SECURITY GAP: A Hard Look At the Soft Spots in Our Civilian Nuclear Reactor Security

Staff Summary of Responses by the
Nuclear Regulatory Commission
to Correspondence from
Rep. Edward J. Markey (D-MA)
Member, Energy and Commerce Committee
U.S. House of Representatives
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Introduction

Following the terrorist attacks on the World Trade Center Towers and the Pentagon on September 11, 2001, Rep. Markey initiated a series of letters to the Nuclear Regulatory Commission regarding our nation's preparedness for similar attacks on civilian nuclear targets. The possibility of a terrorist attack on a civilian nuclear power plant is not new. In fact it is anticipated in requirements, referred to as the "Design Basis Threat," that all plant operators must meet when they build a civilian nuclear power-plant in the United States. Unfortunately, prior to 9-11, the NRC was in the process of systematically backing away from rigorous enforcement of those requirements, and post 9-11, it has failed to upgrade the Design Basis Threat to take into account the new reality of terrorists acting in large groups carrying a sophisticated understanding of the technical aspects of their target and a commitment to suicide as the price to be paid for accomplishing their goal. The threat is no longer theoretical. President Bush has remarked on the discovery of Al Qaeda documents showing the plans of civilian nuclear targets, and Al Qaeda operatives have given testimony asserting their interest in targeting nuclear materials and civilian nuclear power-plants[1].

Although Rep. Markey's concerns regarding the terrorist threat to civilian nuclear power-plants have been expressed in correspondence with the NRC over many years,[2] the basis of the current analysis can be found in the letters sent by Rep. Markey to the NRC following 9-11 (November 15, November 19 and November 27, 2001) and the NRC's responses forward to Rep. Markey on March 4, 2002 (hereafter referred to as the NRC Response). (The NRC has yet to respond to Rep. Markey's December 4, 2001 letter NRC regarding the security of radioactive materials.)

The NRC requested that some responses to these questions be kept confidential for security reasons. We have done so while compiling this analysis. The full correspondence (other than the documents NRC has requested we not make publicly available) on which this analysis is based can be found at http://www.house.gov/markey/iss_terrorism.htm.

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[1] See, for example: "Bin Laden Sought Uranium, Jury Told," Washington Post, February 8, 2001; 2 Nuclear Experts Briefed Bin Laden, Pakistanis Say, Washington Post, December 12, 2001; President Bush State of the Union Address, January 29, 2002; "Nuclear Plants Targeted," Washington Times, January 31, 2002;

[2] See http://www.house.gov/markey/iss_terrorism.htm for copies of Rep. Markey's January 15, 1991, February 28, 1991 and January 27, 1992 letters to the NRC supporting a petition to require an upgrade to NRC's security rules for truck bombs and other threats, the May 8, 1997 letter to the NRC on combustibility of nuclear reactor materials, the November 8, 1998 letters to the National Security Counsel and the NRC on terrorism at nuclear reactors, the February 23, 1999 letter to the NRC on nuclear reactor terrorism, the July 8, 1999 letter to the NRC on the suspension of force-on-force security exercises, the February 4, 2000 letter to the NRC on radiological sabotage at domestic nuclear reactors, the September 20, 2001 letter to the NRC on nuclear reactor terrorism in light of the events of September 11th, the November 15, 2001 letter to the NRC on nuclear reactor terrorism in light of the events of September 11th, the November 19, 2001 letter to the NRC on security at spent nuclear fuel facilities, the November 27, 2001 letter on aircraft threats to nuclear reactors, the December 4, 2001 letter to the NRC on the security of nuclear materials and the January 16, 2002 letters to the NRC, U.S. Customs, Fedex and UPS on security associated with the shipment of radioactive materials.

The NRC Is Not Adequately Overseeing Security at Nuclear Reactors

Rep. Markey's letter requested information regarding the numbers and screening procedures for reactor employees who are foreign nationals, as well as information related to the security forces at each reactor. The responses indicate that the NRC is in the dark about what nuclear reactor licensees are doing to ensure the reactors are safe from attack.

A) The NRC does not know how many foreign nationals are employed at nuclear reactors, and does not require adequate background checks of nuclear reactor employees that would determine whether an employee was a member of a terrorist organization[3]

According to the NRC Response, NRC Personnel Access Authorization Requirements for Nuclear Power Plants requires that a *criminal* background check be performed on prospective employees seeking to obtain unescorted access to protected and vital areas of a nuclear power plant. However, the NRC Response states that "the search is limited to the United States" and that "Licensees determine access to the facility regarding foreign applicants on a "best effort" basis and the applicants are screened and processed as any other individual according to federal requirements." It is unacceptable that the NRC neither has a policy on screening of foreign nationals, nor does it know what its licensees' policies are. Terrorists may now be employed at nuclear reactors in the U.S. just as terrorists enrolled at flight schools in the U.S.

According to the NRC Response, crimes committed overseas by foreign job applicants are not even looked for. Moreover, although Rep. Markey requested whether *security* background checks would be conducted in order to determine whether an individual is a member of a domestic or foreign group that seeks to do harm to the U.S. (such as Al Qaeda), the NRC did not indicate that such checks have been performed in the past or would be done in the future. The NRC Response also stated that the NRC has no idea how many foreign nationals are employed at nuclear power plants, though individual licensees would have such records. It states that "the screening requirements do not require the [foreign] applicants to declare any affiliation with terrorist organizations, although the background investigation, including criminal history, may uncover information that may lead to discovery of such affiliation."

In short, it appears that Al Qaeda operatives such as Mohamed Atta or Marwan al-Shehhi could pass the narrow nature of the criminal screening still in use at U.S. nuclear power-plants and gain unescorted access to the controlled area of a plant, just as they obtained student visas to attend flight school. As long as they have no criminal record in this country, Al Qaeda operatives are not required to pass any security check intended to find and expose terrorist links prior to their employment.

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[3] See Page 9-12 of the NRC Response

B) The NRC Does Not Know What its Licensees Spend on Security or How Many Security Guards are Employed at Each Reactor

According to the NRC Response:

- The NRC has approved the use of new technologies that replaced security guards at some reactors. The NRC Response states that "the NRC does not require licensees to submit information concerning security expenditures. The NRC also does not have information on the number of security personnel at each facility over the last ten years."[4]

- The NRC Response states that "the number of security employees varies in accordance with a number of factors, including site design, geography, and response strategies."[5]

It is appalling that the NRC does not require licensees to submit information regarding the licensee's security resources, expenditures and capabilities. While new technologies may be a supplement to security guard forces, only security guard forces would be able to combat an armed attack on a nuclear reactor. The NRC must ensure that there are sufficient security guard forces to repel attacks by a large group of technologically sophisticated and suicidal attackers who may be assisted by insiders working at the reactors who disarm whatever new technologies have been installed.

II) Nuclear Reactors and Impact by Aircraft

A) Twenty-one nuclear reactors are located within 5 miles of an airport

Although an NRC Task Force recommended in NUREG-0625 that nuclear reactors not be sited within 5 miles of a major or commercial airport, the NRC acknowledged that 21 reactors are located within 5 miles of an airport[6]:

Name of reactor	Nearest city/town	Proximity to airport
Three Mile Island	Harrisburg, PA	3 miles from Harrisburg International Airport
Maine Yankee	Wiscasset, ME	1 mile from Wiscasset Municipal Airport
H. B. Robinson	Columbia, SC	2.2 miles from Hartsville Regional Airport
Limerick 1,2	Philadelphia, PA	2.2 miles away from Pottsdown-Limerick airport and 5 miles away from Pottsdown Municipal Airport
Seabrook	Portsmouth, NH	4.6 miles away from Hampton Airfield airport, 6.5 miles away from Cole Farm

[4] See Page 13 of the NRC Response
[5] See Page 14 of the NRC Response
[6] See Pages 83-84 of the NRC Response for airport information, and http://www.nrc.gov/reactors/operating/list-power-reactor-units.html for locations of reactors

		airport and 7.1 miles away from Plum Island airport
Wolf Creek	Burlington, KS	4.5 miles away from Coffey County airport
Clinton Power Station	Clinton, IL	located 4.5 and 4.75 miles away from 2 private airports
Catawba 1,2	Rock Hills, SC	4.2 miles away from Rock Hill airport
Dresden 2, 3	Morris, IL	Within 5 miles of 2 private airports
Brunswick 1,2	Southport, NC	4 miles away from Brunswick County airport
Palisades	South Haven, MI	located 3.6 miles away from South Haven Area Regional airport
Kewaunee	Greenbay, WI	3.7 miles from Ranch Side airport
Duane Arnold	Cedar Rapids, IA	4.6 and 5.3 miles away from 2 private airports
Braidwood 1,2	Joilet, IL	within 5 miles of 2 private airports
LaSalle 1,2	Ottawa, IL	located 2.5 and 4.3 miles away from 2 private airports

B) 96 percent (all but 4 of the 103) of U.S. nuclear reactors were designed without regard to the potential for impact from even a small aircraft.

The planes that struck the World Trade Center and the Pentagon were Boeing 757s and 767s which have a maximum takeoff weight of 272,500 - 450,000 pounds at takeoff. [7] What would happen if they had struck a U.S. nuclear reactor instead?

There are 103 active civilian nuclear reactors in the U.S. According to the NRC, the licensees of 43 of those reactors on 28 sites did not even consider the probability of an accidental aircraft impact when the reactors were designed, built and licensed. In an additional 56 reactors on 37 sites, the licensees concluded that the probability of an accidental aircraft impact was so low that it did not have to be incorporated into the designs for the reactors.

In no case has any U.S. licensee considered the possibility of a deliberate aircraft impact such as the one that occurred on September 11, 2001.[8]

According to the NRC Response, only 4 U.S. reactors include any design features calculated to withstand the impact of an airplane. The Limerick (Philadelphia, PA) and Seabrook (Portsmouth, NH) reactor designs were evaluated to consider impacts from aircraft weighing up to 12,500 pounds – less than 3-5 percent of the weight of the Boeing 757s/767s aimed at the World Trade Center and the Pentagon.[9]

Only the Three Mile Island units 1 and 2 near Harrisburg, PA, were designed with the impact of a large airliner in mind. According to the NRC Response, Unit 1 was

[7] See http://www.boeing.com/commercial/767family/technical.html and http://www.boeing.com/commercial/757-300/product.html
[8] See Pages 74-76 of the NRC Response
[9] See Page 73, 75 of the NRC Response

designed with "reinforcement of outer walls, thickening of concrete sections, and unique internal features. In addition, special fire protection and ventilation features were provided to cope with aircraft crashes. Similar features were incorporated in Three Mile Island Unit 2." The design features were made so that the reactors could withstand the impact of planes weighing up to 200,000 pounds.[10]

Nuclear reactors licensed by Switzerland are designed to withstand the impact of a 44,092 pound airplane traveling at 481 miles per hour, the reactor buildings have 1 meter-thick reinforced concrete walls, and spatial separation of redundant or diverse safety devices is required. According to the NRC Response, "Germany and possibly other European countries also require nuclear containment structures to withstand the crash of certain types of military and commercial aircraft."

The NRC Response states that the U.S. chose not to require additional protection against the impact of an aircraft because "The likelihood of an airplane accidentally crashing onto a reactor site in the U.S. is typically much lower than in Europe."[11]

C) Aircraft Impact To The Containment Structure Of A Nuclear Reactor Is Not The Only Way An Aircraft Could Cause A Full-Scale Core Meltdown

The NRC Response acknowledges that there are buildings other than the core of the reactor (which is a hardened structure) that could lead to a core meltdown if destroyed by the impact of a commercial aircraft:

- "The NRC recognizes that aircraft crashes may result in multiple-failure initiating events, and that non-safety system malfunctions could contribute to such events."[12]

- If all electrical power to a reactor was cut off (by a deliberate crash of an aircraft into the power generating systems, for example), the time it would take for damage to the reactor core to begin is estimated by the NRC to be about two hours[13].

- Support systems for the reactor, such as the cooling system, are not located within buildings that are hardened (such as the reactor core) and "are not designed to withstand the direct impact of a large commercial aircraft." The destruction of some of these buildings could lead to core damage.[14]

These acknowledgments by the NRC are highly significant, because they indicate that claims by the nuclear industry that existing plants would be able to withstand a terrorist aircraft or other attack due to the strength of containment structures are

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[10] See Pages 71-72, 76-79, 83 of the NRC Response
[11] See Pages 32-33 of the NRC Response
[12] See Page 82 of the NRC Response
[13] See Pages 94-95, 97-99 of the NRC Response
[14] See Page 96 of the NRC Response

irrelevant to the very real risk that terrorists might target critical support infrastructure whose destruction could result in a catastrophic nuclear accident.

D) The NRC Has Rejected Placing Anti-Aircraft Capabilities At Nuclear Facilities, Even Though Other Countries Have Chosen To Do So And Even Though Many Reactors Are Located Very Close To Airports

The NRC Response states that it "believes that the proper way to deal with the potential hijacking of large commercial aircraft by suicidal terrorists is through the measures on airline security now well underway."[15] Temporary no-fly-zones above nuclear reactors were imposed on November 2, 2001 but were removed less than a week later. While it is our hope that airline security measures now well underway will prevent future hijackings, the absence of no-fly-zones and the proximity of many nuclear reactors to airports lead many experts to believe that anti-aircraft systems on the ground at or near reactor locations is necessary to assure security.

France has deployed anti-aircraft weaponry at its reprocessing facility in La Hague, and similar measures have reportedly been taken at nuclear facilities in Hungary.

Nevertheless, the NRC has concluded that it "sees no need to deploy anti-aircraft weaponry at any commercial nuclear facilities in the United States. After consultation with the Department of Defense, the Office of Homeland Security, and the Federal Aviation Administration (FAA), the Commission believes that there would be enormous command and control problems and a large potential for unintended consequences and collateral damages if such weaponry were deployed. The Commission believes that the proper way to deal with the potential hijacking of large commercial aircraft by suicidal terrorists is through the measures on airline security now well underway."[16]

The no-fly-zones around nuclear reactors were lifted after less than a week. The NRC has acknowledged that nuclear reactors were not designed to withstand the impact of a large commercial aircraft, and that 21 of the reactors in the U.S. are located within 5 miles of an airport. Rep. Markey strongly believes that equipping the reactor sites with anti-aircraft weaponry would enhance security greatly.

III) Security Of Spent Nuclear Fuel Is Inadequate

A) Spent Nuclear Fuel in Significant Quantities Exists At Reactors All Across The U.S. and is Stored In Buildings That Are Not Hardened Structures.

Pages 38-41 of the NRC Response contain a 1998 table of how much spent nuclear fuel is stored in the spent fuel pool (i.e. outside the better-protected reactor core building) in each operating reactor in the country. The closest city/town to each reactor

[15] See Page 30 of the NRC Response
[16] See Page 30 of the NRC Response

was added by Rep. Markey's staff using information obtained from NRC's website.[17] The table is included as Appendix A of this report. At any reactor that has continued operating since the 1998 list was compiled, the amounts of spent nuclear fuel would, of course, have continued to accumulate and be higher today. Information on decommissioned reactors was not complete and does not seem to be available on the NRC website.

B) Security of Spent Nuclear Fuel at Decommissioned Reactors is Lower than that at Operating Reactors In Part Because Licensees Obtained Exemptions to the Security Regulations. The NRC Assumed That Spent Fuel Fires Would Only Occur As The Result Of An Accident, And Failed To Consider Fires That Occurred As A Result Of A Terrorist Attack.[18]

The NRC Response conceded that "NRC regulations do not require dry cask storage areas to be protected by armed guards or vehicle barriers" and that "A watchman is required with the ability to contact and have the local law enforcement agencies respond immediately to an event." The NRC also allowed licensees of these sites to reduce the amount of insurance coverage they must obtain. Force-on-force exercises have never been conducted at a decommissioned reactor in order to determine whether the exemptions to security requested and received by licensees were appropriate from a security perspective.

Prior to September 11th, the security requirements for non-operating reactors (i.e. those that contain stores of spent nuclear fuel but do not produce electricity any longer) were non-uniform because some licensees had obtained exemptions to the security regulations. Since September 11th, the NRC has issued a security advisory to require vehicle barriers and armed responders at these sites. However, as is noted on page 3 of the NRC Response, an advisory is a "guidance document that is not, in itself, legally binding."

The reason why licensees of these facilities requested and received exemptions from the security requirements is because the NRC assumed that the greatest safety risk at a decommissioned reactor, a zirconium fire, would only occur accidentally, and that the risk of such an accident was very low. NRC did not evaluate the risk that a terrorist attack could intentionally cause a zirconium fire, it did not attempt to update estimates for the costs associated with a zirconium fire, and failed to respond to Rep. Markey's questions related to whether it had performed worst-case analyses of the consequences of such a fire.

The NRC Response stated that "There is a possibility that, with enough explosives, both a spent nuclear fuel pool or spent fuel dry cask can be penetrated." However, in its consideration of whether licensees should be able to reduce safety and insurance coverage at these sites, the NRC assumed that a zirconium fire would be accidental and would therefore require more than 20 hours to ignite as a result of accidental

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[17] See http://www.nrc.gov/reactors/operating/list-power-reactor-units.html
[18] See Pages 42-64 of the NRC Response for references for this section

drainage of the spent nuclear fuel pool. The NRC has not considered an "external heat source," such as an explosion caused by a terrorist attack, in arriving at the 20-hour estimate.

Rep. Markey strongly believes that all security exemptions received by licensees of these sites should be immediately revoked.Security at spent fuel sites needs to be dramatically and immediately upgraded and no lessening of this higher standard should be contemplated unless and until an economic, safety and health analysis of the worst-case consequences associated with a successful terrorist attack at these sites has been completed and has justified a reduction.

C) The NRC Has Not Experimentally Determined How Long A Fire Spent Fuel Casks Can Withstand, And Has Not Provided Information On Worst-Case Consequences Of A Breach Of A Spent Fuel Cask.

In prior correspondence, the NRC dismissed the possibility that a fire caused by an aircraft at a spent nuclear fuel facility would last for more than "a matter of minutes," because NRC assumed that only 200 gallons of jet fuel would be available to feed the fire. However, a typical large commercial aircraft contains more than 20,000 gallons of jet fuel.

The NRC Response states that "the staff performed an analysis of a seven-hour fire duration. The results from the analysis did not lead to fuel failure or cask failure."[19] The NRC does not cite a real-world *experiment* that demonstrated this seven-hour fire duration tolerance level for a spent-fuel cask, nor does it state the theoretical or experimental limit of how long a spent fuel cask can withstand a fire fed by jet fuel.

IV) Security at Nuclear Reactors Continues To Be Inadequate Even After September 11th

A) It Took The NRC Almost 6 Months After September 11 To Require Enhanced Security At Nuclear Reactors

On September 11th, the NRC issued a "Threat Advisory" that recommended security enhancements to its licensees. According to the NRC Response, a "Threat Advisory" is a "guidance document that is not, in itself, legally binding.[20]" The NRC issued an Order requiring security enhancements to its licensees on February 26, 2002, almost 6 months after September 11th. According to the NRC Response, "An order imposes legally binding requirements upon a licensee... If a licensee does not comply with the requirements of an order, civil penalties or additional sanctions for such noncompliance may be imposed by further order. Willful noncompliance with an order may result in criminal sanctions, pursuant to Section 223 of the Atomic Energy Act.[21]"

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[19] See Page 35 of the NRC Response
[20] See Page 3 of the NRC Response
[21] See Page 3 of the NRC Response

It is unclear why, given the seriousness of the events of September 11th and the subsequent discovery of information about U.S. nuclear reactors in captured Al Qaeda locations that suggested they were potential terrorist targets, the NRC failed to impose legally binding security requirements on its licensees until February 26, 2002.

B) The NRC Has Historically Failed To Adjust The Security Regulations To Meet The Evolving Threat, And Has Yet To Begin A Permanent Revision Of Security Regulations Following The Events Of September 11th [22]

The Design Basis Threat (DBT) is the set of regulations that define the security threat against which all licensees must be protected. The DBT was first created in the late 1970s, and according to the NRC Response, was amended in minor ways in 1987 and 1994[23].

The DBT now in force, therefore, is based on assumptions of threat levels that date to the 1970s. These assumptions do not account for the realistic threat levels we now know to exist; the DBT assumes that only a small group of attackers would be involved, it assumes that a vehicle used for a truck bomb could only be as large as an SUV, it assumes only passive insider assistance from one insider at the reactor, and it fails to assume the degree of technical sophistication and modern weaponry that we know Al Qaeda members have access to.

The NRC has yet to even **begin** to permanently revise the DBT regulations to require licensees to protect against the realistic terrorist threat we know now exists, including but not limited to consideration of: attacks by more than "several" simultaneous attackers; attacks that involve the participation of more than one insider; attacks that involve the participation of an *active* insider(s) (i.e. one or more individuals who assist the attackers by opening locked doors or operating equipment during the attack); attacks using sophisticated weaponry such as vehicle-mounted weapons; and attacks by individuals possessing sophisticated knowledge of the operation of nuclear reactors such as the attackers who participated in the September 11th hijackings.

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[22] See Page 6 of the NRC Response

[23] The first such change, in 1987, was to require licensees to consider that attackers might use a vehicle for use in transporting personnel and equipment during an attempted theft of strategic special nuclear material. It is unclear why the use of a vehicle was not anticipated as a possibility prior to 1987, since it seems obvious that anyone seeking to steal strategic special nuclear material would probably approach and leave the site in a car, truck, boat, or plane. The second such change, in 1994, was to a) require licensees to consider that attackers might use a vehicle for use in transporting personnel and equipment during an attempted act of radiological sabotage, and b) require licensees to consider that attackers might use a vehicle bomb as a means of attack. It is unclear why the use of a vehicle to transport personnel and equipment for use in sabotage was not considered in 1987, since it seems rather remarkable for the NRC to have concluded that attackers would use such a vehicle to steal strategic special nuclear material but not to commit an act of radiological sabotage. It must also be noted that the vehicle bomb regulation only requires licensees to protect against bombs contained in 4 wheel drive vehicles, even though much larger truck bombs have been detonated against U.S. targets both in the U.S. and abroad.

C) Security Exercises At Nuclear Reactor Sites Are Inadequate, And Sites Continue To Fail The Exercises About 50% Of The Time

The NRC has historically conducted force-on-force exercises, known as Operational Safeguards Response Evaluations (OSRE), to assess the adequacy of security at nuclear reactors In 1998, the NRC and the industry attempted to de-fund OSRE. After opposition from Rep. Markey and the public forced them to restore funding to the program, the NRC instead decided to replace the OSRE program with one that would be designed and run by the nuclear industry, called the Safeguards Performance Assessment (SPA). Rep. Markey believes that the proposed SPA program would undermine the rigor of current testing and has been proposed by the NRC and industry because they are simply embarrassed by the failure rate under OSRE and the accompanying revelation that security measures that look good on paper are not succeeding in the field.

Prior to September 11, the NRC intended to reduce the number of OSREs from eight to six each year, in order to undertake the SPA pilot program. The NRC Response to Rep. Markey's questions on security exercises at nuclear reactor sites indicates that:

- In 37 of 81 OSREs (46 percent of the security tests) conducted between August 1991 and August 2001, the NRC identified weaknesses that allowed the attacking force to "reach a target set and simulate destruction of that equipment... The licensee's performance is judged unsuccessful for the scenario if the response force is not able to prevent the adversary from disabling and/or destroying all pieces of equipment/actions in a target set.... Cases in which a licensee was unable to satisfy one or more of these criteria would indicate that the adversary could cause an act of sabotage resulting in a loss of a complete target set (i.e., the equipment necessary to be protected to prevent core damage)."[24]

- The NRC Response states that "for the 15 OSREs conducted between April 2000 and August 2001, weaknesses were identified in 9 of 59 exercises or 15 percent of the time.[25]" Compared to the 1991-2001 time frame, this appears at first to be a significant improvement. However, upon further examination of information contained in the non-public section of the NRC's response and discussion with the NRC staff, which agreed to the public disclosure of the statistical representation of this data, the NRC has conceded that if judged using the same method of analysis used for the August 1991-2001 time, **the NRC identified serious weaknesses at 7 of 15 OSRE sites, and required corrective action to be taken at 9 of 15 sites. In short, between August 1991 and August 2001, weaknesses were identified at 46% of the sites tested. Between April 2000 and August 2001, serious weaknesses were identified at 47% of the sites tested and corrective action was required at 60% of them.**

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[24] See Pages 27-29 of the NRC Response
[25] See Page 27 of the NRC Response

- No force-on-force security exercises have been conducted since September 11 because "the current elevated threat environment would pose significant safety hazards to the licensees' employees and negatively impact security effectiveness."[26] Although licensees have advance notice of the date of the exercises, and the Department of Energy has resumed its force-on-force exercises at nuclear weapons facilities, the NRC has chosen to indefinitely postpone future OSREs. This means that the NRC has no way of knowing whether the enhanced security measures it ordered on February 26 actually succeed in enhancing security.

- The NRC intends to continue to move forward with the pilot program of the industry-designed and implemented SPA security program, instead of enhancing its own OSRE program. This will result in the reduced ability by NRC to participate in and oversee exercises designed to test security at nuclear reactors.[27] The NRC Response states that it "does not agreed that the testing of a licensee's security force needs to be the sole function of a federal entity, even in light of the September 11 events."[28]

[26] See Page 17 of the NRC Response
[27] See Pages 19-23 of the NRC Response
[28] See Page 24 of the NRC Response

APPENDIX A

SPENT FUEL POOL/FULL CORE OFFLOAD CAPABILITY - As of November 1998

(Number of fuel assemblies)

(Attachment to Answer 3.b)

CLOSEST CITY /TOWN	PLANT NAME	FUEL IN CORE	AVAILABLE SPENT FUEL POOL CAPACITY	FUEL IN SPENT FUEL POOL	REMAINING SPENT FUEL POOL CAPACITY
RUSSELLVILLE AR	Arkansas 1	177	968	818	150
	Arkansas 2	177	988	701	287
MCCANDLESS PA	Beaver Valley 1	157	1627	756	871
	Beaver Valley 2	157	1088	392	696
JOILET IL	Braidwood 1	193	2870	1054	1816
	Braidwood 2	193	*	*	*
DECATOR AL	Browns Ferry 1	764	3471	1864	1607
	Browns Ferry 2	764	3471	2116	1355
	Browns Ferry 3	764	3471	1588	1879
SOUTHPORT NC	Brunswick 1	560	1767	984	783
	Brunswick 2	560	1767	1020	747
ROCKFORD IL	Byron 1	193	2781	1278	1503
	Byron 2	193	*	*	*
FULTON, MO	Callaway	193	1340	829	511
ANNAPOLIS, MD	Calvert Cliffs 1	217	1830	1362	468
	Calvert Cliffs 2	217	*	*	*
ROCK HILLS SC	Catawba 1	193	1418	705	622
	Catawba 2	193	1418	686	695
CLINTON, IL	Clinton	624	2515	1124	1381
GLENN ROSE TX	Comanche Peak 1	193	556	765	526
	Comanche Peak 2	193	735	*	*
NEBRASKA CITY, NE	Cooper	548	2366	1340	1026
CRYSTAL RIVER, FL	Crystal River 3	177	1357	680	677
TOLEDO, OH	Davis-Besse	177	718	601	117
BENTON HARBOR MI	D.C. Cook 1	193	3613	2015	1598
	D.C. Cook 2	193	*	*	*
SAN LUIS OBISPO CA	Diablo Canyon 1	193	1324	640	684
	Diablo Canyon 2	193	1317	660	657
MORRIS IL	Dresden 2	724	3537	2562	975
	Dresden 3	724	3536	2380	1156
CEDAR RAPIDS, IA	Duane Arnold	368	2411	1648	763
DOTHAN, AL	Farley 1	157	1407	662	527
	Farley 2	157	1407	593	641

	PLANT NAME	FUEL IN CORE	AVAILABLE SPENT FUEL POOL CAPACITY	FUEL IN SPENT FUEL POOL	REMAINING SPENT FUEL POOL CAPACITY
TOLEDO, OH	Fermi 2	764	2383	1296	1087
OSWEGO, NY	FitzPatrick	560	2797	2080	717
OMAHA, NE	Fort Calhoun	133	1083	706	377
ROCHESTER, NY	Ginna	121	1879	879	435
VICKSBURG, MS	Grand Gulf 1	800	4348	2488	1860
BAXLEY, GA	Hatch 1	560	5946	4884	1062
	Hatch 2	560	*	*	*
WILMINGTON, DE	Hope Creek	764	4006	1708	2298
NEW YORK, NY	Indian Point 2	193	1374	917	457
	Indian Point 3	193	1345	672	655
GREEN BAY, WI	Kewaunee	121	990	780	210
OTTAWA, IL	LaSalle 1	764	7932	3076	4852
	LaSalle 2	764	*	*	*
PHILADELPHIA, PA	Limerick 1	764	2832	1701	1131
	Limerick 2	764	3921	1893	2028
CHARLOTTE, NC	McGuire 1	193	1351	871	480
	McGuire 2	193	1425	1039	386
NEW LONDON CT	Millstone 2	217	1306	868	423
	Millstone 3	193	756	416	340
MINNEAPOLIS, MN	Monticello	484	2209	1094	1115
OSWEGO, NY	Nine Mile Point 1	532	2776	2200	576
	Nine Mile Point 2	764	4049	1400	2649
RICHMOND, VA	North Anna 1	157	1737	1505	169
	North Anna 2	157	*	*	*
GREENVILLE, SC	Oconee 1	177	1312	1094	218
	Oconee 2	177	1312	1094	218
	Oconee 3	177	825	552	273
TOMS RIVER, NJ	Oyster Creek	560	2645	2420	180
SOUTH HAVEN, MI	Palisades	204	771	657	101
PHOENIX, AZ	Palo Verde 1	241	1205	648	557
	Palo Verde 2	241	1205	644	561
	Palo Verde 3	241	1205	664	541
LANCASTER, PA	Peach Bottom 2	764	3819	2720	1099
	Peach Bottom 3	764	3819	2777	1042
PAINESVILLE, OH	Perry 1	748	4020	1504	2516

	PLANT NAME	FUEL IN CORE	AVAILABLE SPENT FUEL POOL CAPACITY	FUEL IN SPENT FUEL POOL	REMAINING SPENT FUEL POOL CAPACITY
PLYMOUTH, MA	Pilgrim	580	3859	1974	1885
MANITOWOC WI	Point Beach 1	121	1502	1347	155
	Point Beach 2	121	*	*	*
MINNEAPOLIS MN	Prairie Island 1	121	1386	1237	125
	Prairie Island 2	121	*	*	*
MOLINE IL	Quad Cities 1	724	3657	1933	1724
	Quad Cities 2	724	3897	2943	954
BATON ROUGE, LA	River Bend	624	2680	1400	1280
FLORENCE, SC	Robinson	157	544	302	242
WILMINGTON DE	Salem 1	193	1632	772	850
	Salem 2	193	1632	584	1038
SAN CLEMENTE CA	San Onofre 2	217	1542	870	672
	San Onofre 3	217	1542	918	624
PORTSMOUTH, NH	Seabrook	193	1236	376	860
CHATANOOGA TN	Sequoyah 1	193	2091	1295	796
	Sequoyah 2	193	*	*	
RALEIGH, NC	Shearon Harris 1 (accepts spent fuel from other units)	157	4184	720 PWR and 1841 BWR	336 PWR and 557 BWR
BAY CITY TX	South Texas 1	193	1969	428	1529
	South Texas 2	193	1969	400	1556
FT. PIERCE FL	St. Lucie 1	217	1706	1128	578
	St. Lucie 2	217	1076	692	384
COLUMBIA, SC	Summer	157	1276	637	567
NEWPORT NEWS VA	Surry 1	157	1044	854	190
	Surry 2	157	*	*	*
BERWICK PA	Susquehanna 1	764	2840	2655	None
	Susquehanna 2	764	2840	1762	823
HARRISBURG, PA	Three Mile Island	177	1338	755	583
MIAMI FL	Turkey Point 3	157	1395	808	587
	Turkey Point 4	157	1389	770	619
BATTLEBORO, VT	Vermont Yankee	368	2863	2331	532
AUGUSTA GA	Vogtle 1	193	1475	1081	2392
	Vogtle 2	193	1998	*	*
RICHLAND, WA	WNP 2	764	2654	1703	951
NEW ORLEANS, LA	Waterford 3	217	2398	700	1698
SPRING CITY, TN	Watts Bar 1	193	1612	80	1530
BURLINGTON, KS	Wolf Creek	193	1327	664	663

*Single values given for multiple units using common fuel storage facility.