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Constellation Energy

Nine Mile Point Nuclear Station

April 7, 2008

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

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems (TAC No. MD6352)

- REFERENCES:**
- (a) Letter from K. J. Polson (NMPNS) to Document Control Desk (NRC), dated July 30, 2007, Application for Technical Specification Change TSTF-477, Revision 3, "Add Action for Two Inoperable Control Room AC Subsystems" to the Technical Specifications Using Consolidated Line Item Improvement Process
 - (b) Letter from M. J. David (NRC) to K. J. Polson (NMPNS), dated February 07, 2008, Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems (TAC No. MD6352)

Pursuant to 10 CFR 50.90, Nine Mile Point Nuclear Station, LLC, (NMPNS) requested, in Reference (a), approval of an amendment to the Nine Mile Point Unit 2 Renewed Operating License NPF-69 to revise Technical Specification 3.7.3, "Control Room Envelope Air Conditioning (AC) System" by adding an action statement for two inoperable control room AC subsystems. The purpose of this letter is to provide responses to the request for additional information (RAI) transmitted to NMPNS in Reference (b).

Response to the RAI is provided in Attachment 1. This response 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 response, with attachments, to the appropriate state representative.

Document Control Desk

April 7, 2008

Page 3

Attachment: 1. Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

cc: S. J. Collins, NRC Regional Administrator, Region I
R. V. Guzman, NRC Project Manager
Senior NRC Resident Inspector
J. P. Spath, NYSERDA

ATTACHMENT 1

**RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION
REGARDING NINE MILE POINT NUCLEAR STATION, UNIT NO. 2,
TWO INOPERABLE CONTROL ROOM AIR CONDITIONING
SUBSYSTEMS**

Attachment 1

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

This attachment provides Nine Mile Point Nuclear Station, LLC (NMPNS) responses to the request for additional information documented in the NRC letter dated February 07, 2008. Each NRC question is restated (*in italics*), followed by the NMPNS response.

Question 1

TSTF-477, Revision 3, Section 3.0, assumes a control room AC system that consists of two independent, redundant subsystems, providing cooling and heating of recirculated control room air. The LAR states, "Due to the design of the system, when both subsystems are inoperable, the capability for the Control Room Envelope AC System to perform its design function may still exist by having sufficient components operable from both subsystems to meet its safety function."

1.a Explain the design of the system including interfacing and support systems (e.g., power, instrumentation and controls, chilled water, and service water). Include a discussion of independence and redundancy.

NMPNS Response

Control Room Envelope Air Conditioning (AC) System Design

The Control Room Envelope AC System is designed to provide an environment that ensures habitability of the areas serviced, consistent with personal comfort, and optimum performance of equipment within temperature limits set forth in the Updated Safety Analysis Report (USAR). The system equipment has sufficient surplus cooling capacity to maintain these conditions during normal and accident conditions and concurrent equipment single failure scenarios and is designed to maintain control room envelope temperature for a 30 day continuous occupancy following isolation of the control room envelope. The envelope includes the Main Control Room areas (elevation 306') and the Relay Room areas (elevation 288'6") of the Control Building.

The Control Room Envelope AC System portion of the Control Building heating, ventilation and air conditioning (HVAC) consists of two (2) independent, redundant subsystems that provide cooling of recirculated and outside air. All components are redundant to maintain function integrity during a design basis accident (DBA). A single active failure of a component of the Control Room Envelope AC System, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. All components are Category I, powered from Class 1E buses, and are Safety Class 3. The subsystems receive electrical power from two offsite sources during normal operation and from redundant standby emergency diesel generators if offsite power is lost.

Each redundant subsystem includes two 100% capacity air conditioning units (ACUs). Each ACU includes an air filter assembly, cooling coil, and fan. AC subsystem A consists of 2HVC*ACU1A designed to service the Control Room area ventilation, el. 306', and 2HVC*ACU2A designed to service the Relay Room area ventilation, el. 288'6". This subsystem is powered from the Division 1 power source, and receives its cooling water to the ACU coils from the A chilled water subsystem. The redundant B subsystem is comprised of 2HVC*ACU1B (Control Room) and HVC*ACU2B (Relay Room) powered from the Division 2 power source, and receives cooling water from the B chilled water subsystem. Also included within each AC subsystem are duct work, dampers and instrumentation and controls to provide for control room envelope temperature control. Each control building chilled water subsystem includes a water chiller, chilled water pump, expansion tank, controls, piping and valves.

Attachment 1

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

Control Building Chilled Water System

The Control Building Chilled Water System provides chilled water during normal, plant shutdown, and DBA conditions to the Main Control Room Envelope AC System (Main Control Room and Relay Room). The system is a closed loop piping system consisting of two independent, redundant chilled water loops or trains. Each train is capable of meeting total chilled water demand. Each train is designed to Category 1 criteria and conforms to the single-failure criterion. Each train receives electrical power from two offsite sources during normal operation and from redundant standby emergency diesel generators if offsite power is lost. Each Control Building chilled water subsystem or train is a safety-related, seismically-qualified, fully redundant system, and is designed to assure an uninterrupted supply of water to the ACUs. In the unlikely event both chilled water trains fail, service water can be utilized for emergency cooling.

1.b. What is the safety function of the NMP2 control room envelope AC system?

NMPNS Response

The design bases of the Nine Mile Point, Unit 2 (NMP2) Control Room Envelope AC System is to provide an environment that ensures habitability of the areas served consistent with personnel comfort and optimum performance of equipment. These include maintaining temperature limits for a 30 day continuous occupancy following isolation of the control room envelope under both normal and accident conditions.

Control Room Envelope AC System is designed such that a single subsystem provides the required temperature control to maintain a suitable control room envelope environment for a sustained occupancy of 37 persons. The design conditions for the control room envelope environment are 75° F and 50% relative humidity.

With respect to Technical Specifications Section 3.7.3, the safety function of the Control Room Envelope AC System consists of ensuring that the Control Room Envelope temperature will not exceed equipment OPERABILITY limits ($\leq 90^{\circ}$ F) for the 30 day continuous occupancy following isolation of the Control Room Envelope. The Control Room Envelope AC System safety function is maintained when Control Room AC components equivalent to one Control Room Envelope subsystem are OPERABLE (Technical Specifications Bases 3.7.3).

1.c. Provide explanations of how the capability for the system to perform its safety function may still exist when both subsystems are inoperable, assuming representative component and subsystem failures.

NMPNS Response

The Control Room Envelope AC System safety function is maintained when the Control Room Envelope AC system components equivalent to one (1) control room envelope AC subsystem are operable.

Attachment 1

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

Described in response to Question 1.a above, the Control Room Envelope AC System consists of two independent, redundant AC subsystems. Each subsystem consists of two Air Conditioning Units (one ACU servicing the Main Control Room area el. 306', and one ACU servicing the Relay Room el. 288'6"), two independent redundant Control Building Chilled Water subsystems which provides cooling water to the cooling coils of the two redundant control room AC subsystems, ductwork, dampers, and instrumentation and controls to provide control room envelope temperature control. Each Chilled Water subsystem is divisionally powered consistent with their corresponding ACU.

Due to the design characteristics of the Control Room Envelope AC System, there exists several system operating configurations with both control room envelope AC subsystems that can maintain safety function.

- Option 1: Operation of both ACUs in one subsystem (2HVC*ACU1A servicing the Main Control Room, and 2HVC*ACU2A servicing the Relay Room) with "A" Chilled Water subsystems operable.
- Option 2: Operation of both ACUs in the alternate subsystem (2HVC*ACU1B servicing the Main Control Room, and 2HVC*ACU2B servicing the Relay Room) with "B" Chilled Water subsystems operable.
- Option 3: Operation of 2HVC*ACU1A (Main Control Room) from one subsystem, and operation of 2HVC*AC2B (Relay Room) from the alternate AC subsystem, with both Chilled Water subsystems operable.
- Option 4: Operation of 2 HVC*ACU1B (Main Control Room) from one AC subsystem, and operation on 2HVC*ACU2A (Relay Room) from the alternate AC subsystem, with both Chilled Water subsystems operable.

As illustrated in Options 3 and 4 above, the design and operating configuration capabilities of the Control Room Envelope AC System permits an ACU from each subsystem to be inoperable (one from the Control Room area and one from the Relay Room area), and still maintain Control Room Envelope AC Systems safety function. Sufficient ACUs, and supporting subsystems, and representative components remain available which are equivalent to having one control room envelope AC subsystem fully operable. Technical Specification (TS) 3.7.3 has taken credit for these configurations.

1.d Do procedures currently exist to guide plant staff in regaining system safety function?

NMPNS Response

The plant's Corrective Action Program and established procedural guidance and controls govern the identification, tracking, and timely resolution of inoperable or degraded equipment/components removed from service, including TS Condition entry, tracking and required completion times. Administrative procedures provide risk management and integrated work management tools necessary to regain to operable status, degraded system conditions and system/component safety functions, in a timely manner.

Attachment 1

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

Question 2

Please explain the meaning of the following statement in Section 2.2 of the LAR, "The ability of the Control Room Envelope AC System to maintain control room envelope temperature within limits is an implicit assumption of the safety analysis evaluated in the Updated Safety Analysis Report (USAR) Chapter 6, Engineering Safety Features, and Chapter 15, Accident Analysis."

NMPNS Response

USAR Chapter 6, Engineered Safety Features, provides the design bases, system designs, system operational procedures, design evaluations, testing and inspections, and instrumentation requirements associated with various engineered safety feature systems associated with Nine Mile Point Unit 2. USAR Chapter 15 examines postulated failures and their consequences, and evaluates the plant's built in capabilities to control and accommodate such failures and events.

Both USAR chapters discuss the various design functions of the Control Room Envelope. Included is the Control Room Envelope AC System's function to maintain acceptable temperature and humidity conditions during both normal and accident conditions. However, the specific defined temperature limit values are not discussed in these chapters (values are listed in USAR Chapter 9), but these values remain an implicit assumption in both chapters analyses and would be maintained such that safety-related control room envelope equipment would remain operable during normal and emergency conditions.

Question 3

The TS 3.7.3 in Attachment (2) of the LAR contains the expressions, "Two control room envelope AC subsystems inoperable with safety function maintained..." and "Two control room envelope AC subsystems inoperable with safety function not maintained..." Please explain the meaning of both expressions and the process for determining which is applicable in a given circumstance.

NMPNS Response

Response to Question 1.c provides operating conditions or situations that meet existing TS 3.7.3, Condition A, "Two control room envelope AC subsystems inoperable with safety function maintained..." Due to the design of the Control Room Envelope AC System, if one ACU is inoperable in each of the redundant subsystems and both inoperable ACUs are not servicing the same area (Control Room or Relay room) representative components remain available which are equivalent to having one control room envelope AC subsystem fully operable, and safety function can still be met.

Conversely, if two ACUs are inoperable, one from each AC subsystem, and both inoperable ACUs service the same area (Main Control Room or Relay Room), heat load removal capabilities would be lost to that area. Thus, the plant would enter the condition of two control room AC subsystems inoperable with safety function not maintained.

Attachment 1

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

Question 4

Regarding proposed ACTION B. for TS 3.7.3 in Attachment (2) of the LAR:

4.a What specific safety function(s) is/are meant by the expression "...with safety function not maintained...?"

NMPNS Response

The response to Question 1.b above provided the definition of safety function maintained with respect to TS 3.7.3. Converse to this definition, the meaning of "safety function not maintained" denotes there does not exist operable components in both control room envelope AC subsystems to support system safety function (heat load removal capabilities) in either or both the Main Control Room and Relay Room areas.

4.b What is the basis for the 90° F limit proposed for new REQUIRED ACTION B.1?

NMPNS Response

The bases for the proposed 90° F value are provided in the NMP2 USAR, Chapter 9.4, Air Conditioning, Heating, Cooling, and Ventilation Systems. USAR Subparagraph 9.4.1.1, Design Bases, references USAR Table 9.4-1, "Environmental and System Design Parameters for HVAC Systems," which includes the Control Building, elevation 306' "Control Room," and Control Building", elevation 288'6" "Relay Room." Both areas in the Table are designated by Notes (1) and (3) respectively, which state all safety-related equipment located in both the control room and relay room is qualified to an ambient temperature of 120° F within the panel. The maximum ambient temperature in both the control room and relay room is 90° F, which provides a margin to account for internal temperature rise within safety-related control room and relay room panels.

4.c Does "Restore one control room envelope AC subsystem to OPERABLE status," as proposed for new REQUIRED ACTION B.2, also include "Two control room envelope AC subsystems inoperable with safety function maintained," as stated in current CONDITION A?

NMPNS Response

The new proposed recommended Required Action B.2 was drafted to take a conservative approach when both control room envelope AC subsystems are inoperable with safety function not maintained and is consistent with TSTF-447, Revision 3. The new Required Action B.2 is not meant to include "Two control room envelope AC subsystems inoperable with safety function maintained."

Question 5

Regarding current NMP2 TS 3.7.2, "Control Room Envelope Filtration (CREF) System:"

5.a What components are shared between control room envelope AC subsystems and CREF subsystems?

Attachment 1

Response to NRC Request for Additional Information Regarding Nine Mile Point Nuclear Station, Unit No. 2, Two Inoperable Control Room Air Conditioning Subsystems

NMPNS Response

Shared components between TS 3.7.2, "Control Room Envelope Filtration (CREF) System," and TS 3.7.3 include the fan portion (and associated duct work) of the four 100% capacity Control Room Envelope AC System ACUs.

5.b *What shared components in TS 3.7.2 and TS 3.7.3 are required to remain operable with two control room envelope AC subsystems inoperable:*

- *With safety function maintained?*
- *With safety function not maintained?*

NMPNS Response

The Control Room Envelope Filtration System (TS 3.7.2) is considered operable when the individual components necessary to control operator exposure are operable in both redundant subsystems. A CREF subsystem is considered operable when the associated ACUs (fan portion only) are operable (one for the Control Room area and one for the Relay Room area), including the associated duct work. During normal operation, the CREF System requires these two fans to be in continuous operation to maintain control room envelope positive pressure (≥ 0.125 inches water gauge positive pressure with respect to outside atmosphere) to prevent unfiltered inleakage.

Operability requirements of TS 3.7.2 are independent of, and are not impacted by the operability conditions associated with TS 3.7.3. Whether both control room AC subsystems are inoperable with/without safety function maintained, the CREF System relies on the fan portion only (and associated duct work) of the two air conditioning units to maintain an operable condition.

5.c *What would be the impact on TS 3.7.2 if the NRC staff were to approve the requested changes to TS 3.7.3?*

NMPNS Response

The NRC approval of the proposed amendment to TS 3.7.3, "Control Room Envelope Air Conditioning (AC) System," will have no impact or required changes to TS 3.7.2, "Control Room Envelope Filtration (CREF) System."