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September 15, 2021
L-21-138

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT:
Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
License Amendment Request to Correct TS 3.1.7 Change Made by TSTF-547

Pursuant to 10 CFR 50.90, Energy Harbor Nuclear Corp. is submitting a request for an amendment to the Technical Specifications (TSs) for Beaver Valley Power Station, Unit No. 2.

The proposed amendment removes a required action that currently has a logic error and renumbers another required action. The enclosure provides a description and assessment of the proposed changes. Attachment 1 of the enclosure provides the existing TS pages marked up to show the proposed changes. Attachment 2 of the enclosure provides existing TS Bases pages marked to show the proposed changes for information only.

Approval of the proposed amendment is requested by September 30, 2022. Once approved, the amendment shall be implemented within 60 days.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager – Fleet Licensing at (330) 696-7208.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 15, 2021.

Sincerely,

Grabnar, John 19072
Site Vice President, Beaver Valley
I am approving this document
Sep 15 2021 7:09 AM
The DocuSign logo, which includes the word "DocuSign" in a blue, stylized font.

John J. Grabnar

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Enclosure: Evaluation of the Proposed Change

cc: NRC Region I Administrator
NRC Resident Inspector
NRC Project Manager
Director BRP/DEP
Site BRP/DEP Representative

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1.0 DESCRIPTION

Beaver Valley Power Station, Unit No. 2 (BVPS-2) Amendment No. 188 revised Technical Specification (TS) 3.1.7.2, "Unit 2 Rod Position Indication," consistent with TSTF-547, Revision 0, "Clarification of Rod Position Requirements." A logic error was introduced that results in a required action added to TS 3.1.7.2 that never needs to be followed. To correct this error, Energy Harbor Nuclear Corp. is proposing a change to correct the TS 3.1.7 change made by TSTF-547.

2.0 DETAILED DESCRIPTION

2.1 System Design and Operation

Reactivity control is provided in part by neutron absorbing rods. Rod cluster control assemblies (RCCAs), or rods, are moved out of the core (up or withdrawn) or into the core (down or inserted) by their control rod drive mechanisms. The RCCAs are divided among control banks and shutdown banks. Each bank is further subdivided into two groups to provide for precise reactivity control.

The axial position of rods is indicated by two separate systems, which are the demand position indication system (also called group step counters) and the digital rod position indication (DRPI) system.

The DRPI system measures the actual position of each control and shutdown rod using a detector that consists of discrete coils mounted concentrically over a hollow tube. The tube fits over the rod travel housing. The coils are located axially along the tube and magnetically sense the position of the rod drive shaft as it approaches the detector coil location. For each detector, the coils are interlaced into two data channels and are connected to the containment electronics (data A and B) by separate multiconductor cables. By employing two separate channels of information, the DRPI system can continue to function (at reduced accuracy) when one channel fails. Multiplexing is used to transmit the digital position signals from the containment electronics to the control board display unit.

2.2 Current Technical Specifications Requirements

TS 3.1.7.2 is applicable in Modes 1 and 2. The current TS actions for Condition A in this TS are consistent with TSTF-547, Revision 0, "Clarification of Rod Position Requirements," including Required Action A.2.2. This requires the licensee to restore an inoperable digital rod position indicator to operable status prior to entering Mode 2 from Mode 3.

2.3 Reason for the Proposed Change

If a DRPI is inoperable in Modes 1 or 2 and the plant enters Mode 3, TS 3.1.7.2 is no longer applicable. If it is desired to reenter Modes 1 or 2 while the DRPI is inoperable,

limiting condition for operation (LCO) 3.0.4 must be applied. LCO 3.0.4.a, as further discussed in the LCO 3.0.4.a Bases, states that a mode may be entered if the actions to be entered permit continued operation in the mode for an unlimited period of time. Required Actions A.1 and A.3 meet this criteria.

Section 1.4 of the TS makes clear that when given three required actions joined by a logical OR, any one of those required actions may be chosen. In this case, Required Action A.1, A.3, or both A.2.1 and A.2.2, may be followed and that choice may be changed while maintaining compliance with the TS.

Therefore, if the plant is in Mode 3 and desires to enter Mode 2 with an inoperable DRPI, the licensee may choose to utilize LCO 3.0.4.a and follow Required Action A.1 or A.3 to enter Modes 1 and 2. The licensee may later choose to follow Required Action A.2.1 and A.2.2. However, that choice does not retroactively limit the decision to enter Mode 2 with an inoperable DRPI.

2.3 Description of the Proposed Change

Condition A would be revised to remove Required Action A.2.2, which necessitates deleting the logical connector AND as well as renumbering Required Action A.2.1 to A.2.

3.0 TECHNICAL EVALUATION

Prior to Amendment No. 188, LCO 3.1.7.2, Required Action A.1 required verifying the position of rods with inoperable DRPIs using the moveable incore detector once per 8 hours. Required Action A.2 provided the alternative to reduce thermal power to less than or equal to (\leq) 50 percent (%) rated thermal power (RTP). Amendment No. 188 allowed an alternative to frequent use of the moveable incore detectors when a DRPI is inoperable.

Amendment No. 188 added Required Actions A.2.1 and A.2.2, which are joined with a logical OR to the existing actions, and existing Required Action A.2 was renamed A.3.

Required Action A.2.1 continues to use the movable incore detectors to monitor the position of the rod with the inoperable DRPI. Periodic verification is less frequent and additional verification is made following circumstances in which the rod may have moved. The initial position of the rod is determined within 8 hours and every 31 effective full power days (EFPD) thereafter. If there is unintended movement of a rod or if a rod with an inoperable DRPI is moved more than 12 steps, the movable incore detectors are used to verify the rod position within 8 hours. If there are changes in core power, which could result in changes in rod position, the rod position must be verified before exceeding 50% RTP and within 8 hours of reaching RTP. This confirms the position of the rod with an inoperable DRPI to ensure that power distribution requirements are not violated and to establish a starting point for the proposed alternate monitoring actions.

Required Action A.2.2 requires the inoperable DRPI to be restored to Operable status prior to entering Mode 2 from Mode 3. This allows use of the alternative monitoring scheme until the next shutdown, after which the DRPI must be restored to Operable status.

TS 3.1.7.2 is applicable in Modes 1 and 2. By applying LCO 3.0.4 and the TS Bases guidance to TS 3.1.7.2, if a DRPI is inoperable, the plant may enter Modes 1 and 2 provided the required action to be entered permits continued operation for an unlimited period of time.

If a DRPI is inoperable in Modes 1 or 2 and the plant enters Mode 3, TS 3.1.7.2 is no longer applicable. If it is desired to reenter Modes 1 or 2 while the DRPI is inoperable, LCO 3.0.4 must be applied. LCO 3.0.4.a, as further discussed in the LCO 3.0.4.a Bases, states that Mode 2 may be entered if the actions to be entered permit continued operation for an unlimited period of time.

Section 1.4 of the TS makes clear that when given three required actions joined by a logical OR, any one of those required actions may be chosen. In this case, Required Action A.1, A.3, or both A.2.1 and A.2.2, may be followed and that choice may be changed while maintaining compliance with the TS.

Therefore, if BVPS-2 is in Mode 3 and it is desired to enter Mode 2 with an inoperable DRPI, LCO 3.0.4.a may be utilized and Required Action A.1 or A.3 to enter Modes 1 and 2 may be followed. Required Action A.2.1 and A.2.2 may then be followed. However, that choice does not retroactively limit the decision to enter Mode 2 with an inoperable RPI.

As a result, Required Action A.2.2, "Restore inoperable DRPI to OPERABLE status" with a completion time of "Prior to entering MODE 2 from MODE 3," is never limiting.

Required Action A.2.2 also conflicts with LCO 3.0.2, which states, "If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated." If Required Action A.2.1 is being performed and the applicability of LCO 3.1.7.2 is exited, the required actions no longer apply. Therefore, Required Action A.2.2 is not applicable. In order to utilize the "unless otherwise stated" provision of LCO 3.0.2 to impose the action in Mode 3, the condition should have been modified by a note that states, "Required Action A.2.2 shall be completed whenever this condition is entered." Without the note, Required Action A.2.2 isn't applicable until after Mode 2 is entered, by which time it is already moot.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 50.36(b) requires:

Each license authorizing operation of a ... utilization facility ... will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and

amendments thereto, submitted pursuant to [10 CFR] 50.34 ["Contents of applications; technical information"]. The Commission may include such additional technical specifications as the Commission finds appropriate.

The categories of items required to be in the TSs are provided in 10 CFR 50.36(c). As required by 10 CFR 50.36(c)(2)(i), the TSs will include LCOs, which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. Per 10 CFR 50.36(c)(2)(i), when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TSs until the condition can be met.

4.2 No Significant Hazards Consideration Analysis

Beaver Valley Power Station, Unit No. 2 (BVPS-2) Amendment No. 188 revised Technical Specification (TS) 3.1.7.2, "Unit 2 Rod Position Indication," consistent with TSTF-547, Revision 0, "Clarification of Rod Position Requirements." A logic error was introduced that results in a required action added to TS 3.1.7.2 that never needs to be followed. To correct this error, Energy Harbor Nuclear Corp. is proposing a change to correct the TS 3.1.7 change made by TSTF-547.

Energy Harbor Nuclear Corp. has evaluated if a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

- 1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The intent of Required Action A.2.2 was to allow use of the alternative monitoring scheme until the next shutdown, after which the digital rod position indicator must be restored to operable status. The addition of the required action with the adoption of TSTF-547, and subsequent removal with this change, does not change the requirement for the rods to be aligned and within the insertion limits. Therefore, the assumptions used in any accidents previously evaluated are unchanged and there is no significant increase in the probability or consequences of an accident previously evaluated.

- 2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change does not involve a physical alteration (no new or different type of equipment would be installed) or a change to the methods governing normal operation. The change does not alter the assumptions made in the safety

analyses of TSTF-547. The proposed change does not alter the limiting conditions for the operation for the rods or make any technical changes to surveillance requirements governing the rods.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

- 3) Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change removes Required Action A.2.2 from TS 3.1.7.2. As TS 3.1.7.2 is applicable in Modes 1 and 2 and Required Action A.2.2 would only be applicable in Mode 3, removing Required Action A.2.2 does not impact plant operation or plant response to transients. Additionally, removing Required Action A.2.2 does not impact plant design. As there is no impact on plant operation or design, the change does not impact a margin of safety.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Energy Harbor Nuclear Corp. concludes that the proposed change does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

Attachment 1

Technical Specification Page Markups
(2 pages follow)

3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Rod Position Indication

3.1.7.2 Unit 2 Rod Position Indication

LCO 3.1.7.2 The Digital Rod Position Indication (DRPI) System and the Demand Position Indication System shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each inoperable DRPI and each demand position indicator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One DRPI per group inoperable in one or more groups.	A.1 Verify the position of the rod with inoperable DRPI indirectly by using movable incore detectors.	Once per 8 hours
	<u>OR</u>	
	A.2.1 Verify the position of the rod with inoperable DRPI indirectly by using the moveable incore detectors.	8 hours
	<u>AND</u>	<u>AND</u> Once per 31 EFPD thereafter
		<u>AND</u> 8 hours after discovery of each unintended rod movement <u>AND</u> 8 hours after each movement of rod with inoperable DRPI > 12 steps <u>AND</u>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	<p>A.2.2 Restore inoperable DRPI to OPERABLE status.</p> <p><u>OR</u></p> <p>A.3 Reduce THERMAL POWER to $\leq 50\%$ RTP.</p>	<p>Prior to THERMAL POWER exceeding 50% RTP</p> <p><u>AND</u></p> <p>8 hours after reaching RTP</p> <p>Prior to entering MODE 2 from MODE 3</p> <p>8 hours</p>
B. More than one DRPI per group inoperable in one or more groups.	<p>B.1 Place the control rods under manual control.</p> <p><u>AND</u></p> <p>B.2 Restore inoperable DRPIs to OPERABLE status such that a maximum of one DRPI per group is inoperable.</p>	<p>Immediately</p> <p>24 hours</p>
C. One or more DRPI inoperable in one or more groups and associated rod has been moved > 24 steps in one direction since the last determination of the rod's position.	<p>C.1 Verify the position of the rods with inoperable DRPIs indirectly by using movable incore detectors.</p> <p><u>OR</u></p> <p>C.2 Reduce THERMAL POWER to $\leq 50\%$ RTP.</p>	<p>8 hours</p> <p>8 hours</p>

Attachment 2

TS Bases Markups (for information only)
(2 pages follow)

FOR INFORMATION ONLY

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each inoperable rod position indicator and each demand position indicator. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable position indicator.

A.1, and A.2.1, and A.2.2

When one DRPI channel per group in one or more groups fails, the position of the rod may still be determined indirectly by use of the movable incore detectors. The Required Action may also be satisfied by using the movable incore detectors to ensure at least once per 8 hours that $F_Q(Z)$ satisfies LCO 3.2.1, F_{NH} satisfies LCO 3.2.2, and SHUTDOWN MARGIN is within the limits provided in the COLR, provided the nonindicating rods have not been moved. Based on experience, normal power operation does not require excessive movement of banks. If a bank has been significantly moved, the Required Action of C.1 or C.2 below is required. Therefore, verification of RCCA position within the Completion Time of 8 hours is adequate for allowing continued full power operation, since the probability of simultaneously having a rod significantly out of position and an event sensitive to that rod position is small.

Required Action A.1 requires verification of the position of a rod with an inoperable DRPI once per 8 hours which may put excessive wear and tear on the moveable incore detector system, Required Action A.2.1 provides an alternative. Required Action A.2.1 requires verification of rod position using the moveable incore detectors every 31 EFPD, which coincides with the normal use of the system to verify core power distribution.

Required Action A.2.1 includes six distinct requirements for verification of the position of rods associated with an inoperable DRPI using the movable incore detectors:

- a. Initial verification within 8 hours of the inoperability of the DRPI;
- b. Re-verification once every 31 Effective Full Power Days (EFPD) thereafter;
- c. Verification within 8 hours if rod control system parameters indicate unintended rod movement. An unintended rod movement is defined as the release of the rod's stationary gripper when no action was demanded either manually or automatically from the rod control system, or a rod motion in a direction other than the direction demanded by the rod control system. Verifying that no unintended rod movement has occurred is performed by monitoring the rod control system stationary gripper coil current for indications of rod movement;

BASES

ACTIONS (continued)

- d. Verification within 8 hours if the rod with an inoperable DRPI is intentionally moved greater than 12 steps;
- e. Verification prior to exceeding 50% RTP if power is reduced below 50% RTP; and
- f. Verification within 8 hours of reaching 100% RTP if power is reduced to less than 100% RTP.

Should the rod with the inoperable DRPI be moved more than 12 steps, or if reactor power is changed, the position of the rod with the inoperable DRPI must be verified.

~~Required Action A.2.2 states that the inoperable DRPI must be restored to OPERABLE status prior to entering MODE 2 from MODE 3. The repair of the inoperable RPI must be performed prior to returning to power operation following a shutdown.~~

A.3

Reduction of THERMAL POWER to $\leq 50\%$ RTP puts the core into a condition where rod position is not significantly affecting core peaking factors.

The allowed Completion Time of 8 hours is reasonable, based on operating experience, for reducing power to $\leq 50\%$ RTP from full power conditions without challenging plant systems and allowing for rod position determination by Required Action A.1 above.

B.1 and B.2

When more than one DRPI per group in one or more groups fail, additional actions are necessary. Placing the Rod Control System in manual assures unplanned rod motion will not occur. The immediate Completion Time for placing the Rod Control System in manual reflects the urgency with which unplanned rod motion must be prevented while in this Condition.

The inoperable DRPIs must be restored, such that a maximum of one DRPI per group is inoperable, within 24 hours. The 24 hour Completion Time provides sufficient time to troubleshoot and restore the DRPI system to operation while avoiding the plant challenges associated with the shutdown without full rod position indication.

Based on operating experience, normal power operation does not require excessive rod movement. If one or more rods has been significantly moved, the Required Action of C.1 or C.2 below is required.