U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/OL-94-01

Docket No. 50-263 License No. DPR-22

Licensee: Northern States Power Company

Facility Name: Monticello Nuclear Power Plant

Examination Administered At: Monticello Nuclear Power Plant

Examination Conducted: Week of February 14, 1994

Examiners: Don Draper, Pacific Northwest Laboratories (PNL)
Bob Orton, PNL

Chief Examiner: M J Jordan for 3/2/94
R. L. Doornbos Date

Approved By: M J Jordan 3/2/94
M. J. Jordan, Chief Date
Operator Licensing Section 1

Examination Summary

Requalification examinations administered during the week of February 14, 1994 (Report No. 50-263/OL-94-01(DRS)). Written and operating requalification examinations were administered to nine Senior Reactor Operators (SROs), and three Reactor Operators (ROs). Two operating crews, and one staff crew, were evaluated on the simulator portion of the NRC examination. Three SROs who had been evaluated during previous examinations participated only during the dynamic simulator scenarios to complete crew compositions.

Requal Examination Results:
There were no individual failures on the written or Job Performance Measures (JPMs), and no individual or crew failures on the dynamic simulator portion of the NRC requalification examination. Based on the results of the examination and in accordance with the criteria of NUREG-1021, Revision 7, Operator Licensing Examiner Standards, ES-601, D.2.a, the Monticello Requalification Training Program has been assigned an overall program rating of satisfactory.

The following is a summary of the strengths and weaknesses noted during the performance of the examination and is provided for evaluation via your SAT based training program. No response is required.

STRENGTHS/WEAKNESSES:

Strengths:

Crew communications were good. (Section 7.1)

Good realism was used for inplant and backpanel operations during scenarios. (Section 6.a)

Evaluators thought ahead during JPM evaluations. (Section 3.a)

Weaknesses:

Crews were inconsistent in their implementation of the Emergency Operating Procedure (EOP) section on reactor blowdowns based on steam releases inside containment. (Section 7.b)

Crews were inconsistent in their actuation of the ATWS switches. (Section 7.b)

Two of the three crews observed did not conduct a shift brief at the start of the evaluation scenarios. (Section 7.b)

REPORT DETAILS

1. Examiners

+*R. L. Doornbos, Chief Examiner, NRC, Region III

2. Persons Contacted

Facility

*B. Hill, Plant Manager
*M. Owen, General Superintendent, Operations
+*B. D. Day, Manager, Training/Special Projects
+*B. Sawatzke, Superintendent, Operations Training
+*D. Cox, Operations Instructor
+*D. Fousek, Operations Instructor
+*J. MacIntyre, Operations Instructor
+*E. Sopkin, Shift Manager
*M. Song, Principal Production Engineer
+*T. Witchen, Shift Supervisor

U. S. Nuclear Regulatory Commission (NRC)

+*M. J. Jordan, Operator Licensing Branch, Section Chief
*S. P. Ray, Senior Resident Inspector, Monticello
*W. D. Stearns, Resident Inspector, Monticello

+Denotes those present at the training exit on February, 17, 1994.
*Denotes those present at the management exit on February 18, 1994.

3. Training Program Observations

The Monticello requalification training program required individual operator evaluations based on competencies be performed. Most evaluators were knowledgeable of the standard being used for the individual operator evaluations.

a. Strengths:

The evaluators were knowledgeable and courteous throughout the examination process. They put in extra time when necessary and maintained a professional attitude throughout the examination.

Evaluators were quick to think ahead when JPMs did not go as expected. One evaluator noticed that the operator had described opening only one scram discharge volume (SDV) vent valve during a JPM. The evaluator gave the appropriate cues that allowed, but did not lead, the operator to recognize and correct his oversight.

b. Weaknesses:

Training department development of critical tasks did not always meet the guidance of NUREG 1021, Examiner Standards. For example, crew critical tasks associated with the scenarios initially presented to the NRC for review did not always have safety significance to the plant or public and several critical performance steps in JPMs were subjective rather than objective evaluation criteria.

4. Written Examination Observations

Category A (Static) and B (Written) portions of the written examination were given in separate locations. Both the RO and SRO examinations in the Static had 20 questions while the Written had 30 questions on each exam.

a. Strengths

The majority of the questions provided on the written exam tested the operators at higher than the memory knowledge level. Most of the Static questions required the operator to locate and determine proper switch position or to read instruments correctly to answer the questions.

b. Weaknesses

The Static, as submitted, did not meet the guidance of NUREG 1021, Examiner Standards in the following ways: 1) There were no SRO only questions. NUREG 1021, requires each portion of the written examination to have SRO only questions. 2) One question on the Written portion of the examination had to be replaced on both the RO and SRO exam because it had three correct answers. NUREG 1021, requires multiple choice questions to have only one correct answer.

There was inconsistency in the use of emphasis techniques within the exams. Sometimes a word was bold typed (**NOT**) sometimes the emphasized word would be underlined (NOT). Additionally, there were several examples of grammatical errors found in the exams. These inconsistencies, taken individually, are not a major concern. However, when an operator sees inconsistancy and gramatical errors while taking an exam, this may cause confusion that could give invalid exam results.

5. Job Performance Measures (JPM)

Operator JPM scores ranged from 80% to 100% with each operator performing five JPMs during their requalification examination. Each operator verbalized their actions such that the evaluators were able to effectively evaluate their actions.

a. JPMs performed in the simulator/control room:

- Place Residual Heat Removal (RHR) in Torus Cooling with Failure of Minimum Flow Valve;
- Synchronize Turbine Generator with Output Grid;
- Perform Core Spray Pump Operability Test #0255-03-III and Core Spray Motor Operated Valve Operability Test #0255-03-AI-1;
- Reduction in Reactor Power with a Feedwater Pump Trip;
- Start a Reactor Feed Pump;
- Reactor Core Isolation Cooling System Operability Test with Failure of Speed Controller;
- Manually Start #11 Emergency Diesel Generator (EDG) (Control Room Actions);
- Isolate Core Spray Loop A;
- Perform Reactor Manual Control System Monthly Functional Test #1068;
- Shutdown Cooling Mode with RHR Minimum Flow Valve Failure;
- Classify Emergency Events Requiring E-Plan Implementation;

b. JPMs performed in the plant:

- Use of Alternate Injection for Reactor Pressure Vessel (RPV) Makeup;
- Place an Air Ejector in Service;
- Charge a Control Rod Drive Accumulator;
- Manually Start #11 EDG (In-plant actions);
- Place Division II 250 VDC Battery in Service;
- Shutdown Uninterruptable Power Supply (UPS) Y71 Inverter;
- Manually Open Scram Discharge Volume (SDV) Vent and Drain Valves;
- Shift the Control Rod Drive Flow Control Valve

6. Simulator Scenarios:

Six simulator scenarios were used over two days for the examination. Strengths and weaknesses of the scenarios are provided below, followed by a brief description of each scenario used during the examination.

a. Strengths:

The scenarios provided a challenging environment in which to evaluate the operators' performance. They provided good realism when an in-plant or backpanel operation needed to be performed. The simulator driver had a time validated chart that defined the amount of time the operator or action requested would be delayed before it would be performed. Operators who were sent out of the control room to install jumpers or gather data were held out of the scenario for the prescribed time and then allowed to return to continue their participation in the scenario. This was considered a good simulation technique.

b. Weaknesses:

All of the scenarios were developed such that no operator actions, surveillance or response to events, were necessary during the first five minutes of the scenario. This could give the crew a false sense of security in that they would expect to have this same amount of time to settle into a routine when on shift.

All scenario malfunctions were controlled by an internal timer. Having malfunctions controlled by a timer always allowed the crew to respond to, and in many cases correct, the malfunction before the next malfunction would occur. This activity did not provide a realistic evaluation environment. Actual plant evolutions are not tied to a controlled time, therefore, to properly evaluate opeators it has been the NRC's expectation that operators would be trained and evaluated in conditions that represent actual plant operating conditions.

c. Descriptions:

Scenario #4: SORV with Tailpipe Break; The unit was operating at full power with High Pressure Coolant Injection and #12 EDG out of service for maintenance. An instrumented jet pump riser broke, followed by a trip of #11 Reactor Building Closed Cooling Water pump. A circulating water pump pit flood occured which caused a loss of both circulating water pumps. Vacuum rapidly decreased requiring manual closure of the Main Steam Isolation Valves. Reactor pressure increased until automatic or manual pressure control with the Safety Relief Valves (SRVs) was commenced. When torus cooling was placed in service, one loop had a valve malfunction which prevented use of this loop in torus cooling. One of the relief valves failed to close after it was opened and blowdown to the torus continued with a broken tailpipe above the water line. This caused a rapid increase in drywell pressure. Torus and drywell sprays were be required on high drywell pressure.

Scenario #6: Turbine Failure with Low Power Antisipated Transient Without Scram (ATWS): With the unit at 55% power the Rod Block Monitor (RBM) upscale trip initiated. #11 Reactor Water Cleanup pump tripped on high temperature. Turbine bearing vibration increased on bearing numbers 3, 4, and 5. Vibrations increased to the alarm point and held temporarily while operators unloaded the turbine. Bypass valves stuck and the turbine tripped. An ATWS condition existed and turbine vibrations continued to increase causing turbine blading failure and casing penetration. Vacuum was lost. The SRVs lifted and required Standby Liquid Control (SBLC) to be injected. Control rods could not be inserted due to a loss of the "A" flow control valve and a failure of MO 3-20.

Scenario #10: Small leak in Drywell with Station Blackout; The reactor was at full power when #11 Recirculation MG tripped.

Number 11 EDG tripped due to a faulty overspeed trip switch. A loss of all offsite power resulted in a station blackout. The low-low set valves lifted and the "H" SRV's tailpipe broke and the valve stuck open. Without drywell spray capability the reactor was emergency depressurized. During the blowdown, #11 EDG was restored and was used to stabilize plant conditions using bus #15.

Scenario #13: Loss of Secondary Containment with Fuel Element Failure and SDV Failure; The "A" recirculation signal to the Average Power Range Monitors (APRMs) was lost resulting in an "A" side half-scram and a single rod scram due to a failed fuse. While troubleshooting the nuclear instrument failure, the "B" Reactor Protection System (RPS) bus developed a ground and caused a full scram, ATWS, and fuel element failure. The West scram discharge volume vent would not isolate and a break in the vent line caused steam to be released in the West control rod drive accumulator bank area. The "B" standby gas treatment system would not function causing a loss of secondary containment and radioactive material was released throughout the reactor building. Emergency Depressurization was required to control the release.

Scenario #14: ATWS with Loss of High Pressure Injection; An instrumented jet pump failed requiring a plant shutdown. An I&C technician, working on the ATWS switches, caused a high level trip of the feedwater pumps and the turbine. The reactor feedwater pump high level bypass switch failed. An ATWS occured, however, rods drifted in. RCIC started then tripped and could not be restarted. Control Rod Drive (CRD) normal injection was the only high pressure source available. Level decreased causing the operators to Emergency Depressurize prior to level reaching -156 inches.

Scenario #20: ATWS with Loss of Level Indication; Number 11 recirculation pump tripped followed by a turbine trip and a failure to scram. SBLC was injected. Both reactor instrumentation reference legs failed resulting in an unknown reactor level. RPV flood was required.

7. Crew Performance:

All operators were graded as satisfactory in their performance during the dynamic simulator scenarios. Strengths and weaknesses of the crews are provided below.

a. Strengths:

Crew communications during dynamic scenarios was good. In most cases the operators used and required others to use repeatbacks in their communications. However, repeatbacks were still not "second nature" to all operators.

b. Weaknesses:

The NRC expects that training provided to crews, under a Systemactic Approach to Training (SAT) based training program would result in the same action being taken by the crew under the same circumstances. Inconsistant crew performance during evaluations creates the potential for incorrect operator actions during events that may put the public's health and safety at risk. There were two events where the crews performed a major evoluation differently, and the licensee evaluation team did not have a standard to which the crews were held. The events were: 1) Crews were inconsistent in their application of the blowdown procedure when steam was being released into the reactor building. The decision to blowdown, based on high room temperature, as identified in C.5-1300, Secondary Containment Control, was to be based on local surveys, however, one crew did not perform local surveys prior to directing and performing a reactor blowdown. 2) Crews were inconsistent in their actuation of ATWS controls. One crew only actuated one side of the ATWS controls while the other used both sides. There should have been consistent application of this action between crews.

Two of the three crews evaluated did not conduct a shift briefing at the start of the scenario. It is the NRC's expectation that crews perform in the simulator as they would in the plant. This includes conducting shift briefings as required.

8. Operations, Security, Rad Protection, Other

Interaction between the examiners and each of these organizations was good. Each presented a professional demeanor while providing plant access to the examiners.

9. Simulator Observations:

Monticello had installed a new simulator computer prior to the exam prep week. No simulator discrepancies were identified during the exam week.

10. Exit Meeting

The training exit was held at the Monticello training facility on February 17, 1994, followed on February 18 by the management exit. Those attending each exit are listed in Section 2 of this report. Strengths and weaknesses noted in this report were discussed.

ENCLOSURE 2

REQUALIFICATION PROGRAM EVALUATION REPORT

Facility: Monticello Nuclear Power Station

Examiners: R. Doornbos, Chief Examiner, NRC, Region III
D. Draper, Pacific Northwest Laboratories (PNL)
B. Orton, PNL

Dates of Evaluation: February 14-18, 1994

Areas Evaluated: X Written X Oral X Simulator

Examination Results:

	RO Pass/Fail	SRO Pass/Fail	Total Pass/Fail	Evaluation (S or U)
Written Examination	3/0	9/0	12/0	S
Operating Examination JPMs	3/0	9/0	12/0	S
Simulator	3/0	12/0	15/0	S

Evaluation of facility written examination grading S

Crew Examination Results:

	Crew 1 Pass/Fail	Crew 2 Pass/Fail	Crew 3 Pass/Fail	Evaluation (S or U)
Operating Examination	PASS	PASS	PASS	S

Overall Program Evaluation

Satisfactory

Submitted:
R. Doornbos
Examiner
3/2/94

Forwarded:
M. Jordan
Section Chief
3/2/94

Approved:
M. Ring
Branch Chief
3/2/94