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FERRET EXPLORATION COMPANY OF NEBRASKA, INC.

216 Sixteenth Street Mall, Suite 810
Denver, Colorado 80202

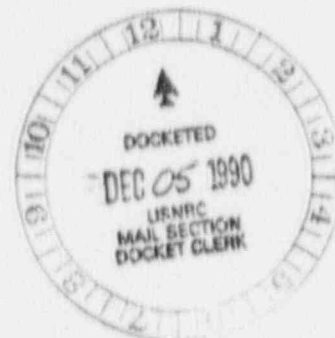
(303) 825-2266
(303) 825-1544 - FAX

RETURN ORIGINAL TO PDR, HQ.

December 4, 1990

Mr. Ramon Hall
U.S. Nuclear Regulatory Commission
Uranium Recovery Field Office
Box 25325
Denver, Colorado 80225

RE: Docket No. 40-8943
License SUA-1534



Dear Mr. Hall:

Ferret Exploration Company of Nebraska (FEN) is currently planning start of its Crow Butte uranium solution mine during March 1991. License Condition 36 requires FEN to submit, for review and approval three months prior to lixiviant injection, a written procedure for determining employee exposures. License Condition 39 requires training and educational documents for the Corporate Radiation Safety Officer and Health Physics Technician to be submitted to the NRC ninety days prior to start-up.

Attached is the procedure that will be followed in determining employee exposures. This procedure conforms to Regulatory Guide 8.30. Upon approval, FEN will incorporate the procedure into its Quality Assurance Program and Standard Operating Procedures.

FEN proposes Rhonda Grantham as the Corporate Radiation Safety Officer and Leland Huffman as Health Physics Technician. Rhonda Grantham was the HPT for the Crow Butte Pilot Plant from 1986 through 1990. Ms. Grantham's title was changed to CRSO in 1990 and approved by the NRC as License Amendment No. 4 on August 14, 1990. Leland Huffman was the HPT designate during the pilot plant operation. Both are assigned full time to the Crow Butte commercial mine facility near Crawford. A copy of their experience and training is attached.

If you should have any questions regarding these submittals, please do not hesitate to contact me.

Sincerely,

Ralph Knode

Ralph Knode
Vice President

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PDR ADOCK 04008943
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DESIGNATED ORIGINAL

Certified By *Mary C. Hood*

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Attachment A

EMPLOYEE EXPOSURE PROCEDURE

External Radiation Exposure

Employee exposure will be monitored using personnel dosimeters. The personal dosimeters will be exchanged quarterly. An action level of 25% of the maximum permissible exposure will be enforced. Specifications for the personnel dosimeters are as follows:

Specifications for the Eberline Instrument Corporation Dosimeters:

Detector	LiF TLD chips
Detector Shields	One 10 mg/cm ² ; One 285 mg/cm ²
Sensitivity	1 mR
Range	1 mR - 1000 R
Exchange Frequency	Quarterly

The results reported from Eberline are in millirem of penetrating radiation and millirem of non-penetrating radiation. The results of the personnel dosimeters will be kept on file at the plant site.

Internal Radiation Exposure

The concentration of yellowcake and radon daughters in the air will be monitored on a routine schedule, the frequency to be based on the concentration present and the propensity for change. These values will be used in conjunction with occupancy times to determine employee exposure. Monthly exposures for individuals will be recorded by the CRSO and kept on file at the plant site. The occupancy time for routine operations may be actual measurement of the time or may be obtained from a time study. The occupancy times for non-routine operations will always be from actual measurement of the time involved in the operation. The intake of yellowcake by individual employees will be calculated by using the following equation:

$$I_u = b \sum_{i=1}^n \frac{X_i t_i}{PF} \quad \text{as per Regulatory Guide 8.30}$$

Where:

I_u = uranium intake uCi

b = breathing rate, 1.2 m³/hr

X_j = average concentration of uranium in breathing zone air during time t_j , uCi/m³

t_j = time of exposure to average concentration X_j , hrs

n = number of exposure periods during the week or quarter

PF = the respirator protection factor, if applicable

The exposure to radon daughters will be calculated using the following quotation:

$$I_r = 1/170 \sum_{i=1}^n \frac{W_i t_i}{PF} \quad \text{as per Regulatory Guide 8.30}$$

Where:

I_r = annual radon exposure, working level months

W_i = average number of working levels in the breathing zone air during time t_i , WL

t_i = time of exposure to average concentration W_i , hrs

170 = conversion from working level hours to working level months

n = number of exposure periods

PF = the respirator protection factor, if applicable

The limit for radon daughters is an annual limit which is 4 working level months in the period of one calendar year. If any worker exceeds 25% of the annual limit for radon daughters the CRSO will initiate an investigation as above. These limits are those specified in Section 20.103 of Title 10, Code of Federal Regulations and in Regulatory Guide 8.30.

All uranium at the Crow Butte Project will be considered to be soluble. The weekly intake limit for soluble uranium is 0.0065 uCi (9.6 mg of uranium). If any worker's TWE exceeds 25% of the soluble uranium limit for a period of one calendar week, the CRSO shall initiate an investigation of the employees work record and exposure history to identify the source of the exposure.

The quarterly intake limit for any type of yellowcake is 0.063 uCi (approximately 93 mg) of uranium. If any worker's TWE exceeds 25% of the uranium limit for one quarter, the CRSO shall initiate an investigation of the employees work record and exposure history to identify the source of the exposure.

An over exposure will have occurred if the previous limits have been exceeded. Also, if the sum of the fraction of the quarterly yellowcake intake limit and the working level months for the past four quarters divided by four exceeds unity, an over exposure will have occurred. All over exposures will be reported to the appropriate NRC Regional Office.

The resulting concentrations from radon daughter and airborne uranium surveys, as well as readings from employee TLD badges, are recorded on a Radiation Exposure Summary form. Employee exposures are calculated based on occupancy hours and any

additional exposure incurred under RWP's. The exposures are reviewed against maximum allowable exposures and unity and posted for all employees.

Attachment B

Resume and Certification of Rhonda Grantham

Resume of Leland Huffman

RESUME

RHONDA GRANTHAM
HC 92, Box 2B
Crawford, Nebraska 69339

EDUCATION:

BA Degree - Earth Science; Chadron State College; 1981
Radiation Protection and Environmental Surveillance for Uranium Resources Organizations; Eberline Instruments Short Course, 1983
Radiation Monitoring, MSHA Short Course, 1984 and 1987
Radiation Protection for Uranium Mills; Western Radiation Consultants Short Course, 1986
Radiation Safety Training Course; Radiant Energy Management Short Course 1987
Indoor Radon Workshop; Eberline Instruments Short Course, 1988
Nebraska Well Drillers and Pump Installers Workshop; Nebraska Well Drillers Association Workshop, 1988
Developing Interpersonal Communications Skills; Mountain States Employers Council Short Course, 1988
Respiratory Protection for the Nuclear Industry; Darell Bevis Associates, Inc., April 1990

EMPLOYMENT:

Corporate Radiation Safety Officer; Ferret Exploration Company of Nebraska, August 1990 to Present

Environmental Specialist/Health Physics Technician; Ferret Exploration Company of Nebraska, May 1986 to August 1990

Responsible for compliance of all in-plant radiological, industrial safety, and environmental programs. Maintain all employee exposure records, perform all plant inspections, and collect and assess all environmental sampling data. Conduct employee radiation safety training.

Environmental Specialist; Wyoming Fuel Company; March, 1986 to May, 1986

Responsible for all on-going environmental sampling programs prior to Crow Butte Plant start-up. Developed all in-plant monitoring schedules and procedures.

Associate Geologist; Wyoming Fuel Company; August 1981 to March, 1986

Collected all Crow Butte R&D environmental baseline data. Initiated and completed the Water User Survey. Conducted well integrity testing for all wellfield and monitor wells. Performed all mud testing for abandonment fluid properties. Assisted in exploration program in rig supervision, drill hole staking, and logging of drill hole lithology. Maintained the Crow Butte Meteorologic weather station.

Geologist; Ammeralda Resources; June, 1981 to August, 1981

Responsible for rig supervision and logging of core lithology for Exxon's oil shale exploration program.

Contract Archaeologist; Plano Consulting; June, 1980 to September, 1980

Contract archaeology involving sweep surveys, site evaluation, and site excavation and preservation

Water Sampler; Union Carbide; June, 1979 to September, 1979

Participated in the National Uranium Resource Evaluation Program (N.U.R.E.). Was responsible for well location and sample collection for mineral analysis in the Alliance Quadrangle of western Nebraska.

PROFESSIONAL SOCIETIES:

The Health Physics Society; Plenary Member

Certificate

Awarded to:

RHONDA GRANTHAM

For: COMPLETION OF "RADIATION

SAFETY TRAINING COURSE "

MARCH 9-13 1987

Lyda W. Haveloff
INSTRUCTOR

RADIANT ENERGY
MANAGEMENT

this 4th day of MAY 1987



WESTERN RADIATION CONSULTANTS, INC. Radiation Protection / Evaluation
Industrial Hygiene
Employee / Management Training

1006 Winfield Drive
Fort Collins, Colorado 80526
303-482-3029

September 30, 1986

Ferret/Nebraska
P.O. Box 169
Crawford, NE 69339

Attention: Ms Rhonda Crantham

This is to certify that Rhonda Crantham, Steve Collings and Ralph Knode have successfully completed a four week training course in Radiation Protection for Uranium Mills conducted and supervised by Western Radiation Consultants, Inc. This course consisted of a three week formal reading course and a one week series of lectures and laboratories conducted in June 1986 on the campus of Colorado State University.

Janet A. Johnson, Ph.D.
Certified Health Physicist

James E. Johnson, Ph.D.
Certified Health Physicist

RESUME

LELAND HUFFMAN
227 Elm Street
Crawford, Nebraska 69339

EDUCATION:

New Mexico Institute of Mining and Technology; Bachelor of Science in Geophysics
- December 1980

Physics - General Physics I & II, Relativity and Quantum Mechanics, Wave Mechanics, Electromagnetism, Integrated Circuitry, Fluid Dynamics

Math - Calculus and Analytic Geometry I, II & III, Linear Algebra, Logic I & II, Differential Equation I & II, Probability and Statistics

Geophysics - Solid Earth Geophysics, Electrical Methods in Geophysics, Exploration Geophysics (includes Seismic, Gravity and Magnetics), Seminar in Gravity Surveys

Geology - Introduction to Geology I & II, Structural Geology, Regional Geology of the U.S. and Canada

Radiatio. Monitoring, MSHA Short Course, 1986

EMPLOYMENT:

Operator/HPT Designate, Crow Butte Uranium Mine, Ferret Exploration Company of Nebraska; July 1986 to Present

Involved in start-up and day to day operation of the solution mine. Received formal radiation safety training as part of the MSHA New Miner Training and subsequent annual refresher training. HPT designate, familiar with operation and use of all radiation monitoring equipment.

Laborer, Crow Butte Uranium Pilot Plant, Ferret Exploration Company of Nebraska; April 1986 to June 1986

Worked on completion and construction of Crow Butte Pilot Plant.

Geophysical Logging Truck Operator, Century Geophysical Corporation; May 1981 to January 1986

Duties included operating, servicing, and maintaining a geophysical well logging truck. This typically included daily use of a radioactive source, either a 125 millicurie, Cesium 137 source or a 1 curie, Americium 241 alpha source. Received formal training from Century Geophysical in radiation safety. Course material covered basic radiation safety, types of radiation and its origin, proper safety procedures for handling and transporting radioactive sources. Additional training included proper methods of calibrating and leak testing radioactive sources. Familiar with daily, monthly and biannual monitoring procedures of sources, source housing containers and logging truck. Also familiar with personnel dosimeters. I was specifically listed in USNRC License No. 35-04017-04 as being licensed to use or supervise use of source materials.