Maria Korsnick
Site Vice President

R.E. Ginna Nuclear Power Plant, LLC
1503 Lake Road
Ontario, New York 14519-9364

585.771.5200
585.771.3943 Fax

maria.korsnick@constellation.com

Constellation Energy
Generation Group

December 15, 2006

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: **R.E. Ginna Nuclear Power Plant**
Docket No. 50-244

LER 2006-006, Core Alterations and Movement of Irradiated Fuel with Containment Ventilation Isolation (CVI) Inoperable

The attached Licensee Event Report (LER) 2006-006 is submitted in accordance with 10 CFR 50.73, Licensee Event Report System, items (a)(2)(i)(B) and (a)(2)(v)(C). This event in no way affected the public's health and safety. There are no new commitments contained in this submittal. Should you have questions regarding the information in this report, please contact Mr. Robert Randall at (585) 771-5219 or Robert.Randall@constellation.com.

Very truly yours,

Mary G. Korsnick

Mary G. Korsnick

Attachments: (1) LER 2006-006

1001676

IE22

cc: S. J. Collins, NRC
P.D. Milano, NRC
Resident Inspector, NRC (Ginna)

1001676

ATTACHMENT (1)

LER 2006-006

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

LICENSEE EVENT REPORT (LER)

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

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
R.E. Ginna Nuclear Power Plant	05000 244	1 OF 7

4. TITLE

Core Alterations and Movement of Irradiated Fuel With CVI Inoperable

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
										05000
10	14	2006	2006	- 006 -	0	12	15	2006	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

6

10. POWER LEVEL

000

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☒ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Robert Randall, Director of Licensing	(585) 771-5219

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
A	JM	RK		Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On October 16, 2006 it was discovered that the DC power to the Engineered Safety Features (ESF) relay racks was de-energized, which resulted in the Containment Ventilation Isolation (CVI) system being inoperable. This condition is prohibited by Technical Specifications section 3.3.5 during core alterations and movement of irradiated fuel assemblies within Containment. The ongoing fuel movement was immediately stopped. The investigation revealed that the DC power was isolated on the morning of October 13, 2006 and that core alterations and fuel movement had occurred on several occasions during the time that the system was inoperable.

Corrective action to prevent recurrence is outlined in Section V.B.

Subsequent analysis has concluded that a fuel handling accident with the CVI system inoperable would not have resulted in applicable regulatory limits being exceeded; therefore, this event had no impact on the health and safety of the public.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER (2)	6. LER NUMBER						3. PAGE		
		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER				
R.E. Ginna Nuclear Power Plant	05000244	2006	--	006	--	00		2	OF	7

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

I. PRE-EVENT PLANT CONDITIONS:

On October 16, 2006 Ginna was in Mode 6 and conducting refueling operations. Irradiated fuel was being moved inside Containment.

II. DESCRIPTION OF EVENT:

A. EVENT:

Between October 14, 2006 and October 16, 2006, the Reactor vessel head was removed, the Reactor upper internals were moved, and refueling started. On October 16th, while reviewing the control room annunciator panels, annunciator L-4, "Safeguard DC Failure CI and CVI" was found illuminated. This annunciator indicates the DC power is de-energized for the Engineered Safety Features (ESF) relay racks, and signified that the Containment Ventilation Isolation (CVI) system was inoperable. This condition is prohibited by Technical Specification (TS) section 3.3.5 and fuel movement was immediately stopped. The investigation revealed that the DC power was isolated on the morning of October 13, 2006.

B. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

None

C. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

October 13, 2006, 0948 EDST: DC power is isolated to the ESF relay racks as part of a hold (Safety Tag-out)

October 14, 2006, 1100 EDST: Reactor head lift and core alterations begin

October 15, 2006, 0200 EDST: Upper Reactor internals are lifted

October 15, 2006, 1600 EDST: Fuel shuffle begins

October 16, 2006, 0522 EDST: Oncoming Operator notes that Annunciator L-4 is illuminated and questions CVI operability. Fuel movement is immediately stopped.

October 16, 2006, 1106 EDST: Notification made to NRC per 10CFR 50.72(b)(3)(v)(C), event number 42909.

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

No other functions were required for the plant mode.

E. METHOD OF DISCOVERY:

An oncoming Licensed Control Room Operator noted Annunciator L-4 was illuminated and questioned the operability of CVI with that alarm illuminated.

F. SAFETY SYSTEM RESPONSES:

There were no safety system responses required.

III. CAUSE OF EVENT:

The events are NUREG-1022 Cause Code (a), "Personnel Error" and (d), Defective Procedures.

A formal Root Cause Evaluation was initiated. The evaluation identified the following root causes:

- Configuration management practices, including the development and administration of the Minimal Essential Equipment List (MEEL), did not meet industry standards.
- Weaknesses in the schedule development process led to missing or incorrect logic ties to the appropriate plant conditions and modes.

IV. ASSESSMENT OF THE SAFETY CONSEQUENCES OF THE EVENT:

This event is reportable in accordance with 10CFR 50.73, Licensee Event Report System, item (a)(2)(i)(B), which requires a report of, "Any operation or condition which was prohibited by the plant's Technical Specifications," and (a)(2)(v)(C) which requires a report of, "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to control the release of radioactive material."

In Mode 6, the function of the CVI system is to limit the release of radioactive material, and thereby mitigate the consequences of a Fuel Handling Accident (FHA) inside containment. The Ginna UFSAR Section 15.7.3.5 states in part: "In containment, the containment ventilation isolation system (which isolates the containment purge system) and containment closure restrictions are sufficient to restrict fission product releases to the environment."

To assess the safety consequences of the event Ginna performed a qualitative PSA Evaluation Request (PSAER). The results of the PSAER indicated that the event had no impact on Core Damage Frequency (CDF) or Large Early Release Frequency (LERF) for a FHA in containment.

With the plant in cold shutdown or refueling, the RCS temperature is below 200° F, and the status of containment has no impact on core damage frequency (CDF). This is due to the fact that the only time containment impacts CDF is its ability to prevent hot reactor coolant system (RCS) water in the B sump from flashing to steam during LOCA recirculation. Given that the RCS is sub-cooled at atmospheric pressure during shutdown, even if sump recirculation were required due to a shutdown LOCA, containment would not be required to prevent flashing of the sump water. Thus this event had no impact on CDF.

UFSAR section 15.7.3.1.4 discusses the potential for occurrence, and the possible consequences, of a fuel handling accident. It concludes that 'no fuel cladding integrity failures are expected to occur during any fuel handling operations.' However, even if a fuel cladding integrity failure occurred, it would at most affect a small number of fuel rods, releasing radioactive gasses from the failed rods. The UFSAR states in section 15.7.3.3.4, that partitioning of the iodine gas would occur in the water, thus reducing the amount of radio-nuclides released into containment. In the event of a fuel handling accident, the procedure for a fuel handling accident (RF-601, note prior to step 3.1 Immediate Actions) dictates that the first notification of a dropped fuel assembly is to be to the Control Room. In the event that radionuclide releases were large enough to require CVI, Control Room operators would receive annunciator alarm E-16 'RMS Process Monitor High Activity', directly from radiation monitor R-11 and/or R-12. The first step in the alarm response procedure for this annunciator (AR-E-16) directs operators to ensure that automatic actions have occurred where applicable. Since the operators would be aware that a fuel handling accident has occurred and R-11 and/or R-12 would be alarming, this procedure step would cause them to manually isolate containment ventilation. Since the required isolation valves have control switches on the main control board, this action would take only a few minutes to complete. Finally, since containment is essentially at atmospheric pressure during shutdown, there would be very little motive force to push the radio-nuclides out of containment, other than any operating purge supply and/or exhaust fans. During the time that CVI was inoperable, no shutdown purge supply fans were operating, one shutdown purge exhaust fan and no mini-purge supply fans were running. Given that a purge exhaust fan has a maximum capacity of approximately 12,600 cfm, and that the total free volume inside containment is approximately one million cubic feet, approximately 6.3% of the containment volume would have exited containment, assuming operators isolated the purge system within 5 minutes of receiving the high radiation alarm.

Given the small amount of radio-nuclides that might actually be released, the partitioning of the iodine that would take place in the water, the lack of differential pressure to push the radio-nuclides out of containment, and the procedural guidance to isolate containment ventilation, any release from this accident would be well below the criteria for LERF. This is confirmed by Table 4.1 of Appendix H of the NRC inspection manual 0609, which states that fuel handling accidents both inside and outside the spent fuel pool are not important to

LERF due to the small fission product inventory contained in single fuel bundle and the fact that scrubbing by water in the spent fuel pool further reduces releases.

Additionally, a dose sensitivity analysis was performed to assess the potential effect of the inoperable CVI system. The results of this analysis show that even with the automatic function inoperable, that the fuel handling accident consequences are still well within the acceptance criteria, and are bounded by the existing analysis. As such, the applicable regulatory acceptance criteria for design basis events would have been met.

Therefore, considering the above, no significant safety consequences resulted from this event.

V. CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

The DC power was restored to the ESF relay racks

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

Initial action taken prior to resuming fuel movement:

1. A Prompt Investigation was initiated.
2. All TS and Technical Requirement Manual (TRM) requirements for core alterations and fuel movement were verified to be included in the appropriate Ginna procedures.
3. A requirement to perform procedure O-15.1, Administrative Requirement Checklist for Entry to Mode 6 and Refueling Conditions, each shift until the periodic check lists could be verified to contain all relevant requirements, was initiated.
4. The checklist for fuel handling in the spent fuel pool was reviewed to ensure relevant requirements were included.
5. Schedule Review of the next shift's schedule, approved and signed by Work control Center SRO, to include: 1) activities in progress 2) activities planned 3) impact on plant mode 4) impact on pending plant mode changes 5) review of work and impact on the MEEL and 6) impact on TS and TRM.
6. Local Leak Rate Testing during Core Alterations, when containment closure is required, was suspended.

7. A SRO meeting with the Operations Manager was conducted to discuss the incident.

8. The Control Room Supervisor was required to review all holds for the correct Mode/condition prior to issuance.

9. The outage schedule was reviewed again to ensure that no conflicts exist with regard to Mode 6

10. The Plant Operations Review Committee (PORC) reviewed the planned actions (meeting number 2006-0037).

Because of similar previous events (see VI.B below) and a TS violation which occurred within days of this event (see LER 2006-005), a formal Root Cause Evaluation was initiated. The following actions are planned as a result of that evaluation:

1. Implement and basis capture NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management, including:
   a) Develop a MEEL and implement effective oversight processes for support, including contingency planning for periods when the minimum equipment requirements may be challenged.
   b) Improve the timeliness of the Shutdown Safety Summary Schedule development.
   c) Implement a Conduct of Lower Mode Operations procedure.
2. Revise IP-OUT-1, Outage Scheduling, to include guidance on schedule development and review.
   a) Include senior licensed personnel involvement in schedule development
   b) Specify minimum quorum requirements that ensure heavy participation from senior licensed level individuals in the schedule review process (vertical and horizontal)
   c) Specify how impacts to a reviewed schedule, including integrity of logic ties, will be incorporated and reviewed.

VI. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

The relay racks were considered failed due to personnel error.

1. FACILITY NAME	2. DOCKET NUMBER (2)	6. LER NUMBER						3. PAGE		
		YEAR		SEQUENTIAL NUMBER		REVISION NUMBER				
R.E. Ginna Nuclear Power Plant	05000244	2006	--	006	--	00		7	OF	7

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

B. PREVIOUS LERs ON SIMILAR EVENTS:

LER 2000-004 – Two Fans Inoperable During Transition from Mode 5 to Mode 4

LER 2003-004 – Auxiliary feedwater flow path inoperable during mode changes

LER 2006-005 – B Containment Sump Covered While in Mode 4

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

COMPONENT	IEEE 803 FUNCTION IDENTIFIER	IEEE 805 SYSTEM IDENTIFICATION
Rack	RK	JM

D. SPECIAL COMMENTS:

None