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Constellation Energy
Nine Mile Point Nuclear Station

November 2, 2009

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 2; Docket No. 50-410

License Amendment Request Pursuant to 10 CFR 50.90: Removal of Operating Mode Restrictions for Performing High Pressure Core Spray Emergency Diesel Generator Surveillance Testing – Response to NRC Request for Additional Information (TAC No. ME1042)

REFERENCES:

(a) Letter from K. J. Polson (NMPNS) to Document Control Desk (NRC), dated March 30, 2009, License Amendment Request Pursuant to 10 CFR 50.90: Removal of Operating Mode Restrictions for Performing High Pressure Core Spray Emergency Diesel Generator Surveillance Testing

(b) Letter from R. V. Guzman (NRC) to S. L. Belcher (NMPNS), dated September 17, 2009, Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, License Amendment Request for the Removal of Operating Mode Restrictions for Performing High Pressure Core Spray Emergency Diesel Generator Surveillance Testing (TAC No. ME1042)

Nine Mile Point Nuclear Station, LLC (NMPNS) hereby transmits supplemental information requested by the NRC in support of a previously submitted request for amendment to Nine Mile Point Unit 2 (NMP2) Renewed Operating License NPF-69. The initial request, dated March 30, 2009 (Reference a) proposed to modify Technical Specification (TS) Section 3.8.1, "AC Sources - Operating," by removing operating Mode restrictions for the performance of certain TS Surveillance Requirements pertaining to the Division 3 (High Pressure Core Spray - HPCS) emergency diesel generator. The supplemental information, provided in the Attachment to this letter, responds to the request for additional information documented in the NRC's letter dated September 17, 2009 (Reference b).

This supplemental information does not affect the No Significant Hazards Determination analysis provided by NMPNS in Reference (a). 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.

A001
NRR

Should you have any questions regarding the information in this submittal, please contact T. F. Syrell, Licensing Director, at (315) 349-5219.

Very truly yours,

STATE OF NEW YORK :
: **TO WIT:**
COUNTY OF OSWEGO :

I, Sam Belcher, being duly sworn, state that I am Vice President Nine Mile Point, and that I am duly authorized to execute and file this supplemental information on behalf of Nine Mile Point Nuclear Station, LLC. To the best of my knowledge and belief, the statements contained in this document are true and correct. To the extent that these statements are not based on my personal knowledge, they are based upon information provided by other Nine Mile Point employees and/or consultants. Such information has been reviewed in accordance with company practice and I believe it to be reliable.

Subscribed and sworn before me, a Notary Public in and for the State of New York and County of Oswego, this 2nd day of November, 2009.

WITNESS my Hand and Notarial Seal: Lisa M. Doran
Notary Public

My Commission Expires:
9/12/2013
Date

Lisa M. Doran
Notary Public in the State of New York
Oswego County Reg. No. 01DO6029220
My Commission Expires 9/12/2013

SB/DEV

Attachment: Nine Mile Point Unit 2 – Response to NRC Request for Additional Information Regarding the Proposed Removal of Operating Mode Restrictions for Performing HPCS Emergency Diesel Generator Surveillance Testing

cc: S. J. Collins, NRC
R. V. Guzman, NRC
Resident Inspector, NRC
A. L. Peterson, NYSERDA

ATTACHMENT

NINE MILE POINT UNIT 2

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE PROPOSED REMOVAL OF OPERATING MODE RESTRICTIONS FOR PERFORMING HPCS EMERGENCY DIESEL GENERATOR SURVEILLANCE TESTING

ATTACHMENT

NINE MILE POINT UNIT 2
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE PROPOSED REMOVAL OF OPERATING MODE RESTRICTIONS FOR PERFORMING HPCS EMERGENCY DIESEL GENERATOR SURVEILLANCE TESTING

By letter March 30, 2009, Nine Mile Point Nuclear Station, LLC (NMPNS) requested an amendment to the Nine Mile Point Unit 2 (NMP2) Renewed Operating License NPF-69. The proposed change would modify Technical Specification (TS) Section 3.8.1, "AC Sources - Operating," by removing operating Mode restrictions for the performance of certain TS Surveillance Requirements pertaining to the Division 3 (High Pressure Core Spray - HPCS) emergency diesel generator. This attachment provides supplemental information in response to the request for additional information (RAI) documented in the NRC's letter dated September 17, 2009. Each individual NRC request is repeated (in italics), followed by the NMPNS response.

RAI No. 1

In the NMP2 Updated Safety Analysis Report, Section 8.3, regarding the High Pressure Core Spray (HPCS) emergency diesel generator (DG), it states that:

> *If a loss-of-offsite power occurs, a parallel-loaded diesel generator would attempt to supply power to the offsite test loads through the closed feed breakers. A set of three directional overcurrent relays will trip the offsite feed breakers when the overcurrent exceeds the preset value on the relays. The diesel generator would continue to power the HPCS bus. The diesel generator would keep running with the voltage regulator in automatic mode and the governor would remain in the droop mode until manually restored to the isochronous mode.*

Regarding the above, provide the single line diagram showing the location of current and voltage transformers which feed the overcurrent relays associated with the offsite feed breakers. Also, provide the current setting of the overcurrent relays. While testing the DG in parallel mode, in the event grid voltage degrades to a value resulting in HPCS DG bus voltage marginally above the degraded voltage relay set point, explain its impact on the operation of the DG.

Response

The attached plant drawing EE-1D shows that directional overcurrent relay protection is provided for each of the two feeders that can power the Division 3 4.16 kV emergency bus 2ENS*SWG102. Three individual relays, one for each phase (designated as 67-1 and 67-2), are located upstream of the feeder breakers (102-4 and 102-5) and will trip the associated feeder breaker upon actuation.

As noted in the March 30, 2009 NMPNS submittal, NMPNS procedures contain precautions to minimize risk by allowing only one DG at a time to be paralleled with offsite power. These procedures specifically note that a DG should not be operated in parallel with offsite power when unstable grid conditions are anticipated or occurring. However, the following paragraphs discuss the impact on Division 3 (HPCS) DG operation if grid voltage degrades during testing with the DG paralleled with offsite power.

When the Division 3 DG is operating in parallel mode of operation on its associated 4.16 kV emergency bus, the generator is typically operating near rated load per surveillance procedure requirements, with the voltage regulator operating in automatic control mode. Nominal emergency bus voltage is 4160 V and rated generator output current for the Division 3 DG is approximately 494 amps. The degraded voltage

relay minimum dropout is 3820 V. If the voltage supplied from the offsite source were to decrease to approximately 3800 V at the emergency bus level (approximately 9 percent low) with the Division 3 DG in parallel mode of operation tied to the emergency bus, the immediate effect would be that the DG voltage regulator would attempt to maintain bus voltage at approximately 4160 V. However, this would not be possible as the grid is essentially an infinite source. As emergency bus voltage lowered, and with no operator action, the generator would increase reactive power output, and amperage supplied from the DG would increase. This is due to the constant power output of the engine with unchanged governor settings along with the decrease in bus voltage and the automatic action of the DG voltage regulator operating in parallel mode. With a decrease in voltage, the automatic voltage regulator would provide additional current due to an effective increase in generator excitation in an attempt to restore bus voltage. A review of the DG protection scheme and coordination confirms that the increased DG output current would result in a trip of the offsite feeder breaker to the Division 3 emergency bus due to directional overcurrent relay actuation prior to other generator protective relay actuation, allowing the DG to remain connected to its bus and isolated from offsite power. Once the offsite power supply breaker opens, the DG output current would decrease to a minimal value and bus voltage would recover to the nominal value (4160 V).

The directional overcurrent relays have a setpoint of 600 amps at the 4.16 kV level. Upon operation, the relays (after a time delay) trip the associated supply breaker from the respective Reserve Station Service Transformer (RSST) to the emergency bus. Assuming no operator action to adjust DG voltage, as emergency bus voltage dropped, load current would increase in proportion to the decrease in voltage, while DG output current would also proportionally increase due to automatic action of the DG voltage regulator operating in parallel mode. Most of the current output from the DG would flow offsite with minimal load on the Division 3 emergency bus. As DG output current increased in response to the lowering offsite power voltage, the directional overcurrent relays would actuate at their 600 amp setpoint, tripping the Division 3 emergency bus supply breaker. The Division 3 emergency bus would remain energized from the Division 3 DG. The DG voltage regulator would remain in automatic mode and shift to unit/isochronous mode of operation, controlling at approximately 4160 V due to control logic provided by emergency bus supply breaker auxiliary contacts. In the event that grid voltage decreased, but DG output current remained less than the trip setpoint of the directional overcurrent relays, a DG overload alarm would be actuated at approximately 113% of generator output rating, alerting operators to take corrective action. Limited duration overload conditions under 600 amps (120% of rated) would not result in an immediate challenge to generator capability.

RAI No. 2

Is the HPCS DG declared inoperable during the parallel operation? If not, provide the evaluation of off-nominal DG frequency (due to droop mode) and off-nominal DG voltage (pre loss-of-coolant accident (LOCA)) on the safety-related loads fed by the DG, if a LOCA occurs and given that the DG does not automatically go from the droop mode in parallel operation to the isochronous mode if tripped from parallel mode.

Response

The Division 3 DG is considered operable during parallel operation. For the surveillance tests in question, the DG is operated in parallel mode with load near the rated value. If a loss of offsite power (LOOP) should occur while in this condition, the increase in current output from the DG will result in operation of the directional overcurrent relays, which will open the offsite power supply breakers and isolate the Division 3 emergency bus from offsite power. The Division 3 DG would remain connected to its associated 4.16 kV bus. In this condition, DG frequency would increase by approximately 3 percent to approximately 61.7 Hz (based on full load reject test results) due to the droop characteristic of the engine governor. Also, immediately following the LOOP, and after the offsite power supply breakers tripped open, the DG voltage regulator would automatically shift from parallel to isochronous mode of operation, with voltage automatically controlled to approximately 4160 V nominal output to the Division 3 bus. These DG voltage regulator actions result from control logic provided by emergency bus supply breaker auxiliary contacts.

In the event of a subsequent loss of coolant accident (LOCA) signal, the HPCS loads would be started at a slightly elevated frequency (approximately 61.7 Hz) and at approximately nominal voltage (4160 V). As the HPCS loads start, with the voltage regulator in automatic/isochronous mode and the engine governor in the parallel regulation (droop) mode, voltage and frequency would stabilize to steady state values that are at or near normal bus voltage and frequency without any operator action. The initially elevated frequency during HPCS load starting would not have an adverse impact on the ability of the HPCS pump motor to start or on the operation of associated equipment since these components are designed for a wider frequency range than that which would be experienced. System flow requirements would also not be impacted, as frequency would return to approximately 60 Hz as the HPCS pump motor load increased to its final steady-state value (near full Division 3 DG rated load). Thus, in the very unlikely event that a LOOP and LOCA occurred during testing with the Division 3 DG operating in parallel with offsite power, the Division 3 DG would be fully capable of performing its specified safety function.

RAI No. 3

Explain the following statement in the March 30, 2009, submittal, Enclosure Section 3.4: "Voltage transients on these buses during online testing will likely be less than those experienced when testing during shutdown conditions."

Response

This statement was meant to convey that voltage perturbations on the 4.16 kV buses would likely be smaller in magnitude during DG testing with the plant online as compared to DG testing during shutdown conditions. As noted in the March 30, 2009 NMPNS submittal, loading on the RSSTs is typically lower with the unit online than during shutdown conditions. With a lower loading on the RSSTs, the RSSTs would represent a stronger source to any transient, resulting in a slightly smaller magnitude of perturbation to the associated 4.16kV buses. The proposed license amendment does not alter any of the TS-required DG surveillance test frequencies; thus, the total number of tests and associated transients would be unchanged.

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