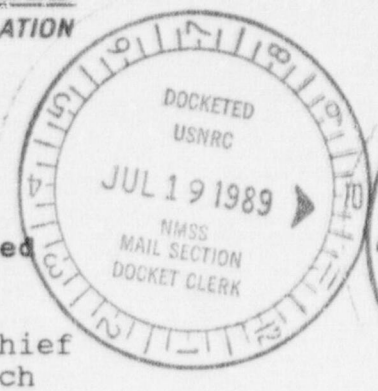
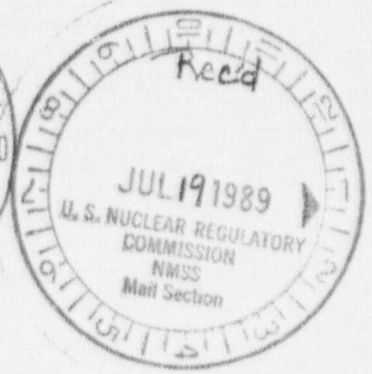
RETURN TO ~~396-SS~~ PI-137

RE: 40-8027 89101-N
PDR/LPDR

SEQUOYAH FUELS CORPORATION

July 14, 1989





Certified Mail
Return Receipt Requested

Mr. Leland C. Rouse, Chief
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS
U.S. NUCLEAR REGULATORY COMMISSION
Washington, D.C. 20555

RE: License SUB-1010; Docket No. 40-8027
Revision to Part II, Chapters 11 and 12

Dear Mr. Rouse:

As enclosures to this letter, Sequoyah Fuels Corporation (SFC) is transmitting to you revisions to Part II, Chapters 11 and 12, of SFC's License SUB-1010. Chapter 11 has been updated to reflect recent reorganizational changes in the Operations Department and the Waste Treatment and Disposal Department. These changes are in addition to those communicated in the previous submittal dated April 11, 1989. A major revision has been made to Chapter 12 to update the license concerning SFC's radiation protection program. The table of contents will be updated at a later date. All changes have been bar-marked in the left-hand margin for your convenience.

Should you have questions concerning any of these revisions, please contact Lee Lacey at 918/489-3207.

Sincerely,

Scott P. Knight

Scott P. Knight
Vice President
Administration

LRL:vp

Enclosures as stated

cc: R. E. Hall, URFO - Region IV
K. E. Asmussen, General Atomics
File

25735

Hwy 10 & I-40 P.O. Box 610 Gore, Oklahoma 74435 Telephone (918) 489 5511 Facsimile (918) 489 5620

add'l mjs DF04

DOCKET NO. 40-8027
CONTROL NO. 25735
DATE OF DOC. July 14, 1989
DATE RCVD. July 19, 1989
FCUF ✓
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FCTC
DATE 7/19/89
PDR ✓
LPDR ✓
I&E REF. ✓
SAFEGUARDS
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CHAPTER 11. ORGANIZATIONAL AND PERSONNEL

11.1 Unit Functions

The President, Sequoyah Fuels Corporation shall have overall responsibility for the safe operation of the Sequoyah Facility. Additional responsibility has been assigned to the Vice President, Administration; Vice President Operations; the Vice President, Business Development; and the Controller for various functions as described in Chapter 2.0 of the license.

The facility organization consists of ten departments, each headed up by a Manager who reports to a Division Vice President as shown in Figure 11-1. The functional responsibilities of the various departments are described in Chapter 2.0.

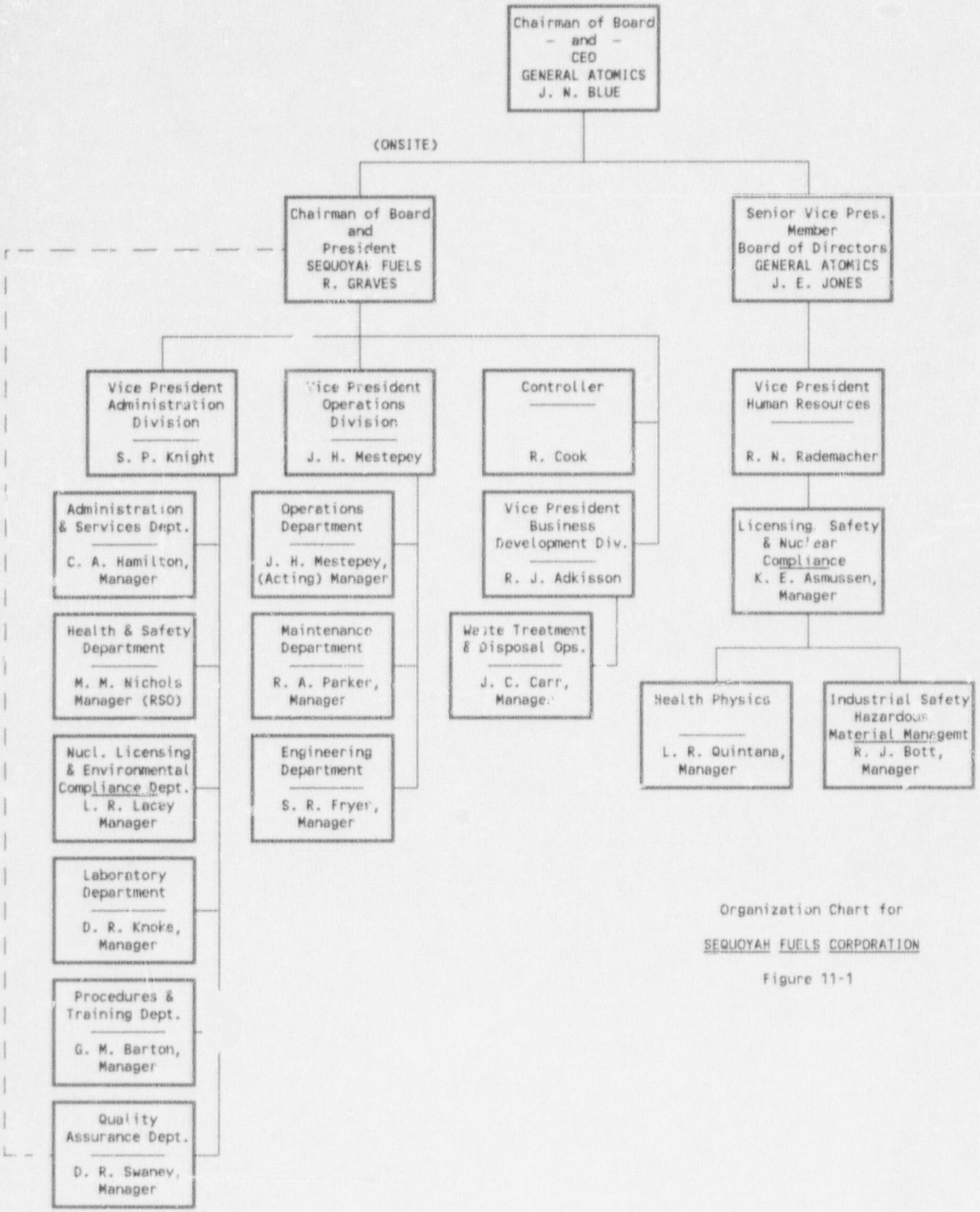
11.2 Organizational Procedures

In view of the company's basic concern for the well-being and protection of its employees and for the health and safety of the public, and in the discharge of its responsibilities under public laws and regulations, a stringent and effective program is maintained for the control of radiation and contamination hazards. To conduct the program, organizational components are established to provide not only for strong facility management in radiation safety but also for independent development of process and equipment criteria and health and safety standards, and audit thereof, under conditions which minimize the length of reporting lines and maximize the effectiveness of management control.

A basic premise of Sequoyah Fuels Corporation and General Atomics is that every individual has a personal responsibility for carrying out his assigned task in the manner which will not only achieve its operational objectives, but will do so without endangering the health and safety of that individual, his co-workers, or the public. It follows that every person in the chain of operational command has responsibility for health and safety matters for all operations under his control.

It is also a basic premise of Sequoyah Fuels Corporation and General Atomics that there be a strong independent overview of the activities of the line operations to assure, through a check and balance system, that health and safety problems have been adequately considered in the process selection and equipment design; that adequate procedures have been established to assure that the process and equipment are operating in a safe manner; and that personnel are adequately protected against radioactivity and radiation hazards.

Organizational responsibilities specific to the Sequoyah Facility are established to give full weight to these two premises. The organizational responsibilities are discussed in Chapter 2.0 of the license.



Organization Chart for

SEQUOYAH FUELS CORPORATION

Figure 11-1

11.3 Functions of Key Personnel

The functions of key personnel both in General Atomics and Sequoyah Fuels Corporation are discussed in Chapter 2.0 of the license.

11.4 Education and Experience of Key Personnel

Rodney N. Rademacher, Vice President, Human Resources, General Atomics

Education

BA Industrial Psychology, San Diego State University, 1962.
Graduate Studies, San Diego State University.
Graduate Studies, University of Colorado, Colorado Springs.

Experience

1974-	Vice President, Human Resources, General Atomics. Employed by General Atomics (GA) since early 1974 in various management capacities. As Director of Human Resources, performed in essentially the same capacity. Responsible for designing, developing and directing corporate human resource programs, policies and procedures so as to effectively support the company's overall business objective. Functions as chief advisor on the personnel implications of company problems, business procedures and other management actions. The Security Force Department was added to his responsibilities in August 1985 and the Licensing and Nuclear Compliance Department in March of 1986, giving him a very broad understanding of the company's people, programs and business needs and requirements. He is intimately familiar with his organization's operations, requirements and applicable NRC and other government requirements. Because of his strong human resources and safety orientation, he has developed an influential, positive working relationship with most GA managers and employees.
1973-1974	Director of Employee Relations for GETZ Brothers & Company, Inc.
1968-1973	Manager of Corporate Employment and EEO for Colorado Interstate Corporation.
1957-1968	Personnel Generalist for SDG&E.
1955-1956	U.S. Marine Corps Reserves.

Dr. Keith E. Asmussen, Manager, Licensing, Safety and Nuclear Compliance, General Atomics

Education

Ph.D., Nuclear Engineering, Iowa State University of Science and Technology, 1969.
Graduate Study in Nuclear Engineering (1 year).
University of Arizona, 1967.
MS, Nuclear Engineering, Iowa State University, 1966.
BS Engineering Operations (Industrial Engineering),
Iowa State University, 1965.

Registered Professional Engineer, Nuclear Engineering, California.
Member, San Diego Section American Nuclear Society.

Experience

General Atomics, San Diego, CA

Joined General Atomics (GA) Nuclear Analysis and Reactor Physics Department as a Senior Reactor Physicist in 1969. His initial responsibilities involved nuclear fuel management analyses and reactor physics calculations. In 1972 he was temporarily assigned to the Fuel Performance Branch where he was responsible for developing the reactor core thermal safety limit and other fuel related technical specifications for a large High Temperature Gas-cooled Reactor (HTGR).

In 1973, and again in 1976, he served as a site physicist at the Fort St. Vrain (FSV) HTGR. His responsibilities involved planning, coordinating and participating in the initial fuel loading, subcritical testing and monitoring, zero power physics testing and rise-to-power testing.
Beginning in 1974, he spent 18 months working in the HTGR physics group of Hochtemperatur Reaktor Bau (HRB) located in Mannheim, West Germany. At HRB he acted as GA liaison and consultant regarding HTGR core and fuel design.

In 1976, returned to GA's San Diego offices and became a section leader engaged in Lead Plant HTGR core physics design and nuclear analysis.

Late in 1977, he was given the special assignment of coordinator of all testing (in-pile and out-of-pile) related to resolving the FSV core temperature fluctuation problem.

In 1979, he became Manager, Fort St. Vrain Fuel Engineering where he was given the additional responsibility for directing all the technical analyses required to design, manufacture and license FSV reload segmert fuel. Other responsibilities included fuel accountability, core reactivity monitoring and monitoring the performance of the core and fuel. He played a key role in developing revised Technical Specifications for the FSV reactor and obtaining NRC release for unrestricted Fuel Power operation. He worked intimately with Public Service Company of Colorado licensing personnel on a variety of issues involving personnel interaction with NRC staff. In 1983, he became Coordinator, Fort St. Vrain Core Activities. In this capacity his technical responsibilities remained unchanged but he assumed responsibility ads project manager of these and related tasks.

From 1979 to 1985, Dr. Asmussen served on GA's Fuel Material Review Board which reviews and dispositions nonconformance reports, waivers, etc., related to the FSVC Fuel Specifications.

In 1985, he became Manager of Licensing and Nuclear Material control. His areas of responsibility were broadened in 1986 when he became Manager, Licensing, Safety and Nuclear Compliance. In this capacity, he is responsible for administering GA's licenses, liaison with regulatory agencies and reviewing and approving all work involving radioactive material for compliance with applicable regulations and license conditions. In addition, he is responsible for the overall planning, coordination, and administration of GA's special nuclear material control, nuclear safety, health physics, and industrial safety.

Laura R. Quintana, Manager, Health Physics, General Atomics

Education

BS Biology, Chemistry, New Mexico Highlands University, 1976.
MS Applied Nuclear Science (Health Physics), Georgia Institute of Technology, 1979.

Experience

General Atomics, San Diego, CA

8/82- Manager, Health Physics. Assures compliance with 10 CFR Parts 19 and 20 as well as state and U.S. Nuclear

Regulatory Commission license-imposed radiological safety requirements. Provides review and approval of radiological safety of activities involving special nuclear materials or other radioactive materials, monitors activities involving special nuclear or radioactive materials, personnel monitoring, dose rate measurement, radioactive material detection and assay, air and water sampling and environmental monitoring.

Provides radiological safety support in decontamination/decommissioning of facilities, including low-level radioactive waste disposal. This involves the identification of radionuclides, quantities and classifications as well as radiation and contamination measurements.

2/80-5/82 The Salk Institute, La Jolla, CA. Assistant Radiation Safety Officer and subsequently Radiation Safety Officer. Responsible for the radiation safety program and the radioactive material licensing of two affiliated companies, La Jolla Biological Associates and the Salk Institute Biotechnology Industrial Associates, Inc.

6/76-9/78 Oak Ridge National Laboratory, Oak Ridge, TN. Initially assigned a research project for the Environmental Sciences Division. Subsequently, joined the Health Physics Division as a health physics technician.

Ronald J. Bott, Industrial Safety Engineer, General Atomics

Education

BS Mechanical Engineering, San Diego State University, 1970. Numerous special courses in industrial safety and materials engineering.

Licenses

Registered Safety Engineer, California #1593.

Qualifications

Ten (10) years experience in developing, implementing, and reviewing company safety, fire, and health programs. Broad working knowledge of federal and state occupational safety and health codes, hazard communication programs, and environment regulations.

Experienced in accident/incident investigations involving worker's compensation insurance and loss prevention programs.

Strong technical background in mechanical engineering and manufacturing processes, including experience with plastic processing and fabrication.

Experience

1973- General Atomics.

1984-1988 Industrial Safety Engineer, General Atomics. Administer industrial safety at General Atomics, including accident statistics, hazardous work requests, safety committee development, worker's compensation reporting, year-end reporting, accident investigation of serious incidents, liaison with nuclear waste management, and coordination of industrial safety programs with Industrial Hygiene, Health Physics, Emergency Services, and Medical. Responsibilities include non-nuclear waste transportation projects and hazardous material management. Recent work as Hazardous Material/Hazardous Waste Manager includes fire department audits, team review by federal, state, and local agencies, and environment assessment by Chevron Corporation.

1982-1984 Senior Engineer, General Atomics. As Task Engineer, responsible for development, fabrication, and installation of large electrical coils (18 feet in diameter) and patch board systems. Basic design of electrical coils including drawings and specifications (stress, electrical, cooling), design procurement and installation of a complete coil winding facility (water heating systems, vacuum systems, winding tables, sand blasting, insulation wrapping, special power tools, copper handling solvent cleaning). Complete fabrication of coils and vacuum potting in epoxy matrix. Electrical testing (high voltage, high current).

1979-1982 Safety Engineer, General Atomics. Reviewed hazardous work requests and developed appropriate safety measures, including hazardous chemical waste, specific processes with potential safety considerations (i.e., cryogenic, explosive atmospheric, flammable liquids, industrial hygiene, hoisting/lifting.) Also conducted system safety analysis, safety inspections. Oversaw company safety procedures. Reviewed state codes and federal regulations. Responded to emergency response fires, industrial accidents, vehicle emergencies, and occupational illnesses and accidents.

1975-1979 Safety Chief, General Atomics. Developed, implemented, and maintained comprehensive accident prevention program involving line management. Implemented controls to eliminate or minimize potential hazards (laser, high voltage microwave radiation, industrial work practices). Responsible for training and indoctrination of 70-150 employees.

1973-1975 Mechanical Engineer, General Atomics. Supervised manufacturing of equipment for fusion research and development. Work included construction of large electrical coils, stainless steel cooling systems, ceramic insulations, high vacuum systems, and cryogenic supply systems. Assisted physics personnel in development of diagnostic systems and vendor liaison. Supervisor of machine shop, welding laboratory and sheet metal fabrication area.

Professional Associations

Member, American Society of Safety Engineers, Research and Development section.
Member, Pacific Coast Electrical Association, Safety and Health Committee.
Member, Industrial Environmental Association, San Diego, CA.

Scott P. Knight, Vice President, Administration, Sequoyah Fuels Corporation

Education

BS Engineering, U.S. Military Academy.
JD, DePaul University College of Law.
MBA Operations and Financial Management, University of Chicago.
Radiation Protection Program, Harvard University School of Public Health.
Continuing education in chemical operations through American Institute of Chemical Engineers Courses.

Experience

11/88- Vice President, Administration Division, Sequoyah Fuels Corporation.

6/88-10/88 General Manager, Sequoyah Fuels Corporation.

1986-1988 Manager, Administration and Services, Sequoyah Fuels Corporation.
Chairman, Plant Operations Review Committee. Acting Facility Manager during absences of the General Manager, Sequoyah Facility.

1986 Manager, Operations Analysis, Kerr-McGee Corporation.

1984-1985 Graduate studies at University of Chicago; President of not-for-profit corporation.

1970-1983 Served as commissioned officer in the United States Army. Managed military operational organizations, from 40 to 1,250 persons in size, which employed heavy equipment and sophisticated systems to accomplish varied combat, security and training missions worldwide.

Management Analyst. Developed an automated inventory control system for the Army Medical Center, San Francisco, California.

Managed the Operations division at the U.S. Army Armor School.

Legal Counsel. Senior Prosecutor for U.S. forces stationed along East German border; managing attorney trial defense and legal assistance centers.

Lee R. Lacey, Manager, Nuclear Licensing and Environmental Compliance, Sequoyah Fuels Corporation

Education

MS Human Resources Development, Oklahoma State University.
BS Engineering Technology, Oklahoma State University.
U.S. Navy:
Electronics Technician Class "A" School.
Basic Nuclear Power School.
Nuclear Power Training Unit (Prototype Training).
Submarine School.

Experience

1/89 Manager, Nuclear Licensing and Environmental Compliance, Sequoyah Fuels Corporation.

1986-1988 Manager, Health, Safety, and Environment, Sequoyah Fuels Corporation, Department Manager for the Health, Safety and Environment Department at the Sequoyah Facility. Responsible for the following programs: health physics, industrial safety, environmental monitoring, industrial hygiene, physical security, occupational health and emergency preparedness. Served as the Facility Contingency Plan Coordinator. Directly supervised the Facility Radiation Safety Officer.

1985-1986 Manager, Training Services, Quadrex Corporation, Tulsa, Oklahoma. Managed Quadrex's training services business. Served as a consultant in the areas of nuclear training, health physics, emergency preparedness, and regulatory compliance.

1983-1985 Manager of Projects, Quadrex Corporation, Tulsa, Oklahoma. Managed large consulting projects and directed the business activities of the Projects Department. Technical involvement included development and implementation of training programs, conduct of audits, development of training administrative controls, and support of INPO accreditation programs. Consulted in health physics and emergency preparedness.

1981-1983 Manager of Radiological Training and Services, Quadrex Corporation, Tulsa, Oklahoma. Directed the business activities of the Radiological Training and Services Section. Developed emergency plan procedures, developed drill scenarios, and managed emergency exercises. Developed radiological training programs and materials. Wrote a nuclear facility Radiation Protection Plan manual.

1980-1981 Senior Health Physics Consultant, Quadrex Corporation, Tulsa, Oklahoma. Supervised health physics, training, and emergency preparedness projects for utility clients. Assigned as Radiation Safety Officer for a radiological facility decontamination project. Revised emergency plans and developed implementing procedures. Developed a comprehensive health physics technician training program.

1980 Reactor Health Physics Inspector, U.S. Nuclear Regulatory Commission, Atlanta, Georgia. Conducted inspections of power reactor health physics programs. Performed as a member of the Health Physics Appraisal Team.

1977-1980 Health Physicist, Duke Power Company, Charlotte, North Carolina. Assignment to the corporate health physics staff. Responsibilities included training, exposure control, respiratory protection, and procedure development. Performed technical audits and ALARA design reviews.

1974-1977 Administrator/Recruiter, U.S. Naval Reserve, Stillwater, Oklahoma. Provided administrative and recruiting support for units of the Naval Reserve.

1966-1972 Reactor Operator/Electronics Technician, U.S. Navy. Nuclear Reactor Operator on S1W and S5W submarine reactor plants.

Professional Recognition

- Certified Hazardous Materials Manager
- American Industrial Hygiene Association
- Health Physics Society
- USNRC Certificate of Appreciation - Three Mile Island Response
- Health Physics Society Continuing and General Education Committee (1986-Present)
- American Industrial Hygiene Association Committee on Continuing Education (1987-Present)
- Atomic Industrial Forum Committee on Radiation Protection (1982-84)
- Atomic Industrial Forum Ad Hoc Committee on Engineering Techniques to Reduce Occupational Exposures (1978-79)
- American Board of Health Physics Certification, Part 1
- Certified Hazard Control Manager

Carolyn L. Couch, Senior Environmental Engineer, Sequoyah Fuels Corporation

Education

BS Biology (Minor in Chemistry), East Central University, Ada, Oklahoma.

Experience

1/89- Senior Environmental Engineer, Sequoyah Fuels Corporation.

1985-1989 Environmental Engineer, Sequoyah Fuels Corporation.

1979-1985 Associate Engineer, Sequoyah Facility, Kerr-McGee Corporation.

Michael M. Nichols, Manager, Health and Safety, Sequoyah Fuels Corporation

Education

BS Engineering Technology (Health Physics), Oklahoma State University.
Certification - Hazards Control Manager, Master Level.

Experience

1/89	Manager, Health and Safety (RSO), Sequoyah Fuels Corporation.
1988-1989	Manager, Health Physics and Industrial Hygiene (RSO), Sequoyah Fuels Corporation.
1985-1988	Superintendent of Plant Support, (Radiation Protection Manager) Wolf Creek Power Station, Wolf Creek Nuclear Operating Corporation. Responsible for Fire Protection, Radiation Protection and Emergency Planning. Responsible for the management, direction, and supervision of a department of 175 personnel. Interfaced with FEMA, NRC, EPA and other State and Local Regulatory agencies in areas of compliance, inspection and joint training. During plant start-up: responsible for installation, testing and modification of radioactive and chemical systems.
1979-1985	Radiation Protection Manager, Wolf Creek Nuclear Operating Corporation. Responsible for development of programs and procedures to assure compliance with regulatory requirements, Radiation Protection, Emergency Planning, internal and external dosimetry, nuclear plant start-up and power ascension and industrial and chemical safety. Developed site specific Health Physics Program description for Wolf Creek final Safety Analysis Report. Responsible for the development and implementation of the Emergency Plan. Directed development of Technician and Engineer Training Program as well as plan wide radiation worker, GET, safety/chemical safety and respiratory protection and Emergency Plan Training.
1973-1979	Supervisor, Radiological and Industrial Hygiene Program Development, Arkansas Nuclear One, Arkansas Power and Light Company. Responsible for Radiological and Industrial Hygiene Program development and implementation including regulatory interface, equipment calibration for fixed and portable instrumentation and associated training. Developed procedures for analyses of secondary and primary chemistry samples; performed chemical and radiochemical analyses of various samples; developed and implemented various procedures including instrument calibration, system start-up and repair.
1972-1973	Technician, Enrico Fermi Nuclear Power Plant, Detroit Edison Company. Supervision of personnel during start-up efforts, de[illegible]ling, and decommissioning Fermi I-LMFBR; supervised activities during fuel and major component removal.

1971-1972	Laboratory Technician, Enrico Fermi Nuclear Power Plant, Detroit Edison Company. Part-time chemistry and radiological technician activities and analyses while attending Oklahoma State University.

Kenneth G. Simeroth, Supervisor-Health Physics/Assistant RSO

Education

BS Industrial Technology, Northeastern State University.
AA Northeastern State, Tahlequah, Oklahoma (Major: Arts and Physics).
Certificate, Chemical Operator School, Gore, Oklahoma.
Radiological Technologist Course, Rockwell International.

Experience

1/89-	Supervisor-Health Physics/Assistant RSO, Sequoyah Facility, Sequoyah Fuels Corporation.
1970-1988	Senior Health and Safety Technician, [Sequoyah Facility], Sequoyah Fuels Corporation, [Kerr-McGee Corporation]
1970	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.

Charlotte A. Hamilton, Manager, Administration and Services, Sequoyah Fuels Corporation

Education

BA Business Administration/Business Education, Oklahoma City University.
JD Oklahoma City University School of Law.

Experience

6/88-	Manager, Administration and Services, Sequoyah Fuels Corporation.
1/87-6/88	Manager, Industrial Relations, Sequoyah Facility, Sequoyah Fuels Corporation.
1981-1986	Services Manager, Clovis Point Mine, Kerr-McGee Coal Corporation.
1979-1981	Administrative/Personnel Supervisor, Clovis Point Mine, Kerr-McGee Coal Corporation.

1978-1979 Administrative/Personnel Supervisor, Jacobs Ranch Mine, Kerr-McGee Corporation.

1976-1978 Human Resources Intern - Management Rotation Program, Kerr-McGee Corporation.

1969-1976 Kerr-McGee Corporation. Various positions in retail Oil and Gas Marketing and the Nuclear Corporation.

Glenn M. Barton, Manager, Procedures/Training and Community Relations

Education

BA Business, Oklahoma City University.
MA Human Relations, University of Oklahoma.

Experience

6/88- Manager, Procedures/Training and Community Relations, Sequoyah Facility, Sequoyah Fuels Corporation.

1986-6/88 Manager, Procedures and Training, Sequoyah Facility, Sequoyah Fuels Corporation.

1985-1986 Manager, Employee Relations, U.S. Onshore Division of Oil and Gas Division.

1981-1985 Manager, Training and Personnel Services, Kerr-McGee Corporation.

1979-1981 Administrator, Employee Relations, Kerr-McGee Corporation.

1975-1979 Employee Relations Specialist, Kerr-McGee Corporation.

1974-1975 Senior Job Analyst, Kerr-McGee Corporation.

1972-1974 Senior Administrative Analyst, Kerr-McGee Corporation.

1967-1972 Systems Analyst, Kerr-McGee Corporation.

Don R. Knoke, Manager, Sequoyah Fuels Laboratory

Education

BS Chemistry, West Virginia University.

Experience

5/86-	Manager, Facility Laboratory, Sequoyah Fuels Corporation.
1986-	Senior Analytical Chemist, Sequoyah Facility, Sequoyah Fuels Corporation.
1969-1986	Supervisor, Laboratory Instruments, Sequoyah Facility, Kerr-McGee Corporation.
1968-1969	Chemist, Method Development, Sequoyah Facility, Kerr-McGee Corporation.
1966-1968	Chemist, Method Development, Amceel Plant, Celanese Fibers Company.
1957-1966	Chemist, Mallinckrodt Chemical Works, Uranium Division, Weldon Springs, Missouri.

David R. Swaney, Manager, Quality Assurance, Sequoyah Fuels Corporation

Education

BS Chemistry, Antioch College.
Certified - American Chemical Society.

Experience

4/86-	Manager, Quality Assurance, Sequoyah Fuels Corporation.
1969-1986	Manager, Facility Laboratory, Sequoyah Facility, Sequoyah Fuels Corporation.
1966-1969	Supervisor, Department of Chemical Control, Mallinckrodt, Inc., St. Louis, Missouri.
1961-1966	Supervisor, Analytical Department, Uranium Division, Mallinckrodt Chemical, Weldon Spring, Missouri.
1958-1961	Staff Assistant, Analytical Department, Uranium Division, Mallinckrodt Chemical, Weldon Spring, Missouri.
1953-1957	Chemist, Department of Chemical Control, Destrehan Facility, Mallinckrodt Chemical, St. Louis, Missouri.
1951-1953	Department of Chemical Control, Mallinckrodt Chemical, St. Louis, Missouri.

Ronald J. Adkisson, Vice President, Business Development, Sequoyah Fuels Corporation

Education

BBA Marketing/Management, Central State University.

Experience

12/88-	Vice President, Business Development, Sequoyah Fuels Corporation.
8/83-11/88	Director, Contract Management and Cimarron Operations.
1981-1983	Director, Uranium Sales, Kerr-McGee Nuclear Corporation.
1979-1981	Manager, Technical Sales, Kerr-McGee Nuclear Corporation.
1978-1979	Manager, Regulatory Claims, Kerr-McGee Nuclear Corporation.
1976-1978	Sr. Planning Analyst - Market Planning, Kerr-McGee Nuclear Corporation.
1975-1976	Claims Representative, Kerr-McGee Corporation.
1973-1975	Accountability & Security Supervisor, Kerr-McGee Nuclear Corporation.
1972-1973	Nuclear Technician, Kerr-McGee Nuclear Corporation.

James C. Carr, Manager, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation

Education

Chemistry, 3 years, University of Colorado, Boulder, Colorado
Diploma, [illegible]or High School, Agar, South Dakota.

Experience

12/87	Manager, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation.
1985-1987	Manager, Process Engineering, Sequoyah Fuels Corporation.
1984-1985	Manager, Sequoyah Facility, Sequoyah Fuels Corporation.
1978-1984	Manager, Engineering, Kerr-McGee Nuclear Corporation.

1975-1978	Senior Process Engineer, Kerr-McGee Nuclear Corporation.
1972-1975	Technical Supervisor - FFTF, Kerr-McGee Nuclear Corporation.
1971-1972	Plutonium Plant Supervisor, Kerr-McGee Nuclear Corporation.
1969-1971	Senior Process Engineer, Kerr-McGee Nuclear Corporation.
1963-1969	Shift Supervisor, Dow Chemical Corporation, Rocky Flats.

James H. Mestepey, Vice President, Operations, Sequoyah Fuels Corporation

Education

BS General Science (Chemistry, Physics & Mathematics), Louisiana State University.

Experience

11/88-	Vice President, Operations, Sequoyah Fuels Corporation.
7/87-10/88	Manager of Operations, Sequoyah Fuels Corporation.
4/87-7/87	Manager, Special Projects and Process Technology, Sequoyah Facility, Sequoyah Fuels Corporation.
1985-1987	Senior Project Manager, New York State Energy Research and Development Authority, West Valley, New York.
1984-1985	Manager, Special Nuclear Studies, Allied Corporation, Barnwell, South Carolina.
1979-1983	Manager, Plant Engineering and Maintenance, Allied-General Nuclear Services, Barnwell, South Carolina.
1977-1979	Manager, Design Engineering, Allied-General Nuclear Services, Barnwell, South Carolina.
1973-1977	Superintendent, UF_6 Facility, Allied-General Nuclear Services, Barnwell, South Carolina.
1971-1973	Technical Superintendent, Metropolis Works, Allied Corporation, Metropolis, Illinois.

R. A. Parker, Manager, Maintenance, Sequoyah Fuels Corporation

Education

BS Electrical Engineering, Western Michigan University.

Experience

6/86-	Manager, Facility Maintenance, Sequoyah Fuels Corporation.
1982-1986	Superintendent Prep Plant, Kerr-McGee Coal Corporation, Clovis Point Mine.
1980-1982	Senior Construction Engineer, Kerr-McGee Coal Corporation, Jacobs Ranch and Clovis Point Mines.
1979-1980	Construction Engineer, Kerr-McGee Coal Corporation, Jacobs Ranch and Clovis Point Mines.
1978-1979	Development and Implementation of Prevent Maintenance Program, Atlantic Richfield company, Black Thunder Mine.
1976-1978	Development and Implementation of Preventive Maintenance Programs, Eveleth Mines, Thunderbird Mines.
1975-1976	Electrical Engineer, Hibbing Taconite Company, Hibbing, Minnesota.
1972-1975	Instructor, Michigan Technological University, Houghton, Michigan.
1969-1972	Electrical Engineer, Consumers Power Company, Jackson, Michigan.

Sam R. Fryer, Manager, Engineering, Sequoyah Fuels Corporation

Education

BS Chemical Engineering, Massachusetts Institute of Technology.
MBA Marketing Concentrate, Harvard Business School.
Registered Professional Engineer in Oklahoma.

Experience

8/86-	Manager, Engineering, Sequoyah Fuels Corporation.
1985-1986	Director, Technology and Engineering, Sequoyah Fuels Corporation.

1980-1985	Manager, Planning and Analysis, Roy M. Huffington, Inc., Houston, Texas.
1977-1980	Manager, Planning, Cities Service Company, Tulsa, Oklahoma.
1966-1977	Manager of Chemicals Getty/Skelly Oil Company. Other positions during this period included Development Engineer, Vice President and Director Chemland Corporation (subsidiary), Vice President and Director Hawkeye Chemical Company (subsidiary), Director Yong-Nam Chemical Company (subsidiary).
1964-1966	Attended Harvard MBA Program.
1960-1964	Development Engineer, Dow Chemical Company.

Michael R. Chilton, Area Manager, UF_6, Sequoyah Fuels Corporation

Education

BS Chemical Engineering, University of Missouri.

Experience

5/89-	Area Manager, UF_6, Sequoyah Fuels Corporation.
1/89-5/89	Area Manager, UF_6 & DUF_4, Sequoyah Fuels Corporation.
1/88-1/89	Manager, DUF_4 and Process Engineering, Sequoyah Fuels Corporation.
1986-1988	Manager, DUF_4, Sequoyah Facility, Sequoyah Fuels Corporation.
1985-1986	Operations Liaison, DUF_4 Construction Project, Sequoyah Fuels Corporation.
1981-1985	Process Engineer, Sequoyah Fuels Corporation.

Tom L. Johns, Area Manager, UO_3, Sequoyah Fuels Corporation

Education

BS Chemical Engineering, University of Arkansas.

Experience

5/89-	Area Manager, UO_3, Sequoyah Fuels Corporation.
9/88-5/89	Senior Process Engineer, Sequoyah Fuels Corporation.
1985-9/88	Instrumentation Engineer, Power Specialties, Inc.

Larry A. Tharp, Manager, Process Engineering, Sequoyah Fuels Corporation

Education

BSCHE Chemical Engineering, University of Tulsa.

Experience

1/89-	Manager, Process Engineering, Sequoyah Fuels Corporation.
1986-1988	Area Manager, Sequoyah Facility, Sequoyah Fuels Corporation.
1979-1986	Senior Process Engineer, Sequoyah Facility, Kerr-McGee Corporation.
1970-1978	Area Supervisor, Sequoyah Facility, Kerr-McGee Corporation.
1969-1970	Senior Engineer, Sequoyah Facility, Kerr-McGee Corporation.
1963-1969	Technical Assistant to the Superintendent, International Paper Company, Pine Bluff, Arkansas.

Joseph E. Bohannon, Area Manager, DUF_4, Sequoyah Fuels Corporation

Education

BS Chemical Engineering, University of Oklahoma.
Registered Professional Engineer in Oklahoma.
Radiation Safety Specialty Training, Oklahoma State University.
Visible Emissions Training, Eastern Technical Associates.
Economic Evaluation and Investment Decision Methods, Colorado School of Mines.
Practical Project Economic Evaluation, A.I.C.H.E.
Selected Diffusional Unit Operations, Oklahoma State University.
Crystallization Technology, Center for Professional Development.

Experience

5/89-	Area Manager, DUF_4, Sequoyah Fuels Corporation.
7/87-5/89	Senior Process Engineer, Sequoyah Fuels Corporation.
6/85-7/87	Engineer, Technology Division, Kerr-McGee Corporation.
6/82-6/85	Associate Engineer, Technology Division, Kerr-McGee Corporation.

Farrell Mathews, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Sapulpa High School.

Experience

1/89-	Shift Supervisor, Sequoyah Fuels Corporation.
1986-1988	Area Superintendent, Sequoyah Facility, Sequoyah Fuels Corporation.
1970-1986	Area Supervisor, Sequoyah Facility, Kerr-McGee Corporation.
1969-1970	Shift Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation.

John L. Swimmer, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Vian High School, Vian, Oklahoma.
Connors State College (30 hours).

Experience

1/88-	Shift Supervisor, Sequoyah Fuels Corporation.
11/86-1/88	Area Superintendent, Sequoyah Facility, Sequoyah Fuels Corporation.
10/68-11/86	Shift Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation, Kerr-McGee Corporation.

Jerry Sam Gilbreath, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Vian High School, Vian, Oklahoma.

Experience

11/86-	Shift Supervisor, Sequoyah Fuels Corporation, Kerr-McGee Corporation.
6/78-11/86	Assistant Control Room Operator, Sequoyah Facility, Sequoyah Fuels Corporation.
11/71-6/78	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
6/[illegible]71	Chemical Operator Trainee, Sequoyah Facility, Sequoyah Fuels Corporation.
10/70-6/71	Laborer/Sampler, Sequoyah Facility, Sequoyah Fuels Corporation.

Sammie N. Moore, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, High School Graduate, Ft. Gibson, Oklahoma.

Experience

1/71-	Shift Supervisor, Sequoyah Fuels Corporation, Kerr-McGee Corporation.
1969-1971	Control Room Operator, Sequoyah Facility, Kerr-McGee Corporation.

J. C. Brewer, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Bokoshe High School.

Experience

1/72-	Shift Supervisor, Sequoyah Fuels Corporation, Kerr-McGee Corporation.

1969-1972 Control Room Operator, Sequoyah Facility, Kerr-McGee Corporation.

Richard Hughes, Jr., Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Okay High School, Okay, Oklahoma.

Experience

4/86- Shift Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation.

2/78-4/86 Assistant Shift Supervisor, Sequoyah Facility, Kerr-McGee Corporation.

1975-1978 Assistant Control Room Operator, Sequoyah Facility, Kerr-McGee Corporation.

1969-1975 Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.

Jimmy D. Hummingbird, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Stillwell High School, Stillwell, Oklahoma.

Experience

4/86- Shift Supervisor, Sequoyah Fuels Corporation.

1/79-4/86 Assistant Shift Supervisor, Sequoyah Facility, Kerr-McGee Corporation.

1970-1979 Control Room Operator, Sequoyah Facility, Kerr-McGee Corporation.

1969-1970 Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.

Jerry D. Clapp, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Hobbs High School, Hobbs, New Mexico.
Bailey Computer Training.

Experience

11/86-	Shift Supervisor, Sequoyah Fuels Corporation.
1976-1986	Control Room Operator, Sequoyah Facility, Sequoyah Fuels Corporation.
1969-1976	Chemical Operator, Sequoyah Facility, Sequoyah Fuels Corporation.

Barbara Sue Smith, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Braggs High School, Braggs, Oklahoma.
College Training - 3 years - John F. Kennedy College.

Experience

11/86-	Shift Supervisor, Sequoyah Fuels Corporation.
1977-1986	Chemical and Relief Operator, Sequoyah Facility, Sequoyah Fuels Corporation.
1977	Labor, Sequoyah Facility, Sequoyah Fuels Corporation.

Deborah Ann Emerson, Shift Supervisor, Sequoyah Fuels Corporation.

Education

GED American Schools, Chicago, Illinois.

Experience

7/87-	Shift Supervisor, Sequoyah Fuels Corporation.
1977-1987	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
1976-1977	Chemical Operator Trainee, Sequoyah Facility, Kerr-McGee Corporation.

1976 Laborer, Sequoyah Facility, Kerr-McGee Corporation.

Lloyd Macarty, Shift Supervisor, UO_3 Area, Sequoyah Fuels Corporation

Education

Diploma, Northeast High School, Oklahoma City, Oklahoma.

Experience

6/89-	Shift Supervisor, Sequoyah Fuels Corporation.
3/88-6/89	Control Room Operator II, Sequoyah Facility, Sequoyah Fuels Corporation.
1/79-3/88	Assistant Control Room Operator, Sequoyah Facility, Sequoyah Fuels Corporation
2/78-1/79	Relief Operator, Sequoyah Facility, Kerr-McGee Corporation
5/71-2/78	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
8/70-5/71	Chemical Operator Trainee, Kerr-McGee Corporation.
6/68-7/70	Salesman, Standard Life Insurance Company, Oklahoma City, Oklahoma.
1/68-6/68	Salesman, B.M.A. Insurance Company, Oklahoma City, Oklahoma.
9/67-12/67	Assistant Service Manager, City Chevrolet, Muskogee, Oklahoma.
12/65-8/67	Chemical Operator, Fansteel Metalurgical, Muskogee, Oklahoma.
8/60-9/65	Route Salesman, Carnation, Phoenix, Arizona.
5/54-7/60	Packing/Shipping Clerk, Macklanburg, Oklahoma City, Oklahoma.

Leroy M. Reid, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Sallisaw High School, Sallisaw, Oklahoma.

Experience

1/89-	Shift Supervisor, Sequoyah Fuels Corporation.
1988-1989	Relief and Project Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation.
1986-1988	Area Superintendent, Sequoyah Facility, Sequoyah Fuels Corporation.
1979-1986	Shift Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation.
1978-1979	Assistant Shift Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation.
1972-1978	Control Room Operator, Sequoyah Facility, Kerr-McGee Nuclear Corporation.
1969-1972	Assistant Control Room Operator and Chemical Operator, Sequoyah Facility, Kerr-McGee Nuclear Corporation.

Bill F. Bradley, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Sallisaw High School, Sallisaw, Oklahoma.
Connors State College (one year).

Experience

9/87-	Shift Supervisor, Sequoyah Fuels Corporation.
1978-1987	Assistant Shift Supervisor, Sequoyah Facility, Kerr-McGee Corporation.
1977-1978	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
1973-1977	Laboratory Technician, Sequoyah Facility, Kerr-McGee Corporation.
1970-1973	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.

Billy Jo McAffrey, Shift Supervisor, Sequoyah Fuels Corporation

Education

Diploma, Welch High School, Welch, Oklahoma.
N.E.O.A.M., Miami, Oklahoma.
Oklahoma State University (3-1/2 years), Stillwater, Oklahoma.

Experience

5/89-	Shift Supervisor, Sequoyah Fuels Corporation.
10/88-5/89	Chemical Operator IV, Sequoyah Fuels Corporation.
11/87-10/88	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
7/87-11/87	Shift Supervisor, UF_4 Area (temporary assignment), Sequoyah Facility, Kerr-McGee Corporation.
5/78-7/87	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
3/78-5/78	Chemical Operator Trainee, Sequoyah Facility, Kerr-McGee Corporation.
11/77-3/78	Laborer, Sequoyah Facility, Kerr-McGee Corporation.
5/76-5/77	Self-Employed (Farming), Welch, Oklahoma.
9/75-5/76	Oklahoma State University Meat Laboratory, Stillwater, Oklahoma.
5/75-9/75	Self-Employed (Farming), Welch, Oklahoma.

Louie G. Wells, Shift Supervisor, Sequoyah Fuels Corporation

Education

Connors State College - Sociology.
Northeastern State University (95 college credit hours).

Experience

5/89-	Shift Supervisor, Sequoyah Fuels Corporation.
10/88-5/89	Control Room Operator II, Sequoyah Fuels Corporation.
3/88-10/88	Control Room Operator I, Sequoyah Fuels Corporation.

8/83-3/88	Assistant Control Room Operator, Sequoyah Facility, Sequoyah Fuels Corporation.
1/79-8/83	Relief Operator, Sequoyah Facility, Kerr-McGee Corporation.
7/73-1/79	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
7/72-7/73	Chemical Operator Trainee, Sequoyah Facility, Kerr-McGee Corporation.
5/72-7/72	Laborer, Sequoyah Facility, Kerr-McGee Corporation.
7/71-5/72	Stillwell Canning Company, Stillwell, Oklahoma.
1/71-5/71	Central Mill, Tulsa, Oklahoma.
6/70-9/71	DuPont Plastics, Tulsa, Oklahoma.

Eulous Youngblood, Shift Supervisor, Sequoyah Fuels Corporation.

Education

Diploma, Gans High School, Gans, Oklahoma.

Experience

5/89-	Shift Supervisor, Sequoyah Fuels Corporation.
10/88-5/89	Control Room Operator II, Sequoyah Fuels Corporation.
12/80-10/88	Assistant Control Room Operator, Sequoyah Facility, Kerr-McGee Corporation.
6/78-12/80	Relief Operator, Sequoyah Facility, Kerr-McGee Corporation.
7/73-6/78	Chemical Operator, Sequoyah Facility, Kerr-McGee Corporation.
7/72-7/73	Chemical Operator Trainee, Sequoyah Facility, Kerr-McGee Corporation.
5/72-7/72	Laborer, Sequoyah Facility, Kerr-McGee Corporation.
9/68-1/72	Wards Manufacturing, Fort Smith, Arkansas.

D. K. Isham, Supervisor, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation

Education

Diploma, Vian High School, Vian, Oklahoma.
Associate Degree, Connors State College, Warner, Oklahoma.
Additional College Courses - Westark Community College, Tulsa University.
Bailey Computer Training.

Experience

11/86-	Supervisor, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation.
1971-1986	Chemical and Relief Operator, Sequoyah Facility, Sequoyah Fuels Corporation.
1970-1971	Assistant Control Room Operator, Sequoyah Facility, Sequoyah Fuels Corporation.
1969-1970	Operator, Sequoyah Facility, Sequoyah Fuels Corporation.

Leon E. McCoy, Supervisor, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation

Education

Diploma, Vian High School, Vian, Oklahoma.

Experience

4/88-	Supervisor, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation.
1986-1988	Staff Operations Advisor, Sequoyah Facility, Sequoyah Fuels Corporation.
1979-1986	Area Supervisor, Sequoyah Facility, Sequoyah Fuels Corporation.
1970-1979	Shift Supervisor, Sequoyah Facility, Kerr-McGee Corporation.
1969-1970	Control Room Operator, Sequoyah Facility, Kerr-McGee Corporation.

Cecil (Butch) G. Garner, Supervisor, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation

Education

BS Marketing and Business Administration, Northeastern State University

Experience

1/89-	Supervisor, Waste Treatment and Disposal Operations, Sequoyah Fuels Corporation.
1984-1989	Manager, Ranch Operations, Sequoyah Facility, Sequoyah Fuels Corporation/Kerr-McGee Corporation.
1983-1984	Ranch Manager, Sheffield Farms, Webbers Falls, Oklahoma.
1973-1983	Supervisor, Cattle Research, Farmers Hybrid Co., Inc., Subsidiary of Monsanto Chemical Co., St. Louis, MO.

Reggie Cook, Controller, Sequoyah Fuels Corporation

Education

BBA, Accounting Major, University of Oklahoma.

Experience

11/88-	Controller, Sequoyah Fuels Corporation.
1986-1988	Group Supervisor, Coal/Uranium Accounting, Kerr-McGee Corporation.
1981-1986	Supervisor, Coal/Uranium Accounting, Kerr-McGee Corporation. Joint Venture Coordinator, Nuclear Accounting, Kerr-McGee Nuclear Corporation. (March-August 1981).
1979-1981	Assistant Supervisor, Retail Accounting, Kerr-McGee Corporation.
1978-1979	Refinery Accountant, Refining Accounting, Kerr-McGee Corporation.
1976-1978	TBA Inventory Control, Refining Accounting, Kerr-McGee Corporation.

CHAPTER 12. RADIATION PROTECTION PROCEDURES AND EQUIPMENT

This chapter describes the radiation protection programs, equipment and procedures used at the Sequoyah Facility to protect employee and public health and safety. (See Chapter 3.0 for specific requirements.)

12.1 Radiation Protection Procedures

The protection of employees and the public from radiation and hazardous materials was a principal concern in the design and construction of the facility. The philosophy that each individual is responsible for his and his fellow worker's safety is supplemented by an aggressive health and safety program to assure that conditions in the facility and in the surrounding environs are safe.

Operating procedures are strictly enforced and process equipment is designed to prevent excessive personnel exposure to radiation and radioactive materials. Radiation instruments are utilized to detect and measure radiation or contamination and prompt corrective action is taken where appropriate.

12.1.1 ALARA

The management of Sequoyah Fuels Corporation maintains a Health and Safety program designed to maintain exposures to radiological hazards "as low as is reasonably achievable" (ALARA). There are several aspects to this ALARA commitment:

a. A written company policy and a corporate Radiation Health and Safety Standard have been promulgated. These documents, as well as facility procedures, are used to make personnel aware of management's commitment to ALARA. Each individual is required to implement ALARA on the job.

b. The Corporate Manager, Health Physics, periodically performs or directs a formal ALARA audit, including such items as operating procedures, emergency procedures, survey and monitoring records, bioassay data, training records, past exposure records, incident reports, inspection reports, proposed process or operational changes, and environmental data. In addition, the activities of the Health and Safety staff are reviewed.

   The audit findings are documented in a report which is distributed to the ALARA committee members and others as appropriate. ALARA committee members submit their comments and recommendations to the Corporate Manager, Health Physics. The Corporate Manager, Health Physics (Chairman)

schedules ALARA committee meetings annually, or more frequently when deemed necessary. The composition of the ALARA committee is described in Chapter 3.0.

c. Workers are trained in radiation protection as is relevant to their jobs, and are tested on their understanding at least once each year. They are encouraged to discuss radiation safety with the Health and Safety staff whenever a concern arises.

d. The Manager, Health and Safety (RSO) is well qualified to supervise Health and Safety Technicians and to administer the Health and Safety programs of the Sequoyah Facility. He has the authority to stop unsafe practices and acts promptly to correct unsafe conditions. He does this by communicating with appropriate management and supervision to cease an unsafe operation or correct a potentially unsafe condition.

e. The Facility Health and Safety staff conducts surveillance programs and investigations to ensure that occupational exposures to radiation or radioactive materials are maintained as far below the specified limits as is reasonably achievable. They are vigilant in seeking new and better ways to perform all jobs involving radiation exposure consistent with ALARA philosophy.

f. Adequate equipment, supplies and manpower for radiation protection work are provided. The RSO is responsible for ensuring that proper equipment and supplies are available. He reviews activities involving maintenance and use of such equipment and supplies. The maintenance and use of critical radiation protection equipment and instrumentation is covered by approved procedures.

12.1.2 Radiation Safety Program (General)

The radiation safety program consists of the activities necessary for control of radiation and contamination, and monitoring of internal and external personnel radiation exposures. Elements of the program include:

- Radiation Health and Safety Standards
- Procedures
- Training
- Contamination Control
- Surveillance

12.1.3 Health and Safety Standards

The Radiation Health and Safety Standard titled, "Radiation Protection in Natural Uranium Conversion Plants," governs radiation protection activities at the Sequoyah Facility. The standard specifies rules, principles and measures established by management for the conduct of the facility operations. The standard and any proposed operational changes which deviate from the standard are approved by the Corporate Vice President, Human Resources.

12.1.4 Procedures

Operating procedures are reviewed for any unusual health and safety aspects prior to approval. If results from any of the sampling, monitoring, or inspection activities indicate unfavorable trends or potentially unsafe conditions, a report is made to operations management and the cause is investigated. Corrective action is initiated by the appropriate manager. If necessary, specific operations are discontinued or curtailed by management until adequate protective or corrective measures are incorporated to provide for continued safe operation.

Written procedures are prepared by technical personnel and reviewed and approved as provided in Chapter 2.0, Section 2.7.1. Approved procedures are implemented covering the following subjects:

- Personnel Radiation Exposure Monitoring
- Access to Restricted Areas and Controlled Access Areas
- Management of Radioactive Sealed Sources
- Non-Routine Handling of Radioactive Materials
- Waste Management
- Emergency Response
- Incident Investigation and Reports
- Respiratory Protection Program
- Hazardous Work Permits
- Establishing and Posting Radiation Controlled Areas
- Contamination Control and Decontamination
- Radiological Safety Reports and Inspections
- Radiation and Radioactive Material Incident Investigation and Reporting
- Bioassay Program
- In-Plant Air Sampling and MPC-Hour Exposure
- Survey of Low Specific Activity (LSA) Radioactive Shipments and Receipts
- Radiation, Contamination and Release Surveys
- Laundry Facility Operation
- Airborne and Liquid Effluent Monitoring

12.1.5 Training

Training programs are designed specifically to train facility personnel in the safe handling of radioactive and hazardous materials and the effective operation of equipment at the Sequoyah Facility. General Employee training consists of classroom instruction as described in Chapter 2.0, Section 2.6. Chemical Operator training consists of classroom and on-the-job training in specific areas, as well as a certification process prior to the employee being permitted to work without direct supervision as described in Chapter 2.0, Section 2.6. Monthly Safety meetings are conducted to enhance employee awareness of safety and safety-related matters.

12.1.6 Contamination Control

The Sequoyah Facility is divided into three zones used to prevent the spread of contamination:

- o Restricted Areas
- o Controlled Access Areas
- o Unrestricted Areas

The definitions of these areas are set forth in Chapter 3.0, Section 3.1.

The Restricted Areas are shown in Figures 3-1 and 3-2, Chapter 3.0. The Restricted Areas are bounded by security fences and access is limited to employees and authorized visitors. Entrances are posted with appropriate signs. All entrances to Restricted Areas are conspicuously posted as provided in Chapter 3.0, Section 3.1.10. Access to Restricted Areas is controlled administratively and work in these areas by employees and authorized visitors is closely supervised by operating supervision and health and safety personnel. Equipment, articles, and vehicles removed from Restricted Areas are surveyed and decontaminated or packaged in a safe manner prior to release from the area.

Controlled Access Areas are normally areas within Restricted Areas that have a higher potential incidence rate of uncontained uranium. These areas normally include uranium handling areas and areas where maintenance work on contaminated equipment and clean-up work is performed. Temporary Controlled Access Areas may be established in the event of an accidental spill, contamination spread, or where work is performed on contaminated equipment in the maintenance shop. Permanently established Controlled Access Areas are shown on Figure 3-1, Chapter 3.0.

Personnel access to Restricted Area No. 1 is normally through Change Rooms which are equipped with clothes hampers for discarding protective clothing, and sinks and shower stalls for personnel decontamination. Persons entering Controlled Access Areas follow

approved procedures for protective clothing and equipment requirements. All work in Controlled Access Areas involving potential exposure to hazardous or radioactive materials is performed according to requirements specified on the "Hazardous Work Permit" or in accordance with an approved procedure.

12.1.7 Surveillance

The Health and Safety staff performs surveillance activities in the following areas:

- o Personnel Radiation Monitoring
- o Direct Radiation Surveys
- o Smear Surveys
- o Personnel Surveys
- o Air Monitoring

See Sections 12.3 and 12.4 for specific information.

12.2 Posting and Labeling

All entrances to Restricted Areas are conspicuously posted in accordance with the requirements stated in Chapter 3.0 of this license.

12.3 Personnel Radiation Monitoring

Personnel exposure to gamma and beta radiation is measured with film badges using established film evaluation techniques. Badges are supplied and evaluated by an outside contractor who is experienced in evaluating exposure associated with uranium handling. Film badges are exchanged on a monthly basis.

Exposure control guides are established for external personnel exposure to provide a basis for exposure control planning for work groups and facilities, and to minimize the possibility of any individual inadvertently exceeding radiation exposure limits. Using the results of personnel exposure monitoring programs, exposures are controlled in a manner that prevents individuals from exceeding the following quarterly exposure guides:

	Organ	Quarterly Exposure Control Guides (rem)
	Whole body and trunk, active blood-forming organs, gonads, or lens of the eyes	1.25
B.	Skin of whole body and thyroid	6.0
C.	Hands and forearms, feet and ankles	15.0
D.	All other organs	3.0

12.4 Surveillance

12.4.1 Direct Radiation Surveys

Field measurements of beta and gamma exposure rates are made monthly in accordance with approved procedures using calibrated ionization chamber instruments. The RSO specifies more frequent surveys if data shows it to be necessary for controlling and evaluating personnel exposure.

12.4.2 Smear Surveys

Routine measurements of surface contamination are performed in accordance with approved procedures to ensure an acceptable level of contamination control. Surface contamination measurements are made by appropriate direct alpha survey techniques and smear tests. Decontamination is performed promptly in accordance with Chapter 3.0 requirements when "smearable" alpha contamination exceeds 4,000 dpm/100 cm^2 in Controlled Access Areas or 2,000 dpm/100 cm^2 in the remainder of the Restricted Areas.

12.4.3 Personnel Surveys

Health and Safety personnel periodically survey facility personnel when they leave the change room as a quality control check of compliance with personnel frisking and contamination control requirements.

12.4.4 Release Surveys (Equipment)

Facility equipment and material are surveyed for unconditional release to the unrestricted area in accordance with approved procedures. Release criteria is established in Chapter 3.0, Section 3.3.4.7.

a. A reasonable effort is made to minimize the contamination present.

b. Surfaces of premises, equipment or scrap likely to be contaminated, and of such size, construction, or location as to make the surface inaccessible for purposes of measurement are presumed to be contaminated in excess of the levels specified in Chapter 3.0, Section 3.3.4.7.

c. Premises, equipment or scrap having contaminated surfaces which have been covered by painting, metal plating or other covering material are presumed to be contaminated in excess of the levels specified above, unless it can be established that the contamination was below the above levels prior to

applying the covering.

12.4.5 Air Monitoring

The airborne radioactivity monitoring program includes the following elements:

a. A fixed air sampling system collects air samples throughout process areas and selected adjacent areas for the purpose of detecting excessive airborne contamination levels that may result from abnormal operating conditions and for the purpose of trending chronic exposure conditions in the plant. Sample stations are strategically located to sample general breathing air and for purposes of leak detection. An independent vacuum system is used to pull air through filter media. Samples are collected and the system is operated and maintained in accordance with approved procedures.

b. Breathing zone samples are collected to evaluate individual exposure during the performance of jobs involving actual or potential exposure to excessive levels of airborne radiation materials. Portable high volume, low volume, and lapel sampling units are available for collection of breathing zone samples.

c. Approved procedures establish methods for determining air concentrations and exposure levels requiring respiratory protection. During abnormal conditions causing high airborne concentrations, personnel exposures are calculated assuming all of the sample was deposited during the period of the release. Affected areas are posted with respiratory protection requirements, as appropriate.

d. During air sample collection, the samples are checked for visible quantities of uranium. The Shift Supervisor is notified as soon as practicable of problem areas if visible amounts of uranium are present on the filter media. An effort is made to identify the cause of the problem. After the air samples are counted, the Shift Supervisor is informed of all air samples greater than 0.5 MPC, which is a Facility Action Level (FAL).

e. If air sample results exceed 3 MPC, an incident report is prepared by operations supervision. A section of the report includes exposure calculations, which are completed by the Health and Safety Department. Incident reports document MPC-hour exposure and inform management of problem areas. Where appropriate, actions are taken to correct problems and prevent recurrence.

12.5 Reports and Records

Records of all Health Physics exposure evaluations (internal and external) are prepared, reported and retained as specified in 10 CFR 20.401, Regulatory Guide 10.1, and Regulatory Guide 8.7. Trend analyses and reports are prepared and distributed to management on a daily report. Unusual incidents are investigated (e.g., air samples above 3 MPC) and incident reports are prepared and submitted to management, as appropriate.

Quarterly ALARA audits performed by the Corporate Manager, Health Physics, include a trend and cause analysis of radiological exposure conditions within the facility, employee exposures, and progress of administrative and engineering controls needed to assure that exposures to personnel and releases to the environment are maintained as low as is reasonably achievable.

12.6 Instruments

Instrumentation is provided to perform the surveys associated with the radiological control program. All survey and sampling equipment is inspected and calibrated under the direction of the RSO at intervals sufficient to assure reliable operation. A semi-annual preventive maintenance inspection is also performed by a qualified instrument technician. The following instruments are available at the facility for routine surveying and monitoring:

Radiation Detection and Related Instruments

Type	Available	Detected	Range	Use
Dose Rate Instrument	2	Beta-Gamma	0-5 R/hr	Survey
Dose Rate Instrument	1	Beta-Gamma	0-1 R/hr	Survey
Portable Alpha Survey Instr.	17 *	Alpha	0-500,000 cpm	Survey
GM Survey (Portable)	3 *	Beta-Gamma	0-70,000 cpm	Survey
Personnel Monitor	9	Alpha	0-500,000 cpm	Personnel Monitor

*Does not include instruments dedicated for emergency use only.

Samples of airborne and liquid effluent are counted using an internal proportional counter (IPC). A certified alpha calibration source is used to calibrate the counter. One IPC back-up instrument is available.

Environmental water samples are analyzed for uranium using the fluorimetric method at Sequoyah Facility. All isotopic analyses are performed on liquid samples at off-site laboratories.

The beta-gamma survey instruments are calibrated using a sealed Cesium-137 source. Alpha detectors and counting instruments are calibrated against a standard Pu-239 reference source and/or a Th-230 source.

12.7 Protective Clothing and Equipment

Protective clothing is supplied for routine use to maintenance and operating personnel. Coveralls, hard hats, safety shoes, and safety glasses are worn routinely. Respirators, acid suits, shoe covers, hoods, face shields and gloves may be specified for work where special hazards exist.

Approved respirators used at the facility for protection against radioactive aerosols include air line respirators, full face and half mask filter respirators, self contained breathing apparatus, and emergency escape breathing apparatus.

12.8 Administrative Control Levels

12.8.1 External Exposure

External exposure due to gamma and beta radiation exposure is measured with film badges using established film evaluation techniques. Employees are required to wear a radiation film badge while in the plant. Film badges are exchanged and evaluated on a monthly basis by an independent laboratory. External Radiation Limits used at the Sequoyah Facility are those found in 10 CFR 20.

12.8.2 Internal Exposure

Internal exposure calculations based on air sample results are performed each day for exposed individuals and MPC-hour exposures are assigned. This calculation is an estimate of internal deposition with credit given for respiratory protection when used.

Internal uranium exposure is determined by analysis of urine samples. Routine samples are collected semi-monthly. In accordance with approved procedures, special diagnostic samples are collected following a known significant exposure such as might occur from an accidental spill or leak of uranium material.

A urine sample result greater than 100 ug U/l results in work restriction from controlled areas until a subsequent sample is less than 20 ug/l. A result greater than 20 ug U/l requires a re-sample,

and if the second sample is greater than 20 ug U/l, work restriction is imposed until a subsequent urine sample is less than 20 ug U/l.

In-vivo (lung) counting to detect internal depositions, is performed annually for employees who fall under one of the following categories:

1. Routine urinalysis shows consistently elevated uranium in urine concentrations (above the 20 ug U/liter guideline).

2. Significant acute or chronic exposure to uranium aerosols which are insoluble in body fluids.

3. Previous lung counting history shows a significant fraction of body burden of natural uranium or U-235.

All other employees who normally work in radiation areas are counted once every two years.

12.8.3 Facility Stack Sampling (Points of release to the unrestricted areas)

The major points of release from the plant are sampled continuously. The locations which are sampled, and the type of analyses for each sample, are as follows:

Location	Analysis Performed
UF_6 Conversion Plant	
a. Powered roof fans	gross alpha
b. Lab sample prep. room exhaust	gross alpha
c. HF off-gas scrubber exhaust	gross alpha-fluoride
d. Dust collector exhaust	gross alpha-fluoride
e. Main plant stack	gross alpha
f. Lab hood exhausts	gross alpha
g. Sample plant dust collector exhaust	gross alpha
UF_6 Reduction Plant	
a. Dust collector exhaust	gross alpha-fluoride
b. Powered roof fans	gross alpha

The uranium concentrations from these release points are expressed in terms of MPC which is 5.0×10^{-12} uCi/ml for natural uranium and 3.0×10^{-16} uCi/ml for depleted uranium. The fluoride concentrations, where measured, are reported in micro gm/liter. Effluent sample results are reported to management in a daily status report. They are used in preparing the monthly Uranium Loss Report

and the semi-annual effluent release report to the NRC. The facility action level for discharge of airborne radioactive material to the unrestricted area is 30,000 uCi per calendar quarter.

12.8.4 Liquid Effluent

The Combination Stream is the only point of discharge for liquid process effluents to reach the unrestricted area. A continuous sampler draws a proportional sample every 8 hours. Samples for chemical analysis are composited daily from the samples. The 8-hour samples are also composited into a monthly sample for fluorimetric analysis of uranium concentrations as well as a gross alpha radiometric analysis. Quarterly, a composite of the monthly samples are analyzed for Thorium and Radium. A calibrated flume is used to determine the volume of the combination stream discharge. The laboratory reports gross alpha as pCi/l, and uranium as mgm/l. The daily stream gallons are totaled for the month. Data for two calendar quarters are totaled for the uranium loss report.

12.8.5 Surface Contamination

12.8.5.1 Personnel

Entry into the Restricted Area via the change room by personnel required to wear coveralls, is accomplished by entering the appropriate change room and removing all personal clothing and donning protective clothing obtained from the clean clothing bins and process area safety shoes from the individual shoe lockers provided. Exit from the restricted area is a reverse of the above with a personnel contamination survey, or "frisk" being required prior to exiting the Change Room. Personnel who may enter the Restricted Area with lab coats over their street clothing will obtain lab coats and other protective equipment in the change room and enter the Restricted Area. Exit from the restricted area will be a reverse of the above with a survey of exposed skin surfaces being required prior to exiting the Change Room (alpha friskers are installed in Change Room to perform this survey). When contamination is detected, appropriate washing or decontamination will be required before leaving this area. The Health and Safety Technician on duty is called if assistance is required.

There are two zones within the Restricted Area: Controlled Access Areas and Semi-Controlled Access Areas. The Controlled Access Areas are those areas within the Restricted Area that have the highest potential for uranium spills or releases. All other zones are classified as semi-controlled access areas. Shoe cover changes are necessary when exiting from Controlled Access Areas for those personnel wearing shoe covers. Personnel not wearing

shoe covers are to put shoe covers on before entering Controlled Access Areas and remove them when leaving these areas.

Personnel surveys (facility and contractor) are performed on a random basis by Health and Safety Technicians. Where contamination is found, personnel are decontaminated. Records of these surveys are retained on file.

12.8.5.2 Process Area

Surface decontamination guidelines are:

	alpha		
	cpm/100 cm^2		
	Fixed	Removable	Total
Controlled Access Areas	-	4,000	-
Semi-Controlled Access Areas			
Areas Adjacent to Controlled Access Areas	-	2,000	-
Unrestricted Areas	1,000	500	1,500

Smear surveys are conducted throughout the process areas, Controlled Access and Semi-Controlled Access Areas, on a weekly schedule. The results of this survey are communicated to operations supervision, and where the guideline level is exceeded, facility personnel are required to decontaminate the area in a timely manner. The purpose of this survey is to point out problem areas which could contribute to airborne concentrations with the possibility of internal deposition. When decontamination is completed, the Shift Supervisor requests a re-survey of the area or equipment by the Health and Safety Technician on duty to ensure that the smearable levels have been reduced to less than the guideline. If the guidelines have not been met, additional decontamination must be performed.

Smear surveys are also done in the facility unrestricted areas on a weekly basis (office area, engineering area, control room and lunch room). When the action level, 500 dpm/100 cm^2, is exceeded, decontamination is initiated to reduce contamination to acceptable levels.

Surveys of material and/or equipment for unconditional release to the unrestricted area are performed and measurements must meet limits in Chapter 3.0, Section 3.3.4.7. Examples of material released under these conditions are scrap metal or equipment being sent off-site for repair. Appropriate records are maintained.

12.8.5.3 Shipment Surveys

Incoming yellowcake trucks are surveyed before unloading in accordance with approved procedures. Where excessive amounts of uranium have been released from drums during shipping, decontamination of the shipping vehicle is performed as the unloading is done. If it appears that uranium may have been released from the sealed trailer, the Manager, Nuclear Licensing and Environmental Compliance is notified and appropriate follow-up action is initiated. Outgoing yellowcake trucks are surveyed after washing or cleaning in accordance with approved procedures. If they exceed 1000 dpm/100 cm^2, smearable, they are re-washed. If outgoing yellowcake trucks are released containing empty yellowcake drums, the drums are spot checked prior to being shipped.

All outgoing contractor vehicles or equipment are checked. If contamination levels are found that exceed release limits, decontamination of the vehicle or its contents is performed by facility personnel until the limits are met. A record of this survey is maintained by Health and Safety.

Filled UF_6 cylinder trucks are surveyed prior to leaving the plant, and appropriate documents are completed and copies of the document accompany the shipment. Where release limits are exceeded, decontamination is performed until limits are met.

12.8.5.4 Miscellaneous Surveys

Sealed source surveys are performed as outlined in NRC Byproduct Material License No. 35-12636-03. In addition to the survey, for the purpose of detecting loss of capsule integrity by presence of contamination, a physical inventory is done semi-annually. Smears of the source for leak detection purposes are analyzed initially by using a proportional counter. If high results are found, they are then analyzed using a gamma spectrometer.

Smears of respirators which have been cleaned and serviced and are ready for re-issue are done periodically.

These smears are counted in an IPC counter. Records of this survey are retained on file.

12.9 Respiratory Protection

The facility respiratory protection program meets the requirements of 10 CFR 20.103, Regulatory Guide 8.15, and the guidance in NUREG-0041.

The types of respiratory protection used at the facility are as follows:

a. Half-mask respirators are provided for routine use in the sampling plant and raffinate treatment area only, where airborne radioactive particulate concentrations do not exceed 10 MPC.

b. The full-face filter respirators are provided for use where airborne radioactive particulate concentrations do not exceed 50 MPC.

c. Supplied-air (air line respirators or Self-Contained Breathing Apparatus - SCBA) are provided for use where radioactive particulate concentrations exceed 50 MPC, or where acid gas or organic vapors only are present in excess of 2% by volume. SCBA is the only device approved for oxygen deficient atmospheres.

d. Emergency Escape Breathing Apparatus (EEBA) are placed at strategic locations around the site for escape use only. EEBA provide a nominal 5-minute air supply to facilitate escape from a hazardous airborne environment.

Employees are fitted with each type of respirator they may use at the Facility and checked for respirator seal by using a quantitative fit test (air-line and filter) before working in controlled areas. Appropriate records are kept of these tests. Additionally, half mask respirators are checked for seal using a smoke tube prior to use.