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PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE

Petition for Approval of Final Reconciliation of Fuel and Purchased Power Adjustment Clause (FPPAC) Charges

Order Approving Final Reconciliations of FPPAC Charges

O R D E R N O. 24,108

December 31, 2002

APPEARANCES: Gerald M. Eaton, Esq. for Public Service Company of New Hampshire; Meredith M. Hatfield, Esq. for the Governor's Office of Energy and Community Services; Senator Theodore Gatsas, *pro se*; Jennifer Orsi, Esq. of Brown, Olson and Wilson, P.C.; Office of Consumer Advocate by Michael M. Holmes, Esq. on behalf of residential ratepayers; and Gary Epler, Esq. and Donald M. Kreis, Esq. for the Staff of the New Hampshire Public Utilities Commission.

I. PROCEDURAL HISTORY

On July 27, 2001, Public Service Company of New Hampshire (PSNH) filed with the New Hampshire Public Utilities Commission (Commission) a petition seeking the Commission's approval of the final reconciliation of PSNH's Fuel and Purchased Power Adjustment Clause (FPPAC) charges. In 1997, the FFPAC rate was frozen in order to accommodate efforts to resolve PSNH restructuring issues. These efforts ultimately resulted in the August 2, 1999 Restructuring Settlement Agreement between PSNH and the State settling parties. As approved by the Commission in Order No. 23,422, the Restructuring Settlement Agreement subjected any FPPAC accruals that occurred after

August 2, 1999 to prudence standards as defined in that Agreement as follows:

> "Prudence: The standard of care which qualified utility management would be expected to exercise under the circumstances that existed at the time the decision in question had to be made. In determining whether a decision was prudently made, only those facts known or knowable at the time of the decision can be considered." *Revised and Conformed Agreement to Settle PSNH Restructuring, p. 8.*

This docket pertains to the FPPAC charges incurred during the period from August 2, 1999 through April 30, 2001. Through this docket, PSNH petitions the Commission to approve approximately $209 million as necessary and prudent expenses, including purchased off-system power necessitated by planned and unplanned power outages at its generating plants. Of the $209 million, PSNH represents that about $105 million is in controversy after taking into account the $70 million balance on August 2, 1999 and the $34 million in under-collections regarding the so-called Light Loading Docket which was closed with prejudice as part of the Restructuring Settlement Agreement. If determined by the Commission to be prudent, all costs incurred for off-system power purchases during planned and unplanned outages would be passed on to ratepayers and recovered through the Stranded Cost Recovery Charge.

The Commission issued an Order of Notice on August 7, 2001. On August 8, 2001, the Office of Consumer Advocate (OCA) notified the Commission that the OCA would participate in this

docket as statutory intervener on behalf of residential ratepayers. As provided in the Order of Notice, a Prehearing Conference was held on August 22, 2001. The following intervention requests were granted, there being no objection: the Robert McLaughlin Trust(McLaughlin Trust), Senator Theodore Gatsas and the Governor's Office of Energy and Community Services (GOECS).

The Commission issued Order No. 23,772 (September 7, 2001) establishing a discovery schedule, including site visits and technical sessions among PSNH, the intervenors, and Commission staff. Subsequently, on September 19, 2001, a Secretarial Letter was issued setting a procedural schedule, which was further revised by a secretarial letter dated March 29, 2002, scheduling a hearing on the merits for June 10 and June 11, 2002.

PSNH's July 27, 2001 filing included the prefiled testimony of Robert A. Baumann, Manager of NH Revenue Requirements for Northeast Utilities Service Company (NUSCO); William H. Smagula, Director of Generation for PSNH; John B. Hart, Manager of Environmental, Government and Owner Relations for North Atlantic Energy Services Company(NAESCO),the operator of Seabrook Station; and Thomas J. Dente who, during the FPPAC period at issue in this proceeding, was employed by the operator of the Millstone nuclear generating units, Northeast Nuclear

Energy Company, as Manager of Financial Regulation.

In response to issues raised at the August 22, 2001 Prehearing Conference, on September 5, 2001 PSNH filed additional testimony to address the issues of operation and maintenance expenses at Seabrook Station, purchases and sales from PSNH's generating plants, and fuel procurement practices for PSNH's fossil fired generating stations. The additional testimony was submitted by Ted C. Feigenbaum, Executive Vice President and Chief Nuclear Officer for NAESCO; James R. Shuckerow, Jr., Director – Wholesale Contracts for NUSCO; and Jody TenBrock, Manager of fuel purchasing and supply for NUSCO. Also filed on that date was the supplemental testimony of Mr. Hart to address minor power reductions which took place at Seabrook Station.

Staff prefiled testimony of Robert L. Stright and Michael D. Cannata, Jr. of Liberty Consulting Group, ("Liberty" or "Staff Experts") which had been retained by the Commission to conduct prudence reviews of all planned and unplanned outages and power reductions experienced by PSNH's nuclear and fossil fuel generation units from August 2, 1999 through April 30, 2001. In addition, Liberty reviewed the maintenance expenses for the Seabrook nuclear generating unit to assure that such expenses were proper and prudent to ensure safe and efficient operation of Seabrook pending its sale by PSNH.

The Commission held the hearing on the merits as scheduled. The Commission's hearing focused on certain planned and unplanned outages and power reductions, as described below.

During the hearing, the Commission issued record requests to PSNH to submit certain Nuclear Regulatory Commission reports evaluating the November, 2000 extension of a planned outage at the Seabrook station. These reports were submitted (Ex. 14-2 and 14-3), and after reviewing the reports, the Commission issued additional post-hearing information requests to PSNH. PSNH responded to Commission post-hearing information requests on August 21, 2002.

PSNH filed its brief with the Commission on July 15, 2002. OCA filed a Memorandum Brief with the Commission on July 15, with additional comments on PSNH post-hearing data request responses on September 28, 2002.

II. POSITIONS OF THE PARTIES

The testimony and briefs, in large measure, focused on the issues of whether PSNH acted prudently in the management of three specific outages: 1) an unplanned outage occurring at the Newington Fossil Fuel Generation Plant in June, 2000; 2) the extension of a planned outage at the Seabrook plant which occurred on November 1, 2000 and December 3, 2000; and, 3) an unplanned outage at the Seabrook plant during a snowstorm in March, 2001.

A. PSNH

PSNH maintains that all of its replacement power costs submitted in this docket were based on prudent management action. PSNH, however, accepts the Staff Expert's recommendations with respect to prudence findings that recommend disallowance of replacement power costs for several situations, including outages at Vermont Yankee, Wyman Unit 4, Schiller Station and Newington Station. The costs recommended for disallowance total $17,100.

With respect to the three major outages identified below, PSNH maintains that the actions of its management were prudent and that the associated cost of these outages should be recoverable by PSNH.

1) Unplanned Outage at the Newington Station

PSNH asserts that management acted prudently with respect to management of the 287.76 day outage at the Newington Plant. The outage occurred when tubes in the major external waterwall failed, releasing of boiler water into the boiler building, requiring the building's evacuation. Analysis of the failed tubes indicated the lack of weld penetration, which provided an internal crevice location conducive to thermal fatigue. Management initially decided to repair all welds, but upon inspection of the failures management concluded that weld failures could not be easily detected and could, in fact, be

overlooked. Based on analysis of this information, the possibility of a multitude of tube failure sites, and the potential of injury to personnel, management decided to replace all four waterwalls of the boiler. Ex. 21, Attachment MDC-3, at 13-14.

PSNH undertook the replacement, repairs and further testing before releasing the unit for operation in April, 2001. PSNH calculated the cost of off-site power purchased as a result of this outage to be $3,003,000. Ex. 1 at 2.

PSNH acknowledges that the Newington Station had experienced three other waterwall tube failures during the period from December, 1999 through June, 2000. Tr. 6/11/02 8:7-14. The most recent failure occurred in May, 2000. PSNH states that while the pattern of frequency of failures was not unusual, the kind of failure which occurred in May and June 2000 was sufficiently unusual to warrant investigation. PSNH testified that in May of 2000 and June of 2000 failures convinced it to consult with the vendor and ultimately to decide to replace the entire waterwall. *Id.* at 36:4-24 and 37:1-20. PSNH claims that its actions surrounding this event demonstrated prudence and that the Commission should allow recovery of purchased power costs associated with the June 2000 waterwall failure at the Newington plant.

2) Outage Caused by Failure of EDG 1B at the Seabrook Station

PSNH stated that the failure of Emergency Diesel Generator-1B (EDG-1B) occurred during scheduled testing. Emergency Diesel Generators need to operate on a quick start basis to provide power in emergency situation. The Seabrook Station Operating License requires 24-hour testing of Emergency Diesel Generators every 18 months. (Ex. 2 at 169). NAESCO anticipated completing the refueling outage in 30 days or less. NAESCO informed the Independent System Operator-New England (ISO-NE) to plan for a 35-day refueling outage. Ex. 3 at 168. The refueling outage began on schedule on October 21, 2000, therefore, the planned outage would continue to November 25, 2000.

PSNH states that after maintenance and inspection of EDG-1B was complete, the 24-hour surveillance testing began on October 29, 2000. Operators terminated the testing after 7 hours because of other outages caused by electrical repairs. Testing resumed on October 30 but was terminated because of strainer differential pressure exceeding operator criteria. Record Request, Post Hearing, 01-PH-004 (8/21/02). PSNH stated that the routine and proven solution for such pressure is replacement of the strainer. Following laboratory tests of the generator oil, the operator, with its consultants, determined that replacement of the strainer had not sufficiently solved the

pressure problem. After further testing, the operator decided to conduct a complete oil change on EDG 1-B, and replace the filters and strainers.

The operator confirmed by laboratory analysis that the replacement of the strainers, filters and oil had resolved the problem of oil breakdown before resuming the 24-hour surveillance test on EDG-1B. *Id.* When testing resumed on November 1, EDG-1B experienced high crankcase pressure and high vibration alarm, causing an emergency shutdown of the generator.

This outage caused an extension of the planned refueling outage. Investigation and engine teardown revealed severe damage had been incurred due to polishing of the cylinder liner of the #7 cylinder, resulting in inadequate lubrication of the cylinder which allowed ignition by-pass of the piston rings. Operators honed the cylinder liners and replaced the piston rings to correct the problem and completed repairs so that testing could resume. Ex. 3 at 168.

The 1-minute, 5-minute, 10-minute and 20-minute unloaded runs were conducted on December 2, 2000, after operators had completed extensive repairs on EDG-1B. The second event occurred on December 3, 2000, which represented the first loaded testing of the generator. Twenty-five minutes into testing, the engine shut down due to high differential pressure. Investigation revealed that the No. 5 main bearing had hard

contact with the crankshaft. The elevated temperatures caused by this contact resulted in bearing materials melting and extruding out of the bearing. Some bearing material became embedded in the crankshaft. Attempts to repair the crankshaft in-place failed, and operators concluded that repair was not an option. The entire engine had to be disassembled and the crankshaft replaced. *Id.* Ultimately, post-incident review determined two likely causes. In the first, insufficient crush or force applied to the bearing when installed resulted in inadequate clamping force on the upper bearing cap. The second, and most probable cause, was localized film failure as a result of foreign material or the introduction of air into the line. PSNH states that because the bearing was destroyed, it was not possible to determine which of these probable causes actually led to failure. *Id.* at 10.

This event and the associated repairs prolonged the planned outage, originally scheduled to end on November 25, 2000, to January 28, 2001. Tr. 6/11/02 at 48:7-13. As a result of this outage, PSNH incurred approximately $27,400,000 in replacement power costs for total extension of the outage, with a little over $21,055,000 representing the costs associated with the second incident involving the bearing failure. *Id.* at 48:17-24. Repair costs were incurred as well. *Id.* at 51:12-14.

PSNH maintains that these events were not a result of imprudent management. They point out that the cylinder liners were inspected before the beginning of the surveillance test by technicians from the manufacturer via boroscope and were judged to be acceptable. Tr. 6/10/02 at 50:17-18. PSNH maintains that there was nothing that management knew or could have known regarding the condition of the cylinder liners or the crankshaft that could have prevented the incident.

PSNH states that the initial Nuclear Regulatory Commission (NRC) report criticizing the management of the diesel problems at Seabrook did not sufficiently take into account the diligence of management in analyzing the cause of the pressure problems with EDG-1B. Record Request, Post Hearing, 01-PH-002 (8/21/02). PSNH stated that management experience indicated that increased differential pressure occurred when the strainer needed replacement. PSNH states that strainer replacement is standard practice, and was also the recommendation of the manufacturer of the generator (Fairbanks Morse). PSNH states that laboratory tests indicated strainer replacement, and did not disclose any other concerns in conducting the 24-Hour testing. *Id.*

PSNH challenged the initial NRC notice of violation, which included a finding that operators of Seabrook failed to comply with NRC regulations because it did not adopt a

corrective action process that could have avoided the failure of EDG-1B. Five years earlier, Seabrook operators had replaced a cylinder liner for EDG-1B that appeared to be worn. On April 17, 1999, another cylinder liner was replaced for the same reason. The NRC concluded that this "performance issue (failure to place these degraded conditions into a corrective action process and evaluate the cause of the degraded conditions of the emergency diesel generator) was determined to be a potential cause in the 1B diesel generator failure in November 2000." Ex. 14-2 NRC Final Significance Determination for a White Finding and Notice of Violation, June 29, 2001. Specifically, the NRC informed the company that this "performance issue, which also constitutes a violation of 10 CFR Part 50, Appendix B, Criterion XVI, had several other aspects. For example, you also (1) failed to establish appropriate quantitative or qualitative acceptance criteria for boroscopic inspections of the diesel generator cylinder liners; (2) did not incorporate industry operating experience to modify your diesel generator test so minimize wear; and (3) did not evaluate the worn cylinder liners replaced during previous outages to determine the cause of wear." *Id.*

On July 27, 2001, the Company agreed with the violation and submitted a corrective action plan. Ex. 14-3. However, PSNH points out that in a November, 2001 letter, the

NRC stated that NAESCO and its agents had conducted a comprehensive evaluation of the engine failure that occurred on December 3, 2000, and stated that this event had not been previously reviewed by the NRC in its investigation of the November 1, 2000 event. The NRC further stated that the licensee's overall acceptable performance in addressing the inoperable diesel generator results in a "White Finding" to four quarters of operation. Ex. 23, Letter of November 9, 2001 from Wayne D. Lanning, Director, Division of Reactor Safety (NRC) to Ted Feigenbaum.

PSNH maintains that these two related unplanned outages could not have been prevented. PSNH states that it and its agents acted in a reasonable and appropriate manner, using all information available to it at the time, to limit the outage to the time necessary to complete repairs. PSNH asserts that its conduct and the conduct of its agents during the testing and subsequent management of the outage was prudent within the meaning of the Restructuring Settlement Agreement, and that the Commission should allow recovery of the purchased power costs associated with this outage.

3) Unplanned Outage During Spring Snowstorm

In March 2001, Seabrook experienced a loss of off-site power in an outage that resulted in about 32,000 megawatt-hours of lost power. Tr. 6/10/02 43:18-19. PSNH's witness testified

that not only had about 30 inches of snow fallen that day, but in addition, the wind was blowing over the marshes at about 60 miles per hour, entraining salt water with it and blowing it onto the bushings. External decisions regarding the restoration of power, and the tripping of the last power line into the plant, isolated the turbine generator from the plant and tripped the reactor. *Id.*, pp. 62-64.

When the plant tripped, the thermal transient resulted in a small condenser leak that was difficult to track down and fix. *Id.* at 43:6-7. PSNH claims the outage resulted in incurred costs of $4,141,000 in off-site power from March 5, 2001, through March 16, 2001.

PSNH states the combination of snowfall, high winds, and the deposits of salt from the seawater in the adjacent marsh were unique weather events that resulted in the accumulation of snow and ice on the transmission bushings which failed. Since that time, PSNH has installed oversized bushings (designed for 550 kV applications) which are expected to eliminate similar weather-related flashovers. PSNH maintains that it and its agents could not foresee the combinations of extreme weather factors that resulted in this outage. PSNH asserts that it and its agents acted prudently and appropriately, consistent with the information available at the time the incident occurred. Consequently PSNH maintains that the Commission should allow

recovery of the costs associated with this event. Brief of PSNH, at 6-7.

B. Staff

As previously stated, Commission Staff retained Michael D. Cannata, Jr., P.E. and Robert L. Stright of the Liberty Consulting Group to investigate the FPPAC expenses to determine whether such were prudent as defined in the Restructuring Settlement Agreement. These experts conducted a prudence review of all planned outages, unplanned outages and power reductions experienced by all PSNH generating units from August 2, 1999, through April 30, 2001. Messrs. Stright and Cannata also reviewed the prudence of operation and maintenance costs related to electricity generation. The Staff Expert reports were submitted as Exhibits 15, 16, 17 and 21.

Mr. Cannata reviewed 365 outages that occurred on PSNH's fossil units, hydroelectric units or their entitlements. Of these outages, he determined that 11 fell into the category of imprudent. *Ex. 21 at 7 -11.* Mr. Cannata also determined that the amount of money spent for operation and maintenance of PSNH's fossil units was sufficient to ensure proper operation of the fossil units, and that PSNH had not reduced operation and maintenance spending pending the sale of those units. *Id.* at 13.

1) Unplanned Outage at the Newington Station

Messrs. Stright and Cannata reviewed each of the 38 outages at the Newington facility, including the outage of 287.76 days which began on June 26, 2000, and ended on April 10, 2001. The Staff Experts stated that the failure occurred approximately one month after extensive examination and repair was done to the waterwall section of the boiler. Messrs. Stright and Cannata stated in their report that this failure was in a section not previously repaired and one that was not in proximity to the other waterwall failure locations.

Liberty reported in its analysis that operators acted appropriately in managing the failure. Liberty states that the response team was on site the following day, and determined, after analysis, the cause of the failure as lack of weld penetration in the window-type welds that were made years before. Liberty reports that operators immediately decided to repair all window-type welds, representing 38 tube-section replacements.

Liberty states that the response team determined that a boiler inspection would be appropriate to ascertain the condition of the boiler tubes and other pressure parts after 26 years of operation. Liberty observed that as this process was underway, it became clear that the failure mechanisms in question were not easily detected and could be overlooked.

Several samples, for example, passed the ultrasonic testing, but, when removed and inspected, were observed to have internal cracking. Liberty noted that corrosive fatigue identification was not able to give a high probability of success due to the fact that the areas where it was most likely to occur would produce longitudinal failures that were in areas difficult to detect.

Messrs. Stright and Cannata found the decision to replace the four boiler corners and repair the four boiler waterwalls from top to bottom was correct for purposes of enhancing the reliability and safety of the unit. They determined that PSNH made all reasonable efforts to reduce outage time, while performing the repair work properly. According to Stright and Cannata, the management and expenditures related to this event passed the "prudence" test in the Restructuring Settlement Agreement. Testimony of Stright and Cannata, Exhibit 21, pp. 12—15.

2) Nuclear Facility Outages

Messrs. Stright and Cannata reviewed the outages at the Seabrook station and other nuclear generating units in which PSNH has an ownership interest. With respect to the latter category—-Millstone Unit #3 in Waterford, Connecticut, and Vermont Yankee in Vernon, Vermont, the experts found management and resolution of the planned and unplanned outages were

reasonable, with the exception of one incident at Vermont Yankee. This incident occurred when an operator did not follow procedures and used an incorrect tool in changing an indicator bulb, causing a short-circuit. Testimony of Stright and Cannata, Exhibit 17, pp. 2-3. This incident did not meet the prudence requirement of the Restructuring Settlement Agreement, and Liberty recommended that the Commission disallow costs associated with it.

3) Outage Caused by Failure of EDG 1B at the Seabrook Station

Liberty provided an extensive review of the planned and unplanned outages at the Seabrook Station, and determined that management had acted appropriately and taken reasonable and necessary corrective action as required by events leading to unplanned outages. Ex. 16. Included in their review were the outages caused by the failure of Emergency Diesel Generator 1B (EDG-1B) in November and December, 2000, and the trip of the Seabrook Plant caused by the snowstorm of March, 2001.

According to Staff Experts' report, the outage resulting from the failure of EDG-1B caused an extension of the planned refueling outage. Liberty states that the deviation from the planned outage schedule was attributed to two failures of the EDG-1B, namely the damage to the #7 piston and cylinder wall liner, and damage to the #5 Main Crankshaft Bearing during testing after initial repairs.

Later it was determined that damage had occurred due to polishing of the cylinder liner of the #7 cylinder, and inadequate lubrication of the cylinder. Operators honed the cylinder liners and replaced the piston rings before restoring EDG-1 to service. The generator was inspected and the response team attributed the failure to differential thermal expansion of the piston skirt and cylinder liner due to loss of grooves in the cylinder through wear.

With regard to the first failure, the Staff Experts note that because EDG-1B is an emergency generator, operators are required to subject them to rapid starting, when the pre-lube system lubricates the bearings and not the cylinder walls. Staff Experts found little industry information to alert any operator as to the specifications for the roughness of the cylinder walls to retain proper lubrication, or of the effect of repeated rapid starts in smoothing the grooves of cylinder walls, and concluded that the operators performed all maintenance properly and followed its Technical Specifications for the diesel generators in the repair of EDG-1B. Ex. 16 at 6-11. They also noted that a speed guard was installed on the generator after the accident to help minimize the polishing of cylinder liners during rapid starts.

Liberty concluded that the likely cause of the failure of the generator on December 3, 2000, was the introduction of

air to the Main Crankcase Bearing. Liberty found no information available to Seabrook personnel that would suggest venting of that specific section of line where the air was trapped. In conclusion, Liberty stated that the operators acted prudently during the management of this outage, and recommended the Commission allow the off-site power costs incurred by PSNH during *the outage.* Ex. 16 at 9-11.

4) Unplanned Outage During Spring Snows

Staff Experts also reviewed the outage resulting from a severe snowstorm on March 5, 2001, when Seabrook lost all three 345 kV off-site power supplies within a short period of time due to flashovers at the individual transition bushings which initiated a unit trip.

Liberty stated that the flashovers were attributed to either flashover through built up snow or cascading water on the bushings. Liberty notes that as a result of the investigation, the B phase bushing was tiled to promote the shedding of water and snow, and the decision was made to replace the 345 kV bushings with the longer 550 kV bushings to reduce voltage stress. Staff Experts concluded that Seabrook operators and system dispatchers acted both reasonably and logically to maintain the integrity of the system, and took reasonable and appropriate action to correct problems with the bushings. *Id.* at 11-15.

The second part of this event resulted from the tripping of a turbine driven pump (FW-P-37A) into overspeed condition. After off-site power was restored, the pump was inspected and damage was found in both rotary and stationary components. Liberty states that Seabrook worked with the vendor to replace and rebuild the rotating assembly on the pump. *Id.*, at 13-14.

The off-site power loss also triggered a significant temperature transient in the condenser which resulted in leaks in two of the three condensers. The condensers at Seabrook consist of over 52,000 tubes in three condenser shells. The tubes are arranged in a "U" shape so that the inlet and outlet are on the same end of the condenser. Prior to this incident, the plant had experienced two condensers leaks over its life.

Investigation showed that these leaks were extremely small and varied with the temperature in the condenser, thus making them very hard to locate. Inspection, repair and testing commenced on the two condensers to find the leaks, yet, the leaks were never found. Seabrook applied an elastomer to the flange area and the waterbox was successfully filled on the fourth try on March 25, 2001. Staff Experts reported that Seabrook will undertake additional maintenance on the condensers to prevent recurrence of the leak. Staff Experts found that Seabrook acted methodically and logically in trying to pinpoint

the condenser leaks, and acknowledged that such leaks are not frequent, are extremely small, and are difficult to locate. Staff Experts concluded that corrective actions were reasonable and prudent. *Id*. at 14-15.

With the exception of the 12 outages identified in their testimony, Staff Experts determined that PSNH's actions with respect to the other outages, planned and unplanned, passed the test of prudence as set forth in the Restructuring Settlement Agreement and recommend that the Commission approve the FPPAC petition subject to the exceptions identified in Expert testimony.

C. Office of Consumer Advocate (OCA)

The OCA stated in its brief that it agrees with the disallowance of costs associated with outages deemed imprudent by Staff Experts.

1) Unplanned Outage at the Newington Station

OCA maintains that PSNH did not act prudently with respect to this outage. OCA believes that PSNH should have started planning for more extensive repairs months before the June 26, 2000 event based on the related failures of the waterwall in December, 1999. Had they done so, OCA believes that the 3-month delay between the outage and the commencement of repairs could have been significantly shortened. The OCA believes the Commission should disallow a considerable portion

of the 3-month delay as imprudent action by PSNH. OCA further noted that any insurance funds recovered by PSNH related to this incident should be credited to ratepayers. *OCA Brief at 8.*

2) Outage Caused Failure of EDG 1B at the Seabrook Station

OCA takes the position that the extension of the planned outage to replace the strainer, filter and oil in EDG-1B should have been an obvious task for operators, similar to having the oil changed in one's car. OCA believes that operators should have conducted replacement at the outset of testing, rather than in response to a problem. It believes the purchased power cost for the 3-day extension of this outage should be disallowed from recovery.

In addition, OCA has particular concerns with respect to the outage at Seabrook caused by the failure of the EDG-1B. OCA believes the inadequate inspection of the generator caused the failure of EDG-1B on November 1, 2000. OCA believes that had operators properly examined the cylinder walls, they would have observed the smoothing of the grooves on the cylinder wall liners, as occurred in 1995 and 1999, which would have prompted them to replace the cylinder liners. OCA believes that inadequate inspection of the cylinder walls demonstrates operator imprudence, and that such caused this failure. OCA Brief at 2.

To support its position, OCA refers to the NRC notice of violation, dated June 29, 2001, which stated that managers acted in violation of federal law when the licensee failed to perform a root cause analysis of degraded components in EDG-1B in November, 1995 and April, 1999. The NRC observed that in both 18 month inspections the liners revealed heavy wear and a polished appearance, but the operators only replaced the cylinder liners. The NRC states that operators should have prepared a condition report and entered into a correction action process to assist in identifying the cause of the heavy wear. This failure made it more likely that similar degradation would go unnoticed until an actual failure occurred, as happened to cylinder No. 7 in November 2000. Ex. 13-2 at 4.

OCA maintains that this failure to comply with federal requirements by not determining the cause of prior cylinder liner failures is prima facie proof of negligence as to safety, and demonstrates imprudent operation of the plant. OCA states that the NRC found "not only the failure to establish appropriate quantitative criteria inspections of the diesel generator cylinder liners was a potential cause of failure, but also failure to incorporate industry operating experience to modify diesel generator tests to produce minimize (sic) wear. While relevant, the later (sic) would not have resulted in failure if degraded components were properly identified and

replaced. Therefore, the failure to establish standards is the proximate cause of the liner failure and blow-by." *OCA Brief at 4-5*. OCA recommends that the Commission disallow $21,055,000 for replacement power costs and $15,100,000 for all associated repairs.

Finally, the OCA urges the Commission to use its own determination of prudence in evaluating these outages. The OCA states that the Commission does not have to rely upon its experts in the matter of prudence, and should use its own experience in determining whether the report of the Staff Experts is useful in that it failed to evaluate the statistical evidence of the number of similar failures in nuclear industry operation industry-wide. OCA maintains that the burden of proof is on the utility as to whether the outages were an unforeseen event or something that could have been anticipated in examining industry events. OCA states that PSNH should have provided an industry-wide statistical evaluation of the kinds of events that occurred at Seabrook to help the Commission determine whether such events could be predicted, and therefore prevented. The OCA concludes that the failure of PSNH to provide this kind of information should lead the Commission to conclude that the results of any such analysis would be unfavorable to PSNH. OCA Brief at 8-9.

III. COMMISSION ANALYSIS

The New Hampshire Supreme Court has held that when a utility has incurred costs resulting from demonstrated inefficiency or waste, or action inimical to the public interest, those costs may not be passed on to ratepayers. *Appeal of Seacoast Anti-Pollution League*, 125 NH 708, 723 (1985). The Court developed this prudence standard as one criterion to assist the Commission in determining whether costs should be included or excluded for ratemaking purposes. Consequently, it is the Commission's responsibility and obligation under the law in this matter to determine whether PSNH conducted itself with the level of care expected of highly trained specialists with regard to the unplanned outages which occurred during the period from August 2, 1999, through April 30, 2001. *See, Re Public Service Company of New Hampshire*, 81 NH PUC 531, 541.

One of the critical prudence considerations when evaluating actions and decisions, is to not apply the perspective of hindsight, but rather to consider the actions in light of the conditions and circumstances as they existed at the time they were taken. In this temporal respect it is similar to the duty of care in a case of negligence at common law, namely, what would a reasonable person do at the time the decision was made. *Fitzpatrick v. PSNH*, 101 NH 35 (1957). A second critical

consideration is the determination that "one who engages in a business, occupation, or profession must exercise the requisite degree of learning, skill and ability of that calling with reasonable and ordinary care." 57 A Am.Jur.2d, Negligence Sec. 190.

We have previously determined that the definition of "prudence" as set forth in the Restructuring Settlement Agreement is consistent with the standard that this Commission and the courts have traditionally applied, and it is the standard we will apply with respect to this docket. Order No. 23,549, *Re PSNH Proposed Restructuring Settlement,* 85 NH PUC 536, 556 (September 8, 2000).

The OCA states that the Commission is not required to rely on experts when a matter before it is one where its own experience provides a meaningful foundation to inform its decision. OCA Brief at 8. It asserts that common sense precautions used in the maintenance of one's automobile would lead the Commission to the conclusion that improper maintenance caused the diesel engine generator to fail.

OCA appears to imply that we could choose to disregard the factual analysis and opinion testimony presented by the Staff and Company witnesses. While this may be the ultimate result in a given case, we recognize that the function of the

expert witnesses in this case was to provide comprehensive review and analysis of the management of the plant outages.

The EDG-1B outage at Seabrook was a complex event, requiring expert review and analysis. While it may be true that the diesel engine at issue is similar in some respects to a car or truck diesel engine, we believe that the conditions of operation and the testing regime of the emergency generator are not simply analogous to maintaining an automobile. In fact, the Commission required this comprehensive, expert review to have sufficient understanding of the complicated sequence of events that led to the extension of this planned outage.

We note that the Staff Experts, Robert L. Stright and Michael D. Cannata, Jr. submitted comprehensive reports reviewing each event where PSNH identified purchased power costs. We determine that the recommendation of Mr. Stright and Mr. Cannata to disallow certain of the costs as failing to meet the standard of prudence is appropriate and so order. Ex. 21 at 7. We note as well that PSNH, although disagreeing with Liberty, has made no formal argument objecting to such disallowance. We also note that the OCA concurs in the recommendations of Liberty in this regard.

We also accept Liberty's judgment that the Operation and Maintenance Budget for the PSNH fossil fuel plants was reasonable and adequate for the fiscal year 2002.

Liberty also reviewed the operation and maintenance expenses for Seabrook and offered the opinion that the 2002 operation and maintenance budget was sufficient to ensure proper operation of the Seabrook Station. Ex. 15 at 6-8. We find that Liberty's report provides sufficient information to support our determination that such budget was sufficient.

We now turn our attention to the three principal outages to determine if PSNH's conduct was prudent with respect to each of these events.

A) Unplanned Outage at the Newington Station

As discussed above, the unplanned outage at the Newington Station occurred with major external failure of the waterwall, resulting in the release of boiler water into the building and requiring its evacuation. The event occurred on June 26, 2000.

PSNH acknowledged that the waterwall tubes had failed at the Newington plant on three occasions between December, 1999 and June, 2000, the most recent to the last event having occurred in May, 2000. PSNH insists that frequency of the failures was not in and of itself unusual. The failure that occurred in May, however, demonstrated characteristics different from prior failures. The severity of the June failure and its similarity to the May event prompted PSNH to consult with the vendor and ultimately to replace all four waterwalls.

We have reviewed the record on this outage and accept the findings of Staff Experts that PSNH made the correct decisions with regard to waterwall replacement and made all reasonable efforts to reduce outage time while properly replacing the waterwall. Staff Experts indicate the alternative to replacement, repair of the cracked tubes, may have reduced the length of the outage, but concluded that a "significant probability" would remain that future violent failures would occur, jeopardizing the safety of plant personnel. Ex. 21, MDC-3 at 12).

OCA takes the position that PSNH should have started planning repairs on the waterwall earlier than it did and asks us to disallow the purchased power costs associated with a portion of this outage. We find that this argument is not supported by the record. The response team recommended complete replacement of the four waterwalls only after it conducted a complete investigation into the failure and identified its cause. PSNH consulted with three experts to arrive at this decision. Once the recommendation was made to senior management on August 16, 2000, PSNH solicited competitive bids for the repair work. Contractors began repair on October 2, 2000, and as work was conducted on the boiler, operators took advantage of the time to make other repairs as well.

We believe the delay between the waterwall failure and the commencement of work was a consequence of a thorough investigation of the waterwall failure, necessitated because of the significant personnel safety issue. In other words, PSNH needed to choose the best solution to avoid the possibility of future failures that could result in serious injuries or even fatalities. We agree with the findings of Staff Experts that PSNH managed this outage and the repairs in a prudent and reasonable manner, and will allow the purchased power costs associated with this outage.

B) Unplanned Outage Caused by Failure of EDG 1B at the Seabrook Station (November, 2000)

As stated by Staff Experts and PSNH witnesses, there are two related outages at the Seabrook plant that require review. One occurred on November 1, 2000, and was the subject of a notice of violation by the NRC. The second occurred on December 3, 2000, and resulted in sufficient damage to require replacement of the crankcase.

The first event began as routine testing of Emergency Diesel Generator-1B at the Seabrook Station on October 29, 2000. During the testing, operators observed that the strainer differential pressure exceeded operation criteria. The operators replaced the filter, conducting laboratory tests to determine if oil breakdown accounted for the problem. Subsequently, operators decided to replace the strainer and

filters, and to completely change the oil. Laboratory tests indicated that this should have solved the problem.

When testing resumed on November 1, the emergency shutdown was tripped due to high crankcase pressure and vibration. Upon investigation and engine teardown, operators found severe damage. Proper repairs required that the 16 cylinders in both EDG-1B and EDG-1A would require honing to reestablish the appropriate roughness for oil to remain on the cylinder walls and properly lubricate the pistons.

Operators conducted a safety evaluation and determined that, with the entire core of the fuel off-loaded to the spent fuel pool, both diesel generators could be worked on simultaneously, allowing for time savings in repair work. Operators brought temporary diesels on site to supply emergency power during the repairs. This necessary repair, however, resulted in an extension of the planned outage until testing resumed on December 3, 2000.

OCA asserts that the strainer, filters and oil should have been replaced as a matter of routine maintenance. OCA also agrees with the NRC report of violation which states that Seabrook should have prepared an event report and a corrective action plan related to the replacement of a cylinder liner in 1995 when cylinder inspection identified a polished appearance

of the liner. Thus, OCA urges disallowance of the unplanned outage associated with this event.

In the post hearing data production, PSNH and its agents demonstrated that operators conducted a boroscope inspection on the cylinders and laboratory testing on oil samples prior to commencing the 24-hour surveillance testing. The laboratory reports showed no breakdown in the oil, with some wear particle count which warranted replacement of the strainer and filters. PSNH and its agents replaced the strainer and filters, and changed the oil. Based on what operators knew on November 1, 2000, EDG-1B was ready for testing.

The NRC based its notice of violation on the failure of operators to take adequate corrective action to address degraded components associated in EDG-1B. It referred to the 1995 and 1999 replacement of cylinder liners in the same diesel generator due to a polished appearance. The report states that Seabrook operators failed to prepare a condition report and plan corrective action consistent with the NRC requirements. The NRC said that this performance issue "was determined to be a potential cause in the 1B diesel generator failure in November 2000." Ex. 14-2.

PSNH presented comprehensive testimony describing its actions prior to testing the generator. PSNH demonstrated that a boroscope examination of the cylinders had been conducted

prior to the test which revealed no "polished appearance" of cylinder liners. In addition, PSNH provided detailed information describing the laboratory testing it conducted prior to the test to eliminate any problems related to the strainer, filter and oil that would make it imprudent to test the generator.

The testimony of Staff Experts confirms that PSNH and its agents followed technical specifications in preparing the generator for testing. Staff Experts stated that it is the function of the generator — the rapid starts in emergency conditions — which contributed to the wear on the pistons. To help ameliorate the polishing effect of rapid starts on the cylinder lines, Staff Experts note that Seabrook installed a speed guard during the course of repairs on EDG-1B.

We conclude that plant operators were prudent in managing this initial failure according to the standard of the industry and consistent with the information they had available to them at the time. They inspected the unit, analyzed the problem of the high differentiated pressure, and did repeated tests on the oil to confirm their findings. They followed the technical specifications regarding the generator. The test resumed only after reasonable and appropriate reviews and discussions with outside industry consultants over three days.

The NRC found, however, that the company violated NRC requirements. Ex. 14-2. We note that the company agreed with the notice of violation. Ex. 14-3 The violation relates to the engine failure on November 1, 2000, because, had corrective maintenance and operation measures been in place, it is possible that the condition which caused the failure would either not have occurred, or would have been discovered prior to failure.

Although the NRC states that the failure was a "potential cause" of engine failure, we find nothing in the record to provide a sufficient causal link between the violation of the NRC requirement and the engine failure that would support a finding of imprudence in this case.

The second event occurred on December 3, when testing resumed after the major repairs were completed to EDG-1B, including the honing of all cylinder liners and piston ring replacement. Twenty-five minutes into the first loaded run, EDG-1B was shut down after operators noticed high differential pressure.

Inspection demonstrated bearing material in the strainer and severe damage to the #5 Main Crankcase Bearing. Damage included the bearing shell, housing and crankcase journal. Inspectors estimated that the journal had experienced temperatures in the range of 1600 degrees Fahrenheit, causing hard spots to form on the journal. Attempts to remove such

spots were unsuccessful. The resulting damage to the generator required extensive repair or replacement of the entire crankshaft. Operators chose to replace the crankshaft as that represented the quickest repair time.

Liberty concluded that the likely cause of this failure was the introduction of air into the Main Crankcase Bearing. Liberty found no information available to Seabrook personnel that would suggest venting of those specific sections of line where the air was trapped. PSNH concurs with that analysis.

OCA states that the December 3 emergency shutdowns resulted from failure to properly tighten the crankshaft on its bearing or provide operable or clean oil and recommends that the 59 day extension of the planned outage is attributable to PSNH mismanagement and imprudence. We note first that the cause of this damage has not been precisely determined. However, all the experts testifying agree that it was most likely the result of trapped air in the crankcase oil line rather than an improper tightening of the crankcase bearing. We find PSNH did not have any information available to it at the time it resumed testing on December 3, 2000 to indicate that further testing of the oil line for trapped air should have been undertaken. In fact, inspection of the generator conformed with the manufacturer's

requirements, and only post-accident inspection uncovered the defect that could have caused the trapping of air in the line.

Based on the record before us, we believe that the failure of EDG-1B on December 3, 2000, was unpredictable, even to the manufacturer of the generator. No operating instructions exist which require plant personnel to vent that section of line or to suspect that air could be trapped in that area. Given the circumstances which existed at the time, and the knowledge that they possessed, Seabrook operators acted reasonably and prudently in the management of this event. We determine that all purchased power and repair costs associated with the December 3, 2000 failure of EDG-1B may be recovered.

C) Unplanned Outage During Spring Snows

In March 2001, Seabrook experienced a loss of off-site power in an outage that resulted in purchased power costs of $4,141,000 from March 5, 2001 through March 16, 2001. The Commission notes that the Staff Experts made a finding of prudence with respect to this outage. However, this unplanned outage was the subject of examination during the hearing and the purchased power costs associated with it warrant Commission analysis.

PSNH's witness testified a severe snowstorm, coupled with off-site power outages led to this unplanned outage. PSNH states that wind conditions entrained salt water which gathered

on the bushings. Unforeseeable decisions regarding the restoration of off-site power coupled with the tripping of the last power line into the plant isolated the turbine generator from the plant and tripped the reactor. Tr. 6/10/02 at 62-64. When the plant tripped, the thermal transient resulted in a small condenser leak that was difficult to track down and fix. Tr. 6/10/02 at 43:6-7.

We find that management acted prudently in operation of the plan, and implementation of corrective action. We find that the sequence of events could not have been foreseen, and that the corrective action initiated by the response team was reasonable and appropriate. Therefore we allow recovery of the costs associated with this event.

IV. Motion for Protective Order

On September 28, 2001, PSNH moved for confidential treatment of certain documents, provided in discovery, that revealed the Company's projected energy and capacity positions and the internal resources that were available to meet those projected needs from January 2000 through April 2001. According to PSNH, these documents also revealed the Company's actual experience in supplying its energy needs, and actual energy positions in the regional marketplace for wholesale electricity as well as the strategy PSNH employed in the market. Finally, PSNH pointed out that the documents revealed details of its

system, particularly the exact power deficiencies experienced in a particular month and PSNH's strategy for meeting those deficiencies. PSNH requested that the documents be protected both from public disclosure as well as disclosure to the McLaughlin Trust. The McLaughlin Trust filed an objection to the PSNH motion on October 9, 2001. No other party took a position on the PSNH motion.

The New Hampshire Right-to-Know Law provides each citizen with the right to inspect all public records in the possession of the Commission. *See* RSA 91-A:4, I. The statute contains an exception, invoked here, for "confidential, commercial or financial information." RSA 91-A:5, IV. In *Union Leader Corp. v. New Hampshire Housing Finance Authority*, 142 N.H. 540 (1997), the New Hampshire Supreme Court provided a framework for analyzing requests to employ this exception to shield from public disclosure documents that would otherwise be deemed public records. There must be a determination of whether the information is confidential, commercial or financial information "*and* whether disclosure would constitute an invasion of privacy." *Id.* at 552 (emphasis in original, citations omitted). "An expansive construction of these terms must be avoided," lest the exemption "swallow the rule." *Id.* at 552-53 (citations omitted). "Furthermore, the asserted private confidential, commercial, or financial interest must be balanced

against the public's interest in disclosure, . . . since these categorical exemptions mean not that the information is *per se* exempt, but rather that it is sufficiently private that it must be balanced against the public's interest in disclosure." *Id.* at 553 (citations omitted).

Our applicable rule is designed to facilitate the employment of this balancing test. We require a motion for confidentiality to contain (1) the specific documents or portions thereof for which confidential treatment is sought, (2) reference to statutory or common law authority favoring confidentiality, (3) "[f]acts describing the benefits of non-disclosure to the public, including evidence of harm that would result from disclosure to be weighed against the benefits of disclosure to the public," and certain evidence. Puc 204.06(b). The evidence must go to the issue of whether the information "would likely create a competitive disadvantage for the petitioner." *Id.* at (c).

PSNH contended that, consistent with the foregoing, the public's interest in disclosure is outweighed by the competitive harm that disclosure would cause to the Company. In support of this position, PSNH stated that if the data at issue were publicly disclosed, all potential energy suppliers and members of the New England Power Pool (NEPOOL) would gain a competitive advantage over PSNH in situations where PSNH needs

to access the region's wholesale energy markets as a result of outages at the Company's own generation units.

We agree with PSNH that the benefits of publicly disclosing this information are outweighed by the harms that disclosure would likely cause. Because PSNH's prudently incurred wholesale energy costs are essentially passed through to customers purchasing transition and default service, these customers are likely to suffer harm when PSNH's negotiating position is compromised with regard to transactions in the wholesale marketplace.

With regard to the McLaughlin Trust, PSNH contended that (1) the Trust is applying for membership in NEPOOL and (2) the Trust's counsel, Attorney James T. Rodier, is a principal of Freedom Energy Partners, which has long expressed its intention of becoming a competitive energy supplier in New Hampshire. Thus, according to PSNH, furnishing the documents in question to the Trust would (1) set a dangerous precedent with regard to requiring PSNH to turn over data as to its strategies for acquiring wholesale energy to other NEPOOL members, i.e., the very entities against which PSNH is bidding in the regional marketplace.

In its opposition to the PSNH motion, the McLaughlin Trust disagreed with certain of PSNH's factual assertions. The Trust averred that it is the owner of Mr. Rodier's personal

residence in Rye, that it is in the process of becoming an end-user member of NEPOOL for the purpose of acquiring energy directly from the wholesale market (presumably at a lower cost than available at retail in New Hampshire) and that, accordingly, the Trust is not contemplating direct competition with PSNH as a wholesale buyer and retail seller of energy. According to the Trust, PSNH's strategy for making energy purchases through NEPOOL is of absolutely no interest to a NEPOOL end-user member, particularly one whose participation is limited to passive purchases at the prevailing spot price. With regard to Freedom Energy Partners, the Trust does not deny that Mr. Rodier is a principal of the firm but takes the position that in its "present reincarnation" as Freedom Energy Buyers Group, LLC the organization is an aggregator whose business is "seeking the best deal from a licensed retail competitive supplier for a group of endusers" and thus has no interest in learning PSNH's strategies for wholesale purchases. Partial Objection to PSNH Motion for Protective Order at 2.

With regard to PSNH’s motion to exclude the Trust from receipt of the information that was the subject of this docket, the Commission is confronted with a need to consider the rights of the Trust to information needed for participation as an intervenor, as well as the competing interests of PSNH for confidentiality of trade secret information, and the public’s

right to know the basis of the decisions made by the Commission on its behalf. Each request for confidential treatment must be dealt with on its individual merits, and the need for such care is particularly evident in the present case, where denial of access to the information would potentially affect the ability of one party to participate fully in the docket.

On the side of disclosure to the Trust are the facts that the Trust has asserted it only proposes to be a price-taker from the spot market, and that the information sought refers to a historic period and may not reflect either PSNH's capacity position going forward or its strategy under different market conditions. On the side of non-disclosure are the undisputed and very public intentions of the Trust's principal, Mr. Rodier, to enter the competitive marketplace as a supplier, and the fact that PSNH's default and transition service customers are at risk in the event commercially sensitive trading strategy information finds its way into the hands of competitors in the marketplace. Also, we note that Mr. Rodier did not indicate what use he would make of such information for the purposes of litigating the instant docket, and indeed the Trust did not pursue vigorously either the information itself or the issues for which the information was relevant in this docket.

On balance, we find that the Trust's right to information sought in disclosure in this docket is outweighed by

the risk to PSNH's default and transition service customers, and we grant PSNH's motion for limitation on its disclosure.

Based upon the foregoing, it is hereby

ORDERED, that the final reconciliation of PSNH's Fuel and Purchased Power Adjustment Clause charges is approved subject to the disallowance described herein; and it is

FURTHER ORDERED, that PSNH's Motion for a protective order is granted.

By order of the Public Utilities Commission of New Hampshire this thirty-first day of December, 2002.

Thomas B. Getz	Susan S. Geiger	Nancy Brockway
Chairman	Commissioner	Commissioner

Attested by:

Michelle A. Caraway
Assistant Executive Director