

NORTHEAST UTILITIES



THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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March 20, 1987

Docket No. 50-423

A05322

Re: 10 CFR 50.54

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

- References: (1) T. M. Novak letter to J. F. Opeka, Probabilistic Study for Millstone Nuclear Power Station, Unit No. 3, dated October 17, 1985.
- (2) J. F. Opeka letter to T. M. Novak, Risk Evaluation Report, dated November 22, 1985.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Evaluation of AC-Independent Containment Spray System

In September, 1981, the Director of the Office of Nuclear Reactor Regulation requested that Northeast Nuclear Energy Company (NNECO) perform a plant-specific risk study for Millstone Unit No. 3. In August, 1983, NNECO submitted the Millstone 3 Probabilistic Safety Study (PSS), which estimated the core damage frequency and risk from internal and external events. On October 17, 1985, the NRC issued its Draft Risk Evaluation Report (NUREG-1152) for Millstone Unit No. 3 and requested that NNECO consider four specifically-recommended improvements identified by the Staff in that report. In Reference (2), NNECO committed to evaluating these potential improvements and implementing appropriate actions as necessary.

One of the four recommendations of NUREG-1152 was that an evaluation be made as to the feasibility of adding an AC-independent containment spray system at Millstone Unit No. 3. In Reference (2), NNECO committed to perform such an evaluation by the startup from the first refueling outage. A report has been prepared for the purpose of evaluating the feasibility and cost-benefits of conceptual designs of an AC-independent containment spray system. We are hereby submitting the results and conclusions of the evaluation as committed in Reference (2).

Based on generic studies of the feasibility and cost of adding an AC-independent train of containment spray, a new train which fully meets all current regulatory requirements would cost on the order of \$10 million (1986 \$). The design would not be cost-effective by very substantial margins.

Two plant-specific designs have been proposed in this report which provide containment spray independent of the existing offsite and emergency onsite AC

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power system. Both designs were pursued far enough to get a reasonable measure of their feasibility and costs. The first design (Option 1) proposed is a non-Class 1E, commercially available emergency diesel generator which would provide power to an existing quench spray pump. Only the design's interface with existing Class 1E systems would be Class 1E. The cost was calculated to be about \$1 million (1986 \$). The second design (Option 2) involves the use of skid-mounted diesel-powered fire pumps which would pump ocean water through hoses and fittings directly into the quench spray piping. The cost of the design was calculated to be \$1.15 million. Both designs would be manually actuated.

The cost-effectiveness of the two designs was determined using two different measures. The first measure is a straight calculation of the total present worth costs of the design per man-rem of averted public risk. For either option, a value of about \$11,000 per man-rem averted is obtained. The second measure compares the total benefits with the total costs. The averted risks (benefits) include health effects, lost wages, relocation expenses, lost private and public property (offsite) and so on. (The proposed designs would not affect core melt frequency nor have an impact on onsite costs). Benefit-to-cost ratios of 0.01 were calculated for both options.

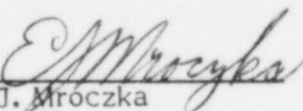
Sensitivity studies were performed which measured the effects of source term, seismic hazard curve, health effects costs, and distance from the plant over which the (averted) risk are calculated. Even using pessimistic assumptions which tend to maximize offsite risks, it is shown that the proposed designs are not cost effective. We would also note that the draft Reactor Risk Reference Document (NUREG-1150) comes to essentially the same conclusion (Reference Figure 8.12 of NUREG-1150). This work was done independently of the NNECO evaluation yet reached virtually identical cost benefit conclusions.

In summary, it is concluded that a containment spray system independent from the existing onsite emergency AC power system could be constructed, but it would be imprudent to do so. The lowest cost proposals would be for designs that do not fully meet all regulatory standards. However, cost-benefit evaluations using two methods show that even these designs would not be cost-effective by very substantial margins.

As requested by Ms. E. L. Doolittle, NRC Project Manager, 10 copies of the report, "Evaluation of AC-Independent Containment Spray System" are being forwarded directly to her. As always, we are available to discuss any questions you may have.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY


E. J. Mróczka
Senior Vice President

cc: Dr. T. E. Murley, Region I Administrator
J. T. Shedlosky, Senior Resident Inspector, Millstone Unit No. 3
E. L. Doolittle, NRC Project Manager, Millstone Unit No. 3