



CONNECTICUT YANKEE ATOMIC POWER COMPANY

HADDAM NECK PLANT

362 INJUN HOLLOW ROAD • EAST HAMPTON, CT 06424-3099

DEC 17 2004
CY-04-252

Docket No. 50-213

RE: 10 CFR 20.2002

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D C 20555

Haddam Neck Plant
Supplemental Information
Request for Approval of Proposed Procedures
in Accordance with 10 CFR 20.2002

Connecticut Yankee Atomic Power Company (CYAPCO) proposes to transfer certain of its solid waste from decommissioning of the Haddam Neck Plant (HNP) facilities (e.g., structures and buildings) to a disposal facility. Specifically, CYAPCO proposes to dispose of demolition debris from decommissioning of the HNP facilities to the US Ecology Idaho Facility, located in Grand View, Idaho.

The purpose of this letter is to provide supplemental information requested by the NRC Staff in teleconferences with CYAPCO on December 9 and 15, 2004.

CYAPCO has performed a conservative radiological assessment of the demolition debris material and determined that the potential dose to workers involved in the transportation and placement of the waste at the site and to members of the public after closure of the facility will be no more than a few millirem per year Total Effective Dose Equivalent (TEDE) and a small fraction of NRC limits for exposure to members of the public of 25 millirem/yr TEDE. This assessment was provided to the NRC by letter dated September 16, 2004.¹

To further support this conclusion, CY has performed Microshield² runs to determine an on-site survey limit for the disposition of waste in appropriate containers that can be shipped to US Ecology Idaho RCRA disposal site.

¹ G. H. Bouchard (CYAPCO) letter to the US NRC Document Control Desk, dated September 16, 2004, "Request for Approval of Proposed Procedures in accordance with 10 CFR 20.2002", CY-04-168.

² MicroShield 5. Grove Engineering, Rockville, MD, 1998.

NMS501

An action level has been developed to identify when it is appropriate to transport a container to US Ecology or to an alternate disposal site should the container dose rates exceed the alternate waste disposal procedure criteria of 10 CFR 20.2002. These action levels are expressed as a dose rate (in $\mu\text{R/hr}$), and are based upon the assumption that all gamma emissions are produced by the decay of Cs-137. The action levels also assume that the contents of the container contain Cs-137 contamination at a maximum allowable activity concentration of 30 pCi/gm for disposal at US Ecology.

It should be noted that as the weight (and effective density) of the contents of each container is variable, the action levels will also vary. Accordingly, action levels were determined for B-25 containers as well as intermodal containers using appropriate software (i.e., MicroShield).

The survey data in CY's submittal requesting approval of alternative waste disposal procedures for disposal at US Ecology Idaho show Cs-137 as approximately 70% of the total radioactivity (Co-60 making up most of the remaining percentage) and Am-241 more than 2 orders of magnitude below Cs-137. Considering this and the waste activity concentration limits for US Ecology Idaho, it is considered appropriate to base the survey criteria on Cs-137. This approach is conservative, as any Co-60 present in the waste will drive the total activity concentration at the action levels to lower values due to the higher energy gamma resulting from decay of Co-60 versus that from Cs-137.

Using a nominal container fill height for an intermodal container corresponding to 55 %, a 1 meter dose rate of 4 $\mu\text{R/hr}$ is selected as a reliable and conservative action level for determining compliance with the alternate disposal procedure survey criteria. It is considered that containers exhibiting dose rates below the action level may be shipped to US Ecology Idaho and those exhibiting higher dose rates need to be shipped to alternate facilities or investigated further to determine radionuclide concentrations.

Using a dose rate at 1 meter from each intermodal container of 4 $\mu\text{R/hr}$ the dose to offloading workers is acceptable. Considering such a close distance to each container (1 meter), an exposure time of 1000 hours at this distance would be needed to approach the criteria of 5 mrem per year requirement established by NRC for this alternative disposal procedure. This exposure scenario is conservative and provides evidence that the use of a 30 pCi/g limit (or 4 $\mu\text{R/h}$ for an intermodal at 1 meter) for waste to be disposed at the US Ecology site would result in worker exposures well within the NRC criteria for approval of the alternate disposal request in accordance with 10CFR20.2002.

CYAPCO hereby requests expedited review and approval of this request to support our decommissioning activities at the HNP.

If you should have any questions regarding this submittal, please contact Mr. G. P. van Noordennen at (860)-267-3938.

Sincerely,

G. van Noordennen
G. P. van Noordennen
Regulatory Affairs Manager

12-17-04
Date

cc: S. J. Collins, NRC Region 1 Administrator
T. B. Smith, NRC Project Manager, Haddam Neck Plant
R. R. Bellamy, Chief, Decommissioning and Laboratory Branch, NRC
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E. L. Wilds, Jr., Director, CT DEP Monitoring and Radiation Division