UNITED STATES NUCLEAR REGULATORY COMMISSION



REGION I 2100 RENAISSANCE BLVD., SUITE 100 KING OF PRUSSIA, PA 19406-2713

May 5, 2014

Mr. Michael J. Pacilio Senior Vice President, Exelon Generation Company, LLC President and Chief Nuclear Officer, Exelon Nuclear 4300 Winfield Rd. Warrenville, IL 60555

SUBJECT: OYSTER CREEK GENERATING STATION - NRC TRIENNIAL FIRE

PROTECTION INSPECTION REPORT 05000219/2014007

Dear Mr. Pacilio:

On April 11, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at the Oyster Creek Nuclear Generating Station. The enclosed inspection report documents the inspection results, which were discussed on April 11, 2014, with Mr. R. Peak and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations, and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed station personnel. The inspectors also reviewed mitigation strategies for addressing large fires and explosions.

Based on the results of this inspection, no findings were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of the NRC's document system, Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

John F. Rogge, Chief Engineering Branch 3 Division of Reactor Safety

Docket No: 50-219 License No: DPR-16

Enclosure: Inspection Report 05000219/2014007

w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

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U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-219

License No: DPR-16

Report No: 05000219/2014007

Licensee: Exelon Generation Company, LLC

Facility: Oyster Creek Nuclear Generating Station

Location: P.O. Box 388

Forked River, NJ 08731

Dates: March 24 – 28 and April 7 -11, 2014

Inspectors: R. Fuhrmeister, Senior Reactor Inspector (Team Leader)

C. Cahill, Senior Reactor Analyst K. Young, Senior Reactor Inspector J. Richmond, Reactor Inspector J. Rady, Reactor Inspector L. DuMont, Reactor Inspector

Approved by: John F. Rogge, Chief

Engineering Branch 3
Division of Reactor Safety

SUMMARY

IR 05000219/2014007; 03/24-28/2014 and 04/07-11/2014; Oyster Creek Nuclear Generating Station; Triennial Fire Protection Inspection.

This report covered a two week on-site triennial fire protection team inspection by specialist inspectors. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

No Findings were identified.

REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05T, "Fire Protection." The objective of the inspection was to assess whether Exelon Generation Company, LLC (Exelon) had implemented an adequate fire protection program and whether post-fire safe shutdown capabilities had been established and were properly maintained at Oyster Creek Nuclear Generating Station (Oyster Creek). The following fire areas (FAs) and associated fire zones (FZs) were selected for detailed review based on prior inspection results and risk insights from the Oyster Creek Individual Plant Examination of External Events (IPEEE):

Fire Areas (Fire Zones)

- TB-FZ-11D
- RB-FZ-1F3
- OB-FZ-22A

Inspection of these fire areas/zones fulfilled the inspection procedure requirement to inspect a minimum of three samples.

The inspection team evaluated Exelon's fire protection program (FPP) against applicable requirements which included Operating License Condition, NRC Safety Evaluation Reports (SERs), 10 CFR 50.48, and 10 CFR 50, Appendix R. The team also reviewed related documents that included the Updated Final Safety Analysis Report (UFSAR), Section 9.5.1, fire protection plan, fire hazards analysis (FHA), and post-fire safe shutdown analyses.

The team evaluated aspects of five mitigating strategies for responding to large fires and explosions, as required by Operating License Condition 2.C.17 and 10 CFR 50.54(hh)(2). The team also reviewed related documents that included NEI 06-12, "B.5.b Phases 2 & 3 Submittal Guidance," Revision 2 (ML070090060). Inspection of these strategies fulfills the inspection procedure requirement to inspect a minimum of one sample.

Specific documents reviewed by the team are listed in the attachment to this report.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05T)

.1 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the FHA, safe shutdown analyses, and supporting drawings and documentation to verify that post-fire safe shutdown capabilities were properly protected. The team ensured that applicable separation requirements of Section III.G of

10 CFR Part 50, Appendix R, and the licensee's design and licensing bases were maintained for the credited safe shutdown equipment and their supporting power, control, and instrumentation cables. This review included an assessment of the adequacy of the selected systems for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring and associated support system functions.

b. Findings

No findings were identified.

.2 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to evaluate whether the material conditions of the fire area boundaries were adequate for the fire hazards in the area. The team compared the fire area boundaries including walls, ceilings, floors, fire doors, fire dampers, penetration seals, electrical raceway and conduit fire barriers, and redundant equipment fire barriers and radiant energy heat barriers to the design and licensing basis requirements, industry standards, and the OCNGS FPP, as approved by the NRC, to identify any potential degradation or non-conformances.

The team reviewed selected engineering evaluations and qualification records for a sample of penetration seals to determine whether the fill material was properly installed and whether the as-left configuration satisfied design requirements for the intended fire rating. The team also reviewed similar records for selected fire protection wraps to verify whether the material and configuration was appropriate for the required fire rating and conformed to the engineering design.

The team also reviewed recent inspection and test records for fire dampers and the inspection records for penetration seals and fire barriers to verify whether the inspection and testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

b. Findings

No findings were identified.

.3 Active Fire Protection

a. Inspection Scope

The team evaluated manual and automatic fire suppression and detection systems in the selected fire areas to determine whether they were installed, tested, maintained and operated in accordance with NRC requirements, National Fire Protection Association (NFPA) codes of record and the OCNGS FPP. The team also assessed whether the suppression systems capabilities were adequate to control and/or extinguish fires associated with the hazards in the selected areas.

The team reviewed the as-built capability of the fire water supply system to verify whether the design and licensing basis and NFPA code of record requirements were satisfied and to assess whether those capabilities were adequate for the hazards involved. The team reviewed the fire water system design and hydraulic analysis to assess the adequacy of the system to supply the largest single hydraulic load on the fire water system plus concurrent fire hose usage with one fire pump out of service. The team evaluated fire pump performance tests to assess the adequacy of the test acceptance criteria for pump minimum discharge pressure at the required flow rate to verify whether the criteria was adequate to ensure that the design basis requirements were satisfied. The team also evaluated the underground fire loop flow tests and flushes to verify whether the combination of the tests and flushes adequately demonstrated that the flow distribution circuits were able to meet design basis requirements. In addition, the team reviewed recent pump and loop flow test results to verify whether the testing was adequately conducted, the acceptance criteria were met and any potential performance degradation was identified.

The team walked down accessible portions of the detection and water suppression systems in the selected areas and major portions of the fire water supply system, including the motor and two diesel driven fire pumps, interviewed system and program engineers, and reviewed selected issue reports (IRs) to independently assess the material condition of the systems and components. In addition, the team reviewed recent test results for the fire detection and suppression systems for the selected fire areas to verify whether the testing was adequately conducted, the acceptance criteria were met and any potential performance degradation was identified.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed Exelon's firefighting strategies (i.e., prefire plans) and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. The team independently inspected the fire brigade equipment, including personnel protective gear (e.g., turnout gear) and smoke removal equipment, to determine operational readiness for firefighting.

In addition, the team reviewed Exelon's fire brigade equipment inventory and inspection procedure and recent inspection and inventory results to verify whether adequate equipment was available, and whether any potential material deficiencies were identified.

b. Findings

No findings were identified.

.4 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to determine whether redundant trains of systems required for post-fire safe shutdown, located in the same or adjacent fire areas, were subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team evaluated whether:

- A fire in one of the selected fire areas would release smoke, heat or hot gases that could cause unintended activation of suppression systems in adjacent fire areas which could potentially damage all redundant safe shutdown trains or
- A fire suppression system rupture, inadvertent actuation or actuation due to a fire, in one of the selected fire areas, could directly damage all redundant trains (e.g. sprinkler caused flooding of other than the locally affected train) and
- Adequate drainage was provided in areas protected by water suppression systems

b. Findings

No findings were identified.

.5 Alternative Shutdown Capability

a. Inspection Scope

The team reviewed the safe shutdown analysis, operating procedures, piping and instrumentation drawings (P&IDs), electrical drawings, the UFSAR, and other supporting documents for the selected fire areas to verify whether Exelon had properly identified the systems and components necessary to achieve and maintain post-fire safe shutdown conditions. The team evaluated selected systems and components credited by the safe shutdown analysis for reactor pressure control, reactivity control, reactor coolant makeup, decay heat removal, process monitoring, and support system functions to assess the adequacy of Exelon's alternative shutdown methodology. The team also assessed whether alternative post-fire shutdown could be performed both with and without the availability of off-site power. The team walked down selected plant configurations to verify whether they were consistent with the assumptions and descriptions in the safe shutdown and fire hazards analyses. In addition, the team evaluated whether the systems and components credited for use during post-fire safe shutdown would remain free from fire damage.

The team reviewed the training program for licensed and non-licensed operators to verify whether it included alternative shutdown capability. The team also verified whether personnel required for post-fire safe shutdown, using either the normal or alternative shutdown methods, were trained and available on-site at all times, exclusive of those assigned as fire brigade members.

The team reviewed the adequacy of procedures utilized for post-fire shutdown and performed an independent walk through of procedure steps (i.e., a procedure tabletop) to assess the adequacy of implementation and human factors within the procedures. The team also evaluated the time required to perform specific actions to verify whether operators could reasonably be expected to perform those actions within sufficient time to maintain plant parameters within specified limits.

Specific procedures reviewed for normal and alternative post-fire shutdown included:

- ABN-30, Control Room Evacuation, Rev. 25
- FSP-TB11D, Turbine Building Basement Fire Support Procedure, Rev. 8
- FSP-RB1F3, Reactor Building Elev. -19 Foot, Rev. 3

The team reviewed selected operator manual actions to verify whether they had been properly reviewed and approved and whether the actions could be implemented in accordance with plant procedures in the time necessary to support the safe shutdown method for each fire area. The team also reviewed the periodic testing of the alternative shutdown transfer and isolation capability, and instrumentation and control functions, to evaluate whether the tests were adequate to ensure the functionality of the alternative shutdown capability.

b. Findings

No findings were identified.

.6 <u>Circuit Analysis</u>

a. Inspection Scope

The team reviewed Exelon's post-fire safe shutdown analysis for the selected fire areas to determine whether the analysis identified both required and associated electrical circuits and cables for the systems and components necessary to achieve and maintain safe shutdown. The team reviewed electrical schematics and cable routing data for power, control, and instrument cables associated with selected components. Specifically, the team evaluated the selected circuits and cables to determine whether they were (a) adequately protected from potential fire damage, or (b) analyzed to show that fire-induced faults (e.g., hot shorts, open circuits, and shorts to ground) would not prevent safe shutdown, or (c) analyzed to show that potential damage could be mitigated with approved operator manual actions, in order to verify whether fire-induced faults could adversely impact safe shutdown capabilities. The team's evaluations considered credible fire scenarios, cable insulation attributes, cable failure modes, cable routing, and common power supply or electrical bus configurations.

In addition, the team reviewed cable raceway drawings and cable routing databases for a sample of components required for post-fire safe shutdown to determine whether those cables were routed as described in the safe shutdown analysis. The team also reviewed equipment important to safe shutdown, but not part of the success path, to

assess whether Exelon's safe shutdown methodologies were appropriate, conformed to design and licensing basis requirements, and appropriately considered the guidance in NRC Regulatory Guide 1.189, "Fire Protection for Nuclear Power Plants," revision 2.

Cable failure modes were reviewed for the following components:

•	P-15-1B	'B' Control Rod Drive Pump
•	P-5-2	RBCCW Pump
•	V-14-30	Steam Line Valve – Train 'A' (AC)
•	V-14-31	Steam Line Valve – Train 'A' (DC)
•	V-14-34	Condensate Valve – Train 'A' (DC)
•	V-14-36	Condensate Valve – Train 'A' (AC)
•	LI-IG07A	'A' Isolation Condenser Shell Water Level

The team reviewed a sample of circuit breaker and over-current protection coordination studies to determine whether equipment needed for post-fire safe shutdown activities could be adversely affected due to a lack of coordination that could result in a common power supply or common electrical bus concern. The team also evaluated whether coordination studies appropriately considered multiple faults due to fire. In addition, the team reviewed a sample of circuit breaker maintenance records, for components required for safe shutdown, to determine whether the breakers were properly maintained.

The team assessed the transfer of control from the control room to the alternative shutdown locations to determine whether it would be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

No findings were identified.

.7 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the safe shutdown analysis, and associated documents to verify whether an adequate method of communications would be available to plant operators following a fire. Specifically, the team evaluated whether plant telephones, page systems, and portable radios would be available for use and were properly maintained. During this review, the team considered the effects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team inspected selected emergency storage lockers to independently verify whether portable communication equipment was available for the fire brigade and plant operators. In addition, the team evaluated whether radio or phone repeaters, transmitters, and power supplies would be reasonably unaffected by a fire.

b. Findings

No findings were identified.

.8 Emergency Lighting

a. Inspection Scope

The team walked down the emergency lights in the selected fire areas to independently evaluate the placement and coverage areas of the lights. The team assessed whether the lights provided adequate illumination on local equipment and instrumentation required for post-fire safe shutdown, to ensure local operations could be reliably performed under expected post-fire conditions. In addition, emergency light placement was also evaluated to determine adequate illumination of local area access and egress pathways.

The team verified whether the emergency light batteries were rated for at least an eight-hour capacity. The team interviewed system engineers and technical staff to evaluate the adequacy and the performance of the Emergency lighting Units (ELUs). Preventive maintenance procedures, the vendor manual, conductance tests, and battery replacement practices were also reviewed to evaluate whether the ELUs had been maintained in a manner that would ensure reliable operation.

b. Findings

No findings were identified.

.9 Cold Shutdown Repairs

a. Inspection Scope

The team reviewed Exelon's dedicated repair procedures, for components which might be damaged by fire and were required to achieve post-fire cold shutdown. The team evaluated selected cold shutdown repairs to determine whether they could be achieved within the time frames assumed in the design and licensing bases. In addition, the team verified whether the necessary repair equipment, tools, and materials (e.g., pre-cut cables with prepared attachment lugs) were available and accessible on site.

b. Findings

No findings were identified.

.10 <u>Compensatory Measures</u>

a. Inspection Scope

The team verified whether compensatory measures were in place for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems,

or features (e.g., detection and suppression systems and equipment, passive fire barriers, pumps, valves, or electrical devices providing safe shutdown functions or capabilities). The team evaluated whether the short term compensatory measures adequately compensated for the degraded function or feature until appropriate corrective action could be taken and whether Exelon was effective in returning the equipment to service in a reasonable period of time.

The team reviewed selected compensatory measures in the form of operator manual actions for 10 CFR 50 Appendix R, Section III.G.2 areas to evaluate whether those actions could be reasonably accomplished. Specific attributes reviewed included availability of diagnostic instrumentation, expected environmental conditions, minimum staffing, communications, equipment availability, training, procedures, and verification and validation.

b. Findings

No findings were identified.

.11 Review and Documentation of FPP Changes

a. Inspection Scope

The team reviewed recent changes to the approved fire protection program to assess whether those changes had an adverse effect on the ability to safely shutdown.

b. Findings

No findings were identified.

.12 Control of Transient Combustibles and Ignition Sources

a. Inspection Scope

The team reviewed Exelon's procedures and programs for the control of ignition sources and transient combustibles to assess their effectiveness in preventing fires and in controlling combustible loading within limits established in the FHA. A sample of hot work and transient combustible control permits were reviewed to assess the adequacy of Exelon's fire protection program administrative controls. The team performed plant walkdowns to independently verify whether transient combustibles and ignition sources were being properly controlled in accordance with the administrative controls.

b. Findings

No findings were identified.

.13 Large Fires and Explosions Mitigation Strategies

a. Inspection Scope

The team reviewed selected mitigation strategies intended to maintain or restore core cooling, containment integrity, and spent fuel pool cooling capabilities under the circumstances associated with loss of large areas of the plant due to large fires or explosions. The team assessed whether Exelon continued to meet the requirements of license condition 2.C.17. The team reviewed five mitigation strategies:

- Operation of the electro-magnetic relief valves using the portable power supply;
- Manual operation of the isolation condenser for B.5.b events:
- External makeup to the isolation condensers using the portable pump;
- External makeup to the fuel pool using the B.5.b pump and,
- Manually opening containment vent valves in a B.5.b event

The team's review included: a detailed assessment of the procedural guidance; a walkdown of the strategy with a trained operator to assess the feasibility of the strategy and operator familiarity; a review of maintenance and surveillance test records for the strategy equipment; and an independent inventory check of the strategy equipment, materials, and tools to ensure the appropriateness of equipment storage and availability.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems (IP 71152)

a. Inspection Scope

The team reviewed a sample of issue reports and action requests associated with the fire protection program, post-fire safe shutdown issues, and mitigation strategy issues to determine whether Exelon was appropriately identifying, characterizing, and correcting problems associated with these areas and whether the planned or completed corrective actions were appropriate. The condition reports reviewed are listed in the attachment.

b. Findings

No findings were identified.

4OA6 Meetings, including Exit

The team presented the inspection results to Mr. R. Peak, Plant Manager, and other members of Exelon 's staff on April 11, 2014. The team verified that this report does not contain proprietary information.

A-1

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

- N. Onuorah, Fire Protection Engineer
- T. Prosser, Fire Marshall
- T. Trettel, Fire Protection System Engineer
- J. Chrisley, Senior Regulatory Specialist
- D. Brown, ELU System Engineer
- A. Bready, PRA Engineer
- M. Carlson, Fire Protection Safe Shutdown Engineer
- C. Pragman, Exelon Corp. Fire Protection Manager
- Z. Demeke, License Renewal Engineer
- S. Rios, Senior Reactor Operator
- M. Rossi, Licensed Operator Training Instructor
- T. Cannon, Electrical Technician
- R. Wojcik, Electrical Technician

NRC Personnel

- J. Kulp, Senior Resident Inspector
- A. Patel, Resident Inspector
- J. Schoppy, Senior Reactor Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

<u> </u>
None
Opened and Closed
None

None

Closed

Opened

LIST OF DOUCMENTS REVIEWED

Fire Protection Licensing and Design Basis Documents

990-1746 Fire Hazard Analysis Report, Revision 17

SP-1302-06-013, Augmented Quality Fire Protection Specification for Post-Fire Safe Shutdown Requirements at Oyster Creek Generating Station, Rev. 5

Oyster Creek Nuclear Generating Station UFSAR, Section 9.5.1, Fire Protection, Rev. 18

Oyster Creek Nuclear Generating Station UFSAR, Section A.1.20, Fire Water System (Aging Management), Rev. 18

Oyster Creek Nuclear Power Plant Technical Specifications, 8/8/00

OCNGS SER. Fire Protection 3/3/78

OCNGS SER, Fire Protection Supplement No. 2, 11/13/79

OCNGS SER, Fire Protection Supplement No. 3, 8/25/80

Letter Dated March 24, 1986, Exemption from Requirements of Appendix R to 10 CFR Part 50, Section III.G.2 and the Post-Fire Safe Shutdown Capability

Letter Dated June 25, 1990, Exemption from Certain Technical Requirements Contained in Section III.G if Appendix R to 10 CFR Part 50

SP-1302-06-013, Specification for Post-Fire Shutdown Program Requirements at OCNGS, Rev. 4

Calculations, Analysis, and Engineering Evaluations

BR Report 3731-042, Tripping Feedwater Pumps from Control Room for Fire Outside the Control Room Complex, Rev. 2

C-1302-911-E120-001, Fire Area OB-FA-5 Safe Shutdown Analysis, Rev. 0

C-1302-911-E120-004, Fire Zone TB-FZ-11D Safe Shutdown Analysis, Rev. 0

C-1302-911-E120-015, Fire Zone RB-FZ-1F3 Safe Shutdown Analysis, Rev. 0

TDR 612, Appendix R Reactor Water Inventory Study, Rev. 0

AR 673565-37, Evaluation of Operator Manual Actions in 4160 Switchgear Rooms during a Fire in the Turbine Building Basement, performed 06/04/08

748-41, BISCO Report, Three Hour Rated Fire Seal Utilizing BISCO SF-20 Silicone Foam, 4/17/81

748-134, BISCO Test Report, Fire Test Utilizing BISCO SF-20 and SE-Foam, 5/14/84

1042-01, BISCO Test Report, Qualification, Fire and Hose Stream Tests, 2/78

3001-01, Fire Test Configuration for BISCO Block Out Reduction System – Wall Openings with Inner Lagging Attachment Supports, 7/3/79

375645, Biodiesel Blend Fuel Oil Evaluation, 5/21/09

BM-TE-01, Mecatiss MPF-60 Fire Barriers, Rev. 0

C-1302-811-E310-043, OCNGS Fire Protection Hydraulic Model Margin Analysis, Rev. 0

CTP-1198, Fire Endurance Test of 3M Interam Mat Fire Protective Envelopes

(24 in. and 6 in. Cable Trays, 5", 3", 2", and 1" Conduits, 2" Air Drop and a 12" x 12" x 8" Junction Box), 11/9/95

CTP-1199, Fire Endurance Test of 3M Interam Mat Fire Protective Envelopes

(24" Cable Tray, 5" and 1" Conduits, and 2" Air Drop into the Tray Center), 9/18/95

CTP-2004, ASTM E136-94 Behavior of Materials in a Vertical Tube Furnace at 750°C,

3M E-50 Interam Series Mat, 1/17/95x 30" Deep Large Box Design, 11/10/98

CTP-2009, Fire Endurance Test of 3M Interam Fire Wrap Fire Protective Envelope, 5/19/98

CTP-2011, Fire Endurance Test of 3M Interam Fire Wrap 75" Wide x 56" High

CTP-2037, Fire Endurance Test Report of a Heat Transfer Study on Heavy Steel Support Elements protected with 3M E-50 Series E 54A Interam. 10/12/06

C312252, Thermo-Lag Raceway Cable Upgrades Modification, Rev. 0

C312257, Thermo-Lag Raceway Cable Upgrades Modification, Rev. 0

EC ECR A2014648, Evaluate Penetration Seal #435, 10/21/05

ECR A2161442, Evaluation of 3M Interam Installation for Conduit 86-71, 9/7/12

GL 86-10 Evaluation (AR 00732552-02), Sprinkler System #9 Turbine Basement, South

GL 86-10 Evaluation (AR 00732559-02), Sprinkler System #15 Upper Cable Spreading Room

Test Deck #1, UL Report, Raceway Fire Barriers for Aluminum Cable Tray & Aluminum Conduit Systems, 2/5/96

Test Deck #3, UL Report, Raceway Fire Barriers for Aluminum Cable Tray and Aluminum Conduit Systems, 2/7/96

Test Deck #5, UL Report, Raceway Fire Barriers for Aluminum Cable Tray, Aluminum Junction Box and Aluminum Conduit Systems, 2/9/96

06-00797, Appendix R Evaluation of Electrical Protective Device Coordination, Rev. 0

C-1302-911-E120-001, Fire Area/Zone OB-FA-5 Fire Safe Shutdown Analysis, Rev. 2

C-1302-911-E120-004, Fire Area/Zone TB-FZ-11D Fire Safe Shutdown Analysis, Rev. 4

C-1302-911-E120-015, Fire Area/Zone RB-FZ-1F3 Fire Safe Shutdown Analysis, Rev. 3

OC-PRA-21.06, Oyster Creek Nuclear Generating Station Fire Probabilistic Risk Assessment, Summary and Quantification Notebook

OC-PSA-012, Internal Flood Evaluation Summary and Notebook, Oyster Creek Nuclear Generating Station, Rev. 1

6-1302-104-5320-013, Design Of Support 1B for 3" Dia and 4" Dia Lines of Fire Protec. Sys. N.C.S.R. O.C. Stn.

13432.30-105, New CSR Floor Drain Line Sizing, Rev. 0

ECR OC 11-0507 002, Replace Deluge Valve for System #6

ECR OC 13-00350 001, Replace Fire Detectors on RB 95'

Drawings and Wiring Diagrams

7023-56751-43, Auto Depressurization System Connection Diagram, Rev. 7

729E182 Sht. 5, Auto Depressurization System Elementary Diagram, Rev. 4

E1132, CRD Pump Elementary Diagram, Rev. 10

223R0173 Sht. 7, Feedwater System Elementary Diagram, Rev. 15

157B6350 Sht. 184A, Feedwater System Elementary Diagram, Rev. 2

BR 2192, Sht.1, Composite Yard Piping Key Plan, Rev. 12

BR 2192, Sht. 2, Composite Yard Piping Key Plan, Rev. 0

DJP FBS TB-FZ-11D-03, Isometric, Fire Barrier (Mecatiss), Rev. 0

DJP FBS TB-FZ-11D-03, Isometric, Fire Barrier (Mecatiss), Rev. 1

DJP 3E-811-17-1001, Fire Protection Water System, Electrical Elementary Diagram, Fire Diesel Pump #1, Rev. 2

GU 3D-911-01-001, Fire Area Layout Site Plan, Rev. 7

GU 3D-911-02-002, Fire Area Layout Turbine Building Basement Floor Plan, Rev. 5

GU 3D-911-02-006, Fire Area Layout Turbine Building Operating Floor, Rev. 8

GU 3D-911-02-007, Fire Area Layout Turbine Building Sections "A-A" & "B-B", Rev. 3

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GU 3D-911-02-008, Fire Area Layout Turbine Building Sections "C-C" & "D-D", Rev. 2
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GU 3D-911-02-009, Fire Area Layout Turbine Building Sections "E-E" & "F-F", Rev. 3

GU 3D-911-02-011, Fire Area Layout Office Building Third Floor, Rev. 8

GU 3D-911-02-012, Fire Area Layout EDG Vaults, Rev. 7

GU 3D-911-02-013, Fire Area Layout Reactor Building EL. -19'6", -6'-5" & -1'-11", Rev. 3

GU 3D-911-02-030, Fire Area Layout Fresh Water Pump House & Redundant Fire Protection Pump House & Tank, Rev. 3

GU 3D-911-02-039, Fire Area Layout Legend and Notes, Rev. 6

GU 3E-811-17-1000, Fire Protection Water System, Diesel Fire Pump #2, Electrical Elementary Dia., Rev. 5

4092, Turbine Building Floor Plan @ EL. 23'6", 27' & 36', Beam and Slab Schedules, Rev. 10

13432.02-M-03, Redundant Fire Protection System Underground Piping Phase I, Rev. 3

103D5244, Connection Diagram Metal Clad Switchgear Unit A1 Bus 1A, Rev. 24

103D5287, Sht. 2, Metal Clad Switchgear Interconnection Diagram, Rev. 26

104D2511, Sht. 2, Emergency Diesel Generator 1 Connection Diagram, Rev. 7

112C3714, Sht. 4, Connection Diagram for Panel 13R, Rev. 21

3C-733-11-006, 120Vac Vital Power System Panel Schedule IP-4, Rev. 6

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EDMG-SPX5, External Makeup to the Isolation Condensers Using the Portable Pump, Rev. 10

EDMG-SPX8, Operation of the EMRVs using the Portable Power Supply, Rev.10

EDMG-SPX9, Manually Opening Containment Vent Valves in a B.5.b Event, Rev. 4

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101.2, Oyster Creek Site Fire Protection Program, Rev. 70

101.2-3, Oyster Creek Site Fire Protection Program, Technical Requirements, Rev. 70

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(Fire Area/Zone RB-FZ-1F3), Rev. 0

OP-OC-201-008-1019, Oyster Creek Generating Station Pre-Fire Plan,

(Fire Area/Zone OB-FZ-22A), Rev. 0

OP-OC-201-008-1027, Oyster Creek Generating Station Pre-Fire Plan, (Fire Area/Zone TB-FZ-11D), Rev. 5

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14-005, Fire Zone TB-FZ-11D, Heat Exchangers, 3/1/14

14-008, Fire Zone TB-FZ-11G, Turbine Building Mezzanine-Cart, 3/23/13

2014 Transient Combustible Log, 3/27/14

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- 645.4.019, Redundant Fire Protection Water Supply Pump Operability Test, Rev. 20, Completed 2/6/14 & 3/7/14
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- 645.4.036, Fire Pump #2 Operability Test. Rev. 23, Completed 12/31/13 & 3/7/14
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- 645.6.007, Fire Protection Flush, Rev. 21, Completed 10/12/11 & 12/3/12
- 645.6.008, Fire Hose Re-Rack & Blockage Check, Rev. 13, Completed 12/7/11 & 6/2/13
- 645.6.017, Fire Barrier Penetration Surveillance, Rev. 14, Completed 6/9/09 & 6/25/09
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- 645.6.017, Fire Barrier Penetration Surveillance, Rev. 19, Completed 11/28/11 & 2/28/12
- 645.6.023, Fire Suppression Water Underground Flow Test, Rev. 14, Completed 4/15/10 and 8/30/13
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- 645.6.032, Fire Detection System Alarm Circuitry Test for Turbine Building & 4160V Switchgear Room, Rev. 20, Completed 2/28/11
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- 680.4.006, Remote Shutdown Panel Functional Test Train B, Rev. 18, Completed 3/1/12 and 11/18/12
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1582441	1639352*	0527339	00931459
00935317	01181818	01348120	01349405
01406356	01410451	01414079	01466438
01448363	01593476	01598001	01629862
01629864	01632532*	01632800	01633052
01638726*	01644466	01644531	01645106*
01645125*	01645693*	01173474	01176224

01267338 01606938 01639317*	01298893 01632238 01639330*	01302134 01638171* 01644668*	01522732 01638631* AR01500766
Work Orders			
R2225828	R2225962	R2223472	R2218408
R2232003	R2232769	R2232794	R2233916
R2234017	R2209149	C2026742	A2346341
A2347715	A2348891	A2350251	C2026068
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VM-OC-2785 Vendor Technical Manual, Revision 2

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EPRI-TR-106826 Battery Performance Monitoring by Internal Ohmic Measurements - Emergency Lighting Unit Batteries, December 1996 NFPA Fire Protection Handbook, 14th Edition, Section 11, Chapter 5, Test of Water Supplies

Miscellaneous Documents

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Exelon Letter of Agreement, Forked River Volunteer Fire Company, 1/15/14

Exelon Letter of Agreement, Lanoka Harbor Fire Department, 1/15/14

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Shutdown of the Godwin Portable Pump, Rev.2

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OCNGS Fire Protection – Comparison to Standard Review Plan 9.5.1, Appendix A, 12/3/76 PES-P-006, Procurement Standard for Diesel Fuel Oil, Rev. 10

Analysis of Diesel Fuel Oil, 1/16/14

Electrical Cable and Conduit Routing Information

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LIST OF ACRONYMS

ADAMS Agencywide Documents Access and Management System

AC Alternating Current

APCSB [NRC] Auxiliary and Power Conversion Systems Branch

ASME American Society of Mechanical Engineers

ASSS Alternate Safe Shutdown System

BTP Branch Technical Position
CCW Component Cooling Water
CDF Core Damage Frequency
CFR Code of Federal Regulations

CMEB [NRC] Chemical Engineering Branch

CO₂ Carbon Dioxide DC Direct Current

ELU Emergency Lighting Unit

FA Fire Area

FHA Fire Hazards Analysis FPP Fire Protection Program

FW Feedwater FZ Fire Zone

HRR Heat Release Rate
IN [NRC] Information Notice
IP [NRC] Inspection Procedure

IPEEE Individual Plant Examination of External Events

IR [NRC] Inspection Report IR [Exelon] Issue Report

kV kilo-Volt

LOCA Loss of Coolant Accident
MOV Motor Operated Valve
MSO Multiple Spurious Operation
NEI Nuclear Energy Institute

NFPA National Fire Protection Association

NCV Non-Cited Violation

NRC Nuclear Regulatory Commission

OCNGS Oyster Creek Nuclear Generating Station

PARS Publicly Available Records System
P&ID Piping and Instrumentation Drawing
PRA Probabilistic Risk Assessment

RBCCW Reactor Building Closed Cooling Water

RG [NRC] Regulatory Guide

SCBA Self-Contained Breathing Apparatus

SDP [NRC] Significance Determination Process

SER [NRC] Safety Evaluation Report

SSC Structures, Systems and Components

SW Service Water

TRM Technical Requirements Manual UFSAR Updated Final Safety Analysis Report

V Volts

Vac Voltage Alternating Current Vdc Voltage Direct Current