HEALTH ENVIRONMENT department

STATE OF NEW MEXICO
ENVIRONMENTAL IMPROVEMENT DIVISION
DISTRICT I - P.O. Box 2536
Milan, NM 87021 Tel. #287-8845
Thomas E. Baca, M.P.H., Director

Bruce King
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Larry J. Gordon, M.S., M.P.H.
DEPUTY SECRETARY

September 15, 1980

Mr. H. J. Abbiss
Vice-President
United Nuclear Corporation
Mining and Milling Division
Church Rock Operations
P.O. Drawer QQ
Gallup, NM 87301

Dear Mr. Abbiss:

This letter reports on a routine inspection on August 25 through August 27, 1980 at your Church Rock Operations of activity authorized by New Mexico Radioactive Materials License NM-UNC-ML-13.

The inspection was an examination of the activities authorized under the license as they relate to radiation safety; and to compliance with the Health and Environment Department's rules and regulations, and adherence to activities detailed in the license application.

During the inspection the following deficiency was found:

1. Your Ludlum micro-roentgen survey meters have not been calibrated since June 1979. Although the instruments are checked monthly with an appropriate check source as described in Section 11 of your license application, Section 4-110, and 4-200 of the New Mexico Radiation Protection Regulations require monitoring with properly calibrated instruments. A properly calibrated instrument is ordinarily one that is calibrated on some sort of standard range every 6 months.

Please inform this agency within twenty days of receipt of this letter of measures taken to correct the above deficiency.

Thank you for the courtesy and cooperation extended to us during the inspection.

Sincerely,

Theodore G. Brough

Theodore G. Brough
Environmental Scientist

jq

cc: Richard Wooten, UNC
Jerry Stewart, Santa Fe (2)
File

DRAFT INSPECTION REPORT FORM

1. Name and address of license

UNC Corp
Mining + Milling Div.
Church Rock operations
P.O. Drawer QQ
Gallup NM 87301

2. Date of Inspection Aug 25, 26, 27 1980

3. Type of Inspection R unannounced

4. License number(s), docket number(s), number and date of last amendment for each license. Category and Priority of each licensee.

NM-UNC-M[illegible]3
Last amend Aug 6, 1980
cat I

5. Date of previous inspection Jan 3, 4 1979

6. Proprietary information None

7. Scope of inspection if other than routine Routine

8. Participants (Licensee representatives and titles, State representatives, etc.)

UNC { Gus Swandquist, Mill + Mine, Super. / Ed Morales, Mill Super. / Richard Wooten, RSO }

T.G. Brough / Kent Brooks / Dave Baggett / Saul Trevathan } NM EID

9. Management Interview (Information required for N/C cases). Include discussion of the NRC checklist (see Implementation of Part 19, checklist)

with Swandquist and Morales, Richard Wooten → Instruments not calibrated

10. Action and Date: Letter to Licensee Sept 15, 1980

591 Clear

591 N/C

11. Recommend reinspection date March, 1981

12. Theodore G Brough — Inspector

7-15-80 — Date of Report

[signature] — Reviewer

Sept 25, 1980 — Date of Review

13. Inspection Summary (Including violations and safety items, and status of previously reported violations and safety items, etc.)

14. Summary of Licensed Program (Kind of program, number of people, rate of use or quantities on hand, places and frequency of use, type, quantity and use as authorized, etc.)

mill production: 3,000 tons/day; 2 shifts,
10 days on 4 days off = $\frac{20}{42}$ = 50%
120 people total of
30 salaried
90 hourly

15. Organization and Administration (Management organization, RSO, authorities and responsibilities, authorized users, qualifications, supervision, etc.)

16. Facilities (Use facilities, storage facilities, control of access, control devices and alarms, etc.)

no alarms.

contractors go thru pre-operational meetings - warned that if found in restricted area.

17. Equipment (Devices utilizing licensed material, monitoring instrumentation, special equipment as glove boxes, hoods, handling tools, respirators, etc.)

* no calib.

(1 being used. other out of calib.) → calib may or June 1979

2 Ludlum μr meters
Ludlum alpha scint. } calib at Eberline on 6 mo. basis

Ludlum GM - at UNM - not now in use - needs repair

lab Ludlum - checked
Brand new (Tennelec 5100 - w/ gas prop calc.) } using standards in Laboratory - then change gases, run plateau

1 Ludlum was calibrated less than 1 yr. ago.

18. Radiological Safety Procedures (Written operating and emergency procedures, availability of procedures, license and regs, training, Form AEC-3, etc.)

Annual update of training: done by Safety as part of weekly safety meetings

orientation outline given to employees - signed sheet by each employee

(contract employees sign MSHA sheet - states rad. training given.

In Gus Swandquist office (operations)

(maintenance has a set that apply to them.)

W.O. written for special jobs - drier operation - got an air sample taken.

(Drier repair procedures require respirators.)

2,8 7x24

18-20 ur/hr = background

792

19. Personnel Monitoring and Exposure to External Radiation (Type of monitoring, range of exposures, supplier, period worn, exposure history, etc.)

1979 Highest: 170 mr, 137 mr } av 36.6 mr (41 totalled); 13 zeros

1980 Highest: 361 mr, 151, 127 } av. 54.6 mr (15); 5 zeros. thru 7/22/80

2.88 mr/wk = back. IX 4 mr/wk in area

Quarterly service, Eberline, TLD. 500 mr or so max. anybody getting 75 mrem gets reported locally. +2 exposed av .578 Rem .04 MPC

20. Exposure of Employees to Airborne Radioactive Materials (Method of evaluation, type of samples, radioisotopes, records, bioassay, etc.)

for 1979 .23 .18

MPC calculations: using time weighted average (av for 1980 <.1 MPC)

.36 MPC in Feb 1980 (a packaging operator) most get less than .1 MPC

In June, MPC's dropped: packaging is spread around: RSO reviews and recommends a change in occupation.

annual dose report goes

Bio-assays: a semi annual dosage (MPC) report made, take top 10 or 10% MPC gets bio-assay. - no apparent corr. between

21. Effluents to Unrestricted Areas (Types, source, measurements, flow rates, applicable MPC, analytical procedures, environmental samples, etc.)

IX plant overflow - June 25, 1979 (EID called, Samples taken June 26, 1979)

Dam break July 16 (EID informed right away)

3.2 x10^-13 uC/ml is max. av. no. (see reported nos. in air sampling report ~~to~~ EID) at boundaries (~.1 MPC)

22. Disposals (Methods, typical quantities, etc.)

nothing comes out of yellow-cake area unless they are cleaned. contam equip can drift into work areas. control rms are eating areas. (must be kept clean). a sealed source would go back to the mfgr.

23. Miscellaneous Surveys, Evaluations and Records (External radiation levels, contamination levels, leak tests, etc.)

wipe surveys: once each 6 mos. on gague & ore ore analyzer Co^{57} (

Truck scanners: at installation and upon maintenance.

24. Special License Conditions

wipes on ore analyzer (not required)

X-ray analyzer (Pm^{-147}) Mar 17, 1980
11/15/79

leak tests for density gague - 3/6/79) dam break
done by mgr/installer

25. Posting and Labelling

RPS-11 posted
License File (in nearby office - John advises)

26. Independent Measurements (Type, results, comparison to licensee results, etc.)

WL meas. (see ENV MEAS. report, attached
Wipes taken
ur/hr readings - at perimeter and near drier, and (+
Radon measures: Grizzly
YC drier
Perimeter

27. Operations Observed

Yellow cake pkg - loading, covering drum
(with respirator on)
Tailings cyclone operating
WL measurements taken side / side

28. Emergency/contingency response plan

General Mill Foreman on duty - has access to data + plan

Fire marshall = Surface labor foreman

SOP for fire = 1 fire truck

Safety officer on duty: EMT's then drive to Ishpeming

29. Operational Records

Daily shift log:

operators log kept of Ons Swandquist (tailings) are handled

water balance

Operators make round each shift:

water levels

Dam conditions

fire conditions

30. Land Use

Everything stored within fence. (nothing

Storage in old Clowbrook. (has own substation)

31. Incidents, Overexposures, Theft or Loss, Equipment Malfunction (Those not described elsewhere should be reported here.)

None occurred (some wristbands reported from badges — turned out to be from mine and not have overexposures)
Spill due to dam break - July 16, 1980 - report filed

32. Other Information or Continuation from Previous Paragraphs

area TLD check at 23 locations (monthly badges)
[310 ur/hr at yellowcake area]
people badged are precip workers
and yellowcake packagers

STATE AGREEMENTS BRANCH
DIVISION III
INFORMATION NOTICE

Other

H.-1 - Implementation of
Part 19 Equivalent

The purpose of this Information Notice is to provide the SAB staff and the Agreement States with a check list of items for implementing Part 19, or the State equivalent, for agreement material licensees.

The checklist is attached.

IMPLEMENTATION OF PART 19 EQUIVALENT REGULATION

Check List

I. POSTING	Yes	No	N/A	*N/R
A. Equivalent regulations to Parts 19 & 20	✓			
B. The license and license conditions	✓			
C. Document tied to the license	✓			
D. Operating procedures	✓			
E. Any Notice of Violation, proposed Penalties or Orders			✓	
F. Notice to Employees	✓			
G. Documents, notices, or forms required to be posted are posted in a sufficient number of places to permit being seen when going to and from any licensed activity location to which the document applies.	✓			
H. Documents, etc., are legible and have not been altered.	✓			
I. Agency documents posted pursuant to I.E. and have been posted within 2 working days after receipt.			✓	
J. Licensee response, if any, posted for a minimum of 5 working days, or until corrective action was completed, whichever was later.	✓			
When posting of items I.A., I.B., I.C., I.D. is not practicable, the licensee may post a notice describing the material and where it may be seen.				

*Not Reviewed

II. INSTRUCTION TO WORKERS		Yes	No	N/A	N/R
A.	Individuals working in or frequenting restricted areas have been kept informed of storage, transfer or use of radioactive materials.	✓			
B.	Persons in A. have been instructed in health protection problems associated with exposure to such radioactive materials.	✓			
C.	Persons in A. have been instructed in precautions and procedures to minimize exposures and the purpose and use of protective devices employed.	✓			
D.	Persons in A. have been instructed in, and instructed to observe, to the extent within the worker's control, the applicable provisions of the Agency's regulations and license conditions.	✓			
E.	Persons in A. have been instructed of their responsibility to report promptly to the licensee any condition which could or has caused a violation of Agency regulations, license, or unnecessary exposure to radiation or radioactive material.	✓			
F.	Persons in A. have been instructed in the appropriate response to warnings regarding any unusual occurrence or malfunction that may involve radiation exposure.	✓			
G.	Persons in A. have been instructed in the radiation exposure reports which can be requested.	✓			
	The extent of the instructions should be commensurate with the real or potential radiological health hazards.				

III. NOTIFICATIONS AND REPORTS TO INDIVIDUALS	Yes	No	N/A	N/R
A. All radiation exposure data (internal and external) has been reported to the individuals noted in II.A as specified below.	✓			
B. Reports as specified in III.A. have included the appropriate legend "This report is furnished to you under the provisions of the (Agency) regulations _____. You should preserve this report for further reference."	✓			
C. The licensee has upon request of any worker advised him annually of his radiation exposure as shown in records maintained pursuant to Agency regulations.	✓			
D. The licensee has upon request of any former worker furnished a report of his radiation exposure to him.	✓			
E. The licensee has provided his workers with reports of any exposure to these workers which are required to be submitted to the Agency.	✓			

Radiation exposure data for an individual, and the results of any measurements, analyses, and calculations of radioactive material deposited or retained in the body of an individual, shall be reported to the individual as specified. The information reported shall include data and results obtained pursuant to Agency regulations, orders or license conditions, as shown in records maintained by the licensee pursuant to Agency regulations. Each notification and report shall: be in writing; include appropriate identifying data such as the name of the licensee, the name of the individual, the individual's social security number; include the individual's exposure information.

III. NOTIFICATIONS AND REPORTS TO INDIVIDUALS (Cont'd.)

	Yes	No	N/A	N/R
At the request of a worker formerly engaged in licensed activities controlled by the licensee, each licensee shall furnish to the worker a report of the worker's exposure to radiation of radioactive material. Such report shall be furnished within 30 days from the time the request is made, or within 30 days after the exposure of the individual has been determined by the licensee, whichever is later; shall cover, within the period of time specified in the request, each calendar quarter in which the worker's activities involved exposure to radiation from radioactive materials licensed by the Agency; and shall include the dates and locations of licensed activities in which the worker participated during this period.				

IV.	PRESENCE OF REPRESENTATIVES OF LICENSEES AND WORKERS DURING INSPECTION				
	A. Agency inspectors were allowed to consult privately with workers on appropriate matters. (1)	✓			
	B. Inspector was informed of the identity of the worker's representative for Agency inspections. (2)			✓	
	C. The worker's representative was allowed to accompany the inspector during the inspection of physical working conditions.			✓	
	(1) Inspectors may consult privately with workers concerning matters of occupational radiation protection and other matters related to applicable provisions of the regulations and licenses to the extent the inspectors				

IV. PRESENCE OF REPRESENTATIVES OF LICENSEES WORKERS DURING INSPECTION (Cont'd)

deem necessary for the conduct of an effective and thorough inspection.

During the course of an inspection any worker may bring privately to the attention of the inspectors, either orally or in writing, any past or present condition which he has reason to believe may have contributed or caused any violation of the chapter, or license condition, or any unnecessary exposure of an individual to radiation from licensed radioactive material under the licensee's control. Any such notice in writing shall comply with the requirements of the following:

(2) Any worker or representative of workers who believes that a violation of the regulations in this chapter, or license conditions exist or have occurred in license activities with regard to radiological working conditions in which the worker is engaged, may request an inspection by giving notice of the alleged violation to the Director of the Agency or to Agency inspectors. Any such notice shall be in writing, shall set forth the specific grounds for the notice, and shall be signed by the worker or representative of workers. A copy shall be provided the licensee by the Director of the Agency or the inspector no later than at the time of inspection except that, upon the request of the worker giving such

IV. PRESENCE OF REPRESENTATIVES OF LICENSEES WORKERS DURING INSPECTION (Con't)

notice, his name and the name of individuals referred to therein shall not appear in such copy or on any record published, released, or made available by the Agency, except for good cause shown.

(3) Each worker's representative shall be routinely engaged in licensed activities under control of the licensee and shall have received instructions as specified in II.

Different representatives of licensees and workers may accompany the inspectors during different phases of an inspection if there is no resulting interference with the conduct of the inspection. However, only one worker's representation at a time may accompany the inspectors.

With the approval of the licensee and the worker's representative an individual who is not routinely engaged in licensed activities under control of the license, for example, a consultant to the licensee or to the workers' representative, shall be afforded the opportunity to accompany inspectors during the inspection of physical working conditions.

Notwithstanding the other provisions of this section, inspectors are authorized to refuse to permit accompaniment by any individual who deliberately interferes with a fair and orderly inspection. With regard to any area containing proprietary information, the workers' representative for that area shall be an individual previously authorized by the licensee to enter that area.

SAFETY SUGGESTIONS RECEIVED DURING INSPECTIONS

During inspections, inspectors may receive safety suggestions relating to plant conditions or operations from licensee employees. Inspectors must be receptive to such suggestions and should attempt to resolve or deal with each one received. Even in those cases where the suggestion would require a licensee to do more than is required by NRC regulations, license conditions, or technical specifications, the inspector should discuss the suggestion with the employee and provide, to the best of the inspector's ability, the options that are available.

Depending upon the nature of the suggestion, some possible courses of action are as follows:

1. Encourage the employee to forward the suggestion in writing to plant management and, if appropriate, to the NRC.
2. For matters clearly under the jurisdiction of another Federal agency, or a state or local agency, encourage the employee to contact the appropriate agency, or offer to bring the information to the attention of the proper official.
3. Inform the employee that the matter will be evaluated and, if appropriate, brought to the attention of NRC management.

It is important that an employee profferring a suggestion related to safety be made aware that the NRC is interested in such suggestions and they will be pursued.

(Inspection notes)

UNC Church ~~Sept~~ aug 20, 1980

Ed Morales, Mill Supervisor

Richard Wooten

Respirators

.30 MPC is highest at yellowcake pkg.

4 or 5 yellowcake packaging operators (30 hrs/mo.)

Take MPC calc. on quarterly basis.
lately about once each 6 months.
[Probably end of last yr.]
[Take packaging + change rm] x charged time
average there in packaging area

Bio-assays. anybody who exceeds 10% MPC
over a 6-mo period
or 10 highest exposures
or anybody requesting one

Drier maintenance is a non-routine task
and air sample is taken.

Prod about 60-70% (3,000 tons/day)

now 2 shifts 10 days/4 off
[licensed for 4400 tons/day]

Hauling of backfill
... about ...

a shipment about once/wk
38 to 40 barrels (ATF)

Production presently about 4 or 5 barrels/day.

Precip operators also are doing packaging.
[Have not laid off packagers - they have gone to other areas in the mill]

Truck enters shipping yard and is loaded (stays overnight, if necessary]

[Planned to improve yellowcake packaging area to cut down noise + dust] - no capital at the moment.

[80-90 ur/hr at TLD above drier]

Ore processing area - Loader doors open - closed if dusty

WL + pCi) have been taken in the scale house.
.007 .7 pCi/l

100 ur/hr

Spill - running over from tank - ~~high~~ low pH
(one tank being worked on).

Shower operates, eyeball wash operates - over leach tanks

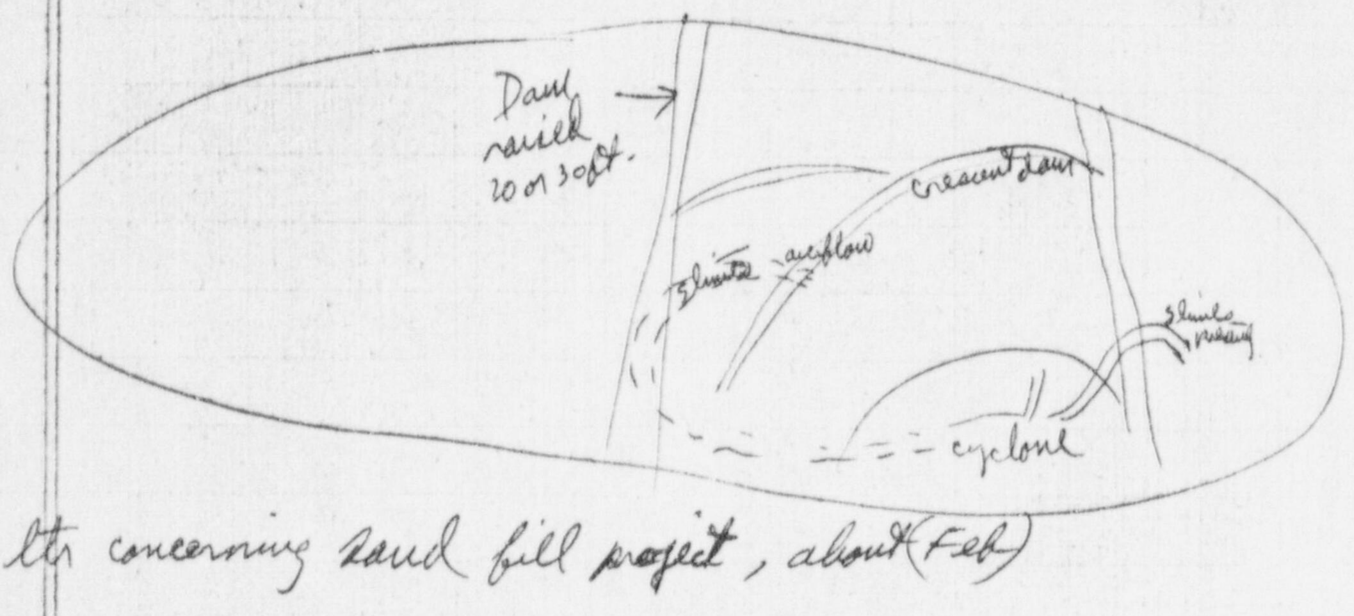
Enviroclear – recirculates part of tailings water to pH 4 to 4.5
the tailings water – anhydrous ammonia added
and from there goes back into grinding circuit and
added to line: used for make-up water in grinding circuit.
A lot more mine water goes thru the IX plant.

Tails (Floc is Calgon)

Old well (N)
across from new well cluster (TWQ 105A)
(In center of N line, 10 ft from fence).

Tails

Interceptor wells being put in on East boundary levee.



ltr concerning sand fill project, about (Feb)

* No Signs on N side [

complaints: Mailings: no enclosure, cover letter } Sept 26, 1980
Xerox copy of order
Regular mail: delayed } mail not forwarded

1X Plant: Old Church Mine.

12 - 50 mr/hr (entrance; near vent) 5 mr/hr outside

1X plant into operation at old church mine: Fall 1979.

Design 800 gal/min.
Mine is being dewatered
(some production now)

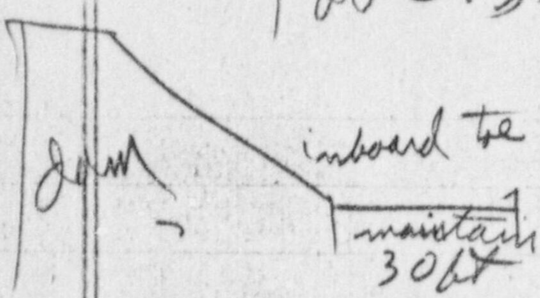
Discharge (sample taken whenever discharging)
Floc - 1st pond
BaCl - 2nd pond) then into ion exchange
(added in wing of 1X bldg, then flows back to pond)

1X discharge records - to Todd.

5 ponds (about 1 acre/pond)
[last pond gets BaCl, then from pond (N end) into 1X plant] (S. end)
(BaCl dribbles into inlet to 5th pond)

designed for 800 gal/min discharge from mine.

1 ov. 3 ... ...



7.94 acre lake
S. Pond

Stability reports submitted to State Engin (about 1 mo. ago.)

1 X plant

12 ur/hr outside bldg.

20 ur/hr outside near spill area
(25 ur/hr in ditch draining spill area)

1400 gal/min 24 hrs 7 days wk.

at Discharge pt meets 30 tot / 5 diss. pCi/l → see NPDES permit

Floc + Ball added going into Pond 2.

gamma / WL) once/Q.

Backfill: monitored Monthly (Radon Partic.)

2000 tons/day

Water Quality Quarterly.

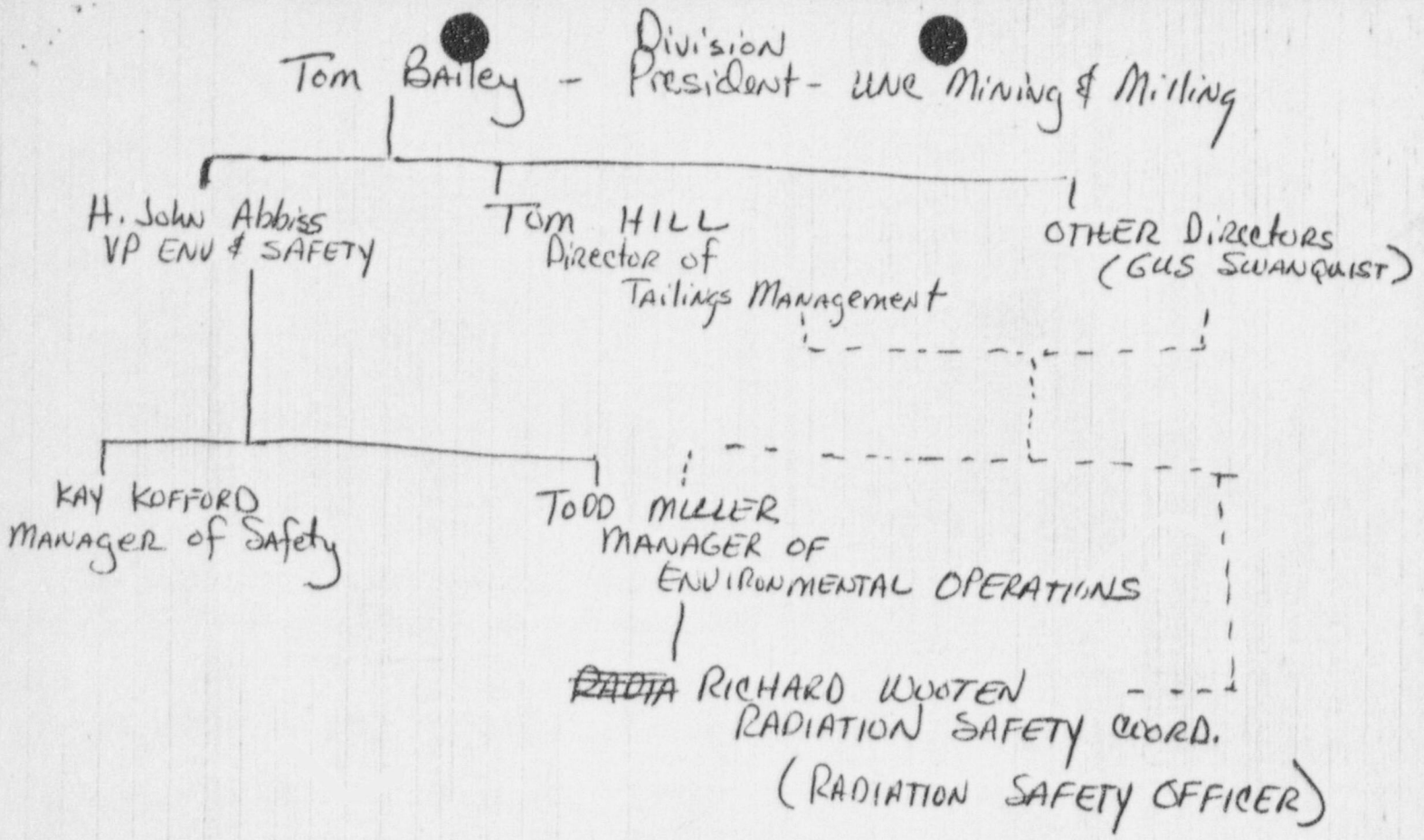
aug 27, 1980

Origin. Chart

UNC annual Report, 1980.

as of 8-21-80 Salaried & Hourly people - 120
Salaried 30
Hourly 90

last calib of ux meter: 4/79
will be calibrated ASAP.


Tom Bailey - Division President - UNC Mining & Milling
H. John Abbiss
VP ENV & SAFETY
Tom HILL
Director of
Tailings Management
OTHER DIRECTORS
(GUS SWANQUIST)
KAY KOFFORD
MANAGER of Safety
TODD MILLER
MANAGER OF
ENVIRONMENTAL OPERATIONS
~~RADIA~~ RICHARD WOOTEN
RADIATION SAFETY COORD.
(RADIATION SAFETY OFFICER)

UNITED NUCLEAR CORPORATION
Mining and Milling Division
New Mexico Operations

UNC - NECR MILL OPERATIONS
P.O. DRAWER QQ
GALLUP, NEW MEXICO 87301
(505)722-6651

RADIATION SAFETY - LABORATORY

I. When working with any contaminated or potentially contaminated samples, always wear gloves.

II. Always wear safety glasses when working in the lab. This is for protection from possible contamination and/or injury.

III. If working with contaminated or possibly contaminated dust samples, always work under a hood and/or wear a dust respirator. (cloth face mask is sufficient)

IV. What to do if a spill occurs.
1. Stop the spill.
2. Warn others in the area about the spill.
3. Isolate the spill and begin cleanup.
4. Monitor the area to insure no residual contamination is present.

V. How to clean up a spill.
1. Put on gloves.
2. Keep from spreading the substance.
3. Use a Kimwipe or some other type of absorbant material to collect the majority of the liquid.
4. Wipe area in a sweeping action to a central point. Not in a back and forth motion.
5. If sample is a dust sample use a damp sponge or cloth to prevent dust from going airborne. Clean as per #3.
6. After cleaning dispose of materials used. Dispose of your gloves immediately being careful not to contaminate any other areas.
7. Have area monitored or monitor area yourself, using the Ludlum Alpha Scintillation meter.

VI. In all cases of possible contamination, immediately notify your supervisor and the RSC. Never attempt to decontaminate yourself unless there is no other alternative.

VII. What do you do if you spill a potentially contaminated substance on yourself?
1. DO NOT PANIC. This is your worst enemy.
2. Do as any other spill. See Section IV.
3. Contact your supervisor and the Radiation Safety Coordinator.
4. If on gloves, dispose of the gloves being careful not to spread the contamination. Monitor your hands.
5. If the hands are contaminated, wash them right away using tepid water and mild soap. If after washing, contamination is still present, consult the RSC and the attached handout.
6. If on the clothing, monitor, if contaminated contact the RSC.

7. If on the face:
   a. Eyes--wash the eyes with eyewash or normal saline. Flush the eyes thoroughly using a sweeping action, with the head facing down.
   b. Nose--use a kimwipe or cotton swab to carefully wipe out the nose. Blowing the nose several times is also very effective.
   c. Mouth--wash or rinse the mouth with water being careful not to swallow it.
   d. Hair--wash the contaminated portion of the hair being careful to isolat it from the rest of the hair.
   e. Face in general--wash the face using tepid water and mild soap. It is best to use a soft cloth to perform the washing as this will prevent getting contamination in the eyes.

VIII. Always wear gloves, lab coat and safety glasses. This will help to minimize the potential spread of contamination to the body.

UNC CHURCH ROCK MILL

QUARTERLY EXPOSURE CALCULATIONS

NAME _____ SOCIAL SECURITY NO. _____ YEAR _____

Empl. # _____

MPC = 1 X 10^{-10} µCi/ml

Month	Working Area	Working Hour/Mo.	Measured Concentration µCi/ml	Time Weighted Exposure in µCi X 10^{-10}/ml	Fraction of MPC for Month	Dose to Lung Rem/Qtr.
January	Precip.					
	Yellowcake					
February	Precip.					
	Yellowcake					
March	Precip.					
	Yellowcake					
April	Precip.					
	Yellowcake					
May	Precip.					
	Yellowcake					
June	Precip.					
	Yellowcake					
July	Precip.					
	Yellowcake					
August	Precip.					
	Yellowcake					
September	Precip.					
	Yellowcake					
October	Precip.					
	Yellowcake					
November	Precip.					
	Yellowcake					
December	Precip.					
	Yellowcake					

Rem/Year:

Permissible Dose to Lung:

Rem/Quarter 3.75

Rem/Year 15.00

UNC CHURCH ROCK URANIUM MILL

DETERMINATIONS OF QUARTERLY OCCUPATIONAL EXPOSURES

1. On the "Monthly Exposure Record" enter the total number of hours spent by each employee in the yellowcake packaging and in the precipitation (precip.) areas of the Mill. This information is obtained from the individual employee time cards.

2. On the "Quarterly Exposure Calculations" for each employee record by month the total hours spent in yellowcake packaging and precipitation areas of the Mill.

   (a) Record the measured concentration of yellowcake in units of μCi/ml for each month.

   (b) Calculate and record the time weighted exposures in units of μCi X 10^{-10}/ml by:

$$\left(\frac{\text{hours worked per month}}{168 \text{ hrs. per work month}}\right)\left(\text{measured concentration}\right) = \text{time weighted exposure}$$

   (c) Calculate and record the fraction of MPC for each month by:

$$\left(\frac{\Sigma \text{ time weighted exposure for each area}}{\text{MPC}}\right) = \text{fraction of MPC for month}$$

   (d) Calculate and record the dose to the lung in Rem per quarter by:

$$\left(1.25 \text{ Rem/mo.}\right)\left(\sum_{1}^{3} \text{fraction of MPC for each month}\right) = \text{Rem/Quarter}$$

CHURCH ROCK URANIUM MILL

RADIATION SAFETY ORIENTATION OUTLINE

What is radiation and the difference between radiation and contamination?

1. Types of radiation.
2. Types of radiation present in the mill.

Radioactive materials present in the mill.

1. Uranium decay chain.

Radiological hazards in the mill.

1. Routes of entry into the human body.

Contamination Control

1. Spills
2. Clothing and showers
3. Respirators

Monitoring in the mill.

1. Surveys and sampling
2. Personnel

Rules for radiation protection

License, exposure records

Exposure limits.

1. As low as reasonably achievable (ALARA)
2. Women in radiation zones.

Environmental Protection

_____ _____

(Print) Last Name, First name Social Security No.

I have received the radiation orientation outlined above.

_____ _____

Employee No. Signature

Document location - Employee's personnel file, RSO office RSO-79-1

RULES FOR RADIATION PROTECTION

1. DON'T SMOKE, EAT OR DRINK inside any of the processing buildings or the laboratory.

2. Wash your hands frequently when working in the processing areas.

3. Wash your hands prior to eating, smoking or drinking.

4. If you have a cut or open sore, have it bandaged before working in or around process areas.

5. If you receive a cut or open wound while working in the processing areas immediately wash the injury and bandage it.

6. Wear a respirator whenever required by the Standard Operating Procedure and when instructed to by the foreman in charge.

7. Personnel handling yellowcake dust are required to wear a respirator at all times.

8. All cleanup in process areas must be performed with water; never use a broom clean up an area.

9. Work safely; report unusual conditions and defective equipment to your supervisor.

10. Do not loiter in any of the processing areas.

11. Read and follow the radiation protection requirements in the Standard Operating Procedure for the job you are doing.

12. All clothing contaminated with yellowcake are to be taken to the yellowcake packaging change room for laundering. DO NOT take coveralls with yellowcake on them home to be laundered.

CHURCH ROCK URANIUM MILL

RADIATION SAFETY ORIENTATION OUTLINE

(Visitors and Vendors)

(MSHA form covers this)

1. What is Radiation?

2. What are the effects of radiation?

3. What is the effect of radiation to myself while at the mill?

4. Potential radiological hazards at the mill.
   a. How can I tell what is hazardous and what isn't?
   b. What do I do if I come in contact with any of this material?

5. Protective measures

6. Your responsibilities and UNC's responsibilities to you.

I have received the above orientation and I am aware of my responsibilities and the potential hazards associated, if any, with my being at the mill.

_____

(PRINT) Last Name, First Name

_____

Firm or Organization Representing

_____

SIGNATURE

RADIATION TRAINING

What is Radiation and the difference between radiation and comtamination?

Contamination - Radioactive material in an area where you don't want it.

Radiation - The emanation of nuclear particles or high energy electromagnetic protons from a source such as a radioactive material or a device such as a reactor or accelerator. Something that is given off, can't usually be seen, can't feel it, taste it, or touch it.

Types of Radiation - 1. Non-Ionizing
2. Ionizing

What is an Ion?

An ion is an electrically charged atom, either positive or negative.

Atom - 2 Parts

1. Nucleus - Protons(+) and neutrons
2. Electron field - Electrons (-)

- easy to add or remove electrons

Stable Atom

Equal number of protons & electrons

Tons - Atoms with either more or less electrons than protons.
- If more electrons then negative if less then positive.

Non-Ionizing - Insufficient energy to add or remove electrons.
- Pure energy
- Low end of electromagnetic spectrum.
- Heat, light, sound, micro-waves, TV waves, radio waves, lasers.

Ionizing

A. Particulate
Has mass, dimension, a particle.

1. Alpha - Helium atom = +2 charge.
Range - Maximum about 2 inches
- Will penetrate clothing, skin, etc.
- Internal hazard
- Most dangerous - Ionizes atoms easily
2. Beta - Free electron
- Variable range dependent on energy.
- Will penetrate several layers of skin
- Can cause a burn similar to sunburn.
- Attaches to atoms - Method of ionization

B. Electormagnetic
1. X-Rays
- Formed in electron field

- Pure energy
- Medical benefit
- Hard to shield

2. Gamma Rays
   - Formed in nucleus
   - Similar to X-Rays hard to tell difference

Shielding

- To reduce to amount of gamma radiation present by 1/10 it takes:

  2 inches of lead
  or
  4 inches of steel
  or
  24 inches of water of human flesh

- The denser the material the better the shield.

Biological Effects

- What happens when you are exposed to radiation? Only one of the four things can occur.

  1. Radiation will pass through the cell without doing any damage.
  2. Radiation will pass through the cell doing some damage but the cell is able to repair the damage and repair it correctly.
  3. Radiation will pass through the cell, damaging the such that, it cannot repair it, so it reproduces in the damaged form. This is called a mutation.
  4. Radiation will kill the cell.

- Last 2 are worst cases but #3 can lead to cancer.

NOTE: Radiation effects newly forming cells, cancer is newly forming cells, treat cancer with radiation by #4.

Radioactive material present for consumer use.

- Smoke detectors, radium dials, color television, eyeglasses, dentures.

Background radiation

- Naturally occuring radiation due to cosmic rays form space, surroundings, building materials, and natural elements, man-made.
- Varies with altitude
- Los Angeles = 100 mrem/yr.
- Gallup = 165mrem/yr.

Esposure Limits

- Federal & State - 10 CFR 20
  Whole Body - Gamma = 5 rem/yr
  1.25 rem/qtr.
  Lungs = 15 rem/yr
  3.75 rem/qtr.

ALARA

- As low as reasonably achievable
- Keep levels of exposure as low as possible based on cost and technology.

UNC

About 3.4 of whole body limit per year
About 20-25% of lung limit per year.

ENV. MEASUREMENTS

Unit #111 - 6.83 UNC RGM Readings Unit #107 5.10 cpm/pci/l

GRIZZLY

	CPM	Poi/l	WL
8/26/80			
14:50	165.88	24.29	.24
15:50	202.92	29.71	.30
16:50	210.68	30.88	.31
17:50	205.37	30.07	.30
18:50	195.37	28.60	.28
19:50	189.82	27.79	.28
20:50	186.10	27.25	.27
21:50	183.08	26.81	.27
22:50	178.18	26.09	.26
23:50	176.50	25.84	.26
8/27/80	avg →	27.73	.277
00:50	176.10	25.78	.26
1:50	176.60	25.86	.26
2:50	173.60	25.42	.25
3:50	174.78	25.59	.25
4:50	175.80	25.74	.26
5:50	176.42	25.83	.26
6:50	180.00	26.35	.26
7:50	178.33	26.11	.26
8:50	185.93	27.22	.27
9:50	186.38	27.29	.27
10:50	186.25	27.27	.27
11:50	184.10	26.95	.27
12:50	186.75	27.34	.27
13:50	183.68	26.89	.27
	→	26.55	.266

Yellowcake Dryer

	CPM	Pci/l	WL
8/26/80 15:09	16.33	3.20	.03
16:09	13.52	2.65	.03
17:09	13.73	2.69	.03
18:09	14.53	2.85	.03
19:09	14.25	2.79	.03
20:09	18.15	3.56	.03
21:09	24.78	4.86	.05
22:09	23.05	4.52	.04
23:09	20.57	4.03	.04
8/27/80 avg →		3.46	.035
00:09	18.70	3.67	.04
1:09	22.40	4.39	.04
2:09	40.75	7.99	.08
3:09	51.85	10.17	.10
4:09	54.03	10.59	.10
5:09	35.63	6.99	.07
6:09	29.22	5.73	.06
7:09	37.10	7.27	.07
8:09	42.20	8.27	.08
9:09	32.27	6.33	.06
10:09	24.45	4.81	.05
11:09	20.97	4.11	.04
12:09	17.10	3.35	.03
13:09	14.90	2.93	.03
14:09	12.38	2.41	.02
14:39 avg →		6.42	.064

unit 107 Y/C
1443 off
8/27/80

14:39	000399
14:09	000737
13:09	000895
12:09	001026
11:09	001258
10:09	001467
09:09	001936
08:09	002532
07:09	002226
06:09	001753
05:09	002138
04:09	003242
03:09	003111
02:09	002445
01:09	001344
00:09	001122
23:09	001234
22:09	001383
21:09	001487
20:09	001089
19:09	000855
18:09	000872
17:09	000824
16:09	000811
15:09	000980
14:09	000000
14:09	000000
10:09	000000
99:99	000000

8/26/80

Grizzly #111
14:28 UNC
8/27/80

14:27	007070
13:50	011021
12:50	011205
11:50	011046
10:50	011175
09:50	011183
08:50	011156
07:50	01070
06:50	010800
05:50	010585
04:50	010548
03:50	010487
02:50	010416
01:50	010596
00:50	010566
23:50	010590
22:50	010691
21:50	010985
20:50	011166
19:50	011389
18:50	011722
17:50	012322
16:50	012658
15:50	012175
14:50	009953
13:50	000025

8/26/80

cc: Al Topp, Radiation (2)
G.A. Swanquist, UNC
Todd Miller, UNC
File

jq

Wolff

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT
BUREAU OF MINE INSPECTION
2340 MENAUL, N.E., SUITE 106
ALBUQUERQUE, NEW MEXICO 87107

SAFETY FIRST

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

OFFICE TELEPHONE 842-3066
RESIDENCE PHONE 344-1129

RECEIVED
SEP 08 1980
RADIATION PROTECTION SECTION

RADIATION

REPORT OF INSPECTION

I.D. No. 2901375 - Mount Taylor Project
Gulf Mineral Resources Co.
(Name) { Mine } Typed: Sept. 2, 1980
August 20,21, 1980
(Date of Inspection)

Underground Development
(Uranium) Valencia
(Classification of Mine) (County in which located)

Clayton Perry, Ventilation Engineer; Gerald Sena, Sr. Vent. Technician; Steve Owen, Chief Engineer; Joe Lister, Leadman
(Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The primary purpose of this inspection was to check radon-daughter concentrations in each working place of the mine, to measure quantity of air supplied to each employee working underground and to calculate a time-weighted exposure for each of the various classes of mine personnel.

For collecting alpha particles, the M.S.A. Monitaire air sampler, U.S. Bureau of Mines approval No. 2F-2004, was used. For counting the alpha disintegration, the PS-1 Eberline pulse rate meter in combination with the SPA-1 Eberline millipore filter radon probe was used.

GENERAL INFORMATION

Owner of Property: Gulf Mineral Resources Co.

Shaft Sinking and Mine Development Contractor:
Morrison Western Corporation

Location: One mile E of the village of San Mateo, & mile E off New Mexico Highway No. 53.

Employment:

Gulf Mineral Resources Co. & Small Contractors	385
Morrison Western Corporation	205

Work Schedule:

Gulf Mineral Resources Co.:

Hours per shift	8
Shifts per day	3
Hours per week	40

Company Officials:
Gulf Mineral Resources Company
K.S. Barnhill, Manager of NM Uranium Operations
George Holb, Operations Manager
John Thompson, Mine Superintendent
D. M. Walker, Mine Captain
Rosco S. Jurani, Ventilation Engineer
L.E. Lewis, Manager of Safety, Health and Environment
Tino Manzanares, Safety Director
Clayton P. Perry, Ventilation Engineer
Gerald Sena, Sr. Ventilation Technician
C. C. Little, Electrical Supervisor

JOE D. LONGACRE, SR.
State Inspector of Mines

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Harrison Western Corp. & Small Contractors

Hours per shift	8
Shifts per day	3
Hours per week	48

Type of operation: development of drifts for sub-level stoping

Trained in First-Aid:
Gulf Mineral Resources Co: 100%
Harrison Western Corp & Small Contractors: 5%

Last Fire Drill Practice: June 28, 1980

Harrison Western Corporation
Dennis Blanchette, Project Supt.
Jim Downs, Project Engineer
Steve Owen, Chief Engineer

Cranone Electrical
Joe Lister, Leadman

Last lost-time accident: Aug. 21, 1980

Lost-time accidents 1980: 54

Mine Rescue Training: Aug. 20, 1980

Self Rescuers Weighed: June 30, 1980

The inspector was accompanied by Messrs. Clayton P. Perry, Steve Owen and Joe Lister during the period of this inspection; Mr. Gilbert Miera, Dust and Mine Gas Inspector of this Bureau, also participated in this inspection and was accompanied by Mr. Gerald Sena.

The sinking of both shafts, 14' I.D. and 24' I.D., are completed. These shafts are interconnected in the 700 level, 1600 level, 3100 level, 3200 level, and 3300 level; between the 3100 level and 3200 level, these shafts were connected by vertical raises. These connection drifts and raises were used primarily for ventilation, pumping water and as an escapeway in case of extreme emergency.

VENTILATION AND RADIATION

This underground operation was ventilated by some 385,000 cubic feet per minute of air delivered and exhausted through the following openings:

Opening	Size	Air Direction	Air Volume C.F.M.	Make of Fan	Fan H.P.	Depth of Opening
Shaft No. 1	14' I.D.	Exhaust	385,000	N/A	N/A	3,470'
Shaft No. 2	24' I.D.	Intake	385,000	N/A	N/A	3,470'

The system of ventilation in this mine is set up with a series of underground primary fans located at some of the levels of this mine and most of them at the shaft interconnections as it can be seen in the attached Sketch #1-A and the distribution of the ventilation system for 3100 level can be seen in the attached Sketch #1-B and the 3200 and 3220 levels in attached Sketch #1-C.

The following is a list of radon-daughter concentrations found in the several working areas of the mine as well as ventilation volume measurements found during this inspection.

Sample #	Sample Location	Ventilation C.F.M.	Working Level
1	5E right from 5S drift development	16,000	0.0155
2	6S pressure station	12,000	0.0120
3	1.5S left of 5S drift development	12,000	0.0054
4	3200 - 0E, N drift	6,000	0.0017
5	1W right of 3S, 3200 drift development	12,000	0.0009

Sample #	Sample Location	Ventilation C.F.M.	Working Level
6	3S haulage	30,000	0.0011
7	3200 trench	26,000	0.0011
8	3200 pump station	12,000	0
9	C3E travelway	60,000	0.0013
10	C3N drift development	50,000	0.0017
11	C3N, 3E, 2N haulage	50,000	0.0270
12	C2E, N travelway	100,000	0.0002
13	SLS/S drift development	65,000	0.0980
14	SLS travelway	65,000	0.0520
15	S lunchroom	5,000	0.0002

It is evident from the above figures that the concentration of radon-daughters in this mine in terms of working levels is negligible below 0.1 working level; therefore, the company will not have problems with over-exposure from alpha particles to working personnel as long as a good system of ventilation control is maintained.

NOTICES ISSUED AUGUST 21, 1980

Notice No. 1, SIM Rule No. 76-1(2c): Evidence of cigarette smoking was found throughout the 3200 level (57.5-41M) Abated August 21, 1980.

Notice No. 2, SIM Rule No. 76-1(2c): Evidence of cigarette smoking was found in 3100 level shop (57.5-41M) Abated August 21, 1980.

Notice No. 3, SIM Rule No. 78-1(2a): Waste food and garbage at the bottom of 3200 level OE m/w shall be disposed in receptacles (57.20-13M) Abated August 21, 1980.

Notice No. 4, SIM Rule No. 78-1(2a): The waste food and Gatorade throughout the 3200 level shall be disposed into suitable receptacles (57.20-13M) Abated August 21, 1980.

Notice No. 5, SIM Rule No. 78-1(2a): The waste food and Gatorade throughout the 3100 level especially in 31-2N shall be disposed into suitable receptacles (57.20-13M) Abated Aug. 21, 1980.

Notice No. 6, Section No. 69-35-17(b), MMSA: Men working in 3200 level shall have in their possession safety glasses or goggles when working in a mine (57.15-4M) Abated Aug. 21, 1980.

Notice No. 7, SIM Rule No. 74-1(2c): Locomotive No. 056 in 3200 level shall have the lights repaired (57.9-2M) Abated August 21, 1980.

Notice No. 8, Section 69-35-16, MMSA: The battery and electric control exposed in locomotive No. 058 in 3200 level shall be guarded (57.14-1M) Abated August 21, 1980.

Notice No. 9, SIM Rule No. 71-1: The blasting line in 3200 level SE drift shall be properly supported and insulated (57.6-122M) Abated August 21, 1980.

Notice No. 10, SIM Rule No. 71-1: The blasting line in 3200 level 3S drift shall be properly supported and insulated (57.6-122M) Abated August 21, 1980.

Notice No. 11, SIM Rule No. 71-1: The oxygen and acetylene cylinder valves in 3200 level SE drift shall be kept protected by covers (57.16-6M) Abated August 21, 1980.

Notice No. 12, SIM Rule No. 71-1(2c): The oxygen and acetylene cylinders in 3220 level OE drift shall be secured in a safe manner (57.16-5M) Abated August 21, 1980.

Notice No. 13, SIM Rule No. 71-1(2c): The oil storage area in 3200 by the shop area shall be provided with "No Open Flame" sign (57.4-2M) Abated August 21, 1980.

Notice No. 14, Section 69-35-20, MMSA: The stretcher in the 3100 level shop shall be provided with splints. Abated August 21, 1980.

Notice No. 15, Section 69-32-8, MMSA: The powder box in 3200 level, OE drift shall be provided with benacade or stulls in both sides so haulage equipment can be kept away. Abated August 21, 1980.

Notice No. 16, Section 69-32-6, MMSA: The powder box in 3200 level, OE drift shall be provided with "No Open Flame" sign. Abated August 21, 1980.

Notice No. 17, Section 69-32-8, MMSA: The primer box in 3200 level, OE drift shall be provided with banacade or stulls in both sides, so haulage equipment can be kept away from it. Abated August 21, 1980.

Notice No. 18, SIM Rule No. 75-3(2a): The air trigger in the 3200 trench shall be provided with a noise control device (57.5-50(b)M) Abated August 21, 1980.

Notice No. 19, Section 69-30-3, MMSA: the track system throughout the 3200 level at the track guardrails, lead rails and frogs shall be protected or blocked in order to prevent a person's foot from becoming wedged (57.9-19M) Abate by August 28, 1980.

Notice No. 20, Section 69-35-5, MMSA: At the 3220 level trench, a trap door shall be installed at top of first landing from trench on m/w (57.11-36M) Abate by August 28, 1980.

Notice No. 21, Section 69-29-2, MMSA: The m/w between 3100 and 3200 level at OE drift of 3100 level shall have a minimum of 24" x 24" clearance. Abate by September 2, 1980.

Notice No. 22, Section 69-29-2, MMSA: The m/w between 3100 and 3200 level at OE drift of 3100 level shall be provided with positive closing doors and each door shall be provided with a device to allow a person to open the door when he or she is within 36 inches of the door. Abate by September 2, 1980.

Notice No. 23, Section 69-30-1, MMSA: Throughout haulageways in this mine, shelter holes shall be provided at intervals not more than 100 feet. Shelter holes shall be at least 4 feet high, 3 feet deep and 4 feet wide and kept clear of timber, tools, or other materials and marked conspicuously with lights or reflective signs, reflective tape, etc. (57.10-110M) Abate by September 2, 1980.

Notice No. 24, Section 69-33-3, MMSA: The primary underground fans shall have controls placed at a suitable protected location remote from the fan, preferably on the surface. (57.5-18F.M) Abate by September 30, 1980.

At the conclusion of this inspection, the above notices were discussed with Messrs. Tino Manzanares, Gerald Sena, Don M. Walker, Joe Lister, Clayton P. Perry, Steve Owen, Dennis Blanchette, and C. G. Little.

COMMENDATION

Commendation is made to company personnel for keeping the concentration of alpha particles below the maximum requirements throughout all working areas.

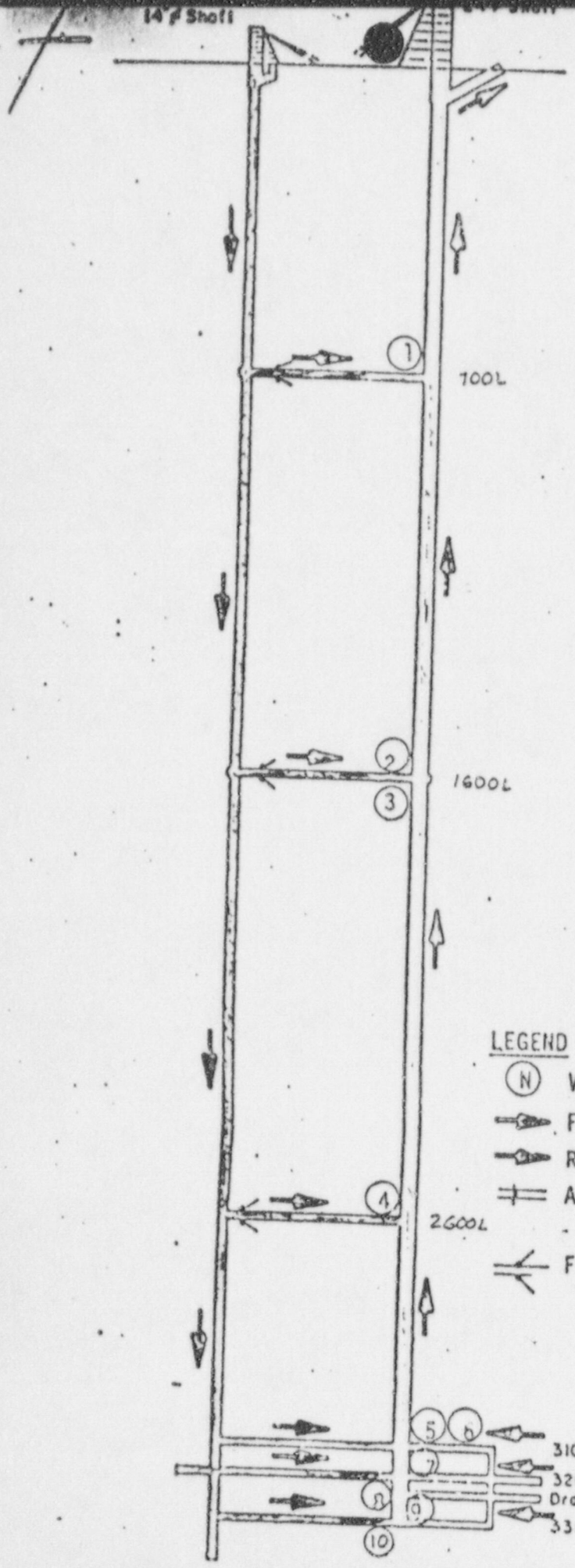
ACKNOWLEDGEMENT

The courtesy and cooperation of staff and personnel of the Mount Taylor Project Mine, during this inspection, are hereby gratefully acknowledged.

Inspected and Reported by:
L. A. Quinones
Dust and Mine Gas Engineer
Deputy Inspector of Mines

llk

Approved: .....
JOE D. LONGACRE, SR.
State Inspector of Mines



SKETCH IA

CURRENT VENTILATION CURCUIT WITH PRIMARY STATION FAN INSTALLATION

(1) 2-10 HP/19"ø (700 Level) JOY
5000 CFM @ 7" W G T P

(2) 20HP/31.5"ø (1600 Level) AXICO
10,000 CFM @ 8"W G T P

(3) 40HP/31.5"ø (1600 Level) WESTERN
20,000 CFM @ 9"W G T P

(4) 50HP/35"ø (2600 Level) AXICO
30,000 CFM @ 9"W G T P

(5) 3-150HP/48"ø (3100 Level- C1E & C2E
60,000 CFM @ 10"W G T P JETAIR

(6) 1-200 HP/54"ø (3100 Level- C2E)
90,000 CFM @ 10"W G T P JOY

(7) 3-150HP/48" ø (3200 Level- HIS)
60,000 CFM @ 10"W G T P JETAIR

(8) 1-150HP/48"ø (3200 Level- HOE)
60,000 CFM @ 10"W G T P JETAIR

(9) 1-60HP/31.5"ø (3220 Level- JOE)
24,800 CFM @ 10"W G T P WESTERN

(10) 1-60HP/31.5"ø (3300 Level- SIE)
24,800 CFM @ 10"W G T P JOY

LEGEND

(N) VANE AXIAL FAN
FRESH AIR
RETURN AIR
AIRDOOR/BULKHEAD
WITH MANDOOR
FIREDOOR (KEEP OPEN UNLESS OTHERWISE INSTRUCTED)

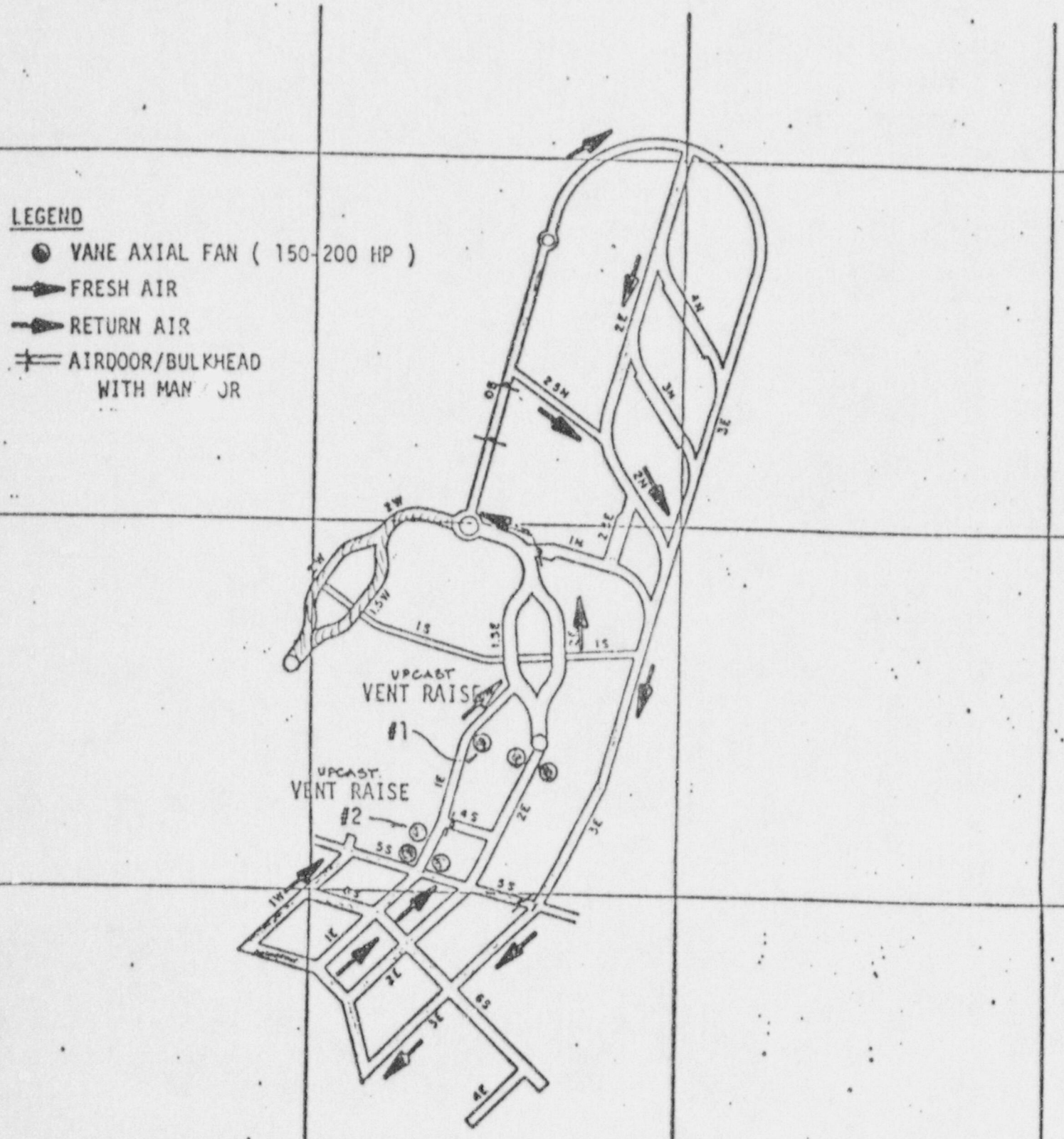
MT. TAYLOR PROJECT

14' & 24' Vertical Shaft Section

SKETCH # 1B

3100 Level

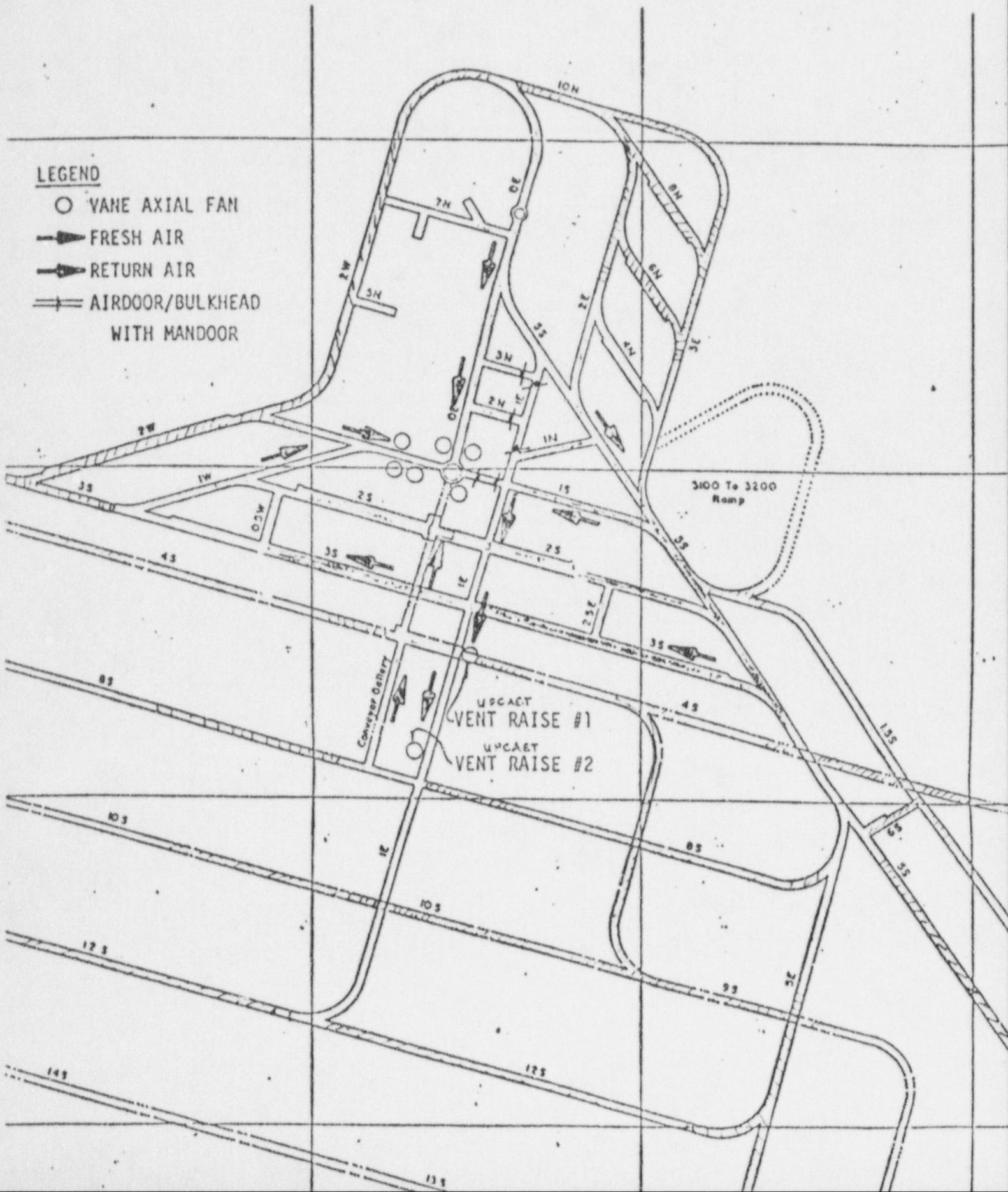
CURRENT VENTILATION CIRCUIT



SKETCH IC

3200 Level and 3220 Level

CURRENT VENTILATION CIRCUIT



M .10 File.

From the desk of

JOE D. LONGACRE, SR.
State Inspector of Mines

September 9, 1980

TO: Mr. Holcomb and Mr. Wolff

RE: Attached page of report

Please replace page 2 of the report you have in your possession at this time and replace it with this corrected copy of page 2. Thank you.

Joe D. Longacre, Sr.
State Inspector of Mines

11k
encl

Harrison Western Corp. & Small Contractors	
Hours per shift	8
Shifts per day	3
Hours per week	48

Type of operation: development of drifts for sub-level stoping

Trained in First-Aid:
Gulf Mineral Resources Co: 100%
Harrison Western Corp & Small Contractors: 85%

Last Fire Drill Practice: June 28, 1980

Harrison Western Corporation
Dennis Blanchette, Project Supt.
Jim Downs, Project Engineer
Steve Owen, Chief Engineer

Cranone Electrical
Joe Lister, Leadman

Last lost-time accident: Aug. 21, 1980

Lost-time accidents 1980: 54

Mine Rescue Training: Aug. 20, 1980

Self Rescuers Weighed: June 30, 1980

The inspector was accompanied by Messrs. Clayton P. Perry, Steve Owen and Joe Lister during the period of this inspection; Mr. Gilbert Miera, Dust and Mine Gas Inspector of this Bureau, also participated in this inspection and was accompanied by Mr. Gerald Sena.

The sinking of both shafts, 14' I.D. and 24' I.D., are completed. These shafts are interconnected in the 700 level, 1600 level, 3100 level, 3200 level, and 3300 level; between the 3100 level and 3200 level, these shafts were connected by vertical raises. These connection drifts and raises were used primarily for ventilation, pumping water and as an escapeway in case of extreme emergency.

VENTILATION AND RADIATION

This underground operation was ventilated by some 385,000 cubic feet per minute of air delivered and exhausted through the following openings:

Opening	Size	Air Direction	Air Volume C.F.M.	Make of Fan	Fan H.P.	Depth of Opening
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The following is a list of radon-daughter concentrations found in the several working areas of the mine as well as ventilation volume measurements found during this inspection.

Sample #	Sample Location	Ventilation C.F.M.	Working Level
1	5E right from 5S drift development	16,000	0.0155
2	6S pressure station	12,000	0.0120
3	7.5S left of 5S drift development	12,000	0.0054
4	3200 - 0E, N drift	6,000	0.0017
5	1W right of 3S, 3200 drift development	12,000	0.0009

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
BUREAU OF MINE INSPECTION
2340 MENAUL, N.E., SUITE 106
ALBUQUERQUE, NEW MEXICO 87107

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

SAFETY FIRST

OFFICE TELEPHONE 842-3056
RESIDENCE PHONE 344-1129

RADIATION CHECK UP

REPORT OF INSPECTION

I.D. No. 2900569 - Ann Lee Mine
United Nuclear Corp. (Name) { Mine } Typ: Aug. 13, 1980 August 5, 1980 (Date of Inspection)
Underground Uranium Mine (Classification of Mine) McKinley (County in which located) Bob Holley, General Mine Foreman (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The main purpose of this check up inspection was to abate the notices issued during the inspection carried out on July 24, 1980.

GENERAL INFORMATION

All general information as per location of operation, company officials, employment, etc. etc. shall refer to report of inspection dated July 24, 1980.

ABATEMENT OF NOTICES ISSUED July 24, 1980

Notice No. 7, SIM Rule No. 78-1(2a): (57.12-11M) Abated Aug. 5, 1980.

Notice No. 8, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 3: Abated Aug. 5, 1980.

Notice No. 9, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 9: Abated Aug. 5, 1980.

Notice No. 10, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 4: Abated Aug. 5, 1980.

ACKNOWLEDGEMENT

The courtesy and cooperation of Mr. Bob Holley and personnel of the Ann Lee Mine are hereby gratefully acknowledged.

Inspected and reported by:
L. A. Quinones
Dust and Mine Gas Engineer
Deputy Inspector of Mines

JOE D. LONGACRE, SR.
State Inspector of Mines

llk

ONE COPY OF THIS REPORT SHALL BE POSTED IN A CONSPICUOUS PLACE AT THE MINE

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT
BUREAU OF MINE INSPECTION
2340 MENAUL, N.E., SUITE 106
ALBUQUERQUE, NEW MEXICO 87107

SAFETY FIRST

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

OFFICE TELEPHONE 842-3065
RESIDENCE PHONE 344-1129

RADIATION

REPORT OF INSPECTION

I.D. No. 2900569 - Ann Lee Mine
(United Nuclear Corporation) (Name) { Mine } Typed: Aug. 6, 1980
July 24, 1980 (Date of Inspection)

Underground Uranium Mine (Classification of Mine) McKinley (County in which located) Bob Holley, General Mine Foreman (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The primary purpose of this inspection was to check "gamma" and "alpha" radiation in each working place of the mine, to measure quantity of air supplied to each man working underground, as required by State Statutes, rules and regulations of the New Mexico Statutes Annotated.

For collecting the alpha particles, the M.S.A. Monitaire air sampler, U.S. Bureau of Mines approval No. 2F-200A was used. For counting the alpha disintegration, the PS-1 Eberline portable scaler, pulse rate meter in combination with the SPA-1 Eberline millipore filter radon probe was used.

For measuring the gamma radiation, the Eberline portable ion chamber, Model RO-3 cutleple type was used. The American National Standard Institute (A.N.S.I.) Standard was used to evaluate the results, and during the measuring of the gamma radiation, the criteria of the Standard was followed.

GENERAL INFORMATION

Owner and Operator: United Nuclear Corp.

Location: Ambrosia Lake Mining District; approx. 25 miles NE of Grants, NM

Employment: 13

Work Schedule:
- Hours per shift 8
- Shifts per day 1
- Hours per week 40

Trained in First-aid: 90%

Company Officials:
Tom Bailey, President
Bob Schlosser, Gen. Mgr. Eastern Mines
Jack Farley, Resident Manger
Bob Holley, General Mine Foreman
Roger Siegmann, Safety Officer
John Visarraga, Ventilation Foreman

Previous Radiation Insp: Jan 3,4, 1979

Mining methods: Developing drifts in ore bodies and repairing old drifts for modified room & pillar extraction

JOE D. LONGACRE, SR.
State Inspector of Mines

ONE COPY OF THIS REPORT SHALL BE POSTED IN A CONSPICUOUS PLACE AT THE MINE

Last Fire drill training conducted: 6-10-80

Principal Product: Uranium ore

Trained in Mine Rescue: Four men 1-16-80

Type of operation: Underground

Self Rescuer Weighed: 5-16-80

Last Lost-time accident: 1-9-80

The inspector was accompanied by Mr. Bob Holley during the entire period of this inspection.

VENTILATION

The mine was ventilated by some 130,000 cubic feet per minute of air delivered and exhausted through the following openings:

Opening	Size	Air Direction	Air Volume C.F.M.	Make of Fan	Fan H.P.	Depth of Opening
3-compt. shaft	9' x 16'	Intake	130,000	-	-	900'
B.H.No1	60"	Exhaust	44,000	Joy Series 1000	1-150	850'
B.H.No2	48"	Exhaust	43,000	Joy Series 1000	1-150	850'
B.H.No3	36"	Exhaust	43,000	Hartzell	1-150	800'

Main fans were electrically powered, axial-flow type units. All primary fans were surface-mounted units. All boreholes (B.H.) were steel lined throughout the length of the opening. Air was distributed to the working places by directing the primary air flow, use of auxiliary fans and vent tubing. Air flow underground was controlled by bulkheads, air doors, air seals, overcasts, brattices and curtains.

ALPHA AND GAMMA RADIATION

The following is a list of alpha and gamma radiation measurements. Time-weighted exposure calculations for alpha radiation for each of the various classes of mine personnel, air volume measurements, and the mine exposure index are listed. Gamma radiation rates are indicated in milli-Roentgens per hour (mR./h.) and alpha radiation concentrations are indicated in working levels (W.L.)

Sample No.	Sample Location	Ventilation C.F.M.	Man-Shift Exposure M&M	Stopes	Haulages	W.L. Alpha Radiation	mR./h. Gamma Radiation
1	2 Slant Drift Development	2,000	0.1	2.0		0.2	0.80
2	2 Slant Haulage	6,000	0.1		1.0	0.4	0.30
3	1 Slant Drift Development	4,000	0.1	2.0		0.4	0.90
4	1 Slant Haulage E of GE Lunchroom	10,000	0.1		1.0	0.3	0.40
5	GE Haulage	8,000	0.1		0.5	0.2	0.30
6	GE Lunchroom	3,000	0.1	1.0	0.5	0.1	0.50
7	GE Haulage S of GE Luhchrm	16,000	0.1		0.5	0.1	0.30
8	Main Diesel Shop	10,000	1.1			Nil	0.40
9	GE Haulage S of Diesel Shop	12,000	0.1		0.5	Nil	0.30
10	Skip tender&1-4 Station	24,000	0.1		1.0	Nil	0.30
	TOTALS		2.0	5.0	5.0		

The average time-weighted exposure for the various classes of mine personnel and the total mine exposure index are as follows:

Maintenance and Management	= 0 x Working Level
Stopes and Developments	= 0.3 x Working Level
Haulageways	= 0.2 x Working Level
Total Mine Exposure Index	= 0.2 x Working Level

The average gamma radiation measurements for this mine is 0.45 mR./h.

The average gamma radiation measurement for this mine is below 2.0 mR./h.; therefore, no gamma radiation dosimeter is required for mine personnel to wear.

NOTICES ISSUED JULY 24, 1980

Notice No. 1, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 1: Men loading around No. 2 slant drift development shall use safety jacks or stulls. Abated July 24, 1980.

Notice No. 2, Section 69-32-13, NMSA: The electric primers in No. 1 slant drift development shall be carried in sacks or bags. (57.6-57M) Abated 7-24-80.

Notice No. 3, Section 69-5-7(c); NMSA: All drill equipment, etc. shall be removed in No. 1 slant drift development before loading the round. Abated July 24, 1980.

Notice No. 4, SIM Rule No. 75-1(2c): The air blow pipe in the 1-4 trench shall be provided with safety chain. (57.13-21M) Abated July 24, 1980.

Notice No. 5, SIM Rule No. 71-1(2c): The oil storage area in GE haulage by GE lunchroom shall be provided with fire extinguisher. (57.4-4M) Abated July 24, 1980.

Notice No. 6, SIM Rule No. 76-1: Evidence of cigarette smoking was found in GE lunchroom. (57.5-41M) Abated July 24, 1980.

Notice No. 7, SIM Rule No. 78-1(2a): The telephone line and shaft signal line in 1-4 station shall be kept away from high-potential power lines. (57.12-11M) Abate by July 31, 1980.

Notice No. 8, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 3: Areas in GE haulage that are above 10 feet in height shall be supported with roof bolts and heavy wire mesh fencing. Abate by July 31, 1980.

Notice No. 9, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 9: Areas in GE haulage that are fifteen (15) feet in width or wider; the width shall be reduced by installing stulls or cribbs. Abate by July 31, 1980.

Notice No. 10, Rules and Regulations Effective in the Uranium Mining Areas, Rule No. 4: All ribs (sides) in GE haulage that are fractures shall be supported with rock bolts and lending mats or timber. Abate by July 31, 1980.

At the conclusion of this inspection, notices issued were discussed with Mr. Bob Holley.

ACKNOWLEDGEMENT

The courtesy and cooperation of staff and personnel of the Ann Lee Mine during this inspection are hereby gratefully acknowledged.

Inspected and Reported by:
L. A. Quinones
Dust and Mine Engineer
Deputy Inspector of Mines

Approved: Joe D. Longacre, Sr.
JOE D. LONGACRE, SR.
State Inspector of Mines

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STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT
BUREAU OF MINE INSPECTION
2340 MENAUL, N.E., SUITE 106
ALBUQUERQUE, NEW MEXICO 87107

SAFETY FIRST

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

OFFICE TELEPHONE 842-3066
RESIDENCE PHONE 344-1129

RADIATION CHECKUP

REPORT OF INSPECTION

I.D. No. 2901729 - Piedra Triste Unit Mine
Todilto Exploration and Development Co. (Name) { Mine } Typed July 22, 1980
July 17, 1980 (Date of Inspection)

Underground Uranium (Classification of Mine) | McKinley (County in which located) | Fred Quimby, Mine Supt. (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The main purpose of this inspection was to check the places where radon-daughter concentrations were found to be above the maximum permissible concentrations during the inspection carried out on June 5, 1980.

GENERAL INFORMATION

All general information as per location, employment, company officials, and so forth, shall refer to radiation inspection report dated June 5, 1980.

RADIATION

The following radon-daughter concentrations were found during this inspection:

Sample No.	Sample Location	Ventilation c.f.m.	Alpha Radiation Working Level
1	2880 drift development	5,600	Nil
2	3600 & 2880 haulage	7,000	0.1
3	Main decline exhaust	45,000	0.6

ACKNOWLEDGEMENT

The courtesy and cooperation of staff and personnel of the Piedra Triste Unit Mine during this check-up inspection are hereby gratefully acknowledged.

Inspected and reported by:
L. A. Quinones
Dust and Gas Mine Engineer
Deputy Mine Inspector

Joe D. Longacre Sr.
JOE D. LONGACRE, SR.
State Inspector of Mines

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ONE COPY OF THIS REPORT SHALL BE POSTED IN A CONSPICUOUS PLACE AT THE MINE

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
BUREAU OF MINE INSPECTION
2340 MENAUL, N.E., SUITE 106
ALBUQUERQUE, NEW MEXICO 87107

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

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RADIATION
REPORT OF INSPECTION

I.D. No. 2901710 - Westranch Mine
(Cobb Nuclear Corporation) (Name) { Mine } Typed July 31, 1980 July 15, 1980 (Date of Inspection)

Underground Uranium Mine (Classification of Mine) McKinley (County in which located)

Charles Lunger, Safety Director
Gerald R. Small, Mine Foreman (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The primary purpose of this inspection was to check "gamma" and "alpha" radiation in each working place of the mine, to measure quantity of air supplied to each man working underground, as required by State Statutes, rules and regulations of the New Mexico Statutes Annotated.

For collecting the alpha particles, the M.S.A. Monitaire air sampler, U.S. Bureau of Mines approval No. 2F-200A was used. For counting the alpha disintegration, the PS-1 Eberline portable scaler, pulse rate meter in combination with the SPA-1 Eberline millipore filter radon probe was used.

For measuring the gamma radiation, the Eberline portable ion chamber, Model RO-3 cutleple type was used. The American National Standard Institute (A.N.S.I.) Standard was used to evaluate the results, and during the measuring of the gamma radiation, the criteria of the Standard was followed.

GENERAL INFORMATION

Owner and Operator: Cobb Nuclear Corp.

Location: Approximately 12 miles W of Prewitt, NM, on Borrego pass road.

Employment: 69

Work Schedule:
- Hours per shift 8
- Shifts per day 1
- Hours per week 40

Self rescuer weighed: May, 1980

Company Officials:
George O. Lotspeich, President
Richard Stevenson, General Superintendent
Charles Lunger, Safety Director
Gerald R. Small, Mine Foreman

Mining methods: re-development for modified room and pillar extraction

Principal product: uranium ore

Previous radiation inspection: Sept. 19, 1979.

JOE D. LONGACRE, SR.
State Inspector of Mines

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Mine Emergency fire drill: Feb., 1979

Last Lost-time accident: April 4, 1980

Trained on First aid: 100%

Trained in Mine Rescue: None

The inspector was accompanied by Messrs. Charles Lunger and Gerald Small during the period of the inspection

The mine is opened by an 800 foot decline, pitching at 20° slope; this decline is used for hoisting development muck and for hoisting materials. This decline is also used as a travelway for all underground personnel

The mine is also opened by a vertical shaft 4'6" x 3'9" in size, supported with square set timbering and is 260 feet deep. This shaft, at the present time, is used for exhausting used air. Besides the vertical shaft and the main decline, this mine has two 18" I.D. boreholes; these boreholes are used strictly for ventilating the mine.

VENTILATION

Fresh air entered the mine through the main decline at a rate of 8,000 cubic feet per minute, and after ventilating the working places, used air was forced to exhaust through the vertical shaft, by a 7½ H.P. L.J. Wing Manufacturing Company, axial-flow type electric fan, which was mounted at the surface collar of this shaft.

Fresh air underground was distributed throughout the working places and to the W drift development by an auxiliary 5 H.P. Hartzell fan with the aid of a 24" vent tubing. Air flow underground was controlled by bulkheads and brattice curtains.

ALPHA AND GAMMA RADIATION

The following is a list of alpha and gamma radiation measurements. A time-weighted exposure calculations for alpha radiation for each of the various classes of mine personnel, air volume measurements, and the mine exposure index are indicated. Gamma radiation rates are indicated in MilliRoentgens per hour (mR/h), and alpha radiation concentrations are indicated in working levels (WL).

Sample No.	Sample Location	Ventilation c.f.m.	Man-Shift Exposure M&M	Slopes	Haulages	Alpha Rad. W.L.	Bamma Rad. mR./h.
1	SW haulage drift dev	1,200	0.2	2.0		0.5	0.40
2	SW haulage drift No1	1,800	0.2		1.0	0.4	0.20
3	SW haulage drift No2	5,000	0.2		1.0	0.2	0.20
4	SW refuge chamber	static	0.1			0.3	0.30
5	Lunchroom and station	6,000	0.1	0.5	0.5	0.4	0.20
6	Main decline	8,000	0.2	0.5	0.5	Nil	0.10
	TOTALS		1.0	3.0	3.0		

The average time-weighted exposure for the various classes of mine personnel and the total mine exposure index are as follows:

Maintenance and Management	= 0.2 x working level
Stopes and Development	= 0.4 x working level
Haulageways	= 0.3 x working level
Total Mine Exposure Index	= 0.3 x working level

The average gamma radiation measurements for this mine is 0.23 mR/h.

The average gamma radiation measurement for this mine is below the 2.0 mR/h required.

ABATEMENT OF NOTICES ISSUED May 29, 1979

Notice No. 7, SIM Rule No. 78-1(2a); (57.5-47M) Abated July 15, 1980.

EXTENSION OF NOTICES ISSUED May 29, 1979

Notice No. 6, Section 69-33-3, NMSA: The primary fan in the surface shall be so arranged that the ventilating current can be reversed quickly. Notice extended to be abated by July 18, 1980.

NOTICES ISSUED July 15, 1980

Notice No. 1, Section 69-5-7(c), NMSA: The silica dust condition throughout the main decline and W haulage drift shall be controlled with water or dust control material. Abated July 15, 1980.

Notice No. 2, SIM Rule No. 75-1(2c): The air hose for the drill machine in the W drift development shall be provided with safety chain. (57.13-21M) Abated July 15, 1980.

Notice No. 3, Section 69-35-16, NMSA: The fans in W drift haulage shall be provided with guards at the intake end of fan. (57.14-1M) Abated July 15, 1980.

Notice No. 4, SIM Rule No. 71-1(2c): The hand-held power drill shall have the locking device removed. (57.14-10M) Abated July 15, 1980.

Notice No. 5, Section 69-34-8(a), NMSA: The portable drill in the lunch room shall be effectively grounded. Abated July 15, 1980.

Notice No. 6, Section 69-34-8(a), NMSA: The electric plug in the lunchroom shall be a three-pronged connection. Abated July 15, 1980.

Notice No. 7, Section 69-32-8, NMSA: The auxiliary magazine in the W haulage drift shall be placed at least 10 feet away from the main haulage. Abated July 15, 1980.

Notice No. 8, Section 69-32-8, NMSA: The powder magazine in W haulage drift shall be provided with "No Open Flame" sign. Abated July 15, 1980.

Notice No. 9, Section 69-32-8, NMSA: The primer magazine in W haulage drift shall be provided with "Danger Explosive" sign. Abated July 15, 1980.

Notice No. 10, SIM Rule No. 74-1(2c): The blasting device in W haulage drift shall be kept locked. (57.6-128M) Abated July 15, 1980.

Notice No. 11, Section 69-35-20, NMSA: The first aid station in the main lunch room shall be provided with splints and the blanket shall be protected from moisture. Abated July 15, 1980.

Notice No. 12, SIM Rule No. 71-1(2c): Flammable materials shall not be stored within 100 feet from the decline opening. (57.4-46M) Abated July 15, 1980.

Notice No. 13, Section 69-5-15, NMSA: The report of inspections shall be posted in a conspicuous place in glass cover outside of the mine office where it can be read and where it shall remain until superceded by the next report of inspection. Abated July 15, 1980.

Notice No. 14, SIM Rule No. 74-2(2a): Mine evacuation drills shall be held for each shift once every six months. (57.4-73M) Abated by 7/28/80.

Notice No. 15, SIM Rule No. 74-3(2a): A specific escape and evacuation plan shall be posted at the underground station and lunchroom, etc., etc. (57.11-53(a-f)M) Abate by July 18, 1980.

Notice No. 16, SIM Rule No. 71-3(2c): This mine shall have at least one man trained in mine rescue in the last six months. (57.4-70M) Abate by July 28, 1980.

At the conclusion of this inspection, all notices issued were discussed with Messrs. Richard Stevenson and Charles Lunger.

ACKNOWLEDGEMENT

The courtesy and cooperation of the staff and personnel of the Westranch Mine during the inspection is hereby gratefully acknowledged.

Inspected and reported by:
L. A. Quinones
Dust & Mine Gas Engineer
Deputy Mine Inspector

Approved: Joe D. Longacre Sr.
JOE D. LONGACRE, SR.
State Inspector of Mines

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SAFETY FIRST

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

OFFICE TELEPHONE 842-3055
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RADIATION

REPORT OF INSPECTION

I.D. No. 2901360 - Great Eagle Mine
McCauley Mining Co. (Name) { Mine } Typed July 30, 1980
July 15, 1980 (Date of Inspection)

Fluorspar (Classification of Mine) Grant (County in which located) Ray Baker, Person in Charge (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The primary purpose of this inspection was to check radon-daughter concentrations in each working place of the mine, to measure quantity of air supplies to each man working underground, and to calculate a time-weighted exposure for each of the various classes of mine personnel.

For collecting the alpha particles, the MSA Monitaire air sampler, U. S. Bureau of Mines approval No. 2F-2004 was used. For counting the alpha disintegration, the PS-1 Eberline PRM-4 pulse rate, in combination with the pulse integrator PI-1 was used.

GENERAL INFORMATION

Owner and Operator: McCauley Mining Co.

Company Officials:
Tom McCauley, General Manager
Ray Baker, Person in Charge

Location: Six (6) miles NE of Red Rock, New Mexico

Employment: 9

Mining Method: Decline, stope development

Work Schedule:
Hours per day 8
Hours per shift 2
Hours per week 40

Principal product: Fluorspar

Last radiation inspection: May 16, 1979

This inspector was accompanied by Mr. R. Baker during the entire period of the inspection.

This operation is opened by one decline, 9'x12', 1,000 feet deep. A secondary exit, which will be used for exhaust and escapeway, is also being developed.

JOE D. LONGACRE, SR.
State Inspector of Mines

ONE COPY OF THIS REPORT SHALL BE POSTED IN A CONSPICUOUS PLACE AT THE MINE

VENTILATION

The mine is presently being ventilated by a 20 HP axi-vane fan mounted on the surface; intake is 9,900 c.f.m.

RADON DAUGHTER CONCENTRATIONS

The following is a list of radon-daughter concentrations found in each working place of the mine, as well as ventilation volume found during this inspection.

A time-weighted exposure calculation for the different types of mine personnel was not made due to the low concentration of radon-daughters (0.08 working level) found during this inspection; therefore, the total mine exposure index will be too low, as a result, it will be negligible.

Sample No.	Sample Location	Ventilation c.f.m.	Working Level
1	Main decline	25,200	Nil
2	No. 12 stope	2,500	0.01
3	No. 11 stope	3,100	Nil

As it can be seen in the figures, the concentration of radon-daughters in this mine, in terms of working levels, are below the standards; therefore, the company will not have problems with over exposure to the working personnel, as long as the same system of ventilation is kept.

ACKNOWLEDGEMENT

The courtesy and cooperation rendered during this inspection are hereby gratefully acknowledged.

Inspected and reported by:
Gilbert E. Miera
Dust & Gas Mine Inspector
Deputy Inspector of Mines

Approved: Joe D. Longacre Sr.
JOE D. LONGACRE, SR.
State Inspector of Mines

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ALBUQUERQUE, NEW MEXICO 87107

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JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

OFFICE TELEPHONE 842-3055
RESIDENCE PHONE 344-1129

RADIATION

REPORT OF INSPECTION

I.D. No. 2901650 - Haystack Mine
Todilto Exploration and Development Company (Name) { Mine } Typed July 22, 1980 / July 8, 16, 1980 (Date of Inspection)

Underground Uranium Mine (Classification of Mine) | McKinley (County in which located) | Dale Palmer, Mine Superintendent (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The primary purpose of this inspection was to check "gamma" and "alpha" radiation in each working place of the mine, to measure quantity of air supplied to each man working underground, as required by State Statutes, rules and regulations of the New Mexico Statutes Annotated.

For collecting the alpha particles, the MSA Monitaire air sampler, U. S. Bureau of Mines approval No. 2F-200A was used. For counting the alpha disintegration, the PS-1 Eberline portable scaler, pulse rate meter in combination with the SPA-1 Eberline millipore filter radon probe was used.

For measuring the gamma radiation, the Eberline portable ion chamber, Model RO-3 cutie-pie type was used. The American National Standard Institute (ANSI) standard was used to evaluate the results, and during the measuring of the gamma radiation, the criteria of the standard was followed.

GENERAL INFORMATION

Owner of Property: A.T.S.F. Railroad

Lessee: Todilto Exploration and Development Company

Location: approximately seven miles east of Prewitt, NM, off old State Hwy. No. 66.

Employment: 18

First Aid trained: 100%

Company Officials:
George Warnock, President
Dale Palmer, Mine Superintendent

Previous Radiation inspection: April 17, 1979

Mining method: modified room and pillar

Principal product: uranium ore

Last mine emergency fire drill: July 3, 1980

Trained in Mine Rescue: three men - March, 1980

JOE D. LONGACRE, SR.
State Inspector of Mines

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Lost-time accidents in 1980: none Self-rescuer weighed: June 20, 1980

Last lost-time accident: October, 1979

Work Schedule:

Hours per day	8
Shifts per day	2
Hours per week	40

The inspector was accompanied by Mr. Dale Palmer during the period of this inspection.

This mine is being developed by driving 9'x9' drifts for a modified room and pillar extraction, some of the pillars around the 15C0 area have already been extracted. Development at the present time is being carried out in the 700 N area. The main 1200 drift and 700N drift is being utilized for hauling ore, supplies and ventilation exhaust. The 1000 drift is connected with the open pit workings and this drift is used for ventilation and escapeway. The ventilation raise is used as fresh air intake and as an emergency escapeway. The twin 18" I.D. ventilation boreholes are also used as exhaust ventilation.

VENTILATION

This mine was ventilated by some 40,000 cubic feet per minute of air delivered and exhausted through the following openings:

Opening	Size	Air Direction	Ventilation c.f.m.	Make of Fan	Fan HP	Depth of Opening
70W&1200N raise	4'x5'	intake	40,000	Hartzell	1-60	157'
2-BH		exhaust	11,500	Hartzell	1-40	85'
1000 adit		exhaust	12,500	Hartzell	1-60 hot work	N/A
1200 adit		exhaust	16,000	-	-	N/A

Main fans were electrically powered axial-flow type units. The twin 18" I.D. boreholes were steel lined only for the first forty (40) feet, from the top collar. The 4'x5' raise was cribbed throughout the length of the opening and at the bottom of this raise the 60 HP fan was installed. Air to the working places was distributed by the use of auxiliary fans and vent tubing. Airflow underground was controlled by the use of bulkheads and curtains.

ALPHA AND GAMMA RADIATION

The following is a list of alpha and gamma radiation measurements. A time-weighted exposure calculations for alpha radiation exposure for each of the various classes of mine personnel, air volume measurements and the mine exposure index. Gamma radiation rates are indicated in Milli-Roentgens per hour (mR/h), and alpha radiation concentrations are indicated in working levels (W.L.)

ample No.	Sample Location	Ventilation c.f.m.	Man-Shift Exposure M&M	Stopes	Haulages	Alpha Rad. W.L.	Gamma Rad. (mR/h)
1	700N drift development	static	0.3	2.0		0.2	1.0
2	2600W drift development	static	0.3	2.0		0.3	0.4
3	2500E drift development	static	0.3	2.0		0.4	0.4
4	2600W & 2500E and 700N haulage	6,000	0.3		2.0	0.2	0.3
5	700N lunchroom	1,200	0.2	1.0	1.0	0.7	0.1
6	700N haulage S of lunchroom	8,000	0.2		0.5	1.0*	0.2
7	1200 haulage to old lunchroom	12,000	0.2		0.5	1.5*	0.1
8	1200W haulage to portal	16,000	0.2		1.0	1.1*	0.1
9	700N haulage s of lunchroom - Resampled, Cease Work Order Issued.					0.9	
10	1200W haulage to old lunchroom - Resampled, Cease Work Order Issued.					1.5	
11	1200W haulage to portal - Resampled, Cease Work Order Issued.					1.1	
12	700N haulage S of lunchroom - Resampled, Cease Work Order Abated 7-16-80.					0.6	
13	1200W haulage E of old lunchroom - Resampled, Cease Work Order Abated 7-16-80.					1.0	
14	1200W haulage W of old lunchroom - Resampled, Cease Work Order Abated 7-16-80.					Nil	
	Total Number of Men		2.0	7.0	5.0		

*Cease Work Order Issued.

The average time-weighted exposure for the various classes of mine personnel and the total mine exposure index are as follows:

Maintenance and Management - 0.6 x working level
Stopes and Developments - 0.4 x working level
Haulageways - 0.7 x working level
Total Mine Exposure Index - 0.5 x working level

The average gamma radiation for this mine is 0.68 mR/h. The average gamma radiation measurement for this mine is below the 2.0 mR/h required.

ORDERS ISSUED JULY 8, 1980

Order No. 1, SIM Rule No. 76-1(2c): Workers in 700N haulage from lunchroom to 1200 drift shall not be exposed to concentrations of radon-daughters in excess of 1.0 working level. (57.5-39M) Abated 7-16-80.

Order No. 2, SIM Rule No. 76-1(2c): Workers in 1200 drift haulage to portal shall not be exposed to concentration of radon-daughters in excess of 1.0 working level. (57.5-39M) Abated 7-16-80.

NOTICES ISSUED JULY 8, 1980

Notice No. 1, Section 69-33-1(b), NMSA: The driller in 700N drift development shall be provided with at least 500 cubic feet per minute of air. Abated 7-8-80.

Notice No. 2, Section 69-33-1(b), NMSA: The driller in 2600W drift development shall be provided with at least 500 cubic feet per minute of air. Abated 7-8-80.

Notice No. 3, Section 69-33-1(b), NMSA: The miner in 2500E drift development shall be provided with at least 500 cubic feet per minute of air. Abated 7-8-80.

Notice No. 4, Rules Governing Diesel Equipment in Underground Mines for the State of New Mexico, Rule No. 4(b): At least 75 cubic feet per minute of fresh air must be supplied per brake-horsepower when mucking in 2500E drift development. Abated 7-8-80.

Notice No. 5, SIM Rule No. 75-1(2c): The air hose for the drill machine in 700N drift development shall be provided with safety chains. (57.13-21M) Abated 7-8-80.

Notice No. 6, SIM Rule No. 75-1(2c): The drill machine air hose in 2600W drift development shall be provided with safety chain. (57.13-21M) Abated 7-8-80.

Notice No. 7, SIM Rule No. 75-1(2c): The air hose in 2600W drift development shall be provided with safety chain. (57.13-21M) Abated 7-8-80.

Notice No. 8, Section 69-35-6, NMSA: The 700N drift development shall be provided with sealing bars. Abated 7-8-80.

Notice No. 9, Section 69-34-8(a), NMSA: The 40 HP electric fan in 700N haulage shall be provided with frame ground. (57.12-25M) Abated 7-8-80.

Notice No. 10, SIM Rule No. 71-1(2c): The blasting line in 700N drift shall be properly supported and kept in good repair. (57.6-122M) Abated 7-8-80.

Notice No. 11, SIM Rule No. 78-1(2a): The waste food and empty tin cans shall be disposed into the garbage receptacles. (57.20-13M) Abated 7-8-80.

ACKNOWLEDGEMENT

The courtesy and cooperation of staff and personnel of the Haystack Mine during this inspection are hereby gratefully acknowledged.

Inspected and Reported by:
L. A. Quinones
Dust and Mine Gas Engineer
Deputy Inspector of Mines

Approved: Joe D. Longacre, Jr.
JOE D. LONGACRE, SR.
State Inspector of Mines

jmz

Wolff

STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT
BUREAU OF MINE INSPECTION
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SAFETY FIRST

JOE D. LONGACRE, SR.
STATE INSPECTOR OF MINES

OFFICE TELEPHONE 842-3065
RESIDENCE PHONE 344-1129

RADIATION

REPORT OF INSPECTION

I.D. No. 2900233 - Continental Underground Complex
Continental No. 2 Mine (Sharonsteel Corporation) (Name) { Mine } Typed July 29, 1980
July 7-10, 1980 (Date of Inspection)

Copper Ore (Classification of Mine) | Grant (County in which located) | Pete Martinez, Mine Foreman (Company representative present at inspection)

Pursuant to the Mining Laws of the State of New Mexico, Section 69-5-10, an inspection, as designated above, has been made. During this inspection the following was noted:

INTRODUCTION

The primary purpose of this inspection was to check radon-daughter concentrations in each working place of the mine and to calculate a weighted exposure for each of the various classes of mine personnel.

For collecting the alpha particles, the MSA Monitaire air sampler, U. S. Bureau of Mines approval No. 2G-2004 was used. For counting the alpha disintegration, the PRM-4R Eberline pulse rate meter, in combination with the SPA-1 Eberline millipore filter radon probe and the Pi-1 Eberline pulse integrator was used.

GENERAL INFORMATION

Owner and Operator: Sharon Steel, Inc.

Location: Fierro, NM

Employment: 93

Work Schedule:

Hours per shift	8
Shifts per day	2
Hours per week	40
Days per week	5

Date of previous inspection: Jan. 30, 31, Feb. 1,2, 1978

Company Officials:
Robert C. Weagel, Vice-President
Paul Shanks, Mine Manager
R. Foist, Mine Supt.
G. Kyllenon, Safety Director
Alfonso Gonzales, General Mine Foreman

Mining method: Modified room and pillar

Principal product: Copper ore

The inspector was accompanied by Mr. Pete Martinez during the entire period of this inspection.

This mine is opened by one two-compartment vertical, timbered shaft. This shaft is

JOE D. LONGACRE, SR.
State Inspector of Mines

ONE COPY OF THIS REPORT SHALL BE POSTED IN A CONSPICUOUS PLACE AT THE MINE

used primarily for ventilation, for hoisting and lowering men and supplies. This mine is interconnected in the 1300 level with the Continental No. 3 shaft and the Union Hill adit to the surface.

At the present time, mining was carried out in the 600, 800, and 1000 level. The 1300 level is used for tramming the mined ore to the Continental No. 3 shaft.

VENTILATION

Fresh air enters this mine through the Continental No. 2 shaft at a rate of 52,000 cubic feet per minute. Some 27,000 cubic feet per minute was distributed to the workings in the 600 level; 10,811 cubic feet per minute was distributed to the workings in the 800 level; 3,442 cubic feet per minute was distributed to the workings in the 1,300 level; and some was used to ventilate workings in the Continental No. 3 mine through the 1,300 level.

Ventilation underground was distributed from the main levels to the working places by auxiliary fans and tubing, and was controlled by bulkheads, air doors, and brattices.

RADON-DAUGHTER CONCENTRATIONS

The following is a list of radon-daughter concentrations and air volume measurements found in the working places of the mine. A weighted exposure calculation was not made due to the low concentrations of radon-daughters found during this inspection and the total mine exposure index would be too low; as a result, it will be negligible:

Sample No.	Sample Location	Ventilation c.f.m.	Working Level
1	6-13-2 stope	1,700	0.01
2	6-4-4 stope	2,400	0.01
3	6-5-1 ramp	2,550	0.02
4	6-6-5 stope	3,100	Nil
5	8-14-4 stope	3,400	Nil
6	6-6-4 stope	1,700	Nil
7	6-6-4 slusher	1,600	0.01
8	6-6-5 stope	1,840	0.02
9	6-6-5 access	1,980	0.01
10	8-13 stope	1,800	Nil
11	10-21-1 stope access	1,950	Nil
12	10-35 drift	21,000	Nil

As it can be seen from the previous listed working places, the concentrations of radon-daughters, in terms of working levels (W.L.), are below the concentration required by the Bureau of Mine Inspection, State of New Mexico, as per 57.5-42M. Therefore, the company will not have any problems with overexposure nor exposure from radiation to the working personnel as long as ventilation systems are adequate.

Minor violations were brought to the attention of Pete Martinez and were corrected at the end of the inspection.

ACKNOWLEGEMENT

The courtesy and cooperation extended during this inspection are hereby gratefully acknowledged.

Inspected and reported by:
Gilbert E. Miera
Dust & Mine Gas Inspector
Deputy Inspector of Mines

sbw

Approved: Joe D. Longacre Sr.

JOE D. LONGACRE, SR.
State Inspector of Mines