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RELEASED
REPORT TO THE SUBCOMMITTEE
ON REPORTS, ACCOUNTING,
AND MANAGEMENT
COMMITTEE ON
GOVERNMENT OPERATIONS
UNITED STATES SENATE

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Federal Investigations Into
Certain Health, Safety,
Quality Control, And
Criminal Allegations At
Kerr-McGee Nuclear Corporation

BY THE COMPTROLLER GENERAL
OF THE UNITED STATES

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MAY 30 1975



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20546

B-157767

The Honorable Lee Metcalf, Chairman
Subcommittee on Reports, Accounting,
and Management
Committee on Government Operations
United States Senate

Dear Mr. Chairman:

This report is in response to your request of
January 21, 1975, that we inquire into pertinent aspects
of the investigations made by various Federal agencies
into the so-called Kerr-McGee incidents.

We do not plan to distribute this report further
unless you agree or publicly announce its contents.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "James A. Atlast".

Comptroller General
of the United States

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ABBREVIATIONS

AEC	Atomic Energy Commission
ERDA	Energy Research and Development Administration
FBI	Federal Bureau of Investigation
FFTF	Fast Flux Test Facility
GAO	General Accounting Office
NLRB	National Labor Relations Board
NRC	Nuclear Regulatory Commission
RRD	Reactor Research and Development Division

COMPTROLLER GENERAL'S
REPORT TO THE SUBCOMMITTEE
ON REPORTS, ACCOUNTING, AND
MANAGEMENT
COMMITTEE ON GOVERNMENT OPERATIONS
UNITED STATES SENATE

FEDERAL INVESTIGATIONS INTO
CERTAIN HEALTH, SAFETY, QUALITY
CONTROL, AND CRIMINAL ALLEGATIONS
AT KERR-MCGEE NUCLEAR CORPORATION
B-157767

D I G E S T

WHY THE REVIEW WAS MADE

GAO was asked to review pertinent aspects of investigations made by various Federal agencies into a series of allegations concerning

- working conditions at the Kerr-McGee Nuclear Corporation,
- radiological contamination and death of Karen Silkwood (an employee of Kerr-McGee),
- harassment of Kerr-McGee employees, and
- Kerr-McGee quality assurance practices.

The investigating agencies are the Federal Bureau of Investigation and the Atomic Energy Commission which was abolished on January 19, 1975, and replaced by the Energy Research and Development Administration (ERDA) and by the Nuclear Regulatory Commission.

FINDINGS AND CONCLUSIONS

Disclosure to the public of information on material unaccounted for and the altering of quality control records

The Nuclear Regulatory Commission has not made available to the public information on the difference between the book inventory of nuclear material and the physical inventory (material

unaccounted for) at the Kerr-McGee plant. This data has been deemed to be proprietary information and subject to protection from public disclosure under the Regulatory Commission's regulations. However, the Regulatory Commission and the National Security Council are studying the possibility of making such information public. (See p. 5.)

ERDA has completed and released to the public a fact-finding report regarding allegations of improper quality assurance practices at Kerr-McGee.

A second report examining all quality assurance and inspection procedures of Kerr-McGee's plutonium product has been completed and senior ERDA officials are reviewing it. A summary of this report has been released.

GAO examined the two reports and supporting documentation, including the handwritten notes of the investigators, and talked to the responsible officials. It appears that all substantive information in the supporting documentation has been included in the two reports. (See p. 6.)

Information given to the Federal Bureau of Investigation

The Regulatory Commission contacted the Bureau on several occasions concerning the Regulatory Com-

mission's investigations at Kerr-McGee of working conditions, the possible diversion of plutonium concerning the contamination of Karen Silkwood, and the findings of uranium pellets on the grounds of the plant. The Regulatory Commission's reports, as well as briefings on these reports, were provided to the Bureau. (See p. 6.)

The Regulatory Commission also requested the Bureau to investigate the unauthorized removal and possession of nuclear material at Kerr-McGee and the allegation of harassment of Kerr-McGee employees. No other documents have been provided to or requested by the Bureau.

On several occasions the Bureau has informally contacted the Regulatory Commission to obtain clarification of some items in the Commission's report or technical information.

Regulatory Commission officials told GAO that their files on the Kerr-McGee incidents were and are now available to the Bureau on request.

GAO reviewed the Regulatory Commission's files and found four additional documents containing information not in the Commission's reports that may benefit the Bureau in its investigation.

GAO brought this matter to the attention of Regulatory Commission officials who told GAO in a May 6, 1975, meeting that they planned to send the documents to the Bureau.

These documents are

--a listing of events that may relate to the timing of the allegations (see p. 7),

--a memorandum containing observations and conclusions on the uranium pellet incident (see p. 7),

--a diversion risk analysis of the Kerr-McGee plant (see p. 8), and

--a memorandum stating the reasons for the Regulatory Commission's conclusion that no major diversion of plutonium has occurred at Kerr-McGee (see p. 8).

ERDA notified the Bureau concerning its fact-finding report on the allegations of improper quality assurance practices at Kerr-McGee. This report, as well as a briefing on the report, was provided the Bureau.

ERDA has not notified the Bureau concerning the second report. ERDA officials told GAO that their files on the quality assurance allegations are available to the Bureau on request. (See p. 8.)

Disposition of documents in Karen Silkwood's possession

On November 13, 1974, Karen Silkwood was killed in an automobile crash enroute to a meeting where, according to the Oil, Chemical, and Atomic Workers International Union, she was to provide evidence she had collected on the allegations. (See p. 8.)

Regulatory Commission inspectors made radiological surveys of the automobile, personal effects, and

site of the crash and found no contamination. One inspector noticed some papers in the automobile, which had been removed from the accident site, but was unable to describe their contents. The Regulatory Commission lacked the authority to retain the papers. The car and its contents were released to Karen Silkwood's boyfriend.

According to the union, the released possessions contained papers but did not include all the documents related to health and safety hazards and falsification of quality control records. No papers were found at the accident site. Because of possible Bureau investigation into this allegation, GAO did not pursue this matter further. (See p. 9.)

Adequacy of coordination, cooperation, and communication among agencies

The Bureau has refused to talk to GAO about its investigations based on its standing practice of refraining to discuss or make public matters pertaining to ongoing investigations.

Accordingly, GAO was unable to determine whether the (1) cooperation and communication among the agencies was adequate, (2) Bureau received all needed assistance, or (3) additional documents GAO found may be of use to the Bureau.

Investigation of alleged harassment of employees

The Regulatory Commission reviewed the allegations of harassment of Kerr-McGee employees and found possible criminal aspects to the allegations and therefore referred the matter to the Bureau. (See p. 10.)

The National Labor Relations Board initiated an investigation into the harassment allegations. This effort was discontinued when the Board recognized it might be concurrently conducting an investigation with the Bureau.

The independence of an ERDA task force

ERDA appointed five members to a task force to examine the quality of Kerr-McGee's product and the effectiveness of the quality assurance program. The task force leader is an ERDA employee; the other members are employed by organizations having contracts with ERDA. (See p. 11.)

GAO found no evidence that the makeup of the task force impaired its objectivity. (See p. 13.)

As agreed with the Subcommittee office, GAO has included a brief summary of the Regulatory Commission and ERDA reports, plus additional information on the Kerr-McGee incidents not directly related to the work GAO was requested to do. (See app. I.)

CHAPTER 1

INTRODUCTION

The Subcommittee on Reports, Accounting, and Management of the Senate Committee on Government Operations requested us to review the investigations performed by the Nuclear Regulatory Commission (NRC)¹, the Energy Research and Development Administration (ERDA), and the Federal Bureau of Investigation (FBI) of various incidents and allegations surrounding the death of Karen Silkwood, an employee at the Kerr-McGee Nuclear Corporation, Cimarron Facilities, Crescent, Oklahoma.

Under the terms of a license for special nuclear material issued by AEC, Kerr-McGee is authorized to possess and use plutonium and uranium in its Cimarron Plant. Its uranium activities include producing uranium pellets for one of the major light-water reactor fuel fabricators. Kerr-McGee plutonium activities consist of a contract with the Westinghouse Hanford Company for fabricating plutonium-bearing fuel rods. Kerr-McGee employees are represented by the Oil, Chemical, and Atomic Workers International Union.

ALLEGATIONS AND INCIDENTS

On September 27, 1974, representatives of the union, including Karen Silkwood, met with representatives of AEC and made a series of allegations concerning working conditions at the Kerr-McGee plant.

From November 5 to 7, 1974, Karen Silkwood, her apartment, and her roommate were found to be contaminated with plutonium. On November 13, 1974, Karen Silkwood was killed in an automobile crash while on her way to a meeting with the Union Legislative Assistant and a reporter for the New York Times. The union has alleged that she was carrying evidence she had accumulated on health and safety hazards and falsification of quality control records by Kerr-McGee supervisors and employees. It has further alleged that her death was not an accident as reported by the highway patrol but that she was killed when her car was struck by an unknown vehicle and pushed

¹The Energy Reorganization Act of 1974 (Public Law 93-438) abolished the Atomic Energy Commission and established the Energy Research and Development Administration and the Nuclear Regulatory Commission on January 19, 1975. All of the AEC programs and activities discussed in this report are now carried out by the Energy Research and Development Administration and the Nuclear Regulatory Commission.

off the road.

On November 19, 1974, the union notified the Atomic Energy Commission (AEC) that it possessed information giving credibility to Karen Silkwood's allegation that improper quality assurance practices existed at Kerr-McGee. The union information consisted of tape-recorded interviews with confidential informants.

On December 16, 1974, Kerr-McGee found uranium pellets and pellet fragments on the ground outside the uranium pellet manufacturing building, but within Kerr-McGee's perimeter fence. Kerr-McGee management was unable to determine the reason for the presence of uranium pellets in the unusual location, but concluded the cause could not have been accidental.

In a January 21, 1975, letter to NRC, the union charged Kerr-McGee with a campaign of harassment and intimidation against certain employees who had complained to NRC and the union about alleged safety violations and other questionable practices by Kerr-McGee. The union asserted that Kerr-McGee's actions against the employees violated NRC's regulations and requested that NRC investigate and take appropriate remedial action.

GOVERNMENT RESPONSIBILITIES AND INVESTIGATIONS

NRC

Under the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974, NRC--formerly the regulatory part of AEC--is responsible for regulating the production and utilization of atomic energy, and related facilities, to protect the health and safety of the public. In carrying out this responsibility, NRC conducted three investigations into the incidents.

- From November 8 to December 4, 1974, NRC investigated the plutonium contamination of Karen Silkwood that was found in November 1974. Its report was made public January 6, 1975.
- From November 21 to December 6, 1974, NRC investigated 39 separate allegations on deficiencies in Kerr-McGee's working conditions. This report was made public on January 7, 1975.
- On December 19 and 20, 1974, NRC investigated the uranium pellet incident. Its report was made public on January 23, 1975.

ERDA

ERDA is responsible for promoting energy research and development to meet the Nation's immediate and long-range needs. A key test facility in ERDA's major nuclear program is the Fast Flux Test Facility (FFTF) which is to use the plutonium-bearing fuel rods fabricated by Kerr-McGee. The FFTF is being built at the Hanford Engineering and Development Laboratory, Richland, Washington, by the Westinghouse Hanford Company. Concerned over the possible impact that the union's quality control allegations could have on the quality of the fuel rods, ERDA made two investigations.

--ERDA's Division of Inspection made a fact-finding study into the union's allegations from November 21 to December 10, 1974. The division's report was released to the public on January 7, 1975.

--ERDA's Reactor Research and Development Division (RRD) set up a task force on December 10, 1974, to review all quality assurance and inspection procedures related to Kerr-McGee's fabrication of FFTF fuel. This review included investigations of the union's quality control allegations. A summary of the task force report was made public on April 11, 1975; ERDA plans to release the report itself when it is finalized.

Department of Justice

The chief purposes of the Department of Justice are to enforce the Federal laws, furnish legal counsel in Federal cases, and construe the laws under which other departments act. In addition, the Atomic Energy Act of 1954 provides that the FBI will investigate all alleged or suspected criminal violations of the act. The Department directed the FBI to investigate the events surrounding Karen Silkwood's death and the unauthorized removal and possession of special nuclear material from Kerr-McGee. A third investigation, concerning alleged harassment of Kerr-McGee employees, is being considered. None of these investigations has been completed.

National Labor Relations Board

Under terms of the National Labor Relations Act, employees have a right to self-organization, to join a labor organization, and to bargain collectively through representatives of their own choosing. It is therefore an unfair labor practice for an employer to restrain or coerce employees exercising their rights, and the National Labor Relations Board (NLRB) is empowered to investigate any allegation of an unfair labor practice. NLRB has performed a limited investigation of the

alleged harassment of Kerr-McGee employees, but the investigation was discontinued when NLRB realized it might be concurrently conducting an investigation with the FBI. NLRB did not wish to jeopardize the FBI investigation.

As agreed with the Subcommittee office, we have included a brief summary of the NRC and ERDA reports, plus some additional information on the Kerr-McGee incidents not directly related to our request (see app. I).

CHAPTER 2

ANSWERS TO THE SUBCOMMITTEE QUESTIONS

The Subcommittee on Reports, Accounting, and Management of the Senate Committee on Government Operations requested us to look into six aspects of the various investigations of the incidents and allegations. A discussion of these aspects follows.

DISCLOSURE TO THE PUBLIC OF INFORMATION ON MATERIAL UNACCOUNTED FOR AND ALTERING OF QUALITY CONTROL RECORDS

Information on the statistic "material unaccounted for" at the Kerr-McGee Cimarron Facilities has not been made public. Material unaccounted for is the difference between the book inventory (the amount of material that is supposed to be present according to the accounting record, based on measured receipts, transfers, and discards) and the physical inventory. NRC officials told us that a small difference between the book and physical inventories is normal. This difference can be caused by errors in measuring quantities of nuclear material, material adhering to process equipment, or unmeasured losses or theft.

NRC has determined that data on material unaccounted for are proprietary information and therefore subject to protection from public disclosure under NRC's regulations. However, NRC is studying the possibility of making such information public. On January 8, 1975, NRC referred the matter of public disclosure of "material unaccounted for" data to the National Security Council to determine the national security and international relations importance of such information on domestic nuclear safeguards and security.

Because the National Security Council is studying whether to publicly disclose this information, we are not presenting the figures on material unaccounted for at Kerr-McGee.

On the matter of public disclosure of information on the altering of quality control records, AEC made public the Division of Inspection report on January 7, 1975. A summary of the RRD task force report was made public on April 11, 1975. The final task force report is being reviewed by senior ERDA management and is expected to be released when finalized. All the quality control allegations made by the union relate to the plutonium operations at Kerr-McGee.

We examined the reports and the supporting documentation¹, including the handwritten notes of the investigators, and talked to ERDA officials involved in the investigation. It appears that all substantial information gathered during the investigations on the quality of Kerr-McGee plutonium-bearing fuel rods was included in the two reports.

ERDA is not responsible for the quality of Kerr-McGee's uranium operations because this product is used in an NRC-licensed reactor. NRC has not inspected Kerr-McGee for quality assurance procedures of its uranium operations. However, NRC has inspected the completed fuel rods as assembled by the company that Kerr-McGee sells its uranium pellets to. These inspections have not found any major quality control problems.

EXTENT OF INFORMATION GIVEN
TO THE FBI BY NRC AND ERDA

NRC officials notified the FBI by telephone several times in November and December 1974 that they were conducting investigations into the following areas: the alleged deficiencies regarding working conditions at Kerr-McGee, the possible diversion of plutonium from Kerr-McGee concerning the contamination of Karen Silkwood, and the finding of uranium pellets and pellet fragments on the ground surrounding the Kerr-McGee plant. The FBI responded by telephone that it had no objection to NRC's pursuing these investigations and requested NRC to provide it with copies of the final reports. The NRC final reports, as well as briefings on these reports, were provided to the FBI in early 1975.

In a January 16, 1975, letter, NRC requested an FBI investigation into the unauthorized removal and possession of plutonium at Kerr-McGee. In a February 20, 1975, letter, NRC requested an FBI investigation into the union allegations of harassment of Kerr-McGee employees. As appendices to the letter, NRC sent to the FBI copies of the union's January 21 and January 27, 1975, letters to NRC; a copy of a note to the files, with attachments, titled "Meeting with Oil, Chemical, and Atomic Workers International - Working Conditions at Kerr-McGee Corporation, Crescent, Oklahoma"; a list of names of Kerr-McGee employees who attended the September 27, 1974, meeting with AEC; copies of NRC's inspection reports at Kerr-McGee on the working conditions and the contamination of Karen Silkwood; and a list of names contacted during the NRC's investigations. The FBI has not requested additional documents

¹ERDA officials told us that the supporting documents they made available to us included all information developed in their investigations.

and has not asked to review the NRC files.

NRC officials told us that, on several occasions, the FBI had informally contacted NRC to obtain clarification of some items in NRC's reports and on technical information. NRC officials told us that their files on the Kerr-McGee incidents were and still are available to the FBI upon request.

We reviewed the NRC¹ files and found four additional documents that were not included in NRC's reports which may benefit the FBI. These documents were prepared by NRC employees. We brought this matter to the attention of NRC officials who told us in a May 6, 1975, meeting that they would send the documents to the FBI.

The first document lists events suggesting that these events might be related to the timing of the union's allegations and that employees were trying to embarrass Kerr-McGee management or were trying to put them in bad light. These events included:

- A September 5, 1974, petition drawn up by Kerr-McGee employees to end their affiliation with the local union. Over 80 employees signed the petition.
- Union allegations concerning unsafe working conditions that were made September 27, 1974. None of the union allegations was brought up at union - Kerr-McGee monthly safety meetings or was taken up in the grievance and arbitration procedure set out in the contract.
- An October 16, 1974, vote which maintained the union by a vote of 80 to 61.
- Negotiations for a new union - Kerr-McGee contract which started November 6, 1974.

This document does not contain proprietary information.

The second document is a memorandum-to-file containing an NRC inspector's observations and conclusions on the uranium pellet incident. The inspector concluded that two or three handfuls of pellets were quickly thrown from inside the inner protective fence; about 25 pellets were found. A person could have emerged from either the laboratory door or the pellet storage area door with the pellets, thrown them,

¹NRC officials told us that the documents made available to us include all information developed in their investigations.

and re-entered the building within a few seconds. The date of the incident was believed to be between December 10 and 16, 1974. The NRC investigator speculated that one individual was responsible for the incident and believed that the perpetrator intended the discovery of the pellets to embarrass Kerr-McGee or particular members of management. This document contains proprietary information and is therefore protected from public disclosure.

The third document is a diversion risk analysis of the Kerr-McGee plant that NRC prepared in December 1974. This report discusses the protection of plutonium and uranium at the plant. NRC has determined that this document also contains proprietary information.

The fourth document is an NRC internal memo which discusses the reasons why NRC concluded that no diversion of a significant quantity of plutonium has occurred at Kerr-McGee. This memorandum discusses NRC's inspections of the physical security and material control systems at Kerr-McGee. This document also contains proprietary information.

In reviewing the handwritten notes of the NRC investigators, we found references to a discussion on the desirability of having Karen Silkwood's urine and fecal sample kits checked for fingerprints. NRC officials told us this matter was discussed but that it was not pursued when they realized that the sample kits had been handled by too many people to be useful.

AEC's Division of Inspection notified the FBI by telephone in November, 1974, that they were investigating the allegation of improper quality assurance practices at Kerr-McGee FFTF fuel rod operations. The FBI responded by telephone that it had no objection to the investigation and requested a copy of the final report. The division's final report, as well as a briefing on the report, was provided to the FBI in early 1975. The FBI has not requested additional documents and has not asked to review ERDA files. ERDA's RRD has not contacted the FBI on its investigation. ERDA officials told us that their files on the quality assurance allegations are available to the FBI on request.

DISPOSITION OF DOCUMENTS IN KAREN SILKWOOD'S POSSESSION

The union has stated that Karen Silkwood had certain documents pertaining to health and safety hazards in the plant and falsification of quality control records in her automobile when she left the Kerr-McGee plant the evening of November 13, 1974. The union has alleged that some of the papers disappeared after the fatal automobile crash that evening.

NRC officials told us that they were notified of the crash about 10:30 p.m. on November 13 and went to an automobile dealer in Crescent where the car was impounded. They were met by a Kerr-McGee representative and a trooper of the Oklahoma State Highway Patrol and performed radiological surveys of the automobile and personal effects contained in the car. No contamination was found. The NRC investigator told us that there were some papers in the automobile, but he could not describe their contents. Having found no contamination on or in the car, the NRC and Kerr-McGee officials, along with the state trooper, drove to the accident site. Again no contamination was found. The NRC investigator said that no documents were found on the ground at the accident site when he arrived. The NRC investigators also surveyed the fire department ambulance and the personnel who had removed and transported the body. They found no contamination.

Having found no contamination on the car or its contents, NRC had no authority to retain Karen Silkwood's possessions. NRC officials told us that the car and its contents were released to Karen Silkwood's boyfriend after obtaining permission from her parents. These possessions included some papers containing information on health and safety at Kerr-McGee.

The union has alleged that the possessions released to the boyfriend did not include all the documents pertaining to safety and quality control reported to have been in the automobile when Karen Silkwood left the Crescent Facilities on November 13. Because of possible FBI investigation into this allegation, we did not pursue the matter further.

ADEQUACY OF COORDINATION, COOPERATION, AND COMMUNICATION AMONG AGENCIES

The FBI has refused to talk to us based on its standing practice of refraining to discuss or make public matters pertaining to ongoing investigations. Accordingly, we have been unable to come to any conclusion on the adequacy of the cooperation and communication between the agencies. NRC and ERDA made several initiatives in referring matters to the FBI, provided some documents to the FBI, and on several occasions offered to assist the FBI. We were unable to determine whether NRC and ERDA have supplied the FBI with all needed assistance or whether the additional material we found in NRC files may have been of use to the FBI.

As an attachment to a May 1, 1975, letter to us, the Subcommittee Counsel sent for our consideration a letter prepared by a union official. This letter contained a series of outstanding issues on the Kerr-McGee incidents. We have

not looked into these issues because (1) their nature deals mostly with the possible criminal aspects of the incidents and (2) the FBI is investigating this area.

INVESTIGATIONS OF ALLEGED
HARASSMENT OF EMPLOYEES

In a January 21, 1975, letter to NRC, the union charged Kerr-McGee with harassment of certain employees in violation of NRC's regulations, which include a provision that a licensee--like Kerr-McGee--cannot discharge or discriminate against a worker who files a complaint regarding radiological working conditions.

A summary of the union's charges, as made in the January 21 letter, follows:

The alleged harassment was for the purpose of punishing the employees for taking their complaints to the Union and NRC and to deter them from ever doing so again. Kerr-McGee asked a number of employees to submit to polygraph examinations which was to determine who was cooperating with the union and NRC investigations. The polygraph examinations were intended to create an atmosphere of fear and distrust, and to make clear to employees that they should not be talking to anyone outside of Kerr-McGee about problems in the plant.

Following the polygraph examinations, several employees were transferred to an isolated warehouse where no nuclear materials were stored or handled and were required to have a supervisor with them at all times. Two of the employees receiving this treatment were the chairman of the Local Union and a former Union committeeman. On January 20, 1975, the former committeeman was discharged by Kerr-McGee and the chairman of the Local Union was transferred to the dirtiest and least desirable place to work in the entire facility.

The union stated that if NRC did not take effective action to remedy and neutralize the intimidatory effects of the Kerr-McGee actions, the employees would in the future be extremely reluctant to exercise the rights and responsibilities set out in NRC's regulations. NRC was requested to give the matter expeditious consideration, and to take immediate steps to investigate and remedy the alleged violations.

NRC reviewed the union allegations and concluded that Kerr-McGee might have violated Federal regulations, including NRC's regulations. Investigation was deemed to be a matter under the jurisdiction of the FBI, and on February 20, 1975, NRC requested an FBI investigation.

On the basis of allegations of employee harassment at Kerr-McGee, which the union submitted to NLRB on January 16, 1975, an investigation by NLRB was initiated. However, the investigation was discontinued when NLRB recognized that it might be concurrently conducting an investigation with the FBI. NLRB did go as far as compiling the employee allegations and interviewing seven employees. NLRB officials told us they do not have additional files on Kerr-McGee Nuclear Corporation at Crescent, Oklahoma.

As mentioned earlier, the Department of Justice is studying the harassment allegations to determine if the FBI should initiate an investigation.

THE INDEPENDENCE OF AN ERDA TASK FORCE

On December 10, 1974, the Director of RRD appointed five members to a task force to examine the quality of fuel Kerr-McGee was fabricating for FFTF. The task force was to determine the effectiveness of the quality assurance programs at both Kerr-McGee and the Hanford Engineering and Development Laboratory--where the fuel rods that Kerr-McGee fabricates are sent. In choosing members for the task force, ERDA officials told us the following criteria were used:

- Experience and knowledge in a quality plutonium-bearing fuel, such as FFTF fuel, and in quality assurance techniques.
- Known objectivity.

The task force leader is the Chief, Materials Engineering Branch, RRD. RRD officials told us he was chosen because of his expertise in quality assurance techniques and his supervisor's belief in his objectivity. He has not been involved with FFTF fuel, but he has done some work on other aspects of the FFTF project.

Other members were chosen from private industry or from Government-owned laboratories operated by contractor organizations representing universities, other non-profit organizations, or private industry. ERDA formulates and administers programs (including allocating funds) carried out by these laboratories. Background information on each member and his employing laboratory follows.

The second member of the task force is the Quality Control Manager, Hanford Engineering and Development Laboratory. The Hanford Laboratory is responsible for managing the development, design, construction, and startup of FFTF, which it will then operate. This responsibility includes examining, developing, and fabricating fuels. RRD officials said the individual was chosen for his quality assurance expertise, experience, and objectivity. At Hanford, he is responsible for overall quality assurance for plant and core components, including fuel. Because of his responsibilities at Hanford, he was excluded from the task force's analysis of Hanford's quality assurance procedures.

A third member is employed by Westinghouse Advanced Reactor Division and was chosen for his expertise in quality assurance. His responsibilities at Westinghouse include establishing quality assurance requirements, supervisory quality assurance engineering functions, and evaluating and acting on all deviations from specification requirements. The Westinghouse Advanced Reactor Division has substantial involvement in the FFTF project.

The fourth member was chosen for his expertise in plutonium and his noninvolvement in the FFTF. He is the Supervisor, Plutonium Recycling and Purification Plant, Los Alamos Scientific Laboratory, where he works with the recycling and purification of unirradiated mixed oxide and carbide fuels and residues generated in weapons test and metallurgical programs. His employing laboratory has had only minimal involvement in the FFTF project; it has provided certain calibration standards used in the chemical quality assurance program at Kerr-McGee.

The last task force member is the Director, Special Materials Division, Argonne National Laboratory. Argonne devotes a major portion of its efforts to the liquid metal fast breeder reactor program but has not been involved in the FFTF project. Argonne has prime responsibility for the liquid metal fast breeder reactor safety programs, but also carries out basis studies and applied technology work in the fields of reactor physics, fuels and materials development, and component engineering. This individual has had no involvement in FFTF fuel, but he has previous experience with plutonium-bearing fuel purchased from Kerr-McGee for use in the Zero Power Plutonium Reactor¹.

¹ Argonne has operated the Zero Power Plutonium Reactor since 1969 as a support facility for the Liquid Metal Fast Breeder Reactor Program.

The Director, RRD, attempted to place an employee of the Project Management Corporation¹ on the task force. The Project Management Corporation declined for internal reasons to release this employee. No other efforts were made to obtain members outside of RRD or the ERDA contractor organization.

Financial involvement of the
employing laboratories in
the FFTF project

The amounts of AEC and ERDA funds spent by and committed to the employing laboratories for the FFTF project through June 30, 1975, are shown below.

Los Alamos Scientific Laboratory	\$	0
Argonne National Laboratory		0
Hanford Engineering and Development Laboratory		68,200,000
Westinghouse Advanced Reactor Division		101,400,000

Kerr-McGee's financial interest with the laboratories is limited to the contract it has with Hanford. The contract originally called for Kerr-McGee to be paid an estimated total of \$7,215,000, but it has been modified, increasing the cost to \$7,572,210.

In our view, the members of the task force have the technical backgrounds that should enable them to determine whether the FFTF fuel rods fabricated by Kerr-McGee are acceptable. Although the members or their employing laboratories are involved or have been involved in FFTF, we found no evidence that the makeup of the task force impaired its objectivity.

Availability of qualified fuel fabricators

As part of its liquid metal fast breeder reactor program--of which the FFTF is an integral part--ERDA has a multiphased program with the objective of developing an industrial capability to provide the fuel needed to maintain the program. As part of this effort, AEC awarded fixed-price contracts in 1972 to Kerr-McGee and another company to fabricate fuel for the first two FFTF reactor cores. The contracts were for the same quantity of fuel, but Kerr-McGee's price was about 20 percent less than the other company's price. On the basis of current projections, both fabricators will complete production

¹Project Management Corporation is a nonprofit corporation consisting of representatives from the utility industry to manage the design and construction of the Clinch River Breeder Reactor project.

of the first two cores between June and August 1975.

The only other market for FFTF-type fuel in the next several years, according to ERDA, will be the Clinch River Breeder Reactor project. Fuel for this project will not have to be ordered until 1978 to meet its schedule. Representatives of each contractor have indicated that, if they could not maintain continued operations after their present commitments are met, they would have to close down their plants and would probably not re-enter the field. They said that if they shut down their present facilities they would have to invest a large amount of capital to re-enter the market. They would have to extensively modify their existing facilities or build new plants to meet changing regulatory requirements and future technology changes.

To maintain a capability in private industry to fabricate FFTF-type fuel, a plan has been approved whereby ERDA will order two additional FFTF cores for future use. Only one of the two contractors is to be selected to produce the two additional FFTF cores. To select the contractor, ERDA solicited bids in April 1975. ERDA anticipates that this approach will allow one contractor to continue operations in FFTF fuel until about mid-1978. The selected contractor would probably be asked to produce the Clinch River Breeder Reactor project fuel when it is needed.

On December 11, 1974, one day after AEC established its task force, Kerr-McGee notified Hanford that unless Kerr-McGee was charged or cleared of allegations it was not interested in any future contracts with ERDA. RRD officials told us they did not notify Kerr-McGee that the task force had been established until January 6 or 7, 1975.

A question arises as to whether Kerr-McGee's letter to Hanford placed pressure on the task force in its investigation of the quality of Kerr-McGee fuel since it would be advantageous to ERDA to retain Kerr-McGee as a potential fabricator to provide some degree of competition. The leader and members of the task force told us they were aware of Kerr-McGee's position during the investigation but said it had no influence on their investigation.

CHAPTER 3

SCOPE OF REVIEW

We made our review at the NRC Regional Office, Region III, Glen Ellyn, Illinois; NRC Headquarters, Bethesda, Maryland; and ERDA Headquarters, Germantown, Maryland. We talked with and obtained information from NLRB officials in Tulsa, Oklahoma.

Our review included discussions with officials connected with the investigations, a review of the reports, investigators' notes, and other files on the investigations. We reviewed NRC reports and files on "material unaccounted for" prior incidents at Kerr-McGee. Discussions with NLRB officials involved obtaining information on the extent of their investigation, reasons for terminating the inquiry, and dissemination of information on the case to other Federal agencies.

SUMMARY OF GOVERNMENT INVESTIGATIONS
AND RELATED INFORMATION

NRC INVESTIGATIONS INTO
CONTAMINATION OF KAREN SILKWOOD

NRC's investigation into the contamination of Karen Silkwood was directed toward obtaining information concerning the contamination and evaluation of the plutonium exposure of the individuals involved. NRC contacted 40 Kerr-McGee employees and 9 nonemployees and obtained and examined approximately 3,700 pages of Kerr-McGee records.

The investigation disclosed that in addition to November 7, 1974, Karen Silkwood also had been contaminated on November 5 and 6, 1974. On November 5 she was working in a laboratory glovebox with plutonium. She checked her hands on a monitoring instrument and discovered that they were contaminated. She was taken to Kerr-McGee's Health Physics Office for decontamination, which consisted of washing and scrubbing her hands. Two glovebox gloves in the laboratory room were found to be contaminated at their hand side surfaces. However, these gloves were subsequently tested by Kerr-McGee personnel and no leaks were found. Also, the air sample filter papers disclosed no questionable airborne activity. Following decontamination, she returned to the laboratory for duties that did not involve using the gloveboxes. The contaminated gloves had been replaced.

On November 6, Karen Silkwood returned to the plutonium plant and engaged in administrative duties; she did not use the gloveboxes. As a union representative, she had planned to attend a union and Kerr-McGee meeting for contract negotiation scheduled for that morning. When she monitored herself before leaving the laboratory, she detected contamination on her hands. Decontamination processes were again performed by health physics personnel. At Karen Silkwood's request, a health physics technician checked her locker at the plutonium plant and her automobile, but no contamination was found.

On November 7 Karen Silkwood was surveyed as soon as she arrived for work. Significant contamination levels were detected in and around her nose and lower levels of contamination were found on other parts of her body. After decontamination, health physics personnel accompanied her to the Edmond, Oklahoma, apartment she shared with a roommate, another Kerr-McGee laboratory analyst. A survey of the apartment revealed various levels of contamination. No contamination was found outside the apartment. The survey also

revealed that the roommate had a low level of contamination on her body; she was taken to the Kerr-McGee plant for decontamination.

Kerr-McGee personnel decontaminated the apartment from November 7 to December 2, 1974. A final survey on December 3, 1974, performed by representatives of AEC and the Oklahoma Department of Health, showed contamination levels below those specified in AEC guidelines for unrestricted use.

A survey was also made of Karen Silkwood's boyfriend and other individuals who had visited Karen Silkwood's apartment. No contamination was found.

Following Karen Silkwood's contamination on November 5, 1974, Kerr-McGee gave her urine and fecal kits for a total collection bioassay program to last 5 days. Data obtained through analysis of the urine samples submitted on November 7 indicated that a significant inhalation of plutonium might have occurred; data obtained from analysis of urine samples after November 7 indicated that a large inhalation did not occur. This inconsistency, together with the whole body count data and the post-mortem examination, indicated that plutonium had been added to the samples submitted on November 7. No evidence was found to indicate how the plutonium was added.

The cause of death and possible criminal involvement are not within NRC's jurisdiction and were not pursued during its investigation.

On November 14, 1974, a post-mortem examination was performed at the Oklahoma Medical Examiner's Facility, Oklahoma City. Representatives from the AEC's Los Alamos Scientific Laboratory participated in the examination. Analytical data was furnished to the NRC medical consultant for inclusion in his evaluation.

The NRC report of December 16, 1974, on the contamination of Karen Silkwood and her residence contained the following conclusions:

- Two biological samples submitted by Karen Silkwood contained plutonium which was not present when the sample was excreted.
- Karen Silkwood did not inhale a large quantity of plutonium.
- Karen Silkwood's body organs and tissue contained a small amount of plutonium; less than one-half

the maximum permissible body burden.

- Karen Silkwood's boyfriend and roommate did not receive a biologically significant internal deposition of plutonium.
- The quantity of plutonium released to the Edmond, Oklahoma (location of Karen Silkwood's residence) sewage treatment plant was probably insignificant.
- No more than 0.0003 grams of plutonium was identified in the contamination of the individuals and their apartment.
- Karen Silkwood's contamination on November 5th, 6th, and 7th of 1974 probably did not result from an accident or incident within the plant.

Only one violation of AEC regulations was found during the investigation. It involved Kerr-McGee's failure to maintain proper records on two biological samples taken in October 1974 following a previous plutonium contamination incident involving Karen Silkwood.

The Oklahoma Department of Health was notified of the contamination incident and participated in the investigation with NRC. A representative of the State of Oklahoma told us that the State did not issue an independent report.

Information on the amount of plutonium involved in the contamination of Karen Silkwood, her roommate, and her apartment was made public in a January 6, 1975, NRC news release. The news release summarized the pertinent events relative to the incident and disclosed that the total amount of plutonium found in personal and apartment contamination was less than .0003 grams, or about .00001 of an ounce.

NRC INVESTIGATION INTO RADIOLOGICAL WORKING CONDITIONS

On January 7, 1975, AEC released its report on the union's 39 allegations concerning working conditions. The investigation disclosed that there was substance or partial substance to 20 of the 39 allegations. In 3 of the 20 allegations with substance or partial substance, Kerr-McGee was found to be in violation of licensee requirements as follows:

- Plutonium metal had been used in laboratory programs even though possession of plutonium as a metal is not permitted in Kerr-McGee's license.

--On two occasions the quantity of plutonium shown on the glovebox log of a laboratory glovebox exceeded the safe operating limits for that glovebox.

--A spill in the Solvent Extraction System, requiring 40 hours to decontaminate, was not reported within the required 24-hour period.

The remaining 17 allegations involved working conditions at the plutonium plant which were either outside the scope of, or did not result in, noncompliance with specific safety requirements.

In January 1975 Kerr-McGee issued a statement of corrective actions that had been taken on the violations of NRC requirements. NRC considered these corrective measures satisfactory. NRC said the Kerr-McGee corrective measures will be confirmed during a subsequent inspection.

NRC INVESTIGATION INTO URANIUM PELLET INCIDENT

On January 23 NRC released its report on the uranium pellet incident. The report disclosed that on December 16, 1974, Kerr-McGee personnel discovered several uranium pellets and pellet fragments on the ground near a Cimarron uranium facility official building. Continued search resulted in the recovery of about a dozen pellets near the initial location and about three pellets and fragments about 75 feet from the first finding. A further Kerr-McGee search using instruments, conducted on December 17th and 18th, resulted in finding of additional pellets in a third location midway between the first two. All three locations were within the perimeter fence of the facility.

Following collection, the pellet material was examined and weighed; the total weight was equivalent to about 25 pellets. From data stamped on the pellets, it was determined that some of them had been produced as recently as December 10, 1974, or a few days before they were found on the plant grounds. Kerr-McGee concluded that the pellets could not have been accidentally transported from their normal location within the uranium manufacturing building to the outside location where they were found. Kerr-McGee reported the incident to NRC and the FBI on December 17, 1974.

ERDA INVESTIGATION INTO
ALLEGED FALSIFICATION OF
QUALITY CONTROL RECORDS

Responding to the union allegations, ERDA's Division of Inspection made a fact-finding study into the allegations and issued its report on January 7, 1975. For the purpose of investigation, the allegations were grouped into the following categories:

- Falsification of photomicrograph negatives of weld test samples.
- Improper use of quality control sample analytical data by Kerr-McGee supervisors and employees.
- Irregularity in pellet inspections.
- Falsification of computer input data.

The investigation was directed at clarifying the facts surrounding the allegations to determine the validity of the allegations. This was accomplished primarily through interviews with confidential informants and Kerr-McGee management and employees. In accordance with the division's normal practice, its report did not reach conclusions, but its findings gave some support for the first two allegations.

On the first allegation--falsification of photomicrograph negatives--a Kerr-McGee quality control analyst admitted touching up negatives with a felt tip pen to conceal small artifacts. The analyst said that such artifacts originated in the darkroom processing of the negatives and were not defects in the weld itself. His motive was to prevent his supervisor from rejecting any subsequent photograph which would require the analyst to rework the entire weld sample.

The second allegation--improper use of quality control sample analytical data--involves chemical tests to determine the quality of fuel pellets. These tests are designed so that an analyst independently determines the quality of pellets and then is told whether this quality is within an acceptable range. The investigation disclosed that three analysts believed that one other analyst knew what the acceptable range was before he made quality control tests. The report further disclosed that this analyst had received considerably much more overtime wages than his coworkers and that he conducted an estimated 75 to 80 percent of the quality control sample analyses. This allegation was not fully substantiated. The analyst in question denied any access to quality control sample analytical data, although he acknowledged that on

one occasion a supervisor had provided him the answer to a particular analysis. Kerr-McGee conducted its own inquiry with inconclusive results.

AEC's RRD became concerned of the possible effects and implications that the allegations could have on the quality of the fuel rods and in early December appointed a task force to conduct a comprehensive quality review of FFTF fuel rods manufactured at Kerr-McGee. The specific objectives of the task force were to determine whether the

--FFTF fuel rods thus far manufactured at Kerr-McGee met the quality requirements specified in the contract, and by what measures this had been assured, and

--quality assurance provisions, programs, procedures, and practices governing the manufacturer and acceptance of FFTF fuel rods by Kerr-McGee and Hanford has been adequate and whether their implementation has been effective.

The task force visited Kerr-McGee and Hanford to review the programs, procedures, and practices of each organization concerning the quality of FFTF fuel. The review included, but was not limited to, investigation of the union's quality control allegations.

On April 11, 1975, ERDA issued a summary report concluding that the fuel rods manufactured by Kerr-McGee and accepted by Hanford met the established quality requirements. The report also concluded that the quality assurance program at Kerr-McGee met the requirements specified in their contract, but that the contract requirements for documentation, data analysis, and internal auditing programs should be strengthened. The report recommended continuing Hanford's surveillance and receiving inspection at the current high level until appropriate contract charges are made and found to be satisfactorily implemented. Concerning the union's quality control allegations, the task force concluded that the allegations were not substantiated and did not affect the quality of the fuel rods.

After completing its investigation, the task force made arrangements with the Battelle Northwest Laboratory to re-examine a certain number of the fuel rods fabricated by Kerr-McGee to provide an additional and independent examination of the fuel rods. The Battelle analysis, when completed, is to be added as an addendum to the task force report.

PRINCIPAL OFFICIALS OF
AEC, NRC, ERDA, AND THE FBI
RESPONSIBLE FOR ADMINISTERING THE ACTIVITIES
DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<u>AEC</u>		
CHAIRMAN:		
Dixy Lee Ray	Feb. 1973	Jan. 1975
GENERAL MANAGER:		
Robert D. Thorne (acting)	Jan. 1975	Jan. 1975
John A. Erlewine	Jan. 1974	Dec. 1974
DIRECTOR OF REGULATION:		
L. Manning Muntzing	Oct. 1971	Jan. 1975
<u>NRC</u>		
CHAIRMAN:		
William A. Anders	Jan. 1975	Present
EXECUTIVE DIRECTOR FOR OPERATIONS:		
Lee V. Gossick	Jan. 1975	Present
<u>ERDA</u>		
ADMINISTRATOR:		
Robert C. Seamans, Jr.	Jan. 1975	Present
ASSISTANT ADMINISTRATOR FOR NUCLEAR ENERGY:		
Robert D. Thorne (acting deputy)	Jan. 1975	Present
<u>FBI</u>		
DIRECTOR:		
Clarence M. Kelley	July 1973	Present