to sample certain production media (natural gas and produced water) to document the presence or absence of potential impacts associated with Project Rulison. Section 1.2 of this Report provides additional details of the SAP requirements.

All known natural gas wells within the three mile radius of Project Rulison (including Laramie Energy II wells) are shown on [Figure 1](#). Laramie Energy II's Furr Gas wells are shown more specifically on [Figure 2](#).

The drilling and baseline monitoring activities for the Furr wells was conducted in November and December 2008 with the results presented in a report titled Laramie Energy II, LLC Tier II Gas Well Baseline Monitoring and Production Report, Rulison Field, Garfield County, Colorado November - December 2008 issued in May 2009 once all of the laboratory analytical data had been received. The results of this drilling and baseline monitoring indicate that no Project Rulison related radionuclides were detected in any of the gas or produced water samples. Copies of the report, including the December 17, 2008 baseline/production data for the Furr 16-22B and Furr 16-22D wells, were provided to Laramie Energy II, the Colorado Oil and Gas Conservation Commission (COGCC), the Colorado Department of Public Health and

Environment (CDPHE) Hazardous Materials and Waste Management Division - Radiation Management Unit, S.M. Stoller/DOE, the Garfield County Oil and Gas Liaison, and URS Corporation.

The subject of this document is to report the first quarter, 2009 production monitoring results for the Laramie Energy II Furr 16-22D well conducted on April 14, 2009. The Furr 16-22B Tier II gas well was shut-in and could not be sampled on April 14, 2009.

For purposes of classifying the Laramie Energy II wells within the context of the approved SAP, both the Furr 16-22D and Furr 16-22B are considered Tier II wells located respectively in Sectors 10 and 11. The Furr 16-22B is currently considered to be the closest natural gas wells to the former Project Rulison site in sector 11. The Furr 16-22D has a surface location in sector 11 and a bottom hole location in sector 10, but the bottom hole location is very close to the sector dividing line. This well was sampled as a voluntary measure as Noble Energy has wells in sector 10 closer to the former Project Rulison site. Based on this, the Furr 16-22D may be dropped from future quarterly sampling if another well on the same pad location is determined to be more suitable for quarterly monitoring. All of the wells on this well pad were sampled on December 17, 2008 during baseline/production monitoring.

As with the drilling and baseline sampling conducted in November and December of 2008, the first quarter laboratory analytical results for 2009 do not indicate the presence of any Project Rulison related radioactivity. A summary table of Laramie Energy II well locations and sampling activities is presents as Table 1.

### **1.1 Tier II Zone Monitoring Requirements**

URS Corporation (URS) is working for Noble Energy, EnCana Oil & Gas (USA), Inc., and Williams Production RMT who are also conducting natural gas well drilling operations in the vicinity of Project Rulison. URS has developed a Rulison Sampling Analysis Plan (SAP), Revision 2 issued in March 2008. The URS Rulison SAP defines Tier II wells as those gas wells located outside the 1-mile radius, but within the 3-mile radius of Project Rulison; whereas Tier I wells are defined as those gas wells located within the 1-mile radius of Project Rulison. This SAP has been adopted by the COGCC, and outlines the required sampling and analysis for all operators within a three-mile radius or Project Rulison.

According to the March 2008 Revision 2 of the URS SAP the Tier II well monitoring includes:

- Drilling Monitoring;
- Production Monitoring; and
- Baseline produced water and natural gas monitoring.

A discussion of these monitoring activities was presented in the May 2009 report. According to the URS Rulison SAP Table 2 - Tier I and II Sampling and Analysis Scheme for Gas Wells within a Three Mile Radius of Project Rulison well production sampling provisions require that Tier II wells be sampled and analyzed as follows:

- A one-time sampling and analysis of produced water for the radiological and non-radiological analytes listed in Table 3 and Table 4 of the Rulison SAP. The Tier II wells are to be sampled as soon as possible after frac-ing but no later than 30-days after the first gas delivery from a new gas well;
- If a Tier II gas well is the closest well in a sector (i.e. no Tier I well), produced water and natural gas will be sampled and analyzed for the radiological analytes listed in Table 3 quarterly during the first year, semi-annually (twice a year) during the second and third year, and annually thereafter; and
- Further testing contingent on verified Project Rulison-related radionuclide detection in Tier I zone wells.

## **1.2 Laramie Energy II Furr 16-22B and Furr 16-22D Gas Wells**

Both the Furr 16-22B and Furr 16-22D are directionally drilled wells meaning that the bottom of the well is located several hundred feet or thousands of feet away from the surface location. The Laramie Energy Furr 16-22B well is the closest Tier II well in Sector 11, and as such is required to be sampled quarterly. However, it was shut-in on April 14, 2009, and could not be sampled. The Furr 16-22D has a surface location in sector 11 and a bottom hole location in sector 10. The Furr 16-22D was sampled on April 14, 2009 in lieu of the Furr 16-22B as it is the next closest Tier II well to Project Rulison operated by Laramie Energy II. Noble Energy has Tier I and Tier II wells located in sector 10 that are closer to the dividing line between sector 10 - sector 9 but are closer to the former Project Rulison site than any of the Furr wells.

Olsson Associates conducted the 1<sup>st</sup> quarter 2009 sampling trip for the Furr 16-22D on April 14, 2009. Both of the Furr 16-22D and Furr 16-22B wells were sampled as part of the baseline sampling program on December 17, 2008. The Furr 16-22B was shut-in at that the time of the 1<sup>st</sup> quarter 2009 sampling event and could not be sampled. These wells are reportedly yielding less produced water than during the initial production phase and may not be able to be sampled in the future due to a lack of produced water volume.

This report presents the results from Furr 16-22D gas and produced water samples collected on April 14, 2009. Copies of the Isotech Laboratories Inc. laboratory reports for the Furr 16-22D gas analysis and tritium in produced water from are included as [Appendix A](#). The analytical results for the produced water sample from the Furr 16-22D analyzed by GEL Laboratory LLC are presented as [Appendix B](#).

### 1.3 Tier II Zone Drilling Monitoring Requirements

The drilling monitoring requirements in the SAP consist of a review of the open- or cased-hole gamma-ray logs through the Williams Fork Formation interval for evidence of elevated gamma radiation. This review is conducted to determine whether there is potential evidence of Project Rulison-related gamma radiation observed in the formation during gas well drilling. The gamma-ray logs also detect naturally occurring radionuclides such as potassium-40, uranium, and thorium isotopes. According to the URS Rulison SAP, the logs will be reviewed for evidence of above normal gamma-ray signatures. A gamma radiation measurement greater than 500 API gamma units or any other gamma readings that appear to be anomalous are to be noted by the drilling supervisor or his designated representative and immediately reported to the Company management and the [radiation safety officer] RSO for review and guidance.

A review of the well logs for the Furr 16-22B and Furr 16-22D wells on the COGCC website database shows that gamma-ray signatures were typically less than 200 API gamma units. Special attention was paid to the well log intervals below 6,000 feet to the bottom of each the wells. Copies of these logs are presented in [Appendix C](#).

A “spike” was noted at approximately 8,445 feet on the Reservoir Monitor Tool Elite (RMTE) log for the Furr 16-22D well; however, there was no corresponding spike through this interval on the gamma track on the cement bond log for the Furr 16-22D well. This anomaly does not appear to be related to Project Rulison based on the analytical data for the two produced water and natural gas samples collected from this well.

Olsson Associates contacted Halliburton who ran the RMTE log and cement bond log to ask about the anomaly. According to Halliburton, the anomaly appears to be caused by the RMT Tool and not the formation. It occurred very near the total depth [of the Furr 16-22D well], when the neutron generator was turned on for logging which is suspected as the cause of the anomaly. The gamma-ray track on the cement bond log for the same interval did not show anything out of the ordinary, and the cement bond log that was run later. If there had been radioactive material present it would have been recorded on the bond log. The repeat on the bond log also suggests that there is no radioactive material present.

Laramie Energy II re-ran the RMTE logging tool in the Furr 16-22D on June 3, 2009; but could not make it down to the interval and was about 50 feet short.

#### **1.4 Application for Permit to Drill and Conditions of Approval**

The COGCC may attach Conditions of Approval (COA) to the Application for Permit to Drill (APD) that parallel or are additional to what is contained in the URS SAP for Tier II wells. According to the copies of the APDs for the Furr 16-22B and Furr 16-22D wells found on the COGCC's internet website database, the additional COA requirements are as follows:

*'To prevent the loss of drilling fluid to shallow formations and to protect shallow groundwater and surface waters, conductor pipe shall be set at a depth sufficient to insure absolute wellbore integrity during the drilling operations. Conductor pipe must be set at a minimum depth of 200', or at a depth at which formation integrity is sufficient to prevent a loss of drilling fluid, whichever is greater, on the first well on each pad and cemented by the pumped plug method. Conductor pipe setting depths on subsequent wells on the pad may be increased or decreased based on geologic conditions encountered in the first well so as to insure absolute wellbore integrity.'*

*'Submit a radionuclide (sic) monitoring program via Sundry Notice Form 4 for this well and obtain approval of the plan prior to spudding the well.'*

The Furr 16-22B and Furr 16-22D wells were sold by GSL Energy Corporation to Petrohunter Operating Company in late 2006 and sold in turn to Laramie Energy II in 2008. As with other operators in the Rulison area, Laramie Energy II follows the URS developed Rulison SAP, Revision 2, March 2008 as the radionuclide monitoring program for the area. This SAP has been accepted by the COGCC, CDPHE, DOE and Garfield County.



## 1.5 Data Verification and Validation

Olsson retained Diane Short & Associates of Lakewood, Colorado to perform the independent data validation on the November and December 2008 radiochemistry and non-radiochemistry baseline and production data, and also on the radiochemistry parameters for the first quarter 2009 production data for the Furr 16-22D well.

The data validation will be provided as an addendum to the Laramie Energy II, L.L.C. Tier II Gas Well Baseline Monitoring and Production Monitoring Report, Rulison Field, Garfield County, Colorado November - December 2008 which was submitted to the COGCC, Colorado, CDPHE-HMWMD Radiation Control, S.M. Stoller/DOE, Garfield County, and URS Corp. in May 2009.

## 2.0 Natural Gas and Produced Water Sampling

Laramie Energy II authorized sampling of the Furr 16-22D and Furr 16-22B wells, are both Tier II wells located in sectors 10. The Furr 16-22B has a bottom of hole location that is also located in sector 10; however, it was shut-in and could not be sampled. The Furr 16-22D has a surface location in sector 10 and a bottom of hole location in sector 11. Olsson performed the sampling of the natural gas and produced water by following the URS Rulison SAP, Revision 2, March 2008. There are no Tier I wells within Sector 10; therefore, the Furr 16-22B is the closest Tier II well in this sector. The Furr 16-22D is the next closest Tier II well to Project Rulison operated by Laramie Energy II. Noble Energy has completed Tier II wells and Tier I wells in Sector 10 that are closer to Project Rulison than any of the Laramie Energy II wells. However, these Noble Energy wells are located near the dividing line between sectors 9 and 10.

### 2.1 Quarterly Production Sampling - Tier II Furr 16-22D Gas Well

Well Identification:

- Furr 16-22B
- Furr 16-22D

Well Surface Location:

SE ¼, SE ¼, Section 22, T7S, R95W; and  
SE ¼, SE ¼, Section 22, T7S, R95W.

Olsson Associates personnel sampled natural gas and produced water the Furr 16-22D well on April 14, 2009 for the radiochemistry parameters listed in Table 3 of the URS Rulison SAP. The samples consisted of natural gas and produced water collected from the Furr 16-22D well separator with the assistance of Laramie Energy II's pumper. Olsson Associates collected the gas sample using a two-stage regulator and obtaining the gas from the separator. Olsson Associates collected the produced water samples from the dump line on the separator. Since there are multiple wells on these pads and production fluids are co-mingled in the onsite tank batteries, it is not possible to collect representative produced water samples for individual wells from the onsite production tanks as described in the URS Rulison SAP sampling protocols.

### 2.2 Natural Gas Sample Analysis

A natural gas sample was collected from the Furr 16-22D on April 14, 2009 and was submitted to Isotech in Champaign, Illinois for gas compositional analysis including carbon-14 ( $^{14}\text{C}$ ) and tritium ( $^3\text{H}$ ), a radioactive form of hydrogen. The natural gas sample was collected in an evacuated, propane tank provided by Isotech, using a two-stage pressure regulator connected to the separator or the natural gas wellhead.

Isotech reported the  $^3\text{H}$  in tritium units (TU). One TU is equivalent to 3.19 picocuries per liter (pCi/L); therefore, any tritium present in the gas would be less than 32 pCi/L. The tritium analysis measures counts above background, and if the concentration is high enough the laboratory can report a finite value with a calculated uncertainty. If the concentration is low relative to the standard deviation of the measurement then the values are reported as “less than” the laboratory reporting limit, meaning that tritium was not detected. Isotech’s reporting limit for tritium ranges from 10 TU to 15 TU.

Beginning in about 1954, atmospheric tritium levels rose in excess of 1,000 TU due to nuclear weapons testing, and have declined back to natural background levels since then as a result of the ban on nuclear testing. Current natural background levels for tritium in the atmosphere range from 5 TU to 50 TU (15.9 pCi/L to 159.5 pCi/L). The isotopic composition of hydrogen is compared relative to the Vienna Standard Mean Ocean Water (VSMOW) standard.

Isotopic composition of carbon is relative to the Vienna Peedee Belemnite (VPDB)  $\delta^{13}$  Standard and is based on the carbon isotopes in the shell of a marine fossil. The laboratory detection limit is 1 percent modern carbon (pMC). The result indicates that carbon-14 is not present in the natural gas and the natural gas has been isolated from sources of modern carbon.

Krypton-85 ( $^{85}\text{Kr}$ ) was the only other radionuclide that was identified in the Project Rulison estimated inventory potentially present in the natural gas. Isotech is not able to analyze the gas samples for the presence of  $^{85}\text{Kr}$ . Krypton-85 ( $^{85}\text{Kr}$ ) disintegrates by beta decay to form stable rubidium-85 ( $^{85}\text{Rb}$ ). Analysis of  $^{85}\text{Kr}$  beta decay activity in groundwater is restricted to a limited number of research laboratories worldwide due to complications in sampling which require large sample volumes, long counting times, and specialized analytical methods (Clark and Fritz, 1997) (Gholam, Lehr, and Perrochet, 2006).

### 2.3 Produced Water Sample Analysis

A produced water sample was collected from the dump line on the Furr 16-22D separator unit located on the well pad and was submitted for analysis of radiochemistry parameters as listed in Table 3, as specified for Tier II wells in Table 2 of the URS Rulison SAP. The produced water sample collected on April 14, 2009 was submitted to Isotech for tritium analysis and to GEL Laboratory in Charleston, South Carolina for radiochemistry analysis (gamma spectroscopy, gas flow proportional counting for gross alpha and gross beta, chlorine-36 ( $^{36}\text{Cl}$ ), strontium-90 ( $^{90}\text{Sr}$ ), liquid scintillation analysis for Technetium-99 ( $^{99}\text{Tc}$ ), and total

uranium). The laboratory analytical results are discussed in the following section and the results are summarized in [Table 1](#) through [Table 4](#).

According to the USGS Open File Report Geohydrology - Project Rulison (Voegeli, West, Cordes, 1970), intervals below 6,000 feet bgs in the R-EX hole were analyzed in 1968 for the presence of gross alpha as Uranium equivalent and gross beta, as  $^{90}\text{Sr}$ - $^{90}\text{Y}$ . The alpha activities ranged from  $< 0.4 \mu\text{g/L}$  to  $9.8 \mu\text{g/L}$ , and gross beta activities ranged from 29 pCi/L to 70 pCi/L (Voegeli, 1969).

## 3.0 Laboratory Analytical Results

The following sections present the laboratory analytical results for natural gas samples and produced water samples. Radionuclide results are presented first followed by the results for inorganic and organic analyses. The laboratory analytical results for the natural gas and produced water sample show that there are no Project Rulison related radionuclides present in the natural gas or produced water collected from the Furr 16-22D Tier II gas well.

### 3.1 Natural Gas Sample Results

The natural gas sample results are presented in [Table 1](#) and copies of the Isotech laboratory gas sample reports are presented in [Appendix A](#). The Isotech laboratory reports present the compositional analysis reported in mol percent for components in each of the gas samples. The results show that the samples are predominantly composed of methane with lesser concentrations of helium, hydrogen, oxygen, carbon dioxide, nitrogen, ethane, propane, iso-butane, N-butane, iso-pentane, and hexanes. Argon, carbon monoxide, hydrogen sulfide, and ethylene gas were not detected. The gas samples were also analyzed for the radionuclides tritium ( $^3\text{H}$ ) and carbon-14 ( $^{14}\text{C}$ ).

#### 3.1.1 Tritium Results

The tritium ( $^3\text{H}$ ) in the gas sample was reported as  $< 10$  TU, and was not detected above the laboratory method detection limit.

#### 3.1.2 Carbon-14 Results

The carbon-14 result was reported for the gas sample from the Furr 16-22D as  $0.5 \pm 0.1$  percent modern carbon (pMC). The method detection limit is 1 pMC, so the  $^{14}\text{C}$  pMC is less than the detection limit which indicates that the gas sample has been isolated from sources of modern carbon.

### 3.2 Produced Water Sample - Radiochemistry Results

The following sections present the laboratory analytical results for the produced water sample collected from the Furr 16-22D gas well on April 14, 2009. Copies of the laboratory report from Isotech and GEL are included as [Appendix B](#) and [Appendix C](#).

#### 3.2.1 Tritium Results

The laboratory result for tritium ( $^3\text{H}$ ) in produced water reported by Isotech was less than ten ( $< 10.0$  TU) or less than 32 pCi/L. The minimum detectable

concentration (MDC) that Isotech is able to achieve for  $^3\text{H}$  using this method is 10.0 TU. The tritium results in produced water are summarized in [Table 2](#).

For comparison Olsson converted TU to pCi/L by multiplying by 3.19 and the resulting range of tritium results were from less than 31.9 pCi/L. Natural background tritium levels in precipitation typically range from 10 TU to 20 TU (32 pCi/L to 64 pCi/L). The CDPHE basic groundwater quality standard for tritium is 20,000 pCi/L referenced as the level of activity that could potentially result in an annual dose of 4 millirems of beta radiation.

### 3.2.2 Gross Alpha Radiation Results

The laboratory results for gross alpha activities show that alpha radiation was detected in the Furr 16-22D produced water sample with an alpha activity of  $33.0 \pm 16.3$  pCi/L. The laboratory detection limit (DL) was 21.8 pCi/L and the laboratory reporting limit (RL) was 5.00 pCi/L.

The detected gross alpha activity is due to high total dissolved solids (TDS) concentrations present in the sample. The alpha activity is within the expected range of natural background radiation for the area and is likely due to the presence of naturally occurring uranium, thorium, and their daughter products present in the produced water from the producing formation. One part per million (ppm) uranium ( $^{238}\text{U}$ ) equals 0.33 picocuries per gram (pCi/g); and one ppm thorium ( $^{232}\text{Th}$ ) equals 0.11 pCi/g.

The results for the gross alpha activities in the produced water sample are summarized on [Table 3](#) and copies of the laboratory report are presented in [Appendix B](#).

### 3.2.3 Gross Beta Radiation Results

The laboratory results for gross beta activities in produced water samples indicated that gross beta activities were detected in the Furr 16-22D sample with a beta activity of  $79.4 \pm 23.0$  pCi/L. The laboratory DL was 34.8 pCi/L and the RL was 5.00 pCi/L.

The gross beta results are within the expected range of natural background radiation for the area and are likely due to the presence of naturally occurring potassium-40 ( $^{40}\text{K}$ ). Potassium-40 ( $^{40}\text{K}$ ) was not detected in the April 14, 2009 Furr 16-22D produced water sample submitted for gamma spectroscopy, but it was detected in the December 2008 Furr 16-22D sample.

The results for the gross beta activities are summarized on [Table 3](#) and copies of the laboratory reports are presented in [Appendix B](#) for the April 2009 sample.

### 3.2.4 Strontium-90 and Technetium-99 Results

The produced water sample was submitted to GEL Laboratories and was analyzed for Strontium-90 ( $^{90}\text{Sr}$ ) and Technetium-99 ( $^{99}\text{Tc}$ ). The laboratory results show that Strontium-90 ( $^{90}\text{Sr}$ ) and Technetium-99 ( $^{99}\text{Tc}$ ) were not detected. The results for the  $^{90}\text{Sr}$  and  $^{99}\text{Tc}$  activities are summarized on [Table 3](#) and copies of the laboratory reports are presented in [Appendix B](#).

### 3.2.5 Chlorine-36 results

Chlorine-36 ( $^{36}\text{Cl}$ ) analysis was submitted to GEL for  $^{36}\text{Cl}$  analysis and the results show that  $^{36}\text{Cl}$  activities were not detected above the laboratory reporting limits. The results for the  $^{36}\text{Cl}$  activities are summarized on [Table 3](#) and copies of the laboratory reports are presented in [Appendix B](#).

According to the January 2005 DOE Rulison Site End State Vision document, the estimated inventory of  $^{36}\text{Cl}$  is 2.82 curies (Ci), and according to the URS 3<sup>rd</sup> Quarter 2008 Report,  $^{36}\text{Cl}$  is a less common radionuclide in the inventory at Project Rulison.

### 3.2.6 Gamma-Emitting Radionuclide Results

The majority of the results for the gamma-emitting radionuclides show that activities were not detected above laboratory reporting limits. This is indicated with a letter 'U' in the results and also in the first row of [Table 4](#). The laboratory results for gamma-emitting radionuclides in the Furr 16-22D produced water sample show that Bismuth-214 and Lead-214 results were qualified as 'UI' Gamma Spectroscopy - 'Uncertain Identification.' Both  $^{214}\text{Bi}$  and  $^{214}\text{Pb}$  are daughter products of the naturally occurring uranium-238 ( $^{238}\text{U}$ ) decay series. Lead-212 ( $^{212}\text{Pb}$ ) was also reported in the Furr 15-22B produced water sample, and  $^{212}\text{Pb}$  is a daughter product of the naturally occurring thorium-232 ( $^{232}\text{Th}$ ) decay series. Copies of the laboratory reports for gamma spectroscopy results are included in [Appendix B](#).

Potassium-40 ( $^{40}\text{K}$ ) was previously detected in seven of the fourteen produced water samples, submitted in November and December 2008 including the sample from the Furr 16-22D. Potassium-40 is one of the most common radionuclides in nature and is frequently found in sedimentary rocks high in clay minerals which contain potassium in their chemical formulas. Potassium-40 was not detected in the Furr 16-22D produced water sample collected in April 2009; however, the gross beta results for this sample indicated beta activity was detected. Krypton-85 ( $^{85}\text{Kr}$ ) was also not detected in the produced water sample collected from the Furr 16-22D well analyzed by gamma spectroscopy analysis.

## 4.0 Summary

The Furr 16-22B and Furr 16-22D gas wells are both located in Section 22, Township 7S, Range 95 West of the Sixth Principal Meridian. The Furr 16-22B and Furr 16-22D are Tier II wells in URS Sectors 10 and 11 and are located within the 3-mile radius of Project Rulison as shown on [Figure 1](#) and [Figure 2](#).

Olsson Associates reviewed the gamma-ray well logs for Laramie Energy II's Furr 16-22B and Furr 16-22D. An anomaly was noted in the Furr 16-22D Halliburton RMTE well log at an approximate depth of 8,445 feet. According to Halliburton personnel, the anomaly was most likely caused by the RMT tool, and was not due to radioactivity in the formation. Since it occurred near the total depth of the well where the neutron generator was turned on for logging, Halliburton suspects that this was the cause of the anomaly. No anomalies were observed in the cement bond log for this interval in the Furr 16-22D well which was run after the RMTE log. No anomalies were observed in the Furr 16-22B well logs.

Two Tier I wells owned by Noble Energy are shown within Sector 11 on the COGCC online GIS database. However, these wells were never drilled and the locations were subsequently abandoned, making the Furr 16-22B the closest Tier II well in Sector 11. On April 14, 2009, The Furr 16-22B was shut-in and could not be sampled. The Furr 16-22D surface location is in sector 11, but the bottom hole location is in sector 10. The Furr 16-22D is the next closest Tier II well to Project Rulison operated by Laramie Energy II. Noble Energy has Tier I and Tier II wells located in sector 10 that are closer to Project Rulison than any of the Furr wells. However, these Noble Energy wells are located closer to the dividing line between sector 10 and sector 9 as shown on [Figure 1](#).

Olsson Associates conducted quarterly production sampling of the Furr 16-22D well on April 14, 2009. The Furr 16-22B and 16-22D wells were previously sampled for baseline radiochemistry and non-radiochemistry parameters on December 17, 2008 once they were brought into production. These wells are scheduled to be sampled again in June 2009.

The laboratory analytical results for the natural gas and produced water sample show that there are no Project Rulison related radionuclides present in the natural gas or produced water collected from the Furr 16-22D Tier II gas well. The analytical results for samples collected from the Furr 16-22D well in April 2009 and December 2008 are presented in the attached tables.



The analytical results show that tritium ( $^3\text{H}$ ), reportedly the most abundant and most mobile radionuclide in the Project Rulison estimated inventory, was not detected in the gas sample or in produced water sample analyzed by Isotech in Champaign, Illinois. Krypton-85 ( $^{85}\text{Kr}$ ) is a Project Rulison radionuclide potentially present in the gas; however, Isotech is not able to analyze for  $^{85}\text{Kr}$ . The GEL laboratory results indicate that  $^{85}\text{Kr}$  was not detected in the produced water sample analyzed by GEL for gamma-emitting radionuclides.

Carbon-14 ( $^{14}\text{C}$ ) was also identified in the Project Rulison estimated inventory as a radionuclide that potentially could be present in natural gas. The Isotech analytical results for the natural gas sample collected from the Furr 16-22D well show that  $^{14}\text{C}$  was reported at  $0.5 \pm 0.1$  pMC. The laboratory detection limit for this method is 1.0 pMC which shows the sample has been isolated from modern carbon sources.

Naturally occurring radionuclides, such as Bismuth-214 and Lead-214 were reported as uncertain identification in the Furr 16-22D produced water sample. Other gamma emitting radionuclides were reportedly not detected. Laboratory analytical results for gross alpha and gross beta indicate that alpha activities and beta activities were within the range of natural background and these low level activities are most likely due to naturally occurring radionuclides such as  $^{214}\text{Bi}$  and  $^{214}\text{Pb}$ . Gross alpha activities in the produced water are likely to due to high TDS detected in the baseline samples. The gross beta activities may be related to naturally occurring  $^{40}\text{K}$ . The laboratory analytical results indicate that,  $^{36}\text{Cl}$ ,  $^{90}\text{Sr}$ ,  $^{99}\text{Tc}$ , and total Uranium results were reported as 'not detected' in the Furr 16-22D sample.

## 5.0 References

- Clark, I.D. and Fritz, P., Environmental Isotopes in Hydrogeology, 1997, CRC Press, LLC, 2000 N.W. Corporate Blvd., Boca Raton, FL 33431,
- Gholam, K.A.; Lehr, J.H., PhD.; Perrochet, P., Groundwater Age, 2006, John Wiley & Sons, Inc., Hobken, NJ.
- URS Corp. Rulison Sampling and Analysis Plan, Revision 2, March 2008  
Denver, Colorado
- Voegeli, P.T., Sr.; West, S.W.; Geohydrology of Project Rulison, Garfield County, Colorado with a section on Aquifer Response by Cordes, E.H., 1970, U.S.G.S. Open File Report USGS-474-68, 56 pages;
- Voegeli, P.T., Sr.; Geology and Hydrology of the Project Rulison Exploratory Hole, Garfield County, Colorado, 1969, USGS-474-16;

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## TABLES AND FIGURES

**TABLE 1**

**FURR GAS WELL INFORMATION**  
 Furr 16-22B and Furr 16-22D Tier II Wells - First Quarter 2009  
 Laramie Energy II  
 Rulison Area Gas Well Monitoring

COUNT	WELL	PAD	Surface Location				TOTAL DEPTH (FT.)	COMPLETION INITIATION DATE	4th Quarter 2008	1st Quarter 2009
			QTR/QTR	SEC	TWP	RNG				
1	Furr A11-15B	Furr A-11	NE SW	15	7S	95W	7,643	9/22/08	B (11/13/08)	N/A
2	Furr A11-15D	Furr A-11	NE SW	15	7S	95W	7,645	9/29/08	B (11/13/08)	N/A
3	Furr Hagen 6-22B	F-1	SW NE	22	7S	95W	8,225	10/3/08	B (12/17/08)	N/A
4	Furr Hagen 6-22D	F-1	SW NE	22	7S	95W	8,225	10/3/08	B (12/17/08)	N/A
5	Furr 7-22B	F-1	SW NE	22	7S	95W	8,077	10/8/08	B (12/17/08)	N/A
6	Furr 7-22D	F-1	SW NE	22	7S	95W	8,110	10/8/08	B (12/17/08)	N/A
7	Furr 10-22B	F-1	SW NE	22	7S	95W	8,130	10/13/08	B (12/17/08)	N/A
8	Furr 9-22B	F-2	SE SE	22	7S	95W	8,820	10/24/08	B (12/17/08)	N/A
9	Furr 9-22D	F-2	SE SE	22	7S	95W	8,720	10/30/08	B (12/17/08)	N/A
10	Furr 16-22B	F-2	SE SE	22	7S	95W	8,520	10/24/08	B (12/17/08)	QP (NS)
11	Furr 16-22D	F-2	SE SE	22	7S	95W	8,540	10/30/08	B (12/17/08)	QP (4/14/09)
12	Furr 10-22D	F-3	SW SE	22	7S	95W	8,606	11/6/08	B (12/17/08)	N/A
13	Furr 15-22B	F-3	SW SE	22	7S	95W	9,172	11/6/08	B (12/17/08)	N/A
14	Furr 15-22D	F-3	SW SE	22	7S	95W	8,476	11/6/08	B (12/17/08)	N/A

B - Baseline Data Collection Date

QP - Quarterly Production Data Collection Date.

N/A - Not Applicable (See explanation below)

NS - Not Sampled. The Furr 16-22B was shut-in and could not be sampled.

According to the URS Rulison SAP, Revision 2, March 2008, Table 2 - *Tier I and Tier II Sampling and Analysis Scheme for Gas Wells within a Three-Mile Radius of Project Rulison*, Tier II Zone wells require a One-Time sampling and analysis (Baseline) for the radiological and non-radiological analytes in SAP Tables 3 and 4 and natural gas for the radiological analytes listed in SAP Table 3 as soon as possible after fracing but no later than 30 days after first gas delivery from a new gas well. If a Tier II well is the closest well in a sector (i.e., no Tier I well), produced water and natural gas will be sampled and analyzed for the radiological analytes listed in Table 3 quarterly during Year 1, semiannually during Years 2 and 3, and annually thereafter.

The Furr 16-22B and Furr 16-22D are the two Tier II wells closest to Project Rulison in Sector 11, and there are no Tier I wells in this sector.

TABLE 2

GAS SAMPLE DATA

Rulison Area Well Monitoring  
 Furr 16-22B and Furr 16-22D Wells  
 Natural Gas Samples - Laramie Energy II - Rulison Field, Garfield County, Colorado

Well Name/ No.	Sample Source	Latitude/	Longitude	Qtr/Qtr	Section	Township	Range	P.M.	Isotech Lab No.	Sample Name	Date Sample	He %	H <sub>2</sub> %	Ar %	O <sub>2</sub> %	CO <sub>2</sub> %	N <sub>2</sub> %	C <sub>1</sub> %	C <sub>2</sub> %	C <sub>3</sub> %	iC <sub>4</sub> %	nC <sub>4</sub> %	iC <sub>5</sub> %	nC <sub>5</sub> %	C <sub>6+</sub> %	<sup>14</sup> C <sub>1</sub> pMC	Std. Dev. (±)	Tritium C <sub>1</sub> TU	Std. Dev. (±)
Furr 16-22B	Separator	39.41662	-107.97507	SE SE	22	7S	95W	6th	152400	Furr 16-22B	12/17/2008	0.0029	0.0036	ND	ND	2.97	0.029	89.26	5.12	1.50	0.335	0.322	0.139	0.0981	0.220	< 0.4	N/A	< 10.0	N/A
Furr 16-22D	Separator	39.41662	-107.97512	SE SE	22	7S	95W	6th	152398	Furr 16-22D	12/17/2008	0.0029	0.0033	ND	0.0060	3.25	0.053	88.76	5.35	1.52	0.337	0.307	0.128	0.0895	0.192	< 0.8	N/A	< 10.0	N/A
									160503		4/14/2009	0.0029	0.0042	ND	0.0098	3.39	0.086	88.87	5.24	1.45	0.309	0.278	0.117	0.0789	0.167	0.5	0.1	< 10.0	N/A

Accronyms:

pMC - Percent Modern Carbon.  
 TU - Tritium Units (One TU is equivalent to 3.19 pCi/L of water)  
 < - Not Detected  
 Std. Dev. (±) - Standard Deviation  
 N/A - not applicable  
 ND - not detected

He - Helium  
 H<sub>2</sub> - Hydrogen  
 Ar - Argon  
 O<sub>2</sub> - Oxygen  
 CO<sub>2</sub> - Carbon Dioxide  
 N<sub>2</sub> - Nitrogen  
 C<sub>1</sub> - Methane  
 C<sub>2</sub> - Ethane  
 C<sub>3</sub> - Propane  
 iC<sub>4</sub> - Iso-Butane  
 nC<sub>4</sub> - N-Butane  
 iC<sub>5</sub> - Iso-Pentane  
 nC<sub>5</sub> - n-Pentane  
 C<sub>6+</sub> - Hexanes+

<sup>14</sup>C<sub>1</sub> - Carbon 14  
 Tritium

Carbon-14 (14C) Detection Limit is 1.0 pMC. Isotopic composition of carbon is relative to the Vienna Peedee Belemnite (VPDB).  
 Tritium (<sup>3</sup>H) Detection Limit 10.0 TU. Isotopic composition of hydrogen is relative to Vienna Standard Mean Ocean Water (VSMOW).

Std. Dev./ (±) Standard Deviation (possible range added to or subtracted from result)

Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol.% Chemical analysis based on standards accurate to within 2%.

Table presents 1st Quarter 2009 laboratory analytical results for the Furr 16-22D well (04/14/09) and also the baseline results obtained for the Furr 16-22B and Furr 16-22D (12/17/08)

**TABLE 3**

**TRITIUM ANALYTICAL RESULTS FOR PRODUCED WATER SAMPLES  
Furr 16-22B and Furr 16-22D Tier II Wells  
Laramie Energy II, Rulison Field, Garfield County, Colorado**

Well Name/Number	Sample Source	Latitude	Longitude	QTR/ QTR	Section	Township	Range	P.M.	SAMPLE ID	DATE SAMPLED	TIME SAMPLED	Laboratory	Tritium (TU)	Tritium (pCi/L)	Tritium Result ± 2s TPU (pCi/L)	Tritium MDC
Furr 16-22B	Separator	39.41669	-107.97507	SE SE	22	7S	95W	6th	Furr 16-22B	12/17/2008	12:54	ISO	< 10.8	< 34.5	NR	NR
Furr 16-22D	Separator	39.41662	-107.97512	SE SE	22	7S	95W	6th	Furr 16-22D	12/17/2008	12:13	ISO	< 10.0	< 31.9	NR	NR
										4/14/2009	11:00	ISO	< 10.0	< 31.9	NR	NR

Table presents 1st Quarter 2009 laboratory analytical results for the Furr 16-22D well (04/14/09) and also the baseline results obtained for the Furr 16-22B and Furr 16-22D (12/17/08)  
The Furr 16-22B well was shut-in and was not sampled.

Tritium (<sup>3</sup>H) Detection Limit 10.0 TU. Isotopic composition of hydrogen is relative to Vienna Standard Mean Ocean Water (VSMOW).

**Abbreviations:**

ISO - Isotech Laboratories, Inc. of Champaign, Illinois

TU - Tritium Units (One TU is equivalent to 3.19 pCi/L of water) Note: Isotech reported the tritium results in TU and Cordilleran converted to equivalent picocuries per liter.

pCi/L - picocuries per liter

TPU - total propagated uncertainty

< - Result is less than the method detection limit

The TPU is 2s or two standard deviations

NR - Not Reported (Laboratory did not report parameter in this manner)

**TABLE 4**

**Radiochemistry Gas Flow Proportional Counting/Liquid Scintillation Analysis/Total Uranium for Produced Water Samples  
Furr 16-22B and Furr 16-22D Tier II Wells  
Laramie Energy II - Rulison Field, Garfield County, Colorado**

WELL NAME/ Sample ID	Sample Source	Latitude/ Longitude	QTR/ QTR	Section	Township	Range	P.M.	SAMPLE ID	DATE SAMPLED	TIME SAMPLED	Laboratory	GFPC Gross Alpha	Result ± Uncertainty (pCi/L)	Detection Limit (pCi/L)	GFPC Gross Beta	Result ± Uncertainty (pCi/L)	Detection Limit (pCi/L)	GFPC Chlorine-36	Result ± Uncertainty (pCi/L)	Detection Limit (pCi/L)	GFPC Strontium-90	Result ± Uncertainty (pCi/L)	Detection Limit (pCi/L)	LSA Technetium-99	Result (pCi/L)	Detection Limit (pCi/L)	Total Uranium	Result ± Uncertainty (µg/L)	Detection Limit (µg/L)
Furr 16-22B	Separator	39.41669 -107.9751	SE SE	22	7S	95W	6th	16-22B	12/17/2008	12:54	GEL	U	5.88 ± 16.8	30.4	U	15.9 ± 27.6	46.8	U	-98.4 ± 152	271	U	0.817 ± 0.781	1.27	U	8.00 ± 17.5	29.7		0.548 ± 0.116	0.267
Furr 16-22D	Separator	39.41662 -107.9751	SE SE	22	7S	95W	6th	16-22D	12/17/2008	12:13	GEL	U	-40 ± 27.6	56.2	U	0.428 ± 30.6	52.5	U	195 ± 210	353	U	-0.727 ± 0.945	1.92	U	9.98 ± 17.6	29.8		0.394 ± 0.0727	0.267
									4/14/2009	11:00	GEL		33.0 ± 16.3	21.8		79.4 ± 23.0	34.8	U	47.7 ± 72.7	124	U	-0.567 ± 0.476	1.17	U	-7.01 ± 22.5	39.5	U	0.00 ± 0.00	0.289
												April 2009 GEL Reporting Limits:		5.00		5.00		100		2.00		50.0		1.00					

Table presents 1st Quarter 2009 laboratory analytical results for the Furr 16-22D well (04/14/09) and also the baseline results obtained for the Furr 16-22B and Furr 16-22D (12/17/08).  
The Furr 16-22B well was shut-in and was not sampled.

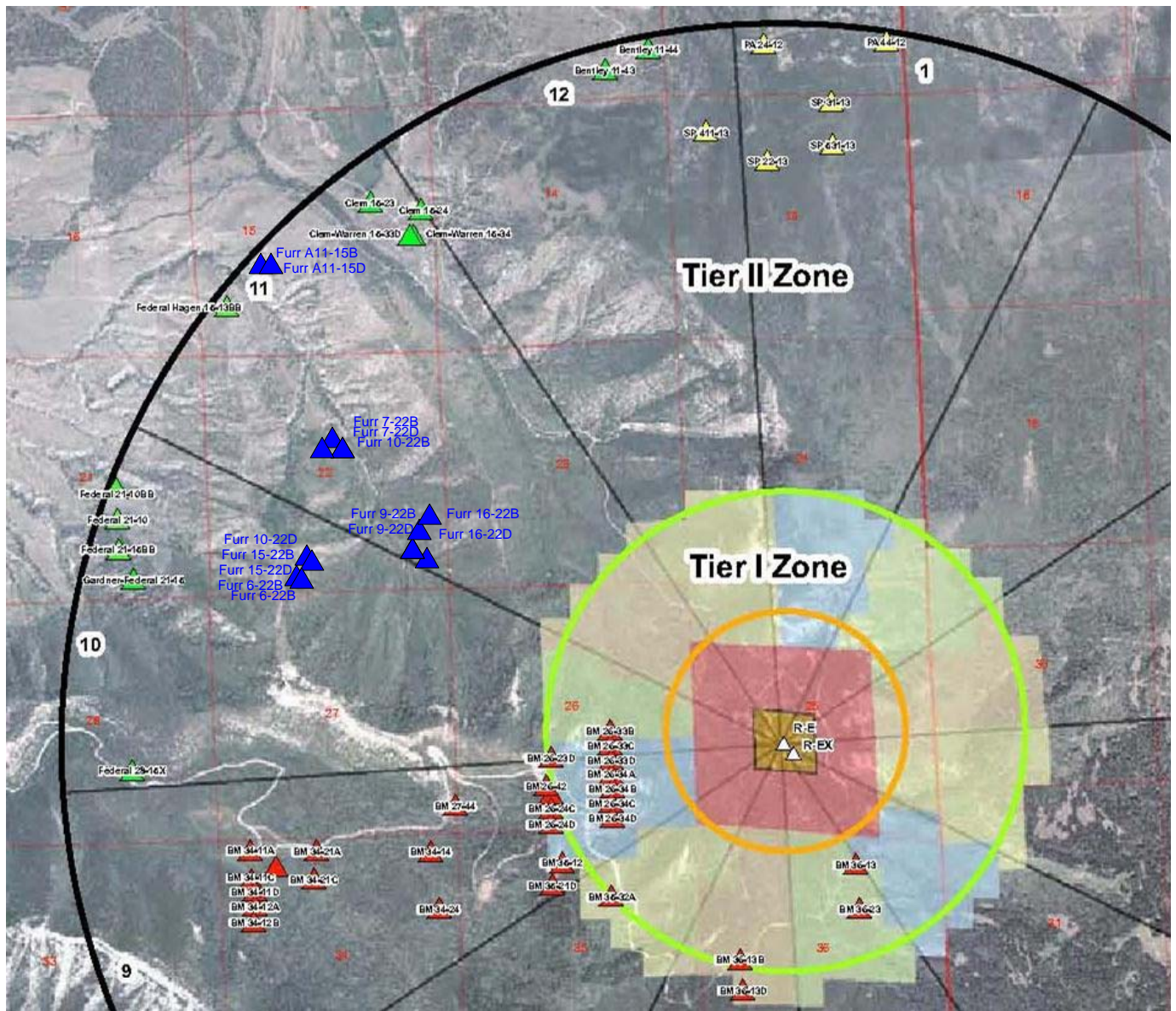
**Abbreviations:**  
pCi/L - picocuries per liter (activity in parts per trillion)  
µg/L - micrograms per liter (concentration in parts per billion)

U - Result is less than the sample specific Minimum Detectable Concentration (MDC) or Minimum Detectable Activity (MDA), Method Detection Limit (MDL), Limits of Detection (LOD), total propagated uncertainty (TPU), or laboratory reporting limit (RL).

GFPC - Gas Flow Proportional Counting  
LSA - Liquid Scintillation Analysis







**Legend:**

- ▲ Existing Laramie II Well
- ▲ Existing EnCana Well
- ▲ Existing Williams Well
- ▲ Existing Noble Well
- △ Project Rulison Well

Project Rulison Lot 11

- 3 Mile Radius Tier II Zone Wells
- 1 Mile Radius – Tier I Zone Wells
- ½ Mile Radius

Section, Township, Range

Monitoring Sectors (1 through 12)



Base Map Adapted from URS 3<sup>rd</sup> Quarter Report 2008 (November 2008)

PROJECT NO:	008-2362
DRAWN BY:	JWH
DATE:	04/29/09

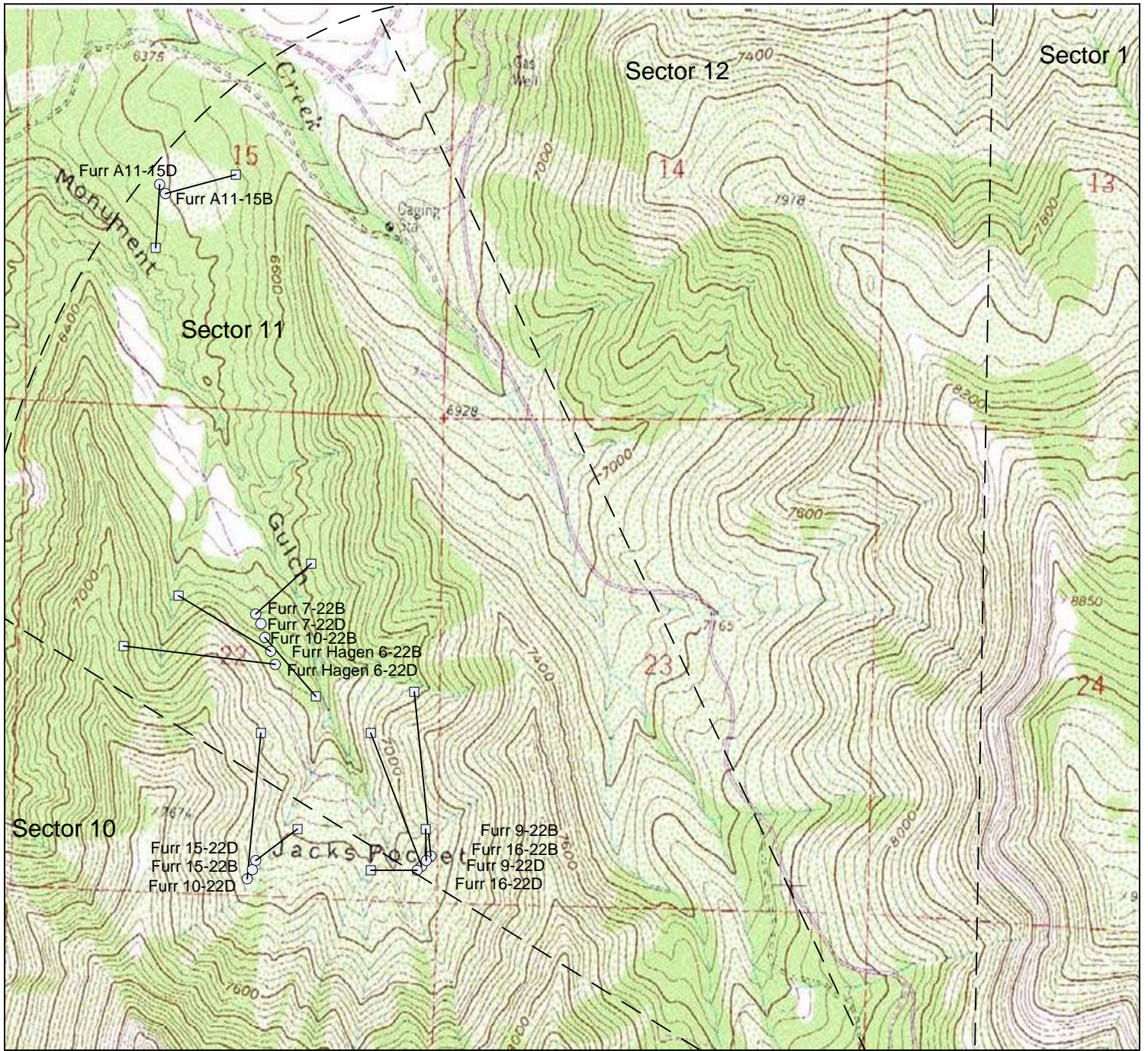
**Gas Well Locations  
Project Rulison Area  
November-December 2008**



4690 Table Mountain Dr. #200  
Golden, CO 80403  
TEL 303.237.2072  
FAX 303.237-2659

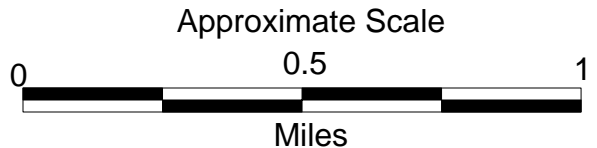
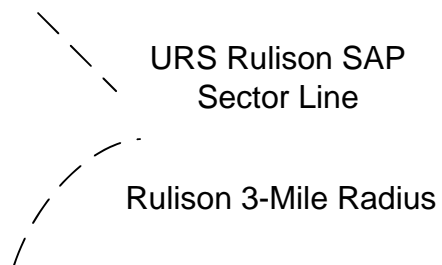
**FIGURE**

**1**



**Legend:**

- Vertical Gas Well Location  
Furr 7-22D
- Directional Gas Well Location  
Furr 16-22B  
(square denotes approximate bottom hole location)



PROJECT NO:	008-2362
DRAWN BY:	JWH
DATE:	04/30/09

**Laramie Energy II  
Rulison Area Gas Wells**



4690 Table Mountain Dr. #200  
Golden, CO 80403  
TEL 303.237.2072  
FAX 303.237.2659

---

**APPENDIX A**  
**ISOTECH LABORATORIES INC.**  
**SAMPLE RESULTS**

Lab #: 160503 Job #: 11299  
 Sample Name/Number: Furr 16-22D  
 Company: Cordilleran, Div. of Olsson Assoc.  
 Date Sampled: 4/14/2009  
 Container: Steel tank  
 Field/Site Name: 008-2362  
 Location: Furr Hagen  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 4/16/2009 Date Reported: 5/29/2009

Component	Chemical mol. %	Delta C-13 per mil	Delta D per mil	C-14 conc. pMC	Tritium TU
Carbon Monoxide -----	nd				
Hydrogen Sulfide -----	nd				
Helium -----	0.0029				
Hydrogen -----	0.0042				
Argon -----	nd				
Oxygen -----	0.0098				
Nitrogen -----	0.086				
Carbon Dioxide -----	3.39				
Methane -----	88.87			0.5 ± 0.1	< 10.0
Ethane -----	5.24				
Ethylene -----	nd				
Propane -----	1.45				
Iso-butane -----	0.309				
N-butane -----	0.278				
Iso-pentane -----	0.117				
N-pentane -----	0.0789				
Hexanes + -----	0.167				

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 1066  
 Specific gravity, calculated: 0.643

nd = not detected. na = not analyzed. Isotopic composition of carbon is relative to VPDB. Isotopic composition of hydrogen is relative to VSMOW. Calculations for BTU and specific gravity per ASTM D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. % Chemical analysis based on standards accurate to within 2%

## Water Analysis

Lab Number: 160371 Job Number: 11289

Submitter Sample Name: Furr 16-22D

Submitter Sample ID:

Submitter Job #:

Company: Cordilleran, Div. of Olsson Assoc.

Field or Site: 008-2362

Location: Furr Hagen

Depth/Formation:

Container Type: Plastic Bottle

Sample Collected: 4/14/2009 Results Reported: 4/30/2009

Delta D of water ----- na

Delta O-18 of water ----- na

Tritium content of water ----- < 10.0 TU

Delta C-13 of DIC ----- na

Carbon-14 content of DIC ----- na

Delta N-15 of nitrate ----- na

Delta O-18 of nitrate ----- na

Delta S-34 of sulfate ----- na

Delta O-18 of sulfate ----- na

Remarks:

---

**APPENDIX B**  
**GEL LABORATORIES LLC**  
**SAMPLE RESULTS**



May 12, 2009

Mr. James Hix  
Cordilleran Compliance Services  
4690 Table Mountain Drive  
Suite 200  
Golden, Colorado 80403

Re: Cordilleran Compliance Services, Inc  
Work Order: 228075

Dear Mr. Hix:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 16, 2009. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4297.

Sincerely,

Cheryl Jones signing for Amanda Rasco  
Project Manager

Purchase Order: Signed Quote  
Enclosures

# GEL Chain of Custody and Analytical Request

GEL Laboratories, LLC  
 2040 Savage Road  
 Charleston, SC 29407  
 Phone: (843) 556-8171  
 Fax: (843) 766-1178

228075

GEL Work Order Number: \_\_\_\_\_

Client Name: CORNWELLERAM, a division of Olsson Associates Phone #: 303.237.2072  
 Project/Site Name: FURR HAGEN 16-22D Fax #: 303.237.2659  
 Address: ACRIO TABLE MOUNTAIN DRIVE, STE 200, GOLDFIELD CO 80403  
 Collected by: T. DOBRANSKY Send Results To: JAMES HUX

Sample ID <i>* For composites - indicate start and stop date/time</i>	*Date Collected (mm-dd-yy)	*Time Collected (Military) (hhmm)	QC Code (a)	Field Filtered (b)	Sample Matrix (c)	Should this sample be considered:		Total number of containers	Sample Analysis Requested <sup>(5)</sup> (Fill in the number of containers for each test)	Preservative Type (6)	Comments
						Radioactive	TSCA Regulated				
FURR 16-22D	04-14-09	1100	N	N	W			2	X		Note: extra sample is required for sample specific QC

TAT Requested: Normal:  Rush: \_\_\_\_\_ Specify: \_\_\_\_\_ (Subject to Surcharge) Fax Results:  Yes /  No

Circle Deliverable: C of A / QC Summary / Level 1 / Level 2 / Level 3 / Level 4

Sample Collection Time Zone: \_\_\_\_\_  
 Eastern Pacific Other \_\_\_\_\_  
 Central Mountain

**Chain of Custody Signatures**

Relinquished By (Signed)	Date	Time	Received by (signed)	Date	Time
	4/16/09	1600		4/16/09	0930

GEL PM: \_\_\_\_\_  
 Method of Shipment: \_\_\_\_\_ Date Shipped: \_\_\_\_\_  
 Airbill #: \_\_\_\_\_  
 Airbill #: \_\_\_\_\_

1.) Chain of Custody Number = Client Determined  
 2.) QC Codes: N = Normal Sample, TB = Trip Blank, FD = Field Duplicate, EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Grab, C = Composite  
 3.) Field Filtered: For liquid matrices, indicate with a - Y - for yes the sample was field filtered or - N - for sample was not field filtered.  
 4.) Matrix Codes: DW=Drinking Water, GW=Groundwater, SW=Surface Water, WW=Waste Water, W=Water, SO=Soil, SD=Sediment, SL=Sludge, SS=Solid Waste, O=Oil, F=Filter, P=Wipe, U=Urine, F=Feecal, N=Nasal  
 5.) Sample Analysis Requested: Analytical method requested (i.e. 8260B, 6010B/7470A) and number of containers provided for each (i.e. 8260B - 3, 6010B/7470A - 1).  
 6.) Preservative Type: HA = Hydrochloric Acid, NI = Nitric Acid, SH = Sodium Hydroxide, SA = Sulfuric Acid, AA = Ascorbic Acid, HX = Hexane, ST = Sodium Thiosulfate, If no preservative is added = leave field blank

**WHITE = LABORATORY      YELLOW = FILE      PINK = CLIENT**

For Lab Receiving Use Only

Check Seal Intact?  YES /  NO  
 Cooler Temp: 10 C



Client: <u>CORD</u>		SDG/ARCOC/Work Order: <u>228075</u>	
Received By: <u>Ricky Alba</u>		Date Received: <u>4/16/09</u>	
<b>Suspected Hazard Information</b>	Yes	No	*If Counts > x2 area background on samples not marked "radioactive", contact the Radiation Safety Group of further investigation.
COC/Samples marked as radioactive?		✓	Maximum Counts Observed*: <u>40 CPM</u>
Classified Radioactive II or III by RSO?		✓	
COC/Samples marked containing PCBs?		✓	
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: _____ UN#: _____
Samples identified as Foreign Soil?		✓	

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken    damaged container    leaking container    other (describe)
2	Samples requiring cold preservation within 0 ≤ 6 deg. C?		✓		Preservation Method: <u>ice bags</u> <u>blue ice</u> dry ice    none    other (describe) <u>10" - ice melted, blue ice = 10"</u>
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: seals broken    damaged container    leaking container    other (describe)
5	Samples requiring chemical preservation at proper pH?				Sample ID's, containers affected and observed pH: ✓ <u>1-gallon container - pH 5</u> If Preservation added, Lot#: <u>H02026 - 20 mL HNO3 added</u>
6	VOA vials free of headspace (defined as < 6mm bubble)?		✓		Sample ID's and containers affected: <u>-4/16/09 RA</u>
7	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	✓			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?			✓	Sample ID's and containers affected: <u>No IDs on containers</u>
10	Date & time on COC match date & time on bottles?			✓	Sample ID's affected: <u>no date/time on containers</u>
11	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
12	COC form is properly signed in relinquished/received sections?	✓			

Comments: Fedex 9660 0451 2870

**Subject:** RE: Samples received today 4/16/09  
**From:** "James Hix" <jhix@oaconsulting.com>  
**Date:** Thu, 16 Apr 2009 13:54:15 -0500  
**To:** "Amanda Rasco" <amanda.rasco@gel.com>

Amanda,  
Thanks for the update. Please preserve the sample prior to analysis.  
James

James W. Hix, PG| Cordilleran Compliance Services, Inc. | A division of Olsson Associates  
4690 Table Mountain Drive, Suite 200 | Golden, CO 80403 | [jhix@oaconsulting.com](mailto:jhix@oaconsulting.com)  
TEL 303.237.2072 | CELL 303.589.1572 | FAX 303.237.2659



*A division of Olsson Associates*



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**From:** Amanda Rasco [mailto:[amanda.rasco@gel.com](mailto:amanda.rasco@gel.com)]  
**Sent:** Thursday, April 16, 2009 11:55 AM  
**To:** James Hix  
**Subject:** Samples received today 4/16/09

James,  
The gallon container for Sample FURR 16-22D was received at a pH=5.  
Please confirm it is acceptable for us to preserve this sample prior to  
analysis. Let me know if you have any questions.

Thanks,  
Amanda

--

~~~~~

Amanda J. Rasco  
Project Manager  
GEL Laboratories, LLC  
2040 Savage Road  
Charleston, SC (USA) 29407  
Direct: 843.769.7373  
Main: 843.556.8171 x4297  
Fax: 843.766.1178  
E-mail: [Amanda.Rasco@gel.com](mailto:Amanda.Rasco@gel.com)  
Web: [www.gel.com](http://www.gel.com)

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556-8171 – www.gel.com

## Certificate of Analysis Report for

CORD001 Cordilleron Compliance Services, Inc

Client SDG: 228075 GEL Work Order: 228075

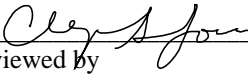
**The Qualifiers in this report are defined as follows:**

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.
- UI Gamma Spectroscopy—Uncertain identification

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the detection limit.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Amanda Rasco.

  
\_\_\_\_\_  
Reviewed by

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 – (843) 556–8171 – www.gel.com

## Certificate of Analysis

Company : Cordilleran Compliance Services  
 Address : 4690 Table Mountain Drive  
 Suite 200  
 Golden, Colorado 80403  
 Contact: Mr. James Hix  
 Project: **Cordilleran Compliance Services, Inc**

Report Date: May 12, 2009

|                   |                 |            |           |
|-------------------|-----------------|------------|-----------|
| Client Sample ID: | FURR 16–22D     | Project:   | CORD00100 |
| Sample ID:        | 228075001       | Client ID: | CORD001   |
| Matrix:           | Water           |            |           |
| Collect Date:     | 14–APR–09 11:00 |            |           |
| Receive Date:     | 16–APR–09       |            |           |
| Collector:        | Client          |            |           |

| Parameter                                      | Qualifier | Result | Uncertainty | DL   | RL   | Units | DF | AnalystDate   | Time | Batch  | Method |
|------------------------------------------------|-----------|--------|-------------|------|------|-------|----|---------------|------|--------|--------|
| <b>Rad Gamma Spec Analysis</b>                 |           |        |             |      |      |       |    |               |      |        |        |
| <i>Gammascpec, Gamma, Liquid "As Received"</i> |           |        |             |      |      |       |    |               |      |        |        |
| Actinium–228                                   | U         | 3.93   | +/-9.67     | 15.5 |      | pCi/L |    | KXG3 04/21/09 | 0914 | 859857 | 1      |
| Americium–241                                  | U         | -10.6  | +/-10.2     | 16.5 |      | pCi/L |    |               |      |        |        |
| Antimony–124                                   | U         | 0.632  | +/-4.64     | 7.82 |      | pCi/L |    |               |      |        |        |
| Antimony–125                                   | U         | -1.06  | +/-5.56     | 9.28 |      | pCi/L |    |               |      |        |        |
| Barium–133                                     | U         | 0.308  | +/-2.84     | 4.25 |      | pCi/L |    |               |      |        |        |
| Barium–140                                     | U         | 3.77   | +/-10.5     | 17.9 |      | pCi/L |    |               |      |        |        |
| Beryllium–7                                    | U         | 13.1   | +/-16.5     | 29.4 |      | pCi/L |    |               |      |        |        |
| Bismuth–212                                    | U         | 3.89   | +/-18.5     | 29.1 |      | pCi/L |    |               |      |        |        |
| Bismuth–214                                    | UI        | 0.00   | +/-7.94     | 9.50 |      | pCi/L |    |               |      |        |        |
| Cerium–139                                     | U         | -1.36  | +/-1.87     | 2.97 |      | pCi/L |    |               |      |        |        |
| Cerium–141                                     | U         | -0.631 | +/-3.96     | 6.02 |      | pCi/L |    |               |      |        |        |
| Cerium–144                                     | U         | 17.5   | +/-16.0     | 24.6 |      | pCi/L |    |               |      |        |        |
| Cesium–134                                     | U         | -0.322 | +/-2.39     | 3.87 |      | pCi/L |    |               |      |        |        |
| Cesium–136                                     | U         | 0.121  | +/-3.24     | 5.52 |      | pCi/L |    |               |      |        |        |
| Cesium–137                                     | U         | -0.996 | +/-2.14     | 3.39 | 5.00 | pCi/L |    |               |      |        |        |
| Chromium–51                                    | U         | -12.4  | +/-18.0     | 29.5 |      | pCi/L |    |               |      |        |        |
| Cobalt–56                                      | U         | 1.67   | +/-1.88     | 3.50 |      | pCi/L |    |               |      |        |        |
| Cobalt–57                                      | U         | -0.601 | +/-1.75     | 2.87 |      | pCi/L |    |               |      |        |        |
| Cobalt–58                                      | U         | -1.09  | +/-2.02     | 3.11 |      | pCi/L |    |               |      |        |        |
| Cobalt–60                                      | U         | -0.177 | +/-2.26     | 3.74 |      | pCi/L |    |               |      |        |        |
| Europium–152                                   | U         | -2.33  | +/-5.99     | 9.37 |      | pCi/L |    |               |      |        |        |
| Europium–154                                   | U         | 2.46   | +/-5.39     | 9.62 |      | pCi/L |    |               |      |        |        |
| Europium–155                                   | U         | -9.25  | +/-7.58     | 12.0 |      | pCi/L |    |               |      |        |        |
| Iridium–192                                    | U         | -0.574 | +/-1.87     | 3.14 |      | pCi/L |    |               |      |        |        |
| Iron–59                                        | U         | 0.757  | +/-3.70     | 6.42 |      | pCi/L |    |               |      |        |        |
| Krypton–85                                     | U         | -1490  | +/-638      | 930  |      | pCi/L |    |               |      |        |        |
| Lead–210                                       | U         | -190   | +/-240      | 357  |      | pCi/L |    |               |      |        |        |
| Lead–212                                       | U         | 0.756  | +/-4.68     | 7.16 |      | pCi/L |    |               |      |        |        |
| Lead–214                                       | UI        | 0.00   | +/-7.21     | 9.00 |      | pCi/L |    |               |      |        |        |
| Manganese–54                                   | U         | 1.22   | +/-2.00     | 3.62 |      | pCi/L |    |               |      |        |        |
| Mercury–203                                    | U         | 1.25   | +/-2.13     | 3.78 |      | pCi/L |    |               |      |        |        |
| Neodymium–147                                  | U         | 10.4   | +/-20.0     | 34.8 |      | pCi/L |    |               |      |        |        |
| Neptunium–239                                  | U         | 10.2   | +/-12.8     | 22.2 |      | pCi/L |    |               |      |        |        |
| Niobium–94                                     | U         | 0.598  | +/-1.92     | 3.27 |      | pCi/L |    |               |      |        |        |
| Niobium–95                                     | U         | -1.38  | +/-2.84     | 3.64 |      | pCi/L |    |               |      |        |        |
| Potassium–40                                   | U         | 27.8   | +/-47.5     | 32.3 |      | pCi/L |    |               |      |        |        |
| Promethium–144                                 | U         | 0.421  | +/-2.04     | 3.44 |      | pCi/L |    |               |      |        |        |
| Promethium–146                                 | U         | -0.895 | +/-2.45     | 4.01 |      | pCi/L |    |               |      |        |        |

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## Certificate of Analysis

Company : Cordilleran Compliance Services  
 Address : 4690 Table Mountain Drive  
 Suite 200  
 Golden, Colorado 80403  
 Contact: Mr. James Hix  
 Project: **Cordilleran Compliance Services, Inc**

Report Date: May 12, 2009

Client Sample ID: FURR 16–22D      Project: CORD00100  
 Sample ID: 228075001      Client ID: CORD001

| Parameter                                      | Qualifier | Result | Uncertainty | DL    | RL   | Units | DF | AnalystDate        | Time   | Batch | Method |
|------------------------------------------------|-----------|--------|-------------|-------|------|-------|----|--------------------|--------|-------|--------|
| <b>Rad Gamma Spec Analysis</b>                 |           |        |             |       |      |       |    |                    |        |       |        |
| <i>Gammascpec, Gamma, Liquid "As Received"</i> |           |        |             |       |      |       |    |                    |        |       |        |
| Radium–228                                     | U         | 3.93   | +/-9.67     | 15.5  |      | pCi/L |    |                    |        |       |        |
| Ruthenium–106                                  | U         | -21.9  | +/-21.7     | 31.0  |      | pCi/L |    |                    |        |       |        |
| Silver–110m                                    | U         | 2.41   | +/-1.99     | 3.65  |      | pCi/L |    |                    |        |       |        |
| Sodium–22                                      | U         | 0.825  | +/-1.91     | 3.41  |      | pCi/L |    |                    |        |       |        |
| Thallium–208                                   | U         | 0.916  | +/-2.61     | 4.26  |      | pCi/L |    |                    |        |       |        |
| Thorium–230                                    | U         | 910    | +/-5900     | 1170  |      | pCi/L |    |                    |        |       |        |
| Thorium–234                                    | U         | -2.78  | +/-110      | 158   |      | pCi/L |    |                    |        |       |        |
| Tin–113                                        | U         | -0.26  | +/-2.50     | 4.22  |      | pCi/L |    |                    |        |       |        |
| Uranium–235                                    | U         | 1.04   | +/-17.0     | 23.8  |      | pCi/L |    |                    |        |       |        |
| Uranium–238                                    | U         | -2.78  | +/-110      | 158   |      | pCi/L |    |                    |        |       |        |
| Yttrium–88                                     | U         | 0.687  | +/-2.17     | 3.88  |      | pCi/L |    |                    |        |       |        |
| Zinc–65                                        | U         | -6.48  | +/-5.04     | 7.36  |      | pCi/L |    |                    |        |       |        |
| Zirconium–95                                   | U         | 0.509  | +/-3.95     | 6.59  |      | pCi/L |    |                    |        |       |        |
| <b>Rad Gas Flow Proportional Counting</b>      |           |        |             |       |      |       |    |                    |        |       |        |
| <i>GFPC, Chlorine–36 liquid "As Received"</i>  |           |        |             |       |      |       |    |                    |        |       |        |
| Chlorine–36                                    | U         | 47.7   | +/-72.7     | 124   | 100  | pCi/L |    | AF1 05/01/09 0837  | 861846 |       | 2      |
| <i>GFPC, Gross A/B, liquid "As Received"</i>   |           |        |             |       |      |       |    |                    |        |       |        |
| Alpha                                          |           | 33.0   | +/-16.3     | 21.8  | 5.00 | pCi/L |    | DXF3 04/21/09 0819 | 859776 |       | 3      |
| Beta                                           |           | 79.4   | +/-23.0     | 34.8  | 5.00 | pCi/L |    |                    |        |       |        |
| <i>GFPC, Sr90, liquid "As Received"</i>        |           |        |             |       |      |       |    |                    |        |       |        |
| Strontium–90                                   | U         | -0.567 | +/-0.476    | 1.17  | 2.00 | pCi/L |    | JXR1 05/04/09 1425 | 863398 |       | 4      |
| <b>Rad Liquid Scintillation Analysis</b>       |           |        |             |       |      |       |    |                    |        |       |        |
| <i>Liquid Scint Tc99, Liquid "As Received"</i> |           |        |             |       |      |       |    |                    |        |       |        |
| Technetium–99                                  | U         | -7.01  | +/-22.5     | 39.5  | 50.0 | pCi/L |    | SXL4 05/03/09 1635 | 859894 |       | 5      |
| <b>Rad Total Uranium</b>                       |           |        |             |       |      |       |    |                    |        |       |        |
| <i>KPA, Total U, Liquid "As Received"</i>      |           |        |             |       |      |       |    |                    |        |       |        |
| Total Uranium                                  | U         | 0.00   | +/-0.00     | 0.289 | 1.00 | ug/L  |    | KXG3 04/24/09 1021 | 859936 |       | 6      |

**The following Analytical Methods were performed**

| Method | Description                         | Analyst Comments |
|--------|-------------------------------------|------------------|
| 1      | EPA 901.1                           |                  |
| 2      | GL–RAD–A–033                        |                  |
| 3      | EPA 900.0                           |                  |
| 4      | EPA 905.0 Modified                  |                  |
| 5      | DOE EML HASL–300, Tc–02–RC Modified |                  |
| 6      | ASTM D 5174                         |                  |

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## Certificate of Analysis

Company : Cordilleran Compliance Services

Address : 4690 Table Mountain Drive  
Suite 200

Golden, Colorado 80403

Contact: Mr. James Hix

Project: **Cordilleran Compliance Services, Inc**

Report Date: May 12, 2009

Client Sample ID: FURR 16-22D  
Sample ID: 228075001

Project: CORD00100  
Client ID: CORD001

| Parameter                        | Qualifier                               | Result | Uncertainty | DL | RL            | Units          | DF               | AnalystDate | Time | Batch                    | Method |
|----------------------------------|-----------------------------------------|--------|-------------|----|---------------|----------------|------------------|-------------|------|--------------------------|--------|
| <b>Surrogate/Tracer recovery</b> | <b>Test</b>                             |        |             |    | <b>Result</b> | <b>Nominal</b> | <b>Recovery%</b> |             |      | <b>Acceptable Limits</b> |        |
| Potassium Chloride Carrier       | GFPC, Chlorine-36 liquid "As Received"  |        |             |    |               |                | 55.3             |             |      | (25%-125%)               |        |
| Strontium Carrier                | GFPC, Sr90, liquid "As Received"        |        |             |    |               |                | 93.8             |             |      | (25%-125%)               |        |
| Technetium-99m Tracer            | Liquid Scint Tc99, Liquid "As Received" |        |             |    |               |                | 96.2             |             |      | (15%-125%)               |        |

# GEL LABORATORIES LLC

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## QC Summary

Report Date: May 12, 2009  
Page 1 of 10

**Cordilleran Compliance Services**  
4690 Table Mountain Drive  
Suite 200  
Golden, Colorado

**Contact: Mr. James Hix**

**Workorder: 228075**

| Parmname              | NOM           | Sample  | Qual | QC      | Units | RPD%     | REC% | Range | Anlst | Date | Time           |
|-----------------------|---------------|---------|------|---------|-------|----------|------|-------|-------|------|----------------|
| <b>Rad Gamma Spec</b> |               |         |      |         |       |          |      |       |       |      |                |
| Batch                 | 859857        |         |      |         |       |          |      |       |       |      |                |
| QC1201821061          | 228075001 DUP |         |      |         |       |          |      |       |       |      |                |
| Actinium-228          | U             | 3.93    | U    | 8.21    | pCi/L | 70.5     |      |       | N/A   | KXG3 | 04/21/09 14:09 |
|                       |               | +/-9.67 |      | +/-13.7 |       |          |      |       |       |      |                |
| Americium-241         | U             | -10.6   | U    | -11.8   | pCi/L | 10.8     |      |       | N/A   |      |                |
|                       |               | +/-10.2 |      | +/-11.1 |       |          |      |       |       |      |                |
| Antimony-124          | U             | 0.632   | U    | -1.18   | pCi/L | 661      |      |       | N/A   |      |                |
|                       |               | +/-4.64 |      | +/-4.74 |       |          |      |       |       |      |                |
| Antimony-125          | U             | -1.06   | U    | -1.46   | pCi/L | 31.3     |      |       | N/A   |      |                |
|                       |               | +/-5.56 |      | +/-5.26 |       |          |      |       |       |      |                |
| Barium-133            | U             | 0.308   | U    | -0.309  | pCi/L | 6.17E+05 |      |       | N/A   |      |                |
|                       |               | +/-2.84 |      | +/-2.80 |       |          |      |       |       |      |                |
| Barium-140            | U             | 3.77    | U    | -0.189  | pCi/L | 221      |      |       | N/A   |      |                |
|                       |               | +/-10.5 |      | +/-9.61 |       |          |      |       |       |      |                |
| Beryllium-7           | U             | 13.1    | U    | 4.64    | pCi/L | 95.2     |      |       | N/A   |      |                |
|                       |               | +/-16.5 |      | +/-16.7 |       |          |      |       |       |      |                |
| Bismuth-212           | U             | 3.89    | U    | 4.30    | pCi/L | 10.1     |      |       | N/A   |      |                |
|                       |               | +/-18.5 |      | +/-15.6 |       |          |      |       |       |      |                |
| Bismuth-214           | UI            | 0.00    | UI   | 0.00    | pCi/L | 16.6     |      |       | N/A   |      |                |
|                       |               | +/-7.94 |      | +/-6.77 |       |          |      |       |       |      |                |
| Cerium-139            | U             | -1.36   | U    | -1.63   | pCi/L | 18.2     |      |       | N/A   |      |                |
|                       |               | +/-1.87 |      | +/-1.81 |       |          |      |       |       |      |                |
| Cerium-141            | U             | -0.631  | U    | 1.55    | pCi/L | 476      |      |       | N/A   |      |                |
|                       |               | +/-3.96 |      | +/-3.48 |       |          |      |       |       |      |                |
| Cerium-144            | U             | 17.5    | U    | -8.56   | pCi/L | 584      |      |       | N/A   |      |                |
|                       |               | +/-16.0 |      | +/-13.3 |       |          |      |       |       |      |                |
| Cesium-134            | U             | -0.322  | U    | 1.38    | pCi/L | 321      |      |       | N/A   |      |                |
|                       |               | +/-2.39 |      | +/-2.49 |       |          |      |       |       |      |                |
| Cesium-136            | U             | 0.121   | U    | -0.928  | pCi/L | 260      |      |       | N/A   |      |                |
|                       |               | +/-3.24 |      | +/-3.45 |       |          |      |       |       |      |                |
| Cesium-137            | U             | -0.996  | U    | -1.26   | pCi/L | 23.7     |      |       | N/A   |      |                |
|                       |               | +/-2.14 |      | +/-2.12 |       |          |      |       |       |      |                |
| Chromium-51           | U             | -12.4   | U    | -8.04   | pCi/L | 42.8     |      |       | N/A   |      |                |
|                       |               | +/-18.0 |      | +/-18.2 |       |          |      |       |       |      |                |
| Cobalt-56             | U             | 1.67    | U    | 0.181   | pCi/L | 161      |      |       | N/A   |      |                |
|                       |               | +/-1.88 |      | +/-1.88 |       |          |      |       |       |      |                |
| Cobalt-57             | U             | -0.601  | U    | 0.783   | pCi/L | 1520     |      |       | N/A   |      |                |
|                       |               | +/-1.75 |      | +/-1.70 |       |          |      |       |       |      |                |
| Cobalt-58             | U             | -1.09   | U    | -1.74   | pCi/L | 46.3     |      |       | N/A   |      |                |
|                       |               | +/-2.02 |      | +/-2.05 |       |          |      |       |       |      |                |
| Cobalt-60             | U             | -0.177  | U    | 0.134   | pCi/L | 1450     |      |       | N/A   |      |                |

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## QC Summary

Workorder: 228075

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| Parmname                       | NOM | Sample            | Qual | QC                | Units | RPD%  | REC%        | Range | Anlst | Date     | Time  |
|--------------------------------|-----|-------------------|------|-------------------|-------|-------|-------------|-------|-------|----------|-------|
| Rad Gamma Spec<br>Batch 859857 |     |                   |      |                   |       |       |             |       |       |          |       |
| Europium-152                   | U   | +/-2.26<br>-2.33  | U    | +/-2.56<br>0.154  | pCi/L | 228   |             | N/A   | KXG3  | 04/21/09 | 14:09 |
| Europium-154                   | U   | +/-5.99<br>2.46   | U    | +/-5.53<br>-0.933 | pCi/L | 445   |             | N/A   |       |          |       |
| Europium-155                   | U   | +/-5.39<br>-9.25  | U    | +/-5.66<br>2.35   | pCi/L | 337   |             | N/A   |       |          |       |
| Iridium-192                    | U   | +/-7.58<br>-0.574 | U    | +/-7.45<br>0.567  | pCi/L | 29300 |             | N/A   |       |          |       |
| Iron-59                        | U   | +/-1.87<br>0.757  | U    | +/-1.91<br>-5.02  | pCi/L | 271   |             | N/A   |       |          |       |
| Krypton-85                     | U   | +/-3.70<br>-1490  | U    | +/-4.02<br>-2040  | pCi/L | 31.0  |             | N/A   |       |          |       |
| Lead-210                       | U   | +/-638<br>-190    | U    | +/-626<br>-58.2   | pCi/L | 106   |             | N/A   |       |          |       |
| Lead-212                       | U   | +/-240<br>0.756   | U    | +/-277<br>3.42    | pCi/L | 128   |             | N/A   |       |          |       |
| Lead-214                       | UI  | +/-4.68<br>0.00   | UI   | +/-6.19<br>0.00   | pCi/L | 32.5  |             | N/A   |       |          |       |
| Manganese-54                   | U   | +/-7.21<br>1.22   | U    | +/-6.62<br>-1.26  | pCi/L | 15500 |             | N/A   |       |          |       |
| Mercury-203                    | U   | +/-2.00<br>1.25   | U    | +/-1.92<br>1.03   | pCi/L | 19.1  |             | N/A   |       |          |       |
| Neodymium-147                  | U   | +/-2.13<br>10.4   | U    | +/-2.16<br>10.6   | pCi/L | 1.72  |             | N/A   |       |          |       |
| Neptunium-239                  | U   | +/-20.0<br>10.2   | U    | +/-18.7<br>-11.7  | pCi/L | 2850  |             | N/A   |       |          |       |
| Niobium-94                     | U   | +/-12.8<br>0.598  | U    | +/-13.3<br>1.02   | pCi/L | 52.3  |             | N/A   |       |          |       |
| Niobium-95                     | U   | +/-1.92<br>-1.38  | U    | +/-1.92<br>1.48   | pCi/L | 5400  |             | N/A   |       |          |       |
| Potassium-40                   | U   | +/-2.84<br>27.8   |      | +/-2.17<br>68.5   | pCi/L | 84.6  | (0% - 100%) |       |       |          |       |
| Promethium-144                 | U   | +/-47.5<br>0.421  | U    | +/-39.7<br>0.198  | pCi/L | 72.3  |             | N/A   |       |          |       |
| Promethium-146                 | U   | +/-2.04<br>-0.895 | U    | +/-1.87<br>-0.69  | pCi/L | 25.9  |             | N/A   |       |          |       |
| Radium-228                     | U   | +/-2.45<br>3.93   | U    | +/-2.66<br>8.21   | pCi/L | 70.5  |             | N/A   |       |          |       |
| Ruthenium-106                  | U   | +/-9.67<br>-21.9  | U    | +/-13.7<br>0.629  | pCi/L | 212   |             | N/A   |       |          |       |
| Silver-110m                    | U   | +/-21.7<br>2.41   | U    | +/-17.0<br>1.09   | pCi/L | 75.5  |             | N/A   |       |          |       |
| Sodium-22                      | U   | +/-1.99<br>0.825  | U    | +/-1.91<br>-0.357 | pCi/L | 506   |             | N/A   |       |          |       |



# GEL LABORATORIES LLC

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## QC Summary

Workorder: 228075

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| Parmname              | NOM    | Sample | Qual | QC     | Units | RPD% | REC% | Range      | Anlst | Date     | Time  |
|-----------------------|--------|--------|------|--------|-------|------|------|------------|-------|----------|-------|
| <b>Rad Gamma Spec</b> |        |        |      |        |       |      |      |            |       |          |       |
| Batch                 | 859857 |        |      |        |       |      |      |            |       |          |       |
| Thallium-208          | U      | 0.916  | UI   | 0.00   | pCi/L | 151  |      | N/A        | KXG3  | 04/21/09 | 14:09 |
| Thorium-230           | U      | 910    | U    | -256   | pCi/L | 357  |      | N/A        |       |          |       |
| Thorium-234           | U      | -2.78  | U    | -132   | pCi/L | 192  |      | N/A        |       |          |       |
| Tin-113               | U      | -0.26  | U    | -0.877 | pCi/L | 108  |      | N/A        |       |          |       |
| Uranium-235           | U      | 1.04   | U    | -3.89  | pCi/L | 346  |      | N/A        |       |          |       |
| Uranium-238           | U      | -2.78  | U    | -132   | pCi/L | 192  |      | N/A        |       |          |       |
| Yttrium-88            | U      | 0.687  | U    | 1.31   | pCi/L | 62.7 |      | N/A        |       |          |       |
| Zinc-65               | U      | -6.48  | U    | -0.981 | pCi/L | 147  |      | N/A        |       |          |       |
| Zirconium-95          | U      | 0.509  | U    | -0.456 | pCi/L | 3700 |      | N/A        |       |          |       |
| QC1201821063          | LCS    |        |      |        |       |      |      |            |       |          |       |
| Actinium-228          |        |        | U    | 16.4   | pCi/L |      |      |            |       | 04/21/09 | 14:10 |
| Americium-241         | 1240   |        |      | 1400   | pCi/L |      | 113  | (75%-125%) |       |          |       |
| Antimony-124          |        |        | U    | -0.606 | pCi/L |      |      |            |       |          |       |
| Antimony-125          |        |        | U    | 0.448  | pCi/L |      |      |            |       |          |       |
| Barium-133            |        |        | U    | -0.643 | pCi/L |      |      |            |       |          |       |
| Barium-140            |        |        | U    | 13.1   | pCi/L |      |      |            |       |          |       |
| Beryllium-7           |        |        | U    | 9.88   | pCi/L |      |      |            |       |          |       |
| Bismuth-212           |        |        | U    | 67.3   | pCi/L |      |      |            |       |          |       |
| Bismuth-214           |        |        | U    | -0.234 | pCi/L |      |      |            |       |          |       |
| Cerium-139            |        |        | U    | 6.63   | pCi/L |      |      |            |       |          |       |
| Cerium-141            |        |        | U    | -2.17  | pCi/L |      |      |            |       |          |       |
| Cerium-144            |        |        | U    | -3.23  | pCi/L |      |      |            |       |          |       |

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| Parmname              | NOM    | Sample | Qual | QC                | Units | RPD% | REC% | Range      | Anlst | Date     | Time  |
|-----------------------|--------|--------|------|-------------------|-------|------|------|------------|-------|----------|-------|
| <b>Rad Gamma Spec</b> |        |        |      |                   |       |      |      |            |       |          |       |
| Batch                 | 859857 |        |      |                   |       |      |      |            |       |          |       |
| Cesium-134            |        |        | U    | -3.21<br>+/-10.8  | pCi/L |      |      |            |       |          |       |
| Cesium-136            |        |        | U    | 0.280<br>+/-13.7  | pCi/L |      |      |            | KXG3  | 04/21/09 | 14:10 |
| Cesium-137            | 440    |        |      | 466<br>+/-36.7    | pCi/L |      | 106  | (75%-125%) |       |          |       |
| Chromium-51           |        |        | U    | 12.6<br>+/-61.1   | pCi/L |      |      |            |       |          |       |
| Cobalt-56             |        |        | U    | -4.5<br>+/-8.75   | pCi/L |      |      |            |       |          |       |
| Cobalt-57             |        |        |      | 39.0<br>+/-11.4   | pCi/L |      |      |            |       |          |       |
| Cobalt-58             |        |        | U    | -4.23<br>+/-8.20  | pCi/L |      |      |            |       |          |       |
| Cobalt-60             | 553    |        |      | 530<br>+/-51.8    | pCi/L |      | 96   | (75%-125%) |       |          |       |
| Europium-152          |        |        | U    | 9.54<br>+/-21.2   | pCi/L |      |      |            |       |          |       |
| Europium-154          |        |        | U    | 9.69<br>+/-15.6   | pCi/L |      |      |            |       |          |       |
| Europium-155          |        |        | U    | -6.17<br>+/-26.0  | pCi/L |      |      |            |       |          |       |
| Iridium-192           |        |        | U    | -4.42<br>+/-6.97  | pCi/L |      |      |            |       |          |       |
| Iron-59               |        |        | U    | -8.38<br>+/-18.5  | pCi/L |      |      |            |       |          |       |
| Krypton-85            |        |        | U    | -1610<br>+/-1840  | pCi/L |      |      |            |       |          |       |
| Lead-210              |        |        | U    | -911<br>+/-1060   | pCi/L |      |      |            |       |          |       |
| Lead-212              |        |        | U    | 14.4<br>+/-14.4   | pCi/L |      |      |            |       |          |       |
| Lead-214              |        |        | U    | -0.463<br>+/-16.0 | pCi/L |      |      |            |       |          |       |
| Manganese-54          |        |        | U    | -4.26<br>+/-8.14  | pCi/L |      |      |            |       |          |       |
| Mercury-203           |        |        | U    | -0.307<br>+/-7.98 | pCi/L |      |      |            |       |          |       |
| Neodymium-147         |        |        | U    | -13.5<br>+/-58.4  | pCi/L |      |      |            |       |          |       |
| Neptunium-239         |        |        | U    | 38.5<br>+/-53.4   | pCi/L |      |      |            |       |          |       |
| Niobium-94            |        |        | U    | -2.05<br>+/-7.57  | pCi/L |      |      |            |       |          |       |
| Niobium-95            |        |        | U    | 2.37              | pCi/L |      |      |            |       |          |       |

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| Parmname              | NOM    | Sample | Qual | QC                | Units | RPD% | REC% | Range | Anlst | Date     | Time  |
|-----------------------|--------|--------|------|-------------------|-------|------|------|-------|-------|----------|-------|
| <b>Rad Gamma Spec</b> |        |        |      |                   |       |      |      |       |       |          |       |
| Batch                 | 859857 |        |      |                   |       |      |      |       |       |          |       |
| Potassium-40          |        |        | U    | +/-8.30<br>34.3   | pCi/L |      |      |       | KXG3  | 04/21/09 | 14:10 |
| Promethium-144        |        |        | U    | +/-60.8<br>0.350  | pCi/L |      |      |       |       |          |       |
| Promethium-146        |        |        | U    | +/-7.50<br>0.0394 | pCi/L |      |      |       |       |          |       |
| Radium-228            |        |        | U    | +/-10.3<br>16.4   | pCi/L |      |      |       |       |          |       |
| Ruthenium-106         |        |        | U    | +/-35.6<br>-58.3  | pCi/L |      |      |       |       |          |       |
| Silver-110m           |        |        |      | +/-68.7<br>18.7   | pCi/L |      |      |       |       |          |       |
| Sodium-22             |        |        | U    | +/-10.5<br>3.45   | pCi/L |      |      |       |       |          |       |
| Thallium-208          |        |        | U    | +/-5.52<br>6.33   | pCi/L |      |      |       |       |          |       |
| Thorium-230           |        |        | U    | +/-8.32<br>4140   | pCi/L |      |      |       |       |          |       |
| Thorium-234           |        |        | U    | +/-26500<br>-585  | pCi/L |      |      |       |       |          |       |
| Tin-113               |        |        | U    | +/-412<br>-1.31   | pCi/L |      |      |       |       |          |       |
| Uranium-235           |        |        | U    | +/-9.62<br>-70.1  | pCi/L |      |      |       |       |          |       |
| Uranium-238           |        |        | U    | +/-51.1<br>-585   | pCi/L |      |      |       |       |          |       |
| Yttrium-88            |        |        | U    | +/-412<br>7.10    | pCi/L |      |      |       |       |          |       |
| Zinc-65               |        |        | U    | +/-6.91<br>-2.89  | pCi/L |      |      |       |       |          |       |
| Zirconium-95          |        |        | U    | +/-19.7<br>1.85   | pCi/L |      |      |       |       |          |       |
| QC1201821060          | MB     |        |      | +/-14.8           |       |      |      |       |       |          |       |
| Actinium-228          |        |        | U    | -4.7              | pCi/L |      |      |       |       | 04/21/09 | 09:15 |
| Americium-241         |        |        | U    | +/-7.91<br>-17.1  | pCi/L |      |      |       |       |          |       |
| Antimony-124          |        |        | U    | +/-8.84<br>-1.77  | pCi/L |      |      |       |       |          |       |
| Antimony-125          |        |        | U    | +/-3.43<br>3.95   | pCi/L |      |      |       |       |          |       |
| Barium-133            |        |        | U    | +/-4.55<br>-3.09  | pCi/L |      |      |       |       |          |       |
|                       |        |        |      | +/-2.34           |       |      |      |       |       |          |       |

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| Parmname              | NOM    | Sample | Qual | QC                | Units | RPD% | REC% | Range | Anlst | Date     | Time  |
|-----------------------|--------|--------|------|-------------------|-------|------|------|-------|-------|----------|-------|
| <b>Rad Gamma Spec</b> |        |        |      |                   |       |      |      |       |       |          |       |
| Batch                 | 859857 |        |      |                   |       |      |      |       |       |          |       |
| Barium-140            |        |        | U    | -1.66<br>+/-6.41  | pCi/L |      |      |       |       |          |       |
| Beryllium-7           |        |        | U    | 7.74<br>+/-13.9   | pCi/L |      |      |       | KXG3  | 04/21/09 | 09:15 |
| Bismuth-212           |        |        | U    | 5.96<br>+/-12.4   | pCi/L |      |      |       |       |          |       |
| Bismuth-214           |        |        | U    | 5.40<br>+/-6.75   | pCi/L |      |      |       |       |          |       |
| Cerium-139            |        |        | U    | -0.687<br>+/-1.47 | pCi/L |      |      |       |       |          |       |
| Cerium-141            |        |        | U    | -1.2<br>+/-2.39   | pCi/L |      |      |       |       |          |       |
| Cerium-144            |        |        | U    | 6.99<br>+/-10.1   | pCi/L |      |      |       |       |          |       |
| Cesium-134            |        |        | U    | 0.0125<br>+/-1.92 | pCi/L |      |      |       |       |          |       |
| Cesium-136            |        |        | U    | 1.29<br>+/-2.51   | pCi/L |      |      |       |       |          |       |
| Cesium-137            |        |        | U    | 0.943<br>+/-1.69  | pCi/L |      |      |       |       |          |       |
| Chromium-51           |        |        | U    | 12.5<br>+/-15.0   | pCi/L |      |      |       |       |          |       |
| Cobalt-56             |        |        | U    | 0.0872<br>+/-1.82 | pCi/L |      |      |       |       |          |       |
| Cobalt-57             |        |        | U    | 0.381<br>+/-1.28  | pCi/L |      |      |       |       |          |       |
| Cobalt-58             |        |        | U    | 1.62<br>+/-1.88   | pCi/L |      |      |       |       |          |       |
| Cobalt-60             |        |        | U    | -1.74<br>+/-2.11  | pCi/L |      |      |       |       |          |       |
| Europium-152          |        |        | U    | 0.922<br>+/-5.19  | pCi/L |      |      |       |       |          |       |
| Europium-154          |        |        | U    | -1.5<br>+/-5.27   | pCi/L |      |      |       |       |          |       |
| Europium-155          |        |        | U    | -1.37<br>+/-5.62  | pCi/L |      |      |       |       |          |       |
| Iridium-192           |        |        | U    | 0.0787<br>+/-1.70 | pCi/L |      |      |       |       |          |       |
| Iron-59               |        |        | U    | 1.64<br>+/-3.27   | pCi/L |      |      |       |       |          |       |
| Krypton-85            |        |        | U    | -1840<br>+/-644   | pCi/L |      |      |       |       |          |       |
| Lead-210              |        |        | U    | -127<br>+/-256    | pCi/L |      |      |       |       |          |       |
| Lead-212              |        |        | UI   | 0.00              | pCi/L |      |      |       |       |          |       |

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| Parmname              | NOM    | Sample | Qual | QC                | Units | RPD% | REC% | Range | Anlst | Date     | Time  |
|-----------------------|--------|--------|------|-------------------|-------|------|------|-------|-------|----------|-------|
| <b>Rad Gamma Spec</b> |        |        |      |                   |       |      |      |       |       |          |       |
| Batch                 | 859857 |        |      |                   |       |      |      |       |       |          |       |
| Lead-214              |        |        | U    | +/-6.76<br>3.14   | pCi/L |      |      |       | KXG3  | 04/21/09 | 09:15 |
| Manganese-54          |        |        | U    | +/-4.87<br>0.0853 | pCi/L |      |      |       |       |          |       |
| Mercury-203           |        |        | U    | +/-1.69<br>0.609  | pCi/L |      |      |       |       |          |       |
| Neodymium-147         |        |        | U    | +/-1.79<br>-6.94  | pCi/L |      |      |       |       |          |       |
| Neptunium-239         |        |        | U    | +/-11.9<br>-4.91  | pCi/L |      |      |       |       |          |       |
| Niobium-94            |        |        | U    | +/-9.96<br>2.08   | pCi/L |      |      |       |       |          |       |
| Niobium-95            |        |        | U    | +/-1.82<br>0.381  | pCi/L |      |      |       |       |          |       |
| Potassium-40          |        |        | UI   | +/-1.81<br>0.00   | pCi/L |      |      |       |       |          |       |
| Promethium-144        |        |        | U    | +/-32.0<br>-1.52  | pCi/L |      |      |       |       |          |       |
| Promethium-146        |        |        | U    | +/-1.90<br>0.211  | pCi/L |      |      |       |       |          |       |
| Radium-228            |        |        | U    | +/-2.21<br>-4.7   | pCi/L |      |      |       |       |          |       |
| Ruthenium-106         |        |        | U    | +/-7.91<br>12.6   | pCi/L |      |      |       |       |          |       |
| Silver-110m           |        |        | U    | +/-15.5<br>-0.263 | pCi/L |      |      |       |       |          |       |
| Sodium-22             |        |        | U    | +/-1.65<br>-0.582 | pCi/L |      |      |       |       |          |       |
| Thallium-208          |        |        | U    | +/-1.87<br>-0.269 | pCi/L |      |      |       |       |          |       |
| Thorium-230           |        |        | U    | +/-2.19<br>-635   | pCi/L |      |      |       |       |          |       |
| Thorium-234           |        |        | U    | +/-4100<br>-48.4  | pCi/L |      |      |       |       |          |       |
| Tin-113               |        |        | U    | +/-89.2<br>-1.98  | pCi/L |      |      |       |       |          |       |
| Uranium-235           |        |        | U    | +/-2.05<br>-1.83  | pCi/L |      |      |       |       |          |       |
| Uranium-238           |        |        | U    | +/-10.8<br>-48.4  | pCi/L |      |      |       |       |          |       |
| Yttrium-88            |        |        | U    | +/-89.2<br>1.86   | pCi/L |      |      |       |       |          |       |
| Zinc-65               |        |        | U    | +/-1.74<br>-1.47  | pCi/L |      |      |       |       |          |       |

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| Parmname              | NOM       | Sample | Qual | QC       | Units | RPD% | REC% | Range       | Anlst    | Date     | Time  |
|-----------------------|-----------|--------|------|----------|-------|------|------|-------------|----------|----------|-------|
| <b>Rad Gamma Spec</b> |           |        |      |          |       |      |      |             |          |          |       |
| Batch                 | 859857    |        |      |          |       |      |      |             |          |          |       |
| Zirconium-95          |           |        | U    | -1.51    | pCi/L |      |      |             | KXG3     | 04/21/09 | 09:15 |
|                       |           |        |      | +/-4.06  |       |      |      |             |          |          |       |
|                       |           |        |      | +/-3.07  |       |      |      |             |          |          |       |
| <b>Rad Gas Flow</b>   |           |        |      |          |       |      |      |             |          |          |       |
| Batch                 | 859776    |        |      |          |       |      |      |             |          |          |       |
| QC1201820810          | 228134001 | DUP    |      |          |       |      |      |             |          |          |       |
| Alpha                 |           |        | U    | -0.588   | pCi/L | 0.00 |      |             | N/A DXF3 | 04/21/09 | 08:19 |
|                       |           |        |      | +/-0.741 |       |      |      |             |          |          |       |
| Beta                  |           |        |      | 10.3     | pCi/L | 21.6 |      | (0% - 100%) |          |          |       |
|                       |           |        |      | +/-1.93  |       |      |      |             |          |          |       |
| QC1201820813          | LCS       |        |      |          |       |      |      |             |          |          |       |
| Alpha                 | 77.9      |        |      | 75.5     | pCi/L |      | 96.9 | (75%-125%)  |          | 04/21/09 | 08:19 |
|                       |           |        |      | +/-8.56  |       |      |      |             |          |          |       |
| Beta                  | 261       |        |      | 233      | pCi/L |      | 89.2 | (75%-125%)  |          |          |       |
|                       |           |        |      | +/-9.95  |       |      |      |             |          |          |       |
| QC1201820809          | MB        |        |      |          |       |      |      |             |          |          |       |
| Alpha                 |           |        | U    | -1.14    | pCi/L |      |      |             |          | 04/21/09 | 08:19 |
|                       |           |        |      | +/-0.718 |       |      |      |             |          |          |       |
| Beta                  |           |        | U    | 0.252    | pCi/L |      |      |             |          |          |       |
|                       |           |        |      | +/-0.765 |       |      |      |             |          |          |       |
| QC1201820811          | 228134001 | MS     |      |          |       |      |      |             |          |          |       |
| Alpha                 | 234       |        | U    | -0.588   | pCi/L |      | 114  | (75%-125%)  |          | 04/21/09 | 08:19 |
|                       |           |        |      | +/-0.741 |       |      |      |             |          |          |       |
| Beta                  | 784       |        |      | 10.3     | pCi/L |      | 102  | (75%-125%)  |          |          |       |
|                       |           |        |      | +/-1.93  |       |      |      |             |          |          |       |
| QC1201820812          | 228134001 | MSD    |      |          |       |      |      |             |          |          |       |
| Alpha                 | 234       |        | U    | -0.588   | pCi/L | 1.44 | 116  | (0%-20%)    |          | 04/21/09 | 08:19 |
|                       |           |        |      | +/-0.741 |       |      |      |             |          |          |       |
| Beta                  | 784       |        |      | 10.3     | pCi/L | 2.05 | 105  | (0%-20%)    |          |          |       |
|                       |           |        |      | +/-1.93  |       |      |      |             |          |          |       |
| Batch                 | 861846    |        |      |          |       |      |      |             |          |          |       |
| QC1201825606          | 228075001 | DUP    |      |          |       |      |      |             |          |          |       |
| Chlorine-36           |           |        | U    | 47.7     | pCi/L | 0.00 |      |             | N/A AF1  | 05/01/09 | 08:37 |
|                       |           |        |      | +/-72.7  |       |      |      |             |          |          |       |
| QC1201825608          | LCS       |        |      |          |       |      |      |             |          |          |       |
| Chlorine-36           | 16000     |        |      | 19900    | pCi/L |      | 124  | (75%-125%)  |          | 05/01/09 | 08:37 |
|                       |           |        |      | +/-302   |       |      |      |             |          |          |       |
| QC1201825605          | MB        |        |      |          |       |      |      |             |          |          |       |
| Chlorine-36           |           |        | U    | 66.0     | pCi/L |      |      |             |          | 05/01/09 | 08:37 |
|                       |           |        |      | +/-59.0  |       |      |      |             |          |          |       |
| QC1201825607          | 228075001 | MS     |      |          |       |      |      |             |          |          |       |
| Chlorine-36           | 47900     |        | U    | 47.7     | pCi/L |      | 102  | (75%-125%)  |          | 05/01/09 | 08:37 |
|                       |           |        |      | +/-72.7  |       |      |      |             |          |          |       |
| Batch                 | 863398    |        |      |          |       |      |      |             |          |          |       |
| QC1201829019          | 228075001 | DUP    |      |          |       |      |      |             |          |          |       |

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| Parmname                        | NOM       | Sample | Qual | QC       | Units | RPD%      | REC%  | Range | Anlst       | Date | Time           |
|---------------------------------|-----------|--------|------|----------|-------|-----------|-------|-------|-------------|------|----------------|
| <b>Rad Gas Flow</b>             |           |        |      |          |       |           |       |       |             |      |                |
| Batch                           | 863398    |        |      |          |       |           |       |       |             |      |                |
| Strontium-90                    |           |        | U    | -0.567   | U     | 0.0519    | pCi/L | 0.00  | N/A         | JXR1 | 05/04/09 14:26 |
|                                 |           |        |      | +/-0.476 |       | +/-0.721  |       |       |             |      |                |
| QC1201829021                    | LCS       |        |      |          |       |           |       |       |             |      |                |
| Strontium-90                    | 65.3      |        |      |          |       | 71.3      | pCi/L | 109   | (75%-125%)  |      | 05/04/09 14:26 |
|                                 |           |        |      |          |       | +/-4.55   |       |       |             |      |                |
| QC1201829018                    | MB        |        |      |          |       |           |       |       |             |      |                |
| Strontium-90                    |           |        | U    | -0.10    |       | -0.10     | pCi/L |       |             |      | 05/04/09 14:26 |
|                                 |           |        |      |          |       | +/-0.729  |       |       |             |      |                |
| QC1201829020                    | 228075001 | MS     |      |          |       |           |       |       |             |      |                |
| Strontium-90                    | 131       | U      |      | -0.567   |       | 82.7      | pCi/L | 63.2* | (75%-125%)  |      | 05/04/09 14:26 |
|                                 |           |        |      | +/-0.476 |       | +/-6.74   |       |       |             |      |                |
| <b>Rad Liquid Scintillation</b> |           |        |      |          |       |           |       |       |             |      |                |
| Batch                           | 859894    |        |      |          |       |           |       |       |             |      |                |
| QC1201821168                    | 228139001 | DUP    |      |          |       |           |       |       |             |      |                |
| Technetium-99                   |           | U      |      | -10.4    | U     | -19.7     | pCi/L | 0.00  | N/A         | SXL4 | 05/03/09 17:39 |
|                                 |           |        |      | +/-44.0  |       | +/-42.8   |       |       |             |      |                |
| QC1201821170                    | LCS       |        |      |          |       |           |       |       |             |      |                |
| Technetium-99                   | 1300      |        |      |          |       | 1320      | pCi/L | 102   | (75%-125%)  |      | 05/03/09 18:22 |
|                                 |           |        |      |          |       | +/-50.9   |       |       |             |      |                |
| QC1201821167                    | MB        |        |      |          |       |           |       |       |             |      |                |
| Technetium-99                   |           | U      |      | -5.61    |       | -5.61     | pCi/L |       |             |      | 05/03/09 17:18 |
|                                 |           |        |      |          |       | +/-22.0   |       |       |             |      |                |
| QC1201821169                    | 228139001 | MS     |      |          |       |           |       |       |             |      |                |
| Technetium-99                   | 2590      | U      |      | -10.4    |       | 2690      | pCi/L | 104   | (75%-125%)  |      | 05/03/09 18:01 |
|                                 |           |        |      | +/-44.0  |       | +/-103    |       |       |             |      |                |
| <b>Rad Total U</b>              |           |        |      |          |       |           |       |       |             |      |                |
| Batch                           | 859936    |        |      |          |       |           |       |       |             |      |                |
| QC1201821295                    | 228050001 | DUP    |      |          |       |           |       |       |             |      |                |
| Total Uranium                   |           |        |      | 2.71     |       | 3.10      | ug/L  | 13.2  | (0% - 100%) | KXG3 | 05/01/09 09:09 |
|                                 |           |        |      | +/-0.385 |       | +/-0.626  |       |       |             |      |                |
| QC1201821297                    | LCS       |        |      |          |       |           |       |       |             |      |                |
| Total Uranium                   | 25.0      |        |      |          |       | 21.8      | ug/L  | 87.1  | (75%-125%)  |      | 04/24/09 10:50 |
|                                 |           |        |      |          |       | +/-2.00   |       |       |             |      |                |
| QC1201821298                    | LCS       |        |      |          |       |           |       |       |             |      |                |
| Total Uranium                   | 2.50      |        |      |          |       | 2.05      | ug/L  | 82    | (75%-125%)  |      | 05/01/09 09:14 |
|                                 |           |        |      |          |       | +/-0.0833 |       |       |             |      |                |
| QC1201821294                    | MB        |        |      |          |       |           |       |       |             |      |                |
| Total Uranium                   |           |        |      |          |       | 0.310     | ug/L  |       |             |      | 04/24/09 10:39 |
|                                 |           |        |      |          |       | +/-0.033  |       |       |             |      |                |
| QC1201821296                    | 228050001 | MS     |      |          |       |           |       |       |             |      |                |
| Total Uranium                   | 25.0      |        |      | 2.71     |       | 23.6      | ug/L  | 83.5  | (75%-125%)  |      | 05/01/09 09:12 |
|                                 |           |        |      | +/-0.385 |       | +/-1.02   |       |       |             |      |                |

Notes:

The Qualifiers in this report are defined as follows:

\*\* Analyte is a surrogate compound

# GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 228075

Page 10 of 10

| Parmname | NOM | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|-----|--------|------|----|-------|------|------|-------|-------|------|------|
| <        |     |        |      |    |       |      |      |       |       |      |      |
| >        |     |        |      |    |       |      |      |       |       |      |      |
| A        |     |        |      |    |       |      |      |       |       |      |      |
| B        |     |        |      |    |       |      |      |       |       |      |      |
| BD       |     |        |      |    |       |      |      |       |       |      |      |
| C        |     |        |      |    |       |      |      |       |       |      |      |
| D        |     |        |      |    |       |      |      |       |       |      |      |
| F        |     |        |      |    |       |      |      |       |       |      |      |
| H        |     |        |      |    |       |      |      |       |       |      |      |
| J        |     |        |      |    |       |      |      |       |       |      |      |
| M        |     |        |      |    |       |      |      |       |       |      |      |
| M        |     |        |      |    |       |      |      |       |       |      |      |
| N/A      |     |        |      |    |       |      |      |       |       |      |      |
| ND       |     |        |      |    |       |      |      |       |       |      |      |
| NJ       |     |        |      |    |       |      |      |       |       |      |      |
| R        |     |        |      |    |       |      |      |       |       |      |      |
| U        |     |        |      |    |       |      |      |       |       |      |      |
| UI       |     |        |      |    |       |      |      |       |       |      |      |
| X        |     |        |      |    |       |      |      |       |       |      |      |
| Y        |     |        |      |    |       |      |      |       |       |      |      |
| ^        |     |        |      |    |       |      |      |       |       |      |      |
| h        |     |        |      |    |       |      |      |       |       |      |      |

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



**COMPANY – WIDE NONCONFORMANCE REPORT**

|                                 |                                             |                                            |                             |
|---------------------------------|---------------------------------------------|--------------------------------------------|-----------------------------|
| <b>Mo.Day Yr.</b><br>05-MAY-09  | <b>Division:</b><br>Radiochemistry          | <b>Quality Criteria:</b><br>Specifications | <b>Type:</b><br>Process     |
| <b>Instrument Type:</b><br>GFPC | <b>Test / Method:</b><br>EPA 905.0 Modified | <b>Matrix Type:</b><br>Liquid              | <b>Client Code:</b><br>CORD |
| <b>Batch ID:</b><br>863398      | <b>Sample Numbers:</b><br>See Below         |                                            |                             |

**Potentially affected work order(s)(SDG): 228075**

**Application Issues:**  
 Failed Recovery for MS/PS

|                                                                                                                                                                          |                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Specification and Requirements<br/>Nonconformance Description:</b>                                                                                                    | <b>NRG Disposition:</b> |
| 1. The matrix spike 1201829020 did not meet the recovery requirement due to the matrix of the sample. The matrix spike recovery result was similar to the previous prep. | 1. Reporting results    |

**Originator's Name:**  
 Nat Long                      05-MAY-09

**Data Validator/Group Leader:**  
 Layota Yom                      11-MAY-09

**COMPANY – WIDE NONCONFORMANCE REPORT**

|                                 |                                       |                                            |                             |
|---------------------------------|---------------------------------------|--------------------------------------------|-----------------------------|
| <b>Mo.Day Yr.</b><br>08-MAY-09  | <b>Division:</b><br>Radiochemistry    | <b>Quality Criteria:</b><br>Specifications | <b>Type:</b><br>Process     |
| <b>Instrument Type:</b><br>GFPC | <b>Test / Method:</b><br>GL-RAD-A-033 | <b>Matrix Type:</b><br>Liquid              | <b>Client Code:</b><br>CORD |
| <b>Batch ID:</b><br>861846      | <b>Sample Numbers:</b><br>See Below   |                                            |                             |

**Potentially affected work order(s)(SDG): 228075**

**Application Issues:**

RDL less than MDA

**Specification and Requirements  
 Nonconformance Description:**

**NRG Disposition:**

1. The sample and the duplicate, 228075001 and 1201825606, did not meet the required detection limit due to reduced sample aliquots. The samples were counted for 500 minutes.

1. Reporting results

**Originator's Name:**

Nat Long 08-MAY-09

**Data Validator/Group Leader:**

Layota Yom 09-MAY-09

**List of current GEL Certifications as of 12 May 2009**

| <b>State</b>              | <b>Certification</b> |
|---------------------------|----------------------|
| Arizona                   | AZ0668               |
| Arkansas                  | 88-0651              |
| CLIA                      | 42D0904046           |
| California – NELAP        | 01151CA              |
| Colorado                  | GEL                  |
| Connecticut               | PH-0169              |
| Dept. of Navy             | NFESC 413            |
| EPA Region 5              | WG-15J               |
| Florida – NELAP           | E87156               |
| Georgia                   | E87156 (FL/NELAP)    |
| Georgia DW                | 967                  |
| Hawaii                    | N/A                  |
| ISO 17025                 | 2567.01              |
| Idaho                     | SC00012              |
| Illinois – NELAP          | 200029               |
| Indiana                   | C-SC-01              |
| Kansas – NELAP            | E-10332              |
| Kentucky                  | 90129                |
| Louisiana – NELAP         | 03046                |
| Maryland                  | 270                  |
| Massachusetts             | M-SC012              |
| Nevada                    | SC00012              |
| New Jersey – NELAP        | SC002                |
| New Mexico                | FL NELAP E87156      |
| New York – NELAP          | 11501                |
| North Carolina            | 233                  |
| North Carolina DW         | 45709                |
| Oklahoma                  | 9904                 |
| Pennsylvania – NELAP      | 68-00485             |
| South Carolina            | 10120001/10120002    |
| Tennessee                 | TN 02934             |
| Texas – NELAP             | T104704235-07B-TX    |
| U.S. Dept. of Agriculture | S-52597              |
| Utah – NELAP              | GEL                  |
| Vermont                   | VT87156              |
| Virginia                  | 00151                |
| Washington                | C1641                |

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**APPENDIX C**

**Furr 16-22D WELL LOGS**



CORRECTED

Company LARAMIE ENERGY II  
Well FURR 16-22D  
Field PARACHUTE  
County GARFIELD State COLORADO

Company LARAMIE ENERGY II  
Well FURR 16-22D  
Field PARACHUTE  
County GARFIELD  
API No.: 050451261100  
Location: SURFACE HOLE:  
0310' FSL & 0295' FEL  
BOTTOM HOLE:  
0330' FSL & 0990' FEL  
Sec: 22 Twp: 07S Rge: 95W  
GROUND LEVEL Elevation 7115'  
K.B. 24 Ft. above perm. datum  
K.B.

**RECEIVED**  
DEC 11 2008  
COCOGG  
COLORADO

Other Services  
Elevation  
K.B. 7139' 7145'  
D.F. 7498' 7144'  
G.L. 7115' 7142'

| Permanent Datum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Log Measured From | Drilling Measured From | Date @ Time Logged   | Run No.                | Depth - Driller | Depth - Logger | Bottom - Logged Interval | Top - Log Interval | Max. Recorded Temp. | CEMENTING DATA | Date / Time Cemented | Primary / Squeeze | Expected | Compressive Strength | Cement Volume | Cement Type / Weight | Annulation | Fluid Type / Mud Wgt |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|------------------------|----------------------|------------------------|-----------------|----------------|--------------------------|--------------------|---------------------|----------------|----------------------|-------------------|----------|----------------------|---------------|----------------------|------------|----------------------|-----------------|--|--|--|------------------------|--|--|--|------------|-----|------|----|------|--------|------|----|-----|-----|---------|------|-----|-----|---------|------|-----|--------|------|------|--------|-----|---------|------|-------|--------|------|-------|------|-------|---------|-------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                        | 07-12-08 @ 18:45 HRS | ONE                    | 8540'           | 8484'          | 8601'                    | 4500'              | 228 DEG F           | Surface        | N/A                  | N/A               |          | psi@                 | hrs           |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                        |                      |                        |                 |                |                          |                    |                     | Protection     | String               | N/A               |          | psi@                 | hrs           |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                        |                      |                        |                 |                |                          |                    |                     | Production     | String               | N/A               |          | psi@                 | hrs           |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                        |                      |                        |                 |                |                          |                    |                     | Liner          | N/A                  |                   |          | psi@                 | hrs           |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
| <table border="1"> <thead> <tr> <th colspan="4">Borehole Record</th> <th colspan="4">Casing &amp; Tubing Record</th> </tr> <tr> <th>Run Number</th> <th>Bit</th> <th>From</th> <th>To</th> <th>Size</th> <th>Weight</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>ONE</td> <td>20"</td> <td>SURFACE</td> <td>200'</td> <td>16"</td> <td>85#</td> <td>SURFACE</td> <td>200'</td> </tr> <tr> <td>TWO</td> <td>12.25"</td> <td>200'</td> <td>854'</td> <td>12.25"</td> <td>32#</td> <td>SURFACE</td> <td>854'</td> </tr> <tr> <td>THREE</td> <td>7.875"</td> <td>854'</td> <td>8540'</td> <td>4.5"</td> <td>11.6#</td> <td>SURFACE</td> <td>8540'</td> </tr> </tbody> </table> |                   |                        |                      |                        |                 |                |                          |                    |                     |                |                      |                   |          |                      |               |                      |            |                      | Borehole Record |  |  |  | Casing & Tubing Record |  |  |  | Run Number | Bit | From | To | Size | Weight | From | To | ONE | 20" | SURFACE | 200' | 16" | 85# | SURFACE | 200' | TWO | 12.25" | 200' | 854' | 12.25" | 32# | SURFACE | 854' | THREE | 7.875" | 854' | 8540' | 4.5" | 11.6# | SURFACE | 8540' |
| Borehole Record                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                        |                      | Casing & Tubing Record |                 |                |                          |                    |                     |                |                      |                   |          |                      |               |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
| Run Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Bit               | From                   | To                   | Size                   | Weight          | From           | To                       |                    |                     |                |                      |                   |          |                      |               |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
| ONE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 20"               | SURFACE                | 200'                 | 16"                    | 85#             | SURFACE        | 200'                     |                    |                     |                |                      |                   |          |                      |               |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
| TWO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 12.25"            | 200'                   | 854'                 | 12.25"                 | 32#             | SURFACE        | 854'                     |                    |                     |                |                      |                   |          |                      |               |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |
| THREE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.875"            | 854'                   | 8540'                | 4.5"                   | 11.6#           | SURFACE        | 8540'                    |                    |                     |                |                      |                   |          |                      |               |                      |            |                      |                 |  |  |  |                        |  |  |  |            |     |      |    |      |        |      |    |     |     |         |      |     |     |         |      |     |        |      |      |        |     |         |      |       |        |      |       |      |       |         |       |

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HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

Comments

H.E.S. RESERVOIR MONITOR TOOL ELITE LOG DATED JULY 12, 2008 WAS CORRELATED ON BOTTOM TO H.E.S. ACOUSTIC CEMENT BOND LOG DATED JULY 12, 2008.

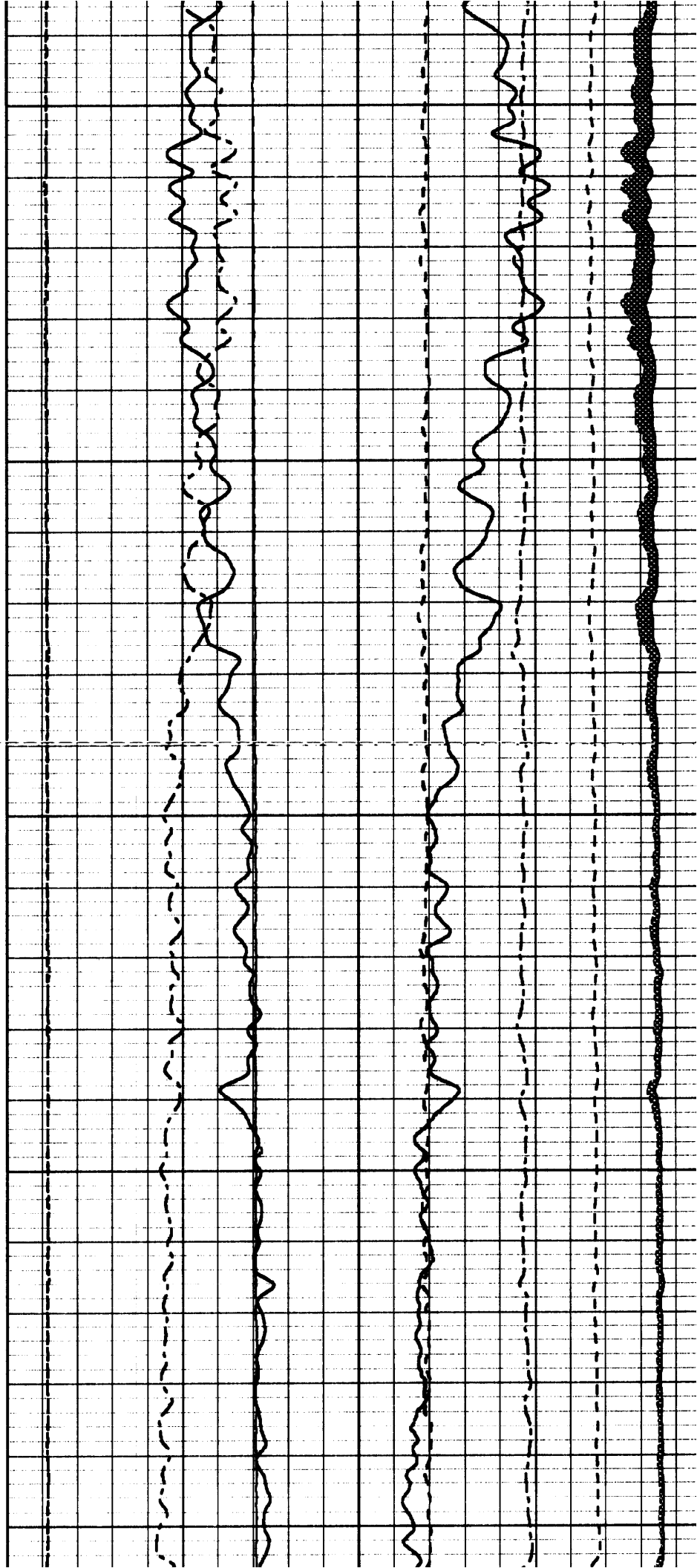
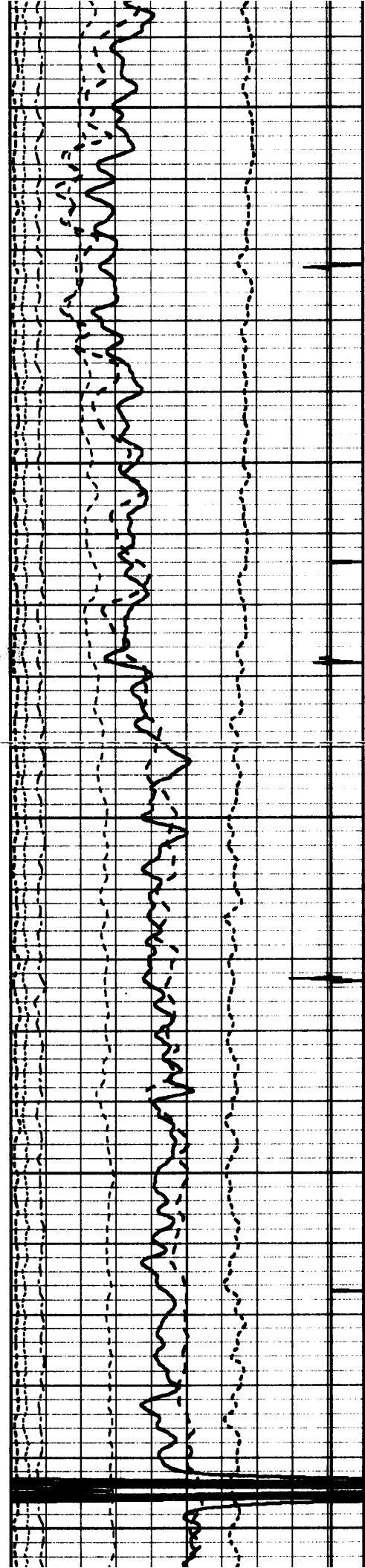
SHORT JOINTS: 8544' - 8558' & 5722' - 5735'

YOUR CREW TODAY: JIM JOSEPH, MIKE SIMMONS

\*\*\* THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES \*\*\*

8300

8400



**RECEIVED**  
DEC 11 2008  
**COGCC**

|                                                                                                            |                         |                         |                   |                |                                           |
|------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------|-------------------|----------------|-------------------------------------------|
| Company                                                                                                    | LARAMIE ENERGY II       | Company                 | LARAMIE ENERGY II | Elevation      | 7115'                                     |
| Well                                                                                                       | FURR 16-22D             | Well                    | FURR 16-22D       | K.B. D.F. G.L. | 2429' 7145'<br>7445' 7144'<br>7445' 7117' |
| Field                                                                                                      | PARACHUTE               | Field                   | PARACHUTE         | Other Services | RMT                                       |
| County                                                                                                     | GARFIELD State COLORADO | County                  | GARFIELD          | State          | COLORADO                                  |
| API No: 05045126110000<br>Location: Surface Hole : 310' FSL & 295' FEL<br>Bottom Hole: 330' FSL & 990' FEL |                         | Sec: 22 Twp: 7S Rge 95W |                   |                |                                           |

|                                   |                                 |                        |                 |        |
|-----------------------------------|---------------------------------|------------------------|-----------------|--------|
| Permanent Datum                   | GROUND LEVEL                    |                        | Elevation       | 7115'  |
| Log Measured From                 | K.B. , 24 Ft. above perm. datum |                        |                 |        |
| Drilling Measured From            | K.B.                            |                        |                 |        |
| Date @ Time Logged                | 07-14-08 @ 13:45 HRS            | Type Fluid in Hole     | FRESH WATER     |        |
| Run No.                           | ONE                             | Density of Fluid       | 8.34#           |        |
| Depth - Driller                   | 9890' 8540                      | Fluid Level            | 80'             |        |
| Depth - Logger                    | 8484'                           | Cement Top Est. Logged | 4350'           |        |
| Bottom - Logged Interval          | 8476'                           | Equipment / Location   | 10549604 / G.J. |        |
| Top - Log Interval                | SURFACE                         | Recorded by            | JAMES ZLOMKE    |        |
| Max. Recorded Temp.               | 237 DEG F                       | Witnessed by           | N/A             |        |
| <b>CEMENTING DATA</b>             |                                 |                        |                 |        |
| Date / Time Cemented              | String                          | Production             | String          | Liner  |
| Primary / Squeeze                 | N/A                             | String                 | N/A             | N/A    |
| Expected Compressive Strength     | psi@                            | hrs                    | psi@            | hrs    |
| Cement Volume                     | /                               | /                      | /               | /      |
| Cement Type / Weight              | /                               | /                      | /               | /      |
| Formulation                       | /                               | /                      | /               | /      |
| Mud Type / Mud Wgt.               | /                               | /                      | /               | /      |
| <b>Borehole Record</b>            |                                 |                        |                 |        |
| Run Number                        | Bit                             | From                   | To              | Size   |
| ONE                               | 20"                             | SURFACE                | 200'            | 16"    |
| TWO                               | 12.25"                          | 200'                   | 877'            | 8.625" |
| THREE                             | 7.875"                          | 877'                   | 8800'           | 4.5"   |
| <b>Casing &amp; Tubing Record</b> |                                 |                        |                 |        |
|                                   |                                 | Weight                 | From            | To     |
|                                   |                                 | 65#                    | SURFACE         | 200'   |
|                                   |                                 | 32#                    | SURFACE         | 877'   |
|                                   |                                 | 11.6#                  | SURFACE         | 8800'  |

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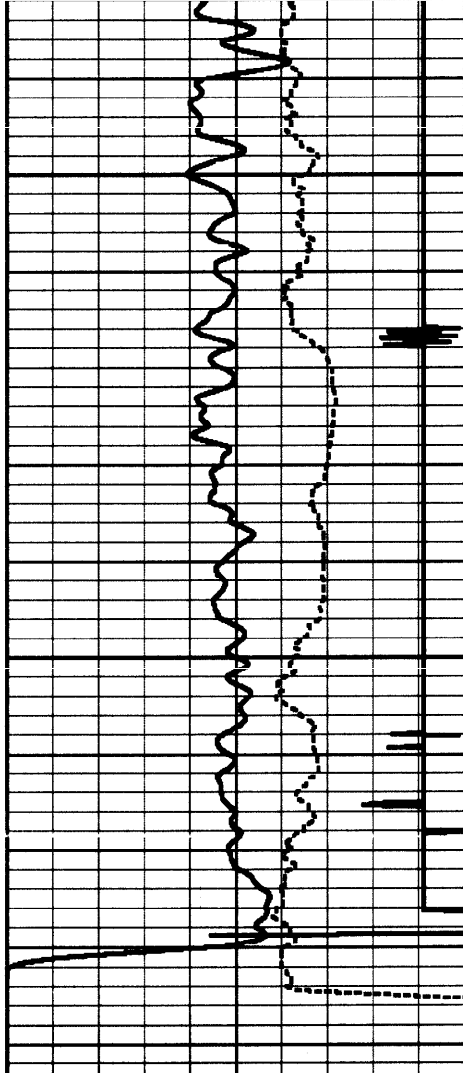
**Comments**

H.E.S. ACOUSITC CEMENT BOND LOG DATED JULY 14, 2008 IS THE PRIMARY LOG FOR THIS WELL.

SHORT JOINT: 8314' - 8328' & 6212' - 6226'

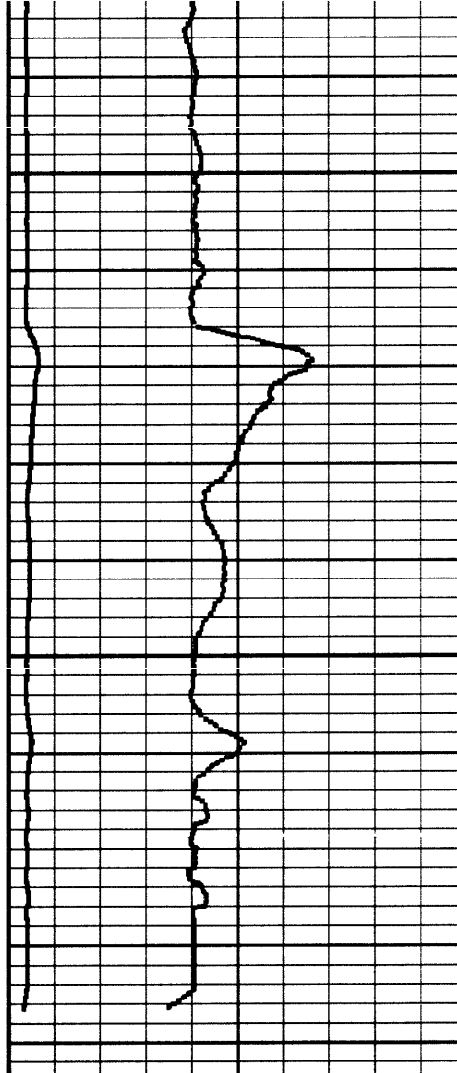
YOUR CREW TODAY: JIM JOSEPH, MIKE SIMMONS

\*\*\* THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES \*\*\*

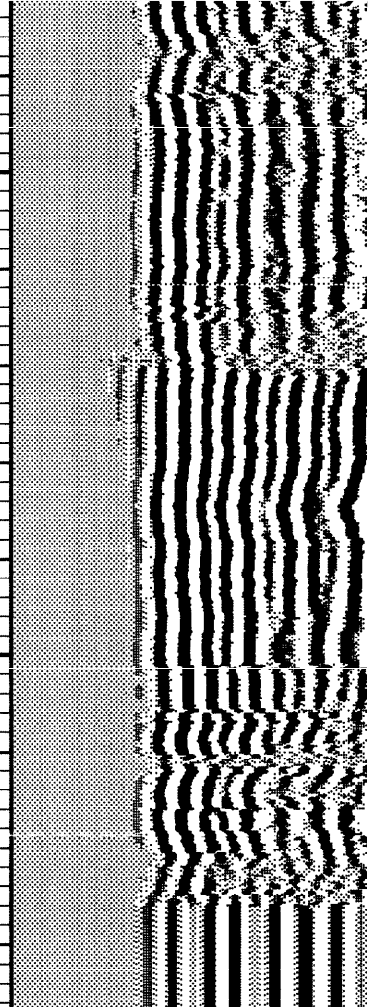


8400

|        |                    |      |
|--------|--------------------|------|
| 360    | TRAVEL TIME (usec) | 160  |
| -30000 | Collar Locator     | 3000 |
| 0      | Gamma Ray (cps)    | 200  |



|   |                    |     |
|---|--------------------|-----|
| 0 | AMPLITUDE (mV)     | 100 |
| 0 | AMP AMPLITUDE (mV) | 10  |



|     |     |
|-----|-----|
| 200 | MSG |
|-----|-----|

**HALLIBURTON**

**ACOUSTIC CEMENT BOND LOG**

REPEAT LOG SECTION

5" = 100'

**HALLIBURTON**

**ACOUSTIC CEMENT BOND LOG**

FREE PIPE LOG SECTION

5" = 100'

Database File: furr\_16\_22d\_cbl.db  
 Dataset Pathname: PARACHUTE/FURR\_9\_22/CBL/freepipe  
 Presentation Format: cbl\_main  
 Dataset Creation: Mon Jul 14 19:53:35 2008  
 Charted by: Depth in Feet scaled 1:240

|        |                        |      |
|--------|------------------------|------|
| -30000 | Collar Locator         | 3000 |
| 0      | Gamma Ray (GAPI) (cps) | 200  |
| 360    | TRAVEL TIME (usec)     | 160  |

|   |                          |     |
|---|--------------------------|-----|
| 0 | Amplified Amplitude (mV) | 10  |
| 0 | Amplitude (mV)           | 100 |

|     |                  |
|-----|------------------|
| 200 | Variable Density |
|-----|------------------|