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Kerr-McGee Oil Industries, Inc.
Post Office Box 608
Empire, New Mexico

Attention: Mr. M. F. Bolton
Manager

Gentlemen:

As you are already aware, the Division of Inspection has initiated a program for the collection of samples, both air and liquid effluents for determining concentrations of radioactive materials released to unrestricted areas, for the measurement of radiation levels, and for the determination of radiation exposures to all employees at each of the uranium ore processing mills which are licensed by the Atomic Energy Commission.

Recently, a team from the Idaho Operations Office visited your mill for the collection of the above data and for initiating the distribution of the film badges which are furnished by the AEC.

In accordance with Title 10, Code of Federal Regulations, Part 20, Standards for Protection Against Radiation, each licensee is required to conduct surveys to determine the radiation status of his facilities and to make corrections in equipment and processes in order that employees will not be subjected to radiation exposures in excess of the limits set forth in the above regulations. It is the responsibility of the Division of Inspection to determine, in each licensee's facility, the degree to which the licensee is conforming with the pertinent regulations. To achieve the Division of Inspection's responsibility in this program, it has been the AEC's decision to initiate the program outlined above.

It should be recognized that the collection of either air or liquid samples during a visit to each of the mills will not necessarily determine the mill's degree of compliance over a long period of time but is only a measure of compliance as of that particular time. The results found during such a short visit are, however, an indication

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of a licensee's degree of compliance. If, for example, the results showed that, at any time, a concentration of radioactive materials in air or water was many, many times in excess of the maximum permissible concentration, this would certainly be an indication that the average concentration in that area over a long time may be in excess of permissible limits.

The Division of Inspection's program is intended in no way to replace or even supplement the licensee's own survey program, inasmuch as the average conditions can be most readily determined through the licensee's own continuous monitoring program.

I should like to take this opportunity to outline for you the information which we expect to obtain through this program, the methods which are currently being used to obtain it, and the reasons therefor.

Film badges are being distributed to all employees of each mill to evaluate external radiation exposure which they may be receiving from working with or being near radioactive materials. The information which this will provide is the exposure to beta and gamma radiation to which each employee is subjected. According to 10 CFR 20.202, each employee who "receives, or is likely to receive, a dose in excess of 25 per cent of the applicable limits" is required to be supplied with appropriate personnel monitoring equipment. This portion of the program will assist those mills who do not already have their own film badge service to determine which, if any, of their employees are subjected to radiation doses such that continuous personnel monitoring would be required. For those mills which have already established their own film badge program, this would provide an additional check for their own service.

It is intended to provide film badges to each of the mills, on a monthly basis, for a minimum period of three months. As you have already been informed, additional film badges, with your company's name and the individual employee's name affixed to each of the badges, will be forwarded to your company at the end of each month. The used badges, including control badges, should be returned air express collect when possible to the United States Atomic Energy Commission, Health and Safety Division, Personnel Metering Branch, P. O. Box 2108, Idaho Falls, Idaho, at the end of each monthly period, after the new badges have been distributed to employees.

When the survey team arrived at your facility, existing external radiation levels throughout your mill were measured and recorded. Also, during the survey team's visit to your mill, various types of air samples were collected to indicate the degree of compliance with 10 CFR 20.101(b). Three main types of samples were taken in your

mill. The first of these, general air samples, were collected throughout all areas of the mill, to reflect general atmospheric conditions with respect to airborne radioactive materials, namely uranium. The second group of samples, "breathing zones," was taken in those locations where an employee was accomplishing a fairly repetitive job under relatively dusty conditions. You probably noted, during the collection of these samples, that the team member attempted to keep the sampler as close to the operator's nose, or "breathing zone," as possible without interfering with his work. By knowing the number of times that the employee repeats this operation each hour, day, or week, and the amount of time which he may spend in "general" areas, it is then feasible to calculate an average amount of airborne radioactive material to which he may be subjected during a particular work period.

The third type of air sample collected is called a process sample. The results from these samples will not assist in the evaluation of the exposures to individuals but will point out what particular items of processing equipment may be contributing substantially to the general contamination of a particular area.

Each of the above types of atmospheric, or dust, samples are collected with one of several types of air pumps which have been calibrated to pull a known volume of air through a particular type of filter. The filter paper currently in use is Whatman No. 41. After the collection of the samples has been completed, the samples are analyzed fluorometrically for uranium. The detailed method of analysis used will be forwarded to you upon request.

During the team's visit to your mill, samples of liquid effluents, which are released into unrestricted areas (those areas to which you cannot control the access of personnel), were collected by members of the team, in order to indicate the degree of compliance with 10 CFR 20.103. If the effluent reached some river or stream, samples of those waters were also collected above and below the mill's discharge point in order to determine the relative increase of radioactive material in the stream, which may be attributable to your operations. These liquid samples are analyzed for radium and thorium. Details of the particular methods used are also available upon request.

It should be mentioned again, with respect to the concentrations of radioactive materials found in the effluent samples, that the results of these samples will only reflect conditions at the particular time that the samples are collected and not necessarily average concentrations for any considerable period of time. This is particularly true of stream samples since, though concentrations in mill effluents may remain essentially constant over a long period of time, the stream

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flow may vary considerably over the seasons, and resulting stream concentrations will then vary accordingly.

While the results of this program by the Division of Inspection will provide a measure of a particular mill's degree of compliance, such a program will be of no material value to the mill operator unless the results of the sample collection and analyses are made available to the respective mills. During the next visit to your mill, the results of our survey will be given to your mill management either verbally or visually. A copy of the results will be forwarded to you through the Division of Licensing and Regulation, Washington, D. C., upon request.

Should you have any questions or feel that any part of this needs further amplification, please do not hesitate to contact us.

Very truly yours,

Original signed by
Richard T. Kent

Donald I. Walker, Director
Division of License Inspection
Idaho Operations Office

CCG: Marvin M. Maan
Division of Inspection
AEC Headquarters

MEMO ROUTE SLIP

Form AEC-93 (Rev. May 14, 1947)

See me about this.

For concurren

For action.

Note and return.

For signature.

For information.

(Name and unit) C. P. McCallum Licensing Branch DLR	INITIALS	REMARKS We have already given an exemption in one case, reference R-138, without requesting this additional information. Since the terms of the contract list the description for the container, it is perhaps necessary to specify the type container for which the exemption is granted but which would not seem appropriate to go back to the licensee and ask him for the terms of his AEC contract.
	DATE 8/18	
TO (Name and unit)	INITIALS	REMARKS
	DATE	
TO (Name and unit)	INITIALS	REMARKS
	DATE	
FROM (Name and unit) R. F. Barker	REMARKS	
	DATE	

USE OTHER SIDE FOR ADDITIONAL REMARKS

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