U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-220/89-13

License No. DPR-63

Licensee: Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York

Facility Name: Nine Mile Point Unit 1

Inspection Conducted: May 22-25, 1989

Inspectors: Allen G. Howe — 7/26/89
A. Howe, Sr. Operations Engineer — Date

Allen G. Howe for — 7/26/89
D. Florek, Sr. Operations Engineer — Date

Allen G. Howe for — 7/26/89
W. Cook, Sr. Resident Inspector — Date

Reviewed by: RJ Conte — 7/26/89
R. Conte, Chief, BWR Section — Date
Operations Branch, DRS

Approved by: BA Boger for — 7/26/89
Robert M. Gallo, Chief — Date
Operations Branch
Division of Reactor Safety

Executive Summary:

This was a special announced inspection which assessed the Nine Mile Point Unit 1 operator proficiency and use of facility procedures, primarily Emergency Operating Procedures, during emergency situations/transients. This inspection assessed the performance of the Nine Mile Point Unit 1 on-shift operating crews using NRC developed scenarios on the Nine Mile Point Unit 1 plant specific simulator.

No violations or deviations were identified. There was improved operator proficiency in the use of the Emergency Operating Procedures from a previous inspection in this area. Five of six crews were determined to be satisfactory.

All six Station Shift Supervisors (SSS) and Assistant Station Shift Supervisors (ASSS) were determined to be satisfactory. However, the SSS and ASSS for the crew, which was not considered satisfactory, demonstrated individual weaknesses that were considered as part of the crew evaluation rather than individually. In addition, one Chief Shift Operator for one of the crews, which was considered satisfactory, demonstrated individual weaknesses. Weaknesses were also identified regarding crew communications and crew duties, assignments, and responsibilities. Additional weaknesses were identified in the use of selected facility procedures. The crew and individual who did not demonstrate satisfactory performance will require reassessment prior to power operation. The NRC may also assess an additional crew(s) to determine if actions relative to the weaknesses were effective.

DETAILS

1.0 PERSONS CONTACTED AND STATION SHIFT SUPERVISORS of the CREWS EVALUATED

Licensee representatives

*+ W. Bandla, Assistant Superintendent Operations
* C. Beckham, Manager NQAO
#* G. Brownell, Regulatory Compliance
* J. Bunyen, Assistant Manager
*+ L. Burkhardt, Executive Vice president Nuclear Operations
# J. Burton, Supervisor NQAO Surveillance
#* M. Colomb, Regulatory Compliance
#*+ K. Dahlberg, Station Superintendent Unit 1
* A. Denny, ISEG
J. Earls, SSS of Crew C
#* L. Fenton QA Lead Auditor
G. Holthouse, SSS of Crew A
* J. Jordan, Attorney
D. Lilly, SSS of Crew R
* P. MacEwan, NYSEG
J. Parrish, SSS of Crew E
#* M. Peifer, Manager Nuclear Services
+ M. Peterson, Training
*+ N. Rademaker, Executive Assistant
#*+ R. Randall, Operations Superintendent
* R. Remus, Superintendent Chemistry/Radiation
#*+ A. Rivers, Superintendent Training
#*+ R. Sanaker, Training
*+ R. Seifried, Assistant Superintendent Training
G. Shelling, SSS of Crew B
M. Stancliffe, SSS of Crew D
* W. Thomas, OD Consultant
+ J. Willis, General Superintendent

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#*+ R. Conte, Chief BWR Section, Operations Branch
R. Gallo, Chief Operations Branch, DRS
+ R. Laura, Resident Inspector
# + R. Temps, Resident Inspector

# Denotes those who participated in the telephone conducted exit on June 1, 1989.
* Denotes those present at the interim exit on May 25, 1989.
+ Denotes those persons who observed the NRC assessment process at times at the Nine Mile Point Unit 1 simulator.

2.0 OVERVIEW OF INSPECTION

Inspection Report 50-220/88-22 identified that the operating staff was unable to use the Emergency Operating Procedure (EOP) flow charts. Deficiencies were observed in three areas: an apparent misunderstanding regarding emergency operating concepts, procedure adherence and the use of the procedures. In addition, teamwork and communication skills, as well as recognition of emergency system status and degraded plant conditions, were also identified as weaknesses observed during the inspection.

The licensee in a letter dated August 12, 1988, responded to the inspection findings and also identified that actions to correct EOP and operator training deficiencies will be further addressed in the action plan for Unit 1 restart in response to CAL 88-17.

The NRC in a letter dated March 24, 1989, made arrangements for an NRC assessment of operator proficiency, provided that the facility senior management indicate in writing that the Unit-1 operators have achieved the desired level of proficiency in using the facility procedures. The NRC evaluation would not only emphasize EOP implementation, but also the implementation of Emergency Action Procedures (EAP) and Emergency Plan Implementation Procedures (EPP). In a letter dated May 19, 1989, the facility provided senior management endorsement of operator proficiency in the use of facility procedures and formally requested that the NRC conduct assessments of the Nine Mile Point Unit 1 operators in this area.

The NRC conducted the assessment of Nine Mile Point Unit-1 operator proficiency and use of facility procedures during the week of May 22, 1989. The NRC developed scenarios to use on the Nine Mile Point Unit-1 simulator to determine if weaknesses previously identified had been corrected. The NRC verified the adequacy of the scenarios prior to use with the assistance from two facility representatives from training and one facility representative from operations. These individuals also assisted in or operated the simulator during the NRC assessments and signed security agreements for the period of the NRC assessments stating that they would not divulge the contents of the simulator scenarios or participate in any training or warm up scenarios with the operating crews. To assure that the type of scenario performed on one crew would not bias the performance of a subsequent crew, the operating crews also signed statements that during the NRC assessment period, they would not divulge the contents of the scenarios to personnel who had not observed the specific scenario.

Acceptance criteria were developed based on the current operator licensing examiner standards to further assure that the operator weaknesses previously identified had been corrected. Acceptance criteria were specifically developed for the Station Shift Supervisor (SSS), Assistant Station Shift Supervisor (ASSS) and for the overall crew which include the SSS and ASSS as well as the other members of the crew. The criteria used are shown in Attachment 1.

Each crew participated in two scenarios. A crew consisted of the following:

1 - Station Shift Supervisor (SSS) - Senior Reactor Operator (SRO)
1 - Assistant Station Shift Supervisor (ASSS) - SRO
1 - Chief Shift Operator (CSO) - Reactor Operator (RO)
2 - Nuclear Auxiliary Operator E (NAOE) - RO
2 - Auxiliary Operators - Non licensed

Following each scenario the NRC observed the crew self critique of their performance and then held additional discussion to clarify NRC observations during the scenarios.

3.0 SUMMARY OF RESULTS

The following table summarizes the results of the NRC assessments of the Nine Mile Point Unit-1 Operator performance. The details to support the table can be found in subsequent sections. In addition, one CSO, of a crew that was rated as satisfactory, did not demonstrate satisfactory performance. Satisfactory performance was determined by use of the acceptance criteria of Attachment 1.

	TOTAL NO. ASSESSED PERFORMANCE	DEMONSTRATED SATISFACTORY PERFORMANCE	DID NOT DEMONSTRATE A SATISFACTORY LEVEL OF PERFORMANCE
STATION SHIFT SUPERVISOR	6	6*	0
ASSISTANT STATION SHIFT SUPERVISOR	6	6*	0
CREW	6	5	1

* SSS and ASSS, that are part of crew that did not demonstrate satisfactory performance, demonstrated individual weaknesses that are considered as part of the crew evaluation.

4.0 CONCLUSIONS, STRENGTHS AND WEAKNESSES

The following section discusses the conclusions, strengths and weaknesses observed during the course of the NRC assessment. These strengths and weaknesses were generally observed across all operating crews. Some of the weaknesses noted below are similar to those identified in Inspection Report 50-220/88-22. While weaknesses in operator performance remain, substantial improvement was noted over previous performance in these areas.

1. Communication practices for all crews require improvement, some more than others. Use of slang terminology, imprecise communications and inconsistent repeatbacks or acknowledgements were widespread. Plant status, changed condition or parameter updates were inconsistently provided or requested by the crews and often not heard or acknowledged by the crew members. The effectiveness of the SSS briefings were inconsistent among the crews. The difficulties observed during the scenarios were in several instances a result of the poor communication practices. The poor communication practices did not appear to be the result of lack of expectations on the part of the operators because all crews did perform some proper communications. However when the situations posed during the scenario became more challenging, poor communication methods became more apparent. Operations Department Instruction N1-ODI-1.06 Operational Voice Communications Guide prescribes the communication practices expected of the operations staff, but the prescribed practices were consistently not followed during the scenarios.

   As a subset of communication difficulties, several chief shift operators did not inform the senior reactor operators of recovery actions that they were pursuing until the recovery actions were completed. This lack of communication did not allow the SSS the opportunity to properly manage and prioritize the crew member activities and in some cases caused delays in executing or non-adherence to SSS directions. Communications by all shifts were considered weak.

2. The SSS and the ASSS generally worked effectively together to respond to the scenarios. The role of the ASSS varied from crew to crew. Some ASSSs were very knowledgeable of EOPs and the SSS utilized the ASSS to check his work. Other ASSSs were used to follow the Primary Containment Control EOP (EOP-4), and performed Emergency Action Procedures and Emergency Plan Implementation Procedures recommendations. By plant procedures during an emergency the ASSS reverts to a Shift Technical Advisor function and provides little direction to the reactor operators. The ASSS generally only recommends directions and/or decisions to the SSS. The SSS makes the final decision or issues the orders. However, using the ASSS to focus on containment control takes the ASSS away from performing the STA function.

3. The roles of the reactor operators varied from crew to crew and this affected crew performance on each scenario. The CSOs were not effective members of the crews when the SSS allowed the CSO to establish priorities and assignments or when the SSS only used the CSO to oversee the two other reactor operators with infrequent control board manipulations required of the CSO.

   The use of the CSO, as described above, resulted in certain SRO responsibilities being distributed to the reactor operators. In addition, no standard approach among the crews existed for reactor

operator assignments during scenarios. Some crews assigned the reactor operators to specific panel responsibilities for most of the scenario such as ECCS, feedwater and electrical whereas other crews required the reactor operators to go from panel to panel within each scenario causing them to refamiliarize themselves with panel conditions before operating the controls.

The lack of definition of the CSO and other reactor operators' roles is considered as a weakness.

4. The reactor operators were inconsistent in using procedures during electrical switching operations. Some operators utilized the available procedures and some did not. Some operators did not utilize the procedures properly. Difficulty was observed among several crews in the ability to restore 115 kv power when it was made available during the scenarios. The operator reliance on memory and the inability to restore electrical power to service is considered a weakness.

5. Assessment of plant impact when a "power board" (electrical distribution bus) was de-energized was considered a weakness among several crews. The crews recognized that a power board was de-energized but did not always assess what operating and standby equipment was affected due to power board de-energization.

6. Several crews did not use all the information available to diagnose failures, especially backup information when primary information was confusing or misleading.

7. There was an inconsistent approach to avoiding the restricted region of the reactor power to core flow map. The restricted region is that region that has the potential for inducing power oscillations. Some crews avoided the region; some SSSs told the reactor operators to avoid entering the region, but the operators entered the region, and some crews entered the region with no apparent direction to avoid the region. Inconsistent avoidance of the restricted region is considered a weakness.

8. Differences were noted in the crew responses and approaches to beginning a normal cooldown versus stabilizing at rated conditions. EOP-2 requires that a normal cooldown be initiated. The EOP basis documents indicate that when all control rods are inserted and the emergency still exists a normal cooldown is required. Some SSSs stabilized and maintained pressurized conditions rather than beginning a normal cooldown. Inconsistent application of EOP cooldown steps is considered a weakness.

9. Several crews closed the MSIVs when all feedwater was lost. When requested for the procedural basis for the actions, the response provided was that training provided such guidance. Further investigation indicated that a procedure once existed for loss of feedwater

that required such actions, but the procedure does not exist at this time. The licensee committed to evaluate the appropriate operator actions for a loss of feedwater.

Operator action to close MSIVs when all feedwater is lost without appropriate procedural guidance is considered a weakness.

10. The SSSs were not consistent in the use of the cautions and notes of EOP-1. Some incorporated the EOP-1 cautions and notes in the directions provided and some did not until prompted by individual crew members.

11. Emergency classifications were generally promptly made and implemented. However, recommendations for protective actions for a General Emergency per the guidance of EPP-26 for the same scenario were not always consistent. Two SSSs recommended evacuation directly per the flow chart in EPP-26 whereas the other two utilized other information received on radioactive releases and did not recommend protective actions be taken.

12. No procedure or policy direction is available to reactor operators for actions following a loss of plant annunciators. This is considered a weakness.

13. All SSSs and ASSSs entered the EOPs when the entry conditions were satisfied.

14. Placekeeping techniques in the EOPs varied among the SSS and ASSS. Some individuals used a line out method to determine steps accomplished and circled the place of the EOP flow charts when they were in a holding or waiting condition. Others simply checked off the steps completed. Lack of consistency could cause problems when crew members work with different shifts or if a shift turnover occurred during the emergency. All SSSs and ASSSs were observed to consistently update the EOP flow charts when parameter data was received by crossing out the old data.

5.0 ASSESSMENT BY SHIFT CREW

Crew A - Station Shift Supervisor - Holthouse

Crew knowledge and use of EOPs was satisfactory; however, during the scenario with partial rod insertion, the SSS did not enter EOP step 4.5.2 to control water level above Top of Active Fuel (TAF) after emergency depressurization, but restored water level to the normal band. Appropriate Emergency classifications were performed. The SSS incorporated EOP-1 cautions and notes when providing direction to the crew. Communications with the crew were not always consistent with the facility requirements and were imprecise and several times utilized slang type terminology.

Crew B - Station Shift Supervisor - Shelling

The SRO use of EOPs was weak. The SSS exited EOP-2 prematurely in both scenarios and missed steps in the EOPs in both scenarios. In one scenario the SSS did not direct tripping of drywell cooling fans before spraying containment and was slow in beginning a normal cooldown after a scram with all rods inserted. In the second scenario, the SSS entered EOP-8 after water level had dropped to below TAF and ordered core spray pumps to be locked out due to taking the wrong path through EOP-8. This action resulted in conditions which could not assure adequate core cooling, and this situation was eventually recognized by the SSS. The SSS did not take action to vent containment for hydrogen control per EOP-4, but continuously monitored the parameter for changes.

Communications between the SSS and crew were not precise, and they consistently used slang terminology. Poor communication occurred from the crew to the SSS and from the SSS to the crew. Very few crew updates were provided; and, on several occasions, the crew requested that the SSS provide his plans regarding the EOP's. The SSS also allowed imprecise communications to occur among other crew members. During the second scenario the SSS used good diagnostic approaches to confirm that the RPS had not failed but that the annunciator system had failed. Appropriate emergency classifications were made.

The CSO (a reactor operator) was not effectively utilized by the SSS. The CSO performed minimal control board operations because he acted as a supervisor for the other two reactor operators on shift. As a result, these two reactor operators were overloaded with control board manipulations. The CSO was familiar with EOP entry conditions and effectively prompted the SSS on the entry conditions. However, the CSO (who was not reading the EOP's since the SSS does this) prompted the SSS on several occasions to secure equipment being utilized in accordance with the EOP's. On these occasions, the SSS would initially concur with the CSO, then rescind his concurrence after discussing these actions with the ASSS. The result of these activities was added confusion among the crew members as to expected actions and instances where needed equipment was nearly prematurely secured.

This crew also demonstrated a lack of teamwork which resulted in a poor coordination of activities. The reactor operators were observed to have a verbal confrontation on individual duties and responsibilities. The confrontation was possibly caused by a lack of definition in the individual duties and responsibilities. The SSS appeared to lack confidence in the ASSS. The ASSS displayed a lack of assertiveness in a few instances; however, recommendations made to the SSS were generally good.

Several difficulties were experienced by the operators on the control boards in electrical power operation, which complicated the scenario, and in the restoration of feedwater.

Overall, this crew was considered unsatisfactory.

Crew C - Station Shift Supervisor - Earls

Knowledge and use of EOPs was satisfactory. However, during emergency depressurization, the SSS did not monitor reactor pressure, but kept requesting information on reactor level and, as such, was slow in responding to step 2.5 of EOP-8 which prescribed when depressurization was to be stopped. Appropriate emergency classifications were performed. The SSS kept the crew constantly informed of plant status and his plans with respect to the EOPs. Communication was weak during the emergency depressurization portion of one scenario.

Crew D - Station Shift Supervisor - Stancliffe

Knowledge and use of EOPs were satisfactory. Emergency classifications were appropriate in one scenario and conservative in the other scenario. The SSS declared a general emergency without all of the conditions required to make such a classification in one scenario. The SSS did not diagnose that the leak entering the reactor building was coming from the scram discharge instrument volume but followed the EOP action that would be required if there was a challenge to secondary containment so diagnosis was not required to handle the scenario. Several instances of poor communications were observed at all levels.

The CSO for this crew was not effectively integrated into the crew. Several instances of weaknesses were observed which are described in section 6.

Crew E - Station Shift Supervisor - Parish

Knowledge and use of EOPs was satisfactory. Emergency classifications were appropriate. Overall crew communication was minimally acceptable and in a few instances crew communications were not adequate to inform the SSS of plant status changes to allow the SSS to direct activities. The SSS was not informed that the operating liquid poison pump had tripped for several minutes (this delay was also the result of weak assessment of the effects of a power board de-energization) and, that the leak in secondary containment had stopped when the scram had reset and that power was able to be restored to the power board that had lost power.

Crew R - Station Shift Supervisor - Lilly

Knowledge and use of EOPs were satisfactory. Emergency classifications were appropriate, but the upgrade to a Site Area Emergency when all annunciators were lost and a transient occurred was somewhat late. The SSS did not diagnose, and the remainder of the crew did not effectively assist in the diagnosis of the loss of annunciators, and he believed that he had a failure of RPS, even though the RPS functions were consistent with a single failed APRM and tests of the annunciators proved they were not functioning. Directing a manual scram with no annunciators available was not necessary. Communication was generally satisfactory in the first scenario with more imprecise communication observed during the second scenario when annunciators were lost.

6.0 INDIVIDUAL WEAKNESS

CSO of Crew D

The CSO demonstrated significant weakness in communications in that he failed to acknowledge significant information and instructions relayed to him or failed to repeat back information and instructions on numerous occasions. The CSO did report some actions such as performance of immediate scram actions; but, on several occasions, he did not assure his information was received (i.e. reports to others made while their back was turned or they were speaking to someone else). Several times the CSO silenced annunciators without reporting the alarm.

The CSO appeared to have a weak understanding of plant conditions, as evidenced by his unneeded action to close a turbine bypass valve (previously manually opened) in order to reduce flow after an emergency blowdown commenced and the MSIV's were closed.

The CSO also dispatched a fire brigade to investigate a fire alarm in the reactor building after the reactor building had been evacuated and a General Emergency had been declared. This action placed the fire brigade at risk of excessive radiation exposure without the cognizance of the SSS.

In summary, the CSO's weak communications, apparent lack of understanding of plant status, and independent actions resulted in ineffective integration with the shift crew.

7.0 EOP-4 Depressurization Strategy

During observation of simulator training (as reported in Inspection Report 50-220/89-11), the inspector questioned the implementation of a step in EOP-4, Primary Containment Control, regarding emergency depressurization. The use of the main condenser when emergency depressurization is anticipated versus when emergency depressurization is required was discussed. The inspector reviewed licensee procedure bases and other documentation and the EOP Generic Technical Guidelines. The inspector also discussed this concern with licensee training and technical staff members and operations management. The inspector noted a different approach depending on which party was addressing the issue and requested that a clear policy be provided before evaluations were conducted. This policy was provided as requested and evaluations were performed as scheduled. No concerns were identified regarding the emergency depressurization policy.

8.0 Exit Meeting

An exit meeting was conducted on May 25, 1989, at the simulator facility with the licensee senior site representatives (denoted in paragraph 1.0). The inspection scope and preliminary findings were summarized at the meeting. The senior licensee management representative questioned whether the NRC observed any operator attitude difficulties with training. The NRC did not observe any such problems during the course of the operator assessments.

A subsequent telephone exit was conducted on June 1, 1989 with the licensee representatives denoted in paragraph 1.0 to provide the licensee with additional conclusions as detailed in the inspection report. The NRC inspectors indicated that a licensee response would be requested to address the weaknesses identified, as well as remedial training for the individual and crew that was not satisfactory. Additional NRC staff reassessment would be required for the crew and individual prior to startup and that NRC staff may also assess one additional crew(s) to assess the adequacy of the licensee actions regarding the weaknesses identified.

ATTACHMENT 1

Acceptance Criteria

ATTACHMENT 1

UNDERSTANDING/INTERPRETATION OF ANNUNCIATOR/ALARM SIGNALS

Did the STATION SHIFT SUPERVISOR:

(a) NOTICE and ATTEND to annunciator/alarm signals in order of their importance/severity?

3	2	1
Accurately and efficiently, in all instances.	Minor difficulties in attending to or prioritizing attention	Failed to attend to/prioritize important alarms; slow response and/or distracted by nuisance alarms.

(b) Correctly INTERPRET the meaning and significance of alarms and annunciators?

3	2	1
Understood/quickly determined what failures alarms were indicating	Minor inaccuracies/some delays in alarm interpretation.	Misinterpretations, delays or misuse of ARCs resulted in plant degradation.

(c) VERIFY that annunciator/alarm signals were consistent with plant/system conditions?

3	2	1
Ensure proper verification when necessary.	Minor lapses in alarm verification, but no inappropriate actions as a result of inadequate verification.	Failed to verify and or improperly verified on important occasions; didn't notice inconsistency between alarms and plant conditions.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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DIAGNOSIS OF EVENTS/CONDITIONS BASED ON SIGNALS/READINGS

Did the STATION SHIFT SUPERVISOR:

(a) RECOGNIZE off-normal trends/status?

3	2	1
Quick and accurate recognition.	Some delays in recognizing off-normal conditions.	Spurious omissions, delays of inaccuracies in recognition.

(b) Ensure the collection of CORRECT, ACCURATE and COMPLETE information and reference material upon which to base diagnoses?

3	2	1
Ensure that all relevant indications and references were checked.	Minor instances of overlooking, overreliance on misinterpretation of indications and or references.	Serious instances of failure to use or heed important information or misuse of data.

(c) Correctly DIAGNOSE plant conditions based on control room indications?

3	2	1
Diagnoses were accurate.	Minor errors/ difficulties in diagnosis	Faulty diagnosis adversely impacted plant status.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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UNDERSTANDING OF PLANT/SYSTEM RESPONSE

Did the STATION SHIFT SUPERVISOR:

(a) INTERPRET control room information correctly and efficiently to ascertain and verify the status/operation of plant systems?

3	2	1
Accurate and efficient information interpretation.	Minor errors in interpreting information.	Serious omissions, delays or inaccuracies in information interpretation.

(b) Remain ATTENTIVE to control room indications?

3	2	1
Regularly scanned indications; anticipated changes in plant conditions due to events in progress.	Sporadic scanning of indications; minor lapses in anticipating predictable changes.	Rarely scanned indications; failed to anticipate predictable changes in plant status.

(c) Demonstrate through directives and actions a thorough UNDERSTANDING of how the PLANT, SYSTEMS, and COMPONENTS operate and interact?

3	2	1
Demonstrated through understanding of how systems/components operate and interact.	Minor instances of errors due to gaps in knowledge of how systems/components operate.	Inadequate knowledge of system/component operation resulted in serious mistakes of plant degradation.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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COMPLIANCE/USE OF PROCEDURES

Did the STATION SHIFT SUPERVISOR:

(a) REFER to correct procedures and procedural steps when appropriate?

3	2	1
Requested/readily located all appropriate procedures as necessary.	Minor lapses in referring to/ locating appropriate procedures.	Failed to correctly refer to procedures in important instances.

(b) USED PROCEDURES CORRECTLY, including following procedural steps in correct sequence, abiding by procedural cautions and limitations, selecting correct paths on decision blocks and correctly transitioning between procedures?

3	2	1
Ensured accurate, timely enactment of procedural steps.	Minor errors, but made necessary corrections in timely fashion.	Significant errors which led to impeded/ slow recovery and/or unnecessary plant degradation.

(c) Ensure the safe efficient IMPLEMENTATION of procedures by the CREW?

3	2	1
Assess Shift Supervisor directions provided to the crew for acceptability. If directions are given to crew inform SS.	Allowed lapses in implementation by the crew.	Read procedures to himself; failed to orchestrate/verify use of procedures by crew members.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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COMMUNICATIONS / CREW INTERACTIONS

Did the STATION SHIFT SUPERVISOR:

(a) Communicate in a clear, easily understood manner?

3	2	1
Communications were timely, clear-cut, and easy to hear and understand.	At times communications were confusing, hard to hear or understand.	Communications were ill-timed, vague and/or difficult to hear of interpret.

(b) Keep crew members and those outside the control room informed of plant status?

3	2	1
Provided others with accurate, pertinent information throughout scenario.	Minor instances of needing to be prompted for info; some incomplete inaccurate info.	Failed to provide needed information.

(c) ENSURES RECEIPT of clear easily understood communications from the crew and others?

3	2	1
Requests information clarification when necessary; understands communications from others.	Minor instances of failing to require or acknowledge info from others.	Failed to request needed info or inattentive when info was provided; serious misunderstanding among the crew.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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DIRECT SHIFT OPERATIONS

Did the STATION SHIFT SUPERVISOR:

(a) Take TIMELY, DECISIVE ACTION when problems arose?

3	2	1
Took early remedial recuperative action when necessary.	Minor instances of failing to take action within reasonable period of time.	Failure to take timely action resulted in deterioration of plant conditions.

(b) Provide TIMELY, WELL THOUGHT OUT DIRECTIONS that facilitated crew performance and demonstrated appropriate concern for the safety of the plant, staff, and public?

3	2	1
Directives enabled safe, integrated crew performance.	Minor instances of incorrect, trivial or difficult to carry out orders.	Directives inhibited safe crew performance; crew had to explain why orders couldn't or shouldn't be followed.

(c) Stay in a position of OVERSITE providing an appropriate amount of Direction and Guidance?

3	2	1
Stayed involved, but without being too intrusive; anticipated crew needs and provided guidance when necessary.	Crew had to solicit assistance on occasion, interfering with their ability to carry out actions.	Lost the big picture; crew had to repeatedly request/ provide guidance; failed to verify correct enactment of directives.

(d) SOLICIT and INCORPORATE FEEDBACK from crew to foster an effective, team orientated approach to problem solving/decision making?

3	2	1
Involved crew in problem solving process as appropriate, leading to effective team decision making.	At times, failed to involve crew in decision making when it would have been appropriate, detracting from team orientated approach.	Decisions made without needed crew participation or consultation; crew divisiveness was counter-productive.

UNDERSTANDING/INTERPRETATION OF ANNUNCIATOR/ALARM SIGNALS

Did the ASSISTANT STATION SHIFT SUPERVISOR:

(a) NOTICE and ATTEND to annunciator/alarm signals in order of their importance/severity?

3	2	1
Accurately and efficiently, in all instances.	Minor difficulties in attending to or prioritizing attention	Failed to attend to/prioritize important alarms; slow response and/or distracted by nuisance alarms.

(b) Correctly INTERPRET the meaning and significance of alarms and annunciators?

3	2	1
Understood/quickly determined what failures alarms were indicating	Minor inaccuracies/some delays in alarm interpretation.	Misinterpretations, delays or misuse of ARCs resulted in plant degradation.

(c) VERIFY that annunciator/alarm signals were consistent with plant/system conditions?

3	2	1
Ensure proper verification when necessary.	Minor lapses in alarm verification, but no inappropriate actions as a result of inadequate verification.	Failed to verify and or improperly verified on important occasions; didn't notice inconsistency between alarms and plant conditions.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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DIAGNOSIS OF EVENTS/CONDITIONS BASED ON SIGNALS/READINGS

Did the ASSISTANT STATION SHIFT SUPERVISOR:

(a) RECOGNIZE off-normal trends/status?

3	2	1
Quick and accurate recognition.	Some delays in recognizing off-normal conditions.	Spurious omissions, delays of inaccuracies in recognition.

(b) Ensure the collection of CORRECT, ACCURATE and COMPLETE information and reference material upon which to base diagnoses?

3	2	1
Ensure that all relevant indications and references were checked.	Minor instances of overlooking, overreliance on misinterpretation of indications and or references.	Serious instances of failure to use or heed important information or misuse of data.

(c) Correctly DIAGNOSE plant conditions based on control room indications?

3	2	1
Diagnoses were accurate.	Minor errors/ difficulties in diagnosis	Faulty diagnosis adversely impacted plant status.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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UNDERSTANDING OF PLANT/SYSTEM RESPONSE

Did the ASSISTANT STATION SHIFT SUPERVISOR:

(a) INTERPRET control room indicators correctly and efficiently to ascertain and verify the status/operation of plant systems?

3	2	1
Accurate and efficient instrument and display interpretation.	Minor errors in interpreting instruments and displays.	Serious omissions, delays of inaccuracies in instrument and display interpretation.

(b) Remain ATTENTIVE to control room indications?

3	2	1
Regularly scanned indications; anticipated changes in plant conditions due to events in progress.	Sporadic scanning of indications; minor lapses in anticipating predictable changes.	Rarely scanned indications; failed to anticipate predictable changes in plant status.

(c) Demonstrate through directives and actions a thorough UNDERSTANDING of how the PLANT, SYSTEMS, and COMPONENTS operate and interact?

3	2	1
Demonstrated through understanding of how systems/components operate and interact.	Minor instances of errors due to gaps in knowledge of how systems/components operate.	Inadequate knowledge of system/component operation resulted in serious mistakes of plant degradation.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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COMPLIANCE/USE OF PROCEDURES

Did the ASSISTANT STATION SHIFT SUPERVISOR:

(a) REFER to correct procedures and procedural steps when appropriate?

3	2	1
Requested/readily located all appropriate procedures as necessary.	Minor lapses in referring to/ locating appropriate procedures.	Failed to correctly refer to procedures in important instances.

(b) USED PROCEDURES CORRECTLY, including following procedural steps in correct sequence, abiding by procedural cautions and limitations, selecting correct paths on decision blocks and correctly transitioning between procedures?

3	2	1
Ensured accurate, timely enactment of procedural steps.	Minor errors, but made necessary corrections in timely fashion.	Significant errors which led to impeded/ slow recovery and/or unnecessary plant degradation.

(c) Ensure the safe efficient IMPLEMENTATION of procedures by the CREW?

3	2	1
Kept SSS and crew informed of procedural status; got acknowledgement from crew when reading procedures.	SSS occasionally had to question ASSS regarding status; allowed lapses in implementation by the crew.	Read procedures to himself; failed to orchestrate/verify use of procedures by crew members.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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COMMUNICATIONS / CREW INTERACTIONS

Did the ASSISTANT STATION SHIFT SUPERVISOR:

(a) Communicate in a clear, easily understood manner?

3	2	1
Communications were timely, clear-cut, and easy to hear and understand.	At times communications were confusing, hard to hear or understand.	Communications were ill-timed, vague and/or difficult to hear of interpret.

(b) Keep crew members and those outside the control room informed of plant status?

3	2	1
Provided others with accurate, pertinent information throughout scenario.	Minor instances of needing to be prompted for info; some incomplete inaccurate info.	Failed to provide needed information.

(c) ENSURES RECEIPT of clear easily understood communications from the crew and others?

3	2	1
Requests information clarification when necessary; understands communications from others.	Minor instances of failing to require or acknowledge info from others.	Failed to request needed info or inattentive when info was provided; serious misunderstanding among the crew.

Satisfactory _____ Unsatisfactory _____

COMMENTS: _____

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DIRECT SHIFT OPERATIONS

Did the ASSISTANT STATION SHIFT SUPERVISOR:

(a) Take TIMELY, DECISIVE ACTION when problems arose?

3	2	1
Took early remedial recuperative action when necessary.	Minor instances of failing to take action within reasonable period of time,	Failure to take timely action resulted in deterioration of plant conditions.

(b) Provide TIMELY, WELL THOUGHT OUT RECOMMENDATIONS OR DIRECTIONS that facilitated crew performance and demonstrated appropriate concern for the safety of the plant, staff, and public?

3	2	1
Recommendations or directives enabled safe, integrated crew performance.	Minor instances of incorrect, trivial or difficult to carry out acions.	Recommendations and directions inhibited performance; crew had to explain why action couldn't or shouldn't be followed.

(c) Stay in a position of OVERSITE providing an appropriate amount of Direction and Guidance?

3	2	1
Stayed involved, but without being too intrusive; anticipated crew needs and provided guidance when necessary.	Crew had to solicit assistance on occasion, interfering with their ability to carry out actions.	Lost the big picture; SSS had to repeatedly request assistance; failed to verify correct enactment of SSS directives.

(d) SOLICIT and INCORPORATE FEEDBACK from crew to foster an effective, team orientated approach to problem solving/decision making?

3	2	1
Involved crew in problem solving process as appropriate, leading to effective team decision making.	At times, failed to involve crew in decision making when it would have been appropriate, detracting from team orientated approach.	Decisions made without needed crew participation or consultation; crew divisiveness was counter-productive.

UNDERSTANDING/INTERPRETATION OF ANNUNCIATOR/ALARM SIGNALS

DID THE CREW:

(a) NOTICE and ACKNOWLEDGE alarms, and ATTEND TO alarms in order of their importance/severity?

3	2	1
All alarms that directly related to significant changes in plant conditions were noted	Minor awareness or response difficulties or lapses	Failed to notice and/or extremely slow at responding to significant alarms at critical times; easily distracted by nuisance alarms

(b) Correctly INTERPRET the meaning and significance of alarms and annunciators (including the use of the Alarm Response Procedures, as applicable)?

3	2	1
Crew readily determined what failures/events alarms were indicating	Minor inaccuracies in alarm interpretation but without safety related consequences	Significant misinterpretations, resulting in plant degradation

(c) VERIFY that annunciators/alarm signals were consistent with plant/system conditions?

3	2	1
All necessary verifications performed, including the identification of erroneous alarms	Minor lapes in alarm verification, but no inappropriate actions taken as a result of inadequate verification	Verification of failed systems was poor or altogether absent

SCORE ON UNDERSTANDING/INTERPRETATION OF ANNUNCIATORS/ALARM SIGNALS:

Satisfactory _____ Unsatisfactory _____

Comments: _____

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DIAGNOSIS OF EVENTS/CONDITIONS BASED ON SIGNALS/READINGS

DID THE CREW:

(a) RECOGNIZE off-normal trends/status?

3	2	1
Timely and accurate recognition of trends even prior to alarms	Recognition of trends at time of, but not prior to, sounding of alarms	Failed to recognize trends, even after sounding of alarms and annunciators

(b) USE INFORMATION and use REFERENCE MATERIAL (prints, books, charts) to aid in the diagnosis/classification of events and conditions?

3	2	1
Correct, timely use of information and reference material led to accurate diagnoses	Minor errors by crew in use or interpretation of information and reference material	Failure to use reference material, misuse/misinterpretation of information resulted in improper diagnoses

(c) Correctly DIAGNOSE plant conditions based on those control room indications?

3	2	1
Diagnoses by crew were accurate and timely	Minor errors/difficulties in diagnoses	Faulty diagnoses resulted in incorrect control manipulations

SCORE ON DIAGNOSIS OF EVENTS/CONDITIONS BASED ON SIGNALS/READINGS.

Satisfactory _____ Unsatisfactory _____

Comments: _____

UNDERSTANDING OF PLANT/SYSTEMS RESPONSE

DID THE CREW:

(a) · LOCATE and INTERPRET control room indicators correctly and efficiently to ascertain and verify the status/operation of plant systems?

3	2	1
Accurate and efficient instrument location & interpretation by all crew members	Minor errors in locating or interpreting instruments and displays; some crew members required assistance	Serious omissions delays or inaccuracies made in instrument interpretation

(b) Demonstrate an UNDERSTANDING of how the plant, systems, and components operate, including setpoints, interlocks, and automatic actions?

3	2	1
All crew members demonstrated thorough understanding of how systems/components operate	Minor instances of errors due to gaps in crew knowledge of system/component operation; some crew members required assistance	Inadequate knowledge of system/component operation resulted in serious mistakes or plant degradations

(c) Demonstrate an understanding of how their ACTIONS (or inaction) affected system/plant conditions?

3	2	1
All members understood the effect that actions or directives had on plant/system conditions	Actions or directives indicated minor inaccuracies in understanding by individuals, but actions were corrected by team	Crew appeared to act without knowledge of or disregard to, effect on plant

SCORES ON UNDERSTANDING OF PLANT/SYSTEM RESPONSE:

Satisfactory _____ Unsatisfactory _____

Comment: _____

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COMPLIANCE/USE OF PROCEDURES

DID THE CREW:

(a) REFER TO the appropriate procedures in a timely manner?

3	2	1
Crew used procedures as required; knew what conditions were covered by procedures and where to find them	Minor failures by crew to refer to procedures without prompting, but did affect plant status	Failed to correctly refer to procedures when required, resulting in faulty system operation

(b) CORRECTLY IMPLEMENT procedures, including following procedural steps in correct sequence, abiding by cautions and limitations, selecting correct paths on decision blocks, and correctly transitioning between procedures?

3	2	1
Timely, accurate enactment of procedural steps by crew, demonstrating thorough understanding of procedural purposes/bases	Minor instances of misapplication, but corrections made in sufficient time to avoid adverse impact	Importance procedural steps were not enacted correctly, which led to impeded and/or slow recovery or unnecessary degradation

(c) RECOGNIZE EOP ENTRY CONDITIONS and carry out appropriate immediate actions without the aid of references or other forms of assistance?

3	2	1
Consistently accurate and timely recognition and implementation	Minor lapses or errors; individual crew members needed assistance from others to implement procedures	Failed to accurately recognize conditions or execute actions, even with use of aids

SCORE ON COMPLIANCE/USE OF PROCEDURES AND TECHNICAL SPECIFICATIONS:
Satisfactory _____ Unsatisfactory _____

Comments: _____

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CONTROL BOARD OPERATIONS

DID THE CREW:

(a) LOCATE CONTROLS efficiently and accurately?

3	2	1
Controls and indicators were located without hesitation by individual operators	Instances of hesitancy/ difficulty in locating controls by one or more operators	Instances of failure to locate controls jeopardized system status

(b) MANIPULATE CONTROLS in an accurate and timely manner?

3	2	1
Smooth manipulation of the plant within controlled parameters	Minor shortcomings in manipulations, but recovery from errors without causing problems	Mistakes made in manipulating controls caused system transients and related problems

(c) Take MANUAL CONTROL of automatic functions, when appropriate?

3	2	1
All operators took control, and smoothly operatored automatic systems manually, without assistance, thereby averting adverse events	Minor delays and/or prompting necessary before overriding/ operating automatic functions, but plant transients were avoided when possible	Failed to control automatic systems manually, even when ample time and indications existed

SCORE ON CONTROL BOARD OPERATIONS:

Satisfactory _____ Unsatisfactory _____

Comments: _____

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COMMUNICATIONS/CREW INTERACTIONS

DID THE CREW:

(a) EXCHANGE complete and relevant information in a clear, accurate, and attentive manner?

3	2	1
Members informed each other of relevant info. and actively sought and listened to info. from others as/when necessary	Communications generally complete and accurate, but some instances of needing to be prompted, or failing to acknowledge or respond to info. from others	Members did not inform each other of abnormal indications or when performing evolutions; inattentive when important info. was requested or provided

(b) INTERACT with other regarding issues/circumstances outside of their individual area of responsibility to facilitate safe plant conditions?

3	2	1
Members assumed responsibility for issues outside their own boards, as appropriate	Members listened to each others conversations in general; major technical errors corrected	Members were inattentive to what was happening around them; poor coordination of activities

(c) MAKE TEAM DECISIONS in a timely, effective manner?

3	2	1
All individuals' provided input to decisions. Decisions resulted in early, recuperative action	Major team decisions generally included input from most crew members, but some delays or other problems in reaching effective decisions	Leader or other crew members did not accept input from others, resulting in incorrect or untimely decisions/ directives

SCORE ON COMMUNICATIONS/CREW INTERACTIONS:

Satisfactory _____ Unsatisfactory _____

Comments: _____

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