



70-36

June 14, 1994
ML-94-028

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

Dr. Michael Tokar, Section Leader
Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: **Hematite License Renewal Changes**

Dear Dr. Tokar:

This letter provides changes to the Hematite License Renewal Application as discussed with your staff on June 13, 1994.

Enclosure I provides an explanation of substantive changes from the previous renewal submittals. A revised "List of Effective Pages" is provided as Enclosure II for your information. Enclosure III provides the replacement pages of the renewal application. Six (6) copies of this document are provided for your use.

If there are questions or comments concerning this matter, do not hesitate to contact me at (203) 285-5261.

Very truly yours,

COMBUSTION ENGINEERING, INC.

Mark A. Michelsen
Licensing Engineer

Enclosures: As Stated
cc: S. Soong (NRC)
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Enclosure I to
ML-94-028

COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
LICENSE RENEWAL APPLICATION

DESCRIPTION OF CHANGES

June 1994

COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
LICENSE RENEWAL APPLICATION

DESCRIPTION OF CHANGES

This submittal provides changes to Part I of the Hematite License Renewal Application as discussed with the Nuclear Regulatory Commission staff. Enclosure II provides a List of Effective Pages for information. The substantive changes to the Hematite License Renewal Application which are submitted herein are discussed below.

In Section 1.6, item b, it has been clarified that the "Guidelines ..." are those of the NRC.

In Section 2.1, the provisions for resolution of disputes, as submitted in our May 4, 1994, letter concerning the recent organization amendment of the existing license, have been added. Similarly, the provisions concerning the Manager, Production Support, responsibilities have been reflected in Section 2.1.2, and those concerning the authority of the Manager, Regulatory Compliance, to stop work and restart, have been included in Section 2.1.3. Also, the changes to Table 2-1 as submitted in our May 4, 1994, letter have been included. Table 2-1 has also been changed to require that the Manager, Regulatory Compliance have training in nuclear criticality safety.

In Section 2.3 (page 2-5), the Manager, Production Support, has been added to receive the report of findings and recommendations of the safety committee if appropriate.

In Section 2.4, the wording concerning approval of safety-related staff positions has been clarified.

In Section 2.6, the term "Operations Sheets" has been replaced with the more general term "operating procedures". The practice of using Operations Sheets or Special Evaluation Travelers for these procedures is already described in Part II of the application.

In Section 2.8 (page 2-11), the required qualifications for the person performing the quarterly radiation safety inspection and those for the person performing the quarterly criticality safety inspection are explicitly stated, in lieu of the former reference to the Manager, Regulatory Compliance.

In Section 3.1.1, the former term "Plant Manager" has been replaced with "Focused Factory Managers and the Manager, Production Support".

The section concerning Radiation Work Permits (Section 3.1.2) has been revised. The former discussion of Operations Sheets and Special Evaluation Travelers has been eliminated since it was redundant with the provisions for operating procedures of Section 2.6. The provision for monthly review of RWPs was revised to clarify its purpose.

In Section 3.2.3.2.b, the frequency of assessing airborne radioactive concentration for insoluble uranium has been specified as at least weekly. Also, the former term "airborne radioactivity areas" has been revised to "areas having the potential for airborne radioactivity".

In Section 3.2.6.2, the table specifying surface contamination survey frequency has been modified to add action levels. The former reference to the action levels of Regulatory Guide 8.24 has been replaced with reference to this table.

In Section 4.1.3 (first paragraph), the former term "analyst" has been replaced with "specialist", as consistent with elsewhere in the application. In addition, the third paragraph of this section was reworded for clarity concerning the criticality safety approvals of postings and procedures.

In Chapter 7, the former reference to the 1979 Decommissioning Plan was deleted; reference is made to the requirements of 10 CFR 70.38. The CE letters submitting financial assurances for decommissioning are referenced.

In Chapter 8, the CE submittal letter for the Emergency Plan is referenced.

Enclosure II to
ML-94-028

COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
LICENSE RENEWAL APPLICATION

LIST OF EFFECTIVE PAGES

June 1994

COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
LICENSE RENEWAL APPLICATION

LIST OF EFFECTIVE PAGES

Combustion Engineering, Inc., provides changes to the Hematite license renewal application. The following is a comprehensive List of Effective Pages, summarizing the latest applicable submittal dates for each page of the application.

<u>Pages</u> <u>Revision</u>	<u>Date</u>	<u>Pages</u> <u>Revision</u>	<u>Date</u>
<u>License Application Title Page</u>		2-8	0 4/20/94
		through	
		2-10	
<u>Table of Contents</u>		2-11	0 6/14/94
i	0 1/28/94	2-12	0 4/20/94
through		2-13	0 4/20/94
xii		2-14	0 6/14/94
<u>Part I Title Page</u>		<u>Chapter 3</u>	
		3-1	0 6/14/94
<u>Chapter 1</u>		3-2	0 6/14/94
1-1	0 3/21/94	3-3	0 4/20/94
through		3-4	0 3/21/94
1-4		3-5	0 6/14/94
1-5	0 6/14/94	3-6	0 3/21/94
1-6	0 3/21/94	3-7	0 3/21/94
1-7	0 4/20/94	3-8	0 4/20/94
<u>Chapter 2</u>		3-9	0 6/14/94
2-1	0 6/14/94	3-10	0 6/14/94
2-2	0 6/14/94	3-11	0 4/20/94
2-3	0 4/20/94	3-12	0 3/21/94
2-4	0 4/20/94	through	
2-5	0 6/14/94	3-13	
2-6	0 6/14/94		
2-7	0 6/14/94		

Pages Revision Date

Chapter 4

4-1	0	1/28/94
4-2	0	1/28/94
4-3	0	6/14/94
4-4	0	1/28/94
through 4-6		
4-7	0	4/20/94
through 4-10		
4-10a	0	4/20/94
4-11	0	1/28/94
through 4-18		
4-19	0	4/20/94
through 4-23		
4-23a	0	4/20/94
4-24	0	1/28/94
through 4-26		
4-27	0	4/20/94
through 4-28		

Chapter 5

5-1	0	1/14/94
through 5-3		
5-4	0	4/20/94

Chapter 6

6-1	0	10/29/93
through 6-3		

Pages Revision Date

Chapter 7

7-1	0	6/14/94
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Chapter 8

8-1	0	6/14/94
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Part II Title Page

Chapter 9

9-1	0	11/24/93
through 9-20		

Chapter 10

10-1	0	1/14/94
through 10-23		

Chapter 11

11-1	0	4/20/94
through 11-28		
11-29	0	3/21/94
through 11-33		
11-34	0	4/20/94

Pages Revision Date

Chapter 12

12-1 0 3/21/94
through
12-4
12-5 0 4/20/94
12-6 0 3/21/94
through
12-12
12-13 0 4/20/94
through
12-15
12-16 0 3/21/94
through
12-17

Chapter 13

13-1 0 3/21/94
13-2 0 4/20/94
13-3 0 3/21/94
through
13-25

Chapter 14

14-1 0 1/28/94
through
14-97

Pages Revision Date

Chapter 15

15-1 0 1/14/94
through
15-12
15-13 0 4/20/94
15-13a 0 4/20/94
15-14 0 4/20/94
15-15 0 4/20/94
15-16 0 1/14/94
through
15-19
15-20 0 4/20/94
15-20a 0 4/20/94
15-21 0 1/14/94
through
15-23
15-24 0 4/20/94
15-24a 0 4/20/94
15-25 0 1/14/94
through
15-269
15-270 0 4/20/94
15-270a 0 4/20/94
15-271 0 1/14/94
through
15-292
15-293 0 4/20/94
15-294 0 1/14/94
through
15-299
15-300 0 4/20/94
15-301 0 1/14/94
through
15-309

Enclosure III to
ML-94-028

COMBUSTION ENGINEERING, INC.
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY
LICENSE RENEWAL APPLICATION

AFFECTED PAGES

June 1994

1.6 Exemptions and Special Authorizations

The following are specific exemptions and special authorizations of this license application:

- (a) Treat or dispose of waste and scrap material containing uranium enriched in the U^{235} isotope, and/or source material, by incineration pursuant to 10 CFR 20.2002.
- (b) Release of equipment and materials from restricted areas to controlled areas or off-site in accordance with the NRC's "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," dated April 1993.
- (c) Release of calcium fluoride (spent limestone) from the conversion process dry scrubbers for use as fill materials on site, providing the average total uranium alpha activity is less than 30 picoCuries per gram. Spent limestone with an average activity greater than 30 picoCuries per gram shall be dispositioned as low level radioactive waste. The procedure for sampling spent limestone as it is unloaded from the scrubbers shall be consistent with that described in CE letter dated August 9, 1991.

CHAPTER 2 ORGANIZATION AND ADMINISTRATION

2.1 Organizational Responsibilities and Authority

The Vice President, Fuel Operations has complete responsibility for ensuring that corporate operations related to nuclear fuel manufacturing are conducted safely and in compliance with applicable regulations. The Vice President has delegated the safety and compliance responsibility for nuclear fuel manufacturing and support activities to the three Focused Factory Managers, and the Managers of Production Support and Regulatory Compliance.

In the event of unresolved dispute among managers responsible for safety, the Manager, Regulatory Compliance has the authority to resolve such dispute.

2.1.1 Focused Factory Managers

The Focused Factory Managers report to the Vice President, Fuel Operations. There are three Focused Factories, whose Managers are responsible for Chemical Operations, Ceramic Operations and Assembly Operations. These Focused Factory Managers direct production operations. Each Manager directs and has the overall responsibility for safe operation of the Hematite facility, especially in the factory under his cognizance. This includes criticality safety, radiological and industrial safety, environmental protection, production, accountability, security, transportation, training, materials handling and storage, process and equipment engineering and maintenance.

2.1.2 Manager, Production Support

The Manager, Production Support reports to the Vice President, Fuel Operations. He provides production support to the Focused Factory Managers. Responsibilities may include, but are not limited to, administration of security, shipping and receiving, packaging and shipment of SNM products and waste, facilities engineering and maintenance, and laboratory services. He has the responsibility to assure safe operation of the Hematite facility in the plant areas under his cognizance. This includes criticality safety, radiological and industrial safety, environmental protection, production, accountability, security, transportation, training, materials handling and storage, process and equipment engineering and maintenance.

2.1.3 Manager, Regulatory Compliance

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

- o Environmental protection trends
- o Radiation safety trends
- o Criticality safety practices
- o Industrial safety trends
- o Adequacy of emergency planning and drills
- o Effectiveness of ALARA program
- o Internal inspection and audit reports
- o Abnormal occurrences and accidents including recommendations to prevent recurrence
- o Review of significant physical facility changes in the pellet shop and significant changes to operations involving radiation and/or nuclear criticality safety

The review of findings and recommendations of corrective action shall be reported to the appropriate Focused Factory Manager or Manager, Production Support, and to the Manager, Regulatory Compliance for action.

The Committee Chairman 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 Vice President, Fuel Operations. The Committee Chairman appoints the committee members to represent, as a minimum, engineering, production, health physics, and criticality safety. He or she 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 comprised of senior personnel from the technical staff of Combustion Engineering's organization who have at least five (5) years experience in the nuclear industry. The Committee Chairman may invite participation by others from within Hematite or from the staff at Windsor.

2.4 Approval Authority for Personnel Selection

Personnel for safety-related staff positions are approved by a higher level of management than the position of concern.

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 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 training in specialized topics such as personnel protective equipment, 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 technicians will receive professional related training at least biennially.

2.6 Operating Procedures

Operations which affect licensed material shall be conducted in accordance with approved written procedures. Operating procedures are issued and controlled under the direction of Quality Coordinators. These procedures provide the detailed instructions for equipment operation and material handling and the limits and controls required by the License. Operating procedures are the basic control document; before issuance or revision they require signed approval by the appropriate Focused Factory Manager (or the Manager, Production Support) and the Manager, Regulatory Compliance. In the Manager's absence, another individual meeting the Manager's minimum education and experience requirements may provide approval. Health Physics activities will be conducted in accordance with approved written procedures; these procedures must be approved by the Manager, Regulatory Compliance or the Health Physicist.

Procedures concerning the handling, processing, storing and shipping of nuclear materials are given prior review and approval by the Manager of Regulatory Compliance. Suitable control measures are prescribed, and pertinent control procedures relative to nuclear criticality safety and radiological safety are followed.

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 cognizant Focused Factory Manager and manager level staff. The appropriate Focused Factory Manager is responsible for corrective action.

Planned and documented quarterly inspections cover criticality control and radiation 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. The inspection of radiation safety shall be performed by an individual meeting at least the education and experience requirements of a Health Physicist. Items requiring corrective action are documented in a report distributed to the Focused Factory Managers 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 other responsible manager, shall be documented.

Annual audits, in which the results of previous inspections or audits are reviewed, are conducted 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, Fuel Operations. Annual audits are performed by

TABLE 2-1

MINIMUM EDUCATION AND EXPERIENCE REQUIREMENTS FOR KEY PERSONNEL

<u>POSITION</u>			
<u>Described In Section No.</u>	<u>Title</u>	<u>Education</u>	<u>Experience (Years/Field)</u>
2.1.1	Focused Factory Managers	Bachelors, Science or Engineering	5/Nuclear manufacturing industry
2.1.2	Manager, Production Support	Bachelors, Science or Engineering	2/Facilities Management, including nuclear industry experience
2.1.3	Manager, Regulatory Compliance	Bachelors, Science or Engineering, and 1 week training course in nuclear criticality safety	4/Health Physics with 2/Operational health physics with uranium bioassay techniques, internal exposure control, and radiation measurement techniques
2.1.4	Nuclear Criticality Specialist	Bachelors, Science or Engineering	2/Nuclear criticality evaluations, including 6 months applicable to fuel manufacturing
2.1.5	Supervisor, Health Physics	High School Diploma	5 Total/Nuclear industry, with 3/Health Physics Technician
2.1.6	Health Physicist	Bachelors, Science or Engineering	2/Operational Health Physics applicable to fuel manufacturing
2.1.7	Health Physics Technician	High School Diploma or GED Equivalent	6 months/Training and experience in radiation protection activities
2.3	Chairman, Plant Safety Committee	Bachelors, Science or Engineering	5/Nuclear manufacturing industry

CHAPTER 3 RADIATION PROTECTION

3.1 Special Administrative Requirements

3.1.1 ALARA Policy

It is the policy of Combustion Engineering to maintain a safe work place and healthful work environment for each employee and to keep radiation exposures to both employees and the general public As Low As Reasonably Achievable (ALARA). The annual audit team described in Section 2.8 considers ALARA requirements in conjunction with the intent of Regulatory Guide 8.10.

A written report shall be made by the Manager, Regulatory Compliance to the Focused Factory Managers and the Manager, Production Support, every six months providing employee radiation exposure (internal and external) and effluent release data. Trends in the reported data may reveal areas where exposures and releases can be lowered in accordance with the above ALARA commitment. The data may also help to identify problems in personnel exposure, in effluent release, in process control or in equipment for measuring effluents and exposures.

3.1.2 Radiation Work Permit Procedures

Short term non-routine activities which do not require an operating procedure may be controlled by a Radiation Work Permit (RWP) approved by Regulatory Compliance management. Examples of activities which may be controlled by such RWPs include non-routine maintenance or repair operations on equipment involved with handling radioactive materials and non-routine maintenance operations in which ventilated containment systems are breached. Such RWPs specify applicable radiological controls for the activity, such as special radiological equipment, special personnel monitoring devices, protective clothing or air sampling requirements. RWPs which remain open for more than a month are reviewed on a monthly basis to ensure the controls are effective and are closed if no longer needed.

3.2 Technical Requirements

3.2.1 Contamination Control

The facility shall be zoned to define contamination control areas and clear areas. Appropriate protective clothing shall be worn in the contamination areas. An alpha survey meter or alpha monitor shall be provided at the exit from a contamination area. All personnel are required to monitor their hands, and to monitor other body surfaces and personal clothing as appropriate, when exiting a contamination control area. Except for hand contamination which is easily removed with cleaning, health physics assistance and approval for release above background levels shall be required.

- 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. If a fixed position air sampler is used for assigning intake, the sampler shall be located in or as near as practical to the breathing zone of the person performing the operations. A means for measuring the flow rate (such as rotameter or critical orifice) will be installed at each fixed air sampling head.
- b. Lapel air 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.

3.2.3.2 Airborne Radioactivity

- a. Where fixed air sampling equipment is used to determine concentration in a worker's breathing zone, the locations of the fixed air sampling heads shall be reexamined for representativeness at least every 13 months or whenever licensed process or equipment changes are made or at the commencement of operations in an area that has been shut down for more than 6 months, whichever comes first.
- b. During operations involving soluble uranium in areas having the potential for airborne radioactivity, the airborne radioactivity concentration in the areas shall be assessed on a working shift basis to identify any unexpected concentration level of radioactive material. During operations involving insoluble uranium in areas having the potential for airborne radioactivity, the airborne radioactivity concentration in the area shall be assessed on at least a weekly basis. Air samples that are suspected of reflecting releases and high concentrations shall be counted at once to determine the radioactivity concentration.

With the exception of incidents requiring immediate evacuation, spills or other accidental releases shall be cleaned up immediately. The Production Supervisor and Regulatory Compliance must be notified immediately of such incidents.

3.2.6.2 Routine Surveillance

Surveys shall be conducted on a regular basis consistent with plant operations and prior 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.

Material on processing equipment or fixed on surfaces shall be limited as required to control airborne radioactivity and external radiation exposures.

The following minimum frequency schedule shall be applied to the plant contamination survey program:

<u>Area</u>	<u>Survey Frequency</u>	<u>Action Level*</u>
Contamination control areas	Weekly	5,000
Clear areas	Monthly	200
Lunchrooms, snack area, step-off pad areas	Daily	200

* dpm/ 100 cm² as determined by smear survey

Clean up action shall be started no later than the beginning of the next work shift when removable surface contamination exceeds the action level limits specified above.

The frequency of direct beta-gamma surveys shall be quarterly.

3.2.7 Intake Assessment

Individuals who are likely to receive, in one year, an intake in excess of 10 percent of the Annual Limit on Intake (ALI) shall be monitored for exposures to radioactive material. For individuals likely to receive an intake in excess of 10 percent of the ALI, internal dose will be assessed by taking suitable and timely measurements of:

- 3.2.7.1 Concentrations of radioactive materials in the air of the work area; or
- 3.2.7.2 Quantities of radionuclides in the body; or
- 3.2.7.3 Quantities of radionuclides excreted from the body; or
- 3.2.7.4 Any combination of measurements specified in 3.2.7.1 through 3.2.7.3 above.

- (c) Before a new operation with SNM is begun or an existing operation is changed, it shall be determined that the entire process will be subcritical under normal and operating conditions, consistent with paragraph a) of this section and applicable technical criteria of Section 4.2.1.3.

4.1.2 Positions Responsible for Criticality Safety

Section 2.1 describes the responsibilities and authority for key organizational positions affecting safety; Section 2.2 gives the professional requirements for these positions.

4.1.3 Documenting Criticality Evaluations and Reviews

Criticality evaluations associated with facility changes affecting the handling and storage of SNM in Nuclear Manufacturing shall be documented by a nuclear criticality specialist and independently reviewed.

The criticality evaluations shall consider potential scenarios which could lead to criticality and barriers erected against criticality in establishing applicable criticality limits and controls.

These limits and controls shall be incorporated into applicable written procedures and postings. Postings are approved by a qualified Nuclear Criticality Specialist. Procedures are approved by the Manager, Regulatory Compliance. Day-to-day monitoring of workers for conformance to criticality limits and controls and administrative procedures is carried out by line supervision and health physics technicians.

CHAPTER 7 DECOMMISSIONING PLAN

Combustion Engineering reaffirms that, upon terminating activities involving materials authorized under license SNM-33, affected facilities will be decommissioned in a manner that will protect the health and safety of the public in accordance with 10 CFR 70.38. Combustion Engineering's financial assurances in the letters dated May 28, 1993, December 10, 1993, and May 23, 1994, should be considered a part of this renewal application.

CHAPTER 8 EMERGENCY PLAN

Combustion Engineering, Inc. shall maintain and execute the response measures of the Hematite Emergency Plan submitted to the NRC via letter dated August 23, 1993. Combustion Engineering, Inc. shall also maintain implementing procedures as necessary to implement the Plan. No change shall be made in this Plan that would decrease its response effectiveness without prior approval of the NRC as evidenced by a license amendment. Changes which do not decrease the response effectiveness of the Plan may be made without prior NRC approval; such changes to the Plan shall be reported to the NRC within 6 months after the change is made.