COMSECY-14-0015

April 23, 2014

MEMORANDUM TO: Chairman Macfarlane
Commissioner Svinicki
Commissioner Apostolakis
Commissioner Magwood
Commissioner Ostendorff

FROM: Mark. A. Satorius **/RA/**
Executive Director for Operations

SUBJECT: SECURITY INSPECTIONS AT U.S. NUCLEAR REGULATORY COMMISSION DECOMMISSIONING POWER REACTORS

This memorandum informs the Commission of the staff's intended approach for security inspections at decommissioning power reactors. The staff re-examined the current approach to security inspections at these facilities, and specifically the potential need for U.S. Nuclear Regulatory Commission (NRC)-conducted force-on-force inspections, based on recent licensee announcements regarding permanent reactor shutdowns and the 2009 changes in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 73 security requirements. As a result of this review, the staff intends to continue the current practice of security inspections for decommissioning power reactors. These security inspections do not include NRC-conducted force-on-force inspections.

Operating power reactors, for the purpose of this memorandum, are defined as facilities having received a 10 CFR Part 50 license to operate or a 10 CFR 52.103(g)[1] finding. Licensees who have submitted both a certification of permanent cessation of operations (10 CFR 50.4(b)(8))[2] and a certification of permanent fuel removal (10 CFR 50.4(b)(9))[3] are defined, for the purpose of this memorandum, as decommissioning power reactors.

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[1] Paragraph 52.103(g) of 10 CFR states that a licensee, "shall not operate the facility until the Commission makes a finding that the acceptance criteria in the combined license are met, except for those acceptance criteria that the Commission found were met under § 52.97(a)(2). If the combined license is for a modular design, each reactor module may require a separate finding as construction proceeds."

[2] As defined in 10 CFR 50.2, permanent cessation of operation(s) means, for a nuclear power reactor facility, a certification by a licensee to the NRC that it has permanently ceased or will permanently cease reactor operation(s), or a final legally effective order to permanently cease operation(s) has come into effect.

[3] As defined in 10 CFR 50.2, permanent fuel removal means, for a nuclear power reactor facility, a certification by the licensee to the NRC that it has permanently removed all fuel assemblies from the reactor vessel.

The NRC provides oversight of licensee security programs at decommissioning power reactors through a security inspection program that verifies compliance with applicable regulatory requirements. The security inspection program examines licensee activities in order to assess performance and to assure that the licensee's overall security program is meeting the objective of providing high assurance of protection against the design basis threat. The following attributes of licensee security programs are inspected for decommissioning power reactors: (1) access authorization; (2) access control; (3) equipment performance, testing, and maintenance; (4) protective strategy evaluation; (5) protection of safeguards information; (6) security training; and (7) target sets.

NRC-conducted force-on-force evaluations are congressionally mandated by Section 170D of the Atomic Energy Act of 1954, as amended.[4] NRC's prior and current practice is to conduct these evaluations at two classes of licensed facilities: (1) operating power reactors; and (2) Category I fuel cycle facilities.[5] The current security inspection program for decommissioning power reactors does not include an NRC-conducted force-on-force inspection.

The NRC's most recent experience with decommissioning involved the Zion nuclear power plant, which permanently shut down on February 13, 1998. In 2009, the security of spent fuel pools was increased through changes that were made to 10 CFR Part 73, requiring additional protection against spent fuel sabotage. In 2013, four licensees announced plans to permanently cease reactor operations and transition to decommissioning. This memorandum is intended to inform the Commission regarding the staff's review and plans for security oversight at decommissioning facilities, taking into account the NRC's enhanced security requirements since the most recent, historical decommissioning activities.

The staff's view is that NRC-conducted force-on-force inspections during decommissioning are not warranted because the current security inspection program, which may include licensee-conducted force-on-force inspections, provides adequate oversight and verification of the security posture given a reduction in both risk and the number of target sets at decommissioning power reactors.

Physical security for special nuclear material at fixed sites, including decommissioning power reactors, is required by 10 CFR Part 73, "Physical Protection of Plants and Materials." Decommissioning power reactor licensees are required by 10 CFR 73.55(f) to develop target sets for use in the development and implementation of security strategies that protect against spent fuel sabotage. A target set is a minimum combination of equipment or operator actions which, if prevented from performing their intended safety function or prevented from being accomplished, would likely result in radiological sabotage, specifically, significant damage to

[4] Section 170D of the Atomic Energy Act of 1954, as amended states, "not less often than once every 3 years, the Commission shall conduct security evaluations at each licensed facility that is part of a class of licensed facilities, as the Commission considers to be appropriate, to assess the ability of a private security force of a licensed facility to defend against any applicable design basis threat."

[5] Category I fuel cycle facilities for the purpose of this memorandum are defined as facilities that possess a formula quantity of strategic special nuclear material as defined in 10 CFR 73.2 and are subject to the design basis threat Order. This definition currently applies to two facilities: (1) Nuclear Fuel Services, Inc.; and (2) Babcock & Wilcox Nuclear Operations Group.

spent fuel (e.g., non-incipient and/or non-localized fuel melting) or a loss of water level, and exposure of spent fuel, barring extraordinary actions by plant operators. While both operating and decommissioning power reactors are required to develop target sets, the number of target sets at a decommissioning reactor is significantly reduced. Implementation of the protective strategy at a decommissioning reactor takes into account this reduction in target sets.

The NRC staff evaluates the overall security and emergency preparedness posture during decommissioning on a site-specific basis. The NRC requires a level of security commensurate with the potential consequences to public health and safety and common defense and security. Each decommissioning power reactor has unique characteristics, such as the age of the fuel, amount of fuel in the pool, pool construction/location, and spent fuel load pattern.[6] Under the current safety analysis, the event sequences important to risk at decommissioning power reactors are limited to large earthquakes and cask-drop events. This is an important difference relative to operating power reactors where typically a large number of different initiating events make significant contributions to risk. For security, risk insights can be used to determine which targets are important to protect against sabotage. If the current understanding of spent fuel pool vulnerabilities changes, the approach for security and emergency preparedness at decommissioning power reactors may need to be re-evaluated.

For decommissioning power reactors, analyses[7] performed by the staff show that after spent fuel is sufficiently cool, spent fuel sabotage would not be expected to result in a large offsite radiological release because there is considerable time available to initiate and implement mitigative actions. In contrast, for operating reactors, the initial condition assumed for spent fuel pool target sets is a short period of time after spent fuel is removed from the reactor core, during which a sabotage event would be more likely to cause significant effects such as an offsite radiological release.

The NRC's process for regulation of decommissioning power reactors allows licensees to use existing license amendment and exemption processes to tailor security requirements to the specific circumstances at the facility. During the decommissioning process, a licensee may: (1) request exemption from specific physical security requirements (in accordance with 10 CFR 73.5, "Specific Exemptions"); (2) request amendments to its license regarding the implementation of the physical protection program (in accordance with 10 CFR 50.90, "Application for Amendment of a License, Construction Permit, or Early Site Permit"); (3) request use of alternative measures in lieu of meeting a physical security requirement (in accordance with 10 CFR 73.55(r), "Alternative Measures"); or (4) submit changes, under its own volition, to security plans that do not decrease the safeguards effectiveness of the plan (in accordance with subsections (p)(1) and (p)(2) of 10 CFR 50.54, "Conditions of Licenses"). The licensee's technical and regulatory evaluations provide the bases for their selection of the appropriate regulatory provision and process. With reduced radiological risk for a power reactor undergoing decommissioning after a certain period of time, the NRC has historically been open to relaxation of security requirements and has adjusted its security inspection program accordingly.

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[6] In 2009, the Zion plant was granted exemptions from many security requirements based on site specific characteristics such as the age of the fuel.

[7] NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," published February 2001 (Agencywide Document Access and Management System Accession No. ML010430066).

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The security inspection activities at decommissioning power reactors will transition to keep pace with changes resulting from decommissioning activities, and staff plans will be adjusted to satisfy changing demands and continuous improvement.

The Office of the General Counsel has reviewed this memorandum and has no legal objections.

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