

United States Nuclear Regulatory Commission  
Attachment II to Serial: RNP-RA/12-0082  
4 Pages (including cover page)

**H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2**

**LER 2012-002-01, UNPLANNED LCO 3.5.4 ENTRY DUE TO  
RWST ALIGNMENT TO PURIFICATION**

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects.resource@nrc.gov](mailto:infocollects.resource@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

<b>1. FACILITY NAME</b> H. B. Robinson Steam Electric Plant, Unit No. 2	<b>2. DOCKET NUMBER</b> 05000261	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Unplanned LCO 3.5.4 Entry Due to RWST alignment to Purification

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	16	2012	2012	002	01	08	01	2012		05000
									FACILITY NAME	DOCKET NUMBER
										05000

<b>9. OPERATING MODE</b>  4	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)									
<b>10. POWER LEVEL</b>  0%	<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(i)(C)	<input type="checkbox"/>	50.73(a)(2)(vii)		
	<input type="checkbox"/>	20.2201(d)	<input type="checkbox"/>	20.2203(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(ii)(A)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)		
	<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(ii)(B)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)		
	<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	50.36(c)(1)(i)(A)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)(A)		
	<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	50.36(c)(1)(ii)(A)	<input type="checkbox"/>	50.73(a)(2)(iv)(A)	<input type="checkbox"/>	50.73(a)(2)(x)		
	<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(v)(A)	<input type="checkbox"/>	73.71(a)(4)		
<input type="checkbox"/>	20.2203(a)(2)(iv)	<input type="checkbox"/>	50.46(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(v)(B)	<input type="checkbox"/>	73.71(a)(5)			
<input type="checkbox"/>	20.2203(a)(2)(v)	<input type="checkbox"/>	50.73(a)(2)(i)(A)	<input type="checkbox"/>	50.73(a)(2)(v)(C)	<input type="checkbox"/>	OTHER			
<input type="checkbox"/>	20.2203(a)(2)(vi)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/>	50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A				

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME M. S. Connelly	TELEPHONE NUMBER (Include Area Code) 843-857-1569
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>				<b>15. EXPECTED SUBMISSION DATE</b>		
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO			MONTH	DAY	YEAR

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

The Refueling Water Storage Tank (RWST) was placed on purification in accordance with OP-913, Refueling Water Purification Pump Operation, as directed from OP-301-1, Chemical And Volume Control System (Infrequent Operation), at 04:00 on March 16, 2012, to support make up of level to the RWST. The Plant was in MODE 4 with the Reactor Coolant System at approximately 285 degrees Fahrenheit. This condition, connection of the purification loop, is not currently allowed based on unresolved seismic concerns with purification piping to the RWST. This was later discovered during a log review at 05:45, and operators were immediately directed to remove the RWST from purification. Technical Specification (TS) 3.5.4 was applied from 04:00 based on when it was determined that this condition had been entered. TS 3.5.4 was exited at 06:22 when the RWST was removed from purification.

The cause of this event was determined to be a result of ineffective implementation of previous corrective actions from HBRSEP, Unit No. 2 Condition Report (CR) 463557 and reported in LER 2011-001-00.

Operating procedures associated with placing the non-seismic Refueling Water Purification (RWP) loop in service on seismic systems were suspended and Caution Tags (CTs) on SFPC-805A, RWP Pump Suction Isolation Valve from RWST, and SFPC-805B, RWST Return Isolation Valve were replaced with Danger Tags which state "DO NOT OPERATE."

The condition described in this Licensee Event Report is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), Any operation or condition which was prohibited by the plant's Technical Specifications and 10 CFR 50.73(a)(2)(v)(D), Event or Condition that could have prevented fulfillment of a safety function.

**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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		2012	- 002	- 01	

**NARRATIVE**

**I. DESCRIPTION OF EVENT**

The Refueling Water Storage Tank (RWST) [TK] was placed on purification in accordance with OP-913, Refueling Water Purification Pump [P] Operation, as directed from OP-301-1, Chemical and Volume Control System (Infrequent Operation), at 04:00 on March 16, 2012, to support make up of level to the RWST. The Plant was in MODE 4 with the Reactor Coolant System at approximately 285 degrees Fahrenheit. This configuration, connection of the Refueling Water Purification (RWP) to the RWST, is not currently allowed based on unresolved seismic concerns. This was later discovered during a log review at 05:45, and operators were immediately directed to remove the RWST from purification. Technical Specification (TS) 3.5.4 was applied from 04:00 based on when it was determined that this condition had been entered. TS 3.5.4 was exited at 06:22 when the RWST was removed from purification.

TS Limiting Condition for Operation (LCO) 3.5.4 has an Applicability of MODES 1, 2, 3 and 4. Condition B of the LCO states that the RWST inoperable for reasons other than Condition A, restore the RWST to OPERABLE status in one hour. This was not accomplished. Condition C of the LCO states that if the Required Action and associated Completion Time is not met, be in MODE 3 in 6 hours and be in MODE 5 in 36 hours. The total time the RWST was inoperable was approximately 2 hours and 22 minutes. (Condition A pertains to inoperability of the RWST associated with born concentration and temperature limits.)

**II. CAUSE OF EVENT**

This event was investigated using the HBRSEP, Unit No. 2, Corrective Action Program (CAP) and is documented in Condition Report (CR) 524619. The investigation in CR 524619 was approved on April 30, 2012.

The CR 524619 investigation concluded to be a result of ineffective implementation of previous corrective actions. Several contributors were identified that relate to Human Performance. No Pre-Job Brief, Heavy Work load, failure to effectively use human performance tools, habits and patterns, assumptions, inaccurate risk perception are several of the identified contributors. However, the one Human Performance tool identified that was a repetitive and significant contributor to many of the inappropriate actions was procedure use and adherence. Procedure use and adherence during the procedure revision process could have resulted in a more effective procedure revision and prevented this event. Procedure use and adherence on the part of the Senior Reactor Operator (SRO) controlling the evolution or the operator performing the field operations could have prevented this event. Fundamentally focus on doing the job right the first time was lost in the magnitude of activity associated with plant startup and the desire plan for moving into the next sequential Mode and producing power.

**III. ANALYSIS OF EVENT**

The HBRSEP, Unit No. 2, original plant design included a RWP loop, consisting of a refueling water purification pump, filter, and demineralizer. The loop can be aligned to filter and demineralize either the spent fuel pool or the RWST. The RWP loop is not seismically qualified and is normally isolated from the RWST by manual isolation valves which are within the seismically qualified boundary of the RWST.

As stated in Condition Report 524619, there were numerous contributing factors influencing activities on the March 15th night shift. It is the culmination of actions taken in response to the May 2011 event and these influencing factors that resulted in a repeat event.

**LICENSEE EVENT REPORT (LER)  
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**NARRATIVE**

**IV. SAFETY SIGNIFICANCE**

Safety Significance as determined in HBRSEP, Unit No. 2 LER 2011-001-00 remains valid and bounds this event. The risk impact of having the RWST aligned for purification has been evaluated and determined to be of low risk impact (<5E-07). This analysis takes into consideration the impact of internal flooding due to a pipe break, as well as the increase in risk due to a seismic event. The result of the analysis was based on having the non-seismic purification loop in service aligned to the RWST with the plant on-line for a conservative estimate of approximately 5000 hours per year. The duration of the event documented in this LER was 2 hours 22 minutes. The analysis conservatively assumed that the purification path will fail and drain the RWST under a range of seismic events. Also, operator actions are conservatively not credited after a break in the purification flow path. Even with these conservative assumptions, having the RWST in recirculation mode while the plant is at power results in a very small increase in risk due to seismic events.

It has been previously concluded that aligning the purification loop to the RWST created an inoperable condition for the RWST; however, the RWST was available and capable of providing the RWST inventory during a design basis event. Providing the required fluid inventory during the design basis event is a safety related function of the RWST. No components were deemed failed during this alignment configuration. It has previously been concluded that aligning a non-seismic and non-safety related purification system to the RWST creates an in-operable condition for the RWST, but this alignment does not create a condition where RWST is not available if needed. In order for a failure to occur a seismic event would have to occur; however, it could create a condition that prevented the RWST from performing its safety function. As a result, this is also reportable under 10 CFR 50.73(a)(2)(v)(D), Event or Condition that could have prevented fulfillment of a safety function. This also constitutes a Safety System Functional Failure.

**V. CORRECTIVE ACTIONS**

Completed Corrective Actions:

- Operating procedures associated with placing the non-seismic RWP system in service on seismic systems were suspended.
- Caution tags (CTs) on SFPC-805A [ISV], RWP Pump Suction from RWST, and SFPC-805B [ISV], RWST Return were replaced with Danger Tags which state "DO NOT OPERATE."

Planned Corrective Actions:

- Applicable Operations procedures will be revised to correctly apply TS implications into procedural step as required by administrative procedures. These procedural changes may be removed upon completion of the seismic qualification of the RWP and remove TS implications.
- Perform seismic qualification of RWP to allow alignment to the RWST without affecting operability.

**VI. PREVIOUS SIMILAR EVENTS:**

Licensee Event Reports (LERs) for HBRSEP, Unit No. 2, were reviewed from the past 5 years. LER 2011-001-00, Condition Prohibited by Technical Specifications When Non-Seismic System was Aligned to Refueling Water Storage Tank due to Regulatory Requirements not Adequately Incorporated in Plant Documentation, documented the historical use of the purification loop to mix and clean up the volume of the RWST.