January 23, 2006

Mr. Roy Blickwedel
Remedial Project Manager
General Electric Company
640 Freedom Business Center
King of Prussia, PA 19406

SUBJECT: SUMMARY OF JANUARY 18, 2006, MEETING

A summary of the meeting between U. S. Nuclear Regulatory Commission (NRC) staff and representatives of United Nuclear Corporation (UNC) on January 18, 2006, is enclosed. Two action items were agreed upon at the meeting and are detailed in the enclosed meeting summary.

If you have any questions regarding this letter or the enclosed meeting summary, please contact me at (301) 415-7612 or by email at PXM2@NRC.GOV.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publically Available Records (PARS) component of the NRC's Agencywide Document Acess and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html.

Sincerely,

/RA/

Paul Michalak
Hydrogeologist
Uranium Processing Section
Fuel Cycle Facilities Branch
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

Docket No.: 40-8907
License No.: SUA-1475

Enclosure: Meeting Summary

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MEETING WITH UNITED NUCLEAR CORPORATION
MEETING REPORT

On January 18, 2006, the U.S. Nuclear Regulatory , Uranium Recovery Section, Fuel Cycle Licensing Branch, staff met with representatives of United Nuclear Corporation (UNC) at the agency headquarters in Rockville, Maryland. The public meeting was announced on the NRC public web site on January 5, 2006, but no members of the public chose to attend.

PURPOSE:

Presentation and discussion of statistical analyses in support of a license amendment request for changing the way a radium ground water protection standard exceedance in Source Materials License SUA- 1475 is evaluated.

ATTENDEES: Refer to Attachment A

BACKGROUND:

In September 2005, United Nuclear Corporation (UNC) submitted a technical analysis report in support of changing the method of determining combined radium (i.e., radium-226 and -228) exceedances at its Church Rock, New Mexico site (Source Materials License SUA-1475). The proposal included the application of two non-parametric statistical analyses: the Kruskal-Wallis test (a non-parametric analysis of variance technique that was used to compare compliance well data as a group, and individually by well, to a set of background data) and a Two-Sample Test of Proportions (TSTP) that was used to compare compliance and background well results with the site standard for radium (5 pCi/L).

DISCUSSION:

Discussion focused on the sensitivity of the Two-Sample Test for Proportions with respect to sample sizes (compliance and background) and the difference (so-called D value) in the true proportions of the compliance and background measurements that exceed the current radium background standard (5 pci/L) and the 95th percentile radium concentration. The licensee presented a statistical formula (Attachment B) that evaluates the number of compliance and background measurements necessary to conduct the Two-Sample Test for Proportions at a predetermined D value or conversely, evaluates the D value for a given set of compliance and background measurements. The results from both quarterly and cumulative Southwest Alluvium and Zone I data using the above formula were presented (Attachment B).

ACTIONS:

Two action items were agreed upon:
1) Further discussion with licensee focusing on Zone 1 radium-226 and -228 95th percentile background levels.

2) Re-submittal of the radium exceedance evaluation proposal potentially containing a revised Zone 1 radium background concentration, coupled with the two non-parametric statistical analyses presented in the September 2005 submittal.

ATTACHMENT: Refer to Attachment B

ATTACHMENT A

UNC-CHURCH ROCK MEETING SIGN-IN SHEET
JANUARY 18, 2006

NAME	ORGANIZATION	PHONE NO.
Stephen J. Cohen	USNRC	301-415-7182
Roy Blickwedel	GE/UNC	(610) 992 7935
Paul Michalak	USNRC	301-415-7612
MARK JANCIN	N.A. Water Systems	814-231-2170 x236
JAMES EWART	N.A. Water Systems	412-809-6719

Procedure for Calculating the Number of Measurements Required to Conduct the TSTP

$$n = m = \frac{2(Z1-\alpha + Z1-\beta)^2 \, P\,(1-P)}{D^2}$$

where

$P = (Ps + Pb) / 2$

Ps = the proportion of the true site distribution of potential measurements that exceeds C

Pb = the proportion of the true background distribution of potential measurements that exceeds C.

α = the probability that can be tolerated that the two-sample test for proportions will incorrectly declare the chemical is a COPC, (α is usually specified to be a small value such as 0.01, 0.025, 0.05 or 0.10)

$1 - \beta$ = the power (probability) required that the two-sample test for proportions will declare that the chemical is a COPC when that is indeed the case, (β is usually specified to be ≥ 0.80)

Procedure for Calculating the Number of Measurements Required to Conduct the TSTP

$$n = m = \frac{2(Z1-\alpha + Z1-\beta)^2 \, P\,(1- P\,)}{D^2}$$

where

D = the difference in the true (unknown) proportions of the site and background distributions of potential measurements that exceed the constant C *that must be detected with probability 1* - β. That is, the stakeholders and regulators have agreed that the difference D needs to be detected by the two-sample test for proportions with power (probability) equal to 1 - β.

Z1-α = the 100(1-α) percentile of the standard normal distribution (for example, if α = 0.05, Z1-0.05 = Z 0.95 = 1.645)

Z1-β = the 100(1-β) percentile of the standard normal distribution, (for example, if 1 - β = 0.80, Z0.80 = 0.84)

Example Calculations of TSTP Power Dependencies

Comparisons to Site Standard

	P_s	P_b	$1-\alpha$	$1-\beta$	Z_{95}	Z_{80}
Southwest Alluvium	0.035	0.055	0.95	0.8	1.645	0.84
data	Background Sample Number (m)	Compliance Sample Number (n)	Difference of Proportions Detectable at 1-β (D)	D exceedences in n samples		
all	357	543	0.039	21		
1 qtr		7	0.275	1.9		
2 qtrs		14	0.195	2.7		
3 qtrs		21	0.159	3.3		
4 qtrs		28	0.138	3.9		

	P_s	P_b	$1-\alpha$	$1-\beta$	Z_{95}	Z_{80}
Zone 1	0.41	0.26	0.95	0.8	1.645	0.84
data	Background Sample Number (m)	Compliance Sample Number (n)	Difference of Proportions Detectable at 1-β (D)	D exceedences in n samples		
all	227	319	0.110	35		
1 qtr		5	0.742	3.7		
2 qtrs		10	0.525	5.2		
3 qtrs		15	0.428	6.4		
4 qtrs		20	0.371	7.4		
5 qtrs		25	0.332	8.3		
6 qtrs		30	0.303	9.1		

NA WaterSystems

VEOLIA WATER
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Example Calculations of TSTP Power Dependencies

Comparisons to 95th Percentile of Background

	P_s	P_b	$1-\alpha$	$1-\beta$	Z_{95}	Z_{80}
Southwest Alluvium	0.024	0.05	0.95	0.8	1.645	0.84
data	Background Sample Number (m)	Compliance Sample Number (n)	Difference of Proportions Detectable at 1-β (D)	D exceedences in n samples		
all	357	543	0.035	19		
1 qtr		7	0.251	1.8		
2 qtrs		14	0.177	2.5		
3 qtrs		21	0.145	3.0		
4 qtrs		28	0.125	3.5		

	P_s	P_b	$1-\alpha$	$1-\beta$	Z_{95}	Z_{80}
Zone 1	0.17	0.05	0.95	0.8	1.645	0.84
data	Background Sample Number (m)	Compliance Sample Number (n)	Difference of Proportions Detectable at 1-β (D)	D exceedences in n samples		
all	227	319	0.073	23		
1 qtr		5	0.492	2.5		
2 qtrs		10	0.348	3.5		
3 qtrs		15	0.284	4.3		
4 qtrs		20	0.246	4.9		
5 qtrs		25	0.220	5.5		
6 qtrs		30	0.201	6.0		