

November 13, 2001

Mr. M. Reddemann  
Site Vice President  
Kewaunee and Point Beach Nuclear Plants  
Nuclear Management Company, LLC  
6610 Nuclear Road  
Two Rivers, WI 54241

SUBJECT: POINT BEACH NUCLEAR PLANT  
NRC INSPECTION REPORT 50-266/01-12(DRS); 50-301/01-12(DRS)

Dear Mr. Reddemann:

On September 28, 2001, the NRC completed an inspection at your Point Beach Nuclear Plant facility. The enclosed report documents the inspection findings which were discussed on September 28, 2001, with you and members of your staff.

The inspection examined the effectiveness of activities conducted under your license as they related to implementation of your NRC approved Fire Protection Program. The inspection consisted of a selected examination of design drawings, calculations, analyses, procedures, audits, field walkdowns, and interviews with personnel.

Based on the results of this inspection, the inspectors identified three issues of very low safety significance (Green or No Color). These issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you deny these Non-Cited Violations, you should provide a response with the basis for your denial, within 30 days of the date of this inspection report, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Point Beach Nuclear Plant facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your responses will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room).

Sincerely,

**/RA/**

Ronald N. Gardner, Chief  
Electrical Engineering Branch  
Division of Reactor Safety

Docket Nos. 50-266; 50-301  
License Nos. DPR-24; DPR-27

Enclosure: Inspection Report 50-266/01-12(DRS);  
50-301/01-12(DRS)

cc w/encl: R. Grigg, President and Chief  
Operating Officer, WEPCo  
R. Anderson, Executive Vice President  
and Chief Nuclear Officer  
T. Webb, Licensing Manager  
D. Weaver, Nuclear Asset Manager  
F. Cayia, Plant Manager  
J. O'Neill, Jr., Shaw, Pittman,  
Potts & Trowbridge  
K. Duveneck, Town Chairman  
Town of Two Creeks  
D. Graham, Director  
Bureau of Field Operations  
A. Bie, Chairperson, Wisconsin  
Public Service Commission  
S. Jenkins, Electric Division  
Wisconsin Public Service Commission  
State Liaison Officer

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION III

Docket Nos: 50-266; 50-301  
License Nos: DPR-24; DPR-27

Report No: 50-266/01-12; 50-301/01-12

Licensee: Nuclear Management Company, LLC

Facility: Point Beach Nuclear Plant, Units 1 & 2

Location: 6610 Nuclear Road  
Two Rivers, WI 54241

Dates: September 10 through 28, 2001

Lead Inspector: R. Langstaff, Senior Reactor Inspector  
Mechanical Engineering Branch

Inspectors: D. Chyu, Reactor Inspector  
Electrical Engineering Branch  
R. Daley, Reactor Inspector  
Electrical Engineering Branch

Approved By: Ronald N. Gardner, Chief  
Electrical Engineering Branch  
Division of Reactor Safety

## SUMMARY OF FINDINGS

IR 05000266-01-12(DRS), 05000301-01-12(DRS), on 09/10-09/28/2001, Nuclear Management Company, LLC, Point Beach Nuclear Plant. Fire Protection Triennial.

The inspection was conducted by a team of three Region III inspectors. The inspection identified three Non-Cited Violations (NCVs) and one inspection finding. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

### A. Inspector-Identified Findings

#### **Cornerstone: Mitigating Systems**

- **No Color.** The inspectors identified that there was insufficient emergency lighting to support performance of required safe shutdown actions. Specifically, there was insufficient emergency lighting in the Unit 1 and Unit 2 façade areas to support performing confirmatory actions to fail air to the Unit 1 and Unit 2 main steam isolation valves so as to ensure these valves would not spuriously reopen. The failure to have adequate emergency lighting is a violation of 10 CFR Part 50, Appendix R, Section III.J.

The finding was greater than minor because a delay in performing safe shutdown actions could occur due to the lack of emergency lighting. The finding was determined to be No Color because the finding did not involve the impairment or degradation of a fire protection defense-in-depth element. Because the finding was of very low safety significance, and the finding was captured in the licensee's corrective action system, this finding is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 1R05.7.b).

- **Green.** The inspectors identified that the automatic fire suppression system for the auxiliary feedwater pump room was not adequate. The installed fire suppression system was only designed for surface fires and was not designed to provide the necessary soak time for deep-seated fires. However, deep-seated fire hazards had been introduced to the room. The failure to have an adequate automatic suppression system is a violation of 10 CFR Part 50, Appendix R, Section III.G.2.

The finding was determined to be greater than minor because the finding involved automatic suppression, a fire protection defense-in-depth element. The finding was determined to be of very low safety significance (Green) because the inspectors were not able to postulate a fire scenario which could sustain a deep-seated fire and damage redundant trains of equipment. Because the finding was of very low safety significance, and the finding was captured in the licensee's corrective action system, this finding is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 1R05.10.b).

- No Color. The inspectors identified that the licensee had failed to maintain a 72-hour fuel supply on-site for generator G-05 relied upon for safe shutdown in the event of a fire. The failure to maintain a 72-hour supply of fuel is a violation of 10 CFR Part 50, Appendix R, Section III.L.3.

The finding was greater than minor because the capability to achieve and maintain cold shutdown conditions for 72-hours was not provided. The finding was determined to be No Color because the finding did not involve the impairment or degradation of a fire protection defense-in-depth element. Because the finding was of very low safety significance, and the finding was captured in the licensee's corrective action system, this finding is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 1R05.12.b).

#### **Cross-Cutting Issues: Human Performance**

- No color. The inspectors identified a numbers of issues which, collectively, indicated that human performance weaknesses existed in the fire protection engineering area (Section 4OA4.a).

#### **B. Licensee-Identified Findings**

Violations of very low significance which were identified by the licensee have been reviewed by the inspector. Corrective actions taken or planned by the licensee appear reasonable. These violations are listed in Section 4OA7 of this report.

## Report Details

Summary of Plant Status: Unit 1 was initially shutdown during the inspection period and was subsequently made critical and synchronized to the grid on September 16, 2001. Unit 1 was removed from the grid late on September 16, 2001 when the turbine was manually tripped due to the generator hot gas differential temperature exceeding procedural limits. Following proper venting of the condensate cooler, the Unit was resynchronized to the grid on September 17, 2001 and reached 100 percent power on September 18, 2001. Unit 1 was operated at or near 100 percent for the remainder of the inspection period.

Unit 2 was operated at or near 100 percent power throughout the inspection period.

### **1. REACTOR SAFETY**

#### **Cornerstones: Initiating Events and Mitigating Systems**

##### 1R05 Fire Protection (71111.05)

The purpose of this inspection was to review the Point Beach Nuclear Plant fire protection program for selected risk-significant fire areas. Emphasis was placed on verifying that the post-fire safe shutdown capability and the fire protection features were maintained free of fire damage to ensure that at least one post-fire safe shutdown success path was available. The inspection was performed in accordance with the NRC regulatory oversight process using a risk-informed approach for selecting the fire areas and attributes to be inspected. The lead inspector used the Point Beach Individual Plant Examination for External Events (IPEEE) to choose several risk-significant areas for detailed inspection and review. The fire areas chosen for review during this inspection were:

- Fire Area 23M            Auxillary Feedwater Pump Room - Middle Portion
- Fire Area 23N            Auxillary Feedwater Pump Room - North Portion
- Fire Area 23S            Auxillary Feedwater Pump Room - South Portion
- Fire Area 24            Vital Switchgear Room

For each of these fire areas, the inspection was focused on the fire protection features, the systems and equipment necessary to achieve and maintain safe shutdown conditions, determination of license commitments, and changes to the fire protection program.

##### .1 Systems Required to Achieve and Maintain Post-Fire Safe Shutdown

10 CFR Part 50, Appendix R, Section III.G.1, required the licensee to provide fire protection features that were capable of limiting fire damage to structures, systems, and components important to safe shutdown. The structures, systems, and components that were necessary to achieve and maintain post-fire safe shutdown were required to be protected by fire protection features that were capable of limiting fire damage to the structures, systems, and components so that:

- One train of systems necessary to achieve and maintain hot shutdown conditions



from either the control room or emergency control station(s) was free of fire damage; and

- Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) could be repaired within 72 hours.

Specific design features for ensuring this capability were specified by 10 CFR Part 50, Appendix R, Section III.G.2.

a. Inspection Scope

The inspectors reviewed the plant systems required to achieve and maintain post-fire safe shutdown to determine if the licensee had properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for each fire zone selected for review. Specifically, the review was performed to determine the adequacy of the systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring, and support system functions. This review included the fire protection safe shutdown analysis.

The inspectors also reviewed the operators' ability to perform the necessary manual actions for achieving safe shutdown including a review of procedures, accessibility of safe shutdown equipment, and the available time for performing the actions.

The inspectors reviewed the updated final safety analysis report and the licensee's engineering and/or licensing justifications (e.g., NRC guidance documents, license amendments, technical specifications, safety evaluation reports, exemptions, and deviations) to determine the licensing basis.

b. Findings

No findings of significance were identified.

.2 Fire Protection of Safe Shutdown Capability

10 CFR Part 50, Appendix R, Sections III.G.2, required separation of cables and equipment and associated circuits of redundant trains by a fire barrier having a three hour rating. If the requirements cannot be met, then alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room, or zone under consideration should be provided (Section III. G.3).

a. Inspection Scope

For each of the selected fire areas, the inspectors reviewed the licensee's safe shutdown analysis to ensure that at least one post-fire safe shutdown success path was available in the event of a fire. This included a review of manual actions required to achieve and maintain hot shutdown conditions and make the necessary repairs to reach cold shutdown within 72 hours. The inspectors also reviewed procedures to verify that adequate direction was provided to operators to perform these manual actions. Factors, such as timing, access to the equipment, and the availability of procedures, were considered in the review.

The inspectors also evaluated the adequacy of fire suppression and detection systems, fire area barriers, penetration seals, and fire doors to ensure that at least one train of safe shutdown equipment was free of fire damage. To do this, the inspectors observed the material condition and configuration of the installed fire detection and suppression systems, fire barriers, and construction details and supporting fire tests for the installed fire barriers. In addition, the inspectors reviewed license documentation, such as deviations, detector placement drawings, fire hose station drawings, carbon dioxide pre-operational test reports, smoke removal plans, fire hazard analysis reports, safe shutdown analyses, and National Fire Protection Association (NFPA) codes to verify that the fire barrier installations met license commitments. The inspectors reviewed the electrical raceway fire barrier systems for the following raceways in the selected fire areas:

<u>Raceway</u>	<u>Equipment</u>	<u>Raceway</u>	<u>Equipment</u>
1S077	1Y-103	D12-9	1AF-04001
2S079	2Y-104	D301-1	D-302
A130	P-032E	FV07	2P-002C
A131	P-032E	JB-1017	P-032B
A134	P-032B	PBNO.2A	P-032E
A135	P-032B	S1030	P-032E
D01-2	D-12	S1032	P-032B

b. Findings

A number of issues were identified and are discussed in Section 4OA4 as a cross-cutting human performance issue.

.3 Post-Fire Safe Shutdown Circuit Analysis

10 CFR Part 50, Appendix R, Section III.G.1, required that structures, systems, and components important to safe shutdown be provided with fire protection features capable of limiting fire damage to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions remained free of fire damage. Options for providing this level of fire protection were delineated in 10 CFR Part 50, Appendix R, Section III.G.2. Where the protection of systems whose function was required for hot shutdown did not satisfy 10 CFR Part 50, Appendix R, Section III.G.2, an alternative or dedicated shutdown capability and its associated circuits, was required to be provided that was independent of the cables, systems, and components in the area. For such areas, 10 CFR Part 50, Appendix R, Section III.L.3, specifically required the alternative or dedicated shutdown capability to be physically and electrically independent of the specific fire areas and capable of accommodating post-fire conditions where offsite power was available and where offsite power was not available for 72 hours.

a. Inspection Scope

On a sample basis, the inspectors investigated the adequacy of separation provided for the power and control cabling of redundant trains of shutdown equipment. This investigation focused on the cabling of selected components in systems important for safe shutdown. The inspectors' review also included a sampling of components whose inadvertent operation due to fire may adversely affect post-fire safe shutdown capability. The purpose of this review was to determine if a single exposure fire, in one of the fire areas selected for this inspection, could prevent the proper operation of both safe shutdown trains.

b. Findings

No findings of significance were identified.

.4 Alternative Safe Shutdown Capability

10 CFR Part 50, Appendix R, Section III.G.1, required that structures, systems, and components important to safe shutdown be provided with fire protection features capable of limiting fire damage to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions remained free of fire damage. Options for providing this level of fire protection were delineated in 10 CFR Part 50, Appendix R, Section III.G.2. Where the protection of systems whose function was required for hot shutdown did not satisfy 10 CFR Part 50, Appendix R, Section III.G.2, an alternative or dedicated shutdown capability independent of the area under consideration was required to be provided. Additionally, alternative or dedicated shutdown capability must be able to achieve and maintain hot standby conditions and achieve cold shutdown conditions within 72 hours and maintain cold shutdown conditions thereafter. During the post-fire safe shutdown, the reactor coolant process variables must remain within those predicted for a loss of normal alternating current (AC) power, and the fission product boundary integrity must not be affected (i.e., no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary).

a. Inspection Scope

The inspectors reviewed the licensee's systems required to achieve alternative safe shutdown to determine if the licensee had properly identified the components and systems necessary to achieve and maintain safe shutdown conditions. The inspectors also focused on the adequacy of the systems to perform reactor pressure control, reactivity control, reactor coolant makeup, decay heat removal, process monitoring, and support system functions.

b. Findings

One finding of significance was identified and is discussed in Section 1R05.12.b.

.5 Operational Implementation of Alternative Shutdown Capability

10 CFR Part 50, Appendix R, Section III.L.2.d, required that the process monitoring function should be capable of providing direct readings of the process variables necessary to perform and control the functions necessary to achieve reactivity control, reactor coolant makeup, and decay heat removal. a. Inspection Scope

The inspectors performed a walkdown of a sample of the actions defined in procedure AOP-10A, "Safe Shutdown - Local Control," which was the procedure for performing a plant alternative shutdown from outside the control room. The inspectors verified that operators could reasonably be expected to perform the procedure actions within the identified applicable plant shutdown time requirements and that equipment labeling was consistent with the procedure.

The inspectors' reviews of the adequacy of communications and emergency lighting associated with these procedures are documented in Sections 1R05.6 and 1R05.7 of this report.

b. Findings

No findings of significance were identified.

.6 Communications

For a fire in an alternative shutdown fire area such as the cable spreading room, control room evacuation is required and a shutdown is performed from outside the control room. Radio communications are relied upon to coordinate the shutdown of both units and for fire fighting and security operations. 10 CFR Part 50, Appendix R, Section III.H., required that equipment provided for the fire brigade include emergency communications equipment.

a. Inspection Scope

The inspectors reviewed the adequacy of the communication system to support plant personnel in the performance of alternative safe shutdown functions and fire brigade duties.

b. Findings

No findings of significance were identified.

.7 Emergency Lighting

10 CFR Part 50, Appendix R, Section III.J., required that emergency lighting units with at least an eight-hour battery power supply be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

a. Inspection Scope

The inspectors performed a walkdown of a sample of the actions defined in procedure AOP-10A, "Safe Shutdown - Local Control." As part of the walkdowns, the inspectors verified that sufficient emergency lighting existed for access and egress to areas and for performing necessary equipment operations.

b. Findings

A violation of 10 CFR Part 50, Appendix R, Section III.J was identified for inadequate emergency lighting to operate safe shutdown equipment. The violation was determined to be No Color because the violation did not involve the impairment or degradation of a fire protection defense-in-depth element, and this violation is being treated as a Non-Cited Violation (NCV).

During a walkdown of procedure AOP-10A, the inspectors identified that there was insufficient emergency lighting in the Unit 1 and Unit 2 façade areas for performing required procedure steps. Specifically, emergency lighting was insufficient for performing portions of sections C2 and C3 of procedure AOP-10A. These procedure sections directed operators to perform confirmatory actions to fail air to the Unit 1 and Unit 2 main steam isolation valves. These actions were required to ensure that the valves would not spuriously open. The inspectors noted that handheld flashlights would have enabled operators to perform the steps. Additionally, during daylight hours, some ambient lighting would have been available.

10 CFR Part 50, Appendix R, Section III.J requires, in part, that emergency lighting units with at least an eight hour battery power supply be provided in all areas needed for operation of safe shutdown equipment. Contrary to the above, emergency lighting units were not provided in all areas needed for operation of safe shutdown equipment. The inspectors considered the failure to have adequate emergency lighting to have a credible impact on safety because the lack of lighting could delay performing the procedure steps. This issue was not evaluated using the Significance Determination Process because the finding did not involve impairment or degradation of a fire protection feature. Consequently, this violation is associated with a No Color finding and is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation was entered into the licensee's corrective action program as Condition Report 01-2923 (NCV 50-266/01-12-01; 50-301/01-12-01).

.8 Cold Shutdown Repairs

10 CFR Part 50, Appendix R, Section III.L.5, required that equipment and systems comprising the means to achieve and maintain cold shutdown conditions should not be damaged by fire; or the fire damage to such equipment and systems should be limited so that the systems can be made operable and cold shutdown achieved within 72 hours. Materials for such repairs shall be readily available onsite and procedures shall be in effect to implement such repairs.

a. Inspection Scope

The inspectors reviewed the licensee's procedures to determine if any repairs were required to achieve cold shutdown. The inspectors determined that the licensee did require repair of some equipment to reach cold shutdown based on the safe shutdown methods used. The inspectors reviewed the procedures for adequacy.

b. Findings

No findings of significance were identified.

.9 Fire Barriers and Fire Zone/Room Penetration Seals

10 CFR Part 50, Appendix R, Section III.M, required that penetration seal designs be qualified by tests that are comparable to tests used to rate fire barriers.

a. Inspection Scope

The inspectors reviewed the test reports for three-hour rated barriers installed in the plant and performed visual inspections of selected barriers to ensure that the barrier installations were consistent with the tested configuration. The inspectors performed a walkdown and test documentation review for penetration seals M-7-3-23-E24 (on the south wall of the vital switchgear room ) and M-7-3-7-S8 (on the west wall of the vital switchgear room).

b. Findings

No findings of significance were identified. However, a number of issues identified during this review contributed towards a finding in the human performance cross-cutting issues area (Section 4OA4.a).

.10 Fire Protection Systems, Features, and Equipment

a. Inspection Scope

The inspectors reviewed the material condition, operations lineup, operational effectiveness, and design of fire detection systems, fire suppression systems, manual fire fighting equipment, fire brigade capability, and passive fire protection features. The inspectors reviewed deviations, detector placement drawings, fire hose station drawings, halon system pre-operational test reports, and fire hazard analysis reports to ensure that selected fire detection systems, sprinkler systems, portable fire extinguishers, and hose

stations were installed in accordance with their design, and that their design was adequate given the current equipment layout and plant configuration.

b. Findings

A violation of 10 CFR Part 50, Appendix R, Section III.G.2 was identified for failure to have adequate automatic fire suppression for the auxiliary feedwater pump room. Institute of Electrical and Electronics Engineers (IEEE) 383 qualified cables, which are classified as a deep-seated fire hazard, were introduced to the auxiliary feedwater pump room. However, the Halon suppression system for the room was only designed for surface fires and was not designed to provide the necessary soak time for deep-seated fires. The violation was determined to be of very low safety significance (Green) because the inspectors were not able to postulate a fire scenario which could sustain a deep-seated fire and damage redundant trains of equipment in the auxiliary feedwater pump room.

The vital switchgear room was an alternate shutdown area and, as such, is required to be protected by a fixed suppression system in accordance with 10 CFR Part 50, Appendix R, Section III.G.3. The auxiliary feedwater room relied upon a combination of 20 foot separation and one hour fire barriers to protect redundant trains of equipment. As such, the auxiliary feedwater pump room was required to be protected by an automatic suppression system by 10 CFR Part 50, Appendix R, Section III.G.2. A Halon system was installed in 1984 to provide automatic suppression for the vital switchgear and auxiliary feedwater pump room areas. The code of record for the Halon system was NFPA 12A-1980, "Halon 1301 Fire Extinguishing Systems." The Halon system was designed, installed, and tested to ensure a six percent Halon concentration could be maintained for a soak time of ten minutes. The six percent concentration and ten minute soak time was appropriate for surface fires, the hazards present at the time that the system was installed. However, from 1985 on, IEEE-383 qualified cables had been added to the rooms as the result of modifications. The inspectors noted that IEEE-383 qualified cables burn in a deep-seated manner rather than as a surface fire. Section 2-4.3.2 of NFPA 12A provided the following guidance with respect to deep-seated fires:

Where the solid material is in such a form that a deep-seated fire can be established before a flame extinguishing concentration has been achieved, provision shall be made to the satisfaction of the authority having jurisdiction for the means to effect complete extinguishment of the fire.

The inspectors noted that NRC is the authority having jurisdiction for nuclear plants. The minimum soak time required using Halon at six percent concentration for fully developed IEEE-383 qualified cable tray fires was 15 minutes (Table 9, NUREG/CR-3656, "Evaluation of Suppression Method for Electrical Cable Fires").

The inspectors reviewed the pre-operational test results for the Halon system concentrations in the vital switchgear room. The inspectors noted that the test showed that concentrations over seven percent had been maintained for the ten minute test. The inspectors performed a linear regression analysis on the worst case data point and determined, based on the data, that concentration would remain over six percent after a

15 minute soak time with some margin. The inspectors concluded that the installed Halon system was capable of extinguishing a deep-seated fire involving the cables in the vital switchgear room.

The inspectors also reviewed the pre-operational test results for the Halon system concentrations in the auxiliary feedwater pump room. Although the test results generally showed that a six percent concentration would be maintained for 10 minutes, there did not appear to be sufficient margin to ensure that a six percent concentration would be maintained for 15 minutes. The inspectors evaluated the finding using Inspection Manual Chapter (IMC) 0609, Appendix F, "Determining Potential Risk Significance of Fire Protection and Post-Fire Safe Shutdown Inspection Findings." The inspectors evaluated the hazards in the room and general room configuration. The inspectors noted that the primary fire hazards in the room were from lubricating oil contained in the auxiliary feedwater pumps and transient materials. Both hazards were surface fire hazards which would be effectively extinguished by the Halon with a 10 minute soak time. However, the inspectors noted that the 10 minute soak time did not provide assurance that a fully developed cable tray fire with IEEE-383 qualified cable would be extinguished. The inspectors performed independent calculations and determined, however, that a single cable tray fire with 20 square foot surface area would not develop a hot gas layer with sufficiently high temperatures in the auxiliary feedwater pump room which could damage cables in other trays. The inspectors also noted that the Halon suppression system was activated by either one heat detector or two smoke detectors which would provide a relatively quick response. Consequently, although the suppression system was not adequate for a 10 CFR Part 50, Appendix R, design basis exposure fire, the inspectors were not able to postulate a fire scenario which could sustain a deep-seated fire and damage redundant trains of equipment in the auxiliary feedwater pump room.

10 CFR Part 50, Appendix R, Section III.G.2, required, in part, that automatic fire suppression be installed in the fire area. The inspectors determined that the automatic fire suppression system installed for the auxiliary feedwater pump room was not adequate because deep-seated fire hazards had been introduced into the area which the suppression system was not demonstrated as capable of extinguishing. The inspectors considered this finding to have a credible impact on safety because the automatic suppression fire protection defense-in-depth element was affected. However, the inspectors were not able to postulate a fire scenario relating to the finding in which redundant trains of equipment were affected. Consequently, this finding is characterized by the SDP as having very low safety significance (Green) and is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation was entered into the licensee's corrective action program as Condition Reports 01-2949 and 01-2975 (NCV 50-266/01-12-02; 50-301/01-12-02).

.11 Compensatory Measures

a. Inspection Scope

The inspectors conducted a review to verify that adequate compensatory measures were put in place by the licensee for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features. The inspectors



also verified that short term compensatory measures were adequate to compensate for a degraded function or feature until appropriate corrective actions were taken.

b. Findings

No findings of significance were identified.

.12 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the corrective action program procedures and samples of corrective action documents to verify that the licensee was identifying issues related to fire protection at an appropriate threshold and entering them in the corrective action program. The inspectors reviewed selected samples of condition reports, work orders, design packages, and fire protection system non-conformance documents.

b. Findings

A violation of 10 CFR Part 50, Appendix R, Section III.L.3, was identified for not ensuring that a 72-hour supply of fuel was on-site for the generator relied upon for safe shutdown in the event of a fire. The violation was determined to be No Color because the violation did not involve the impairment or degradation of a fire protection defense-in-depth element, and this violation is being treated as a NCV.

The onsite gas turbine generator, generator G-05, was relied upon to provide AC distribution power for several Appendix R scenarios including supplying all required safe shutdown loads in the case of a fire in an alternative shutdown area. Historically, generator G-05 was also used to supply power to the grid during periods of high electricity demand.

The fuel oil supply for generator G-05 was maintained onsite in two 60,000 gallon storage tanks. Calculations performed prior to the inspection showed that a minimum of 94,000 gallons of fuel oil was required to support achieving and maintaining cold shutdown within 72 hours as required by 10 CFR Part 50, Appendix R. Operations personnel were required to reorder fuel oil when fuel oil in the tanks fell to 81,000 gallons. Fuel oil was resupplied by either local fuel suppliers within 35 miles of the Point Beach Nuclear Plant or from the Wisconsin Electric's off-site bulk storage tanks. By the time fuel oil actually arrived on site, fuel levels could have fallen far below the 94,000 gallons accepted as being required for 10 CFR Part 50, Appendix R purposes. The licensee had previously recognized and documented this issue in Condition Report 99-0123 prior to this inspection. However, the licensee inappropriately closed out the condition report because they believed, incorrectly, that reordering fuel oil to replenish the tanks before depletion met Appendix R requirements.

As a result of the inspectors questioning the fuel supply, the licensee stated that the numbers used to calculate generator G-05 fuel consumption were very conservative and that the actual fuel consumption when supplying Appendix R safe shutdown loads was much less. To better determine the fuel consumption rate, the licensee ran generator G-05 during the inspection with a loading similar to that expected during a fire scenario.

Based on the fuel consumption rate observed, the licensee determined that approximately 75,000 gallons were required to meet the Appendix R 72-hour criteria. The inspectors noted that the 81,000 gallon reorder point only provided a 6000 gallon margin. As such, the inspectors concluded that it was possible to have less than the required supply for 72 hours, especially when generator G-05 was used as a peaking unit to supply the grid. Condition Report CR 99-0123 documented one case in which the level fell as low as 71,571 gallons.

10 CFR Part 50, Appendix R, Section III required, in part, that alternative or dedicated shutdown capability be provided for a specific fire area to achieve cold shutdown conditions within 72 hours and maintain cold shutdown conditions thereafter. The failure to provide 72 hour supply of fuel oil on-site was a violation of 10 CFR Part 50, Appendix R, Section III.L.3 in that cold shutdown capability to achieve cold shutdown conditions within 72 hours and maintain cold shutdown conditions thereafter was not provided for alternative shutdown areas. This issue was not evaluated using the Significance Determination Process because the finding did not involve impairment or degradation of a fire protection feature. Consequently, this violation is associated with a No Color finding and is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy. This violation was entered into the licensee's corrective action program as Condition Reports 01-2897 and QCR 01-0005 (NCV 50-266/01-12-03; 50-301/01-12-03).

#### **4. OTHER ACTIVITIES**

##### **4OA3 Event Follow-Up**

- a. (Closed) LER 50-266/1999-006-00; 50-301/1999-006-00: This Licensee Event Report (LER) described the discovery that a postulated fire in the central zone of the primary auxiliary building could have resulted in the spurious operation of a pressurizer power operated relief valve (PORV) and, at the same time, could have caused the pressurizer PORV block valves to fail in the open position. In addition, while this event could have been mitigated by securing and venting instrument air to containment thereby failing the pressurizer PORV closed, the valves required for performing this action were located in the same fire zone and were not accessible until the postulated fire was extinguished.

The licensee discovered this condition during a 10 CFR Part 50, Appendix R program rebaselining project at PBNP and appears to have been caused by Engineering oversight. As a corrective action, the licensee re-routed cables in dedicated conduit such that a fire could not possibly cause both the pressurizer PORV to open and the pressurizer PORV block valve to fail in the open condition. The inspectors considered this corrective action to be acceptable.

Since this issue involved a degradation of defense-in-depth element, the inspectors evaluated the issue using NRC Manual Chapter 0609, "Appendix F, Fire Protection Significance Determination Process." Phase 1 and 2 evaluations of the fire protection SDP were performed because the issue involved a degradation of a 3-hour fire barrier separating redundant safe shutdown functions. The generic ignition frequency for electrical cabinets of  $4.88 \times 10^{-3}$  per year was used for this fire area, because the circuits of concerns were located directly above the electrical cabinets in that area. No credit

was given for fire barriers and automatic suppression because none was installed. Full credit was given for manual suppression capability because no significant problems regarding the manual suppression were identified. All pressurizer PORVs and their associated block valves were assumed to be affected by the fire as a result of multiple spurious actuations. A probability of occurrence for spurious actuations of 0.1 was assigned. None of the auxiliary feedwater pumps, residual heat removal pumps, high pressure safety injection pumps, or atmospheric dump valves were affected by a potential fire in this area and were considered available. The power conversion system (main feedwater and condensate) was conservatively assumed to be unavailable because the cable routing for these systems was unknown and could potentially be affected by the fire. Based on these assumptions, the inspectors determined that the finding was of very low safety significance (Green) using the transient and stuck open pressurizer PORV significance determination worksheets for the Point Beach Nuclear Plant.

10 CFR Part 50, Appendix R, Section III.G.1.a required, in part, that one train of systems necessary to achieve and maintain hot shutdown conditions be free of fire damage. For the condition reported in this LER, hot shutdown conditions would not have been able to be maintained during the ensuing plant transient which would have resulted from a stuck open pressurizer PORV. Consequently, this condition was a violation of 10 CFR Part 50, Appendix R, Section III.G.1.a. This violation was associated with an inspection finding that is characterized by the SDP as having very low safety significance (Green) and is being treated as a NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 50-266/01-12-04; 50-301/01-12-04).

- b. (Closed) LER 50-266/2000-002-00; 50-301/2000-002-00: Two issues were identified in this Licensee Event Report as follows:
- (1) The Licensee Event Report reported a condition in which redundant channels of the steam generator pressure indication were routed in the same fire area in the north section of the 26 foot elevation of the auxiliary building. If a fire had occurred in the 26 foot elevation of the auxiliary building, it was possible that fire damage could leave no Steam Generator pressure instrumentation available for safe shutdown of the reactor. This is a violation of 10 CFR Part 50, Appendix R, Section III.G.1.a, which states that fire damage shall be limited so that "one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage." However, even though other methods of determining steam generator pressure were not credited in the licensee's Safe Shutdown Analysis or included in the associated procedure, other methods would have been available during a fire. Specifically, reactor coolant temperature and system pressure could have been correlated to determine steam generator pressure, and realigning power supplies could have restored power to the steam generator pressure instrumentation thereby restoring the instrumentation capability. Consequently, this issue has no credible safety impact. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy. This LER is considered closed.
  - (2) PBNP LER 2000-002 reported a condition in which redundant channels of the source range instrumentation were routed within the same fire area in the 8 foot elevation of the

auxiliary building. If a fire had occurred at the 8 foot elevation of the auxiliary building, it was possible that fire damage could leave no source range instrumentation available for safe shutdown of the reactor. This is a violation of 10 CFR Part 50, Appendix R, Section III.G.1.b, which states that fire damage shall be limited so that "systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours." While plant operators would have been capable of achieving and maintaining hot shutdown conditions, achieving cold shutdown conditions would have been unattainable without source range instrumentation. While this is considered to be a violation, it has no credible impact on safety because hot shutdown conditions could have been maintained, and, after repair of the source range instrumentation, cold shutdown conditions could have been achieved. The inspectors agreed that the repair could be performed within 72 hours. Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy. This LER is considered closed.

#### 40A4 Cross-Cutting Issues

##### a. Human Performance

During this inspection, the inspectors identified a number of issues which, collectively, indicated that human performance weaknesses existed in the fire protection engineering area. The weaknesses were especially apparent considering that the licensee had just re-baselined their Appendix R program engineering documentation. The specific examples indicating a lack of engineering rigor included:

- Although the 10 CFR Part 50, Appendix R Safe Shutdown Analysis Report (SSAR) had been rebaselined in September 2001, the SSAR did not correctly show that the P-38A auxiliary feedwater pump would be required in the event of a fire initiating in the middle portion of the auxiliary feedwater pump room. The inspectors determined that the pump would be available in the event of such a fire. The licensee initiated Condition Report 01-2954 to address this issue.
- As discussed in Section 1R05.12.b, above, the G-05 gas turbine generator fuel oil supply had not been correctly addressed for meeting the 72-hour 10 CFR Part 50, Appendix R, requirements.
- Neither engineering nor operations personnel had operational knowledge of the G-05 gas turbine generator load reject function. The load reject function would have been challenged had the peaking loads been required to be removed in order to supply Appendix R loads. The licensee was unable to identify any documentation during the inspection which demonstrated that the load reject function had been tested. The licensee initiated Condition Report 01-2976 to address this concern.
- The installed configuration of penetration seal M-7-3-23-E24 was not bounded by the tested configuration used for justifying operability. Specifically: (a) the four-inch conduit was surrounded by silicone foam as opposed to the steel sleeve and concrete (acting as a better heat sink) of the tested configuration, (b) the

four-inch conduit was larger than the two-inch conduit (conducting less heat) of the tested configuration, and (c) the four-inch conduit was physically supported by the damming material rather than the steel sleeve and concrete (providing more rigidity) of the tested configuration. During the inspection, the licensee obtained an additional test report which bounded the installed fire barrier configuration. The licensee initiated Condition Report 01-2924 to address this issue.

- The installed configuration of penetration seal M-7-3-7-S8 was not bounded by the tested configuration used for justifying operability. Specifically, the installed configuration had less thermal mass and rigidity than the tested configuration. Additionally, the penetration had a copper pipe which was not bounded by testing configurations using steel conduits (having less thermal conductivity). During the inspection, the licensee obtained an additional test report which bounded the installed fire barrier configuration. The licensee initiated Condition Report 01-2924 to address this issue.
- Numerous four-inch rigid steel conduits with three-layer 3M Interam Mat raceway barriers were not bounded by tested configurations. Specifically, the licensee relied upon a test report in which a five-inch conduit with a three-layer raceway barrier had passed as a one-hour rated assembly. However, the four-inch conduit did not have as much thermal mass as the tested five-inch conduit. Moreover, a three-inch conduit with three-layer raceway barriers failed both the average and maximum temperature requirements at the end of one hour fire test. During the inspection, the licensee obtained an additional test report which bounded the installed fire barrier configuration. The licensee initiated Condition Report 01-2957 to address this issue.
- The installed configurations of electrical pull boxes with 3M Interam three-layer one-hour rated fire barriers were not bounded by tested configurations. Specifically, the installed configurations of junction box JB-1017 (24-inch x 24-inch x 16-inch) and pull box PBN02A (54-inch x 18-inch x 36-inch) were much larger than the tested configuration (12-inch x 12-inch x 8-inch). Although the thermal masses of as-built configurations were greater than the tested configuration, the licensee failed to address the structural integrity of the fire barriers as the area of the exposed surfaces increased.
- As documented by Section 4.2 FPTE 015, "Technical Evaluation of the Acceptance Testing for the Cable Spreading Room, Vital Switchgear Room, and Auxiliary Feedwater Pump Room Halon System," performed in September 2001, the licensee incorrectly believed that the fire hazards for vital switchgear room and auxiliary feedwater pump rooms were representative of solid surface fires (versus deep-seated fires requiring a longer soak time). However, as discussed in Section 1R05.10.b, IEEE-383 qualified cable had been introduced to the rooms which introduced deep-seated fire hazards requiring a longer soak time.

Collectively, these examples are considered a substantive cross-cutting issue and is considered a finding (Finding 50-266/01-12-05; 50-301/01-12-05).

4OA6 Meeting(s)

Exit Meeting

On September 28, 2001, at the conclusion of the on-site inspection activities, the inspectors presented their initial findings to Mr. Reddemann and other members of licensee management at Point Beach Nuclear Plant. The licensee representatives acknowledged the findings presented. The inspectors identified the proprietary information reviewed during the inspection and noted that the information would be handled accordingly. The licensee did not identify any other material reviewed during the inspection as being proprietary.

4OA7 Licensee Identified Violations. The following findings of very low significance were identified by the licensee and are violations of NRC requirements which meet the criteria of Section VI.A.1 of the Enforcement Policy, NUREG-1600 for being dispositioned as NCVs.

NCV Tracking Number

50-266/01-12-04;  
50-301/01-12-04

Requirement Licensee Failed to Meet

10 CFR Part 50, Appendix R, Section III.G.1.a required, in part, that one train of systems necessary to achieve and maintain hot shutdown conditions be free of fire damage. As discussed in LER 50-266/1999-006-00; 50-301/1999-006-00 (discussed in Section 4OA3.a of this report), hot shutdown conditions would not have been able to be maintained during the ensuing plant transient which would have resulted from a stuck open pressurizer PORV. This violation is being treated as a NCV.

## KEY POINTS OF CONTACT

### Licensee

L. Armstrong, Design Engineering Manager  
A. Cayia, Plant Manager  
N. Hoefert, Engineering Programs Manager  
D. Schoon, Operations Manager  
T. Webb, Licensing Director

### NRC

R. Gardner, Chief, Electrical Engineering Branch  
J. Grobe, Director, Division of Reactor Safety

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

050-266/01-12-01; 050-301/01-12-01	NCV	Emergency Lighting Inadequate in Façade Area
050-266/01-12-02; 050-301/01-12-02	NCV	Auxiliary Feedwater Pump Room Halon System Inadequate for Deep-Seated Fire Hazard
050-266/01-12-03; 050-301/01-12-03	NCV	Failure to Maintain Sufficient Appendix R Fuel Oil Supply
050-266/01-12-04 050-301/01-12-04	NCV	Failure to Prevent Spurious Opening of PORV
050-266/01-12-01; 050-301/01-12-05	Finding	Human Performance Cross-Cutting Issue Due to Weaknesses in Fire Protection Engineering Area

Closed

50-266/99-006-00; 50-301/99-006-00	LER	Postulated fire and inability to isolate PORV outside Appendix R design basis
50-266/00-002-00; 50-301/00-002-00	LER	Redundant channels of steam generator pressure indication and source range nuclear instrumentation not routed independent of common fire zone
050-266/01-12-01; 050-301/01-12-01	NCV	Emergency Lighting Inadequate in Façade Area
050-266/01-12-02; 050-301/01-12-02	NCV	Auxiliary Feedwater Pump Room Halon System Inadequate for Deep-Seated Fire Hazard
050-266/01-12-03; 050-301/01-12-03	NCV	Failure to Maintain Sufficient Appendix R Fuel Oil Supply
050-266/01-12-04 050-301/01-12-04	NCV	Failure to Prevent Spurious Opening of PORV
050-266/01-12-05; 050-301/01-12-05	Finding	Human Performance Cross-Cutting Issue Due to Weaknesses in Fire Protection Engineering Area



## LIST OF ACRONYMS USED

AC	Alternating Current
CFR	Code of Federal Regulations
DPR	Demonstration Power Reactor
DRS	Division of Reactor Safety
FSAR	Final Safety Analysis Report
IEEE	Institute of Electrical and Electronics Engineers
IMC	Inspection Manual Chapter
IPEEE	Individual Plant Examination of External Events
IR	Inspection Report
LLC	Limited Liability Company
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NMC	Nuclear Management Company, LLC
NRC	U.S. Nuclear Regulatory Commission
SDP	Significance Determination Process

## LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that NRC inspectors reviewed the documents in their entirety, but, rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort.

### **Analyses**

CALC-WE0005-18	Diesel Fuel Oil Consumption	Revision 1
E-09334-368-DC.3	125 VDC Coordination Analysis - Phase B	Revision 0
N-92-003	480 VAC Switchgear Coordination Analysis	Revision 2
V878-15-CA-01	Appendix R Associated Circuits Analysis	Revision 4
V878-15-CA-02	Appendix R 120 VAC and 125 VDC Branch Circuit Coordination	Revision 0

### **Condition Reports**

82-4984	ICMS Fire and Hose-Stream Tests for Penetration Seal System	June 3, 1982
82-4926	Fire and Hose-Stream Tests for Penetration Seals Systems	March 19, 1982
99-0123	Fuel Oil Supply Duration for Emergency Diesel Generators/ Gas Turbine Operating Under the Appendix R Safe Shutdown Equipment Loads	June 18, 1999
99-1832	Spurious Power Operated Relief Valve Opening Due to Appendix R Fire	July 20, 1999
00-1223	Steam Generator Pressure Transmitter Not Available for a Postulated Fire Scenario	April 13, 2000
00-1255	Source Range Monitor Not Available for Postulated Fire	April 17, 2000
00-2804	Spurious Opening of SI-851A/B valves Not Properly Addressed by Abnormal Operating Procedures 10A and 10B	September 20, 2000

### **Condition Reports Initiated As A Result of Inspection**

01-2843	Fire drill scenarios may need improvement	September 14, 2001
01-2893	The total amount of oil in the auxiliary feedwater pump room may exceed current assumptions listed in the fire protection program	September 21, 2001

01-2897	G05 Fuel Supply Potential Conflict With Appendix R Requirements	September 21, 2001
01-2923	Appendix R Emergency Lighting Issues	September 25, 2001
01-2924	A walkdown of penetrations M-7-3-7S8 and M-7-3-23-E24 in support of the NRC Fire Protection Audit resulted in the discovery of two design deficiencies	September 24, 2001
01-2949	During the conduct of the NRC Fire Protection inspections, questions have been raised concerning the adequacy of the Halon 1301 fire suppression system	September 27, 2001
01-2951	Fully Describe No Supporting Calc for LO Reservoir to Support Appendix R Modifications M-667, M-689, and M-690 installed concrete dikes around the lube oil reservoir tanks	September 27, 2001
01-2954	Documentation for a Middle Section fire in the AFP Room does not properly account for AFP availability	September 27, 2001
01-2957	PBNP's qualification of 3-layer 3M Interam fire wrap on 4" conduits is based on an engineering evaluation that was performed in response to Information Notice 95-052.	September 27, 2001
01-2960	CARDS incorrectly lists conduits for junction boxes PBNO.1 and PBNO.2 in the Vital Switchgear Room as 4" ABS Plastic.	September 27, 2001
01-2969	This CR is written only to track a potential concern with the sizing of the current transformer installed on the 4160 volt cable for 1P-015A.	September 26, 2001
01-2974	Concerns were identified with certain raceway, fire-barrier wraps and fire barrier penetration seals during the NRC Fire Protection Audit.	September 28, 2001
01-2975	During the NRC Inspection 2001-0112, a review of the Halon systems as part of their assessment was performed.	September 28, 2001
01-2976	Lack of knowledge of how the G-05 Gas Turbine control system functions	September 28, 2001
01-2977	An NRC inspection of the Fire Protection Program, conducted in the month of September, revealed a number of significant deficiencies, that were not identified through NMC internal assessments.	September 28, 2001

QCR 01-05	G05 Fuel Reserve Maintained on Site may not be sufficient for Appendix R requirements due to inadequate calculation design inputs and an OD based in part on an unapproved FSAR change.	September 20, 2001
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**Correspondence**

	Appendix R Exemption Requests	April 28, 1983
	Exemption to Appendix R of 10 CFR Part 50	July 3, 1985
	Fire Protection Requirements 4160 Volt Switchgear Room	July 30, 1986
NPNPD-94-072	Request for Exemption From the Requirements of 10 CFR Part 50, Appendix R, Section III for the AFW Pump Room	August 5, 1994
	Correction to Exemption From Certain Technical Requirements of Appendix R to 10 CFR Part 50	October 24, 1995

**Drawings**

E-1	Station Connections	Revision 8
E-11 Sheet 3	Meter & Relay Diagram 4160 V Auxiliary System	Revision 6
E-90 Sheet 7C	4160 V Switchgear 1A05-Cubicle 59 Safety Injection Pump 1P-15A Breaker 1A52-59	Revision 1
E-110	Equipment Grounding, Elev 8'-0" & Below & Underground Conduits	Revision 0
E-117 Sheet 1	Electrical Layout Turbine Building Area 3	Revision 22
E-117 Sheet 2	Electrical Layout Turbine Building Area 3	Revision 16
E-117 Sheet 3	Electrical Layout Turbine Building Area 3	Revision 3
E-117 Sheet 4	Electrical Layout Turbine Building Area 3	Revision 1
M7-3-7	Vital Switch Gear Room 305 South Wall EI 8'-0"	Revision 5
M7-3-23 Sheet 2	Aux Pump Local Control Station Room 312 East Wall EI. 8'-0"	Revision 6
541F152 Sheet 1	4160V One Line Diagram 1A01, 1A02	Revision 9
541F152 Sheet 2	4160V One Line Diagram Motor Control Center	Revision 9
541F152 Sheet 3	4160V One Line Diagram Units 1 and 2	Revision 15
541F152 Sheet 4	4160v One Line Diagram Motor Control Center Bus 1A05, 1A06, 2A05 & 2A06	Revision 10

541F152 Sheet 5	4160V One Line Diagram 1A06 & 2A06	Revision 8
541F153 Sheet 1	480 V One Line Diagram, Unit 1	Revision 18
541F153 Sheet 2	480 V One Line Diagram, Unit 2	Revision 18

### Evaluations

Fire Hazards Analysis Report	Fire Area A24 4KV Vital Switchgear Room Fire Area A23 Auxiliary Feedwater Pump Room	August 17, 2001
FPEE 2001-002	Evaluation of Fire Propagation Beneath AFW Pump Room Doors	Revision 0
FPTE 001	Technical Evaluation of Fire Barrier Penetration Seals, Fire Rated Wrapping and Cable Tray Fire Stops at Point Beach Nuclear Plant	August 3, 2001
FPTE 008	Technical Evaluation for Appendix R Cable Separation in the AFW Pump Room Fire Zone 304	August 3, 2001
FPTE 015	Technical Evaluation of the Acceptance Testing for the Cable Spreading Room, Vital Switchgear Room, and Auxiliary Feedwater Pump Room Halon System	September 11, 2001
NPM 96-0020	NRC IN 95-052: Fire Endurance Test Results for Electrical Raceway Fire Barrier Systems Constructed From 3M Company Interim Fire Barrier Materials	January 19, 1996
SSAR	Safe Shutdown Analysis Report (SSAR)	August 17, 2001
SSAR, Table 5-7	Point Beach Nuclear Plant Electrical Raceway Fire Barrier System, (EREBS)	August 17, 2001
V878-04-TD-5, Section 6.7	Typical Detail W-E-01-01, Dow Corning 3-6548 RTV Foam Design Blockout Penetrations	Revision 0

### Fire Test Reports

Brand Fire Protection Services, Inc	Mecatiss Qualification Package	June 3, 1997
File E10125	Special Service Investigation Report on Electrical Circuit Protective Systems	April 14, 1995
Project 14980-104090	Fire Endurance Test of Articles Protected With Selected Electrical Raceway Fire Barrier Systems	March 3, 1999

Project 14540-98308	Fire Endurance Test of 3M Interim Mat Fire Protective Envelopes	November 9, 1995
Promatec CTP-2011	Fire Endurance Test of 3M Interim Fire Wrap	November 10, 1998
SWI Project 01-7912a[1]	Qualification Fire Test of a Protective Envelope System	06/85
SWI Project 01-7912[2]	Qualification Fire Test of a Protective Envelope System	06/85
03-5734-001	Fire Qualification Test on Floor Penetration Seals	November 30, 1979
OAOQ3.AM	Fire Endurance Test Penetration Seal Systems in Precast Concrete Floor Utilizing Silicone Elastomers Carborundum Design FC-246	May 18, 1977

### Licensee Event Reports

1999-006-00	Postulated Fire and Inability to Isolate Power Operated Relief Valve Outside Appendix R Design Basis	August 19, 1999
2000-002-00	Redundant Channels of Steam Generator Pressure Indication and Source Range Nuclear Instrumentation Not Routed Independent of Common Fire Zone	May 11, 2000
2000-008-00	Inadequate Procedural Guidance for Spurious Opening of SI-851A/B Valves During Appendix R Alternate Shutdown	October 19, 2000

### Modifications

M-597	Foam & Lead Filled Silicone Field Take-off, Installation & Inspection Record	10/80
97-058	Mecatiss MTS-1 Installation	06/97

### Procedures

AOP-10A	Safe Shutdown - Local Control	Revision 31
OI 92A	Fuel Oil Ordering, Receipt, Sampling, and T-173 Fill Tank Draining	Revision 4
OI 110	Gas Turbine Operation	Revision 5
O-SOP-DC-003	125 VDC System, Bus D-03 & Components	Revision 5

WMTP 11.32                      Halon System Acceptance Test                      Revision 1

**Safety Evaluation Reports**

Fire Protection Safety Evaluation Report	August 2, 1979
Fire Protection Safety Evaluation Report Supplement	October 21, 1980
Fire Protection Safety Evaluation Report Supplement	January 22, 1981
4160 Volt Switchgear Room	July 27, 1988

**Startup Tests**

SMP-1116	Gas Turbine G-05 System Post-Overhaul Startup Test	October 16, 1992
WEPCO Contract 2247	Halon Systems Test Report	Revision 1

**Westinghouse Vendor Manuals**

EMS 180	Zero-Sequence Overcurrent Relay Scheme	
IL 41-102C	Type COM Overcurrent Relays	May 1968
IL 41-771D	Type ITH Relay	December 1968

**Work Orders**

2001-051	Test Halon Pressure Trip Devices for Auxiliary Feedwater Pump Room and Vital Switchgear Room Fire Dampers
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**Work Requests**

WR 911490	JB 1017	May 13, 1991
WR 911490	PBN02 Junction Box	May 20, 1991