



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

NOV 20 1992

DOCKET NO: 70-36

LICENSEE: Combustion Engineering, Inc. (CE)  
Hematite, Missouri

SUBJECT: SAFETY EVALUATION REPORT, LICENSE AMENDMENT APPLICATION DATED  
OCTOBER 9, AND SUPPLEMENT DATED NOVEMBER 6, 1992, RE SEALED  
SOURCES

BACKGROUND

On February 13, 1992, CE informed the NRC of plans to construct a new fuel rod and bundle assembly building and several other minor activities at the Hematite facility. The new building will be used to consolidate Windsor and Hematite uranium fuel manufacturing operations. In an April 13, 1992, letter, CE indicated that the new Fuel Rod and Assembly Building at Hematite will be built to the following codes, standards, and design requirements:

1. Meet or exceed BOCA National Building Code 1984 (required in Jefferson County). BOCA = Building Officials and Code Administrators
2. Wind Loading: 100 mph
3. Snow Loading: 50 lb/sf
4. Seismic Zone 2 earthquake loading with a 1.5 occupancy importance factor. This is the same requirements to which police stations, fire stations, and hospitals are built.

By letters dated February 27, and March 30, 1992, NRC expressed no objection to CE initiating construction of the building but advised that operation could not commence until License No. SNM-33 was amended. By letter dated August 5, 1992, CE submitted an application for consolidation of uranium fuel manufacturing operations at Hematite. CE indicated that it plans to commence full production in May 1993. To achieve this goal, CE has to complete the following start-up milestones:

1. Receive and test the fuel rod scanner containing sealed sources
2. Test new equipment with uranium source material
3. Store SNM in the new building
4. Production of fuel rods and assemblies with enriched uranium in May 1993.

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To accomplish the first milestone, CE, by application dated October 9, and supplement dated November 6, 1992, requested authorization to possess and use 500 millicuries of cesium-137 and 4 milligrams of californium-252 sources in a scanner for non-destructive testing and less than 700 grams of uranium-235 in the form of  $UO_2$  pellets within the fuel rods for calibrating the scanner. The pellets will contain uranium enriched to less than or equal to 5 weight percent in the U-235 isotope or will be comprised of uranium source material. The calibration operation will be performed in the existing facility or the new manufacturing building (Building 230). CE requests that authorization be granted for 1 year.

#### Radiation Safety

The scanner will be maintained in a clean area. The area will be roped off and posted as a radiation work area, thereby allowing only those personnel authorized to perform testing. All testing personnel will be trained and will utilize approved procedures. Since the testing operation involves only sealed sources, the potential for generating airborne and local surface contamination is minimal, and the principal pathway of exposure to an individual is via the external radiation from the Cs-137 and Cf-252 contained in the scanner. To monitor external radiation, personnel dosimeters capable of measuring gamma and neutron radiation will be worn by test personnel. The expected external exposure rate, 1 meter from the scanner, is reported to be on the order of 0.1 mr/hr gamma and less than 0.1 mr/hr neutron. The operator normally remains more than 1 meter from the scanner. The staff estimates that the total operator exposure would only be a small fraction of the permissible limits allowed in 10 CFR Part 20.

To ensure that the sealed Cs-137 and Cf-252 sources are leak tight, the sources will be leak tested every 6 months.

Based on the discussion above, the staff determines that the requested operation can be conducted safely by the licensee.

#### Nuclear Criticality Safety

Proposed processes and use of equipment shall be limited to a safe mass. The requested possession and use of less than 700 grams of U-235 in the form of  $UO_2$  pellets within fuel rods presents no potential for nuclear criticality.

#### CONCLUSION/RECOMMENDATION

The staff concludes that the proposed operation will have no adverse effect on the public health and safety or the environment. Approval of the amendment application is recommended.

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The Region III staff has no objection to this licensing action.

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