

Tim Murphy, Chief  
Bureau of Federal Facilities  
Division of Environmental Protection  
2030 E. Flamingo Road, Suite 230  
Las Vegas, NV 89119-0818

SUBMITTAL OF THE FINAL CLOSURE LETTER REPORT FOR CORRECTIVE ACTION  
UNIT 496: BURIED ROCKET SITE - ANTELOPE LAKE (TTR), REVISION 0, MAY 2007,  
DOE/NV/25946--163

This letter serves as the Closure Letter Report for Corrective Action Unit (CAU) 496, Buried  
Rocket Site - Antelope Lake

**Background**

A Streamlined Approach for Environmental Restoration (SAFER) Plan for investigation and closure of CAU 496, Corrective Action Site (CAS) TA-55-008-TAAL (Buried Rocket), at the Tonopah Test Range (TTR), was approved by the Nevada Department of Environmental Protection (NDEP) on July 21, 2004. Approval to transfer CAS TA-55-008-TAAL from CAU 496 to CAU 4000 (No Further Action Sites) was approved by NDEP on December 21, 2005, based on the assumption that the rocket did not present any environmental concern. The approval letter included the following condition: "NDEP understands, from the NNSA/NSO letter dated November 30, 2005, that a search will be conducted for the rocket during the planned characterization of other sites at the Tonopah Test Range and, if found, the rocket will be removed as a housekeeping measure." NDEP and U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office personnel located the rocket on Mid Lake during a site visit to TTR, and a request to transfer CAS TA-55-008-TAAL from CAU 4000 back to CAU 496 was approved by NDEP on September 11, 2006.

CAS TA-55-008-TAAL was added to the *Federal Facility Agreement and Consent Order* of 1996, based on an interview with a retired TTR worker in 1993. The original interview documented that a rocket was launched from Area 9 to Antelope Lake and was never recovered due to the high frequency of rocket tests being conducted during this timeframe. The interviewee recalled the rocket being an M-55 or N-55 (the M-50 "Honest John" rocket was used extensively at TTR from the 1960s to early 1980s). A review of previously conducted interviews with former TTR personnel indicated that the interviewees confused information from several sites.

The location of the CAU 496 rocket on Mid Lake is directly south of the TTR rocket launch facility in Area 9 and is consistent with information gathered on the lost rocket during recent

interviews. Most pertinently, an interview in 2005 with a former TTR range manager recalled a lost rocket that possibly contained a depleted uranium ballast in an inert warhead. The interviewee confirmed that the last tracking coordinate for the rocket indicated it was lost in an area south of Area 9 near the TTR range coordinates  $X = 6,614.57$  feet (ft) and  $Y = -20,508.79$  ft. These coordinates correspond to a location approximately 2,295 ft northeast of the Mid Target, on Mid Lake. CAS TA-55-008-TAAL was removed from CAU 496 before the SAFER investigation could be completed, and before the new information could be evaluated and the conceptual site model assumptions confirmed.

### **Initial Site Conditions**

The CAU 496 rocket location was verified in October 2006 with the assistance of Air Force and Sandia Explosive Ordnance Disposal (EOD) personnel and a Radiological Control Technician (RCT). The rocket was present on the lake bed as described and was confirmed to be an M-50 "Honest John" rocket that was approximately half buried in the lake bed. The rocket and surrounding area were surveyed by the RCT, and an area of radiological contamination was present near the front end of the rocket. The RCT roped off the area around the rocket and posted the area as a Radioactive Materials Area. The EOD personnel inspected the rocket under the supervision of the RCT, and the rocket was verified as being inert and safe for movement. The rocket was surveyed by the RCT and verified to not be radiologically impacted. Photograph 1 shows the condition of the CAU 496 rocket shortly after discovery.

### **Closure Activities**

The rocket was removed from the ground on October 3, 2006, and was staged near the crash site. The rocket was radiologically surveyed by a RCT and determined not to be radiologically impacted. The rocket was transported to the Nellis Air Force Range ordnance salvage area for recycling. Visual inspection of the crash site and radiological survey of the area confirmed that depleted uranium was present in the rocket nose cone which had broken off during impact and partially disassembled in the shallow subsurface.

Closure field activities began on December 19, 2006, under the supervision of a RCT by manually excavating impacted debris and soil from the crash site and placing the waste into plastic bags. The excavation was radiologically surveyed by the RCT as work progressed to ensure all areas over background were removed. Approximately 0.5 cubic yards of depleted uranium waste were removed from the rocket crash location. The waste consisted of depleted-uranium-impacted debris and soil and five 0.5-ft by 1.5-ft depleted uranium plates which were removed from an approximate depth of 2 ft below ground surface and were associated with other metal debris from the rocket nose cone.





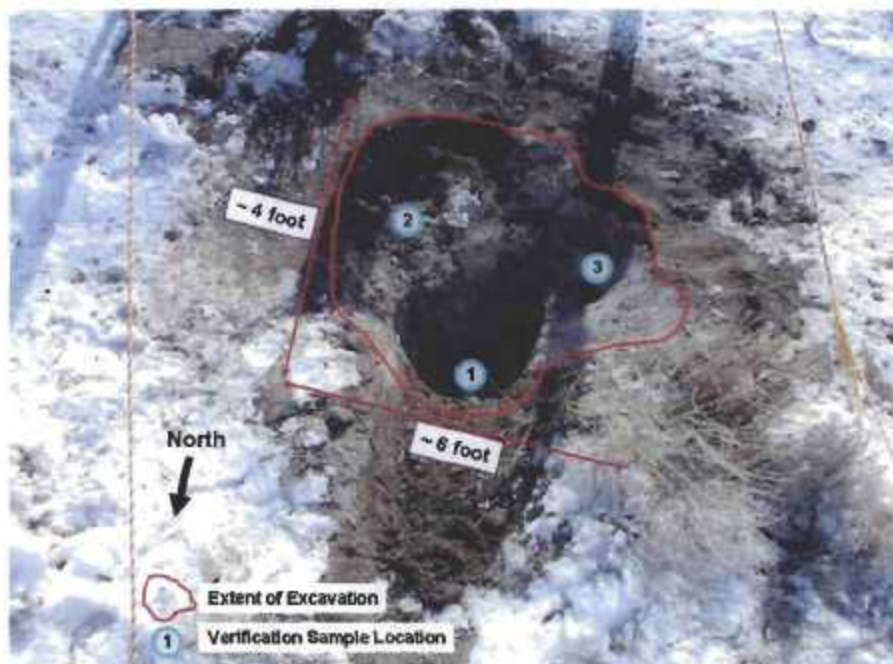
**Photograph 1 – Initial site condition of CAU 496 rocket (facing west), 10/03/2006**

The excavation was radiologically surveyed, and the three areas with the highest readings were selected for collecting verification samples to document clean closure. Verification samples were collected for uranium metal and isotopic uranium analyses. Additional quality assurance blind duplicate and equipment blank samples were collected to support the analytical objectives. After collecting verification samples, the site was secured, and depleted uranium waste was containerized under the supervision of a Waste Certification Official for subsequent offsite disposal.

Photograph 2 shows the site during removal of depleted uranium debris and impacted soil, and Photograph 3 shows sampling locations and the extent of excavation.



Photograph 2 – CAU 496 rocket site during cleanup (facing northwest), 12/19/2006



Photograph 3 – Sampling locations and extent of excavation, 12/20/2006



Table 1 summarizes the analytical results for verification samples collected on December 20, 2006. One sample collected from location 496-01 exceeded the Preliminary Remediation Goal (PRG) action level for uranium metal of 200 milligrams per kilogram (mg/kg).

**Table 1 – Analytical results for verification samples**

Sample ID	Date Collected	Radiological Survey Results (dpm <sup>A</sup> )	Uranium (mg/kg)	Isotopic Uranium-238 (pCi/g <sup>B</sup> )
Action Level		~5,000 dpm (background)	200 mg/kg	63 pCi/g
496-01	12/20/2006	7,200	217	4.14
496-02	12/20/2006	6,000	10.2	4.59
496-03	12/20/2006	5,780	8	8.37
496-04 Dup of 01	12/20/2006	n/a	19	14.2
496-05	12/20/2006	n/a	13.6	0.0183
496-01R	04/10/2007	n/a	2.5	n/a

<sup>A</sup> dpm: disintegrations per minute

<sup>B</sup> pCi/g: picocuries per gram

### Additional Closure Activities

Another phase of fieldwork was conducted on April 10, 2007, to remove additional impacted soil from sample location 496-01, which was above the PRG of 200 mg/kg for uranium metal. Impacted soil was removed using hand tools, and waste was placed into plastic bags under RCT supervision. No depleted uranium fragments or debris were noted during the additional removal activities. One additional verification sample (496-01R) was collected from the area of new excavation and analyzed for uranium metal. The sample was below the PRG, and the result is included in Table 1. The excavation was backfilled with clean soil and contoured to the surrounding topographic grade. Photograph 4 shows the location of additional soil removal.

### Summary

The CAU 496 rocket was located, and the crash site was moved from CAU 4000 back to CAU 496 so that the rocket could be removed and the crash site could be investigated for the presence of contaminants of concern. Depleted uranium was confirmed to be present at the site, and cleanup activities were conducted to remove the depleted-uranium-impacted debris and soil to meet PRG and radiological cleanup standards. Additional verification samples collected from the excavation confirmed that all depleted-uranium-impacted debris and soil had been removed to below applicable action levels, the excavation was backfilled with clean soil. Waste generated during cleanup activities is being managed as low-level waste and is planned for disposal at the Nevada Test Site. The rocket was surveyed for radiological contamination and was determined to meet free-release conditions. The rocket was transported to the Nellis Air Force Range ordnance salvage area for recycling.

Tim Murphy, Chief

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**Photograph 4 – Location of additional soil removal, 04/10/2007**

Copies of the analytical result summaries are attached.

Please direct comments and questions to Kevin J. Cabbie, of my staff, at (702) 295-5000.

ERD:KJC

Wilhelm R. Wilborn  
Acting Federal Project Director  
Environmental Restoration Project

Enclosure:  
As stated

Tim Murphy, Chief

-7-

cc w/encl. (uncontrolled) via email:

D. R. Elle, NDEP, Las Vegas, NV  
Southern Nevada Public Reading Room  
Las Vegas, NV (2 electronic copies)  
Northern Nevada Public Reading Room  
Carson City, NV (electronic copy)  
Public Reading Facility Coordinator, SNJV  
Las Vegas, NV (CD)  
David Swanson, Department of Natural  
Resources & Federal Facilities, Pahrump, NV (electronic copy)  
Technical Library, NNSA/NSO, Las Vegas, NV (CD)  
NSTec Document Production (electronic copy to OSTI)  
J. L. Smith, NSTec, Las Vegas, NV  
R. F. Boehlecke, SNJV, Las Vegas, NV  
P. A. Sanders, ERP, NNSA/NSO, Las Vegas, NV  
R. B. Jackson, NSTec, Las Vegas, NV  
A. L. Primrose, NSTec, Las Vegas, NV  
A. J. Silvas, NSTec, Las Vegas, NV  
T. A. Thiele, NSTec, Las Vegas, NV  
T. Zaferatos, NDEP, Las Vegas, NV

cc w/o encl (uncontrolled) via email:

D. C. Loewer, DTRA/CXT1, M/S 645, Mercury, NV  
T. A. Lantow, DTRA/CXT1, M/S 645, Mercury, NV  
W. R. Griffin, SNJV/DTRA, M/S 645, Mercury, NV  
K. A. Hoar, AD/AMSP, NNSA/NSO, Las Vegas, NV  
E. F. Di Sanza, WMP, NNSA/NSO, Las Vegas, NV  
EM Records, AMEM, Las Vegas, NV  
FFACO Group, PSG, NNSA/NSO, Las Vegas, NV

PROJECT/CLIENT INFORMATION			REPORT & TURNAROUND INFORMATION			SAMPLE INFORMATION		
Project: <u>CAU 496</u>	ROW: <u>11300</u>	Send Report to: <u>Brad Jackson</u>	Phone: <u>295-7761</u>		Fax: <u>5-7761</u>	Sampling Site: <u>CAU 496 rocket D4 site</u>		
Charge Number: <u>SB18 13W5</u>		Phone: <u>295-7761</u>	Fax: <u>5-7761</u>	MS: <u>N45306</u>		The samples submitted contain (check):		
Project Manager: <u>Brad Jackson</u>		Turnaround: ( ) Standard 14 days (1H, 25 days Non rad Env, 45 days Rad Env)				( ) Hazardous (Rad) <u>Unknown</u>		
Phone: <u>295-0331</u>	Fax: <u>295-7761</u>	Turnaround: ( ) RUSH Preliminary by _____ (H)				( ) Radioactive (Rad) <u>Unknown</u>		
	MS: <u>N45306</u>	( ) 14 (rad Rad Env)				( ) Unknown contamination If known, identify		
		( ) 14 (rad Rad Env)				contaminants. This information will ensure compliance with		
		( ) 14 (rad Rad Env)				applicable regulations and allow for the safe handling of the		
		( ) 14 (rad Rad Env)				sample materials		

SAMPLE MANAGEMENT INFORMATION										Pay Item, Analysis, Method											
SDG: _____ (IH) <u>V2827</u> (Non-Rad Env) _____ (Rad Env)										9.9 4.10											
Samples submitted are associated with a signed Project SOW. (X) YES ( ) NO										Uranium											
Analyses entered here agree with the SOW (X) YES ( ) NO ( ) N/A										Uranium											
If not, identify the variation: _____										Uranium											
Subcontract Lab(s) used for this work: <u>LIDNVILLE</u>										Uranium											
ID/DESCRIPTION	SAMPLING		MATRIX	CONTAINER		QC			Pres - Analysis												
	DATE	TIME		#	Est. Vol	MD	MS	MSD	HCl - VOCs												
496-01	12-20-06	1150	Soil	1	250ml				ice	X											
496-02	12-20-06	1153		1	250ml					X											
496-03	12-20-06	1158		1	250ml					X											
496-04	12-20-06	1203		1	250ml					X											
496-05	12-20-06	1130	Water	1	250ml						X										
LAST ITEM																					

## CUSTODY TRANSFER

Sampled/Relinquished (print)	Signature	DATE/TIME	Received by (print)	Signature	DATE/TIME
David Nacht		12-27-06 13:18	C. CASTANEDA		12/27/06 13:18
C. CASTANEDA		12-28-06 13:00	Fred Ex		12/28/06 13:00
Fred Ex			VICTOR HERNANDEZ		12/29/06 09:35







1  
INORGANIC ANALYSES DATA SHEET

49603

Lab Name: LIONVILLE LABORATORY Contract: 60052  
Lab Code: LVL1 Case No.: 496 SAS No.: SDG No.: V2827  
Matrix (soil/water): SOIL Lab Sample ID: 0612L582-003  
Level (low/med): LOW Date Received: 12/29/06  
% Solids: 90.2

[illegible]

Color Before: \_\_\_\_\_ Clarity Before: \_\_\_\_\_ Texture: \_\_\_\_\_  
Color After: \_\_\_\_\_ Clarity After: \_\_\_\_\_ Artifacts: \_\_\_\_\_

Comments:

496-03

FORM I - IN

000000418



1  
INORGANIC ANALYSES DATA SHEET

49604

SDG No.: V2827

Lab Sample ID: 0612L582-004  
Date Received: 12/29/06

Date Received: 12/29/06

[illegible]

Color Before: \_\_\_\_\_  
Color After: \_\_\_\_\_

Clarity Before: \_\_\_\_\_  
Clarity After: \_\_\_\_\_

Texture: \_\_\_\_\_  
Artifacts: \_\_\_\_\_

Comments :

496-04

FORM I - IN

000000019



PROJECT CLIENT INFORMATION		REPORT & TURN-AROUND INFORMATION		SAMPLE INFORMATION	
Project #300 C-496	Project #300 C-496	Send Report BRAD JACOBSON	Phone 295-0331	Phone 295-7761	Phone 178-300
Charge Number 5B13 13WS					
Project Manager BRAD JACOBSON					
Phone 295-0331	Phone 295-7761	Phone 178-300			

## SAMPLE MANAGEMENT INFORMATION

SDG 178475% (111) 12/28/06  
 Samples submitted are associated with a signed Project SOW YES NO  
 Analyses entered here agree with the SOW YES NO NA  
 If not, identify the variation \_\_\_\_\_  
 Subcontract Lab(s) used for this work ELC

## Pay Item, Analysis, Method

DESCRIPTION	SAMPLING DATE	TIME	MATRIX	CONTAINER	Vol	Q1	MS	MSD	Prep - Analysis	TH - VOLUME	MS A-002	MS A-013						
496-01	20 Dec 06	1156	Soil	21	250ml				100		X							
496-02	20 Dec 06	1153		21	250ml				100		X							
496-03	20 Dec 06	1158		21	250ml				100		X							
496-04	20 Dec 06	1203		21	250ml				100		X							
496E3-01	20 Dec 06	1130	Gravel	21	1L				100		X							
LAST ITEM																		

## CUSTODY TRANSFER

Sampled/Released (print)	Signature	DATE TIME	Received by (print)	Signature	DATE TIME
BRAD JACOBSON		20 Dec 06 / 1141	Sample Turn In Release	NA	20 Dec 06 / 1141
Sample trailer trip	NA	12-27-06 10:05	David Nacht		12-27-06 10:05
David Nacht		12-27-06 13:17	C. J. CASTANEDA		12-27-06 13:17
C. J. CASTANEDA		12-28-06 13:00	Field Log		12-28-06 13:00
			JASON PATE		12-28-06 9:00



# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company Bechtel Nevada Corp  
Address 2621 Losee Road  
M/S NTS273  
North Las Vegas, Nevada 89030-4134  
Contact Mr. Ted Redding  
Project Environmental Rad Analysis - No EDD

Report Date January 10, 2007

Client Sample ID: 496-01  
Sample ID: 178475001  
Matrix Soil  
Collect Date 20-DEC-06  
Receive Date 29-DEC-06  
Collector Client  
Project Client ID: NEVA00406  
NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Met
Rad Alpha Spec Analysis													
AlphaSpec U, Solid													
Uranium-233/234		1.89	+/-0.106	0.0189	+/-0.236	0.020	pCi/g		BXLI	01/05/07	1812	599519	1
Uranium-235/236		0.138	+/-0.0318	0.00569	+/-0.0353	0.020	pCi/g						
Uranium-238		4.14	+/-0.156	0.0117	+/-0.489	0.020	pCi/g						

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	12/30/06	1040	599418

### The following Analytical Methods were performed

Method	Description
I	DOE EML HASL-300, U-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Uranium-232	AlphaSpec U, Solid	76	(25% - 125%)

### Notes

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
- < Result is less than value reported
- > Result is greater than value reported
- A The TIC is a suspected aldol-condensation product
- B 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
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected

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### Certificate of Analysis

Company: Bechtel Nevada Corp.  
Address: 2621 Losee Road  
M/S NTS273  
North Las Vegas, Nevada 89030-4134  
Contact: Mr. Ted Redding  
Project: Environmental Rad Analysis - No EDD

Report Date: January 10, 2007

Client Sample ID: 496-02  
Sample ID: 178475002  
Matrix: Soil  
Collect Date: 20-DEC-06  
Receive Date: 29-DEC-06  
Collector: Client

Project: NEVA00406  
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RI	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Alpha Spec Analysis													
Alphaspec U, Solid													
Uranium-233/234		1.64	+/-0.115	0.0161	+/-0.222	0.020	pCi/g		BXL1	01/05/07	1812	S99519	1
Uranium-235/236		0.156	+/-0.0395	0.00781	+/-0.0434	0.020	pCi/g						
Uranium-238		4.59	+/-0.193	0.0233	+/-0.566	0.020	pCi/g						

#### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	12/30/06	1040	S99448

#### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300.U-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Uranium-232	Alphaspec U, Solid	55	(25%-125%)

#### Notes

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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD

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## Certificate of Analysis

Company Bechtel Nevada Corp  
Address 2621 Losee Road  
M/S NTS273  
North Las Vegas Nevada 89030-4134  
Contact Mr. Ted Redding  
Project Environmental Rad Analysis - No CDD

Report Date January 10 2007

Client Sample ID 496-03  
Sample ID 178475003  
Matrix Soil  
Collect Date 30-DEC-06  
Receive Date 29-DEC-06  
Collector Client  
Project NEVA00406  
Client ID NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DE	Analyst	Date	Time	Batch	Mid
Rad Alpha Spec Analysis													
Alphaspec U Solid													
Uranium-233/234		2.27	+/-0.134	0.0195	+/-0.294	0.020	pCi/g	BXLI	01/05/07	1812	599519	1	
Uranium-235/236		0.212	+/-0.0453	0.0241	+/-0.0523	0.020	pCi/g						
Uranium-235		8.37	+/-0.256	0.0195	+/-0.998	0.020	pCi/g						

### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	12/30/06	1040	599448

### The following Analytical Methods were performed

Method	Description
I	DOE EML HASL - 300 U-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Uranium-232	Alphaspec U Solid	58	(25%-125%)

### Notes

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- B Target analyte was detected in the associated blank
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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- II Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD



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### Certificate of Analysis

Company : Bechtel Nevada Corp.  
Address : 2621 Losee Road  
M/S NTS273  
North Las Vegas, Nevada 89030-4134  
Contact : Mr. Ted Redding  
Project : Environmental Rad Analysis - No EDD

Report Date: January 10, 2007

Client Sample ID: 496-04  
Sample ID: 178475004  
Matrix: Soil  
Collect Date: 20-DEC-06  
Receive Date: 29-DEC-06  
Collector: Client

Project: NEVA00406  
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd
Rad Alpha Spec Analysis													
Alphaspec U, Solid													
Uranium-233/234		2.95	+/-0.134	0.0176	+/-0.358	0.020	pCi/g		BXL1	01/05/07	1812	599519	1
Uranium-235/236		0.379	+/-0.0543	0.0217	+/-0.0689	0.020	pCi/g						
Uranium-238		14.2	+/-0.295	0.0122	+/-1.62	0.020	pCi/g						

#### The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
Dry Soil Prep	Dry Soil Prep GL-RAD-A-021	JMB1	12/30/06	1040	599448

#### The following Analytical Methods were performed

Method	Description
I	DOE EML HASL-300, U-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Uranium-232	Alphaspec U, Solid	74	(25%-125%)

#### Notes:

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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- H Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

# GEL LABORATORIES LLC

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

## Certificate of Analysis

Company : Bechtel Nevada Corp.  
Address : 2621 Lasec Road  
M/S NT5273  
North Las Vegas, Nevada 89030--4134  
Contact: Mr. Ted Redding  
Project: Environmental Rad Analysis - No EDD

Report Date: January 10, 2007

Client Sample ID: 496EB-01  
Sample ID: 178475005  
Matrix: Water  
Collect Date: 20-DEC-06  
Receive Date: 29-DEC-06  
Collector: Client  
Project: NEVA00406  
Client ID: NEVA002

Parameter	Qualifier	Result	Uncertainty	DL	TPD	RL	Units	DF	Analyst	Date	Time	Batch	Mod
Rad Alpha Spec Analysis													
Alphaspec U, Liquid													
Uranium-233/234		0.0921	+/-0.042	0.0516	+/-0.0432	0.060	pCi/L		BXL1	01/08/07	1752	599518	1
Uranium-235/236	U	0.0452	+/-0.0365	0.0543	+/-0.0368	0.060	pCi/L						
Uranium-238	U	0.0183	+/-0.0326	0.0581	+/-0.0326	0.060	pCi/L						

### The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, U-02-RC Modified

Surrogate/Tracer recovery	Test	Recovery %	Acceptable Limits
Uranium-232	Alphaspec U, Liquid	65	(25%-125%)

### Notes:

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- A The TIC is a suspected aldol-condensation product
- B Target analyte was detected in the associated blank
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- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- E Analytical holding time was exceeded
- J Value is estimated
- N/A Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
- ND Analyte concentration is not detected above the detection limit
- 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.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/18/07

CLIENT: NSTRC V2895

LVL LOT #: 07061128

WORK ORDER: 60952-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
-001	496-02R	Uranium, Total	2.5	U MG/EG	2.5	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/18/07

CLIENT: MSTEC 92695

LVL LOT #: 0704L128

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	07L0103-MB1	Uranium, Total	2.5	u MG/KG	2.5	1.0

Leonville Laboratory, Inc

INORGANICS ACCURACY REPORT 04/18/07

CLIENT NSTEC V2895

LVL LOT # 0704L128

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECDV	DILUTION FACTOR(SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-001	496-DIR	Uranium, Total	224	2.5 u	246	91.1	1.0
		Uranium, Total MSD	227	2.5 u	246	92.2	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 04/18/07

CLIENT: NSTSC V2895

LVL LOT #: 0704L128

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 SPIKE#2		
			%RECOV	%RECOV	%DIFF
-----	-----	-----	-----	-----	-----
-001	496-01R	Uranium, Total	91.1	92.2	1.2



Lienville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/18/07

CLIENT: N5TEC V2895

LVL LOT #: 07094128

WORK ORDER: 60052-001-001-0001-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE RPD	DILUTION FACTOR (RFP)
-001REP	496-01R	Uranium, Total	2.5 u	2.5 u NC	1.0

Lionville Laboratory, Inc

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/18/07

CLIENT: NSTEC V2895

LVL LOT #: D704L126

WORK ORDER: 60052-002-001-0001-00

SAMPLE	SITE ID	ANALYTE	SAMPLE	SPKED	SPKED	UNITS	RECOV
			AMOUNT				
LCS1	07L0181-LC1	Uranium, LCS	226	250		MG/KG	90.3