

10 CFR 50.55a

NMP1L3478

August 5, 2022

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
NRC Docket No. 50-220

Subject: Response to Request for Additional Information - Relief Request Associated with Pump Periodic Verification Tests of Core Spray System Pumps

- References:
- 1) Letter from D. Gudger (Constellation Energy Generation, LLC) to U.S. Nuclear Regulatory Commission, "Relief Request Associated with Pump Periodic Verification Tests of Core Spray System Pumps," dated March 2, 2022 (ML22061A057)
 - 2) Email from R. Guzman (U.S. Nuclear Regulatory Commission) to T. Loomis (Constellation Energy Generation, LLC), "Nine Mile Point Unit 1 - REQUEST FOR ADDITIONAL INFORMATION - Relief Request CS-PR-02, Pump Periodic Verification Tests of Core Spray System Pumps [EPID: L-2022-LLR-0029]," dated July 13, 2022 (ML22194A941)


In the Reference 1 letter, Constellation Energy Generation, LLC (CEG) requested approval of relief request CS-PR-02, Revision 0 associated with the Inservice Testing (IST) Program for Nine Mile Point Nuclear Station, Unit 1 (NMP1). This relief request concerns pump periodic verification tests of Core Spray System Pumps. In the Reference 2 email, the U.S. Nuclear Regulatory Commission requested additional information. Attached is our response.

There are no regulatory commitments contained in this letter.

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If you have any questions, please contact Tom Loomis at 610-765-5510.

Respectfully,

A handwritten signature in cursive script that reads "David T. Gudger".

David T. Gudger
Sr. Manager - Licensing and Regulatory Affairs
Constellation Energy Generation, LLC

Attachment: Response to Request for Additional Information - Request for Relief CS-PR-02

cc: Regional Administrator - NRC Region I
NRC Senior Resident Inspector – Nine Mile Point
NRC Project Manager – Nine Mile Point
A. L. Peterson

Attachment

Response to Request for Additional Information - Request for Relief CS-PR-02

RAI-1:

“Alternative Request CS-PR-02, Section 4, “Reason for Request,” first paragraph, states in part:

Pump testing over the last 12 years has shown no signs of mechanical or hydraulic degradation as indicated by consistent performance of the Core Spray System (CSS) pumps within ASME OM Code [American Society of Mechanical Engineers *Operation and Maintenance of Nuclear Power Plants*] acceptance criteria and only needing minor routine maintenance. Additionally, this request aids NMP1 in the implementation of a division-based outage strategy that will allow testing of a single division per outage.

Alternative Request CS-PR-02, section 5, “Proposed Alternative and Basis for Use,” first paragraph states:

NMP1 proposes to perform the PPVT at an alternate frequency (48 months) with these pump sets while retaining the normal quarterly testing.

Please provide the following information:

- (a) Clarify in the proposed alternative wording that the PPVT testing will be conducted on a staggered basis.
- (b) The basis for the proposed alternative states that the pumps have “only required minor maintenance.” Describe the types of maintenance that have been required for the pumps in questions.”

Response:

- (a) The proposed performance of the two pump sets at an extended frequency of 24-months staggered (each train tested every 48 months) means that **one train will be tested each outage**.
- (b) Minor maintenance would be described as re-painting and oil changes performed as part of preventative maintenance. These practices have been implemented on PMP-81-24, PMP-81-49, and PMP-81-52. PMP-81-04 has not required any maintenance in the last 12 years. In 2021, PMP-81-49 saw increased vibration, and in November, the impellor, impellor wear rings, impellor nut and washer, bearings, oil flingers and oil seals, and coupling shim packs were replaced to address a cracked impellor wear ring and degraded line bearing.

RAI-2:

“Alternative Request CS-PR-02, Section 5, “Proposed Alternative and Basis for Use,” second paragraph states:

The CSS pump sets have been and will continue to be tested quarterly in accordance with the ASME OM Code paragraph ISTB-5200, Vertical Line Shaft Centrifugal Pumps for the CSS pumps, and paragraph ISTB-5100, Centrifugal Pumps (Except Vertical Line Shaft Centrifugal Pumps), for the CSS topping pumps. This CSS pump operability and performance testing is currently being performed in accordance with the NMP1 Technical Specifications Surveillance Requirement 4.1.4 and the Inservice Testing Program.

Please provide the following information:

- (a) The NRC staff understanding is that the NMP1 CSS pumps and CSS topping pumps are Group B pumps and are being tested quarterly to meet the Group B test requirements in accordance with the ASME OM Code. The ASME OM Code does not require vibration measurement during Group B tests. Please discuss whether NMP1 plans to measure vibration during Group B test to evaluate degradation between PPVT tests to support extension of the PPVT interval.
- (b) Describe the comprehensive pump testing and results for the NMP1 CSS pumps and CSS topping pumps performed biennially in accordance with the ASME OM Code as specified in the NMP1 Inservice Testing Program (ADAMS Accession No. ML19072A182).
- (c) Describe the testing and acceptance criteria (e.g., speed, differential pressure, flow, and vibration) used to demonstrate the operational readiness of the CSS pumps during the quarterly tests performed in accordance with Technical Specification Surveillance Requirement 4.1.4, and the Inservice Testing Program at NMP1."

Response:

- (a) NMP1 does not plan to measure vibration during Group B tests. The Comprehensive tests will continue to monitor the vibration at the code required frequency of every 2 years.

(b) Comprehensive Pump Testing and Results

The comprehensive pump tests are performed in compliance with Table ISTB-5221-1 in the 2012 edition of the ASME OM Code.

PMP-81-04	Date	Flowrate (gpm)	Diff. Pressure (psid)	Vibration (1H) (IPS)	Vibration (1V) (IPS)	Vibration (1A) (IPS)
	6/14/21	2904.00	212.98	0.0824	0.1027	0.0420
	6/12/19	2904.70	206.80	0.1119	0.1339	0.0698
	6/12/17	2915.47	212.48	0.1277	0.1096	0.0588
	6/12/15	2893.90	214.78	0.1299	0.1186	0.0708
	6/11/13	2905.00	216.48	0.1284	0.1134	0.0554
	6/16/11	2904.70	213.03	0.1344	0.1132	0.0617

PMP-81-24	Date	Flowrate (gpm)	Diff. Pressure (psid)	Vibration (1H) (IPS)	Vibration (1V) (IPS)	Vibration (1A) (IPS)
	11/11/21	2905.0	199.78	0.0492	0.0559	0.0334
	6/16/21	2904.0	197.28	0.0517	0.0446	0.0522
	6/11/19	2915.0	200.68	0.0412	0.0595	0.0457
	6/14/17	2905.0	198.48	0.0448	0.0487	0.0449
	6/9/15	2905.0	198.28	0.0368	0.0531	0.0426
	6/14/13	2894.0	199.68	0.0471	0.0513	0.0451
	6/14/11	2905.0	198.38	0.0402	0.0622	0.0465

PMP-81-49	Date	Flowrate (gpm)	Diff. Pressure (psid)	Vibration (1H) (IPS)	Vibration (1V) (IPS)	Vibration (2H) (IPS)	Vibration (2V) (IPS)
	11/11/21	2905.0	119.92	0.0770	0.0637	0.0450	0.0446
	6/16/21	2904.0	121.92	0.2186	0.3187	0.3109	0.2502
	6/11/19	2915.0	117.92	0.1467	0.1129	0.1110	0.0964
	6/14/17	2905.0	121.92	0.0397	0.0347	0.0574	0.0404
	6/10/15	2905.0	121.96	0.1254	0.1184	0.0965	0.1107
	6/14/13	2894.0	120.92	0.1411	0.1096	0.0961	0.0853
	6/14/11	2905.0	124.96	0.1482	0.1200	0.1113	0.0914

PMP-81-52	Date	Flowrate (gpm)	Diff. Pressure (psid)	Vibration (1H) (IPS)	Vibration (1V) (IPS)	Vibration (2H) (IPS)	Vibration (2V) (IPS)
	6/14/21	2904.00	123.92	0.1397	0.1167	0.1146	0.1178
	6/12/19	2904.70	122.92	0.0119	0.1361	0.1426	0.1147
	6/12/17	2915.47	124.92	0.1428	0.1217	0.1224	0.1153
	6/12/15	2893.90	122.90	0.0981	0.1099	0.0824	0.0846
	6/11/13	2905.00	115.92	0.1107	0.1003	0.0870	0.0760
	6/16/11	2904.70	123.92	0.1250	0.1127	0.1077	0.0765

- (c) A permanent test return line is provided to permit surveillance testing of the CSS pumps without injecting Torus water into the RPV. The test return line connects to the CSS piping between the CSS topping pump and the outboard reactor coolant isolation valve and discharges into the Torus. The highest required design basis accident flow rate for the CSS system is 4540 gpm for each CSS pump set (4635 gpm when adjusted for test instrumentation). The CSS test return lines for the CSS pumps are used to conduct routine system testing at a flowrate of approximately 2900 gpm per CSS pump set. This design allows for routine quarterly testing at a representative point on the pump's performance curve to allow for demonstrating pump performance, but not at the highest design basis accident flow rate. Currently, to meet PPVT requirements, one CSS pump set in each loop is aligned to take suction from the CSTs and inject to the Reactor Pressure Vessel.

As previously stated, vibration is not measured quarterly. The flowrate is set to 2874 gpm to 2962 gpm for all the pumps. The pumps are constant speed; therefore, the speed is not measured. The acceptance criteria for differential pressures is as follows:

Pump	Differential Pressure (psid)
PMP-81-04	202.13 to 234.05 psid
PMP-81-24	187.439 to 217.034 psid
PMP-81-49	113.85 to 136.642 psid
PMP-81-52	115.24 to 136.31 psid