



Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

March 21, 2007

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

Attention: Rulemakings and Adjudications Staff

Submitted via e-mail to SECY@nrc.gov

**SUBJECT: COMMENTS ON NRC PROPOSED RULE "POWER REACTOR
SECURITY REQUIREMENTS" (RIN 3150-AG63)**

Good Day:

Pursuant to the notice published in the *Federal Register* (Vo. 71, No. 207, October 26, 2006, pp. 62664-62874), we submit the attached comments on the proposed revision to its regulations on security at operating nuclear power plants on behalf of the Union of Concerned Scientists and the following organizations:

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Sincerely,

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FRN Page	Proposed Rule Paragraph	Comment
n/a	General comment	UCS supports many elements of this rule, including (1) clarification of the definition of radiological sabotage, especially the inclusion of spent fuel sabotage; (2) clarification of the meaning of protection against the DBT, including the responsibility of the licensee to “neutralize” the threat; (3) establishing a security “defense-in-depth” requirement; and (4) expanding the licensee’s security obligations to include the owner-controlled area. UCS has not identified any elements of the proposed rule that would represent an undue regulatory burden to licensees.
62665	n/a	<p>The proposed rule does not comply with the requirements of the Energy Policy Act of 2005.</p> <p>Section 651 of the Energy Policy Act of 2005 (EPAAct) requires that “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.” Furthermore, “the security evaluations shall include force-on-force exercises.”</p> <p>The proposed rule mentions this requirement in the preamble (71 FR 62665) and states that this provision “would be reflected in proposed §73.55.” Yet a review of the proposed rule text reveals that the provision is not included. The proposed rule requires licensees to establish a licensee-run “Performance Evaluation Program” in Part 73 Appendix C Section II (l), but nowhere in this section is there any requirement for Commission-conducted, force-on-force based security evaluations. This does not appear to be an accidental omission, since the other EPAAct provisions in Section 651 are incorporated essentially verbatim in the proposed rule. But the omission results in confusion, since Part 73 Appendix C (l)(5) refers to “NRC observed exercises,” yet nowhere in the proposed rule is it explained exactly what those exercises are, how often they are to be carried out, or any other information about them.</p> <p>When this omission was pointed out at the public meeting on March 9, 2007, NRC staff claimed that the proposed rule was only intended to include requirements for licensees, not those for the Commission. But such a position is not consistent with current regulations. The physical protection regulations that are currently in effect for Category I fuel cycle facilities clearly state the requirement for a Commission role in the force-on-force exercise program at 10 CFR §73.46(b)(9):</p>

FRN Page	Proposed Rule Paragraph	Comment
		<p>“The licensee shall conduct Tactical Response Team and guard exercises to demonstrate the overall security system effectiveness and the ability of the security force to perform response and contingency plan responsibilities and to demonstrate individual skills in assigned team duties. During the first 12-month period following the date specified in paragraph (i)(2)(ii) of this section, an exercise must be carried out at least every three months for each shift, half of which are to be force-on-force. Subsequently, during each 12-month period commencing on the anniversary of the date specified in paragraph (i)(2)(ii) of this section, an exercise must be carried out at least every four months for each shift, one third of which are to be force-on-force. The licensee shall use these exercises to demonstrate its capability to respond to attempts to steal strategic special nuclear material. During each of the 12-month periods, the NRC shall observe one of the force-on-force exercises which demonstrates overall security system performance. The licensee shall notify the NRC of the scheduled exercise 60 days prior to that exercise. The licensee shall document the results of all exercises. The licensee shall retain the documentation of each exercise as a record for three years after each exercise is completed.”</p> <p>Therefore, it is clear that to comply with the 2005 EAct, the proposed rule must incorporate text to make clear that in addition to the licensee-run Performance Evaluation Program, there will also be a Commission-conducted security evaluation program at each power reactor site, including force-on-force exercises, at least every three years.</p> <p>We acknowledge that the EAct language gives the Commission discretion to decide at which classes of facilities it should conduct security evaluations. However, we cannot believe it was the Commission’s intention to exclude power reactors from those facilities requiring Commission-conducted force-on-force evaluations. If so, the Commission should state this position plainly and not try to bury the omission in the proposed rule text.</p> <p>In addition to explicitly including this requirement, the rule should contain some specific guidelines (in addition to the conflict-of-interest provision) for the conduct of the NRC-evaluated force-on-force exercises. For instance, the protocols used to simulate the provision of insider information to the external adversary team to be used in scenario selection should be clearly defined.</p>
n/a	General	<p>The rule should require that licensees adopt “denial of access” as the fundamental protective strategy for defense against the DBT.</p> <p>In keeping with the new “defense-in-depth” security requirement in the proposed rule, “denial of access” should be defined as the fundamental protective strategy at power reactor sites. “Denial of task,” that is, protecting at least one element of a target set from destruction, should</p>

FRN Page	Proposed Rule Paragraph	Comment
		<p>be regarded as a contingency goal in the event that access denial fails. But denial of task should not be permitted to be the primary protective strategy. This will naturally reinforce the importance of the proposed security requirements for owner-controlled areas.</p>
n/a	General	<p>The rule should designate a subset of “critical” security implementing procedures that are subject to Commission review and approval.</p> <p>Under the current rule, the security plan and safeguards contingency plan are subject to Commission review and approval, but the written security procedures that detail how those plans are to be carried out are not subject to such review. However, in our experience the security and contingency plans themselves do not contain enough detail to allow the Commission to reasonably determine that they are adequate. The implementing procedures, on the other hand, contained detailed information about such critical plan elements as the positions, duties and redeployment strategies of the armed response force, and therefore are crucial to the determination of a licensee’s ability to defend against the DBT. It is not prudent for the Commission to wait for a triennial evaluated force-on-force exercise before uncovering serious vulnerabilities in a licensee’s protective strategy.</p> <p>At the March 9, 2007 public meeting, NRC staff said that NRC headquarters staff would not have the site-specific knowledge to evaluate detailed implementing procedures. However, in our judgment, an experienced security analyst would be able to detect obvious weaknesses in documents such as the armed responder procedure without the need for an actual site inspection. And there is no reason why baseline security inspections in between force-on-force evaluations cannot be expanded to address some of these concerns.</p> <p>We note that the Government Accountability Office (GAO) made similar observations regarding the inadequate level of detail in security plans in its testimony to Congress in September 2004.¹</p>
62683	73.19(f)(2)(iv)	<p>The proposed rule would allow enhanced weapons to be used, but would not require an insider using an enhanced weapon against the facility to be considered.</p> <p>This regulation requires licensees seeking to add enhanced weapons to their physical protection plan to conduct a safety assessment. During the NRC public meeting conducted on March 9, 2007, UCS asked the NRC staff about the expected depth and breadth of this safety assessment. The NRC staff responded by saying that 73.19(f)(2)(iv)(A)</p>

¹ “Preliminary Observations on Efforts to Improve Security at Nuclear Power Plants,” Statement of Jim Wells, Director, Natural Resources and Environment, United States Government Accountability Office, Testimony before the Subcommittee on National Security, Emerging Threats, and International Relations, Committee on Government Reform, House of Representatives, Tuesday, September 14, 2004.

FRN Page	Proposed Rule Paragraph	Comment
		<p>required licensee to “Assess any potential safety impact on the facility ...” from the deliberate or accidental discharge of the enhanced weapon by an authorized security force member in an authorized part of the plant. For example, the licensee’s physical protection plan might rely on enhanced weapon(s) to defend against an assault through the Widget Fabrication Building and only this one structure. The safety assessment to be required under 73.19(f)(2)(iv)(A) would be limited to the consequences of the enhanced weapon(s) accidentally discharging while being carried from storage location to deployment positions in the Widget Fabrication Building and the deliberate firing of the weapon(s) against intruders within the Widget Fabrication Building.</p> <p>That scope is insufficient because it is non-conservative.</p> <p>The NRC’s original and recently revised design basis threat (DBT) regulation requires the licensee to protect against an insider, either working alone or in conjunction with a number of external persons. The safety assessment required by 73.19(f)(2)(iv) must also include an insider using the enhanced weapon(s) for the purposes of radiological sabotage. In other words, the safety assessment must not be limited to the enhanced weapon(s) use by authorized personnel in authorized areas.</p>
62688 & 62690	73.55(b)(3) & 73.55(b)(7)	<p>The proposed rule requires protection against either core damage or spent fuel sabotage, not both.</p> <p>A former NRC staffer, Richard Rosano, pointed out a significant wording difference in the text of these two paragraphs. Paragraph (b)(3) requires licensees to “prevent significant core damage and spent fuel sabotage” while paragraph (b)(7) requires licenses to “prevent significant core damage or spent fuel sabotage.”</p> <p>The regulation must be reviewed and wording revised as necessary to consistently prevent significant core damage and spent fuel sabotage whether occurring individually or collectively.</p>
62701	73.55(g)(1)	<p>The proposed rule does not close a dangerous loophole in current search requirements for law enforcement personnel and security officers.</p> <p>The current rule at §73.55(d)(1) states that ... The licensee shall control all points of personnel and vehicle access into a protected area ... The licensee shall subject all persons except bona fide Federal, State, and local law enforcement personnel on official duty to these equipment searches upon entry to a protected area. Armed security guards who are on duty and have exited the protected area may reenter the protected area without being searched for firearms.”</p> <p>The draft rule language in 73.55(g)(1) no longer specifically authorizes these exceptions to the search procedures, but would still allow them subject to Commission review and approval. However, such exceptions could provide insiders or corrupt law enforcement personnel</p>

FRN Page	Proposed Rule Paragraph	Comment
		collaborating with adversaries with significant opportunities to introduce contraband, silencers, ammunition or other unauthorized equipment that could be used in an attack. This practice should be explicitly forbidden in the rules except under extraordinary circumstances, as approved by the Commission.
62708	73.55(g)(8)	<p>The proposed rule allows escorts to take multiple visitors with minimal background checks into protected and vital areas within nuclear power plants, but does not require that the escorts met even minimal physical and visual capabilities.</p> <p>This paragraph and its subparagraphs delineate requirements for personnel who escort visitors into the protected areas of nuclear power plants. Basically, the escorts must have been authorized unescorted access and be knowledgeable of their responsibilities as visitor escorts. But unlike the proposed new requirement the NRC seeks to add via Part 73 Appendix B paragraph B.2.a.(2) (FRN page 62808) that unarmed members of the security organization meet specified physical capabilities, the proposed regulations would not prevent licensees from assigning blind, deaf, and mute persons as escorts. The regulation must define minimally acceptable physical attributes for escorts.</p>
62708	73.55(g)(8)(v)	<p>The proposed rule would allow a single escort to take more visitors with minimal background checks into protected areas of nuclear power plants than was specified as an external assault force in the recent design basis threat rulemaking and would allow literally hundreds of visitors with minimal background checks to be escorted into vital areas.</p> <p>This paragraph allows an escort to take up to 10 visitors into protected areas and up to 5 visitors into vital areas if certain conditions are satisfied. There are many problems with this paragraph.</p> <p>First, the protected area / vital area distinction contradicts the approach taken to physical protection within this regulation. Paragraph 73.55(f)(1) (FRN page 62700) requires licensees to document how target set equipment and elements were developed. Paragraph 73.2 (FRN page 62846) was revised to add a definition for target set. The target set requirements and practices do not ensure that all target set equipment and operator actions are confined to vital areas, thus some may reside in the non-vital portions of the protected areas. The regulation must limit the number of visitors that escorts take into areas containing target set equipment when those areas are not within vital areas.</p> <p>Second, the requirement limits the number of visitors that an individual escort can take into protected and vital areas of nuclear power plants, but it does not limit the total number of visitors within vital and protected areas. For example, a group of, say, 19 visitors could be taken into vital areas of any nuclear plant in the US as long as four or more escorts were used. The regulation must limit the total number of visitors inside vital and protected areas of nuclear plants at any given time.</p>

FRN Page	Proposed Rule Paragraph	Comment
		<p>Third, the NRC's recently revised design basis threat (DBT) regulation requires licensees to protect their facilities from radiological sabotage by up to X number of external attackers. While the NRC has not publicly stated the magnitude of X, it is generally understood to be on par with the number of visitors that 73.55(g)(8)(v) would allow an unarmed escort to take into a vital area of a nuclear plant and half the number of visitors that 73.55(g)(8)(v) would allow an unarmed escort to take into the protected area. Unless the force-on-force security exercises have demonstrated that the facility can be protected against attempted sabotage by 10 persons within the protected area and 5 persons within the vital area, this regulation as-is undermines the entire physical protection program. This regulation must (a) require armed members of the security organization escort visitors into areas of the plant containing target set equipment, (b) prohibit visitors from entering areas of the plant containing target set equipment, and/or (c) require periodic force-on-force security exercises demonstrate capability to prevent sabotage by 10 persons starting from within the protected area and by 5 persons starting from within the vital area.</p> <p>Fourth, if the sabotage threat is such that an escort can take 10 visitors into protected areas but only 5 visitors into vital areas, the regulation must require measures to protect against an escort for more than 5 visitors from accessing vital areas. For example, the escort's access rights could be temporarily changed in the security computer to not permit his or her access badge from opening vital area doors. Or, the escort could exchange his or her permanent badge for a temporary badge that only opens doors to protected areas of the plant. These measures would protect against the escort accidentally leading a group of more than 5 visitors into vital areas and against the visitors overwhelming their escort and using his or her badge for unauthorized entry into vital areas.</p>
62720	73.55(k)(3)	<p>The rule should ensure that security officers with duties other than immediate armed response are not required for protection against the DBT and are not inappropriately credited in force-on-force exercises.</p> <p>The proposed rule requires at §73.55(k)(3) that licensees provide an armed response team consisting of both "armed responders" and "armed security officers." The difference is that "armed responders" cannot be assigned "any other duties or responsibilities that could interfere with response duties." "Armed security officers," on the other hand, can be assigned such duties or responsibilities. The rule should be written to make clear that only armed responders can be utilized in the protective strategy to protect against the DBT. The Commission must be able to ensure that licensees will provide an armed responder force large enough to be able to remain effective in the event of significant attrition without the necessity of calling in armed response personnel, who may be fulfilling other critical functions during an attack such as securing the protected area perimeter, or protecting operators needed to implement mitigating strategies.</p>

FRN Page	Proposed Rule Paragraph	Comment
		<p>Only through review of implementing procedures, tabletops and evaluated force-on-force exercises can the Commission evaluate whether the number of armed responders is adequate. Consequently, an evaluated exercise in which armed security officers are required to be called in to successfully defend against the DBT should be regarded as a failure of the protective strategy.</p>
62722	73.55(l)	<p>The broad exemption of commercial nuclear power reactors using plutonium-containing “MOX fuel assemblies” from requirements for protection of Category I quantities of strategic special nuclear material from theft is technically unsupportable, irresponsible and sets a dangerous precedent. The draft section §73.55(l) should therefore be removed.</p> <p>We categorically reject the proposed addition of section 10 CFR §73.55(l), “Facilities using mixed-oxide (MOX) fuel assemblies.” This section would exempt nuclear power reactors possessing unirradiated MOX fuel assemblies, which generally consist of a mixture of uranium and a Category I quantity (2 kilograms or greater) of plutonium, from the requirement to protect these assemblies from the design basis threat of theft or diversion of strategic special nuclear material (SSNM) as stated in §73.1(a), as well as all specific requirements in §§73.20, 73.45 and 73.46 detailing measures necessary to protect against the Category I theft DBT. In lieu of these requirements, which constitute a systematic structure for the security organization needed to protect Category I SSNM from theft, the draft section substitutes a number of ad hoc measures that provide an incremental level of security for unirradiated MOX fuel assemblies above the level needed to protect nuclear reactor sites from the DBT of radiological sabotage. This substitution is inadequate and will not result in the necessary level of protection. Accordingly, the language in the draft statement of considerations for the proposed §73.55(l), which is written to suggest that the NRC is actually strengthening requirements when it is actually weakening them, is misleading and should be revised.</p> <p>One of us participated as an expert witness for the Blue Ridge Environmental Action League (BREDL) during a hearing before the Atomic Safety and Licensing Board (ASLB) regarding Duke Energy’s request for an exemption from Category I requirements for the receipt of four MOX lead test assemblies at the Catawba plant. During that hearing, BREDL demonstrated that security measures generally similar to those in the draft section §73.55(l) would not provide high assurance of adequate protection against theft of unirradiated MOX assemblies containing Category I quantities of plutonium. A description of the case and BREDL’s arguments, based only on redacted, publicly available documents and containing no safeguards information, was presented at a conference in 2005.²</p>

² Edwin S. Lyman, “The Erosion of Physical Protection Standards Under the MOX Fuel Program,” Proceedings of the Institute of Nuclear Materials Management Annual Meeting, Phoenix, AZ, July 2005.

FRN Page	Proposed Rule Paragraph	Comment
		<p>In proposing the draft section §73.55(l), the Commission is ignoring the decision of the ASLB in the Catawba case. In particular, the ASLB found that the measures Duke Energy proposed in lieu of Category I security requirements were not adequate, and it imposed four additional security conditions. Most notably, the ASLB required that “prior to receipt of the MOX fuel at Catawba, Duke must demonstrate its ability to counter an attempt at theft of the MOX fuel material by undertaking tabletop and force-on-force exercises.”³ Such a requirement would not apply to power reactors possessing MOX fuel in the proposed rule, since the protective force would only be required to demonstrate protection against the DBT for radiological sabotage. Therefore, the security plan, contingency response plan and all security procedures would not be required to consider the possibility of MOX theft by an adversary team with the characteristics of the Category I DBT.</p> <p>Moreover, the proposed language, to the extent it relies on the Catawba security plan for MOX LTAs as a model, is deficient because it does not reflect the specific circumstances under which the Commission ultimately approved Duke’s MOX security plan. The exemption request for Catawba was based on the receipt of four light-water reactor MOX LTAs, each containing about 5% weapon-grade plutonium. Duke and the NRC both argued that the low plutonium concentration and configuration (size and weight) of these assemblies rendered these LTAs unattractive for theft, citing unofficial DOE guidance that items containing less than 10% plutonium should be considered Category II, not Category I.</p> <p>But the proposed rule language does not define MOX fuel with regard to concentration, weight or any other physical property. Thus MOX fuel assemblies for a different type of nuclear power plant, such as the “advanced burner reactor” proposed by DOE for deployment in the U.S., which might utilize MOX fuel assemblies with plutonium concentrations of 50%, would likewise be subject to the same weak physical protection standards as light-water reactor MOX, even though they arguably would not have a “low plutonium concentration,” as would be implied by the draft statement of considerations for proposed §73.55(l)(2).</p> <p>Furthermore, the proposed language does not make the distinction between the security to be applied to a small number of MOX LTAs and that for the much larger number of MOX assemblies (a factor of ten greater) that would be involved in a full batch MOX reload.</p> <p>In light of these flaws, the draft section §73.55(l) should be struck, and licensees seeking to obtain exemptions from Category I physical protection requirements for use of MOX fuel should be required to seek special approval under the exemption provisions in the current rule. If the Commission finds it necessary to revise certain Category I requirements for possession of plutonium in the form of MOX fuel</p>

³ U.S. NRC, Atomic Safety and Licensing Board, In the Matter of Duke Energy Corporation, Catawba Nuclear Station, Final Partial Initial Decision, Public Redacted Version, LBP-05-10, April 18, 2005.

FRN Page	Proposed Rule Paragraph	Comment
		<p>assemblies, it should do so in the context of the planned revision of the relevant sections of the regulations (§§73.20, 73.45 and 73.46) slated to begin in 2009. The revisions should be on a line-by-line basis that clearly explains why each Category I requirement should or should not be applied to MOX fuel assemblies.</p>
62764	73.56(g)	<p>The proposed rule could facilitate retaliation by plant owners against workers raising safety or security concerns.</p> <p>This paragraph requires individuals with unescorted access authorization to a nuclear power plant to report “any formal action(s) taken by a law enforcement authority.” This language is overly broad and sets workers up for retaliation by management. UCS asked the NRC staff during the March 9, 2007, public meeting about its intentions with this paragraph. Specifically, UCS asked if the NRC expected workers to report speeding tickets, parking tickets, and letters of reprimand from NRC. The NRC staff’s answer was no.</p> <p>But the language in the proposed regulation would require workers to report “any formal action(s).” A parking ticket, written in ink, is clearly a formal action. If a worker at a nuclear plant who had raised safety concerns to management later got a parking ticket that he or she failed to report, management could terminate the worker for having violated federal regulations. Thus, this regulation could have the unintended consequence of being abused by licensees in their campaign to rid work places of people raising safety issues.</p> <p>The NRC must not make it easier for its licensees to retaliate against workers raising safety issues.</p>
62778	73.56(h)(10)	<p>The proposed rule would allow individuals known to be escaped felons or on the terrorist list to be escorted into protected and vital areas of nuclear power plants.</p> <p>This paragraph would prevent individuals who have formally been denied unescorted access to a nuclear power plant from entering that, or any other US nuclear power plant, as a visitor. The intention is commendable but its application is too narrowly defined.</p> <p>As the NRC is aware,⁴ licensees have come across derogatory information during background checks that would have resulted in unescorted access being formally denied, but stopped the process at that point and simply escorted the individuals into the protected area anyway. The NRC’s regulations must prevent licensees possessing derogatory information about individuals that would prevent them from being granted unescorted access from letting said persons inside the protected area fence even as visitors.</p>
62798	73.58	<p>This paragraph adds a requirement for safety and security interfaces as sought by the petition for rulemaking submitted by UCS and the</p>

⁴ Nuclear Regulatory Commission, “Summary of NRC’s Review of the Recent Security Issues at the South Texas Project Nuclear Power Plant,” November 27, 2006.

FRN Page	Proposed Rule Paragraph	Comment
		<p>Mothers For Peace. This paragraph as written satisfies UCS's concerns that prompted us to petition the NRC.</p> <p>During the NRC public meeting on March 9, 2007, an industry working group representative asserted that this requirement was too onerous, too burdensome, and too complex for his company to implement. Perhaps so, but a competent licensee should have no difficulty meeting this requirement with little burden. After all, the requirement for the security/safety assessments can be no more burden than the present fire protection/safety assessments, Safety Grade II/I assessments, etc.</p>
62842	73 Appendix G paragraph III.(B)	<p>The proposed rule would require plant owners to report tampering of safety or security equipment, but does not require plant owners to train workers to recognize signs of tampering.</p> <p>This paragraph requires licensees to report "The unauthorized use of or tampering with the component or controls, including the security system, or nuclear power reactors." It's not apparent from the regulations that licensees would acquire and maintain the skill set necessary to distinguish tampering from normal degradation or accidental personnel action. For this reporting requirement to have meaning, it would seem necessary, as a minimum, for the regulations to require licensees (a) provide training on the identification of tampering and (b) formally incorporate tampering assessments into all corrective actions taken for target set equipment malfunctions and mispositionings.</p> <p>UCS is concerned about an apparent informal, less-than-rigorous approach by the industry and NRC to potential acts of tampering at nuclear power plants. For example, on June 9, 1985, the Davis-Besse nuclear plant experienced a loss of feedwater event with complications. The NRC dispatched an Incident Inspection Team to the site to investigate. The team's extensive inquiries are documented in NUREG-1154. In this nearly 100-page report, tampering is not mentioned once even though the reasons for certain equipment failures could not be conclusively determined. And the NRC's Safeguards Summary Event Listing (NUREG-0525) reported that the NRC received a report from Davis-Besse on June 5, 1985 – four days BEFORE the loss of feedwater event – about two recent apparent tampering events. UCS is by no means contending that the June 1985 loss of feedwater event at Davis-Besse was caused by or worsened by tampering, but we cite it to demonstrate that tampering will never be identified in any event if no one even asks if tampering could have occurred.</p>