

December 7, 2016

Document Control Desk  
U. S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, MD 20852

Attention: Joseph Holonich

Subject: Project No. 704 – Withdrawal of the Cooper 120° Surveillance Capsule

References:

1. BWRVIP-86, Revision 1-A: BWR Vessel and Internals Project, Updated BWR Integrated Surveillance Program (ISP) Implementation Plan, EPRI, Palo Alto, CA: 2012. 1025144.
2. NRC Information Notice 2016-02: Improper Seating of Reactor Vessel Surveillance Capsules, January 15, 2016. ADAMS Accession Number ML15278A472.
3. BWRVIP Letter 2016-135, “Cooper Surveillance Capsule Test Results Report,” December 7, 2016.

The purpose of this letter is to provide notification that the 120° surveillance capsule was withdrawn from the Cooper Nuclear Station on October 25, 2016. Withdrawal was necessitated as a result of concerns related to complete engagement of the surveillance capsule holder to the lower vessel bracket. Notification is being provided in accordance with Section 6.3 of BWRVIP-86, Revision 1-A [1] because the capsule was withdrawn before the number of effective full power years (EFPY) for which withdrawal was planned. The impact of this early withdrawal on the ISP has been determined to be negligible.

### Background

Cooper is a host plant in the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) as defined in BWRVIP-86, Revision 1-A (Reference 1). As identified in the ISP test schedule in Table 4-5 of BWRVIP-86, Revision 1-A, the next Cooper surveillance capsule was originally planned to be removed in 2017. After switching to two-year refueling cycles, the 2017 withdrawal date did not align with a scheduled outage. As stated in Section 4.2 of BWRVIP-86, the test schedule can be modified by plus or minus one year to accommodate plant operating schedules. As such, the withdrawal of the Cooper 120° surveillance capsule was planned for the fall 2018 refueling outage to align with a scheduled outage and remain in compliance with BWRVIP-86, Revision 1-A.

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### Reason for Early Capsule Withdrawal

During Cooper's fall 2016 refueling outage, it was discovered that the spring in the 120° surveillance capsule holder had relaxed, resulting in less than optimal engagement between the surveillance capsule holder and the lower vessel bracket. Attempts were made to reengage the capsule holder fully into the vessel bracket, but the capsule returned to the relaxed position. Inspection video footage from the previous outage was reviewed and the capsule was determined to be fully engaged on the lower vessel bracket at that time. It was concluded that the spring within the capsule holder had relaxed during the subsequent operating cycle. As a result a concern arose that the capsule holder could become disengaged from the lower vessel bracket during the following operating cycle. A disengaged capsule holder could cause the capsule to fall within the annulus between the reactor vessel and the core shroud causing damage to internals components and/or the generation of loose parts. Recent operating experience at another nuclear station [2], where improper engagement of a surveillance capsule resulted in the loss of surveillance capsules and generation of loose parts, heightened this concern. Furthermore, even if the capsule remained intact after becoming disengaged, it would not be possible to accurately determine fluence exposure for the prior cycle. Therefore, a joint decision between Cooper and the BWRVIP was made to withdraw the capsule one cycle earlier than previously planned.

### Evaluation of Early Capsule Withdrawal

As previously stated, the BWRVIP ISP test schedule as documented in BWRVIP-86, Revision 1-A, stated a withdrawal of the Cooper capsule in 2017 with an allowance of plus or minus one year to accommodate plant schedules. Therefore, withdrawal of the Cooper 120° capsule in 2016 remains in accordance with the ISP schedule. However, Section 6.3 of BWRVIP-86, Revision 1-A requires that the NRC be informed if the EFPY at the time of withdrawal is less than that shown in the schedule. Table 4.6 of BWRVIP-86, Revision 1-A shows a target of 32 EFPY for the Cooper capsule. Cooper is projected to reach 32 EFPY of operation on January 15, 2017, meaning that the 120° capsule was withdrawn less than three months short of the target EFPY. This difference in the target EFPY is considered negligible, especially in light of the potential for loose parts identified in Reference 2.

### Summary and Conclusions

The 120° surveillance capsule was withdrawn from the Cooper Nuclear Station on October 25, 2016. This withdrawal was earlier than planned but within the schedule requirements of BWRVIP-86, Revision 1-A. The exposure of this capsule was slightly less than the planned 32 EFPY exposure. The BWRVIP has evaluated the impact of this capsule withdrawal and concluded that the capsule will still serve its intended purpose. As such, no modifications to the BWRVIP ISP are needed and the BWRVIP intends to submit the capsule test report by July 31, 2018 [3].

If you have any questions on this subject please call Steve Richter (Energy Northwest, BWRVIP Assessment Committee Chairman) at 509-377-4703.

Sincerely,

The image shows two handwritten signatures in black ink. The signature on the left is 'A. O. McGehee' and the signature on the right is 'Tim Hanley'.

Andrew McGehee, EPRI, BWRVIP Program Manager

Tim Hanley, Exelon, BWRVIP Chairman

c:     D. Rudland, NRC-NRR  
       D. Odell, Exelon Corp.  
       S. Richter, Energy Northwest  
       T. McClure, NPPD  
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