(2)

NEI

NUCLEAR ENERGY INSTITUTE

'00 ... 2

Ralph E. Beedle
SENIOR VICE PRESIDENT AND
CHIEF NUCLEAR OFFICER,
NUCLEAR GENERATION

August 23, 2000

Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

DOCKET NUMBER
PROPOSED RULE PR 73
(65FR36649)

ATTENTION: Rulemakings and Adjudications Staff

SUBJECT: Request for Comments on Proposed Re-evaluation of Physical Protection Regulations, 65 *Fed. Reg.* 36649 (June 9, 2000)

The Nuclear Energy Institute (NEI)[1], on behalf of its industry members, is responding to a request for comments on SECY-00-0063, *Re-evaluation of Power Reactor Physical Protection Regulations and Position on Definition of Radiological Sabotage* (65*FR*36649 – June 9, 2000).

The industry continues to support the Commission's goal of developing a performance-based regulation for physical protection programs at nuclear power plants. In achieving this goal, clear objectives and performance criteria must be established.

There are two major concerns with the proposals contained in SECY-00-0063. First, radiological sabotage needs to be defined. Protecting against radiological sabotage and the relationship to public protection should be clearly understood. Second, the use of "critical safety functions" as the rule's overarching performance criteria does not lead to a performance-based, risk-informed rule. These proposals do not meet the Commission's direction in SRM-SECY-99-241 to pay attention to "...the degree to which risk insights can be used..." and to "...provide for flexibility in implementing..." the program.

In a series of public meetings conducted through February 2000, the NRC staff solicited comments on the definition of radiological sabotage and the performance criteria for a contingency response program. A key issue was the relationship between radiological sabotage and protection of public health and safety. The diverse positions expressed on this issue reinforce the need for a clear definition of the term "radiological sabotage," as it would be used in the rule. Radiological sabotage is defined as a release exceeding 10 CFR Part 100 criteria in NUREG-1178, *Vital Equipment/Area Guidelines Study: Vital Area Committee Report,*

[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

1776 I STREET, NW SUITE 400 WASHINGTON, DC 20006-3708 PHONE 202.739.8088 FAX 202.785.1898

Template = SECY-067

SECY-02

published February 1988. The industry supports this definition because it is consistent with the design requirements of the plants, it is in keeping with the practices for emergency planning and security measures, and it provides a sound basis for a performance-based assessment of security programs.

SECY-00-0063 introduced a new concept of "protecting critical safety functions" as the principal performance criteria for the rule. A prescriptive list of functions was included in the proposal. The nature of this concept and its relationship to 10 CFR 73 is not clear.

Furthermore, the resultant increased level of detail will lead to a more and more prescriptive list of Structures, Systems and Components that must be protected with little regard for performance or risk insights. This approach moves away from the fundamental issue of protecting the public. Incorporating risk-informed and performance-based concepts in meeting rule requirements would become more difficult. The concepts contained in SECY-00-0063 would obscure the focus on protection of the public.

We acknowledge the value of significant core damage-based target set methodologies as a useful tool for developing a risk-informed contingency response strategy. Licensees have developed target sets that support a contingency response strategy designed to protect against malevolent acts that could lead to significant core damage. The response must be effective in protecting the public and not the defense of a target set. Several different approaches have been used successfully in developing these target sets and all licensees' target sets have had validation reviews by the NRC staff during inspections.

The industry believes that contingency response programs should continue the focus on preventing significant core damage. Licensees should have flexibility in their approach to develop target sets and performance should be based on evaluation of the effectiveness of the contingency response in preventing significant core damage.

Detailed comments are provided in the enclosure. We appreciate the opportunity to comment on this issue and look forward to working with the NRC staff on issues related to the rulemaking effort.

Sincerely,

Ralph E. Beedle

Enclosure

Enclosure

Detailed Comments on SECY-00-0063 NRC's Re-evaluation of Power Reactor Physical Protection Regulations and Position on a Definition of Radiological Sabotage

These comments provide industry views on issues delineated in SECY-00-0063, dated March 9, 2000, and discussed at a July 12, 2000, public meeting. The original NRC Safeguards Performance Assessment Task Force recommendation in SECY-99-024, dated January 22, 1999, was to require power reactor licensees to identify target sets, develop protective strategies, and exercise these strategies on a periodic basis. SECY-99-241 dated October 5, 1999, revised the recommendation to begin a comprehensive review of security regulation with, in transition, an industry run pilot program of drills and exercises. Related information from Staff Requirements Memoranda on these documents has also been considered.

The industry has dedicated the resources needed to contribute to the comprehensive review of the existing rule, 10 CFR §73.55, covering nuclear power plant security/safeguards requirements. The revised rule needs to allow use of risk-informed, performance-based approaches to security. Elimination of compliance-based elements in all associated regulatory documents, including individual Physical Security Plans, must occur to shift security program focus to realistic objectives and outcomes.

The concepts introduced in SECY-00-0063 do not support Commission direction to include risk insights and provide flexibility in implementation of the rule. The NRC should clearly define the performance-based criteria that would constitute successful radiological sabotage if they were not met. Secondly, the use of a new, untested concept for protection of "critical safety functions" will result in inflexible, prescriptive requirements that would make performance-based assessments difficult.

Radiological Sabotage:

An understanding of the level of protection to be provided to the public is fundamental to a performance based security rule. Additionally, the Commission's questions on "margin of safety" cannot be answered if the level of protection is not defined.

In other areas of plant design, the need to protect the public is ultimately addressed by preventing a release that exceeds 10 CFR Part 100 limits. There are a number of initiating events that are considered in the design and evaluation process.

Attempted radiological sabotage can be considered as another initiating event, with the consequences analyzed on the same bases as the rest of the plant.

To provide a safety margin, performance criteria must be set at some level below the level of successful radiological sabotage. In developing contingency response programs, significant core damage is currently being used as the performance criteria by both the NRC staff and the industry. It is considered an appropriate basis for future discussions on performance criteria.

For radiological sabotage to be successful, the malevolent activities would have to lead to a large radiological release that exceeds 10 CFR Part 100 limits. The industry's understanding of radiological sabotage is supported by that expressed in NUREG 1178:[2]

> "Successful radiological sabotage results in doses in excess of those defined in 10 CFR 100. The 10 CFR 100 criteria are intended to serve as a benchmark for the analysis of major events, that is, those events that pose a potential health hazard (a significant release of radioactivity as a result of a major accident or radiological sabotage)."

To provide a margin of safety, NUREG 1178 also states in its analysis assumptions that, "Any transient or event that causes significant core damage will result in an attendant 10 CFR 100 release." As such, "significant core damage" has been the basis for the industry's protection strategy and the NRC OSRE oversight program.

Critical Safety Functions:

The proposal inappropriately elevates protecting "critical safety functions" to the primary rule objective. This would create a significant problem in the development of a performance-based rule.

Currently, the industry's contingency response programs have been based on preventing significant core damage. As a development and evaluation tool, target sets were used to identify functional Structures, Systems and Component (SSC) groupings for performing particular functions. Since these target sets are only tools in the development of protection strategies for contingency response designed to protects the public by preventing significant core damage, these target sets in themselves should not become the key rule objective.

NUREG 1178 documents the Vital Area Committee's efforts to reevaluate the need to protect all vital equipment. The concepts presented in this document have become the basis for much of the work on target sets and performance-based

[2] NUREG 1178 ("Vital Equipment/Area Guidelines Study," page 4-1)

contingency response strategies. Target sets provide a means of addressing key functions needed to prevent significant core damage, such as maintaining a source of makeup water. It also recognizes that there are multiple ways to fulfill that function. This provides a tool for developing protection strategies that provide for defense-in-depth and flexible response. It is essential that responders can react as considered necessary on the different conditions of real-time events.

A July 12, 2000, NRC staff briefing on the use of critical safety functions in the security rule raised a number of issues. The process reverts to the old vital island concept with a series of "protected target sets" to be defended. There would be little flexibility and other systems could not be used to fulfill the function of a critical target set if it were not protected. In one example provided by the staff, one train of ECCS and the RWST were to be protected to maintain reactor coolant makeup capability. Loss of the RWST is of little importance if there are other sources of water still available.

Protection of a "protected target set" without considering the overall status of the plant leads to evaluation criteria based on a set of prescriptive requirements that are unrelated to the overall issue of protecting the public. Performance evaluations should focus on the overall consequence of a drill or exercise. Was the licensee able to prevent radiological sabotage by preventing significant core damage? The protection of one tank of water should not be the critical issue.

No details have been provided on how the NRC expects to address "with an appropriate margin of safety." The concept was not explained in SECY-00-0063 or in the July 12, 2000, staff's discussion. The safety margin needs to be clearly defined and understood for a performance-based rule to work. The industry believes that an anappropriate margin would be provided by selecting significant core damage as the performance criteria. Margin has been the key issue in discussion of radiological sabotage. As used in this application, the term has not been clarified.

The current target sets identify a range of equipment needed to perform certain functions. This has allowed development of defensive strategies that provide for better defense-in-depth responses to unexpected events. In developing target sets, key functions such as reactivity control, sources of makeup water, and reactor cooling must be considered. Identifying critical SSCs is a key tool in target set development, but should not become the ultimate goal for the security program.

How do the individual parts support the overall criteria? For example, "containment of radioactive materials" needs to show primary barriers are protected independent of the other criteria. If significant core damage is prevented, how does this apply? What is the danger to the public that could result from this element? In the staff's example, containment would have to be protected independent of any

other criteria. If the containment was damaged but not the primary barriers, how would this affect public health and safety?

In SRM-99-241, the Commission asked that, "In developing the rule, the staff should pay particular attention to the degree to which risk insights can be used to develop target sets, and to the integration of security inspections and performance indicators into the new oversight process. The rule should provide for flexibility in implementing its provisions, and, most importantly, it should not unnecessarily burden operational safety at nuclear power plants." It is unclear how these precepts would be fulfilled by critical safety functions as a criteria.

In May 2000, the industry provided in a public meeting draft rule language that provides a logical approach to meeting the overall performance objectives for physical protection of nuclear power plants. There are several–layered–elements of the program. First is the access authorization program to assure the trustworthiness and reliability of personnel with unescorted access. Second is a barrier system and material search program. Third is a detection system to detect unauthorized attempts to enter the facility. Fourth is an assessment capability to evaluate the threat. And fifth is a contingency response capability to counter a threat. Target sets and contingency response performance criteria should be elements of this layer.

Protection strategies have been based on specifically identified target sets A target set is a group of SSCs that, if one component function were maintained, no core damage would result. The performance standard then would involve the protection of necessary functions in order to prevent significant core damage and to preserve containment integrity.

Also, the industry supports protection of the spent fuel pool (SFP) as an included target to be considered in the protection strategy. Performance criteria would need to encompass long-term heat removal including the time/conditions associated with integrity failure of stored fuel elements.

Hypothetically, the loss of one of the defined critical safety functions would not necessarily result in core damage or in the release of any radiation. The plant protection strategy based on target set analysis that considered this loss would still meet its objective—no core damage means no radiological risk to public health and safety. By current industry and regulatory experience, in order to achieve "significant core damage," all functions in a target set would have to be compromised in order to initiate an event that might result in a radiological release. Licensees developed target sets considering design basis SSCs necessary to prevent core damage. Then operations could use undamaged SSCs once the adversary was neutralized.

In summary, instead of promoting untested concepts (critical safety functions) for physical protection, the effort would best serve to establish a meaningful Safeguards Performance Assessment program by:

- using the current radiological sabotage performance criterion of significant core damage;
- promulgating the generally accepted adversary characteristics that support the design basis threat;
- providing risk-based principles for target set analysis on which a sound protection strategy can be based;
- enabling operator action flexibility for mitigation of equipment loss.; and
- enabling the response force to maximize resources and focus on the ultimate goal of protecting the public health and safety.