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

JAN 28 1980

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

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

SUBJECT: SITE VISIT AND EXAMINATION OF FAULTED BEDROCK IN THE MILLSTONE PUMP HOUSE EXCAVATION, UNIT 3

DOCKET NO.: 50-523
APPLICANT: Northeast Nuclear Energy Company
FACILITY: Millstone Nuclear Power Station, Unit 3

Following notification of the NRC by Northeast Nuclear Energy Company (NNECO) on November 8, 1979 of faults in the Millstone Pump House excavation, Geosciences Branch geologists visited the site on November 15, 1979 and examined those faults available for inspection. This report was prepared by H. Lefevre of the Geosciences Branch. On December 13, 1979, background information in the form of fault descriptions and locations, was received from NNECO's consultant, Stone and Webster. NNECO officially transmitted the same background information to the NRL by letter dated January 7, 1980. Our observations at the site and assessment of the Pump House faults are presented in Attachment A. The site visit attendees are listed in Attachment B.

Robert E. Jackson

Robert E. Jackson, Chief
Geosciences Branch
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Enclosures:
As stated

cc: w/enclosures
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Attachment A

MILLSTONE NUCLEAR POWER STATION, UNIT 3
NORTHEAST NUCLEAR ENERGY COMPANY
DOCKET NO. 50-423

NOTIFICATION OF PUMP HOUSE FAULTS AND SITE VISIT OF
NOV. 15, 1979

Background

On Thursday, November 8, 1979, Tom Deshefy of Northeast Nuclear Energy Company (NNECO) notified A. Dromerick, NRC Licensing Project Manager and H. Lefevre, NRC Staff Geologist, of faults in the excavation for the Millstone Unit 3 Circulating and Service Water Pump House. The Pump House is located west of Unit 3 Turbine Building, approximately 400 feet from the nearest previously-identified fault. According to NNECO the Pump House mapping has not been completed, but preliminary mapping indicates a number of steeply-dipping northerly-trending faults of minor displacement (1 ft or so). These faults, as reported by NNECO are similar to those seen by the NRC elsewhere in the Unit 3 excavations.

Site Visit of November 15, 1979

Since the excavation for the Pump House had been nearly completed, the NRC Staff (I. Alterman and H. Lefevre) visited the site on November 15, 1979 in order to examine the Pump House faults.

Following a brief introductory meeting (see Attachment "B" for attendees) a detailed examination of the exposed bedrock surface was made by the Staff. With the exception of a small portion of the western corner of the excavation (now being cleaned preparatory to mapping) the bedrock foundations were completely exposed and had been mapped by NNECO on a preliminary basis. The

Staff observed very little gouge present along the fault traces. According to NNECO's geologic consultant, Stone and Webster, only a small pocket of gouge within Faults 2282 and 2339 was considered of sufficient quantity for analysis (mineralogy and geochronology). When available, NNECO will inform the NRC of the results of the analysis. The NRC Staff observed seven faults similar to those seen elsewhere at the Unit 3 site in the available portion of the Pump House excavation. These faults are northeasterly-trending, are high angle (more than 70°) and have apparent offsets averaging 2 ft. or less. None of the faults appeared to offset the overlying glacial till.

Following the Staff's inspection of the faults a brief exit meeting was held. In keeping with the reporting procedures stated in the May 25, 1979 NRC memorandum (R. E. Jackson to O. D. Parr) NNECO, following completion of mapping, will provide the NRC with (1) a site plan view showing the newly-mapped faults as well as all previously mapped faults and (2) appropriate description of all the Pump House faults. At least a preliminary submittal of the above information is to be received by the NRC Staff by early December, 1979.

Preliminary Information of December 13, 1979

On December 13, 1979 a packet of preliminary information regarding the Pump House faulting was received from NNECO's geologic consultant, Stone and Webster (conversations with NNECO on December 17, 1979 indicated that,with the exception of a transmittal letter, the same packet of information will be sent to the NRC within the next week). This packet consisted of:

1. A description of each of the eight prominent faults within the Pump House excavation (minor splays of several of the faults are also described).

2. A site plan showing the location of all faults reported to date.

3. A geologic map of the floor of the Pump House excavation.

4. A copy of Table 2.5.3-1, List of Faults.

Our review of the above data indicated that, with the exception of the addition of another fault (designated Fault 2380) in the western portion of the excavation, conditions were as perceived by the Staff on the site visit of November 15, 1979. Although the dip (54°) of the additional fault is shallower than the other seven, it is similar in trend and dip to those noted and evaluated by the staff elsewhere at the site.

Prior to notification of the eight Pump House faults, the NRC had been apprised of and has evaluated nine other faults within the Unit 3 excavations. Based upon our earlier evaluations of the data presented by NNECO, the Millstone 3 faults are considered not capable within the meaning of Appendix A to 10 CFR Part 100. Our earlier determination of non-capability is based upon, but not limited to, the following: (1) radiometric dating of fault gouge yielding a minimum age of approximately 174 million years, (2) unbroken quartz crystals found within the gouge, (3) fluid inclusions in the above quartz crystals indicating emplacement at a possible depth of burial of several kilometers and (4) consistency of the site geology (fault orientation, presence of undeformed hydro-

thermal quartz, and sense of movement) with the ancient geologic history of the area. We consider the Pump House faults to be not capable since they appear to be members of the same non-capable fault set seen and evaluated elsewhere at the Unit 3 site.

NNECO Submittal of January 7, 1980

Since the data transmitted to the NRC on January 7, 1980 by NNECO pertaining to the faulting in the Pump House excavation is identical to that provided on December 13, 1979 by NNECO's geologic consultant, Stone and Webster, no change is required in our preceding discussion.

Conclusion

Based upon observations made during the November 15, 1979 site visit, indicating the similarity of the eight Pump House faults with the nine faults previously seen at the Millstone Unit 3 site, we conclude that these recently-identified faults like those evaluated elsewhere at the site are not capable within the meaning of Appendix A to 10 CFR Part 100. As such these faults present no hazard to either the further construction of Unit 3 or to the continuing operation of Units 1 and 2.

ATTACHMENT B

MILLSTONE NUCLEAR POWER STATION, UNIT 3
NORTHEAST NUCLEAR ENERGY COMPANY
DOCKET NO. 50-423

SITE MEETING AND VISIT OF NOV. 15, 1979

LIST OF ATTENDEES

NRC	Northeast Nuclear	Stone and Webster
I. Alterman	T. Deshefy	R. E. Hike
H. Lefevre	S. Toth (part time)	F. S. Vetere