

# UNITED NUCLEAR CORPORATION



P.O. Box 3077  
Gallup, New Mexico 87305-3077

Telephone: (505) 722-6651  
Fax: (505) 722-6654

January 31, 2007

Mr. Jack Whitten, Chief  
US Nuclear Regulatory Commission  
Division of Radiation Safety & Safeguards  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-4351

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DNMS

Dear Mr. Whitten:

Pursuant to our License SUA-1475, submitted herewith are the result of our ALARA Audit conducted on December 11, 2006.

If you have any questions, please advise.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Bush", written over a horizontal line.

Larry Bush  
Manager

LB

Cc: US NRC, Rockville, Maryland  
Steve Hill, GE  
Roy Blickwedel, GE

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January 31, 2007

To: File

From: Max Chischilly Jr.

Subject: ALARA Committee Meeting and Audit, December 11, 2006

The UNC Mining and Milling ALARA Committee met on December 11, 2006 to audit the result of the radiological monitoring program for the fourth quarter of 2005, and the first three quarters of data for 2006. Current committee members are: Larry Bush, Manager, and Max Chischilly, Jr., Radiation Safety Officer. The Committee reviewed Mr. Chischilly's Annual Report entitled "Environmental Monitoring Program for Inactive Status 2006," dated December 2006, and "Data Summary between the fourth quarter of 2005 to the first three quarters of 2006."

## Significant Finding and Event:

1. No radiation exposure was recorded for United Nuclear Corp. (UNC) employees, contractors, and the public due to our current site status conditions.
2. Training and refresher training of employees on radiation protection and safety was done in 2006 as required.
3. All documentation and monitoring required by our radiation protection program and NRC License was in order for 2006.
4. Available data for this Report is also reported as per suggested format in Regulatory Guide 4.14 (see attached Table-1).
5. The annual landuse survey was done on 3/15/06 for 2005. Findings include:

- A.) Residential homesite had increased from twenty-three to twenty-four in the northern most portion of the two mile radius (Navajo Reservation).
  - B.) NA-1 and NA-2 wells were drilled and installed near the north tailings perimeter fenceline on UNC's Section 36 in May, 2005. The purpose was for a pump test to determine the hydraulic properties of the alluvium and as part of the in-situ alkalinity stabilization pilot study in Zone 3 plume area.
  - C.) Continual pumping / extraction process in the Zone 3 plume area began for five hydrofractured wells (RW-11, RW-12, RW-15, RW-16, and RW-17) on 1/10/05 and one (RW-13) on 3/22/05. The pumped water is discharged into the tailings North Evaporation Pond.
- 6. The environmental monitoring program is limited and the reported items in the Environmental Monitoring Summary Data (pg. 4 of 8 ) are solely based on available data. The only required radiation monitoring program will be under an RWP (Radiation Work Permit), and no RWP was issued during this annual period.
  - 7. The active radiation monitoring instruments are routinely calibrated and Personnel Radiation Monitoring program under RWP is still in effect, but is in a standby status awaiting the final pond closure reclamation activity (see also pg. 5 of 8).
  - 8. Continual monthly monitoring is ongoing for well NBL-1, 504-B, PB-2, PB-3, and PB-4 to track and locate the northern most migration extent of the seepage impacted water or plume in Zone 3. Also, PB-2 is a pumping/extraction well as of 8/31/05.
  - 9. Continual pumping/extraction process in the Zone 3 plume area began for five hydrofractured wells (RW-11, RW-12, RW-15, RW-16, and RW-17) on 1/10/05 and one (RW-13) on 3/22/05. The pumped water is discharged into the tailings North Evaporation Pond.
  - 10. Based on the routine annual ALARA committee meeting and audit (December 11, 2006); the program has met the requirement under 10 CFR Part 20, Subpart G - Radiation Protection Programs, Sec. 20.1101 ( c ).

Past Significant Events:

1. The mill site was released from a restricted to unrestricted area by License # SUA-1475 Amendment # 21 in 1995.
2. The final tailings reclamation was completed in 1995. The last of drainage channels was completed in 1996. The reclamation of evaporation ponds is being delayed until the ground water Corrective Action Plan is deemed completed by the NRC and EPA.
3. The radon cap covers was completed in 1996 with the exception of the lined evaporation ponds.
4. The report submitted January 03, 1997 and on January 13, 1998 on Radon Emanation Testing of UNC's Church Rock Tailings Site shows the average Radon Flux to be 5.71 pci/m2sec., which is less than the allowable of 20.0 pci/m2sec.

UNC MINING AND MILLING  
ENVIRONMENTAL SURVEILLANCE

Monitoring Program

- \* 1. The Radiation Safety Officer (RSO) inspects the restricted areas monthly.
- \* 2. Air sampling is continuously done at four locations; one located upwind of the tailings impoundment, two located downwind of the tailings impoundment, and one background sampling location (see EMP-2).
- \* 3. Gamma exposure is continuously monitored with TLDs at the same four locations as the air sampling. The TLDs are changed out and analyzed semi-annually (See Procedure EMP-3).
- \* 4. Ambient radon is continuously monitored with radon detectors at the same sites as air sampling. The detectors are changed out and analyzed quarterly and reported semi-annually (see Procedure EMP-4).
- \* 5. Groundwater samples are collected and analyzed quarterly at two locations near tailings, and one domestic water well at the mill site (see Procedures EMP-5 and EMP-5a).
- 6. Equipment being sold or for other purposes, leaving the restricted area is surveyed for compliance with guidelines for release to unrestricted use (see Procedure EMP-8A).
- \* 7. An Effluent Report will be submitted semi-annually within 60 days of each six-month period. All of the Environmental Monitoring Program data is included in this report, with the exception of the equipment surveys (see EMP-9).

Note: The above (\*) marked items are deleted as per NRC approved License amendment 29 dated 6-18-99 deleting condition's #16, #22, and #28.

Additional Note: Item #1 procedure is continued on 10-19-99, to show and maintain the integrity of the restricted tailings area. Effluent Report under Item #7 is reported when pertinent data is available.

*Max Chischilly Jr. 1/28/02    Max Chischilly Jr. 1-20-03    Max Chischilly Jr. 1/17/05*  
*Max Chischilly Jr. 1/29/01    M. Chischilly 1/22/99    Max Chischilly Jr. 1/24/06*  
*Max Chischilly Jr. 1/20/00    Max Chischilly Jr. 1-20-04    Max Chischilly Jr. 1/25/07*  
*E. Morala 1/19/95    E. Morala 1/22/97*  
*E. Morala 1/20/96    E. Morala 1/22/98*

UNC MINING AND MILLING  
PERSONNEL RADIATION PROTECTION PROGRAM

External Exposure Monitoring

1. Employees working within the tailings area wear a TLD badge which is changed out and analyzed semi-annually. (See Procedure PMP-2).

Internal Exposure Monitoring

2. Self-monitoring Alpha survey is done by employees working within the tailings area daily prior to leaving the area with occasional spot checks by the RSO or the Radiation Technician (see Procedure PMP-4).
3. Bioassays are done on employees working within the tailings area semi-annually (See Procedure PMP-5).
4. Continuous air samples are taken in the general tailings working area of employees for the purpose of calculating exposures (see Procedure PMP-6).
5. Surface surveys of eating areas, change room benches, and labs are done monthly.
6. TLD, bioassays and air samples will also be done under the RWP program (see Procedure PMP-9).
7. Instrumentation and calibration (see Procedure PMP-10).

\*NOTE Rev. 4, PMP

Personnel Radiation Monitoring, 1 through 6, to be done as needed under an RWP.

*E. Muehle*  
1/19/95

*Max Chischilly J.* 1/25/97

*ED Muehle*  
1/20/97

*Max Chischilly J.* 1/24/06

*Max Chischilly J.* 1/17/05

*M. Chischilly* 1/22/99

*Max Chischilly* 1/20/00

*Max Chischilly* 1/29/01

*Max Chischilly J.* 1/28/02

*Max Chischilly J.* 1/20/03

*Max Chischilly J.* 1-20-04

1/20/96 *E. Muehle* 1/22/98 *E. Muehle*

ENVIRONMENTAL MONITORING SUMMARY DATA  
FOR 4TH QUARTER 2005 TO 3RD QUARTER 2006

Environmental Monitoring:	Required Analysis:	Highest Result Obtained:	Allowable:
1. Quarterly Ground Water GW-Wells: (NOTE: Available data is on GW-3 Well)	U-Nat ( $\frac{\text{mg}}{\text{l}}$ )	0.118 (dissolved or total)	0.30 (NRC) 5.0 (EPA)
	Th-230 ( $\frac{\text{pci}}{\text{l}}$ )	0.20 (dissolved or total)	5.0 (NRC)
	RA-226 ( $\frac{\text{pci}}{\text{l}}$ )	0.40 (dissolved or total)	5.0 with RA-228 (NRC & EPA)
	PB-210 ( $\frac{\text{pci}}{\text{l}}$ )	1.0 (disolved or total)	1.0 (NRC)
	PH (units)	7.62	6 - 9 (NMED)
2. Surface Alpha:	Any Material or Equipment released, will meet the requirements for unrestricted use.		a. Removable is $1000 \frac{\text{dpm}}{100 \text{ cm}^2}$ b. Fixed average is $5000 \frac{\text{dpm}}{100 \text{ cm}^2}$ where area is not greater than 1m <sup>2</sup> c. Gamma is 40 ur/hr
3. Monthly Inspection Findings:	a.) The extraction wells collection tank's (located near UNC's Sec. 2 NW corner area) exterior outlet pipe leak was repaired on 2/28/06 and wells were restarted after shutoff on 2/24/06. b.) Repair work on flood damaged fenceline (located on UNC's Sec. 2 & 36 boundary line areas) were done on 10/24/05; 7/13,20,21/06 & 9/29/06. Continual surveillance was done to keep out livestock while the fenceline was being repaired.		

PERSONNEL MONITORING SUMMARY DATA  
FOR 4TH QUARTER 2005 TO 3RD QUARTER 2006

Personnel Monitoring Items:	Required Analysis:	Highest Result Obtained:	Allowable:
1. Semi-Annual or as needed personnel TLD (DDE)	Gamma ( $\frac{\text{rem}}{\text{yr}}$ )	NM	0.500 (Active Level)
2. Semi-Annual or as needed Bioassay:	Total Uranium ( $\frac{\mu\text{g}}{\text{l}}$ )	NM	15-35 (active Level)
3. Bi-Weekly or Quarterly air sample	Gross Alpha ( $\frac{\mu\text{ci}}{\text{ml}}$ )	NM	$6\text{E}^{-11}$ (DAC)
(Also Note: Action Level is 10% of an application doses limit)	Th-230 ( $\mu\text{ci}/\text{ml}$ )	NM	$6\text{E}^{-12}$ (DAC)
	RA-226 ( $\frac{\mu\text{ci}}{\text{ml}}$ )	NM	$3\text{E}^{-10}$
	PB-210 ( $\frac{\mu\text{ci}}{\text{ml}}$ )	NM	$1\text{E}^{-10}$ (DAC)
	RN-222 ( $\frac{\mu\text{ci}}{\text{ml}}$ )	NM	$4\text{E}^{-6}$ (DAC)
	(-Daughter)		
	U-Nat ( $\frac{\mu\text{ci}}{\text{ml}}$ )	NM	$2\text{E}^{-11}$ (DAC)
Personnel Exposure:			
4. Estimated Annual Total Effective Dose Equivalent (TEDE):	TEDE (rem)	NM	5.0 (MAX.) 2.0 (Action Level)

NOTE: The above items are only required under an RWP as needed (see PMP, Rev. 4). And no RWP was issued during this reporting period.

NM - Not Monitored



TABLE - 1  
QUARTERLY LIQUID SAMPLES

<u>Date/Qr.</u>	<u>Location</u>	<u>Type</u>	<u>Radionuclide</u>	<u>Concentration</u>		<u>Error Est.</u>	<u>LLD</u>
				<u>Mg/l</u>	<u>uCi/ml</u>	<u>uCi/ml</u>	<u>uCi/ml</u>
<u>4TH-QR.2005</u>	<u>GW-3</u>	<u>GROUND</u>	<u>U-Nat (dissolved)</u> or total		<u>7.99E-08</u>		<u>2.00E-10</u>
<u>to 3RD-QR.</u>		<u>WATER WELL</u>	<u>Th-230 (dissolved)</u> or total		<u>2.00E-10</u>		<u>2.00E-10</u>
<u>2006 HIGHEST</u> <u>RESULT</u>			<u>Ra-266 (dissolved)</u> or total		<u>4.00E-10</u>	<u>2.00E-10</u>	<u>2.00E-10</u>
<u>UNC Field Data:</u>			<u>Pb-210 (dissolved)</u> or total		<u>1.00E-09</u>		<u>1.00E-09</u>
PH (STD. Units) = 6.65			<u>Po-210 (dissolved)</u> or total		<u>NOT MONITORED</u>		<u>1.00E-09</u>
Cond. ( $\mu$ MHOS) = 5,680							
Water Depth (Ft.) = 51.40							
Temp. ( $^{\circ}$ C) = 20.1							

COMMENTS:

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