EDO Principal Correspondence Control

FROM: DUE: 04/28/11

EDO CONTROL: G20110221
DOC DT: 03/28/11
FINAL REPLY:

Janice A. Dean
Office of the New York
State Attorney General

TO:

Borchardt, EDO

FOR SIGNATURE OF : ** GRN ** CRC NO:

Leeds, NRR

DESC:

2.206 - Entergy Nuclear Operations, Inc., Fire Safety Regulations at Indian Point Units 1, 2 and 3 (EDATS: OEDO-2011-0226)

ROUTING:

Borchardt
Weber
Virgilio
Ash
Muessle
OGC/GC
Dean, RI
Burns, OGC
Mensah, NRR
Scott, OGC
Wittick, OEDO

DATE: 03/29/11

ASSIGNED TO: CONTACT:

NRR Leeds

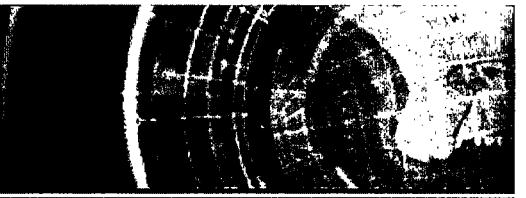
SPECIAL INSTRUCTIONS OR REMARKS:

Template: EDO-001

E-RIDS: EDO-01

EDATS

Electronic Document and Action Tracking System



EDATS Number: OEDO-2011-0226 **Source:** OEDO

General Information

Assigned To: NRR **OEDO Due Date:** 4/28/2011

Other Assignees: **SECY Due Date:** NONE

Subject: 2.206 - Entergy Nuclear Operations, Inc., Fire Safety Regulations at Indian Point Units 1, 2 and 3

Description:

CC Routing: RegionI; OGC; Tanya.mensah@nrc.gov; catherine.scott@nrc.gov

ADAMS Accession Numbers - Incoming: NONE **Response/Package:** NONE

Other Information

Cross Reference Number: G20110221 **Staff Initiated:** NO

Related Task: **Recurring Item:** NO

File Routing: EDATS **Agency Lesson Learned:** NO

OEDO Monthly Report Item: NO

Process Information

Action Type: 2.206 Review **Priority:** Medium

Sensitivity: None

Signature Level: NRR **Urgency:** NO

Approval Level: No Approval Required

OEDO Concurrence: NO

OCM Concurrence: NO

OCA Concurrence: NO

Special Instructions:

Document Information

Originator Name: Janice A. Dean **Date of Incoming:** 3/28/2011

Originating Organization: Office of the New York State Attorney General **Document Received by OEDO Date:** 3/29/2011

Addressee: R. W. Borchardt, EDO **Date Response Requested by Originator:** 4/28/2011

Incoming Task Received: 2.206

Jaegers, Cathy

From: Janice Dean [Janice.Dean@ag.ny.gov]
Sent: Monday, March 28, 2011 12:26 PM
To: Borchardt, Bill
Cc: John Sipos
Subject: New York State Attorney General Petition Pursuant to 10 C.F.R. 2.206
Attachments: 2011 03 28 OAG 2-206 petition re fire safety signed.pdf

Dear Executive Director of Operations Borchardt,

Attached please find an electronic version of the New York Attorney General's Petition Pursuant to 10 C.F.R. 2.206 regarding fire safety at Indian Point which was sent to you via overnight mail today.

Respectfully submitted,

Janice A. Dean
Assistant Attorney General

Janice A. Dean
Assistant Attorney General
Office of the NYS Attorney General
120 Broadway, 26th Floor
New York, New York 10271
(212) 416-8459 voice
(212) 416-6007 fax
janice.dean@ag.ny.gov

EDO --G20110221

UNITED STATES
NUCLEAR REGULATORY COMMISSION

In re:	Dkt Nos. 50-247; 50-286
Petition for Enforcement Filed by the Attorney General of the State of New York	DPR-26; DPR-64
for Enforcement Action Against	
Entergy Nuclear Operations, Inc. (Indian Point Unit, Indian Point Unit 2 Indian Point Unit 3).	March 28, 2011

PETITION PURSUANT TO 10 C.F.R. § 2.206 REQUESTING THAT NRC TAKE ENFORCEMENT ACTION AGAINST ENTERGY NUCLEAR OPERATIONS, INC., AND ITS AFFILIATES FOR VIOLATIONS OF NRC'S 1980 FIRE SAFETY REGULATIONS AT INDIAN POINT UNIT 1, INDIAN POINT UNIT 2, AND INDIAN POINT UNIT 3 AND TO COMPEL ACTUAL COMPLIANCE WITH SUCH REGULATIONS

Office of the Attorney General
for the State of New York
The Capitol
State Street
Albany, New York 12224

Note about Citations and References Contained in this Document

All citations and references mentioned in this document are hereby incorporated by reference. Should NRC Staff have difficulty obtaining any such citations and references, they are requested to contact the Office of the Attorney General for the State of New York for assistance.

TABLE OF CONTENTS

PRELIMINARY STATEMENT 1

INTEREST OF PETITIONER 1

INDIAN POINT'S UNIQUE LOCATION 2

AUTHORITY FOR PETITION 5

REGULATORY FRAMEWORK 5

History of NRC's Fire Safety Standards 6

Fire Safety Regulations for U.S. Nuclear Reactors 7

Systemic Weaknesses Exist in NRC Enforcement of its Fire Protection Regulations 10

Heightened Fire-safety Concerns Post-9/11 14

Earthquakes Can Produce Fires 16

INDIAN POINT VIOLATES NRC FIRE SAFETY REGULATIONS 16

The Part 50, Appendix R Fire Protection Regulations Apply to the Indian Point Facilities 16

Violation of Applicable Federal Fire Safety Regulations 17

CONCLUSION 22

PRELIMINARY STATEMENT

In 1980, the Nuclear Regulatory Commission ("NRC") promulgated specific and prescriptive fire safety regulations for United States nuclear power reactors. 10 C.F.R. § 50.48(b), Appendix R, Section III. Today, thirty years after the regulations became effective, the Indian Point reactors still do not comply with those fire safety regulations. This petition, filed pursuant to 10 C.F.R. § 2.206, requests that NRC actually enforce these important fire safety regulations and require the Indian Point nuclear reactors and related facilities to comply with the plain text of NRC's fire safety regulations.

INTEREST OF PETITIONER

The Attorney General is the chief legal officer for the State of New York and its citizens. As such, the Attorney General has an interest in protecting the State's citizens, to the extent possible, from the health and safety risks posed by the nuclear reactors at Indian Point. The Indian Point site, which was selected before NRC adopted detailed siting regulations, has the highest surrounding population of any operating reactor site in the United States. Each day, more than seventeen million people live, work, or travel within fifty miles of Indian Point.

Like most U.S. reactors, the Indian Point facilities contain miles of electrical cables that control and power mechanical safety systems — including valves, pumps, motors, and gauges — designed to ensure the prompt shut down of the reactors. A fire at Indian Point that damaged those cables could disable the critical safety systems served by the cables and ultimately lead to a major radiation release

that would have a disastrous impact on the lives, health, and property of the people of New York. Indeed, NRC Commissioners have long been concerned about the risks of fire at a nuclear reactor. During a 2008 briefing, NRC staff informed the Commissioners that "[a]pproximately one-half of the core damage risk at operating reactors results from accident sequences that initiate with fire events." NRC, *Briefing on Fire Protection Issues*, at 58-59 (July 17, 2008), ML082030647 (Statement of Jack Grobe, NRC Associate Director, Office of Nuclear Reactor Regulation for Safety Systems and Engineering).[1]

INDIAN POINT'S UNIQUE LOCATION

The Indian Point reactors are located 24 miles north of New York City. As noted above, more than 17 million people live within 50 miles of Indian Point, a population that is projected to grow to 20 million by 2035. According to the Atomic Energy Commission ("AEC"), the NRC, and the Federal Emergency Management Agency ("FEMA"), more people live within 10 and 50 miles of the Indian Point reactors than at any other operating power reactor in the nation. Indeed, no other operating reactor site in the country comes close to Indian Point in terms of surrounding population.[2] Moreover, the communities within the 50-mile radius around Indian Point also contain some of the most densely-developed and expensive real estate in the country, critical natural resources, centers of national and

---

[1] The nine digit "ML" accession numbers refer to documents in NRC's "Electronic Reading Room" that may be located via the agency's search engine known as Agencywide Documents Access and Management System (ADAMS) at www.nrc.gov/reading-rm/adams/web-based.html.

[2] *See, e.g.*, AEC, Population Distribution Around Nuclear Power Plant Sites, Figure 2: Typical Site Population Distribution (5-50 Miles) (April 17, 1973); FEMA, Nuclear Facilities & Population Density Within 10 Miles (June 2005).

international commerce, transportation arteries and hubs, and historic sites. Thus, a severe accident at Indian Point has the potential to affect more people than an accident at any other reactor in the country.

The Indian Point facilities are approximately 35 miles from Times Square, and approximately 38 miles from Wall Street. The U.S. Census Bureau estimated that New York City had a population of 8,214,426 in 2006. The facilities are approximately 3 miles southwest of Peekskill, with a population of 22,441; 5 miles northeast of Haverstraw, with a population of 33,811, 16 miles southeast of Newburgh, with a population of 31,400, and 17 miles northwest of White Plains, with a population of 52,802. Indian Point is also 23 miles northwest of Greenwich, Connecticut, 37 miles west of Bridgeport, Connecticut, and 37-39 miles north northeast of Jersey City and Newark, New Jersey. Portions of four New York counties – Westchester, Rockland, Orange, and Putnam – fall within the inner 10-mile Emergency Planning Zone. Additional population centers in New York, such as New York City's five boroughs and Nassau County, lie within the 50-mile Emergency Planning Zone, as do significant population centers in Connecticut and New Jersey. *See* Declaration of Dr. Bruce Egan, August 28, 2009, ¶ 31 (ML092610916).

In addition, the Indian Point reactors are approximately 5 miles from the New Croton Reservoir in Westchester County, which provides drinking water to New York City. An important regional gas pipe line, that was constructed before

the Consolidated Edison Company ("ConEd") and AEC selected the site to locate nuclear reactors, travels under portions of the Indian Point site.

The Indian Point location was selected as the site of one of the first commercial power reactors in the nation in March 1955 – before the Atomic Energy Commission or the Nuclear Regulatory Commission developed any regulations concerning the siting of such reactors, before passage of the National Environmental Policy Act ("NEPA"), before the White House Council on Environmental Quality ("CEQ") promulgated any regulations implementing NEPA, before the 1989 ruling by the Unites States Court of Appeals for the Third Circuit that told NRC to promulgate regulations to require the examination of the impacts of severe accidents at nuclear reactors, and before NRC promulgated regulations requiring the examination of ways to mitigate the impacts caused by severe accidents in licensing proceedings.[3] Under NRC's current siting regulations, which were not in place when AEC approved the Indian Point site in 1956, it is highly unlikely that the Indian Point reactors could be located today in this densely populated area. *See* 10 C.F.R. § 100.21(h).

[3] *Limerick Ecology Action, Inc. v. NRC*, 869 F.2d 719 (3d Cir. 1989).

AUTHORITY FOR PETITION

10 C.F.R. § 2.206(a) states, in relevant part:

> Any person may file a request to institute a proceeding pursuant to § 2.202 to modify, suspend, or revoke a license, or for such other action as may be proper.

In turn, 10 C.F.R. § 2.202 states:

> Orders.
> (a) The Commission may institute a proceeding to modify, suspend, or revoke a license or to take such other action as may be proper by serving on the licensee or other person subject to the jurisdiction of the Commission an order that will:
> (1) Allege the violations with which the licensee or other person subject to the Commission's jurisdiction is charged, or the potentially hazardous conditions or other facts deemed to be sufficient ground for the proposed action, and specify the action proposed;
> (2) Provide that the licensee or other person must file a written answer to the order under oath or affirmation within twenty (20) days of its date, or such other time as may be specified in the order;
> (3) Inform the licensee or any other person adversely affected by the order of his or her right, within twenty (20) days of the date of the order, or such other time as may be specified in the order, to demand a hearing on all or part of the order, except in a case where the licensee or other person has consented in writing to the order;
> * * *

REGULATORY FRAMEWORK

Entergy Nuclear Operations, Inc. ("ENO"), is the holder of Operating Licenses Nos. DPR-26 and DPR-64, which authorize the operation of the Indian Point Unit 2 nuclear power reactor and Indian Point Unit 3 nuclear power reactor located in Westchester County, New York.[4] ENO also owns Indian Point Unit 1, one of the nation's first reactors that stopped generating power in 1974 because it could not comply with federal safety regulations, but which, according to its owner,

[4] *See generally* NUREG-1350, Volume 20, *2008 - 2009 Information Digest,* at 103 (Aug 2008).

still plays an important role in the operation of Indian Point Unit 2 and Unit 3. Those licenses provide, among other things, that each facility is subject to all rules, regulations, and orders of the NRC now or hereafter in effect.

History of NRC's Fire Safety Standards

In 1975, a major fire broke out at the Browns Ferry nuclear power station in Alabama. The fire, which was caused by a single candle a worker was using to test leaks in a pressurization system, burned for seven hours and caused extensive damage to many safety systems, including 600 safety-related cables and the emergency core cooling system needed for the quick and safe shutdown of the reactor. NRC, *A Short History of Nuclear Regulation, 1946 - 1999*, ch. 3, p. 43 (2000);[5] *see also Fire Protection Program for Nuclear Power Plants Operating Prior to January 1, 1979,* 45 Fed. Reg. 36,082 (May 29, 1980). A subsequent NRC review concluded that improvements in fire prevention and control were essential and made a number of recommendations. *See* NRC Special Review Group, *Recommendations Related to Browns Ferry Fire*, NUREG-0050 (Feb. 1976), ML070520452. One recommendation identified the need to ensure the separate protection of redundant electrical cables that both control and power critical systems necessary to achieve and maintain safe shutdown of a nuclear reactor. *See* NRC Office of the Inspector Gen. Special Inquiry, *NRC's Oversight of Hemyc Fire Barriers,* at 2 (Jan. 22, 2008), ML080250003.

---

[5] This document, which is also known as NUREG/BR-0175 is *available at* http://www.nrc.gov/about-nrc/short-history.html.

NRC subsequently promulgated fire-safety regulations. *See generally* 10 C.F.R. pt. 50, App. R; 45 Fed. Reg. 76,602, 76,608 (Nov. 19, 1980). The new regulations provided that, when redundant trains of cables and equipment for shutting down a reactor were located in the same area less than twenty feet apart (rather than, for example, in two rooms separated by a concrete barrier), the operator was required to install fire protection with at least three hours of fire resistance or, in areas with fire detection and automatic suppression (*e.g.*, sprinkler systems), one hour of fire resistance. 10 C.F.R. pt. 50, App. R, III-(G)(2)(a),(c).

Fire Safety Regulations for U.S. Nuclear Reactors

Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Section 48 (§ 50.48), requires that nuclear power plants that were licensed before January 1, 1979, satisfy the requirements of 10 C.F.R. Part 50, Appendix R, "FIRE PROTECTION PROGRAM FOR NUCLEAR POWER FACILITIES OPERATING PRIOR TO JANUARY 1, 1979," Section III, "SPECIFIC REQUIREMENTS," Subsection G, "*Fire protection of safe shutdown capability.*" Indian Point Unit 1, Indian Point 2, and Indian Point Unit 3 were licensed to operate prior to January 1, 1979. As such, the licensee's Fire Protection Program ("FPP") must provide the established level of protection as intended by Section III.G of 10 C.F.R. Part 50, Appendix R.

In accordance with 10 C.F.R. § 50.48(b), nuclear power plants licensed before January 1, 1979 are required to meet Section III.G, of 10 C.F.R. Part 50, Appendix R. Underscoring the critical importance of the fire safety regulations, the NRC Commissioners included the following language in the text of the regulation:

> When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boiloff.

10 C.F.R. Part 50, Appendix R, Section I. Section III.G.2 requires one of the following means to ensure that a redundant train of safe shutdown cables and equipment is free of fire damage, where they are located in the same fire area outside of primary containment:

a. Separation of cables and equipment by a fire barrier having a 3-hour rating (Appendix R, section III, G, 2, a);

b. Separation of cables and equipment by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards and with fire detectors and an automatic fire suppression system installed in the fire area (Appendix R, section III, G, 2, b); or

c. Enclosure of cables and equipment of one redundant train in a fire barrier having a 1-hour rating and with fire detectors and an automatic fire suppression system installed in the fire area (Appendix R, section III, G, 2, c).

10 C.F.R. Part 50, Appendix R, Paragraph III.G.3 imposes the following requirements:

> Alternative of [*sic*] dedicated shutdown capability and its associated circuits,[1] independent of cables, systems or components in the area, room, zone under consideration should be provided:
>
> a. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section; or
>
> b. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems.

In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

---

[1]Alternative shutdown capability is provided by rerouting, relocating, or modifying existing systems; dedicated shutdown capability is provided by installing new structures and systems for the function of post-fire shutdown.

Appendix R, III, G.3.

Consequently, unless alternative or dedicated shutdown capability is provided or an exemption from paragraph III.G.2 is granted, circuits which could cause maloperation or prevent operation of redundant trains for post-fire safe shutdown and are located in the same fire area must be protected in accordance with paragraph III.G.2.

Additionally, section III, F mandates the installation of fire detection systems in areas that could be affected by a fire.

Automatic fire detection. Automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety related systems or components. These fire detection systems shall be capable of operating with or without offsite power.

Appendix R, III, F.

Systemic Weaknesses Exist in NRC Enforcement of its Fire Protection Regulations

Recent reports by NRC's own Office of the Inspector General ("OIG") and the Government Accountability Office ("GAO") found significant deficiencies in the NRC's exercise of its responsibilities with respect to fire protection issues.

In a January 2008 Special Report, the NRC Inspector General documented NRC's repeated reluctance to address deficiencies in critical "fire barrier" products that are used to ensure electrical cables can withstand fire damage for one hour as required by NRC's fire safety regulations. NRC Office of the Inspector General, Special Inquiry, *NRC's Oversight of Hemyc Fire Barriers*, (Jan. 18, 2008) ML080250003.[6] Specifically, in the late 1980s and early 1990s, after concerns arose about a fire barrier product, known as Thermo-Lag, used in nuclear reactors, NRC and the United States conducted additional testing and determined that the product did not meet its represented durability. In August 1992, an NRC OIG investigation determined that NRC had accepted manufacturer fire qualification test results for Thermo-Lag that were reported to have met required standards, but later were found to have been falsified. *Id.*, at 4. On February 27, 1993, a NRC staff report addressed concerns pertaining to Thermo-Lag performance and testing issues and recommended that Staff reassess NRC reviews done for other fire barrier materials. *Id.* On March 3, 1993, the U.S. House of Representatives Subcommittee on Oversight and Investigations conducted an oversight hearing concerning deficiencies in Thermo-Lag fire barriers during which then NRC Chairman Ivan

[6] The January 2008 NRC OIG Report is available at http://www.nrc.gov/reading-rm/doc-collections/insp-gen/2008/el-05-46.pdf.

Selin admitted that NRC Staff had been slow in responding to questions about Thermo-Lag and promised that Staff would expeditiously review other fire barrier products. *Id.*

As part of its response to the Thermo-Lag problem, NRC developed a Fire Protection Task Action Plan ("FP-TAP") that included a recommendation to assess other fire barrier materials, such as Hemyc, which is used at Indian Point. NRC OIG, *NRC's Oversight of Hemyc Fire Barriers* , at 4-5. In accordance with the FP-TAP, NRC selected the National Institute of Standards and Technology ("NIST") to conduct tests to evaluate the fire endurance characteristics of fire barriers. According to the NRC Inspector General, a March 31, 1994 NIST test report (FR 3994) contained the results of a test performed by NIST on Hemyc on September 17, 1993, and noted that NRC staff were present to observe this test. As noted above, the 1993 NIST report concluded that the Hemyc test sample failed to meet a 1-hour duration period – despite the fact that it claimed to provide 1 hour of protection from fire. *Id.* at 4-5. Far from taking expeditious action as it promised Congress, NRC Staff took no meaningful action on Hemyc for *thirteen years* –until it issued an Information Notice in 2005 after subsequent tests. *Id.* at 5-10 and Figure 3 (time line). This lack of follow-through and commitment by NRC Staff resulted in a deficient and degraded fire protection plan at Indian Point for approximately 20 years.

NRC Staff has not taken any meaningful enforcement action concerning Indian Point's use of the deficient Hemyc product. Instead on, on September 28,

2007, a NRC manager granted Indian Point Unit 3 an exemption from the Part 50, Appendix R, III G 2 c one-hour minimum requirement, so that the facility could continue to use Hemyc that provided only 24 and 30 minutes of protection from fire damage. 72 Fed. Reg. 56798-56801 (Oct 4. 2007).

A June 2008 GAO Report further documents NRC's lax approach to fire safety. *See* GAO Report to Congressional Requesters, *NUCLEAR SAFETY, NRC Oversight of Fire Protection at U.S. Commercial Nuclear Reactor Units Could Be Strengthened*, GAO-08-747 (June 30, 2008).[7]

> NRC has not resolved several long-standing issues that affect the nuclear industry's compliance with existing NRC fire regulations, and NRC lacks a comprehensive database on the status of compliance. These long-standing issues include (1) nuclear units' reliance on manual actions by unit workers to ensure fire safety (for example, a unit worker manually turns a valve to operate a water pump) rather than "passive" measures, such as fire barriers and automatic fire detection and suppression; (2) workers' use of "interim compensatory measures" (primarily fire watches) to ensure fire safety for extended periods of time, rather than making repairs; (3) uncertainty regarding the effectiveness of fire wraps used to protect electrical cables necessary for the safe shutdown of a nuclear unit; and (4) mitigating the impacts of short circuits that can cause simultaneous, or near-simultaneous, malfunctions of safety-related equipment (called "multiple spurious actuations") and hence complicate the safe shutdown of nuclear units. Compounding these issues is that NRC has no centralized database on the use of exemptions from regulations, manual actions, or compensatory measures used for long periods of time that would facilitate the study of compliance trends or help NRC's field inspectors in examining unit compliance.

GAO-08-747, preface.

---

[7] The June 2008 GAO Report is available at http://www.gao.gov/products/GAO-08-747.

The GAO Report also found:

> Nuclear units must plan for short circuits that could cause safety-related equipment to start or malfunction spuriously (instances called spurious actuations). To date, units typically account only for spurious actuations that occur one at a time or in isolation. In 2001, industry tests demonstrated that spurious actuations could occur simultaneously or in rapid succession and that units' current fire protection plans do not account for this possibility.

GAO-08-747, at 6.

In June 2008, NRC reiterated that "[t]he results of [plant examinations] and actual fire events indicate that fire can be a significant contributor to nuclear power plant risk, depending on design and operational conditions." NRC, *Information Sheet: Fire-Induced Electrical Cable Failure Testing* (June 6, 2008), ML081610109. A subsequent briefing to the Commissioners confirmed that "[a]pproximately one-half of the core damage risk at operating reactors results from accident sequences that initiate with fire events." NRC, *Briefing on Fire Protection Issues*, at 58-59, ML082030647 (Statement of Jack Grobe).

The GAO Report found that between January 1995 through December 2007, nuclear unit operators reported 125 fires at 54 sites to NRC. GAO-08-747 at 4. Of these 125 fires, operators categorized 13 as "alerts"[8] *Id.* at 11-12. As reflected in the following table, of the 9 "alert" fires for which a cause was identified, 6 were caused by electrical fires:

---

[8] An "Alert" describes a situation that involves an actual or potential substantial degradation of the level of safety of the plant, with any resulting radiological releases expected to be limited to small fractions based on guidance from the U.S. Environmental Protection Agency. GAO-08-747 at 12.

Table 1: Characteristics of Fires Rising to "Alert" Status at U.S. Commercial Nuclear Units, 1995-2007

Year	Unit	State	Location within unit	Cause
2007	Arkansas Nuclear One, Unit 2	Arkansas	Auxiliary building	Electrical
2007	Columbia Generating Station	Washington	Equipment room	Electrical
2007	Callaway Nuclear Plant	Missouri	Control building	Electrical
2006	Arkansas Nuclear One, Unit 2	Arkansas	Breaker compartment	Electrical
2006	Perry Nuclear Power Plant	Ohio	Ventilation fan	Bearing
2003	Palisades Power Plant	Michigan	Cable spreading room	Electrical
2002	D.C. Cook Nuclear Plant	Michigan	Switchyard	Electrical
2001	Cooper Nuclear Station	Nebraska	Startup transformer	Unreported
2001	Fermi Unit 2	Michigan	Emergency diesel generator	Bearing
2000	Farley Unit 2	Alabama	Service water pump motor	Unreported
1998	Fermi Unit 2	Michigan	Emergency diesel generator	Unreported
1997	Limerick Generating Station Unit 2	Pennsylvania	Emergency diesel generator exhaust	Unreported
1996	Clinton Power Station	Illinois	Pump turbine insulation	Oil-Soaked Insulation

Source: GAO analysis of NRC data.

GAO-08-747, at 12, Table 1.

Heightened Fire-safety Concerns Post-9/11

Fire safety at nuclear power plants has taken on greater importance since September 11, 2001, when terrorists hijacked four jet airliners and crashed three of them into their intended targets, causing explosions and large, long-lasting fires. Those explosions and fires destroyed a portion of the Pentagon in northern Virginia and caused the collapse of the World Trade Center towers in New York City. *See* Nat'l Inst. of Standards & Tech., *Final Report on the Collapse of the World Trade Center Towers*, 175-76 (2005) (concluding that long-lasting fires were a significant factor in the collapse of the Twin Towers). Minutes before hitting the World Trade Center, two of the hijacked planes flew near or over the Indian Point reactors, located on the Hudson River twenty-four miles north of New York City. *See* Nat'l Comm'n on Terrorist Attacks Upon the U.S., *The 9/11 Commission Report* (2004), at 32 (map of flight paths of AA11 & UA175). The 9/11 Commission's report found

that Khalid Sheikh Mohammad, the mastermind of the 9/11 attacks, originally planned to hijack additional aircraft to crash into targets on both coasts, including nuclear power plants. *Id.* at 154. As late as July 2001, the terrorists were considering attacking a specific nuclear facility in New York, which one of the pilots "had seen during familiarization flights near New York." *Id.* at 245. This facility was most likely Indian Point. Even if a terrorist attack were not successful in destroying one of the reactors, it could trigger a fire that could then lead to a major release of radioactivity.

Following 9/11, NRC amended all reactor licenses, including the operating licenses for Indian point Unit 2 and Indian Point Unit 3, "to address the generalized high-level threat environment in a consistent manner throughout the nuclear reactor community." *See generally* 67 Fed. Reg. 9,792 (Mar. 4, 2002). The amended licenses required the identification of mitigative measures to reduce the consequences of explosions or fire at nuclear plants, "including those that an aircraft impact might create." *See* Letter from J. Boska, NRC, to M. Balduzzi, Entergy Nuclear Operations (July 11, 2007), ML071920023; *see, e.g.,* NRC, *IP Nuclear Generating Unit 3 Operating License,* Amendment No. 203, at 8 (July 11, 2007), ML052720273. However, the license amendments did not specifically compel the Indian Point facilities to address their shortcomings with the 10 C.F.R. § 50.48, Appendix R, Section III fire safety regulations.

Earthquakes Can Produce Fires

A report by Sandia National Laboratories acknowledged that an earthquake involving a nuclear power reactor facility could result in fires. *Fire Risk Scoping Study: Investigation of Nuclear Power Plant Fire Risk, Including Previously Unaddressed Issues*, NURE/CR-5088, SAND88-0177 (1989).

> There are a number of potential interactions that one can envision that could cause an interaction between earthquakes and fire. For example, earthquakes could cause fire initiators by pulling cables loose due to vibration or shifting of [electrical] cabinets. . . .
>
> Gases can be released from the hydrogen system, and there is always no shortage of sparks that could ignite flammable gases.

NUREG/CR-5088, at 60.

INDIAN POINT VIOLATES NRC FIRE SAFETY REGULATIONS

NRC should compel Indian Point to comply with the specific requirements set forth in NRC's long-standing fire protection regulations contained in 10 C.F.R. Part 50, Appendix R, Section III, F and G.

The Part 50, Appendix R Fire Protection Regulations Apply to the Indian Point Facilities

Indian Point Unit 1, Unit 2 and Unit 3 are required to comply with the fire safety requirements set forth in 10 C.F.R. § 50.48, Appendix R Section III because those three power reactors were licensed before 1979. According to AEC and NRC documents, ConEd received the following construction permits and operation licenses on the following dates:

	CONSTRUCTION PERMIT ISSUED	OPERATING LICENSE ISSUED
IP Unit 1	May 4, 1956	March 26, 1962
IP Unit 2	October 14, 1966	September 28, 1973
IP Unit 3	August 13, 1969	December 12, 1975

Source: Federal Register and NRC Information Digest.[9]

In addition, the requirements imposed by the fire safety regulations set forth in 10 C.F.R. § 50.48, Appendix R were automatically incorporated into operating licenses for commercial nuclear power reactors through 42 U.S.C. § 2237 (which provides "The terms and conditions of all licenses shall be subject to amendment, revision, or modification, by reason of amendments of this chapter or by reason of rules and regulations issued in accordance with the terms of this chapter") as well as 10 C.F.R. § 50.54(h) (which provides "The license shall be subject to the provisions of the [Atomic Energy] Act now or hereafter in effect and to all rules, regulations, and orders of the Commission.").

Violation of Applicable Federal Fire Safety Regulations

NRC's Appendix R fire safety regulations require that nuclear units protect at least one redundant system—or "train"—of equipment and electrical cables required for a unit's safe shutdown through the use of fire protection measures, such as 1-hour or 3-hour fire barriers, 20 feet of separation between redundant

[9] *See* 21 Fed. Reg. 3,085 (May 9, 1956); 31 Fed. Reg. 13,616-17 (Oct. 21, 1966); 34 Fed. Reg. 13,437 (Aug. 20, 1969); NUREG-1350, Volume 20, *2008 - 2009 Information Digest*, at 103, 113 (Aug. 2008).

systems, and automatic fire detection and suppression systems. Instead of complying with the plain text of the Appendix R regulations, certain nuclear reactor operators informally resorted to manual work arounds for the strict safety requirements set forth in the regulations referred to as "operator manual actions" . Operator manual actions (or "OMAs") refer to discrete physical tasks that a worker performs - - sometimes at a location outside of the main control room -- on a specific piece of safety equipment, (for example, a unit worker manually turns a valve to operate a water pump) rather than "passive" measures, such as fire barriers and automatic fire detection and suppression. However, during emergencies at nuclear plants, trained staff may not have access to key locations or, as in the case in the ongoing emergency in Japan at the Fukushima reactors, may be forced to evacuate the facility. OMAs depend, by definition, on the presence of skilled staff to control the spread of fire. In contrast, the regulations promulgated to ensure "fire protection of safe shutdown capability" require passive, self-actuating systems that are part of the plant's physical infrastructure, and do not rely on human intervention. *The regulations do not authorize operator manual actions as a means of protecting a redundant system from fire.*

As of today, safety related cable at numerous locations within Indian Point do not comply with the text of NRC's fire safety regulations, 10 C.F.R. § 50.48, Appendix R. Indeed, ENO acknowledges that it would need to resort to unapproved operator manual actions to shut down Indian Point Unit 2 and Unit 3 if safety related electrical cables were damaged. March 6, 2009, ENO Communications NL-

09-031 (IP2 Table 1), NL-09-032 (IP3 Table 1). NRC Staff's position is that crediting of operator manual actions was not explicitly or implicitly permitted by the regulation, and that any crediting of such manual actions for compliance with III.G.2, without prior review and approval by the Staff in the form of an exemption, is unacceptable and noncompliant with the Appendix R fire safety regulations. Simply put, Indian Point Unit 2 and Unit 3 violate the NRC fire safety regulations. The explicit requirements of 10 C.F.R. Part 50, Appendix R, Section III.G.2 mandate that the redundant cable trains must be separated and protected using one of the options given by Section III.G.2.

Based upon ENO's own statements, it appears that approximately 140 different fire zones in Indian Point Unit 2 would resort to operator manual actions to bring about a shutdown should safety related cables become damaged by a fire. The story is similar at Unit 3, as it appears that that approximately 135 different fire zones in Indian Point Unit 3 would resort to operator manual actions to bring about a shutdown should safety related cables become damaged by a fire. Stated differently, it appears that up to 275 separate fire zones at both Indian Point Unit 2 and Unit 3 do not comply with the minimum requirements established in the 10 C.F.R. § 50.48, Appendix R, Section III.G.2. These fire zones that would need employees to take manual actions are identified in tables from ENO submissions to NRC and are attached to this petition. ENO Communications NL-09-031 (Table 1), NL-09-032 (Table 1).

It is also noteworthy that many of the operator manual actions that ENO would resort to involve more than one discrete task by the employee to engage and/or operate a specific safety system. Thus, in several instances, multiple discrete employee tasks that are needed to bring about safe shutdown may be grouped together into what ENO may label or count as a single operator manual action.

Moreover, ENO's submissions make clear that several Indian Point fire zones lack fire detection and/or fixed fire suppression systems. *See, e.g.*, ENO communication NL-09-031, IP2 Table 1, p. 23 of 34; ENO communication NL-09-032, IP3 Table 1, p. 18 of 42.

Although ENO has asked NRC Staff to exempt numerous locations within the Indian Point facilities from the binding fire safety regulations, NRC should not approve that exemption request. Such a raft of exemptions would be inconsistent with NRC's commitment that exemptions not swallow a regulation. In the administrative proceedings for the Shoreham reactor, the NRC Commissioners held that the exemption authority in 10 C.F.R. § 50.12 is "extraordinary" and "available . . . only in the presence of exceptional circumstances." *Long Island Lighting Co.* (Shoreham Nuclear Power Station, Unit 1), CLI-84-8, 19 NRC 1154, 1156 n.3 (May 16, 1984); *see also United States Department of Energy* (Clinch River Breeder Reactor Plant), CLI-83-1, 17 NRC 1, 4-6 (Jan. 5, 1983) (and cases cited therein). In late 1985, when NRC promulgated the present version of the § 50.12, it made clear that exemptions should not be widespread. 50 Fed. Reg. 50,764, 50,765 (Dec. 12,

1985) ("the Commission will exercise its discretion to limit exemptions in any particular area if the 'exceptions' to the rule threaten to erode the rule itself."). ENO's pending exemption request ignores this NRC precedent.

ENO's 2009 request for wholesale exemptions from the Appendix R fire safety requirements demonstrate that it has not seriously explored how it could come into actual compliance with the federal regulations contained in 10 C.F.R. § 50.48, Appendix R, Section III.G.2. ENO has not informed the State (or apparently NRC) about any efforts to come into compliance or any credible analysis about the steps to come into such compliance.

CONCLUSION

For the above reasons, the Attorney General requests NRC to immediately issue an order:

(1) identifying the violations of C.F.R. § 50.48, Appendix R, Paragraph III, F and G that exist as of the date of this petition at Indian Point Unit 1, Indian Point Unit 2, and Indian Point Unit 3;

(2) compelling ENO and its affiliates to comply on or before September 20, 2011 with the requirements contained in 10 C.F.R. § 50.48, Appendix R, Paragraph III, F and G for all the fire zones in Indian Point Unit 2 and Indian Point Unit 3 and any Indian Point Unit 1 fire zone or system, structure, or component relied on by Indian Point Unit 2 or Indian Point Unit 3;

(3) convene an evidentiary hearing before the Commissioners to adjudicate the violations by ENO and its affiliates of C.F.R. § 50.48, Appendix R, Paragraph III, F and G at Indian Point Unit 1, Indian Point Unit 2, and Indian Point Unit 3.

Respectfully submitted,

Eric T. Schneiderman
Attorney General
State of New York

ATTACHMENT

INDIAN POINT UNIT 2

LIST OF FIRE ZONES THAT RELY ON
OPERATOR MANUAL ACTIONS

TABLE 1
FROM ENO COMMUNICATION NL-09-031

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
C	23	25	Low	Ionization	Area Wide	None	N/A	CO_2	Hydrant	900
F	5A	108	Moderate	None	N/A	None	N/A	None	CO_2 Hose Station	7A
F	6	38	Low	Ionization	Area Wide	None	N/A	None	CO_2 Hose Station	7A
F	7	38	Low	Ionization	Area Wide	None	N/A	None	CO_2 Hose Station	7A
F	7A	58	Low	Ionization	Area Wide	None	N/A	CO_2 Wheeled Dry Chem Hose Stations	--	--
F	8	38	Low	Ionization	Area Wide	None	N/A	None	CO_2 Wheeled Dry Chem Hose Station	7A
F	8A	31	Low	None	N/A	None	N/A	None	CO_2 Hose Station	7A
F	9A	31	Low	None	N/A	None	N/A	None	CO_2 Hose Station	7A
F	10A	7	Low	None	N/A	None	N/A	None	CO_2 Hose Station	7A
F	11A	86	Moderate	None	N/A	None	N/A	None	CO_2 Hose Station	7A
F	20A	4	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	21A	6	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	22A	9	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	23A	8	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
F	24A	45	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	25A	22	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	26A	3	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	27A	91	Moderate	Ionization	Area Wide	None	N/A	CO_2 Hose Stations	--	--
F	28A	6	Low	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	33A	107	Moderate	None	N/A	None	N/A	None	CO_2 Hose Station	27A
F	59A	353	High	Thermistor Ionization	Charcoal Filters Outside Charcoal Filter Enclosure	Deluge Water Spray	PAB and Containment Ventilation Charcoal Filters	CO_2	--	--
H	70A	25	Low	Ionization	RCPs 23&24	None	N/A	None	CO_2 Hose Station	76A 77A
H	71A	33	Low	Ionization	RCPs 21&22	None	N/A	None	CO_2 Hose Station	76A 72A
H	72A	24	Low	None	N/A	None	N/A	CO_2 Hose Station	--	--
H	75A	79	Moderate	Ionization	N/A	None	N/A	None	CO_2 Hose Station	72A
H	76A	101	Moderate	None	N/A	None	N/A	CO_2	Hose Station	77A
H	77A	116	Moderate	None	N/A	None	N/A	CO_2 Hose Station	--	--
H	78A	10	Low	None	N/A	None	N/A	None	CO_2 Hose Station	76A 72A

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
H	80A	19	Low	None	N/A	None	N/A	CO_2	Hose Station	72A
H	81A	16	Low	None	N/A	None	N/A	CO_2	Hose Station	72A
H	82A	18	Low	None	N/A	None	N/A	CO_2	Hose Station	77A
H	83A	19	Low	None	N/A	None	N/A	CO_2	Hose Station	77A
H	84A	20	Low	None	N/A	None	N/A	CO_2	Hose Station	72A
H	85A	60	Low	None	N/A	None	N/A	CO_2	Hose Station	72A
H	86A	1	Low	None	N/A	None	N/A	None	CO_2 Hose Station	87A
H	87A	23	Low	None	N/A	None	N/A	CO_2 Hose Stations	--	--
J	16	3,051	High	Thermal	Clean and Dirty Oil Storage Tanks	Automatic Foam Spray	Clean and Dirty Oil Storage Tanks	None	CO_2 Hose Stations (foam and water)	47A
J	17	1,143	High	Thermal	Turbine Lube Oil Reservoir	Automatic Foam Spray	Turbine Lube Oil Reservoir	None	CO_2 Hose Stations (foam and water)	47A
J	18	363	High	Thermal	Turbine Lube Oil Conditioner	Automatic Foam Spray	Turbine Lube Oil Conditioner	None	CO_2 Hose Stations (foam and water)	47A
J	19	18	Low	None	N/A	None	N/A	None	CO_2 Hose Stations (foam and water)	44A 46A
J	20	572	High	Thermal	Boiler Feed Pump Oil Console and Accumulators	Automatic Foam Spray	Boiler Feed Pump Oil Console and Accumulators	None	CO_2 Hose Stations (foam and water)	44A 46A
J	21	22	Low	Thermal	Hydrogen Seal Oil Unit	Automatic Foam Spray	Hydrogen Seal Oil Unit	None	CO_2 Foam Hose Station	44A 43A

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	25	48	Low	None	N/A	None	N/A	None	CO_2 Hose Station	270 201
J	39A	132	Moderate	None	N/A	Automatic Wet Pipe Sprinkler	Computer Office	CO_2 Hose Station	--	--
J	40A	81	Moderate	None	N/A	None	N/A	CO_2 Dry Chemical Hose Station	--	--
J	41A	46	Low	None	N/A	None	N/A	CO_2 Wheeled Dry Chem Hose Station	--	--
J	42A	2	Low	None	N/A	None	N/A	CO_2 Dry Chemical Hose Station	--	--
J	43A	61	Low	None	N/A	None	N/A	CO_2 Wheeled Dry Chem Hose Stations (foam & water)	--	--
J	44A	30	Low	None	N/A	None	N/A	CO_2 Hose Station	--	--
J	45A	15	Low	None	N/A	Automatic Foam Spray	Boiler Feed Pump Oil Console	CO_2 Hose Station (foam & water)	--	--
J	46A	42	Low	None	N/A	None	N/A	Hose Station	CO_2	47A
J	47A	10	Low	None	N/A	None	N/A	CO_2 Foam Hose Stations	--	--
J	48A	11	Low	None	N/A	None	N/A	CO_2 Hose Stations (water & foam)	--	--

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	49A	2	Low	None	N/A	None	N/A	None	CO_2 Hose Station	39A
J	50A	44	Low	None	N/A	None	N/A	CO_2 Hose Stations	--	--
J	51A	1	Low	None	N/A	None	N/A	CO_2	Hose Station	50A
J	52A	149	Moderate	None	N/A	None	N/A	CO_2 Wheeled Dry Chem Hose Station	--	--
J	53A	75	Low	None	N/A	None	N/A	CO_2	Hose Station	52A
J	64A	<1	Low	None	N/A	None	N/A	None	Hydrants	900
J	115	74	Low	Ionization	CCR Panels, Exhaust Ducts	None	N/A	CO_2 Pressurized Water	Hose Stations	141 201
J	130	1	Low	None	N/A	None	N/A	None	CO_2 Hose Station	141 540
J	140	3	Low	Ionization	Return Air Ducts	None	N/A	CO_2	Hose Stations	141 201
J	141	1	Low	None	N/A	None	N/A	Hose Stations	--	--
J	150	2	Low	None	N/A	None	N/A	Pressurized Water	Hose Station	141
J	160	15	Low	Ionization	Cabinets / Ceiling	None	N/A	CO_2	Hose Station	141
J	170	24	Low	Ionization	Cabinets / Ceiling	None	N/A	CO_2	Hose Stations	141 201
J	171	39	Low	Ionization	N/A	None	N/A	None	CO_2 Hose Stations	170 141 201
J	180	5	Low	None	N/A	None	N/A	CO_2 Dry Chemical	Hose Stations	141 201
J	200	52	Low	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	201

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	201	<1	Low	None	N/A	None	N/A	Hose Stations	--	--
J	210	53	Low	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	201
J	220	102	Moderate	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	201
J	230	56	Low	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	201
J	240	87	Moderate	None	N/A	Automatic Wet Pipe Sprinkler	Throughout Office Areas	CO_2 Pressurized Water Dry Chemical	Hose Station	201 244
J	241	20	Low	Thermistor	Charcoal Filter Enclosure	Manual Closed Head Water Spray	Charcoal Filter Enclosure	CO_2 Dry Chemical	Hose Station	244
J	242	11	Low	None	N/A	None	N/A	Pressurized Water	Hose Station	201
J	243	1	Low	None	N/A	None	N/A	Dry Chemical Hose Station	--	--
J	244	1	Low	None	N/A	None	N/A	Hose Stations	--	--

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	250	66	Low	Ionization	Office Areas	Automatic Preaction Sprinkler Automatic Wet Pipe Sprinkler	Computer Room, Repair and Parts Rooms #1 & #2, and Tape Library TSC Office Area, NRC Office Area, Central Files Work Area	CO_2 Pressurized Water	Hose Stations	201 243 244
J	251	14	Low	None	N/A	Automatic Wet Pipe Sprinkler	Radwaste Office Area	CO_2 Pressurized Water Dry Chemical	Hose Stations	201 243 244
J	252	112	Moderate	None	N/A	Automatic Wet Pipe Sprinkler	Area Wide	Dry Chemical	Hose Station	243
J	253	1,420	High	None	N/A	Automatic Wet Pipe Sprinkler	Area Wide	Dry Chemical	Hose Station	243
J	254	59	Low	None	N/A	None	N/A	Dry Chemical	Hose Station	243
J	260	<1	Low	None	N/A	None	N/A	None	CO_2 Hose Station	160 141 243
J	270	10	Low	None	N/A	None	N/A	CO_2 Dry Chemical	Hose Stations	201 243 244
J	271	17	Low	None	N/A	None	N/A	None	Dry Chemical Hose Station	270 201

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	272	47	Low	Ionization / Thermal	UPS room	Automatic Preaction Sprinkler	UPS room	CO_2	Hose Station	243
J	273	47	Low	None	N/A	None	N/A	CO_2	Hose Stations	201 244
J	274	42	Low	None	N/A	None	N/A	CO_2 Dry Chemical	Hose Station	244
J	275	91	Moderate	None	N/A	None	N/A	Dry Chemical	Hose Station	243
J	280	523	High	None	N/A	Automatic Wet Pipe Sprinkler	Former Oil Storage Room and Tool Room	CO_2 Dry Chemical Pressurized Water	Hose Stations	201 243 244
J	350	15	Low	None	N/A	Automatic Wet Pipe Sprinkler	Work Control Center and One Stop Shop	Pressurized Water Hose Station	--	--
J	360	21	Low	None	N/A	Automatic Wet Pipe Sprinkler	I&C M&TE Office	CO_2 Dry Chemical Hose Station	--	--
J	361	28	Low	None	N/A	None	N/A	CO_2 Dry Chemical	Hose Stations	244 453
J	362	3	Low	None	N/A	None	N/A	None	Dry Chemical Hose Station	360 453
J	370	10	Low	None	N/A	Automatic Wet Pipe Sprinkler	Unit 1 Turbine Building El. 15'	CO_2 Dry Chemical Pressurized Water Hose Station	--	--
J	371	9	Low	None	N/A	None	N/A	CO_2	Hose Station	244

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	372	81	Moderate	None	N/A	Automatic Wet Pipe Sprinkler	Area Wide (including within pallet storage racks)	CO_2 Dry Chemical Pressurized Water Hose Station	--	--
J	380	4	Low	None	N/A	Automatic Wet Pipe Sprinkler	North Portion *of the fire zone* (partial)	CO_2 Dry Chemical Hose Stations	--	--
J	381	18	Low	None	N/A	Automatic Wet Pipe Sprinkler	Area Wide	None	CO_2 Hose Station	380
J	450	27	Low	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	452
J	451	6	Low	None	N/A	None	N/A	CO_2	Hose Station	452
J	452	1	Low	None	N/A	None	N/A	Hose Stations	--	--
J	453	1	Low	None	N/A	None	N/A	Hose Stations	--	--
J	460	68	Low	None	N/A	None	N/A	CO_2 Dry Chemical Pressurized Water	Hose Stations	452 453
J	470	7	Low	None	N/A	None	N/A	CO_2 Dry Chemical Pressurized Water	Hose Stations	452 453
J	480	39	Low	Ionization	Telephone Equipment Room and Cafeteria	Automatic Wet Pipe Sprinkler Dry Chemical Exting. System	Kitchen Area Kitchen Hood	CO_2 Dry Chemical Pressurized Water	Hose Stations	452 453
J	500	<1	Low	None	N/A	None	N/A	CO_2	Hose Station	452

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	510	4	Low	None	N/A	None	N/A	CO_2	Hose Station	452
J	520	19	Low	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	452
J	530	2	Low	None	N/A	None	N/A	Hose Stations	--	--
J	540	34	Low	None	N/A	None	N/A	CO_2 Dry Chemical Pressurized Water	Hose Station	452
J	550	<1	Low	Ionization	Area Wide	None	N/A	CO_2	Hose Station	452
J	560	3	Low	None	N/A	None	N/A	CO_2 Pressurized Water	Hose Station	452
J	600	1,902	High	None	N/A	None	N/A	None	Hydrants	900
J	610	8	Low	Thermal	Hydrogen Storage Bank	Automatic Wet Pipe Sprinkler Deluge Water Spray	Maintenance Library Hydrogen Storage Bank	CO_2 Dry Chemical Pressurized Water	Hydrants	900
J	700	62	Low	None	N/A	None	N/A	CO_2 Hose Station	Hose Stations	Stairwells 8 & 9
J	710	337	High	None	N/A	Automatic Wet Pipe Sprinkler	Oil & Mixed Waste Storage Room	None	CO_2 Hose Station	Stairwell 9
J	720	2	Low	None	N/A	None	N/A	CO_2	Hose Stations	Stairwells 8 & 9
J	730	51	Low	None	N/A	None	N/A	CO_2 Hose Station	--	--
J	740	<1	Low	None	N/A	None	N/A	None	CO_2 Hose Stations	Stairwells 8 & 9

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
J	750	15	Low	Ionization	CCR and corridor outside Fire Zone 710	None	N/A	CO_2 Hose Station Wheeled Dry Chem	--	--
J	760	<1	Low	None	N/A	None	N/A	None	CO_2 Hose Stations	Stairwells 8 & 9
J	770	1	Low	None	N/A	None	N/A	None	CO_2 Hose Stations	Stairwells 8 & 9
J	780	10	Low	None	N/A	None	N/A	CO_2 Dry Chemical		
J	790	25	Low	None	N/A	None	N/A	CO_2 Dry Chemical Hose Station		
J	800	<1	Low	Flame	Interim Onsite Storage Facility	None	N/A	None	Hose Stations	Stairwell 1 & FHB
J	910	<1	Low	Thermistor	Utility Tunnel	None	N/A	CO_2 Hose Stations	--	--
K	60A	1	Low	None	N/A	None	N/A	CO_2	Hydrants	900
K	61A	1	Low	None	N/A	None	N/A	None	CO_2 Hydrant	65A 900
K	62A	1	Low	None	N/A	None	N/A	None	CO_2 Hydrant	23 900
K	65A	5	Low	None	N/A	None	N/A	CO_2	Hydrants Hose Station	900 52A
P	1	2	Low	Ionization	Area Wide	None	N/A	None	CO_2 Hose Station	8 7A
YD	55	<1	Low	None	N/A	None	N/A	CO_2	--	--
YD	55A	Note 2		Thermistor	21 Main Transformer	Deluge Water Spray	21 Main Transformer	None	Hydrants	900

Table 1
IP2 Fire Hazards Analysis Summary
/+For Appendix R, Paragraph III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Equiv. Fire Severity (min)	Category	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
YD	56A	Note 2		Thermistor	22 Main Transformer	Deluge Water Spray	22 Main Transformer	None	Hydrants	900
YD	57A	Note 2		Thermistor	Unit Auxiliary Transformer	Deluge Water Spray	Unit Auxiliary Transformer	None	Hydrants	900
YD	58A	Note 2		Thermistor	Station Auxiliary Transformer	Deluge Water Spray	Station Auxiliary Transformer	None	Hydrants	900
YD	900	Note 2		Thermistor	Carbon Filter on CCR Ventilation Room roof	Deluge Water Spray	Spare Transformer	Hydrants Hose Houses	pre-staged 1½" jumper fire hose and CCR charcoal filter deluge inlet stop valve FP-1105 at the hose station on elevation 72'-0"	141
YD	920	Note 2		None	N/A	Wet Pipe Sprinkler	Area Wide	CO_2 Dry Chemical	Hydrants Hose Houses	900

NOTES

1. In this column, CO_2, Dry Chemical, Wheeled Dry Chem[ical], Pressurized Water, and Halon are types of Extinguishers – there is at least one in the zone when listed for a zone. Extinguishers in Area H are stored outside Containment during normal operation. Hose stations are water unless otherwise noted.

2. Combustible loading is not computed for the outdoor (YD) areas given the absence of compartmentalization and the recognition that heat and products of combustion from a fire in any of these zones will be dissipated to the outdoor environment, with the principal challenge to adjacent SSCs resulting from radiant heat flux from the postulated fire scenario.

ATTACHMENT

INDIAN POINT UNIT 3

LIST OF FIRE ZONES THAT RELY ON
OPERATOR MANUAL ACTIONS

TABLE 1
FROM ENO COMMUNICATION NL-09-032

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
AFW-6	23	Low	19.0	Ionization	Area Wide	Automatic Wet Pipe Sprinklers	Area Wide	CO_2 Dry Chemical	--	--
ETN-4	7A	Low	59.0	Thermal/ Ionization	Cable Trays/ Area Wide	Automatic Preaction Water Spray	Cable Trays Only	CO_2 Dry Chemical	--	--
ETN-4	60A	Low	68.0	Thermal/ Ionization	Cable Trays/ Area Wide	Automatic Preaction Water Spray	Cable Trays Only	CO_2 Dry Chemical	--	--
ETN-4	73	Low	11.0	None	N/A	None	N/A	CO_2		
ETN-4	73A	Moderate	96.0	Thermal/ Ionization	Cable Trays/ Area Wide	Automatic Preaction Water Spray	Cable Trays Only	CO_2 Dry Chemical	--	--
ETN-4	74A	Low	28.0	Thermal/ Ionization	Cable Trays/ Area Wide	Automatic Preaction Water Spray	Cable Trays Only	CO_2 Dry Chemical	--	--
PAB-2	1	Low	8.0	Ionization	Area Wide	None	N/A	CO_2	--	--
PAB-2	1A	Low	9.0	Ionization	Area Wide	None	N/A	None	CO_2	1
PAB-2	2	Low	35.0	Ionization	Area Wide	None	N/A	Hose Station CO_2	--	--
PAB-2	2A	Low	15.0	Ionization	Area Wide	None	N/A	Dry Chemical	--	--
PAB-2	3	Low	69.0	Ultraviolet	Area Wide	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	3A	Low	<1.0	None	N/A	None	N/A	None	CO_2 Hose Station	2
PAB-2	4	Low	74.0	Ultraviolet	Area Wide	None	N/A	None	CO_2 Hose Station	12A 14A

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
PAB-2	4A	Moderate	87.0	None	N/A	None	N/A	Hose Station Dry Chemical	--	--
PAB-2	5	Moderate	85.0	Ionization	Area Wide	None	N/A	None	Hose Stations CO_2	17A A
PAB-2	5A	Low	6.0	None	N/A	None	N/A	None	None	--
PAB-2	6	Moderate	84.0	Ionization	Area Wide	None	N/A	None	Hose Stations CO_2	17A
PAB-2	6A	Moderate	75.0	None	N/A	None	N/A	None	Hose Station Dry Chemical	4A
PAB-2	7	Moderate	77.0	Ionization	Area Wide	None	N/A	None	Hose Stations CO_2	17A
PAB-2	8	Low	19.0	Ionization	Area Wide	None	N/A	CO_2	--	--
PAB-2	8A	Low	16.0	None	N/A	None	N/A	None	Dry Chemical CO_2 Hose Station	12A 14A
PAB-2	9	Low	10.0	None	N/A	None	N/A	None	Hose Station Dry Chemical	4A
PAB-2	9A	Low	60.0	Ionization	Area Wide	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	10A	Low	23.0	None	N/A	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	11A	High	166.0	None	N/A	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	12A	Low	42.0	Ionization	15'-0" Corr.	None	N/A	CO_2	--	--
PAB-2	13A	Low	37.0	None	N/A	None	N/A	None	CO2 Hose Station	12A 14A

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
PAB-2	14A	Low	48.0	Ionization	Area Wide	Manual Water Spray Curtain	Separates PAB-2 (door) and Trans. Yard	Hose Station	--	--
PAB-2	15A	Moderate	95.0	None	N/A	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	16A	High	> 3 Hours	None	N/A	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	17A	Low	38.0	Ionization	Area Wide	None	N/A	Hose Stations CO_2 Dry Chemical	--	--
				Ionization	Under Floor, MCC Area	--	--	--	--	--
				Ultraviolet	MCC Area	--	--	--	--	--
PAB-2	18A	Low	66.0	None	N/A	None	N/A	None	Hose Stations CO_2 Dry Chemical	17A
PAB-2	19A	Low	26.0	None	N/A	None	N/A	None	Hose Stations CO_2 Dry Chemical	17A
PAB-2	20A	Moderate	92.0	None	N/A	None	N/A	None	Hose Stations CO_2 Dry Chemical	17A
PAB-2	21A	Moderate	125.0	Ionization & Ultraviolet	Area Wide	None	N/A	None	Hose Stations CO_2 Dry Chemical	17A
PAB-2	22A	Low	29.0	None	N/A	None	N/A	CO_2 Dry Chemical	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
PAB-2	23A	High	152.0	None	N/A	None	N/A	None	CO_2 Dry Chemical CO_2	22A 22A 24A
PAB-2	24A	Low	30.0	None	N/A	None	N/A	CO_2	--	--
PAB-2	25A	Moderate	91.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	26A	High	152.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	27A	Low	15.0	None	N/A	None	N/A	Hose Stations CO_2	--	--
PAB-2	28A	Moderate	115.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	29A	Moderate	127.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	30A	Moderate	108.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	31A	Low	63.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	32A	Low	64.0	None	N/A	None	N/A	None	Hose Stations CO_2	27A
PAB-2	58A	Low	16.0	Ionization	PAB 41' Corridor	None	N/A	None	Dry Chemical Hose Stations CO_2	2A 59A 59A
PAB-2	59A	Low	5.0	Ionization	Area Wide	None	N/A	Hose Stations CO_2	--	--
PAB-2	61A	Low	< 1.0	None	N/A	None	N/A	None	None	--
PAB-2	62A	Low	15.0	None	N/A	None	N/A	Dry Chemical	None	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
PAB-2	63A	Low	38.0	None	N/A	None	N/A	None	Hose Stations CO_2	17A
PAB-2	68A	Low	42.0	None	N/A	None	N/A	None	None	--
PAB-2	69A	Moderate	110.0	Ionization	Area Wide	None	N/A	None	CO_2 Hose Station	12A 14A
PAB-2	79	Low	25.0	None	N/A	None	N/A	None	Dry Chemical	8A
PAB-2	79A	Low	58.0	None	N/A	None	N/A	None	CO_2 Hose Station	59A
PAB-2	88A	Moderate	112.0	Ionization	72'-0" El. - Filter Area	Manual Deluge Water Spray	Containment Purge Exh. Charcoal Filter	Hose Stations CO_2 Dry Chemical	--	--
				--	--	Manual Deluge Water Spray	PAB Exhaust Charcoal Filter	--	--	--
				--	--	Manual Deluge Water Spray	Cont. Pressure Relief Charcoal Filter	--	--	--
PAB-2	89A	Low	41.0	None	N/A	None	N/A	CO_2	--	--
PAB-2	107	Low	14.0	Ionization/ Thermal	el. 44'-6" Area Wide Ion. / el. 54' & 73' Area Wide Thermal	None	N/A	Hose Stations CO_2 Dry Chemical Pressurized Water	--	--
PAB-2	127	Low	50.0	Ionization	Area Wide	None	N/A	CO_2 Pressurized Water	--	--
PAB-2	128	Low	22.0	Thermal	Area Wide	Automatic Pre-Action Sprinklers	Area Wide	CO_2 Dry Chemical	--	--
PAB-2	622	Low	43.0	None	N/A	None	N/A	None	Dry Chemical	74A

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
TBL-5	16	High	>3 hours	Thermal	Area Wide	Automatic Foam Spray	Lube Oil Storage Tank	None	Hose Stations – water & foam	42A
TBL-5	17	High	>3 hours	Thermal	Area Wide	Automatic Foam Spray	Lube Oil Reservoir, Htrs, Separator	None	Hose Stations – water & foam	42A
TBL-5	18	High	>3 hours	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide	None	Hose Stations – water & foam	42A
TBL-5	19	Low	24.0	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide	None	Hose Station CO_2 Dry Chemical	37A, 38A 39A, 41A
TBL-5	20	High	>3 hours	Thermal	Area Wide	Automatic Foam Spray	Area Wide (Boiler Feed Pump Oil Console & Oil Accumulators)	Foam Hose Stations	--	--
TBL-5	21	Low	30.0	Thermal	Area Wide	Automatic Foam Spray	Area Wide (H2 Seal Oil Unit)	None	Hose Stations - water Hose Station - foam CO_2 Dry Chemical	37A

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
TBL-5	37A	Low	53.0	Ionization/ Thermal	MCC 34, 6.9KV Switchgear /Battery & Charger Rm	Automatic Wet Pipe Sprinklers	Area Wide overhead (except Swgr Area), including Battery & Charger Rms	Hose Stations - Water Hose Station - Foam CO_2 Dry Chemical	--	--
						Automatic Water Spray Exposure Protection	Separates TBL-5 & Trans. Yard			
TBL-5	38A	Low	15.0	Ionization	MCC 32	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Station CO_2 Dry Chemical	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
TBL-5	39A	Low	37.0	Ionization	MCC 33	Automatic Wet Pipe Sprinklers	Area Wide overhead	None	Hose Stations - Water Hose Station - Foam CO_2 Wheeled Class D	40A
				Thermal	BFP Oil Console & BFP Drive Turb. HP Bgs.	Automatic Foam Spray	Boiler Feed Pump Oil Console	--	--	--
				--	--	Manual Water Spray	Turbine Building Boiler Feed Pumps			
				--	--	Automatic CO2	Local App., Drive Turb. HP Bgs, Boiler Feed Pumps	--	--	--
TBL-5	40A	Low	7.0	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Stations – water & foam CO_2 Wheeled Class D Dry Chemical	--	--
TBL-5	41A	Low	9.0	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Station CO_2 Dry Chemical	--	--
TBL-5	42A	Low	24.0	Ionization	MCC 35	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Stations – water & foam	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
TBL-5	43A	Low	33.0	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Stations CO_2 Halon Pressurized Water	--	--
				--	--	Automatic Water Spray Exposure Protection	Separates TBL-5 and Trans. Yard	--	--	--
TBL-5	44A	Low	13.0	None	N/A	None	N/A	None	Hose Stations CO_2 Halon Pressurized Water	43A
TBL-5	45A	Low	3.0	None	N/A	None	N/A	None	--	--
TBL-5	46A	Low	9.0	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Stations CO_2 Dry Chemical	--	--
TBL-5	47A	Low	21.0	None	N/A	Automatic Wet Pipe Sprinklers	Area Wide overhead	Hose Station CO_2 Dry Chemical	--	--
				Thermal	R4D4 Separator	Automatic Foam Spray	R4D4 Separator			
TBL-5	48A	Low	< 1.0	None	N/A	None	N/A	None	Hose Station CO_2 Dry Chemical	47A

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
TBL-5	49A	Low	7.0	Ionization/ Thermal	Office/Exciter Enclosure, incl. Bgs 10 & 11	Automatic CO2	Total Flooding, Exciter Enclosure and Bearings 10 & 11	Hose Stations CO_2 Dry Chemical Wheeled Dry Chem Halon Foam Pressurized Water	--	--
TBL-5	50A	Low	< 1.0	Thermal	Governor Housing & Oil Lines & TG Bearings 1-9	Automatic Preaction Spray	Governor Housing & Oil Lines & TG Bearings 1-9	Hose Stations CO_2 Dry Chemical	--	--
				--	--	Manual CO2	Local App., TG Bgs 1,2,3 & MS Valves in Governor Enclosure	--	--	--
				--	--	Manual CO2	Local App., TG Bgs 4,5,6 & 7	--	--	--
				--	--	Manual CO2	Local App., TG Bearings 8 & 9			
TBL-5	51A	Low	6.0	None	N/A	None	N/A	Hose Stations CO_2	--	--
				Thermal	TB pipe bridge to AFW Pump Bldg	Automatic Water Spray Curtain	TB pipe bridge to AFW Pump Bldg	--	--	--
TBL-5	52A	Low	10.0	None	N/A	None	N/A	Dry Chemical	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
TBL-5	53A	Low	7.0	None	N/A	None	N/A	None	Dry Chemical Hose Station	52A 54A
TBL-5	54A	Low	14.0	None	N/A	None	N/A	Hose Station	--	--
TBL-5	57A	Low	37.0	Thermal	TB pipe bridge to AFW Pump Bldg	Automatic Water Spray	TB pipe bridge to AFW Pump Bldg	Dry Chemical	--	--
TBL-5	58	Low	67.0	None	N/A	None	N/A	None	Hose House & Hydrant	YARD-7
TBL-5	59	Low	65.0	Ionization	Area Wide	Automatic Wet Pipe Sprinklers	Area Wide	None	Hose Station CO_2 Dry Chemical	38A
TBL-5	109	Low	32.0	Thermal	Area Wide	Automatic Wet Pipe Sprinklers	Area Wide	CO_2 Dry Chemical	--	--
TBL-5	110	Low	12.0	Ionization	Area Wide	None	N/A	Hose Station CO_2 Dry Chemical	--	--
TBL-5	111	Low	2.0	Thermal	Area Wide	Automatic Wet Pipe Sprinklers	Area Wide	Dry Chemical	--	--
TBL-5	112	Low	2.0	Ionization	Area Wide	None	N/A	Hose Station CO_2	--	--
TBL-5	113	Low	< 1.0	Ionization	Area Wide	None	N/A	CO_2 Dry Chemical	--	--
TBL-5	114	Low	2.0	Ionization	Area Wide	None	N/A	Hose Station CO_2	--	--
YARD-7	22	Low	27.0	Photoelectric	Area Wide	None	N/A	Dry Chemical	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
YARD-7	55A	Low	2.0	Photoelectric	Area Wide	None	N/A	Hose Stations CO_2	--	--
YARD-7	56A	Low	2.0	None	N/A	None	N/A	Adjacent Yard Hydrant	Hose House & Hydrant	YARD-7
YARD-7	64A	High	> 3 hours	Thermal	Area Wide	Automatic Deluge Water Spray	Main Transformer 31	Adjacent Yard Hydrant	Hose House & Hydrant	YARD-7
				XFMR detectors actuate water curtains	--	Automatic Water Spray Exposure Protection	Separates TBL-5 and Trans. Yard	--	--	--
				--	--	Automatic Water Spray Curtain	Separates XFMR 31 and Unit Aux. XFMR			
YARD-7	65A	High	> 3 hours	Thermal	Area Wide	Automatic Deluge Water Spray	Main Transformer 32	Adjacent Yard Hydrant	Hose House & Hydrant	YARD-7
				--	--	Manual Water Spray Curtain	Separates PAB-2 (door) and Trans. Yard	--	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
YARD-7	66A	High	> 3 hours	Thermal	Area Wide	Automatic Deluge Water Spray	Unit Auxiliary Transformer	Adjacent Yard Hydrant	Hose House & Hydrant	YARD-7
				XFMR detectors actuate water curtains	--	Automatic Water Spray Exposure Protection	Separates TBL-5 and Trans. Yard	--	--	--
				--	--	Automatic Water Spray Curtain	Separates XFMR 31 and Unit Aux. XFMR			
YARD-7	67A	High	> 3 hours	Thermal	Area Wide	Automatic Deluge Water Spray	Station Auxiliary Transformer	Adjacent Yard Hydrant	Hose House & Hydrant	YARD-7
				--	--	Manual Water Spray Curtain	Separates PAB-2 (door) and Trans. Yard	--	--	--
YARD-7	90A	Low	9.0	None	N/A	None	N/A	Hose Station CO_2	--	--
YARD-7	91A	Low	9.0	None	N/A	None	N/A	Hose Station CO_2	--	--
YARD-7	92A	Low	< 1.0	None	N/A	None	N/A	None	Dry Chemical	96A
YARD-7	93A	Low	< 1.0	None	N/A	None	N/A	None	Dry Chemical	96A
YARD-7	94A	Low	< 1.0	None	N/A	None	N/A	None	CO_2	98A
YARD-7	95A	Low	< 1.0	None	N/A	None	N/A	None	CO_2	98A
YARD-7	96A	Low	63.0	None	N/A	None	N/A	Dry Chemical		
YARD-7	97A	Low	6.0	None	N/A	None	N/A	None	CO_2	98A

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
YARD-7	98A	Low	6.0	None	N/A	None	N/A	CO_2	--	--
YARD-7	105A	Low	N/A	None	N/A	None	N/A	None	None	--
YARD-7	106A	Low	N/A	None	N/A	None	N/A	None	None	--
YARD-7	108	Low	9.0	None	N/A	None	N/A	None	Hydrant & Hose House	YARD-7
YARD-7	115	Low	12.0	Thermal/ Photoelectric	Local coverage only	Automatic Wet Pipe Sprinklers	Area Wide	Hose Stations CO_2 Pressurized Water Dry Chemical	--	--
YARD-7	116	Low	24.0	Photoelectric	Local coverage only	Automatic Wet Pipe Sprinklers	Area Wide	Hose Station CO_2 Dry Chemical Pressurized Water	--	--
YARD-7	117	Low	47.0	Photoelectric	Local coverage only	Automatic Halon	Total Flooding, TSC Computer Room	Hose Stations CO_2 Dry Chemical Pressurized Water Halon	--	--
				--	--	Manual Water Spray	TSC/OSC Charcoal Filter	--	--	--
YARD-7	118	Low	47.0	Photoelectric, Thermal and Ionization	Local coverage only inc. underfloor computer area	None	N/A	Hose Stations CO_2 Pressurized Water Dry Chemical	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
YARD-7	119	Low	47.0	Thermal/ Photoelectric	Local coverage only	None	N/A	Hose Stations CO_2 Dry Chemical Pressurized Water	--	--
YARD-7	120	Low	47.0	Photoelectric, Thermal/ Thermal	Local coverage only/ Documents Vault	Automatic Halon	Total Flooding, Documents Vault	Hose Stations Dry Chemical Pressurized Water Halon	--	--
YARD-7	121	Low	47.0	Thermal/ Photoelectric	Local coverage only	Manual Water Spray	Filter Units AS-FU-1,2,3	Hose Stations CO_2 Dry Chemical Pressurized Water Halon	--	--
YARD-7	122	Low	47.0	Thermal, Photoelectric	Local coverage only	None	N/A	Hose Station CO_2 Dry Chemical Pressurized Water Halon	--	--
YARD-7	123	Low	47.0	Ionization	Area Wide	None	N/A	Hose Station CO_2 Dry Chemical Pressurized Water Halon	--	--
YARD-7	125	Low	7.0	Ionization	Area Wide	Automatic Wet Pipe Sprinklers	Area Wide	Hose Stations CO_2 Dry Chemical Pressurized Water Halon	--	--

Table 1
IP3 Fire Hazards Analysis Summary
For Appendix R, Section III.G.2 Fire Areas in Which OMAs Are Credited

Fire Area	Fire Zone	Category	Equiv. Fire Severity (min)	Fire Detection		Fixed Fire Suppression		Manual Fire Suppression (see Note 1)	Adjacent Manual Suppression	
				Type	Coverage	Type	Coverage		Equipment (see Note 1)	Fire Zone
YARD-7	126	Low	3.0	Ionization	Area Wide	Automatic Wet Pipe Sprinklers	Area Wide	Hose Stations CO_2 Pressurized Water Foam	--	--
YARD-7	129	Low	30.0	Ionization/ Thermal	Area Wide/ Men's & Women's Rooms	Automatic Wet Pipe Sprinklers	Area Wide	Hose Stations CO_2 Dry Chemical Pressurized Water	--	--
YARD-7	130	Low	47.0	Ionization/ Thermal	Area Wide/ Men's Room & lunch room	Automatic Wet Pipe Sprinklers	Area Wide	Hose Stations CO_2 Pressurized Water	--	--
YARD-7	131	High	177.0	Ionization & Thermal	Area Wide	Automatic Halon	Total Flooding	CO_2 Dry Chemical	--	--
YARD-7	131A	High	> 3 hours	None	N/A	None	N/A	None	Hose House & Hydrant	YARD-7
YARD-7	132	Low	38.0	Ionization/ Infrared	Elec. Pump Room/ Diesel Pump Room	Automatic Wet Pipe Sprinklers	Area Wide, except Elec. Fire Pump Rm	CO_2 Dry Chemical	--	--
YARD-7	133	Low	< 1.0	Ionization	Area Wide & in Ctrl Panels	None	N/A	CO_2 Dry Chemical	--	--
YARD-7	136	Low	0.0	None	N/A	None	N/A	None	None	--
YARD-7	222	Low	N/A	None	N/A	None	N/A	None	Hose House & Hydrant	YARD-7
YARD-7	552	Low	N/A	None	N/A	None	N/A	None	None	--
YARD-7	553	Low	N/A	None	N/A	None	N/A	None	None	--
YARD-7	554	Low	N/A	None	N/A	None	N/A	None	Hose House & Hydrant	YARD-7

NOTE

1. In this column, CO_2, Dry Chemical, Wheeled Dry Chem[ical], Wheeled Class D, Pressurized Water, Foam, and Halon are types of Extinguishers – there is at least one in the zone when listed for a zone. Extinguishers in Area CNT-1 are stored outside Containment during normal operation. Hose stations are water unless otherwise noted.