



April 15, 1994  
ML-94-018

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

Dr. Sean Soong, Project Manager  
Licensing Section 2, Licensing Branch  
Division of Fuel Cycle Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: **Additional Information on Chemical Safety (TAC No. L21637)**

Reference: Letter, S. Soong (NRC) to R. W. Sharkey (C-E), dated February 24, 1994,  
"Chemical Safety Program for License Renewal (TAC No. L21637)"

Dear Dr. Soong:

This letter responds to your request for additional information in the referenced letter.

Enclosure (1) provides our response. Some of the requested information is not available at this time. In Part I, Chapter 1, Section 1.6, of the Hematite License Renewal Application we have made a commitment (item (f)) to evaluate the safety program with respect to the "Guidance On Management Controls/Quality Assurance, Requirements for Operation, Chemical Safety, and Fire Protection for Fuel Cycle Facilities". When that evaluation is complete a schedule can be developed to address the remaining information regarding chemical safety. As the NRC has discussed with the industry's Facility Operations Committee, chemical safety is one of the subjects being considered generically by the NRC as part of its current review of Part 70. We understand that the nature and scope of evolving NRC requirements and information needs in this area will be adopted and applied on an industry wide basis and schedule, rather than in renewal actions involving individual fuel cycle licensees.

Your letter indicates that the requested information "is either directly addressed or implied in the language of draft Branch Technical Positions on Chemical Safety, Requirements for Operations, and Management Controls." As you realize, the draft BTP on Chemical Safety has not been finalized, and active discussions between NRC and fuel cycle licensees are currently taking place while the NRC develops what will be the future applicable

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requirements. Moreover, it appears to us that the requested information goes well beyond anything addressed or implied in the draft BTP. The areas of inquiry and level of detail sought are not within any regulatory requirement pertaining to contents of a license application, and far exceed information submitted in other analogous areas. Once appropriate commitments are made by a licensee such as CE, the mechanisms implemented by the licensee to satisfy these commitments (e.g., procedures, training, program plans) have traditionally been reviewed by the NRC in the course of its inspection function and not by licensing review of unnecessarily voluminous information submittals.

We should also point out that the scope of the NRC's appropriate responsibility for chemical safety, in view of the explicit OSHA and EPA programs acknowledged in your letter, has yet to be worked out. As recently as the NRC's issuance of the Draft Radiological Criteria for Decommissioning (Jan. 26, 1994), the staff stated (at p. 15):

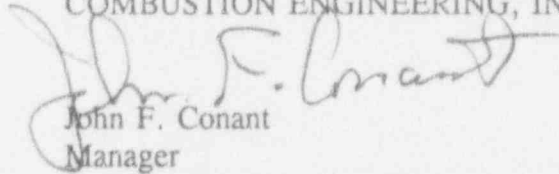
NRC's authority is limited by law primarily to ensuring protection of the public health and safety from radiological and nuclear hazards associated with source, special nuclear, and byproduct material. NRC has refrained from extending its reach to address non-radiological hazards except where specifically authorized by Congress (e.g., uranium mill tailings) or where these hazards would not otherwise be adequately controlled because of a regulatory void.

Whether or not any regulatory void exists with respect to chemical safety (which has yet to be determined), the current and prospective OSHA and EPA programs need to be taken into account at this time in order to avoid unnecessary and costly duplicative regulatory programs.

We look forward to working with the NRC in the development of its program in this area, consistent with the OSHA and EPA programs.

Very truly yours,

COMBUSTION ENGINEERING, INC.



John F. Conant  
Manager

Nuclear Materials Licensing

JFC:da

cc: Mr. G. France (NRC Region III)

Enclosure I to  
ML-94-018

COMBUSTION ENGINEERING, INC.  
HEMATIYE NUCLEAR FUEL MANUFACTURING FACILITY  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
CONCERNING CHEMICAL SAFETY

April 1994

**COMBUSTION ENGINEERING, INC.  
HEMATITE NUCLEAR FUEL MANUFACTURING FACILITY  
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
CONCERNING CHEMICAL SAFETY**

A response is provided below to the February 24, 1994, NRC request for additional information relating to the safe use of chemicals at the Hematite facility. The NRC comments and questions have been abstracted for brevity; please refer to the February 24, 1994, NRC letter for the complete text.

While the responses below refer to the Renewal application, it should not be construed that such reference indirectly invokes new requirements or commitments.

1.0 Chemical Hazard Identification

What are the onsite inventories of toxic and flammable chemicals that exceed the threshold amounts identified in OSHA's 29 CFR 1910.119 or EPA's 40 CFR 68? What hazardous chemicals are included in your CSP? Discuss the presence, or lack thereof, of  $UF_6$ , HF,  $NH_3$ , and  $H_2$  on the list of hazardous chemicals.

Response:

The only chemical which exceeds the OSHA or EPA thresholds is anhydrous ammonia. The inventory is less than 10,000 gallons, as stated in our Renewal application.

Combustion Engineering considers the safety impact of chemicals used at the Hematite facility, whether classified as "hazardous" or not. However, hazardous chemicals are specifically discussed in Section 10.2.6 and Chapter 15 of our Renewal application. Additionally, the Emergency Plan identifies and discusses hazardous chemicals and addresses postulated chemical events in Chapters 1.0 and 2.0.  $UF_6$ , HF,  $NH_3$ , and  $H_2$  are addressed in our consideration of chemical safety.

## 2.0 Chemical Hazard Assessment

**Provide information to assure the adequacy of CE's approach to integrated safety as regards chemical safety.**

### Response:

In Part I, Chapter 1, Section 1.6 of the Hematite License Renewal Application, we have made a commitment (item (e)) to submit a schedule to the NRC within six months of the NRC's approval of the renewal application for the performance of an Integrated Safety Assessment (ISA) for plant processes. Questions 2.1 through 2.6 will be taken into account in the chemical safety portion of the ISA. As the NRC knows, chemical hazards were considered in the ISA performed for the Hematite Consolidation amendment. In this amendment, the licensed facilities were broken into process areas, and each process area was subdivided into process stations. An ISA was performed on each station, and results were published in Chapter 15 of the Hematite license application. The ISA in each case considered criticality, radiological, and industrial safety, with the latter category including chemical, fire and miscellaneous safety considerations. Which of these safety areas received the most attention was determined by the relative risk perceived by the responsible design and safety engineers assigned to evaluate the particular station.

When these evaluations for the Consolidation project were carried out, the NRC had not yet provided any regulatory guidance for the performance of an ISA. As a result, CE developed an approach, made a formal presentation (May 12, 1992) to NRC staff and management, made an additional formal presentation (July 28, 1992) to NRC staff and management of the ISA method prior to the Consolidation amendment submittal, and then held a post submittal review of some ISA results with NRC staff on September 10, 1992. The Consolidation project was subsequently approved on May 12, 1993. Furthermore, CE provided a presentation of its approach at the NRC Workshop on ISA's (August 27, 1993). In light of that information, we assume that the NRC is thoroughly familiar with the CE approach.

In response to Question 2.7, release of cracked ammonia has the potential to create an explosive atmosphere. The ammonia cracker room is vented to the atmosphere; process areas are maintained under negative pressure. A release would be detected by low pressure at the cracker; the ammonia supply would automatically shut off. Pressure is also monitored at the furnaces. Excess hydrogen in the furnaces is burned by flares, forming water vapor. A natural gas burner is fixed to the flare to ensure that it remains lit. Flame supervision devices are also used to monitor the combustion.

In response to Question 2.8, anhydrous ammonia is a strong irritant to the eyes and mucous membranes. The ammonia storage tank was built and certified in accordance with the ASME code in effect at the time of its manufacture. The tank is inspected visually and pressure relief valves are periodically tested. A release of ammonia is readily detected as the odor threshold is very low. Water supplies are available to mitigate the effect of a release. The plant would be evacuated in the event of a major release. Emergency response is addressed by the Emergency Plan.

In response to Question 2.9, the waste drums temporarily stored in the vicinity of the ammonia tank contained soil slightly contaminated with low enriched uranium oxide. They were stored awaiting proper disposal and were a result of our recent construction program, of which the NRC was fully aware. Other than the obvious minor radiological aspects, hazards associated with these waste drums are non-existent.

In response to Question 2.10, hydrogen fluoride concentrations have been extensively analyzed in previous NRC environmental impact appraisals for the Hematite facility. The reaction of HF with calcium carbonate (limestone) in the dry scrubbers is monitored by thermocouples which indicate the location of the reaction zone. The limestone is changed prior to depletion. The exhaust of the scrubbers is continuously monitored for fluorides during operation to detect inadvertent release. In addition, near term plans include modification of the dry scrubbers by adding a secondary scrubber downstream of the primary scrubbers. This secondary scrubber will improve the overall efficiency and will provide a backup to the primary scrubbers.

### 3.0 Process Safety Information

**Describe process safety information pertinent to the Hematite facility as regards chemical safety, and how the information is maintained. If a current version of the information does not exist, describe plans and schedules for developing such information.**

#### Response:

CE currently satisfies the requirements of the OSHA Process Safety Management Regulation (29 CFR 1910.119).

The type of information requested by the NRC will be considered in the chemical safety portion of the ISA and in the evaluation of the chemical safety program committed to under Section 1.6(f) of the License Renewal Application.

4.0 Operating Procedures

1. Describe how the SOPs relevant to chemical safety are developed, reviewed, approved, distributed, and kept current. ...
2. Describe how the detailed procedures, log-sheets, and checklists address chemical safety concerns during all phases of operation. ...
3. Do the operating procedures for processes containing chemical hazards of importance to NRC (as defined in Section 1.0) address ...
4. Describe whether employees have ready access to the following sources of information ...

Response:

- 1.a. There is no requirement for independence between a preparer and a reviewer.
- b. A management review determines the need for specific safety discipline input or review.
- c. While it is granted that operations experience is quite beneficial to procedure preparation, it is the experiential lessons learned rather than the operator's participation in procedure development that is of value. Those lessons may be applied to procedure development without the necessity of direct operator participation in the procedure development.
- d. In addition to biennial procedure reviews, applicable procedures are reviewed as part of management of change.
- e. There is a biennial procedure review.
- f. Procedures are maintained as controlled documents, assigned to specific individuals or work stations, and are available as needed.
- g. Action is assigned to specific individuals to implement approved recommendations.
2. Procedures for the various modes of operation address chemical safety concerns in their procedural steps, as precautions, as protective requirements, etc.

3. Yes, procedures address the applicable limits, actions, etc.
4. Yes, employees have access to the information needed to safely and effectively perform their jobs, including the information needed to safely address abnormal conditions.

5.0 Site-Wide Safety Procedures

1. **In the following areas, describe the procedures used to protect maintenance and contract workers from the risks of handling, using, and storing the hazardous chemicals identified in response to Question 1.2 ...**
2. **Describe the contractor management program that is used to assure that the contractors perform their jobs in a safe manner. ...**
3. **Describe how management-approved recommendations of the Hazards Assessment team are incorporated into site-wide safety procedures.**

Response:

- 1.a. Access control is part of the security force's function.
- b. The hot work permit procedure specifies measures for fire prevention and protection for specific tasks.
- c. The confined space entry permit procedure specifies requirements to prevent explosion or asphyxiation when working in confined spaces.
- d. The lockout/tagout procedure specifies actions to be taken to ensure equipment is not inadvertently reactivated, to avoid personnel injury.
- e. Safe opening of process equipment is addressed by the lockout/tagout procedure.
2. Only a very limited use is made of contractors in plant areas where exposure to chemicals could occur. Due to the limited use of contractors, safety requirements are addressed through management controls on a case-by-case basis. Where contractors are involved, safety rules may be made a part of the contract and training is provided commensurate with the extent of their potential exposure. Special case contractors are normally escorted by plant personnel.



3. Management approved recommendations from any internal evaluations, including any evaluations of chemical hazards, are incorporated into procedures in accordance with Section 2.6 of the license renewal application.

#### 6.0 Detection and Monitoring

**Describe the facility's approach in determining its chemical hazard detection and monitoring needs. ... Provide a listing of detection and monitoring systems for identified chemical hazards of NRC interest. Include a plot plan showing the location of such devices. Describe the maintenance and inspection program for detection and monitoring devices. Describe how management-approved recommendations of the Hazards Assessment team are incorporated into the detection and monitoring program.**

#### Response:

Monitors, detectors and alarms for chemicals are selected as part of system design in consideration of the existence of process safety hazards and the potential for consequential operator health risks. The adequacy of monitors, detectors and alarms will be considered in the chemical safety portion of the ISA and as a result of the evaluation of the safety program committed to in Section 1.6(f) of the license renewal application.

#### 7.0 Training

**Describe the training program as it relates to chemical safety. ... Describe the typical material on chemical safety covered in the training program, including general orientation, initial training, and specialized training. Describe the training material and frequency for refresher training on chemical safety. Describe the process for incorporating management-approved chemical safety recommendations of the Hazards Assessment team into the training program.**

#### Response:

It is the intent of CE's training program to ensure operators are adequately prepared to safely and effectively perform their functions. This intent includes all pertinent aspects of safety, including chemical safety. CE's training program is described in Section 2.5 of the license renewal application. The training program includes chemical safety and satisfies the requirements of 29 CFR 1910.1200. Management approved recommendations with respect to chemical safety are included in the training program in the same manner as other management approved recommendations are included.

#### 8.0 Maintenance and Inspection

Describe the maintenance and inspection program as it relates to equipment used to process, store, or handle hazardous chemicals. ... Identify a current list of components that are receiving regular preventive maintenance for chemical safety reasons. Describe the process for incorporating management-approved chemical safety recommendations of the Hazards Assessment team into the maintenance and inspection program.

#### Response:

CE's maintenance and inspection program is intended to maintain equipment in a safe operable condition so as to minimize worker and public health risks. While chemical safety is a consideration of that program, a separate and discrete program specifically for chemical safety purposes is not required and is not maintained. In that light, a complete listing of equipment being maintained specifically for chemical safety reasons is not available; however, such a list would include the ammonia tank and ammonia crackers. Management approved chemical safety recommendations are incorporated in the same manner as other approved recommendations are incorporated. The facility maintenance and inspection program is described in Section 2.8 of the license renewal application.

#### 9.0 Management of Change

Describe the management of change program, as it applies to chemical safety. ... Describe the process for incorporating management-approved chemical safety recommendations of the Incident/Audit team into the management of change program.

#### Response:

CE's management of change program applies to chemical safety in the same manner as it applies to other safety related concerns. Management approved chemical safety recommendations are incorporated into the management of change program in the same manner as other approved recommendations are incorporated. The program is described in Section 2.7 of the license renewal application.

#### 10.0 Emergency Planning

Are there plans to acquire and install an independent telecommunications backup system? Would the ventilation system of the safe haven shelter used to direct emergency response operations be able to protect the shelter from the

effects of a hazardous vapor plume? Describe the process for incorporating management-approved chemical safety recommendations of the Hazards Assessment team into the emergency planning program.

Response:

The majority of telephone lines to the plant site are connected to the site telephone system. An additional independent telephone line is routed to the Emergency Control Center and the Administration Building, No. 110. There are no current plans to acquire and install another independent telecommunications backup system.

While the ventilation system of the emergency assembly area is not specifically designed to protect the shelter from the effects of a hazardous vapor plume, an alternate assembly area exists, as identified in the Emergency Plan.

Management approved chemical safety recommendations are incorporated into emergency planning in the same manner as other approved recommendations are incorporated. CE's emergency plan is referred to in Chapter 8 of the license renewal application. Detailed information relating to emergency planning, including the implementing procedures, is available for NRC's review on site.

11.0 Incident Investigation Program

**Describe the program for investigating chemical incidents. ...**

Response:

CE's incident investigation program, which would be applicable to chemical incidents as well as non-chemical incidents, is described in Section 2.9 of the license renewal application. The Emergency Plan also provides relevant information which would apply if the incident resulted in activation of that Plan.

12.0 Audits and Inspections

**Describe the process used for auditing the elements of the Chemical Safety Program. ...**

Response:

As a subset of industrial safety concerns, chemical safety is a consideration of CE's safety program. CE's audit and inspection program with respect to safety related concerns is described in Section 2.8 of the license renewal application.