



July 19, 1993
ML-93-027

Docket No. 70-36
License No. SNM-33

Mr. Charles W. Emeigh, Acting Chief
Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Subject: Hematite Organizational Amendment

Dear Mr. Emeigh:

This license amendment reflects an organizational change recently instituted at our Hematite facility. Enclosure I to this letter provides a detailed description of the changes.

The basic change associated with this organizational amendment is the addition of the Focused Factory Managers, each of whom report to the Plant Manager. The Focused Factory concept was introduced in our Windsor facility last year and has proven to be highly successful.

Enclosure II provides a listing of the license application change pages resulting from these changes. Enclosure III provides the actual license application change pages for insertion into your copies. Six (6) copies of this document are provided for your use.

Information in this record was deleted
in accordance with the Freedom of Information
Act, exemptions 6
FOIA-2004-0234

ABB Combustion Engineering Nuclear Power

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If there are any questions or comments concerning this matter, please do not hesitate to call me or Mr. Mark A. Michelsen of my staff at (203) 285-5261.

Very truly yours,

COMBUSTION ENGINEERING, INC.



John F. Conant
Manager
Nuclear Materials Licensing

Enclosures: As Stated

cc: G. France (NRC - Region III)
S. Soong (NRC)

**Enclosure I to
ML-93-027**

**COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
ORGANIZATIONAL AMENDMENT**

July 1993

**COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
ORGANIZATIONAL AMENDMENT**

Changes to the Hematite license application for organizational modifications are described below. A list of affected license application pages is in Enclosure II, and the change pages for the license application are provided in Enclosure III.

The most significant change associated with this organizational amendment is the addition of the Focused Factory concept of management. This concept was introduced in our Windsor facility last year and has been quite successful. Three Focused Factories have been defined in the Hematite organization: Chemical Operations, Ceramic Operations and Assembly Operations. The Assembly Operations Factory is for the fuel rod and the bundle assembly facility, added as part of the Hematite Consolidation program. Chemical Operations includes oxide conversion and recycle processes. Ceramic Operations includes the pelletizing processes. In the Focused Factories, production is divided into clearly defined areas, and the factory organization as a whole is responsive to the unique needs of each factory.

Associated with the Focused Factory changes is the concept of Quality Coordinators for each factory. Quality Coordinators report administratively to their respective factory managers, but also report functionally to the Director of Quality Systems. This maintains independence of management oversight for the quality function.

In conjunction with this organizational change, procedure and plant modification approval requirements formerly associated with the position of Manager, Engineering, are now met by the individual Focused Factory managers. Each Focused Factory has its own process engineers to focus on changes to the processes unique to each factory. The position of Manager, Engineering, has thus been deleted from Part I of the license application.

In another change, the former title of Shift Supervisor has been changed to Production Supervisor; there has been no change to the function. Also, the title of the Manager, Nuclear Licensing, Safety and Accountability has changed to Manager, Regulatory Compliance. This is a change in name only; all previous functions remain with the same individual. The recent hiring of a Criticality Specialist, a Health Physicist, is reflected in the additional resumes added to Chapter 3 in Part II, along with the new Focused Factory Managers.

In light of the filled positions of Criticality Specialist and Health Physicist, certain responsibilities formerly filled solely by the Manager, Regulatory Compliance, are now

alternatively filled by the Criticality Specialist and/or Health Physicist. Also, the years of required experience for the position of Manager, Regulatory Compliance, have been reduced (Part I, Table 2-1).

Finally, throughout the amendment, there are changes which involve the use of non-gender-specific language.

**Enclosure II to
ML-93-027**

**COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
ORGANIZATIONAL AMENDMENT
LIST OF AFFECTED PAGES**

July 1993

COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
ORGANIZATIONAL AMENDMENT

LIST OF AFFECTED PAGES

Combustion Engineering, Inc. is submitting an amendment to its license application for the Hematite facility to describe organizational changes. The following identifies the changed license pages. The affected pages are provided as change pages in Enclosure III.

The license application pages affected are as follows:

<u>Delete Page</u>			<u>Add Page</u>		
<u>Page No.</u>	<u>Rev.</u>	<u>Date</u>	<u>Page No.</u>	<u>Rev.</u>	<u>Date</u>
<u>PART I</u>			<u>PART I</u>		
<u>Chapter 2</u>			<u>Chapter 2</u>		
I.2-1	1	8/12/91	I.2-1	2	7/19/93
I.2-2	1	8/12/91	I.2-2	2	7/19/93
I.2-3	3	8/12/91	I.2-3	4	7/19/93
I.2-5	2	8/12/91	I.2-5	3	7/19/93
I.2-6	2	8/12/91	I.2-6	3	7/19/93
I.2-7	2	8/12/91	I.2-7	3	7/19/93
I.2-8	1	8/12/91	I.2-8	2	7/19/93
I.2-9	2	8/12/91	I.2-9	3	7/19/93
I.2-10	2	8/12/91	I.2-10	3	7/19/93
I.2-11	1	8/12/91	I.2-11	2	7/19/93
I.2-12	0	8/12/91	I.2-12	1	7/19/93
<u>Chapter 3</u>			<u>Chapter 3</u>		
I.3-2	1	1/24/83	I.3-2	2	7/19/93
I.3-6	2	8/12/91	I.3-6	3	7/19/93
I.3-8	2	8/12/91	I.3-8	3	7/19/93

<u>Delete Page</u>			<u>Add Page</u>		
<u>Page No.</u>	<u>Rev.</u>	<u>Date</u>	<u>Page No.</u>	<u>Rev.</u>	<u>Date</u>
<u>Chapter 4</u>			<u>Chapter 4</u>		
I.4-1	2	8/12/91	I.4-1	3	7/19/93
<u>Chapter 5</u>			<u>Chapter 5</u>		
I.5-3	1	1/24/83	I.5-3	2	7/19/93
<u>Part II</u>			<u>Part II</u>		
<u>Chapter 3</u>			<u>Chapter 3</u>		
II.3-1	1	8/12/91	II.3-1	2	7/19/93
II.3-2	1	8/12/91	II.3-2	2	7/19/93
II.3-3	1	8/12/91	II.3-3	2	7/19/93
II.3-4	1	8/12/91	II.3-4	2	7/19/93
II.3-5	1	8/12/91	II.3-5	2	7/19/93
II.3-6	1	8/12/91	II.3-6	2	7/19/93
II.3-7	1	8/12/91	II.3-7	2	7/19/93
II.3-8	1	8/12/91	II.3-8	2	7/19/93
II.3-9	1	8/12/91	II.3-9	2	7/19/93
II.3-10	1	8/12/91	II.3-10	2	7/19/93
II.3-11	1	8/12/91	II.3-11	2	7/19/93
II.3-12	1	8/12/91	II.3-12	2	7/19/93
II.3-13	2	8/12/91	II.3-13	3	7/19/93
II.3-14	2	8/12/91	II.3-14	3	7/19/93
II.3-15	1	8/12/91	II.3-15	2	7/19/93
II.3-16	1	8/12/91	II.3-16	2	7/19/93
II.3-17	1	8/12/91	II.3-17	2	7/19/93
II.3-18	1	8/12/91	II.3-18	2	7/19/93
II.3-19	1	8/12/91	II.3-19	2	7/19/93
II.3-20	0	8/12/91	II.3-20	1	7/19/93
-	-	-	II.3-21	0	7/19/93
-	-	-	II.3-22	0	7/19/93
-	-	-	II.3-23	0	7/19/93
-	-	-	II.3-24	0	7/19/93
-	-	-	II.3-25	0	7/19/93

<u>Delete Page</u>			<u>Add Page</u>		
<u>Page No.</u>	<u>Rev.</u>	<u>Date</u>	<u>Page No.</u>	<u>Rev.</u>	<u>Date</u>
-	-	-	II.3-26	0	7/19/93
-	-	-	II.3-27	0	7/19/93
-	-	-	II.3-28	0	7/19/93
-	-	-	II.3-29	0	7/19/93
<u>Chapter 4</u>			<u>Chapter 4</u>		
II.4-1	0	1/29/82	II.4-1	1	7/19/93
II.4-2	0	1/29/82	II.4-2	1	7/19/93
II.4-3	0	1/29/82	II.4-3	1	7/19/93

**Enclosure III to
ML-93-027**

**COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
ORGANIZATIONAL AMENDMENT**

AFFECTED PAGES

July 1993

2.0 ORGANIZATION AND ADMINISTRATION

2.1 Organizational Responsibilities and Authority

The President, Nuclear Fuel has the ultimate responsibility for ensuring that corporate operations related to Nuclear Fuel are conducted safely and in compliance with applicable regulations. The President has delegated the responsibility for nuclear fuel manufacturing to the Vice President, Manufacturing Operations, who in turn has delegated this responsibility to the Plant Manager, Hematite.

2.1.1 Plant Manager, Hematite

The Plant Manager, Hematite reports to the Vice President, Manufacturing Operations. He directs and has the overall responsibility for the safe operation of the Hematite facility including production, accountability, security, criticality safety, radiological and industrial safety, environmental protection, transportation, training, materials handling and storage, licensing, process and equipment engineering and maintenance. He fulfills these functions by delegation to a staff at Hematite that reports to the Plant Manager. He may also request support from the Windsor, CT staff to provide functions that may include criticality analysis, production methods, nuclear licensing and others as needed.

2.1.2 Manager, Regulatory Compliance

The Manager, Regulatory Compliance reports to the Plant Manager. He manages radiological protection and industrial safety, SNM accountability, criticality safety, licensing, emergency planning, and environmental protection. His activities include review and approval of procedures for control, sampling, measurement and physical inventory of SNM, auditing of plant operations.

2.1.2 Manager, Regulatory Compliance (Continued)

He reviews results from personnel and environmental monitoring and facility activities to ensure compliance with the requirements of License No. SNM-33. To enforce compliance, he has authority to halt any operation at the Hematite facility, and the operation shall not restart until approved by the Plant Manager or a duly authorized alternate.

2.1.3 Manager, Focused Factory

There are three Focused Factories, whose Managers report to the Plant Manager: Chemical Operations, Ceramic Operations and Assembly Operations. These Focused Factory Managers direct production operations in accordance with the content of Operation Sheets and Traveler documents. The Focused Factory Managers' activities include scheduling of Production Supervisors, recommending improvements to equipment, processes and procedures, training and qualification of production operators through their Production Supervisors, and periodically directing the cleanout of the production equipment in conjunction with the physical SNM inventory. They are responsible for the engineering of new equipment and of modifications to existing equipment. With support from Nuclear Fuel staff, activities include recommendation, development and qualification of manufacturing processes, specification of process control methods and design, procurement and installation of processing equipment.

2.1.4 (Deleted)

2.1.5 Nuclear Criticality Specialist

The Nuclear Criticality Specialist function reports to the Manager, Regulatory Compliance. An individual fulfilling the function may be based at the Hematite facility or at other Nuclear Fuel locations. The Nuclear Criticality Specialist verifies that equipment, processes and procedures satisfy the criticality criteria in Section 4 of Part I by performing the review described in Section 2.6 of Part I. Alternatively, for criticality analyses that require elaborate computational techniques, the specialist may supervise and/or review the analyses. The specialist may also perform the annual audit at Hematite required by Section 2.7.

2.1.6 Supervisor, Health Physics

The Supervisor of Health Physics reports to the Manager of Regulatory Compliance. He supervises the health physics technicians in the radiological surveillance of activities that involve radioactive materials, in personnel radiation monitoring and in the collection and measurements of environmental samples. He has the authority to suspend unsafe operations.

2.1.7 Health Physicist

The Health Physicist function reports to the Manager of Regulatory Compliance. Activities include observation of plant operations and evaluation of results from personnel and environmental monitoring. Quantitative measurements and other observations of Facility activities are compared with the requirements of License No. SNM-33.

2.3 Hematite Plant Safety Committee (Continued)

The review of findings and recommendations of corrective action shall be reported to the Plant Manager for action.

The Committee Chairman or Plant Manager determines which committee members, as a minimum, shall attend each quarterly meeting, according to the topics to be considered. The Committee submits a quarterly meeting report to the Hematite manager level personnel and the Plant Manager at Hematite. The Plant Manager appoints the committee members to represent, as a minimum, engineering, production, health physics, and criticality safety. He may also approve alternate(s) for the members.

Minimum education and experience requirements for the Chairman are in Table I.2-1. The Committee is composed of senior personnel from the technical staff of Combustion Engineering's Nuclear Fuel organization who have at least five (5) years experience in the nuclear industry. The Committee Chairman or Plant Manager may invite participation by others from within Hematite or from the staff at Windsor.

2.4 Approval Authority for Personnel Selection

Two higher levels of management shall approve personnel for safety-related staff positions.

2.5 Training

Hematite staff conduct or supervise the indoctrination of new employees in the safety aspects of the facility. The indoctrination topics shall include nuclear criticality, safety, fundamentals of radiation and radioactivity, contamination control, ALARA practices and emergency procedures. After test results demonstrate that a new

Training (Continued)

employee has sufficient knowledge in the above topics, the new employee begins on-the-job training under direct line supervision and/or experienced personnel. The Supervisor monitors performance until it is adequate to permit work without close supervision.

The training and personnel safety program continues with on-the-job training supplemented by regularly scheduled meetings conducted by line supervision and specialists in the subjects covered. Topics include personnel protective equipment, industrial safety and accident prevention, and other safety topics. Production Supervisors receive formal training in radiation and criticality control. Testing determines when they have sufficient knowledge to enable them to carry out their training functions. Operating personnel receive a re-training course in criticality control and radiation safety on a biennial basis. The effectiveness of retraining is determined by testing. Formal training shall be documented. The health physics staff will receive professional related training at least biennially.

Operating Procedures

Operations which involve licensed material shall be conducted in accordance with approved written procedures. Operating Procedures, called Operation Sheets, are issued and controlled by Quality Coordinators. They provide the detailed instructions for equipment operation and material handling and the limits and controls required by the License. Operation Sheets are the basic control document; before issuance or revision they require signed approval by the appropriate Focused Factory Manager and the Manager, Regulatory Compliance (or, in lieu of the Manager of Regulatory Compliance, both the Nuclear Criticality Specialist and the Health Physicist). In the Manager's absence, another individual meeting the Manager's minimum education and experience requirements, or the Plant Manager, may provide approval. Health Physics activities will be conducted in accordance with approved written procedures; these

2.6 Operating Procedures (Continued)

procedures must be approved by the Manager, Regulatory Compliance or the Health Physicist.

Supervision is required to assure that handling, processing, storing and shipping of nuclear materials is given prior review and approval by the Manager of Regulatory Compliance (or, in lieu of the Manager of Regulatory Compliance, both the Nuclear Criticality Specialist and the Health Physicist), that suitable control measures are prescribed, and that pertinent control procedures relative to nuclear criticality safety and radiological safety are followed.

Primary responsibility and authority to suspend unsafe operations is placed with line supervision. Within their respective responsibilities, members of Regulatory Compliance also have authority to suspend operations not being performed in accordance with approved procedure.

Supervision is further required to assure that, prior to the start of a new activity involving nuclear materials, approved procedures are available. A review procedure has been established for changes in processes, equipment and/or facilities prior to implementation. Regulatory Compliance authorization must be obtained for each change involving nuclear safety, radiological safety or industrial safety. Regulatory Compliance reviews shall be documented, except for minor changes within existing safety parameters.

The Manager of Regulatory Compliance or Health Physicist shall grant approval only when:

- a. A nuclear criticality safety evaluation has been performed based on the criteria and standards of Chapters 3.0 and 4.0 by a person who meets the education and experience requirements for a Nuclear Criticality Specialist (and who

2.6 Operating Procedures (Continued)

may be the Manager of Regulatory Compliance). This evaluation shall be in sufficient detail to permit subsequent review.

- b. The criticality safety evaluation has been reviewed by a second person who has fulfilled the education and experience requirements for a Nuclear Criticality Specialist (and who may be the Manager of Regulatory Compliance). This review is based on the criteria and standards of Chapter 4.0 and includes verification of each of the following:

- 1) assumptions
- 2) correct application of criteria of Section 4.0
- 3) completeness and accuracy of the evaluation
- 4) compliance with the double contingency criteria

- c. The Manager of Regulatory Compliance or Health Physicist has concluded that the operation can be conducted in accordance with applicable health physics and industrial safety criteria.

Review and verification shall include written approval by the reviewer.

The minimum frequency for review, for the purpose of updating, of operating procedures involving Special Nuclear Materials and health physics procedures shall be every two (2) years. Updating of operating procedures is the responsibility of the cognizant manager.

Audits and Inspections

Audits and inspections shall be performed to determine if plant operations are conducted in accordance with applicable license conditions, C-E policies, and written procedures. Audits shall apply to safety-related and environmental programs. Qualified personnel having no direct responsibility for the plant operation being audited shall be used to ensure unbiased and competent audits.

Daily checks for safety related problems are made by Health Physics technicians, who observe, note and make general observations in addition to their other duties. Problems are normally corrected on the spot by the Production Supervisor. More significant problems are listed on the daily exception report distributed to the Plant Manager and manager level staff. The appropriate Focused Factory Manager is responsible for corrective action.

Planned and documented quarterly inspections cover criticality control, radiation safety and industrial safety. The inspection of criticality control shall be performed by an individual meeting at least the education and experience requirements of a Nuclear Criticality Specialist and at least one of the quarterly inspections regarding criticality control will be by an individual who is not the Manager of Regulatory Compliance. The inspection of radiation safety will be conducted by an individual meeting at least the education and experience requirements of the Health Physicist function. Items requiring corrective action are documented in a report distributed to the Plant Manager and manager level staff. The appropriate Focused Factory Manager is responsible for corrective action, except where another manager is specifically designated. Follow-up actions taken by the appropriate Focused Factory Manager, or responsible manager, shall be documented. Documentation shall be maintained for at least the period stated in Section 2.9.

2.7 Audits and Inspections (Continued)

Annual audits are conducted in which the results of previous inspections or audits are reviewed, as an evaluation of the effectiveness of the program. These audits may also involve a detailed review of non-safety documents such as operation procedures, shop travelers, etc., and are documented by a formal report to the Vice President, Manufacturing Operations. Annual audits are performed by a team appointed by the Vice President, Manufacturing Operations. Personnel on the team will not have direct responsibility for the function and areas being audited. The team shall include, as a minimum, a Nuclear Criticality Specialist and a radiation specialist who shall audit criticality and radiation safety, respectively. The radiation specialist who conducts the annual audit shall have as a minimum a Bachelor's degree in Science or Engineering with two years experience in operating health physics for uranium bioassay techniques, internal exposure controls and radiation measurement techniques. The annual audit will review ALARA requirements in conformance with Regulatory Guide 8.10, as applicable. The Manager of Regulatory Compliance shall be responsible for follow-up of recommendations made by the audit team.

2.8 Investigations and Reporting

Events specified by applicable regulations or license conditions shall be investigated and reported to NRC. The Manager of Regulatory Compliance shall be responsible for conducting the investigation and documentation of reportable events.

Non-reportable occurrences shall be investigated and documented as appropriate. Such reports shall be available for NRC inspection.

2.9 Records (Continued)

Retention of records required to be maintained by the regulations, and by the conditions of this license, shall be the responsibility of the cognizant manager. Records of tests, measurements, and surveys identified as requiring preservation until the NRC authorizes disposition shall be retained indefinitely. Records of Regulatory Compliance evaluations and approvals shall be retained for a period of at least six months after use of the operation has been terminated, or for two years, whichever is longer. Other safety significant records shall be retained for at least two years.

TABLE 2-1

MINIMUM EDUCATION AND EXPERIENCE REQUIREMENTS FOR KEY PERSONNEL

POSITION

<u>Described In Section No.</u>	<u>Title</u>	<u>Education</u>	<u>Experience (Years/Field)</u>
I.2.1.1	Plant Manager	Bachelors, Science or Engineering	5/Nuclear manufacturing
I.2.1.2	Manager, Regulatory Compliance	Bachelors, Science or Engineering	4/Health Physics with 2/Operational health physics with uranium bioassay techniques, internal exposure control, and radiation measurement techniques
I.2.1.3	Focused Factory Managers	Bachelors, Science, Engineering or Manufacturing	4/Nuclear manufacturing industry
I.2.1.5	Nuclear Criticality Specialist	Bachelors, Science or Engineering	2/Nuclear criticality evaluations.
I.2.1.6	Supervisor, Health Physics	High School Diploma	5 Total/Nuclear industry, with 3/Health Physics Technician
I.2.1.7	Health Physicist	Bachelors, Science or Engineering	2/Operational Health Physics applicable to fuel manufacturing
I.2.1.8	Health Physics Technician	High School Diploma or GED Equivalent	6 months/Training and experience in radiation protection activities
I.2.3	Chairman, Plant Safety Committee	Bachelors, Science or Engineering	5/Nuclear manufacturing industry

3.2.2

Ventilation Requirements

Air flow shall be from areas of lower to areas of higher contamination. Hoods, glove boxes, or local exhaust will be used to control contamination and airborne concentrations. All dispersible forms of uranium will be handled in ventilated enclosures having sufficient air flow to assure minimum face velocities of 100 Fpm. Face velocities will be checked weekly by Regulatory Compliance, except during periods when not in use. This effectively limits HEPA filter pressure differential to less than 8 inches of water.

Glove boxes under negative pressure will be used where airborne material is actively generated such that ventilated hoods would not be adequate.

Fire prevention and the potential for generating explosive atmospheres will be considered in ventilation design.

Air effluents from process areas and process equipment involving uranium in a dispersible form shall be subject to air cleaning. Exhaust air cleaning shall include use of high efficiency filters except where the effluents, evaluated individually, do not contribute significantly to the total emission. Low velocity blowers are used to preclude filter damage if heavy loading occurs. All exhaust stacks shall be continuously monitored when in operation. Air cleaning equipment that may be used is:

a. Cyclone Collectors.

Used to remove particulates from exhaust streams that are heavily loaded.

b. High Efficiency Particulate Air Filters

Used in the majority of cases for highest efficiency air cleaning, normally in conjunction with roughing filters to extend useful life and improve reliability.

3.2.4 Internal and External Exposure

3.2.4.1 Special Surveys

All non-routine operations not covered by operating procedures shall be reviewed by Regulatory Compliance and a determination made by Regulatory Compliance if radiation safety monitoring is required.

With the exception of incidents requiring immediate evacuation, spills or other accidental releases shall be cleaned up immediately. Criticality restrictions on the use of containers and water shall be followed at all times. The Production Supervisor and Regulatory Compliance must be notified immediately of such incidents. Appropriate precautions such as use of respirators shall be observed.

3.2.4.2 Routine Surveillance

Surveys shall be conducted on a regularly scheduled basis consistent with plant operation and survey results. The frequency of survey depends upon the contamination levels common to the area, the extent to which the area is occupied, and the probability of personnel exposures. The frequency for contamination surveys in plant operating areas shall be specified in Table 1 of Regulatory Guide 8.24, where applicable. Clear areas with high potential for tracking of contamination may be surveyed more frequently. Areas with a low use factor may be surveyed less frequently.

Cleanup action for restricted areas shall be initiated when surface contamination exceeds the action limits specified in Table 2 of Regulatory Guide 8.24.

3.2.4.3 Air Sampling Criteria

Air sampling shall be performed using fixed location samplers, personal (lapel) samplers, and air monitors.

The type of air sample collected at a specific operation or location shall depend on the type, frequency, and duration of operations being performed. One or more of these sample methods shall be employed at intervals prescribed by the Manager of Regulatory Compliance or Health Physicist. General criteria for sampling are:

- a. Fixed location samplers shall be used where uranium handling operations are pursued for extended periods of time, or where short term operations occur frequently. These samplers shall be located in or as near as practical to the breathing zone of the person performing the operations. Fixed sampling may also be used for investigative purposes. In this case, the samples may be collected near the point of suspected release of material.
- b. Lapel samplers may be used where work stations are not defined or for supportive measurements and special studies. Continuous air monitors may be used for early warning of unexpected releases.
- c. Emphasis shall be placed on sampling new operations or processes until adequate, effective, control of airborne contamination is assured.

4.0 NUCLEAR CRITICALITY SAFETY

4.1 Administrative Requirements

4.1.1 Double Contingency Policy

Process Designs shall, in general, incorporate sufficient factors of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible.

4.1.2 Criticality Safety Review

Final design, initial installation, modification, or relocation of special nuclear material processing, handling or storage equipment, or related operations, shall be reviewed and approved by the Manager of Regulatory Compliance or Nuclear Criticality Specialist. Such changes as could effect nuclear criticality safety shall be reviewed prior to implementation according to the review and approval procedure described in Section 2.6 of this part.

4.1.3 Posting of Limits

Signs listing approved nuclear criticality safety limits shall be posted such that information thereon is readily discernible to employees. This posting may be for individual pieces of equipment or groups of equipment, depending on the nature of the operations covered.

5.1.4 Solid Wastes (continued)

Non-contaminated solid wastes are disposed of by a commercial waste disposal firm. Old items of non-contaminated equipment may be disposed of to commercial scrap dealers.

Inspection of conditions of storage of waste, waste containers, and contaminated equipment shall be included in the monthly Regulatory Compliance audit.

5.2 Environmental Monitoring

Locations of air particulate, soil, vegetation, well water, surface water and liquid effluent sampling stations shall be established and kept part of the Demonstration Section of this license.

Monitoring locations may be changed only if a documented evaluation by Regulatory Compliance demonstrates that a new location provides data that are as representative (or more representative of) conditions likely to impact on the general public, as was the data from the original location.

The minimum environmental monitoring program shall consist of the following samples:

3.0 ORGANIZATION AND PERSONNEL

Section I.2.1 describes the key positions important to safety and the line of authority to top management. Section I.2.2 lists the education and training requirements for those positions. The following Section II.3.1 similarly describes additional positions of the organization. Section II.3.2 gives the resumes for personnel currently holding the key positions described in Part I.

3.1 Organizational Responsibilities

Figure II.3-1 is the Hematite plant organization chart. The following sections describe some of the supervisory and higher level positions shown in Figure II.3-1 that are not included in Section I.2.1.

3.1.1 Manager, Administration

The Manager, Administration reports to the Plant Manager. He manages the control of SNM from receipt at the Hematite facility, through the production process until it is shipped as product or waste. His activities include scheduling of production, selection of SNM for use in the production process, specification of the product lot makeup, scheduling of SNM shipments from the supplier to Hematite and from Hematite to the customer, coordination of the packaging and shipment of SNM waste and residues to a commercial, licensed disposal facility and development of procedures for packaging, shipping and receiving. He also performs facility administration duties including the supervision of the guards, site purchasing and personnel services.

3.1.2 Quality Coordinators

The Quality Coordinators report administratively to their respective Focused Factory Managers, and also report functionally to the Director, Quality Systems to maintain independent management oversight. The Quality Coordinators manage the measurement activities which verify that the product conforms to specification. These activities may include development of the Operation Sheets that are the procedures for acquisition of product data, approval of laboratory measurement methods, approval of statistical methodology for data evaluation and establishment of the system for control and distribution of data documentation. The Quality Coordinators maintain separation between their measurement activities and the production activities that they monitor.

3.1.3 Coordinator of Nuclear Materials Accountability

The Coordinator of Nuclear Materials Accountability reports to the Manager of Regulatory Compliance. He maintains the SNM accounting records, prepares NRC required reports on material balance, transfer and inventory, periodically verifies current knowledge of the presence of SNM and computes Inventory Differences.

3.1.4 Supervisor, Materials

The Supervisor, Materials reports to the Manager, Administration. He implements the production schedules provided by the Manager through supervision of the production clerk, the material control operators and the material handlers. He monitors the sequence of steps in the processing and handling of each material unit including the proper use of the Traveler that documents each process step.

3.1.5 Manager, Facilities

The Manager, Facilities reports to the Plant Manager. The duties of this function include facilities engineering and maintenance for the entire plant, including such support for the focused factories as requested.

3.1.6 Supervisor, Laboratory

The Laboratory Supervisor reports to the Plant Manager. He/she supervises and trains the laboratory technicians, recommends sampling procedures, establishes laboratory methods and reviews and approves all chemical measurements on SNM. He/she also selects subcontractors and qualifies and coordinates their measurement services.

3.1.7 Supervisor, Maintenance

The Supervisor, Maintenance reports to the Manager, Facilities. He supervises technicians in the maintenance activities related to the facility and the production equipment within the constraints of applicable radiation and industrial safety practice.

3.2

Resumés of Personnel

Resumés of key personnel important to safety are provided in this section for the following personnel:

J. A. Rode - Plant Manager

S. G. Borell - Manager, Chemical Operations

G. F. Palmer - Manager, Ceramic Operations

G. C. Kersteen - Manager, Assembly Operations

H. E. Eskridge - Manager, Regulatory Compliance

R. J. Klotz - Nuclear Criticality Specialist
(located in Windsor)

M. R. Eastburn - Nuclear Criticality Specialist

A. M. Keklak - Health Physicist

E. W. Criddle - Supervisor, Health Physics

JAMES A. RODE - PLANT MANAGER, HEMATITE

EDUCATION:

B.S., Chemical Engineering, University of Texas, 

Ex. 6

EXPERIENCE:

COMBUSTION ENGINEERING, INC.

1974 to Present

Plant Manager, Nuclear Fuel Manufacturing, Hematite

Responsible for all Nuclear Fuel Manufacturing activities at the Hematite Plant. Manages three Focused Factories (Chemical Operations, Ceramic Operations and Assembly Operations) and the supporting services of Facilities, Regulatory Compliance, Laboratory and Administration.

GULF UNITED NUCLEAR FUELS CORPORATION

1968 to 1974

Technical Consultant

Responsible for establishing process flow sheets and capacities for production of UO_2 , UO_2 pellets, and uranium recovery; and coordinating development activities. Also responsible for preparation of stable density pellets and development of process modifications. Technical Assistant to the Manager of Chemicals Operations on major operational problems.

JAMES A. RODE (continued)

UNITED NUCLEAR CORPORATION

Manager of Facilities Development and Technical Director

1964 to 1968

Responsible for design, construction and startup of the first large scale fluidized-bed process for the production of UO₂ from UF₆ and of companion facilities for converting oxide to pellets.

Responsible as Technical Director for Chemicals Operations for process engineering supervision and development activities including design, construction, and operations of a pilot plant for preparation of UO₂ via the reaction of UF₆ and steam and for development, design, construction and startup of a fluid-bed vapor phase coating system.

Assistant Technical Director

1962 to 1964

Responsible for process and equipment design in the Rhode Island Scrap Recovery Facility, development work on process for producing pyrolytic carbon coated UO₂, and for continuing development work in Naval Fuel Program.

Project Leader

1961 to 1962

Assumed total responsibility for salvaging a non-operative Naval Fuels Plant including production, quality control, development and customer contacts. The facility was converted into the primary source of profits for the Chemical Operations.

JAMES A. RODE (continued)

MALLINCKRODT CHEMICAL WORKS

Group Leader and Production Superintendent

1958 to 1961

Responsible for the startup of high enrichment metal production and development and startup of the Hematite Pellet Plant.

Responsible as Production Superintendent for detailed supervision of production in both high and low enrichment conversion operations.

Process Engineer and Research Chemist

1953 to 1958

Participated in preparation of proposals for production of yttrium metal and conversion of 5000 tons per year of UF₆. Responsible for operation of the first ADU pilot plant and startup of the Hematite Oxide Plant.

STEN G. BORELL - MANAGER CHEMICAL OPERATIONS

Ex. 6

EDUCATION

M.S., Chemical Engineering, Lund Institute of Technology Sweden, 1974

EXPERIENCE

ABB COMBUSTION ENGINEERING NUCLEAR FUEL

Manager Chemical Operations - Hematite

1993 to Present

Responsible for this focused factory consisting of Conversion and Recycle/Recovery operations.

Manufacturing Operations Senior Consulting Engineer

1992 - 1993

Lead engineer for the Integrated Safety Analysis covering the conversion process and it's new computerized control system.

ABB ATOM AB

Manager Process Development

1990 - 1992

This office consisted of groups for Chemical Processes, Welding and Non Destructive Testing, Metallographic Laboratory, Process Control Computers, Mechanical Design of process equipment and Electric Design of process equipment.

Established standards for the design of criticality related circuits and computer programs to be used in the plant.

Responsible for preparing and reviewing safety analysis reports for all uranium containing systems in the plant.

STEN G. BORELL (continued)

Project Manager Rod Manufacturing Shop

1988 - 1990

Started this \$10 Million project to modernize the Rod Manufacturing shop. This project included all Non Destructive Testing equipment for rod manufacturing. Had this job in parallel with being the manager for Chemical Process Development. A new project manager was appointed when the Process Development office was formed.

Manager Chemical Process Development

1987 - 1990

Responsible for Chemical Processes used in the plant. Also, responsible for preparing and reviewing safety analysis reports for all uranium containing systems.

Process Engineer, Stationed at Westinghouse Nuclear Fuel, SC

1986 - 1987

Stationed at the Westinghouse South Carolina Plant for one year as a part of a technical exchange program. Responsible for conversion line number five which was converting uranyl nitrate into uranium dioxide. Developed a theoretical model of the interaction between the precipitation and the calciner and used this model to control the product properties.

Development Engineer, Conversion and Recovery Systems

1978 - 1986

Designed and implemented chemical recovery systems for the ABB ATOM NUCLEAR FUEL Plant; distillation to recover ammonium carbonate; distillation to purify methanol filtrates and cracking to produce Hydrogen from the recovered methanol.

Designed and implemented a safe geometry water cleanup system to serve all active areas in the plant. The system consists of several mechanical separation steps to remove suspended solids and ion exchangers to remove soluble uranium.

STEN G. BORELL (continued)

Designed and implemented a safe geometry uranium recovery system based on leaching with nitric acid followed by chromatographic extraction in fixed bed columns.

Development Engineer, Reactor Systems

1974 - 1977

Participated in the design work on the reactor primary systems and the waste systems for the Swedish BWR reactors.

ADDITIONAL EDUCATION

Numerous national and international courses on technical issues.
Management training classes every year in management position.

PUBLICATIONS

Nuclear Europe Worldscan March/April 1992: ABB Atom adapts it's fuel factory for the future.

PATENTS

Holder and co-holder of several patents and pending patents.

GEORGE F. PALMER - CERAMIC OPERATIONS MANAGER

EDUCATION:

B.S., Ceramic Engineering, Georgia Tech, 

EX 6

EXPERIENCE:

ABB COMBUSTION ENGINEERING NUCLEAR FUEL

Ceramic Operations Manager - Hematite

1993 to Present

Responsible for the fabrication process and the quality of UO_2 and $Er_2O_3-UO_2$ pellets in the Ceramic Focus Factory. This includes directing the ceramic processes to ensure that the product is fabricated in accordance with the requirements of Operation Sheets and Traveler documents.

Production activities include overseeing process fabrication, process and personnel scheduling, procedure writing, equipment modifications; process, equipment and personnel qualification, and the training of personnel. Act as a liaison to Facilities Group for the repair and maintenance of process equipment in the Ceramic Operation.

Quality activities include, in conjunction with the Quality Control Coordinator, overseeing the quality of the product, verification of product certification, quality procedures, and customer interface.

Periodically directing clean out of production equipment in conjunction with physical SNM inventory.

GEORGE F. PALMER (continued)

Process Engineering Supervisor - Hematite

1990-1993

Responsible for the process engineers and the production process for the oxide plant, pellet plant, and the recycle areas of the Hematite Plant. Activities included writing operation sheets, travelers, qualification plans and reports, maintenance procedures; overseeing the day-to-day operation of the processing areas, dispositioning Deviation Notices, training of operators, selection of process equipment, and defining the process flow.

Work on the process layout for the pellet drying and transport process associated with the Consolidation Project at Hematite.

Project Manager for the Erbia Pellet Line installation. Worked on design and installation of equipment to start-up a new pellet processing line at the Hematite Production Facility. Worked on the start-up and qualification of the new pellet line as part of the revitalization project.

Process Engineer - Windsor

1970-1993

Worked on design and installation of equipment to start-up a new pellet processing line at the Windsor Production Facility. Worked on the start-up and qualification of the new pellet line.

Primary responsibilities covered the fabrication of UO_2 pellets into fuel tubes, recycling of clean UO_2 scrap, and the handling of low level waste. Activities included writing operation sheets, travelers, qualification plans and reports, maintenance procedures; overseeing the day-to-day operation of the processing areas, dispositioning Deviation Notices (D/N's), training of operators, selection of process equipment, and defining the process flow.

GEORGE F. PALMER (continued)

UNITED NUCLEAR CORP.

Process Engineer - New Haven & Hematite

1967-1970

Responsibilities included overseeing the process to produce fuel and fuel components for the nuclear navy program. Activities included overseeing the day-to-day processes, writing procedures and travelers, dispositioning Deviation Notice (D/N's).

GARY C. KERSTEEN - ASSEMBLY OPERATIONS MANAGER

EDUCATION:

B.S., Mechanical Engineering, Trinity College, Hartford, CT, 

Supplemental Education:

Advanced Course - Nuclear Materials Safeguards, Argonne Labs

Effective Middle Management Courses

Financial Management Course

Crosby Quality Education Instructors Course (taught Quality Improvement Process to more than 100 employees)

Worcester Polytechnic Institute, Statistical Process Control

Motorola Management Institute, Motorola University

EXPERIENCE:

COMBUSTION ENGINEERING, INC.

Assembly Operations Manager - Hematite

1993 - Present

Directs the production operations of the Assembly Operations Focused Factory, including scheduling of Production Supervisors, processes and procedures, training and qualification of production operators through their Production Supervisors, and periodically directing cleanout of the production in conjunction with the physical SNM inventory. With support form staff, responsible for engineering of new equipment, modifications to existing equipment, recommendation, development and qualification of manufacturing processes, specification of process control methods and design, procurement and installation of processing equipment.

GARY C. KERSTEEN (continued)

Uranium Plant Manager - Windsor

1992 - 1993

Had overall responsibility for the safe conduct of all activities that are regulated by the Nuclear Regulatory Commission. Responsibilities encompassed the following functions: operations, accountability, security, training, criticality, radiological and industrial safety, environmental protection, transportation, engineering and maintenance.

Director, Planning and Materials

1990 - 1992

Directed the master planning of all nuclear fuel manufacturing activities. Managed the planning and procurement of contract materials and other supplies and services. Coordinated uranium management activities. Directed manufacturing related information systems development and support including installation of Statistical Process Control (SSP) and Material Requirements Planning (MRP) systems.

Production Manager

1982 - 1990

Managed all aspects of production control, material control and the manufacturing work force and the Windsor Plant. During this time, installed real-time fuel rod information systems, moved pellet operations to Hematite, MO, Plant and initiated the fuel rod automation project. Developed a sophisticated fabrication planning system. Initiated the C-E Quality Improvement Process and developed Improvement Teams at the Windsor Plant to encourage employee empowerment, involvement and communications.

Production Control Manager

1979 - 1982

Managed the production control section, the material control group and the warehouse activities.

GARY C. KERSTEEN (continued)

Supervisor, SNM Accountability

1975 - 1979

Started the Windsor Plant accountability department. Wrote the first Fundamental Nuclear Material Control Plan. Brought the first distributed data processing system to the Windsor Plant to automate accountability of special nuclear material. Developed the initial limit of error methodologies used at Windsor.

Manufacturing Engineer

1974 - 1975

Initial assignment at Nuclear Fuel Manufacturing developing fixtures and processes for fabrication activities.

MILITARY EXPERIENCE

U. S. Army

1969 - 1974

U. S. Army Officer Candidate School - Engineering, Fort Belvoir, VA

Commander, 575 Ordnance Company (Guided Missile Repair), Germany

HAROLD E. ESKRIDGE - MANAGER, REGULATORY COMPLIANCE

EDUCATION:

B.S., Physics, North Carolina State University,
M.S., Physics, North Carolina State University, 1963

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6

EXPERIENCE:

COMBUSTION ENGINEERING, INC.

Manager, Regulatory Compliance - Hematite 1989 to Present

Responsible for licensing, safety, and safeguards at Nuclear Fuel Manufacturing - Hematite. Develops and implements the health physics, criticality and industrial safety, and accountability programs for the Hematite facility. Audits manufacturing operations and supervises safety and safeguards personnel in day-to-day operations.

Supervisor, Nuclear Licensing, Safety and Accountability - Hematite 1974 to 1989

Responsible for licensing, safety, and safeguards at Nuclear Fuel Manufacturing - Hematite. Develops and implements the health physics, criticality and industrial safety, and accountability programs for the Hematite facility. Audits manufacturing operations and supervises safety and safeguards personnel in day-to-day operations.

GENERAL ELECTRIC COMPANY 1972 to 1974
Nuclear Safety Engineer

Analyzed changes and specified requirements for Wilmington nuclear fuel manufacturing to assure compliance. Audited manufacturing operations and radiation protection programs. Planned and conducted development programs in dosimetry, radiation monitoring and environmental sampling.

HAROLD E. ESKRIDGE (continued)

SALISBURY METAL PRODUCTS COMPANY

1971 TO 1972

Co-Manager

Managed operations for manufacturer of precision components; including sales, finance, production control and quality assurance. Consultant to Institute for Resources Management on decontamination and radioactive waste disposal projects and a member of Rowan Technical Institute Advisory Committee.

EVIRONONICS, INC.

1970 to 1971

Vice President - Nuclear Applications

Performed variety of functions, including market research, proposal preparation and technical analyses relating to remote sensing, environmental surveys, and health physics services. Contacted potential customers, including government agencies and utility companies with power reactors.

EG&G, INC.

1967 to 1970

Senior Scientist and Scientific Executive

Head, Radiological Sciences Section and Senior Health Physicist, responsible for radiation and nuclear safety and regulatory compliance for Las Vegas Operations. Provided technical direction for Nuclear Counting Laboratory, Nevada Aerial Tracking System, and Aerial Radiation Measuring Surveys Programs. Acting Manager, Environmental Measurements Department, which included High Energy Neutron Reactions Experiment and Metrology Sections.

NORTH CAROLINA STATE BOARD OF HEALTH

1962 to 1967

Public Health Physicist

Technical, policy, and procedural consultation in all aspects of health physics, environmental surveillance and radiological health. Functioned as administrator of Radioactive Materials Licensing and Regulation. Served as Team Chief of State

HAROLD E. ESKRIDGE (continued)

Radiological Emergency Team and established and equipped a laboratory for radiological and chemical analysis of environmental samples.

U.S. AIR FORCE

1954 to 1957

Nuclear Specialist

Responsible for criticality and radiological safety for nuclear weapon systems and components. Also was an instructor in nuclear safety and weapons systems.

ROBERT J. KLOTZ - NUCLEAR CRITICALITY SPECIALIST

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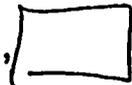
EDUCATION

Graduate, Oak Ridge School of Reactor Technology, 1957

M.S. Physics, Kansas State College, 1954

A.B. Physics and Mathematics, Kansas State Teachers College of Emporia,

Graduate Studies, Texas Christian University



EXPERIENCE

COMBUSTION ENGINEERING, INC.
Windsor, Connecticut

1965 to Present

Principal Consulting Physicist

1977 to Present

Responsible for the physics design of new and spent fuel racks, fuel transfer machines, and other equipment involved in moving, testing or storing fuel. Nuclear Criticality Specialist provide technical support and criticality audit function at both the Windsor Manufacturing and Hematite Fuel Manufacturing facilities. Involved in solving special physics problems.

Section Manager, Radiation and
Criticality Physics

1965 to 1977

Responsible for radiation shielding, the ex-core criticality, and determination of source terms for Nuclear Steam Supply Systems. Also for providing nuclear heat generation rates for structures in the NSSS, and radiation dose rates for assessing physical changes in NSSS materials and equipment in the radiation environment.

ROBERT J. KLOTZ (continued)

GENERAL NUCLEAR ENGINEERING CORPORATION

Physicist

1959 to 1965

Responsible for the shield design of the heavy water research reactor at the Georgia Institute of Technology and the thermal and biological shield design analysis for the Boiling Nuclear Superheat Reactor (BONUS) located in Rincon, Puerto Rico. Reviewed all the literature on radiation shielding for the publication Power Reactor Technology.

CONVAIR DIVISION OF GENERAL DYNAMICS

Physicist

1954 to 1959

Responsible for the design of a shield for a mobile reactor of the Army Compact Core Design and for a Nuclear Ramjet Missile. Performed analysis of aircraft nuclear shielding experiments, developed shielding programs for computers, and contributed to the Aircraft Shield Design Manual.

MICHAEL R. EASTBURN - NUCLEAR CRITICALITY SPECIALIST

EDUCATION:

M.S. Nuclear Engineering, University of Missouri at Rolla, 1976

M.S. Physics, University of Missouri at Rolla, 1975

B.S. Physics, University of Missouri at Rolla,

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EXPERIENCE:

ABB COMBUSTION ENGINEERING NUCLEAR FUEL

1993 to Present

Nuclear Criticality Specialist

Responsible for verification that equipment, processes and procedures satisfy the criticality criteria of a Special Nuclear Materials license. Performs criticality analyses of new or modified equipment, processes and procedures, or reviews the analyses of others.

ENTERGY OPERATIONS, INC.

1982 - 1993

Senior Nuclear Engineer

As part of the Nuclear Analysis Department, responsible for physics calculations and computer code development. Developed and installed modifications to EPRI NODE-P nodal code for use in physics calculations. Developed FORTRAN coding which calculates boundary conditions for Combustion Engineering's CECOR program and performs a computer check of the CECOR coefficient library. Participated in the development of a personal computer based system to run CECOR for startup and core follow of CE reactors. Generated CECOR coefficient libraries and participated in the startup testing of Arkansas Nuclear One- Unit 2 nuclear reactor. Performed criticality analyses of spent and fresh fuel storage racks using diffusion and Monte Carlo codes. Analyzed the effect of Boraflex gaps on spent fuel rack criticality. Modified the Oak Ridge SCALE 4 Criticality Safety Analysis Sequences (CSAS) codes for installation on an IBM RISC 6000 workstation.

MICHAEL R. EASTBURN (continued)

BABCOCK & WILCOX

1977 to 1982

Nuclear Engineer

As part of the Nuclear Analysis Department, responsible for generating nuclear core physics constants for reactor startup and operation. Analyzed heat production and nuclear composition of spent fuel. Evaluated nuclear source designs. Developed several data handling FORTRAN codes which saved more than five man-days per reload analysis.

AWARDS AND HONORS:

Recipient Entergy Peak Performer Award, 1991

Recipient Entergy Corporate Cup Award, 1990

Nuclear Engineering Honor Society

Phi Kappa Phi (Scholastic Honorary)

President, Sigma Pi Sigma (Physics Honorary)

Cum Laude Graduate, University of Missouri at Rolla, 1967

ANN MARIE KEKLAK - HEALTH PHYSICIST

EDUCATION:

M.S. Radiation Science, Rutgers University, 1990

B.S. Public Health, West Chester University, 

A.S. Nuclear Medicine Technology,  

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EXPERIENCE:

ABB COMBUSTION ENGINEERING NUCLEAR FUEL

1993 to Present

Health Physicist

Responsible for observation of plant operations and evaluation of results from personnel and environmental monitoring, including comparing quantitative measurements and other observations of a licensee's facility activities with the requirements of a Nuclear Regulatory Commission Special Nuclear Materials license.

PUBLIC SERVICE ELECTRIC AND GAS

1990 - 1993

Health Physics Supervisor

First Line Supervisor at Salem Nuclear Generating Station (2 unit PWR). Directly supervised both bargaining unit and contractor personnel. Responsible for ALARA/RWP work, shielding, dose assessment, report preparation, training, new 10 CFR Part 20 implementation, and technical support.

ROER PHARMACEUTICAL COMPANY

1989 to 1990

Radiation Safety Officer

Functioned as Radiation Safety Officer. Responsible for developing a comprehensive radiation safety program for a rapidly developing pharmaceutical firm. Duties included implementation of NRC license, developing and providing

ANN MARIE KEKLAK (continued)

radiation worker training program, development of a bioassay program, establishment of an environmental surveillance program, compliance audits, and active membership of the industrial hygiene/safety committee.

Other Employment During Education:

Nuclear Medicine Technologist, 1989
Co-Chief Nuclear Medicine Technologist and Assistant RSO, 1989
Radiation Safety Technician, 1988 - 1989
Health Physics Intern, 1987
Staff Nuclear Medicine Technologist, 1981 - 1985
Nuclear Medicine Technologist Intern, 1979 - 1981

AWARDS AND HONORS:

Recipient 1987 - 1988 Health Physics Society Fellowship
1987 Distinguished Student Writer Award (West Chester)
Eta Sigma Gamma Honor Society, 1987

CERTIFICATION:

Board Certified Nuclear Medicine Technologist - American Registry of Radiation Technologists (1981) and Society of Nuclear Medicine (1981)

PROFESSIONAL SOCIETY MEMBERSHIPS:

Delaware Valley Society for Radiation Safety
Health Physics Society
American Nuclear Society

ANN MARIE KEKLAK (continued)

ADDITIONAL TRAINING:

- Certified Health Physics Review Course, Delaware Chapter of the Health Physics Society, 1991
- Numerous local and national symposia, meetings and short courses

ENOS W. CRIDDLE - SUPERVISOR, HEALTH PHYSICS

EDUCATION:

Cape Girardeau Central High School, Graduated 
Naval Nuclear Power School, 1982
Naval Nuclear Power Prototype Training, 1983
Naval Nuclear Engineering Laboratory Technician, 1983
Naval Damage Control School, 1984
Naval Fire Fighting Training, 1985

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EXPERIENCE:

ABB COMBUSTION ENGINEERING NUCLEAR POWER, 1988 to Present

Health Physics Supervisor, 1990 to Present

Responsible for the daily operations management of the health physics department and staff at Nuclear Fuel Manufacturing - Hematite. Implements health physics and industrial safety program through training, supervision, and daily audit. Develops and revises departmental operations procedures and emergency plan implementing procedures.

Health Physics Technician, 1988 to 1990

Responsible for radiological and industrial safety at Nuclear Fuel manufacturing - Hematite. Duties include instrument calibration, environmental sampling, documenting employee exposures, maintaining health physics documents, and performing routine radiological and industrial safety monitoring.

ENOS W. CRIDDLE (continued)

U.S. Navy Engineering Laboratory Technician, 1981 to 1987

Stationed on board USS Lafayette SSBN 616 (G) responsible for radiological safety throughout the ship. Qualified supervisor for administration and control of radiological materials and records. Responsible for instrument and gauge calibration program, chemical inventory and storage, and water chemistry controls for reactor plant and steam plant.

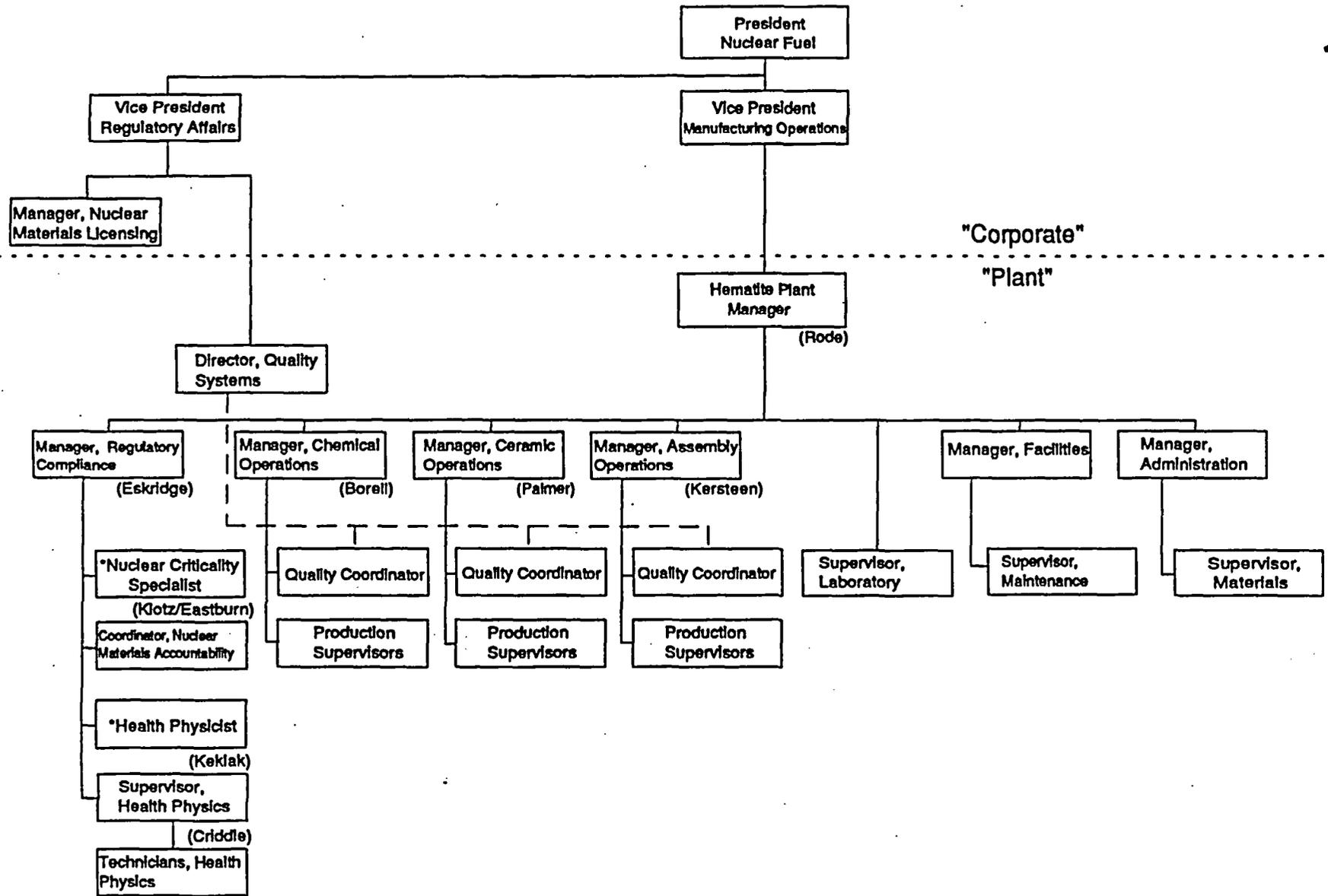


Figure II.3-1

Hematite Plant Organization Chart

*May be Windsor Based Support

4.0 RADIATION PROTECTION PROCEDURES AND EQUIPMENT

4.1 PROCEDURES

A manual containing procedures necessary to implement the radiation safety program described in Part I of this renewal application is maintained by Regulatory Compliance.

All routine operations involving SNM handling are covered by an Operation Sheet (O.S.) and/or by a Special Evaluation Traveler (S.E.T). A separate O.S. covers plant-wide radiation safety procedures, while procedures specific to a certain operation are covered in the O.S. for that operation.

The Manager, Regulatory Compliance or Health Physicist, reviews all O.S.s and S.E.T.s regarding all aspects of safety. All approvals are documented. The Production Supervisors instruct their people to assure their understanding of the operations and their safety limit and restrictions. Adequate performance of individuals is continually monitored by the Foremen.

The Production Supervisors further assure that each work station is properly posted, and that operations are performed in compliance with posted limits and written instructions.

4.2 Posting and Labeling

All work stations involving nuclear fuel handling are posted with criticality safety limit. Radiological posting of areas is in accordance with 10 CFR 20.203. All mass-limited containers of SNM are labeled as to their contents.

4.2 Posting and Labeling (continued)

Other signs containing summary instructions, cautions, and reminders relating to safety are posted, as appropriate or required, throughout the plant.

4.3 Personnel Monitoring

All personnel are required to wash their hands and monitor for contamination before exiting the contamination area. Alpha personnel monitors are located beyond the step-off pad at each change area. Any person having contamination must wash thoroughly and recheck for contamination. If contamination persists, a member of the Regulatory Compliance group will assist in decontamination.

4.4 Surveys

Removable contamination on surfaces in plant areas and on items to be released to unrestricted areas are determined by smearing an area of 100 cm². Limits are provided in Part I, Section 3.2.4.

Direct radiation surveys of plant environs, sealed sources, and offsite shipments of radioactive materials are made as necessary to comply with 10 CFR 20.201. All survey results are documented.

4.5 Records and Reports

Records required by NRC Regulations and this license are retained by the Regulatory Compliance Group. These records include alternations or additions made, abnormal occurrences and events associated with radioactivity release, criticality analyses, audits and inspections, instrument calibrations, ALARA findings, employee training and retraining, personnel exposure, routine

4.5 Records and Reports (continued)

and special radiation surveys, and SNM control records required by 10 CFR 70.51.

Retention of records is described in Part I, Section 2.10.

4.6 Instruments

Type of radiation detection instruments, their capabilities, and frequency of calibration are described in Part I, Section 3.2.3.

4.7 Protective Clothing

Protective clothing is worn as specified by Regulatory Compliance posting or as specified by the O.S. for a particular operation, including: coveralls, lab coats, safety shoes, shoe covers, cotton and rubber gloves, safety glasses, face shields, respirators, supplied-air breathing apparatus, rubber aprons, and acid suits.

4.8 Dosimetry

A film badge and I.D. badge with indium foil is worn by personnel at all times they are within the fenced site area. Visitors also wear these badges, unless they are escorted when in the controlled areas or only visiting the office area. Film badges are processed monthly.

Procedures to be followed in case of a criticality accident are described in the Emergency Procedures Manual.