

OCT 28 1981

Docket File 70-36

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DOCKET NO: 70-36

APPLICANT: Combustion Engineering, Inc. (CE)
Hematite, Missouri Facility

SUBJECT: REVIEW OF AMENDMENT APPLICATION DATED JUNE 19, 1981, AND
SUPPLEMENT DATED OCTOBER 8, 1981, CONCERNING STORAGE OF
DRY UO₂ POWDER, 70-36AG3S

I. Background

Building 255-1 is used for the production and processing of UO₂ powder. After conversion of UF₆ to UO₂ powder, moderation control is used to assure nuclear criticality safety during powder processing and pellet production. CE proposes to add storage conveyors and mezzanine storage racks in the process area.

II. Discussion

The final step in powder production is dry UO₂ blending. After this step, the UO₂ powder would be packaged in 9.75"Ø x 11"-long 55 cans with friction fit lids sealed with tape. Existing practices on moderation control would be applied to this operation. After packaging, the cans, each containing not more than 30 kg UO₂, would be stored on seven conveyors at the end of Building 255-1.

There are six conveyors which are parallel to the end of the building. Aisles exist between conveyors Nos. 1 and 2, Nos. 3 and 4, and Nos. 5 and 6 (conveyor Nos. 2 and 3 and Nos. 4 and 5 are side-by-side in contact). The seventh conveyor is at the end of the six conveyors and runs perpendicular to the six conveyors.

Nuclear criticality safety is assured by moderation control on individual units and storage in an area which does not have fire sprinklers. Dry UO₂ containing 4.7% U-235 cannot be made critical. As used here, "dry" means less than 5 w/o H₂O (normally less than 0.05 w/o water).

A second storage area which would be established on the mezzanine has a 0.25-inch thick steel deck. This area will be used for storage of agglomerated press feed (UO₂ + binders + other materials) in 11"Ø x 13" long steel cans. Metal rings on the mezzanine will be used to space the containers and 24-inch centers in a 13 x 13 array.

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CE has performed a KENO calculation assuming double batching of binder (2 w/o H₂O) and double stacking of containers (to account for interaction with material on the conveyors below the mezzanine). CE also assumed interspersed moderation although this area does not have fire sprinklers. A k-effective of 0.59 was calculated for this array which has been conservatively modeled for the KENO calculation.

The Region III inspector, Mr. C. Peck, has no objection to this amendment request.

III. Conclusion and Recommendation

The proposed storage activities will have no adverse effects on health and safety or on the environment. Approval of the application is recommended.

Original signed by
George H. Bidinger

G. H. Bidinger
Uranium Process Licensing Section
Uranium Fuel Licensing Branch
Division of Fuel Cycle and
Material Safety

Original signed by:
E. T. Crow

Approved by:

W. T. Crow, Section Leader

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| NAME | GH Bidinger | rad L Tyson | WTCrow | | | |
| DATE | 10/26/81 | 10/21/81 | 10/24/81 | | | |