

# REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8704130520 DOC. DATE: 87/04/05 NOTARIZED: NO DOCKET #  
 FACIL: 50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244  
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SUBJECT: LER 87-002-00: on 870306, RCS oxygen analysis indicated that steady state requirements of Tech Spec 3.1.6.2 had been exceeded. Caused by personnel error & procedural inadequacy. Procedural guidance being developed. W/870405 ltr.

DISTRIBUTION CODE: 1E22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 8  
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: License Exp date in accordance with 10CFR2.2.109(9/19/72). 05000244

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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) R.E. Ginna Nuclear Power Plant										DOCKET NUMBER (2) 0 5 0 0 0 2 4 4										PAGE (3) 1 OF 0 7	
TITLE (4) Reactor Coolant System Oxygen Concentration Exceeds Technical Specification Limits Due To Personnel Error and Procedural Inadequacy																					
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)											
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES			DOCKET NUMBER(S)									
0 3	0 6	8 7	8 7	0 0 2	0 0	0 4	0 5	8 7				0 5 0 0 0									
OPERATING MODE (9) N			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)																		
POWER LEVEL (10) 0 0 0			20.402(b)			20.406(a)			80.73(a)(2)(iv)			73.71(b)									
			20.406(a)(1)(i)			80.38(a)(1)			80.73(a)(2)(v)			73.71(c)									
			20.406(a)(1)(ii)			80.38(a)(2)			80.73(a)(2)(vi)			OTHER (Specify in Abstract below and in Text, NRC Form 365A)									
			20.406(a)(1)(iii)			X 80.73(a)(2)(i)			80.73(a)(2)(vii)(A)												
			20.406(a)(1)(iv)			80.73(a)(2)(ii)			80.73(a)(2)(vii)(B)												
			20.406(a)(1)(v)			80.73(a)(2)(iii)			80.73(a)(2)(ix)												
LICENSEE CONTACT FOR THIS LER (12)												TELEPHONE NUMBER									
NAME Duane L. Filkins, Manager, Health Physics and Chemistry												AREA CODE 3 1 5 5									
												2 4 4 4 6									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS											
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (16)		MONTH	DAY	YEAR					
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO									

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

During startup from a refueling outage on March 6, 1987, at 0009 EST, a reactor coolant system (RCS) oxygen analysis indicated that the steady state requirements of Technical Specification (TS) 3.1.6.2 had been exceeded. A review of the previous days analytical results indicated a previous analysis on March 5, 1987, had indicated a similar result which violated the 24 hour limiting condition for operation in TS 3.1.6.4. A reactor coolant system cooldown was initiated to lower system temperature and to allow addition of hydrazine to scavenge oxygen from the system.

The cause for exceeding the TS requirements was personnel error and procedural inadequacy. There was no procedural guidance in the operating procedures which correlates required chemistry sampling to RCS temperature. The technician did not initially recognize that TS requirements had been exceeded.

To preclude recurrence better procedural guidance is being developed and technician training will be performed based on this LER.

There were no significant safety consequences of this incident.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  R.E. Ginna Nuclear Power Plant	DOCKET NUMBER (2)  0 5 0 0 0 2 4 4	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 368A's) (17)

I. PRE-EVENT PLANT CONDITIONS

On March 4, 1987, the unit was starting up from the annual refueling and maintenance outage. On this date the plant left the cold shutdown condition and heated up to approximately 315°F, 350 psig reactor coolant system (RCS) temperature and pressure, respectively, to perform steam generator (S/G) crevice cleaning per operating procedure O-10. The TS requirements for RCS oxygen of less than 0.1 ppm had been achieved prior to increasing RCS temperature above 200°F.

II. DESCRIPTION OF EVENT

## A. EVENT:

On March 6, 1987, at 0009 EST with S/G crevice cleaning in progress, a RCS sample was taken as required by Attachment I of procedure PC-1.1 (Primary System Analysis Schedule and Limits). This procedure outlines the required analysis and limits for RCS chemistry during hot shutdown and normal operation.

The result of the oxygen analysis of the above sample was 0.5 ppm. The plant technician performing the analysis recognized this result as a number greater than allowed by TS for the existing plant conditions. As is routine, a confirming sample was taken and an oxygen analysis performed at 0130 EST with the same result. A review of the plant technicians laboratory notebook revealed that on March 5, 1987 at 0030 EST, another sample and analysis had been performed which also indicated oxygen concentration in the RCS greater than 0.1 ppm.

The Ginna Station TS, Section 3.1.6.2, requires that corrective action be taken immediately when the normal steady state RCS oxygen concentration limit of 0.1 ppm is exceeded. Also TS Section 3.1.6.4 requires that if the normal steady state limits for RCS oxygen are exceeded and cannot be returned to within the limits within 24 hours, the reactor shall be brought to the cold shutdown condition. Because, from 0030 EST on March 5, 1987, until 0235 EST on March 6, 1987, (a lapsed time of approximately 26 hours), the RCS oxygen concentration exceeded its normal steady state limit with no corrective action taken, both sections of TS, 3.1.6.2 and 3.1.6.4 were exceeded.

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

None

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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## C. DATES AND APPROXIMATE TIMES FOR MAJOR OCCURRENCES:

- o March 4, 1987, 0900 EST: Unit leaves cold shutdown, RCS oxygen concentration less than 0.1 ppm.
- o March 5, 1987, 0030 EST: Event date.
- o March 6, 1987, 0009 EST: Discovery date.
- o March 6, 1987, 0130 EST: Confirmatory sample taken.
- o March 6, 1987, 0235 EST: Plant cooldown initiated.
- o March 6, 1987, 0800 EST: RCS average temperature less than 250°F.
- o March 6, 1987, 1030 EST: RCS oxygen concentration within TS requirements.

## D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None

## E. METHOD OF DISCOVERY:

The event was made apparent during the foreman's review of the plant technicians laboratory notebook.

## F. OPERATOR ACTION:

The plant technician reported the event to the Control Room. The Control Room operators initiated a plant cooldown per TS requirements at 0235 EST on March 6, 1987. By 0800 EST the RCS average temperature was less than 250°F. At 0935 a hydrazine addition was made to the RCS which brought the oxygen concentration within TS requirements by 1030 EST.

## G. SAFETY SYSTEM RESPONSES:

None

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## III. CAUSE OF EVENT

## A. IMMEDIATE CAUSE:

RCS oxygen concentration was greater than the normal steady state TS limit for more than 24 hours with no immediate corrective action taken. This was due partially to a cognitive error since the technician failed to recognize that the analytical results exceeded the TS requirements for the RCS temperature which existed at the time. It was also partially the result of a procedural inadequacy since there was no procedural guidance in the operating procedure which correlated required chemistry sampling to RCS temperature.

## B. ROOT CAUSE:

The results of a root cause investigation determined that there were two major root causes that contributed to the event. These are as follows:

1. The Health Physics and Chemistry section failed to recognize the RCS oxygen concentration was exceeding TS requirements for approximately 24 hours. This occurred because of the following reasons and actions:
  - o The crevice cleaning operating procedure holds the RCS temperature between cold shutdown and hot shutdown for extended periods of time.
  - o The plant chemistry procedure, PC-1.1, only provided a schedule for analysis for the following plant conditions:
    - a. Hot shutdown or normal operation, Attachment I
    - b. Cold shutdown, Attachment II
    - c. Refueling shutdown, Attachment III
  - o On March 5, 1987, Attachment II was in use, which did not require a RCS oxygen analysis be taken. The technician who performed the oxygen analysis on this date had received a verbal request from another technician to run the RCS oxygen analysis with no apparent reason given. Since the analysis was not required, he did not recognize the significance of the results.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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- o The analytical results for RCS chemistry are normally entered into the Primary System Chemistry Log and also on the Daily Chemistry Analysis Results Form which is forwarded to Operations daily. The chemistry results obtained on March 5, 1987, were not entered on either of these records. Supervisory review of the chemistry log did not recognize the lack of results for March 5, 1987, until March 6, 1987, and Operations also did not recognize the lack of results for March 5, 1987. Although the review of these logs would not have precluded exceeding the requirements of TS 3.1.6.2, it is likely that corrective action would have been taken prior to exceeding 24 hours if the results had been properly logged.
- 2. The unanticipated oxygen concentration increase in the RCS. This happened because of the following reasons and actions:
  - o The investigation of the cause of the oxygen increase in the RCS revealed that the step in procedure O-10 which requires burping of the volume control tank (VCT) with hydrogen had been marked non-applicable (N/A). This is allowed procedurally and Operations had been directed by the outage planning group to proceed with only a nitrogen overpressure on the VCT. This had been done in the 1985 and 1986 outages without oxygen excursions, so this was not without precedent. The reason for not introducing hydrogen is to allow a more rapid turnaround if system leaks should develop during performance of the primary system hydro. If the hydrogen concentration is increased in the RCS, operating procedures require removal prior to system drain down to preclude possible explosive mixtures in primary components. This is a time consuming process.
  - o Without hydrogen to control oxygen, any source of oxygen would cause increases in the RCS oxygen concentration. Three sources that could have contributed to the oxygen ingress to the RCS were:
    - a. The volume control tank was not burped so any oxygen in the tank would have been allowed to come into equilibrium with the RCS.

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- b. Normal introduction of reactor make-up water would introduce oxygen into the RCS.
- c. Some oxygen would have been formed by radiolysis of water while passing through the core.

IV. ANALYSIS OF EVENT

This event is reportable in accordance with 10 CFR 50.73, Licensee Event Report System, Item (a)(2)(i)(B), which requires reporting of "any operation prohibited by the plant's Technical Specifications" in that the plant was in a degraded mode allowed by the Technical Specifications for a period of time longer than that permitted by the Technical Specifications.

An assessment was performed of the safety consequences and implications of the event with the following results and conclusions:

- o The basis for control of oxygen in the RCS is to minimize general corrosion and to prevent localized stress corrosion in the presence of chloride and fluoride ions. During the period of time that the oxygen concentration was outside the operating band, both the chloride and fluoride concentrations were well below the normal operating requirements.
- o Since the oxygen concentrations never exceeded the TS transient limits (always 0.5 ppm or less) and the chloride and fluoride concentrations were within requirements, there would have been no anticipated degradation of RCS system components and, therefore, no safety consequences or implications from this event.

V. CORRECTIVE ACTION

## A. ACTIONS TAKEN TO RETURN THE RCS OXYGEN CONCENTRATION TO NORMAL STEADY STATE OPERATING VALUES:

- o The RCS was cooled down to less than 250°F to allow the addition of hydrazine to scavenge the oxygen.
- o Hydrazine was added to the RCS and oxygen was brought within TS limits.

## B. ACTIONS TAKEN OR PLANNED TO PREVENT RECURRENCE:

- o Corrective action currently in progress will provide better procedural guidance to assure the Health Physics and Chemistry section is aware when the RCS temperature has been increased and chemistry requirements have changed.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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- The Health Physics and Chemistry technicians involved with primary system chemistry have all been made aware of the errors which contributed to the event.
- A copy of this LER will be forwarded to the Training section and will be included in the training program for the Health Physics and Chemistry section.

VI. ADDITIONAL INFORMATION

## A. FAILED COMPONENTS:

There were no component failures that contributed to this event.

## B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results: no documentation of similar LER events could be identified.



ROCHESTER 89 EAST AVENUE, ROCHESTER, N.Y. 14619-0001

April 5, 1987

U.S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, DC 30555

Subject: LER 87-002, Reactor Coolant System Oxygen  
Concentration Exceeds Technical Specification  
Limits Due to Personnel Error and Procedural  
Inadequacy  
R.E. Ginna Nuclear Power Plant  
Docket No. 50-244

In accordance with 10 CFR 50.73, Licensee Event Report System,  
Item (a)(2)(i)(B) which requires a report of "any operation  
prohibited by the plant Technical Specifications", the attached  
Licensee Event Report LER 87-002 is hereby submitted.

Very truly yours,

  
Roger W. Kober

xc: U.S. Nuclear Regulatory Commission  
Region I  
631 Park Avenue  
King of Prussia, PA 19406

Ginna USNRC Resident Inspector

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