

**Laramie Energy II, LLC  
Tier II Gas Wells  
Quarterly Production Monitoring Report  
Furr 16-22D and Furr 16-22B  
Rulison Field, Garfield County, Colorado  
April 2009**

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**June 2009**

**Project #008-2362**

# Table of Contents

Table of Contents.....	i
Tables .....	ii
Figures .....	ii
Appendices .....	ii
1.0 Introduction .....	1
1.1 Tier II Zone Monitoring Requirements .....	2
1.2 Laramie Energy II Furr 16-22B and Furr 16-22D Gas Wells .....	3
1.3 Tier II Zone Drilling Monitoring Requirements.....	4
1.4 Application for Permit to Drill and Conditions of Approval.....	5
1.5 Data Verification and Validation .....	6
2.0 Natural Gas and Produced Water Sampling .....	7
2.1 Quarterly Production Sampling - Tier II Furr 16-22D Gas Well .....	7
2.2 Natural Gas Sample Analysis .....	7
2.3 Produced Water Sample Analysis .....	8
3.0 Laboratory Analytical Results.....	10
3.1 Natural Gas Sample Results.....	10
3.2 Produced Water Sample - Radiochemistry Results .....	10
3.2.1 Tritium Results.....	10
3.2.2 Gross Alpha Radiation Results .....	11
3.2.3 Gross Beta Radiation Results.....	11
3.2.4 Strontium-90 and Technetium-99 Results.....	12
3.2.5 Chlorine-36 results .....	12
3.2.6 Gamma-Emitting Radionuclide Results .....	12
4.0 Summary.....	13
5.0 References.....	15

## **TABLES**

Table 1 – Furr Gas Well Information

Table 2 - Gas Sample Data

Table 3 – Tritium Analytical Results for Produced Water Samples

Table 4 - Radiochemistry Gas Flow Proportional Count/Liquid Scintillation/  
Total Uranium for Produced Water Samples

Table 5 - Gamma Spectroscopy Results for Produced Water Samples

## **FIGURES**

Figure 1 - Rulison Area Gas Well Locations

Figure 2 - Laramie Energy II Rulison Area Well Locations

## **APPENDICES**

Appendix A - Isotech Laboratories Inc. Sample Results

Appendix B - GEL Laboratories LLC Sample Results

Appendix C - Furr 16-22D Well Logs

## 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 of 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

<u>Well Identification:</u>	<u>Well Surface Location:</u>
• Furr 16-22B	SE ¼, SE ¼, Section 22, T7S, R95W; and
• Furr 16-22D	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 Pee Dee 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 µg/L to 9.8 µg/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

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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

Std. Dev./ (±)

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)

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).

Standard Deviation (possible range added to or subtracted from result)

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 $\pm$ 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 ( $^3\text{H}$ ) 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 propogated uncertainty (TPU), or laboratory reporting limit (RL).

GFPC - Gas Flow Proportional Counting  
LSA - Liquid Scintillation Analysis

TABLE 5

GAMMA SPECTROSCOPY RESULTS FOR PRODUCED WATER SAMPLES

Furr 16-22B and Furr 16-22D Tier II Wells

Laramie Energy II - Rulison Field, Garfield County, Colorado

	Sample Collection Point							SAMPLE ID	DATE SAMPLED	TIME SAMPLED	Gamma Emitting Radionuclides	Ac-228 Result (pCi/L)	Am-241 Result (pCi/L)	Sb-124 Result (pCi/L)	Sb-125 Result (pCi/L)	Al-26 Result (pCi/L)	Ba-133 Result (pCi/L)	Ba-140 Result (pCi/L)	Be-7 Result (pCi/L)	Bi-212 Result (pCi/L)	Bi-214 Result (pCi/L)	Ce-139 Result (pCi/L)	Ce-141 Result (pCi/L)	Ce-144 Result (pCi/L)	Cs-134 Result (pCi/L)	Cs-136 Result (pCi/L)	Cs-137 Result (pCi/L)	Cr-51 Result (pCi/L)	Co-56 Result (pCi/L)	Co-57 Result (pCi/L)	Co-58 Result (pCi/L)	Co-60 Result (pCi/L)	Eu-152 Result (pCi/L)	Eu-154 Result (pCi/L)	Eu-155 Result (pCi/L)	I-131 Result (pCi/L)	Ir-192 Result (pCi/L)	Fe-59 Result (pCi/L)	Kr-85 Result (pCi/L)		
WELL NAME/No.		Latitude/ Longitude	QTR/QTR	SEC	TWP	RNG	P.M.																																		
Furr 16-22B	Separator	39.4167 -107.9751	SE SE	22	7S	95W	6th	16-22B	12/17/2008	12:54	Qualifier	U	U	U	U	NA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
											Result	3.91	0.459	1.22	-1.04	NA	-0.923	16.6	-4.13	-3.67	4.67	0.590	-0.838	-6.11	1.19	11.4	0.177	6.72	-0.858	0.0899	-3.17	0.181	-5.17	-0.406	-7.3	NA	U	-0.128	-2.27	-1760	
											Uncertainty (±)	15.7	11.6	4.83	5.60	NA	3.29	25.1	20.1	15.9	5.23	2.03	4.96	14.1	2.41	9.13	2.18	31.3	2.24	1.78	2.47	2.39	5.88	5.55	7.85	NA	2.49	4.80	638		
											MDC	15.6	17.3	8.58	9.02	NA	4.63	44.1	34.0	25.9	8.60	3.55	8.54	22.2	4.20	17.6	3.41	52.8	3.52	2.90	3.47	3.54	9.11	9.20	11.3	NA	4.13	7.62	928		
Furr 16-22D	Separator	39.4166 -107.9751	SE SE	22	7S	95W	6th	16-22D	12/17/2008	12:13	Qualifier	U	U	U	U	NA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
											Result	6.57	10.3	0.498	-6.79	NA	-5.81	-30.8	-26	-3.97	6.13	-1.31	-1.39	-2.9	2.66	-2.31	-1.74	-19.8	1.70	0.0278	1.50	1.43	0.715	-6.94	0.437	NA	-1.18	-4.79	-2410		
											Uncertainty (±)	10.1	22.4	5.76	5.66	NA	2.79	26.3	24.1	20.4	6.34	2.20	6.31	16.2	2.31	11.2	1.90	32.4	2.33	1.92	2.25	1.97	5.84	6.17	8.57	NA	2.44	7.67	690		
											MDC	16.6	37.9	9.76	8.29	NA	3.75	36.6	35.6	29.3	9.09	3.71	8.90	25.9	4.37	18.0	2.90	52.2	4.23	3.12	4.07	3.69	9.84	8.75	14.1	NA	3.96	8.56	852		
									4/14/2009	11:00	Qualifier	U	U	U	U	NA	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
											Result	3.93	-10.6	0.632	-1.06	NA	0.308	3.77	13.1	3.89	0.00	-1.36	-0.631	17.5	-0.322	0.121	-0.996	-12.4	1.67	-0.601	-1.09	-0.177	-2.33	2.46	-9.25	NA	-0.574	0.757	-1490		
											Uncertainty (±)	9.67	10.2	4.64	5.56	NA	2.84	10.5	16.5	18.5	7.94	1.87	3.96	16.0	2.39	3.24	2.14	18.0	1.88	1.75	2.02	2.26	5.99	5.39	7.58	NA	1.87	3.70	638		
											MDC	15.5	16.5	7.82	9.28	NA	4.25	17.9	29.4	29.1	9.5	2.97	6.02	24.6	3.87	5.52	3.39	29.5	3.50	2.87	3.11	3.74	9.37	9.62	12.0	NA	3.14	6.42	930		

(Table Continued from Above)

WELL NAME/No.	Sample Collection Point	Latitude/ Longitude	QTR/QTR	SEC	TWP	RNG	P.M.	SAMPLE ID	DATE SAMPLED	TIME SAMPLED	Gamma Emitting Radionuclides	Pb-210 Result (pCi/L)	Pb-212 Result (pCi/L)	Pb-214 Result (pCi/L)	Mn-54 Result (pCi/L)	Hg-203 Result (pCi/L)	Nd-147 Result (pCi/L)	Np-239 Result (pCi/L)	Nb-94 Result (pCi/L)	Nb-95 Result (pCi/L)	K-40 Result (pCi/L)	Pa-234m Result (pCi/L)	Pm-144 Result (pCi/L)	Pm-146 Result (pCi/L)	Ra-228 Result (pCi/L)	Ru-106 Result (pCi/L)	Ag-110m Result (pCi/L)	Na-22 Result (pCi/L)	Sc-46 Result (pCi/L)	Ti-208 Result (pCi/L)	Th-227 Result (pCi/L)	Th-230 Result (pCi/L)	Th-234 Result (pCi/L)	Sn-113 Result (pCi/L)	U-235 Result (pCi/L)	U-238 Result (pCi/L)	Y-88 Result (pCi/L)	Zn-65 Result (pCi/L)	Zr-95 Result (pCi/L)		
Furr 16-22B	Separator	39.4167 -107.9751	SE SE	22	7S	95W	6th	16-22B	12/17/2008	12:54	Qualifier	U	U	U	U	U	U	U	U	U	U	NA	U	U	U	U	U	U	NA	U	NA	U	U	U	U	U	U	U	U	U	U
											Result	31.4	-3.14	3.30	0.333	2.44	-16.7	3.69	0.251	-1.36	27.2	NA	-0.00461	0.616	3.91	13.6	-1.81	-0.146	NA	-0.272	NA	802	134	-0.35	-19.5	134	-0.221	-0.378	1.72		
											Uncertainty (±)	347	4.74	6.03	1.84	2.87	58.5	12.9	1.97	3.27	34.0	NA	2.04	2.29	15.7	17.4	1.83	2.00	NA	2.57	NA	5220	128	2.97	16.4	128	2.39	4.28	4.19		
											MDC	517	6.62	8.61	3.10	5.04	97.2	21.3	3.33	5.21	27.3	NA	3.42	4.02	15.6	31.4	2.75	3.31	NA	3.92	NA	1300	140	4.84	23.2	140	3.97	7.16	7.26		
Furr 16-22D	Separator	39.4166 -107.9751	SE SE	22	7S	95W	6th	16-22D	12/17/2008	12:13	Qualifier	U	U	U	U	U	U	U	U	U	U	NA	U	U	U	U	U	U	NA	U	NA	U	U	U	U	U	U	U	U	U	U
											Result	-315	0.140	7.30	0.566	-0.0842	63.1	10.1	-2.03	3.15	82.8	NA	-1.15	-0.113	6.57	-6.7	-0.317	-2.18	NA	-0.229	NA	320	115	-0.121	10.6	115	0.554	-4.33	-0.501		
											Uncertainty (±)	648	5.38	5.73	2.14	2.90	59.3	15.1	2.06	3.29	39.1	NA	2.59	2.46	10.1	19.6	1.82	2.18	NA	2.73	NA	2430	182	3.01	20.6	182	2.54	5.20	4.21		
											MDC	1070	7.16	9.15	3.69	4.89	111	25.4	3.16	6.06	32.2	NA	3.66	4.03	16.6	32.5	3.04	3.16	NA	4.30	NA	2230	293	4.98	23.5	293	4.38	7.61	7.01		
									4/14/2009	11:00	Qualifier	U	U	UI	U	U	U	U	U	U	U	NA	U	U	U	U	U	U	NA	U	NA	U	U	U	U	U	U	U	U	U	U
											Result	-190	0.756	0.00	1.22	1.25	10.4	10.2	0.598	-1.38	27.8	NA	0.421	-0.895	3.93	-21.9	2.41	0.825	NA	0.916	NA	910	-2.78	-0.26	1.04	-2.78	0.687	-6.48	0.509		
											Uncertainty (±)	240	4.68	7.21	2.00	2.13	20.0	12.8	1.92	2.84	47.5	NA	2.04	2.45	9.67	21.7	1.99	1.91	NA	2.61	NA	5900	110	2.50	17.0	110	2.17	5.04	3.95		
											MDC	357	7.16	9.00	3.62	3.78	34.8	22.2	3.27	3.64	32.3	NA	3.44	4.01	15.5	31.0	3.65	3.41	NA	4.26	NA	1170	158	4.22	23.8	158	3.88	7.36	6.59		

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.

Samples were all analyzed by GEL Laboratories, LLC in Charleston, SC

Four Rows:

- 1) Qualifier
- The laboratory data qualifiers are designated by one or two letters to provide information about the reported results.
- 2) Result
- Results are the level of activity reported for the individual produced water sample.
- 3) Uncertainty (±)
- The margin of error, or range of activity, when added to the result.
- 4) MDC
- The laboratory minimum detectable concentration (MDC) for the analytical method.
- If the result is less than the reporting limits the radionuclide is reported as 'not detected' (U).

The qualifiers used in the laboratory reports are listed below:

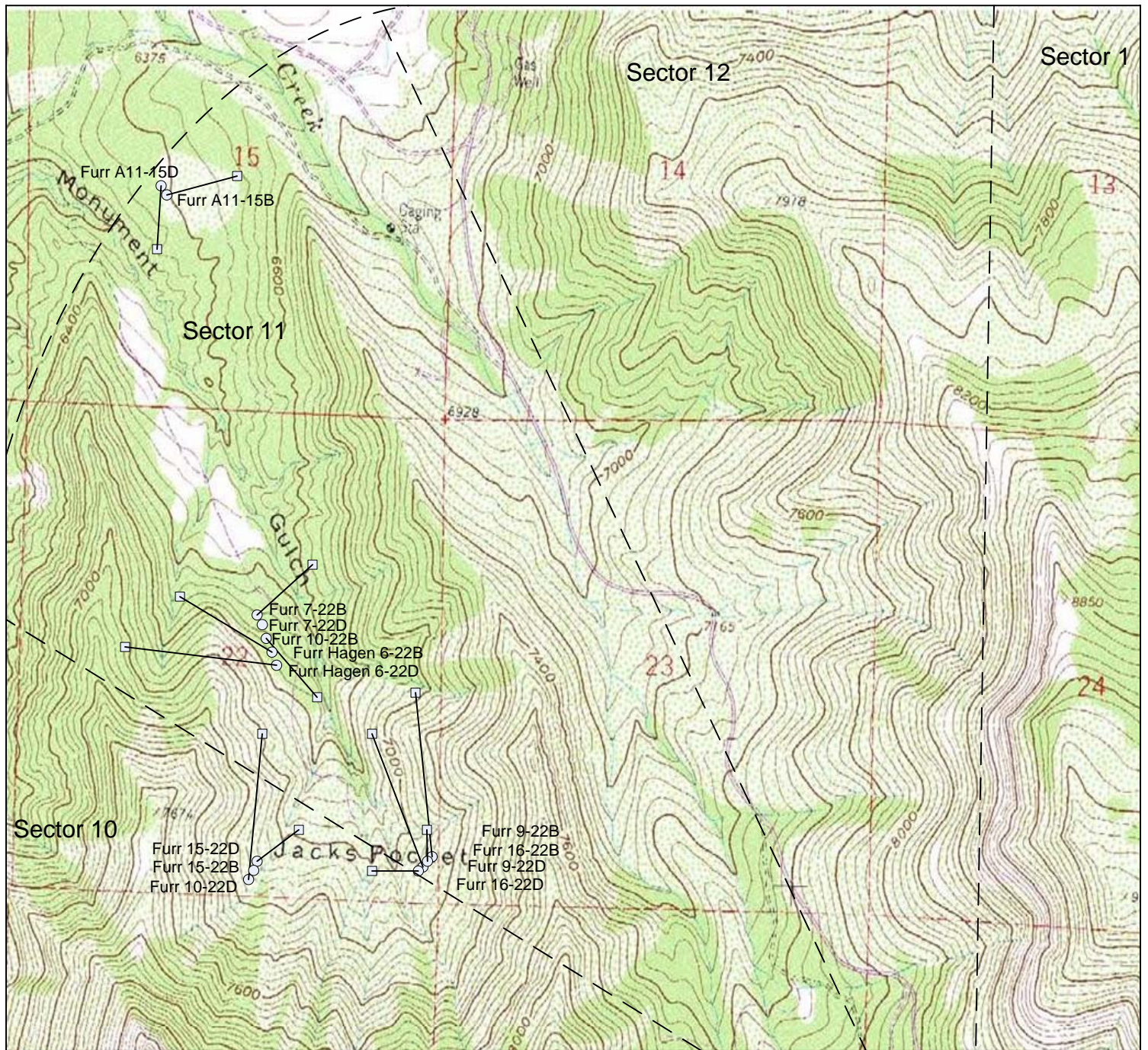
U - Result is less than the sample specific Minimum Detectable Concentration (MDC) or Minimum Detectable Activity (MDA), Method Detection Limit (MDL), Limits of Detection (LOD), total propagated uncertainty (TPU), or laboratory reporting limit (RL).  
UI - Gamma Spectroscopy Uncertain Identification

Note: Values shown in blue represent a detection. The gamma emitting radionuclides that were detected are naturally occurring potassium-40 (<sup>40</sup>K), lead-212 (<sup>212</sup>Pb), lead-214 (<sup>214</sup>Pb), and bismuth-214 (<sup>214</sup>Bi) in a few of the samples.







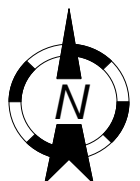


### Legend:

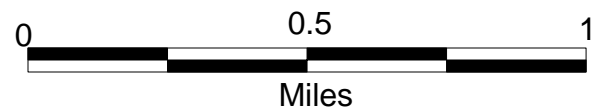
- Vertical Gas Well Location  
Furr 7-22D
- Directional Gas Well Location  
Furr 16-22B  
(square denotes approximate bottom hole location)

URS Rulison SAP  
Sector Line

Rulison 3-Mile Radius



Approximate Scale



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

## Laramie Energy II Rulison Area Gas Wells

**OLSSON**  
ASSOCIATES

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

FIGURE

2

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**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 ----- &lt; 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:

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**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

**Sample Analysis Requested** <sup>(5)</sup> (Fill in the number of containers for each test)



[illegible][illegible]

Number of	Comments
1	Note: extra sample is

Page 2 of 21

<b>Remarks:</b> Are there any known hazards applicable to these samples? If so, please list the hazards		<b>Sample Collection Time Zone</b>
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### 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 #:	

- |                            |    |
|----------------------------|----|
| For Lab Receiving Use Only |    |
| Custody Seal Intact?       |    |
| YES                        | NO |
| Cooler Temp:               |    |
| 10                         | C  |

**PINK = CLIENT**



## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <u>CORD</u>			SDG/ARCOC/Work Order: <u>228075</u>		
Received By: <u>Ricky Alba</u>			Date Received: <u>4/16/09</u>		
Suspected Hazard Information		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 HNO<sub>3</sub> 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

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~~~~~

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  
Sample ID: 228075001  
Matrix: Water  
Collect Date: 14-APR-09 11:00  
Receive Date: 16-APR-09  
Collector: Client

Project: CORD00100  
Client ID: CORD001

| Parameter                                      | Qualifier | Result | Uncertainty | DL   | RL   | Units | DF | Analyst | Date | 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 |    |         |      |      |       |        |
| 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 |    |         |      |      |       |        |

# 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  
Sample ID: 228075001

Project: CORD00100  
Client ID: CORD001

| Parameter                                      | Qualifier | Result | Uncertainty | DL    | RL   | Units | DF | Analyst | Date     | 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                         |                  |

# 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  
Sample ID: 228075001

Project: CORD00100  
Client ID: CORD001

| Parameter                  | Qualifier                               | Result | Uncertainty | DL        | RL                | Units | DF | Analyst | Date | Time | Batch      | Method |
|----------------------------|-----------------------------------------|--------|-------------|-----------|-------------------|-------|----|---------|------|------|------------|--------|
| Surrogate/Tracer recovery  | Test                                    | Result | Nominal     | Recovery% | Acceptable Limits |       |    |         |      |      |            |        |
| 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

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

## 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  |
|----------------|-----------|---------|------|---------|-------|----------|------|-------|-------|----------|-------|
| Rad Gamma Spec |           |         |      |         |       |          |      |       |       |          |       |
| 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   |       |          |       |

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 228075

Page 2 of 10

| 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

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

## QC Summary

Workorder: 228075

Page 3 of 10

| Parmname                       | NOM  | Sample           | Qual | QC                | Units | RPD% | REC% | Range      | Anlst | Date     | Time  |
|--------------------------------|------|------------------|------|-------------------|-------|------|------|------------|-------|----------|-------|
| Rad Gamma Spec<br>Batch 859857 |      |                  |      |                   |       |      |      |            |       |          |       |
| Thallium-208                   | U    | +/-1.91<br>0.916 | UI   | +/-2.01<br>0.00   | pCi/L | 151  |      | N/A        | KXG3  | 04/21/09 | 14:09 |
| Thorium-230                    | U    | +/-2.61<br>910   | U    | +/-3.45<br>-256   | pCi/L | 357  |      | N/A        |       |          |       |
| Thorium-234                    | U    | +/-5900<br>-2.78 | U    | +/-1840<br>-132   | pCi/L | 192  |      | N/A        |       |          |       |
| Tin-113                        | U    | +/-110<br>-0.26  | U    | +/-110<br>-0.877  | pCi/L | 108  |      | N/A        |       |          |       |
| Uranium-235                    | U    | +/-2.50<br>1.04  | U    | +/-2.42<br>-3.89  | pCi/L | 346  |      | N/A        |       |          |       |
| Uranium-238                    | U    | +/-17.0<br>-2.78 | U    | +/-14.4<br>-132   | pCi/L | 192  |      | N/A        |       |          |       |
| Yttrium-88                     | U    | +/-110<br>0.687  | U    | +/-110<br>1.31    | pCi/L | 62.7 |      | N/A        |       |          |       |
| Zinc-65                        | U    | +/-2.17<br>-6.48 | U    | +/-2.27<br>-0.981 | pCi/L | 147  |      | N/A        |       |          |       |
| Zirconium-95                   | U    | +/-5.04<br>0.509 | U    | +/-4.18<br>-0.456 | pCi/L | 3700 |      | N/A        |       |          |       |
| QC1201821063<br>Actinium-228   | LCS  | +/-3.95          |      | +/-3.42<br>16.4   | pCi/L |      |      |            |       | 04/21/09 | 14:10 |
| Americium-241                  | 1240 |                  | U    | +/-35.6<br>1400   | pCi/L |      | 113  | (75%-125%) |       |          |       |
| Antimony-124                   |      |                  | U    | +/-166<br>-0.606  | pCi/L |      |      |            |       |          |       |
| Antimony-125                   |      |                  | U    | +/-11.9<br>0.448  | pCi/L |      |      |            |       |          |       |
| Barium-133                     |      |                  | U    | +/-21.8<br>-0.643 | pCi/L |      |      |            |       |          |       |
| Barium-140                     |      |                  | U    | +/-9.45<br>13.1   | pCi/L |      |      |            |       |          |       |
| Beryllium-7                    |      |                  | U    | +/-29.9<br>9.88   | pCi/L |      |      |            |       |          |       |
| Bismuth-212                    |      |                  | U    | +/-70.4<br>67.3   | pCi/L |      |      |            |       |          |       |
| Bismuth-214                    |      |                  | U    | +/-70.4<br>-0.234 | pCi/L |      |      |            |       |          |       |
| Cerium-139                     |      |                  | U    | +/-13.9<br>6.63   | pCi/L |      |      |            |       |          |       |
| Cerium-141                     |      |                  | U    | +/-6.79<br>-2.17  | pCi/L |      |      |            |       |          |       |
| Cerium-144                     |      |                  | U    | +/-10.7<br>-3.23  | pCi/L |      |      |            |       |          |       |
|                                |      |                  |      | +/-49.7           |       |      |      |            |       |          |       |

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 228075

Page 4 of 10

| Parmname                       | NOM | Sample | Qual | QC                | Units | RPD% | REC% | Range      | Anlst | Date     | Time  |
|--------------------------------|-----|--------|------|-------------------|-------|------|------|------------|-------|----------|-------|
| Rad Gamma Spec<br>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 |      |      |            |       |          |       |

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 228075

Page 5 of 10

| Parmname       | NOM    | Sample | Qual | QC                | Units | RPD% | REC% | Range | Anlst | Date     | Time  |
|----------------|--------|--------|------|-------------------|-------|------|------|-------|-------|----------|-------|
| Rad Gamma Spec |        |        |      |                   |       |      |      |       |       |          |       |
| 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           |       |      |      |       |       |          |       |

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 228075

Page 6 of 10

| Parmname                       | NOM | Sample | Qual | QC                | Units | RPD% | REC% | Range | Anlst | Date     | Time  |
|--------------------------------|-----|--------|------|-------------------|-------|------|------|-------|-------|----------|-------|
| Rad Gamma Spec<br>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 |      |      |       |       |          |       |

# GEL LABORATORIES LLC

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

## QC Summary

Workorder: 228075

Page 7 of 10

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

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## QC Summary

Workorder: 228075

Page 8 of 10

| Parmname              | NOM       | Sample | Qual     | QC                          | Units    | RPD%  | REC% | Range       | Anlst      | Date     | Time           |
|-----------------------|-----------|--------|----------|-----------------------------|----------|-------|------|-------------|------------|----------|----------------|
| <b>Rad Gamma Spec</b> |           |        |          |                             |          |       |      |             |            |          |                |
| Batch                 | 859857    |        |          |                             |          |       |      |             |            |          |                |
| Zirconium-95          |           |        | U        | +/-4.06<br>-1.51<br>+/-3.07 | pCi/L    |       |      |             | KXG3       | 04/21/09 | 09:15          |
| <b>Rad Gas Flow</b>   |           |        |          |                             |          |       |      |             |            |          |                |
| Batch                 | 859776    |        |          |                             |          |       |      |             |            |          |                |
| QC1201820810          | 228134001 | DUP    |          |                             |          |       |      |             |            |          |                |
| Alpha                 |           | U      | -0.588   | U                           | -0.00173 | pCi/L | 0.00 |             | N/A        | DXF3     | 04/21/09 08:19 |
|                       |           |        | +/-0.741 |                             | +/-1.65  |       |      |             |            |          |                |
| Beta                  |           |        | 10.3     |                             | 12.8     | pCi/L | 21.6 | (0% - 100%) |            |          |                |
|                       |           |        | +/-1.93  |                             | +/-2.51  |       |      |             |            |          |                |
| 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   |                             | 267      | pCi/L |      | 114         | (75%-125%) |          | 04/21/09 08:19 |
|                       |           |        | +/-0.741 |                             | +/-29.7  |       |      |             |            |          |                |
| Beta                  | 784       |        | 10.3     |                             | 814      | pCi/L |      | 102         | (75%-125%) |          |                |
|                       |           |        | +/-1.93  |                             | +/-32.7  |       |      |             |            |          |                |
| QC1201820812          | 228134001 | MSD    |          |                             |          |       |      |             |            |          |                |
| Alpha                 | 234       | U      | -0.588   |                             | 271      | pCi/L | 1.44 | 116         | (0%-20%)   |          | 04/21/09 08:19 |
|                       |           |        | +/-0.741 |                             | +/-29.1  |       |      |             |            |          |                |
| Beta                  | 784       |        | 10.3     |                             | 830      | pCi/L | 2.05 | 105         | (0%-20%)   |          |                |
|                       |           |        | +/-1.93  |                             | +/-32.6  |       |      |             |            |          |                |
| Batch                 | 861846    |        |          |                             |          |       |      |             |            |          |                |
| QC1201825606          | 228075001 | DUP    |          |                             |          |       |      |             |            |          |                |
| Chlorine-36           |           | U      | 47.7     | U                           | 65.6     | pCi/L | 0.00 |             | N/A        | AF1      | 05/01/09 08:37 |
|                       |           |        | +/-72.7  |                             | +/-64.7  |       |      |             |            |          |                |
| 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     |                             | 49000    | pCi/L |      | 102         | (75%-125%) |          | 05/01/09 08:37 |
|                       |           |        | +/-72.7  |                             | +/-776   |       |      |             |            |          |                |
| Batch                 | 863398    |        |          |                             |          |       |      |             |            |          |                |
| QC1201829019          | 228075001 | DUP    |          |                             |          |       |      |             |            |          |                |

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## QC Summary

Workorder: 228075

Page 9 of 10

| 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     | 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     | 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

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## QC Summary

Workorder: 228075

Page 10 of 10

| Parmname | NOM                                                                                                                            | Sample | Qual | QC | Units | RPD% | REC% | Range | Anlst | Date | Time |
|----------|--------------------------------------------------------------------------------------------------------------------------------|--------|------|----|-------|------|------|-------|-------|------|------|
| <        | Result is less than value reported                                                                                             |        |      |    |       |      |      |       |       |      |      |
| >        | Result is greater than value reported                                                                                          |        |      |    |       |      |      |       |       |      |      |
| A        | The TIC is a suspected aldol-condensation product                                                                              |        |      |    |       |      |      |       |       |      |      |
| B        | For General Chemistry and Organic analysis the target analyte was detected in the associated blank.                            |        |      |    |       |      |      |       |       |      |      |
| BD       | Results are either below the MDC or tracer recovery is low                                                                     |        |      |    |       |      |      |       |       |      |      |
| C        | Analyte has been confirmed by GC/MS analysis                                                                                   |        |      |    |       |      |      |       |       |      |      |
| D        | Results are reported from a diluted aliquot of the sample                                                                      |        |      |    |       |      |      |       |       |      |      |
| F        | Estimated Value                                                                                                                |        |      |    |       |      |      |       |       |      |      |
| H        | Analytical holding time was exceeded                                                                                           |        |      |    |       |      |      |       |       |      |      |
| J        | Value is estimated                                                                                                             |        |      |    |       |      |      |       |       |      |      |
| M        | M if above MDC and less than LLD                                                                                               |        |      |    |       |      |      |       |       |      |      |
| M        | Matrix Related Failure                                                                                                         |        |      |    |       |      |      |       |       |      |      |
| N/A      | RPD or %Recovery limits do not apply.                                                                                          |        |      |    |       |      |      |       |       |      |      |
| ND       | Analyte concentration is not detected above the detection limit                                                                |        |      |    |       |      |      |       |       |      |      |
| NJ       | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier                                     |        |      |    |       |      |      |       |       |      |      |
| R        | Sample results are rejected                                                                                                    |        |      |    |       |      |      |       |       |      |      |
| U        | Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.                                                         |        |      |    |       |      |      |       |       |      |      |
| UI       | Gamma Spectroscopy--Uncertain identification                                                                                   |        |      |    |       |      |      |       |       |      |      |
| X        | Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier                                     |        |      |    |       |      |      |       |       |      |      |
| Y        | QC Samples were not spiked with this compound                                                                                  |        |      |    |       |      |      |       |       |      |      |
| ^        | RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry. |        |      |    |       |      |      |       |       |      |      |
| h        | Preparation or preservation holding time was exceeded                                                                          |        |      |    |       |      |      |       |       |      |      |

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         |                                            |                             |
| <b>Potentially affected work order(s)(SDG): 228075</b><br><br><b>Application Issues:</b><br>Failed Recovery for MS/PS                                                    |                                             |                                            |                             |
| <b>Specification and Requirements</b>                                                                                                                                    |                                             | <b>NRG Disposition:</b>                    |                             |
| <b>Nonconformance Description:</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   |                                            |                             |
| <b>Potentially affected work order(s)(SDG): 228075</b><br><br><b>Application Issues:</b><br>RDL less than MDA                                                                                                            |                                       |                                            |                             |
| <b>Specification and Requirements</b>                                                                                                                                                                                    |                                       | <b>NRG Disposition:</b>                    |                             |
| <b>Nonconformance Description:</b><br><br>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                |

---

## **APPENDIX C**

### **Furr 16-22D WELL LOGS**

# HALLIBURTON

01370796

## RESERVOIR MONITOR TOOL ELITE

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 State COLORADO

API No.: 050451261100 Serv #: 6028025  
Location: SURFACE HOLE:  
0310' FSL & 0295' FEL  
BOTTOM HOLE:  
0330' FSL & 0990' FEL  
CBL

Sec: 22 Twp: 07S Rge: 95W

GROUND LEVEL Elevation 7115'  
K.B. 24 Ft. above perm. datum  
K.B.  
K.B.

DATE @ Time Logged 07-12-08 @ 18:45 HRS  
Run No. ONE  
Depth - Driller 8540'  
Depth - Logger 8484'  
Bottom - Logged Interval 8601'  
Top - Log Interval 4500'  
Max. Recorded Temp. 228 DEG F  
CEMENTING DATA  
Date / Time Cemented  
Primary / Squeeze  
Expected  
Compressive Strength  
Cement Volume  
Cement Type / Weight  
Cementation  
Fluid Type / Mud Wgt

Type Fluid in Hole  
Density of Fluid  
Fluid Level  
Cement Top Est. Logged  
Equipment / Location  
Recorded by  
Witnessed by  
Protection  
String  
String  
Production  
String  
Liner

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

Other Services

RECEIVED  
DEC 11 2008  
COCOGG  
COLORADO

| 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.

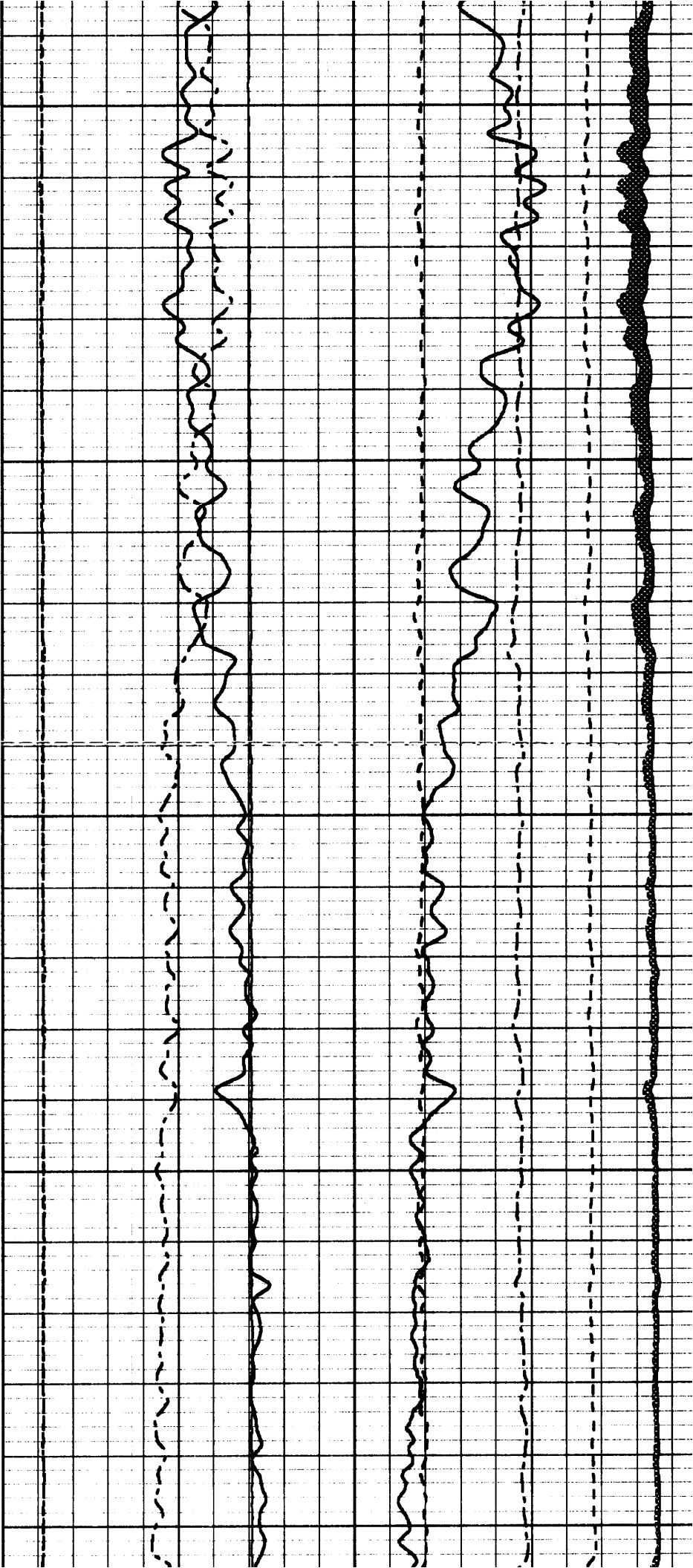
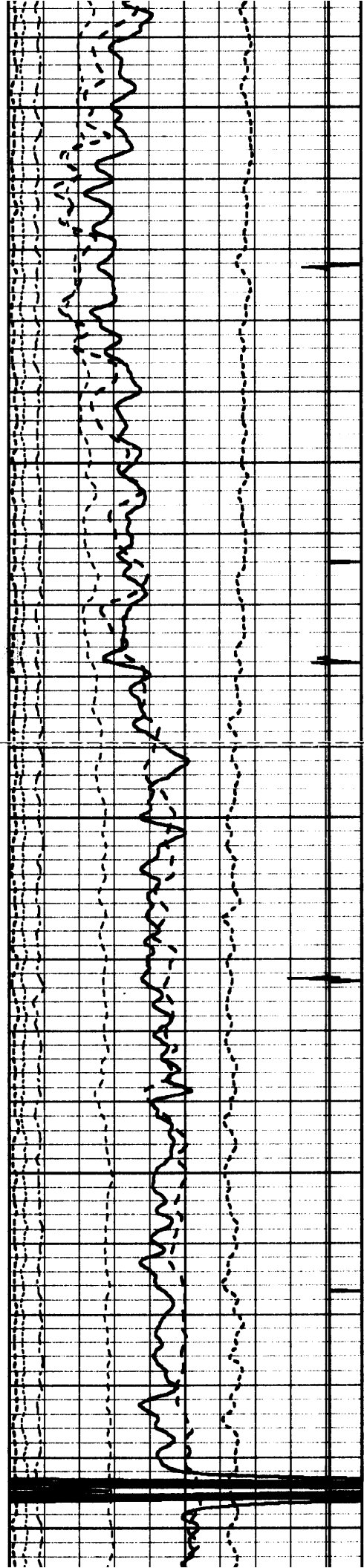
SHORT JOINTS: 8544' - 8558' & 5722' - 5735'

YOUR CREW TODAY: JIM JOSEPH, MIKE SIMMONS

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

8300

8400



**<<< Fold Here >>>**

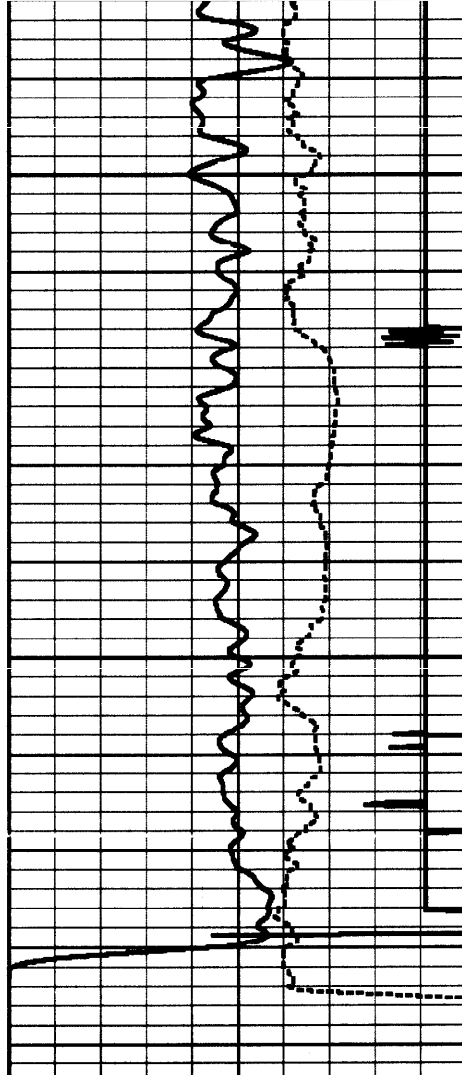
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR 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.

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

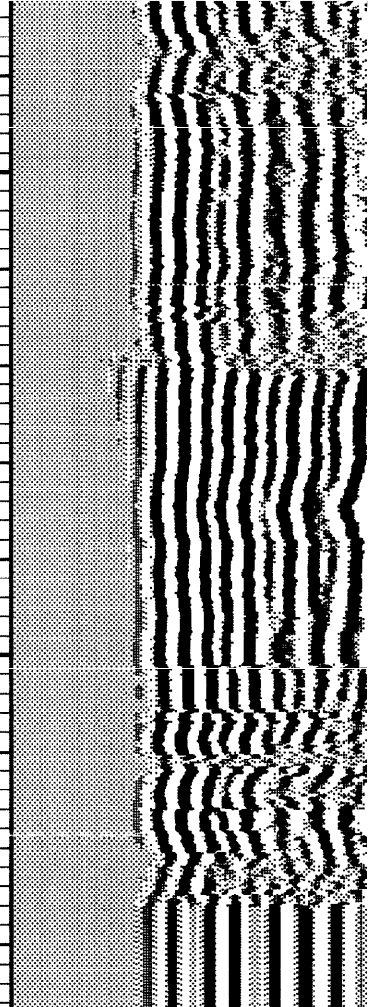
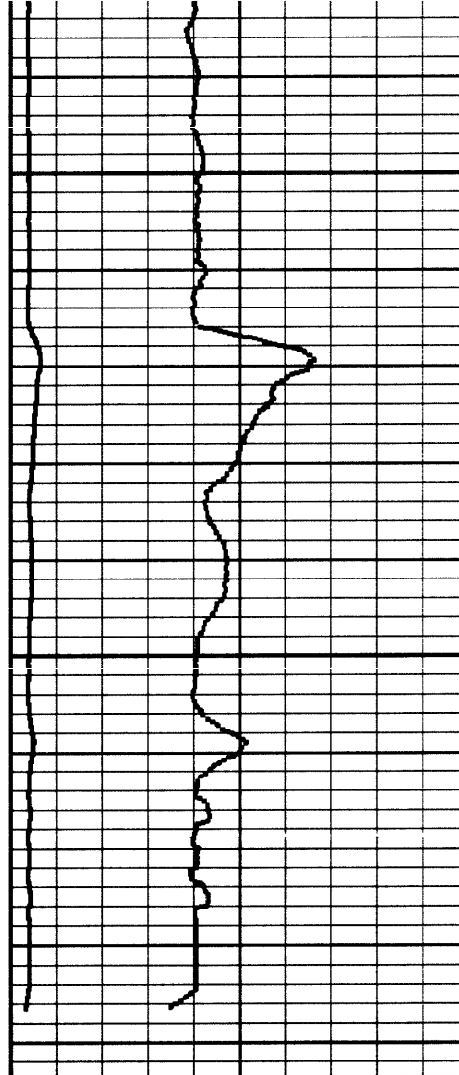
SHORT JOINT: 8314' - 8328' & 6212' - 6226'

**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 |
|-----|------------------|