DCS MS-016

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Docket No. 50-336

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Mr. W. G. Counsil, Senior Vice President
Nuclear Engineering & Operations
Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06141

Dear Mr. Counsil:

SUBJECT: EVALUATION OF PROPOSED INADEQUATE CORE COOLING INSTRUMENTATION SYSTEM FOR MILLSTONE UNIT 2

We have reviewed your March 11, 1983 response to our December 10, 1982 Generic Letter 82-28 "Inadequate Core Cooling Instrumentation System." We have found that your proposed Heated Junction Thermocouple (HJTC) concept is acceptable as indicated in our review and evaluation in Enclosure 1. However, we will require you to provide the detailed design description and schedule milestones described in Enclosures 2 and 3 for our review. We request that you provide us with your schedule for additional submittals including response to the additional information requests within 30 days of your receipt of this letter.

The information requested in this letter affects fewer than 10 respondents; therefore OMB clearance in not required under P.L 96-511.

Sincerely,

Original signed by:

James R. Miller, Chief
Operating Reactors Branch #3
Division of Licensing

Enclosures:
As stated

cc w/enclosures:
See next page

ORB#3:DL	ORB#3:DL	ORB#3:DL
PKreutzer	DOsborne:dd	JRMiller
5/30/84	6/1/84	6/4/84

8406150297 840604
PDR ADOCK 05000336
P PDR

cc:
Gerald Garfield, Esquire
Day, Berry & Howard
Counselors at Law
One Constitution Plaza
Hartford, Connecticut 06103

Mr. Charles Brinkman
Manager - Washington Nuclear
Operations
C-E Power Systems
Combustion Engineering, Inc.
7910 Woodmont Avenue
Bethesda, Maryland 20014

Mr. Lawrence Bettencourt, First Selectman
Town of Waterford
Hall of Records - 200 Boston Post Road
Waterford, Connecticut 06385

Superintendent
Millstone Plant
P. O. Box 128
Waterford, Connecticut 06385

U.S. Environmental Protection Agency
Region I Office
ATTN: Regional Radiation Representative
John F. Kennedy Federal Building
Boston, Massachusetts 02203

Northeast Utilities Service Company
ATTN: Mr. Richard R. Laudenat, Manager
Generation Facilities Licensing
Post Office Box 270
Hartford, Connecticut 06101

Regional Administrator
Nuclear Regulatory Commission
Region I
Office of Executive Director
for Operations
631 Park Avenue
King of Prussia, Pennsylvania 19406

Office of Policy & Management
ATTN: Under Secretary Energy
Division
80 Washington Street
Hartford, Connecticut 06115

Arthur Heubner, Director
Radiation Control Unit
Department of Environmental Protection
State Office Building
Hartford, Connecticut 06115

Mr. John Shedlosky
Resident Inspector/Millstone
c/o U.S.N.R.C.
Box 811
Niantic, CT 06357

Vice President - Nuclear Operations
Northeast Utilities Service Company
P. O. Box 270
Hartford, Connecticut

ENCLOSURE 1

NORTHEAST NUCLEAR ENERGY COMPANY RESPONSE TO U.S.NRC
GENERIC LETTER 82-28 "INADEQUATE CORE COOLING INSTRUMENTATION SYSTEM" OF
DECEMBER 10, 1982, NUREG-0737, ITEM II.F.2 FOR
THE MILLSTONE-2 NUCLEAR POWER STATION

In response to the U. S. NRC Generic Letter No. 82-28 "Inadequate Core Cooling Instrumentation (ICCI) System" dated December 10, 1982, the Northeast Nuclear Energy Company (NNECO) has proposed a system for detecting and monitoring ICC conditions including a subcooling margin monitor (SMM), core exit thermocouples and reactor vessel level instrumentation system for the Millstone-2 nuclear power station. The staff in conjunction with our contractor, Oak Ridge National Laboratory (ORNL), has reviewed the NNECO submittal of March 11, 1983 describing the proposed system. Our review and evaluation follows.

Subcooling Margin Monitor (SMM)

The SMM for Millstone-2 is a Combustion Engineering device with two in-core RTDs with a range from 150°F to 750°F and two overlapping reactor coolant pressure transmitters (ranges: 0 - 1600, and 1500-2500 psia). The RTD range is less than the required 1800°F maximum. Only one SMM is installed. As a backup, existing instrumentation will be utilized with steam tables and plant procedures. Presently the SMM does not include superheated steam conditions. It is stated that in the final ICC system the SMM range will be increased.

Based on our review, we find that deviations from NUREG-0737 Item II.F.2 design requirements for SMM and justification for these deviations were not described. The concerns are described in Enclosure 2.

Core Exit Thermocouples (CET)

There are 45 CETs, there are approximately 11 CETs per quadrant. The CETs have been upgraded inside containment to meet seismic and environmental criteria. The CET signals are fed directly to the plant computer. The display range is 70°F to 2300°F. The submittal of April 15, 1983 which deals with the items of NUREG-0737, Supplement 1, stated that the Safety Parameter Display System (SPDS) will be upgraded in the integrated implementation plan for Supplement 1, NUREG-0737. However, no additional information has been submitted on this matter. Please note that Supplement 1 to NUREG-0737 does not identify the specific design requirements for core exit thermocouples as outlined in Item II.F.2. Therefore Supplement 1 does not supercede the II.F.2 requirements. We will require the licensee to (1) provide specific plans and schedules for upgrading the core exit thermocouple system, including the cables, connectors, penetrations, compensation junction boxes, and display indicators, (2) identify any deviations from II.F.2 requirements and (3) justify each deviation.

Heated Junction Thermocouples (HJTC)

NNECO has elected to install the CE HJTC system as their Reactor Coolant Inventory System (RITS) which has been generically approved by the staff (NUREG/CR-2627). The system was ordered for delivery in late 1983 with planned installation in the October 1984 refueling outage. The required cabling for the HJTC has already been installed from the reactor vessel head to the containment.

Summary and Conclusion

Based on our review of the NNECO response to Generic Letter 82-28 we have concluded that the HJTC for RITS is acceptable. However, some confirmatory information, described in Enclosure 2 is needed before we can conclude that the design of the SMM, the CET and RITS conform to the NUREG-0737 design requirements.

With regard to the implementation of the RITS, NNECO should provide the implementation letter report described in Enclosure 3 in order that we can complete our review for approval of the RITS implementation.

ENCLOSURE 2

REQUEST FOR ADDITIONAL INFORMATION NORTHEAST UTILITIES SERVICES COMPANY
PROPOSED INADEQUATE CORE COOLING INSTRUMENTATION FOR
THE MILLSTONE-2 NUCLEAR POWER STATION

1. In view of the installation of only one SMM, provide more detail of the backup instrumentation to justify the single failure criteria. Provide the scope of its upgrading and describe how it meets the requirements of Item II.F.2 of NUREG-0737 including the display range.

2. Provide confirmation that there are no deviations of the HJTC from the CE generic design addressed in NUREG/CR-2627.

3. Provide the scope of the CET upgrade and discuss how they will meet the requirements of Item II.F.2 of NUREG-0737.

ENCLOSURE 3

MILESTONES FOR IMPLEMENTATION OF

INADEQUATE CORE COOLING INSTRUMENTATION

1. Submit final design description (by licensee) (complete the documentation requirements of NUREG-0737, Item II.F.2, including all plant-specific information items identified in applicable NRC evaluation reports for generic approved systems).
2. Approval of emergency operating procedure (EOP) technical guidelines - (by NRC).

   Note: This EOP technical guideline which incorporates the selected system must be based on the intended uses of that system as described in approved generic EOP technical guidelines relevant to the selected system.
3. Inventory Tracking Systems (ITS) installation complete (by licensee).
4. ITS functional testing and calibration complete (by licensee).
5. Prepare revisions to plant operating procedures and emergency procedures based on approved EOP guidelines (by licensee).
6. Implementation letter* report to NRC (by licensee).
7. Perform procedure walk-through to complete task analysis portion of ICC system design (by licensee).
8. Turn on system for operator training and familiarization.
9. Approval of plant-specific installation (by NRC).
10. Implement modified operating procedures and emergency procedures (by licensee).

- System Fully Operational -

*Implementation Letter Report Content

(1) Notification that the system installation, functional testing, and calibration is complete and test results are available for inspection.

(2) Summary of licensee conclusions based on test results, e.g.:

   (a) the system performs in accordance with design expectations and within design error tolerances; or

   (b) description of deviations from design performance specifications and basis for concluding that the deviations are acceptable.

(3) Description of any deviations of the as-built system from previous design descriptions with any appropriate explanation.

(4) Request for modification of Technical Specifications to include all ICC instrumentation for accident monitoring.

(5) Request for NRC approval of the plant-specific installation.

(6) Confirm that the EOPs used for operator training will conform to the technical content of NRC approved EOP guidelines (generic or plant specific).