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| **From:** | Semancik, Jeffrey |
| **To:** | Guzman, Richard |
| **Cc:** | Tifft, Doug |
| **Subject:** | [External_Sender] RE: Planned Issuance of Millstone Unit 2 License Amendment re: Surveillance Requirement 4.1.3.1.2 for CEA 39 (MF8935) |
| **Date:** | Tuesday, January 31, 2017 11:21:55 AM |
| **Attachments:** | image003.png<br>image001.png |

Richard,

You have adequately answered my questions. I also appreciate the time NRC technical staff spent with me ensuring that you fully understood my questions.

I have no additional comments/questions.

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**From:** Guzman, Richard [mailto:Richard.Guzman@nrc.gov]
**Sent:** Tuesday, January 31, 2017 11:17 AM
**To:** Semancik, Jeffrey
**Cc:** Tifft, Doug
**Subject:** RE: Planned Issuance of Millstone Unit 2 License Amendment re: Surveillance Requirement 4.1.3.1.2 for CEA 39 (MF8935)

Jeff,

Thank you for providing the comments/questions in your e-mail dated January 19, 2017. As I mentioned during our conversation on January 25th, the comments were considered in

the NRC staff's review of the subject license amendment request. Please see below - the NRC staff's response to your comments. My current projection for issuance of the amendment is on or before February 10, 2017. I've also copied Doug Tifft, Region I State Liaison Officer, for his awareness. Please contact me if you have any additional questions or concerns.

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State Official Comment

1. Millstone 2 surveillance frequencies, including SR 4.1.3.1.2 are controlled by TS Surveillance Control Program. Is there a reason that this change, a de facto surveillance frequency change, is not being evaluated under this program?

NRC Staff Response

The license amendment request (LAR) is for a one-time exclusion for a single control element assembly (CEA) and not a proposed change to the CEA surveillance frequency in the Surveillance Control Program. Once the actual problem (which the licensee suspects is the control element drive mechanism upper gripper coil) is identified and repaired during the upcoming outage, the existing surveillance frequency will still be applied to all CEAs. Note that the surveillance on the other 72 CEAs are still being performed per the Surveillance Control Program.

State Official Comment

2. Dominion's NSHC response to question 1 states, "CEA 39 was demonstrated to be moveable and trippable during the last performance of SR 4.1.3.1.2. Since the functionality of CEA 39 has not been affected…" The purpose of SR 4.1.3.1.2 is to determine if there are any conditions that have resulted in mechanical binding of the CEA. Dominion has not (see 1) determined that the surveillance interval can be extended; therefore, it is not clear to me how they can justify that the rod remains operable without performing the required surveillance within the specified surveillance interval. (TS 4.0.1) What is the basis for assuming the rod remains operable for a period beyond the surveillance interval? Does Dominion have rod failure data? How have they justified that end of cycle failure mechanisms such as thermally induced twisting/bowing are not present? Is there predictive data that indicates other signs of mechanical bowing? In short, the assessment provided seems to focus on why the UGC condition does not affect trippability but does not address basis for assuming that the CEA is not affected by other unrelated mechanisms beyond the analyzed surveillance interval.

NRC Staff Response

The NRC staff agrees with the comment that the LAR focuses on why problems with the upper gripper coil would not affect trippability and does not discuss other unrelated mechanisms. In the fall of 2016, CEA 39 did successfully pass its last freedom of movement surveillance, and while not stated in the LAR, there is no history of CEAs getting stuck. A Licensee Event Report search of all Combustion Engineering Pressurized-Water Reactors (CE PWRs) showed only a single case of a CEA stuck due to binding (Calvert Cliffs, Unit 1, April 8, 2006; ADAMS Accession No. ML061580322) with the most likely cause determined to be the presence of debris. The NRC staff did not identify any operating experience documents to suggest that there is a failure mode that would prevent the CEA from inserting.

While the licensee expects this CEA to be trippable for the remainder of Cycle 24 (approximately 49 days past the extended surveillance requirement date), they also addressed the hypothetical failure of the highest reactivity combination of CEA 39 and a second CEA failing to insert on reactor trip. This analysis showed that the shutdown margin (SDM) available if CEA 39 fails to trip would be greater than the required SDM as specified in the MPS2 Core Operating Limits Report (COLR). In addition, in the Probabilistic Risk Assessment models (used for core damage frequency (CDF) and large early release frequency (LERF)), success is defined for all PWRs as the insertion of one-half or more of the control rods into the core in a roughly checkerboard pattern. Based on this definition, one CEA out of 73 total CEAs failing to insert is considered negligible (for the purposes of CDF and LERF calculations). The NRC staff determination is that exclusion of a single CEA from the freedom of movement surveillance (thus rendering the CEA inoperable) does not pose a safety concern.

State Official Comment

3. How is the UGC being maintained de-energized? Does this method require any actions outside the control room to re-energize in order to move rods or can the LGC [lower gripper coil] perform this function alone? If so, does this affect any TCOAs [time critical operator actions] for an ATWS [anticipated transient without scram] or other events requiring rapid manual insertion of control rods? I did not see this addressed under Administrative Controls.

NRC Staff Response

The lower gripper coil alone cannot move the rod (including performance of the surveillance). The LAR states that MPS2 Operations has issued a standing order to limit but not prohibit the use of CEAs. It states that a tag has been placed on the CEA motion control switch identifying that (1) CEA 39 is on the lower gripper coil and (2) the potential for actuating the Automatic CEA Timer Module (ACTM) Trouble alarm upon motion of Regulating Group 7. The NRC staff also understands from the licensee that the UGC was de-energized using the ACTM computer and is being verified de-energized twice a shift. To move the rod requires no action outside the control room; the UGC will automatically re-energize if the rod is called on to move, provided the system does not detect an error. In the case of events requiring rapid manual insertion of control rods, the system is designed so that loss of power (by opening the reactor trip circuit breakers) to the coils (upper, lift, lower, etc.) results in the rod dropping into the core by gravity.

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Rich Guzman
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Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Office: O-8E10 | Phone: 301-415-1030

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**From:** Semancik, Jeffrey [mailto:Jeffrey.Semancik@ct.gov]
**Sent:** Thursday, January 19, 2017 2:58 PM
**To:** Guzman, Richard <Richard.Guzman@nrc.gov>
**Cc:** Tifft, Doug <Doug.Tifft@nrc.gov>
**Subject:** [External_Sender] RE: Planned Issuance of Millstone Unit 2 License Amendment re: Surveillance Requirement 4.1.3.1.2 for CEA 39 (MF8935)

Richard,

I do have a few comments/questions:

1. Millstone 2 surveillance frequencies, including SR 4.1.3.1.2 are controlled by TS Surveillance Control Program. Is there a reason that this change, a de facto surveillance frequency change, is not being evaluated under this program?

2. Dominion's NSHC response to question 1 states, " CEA 39 was demonstrated to be moveable and trippable during the last performance of SR 4.1.3.1.2. Since the functionality of CEA 39 has not been affected…" The purpose of SR 4.1.3.1.2 is to determine if there are any conditions that have resulted in mechanical binding of the CEA. Dominion has not (see 1) determined that the surveillance interval can be extended; therefore, it is not clear to me how they can justify that the rod remains operable without performing the required surveillance within the specified surveillance interval. (TS 4.0.1) What is the basis for assuming the rod remains operable for a period beyond the surveillance interval? Does Dominion have rod failure data? How have they justified that end of cycle failure mechanisms such as thermally induced twisting/bowing are not present? Is there predictive data that indicates other signs of mechanical bowing? In short, the assessment provided seems to focus on why the UGC condition does not affect trippability but does not address basis for assuming that the CEA is not affected by other unrelated mechanisms beyond the analyzed surveillance interval.

3. How is the UGC being maintained de-energized? Does this method require any actions
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outside the control room to re-energize in order to move rods or can the LGC perform this function alone? If so, does this affect any TCOAs for an ATWS or other events requiring rapid manual insertion of control rods? I did not see this addressed under Administrative Controls.

I would appreciate a phone call to discuss in addition any email response.

Jeff Semancik
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**From:** Guzman, Richard [mailto:Richard.Guzman@nrc.gov]
**Sent:** Thursday, January 19, 2017 7:30 AM
**To:** Semancik, Jeffrey
**Subject:** Planned Issuance of Millstone Unit 2 License Amendment re: Surveillance Requirement 4.1.3.1.2 for CEA 39 (MF8935)

Good Morning,

The NRC staff is preparing to issue the following license amendment related to Millstone Power Station, Unit 2. A brief description of the license amendment request (LAR) is provided below. Additional information can be found in the licensee's submittal which is also referenced below by ADAMS Accession number.

Please let me know if you have any comments or questions regarding this licensing action by January 26. My current projection for issuance of the amendment is by the 1st week of February.

Millstone Power Station, Unit 2 (MPS2), License Amendment Request re: Surveillance Requirement 4.1.3.1.2 for Control Element Assembly 39 (CAC No. MF8935)

Application date:  December 14, 2016 (ADAMS Accession No. ML16354A424)

Brief Description of LAR:  The amendment would revise the MPS2 Technical Specifications (TSs) for MPS2 by adding a note to TS Surveillance Requirement (SR) 4.1.3.1.2, control element assembly (CEA) freedom of movement surveillance, such that CEA 39 may be excluded from the remaining quarterly performance of the SR in Cycle 24.  The amendment would allow the licensee to delay exercising CEA 39 until after repairs can be made during the next outage.

The LAR was published in the Federal Register (FR) on January 3, 2017 (82 FR 157) https://www.gpo.gov/fdsys/pkg/FR-2017-01-03/pdf/2016-31813.pdf. To date, no comments have been received.

Thanks,
Rich

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