

U.S. NUCLEAR REGULATORY COMMISSION

DOCKET NO.: 070-3073

AGENCY: U.S. Nuclear Regulatory Commission

ACTION: NOTICE OF CONSIDERATION OF AMENDMENT REQUEST AND OPPORTUNITY
FOR HEARING RELATED TO MATERIALS LICENSE NO. SNM-1999 FOR
THE KERR-McGEE CORPORATION, OKLAHOMA CITY, OKLAHOMA

The U.S. Nuclear Regulatory Commission is considering issuance of an amendment to Special Nuclear Material License No. SNM-1999 issued to the Kerr-McGee Corporation for the possession of special nuclear material at its facility at Cushing, Oklahoma in response to three requests from the licensee.

In accordance with License Condition 11.D the licensee requested an amendment to its license by letter dated June 3, 1993. The amendment would revise the License to define "the proposed boundaries of all radioactive materials areas designated in accordance with 10 CFR 20.203(e)(2) [now 10 CFR 20.1902(e)], restricted areas as defined in 10 CFR 20.3 [now 10 CFR 20.1003], and areas outside of the restricted areas, where licensed materials exist which must be secured from unauthorized removal per 10 CFR 20.207 [now 10 CFR 20.1801]."

The licensee requested a second amendment in a letter dated May 10, 1995. The amendment would authorize the licensee to possess calibration and reference radioactive sources containing U-235, not to exceed 0.1 microCurie per source.

The licensee is performing decommissioning activities at the Cushing, Oklahoma site under NRC license SNM-1999. License SNM-1999 provides for possession of natural and enriched uranium and thorium in the form of

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"Contaminated soil, sludge, sediment, trash, building rubble, structures, and any other contaminated material." The licensee utilizes those same radionuclides, as well as others not specified in the license, to calibrate equipment and as check sources for instruments. Except for U-235, all sources are either exempt quantities or are addressed by a general license, e.g., Pu-239 and Am-241. However, there is no exempt quantity or general license for U-235.

The licensee requested the third amendment in a letter dated October 20, 1995. The licensee submitted supplemental information via letters dated February 15, and January 15, 1996. The amendment would: (1) incorporate a revised organizational chart into the license; (2) correct the license to reflect the licensee's new contact person; (3) change approval authority from a corporate officer to the Radiation Safety Officer for all radiation protection program procedures; (4) remove the requirements to provide bi-monthly urinalysis and biennial in-vivo lung counts and base these submittal on worker exposures; (5) replace the requirement to provide lapel air samplers to 50 percent of all workers working in radioactive materials areas with a performance based requirement for issuance of lapel air samplers; (6) remove specified length of training from training program requirements; (7) change the requirement to process workers film badges from monthly to quarterly; and (8) change the monitoring equipment calibration laboratory from Cimarron site laboratory to Cushing site laboratory.

Prior to the issuance of the proposed amendments, the NRC will have made findings, required by the Atomic Energy Act of 1954, as amended, and the NRC's regulations. These findings will be documented in a Safety Evaluation Report and an Environmental Assessment. The NRC hereby provides notice that these

actions are a proceeding on an application for license amendments falling within the scope of Subpart L, Informal Hearing Procedures for Adjudications in Materials Licensing Proceedings, of the NRC's rules of practice for domestic licensing proceedings in 10 CFR Part 2. Pursuant to §2.1205(a), any person whose interest may be affected by this proceeding may file a request for a hearing in accordance with §2.1205(c). A request for a hearing must be filed within thirty (30) days of the date of publication of this Federal Register notice.

The request for a hearing must be filed with the Office of the Secretary either:

1. By delivery to the Docketing and Services Branch of the Office of the Secretary at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852-2738; or
2. By mail or telegram addressed to the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001 Attention: Docketing and Services Branch.

In addition to meeting other applicable requirements of 10 CFR Part 2 of the NRC's regulations, a request for a hearing filed by a person other than an applicant must describe in detail:

1. The interest of the requester in the proceeding;
2. How that interest may be affected by the results of the proceeding, including the reasons why the requester should be permitted a hearing, with particular reference to the factors set out in § 2.1205(g);
3. The requester's areas of concern about the licensing activity that is the subject matter of the proceeding; and

4. The circumstances establishing that the request for a hearing is timely in accordance with § 2.1205(c).

In accordance with 10 CFR § 2.1205(e), each request for a hearing must also be served, by delivering it personally or by mail to:

1. The applicant, Kerr-McGee Corporation, Attention: Mr. Jeff J. Lux, Project Manager, P.O. Box 25861, Oklahoma City, Oklahoma 73125; and
2. The NRC staff, by delivery to the Executive Director for Operations, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852, or by mail addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

For further details with respect to the proposed action, see the licensee's request for license amendment dated October 20, 1995, and *other dates* supplementary information, which is available for inspection at the NRC's Public Document Room, 2120 L Street NW, Washington, DC 20555-0001.

Dated at Rockville, Maryland, this ____ day of June, 1996. *July*

FOR THE NUCLEAR REGULATORY COMMISSION

[Original signed by]
Robert A. Nelson, Acting Chief
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

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NAME	SBrown <i>ES</i>	JCopeland <i>rich for</i>	LBell <i>for</i>	RNelson
DATE	6/2/96	5/25/96	5/1/96	5/ /96

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ACNW: YES ☐ NO ☐
IG : YES ☐ NO ☐
LSS : YES ☐ NO ☐

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R. F. Forner

3. The requester's areas of concern about the licensing activity that is the subject matter of the proceeding; and
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For further details with respect to the proposed action, see the licensee's request for license amendment dated October 20, 1995, and supplementary information, which is available for inspection at the NRC's Public Document Room, 2120 L Street NW, Washington, DC.

Dated at Rockville, Maryland, this July day of May, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION

[Original signed by]
Robert A. Nelson, Acting Chief
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

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NAME	SBrown	JCopeland	LBell	RNelson
DATE	5/9/96	5/9/96	5/ /96	5/ /96

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IG : YES ☐ NO ☐
LSS : YES ☐ NO ☐

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For further details with respect to the proposed action, see the licensee's requests for license amendment dated June 3, 1993, May 10, 1995, and October 20, 1995, and supplementary information, which is available for inspection at the NRC's Public Document Room, 2120 L Street NW, Washington, DC 20555-0001.

Dated at Rockville, Maryland, this 18th day of July, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION

[Original signed by]
 Micheal F. Weber, Chief
 Low-Level Waste and Decommissioning
 Projects Branch
 Division of Waste Management
 Office of Nuclear Material Safety
 and Safeguards

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Darlene (good example of hearing app. language)

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NAME	SBrown*	JCopeland*	LBell*	RFonner	MWeber	
DATE	5/30/96	5/30/96	6/21/96	7/18/96	7/18/96	

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 LSS : YES ☐ NO ☒

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 (30 days)

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Dated at Rockville, Maryland, this 18^{*} day of July, 1996.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael F. Weber

Michael F. Weber, Chief
Low-Level Waste and Decommissioning
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards



KERR-MCGEE CORPORATION

KERR-MCGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

May 10, 1995

Mr. David Fauver
Office of Nuclear Materials Safety & Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 70-3073
License No. SNM-1999

Dear Mr. Fauver:

Kerr-McGee Corporation (KMC) is performing decommissioning activities at the Cushing, Oklahoma site under NRC license SNM-1999. License SNM-1999 provides for possession of natural and enriched uranium and thorium in the form of "Contaminated soil, sludge, sediment, trash, building rubble, structures, and any other contaminated material." KMC utilizes those same radionuclides, as well as others not specified in the license, to calibrate equipment and as check sources for instruments.

Except for U-235, all sources are either exempt quantities or are addressed by a general license, e.g. Pu-239 and Am-241. However, there is no exempt quantity or general license for U-235. Consequently, KMC requests that license SNM-1999 be amended to provide for possession of calibration and reference radioactive sources containing U-235, not to exceed 0.1 microCurie per source.

If you have any questions or comments regarding this request, please call me at (405) 270-2694, or Mr. Terry Moore at (918) 225-7753.

Sincerely,

Jeff Lux
Project Manager

REVIEWED BY: Terry Moore
DATE: 5-11-95

xc: Bob Evans, NRC Region IV
Rick Reiley, Cushing Citizens' Oversight Committee
Gene Smith, ODEQ

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Safety & Environ Cushing

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KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

October 20, 1995

Mr. David Fauver
Office of Nuclear Materials Safety & Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 70-3073
License No. SNM-1999

Dear Mr. Fauver:

Kerr-McGee Corporation (KMC) submits herein a request for an amendment of license SNM-1999 regarding the organization supporting the decommissioning of the Cushing site, the approval of radiation safety procedures, and the bioassay program implemented under the radiation safety program, and other miscellaneous items addressed in the license application.

Organization

KMC has presented several organization charts for the Cushing project in various submittals to the NRC. The first organization chart was presented in the license application, dated September, 1992. At that time, decommissioning work was being performed by employees of the Cimarron Corporation, a subsidiary of Kerr-McGee Corporation. Project oversight was provided through the Technology and Engineering Division of the parent company, Kerr-McGee Corporation. License oversight was provided by the Environmental and Health Management department of KMC. License condition 11.F requires the approval of either the Vice President, Environmental Operations, or the Vice President, Environmental & Health Management, for all radiation protection program procedures.

After license SNM-1999 was issued, organizational changes occurred within KMC. Most significantly, KMC assigned all Cimarron personnel to the Crescent facility to expedite decommissioning activities at that location, and established an independent organization committed to the Cushing project. Since that time, all project oversight, health physics, and operations personnel have been contained within a single organizational unit. At that time, the organization was contained within the Technology and Engineering Division as the Environmental Operations department. That organization was presented to the NRC as a license amendment request in the Site Decommissioning Plan, submitted to the NRC in April, 1994. That organization chart shows the Vice President, Environmental Operations (Roy Smith) reporting to the President, Technology and Engineering Division (Ken Richards). Radiation protection procedures, identified at the Cushing site as health physics procedures, were approved by Mr. Smith during the time the Environmental Operations department was in existence.

In August, 1994, Kerr-McGee Corporation underwent a significant restructuring effort. As part of the restructuring of the company, the Technology and Engineering Division and the

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Environmental Operations department were terminated. The positions "President, Technology and Engineering Division", and "Vice President, Environmental Operations", were terminated. A new corporate division, the Safety and Environmental Affairs (S&EA) Division, was created. Prior to the restructuring, site remediation activities were managed by a number of separate organizations both within operating units and within the parent company. One of the results of the corporate restructuring was to bring all site remediation activities under the management of a single group, the S&EA Division.

In the new organization, the Vice President, Remediation, oversees all "orphan site" remediation. Orphan sites are abandoned sites with no continuing operations. Although pipeline operations continue at the Cushing site, it is considered an orphan site because refining and nuclear processing operations were discontinued decades ago. Program and Project Managers, responsible for one or more sites, report to the Vice President, Remediation.

The restructured organization yields several benefits in the administrative oversight of the Cushing site. Mr. George Rice, Vice President, Remediation oversees all NRC and agreement state decommissioning activities within the company. Mr. Rice brings years of experience in the radioactive decommissioning field to this position. Mr. Jess Larsen, Program Manager for the Cushing site, replaced the Vice President, Environmental Operations, and retains responsibility for the Cushing and Cimarron sites formerly managed by Mr. Smith. Brief resumes for Mr. Rice and Mr. Larsen are attached to this letter.

Mr. Terence Moore, who had been designated Radiation Safety Officer for both the Cushing and Cimarron decommissioning projects, was assigned exclusively to the Cushing site. A separate RSO was provided for the Cimarron project. This is intended to enhance the radiation protection programs at both sites. Mr. Moore now reports to Mr. Jeff Lux, Project Manager for the Cushing site, placing all site remediation responsibilities under the supervision of the Project Manager. Dr. Jeffrey Ostmeyer, Site Coordinator, was redesignated Site Manager, and is responsible for all decommissioning operations. Mr. Lux' and Dr. Ostmeyer's positions have increased in responsibility since issuance of license SN M-1999 in 1993.

The new organization was presented in Final Radiation Survey of Four Unaffected Areas of the Cushing Refinery Site, submitted to the NRC in April, 1995. The title for the Program Manager responsible for the Cushing site had not yet been finalized, so his position was shown as "Project Leader" in the organization chart. KMC believes this organization represents enhanced capability to control and manage the decommissioning efforts at the Cushing site. KMC submits the attached organization chart as a proposed license amendment. KMC also requests that Jeff Lux be designated as the contact person for all written correspondence pertaining to the license.

KMC notes that when Cimarron personnel were utilized to administer the health physics program, it was necessary to designate a responsible individual. However, now that KMC has established a Cushing-based health physics staff, KMC believes it is inappropriate to designate Mr. Terence Moore by name as the radiation safety officer. KMC therefore requests that the license be amended to remove his name from the license.

Approval of Radiation Safety Procedures

After the corporate reorganization, the S&EA Division began the development of a quality management system. In the process of developing the management system, the radiation safety program was restructured. A radiation safety **plan** outlines the main elements of the radiation safety program, identifies organizational responsibilities, and references radiation **safety procedures** that will implement the program. This radiation safety **plan** was approved by the Program Manager and Project Manager. **Radiation safety procedures** detail how instruments are calibrated, how surveys are performed, etc. They are technical in nature and prescriptive in scope. It is not appropriate that administrative managers approve such detailed technical **procedures**. It is appropriate that all radiation safety procedures be approved by the Radiation Safety Officer. KMC requests that license SNM-1999 be amended to either delete approval requirements for the radiation safety plan and procedures, or to require approval of radiation safety **procedures** by the radiation safety officer only, and not by management. (3)

Bioassay Program

KMC has contracted a thorough evaluation of the current internal monitoring practices at the Cushing site. These evaluations have concluded that:

1. The sensitivity of routine bioassays for Thorium isotopes is poor,
2. The sensitivity of lapel air samples is excellent compared to that of bioassays for intake detection, and
3. The intakes for the thirteen month period beginning 1/1/94, as measured by lapel air samples, were negligible (60 DAC-hrs summed over all workers combined), assuming the presence of the most conservative isotope, Th-232.

We have included the analysis of intakes performed for the thirteen month period beginning 1/94 for your review. Names of the workers have been removed since this is confidential information. This report concludes that intakes during this period are well below the 10 CFR 20 monitoring threshold of 200 DAC-hrs.

KMC therefore requests that the license commitment to provide bi-monthly urinalysis and bi-annual in-vivo lung counts be removed. KMC also requests that the commitments to provide 50% of all workers with lapel air samplers when working in radioactive materials areas, and to collect daily lapel and area air samples, be removed. KMC proposes the following alternative bioassay and air sampling program.

Lapel air samplers will be issued when required by a special work permit or at the direction of health physics personnel. Generally, lapel air samplers will be issued when there is a reasonable probability that personnel may be exposed to airborne radioactive material. Lapel samplers may be issued at a minimum of one lapel per work crew, or a maximum of one per individual, depending on the work scope and the potential for worker exposure.

Urine sampling and analysis for uranium isotopes will be performed for workers if the lapel air samples indicate the following intake results:

- > 40 DAC-hrs for a single air sample result.
- > 100 DAC-hrs/yr accumulated exposure for any worker.

Fecal analysis will be performed in cases where Thorium exposure is suspected and lapel air samples indicate chronic or acute exposures in excess of 100 DAC-hrs.

Miscellaneous Items Addressed in the License Application

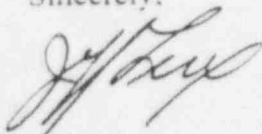
Sections 8.1 and 8.2 of the license application stipulates prescribed numbers of hours for various training programs. This is an unnecessary stipulation. Adequate time is spent on training to ensure that all personnel have an adequate understanding of the material to perform their work. KMC requests that the NRC recognize that the stipulated times are not appropriate as a criteria for judging the adequacy of a radiation safety training program.

Section 10.1 of the license application states that film badges for workers are processed on a monthly basis. KMC now submits all film badges, whether for workers or visitors, on a quarterly basis. KMC requests that NRC acknowledge this modification of the radiation safety program as appropriate.

Section 10.4 of the license application states that certain radiation monitoring equipment is calibrated at the Cimarron Corporation's Crescent, Oklahoma facility. KMC has established an instrument laboratory at the Cushing site. All radiation monitoring instruments are now calibrated either by the manufacturer or at the Cushing facility. KMC requests that NRC acknowledge this modification of the license application as appropriate.

If you have any questions or comments regarding these requests, please call me at (405) 270-2694.

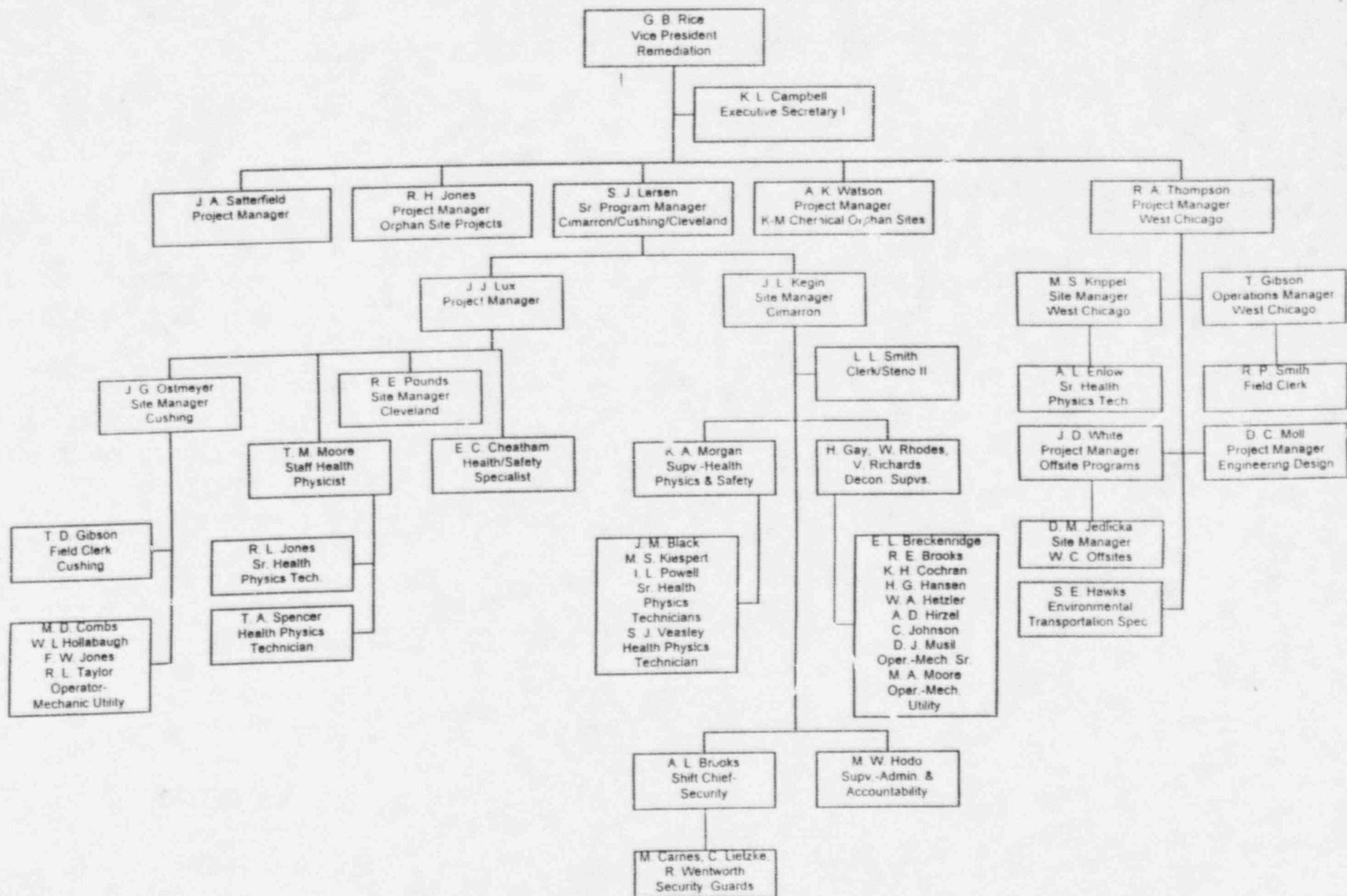
Sincerely,



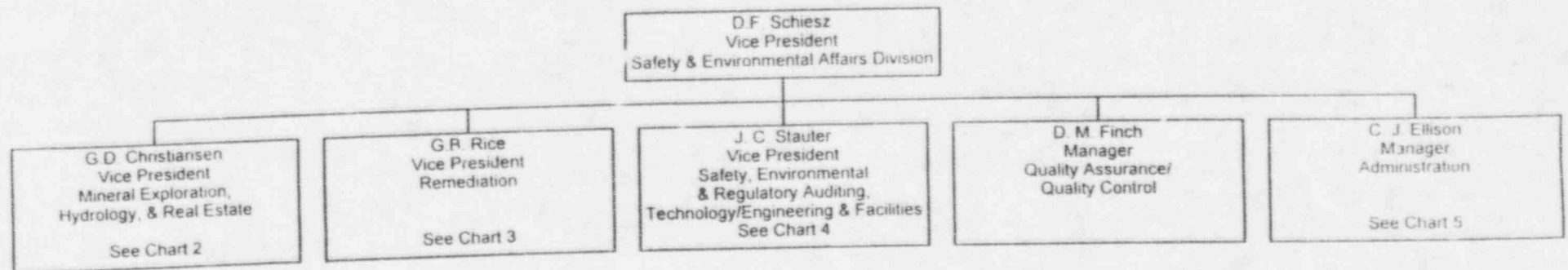
Jeff Lux
Project Manager

cc: Bob Evans, NRC Region IV
Rick Reiley, Cushing Citizens' Oversight Committee
Gene Smith, ODEQ, w/o work plan
Scott Thompson, ODEW, w/o work plan

Kerr-M Corporation
Safety & Environmental Affairs Division
Remediation



Kerr-McGee Corporation
Safety & Environmental Affairs Division



GEORGE B. RICE

Education:

B.S. Chemical Engineering, Stanford University, Stanford, California (1958)

M.S. Industrial Management, Purdue University, West Lafayette, Indiana (1959)

Experience:

1965 to Present: Kerr-McGee Corporation & Subsidiaries

- 1987 to Present: Remediation Management.
- 1985 to 1986: Chemical Operations Management
- 1979 to 1984: Environmental & Safety Management
- 1975 to 1978: Research & Development Mgmt
- 1965 to 1975: Engineering and Related Assignments

1959 to 1965: Standard Oil Company of California

September 28, 1995

RESUME

S. JESS LARSEN
Program Manager
Safety & Environmental Affairs Division
Kerr-McGee Corporation

- ▶ B. S. Civil Engineering, University of Utah, 1967
- ▶ Executive Development Program, University of Houston, 1974. Certificate of completion
- ▶ HAZWOPER 40-hour training, March 31, 1995. Certificate of completion

Employment

- ▶ Kennecott Copper Corporation - Bingham Canyon Mine (1967-1978) Positions held:
 - a) Truck Shift Foreman
 - b) Truck Area Safety Engineer
 - c) Mine Safety Engineer
 - d) Truck General Foreman
 - e) Truck & Dozer Repair General Foreman
 - f) Truck Area Superintendent
 - g) Mine Maintenance Superintendent
- ▶ Kerr-McGee Corporation (1978-1995 and continuing)
 - a) Mine Manager, Jacobs Ranch Coal Mine - Gillette, Wyoming
 - b) Mine Manager, Clovis Point Coal Mine - Gillette, Wyoming
 - c) General Manager, Kerr-McGee Chemical Corporation Western Australia Pty Ltd.
 - d) Executive Assistant, TiWest Joint Venture, Perth, Western Australia
 - e) Program Manager, Safety & Environmental Affairs Division

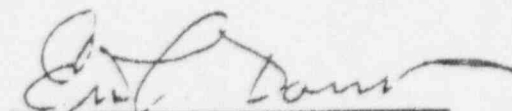
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*Evaluation of Lapel Air Sample Results for 1994 at The Kerr-McGee
Cushing Site*

(Confidential Information Removed)

Prepared by:


Eric L. Darois, CHP

Reviewed by:


James P. Tarzia, CHP

REVIEWED BY: James P. Tarzia
DATE: 9-18-95

August, 1995

Radiation Safety and Control Services, Inc
Stratham, NH

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Safety & Environ Cushing

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1.0 Introduction:

During the thirteen month period from 1/1/94 to 1/31/95, the radiological remediation efforts at the Kerr-McGee Cushing site have been performed in accordance with NRC license # SNM-1999. The Safety Evaluation in support of this license (Reference 5.1) specifies that the method used to monitor and control worker inhalation of airborne material will be air sampling with bioassays as a supplement. Subsequent to the license implementation, Kerr-McGee contracted RSCS Inc. to perform comprehensive evaluations of internal monitoring methods for the Uranium and Thorium isotopes of concern (references 5.2 and 5.3). These evaluations conclude that:

- a) Routine urine bioassays are an ineffective tool for detecting significant intakes of Thorium but may be a reasonable tool for Uranium isotopes.
- b) Routine fecal bioassays may provide adequate sensitivities for intake detection for Thorium isotopes; however its effectiveness as a routine monitoring method may be low because of the physical challenges involved.
- c) The use of routine lapel air samples provides far better sensitivities for intake detection as compared to either bioassay methods for Thorium isotopes.
- d) The internal monitoring program at the Kerr-McGee Cushing Site should retain both air sampling and bioassay elements with a modification in the implementation scheme. The change would initiate bioassays only if the lapel air sample results exceed specified action levels.

10CFR20 requires internal monitoring for individuals if the annual exposure is expected to exceed 200 DAC-HRS. As stated above, the current license requires all "radiation workers" to participate in the bioassay (in-vivo and in-vitro) and lapel air sampling programs. This report evaluates worker intakes for a thirteen month period as determined by lapel air sample data for thirty five workers. This evaluation provides the basis for amending the license requirements for routine bioassays of workers.

2.0 Results and Analysis:

Appendix A provides the results of all lapel air samples for each worker during the thirteen month period 1/1/94 through 1/31/95. The sample count data is analyzed using two statistical tests. The first test uses the calculated net count rate regardless of its outcome (positive or negative) to calculate intake. The second test uses the critical level concept to evaluate the net count rate as provided in reference 5.2. In this method, if the net count rate is below the critical level, a value of "0" is used to calculate the intake. Otherwise the actual count rate is used.

The intake values shown are calculated using the methods from reference 5.2 which include the following assumptions:

- a) All counts are from the Th-232 decay chain (conservative assumption).
- b) Th-232 is in secular equilibrium with Ra-228 and Th-228, therefore, two alpha particles are emitted for each decay of Th-232.
- c) All aerosols are 1 micron AMAD.
- d) All Thorium consists of class W solubility.

Using these assumptions, the relationship used to determine intake from the count data as provided in reference 5.2 is:

$$I(\text{DAC-HRS}) = \frac{10 * R_{\text{net}}}{F(\text{lpm}) * E(c/\alpha) * f}$$

where: F(lpm) is the sampler flow rate,
E(c/α) is the alpha particle detection efficiency,
f is the filter self absorption factor = 0.57.

In all cases, the background count time is 240 minutes and the sample count time is 30 minutes.

The data from Appendix A is summarized in Table 1 for each worker. This summary, which totals the intake for each worker throughout the thirteen month period, is shown using each

statistical analysis method described above. Additionally, the sum of all worker intakes is shown. These values are:

60 DAC-HRS by the critical level method, and
72 DAC-HRS by true net count rate method.

The data in table 1 also shows that the maximum intake for any worker during this period is less than 20 DAC-HRS.

3.0 Discussion

The lapel air sample data indicates that the maximum intake for an individual worker was less than 20 DAC-HRS and the maximum estimate of the cumulative total intake for all workers for the same period was 72 DAC-HRS. This data clearly shows that internal monitoring is not required by 10CFR20. The values provided here are also conservative since the lapel air sample analysis assumes that all radioactivity is from the Th-232 decay chain.

This intake data may be used to justify two changes to the internal monitoring program at the Cushing site;

- 1) a reduction in the use of lapel air samples, and
- 2) a significant reduction in the bioassay sampling program (including the elimination of 2-year whole body counts and routine urine samples).

Reference 5.3 recommends bioassay sampling action levels based on the results of lapel air sample analysis. These action levels would provide significant safety margin for worker protection. If this scheme had been implemented during the interval of the samples of this study, then bioassays would not have been required for any worker.

Evaluation of Lapel Air Sample Results for 1994 at the Kerr-McGee Cushing Site

Page 5 of 20

Table 1: Summary of Lapel Air Sample Data for all Radiation Workers from 1/1/94 - 1/31/95

Name	Intake (DAC-HRS) based on Critical Level Criteria	Intake (DAC-HRS) based on True Net Count Rate
	1.75	2.02
	0.00	-1.45
	2.12	6.60
	0.00	0.85
	0.00	-0.18
	1.44	7.11
	3.84	19.66
	0.00	0.89
	0.00	2.11
	0.00	1.18
	0.11	-4.41
	12.63	16.16
	1.57	-1.39
	0.00	2.16
	0.00	0.74
	0.00	1.39
	0.00	2.60
	0.00	0.37
	0.00	-0.83
	8.04	2.36
	0.00	-2.12
	0.00	-2.08
	0.00	-0.09
	0.01	-7.85
	0.00	0.91
	0.00	0.46
	0.00	0.74
	0.00	-0.79
	0.00	0.81
	19.30	18.65
	0.09	4.18
	0.00	0.74
	4.81	-2.75
	0.00	-1.57
	4.44	4.67
Grand Total	60.16	71.83

4.0 Conclusions:

The following changes are recommended for the air sampling and bioassay programs.

1. Provide one worker per work group with a lapel air sample when working with licensed radioactive material instead of all 50% of workers.
2. Allow air samples to be collected and analyzed on a weekly interval instead of daily.
3. Institute urine sampling and analysis (uranium isotopes only) for all work-party workers if the lapel air sample results exceed: 40 DAC-HRS for a single sample, or 100 DAC-HRS per year accumulated exposure.
4. Eliminate the requirement to conduct whole body counts for workers at a two year interval.
5. Institute fecal sampling and analysis when thorium exposures are suspected and air samples indicate chronic or acute exposures in excess of 100 DAC-HRS.

These changes are clearly justified by the lapel air sample data provided in this report. The data from over 1 year of lapel air sampling indicates that the collective exposure for all monitored workers is insignificant. These changes will support the ALARA program and benefits the entire radiation protection program by making more resources available for other more significant worker protection issues.

5.0 References

- 5.1 USNRC Docket No. 70-3073, "Safety Evaluation Report, License Application Dated October 17, 1991, as Revised on September 25, 1992, and Supplemented on December 18, 1992, January 14, 1993, and February 23, 1993. Re: Possession of Uranium and Thorium at the Cushing Refinery Site, April 6, 1993.
- 5.2 "Evaluation of the Internal Monitoring Program at the Kerr-McGee Cushing Site", prepared by Radiation Safety and Control Services Inc; July 1994.
- 5.3 "Evaluation of Bioassay Sampling and Action Levels at the Kerr-McGee Cushing Site"; July 1995.



KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

January 15, 1996

Mr. David Fauver, Senior Project Officer
Low-Level Waste & Decommissioning Projects Branch
Division of Waste Management
Office of Nuclear Materials Safety & Safeguards
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 70-3073
License No. SNM-1999 Amendment Request

Dear Mr. Fauver:

Kerr-McGee Corporation (KMC) recently restructured the Safety and Environmental Affairs Division. As a result of this restructuring, Mr. George Christiansen has replaced Mr. George Rice as Vice President of the department, which has been renamed, "Assessment and Remediation Department". KMC requests that the Cushing license be amended to reflect this modification, as necessary.

A revised organization chart is attached, identifying all those responsible for the Cushing site decommissioning project through the Division Vice President. Also attached is a brief resume for Mr. Christiansen.

If you have any questions or comments regarding this license amendment request, please call me at (405) 270-2694.

Sincerely,

Jeff Lux
Project Manager

cc: Bob Evans, NRC Region IV
Rick Reiley, Cushing Citizens' Oversight Committee
Gene Smith, ODEQ
Scott Thompson, ODEQ

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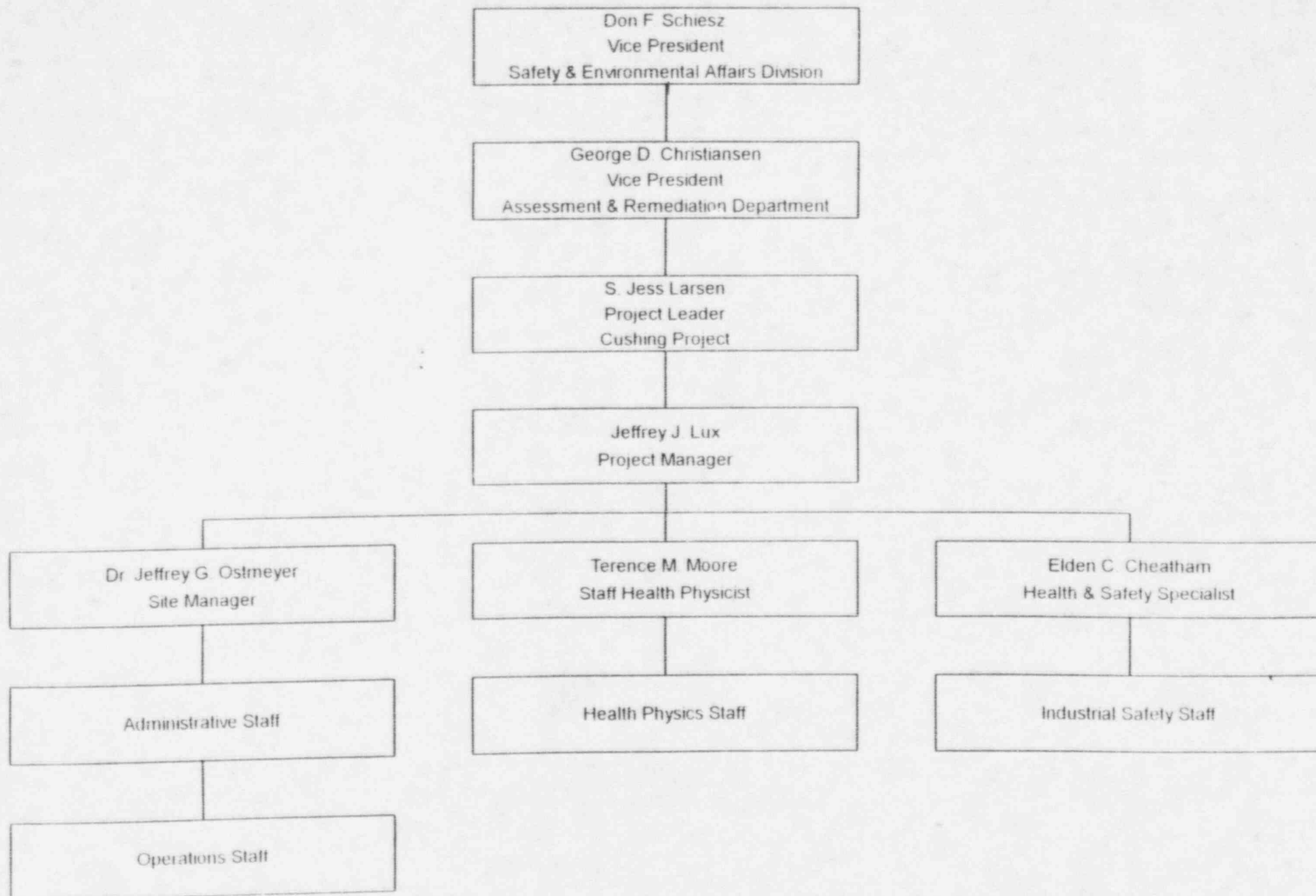
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Environ Cushing

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m:cushing.letters@nrc.org

Kerr-McGee Corporation
Safety & Environmental Affairs Division
Cushing Project Oversight



GEORGE D. CHRISTIANSEN

Kerr-McGee Corporation
Safety and Environmental Affairs Division

Education: B.S. Geology, University of Wyoming, Laramie,
Wyoming (1968)

Current Position: Vice President - Assessment and Remediation,
Safety & Environmental Affairs Division

Experience: 1968 to Present: Kerr-McGee Corporation

- 1994 through 1995: Minerals Exploration,
Environmental Assessment
(Hydrology) & Real Estate
Management
- 1980 to 1994: Minerals Exploration
Management
- 1974 to 1980: Uranium Exploration
Management
- 1970 to 1974: Uranium and Coal
Exploration Geology
- 1968 to 1970: Uranium Mine Geology

January 3, 1996



KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY • OKLAHOMA 73125

February 15, 1996

Mr. David Fauver
Low-Level Waste & Decommissioning Projects Branch
Division of Waste Management
Office of Nuclear Materials Safety & Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No. 70-3073
License No. SNM-1999

Dear Mr. Fauver:

Kerr-McGee Corporation (KMC) submits the following responses to your October 20, 1995 comments on KMC's license amendment request.

NRC Comment 1 on Page 2, Paragraph 6

Kerr-McGee proposes to remove from the license specific reference to Mr. Terence Moore as the radiation safety officer (RSO). The justification for this request is that Kerr-McGee has established a Cushing-based health physics staff. The staff believes that for small health physics programs, such as the program for the Cushing site, it is appropriate to specifically list the RSO on the license. This ensures that the NRC will have an opportunity to review the qualifications of replacement RSO's, should replacement be necessary. Unless additional justification is provided, Mr. Terence Moore will continue to be specifically listed in License SNM-1999.

KMC Response:

KMC acknowledges NRC's position and will continue to operate in accordance with this license condition. ✓

NRC Comment 2 on Approval of Radiation Safety Procedures

Will revisions to the radiation safety plan be approved by the RSO, as well as the Program Manager and Project Manager? Is there a Kerr-McGee Cushing procedure control program that designates which Cushing staff are responsible for developing and approving procedures?

KMC Response:

Revisions to the radiation safety plan will be approved by the Radiation Safety Officer, as well as the Site Manager, Project Manager, and the Project Leader. Revisions to radiation safety procedures will be approved by the RSO. These approval requirements are detailed in the Kerr-McGee Corporation Cushing Site Quality System Manual.

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NRC Comment 3 on Bioassay Program

What activities were being performed by the Cushing site workers that were included in the analysis of intakes over the past 13 months? Is this analysis appropriate for the significant earth moving activities anticipated during the Cushing soil consolidation project, which could result in higher concentrations of airborne radioactivity than experienced during the past 13 months?

If the bioassay program is reduced as proposed by Kerr-McGee, greater emphasis will be placed on the air sample results. One lapel sampler per work group may not provide adequate confidence that air sample results are representative of potential inhalation intakes for the entire crew. Additional lapel samples may be necessary to provide adequate confidence in the intake estimates. Also, one or more area air samples, in addition to lapel samples, should continue to be collected when work is being performed in a radioactive materials area. Please provide additional information regarding the representativeness of air sample results and the method for verifying the representativeness of the air samples.

Will urinalysis be performed for all workers on a crew where one or more individuals exceed the intake action levels?

What are the sensitivities of the lapel air samplers and routine bioassays?

KMC Response:

During the 13 month period evaluated by the contractor, work crews performed soil sampling activities both inside and outside of radioactive materials areas. KMC does not believe these activities are representative of larger scale earthmoving operations. KMC proposed to reduce lapel samples to a **minimum** of one per work crew, etc., not a **maximum**. KMC has no intention of monitoring all work performed with the minimal requirements stated in the license amendment request. However, much of the work performed at the Cushing site does not warrant the air monitoring and bioassay program currently required by license.

KMC's trained, experienced Radiation Safety Officer can ensure that monitoring is performed at a level commensurate with exposure potential. This license amendment request is not intended to justify a substandard radiation safety monitoring program, but rather to gain relief from an excessive one when data indicates a low exposure potential.

Upwind and downwind area air sampling is appropriate when earthmoving activities with the potential for producing airborne radioactivity are being performed. As the potential for exposure increases, area and lapel sample collection will be increased. Area air samples will be collected as appropriate, and lapel samples will be increased from a **minimum** of one per work crew to a maximum of one per individual. Results for individuals within a single work crew will be compared to each other and also to

area air sample results as appropriate. This will ensure that we are monitoring in a sufficiently conservative manner.

Urinalysis will be performed on all members of a work crew should one individual exceed the intake action level.

Cushing currently utilizes a ten-hour work day, and typical MDAs for lapel samples (ten hours @ 5 liters per minute) are approximately 1.0 - 1.2 DAC-hours, or 10-12 % of DAC for the ten-hour period.

Typical bioassay sensitivities are:

U-238/235	Acute	Class Y	0.01 ALI	can be detected within several days post intake
		Class W	0.01 ALI	detectable for up to one year post intake
	Chronic	Class Y	0.1 ALI/yr	can be detected within 2 months of onset
		Class W	0.001 ALI/yr	detectable
U Series	very similar to U-238/U-235			
Th-232	Acute	Class Y	1 ALI	can be detected for up to 3 days post intake
		Class W	1 ALI	can be detected for up to 10 days post intake
	Chronic	Class W/Y	1 ALI/yr	cannot be detected
Th 228	Acute	Class Y	1 ALI	can be detected for up to 5 days post intake
		Class W	0.1 ALI	can be detected for up to 50 days post intake
	Chronic	Class Y	1 ALI/yr	may go undetected
		Class W	0.5 ALI/yr	can be detected
Th Series	Acute	Class Y	1 ALI	can be detected for up to 4 days post intake
		Class W	1 ALI	can be detected for up to 50 days
	Chronic	Class W/Y	1 ALI/yr	may go undetected

NRC Comment 4 on Training Programs

The staff agrees that the content of training courses, and not the number of hours devoted to each course, is the germane issue. License Condition 11.C of License SNM-

1999 pertains to the content of the courses, i.e., that both courses should include all of the topics described in 10 CFR 20.19.12 (sic). The nomenclature used in License Condition 11.C pertaining to 8 hour and 2-3 hour indoctrinations was provided by Kerr-McGee in the license application. The names of the courses can be changed, along with the implied commitment to train for a designated period of time. However, the content of both training courses must cover the topics listed in 10 CFR 19.12 in detail that is commensurate with the type of activities to be performed by the trainee. Please provide alternate designations for the 2 training courses, and a commitment to cover all of the topics listed in 10 CFR 19.12 in each course.

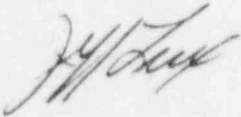
KMC Response:

KMC will utilize Initial Radworker Training for initial training and Annual Radworker Requalification Training for annual updates. Both Initial Radworker Training and Radworker Requalification Training shall include the topics listed in 10 CFR 19.12 in detail that is commensurate with the type of work to be performed.

Visitors and others not expected to work in radioactive materials areas or with licensed material will receive a Visitors' Radiation Safety Orientation unless they are expected to stay or work exclusively within unaffected areas.

If you have any questions or comment concerning these responses, please call me at (405) 270-2694.

Sincerely,



Jeff Lux

cc: Rick Reiley, Citizens' Oversight Committee
Gene Smith, ODEQ
C.L. Cain, NRC Region IV.

Jeff Lee



KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

TECHNOLOGY & ENGINEERING DIVISION

ROY R. SMITH
VICE PRESIDENT, ENVIRONMENTAL OPERATIONS

June 3, 1993

Mr. David Fauver
Low Level Waste Management and Decommissioning Division
Nuclear Material Safety and Safeguards Office
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

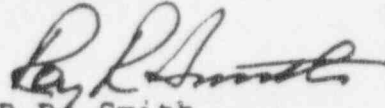
Re: License No. SNM-1999
Docket No. 70-3073
Cushing, Oklahoma
Kerr-McGee Corporation

Dear Mr. Fauver:

Please find attached a license amendment request as required by Condition (D) of license SNM-1999 for the purpose of delineating boundaries of radioactive materials areas, restricted areas, and areas outside of restricted areas where licensed materials exist.

The date for submittal of this material was extended to not later than June 8, 1993 in a telephone conversation between you and E.T. Still of Kerr-McGee on June 1, 1993.

Sincerely,


R.R. Smith

RRS:jd

9306140074 Gpp

DRAFT
AMENDMENT REQUEST
LICENSE NO. SNM-1999
DOCKET NO. 70-3073
CUSHING, OKLAHOMA REFINING SITE
KERR-MCGEE CORPORATION
JUNE 2, 1992

Condition 11.D. of License SNM-1999 directs Kerr-McGee Corporation (Kerr-McGee) to submit, by license amendment request, "-- the proposed boundaries of all radioactive materials areas designated in accordance with 10 CFR 20.203(e) (2), restricted areas as defined in 10 CFR 20.3, and areas outside of restricted areas, where licensed materials exist which must be secured from unauthorized removal per 10 CFR 20.207." At the request of Kerr-McGee, NRC staff agreed to a one-week extension of the June 1, 1993 submittal date. The proposed boundaries are described below and are shown on the accompanying map of the Cushing site.

General Site Control

Kerr-McGee limits access to the portion of the former refinery site currently owned and to some portions of the site not currently owned by means of a fence with locked entry points. This area to which access is limited is comparable to a "controlled area" as defined in 10 CFR 20.1003, i.e. "Controlled area means an area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason." The extent of the area controlled overall is outlined on the attached site map.

Restricted Areas -- 10 CFR 20.3

Under 10 CFR 20.3, a "restricted area means any area access to which is controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials." On the basis of radiation surveys and anticipated future activities required in the remediation, six areas within the site are designated as a restricted area. These areas, located on the attached map by block number, are: No. 1 the trash dump - blk #4, Nos. 2,3,4, tank dikes in blocks 29, 41, 43, No. 5, Pit 4 in block 23, and No. 6, the processing buildings in block 101.

The perimeters of these areas have been, or will be, delineated by fencing, or other physical barriers and posted with the conventional radiation symbol.

Radioactive Materials Areas - 10 CFR 20.203(3) (2)

10 CFR 20.203(e) (2) provides for conspicuously posting of areas in which natural uranium or thorium is used or stored in any amount exceeding a specified quantity. Outside of the areas designated as restricted areas, which are or will be conspicuously posted, available data do not indicate the quantity specified in 10 CFR 20.203(e) (2) has been, or is likely to be, exceeded in any defined area or room.

Nevertheless, Kerr-McGee has designated as radioactive materials areas those locations at which the characterization survey indicates an external gamma exposure rate greater than 15 microR per hour. These areas are identified on the attached map. The perimeter of these areas have been, or will be, marked using steel T-posts and plastic caution tape. A sign with the radiation caution symbol and the words "caution" and "Radioactive materials" will be placed in the center of small areas; similar signs will be posted at appropriate intervals along the perimeter of larger areas.

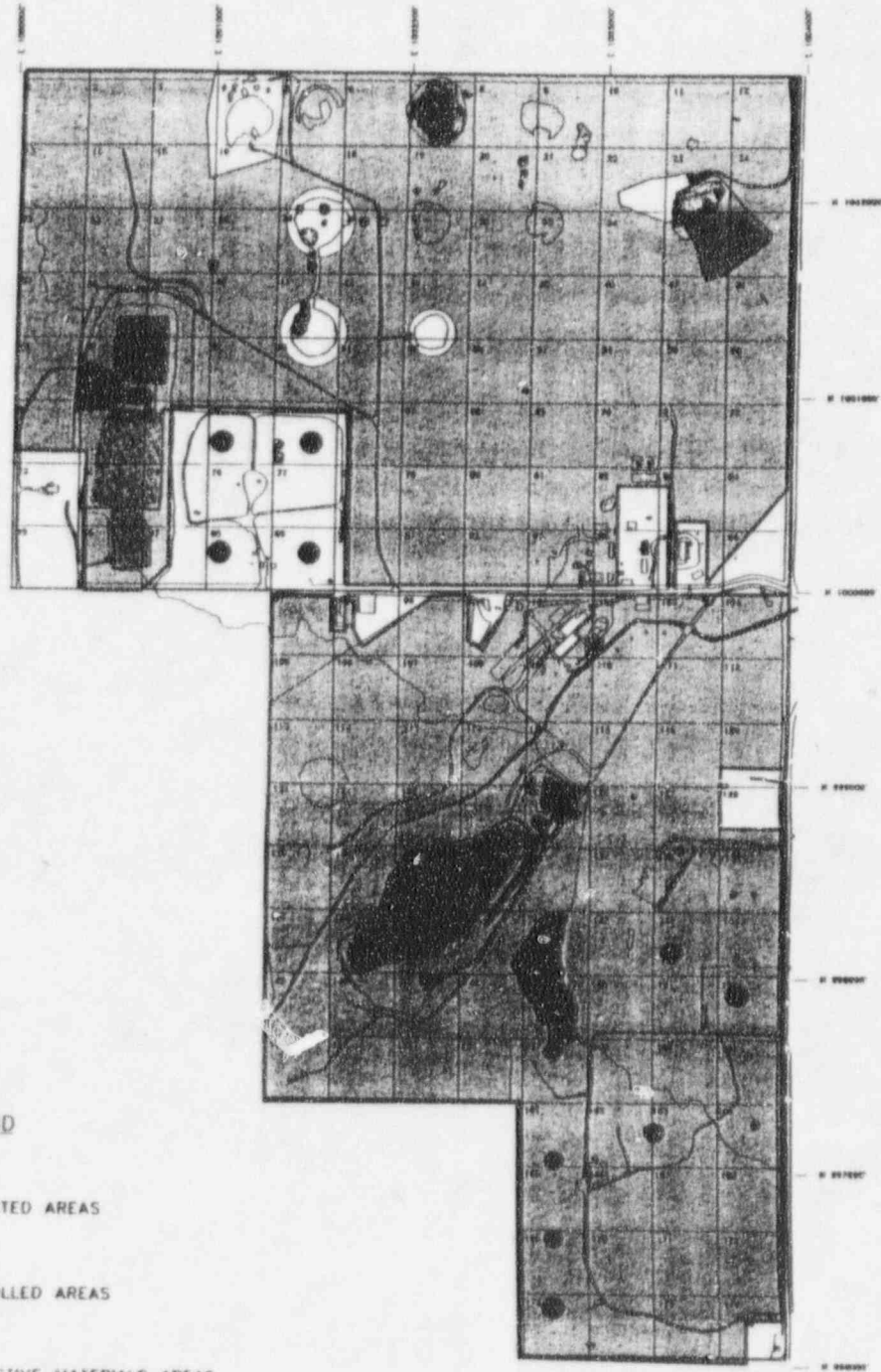
Additional areas may be designated as radioactive materials areas on the basis of scoping surveys being performed at drainage ways, at areas identified in the characterization survey with elevated exposure rates and at locations for which anecdotal information indicates licensed materials might be present. The surveys consist of area scans with a sodium iodide detector to identify areas with gamma exposure rates in excess of two times background. Gamma spectrum analysis of soil samples will determine the requirement for conspicuous posting.

Unrestricted Area Storage and Control - 10 CFR 20.207

Some licensed material has been identified as contamination in soil in an unrestricted area that is not within the site perimeter fence. This area is within the North tank farm that is owned and operated by a wholly-owned subsidiary of Kerr-McGee Corporation. Tank farm areas determined with a sodium iodide detector to contain activity exceeding two times background

have been delineated and flagged and are posted as a radioactive materials area, as identified on the attached map. The only work routinely performed in the area of contamination is grass mowing for fire prevention purposes. The mowing is performed under a special work permit.

Some licensed material is stored in the form of soil samples in the radiological crew trailer and in the site office building. The crew trailer, sample storage room and soil counting room are locked when no one is present. The trailer location and office building are shown on the attached map.



LEGEND

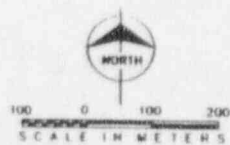
RESTRICTED AREAS



CONTROLLED AREAS



RADIOACTIVE MATERIALS AREAS



KERR-McGEE CORPORATION

DOCUMENT TITLE:
CUSHING FACILITY MAP
CONTROLLED, RESTRICTED &
RADIOACTIVE MATERIALS AREAS

PREPARED BY: J. ORN: BY: J.
PROJECT NO. DATE: JUNE 1, 1993