(DRAFT) INSPECTION REPORT (OPEN)

- 1. Kerr-AcGee Nuclear Corporation Post Office Box 218 Grants, New Mexico 87020
- 2. Date of Inspection: January 27-28 and February 1, 1977
- 3. Type of Inspection: Unannounced, Reinspection No. 9
- 4. License No. SUA-616 (Docket No. 40-1917) as issued by the AEC.
- 5. Previous Inspection: October 11-12, 1973
- 6. Proprietary Information: None
- 7. Scope of Inspection:

The inspection was the first performed by the New Mexico Environmental Improvement Agency upon this licensee. The inspection was routine and included a tour of the licensee's facility, a tour of the tailings pond area; a review of selected records pertaining to personnel monitoring, the licensee's evaluation of airborne concentrations in both restricted and unrestricted areas, and interviews with selected personnel. The records pertaining to the licensee's evaluation of water monitoring wells were not received since they were in the corporate headquarters in Oklahoma City, Oklahoma.

8. Participants

Billy Stevens, General Manager Don King, Mill Superintendent Jonathan Ma, Assistant Metallurgist

Jim Cleveland Superintendent, Environment-Industrial Hygiene Dave Kump, Environmental Engineer Marlin Visage, Technician Alphonso A. App, Jr., Environmental Scientist III, NMEIA, Santa Fe

Richard E. Blubaugh, Environmentalist IV, NMEIA, Milan

9806240366 770315 PDR 4 DOCK 04001917

9. Management Interview

All the above individuals except for M. Visage participated in the management interview. Mr. Stevens was informed that a number of deficiencies were encountered and grouped under two categories. These are enumerated in the letter dated <u>Man 15,1977</u>, to Mr. Stevens. The violation concerning time studies was not mentioned since it was not encountered until Feb. 1, 1977 and the interview was held on January 28, 1977. In summary, Mr. Stevens was notified of the several violations and deficiencies and informed that he would receive a letter stating the violations and deficiencies and a request for a response detailing corrective and preventive action taken. Mr. Stevens was also informed that the inspection would remain "open" until the water monitoring records had been received and an independent measurement of discharged surface water radioactivity had been made.

10. Result of Inspection: Letter to licensee stating items of non-compliance, requesting details of corrective and preventive action taken.

11. Recommended reinspection date: January 1978.

12. Richard Blubaugh Inspector/Environmentalist

February 14, 1977 Date Mard. 15, 1977 Date

13. Inspection History

No items of noncompliance were noted during the previous inspection conducted under the Atomic Energy Commission's requirements on October 11-12,1973.

14. Current Inspection

The unannounced reinspection was conducted by Messrs. Alphonso A. Topp and Richard Blubaugh on January 27-28 and February 1, 1977. It was Mr. Blubaugh's first such inspection. On January 27, the entrance interview was held with

-2-

Mr. James E. Cleveland, Superintendent, Environment -- Industrial Hygiene and Mr. Dave Kur, Environmental Engineer, since Mr. Billy Stevens was not available until the following day. Upon entering, we were referred to Mr. Ronnie Dauffenbach, Industrial Relations Manager who turned us over to Mr. Cleveland. After the interview, a thorough tour of the mill facilities and tailings pond areas was conducted with Mr. Cleveland and Mr. Kump. Fences and signs were not in compliance. The records review was begun on the 27th and completed on February 1, 1977. A few deficiencies were found during the record review. The inspection was not completed since the records on unrestricted area water monitoring were not available for review. They were in corporate headquarters in Oklahoma City, Oklahoma. Also, an independent radioactivity measurement of surface water effluent could not be made since there was no discharge. The inspection will remain open until these two items are completed. The exit interview was held with Mr. Billy Stevens, General Manager; Don King, Mill Superintendent; Jonathan Ma, Assistant Chief Metallurgist; Mr. Cleveland; Mr. Kump and Messrs. Topp and Blubaugh.

15. Organization

The corporation is a wholly owned subsidiary of Kerr-McGee Corporation which is a fully integrated natural resources company and is listed on the New York Stock Exchange. Parent company officers include Mr. J. J. Kelly, President; Mr. D. A. McGee and Chairman of the Board of Directors. Kerr-McGee Nuclear Corporation is incorporated in the state of Delaware and its officers include Mr. Frank A. McPherson, President and Mr. Jack Swales, Vice-President. Mr. W. J. Shelley, Manager of Regulation and Controls, works for Mr. F. A. McPherson and does handle regulatory matters for Kerr-AcGee Nuclear Corp.

-3-

Mr. James E. Cleveland reports directly to Billy Stevens, General Manager of Kerr-McGee Nuclear Corporation, who reports directly to Mr. Jack Swales, Vice-President of Kerr-AcGee Nuclear Corp. Charley Stanley, Mill Manager, and Art Gebeau, Mining Manager also report to Mr. Stevens. Mr. Cleveland informed the inspectors that he had taken over the radiation safety program in January of 1976. Prior to that time, the program was delegated to the office of the Chief Metallurgist, George Sloan, who also reports to Mr. Stevens. The Agency had not been notified of this major change in management organization; however, it does appear to be an improvement for the radiation safety program since there are no production managers between the RSO (Mr. Cleveland) and top management (Mr. Stevens).

16. Responsibility

Mr. J. E. Cleveland stated that he is fully responsible for all aspects of radiation safety and for all records related to activities conducted under this license. He is also responsible for all environmental surveys and industrial hygicane. He reports directly to Mr. Stevens, General Manager.

17. Mill Operation

Mr. Cleveland stated that the mill currently processes approximately 6000 tons of faw ore per day and that they would be processing approximately 6500 tons per day in the near future. He also stated that some toll milling is done for Anaconda Company, United Nuclear Corp, and Ranchers Exploration and Development Corp. The present grade of ore being processed is from .175 to .200 U30₈ with a moisture content from 8 - 10 % according to Mr. Cleveland. He also stated that the recovery was approximately 95% and the final product consisted of approximately 30% U₃0₈. In addition to the mill operation per se, pregnant solution from two ion exchange units is added to the precipitation circuit. One 1X unit is located at the millsite and receives all the mine water except for mines in Sections 35 and 36 which flow to a separate 1X unit located between them.

-4-

18. Inventory and Sales

Mr. Cleveland stated that there presently was 849,861 pounds of yellowcake in storage at the millsite. He further stated that 80% of the yellow cake is shipped to Kerr-McGee, Nuclear Corporation facilities at Sequoyah, Oklahoma. The remaining 20% of shipments go to the allied facility.

19. Work Schedule

Mr. Cleveland stated that 199 people work at the millsite. This includes salaried people as well as hourly workers. The mill operates continuously except for the last week in June and the first week in July which is reserved for the annually scheduled. "maintenance turnaround". During this period some salaried people and all maintenance people work at the mill, mostly on day shift. There are three 8 hour shifts per day in all circuits except the crushing and sampling circuit which normally operates a maximum two shifts per day. The hourly workers operate on a 10-day on--4-day off cycle which is staggered to allow continuous operation of the mill. The lab works day shift only. Most maintenance men work on day shifts as well as "on call". The license condition 13 allows for an exposure period of 80 hours in any 14 consecutive day period. This condition appears to be unnecessary since it is never used. Most exposure records did not exceed MPC for 8 hours. A few had to be averaged over a 40 hour exposure period (see item 22) 20. Restricted Area Sampling Program

Normally, ten area samples are collected and analyzed each month in the crushing circuit. These area samples consist of a ten minute sample at 10 1/min for a total sample volume of 100 liters. The sampler being used is a RAC 440 B carbon view pump with a .50 mm Whatman 41 filter. Radon samples have been

-5-

collected at the same locations as the air samples since January 1973 according to Mr. Cleveland. The radon samples are collected for 5 minutes at a flow of 2 1/min for a total volume of 10 liters. The sample is counted by a scintillation alpha counter after a 30 minute wait. The counters are Eberline PRM 4R and a Ludlam Alpha scintillation counter. The sampling locations are shown on the attached form #1 and 1a. In addition to the above, silica dust levels are also determined once each month at eight locations in the crushing circuit (see form #1b.)

Uranium ore dust samples are also collected and analyzed monthly at 13 locations in the area of the sample bucker downstairs, and at 10 locations in the area of the sample bucker upstairs (see forms #2 and 2a). Sampling method is the same as above for area samples. Breathing zone samples are usually taken at these areas, however, and these samples are collected with a MSA diaphragm pump type S or H for five minutes at a flow rate of 10 1/min on a 25 mm Whatman 41 ashless filter for a total of 50 liters. Uranium concentrations are determined fluorometrically in the mills's analytical laboratory.

Breathing zone samples are collected in both the packaging and precipitation areas twice per month. There are 14 sampling locations in the packaging area and 18 sampling locations in the precipitation area for a total of 64 breathing zone samples collected and analyzed for U_30g . (See forms 3 and 3a for locations).

All equipment is calibrated periodically according to Mr. Dave Kump. The MSA pumps are calibrated via a wet test or a bubble meter. The RAC pump is calibrated less frequently with a wet test meter. Kerr-McGee patented Instant Working Level Meters are also used in restricted area monitoring. Some new equipment has recently been acquired for additional restricted area monitoring.

-6-

A new RAC isokinetic stack sampler has been purchased and will be in use in the near future. A new multi-channel analyzer has also been acquired for use in some of their environmental studies.

21. Airborne Concentrations Measured in the Restricted Area.

Record review established that the licensee had collected and analyzed air samples from all locations where employees work during each month of the inspection period, and that all sample locations which were to be sampled according to licensee's application were, in fact, sampled. Review also established that the applicable MPC of 2.5 x 10⁻¹¹ u ci/ml or 75 ug/m³ U_{nat} for uranium ore dust was not exceeded in the headend or crushing and sampling circuit during the period since the previous inspection. The maximum concentration as applied to exposure calculations during thetime since the previous inspection in this area produced a result of .98 MPC (2.46 u ci/ml x 10^{-11}). This concentration was found to exist during cleanup around the pulverizer and was determined from a breathing zone sample taken on N. Baca, sample bucker upstairs on 7/19/74 and from sample taken on 2/11/75 on Baca and P. Pino in the same area. This exposure was based on an 8 hour work day, however, there is no real significance to this exposure when calculated over an 80 hour period. The maximum radon concentration was found along the mill ramp in the crusher area on 10/25/74. The concentration found was .625 u ci/ml x 10^{-7} or .625 MPC. The majority of results were much lower than this.

The maximum concentration found in the yellow cake area was 1.01 MPC on February 15, 1976 fortan 8 hour exposure period for Balles. Again, this is not a significant concentration when averaged over an 80 hour exposure period as provided in the license SUA-616.

During the inspection on Februarly 1, 1977, it was found that time-weighted exposure calculations were not being performed as a routine on individuals Advision in an area where high or excessive concentrations were being found. One

-7-

reason is that the last time study was made in 1971, and it was not readily available. It was recommended that more frequent time studies are made especially on the maintenance people.

22. Airborne Concentrations Experienced During Periods of Non-Routine Maintenance

During the interview with Mr. Cleveland, it was learned that only those maintenance jobs in the yellow cake area receive an authorization for radiation surveys. Other areas are not considered to warrant such surveys by the Shift foremen who make the determination of whether a job requires surveys or not. It was recommended that this procedure be modified to allow Mr. Cleveland the opportunity and authority to determine whether a special maintenance job requires radiation surveys or not. There were several 8 hour exposures above the appropriate MPC of 6.0×10^{-11} U ci/ml. The highest ones are shown below:

SPECIAL MAINTENANCE EXPOSURES

DATE	PERSON (S)	XMPC	TIME EXPOSED	P CATION
9-24-75	B. Almanza R. Sanchez	1.84	30 Min.	Dryer
10-26-75	R. McCorkle B. Almanza	2.96	360 Min	Dryer
	A. Ortega	11 11 11 11		
11-16-75	G. Mercer	5.25	300 Min	Dryer

These special maintenance jobs are all on the yellow cake dryer and usually involve working inside it. There were no time weighted studies on record to allow the inspector the opportunity to verify that there was no over exposure. Again, the main reason being that there is no valid time study available. The above concentrations were calculated on an eight hour exposure period. A request was made for a time-weighted study on the highest concentration above. Review of this time study indicates that

It was recommended that more frequent time studies be performed and used im time weighting whenever these is an exposure concentration greater than the appropriate MPC for an eight hour period.

23. Unrestricted Area Airbome Concentrations

Record review established that, at various with license application commitments, the licensee did not collect airborne samples at the frequency specified in the license application Item 14. There were only airborne concentrations recorded

-8-

for one six month period in 1973 and 1974. The application commitment was for two samples per year. The maximum uranium concentration recorded was .66 MPC. The range was from .03 MPC to .66 MPC for the period reviewed--1973 to present. There was some question whether the locations presently being sampled were the same as those specified in the license application. However, it was determined that the present sampling locations were close enough to those specified that there would not be any significant differences in results. The applicable MPC of 8×10^{-13} u ci/ml U_{nat} was not exceeded in the records reviewed. The unrestricted area samples are collected with a portable Bendix Hi-Vol Air Sampler at approximately 22 cubic feet per minute for 15 minutes at each location. The sampler is periodically calibrated with a pitot tube. Samples are collected on Whatman 41 filter paper and analyzed fluorometrically for uranium at the mill laboratory. Meterological conditions are recorded at time sample is taken. This agency has a Hi-Volume sampler located near the tailings pile on the northeast side. There is also a continuous SO, monitor which was placed by the Agency in the old school house now being used as the Safety-Environmental offices. The present monitoring plan calls for 21 airborne uranium samples quarterly at all mines, the mill, Ambrosia Lake-general, San Mateo and 8 locations at the restricted area perimeter. (see attached memo dated July 23, 1976 from Dave Kump to J. Cleveland).

24. Liquid Effluent Measurements

Review of all these records was not possible since the file on monitor wells was in corporate headquarters in Oklahoma City. A file on surface water monitoring, however, indicated a discharge of surface water in the Rio de Puertocito on 3/10/76 with a 33 p.ci/l. This surface water channel

-)-

receives discharge from United Nuclear Homestake Partners' Ton Exchange Flant also. There was no discharge from the licensee during this inspection, so an independent measurement has not yet been made. This inspection will remain open until the file on monitor wells has been reviewed and an independent measurement can be obtained on the surface discharge.

25. Area Radiation Surveys (?)

26. Personnel Monitoring

Vendor reports establish that the licensee continues to participate in a monthly badge exchange program through the services of Radiation Detection Company of Sunnyvale, C lifornia. A review of these reports show that there are 9 operators issued TLD badges plus 5 badges are located at various locations throughout the mill. The maximum exposure recorded was 500 mrem during any one quarter for the operators and 520 mrem/quarter for the area badges.

27. Instruction to Employees

Review of procedures implemented during the period covered by this inspection showed that the licensee posted instructions on the bulletin board stating that copies of the license, the regulations and the standard operating procedures related to this license were available for inspection in the office of the Radiation Safety Officer, Jim Cleveland. The inspectors also had the opportunity to sait in on a safety meeting for now employees. The radiation safety hazards and pertinent precautions were well covered by Mr. M. Visage during this presentation. Mr. Cleveland stated that all employees have weekly and monthly safety meetings.

-10-