

PR 52
(72FR56287)

Northern Lights Engineering, L.L.C.
71 Edgewood Way, Westville, Connecticut, 06515

Ulrich K. Witte

DOCKETED
USNRC

18

December 17, 2007

December 18, 2007 (9:59am)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Honorable Annette L. Vietti-Cook
Secretary
United States Nuclear Regulatory Commission
Washington, D.C., 20555-001

Re: Notice of "A new subpartK-Additional Requirements" to include proposed §52.500, "Aircraft Impact Assessment" contained in Federal Register 56308 /Volume 72, No. 191, published October 3rd 2007.

Subject: Comments Regarding Proposed New Rule!

Dear Secretary Vietti-Cook:

I am a consultant in the nuclear power industry and read with interest the notice published in the Fed. Reg. regarding rule making associated with Aircraft Impact Assessment under proposed rule §52.500.

After examining the analysis provided in the Fed. Reg. I am formally providing comments regarding the statutory requirements imposed upon the Nuclear Regulatory Commission. From the analysis of the several statutes that apply when the Commission proposed to codify the Design Basis Threat of airborne sabotage of domestic nuclear facilities it is clear that the NRC has not properly implemented its congressional mandate of implementing regulations governing design of nuclear power plants and that those regulations must by statutory authority be fully promulgated under federal rules or other mechanism with the force of law.

I submit these comments in the attached brief, pointing out that each regulation governing the design of nuclear power plants and any other activity authorized pursuant to the Atomic Energy Act of 1954, 42 U.S.C. §§2011 *et seq.* must address its subject so as to minimize danger to life or property.

Office: 203 389 4564
Mobil: 860 391 1183
Fax: 203 389 6657
Email: ulrich@ulrichwitte.com

Template = SECY-067

SECY-02

Ulrich K. Witte

As drafted the proposed 10 C.F.R. §52.500 does not meet the statutory requirements for regulations governing the design of nuclear facilities. The United States Nuclear Regulatory Commission must withdraw the proposed regulation, amend the proposed regulation so that it conforms to statutory standards and republish it for comment.

Kindest regards,

Ulrich Witte

Before the

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of)
Proposed new Subpart K --)
"Additional Requirements")
and proposed 10 C.F.R. §52.500) Docket No. RIN - 3150 - A119
"Aircraft Impact Assessment")

COMMENTS

**POINTING OUT THAT
REGULATIONS GOVERNING DESIGN OF NUCLEAR POWER PLANTS
MUST MINIMIZE DANGER TO LIFE OR PROPERTY**

I. Summary

After September 11, 2001 the ability of terrorists to strike through the air as well as on land and over water is beyond dispute. If evidence that terrorist can use means other than aircraft is needed, the missile and mortar attacks on our troops in Iraq and Afghanistan are more than sufficient. During a taped interview shown September 10, 2002, on Arab TV Station Al-Jazeera, contained statements that Al

Qaeda initially planned to attack a nuclear plant in its 2001 attack sites.¹ For these reasons I submit these comments pointing out that each regulation governing the design of nuclear power plants and any other activity authorized pursuant to the Atomic Energy Act of 1954, 42 U.S.C. §2011 *et seq.* (“1954 Atomic Energy Act”) must address its subject so as to minimize danger to life or property.² As drafted the proposed 10 C.F.R. §52.500 does not meet the statutory requirements for regulations governing the design of nuclear facilities. The United States Nuclear Regulatory Commission (“NRC”) must withdraw the proposed regulation, amend the proposed regulation so that it conforms to statutory standards and republish it for comment.

II.

INTRODUCTION

The United States has over a hundred active and an additional number of

¹ Congressional Research Service Report for Congress—Nuclear Power Plants: Vulnerability to Terrorist Attack, August 9, 2005.

² 42 U.S.C. §2201(i)(3) (“General provisions - (i) Regulations or orders. prescribe such regulations or orders as it may deem necessary ... **(3) to govern any activity authorized pursuant to this Act [42 USC §§ 2011 et seq.], including standards and restrictions governing the design, location, and operation of facilities used in the conduct of such activity, in order to protect health and to minimize danger to life or property**” (emphasis added))

retired nuclear power plants with active associated spent fuel pools.³ These plants and pools containing enormous amounts of radioactive and toxic materials that a successful terrorist attack could release into the environment. Many of these facilities are on or close to the nation's shores or borders. Some, e.g., Indian Point Energy Center's two operating reactors, a closed reactor and three spent fuel pools, are close to major population centers.⁴ A successful air attack on Indian Point could cause horrific physical injury to many of the 20 million people who live within 50 miles of that facility and enormous economic loss for individuals, the nation and the entire world economy.

The 1954 Atomic Energy Act assigns the NRC responsibility for ensuring the safety of our nuclear facilities. This duty includes establishing standards for defending these facilities against sabotage by terrorists.

In part the NRC establishes antiterrorist and other nuclear power plant safety standards by issuing regulations under authority granted in the Act. On October 3, 2007 the NRC published in the Federal Register a proposed new regulation, 10

³ See, e.g., NUREG-1350, Volume 19, 2007 – 2008 Information Digest, Appendices A: U.S. Commercial Nuclear Power Reactors & B: U.S. Commercial Nuclear Power Reactors Formerly Licensed to Operate (Permanently Shut Down).

⁴ The three Indian Point nuclear power plants and their three associated spent fuel pools are on the east bank of the Hudson close to vital parts of New York City's water supply and about 30 miles from Times Square.

CFR §52.500, intended to make a few of the anticipated new nuclear power plants somewhat more secure against aircraft deliberately crashed into them by terrorists.⁵

The actual number of plants likely to be affected by this regulation is about eight, leaving the remaining fleet of 125 operating or closed facilities unprotected from air attacks and most of the new generation reactors beyond the scope of this intended rule as well.

The proposed rule does not mitigate a single current threat—leaving one wondering why this rulemaking is prioritized above other codification requirements directed by Congress. For example, the House Appropriations Committee in preparing the House version of the FY2006 Energy and Water development bill (H.R. 2419, H. Rept 109-86) states: “The committee expects the NRC to redouble its efforts to address the NAS identified deficiencies [Report by the National Academy of Sciences findings released April 6, 2005] and to *direct, not request industry to take prompt corrective action,*”

In its notice the NRC invited comments on the proposed regulation.

THE PROPOSED RULE

The NRC’s Federal Register notice states that the purposes of the proposed 10 CFR §52.500 are to provide nuclear power plants an “enhanced level of

⁵ 72 Fed. Reg. 56,287 - 56,308 (October 3, 2007).

protection,”⁶ improve knowledge of ways to avoid or mitigate the threat of aircraft impacts on such plants,⁷ and increase public confidence in nuclear power.⁸ The means for achieving these goals would be to have applicants for new generic certification or approval of plant or reactor designs and some nuclear power plant construction permits prepare an “aircraft impact assessment.”⁹ Specifically, the proposed rule would require applicants for (1) “new standard design certifications that do not reference a standard design approval,” (2) “new standard design approvals,” (3) “combined licenses that do not reference a standard design certification, standard design approval, or manufactured reactor; and (4) “new manufacturing licenses that do not reference a standard design certification or standard design approval”¹⁰ to (a) analyze their plant or reactor designs for ways to change those designs so that a plant built with the design changes would be less

⁶ *Id.* at 56,288.

⁷ *Id.* at 56,302.

⁸ *Id.* at 56,306. It is unclear whether NRC promotion of public confidence in nuclear power is consistent with the regulatory responsibilities assigned the NRC when Congress abolished the Atomic Energy Commission (“AEC”) and transferred the AEC’s nuclear power promotion authority to what is now the U.S. Department of Energy. *See, e.g.*, Energy Reorganization Act of 1974, P. L. 93-438.

⁹ *Id.* at 56,287.

¹⁰ *Ibid.*

likely to release significant radiation if a terrorist crashes a commercial airliner into the plant, and (b) report to the NRC which of the identified potential design improvements the applicant actually adopts.¹¹

According to the NRC, the proposed rule would likely improve the security of about eight new nuclear power plants over the next 20 years¹² but all operating and retired nuclear power plants, and an unknown number of new plants built using designs with “standard design certification,” “an approval standard design approval,” or a “licensed” manufactured nuclear power plant [,] would be exempt from the proposed regulation.¹³

The aircraft impact assessments the proposed rule would require would be based solely on potential for damage from aircraft impacts even though terrorists can use other weapons, e.g., missiles, mortars or artillery.¹⁴ The Federal Register notice does not explain why air attacks by means other than aircraft are ignored. Indeed, the notice contains no reference to any air attack threat other than aircraft.

¹¹

¹² *Id.* at 56,303 - 56,305 (8 plants using new standard design certifications; none using a new approved standard design; 1 with a combined license not referencing a standard design certification, a standard design approval or a licensed manufactured reactor; and 1 using a licensed manufactured reactor but not a standard design certification or an approved standard design).

¹³ *See, e.g., id.* at 56,290 - 56,291.

¹⁴ *See, e.g., id.* at 56,287.

In the Federal Register notice the NRC describes the aircraft to be used as the basis for impact assessments in only the most general terms; this “aircraft’s” characteristics are to be those of “a large, commercial aircraft used for long distance flights in the United States, with aviation fuel loading typically used in such flights.”¹⁵

Whatever characteristics the NRC chooses for its generic assessment-basis aircraft, once adopted these characteristics would not change in response to either actual threat assessments or the evolution of commercial aircraft.¹⁶

Implementation of whatever potential security improvements the application of the proposed regulation would identified would be discretionary.¹⁷ In its Federal Register notice the NRC repeatedly indicates that the aircraft impact assessment would be used to identify potential ways to “avoid or mediate” the damage that a “beyond-design-basis threat” could cause and that nuclear power plant licensees are not required to defend against such threats.¹⁸

¹⁵ See, e.g., *id.* at 56,291 - 56,292. The NRC indicates that the detailed characteristics of the assessment-basis aircraft will be available to parties that have a specific need for this information.

¹⁶ *Id.* at 56,291.

¹⁷

¹⁸ See, e.g., *id.* at 56,

Although implementation of any identified security improvement would be discretionary, the NRC indicates that the proposed regulation would result in “an enhanced level of protection beyond ... adequate protection”¹⁹ and “improve[d] knowledge ... of the effects of the impact of a large, commercial aircraft on” nuclear power plants.²⁰ Indeed, the NRC states:

The proposed regulatory action *would reduce* the risk that public health will be affected by the release of radioactive materials to the environment from the impact of a large, commercial aircraft on a nuclear power plant.

...

The proposed regulatory action *would reduce* the risk that occupational health will be affected by the release of radioactive materials to the environment from the impact of a large, commercial aircraft on a nuclear power plant.

The proposed regulatory action *would reduce* the risk that offsite property will be affected by the release of radioactive materials to the environment from the impact of a large, commercial aircraft on a nuclear power plant.

The proposed regulatory action *would reduce* the risk that onsite property will be affected by the release of radioactive materials to the environment from the impact of a large, commercial aircraft on a nuclear power plant.²¹

(emphasis added)

¹⁹ *Id.* at 56,288 (October 3, 2007).

²⁰ *Id.* at 56,302 (October 3, 2007).

²¹ *Id.* at 56,302.

How analysis alone is certain to improve nuclear power plant security the Federal Register notice does not say.

III.

COMMENTS

In addition to being of questionable effectiveness, the proposed 10 CFR §52.500 does not comply with the legal requirement set out in the 1954 Atomic Energy Act for regulations governing the design of nuclear power plants. The current proposal must be revised to take into account the comments set out below, then renoticed for comment.

a. The 1954 Atomic Energy Act statutory standard for the proposed regulation. The 1954 Atomic Energy Act directs that regulations governing the design, location, and operation of nuclear power plants and other such facilities “minimize danger to life or property.”²² That is, whatever control or guidance the NRC provides through means other than regulations or thorough regulations that do not govern “activity authorized pursuant to the Act,”²³ regulations that do govern activity the Act authorizes must provide the maximum protection for life and property possible given the subject of the regulation.

b. The proposed regulation’s 1954 Atomic Energy Act deficiencies The

²² 42 USC §2201(i)(3).

²³ *See, e.g., 10 CFR Part 5 - Nondiscrimination on the basis of sex in education programs or activities receiving Federal financial assistance.*

proposed 10 CFR §52.500 falls short of the requirements of the 1954 Atomic Energy Act by (1) covering only a portion of the nuclear power plants and other threatened facilities, (2) not addressing air attack threats other than aircraft, (3) limiting the characteristics of the threat to be used in aircraft impact assessments, (4) ignoring changes in air attack threats and developments in commercial aircraft, (5) limiting the security improvements sought, and (6) relying solely on voluntary implementation of identified security improvements.

1. Requiring threat assessments for all nuclear power plants and related facilities would maximize the increase in security possible from such assessments.

As indicated above, in its current form the proposed regulation would exempt existing nuclear power plants, new nuclear power plants that meet certain criteria and their associated spent fuel pools from aircraft impact assessments. Such exemptions are inconsistent with the requirements of 42 USC §2201(i)(3) in that the proposed regulation would produce its maximum improvement in nuclear facility security if a threat assessment were performed for every such facility. In contrast to its statutory obligations the NRC proposal here is that about 8 facilities have threat assessments while over 100 other plants operate without analysis. Moreover, adopting 10 CFR §52.500 as proposed would increase the terrorist threat to unassessed plants and those who live near them. Labeling one set of nuclear power plants as better protected would in effect paint bull's-eyes on the

unassessed plants. Such a result is inconsistent with the legal requirements for regulations governing nuclear power plant design.

2. Examining all means of air attack would maximize the increase in security possible from assessing airborne threats.

For reasons not explained in the Federal Register notice the NRC limits the proposed new regulation to the assessment of the potential consequences of aircraft crashes. While an obvious threat after 9/11, aircraft are not the only weapon terrorist can use to attack nuclear power plants through the air. At a minimum, missiles, mortars and artillery can be used in air attacks. Unless the NRC can explain why addressing only one air attack threat is consistent with maximizing the security of nuclear power plants, any regulation addressing one air attack threat must address all.

3. Basing aircraft impact assessments on the largest commercial aircraft used on intercontinental routes would maximize the increase in security possible from assessing air attack threats.

The NRC proposes to model its assessment-basis aircraft characteristics on a “large, commercial aircraft used for long distance flights in the United States, with aviation fuel loading typically used in such flights.”²⁴ The model the NRC poses

²⁴ See, e.g., *id.* at 56,291 - 56,292. The NRC indicates that the detailed characteristics of the assessment-basis aircraft will be available to parties that have a specific need for this information.

would not produce the maximum security increase possible. Instead the assessments must be based on the larger aircraft that fly intercontinental routes. At least sixty existing nuclear power plants are on or near our coasts and thus at risk of being hit by one of the larger aircraft.

Some aircraft used for intercontinental service are significantly larger than those on domestic routes. For example, Boeing states that its 747-ER, a model commonly used for intercontinental flights, has a maximum take off weight of about 900,000 pounds and a maximum fuel load of about 64,000 gallons of kerosene.²⁵ In contrast, the Boeing 767's hijacked on domestic flights and crashed into the World Trade Center had maximum takeoff weights and fuel loads of about 450,000 pounds and 24,000 gallons,²⁶ and the domestic workhorse Boeing 737 has maximum takeoff weights and fuel loads of about 145,000 pounds and 7,000 gallons.²⁷ Given the potential for 747-size air crashes at nuclear power plants on or near our coasts, maximization of the security improvements derived from 10 CFR §52.500 requires assessments based on 747-like characteristics.

4. To maximize the increase in security possible from assessing air attack threats, aircraft impact assessments must take into consideration changes in the air attack threat and commercial aircraft developments.

²⁵ See, e.g., http://www.boeing.com/commercial/747family/pf/pf_400er_prod.html.

²⁶ See, e.g., http://www.boeing.com/commercial/767family/pf/pf_400prod.html

²⁷ See, e.g., http://www.boeing.com/commercial/737family/pf/pf_600tech.html

The NRC poses to freeze the assessment-aircraft characteristics used in 10 CFR §52.500. Such an approach is inconsistent with the statutory requirement for regulations involving nuclear facility design to maximize security for life and property. Whatever air attack threat characteristics are at the time of a given threat assessment, those characteristics may change. New air attacks threats must be taken into consideration if the regulation is to continue to maximize security. In particular, the characteristics of commercial aircraft in common use are likely to change over time. Indeed, the potential for an order of magnitude increase in the threat commercial aircraft pose is visible in the efforts to make the Airbus 380 commercially viable.²⁸ At a minimum the NRC must provide for periodic reexamination of the assessment-aircraft characteristics and modification of the characteristics when a significant change in the air attack threat is identified.

5. To maximize the increase in security possible from assessing air attack threats, such assessment must look for ways to prevent air attacks from reaching nuclear facilities.

One stated purpose for the aircraft impact assessment that 10 CFR §52.500 would institute is the identification of the means to avoid or mitigate the consequences of an aircraft's crashing into a nuclear power plants or associated facilities. To maximize the security improvements from such assessments the

²⁸ See, e.g., <http://www.airbus.com/en/aircraftfamilies/a380/index2.html>.

assessments must include a search for ways to prevent an aircraft or other air attack from hitting a facility or vital equipment if a hit cannot be completely prevented.

There are both active and passive defenses against air attacks. Active air defenses, such as anti-aircraft missiles and other weapons exclusively available to the military, the NRC properly excluded from the Design Basis Threat regulation²⁹ and proposes to exclude here.³⁰

However, there is no bar to nuclear power plant licensees' building effective passive air defenses such as concrete covers and metal barriers. For example, a properly designed and located metal barrier could stop an aircraft before it strikes a plant and a reinforced concrete cover for a vital nuclear power plant component could both detonate mortar shells before the shells reach the component and protect the component from any resulting explosions.

Despite the obvious value of using passive defenses to frustrate air attacks the NRC appears to base 10 CFR §52.500 on an assumption that the starting point of an aircraft impact assessment is the impact of the airplane on a nuclear power plant. If so, the proposed regulation would forgo passive air defense and thereby violate 42 USC §2201(i)(3)'s requirement that regulations governing the design of nuclear facilities maximize protection of life and property.

²⁹ 10 CFR sec. 73.1.

³⁰ *Id.* at 56,288.

The NRC's "enemy of the United States" Rule, 10 CFR §50.13, 31 cited in the Federal Register notice in this proceeding as justification for leaving air attacks out of the Design Basis Threat, does not permit leaving passive air defenses out of 10 CFR §52.500.32 The intent of the "enemy of the United States" Rule is to excuse nuclear facility licensees from having to design or build features for the specific purpose of protecting their facilities against "the effects of (a) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (b) use or deployment of weapons incident to U.S. defense activities."³³ There are several reasons why the Rule is not applicable to 10 CFR §52.500's treatment of passive air defenses. First, the obligation for nuclear facility design regulations to maximize protection for life and safety is statutory and thus trumps any regulation. Secondly, the "enemy of the United States" rule is cite here as justification for leaving air attacks out of the Design Basis Threat, a regulation that is not under consideration

31 10 CFR Part 52, to which 10 CFR §52.500 would be added, has an almost identical provision, 10 CFR §52.10. The *Federal Register* here notice makes no mention of 10 CFR §52.10.

32 The "enemy of the United States" Rule also does not justify leaving air attacks out of the Design Basis Threat, for most of the same reasons the Rule is irrelevant to 10 CFR §52.500.

33 10 CFR Part 52, to which 10 CFR §52.500 would be added, has an almost identical provision, 10 CFR §52.10. The Federal Register notice makes no mention of 10 CFR §52.10.

in this proceeding. Thirdly, the attempt to shoehorn the Rule into this proceeding by asserting that crashing an aircraft into a nuclear facility is “in the nature of an attack by an enemy of the United States” fails because the analogy overreaches; by its explicit terms the Rule is limited to (a) acts by an enemy of the United States and (b) use or deployment of weapons incident to U.S. defense activities. The Rule would have to be amended before it would cover acts that are “like” the enumerated acts. Finally, if crashing an aircraft into a nuclear facility qualifies as a threat that the “enemy of the United States” Rule allows nuclear facility licensees to ignore, the NRC’s authority to require aircraft impact assessments goes away.³⁴ What justifies ignoring an act would also justify ignoring an order to examine that act.

Mandatory aircraft impact assessments can coexist with the “enemy of the United States” Rule. Issued in 1967 during the Cold War, the Rule addressed a world where the external threat to nuclear power plants and facilities was military action by the Soviet Union and its surrogates.³⁵ Nuclear power plant owners can’t defend against bombers, guided missile cruisers or other heavy weapons nation states have, much less the number of attackers a nation state can field. Terrorists

³⁴ If an aircraft crash is sufficiently “like” an attack by an “enemy of the United States to invoke the “enemy of the United States Rule, then the NRC’s justification for including land and waterborne threats in the Design Basis Threat is also suspect. A land attack by a group of armed terrorists is like an infantry attack ; waterborne attacks are what navy’s do.

³⁵ See, e.g., *Siegel v. Atomic Energy Commission*, 400 F.2d 778 (D.C. Cir. 1968) (Atomic Energy Commission not required to consider whether a proposed nuclear power plant in Florida would be vulnerable to Cuban military attack).

are another matter. While the 9/11 attack caused enormous destruction, all but the tiniest nation state has military forces with destructive capability that dwarfs that of the four aircraft hijacked.

6. To comply with the 1954 Atomic Energy Act the proposed regulation must required that identified security improvements be installed.

All the assessment in the world will not improve the security of even one nuclear power plant if the improvements are totally discretionary and the plant owners choose not to install the designated improvements. Thus there is no guarantee that a purely voluntary implementation will maximize the security improvements. To comply with 42 USC §2201(i)(3) the final 10 CFR §52.500 must require that nuclear licensees install the security improvements that the assessments identify.

CONCLUSION

The NRC's ignoring the potential for air attacks on nuclear power plants when installing passive defenses could make such plants safer from air attacks has never made any sense as policy. Here the NRC at last admits that air attacks should be taken into consideration, but proposes to do so in a virtually useless way. This continued lack of bona fide action doesn't make any sense, and as shown above is also illegal. The NRC should withdraw 10 CFR §52.500 as proposed,

amend it consistent with the comments set out above, and renotice a proposed rule that will make the public safer from terrorist attacks.

From: "Ulrich Witte" <ulrich@ulrichwitte.com>
To: <secy@nrc.gov>, <OCAAMAIL@nrc.gov>
Date: Mon, Dec 17, 2007 5:21 PM
Subject: Comments regarding Section 52.500

Dear Hon. Vietti-Cook

Please see attached.

Regards,

Ulrich Witte

Mail Envelope Properties (4766F62F.E2F : 2 : 52783)

Subject: Comments regarding Section 52.500
Creation Date Mon, Dec 17, 2007 5:21 PM
From: "Ulrich Witte" <ulrich@ulrichwitte.com>

Created By: ulrich@ulrichwitte.com

Recipients

nrc.gov

TWGWPO02.HQGWDO01
 SECY (SECY)

nrc.gov

TWGWPO04.HQGWDO01
 OCAAMAIL

Post Office

TWGWPO02.HQGWDO01
 TWGWPO04.HQGWDO01

Route

nrc.gov
 nrc.gov

Files	Size	Date & Time
MESSAGE	79	Monday, December 17, 2007 5:21 PM
TEXT.htm	1918	
letter DBT rule comments.pdf	107713	
2007 12 17 section 52 500 final .pdf		273275
Mime.822	525823	

Options

Expiration Date: None
Priority: Standard
ReplyRequested: No
Return Notification: None

Concealed Subject: No
Security: Standard

Junk Mail Handling Evaluation Results

Message is eligible for Junk Mail handling
 This message was not classified as Junk Mail

Junk Mail settings when this message was delivered

Junk Mail handling disabled by User
 Junk Mail handling disabled by Administrator

Junk List is not enabled
Junk Mail using personal address books is not enabled
Block List is not enabled