



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

MAY 25 1979

MEMORANDUM FOR: Olan D. Parr, Chief, Light Water Reactors Branch No. 3, DPM

FROM: Robert E. Jackson, Chief, Geosciences Branch, DSE

SUBJECT: MEETING OF MAY 15, 1979 ON FAULT IN REFUELING WATER STORAGE TANK AREA

PLANT NAME: Millstone Nuclear Power Station, Unit 3
LICENSING STAGE: Post CP
DOCKET NUMBER 50-423
RESPONSIBLE BRANCH: LWR-3, A. Dromerick, LPM

Representatives of the Nuclear Regulatory Commission, Northeast Nuclear Energy Company (NNECO), and NNECO's geological consultant, Stone and Webster, met at the NRC's Bethesda office in order to discuss the most recently discovered fault in the Millstone Unit 3 foundations area. The salient points of that meeting, as prepared by H. Lefevre of the Geosciences Branch, are attached as Enclosure 1. The attendees are listed in Enclosure 2.

A handwritten signature in cursive script, appearing to read "Robert E. Jackson".

Robert E. Jackson, Chief
Geosciences Branch
Division of Site Safety
and Environmental Analysis

Enclosures:
As Stated

cc: D. Vassallo
R. Denise
O. Parr
A. Dromerick
R. Jackson
R. McMullen
H. Lefevre
A. Cardone
NRC PDR
Local PDR

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MILLSTONE NUCLEAR POWER STATION, UNIT 3
NORTHEAST NUCLEAR ENERGY COMPANY
DOCKET NO. 50-423
BETHESDA MEETING OF MAY 15, 1979

Background

On April 26, 1979, L. Chatfield of Northeast Nuclear Energy Company (NNEC) notified A. Dromerick, NRC Licensing Project Manager, of a bedrock fault in the Millstone Unit 3 excavation. As reported, this fault (J-1940), the ninth to be encountered in the Unit 3 area, is exposed in the Refueling Water Storage Tank area, extends westward into the Engineered Safety Features Building, and apparently dies out before reaching the wall of the Containment Building. The fault, a low angle (8° to 15° SW) thrust, strikes approximately N40 $^{\circ}$ W. Apparent displacement is on the order of two inches or less.

Of the previously-reported eight faults in the Unit 3 area, the NRC staff has concluded that the faults are not capable within the meaning of Appendix A to 10 CFR Part 100. Conclusions regarding the first seven faults are contained in the Geosciences Branch's Safety Evaluation Report Amendments of June 18, 1975 and August 12, 1976.

Because of the structural similarities of the eighth fault (J-1599) with the previously evaluated non-capable faults, we have not prepared another amendment to the Safety Evaluation Report addressing this specific fault. Nevertheless, by early April 1977, we had completed our evaluation of Fault J-1599, as described in MNECO's report entitled "Fault in the Demineralized and Refueling Water Tank Area." This report was received by the NRC on March 7, 1977.

Engineered Safety Features Building Fault (J-1940)

Because of the anomalous nature of the newly-reported (ninth) fault (J-1940) exposed in the excavations for the Engineered Safety Features Building and the Refueling Water Storage Tank areas, we requested that NNECO provide all available information relative to the fault. The previous eight faults were high angle, normal faults with strikes ranging from N28°W to N7°E. Fault J-1940 is low angle (8° to 15°) southwest-dipping reverse fault striking N40°W. The maximum apparent displacement of Fault J-1940 is two inches. Displacement on the other eight faults ranges from 1 foot to 43 feet.

The sequence of events following the April 26 notification and discussion is as follows:

1. Friday, April 27 - Receipt of a fault location plan accompanied by four geologic cross-sections with attendant notations.
2. Monday, April 30 - Conference call with NNECO discussing the April 27 information and a request for transmittal of a written description of a portion of Table 2-C and the fault.
3. Tuesday, May 1 - Receipt of preliminary copies of geologic wall maps (Figures 2.5.4-6C and 2.5.4-6D).
4. Wednesday, May 2 - Receipt of two page discussion of the fault.
5. Friday, May 4 - Conference call with NNECO discussing the fault and a request that all additional information (maps, cross-sections, photographs, etc.) relative to this matter be presented at a meeting to the NRC at Bethesda as soon as possible.

6. Monday, May 7 - Telephone call. Because of airline scheduling difficulties in the early part of the week and NRC staff commitments (visit to TVA's Yellow Creek site) later in the week, the meeting was scheduled for May 15 at Bethesda.
7. Tuesday, May 15 - See following section for meeting description.

Meeting of May 15, 1979

In addition to a verbal discussion NNECO presented the following field evidence supportive of the non-capability of Fault J-1940:

1. Extensive photo coverage of the faulted area and near vicinity.
2. Pertinent geologic maps of the excavation walls and floors. These include (a) a figure location map (b) geologic map of the north and east walls of the excavation, and (c) geologic map of the floor at final grade.
3. Isometric drawing of the excavation affected by faulting.

Of the evidence presented, the most persuasive were the high-quality photos and the geologic floor map of the faulted area and adjacent portions of the Containment Building and the Refueling and Demineralized Water Storage Tank excavation. The photos demonstrated that the fault, with an apparent maximum displacement of two inches, either dies out or is cut off by previously determined non-capable faults (T-2 to the west wall and J-1599 to the east). Although no radiometric date of the gouge encountered in the fault is available because of contaminants and other reasons, the isolation or "severing" of Fault J-1940 by two confining, non-capable faults, T-2 and T-1599, requires that Fault J-1940 predate and thus, be older (or at least

equivalent in age) than either of these two faults (radiometrically dated at approximately 175 million years old). Other evidence (crystallized smectite contained within the gouge and an apparently non-offset joint (J-1970), intersecting the fault) is likewise supportive of the fault's great age.

Conclusion

Based upon the evidence presented, coupled with knowledge and data gathered through earlier site fault investigations, we conclude that the ninth fault (J-1940), like the preceding eight faults, is not capable within the meaning of Appendix A to 10 CFR Part 100. As such the fault presents no hazard to either the further construction of Unit 3 or the continuing operation of Units 1 and 2.

It is reasonable to expect that faulting, similar to that already evaluated may be encountered elsewhere within yet-to-be exposed portions of the Millstone Unit 3 excavations. We therefore conclude that there is a high degree of assurance that extensions of the presently-known faults and other members of the fault set which may be discovered during further excavations are not capable within the meaning of 10 CFR Part 100, Appendix A. We have therefore informed NNECO that, in the event faults of the same set as those previously evaluated by the NRC staff, are encountered within the Unit 3 excavations, separate reports need not be prepared and submitted to the Nuclear Regulatory Commission. This is in keeping with procedures established by the Commission at other nuclear power plant sites where numerous non-capable faults have been mapped in the excavations. We do require however, that we be immediately informed by telephone of the discovery of additional faulting

(including probable extensions of the previously-identified faults) and that plot plans depicting the location of the newly-discovered fault as well as all other previously-mapped faults be furnished expeditiously to the NRC staff. Appropriate description of the fault is to accompany the plot plan. A complete description of all faulting, including the basis for concluding that the faults are not capable, is to be included in the Unit 3 Final Safety Analysis Report.

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MILLSTONE NUCLEAR POWER STATION, UNIT 3
NORTHEAST NUCLEAR ENERGY COMPANY
DOCKET NO. 50-423
BETHESDA MEETING OF MAY 15, 1979

LIST OF ATTENDEES

NRC

A. Cardone
H. Lefevre
O. Parr

Northeast Nuclear

L. A. Chatfield

Stone and Webster

J. Briedis
R. E. Hike
F. S. Vetere