ABB
ASEA BROWN BOVERI

January 7, 1994
ML-94-001

Docket No. 70-1100
License No. SNM-1067

Mr. Robert C. Pierson, Chief
Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D.C. 20555

Subject: **Amendment Application for SNM-1067**

References: (A) Letter, J. F. Conant (C-E) to R. C. Pierson (NRC), dated October 21, 1993

(B) Letter, J. F. Conant (C-E) to R. C. Pierson (NRC), dated December 6, 1993

Dear Mr. Pierson:

In Reference (A), Combustion Engineering submitted to the Nuclear Regulatory Commission a license amendment application for the removal of the criticality alarm system from Buildings 6, 17, and 21. Reference (B) provided an addendum to the application, requesting elimination of the prohibition on the use of fire hoses in Building 17. This letter provides minor corrections to and replaces in its entirety, the license amendment requested by References (A) and (B).

Enclosure I provides the justification for the removal of the criticality alarm system. Enclosure II provides a tabulation of the affected pages and their respective revision numbers and page dates. Enclosure III provides the affected pages; changes are indicated by a bar in the right hand margin. Six (6) copies of this letter are provided herewith for your use.

NF12

240144 ABB Combustion Engineering Nuclear Power

Combustion Engineering, Inc.
1000 Prospect Hill Road
Post Office Box 500
Windsor, Connecticut 06095-0500
Telephone (203) 688-1911
Fax (203) 285-9512
Telex 99297 COMBEN WSOR

If there are questions or comments concerning this request, please feel free to call me or Mr. Reid Wolf of my staff at (203) 285-9679.

Very truly yours,

COMBUSTION ENGINEERING, INC.

John F. Conant
Manager
Nuclear Materials Licensing

JFC:cr

Enclosures: As Stated

cc: J. Noggle (NRC - Region I)
S. Soong (NRC)

Enclosure I to
ML-94-001

COMBUSTION ENGINEERING, INC.

WINDSOR NUCLEAR FUEL MANUFACTURING FACILITY

JUSTIFICATION OF REMOVAL

OF CRITICALITY ALARM SYSTEM FROM BUILDINGS 6, 17, AND 21

JANUARY 1994

COMBUSTION ENGINEERING, INC.

WINDSOR NUCLEAR FUEL MANUFACTURING FACILITY

JUSTIFICATION FOR REMOVAL

OF CRITICALITY ALARM SYSTEM FROM BUILDINGS 6, 17 AND 21

The following discussion assumes that the total material limit for possession and use in the laboratory facilities (includes Building 6) is <350 gms U-235, and that the total possession limit for residual special nuclear material in Buildings 17 and 21 during decontamination and decommissioning is 700 gms U-235.

To control the amount of uranium-235, a log will be maintained of the uranium-235 entering and leaving each building. The only activities in Buildings 17 and 21 following termination of fuel manufacturing will be those associated with decontamination and decommissioning. Only Buildings 5 and 17 discharge water into Building 6.

Building 17 has several potential sources of uranium contaminated water: the centrifuge, the change room Bradley sink, two floor drains on the FA-3 mezzanine and the FA-3 mezzanine industrial sink. The controls for each source are described below.

Bradley sinks - The change room has one large hand washing sink. SNM is not allowed in the change room other than slightly contaminated protective clothing. The door to the change room is posted "NO SNM ALLOWED BEYOND THIS POINT". The combination of personal protective equipment and contamination control prevents personnel from becoming contaminated. Therefore the Bradley sink is not a significant source of unmeasured SNM to Building 6.

Centrifuge - The centrifuge has recently undergone rigorous review both internally and by the NRC as part of the centrifuge relocation amendment and NRC Safety Evaluation Report (SER). Discharge from the centrifuge to Building 6 is accomplished only after isolating and double sampling the centrifuged water. Water is only released when the concentration of uranium is less than 3E-5μCi/ml (MPC_{water}). Conservatively assuming 5% ^{235}U by weight and a specific activity of 2.4 μCi/g, the activity concentration reduces to 6.3E-7 grams ^{235}U/ml. During the year 1992, the centrifuge was discharged 150 times. The total amount of ^{235}U released during the year, conservatively assuming 5% ^{235}U by weight, was approximately 1 gram. Thus, at this rate of discharge, the yearly release to Building 6 is about 1 gram ^{235}U/year. Considering the double sampling of the centrifuge water, the small amount of SNM released and dispersed in 10 retention tanks, this is not a significant source of SNM to Building 6.

FA-3 mezzanine - The FA-3 mezzanine located in the northeast side of the pellet shop has two air conditioner condensate drains and one industrial sink. Access to the mezzanine from the pellet shop is via a covered safety ladder. There is also a closed and locked door from the mezzanine to the cold side of the shop. The Air Handling Units (AHU) may contribute a small amount of SNM to Building 6, as well as the respirator washer. The FA-3 mezzanine is not considered a significant source of unmeasured SNM to Building 6. The controls for the AHUs are as follows:

Air handling units (AHU) - The following table provides brief analysis of the amount of uranium passing through each AHU. Using the extremely conservative assumption that all of the air passing through the AHUs is filtered of ^{235}U and that all of the air originates in the pellet shop, then 22 grams of ^{235}U would be collected in a year. Radiological measurements of the condensate drip pan suggest that the amount of uranium removed from the air and discharged in the condensate is much lower. Therefore, condensate from the AHU's are not considered a significant source of unmeasured SNM.

Maximum Unmeasured Discharge via Air Handling Units

Unit	Capacity	Grams ^{235}U/year
AHU1	22,000 CFM	7
AHU2	8,000 CFM	2
AHU3	8,000 CFM	2
AC-7	34,000 CFM	11
		Total = 22
Concentration (air; grams ^{235}U / ml) = (1E-12 μCi / ml) x (1 gram U / 2.4 μCi) x (.05 g ^{235}U / gU) = 2.1E-14 grams ^{235}U / ml		

Building 5 has several discharge points into Building 6. The control of discharges from Building 5 will be based on limiting the quantity of SNM in Building 5. Building 5 is limited to a total of <350 gms U-235. The limit will be controlled by a log. Discrepancies in the log that cannot be accounted for will be assumed to have been discharged to Building 6.

Enclosure II to
ML-94-001

COMBUSTION ENGINEERING, INC.

WINDSOR NUCLEAR FUEL MANUFACTURING FACILITY

LIST OF AFFECTED PAGES

JANUARY 1994

COMBUSTION ENGINEERING, INC.

WINDSOR NUCLEAR FUEL MANUFACTURING FACILITY

LIST OF AFFECTED PAGES

Combustion Engineering, Inc. is updating Part I, Licensing Conditions license application information regarding its Windsor Nuclear Fuel Manufacturing Facility (License No. SNM-1067) following shutdown of the fuel manufacturing operation and the NRC approval of reduced possession limits for special nuclear material. The updates address the fact that the criticality alarms are no longer required in Buildings 6, 17, and 21, and the use of fire hoses in Building 17 is no longer prohibited. The affected pages are provided in Enclosure II.

The license application pages affected are as follows:

List of Affected Pages

Delete Page			Add Page		
Page No.	Rev.	Date	Page No.	Rev.	Date
I.1-4	5	5/27/92	I.1-4	6	1/7/94
I.3-8	4	6/23/89	I.3-8	5	1/7/94
I.4-11	3	10/22/86	I.4-11	4	1/7/94
I.4-12	6	5/27/92	I.4-12	7	1/7/94
II.8-75	1	5/27/92	II.8-75	2	1/7/94

Enclosure III to
ML-94-001

COMBUSTION ENGINEERING, INC.

WINDSOR NUCLEAR FUEL MANUFACTURING FACILITY

AFFECTED PAGES

JANUARY 1994

be of a product development nature and the material may ultimately be returned to the Nuclear Fuel Manufacturing facility. These transfers shall not require the issuance of applicable NRC transfer documents, but shall be transferred in accordance with the provisions of this license, and shall be handled as a departmental transfer and shall be controlled by the Fundamental Nuclear Material Control Plan (FNMC) referenced in Section 9.0 of this application.

Buildings 1, 1A, 2, 2A, 3, 3A, 5, 6, 16, 17, 18 and 21 shall be exempt from the requirement of a criticality monitoring system as specified in 10CFR70.24(a)(1). The above buildings are not required to have a criticality monitoring system because of the exemptions allowed in 10CFR70.24(d).

In each area where labelling of all containers is not in accordance with 10CFR20.203(f), all personnel ingress locations shall be posted with a sign stating that "Every container or vessel in this area, unless otherwise identified, may contain radioactive material."

100 fpm minimum or the hood will not be used to handle radioactive material. Face velocities will be checked monthly in Product Development.

The filters in these stacks shall be tested either by 1) counting samples immediately after 1/2 hour of operation or 2) DOP testing the filters in accordance with ANSI standards. Such testing shall be done after all filter changes or movement of the filters to assure they are adequately filtering the exhaust air. The results of these tests shall be documented. Each ventilating filter system described in Section 3.2.3 shall be equipped with an instrument that measures the pressure drop continuously.

3.2.4 Instrumentation

Capabilities of radiation detection and measurement instrumentation shall be as follows:

Alpha counting System	10 - 10,000 dpm
Alpha Survey me*ers	0 - 50,000 counts per minute
Beta Gamma Survey Instruments	.05 mR/hr - 200 mR/hr
Neutron Survey Instruments	.5 - 5,000 mrem/hr

A sufficient number of the instruments, meters and systems listed above shall be maintained operational to adequately conduct our Radiological Protection and Industrial Safety program. Additional instrumentation is maintained for emergency use as outlined in Part I, Section 8. Instruments are calibrated semi-annually and following any repair that affects the accuracy of the measurements. The calibration of the survey instruments shall meet the specifications described in Section 1.11 of

shall be indicated with a colored line. The line may be crossed by carts only to permit an operator to transfer that SIU to an available storage position.

4.2.7 Structural Integrity Policy - All storage racks, furnaces, containment, and processing equipment which provide nuclear safety limiting parameters shall be designed to assure against failure under normal and reasonable overload conditions and under conditions of shock or collision foreseeable in the plant area. All equipment designed shall incorporate a minimum safety factor of 3.0. All equipment design shall conform to standard design practices, thereby assuring adequate structural integrity. Materials of construction shall be selected to assure, as far as possible, resistance to fire and corrosion. The individual engineer responsible for the purchasing or design of the new equipment shall assure that the minimum safety factor of 3 has been incorporated into the design of the equipment. The minimum qualifications for engineers shall be a bachelors degree in engineering or related fields.

4.2.8 Zoning for Fire Protection - An overhead sprinkler system as well as portable extinguishes are located throughout the fuel manufacturing facilities and Product Development.

4.2.9 (SECTION DELETED)

4.3 Specific Criticality Safety Criteria

Specific criticality safety criteria in addition to the general criteria described in Section 4.2 are necessary to assure nuclear safety for several process operations, as described below:

(THIS PAGE REPLACES PAGE II.8-75 AND IS INTENTIONALLY BLANK)