September 29, 1999

OK

Mr. Gilles Page
Vice President, Fuel Operations
ABB Combustion Engineering Nuclear Power, Inc.
3300 State Road P
Festus, MO 63028

SUBJECT: NRC INSPECTION REPORT 070-00036/99004(DNMS)

Dear Mr. Page:

The NRC completed an announced routine, inspection from September 7-10, 1999, at your Hematite facility. The purpose of the inspection was to determine whether activities authorized by your license were conducted safely and in accordance with NRC requirements.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of a selective examination of procedures and representative records, interviews with personnel, and observations of activities in progress. No violations of NRC requirements were identified during the course of the inspection

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

Monte P. Phillips, Acting Chief
Fuel Cycle Branch

Docket No. 070-00036
License No. SNM-33

Enclosure: Inspection Report 070-00036/99004(DNMS)

cc w/encl: R. W. Sharkey, Director, Regulatory Affairs
R. A. Kucera, Director, Intergovernmental Cooperation
Missouri Department of Natural Resources

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	070-00036
License No:	SNM-33
Report No:	070-00036/99004(DNMS)
Licensee:	ABB Combustion Engineering Nuclear Power, Inc.
Facility:	Hematite Nuclear Fuel Manufacturing Facility
Location:	3300 State Road P Festus, Missouri 63028
Dates:	September 7-10, 1999
Inspector:	Courtney A. Blanchard, Resident Inspector Portsmouth Gaseous Diffusion Plant
Approved By:	Monte P. Phillips, Acting Chief Fuel Cycle Branch Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

ABB Combustion Engineering Nuclear Power, Inc.
Nuclear Fuel Manufacturing Facility
NRC Inspection Report 070-00036/99004(DNMS)

This announced routine inspection included a review of aspects of licensed operations safety, maintenance, transportation safety, emergency preparedness, environmental protection, and management organization and controls.

Plant Operations

- The inspector identified that the housekeeping in Building 253 was poor and hindered emergency egress routes through the building and increased the fire load. Postings observed were in compliance with requirements. Inspector-identified housekeeping issues were promptly corrected by the licensee. (Section O1.1)

Maintenance and Surveillance Activities

- The inspector concluded that the licensee had the minimum structured guidance to consistently and systematically perform maintenance activities. In addition, the inspector identified that the licensee's computer maintenance management program was not utilized to develop a formal trend analysis program. One inspector follow-up item was identified. (Section M1.1)

Plant Support

- The inspector concluded that the licensee was effectively implementing its radioactive materials transportation program. Individuals performing these activities were adequately trained on the procedures and qualified for their assigned tasks. (Section A1.1)

- The inspector noted a weakness in the licensee's emergency plan implementing procedure for training emergency responders. The inspector identified emergency responder's were not comfortable with donning personal protective equipment. (Section P5.2)

- The inspector concluded that the licensee's sampling program and results were in compliance with the license and licensee procedures. (Section V1.1)

Report Details

I. Operations

O1 Conduct of Operations

O1.1 Facility Tours and Discussions with Operators

a. Inspection Scope (88020)

The inspector performed facility tours to observe general housekeeping, operational safety limits and NRC-required postings, emergency egress routes, operation of high efficiency particulate air (HEPA) filters and lighting intensity throughout the production facility.

b. Observation and Findings

The inspector observed the condition of the housekeeping in Building 253. Building 253 was congested with process equipment and debris staged for decontamination and characterization before shipment to an appropriate disposal site. The inspector noted that the abundance of staged process equipment and debris hindered egress from the operational area through Building 253 and increased the fire load within the building. The plant staff reduced the quantity of the staged process equipment and debris by the end of the inspection period to ensure that the egress routes out of building 253 were clear.

The inspector observed the location and accuracy of postings, emergency egress routes, pressure differentials across the HEPA filters, and the lighting intensity throughout the plant. Posting of criticality limits and controls were consistent with Section 4.1.5, "Posting of Limits and Controls," and Section 2.4, "Criticality Safety Limits and Signs," of the license application and with Nuclear Industrial Safety (NIS) Procedure No. 201, "Nuclear Safety Manual." The inspector observed that the current NRC Form 3 was posted at all portals and on every bulletin board throughout the production plants, and that hallways, stairways, and paths were clear of obstacles for egress out of the production plants. Additionally, the inspector observed that the differential pressure across the HEPA filters was within license requirements. The inspector identified that lighting was adequate throughout the operating area and hallways.

c. Conclusions

The inspector identified that the housekeeping in the Building 253 was poor and hindered emergency egress routes through the building and increased the fire load. Postings observed were in compliance with requirements. Inspector-identified housekeeping issues were promptly corrected by the licensee.

II. Maintenance

M1 Conduct of Maintenance

M1.1 Maintenance Management Program Review

a. Inspection Scope (88025)

The inspector reviewed the method to retain spare equipment inventory, manage preventive maintenance, and control required equipment repairs.

b. Observations and Findings

The inspector noted that the licensee implemented a computerized maintenance management program (CMMP) in June 1998. The program was used to control inventory, preventive maintenance, and required maintenance activities. The inspector noted that the CMMP was also used to:

- retain inventory of spare parts with several different sort functions, including safety function;
- trend preventive maintenance for special nuclear material (SNM) process equipment to gain insight and make appropriate changes to enhance preventive maintenance activities;
- develop work control processes that repair SNM equipment in a controlled and safe manner; and
- trend equipment failures.

At the time of the inspection, the inspector noted that the licensee had implemented some aspects of the CMMP.

The licensee had implemented some of the CMMP configuration control features. Specifically, the licensee had assigned an unique part number by bar code to all plant store items, and maintained their inventory with the CMMP. However, the inspector learned that the plant staff acquired materials out of the store area without logging the material through the CMMP during off-normal work hours which hindered the control of SNM components. In addition, the inspector noted that the plant staff did not analyze failed components or enter the results in the CMMP to trend SNM equipment component failures.

The inspector noted that the maintenance manager scheduled preventative maintenance for SNM equipment in the CMMP. In review of select records, the inspector noted that plant staff did not document the as-found condition of SNM equipment during preventative maintenance activities.

The inspector discussed with licensee management the plant's maintenance program to ensure SNM equipment was maintained at a high level of reliability to facilitate safe and efficient plant operation. The inspector noted that the CMMP had the capacity to develop an effective equipment history, planned maintenance, predictive maintenance,

and preventative maintenance program. In discussions with the licensee management and the maintenance staff, the inspector noted that the licensee had no formalized process to implement and perform maintenance activities. Specifically, there was no procedural guidance on how to complete a maintenance job in a controlled and safe manner. In further discussions with select maintenance staff, the inspector noted inconsistencies between the maintenance staff on the type of maintenance repairs that required a pre-job briefing, post-maintenance test, post job critique, and failure analysis evaluation. In addition, the inspector noted the licensee had no guidance or requirement to log into the CMMP the as-found condition or failure mode of a component to assist in resolving future system or component failures. The Director of Uranium Operations explained that the plant staff would enhance and formalize maintenance activities to ensure that a consistent and systematic approach was used to repair/replace equipment.

In response to the inspector's issue, the licensee committed to implement a formal maintenance program. The inspector will continue to assess the licensee's performance with regard to trend analysis as an **Inspection Follow-up Item (IFI 70-7002/99004-01)**.

c. Conclusion

The inspector concluded that the licensee had minimum structured guidance to consistently and systematically perform maintenance activities. In addition, the inspector identified that the licensee's CMMP was not utilized to develop a formal trend analysis program. One IFI was identified.

IV. Plant Support

A1 Conduct of Transportation Activities

A1.1 Uranium Hexafluoride Cylinder Transportation

a. Inspection Scope (IP 86740)

The inspector reviewed the licensee's transportation program relating to UF_6 cylinder shipments. The inspector reviewed procedures and records for receiving and shipping cylinders with overpacks, and observed cylinder and trailer surveys for exposure rates and removable contamination. Specific procedures and documents reviewed were:

- HP Procedure No. 308, "Performing Trailer Surveys," Rev. 3, dated September 10, 1996.
- OS No. 1001.3, "Classification, Description, Packaging, and Marking Instructions," Rev. 3, dated January 10, 1996.
- OS No. 1001.4, "Specific Product Instructions," dated January 3, 1996.
- OS No. 1001.5, "General Labeling, Mixed Container Shipments, & Shipment Bracing Instruction," dated January 6, 1992.

b. Observations and Findings

b.1 UF_6 Cylinder Shipments

During the inspection, the inspector observed the unloading and loading of 30-B Cylinders. On September 10, a tractor-trailer form the Portsmouth Gaseous Diffusion Plant arrived at the site loaded with five full Model 30-B Cylinders in UX-30 overpack containers. The tractor-trailer was backed into the unloading area adjacent to the vaporization area. The inspector noted that the tractor-trailer operator performed the maneuver slowly and smoothly to ensure that the load was not jerked. The inspector observed that the cylinder packages were unloaded and loaded in accordance with OS No. 1001.3 and OS No. 1001.4, and appropriately positioned and braced on the trailer. However, during the process the inspector observed that the loading dock was congested with Model 30-B Cylinders. The congested area required the crane operator to make several directional changes over staged cylinders during the unloading and loading process. In discussion with the inspector, the crane operator explained that the movement of a cylinder over other cylinders was undesirable but stated that the congested loading area required this type of movement. The licensee management explained that several staged Model 30-B Cylinders should have been moved prior to the unloading and loading activities which would have eliminated the movement of cylinders over other cylinders. The individuals performing the loading were qualified to perform the loading and packaging activities.

b.2. Shipping Papers

The shipping papers of licensee transportation activities regarding UF_6 cylinder shipments were reviewed. Selected records associated with shipment numbers 8521-7 and 8521-9 and shipped as "exclusive use" on August 29, 1999 were reviewed in detail. The inspector reviewed the Bill of Lading, shipping records, UF_6 cylinder inspection forms, overpack inspections forms, and exclusive use vehicle instructions to the carrier. An exclusive use vehicle instruction form accompanies the shipping documentation.

b.3. Trailer Surveys

The inspector reviewed selected survey records for the period encompassing July to August 1999, for UF_6 cylinders shipped and received. These records indicated that removable contamination on cylinders, overpacks and trailer was below the limits of 49 CFR 173.443. Dose rates for cylinders, overpacks, and vehicles were below the limits as defined in the DOT regulations as well.

c. Conclusions

The inspector concluded that the licensee was effectively implementing their radioactive materials transportation program. Individuals performing these activities had been adequately trained on the procedures and qualified for their assigned tasks.

P5 Staff Training and Qualification in Emergency Preparedness

P5.1 Review of Emergency Responder Training and Qualifications

a. Inspection Scope (88050)

The inspector reviewed the licensee's established training and qualification requirements for emergency responders. In addition, the inspector discussed with select emergency responders current emergency response training activities.

b. Observations and Findings

The inspector reviewed the licensee's training commitments for emergency responders. The inspector noted that License No. SNM-33, Docket No. 70-00036, Chapter 8, "Emergency Plan," states that the licensee shall maintain and execute the response measures of the Hematite Emergency Plan. The inspector noted that the current Hematite Emergency Plan, Revision 1, dated January 15, 1999, required that emergency responders be provided specialized training in fire fighting annually, and first aid training of selected emergency responders was provided every three years. In discussion with the inspector, the Safety Engineer explained that the emergency responders were trained in accordance with the requirements of 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response (HAZ WOPER)." The inspector identified that neither the Hematite Emergency Plan or the emergency plan implementing procedure (EPIP) clearly documented managements training expectations for emergency responders.

The inspector reviewed the licensee's HAZ WOPER training material. The HAZ WOPER training material consisted of overhead slides, class room training aids that included several types of personal protective equipment (PPE), and training files. The inspector noted that the sections reviewed in the training plan addressed the requirements of 29 CFR 1910.120. However, the training material did not include enabling objectives for the class. Enabling objectives assist the students in establishing learning goals. The inspector noted that select emergency responders were current with required classroom training.

The inspector discussed the emergency response training activities with select emergency responders. Several emergency responders stated that the training they received was adequate, but they would be more comfortable donning and doffing required PPE if emergency response exercises were conducted more frequently. The inspector noted that the licensee had conducted the required biennial site emergency exercises and annual site emergency evacuation drills as required by the Hematite Emergency Plan. In discussions with the inspector, the Safety Engineer explained that more frequent emergency exercises coupled with emergency response command and control refresher training would enhance the emergency responders confidence in responding to an emergency if required. In addition, the Safety Engineer stated that the licensee would conduct refresher training and perform donning PPE exercises on a regular basis.

c. Conclusions

The inspector noted a weakness in the licensee's EPIP for emergency responders required training. The inspector identified that emergency responder's were not comfortable with donning PPE.

V2 Environmental Protection

V1.1 Conduct of Environmental Protection Activities

a. Inspection Scope (88045)

The inspector reviewed selected elements of the licensee's environmental protection program with respect to management controls and program implementation. The review included an evaluation of trends in the environmental data including sampling results for air emissions, liquid effluents, and soil, water and vegetation. Specific documents reviewed were:

- Health Physics (HP) Procedure No. 301, "Exhaust Stack Sampling," Revision 3, dated February 14, 1996;
- HP Procedure No. 319, "Environmental Sampling, Water, Soil, Vegetation and Air," Revision 5, dated October 17, 1996; and
- Chapter 5 of the license application, "Environmental Protection."

b. Observations and Findings

b.1 Ground Water Environmental Sampling Results

The licensee installed four new ground water monitoring wells in November 1998 to monitor the legacy plant trash burial area. Through record review, the inspector noted that the licensee had performed required sampling of new Burial Wells Nos. 22, 24, 26, and 28 as required by the NRC approved hydrogeological work plan. In addition, the licensee continued to monitor the burial wells as described in the license except for Burial Well No. 14. As noted in NRC Report 070-00036/98001, Burial Well No. 14 sample results identified elevated levels of organic compounds that exceeded Resource Conservation Recovery Act hazardous waste limits. The inspector noted that the licensee continued to monitor Burial Well No. 14 on a 6-month frequency. In discussions with the inspector, the Health Physicist stated that the licensee would submit a license amendment to stop monitoring the Burial Wells Nos. 15, 16 and 14 once historic sampling data from the new Burial Well Nos. 24, 26, and 28 ensured a representative contaminant stability characterization. The inspector noted that well readings were significantly below the 10 CFR Part 20, Appendix B, limit for all monitored radionuclides

b.2 Air Sampling Results

The air sampling program consisted of three air sampling stations located near the fence line on the licensee's property which were run continuously. Particulate filters were analyzed weekly for alpha contamination (uranium). During the first 8-months of

1999, the average concentrations for all three samplers was approximately 3.0 X 10^{-15} microcuries per milliliter (uCi/ml) which is 6 percent of the 10 CFR Part 20, Appendix B, limit for insoluble uranium-234, the most restrictive isotope.

b.3 Liquid Effluent Sampling Results

The sewage treatment outfall and the storm drain runoff outfalls were sampled weekly with grab samples. The storm drain outfall fed into the site pond, and the overflow from the pond (the site dam overflow) was sampled continuously with a composite sampler. The composite sample was analyzed weekly. The average sampling results for uranium for the sewage treatment outfall, storm drain runoff outfalls, and overflow from the pond were as follows:

Sampling Location	Jul - Feb 1998	Jan - Jun 1999
sewage treatment outfall	4.0 x 10^{-8} uCi/ml	6.0 x 10^{-8} uCi/ml
storm drain runoff outfalls	2.0 x 10^{-8} uCi/ml	3.0 x 10^{-8} uCi/ml
overflow from the pond	2.0 x 10^{-8} uCi/ml	0.5 x 10^{-8} uCi/ml

The average results were below the 10 CFR 20, Appendix B, limit for uranium in liquid effluent to uncontrolled areas which is 30 x 10^{-8} uCi/ml.

b.4 Vegetation Sampling Results

The vegetation sampling program consisted of four sampling areas located near the fence line on the licensee's property which were sampled quarterly for gross alpha and gross beta contamination. The vegetation sample results indicated that there were no statistically significant trends identified above background. The first 8 months of the 1999 vegetation samples results were less than 11 picocuries per gram (pCi/g), which was less than the historically accepted limit of 30 pCi/g.

b.5 Soil Samples

The first 8 months of the 1999 soil sampling program consisted of eight sampling areas located on the licensee's property which were sampled quarterly for gross alpha and gross beta contamination. Seven soil sample results indicated that there were no statistically significant trends identified above background. However, the licensee measured several elevated readings of Technetium-99 (TC-99) from Soil Sample Area No. 11. In discussion with the inspector, the Health Physicist explained that the elevated TC-99 was due to the proximity of the Sampling Area No. 11 to the spent pile scrubber rocks which had filtered some TC-99 for the main exhaust stack for the oxide plant in the 1970s.

b.6 Exhaust Stack Air Samples

The first 8 months of the 1999 "Weekly Stack Sample Concentration Reports" documented that stack concentrations of uranium had not exceeded the required investigation level of 5 x 10^{-14} uCi/ml in the accessible unrestricted area. The "Monthly Stack Loss Report" for uranium lost to the atmosphere during the first 8-months of 1999

totaled 44.2 uCi for the first quarter, 22 uCi for the second quarter, 27 uCi for the third quarter, and 17 uCi for the fourth quarter. None of the results exceeded the license limit for total plant exhaust effluents of 150 uCi per calendar quarter.

c. Conclusions

The inspector concluded that the licensee's sampling program and results were in compliance with the license and licensee procedures.

IV. Management Meetings

X1 Exit Meeting Summary

The inspector met with plant management and other staff throughout the inspection and on September 10, 1999, for the exit meeting. The inspector summarized the observations and findings of the inspection. The licensee management acknowledged the findings. The licensee did not identify any of the information discussed at the meetings as proprietary.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Maurer, Nuclear Criticality Specialist
K. Funke, Supervisor Health Physics
L. Tupper, Material Control and Accountability
H. Eskridge, Consultant
A. Noack, Maintenance Manager
E. Saito, Health Physicist
B. Sharkey, Director of Regulatory Affairs
P. Weaver, Production Manager
G. Page, Vice President of Nuclear Fuels
S. Ogunji, Director of Uranium Operations

INSPECTION PROCEDURES USED

IP 88020:	Operations Review/Regional Criticality Safety
IP 88025	Maintenance and Surveillance
IP 88035:	Radioactive Waste Management
IP 88045:	Environmental Protection
IP 88050:	Emergency Prepareness

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

070-00036/99004-01 IFI Control of maintenance activities.

Discussed

none

Closed

none

LIST OF ACRONYMS USED

CMMP	Computerized Maintenance Management Program
EPIP	Emergency Plan Implementing Procedure
HAZ WOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
IFI	Inspector Followup item
NIS	Nuclear Industrial Safety
NRC	Nuclear Regulatory Commission
PPE	Personal Protective Equipment
SNM	Special Nuclear Material
TC-99	Technetium-99