RULEMAKING ISSUE
(Notation Vote)

March 28, 2005 SECY-05-0048

FOR: The Commissioners

FROM: Luis A. Reyes
Executive Director for Operations /RA/

SUBJECT: PETITION FOR RULEMAKING ON PROTECTION OF U.S. NUCLEAR POWER PLANTS AGAINST RADIOLOGICAL SABOTAGE (PRM-50-80)

PURPOSE:

This paper asks the Commission to approve consideration of rulemaking to require licensees to evaluate the effects of plant changes on the safety/security interface. This paper also recommends the Commission deny the petitioners' request that licensees conduct analyses of potential aerial crashes and implement plant modifications to ensure safe shutdown capability.

SUMMARY:

The subject petition requested two rulemaking actions be undertaken. The staff evaluated the requests and, regarding the first request, recommends the Commission approve development of a technical basis for rulemaking requiring licensees to evaluate the effects of plant changes on the safety/security interface. The staff also recommends the Commission deny the petitioners second request that licensees conduct analyses of potential aerial crashes and implement modifications to ensure safe shutdown capability.

BACKGROUND:

On April 28, 2003, the Union of Concerned Scientists (UCS) and the San Luis Obispo Mothers for Peace (MFP) petitioned the Nuclear Regulatory Commission (NRC) for changes to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The requested changes relate to radiological sabotage of nuclear power plants.

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SECY NOTE: TO BE RELEASED TO THE PUBLIC 5 WORKING DAYS AFTER DISPATCH OF THE LETTER TO THE PETITIONER.

The petitioners proposed two rulemaking actions in PRM-50-80. First, the petitioners requested that 10 CFR 50.54(p), "Conditions of licenses," and 10 CFR 50.59, "Changes, tests, and experiments," be revised to require licensee evaluation of whether proposed changes, tests, and experiments would decrease protection against radiological sabotage and, if so, that such activities only be conducted with prior NRC approval. Second, the petitioners requested that 10 CFR Part 50 be revised to require licensees to evaluate their facilities' vulnerability to specified aerial hazards and make necessary changes to provide reasonable assurance that the ability of the facility to reach and maintain safe shutdown will not be compromised by such aerial hazards.

In accordance with 10 CFR 2.802(d), the petitioners further requested suspension of the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) proceeding during consideration of PRM-50-80. That request was denied by Commission Memorandum and Order CLI-03-04, dated May 16, 2003.

The petition was published in the *Federal Register* for comment on June 16, 2003. Four comments were received arguing against the petition. No comments were received supporting the petition.

DISCUSSION:

First Proposed Action

The petitioners requested that 10 CFR 50.54(p) and 10 CFR 50.59 be revised to require licensee evaluations of whether proposed changes, tests, and experiments would decrease protection against radiological sabotage and, if so, that such activities only be conducted with prior NRC approval. The petitioners stated that presently, the two regulations have minimal overlap and that many changes, tests, and experiments have no effect on security. However, some proposed changes, tests, and experiments, including short-term or temporary ones, may affect plant security.

The petitioners stated that short-term degraded or off-normal conditions are often determined to be acceptable because of the low probability of an accident initiator during the short time they exist. However, the petitioners stated that sabotage is not random and the saboteur or saboteurs may choose to act during the degraded or off-normal condition. Therefore, the probability of sabotage occurring during degraded or off-normal conditions increases towards 100 percent. The petitioners asserted that it is reasonable to assume an insider acting alone or an insider aided by several outsiders will time the sabotage to coincide with a vulnerable plant configuration. Therefore, the petitioners requested that licensees be required to evaluate changes, tests, and experiments from both a safety and a security perspective. The petitioners suggested that the security review could flag a heightened vulnerability for a given change, but accept it (for temporary situations) based on compensatory measures (armed guards, etc.), and that the result of such a review would be that many licensee actions could proceed as planned, some could proceed with compensatory measures, a few would require NRC review, and a very small number might be denied.

Four letters of public comment were received on PRM-50-80. All opposed the actions requested in the petition. The commenters were the Aircraft Owners and Pilots Association (AOPA), Tennessee Valley Authority (TVA), Strategic Teaming and Resource Sharing (STARS), and the Nuclear Energy Institute (NEI). With regards to the first Proposed Action, two of the commenters stated that 10 CFR 50.59 and 50.54(p) have different purposes. Two of the commenters stated that industry guidance (NEI 96-07) on 10 CFR 50.59 evaluations requires all applicable regulations to be considered for changes, tests, and experiments and that a dual review of all changes is unnecessary. Two of the commenters stated that there are already requirements for prevention of radiological sabotage, including the recent orders and security requirements in both Part 73 and Part 50. One commenter stated that there is no direct correlation between security plan effectiveness and plant condition.

Second Proposed Action

The petitioners requested that 10 CFR Part 50 be amended to require licensees to evaluate the ability of their facilities to withstand specified aerial hazards and make necessary changes to provide reasonable assurance that the ability of the facility to reach and maintain safe shutdown would be maintained in the event of an accidental or intentional aerial crash. The petitioners asserted that none of the nuclear power plants were designed to withstand suicide attacks from the air and that the fire hazards analysis process used by the NRC following the Browns Ferry fire should be implemented for aerial hazards.

The petitioners claimed that the no-fly zones established in late 2001 by the Federal Aviation Administration (FAA) were a concession by the Federal government to the vulnerability of nuclear power plants to air assault. The petitioners also asserted that the control buildings at all nuclear power plants are outside of the robust concrete structures studied in NEI's analyses of nuclear power plant vulnerability to aircraft crashes. The petitioners asserted that 37 of the 81 Operational Safeguards Response Evaluations (OSREs) conducted before the date of the petition identified significant weaknesses. The petitioners contended that the control building is the Achilles heel in the OSRE target sets. The petitioners claimed that an aircraft hitting the control building may destroy the control elements for all four water supplies and much more. The petitioners argued that the NRC fire hazards analyses are not restricted to containment and that this is in recognition that core damage can result from fires outside containment. The petitioners stated that licensees are required to show in their fire hazards analyses that there is sufficient equipment outside the control room to achieve safe shutdown. The petitioner stated that the fire analyses have resulted in equipment and cable relocation. The petitioners further stated that the fire hazards analyses are "living documents" that future plant changes must be reviewed against.

The petitioners suggested that one way to ensure adequate protection from aerial threats is to replicate the fire hazards analysis process and that NRC should define the size and nature of the aerial threat a plant must protect against as part of the design basis threat (DBT). The petitioners suggested the aerial threat should include, at a minimum, general aviation aircraft because post-9/11 airport security measures usually overlook general aviation. The petitioners suggested the aerial threat might include explosives delivered via mortars and other means (e.g., rocket-propelled grenades). The petitioners further stated that, if the aerial hazards

evaluation identifies that all targets within target sets are likely to be disabled, the licensee should have three options:

1. Add or install other equipment to the target set that is outside of the impact zone to perform the target set function.
2. Protect in place at least one of the targets (shield wall, etc.).
3. Relocate or reroute affected portions of a system to outside of the impact zone.

The petitioners also suggested the aerial hazards analysis should provide a means to ensure future changes do not compromise protection and that whether arriving on foot or by air, adversaries should not be able to disable an entire target set. The petitioners asserted that in 13 of 57 plant OSREs, the adversary team was able to destroy every target in the target set without entering containment (27 of the OSREs simulated destruction of at least 1 target set). The petitioners further argued that if an aircraft had hit a nuclear power plant on September 11, 2001, then the actions proposed in the petition would have been taken as necessary to prevent recurrence. The petitioners suggested that these actions should be implemented to prevent occurrence in the first place.

With respect to the second requested action, one commenter opposed inclusion of general aviation aircraft in the DBT, and described actions and flight restrictions taken by Federal and industry airport and aircraft security organizations. The same commenter cited a report by Robert M. Jefferson that concluded that general aviation aircraft are not a significant threat to nuclear power plants. Another commenter mentioned industry and government studies of the effects of a large airborne object. The commenter stated the studies concluded there would be no massive releases from such an event. The commenter also said that nuclear power plants already have diverse, divided trains and shutdown capability. Another commenter said that NRC would promulgate any needed regulatory changes, based on ongoing vulnerability studies at a Department of Energy national laboratory. Another commenter argued the Federal Government is responsible for protection of nuclear power plants from aircraft attacks. The same commenter claimed that extensive aircraft impact analyses are not justified and cited an industry study of the risk from an armed terrorist ground attack. The study concluded that the consequences would be noncatastrophic.

ANALYSIS OF REQUESTED ACTIONS:

The staff evaluated the advantages and disadvantages of the two proposed actions with respect to the NRC Strategic Performance Goals.

First Proposed Action

1. Ensure protection of public health and safety and the environment: The staff acknowledges that the requested rulemaking could help protect public health and safety and the environment. Nuclear power plant licensees are currently required to address the continued safety of the plant with regard to changes, tests, or experiments (10 CFR 50.59) and also to ". . . establish, maintain, and follow an NRC-approved safeguards contingency plan for responding to threats, thefts, and radiological sabotage . . ." (10 CFR 73.55(h)(1)). Further, licensees must ". . . establish and maintain an onsite physical protection system and security organization which will have as its objective to provide high assurance that activities involving special nuclear material are not inimical to the common defense and security and do not constitute an unreasonable risk to the public health and safety." (10 CFR 73.55(a)), and ". . . may make no change which would decrease the effectiveness of a security plan . . ." (10 CFR 50.54(p)(1)). However, the regulations do not specifically require evaluation of the effect of plant changes on security or the effect of security plan changes on plant safety. Further, the regulations do not require communication about the implementation and timing of changes amongst operations, maintenance, and security to promote awareness of the effects of changing conditions for appropriate assessment and response.

   In addition, the staff is aware of enough occurrences of adverse safety/security interactions at nuclear power plants over the years to justify consideration of a rule change. Many, but not all, of these occurrences were during refueling outages. Examples of operations adversely impacting on security include: inadvertent security barrier breaches while performing maintenance activities (e.g., cutting of pipes that provide uncontrolled access to vital areas, removing ventilation fans or other equipment from vital area boundary walls without taking compensatory measures to prevent unauthorized entry into vital areas, etc.); blockage of bullet resisting enclosure (or other defensive firing position) fields of fire; erection of scaffolding and other equipment without due consideration of its impact on security response time-lines or response pathways; and staging of temporary equipment within security isolation zones. An example of security adversely impacting operations could be inadequate staffing of security force personnel on backshifts, weekends, and holidays, to support operations during emergencies (e.g., opening and securing vital area access doors to allow operations personnel timely access to safety-related equipment).

2. Ensure the secure use and management of radioactive materials: The staff believes that the requested rulemaking could help ensure the secure use and management of radioactive materials. As discussed above, existing regulations require the evaluation of changes to the facility and to the security plan. However, the regulations do not specifically require that these changes be evaluated for their effect on the safety/security interface. Therefore, revising the regulations to specifically require these changes to be evaluated for their potential effect on the safety/security interface could help further the secure use and management of radioactive materials.

3. Ensure openness in our regulatory process: The requested rulemaking would further openness in the regulatory process by providing an opportunity for public comment on the proposed revision. Public comment and the rulemaking process could help determine the need for a revision and the scope of any revision.

4. Ensure that NRC activities are effective, efficient, realistic, and timely: The proposed revisions would likely make existing regulations more effective and address realistic field implementation issues but would necessarily result in some increase in licensee and NRC burden.

In summary, the staff agrees with the petitioners that rulemaking may be appropriate for the first requested action but suggests that further consideration is needed to determine the sections of Parts 50 and/or 73 that should be revised. The staff also plans to issue a generic communication to heighten licensee awareness to the potential for changes to the facility or to the security plan to adversely affect plant safety or security. The staff notes that communications between the NRC and licensees should comply with guidance in SECY-04-191 on sensitive unclassified information to preclude aiding a potential adversary.

Approach for rulemaking for the first requested action:

If the Commission approves the staff's recommendation, the staff will begin development of the technical basis for rulemaking and of a specific approach for revision of the regulations. An interoffice workgroup has identified options for rulemaking for power reactors and provided them to the interoffice Safety Security Interface Advisory Panel (SSIAP) which will, if the Commission approves the staff's recommendation, advise the staff on an approach for technical basis development.

The Office of Nuclear Materials Safety and Safeguards (NMSS) will be informed of the actions and decisions of the SSIAP. After the technical basis has been developed and a preferred approach for rulemaking that would address safety/security interface issues for power reactors has been identified, NMSS will assess the need for rulemaking that would encompass safety/security issues for their licensees.

Second Proposed Action

1. Ensure protection of public health and safety and the environment: The staff believes that the requested action would not significantly contribute to protecting public health and safety and the environment because vulnerability assessments to date indicate that the likelihood of such events damaging the reactor core and releasing radioactivity that could affect public health and safety is low. In addition, the staff believes that the best way to protect against an attack is by effective implementation of Transportation Security Administration security measures at the nation's airports. Additional site-specific studies of operating nuclear power plants are underway or being planned to determine the need, if any, for additional mitigating capability on a site-specific basis. Furthermore, the staff will continue to review intelligence and threat reporting to recommend any appropriate modifications to the DBT. The specifics of the DBT for

radiological sabotage are considered safeguards information and are not disclosed to the general public.

2. Ensure the secure use and management of radioactive materials: The staff believes that the requested action would not significantly contribute to ensuring the secure use and management of radioactive materials because evaluations that support the adequacy of the DBT already consider attacks by various modes of transport and their likelihood of occurrence.

3. Ensure openness in our regulatory process: The proposed revisions would not further increase openness in our regulatory process because the analyses and/or plant changes that would be required if the requested action was implemented would need to be protected as Safeguards Information and would not be disclosed to the general public.

4. Ensure that NRC actions are effective, efficient, realistic, and timely: The proposed revisions would not make NRC activities and decisions more effective, efficient, realistic, and timely because NRC already required nuclear power plant licensees to implement specific security enhancements and/or measures to mitigate the potential consequences of a successful attack on a nuclear power plant in a manner that incorporates the full scope of the Interim Compensatory Measures required by Order dated February 25, 2002, and the DBT as supplemented by Order on April 29, 2003. Additional site-specific studies of nuclear power plants are underway or are being planned to determine the need, if any, for additional mitigating capability on a site-specific basis. Furthermore, the staff will continue to review intelligence and threat reporting to recommend any appropriate modifications to the DBT.

Because the requested action would not significantly contribute to protecting public health and safety and the environment and because the best way to protect against an aerial assault is by effective implementation of Transportation Security Administration security measures at the nation's airports, the staff does not agree with the petitioners that rulemaking is necessary for the second requested action of PRM-50-80.

RESOURCES:

The staff expects that 2.3 FTE will be needed to develop the technical basis for this rule, approximately 1 FTE from the Office of Nuclear Security and Incident Response (NSIR), 1 FTE from the Office Of Nuclear Reactor Regulation (NRR), and 0.3 FTE from NMSS. If the Commission approves the staff's recommendation, the staff will begin technical basis development in FY 06. The staff evaluated this proposed rulemaking against all other potential agency rulemakings and determined that it ranked high. Therefore, if the Commission approves the staff's recommendation, the staff intends to reallocate resources from lower priority activities in the existing budget.

The staff is also planning to include resources in the proposed FY 07 budget for this rulemaking based on the assumption that the technical basis will be available by mid FY 07. The staff

expects that 2.5 FTE will be needed to conduct the rulemaking (approximately 0.7 FTE from NSIR, 1.5 FTE from NRR, and 0.3 from the Office of the General Counsel). The staff estimates that $40K from NRR will be needed to develop the regulatory analysis and that the rulemaking will take 24 months to complete.

RECOMMENDATION:

That the Commission:

1. Approve the staff developing the technical basis for a rulemaking to require licensees to evaluate the effects of plant changes on the safety/security interface.

2. Deny the second requested action of PRM-50-80 regarding licensee analyses of aerial crashes.

3. Approve publication of a *Federal Register* Notice (Attachment 1) describing the Commission's intention.

4. Note that:

   a. A letter is attached for the Secretary's signature (Attachment 2) informing the petitioners of the Commission's decision to partially deny the petition.

   b. The appropriate Congressional committees will be informed.

COORDINATION:

The Office of the General Counsel has no legal objection to denying the petition in part.

/RA/

Luis A. Reyes
Executive Director
for Operations

Attachments: 1. *Federal Register* Notice
2. Letter to Petitioners

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ADAMS Accession No.: Commission Paper and Attachments: ML043270383

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