



Union of
Concerned
Scientists

Citizens and Scientists for Environmental Solutions

September 6, 2005

Robert Moody
United States Nuclear Regulatory Commission
One White Flint North, Mail Stop O6H2
11555 Rockville Pike
Rockville, MD 208252

**SUBJECT: COMMENTS RE: EMERGENCY PREPAREDNESS REGULATIONS
AND GUIDELINES**

Dear Mr. Moody:

Pursuant to the notice published in the *Federal Register* (July 28, 2005, Vol. 70, No. 144, pp. 43721 to 43725), I hereby submit comments related to the NRC's ongoing review of emergency preparedness regulations and guidance for security-initiated events.

Emergency preparedness is a vital part of the measures intended to protect the public from the inherent hazards of nuclear power plant operation. It is imperative that emergency preparedness measures be as fully evolved and effective as possible.

There was repeated discussion during the meeting conducted by the NRC on August 31st and September 1st about trust and confidence. UCS is confident that the existing emergency preparedness regulations and guidelines can be improved so as to become more effective in coping with a security-initiated event at a nuclear power plant. The enclosed comments are provided in that spirit.

If I can provide any clarification about these comments, please do not hesitate to contact me.

Sincerely,

David Lochbaum
Nuclear Safety Engineer

Enclosure: UCS Comments in response to the July 28th *Federal Register* notice

UCS COMMENTS ON EMERGENCY PREPAREDNESS REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS

Topic	UCS Comment
Security-based Emergency Classification Levels (ECLs) and Emergency Action Levels (EALs)	<p data-bbox="452 434 1400 761">NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," dated July 18, 2005, distinguished between security events occurring in plant Protected Areas and security events occurring in plant Vital Areas, with the latter being more significant. The two major hazards at a nuclear plant are the radioactive material in the reactor core and the radioactive material in the spent fuel. This radioactive material is likely to be the target for attempted sabotage at a nuclear power plant. Vital Areas of the plant contain equipment essential for preventing and/or mitigating reactor core damage. Equipment essential for preventing and/or mitigating spent fuel damage are not always located within Vital Areas.</p> <p data-bbox="452 795 1407 961">Since the attempted sabotage may be aimed at releasing the radioactive material from spent fuel, it is necessary to either expand Vital Area designations to also include spent fuel cooling and makeup equipment or to revise the emergency response plans so that both the reactor core and spent fuel hazards are handled comparably.</p>
Prompt NRC notification	<p data-bbox="452 1029 1414 1259">As UCS understands current emergency preparedness regulations and guidance, plant owners must notify the NRC within one hour after their declaration of a security-initiated event. Per the July 28th <i>Federal Register</i> notice and discussions during the August 31st and September 1st public meeting, the NRC staff is considering requiring plant owners to notify the agency within 15 minutes. The NRC claims this prompt notification may be necessary because "there is the potential for coordinated attacks on multiple facilities."¹</p> <p data-bbox="452 1293 1424 1357">It is not evident what benefit could or would be realized if the NRC learned about a security-initiated event 45 minutes (2,700 seconds) sooner.</p> <p data-bbox="452 1391 1424 1621">It would not likely lead to tangibly better security protection at other nuclear power plant sites. In private talks with industry representations, UCS asked about the steps they might take if they received notice from the NRC that another nuclear plant had been attacked. Other than possibly deploying armed responders to their designated defensive positions, no steps were identified. But the only way for pre-disposition of armed responders to be a security improvement is for the timelines within existing security plans to be suspect.</p> <p data-bbox="452 1655 1433 1821">It appears to UCS that the real reason behind the NRC's alleged need for prompt notification is to protect the agency from the embarrassment about learning of an attack on a nuclear power plant from CNN. Given the amount of embarrassment that such an attack would give the agency anyway, the incremental embarrassment stemming from this "surprise" doesn't warrant remedying.</p>

¹ *Federal Register*, July 28, 2005, page 43723.

UCS COMMENTS ON EMERGENCY PREPAREDNESS REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS

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Onsite protective actions	<p>§50.48 of 10 C.F. R. and Appendix R to §50 of 10 C.F.R. require that plant owners install emergency lighting in areas where operator manual actions are needed to provide safe shutdown of the reactor following a postulated fire. Emergency lighting is also required along access routes to plant areas where operator manual actions are needed. The NRC reminded plant owners about these requirements in guidance documents such as NRC Information Notice No. 90-69, "Adequacy of Emergency and Essential Lighting," dated October 31, 1990. In recent years, some plant owners have increased their reliance on manual operator actions to deal with electrical cable separation issues on an interim compensatory basis and security-initiated events. From a review of publicly available information, UCS concludes that neither these plants owners nor the NRC have ensured that additional plant areas where manual actions must be taken are equipped with emergency lighting.</p> <p>Emergency lighting must be provided in all areas where pre-planned manual actions are needed as well as along access routes to/from those areas.</p>
Onsite protective actions	<p>In a letter to the NRC dated September 11, 2001, and issued shortly <i>before</i> the first plane hit the World Trade Center, UCS pointed out a discrepancy between the regulations and guidance governing worker actions during an accident and during a security-initiated event. Specifically, §50.47(b)(11) of Title 10 to the <i>Code of Federal Regulations</i> does not permit workers to take manual actions during emergency that could expose them to radiation doses above 5 rem and ranging up to 75 rem unless the workers volunteer. The NRC reminded plant owners of this regulation in guidance documents such as NRC Information Notice No. 84-40, "Emergency Worker Doses," dated May 30, 1984. The basis for this regulation is that individuals must provide their informed consent before undertaking actions under emergency conditions that elevate the risk of incurring a radiation-induced illness. UCS pointed out that many plant owners are relying on operator manual actions to mitigate security-initiated events. Because undertaking such actions exposes the operators to elevated risks of being shot by the intruders (unfriendly fire) or by the armed responders (friendly fire), these actions should also be only performed on a volunteer basis.</p> <p>Workers must give their informed consent before undertaking potentially hazardous manual actions during security-initiated events like they must do before undertaking manual actions in high radiation areas.</p>
Emergency response organization augmentation	<p>The onsite response to a security-related emergency will be different from that to an accident-initiated emergency. NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for Security-Based Events," dated July 18, 2005, concedes this point on page 4:</p>

UCS COMMENTS ON EMERGENCY PREPAREDNESS REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS

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	<p><i>The emergency response organization is expected to be staged in a manner that supports rapid response to limit or mitigate site damage or the potential for an offsite radiological release. Some licensees have chosen not to activate elements of the emergency response organization during a security-based event until the site is secured.</i></p> <p>...until the site is secured. How long might that take? At 11:19 a.m. on April 20, 1999, two students initiated a shooting rampage at the Columbine High School in Littleton, Colorado. Police and SWAT responded. The school was declared safe at 4:30 p.m.² Five hours and eleven minutes for law enforcement officials to secure a site from two teenage boys. How long will highly trained, adult attackers be able to keep a nuclear power plant unsecured? Until the site is secured, the attackers may disrupt the emergency response organization's efforts during security-based events where licensees activate their e-plans. For example, how many persons will really arrive at a site that is under assault in response to an emergency call-in? On a related theme, does the NRC really want persons with such poor judgment making decisions on public health questions? Until the site is secured, the absence of efforts by the emergency response organization during security-based events where licensees do not activate their e-plans may cause problems. After all, NRC repeatedly finds that emergency response organizations successfully mitigated accidents during biennial emergency exercises, implying adverse consequences would have happened but for those efforts. Unless the outcomes are independent of actions taken by the emergency response organizations, delaying those actions for unspecified periods would appear to have the likely effect of worsening the outcome.</p> <p>NRC Bulletin 2005-02 asserts that an attack on a nuclear power plant "<i>would not create an accident that causes a larger release or one that occurs more quickly than those already addressed by the EP planning basis.</i>" Even if that were true – and UCS is unaware of any scientific evidence to support this fanciful notion – the fact remains that a security-based event producing a radiological release of equal magnitude on the same timeline as an accident can result in significantly worse offsite consequences. For an accidental release, the onsite organization will be interacting with the local, state, and federal authorities regarding the size and nature of the release so informed decisions can be made about appropriate public health measures. When the emergency response organization staffers are loitering outside the owner controlled area waiting for who knows what entities to chase out the bad guys and secure the site, those essential interactions are reduced to little more than rumor and supposition.</p> <p>It matters little if the radioactive cloud is of the same size and drifting at the same pace if the people in its way are afforded lesser protection. At this stage, it appears the public will get even less protection from a security-based emergency at a nuclear power plant than they would get from an accident.</p>

² http://en.wikipedia.org/wiki/Columbine_High_School_massacre

UCS COMMENTS ON EMERGENCY PREPAREDNESS REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS

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	<p>The NRC must ensure that onsite and offsite emergency response organizations will be able to take timely measures to protect public health following security-initiated events.</p>
<p>Drill and exercise program</p>	<p>A chronic weakness of the NRC's reactor oversight process has been the way that findings from emergency preparedness exercises are handled. The emergency preparedness exercises are intended to be realistic and to the extent possible test the capabilities of onsite and offsite personnel in the performance of their important roles and responsibilities. That realism fades when it comes to determining the significance of performance deficiencies revealed during the exercises. Time and time again, UCS sees NRC inspection reports downplay such performance deficiencies with words to the effect "had this finding occurred during a real emergency, it would be classified xxxx, but because it occurred during an exercise, it will be classified yyyy" with yyyy being much less significant than xxxx. This makes no sense. The exercise is intended to be as realistic as possible and to replicate, to the extent possible, what would happen during a real emergency. Consequently, it is reasonable to assume that any performance deficiencies occurring during an exercise would also have occurred had the emergency been real. It is luck rather than skill that the performance deficiency was revealed during an exercise. The licensees must not benefit from that luck and must be held accountable for that lack of skill.</p> <p>Left unchecked, this NRC practice reduces the emergency preparedness finding colorization to merely two colors – green (if occurring during an exercise) and red (if occurring during an actual event). The NRC, and not CNN, should determine the final color of performance deficiencies in the emergency preparedness arena.</p> <p>The NRC must cease and desist the "grade inflation" given to emergency preparedness deficiencies identified during drills and exercises.</p>
<p>Enhanced offsite protection action recommendations</p>	<p>In the July 28th <i>Federal Register</i> notice, the NRC staff posed the question:</p> <p style="padding-left: 40px;">What value to public health and safety would a recommendation to "go indoors and monitor the emergency alert system" at a site area emergency classification provide during a security event?</p> <p>The answer depends on the education and awareness level of the affected population.</p> <p>An educated and aware population would understand that the site area emergency classification did not necessarily equate to a radiological release and that, even if a radiological release had occurred or was imminent, the emergency alert system would provide the best advice on what to do where.</p>

UCS COMMENTS ON EMERGENCY PREPAREDNESS REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS

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	<p>An uninformed population could not be faulted for being reluctant to go inside and watching some television after learning that an attack on the neighborhood nuclear plant caused a site area emergency. That uninformed population could easily opt to TVO the news while packing up the car and heading out to Aunt Emma's place in the next county.</p> <p>From the numerous contacts UCS has had with communities across the United States, we conclude that populations around nuclear power plants are simply not educated and aware enough for such recommendations to have positive value.</p> <p>Unless the NRC first ensures that affected populations have been educated and made aware of the value behind such recommendations, the NRC must not take public health short-cuts with such recommendations.</p>
Enhanced offsite protection action recommendations	<p>A representative from the State of North Carolina commented during the public meeting conducted by the NRC on August 31st and September 1st that the NRC consider expanding the computer data made available to federal, state, and local authorities (sometimes called the safety parameter data system (SPDS) or the emergency response data set (ERDS)) to include some information on the status of the spent fuel pool. This was an excellent recommendation. Because either the irradiated fuel in the reactor core or in the spent fuel pool may be a target during the security-initiated event, offsite protective action recommendations would be enhanced by increased monitoring capability of spent fuel pool conditions by these decision-makers.</p> <p>The data set made available to federal, state, and local authorities offsite should include spent fuel pool parameters.</p>
Abbreviated notifications to offsite response organizations	<p>No comment.</p> <p>Upon further reflection, still no comment.</p>
Backup power to siren systems	<p>Other non-government organizations at the national and state levels have done a stellar job of highlighting the inexcusable condition where emergency sirens installed to warn the public in event of a nuclear plant disaster are not always equipped with back-up power supplies. UCS wholeheartedly agrees with our colleagues that this situation is intolerable and must be rectified ASAP. This situation is particularly galling considering that the NRC does not allow the systems used by plant owners to contact the agency in event of a nuclear plant disaster to function only when offsite power is available. For example, the NRC issued Bulletin 80-15, "Possible Loss of Emergency Notification System (ENS) with Loss of Offsite Power," on June 18, 1980, after events at Indian Point Unit 2 on June 3, 1980, and at Davis-Besse on October 15, 1979, demonstrated the</p>

UCS COMMENTS ON EMERGENCY PREPAREDNESS REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS

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	<p>undesirability of relying solely on offsite power. In the bulletin, the NRC pointed out, "The installation of the ENS [emergency notification system between plant owners and the NRC] requires a station package which operates on 110 vac. ... In some cases where the station package is served by on-site power, the station package has not been backed up by emergency power." If it is essential that back-up power be provided so that the NRC is informed in event of a nuclear plant emergency, it is equally essential that back-up power be provided so that the public is also informed of that emergency.</p> <p>The alert and notification system (ANS) relied upon to notify the public of a problem at the nearby nuclear power plant <u>must</u> be equipped with backup power.</p>
<p>Offsite medical services for radiological incidents</p>	<p>A doctor responsible for emergency services at the Level 1 Trauma Center at the Westchester Medical Center reported the shallowness of that facility's ability to cope with a radiological accident during the Indian Point Technical Briefing conducted by the Hudson River Sloop Clearwater, Inc. on January 11, 2002. The doctor reported that a worker at Indian Point suffered a crushing injury to a foot. Because the wound was potentially contaminated with radioactivity, the Trauma Center activated its radiological response plan after being informed the worker was en route. Doing so required the Trauma Center to be closed to all other persons. Other incoming ambulances were diverted to emergency rooms at other area hospitals. Setting up the Trauma Center to handle contaminated individuals took time – the worker remained inside the ambulance parked in the ambulance bay at the Westchester Medical Center for several minutes until the Trauma Center was ready to receive him. The receiving tank for water used to cleanse potential contaminated wounds had a 50-gallon capacity. Any additional contaminated water would have gone into the common sanitary drains. That one of the finest and best-equipped facilities in the United States could be "swamped" by one contaminated patient does not suggest that we are fully prepared to cope with a large-scale radiological event, whether it is caused by accident or by malicious intent</p>
<p>Public outreach</p>	<p>After 09/11, UCS participated in town-hall meetings conducted near the Seabrook nuclear plant in New Hampshire, the Maine Yankee nuclear plant in Maine, the Pilgrim nuclear plant in Massachusetts, the FitzPatrick and Nine Mile Point nuclear plants in New York, and the Shearon Harris nuclear plant in North Carolina. These meetings were attended by 30 to over 200 local individuals.</p> <p>At each meeting, the following two questions were asked: (1) How many people live within the 10-mile emergency planning zone? (2) How many people know what to do if they hear the emergency sirens wail?</p> <p>It was disappointing how few of the affected populations knew how to respond should the sirens wail and how many individuals equated sirens with evacuation</p>

**UCS COMMENTS ON EMERGENCY PREPAREDNESS
REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS**

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	<p>alarms.</p> <p>Clearly, the best emergency plan in the universe fails when the public does not abide by its sound recommendations.</p> <p>UCS concedes that it is extremely hard to pro-actively inform the affected populations about nuclear plant emergency planning. But the agency could and should do more to try to overcome this obstacle.</p> <p>For example, the NRC staff conducts an annual assessment meeting in every reactor community. While the focus of this public meeting is to convey the results of the NRC's oversight process for that reactor, it also provides an excellent opportunity to remind individuals about emergency planning. By analogy, airline flight crews remind passengers about emergency exits and floatation devices before each and every take-off. Likewise, each annual assessment meeting provides the NRC with the opportunity to remind people about emergency preparedness. Hopefully, the local media covering the annual assessment meeting would follow-up with stories about emergency preparedness so that a broader segment of the affected population would be reached.</p> <p>The presentations by the NRC staff during the annual assessment meetings have become very, very good. The presentation slides from the Crystal River Unit 3 annual assessment meeting (ML051370200) are typical. The fourth slide shows how the NRC uses performance indicators and inspection findings to both evaluate performance and respond to declining trends. The fifth slide conveys the scope and depth of the NRC's inspection program. The eighth slide presents the national results from the NRC's action matrix, allowing the public to put the results for their neighborhood nuclear plant in some context. The 14th slide provides NRC contact information if additional interactions are desired. This excellent public outreach tool could be expanded to also include a slide or two on emergency preparedness. In addition, the slides from the annual assessment meetings (which are available in ADAMS but many people cannot use ADAMS) could be posted to the plant-specific NRC website. For example, the Crystal River Unit 3 slides could be posted to http://www.nrc.gov/info-finder/reactor/cr3.html.</p> <p>The annual assessment meetings should include a discussion of emergency preparedness, particularly changes made during the prior year or planned in the upcoming year.</p>
Public outreach	<p>The NRC staff explained during the August 31st and September 1st public meeting that its infamous "dark screen" or "black screen" was nothing more than an inactive website pre-loaded with information on emergencies and emergency response that could be swiftly activated so as to handle the expected large volume of public inquiries following a nuclear plant emergency.</p> <p>UCS wonders why the NRC staff opted not to unveil this communications tool</p>

**UCS COMMENTS ON EMERGENCY PREPAREDNESS
REGULATIONS AND GUIDANCE FOR SECURITY-INITIATED EVENTS**

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	<p>during the emergency declared at the Waterford nuclear plant in the wake of Hurricane Katrina. An Unusual Event was declared at Waterford due to the loss of offsite power caused by the hurricane. The Unusual Event remained in place for several days – which is highly unusual even for an Unusual Event. The NRC could have, and perhaps should have, activated its infamous “dark screen” to road test it to see if it really provides useful information. But the NRC kept its “dark screen” dark.</p> <p>The NRC should revisit the thresholds for activating its “dark screen” public communications vehicle. An emergency declaration lasting several days, such as that experienced at Waterford in the wake of Hurricane Katrina, seems to rise above the proper threshold.</p>