



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

June 23, 1989

Docket No. 50-213

Mr. Edward J. Mrocza, Senior Vice President
Nuclear Engineering and Operations
Connecticut Yankee Atomic Power Company
P. O. Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Mrocza:

SUBJECT: COMBUSTIBLE GAS CONTROL EVALUATION FOR THE HADDAM NECK PLANT
(TAC NO. 68355)

By letter dated March 4, 1983, the Connecticut Yankee Atomic Power Company (CYAPCO) submitted its combustible gas control evaluation report for the Haddam Neck Plant to document its position regarding compliance with the requirements of 10 CFR 50.44(c)(3)(ii). This analysis, assuming stainless steel fuel, concluded that combustible gas accumulation inside the containment would not reach the flammable limit of 4% by volume until approximately 13 months following a design basis LOCA assuming no purging or repressurization. Subsequently, CYAPCO provided additional information in a letter dated November 17, 1986 and concluded the time to reach flammability would be 8.5 months rather than 13 months as originally calculated. Based on this analysis, CYAPCO concluded that the plant need not be provided with the hydrogen recombiner capability called for in 10 CFR 50.44(c)(3)(ii). By letter dated May 19, 1989, CYAPCO stated hydrogen recombiner capability could be established and would be one of the options evaluated should combustible gas control be necessary. In addition CYAPCO stated that based on its analysis, assuming zircaloy fuel the amount of hydrogen generated for stainless steel or zircaloy cladding is equivalent.

The staff performed an independent confirmatory analysis of hydrogen generation in accordance with Regulatory Guide 1.7 guidelines using the COGAP computer program with assistance of the Los Alamos Laboratory (LANL). The staff analysis assumed zircaloy fuel and concluded that the hydrogen concentration would reach the flammable limit in 6 months assuming no purging or repressurization. The staff concluded that CYAPCO did not follow the guidelines of Regulatory Guide 1.7 when analyzing long term hydrogen generation which resulted in an incorrect accumulation time estimation to reach the flammability limit. However, since the plant has a large containment volume and the hydrogen accumulation rate is low, the staff has concluded that given the 6 months to reach the flammability limit CYAPCO has sufficient time to establish an external hydrogen recombiner capability following a LOCA and that no further action is required by CYAPCO to comply with 10 CFR 50.44.

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Mr. Edward J. Mroczka

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Based on the above the staff concludes that the Haddam Neck Plant meets the requirements of 10 CFR 50.44. In addition, this conclusion also bounds the upcoming zircaloy conversion. The staff's safety evaluation is provided as Enclosure 1. The staff considers ISAP Topic No. 1.63, "Hydrogen Control" complete with the issuance of this safety evaluation. If you have any questions or comments please call me at (301)492-1313.

Sincerely,

Original signed by

Alan B. Wang, Project Manager
Project Directorate I-4
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosure
As stated

cc w/enclosure:
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Mr. Edward J. Mroczka
Connecticut Yankee Atomic Power Company

Haddam Neck Plant

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