



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

RELATED CORRESPONDENCE

July 25, 1985

DOCKETED  
USNRC

Anne Rapkin, Esq.  
Assistant Attorney General  
Environmental Controls Division  
100 W. Randolph - 13th Floor  
Chicago, IL 60601

'85 JUL 30 A10:05

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

In the Matter of  
KERR-MCGEE CHEMICAL CORPORATION  
(West Chicago Rare Earths Facility)  
Docket No. 40-2061 ML, ASLBP No. 83-495-01-ML

Dear Ms. Rapkin:

This letter relates to the production of documents at Argonne National Laboratory (ANL) in response to the People of the State of Illinois' Second Set of Interrogatories and Request for Documents to Staff, dated November 27, 1984. The files of ANL regarding the decommissioning of the Rare Earths Facility were reviewed by the People on May 31 and June 12, 1985 and by Kerr-McGee on June 11, 1985. Prior to that review, the Staff had temporarily removed certain documents for a determination as to privilege. The removed documents were identified by type, author, recipient, and date on sheets inserted in the files. The Staff has completed its review of the temporarily removed documents and is enclosing copies of those documents on which it is not claiming privilege. Also enclosed is a list of those documents from the ANL files which are being withheld as privileged. The information requested at page four of your interrogatories as to the Staff's claims of privilege is provided in the list.

Copies of the documents which either the People or Kerr-McGee requested at the time of their visit to ANL, were sent to the People and Kerr-McGee on July 16, 1985.

Sincerely,

Stephen H. Lewis  
Deputy Assistant Chief Hearing Counsel

Enclosures:

1. Additional ANL documents being produced.
2. "Documents From Argonne National Laboratory Files Claimed As Privileged".

cc: See page 2

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PDR ADOCK 04002061  
C PDR

DS07

cc/both enclosures: Richard Meserve, Esq.

cc/enclosure 2:

John H. Frye, III, Chairman  
Dr. Peter A. Morris  
John C. Berghoff, Esq.  
Docketing and Service Section  
Atomic Safety and Licensing  
Appeal Board Panel

Dr. James H. Carpenter  
Mead Hedglon, Esq.  
Steven Seiple, Esq.  
Thomas W. Fawell, Esq.  
Atomic Safety and Licensing  
Board Panel

# ARGONNE NATIONAL LABORATORY

9700 SOUTH CASS AVENUE, ARGONNE, ILLINOIS 60439

November 14, 1984

Mr. W. A. Nixon  
Division of Fuel Cycle and Material Safety  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Bill:

In response to your request, we have estimated the time and effort that would be required to prepare a Supplemental EIS (SEIS) for the West Chicago Kerr-McGee facility, with particular focus on the issues raised by the Illinois Attorney General.

We estimate that it will take approximately one year to publish a Draft SEIS (see proposed schedule--Attachment 1). Please note that only a small portion of this time is required by ANL for the actual analyses (about 3 months). The rest of the time is needed for coordination, reviews, and concurrence by the various participating parties.

The ANL effort to support preparation of the Draft SEIS is estimated to be about 2.8 person-years, or a total cost of \$250 K, of which 180 K would be needed in FY85 and 70 K in FY86 (Attachment 2). The scope of the Final SEIS will depend primarily on the extent and nature of the comments on the DSEIS; therefore, schedule and cost for the Final SEIS will require further discussion.

The abovementioned schedule and cost estimates are based on several assumptions (Attachment 3). Key assumptions include:

- 1) A maximum of five major alternatives will be analyzed, including 2 at the West Chicago site and one at each of 3 alternative sites.
- 2) The State of Illinois will identify the alternative sites to be analyzed in detail and compared to the West Chicago site.
- 3) The focus of the analysis will be on the major issues of groundwater contamination, containment system stability, radiological impacts, land use/socioeconomic impacts, and dollar costs.

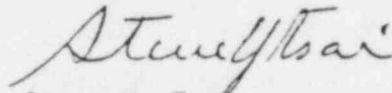
Mr. W.A. Nixon

-2-

11/14/84

If you have any questions or need any further information, please call.

Sincerely,



Steve Y. Tsai  
Environmental Research Division

SYT:mz

cc: A. J. Dvorak  
P. F. Gustafson  
P. A. Merry-Libby

bcc: P. A. Benioff  
T. L. Gilbert  
N. Meshkov  
C. Yu

Attachment 1: PROPOSED SCHEDULE  
Supplemental Environmental Impact Statement,  
Decommissioning of the Rare Earths Facility  
at West Chicago, Illinois

Primary Responsibility	Activity	Completion Date
NRC	Approve Supplemental EIS Approach	Dec. 7, 1984
IL/NRC	Identify and Concur on Alternative Sites	Jan. 30, 1985
IL	Provide ANL With Alternative Site Data*	Jan. 30
ANL	Develop Conceptual Designs for Alternative Sites	Feb. 28
IL/NRC/ANL/ Kerr-McGee	Review and concur on Conceptual Designs for Alternative Sites.	Mar. 29
IL/NRC/ANL	Concur on (1) Time Frames for Analysis, (2) Major Issues, and (3) Depth of Analysis	Mar. 29
ANL	Prepare Preliminary Draft Supplemental EIS (PDSEIS) - I	Jun. 28
NRC/IL/ Kerr-McGee	Review PDSEIS-I	Jul. 19
NRC/IL/ Kerr-McGee/ANL	Concur on Revisions	Jul. 26
ANL	Prepare PDSEIS-II	Aug. 27
NRC/IL/ Kerr-McGee	Review PDSEIS-II	Sep. 18
NRC/IL Kerr-McGee/ANL	Concur on Revisions	Oct. 1
ANL	Prepare Camera-Ready DSEIS	Oct. 15
NRC	Concurrence, Prepare Letters, etc.	Nov. 8
NRC	Print and Distribute DSEIS	Nov. 20
NRC	Issue Federal Register Notice of Availability	Nov. 27
IL/Public/ Kerr-McGee	Review/Comment on DSEIS	Jan. 1986
NRC	Issue Final SEIS	Jul.
NRC	Record of Decision	Aug.

\*For any new sites and/or new data on previously considered sites.

Attachment 2: ESTIMATE OF ANL COSTS  
to Prepare Draft Supplemental EIS.

Effort (Person-Years)

	<u>FY 85</u>	<u>FY 86</u>
Direct Scientific/Technical	1.7	0.6
Other Direct	<u>0.3</u>	<u>0.2</u>
Total	2.0	0.8

Cost (\$1,000)

	<u>FY 85</u>	<u>FY 86</u>
Direct Salaries	104.1	41.3
M & S	1.0	1.0
ADP Support	4.0	1.0
Subcontracts	0	0
Travel (Domestic)	1.0	1.0
Indirect Labor Costs	32.9	13.9
G & A (19.6%)	<u>34.5</u>	<u>14.1</u>
Total	177.5	72.3

Attachment 3: KEY ASSUMPTIONS  
for Supplemental EIS

1. A maximum of five alternatives at four sites (Kerr-McGee site and three alternative sites) will be analyzed in detail. Alternative sites should be at least as good as the Kerr-McGee site from a hydrogeological point of view.
2. The State of Illinois will identify, with NRC concurrence, the alternative sites to be analyzed in depth.
3. The proposed schedule envisions no out-of-state coordination/concurrence/review. If analysis of out-of-state site(s) is needed, more time and effort will be needed.
4. NRC and Illinois will concur on the time frames for the analysis and the assumptions regarding monitoring/maintenance/institutional controls. Under established policy, "long-term" means containment for at least 200 years and up to 1,000 years (per EPA uranium mill tailings regulations).
5. The major issues to be analyzed in depth are:
  - (a) Long-term groundwater contamination and containment system durability/ stability.
  - (b) Radiological impacts (near- and long-term).
  - (c) Land-use/socioeconomic impacts.
  - (d) Dollar costs (implementation costs and maintenance/monitoring costs)
6. The cost-benefit analysis will be a summary comparison of the results of abovementioned analyses of major issues.
7. The schedule assumes concurrent reviews of preliminary drafts by NRC, Illinois, and Kerr-McGee. Sequential reviews could extend the schedule greatly.
8. The schedule is based on no local (county, city, etc.) review of preliminary drafts and no public meetings. NRC will decide the level and timing of local participation in the decision-making process.

# ARGONNE NATIONAL LABORATORY

9700 SOUTH CASS AVENUE, ARGONNE, ILLINOIS 60439

(312)972-7798

April 17, 1985

Mr. W. A. Nixon  
Division of Fuel Cycle and Material  
Safety  
Office of Nuclear Material Safety  
and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Nixon:

In response to your request, we have revised our November 14, 1984, estimate of time and effort required to prepare a Supplemental Environmental Impact Statement (SEIS) for the decommissioning of the Kerr-McGee West Chicago facility.

Our previous estimate indicated that the ANL effort to support preparation of a Draft SEIS for evaluating two disposal/storage alternatives at the West Chicago site and one at each of three alternative sites would be about 2.8 person-years at a total cost of \$250 K. This estimate is now revised based on the scope of work outlined in the NRC staff report on preparation of the SEIS (March 22, 1985).

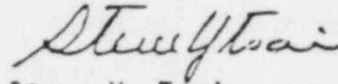
The revised scope of work required that in addition to the West Chicago site, six clay/shale quarry sites in Illinois should be analyzed on an equal basis as to the impacts of permanent disposal of the rare earths facility wastes. Based on this requirement and the assumptions outlined in Attachment 1, we estimate that starting in May 1985, it would take approximately 16 months to publish a Draft SEIS (see Attachment 2). The ANL effort would be about 3.6 person-years, or a total cost of \$365 K of which \$149 K would be needed in FY85 and \$216 K in FY86 (see Attachment 3).

The abovementioned schedule and cost estimates could be significantly reduced if the six alternative sites were screened on a qualitative level by ANL at an early stage and narrowed down to only two sites for further detailed analysis and comparison with the West Chicago site. By doing so, we estimate that it would take approximately one year to publish a Draft SEIS and the cost for ANL effort would be about \$280 K. We recommend this approach be taken to prepare the Draft SEIS.

April 17, 1985

If you have any questions or need further information, please call.

Sincerely,

A handwritten signature in cursive script, appearing to read "Steve Y. Tsai".

Steve Y. Tsai  
Environmental Research Division

SYT:mz

Attachments

cc: A. Hodgdon, OELD  
A. J. Dvorak  
P. A. Merry-Libby

Attachment 1: Key Assumptions for Estimating Costs for Preparation of  
the Draft SEIS

1. A maximum of eight alternatives at seven sites will be analyzed in detail. The alternative sites should be at least as good as the West Chicago site from a hydrogeological point of view.
2. At present the seven sites consist of West Chicago site and six clay/shale quarry sites. Other alternative site(s) recommended by the state of Illinois, with NRC concurrence, will replace the clay/shale quarry site(s) to maintain a total of only six alternative sites.
3. The proposed schedule envisions no out-of-state coordination/concurrence/review. If analysis of out-of-state site(s) is needed, more time and effort will be needed.
4. NRC and the state of Illinois will concur on the time frames for the analysis and the assumptions regarding monitoring/maintenance/institutional controls. Under established policy, "long-term" means containment for at least 200 years and up to 1,000 years (per EPA uranium mill tailings regulations).
5. A total of 2 to 3 disposal designs will be developed and utilized with minor modifications for each alternative site.
6. The major issues to be analyzed in depth are:
  - (a) Long-term groundwater contamination and containment system durability/stability.
  - (b) Radiological impacts (near-term and long-term).
  - (c) Land-use/socioeconomic impacts.
  - (d) Dollar costs (implementation costs and maintenance/monitoring costs).
7. The cost-benefit analysis will be a summary comparison of the results of the abovementioned analyses of major issues.
8. The schedule assumes concurrent reviews of preliminary drafts by NRC, state of Illinois, and Kerr-McGee. Sequential reviews could extend the schedule greatly.
9. The schedule is based on no local (county, city, etc.) review of preliminary drafts and no public meetings. NRC will decide the level and timing of local participation in the decision-making process.

Attachment 2: Proposed Schedule for Preparation of  
the Draft SEIS

Primary Responsibility	Activity	Completion Date
NRC	Approve Supplemental EIS Approach	May 1, 1985
ILL/NRC	Identify and Concur on Alternative Sites	May 31
IL	Provide ANL with Alternative Site Data*	May 31
ANL/NRC	Visit Alternative Sites	June 28
ANL	Develop Conceptual Designs for Alternative Sites	Aug. 1
NRC/ANL	Review and concur on Conceptual Designs for Alternative Sites.	Aug. 30
NRC/ANL	Concur on (1) Time Frames for Analysis, (2) Major Issues, and (3) Depth of Analysis	Aug. 30
ANL	Prepare Preliminary Draft Supplemental EIS (PDSEIS) - I	Dec. 23
NRC	Review PDSEIS-I	Jan. 24, 1986
NRC/ANL	Concur on Revisions	Jan 31
ANL	Prepare PDSEIS-II	Feb. 28
NRC/ILL/ Kerr-McGee	Review PDSEIS-II	Mar. 28
NRC/ILL/ Kerr-McGee/ANL	Concur on Revisions	Apr. 11
ANL	Prepare Camera-Ready Draft SEIS	May 2
NRC	Concurrence, Prepare Letters, etc.	May 23
NRC	Print and Distribute DSEIS	June 6
NRC	Issue <u>Federal Register</u> Notice of Availability	June 13
ILL/Public/ Kerr-McGee	Review/Comment on DSEIS	Aug.
NRC	Issue Final SEIS	Feb.
NRC	Record of Decision	Mar. 1987

\*For any new sites and/or new data on previously considered sites.

Attachment 3: Estimate of ANL Costs  
for the Preparation of the Draft SEIS

	<u>Effort (Person-Years)</u>	
	<u>FY 85</u>	<u>FY 86</u>
Direct Scientific/Technical	1.3	1.8
Other Direct	<u>0.2</u>	<u>0.3</u>
Total	1.5	2.1

	<u>Cost (\$1,000)</u>	
	<u>FY 85</u>	<u>FY 86</u>
Direct Salaries	75.0	112.0
M & S	5.0	7.0
ADP Support	5.0	5.0
Subcontracts	0	0
Travel (Domestic)	10.0	10.0
Indirect Labor Costs	25.0	40.0
G & A (19.6%)	<u>29.0</u>	<u>42.0</u>
Total	149.0	216.0

September 11, 1984

TO: T. Gilbert  
N. Meshkov  
C. Yu

FROM: S. Tsai *ST*

SUBJECT: Request for Information Related to Radiological Impact Analysis for  
West Chicago Project

Attached is a list of interrogatories submitted by the State of Illinois to the NRC requesting information related to the long-term radiological impact analysis for Kerr-McGee West Chicago rare earth facility.

I would like you to coordinate among yourself to review these interrogatories and prepare answer to each one of them. The answer to most of the interrogatories can be extracted from the materials contained in Section 5.9 and Appendix F of the FES and would not require any detailed analysis. Please provide me with your inputs by September 20, 1984.

If you have any questions in interpreting the interrogatories and/or problems in meeting the deadline, please let me know ASAP. Thank you.

SY:mz

Attachment

cc: A. J. Dvorak  
R. W. Vocke

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 FORMER/G.16att/BURNS  
 Olmsted/FF

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD  
 U.S. NUCLEAR REGULATORY COMMISSION

Reply Due 7/4/84

RECEIVED  
 SEP 11 1984

In the Matter of )  
 )  
 KERR-MCGEE CHEMICAL CORPORATION )  
 (West Chicago Rare Earths Facility) )

Docket No. 40-2061-PL 11 1984

STEVE Y. H. TSAI

PEOPLE OF THE STATE OF ILLINOIS'  
 MOTION FOR LEAVE TO FILE CONTENTION 2(x)  
 AND SECOND DISCOVERY REQUEST

The PEOPLE OF THE STATE OF ILLINOIS move the Board for leave to file another contention and to file discovery against the Staff and licensee with respect to this contention. New Contention 2(x) would raise in connection with the licensee's application an issue which has already been raised against the Staff in the People's NEPA contention, i.e., long-term radiological impacts resulting from onsite disposal. (Contention 1(b) asserts that the FES did not address the long-range environmental significance of Kerr-McGee's proposal. The People's brief on Contention 1 specifically discusses long-term radiological impacts.)

While this issue has been raised under Contention 1, the Board has not yet ruled on that contention, since extensive briefing has only just been completed. We do not know when a ruling is expected; hence, we do not know when discovery on this issue may begin, if at all. The People would like to begin fact-finding on long-term radiological impacts, a matter of major importance in a proceeding involving a permanent repository. In preparation for hearing, a consultant hired by the State has determined on the basis of an initial review that there may be

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significant problems with calculations presented in the FES. Firmer conclusions cannot be made, however, without discovery from the Staff and licensee.

Admission of new Contention 2(x) would not prejudice any of the parties, since they are on notice pursuant to Contention 1 that long-term radiological impacts are in question. Moreover, discovery has only recently begun, so the filing of the attached discovery requests will not delay the proceeding.

Respectfully submitted,

PEOPLE OF THE STATE OF ILLINOIS

NEIL F. HARTIGAN  
Attorney General  
State of Illinois

BY: 

ANNE RAPKIN  
Assistant Attorney General  
Environmental Control Division

ANNE RAPKIN  
WILLIAM J. BARZANO, JR.  
Assistant Attorneys General  
Environmental Control Division  
160 North LaSalle Street  
Room 900  
Chicago, Illinois 60601  
[312] 793-2512

DATED: August 15, 1984

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD  
U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of )  
 ) Docket No. 40-2061-ML  
KERR-McGEE CHEMICAL CORPORATION )  
(West Chicago Rare Earths Facility) )

PEOPLE OF THE STATE OF ILLINOIS'  
FIRST SET OF INTERROGATORIES AND REQUEST  
FOR DOCUMENTS TO STAFF

Pursuant to 10 CFR §2.720(j)(2)(ii) the People request the Board to direct the NRC Staff to answer the following interrogatories. Answers to these interrogatories are necessary for a proper decision in the proceeding and are not reasonably obtainable from any other source.

The People also file the following request for documents. Unless otherwise agreed upon by the parties, documents should be produced at the Office of the Attorney General, Environmental Control Division, 160 North LaSalle Street, Room 900, Chicago, Illinois 60601.

Definitions

"Kerr-McGee" means Kerr-McGee Chemical Corporation and any employees, agents, consultants, or contractors thereof.

"Staff" means the Staff of the NRC Office of Nuclear Material Safety and Safeguards and any employees, agents, consultants, or contractors thereof.

"FES" means the "Final Environmental Statement related to decommissioning of the Rare Earths Facility, West Chicago, Illinois," Docket No. 40-2061, Kerr-McGee Chemical Corporation, May 1983, NUREG-0904.

"Site" means Kerr-McGee's 43-acre site in West Chicago, Illinois which is described in Sec. 4.1 of the FES.

"Identify" means, for a natural person, to state his full name; present and/or last known residential and business addresses; present employer and office, title, or position.

"Identify" means, for a person other than a natural person, to state its legal name; present and/or last known addresses; and State of incorporation.

"Identify" means, for a document, to state its author or signatory; date; subject matter; type or nature (e.g. letter, phone log, etc.); and present location and custodian.

"Document" means the original and any copy (even if such copy contains additional material or is not identical to the original), whether draft or final, regardless of origin or location, of any writing or record of any type within the possession or control of the Staff, its employees, agents, consultants, or contractors, including but not limited to any paper, memorandum, book, manual, work sheet, record, account, communication, telephone record, blue print, instrument recording chart, plan, flow diagram, corporate document, corporate record book, corporate minute book, bill, receipt, invoice, bill of lading, manifest, contract for purchase, contract for sale, drawing, date book, calendar, photograph, film.

#### Claims of Privilege

If the Staff claims that any information requested in these Interrogatories or any document covered by this Request is

not subject to discovery on grounds of any privileges, the Staff shall identify:

1. the date of the information or document;
2. the type or nature of the information or document (e.g. letter, conversation, etc.);
3. the present location and custodian of the document;
4. the nature of the claim of privilege;
5. the basis on which Kerr-McGee claims the privilege; and
6. all persons having knowledge of any facts related to the claim of privilege.

#### Interrogatories

S.T  
1. Identify all persons who participated in preparation of Appendix F of the FES.

S.T  
2. Identify all expert witnesses the Staff plans to call at hearing with respect to post-closure radiological impacts, including radon flux and radiation doses, and describe the subject matter on which each is expected to testify, the substance of the facts and opinions to which each expert is expected to testify, a summary of the grounds for each opinion, and all documents on which each such opinion is based.

P. 5-19  
Table 5.2  
C.Y.  
3. State the total amount, volume, and categories of material which will be stabilized on site if onsite stabilization is authorized by the Commission.

C.Y.  
C-23  
Tables 5.2, 5.3, 5.4  
4. State the total concentrations of the following radionuclides contained in (a) the wastes presently onsite and (b) the total material which will be stabilized onsite if onsite

stabilization is authorized by the Commission: U-238, U-234, Th-232, Th-230, Th-228, Ra-228, Ra-226, Ra-224, Pb-212, Pb-210.

5. State the total amount and volume of contaminated material (a) which is the subject of the Staff's Order to Show Cause issued to Kerr-McGee on March 2, 1984; (b) in the "hot spots" referred to in the Staff's pleading entitled "Further Information Relating To West Chicago" filed July 12, 1984; and (c) at the sewage treatment plant referred to in the said Staff pleading.

6. State the concentrations of the radionuclides listed in Interrogatory 4 contained in all the contaminated materials described in Interrogatory 5.

7. Specify the diffusion coefficients used in the radon flux calculation of Appendix F to the FES, and specify the assumptions supporting the selection of these coefficients.

8. Describe the (a) density ( $\text{g/cm}^3$ ) and (b) concentrations of radionuclides in each layer of waste material to be encapsulated in the proposed containment cell if onsite stabilization is authorized, and specify the order of layers in the said cell.

9. (a) Describe in detail the source of materials to be utilized in the cap of the said containment cell.

(b) Describe in detail the moisture content of (a) the materials to be utilized in the cap of the said containment cell and, (b) the wastes to be encapsulated in the said containment cell.

(c) Describe all tests or studies upon which the answers to Interrogatory 9(b) are based.

(d) Identify the person(s) from whom all materials to be utilized in the cap of the said containment cell will be purchased or obtained.

10. (a) State the number of persons residing within 1/2 mile of the site of the said containment cell.

(b) How many residences are located within 1/2 mile of the site of the said containment cell?

(c) How many persons reside in each such residence?

(d) How far is each such residence from the site of the said containment cell?

(e) Describe the direction of each such residence from the site of the said containment cell.

(f) Identify all documents, including but not limited to aerial photographs, tabulations, and diagrams, on which the answers to Interrogatories 10(a)-(e) are based.

N. 11. Describe in detail how population data and/or assumptions about population data were utilized in the dose calculations of Table 5.5 of the FES.

N. 12. Describe in detail the atmospheric dispersion model utilized in the dose calculations of Table 5.5 of the FES.

13. At page H-251 of the FES, the Staff states:

C.Y. Health effects can only be given on a statistical basis and, for the no-action Kerr-McGee situation, can be calculated to be less than 0.019 increased cancer deaths per year in the entire 80-km radius area around West Chicago.

(a) Describe in detail (i) all monitoring data on which the above calculation was made, including but not limited to the time periods over which such data was gathered and the

conditions under which it was gathered; and (ii) how the above calculation was made.

(b) Would the above calculation be affected, and if so how, by the data contained in USEPA Region V's study dated May 1982 and entitled "Ambient Monitoring of Airborne Radioactivity Associated with Thorium Wastes Near the Kerr-McGee West Chicago, Illinois Facility"?

14. State whether the documents produced in response to the following Request For Documents constitute all documents responsive to that Request.

15. Identify all persons with knowledge of the matters raised in these Interrogatories, designated by interrogatory number.

16. Identify (a) the person(s) who provided the answers to these Interrogatories, designated by interrogatory number, and (b) the custodian(s) of documents produced and person(s) who participated in preparing or assembling such documents.

#### Request For Documents

The Staff is requested to produce all documents related or responsive to each of the foregoing Interrogatories (including the documents identified in answer to Interrogatory 10(f), and state which Interrogatory each such document relates or responds to.

PEOPLE OF THE STATE OF ILLINOIS

NEIL F. HARTIGAN  
Attorney General  
State of Illinois

BY: 

ANNE RAPKIN  
Assistant Attorney General  
Environmental Control Division

ANNE RAPKIN  
WILLIAM J. BARZANO, JR.  
Assistant Attorneys General  
Environmental Control Division  
160 North LaSalle Street  
Room 900  
Chicago, Illinois 60601  
[312] 793-2512

DATED: August 15, 1984

PROOF OF SERVICE

I, ELAINE C. THOMAS, having been sworn and under oath do state that I have this 15th day of August, 1984, served copies of the foregoing People Of The State Of Illinois' Motion For Leave To File Contention 2(x) And Second Discovery Request, First Set Of Interrogatories And Request For Documents To Staff, and Second Set Of Interrogatories And Request For Documents To Kerr-McGee, upon Samuel J. Chilk, Chief, Docketing and Service Section, Steven Seiple, John C. Berghoff, Jr., and Thomas W. Fawell by placing same in envelopes addressed to said persons, by first class mail, postage prepaid, and served copies of same upon all others listed on the attached Service List by Express Mail, and depositing all with the United States Postal Service located at 160 North LaSalle Street, Chicago, Illinois 60601.

Elaine C. Thomas

SUBSCRIBED AND SWORN TO  
BEFORE ME THIS 15TH DAY  
OF AUGUST, 1984.

---

NOTARY PUBLIC

SERVICE LIST

Samuel J. Chilk  
Secretary to the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Chief, Docketing and Service  
Section (3)  
Office of the Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

John H. Frye, III, Chairman  
Atomic Safety and Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. Peter A. Morris  
Atomic Safety & Licensing Board  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dr. James H. Carpenter  
Atomic Safety & Licensing Board  
U.S. Nuclear Regulatory Commission  
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Illinois Department of  
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Springfield, Illinois 62704

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Richard A. Meserve  
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Washington, D.C. 20044

John C. Berghoff, Jr.  
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Chicago, Illinois 60606

Thomas W. Fawell  
Fawell & Marutzky  
2021 Midwest Road  
Suite 206  
Oak Brook, Illinois 60521

Robert L. Fonner  
Office of the Executive  
Legal Director  
U.S. Nuclear Regulatory  
Commission  
Washington, D.C. 20555

Mead Hedglon  
Kerr-McGee Corporation  
Kerr-McGee Center  
Oklahoma City, Oklahoma 73215

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 FOMNER / 6:16  
 BARNES / 10:12  
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9/11/84  
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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD  
 U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of )

KERR-McGEE CHEMICAL CORPORATION )  
 (West Chicago Rare Earths Facility) )

Docket No. 40-2061-ML

PEOPLE'S CONTENTION 2(x)

In their Motion for Leave to File Contention 2(x) and Second Discovery Request, filed August 15, 1984, the People inadvertently omitted to include a statement of the contention itself. Contention 2(x) reads as follows:

"2. . . .

. . .

(x) The applicant's and Staff's assessments of post-closure radiation doses are inaccurate, and the applicant has not demonstrated that post-closure radiation doses will be low enough to adequately protect the public health and safety."

Respectfully submitted,

PEOPLE OF THE STATE OF ILLINOIS

NEIL F. HARTIGAN  
 ATTORNEY GENERAL  
 STATE OF ILLINOIS

BY:

ANNE RAPKIN  
 Assistant Attorney  
 Environmental Control Division

84082-0008 20 PP

ANNE RAPKIN  
WILLIAM J. BARZANO, JR.  
Assistant Attorneys General  
Environmental Control Division  
160 North LaSalle - 9th Floor  
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312-793-2515

Dated: August 22, 1984

PROOF OF SERVICE

I, ELAINE C. THOMAS, having been sworn and under oath do state that I have this 22nd day of August, 1984, served a copy of the foregoing People's Contention 2(x) upon the persons listed on the attached Service List by placing same in envelopes addressed to said persons, by first class mail, postage prepaid, and depositing same with the United States Postal Service located at 160 North LaSalle Street, Chicago, Illinois 60601.

Elaine C. Thomas

SUBSCRIBED AND SWORN TO  
BEFORE ME THIS 22ND DAY  
OF AUGUST, 1984.

\_\_\_\_\_  
NOTARY PUBLIC

SERVICE LIST

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ARGONNE  
NATIONAL  
LABORATORY

INTRA-LABORATORY MEMO

August 1, 1984

TO: P. Benioff  
T. Gilbert

FROM: S. Tsai *Steve Tsai/amt*

SUBJECT: Contentions for Kerr-McGee West Chicago Project

Attached are the contentions which have been admitted for the ASLB hearings for the decommissioning of the Kerr-McGee rare earth facility in West Chicago, Illinois. I have discussed with Bob Vocke the possibility of having you serve as the witnesses for the appropriate contentions.

Please review the contentions and, if you can be the witness, prepare the information requested by W. Nixon as soon as possible. Preparation of either written or oral responses to the contentions will be needed sometime in September 1984.

If you have any questions regarding this assignment, please see Bob or me. Thank you.

ST/amt  
Att.

cc: A. Dvorak  
P. Gustafson  
W. Vocke

Dr. Y. H. Tsai  
Argonne National Laboratory

Dear Steve:

Attached are the contentions we discussed by telephone on July 25.  
For each contention we need to know:

1. Name of potential witness from ANL staff.
2. Resume'
3. Synopsis of area of testimony.

We realize that you may not be able to identify a witness or witnesses for each contention.

This information is needed without delay.

*Bill*

W. A. Nixon  
Uranium Process Licensing Section  
Uranium Fuel Licensing Branch  
Division of Fuel Cycle and  
Material Safety

RECEIVED

JUL 26 1984

STEVE Y. H. TSAI

Contention 2(a) is as follows:

(i) With respect to levels of inorganic contaminants in the onsite wastes, the applicant has conceded (Stabilization Plan 3.43) that because the sludge and tailings piles are non-homogeneous, averaging the results of the samples does not yield numbers which are

necessarily representative of the mass of the wastes. The applicant did, however, use averages in calculating the concentrations of inorganic contaminants released from the disposal cell. In order to provide conservative and reliable estimates of dispersion and dilution effects, the applicant should base its calculation on the hot spots in the wastes.

(ii) The applicant's dispersion model assumes uniform dispersion of leachate from the disposal cell and does not take into account the possibility of a channelized flow. Given the historical experience concerning channelized flow at the Sheffield, Illinois low-level radioactive waste disposal site, and given the inhomogeneous character of the West Chicago Kerr-McGee site subsurface, the possibility and impact of channelized flow must be addressed.

PB  
ST

Contention 2(b) is as follows:

(b) Despite the fact that an August 1977 Argonne National Laboratory study and the FES itself (p. 4-3) indicate that organic solvents were used in the manufacturing process, neither the applicant nor the NRC has performed any tests to determine whether the wastes onsite contain leachable organic compounds. The kind and concentrations of leachable organic compounds are crucial information because:

- (1) such information affects whether under state law the West Chicago site would be permissible as a waste disposal facility;
- (2) certain kinds of organic compounds are known to adversely affect the integrity of clay liners; and
- (3) certain organic compounds pose a danger to human health and the environment even in minute quantities. Since the proposed disposal cell is designed to permit release of contaminants, and since there is abundant groundwater in the vicinity, the presence of leachable organics in the water is of especial concern.

ST  
PB

Note

①

Contention 2(d) is as follows:

- (c) The applicant's proposed groundwater monitoring system is insufficient to detect the kind and quantity of contaminant migration. Among other things, the stabilization plan does not describe the methods for sample collection, preservation, analysis, and custody; the plan unhelpfully states only that "standard procedures will be followed for sampling and analysis." Plan, 7-3. Similarly, the plan does not describe how groundwater data obtained from the samples will be statistically analyzed; without proper statistical analysis, significant changes in groundwater quality can go undetected. (The plan states only that "Results will be examined for trends by a professional hydrologist." Id.) Nor does the plan specifically indicate the depths, locations, and screen lengths of monitoring wells; without this information the applicant cannot show that the screen settings are related to the probable path contaminants would take as they migrated offsite. Nor is the number of wells certain.

Furthermore, the proposed system does not include analysis for organic waste constituents or indicators of organic waste constituents. Such analysis must be undertaken because residuals of organic solvents used in the industrial process may be present in leachate.

The applicant has not shown that it will install a background groundwater monitoring system capable of establishing the quality of groundwater which has not already been contaminated by leachate from the site. Groundwater contamination maps in the FES indicate that pollution originating at the Kerr-McGee site spreads offsite in all directions. Samples from improperly located background wells may yield water that has been contaminated by site pollutants rather than water that is representative of the general area.

The applicant does not proposed to monitor groundwater for an adequate length of time following closure. Regulations under the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq. ("RCRA"), require, in this case, post-closure monitoring for around 60 years. However, given the fact that the proposed disposal site is located above, and has already seriously degraded, the major groundwater source in the area, RCRA's monitoring requirements should be treated as a minimum only.

ST  
PB

Contention 2(e) is as follows:

- (e) The leachate collection system is inadequately designed to perform as intended over either the short or the longer term. The system consists of sumps and of a series of leachate collection pipes embedded within a one-foot sand and gravel layer located over the liner. First, it will be extremely difficult to maintain the integrity of the pipes when several million cubic feet of waste are deposited on top of them. Second, no information is provided as to the size of the pipes and the material of which they will be composed. Third, the applicant has not indicated how failure of the pipes, through clogging or collapse, will be detected, and has not provided for correction of clogs or collapse should these occur. The leachate collection system must be designed to maintain its integrity not only over the short term but over the long term as well, because it provides the only means of detecting cap failure before contaminants escape the cell.

The NRC's own Low-Level Waste Licensing Branch ("WLL") "does not recommend the use of systems which require internal sumping for long-term disposal of radioactive wastes due to the need for continual active maintenance and monitoring of the sumping systems." FES, H-10. In light of WLL's views, the enormous difficulty of assuring long-term performance of the leachate collection system, and the demographic setting and hydrogeology of the site, disposal at West Chicago in the manner proposed would be wholly improper.

Contention 2(f) is as follows:

- (f) The applicant has not demonstrated that it will adequately control radioactive dust releases from both mobile and stationary sources during stabilization activities, or that the applicant's dust control measures will achieve NRC's ALARA requirement.

Contention 2(g) is as follows:

- (g) The applicant has not demonstrated that radiological air hazards will be adequately monitored after closure. Type and model of instrumentation, location of monitoring points, and frequency of reading or sample collection are not discussed. Because of the demographic setting of the proposed site, adequate post-closure radiological air monitoring for an appropriate time period must be carried out.

ST  
PB

TG  
ST

TG

Contention 2(n) is as follows:

- (n) Neither the applicant's proposal nor the FES makes clear whether the building rubble layer of the cap will be composed in part or in whole of rubble from demolished onsite buildings. If building rubble originating onsite is used in the building rubble layer, such rubble should have a sufficiently low level of radioactivity to render it suitable for such near-surface disposal. If the applicant intends to use onsite building rubble in the cap, then the applicant must specify a level of radioactivity which will protect public health and the environment and must demonstrate that such level will not be exceeded by rubble utilized in the cap.

TG  
ST  
PB

Contention 2(o) is as follows:

- (o) The applicant has not demonstrated that the disposal onsite of 11,000 cubic feet of rare earth compounds will not harm the environment. The applicant must address the toxicity and mobility of these compounds as well as their potential effect on the clay liner.

PB  
ST

Contention 2(p) is as follows:

- (p) The FES acknowledges that stabilization activities at the site will cause "temporary increases of sediment load and chemical and radioactive concentrations in Kress Creek and perhaps in the West Branch DuPage River, resulting from rainfall-induced run-off during demolition, excavation, and burial onsite." ~~FES, 5-6.~~ There will also be long-term impacts on Kress Creek and perhaps on the West Branch DuPage River resulting from deposition of suspended solids. Neither the FES nor the applicant has indicated what levels of contamination in run-off will be deemed acceptable from a public health and environmental standpoint, and neither has shown that measures can and will be taken to limit contaminant releases to such levels.

ST  
TG

Contention 2(q) is as follows:

- (q) Based on the calculations in the FES (Table 5.5), the applicant has not shown that during stabilization activities it will meet applicable radiological exposure and emission standards, because unjustifiable assumptions have been made which effectively minimize the calculated dose. Specifically:
- (i) The FES assumed that the individual at the nearest residence will spend only 10% of his time outdoors. However, since the applicant's earth-moving activities are planned for the warm months, it is unlikely that individuals, especially children, will spend only 10% of their time outdoors. Underestimation of outdoor time results in underestimation of dose received.
- (ii) The FES assumes that radon and thoron will be uniformly released over eight weeks of earth-moving operations. To the contrary, releases will most likely occur as puffs of high concentrations when crusted waste materials are breached. The assumption of uniform release serves to minimize the calculation of dose received.

TG

TG

TG  
ST

Contention 2(r) is as follows:

- (r) The applicant did not conduct any tests utilizing representative tailings solutions and representative clay materials to determine whether significant deterioration of permeability or stability properties will occur in the proposed clay liner. Indeed, the applicant has not yet decided what type of clay to use at the site, thus making such tests impossible.

ST  
PB

September 28, 1984

TO: Distribution  
FROM: Tom Gilbert <sup>DS7</sup>  
SUBJECT: Kerr-McGee Interrogatory Documentation

Please identify all documents that you used in preparing your responses to the interrogatories, submit a list to me, and make sure that the material will be available if and when the lawyers request copies.

TG/amt

Distribution

N. Meshkov  
S. Tsai  
C. Yu

cc: R. Vocke

# ARGONNE NATIONAL LABORATORY

9700 SOUTH CASS AVENUE, ARGONNE, ILLINOIS 60439

Telephone 312/972-7798

November 6, 1984

Mr. William A. Nixon  
Uranium Process Licensing Section  
Uranium Fuel Licensing Branch  
Division of Fuel Cycle & Material Safety  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

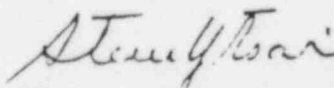
SUBJECT: KERR-MCGEE WEST CHICAGO PROJECT-RESPONSES TO CONTENTIONS

Dear Bill:

Enclosed is a copy of our proposed responses to the eleven contentions of the People of the State of Illinois regarding the decommissioning of Kerr-McGee's rare earths facility in West Chicago, Illinois.

Please review our responses and let me know if you have any questions.

Sincerely,



Steve Y. Tsai  
Environmental Research Division

SY:mz

Encl.

cc: A. J. Dvorak  
P. F. Gustafson

bcc: P. A. Benioff  
P. C. Chee  
T. L. Gilbert  
C. Yu

Calculation of Rn-220 (thoron) concentrations in houses built over Th-232 residues and ores.

The diffusion coefficient of thoron in the residues is assumed to be equal to that typical of Rn-222 (radon) in uranium tailings, i.e.,  $K = 8.5 \times 10^{-3} \text{ cm}^2/\text{sec}$ . The porosity,  $p$ , is assumed to be 0.37, again a typical value. The decay constant of thoron is  $\lambda = 1.26 \times 10^{-2} \text{ sec}^{-1}$ .

The relaxation or diffusion length is therefore,

$$\begin{aligned} L &= (K/\lambda \cdot p)^{1/2} \\ &= 1.35 \text{ cm} \end{aligned}$$

The flux at the soil-air interface is given by

$$\phi = C_p E \lambda L \tanh (x/L)$$

where  $C$  = Concentrations of Ra-224,  $\mu\text{Ci/g}$

$\rho$  = density of cover,  $1.6 \text{ g/cm}^3$

$E$  = emanating power, 0.2

$X$  = depth of Ra-224 nuclides, cm

For large values of  $x/L$ ,  $\tanh (x/L) \approx 1$ .

( $\tanh 3 = 0.995$ )

Thus, for depths of Ra-224 contamination in excess of 4 cm, the flux,

$$\phi = 1 \times 1.6 \times 0.2 \times 1.26 \times 10^{-2} \times 1.35 \times 1$$

$$= 0.00544 \text{ pCi/cm}^2 \text{ - sec.}$$

$$\Rightarrow 54.4 \text{ pCi thoron/m}^2 \text{ - sec}$$

per pCi Ra-224/gm cover.

The indoor concentrations of thoron due to a flux through the floor of the room is given by

$$Ca = \frac{\phi B}{H \lambda_e} \text{ pCi/m}^3$$

where  $\phi$  = thoron flux, pCi/m<sup>2</sup>-sec

B = flux reduction through floor, 0.25

H = room height, 2.44 m

$\lambda_e$  = effective removal constant of thoron from room 0.013 sec<sup>-1</sup>.

$$\lambda_e = \frac{1}{T_e} \quad \text{and} \quad \frac{1}{T_e} = \frac{1}{T_r} + \frac{1}{T_p}$$

where  $T_r$  = decay half-life, 55 sec

$T_p$  = ventilation half-life, 0.693 hr. = 2495 sec

Thus, for a contamination level of 1 pCi Ra-224 per g cover soil, an indoor air concentration of 0.43 pCi thoron /l will result.

The uranium milling operations GEIS uses a value of 625 mrem/yr to bronchial epithelium from breathing air containing 1 pCi/l for a year.

Jacobi has estimated that for equal concentration of radon and thoron in a room, the epithelial dose from thoron daughters will be about 0.06

times that of radon daughters. Thus, a pCi/l of thoron may be expected to result in an annual dose of 40 mrem/yr.

The table summarizes the Ra-224 soil concentrations and associated bronchial epithelial doses.

Soil conc. (pCiRa-224/g)	Thoron flux (pCi/m <sup>2</sup> -sec)	Indoor Conc. pCi/l)	Annual Dose (mrem)
1	54.4	0.429	17.2
43.6	2372	18.7	750 <sup>a</sup>
145	7888	62.2	2500 <sup>b</sup>

<sup>a</sup>NRC Interim Cleanup Criteria target level.

<sup>b</sup>NRC Interim Cleanup Criteria maximum allowable level.

#### Reference

Jacobi, W., The Dose to the Human Respiratory Tract by Inhalation of Short-Lived Rn-222 and Rn-220 Decay Products. Health Physics, Vol. 10, pp. 1163-1174, 1964.