

October 23, 2000

Mr. John H. Mueller  
Chief Nuclear Officer  
Niagara Mohawk Power Corporation  
Nine Mile Point Nuclear Station  
Operations Building, 2nd Floor  
P.O. Box 63  
Lycoming, NY 13093

SUBJECT: NRC's NINE MILE POINT INSPECTION REPORT 05000220/2000-006,  
05000410/2000-006

Dear Mr. Mueller:

On September 30, the NRC completed an inspection of your Nine Mile Point Nuclear Station, Units 1 and 2. The enclosed report presents the results of that inspection. Preliminary results were discussed with Mr. J. Conway and other members of your staff on October 17, 2000.

NRC inspectors examined numerous activities as they related to reactor safety and compliance with the Commission's rules and regulations and with the conditions of your operating license. The inspection consisted of a selected examination of procedures and records, observations of activities, and interviews with personnel. There were no findings identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in 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/NRC/ADAMS/index.html> (The Public Electronic Reading Room).

Sincerely,

/RA/

William A. Cook, Chief  
Projects Branch 1  
Division of Reactor Projects

Docket Nos.: 05000220, 05000410  
License Nos.: DPR-63, NPF-69

Enclosure: NRC's Nine Mile Point Inspection Report 05000220/2000-006, 05000410/2000-006

Mr. John H. Mueller

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cc w/encl:

G. Wilson, Esquire

M. Wetterhahn, Winston and Strawn

J. Rettberg, New York State Electric and Gas Corporation

P. Eddy, Electric Division, Department of Public Service, State of New York

C. Donaldson, Esquire, Assistant Attorney General, New York Department of Law

J. Vinqvist, MATS, Inc.

F. Valentino, President, New York State Energy Research  
and Development Authority

J. Spath, Program Director, New York State Energy Research  
and Development Authority

T. Judson, Central NY Citizens Awareness Network

Distribution w/encl: (VIA E-MAIL)

Region I Docket Room (with concurrences)

H. Miller, RA (to M. Fudge)

J. Wiggins, DRA (to G. Matakas)

M. Evans, DRP

W. Cook, DRP

R. Junod, DRP

G. Hunegs - Nine Mile Point

J. Shea, RI EDO Coordinator

E. Adensam, NRR (ridsnrrdlpmlpdi)

P. Tam, NRR

W. Scott, NRR

J. Wilcox, NRR

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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION I**

Docket Nos: 050000220, 050000410  
License Nos: DPR-63, NPF-69

Report No: 050000220/2000-006, 050000410/2000-006

Licensee: Niagara Mohawk Power Corporation (NMPC)

Facility: Nine Mile Point, Units 1 and 2

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

Dates: August 13, 2000 - September 30, 2000

Inspectors: G. Hunegs, Senior Resident Inspector  
R. Fernandes, Resident Inspector  
B. Fuller, Resident Inspector  
M. Gray, Reactor Engineer  
T. Hoeg, Resident Inspector, Calvert Cliffs  
G. Smith, Safeguards Inspector

Approved by: William A. Cook, Chief  
Projects Branch 1  
Division of Reactor Projects

## Summary of Findings

IR 05000220-00-06, 05000410-00-06; on 08/13 - 09/30/2000; Niagara Mohawk Power Corporation; Nine Mile Point, Units 1 & 2.

The report covers a seven week period of inspection performed by resident inspectors and regional specialists and conducted per the NRC's Reactor Oversight Process (Attachment 1). The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process described in Inspection Manual Chapter 0609.

This inspection identified no findings.

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ATTACHMENT

Attachment 1 - NRC's Revised Reactor Oversight Process

## Report Details

### **SUMMARY OF PLANT STATUS**

Nine Mile Point Unit 1 (Unit 1) began this inspection report period at 100 percent power. On August 25, an operating feedwater pump controller failed and power was reduced to 40 percent. On August 29, Unit 1 was returned to 100 percent power. On September 24, Unit 1 was shut down for a maintenance outage and remained shutdown through the end of the inspection period.

Nine Mile Point Unit 2 (Unit 2) began this inspection report period at 100 percent power. On September 9, 2000, Unit 2 was shut down for a maintenance outage. Unit 2 was returned to power on September 17, but an automatic reactor scram from 70 percent power resulted from a high vibration turbine trip. Unit 2 was returned to power on September 20 and power reached 100 percent on September 22. Unit 2 remained at 100 percent power through the end of the inspection period.

#### **1. REACTOR SAFETY**

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R04 Equipment Alignment

##### .1 Partial Walkdown

###### a. Inspection Scope

The inspectors conducted equipment alignment partial walkdowns primarily to evaluate the operability of selected trains or backup systems, while the redundant train or system was inoperable or out of service. Walkdowns were also conducted on equipment recently realigned due to refueling outage activities and surveillance testing. The walkdowns included, as appropriate, consideration of plant procedures and reviews of documents to determine correct system lineups, and verification of critical components to identify any discrepancies which could affect operability of the redundant train or backup system.

The inspectors performed a partial system walkdown of the Unit 1 control rod drive system.

###### b. Issues and Findings

There were no findings identified.

##### .2 Complete Walkdown

###### a. Inspection Scope

The inspectors performed a complete walkdown of the B train of the service water system at Unit 2. The inspectors utilized the individual plant examination to identify the risk significant equipment to inspect and procedures to review. The inspector reviewed the system health report and maintenance rule status. The B train of the service water

system is currently maintenance rule category (a)(2). The system was previously considered (a)(1) due to service water pump unavailability. NMPC corrective actions included performing pump maintenance locally versus sending the pump off site for repairs and monitoring strainer preventive maintenance more closely to reduce system unavailability time. The inspector noted a recent reduction in outstanding corrective maintenance items. The inspector also noted that the corrective actions have been completed for the three open Category 1 deviation/event reports (DERs) for the system.

The inspector performed a walkdown using plant drawings and checked for proper valve position and material condition of the pumps, strainers, and valves. The inspector verified switch and breaker line-ups were in accordance with operating procedures. The inspector reviewed several pipe supports for correct hardware and configuration.

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection

.1 Routine Inspection

a. Inspection Scope

The inspectors conducted walk-downs of fire areas to determine if there was adequate control of transient combustibles and ignition sources. The condition of fire detection devices and the readiness of the sprinkler fire suppression system and fire doors were also inspected. In addition, the passive fire protection features were inspected, including the ventilation system fire dampers, structural steel fire proofing and electrical penetration seals. The following plant areas were inspected:

- Turbine building (Unit 1)
- Reactor building (Unit 1)
- A train service water pump room, fire zone 806NZ (Unit 2)
- B train service water pump room, fire zone 807NZ (Unit 2)

b. Issues and Findings

There were no findings identified.



## .2 Annual Observation of a Fire Brigade Drill

### a. Inspection Scope

On September 29, 2000, the inspectors observed a fire brigade drill to evaluate the readiness of NMPC's personnel to fight fires. The drill observed was conducted with the assistance of the local volunteer fire department. The following aspects were evaluated:

- Protective clothing/turnout gear was properly donned.
- Self-contained breathing apparatus (SCBA) equipment was properly worn and used.
- Fire hose lines were capable of reaching all necessary fire hazard locations, that the lines were laid out without flow constrictions, the hose was simulated being charged with water, and the nozzle was pattern (flow stream) tested prior to entering the fire area of concern.
- The fire area of concern was entered in a controlled manner.
- Sufficient fire fighting equipment was brought to the scene by the fire brigade to properly perform their firefighting duties.
- The fire brigade leader's fire fighting directions were thorough, clear, and effective.
- Radio communications with the plant operators and between the fire brigade members were efficient and effective.
- Members of the fire brigade checked for fire victims and propagation into other plant areas.
- Effective smoke removal operations were simulated.
- The firefighting pre-plan strategies were utilized.
- The licensee's pre-planned drill scenario was followed, and that the drill objectives and acceptance criteria were met.

### b. Issues and Findings

There were no findings identified.

## 1R11 Licensed Operator Requalification Program

### a. Inspection Scope

The inspectors reviewed the licensed operator requalification training activities to assess the licensee's training effectiveness. The inspector observed Unit 2 licensed operator simulator training on August 17, 2000. The inspector assessed performance in the areas of procedure use, self- and peer-checking, completion of critical tasks, and training performance objectives. Following the simulator exercises, the inspector observed the training instructor's debrief and critique and reviewed the simulator fidelity through a sampling process.

### b. Issues and Findings

There were no findings identified.

## 1R12 Maintenance Rule Implementation

.1 Routine Inspection

a. Inspection Scope

The inspectors reviewed performance based problems involving selected in-scope structures, systems, and components (SSCs) to assess the effectiveness of the maintenance program. Reviews focused on: (1) proper maintenance rule scoping, in accordance with 10 CFR 50.65; (2) characterization of failed SSCs; (3) safety significance classifications; (4) 10 CFR 50.65 (a)(1) and (a)(2) classifications; and, (5) the appropriateness of performance criteria for SSCs classified as (a)(2), and goals and corrective actions for SSCs classified as (a)(1). The inspectors reviewed the licensee's system scoping documents and system health reports. The following DER was reviewed:

- DER 1-2000-2979 BV 68-03 vacuum breaker failed to shut. (Unit 1)

b. Issues and Findings

There were no findings identified.

.2 Periodic Evaluation

a. Inspection Scope

The inspectors reviewed the periodic evaluations required by 10 CFR50.65 (a)(3) for Nine Mile Point Nuclear Station, Units 1 and 2, to verify that SSCs within the scope of the maintenance rule were included in the evaluations and balancing of reliability and unavailability was given adequate consideration. The inspectors reviewed the licensee's most recent periodic evaluations which covered the period from April 1, 1998 through March 1, 2000.

The inspectors selected the below listed safety significant systems in (a)(1) status to verify that: goals and performance criteria were appropriate; industry operating experience was considered; corrective action plans were effective; and performance was being effectively monitored. The inspectors also reviewed the licensee's assessment of the balance between reliability and availability for these systems.

Unit 1 Neutron Monitoring System  
 Unit 1 Emergency Cooling System  
 Unit 1 Process Radiation Monitoring System  
 Unit 1 Primary Containment Pressure Control System  
 Unit 1 High Pressure Coolant Injection System  
 Unit 2 Containment Atmosphere Monitoring System  
 Unit 2 Reactor Recirculation System  
 Unit 2 Eight Hour Battery Packs for Emergency Lighting System  
 Unit 2 Instrument Air System

The inspectors reviewed the following safety significant systems in (a)(2) status to verify that system performance satisfied the licensee's performance criteria:

Unit 1 Control Room Heating, Ventilation and Air Conditioning System  
 Unit 1 Reactor Protection System  
 Unit 1 Emergency Diesel Generator System  
 Unit 1 Containment Spray System  
 Unit 1 Liquid Poison System  
 Unit 2 Diesel Driven Fire Pump  
 Unit 2 Emergency Diesel Generator System  
 Unit 2 Reactor Core Isolation Cooling System

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

For selected maintenance work orders (WOs), the inspectors evaluated: (1) the effectiveness of the risk assessments performed before the maintenance activities were conducted; (2) risk management control activities; (3) the necessary steps taken to plan and control resultant emergent work tasks; and, (4) the overall adequacy of identification and resolution of emergent work and the associated maintenance risk assessments. The following WOs were reviewed:

- WO-00-06128-00, Troubleshoot and clean initiation timer contacts for the 11 emergency condenser valve control circuit. (Unit 1)
- WO-00-08371-00, Troubleshoot and perform repeatability checks of the 102 emergency diesel generator governor control circuit. (Unit 1)

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations affecting risk significant mitigating systems, to assess: (1) the technical adequacy of the evaluation; (2) whether continued system operability evaluations were warranted; (3) whether other existing degraded systems adversely impacted the affected system or compensatory measures; (4) where compensatory measures were used, whether the measures were appropriate and properly controlled; and (5) the degraded system's impact on technical specifications (TS) limiting condition for operations. The following DER was reviewed:

- DER 2-2000-3178: High pressure core spray line break annunciator received following a manual reactor scram. (Unit 2)

b. Issues and Findings

There were no findings identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspector reviewed operator workarounds at Unit 1 to determine if any had a potential adverse effect on the functionality of mitigating systems. Included in this review were the cumulative effects of operator workarounds on: (1) the reliability, availability, and potential for mis-operation of a system; (2) the potential increase in initiating event frequency or that could affect multiple mitigating systems; and (3) the ability of operators to respond in a correct and timely manner to plant transients and accidents.

b. Issues and Findings

There were no findings identified. Specifically, there were no operator workarounds which impacted the operators' ability to implement abnormal or emergency operating procedures. The inspector noted that the licensee has no formal process to identify and track operator workarounds. However, it was the licensee's practice to have a licensed operator perform a periodic review of the workarounds list, which is maintained in the control room, for aggregate affects of the active workarounds. The licensee documented the inspector's observations related to the operator workaround process in DER Common (C)-2000-3196.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed post-maintenance testing (PMT) procedures and associated testing activities for selected risk significant mitigating systems to assess whether: (1) the effect of testing on the plant had been adequately addressed by control room and engineering personnel; (2) testing was adequate for the maintenance performed; (3) acceptance criteria were clear and adequately demonstrated operational readiness, consistent with the design and licensing basis documents; (4) test instrumentation had current calibrations, range, and accuracy for the application; (5) tests were performed, as written, with applicable prerequisites satisfied; (6) jumpers installed or leads lifted were properly controlled; (7) test equipment was removed following testing; and (8) equipment was returned to the status required to perform its safety function. The following DERs were reviewed:

- DER 1-2000-2892, 13 feed pump flow control valve (Unit 1).
- DER 1-2000-2979, torus-to-drywell vacuum breaker (Unit 1).

b. Issues and Findings

There were no findings identified.

#### 1R20 Outage Activities

##### a. Inspection Scope

The inspectors reviewed the Unit 1 and Unit 2 maintenance outage activities for conformance to the applicable procedures and witnessed selected activities associated with each evolution. Surveillance tests were reviewed to verify TS were satisfied. The inspectors observed start-up activities in the control room to verify that TS, license conditions, commitments, and other procedural prerequisites and requirements for mode changes were met prior to changing modes.

- shutdown cooling system operation
- shutdown risk evaluations
- containment closeout
- reactor startup, including the control of approach to criticality
- various outage related preventive and corrective maintenance activities

##### b. Issues and Findings

There were no findings identified.

#### 1R22 Surveillance Testing

##### a. Inspection Scope

The inspectors witnessed performance of surveillance test procedures and reviewed test data of selected risk significant SSCs to assess whether the SSCs satisfied Technical Specifications, Updated Final Safety Analysis Report (UFSAR), and licensee procedure requirements; and to determine if the testing appropriately demonstrated that the SSCs were operationally ready and capable of performing their intended safety functions. The following tests were witnessed:

- N1-ST-M4, 102 Emergency Diesel Generator Monthly Operability Test (Unit 1)
- N1-ST-Q1D, 122 Core Spray Pump Quarterly Operability Test (Unit 1)

##### b. Issues and Findings

There were no findings identified.

#### 1R23 Temporary Plant Modifications

##### a. Inspection Scope

On September 5, 2000, during a surveillance test on drywell and torus vacuum relief check valve BV-68-03, the valve did not fully close after stroke testing with the air operator. The licensee documented the problem in DER 1-2000-2979. The inspector

reviewed the work history and previous surveillance test results for this valve. Temporary modification (TM), Remove Material from Limit Switch Cover Plate to Prevent Interference with Free Movement of Valve 68-03, had been implemented for limit switch 68-03-ILSO on the valve in December 1999, to prevent interference with the free movement of the valve. The inspector reviewed the TM to assess the impact of the modification and the adequacy of the TM, in light of the recent valve failure. The TM was adequate in preventing interference. The TM corrected a condition which was not related to the failure mechanism identified on September 5, 2000.

b. Issues and Findings

There were no findings identified.

1R53 Event Followup

a. Inspection Scope

On September 17, 2000, during power ascension following a planned maintenance outage, Unit 2 automatically scrammed from approximately 70 percent power. The cause of the scram was high vibration on the number eight bearing of the main turbine. The inspectors reviewed the event to evaluate the performance of mitigating systems and NMPC's actions.

The inspectors interviewed operating personnel, reviewed plant logs and the post scram documentation, and assessed operator performance. The cause of the scram was reviewed and determined to be the result of a turbine control valve fast closure which was a valid signal from the turbine supervisory instrumentation for high turbine shaft vibration. The inspectors reviewed operator problems encountered with feed water level control valve leak-by, which resulted in a high level trip of the running feed pump. Due to difficulties restoring a feed pump to service, level was subsequently controlled by lowering reactor pressure and using a condensate booster pump for level control. No safety relief valves lifted following the scram and pressure was maintained by isolating steam loads. Turbine by-pass valves opened and closed, as expected, and all control rods inserted to "Full In" on the scram signal. There were no automatic emergency core cooling system initiation signals received during the transient and no emergency diesel generators started as a result of the event.

NMPC determined that the high vibration trip was the result of an actual high vibration condition from the number eight bearing, which is the last bearing on the turbine platform closest to the generator. The source of the vibration was determined to be from a phenomenon known as "oil whip". Oil whip is caused when bearing oil is drawn into a cushioning wedge for a rotating shaft. The whip occurs when the viscosity of that oil wedge is great enough for that wedge to be pulled out from under the shaft and the shaft moving closer to the bearing surface, wedge reformation and whipping away again. This action results in increased bearing vibration. NMPC determined that a higher viscosity lubrication oil was installed in the turbine during the last refueling outage and that the bearing oil temperature prior to the trip was at or below the normal operating range.

The inspectors determined, notwithstanding the problems with reactor water level control, that the scram was not complicated and all safety systems functioned as designed. The corrective actions for the event will be reviewed as part of the Licensee Event Report follow-up.

b. Issues and Findings

There were no findings identified.

**3. SAFEGUARDS**

Cornerstone: Physical protection of plant and nuclear fuel

PP4 Security Plan Changes

a. Inspection Scope

An in-office review was conducted of changes to the Nine Mile Point Physical Security and Contingency Plan, identified as Issue 5, Revision 2, submitted to the NRC on March 16, 2000, in accordance with the provisions of 10 CFR 50.54(p).

b. Issues and Findings

Based on a limited review of the changes, as described in the plan revision, no NRC approval of this change is required per 10 CFR 50.54(p). These changes will be subject to future inspection to confirm that the changes, as implemented, have not decreased the overall effectiveness of the security plan.

**4. OTHER ACTIVITIES**

4OA6 Management Meetings

Exit Meeting Summary

The inspectors presented the inspection results to Mr. J. Conway, Vice President, Nuclear Generation and other members of licensee management at the conclusion of the inspection on October 17, 2000. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any of the material examined during the inspection should be considered proprietary. No proprietary information was identified.

**PARTIAL LIST OF PERSONS CONTACTED**

Licensee

R. Abbott, VP Nuclear Engineering  
 J. Conway, VP Nuclear Generation  
 L. Hopkins, Unit 1 Plant Manager

J. Mueller, Senior VP and Chief Nuclear Officer  
 M. Peckham, Unit 2 Plant Manager  
 C. Terry, VP Quality Assurance Nuclear

### LIST OF ACRONYMS USED

ADAMS	NRC's Document System
C	Common
DER	Deviation/ Event Report
NMPC	Niagara Mohawk Power Corporation
PARS	Publically Available Records
PMT	Post-Maintenance Testing
SCBA	Self Contained Breathing Apparatus
SDP	Significance Determination Process
SSC	Structures, Systems and Components
TM	Temporary Modification
TS	Technical Specification
Unit 1	Nine Mile Point Unit 1
Unit 2	Nine Mile Point Unit 2
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

### PARTIAL LIST OF DOCUMENTS REVIEWED

Report entitled "Periodic Assessment of Maintenance Rule Program," Nine Mile Point Nuclear station, for period April 1, 1998 through March 1, 2000, dated June 13, 2000

Nine Mile Point Procedure S-MRM-REL-0101, "Maintenance Rule," Revision 7, June 7, 2000

Nine Mile Point Unit 1 Procedure N1-MRM-REL-0104, "Maintenance Rule Manual," Revision 12, August 18, 2000

Nine Mile Point Unit 2 Procedure N2-MRM-REL-0104, "Maintenance Rule Manual," Revision 9, August 10, 2000

Nine Mile Point Unit 1 Procedure N1-MRM-REL-0105, "Maintenance Rule Performance Criteria," Revision 10, August 18, 2000

Nine Mile Point Unit 2 Procedure N2-MRM-REL-0105, "Maintenance Rule Performance Criteria," Revision 7, January 31, 2000

Nine Mile Unit 1 Maintenance Rule Quarterly Status Report, 1<sup>st</sup> and 2<sup>nd</sup> Quarters, 2000, issued August 8, 2000.

Nine Mile Unit 2 Maintenance Rule Quarterly Status Report, 1<sup>st</sup> and 2<sup>nd</sup> Quarters, 2000, issued July 24, 2000.



Nine Mile Unit 1 Monthly Maintenance Rule Unavailability Monitoring Report as of July 31, 2000, issued August 16, 2000

Nine Mile Unit 2 Monthly Maintenance Rule Unavailability Monitoring Report as of July 31, 2000, issued August 18, 2000

Nine Mile Unit 1 Monthly Maintenance Rule Reliability Monitoring Report as of July 31, 2000, issued August 18, 2000

Nine Mile Unit 2 Monthly Maintenance Rule Reliability Monitoring Report as of July 31, 2000, issued August 14, 2000

Selected System Health Reports for the second quarter, 2000.

## ATTACHMENT 1

# NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

### Reactor Safety

- Initiating Events
- Mitigating Systems
- Barrier Integrity
- Emergency Preparedness

### Radiation Safety

- Occupational
- Public

### Safeguards

- Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.