



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION I  
 475 ALLENDALE ROAD  
 KING OF PRUSSIA, PENNSYLVANIA 19406

Docket No. 70-1100

DEC 18 1990

Combustion Engineering, Inc.  
 ATTN: Mr. C. R. Waterman  
 Acting Vice President - Nuclear Fuel  
 Nuclear Power Systems  
 1000 Prospect Hill Road  
 Windsor, Connecticut 06095-0500

Gentlemen:

Subject: Inspection Number 70-1100/90-07

This letter refers to the routine safety inspection conducted by Mr. J. Roth of this office on November 5-9, 1990. Mr. Roth reviewed your manufacturing operations, management controls, emergency preparedness, fire protection and licensing issues to determine the actions you have taken to implement the recommendations provided in the NRC's Systematic Assessment of Licensee Performance Report Number 70-1100/88-99. Discussions of our findings were held with you and others of your staff by Mr. Roth at the conclusion of the inspection. The inspection consisted of selected examination of procedures and representative records, interviews with personnel and observations by the inspector.

Within the scope of this inspection, no violations were identified and no response to this letter is required.

Your cooperation with us is appreciated.

Sincerely,

A handwritten signature in dark ink, appearing to read "James H. Joyner".

James H. Joyner, Chief  
 Facilities Radiological Safety  
 and Safeguards Branch  
 Division of Radiation Safety  
 and Safeguards

Enclosure: NRC Region I Inspection Report No. 70-1100/90-07

cc w/encl:

A. E. Scherer, Vice President, Quality Systems  
 C. B. Brinkman, Manager, Washington Nuclear Operations  
 Public Document Room (PDR)  
 Local Public Document Room (LPDR)  
 Nuclear Safety Information Center (NSIC)  
 State of Connecticut

R-56

U. S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 70-1100/90-07

Docket No. 70-1100

License No. SNM-1067

Priority 1

Category ULFF

Licensee: Combustion Engineering, Inc.  
1000 Prospect Hill Road  
Windsor, Connecticut 06095-0500

Facility Name: Nuclear Fuel Manufacturing and Nuclear Laboratories

Inspection At: Windsor, Connecticut

Inspection Conducted: November 5-9, 1990

Inspector:

J. Roth  
J. Roth, Project Engineer, Effluents  
Radiation Protection Section, Facilities  
Radiation Safety and Safeguards Branch (FRSSB),  
Division of Radiation Safety and Safeguards (DRSS)

12/12/90  
date

Approved by:

R. Bores  
R. Bores, Chief, Effluents Radiation  
Protection Section, FRSSB, DRSS

12/12/90  
date

Inspection Summary: Inspection on November 5-9, 1990 (Inspection Report  
No. 70-1100/90-07

Areas Inspected: Routine, unannounced inspection by a region-based inspector of the licensed program in the areas of management controls, operations, emergency preparedness, fire protection, and licensing issues to review the licensee's actions taken to implement the recommendations described in the NRC Systematic Assessment of Licensee Performance Report Number 70-1100/88-99.

Results: No violations or deviations were identified.

## DETAILS

### 1.0 Individuals Contacted

- \*J. Ballard, Operations Consultant
- \*W. Bennett, Manager, Training
- W. Coppersmith, Chairman, Facilities Review Group
- \*R. Freeman, Manager, Manufacturing Engineering
- K. Hayes, Industrial Safety Specialist
- \*G. Hess, Licensing Engineer
- R. Klotz, Criticality Safety Specialist
- J. Moulton, Program Manager, Windsor Woods Remediation Effort
- G. Page, Revitalization Engineer
- \*P. Rosenthal, Program Manager, Radiological and Industrial Safety
- \*R. Sharkey, Manager, Radiation Protection and Industrial Safety
- \*R. Sheeran, Manager, Accountability and Security
- \*R. Vaughn, Plant Manager
- \*C. Waterman, Acting Vice President-Nuclear Fuels

\*Denotes those present at the exit interview.

### 2.0 Review of Operations

The inspector examined selected areas of the plant and the nuclear laboratories to observe operations and activities in progress, to inspect the nuclear safety aspects of the facilities, and to examine the general state of cleanliness, housekeeping, adherence to fire protection rules, and the status of redeployment activities.

#### 2.1 Status of Redeployment Activities

The inspector observed that cleanup of the Pellet Shop was continuing and that the licensee had completed removal of all processing equipment. Duct work associated with the FA-2 and FA-4 ventilation systems had also been removed. As a result of the removal of the FA-4 ventilation system components, the inspector noted that two drawings (sketches 3-1 and 4-1) associated with nuclear criticality safety postings located on the Pellet Shop Annex Mezzanine were no longer current and needed to be updated to reflect current activities. The licensee took immediate actions to update these drawings.

#### 2.2 Contaminated Wooded Areas

(Refer to Attachment 1 for the approximate location of each area.)

##### 2.2.1 Former Waste Storage Pad Area

Through discussions with licensee representatives, the inspector determined that the licensee had essentially completed soil

sampling needed for characterization of this area and expected to develop decontamination plans and procedures over the winter.

#### 2.2.2 Old Drum Storage Area

Prior to this inspection, licensee representatives informed the inspector that an old drum storage area had been identified along the former west site boundary. In about mid-1985 the licensee purchased an additional piece of property which extended the west site boundary out about 900 feet further to the west. During this inspection the inspector examined the old drum storage area and noted that the storage area was a pit about 50 feet in diameter and appeared to be about three or four drums deep. Preliminary analytical results obtained by the licensee indicated that the total uranium contamination present in the soil in the pit ranged from 80 to 9000 picocuries per gram of soil and was enriched in excess of 50 percent uranium-235. After discovery of the drums, the licensee placed two groundwater wells to the north and northeast of the area. Preliminary analysis of groundwater samples indicated that neither uranium nor other USEPA regulated chemicals were present in the ground water in excess of established limits. Subsequent to this inspection, the inspector was informed, on November 19, 1990, that the licensee had initiated removal of some of the drums from the area. The drums were repackaged as appropriate and stored in a controlled area. About 26 drums were removed from the storage pit, down to a depth of about 10 to 12 feet. The opened drums were filled with contaminated trash, plastics, floor tiles, metal parts, fencing, etc. Mud present in one of the drums was found to contain uranium in excess of 40 picocuries total uranium per gram of soil. This uranium was also enriched in excess of 50% uranium-235. The licensee does not expect to perform additional remediation activities in this area between December 1, 1990 and the Spring of 1991 because of expected poor weather conditions.

#### 2.2.3 Building 3 North Fenceline

As a result of environmental surveys conducted around Building 6, the site radioactive liquid waste storage facility, the licensee identified elevated contamination areas along the fenceline separating Building 6 from the adjacent Building 3. The fence is located on the north side of Building 3. Soil analysis had not been completed as of the end of this inspection. Further licensee actions in this area will be followed during subsequent inspections.

### 3.0 Review of the Systematic Assessment of Licensee Performance (SALP) Response

During this inspection, the inspector reviewed the licensee's implementation of actions taken in response to the Systematic Assessment of Licensee Performance (NRC Region I Report No. 70-1100/88-99) as outlined in the licensee's letter dated October 8, 1990. In particular, the inspector examined the licensee's actions with regard to the NRC recommendations identified in the SALP report. Following is the result of this review in all applicable areas in which NRC recommendations were made, except Radiological Protection, which is covered in Inspection Number 70-1100/90-08.

#### 3.1 Nuclear Criticality Safety

##### 3.1.1 Board Recommendation 1

"Implement corrective actions to prevent the recurring instances of failure to perform complete NCS evaluations".

The inspector verified that a nuclear criticality safety program document has been reviewed, approved and issued by licensee management. This document describes the criticality safety program requirements and states, in part, that criticality safety information must be documented and made available to appropriate personnel. Procedures have been established which provide the instructions needed to assure that proper criticality safety reviews of proposed changes or modifications to equipment, processes or facilities have been conducted. Since the end of the SALP period (March 31, 1990), the licensee has added a third nuclear criticality safety specialist to the Windsor staff and has implemented an "independent" quarterly audit program of criticality safety aspects of facility operations. These quarterly audits are conducted by an individual assigned to the CE facility located in Hematite, Missouri. Monthly audits of the nuclear criticality safety program are now conducted by the Nuclear Safety Committee and the Senior Criticality Safety Specialist. In addition, the Facility Review Group (FRG), which reports to the Plant Manager, has conducted an "independent" review of the Facility Nuclear Criticality Safety Program. However, the report of this review had not been completed and issued as of the end of this inspection. In the licensee's October 8, 1990 response to this SALP Board recommendation, reference was made to a "comprehensive review of the criticality safety evaluations process", which was completed in March 1990. The inspector determined that this cited review was conducted by a CE team to assess the criticality safety evaluation process, as the result of concerns about the evaluations conducted for

Hematite facility submittals to the NRC. Windsor facility personnel advised the inspector they conducted only a cursory examination of the recommendations by the review group. However, the chairman of the review team is also chairman of the Windsor Facility Review Group, and two other Windsor facility managers were included on the four-person team. Further, the CE staff members responsible for all criticality safety evaluations (both Windsor and Hematite) report to one of the team members. At the time of the inspection, licensee personnel informed the inspector that no actions, specific to Windsor activities, had yet been taken as a result of this review. However, during a subsequent inspection, the inspector learned that the licensee had drafted and circulated for review guidance on the preparation of criticality safety evaluation for both engineers and criticality safety personnel. This guidance will be applied to both the Windsor and Hematite facilities. With regard to the quarterly and monthly criticality safety audits discussed above, the inspector was not able to examine the details of these audits during this inspection because either the auditing personnel (criticality safety specialists) were not available or because the audit reports had not been issued (FRG).

In summary, the inspector determined that the licensee had established and initiated implementation of an appropriate nuclear criticality safety program. However, the inspector was not able to confirm that the program has been fully implemented because of the unavailability of either audit documentation or appropriate licensee personnel during this inspection.

### 3.1.2 Board Recommendation 2

Provide continued management attention to assure adherence to NCS requirements.

As a result of the development of the programs, audits and reviews discussed above, the licensee appears to have established the capability to provide the necessary management attention needed to assure adherence to facility nuclear criticality safety requirements. However, the licensee has not yet demonstrated sustained satisfactory implementation in this area.

### 3.2 Management Controls

During this inspection, the inspector reviewed the licensee's implementation of various management controls, in addition to conducting a review of licensee actions on specific SALP Board recommendations.

In the area of training, subsequent to the end of the SALP assessment period, the licensee assigned a knowledgeable individual as a training manager. This individual substantially revised the General Employee Training (GET), General Indoctrination Training and Annual

Refresher Training curricula. In addition, a mechanism was established to assure that either all personnel who required unescorted access to the facility were trained on an established cycle or denied access. The number of individuals granted unescorted access was also reduced by about 50 percent in order to better control access to the facility.

With regard to audits, inspections, and assessments, the licensee has established or expanded and implemented several new programs which appear to be appropriate and working. However, in several cases, full implementation of these programs has not, as yet, been accomplished. For instance, a Facility Review Group was established in December 1989 to supplement the licensee's Nuclear Safety Committee. Operational procedures and a charter for this group were developed by April 1990 and implementation was then initiated. Since July 1990, this group has conducted several independent reviews of facility operations in the areas of environmental protection, radiological safety, criticality safety, industrial safety, emergency planning, ALARA programs, accountability and security, training, and transportation. However, the results of these reviews have not, as yet, been issued to plant management for review and/or implementation of recommendations. The inspector also determined that the plant manager has established an appropriate mechanism to assure that all inspection and audit findings have been addressed. However, no mechanism has been established to assure that the auditors have reviewed corrective actions taken and verified that the actions taken by plant management to address the findings were appropriate and have been completed.

The licensee has also established a document control configuration management system. This system was established to assure that a mechanism was available to make appropriate changes to all affected documents when changes to the process, the federal regulations or management policy occur. However, during this inspection, the inspector determined that this system had not been fully implemented because the licensee had not been able to make the system work as described in program documents.

With regard to organizational changes, the inspector determined that only one significant change in plant management has occurred since the end of the SALP period. The licensee filled the vacancy that existed for the position of Manager, Radiation Protection and Industrial Safety, during July 1990. Evaluation of this staff

position was independently conducted by the NRC during Inspection No. 70-1100/90-08. However, during this inspection, the licensee announced that a change had occurred in the ABB-America senior management structure. An individual formerly with Westinghouse Electric Corporation has been added to the ABB-America staff and Mr. Shelby T. Brewer, President, ABB-Combustion Engineering Nuclear Power, now reports to this individual.

The licensee has also established an abnormal occurrence reporting and evaluation system which includes the use of a committee to investigate root causes for each occurrence. Through a review of specific cases reported and evaluated by licensee personnel, the inspector determined that the system appeared to be working. It is the licensee's expectation that this system will reduce the possibility for recurrence of investigated occurrences. However, this system has not been in place for a sufficient period of time to demonstrate the expected long term benefits of the system.

### 3.2.1 Board Recommendation 1

"Apply appropriate sections of the facility quality assurance program to the facility safety and compliance activities (repeat recommendation)."

During this inspection, the inspector reviewed various program documents developed by the licensee to determine if appropriate sections of the eighteen 10 CFR 50 (Appendix B) quality assurance criteria have been addressed. Although the inspector determined that the licensee had not specifically applied the available facility quality assurance program to facility safety and compliance activities, all applicable 10 CFR 50, Appendix B quality assurance criteria have been addressed in program documents developed by the licensee, and that these program documents are being implemented. Appropriate actions have been completed by the licensee on this recommendation.

### 3.2.2 Board Recommendation 2

"Establish a mechanism to assure that a hazards assessment of site maintenance activities that could affect facility operation is conducted prior to the start of work."

During this inspection, the inspector verified that the plant manager had requested (in writing) that site maintenance personnel conduct hazards assessments of site maintenance operations prior to the start of work which could affect facility operations. It was also determined that none of the site maintenance activities conducted during the two-week plant shutdown in August 1990 resulted in occurrences that could have affected plant operations. Appropriate actions have been taken by the licensee.

### 3.3 Emergency Preparedness

#### 3.3.1 Board Recommendation 1

"Conduct a site-wide demonstration of the emergency plan and include offsite support groups."

Contrary to the statement made by the licensee in its October 8, 1990 response to this recommendation, it is the NRC's position that a site-wide demonstration of the emergency plan has not been conducted. Subsequent to this inspection, on November 13, 1990, the licensee submitted a revision to the facility Emergency Plan which is currently under review by the NRC. In that revision, the licensee provides its justification for not requiring evacuation from all buildings located on site. This revision shows that, based on an evaluation of a criticality incident at the Building 17/21 complex, only those employees located in Buildings 3, 5, 6A, 6, 12 and 15 would be affected, and then only if they were required to leave the buildings. Therefore, if all personnel remained in these buildings (sheltered) they would not be significantly affected by this worst case incident. However, in its November 13 submittal, the licensee failed to consider a criticality incident in Buildings 5 and 6, which would be expected to affect additional buildings and/or more significantly affect personnel in the identified buildings. The licensee also failed to provide an action statement in the revised plan which would require notification of personnel in affected buildings in case of an emergency incident.

With regard to the inclusion of offsite support groups in emergency drills, the inspector determined that the licensee has only tested communications systems with offsite support groups in the recent past. However, it is the inspector's understanding that at least one offsite support group (the local fire department) is expected to actively participate in an emergency preparedness drill which has been scheduled by the licensee during December 1990.

In summary, the licensee does not believe that site-wide emergency drills are necessary. The licensee has provided the NRC with its rationale to support this position. However, the rationale provided does not include a complete evaluation of all major scenarios (e.g., only the Building 17/21 complex was considered). NRC evaluation of the newly submitted plan revision has not been completed as of the time of this inspection.

### 3.3.2 Board Recommendation 2

"Enhance operator and ERO training on responses to fire emergencies and new implementing procedures."

During this inspection, the inspector verified that the licensee conducted appropriate training of Emergency Response Organization (ERO) personnel prior to drills held during June 1990. This training included the use of self-contained breathing apparatus, use and care of radiation measurement instruments, criticality safety instruments and alarms, orientation on the content of applicable emergency procedures, and tours of each of the facilities involved. During these tours, special cases and procedures were pointed out and discussed. A special case included non-use of water in certain areas of the plant. The licensee has completed appropriate action on this recommendation.

## 3.4 Fire Protection

### 3.4.1 Board Recommendation 1

"Develop a written fire pre-plan for the Fuel Manufacturing Facility."

During this inspection, the inspector discussed the status of the licensee's development of an updated, written fire pre-plan for the Fuel Manufacturing facility. The inspector determined that a fire pre-plan had been written and was in preparation for approval and release to the local government safety and fire personnel. The licensee expected to release the plan by the end of the week of November 16, 1990. Once provided to local safety and fire personnel, appropriate actions will have been completed by the licensee. Local fire department personnel were expected to participate in a facility emergency drill scheduled for December 1990. During this drill, use of the pre-plan was expected to be tested and evaluated.

## 3.5 Safeguards

### 3.5.1 Board Recommendation 1

"Address the communication/interface problems that have impacted FNMCP and Security Plan revisions."

Through discussions with licensee personnel, the inspector determined that communications and interface problems between members of the licensee's safeguards staff have been resolved

and should no longer be an issue. Appropriate actions have been completed by the licensee. However, sustained cooperation between members of the licensees safeguards staff has not been demonstrated.

### 3.6 Licensing Issues

#### 3.6.1 Board Recommendation 1

"Provide adequate technical support to the licensing staff (repeat recommendation from previous SALP report)."

In an attempt to improve the quality of license amendment requests, the licensee developed and issued an administrative procedure on April 11, 1990 which was designed to establish a uniform system for the preparation, review and submittal of requests to the NRC for license amendments. Overall, this procedure appears to be working in an adequate manner. However, a recent submittal to the NRC licensing staff related to emergency preparedness was deficient in that all applicable scenarios had not been addressed, (e.g., the issue of emergency planning for criticality incidents at the Building 5 complex in addition to the Building 17 complex (see paragraph 3.3.1)). The licensee continues to maintain a dedicated licensing staff to assist and coordinate the preparation of licensing submittals. In addition, the licensee has increased the technical support staff in the area of criticality safety. This increase in technical support is expected by the licensee to improve future submittals to the NRC. However, this has not been demonstrated for a sustained period of time.

Based upon this review of the SALP report recommendations, the inspector determined that the licensee had initiated actions to address each recommendation. These initial licensee actions appeared appropriate to begin adequate implementation of the recommendations. However, except for Management Control Recommendations 1 (Paragraph 3.2.1) and 2 (Paragraph 3.2.2), and Fire Protection Recommendation 1 (Paragraph 3.4.1), either the licensee had not had adequate time to demonstrate that satisfactory implementation could be sustained, or appropriate personnel/documentation were not available for review by the inspector, or, at the time of the inspection, further action by the licensee was needed to resolve a licensing issue. The continuation of the licensee's actions in response to these recommendations will be monitored in future inspections.

#### 4.0 Exit Interview

The inspector met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 9, 1990. The inspector summarized the scope and findings of the inspection.

