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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

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

Attention: Rulemakings and Adjudication Staff:

Pursuant to Federal Register 72 FR 56287, October 3, 2007, Greenpeace and the undersigned organizations and individuals submit the following comments. Additionally, Greenpeace has reviewed the comments and attachments submitted by the Union of Concerned Scientists and here by incorporates them by reference.

GREENPEACE COMMENTS ON NRC PROPOSED RULE "CONSIDERATION OF AIRCTAFT IMPACTS FOR NEW NUCLEAR POWER REACTOR DESIGNS"

The U.S. Nuclear Regulatory Commission (NRC) has promulgated a proposed rule that would require some but all new reactors to review their designs to improve the chances that they could withstand an attack similar to 9-11. According to the NRC, "The proposed rule is based on the premise that it is desirable for future power reactors to avoid or mitigate the effects of the applicable aircraft impact through design features that reduce or eliminate the need for operator actions." (72 FR 56287, 56288.)

Under this proposed rule, some, but not all of the applicants for new nuclear reactors would be required to undertake the following:

- Perform an assessment of the effects on the designed facility of a beyond design-basis aircraft impact
- Evaluate potential design features, functional capabilities, and strategies for avoiding or mitigating the effects of a beyond-design-basis aircraft impact on the key safety functions of the facility
- Describe how such design features, functional capabilities, and strategies avoid or mitigate, to the extent practicable, the effects of the applicable aircraft impact with reduced reliance on operator actions

(72 FR 56287, 56291.)

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Greenpeace believes that if the NRC is going to license reactors in a post 9-11 America, the government should require that any new reactors be designed to withstand the known terrorist threat. The 9-11 Commission has already documented the threat to nuclear reactors.

> As originally envisioned, the 9/11 plot involved even more extensive attacks than those carried out on September 11. KSM maintains that his initial proposal involved hijacking ten planes to attack targets on both the East and West coasts of the United States.
>
> He claims that, in addition to the targets actually hit on 9/11, these hijacked planes were to be crashed into CIA and FBI headquarters, **unidentified nuclear power plants**, and the tallest buildings in California and Washington State. (emphasis added)

(The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States, Outline of the 9/11 Plot, Staff Statement No. 16, pp.12 – 13.
http://www.9-11commission.gov/staff_statements/staff_statement_16.pdf)

Unfortunately the Bush Administration's NRC seems intent on making the nuclear industry do as little as possible to address the threat posed by terrorists use of aircraft as weapons against nuclear reactors.

The U.S. Nuclear Regulatory Commission's Determination That The Impact Of A Large, Commercial Aircraft Is A Beyond-Design Basis Event Is Arbitrary And Capricious.

In order NOT to address the actual threat to posed to nuclear reactors the U.S. Nuclear Regulatory Commission (NRC) has relied on two specious arguments:

> First, it is not reasonable to expect a licensee with a private security force using weapons legally available to it to be able to defend against such an attack.
>
> Second, such an act is in the nature of an attack by an enemy of the United States. Power reactor licensees are not required to design their facilities or otherwise provide measures to defend against such an attack, as provided by 10 CFR 50.13, "Attacks and Destructive Acts by Enemies of the United States; and Defense Activities." (72 FR 56287, 56288.)

The NRC's first argument has little or no bearing upon whether or not the agency will require nuclear reactors to be designed to withstand an airliner attack similar to 9-11. The public doesn't expect the Wackenhuts to defend against an airliner attack. The public does expect that the agency charged with protecting the U.S. from the dangers of nuclear power would require that new reactors be designed to defend against an attack we have already been warned about. The protection of the public health and safety should not be premised upon what a "private security force" is capable of defending against. The fact that this argument holds

sway with the Bush Administration's NRC demonstrates the extent to which the agency has been capture by the nuclear industry.

The NRC's second argument is premised upon a portion of the Code of Federal Regulations that has been on the books since 1967.

§ 50.13 Attacks and destructive acts by enemies of the United States; and defense activities.

> An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required to provide for design features or other measures for the specific purpose of protection 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. (32 FR 13445, Sept. 26, 1967)

However this regulation did not prevent a previous Commission from addressing the threat posed to nuclear reactors by truck bombs. Prior to the attempt by Al Qaeda to topple the World Trade Center with a truck bomb; the truck bomb attack on the marine barracks in Beirut and the break in at Three Mile Island by an ex mental patient armed with nothing more than a Chevy station wagon, the NRC also considered a truck bomb to be beyond the design basis. In fact, just as the NRC now is attempting to duck the airliner issue, the Commission originally dismissed efforts by the Committee to Bridge the Gap (CBG) and the Nuclear Control Institute (NCI) in the 1980's to upgrade protection against truck-bombs at nuclear power plants.

> The Commission argued that no such threat was then known to exist and that the NRC would have sufficient advance warning if one did materialize. It made the same argument two years ago in denying our petition for rulemaking. Then, the intrusion at Three Mile Island and the bombing of the World Trade Center in February 1993 demolished those arguments.

(Letter from Paul Leventhal, Nuclear Control Institute & Daniel Hirsch, Committee to Bridge the Gap to NRC Chairman Richard Meserve, "Inadequate Protection of Nuclear Power Reactors Against Millennial Terrorist Attack," Dec. 23, 1999.)

However, a more responsible Commission eventually woke up to the new reality and thanks to the dogged efforts of the Committee to Bridge the Gap and the Nuclear Control Institute, the NRC accepted the groups' petition for rulemaking and eventually convinced the Commission to promulgate a truck-bomb rule in 1994. (10 CFR 73.1(a)(1) and 10 CFR 73.55(c)(7-9).

Just as the truck bomb attacks on the Beirut marine barracks and the World Trade Center changed the NRC's thinking and resulted in truck bombs being included in the DBT, so should have September 11th. The attacks of 9-11

changed the threat environment for nuclear reactors yet the NRC and the nuclear industry continue to cling to a pre 9-11 view of the world.

> Arising from the history of considering only accidents and natural hazards for in-plant defense, the worldwide nuclear industry is almost dismissive of the risk solely on the basis that the calculated frequency renders such an *accidental* event to be entirely incredible and, hence, there may have been little incentive to include for such a remote event in the plant's design. Now, in the post-11 September era, the unpalatable likelihood of an intentional aircraft crash into a nuclear plant has to be considered and accounted for as a Design Basis Threat (DBT).

(John Large, "The implications of 11 September for the nuclear industry," Nuclear Terrorism, Disarmament Forum, p. 35. http://www.largeassociates.com/terrorismUNDisarmament.pdf)

Greenpeace encourages the current Commission to WAKE UP to the post 9-11 reality and require that any new nuclear reactors be designed to defend against airliner attacks. The public doesn't care whether the threat to U.S. nuclear reactors comes from terrorists or nation states, whether the reactor is attacked from the air, sea or land. The NRC should stop its dissembling, ignore the nuclear industry lobbyists and address the threat.

The NRC's decision not to address aircraft impact as design basis threat (DBT) fails to reflect the existing threat of terrorism and means that the proposed rule is fundamentally flawed.

The U.S. Nuclear Regulatory Commission's Determination That Reactor Designs That Have Already Been Certified By The NRC Need Not Comply With The Proposed Rule Is Arbitrary And Capricious.

According to the NRC's proposed rule, "the Commission believes that it is prudent for nuclear power plant designers to take into account the potential effects of the impact of a large commercial aircraft." (72 FR 56288.) Greenpeace not only agrees, but believes that the NRC should require that every and any new reactor built in the U.S. to be designed to withstand an airliner impact. Unfortunately, NRC's beliefs are not backed up in its regulations.

According to the language in the proposed rule:

> The Commission has concluded that the proposed rule need not be applied to the four currently approved standard design certifications in Appendices A through D to 10 CFR part 52.2 Therefore, applicants would not need to re-certify these standard designs to meet this proposed rule. (72 FR 54287, 54290.)

Unfortunately, the NRC has already bowed to industry pressure and claims that current reactors provide adequate protection despite its own studies that show

otherwise. However, this should not be used as a pretext to exclude review of reactors that have yet to break ground.

If the NRC's proposed rule is finalized as written, potentially as many as seven of the first ten new nuclear plants slated to be licensed by NRC would not be required to review their designs for the post 9-11 reality. These potential reactors include:

Corp	Design	Site	State
Duke	AP1000	William Lee Nuclear Station	SC
NuStart Energy	AP1000	Bellefonte	AL
South Carolina E&G	AP1000	Summer	SC
NRG Energy	ABWR	South Texas Project	TX
Progress Energy	AP1000	Harris	NC
Progress Energy	AP1000	Levy County	FL
Southern Nuclear	AP1000	Vogtle	GA

(U.S. Nuclear Regulatory Commission, Expected New Nuclear Power Plant Applications Updated November 8, 2007, http://www.nrc.gov/reactors/new-licensing/new-licensing-files/expected-new-rx-applications.pdf)

Even those in the nuclear industry recognize that this bureaucratic absurdity suggested by the Commission would further damage the public's confidence in the nuclear industry and those that purport to regulate it. According to the Congressional Research Service, "Westinghouse submitted changes in the design of its AP1000 reactor to NRC on May 29, 2007, proposing to line the inside and outside of the reactor's concrete containment structure with steel plates to increase resistance to aircraft penetration." (Mark Holt and Anthony Andrews, Nuclear Power Plants: Vulnerability to Terrorist Attack, Congressional Research Service, August 8, 2007, p. 5.)

However, voluntary submittals are not a substitute for regulation. The NRC must require that any reactor to be built in the U.S. be reviewed to ensure that it can withstand an airliner impact.

The U.S. Nuclear Regulatory Commission's Proposed Rule Fails To Provide The Public With ANY Criteria By Which To Judge Whether Or Not Nuclear Corporations Meet NRC's Intent And Is There For Fundamentally Flawed.

Greenpeace has already commented on the NRC's failure to address airliner impact as a design basis accident. Again the public doesn't care whom the attackers are aligned with or how an attack on a reactor might take place. Nor do we give a damn whether NRC has already certified a design or not. These new reactor designs have not been constructed, the agency and the industry have the time and where-with-all to address the airliner threat through design. However NRC's proposed rule lacks of any identifiable criteria.

As noted by NRC Chairman Klein,

> The proposed rule text includes a **general description** of the beyond design basis aircraft characteristics to allow public stakeholders to provide meaningful input during the comment period. The specific details of the aircraft characteristics will be issued in a separate document, which may contain Safeguards or SECRET Information. (emphasis added)

(U.S. Nuclear Regulatory Commission, Commission Voting Record, Proposed Rulemaking – Security Assessment Requirements For New Nuclear Power Reactor Designs, SECY-06-204, Attachment 2, Chairman Klein's Comments on SECY-06-0204, April 27, 2007, p. 2.)

Greenpeace acknowledges the need in certain instances for NRC use of "safeguards or SECRET information." However, the current Commission has so abused the public's trust that absent a documented showing by the agency that new reactor designs have addressed substantive criteria, the public is concerned that NRC will merely rubberstamp industry submittals whether voluntary or not. The absence of any actual criteria in NRC's proposal makes the rule fundamentally flawed.

The U.S. Nuclear Regulatory Commission's Long Standing Failure To Require Nuclear Reactor Licensees To Address The Aircraft Threat Suggests The Need For A Federal Advisory Committee To Review New Nuclear Reactor Designs.

The credibility of the Bush Administration's NRC on the topic of security is, at best suspect. Since September 11th, the NRC has repeatedly refused to take action to address the terrorist threat of aircraft impact and both the NRC and the nuclear industry have mislead the public concerning both the potential for and consequences of a terrorist attack on a U.S. nuclear plant.

According to the former NRC Chairman Nils Diaz, "(w)ith respect to intentional aircraft crashes, the NRC believes that the Nation's efforts to provide protection against terrorist attacks by air should be directed toward enhancing security at airports and within airplanes instead of defending all potential targets such as nuclear power plants. " However, it's the NRC's responsibility not the FAA or the airlines to ensure that reactors do not pose an undue risk to the public.

In 2001 during the days and weeks following 9-11, the NRC claimed that nuclear plants were invulnerable to a similar terrorist attack. On September 18, 2001, NRC spokesperson William Beecher told the Dow Jones newswire that, "It is the considered opinion of the NRC that these (containments) are very robust and it is unlikely that a large airliner could penetrate containment."

However the Argonne Study which the NRC pulled from circulation after 9-11 states that:

"The impact of an aircraft upon a concrete containment of a nuclear power plant generally may result in the damage to concrete walls....if the damage is sufficient, the missile (i.e. the airplane turned into a weapon) may perforate and pass through the target." (Kot, C. A.; Lin, H. C.; van Erp, J. B.; Eichler, T. V.; Wiedermann, A. H.; 1982. *Evaluation of Aircraft Crash Hazards Analyses for Nuclear Power Plants.* Argonne National Laboratory report NUREG/CR-2859 prepared for the Nuclear Regulatory Commission (NRC). June. p. 61. Here in after referenced as the Argonne Study.)

In 2002, the Nuclear Energy Institute (NEI) released the industry's analysis of the threat posed by airliners once again claiming the reactors could withstand a 9-11-type attack. According the industry study:

> [T]he nuclear power industry is confident that nuclear plant structures that house reactor fuel can withstand aircraft impact, even though they were not specifically designed for such impacts. This confidence is predicated on the fact that nuclear plant structures have thick concrete walls with heavy reinforcing steel and are designed to withstand large earthquakes, extreme overpressures and hurricane force winds. The purpose of this study is to validate that confidence.

However the Argonne Study shows that while the impact of a fighter jet would be less severe than a earth quake, the same can not be said for a commercial airliner. "These spectra clearly show that the effect of impact by a Multi-Role Combat Aircraft at 215 m/s is considerably less severe than a modest Safe Shutdown Earthquake (SSE) as represented by the Parkfield earthquake. On the other hand, the effect due to the impact of a Boeing 707-320 at 103 m/s is clearly more severe than that due to an earthquake." (Argonne Study at p. 70).

In 2003, A number of nuclear corporations again claimed that their eactors were not at risk of airliner attack. The director of public affairs with Nuclear Management Co., which managed both the Kewaunee and Point Beach Nuclear Power Plants in Wisconsin told the Green bay Gazette that the nuclear plants' robust construction and relatively small size make them tough targets for an airborne terrorist attack. "These are among the most formidable structures in existence," Brown said, noting that the containment dome that houses each plant's reactor is protected by 4 to 6 feet of steel-reinforced concrete.
While Progress Energy noted that they had consulted closely with nearby military bases, the FBI and state law enforcement officials, as directed by the NRC. "They have jets that can intercept planes quicker than you can ever imagine," said Progress Energy's communications manager, "Of course, we'd survive it, anyway."

However the Argonne Study also discusses accident scenarios which are not dependent upon the airplane breaching any hardened structures like a containment dome. The Argonne study states that in:

> An aircraft crash on a PWR nuclear power plant...the core would most probably be headed for serious damage if not total meltdown. Core meltdown, without the availability of electric power, would probably result in containment over-pressurization and release of radioactive materials to the environment far in excess of 10 CFR 100 guidelines. Note that the above sequence of events does not depend in any way on the breach of a hardened structure due to the impact of a heavy segment of the aircraft at some optimum (i.e., most damaging) angle, which seems up to now to have had the greatest attention in the evaluation of nuclear power reactor safety with respect to aircraft crashes. (Argonne Study at p. 51.)

In 2004, the NRC claimed that the agency was conducting emergency drills based upon the attacks of 9-11. MSNBC reported that "(f)or the first time ever, a nuclear power plant this week incorporated a 9/11 scenario into its security drills: a terrorist strike using a commercial aircraft.... The scenario of the crash included no damage to the reactor's concrete containment building. Brian Holian, of the Nuclear Regulatory Commission, said recent studies showed "most plane crashes into containment buildings would not result in significant releases of radiation."

However, the Argonne study states that:

> The results of an aircraft crash on a nuclear power plant are not limited to the effects of the impact of heavy parts (such as a jet engine) on civil engineering structures. Numerous systems are required in order to provide reactor shutdown and adequate long-term cooling of the core. Although many of these safety-related systems are well protected within hardened structures (containment system, auxiliary building), some are not. (Argonne Study at p. 50.)

The Argonne Study also notes that:

> A crash of an aircraft on a switchyard would very likely eliminate the plant's offsite power.....Should massive electrical failure leading to total loss of power be possible (with the diesel generators failing or unable to power because of short circuits or other equipment failure) it would leave the plant vulnerable to core melt."
> (Argonne Study at p. 51.)

In 2005, in a meeting with environmentalists & nuclear safety advocates, NRC's head of the Nuclear Safeguards and Incident Response branch again attempted to claim that the drills the agency and industry were conducting at Indian Point showed that the nuclear plants could withstand airliner impacts. An unclassified slide released by the NRC under the Freedom of Information Act entitled Aircraft Attacks on Indian Point, claims that, "NRC has conducted an extensive analysis of the potential vulnerability of nuclear power plants to aircraft attack. These studies confirm that the likelihood of damaging the reactor core and releasing radioactivity that could affect public health and safety is low."

However, the Argonne Study states that, "If only one percent of the fuel, say 500 lb. for the FB-111 fighter plane, is involved in such an event, the blast environment will be equivalent to the detonation of approximately 1000 lb. of TNT." (Argonne Study at pp. 76 –77.)

The Argonne study also states that:

> "Based on the review of past licensing experience, it appears that fire and explosion hazards have been treated with less care than the direct aircraft impact and the resulting structural response. Therefore, the claim that these fire/explosion effects do not represent a threat to nuclear power plant facilities has not been clearly demonstrated." (Argonne Study at p. 78.)

In 2006, the NRC Staff prepared a proposed rule that would have amended the current regulations for nuclear power reactors by adding security design assessment requirements for future applicants for a construction permit, operating license, standard design approval, design certification, manufacturing license, or combined license. (U.S. Nuclear Regulatory Commission, Proposed Rulemaking – Security Assessment Requirements For New Nuclear Power Reactor Designs, SECY-06-204, September 28, 2006, p.1.)

However, according to former Commissioner McGaffigan, the NRC's staff proposed rulemaking was significantly altered based upon a letter from the Nuclear Energy Institute (NEI):

> I also appreciate NEI's December 8, 2006 letter to the Commission that proposed that the beyond-design-bases security assessments be handled in Part 52 at the design certification stage (when practicable changes, if needed, can be most readily adopted). That suggestion helped the entire Commission in the development of alternatives to the staff proposal.

(U.S. Nuclear Regulatory Commission, Commission Voting Record, Proposed Rulemaking – Security Assessment Requirements For New Nuclear Power Reactor Designs, SECY-06-204, Attachment 2, Commissioner McGaffiqan's Comments on SECY-06-0204, April 27, 2007, p. 1.)

While the former Commissioner claimed that the NRC's proposal was more stringent than that submitted by NEI's, the public will have to take that on faith as the NEI letter is being withheld from the public.

Since the attacks of 9-11, the government and the nuclear industry have continued to traffic in half-truths about the vulnerability of nuclear power plants. Merely claiming that reactors are invulnerable from terrorist's attack does not make it so. The government's failure to reduce the nuclear reactor risks within its control and its continued attempts to deflect legitimate concern regarding the vulnerability of nuclear reactors suggests that the public would be better served

by the establishment of a federal advisory committee to review nuclear power plant designs for post 9-11 improvements.

Sincerely,

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Subject: Greenpeace Comments on 72FR56287 Consideration of Aircraft Impacts for New Nuclear Power Reactor Designs

attached

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