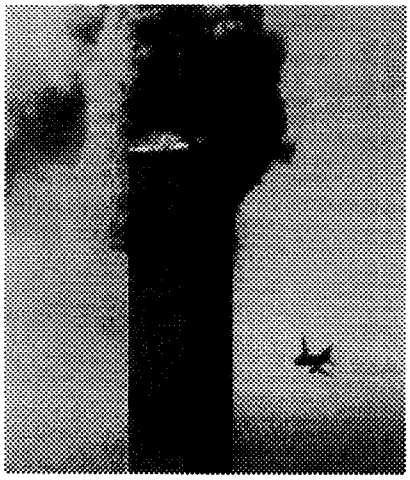

HERE TODAY,

THERE TOMORROW:

COMMERCIAL NUCLEAR REACTOR SITES AS TERRORIST TARGETS

A Report by
Nuclear Energy Information Service
Evanston, IL
October 22, 2001

NEIS ● P.O. BOX 1637, EVANSTON, IL 60204 ● (847)869-7650; -7658 FAX
www.neis.org neis@forward.net

HERE TODAY, *THERE* TOMORROW: COMMERCIAL NUCLEAR REACTOR SITES AS TERRORIST TARGETS

A Report by
Nuclear Energy Information Service
Evanston, IL
October 22, 2001

SUMMARY:

The September 11th attacks on the World Trade Center and the Pentagon call into serious question the capability of existing or proposed nuclear reactors to resist such assaults without major releases of radiation to the environment and exposures to the public. They come at a time when the federal Nuclear Regulatory Commission (NRC) has been "experimenting" with a plan to allow the nuclear industry to police itself on reactor security from terrorist assaults; and this plan comes after a decade-long series of tests of such security at U.S. reactors demonstrated conclusively that over 50% of those reactors tested could not resist a determined land-based intruder. The collapse of the World Trade Center buildings demonstrated, with subsequent public remarks by BOTH NRC and the International Atomic Agency that NO reactor could be certain to have been able to withstand impacts from today's vintage of commercial or military aircraft, and contain its radioactive content. Finally, regardless of whether the reactors themselves could withstand such air assaults, it is clear that many of today's operating spent fuel pools definitely cannot.

These conditions cast serious doubts on the wisdom of plans to either 1.) extend the operating licenses of currently existing reactors which have containment buildings; or 2.) permit construction of a new generation of reactors, which are being proposed with either no containments, or containments inferior to those in use today to withstand such crashes from aircraft. Specifically, the proposal by President Bush and Vice President Cheney to build an additional 150 new reactors only provides terrorists with 150 new and extremely dangerous target opportunities within the borders of the United States.

Given the anticipated tremendous costs to attempt to modify conditions at current or proposed reactors to enable them to successfully meet such determined attacks, the investment would be better made in a methodical and aggressive implementation of sustainable, renewable energy generating resources, and energy efficiency options which would simultaneously satisfy legitimate energy needs, without providing additional "targets of mass destruction" for would-be terrorists; and in a planned, progressive phase-out of current nuclear reactors.

HERE TODAY, *THERE* TOMORROW: COMMERCIAL NUCLEAR REACTOR SITES AS TERRORIST TARGETS

I. Introduction

The tragic events of September 11, 2001, have irreversibly changed many beliefs, views and notions about our modern society. Two of the most notable of these changes are that

- the very infrastructure upon which we have built modern life and which make it possible at all — our modes of transportation, our communication, our architecture, our centrally planned systems — must now be viewed and analyzed as possible weapons for use by terrorists against society. How one defends society quite literally against itself has yet to be discussed much in policy circles, let alone with the public. When an airliner, crop-duster, railroad train, etc. can be used effectively as a lethal weapon of mass destruction, it begs a pregnant question outside the scope of this paper: what use will spending multi-billions of dollars on missile defense systems and Star Wars satellites of dubious capability be in a world where the same mass destruction can be more precisely delivered by a suicidal pilot, engineer, or truck driver? Are we putting far too many eggs in the wrong basket?
- almost as a corollary, these same mundane yet essential pieces of infrastructure must also be simultaneously analyzed as potential terrorist ***targets*** as well. September 11th demonstrated that a hijacked airliner can be either; and the World Trade Center and Pentagon lucrative targets.

Perhaps nowhere is the second point more worrisome in this context than at the Nation's 103 operating commercial nuclear power reactors, and their adjoining "spent" fuel pools. Illinois has 14 such reactors and accompanying required spent fuel pools, all under the umbrella of Exelon Corporation (formerly Unicom/ComEd). Eleven are operating, three are currently closed. If Illinois were a nation, we'd be the 11th largest nuclear provider in the world. Illinois is also the site of the Nation's only (de facto) high-level radioactive waste (HLRW) repository — the General Electric Morris Operation near the Dresden nuclear reactors, which holds slightly more than 700 tons of spent reactor fuel. Each of the 7 reactor sites also has its own spent reactor fuel pools in operation, and would not be permitted to operate by regulators without an active,

operating spent fuel pool.

Each core of today's large reactors has the radiation content of over 1,000 Hiroshima-bombs stored inside it. Hence the requirement for the large containment buildings which enclose these reactors, some of which having reinforced concrete walls as much as 4 feet thick (5 feet in some European reactors).

The spent fuel pools which adjoin the reactors and are essential and required for their continued operation, have many more times that amount of radiation stored in them. This is due to the fact that so-called "spent" reactor fuel is far more radioactive coming out of the reactors than the fresh fuel going in, thus making the term "spent" an egregious misnomer. Regrettably, many of these reactor "spent" fuel pools ***are not*** housed in the highly reinforced reactor containment buildings. Instead, they are housed in adjacent buildings which may have walls only 18-inches thick — a far cry from the design specs for protecting the reactors themselves.

It has long been the "expert" and quite public opinion of regulators and members of the nuclear industry that these reactors could withstand the crash impact of large commercial jetliners. Further, the crashing of a large jetliner into a reactor building was not even considered a likely or credible threat, and therefore the reactors and their surrounding protective buildings did not need to be designed to protect against such a presumed unlikely scenario.

This unsubstantiated self-assured attitude has led both Westinghouse and Exelon Corporation to submit new reactor designs to the Nuclear Regulatory Commission (NRC) which actually propose the ***elimination*** of the use of such heavily reinforced protective containment buildings that characterize -- and protect -- today's operating reactors. In both cases elimination of the reinforced containments are claimed by the designers as ***essential*** to making the designs cost-effective in the competitive marketplace. The NRC has approved the Westinghouse design (the AP-600), and is currently considering the Exelon proposal for "pebble-bed modular reactors.".

The events of September 11th clearly demonstrate as self-serving hubris such historic claims about existing containment structures. Further, they demonstrate that the proposed reactor designs that the nuclear industry claims it needs to survive — i.e., designs ***without*** reinforced containment buildings — place our Nation in grave peril, should they be built. When the World Trade Center towers came crashing down, they took these ridiculous and self-serving notions of reactor safety and vulnerability with them.

It is the purpose of this paper to demonstrate that:

1.) The continued use of nuclear power in the post-September 11th World cannot be done safely, with any credible assurance that these reactors will not become inviting targets to future terrorist attacks, some resulting in the release of their radioactive contents. Even if the reactors themselves could, the spent fuel pools required for their continued operation could not.

2.) New reactor proposals without containments are even less capable than existing reactors of withstanding such determined terrorist attacks, and should be immediately rejected by regulators. Any previous approvals by NRC for such designs should be immediately revoked.

3.) The NRC itself has shown a historic disregard and lackadaisical attitude towards the ability of reactors to withstand a determined terrorist attack. It has constantly caved in to pressures from the nuclear industry to weaken standards in this area, and is currently engaged in a process of abdicating its Congressional mandate to regulate the industry in behalf of the public interest and protection, by considering allowing the industry to self-regulate itself in this critical area. Finally, it historically has knowingly deceived the public and the Congress as to the ability of reactor containments to withstand either determined terrorist attacks, or impacts from large commercial or military aircraft.

4.) Since the current generation of nuclear plants with reinforced containments, and their accompanying non-reinforced spent-fuel pools cannot withstand the impacts of today's aircraft, whether from intentional terrorist assault or accidental crash, petitions by utilities to have their reactor operating licenses extended should be rejected until the utility licensees can prove they can withstand such assault. Since newly proposed designs without containments present an even easier target, they should be rejected, or, if already approved, have their approvals withdrawn.

5.) Rather than enhance our energy security as nuclear power cheerleaders in industry and Congress would have the public believe, the events of September 11th clearly demonstrate that the continued use of nuclear power places this Nation's people, environment, and energy security at continued grave risk. The proposal by President Bush and Vice President Cheney to build an additional 150 new reactors only provides terrorists with 150 new and extremely dangerous target opportunities within the borders of the United States.

A more effective means to achieve energy security without continuing to play Nuclear Jeopardy would be to adopt an aggressively planned phase-in of sustainable, renewable energy resources, in conjunction with aggressive implementation of energy efficiency measures. Such

plans are outlined in numerous "20-20" Energy Vision statements developed by state and national environmental organizations, and are readily available for review upon request.

Granted, America experienced a terrible tragedy on September 11th, but we may actually have dodged a far worse bullet. If nuclear power is allowed to continue under the current visions of the nuclear industry and its Congressional cheerleaders, and under the regulatory indifference and capitulation of the NRC, this Nation may not be so lucky the next time.

II. The Vulnerability of Nuclear Reactors and Spent Fuel Pools to Terrorist Attack

A. Nuclear Reactors and the 9/11 airborne attack:

For decades representatives of the nuclear power industry, and even of the federal NRC have glibly asserted that today's operating nuclear reactors were designed and built to successfully withstand the impact from large commercial airliners without a release of their radioactive contents. Some used references to specific models of aircraft (747's being often cited); others used the more general term.

The tragic events of September 11th at the World Trade Center and the Pentagon have subsequently exposed those claims as myth and fraud. If anything, it is more probable that nuclear reactors in the post 9/11 world should be considered World Trade Centers with 1,000 Hiroshima's worth of radiation stored inside them.

Within days of the WTC attack, officials in the US and around the world did a humiliating back-peddle from this untenable and largely self-serving position of invincibility.

In the NRC News release of September 21, 2001 (No. 01-112), NRC comes clean, stating clearly that, "...the NRC did not specifically contemplate attacks by aircraft such as Boeing 757's or 767's and nuclear plants were not designed to withstand such crashes. *Detailed engineering analyses of a large airline crash have not yet been performed."* (Emphasis ours)

Just as the dust was settling in New York, the International Atomic Energy Agency was holding its annual conference in Vienna. David Kyd, a representative of the IAEA stated, "If you postulate the risk of a jumbo jet full of fuel, it is clear that their design was not conceived to withstand such an impact."

Industry representatives from Japan took the IAEA declaration one step further towards reality, stating that Japan did not have the capability of designing a reactor containment that COULD withstand an impact from a 757 or 767.

Even the nuclear industry trade association, the Nuclear Energy Institute (NEI), used very cautious language on its website, stating that "Reinforced concrete containment structures...have been designed to withstand the impact of hurricanes, tornados, floods, *and airborne objects up to a certain force. Design requirements with respect to aircraft impacts are specific to each facility.*" (Emphasis ours)

B. Nuclear Reactor Vulnerability to Conventional "Ground-Based" Assault

While it is now abundantly clear that the NRC, the nuclear utilities and the NEI had never taken into account a terrorist attack on a nuclear facility from the air, it would have been hoped that these institutions would have made adequate preparations to foil terrorist assault on the ground, from a team of "determined intruders." The current record suggests otherwise.

A mere two days prior to the attacks on the World Trade Center and the Pentagon, *U.S. News and World Report* (Sept. 17, 2001) ran an investigative report written by Douglas Pasternak titled, "A Nuclear Nightmare." The article chronicled that, at a time when the NRC and nuclear industry have been calling for less-rigorous security and safety standards and industry self-regulation, the record shows a long standing history of inadequate staffing, training, procedures, and equipment to deal with even the minimal terrorist threat as defined in current NRC regulations dealing with terrorist assault, known as the Design Basis Threat.

The investigative report also illustrated examples of sabotage from within, the ease with which non-authorized personnel can and have gained access to nuclear power facilities, and poor personnel screening techniques which have led to hiring dangerous felons and murderers at nuclear plants. The report also mentioned an embarrassing fact known by the NRC and nuclear industry for years — that in mock-terrorist assaults done at U.S. nuclear plants, nearly 50% of those plants tested (33 of 68) failed to repel the small teams of mock-intruders armed only with light hand-held weapons.

These plant security exercises, known as Operational Safeguards Response Evaluations, or OSRE's, were conducted by ex-Navy SEAL veteran Captain David Orrik. The exercise program was originally instituted by the NRC in 1991 to evaluate plant security. When the failures kept

piling up, the nuclear industry complained, and NRC decided to terminate the program in 1998. The nuclear industry claimed the tests were unfair, and challenged NRC's legal authority to conduct the OSRE tests, which are not required by existing regulations. It was reinstated later the same year only after a hue and cry was raised by nuclear critics, the public, and ultimately Congress. After reinstatement 6 of 11 reactors tested failed to repel the mock assaults.

It is important to note that these exercises occurred with the plants having the benefit of advance warning. Further, these exercises did not assess the full Design Basis Threat that NRC regulations require nuclear power plants to protect against. Finally, these exercises failed to assess the ability of nuclear plants to defend against attacks by truck bomb, aerial, and water-borne assault, three likely scenarios that fall outside the current Design Basis Threat.

Astonishingly, in spite of this dramatically dismal history of decade-long failure of the nuclear industry to perform to regulatory requirement on plant security issues, shortly before the WTC attacks the NRC announced that it would implement an "experiment" of industry self-assessment, effective November 1, 2001. Physicist Ed Lyman of the Washington-based Nuclear Control Institute observes, "Past experience has shown that a lower level of NRC oversight would result in a reduction in security at nuclear plants." (xx)

Lyman goes on to point out that this industry self-assessment plan was written by the nuclear industry's trade association, the Nuclear Energy Institute (NEI), and while it is still subject to NRC approval, it "contains numerous elements that substantially weaken NRC's authority to identify, require corrections at and take enforcement actions against plants with significant vulnerabilities in their physical protection systems." (xx)

C. Spent Fuel Pools and Dry Casks as Potential Terrorist Targets

Virtually everything described above concerning the vulnerability of reactors to terrorist attack applies to the even more vulnerable spent fuel pools *required by license* to operate at every operating reactor.

The spent fuel pools hold the reactor fuel taken out the reactors which have lost its ability to efficiently produce heat through fissioning. This fuel is kept under 20-feet of water in special pools 45-feet deep adjacent to the reactors, both because it is thermally hot coming out of the reactors, and because its radiation content when it immediately leaves the reactor is as much as 50 million times that of fresh fuel. In spite of the fact that this radioactive inventory decays

quickly, the fuel must be kept constantly cooled, or the residual heat from radioactive decay can melt the fuel.

While the average large-scale light water reactor will have in its core between 130-150 tons of fuel, and a radioactive inventory of about 15 billion curies (1.5×10^{10} ci.), the spent fuel pools of reactors in operation for decades can have well over 1,000 tons of spent fuel per reactor; the curie content of the inventory will vary with the age of the fuel.

The position of the spent-fuel pools varies with reactor design. With U.S. pressurized water reactors (PWRs;, and 2 permanently closed), the spent fuel pool is placed *below* ground in the Fuel Handling Building adjacent to the reactors. In boiling-water reactors (BWRs; 7 of these are currently in operation in Illinois, and one permanently closed) the pools are situated *above* ground.

Spent fuel pools are not always positioned within the same highly protective containments that house the reactors. They are often found in adjacent Fuel Handling Buildings between reactors at multiple reactor sites. These buildings are NOT as well reinforced as the reactor containment buildings, often having walls only 18" thick.

The main concern is that in an attack, or even severe unintended accident, cooling water would either be drained from the spent fuel pool, or the supply cut off. Without cooling water, the fuel would eventually overheat and melt. In conjunction with a severe fire (as would occur with a jet loaded with aviation fuel) and a breach of the building, the melted fuel would have its radioactive inventory dispersed by a plume into the surrounding area.

It is because these less-reinforced buildings are far more vulnerable to attack from both land based and aircraft induced terrorism that they represent a perhaps greater threat, containing as they do they entire remaining radioactive inventory of the reactor from day-one of operation to the present.

NRC staff has recognized this threat. An October, 2000, NRC report indicates that a severe accident at a spent-fuel pool could result in a number of deaths "a large as for a severe reactor accident."

It should be noted here that this threat to the spent fuel pool does NOT argue in favor of moving spent fuel as quickly as possible either to a centralized, intermediate storage facility; nor to a centralized perpetual storage facility. The reason is that an operational spent fuel pool is a ***requirement for operation*** of an existing reactor. The spent fuel is far too "hot," both thermally

and radioactively to be moved anywhere. It cannot even be moved ***onsite*** safely to "dry-cask storage canisters (see below) until it has cooled for at least 5 years in the wet pools. Thus, claims that facilities like Yucca Mt. or the MRS being proposed in Utah would provide greater security by *reducing* the number of facilities in operation are completely false. As long as reactors are allowed to operate, their spent fuel pools must also operate, meaning they will have the hottest of the spent fuel in them at all times. Other facilities built merely *add* to the potential list of terrorist targets, not reduce them, as long a reactors continue to operate..

Some utilities (Exelon most recently) have adopted a method of spent fuel storage called *dry-cask storage.* The oldest (and hence less "hot) spent fuel is being stored in large concrete cylinders outside *both* the reactor containment buildings *and* the Spent Fuel Handling building. These canisters are air cooled, and sit out on open-air pads. Some are in line-of-sight view from unsecured areas; some are in unguarded areas within chain link fences.

Given the weaponry available to "determined intruders" of today, and the use of DU and tungsten-tipped ordinance whose effectiveness has been amply demonstrated against "hardened" targets in the Gulf War, the Balkans, and now Afghanistan, the security of either the Fuel Handling Building or the dry casks is in grave doubt from a land-based assault.

Since NRC has not done calculations on the ability of reactor containments to withstand an impact from a modern, wide-bodied jet, they probably have yet to do similar calculations on the less-fortified spent fuel buildings and dry casks.

III. The Alleged "Nuclear Renaissance" in the Age of the 9/11 Terrorist Threat

For much of the past 2 years, the nuclear industry has engaged in an aggressive advertising campaign to bring nuclear power back into acceptance with both the public and with policy makers. It has attempted to portray itself a the alleged "clean air" energy resource. The industry attempted to get the Clinton Administration negotiators to promote nuclear power as a "sustainable" energy resource at the COP-6 meeting on Global Warming in November, 2000, alleging that nuclear power was a resource that could help fight global warming.

It has received a major boost from the Bush Administration as well. The Bush/Cheney energy plan calls for aggressive expansion of nuclear power, rapid relicensing of older plants,

massive subsidization, and the construction of as many a 150 new reactors in the next 20 years.

It is small wonder that the industry press releases parroted by the media have been claiming a "nuclear renaissance."

In spite of these claims and posturings by the nuclear industry, the reality has been far different. Due to intense activist pressure, the industry lost its bid to be classified as "sustainable" in the fight against Global Warming, both domestically and internationally. Clean air claims were successfully challenged in false advertising suits lodged by U.S. activists. Even the Bush/Cheney Energy Plan has yet to garner substantive gains for the industry to date.

The events of September 11th seriously call into question the very future of nuclear power in a world of unpredictable terrorist acts of mass destruction

Reactors can no longer be discussed as merely another energy source. The now must be seen as potential and extremely lethal targets, World Trade Centers with 1,000 Hiroshima's worth of radiation inside them. They are a qualitatively different target than the wind farm at Altamont Pass, or the Luz Solar Array in California. And they will become more expensive for society to safeguard.

The added expense borne by society to safeguard these brittle power sources must now be factored into every economic decision pertaining to the relicensing of old reactors, or permitting the construction of new ones.

Now that the terrorist threat has become "credible," the old design basis standards under which current reactors are licensed have become obsolete. Continued use of standards that no longer reflect the unfortunate real world conditions places millions of citizens in jeopardy. As reactor operators begin to apply for extension of their current 40-year licenses, they need to be given a set of standards that require them to meet the post-September 11th terrorist challenge, or have those license extensions denied.

Perhaps more worrisome than the plant life extension applications are proposed plans to build new reactors without the benefit of today's highly reinforced containments.

One such new design is the "pebble-bed modular reactor" (PBMR), proposed by Exelon Corporation. Exelon is in partnership with several other corporations to build a prototype of this design in South Africa, with intentions of having them commercially available in the U.S. within seven years.

A presentation given before the NRC in January, 2001, reveal several features made

alarming in the post-September 11th world:

- these reactors would likely not be constructed with the benefit of containments similar in size or protective capability to those in existence at today's reactors; information from other sources indicate that the PBMR reactors would not be economically viable were they obligated to meet this current containment requirement;
- expected emergency plan zones (EPZ) , would be on the order of 400 meters -- a huge downsize from today's 10 mile EPZ radius. This suggests strongly the intention of siting these facilities closer to population centers;
- the PBMR core and fuel assembly makes extensive use of graphite -- the combustion of which was so effective in distributing most of the Chernobyl-4 reactor core around the planet -- as a fuel sphere matrix;
- radical changes in Price Anderson indemnification are required to make the PBMR's economically viable, while at the same time Exelon is making paradoxical claims that the reactor design is nearly accident proof, and that consequences to the public would be negligible.

While no PBMR's have yet been built, the above requirements for making them economically viable are totally inappropriate in terms of today's known terrorist threat. No reactor of any kind should be given an operating license, or have one renewed, that cannot demonstrate it's ability to withstand the impact of a wide-body commercial or military aircraft, whether by accident or intention.

NEIS has sent a letter to the CEO's of Exelon Corporation, formally requesting that the company abandon its plans to build the PBMR.

On a positive note, aggressive promotion of energy efficiency and renewable energy resources may finally be given the one critical justification needed for their implementation: use of these "soft path" energy resources is infinitely preferable to losing huge population centers or agricultural breadbaskets from nuclear terrorist assaults on nuclear reactors or spent fuel pools.

IV. The Nuclear Regulatory Commission has been indifferent at best, irresponsible at worst on the issue of "credible terrorist threat."

The NRC has shown an historic lack of interest in regulating the nuclear industry on the issue of reactor security. As early as 1981-82 the NRC allowed Commonwealth Edison considerable enforcement discretion and self-monitoring latitude on issues of firearms and alcohol infractions at the operating Zion reactors, and the then under construction LaSalle reactors. This attitude of indifference, and practice of allowing the nuclear industry to regulate itself seems to have become the regulatory norm over the years:

- In October, 1995, not long after the Oklahoma City bombing, a reporter from a Milwaukee, WI, TV station drove an unmarked van into the Zion nuclear power station site north of Chicago, IL, drove past both reactor buildings and the spent fuel building, and parked outside the security building. He and his crew went inside, passed their equipment bags unchallenged through the x-ray machines, passed through metal detectors with a pocket full of nails, and nearly entered the secure area of the building before being stopped and asked to state his business. He performed a similar set of intrusion activities at the Point Beach reactors in Wisconsin, filming deserted guard stations, missing surveillance equipment, and overall lack of security presence.

  When he requested a meeting with NRC to inform them of his findings and show them his video, he was told the NRC was not interested. Only after securing the support and intervention of U.S. Senator Herb Kohl of Wisconsin was the reporter able to meet with NRC, which promised a "special investigation." In February, 1996, at the public meeting held to discuss the previous year's "SALP" report (Systematic Assessment of Licensee Performance — i.e., a "report card" for reactors), NRC gave Zion a "2" ranking — "good" or "acceptable" in the area that rated overall plant security.

- While NRC agreed in 1994 to increase setback distances and erect driving barriers at nuclear plants to defend against truck bombs, NRC has refused subsequent appeals by the Nuclear Control Institute -- a Washington D.C. nuclear watchdog organization -- to upgrade protection to defend against much larger bombs subsequently used by terrorists

than the one that was used in Oklahoma City. Further, filmed documentation in 1995 at the Zion nuclear reactor in Illinois, and the Point Beach reactors in Wisconsin illustrated that the utilities were still not taking NRC's directives seriously.

- In June, 1999 the State of Nevada filed a "Petition for Rulemaking" to the NRC, charging that federal safeguards against terrorist attacks on high-level radioactive waste shipments were woefully inadequate or non-existent. Nine State governments and the Western Governors Association endorsed the petition. Despite accepting the petition over two years ago, NRC has yet to act upon it.

- As described above in Section 2, NRC canceled the only program that provided it with objective, real-world analysis of the capabilities of reactor operators to resist and repel terrorist assaults — the OSRE program. And even after reinstating the program, NRC announced a plan for the nuclear industry to self-assess and monitor itself, scheduled to begin November 1, 2001.

The NRC's responses to the September 11th attacks illustrate a similar disinterest in regulating reactor security:

- Over one month has elapsed since the WTC and Pentagon attacks, and the sense that NRC needs to take urgent action of any kind on reactor security is no where apparent. NRC has yet to *order* nuclear utilities to adopt a uniform plan of response for security at reactors, instead allowing for "voluntary" responses and initiatives from utilities, which have varied from site to site, and state to state. Some sites have utilized state police; some, stepped-up patrols from the local sheriffs. In New Jersey and New York State, the governors have called out the National Guard to monitor and guard nuclear plants. In stark contrast, France ordered military presence at reactor sites on September 12th; and recently, France ordered its military to begin installing anti-aircraft batteries at some reactor sites to deter or shoot down potential airliner threats.

- A full 30 days *after* the WTC attack, the NRC closed its website to public access, claiming it was doing a thorough review of the materials in an effort to remove content that might aid terrorists. Why the NRC waited 30 days to launch this review has gone unexplained. It did, however, deny the public access to previously available information just as the Congress was taking up debate on the Price Anderson Act renewal legislation. This Act deals with limiting the liability of nuclear utilities in case of catastrophic accidents.

- While it has seen fit to review its website contents, NRC has still not performed critical engineering analysis to determine whether reactor containments and sent fuel pools could withstand impacts from today's vintage of wide bodies aircraft. Further, in a response to an inquiry dated 9/21, dealing with a controversial shipment of spent reactor fuel from West Valley, NY, to Idaho, NRC -- responsible for regulating the West Valley waste transport containers -- admitted that "the capacity of shipping casks to withstand such a [large aircraft] crash has not been analyzed."

On what remains of its website, most of which was taken down a mere month after the WTC attacks ostensibly to deny terrorists information on plant security, the NRC claims as its Mission:

> "...to protect the public health and safety, and the environment from the effects of radiation from nuclear reactors, materials and waste facilities. We also regulate these nuclear materials and facilities to promote the common defense and security."

The NRC derives its authority to enact this Mission from the Congress. Yet, time and again over the past 15 years, NRC has ignored the public input, and unilaterally delegated its Congressionally derived authority to those it is required to regulate.

In the post-September 11th world, one fails to see how such abdication of its regulatory authority contributes to NRC's being able to successfully fulfill its stated mission. It remains to be seen how permitting utilities -- with a history amply littered with demonstrated failures -- to conduct their own future security analysis will allow them to successfully defend against a determined, land-based intruder who will not play by the "code of wishful thinking" on terrorist assault. This nuclear industry "code of wishful thinking" should not be permitted to substitute for

stringent NRC regulatory oversight at U.S. nuclear plants.

For its part Congress will have to determine whether an agency under its charge has the unilateral authority to give away its regulatory powers to those it regulates. After making the case for the Nation to be on near-war footing, necessitating restriction of previously enjoyed rights and civil liberties, and greater security restrictions for air travel, the affected public may not take too kindly to Congress' consciously permitting its chief regulator of an inherently dangerous industry to turn lap-dog and weaken safety and security measures at nuclear facilities.

Congress needs to either insure greater nuclear plant security through decisive policy action; or it will find that the public may make it a decisive campaign issue in 2002.

IV. The Situation at Illinois Nuclear Power Plants

Illinois has 14 reactors and accompanying required spent fuel pools, all under the umbrella of Exelon Corporation (formerly Unicom/ComEd). Eleven are operating, three are currently closed. If Illinois were a nation, we'd be the 11th largest nuclear provider in the world. Illinois is also the site of the Nation's only (de facto) high-level radioactive waste (HLRW) repository — the General Electric Morris Operation (GEMO) near the Dresden nuclear reactors, which holds slightly more than 700 tons of spent reactor fuel. Each of the seven (7) reactor sites also has its own spent reactor fuel pools in operation, and would not be permitted to operate by regulators without an active, operating spent fuel pool.

As seen above Illinois reactors over the years have played a highly visible role in demonstrating security incompetence. All of the above examples of security breaches and gaffs occurred under the watchful eye of the NRC, which constantly boasts that it maintains resident inspectors at all reactors.

What was not mentioned above is that since the 1995-96 Zion security breach incident, ComEd/Unicom/Exelon has cut plant security staff by 25%, largely to save money. This is one of the results of utility deregulation pressures to cut costs. Petitions signed by Zion security staff and sent to NRC in 1996 claiming that staff cuts threatened the security of the plant were rejected by NRC.

Also not mentioned above was the fact that Exelon's two Quad Cities reactors were among the last to undergo an OSRE test in May, 2001. It failed.

On the morning of September 11th, one hour *after* the WTC assault, Jim Howard, a Zion resident and former employee at the Exelon reactors, drove his car through the open gate, past the unstaffed guard house and down the straight-arrow, obstacle free roadway into the Zion parking lot. He drove around and left. He wanted to see if Exelon had understood the significance of the morning's events, and taken appropriate actions. When he returned at 4 p.m., Exelon had closed the gate, and stationed one person in the guard station, and one in a parked vehicle nearby.

"I drove right through the front gate, right up past the two silos — maybe 100 feet from them — turned around, and came back out. Nobody stopped me," Howard said.

VI. Learn from History, or Repeat It: What We Suggest Instead

In remarks after the September 11th attacks, Rep. Edward Markey stated that, as tragic a loss of like as the WTC and Pentagon attacks were, "a successful terrorist assault on a nuclear power plant could result in a full scale core meltdown and breach of reactor containment that could result in countless more deaths and injuries."

It is the responsibility of the Illinois delegation to Congress to act in the best interests to protect the people and environment of Illinois, the state with the largest number of reactors and spent fuel pools in the Nation. Yet, no one from the delegation sits on a committee that directly deals with nuclear power oversight issues. Two members of the House sit on an energy-related committee. It is embarrassing that Senators from Alaska and Oklahoma — which have NO nuclear reactors — have more influence on nuclear power issues than any of our delegation to Congress. The events of September 11th make this situation intolerable.

NEIS recommends that the Illinois delegation and other elected officials work to achieve the following changes made *absolutely necessary* by the events of September 11th:

Immediate/Short-term Changes and Recommendations:

- *Increase security at reactor sites and the GEMO facility for spent fuel.* Congress should order NRC to prepare orders for the utility funded deployment of either federal troops or National Guard units at nuclear reactor/spent fuel sites. Some have recommended the deployment of anti-aircraft batteries at nuclear plants. This suggestion needs further

debate and analysis. At a minimum, no fly zones should be instituted for all general and commercial aircraft. Onsite personnel screening and background checks should be instituted for all employees and subcontracted individuals. Improvements in traffic and intruder barriers should be immediately implemented. All gates at plants should be locked, and all guardhouses staffed 24/7 with multiple personnel.

- *Order NRC to come up with a revised "design basis threat" within 30 days.* As Paul Leventhal of the Nuclear Control Institute says, we do not have the luxury of time to await NRC bureaucratic rulemakings on this issue; the emergency is ***now***, not next year. And Congress keeps telling us we are at war ***now***, not later on. If this is the case, Congress needs to order NRC to behave as if we were at war, and do their job of regulating and rulemaking ***now***, not later. The design basis threat analysis and rules should take into account assault from air and water, as well a from land.
- *Explicitly prohibit NRC from allowing the nuclear industry to self-regulate, self-evaluate, or self-monitor itself in the area of reactor security.* The NRC has lost its credibility to do the right thing in terms of reactor security. It is no longer viewed as capable on its own of acting in behalf of public safety and protection. Therefore, Congress should enact the above prohibition. Further, it should order NRC to continue use of the OSRE evaluations as a more reliable indicator of plant readiness. Finally, it should order NRC to enforce all existing regulations pertaining to reactor security, and not permit discretionary enforcement in this area.
- *Order NRC to re-establish its website for public use.* The nonsensical and greatly delayed NRC action to close its website to the public only impedes the ability of the public to accurately assess whether NRC is doing its job. Any terrorist worth his/her salt would have long ago gotten whatever information s/he needed from the website, certainly within the 30 days after the WTC attack that NRC left the site up. This is merely an attempt to obfuscate, and should be reversed immediately, so that the public can make informed decisions relating to nuclear power and NRC competency.
- *Suspend all shipments of spent reactor fuel indefinitely.* As noted above, NRC cannot guarantee the integrity of the shipping containers. No shipments of spent reactor fuel should occur until NRC can provide such a guarantee.

Intermediate/Long-Term Recommendations:

- *Direct NRC to revise its "design basis threat" to reflect the impact of current large commercial and military aircraft on reactor containments and spent fuel pools:* The NRC again will not do this in a timely manner unless ordered by Congress. Reactors not capable of meeting the revised design basis threat should have their licenses suspended until they are in compliance.
- *Prohibit the extension of operating licenses for existing reactors that cannot withstand the impact of current large commercial and military aircraft on reactor containments and spent fuel pools without releasing their radioactive inventory.* Other industries are obliged to make upgrades reflecting real-world changes. The nuclear industry should be no different in this regard, given the potential loss of life should they not do so.
- *Prohibit the licensing and operation of new reactors not possessing containments that can withstand the impact of current large commercial and military aircraft.* The same argument applies here as in point two above. If reactors cannot operate safely under real world conditions, they should not be built.
- *Begin a methodical, aggressive phase in of energy efficiency and renewable energy sources, to replace those reactors unable to meet the above design basis threat requirements.* The Bush/Cheney National Energy Plan calls for the construction of 150 new terrorist targets that could render huge portions of the U.S. unusable. The sooner the nation implements energy resources that supply legitimate energy needs, without increasing the risks and expense from potential terrorist attacks, the sooner we will emerge from the specter of terrorist fears, and achieve true energy security.
- *Congress should conduct an investigation of NRC's long-standing record of ineffective or absent regulation in terms of reactor security.* The conditions existing at reactors today have been long standing, and have existed with the tacit approval of NRC. The Agency has shown a consistent bias to do the bidding of the nuclear power industry, while disregarding members of the public, and even their own staff, who disagree with this bias. Congress needs to exert greater oversight of this Agency, remove individuals reluctant to regulate, and order the Agency to enforce existing regulations.

Appendix 1: Expert Commentary

"Recent events demand the obvious — an immediate modification of the design basis threat, and the application of corrective defensive measures." -- Dr. Bennett Ramberg, author of *"Nuclear Power Plants as Weapons for the Enemy: An Unrecognized Military Peril,"* 1984.

"I think, given the potential consequences of a successful attack on a nuclear plant, if these plants cannot be protected effectively, they would have to be shut down....the consequences, particularly to nearby cities, of a successful hit are unacceptable. And these plants should not remain vulnerable to that kind of threat for any period of time. The NRC response to us suggests a long bureaucratic review process. This is simply unacceptable."

— Paul Leventhal, President, Nuclear Control Institute—

"The [NRC] 'staff recommendations' egregiously misstates/mitigates the failure of the [nuclear] industry to protect critical vital equipment as demonstrated in OSREs....In fact all of [the] weaknesses, not 'some', related to a demonstrated inability to prevent mock adversary forces from gaining access to vital equipment which could, if sabotaged, cause core damage and radioactive release....This is nothing less than evidence of an abject failure by the nuclear industry to be capable — by themselves — of protecting against radiological sabotage."

— Capt. David N. Orrik, USN (Ret.), *"Differing Professional Opinion Regarding NRC's Reduction of Effectiveness and Efficiency in the 'Staff Recommendations' of the Follow-On OSRE Program for Nuclear Power Plants,"* February 3, 1999—

"The NRC can no longer dismiss the probability of an airplane crashing into a nuclear power plant as essentially zero....The NRC needs to engage in a wholesale review of the security at nuclear power plants, considering not just the threats from ground forces, but also previously unevaluated threats.."

— Rep. Edward J. Markey, letter to NRC after September 11th attacks—

"The issue of a plane crashing wasn't discussed....[NRC] didn't do anything to address trucks, boats, airplanes, or whatever. They are only dealing with ground threats, which was their concern all along."

— David Lochbaum, nuclear safety expert, Union of Concerned Scientists, after attending and NRC meeting on reactor security, week of October 7, 2001—

Ver.:10/21/01