

Letter Report

**Rio Blanco: Sampling of Proximate Producing
Natural Gas Wells**

prepared by

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submitted to

Nevada Site Office
National Nuclear Security Administration
U.S. Department of Energy
Las Vegas, Nevada

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Two wells proximate to the Rio Blanco gas stimulation test were sampled and the gas analyzed. Sample wells were selected based on inclusion in the Sulphur Creek production field, current gas production status and proximity to the Rio Blanco test (Table 1). Information on the location and production of oil and gas was obtained from the Colorado Oil and Gas Commission Geographic Information System (COGIS).

Table 1. Producing wells within 5,000 meters of Ground Zero. Sample wells are highlighted.

Field	Well	Easting (UTM)	Northing (UTM)
FAWN CREEK	1 PAUL BURTON 'A'	724237	4403943
	398-22-1 BOIES	724548	4405886
SULPHUR CREEK	298-32-1 GOVERNMENT	720869	4411600
	298-33-1 GOVERNMENT	722499	4411492
	398-10-1 GOVERNMENT (FEDERAL)	724700	4408601
	398-17-4 GOVERNMENT	721595	4407211
	MHF-3 GOVERNMENT-FEDERAL	726195	4409078

The two closest wells meeting these criteria, Government-Federal #MHF-3 and Government #398-17-4, were selected for sampling (See Figure 1). Both wells are operated by Riata Energy, Inc. Sonny Busch, the Riata field representative provided sampling support. The wells were sampled on January 29, 2004, at 3:00 pm and 3:25 pm (MST). Two new 20-pound steel propane bottles were used to obtain the samples. Prior to sampling, each container was filled with wellhead gas and purged three times to ensure representative samples. The samples were obtained directly at the wellheads with the pressure being limited to less than 30 psi. This low pressure was specified by the sampling instructions provided by the analytical laboratory.

The collected samples were sent to Isotech Laboratories, 1308 Parkland Court, Champaign, IL 61821, for compositional analysis, $\delta^{13}\text{C}$ analysis of methane, ^{14}C and ^3H analysis of methane by beta spectrometry. The results are shown in the analysis report (Attachment A) provided by Isotech Laboratories.

Tritium has a half-life of 12.41 years, thus approximately 83 percent of the tritium resulting from testing has decayed. Gas production subsequent to the stimulation test further reduced the mass of tritium remaining in the subsurface. The samples from Government-Federal #MHF-3 and Government #398-17-4 did not contain tritium above the detection limit concentrations of 10 and 12.4 tritium units (TU), respectively. One tritium unit equals 1 tritium atom per 10^{18} hydrogen atoms or approximately 0.1183 becquerels per liter of water (Bq/L). Expressed as picocuries per liter, 1 TU equals approximately 3.19 pCi/L of liquid water. The analytical results from the gas production wells show no impact from the Rio Blanco nuclear test.

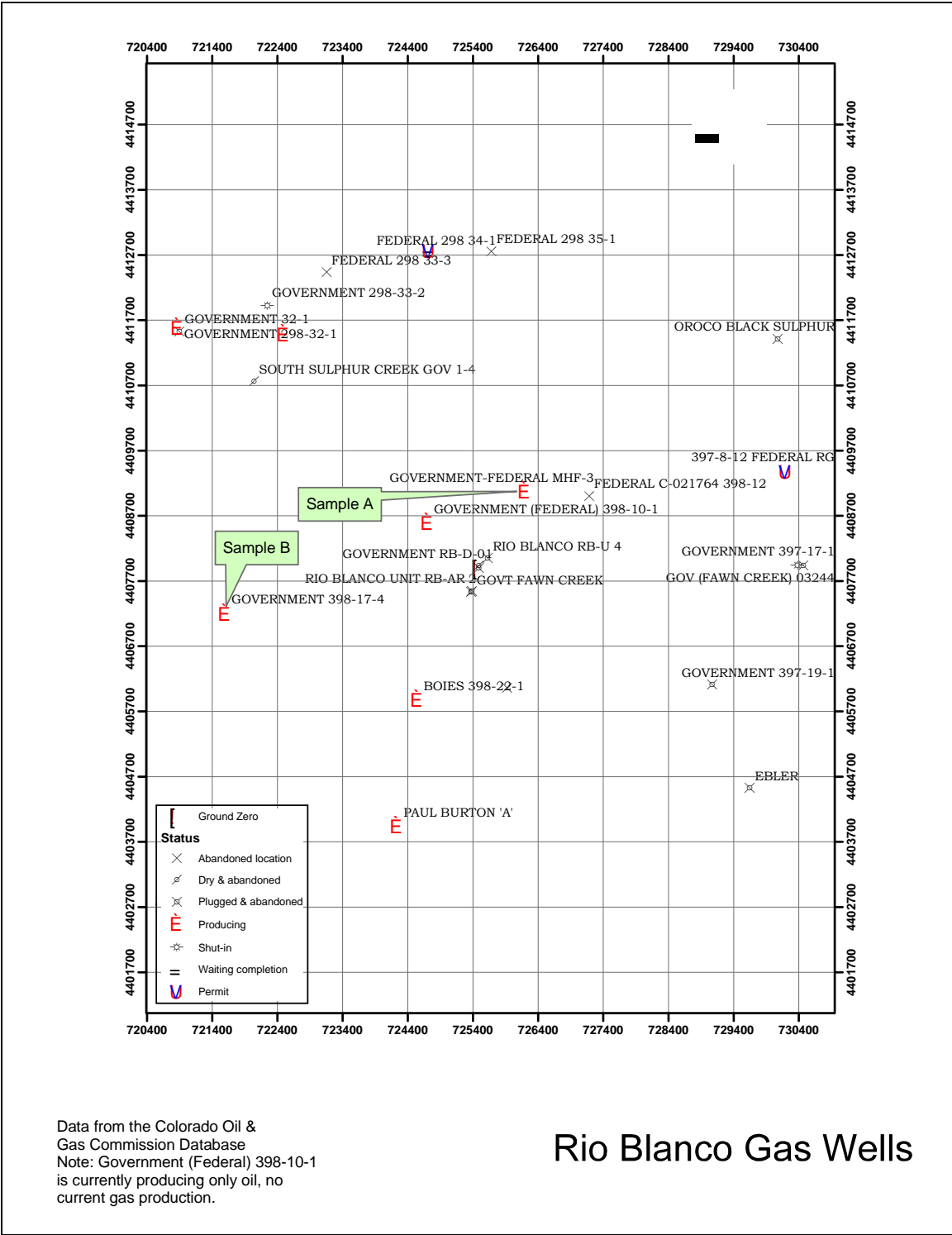
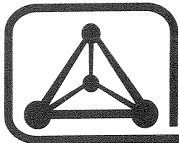


Figure 1. Well locations.

ATTACHMENT A

Isotech Laboratories Report



ISOTECH®

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Isotech Laboratories, Inc. 1308 Parkland Court Champaign, IL 61821-1826 Telephone 217/398-3490 FAX 217/398-3493

April 13, 2004

Jenny Chapman
Desert Research Institute
755 East Flamingo
Las Vegas, NV 89119

Dear Jenny:

Enclosed are the analysis reports for the 2 gas samples recently submitted for radiocarbon and tritium analysis. These samples were assigned to Isotech job number 4827. These are the same data that were emailed to you and Craig Shirley earlier. If you have any questions concerning this data, or if there is anything else we can do for you, please do not hesitate to contact us.

We will hold the samples until 05/01/04 in case you should want any additional analyses carried out and will then dispose of the remaining sample material. The invoice for this work is being sent to the Controller's Office in Reno. Thank you for choosing Isotech for your analysis needs, we appreciate your business.

Sincerely,

Steven R. Pelphey
Laboratory Manager

Enclosure

SRP:cw

CJ040412.doc


ANALYSIS REPORT

Lab #: 64175 Job #: 4827
 Sample Name/Number: Sample A
 Company: Desert Research Institute
 Date Sampled: 1/29/2004
 Container: Steel tank
 Field/Site Name: Gov-Fed-MHF #3
 Location:
 Formation/Depth:
 Sampling Point:
 Date Received: 2/25/2004 Date Reported: 3/31/2004

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 -----	0.0040				
Hydrogen -----	0.0025				
Argon -----	0.226				
Oxygen -----	4.92				
Nitrogen -----	19.91				
Carbon Dioxide -----	0.75				
Methane -----	70.79	-36.70		< 0.30	< 10.0
Ethane -----	2.30				
Ethylene -----	nd				
Propane -----	0.512				
Iso-butane -----	0.132				
N-butane -----	0.123				
Iso-pentane -----	0.0603				
N-pentane -----	0.0475				
Hexanes + -----	0.222				

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 795
 Specific gravity, calculated: 0.700

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%

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ANALYSIS REPORT

Lab #: 64176 Job #: 4827
 Sample Name/Number: Sample B
 Company: Desert Research Institute
 Date Sampled: 1/29/2004
 Container: Steel tank
 Field/Site Name: Gov 398-17-4
 Location:
 Formation/Depth:
 Sampling Point:
 Date Received: 2/25/2004 Date Reported: 3/31/2004

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 -----	0.0015				
Hydrogen -----	0.0020				
Argon -----	0.147				
Oxygen -----	3.31				
Nitrogen -----	13.07				
Carbon Dioxide -----	5.29				
Methane -----	67.14	-40.55		< 0.40	< 12.4
Ethane -----	6.96				
Ethylene -----	nd				
Propane -----	2.07				
Iso-butane -----	0.468				
N-butane -----	0.470				
Iso-pentane -----	0.213				
N-pentane -----	0.176				
Hexanes + -----	0.683				

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 936
 Specific gravity, calculated: 0.770

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%


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