

Exelon Generation Company, LLC
Braidwood Station
35100 South Rt 53, Suite 84
Braceville, IL 60407-9619
Tel. 815-417-2000

www.exeloncorp.com

August 16, 2004
BW040080

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

Braidwood Station, Unit 1
Facility Operating License No. NPF-72
NRC Docket No. STN 50-456

Subject: Submittal of Licensee Event Report Number 2004-003-00, "0A Hydrogen Recombiner identified to be inoperable greater than required Technical Specification Allowed Outage Time"

The enclosed Licensee Event Report (LER) is being submitted in accordance with 10 CFR 50.73, "Licensee event report system", paragraph (a)(2)(i)(B). 10 CFR 50.73(a) requires an LER to be submitted within 60 days after discovery of the event; therefore, this report is being submitted by August 16, 2004.

Should you have any questions concerning this submittal, please contact Scott Butler, Acting Regulatory Assurance Manager, at (815) 417-2815.

Respectfully,



Thomas P. Joyce
Site Vice President
Braidwood Station

Enclosure: LER Number 2004-003-00

cc: Regional Administrator - Region III
NRC Braidwood Senior Resident Inspector

IE22

NRC FORM 366 (7-2001)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004 Estimated burden per response to comply with this information collection request: 50.0 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to bis1@nrc.gov , and to the Desk Officer, Office of Information and Regulatory Affairs, NOEB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose 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.					
LICENSEE EVENT REPORT (LER)									
1. FACILITY NAME Braidwood, Unit 1				2. DOCKET NUMBER STN 05000456		3. PAGE 1 of 5			
4. TITLE 0A Hydrogen Recombiner identified to be inoperable greater than required Technical Specification Allowed Outage Time									
5. EVENT DATE MO DAY YEAR 06 16 2004			6. LER NUMBER YEA SEQUENTIAL NUMBER REV NO 2004-003-00		7. REPORT DATE MONTH DAY YEAR 08 16 2004		8. OTHER FACILITIES INVOLVED FACILITY NAME DOCKET NUMBER Braidwood, Unit 2 STN 05000457 FACILITY NAME DOCKET NUMBER N/A N/A		
9. OPERATING MODE 1		11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
10. POWER LEVEL 100		<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"/> 73.73(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"/> 73.73(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)		OTHER Specify in Abstract below or in NRC Form 366A	
<input type="checkbox"/> 20.2203(a)(2)(vi)		<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)		<input type="checkbox"/> 50.73(a)(2)(v)(D)					
<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>			
12. LICENSEE CONTACT FOR THIS LER									
NAME Gary Dudek, Operations Director					TELEPHONE NUMBER (Include Area Code) (815) 417-2200				
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
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14. SUPPLEMENTAL REPORT EXPECTED Yes (If yes, complete EXPECTED SUBMISSION DATE). X NO						15. EXPECTED SUBMISSION DATE MONTH DAY YEAR			

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

On March 3, 2004, the 0A Hydrogen Recombiner was started to perform maintenance testing. At approximately 2000 hours the Recombiner heater breaker tripped. The breaker was reset and the Recombiner run was continued; however, no Technical Specification (TS) Limiting Condition for Operation entry was made at that time. It was not recognized that the tripped breaker placed the Hydrogen Recombiner in an inoperable condition. On June 16, 2004, Braidwood Station realized the 0A Hydrogen Recombiner was inoperable since March 3, 2004, and therefore exceeded the TS Allowed Outage Time (AOT).

The root cause for exceeding the AOT was the failure to apply an adequate technical evaluation in determining operability. Contributing to this event was the inappropriate revision of the procedure governing the startup of the Hydrogen Recombiners to allow for manual incremental increases of temperature controller setpoint during heat up of the Recombiner, which was contrary to the UFSAR description of how the Recombiner is operated. The corrective action to prevent recurrence is to implement a policy or procedure mandating the use of peer review for designated operability reviews conducted by the operating shift.

A risk assessment was performed for the Hydrogen Recombiner inoperability and it was determined to be of low risk. The online risk assessment remained green with one Hydrogen Recombiner inoperable. A second Recombiner was available during the event.

This event is being reported pursuant to 10CFR50.73(a)(2)(i)(B).

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Braidwood, Unit 1	STN 05000456				2 of 5
		2004 - 003 - 00			

A. Plant Operating Conditions Before The Event:

Event Date: June 16, 2004

Event Time: 2109

Unit: 1 MODE: 1

Reactor Power: 100 percent

Unit: 2 MODE: 1

Reactor Power: 100 percent

Unit 1 Reactor Coolant System [AB] Temperature: 587 degrees F, Pressure: 2235 psig

Unit 2 Reactor Coolant System Temperature: 581 degrees F, Pressure: 2234 psig

B. Description of Event:

There were no additional structures, systems or components inoperable at the beginning of the event that contributed to the severity of the event.

On March 3, 2004, at approximately 1300 hours, the 0A Hydrogen Recombiner [WE] was started to perform maintenance testing. At approximately 2000 hours, the heater breaker for the Recombiner tripped resulting in a Main Control Room annunciator alarm. At 2112 hours, the breaker was reset and the heaters were reenergized and able to maintain temperature. Maintenance testing was completed and the Hydrogen Recombiner was secured. The Shift Manager reviewed Technical Specification (TS) 3.6.8, "HYDROGEN RECOMBINERS," and its associated basis and determined that the 0A Hydrogen Recombiner was operable based on the fact that the heater breaker re-closed, remained closed, and maintained reaction chamber temperature in the Recombiner. The Shift Manager also understood that the Recombiner was not required until 20 hours after a Loss of Coolant Accident (LOCA). No TS Limiting Condition for Operation (LCO) entry was made at this time.

On March 12, 2004, during a follow-up review of this event, a condition report (CR) was generated to address the March 3, 2004, tripping of the heater breaker. The CR described the heater breaker tripping as a startup issue. Based on a review of previous calibration data and the determination that the instrumentation was within tolerance for its previous two calibration cycles, it was confirmed that the Recombiner remained operable.

On April 5, 2004, during a supervisor's review of the previous Hydrogen Recombiner's work window data, a CR was written to address whether operator action to gradually increase the temperature controller setting (in order to bring the Recombiner up to the required operating temperature without tripping the heater breaker) had an adverse effect on the ability of the Recombiner to perform its design function. It was determined that the 0A Hydrogen Recombiner was capable of performing its design function and remained operable. It was later identified that manual operation of the temperature controller is contrary to the Updated Final Safety Analysis Report (UFSAR) description of how the Recombiner is operated.

On April 20, 2004, the 0A Hydrogen Recombiner was started to support Hydrogen Analyzer modification work. On April 23, 2004, during the planned shutdown of the Recombiner, heater breaker CB-3 was found tripped with the indicated Recombiner

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Braidwood, Unit 1	STN 05000456	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 5
		2004 - 003 - 00			

temperature at 175 degrees F, well below the acceptable value. LCO 3.6.8 for 0A Hydrogen Recombiner was entered.

From April 27 through May 13, 2004, troubleshooting efforts took place. Troubleshooting found the signal output of the temperature controller to be erratic and the temperature controller was subsequently replaced. Following successful completion of the surveillance 0BWOSR 3.6.8.1.1 "UNIT COMMON 0A HYDROGEN RECOMBINER INTERVAL SURVEILLANCE," at 1230 hours, the 0A Hydrogen Recombiner was declared operable and LCO 3.6.8 was exited.

Additionally, on May 3, 2004, during the troubleshooting of the 0A Hydrogen Recombiner, the procedure to startup the Hydrogen Recombiners was revised to allow for manual incremental increases of the temperature controller setpoint. The previous procedure revision directed the operator to set the temperature controller to 1325 degrees F and did not allow for incremental increases in the temperature setpoint. It was later identified that manual operation of the temperature controller is contrary to the UFSAR description of how the Recombiner is operated, and the procedure change had not been evaluated with respect to this description. This revised procedure was used during multiple startups of the Recombiner during troubleshooting, starting on May 3, 2004.

On June 16, 2004, Braidwood Station determined the 0A Hydrogen Recombiner had been inoperable since March 3, 2004. The LCO AOT for the 0A Hydrogen Recombiner is 30 days; therefore, the 0A Hydrogen Recombiner was determined to be inoperable for greater than the AOT for LCO 3.6.8.

C. Cause of Event

The root cause for exceeding the TS AOT for the inoperable 0A Hydrogen Recombiner was failure to apply an adequate technical evaluation in determining operability. It was incorrectly determined that since the heater breaker could be reset and the Recombiner was able to maintain temperature, the Recombiner was operable.

Additionally, during this event the procedure governing the startup of the Hydrogen Recombiners was revised to allow for manual incremental increases of temperature controller setpoint during heat up of the Recombiner. Manual operation of the temperature controller is contrary to the UFSAR description of how the Recombiner is operated, and the procedure change had not been evaluated with respect to this description.

D. Safety Consequences:

A risk assessment was performed for the Hydrogen Recombiner inoperability and it was determined to be of low risk. The online risk assessment remained green with one Hydrogen Recombiner inoperable. A second Recombiner was available during the event.

The installation of Hydrogen Recombiners was intended to address the limited quantity and rate of hydrogen generation that was postulated from a design-basis LOCA. The NRC has found, as documented in SECY-00-0198, "Status Report on Study of

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Braidwood, Unit 1	STN 05000456	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 of 5
		2004 - 003 - 00			

Risk-Informed Change to the Technical Requirements of 10 CFR Part 50 (Option 3) and Recommendations on Risk-Informed Changes to 10 CFR 50.44 (Combustible Gas Control)," that this hydrogen release is not risk-significant because the design-basis LOCA hydrogen release does not contribute to the conditional probability of a large release up to approximately 24 hours after onset of core damage. In addition, these systems were ineffective at mitigating hydrogen releases due to risk-significant beyond design-basis accidents. Consequently, the NRC eliminated the hydrogen release associated with a design-basis LOCA from 10 CFR 50.44, "Combustible Gas Control for Nuclear Power Reactors," and the associated requirements that necessitated the need for the Hydrogen Recombiners and the backup hydrogen vent and purge systems.

The Braidwood Station containments are categorized as Pressurized Water Reactor large volume containments. The challenge to this type of containment from combustible gases was addressed in SECY-00-0198. SECY-00-00198 concluded that hydrogen combustion was not a failure threat to large volume containments and that there was no basis for requiring generic hydrogen control measures in these plants. The results of the risk studies supported the final rule change to 10 CFR 50.44 effective September 16, 2003. Consequently, the requirements related to Hydrogen Recombiners no longer meet any of the four criteria in 10 CFR 50.36(c)(2)(ii) for retention in Technical Specifications.

The significance of this event is exceeding the 30-day TS AOT.

This event did not result in a safety system functional failure.

E. Corrective Actions:

The corrective action to prevent recurrence is to implement a policy or procedure mandating the use of a peer review for designated operability reviews conducted by the operating shift.

Other corrective actions include revising the Hydrogen Recombiner startup procedure to be consistent with the UFSAR description. This action has been completed. Additionally, Braidwood Station is pursuing a license amendment request to delete the requirements associated with the Hydrogen Recombiners consistent with NRC approved Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-447, Revision 1, "Elimination of Hydrogen Recombiners and Change to Hydrogen and Oxygen Monitors."

F. Previous Occurrences:

There have been two previous similar instances where TS requirements have not been met based on a misunderstanding of the requirements. These situations differed in that decisions were based primarily on past operating practice:

1. September 11, 2002: LER 2002-003-01, "Isolated Loop Reactor Coolant System Boron Sample Outside of Technical Specification Frequency Requirement Due to Misapplication of the Implementing Procedure," submitted on November 26, 2002.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Braidwood, Unit 1	STN 05000456	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 of 5
		2004 - 003 - 00			

2. January 27, 2003: LER 2003-001-01, "Control Room Ventilation System Alignment Results in Inoperable Radiation Monitors Without Taking Required Actions per the Technical Specifications due to inadequate evaluation of the original procedures and some subsequent revisions and inadequate evaluation of a design change," submitted May 23, 2003.

G. Component Failure Data:

Manufacturer
N/A

Nomenclature
N/A

Model
N/A

Mfg. Part Number
N/A