July 18, 1996

Mr. John F. Conant Windsor Nuclear Fuel Manufacturing Combustion Engineering, Inc. 2000 Prospect Hill Road Windsor, Connecticut 06095-0500

SUBJECT: BUILDING I FINAL STATUS SURVEY REPORT (FSR) (TAC NO. L30868)

Dear Mr. Conant:

This refers to your letter dated March 29, 1996, transmitting the FSR in supporting of your request for free release of Building 21 and its immediate environs for unrestricted use.

Our review of your submittal has identified additional information that is needed before further action can be taken. The additional information, specified in the enclosure, should be provided within 30 days of the date of this letter. Please reference the above TAC No. in future correspondence related to this request.

If you have any questions regarding this matter, please contact me at (301) 415-8155.

Sincerely,

Original signed by:

Sean Soong Licensing Section 2 Licensing Branch Division of Fuel Cycle Safety and Safeguards, NMSS

Docket 70-1100 License SNM-1067

Enclosure: As stated

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UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D.C. 20555-000

July 18, 1996

Mr. John F. Conant Windsor Nuclear Fuel Manufacturing Combustion Engineering, Inc. 2000 Prospect Hill Road Windsor, Connecticut 06095-0500

SUBJECT: BUILDING 21 FINAL STATUS SURVEY REPORT (FSR) (TAC NO. L30868)

Dear Mr. Conast.

This refers to your letter dated March 29, 1996, transmitting the FSR in supporting of your request for free release of Building 21 and its immediate environs for unrestricted use.

Our review of your submittal has identified additional information that is needed before further action can be taken. The additional information, specified in the enclosure, should be provided within 30 days of the date of this letter. Please reference the above TAC No. in future correspondence related to this request.

If you have any questions regarding this matter, please contact me at (301) 415-8155.

Sincerely,

Sean Soong

Licensing Section 2 Licensing Branch Division of Fuel Cycle Safety and Safeguards, NMSS

Docket 70-1100 License SNM-1067

Enclosure: As stated

Comments on the Final Status Survey Report of Building 21 of the Combustion Engineering, Inc. Facility Docket No. 70-1100, SNM-1067

General Comments:

1. Potential Impacts From Adjacent Facilities Within Building 17/21 Complex:

The approach and methodology specific to Building 21, as presented in the FSR, are adequate and consistent with NRC's guidance and practices. Decommissioning of Building 21 separately (e.g., independent of the rest of Building 17/21 complex) is acceptable; however, this approach requires adequate treatment and analysis of potential impacts from neighboring facilities within the complex. Therefore, the licensee should provide; more detailed analysis of potential subsurface contamination associated with the nuclear material used previously in Building 17 and, the potential transport of such material to areas contiguous to, or under, Building 21 (e.g., sewer lines and subsurface drainage lines).

2. Background Measurements and the Predominant Negative Activity Data:

Background surface activity data presented in Table 2-3 for Beta measurements, using the two instruments with Serial Nos. #116240 and #118236, indicate an average activity of 1267.00 and 1596.00 dpm/100cm² respectively. The range for these measurements was reported to be within 1060-2110 dpm/cm² and the uncertainty level was reported between 150-190 dpm/cm². Beta-Gamma surface activity data reported for several survey units (e.g., Survey Units B2-1, B21-3.1, 3.2, and B21-6), were dominantly negative values. For example, 20 Beta-Gamma measurements for the survey unit B21-1 (Table 2-5) were all negative values falling between -256 and -40 dpm/cm². Comparison of these negative values with the positive background measurements, presented in Table 2-3, indicates that the areas or locations selected for background measurements may have not been compatible with the survey units. Although it is an acceptable practice to have some negative values in the background data, or in the surface activity measurements (due to instruments instability and/or fluctuations in background conditions); however, typically, the negative values are compensated for by the positive values of the measurements. Therefore, having 100 percent negative values for the whole survey unit indicates ossible inappropriate selection of background locations and/or inconsistencies in the selection and use of instruments, or inconsistencies in selection of instrument calibration procedures. Therefore, the licensee should provide rationale and justification for background selection and discuss causes of having predominantly negative activity values in certain survey units. Further, inconsistencies in instruments selection and calibration (if any) should also be identified.

ENCLOSURE

Specific Comments:

 The licensee reported, on page 8, that "audits for analysis of soil samples revealed some deficiencies." The licensee should provide additional information explaining the nature of these deficiencies and its impact, if any, on the analysis results reported in the FSR.

2. All building floor and lower walls (up to 2 m) were gridded at 1 m intervals. Table 6 of the FSR shows that one reading was taken every 4 m² (instead of 1 m²) for a total of 48 measurements. The licensee indicated, on page 6, that the combination of instrumentations and techniques were chosen to provide a detection sensitivity of <25 percent of the guideline levels. Apparently, the licensee used this statement to justify having systematic measurements at a spacing of 2 m instead of 1 m intervals. The detection sensitivity of <25 percent is the basis used by the licensee (in accordance with NUREG/CR-5849) to justify selection of the alternate 2 m intervals, therefore, the licensee should describe in detail the combination of instruments and techniques that were used in the survey measurements to select such a spacing interval. In addition, the licensee should demonstrate, using background and actual uncertainty data, how the <25 percent sensitivity criterion was established.

- 3. The licensee presented a list of "Detection Sensitivity" (DS) data for various instruments. The licensee indicated, in Table 3, that the DS values were "nominal values." The licensee should explain how these "nominal values" were derived or measured. In addition the licensee should explain how these values are related to the acceptable response range, using the daily response checks, for each instrument.
- The licensee defined the grid square perimeter, marked by the 4. coordinates L0, L12, Y12, Y0, as the boundary of the affected area. The licensee designated the affected/unaffected areas for Building 21 based solely on information regarding storage and handling of radioactive material in these areas. The licensee should describe how the boundary, between the affected and unaffected area, was established. In addition, the licensee considered only a small corner of Building 21 as the affected area. The area around the loading/unloading zone and the corridors used for transporting of radioactive material, within Building 21 area, were not considered. The licensee should provide the basis for exclusion of these latter two areas from being classified as affected areas and provide further justification for establishing the boundary between the affected and the unaffected areas within, and around the vicinity of, Building 21.

AC Ducts and drainage channels: The licensee conducted direct radiological measurements and analyzed swabs obtained from two heaters suspended from the ceiling of the warehouse. However, CE did not conduct survey and analysis of the AC ducts and drainage channels within the affected/unaffected survey units. It should be noted that these near surface structures may contain radiological contamination and need to be surveyed in order to confirm their status regarding potential radiological contamination.

5.

6. Zero alpha background: The licensee assumed a zero background for alpha measurements. The licensee contemplated that this assumption is based on a conservative approach to background measurement. Although this approach appears to be conservative, it is still necessary for the licensee to verify if (or if not) the selected zero background was associated with the instruments' low responses or with low sensitivities of the instruments used. Therefore, for adequate characterization of background, the licensee needs to demonstrate having adequate instrument sensitivities. The negative beta background measurements (general comment No. 3) is another concern that the licensee needs to address in the context of instrument response, low sensitivity, and verification of background and surface activities measurements.

7. Missing references list: the licensee cited some references in the FSR text; however, the FSR report submitted to NRC contained no list of references. The licensee should submit a reference list matching those references cited in the text of the FSP document.

- 8. Background surface activity measurements: The licensee reported (page 13) that "The two instruments utilized for scanning and direct measurements, while both recently calibrated, yielded significantly different results for background readings." Therefore, the licensee decided to utilize the specific instrument's background when calculating residual activity rather than the average background for the two instruments. The licensee should identify the two instruments employed in the background measurements and clarify if the unacceptable difference in background measurements is related to the type of measurements (e.g., alpha or beta), or to variation in instrument's efficiency, sensitivity, and/or response.
- 9. Surface activity measurements: The licensee presented, in Tables 2-5 and 2-6, surface activity measurements of Building 21 interiors and exteriors. The data showed frequently very high negative values much exceeding the uncertainty values reported in these Tables. For example, negative values as low as -547 dpm/100 cm² were reported. The maximum uncertainty value reported for

3

surface activity was 220 dpm/100 cm². The licensee should verify the adequacy of these values and the implication on values of background measurements, instruments' sensitivities, instruments' calibrations, and the minimum detectable limits.

10. Identification of Instruments Used to Generate the Surface Activity Data: The licensee presented surface activity measurements (Tables 2-5 and 2-6) without defining the type of instruments used or listing the instrument's identification numbers. The licensee should report instruments' identification numbers along with the measured data in order to verify the "Minimum Detectable Activity" (MDA) and the uncertainties in these measurements. In addition, the licensee should make reference to specific background data that were used to establish the MDA's and the uncertainties of the survey measurements.