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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Nine Mile Point Nuclear Station, Unit 1
Renewed Facility Operating License No. DPR-63
Docket No. 50-220

Subject: Second Supplement to Nine Mile Point Nuclear Station License Amendment Request for Diesel Generator Initiation - Degraded Voltage Time Delay Setting Change

References:

(1) Letter from C. Costanzo (NMPNS) to Document Control Desk (USNRC), License Amendment Request Pursuant to 10 CFR 50.90: Diesel Generator Initiation - Degraded Voltage Time Delay Setting Change, dated March 8, 2013 (ADAMS Accession No. ML13073A103)

(2) Letter from C. Costanzo (NMPNS) to Document Control Desk (USNRC), Supplement to Nine Mile Point Nuclear Station License Amendment Request for Diesel Generator Initiation - Degraded Voltage Time Delay Setting Change, dated May 16, 2013 (ADAMS Accession No. ML13144A068)

(3) Letter from C. Costanzo (NMPNS) to Document Control Desk (USNRC), Supplement to Nine Mile Point Nuclear Station License Amendment Request for Diesel Generator Initiation - Degraded Voltage Time Delay Setting Change for Final Degraded Voltage Study, dated July 8, 2014 (ADAMS Accession No. ML14203A050)

(4) Letter from C. Costanzo (NMPNS) to Document Control Desk (USNRC), Response to Request for Additional Information Nine Mile Point Nuclear Station License Amendment Request for Diesel Generator Initiation - Degraded Voltage Time Delay Setting Change, dated July 16, 2014 (ADAMS Accession No. ML14199A384)

Nine Mile Point Nuclear Station, LLC (NMPNS) hereby submits a supplement to the Nine Mile Point Unit 1 (NMP1) License Amendment Request for Diesel Generator Initiation - Degraded Voltage Time Delay Setting Change, Reference (1). This supplement is in response to teleconferences held with the NRC Staff after submittal of the final degraded voltage study results, Reference (3), and the response to the request for additional

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information (RAI), Reference (3). The NRC Staff Electrical Branch reviewers requested additional clarification of the final degraded voltage study supplement and the NRC Staff Reactor Systems Branch reviewers requested clarification of information in the RAI response.

The preliminary degraded voltage study submitted in Reference (2) has been finalized and accepted by NMPNS as a formal calculation. The final study refined the preliminary study results with improved margin obtained. The conclusion section of the preliminary study results was originally provided on May 16, 2013 in Attachment 2 of Reference (2). The preliminary study results conclusion has been marked up at the request of the NRC staff and is provided in Attachment 1 to this letter. The marked up information provided in Attachment 1 replaces the information previously submitted with Reference (3) on July 8, 2014.

Attachment 2 provides the information to be included in the NMP1 Updated Final Safety Analysis Report (UFSAR) Table XV-9 and the corresponding UFSAR section referenced in the Table XV-9 note.

This supplemental letter does not change the initial determination of "no significant hazards consideration" justified in the original amendment request, Reference (1).

Pursuant to 10 CFR 50.91(b)(1), NMPNS has provided a copy of this supplemental information to the appropriate state representative. This letter contains no new regulatory commitments.

Should you have any questions regarding the information in this submittal, please contact Theresa H. Darling, Acting Regulatory Assurance Manager, at (315) 349-2221.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 29th day of August, 2014.

Sincerely,

Christopher R. Costanzo

CRC/KJK

Attachments: (1) Mark-up of Preliminary Degraded Voltage Study Conclusion
(2) Clarification of Response to SRXB Request for Additional Information

cc: Regional Administrator, Region I, USNRC
Project Manager, USNRC
Resident Inspector, USNRC
A. L. Peterson, NYSERDA

ATTACHMENT 1

MARK-UP OF PRELIMINARY DEGRADED VOLTAGE STUDY

CONCLUSION

ATTACHMENT 1

MARK-UP OF PRELIMINARY DEGRADED VOLTAGE STUDY CONCLUSION

A mark-up of preliminary degraded voltage study conclusion is included in this attachment, with all changes marked up in red using track changes. This section is included based on the clarification call held with the NRC Staff reviewers during review of the final study results supplement submitted on July 8, 2014.

Conclusions

1. Some equipment steady state terminal voltages fell below the standard 90% voltage criteria. ~~Three~~ One piece~~s~~ of 550 V rated equipment had their terminal voltage fall below 90% of 550 V and ~~thirty-three~~fifteen pieces of 575 V rated equipment had their terminal voltage fall below 90% of 575 V. The worst case 550 V rated equipment terminal voltage was ~~89.29~~89.86% of 550 V and the worst case 575 V rated equipment terminal voltage was ~~85.99~~87.33% of 575 V.

   The steady state voltages at the 4kV equipment terminals were adequate for each of the three steady state load flow simulations and had margin of about 3%.

   550V Equipment Voltage Exceptions

   Table 4 below summarizes the worst case steady state voltage exceptions for the 550V equipment. The voltages are displayed in % of 600 volts and the design criterion is 90% of 550V, or 82.5% of 600V.

Table 4: 550V Equipment Level Voltages (% of 600V - Sorted by Magnitude)		
Equipment	**Volts %**	**V/ Criteria**
CMGSET MG167	~~81.85~~82.37	0.~~992~~998
DG 102 RFEF 209-03	~~82.10~~82.66	~~0.995~~1.002
DG 102 RFEF 209-04	~~82.19~~82.66	~~0.996~~1.002

   The CMGSET MG167 is not needed for accident mitigation and, therefore, only needs to be further evaluated for commercial consequences as opposed to safety consequences.

   ~~The Diesel Generator roof exhaust fans are within their expected operability limit (80% of 550V = 73.33% of 600V, refer to Assumption #5) and, therefore, are not expected to stall.~~

   575V Equipment Voltage Exceptions

   Table 5 below summarizes the worst case steady state voltage exceptions for the 575V equipment. The voltages are displayed in % of 600 volts and the design criterion is 90% of 575V, or 86.25% of 600V.

ATTACHMENT 1

MARK-UP OF PRELIMINARY DEGRADED VOLTAGE STUDY CONCLUSION

Table 5: 575V Equipment Lowest Voltages (% of 600V - Sorted by Magnitude)				
Equipment	**Volts %**	**Voltage / Criteria**	**Note/Bus**	
HOT WTR CIRC PMP	~~82.41~~ 83.682	~~0.955~~ 0.970	1671B (Not needed during a LOCA)	
CTRL RM FAN MTR 12	~~82.99~~ 83.98	~~0.962~~ 0.973	167C, Good down to 82.5%	
UPS 162B	~~83.46~~ 83.695	~~0.968~~ 0.970	Good down to 81.46%	
UPS 162A	~~83.46~~ 83.695	~~0.968~~ 0.970	Good down to 81.46%	
LBRF 203-251	~~83.69~~ 84.248	~~0.970~~ 0.976	1671B (Not needed during a LOCA)	
LAF 203-185	~~83.74~~ 84.283	~~0.971~~ 0.977	1671B (Not needed during a LOCA)	
UPS 172B	~~83.85~~ 84.209	~~0.972~~ 0.976	Good down to 81.46%	
UPS 172A	~~83.85~~ 84.209	~~0.972~~ 0.976	Good down to 81.46%	
BATT CHG SC161A	~~84.31~~ 84.413	0.978	Good down to 80.5%	
BATT CHG SC161B	~~84.31~~ 84.413	0.978	Good down to 80.5%	
BATT CHG SC171B	~~84.72~~ 84.940	~~0.982~~ 0.984	Good down to 80.5%	
BATT CHG SC171A	~~84.72~~ 84.940	~~0.982~~ 0.984	Good down to 80.5%	
CT MON SYS SMPLP 11	~~84.75~~ 84.775	0.983	161B, Good down to 81.46%	
CTMT MON SMPL PU 12	~~84.91~~ 85.115	~~0.985~~ 0.987	171B, Good down to 81.46%	
MOV 33-02R	85.19	0.988	161B (Not running during steady state)	
PENT.HSE SPLY AIR FAN	85.35	0.990	600V PB PH-1 (Fed from 600V PB 14B, Non-Safety)	
PENT.HSE AIR-COND	85.35	0.990	600V PB PH-1 (Fed from 600V PB 14B, Non-Safety)	
MOV 33-01R	85.57	0.992	171B (Not running during steady state)	
MOT-29-383	85.81	0.995	PB 141B (Fed from 600V PB 14C, Non-Safety)	
FN-29-393	85.81	0.995	PB 141B (Fed from 600V PB 14C, Non-Safety)	
MOT-29-265	85.82	0.995	PB 141B (Fed from 600V PB 14C, Non-Safety)	
AIR COMP MOT 95-297	85.95	0.996	600V PB142 (Fed from 600V PB 14B, Non-Safety)	
95-297 AUXILIARIES	85.95	0.996	600V PB142 (Fed from 600V PB 14B, Non-Safety)	
95-297 WATER PUMP	85.95	0.996	600V PB142 (Fed from 600V PB 14B, Non-Safety)	
DFDSP 104-16	~~85.97~~ 86.044	0.997	Fed from 600V PB 161A, 16A, 4160V PB11, Non-Safety	
TPHN RM2 AC	86.03	0.997	PB 141B (Fed from 600V PB 14C, Non-Safety)	
TOVE 97.1-01	86.03	0.997	PB 141B (Fed from 600V PB 14C, Non-Safety)	
UCNMS 203-59	86.03	0.997	PB 141B (Fed from 600V PB 14C, Non-Safety)	
TRB BLDG ELEV	86.03	0.997	PB 141B (Fed from 600V PB 14C, Non-Safety)	
LFEF 203-08	86.03	0.997	PB 141B (Fed from 600V PB 14C, Non-Safety)	

Some of the equipment listed in the above table has degraded voltage capabilities that are below the standard 86.25% of 600V. That equipment has been noted along with the degraded voltage capability of the equipment. It should be noted that loads fed from safety related bus 1671B are not needed during a LOCA. The Non-safety related loads in Table 5 above are not modeled in the final calculation; therefore the preliminary results are not updated.

Loads in the above table that are not needed for accident mitigation only need to be evaluated for potential economic consequences as opposed to safety consequences.

The motor with the lowest equipment terminal voltage (HOT WTR CIRC PMP) has a terminal voltage of ~~82.41~~83.682% of 600V, or ~~85.99~~87.33% of 575V, which is still well above the assumed operability limit of 80% of 575V (refer to Assumption #5); therefore, none of the motors are expected to stall.

2. By comparing the Degraded Voltage Relay (DVR) characteristics with the 4kV bus voltage profiles, it can be concluded that the DVR would operate about 12-15 seconds into the scenario. The operation of the DVR is an expected result because the simulation starts by assuming that the 4 kV bus voltages are floating just above the minimum dropout of the DVR and then the LOCA loads are sequenced on. The addition of the LOCA loads will cause the bus voltage to dip further and hence the DVR relay will eventually operate. However, it is important to demonstrate that none of the overcurrent devices operate prior to the DVR for this scenario because this could cause those loads to be "locked out" and unavailable once the 4kV buses are energized with the emergency diesel generators.

3. The motor starting simulation (LOCA at time = 0) results in some exceptions to the standard assumed requirements for adequate motor starting voltages (80% of motor rated). These exceptions are noted in Table 6 below.

Table 6: Motor Terminal Voltage During Start (Voltages in % of Motor Rated)

Motor	Motor Rated V (kV)	Start Time (Sec)	Volts at start time (% of Rated)	Bus
RFP 29-03	4.000	8.00	~~78.39~~79.54	12
RFPAOP 51-164	0.575	8.00	~~75.00~~77.155	1671A
RFPAOP 51-165	0.575	8.00	~~70.57~~73.295	1671C

Note that the above three motor loads (RFP 29-03, RFPAOP 51-164, and RFPAOP 51-165) are not safety related. The 1.00 second start time used in the July 8, 2014 response was non-conservative and did not correlate to the initial data in the May 16, 2013 submittal.

ATTACHMENT 2

CLARIFICATION OF RESPONSE TO SRXB REQUEST FOR ADDITIONAL INFORMATION

Nine Mile Point Nuclear Station, LLC
August 29, 2014

ATTACHMENT 2

CLARIFICATION OF RESPONSE TO SRXB REQUEST FOR ADDITIONAL INFORMATION

By letter dated July 16, 2014, Nine Mile Point Nuclear Station, LLC (NMPNS) provided supplemental information in response to the request provided in an email from the NRC Staff to NMPNS on May 27, 2014; specifically, SRXB – RAI 1, SRXB – RAI 2, and SRXB – RAI 3. Subsequent teleconference with the NRC Staff reviewers requested clarification of the RAI response. The NRC Staff questions from the teleconference are summarized below (in italics), followed by the NMPNS response.

Question 1

Please clarify the definition of PCT.

Response to Question 1

PCT - Peak Cladding Temperature

Question 2

Provide an updated UFSAR Table XV-9, as referenced in the response to SRXB-RAI 2, part 2, and the new section XV-C.2.2.5 referenced in Table XV-9.

Response to Question 2

Part 2 of the response to SRXB-RAI 2 from the July 16, 2014 RAI response is provided below for consistency.

> In summary, for the NMP1 GNF2 and GE11 Current Licensing Basis LOCA analysis coincident with a LOOP, the core spray delay time used in the analyses for both fuel types is 37 seconds (35 seconds + 2 seconds for low-low level indication). As the 2 seconds is a conservative assumption, not part of the actual timing of the event, the NMP1 UFSAR will show 35 seconds in Table XV-9. In order to further clarify the additional conservatism applied to the LOOP/LOCA a note will be added to the table stating the following: "(2) 2 seconds are added to the maximum time delay for Core Spray start on Reactor Low-Low Level for LOCA coincident with LOOP."

The new draft section XV-C.2.2.5 to the NMP1 UFSAR is included below and includes a revision to Reference 61 in the UFSAR. The revised Table XV-9 information is on the following page.

C.2.2.5 At rated Power and Flow conditions a series of analyses was performed for a sustained degraded voltage event coincident with the LOCA. Using Appendix K modeling assumptions for both limiting exposure points, an extended time delay was applied, as described in Table XV-9 for Core Spray Pump injection. The analysis results are contained in Reference 61 for GE11 and GNF2 fuel. The results identified the recirculation line discharge large break remains limiting for both fuel types with minimal changes to peak clad temperature and maximum local oxidation. All cases analyzed remain below the 10 CFR 50.46 acceptance criteria.

Reference 61 will be changed to, GE-NE-0000-0098-3457-R2, "Nine Mile Point Nuclear Station Unit 1 GNF2 ECCS-LOCA Evaluation," January 2014.

Nine Mile Point Unit 1 UFSAR

TABLE XV-9

SIGNIFICANT INPUT PARAMETERS TO THE
LOSS-OF-COOLANT ACCIDENT ANALYSIS

	GE11 (Reference 4)	GNF2 (Reference 61)
A. Plant Parameters		
Core Thermal Power (MWt)		
Nominal	1850 (100% of Rated)	1850 (100% of Rated)
Appendix-K	1887 (102% of Rated)	1887 (102% of Rated)
Vessel Steam Output (lbm/hr)	$7.49*10^6$ (corresponds to 102% rated core power)	$7.49*10^6$ (corresponds to 102% rated core power)
Vessel Steam Dome Pressure (psia)	1050	1050
Maximum Recirculation Line Break Area (ft^2)	5.446	5.446
Initial MCPR	1.30	1.25
Initial Water Level	SCRAM Trip Level	SCRAM Trip Level
B. Emergency Core Cooling Systems Parameters		
Core Spray System		
System Flow vs. Vessel Pressure	See Table XV-9a	See Table XV-9b
Initiating Signals and Setpoints		
Low Water Level (Downcomer Level)	7.23 ft above TAF	7.23 ft above TAF
- OR -		
High Drywell Pressure (psig)	3.606	3.606
Maximum Allowable Delay Time from Initiating Signal to Pump at Rated Speed (sec)	35 (1) (2)	35 (1) (2)

(1) This value is added to the maximum degraded voltage time delay in TS Table 3.6.2i for a degraded grid voltage coincident with a LOCA (section XV-C.2.2.5).
(2) 2 seconds are added to the maximum time delay for Core Spray start on Reactor Low-Low Level for LOCA coincident with LOOP.