

October 27, 2003

Mr. Peter E. Katz  
Vice President Nine Mile Point  
Nine Mile Point Nuclear Station, LLC  
P.O. Box 63  
Lycoming, NY 13093

SUBJECT: NINE MILE POINT NUCLEAR STATION - NRC SUPPLEMENTAL INSPECTION  
REPORT 05000220/2003010

Dear Mr. Katz:

On September 12, 2003, the NRC completed a supplemental inspection at the Nine Mile Point Nuclear Station. The enclosed report documents the results of the inspection, which were discussed with you, and other members of your staff on September 12, 2003.

The NRC performed this supplemental inspection to assess Constellation Energy Group's evaluation of the white finding concerning the failure to adequately identify and evaluate equipment problems, and correct deficiencies, that resulted in repetitive and continued degraded piping conditions in the reactor building closed loop cooling (RBCLC) system. During this supplemental inspection, performed in accordance with Inspection Procedure 95001 - "Inspection for One or Two White Inputs in a Strategic Performance Area," the inspector determined that Constellation Energy Group completed evaluations which determined the primary cause of the failure to identify and correct equipment problems.

Following identification of the degraded piping, you implemented appropriate corrective actions by replacing most of the small bore RBCLC system piping located in the drywell with improved hardware and design, and by implementing improvements to your corrective action program. Constellation Energy Group's root cause evaluation was sufficient to identify the underlying issues that contributed to events that caused the RBCLC system piping degradation. Constellation Energy Group's evaluation found inadequacies in addressing previously identified issues that caused the leakage, the actions taken to correct those issues are complete or are scheduled, and you intend to implement several programs to address the underlying causes of the issues associated with the White finding. Implementation of the corrective actions and reassessment of weaknesses observed during this inspection will be reviewed during the next "Problem Identification and Resolution" Baseline Inspection per Inspection Procedure 71152 scheduled for October 2003.

Based on the results of this inspection, the inspector identified one finding of very low safety significance (Green) that was determined to be a violation of NRC requirements. The finding involved a procedural deficiency associated with the installation of a temporary system to inject oxygen to the RBCLC system. However, because this violation is of very low safety significance and has been entered into your corrective action program, the NRC is treating the violation as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement

Mr. Peter Katz

2

Policy. If you contest the finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator Region I, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at Nine Mile Point.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection at the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Raymond A. Lorson, Chief  
Performance Evaluation Branch  
Division of Reactor Safety

Docket No. 50-220  
License No. DPR-63

Enclosure: Inspection Report 05000220/2003010

cc w/encl:

M. J. Wallace, President, Nine Mile Point Nuclear Station, LLC  
J. M. Petro, Jr., Esquire, Counsel, Constellation Energy Group, Inc.  
M. J. Wetterhahn, Esquire, Winston and Strawn  
W. M. Flynn, President, New York State Energy, Research,  
and Development Authority  
P. D. Eddy, Electric Division, NYS Department of Public Service  
Supervisor, Town of Scriba  
C. Donaldson, Esquire, Assistant Attorney General, New York  
Department of Law  
T. Judson, Central NY Citizens Awareness Network

Mr. Peter Katz

3

Distribution w/encl:

- H. Miller, RA/J. Wiggins, DRA
- J. Trapp, DRP
- N. Perry, DRP
- J. Jolicoeur, RI EDO Coordinator
- R. Laufer, NRR
- P. Tam, PM, NRR
- G. Vissing, NRR (Backup)
- G. Hunegs, SRI - Nine Mile Point
- B. Fuller, RI - Nine Mile Point
- E. Knutson, RI - Nine Mile Point
- Region I Docket Room (with concurrences)
- W. Lanning, DRS
- R. Crlenjak, DRS
- R. Lorson, DRS
- T. Hipschman, DRS

DOCUMENT NAME: G:\PEB\HIPSCHMAN\NMP95001SUPP.WPD

After declaring this document "An Official Agency Record" it **will** be released to the Public.

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RI/DRS		RI/DRP		RI/DRS		RI/DRS			
NAME	THipschman		JTrapp (NSP for)		WSchmidt		RLorson			
DATE	10/20/03		10/22/03		10/27/03		10/27/03			

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-220

License No: DPR-63

Report No: 05000220/2003010

Licensee: Nine Mile Point Nuclear Station, LLC (NMPNS)

Facility: Nine Mile Point, Unit 1

Location: P. O. Box 63  
Lycoming, NY 13093

Dates: September 8, 2003 - September 12, 2003

Inspector: T. Hipschman, Senior Reactor Inspector

Approved by: Raymond A. Lorson, Chief  
Performance Evaluation Branch  
Division of Reactor Projects

## SUMMARY OF FINDINGS

IR 05000220/2003-010; 09/08/03-09/12/03; Nine Mile Point Unit 1; Supplemental Inspection. Inspection Procedure 95001, Inspection for One or Two White inputs in a Strategic Performance Area.

The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection to assess Constellation Energy Group's evaluation of the failure to evaluate significant conditions adverse to quality involving degraded piping in the reactor building closed loop cooling (RBCLC) system. The failure to adequately identify and evaluate equipment problems, and correct deficiencies, resulted in repetitive and continued degraded piping conditions in the RBCLC system. This performance issue was previously characterized as having low to moderate risk significance (White) in the NRC's final significance determination letter dated May 23, 2003 (EA-03-053). During this supplemental inspection, performed in accordance with Inspection Procedure 95001, the inspector determined that Constellation Energy Group performed comprehensive evaluations to determine the cause of the leakage and the failure to adequately identify and evaluate problems. Constellation implemented appropriate corrective actions by replacing most of the small bore RBCLC system piping located in the drywell with improved hardware and design, and by implementing improvements to the corrective action program.

Given Constellation Energy Group's acceptable performance related to the final resolution of each of the issues and implementing several programs to address the underlying causes of the issues which contributed to the RBCLC leakage, the White finding will only be considered in assessing plant performance for four quarters, in accordance with the guidance in IMC 0305, "Operating Reactor Assessment Program." Implementation of the corrective action program will be reviewed during the next "Problem Identification and Resolution" Baseline Inspection per Inspection Procedure 71152.

### A. Inspector Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. The inspector identified a non-cited violation of Technical Specification 6.8.1, "Procedures." Constellation Energy Group did not develop a procedure to ensure that the temporary oxygen injection system would be secured upon shutdown of the RBCLC system.

The finding is greater than more than minor because the failure to develop this procedure could have complicated recovery of the RBCLC system following initiating events that included loss of the RBCLC system. The inspector determined that this procedural problem would not affect the frequency for loss of RBCLC initiated events. The finding was determined to have very low safety significance (Green) using the Significance Determination of Reactor Inspection Findings for At-Power Situations process because it did not result in any actual loss of safety function of a system (Section 02.04).

## Report Details

### **01 INSPECTION SCOPE**

The U.S. Nuclear Regulatory Commission (NRC) performed this supplemental inspection to assess Constellation Energy Group's problem identification, root cause and extent of condition review, and related corrective actions associated with the December 5 and 12, 2002, discovery of two instances where portions of the RBCLC piping were significantly corroded such that leaks occurred in the system. As discussed in Inspection Report 50-220/2003-003, the issue was identified as a White finding by an NRC special inspection team because of Constellation Energy Group's failure to evaluate significant conditions adverse to quality involving degraded piping in the reactor building closed loop cooling (RBCLC) system. The failure to adequately identify and evaluate equipment problems, and correct deficiencies, resulted in repetitive and continued degraded piping conditions in the RBCLC system. The licensee conducted event evaluations following each incident to determine the root cause and corrective actions. The inspector reviewed the deviation event reports (DERs), root or apparent cause evaluations and status of corrective actions for each event. The inspector reviewed the associated design basis documents, calculations, and other related documents. A list of the documents reviewed by the inspector is provided as Attachment 1 to this report. The inspector also walked down portions of the RBCLC system, and interviewed licensee personnel.

### **02 EVALUATION OF INSPECTION REQUIREMENTS**

#### 02.01 Problem Identification

- a. Determination of who identified the issue and under what conditions

As discussed in Inspection Report 50-220/2003-003, the issue was identified as a White finding by an NRC special inspection team because of Constellation Energy Group's failure to evaluate significant conditions adverse to quality involving degraded piping in the reactor building closed loop cooling (RBCLC) system. The failure to adequately identify and evaluate equipment problems, and correct deficiencies, resulted in repetitive and continued degraded piping conditions in the RBCLC system.

- b. Determination of how long the issue existed, and prior opportunities for identification

An RBCLC system piping leak occurred on May 15, 2002, due to significant pipe corrosion, primarily as a result of inadequate piping design, application and operation. Additionally, numerous RBCLC system leaks occurred during several preceding years. However, the cause for these leaks was not determined and appropriate corrective actions were not implemented. This led to further degradation of the RBCLC system piping such that additional significant leaks occurred on December 5, 2002, and again on December 12, 2002. These significant leaks in December 2002 were accompanied by a significant reduction in the pipe wall which degraded the structural integrity of the affected piping sections.

- c. Determination of the plant-specific risk consequences (as applicable) and compliance concerns associated with the issue

This finding had low to moderate safety significance, based on the results of the phase three significance determination process (SDP) analysis, because the degraded RBCLC piping resulted in an increase in the likelihood of the loss of the RBCLC system due to piping failure, which directly affected the initiating events cornerstone. The loss of the RBCLC system would also result in the loss of cooling to several other risk significant systems (e.g., feedwater/condensate pumps, recirculation pumps, shutdown cooling heat exchangers, etc.) following a loss of coolant accident or a loss of all AC power event where AC power is recovered prior to core damage, which directly affected the mitigating systems cornerstone.

#### 02.02 Root Cause and Extent of Condition Evaluation

- a. Evaluation of method(s) used to identify root cause(s) and contributing cause(s).

The inspector determined that the methods Constellation Energy Group used for their level 1 root cause analysis provided adequate evaluation techniques to determine that the causes for the degraded RBCLC piping included: inadequate system design, inadequate corrective actions, and degraded RBCLC system water chemistry.

- b. Level of detail of the root cause evaluation

The inspector found that the root cause evaluation of the RBCLC leakage went into sufficient detail to identify the root and contributing causes related to the performance issue. Constellation Energy Group initiated a category 1 root cause evaluation and determined that station management had not adequately used the corrective action program as a problem solving tool to ensure equipment reliability, and that multiple opportunities were missed that could have identified weaknesses with the corrective action program.

- c. Consideration of prior occurrences of the problem and knowledge of prior operating experience

Constellation Energy Group performed an extensive evaluation of their failure to evaluate significant conditions adverse to quality involving degraded piping in the reactor building closed loop cooling (RBCLC) system, including a review of additional related deficiency reports. The inspector found that the root cause evaluation of the RBCLC leakage went into sufficient detail to consider prior occurrences of the problem and knowledge of prior operating experience related to the performance issue.

- d. Consideration of potential common cause(s) and extent of condition of the problem

The inspector found that the Constellation extent of condition associated with underlying contributing causes for the RBCLC system leakage was appropriate. Constellation Energy Group determined that there were several systems subject to similar corrosion and chemistry conditions and took appropriate corrective actions.

### 02.03 Corrective Actions

#### a. Appropriateness of corrective action(s)

The inspector found that actions taken to correct the degraded RBCLC piping, inadequate design, corrective action program, and RBCLC chemistry conditions were appropriately addressed. Subsequent to the December 12, 2002, leak, several immediate corrective actions were implemented, including extensive RBCLC small bore piping and fitting replacement with improved piping material and design. Longer term similar actions were also in progress for the remaining RBCLC piping sections that had not been replaced. In addition, the licensee was continuing their efforts to determine the cause and corrective actions for the unexpected and unexplained chemistry parameters. Modifications to monitor and control the water chemistry in the RBCLC system were implemented and have resulted in achieving acceptable steady state chemistry parameters. Specific corrective actions taken included:

- identified and replaced degraded and susceptible small bore RBCLC piping with improved materials and design, as appropriate;

- performed adequate additional non-destructive testing on additional large bore and small bore piping on the RBCLC and other systems;

- implemented several programs to improve corrective action problem identification and resolution such as corrective action review boards and a reduced threshold for initiation of root cause evaluations;

- implemented several programs and training for station personnel including risk assessment, integrated risk management, root cause determination and fluid leak management;

- installed a side stream demineralizer and an oxygen injection system in the RBCLC system to monitor and control chemistry parameters.

#### b. Prioritization of corrective actions

The Constellation root cause corrective actions addressed the failure to properly complete corrective actions in an effective manner. The inspector agreed with the root cause determination and noted that subsequent actions to prevent recurrence were appropriate and properly prioritized.

#### c. Establishment of a schedule for implementing and completing the corrective actions

Subsequent to the December 12, 2002, leak, several immediate corrective actions were implemented, including extensive RBCLC small bore piping and fitting replacement with improved piping material and design. Longer term similar actions were also in progress for the remaining RBCLC piping sections that had not been replaced. Constellation established several programs to address issues identified in the root cause evaluation. Interviews conducted by the inspector with personnel from several of the programs

found the programs to be in newly implemented and a few cases such as the fluid leak management and small bore piping programs to be in development. In addition, the licensee was continuing their efforts to determine the cause and corrective actions for the unexpected and unexplained chemistry parameters. Modifications to monitor and control the water chemistry in the RBCLC system were implemented and have resulted in achieving acceptable steady state chemistry parameters.

- d. Establishment of quantitative or qualitative measures of success for determining the effectiveness of the corrective actions to prevent recurrence

The inspector determined that Constellation's improvements to the corrective action program were adequate. This included revising requirements for the station's corrective action program, and establishing an integrated risk management program. Constellation plans to implement several programs to address the issues identified in the root cause evaluation, such as fluid leak management and small bore piping programs. Additionally, senior management has increased their oversight and involvement with the corrective action program through the use of corrective action review boards, and departmental corrective action review teams.

#### 02.04 RBCLC System Oxygen Injection Temporary Modification

- a. Inspection Scope

The inspector reviewed the RBCLC system oxygen injection temporary modification to verify that the modification was appropriately evaluated and implemented and also to determine whether the modification affected system operability or availability. The inspector verified that the installation of the temporary modification was consistent with the modification documents and also that configuration control of the modification was adequate by verifying that plant documents, such as drawings and procedures, were properly maintained. The inspector also reviewed the adequacy of associated operating and maintenance procedures.

- b. Findings

##### Introduction:

A Green non-cited violation (NCV) was identified for the failure to develop an adequate procedure as required by Technical Specification (TS) 6.8.1 to secure the temporary oxygen injection system upon shutdown of the RBCLC system.

##### Description:

The RBCLC system dissolved oxygen concentration had been low since August 2000. On August 11, 2003, Constellation Energy Group installed a temporary modification to inject oxygen into the RBCLC system to evaluate the oxygen consumption and also to aid in passivating the RBCLC system piping. The modification used an oxygen bottle, regulator and flow meter to inject oxygen directly into the RBCLC system.

In the temporary modification design package, engineering identified the need to secure the oxygen injection system upon shutdown of the RBCLC system. The inspector reviewed the temporary modification, operations and chemistry procedures, and determined that necessary steps or precautions were not proceduralized to ensure that the oxygen injection system would be secured upon shutdown of the RBCLC system. Allowing the oxygen injection system to remain in-service in this configuration could result in a water hammer event or gas binding of the RBCLC pumps during the subsequent RBCLC system restoration. The inspector was concerned that this failure to develop an adequate procedure could complicate the recovery from an initiating event that resulted in a loss of the RBCLC system.

Analysis:

The finding was considered more than minor because it was associated with the equipment performance and procedure quality attributes of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability and capability of systems, such as the RBCLC system, that respond to initiating events to prevent undesirable consequences, such as the loss of the shutdown cooling heat exchangers. The failure to develop an adequate procedure to secure the oxygen injection system could complicate the restoration of the RBCLC system subsequent to initiating events that resulted in the loss of the RBCLC system. Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function and was not the result of any willful violation of NRC requirements or licensee procedures.

The licensee's failure to develop adequate operating procedures was determined to have very low safety significance (Green) using Phase I of the Significance Determination of Reactor Inspection Findings for At-Power Situations process because it did not result in any actual loss of safety function of a system, it did not result in an actual loss of safety function of a single train greater than its TS allowed outage time, it did not represent an actual loss of one or more non-TS trains of equipment designated as risk significant per 10 CFR 50.65, and it did not screen as potentially risk significant due to seismic, fire, flooding, or a severe weather initiating event. The inspector determined that this procedural problem would not affect the frequency for loss of RBCLC initiated events.

Enforcement:

Technical Specification 6.8.1, "Procedures," requires that written procedures shall be implemented for activities recommended in Appendix A of Regulatory Guide 1.33. Regulatory Guide 1.33 requires, in part, that procedures be developed for the shutdown of closed cooling water systems. Contrary to the above, on August 11, 2003, Constellation Energy Group did not develop an operating procedure to secure the temporary oxygen injection system upon shutdown of the RBCLC system. Constellation Energy Group documented this issue and the associated corrective actions in DER 2003-3875. Because this violation is of very low safety significance and has been entered into the corrective action program, this violation is being treated as a NCV, consistent with Section VI.A of the NRC Enforcement Policy: **NCV 05000220/2003010-**

**01, Failure to Implement Adequate Procedures for the RBCLC System Oxygen Injection System Temporary Modification.**

**03 MANAGEMENT MEETINGS**

1. Exit Meeting Summary

The results of this inspection were discussed at an exit meeting conducted on September 12, 2003, with you and other members of the Constellation Energy Group staff. At that time, the inspector asked whether any of the information was considered to be proprietary. None of the information was identified as proprietary.

2. Regulatory Performance Meeting

A regulatory performance meeting in accordance with Manual Chapter 0305 was conducted with you and other members of your staff on September 12<sup>th</sup> by the Region I Deputy Director of the Division of Reactor Safety.

## ATTACHMENT

### KEY POINTS OF CONTACT

#### Licensee Personnel

M Alvi	Lead Engineer, Design Engineering
K. Churchill	System Engineer
Dave Hanretty	Principal Engineer, System Engineering
T. Kulczycky	Principal Engineer, Reliability Engineering
Tim Kurtz	Health Physicist, Reliability Engineering
J. Richards	General Supervisor, Chemistry
A. Salvagno	Health Physicist, Reliability Engineering
D. Topley	Manager, Assessment and Corrective Action

### LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

#### Open/Closed

2003010-01	NCV	Failure to Implement Adequate Procedures for the RBCLC System Oxygen Injection System Temporary Modification.
------------	-----	---

### DOCUMENTS REVIEWED

#### Procedures

NAI-ECA-05	GAP-OPS-117	N1-OP-11	N1-CTP-V975	N1-ST-Q27
MN-1-125				

#### Calculations

S13.4-70DER-2002-5280	S13.4-71DER-2003-3714	S12-91DER-2003-3714
S13.4-70TP19-00	S13.4-70TP18	

#### Deficiency/Event Reports

2000-2139	2002-5305	2002-0672	2002-5280	2002-5386	2003-2463
2002-5166	2002-5193	2003-0415			

#### Miscellaneous Documents

Dwg. C-18022-C	Dwg. C-18008-C	Dwg. C-18009-C	TCP N1-02-234
Dwg. C-26855-C	USFAR Section X.D	NER-1S-033	

**LIST OF ACRONYMS**

CFR	Code of Federal Regulations
DER	Deviation Event Report
EA	Enforcement Action
LOCA	Loss of Coolant Accident
NCV	Non-Cited Violation
NRC	Nuclear Regulator Commission
PI	Performance Indicator
ppb	Parts per Billion
PRA	Probability Risk Assessment
RBCLC	Reactor Building Closed Loop Cooling System
SDP	Significance Determination Process
TS	Technical Specification