

# UNITED NUCLEAR CORPORATION



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DEC 19 2001

December 18, 2001

Dwight Chamberlain, Chief  
US Nuclear Regulatory Commission, Region IV  
Division of Radiation Safety and Safeguards  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-4351

Dear Mr. Leach:

Pursuant to our License SUA-1475, submitted herewith are the results of our ALARA Audit conducted on December 14, 2001.

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:db

Enclosure

Cc: US NRC, Region IV Div. Of Radiation Safety and Safeguards  
Steve Cline, GE  
Roy Blickwedel, GE

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December 18, 2001

To: File

From: Larry Bush

Subject: ALARA Committee Meeting and Audit, December 14, 2001

The UNC Mining and Milling ALARA Committee met on December 14, 2001 to audit the results of the radiologist monitoring program for the fourth quarter of 2000 and the first three quarters of data for 2001. Current committee members are: Mr. Larry Bush, Manager and Mr. Max Chischilly, Jr., Radiation Safety Officer. The committee reviewed Mr. Chischilly's Annual Report entitled "Environmental Monitoring Program for Inactive Status 2001," dated December 2001, and "Data Summary between the fourth quarter of 2000 to the first three quarters of 2001.

#### Current Significant Findings 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 2001 as required.
3. All documentation required by our monitoring program is in order for 2001.
4. Available data for this Report is also reported as per suggested format in Regulatory Guide 4.14 (see attached table).
5. The annual landuse survey was done on 3/22/01 with a one homesite increase within the two mile radius of the mill (i.e. 21 to 22 homesites), and found no other significant changes from the previous year.
6. Presently, our environmental monitoring program is at a greatly reduced level and the reported items in the Environmental Monitoring Summary Data (pg. 4 of 8) are solely based on available data only. 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 the 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. An NRC inspection was done on 5/09/01 by Mr. Louis C. Carson II and no violations or deviations were identified.
9. As of 1/08/01, all extraction well pumping activity has ceased for an indefinite period, and under the NRC License SUA-1475, amendment 31 dated 12/29/00; fourteen Southwest Alluvium Wells are monitored on a monthly basis and a future decision on remedial actions in Zone 3 will be made after 12 – 18 months of sampling.
10. On 7/26/01, an additional monitoring well No. NBL-1 was drilled in UNC's section 36 northern boundary line. In the near future an additional monitoring well will also be drilled in the NE 1/4 of Sec.10,T.16N., R.16W., NMPM.



Past Significant Events:

1. The mill site was release from our License SUA – 1475 as a restricted area by Amendment # 21 in 1995.
2. The final tailings reclamation was completed in 1995. The last of drainage channels were 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 cover was completed in 1996 with the exception of the lined evaporation ponds.
3. The report submitted January 03, 1997 and January 13, 1998 on Radon Emanation Testing of UNC's Church Rock Tailings Site shows the average Radon Flux to be 5.71 pci/m<sup>2</sup>sec., which is less than the allowable of 20.0 pci/m<sup>2</sup>sec.

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 Chachelly Jr. 1/29/01*      *M. Chachelly 1/22/99*  
*Max Chachelly Jr. 1/20/00*  
*E. Morata 1/19/95*      *E. Morata 1/20/97*  
*E. Morata 1/20/96*      *E. Morata 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. Moore* 1/19/95  
*ED Moore* 1/20/97  
*M. Churchill* 1/22/99  
*May Churchill* 1/20/00  
*1/20/96 E. Moore* 1/22/98 *E. Moore* *May Churchill* 1/29/01

ENVIRONMENTAL MONITORING SUMMARY DATA  
For 4<sup>th</sup> - Quarter 2000 to 3<sup>rd</sup> - Quarter 2001

Environmental Monitoring:	Required Analysis:	Highest Result Obtained:	Allowable:
1. Quar. Ground Water GW-Wells: (NOTE: Available data is on GW-3 Well)	U-Nat( $\frac{mg}{l}$ )	0.071(dissolved)	0.30 (NRC) 5.0 (ARAR)
	Th-230( $\frac{pci}{l}$ )	<0.20(dissolved)	5.0 (NRC) 15.0(ARAR)
	RA-226( $\frac{pci}{l}$ )	0.40(dissolved)	5.0 (NRC) 5.0 (ARAR)
	PB-210( $\frac{pci}{l}$ )	<1.0 (dissolved)	1.0 (NRC)
	PO-210( $\frac{pci}{l}$ )	<1.0 (dissolved)	1.0 (NRC)
	PH (units)	7.26	6 - 9 (NMED)
2. Surface Alpha:	All material or equipment released, will meet the requirements for unrestricted use.		Removable is $1000 \frac{dpm}{100cm^2}$ Fixed Average is $5000 \frac{dpm}{cm^2}$ where area is not greater than $1m^2$ Gamma is 40 ur/hr
3. Monthly Inspection:	Broken fenceline caused by cattle had occurred on 11/28/00, 4/27/01, and fenceline/fencepost damage by flooding conditions on 8/30/01. Immediate corrective action was taken to remediate these problems, and all other months checked okay.		Checklist: * Fences * Air MONitors (RWP only) * Rad. Warning Signs * Locked Gates

PERSONNEL MONITORING SUMMARY DATA  
For 4<sup>th</sup> - Quarter 2000 to 3<sup>rd</sup> - Quarter 2001

Personnel Monitoring Items:	Required Analysis:	Highest Result Obtained:	Allowable:
1. Semi-Annual or as needed personnel TLD (DDE):	Gamma( $\frac{rem}{yr}$ )	NM	0.500(Action Level)
2. Semi-Annual or as needed Bioassay	Total Uranium( $\frac{ug}{l}$ )	NM	15-35(Action Level)
3. Bi-weekly or quarterly air sample	Gross Alpha( $\frac{uci}{ml}$ )	NM	6E <sup>-11</sup> (DAC)
(Also Note: Action level is 10% of an applicable dose limit)	Th-230( $\frac{uci}{ml}$ )	NM	6E <sup>-12</sup> (DAC)
	RA-226( $\frac{uci}{ml}$ )	NM	3E <sup>-10</sup>
	PB-210( $\frac{uci}{ml}$ )	NM	1E <sup>-10</sup> (DAC)
	RN-222( $\frac{uci}{ml}$ )	NM	4E <sup>-6</sup> (DAC)
	(-Daughter)		
	U-Nat( $\frac{uci}{ml}$ )	NM	2E <sup>-11</sup> (DAC)

Personnel Exposure:

4. Estimated Annual Total Effective Dose Equivalent (TEDE):	TEDE(rem)	NM	5.0 (MAX.) 2.0 (Action Level)
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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>uci/ml</u>	<u>LLD</u> <u>uci/ml</u>
				<u>Mg/l</u>	<u>uci/ml</u>		
<u>4th-Qr. 2000</u>	<u>GW-3</u>	<u>Ground</u>	<u>U-Nat (dissolved)</u> <u>or total</u>		<u>4.81E<sup>-8</sup></u>		<u>2.00E-10</u>
<u>to 3rd-Qr.</u>		<u>Water Well</u>					
<u>2001</u>			<u>Th-230 (dissolved)</u> <u>or total</u>		<u>&lt; 2.00E<sup>-10</sup></u>		<u>2.00E-10</u>
			<u>Ra-266 (dissolved)</u> <u>or total</u>		<u>4.00E<sup>-10</sup></u>	<u>3.00E<sup>-10</sup></u>	<u>2.00E-10</u>
UNC Field Data:	PH (STD. Units) = 7.26						
	Cond. (U MHOS) = 5,200						
	Water Depth (Ft.) = 52.4		<u>Pb-210 (dissolved)</u> <u>or total</u>		<u>&lt; 1.00E<sup>-9</sup></u>		<u>1.00E-09</u>
	Temp. (°C) = 17.1						
			<u>Po-210 (dissolved)</u> <u>or total</u>		<u>&lt; 1.00E<sup>-9</sup></u>		<u>1.00E-09</u>

COMMENTS: GW-4 well is not producing enough water to pump since the 4th Qr. of 1999.

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