PSEG
Nuclear LLC

To: [redacted]

From: [redacted]

Date: 3/25/2003

Subj: 3/17/2003 Operational Transient Event at Hope Creek

On 3/17/2003 while conducting a reactor shutdown to perform corrective maintenance an operational transient occurred which resulted in a reactor power, pressure, and level excursion. The plant was stabilized following this transient and was safely brought to Mode 4, cold shutdown.

I have personally reviewed the circumstances surrounding this event and commissioned an independent review of the same to ensure the nature of the transient and the operator actions taken as a result are fully understood. From these reviews and assessments I have concluded that this transient represents a significant operational event and that inappropriate operator actions allowed the transient to occur. Additionally, I have concluded that the most appropriate operator action following the onset of the transient would have been to manually scram the reactor to terminate the reactor power excursion. This action was not taken as I would have expected.

A summary of the circumstances that led to the plant shutdown, a description of the event, and the post event actions that have been taken thus far is attached. I have also included a summary of the most significant performance shortfalls identified by the independent review team and a timeline of the relevant events and activities. To ensure all necessary corrective actions are identified a root cause investigation has also been initiated.

As the [redacted] of the Hope Creek Generating Station I am personally responsible and accountable to ensure I set the highest performance standards and expectations for the safe operation of my facility, and that those standards are consistently reflected in the performance of those who operate my facility. The performance of my staff involved in this event did not meet my expectations. I am upset, very disappointed, and embarrassed that this event could occur under my leadership of the station. I assure you that I will take the necessary corrective actions to aggressively and effectively address this significant performance shortfall.

Very Respectfully,

[redacted]

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Information in this record was deleted
In accordance with the Freedom of Information
Act, exemptions 7C
FOIA 2005-0100

Background:

On 3/14/2003 at approximately 2200 the Hope Creek main generator was synchronized to the grid following the completion of a planned maintenance outage. Upon synchronization it was identified that the #2 turbine bypass valve (BPV) failed to fully close as expected. A technical issues determination process was initiated by the Outage Control Center and a troubleshooting plan was developed to identify the cause of the problem so repairs could be planned and performed. The subsequent troubleshooting indicated that the problem with #2 BPV was most likely mechanical in nature and could not be performed with the steam lines pressurized or with main condenser vacuum present. The troubleshooting procedure also identified that the #2 BPV was stuck open at approximately 45% but would still operate properly to position demands greater than 45%. Since plant conditions were stable it was decided to hold the plant in it's current condition (20% power, generator synchronized) while plans were developed to address the #2 BPV.

Operating strategies to safely place the plant in the condition necessary to fix the BPV were reviewed. Two basic operating strategies were available to achieve the plant conditions needed:

1) Scramming the reactor from normal operating pressure (NOP) and conducting a plant cooldown to cold shutdown. This strategy was the typical methodology used when conducting plant shutdowns. This strategy posed an operational challenge to maintain the RPV cooldown rate within established limits since the core was at end of life and pressure control would be difficult following the scram due to the amount of steam that would be used by operating equipment (feedpumps, steam jet air ejectors) combined with the amount of steam that would be passed by the stuck open BPV. Operating experience gained the previous week while conducting a non-nuclear NOP pressure test following maintenance activities on 2 SRV's showed that the decay heat from the core was such that the RPV could be cooled down by opening main steam line drains. Therefore this strategy would be expected to result in the closure of the MSIV's to control the cooldown of the RPV and manual control of RPV water level and pressure using RCIC/ HPCI injection and main steam line drains.
2) Performing a controlled shutdown of the reactor and cooldown of the plant to achieve reactor power less than 5% (in MODE 2) and RPV pressure less than 650 psig prior to scramming the reactor. These plant conditions would allow RPV water level to be maintained in automatic using condensate and would allow main condenser vacuum to be maintained with the mechanical vacuum pumps allowing automatic RPV pressure control using EHC. This strategy would require coordination and control of RPV water level and pressure as the reactor would be operating at low power levels with the intermediate range nuclear instrument (IRM's) inserted and the APRM scram setdown setpoints active.

The second strategy was selected, as it was believed to have the lowest operational risk and was similar in many respects to the plant configurations and

operational lineups seen during plant startups. Recognizing that this strategy was unique in nature it was identified as an Infrequently Performed Test or Experiment (IPTE) and was reviewed by SORC. Industry Operating Experience relative to conducting RPV cooldowns while critical was reviewed and a new procedure section for conducting the evolution was developed. The operating crew who would be performing the evolution was provided simulator training the night prior to performing the evolution. During the simulator training the crew identified that the use of the BPV jack (manual pressure control) allowed a much smoother depressurization of the RPV than reducing the automatic pressure controller setpoint (pressure set) based on their experience while performing the RPV cooldown the previous week during the maintenance outage shutdown. The crew practiced the evolution by utilizing the BPV jack and keeping the pressure set setpoint close to actual RPV pressure.

Event Description

The unit shut down commenced on dayshift 3/16/2003 and progressed smoothly into the night shift. Shortly after midnight the reactor was at 6.5% power and 795 psig with pressure being controlled manually using the BPV jack. While lowering pressure set to be closer to actual RPV pressure a small perturbation on the BPV's was noted causing #1 and #3 BPV's to pulse full shut and back open again to their original positions. This caused minor changes in reactor power, pressure, and level (<1%, 7 psig, and 3" respectively). The operating crew stopped the evolution and discussed the response seen. They concluded that the response was due to pressure control transitioning to the automatic controller from the bypass valve jack as the pressure set setpoint was being lowered. The crew then determined that is was safe to continue by ensuring sufficient margin was maintained between the pressure set setpoint and actual RPV pressure.

The BPV jack controller was then raised to recommence the cooldown. When the BPV jack pushbutton was depressed #3 BPV immediately opened from 0% to 75%. This unexpected response resulted in RPV pressure being reduced by approximately 50 psig and RPV water level to lower 8". The NCO controlling RPV water level requested that the pressure reduction be terminated to allow RPV water level to slowly recover. The NCO controlling RPV pressure reduced the BPV jack demand to zero to allow RPV pressure control to transition back onto pressure set. This closed the BPV's (except for #2 BPV which remained at 45%) and RPV pressure began to recover. The reactor water level control system began to automatically respond to the lowering water level and raised feedflow to the RPV. The RPV pressure and level transient resulted in a rise in reactor power. The NCO controlling reactor power observed the rise in reactor power and manipulated the IRM range switches, one at a time, to maintain the IRM's within 25-75% the indicating band specified in the Integrated Operating procedure being used for the shutdown. 6 of 8 IRM's were ranged up one range with each IRM range switch manipulation being peer checked by another NCO. Reactor power peaked at 13.5% on the APRM's (7% change in power from the transient) and returned to the pre-transient level. The NCO controlling RPV

water level secured air to the startup level control valves to secure feedwater flow to the RPV as RPV water level reached 37". He then utilized the startup level control valves to restore water level to 30". Pressure set automatically stabilized and controlled RPV pressure at 800 psig. The duration of the transient from start to finish was approximately one minute.

Following the transient the IPTE was terminated and notifications were made to the Outage Control Center personnel and to the AOM-shift. After discussing the event with the AOM-shift, direction was provided to terminate the use of the BPV jack for reducing RPV pressure and to utilize pressure set as the pressure control means for the remainder of the shutdown & cooldown sequence. The remainder of the shutdown and cooldown evolution was then completed with no other operational challenges.

Event Response:

Although many individuals were aware that the transient occurred during the shutdown sequence it was not communicated to senior management until 2 days following the transient. The significance of the transient was recognized and the following actions were taken:

- The operating crew involved in the transient was relieved of licensed operator duties until the circumstances surrounding the transient and their performance is fully understood. While off shift the crew was assembled and performed a critical self-assessment of their performance.
- A review of the event was conducted by Reactor Engineering to determine the potential impact to the fuel as a result of the power transient. It was determined that the potential for any adverse effects on the fuel was very small due to the low power levels which existed at the time of the transient which provided large margins to thermal limits and fuel pre-conditioning limits.
- Troubleshooting of the BPV system identified a problem with the BPV jack potentiometer. This condition resulted in erratic response of the BPV jack. This potentiometer was replaced during the outage and retested satisfactorily.
- Use of the BPV jack control system while the reactor is critical has been prohibited
- An independent review of the event was conducted by an experienced TARP team lead and former SRO using the TARP procedure as guide to ensure the post transient review process was thorough.
- The notification written to identify the event was upgraded by SORC to a Level 1 (requiring a root cause to be performed). SORC directed that the results of the root cause be presented to both SORC and the Corrective Action Review Board (CARB) when completed.

- A remediation plan for the operating crew was initiated consisting of a self-assessment of their performance, completion of a case study review focusing on conservative decision-making, and an oral board assessment. Completion of the remediation plan will be finalized upon completion of the root cause evaluation.
- An independent review team of former and current SRO's was formed to conduct an independent review of the transient, the crew's actions, and the organizational response to the transient. The team reviewed the circumstances surrounding the evolution, the plant response, the crew's actions taken, and interviewed the key people involved in the planning and execution of the evolution. This team's review identified the most significant gaps in performance from this transient. The results of this review are attached and will, in turn, be provided to the root cause team for further review and assessment.

Safety Significant Issues

1 Failure to manually scram the unit

Four APRM upscale rod block alarms were in for approximately 25 seconds, indicated power reached 13.5%. The rate of rise was equivalent to a 70 second period (Note – periods of less than 60 seconds shall not be maintained when conducting reactor startups). The power change required the manipulation of the IRM range switches to track the power rise and prevent a reactor scram. The IPTE and reactivity briefings had discussed the need to manipulate the IRM ranges switches due to small power changes anticipated as a result of changing pressure. However, the actual power change and rate of rise that occurred due to the transient was not anticipated.

An unanticipated transient with EHC affected both pressure and feedwater response. These parameters both directly affect reactor power. In response to the feedwater transient, the operator removed air from the startup level control valve (causing them to close) to terminate the reactor power increase and rising RPV level.

2 Continuing in the face of adversity/ uncertainty

The station staff and management elected to use the EHC system with both an actual deficiency (#2 BPV stuck open at 45%) and a perceived deficiency (the crew believed pressure set control was not as smooth as the BPV jack control while cooling down the plant cooldown based on recent operating experience) to shutdown the unit. Although the evolution could have been safety conducted as planned and the plant shutdown was delayed to allow planning and preparation for the evolution, the decision makers underestimated the level of crew and organizational preparation needed for flawless execution.

The crew continued to use the EHC system for reactor pressure control after the first pressure transient, without fully understanding the cause. Although the transition from pressure-set to the bypass valve jack had been performed three times that shift prior to the event, the operating crew rationalized that the anomaly that initially occurred was due to normal system dynamics of this same EHC system transition.

The crew continued to use the EHC system for reactor pressure control after the second pressure transient without fully understanding the cause. Even after the system caused a reactor power excursion, the crew and station staff elected to rely on the EHC system rather than scramming the reactor.

Contrary to station management expectations, the crew did not practice the evolution with the final draft of the procedure to be used. Rather, the crew conducted a procedure V&V and developed the technique and methodology which was to be incorporated in the final version of the procedure. This resulted in the training focus being "what next" versus "what if" as it related to the execution of the evolution. The operating crew left the training center the night before the evolution familiar with the shutdown strategy but was uncertain whether the plant was going to proceed to

cold shutdown or remain in hot shutdown with the MSIV's closed while repairs were being made to #2 BPV. This decision was dependent on how well RPV pressure could be controlled with the MSIV's open following the scram based on the low decay heat load at end of cycle.

Training did not question the pressure reduction methodology chosen by the crew and deviated from the standard training protocol for "just-in-time" training for infrequently performed evolutions.

3 **The notification in regard to this event was not written until thirty-six hours after the event.**

Although the operating crew, OCC staff, QA representative, Reactor Engineering representative, IPTE test manager and test engineer, and the Assistant Operations Manager all were cognizant that the plant had experienced an unplanned power increase from 6.5% to 13.5% as a result of this event, the notification was not written until thirty- six hours after the event, and was written as a result of prompting from the Assistant Operations Manger to the Shift Manager that was on duty at the time of the event.

Senior management was not informed of the event in a timely manner.

Other Significant Issues

1 **The development, assessment, and preparation for the shutdown method used did not sufficiently consider reactivity event risk.**

Reactivity control relied, in part, on a degraded system regardless of the operating strategy chosen. Station management and the operating crew did not ensure the appropriate level of rigor necessary for flawless execution was present in the preparation and execution of the evolution.

The operating crew used the bypass valve jack with the reactor in the IRM range. When the jack is in service, 2 parameters affecting reactivity (control rods and pressure) are in manual control, requiring additional control room team oversight and coordination for positive reactivity control. Although the procedure allowed operation of either the bypass valve jack or pressure set, it did not clearly reflect management's expectation that pressure set was the preferred option until the reactor was shutdown.

2 **Abnormal procedures were not consulted, and some actions were taken that deviated from or are not contained in station procedural guidance.**

The initial method used to reduce reactor pressure was not specifically delineated in the IPTE briefing and violated a procedural requirement to maintain a differential pressure of between 100 to 50 psig between pressure set and reactor pressure while the bypass jack was being used.

During the RPV water level transient, the air was shut off to the Startup Level Control valve to terminate the power excursion. Procedural guidance for this action does not exist.

The crew did not implement the applicable abnormal operating procedures for this transient in accordance with management's expectations.

Some abnormal operating procedure contingencies were discussed during the IPTE briefing but they were not discussed at a level of detail applicable for the specific evolution. For example, the RPV level malfunction abnormal contingency for inserting a reactor scram at +15 inches was discussed but there was no correlation to what the effect on reactor power would be if level had lowered and then was subsequently recovered.

3 **The IPTE test manager and engineer were ineffective in terminating the test when confronted with uncertainty.**

The initial minor event did not result in the IPTE oversight personnel stopping the evolution, and investigating the anomaly with sufficient rigor. Additionally, the IPTE oversight personnel did not recognize that the pressure control methodology being used by the crew deviated from the procedural guidance.

4 **Organizational, training, and crew lack of sensitivity to the complexity of the task resulted in insufficient crew preparation.**

An acceptable, and clearly defined and controlled method of pressure reduction was not established until after the reactivity event occurred. The Assistant Operations Manager provided guidance to the Shift Manager on the method to be used to shut down the plant post-event. This method, use of pressure-set, and insertion of control rods, resulted in safe, challenge-free operation for the remainder of the shutdown. This methodology should have been discussed and practiced during the training session.

5 Potential crew knowledge and communication gaps resulted in incorrect decisions being made with respect to using the bypass valve jack.

The crew discussion following the first event with the EHC system did not include the information that the transition from pressure-set mode to the valve jack had been performed at least three times earlier in the evening without event. Had this been understood and effectively communicated to the OCC and the Assistant Operations Manager, the pressure set methodology would have been invoked at that time and the second transient may have been avoided all together.

The discussion led by the Shift Manager between the management team and the Assistant Operations Manager to continue to use EHC to remove the unit from service did not include the information that the transition from pressure-set mode to the valve jack had been performed at least three times earlier in the evening without event.

Additionally, there was insufficient crew oversight in the control room. The Shift Manager and STA were stationed by the EHC control panel and, as such, their ability to monitor the overall response of the plant and the crew when the BPV jack malfunction occurred.

Station Event Timeline

3/14/03 - Friday

21:54 Main Generator is Synchronized, #2 Turbine Bypass Valve does not fully close. The technical issues process & troubleshooting effort commences.

3/15/03 - Saturday

06:00 Troubleshooting effort indicates problem is mechanical in nature. Shutdown plan development commences.

18:00 Shutdown plan is developed, and procedure draft is produced for verification, validation, and comment.

18:00 Crew commences review of draft procedure and practices method of shutdown in simulator.

18:30 A conference call was held between station management, the Outage Control Center, Director-Operations, VP-Operations, and other members of the Senior leadership team. The conference call communicated the status of # 2 BPV (stuck open @ 45%, problem is mechanical in nature) and that a plant shutdown is required for repair. The discussion includes that plant current status is stable & safe, and that time will be taken to ensure the correct actions going forward. The Assistant Operations Manager provides this information; the Operations Manager is not available at this time, but is cognizant of the plant status.

23:59 Crew review in simulator completed, commenced procedure revision process.

3/16/03 - Sunday

06:00 Procedure revised, plan refined, procedure review process completed.

10:00 SORC review of procedure and approval of method for shutdown completed.

13:44 Commenced shutdown of reactor

14:31 Main Turbine Tripped

18:24 Operational Condition 2 attained, 10% RTP

3/17/03 - Monday

00:07 Commenced pressure reduction from NOP. Reactor power is 7.5%.

00:15 First EHC event occurs, resulting in small changes in level and power. Pressure set is in control. Plant manipulations are halted, crew reviews issue.

00:23 Second EHC event occurs, resulting in level transient and power excursion. Pressure set is in control. After recovery, plant manipulation is halted.

00:30 Teleconference with Assistant Operations Manager with all available management resources (OCC, IPTE, QA, and Shift Manager). Assistant Operations Manager provides specific guidance to the Shift Manager on method for continued shutdown actions.

01:26 Recommenced power and pressure reduction

05:34 Manual Scram. Bypass valve #2 closes.

06:00 Assistant Operations Manager is leading effort to ensure organization is aligned to investigate and repair BPV #2.

08:00 Assistant Operations Manager briefs Operations Manager on plant status and the EHC transient. OPS Manager out of state due to emergent family needs.

10:30 VP-Operations contacted to ensure station focus and alignment on investigation and repair of BPV #2.

12:00 Operations Manager, Assistant Operations Manager, Shift Manager, IPTE Manager, QA, and OCC staff are all cognizant of reactivity event. Senior Management including VP-Operations and Director- Operations have not been informed.

13:40 Shutdown cooling 82 psig interlock cleared

17:00 "B" SDC in service

18:00 Operational Condition 4

3/18/03 - Tuesday

06:00 Assistant Operations Manager continues efforts to assure plant is repaired; and that the event is investigated. In addition, he ensures preparation of data to present to SORC for re-start of unit. Operations manager returns to site.

08:00 Shift Manager commences data gathering and writing description of event.

16:22 Notification written by the Shift Manager to document EHC problem and resultant power excursion.

3/19/03 - Wednesday

09:30 SORC restart readiness review conducted. Summary of transient is presented to SORC by the AOM. Potential significance of transient is recognized. The need for more investigation and a better understanding of the circumstances surrounding the transient is identified and discussed between the Operations Manager and Director - Operations.

11:00 Notification is presented at Managers Meeting as a significance Level 2.

14:00 VP-Operations notified of event by Director-Operations and is provided a summary of the event description and draft evaluation.

17:00 SORC re-convened for re-start readiness review. The notification for the transient is raised to a Level 1 and a SORC open item is created to have a SORC review of the root cause. Immediate corrective actions for the event were reviewed by SORC and established as startup restraints. These immediate actions included:

- Crew removed from watch standing duties
- Standing order issued prohibiting use of the bypass valve jack when reactor is critical
- Independent review completed to ensure the immediate corrective actions taken were adequate
- Review of the event by Fuels/Reactor engineering to assess potential consequences of power excursion.

21:30 Restart restraints completed. Director-OPS discusses completion of immediate corrective actions with VP-Operations and recommendation to restart Hope Creek. Director-OPS authorizes Operations Manager to commence unit startup.

21:45 Operations Manager authorizes unit startup to commence.

23:00 Mode 2 entered, reactor startup commenced.

3/20/03 - Thursday

09:30 Operations Manager meets with Operating crew sequestered for self assessment and creates understanding of the significance of the event for the crew and communicates self assessment expectations.

10:00 Root Cause team leader designated by Operations Manager.

17:30 Operations Manager debriefs with crew on progress made/ insights gained from self assessment activities.

3/21/03 - Friday

11:00 Crew continues self assessment at training center. Re-enacting transient in simulator.

12:00 Independent review team formed to review the circumstances/ information relevant to the transient to develop a thorough understanding of the event and performance shortfalls.

16:00 Operations Manager and Director-Operations debriefed by crew on their findings and conclude that the crew owns the event and has a good understanding of their performance shortfalls and actions necessary to improve performance.

20:00 VP-OPS briefed on preliminary results of independent review team's findings.

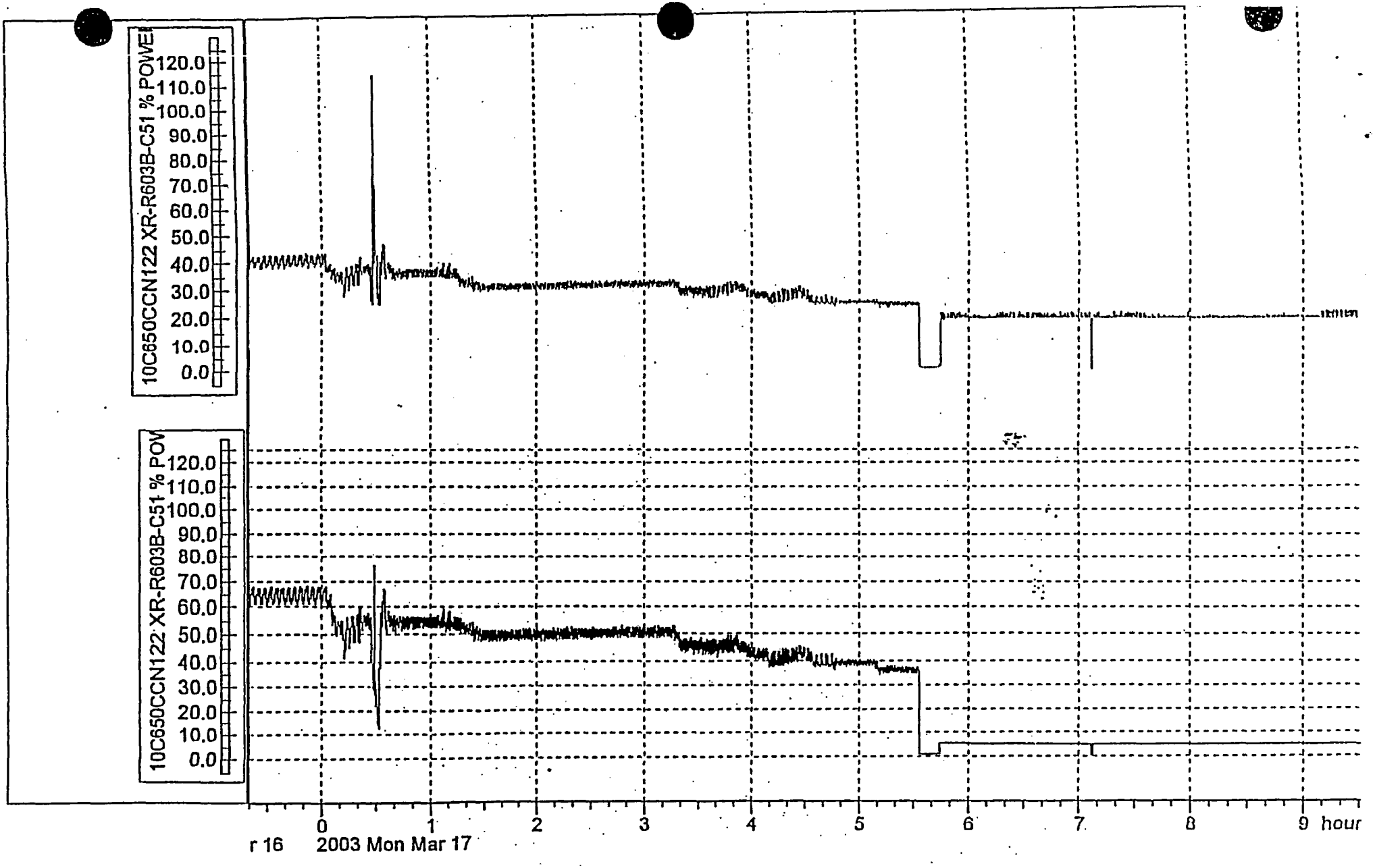
3/22/30 – Saturday

08:00 Independent review continues – findings and conclusion drafted and briefed to Operations Manager and Director-Operations.

3/23/03 – Sunday

08:00 Independent review team conducts interviews with operating crew and AOM. Crew remediation strategy is developed by AOM and Operations Manager.

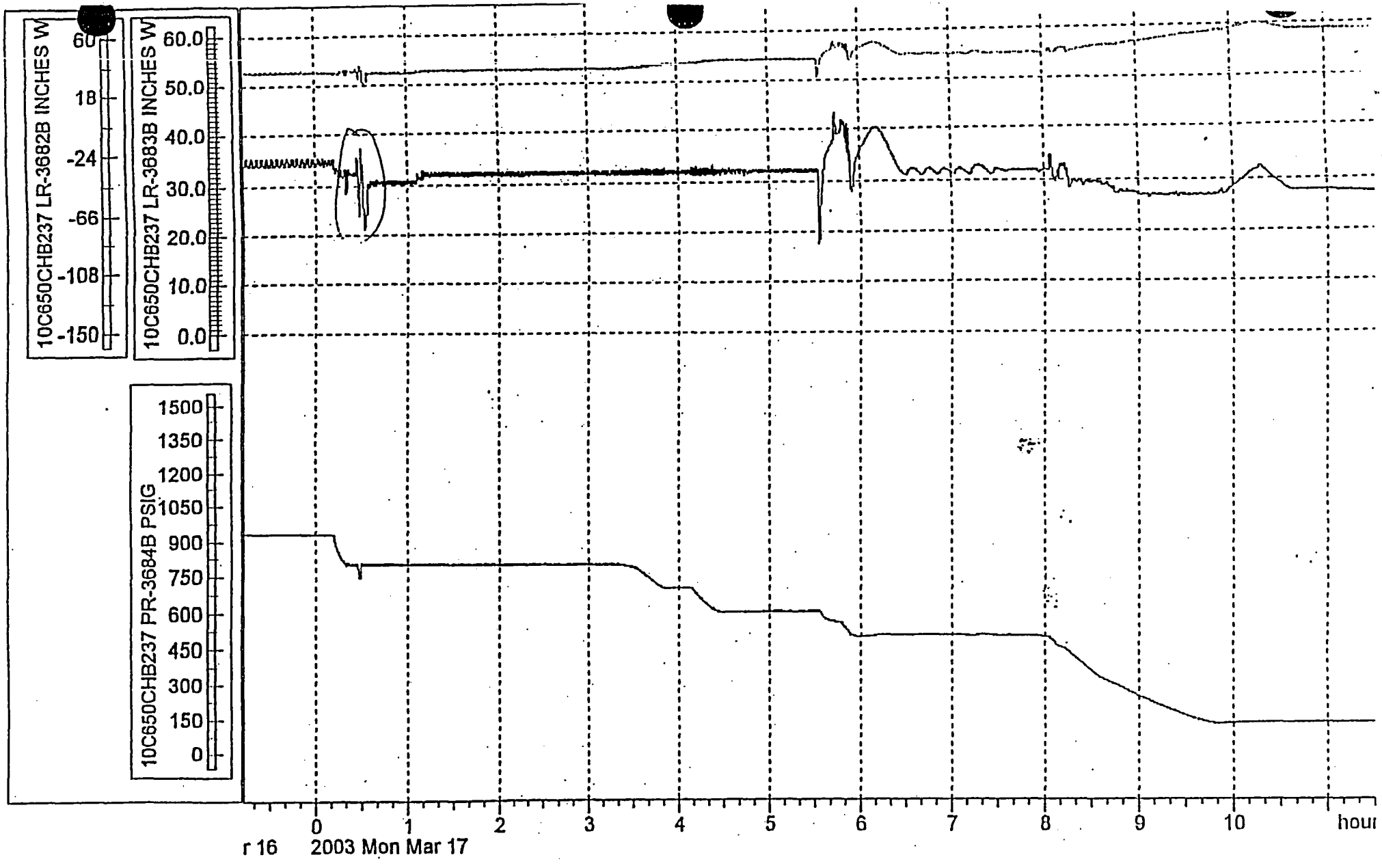
21:30 Operations Manager debriefed on Independent review team's findings.



Default\GRAPH001 5019 : 10C650CCN122 INTERMEDIATE AVG PWR RANGE MONITOR Start: Sun Mar 16 2003 23:20:00 End: Mon Mar 17 2003 09:34:10

XR-R603B-C5 IRM B APRM-B

XR-R603B-C51 IRM D APRM-D



Default\GRAPH001 5033 : 10C650CHB237 REACTOR WATER Start: Sun Mar 16 2003 23:13:00 End: Mon Mar 17 2003 11:35:00

PR-3684B LEVEL LR-2043	LR-3682B LEVEL LR-3682B	LR-3683B LEVEL LR-3683B

09/24/2002 07:04:04 [redacted] (NUMAT)

09/22/2002 00:59:51 [redacted] (NUWSW)

NOTIFICATION SUMMARY [VERIFY CURRENT REQUIREMENTS CONTAINED IN NC.WM-AP.ZZ-0000(Q) "NOTIFICATION PROCESS"]:

1) DESCRIBE THE ACTUAL CONDITION? Steam leak on the bonnett to 22MS42 requires isolation of the main steam to 22 SGFP. This valve will have to be leak repaired and is not isolable from the MS header except by closing itself. The valve is currently closed and the leak is stopped. Significant quantities of steam and water was deposited in the turbine building and on the group busses. The following overhead alarms came in J-45 Turbine building 460-230V Bus hot spot, J-39 4KV Group bus Xfer Fail, and A-17 Annunciator ground detect. The J-45 and A-17 have subsequently cleared, the J-39 alarm remains at this time. The turbine area sump pumps have their breakers opened to ensure sumps are sampled or pumped to non rad waste.

2) HOW DOES THIS ISSUE IMPACT PLANT OR PERSONNEL SAFETY?
22 SGFP is not available.

3) PSEG NUCLEAR OR REGULATORY REQUIREMENT NOT MET?
Leakage from steam systems.

4) WHAT CAUSED THE CONDITION?
steam leak on the bonnett.

5) WHAT ACTIONS, IF ANY, HAVE BEEN TAKEN TO CORRECT THE CONDITION?
22MS42 closed and 22 SGFP is tripped.

6) RECOMMENDED ACTION/CORRECTIVE ACTION AND WORK CENTER RESPONSIBLE FOR CORRECTING CONDITION.
(USE TITLE/POSITION, NOT NAME)
Leak repair 22MS42.

7) ANY OTHER RELEVANT INFORMATION?(WHO, WHEN, WHERE, WHY, REFERENCES, ESTIMATED COST, EMISTAG, ECT)
Unit at 47% power and holding with 22 SGFP out of service.

09/22/2002 16:51:23 [redacted] (NUM4M)
This notification references 3 separate Overhead alarms which were received during the leak on 22MS42. A review of the wiring diagrams for these alarms was performed to determine if a common terminal box or junction box may have been wetted which may have caused these alarms and determine if furthur inspection or drying may be required.

A-17 - Annunciator Ground detection - This alarm was most likely caused by the leak and moisture causing a ground on the 125v dc circuit that originates with in the Annunciator system to monitor field contacts. Since alarms J-45 and J-39 also were received falsely it is reasonable to expect that a ground was developed on the annunciator 125v dc.

J-39 Group bus Xfer failure This alarm has wiring which is terminated in the plant area where the leak occurred. Terminations points are with

in cubicles 2EAD, 2HAD, 2FAD, 2GAD, 21HSD, 21ESD, 22GSD and 22 FSD.

J-45 Turbine Building 460- 230v Bus Hot Spot This alarm also has wiring which is terminated in the plant where the leak had occurred. Terminations points are at the 2H 460v transformer, 2F 460v transformer, 2F 230v transformer, 2H 230v transformer, 2HL 208-120v lighting transformer, and JT 517 junction box located at Elevation 116 col. K14 K15.

There are no common termination point panels or boxes associated with the alarms that were received except for the commonality of the Annunciators ground detection which would be common for both of the alarms. Both alarms J-39 and J-45 utilize the annunciator 125V dc to monitor the N.O. contacts for these alarms.

Based upon a walkdown of the area , inspection in a spare 4kv cubicle near the origin of the leak and the fact that the alarms have cleared it is apparent that the moisture from the leak which caused all 3 alarms has dried. Therefore no furthur action is recommended for this notification.

09/24/2002 07:04:13 [redacted] (NUMAT)
CRRC NOTE: DOWNGRADED TO SL-3 AT THE SM MEETING ON 09/23/02.

09/23/2002 15:43:27 [redacted] (NUDJM)

1) This notification written to document the sudden gasket failure of the 22MS42 valve that occurred on 9/22/0. The body to bonnet gasket of the valve failed in approximately 30 minutes from first indication, resulting the need to secure 22 steam generator feedpump until an emergency leak repair was prepared. The valve is a William Powell 6. gate valve. This notification was written to evaluate the gasket design and determine the apparent cause of the gasket failure so that corrective actions can be taken.

2) There is no operability issue. An emergency leak repair was performed on 9/22/01 to repair the leak and the 22 steam generator feedpump was restored to an operable status.

3) This notification is written to determine why the gasket failed and what can be done to prevent future failures. An expectation is that components do not suddenly fail in service as this gasket did.

4) The apparent cause of the failure is not known at this time. The short period of time between identification of a leak and gasket failure warrants an apparent cause determination.

5) The valve was leak repaired on 9/22/02.

6) Assign the CR-Eval to R-PEV. Component Engineering-Valves

7) This notification submitted by [redacted], x7214.

09/24/2002 07:16:31 [redacted] (NUM3C)
See CR 70027084 (SL-3) for inclusion into this level 2 eval.

09/24/2002 09:50:26 [redacted] (NUMAT)
CRRC NOTE: VALIDATED AS SL-2 AT THE SM MEETING ON 09/24/02.

Steam leak on 22MS42 N1 20113757
09/22/2002 00:59:51 [redacted] (NUWE)

NOTIFICATION SUMMARY [VERIFY CURRENT REQUIREMENTS CONTAINED IN NC.WM-AP.ZZ-0000(Q) "NOTIFICATION PROCESS]:

1) DESCRIBE THE ACTUAL CONDITION? Steam leak on the bonnett to 22MS42 requires isolation of the main steam to 22 SGFP. This valve will have to be leak repaired and is not isolable from the MS header except by closing itself. The valve is currently closed and the leak is stopped.
Significant quantities of steam and water was deposited in the turbine building and on the group busses. The following overhead alarms came in J-45 Turbine building 460-230V Bus hot spot, J-39 4KV Group bus Xfer Fail, and A-17 Annunciator ground detect. The J-45 and A-17 have subsequently cleared, the J-39 alarm remains at this time. The turbine area sump pumps have their breakers opened to ensure sumps are sampled or pumped to non rad waste.

2) HOW DOES THIS ISSUE IMPACT PLANT OR PERSONNEL SAFETY?
22 SGFP is not available.

3) PSEG NUCLEAR OR REGULATORY REQUIREMENT NOT MET?
Leakage from steam systems.

4) WHAT CAUSED THE CONDITION?
steam leak on the bonnett.

5) WHAT ACTIONS, IF ANY, HAVE BEEN TAKEN TO CORRECT THE CONDITION?
22MS42 closed and 22 SGFP is tripped.

6) RECOMMENDED ACTION/CORRECTIVE ACTION AND WORK CENTER RESPONSIBLE FOR CORRECTING CONDITION.
(USE TITLE/POSITION, NOT NAME)
Leak repair 22MS42.

7) ANY OTHER RELEVANT INFORMATION?(WHO, WHEN, WHERE, WHY, REFERENCES, ESTIMATED COST, EMISTAG, ETC)
Unit at 47% power and holding with 22 SGFP out of service.

09/22/2002 16:51:23 [redacted] (EAM)
This notification references 3 separate overhead alarms which were received during the leak on 22MS42. A review of the wiring diagrams for these alarms was performed to determine if a common terminal box or junction box may have been wetted which may have caused these alarms and determine if further inspection or drying may be required.

A-17 - Annunciator Ground detection - This alarm was most likely caused by the leak and moisture causing a ground on the 125v dc circuit that originates with in the Annunciator system to monitor field contacts. Since alarms J-45 and J-39 also were received falsely it is reasonable to expect that a ground was developed on the annunciator 125v dc.

J-39 Group bus Xfer failure This alarm has wiring which is terminated in the plant area where the leak occurred. Terminations points are with in cubicles 2EAD, 2HAD, 2FAD, 2GAD, 21HSD, 21ESD, 22GSD and 22 FSD.

J-45 Turbine Building 460- 230v Bus Hot Spot This alarm also has wiring which is terminated in the plant where the leak had occurred. Terminations points are at the 2H 460v transformer, 2F 460v transformer, 2F 230v transformer, 2H 230v transformer, 2HL 208-120v lighting transformer, and JT 517 junction box located at Elevation 116 col. K14 K15.

There are no common termination point panels or boxes associated with the alarms that were received except for the commonality of the Annunciators ground detection which would be common for both of the alarms. Both alarms J-39 and J-45 utilize the annunciator 125V dc to monitor the N.O. contacts for these alarms.

Based upon a walkdown of the area , inspection in a spare 4kv cubicle near the origin of the leak and the fact that the alarms have cleared it is apparent that the moisture from the leak which caused all 3 alarms has dried. Therefore no furthur action is recommended for this notification.

09/24/2002 07:04:13 [redacted] (NUMAT)
CRRC NOTE: DOWNGRADED TO SL-3 AT THE SM MEETING ON 09/23/02.

22MS42 body to bonnet gasket failure
09/23/2002 15:43:27 [redacted] (NUDJM)

1) This notification written to document the sudden gasket failure of the 22MS42 valve that occurred on 9/22/0. The body to bonnet gasket of the valve failed in approximately 30 minutes from first indication, resulting the need to secure 22 steam generator feedpump until an emergency leak repair was prepared. The valve is a William Powell 6. gate valve. This notification was written to evaluate the gasket design and determine the apparent cause of the gasket failure so that corrective actions can be taken.

2) There is no operability issue. An emergency leak repair was performed on 9/22/01 to repair the leak and the 22 steam generator feedpump was restored to an operable status.

3) This notification is written to determine why the gasket failed and what can be done to prevent future failures. An expectation is that components do not suddenly fail in service as this gasket did.

4) The apparent cause of the failure is not known at this time. The short period of time between identification of a leak and gasket failure warrants an apparent cause determination.

5) The valve was leak repaired on 9/22/02.

6) Assign the CR-Eval to R-PEV. Component Engineering-Valves

7) This notification submitted by [redacted] x7214.

09/24/2002 07:16:31 [redacted] (NUM3C)
See CR 70027084 (SL-3) for inclusion into this level 2 eval.

09/24/2002 09:50:26 [redacted] (NUMAT)
CRRC NOTE: VALIDATED AS SL-2 AT THE SM MEETING ON 09/24/02.

Hope Creek 9/16/02
HPCI Outage Critique

Executive Summary: The HPCI outage of work week #89 was scheduled for 89 hours duration and completed in 91 ¾ hours. While the actual and scheduled duration deviation appears to be relatively small, the execution of the work inside the window did not proceed in accordance with the target schedule and various breakdowns resulted in significant deviation from the ± four hour schedule adherence requirements of our work management program.

Significant changes to the plan and schedule (with new targets) were required in order to support recovery on the target system outage duration. There was no emergent fieldwork identified during execution of this window. It appears that the failure to execute the schedule represents a breakdown in organizational and individual accountability. The breakdowns encountered in this system outage were many and the accountability for them can be widely assigned. Each department owned pieces of the problems

Major problems leading to the breakdowns in schedule adherence include inadequate preparation by maintenance to validate safety tagging boundaries, inadequate resources to execute scheduled work, inadequate walkdown of pre-staged parts, deficiencies in storeroom parts rendering the parts unusable, insufficient supervisory oversight, work interferences not identified, incorrect job durations, and poor callout response. These issues are explained in detail in this report. While many opportunities exist for improvement, there were also many positives noted through both the preparation and execution of the window. These positives will also be highlighted in order that they may be carried into subsequent such efforts.

Preparation:
Tri weekly meetings were held commencing at T-4 and continuing to execution week. A "Straw Boss" from Hope Creek Operations (AOM) was assigned to provide oversight and assist the Work Week Superintendent in coordination of the system outage. The use of an SRO to perform this roll has benefits in understanding work integration and system functionality, however, requirements to attend training and stand proficiency watches prevented attendance at all meetings. Meeting attendees included the "Straw Boss", Work Week Superintendent, Senior Scheduler, Operations Coordinator, Work Group Coordinators from each discipline, and occasionally Production Engineering and Materials. A detailed schedule review was conducted with an action item database maintained to address issues and their resolution. There was excellent participation by the attendees leading to the development of a well planned schedule. Maintenance supervisors and superintendents were included in some of the meetings in order to obtain their concurrence on the work plan. While the meetings flushed out many problems, the initial schedule had numerous issues requiring resolution that should have been fixed long before the T-4 timeframe. These include:

- Identification of work that can be done pre-outage and scheduling of this work in prior weeks (i.e. pre-fab work, scaffolding, hoist inspections).

- The gear box inspection was determined to have been done during the 12/01 system outage during a meeting that included a maintenance supervisor who had previously done the work. It was also identified that there had been bearing and alignment tolerance concerns at that time that had required engineering evaluation.
- Several significant surveillance orders that were missed during initial scoping (50003596 and 50003600 for rupture disc replacement) required Code Job Package evaluations to be done at T-3. The orders were vague and did not have these operations clearly assigned. Several others had STEX's processed from December 2001 to allow them to reach the 9/16/02 window and were still missed from the initial scope (see notification 20111358).
- Coding of work that could be performed outside of the LCO window (i.e. surveillance tests that do not require HPCI out of service).
- Decision on appropriate work calendar. We are inconsistent on application of WMAP-1 requirement for working LCO windows. It is wrong to say that only "critical path" work needs to be scheduled per the WMAP since as we often find, the "critical path" often changes and this creates gaps in work execution and havoc in trying to schedule the outage.
- Unavailability of required parts (i.e. PSV's for F076 and F077 Cat C replacements. It was known back in December 2001, and probably before that, that these valves would need to be checked, and yet parts were not available.).
- Schedule activities do not exist for MQS to do weld PT's. These should be incorporated into the work order and scheduled.
- A template for the 18 month HPCI outage still does not exist. The outage always follows a standard plan and this should be captured so that it doesn't have to be created each time.

Execution:

There were many challenges to work execution. Among the most significant are the following:

1) The largest single impact on execution of the schedule was the delay in Mechanical Maintenance to complete their walkdown and validation of the safety tagging boundaries. All tagouts were hung by Operations on schedule, and 2 hours were allotted and scheduled for each maintenance group to check their tags. This time period was deemed to be acceptable by all groups during schedule preparation, however, it took over 6 hours before Mechanical Maintenance completed walking down the tags. This delay created an immediate conflict that severely challenged the entire schedule. At 1100, the maintenance shop was full of workers awaiting completion of tag walkdowns by chiefs and supervisors. At 1430, mechanics were observed in the HPCI room checking their tags. This could have easily been done in parallel with supervisor walkdowns. Mechanical chiefs brought in for overtime coverage were studying the tagouts late in the afternoon trying to understand the tagging scheme. Workers and Rad Pro were unprepared for walkdown of components in High Radiation areas even though component locations are provided on the tagging requests. Operations personnel volunteered

to assist in tagging request explanation and walkdown but were not taken up on the offer. The only reason the schedule was not impacted more than it was is due to most scaffolds being installed in the prior week even though the installation activities remained in the first several hours of the HPCI schedule.

i. Recommended actions:

1. For major system outages with significant tagging, schedule tag walkdowns in prior week to familiarize supervisors with tag locations. Include Ops and RP support. Get more accurate duration for tag walkdown.
2. Scheduled overtime should be able to be asked ahead of time so that workers can prep for the work.
3. Streamline tag walkdowns by having workers and supervisors walkdown tags simultaneously. Workers should target specific tags for their job. Chiefs and supervisors should take advantage of procedure allowances which allow tag walkdowns to be split among several personnel.
4. Ops identify how many high rad/contaminated area entries are involved for each tagging request, and then give RP this information for their manning plans.

2) Supervisory oversight was lacking during the first and most critical day of the outage. 5 key superintendents and supervisors were sent to GAP training on Monday morning. This occurred even though there were major challenges to schedule execution and their assistance was vital to recovering the work plan. The absence of these personnel was not discussed with the prep team prior to execution.

i. Recommended action:

1. Non-production activities should not take precedence over scheduled work activities. WANO criticized our lack of supervisors oversight and field presence along with our lack of sensitivity to major LCO windows.

3) On Monday, Electrical identified that the group had insufficient resources to begin the battery cell maintenance. One individual called out and other personnel were assigned to duties such as Safety Council and IBEW business that had apparently not been accounted for during the schedule review process. The work group had affirmed previously that resources were satisfactory. Electrical was additionally not prepared for work execution as necessary fire impairment was not obtained for battery charger PM. When the impairment was requested Electrical did not emphasize the need for timely response and Fire Protection initially wanted to wait until after lunch to hang the permit. The Ops Coordinator followed up with Fire Protection to get the permit hung immediately. Planned battery cell replacement was changed to a repair effort for the installed cells. While this was a good recommended corrective action, it should have been identified and resolved weeks earlier. Had cell replacement been needed, the

required discharge test documentation was not initially available and had to be obtained by engineering. Time and manhours were unnecessarily expended as cells were moved from the material center to the Maintenance Shop and back.

i. Recommended actions:

1. Non-production activities should not take precedence over scheduled work activities. Workers should check in and if scheduled activities cannot be covered then other duties should be deferred.
2. Maintenance and engineering need to work closer on issues where there is a possible "maintenance fix" to the problem. Job walkdowns for CM work should ask the question "is there a better way to complete this work".

4) Work on the gear box inspection and valve replacements on the V9966 and V9994 drain pot valves presented an FME conflict that was not identified during schedule preparation and review. The late start by Mechanical Maintenance exacerbated this conflict as resources had to be spread among these two critical jobs and the gland seal inspection. When work finally commenced Monday night, Mechanical notified the AOM that both the gear box and gland seal inspections with 1000 scheduled starts and 24 hour planned durations would be given priority to work that night over the valve replacements which had 1600 starts and 16 hour durations. This was communicated to the Work Week Superintendent, however, it was not determined that the valve replacement work would become critical path until after the gearbox work failed to start until 0800 on Tuesday.

i. Recommended action:

1. Future schedule review/readiness meetings need to include an integrated in-field walkdown of work to look for field conflicts like FME.

5) The gear box inspection was initially scheduled as a 4 hour duration (16 work hours on calendar 5). Following the discovery that the inspection had been previously completed, the duration was not changed however it was discussed that the inspection would be shortened and probably be done only through the inspection access ports vice pulling the gear box cover. On Tuesday afternoon after an initial inspection via the access ports, maintenance and engineering decided that the gear box cover needed to be removed due to the fact that paperwork from the previous inspection documenting a complete inspection could not be located. This expanded the scope of the inspection effort and pushed recover of the lube oil system by 15 ½ hours from the original schedule. Additionally, alignment work was not scheduled since the need for alignment was "to be determined by engineering". Mechanical supervision and workers were required to work around the clock to complete the inspections.

i. Recommended actions:

1. Order needs to be replanned. The need for an alignment should be evaluated weeks ahead of time and incorporated into the schedule.

2. All significant changes to planned work scope must be evaluated with the Work Week Superintendent for impact to the schedule.
3. Previous work (last recurring task) should be reviewed as part of the T-4 walkdown for work with the potential for expanded scope (inspections, etc.).

6) Work on repack of the F028 drain pot drain line isolation scheduled to start at 1200 on Tuesday was pushed until late Tuesday night when resources from Salem were to become available. These resources were diverted back to Salem on Tuesday night prior to starting work without notification being made to the AOM or Work Week Superintendent. This job was identified early as potential for expanded scope due to a long standing packing leak, and we were fortunate that only a repack was required since due to the late start significant valve work would have easily pushed closure of this window. This valve should have been tagged in the open position to facilitate stem inspection.
    i. Recommended actions:
        1. Changes to resource utilization which impact schedule completion should be approved by the Work Week Superintendent.
        2. Repack activities where stem inspections are needed should have valves tagged open.

7) Work on the condensate transfer system valves V037 and V038 did not start on schedule due to resources being diverted to other work. This resulted in a 7 hour delay in the tagging release.

8) Communications between maintenance/operations and the AOM/Work Week Superintendent were poor during this outage. Very few 1031 calls were made even though there were numerous schedule slips. The poor start to the outage may have contributed to this as the schedule had to be repeatedly modified for some groups and they may have been confused as to what should be reported.

9) The commencement of tagging releases for Oil, Water, Steam, and Condensate Transfer, were initially spread out in the schedule to make Ops restoration efforts manageable. Due to schedule delays and necessary modifications, the oil release occurred 15 ½ hours late, the Condensate Transfer release occurred 7 hours late, and the Steam release occurred 3 hours late. This put the three major releases on one shift. Although Operations attempted to call in additional personnel when the likelihood of this was recognized Tuesday morning, there was no response. Problems were complicated further when an NEO called out sick on Wednesday night and an NCO was called for a random off hours FFD. Two NEO's were held over from dayshift Wednesday for an additional 4 hours when the Water release seemed imminent, but tag release was not given to Ops until 2015 and the extra NEO's were only available until 2200.
    i. Recommended actions:

1. Ops should consider overstaffing when there are major tagging releases scheduled for backshift to account for possible callouts and schedule slips.

10) Several issues were identified with prestaged parts that were defective. The replacement valve for the V026 failed blue check. The spare bearings for the gear box were corroded and pitted beyond use (20112828).
    i. Recommended actions:
        1. Inspection of parts in a previous week should be scheduled for critical parts or those with poor histories. Inspections should include things like "blue checks" to ensure parts are good. Either that or set up a more rigorous receipt inspection standard.

11) Hose control was an issue in that a blue (non-contaminated) hose was utilized to drain a portion of the system. Other hoses used were not neatly laid out and presented a tripping hazard to workers.

12) Transient combustible permits were not acquired for lube oil drums that were staged in the HPCI room. A permit was later obtained, but when an additional drum of oil was needed a permit was again not obtained.

13) Problems with control of watertight doors was found by an NRC resident. Workers had left doors open and unattended during cleanup and demobilization.

Despite the many challenges, there were also many strengths realized that should be captured for future outages.

1) Assignment of a "Straw Boss" for the outage helped in focusing preparation and resolving issues during execution. In the future, the roles and responsibilities of this person need to be defined so that there is no confusion as to who is getting status updates (Straw Boss or Work Week Superintendent). In the future it would be good to cycle this duty through Ops, Maintenance, and Engineering so that each group can get insight into the process and its challenges.
2) Pre outage meetings were held routinely and many schedule issues were resolved. While the Work Week Specialists represented their departments well, more involvement from the supervisors/superintendents is needed. The meetings where front line personnel participated provided excellent insight, although somewhat late in the process.
3) Operations shifts were given advance notice of their involvement in the outage and provided excellent feedback and assisted in outage review and preparation. The shifts reviewed and understood the tagouts that they were scheduled to hang and release, and due to this advance preparation were able to recover many hours during tag release and system restoration. Retest and testing binders were assembled including pre-job briefs and copies of the IST's and retests. Most of the needed hoses and ladders were prestaged at the site and made tagging quicker and easier.

4) The main prejob brief for the tagging was completed the night before and only a short brief was needed the night of the outage start. This was significant in that tagging was scheduled to commence at 1800 when the shift arrived.
5) Good coordination between scaffold group, Ops, and Safety on determining appropriate access to backdraft dampers prevented safety concerns during execution.
6) Time was scheduled for walkdown of tagouts and pre-job briefings. Durations were not adequate, but concept was good.
7) Cleanup and decon activities were scheduled and resourced. This was a lesson learned from RCIC which provided an excellent return of the HPCI room post maintenance.
8) Post outage critique was held and lessons learned captured. Attendance was not as good as expected with no representatives from I&C or Electrical.

[redacted]

Tom Lake

1. Steam leak issue [redacted] Asked for Empbyee Concerns. To Look into it. Not Investigating. hand him a list of what the Issues. a Bulletized List. No Names. [redacted] Scrubbed list. One Time on list. No order of Significance. [redacted] will Then Respond To Them. If you Don't hear back Get Back To [redacted]
2. D.d you have any Questions?
- Give Background. in past leading upto Restart. We were involved in a Slacking of Standards So Some history. We were Criticized for Allowing restart To happen. This is a repeat we were Accused of Being Complacent when we are Not and we Speak To Deaf ears when There is a Condition that exists weather a Transient or a Substandard, I Say If I were an observer what would My actions Be Based on the Standards. I thought things were going well Discussion was made Stabalize and evaluate Get Resources Together the Condition Worsens and we had To Set up Contingencies. Manager Reverted and Took The lead and over Powered the Shift Management. He then went out into the Plant To Manipulated equipments.

The rest of the organization Did not know. The CR Did. [redacted] Went out w/out Safety equipment from the Top of a Ladder Not from platform, I think That the actions were inappropriate, No Direct Communication w/ ER ~~Has Been Down To~~ Indications in The Control Room Worsened, [redacted] leaves the Control Room To Tell To Back off. We are Going To Shut Down. Loss of Command and Control, There is a letter. It is a Concern To me That we revert To that activity, after I Questioned Did you Get all your resources. [redacted] first Response. Sometimes he Enforces the Standards.

- My Role IRD for ingaging There is Zero Tolarance, If it happens Contact me
- I understand my rights.

I am Concerned about the reverting Back To the actions. I Talked To [redacted] many T.. about these Behaviors That He was not here To See. When Pressure is applied We Revert Back. We have a lot of Practic That are inplace But we have.

Expectation Safety is #1

If the events that might had led To a personnel injury or a plant. Transient How would it Be Looked at? and since the out Come was Good, then We are not Looking at it.

In My Mind If I were a regulator I would not Be able To Say we are enforcing
- Safety first
Command & Control
enforcement of Standards.

Fire Retardant.
Guy that is out spoken has it enforced upon him. and the Guy next To him. Not wearing.
This happens Top To Bottom.

- We Tend To be more lenient wen we make Progress.
- To not recognize That Things were wrong the end Justified Means.

TC [redacted] almost Said I would do it again.

That's my Concern I Think our Behaviors are Reverting Back, I think we have Managers at risk they know there at risk and acting as if they are fearful of there Job.

I think [redacted] is a Total imbecil, People Want To Do the right Thing they Speak out and are then Squashed. We See That, We See an organization that is in flux. We See People Moved out of the way when they Dont agree and advocate

- I feel Strongly that we made errors leading To restart, We were To Id To Change That attitude that allowed that. We are Walking away at Thos Processes that were put in place, we are Now allowed To interpret.

— on these Procedures. That has Given more leeway. has That been Documented.
— Do you Guys Do Self assessments.
- we don't know What that means.

- We look at ours action.

Our Actions Justified. Re. Means we were Driven To 'Do That

If the NRC look at, if what would they Say. I Think we have a Good Group hear, I Think we lose focus. I Don't Think we are Being led Correctly. If we Go Beyond our OS's there are not Many people that Know What we need. I look at [redacted]

Listen To People.
focus is on-

Two years ago We can't Get this Work week thing Together.

Less Time Simulator Different Test Standards
Less Training Time. Lot of overtime.

Know your Audience. Not a real Diverse Background. We are not overachieve We will Do what you want and Do it Well.

We Need To Be made To feel Valuable.

P.ps. We Perceive That:
It affects us.
A lot of the Things Before happened. and are happening Now.

Belief and Trust.

Performance Partnership Goals and Measures
Business Focus Area: Long Term Reliability:
"Achieve Long Term Equipment Reliability through effective use of the Equipment Reliability Process"

Shift Managers

Goal: **Targeted Equipment Reliability Problem areas are understood by all personnel and issues are driven to closure by Shift Managers.**
Measures:

- Equipment Reliability 2003 top fixes are completed in 2003 (ER03 list).
- Top 20 target areas show significant reliability improvement via "Rainbow Chart".

Actions to take:

- Shift Managers ensure CRS's are trained on targeted equipment reliability problem areas and can speak to these areas and the efforts being made to improve.
- Shift Managers lead the organization to ensure completion of all work items identified as top Equipment Reliability 2003 fixes. Challenge removal or deferral of work that falls into these categories. Personal intervention in the Work Management, Outage, Engineering, and Maintenance departments will be required.
- Shift Managers and CRS's ensure emergent items within the targeted areas are promptly identified and driven to resolution.
- Shift Managers ensure corrective actions for issues regarding targeted equipment reliability problem areas are effective in preventing reoccurrence.
- Shift Managers incorporate "System SRO's" into teams working on targeted equipment reliability problems.
- Work on targeted reliability equipment is closely tracked by System SRO's and Operations Coordinators to ensure successful completion.

Goal: **Scoping and Identification of Equipment Reliability concerns and Critical components minimizes forced loss rate.**
Measures:

- Single point vulnerabilities that can cause plant trips or derates are identified and mitigated.
- No forced outages due to previously identified reliability concerns.

Actions to take:

- Shift Managers follow through on incoming notifications and with potential reliability consequences.

Goal: **Performance Monitoring reports are validated by Operations and provide meaningful and correct system information.**
Measures:

- Unit Analysis Report is utilized by management to focus attention and resources.
- System Health Reports are utilized by management to focus attention and resources.
- Operations Management speaks from facts and with one voice to drive equipment reliability issues.

Actions to take:

- Shift Managers provide expectations to System SRO's to ensure demonstrated ownership of their systems. These expectations should include quarterly reports on systems owned by each SRO, which are reviewed and approved by the Shift Manager and presented to the AOM.
- Shift Managers review and provide insight into Unit Analysis Reports prior to submittal. Operations Departments sign off on quarterly reports is required.
- Shift Managers ensure System SRO's review and provide insight into appropriate System Health Reports and sign off on quarterly reports. System SRO's meet regularly with designated Performance Engineer to discuss system problems and upcoming resolutions.

Goal: Corrective Actions for Equipment Reliability Problems are effective in preventing recurrence.

Measures:

- No repeat root causes for equipment reliability problems.
- All equipment reliability root causes have substantial Operations input.
- Shift Managers review and concur with equipment reliability apparent cause corrective actions.

Actions to take:

- Shift Managers ensure Operations Department representatives are involved in all equipment reliability root cause investigations.
- Protocol established for Shift Manger review and concurrence with equipment reliability apparent cause corrective actions.

Goal: Continuing Equipment Reliability Improvement.

Measures:

- Equipment Reliability performance is driven by Operations and high standards are enforced.

Actions to take:

- Leak Management Plan is understood by all personnel, supported by Operations, and low tolerance for leaks maintained through housekeeping, trending, and identification. Operations involvement in condition based monitoring program is evident.
- Shift Managers hold maintenance superintendents accountable to properly repair equipment and return to service in better than found condition.
- Shift Managers hold engineering superintendents accountable to follow through on resolution of reliability issues.
- Shift Managers hold all personnel accountable to closely monitor, trend, and maintain equipment in high state of operational maintenance. Use of PAOWF observations to document coaching.
- Shift Managers support and champion ideas for equipment reliability improvement through ERB.

Performance Partnership Goals and Measures
Business Focus Area: Long Term Reliability:
"Achieve Long Term Equipment Reliability through effective use of the Equipment Reliability Process"

Shift Control Room Supervisors

Goal: **Targeted Equipment Reliability Problem areas are understood by all personnel and issues are driven to closure.**
Measures:

- Equipment Reliability 2003 top fixes are completed in 2003 (ER03 list).
- Top 20 target areas show significant reliability improvement via "Rainbow Chart".

Actions to take:

- CRS's are knowledgeable of targeted equipment reliability problem areas and can speak to these areas and the efforts being made to improve. CRS's train NCO's and NEO's on target areas.
- CRS's ensure emergent items within the targeted areas are promptly identified and driven to resolution.
- "System SRO's" participate in teams working on targeted equipment reliability problems.
- Work on targeted reliability equipment is closely tracked by System SRO's to ensure successful completion.

Goal: **Scoping and Identification of Equipment Reliability concerns and Critical components minimizes forced loss rate.**
Measures:

- Single point vulnerabilities that can cause plant trips or derates are identified and mitigated.
- No forced outages due to previously identified reliability concerns.

Actions to take:

- System SRO's take lead in working with Reliability Engineering to incorporate EOOS reliability model.
- CRS's appropriately prioritize incoming notifications and flag those with potential reliability consequences.
- Backlog work is prioritized and validated through T-16 walkdowns.
- PM feedback is provided by Operations and attention is given to flagging unnecessary PM's both within and outside Operations to allow focus on more critical work.

Goal: **Performance Monitoring reports are validated by Operations and provide meaningful and correct system information.**
Measures:

- Unit Analysis Report is utilized by management to focus attention and resources.
- System Health Reports are utilized by management to focus attention and resources.
- Operations Management speaks from facts and with one voice to drive equipment reliability issues.

Actions to take:

- System SRO's meet expectations to ensure demonstrated ownership of their systems. These expectations include preparation of quarterly reports on systems owned by each SRO, which are reviewed and approved by the Shift Manager and presented to the AOM.
- System SRO's review and provide insight into appropriate System Health Reports and sign off on quarterly reports. System SRO's meet regularly with designated Performance Engineer to discuss system problems and upcoming resolutions.

Goal: Corrective Actions for Equipment Reliability Problems are effective in preventing recurrence.

Measures:

- No repeat root causes for equipment reliability problems.
- All equipment reliability root causes have substantial Operations input.
- Shift Managers review and concur with equipment reliability apparent cause corrective actions.

Actions to take:

- System SRO's are aware of root and apparent cause investigations on systems under their ownership and provide insight into recommended corrective actions.

Goal: Continuing Equipment Reliability Improvement.

Measures:

- Equipment Reliability performance is driven by Operations and high standards are enforced.

Actions to take:

- Leak Management Plan is understood by all personnel, supported by Operations, and low tolerance for leaks maintained through housekeeping, trending, and identification. Operations involvement in condition based monitoring program is evident.
- CRS's hold maintenance supervisors accountable to properly repair equipment and return to service in better than found condition.
- CRS's hold engineering supervisors accountable to follow through on resolution of reliability issues.
- CRS's hold NEO's accountable to closely monitor, trend, and maintain equipment in high state of operational maintenance. Use of PAOWF observations to document coaching.
- CRS's solicit and champion ideas for equipment reliability improvement through ERB.

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

SHIFT MANAGER

⊕ SAFETY

Human Performance and Safety [redacted]

Goals:

- I will not get hurt. I am alert and identify potential hazards to ensure the safety of others and myself.
- I will ensure no one gets hurt – (station wide when I am the on-shift SM) (in my group when I am an off-shift SM).
- I will wear my PPE as required.
- As the on-shift SM, I will ensure station shift personnel have access to the right tools, procedures, and PPE to safely and effectively do their jobs.
- As an off-shift SM, I will ensure my associates have access to the right tools, procedures, and PPE to safely and effectively do their jobs and the product my group produces identifies or provides for the same to promote safe and effective job execution.
- As the on-shift SM, I will not only participate in, but also insist on pre and post job briefs and that the safety manual is referred to during them – station wide.
- As an off-shift SM, I will insist that the product my work group produces promotes/allows for pre and post job briefs and that the product is in full compliance with safety manual requirements.
- I will have a questioning attitude regarding the safety aspect of all (activities that occur – station wide for on-shift SM assignment) (products my group produces for off-shift SM assignment).
- I will be aware of my expected exposure for every entry into the RCA.
- I will conduct PAOWF observations in accordance with all Director and Departmental expectations; I will document observable adherence to safety standards and use the PAOWF system to improve station safety performance.
- I will use Self-Assessments, the CAP, and Training Programs to improve station safety performance.
- I will ensure all (station shift personnel for on-shift SM assignment) (my associates for off-shift SM assignment) use the CAP to improve station safety performance.
- I will follow all procedures.
- I will champion maximum attendance at the PSEG Human Performance / Safety day.
- I will champion 100% attendance at Safety / Human Performance Simulator Training.
- I will ensure the 19 Health and Safety System Components and the Safety Council Leadership positions are inculcated into our day-to-day operations to achieve an incident free workplace (at the station shift associates level for on-shift SM) (at my group level for off-shift SM).

Measures:

- As the on-shift SM, there will be no accidents or injuries at the station that cause the OSHA Recordable Incident Rate to exceed 0.25 for the site.
- As an off-shift SM, there will be no accidents or injuries in my group that cause the OSHA Recordable Incident Rate to exceed 0.25 for the site
- 4th Quarter Safety Culture Survey score >85% indicating an involved workforce knowledgeable in the health and safety system components and their Council leadership

Plant Configuration [redacted]

Goals:

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Measures:

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OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

SHIFT MANAGER

RELIABILITY

Long Term Reliability [redacted]

Goals:

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Measures:

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Summer Capacity Facto [redacted]

Goals:

- No forced de-rates during summer peak period of May 15 to Sept 15
- Turbine Valve Testing Improvements
- Hope Creek Core Design optimized to avoid control rod pattern adjustments during summer months

Measures:

- 100% capacity factor during summer
- No forced outages
- No forced unit de-rates due to equipment failures or personnel error
- Turbine Valve Testing interval increased to support 100% power through summer months
- Turbine control valve testing is performed at maximum safe power level
- No down powers for control rod pattern adjustments during summer months

Work Management [redacted]

Goals:

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Measures:

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OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

[redacted] SHIFT MANAGER

$ COST

Improve Outage Performance [redacted]

Goals:

- ensure outage milestones and goals are met
- ensure outage dose improvement suggestions are generated and considered
- ensure outage vs. on-line philosophy and outage scope control process is established and understood
- ensure outage scope is identified
- ensure outage staffing plan is in place
- ensure outage-related license changes and plant modifications are identified to improve outage durations

Measures:

- total outage days ≤ 66 days
- total outage dose ≤ 226 REM
- total outage cost ≤ $51M
- maintain 2% scope stability
- production rate of 500 activities per da
- >100 day run following outages

Implement Effective Projects [redacted]

Goals:

-

Measures:

-

Financial Control [redacted]

Goals:

-

Measures:

-

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

SHIFT MANAGER

☺ PEOPLE

Integrated Labor Plan [redacted]

Goals:

- Develop a forward-looking department overtime management process that effectively controls department overtime costs and trains CRSs to effectively implement the process
- Train CRSs to effectively manage workforce availability. Include hierarchy of corporate practices through NBU and department practices, and associated documentation requirements.
- Identify decision-making and communications skills necessary to effectively communicate work tasks / job assignments, management policies, equipment maintenance prioritization, and NBU processes. Shift Managers train CRSs to develop aforementioned skill sets.
-

Measures:

- Overtime costs 'less than / equal to' 2003 year end overtime budget
- Department unavailability <4%
- Department workforce turnover rates <6%
- Gallup Survey scores continue to improve
-

Human Performance [redacted]

Goals:

- I will read and internalize the Managers' Human Performance Briefing Book and all Tool Kits by 3/31/03. I will fulfill the roles and responsibilities of a manager (and supervisor when applicable) contained therein. Also, I will ensure all (station shift associates for on-shift SM) (my associates for off-shift SM) are aware of the 10 Human Error Traps and how to recognize and mitigate them.
- When the Human Performance Procedure/Policy is issued, I will read and internalize it within one month of issue.
- I will ensure the weekly human performance error trap and mitigating tool rollouts provided by the Continuous Performance Improvement Group (CPIG) are effectively communicated in their entirety to all (station shift associates for on-shift SM) (my associates for off-shift SM) AND they understand the error traps and mitigating tools.
- As the on-shift SM, I will not only participate in, but also insist on pre and post job briefs and that all human error traps and mitigating strategies are covered during them – station wide.
- As an off-shift SM, I will insist that the product my work group produces promotes/allows for pre and post job briefs and that the product inherently minimizes human error traps.
- I will have a questioning attitude regarding the human performance aspect of all (activities that occur - station wide for on-shift SM) (products my group produces for off-shift SM).
- I will conduct PAOWF observations in accordance with all Director and Departmental expectations; I will document observable adherence to human performance standards and use the PAOWF system to improve station human performance.
- I will contribute to the RF11 Human Performance Lessons-learned hotline during RF11 to identify ways to improve station human performance in RF12.
- I will be fit for duty and alert to the 10 Human Error Traps.
- I will self-check via STAR and QVV.
- I will be clear and concise in my communications using three-point communications when appropriate.
- I will use Self-Assessments, the CAP, and Training Programs to not only track and trend human performance, but also to improve it. My efforts in these programs will positively impact FEAT POC TOL.
- I will ensure all station personnel use the CAP to improve station human performance
- I will follow all procedures
- I will champion 100% attendance at Safety / Human Performance Simulator Training

Measures:

- there will be no station forced outages, downpowers, or LERs that are a result of station shift human performance issues.
- there will be no Event Free Clock Resets at the station that cause the site reset periodicity to be less than 25 days.

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

SHIFT MANAGER

Work Environment [redacted]

Goals:

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Measures:

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OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

[redacted] CONTROL ROOM SUPERVISOR

⊕ SAFETY

Human Performance and Safety [redacted]

Goals:

- I will not get hurt. I am alert and identify potential hazards to ensure the safety of others and myself
- I will ensure no one gets hurt on my shift
- I will wear my PPE as required.
- I will ensure my shift personnel have access to the right tools, procedures, and PPE to safely and effectively do their jobs
- I will not only participate in, but also insist on pre and post job briefs and that the safety manual is referred to during them at all times
- I will have a questioning attitude regarding the safety aspect of all activities that occur on my shift
- I will be aware of my expected exposure for every entry into the RCA.
- I will conduct PAOWF observations in accordance with Departmental expectations; I will document observable adherence to safety standards and use the PAOWF system to improve my OPS shift's safety performance.
- I will use Self-Assessments, the CAP, and Training Programs to improve station safety performance.
- I will ensure all my associates use the CAP to improve station safety performance.
- I will follow all procedures.
- I will champion maximum attendance at the PSEG Human Performance / Safety day.
- I will champion 100% attendance at Safety / Human Performance Simulator Training.
- I will partner with my Safety Representative to ensure the 19 Health and Safety System Components and the Safety Council Leadership positions are inculcated into our day-to-day operations to achieve an incident free workplace at the shift associate level

Measures:

- there will be no accidents or injuries on my shift that cause the OSHA Recordable Incident Rate to exceed 0.25 for the site.
- 4th Quarter Safety Culture Survey score >85% indicating an involved workforce knowledgeable in the health and safety system components and their Council leadership.

Plant Configuration [redacted]

Goals:

•

Measures:

•

[redacted] CONTROL ROOM SUPERVISOR

RELIABILITY

Long Term Reliability [redacted]

Goals:

•

Measures:

•

Summer Capacity Factor [redacted]

Goals:

- No forced de-rates during summer peak period
- Turbine Valve Testing Improvements
- Hope Creek Core Design Optimized to Avoid Control Rod Pattern Adjustments During Summer Months

Measures:

- 100% capacity factor during summer
- No forced outages
- No forced unit de-rates due to equipment failures or personnel error
- Turbine Valve Testing interval increased to support 100% power through summer months
- Turbine control valve testing is performed at maximum safe power level
- No down powers for control rod pattern adjustments during summer months

Work Management [redacted]

Goals:

•

Measures:

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OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

[redacted] CONTROL ROOM SUPERVISOR

$ COST

Improve Outage Performance [redacted]

Goals:

- meet department outage milestones
- prepare and implement outage schedule to meet outage goals
- generate and champion outage improvement suggestions to improve dose performance, outage efficiency, and outage durations
- understand and implement outage vs. on-line philosophy and outage scope control process
- identify outage items
- identify outage-related license changes and plant modifications to improve outage durations

Measures:

- total outage days ≤ 24 days
- total outage dose ≤ 116 REM
- total outage cost ≤ $23.5M
- maintain 2% scope stability
- production rate of 500 activities per day
- >100 day run following outage

Implement Effective Projects [redacted]

Goals:

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Measures:

•

Financial Control [redacted]

Goals:

•

Measures:

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OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

CONTROL ROOM SUPERVISOR

☺ PEOPLE

Integrated Labor Plan [redacted]

Goals:

- CRSs implement the department overtime process to effectively control department overtime costs. Including effective implementation of overtime rules, efficient control of electronic staffing roster database, effective and efficient management and awareness of direct reports work assignments and locations, 100% time reporting accuracy by direct reports.
- CRSs effectively manage workforce availability in accordance with corporate and NBU practices; and maintain all required documentation accurate and up to date.
- CRSs exhibit skillsets and related knowledge of work prioritization and business decision making needs, and management policies and processes, including familiarization and successful implementation of Work Management procedures...???

Measures:

- Overtime costs 'less than / equal to' 2003 year end overtime budget
- Department unavailability <4%
- Department workforce turnover rates <6%
- Gallup Survey scores continue to improve.

The above-listed items need polish to align them with the Performance Partnership Guide content and format recommendations for Establishing Expectations.

Human Performance [redacted]

Goals:

- I will read and internalize the Managers' Human Performance Briefing Book and all Tool Kits by 3/31/03. I will fulfill the roles and responsibilities of a supervisor contained therein. Also, I will ensure all of my shift personnel are aware of the 10 Human Error Traps and how to recognize and mitigate them.
- When the Human Performance Procedure/Policy is issued, I will read and internalize it within one month of issue.
- I will ensure the weekly human performance error trap and mitigating tool rollouts provided by the Continuous Performance Improvement Group (CPIG) are effectively communicated in their entirety to all my OPS shift personnel AND they understand the error traps and mitigating tools.
- I will not only participate in, but also insist on pre and post job briefs and that all human error traps and mitigating strategies are covered during them AND I will use the pre-job briefing checklist at all times.
- I will have a questioning attitude regarding the human performance aspect of all activities that occur on my shift
- I will conduct PAOWF observations in accordance with Departmental expectations; I will document observable adherence to human performance standards and use the PAOWF system to improve my OPS shift's human performance.
- I will contribute to the RF11 Human Performance Lessons-learned hotline during RF11 to identify ways to improve station human performance in RF12.
- I will be fit for duty and alert to the 10 Human Error Traps.
- I will self-check via STAR and QW.
- I will be clear and concise in my communications using three-point communications when appropriate.
- I will use Self-Assessments, the CAP, and Training Programs to not only track and trend human performance, but also to improve it. My efforts in these programs will positively impact FEAT POC TOL.
- I will ensure all my shift associates use the CAP to improve station human performance.
- I will follow all procedures
- I will champion 100% attendance at Safety / Human Performance Simulator Training.

Measures:

- there will be no station forced outages, downpowers, or LERs that are a result of human performance issues on my OPS shift
- there will be no Event Free Clock Resets caused by my shift that cause the site reset periodicity to be less than 25 days.

Work Environment [redacted]

Goals:

•

Measures:

CONTROL ROOM SUPERVISOR

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OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

OPERATIONS STAFF SUPERVISOR

⊕ SAFETY

Human Performance and Safety [redacted]

Goals:

- I will not get hurt. I am alert and identify potential hazards to ensure the safety of others and myself.
- I will ensure no one gets hurt in my group
- I will wear my PPE as required
- I will ensure my associates have access to the right tools, procedures, and PPE to safely and effectively do their jobs and the product my group produces identifies or provides for the same to promote safe and effective job execution
- As an off-shift SRO, I will insist that the product my work group produces promotes/allows for pre and post job briefs and that the product is in full compliance with safety manual requirements.
- I will have a questioning attitude regarding the safety aspect of all products my group produces
- I will be aware of my expected exposure for every entry into the RCA.
- I will conduct PAOWF observations in accordance with Departmental expectations; I will document observable adherence to safety standards and use the PAOWF system to improve my OPS shift's safety performance.
- I will use Self-Assessments, the CAP, and Training Programs to improve station safety performance.
- I will ensure all my associates use the CAP to improve station safety performance.
- I will follow all procedures.
- I will champion maximum attendance at the PSEG Human Performance / Safety day.
- I will champion 100% attendance at Safety / Human Performance Simulator Training.
- I will partner with my (OPS shift/group) Safety Representative to ensure the 19 Health and Safety System Components and the Safety Council Leadership positions are inculcated into our day-to-day operations to achieve an incident free workplace at my group level

Measures:

- there will be no accidents or injuries in my group that cause the OSHA Recordable Incident Rate to exceed 0.25 for the site
- 4th Quarter Safety Culture Survey score >85% indicating an involved workforce knowledgeable in the health and safety system components and their Council leadership.

Plant Configuration [redacted]

Goals:

-

Measures:

-

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

OPERATIONS STAFF SUPERVISOR

RELIABILITY

Long Term Reliability [redacted]

Goals:

•

Measures:

•

Summer Capacity Factor [redacted]

Goals:

- No forced de-rates during summer peak period
- Turbine Valve Testing Improvements
- Hope Creek Core Design Optimized to Avoid Control Rod Pattern Adjustments During Summer Months

Measures:

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- Turbine control valve testing is performed at maximum safe power level
- No down powers for control rod pattern adjustments during summer months

Work Management [redacted]

Goals:

•

Measures:

•

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

[redacted] OPERATIONS STAFF SUPERVISOR

$ COST

Improve Outage Performance[redacted]

Goals:

- meet department outage milestones
- prepare and implement outage schedule to meet outage goals
- generate and champion outage improvement suggestions to improve dose performance, outage efficiency, and outage durations
- understand and implement outage vs. on-line philosophy and outage scope control process
- identify outage items
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Measures:

- total outage days ≤ 24 days
- total outage dose ≤ 116 REM
- total outage cost ≤ $23.5M
- maintain 2% scope stability
- production rate of 500 activities per day
- >100 day run following outage

Implement Effective Projects[redacted]

Goals:

-

Measures:

-

Financial Control[redacted]

Goals:

-

Measures:

-

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

OPERATIONS STAFF SUPERVISOR

☺ PEOPLE

Integrated Labor Plan [redacted]

Goals:

- CRSs implement the department overtime process to effectively control department overtime costs. Including effective implementation of overtime rules, efficient control of electronic staffing roster database, effective and efficient management and awareness of direct reports work assignments and locations, 100% time reporting accuracy by direct reports.
- CRSs effectively manage workforce availability in accordance with corporate and NBU practices, and maintain all required documentation accurate and up to date.
- CRSs exhibit skillsets and related knowledge of work prioritization and business decision making needs, and management policies and processes, including familiarization and successful implementation of Work Management procedures...???

Measures:

- Overtime costs 'less than / equal to' 2003 year end overtime budget
- Department unavailability <4%
- Department workforce turnover rates <6%
- Gallup Survey scores continue to improve.
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Human Performance [redacted]

Goals:

- I will read and internalize the Managers' Human Performance Briefing Book and all Tool Kits by 3/31/03. I will fulfill the roles and responsibilities of a supervisor contained therein. Also, I will ensure all my associates are aware of the 10 Human Error Traps and how to recognize and mitigate them.
- When the Human Performance Procedure/Policy is issued, I will read and internalize it within one month of issue.
- I will ensure the weekly human performance error trap and mitigating tool rollouts provided by the Continuous Performance Improvement Group (CPIG) are effectively communicated in their entirety to all my associates AND they understand the error traps and mitigating tools.
- I will insist that the product my work group produces promotes/allows for pre and post job briefs and that the product inherently minimizes human error traps.
- I will have a questioning attitude regarding the human performance aspect of all products my group produces
- I will conduct PAOWF observations in accordance with Departmental expectations; I will document observable adherence to human performance standards and use the PAOWF system to improve my OPS shift's human performance.
- I will contribute to the RF11 Human Performance Lessons-learned hotline during RF11 to identify ways to improve station human performance in RF12.
- I will be fit for duty and alert to the 10 Human Error Traps.
- I will self-check via STAR and QVV.
- I will be clear and concise in my communications using three-point communications when appropriate.
- I will use Self-Assessments, the CAP, and Training Programs to not only track and trend human performance, but also to improve it. My efforts in these programs will positively impact FEAT POC TOL.
- I will ensure all my associates use the CAP to improve station human performance.
- I will follow all procedures
- I will champion 100% attendance at Safety / Human Performance Simulator Training.

Measures:

- there will be no station forced outages, downpowers, or LERs that are a result of human performance issues within my group
- there will be no Event Free Clock Resets attributed to my group that cause the site reset periodicity to be less than 25 days.

Work Environment [redacted]

Goals:

-

Measures:

OPERATIONS EXCELLENCE - 2003 PERFORMANCE GOALS

OPERATIONS STAFF SUPERVISOR

LEADERSHIP AT PSEG NUCLEAR

WHAT IS LEADERSHIP?

Webster's dictionary defines leadership as "the ability to lead". In its simplest terms, to lead means to "show the way". In business, as in life, simply showing someone the way doesn't quite capture the essence of leadership. At PSEG Nuclear, we believe leadership is the ability to:

- Define your vision as a reality,
- Continuously mold a team and involve them in a way that results in a shared understanding of that vision, and
- Develop the individual team members in a caring and nurturing way so that their strengths become integral parts of the success you wish to achieve, their weaknesses do not hinder the progress of the team, and their growth ensures your vision is carried on in your absence.

We believe that there was an emotional side to leadership that involves the ability to deeply care about the team's goal, the team members themselves, and the impact the team is to have on the company. We believe that the opportunity and a real need exist now for true leaders at PSEG. We also believe that the atmosphere has changed such that true leaders have an opportunity to emerge. Leadership is now being defined a little bit differently, and the emotional intelligence necessary to be a successful leader is now valued as much, if not more, than the technical qualifications required for the job.

WHAT BEHAVIOURS DOES A LEADER DISPLAY?

Each Vice-President has contributed to the definition of leadership that is contained within this document. In support of this a set of leadership attributes has been identified that captures the essence of leadership here at PSEG. These attributes are:

Own the whole

- Focus on and achieve end results at PSEG Nuclear
- The accept ownership of PSEG Nuclear's performance and drive for Top Quartile in Safety, Reliability and Cost through people.

Energy

- To create change
- Relentless pursuit of results
- Totally committed
- Creates alignment/teamwork – build partnerships, focus on integration and alignment, up/down/horizontal
- Tenacity and persistence – to implement change and improve performance

Energize Others

- Own success and failure of their personnel
- Holds themselves and others accountable
- Creates trust and an open environment

- Creates leadership in others – who then go for excellence
- Inspires others
- Develops people
- Champion change

Edge

- Drives and creates change (get better every day)
- Self-initiate ideas and results
- Yes/no not maybe (decisive, action oriented)
- Create healthy tension
- Words and actions consistent

Execute

- Deliver results
- Know the details – they put their eyeball on the scene and know what is going on
- Knowledge – they know that they are talking about

Recognizes People

- They celebrate results with their people
- Talk about people not themselves when discussing success

WHAT ARE WE DOING TO IMPROVE THE QUALITY OF LEADERSHIP HERE AT PSEG NUCLEAR?

As a result of our own assessments, observations by our stakeholders, and feedback from our people, we identified a GAP between where we were and where we needed to be in the area of leadership. The following efforts were put in place to make a step-change in our leadership:

1) A new leadership team was organized [redacted]
2) A leadership coach was hired to work with the team and develop leadership skills throughout the organization (Kymn).
3) A strategy was developed to significantly improve the leadership skills of our people using the following courses:
   a. First line supervisors attended the Supervisor's Leadership Academy.
   b. Managers attended the Power Leadership Excellence Course.
4) Individuals who graduated from the courses noted above have developed a support network that includes the Gung Ho web site and team meetings.
5) The Gallup Organization was retained to measure our ascent to Top quartile Leadership via the Gallup survey. The repetitive administration of the Gallup Survey enabled us to measure our journey on the road to excellence.

Additional measurement tools used to determine our success would include the corrective action process, our performance indicators, and the event free clock. The ultimate measurement tool for PSEG Nuclear would be the SRC through P performance indicators that have been developed over the past several years. Simply put, we have determined that we will measure our success using the following metrics:

Safety – INPO index
Reliability – Capacity factor
Cost – Cents per KW
People – The results of the Gallup Survey and "Smiles on the faces or our employees".

EVIDENCE

Since we have determined to reach excellence through our leadership, the following improvements have been identified:

1) Significantly improved professionalism in the control rooms at both Salem and Hope Creek.
2) A reduction in the number of grievances in Operations.
3) A reduction in the number of Licensee Event Reports generated – Salem 2R12 was completed without an LER.
4) Top Quartile performance in radiation exposure at Hope Creek.
5) Significant ownership of the Line of Business Safety Councils by the IBEW.
6) A significant reduction in the corrective maintenance backlog.
7) A significant increase in Gallup Scores.

GAPS

The following Gaps exist between our current performance and where we want to be.

1) All managers have not attended the Leadership Excellence Course
2) Gallup survey scores are not Top Quartile.
3) OSHA recordable incident rate is not on target for 2002.

A Senior Operator's Leadership Philosophy
By: An unnamed Senior Operator

Introduction

This document is intended to represent a consensus of professional philosophy shared by each Senior Operator. It reflects bits of idealism and omits an occasional cynicism. It is written in the subjective to reflect the individualism that must be present for any philosophy to exist in a practical form.

Authority and Responsibility

The word "authority" and "responsibility" go together. How can anyone have one without the other? I have the "responsibility" for the operation of my plant in accordance with the directives and guides which I've been given, therefore, I have all the "authority" I need to satisfy myself that I'm fulfilling my responsibilities. Only someone who has responsibilities that are broader than mine and that encompass mine has the responsibility and authority to change my guides or directives, issue me orders, or to assume my responsibilities. I've got "it" and if I err, I'll do so on the side of assuming too much responsibility and authority rather than too little - particularly where none of my bosses are available and I need to make a decision without waiting to clarify the situation.

I'm sensitive to the desires expressed by my boss. I fully discuss any controversial matter with him, particularly if it involves safety. I make sure he understands the basis of my concern, and the fact that I am concerned. Once this is done, I proceed as directed, using my full professional skill to make things work out using the directions I received. It is his job to give directions where he feels they are needed and it is my job to carry them out.

Some of the people who work for me or interface with me may not treat matters for which I am responsible as seriously as I do, but this only results in my recognition that I'm being depended upon to fulfill my assigned responsibility, regardless of how the people assigned to me view the matter. Also, I know that if I don't look after all of my responsibilities, some of my authority may be usurped, particularly where there seems to be a vacuum of activity of my part. If that should happen, I could lose my effectiveness and, also, I would still be responsible for any task not done properly.

I value the trust and confidence placed in me by higher management. I work for them - particularly my immediate supervisor. I try to harmonize my work style with theirs, to anticipate their desires and make them feel that I'm trying to key my efforts to their concerns as well as to provide skillful, consistent and dependable direction of routine and abnormal operations. I

recognize that higher management has even more responsibility for plant operations than I do. I know the General Manager is responsible for what the Operations Manager does, and for what I do. If an operator makes a mistake, I'm responsible - so is the Operations Manager, the General Manager, etc. We all should have taken steps to assure that the operator didn't make the mistake - but we didn't, so we must take some action to preclude its happening again. Responsibility can't be shared - it must be fully assumed by each and everyone in the chain - there's no way to divide it up.

I make reports up-the-line out of recognition of management's responsibilities. My management wants to be kept informed in order to be confident that it is doing what it should to give new or revised directives due to changed conditions. Also, management has assigned me certain resources, some of which may not be optimum for doing our job the way it can best be done. This may limit my capacity to fully deal with a condition or problem and they want to recognize this to help alleviate the situation. My bosses are in the same boat with me - we're all working to fulfill our responsibilities.

My Basic Working Principles

My basic working principles are three-fold. First, I keep informed about conditions of the plant and activities in progress. Second, I continuously manage priorities. Third, I strive to maintain strong, positive control over the operation of the plant and things that could threaten that control.

I get informed as I take over the shift then continuously build upon what I know during the shift. This allows me to adjust my priorities wisely. With respect to priorities, I always keep safety as paramount. I want to feel adequately comfortable about what I'm doing, knowing that there is always some element or risk in anything we do. I give foremost consideration to the prevention of an incident or condition that could lead to excessive release of radioactivity.

The heart of my job is to maintain strong, positive control over what is going on in the plant and what needs to be done to assure proper operation. I need to feel in control - from moment to moment and ready for what will or might happen next.

How I Keep Informed

I keep informed by reading gages, checking annunciators and alarms, referring to trends on recorders, reviewing log sheets, reviewing tagouts, observing the actions of shift personnel and a host of other things. Although I enjoy the feel of looking at a control panel or discussing a situation with a supervisor more than reviewing written documents, I make sure the written documents are serving my needs - to keep informed and to maintain positive control of the plant.

When I initial a log or sign a tagout, I'm making a mental entry of information and I'm telling the involved shift persons that I'm in control of what I've just signed and that I'm hereafter a party to whatever use is made of that document. I never give my signature away. I always get a bit of information from what I've signed even though I may scan a routine document rather casually. I try to make paper work for me - or at least for my boss.

I like to frequently look at the condition of my plant and what's going on first hand. If I can't do that enough, I try to get a look through other shift personnel by asking questions and by requesting reports about specific places or activities.

I watch people - and I study them - talk to them - listen to them and ask questions. It may be as important to me to know the amount of concern a person has for a certain problem as to know more about that particular problem. Keeping informed about my shift personnel is about as important as keeping informed about plant conditions, since I have to know both where attention is needed in the plant and who needs more direction or supervision.

I position myself and conduct my activities with the realization that incidents can develop rapidly and that before I must make decisions, I may not have the time to find out how long we've had a certain alarm or why a piece of equipment is tagged out or what test is in progress. I maintain a "feel" for the plant so that I'm ready to take direct control over virtually every important action that must be taken. I'm the leader that the shift will look to and will be depended upon when trouble comes, or when an operator may freeze or move irrationally. In terms of a football team, I'm the quarterback as well as the safety. I'm the last backup for every person on the shift. In order to be that, I've got to know what's going on.

<u>The Sense of Priority Which I Use to Move Work Along On My Shift</u>

It's not enough just to say that safety has first priority and productivity is what I try to achieve in the rest of my efforts. I have to sort the things to be done some way and keep them in mind as I push along. The things that have to get done can be thought of as falling into one of the following categories:

1. Routine work.

2. Investigating problems.

3. Changing plant conditions by changing plant parameters or by putting equipment into service or taking it out of service

4. Conducting a test.

5. Getting maintenance done and/or making modifications.

6. Training

Somehow, I have to get all of these done in order to be productive and to move things along properly on my shift. I must arrange and set the order of my attention, and that of other shift personnel; I must provide for coordination among activities going on; I must establish prerequisites for upcoming work and activities; and I must make judgments between safety versus productivity. So - here's how I think about each of the categories of work to be done as I try to meld them all together to keep the plant safe and move along.

Priority Considerations

1. Routine work - Routine work must be done, shift by shift. It is designed to detect problems and to prevent problems. If I neglect it, it's like proceeding blindly, hoping to get by - possibly while things build up or get worse.

2. Investigating problems - As we carry out our routine work and identify problems, we must follow up to some degree on every irregularity or abnormality. If we don't, the extent of the problem and significance to safety and productivity will remain obscure. If we cut our follow-up short, we can actually cover-up a problem because we give following shifts the illusion that irregularities and abnormalities have been looked into and don't have any significance - we have to guard against these by leaving a clean trail or what has or has not been done and what has or has not been found out about a problem.

3. Changing plant conditions - This is how we make progress and also where we are apt to make mistakes and be subjected to equipment failures. As we change plant conditions, we increase the demands on part of the plant while possibly decreasing it on other parts. Changing plant parameters or placing equipment in or out of service therefore requires very close operator and supervisory attention. I must ensure that I make, and take the time required for such attention and that my other shift personnel do likewise.

4. Conducting tests - Conducting tests is something like changing plant conditions - in fact - that's what it is except that it isn't necessarily the more routine type of changes. The fact that it isn't a routine plant manipulation means that I must ensure we're properly set up for it

with respect to special prerequisites, initial conditions, and manning. My shift is staffed for routine types of activities therefore certain testing may require more people or special talents. If so, I must get the extra people on station and provide them direction as part of my shift work force.

During the course of testing, I must keep abreast of the results and plant responses. I can waste a whole shift by not recognizing that the test conditions weren't proper or that desired results were not achieved.

5. Conducting maintenance and making plant modifications - This is where we reinforce safety, reliability and future productivity. It's like putting money in the bank, in that it has to be done in order to take it out. But - it must be done under adequate operator controls and supervision. We have to make, and take the time to give it proper attention.

6. Training - It seems as if training is always with us like a little conscience sitting on our shoulders. I seem to usually give it last priority although I know that's being short-sighted. I know that as a supervisor, a constant basic part of my job is to train those under me. I must always keep in mind that it is my responsibility to train shift individuals to do their individual jobs better and to contribute more to the shift crew as a team. I also know that I must make opportunities for trainees to get experience on my shift under close supervision. I must maintain an environment of continuous learning on my shift - including my own growth of knowledge and skills. We usually don't learn how to work harder - only smarter and in that way to do things more safely and productively.

So it's with all of this in mind, that I push and pull to move the shift along. It's only by taking frequent inventory of these considerations am I confident as to whether I've made progress or whether I'm just bridging the shifts that come before and after me.

Maintaining Positive Control of the Plant

I believe that doing my job properly means that I am maintaining positive control of the plant. I define "positive control" in a very subjective way. To me, it means that I am adequately informed about the status of the plant and activities in progress, that I can predict how the plant will behave in the next several minutes barring an unpredictable incident, that I can stabilize the plant (if it is not already stable) whenever in my judgment due caution requires it, and that the activities for which I am responsible are being done the way I want them done.

From a philosophical aspect, control over shift activities is the most challenging. In maintaining this control, I must be successful in imposing my will upon shift personnel and upon those other personnel who interface with shift responsibilities. I can best express my philosophy by addressing how I feel about the control of the principal shift activities.

1. Monitoring, Directing and Verifying Operator Actions

   I monitor operator actions in order to learn, then follow, how each operator performs, his strengths and his weaknesses, as well as to simply keep abreast of what is going on.

   I direct operators in order to tell them what I want done and how I want it done - but I don't direct them in a step-by-step fashion about how to do things unless the type of activity is one requiring special direction or coordination.

   I verify the performance of operators by directly spot-checking things which I feel are important and which I feel are most apt to be unsatisfactory, eg: those activities most prone to errors.

   I make frequent, deliberate judgments on just how much monitoring, directing and verifying is enough. My only guide is that level at which I feel is at my threshold of comfort and confidence with respect to a given person and a given set of plant conditions and circumstances. I pay particular attention to shift personnel who let it be known that they want to be left alone to go their own way when I feel that they are not performing their job the way they should. I must function as a team coordinator, director and leader. I do seek to make working on my shift enjoyable and rewarding for each person - but never at the expense of what I deem to be unacceptable performance.

   Standards of performance on my shift are what I make them and accept - not what I might just want or wish. If I accept performance which I know isn't what I think it should be, then my standards are automatically set by what I've accepted.

2. Use of Management Control Systems

   Management control systems such as documented procedures, qualification programs, reporting instructions etc., provide a disciplined framework for consistent, acceptable results, particularly for activities being performed by large numbers of people working on things requiring high quality results. They constitute management tools which I use to extend my control over many shift activities. I myself "go by the book" in the use of management control systems and I assure that my shift does likewise. I am a stickler in their use because

in many cases, they are substitutes for detailed supervision and/or for more experience and knowledge than the performing operator may have. Therefore, misuse can be dangerous. If there seems to be justification for not going by the book, I make sure that "the book" is properly changed before proceeding.

3. Shift Training

There is one aspect of on-shift training which I feel is very important to maintaining positive control of the plant. That is the conduct of precautionary review (or training) concerning how to handle the plant with existing abnormalities and how to handle the plant prior to making non-routine changes in plant lineups or conditions. I assure this type of training is performed as part of shift turnover when coming on shift or as early in the shift as practical. I hold each person responsible for making such reviews and I spot check that it's done by asking questions which should be answered correctly if the reviews have been made.

4. Performing Modifications and Doing Maintenance

Making modifications or performing maintenance always feels threatening to maintaining positive control of the plant. I try to minimize the threat by meticulous use of applicable management control systems and by requiring that each operator keeps abreast of such work going on within his sphere or responsibility. I also keep abreast with the status of the more significant work in progress in order that I can be alert for, or anticipate impacts upon operational equipment.

I also have operators monitor the working spaces where modifications or maintenance is being performed in order to detect anything that might adversely affect operations such as working outside the cleared work area or system or workers crawling over operational equipment.

5. Testing

My concern for maintaining positive plant control always goes up when we're performing testing. First, normal shift manning is geared only to that testing that is considered part of normal shift operations. When additional testing is done, it always requires additional operator attention to certain aspects of the plant, thereby tending to decrease attention to others. It can be that performing certain tests simultaneously with normal operational requirements are just too much, and that, additional operators are needed. In certain testing, absolutely constant monitoring of indicators is required and failure to do so can have dire results. Also, testing usually requires closer, more disciplined communications - without disrupting the communications needed for routine plant operations.

I am always particularly sensitive to my instinct for caution in starting and conducting tests. I stay very close to what's going on and I assert my positive control over any test that in any way affects operations.

If technical supervision from a vendor or other source is available, I ensure that it is fully utilized in getting set up for the test and in giving advice during the course of testing.

6. Operational Problems

Positive plant control can only be maintained with each responsible operator knowing each operational problem within his scope of responsibility, his verifying that the problem has been investigated and corrective actions initiated, and his implementing compensatory action to minimize adverse affects. Also, I and each operator must fuss about the continuation of operational problems by virtually demanding timely resolution. "Living" with problems clearly leads to inadequate plant control.

7. Routine Operations

Maintaining positive control of the plant is what routine operations is all about. Shift routines are based upon this concept. Early detection of problems and initiation of compensatory and corrective actions are vital.

Teamwork and work discipline must be practiced in normal operations or performance errors will be excessive and discipline won't be achievable for abnormal circumstances. Above all, shift personnel must stay busy monitoring spaces and indicators, looking for and investigating problems, keeping and reviewing logs, maintaining spaces clean and orderly, etc. Operators must never just pass the time! It takes full time effort by all personnel to perform the tasks and maintain the teamwork to get the work done that is necessary to maintain positive plant control. I am not, in any way, being unreasonable in requiring that each and every operator performs accordingly and that a casual or lax atmosphere is not allowed to exist on my shift.

8. Changing Plant Modes and Conditions

I insist upon being very much in control of changing plant modes or conditions. I do not want major equipment started or stopped without my concurrence except, of course, when emergency conditions dictate otherwise. In all cases, I want to be kept informed. Likewise,

all shift operators must be kept informed about changing plant conditions involving or affecting equipment or spaces for which they are responsible.

When changing plant conditions, I stabilize at logical points to look over the plant and to have the other operators look over the plant before going on. I lead such reviews and ensure that it's a team effort by all involved.

9. Removing and Returning Systems and/or Equipment from/to Service

The full and proper use of management control systems for these actions is vital. Documentation should be closed out through careful reviews and I periodically check this. Manipulation of valves, switches and other controls must be done with close supervision. The use of direct, reliable communications is also vital.

Wherever equipment is being tested for return to service, any technical advisors or experts who are available should be made a part of the shift team to verify readiness for service.

I keep personally involved in returning major systems and equipment to service. This clearly requires team effort.

Motivating The Individuals That Work With Me

As the leader of my shift, I want my employees to move in the direction of high output, without accidents or abuse of equipment, producing work of good quality, and on a whole showing a willingness to accept changes made necessary by management's decisions. Over and beyond the line of duty I want my shift to rise to the occasion when emergencies or rush periods call for special effort, overtime, or inconvenience.

I understand that money incentives, which are under management's control, can only be applied externally and do not necessarily produce the results that I strive for on my shift. I realize that I just can't keep pushing employees in a certain direction. My goal is to transform the external incentives into internal motivating forces by creating a work environment where the members of my shift want to produce maximum output of required quality and to do all the other things enumerated above. In short, I try to create a certain level of job enthusiasm.

As often as time and regulatory constraints allow, I follow a participative management style that allows my coworkers to realize that a "we" attitude is one of my major goals. Employees with

this attitude instinctively identify their own interests with those of the company. This plural approach to the job, this instinctive thinking about the company in terms of "we" rather than "they" is what transforms my shift from working on the job to doing a job. We want to meet budgets, want to be cost-conscious and methods-minded, want to cut down on waste and want to submit suggestions for improvement at every opportunity. To achieve this goal, I give praise when problems are solved independently, I entrust others with full responsibility and accountability for assigned tasks, where able I give control as to how and when tasks are done, and I strive to instill a sense of growth and advancement.

Finally, I realize that creating a sense of belonging, of participation, and of accomplishment in each and every employee is one of my most vital responsibilities.

Conclusion

I believe that this philosophy provides a desirable basis for the way each senior operator can approach their job and have confidence that their work principles are sound. Of course, this philosophy is not all inclusive. It must be built upon in order to handle the many conditions and situations that arise.

[redacted]r operators leadership