NORTHEAST UTILITIES

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WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
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November 12, 1992

Docket No. 50-423
B14290

Re: 10CFR50.90
10CFR50.91

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Temporary Heating Source--Operability of the Charging Pump
Proposed Changes to Technical Specifications

Pursuant to 10CFR50.90, Northeast Nuclear Energy Company (NNECO) hereby proposes to amend its operating license, NPF-49 by incorporating the attached changes into the Technical Specifications of Millstone Unit No. 3. Also, NNECO is requesting that the NRC Staff process this license amendment request on an exigent basis pursuant to 10CFR50.91(a)(6). Exigent authorization is being requested since there is a possibility that the outside ambient temperature will fall below 17°F before this amendment would be processed using conventional methods. With ambient temperatures at or below 17°F without this amendment, the plant will be required to shut down pursuant to Technical Specification 3.0.3. Our best estimate as to when ambient temperatures would drop to 17°F or below is December 1, although the actual date could be earlier or later. Given these circumstances, NNECO requests that the NRC issue the subject amendment, or otherwise effect the provisions of this request, before ambient temperature drops below 17°F. In assessing which vehicle is the optimum one to effect this change in a timely fashion, it should be recognized that the specification that would be invoked if the 17°F threshold is reached is 3.0.3, which requires entry into MODE 3 within 7 hours. Accordingly, the Staff may wish to process this amendment on an exigent basis, targeting for an issuance date of December 1. As either an alternative or in parallel, it may be advisable to prepare a temporary waiver of compliance[1] for the near term, to be effective until the amendment is issued. NNECO has no preference in this regard; our position is that we have a safe configuration to operate Millstone Unit No. 3 below ambient temperature of 17°F, and seek timely NRC action to authorize such operation without interruption.

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(1) NNECO acknowledges that this nomenclature may be changed to "exercise of enforcement discretion," pending issuance of changes to 10CFR Part 2 which are anticipated shortly.

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The proposed change to the Technical Specifications provides a clarification to the definition of operability of the charging pump for Cycle 4 operation only. The revised definition recognizes that for Cycle 4 operation only, and with the outside temperature below 17°F, the operability of the charging pump will rely upon a temporary heating source. The proposed change also specifies that modifications will be implemented, prior to Cycle 5 operation, to remove reliance on the temporary heating source.

Background

On September 29, 1992, the "B" train of the supplementary leak collection and release system (SLCRS) was declared inoperable and it was determined that insufficient surveillance testing existed to prove the operability of the "A" train. Specifically, timing delays in the fan circuitry resulted in a 70-75 second delay in auxiliary building filter exhaust fan start from signal actuation. In addition, NNECO determined that the timing sequence difference between an actual accident configuration and the existing SLCRS draw down surveillance was large enough to consider the surveillance inadequate for verifying system operability.

The immediate corrective action based on Limiting Condition for Operation (LCO) 4.0.3 was to perform another inservice test (IST) to determine the operability of the "A" train of SLCRS.

While performing the second IST on September 30, 1992, the "A" train of the SLCRS failed to draw down the secondary enclosure within the required time frame and was declared inoperable. (The IST results show that the 0.25-inch negative pressure criterion could not be met in 60 seconds [80 seconds actual]). NNECO began a shutdown of the unit. The shutdown to MODE 5 was completed on October 1, 1992.

A team of engineers was assembled to address the causes of design deficiencies and develop solutions. It was determined that both short- and long-term solutions would be required. Short-term solutions are necessary primarily due to the single failure concerns related to damper position and to maintain the auxiliary building fans within their operating limits. Short-term solutions are also necessary to establish and maintain system operability to support plant operation. Long-term solutions may require significant modifications to the system design. It is anticipated that these changes will require extensive lead times for equipment purchases, engineering, installation, and testing. Accordingly, this work is scheduled for the next refueling outage.

The solutions are being implemented in stages. The resolution of the identified design deficiencies are being implemented in four stages.

Stage 1: Support operation above 17°F outside air temperature.

Stage 2: Support plant operation at and below 17°F outside air temperature.

Stage 3: Support "warm weather" operation.

Stage 4: Long-term solution to be implemented in the upcoming refueling outage.

In a letter dated November 12, 1992,[2] NNECO informed the NRC Staff of the status and course of action taken (Stage 1) for the resolution of the design deficiencies related to auxiliary building ventilation system (ABVS) and the SLCRS for Millstone Unit No. 3.

Proposed Design Modification to Support Plant Operation Below 17°F Outside Air Temperature

During the month of October 1992, NNECO completed several modifications prior to the start-up of the plant. Presently, Millstone Unit No. 3 is operating at full power. The design modifications completed under Stage 1 include placing of the selected ABVS dampers in a fixed position. In addition, supplemental heat (five local heaters) is provided in the charging pump (CHS)/reactor plant component cooling water pump (CCP) areas to maintain building ambient temperature at 65°F with an outside ambient temperature of 0°F. However, because these local heaters are powered from a nonemergency power source, these local heaters would not be available during a loss of power (LOP) when only the emergency diesel generators (EDG) are supplying AC power. NNECO is proposing to make a temporary modification that will change the power sources to these heaters such that the heaters will be available during an LOP. Additionally, three space heaters powered from emergency buses will also be installed under this temporary modification. Figure 1 of Attachment 1 of this letter shows a typical electrical one-line diagram arrangement of the eight space heaters.

To assure minimum temperature is maintained during an LOP, the local heaters originally powered from a nonemergency power source will be repowered from emergency buses that receive power from the EDG's during an LOP. Assuming no single failures, the eight unit heaters are sufficient to maintain 65°F in the auxiliary building CHS/CCP areas during an LOP concurrent with a design basis accident. Assuming the loss of one train leaves four unit heaters available, four units are sufficient to maintain temperature greater than 32°F in the auxiliary building CHS/CCP areas with an outside ambient temperature of 0°F. The components in the auxiliary building are operable above 32°F. However, the temporary heating source could not be credited to maintain at least 32°F within the CHS/CCP areas of the auxiliary building until the proposed modification is approved by the NRC in the form of a license amendment.

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(2) J. F. Opeka letter to the U.S. Nuclear Regulatory Commission, "SLCRS/ABVS, Event Summary," dated November 12, 1992.

The heaters have been sized (under normal and minimum voltage conditions) to provide the required heat input under the normal and accident operating conditions.

In order for the EDG's to have sufficient capacity to power the supplemental heaters, the existing load; consisting of the fuel building air filter units and exhaust fans, will be disconnected from the EDG electrical buses. This equipment is only required during spent fuel movement and crane movement over the storage pool which will not be performed until the systems are restored. This is not planned until the next refueling outage. The EDG load sequencer sends a manual block signal to this equipment which prevents the load from being energized until 40 seconds after the EDG is supplying the plant's electrical distribution system. Thereafter, the load is added to the EDG automatically. The EDG loading calculation assumes the fuel building air filter units and exhaust fans start automatically once the manual start block signal is removed.

The load being removed has a greater KW rating than the supplemental heaters being added. In addition, the same manual start block signals will be sent to the supplemental heaters such that the supplemental heaters cannot be energized prior to 40 seconds after the EDG is supplying plant power. Thereafter these heaters will be loaded on the EDGs automatically. Therefore, the existing EDG loading calculation, which demonstrates the capability of the EDG to recover to rated frequency and voltage on each load step, envelopes this design change.

Safety Assessment

NNECO has reviewed the proposed design modification to assess the impact on the accidents previously evaluated, the potential for creation of a new unanalyzed event and the impact on the margin of safety. The details of this assessment are provided in Attachment 1. NNECO has determined that the proposed modification constitutes an unreviewed safety question (USQ) since the new equipment (space heaters) being added is not QA Category I and does not completely correct the identified deficiencies of the existing design to the point that it meets the plant's original design basis requirements (see Attachment 1). However, NNECO has determined the proposed modification to be acceptable and safe. NNECO's conclusion that the change constitutes a USQ, pursuant to 10CFR50.59, necessitates this submittal pursuant to 10CFR50.90. Therefore, NNECO hereby proposes to amend its operating license, NPF-49, by incorporating the attached changes into the Technical Specifications of Millstone Unit No. 3.

Description of the Change

The proposed change to the technical specifications provides a clarification of the definition of operability of the charging pumps at Millstone Unit No. 3 for Cycle 4 operation only. The proposed change is included in Attachment 2.

The proposed change also specifies that permanent modifications will be implemented prior to Cycle 5 operation, to remove any reliance on the nonsafety-related heaters to control temperature in the CHS/CCP area of the auxiliary building. A new definition, 1.45, "THE CHARGING PUMP OPERABILITY" is being added which will read as follows:

> "For Cycle 4 operation only, if the outside air temperature is below 17°F, OPERABILITY of the charging pump is defined as including credit for a temporary heating source in order to maintain at least 32°F within the charging pump/reactor plant component cooling water pump areas of the auxiliary building. Modifications will be implemented, prior to startup for Cycle 5 operation to remove reliance on a temporary heating source."

In addition the 'Index' section of the Millstone Unit No. 3 Technical Specifications has been revised to reflect the addition of the new definition. Since this specific change is administrative in nature, no further discussion concerning significant hazards consideration is provided.

Justification for Exigent License Amendment

Pursuant to 10CFR50.91(a)(6), NNECO hereby requests NRC exigent authorization and approval of this proposed amendment to its Operating License, NPF-49. In order to continue plant operation, authorization is required before the outside ambient temperature falls below 17°F (on a sustained basis). Without this amendment, the temporary heating source could not be credited to maintain at least 32°F within the CHS/CCP areas of the auxiliary building which will assure the operability of the charging pumps. This would require NNECO to declare both the charging pumps inoperable and enter into Technical Specification 3.0.3 and commence a plant shutdown. At present, Millstone Unit No. 3 is at full power. A discussion of the circumstances surrounding this situation and a determination of why the need for the prompt action could not have been avoided is provided in the Background Section of this letter and below.

During the month of October 1992, NNECO kept the staff informed of our activities related to the resolution of the design deficiencies discovered in the auxiliary building ventilation system filter exhaust system, CHS/CCP area supply and exhaust fans control circuitry, sequence timing and damper positions. As noted above, the ABVS assists the SLCRS. In a letter dated November 12, 1992, NNECO informed the Staff of the status and planned course of action for resolution of the design deficiencies related to the above listed systems. It was indicated that additional actions are required to support continued operation with an outside air temperature below 17°F. This is based on an analysis which indicates that additional heat would be required post accident on a loss of offsite power to ensure equipment operability in the auxiliary building. A nonsafety grade temporary heat system is being added inside the auxiliary building. Discussions with the Staff culminated in an understanding reached on Monday, November 9, 1992 that the Technical

Specifications should be modified to allow NNECO to rely on the temporary heating source to maintain at least 32°F within the CHS/CCP area. This situation could not have been avoided as NNECO became aware of the problem in late September and more recently concluded that the optimum resolution constituted a USQ, triggering the need for action pursuant to 10CFR50.90. As we believe the Staff is aware, NNECO has expended a very significant amount of engineering resources providing a solution to this matter. Several external consulting organizations were also retained. The matter has been pursued on a seven-day per week, extended-hour basis as a top corporate priority. NNECO successfully engineered a solution that was implemented under 10CFR50.59 to effect unit startup. However, as described herein, that solution is limited by external ambient temperature. Our best estimates as to expected weather condition indicate that there is insufficient time to process a normal license amendment to support uninterrupted safe plant operation.

Further, the requested exigent authorization is appropriate because this amendment request does not involve a significant hazards consideration. For Cycle 4 only, NNECO is crediting a highly reliable temporary heating source in order to maintain at least 32°F within the CHS/CCP areas of the auxiliary building to support continued operation of the charging pump. We have concluded that this is acceptable and thoroughly justified from a safety standpoint.

Significant Hazards Consideration

In accordance with 10CFR50.92, NNECO has reviewed the attached proposed change and has concluded that the change does not involve a significant hazards consideration. The basis for this conclusion is that the three criteria of 10CFR50.90(c) are not compromised. The proposed change does not involve a significant hazards consideration because the change would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

   The supplemental heaters can be considered part of the ABVS. The ABVS is a safety-related system used to mitigate the consequences of an accident and therefore, changes to this system cannot increase the probability of occurrence of previously evaluated accidents.

   Although the proposed change relies on non-QA equipment to maintain the temperature in the auxiliary building, this reliance does not change the performance characteristics of any safety-related equipment contained in the auxiliary building (i.e., charging system.) Thus, the accident analysis results are unaffected and the doses will not be increased. The installation of the heaters along with the previous changes to the system will improve the capability of ABVS in assisting SLCRS to draw a negative pressure and thus the design basis analysis offsite dose calculations are not affected. Therefore, the proposed changes have no effect on the consequences of the previously evaluated accidents.

The proposed change has no adverse impact on the electrical distribution system or EDG loading. Since one EDG load is being replaced with a smaller EDG load and the Class 1E busses and non-Class 1E heaters will be isolated by two Class 1E breakers in series, there is no increase in loads on the electrical systems such that they would be operated outside of their design or tested limits. Therefore, the probability of occurrence of those accidents initiated by the electrical distribution system (i.e., LOP) and the consequences resulting from such an accident, remain unchanged.

The fuel building ventilation system is required to support fuel handling and spent fuel cask drop accidents. However, there will be no movement of new or spent fuel or heavy loads over the storage pool during the time the fuel building exhaust filter system is disconnected. Therefore, these previously evaluated accidents cannot occur during this time period and their dose consequences will not be increased.

2. Create the possibility of a new or different kind of accident from any previously evaluated.

The proposed change and its associated failure modes do not increase the possibility of an accident of a different type. Although multiple failures associated with the change can result in the initiation of an accident, they are similar to failure modes that exist with the current system. The possibility of a failure of all the heaters which causes a loss of CCP and charging injection without an LOP is negligibly low. The reasons for this being negligibly low are because there are two redundant trains of heaters, and the outdoor temperature would seldom be low enough to reduce the auxiliary building temperature below 32°F. There are also two temperature alarms that would alert the operators of a low temperature and there is sufficient time available for operators to take actions.

3. Involve a significant reduction in a margin of safety.

The proposed changes do not impact the physical protective boundaries, nor do they affect the performance of the charging or ABV systems. Therefore, there is no impact on the margin of safety.

Further, as discussed above, the changes will improve the overall reliability of the ABVS when compared to the as found system and thus provides added assurance that the offsite dose calculations in the FSAR remain valid.

With the addition of credit for non-QA equipment, the impact on charging system reliability is judged to be negligible.

The Commission has provided guidance concerning the application of the standards in 10CFR50.92 by providing certain examples (51FR7751, March 6, 1986) of amendments that are considered not likely to involve a significant hazards consideration. The change proposed herein is not enveloped by a specific example. As described above, the proposed change does not constitute a significant hazards consideration since, for Cycle 4 only, NNECO is crediting the temporary heating source in order to maintain at least 32°F within the CHS/CCP areas of the auxiliary building to support continued operation of the charging pump. We have concluded that this is acceptable from a safety standpoint. NNECO has evaluated the failure probabilities of the new failure modes and the risk attributed to an event initiated due to the loss of nonsafety-related heaters. NNECO concludes that the probability of failure of the new failure modes are low and there is no significant impact on core melt frequency or public risk. In addition, there is no significant difference in reliability between the temporary heating source and the one that relies solely on safety-related equipment. NNECO is planning modifications for installation prior to startup for Cycle 5 operation to remove reliance from the temporary heating source. Therefore, NNECO has concluded that the proposed change is acceptable and does not constitute a significant hazards consideration.

Request for Temporary Waiver of Compliance

NNECO is providing the justification below which demonstrates that continued operation during the duration of the requested waiver is consistent with protecting the health and safety of the public.

1. Requirement for Which a Waiver is Requested

   NNECO hereby requests a temporary waiver of compliance (or an equivalent) from the Millstone Unit No. 3 Technical Specification Operability definition for the charging pump in the event outside ambient temperature reaches or falls below 17°F until the proposed license amendment is approved by the NRC.

2. Discussion of Circumstances Surrounding the Situation/Need for Prompt Action/Why the Situation Could not be Avoided

   As stated in the Background section of this letter, Millstone Unit No. 3 was shut down on September 30, 1992 when it was determined that both trains of the SLCRS were inoperable. In addition, NNECO determined that the SLCRS, in conjunction with the auxiliary building filter system, was inoperable because it would not have drawn a negative 0.25 inches vacuum within the required time in the secondary enclosure building as required by the Technical Specifications.

   During the month of October 1992, NNECO kept the staff informed of our activities regarding the resolution of the design deficiencies related to the auxiliary building ventilation system filter exhaust system,

CHS/CCP area supply and exhaust fans control circuitry, sequencer timing and damper positions. In a letter dated November 12, 1992, NNECO informed the Staff of the status and course of action for resolution of the design deficiencies related to the above listed systems. It was indicated that additional actions are required to support continued operation with an outside air temperature below 17°F. This is based on an analysis which indicates that additional heat would be required postaccident on a loss of offsite power to ensure equipment operability in the auxiliary building. A nonsafety grade temporary heat system is being added inside the auxiliary building. Discussion with the Staff culminated in an agreement reached on Monday, November 9, 1992 that the Technical Specifications would be modified to allow NNECO to rely on the temporary heating source to maintain at least 32°F within the CHS/CCP area. This situation could not be avoided as NNECO just recently became aware of the problem and more recently concluded that this change constitutes a USQ.

3. Discussion of Compensatory Actions

As stated above, eight space heaters (4 per train), which will be installed and will be operational in the CHS/CCP areas of the auxiliary building, are sufficient to maintain 65°F in the auxiliary building. Once per shift, plant personnel will verify that the power supply breakers are not tripped. Assuming the loss of one train leaves four heaters available, four units are sufficient to maintain greater than 32°F in the auxiliary building with an outside ambient temperature of 0°F. Therefore, no further compensatory action is deemed necessary.

4. Safety Significance and Potential Consequences of Request

NNECO believes that there is a small and acceptable safety impact of potential consequences to this proposed change. The change simply allows NNECO to implement the revised definition of operability of the charging pump during outside low temperature (< 17°F) until the license amendment is issued. NNECO has judged that operation of the plant with the temporary heating source in the auxiliary building to support the operability of the charging pump for outside temperature below 17°F is safe and justified for Cycle 4. Therefore, NNECO also judges operation to be acceptable for the few days that any waiver might be in effect.

5. Duration of Requested Waiver

The temporary waiver of compliance is being requested for the period until the license amendment is approved by the NRC. This will allow Millstone Unit No. 3 to continue to safely operate.

6. Basis of No Significant Hazards Consideration

The basis for why this temporary waiver of compliance does not involve a significant hazards consideration (SHC) is the same as described previously for the proposed license amendment. However, since the period for which the waiver would apply is very brief, the no SHC conclusion is more persuasive.

7. Basis for No Irreversible Environmental Consequences

The requested waiver involves no environmental consequences. The temporary heating source added to the auxiliary building does not affect any accident analyses or the associated radiological consequences nor does it affect systems associated with the control of radiological or nonradiological effluents.

NNECO has reviewed the proposed license amendment against the criteria of 10CFR51.22 for environmental considerations. The proposed change does not increase the types and amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, NNECO concludes that the proposed change meets the criteria delineated in 10CFR51.22(c)(9) for a categorical exclusion from the requirements for an environmental impact statement.

In summary, NNECO is requesting an exigent license amendment request that, for Cycle 4 operation only, would modify the operability definition of the charging pump to include reliance on a temporary heating source during an LOP with outside temperature below 17°F. This proposed technical specification change would be temporary and would expire automatically upon achieving Mode 4 during startup of Cycle 5. As stated previously, NNECO seeks regulatory action, by whatever vehicle is most appropriate, to authorize uninterrupted safe plant operation.

NNECO has concluded that it is appropriate and necessary that this license amendment request be processed on an exigent basis for the following reasons.

- The amendment request is needed to continue operation of the plant.
- The license amendment does not constitute an SHC.
- NNECO has made every effort to process this request in a timely manner.

We also wish to emphasize our conclusion that this proposed amendment involves no undue safety risk nor irreversible environmental consequences. We are therefore requesting this action to allow continued operation of the plant, an action which is in the interest of the health and safety of the public, our customers and shareholders.

The Millstone Unit No. 3 Nuclear Review Board has reviewed and approved the proposed change and has concurred with the above determination.

In accordance with 10CFR50.91(b), we are providing the State of Connecticut with a copy of this proposed amendment via facsimile to ensure their awareness of this request.

Should the Staff request any additional information to process this request, NNECO remains available to promptly provide such information.

Very truly yours,

NORTHEAST UTILITIES SERVICE COMPANY

J. F. Opeka
Executive Vice President

cc: T. T. Martin, Region I Administrator
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3
P. D. Swetland, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

Mr. Kevin McCarthy, Director
Radiation Control Unit
Department of Environmental Protection
Hartford, CT 06116

Subscribed and sworn to before me

this 12th day of November, 1992

Deborah A. Farley
Notary Public

Date Commission Expires: 12/31/95

DEBO. H.A. FARLEY
NOTARY PUBLIC

Docket No. 50-423
B14290

Attachment 1

Millstone Nuclear Power Station, Unit No. 3

Safety Assessment of the
Installation of Temporary Heaters in
the CHS/CCP Areas of the Auxiliary Building

November 1992

Millstone Unit No. 3
Safety Assessment of the
Installation of Temporary Heaters in the
CHS/CCP Areas of the Auxiliary Building

In a letter dated November 1?, 1992, NNECO informed the NRC Staff of the status and planned course of action taken for the resolution of the design deficiencies related to the auxiliary building ventilation system (ABVS). Several design changes made to the auxiliary building ventilation system (ABVS) may prevent it from controlling the temperature in the auxiliary building. Five local space heaters have been installed in the charging pump (CHS)/the reactor plant component cooling water pump (CCP) areas of the auxiliary building to maintain building ambient at 65°F. However, because these local heaters are powered from nonemergency power sources, this heat would not be available during a Loss of Power (LOP) when only the Emergency Diesel Generators are supplying AC power. The purpose of this design modification is to change the power sources to these heaters such that the heaters will be available during a LOP. Three additional space heaters powered from emergency buses will also be installed under this design modification. See Figure 1 showing an electrical one line of the arrangement of the eight space heaters.

To assure minimum temperature is maintained during a LOP, the local heaters originally powered from nonemergency power sources, will be repowered from emergency buses that receive power from the Emergency Generators (EDG's) during a LOP. Assuming no single failures, the eight unit heaters are sufficient to maintain 65°F in the Aux. Bldg. CHS/CCP Areas during a LOP with an accident. Assuming the loss of one train leaves four units heaters available, four units are sufficient to maintain temperatures greater than 32°F in the auxiliary building CHS/CCP Areas with an outside ambient temperature of 0°F. The heaters have been sized (under normal and minimum voltage conditions) to provide the required heat input under the normal and accident operating conditions.

In order for the EDG's to have sufficient capacity to power the supplemental heaters, existing nonessential loads (the Fuel Building Air Filter Units and Exhaust Fans) will be disconnected. This equipment is only required during fuel movement and crane movement over the pool which will not be performed until the next refueling outage. The EDG Load Sequencer sends a manual block signal to this equipment which prevents the load from being energized until 40 seconds after the EDG is supplying the plant's electrical distribution system. The EDG loading calculation assumes the Fuel Building Air Filter Units and Exhaust Fans start once the manual start block signal is removed.

The load being removed has a greater KW rating than the supplemental heaters being added. In addition, the same manual start block signals will be sent to the supplemental heaters such that the supplemental heaters cannot be energized prior to 40 seconds after the EDG is supplying plant power. Therefore, the existing EDG loading calculation which demonstrates the

capability of the EDG to recover to rated frequency and voltage on each load step envelopes this design change.

Per Millstone Unit No. 3 FSAR Chapter 15, the Fuel Building Filter Units and Exhaust Fans are only required to support fuel movement and crane movement over the storage pool. Fuel and crane movement will be prohibited for the duration of this design change (i.e., prior to startup for Cycle 5 operation) therefore, the disconnection of the Fuel Building Filter Units and Exhaust Fans has no impact on the ability of the plant to mitigate an accident or normal plant operation.

Each Train of four (4) heaters will be connected through two series Class 1E breakers to an emergency 480V load center bus. The breaker located in the load center (an air circuit breaker-ITE Type K600S) receives a trip signal on a loss of power event. Forty seconds after the Emergency Diesel Generator 4kV supply breaker has closed connecting the EDG to the 4kV bus, the breaker will automatically reclose.

The purpose of this tripping is to ensure the supplemental heaters are added to the same load step as the disconnected equipment to ensure the existing EDG loading calculation envelopes the proposed change. Automatically reclosing the 480V load center breaker makes the supplementary heater system completely independent of operator action as each individual heater is thermostatically controlled and immediately available post LOP.

Coordination will be provided such that any size fault on any part of the heater feeder circuit including up to the individual heater, will not result in the loss of the emergency load center. Each of the two series Class 1E breakers will be sized to carry a minimum of 115% of the total heater's full load current. The two series breakers need not be coordinated with each other but are required to coordinate with the bus supply breakers (both the 480V load center incoming breaker and the 4kV supply breaker) and the load center tie breaker. Referring to the attached Figure 2 from the Millstone Unit No. 3 Breaker Coordination Study, these two series breakers will coordinate with the 480V load center supply breaker (breaker no. 6 on Figure 2), the 480V load center tie breaker no. 5 on Figure 2) and the 4kV feeder breaker to the load center (device No.'s 7 & 8 on Figure 2).

The continuous setting for these breakers will be from 175-200 amps @ 480V. Attached for information is Figure 14 taken from the existing Millstone Unit No. 3 Breaker Coordination Study, showing the existing coordination between the bus supply breakers and motor control center supply breakers. Because the heater feeder series breaker will be sized so low in comparison with the bus supply breakers, coordination will not be a concern.

It should be noted that the existing coordination study shows coordination is provided for the 480V load center for much larger loads than these supplementary heaters.

The cabling between the two series breakers will be installed as train related cabling (i.e.-color coded as its associated train). Also, the cabling between the second series breaker to the local distribution panel will be installed as train related cabling. All the train related cabling installation will meet the spatial separation requirements as defined in the FSAR for safety-related cabling between redundant trains and also between safety-related and nonsafety-related cabling.

The cabling from the local distribution panels to the individual heaters will be installed as nonsafety-related cabling. Separation between the redundant train heater's cabling will be maintained as if the cabling was still safety related. However, the separation between the heaters' cabling and other nonsafety-related cabling will not be maintained.

NNECO has reviewed the design modification pursuant to 10CFR50.59 to assess the effect on the accidents evaluated in the safety analysis report, the potential for creation of new unanalyzed event, and the impact on the margin of safety.

1. Effect on the Accidents Evaluated in the Safety Analysis Report

1.1 Effect on the Probability of Occurrence of Previously Evaluated Accidents

The proposed change has no adverse impact on the electrical distribution system or EDG loading. Since one EDG load is being replaced with a smaller EDG load and the class 1E busses and Non-Class 1E heaters will be isolated by two Class 1E breakers in series, there is no increase in loads on the electrical systems such that they would be operated outside of their design or testing limits. Therefore, the probability of occurrence of those accidents initiated by the electrical distribution system (i.e. LOP) remains unchanged.

The supplemental heaters can be considered part of the ABVS. The ABVS is a safety-related system used to mitigate the consequences of an accident and therefore, cannot increase the probability of occurrence of previously evaluated accidents.

The fuel building ventilation system is required to support a Fuel Handling Accident in the Fuel Building and Spent Fuel Cask Drop accidents. However, there will be no movement of new or spent fuel or heavy loads over the storage pool during the time the FBEFS are disconnected. Therefore, these previously evaluated accidents cannot occur during this time period.

1.2 Effect on the Probability of Occurrence of a Previously Evaluated Malfunction of Equipment Important to Safety

The changes implemented to resolve the single failure concerns related to the ABVS may eliminate the capability of the ABVS to maintain the auxiliary building CHS/CCP areas ambient temperature in the event of a LOP. This design modification proposes to use heaters installed in the auxiliary building CHS/CCP areas powered from the EDG's to provide supplemental heat. However, some of the individual components are not QA and as such are not seismically or environmentally qualified. Because the operability of these non-QA components are required to support the operation of equipment important to safety during an LOP, this modification could conservatively be considered an increase in the probability of a malfunction of systems important to safety.

The proposed changes ensure that there is no increase in the probability of occurrence of a malfunction of a EDG because one EDG load is being replaced with a smaller EDG load and the class 1E busses and nonclass 1E heaters will be isolated by two class 1E breakers in series.

Additionally, since seismic II over I concerns have been addressed there should be no interactions with equipment that could cause failures.

1.3 Effect on the Consequences of the Previously Evaluated Accidents

The design modification has no adverse impact on the EDG capability to provide required voltage and frequency. Acceptable isolation is provided between the non-Class 1E and Class 1E circuits.

The disconnection of the fuel building exhaust filter system has no impact on the ability of the plant to mitigate accidents other than fuel handling accidents. Since no fuel movement or crane operation over the storage pool will be permitted with this equipment disconnected, there is no impact on the consequences of a fuel handling accident.

The installation of the supplemental heaters allows the ABVS to maintain auxiliary building ambient temperatures in the event of an LOP and low ambient temperature in order to ensure that the performance of the safety systems will not be degraded. The proposed change does not impact the effectiveness of the ABVS and SLCRS; therefore, the dose consequences will not be increased.

The new QA-Category 1 breakers, new distribution panels, temporary heaters and cabling are installed in a manner that prevents

interaction with other plant equipment. Seismic II over I concerns have been addressed in the location and mounting of the heaters, distribution panels and cabling. In addition, the heated air stream from the heaters will not directly impinge on safety-related equipment.

Therefore, based on the above, the accident analysis results are unaffected and the dose consequences will not be increased.

1.4 Effect on the Consequences of a Previously Evaluated Malfunction of Equipment Important to Safety

With credit for the use of non-QA equipment to mitigate the lack of heat in the CHS/CCP areas during a LOP, the consequences of malfunctions associated with the proposed change are unchanged and do not increase design basis off-site dose calculation. Therefore, there is no effect on the consequences of a previously evaluated malfunction of equipment important to safety.

Since the Fuel Building filter heater unit and exhaust fans are not required to mitigate any accidents, their disconnection has no effect on the consequences of a previously evaluated malfunction of equipment important to safety.

2. Potential for a New Unanalyzed Accident

2.1 Possibility of an Accident of a Different Type than Previously Evaluated

The possibility of an initiating event being a failure of all the heaters which causes a loss of the reactor plant component cooling water pump and charging injection without an LOP is negligibly low. The reasons for this being negligibly low are because there are two redundant trains of heaters, the outdoor temperature must be low enough to reduce the auxiliary building temperature below 32°F, the temperature alarm will alert the operators of a low temperature, and there is sufficient time available for operators to take alternate action. In addition, the outside ambient temperature is monitored once per shift.

Therefore, the proposed temporary design change and its associated failure modes do not increase the possibility of an accident of a different type since they cannot be the initiating event.

2.2. Possibility of a Malfunction of a Different Type than Previously Evaluated

The proposed change introduces a malfunction of a different type than previously evaluated because of the reliance upon non-QA

equipment (the heaters and local distribution panels) to mitigate an event. In addition, parts of the heater circuit (cabling and local distribution panel) are not seismically installed. However, this equipment malfunction is judged to be small and the risk is considered to be acceptable. The bases for this conclusion include the historical reliability of commercially provided space heaters, the use of the EDGs as a power source, meeting the existing design basis for electrical separation for both cable installation and isolation between nonsafety-related and safety-related circuits, the use of IEEE 383 cable for the majority of the circuit, and the proposed monthly surveillance to demonstrate the operability of the heaters.

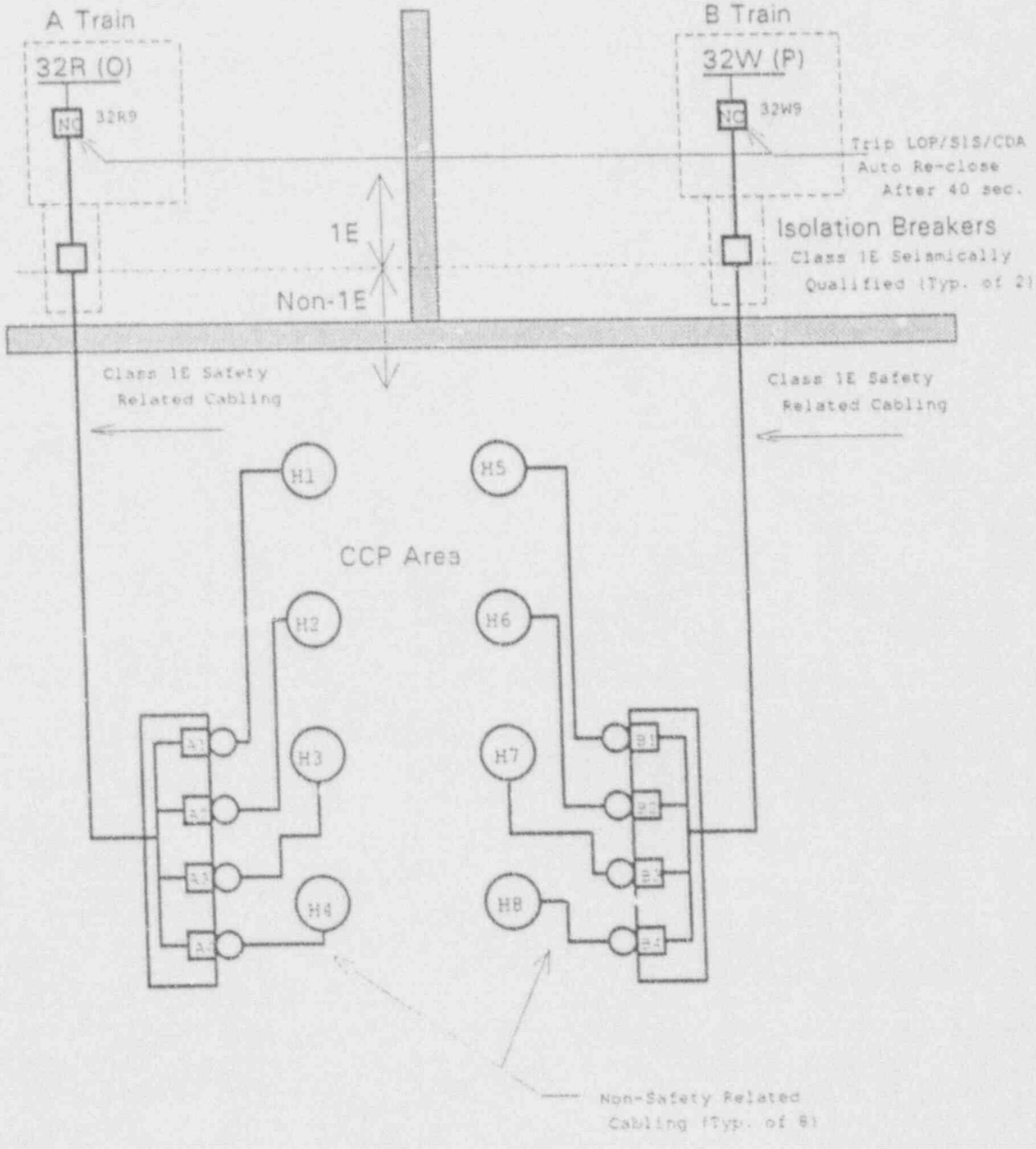
3. Impact on the Margin of Safety

The proposed design modification does not impact the physical protective boundaries. The proposed design modification provides the necessary heat in the event of a LOP in conjunction with low outside ambient temperature. The temporary design changes improve the performance of ABVS by ensuring that the ambient temperatures remain acceptable and does not adversely impact the capability of the electrical distribution system to provide adequate voltage or frequency. Therefore, based on the above, there is no potential adverse impact on the margin of safety.

Summary and Conclusions

Based on the foregoing assessment, the proposed modification is considered an Unreviewed Safety Question (USQ) due to the possibility of a malfunction of a different type than previously evaluated (failure of non-QA equipment), but is acceptable and safe.

FIGURE 1



TYPICAL HEATER INSTALLATION IN THE AUXILIARY BUILDING

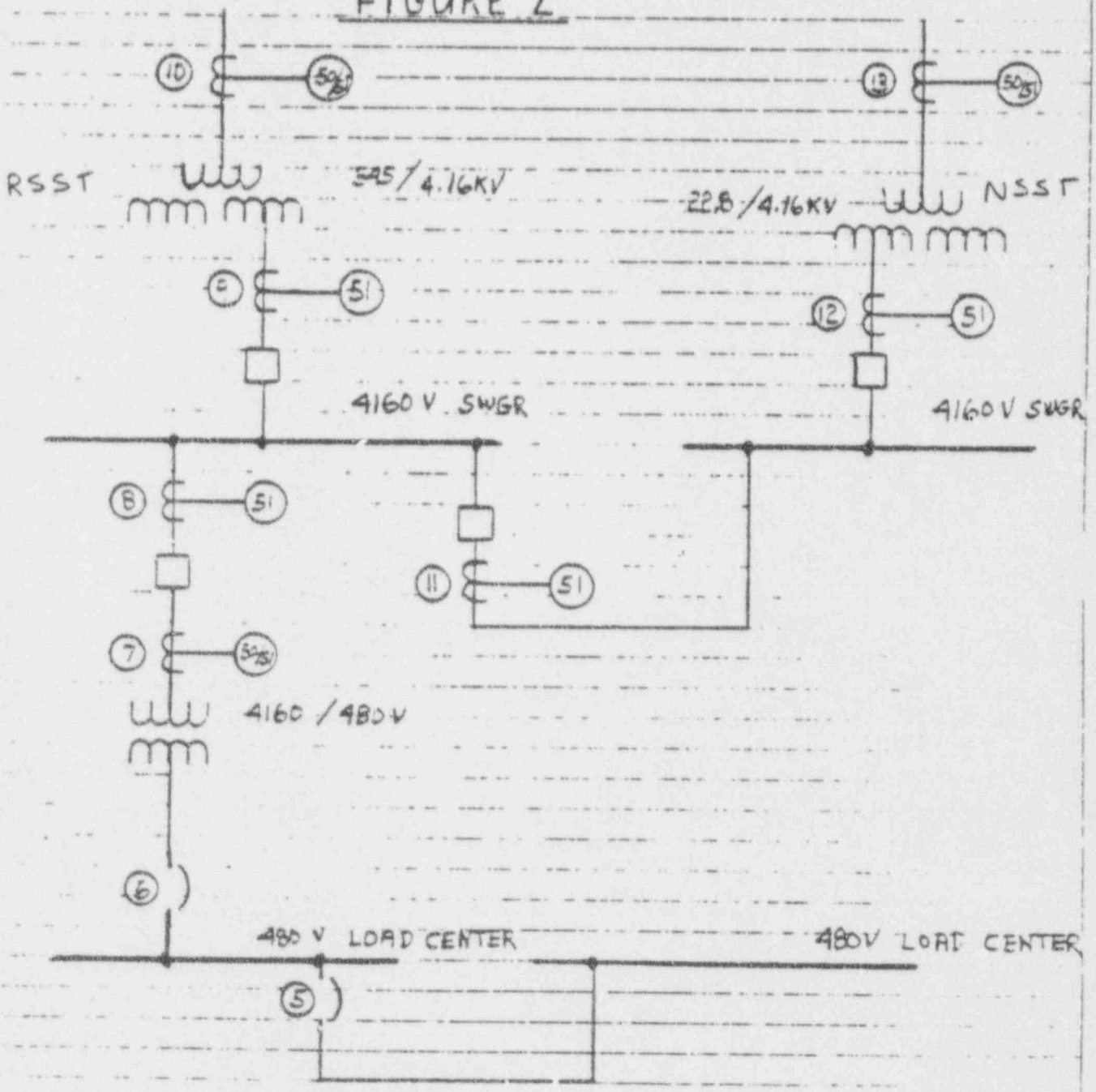
Client NUSCO | Location | Ex. No | 10 X 2.79

Subject APPENDIX R | Date | By

AC DISTRIBUTION SYSTEM | Checked | By

Based on | Revised | By

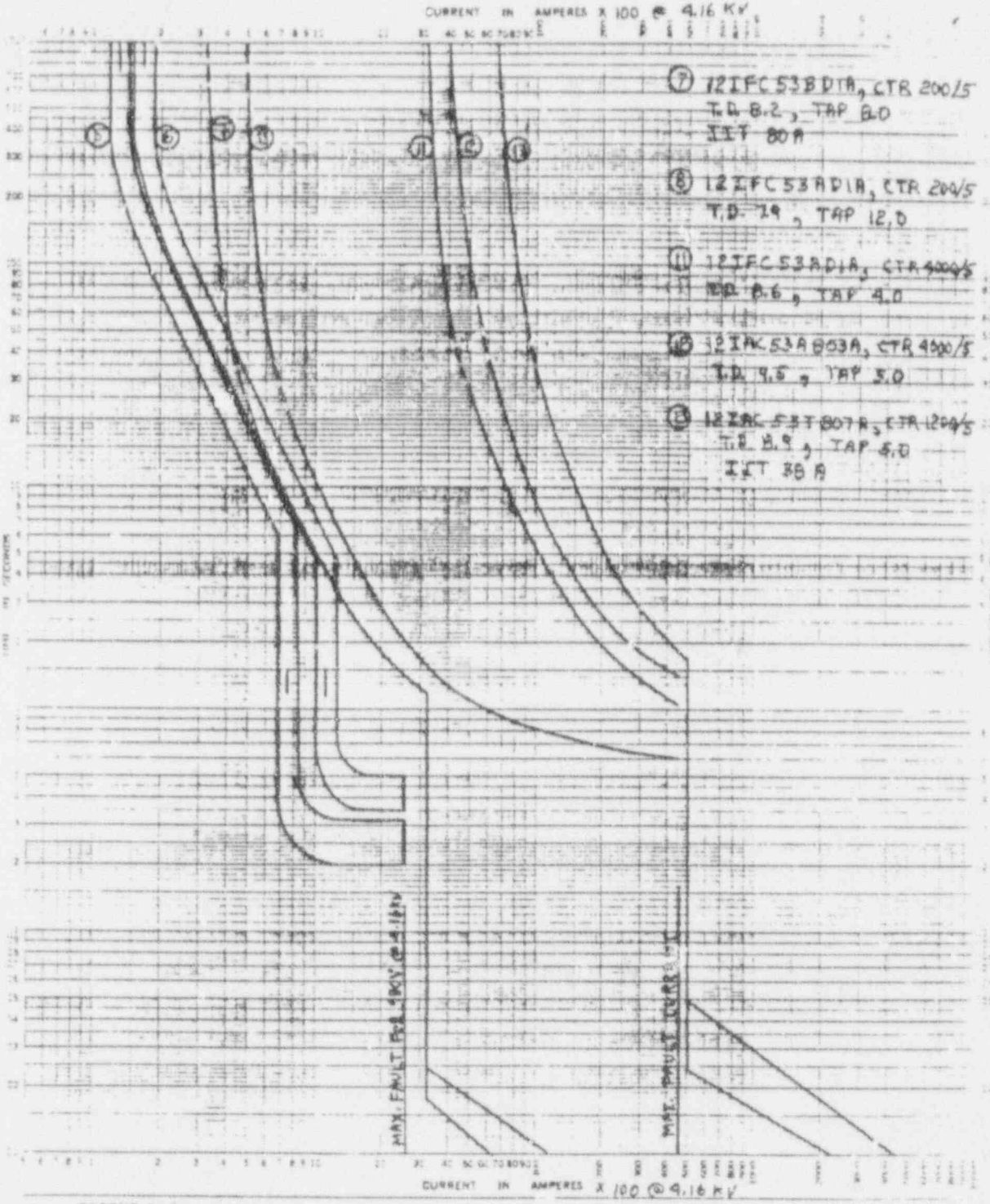
FIGURE 2



COORDINATION CURVES

FIGURE 14

OVERALL COORDINATION FOR 480V & 4160V SYSTEM WHEN SUPPLIED FROM 3STX-XNS-A



APPENDIX R — TIME-CURRENT CHARACTERISTIC CURVES

To: SUPPLY FROM 3STX-XNS-A — Fuse Links In

BASIS FOR DATA Standards — Dated

Tests made at — Volts a-c at — Test points as variations should be

SES-7002, SES-7015, ITE-TD 9002

STONE & WEBSTER ENG. CORP.
No. 2179 - SHEET 5
Date 5-16-86

4.16 KV SWITCHGEAR

3ENS ✱ SWG-A
3ENS ✱ SWG-B

480V LOAD CENTERS

3EJS ✱ US-1A	3EJS ✱ US-1B
3EJS ✱ US-2A	3EJS ✱ US-2B
3EJS ✱ US-3	
2EJS ✱ US-4A	3EJS ✱ US-4B