Sargent & Lundy LLC

Don K. Schopfer
Senior Vice President
312-269-6078

March 30 1998
Project No. 9583-100

Docket No. 50-423

Northeast Nuclear Energy Company
Millstone Nuclear Power Station, Unit No. 3
Independent Corrective Action Verification Program

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

I have enclosed five (5) discrepancy reports (DR)s identified during our review activities for the ICAVP. These DRs are being distributed in accordance with the Communications Protocol, PI-MP3-01.

DR No. DR-MP3-1087
DR No. DR-MP3-1088
DR No. DR-MP3-1089
DR No. DR-MP3-1090
DR No. DR-MP3-1091

I have also enclosed the following twelve (12) DRs for which the NU resolutions have been reviewed and accepted by S&L.

DR No. DR-MP3-0315
DR No. DR-MP3-0478
DR No. DR-MP3-0515
DR No. DR-MP3-0569
DR No. DR-MP3-0614
DR No. DR-MP3-0618
DR No. DR-MP3-0843
DR No. DR-MP3-0866
DR No. DR-MP3-1047
DR No. DR-MP3-1055
DR No. DR-MP3-1056
DR No. DR-MP3-1060

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I have also enclosed the thirteen (13) DRs for which the NU resolutions have been reviewed but not accepted. S&L comments on these resolutions have been provided.

DR No. DR-MP3-0297
DR No. DR-MP3-0373
DR No. DR-MP3-0529
DR No. DR-MP3-0619
DR No. DR-MP3-0687
DR No. DR-MP3-0694
DR No. DR-MP3-0696
DR No DR-MP3-0700
DR No DR-MP3-0999
DR No DR-MP3-1007
DR No. DR-MP3-1009
DR No. DR-MP3-1024
DR No. DR-MP3-1074

Please direct any questions to me at (312) 269-6078.

Yours very truly,

Anthony O'Neil for

D. K. Schopfer
Senior Vice President and
ICAVP Manager

DKS:spr
Enclosures
Copies:
E. Imbro (1/1) Deputy Director, ICAVP Oversight
T. Concannon (1/1) Nuclear Energy Advisory Council
J. Fougere (1/1) NU
m:\icavp\corr\98\nr0330-a.doc

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Component Data
System/Process: HVX
NRC Significance level: 3

DR RESOLUTION ACCEPTED

Potential Operability Issue
(●) Yes
( ) No

Date FAXed to NU:

Date Published: 10/10/97

Discrepancy: SLCRS HEPA Filter Airflow Rating and Pressure Drop

Description: During review of the component data for the Supplementary Leak Collection and Release System (SLCRS) filter units, 3HVR*FLT3A/3B, a discrepancy regarding the design airflow and clean pressure drop for the HEPA filters was identified.

Specification 2170.430-065 specifies an airflow of 8,500 cfm for the SLCRS filter unit.

Vendor drawing 2170.430-065-022 shows an airflow of 8,500 cfm for the SLCRS filter unit and that there are 6 HEPA filters in the unit.

FSAR Section 6.2.3.3 and Table 6.2-63 states that the SLCRS filter unit airflow is 8,500 cfm

FSAR Table 6.5-1 states that the SLCRS filter unit airflow is 9,500 cfm and that there are 6 HEPA filters in the unit.

Piping & Instrumentation Diagram EM-148E shows a 9,500 cfm airflow for the SLCRS filter units

FSAR Table 1.8-1, Regulatory Guide 1.52, paragraph C.3.d clarification states that the HEPA filters will be subjected to velocities recommended by the HEPA filter manufacturer which exceeds ANSI N509-1976 Section 4.3.1 requirements. Specification 2170.430-065 identifies a 1500 cfm rated airflow for the HEPA filter which corresponds to a 9,000 cfm maximum airflow for the unit.

FSAR Table 6.2-63 states that the clean HEPA filter pressure drop is 1.0 inches of water gauge (iwg). Specification 2170.430-065 and vendor drawing 2170.430-065-022 state that the clean pressure drop is 1.15 iwg. At the 9,500 cfm airflow shown on the P&ID the clean pressure drop will be higher due to increase in airflow above the rating conditions for the filter.

		Valid	Invalid	Review Needed	Date
Initiator:	Stout, M. D.	☒	☐	☐	9/24/97
VT Lead:	Neri, Anthony A	☒	☐	☐	9/25/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	10/1/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	10/3/97

Date:

INVALID:

Date: 3/17/98

RESOLUTION: First Response:

NU has concluded that Discrepancy Report, DR-MP3-0315, has identified a condition previously discovered by NU which requires correction. This discrepancy was previously documented in OIR 159 and CR M3 97 2371 (approved corrective action plan attached). FSARCR 97-MP3-468 was initiated 7/30/97 to begin corrective actions. Not all corrective actions have been completed at this time but are required to be complete prior to restart. Corrective actions will be processed and tracked by AR 97018713 and will ensure that the FSAR is reviewed against the Equipment Specification, Operator Instruction Manual (OIM) (2170.430-065) and calculations and revised as necessary. The AR has been modified to ensure that the items related to this DR are addressed. There is reasonable assurance that the engineering evaluation of the required changes will not impact plant operation. NU concurs with the significance level of this DR.

Second Response:

NU has concluded that Discrepancy Report DR-MP3-0315 has identified a condition not previously discovered by NU for which corrective action has been taken.

NU wrote CR-M3-97-2371 to address issues concerning the flow rates through the HEPA filters, but the corrective action did not specifically address Table 1.8-1. AR 97018713-02 was added to track completion of corrective action. This action assignment will correct the FSAR Table 1.8-1 to explain the actual vs. nominal HEPA filter air flow rates.This revision will not change design basis or licensing basis. NU, therefore, considers this issue Significance Level 4.

Attachments:
CR-M3-97-2371
AR 97018713-02

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ◉ Yes ○ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Stout, M. D.	☒	☐	☐	3/17/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/21/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/23/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98

Date: 3/17/98

SL Comments: Comment on First Response:

Disagree with NU's response that this is a condition previously identified by NU. AR 96009041-01 Closure request (attached to the response) states that the capacity of the filter unit is 10,000 cfm. The 10,000 cfm capacity applies to the charcoal adsorber section in the filter unit. The maximum system airflow that the

HEPA filters are rated for is 9,000 cfm (6 filters at 1,500 cfm each).

NU's response did not address the FSAR Table 1.8-1 discrepancy identified in the DR regarding exceeding the HEPA filter manufacturer's maximum recommended velocity.

Comment on Second Response:

Resolution pending completion of correction action for CR M3-97-2371 regarding vendor qualified airflow rating for HEPA filter.

NU is requested to provide vendor documentation accepting the higher than rated filter airflow.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0478

Review Group: System
Review Element: System Design
Discipline: Other
Discrepancy Type: Calculation
System/Process: SWP
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 10/26/97

Discrepancy: In correct drawing reference

Description: Calculation No. 86-210-732GM, Rev. 0, "MP3 Chlorine Monitor Pipe Break Evaluation," calculates the flow rate from a break in the 3/4" SWP supply line to the Chlorine Monitor. This line is conected to the 20 inch turbine building cooling water heat exchanger SWP discharge line. Reference (2), P&I 12179-EM-133B does not contain this 3/4" line.

		Valid	Invalid	Review Needed	Date
Initiator:	Launi, C. M.	☒	☐	☐	10/14/97
VT Lead:	Neri, Anthony A	☒	☐	☐	10/15/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	10/20/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	10/22/97

Date:

INVALID:

Date: 3/26/98

RESOLUTION: Disposition:

NU has concluded that Discrepancy Report, DR-MP3-0478, has identified a condition not previously discovered by NU which requires correction. The non safety related 3/4" SWP supply lines to Chlorine Monitor 3WTC-AE58 were removed under DCN DM3-S-0319-96 for partially implemented and then canceled PDCR MP3-86-121. However, during the closure of the PDCR, not all affected design documents were revised or voided as necessary. Calculation 86-210-732GM written in support of the modification was among those documents not voided. Calculation NSP-780-WTC, identified during the investigation of this DR, established the setpoint for equipment that has been removed, also requires cancellation. P&ID 12179-EM-133B, Rev 39 walkdown has confirmed the plant configuration.

CR M3-97-3907 has been issued because calculations 86-210-732GM and NSP-780-WTC for canceled PDCR MP3-86-121 are statused active. The corrective action of CR M3-97-3907 voids the engineering calculations in accordance with the DCM and reviews documentation associated with the canceled modification to identify if additional changes are required. Calculations 86-210-732GM and NSP-780-WTC will be voided post startup and are being tracked by AR 97027451-02 and AR 97027451-03. Associated documentation review being tracked by AR 97027451-04 is scheduled post startup.

Design Control Manual, Rev 6 among other design activities, controls calculations associated with new plant modifications.

Additionally, extensive work is being performed to develop the Passport database with verification of as-built conditions for existing calculations defined as critical to the design basis. The updates and data entry are addressed in ARs 97029822-01, 97029822-07 and 97029822-10 for MP3. These changes to Passport provide additional information for active calculations by identifying key design bases and installed verification status. As such, the post and future design control issues with calculations are enhanced by the Passport updates.

Conclusion:

NU has concluded that Discrepancy Report, DR-MP3-0478, has identified a condition not previously discovered by NU which requires correction. CR M3-97-3907 has been initiated to void calculations 6-210-732GM and NSP-780-WTC which have remained active against cancelled modification PDCR MP3-86-121 and review the PDCR to identify if additional documentation requiring change. Plant configuration as depicted by P&ID 12179-EM-133B has been confirmed by walkdown. ARs 97027451-02 and 03 track the voiding of the calculations and AR 97027451-04 reviews associated documentation to canceled PDCR MP3-86-121. These activities are scheduled post startup.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Launi, C. M.	☒	☐	☐	3/26/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/26/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/26/98				

SL Comments: CR M3-97-3907 has been issued to void calculations 86-210-732G and NSP-780-WTC post startup. This resolution is acceptable.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0515

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: QSS
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 11/13/97

Discrepancy: Design Pipeline Temperature in Line List and Calculation P(R)-1171

Description: A calculation is required to determine the basis of the QSS design temperatures provided in the QSS line list.

Calculation US(B)-354, Rev. 0 computes the worst-case temperature transient for QSS piping inside containment (US(B)-352, Rev. 0 and CCN 1 determined that the design basis LOCA would produce higher piping temperatures in containment than the design basis MSLB). The maximum piping temperature in US(B)-354 is approximately 240F. The piping line list indicates that the design temperature for QSS piping in containment is 150F. The line list should be changed to indicate a design temperature of 260F for QSS lines in containment: 3-QSS-012-25, 012-29, 012-41, 012-43, 010-30, 008-42, 008-42, 008-44, 006-45, 750-40, and 750-53 (This would be in accordance with NU Memo ES-SD-96-094, Rev. 1, dated 8-12-96).

Calculation P(R)-1171, Rev. 1 determines that the maximum QSS operating temperature is 98F. Calculation SDP-QSS-01358MS, Rev. 6 provides input for the QSS piping stress analysis. Neither of these calculations provide guidance on what design temperatures should be identified in the QSS line list (which states that the QSS piping design temperatures are as much as 150F). A calculation should be performed which establishes the basis for the design temperatures in the line list for QSS piping outside containment.

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	10/20/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/1/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	11/6/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	11/7/97

Date:

INVALID:

Date: 3/24/98

RESOLUTION: DISPOSITION:

NU has concluded that the issue reported in Discrepancy report DR-MP3-0515 has identified a condition not previously discovered by NU which requires correction.

There are three issues discussed in the S&L discrepancy description. The first (1) is that there is no calculation that documents the development of the design temperature

conditions. The second (2) is that the design temperature reported in the line is designation table is not consistent with the stress data package calculation. The third (3) is that operating conditions calculation P(R)-1171 Rev. 1 has not been updated to refelct the operating conditions listed in stress data package. The issues are dispositioned as follows.

NU has concluded that issues 2 and 3 reported in Discrepancy Report DR-MP3-0515 have identified conditions not previously discovered by NU which required correction:

2. Value of Design Temperature in PDDS:

The design temperature as listed in the stress data package calculation (SDP) are intended as a summary description of design condtions for the piping. The design conditions listed in the PDDs are a detailed line-by-line list for the information needed by the stress analysis for each line. With the provision that one is a summary and one is a detailed listing, they should be essentially consistent upon completion of all design change documentation in accordance with the DCM.

As described in NU memo ES-SD-96-094 Rev. 1, the FSAR imoses special design requriemnts during faulted plant conditions for piping in the QSS system. Thus, while the ASME code does not require that design conditions envelop all emergency and faulted plant conditions, NU conservatively determined that design temperatures for the QSS piping would be selected to envelop predicted pipe wall temperatures for all predicted plant conditons. A design temperature was chosen to bound the results predicted in calculation 03075-US(B)-354. This bounding result was included with the SDP summary table and should have been included in the PDDS for the affected lines inside containment. Therefore NU agrees that the PDDS is discrepant with respect to the established design temperature for those lines. It is noted that the piping anlaysis for the lines used the correct design values, so there is no issue with design basis compliance for the piping.

3. Value of Operating Temperature in calculation 12179-P(R)-1171 Rev. 1

Since the stated purpose of calculation 12179-P(R)-1171 is to develop operating conditons to support the stress data package, the calculation should be updated to provide the explicit basis for the operation conditions listed int he SDP.

The approved corrective action plant for CR M3-98-0334 will address the above issues 2 and 3, It specifies corrective actions to update calculation 12179-P(R)-1171 and the PDDS.

NU does not agree that a separate calculation is required for documentation of piping design conditions in the line table (issue 1):

1. Calculation for Design Temperature

The original values for the design conditions listed in the line designation table (now the PDDS) were developed during plant design Stone & Webster. Desing conditions were based on review of availabe information; only a few systems requried specific calculations. There was no procedural requiremnt to have a calculation for all design conditions.

Any changes to design conditions as listed int he PDDS are implemented via the design change process as described in the Design Control Manual (DCM). There is no requiremnt for a calculation to support the proposed change to the PDDS. Nevertheless, it is noted that the referenced calculation 03075-US(B)-354 Rev. 0 was prepared for the specific purpose of calculating piping temperatures during accident conditons, and does provide an adequate basis for eatablishing a design temperature inside containment. The piping outside containment is protected from backflow by check valves and thus does not experience containment conditions, so there is no need to change its design temperature. Therefore for the first issue raised by S&L there is no discrepancy.

NU believes the two identified issues of consistency among the design documents do not comprise a variance from the licensing and design basis since the correct design conditions were used in the piping analysis. Therefore the discrepancy should be Significance Level 4.

Conclusion:

NU has concluded that the issues #2 and 3 reported in Discrepancy Report DR-MP3-0515 have identified conditions not previously discovered by NU which require correction. The approved corrective action plan for CR M3-98-0334 will update the operational modes calculation and the line list. Issue #1 is considered non-discrepant since there is no requirement for a specific calculation of design temperature. The Significance Level of the report should be 4, since there is no impact on the licensing and design basis.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.				
VT Lead:	Neri, Anthony A	☒	☐	☐	3/24/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/26/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98
Date:	3/24/98	☐	☐	☐	

SL Comments: Sargent & Lundy concurs that a separate calculation is not required for design temperature because this design requirement is covered by operating temperature calculations P(R)-1171 and US(B)-354.

Sargent & Lundy concurs that there is a basis for the bounding

operating temperatures reported in SDP-QSS-01358M3: calculations P(R)-1171 and US(B)-354.

Sargent & Lundy also concurs that SDP-QSS-01358M3 correctly identifies bounding QSS temperatures, so no concern exists that QSS piping stress analysis calculations are incorrect. Because of this Sargent & Lundy concurs that DR-MP3-0515 should be downgraded to a NRC Significance Level 4 discrepancy.

Sargent & Lundy concurs that the corrective action plan of CR M3-98-0334 (AR 98001497-02, 03 and 04) will update P(R)-1171 and the piping line list. Because this discrepancy does not raise any concerns with the QSS piping stress levels, these document updates do not need to be completed prior to Unit 3 restart.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0569

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: RSS
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 12/7/97

Discrepancy: Calculation US(B)-337

Description: The purpose of US(B)-337 is to determine the maximum containment pressure after a design basis LOCA with 5% degraded QSS and RSS pumps (the calculation is based on the assumption that the second peak pressure is at its maximum for 5% degraded spray pumps).

The discrepancy is that US(B)-337 references ES-184 the RSS HX UA. Calculation US(B)-342, Rev. 1 superseded ES-184, Rev. 1, but this change was not incorporated into US(B)-337. As a result, the input to Calculation US(B)-337 contains the two incorrect UA values for the RSS HX:

1. Min. ESF LHSI Recirc Mode on p. 7 of US(B)-337 states that the UA is 3.056 MBtu/hr-F, but Case 3 of US(B)-342 states that the UA is 2.396 MBtu/hr-F (both are for RSS flow of 1187 gpm and SWS flow of 5400 gpm).

2. Min. ESF Spray Mode on p. 8 of US(B)-337 states that the UA is 3.812 MBtu/hr-F (for RSS flow of 3740 gpm and SWS flow of 5400 gpm). Case 1 of US(B)-342 states that the UA is 3.412 MBtu/hr-F (for RSS flow of 3598 gpm and SWS flow of 5400 gpm). This implies that a 4% increase in shell side flow produces a 12% increase in UA, a result which is not possible.

These problems with the input data have a weak effect on containment pressures and temperatures calculated for the PSDER LOCA, however, they have a strong effect on the peak RSS HX heat load of approximately 193 MBtu/hr. Therefore the problems with the input data need to be corrected before the results of US(B)-337 can be accepted as valid.

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	11/14/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/17/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/1/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	12/3/97

Date:

INVALID:

Date: 3/25/98

RESOLUTION: DISPOSITION:

NU has concluded that Discrepancy Report, DR-MP3-0569, has identified a condition not previously discovered by NU which requires correction. The DR identifies revised heat transfer

coeffcients not incorpotated in calculation US(B)-337. MP3 containment operating conditions were modified in 1991 by PDCR MP3-89-013. The evaluation of subatmospheric containment integrity, calculation US(B)-337, was superseded to calculation US(B)-273, Rev 5 dated 4/10/92, which incorporated the revised values.

Therefore, the discrepancy as presented in DR-MP3-0569 is not discrepant. The Passport calculation tracking system identifies calculation US(B)-337 status as active. This discrepancy discovered as a result of the investigation into this DR is an administrative issue relating to calculation tracking/status in Passport. The original calculation US(B)-337 in the vendor files was superseded, however the Northeast Utilities records file copy did not identify the calculation as superseded. Subsequent to the transmittal of US(B)-337 to S&L, an ongoing project has placed the correctly annotated copy of the superseded calculation in the records file.

Design Control Manual, Rev 6 among other design activities, controls calculations associated with new plant modifications. Additionally, AR 97029822-04 will modify the Passport database to incorporate the identification of key calculations. The U3 PI-31 calculation assessment for the RSS system, dated 3/7/97 identified that calculation US(B)-337 was obselete and as such will not be identified as a key calculation in Passport.

CR M3-98-0417 was written because the calculation US(B)-337 status is known to be incorrect. The correctivve action to supersede calculation US(B)-337 in Passport and confirm the status of the remaining US(B) calculations to address generic extent of condition is scheduled post startup.

The calculation for Post LOCA Containment Temperature and Pressure Analysis for MP3, US(B)-273, incorporates the revised information. Calculation US(B)-273 LOCTIC input is provided by calculation US(B)-253 which references the RSS heat transfer rates from calculation US(B)-342, as referenced in the DR. The current LOCA analysis incorporates additional changes including 10% RSS degraded pumps from US(B)-359 and a new single failure. Design changes to the RSS system has resulted in revision 2 to heat transfer coefficient calculation, US(B)-342. Pages 13 b & d of LOCTIC input, calculation US(B)-253 provide the revised heat transfer coefficients for recircualtion and spray modes.

As the Post LOCA Containment Temperature and Pressure Analysis for MP3 is documented by calculation US(B)-273 and the PI-31 process has identified and confirmed the design basis calculation the discrepancy is only associated with the adminstrative tracking of the calculation. As such, NU considers this as a Significance Level 4 discrepancy.

CONCLUSION:

NU has concluded that Discrepancy Report, DR-MP3-0569, has identified a condition not previously discovered by NU which requries correction.. During the investigation into this DR it was discovered that superseded status of calculation US(B)-337 had not been updated inthe passport calculation tracking system. Revised design inputs are incorporated into the current calculation for Post LOCA Containment Temperature and Pressure Analysis for MP3, US(B)-273.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	3/25/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/26/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/25/98				

SL Comments: Sargent & Lundy concurs that DR-MP3-0569 is a NRC Significance Level 4 discrepancy. It is a an administrative calculation status control issue only.

CR M3-98-0417 was issued to resolve the calculation status issue and AR 98001856-02 and 03 implement the corrective actions which are needed. Calculation US(B)-337 has been superseded by US(B)-273 and the ICAVP review confirms that input data on RSS HX performance from US(B)-342, Rev. 2 has been correctly used in US(B)-253, Rev. 5 and US(B)-273, Rev. 6. No further corrective actions are required.

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Licensing Document
System/Process: RSS
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 11/15/97

Discrepancy: RSS Motor Acceleration Time

Description: 3DBS-NSS-003, Rev. 0 states that the RSS pump motor speed-up time is 2 seconds if offsite power is available and 1 second if offsite power is not.

This statement in the design basis summary document is inconsistent with the design basis calculation which addresses the issue of RSS effective time, US(B)-270, Rev. 5.

Calculation US(B)-270 concludes that the RSS pump motor acceleration time is 0.8 seconds if it is powered from the emergency diesel generator, and 3.2 seconds if it is powered from offsite power. This conclusion is based on the assumption (Assumption (8), p. 8) that the diesel generator load sequencer prevents any voltage degradation, and that when started from offisite power without a sequencer, the voltage is degraded to 70% of design. The motor specification data (The motor data sheet is provided as Attachment B to US(B)-270) indicates that the motor start time is 0.8 seconds with 100% voltage and 3.2 seconds with 70% voltage.

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	11/2/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/3/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	11/6/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	11/11/97

Date:

INVALID:

Date: 3/26/98

RESOLUTION: DISPOSITION:

NU has concluded that Discrepacny Report, DR-MP3-0614, has identified a conditon not previously discovered by NU which requires correction.

The approved corrective action plan for CR M3-98-0771 will revise calculation US(B)-270, calculation NL-038 and clarify 3DBS-NSS-003 to accurately reflect the starting time of the RSS pump motors based on actual voltage conditions at the time the motors are sequenced on during non loss-of-offsite-power (LOP) conditions. For offsite power, LOP conditons are defined as 4kV nominal bus voltage at 90% for 8 seconds or 70% for 2 seconds. Therefore a sustained bus voltage at 70% nominal is not credible. Baised on this fact, the confusing references to precent voltages and their source, associated with accleration

times in section 12.2.10 of 3DBS-NSS-003 will be removed. The minimum analytical 4kV bus boltage is 3698 volts based on calculation NL-038 CCN 10. conservatively assuming a 100 volt drop between the bus and motor termianls, the available voltage at the motor would be 3598 volts or 90% of the 4kV motor rating. From the motor data sheet attached to calculation US(B)-270, 90% voltage yields a acceleration time of approximately 1.1 seconds. Therefore using 2 seconds in the 3DBS-NSS-003 is conservative. Using 1 second as the acceleration time at nomianl 4kV in place of 0.8 seconds from the motro data sheet is engineering consevatism. Calculation NL-038 will be updated by the addition of a basis statement for the acceleration times based on actual voltage conditons with conservatism versus those stated in the RSS pump motor data sheet. The minimum and maximum total effective times for RSS spray in calculation US(B)-270 will be revised to include these consevative values. Because the system meets its desgin basis and the DR condition represents a documentaion discrepancy, NU considers this a significance level 4 discrepancy. The corrective action will be completed after startup since the RSS pumpmotro acceleration times in 3DBS-NSS-003 are correct as listed. No field modifcations are required.

The approved corrective action plan for CR M3-98-0771, initiated 2/11/98, will revise calculation US(B)-270, calculation NL-038 and clarify 3DBS-NSS-003 to accurately reflect the starting time of the RSS pump motors based on actual voltage conditions at the time the motors are sequenced on during non-LOP conditions and not the pump motor data sheet because sustained voltage at 70% of 4kV nominal is not credible based on setpoints in the loss of offsite power detection logic. Because the system meets its design basis and the DR condition represents a documentation discrepancy, NU considers this a significance level 4 discrepancy. The correction action will be completed after startup since the RSS pump motor acceleration times in 3DBS-NSS-003 are correct as listed. No field modifications are required.

CONCLUSION:

NU has concluded that Discrepancy Report, DR-MP#-0614, has identified a condition not previously discovered by NU which requires correction.

The approved corrective action plan for CR M3-98-0771, initaied 2/11/98, will revise calculation US(B)-270, calculation NL-038 and clarify 3DBS-NSS-003 to accurately reflect the starting time of the RSS pump motors based on actual voltage conditions at the time the motors are sequenced on during non-LOP conditions and not the pump motor data sheet because sustained voltage at 70% of 4kV nominal is not credible based on setpoints in thel oss of offsite power detection logic. Because the system meets its desgin basis and the DR condition represents a documentation discrepancy, NU considers this a significance level 4 discrepancy. The corrective action will be

completed after startup since the RSS pump motor acceleration times in 3DBS-NSS-003 are correct as listed. No field modifications are required.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	3/26/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/26/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/26/98				

SL Comments: Sargent & Lundy concludes that a change in RSS effective time of approximately 1 second would have and insignificant effect on containment heat removal for a postulated LOCA or MSLB. Therefore, Sargent & Lundy is downgrading the NRC Significance Level for DR-MP3-0614 to level 4 and concurs that correction of the RSS pump acceleration time under CR M3-98-0771 may be deferred until after Unit 3 restart.

Review Group: System
Review Element: System Design
Discipline: Electrical Design
Discrepancy Type: Calculation
System/Process: DGX
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 1/10/98

Discrepancy: Diesel Generator Differential Relaying (Calculation 421CA)

Description: Calculation 421CA sets the General Electric Type PVD differential relays that are used to detect a short circuit in each emergency diesel generator and its connections to the associated Class 1E 4.16 kV bus.

The current drawn from the main circuit of the generator by the power current transformers is calculated on page 3 of the calculation as included in the current drawn from the main circuit that will appear as false differential current. However, power current transformers are connected in series with the main generator leads and draw no current from the main circuit. They do introduce additional voltage drop in the main circuit, which does not affect the differential relays. Therefore, the false differential current from the excitation system is about 9 amperes, not 22 amperes as shown in the calculation.

The minimum output voltage of the diesel generator used to calculate the current drawn by the excitation transformer assumes that the generator is rated 4000 volts. However, the generator is actually rated 4160 volts. (4000 volts is the normal rating of motors used on a 4160 volt system. The standard voltage for generators on the same system is 4160 volts.) This further reduces the false differential current and increases the margin to prevent false relay operation. Moreover, controlled rectifier loads, such as the excitation system, normally have a constant current rather than a constant kVA characteristic. This will reduce the current drawn by the excitation system even more.

While it is necessary to provide margin to prevent false relay operation, it is obtained at the cost of reducing the sensitivity of the relay to detect faults within the zone that is protected by the relay. The available short circuit current for an internal generator fault depends on its location. The available fault current near the neutral end of the generator is limited. Increasing the sensitivity of the differential relay allows more of the generator winding to be protected against internal short circuits; increasing the margin against false relay operation requires allowing some possible short circuits within the relay zone to be undetectable by the relay. The proper setting of the relay requires balancing both of these considerations.

This reduction in the false differential current presents an opportunity to increase the sensitivity of the differential protection. The calculated minimum setting of the main fault detecting 87L element is 58.5 volts compared to an actual relay setting of 140 volts. Therefore, the setting can be reduced while maintaining adequate margin, thereby providing better protection

of the generator. This is especially important since the ground fault relaying only ungrounds the generator neutral. Operation with the neutral ungrounded can result in severe transient overvoltages, which can damage the generator and other equipment that is connected to the generators.

		Valid	Invalid	Review Needed	Date
Initiator:	Bloethe, G. William	☒	☐	☐	12/23/97
VT Lead:	Neri, Anthony A	☒	☐	☐	12/23/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/23/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	1/5/98

Date: 12/11/97

INVALID:

Date: 3/26/98

RESOLUTION: NU has concluded that discrepancy report DR-MP-0618, identified several concerns, one that represents a condition not previously discovered by NU which requires correction and two that do not represent discrepant conditions.

1) After reviewing calculation 421CA against the AC Elementary Diagram Dwg EE-21Q, the calculation is in error to include the "12.8A" for the Power Current Transformer. This does not change the results except to increase the safety margin to 496%. (46.2/ 9.3x100= 496% in lieu of 209%).

However, because this issue does not impact the licensing or design basis and represent a minor calculation error, NU considers this DR to a level 4 discrepancy and CR M3-98-0349 has been initiated to develope the corrective action to correct the calculation. Because this discrepancy does not impact the design basis or the margin developed in the calculation it will be completed after restart.

2) The use of 4000V in lieu of 4160V. It is customary to always use more conservative assumptions while doing calculations. Using 4160 V will decrease the current to (9.3/4160x4000) 8.94 A. That will increase the safety margin to 516% (46.2/8.94x100= 516%). NU has concluded that this issue regarding Discrepancy Report DR-MP3-0618 does not represent a discrepant condition.

3) The Emergency Diesel Generators (EDG's) are protected by a differential scheme (87G) against severe short circuits internal to the machines

The 4.16 KV Switchgear is also protected by a differential scheme (87H) against severe short circuits within the switchgear;

The above protection is fast and will isolate any severe fault before any serious damage to either the generator or the Switchgear.

The Generator is connected to the ground via a grounding resistor to limit any ground fault current to values harmless to the generator. A ground fault relay (51N) picks up the fault current and trips a Neutral Circuit Breaker therefore isolating the ground fault and in essence converting the system to an ungrounded system. This will allow the continuous use of the generator during an accident condition (SIS). In addition, a time delay of 0.2 sec was introduced in the differential schemes to delay their activation (during an accident SIS) to make sure that any ground fault is already cleared and the Neutral Breaker opened to prevent a false actuation of a differential relay. The EDG will continue operating (as an ungrounded system) and providing power to the Class 1E equipment required to mitigate the accident.

The time required for the 51G relay to trigger the timer to actuate and the breaker to trip is estimated as (0.5+0.5+6.5) 7.5 cycles or 0.125 sec. This leaves a margin of 0.085 sec's.

However, the maximum ground fault magnitude of the neutral ground circuit is outside the range of the differential protective scheme, because the ground fault current is limited by the 6 ohm ground limiting resistor (see AC Elementary 12179-EE-21Q). Per calculation 421CA (SP-EE-269), the 1200/5 CT's on the Diesel Generator differential relays will not pickup a current of such a small magnitude which makes the 0.2 sec's delay unnecessary, therefore there is no need to add to the time delay. The time delay is a conservative approach to assure that the safety related Diesel Generator does not trip on false currents.

From the above discussion it is clear that no discrepancies exist . The calculation successfully balances the need to protect the EDGs against severe faults (short circuits) while extending their availability to mitigate an accident under small ground faults in one phase. [Ref. M3-DRT-0619/M3- IRF-01094]. The correction of this error in the Calculation causes an increase in the margin of safety, NU has concluded that this issue regarding Discrepancy Report DR-MP3-0618 does not represent a discrepant condition.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Warner, I.	☒	☐	☐	3/26/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/26/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/26/98				

SL Comments:

As a notation to NU's response #3; we have concerns, which are addressed in DR-MP3-0619, with the generator neutral ground overcurrent protection, but the issue does not affect the response

to this DR.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0843

Review Group: System
Review Element: System Design
Discipline: Structural Design
Discrepancy Type: Calculation
System/Process: HVX
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 1/10/98

Discrepancy: Duct Support Calculation Discrepancy

Description: We have reviewed the following non-standard duct support calculations:

□□□(1) CALC. # 12179-NP(F)-Z60R-530-H005,REV.3
□□□(2) CALC. # 12179-NP(F)-Z545J-1306,REV.3
□□□(3) CALC. # 12179-NP(F)-Z545J-1245,REV.6
□□□(4) CALC. # 12179-NP(F)-Z545J-1235,REV.2
□□□(5) CALC. # 12179-NP(B)-Z545J-1304,REV.2

Based upon this review,we have noted the following discrepancy:

Calculations for Flare Bevel Weld Check have not been performed.For specific examples check calculations and page numbers listed below:

(1) CALC. # 12179-NP(F)-Z60R-530-H005, PAGE #19
(2) CALC. # 12179-NP(F)-Z545J-1306, PAGE #18
(3) CALC. # 12179-NP(F)-Z545J-1245, PAGE #22
(4) CALC. # 12179-NP(F)-Z545J-1235, PAGE #14,23 & 24
(5) CALC. # 12179-NP(B)-Z545J-1304,PAGE #15

		Valid	Invalid	Review Needed	Date
Initiator:	Klaic, N	☒	☐	☐	12/18/97
VT Lead:	Neri, Anthony A	☒	☐	☐	12/19/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/23/97
NRC Chmn:	Singh, Anand K	☒	☐	☐	12/31/97

Date:

INVALID:

Date: 3/26/98

RESOLUTION: NU has concluded that Discrepancy Report, DR-MP3-0843, has identified a condition not previously discovered by NU which requires correction. This discrepancy meets the criteria specified in NRC letter B16901 and 17010. It has been screened per U3 PI-20 criteria and found to have no operability or reportability concerns and meets the Unit 3 deferral criteria. CR M3-98-0967 has been written to develop and track resolution of this item per RP-4.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Klaic, N	☒	☐	☐	3/26/98
VT Lead:	Neri, Anthony A				

VT Lead:	Neri, Anthony A	☒	☐	☐	3/26/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/26/98				

SL Comments: S & L has concluded that the welded connections not addressed in the calculations are structurally adequate based on the comparison of the applied loads to the available capacities.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0866

Review Group: Programmatic
Review Element: Corrective Action Process
Discipline: Piping Design
Discrepancy Type: Corrective Action
System/Process: RSS
NRC Significance level: 3

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 1/17/98

Discrepancy: Incorrect ACR Closure

Description: ACR # 10773 contains the following which are indicative of improper closure.

1. The ACR was apparently changed to a Significance Level B (from D) on the Adverse Condition Report Transmittal Sheet, and a reportability determination is required. There is no Reportability Determination included in the package. Additionally, this incident appears to have been reportable under 10CFR50.72 (2) (I) which states," Any event, found while the reactor is shut down, that, had it been found while the reactor was in operation, would have resulted in the nuclear power plant, including its principal safety barriers, being.....in an unanalyzed condition...." is reportable.

2. This ACR was apparently closed without PORC review. A note included in the package states that the ACR was taken to PORC four times without success. The response to the note is to "Close the ACR without PORC review." No justification is provided with the remark. Another note is included on the Casual Factors and Corrective Action Plan stating "ACR may be closed without root cause or PORC review", again without no explanation or justification.

		Valid	Invalid	Review Needed	Date
Initiator:	Wrona, S. P.	☒	☐	☐	12/24/97
VT Lead:	Ryan, Thomas J	☒	☐	☐	12/24/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	1/12/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	1/13/98

Date:

INVALID:

Date: 3/19/98

RESOLUTION: Disposition

NU has concluded that item # 1 of Discrepancy Report DR-MP3-00866 has identified a condition previously discovered by NU which requires correction. A reportability determination was performed (Attachment 1), although not documented correctly, subsequently LER 96-007-00 (Attachment 2) was issued and transmitted to the NRC on May 2, 1996, within the 30 day requirement for notification as specified in 10CFR50.73(a) (2) (ii) (B), 50.73(a) (2) (v) (B) & (D), 50.73(a) (2) (vii) (B) & (D).

The Millstone Corrective Action Program was significantly upgraded in February 1997 following the performance of QAS

Audit A23077, dated June 19, 1996, and issuance of Corrective Action Plans for ACR-13318, CR M1-96-0823 and CR M3-97-0111. This sequence of CR/ACRs initiated the Corrective Action Program Improvement Plan. The Audit and CR/ACRs identified numerous discrepancies with the Corrective Action Program, one of which was incompletely/incorrectly filled out forms (ACR-13318, item 9). RP-4, Rev. 4 significantly enhanced the Corrective Action Program as a result of above findings. This event took place in March 1996 which was before significant improvements to the Corrective Action Program were completed. Specifically relating to the subject matter of this DR, RP-4 ensures that all CRs which are determined to describe a condition which is reportable are assigned our highest Significance Level of 1. Based on the supplemental reportability determination and LER issued to support this ACR and on the revised program requirements of RP-4 having been issued, NU considers this to be a Significance Level 4 issue.

NU has concluded that item # 2 of Discrepancy Report DR-MP3-00866 does not represent a discrepant condition. The decision to close the ACR without PORC review was made by the Unit Director (Attachment 3) which was in accordance with Section 1.4, RP-4, Rev. 2, the Adverse Condition Resolution Program, the document of record at that time.

Conclusion

NU has concluded that item #1 of Discrepancy Report DR-MP3-00866 has identified a condition previously discovered by NU. A reportability determination was performed and subsequently LER 96-007-00 was issued.

The Millstone Corrective Action Program was significantly upgraded in February 1997. This event took place in March 1996 which was before significant improvements to the Corrective Action Program were completed. Based on program requirements having been fulfilled, NU considers this to be a Significance Level 4 issue. No further action is required.

NU has concluded that item # 2 of Discrepancy Report DR-MP3-00866 does not represent a discrepant condition.

The decision to close the ACR without PORC review was made by the Unit Director which was in accordance with Section 1.4, RP-4, Rev. 2, the Adverse Condition Resolution Program, the document of record at that time.

Previously Identified by NU? (●) Yes ( ) No **Non Discrepant Condition?** ( ) Yes (●) No

Resolution Pending? ( ) Yes (●) No **Resolution Unresolved?** ( ) Yes (●) No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Navarro, Mark	☒	☐	☐	3/19/98
VT Lead:	Ryan, Thomas J	☒	☐	☐	3/20/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/23/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98
Date:					

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1047

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: NEW
NRC Significance level: 4

DR RESOLUTION ACCEPTED

Potential Operability Issue
( ) Yes
(•) No

Date FAXed to NU:

Date Published: 2/12/98

Discrepancy: MOV Thrust/Torque Calculations

Description: The Thrust/Torque Calculations for the MOV Program were performed in accordance with the MOV Program Manual, Rev. 9. Calculations 89-094-1030ES [Rev. 2], 89-094-0987ES [Rev. 3] and 89-094-1073M3 [Rev. 2] were reviewed. The equation for the derated motor torque at elevated temperatures was derived from PI-7 from the MOV Program Manual. The equation divides by a factor of 279. A review of the units within the equation indicates that this value is a temperature differential; however, no basis can be found for this value.

Calculation 89-094-1030ES [Rev. 2] determines the target thrust values for Valves 3RSS*MOV20A/B/C/D. Section 3 of the Attachments indicate that the worst case line and differential pressures are 45 psi, this is for both the opening and closing strokes. The reference for these values is CCN 1 of Calculation CRS-MOV-1382M3 [Rev. 0]. Calculation CRS-MOV-1382M3 indicates that the worst case differential and line pressures are 295 psid and 300 psig, respectively, for the opening stroke and 45 psid and 45 psig, respectively, for the closing stroke.

		Valid	Invalid	Review Needed	Date
Initiator:	Langel, D.	☒	☐	☐	2/5/98
VT Lead:	Neri, Anthony A	☒	☐	☐	2/5/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	2/6/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/7/98

Date:

INVALID:

Date: 3/27/98

RESOLUTION: Disposition:

NU has concluded that the issue reported in item 1 of Discrepancy Report, DR-MP3-1047, has identified a condition not previously discovered by NU which requires correction. There is no basis given in the PI-7 Manual for the factor of 279. The approved corrective action plan for CR M3-98-1236 (attached) will provide the basis for the factor 279 used in the equation for derated motor torque.

This number is the temperature range used, 25C to 180C, which is a difference of 155C. Converted to degrees F yields (155C)x(9F/5C) = 279F. The corrective action plan requires that this explanation be included in the next revision of Calculation 97-MOV-01012MG (draft pages attached). As such there is no effect on the license or design basis, therefore NU has

concluded item 1 to be a Significance Level 4 issue.

NU has concluded that the issue reported in item 2 of Discrepancy Report, DR-MP3-1047, does not represent a discrepant condition. There is no discrepant condition in the Calculation CRS-MOV-1382M3. The table of results on page 3 is attached. In this table only the Safety Related strokes are of concern. The notation in the last column indicates (Yes/No) whether or not each case is Safety Related. In each of the safety related cases the pressure is 45 psi. The opening strokes referred to in the Discrepancy Report are not Safety Related Strokes, and therefore are not included for consideration in Calculation 89-094-1030ES. NU has concluded that the issue reported in item 2 of Discrepancy Report, DR-MP3-1047, does not represent a discrepant condition.

Significance level criteria does not apply here as this is not a discrepant condition.

Conclusion:

NU has concluded that the issue reported in item 1 of Discrepancy Report, DR-MP3-1047, has identified a condition not previously discovered by NU which requires correction. The approved corrective action plan for CR M3-98-1236 (attached) will develop the basis for the factor of 279 that is used in Calculation in the MOV Program Manual. The basis will be explained in Calculation No. 97-MOV-01012MG. As such there is no effect on the license or design basis, therefore NU has concluded item 1 to be a Significance Level 4 issue.

NU has concluded that the issue reported in item 2 of Discrepancy Report, DR-MP3-1047, does not represent a discrepant condition. The pressure of interest is the pressure exerted on the valve while it is performing its safety related function. In the case of the 3RSS*MOV20A, B, C and D valves, the valves are required to close in the accident mode, so it is the pressure exerted on them while closing that must be considered. This is correctly reflected in Calculation 89-094-1030ES, which uses the closing pressure values. NU has concluded that the issue reported in item 2 of Discrepancy Report, DR-MP3-1047, does not represent a discrepant condition.

Significance level criteria does not apply here as this is not a discrepant condition.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Langel, D.	☒	☐	☐	3/27/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/27/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/27/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/27/98				

SI Comments:

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1055

Review Group: System
Review Element: Corrective Action Process
Discipline: Mechanical Design
Discrepancy Type: Corrective Action Implementation
System/Process: RSS
NRC Significance level: NA

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 3/5/98

Discrepancy: UIR 1265

Description: UIR 1265 requests a change to the testing of the RSS Pumps since quarterly testing makes both trains of RHR inoperable.

Closure of the UIR is based on DCR 97042 which adds recirculation testing lines to the RSS C & D pumps. The IST Manual changes required by the modification are being tracked by Action Requests (AR) 96033951-02 and -11. AR 96033951-11 states that an IST Manual Change is not required since the quarterly testing can be performed. However, the IST Manual should be changed to include quarterly testing of the RSS C & D Pumps through the new recirculation lines. No documentation is included in the package to indicate that an IST Manual Change is in progress.

		Valid	Invalid	Review Needed	Date
Initiator:	Langel, D.	☒	☐	☐	2/23/98
VT Lead:	Neri, Anthony A	☒	☐	☐	2/23/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	2/26/98
NRC Chmn:	Singh, Anand K	☒	☐	☐	3/2/98

Date:

INVALID:

Date: 3/27/98

RESOLUTION: Disposition:

NU has concluded that Discrepancy Report DR-MP3-1055 does not represent a discrepant condition. CR M3-98-1278 concluded that the current IST Program manual (Table IWP-1, page 1 of 3) requires the four Containment Recirculation Pumps (RSS*P1A, 3RSS*P1B, 3RSS*P1C, 3RSS*P1D) to be tested quarterly. No change to the IST manual is required. Significant Criteria do not apply as no discrepant conditions exist.

Conclusion:

NU has concluded that Discrepancy Report DR-MP3-1055 does not represent a discrepant condition. CR M3-98-1278 concluded the IST manual already reflects the requirement to test quarterly the C & D RSS pumps. Significant Criteria do not apply as no discrepant condition exists.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ◉ Yes ○ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Langel, D.				

Initiator:	Langer, D.	☒	☐	☐	3/27/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/27/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/27/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	

Date: 3/27/98

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1056

Review Group: System
Review Element: System Design
Discipline: I & C Design
Discrepancy Type: Design Control Procedure
System/Process: SWP
NRC Significance level: NA

DR RESOLUTION ACCEPTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 2/19/98

Discrepancy: Containment pressure transmitter range in FSAR does not agree with calibration procedure.

Description: Per FSAR section 7.3.1.2 the containment pressure range is 0 to 60 psig.

FSAR table 7.5-1 identifies containment pressure range as 0 to 60 psia for type/category A1, B1, B2.

A review of I&C form 3447A01-1, Rev.4 and the calculation 3-ENG-185, Rev. 4 indicates the calibrated range for the containment HI 1, 2, 3 instrumentation loops is 0 to 60 psia.

		Valid	Invalid	Review Needed	Date
Initiator:	Hindia, R.	☒	☐	☐	2/7/98
VT Lead:	Neri, Anthony A	☒	☐	☐	2/9/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	2/12/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/14/98

Date:

INVALID:

Date: 3/23/98

RESOLUTION: NU has concluded that issue reported Discrepancy Report, DR-MP3-1056, has identified a condition previously discovered by NU that has been corrected. MP3 FSAR Section 7.3.1.2.6 "Minimum Performance Requirements" specifies minimum accuracy requirements for pressure, steamline pressure and containment pressure ESF actuations. UIR-310, dated February 20, 1997, documents that these values, including the Containment pressure, are not in agreement with the minimum requirements of WCAP 10991 Rev. 3 and NU calculations. FSAR Change Request 97-MP3-284, dated June 19, 1997, was initiated to revise FSAR section 7.3.1.2.6 replacing the stated values with appropriate references to other locations in the FSAR, Technical specification, and Technical Requirements Manual where the values are correctly stated. This FSAR change request has been approved with an effective date of November 1997.

Note: DR-MP3-1056 contained errors that should be corrected they are: 1) System / Process should identify the Containment Leakage Monitoring System (LMS) as the affected system not SWP 2) the description identifies Reg. Guide 1.97 variables A1, B1, and B2 as the Containment Pressure variables, whereas the Reg. Guide 1.97 identifies variables A7, B6, and B22 as the Containment Pressure variables. These errors have been corrected in this IRF response.

Conclusion:

NU has concluded that the issue reported in Discrepancy Report, DR-MP3-1056, has identified a condition previously discovered by NU that has been corrected. FSAR Change Request 97-MP3-284, has been approved and implemented with an effective date of November 1997.

Previously identified by NU? (●) Yes ( ) No Non Discrepant Condition? ( ) Yes (●) No

Resolution Pending? ( ) Yes (●) No Resolution Unresolved? ( ) Yes (●) No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Hindia, R.	☒	☐	☐	3/27/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/23/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/27/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/23/98				

SL Comments: The following is in response to the note in NU's resolution:

1) It is understood that the variable is a part of the Containment Leakage Monitoring System(LMS). However, the reason for identifying it under SWP system was that it was reviewed under the ICAVP scope as an input to the SWP system.

2) Per UFSAR table 7.5-1, this variable is identified as type/category A1, B1, B2. Also this is in agreement with RG 1.97 classification. A7, B6 and B22 are NU specific variable numbers and are not reflected in the UFSAR.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1060

Review Group: System
Review Element: Corrective Action Process
Discipline: Mechanical Design
Discrepancy Type: Corrective Action Implementation
System/Process: RSS
NRC Significance level: NA

DR RESOLUTION ACCEPTED

Potential Operability Issue
( ) Yes
(•) No

Date FAXed to NU:

Date Published: 2/23/98

Discrepancy: ACR 12862

Description: ACR 12862 requests a review of the RSS MOVs with respect to the increased design temperature of 260 °F.

Action Item 3 (Action Request Tracking Number 96006441-03) was to evaluate the Torque/Thrust Calculations for the increased RSS temperature and revise as necessary. Calculations 89-094-0899ES, 89-094-0987ES, 89-094-1028ES & 89-094-1030ES were not updated.

The action was transferred to the Action Request (A/R) Tracking Number 97003504-01. This Action Request is a review of test results to all the MOV calculations. This is due to changes in the MOV Program Manual and to industry issues. A/R 97003504-01 does not address the RSS temperature change. Therefore, there is no mechanism to ensure the above calculations are revised to incorporate the revised RSS Temperature.

The due date for A/R 97003504-01 is 09/09/1999. The operability evaluation determined that the system is operable in Modes 5 and 6, but additional analysis is required to demonstrate operability for Modes 1 through 4.

		Valid	Invalid	Review Needed	Date
Initiator:	Langei, D.	☒	☐	☐	2/17/98
VT Lead:	Neri, Anthony A	☒	☐	☐	2/17/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	2/18/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/19/98

Date:

INVALID:

Date: 3/27/98

RESOLUTION: Disposition:

NU has concluded that Discrepancy Report, DR-MP3-1060 has identified a condition not considered to be a discrepancy. The latest revision to target thrust/torque calculations, 89-094-0899ES, 89-094-0987ES, 89-094-1028ES and 89-094-1030ES, captures the RSS fluid increased design temperature of 260 °F.

The fluid temperature is not a direct design input to the target thrust/torque calculations. However, the fluid temperature is a design input to the seismic weak link calculations (94103-C-16 Rev 2, 94103-C-21 Rev 5, 94103-C-22 Rev 4, 94103-C-24 Rev 4) and EPRI PPM thrust calculations (MPR Report 1824 Part 2 Rev 0, Part 3 Rev 0, Part 5 Rev 0, Part 6 Rev 0, and Part 8 Rev

0) which are direct design inputs for the target thrust/torque calculations. The RSS seismic weak link calculations and RSS EPRI PPM stem thrust calculatons reference calculation CRS-MOV-1382-M3 for the fluid temperature. Revision 0 of calculation CRS-MOV-1382-M3 entitled "RSS MOV Design Conditions" includes the 260 °F fluid temperature. Therefore, all RSS MOV calculations include the RSS fluid temperature of 260 °F.

AR 97003504-01 does address the RSS temperature change. The revision to assignment -01 was to include the required changes to the valve weak link limits as addressed in ACR 12862 (reference AR 96006441, assignment -03). The revisions to the target thrust/torque calculations were performed as a result of revisions to the MOV design calculations listed above. Therefore, this portion of AR 97003504-01 has been noted as being complete.

CR M3-98-1021 has been closed, as no corrective actions are required.

Since this is a non discrepant condition, Significance Level criteria does not apply.

Conclusion:

NU has concluded that Discrepancy Report, DR-MP3-1060 has identified a condition not considered to be a discrepancy. The latest revision to target thrust/torque calculations, 89-094-0899ES, 89-094-0987ES, 89-094-1028ES and 89-094-1030ES, captures the RSS fluid increased design temperature of 260 °F. The fluid temperature is not a direct design input to the target thrust/torque calculations, however, Calculation CRS-MOV-1382-M3, entitled "RSS MOV Design Conditions", does include the 260 °F fluid temperature. This calculation is a design input to the seismic weak link calculations and EPRI PPM thrust calculations, which are direct design inputs for the target thrust/torque calculations.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ◉ Yes ○ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Langel, D.	☒	☐	☐	3/27/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/27/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/27/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	

Date: 3/27/98

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0297

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: QSS
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 11/13/97

Discrepancy: Design Pressure in Calculation P(R)-1171

Description: A calculation is required to determine the basis of the QSS design pressures provided in the QSS line list. No QSS design pressure calcualtion was located in the NU calculation data base.

Calculation P(R)-1171, Rev. 1 determines the QSS operating pressures and temperatures. Calculation SDP-QSS-01358M3, Rev. 6 provides input for the QSS piping stress analysis. Neither of these calculations provide guidance on what design pressures should be identified in the QSS line list.

The calculations which provides the basis for the design pressures identified in the QSS line list can not be located.

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	10/31/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/4/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	11/7/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	11/7/97

Date:

INVALID:

Date: 3/18/98

RESOLUTION: DISPOSITION:

NU has concluded that DR-MP3-0297does not represent a discrepant condition. S&L DR-MP3-0297 identifies that Calculations P(R)-1171 and SDP-QSS-01385M3 determine operating pressures only for the QSS system and that no calculation exists which provides the bases for the design pressures identified in the QSS line list. This is an accurate description, however, this condition is not a discrepancy.

There is no requirement for a calculation to establish the design pressures listed in the Line Designation Table. Design pressures and temperatures were assigned during initial design of the plant based on experience and documented on FSK-27-12B. If the assigned design conditions were found to be nonconservative when operating pressures and temperatures were determined for the Stress Data Package (SDP), the assigned design conditions were adjusted accordingly.

Significance level criteria does not apply as this is not a discrepant condition.

CONCLUSION:

NU has concluded that Discrepancy Report DR-MP3-0297 does not represent a discrepant condition. There is no requirement for a calculation to establish the design pressures listed in the Line Designation Table. Design pressures and temperatures were assigned during initial design of the plant based on experience and documented on FSK-27-12B. If the assigned design conditions were found to be nonconservative when operating pressures and temperatures were determined for the Stress Data Package (SDP), the assigned design conditions were adjusted accordingly. Significance level criteria does not apply as this is not a discrepant condition

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.	☐	☒	☐	3/19/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/18/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/23/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/26/98
Date:	3/18/98				

SL Comments: Sargent & Lundy does not agree that piping design pressure requires no analytical basis.

The piping design pressure is the basis for the code hydrostatic test of the RSS piping pressure boundary. In NU's response, it was stated that if the design pressures assigned by FSK-27-12B were found to be non-conservative when operating pressures were determined for the stress data package (in P(R)-1187), that the design pressures on the line list were adjusted accordingly. This raises the question of whether design pressures on the line list may have been changed after the code hydro tests. NU needs to investigate the possibility that non-conservative piping design pressures could have been used as the basis for code hydro tests. NU should report the results of this investigation in the re-submittal of their response to this DR.

Because of the issue of potential non-conservative design pressures being used for the RSS piping hydro tests, Sargent & Lundy cannot be certain that DR-MP3-0297 is a Level 4 issue. Accordingly, it has been upgraded to a NRC Significance Level 3 issue.

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: QSS
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
( ) Yes
(•) No

Date FAXed to NU:

Date Published: 11/22/97

Discrepancy: Calculation US(B)-295

Description: The purpose of US(B)-295, Rev. 5/CCN 1 is to determine the minimum RWST drawdown levels and drawdown times. The calculation provides the design basis for the low-low RWST switchover level setpoint.

Eight discrepancies were identified in Calculation US(B)-295 (see DR-MP3-0266 for discrepancy in FSAR and in Calculation US(B)-295):

1. Level-to-volume-to-drawdown time conversions are all accurate to four significant figures except tank volume at 57.88 ft (which should be 1,177,599 gal rather than 1,180,127 gal) and volume at 58.33 ft (which should be 1,192,937 gal rather than 1,194,444 gal). [p.6A] These quantities are off by no more that 0.2% (about 1.5 inches) and are for non-safety-related parameters, so they do not affect the validity of the calculation.

2. The high-high level setpoint is given as 58.33 ft in US(B)-295, but is actually 58.40 ft in 3-ENG-167, Rev. 0 [p. 6B]. The high level setpoint is given as 57.58 ft in US(B)-295, but is actually 58.15 ft in 3-ENG-167 [p. 6B]. These quantities are off by no more that 7 inches, and are for non-safety-related parameters which are not used in the computation of any of the drawdown times or drawdown levels, so the validity of the calculation is not affected.

3. According to Calculation 3451B03-1232E3, the instrument setpoint inaccuracy/drift for the low-low level setpoint is +25.92 in, -28.28 in. Calculation US(B)-295 uses +/-24 inches (pp. 6a, 6b, 6c, 6d, 7a, 10, and p. 5 of CCN 1) for determining drawdown levels and drawdown times. This discrepancy has a significant effect on calculated drawdown times.

4. The telephone memo of 3-26-74 (Attachment 3 to US(B)-295) should not be referenced as the basis for completing the manual switchover of ECCS suction from the RWST to the containment sump within 10 minutes [pp. 6D, 6E, 6F, 6G, 8, and 9]. Westinghouse letter NEU 1016 (to SWEC, dated 3-27-74) is the proper reference for the 10 minute manual switchover time (in accordance with Calculation 357P). There is a basis for the 10 minute manual switchover time, so this discrepancy does not affect the validity of the calculation.

5. No basis is given for the assumption that operators would secure an RHS pump that failed to automatically trip on low-low RWST level within the first 2 minutes of manual ECCS suction switchover [pp. 6F and 9]. The lack of documented basis for time

to manually trip an RHS pump needs to be resolved to verify the validity of the RWST switchover level (and the RHS pump trip/low-low level alarm setpoint), the minimum RWST switchover level of 18.90 ft (see DR-MP3-0266), and the minimum RWST drawdown time from the minimum level at the termination of ECCS suction switchover to the top of the ECCS suction.

6. US(B)-295 identifies hydraulic calculations US(B)-245, Rev. 0 and US(B)-312, Rev. 0 as the source for maximum QSS, HHSI and LHSI flows [p. 7]. Pump flows in these two hydraulic calculations are presented as a set of supply curves (flow as a function of RWST-to-RPV Dp or RWST-to-containment Dp) for the LOCTIC containment pressurization analysis. There is no discussion of how these supply curves were interpreted to obtain maximum pump flow for RWST drawdown. There is no constancy on how this was done. HHSI flows for the minimum and maximum ESF cases are taken for a Dp of -23.4 psi, while LHSI flows for the minimum and maximum ESF cases are taken for a Dp of -7.92 psi. P(R)-1096, Rev. 0 should have been used as the source of maximum QSS flow because it finds the supply curves for undegraded pumps, whereas US(B)-312 finds the supply curves for degraded pumps. The issue of what are the correct flows needs to be resolved in order to verify all of the minimum RWST drawdown levels, the switchover level (and the RHS pump trip/low-low level alarm setpoint), and all of the minimum RWST drawdown times.

7. CCN 1 to US(B)-295 references P(R)-1062 as the basis for changing the maximum QSS flow from 5000 to 5200 gpm for one-pump operation, and from 6000 to 6500 gpm for two-pump operation. P(R)-1062 does not contain this input. The correct reference is P(R)-1096 (See DR-MP3-0440). The issue of what are the correct QSS flows needs to be resolved in order to verify all of the minimum RWST drawdown levels, the switchover level (and the RHS pump trip/low-low level alarm setpoint), and all of the minimum RWST drawdown times.

8. CCN 1 to US(B)-295 references US(B)-245, Rev. 0 as the basis for changing the maximum RHS flow from 4850 to 5100 gpm for one-pump operation, and from 9700 to 10200 gpm for two-pump operation. As discussed above, US(B)-245 does not contain any specific numbers for maximum pump flow. It provides a series of different RHS flows as a function of RWST-to-RPV Dp. US(B)-245 had previously been cited as the basis for the 4850 and 9700 gpm maximum RHS flows. The lack of documented basis RHS pump flow needs to be resolved to verify the validity of the RWST switchover level (and the RHS pump trip/low-low level alarm setpoint), the minimum RWST switchover level of 18.90 ft (see DR-MP3-0266), and the minimum RWST drawdown time from the minimum level at the termination of ECCS suction switchover to the top of the ECCS suction.

Calculation US(B)-295 should be revised to resolve discrepancies 3, 5, 6, 7 and 8.

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	11/11/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/11/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	11/14/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	11/18/97

Date:

INVALID:

Date: 3/17/98

RESOLUTION: DISPOSITION:

NU has concluded that Discrepancy Report, DR-MP3-0373, has identified a condition previously discovered and corrected by NU. Calculation US(B)-295, revised for ongoing plant modifications, incorporates the required changes for the eight (8) items identified in DR-MP3-0373. No further corrective action is required.

Revised RWST drawdown rates and switchover levels were initiated by the corrective action of ACR M3-96-0499, dated 8/1/96. CR M3-97-3298, dated 9/29/97 was issued to correct calculation US(B)-295 to include maximum safeguards flow rates as changed by ongoing modification DCR M3-96-077, issued 5/10/97. Calculation US(B)-295, Revision 6 incorporated changes relating to DR items 3, 6, 7 (portion related to flow rates) & 8. These conditions are considered previously discovered.

UIR 1068, dated 10/28/96 and ACR M3-96-1218 identified issues on operator response times credited in safety analyses. Resolution of associated memo NE-98-SAB-023, addresses DR item 5 as included in US(B)-295, Revision 7. This condition is considered previously discovered.

DR item 7 identified a reference listing an incorrect calculation number but which utilized the correct values. This typo was subsequently identified and corrected in the Revision 7 review process. DR items 1, 2, & 4 and the listing of calculation P(R)-1062 instead of P(R)-1096 on the reference list do not affect results but have been incorporated within calculation US(B)-295, Revision 7.

Specifically, the eight items are currently addressed in calculation US(B)-295, Revision 7 as follows:

1. The ID of the RWST is 59'-0" (Drawing 12179-EP-111G). Therefore, the cross-sectional area, or volume of water per unit tank height (gal/ft) is 20451.5 gal/ft. All values have been corrected based on this conversion.

2. The high level setpoint of 58.15 ft and the high-high level setpoint of 58.40 ft is utilized.

3. The uncertainty in the RWST empty level set point is +12.7/-13.8 in. These values are added to the vortex suppressor height of 28 in. to obtain a QSS pump trip setpoint height of 28 + 12.7 = 40.7 in. (3.39 ft) with a maximum QSS pump trip height of 40.7 + 13.8 = 54.5 in. (4.54 ft). However, the +25.9/-28.3 in. uncertainty referred to in the DR is applied, in the reference, to the low-low level (RHS pump auto-trip) setpoint about a nominal value of 305 in. (25.4 ft).

4. The time allotted to fully achieve switchover is increased from 10 to 25 minutes. The basis for 25 minutes is timed test data taken from 9/19/96 to 10/18/96 in response to UIR 1068 and referenced in memo NE-98-SAB-023.

5. The time allotted for securing an RHS pump which fails to trip on the low-low level (RHS pump auto-trip) signal is increased from 2 to 5 minutes. Basis for 5 minutes is timed test data taken from 9/19/96 to 10/18/96 in response to UIR 1068 and ACR M3-96-1218 as referenced in memo NE-98-SAB-023. The most conservative assumptions lead to a minimum RWST level of 11.82 ft when switchover of the ECCS pumps is completed.

6. All pumps are assumed to operate continuously at conservatively high flow rates. The assumed flow rates are based on flow rate changes per modification DCR M3-96-077 issued 5/10/97.

7. The reference for the QSS pump flow rates is correctly stated as Calculation 12179-P(R)-1096. The relation to pump flow is addressed in item 6 above.

8. The reference for the one-pump RHS flow rate is Calculation 12179-US(B)-294-5 and the
reference for the two-pump RHS flow rate is Westinghouse Letter No. FSSE/CWBS-1200,
2/20/90.

CONCLUSION:

NU has concluded that Discrepancy Report, DR-MP3-0373, has identified a condition previously discovered and corrected by NU. Calculation US(B)-295, revised for ongoing plant modifications, incorporates the required changes for the eight (8) items identified in DR-MP3-0373. No further corrective action is required.

Previously identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.	☐	☒	☐	3/17/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/18/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/23/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/26/98
Date:	3/17/98				

SL Comments: Sargent & Lundy does not agree that all of the issues identified in DR-MP3-0373 were previously discovered by NU. ACR M3-96-0499, initiated 11-6-96, identified DR-MP3-0373 item 3. ACR M3-96-1218, initiated 12-3-96, identified DR-MP3-0583 items 4 and 5. DR-MP3-0373 items 6, 7 and 8 were identified by NU in CR-97-3298, initiated 9-29-97, but this is after the 5-27-97 cutoff date for the QSS/RSS ICAVP review. Level 4 items 1 and 2 were not identified by NU.

Sargent & Lundy's ICAVP review of calculation US(B)-295, Rev. 7 concluded that NU resolved all 8 discrepant conditions identified in DR-MP3-0373.

Sargent & Lundy has determined that items 6, 7 and 8 were level 3 discrepancies, so the NRC Significance Level should remain level 3.

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: RSS
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 12/7/97

Discrepancy: Calculation US(B)-316

Description: The purpose of Calculation US(B)-316, Rev. 0 is to:

1. estimate the quantity of insulation that is removed and shredded as a result of jet impingement from a high energy line break (HELB)

2. determine the resulting pressure drop from said insulation being distributed across the RSS sump intake screens. The additional pressure drop across the sump screens is considered in the Net Positive Suction Head (NPSH) analysis for the RSS pumps.

Two discrepancies were identified in Calculation US(B)-316:

1. US(B)-316 assumes the sump screens are fully submerged, even though Calculation US(B)-326, Rev. 1 concludes that the screens are only partially submerged during a significant portion of the postulated DBA event. The head loss due to the screen blockage on page 21 of US(B)-316, DH = 68.3 U 1.79 t1.07, (Reference 2 of US(B)-316, NUREG-0897, Rev. 1) uses an insulation thickness, t, and an approach velocity, U, based on a fully-submerged net screen area of 244.2 ft2 (Reference 9, Calculation US(B)-303, Rev. 0). Using the wetted screen area of partially submerged screens would result in a larger insulation thickness, t, since the insulation thickness is determined by dividing the volume of shredded insulation by the effective (wetted) screen area. The larger approach velocity and the larger insulation thickness result in a higher head loss.

2. Justification for not using the more conservative (higher) approach velocities listed on page 12 of US(B)-303 (Reference 9 of US(B)-316) is not provided. The higher approach velocities on page 12 of US(B)-303 are due to further area reduction to account for open areas of the screen based on Attachment 2 of US(B)-303.

A revision to Calculation US(B)-316 to evaluate the above discrepancies should be performed.

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	11/4/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/18/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/1/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	12/3/97

Date:

INVALID:

INVALID:

Date: 3/23/98

RESOLUTION: DISPOSITION:

NU has concluded that Discrepancy Report, DR-MP3-0529, has identified a condition previously discovered and corrected by NU. Revised containment sump hydraulic analysis was initiated in part by the corrective action of ACR M3-96-0620, dated 8/21/96. Calculation US(B)-326 hydraulic analysis along with calculations US(B)-303 and US(B)-316 referenced in the DR are superseded by new RSS suction hydraulic calculation US(B)-362, Rev 0 dated 11/9/97. The Passport calculation tracking system is in the process of being revised to reflect this changed status. The two items stated in the DR are evaluated in the new calculation as follows:

Item 1 of DR identifies submergence level of the containment sump screens and its effect on head loss. Previous calculation US(B)-316 assumed full submergence of the screens. The level in the sump is now calculated as a function of time as indicated in Table 8 of calculation US(B)-362. Actual head loss vs. containment sump level is thus modeled.

Item 2 required a justification for utilized approach velocities as relating to screen net area. Calculation US(B)-316 did not decrease effective flow area thru screens to account for wire mesh area although previous referenced calculation US(B)-303, also superseded by calculation US(B)-362, utilized higher approach velocities. Assumption 19 and associated justification included in Appendix C of calculation US(B)-362 identifies the negligible effect on head loss to the RSS pumps from wire mesh screens.

CONCLUSION:

NU has concluded that Discrepancy Report, DR-MP3-0529, has identified a condition previously discovered and corrected by NU. Calculation US(B)-316 is superseded by calculation US(B)-362, Rev 0 dated 11/9/97. The two items identified in the DR are evaluated in the new calculation for Containment Recirculation System (RSS) suction hydraulic analysis, US(B)-362.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.	☐	☒	☐	3/23/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/23/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/23/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/23/98				

SL Comments: Sargent & Lundy does not agree that ACR M3-96-0620 identified the two issues raised in DR-MP3-0529 regarding calculation

US(B)-316. While similar technical issues are identified in ACR M3-96-0620, this ACR addresses only calculations US(B)-326, US(B)-265, P(R)-1115 and P(R)-1131. None of the corrective actions of AR 96028931 identified in the corrective action plan for ACR M3-96-0620 involve US(B)-316. Therefore Sargent & Lundy concludes that DR-MP3-0529 is a condition not previously discovered by NU.

The discrepancies identified in items 1 and 2 of DR-MP3-0529 result in an underestimate of debris loading on the RSS sump screens. Sargent & Lundy needs a more specific basis to conclude that the error in debris loading would not have significantly degraded RSS NPSHa prior to modificaiton M3-97045. Therefore the NRC Significance Level remains level 3.

The Sargent & Lund ICVAP review of US(B)-362, Rev. 0 concluded that the discrepancies identified in DR-MP3-0529 have been resolved in the current RSS sump design.

Review Group: System
Review Element: System Design
Discipline: Electrical Design
Discrepancy Type: Calculation
System/Process: DGX
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 11/24/97

Discrepancy: Coordination Between EDG Neutral Circuit Breaker and Lockout for Bus and EDG Differential Trips

Description: Calculations 420CB and 421CB give the time delay between the time that the generator neutral circuit breaker is opened until all of the circuit breakers on the bus or emergency diesel generator are tripped by the bus or generator differential relay. The operation of a differential relay indicates that there is a short circuit inside the protection zone of the differential relay.

Calculation 420CB concerns the bus differential relay (87). Its protective zone is the entire bus of a Class 1E 4.16 kV switchgear. It trips all circuit breakers at the bus.

Calculation 421CB concerns the emergency diesel generator (EDG) differential relay (87G). Its protective zone is the emergency diesel generator and its connections to the switchgear. It trips the diesel generator circuit breaker.

Time delay relay 62E is associated with the bus differential relay. Time delay relay 62G is associated with the generator differential relay. If either differential relay operates, the diesel generator neutral is opened up in an attempt to clear ground faults, the most likely type of short circuit. If this fails, all of the circuit breakers on the bus are opened and locked out if 62E operates and the diesel generator breaker is opened if 62G operates. A 0.2 second time delay is provided for both relays. However the discussion on Section 14.2.2 of IEEE 242-1986 suggests that this time interval is somewhat short to guarantee reliable coordination. The neutral circuit breaker is normally rated to open in 5 cycles (0.083 s). The auxiliary relay used to open the breaker will require another 0.004 s. Additional time is required to allow the PVD bus differential relay to drop out if opening the neutral breaker successfully clears the fault. (See the note on page 5 of General Electric instruction leaflet GEK-45405C concerning the dropout time of the 87L unit within the PVD relay.) The adequacy of the 0.2 second coordination time interval should be verified. A coordination time interval of 0.3 second is used elsewhere at Millstone and should be adequate.

IRC Comment : Correction of spelling error*

		Valid	Invalid	Review Needed	Date
Initiator:	Bloethe, G. William	☒	☐	☐	11/15/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/18/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	11/18/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	11/19/97

Date:

INVALID:

Date: 3/25/98

RESOLUTION: NU has concluded that the issue reported in Discrepancy Report, DR-MP3-0619, does not represent a discrepant condition.

The Emergency Diesel Generators (EDG's) are protected by a differential scheme (87G) against severe short circuits internal to the machines.

The 4.16 KV Switchgear is also protected by a differential scheme (87H) against severe short circuits within the switchgear

The above protection is fast and will isolate any severe fault before any serious damage to either the generator or the Switchgear.

The Generator is connected to the ground via a grounding resistor to limit any ground fault current to values harmless to the generator. A ground fault relay (51N) picks up the fault current and trips a Neutral Circuit Breaker therefore isolating the ground fault and in essence converting the system to an ungrounded system. This will allow the continous use of the generator during an accident condition (SIS). In addition, a time delay of 0.2 sec was introduced in the differential schemes to delay their activation (during an accident SIS) to make sure that any ground fault is already cleared and the Neutral Breaker opened to prevent a false actuation of a differential relay.

The EDG will continue operating (as an ungrounded system) and providing power to the Class 1E equipment required to mitigate the accident.

The time required for the 51G relay to trigger the timer to actuate and the breaker to trip is estimated as (0.5+0.5+6.5) 7.5 cycles or 0.125 sec. This leaves a margin of 0.085 secs.

However, the maximum ground fault magnitude of the neutral ground circuit is outside the range of the differential protective scheme, because the ground fault current is limited by the 6 ohm ground limiting resistor (see AC Elementary 12179-EE-21Q).

Per calculation 421CA (SP-EE-269), the 1200/5 CT's on the Diesel Generator differential relays will not pickup a current of such a small magnitude which makes the 0.2 sec's delay unnecessary, therefore there is no need to add to the time delay. The time delay is a conservative approach to assure that the safety related Diesel Generator does not trip on false currents.

From the above discussion it is clear that no discrepancies exist . The calculation successfully balances the need to protect the EDGs against severe faults (short circuits) while extending their availability to mitigate an accident under small ground faults in

one phase. NU has concluded that this issue regarding Discrepancy Report DR-MP3-0619 does not represent a discrepant condition.

Note: Calculations GM-60-03.0420CB & .0421CB have been revised and voided, data can be found in Specification SP-EE-269.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Bloethe, G. William	☐	☒	☐	3/25/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/26/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/24/98				

SL Comments: We have reviewed NU's response and after evaluating the response and the associated questions we have defined additional issues:

Issue 1:

NU states that "the maximum ground fault current magnitude of
the neutral ground circuit is outside of the range of the differential protective scheme, because the ground fault current is limited by the 6 ohm grounding resistor (see AC Elementary 12179-EE-21Q)".

The 6 ohm diesel generator neutral resistor on the 2400/4160 volt system limits the ground fault current to 2400/6 = 400 amperes. Calculation 421CA states that the minimum current to activate the diesel generator differential relays is 46.2 amperes. Therefore, line to ground short circuits can be expected to operate the diesel generator differential relay.

Since the differential relays may operate during a line to ground fault, NU's statement appears to be in error.

Issue 2:

NU states that the "time required for the 51G relay to trigger the timer to actuate and the breaker to trip is estimated as (0.5+0.5+6.5) 7.5 cycles or 0.125 sec."

As a basis to this issue we have assumed that relay 51G referred to in the response is the same relay (51N) defined in the drawings and in Calculation 422CB.

This calculation shows that relay 51N takes 0.6 second to operate with the rated ground fault current of 400 amperes. Because of the time delay required for relay 51N to operate, NU's statement on the operating time of the neutral breaker appears to be in

error. Also, Section 8.3.1.1.4.d of the Millstone FSAR states that the neutral breakers will be allowed to trip before the generator is tripped by the generator differential relay (87G).

If our assumptions are correct, the existing relaying arrangement appears to violate the FSAR and the statement in the DR response.

Based on the above discussion, this DR is reclassified as Level 3.

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: HVX
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 12/8/97

Discrepancy: Fan Blade Missiles

Description: During review of NERM 69 and calculation NM(S)-685-DKB discrepancies were identified regarding the identification and evaluation of fan blade missiles for auxiliary building fans 3HVR*FN6A/B, 3HVR*FN13A/B, and 3HVR*FN14A/B.

References
FSAR Section 3.1.2.4 Environmental and Missile Design Basis (Criterion 4)
· NERM 69, Rev. 1, dated 1/21/86, Hazards Review Program Summary
· Calculation NM(S)-685-DKB, Rev. 1, dated 7/26/85, Evaluation of Internally Generated Missiles from High Speed Rotating Machinery
· Calculation NM(S)-685-DKB, Rev. 1, CCN 1, dated 1/14/86
· Calculation NM(S)-685-DKB, Rev. 1, CCN 2, dated 10/23/96
· Calculation HAZ-01449-M3, Rev. 0, dated 9/14/97, Hazard Review Program for Auxiliary Building
· Calculation HAZ-01449-M3, Rev. 0, CCN 1, dated 10/4/97
· P&ID EM-148A-24
· P&ID EM-148B-15
· Drawing EB-45A-12
· Drawing EB-45G-9
· Drawing EB-45H-12
· Drawing EB-45L-13
· Drawing EB-45M-9
· Drawing EB-45N-9

Background
FSAR Section 3.1.2.4 states that structures important to safety shall be appropriately protected against dynamic effects, including the effects of missiles.

NERM 69 Rev. 1
· Paragraph 2.4, page 10 (lines 7.39-7.42), states "A review is required of high speed rotating machinery in order to determine their potential for generating missiles resulting from destructive overspeed conditions or failure resulting from base metal fatigue, fastener failures, or manufacturing defects, and are included in the interaction tables where applicable (see Attachment 1 Description of Interaction Tables)"
· Paragraph 2.4, page 11 (lines 8.10-13), states "Missiles resulting from axial fan vane and from centrifugal fan rotor or blade failure resulting from material failure or assembly error are considered credible if the fan housing is inadequate to retain the fragments. A destructive overspeed induced failure is not credible for fans."
· Paragraph 2.4, page 12 (lines 8.35-38), states "It should be

noted that while the above internal missiles are considered credible, they may be excluded from additional consideration based on not penetrating the casing, or the improbability of (zone of influence) striking safety-related components necessary to mitigate the concequences of the postulated failure event."

Calculation NM(S)-685-DKB, Rev. 1
· Page 27: Concludes that any credible axial flow fan missile is not expected to have sufficient energy to penetrate its casing. Missiles escaping through flexible ducting connected to the fans are considered credible and their trajectories are established on page 70.
· Page 70 & 71: Fan blade missiles escape through any flexible ducting at the fan blade rotor end of the fan. Considers trajectory to be perpendicular to the axis of rotation thru 25° back from the plane of rotation.
· Page 71: The missile trajectory is used to review for safety-related system equipment and components which can be affected by the missile. (this effort is not within the scope of this calculation).
· Page 61 Fan HVR*FN14A/B: Fan casing penetration energy required is less than kinetic energy of the blade missile. Therefore missile has sufficient energy to penetrate the fan casing. Calculation states "It is unreasonable to expect the missile to unacceptably damage any adjacent safety-related equipment." The calculation states that the type of blade failure that results in the blade penetrating the casing is not credible while acknowledging that that type of blade failure has be reported at other stations. The calc then evaluates another type of blade failure that does not result in the blade penetrating the fan casing. Calc does not provide an adequate basis to support the conclusion that there would be no damage to adjacent safety related equipment or that the type of failure resulting in the blade penetrating the casing is not credible.

Calculation HAZ-01449-M3, Rev. 0
· Page 536 Note: The 66'-6" elevation of the Auxiliary Building was reviewed for the effects of pipe rupture and rotating machinery generated missiles. Protection has been provided to preclude HVH HELB pipe whip interaction with 3HVR*ACU1A ducting (ref. E&DCR 06598). All other potentially unacceptable interactions are precluded by analysis.
· Page 537, 3. Axial Ventilation Fans: Missile ejection through the casing or the fan inlet flexible connection is precluded by analysis for the following fans (ref. calculation 12179-NM(S)-685-DKB); HVR*FN6A, HVR*FN65B, HVR*FN14A, HVR*FN14B, HVR*FN13A, HVR*FN13B

Discrepancies
1. NERM 69 Rev. 1 does not address fan missiles escaping through the flex connection for fans 3HVR*FN6A/6B, 3HVR*FN13A/13B, 3HVR*FN14A/14B
2. Statement in HAZ-01449-M3 does not agree with referenced calculation regarding missiles escaping through the fan inlet flex connection.
3. Calculation NM(S)-685-DKB, Page 61: Fan casing penetration

energy required is less than kinetic energy of the blade missile. Therefore missile has sufficient energy to penetrate the fan casing. Calc does not provide an adequate basis to support the conclusion that there would be no damage to adjacent safety related equipment or that the type of failure resulting in the blade penetrating the casing is not credible. This is also in conflict with paragraph 2.4 of NERM 69 lines7.39 to 7.42. Applies to fans 3HVR*FN6A/B, 3HVR*FN13A/B, and 3HVR*FN14A/B

		Valid	Invalid	Review Needed	Date
Initiator:	Stout, M. D.	☒	☐	☐	11/17/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/20/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/1/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	12/4/97

Date:

INVALID:

Date: 3/18/98

RESOLUTION: NU has concluded that the issues reported in DR-MP3-0687, Items 2 and 3, have identified conditions not previously discovered by NU which require correction. CRs M3-98-0765 and M3-98-1105 have been written to develop the corrective actions associated with this DR.

Item 2:
There is a discrepancy between the Millstone 3 hazards analysis and calculation 12179-NM(S)-685-DKB. Hazards analysis HAZ-01449-M3 indicates that fan missiles for HVR fans are precluded by analysis referring to calculation 12179-NM(S)-685-DKB. Calculation 12179-NM(S)-685-DKB indicates that missiles are precluded from penetrating the casing, but are not precluded from penetrating the flexible connection. Modifications per E&DCR T-P-04338, have been made to reinforce the flexible connections, but these are not addressed in the calculation. Although the above modification was not originally intended as a missile shield, the disposition to Deficiency Report No. UNS-7302, addressing potential missiles from HVP and HVQ fans, states that modification similar to that shown in E&DCR T-P-04338 is sufficient to prevent missile ejection. The fans referenced in DR-0687 are: 3HVR*FN6A/B, 13A/B, & 14A/B. This modification is further shown on Drawing 25212-24057.

In addition to the above, the statement in Section 3a, page 537, of HAZ-01449-M3 also includes fans 3HVR*FN10A/B. Although fans FN10A/B do not have a shield in accordance with the above referenced drawing, each has an 18" long Variable Inlet Vane(VIV) Damper(3HVR*VIV1004/1006 respectively) between the flex connection and the fan that will effectively prevent ejection of missiles through the flex connection.

Calculations 12179-NM(S)-685-DKB / HAZ -01449-M3 will be updated to indicate why missiles from the HVR fans are not a credible hazard. Also other similar fans will be reviewed to ensure that the documentation for precluding fan blade missiles

is accurate.

Item 3:
Calculation NM(S)-685-DKB, Page 61 concludes that the fan casing penetration energy required is less than kinetic energy of the blade missile. Therefore the missile has sufficient energy to penetrate the fan casing, but with the low residual energy, it would not be expected to unacceptably damage any safety related equipment. It is further stated in the calc that a number of very conservative assumptions are involved in reaching the above conclusions. The calc, on pages 62-64, then evaluates another type of blade failure, with more realistic assumptions, that does not result in the blade penetrating the fan casing. Sargent & Lundy did not agree with the documentation provided to preclude missiles from HVR fans as a credible hazard source. Sargent & Lundy questioned the fact that the basis for some of the assumptions in the calculation were not documented. Without this documentation Sargent & Lundy could not confirm the adequacy of the calculation.

Calculations 12179-NM(S)-685-DKB , HAZ-01449-M3 and/or NERM 69 will be updated to further document why any potential fan missiles from the HVR fans are not of concern.

Because fan missiles are precluded, and no apparent targets were identified on a preliminary walkdown, the discrepancies are limited to inconsistencies in the calculations which do not affect system licensing or design basis, or the conclusions of the Hazards Program. Therefore NU considers this to be a Significance Level 4.
Since this is a documentation issue it can be completed post start-up.

NU has concluded that the issue identified in Item #1 of DR-MP3-0687 does not represent a discrepant condition.

Item # 1:
This item states that NERM 69 Rev. 1 does not address fan missiles escaping through the flex connection for fans 3HVR*FN6A/6B, 3HVR*FN13A/13B, 3HVR*FN14A/14B
NERM 69, (Internally Generated Missile Analysis), Rev. 1, Section 2.4, Page 10 states "...A review is required of high speed rotating machinery in order to determine their potential for generating missiles resulting from destructive overspeed conditions or failure resulting from base metal fatigue, fastener failures, or manufacturing defects, and are included in the interaction tables where applicable (see Attachment 1)"

The area in question is El. 66'-6" of the Aux Building, as shown in Fig. 12A & 12B of Attachment 6 of NERM 69. The interactions for the equipment in this area are shown in Attachment 5 to NERM 69, Interaction Summary Table, Page 3 of 10, reference Notes 16 and 19, on page 2 of 10 of Attachment 5, Interaction Summary Table, which conclude that the fans in question pose no hazard.

The area is also listed on Attachment 7, as "No Confirmation Required", indicating all assumptions used in analyzing this area are considered valid. Therefore, NERM 69, Rev. 1 does address fan missiles escaping through the flex connection for fans 3HVR*FN6A/6B, 3HVR*FN13A/13B, and HVR*FN14A/14B.

The response to Items 2 and 3 of the DR will further document these conclusions.
Significance Level criteria do not apply as this is not a discrepant condition.

Conclusion:

NU has concluded that the issues reported in DR-MP3-0687, Items 2 and 3 have identified conditions not previously discovered by NU which require correction. CRs M3-98-0765 and M3-98-1105 have been written to develop the corrective actions associated with this DR.

The approved corrective action plans for CRs M3-98-0765 and M3-98-1105 will update Calculations 12179-NM(S)-685-DKB, HAZ -01449-M3 and/or NERM 69 to adequately document why missiles from the HVR fans are not a credible hazard. Also other similar fans will be reviewed to ensure that the documentation for precluding fan blade missiles is accurate.

Because fan missiles are precluded, and no targets were identified on a preliminary walkdown, the discrepancies are limited to inconsistencies in the calculations which do not affect system licensing or design basis, or the conclusions of the Hazards Program. Therefore NU considers this to be a Significance Level 4.
Since this is a documentation issue it can be completed post start-up.

Item 1 of DR-M3-0687 does not represent a discrepant condition.
This item states that NERM 69 Rev. 1 does not address fan missiles escaping through the flex connection for fans 3HVR*FN6A/6B, 3HVR*FN13A/13B, 3HVR*FN14A/14B. NERM 69, Rev. 1 does address the issue of fan missiles escaping through the flex connection for fans 3HVR*FN6A/6B, 3HVR*FN13A/13B, and 3HVR*FN14A/14B. The interactions for equipment in the El. 66'-6" area of the Aux Building are shown in Attachment 5 to NERM 69, Interaction Summary Table, Page 3 of 10, reference Notes 16 and 19 on page 2 of 10 of Attachment 5, which conclude that the fans in question pose no missile hazard. The area is also listed on Attachment 7, as "No Confirmation Required", indicating all assumptions used in analyzing this area are considered valid. In addition, the above referenced Interaction Summary Table also includes fans 3HVR*FN10A/B, which are included in the statement in Section 3a, page 537, of HAZ-01449-M3.

The response to Items 2 and 3 of DR-MP3-0687 will further document these conclusions.

Attachments:
CR M3-98-0765
E&DCR T-P-04338
25212-24057 (12179-EB-45A), Rev. 12
CR M3-98-1105
Deficiency Report UNS-7302

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Stout, M. D.				
VT Lead:	Neri, Anthony A	☐	☒	☐	3/18/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/21/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/23/98
Date:	3/18/98	☐	☒	☐	3/26/98

SL Comments: NU's response does not provide sufficient information to conclude that fan blades would not penetrate the inlet flex connections for 3HVR*FN6A/B, 3HVR*FN13A/B and 3HVR*FN14A/B. The detail shown on EB-45A-12 (drwg 25212-24057) calls for piece #4 to be 16 ga. galvanized sheet metal while E&DCR calls for the piece to be 12 ga. Calculation NM(S)-685-DKB on page 61 shows that a fan blade could penetrate the 8 ga. fan housing. As fans 3HVR*FN6A/B, 3HVR*FN13A/B and 3HVR*FN14A/B run at 3500 rpm the 16 ga. sheet metal in the fan inlet flex connection appears to be too light a gage when compared to the 12 ga. missile shield for the HVP fans which run at 1750 rpm .

Results of the walkdown referenced in NU's disposition are needed to support conclusion that there are no safety related components that are in the trajectory of potential fan blade missiles.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0694

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: DGX
NRC Significance level: 4

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 12/8/97

Discrepancy: Basis for Calculations SP-EGO-10 and SP-EGO-11

Description: Calculations SP-3EGO-10 (Rev. 0) and SP-3EGO-11 (Rev. 0) determine the setpoint for relief valves 3EGO*RV38A/B and 3EGO*RV37A/B. The basis for both calculations is a Telecon between P. Naughton and G. Olson (Fairbanks & Morse) dated 10-26-82. This reference was not attached to either calculation. The telecon was requested in RFI MP3-636/Item 3. According to MP3-IRF-[illegible]80, the requested item was not sent because it could not be identified in the Nuclear Document System. Since the referenced Telecon could not be found, the basis for these calculations cannot be verified.

		Valid	Invalid	Review Needed	Date
Initiator:	Langel, D.	☒	☐	☐	11/19/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/24/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/1/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	12/4/97

Date:

INVALID:

Date: 3/27/98

RESOLUTION: Disposition:

NU has concluded that Discrepancy Report, DR-MP3-0694, has identified a condition not previously discovered by NU which requires correction. This discrepancy meets the criteria specified in NRC letter B16901 and 17010. It has been screened per U3 PI-20 criteria and found to have no operability or reportability concerns and meets the Unit 3 deferral criteria. CR M3-98-0138 has been written to develop and track resolution of this item per RP-4.

Conclusion:

NU has concluded that Discrepancy Report, DR-MP3-0694, has identified a condition not previously discovered by NU which requires correction. This discrepancy meets the criteria specified in NRC letter B16901 and 17010. It has been screened per U3 PI-20 criteria and found to have no operability or reportability concerns and meets the Unit 3 deferral criteria. CR M3-98-0138 has been written to develop and track resolution of this item per RP-4.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

Review

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Langel, D.	☐	☒	☐	3/27/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/27/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/27/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/27/98				

SL Comments: The telecon is the basis for the relief valve setpoints. Justification that the current setpoints are adequate is needed in order to verify deferral is acceptable.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0696

Review Group: Accident Mitigation
Review Element: Operating Procedure
Discipline: I & C Design
Discrepancy Type: Licensing Document
System/Process: N/A
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 12/8/97

Discrepancy: Inadvertent Safety Injection at Power: Time Critical Activity Not Identified in EOP.

Description: In the response to the event the Inadvertent SI Reanalysis (NEU-94-543) Table 15.5-1 lists Operator Action to isolate SI flow in 600 sec. This is to preclude pressurizer filling and subsequent water relief through either the pressurizer power-operated relief valves (PORVs) or the pressurizer safety valves (PSRVs). A stuck open PSRV would create a Loss-Of-Coolant Accident (LOCA). Operator action within the 600 second period prevents the potential operation of either PORV or PSRV thus eliminating the probability of occurence of the more serious LOCA event.

These assumptions and actions should have been identified by the risk analysis of Licensing Basis Accidents under NGP 3.12 Attachment 8.A Section " A.5.1 - Effect on the Probability of Initiation of an Accident" or " A.5.2 - Effect on the Probability of Failure of the Operator to take Corrective Actions".

Our review of EOP 35 ES-1.1 (Rev. 12) could not identify notes or discussions that include operator actions to isolate SI flow within 600 sec. in the case of Inadvertent SI injection at power.

		Valid	Invalid	Review Needed	Date
Initiator:	Balodis, V. E.	☒	☐	☐	11/20/97
VT Lead:	Raheja, Raj D	☒	☐	☐	11/20/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/1/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	12/4/97

Date:

INVALID:

Date: 3/9/98

RESOLUTION: Disposition: NU has concluded that Discrepancy Report, DR-MP3-0696, has identified a condition previously discovered by NU which requires correction.

Emergency operating procedure (EOP) 35 ES-1.1 as well other EOPs are based on the Westinghouse standard Emergency Response Guidelines. These procedures are condition driven, not event driven. As such, operators proceed through the procedure based on indicated conditions. Except for critical tasks, the timeliness of the action is purposely kept transparent to the EOPs condition driven steps. Only a few operator actions such as those relating to Steam Generator Tube Rupture events are procedurally and physically based on operator reaction time. The original ERGs were validated by the Westinghouse Owners Group and demonstrated that an Inadvertent Safety Injection at

Power would be terminated within ten minutes. However, actual events have occurred at other power plants and analysis issues have been raised since 1993 that have challenged this assumption. This has been the focus of activity at NU since 1993

The ability of a Westinghouse unit such as MP3 to withstand the ISI for ten (10) minutes without creating a water solid condition is an original design basis established by Westinghouse and validated in the ERGs, and remains, to this date, a design basis. In 1993, Westinghouse informed operators of their units that because of errors in analysis assumptions, there was a potential that the pressurizer would go solid in the event of an ISI in less than ten (10) minutes (Westinghouse Nuclear Safety Advisory Letter NSAL-93-013). This condition was reported to the NRC in 1993 (LER 93-016-00). To resolve this issue, NU performed a unit-specific analysis and concluded that, in the MP3 case, this was not so, and that a period in excess of ten (10) minutes was available before going water solid. Around the same time, a unit similar in design to MP3 experienced an ISI event and found that the required operator actions took significantly longer than ten minutes and the operators did not prevent the pressurizer from going water solid. A near-miss was experienced at another unit as well.

As a result of these events, NU approached Westinghouse indicating that there may be a conflict between the analysis criterion and the ERGs (NU letter NE-94-SAB-093 dated March 21, 1994). Westinghouse responded by concluding that the validation of the ERGs was still valid (Westinghouse letter NEU-94-562, dated April 21, 1994). Despite this, NU specifically revised EOP 35 E-0 for MP3 to include an early operator action to trip one of the running Charging Pumps. This action results in a slower system fill rate, thus allowing additional time for manual actions. The ability of operators to accomplish the required actions in an acceptable time frame was demonstrated on the unit's simulator. In addition, added emphasis of the need for timely mitigation of the event was included in Operator Training. Thus, the option, identified in the Westinghouse NSAL of crediting a shorter time for operator mitigation was not necessary and the accompanying FSARCR did not change the criterion that the pressurizer will not reach a water-solid condition prior to ten (10) minutes from event initiation. The change to the EOP was determined not to represent an Unreviewed Safety Question.

In 1996, NU noted that operator action times were increasing due to a number of different factors. Thus, it was determined that the basis for prevention of a water solid condition was deteriorating to the point where it could no longer be considered valid. This led to the generation of UIR 1068 , initiated 10/28/96. Since there already existed three (3) CRs (CRs M3-96-1190, M3-96-1154 & M3-96-1218) on this topic including one which covered the general issue of operator response time and validation of that time, it was determined that there was no need for a new CR. The root cause applicable to all three (3) CRs identified three (3) events wherein a closer review of operator action times and training in those actions was specifically

needed. These include the Steam Generator Tube Rupture, Inadvertent Safety Injection (ISI) and the switchover to sump recirculation. The three CRs were closed at the completion of the common root cause evaluation. A copy is attached.

In parallel with these CRs, AR task 97002499 for UIR 1068 was assigned to the Safety Analysis Branch because of the possibility that changes in the EOPs and Operator Training would not be sufficient to achieve the required operator response time The approach being pursued is the option identified in the Westinghouse NSAL of qualification of the Power Operated Relief Valves (PORVs) for water relief. As discussed in the NSAL, there is an issue associated with the PORV block valves in using this option. The current Technical Specifications allow operation with the PORV block valves closed. With the block valves closed, the PORVs would not be available for mitigation of this event. In order to resolve the issue of the PORV block valve, CR M3-97-4537 was initiated on 12/10/97. In evaluating this CR, the operator data from 1996 was re-reviewed and it was concluded that the inability of the operators to reliably mitigate the ISI event was reportable (LER 97-063-00). The engineering and design activities necessary to implement this solution are nearly complete and being tracked by AR 97002499. Resolution of the PORV block valve issue is also necessary in order to complete AR 97002499. This work will be done before restart.

Based on the above, it is clear that this issue has been under study and corrective actions have been ongoing.

The DR alludes to an issue relative to the safety evaluation associated with the results of reanalysis of Inadvertent SI at power and the recommended FSAR changes included as part of FSAR change request (FSARCR) 94-MP3-25. At the time of this FSARCR, a safety evaluation was not required based on the screening criteria applicable at the time The absence of safety screenings/evaluations evidence for historical FSARCRs was recognized during the 10CFR50.54f self discovery and a review of 1986-1996 range FSARCRs was performed. This review resulted in CR M3-97-0215. This CR corrective action plan is to document a safety screening for 80 FSARCRs including FSARCR 94-MP3-25. A FSARCR initiated today would use procedure Regulatory Affairs and Compliance (RAC) 03 "Changes and Revisions to Final Safety Analysis Report". Procedure RAC 03 replaces procedure NGP 4.03. RAC 03 procedure requires a completed 10CFR50.59 Safety Evaluation Screening form (when screening determines a safety evaluation is not required) and a safety evaluation if required per procedure NGP 3.12.

While in this case, the issue of timely operator action has been investigated and documented, MP3-DR-0600 identified that this may not be the case for other operator response actions. Condition Report (CR) M3-98-0328 was initiated on 1/21/98 to document a discrepancy cited in MP3-DR-0600. The CR's corrective action plan will have the Safety Analysis Branch supply the MP3 Training department with all credited operator

actions (and times if applicable) from the MP3 FSAR. The Training department, in conjunction with Safety Analysis Branch and MP3 Operations, will perform a training "needs analysis" on the Safety Analysis Branch data. From this assessment, items will be included in the training programs with appropriate training material and exam items. Those items deemed not requiring training will be logged with justification used in arriving at the decision. MP3 training will maintain the log .This needs analysis is scheduled to be completed after restart.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Belodis, V. E.	☐	☒	☐	3/9/98
VT Lead:	Raheja, Raj D	☐	☒	☐	3/17/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/23/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/6/98				

SL Comments: ICAVP finds the disposition not acceptable, since previous actions associated with UIR 1068 did not assign the required significance or adequately cover this issue.
Implementation of the CRs identified below will address these issues.

a) UIR 1068 was written on 10/28/96. However, it appears that actions required to close this UIR were not taken until this DR was written and CR M3-97-4537 was initiated to address the concerns in this DR.

b) CR M3-98-0328 referenced by NU, based on DR-MP3-0600, partially initiates the action to evaluate training requirements.

needed. These include the Steam Generator Tube Rupture, Inadvertent Safety Injection (ISI) and the switchover to sump recirculation. The three CRs were closed at the completion of the common root cause evaluation. A copy is attached.

In parallel with these CRs, AR task 97002499 for UIR 1068 was assigned to the Safety Analysis Branch because of the possibility that changes in the EOPs and Operator Training would not be sufficient to achieve the required operator response time The approach being pursued is the option identified in the Westinghouse NSAL of qualification of the Power Operated Relief Valves (PORVs) for water relief. As discussed in the NSAL, there is an issue associated with the PORV block valves in using this option. The current Technical Specifications allow operation with the PORV block valves closed. With the block valves closed, the PORVs would not be available for mitigation of this event. In order to resolve the issue of the PORV block valve, CR M3-97-4537 was initiated on 12/10/97. In evaluating this CR, the operator data from 1996 was re-reviewed and it was concluded that the inability of the operators to reliably mitigate the ISI event was reportable (LER 97-063-00). The engineering and design activities necessary to implement this solution are nearly complete and being tracked by AR 97002499. Resolution of the PORV block valve issue is also necessary in order to complete AR 97002499. This work will be done before restart.

Based on the above, it is clear that this issue has been under study and corrective actions have been ongoing.

The DR alludes to an issue relative to the safety evaluation associated with the results of reanalysis of Inadvertent SI at power and the recommended FSAR changes included as part of FSAR change request (FSARCR) 94-MP3-25. At the time of this FSARCR, a safety evaluation was not required based on the screening criteria applicable at the time The absence of safety screenings/evaluations evidence for historical FSARCRs was recognized during the 10CFR50.54f self discovery and a review of 1986-1996 range FSARCRs was performed. This review resulted in CR M3-97-0215. This CR corrective action plan is to document a safety screening for 80 FSARCRs including FSARCR 94-MP3-25. A FSARCR initiated today would use procedure Regulatory Affairs and Compliance (RAC) 03 "Changes and Revisions to Final Safety Analysis Report". Procedure RAC 03 replaces procedure NGP 4.03. RAC 03 procedure requires a completed 10CFR50.59 Safety Evaluation Screening form (when screening determines a safety evaluation is not required) and a safety evaluation if required per procedure NGP 3.12.

While in this case, the issue of timely operator action has been investigated and documented, MP3-DR-0600 identified that this may not be the case for other operator response actions. Condition Report (CR) M3-98-0328 was initiated on 1/21/98 to document a discrepancy cited in MP3-DR-0600. The CR's corrective action plan will have the Safety Analysis Branch supply the MP3 Training department with all credited operator

actions (and times if applicable) from the MP3 FSAR. The Training department, in conjunction with Safety Analysis Branch and MP3 Operations, will perform a training "needs analysis" on the Safety Analysis Branch data. From this assessment, items will be included in the training programs with appropriate training material and exam items. Those items deemed not requiring training will be logged with justification used in arriving at the decision. MP3 training will maintain the log .This needs analysis is scheduled to be completed after restart.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Baiodis, V. E.	☐	☒	☐	3/9/98
VT Lead:	Raheja, Raj D	☐	☒	☐	3/17/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/23/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/6/98				

SL Comments: ICAVP finds the disposition not acceptable, since previous actions associated with UIR 1068 did not assign the required significance or adequately cover this issue.
Implementation of the CRs identified below will address these issues.

a) UIR 1068 was written on 10/28/96. However, it appears that actions required to close this UIR were not taken until this DR was written and CR M3-97-4537 was initiated to address the concerns in this DR.

b) CR M3-98-0328 referenced by NU, based on DR-MP3-0600, partially initiates the action to evaluate training requirements.

Review Group: System
Review Element: System Design
Discipline: Electrical Design
Discrepancy Type: Calculation
System/Process: DGX
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 12/14/97

Discrepancy: Diesel Generator Wattmeter Accuracy (Calculation NL-41GE)

Description: Calculation NL-041GE calculates the uncertainty associated with the diesel generator wattmeters that are located on the main control panel and the diesel generator local panels as well as the plant computer, The range of instrument readings that could be indicated when the diesel generators are operated at important load limits are also calculated. We have the following comments on this calculation:

The calculation considered the ratio error of the instrument transformers. However, the phase error was not considered. Since the wattmeter needs to perform vectorial multiplication of the voltage and current, phase errors also contribute to the inaccuracy of the measurement. In effect, the phase errors represent an error in the measured power factor (cosine of the angle between the voltage and current vectors) where the power is proportional to the magnitude of the voltage times the magnitude of the current times the power factor.

Section 4.14 of the calculation calculates the error due to the uncertainty of interpolating between minor divisions when reading the analogue instruments (main control room wattmeter and diesel generator local panel wattmeter). The calculated error, taken to be ½ of a minor division is 1.15% for the wattmeters on the main control board and 1.25% for the wattmeter at the diesel generator local panel. The calculation then states "Calculated Readability error R using one-half of the minor division is greater than 1% of full scale, therefore, 1% will be used". The calculation needs to justify reducing the calculated uncertainty.

The calculation states that temperature error is not applicable. While it is true that the instruments are calibrated in a "normal environment" in which the normal temperature is in the lower 20's Celsius, typical indoor areas at Millstone can experience temperatures of 50-120°F (10-49°C), a range of nearly 40°C. The temperature effect over such a temperature range can be significant. Unless specific steps are taken to eliminate temperature variations, any decision to neglect temperature variations needs to be based on a review of the temperature range in the area that the equipment is located in and information on how the accuracy of equipment such as transducers is affected by temperature variations.

The calculation considers the measuring and testing error of the instrument used to determine the transformation ratio of the voltage transformers that drive the wattmeters and watt transducers. The ratio error of the current transformers that drive

the same instruments was also measured, and the measured error was used in the calculation. However, the measuring and testing error associated with the current transformer ratio measure was excluded from the calculations. The calculation should justify not considering the measuring and testing error associated with the current transformer ratio measurements.

The ratios of the voltage and current transformers were measured under no-load conditions. The calculation includes an additional error to account for the effect of the instrument transformer burden. The burden errors are treated as random errors. However, the error from the current transformer burden will take the form of increased excitation current (except for unusual burdens). This will always act to reduce the output of the current transformer. The error due to the burden on the voltage transformer will take the form of IZ voltage drop, which will reduce the output of the voltage transformer for normal burdens. The calculation should take the unidirectional behavior of the burden error into account.

Most of the input data has a nominal tolerance in the order of tenths of per cent. This implies four significant figures. However, some of the test data and the calculations use fewer significant figures.

		Valid	Invalid	Review Needed	Date
Initiator:	Bloethe, G. William	☒	☐	☐	11/20/97
VT Lead:	Neri, Anthony A	☒	☐	☐	11/29/97
VT Mgr:	Schopfer, Don K	☒	☐	☐	12/5/97
IRC Chmn:	Singh, Anand K	☒	☐	☐	12/8/97

Date:

INVALID:

Date: 3/25/98

RESOLUTION: NU has concluded that issues #2, 3 and 5 in Discrepancy Report, DR-MP3-0700, have identified conditions not previously discovered by NU which require correction.

Issue # 2

The objective of the calculation is to determine the use of the instrument (wattmeter in the MCB, EDG or the plant computer) that has the least uncertainty to conduct Technical Specifications Surveillance 4.8.1.1.1.2 testing of the EDG's.

NU agrees that the calculation needs to be modify to justify reducing the calculated uncertainty. This is considered a clarification change as the slight reduction of the uncertainty does not affect the result of the calculation.

Issue # 3

The ambient temperature of all three types of wattmeters is that of the Main Control Room for the wattmeter on the MCB and the computer point and the Diesel Generator Room. The temperature environment within these rooms will not be a factor affecting the uncertainty of the devices. These wattmeters are installed in a "mild" environment for temperature per Engineering Specification SP-M3-EE-0333. A "mild" environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation or during anticipated operational occurrences.The calculation modification will justify why temperature error is not applicable and more clarification will be added to the calculation.

Issue # 5

NU believes that the additional error of 0.3% to account for the error due to loading is adequate.

The revised calculation will demonstrate that the additional error (0.3%) taken in the calculation is sufficient to cover burden error.

Condition Report (CR) M3-97-4709 was written provide necessary corrective actions to resolve the issues #2, 3 and 5.

The approved corrective action plan for CR M3-97-4709 will revise calculation NL-041GE to consider the uncertainties and temperature effects. These corrections will be completed post startup. These errors are not significant and corrections are considered enhancements which will not affect the result of the calculation. Therefore, NU considers this to be a Significance Level 4 issue.

NU also concluded that issues # 1 and 4 in Discrepancy Report , DR-MP3-0700, do not represent discrepant conditions.

Issue # 1

The power factor error(phase error) is already included as part of the CT, PT and wattmeter error.

Issue # 4

Section 4.17 : Other effects states : "the average wattmeter circuit CT ratio error for the three phases is 1.3% for the 'A' EDG and 1.6% for the 'B' EDG and the average computer circuit CT ratio error is 0.8% for the 'A' EDG and 0.3% for the 'B' EDG . Based on the test results this error is predicted to be on the negative side and will be added algebraically as bias error." On the 4th paragraph of the same section the total bias error is computed as follows: "The total bias error TBE is the sum of the average CT and PT ratio errors. Therefore TBE in wattmeter

circuit is 1.7% (1.3+0.4) for EDG 'A' and 2.0% (1.6+0.4) for EDG 'B' and TBE in computer circuit is 1.2% (0.8+0.4) and 0.7% (0.3+0.4) for EDG 'B'.

In summary, the limits are:

Limits =[EDG Rating +/- (Error x Full Meter Scale)] - [EDG Rating x TBE]

Therefore the CT ratio errors are included in the Calculation.

Based on the above, Significance Level criteria do not apply as issues # 1 and 4 do not represent a discrepant condition.

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Warner, I.	☐	☒	☐	3/25/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/26/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/25/98				

SL Comments: We concur with NU's statement:

"Condition Report (CR) M3-97-4709 was written provide necessary corrective actions to resolve the issues #2, 3 and 5.

The approved corrective action plan for CR M3-97-4709 will revise calculation NL-041GE to consider the uncertainties and temperature effects. These corrections will be completed post startup. These errors are not significant and corrections are considered enhancements which will not affect the result of the calculation. Therefore, NU considers this to be a Significance Level 4 issue."

We do not concur with NU's statement that Issue's # 1 and 4 do not represent a discrepant condition.

NU states:

Issue # 1

> The power factor error (phase error) is already included as part of the CT, PT and wattmeter error.

We re-reviewed the calculation and could not determine where the power factor error is included in the calculation.

To address this issue, NU needs to specifically define where in the calculation power factor error is included.

Issue # 4

NU states: Section 4.17 : Other effects states : "the average wattmeter circuit CT ratio error for the three phases is 1.3% for the 'A' EDG and 1.6% for the 'B' EDG and the average computer circuit CT ratio error is 0.8% for the 'A' EDG and 0.3% for the 'B' EDG . Based on the test results this error is predicted to be on the negative side and will be added algebraically as bias error." On the 4th paragraph of the same section the total bias error is computed as follows: "The total bias error TBE is the sum of the average CT and PT ratio errors. Therefore TBE in wattmeter circuit is 1.7% (1.3+0.4) for EDG 'A' and 2.0% (1.6+0.4) for EDG 'B' and TBE in computer circuit is 1.2% (0.8+0.4) and 0.7% (0.3+0.4) for EDG 'B'.

It's not clear from NU's response how Measuring and Testing Error is addressed in the response.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-0999

Review Group: System
Review Element: System Design
Discipline: Mechanical Design
Discrepancy Type: Calculation
System/Process: NEW
NRC Significance level: 4

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 2/5/98

Discrepancy: Revision of Calculation SDP-RSS-01361M3 for DCRs M3-97042 and 97045

Description: The purpose of Calculation SDP-RSS-01361M3, Rev. 5 is to provide a line-by-line listing of RSS operating pressures and temperatures for each mode of system operation in a format which can be used as input to the piping stress analysis. The operating pressures and temperatures are determined in Calculation P(R)-1187, Rev. 2.

Four discrepancies were identified in Calculation SDP-RSS-01361M3, Rev. 5:

1. (p. 18) The design pressures and temperatures do not reflect those computed in P(R)-1186, Rev. 2. Design pressure at pump suction should be 49 psig, design pressure at pump discharge should be 300 psig, design pressure at containment isolation valves MOV*20A/B/C/D should be 283 psig, design pressure at SI crosstie valves MOV*8837A/B & 8838A/B should be 285 psig, and design temperature should be 260F throughout the entire spray circuit.

2. (pp. 19-21) There is no source for the 39 psig operating pressure for suction piping in Operating Condition 1. This parameter is not computed in P(R)-1187, Rev. 2.

3. (pp. 20-21) The operating pressures in pump suction piping for the Operating Condition 3, 3RSS*P1A test mode, agree with values computed in P(R)-1187, Rev. 2, but contradict the 50 psig value computed in US(B)-1186, Rev. 2.

4. (pp. 20, 21, 25, and 26) The operating pressures in pump dewatering lines 3-RSS-150-43, 51, 84, and 87 are identified as equal to those for the pump suction piping even though these lines are located nearly 17'-2" below the suction piping (an elevation difference which corresponds to as much as 7.4 psid).

		Valid	Invalid	Review Needed	Date
Initiator:	Wakeland, J. F.	☒	☐	☐	1/24/98
VT Lead:	Neri, Anthony A	☒	☐	☐	1/29/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	1/29/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/2/98

Date:

INVALID:

Date: 3/26/98

RESOLUTION: DISPOSITION:

NU has concluded that DR-MP3-0999 does not represent a discrepant condition. The disposition to each issue raised in DR-MP3-099 is addressed individually as follows:

Issue 1: The design pressures and temperatures in the SDP are a summary provided for information only. The design basis location of design pressure and temperature conditions for the system are contained in the line designation table. P(R)-1186 calculated maximum operating conditions. As the existing suction design pressure is 60 psig no change is required. Discharge design pressure is 275 psig to the 3RSS*MOV20s and 225 psig beyond the 20 series valves. The reference to 300 psia for Case 1 in calculation P(R)-1186 is relevent only for upset conditions and is not a normal operating design parameter. The design temperature for all the lines above is being increased to 260F in DCR M3-96-054. Therefore, this is not a discrepant condition.

Issue 2: The Condition 1 Operating Pressure for the suction piping is computed on Page 9 of P(R)-1187. Therefore, this is not a discrepant condition.

Issue 3: It is the purpose of the SDP to determine the bounding conditions for stress analysis. The difference between the value for the RSS pump Operating Condition 3 pump suction pressure reported in SDP-RSS-01361M3 and P(R)-1186 is the difference between bounding conditions and normal operating conditions. As the values used in SDP-RSS-01361M3 exceed those considered in P(R)-1186, this is not a discrepant condition.

Issue 4: The justification for the operating pressures in pump dewatering lines 3-RSS-150-43, 51, 84 and 87 being equal to those for the pump suction piping can be found in the General Note on page 16 of calculation SDP-RSS-01361M3 which states: "All 2 inch and smaller ASME Class 2 and 3 ANSI B31.1 and all 1 inch and smaller ASME Code Class 1 piping shall normally be analyzed using design conditions as provided in the SDP - System Design Conditions Table. The lines shall be designed using the provisions of Project Procedure NETM-24 and NEAM-110." Employing this practice ensures that all lines can meet the bounding pressure. Threrefore this is not a discrepant condition.

CONCLUSION:

NU has concluded that DR-MP3-0999 does not represent a discrepant condition. As detailed in the disposition, each of the four questions is bounded by the values in the Stress Data Package for the system which inherently incorporates margin from the operating conditions.

Significance level criteria do not apply as this is not a discrepant condition.

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Wakeland, J. F.	☐	☒	☐	3/26/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/26/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/26/98				

SL Comments: Item 1: Sargent & Lundy concludes that this is a discrepant condition. The ASME code requires that nuclear class 2 piping stresses be analyzed for the greater of maximum operating pressure or design pressure. A change in design pressure to account for the possibilty of RSS pump shutoff head, introduces a 25 psi increase in design pressure. This corresponds to a 0.3 ksi increase in the stress in the RSS discharge line (up to the MOV 20 valves): 0.3 ksi = (25 psi/1000 ksi/psi)(10.02 in) / [2 (0.365 in)]. Pressure stresses are used for the sustained load, and the occaisional and emergency load cases. For these cases, the ASME code does not include temperature stresses. Therefore, it is the engineering judgement of the ICVAP reviewer that correcting the RSS design pressure in the stress data package would not significantly reduce the margin in piping stress. Sargent & Lundy consideres this to be a level 4 discrepancy which may be corrected after Unit 3 restart.

Item 2: Sargent & Lundy agrees that this is not a discrepant condition. The basis for using 39 psig for the operating RSS suction pressure is provided on p. 9 of US(B)-1187, Rev. 2.

Item 3: Sargent & Lundy agrees that this is not a discrepant condition. The pressure identified in P(R)-1187, Rev. 2 and in SDP-RSS-01361M3, Rev. 5 bound the value used identified in P(R)-1186.

Item 4: Sargent & Lundy concludes that this is a discrepant condition. However, the 7.4 psi error in estimating the pressure in RSS pump dewatering lines 3-RSS-150-43, 51, 84 and 87 is not a significant contributor to stress levels in these lines. Therefore Sargent & Lundy consideres this to be a level 4 discrepancy which may corrected after Unit 3 restart.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1007

Review Group: Programmatic
Review Element: Corrective Action Process
Discipline: I & C Design
Discrepancy Type: Corrective Action Implementation
System/Process: N/A
NRC Significance level: 4

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 2/7/98

Discrepancy: Inadequate Implementation Documentation

Description: Adverse Condition Report ACR 12875 Causal Factors Corrective Action Plan lists the following four corrective actions to be implemented.
1. Perform a review of all annunciator inputs (Performed as part of Operability Determination).
2. Perform MEPL on Diesel skid mounted instruments that input into the annunciator system.
3. Remove Non Cat 1 inputs from annunciators (B/J 3-96-057, for EGA-A[U1] & B/J 3-96-058, for EGA-B[U2]).
4. Issue design change to resolve separation problem.

The following are the problems associated with each Causal Factors Corrective Action.
1. The Operability Determination may have been part of the ACR; however, no section of the ACR is identified as such in order to verify its completion.
2. MEPL MP3-CD-843 was not included as part of the closure package to verify reclassification of select non-Cat. 1 inputs to the EDG annunciator
3. NCR 3-96-154 was not included as part of the closure package.
4. DCN (MMOD M3-96-571) unexplainably evolved into DCR M3-96067 and was not included as part of the closure package which permanently incorporates B/J 3-96-057 and B/J 3-96-058.

		Valid	Invalid	Review Needed	Date
Initiator:	Dombrowski, Jim	☒	☐	☐	1/27/98
VT Lead:	Ryan, Thomas J	☒	☐	☐	1/27/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	1/29/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/3/98

Date:

INVALID:

Date: 3/13/98

RESOLUTION: NU has concluded that Discrepancy Report, DR-MP3-1007, has identified a condition not previously discovered by NU which requires correction. This discrepancy meets the criteria specified in NRC letter B16901 and 17010. It has been screened per U3 PI-20 criteria and found to have no operability or reportability concerns and meets the Unit 3 deferral criteria. CR M3-98-0970 has been written to develop and track resolution of this item per RP-4.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Dombrowski, Jim	☐	☒	☐	3/13/98
VT Lead:	Ryan, Thomas J	☐	☒	☐	3/26/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	
Date:	3/13/98				

SL Comments: This ACR was identified as a "Start-up" document. Unless a specific reason acceptably dispositions this ACR as to why verification of completion will be delayed till after plant start-up, this DR resolution is unacceptable.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1009

Review Group: Programmatic
Review Element: Corrective Action Process
Discipline: I & C Design
Discrepancy Type: Corrective Action Implementation
System/Process: SWP
NRC Significance level: 4

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 2/7/98

Discrepancy: Inadequate Implementation Documentation

Description: Unresolved Item Report (UIR) 432 Closure Request documents that an "engineering review" (Material Equipment Parts List (MEPL) evaluation MP3-CD-1071) was performed to disposition Non-Conformance Report (NCR) 395-065; however, this "engineering review" (MEPL evaluation MP3-CD-1071) was not included in the UIR 432 closure package.

		Valid	Invalid	Review Needed	Date
Initiator:	Dombrowski, Jim	☒	☐	☐	1/30/98
VT Lead:	Ryan, Thomas J	☒	☐	☐	1/30/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	2/2/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/3/98

Date:

INVALID:

Date: 3/13/98

RESOLUTION: NU has concluded that Discrepancy Report, DR-MP3-1009, has identified a condition not previously discovered by NU which requires correction. This discrepancy meets the criteria specified in NRC letter B16901 and 17010. It has been screened per U3 PI-20 criteria and found to have no operability or reportability concerns and meets the Unit 3 deferral criteria. CR M3-98-1143 has been written to develop and track resolution of this item per RP-4.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Dombrowski, Jim	☐	☒	☐	3/13/98
VT Lead:	Ryan, Thomas J	☐	☒	☐	3/26/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☐	☐	

Date: 3/13/98

SL Comments: This ACR was identified as a "Start-up" document. Unless a specific reason acceptably dispositions this ACR as to why verification of completion will be delayed till after plant start-up, this DR resolution is unacceptable.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1024

Review Group: System
Review Element: Corrective Action Process
Discipline: Mechanical Design
Discrepancy Type: Corrective Action Implementation
System/Process: SWP
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 2/7/98

Discrepancy: Incomplete Closure of UIR 210 and ACR 12880

Description: UIR 210 identified 3 issues relative to the ability of MOVs, used to isolate the RSS heat exchangers, to close.

Issue 1 concerned a discrepancy between the IST flowrates and the MOV calc flowrates.

Issue 2 concerned the closure sequence of the inlet and outlet valves.

Issue 3 concerned a discrepancy between Chapters 6 and 9 of the FSAR relative to minimum required flowrates.

The UIR Form indicated that Final Disposition of the UIR was to disposition via ACR 12880.

ACR 12880 was generated and the Corrective Action Plan referenced A/R 96007043 along with Action numbers -02, -03, and -04. The closure package for ACR 12880 included Discrepancy Closure Request forms for 96007043-01 (the base A/R) and 96007043-02 which addressed part of Issue 1 from UIR 210, dealing only with the MOV calcs, but the package did not include the revised calculations. In addition, no closure documents were included in the closure package for ACR 12880 for 96007043-03 or 96007043-04, both of which are required to close out the remainder of Issue 1 from UIR 210, and are required before startup.

In addition to the statement in the UIR that ACR 12880 was to disposition it, another A/R (97009493) was issued. The UIR closure packeage contained a Closure Request Form for 97009493-01 which stated that that ACR 12880 , A/R 96007043 -02, -03, and -04 would address Issue 1 of the UIR. Issue 2 of the UIR was to be addressed by an "Attachment 7". This item was identified as A/R Item 97009493-02 and dealt with a potential change to procedure to specify MOV closure sequence based on the results of Items 96007043-02, -03, and -04. Since -03 and -04 were not closed, there was no closure documentation in the UIR package for 97009493-02. Finally, Issue 3 of the UIR was to be addressed by another Attachment 7 to follow the FSARCR process to completion. An approved FSARCR with backup info was included in the package, but no documentation to indicate closure.

		Valid	Invalid	Review Needed	Date
Initiator:	Tenwinkel, J. L.	☒	☐	☐	2/2/98
VT Lead:	Neri, Anthony A	☒	☐	☐	2/2/98
VT Mgr:	Schopfer, Don K				2/2/98

VT Mgr:	Schopfer, Don K	☒	☐	☐	2/2/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	2/3/98

Date:

INVALID:

Date: 3/23/98

RESOLUTION: Disposition:

NU has concluded that the issues reported in Discrepancy Report, DR-MP3-1024, do not represent discrepant conditions. ACR 12880 is attached and clearly contains closure paperwork for A/R 96007043-03. A/R 96007043-02 closure paperwork references calculation SWS-MOV-1380-M3-00, SWS System and Design Basis Review for Motor Operated Valves, which is attached. The calculation determines, in accordance with the Specification for MP3 MOV Program Motor Operated Valve Design Basis Review Calculations, # SP-M3-ME-015, the system and functional design basis condition for Motor Operated Valves (MOVs) in the Service Water System. The calculation shows flow rates at the inlet and outlet RSS heat exchanger to be the same and there was no special sequencing of the valves required. A/R 96007043-04 is not completed to date but is a restart required item. ACR 12880 is not closed and will not be closed until this item is completed.

FSARCR 97-MP3-188 has been officially approved and is attached as part of the PI-20 package for UIR 210. A hand written note on the closure package that the item was completed on 7/23/97 making an Attachment 7 unnecessary.

Significance level criteria does not apply here as this is not a discrepant condition.

Conclusion:

NU has concluded that the issues reported in Discrepancy Report, DR-MP3-1024, do not represent discrepant conditions. ACR 12880 is attached and clearly contains closure paperwork for A/R 96007043-03. A/R 96007043-02 closure paperwork references calculation SWS-MOV-1380-M3-00, SWS System and Design Basis Review for Motor Operated Valves, which is attached. The calculation determines, in accordance with Specification for MP3 MOV Program Motor Operated Valve Design Basis Review Calculations, # SP-M3-ME-015, the system and functional design basis condition for Motor Operated Valves (MOVs) in the Service Water System. A/R 96007043-04 is not completed to date but is a restart required item. ACR 12880 is not closed and will not be closed until this item is completed. FSARCR 97-MP3-188 has been officially approved and is attached as part of the PI-20 package for UIR 210.

Significance level criteria do not apply here as this is not a discrepant condition.

Attachments - Calculation SWS-MOV-1380-M3, ACR 12880, PI-

20 Closure Package UIR 210

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Tenwinkel, J. L.	☐	☒	☐	3/23/98
VT Lead:	Neri, Anthony A	☐	☒	☐	3/23/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/23/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/23/98				

SL Comments: The corrective actions specified by NU, including those completed to date, are acceptable. However, this DR cannot be closed out until all items required for startup have been completed. Per the NU Disposition, item A/R 96007043-04 has not yet been completed. Therefore, this DR will remain open until that item has been submitted and reviewed. Note: If the remaining item is a Mode 2 Issue, NU is requested to identify it as such in the Disposition so that it may be deferred.

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1074

Review Group: Operations & Maintenance and Testing
Review Element: Corrective Action Process
Discipline: Other
Discrepancy Type: Corrective Action Implementation
System/Process: SWP
NRC Significance level: 3

DR RESOLUTION REJECTED

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 3/5/98

Discrepancy: Inadequate implementation of Service Water System testing corrective action.

Description: Item 2 of Generic Letter (GL) 89-13, Service Water System Problems Affecting Safety-Related Equipment, requires that a test program be conducted to verify the heat transfer capability of all safety-related heat exchanges cooled by service water. The Generic Letter states that the initial frequency of testing should be at least once each fuel cycle, but after three tests the best frequency for testing should be determined to provide assurance that the equipment will perform the intended safety functions.

Unresolved Issue Report (UIR) # 515, GL 89-13 Heat Exchanger Testing documents that heat exchanger testing was not being accomplished as required by the Generic Letter. The corrective action for this UIR includes developing a "position on heat exchanger testing schedule."

A review of the UIR corrective action implementation determined that the heat exchanger testing program is inadequate and does not meet the intent of Generic Letter 89-13. The testing schedule does not include all safety related heat exchangers cooled by service water. The action tracking items do not assure that each safety related service water heat exchanger will be tested at least once each fuel cycle for the next three cycles.

		Valid	Invalid	Review Needed	Date
Initiator:	Spear, R.	☒	☐	☐	2/26/98
VT Lead:	Bass, Ken	☒	☐	☐	2/26/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/2/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/2/98

Date:

INVALID:

Date: 3/24/98

RESOLUTION: Disposition:
NU has concluded that Discrepancy Report DR-MP3-1074 has identified a condition not previously discovered by NU which requires correction. UIR #515 corrective action (AR96008622-01) required the development of a firm and accelerated schedule for completing the Generic Letter 89-13 service water system heat exchanger tests and evaluations of the test data. Both AR96008622-01 and AR97000669-02 tracked the development of the MP3 Service Water Heat Exchanger Performance Monitoring Program which formalize the commitment to Generic Letter 89-13 requirements and to provide the programmatic

means to schedule the testing of heat exchangers and to evaluate the test results. The discrepant Final Disposition of UIR #515 will be corrected after startup by the approved corrective action plan for CR M3-98-1279 to reference the performance monitoring program which provides the requested heat exchanger testing schedule and commitment to GL 89-13.The Significance Level is concluded to be Level 4 since there is no impact on MP3 DB or LB or plant equipment.

Conclusion:
NU has concluded that Discrepancy Report DR-MP3-1074 has identified a condition not previously discovered by NU which requires correction. UIR 515 Closure Request Final Disposition will be corrected after startup by the approved corrective action plan of CR M3-98-1279 to reference the MP3 GL 89-13 Service Water System Heat Exchanger Performance Monitoring Program which implements the requirements of Generic Letter 89-13 and provides testing schedules. The Significance Level is concluded to be Level 4 since there is no impact on MP3 LB or DB or plant equipment.

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	Spear, R.	☐	☒	☐	3/24/98
VT Lead:	Bass, Ken	☐	☒	☐	3/25/98
VT Mgr:	Schopfer, Don K	☐	☒	☐	3/26/98
IRC Chmn:	Singh, Anand K	☐	☒	☐	3/27/98
Date:	3/24/98				

SL Comments: S&L concurs with NU's resolution and conclusion for Discrepancy Report DR-MP3-1074 but does not concur that the Significance Level is Level 4 as proposed by NU. The requirements of Generic Letter (GL) 89-13 are included in the licensing bases. This Discrepancy Report and NU's conclusion establish that the Heat Exchanger Testing program is not being accomplished as required by the Generic Letter and therefore does not meet the licensing bases. The criteria for determining the relative discrepancy significance level establishes that if a discrepancy does not meet its licensing and design bases but the system is capable of performing its intended function, it is a level 3 discrepancy.

Review Group: System
Review Element: Corrective Action Process
Discipline: Mechanical Design
Discrepancy Type: Corrective Action Implementation
System/Process: HVX
NRC Significance level: 3

DR VALID

Potential Operability Issue
( ) Yes
(•) No

Date FAXed to NU:

Date Published: 3/30/98

Discrepancy: CR M3-96-1222 Corrective Action Implementation

Description: Calculation 97SCS-01471-M3, Rev. 0 'Charging Pump Area Ventilation Requirements for Appendix R' was reviewed as part of the corrective action implementation review of CR M3-96-1222. The review of the calculation identified the following discrepancies:

1) On page 6, calc assumes that 100% outside air is supplied since the exhaust fan is not operating and appears to use an airflow of about 26,600 cfm in calculating the RPCCW area temperature. This assumption does not address the impact the position of outside air balancing damper 3HVR*DMP32 has on fan performance and resulting outside airflow. In the winter mode of operation, 3HVR*DMP32 is positioned to approx 50% open per note 17 on EM-148A to reduce the amount of outside air. A reduction in outside airflow would increase the temperature calculated in the RPCCW area.

2) On page 7, the 640 MBH value for Qt include the capacity of one train of unit heaters. The capacity of the heaters could be backed out of the room load if the resulting temperature is above the thermostat setpoint for the unit heaters.

3) The 5120 cfm airflow thru the charging pump room door calculated on page 8 results in an air velocity of approx 730 ft/min which does not seem realistic considering the 28°F temperature differential. Using the equation from reference 15 shown on page 9 of the calculation and the following values:

Cd = .40 + 0.0025(Ti - To) = 0.47
Ti = 570°R = charging pump cubicle temperature
To = 542°R = ccw area temperature
A = 7 ft² = one-half of the door opening area
NPL = 3.5 ft = one half of the door height
dHnpl = 3.5 ft / 2 = 1.75 ft= distance between NPL and midpoint of lower half of door opening
g = 32.2

the airflow was found to be
cfm = 60(0.47)(7)[2(32.2)(1.75)(28/570)]^.5 = 464 cfm

The 464 cfm estimated above is lower than the 3,350 cfm calculated on page 9. The calculation used the 12'-7" distance from the door midpoint (NPL) to the ceiling instead of the distance between NPL and midpoint of lower half of door opening. The 464 cfm estimated above is also lower than the 3315 cfm required to maintain the charging pump room below 110°F.

4) The 1990 ASHRAE Refrigeration Handbook in Chapter 27 provides a method for calculating the cooling load due to air exchange through open doorways. Using equation 10 on page 27.3, a 82°F RPCCW area temperature and a 110°F charging pump area temperature, the heat transfer through the open door was estimated to be 18,166 BTu/hr. This value is significantly lower than the 91,370 Btu/hr load in the charging pump room. It is expected that with a 82°F RPCCW area temperature the charging pump room temperature would need to approach 170°F before sufficient airflow is established to remove the 91,370 Btu/hr load.

		Valid	Invalid	Review Needed	Date
Initiator:	Stout, M. D.	☒	☐	☐	3/20/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/20/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/23/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98

Date:

INVALID:

Date:

RESOLUTION:

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	(none)	☐	☐	☒	
VT Lead:	Neri, Anthony A	☐	☐	☒	
VT Mgr:	Schopfer, Don K	☐	☐	☒	
IRC Chmn:	Singh, Anand K	☐	☐	☒	

Date:

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1088

Review Group: Programmatic
Review Element: Corrective Action Process
Discipline: I & C Design
Discrepancy Type: Corrective Action Implementation
System/Process: DGX
NRC Significance level: 4

DR VALID

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 3/30/98

Discrepancy: Insufficient documentation for post startup closure of instrument qualification issue.

Description: CR M3-97-1444 addresses the operating temperature range of the Emergency Generator Load Sequencer (EGLS). IEEE 279 requires conditions which render the EGLS inoperable be statused in the Control Room. The vendor's O&M manual documents the equipment's operating temperature range as 75 +/- 5 deg. F. The instrument rack room's normal temperature is documented in the purchase specification as 75 +/- 5 deg F. Setpoint Calculation SP-3HVC-8 documents the rack room's temperature setpoint as 75 deg. F; however, actual rack room temperature measurements vary around 68.7 deg. F. Without an approved design change, the HVAC's temperature controller setpoint was change to 65 deg. F by operation's initiated EWR# 3-94-00128 that was approved but not released. The UFSAR documents the rack room's temperature range as 70 deg. F to 80 deg. F; however, Calculation No. P(B)-0954, titled "Temperature rise in the Control Building during temporary loss of air conditioning" and Calculation No. 88-032-090GF, titled "Station Blackout Transient Room Temperature Analysis for the Instrument Rack Room at MP3" documents that room temperature can be higher than 80 deg. F. The Tech. Spec. documents that rack room's equipment can be declared operable as long as the rack room temperature is below 95 deg. F. The EGLS Qualification Test Report No. 2404.01 documents the equipment's minimum/maximum test temperatures as 70 deg. F and 95 deg. F. however, if the Tech. Spec.'s rack room temperature limit of 95 deg. F is exceeded, the required action is to record the temperature and duration for EQ purposes. No minimum temperature alarm or required action is provided for the instrument rack room.

Corrective action requests ARs 97011501-01, 02, & 03 and 97011973-01 are scheduled for completion after start-up. Justification for scheduling the completion and closure of these action requests, associated with CR M3-97-1444, is based on a EGLS critical subcomponent operating temperature range analysis and critical subcomponent comparison, between the EGLS and similar equipment supplied by Westinghouse. The critical subcomponent operating temperature range analysis is based on the specified operating temperature range for each manufacturer's subcomponent inside the EGLS. The comparasion is based on similarity of critical subcomponents in a piece of equipment supplied by Westinghouse that was qualified with a greater minimum/ maximum testing temperature range, as documented in test report WCAP-8687. None of this data was submitted with the review package. The following information is needed to confirm operability of the EGLS:

-EGLS critical subcomponent list and associated operating temperature range data,

-critical subcomponent list for the Westinghouse supplied equipment used in the EGLS comparison and qualification report WACP-8687.

		Valid	Invalid	Review Needed	Date
Initiator:	Dombrowski, Jim	☒	☐	☐	3/25/98
VT Lead:	Ryan, Thomas J	☒	☐	☐	3/25/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/25/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/27/98

Date:

INVALID:

Date:

RESOLUTION:

Previously identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	(none)	☐	☐	☒	
VT Lead:	Ryan, Thomas J	☐	☐	☒	
VT Mgr:	Schopfer, Don K	☐	☐	☒	
IRC Chmn:	Singh, Anand K	☐	☐	☒	

Date:

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1089

Review Group: System
Review Element: System Design
Discipline: Piping Design
Discrepancy Type: Calculation
System/Process: NEW
NRC Significance level: 4

DR VALID

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 3/30/98

Discrepancy: Incorrect calculation revisions referenced in DCR'S

Description: In the process of reviewing the following RSS Modification DCR's,

(1) DCR M3-96063, Rev. 0
(2) DCR M3-97045, Rev. 0

we noted the following discrepancy:

Background:

In the design input section of (1) and (2), revision numbers for the following calculations are incorrect. The correct revision numbers as reviewed by S&L, and confirmed by NU via IRF-01303 and IRF-01399, are shown in parenthesis:

NP(B)-X7907 Rev 1 (Rev 0, CCN 2)
NP(B)-X7909 Rev 1 (Rev 0, CCN 3)
NP(B)-X7910 Rev 1 (Rev 0, CCN 3)
NP(B)-X7913 Rev 2 (Rev 1, CCN 2)
NP(B)-X7914 Rev 2 (Rev 1, CCN 3)
NP(B)-X7915 Rev 2 (Rev 1, CCN 2)
NP(B)-X7916 Rev 2 (Rev 1, CCN 2)
NP(B)-X7917 Rev 1 (Rev 0, CCN 3)
NP(B)-961-XD Rev 3 (Rev 2, CCN 3)
NP(B)-X798 Rev 2 (Rev 1, CCN 2)
NM(S)-748-CZC-003 Rev 2 (Rev1, CCN 2)

Discrepancy:

Incorrect calculation revisions are referenced in DCR'S. This is consisered a level 4 discrepancy.

		Valid	Invalid	Review Needed	Date
Initiator:	Patel, Ramesh D	☒	☐	☐	3/20/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/21/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/23/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98

Date:

INVALID:

Date:

RESOLUTION:

Previously identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Previously Identified by NRC? ◯ Yes ◉ No Non Discrepant Condition? ◯ Yes ◉ No

Resolution Pending? ◯ Yes ◉ No Resolution Unresolved? ◯ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	(none)	☐	☐	☒	
VT Lead:	Neri, Anthony A	☐	☐	☒	
VT Mgr:	Schopfer, Don K	☐	☐	☒	
IRC Chmn:	Singh, Anand K	☐	☐	☒	
Date:					

SL Comments:

Northeast Utilities
Millstone Unit 3

ICAVP
Discrepancy Report

DR No. DR-MP3-1090

Review Group: System
Review Element: System Design
Discipline: Piping Design
Discrepancy Type: Calculation
System/Process: NEW
NRC Significance level: 4

DR VALID

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 3/30/98

Discrepancy: Acceptance basis for nozzle loads of pumps 3EGF*P1A, P1B, P1C and P1D are not available

Description: In the process of reviewing the following documents,

(1) Calculation 12179-NP(F)-2743, Rev. 0, CCN # 1
(2) Calculation 12179-NP(F)-2744, Rev. 0, CCN # 1
(3) Calculation 12179-NP(F)-2745, Rev. 0, CCN # 1
(4) Calculation 12179-NP(F)-2746, Rev. 0, CCN # 1
(5) Calculation 12179-NM(S)-760-CZC-001, Rev. 0
(6) Calculation 12179-NM(S)-760-CZC, Rev. 0

we noted the following discrepancy:

Background:

Comparison of calculated nozzle loads with their allowable values for Emergency fuel oil transfer pumps 3EGF*P1A, P1B, P1C and P1D is documented in calculations (1-4).

Calculations (1-4) refer to calculation (5) for acceptance of nozzle loads, which exceed allowable values.

Calculation (5) has been requested twice per RFI-M3-854 and RFI-M3-870. Corresponding Response M3-IRF-01885 and M3-IRF-01983 did not provide the subject calculation. Instead calculation (6) was provided.

This calculation (6) performs the nozzle load evaluation for normal load condition only. It also refers to calculation (5) for nozzle load acceptance.

Discrepancy:

Calculation (5) which is referenced as the acceptance basis for pump nozzle loads is not available.

NU should either provide the subject calculation (5) or should revise calculations (1-4 and 6) to correct the documentation.

		Valid	Invalid	Review Needed	Date
Initiator:	Patel, Ramesh.D	☒	☐	☐	3/20/98
VT Lead:	Neri, Anthony A	☒	☐	☐	3/20/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/23/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98

Date:

INVALID:

Date:

RESOLUTION:

Previously Identified by NU? ○ Yes ◉ No **Non Discrepant Condition?** ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No **Resolution Unresolved?** ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	(none)	☐	☐	☒	
VT Lead:	Neri, Anthony A	☐	☐	☒	
VT Mgr:	Schopfer, Don K	☐	☐	☒	
IRC Chmn:	Singh, Anand K	☐	☐	☒	
Date:					

SL Comments:

Review Group: Accident Mitigation
Review Element: Corrective Action Process
Discipline: Other
Discrepancy Type: Corrective Action Implementation
System/Process: QSS
NRC Significance level: 4

DR VALID

Potential Operability Issue
○ Yes
◉ No

Date FAXed to NU:

Date Published: 3/30/98

Discrepancy: Inconsistent Iodine Plateout Removal Constant Used in Safety Evaluation

Description: A corrective action implementation review of UIR 107 and the associated ACR 13788 has been completed. UIR 107 addressed deficiencies in the Radiological Safety Evaluation/Significant Hazards Consideration for MP3 PTSCR 3-16-94, PTSCR 3-29-94 and PDCR 3-94-135, which evaluates FSARCRs associated with Licensing Amendment 115. During the review of the safety evaluation, a discrepancy was identified in the iodine plateout removal constant used in the dose calculation supporting the safety evaluation. Specifically, the iodine plateout removal constant used in the safety evaluation is 3.1/hr, which does not agree with the value of 5.1 in the supporting calculation. Additional details are provided below.

Licensing Amendment 115 involved replacing the post-LOCA NAOH spray with Tri-Sodium Phosphate (TSP) baskets and increasing the post-LOCA leak rate from 0.3%/day to 0.65%/day. The radiological impact of this amendment was supported by calculation US(B)-341 Rev. 1, which calculates the iodine removal constants for the modified spray system. The elemental iodine plateout removal constant in the sprayed region is 5.1/hr. The Radiological Safety Evaluation/Significant Hazards Consideration for MP3 PTSCR 3-16-94, PTSCR 3-29-94 and PDCR 3-94-135 evaluates FSARCRs associated with Amendment 115. In this evaluation, Table 2 provides Containment Spray Assumptions. For elemental iodine, the plateout removal constant is 3.1/hr.

The NRC did not accept calculation US(B)-341 Rev. 1. The NRC permitted the installation of TSP based on an independent assessment of the radiological impact of the modification, but did not permit the increase in containment leakage from 0.3%/day to 0.65%/day. In the resolution of UIR107, NU elected not to change the current dose assessment in the FSAR, which is based on the NAOH addition system, and footnoted the appropriate FSAR table indicating the issue was still under review by the NRC. In a Reportability Evaluation associated with CR-MP3-97-1117, NU states that calculation US(B)-341 Rev. 0 is the calculation of record because the NRC did not accept the methodology of US(B)-341 Rev. 1. Calculation US(B)-341 Rev. 0 contains the elemental iodine plateout removal constant of 0.176/hr, which is the same value stated in FSAR Table 15.6-9.

The discrepancy lies with the 3.1/hr value noted in the first paragraph. It does not appear in the FSAR or in any of the revisions of US(B)-341. It does not impact post-LOCA doses at this time, since the current calculation of record is US(B)-341

Rev. 0. The use of a plateout rate of 0.176/hr is more conservative than 3.1/hr. Therefore this is considered a significance Level 4.

		Valid	Invalid	Review Needed	Date
Initiator:	Schwartz, Barry	☒	☐	☐	3/23/98
VT Lead:	Raheja, Raj D	☒	☐	☐	3/23/98
VT Mgr:	Schopfer, Don K	☒	☐	☐	3/23/98
IRC Chmn:	Singh, Anand K	☒	☐	☐	3/26/98

Date:

INVALID:

Date:

RESOLUTION:

Previously Identified by NU? ○ Yes ◉ No Non Discrepant Condition? ○ Yes ◉ No

Resolution Pending? ○ Yes ◉ No Resolution Unresolved? ○ Yes ◉ No

		Acceptable	Not Acceptable	Review Needed	Date
Initiator:	(none)	☐	☐	☒	
VT Lead:	Raheja, Raj D	☐	☐	☒	
VT Mgr:	Schopfer, Don K	☐	☐	☒	
IRC Chmn:	Singh, Anand K	☐	☐	☒	

Date:

SL Comments: