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USWAG

February 18, 2004

By E-Mail

Mr. Dave Evans
Director, Oil Program Center
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave., NW
Mail Code 5203G
Washington, DC 20460

Re: Dual Regulation of Emergency Generator Tanks at Nuclear Power Stations

Dear Mr. Evans:

In previous discussions between USWAG and your staff, we called to your attention USWAG's concern that application of the SPCC rules to underground storage tank ("UST") systems that are part of an emergency generator system at a nuclear power generation facility regulated by the Nuclear Regulatory Commission ("NRC") under 10 C.F.R Part 50, Appendix A, would lead to unnecessary dual regulation of these tank systems.

Under 40 C.F.R § 112.1(d)(2) & (4), as promulgated by the July 2002 amendments, UST systems that are subject to all technical requirements of Part 280 of EPA rules or a State program approved under Part 281 of the rules are excluded from regulation under the Part 112 SPCC rules (other than inclusion on facility diagrams for emergency response purposes). EPA explained that the rationale for this exclusion is that Parts 280 and 281 "provide comparable environmental protection for the purpose of preventing discharges as described in § 112.1(b)." 67 Fed. Reg. 47042, 47064 (July 17, 2002). However, preamble language states that this exclusion does not extend to tanks deferred from compliance with Parts 280 and 281, including UST systems within nuclear power generation facility emergency generators. It appears that in identifying this category of tanks systems as "remain[ing] potentially subject to the SPCC program" (*ibid.*), EPA may have overlooked the fact that the reason they are not regulated under the Parts 280/281 UST program is that they are comprehensively regulated by the NRC under 10 C.F.R Part 50, Appendix A.

When EPA promulgated the UST rules in 1988, EPA explained that it was deferring application of the Part 280 requirements "pending completion of a review of the NRC regulations (10 C.F.R Part 50, Appendix A) governing these tanks to determine whether further regulation is necessary to protect human health and the environment or would be inconsistent

with NRC regulations . . . ." 53 Fed. Reg. 37082, 37113 (Sept, 23, 1988). The Agency noted two concerns if the UST rules were applied to these tanks: (1) Dual regulation by two agencies under separate regulatory programs, and (2) the possibility of a shut down of the entire nuclear power plant if structural changes to the tanks to comply with EPA regulations required an amendment to the NRC license. *Ibid.* EPA stated that if further study showed the NRC controls are inadequate or incomplete, EPA reserved the option of bringing those tanks within the Part 280 universe or developing a separate set of standards applicable to these tanks. *Ibid.* In the 15 years since promulgation of the Part 280 rules, EPA has taken no action to bring these tanks within the Part 280 regulated universe and has not developed a separate set of regulations applicable to these tanks.

I. Nuclear Regulatory Commission Requirements for Emergency Diesel Generator Systems.

A. As your staff requested, we are pleased to summarize for you the scope of the NRC regulatory program under Part 50 of the NRC rules as they relate to the emergency diesel generator tanks. Part 50 establishes the regulations applicable to the NRC's licensing of nuclear power plants. *See* 10 C.F.R. § 50.1 All persons that operate or supervise operation of a commercially owned nuclear power plant must be licensed by the NRC. 10 C.F.R. § 50.10. Detailed information on the design of the facility, including the emergency diesel generator tanks, must be provided to the NRC as part of the licensing process. 10 C.F.R. §§ 50.33, 50.34. The license, when issued, may include environmental conditions. 10 C.F.R. § 50.36b.

Appendix A to Part 50 contains general design criteria for nuclear power plans – the requirement to provide emergency generation capacity derives from Appendix A – while Appendix B contains quality assurance criteria. The licensee's compliance with these criteria must be incorporated into the license application. *See* 10 C.F.R. Part 50, Appendices A & B, Introduction. As a condition of the operating license, each licensee must develop and implement an ongoing quality assurance program that fully satisfies Appendix B.

Appendix B establishes broad, over-arching requirements, which are then implemented via a myriad of interwoven NRC inspection procedures, technical instructions, program documents, licensee inspection, and surveillance programs, etc. The NRC program is oriented toward achieving defined results rather than prescribing specific implementation measures in its regulations. Although this performance-based approach differs somewhat from the more prescriptive rulemaking approach EPA often employs in its programs, the deviation clause in section 112.7(a)(2) of the SPCC rules seeks to achieve a similar degree of owner/operator flexibility that the NRC achieves for its licensees.

The emergency diesel generator systems, including the diesel fuel storage and supply system and associated tanks and piping, fall under the definition of Nuclear Safety-related Structures, Systems and Components ("SSCs"). "Safety-related structures, systems and components" are defined in the NRC rules as

> structures, systems and components that are relied upon to remain functional during and following design basis events to assure:
>
> (1) The integrity of the reactor coolant pressure boundary
>
> (2) The capability to shut down the reactor and maintain it in a safe shut-down condition; or
>
> (3) The capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to the applicable guideline exposures set forth in §50.34(a)(1) or §100.11 of this chapter, as applicable.

10 C.F.R. § 50.2. Safety-related SSCs are considered critical to maintaining nuclear safety and therefore are subject to the highest level of Appendix B quality control and NRC regulatory oversight.

We quote from several provisions of Appendix B that address quality assurance, testing, and corrective action requirements that the licensee must develop and adhere to.

Appendix B Section II (Quality Assurance Program):

> The applicant shall establish...a quality assurance program which complies with the requirements of this Appendix. This program shall be documented by written policies, procedures, or instructions and shall be carried out throughout plant life in accordance with those policies, procedures, or instructions.
>
> The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety.
>
> The program shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and test. The program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained.

Appendix B Section XI (Test Control):

> A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include...operational tests during nuclear power plant or fuel reprocessing plant operation, of structures, systems, and components.

Appendix B Section XVI (Corrective Action):

> Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

B. We also call to your attention Appendix R to 10 C.F.R. Part 50, which deals with fire protection for nuclear power facilities. This appendix requires nuclear plants to have a fire protection program in place that, among many other things, requires control of combustibles (including prompt clean-up of oil leaks or spills) and training of personnel to respond to fires or emergencies that could increase the probability or consequence of a fire (such as oil spills). Appendix R also requires redundant systems to supply water to fight fires, which typically include diesel-driven fire pumps in case electrical power is lost. These diesel-driven fire pumps typically share their fuel supply systems with the emergency diesel generators. Thus a problem with the diesel generator fuel system could also impair fire-fighting capability.

We quote from several of the provisions of Appendix R that, despite their focus on fire safety, are also relevant to goals of the SPCC program:

Appendix R Section I (Introduction and Scope):

> Criterion 3 of appendix A to this part specifies that "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."

Appendix R Section II (General Requirements):

> The fire protection program shall extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives:
>
> - To prevent fires from starting;
> - To detect rapidly, control, and extinguish promptly those fires that do occur;
> - To provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.

Appendix R Section III (Specific Requirements):

> I. *Fire brigade training.* The fire brigade training program shall ensure that the capability to fight potential fires is established and maintained. The program shall consist

of an initial classroom instruction program followed by periodic classroom instruction, fire fighting practice, and fire drills.

1. *Instruction.*

a. The initial classroom instruction shall include:

(1) Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.

(2) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.

(3) Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.

* * * * *

d. Regular planned meetings shall be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary.

e. Periodic refresher training sessions shall be held to repeat the classroom instruction program for all brigade members over a two-year period. These sessions may be concurrent with the regular planned meetings.

* * * * *

K. *Administrative controls.* Administrative controls shall be established to minimize fire hazards in areas containing structures, systems or components important to safety. These controls shall establish procedures to:

1. Govern the handling and limitation of the use of...flammable gases and liquids...in safety related areas.

* * * * *

3. Govern the handling and limit transient fire loads such as combustible and flammable liquids...during all phases of operating, especially during maintenance, modification or refueling activities.

* * * * *

6. Control the removal from the area of all...oil spills...resulting from the work activity immediately upon completion of the activity, or at the end of each shift, whichever comes first.

* * * * *

12. Define the strategies for fighting fires in all safety-related areas and areas presenting a hazard to safety-related equipment. These strategies shall designate:

* * * * *

g. Potential radiological and toxic hazards in fire zones.

II. Additional Nuclear Regulatory Commission Requirements.

A. The NRC issues Generic Letters ("GL") as a means to quickly disseminate urgent information or in some cases regulatory requirements to licensees without the delay associated with Federal rulemaking. GL 91-18 contained new NRC inspection manual instructions for NRC Inspectors that established new standards to ensure that licensees promptly evaluate any condition that potentially involved the degradation of a safety-related SSC to determine if there has been any loss of quality or functional capability. STS10OP.STS (Oct. 31, 1991). GL 91-18 was revised in 1997 to provide additional clarification and requirements. STS30DEG.TG (Oct. 8, 1997).

Conditions such as leaks, structural damage, or corrosion to emergency diesel generator system tanks or piping would fall under GL 91-18 and the associated NRC inspection manual procedures. Leaks or conditions that could lead to leaks are serious because they create the potential for loss of the fuel inventory needed to run the emergency diesel generators and for contaminants such as water or dirt to get into the fuel supply. If such a condition arose, the licensee would be required to complete a Justification for Continued Operation ("JCO") analysis and, if the conclusion was that the degradation to the safety-related SSC would impair or prevent the proper function of the SSC, the plant would have to be placed in a condition where the SSC is not needed until repaired. In the case of the emergency diesel generator fuel supply, this would typically require the plant to be placed in a cold-shutdown condition.

Forced shutdowns of nuclear plants result in huge losses to the utility due to labor costs, lost revenue, and the need to arrange for more costly replacement power. Such events also reflect poorly on the plant's NRC scorecard, which can lead to increased NRC regulatory oversight, operating costs, and insurance premiums. Plant operators implement robust preventive maintenance, inspection, and testing programs to avoid such conditions.

GL 91-18 also requires corrective action and appropriate documentation to prevent recurrence of the degraded condition. If the degraded condition is attributable to inadequate design, maintenance, or repairs, the plant operator would also be subject to NRC enforcement action in the form of fines or other penalties.

Excerpts from the two NRC Inspection Manual documents that are also relevant to the objectives of the SPCC program are:

STS30DEG.TG, § 4.8, Final Corrective Action:

ENFORCEMENT.

* * * * *

If the licensee, without good cause, does not correct the non-conformance at the first available opportunity, the staff concludes that the licensee has failed to take prompt corrective action and, thus, is in violation of 10 C.F.R. Part 50, Appendix B (Criterion XVI) [footnote omitted]. When the NRC concludes that corrective action to implement the final resolution of the degraded or nonconforming condition is not prompt, or that the operability determination is not valid, enforcement action (Notice of Violation, orders) will be taken. Enforcement action may include restrictions on continued operation

Implementation of complete corrective action within a reasonable time frame does not mitigate the potential for taking enforcement action for the root causes that initially created the degraded or nonconforming condition or for violations of other regulatory requirements. The nonconforming condition may have resulted from (1) earlier changes performed without a 10 C.F.R. 50.59 evaluation or (2) inadequate reviews; or may be a *de facto* change for which the facility never met the [Safety Analysis Report] SAR description. The staff may determine that the "change" from the [Final Safety Analysis Report] FSAR-described condition to the discovered nonconforming condition involved a[n Unresolved Safety Question] USQ (or a [Technical Specifications] TS change), and that enforcement action is appropriate for the time frame up to time of discovery.

STS10OP.STS, § 3.1, Operability Definition:

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its intended functions, and when all necessary attendant instrumentation, controls, electrical power, cooling to seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train component or device to perform its function(s) are also capable or performing their related support function(s) [internal quotation marks omitted].

* * * * *

§ 3.3, Specified Function(s):

* * * * *

In addition to performing the specified safety function, a system is expected to perform as designed, tested and maintained. When system capability is degraded to a point where it cannot perform with reasonable assurance or reliability, the system should be judged inoperable, even if at this instantaneous point in time the system could provide the specified safety function.

§ 4.0, Background:

The purpose of the Technical Specifications is to ensure that the plant is operated within its design basis and to preserve the validity of the safety analyses, which are concerned with both the prevention and mitigation of accidents. Because both prevention of

accidents and the ability to mitigate them must be continuously ensured, the process of ensuring OPERABILITY for safety or safety support systems is ongoing and continuous. The focus of operability is foremost on the capability to ensure safety.

The process of ensuring operability is continuous and consists of the verification of operability whenever a verification or other indication calls in question the system's or component's ability to perform its specified function.

Verification of operability is supplemented by continuous ongoing processes, such as:

- Day-to-day operation of the facility
- Implementation of programs such as in-service testing and inspection
- Plant walkdowns or tours
- Observations from the control room
- Quality assurance activities such as audits and reviews
- Engineering design reviews including design basis reconstitution.

* * * * *

The determination of operability for systems is to be made promptly, with a timeliness that is commensurate with the potential safety significance of the issue.

§ 5.0, Additional Guidance for Operability Determinations:

* * * * *

Licensees should make an operability determination and take corrective action in the following circumstances:

Discovery of degraded conditions of equipment where performance is called into question.

§ 5.1, Focus on Safety:

The immediate and primary attention must be directed to safety concerns. Reporting and procedural requirements should not interfere with ensuring the health and safety of the public.

§ 5.4, Determining Operability and Plant Safety is a Continuous Decision-Making Process:

Licensees are obligated to ensure the continued operability of SSCs as specified by [Technical Specifications], or to take the remedial actions addressed in the [Technical Specifications]. . . . Operability is verified . . . by day-to-day operation, plant tours, observations from the control room, surveillances, test programs, and other similar activities. . . . The [operability determination] process, in one form or another, is ongoing and continuous.

B. Section 50.65 of the NRC's rules, often referred to as the "Maintenance Rule," requires that licensees have effective monitoring and preventive maintenance programs in place to ensure that safety-related SSC's are operable and will function as designed in an emergency. The emergency diesel generators and their fuel supply system fall under this program.

Commercial nuclear power plants rely on "defense in depth" to maintain safety by ensuring that there are multiple and redundant means to respond to and mitigate emergencies. Unplanned loss of critical equipment or systems can degrade this defense in depth by unexpectedly eliminating some of the redundant protections. It is therefore desirable that all maintenance on safety-related SSCs be performed on a pre-planned basis when plant conditions can be established and the risk of removing equipment from service is minimized or eliminated.

The Maintenance Rule is designed to ensure that equipment monitoring and preventive maintenance programs at nuclear power plants are developed and implemented to detect and allow for repair of emerging problems in a deliberate and pre-planned manner, at a time that minimizes operational risk, rather than deferring repairs until the equipment has actually failed, which could occur at a critical time.

The Maintenance Rule also requires plant operators to track and trend equipment availability, failure rates, and equipment out of service times to ensure pre-determined reliability and availability targets are met.

An excerpt from the Maintenance Rule that is relevant to the objectives of the SPCC rule states:

> Each holder of a license to operate a nuclear power plant under §§50.21(b) or 50.22 shall monitor the performance or condition of structures, systems, or components, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components, as defined in paragraph (b), are capable of fulfilling their intended functions. Such goals shall be established commensurate with safety and, where practical, take into account industry-wide operating experience. When the performance or condition of a structure, system, or component does not meet established goals, appropriate corrective action shall be taken.

10 C.F.R § 50.65(a)(1).

C. NRC Inspection Manual IP 62002 establishes inspection procedures for structures, passive components, and other civil engineering features at nuclear power plants. Tanks, piping, and secondary containment structures for emergency diesel generating systems would generally be covered by this manual.

IP 62002 is one of many NRC inspection procedures that verify licensee implementation of 10 C.F.R. Part 50, Appendix B, and the Maintenance Rule. IP 62002 is noteworthy from the SPCC standpoint because it broadly addresses the types of "passive" equipment and structures of concern to the SPCC rule, such as buried piping and cathodic protection, aboveground pipe

supports, concrete and earthen berms, tank or dike liners, etc. As with most NRC inspection procedure manuals, IP 62002 is used as the basis by which NRC inspectors judge the effectiveness of the licensee's own program, *i.e.*, the NRC inspector is checking to ensure the licensee has developed and implemented an acceptable program using plant-specific inspection, testing, and work control procedures. Excerpts from IP 62002 that are relevant to the objectives of the SPCC rule include:

Inspection Objectives:

> 01.01 Evaluate by visual examination and/or review of licensee documentation the condition of structures, passive components, and civil engineering features that are within the scope of Section 50.65 of Title 10 of the Code of Federal Regulations (10 C.F.R. 10.65), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants.
>
> 01.02 Verify implementation of 10 C.F.R. § 50.65 (the Maintenance Rule) with regard to structures, passive components, and civil engineering features, herein referred to as "structures."

Inspection Requirements:

> 02.01 . . . To meet the requirements of the maintenance rule, structures, passive components, and civil engineering features may be categorized into 10 groups for inspection purposes, on the basis of maintenance requirements, expected degradation, and previous industry observations. Possible inspection groups are as follows:
>
> (a) Containment structures
> (b) Concrete (reinforced and prestressed) structures other than containment structures
> (c) Intake and pumphouse structures
> (d) Masonry walls
> (e) Steel structures and connections
> (f) Water storage tanks
> (g) Dams, embankments, and canals . . . .

Specific Guidance:

> 03.01(b) Concrete (Reinforced and Prestressed) Structures Other Than Containment[1] Structures (e.g. fuel-handling buildings, spent fuel pool areas, diesel generator buildings)
>
> Review the documentation constituting the licensee's maintenance program to ensure that the licensee has implemented goal setting, monitoring, and preventive maintenance for

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[1] The reference to "containment" in this context is to reactor containment.

concrete structures other than containment in accordance with the requirements of 10 CFR 50.65.

* * * *

On the basis of previous industry experience documented in NUREG-1522, the following areas should be addressed, as a minimum, in maintenance programs:

1) Condition of concrete slabs, beams, columns, base plates, and foundations
2) Condition of the prestressing system (for grouted and greased prestressing elements)
3) Condition of metallic and nonmetallic liners
4) Leakage through water retaining structures and through portions of structures below grade
5) Differential settlement of walls and foundation slabs . . . .

03.01(e) Buried Piping, Pipe Supports, and Equipment Anchorages

Review the documentation constituting the licensee's maintenance program to ensure that the licensee has implemented goal setting, monitoring, and preventive maintenance for buried piping, pipe supports, and equipment anchorages in accordance with the requirements of 10 CFR 50.65.

* * * *

As a minimum, the licensee's maintenance program should address the following topics for buried piping, pipe supports, and equipment anchorages:

* * * *

The cathodic protection system (CPS) (if present) should be functional. The inspector should review the licensee's documentation and surveillance to ensure that the system is protecting all elements served by the CPS. Licensees should include acceptance criteria for corrosion of piping, pipe supports, and anchorages.

Buried piping maintenance programs should include visual examinations when piping is accessible. Connections and joints of buried piping should show no signs of separation, environmental degradation, or leakage. There should be no appreciable settlement between the piping segments that could inadvertently cause pipe stress and leakage. . . . When leakage is discovered in underground piping, the inspector should review the licensee's inspection methods and corrective actions to ensure the licensee considered both leakage in and leakage out of the pipe in its evaluation.

* * * *

03.01(g) Steel Structures and Connections (including safety-related cranes, crane rails and supporting structures, and blowout panels)

Review the documentation constituting the licensee's maintenance program to ensure that the licensee has implemented goal setting, monitoring, and preventive maintenance for steel structures and connections in accordance with the requirements of 10 CFR. 50.65.

* * * *

As a minimum, the licensee's maintenance program should address the following areas pertaining to steel structures and connections:

* * * * *

> Acceptance criteria pertaining to corrosion of metal components and connectors to be inspected under the maintenance rule. Connectors are the means of making structural connections and may include welds, rivets, bolts and rods, studs and wire ropes.

03.01(h) Dams, Embankments, and Canals

Review the documentation constituting the licensee's maintenance program to ensure that the licensee has implemented goal setting, monitoring, and preventive maintenance for dams, embankments, and canals in accordance with the requirements of 10 CFR 50.65.

Fluid-retaining structures that provide water storage and transfer areas during normal operating, severe environmental, and accident conditions are considered Seismic Category I "safety-related" structures.

USNRC Regulatory Guide 1.127 provides inspection guidance for water-retaining structures that could be useful for reviewing their serviceability. The regulatory guide suggests the following criteria which, as a minimum, should be part of the licensee's maintenance program:

* * * *

> Drainage Systems. All drainage systems should be examined to determine whether the systems can freely pass discharge and to ensure that the discharge is not carrying embankment or foundation material. Systems used to monitor drainage should be examined to ensure they are operating correctly.

* * * *

In general, all massive water-retaining structures should not have areas of differential settlement or construction joint gaps that allow water to leak beneath the structure thereby causing soil erosion and concrete deterioration.. . . . Reinforced and unreinforced

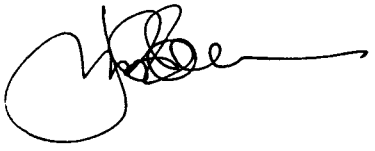
concrete surfaces should be visually inspected in accordance with ACI Committee 207 Report, "Practices for Evaluation of Concrete in Existing Massive Structures for Service Conditions."

III. Conclusion.

This survey of NRC regulations, guidance, inspection manuals and generic letters demonstrates the comprehensive regulatory system to which emergency diesel generator systems at nuclear power stations are subject. Despite the different regulatory approach of the NRC program, the NRC fully addresses each of the objectives of the SPCC program, and dual regulation of the systems by EPA and NRC is not warranted. Proposed language that would eliminate this unnecessary duplication of regulation is appended to this letter.

We hope that this information will be helpful to EPA. If you have any additional questions, please contact me (jim.roewer@uswag.org) or USWAG counsel, Bill Weissman (202-861-3878) (william.weissman@piperrudnick.com). If you are interested in visiting a nuclear power station to observe these systems, I would be happy to arrange for such a visit.

Sincerely,



James R. Roewer
Executive Director

Attachment

cc: Hugo P. Fleischman (EPA)(Mail Code 5203G)
Mark W. Howard (EPA)(Mail Code 5203G)
Jeff Spillyards, Entergy Services
William R. Weissman, Esq., Piper Rudnick LLP
USWAG Tanks Subcommittee

Proposed Exclusion for Tank Systems Included Within Nuclear Power Generation Facility Emergency Diesel Generators

Proposal to amend 40 C.F.R. § 112.1 as follows so as to exclude NRC-regulated tank systems included within nuclear power generation facility emergency diesel generators ("EDG") from SPCC regulation:

Section 112.1 is amended by inserting at the end of subsection (d) the following new subparagraph.

(7) Any storage tank system that is part of an emergency generator system at a nuclear power generation facility regulated by the Nuclear Regulatory Commission under 10 CFR part 50, appendix A.