4080027
PDR/LPDR

March 20, 1991

BEFORE THE OKLAHOMA WATER RESOURCES BOARD

In re:	)	
SEQUOYAH FUELS CORPORATON	)	Application No. WD-75-074
	)	I.D. No. 68000010

Report on

NRC AND EPA REGULATION OF THE SEQUOYAH FACILITY

by

Edwin T. Still
Vice President and Director, Environment and
Health Management Division
Kerr-McGee Corporation
123 Robert S. Kerr
Oklahoma City, Oklahoma 73125

0/1

Delete all dist. except:
End.

V Tharpe 2
PDR 1
LPDR 1
CF 01 1

NF01

BEFORE THE OKLAHOMA WATER RESOURCES BOARD

In re:	
SEQUOYAH FUELS CORPORATON	Application No. WD-75-074 I.D. No. 68000010

Report on

NRC AND EPA REGULATION OF THE SEQUOYAH FACILITY

by

Edwin T. Still
Vice President and Director, Environment and
Health Management Division
Kerr-McGee Corporation
123 Robert S. Kerr
Oklahoma City, Oklahoma 73125

Table of Contents

I. INTRODUCTION

The OWRB Rationale makes reference to regulation by the U.S. Nuclear Regulatory Commission ("NRC") and the U.S. Environmental Protection Agency ("EPA") of many of the matters encompassed by the staff's draft permit. The staff justifies some terms incorporated in the draft permit on the basis that regulation by other agencies is insufficiently comprehensive or stringent (e.g., uranium concentrations in outfalls, controls on ammonium nitrate fertilizer). Other terms in the draft permit are justified on the basis that the OWRB is merely incorporating regulatory provisions by these other agencies (e.g., radium-226 concentrations for Outfalls 002-006). In point of fact, however, the draft permit represents an enormous and unjustified expansion of regulatory control over that provided by these other agencies. Indeed, in some respects, the draft permit is flatly and impermissibly inconsistent with requirements imposed by Federal law.

This report discusses the aspects of the regulatory environment established by NRC and EPA that bear on the OWRB draft permit. In Part I of this testimony, I discuss my qualifications. In Part II, I discuss NRC and EPA regulatory activities and show how the draft permit relates to these other regulatory requirements.

II. QUALIFICATIONS

This report is prepared by Edwin T. Still.[1/] I am director of Kerr-McGee Corporation's Environment and Health Management Division. I have been employed by Kerr-McGee since February 1982 and have been in my present

1/ My resume is attached as Appendix A.

position since October 1984. My division provides licensing, permitting and other support functions to Sequoyah Fuels Corporation and Sequoyah Facility. My division is responsible for obtaining and maintaining federal and state licenses and permits required by the facility in the conduct of its operations and for interacting with the various federal and state agencies that exercise regulatory control over the facility. Thus, I am familiar with and knowledgeable about the agencies that exercise such regulatory control and the type and extent of requirements posed by those agencies.

I have more than twenty years experience in the nuclear and environmental field. I have conducted studies and managed multidisciplinary research programs concerning the effects of radiation on man and the environment. I have authored or coauthored reports and scientific papers that deal with radioactive materials and their toxicity and fate, including natural and depleted uranium. I have participated in the development of Federal standards to assure that man and the environment are adequately protected against potential adverse effects of ionizing radiation. I am currently a member of a task group of the National Council on Radiation Protection and Measurement that is preparing a report on radiation safety programs in uranium mining and processing activities. I am also a member of the Radiation Advisory Council for the Oklahoma State Department of Health.

I received a DVM from the School of Veterinary Medicine, University of Georgia. In addition, I received a Masters degree in Radiation Biology, awarded by the School of Medicine and Dentistry, University of Rochester.

III. EPA AND NRC REGULATION

The operations of the Sequoyah Facility are subject to comprehensive regulatory scrutiny by the NRC.[2/] The NRC, under authority of the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.), is responsible for licensing and regulating activities involving the use of natural uranium. The NRC regulation includes all aspects of the plant's activities, including the discharge of effluents. In addition, water discharges from the Facility are regulated by EPA under the National Pollutant Discharge Elimination System.[3/] (40 CFR Part 122)

The scope and stringency of the OWRB's proposed regulation of the facility extends far beyond the terms that these other agencies have deemed appropriate. This difference is dramatically revealed by Tables 1 through 8, which show the controls under the existing permits for the Facility and the staff's draft permit. As may be seen, the draft permit would either establish controls on activities that are not now deemed to require control or impose a drastic tightening of many activities that are now regulated. For example, it is noteworthy that the OWRB's proposed regulation of radioactive components (uranium, gross alpha, gross beta, and radium-226) far exceed the requirements imposed by the NRC, despite the fact that NRC has detailed and expert knowledge of these matters and has extensive experience with the Facility.

2/ Relevant portions of the NRC license for the facility are attached as Appendix B.

3/ The NPDES permit is attached as Appendix C.

In some cases, the OWRB proposes to incorporate limits that are extracted from other permits. For example, the OWRB staff proposes to add a variety of limits on the usage of the ammonium nitrate fertilizer on the basis that these limits are imposed in the NRC permit. Rationale, p. 18. But there is no justification for imposing a limit simply because another agency, with possible different regulatory objectives, has deemed it necessary. The OWRB should set limits that are based on its own regulatory and statutory requirements, and not attempt to bootstrap its requirements from regulatory activities by other agencies.

In addition, there are several aspects of the draft permit in which the OWRB staff has failed to understand or appreciate the requirements imposed by the NRC and the EPA:

1. Uranium

Any uranium discharged in water effluent from the Facility is subject to the limits established by NRC regulations. (10 CFR Part 20) These concentrations are established at levels that do not pose a concern for adverse effects to the public health or the environment. Because the radioactivity of natural uranium is so low, chemical toxicity is "... the limiting criterion for the longer-lived nuclides of ura (International Commission on Radiological Protection: Report of Committ e II on Permissible Dose for Internal Radiation; Publication 2, Page 9; Pergamon Press, New York, 1960) Chemical toxicity considerations are thus the basis for the NRC requirements for uranium, contrary to assertions by the OWRB staff. Rationale, Page 9.

The limit established for release of natural uranium in water to unrestricted areas is 3 x 10^{-5} uCi/ml. This quantity is equivalent to 45 milligrams per liter (mg/l).[4/] OWRB has proposed a maximum discharge limit of 1.96 mg/l for uranium via the combination stream (outfall 001); of 1.0 mg/l for outfalls 002 through 006; of 1.0 mg/l for outfalls S01 through S04, R01 through R04 and G01 through G19; and 1.0 mg/l for monitoring wells and leak-detection systems. The limits proposed by OWRB are inconsistent with limits established by the NRC by factors of 23 and 45. The incorporation by OWRB of any limit for uranium in the discharge permit is duplicative and, as shown in other testimony, is completely unnecessary.

It should be noted that the EPA NPDES permit does not include a discharge limit for uranium. EPA does not have a standard for uranium concentration in water discharges and obviously considers the discharge of uranium to be the responsibility of the NRC. The OWRB in the past also did not include uranium in the permit.

2. Land Application of Liquid Fertilizer Solution

The draft permit encompasses the ranching program carried out on Facility-owned land. The OWRB staff proposes to establish restrictive limits and extensive conditions for a liquid fertilizer solution that is produced as a byproduct of plant operations. While the ranching activity is, in all

4/ The Oklahoma Radiation Protection Regulations impose a limit of 2x10^{-5} uCi/ml, which is equivalent to 30 mg/l, for natural uranium in drinking water. OSDH: Radiation Protection Regulations, Section 6.4 and Section 14, Table 3 (April 1, 1969) If the NRC requirement for discharge is satisfied, the Oklahoma Radiation protection Regulations limit will also be satisfied because of the effects of dilution.

respects, a conventional agricultural operation, the operation has from its inception been subject to conditions incorporated by the NRC in the Facility's license. Those conditions called for the establishment of test or demonstration plots that were representative of the entire land areas and for reasonable monitoring procedures within those plots. All requirements imposed by NRC have been met and have demonstrated that application of the liquid fertilizer solution to the land is a beneficial and environmentally sound procedure. Additionally, the Oklahoma State Department of Agriculture, after evaluation of the solution, has registered the material as a fertilizer.[5/] As is discussed by others, the additional requirements proposed by OWRB for the ranching activity in many instances conflict with or extend beyond those established by the NRC.

3. Sludge Disposal

OWRB's draft permit states "(s)olids, sludges, filter backwash, or other pollutants removed in the course of treatment of wastewater shall be disposed of by delivery to a State-approved industrial waste disposal site or to a company for recycling." (Draft permit at Page 2 of Part II.) The OWRB staff evidently intends this provision to encompass a calcium fluoride sludge produced by treatment of water used to scrub uranium hexafluoride from an air stream and a raffinate sludge generated in the processing of raffinate to produce the ammonium nitrate fertilizer.

The two sludges contain radionuclides -- natural uranium and daughter products of natural uranium. Accordingly, Sequoyah is transporting these sludges to a uranium mill to recover the uranium values. Both these sludges are therefore not a waste, but rather are a feedstock. Moreover, as discussed by others, Sequoyah's processing of the raffinate properly should

5/ The registration is attached as Appendix D.

not be viewed as "treatment of a waste water." Sequoyah is processing a valuable byproduct stream to recover a commercially important and beneficial product.

Notwithstanding these points, OWRB's provision is improper. Sequoyah is not aware that wastes with radionuclides are accepted by any permitted industrial waste disposal site. And, in fact, licensees can dispose of materials containing radionuclides only in accordance with the rules of the NRC. Those rules do not allow the transfer of these sludges to any facility other than one that is authorized by NRC to receive such materials. 10 CFR Section 20.301. Thus, NRC's rules would prohibit compliance with the conditions proposed by OWRB in the draft permit and thus the OWRB's proposed permit conditions are contrary to law.

4. Radium-226

The OWRB staff proposes to impose stringent limits on any discharges of radium-226, a radioactive substance that results from the decay of uranium. These provisions are inconsistent with regulatory guidance.

The sole justification that the OWRB staff offers for the proposed limit of 5 pCi/l for radium-226 for outfalls 002-006 is that the limit is derived from the NPDES permit. This contention is incorrect. As shown by Appendix C, the EPA does not in fact now regulate stormwater runoff from the Facility.[6/]

6/ SFC is now discussing the regulation of these outfalls in the context of the reneval of the NPDES permit. Of course, the terms of any regulation of the outfalls -- if regulation is deemed necessary -- remain to be determined.

The EPA has imposed limits on radium-226 in two outfalls in the agricultural areas which benefit from the ammonium nitrate fertilizer. The counterpart EPA limit is in fact 30 pCi/l, not the 5 pCi/l that would be imposed by the OWRB staff.

In fact, all the permit requirements for radium-226 should either be eliminated or relaxed. The guidance from the NRC -- the expert agency -- would allow radium-226 in the effluent of 30 pCi/l (soluble) or 30,000 pCi/l (insoluble). 10 CFR Part 20, App. B, Table II. And the Oklahoma Radiation Protection Regulations allow radium-226 in drinking water averaged over a quarter of a year at levels of 10 pCi/l (soluble) or 30,000 pCi/l (insoluble). It is simply unreasonable to impose limits that are more stringent than drinking water limits and that do not recognize the difference in "hazard" between the soluble and insoluble forms.

IV. Conclusion

Many of the items that OWRB has proposed to regulate are already properly regulated by other agencies. In many instances, the OWRB proposals are inconsistent with requirements imposed by other expert agencies. And in all instances, the OWRB should base the permit solely on requirements that are derived from applicable state laws and regulations.

TABLE 1

Sequoyah Facility

Water Effluent Regulation Summary

	Entity			
			OWRB	
• Areas Regulated	NRC	U.S. EPA	Current	Proposed
Process Discharge	x	x	x	x
Sewage Treatment	x	x	x	x
Stormwater Runoff	x	-	-	x
Receiving Stream	x	-	x	x
Storage Ponds	x	-	-	x
Sludges	x	-	-	x
Fertilizer Test Plots	x	x	-	x
Fertilizer Ranch Application	x	-	-	x
• Regulatory Controls	Realistic	Realistic	Realistic	Not Realistic

TABLE 2

Sequoyah Facility
Discharge Limits — Outfall 001

Substance	NRC License	EPA NPDES	OWRB Current	OWRB Proposed
Uranium	45 mg/l (AC)	None	None	1.96 mg/l (MC)
Radium-226	30 pCi/l (sol)(AC) 30,000 pCi/l (insol)(AC)	None	None	10 pCi/l (MC)
Gross alpha	No numerical limit*	None	None	83 pCi/l (MC)**
Gross beta	No numerical limit*	None	None	275 pCi/l (MC)
Fluoride	None	75 lbs/day (max) 30 lbs/day (avg)	75 lbs/day (max) 30 lbs/day (avg)	54 lbs/day (max) 30 lbs/day (avg) 1.6 mg/l (MC)
Nitrate	None	300 lbs/day (max) 75 lbs/day (avg)	300 lbs/day (max) 75 lbs/day (avg)	300 lbs/day (max) 75 lbs/day (avg) 20 mg/l (MC) 10 mg/l (AC)
Total Suspended Solids	None	1500 lbs/day (max) 750 lbs/day (avg)	1500 lbs/day (max) 750 lbs/day (avg)	None
Oil & Grease	None	15 mg/l (MC)	15 mg/l (MC)	None

Notes: AC - Average Concentration
MC - Maximum Concentration
* - NRC gross alpha and gross beta limits are determined by summing the ratio between the quantity of each nuclide released and the allowable release limit, with the sum of the ratios not to exceed unity.

** - OWRB gross alpha proposed limit excludes uranium and radon. There is no counterpart NRC limit.

TABLE 3

Sequoyah Facility
Receiving Stream Limits

Substance	NRC License	EPA NPDES	OWRB Current	OWRB Proposed[a]
Uranium	None	None	None	0.29 mg/l
Gross alpha	None	None	None	15 pCi/l[b]
Gross beta	None	None	None	50 pCi/l
Fluoride	None	None	None	1.6 mg/l
Nitrate (as N)	None	None	None	10 mg/l

Notes: a - Maximum concentration limits with no apparent recognition that exceedances might result from other sources.

b - Excludes uranium and radon

TABLE 4

Sequoyah Facility

Outfalls 002-006[a]

Discharge Limits

Substance	NRC License[b]	EPA NPDES	OWRB Current	OWRB Proposed[c]
Uranium	45 mg/l	None	None	1.0 mg/l
Radium	30 pCi/l (sol) 30,000 pCi/l (insol)	None	None	5.0 pCi/l
Fluoride	None	None	None	1.0 mg/l
Nitrate (as N)	None	None	None	20 mg/l

a - OWRB's designations for stormwater runoff ditches at the facility. Sampling required "during the first hour in which runoff occurs from each rainfall event."

b - Average Concentration

c - Maximum Concentration

TABLE 5

Sequoyah Facility
Outfalls S01-04, R01-04 and G01-G19[a]
Discharge Limits

Substance	NRC	EPA NPDES[b]	OWRB Current	OWRB Proposed[c]
Uranium	None	None	None	1.0 mg/l
Radium-226	None	None	None	5.0 pCi/l
Fluoride	None	None	None	1.6 mg/l
Nitrate (as N)	None	None	None	2.0 mg/l
NH_3-Nitrogen (as N)	None	None	None	2.5 mg/l

Notes: a - OWRB's designations for stormwater runoff ditches for Sequoyah Fuels ranch land; S for land adjacent to Facility, R for Rabbit Hill Ranch, G for Georges Fork Ranch

b - Two farm ponds that collect runoff from the ammonium nitrate application areas are encompassed by the EPA NPDES permit. The permit limits for the two farm ponds are:

Total suspended solids - 45 mg/l daily avg, 90 mg/l daily max
Radium-226 dissolved - 3 pCi/l daily avg, 5 pCi/l daily max
Radium-226 Total - 10 pCi/l daily avg, 30 pCi/l daily max
Nitrate (as N) - 10 mg/l daily avg
NH_3 - 2.5 mg/l daily avg

c - Maximum Concentration

TABLE 6

Sequoyah Facility
Fertilizer Application Land Monitoring Wells[a]

Substance	NRC License Action Level	NRC License Maximum Conc	EPA NPDES	OWRB Current	OWRB Proposed Action Level	OWRB Proposed Maximum Conc
Uranium	None	None	None	None	0.[illegible] mg/l	1.0 mg/l
Radium-226	None	None	None	None	1.0 mg/l	5.0 mg/l
Gross alpha	15 pCi/l[b]	None	None	None	10 pCi/l	15 pCi/l
Gross beta	None	None	None	None	25 pCi/l	50 pCi/l
Nitrate	10 mg/l[c]	None	None	None	10 mg/l	10 mg/l
Fluoride	None	None	None	None	1.0 mg/l	1.6 mg/l

Notes: a - OWRB would require multiple monitor wells at each land application area; NRC requires monitor wells for two test plots (adjacent to Facility and Rabbit Hill).

b - If gross alpha exceeds 15 pCi/l, NRC requires analysis for uranium and radium-226 and investigation and corrective action.

c - NRC requires investigation and corrective action if nitrate exceeds 10 mg/l.

TABLE 7

Sequoyah Facility
Ammonium Nitrate Fertilizer Storage Lagoons
Leachate Detection System[a]

Substance	NRC License[b]	EPA NPDES	OWRB Current	OWRB Proposed	
				Action Level	Maximum Conc
Uranium	None	None	None	0.225 mg/l	1.0 mg/l
Radium-226	None	None	None	1.0 pCi/l	5.0 pCi/l
Gross alpha	None	None	None	10 pCi/l	15 pCi/l
Gross beta	None	None	None	25 pCi/l	50 pCi/l
Nitrate	None	None	None	10 mg/l	10 mg/l
Fluoride	None	None	None	1.0 mg/l	1.6 mg/l

Notes: a -- Leachate detection system monitors any leakage through the upper synthetic liner of the ponds.

b - NRC requires weekly check of leachate detection system for fluid. If fluid is present, analysis is done to determine if the fluid is representative of pond contents and, if so, Sequoyah is to investigate.

TABLE 8

Sequoyah Facility
Ammonium Nitrate Solution

Substance	NRC License	EPA NPDES	OWRB Current	OWRB Proposed
Uranium	0.1 mg/l	None	None	Report mg/l
Ra-226	2.0 pCi/l	None	None	2.0 pCi/l
Gross alpha	None	None	None	15 pCi/l
Gross beta	None	None	None	Report
Nitrogen	700 lbs/acre/yr	None	None	700 lbs/acre/yr
Trace Metals	Cumulative loading/20 yrs	None	None	Cumulative loading/20 yrs

APPENDIX A

Edwin Tanner Still

Professional Biography

1. Personal Vitae: Born 2 November 1935, Walton County, Georgia, citizen U.S.A.

2. Education:

University of Georgia, Athens, Georgia, D.V.M. 1959. Attendance 1953-59

University of Rochester, Rochester, New York, M.S. 1964. Attendance 1963-64

3. Professional Experience:

1959-61	Base Veterinarian, Ellington AFB, Texas
1961-63	Base Veterinarian, McGuire AFB, New Jersey
1964-67	Research Investigator, Radiobiology Branch, School of Aerospace Medicine, Brooks AFB, Texas
1967-69	Senior Research Investigator, Mammalian Radiobiology Section, Biological and Medical Sciences Division, Naval Radiological Defense Laboratory, San Francisco, California
1967-69	Air Force Liaison Officer, Naval Radiological Defense Laboratory, San Francisco, California
1969-75	Technical Representative, Biomedical Programs, Divison of Biomedical and Environmental Research, U.S. Atomic Energy Commission, Washington, D.C. (Energy Research and Development Administration)
1975-76	Chairman, Radiation Biology Department, Armed Forces Radiobiology Research Institute, Bethesda, Maryland 20014
1976-78	Research Program Coordinator, Armed Forces Radiobiology Research Institute, Bethesda, Maryland 20014
1978-82	Assistant to the Director (Biomedical Effects), Defense Nuclear Agency, Washington, D.C. 20305

1982-83 Senior Physical Scientist, Corporate Medical Department, Environment and Health Management Division, Kerr-McGee Corporation, Oklahoma City, Oklahoma 73125

1983-84 Vice President, Environmental Affairs, Environment and Health Management Division, Kerr-McGee Corporation, Oklahoma City, Oklahoma 73125

1984 to Present Vice President and Director, Environment and Health Management Divison, Kerr-McGee Corporation, Oklahoma City, Oklahoma 73125

4. Professional Affiliations:

American Veterinary Medical Association
D.C. Verterinary Medical Association
Oklahoma Veterinary Medical Association
Sigma Xi
Health Physics Society

5. Military Service:

U. S. Air Force, September 1959-October 1979. Retired, Colonel

6. Papers and Abstracts:

(1) "The Effect of Massive Doses of 32 MeV Protons and Cobalt Gamma Radiation on Serum Enzyme Levels of Whole-Body Irradiated Primates," G.V. Dalrymple, I. L. Lindsay, J. J. Ghidoni, H. L. Kundel, and E. T. Still. SAM-TR-65-22, 1965.

(2) Ibid, Journal of Nuclear Medicine, 6, 588-593, August 1965.

(3) "Some Effects of Whole-Body 32 MeV Proton Irradiation on Primates," G. V. Dalrymple, I. L. Lindsay, J. J Ghidoni, H. L. Kundel, and E. T. Still, R. Jacobs, R. Hall, G. Williams, and I. L. Morgan. SAM-TR-65-43, 1965.

(4) "Early Physiologic Changes in Primates Following Mixed Gamma-Neutron Pulsed Radiation," E. A. Rice, D. S. Sawyer, E. T. Still, and S. E. Beard. SAM-TR-65-31, 1965.

(5) "Clinical Aspects of Proton Irradiation," G. V. Dalrymple, I. L. Lindsay, J. J. Ghidoni, H. L. Kundel and E. T. Still, Abstract, 13th Annual Meeting, Radiation Research 25, May 1965.

(6) "Some Effects of Whole-Body 32 MeV Proton Irradiations on Primates,", G. V. Dalrymple, I. Lindsay, J. J. Ghidoni, H. L. Kundel, E. T. Still, R. Jacobs, and I. L. Morgan. Radiation Research 28, 406-433, 1966.

(7) "Dose-Rate Effect on Acute Mortality of Mice Following 138 MeV Proton or 2 MeV X-Ray Irradiation," J. E. Traynor and E. T. Still. Abstract, 15th Annual Meeting, Radiation Research Society, May 1967.

(8) "Dose-Rate Studies with Sheep and Swine," E. J. Ainsworth, N. P. Page, J. F. Taylor, G. F. Leong, and E. T. Still. In Proceedings of a Symposium, "Dose Rate in Mammalian Radiation Biology," 29 April - 1 May 1968, U. of Tenn., AEC, Agriculture Research Laboratory, Oak Ridge, Tennessee.

(9) Ibid, NRDL-TR-68-[illegible], June 1968.

(10) "Reexamination of Biological Recovery Rates and Equivalent Residual Doses," G. F. Leong, E. J Ainsworth, J. F. Taylor and E. T. Still. In Proceedings of a Symposium, "Radiological Protection of the Public in a Nuclear Mass Disaster," Interlaken, Switzerland, 26 May - 1 June 1968.

(11) "Acute Mortality and Recovery Studies in Burros Irradiated with 1 MvP X-Rays," E. T. Still, N. P. Page, J. F. Taylor, W. G. Wisecup, E. J. Ainsworth and G. F. Leong. NRDL-TR-68-101, September 1968.

(12) "Dose-Rate Effect on LD50 (30) in Mice Exposed to Cobalt Gamma Irradiation," J. E. Traynor and E. T. Still, SAM-TR-68-97, October 1968.

(13) "Hematological Response in Sheep Given Protracted Exposures to Cobalt Gamma Radiation," E. T. Still, S. T. Taketa, E. J. Ainsworth, G. F. Leong, and J. F. Taylor, NRDL-TR-69-6, January 1969.

(14) "Survival Time and Hematological Response in Sheep Subjected to Continuous Gamma Irradiation," E. T. Still, J. F. Taylor, G. F. Leong, and E. J. Ainsworth. Abstract, 17th Annual Meeting, Radiation Research Society, May 1969.

(15) "Survival Time and Hematological Responses in Sheep Subjected to Continuous Cobalt Gamma Irradiation," E. T. Still, J. F. Taylor, G. F. Leong, and E. J. Ainsworth, NRDL-TR-69-28, June 1969.

(16) "Mortality of Sheep Subjected to Acute and Subsequent Protracted Irradiation," E. T. Still, J. F. Taylor, G. F. Leong, and E. J. Ainsworth, NRDL-TR-69-32, January 1969.

(17) "Acute Lethality and Recovery of Goats after 1 MvP X-Irradiation," J. F. Taylor, E. T. Still, N. P. Page, G. F. Leong, and E. J. Ainsworth. NRDL-TR-69-32, January 1969.

(18) "The Effect of Exposure Rate on Radiation Lethality in Swine," J. F. Taylor, E. T. Still, E. J. Ainsworth, and G. F. Leong. NRDL-TR-69-96, July 1969.

(19) "The Influence of the Amount of Initial Radiation Exposure on the Recovery Pattern in Sheep," E. T. Still, J. F. Taylor, G. F. Leong, and E. J. Ainsworth, NRDL-TR-69-97, July 1969.

(20) "Acute Mortality and Recovery Studies in Burros Irradiated with 1 MvP X-Rays," E. T. Still, N. P. Page, J. F. Taylor, W. G. Wisecup, E. J. Ainsworth, and G. F. Leong. Radiation Research 39 580-593 (1969).

(21) "Inter-Laboratory Comparison of Mortality of Sheep Exposed to Cobalt Gamma Rays," T. S. Mobley and E. T. Still. Joint AFWL-TR-69-48 (1969).

(22) "Acute Lethality and Recovery of Goats after 1 MvP X-Irradiation," J. F. Taylor, E. T. Still, N. P. Page, G. F. Leong, and E. J. Ainsworth. Radiation Research 45, 110-126 (1971).

(23) "Vulnerability of Livestock to Fallout Gamma Radiation," E. T. Still and N. P. Page. In Proceedings of a Symposium on Survival of Food Crops and Livestock in the Event of Nuclear War, Brookhaven National Laboratory, Upton, New York. AEC Symposium Series 24, 648-655 (December 1971).

(24) "Environmental Effects of Nuclear Industry," E. T. Still, General Topical Session at the 45th Annual Meeting of the South Carolina Academy of Science, March 23-25, 1972. Bulletin of the S. C. Academy of Sciences, XXXIV, 48-54, 1972.

(25) "Factors Modifying the Response of Large Animals to Low-Intensity Radiation Exposure," N. P. Page, and E. T. Still, In Proceedings of the National Symposium on Natural and Manmade Radiation in Space, Las Vegas, Nevada, March 1-5, 1971. NASA TM Z-2440, 622-632 (January 1972).

(26) "Radon Daughters Research and Litigation Issues," E. T. Still and J. C. Stauter. American Mining Congress Annual Meeting, Phoenix, Arizona, September 1985.

7. Representative Presentations of Academic Nature

(1) Lecturer in Radiation Biology, Health Physics, and Radiation Standards for U.S. Air Force School of Aerospace Medicine in courses for: Flight Medical Officers Training; Flight Nurses Training; Allied Officers Advanced Medical Training; NASA Astronaut Training; Medical Service Corps Engineer Training; and Laboratory Animal Medicine Graduate Course for Veterinarians (1964-67).

(2) Lecturer on Laboratory Animal Models for Biomedical Research for Laboratory Animals Training Course, Animal Health Division, Agricultural Research Service, U.S. Department of Agriculture (1970).

(3) Lecturer on Low-Dose Ionizing Radiation for military physicians course of the Medical Effects of Nuclear Weapons at Armed Forces Radiobiology Research Institute (1979).

(4) Lecturer on Fertile Women and Occupational Radiation Exposure Considerations, AFRRI (1976).

(5) Lecturer on Development of Nuclear Weapons History-Policy-Doctrine for Uniformed Services University of Health Sciences (1978).

(6) Symposium Session Chairman and Working Group Chairman on Fallout-Radiation Effects on Livestock at Brookhave National Laboratory, New York for Symposium entitled, "Survival of Food Crops and Livestock in the Event of Nuclear War" (1971).

8. Representative Participation on Committees, Interagency Panels, Groups

(1) Member, Interdepartmental Committee on National Blood Program Research (1972-73).

(2) Liaison member, Hematology Study Section, National Institutes of Health (1971-75).

(3) Member, Joint Technical Coordinating Group for Munitions Effectiveness - Ad Hoc Working Group For Medical and Environmental Evaluation of Depleted Uranium, and contributor to Special Report (1973-74).

(4) Member of special committee convened by Assistant Secretary of Army to perform a Hazard Evaluation of the Use of Depleted Uranium Penetrators, and contributor to report on biological effects and dose rates (1978-79).

(5) Invited Scientific Reviewer for Energy Research and Development Administration Research Programs on Internal Emitters (1976).

(6) Expert witness for Puerto Rico Water Resources Authority, Commonwealth of Puerto Rico, at Environmental Quality Board hearing on radiation effects of nuclear power plants (1972).

(7) Designated U.S. Air Force expert consultant on medical effects of depleted uranium to the Department of State for meetings with NATO allies (1978).

(8) Member, Radiation Safety Audit and Inspection Team for Enewetak Atoll (1978-79).

(9) DoD representative to Science Working Group of the Interagency Task Force on the Health Effects of Ionizing Radiation (1978-79).

(10) Designated DoD representative to Interagency Committee on Transuranic Element Soil Contamination Guidelines (1976-79).

(11) Designated DoD member of Interagency Committee on Federal Research into the Biological Effects of Ionizing Radiation (1979).

(12) Designated DoD member of the Committee for Development of the Federal Strategy for Research into the Biological Effects of Ionizing Radiation (1979).

(13) Member, Committee on Metabolism and Dosimetry of High - LET Radionuclides, U. S. Environmental Protection Agency National Workshop on Radioactivity in Drinking Water (1983-84).

(14) Member, National Environmental Studies Project Taskforce, Atomic Industrial Forum, Washington, D.C. (1983-85).

(15) Member, Task Group on Uranium Mining and Milling - Radiation Safety Programs, National Council on Radiation Protection and Measurements, Bethesda, Maryland (1984 to present).

MATERIALS LICENSE

APPENDIX B

ursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, ode of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 40 and 70, and in reliance on statements and representations eretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, urce, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to eliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This cense shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is bject to all applicable rules, regulations and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any onditions specified below.

Licensee		
Sequoyah Fuels Corporation	3. License number	SUB-1010 Amendment No. 13
Kerr-McGee Center Oklahoma City, Oklahoma 73125	4. Expiration date	September 30, 1990
	5. Docket or Reference No.	40-8027

Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license
Source	Any form	20 million MTU

. Authorized Use: For use in accordance with the statements, representations, and conditions contained in Chapters 1 through 8 of the license renewal application dated August 23, 1985; supplements dated January 24, 1985, August 20, September 3, November 13, December 9, and December 19, 1986, and February 26, May 11, and June 4, 1987; two letters dated December 19, 1985, and letter dated March 25, 1987.

0. Authorized Place of Use: The licensee's existing facilities at Gore, Oklahoma.

1. The licensee shall by April 20, 1986, prepare and submit to the Fuel Cycle Safety Branch the following reports. These reports shall contain sufficient detail and analysis to allow an independent review and shall contain licensee commitments for the actions described.

   a. A report detailing handling procedures for product cylinders containing liquid UF_6. The report shall include a detailed analysis of each step in handling of hot cylinders and identify the possible scenarios which could result in cylinder rupture. The report shall also provide an assessment of the modifications and actions which could be taken to reduce the potential for a UF_6 release and justify the procedures being used.

   b. A report detailing measures and actions to mitigate the effects of a UF_6 release. The report shall deal with the potential release of material within the facility and outside of the facility.

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number: SUB-1010

Docket or Reference number: 40-8027

12. The licensee shall by January 20, 1986, reevaluate the existing groundwater conditions in the area of the treated raffinate storage ponds and submit for NRC review a report which describes these conditions and either justifies the current groundwater monitoring program or proposes a new program.

13. The licensee shall implement the Vegetation Monitoring Program which was transmitted by letter dated December 19, 1985. An annual report of the findings shall be submitted to NRC for review by January 31 of each year.

14. The licensee shall investigate and verify that the elevated uranium and nitrate concentrations found in Well FTP-2A are not the result of the liquid seepage from Ponds 3 or 4. A report of the investigation shall be submitted to NRC within 6 months from the date of renewal of the license.

15. Deleted.

16. The licensee shall investigate the cause of some of the elevated uranium concentrations in the runoffs identified in the submittal for Condition 15. Within 3 months from the date of renewal of the license, a report of the investigation shall be submitted to NRC. The report shall describe what mitigating measures, if any, were taken to eliminate the source(s).

17. The licensee shall conduct a comprehensive soil/sediment radiological survey to determine the extent of uranium accumulation along the length of the effluent stream (001), at the confluence, upstream and downstream of the Illinois River, and along the intermittent runoff areas identified in Condition 14. The results of this survey and any recommendations for mitigation shall be reported to NRC within 12 months from the date of the renewal of the license.

18. The licensee shall submit for NRC review and approval the plan and criteria for decommissioning Pond No. 2 upon the completion of sludge removal from Pond No. 2.

19. The licensee shall maintain a spare pond having capacity equal to or greater than Pond No. 5, unless the licensee's deep well injection plan has been approved.

20. At the end of plant life, the licensee shall decontaminate and decommission the facility so that it can be released for unrestricted use.

21. The licensee shall, by November 15, 1986, prepare and submit to the NRC changes to the decommissioning plan which provide for the permanent disposal of all solid wastes generated by the facility. The plan shall include an estimate of the costs involved in disposing of these wastes and the financial arrangements that have been or will be made to assure that adequate funds will be available to cover these costs at the time of disposal.

22. The licensee shall implement, maintain, and execute the response measures of the Radiological Contingency Plan submitted to the Commission on August 20, 1986; as supplemented with revised pages dated April 10, 1987. The licensee shall also maintain Contingency Plan Implementing Procedures for the Radiological Contingency Plan as necessary to implement the Plan. The licensee shall make no change in the Radiological Contingency Plan or the Contingency Plan Implementing Procedures that would decrease the response effectiveness of the Plan without prior NRC approval as evidenced by a license amendment. The licensee may make changes to the Radiological Contingency Plan and Contingency Plan Implementing Procedures without prior NRC approval if the changes do not decrease the response effectiveness of the Plan. The licensee shall maintain records of changes that are made to the Radiological Contingency Plan and Contingency Plan Implementing Procedures that are made without prior NRC approval for a period of 2 years from the date of the change. The licensee shall furnish the Chief, Fuel Cycle Safety Branch, Division of Industrial and Medical Nuclear Safety, NMSS, U.S. Nuclear Regulatory Commission, Washington, DC 20555 and the appropriate NRC Regional Office specified in Appendix D of 10 CFR Part 20, a report containing a description of each change to the Radiological Contingency Plan and a summary of the types of changes made to the Contingency Plan Implementing Procedures within 6 months after the change is made.

23. The licensee shall use the printout capability of the cylinder filling scales to produce a record of final cylinder weight prior to removal of the cylinder from the cylinder filling area. This record shall be attached to the cylinder status sheet for the cylinder and shall be made part of the permanent record for that cylinder at the facility.

24. The licensee shall implement a method to "tamper safe" UF_6 cylinder valves. UF_6 cylinders shall be "tamper safe" on or before October 1, 1988.

25. The special case-by-case analysis required by Chapter 6, License Conditions, Item 16, page I.6-3, shall be required for any cylinder containing UF_6 in excess of the weight limits specified by ORO-651. If the weight of UF_6 in the cylinder exceeds the limits specified by ORO-651 by more than 500 pounds, heating of the cylinder shall not be allowed without the specific approval of the NRC. The above condition shall be applicable only to Models 48X, 48Y, or equivalent cylinders. Heating of other cylinder types containing UF_6 in excess of the ORO-651 limits shall not be permitted without the specific approval of the NRC.

26. The licensee shall, prior to heating any cylinder containing UF_6, verify the amount of UF_6 in the cylinder using the accountability scale. A printout of the weight shall be attached to the cylinder status sheet.

27. The Manager, Quality Assurance, shall hold a degree in science or engineering with 5 years of experience in a chemical or nuclear materials processing plant and 3 years of management experience in programs having quality assurance responsibilities.

28. The licensee shall ensure that each employee receives and understands the information necessary to safely perform his function. Each employee shall sign a statement indicating the receipt of training and committing to following corporate policy and procedures. Supervisory personnel shall document that all employees under their supervision are aware of and understand changes made in procedures affecting the performance of their job function.

29. The Manager, Health, Safety, and Environment, and the Manager, Administration and Services, or their designated representatives, shall certify that each employee's on-the-job training and module certification has been adequate and that the employee is competent and qualified to perform his or her responsibilities.

30. The licensee shall provide a comprehensive monitoring program for those employees exposed to uranium during the January 4, 1986, incident. At a minimum, the monitoring program shall consist of the following:

    a. Semimonthly quantitative urine uranium bioassay.

    b. Semimonthly urinalysis for physiologic parameters including specific gravity, pH, protein, ketones, blood, and nitrate presence. A microscopic examination of the urine for the presence of formed elements such as casts and cells shall also be performed.

    c. Semiannual pulmonary function testing.

    d. Annual routine physical examinations.

    A report of the findings of this study, including pertinent data allowing an independent analysis of results, shall be submitted to the NRC on or before July 1, 1988.

31. The minimum frequency established by the licensee for audits of operations and safety-related activities that are a part of the ongoing Quality Assurance Program shall not exceed every 12 months. A report of the areas audited shall be made quarterly to the General Manager, Sequoyah Facility.

32. Deleted.

33. The licensee shall maintain all documentation, records, and tests required as a part of this license for a minimum of 5 years or longer if the regulations so require.

34. The licensee shall inform the NRC Region IV Office in writing of any violation of the National Pollutant Discharge Elimination System (NPDES) permit or changes in the permit, within 10 days of the determination of the event.

35. No cylinder shall be heated in an autoclave if it exceeds the weights specified in ORO-651, "Uranium Hexafluoride: Handling Procedures and Container Criteria," April 1977, without special procedures approved by the General Manager, Sequoyah Facility and the General Manager, Sequoyah Fuels Operations. Heating of cylinders shall not be allowed if the weight of UF_6 in the cylinder exceeds the limits specified in ORO-651 by more than 500 pounds for Model 48X, 48Y or equivalent cylinders without specific approval by NRC. Heating of other cylinder types containing UF_6 in excess of the ORO-651 limits shall not be permitted without the specific approval of the NRC.

36. No cylinder shall be heated in an autoclave unless the over-pressure sensor/steam interlock shutoff system is operable.

37. Pages 6-1 and 6-2 of the revised amendment application, dated November 5, 1986, are hereby incorporated as additional pages to Chapter 6, License Conditions, SUB-1010.

38. The licensee shall by May 25, 1987, ascertain whether all residences within a 2 mile radius of the facility have telephones. The licensee shall submit for NRC approval, provisions to notify any residences that do not have telephones.

39. The licensee shall verify that all telephone numbers listed in its Radiological Contingency Plan are accurate during each major exercise of on-site personnel required by the Radiological Contingency Plan.

40. The licensee shall maintain the level of staffing outlined below whenever DUF_6 to DUF_4 operations are being conducted. The licensee shall report to the NRC any significant change in the duties of the staff within 30 days of that change, and shall not make changes which reduce the number of persons assigned to the DUF_6 to DUF_4 facility without prior NRC approval.

a. A shift supervisor with responsibilities for the DUF_6 to DUF_4 facility shall be present during each shift. This individual shall devote 80 to 90 percent of the shift time to the DUF_6 to DUF_4 facility. For purposes of compliance with this condition, the shift supervisor may temporarily substitute for the control room operator identified in paragraph b or the chemical operator identified in paragraph c.

b. A control room operator whose sole responsibility is the operation of the DUF_6 to DUF_4 facility shall be continually present in the control room during each shift.

c. A chemical operator with responsibilities for observation and operation of the facility in coordination with the control room operator shall be continually present in the DUF_6 to DUF_4 facility area during each shift.

d. A chemical operator shall be present as required to perform product drumming.

e. A cylinder handling yard crew shall be present as required to handle DUF_6 cylinders, including the loading of cylinders into the autoclaves.

41. The licensee's President and General Manager shall each spend at least one full workday each month at the facility while the UF_6 to UF_4 process is operational.

42. Prior to commencement of operations at the UF_6 to UF_4 facility, the licensee shall resolve the deficiencies listed in Appendix A of NRC Inspection Report No. 40-8027/87-03. The resolutions to the deficiencies shall be mutually agreed upon by the licensee and NRC Region IV staff.

43. Within 60 days of the issuance of this license amendment, the licensee shall submit to NRC Region IV a plan addressing the items listed in Appendix B of NRC Inspection Report No. 40-8027/87-03. The plan shall describe the licensee's responses and/or planned solutions to the improvement items.

44. The licensee shall analyze the samples from the dust collection exhaust stack for fluoride.

45. The licensee shall ship any UF_4 that is not suitable for sale or recycle to an authorized facility for disposal.

46. Within 60 days of the issuance of this license amendment, the Sequoyah Facility Radiological Contingency Plan (RCP) and associated Contingency Plan Implementing Procedures (CPIP's) shall be revised to include the UF_6 to UF_4 facility. The RCP revision shall be submitted to NRC as a license amendment containing page changes to the Contingency Plan.

47. The licensee shall, prior to restart, obtain the services of an independent oversight organization, with the qualifications described in Paragraph a below, to perform, as a minimum, the actions indicated in Paragraphs b-e below. (Independent means comprised of persons who have never been employed at the Sequoyah Facility by Kerr-McGee or Sequoyah Fuels Corporation (SFC).) At least 10 days prior to proposed restart of UF_6 production at the Sequoyah Fuels Facility, the licensee shall submit to the Regional Administrator, Region IV, for approval the name of the proposed independent oversight organization, including the qualifications of the individuals who will perform the oversight functions, statements from these individuals regarding the extent to which they have been previously employed by Sequoyah Fuels Corporation or Kerr-McGee Corporation, a description of a plan to accomplish the actions described below, and a copy of the licensee's proposed statement of work for the independent organization so that the NRC can verify that the organization's authority and responsibilities are in compliance with this Order. Restart shall not occur prior to approval of the plan by the Regional Administrator.

    a. The independent organization shall have in-depth knowledge of chemical plant operations, radiation hazards associated with uranium processing, applicable NRC regulatory requirements, and programmatic quality assurance through a combination of academic training and practical experience of its staff assigned to the task, sufficient to monitor and assess safety conditions of the Sequoyah Fuels Facility and to determine that the plant is operating in conformance with NRC requirements.

b. The independent organization shall maintain a 24-hour daily surveillance (during operations) of plant processing operations to assure compliance with procedural and regulatory requirements, and shall bring to the immediate attention of the NRC Region IV Office and SFC any conditions it believes to be unsafe or not in conformance with NRC requirements.

c. The independent organization shall be given the authority to order an immediate shutdown of all or any plant operations as required to assure such compliance with procedural and regulatory requirements as is, in its independent judgment, necessary to protect the public health and safety.

d. The independent organization, in carrying out its responsibilities, shall review the following areas:

(1) The qualifications, training, commitment, and the adequacy and capability of SFC employees, including managers, and supervisors, to conduct operations in accordance with license and other regulatory requirements.

(2) The adequacy and accuracy of SFC's operating procedures related to assigned chemical operations and radiation protection functions.

(3) The adequacy and accuracy of SFC record-keeping necessary to demonstrate regulatory and procedural compliance.

(4) The adequacy and conduct of SFC's quality assurance program by which management at corporate and facility levels assures itself through an independent system of checks and balances, that the chemical and radiation safety programs are adequate and are being conducted in accordance with NRC requirements.

e. Two weeks after startup, and monthly thereafter, the independent organization shall provide to the licensee, with a copy simultaneously to the Regional Administrator, Region IV, written reports summarizing the licensee's activities during the period covered by the report with special attention to the areas described in d(1)-(4) above, any problems identified, and recommendations for corrective actions.

f. Within 30 days after receipt of each of the independent organization's reports, SFC shall submit a response to the report in a letter to the Regional Administrator, Region IV, with a copy to the Director, Office of Inspection and Enforcement, and the Director, Office of Nuclear Material Safety and Safeguards. SFC's responses shall describe how SFC will incorporate and implement any recommendations of the independent organization together with a schedule for implementation. If any recommendations are not adopted, SFC shall provide in its responses justification for not adopting the recommendations.

g. Nothing in this Order relieves the licensee of its responsibilities under the license to safely operate the facility and direct its shutdown if problems are identified.

48. Licensee will develop, prior to restart, a plan for providing information to the NRC which incorporates internal coordination and review by appropriate managerial and technical personnel to assure the accuracy of such information. All information provided to the NRC shall be submitted under oath or affirmation of the President, Sequoyah Fuels Corporation.

49. The Director, Office of Nuclear Material Safety and Safeguards or the Director, Office of Inspection and Enforcement, may relax or rescind all or part of the provisions identified in Conditions 47 and 48 upon demonstration of good cause.

FOR THE NUCLEAR REGULATORY COMMISSION

Date: AUG 0 5 1987

By: Glenn A. Tessy for LCR
Division of Industrial and
Medical Nuclear Safety, NMSS
Washington, DC 20555

Fertilizer Distribution

In accordance with applications dated May 30, and August 15, 1980, August 17, 1982, June 2, 1983, and pursuant to Title 10, Code of Federal Regulations, Part 40, the following activities shall be authorized: (1) the use of barium treated neutralized solvent extraction raffinate for fertilizer, and (2) the release of crops grown on land fertilized with the raffinate authorized in item (1) above, subject to the following conditions:

1. Barium treated neutralized solvent extraction raffinate shall be used as fertilizer only for crops which are not used directly as human food, such as animal forage or seed production.
2. The neutralized raffinate feed to the barium treatment unit shall have a pH no lower than 7.5.
3. The barium treated neutralized raffinate shall be analyzed prior to use and shall be released for use as a fertilizer only if:

   a. The Ra-226 content does not exceed 2pCi/l of solution or 0.1 pCi/gN.

   b. The average uranium concentration does not exceed 0.1 mg/l.

   c. The quantity of each trace element applied by using the treated raffinate as fertilizer at the planned application rate is not to exceed the total cumulative loading (lb/acre) as specified in Table 1-1. The total cumulative loadings can be achieved by a single or multiple application of the treated raffinate waste over the usable lifetime of the treatment area. Once the total cumulative loading value for any element is reached within a treatment area, that area is to be removed from further fertilization by the raffinate waste.

4. The total quantity of nitrogen applied to any land in any one year by using treated raffinate as fertilizer will not exceed 700 lb. N/Acre.

5. Quantitative analyses for metals and specified isotopes shall be performed as outlined in the enclosed Appendix I, Revision 1.

6. The designated raffinate fertilizer application test areas shall be the 160 and the 270 acre sites.

7. Monitoring wells on the designated raffinate fertilizer application test sites shall be sampled at the beginning of each fertilizer application season, every other month during fertilizer application, and one month after the last fertilizer application. Samples shall be analyzed individually for nitrates, gross alpha, and all elements whose concentration in the applied raffinate exceeds the concentrations stated for short-term use of irrigation waters. If the gross alpha concentration in a monitoring well exceeds 15 pCi/liter, an analysis for uranium and radium-226 shall be conducted. If the nitrate concentration in a monitoring well exceeds 10mg/liter or it gross alpha exceeds 15 pCi/liter, Sequoyah Fuels shall take appropriate investigation and corrective action.

8. Surface water samples shall be collected from designated ponds (ponds P-1 through P-3 and the retention pond on the 270 acre plot) at the beginning of each fertilizer application season, every other month during fertilizer application, and one month after the last fertilizer application. Samples shall be individually analyzed for any element whose concentration in the raffinate fertilizer exceeds Livestock Enterprize Standards, Appendix II, as specified in Water Quality Criteria, 1972, and gross alpha. If the gross alpha exceeds 15 pCi/liter, an analysis for uranium and radium-226 shall be made.

9. If Sequoyah Fuels Corporation decides to discontinue the use of any designated test site as part of the treated raffinate fertilizer application area, the Division of Fuel Cycle and Material Safety, U.S. Nuclear Regulatory Commission must be informed promptly so alternate areas for long-term testing can be identified. Should more than 30% of a test site be eliminated from application for any reason, an alternate test site will be proposed.

10. Forage grown on land fertilized with treated raffinate may be released providing that the heavy metal content of forage for animals does not exceed the maximum tolerable dietary level given in the National Academy Sciences report, "Mineral Tolerance of Domestic Animals," Washington, D.C., 1980, as shown in Appendix III on Page I.1-7.6. and that the forage contains no more than 1.0 pCi/gm Ra-226, 0.25 pCi/gm Th-230 or 2.5 ugm/gm U measured on a dry basis. Analysis shall be reported on a dry basis, with the moisture content of the vegetation also reported.

11. Other crops grown on land fertilized with treated raffinate may be used or sold without restriction if the use or sale is approved by a qualified independent agronomist.

12. Sequoyah Fuels Corporation shall continue to obtain input and recommendations for the overall treated raffinate fertilizer use program from Oklahoma state Extension Agronomists.

13. A completion report for the previous calendar year's fertilizer program shall be submitted to NRC by May 1 of each year. The report shall contain a description of the program, the analytical results obtained, an analysis of the results, a discussion of any unusual or unexpected results and a summary of the projected future program.

14. Sequoyah Fuels Corporation is responsible for all tests, controls, arrangements and reports required under Conditions 1-13 above regardless of the ownership of the fertilized land or crops.

Table 1 - 1

Total Cumulative Loadings (lb/acre)
Permitted by Condition 3b.

Element	* Cont. use mg/l	* 20 yrs. use mg/l	Total cum. loading over 20 yrs lb/acre
Aluminum	5.0	20.0	3260.0
Arsenic	0.1	2.0	326.0
Beryllium	0.1	0.5	81.5
Boron	0.75	2.0	326.0
Cadmium	0.01	0.05	8.15
Chromium	0.1	1.0	163.0
Cobalt	0.05	5.0	814.0
Copper	0.2	5.0	814.0
Fluoride	1.0	15.0	2445.0
Iron	5.0	20.0	3260.0
Lead	5.0	10.0	1630.0
Lithium	2.5	2.5	407.0
Manganese	0.2	10.0	1630.0
Molybdenum	0.01	0.05	8.15
Nickel	0.2	2.0	326.0
Selenium	0.02	0.02	3.26
Tin	-	-	-
Titanium	-	-	-
Tungsten	-	-	-
Vanadium	0.1	1.0	163.0
Zinc	2.0	10.0	1630.0

*Continuous and 20-year use irrigation water standards taken from Water Quality Criteria, 1972, p. 339, Table V-13.

APPENDIX I-Revision 1

Required Quantitative Analyses

Element	Soil	Vegetation	Raffinate
As	X	X	X
Ba			X
B	X	X	X
Cd			X
Co	X	X	X
Cr			X
Cu	X	X	X
Fe	X	X	X
Hg			X
Mg			X
Mn	X	X	X
Mo	X	X	X
Ni	X	X	X
Pb	X	X	X
Se			X
V	X	X	X
Zn	X	X	X
U	X	X	X
Th-230	X	X	X
Ra-226	X	X	X

(1) Soil samples representative of the major soil types in each fertilized area shall be collected and individually analyzed once every other year for those elements indicated in Appendix I, Revision 1, whose concentration in the treated raffinate fertilizer is less than the "Recommended Maximum Concentrations of Trace Elements in Irrigation Waters," short-term use standard as stated in Water Quality Criteria, 1972, and also analyze for uranium, thorium-230, and radium-226. Soil samples shall be collected and analyzed once per year for those elements indicated whose concentrations in the treated raffinate fertilizer exceeds the "Recommended Maximum Concentrations of Trace Elements" previously noted. Samples shall be collected after the final raffinate addition in the year sampled. Base line samples shall be analyzed every other year prior to the use of raffinate fertilizer.

(2) Vegetation samples from the test sites shall be collected and analyzed for all elements listed in Appendix I, Revision 1, either just prior to or immediately after harvest. The licensee shall develop and use a statistically sound sampling program to ensure that the results obtained are representative of the vegetation harvested.

Elemental analysis of the raffinate fertilized vegetation from the test sites shall serve as an indicator of elemental concentrations in vegatation grown on all other raffinate fertilized sites subject to the following restrictions:

a. The loading of each element (lbs/acre) for any site does not exceed that of the test sites.

In the event that restriction a. is not met for any element, the licensee shall analyze vegetation for that element on those sites which do not meet restriction. Collection and analysis shall take place prior to or immediately after harvest.

b. The vegetation grown on the other sites is the same as that of the test sites, i.e., if fescue and rye are grown on the test sites they will be grown on all other sites.

In the event that condition b. is not met for any site, the licensee shall analyze for all elements listed in Appendix I, Revision 1, in vegetation samples from all fertilized sites which do not meet restriction. Collection and analysis shall take place prior to or immediately after harvest.

Additionally, if the concentration in vegetation from the test sites for any element exceeds maximum tolerable dietary levels[1] or if a trend of increasing concentration for any element for any three consecutive analytic periods is observed, the licensee shall analyze for that element in all raffinate fertilized sites prior to or immediately after harvest.

Vegetation samples from all raffinate fertilized sites shall be collected and analyzed for uranium once per year if the gross alpha measurement of the raffinate exceeds EPA Drinking Water Standards of 15 pCi/liter.

(3) Samples of vegetation like that grown using treated raffinate but in areas not fertilized with treated raffinate shall be obtained and analyzed for the elements and isotopes listed every other year to provide base line information.

(4) A representative composite sample of treated raffinate shall be collected during the application season and analyzed for the elements indicated once per year.

---

[1]Given in Appendix III.

APPENDIX II

LIVESTOCK ENTERPRISE WATERS STANDARDS

As	2 mg/L
Ba	*
B	5.0 mg/L
Cd	50 mg/L
Co	1.0 mg/L
Cr	1.0 mg/L
Cu	.5 mg/L
Fe	*
Hg	10.0 mg/L
Mg	*
Mn	*
Mo	1.0 mg/L
Ni	*
Pb	.5 mg/L
Se	.05 mg/L
V	*
Zn	25.0 mg/L

* - No standards available.

APPENDIX III

ALLOWABLE HEAVY METAL CONTENT OF FORAGE

Element	Maximum tolerable dietary level (ppm)*
B	150
Cu	100
Fe	1000
Mn	1000
Mo	10
Ni	50
Pb	30
Zn	500

---

* National Academy of Sciences, "Mineral Tolerance of Domestic Animals", Washington, D.C. 1980.

APPENDIX C

Permit No. OK0000191
Application No. OK0000191

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Kerr-McGee Nuclear Corporation
P. O. Box 25861
Oklahoma City, Oklahoma 73125

is authorized to discharge from a facility located at Sequoyah Uranium Hexaflouride Facility, Gore (Sequoyah County), Oklahoma

to receiving waters named the headwaters of the Robert S. Kerr Reservoir on the Arkansas River

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on January 24, 1983

This permit and the authorization to discharge shall expire at midnight, January 23, 1988

Signed this 23rd day of December 1982

Myron O Knudson

Myron O. Knudson, P.E.
Director, Water Management Division (6W)

PART I

Page 2 of 23
Permit No. OK0000191

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 001

During the period beginning the effective date and lasting through the expiration date of this permit

the permittee is authorized to discharge from Outfall(s) serial number(s) 001 - combined waste (cooling water, boiler water, process water, treated sanitary wastewater, and excess bypass water.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	*	*
Temperature (°C)	N/A	N/A	* (**F)	* (**F)
Total Suspended Solids	340(750)	(680(1500)	N/A	N/A
Flouride	14(30)	34(75)	N/A	N/A
Nitrate (as N)	34(75)	140(300)	N/A	N/A
Oil & Grease	N/A	N/A	N/A	15 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Continuous	Record
Temperature (°C)	2/Day**	In Situ
Total Suspended Solids	3/Week	Composite
Flouride	3/Week	Composite
Nitrate (as N)	3/Week	Composite
Oil & Grease	3/Week	Grab

* Report
** 1 per 8-hour shift

PART I

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 3/day** by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): at the flow measuring devide located downstream of the last collection point and upstream of the point where the effluent leaves the restricted area..

PART I

Page 8 of 23
Permit No. OK0000191

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 01A

During the period beginning the effective date and lasting through the expiration date of this permit

the permittee is authorized to discharge from outfall(s) serial number(s) 01A - treated sanitary wastewater

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations kg/day(lbs/day)		Other Unit (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	*	*
Total Suspended Solids	N/A	N/A	30 mg/l	45 mg/l
Biochemical Oxygen Demand (BOD_5)	N/A	N/A	30 mg/l	45 mg/l

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/Week	Grab
Biochemical Oxygen Demand (BOD_5)	1/Week	Grab

* Report

PART I

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored N/A

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): prior to commingling with combined wastes (Outfall 001).

PART I

Page 6 of 23
Permit No. OK0000191

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 002

During the period beginning the effective date and lasting through the expiration date of this permit

the permittee is authorized to discharge from outfall(s) serial number(s) 002 - surface runoff from an ammonium-nitrate byproduct test plot.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day (lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day (MGD)	N/A	N/A	*	*
Total Suspended Solids	N/A	N/A	45 mg/l	90 mg/l
Ra 225, Dissolved	N/A	N/A	3 pci/l	5 pci/l
Ra 226, Total	N/A	N/A	10 pci/l	30 pci/l
NH_3	N/A	N/A	2.5 mg/l	N/A
Nitrate (as N)	N/A	N/A	10 mg/l	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day (MGD)	Daily	Estimate
Total Suspended Solids	1/Day**	Composite
Ra 226, Dissolved	1/Day**	Composite
Ra 226, Total	1/Day**	Composite
NH_3	1/Day**	Composite
Nitrate (as N)	1/Day**	Composite

* Report
** During periods of discharge

PART I

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day** by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): where excess runoff is discharged to the unnamed watercourse from the [illegible] retention pond.

PART I

Page 8 of 23
Permit No. OK0000191

PART I
REQUIREMENTS FOR NPDES PERMITS

SECTION A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS - Outfall 003

During the period beginning the effective date and lasting through the expiration date of this permit

the permittee is authorized to discharge from outfall(s) serial number(s) 3 - surface runoff from an ammonium-nitrate byproduct test plot.

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			
	kg/day(lbs/day)		Other Units (Specify)	
	Daily Avg	Daily Max	Daily Avg	Daily Max
Flow-m^3/Day(MGD)	N/A	N/A	*	*
Total Suspended Solids	N/A	N/A	45 mg/l	90 mg/l
Ra 226, Dissolved	N/A	N/A	3 pci/l	5 pci/l
Ra 226, Total	N/A	N/A	10 pci/l	30 pci/l
NH_3	N/A	N/A	2.5 mg/l	N/A
Nitrate (as N)	N/A	N/A	10 mg/l	N/A

Effluent Characteristic	Monitoring Requirements	
	Measurement Frequency	Sample Type
Flow-m^3/Day(MGD)	Daily	Estimate
Total Suspended Solids	1/Day**	Composite
Ra 226, Dissolved	1/Day**	Composite
Ra 226, Total	1/Day**	Composite
NH_3	1/Day**	Composite
Nitrate (as N)	1/Day**	Composite

* Report
** During periods of discharge

PART I

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/day** by grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): where excess runoff is discharged to Sand Branch Creek from the dam retention pond.

SECTION B. SCHEDULE OF COMPLIANCE

The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

NONE

PART II
STANDARD CONDITIONS FOR NPDES PERMITS

SECTION A. GENERAL CONDITIONS

1. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

2. Penalties for Violations of Permit Conditions

The Clean Water Act provides that any person who violates a permit condition implementing sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing sections 301, 302, 306, 307, or 308 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than 1 year, or both.

3. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

5. Toxic Pollutants

Notwithstanding paragraph A.4. above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the permittee so notified.

The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

6. Civil and Criminal Liability

Except as provided in permit conditions on "Bypassing" section B, paragraph 3.b. and "Upsets" section B, paragraph 4.b., nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the Act.

8. State Laws

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

SECTION B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

2. Duty to Halt or Reduce Activity

Upon reduction, loss, or failure of the treatment facility, the permittee shall, to the extent necessary to maintain compliance with its permit, control production or all discharges or both until the facility is restored or an alternative method of treatment is provided. This requirement applies, for example, when the primary source of power of the treatment facility fails or is reduced or lost. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Bypass of Treatment Facilities

a. Definitions

(1) "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

(2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs c and d of this section.

c. Notice

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in section D, paragraph 6 (24-hour notice).

d. Prohibition of bypass.

(1) Bypass is prohibited and the Director may take enforcement action against a permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the permittee could have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(c) The permittee submitted notices as required under paragraph 3.c. of this section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph d.(1). of this section.

4. Upset Conditions

a. Definition. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology-based permit effluent limitations if the requirements of paragraph c of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the specific cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in section D, paragraph 6.

(4) The permittee complied with any remedial measures required under section A, paragraph 3.

d. Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

5. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

SECTION C. MONITORING AND RECORDS

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified in this permit and, unless otherwise specified, before the effluent joins or is diluted by any other wastestream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Director.

2. Flow Measurements

Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to insure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to insure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than ± 10% from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow measurement devices can be obtained from the following references:

a. "A Guide to Methods and Standards for the Measurement of Water Flow", U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 97 pp. (Available from the U. S. Government Printing Office, Washington, D. C. 20402. Order by SD catalog No. C13.10:421).

b. "Water Measurement Manual", U. S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. (Available from the U. S. Government Printing Office, Washington, D. C. 20402. Order by Catalog No. I27.19/2:W29/2, Stock No. S/N 24003-0027).

c. "Flow Measurement in Open Channels and Closed Conduits, U. S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Service (NTIS), Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST).

d. "NPDES Compliance Sampling Manual", U. S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. (Available from the General Services Administration (GSFTS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, Denver, CO 80225).

3. Monitoring Procedures

Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

4. Penalties for Tampering

The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

5. Reporting of Monitoring Results

Monitoring results must be reported on a Discharge Monitoring Report (DMR) form (EPA No. 3320-1). Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a DMR form postmarked no later than the 28th day of the month following the completed reporting period. The first report is due April 28, 1983. Duplicate copies of DMR's signed and certified as required by section D, paragraph 11, and all other reports required by Section D. Reporting Requirements, shall be submitted to the Regional Administrator and the State at the following addresses:

Myron O. Knudson, P.E.
Director, Water Management Division
Environmental Protection Agency
Region VI
First International Building
1201 Elm Street
Dallas, Texas 75270

James R. Barnett, Acting Director
Oklahoma Water Resources Board
1000 N. E. 10th Street
Oklahoma City, Oklahoma 73105

6. Additional Monitoring by the Permittee

If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR Part 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

7. Averaging of Measurements

Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

8. Retention of Records

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

9. Record Contents

Records of monitoring information shall include:

a. The date, exact place, time and methods of sampling or measurements;

b. The individual(s) who performed the sampling or measurements;

c. The date(s) analyses were performed;

d. The individual(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of such analyses.

10. Inspection and Entry

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

SECTION D. REPORTING REQUIREMENTS

1. Planned Changes

The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.

2. Anticipated Noncompliance

The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

3. Transfers

This permit is nontransferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

4. Monitoring Reports

Monitoring results shall be reported at the intervals and in the form specified in section C, paragraph 5 (Monitoring).

5. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

6. Twenty Four Hour Reporting

The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

The following shall be included as information which must be reported within 24 hours:

a. Any unanticipated bypass which exceeds any effluent limitation in the permit.

b. Any upset which exceeds any effluent limitation in the permit.

c. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in Part III of the permit to be reported within 24 hours.

7. Other Noncompliance

The permittee shall report all instances of noncompliance not reported under section D, paragraphs 1, 4, 5, and 6, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 6.

8. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

a. That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the "notification levels" described in 40 CFR 122.61.

b. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

9. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

10. Duty to Reapply

If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit. The Director may grant permission to submit an application less than 180 days in advance but no later than the permit expiration date.

11. Signatory Requirements

All applications, reports or information submitted to the Director shall be signed and certified.

a. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice-president;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

b. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described above.

(2) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and

(3) Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

12. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution

control agency and the Regional Administrator. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

13. Penalties for Falsification of Reports

The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

PART III
OTHER CONDITIONS

A. The "daily average" concentration means the arithmetic average (weighted by flow value) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow value) of all the samples collected during that calendar day.

The "daily maximum" concentration means the daily determination of concentration for any calendar day.

B. "Composite sample" means a sample consisting of a minimum of three (3) grab samples of effluent collected at regular intervals over a normal operating day and combined proportional to flow, or a sample continuously collected proportional to flow over a normal operating day.

C. Test Procedures

The effluent characteristics "soluble radium 226" and "total radium 226" shall be measured by Method 706 "Radium 226 in Water" in accordance with the procedures discussed for soluble radium 226 and total radium 226 in Standard Method for the Examination of Water and Wastewater, 14th Edition, 1975, pg. 667, or an equivalent method.

APPENDIX D

-60
86

(X) APPROVED
( ) DISAPPROVED

STATE OF OKLAHOMA
REGISTRATION FORM FOR COMMERCIAL FERTILIZER

DATE August 14, 19 86

This is to certify the following to be a true copy of the statement which will be plainly printed on the label bag affixed to every lot or parcel of the Commercial Fertilizer indicated below, sold, offered or exposed for le in the State of Oklahoma for use within this State:

a. Net weight (show package weight or bulk) Liquid Bulk

b. Brand name and grade Nitrogen Fertilizer Solution 2-5% N*; 0-P; 0-K (NOTE: Material lots to be analyzed for Nitrogen content; guarantee on shipment invoice)

c. The name, mailing address and telephone number of manufacturer Sequoyah Fuels Corporation

Sequoyah Facility, P. O. Box 267, Gore, Oklahoma 74435

d. The name, mailing address and telephone number of registrant-(if different than above)

e. The place and address where manufactured Sequoyah Facility; Gore, Oklahoma

GUARANTEED ANALYSIS

Total Nitrogen	(N)	2 %
Available Phosphoric Acid-P_2O_5	(P)	0 %
Soluble Potash-K_2O	(K)	0 %
Total Phosphoric Acid (Rock Phosphate only)		0 %

Other *Analysis of lots conducted prior to bulk shipments; guaranteed total Nitrogen to be included in shipment invoice in accordance with O.S. Section 8-63.

S. D. Emerson, General Manager
APPLICANT
Sequoyah Operations

Approved and filed for record this 27th day of August, 1986

Dale O Laubach
PROGRAM ADMINISTRATOR

RETURN TWO COPIES OF REGISTRATION FORM & A PRODUCT LABEL TO:

OKLAHOMA DEPARTMENT OF AGRICULTURE
PLANT INDUSTRY DIVISION
2800 N. Lincoln Blvd.
Oklahoma City, OK 73105
(405) 521-3864

See Supplement

SUPPLEMENT TO SEQUOYAH FUELS CORPORATION
COMMERCIAL FERTILIZER REGISTRATION
FOR NITROGEN FERTILIZER SOLUTION

1. Material lots to be analyzed for nitrogen.

2. Normal analysis of nitrogen 2-5%. However, it will be guaranteed 2% nitrogen.

3. All requirements of the Nuclear Regulatory Commission, Amendment No. 17 dated June 30, 1982, will be followed when using the product or selling the product. Any subsequent changes by the Commission will be submitted to the Plant Industry Division, Oklahoma Department of Agriculture for approval.

4. A five dollar ($5.00) quarterly Fertilizer Inspection Fee will be submitted each quarter the product is registered.

5. An inspection fee of thirty-five cents (35¢) per ton will be paid on all of the product which is sold to the public. The inspection fee will not be paid on that portion of the product used on Sequoyah Fuels Corporation's own property.