UNC TETON EXPLORATION DRILLING, INC.

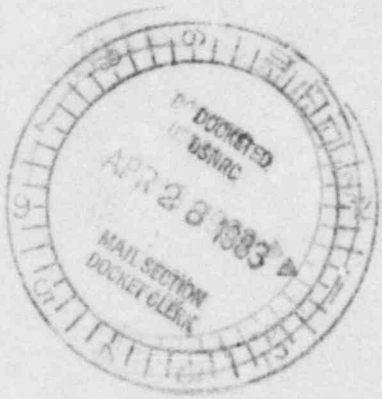
Subsidiary of United Nuclear Corporation
A UNC RESOURCES Company

P.O. Drawer A-1
Casper, Wyoming 82602

Telephone 307/265-4102

40-8728
Return to VRFO 467-SS
PDR

April 1, 1983



Mr. R. Dale Smith
Branch Chief
Uranium Recovery Field Office
Division of Waste Management
U. S. NUCLEAR REGULATORY COMMISSION
Mail Stop 461-SS
7915 Eastern Avenue
Silver Springs, Maryland 20910

and

Mr. Ed Francis
District I Supervisor
Land Quality Division
DEPARTMENT OF ENVIRONMENTAL QUALITY
401 West 19th Street
Cheyenne, Wyoming 82002

RE: SOURCE MATERIAL LICENSE SUA-1373
DOCKET NO. 040-8728
RESEARCH AND DEVELOPMENT LICENSE 2RD
(NOW LICENSE 522)

Gentlemen:

In accordance with the referenced License No. SUA-1373, Condition No. 35, UNC Teton-Nedco Joint Venture partners present the thirteenth quarterly report for their pilot in situ uranium operation located in Converse County, Wyoming.

Site activities for the first quarter 1983 were related to pond water level and detection tube measurements, continuing in plant and area radiological monitoring, site security checks and general mine site clean-up activities.

FEE EXEMPT

Certified By B Fisher

00235
Info only

1.0 Solar Evaporation Ponds and Leak Detection Systems

No solution was introduced to the evaporation ponds during the quarter. Pond levels of March 22, 1983 were 12.59 feet (1.70 m gallons) in the south pond and 12.04 feet (1.38 m gallons) in the north pond. Increases in volumes from the fourth quarter 1982 report were due to a combination of snow melt from drifts in the ponds and partial icing and water temperature increasing the apparent volume. Monthly checks of the leak detection systems revealed no leakage in either pond liner. Pond sampling is scheduled for the second quarter of 1983.

2.0 M Zone Restoration Stability

At this time all required samples have been taken from the nine wells designated for the groundwater chemical stability program for M Zone restoration. All appropriate requested analytical and process data has been forwarded to the U. S. Nuclear Regulatory Commission.

3.0 Radiation Safety

As a result of the decreased site activity, an interim amendment to the R & D Permit was requested to reduce radiological and environmental monitoring to a level consistent with the status of the operation. The resulting document was Amendment No. 7 to SUA-1373 which was followed through this quarter.

Process building Rn^{222} samples were collected monthly at four to six locations within the plant and averaged 4.37×10^{-9} uCi/ml or 14.58% of the MPC 3×10^{-8} uCi/ml limit.

Upwind and downwind 48-hour composite radon samples were collected at ASV-6 and ASV-1, respectively. Upwind concentrations were 7.66×10^{-10} uCi/ml and downwind concentrations showed 5.48×10^{-10} uCi/ml.

Radon daughter concentrations were also determined in the process plant building during the quarter and averaged 0.009 working levels or 2.7% of the MPC 0.33WL.

Complete data on these programs is attached to this report.

No work was performed on any potentially contaminated process equipment in the plant building, therefore no surface contamination surveys were performed.

Sincerely,

UNC TETON EXPLORATION DRILLING, INC.

Richard R. Appel
Coordinator - Permits and Licensing

Roger A. Garling
Project Manager

RAG/RRA/mdd
Attachments

UNC TETON EXPLORATION DRILLING, INC.

RADIATION FORM 10

RADIOLOGICAL SURVEY - URANIUM MINE SITES

AIR SAMPLING - RADON GAS

LOCATION: LEVELBERGER SITE

DATE: 1-19 to 1-21-85 1st QUARTER

SURVEYOR: R.A. GARLING

SAMPLE LOCATION	Time Of Collection	COUNT TIME From	COUNT TIME To	TTL. CNT. Time Minutes	Chamber Background CPM	Gross Counts	CPM	Corrected Counts CPM-BKG	Response Factor $\times 10^9$	Equilibrium Factor	MPC 3×10^{-8} μCi/ml μCi/ml
1. ASY-1 48 Hour BAG Comp - Downwind	11:10 - 14:00	16:35	16:45	10	1.4	46	4.6	3.2	5.84	1.0	5.48×10^{-10}
2. ASY-6 48 Hour BAG Comp - UPWIND	11:20 - 14:15	16:50	17:00	10	1.1	54	5.4	4.3	5.61	1.0	7.66×10^{-10}
3.											
4.											
5.											
6.											

☒ ROUTINE ☐ SPECIAL (If special, indicate reason for initiation of survey below) ☐ CORRECTIVE ACTION TAKEN

RESPONSE FACTOR = 6.0×10^9 CPM per μCi/ml FOR CS-6

RESPONSE FACTOR = 2.4×10^9 CPM per μCi/ml FOR CS-5

MINUTES BETWEEN TRANSFER & COUNTING	5 to 10	11 to 20	21 to 50	51 to 80	81 to 119	120 to 300
FACTOR OF EQUILIBRIUM	0.5	0.6	0.7	0.8	0.9	1.0

$$\frac{\text{CORRECTED COUNTS (CPM-BKG)}}{\text{(EQUILIBRIUM FACTOR)(RESPONSE FACTOR)}} = \mu\text{Ci/ml}$$

1. AIR SAMPLE COLLECTION FOR RADON GAS 1 MINUTE OF FILTERED AIR DRAWN THROUGH CHAMBER CHAMBER VOLUME 0.52 LITERS
2. ANALYSIS 2-5 HOURS AFTER COLLECTION
3. CALLIBRATION CHECK
   THORIUM 230 STANDARD ID. No. 11123
   1 MINUTE COUNT DPM 13310
   GROSS COUNTS (CPM) 6872

$\frac{\text{CPM}}{\text{DPM}} \times 100 = \%$ EFF EFFICIENCY 11.82 %

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UNC TETON EXPLORATION DRILLING, INC.

RADIATION FORM 1C

RADIOLOGICAL SURVEY - URANIUM MINE SITES

AIR SAMPLING - RADON DAUGHTERS

LOCATION: LEUENBERGER PROCESS PLT.

DATE: 3/30/83

SURVEYOR: R.A. GARLING

SAMPLE LOCATION	COLLECTION						ANALYSIS								
	TIME		Total Time Minutes	FLOW RATE LPM		Total Volume In Liters	COUNT TIME		TTL. CNT. Time Minutes	Gross Counts	CPM	BKG CPM	Corrected Counts CPM-BKG	Self-Abs. Factor	MPC .33 WL WL
	From	To		Initial	Final		From	To							
1. PPT. TANK SW PLANT CORNER	14:20	14:25	5	2.97	2.97	14.85	15:40	15:41	1	4.7	4.7	3.7	1.0	75m / 82	0.002
2. REC. TANK NW PLANT CORNER	14:29	14:34	5	2.97	2.97	14.85	15:45	15:46	1	11.7	11.7	3.7	8.0	71m / 90	0.013
3. UNDER IY PLANT CENTRAL	14:37	14:42	5	2.97	2.97	14.85	15:48	15:49	1	15.3.	15.3	3.7	11.6	66m / 100	0.017
4. MAINT. AREA NE PLANT CORNER	14:45	14:50	5	2.97	2.97	14.85	15:52	15:53	1	11.7	11.7	3.7	8.0	62m / 109	0.011
5. BY BAY DOOR SE PLANT CORNER	14:52	14:57	5	2.97	2.97	14.85	15:57	15:58	1	10.3	10.3	3.7	6.6	60m / 112	0.009
6. UPSTAIRS OFFICE	15:00	15:05	5	2.97	2.97	14.85	16:01	16:02	1	1.0	1.0	3.7	< BG	—	—

☑ ROUTINE ☐ SPECIAL (If special, indicate reason for initiation of survey below) ☐ CORRECTIVE ACTION TAKEN

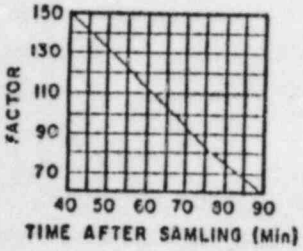
BACKGROUND TAKEN OUTSIDE PLANT BUILDING - HEADING BCK CPM = 3.7

$$\frac{C_2 - C_3}{2C_1 + (C_2 - C_3)} \times 100 = \%\ \text{SELF-ABSORPTION}$$

C_1 = COUNTS FILTER FACE UP

C_2 = COUNTS FILTER BACKSIDE UP

C = COUNTS FILTER FACE UP-COVERED



$$\frac{\text{CORRECTED COUNTS (CPM - BKG)}}{\text{(EFF)}\ \text{(100 - SELF ABS.)(FACTOR)(VOLUME LITERS)}} = \text{WL}$$

SAMPLE PUMP ID. No. 02354 CAL. DATE 3-23-83 CAL. COR. 2.97 LPM

1. AIR SAMPLE COLLECTION EXACTLY 5 MINUTES THROUGH 47mm. FILTER
2. ANALYSIS MINIMUM OF 40 MINUTES AFTER COLLECTION COUNT FOR 1 MINUTE
3. CALLIBRATION CHECK
   THORIUM 230 STANDARD ID. No. 11123
   1 MINUTE COUNT DPM 15310
   GROSS COUNTS (CPM) 6947

$$\frac{\text{CPM}}{\text{DPM}} \times 100 = \%\ \text{EFF}$$

EFFICIENCY 45.38 %

TETON

UNC TETON EXPLORATION DRILLING, INC.

RADIATION FORM 10

RADIOLOGICAL SURVEY - URANIUM MINE SITES
AIR SAMPLING - RADON GAS

LOCATION: LEUENBERGER PROCESS PLANT
DATE: 3/30/83
SURVEYOR: R.A. GARLING

SAMPLE LOCATION	Time Of Collection	COUNT TIME From	COUNT TIME To	TTL. CNT. Time Minutes	Chamber Background CPM	Gross Counts	CPM	Corrected Counts CPM-BKG	Response Factor x 10^9	Equilibrium Factor	MPC 3×10^{-8} μCi/ml μCi/ml
1. SW PLANT CORNER - PPT TANK	14:20	16:05	16:15	10	1.8	142	14.2	12.4	5.32	0.9	2.59×10^{-9}
2. NW PLANT CORNER - REC TANK	14:29	16:16	16:26	10	1.7	280	23.0	21.3	5.23	0.9	4.53×10^{-9}
3. NE PLANT CORNER - MAINT. AREA	14:45	16:39	16:49	10	2.1	316	31.6	23.5	6.20	1.0	4.75×10^{-9}
4. SE PLANT CORNER - BAY DOOR	14:52	16:51	17:01	10	2.9	211	21.1	18.2	3.713	1.0	4.90×10^{-9}
5.											
6.											

☒ ROUTINE ☐ SPECIAL (If special, indicate reason for initiation of survey below) ☐ CORRECTIVE ACTION TAKEN

RESPONSE FACTOR = 6.0×10^9 CPM per μCi/ml FOR CS-6
RESPONSE FACTOR = 2.4×10^9 CPM per μCi/ml FOR CS-5

MINUTES BETWEEN TRANSFER & COUNTING	5 to 10	11 to 20	21 to 50	51 to 80	81 to 119	120 to 300
FACTOR OF EQUILIBRIUM	0.5	0.6	0.7	0.8	0.9	1.0

$$\frac{\text{CORRECTED COUNTS (CPM-BKG)}}{\text{(EQUILIBRIUM FACTOR)(RESPONSE FACTOR)}} = \mu\text{Ci/ml}$$

1. AIR SAMPLE COLLECTION FOR RADON GAS 1 MINUTE OF FILTERED AIR DRAWN THROUGH CHAMBER CHAMBER VOLUME 0.52 LITERS
2. ANALYSIS 2-5 HOURS AFTER COLLECTION
3. CALLIBRATION CHECK
   THORIUM 230 STANDARD ID. No. 11123
   1 MINUTE COUNT DPM 15310
   GROSS COUNTS (CPM) 6947

$\frac{\text{CPM}}{\text{DPM}} \times 100 = \%$ EFF EFFICIENCY 15.88 %

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UNC TETON EXPLORATION DRILLING, INC.

RADIATION FORM 1D

RADIOLOGICAL SURVEY - URANIUM MINE SITES

AIR SAMPLING - RADON GAS

LOCATION: [illegible]

DATE: [illegible]

SURVEYOR: [illegible]

SAMPLE LOCATION	Time Of Collection	COUNT TIME From	To	TTL. CNT. Time Minutes	Chamber Background CPM	Gross Counts	CPM	Corrected Counts CPM-BKG	Response Factor	Equilibrium Factor	MPC 3×10^{-8} µCi/ml µCi/ml
1. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6.											

☐ ROUTINE ☐ SPECIAL (If special, indicate reason for initiation of survey below) ☐ CORRECTIVE ACTION TAKEN

RESPONSE FACTOR = 6.0×10^9 CPM per µCi/ml FOR CS-6

RESPONSE FACTOR = 2.4×10^9 CPM per µCi/ml FOR CS-5

MINUTES BETWEEN TRANSFER & COUNTING	5 to 10	11 to 20	21 to 50	51 to 80	81 to 119	120 to 300
FACTOR OF EQUILIBRIUM	0.5	0.6	0.7	0.8	0.9	1.0

$$\frac{\text{CORRECTED COUNTS (CPM-BKG)}}{\text{(EQUILIBRIUM FACTOR)(RESPONSE FACTOR)}} = \mu\text{Ci/ml}$$

1. AIR SAMPLE COLLECTION FOR RADON GAS 1 MINUTE OF FILTERED AIR DRAWN THROUGH CHAMBER CHAMBER VOLUME 0.52 LITERS
2. ANALYSIS 2-5 HOURS AFTER COLLECTION
3. CALLIBRATION CHECK
   THORIUM 230 STANDARD ID. No. [illegible]
   1 MINUTE COUNT DPM [illegible]
   GROSS COUNTS (CPM) [illegible]

$\frac{\text{CPM}}{\text{DPM}} \times 100 = \%$ EFF EFFICIENCY 45.79 %

TETON - R

UNC TETON EXPLORATION DRILLING, INC.

RADIATION FORM 1D

RADIOLOGICAL SURVEY - URANIUM MINE SITES

AIR SAMPLING - RADON GAS

LOCATION: Leuenberger Process Bldg.

DATE: 1-19-83

SURVEYOR: R.A.G.

SAMPLE LOCATION	Time Of Collection	COUNT TIME From	To	TTL. CNT. Time Minutes	Chamber Background CPM	Gross Counts	CPM	Corrected Counts CPM-BKG	Response Factor $\times 10^9$	Equilibrium Factor	MPC 3×10^{-8} μCi/ml μCi/ml
1. SW Plant Corner - PDT Tank B	12:02	14:27	14:37	10	1.9	207	20.7	18.8	5.32	1.0	3.53×10^{-9}
2. NW Plant Corner - Rec. Tank C	12:05	14:38	14:48	10	1.8	193	19.3	17.5	5.23	1.0	3.35×10^{-9}
3. SE Plant Corner - Mains Bay D	12:08	14:49	14:59	10	2.4	235	23.5	21.1	6.2	1.0	3.40×10^{-9}
4. NE Plant Corner - Manit Benche E	12:11	15:00	15:10	10	1.9	155	15.5	13.6	3.587	1.0	3.79×10^{-9}
5. Central Plant - Under IX F	12:14	15:29	15:39	10	1.0	307	30.7	29.7	3.713	1.0	7.999×10^{-9}
6.											

☒ ROUTINE ☐ SPECIAL (If special, indicate reason for initiation of survey below) ☐ CORRECTIVE ACTION TAKEN

RESPONSE FACTOR = 6.0×10^9 CPM per μCi/ml FOR CS-6

RESPONSE FACTOR = 2.4×10^9 CPM per μCi/ml FOR CS-5

MINUTES BETWEEN TRANSFER & COUNTING	5 to 10	11 to 20	21 to 50	51 to 80	81 to 119	120 to 300
FACTOR OF EQUILIBRIUM	0.5	0.6	0.7	0.8	0.9	1.0

$$\frac{\text{CORRECTED COUNTS (CPM-BKG)}}{\text{(EQUILIBRIUM FACTOR)(RESPONSE FACTOR)}} = \mu\text{Ci/ml}$$

1. AIR SAMPLE COLLECTION FOR RADON GAS 1 MINUTE OF FILTERED AIR DRAWN THROUGH CHAMBER CHAMBER VOLUME 0.52 LITERS
2. ANALYSIS 2-5 HOURS AFTER COLLECTION
3. CALLIBRATION CHECK
   THORIUM 230 STANDARD ID. No. 11123
   1 MINUTE COUNT DPM 15310
   GROSS COUNTS (CPM) 6872

$\frac{\text{CPM}}{\text{DPM}} \times 100 = \%$ EFF EFFICIENCY 44.89 %

TETON - R5