S. HRG. 107–999

NUCLEAR PLANT SECURITY

HEARING

BEFORE THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

ON

S. 1586, A BILL TO AMEND THE ATOMIC ENERGY ACT OF 1954 TO AUTHORIZE THE CARRYING OF FIREARMS BY EMPLOYEES OF LICENSEES, AND FOR OTHER PURPOSES

S. 1746, A BILL TO AMEND THE ATOMIC ENERGY ACT OF 1954 AND THE ENERGY REORGANIZATION ACT OF 1974 TO STRENGTHEN SECURITY AT SENSITIVE NUCLEAR FACILITIES

JUNE 5, 2002

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ONE HUNDRED SEVENTH CONGRESS
SECOND SESSION

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ADDITIONAL MATERIAL

NUCLEAR PLANT SECURITY

WEDNESDAY, JUNE 5, 2002

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
Washington, DC.

The committee met, pursuant to notice, at 10 a.m. in room 406, Senate Dirksen Building, Hon. James M. Jeffords (chairman of the committee) presiding.

Present: Senators Jeffords, Smith, Bond, Corzine, Clinton, Reid, Boxer, Voinovich, Inhofe, Warner, Carper.

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

Senator JEFFORDS. The hearing will come to order.

I believe we have before us a very important task of reviewing legislation that will enhance the security at our Nation's nuclear power plants and other civilian facilities that utilize radioactive materials for commercial or research purposes. In his State of the Union address, President Bush informed us that authorities had found, among other things, diagrams of nuclear power plants in America in terrorist caves, along with surveillance maps of American cities.

In February, the U.S. Nuclear Regulatory Commission responding to an FBI report issued a warning of potential airline attacks against a U.S. nuclear power plant. Numerous media accounts had analyzed in detail the possibility of creating dirty bombs from a combination of readily available commercial sources of radiation and common explosives. We all know that the credibility of these threats is inherently difficult to pinpoint. But we all also know of the seriousness with which these must be viewed and it has changed forever since September 11.

These are sobering times. I commend the U.S. Nuclear Regulatory Commission, whose chairman, Richard Meserve, is with us this morning, for the prompt and comprehensive efforts of that Agency to address threats to our civilian nuclear facilities. I have been briefed on the fact that they have placed our Nation's commercial nuclear reactors on the highest state of alert since September 11 and that they are conducting a top to bottom review of their safeguards and security system. This includes working closely with the intelligence community and others to coordinate all necessary programs.

They have also established a new office of nuclear security and incident response to consolidate certain NRC security divisions. They have assured us that they are taking every precaution to en-

sure safety at our nuclear facilities. I am also aware, however, of a variety of criticisms and concerns that have been leveled at safety procedures of our nuclear facilities in the past. In spite of as much as a 6-months advance notice, up to half our Nation's nuclear power plants have performed below, that's below, the NRC's minimum security requirements during NRC-sponsored mock terrorist activities.

Because of resource constraints, the NRC has since tested security at each nuclear plant only once every 8 years. The current design basic threat which set standards for actions facilities must take to defend against attack has not been significantly revised in over 40 years and do not envision the type of terrorist attack we now assume is possible following the events of September 11. There are significant concerns both about the design of the plants, the ability to defend against inside sabotage, and the location of spent fuel product.

Former employees have complained of inadequate training and background checks of security guards and other personnel. These inconsistencies must be reviewed and must be remedied. We must take strong and focused action to ensure that terrorists continue to view our nuclear plants as undesirable targets that are strongly protected and difficult to damage. It is the duty of this Congress and this committee in particular to make sure that there is effective coordination and cooperation between licensees, the NRC, appropriate Federal agencies and State and local government, preventing criminal and terrorist access to our nuclear power plants and radioactive materials.

As the House and Senate, in cooperation with the Administration, proceeds this week with intelligence hearings on the events leading up to the September 11 attack, this need for effective coordination among the various agencies responsible for security is starkly highlighted. We have been warned, we know these are possible targets. We know there have been problems in the past. We must allocate the resources to fully address these concerns.

A single successful attack would make it clear, in hindsight, that it would have been worth the effort. An unsuccessful attack will make it sure that we did the job well. It is my intent to work with my colleagues on this committee and with the Nuclear Regulatory Commission to quickly pass legislation out of this committee that will ensure strong, consistent and reliable standards for protection of our civilian nuclear facilities. We cannot and will not allow the fear factor to hamper our committees.

It is necessary for the public to know that strong measures are in place to protect their homes and families against attack by those who hate us and our ways of life. As chairman of the committee, I intend to see such measures taken. I trust I will have the full support of the Nuclear Regulatory Commission and my colleagues in this important matter.

Senator Smith.

OPENING STATEMENT OF HON. BOB SMITH, U.S. SENATOR FROM THE STATE OF NEW HAMPSHIRE

Senator SMITH. Thank you very much, Mr. Chairman. Ensuring our power plant safety, our nuclear energy facility safety is of

course of the utmost importance to this committee but also to all Americans. It especially hits close to home for those of us who have power plants in our States, as I do, and as many in this committee do. It is vital that we as a committee be informed and do all that we can to ensure that these assets are indeed safe, secure, and protected.

These facilities are, I might add, among the most protected structures in the Nation. But it doesn't mean that there aren't additional steps that can be taken to enhance that security. Last year, Senator inhofe and I introduced legislation together that would accomplish that goal. We had provisions in the bill that the NRC has requested for many years, provisions that the Senate passed in the last Congress by unanimous consent.

These are common sense enhancements and I have spoken directly about them to several members of the Commission, including the chairman. I know that Senator Reid also has legislation and I'm hopeful that we can work together in a bipartisan way to reach agreement on that legislation.

But as we move this process forward, it's important that we work with the security experts and resist efforts from those who want "added security" as a means to further an anti-nuclear agenda. If that's where we go in this process, then we are going to fail in what we wish to accomplish. We have to do it the right way. I'm very anxious to hear from Chairman Meserve on what the Nuclear Regulatory Commission has been doing to increase security and what plans exist to update the design basis threat.

But unfortunately this is not, with all due respect, Mr. Chairman, the forum to do it. We're not going to be able to get all the information this committee deserves and needs to know in an open forum. I'm very much a strong advocate of the right to know and shining the light on our hearings and not keeping information from the media if we don't have to. But some of the information that we need to discuss today is classified as safeguards and some is secret, all of which is on a need-to-know basis, little of which is suitable for an open, televised hearing.

Mr. Chairman, as you know, myself and Senators Inhofe, Voinovich and Domenici requested that this at a minimum be a closed hearing. On the Armed Services Committee, of which some of us are members here, frequently when we have situations like this we have an open hearing, very briefly, and then go to a closed hearing and get into the sensitive materials or information that we need to know as a committee. To the best of my knowledge, no such followup hearing has been scheduled.

So in essence, our request for a closed hearing was denied or ignored. Now we're going to talk about nuclear security, about all of our power plants, in front of the entire world on C–SPAN, including all those who may wish to do us harm. I find this absolutely unbelievable that we're doing this. I would just say, as a caution to witnesses, if you don't feel comfortable answering a question, in spite of the fact that you might get chastised by a Senator, I wouldn't answer it. Because frankly, aggravating a Senator as opposed to providing information that may let the terrorists find out what's going on in our security of our nuclear power plants, frank-

ly, that's a fair exchange as far as I'm concerned. It's not going to aggravate this one.

I would note also that the House Committee has held only closed and classified hearings on this topic. The chairman mentioned in his opening remarks about what we found in the caves of Al Qaeda. What do we want to be talking about that for in a public session? We almost slipped up, Senator Inhofe caught it when he was doing his homework last night, a potentially damaging mistake, while reading through the testimony, information that has been classified at the NRC as safeguards that was included in some of the written testimony today. I'm not blaming the witnesses for that. The witnesses are trying to answer and be responsive.

But this is not the forum, in front of the cameras, all over the world, to do this. The Government has deemed it sensitive enough so as to strictly limit access to only those who need to know. I'm talking about safeguards, I'm not talking about necessarily classified or secret, as we call it in the formal sense. But there is a need-to-know basis, and I can tell you that everybody watching C–SPAN today does not need to know everything that we need to talk about here this morning.

I understand that this information has leaked before. I've read it, I read it in USA Today. But that doesn't mean that we have to further that and add to it and supplement it and give it credibility. That's not what we do. If something is classified or listed as safeguards and it's in the newspaper, it doesn't mean we have to comment on it and make it worse. But it does underscore the point that these witnesses believe this is important information that we should have, but we just can't get it in this hearing.

This is a completely open forum, I repeat again, completely open, national TV, world TV, let alone national, world TV coverage. It's safe to assume that those who want to hurt us are going to be watching. Good morning to them.

If you have any thoughts that the information you're providing could be of the slightest use to those who wish to do us harm, then please don't answer the question. In order to ensure that the committee has the opportunity to get the information, I don't know why we can't commit to a separate, closed and classified hearing prior to moving away, moving toward any other comprehensive legislation. This will allow us to make the right decisions. It's vital for this committee to vigorously conduct oversight, and we can't do it this way.

Since 9/11, I've visited Seabrook, I've communicated with the guards, I've met with the NRC chairman, I've met with the commissioners, I've talked to those who provide the security at Seabrook. We held a press conference after it with one of the members of the NRC. We didn't talk about all the safeguards. We didn't talk about what we do when somebody attacks the plant, if they attack the plant or how we might react to that or how many people we have at the plant to protect us or what kind of people they are or what weapons they have. We don't talk about any of that.

It's clear that these are things we need to talk about, frankly, but not here. So frankly, Mr. Chairman, unless there's a commitment made for me to the committee that we're going to have a classified hearing or a closed hearing somewhere in the near future as

a follow-on to this, I will yield all of my questions to anyone else who might like to ask them. Because I have questions that I would like to ask in a closed forum.

Thank you, Mr. Chairman.

Senator JEFFORDS. Thank you. I would just point out to you that we held a closed hearing. We held it last fall. No one——

Senator SMITH. That was a briefing, Mr. Chairman, with all due respect. That was a briefing.

Senator JEFFORDS. It was a hearing——

Senator SMITH. It was not a hearing.

Senator JEFFORDS. It was an opportunity and no one showed up except me. But it's amazing what happens when you make a public hearing and you have the TV cameras, and we almost get everybody. So just to point that out, we are not going to breach any security, and we certainly feel if it's appropriate, we will have one where the security aspects will apply.

But right now, this is also, looking at the large audience we have, very obvious that the public has a great interest in knowing and has a great right to know what is going on. This hearing is to make sure that the public of the United States has the background necessary for them to understand fully the problems that we're facing.

Senator Reid.

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Mr. President, I only watch the highest class television, I was watching Headline News this morning. There they had a short piece on distributing to people in New York iodine, some kind of potassium iodide, so that if there is a problem in one of these nuclear facilities, they would have in their medicine cabinet these pills they could take to stop the damage done by nuclear things floating through the air. So this is something the American people are really concerned about, as they should be.

So I appreciate very much the concern of Senator Smith. But also, we have concerns, the American people have, all over America, people are concerned about another Three Mile Island, another Chernobyl. We have a responsibility, this committee has a responsibility, the Nuclear Regulatory Commission. Chairman Meserve has always been willing to come. I'm sure he dreads it the night before, but that's the way it is. But he's always been willing to come and share whatever information he has, even though he knows that some answers he gives we don't like. But he's been very candid with us, and I appreciate that.

The tragedy of September 11 has taught us many things. It taught us the importance of first responders. It taught us the vulnerability of our Nation's buildings and the strength of our Nation's resolve. Finally, it taught us that we must be prepared for today's threats, because they could become tomorrow's attacks.

Last year I introduced legislation with Senators Clinton, Lieberman and Jeffords to improve the safety of our Nation's nuclear power plants. I appreciate the willingness of Senator Jeffords, as chairman of this committee, to hold this hearing and take a look at this legislation. I also appreciate Congressman Markey, who has

worked so hard on these issues. He has done a tremendous job working to make our Nation's nuclear power plants as safe as they can be. As someone who has served with this fine man, in the House of Representatives, I appreciate that his voice is heard in the Senate and all over the country.

I'm disappointed, however, that the Nuclear Regulatory Commission has not chosen to do what I believe is its job with the same commitment to the safety of our Nation and the integrity of our electric supply. When Senators Clinton, Lieberman, Jeffords and I introduced our legislation, we intended to start a dialog, how we make our Nation's commercial nuclear power plants safer than they were before September 11. Many of you here today have strong views on that legislation. We intend to listen to those before a final draft comes out of this committee, of course, we all have to do that.

But when plants are failing nearly half of their security evaluations, we need to more than update the curriculum. We need a new system, I believe. There are some plants that do a reasonably good job. But it's not to have peaks of success. We need a high plateau that secures all plants.

Our bill also requires the Nuclear Regulatory Commission to take a new look at the threats posed by terrorists. Our bill also establishes a rigorous training and evaluation program for the Nuclear Security Force. I must say, members of this committee and you, Mr. Chairman, we in Nevada have had some experience. Nuclear devices were assembled there for some 50 years. We had all kinds of concerns about the safety.

Chairman Dingle, when he was chairman of the Commerce Committee in the House, established a very rigorous physical program for security personnel there, so that if somebody tried to breach this perimeter, which was very close to the outside world, that somebody could run 50 yards and grab somebody, the physical training of those people was very bad. It was difficult, it was made harder to have people work there, but it was really important in the long run.

So I think this is important, that we established a training program and an evaluation program for our nuclear security force, one that is constant and persistent. A new office will be established within the Regulatory Commission with a dedicated team of mock terrorists whose only job is to perfect their skills in challenging the security guards. I see, Mr. Chairman, when professional sports teams practice, they don't do it against amateur athletes playing in the park. They train against other professionals. Nuclear security personnel should do the same.

Our bill will honor the sacrifice of our Nation's emergency responders by ensuring that emergency response plans are in place and work as we expect them. Finally, we will require stockpiles of medicine to help in the event of a release of radioactive material from a nuclear facility. We have drafted a comprehensive bill that will protect our Nation's nuclear infrastructure. The American people have told us how they wanted their airlines and airports protected. We're doing our best to follow what they want and what they need and what they should have. We will work to make sure

that questions about the safety of our Nation's nuclear power plants are answered.

It's time that we give the American people these answers. Today I hope we will have a constructive dialog about the ways to make our nuclear power plants safer. More importantly, I hope today will be the springboard we need to pass legislation in the Senate that accomplishes this goal. I hope we can do this, as Senator Smith has said, on a bipartisan basis. We all have different ideas as to how we can do this. But we need to do it, and we're all going to have to give a little and take a little to come up with a bill that will be good for the country.

Thank you.

Senator JEFFORDS. Senator Bond.

OPENING STATEMENT OF HON. CHRISTOPHER S. BOND, U.S. SENATOR FROM THE STATE OF MISSOURI

Senator BOND. Thank you very much, Mr. Chairman, for holding this very important hearing on security issues facing our Nation's nuclear power plants. Security at nuclear power plants is an important issue, I think, in communities in almost every State in the Nation. My home State of Missouri has both a commercial nuclear power plant and research reactors, including one of the foremost nuclear medicine reactors in the Nation. My home in Mexico, MO is less than 25 miles from the nuclear power plant in neighboring Calloway County.

We depend upon the power generated by nuclear power plants. Not only does it supply 20 percent of the country's power needs, it does so with absolutely no air pollution. Frankly, I'd prefer to have a nuclear power plant in my back yard than a fossil fuel burning plant. France, in this instance, is way ahead of us with 80 percent of its power generated by non-air polluting nuclear power.

As we consider ways to reduce air pollution in electric power generation, as we seek to deal with global warming, I believe we will only be serious when we change the rules so that we can rely more heavily on nuclear power which will clean up our air and which will reduce the pollutants which lead to global warming.

Our role here in Washington should be to ensure that nuclear power is safe, to ensure that operators of nuclear power plants have all the tools they need to run safe and secure facilities. But we must not make the situation worse with one-size-fits-all or reactionary answers. We must not be sidetracked by those whose hidden agenda is to deprive us of this environmentally clean source of energy.

Generally commercial nuclear power plants are probably the most physically secure and least vulnerable of our Nation's industrial infrastructure. They are robust, hardened facilities with numerous redundant systems designed to assure public safety. They are one of the most intensively and comprehensively regulated industries in America. The Nuclear Regulatory Commission rules impose comprehensive security requirements, including physical protection systems, armed tactical security forces and strict access control at all plants.

Is this enough? We need to hear if there are other things we can do to make it even safer. I will certainly support those.

Nuclear power plants are safe, however, by their own inherent design. Typical reactor containment walls are made of heavily reinforced concrete up to 6 feet thick. I urge all of you, if you haven't seen it, to view the video tape of a Government test where they crashed an F–4 jet fighter into a containment wall at nearly 500 miles an hour. The jet was obliterated and the 6-foot wall was penetrated only by 2 inches.

Nuclear plants are also defended by robust tactical security forces. These are not rent-a-cops moonlighting at the local mall, they are screened, trained professionals, many with military or law enforcement experience. Current nuclear power security forces are subject to FBI background checks, physical and psychological testing, screening and substance abuse testing as part of the hiring process. They undergo rigorous training, including weapons training, proof of marksmanship, recognition of sabotage devices and equipment and tactical response training. They are subject to continuous substance abuse and physical fitness checks. These are generally highly motivated, well compensated professionals with a retention rate above 90 percent.

Private nuclear plant screening forces stand in direct contrast to airport baggage screeners, many of whom are simply waiting to get a better paying job at the airport McDonald's. Airport security workers are untrained, unscreened, transitory, poorly supervised, poorly regulated and low paid. Unfortunately some would like to apply a cookie cutter approach of federalizing airport security to federalizing nuclear plant security.

I think we're finding out now the problems in federalizing the airport security, and I think that federalizing nuclear power plant security could lessen the security at those plants. It could diminish and disrupt plant security. Effective plant security requires close coordination between operators and security forces. Creating a separate Federal chain of command could inhibit reaction, coordination and communication when most needed in the face of an attack.

It would require the NRC to hire some 5,000 additional security employees. Many current security personnel would choose not to be come Federal employees and new security personnel would require years of on the job training. I think federalizing nuclear plant security could also reduce the quality of security forces. Screening requirements for Federal personnel in the proposed legislation are less stringent than those already in place in the industry.

We do have and we should take the opportunity to see what reasonable steps we can take to improve security at nuclear power plants. I would like the provisions included in the legislation referred to by Senator Smith, Senator Inhofe and we can build on that, I believe. We can consider empowering security forces by eliminating weapons restrictions and providing limited arrest authority. We certainly should oversee the NRC's review of nuclear plant security measures post the September 11 attacks. I think the NRC testimony should be very helpful.

In summary, I think the nuclear power industry has an unparalleled record of health and safety. They also meet unparalleled security requirements and must continue to do so. I look forward to working with my colleagues on this committee on any measure that

will improve their ability to ensure the health and safety of our communities.

Thank you.

Senator JEFFORDS. Thank you, Senator.

[The prepared statement of Senator Bond follows:]

STATEMENT OF HON. CHRISTOPHER S. BOND, U.S. SENATOR FROM THE STATE OF MISSOURI

Thank you, Mr. Chairman, for holding this hearing on security issues facing our Nation's nuclear power plants.

Security at nuclear power plants is an important issue for communities in almost every state. My home state of Missouri has both a commercial nuclear power plant and research reactors. In fact, my home in Mexico, Missouri is no more than 30 miles from the nuclear power plant in neighboring Callaway County.

Missouri, and the Nation, depend upon the power generated by nuclear power plants. Not only does nuclear energy supply 20 percent of country's power needs, it does so with absolutely no air pollution.

This Committee is considering ways to reduce air pollution from electric power generation. We must keep nuclear power as a valuable and environmentally friendly solution to meet our energy needs.

Our role here in Washington is to ensure that the operators of nuclear power plants have all the tools they need to run safe and secure facilities. We must not make the solution worse with one-size-fits-all or quick, reactionary answers. We must not be sidetracked by those whose real hidden agenda is to deprive us of this environmentally clean source of energy.

Commercial nuclear plants are probably the most physically secure and least vulnerable of our nation's industrial infrastructure. They are robust, hardened facilities with numerous redundant systems designed to assure public safety.

They are one of the most intensively and comprehensively regulated industries in America. Nuclear Regulatory Commission rules impose comprehensive security requirements including physical protection systems, armed tactical security forces, and strict access control at all plants.

Nuclear power plants are safe by their own inherent design. Typical reactor containment walls are made of heavily reinforced concrete up to six feet thick. I urge all of you, if you haven't seen it, to view the videotape of a government test where they crashed an F–4 jet fighter into a containment wall at nearly 500 miles per hour. The jet was obliterated and the 6-foot wall was penetrated only 2 inches.

Nuclear power plants are also defended by robust tactical security forces. These are not rent-a-cops moonlighting at the local mall. These are highly screened, highly trained professionals, most with former military or law enforcement experience.

Current private nuclear power plant security forces are subject to FBI background checks, physical and psychological testing and screening and substance abuse testing as part of the hiring process.

Nuclear security forces undergo rigorous training including weapons training, proof of marksmanship, recognition of sabotage devises and equipment, and tactical response training. They are subject to continuous substance abuse and physical fitness checks. These are highly motivated, well compensated professionals with a retention rate above 90 percent.

Private nuclear plant security forces stand in direct contrast to airport baggage screeners, many of whom were simply waiting to get a better paying job at the airport McDonalds. Airport security workers were untrained, unscreened, transitory, poorly supervised, poorly regulated and low paid.

Unfortunately, some would like to apply a cooky cutter approach of federalizing airport security to federalizing nuclear plant security. federalizing nuclear plant security is not only not needed, it may make nuclear power plant security worse.

Federalizing nuclear power plant security could diminish and disrupt plant security. Effective plant security requires close coordination between plant operators and security forces. Creating a separate Federal security chain of command could inhibit reaction, coordination and communication when it is needed most, in the face of an attack.

Federalizing nuclear plant security would require the NRC to hire 5,000 additional security employees. Many current security forces would choose not to become Federal employees leading to security force shortages. New security personnel would require years of on-the-job training to match the professionalism of current forces.

Federalizing nuclear plant security could also reduce the quality of security forces. Screening requirements for Federal personnel in proposed legislation are less stringent than those already in place in the industry.

We do have the opportunity to improve security at nuclear power plants. We can consider proposals which empower security forces such as reducing weapons restrictions or providing limited arrest authority. We can also closely oversee NRC's review of nuclear plant security measures post the September 11th attacks.

The nuclear power industry has an unparalleled record of health and safety. They also meet unparalleled security requirements and must continue to do so. I look forward to working with my colleagues on any measure that will improve their ability to improve the health and safety of our communities. Thank you.

Senator JEFFORDS. Senator Corzine.

OPENING STATEMENT OF HON. JON S. CORZINE, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator CORZINE. Thank you, Mr. Chairman. I very much appreciate your having this hearing and so do the people of New Jersey. We have 4 of the 104 nuclear power plants and we're very close to one in our neighbor in New Jersey which has major impact if there were an attack or actually, if there were safety problems. If anything September 11 taught us it was that we need to be prepared. As you suggested in your opening remarks and others have noted broadly, there is evidence of interest by the terrorists in nuclear power plants.

So I commend your leadership on leading this discussion. Senator Reid, Senator Inhofe and certainly Congressman Markey for the leadership in trying to protect our people in a way that is sensible but thorough, one that gives us confidence as we go forward. The concern is real, as I think some of the testimony and the data would show, unsatisfactory results with a number of the mock attacks, personnel record problems and other issues that have occurred in some instances, not uniformly, but I think there is time, it is time for revision of our processes here.

I don't think you have to be anti-nuclear power to believe that we ought to do everything that is necessary, belt and suspenders, to provide the kind of security I think the American public, I know the people in my State, are looking for and the rules are dated and need revision and I think that's what this hearing is about. So I think it's a positive and necessary step to make sure that the public is secure.

I would be remiss, Mr. Chairman, if I didn't at this same point, there are 104 of these nuclear power plants that certainly are a concern to our Nation. There are 123 chemical facilities where worst case release of toxic chemicals could threaten more than 1 million people. I know that this issue doesn't get as much headline attention, but I continue to be very concerned, particularly in my home State, that this problem, while not so headline oriented, is just as much of a risk to our communities and the people who live there.

So I hope that we may be able to have similar attention, frankly I think that we're organized much more securely, the discipline associated with the NRC and our State and local communities with regard to that protection is quite substantial. I think what we're doing in chemical plant security in this country is one that we will feel that we have not taken the proper steps if disaster were to

strike. So I hope that we can have a similar hearing with a similar element of focus as we go forward here.

So I thank you and commend you for holding this hearing.

Senator JEFFORDS. Thank you, Senator. It's an excellent suggestion.

Senator Inhofe.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. Thank you, Mr. Chairman.

Let me first clear this record, because I heard the dialog between you and Senator Smith. Let me assure you, Mr. Chairman, we have not had a closed, secure hearing. We haven't had one. We had a members briefing, but that was held in the Johnson room. You weren't the only one there, because I was there too. So I think it's very important that we realize we have not had one. This should have been one, but it wasn't one.

Now, Senator Smith's statement has dramatically shortened mine, because most of the things he was referring to and saying I would have. I don't have a nuclear plant in my State of Oklahoma. But I am very much concerned, 20 percent of our reliability is on nuclear energy, I like Senator Bond believe it should be more than that. After having gone through all of our ambient air hearings and the pollution problems that we have, this is one of the answers, it's cheap and clean energy.

Last Congress, I tried very hard to pass legislation which would have increased the ability of the Nuclear Regulatory Commission to protect nuclear power plants. Unfortunately, although we did get it passed through the Senate, in fact, it passed by unanimous consent, it did not become law. The NRC has again come forward, asking for it, the legislation that I had. I have reintroduced it in this Congress. I hope that we would pass my legislation this year.

In short, my legislation does three things. It prescribes guidelines for carrying firearms and the authority to make arrests by nuclear power plant security professionals. Second, it authorizes the NRC to issue trespass regulations relating to the introduction of dangerous weapons, explosives and other dangerous instruments or materials likely to produce substantial personal injury or damage. That currently is not a Federal crime. Third, it revises the crime of sabotage of Federal nuclear facilities so as to cover any production, utilization, waste storage treatment, disposal, uranium enrichment or nuclear fuel fabrication facilities.

I am keeping an open mind today and I want very much to hear the current state of security. I think that Congress understands the emotions surrounding the security of nuclear power plants. However, in order to make this hearing most productive, I really would like to focus on the facts and with those facts, I want to work with the majority whip and others on this committee to draft legislation which would address any deficiencies in nuclear power plant security.

No matter what we end up doing, I want to make sure that Congress works with and not against the current efforts that are being taken by the NRC and the Office of Homeland Security. Finally, I repeat, I think we should have held a closed hearing today. There

is a problem with holding a public hearing on any possible security deficiencies at nuclear power plants, namely, terrorists can get hold of the very information which we are using to protect the public in order to harm the public.

In that regard, I, along with others in this committee, expressed our concerns in a letter to the chairman. I was shocked that even before the hearing started, some statements containing information which if correct is safeguards information, which if incorrect is false information used to start fear in the public. This committee should not be providing a forum for releasing safeguards information. So I would urge our witnesses today to carefully craft their remarks, so as to be responsive to our questions but not helpful to terrorists.

Thank you, Mr. Chairman.

Senator JEFFORDS. Senator Clinton.

OPENING STATEMENT OF HON. HILLARY RODHAM CLINTON, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator CLINTON. Thank you, Mr. Chairman. I thank you and Senator Smith for holding this important hearing. Certainly, I agree with the statements of both Senators Smith and Inhofe that as we try to educate ourselves and more importantly, educate the public, we do so with full awareness of the sensitivity of some of this information.

I am also very pleased that Congressman Markey is here. I hope to have a chance to hear from him in just a few minutes. I also want to thank Dr. Irwin Redlener, the president of the Children's Hospital at Montefiore in the Bronx and president of the Children's Health Fund for being with us today.

Both Dr. Redlener and I live in Westchester County. It's one of the most beautiful places in the country, and it is also a place where we have nuclear power plants. So unlike some on the committee, I live about 15 or 20 minutes from one of our 104 nuclear power plants. This is the principal subject that the people I live near in my town and in neighboring communities talk to me about, every time, whether I'm going to the store, stopping to get a cup of coffee or just taking a walk in the neighborhood.

I think it's understandable. Because the unthinkable did happen on September 11. Therefore, it is incumbent on us, as unfortunate an exercise as it may be, to think like our adversaries, to imagine the unimaginable and to work together with the appropriate officials in our Government to be as sure as one can be in such human endeavors that we have thought every unthinkable thought, we have taken every possible preventive measure. Because there is no guarantee in life of anything. But unless we've done all that we believe we should do to protect ourselves, then I think we are going to be found not to have fulfilled our responsibility.

Certainly in my specific situation, we have more people, about 20 million in the Catchman area for Indian Point. It is in the most populated area of any nuclear power plant in our country. We have other nuclear power plants in much less populated areas. I visited the nuclear power plants at Indian Point and in Oswego. Certainly Oswego, which is in a much less populated area, doesn't pose the high level of public concern or frankly, as inviting a target as In-

dian Point does. Nowhere in our country do we have the same concentration of population. Clearly those who sought to inflict the most public, high visibility damage on our Nation chose our most populated city.

It's a terrible thing to contemplate, but I think we have to. I don't see any alternative. Instead of being paralyzed by fear or being divided on different points of view or ideology, we all have to work together. I think that's what this committee is attempting to do. We have to close whatever loopholes exist, legislatively or regulatorily, we have to strengthen any weak links that we find, and we have to be unafraid to ask the hard questions. This is not pointing fingers or placing blame on anyone. We didn't have to think like this before September 11. Now we have to. Therefore, it is imperative that we know what steps have been taken, are being taken to protect our nuclear power plants.

According to news reports, not in a classified briefing, but on the front pages of newspapers around America just last month, the NRC again put the Nation's nuclear power plants on a heightened state of alert because of information gained by our intelligence community. Well, you can imagine what that does to mothers and fathers in Westchester County and throughout America who have particular concerns because of their proximity to our nuclear power plants. Now, since 9/11, the Federal Government, State and local governments, and nuclear power plant operators and owners have taken actions, and I applaud those actions, to improve security. But we have the responsibility to ask, has enough been done. This is what we are going to try to find out in part today.

The NRC has previously told this committee that it has the statutory tools necessary to assure that any security deficiencies are corrected in a timely fashion. Yet at the same time, I know that the NRC is strongly supporting S. 1586, which I think has a lot of very good provisions in it.

As we sit here today, we know that the NRC still has not yet revised its rules regarding what kinds of threats nuclear plants must protect themselves against. The NRC has not completed vulnerability assessments on individual plants. Moreover, it is my understanding that the NRC still has not determined, or at least has not told us, either in a classified briefing or in public, what the real threat posed by modern, fully loaded airliners cause to a reactor containment vessel. Now, that decision, of course, could drive a series of other decisions about how to best safeguard these plants, such as whether and when to impose no-fly zones, whether and when to have Naval or Coast Guard support.

Now, we know that the NRC is working on these issues, and I do appreciate everything that the Commission has been doing. But I think it's important that we hear from other well informed voices as we will at this hearing, in public, people who have experience in the nuclear industry, who have expertise with nuclear energy, so that we can make a judgment about whether or not those tools in that tool box for security at our nuclear power plants are sufficient.

That's why I did join with Senators Reid, Jeffords and Lieberman in introducing legislation to start a dialog, to begin a discussion. I think that part of what we should be working on in this committee

is how we determine what of the many additional steps that could be taken would appropriately be taken by national legislation.

We need to guarantee seamless security and we need to do it as quickly as possible. Any legislation should ensure that new, higher standards are met through revisions to the design basis threat. We have to be more realistic about this. You can't give notice ahead of time to the guards at these plants so they can put on their flak jackets, get their weapons out of the lockers in which they're kept, to look as though they're ready to take on whatever possible attack may occur. This has to be a much more well thought out and constant assessment of the security at each and every one of our facilities. Exercises have to be conducted regularly.

I believe, as someone who certainly lives within a rather immediate proximity to a plant, that we've got to have more realistic evacuation plans. If you come up to Indian Point, which is in a beautiful part of Westchester County, you'll be on two lane roads for most of that trip. You're living in a highly populated area. The idea that you could evacuate people, the idea that people that are supposed to lead the evacuation would even be able to get where they're needed strikes most of us as quite implausible.

Now, we are stockpiling potassium iodide in New York. The bill that I've worked on with Senator Reid and others requires that stockpiling be required and that the pills be released to the public on a regular basis.

Finally, I also think, because the NRC does have jurisdiction, that in addition to exploring the security of power plants, we have to raise the issue of so-called dirty bombs. We have to know more and protect more against the use of radiological dispersal devices. That has to be on the agenda as well as our concern about nuclear power plants, since the sources of such material are obviously accessible, easily so, in many parts of every community in our country.

So Mr. Chairman, I thank you for holding this hearing, and I look forward to working with you and all of our colleagues to come up with answers to some of these questions.

Senator JEFFORDS. Thank you.

Senator Voinovich.

OPENING STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM THE STATE OF OHIO

Senator VOINOVICH. Thank you, Mr. Chairman.

I agree that the topic of today's hearing is very important, so important that I believe our time could be best spent in a closed hearing in which the members of our committee can discuss the security issues openly with the witnesses without fear of revealing information that could put those who work in the facilities and the public at risk. I agree with the sentiments expressed by Senator Smith and Senator Inhofe.

Considering the importance of this topic, we need to hear all relevant information with regard to security, including future needs if we're to pass legislation that will enhance the security of our nuclear energy infrastructure. I believe it's impossible to get all the information we need to determine if legislation is needed through public hearings.

Last August, I visited Davis Besse nuclear facility in Oak Harbor, OH for the purpose of reviewing the operation of the plant. I was extremely impressed with the security measures in place to gain entrance and access to that facility.

Just this last April, I had the opportunity to spend a half day at the Perry Nuclear Power Plant in Perry, OH, which by the way is a 25 minute drive from my home, to specifically review their security systems. I wanted to see first-hand just what was happening at that facility. In fact, the entire visit was dedicated to security.

I received a classified security briefing at the facility, which I highly recommend to all of my colleagues. In addition, I participated in personnel and vehicle searches, and I reviewed the external security systems, including meeting with the Coast Guard which patrols Lake Erie off the coast of the Perry facility.

My tour of the security operations confirmed for me that every security measure is being taken to protect our energy supply from terrorist attack and the members of the surrounding community and they should be very comfortable with the level of security that protects them and the facility. If I were a terrorist, the last place I would try to take over and attack would be a nuclear power plant. I know that security reviews are currently being conducted at nuclear facilities across the country, but I hope they are all as secure as our Ohio facilities. I think it's important that we don't throw the baby out with the bath water trying to change things legislatively.

In my opinion, the private sector is getting the job done. We do not have to federalize security, understanding that any system can be improved, and that's the responsibility of the Nuclear Regulatory Commission, and there may be other things that are being suggested by members of this committee that will enhance those security operations in our facilities because of things that have happened because of 9/11.

Recently, I visited the EU headquarters at the Hague in Brussels. I was told and warned that the security there was the best in the world. I tell you, I was impressed with the security required to gain entrance to that facility. But it didn't compare, it didn't compare with the security at Perry and Davis Nuclear. Because this is an opening hearing, and though I think it would be helpful, I can't go into the detail about how they determine who gets in, where they go, and how they can get access. It's incredible.

I also visited the Lima Tank Plant in Ohio where they make the M1A1 Abrams tank, and now that's another place that the Federal Government is securing. I met with people from the Defense Department that are involved in security. I reviewed what they were doing there. I said to them, if you really want to secure this place, get in a car and go up to Perry Nuclear and you'll find out how to really secure a facility. That's the way I felt about that, compared to what I saw at this Federal facility that's something that we should be very concerned about.

Before we move forward with any new requirements, I think it's imperative that the members of this committee spend some time carefully reviewing the existing security controls at our Nation's nuclear facilities. I believe that preparation for each and every committee member should be to include some closed hearings, or

at least one, and classified briefings as well as site visits to the facilities in order to see the security measures in practice. Get out there and get into these places and see what they're doing.

I look forward to working with my colleagues on this important issue and to the testimony from today's witnesses. Mr. Chairman, I really hope that the legislation that has been introduced in this hearing is really aimed at determining the security at our facilities, and not an effort by those who are opposed to nuclear power to discredit nuclear power's contribution to our Nation's energy needs. Nuclear power plays a vital role in maintaining our energy independence and providing a clean energy source.

I look forward to the witnesses' testimony. Thank you, Mr. Chairman.

Senator JEFFORDS. Thank you, Senator.

[The prepared statement of Senator Voinovich follows:]

STATEMENT OF HON. GEORGE V. VOINOVICH, U.S. SENATOR FROM THE STATE OF OHIO

Mr. Chairman, I agree that the topic of today's hearing, Nuclear Security, is very important. So important, that I believe our time could best be spent in a "Closed Hearing" in which the Members of our Committee can discuss the security issues openly with the witnesses without the fear of revealing too much information that could put those who work in the facilities and the public at risk.

Considering the importance of this topic, we need to hear *all* relevant information with regard to security, including future needs, if we are to pass legislation that will enhance the security of our nuclear energy infrastructure.

I believe it is impossible to get all of the information we need to determine if legislation is needed through public hearings.

Last August I visited the Davis Bessie Nuclear facility in Oak Harbor, Ohio, for the purpose of reviewing the operation of the plant. I was extremely impressed with the security measures in place to gain entrance and access to the facility.

And just this last April, I had the opportunity to spend a half day at the Perry Nuclear Power Plant in Perry, Ohio to specifically review their security systems. In fact, the entire visit was dedicated to security.

I received a classified security briefing at the facility, which I highly recommend to all of my colleagues. In addition, I participated in personnel and vehicle searches and I reviewed the external security systems, including meeting with the Coast Guard which patrols Lake Erie off the coast of the Perry facility.

My tour of the security operations confirmed for me that every security measure is being taken to protect our energy supply from terrorist attack and the members of the surrounding community should be very comfortable with the level of security that protects them and the facility.

If I were a terrorist the last place I would try and take over or attack would be a nuclear power plant, if all of our facilities are as secure as Perry and Davis Bessie. I know that security reviews are currently being conducted at nuclear facilities across the country, and I hope they all are as secure as our Ohio facilities. But I think it is important that we don't throw the baby out with the bath water by trying to legislatively change the security procedures.

Recently, I visited the EU Headquarters at the Hague in Brussels. I was impressed with the security required to gain entrance to the facility, but it didn't compare to the security at Perry and Davis Bessie nuclear plants. Because this is an open hearing and though I think it would be helpful, I can not go into detail about how they determine who gets in, where they can go, and what they can access, but it is incredible.

I also visited the Lima Tank Plant in Lima, Ohio, where they make the M1A1 Abrams Tanks. I suggested to the Defense personnel that if they really want to see an excellent security system they should get in their cars and go visit the Perry Nuclear Facility.

Before we move forward with any new requirements, I think it is imperative that the Members of this Committee spend time carefully reviewing the existing security controls at our nation's nuclear facilities. I believe the preparation for each and every Committee Member should include some closed hearings and classified brief-

ings as well as site visits to the facilities in order to see the security measures in practice.

I look forward to working with my colleagues on this important issue and to the testimony from today's witnesses. Mr Chairman, I really hope that the legislation that's been introduced and this hearing is really aimed at determining the security at our facilities and not an effort by those who are opposed to nuclear power to discredit nuclear's contribution to our nation's energy needs. Nuclear power plays a vital role in maintaining our energy independence and providing a clean energy source, and it is critical as we try to harmonize our energy and environmental policies. Thank you Mr. Chairman.

Senator JEFFORDS. Senator Boxer.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. Thank you very much, Mr. Chairman.

I first want to address the point that this is not a hearing about the future of nuclear power. Of course it isn't. That decision is made by the marketplace and the people who live near the plants, and there hasn't been a new plant in 20 years, and maybe there will be a change on that. People will decide that in a democracy like ours. That's good.

For myself, I have no bias, except to say when the private insurers are ready to insure these plants, that will give me much more confidence. Right now it's the taxpayers that have to pick up the tab. So I think those are important points.

I also want to address the issue of closed hearings versus open hearings. I just must say that the comments that have been reiterated by a few of my friends on the other side I find to be disrespectful of our chairman. That's my own personal view. That saddens me, because this is a man who really understands what belongs in a closed hearing. He had one, and all my colleagues who said they want one never went. He knows what belongs in an open hearing.

I would remind everyone that there were lots of closed briefings before 9/11, and we had a disaster. So in and of itself, what's important is what we discuss. I want to send a signal to the would-be terrorists in this country and cells around this country and wherever they are that we are doing everything we can to stop them. I think Senator Voinovich is right, there are some plants that are moving way ahead on this.

But there may be some problems. The reason I think an open hearing, Mr. Chairman, is so important—I commend you for your leadership and I commend Congressman Markey for his on the House side—is that we need to speak with one voice to those that would harm our people and say, we're onto you, we're onto you because the President of the United States, as you said, Mr. Chairman, in his State of the Union address told us that nuclear power plants were a target. This isn't some secret. The President announced it.

We are here today with some of our colleagues who have drawn up some good legislation here to say, "You know, take it somewhere else. Take it somewhere else." I would say for me in California, where we have four power plants, that this is a very important issue. Now, the NRC views this as such a serious problem, perhaps more serious than some of my colleagues, that they've offered free potassium iodide pills. I have urged that those be distributed to the

people in my State. I have urged that the National Guard be deployed to nuclear power plants, just to make sure that it's safe.

So Mr. Chairman, I would ask that the rest of my statement be placed in the record. I want to commend you, and I feel that your statement, I read it, is so balanced and so fair. You praise the NRC for steps they've taken. But frankly, I've been around here a long time, both on the House and Senate side. I know it's hard to bring action to a bureaucracy. It's just the way it is. It's even hard to bring it to a big business. So when we put pressure on, that's a good thing. I think this hearing is a good thing, and I thank you very much.

Senator JEFFORDS. Thank you.

Senator Warner.

OPENING STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE COMMONWEALTH OF VIRGINIA

Senator WARNER. Mr. Chairman, I shall be very brief. I just call upon my own experience, having served on the Armed Services Committee for 24 years, part of which I was privileged to be chairman. We handled matters such as this on a regular basis with open and closed hearings, most often at an open hearing followed immediately thereafter with a closed. I would hope such procedures would be viewed again by the chair and ranking member of this committee as the appropriate way for us to proceed.

I'll not further discuss this matter, because I'm anxious to hear from our witnesses.

Senator JEFFORDS. Well, thank you very much, Senator. I just would alert you that arrangements have been made, minority staff is aware of it, too, that we intend to have members to be able to meet in a confidential situation to discuss matters.

Senator WARNER. Would you not have that in a formal hearing status? Is there some reason not to do it that way?

Senator JEFFORDS. Well, it's a matter of convenience of members, trying to make sure that they can be there. As I said, the last time we had one, no one showed up except me and Senator Inhofe. So whatever the minority wants to work out, we will accommodate you.

Senator WARNER. I would hope that would be done.

Senator JEFFORDS. Sure. We will just work together, and whatever Senator Smith——

Senator WARNER. We have gained a different perspective of the seriousness of the problem, as our colleague from California has pointed out, in the period between that briefing and today.

Senator JEFFORDS. My only goal is to make sure every member has every opportunity to place themselves in a position where they can do their job.

Senator SMITH. Mr. Chairman, would you indulge me 30 seconds to respond to Senator Boxer who made a comment about my feelings toward you? I just want to say that, I think Senator Boxer knows me well enough to know that I don't deal in personal attacks on other members. This is a disagreement. But the chairman has every right to make the decision he made. I disagree with it, and others have. It's not a personal attack, and I regret that you made that charge here. But I will rebut it.

Let me also say that there has never been a classified hearing, a hearing. There is a difference between a hearing and a briefing. There has never been a classified hearing. There was a briefing in October. A lot has happened since October. So let's just make sure that we're dealing with the facts here.

Senator JEFFORDS. Sir, we've never had a request from you for the hearing. So I will take that as a request.

Senator SMITH. We requested a classified hearing today. We requested——

Senator JEFFORDS. OK, today, fine. I appreciate hearing that, and I can assure you the arrangements will be made.

Congressman Markey, I am pleased to have you here. I know that you have been holding hearings, some closed hearings. I commend you for that. You have been a leader in this area, and I appreciate having you here. If you have an opening statement, please present it.

STATEMENT OF HON. EDWARD J. MARKEY, A REPRESENTATIVE IN CONGRESS FROM THE COMMONWEALTH OF MASSACHUSETTS

Mr. MARKEY. Thank you, Mr. Chairman, very much. I appreciate the opportunity to be able to testify before you.

I think at this stage we've already invoked the old Mo Udall axiom that everything has been said but not everyone has said it. So I begin with that as the premise for my testimony. I thank you, Mr. Chairman, and you, Senator Smith, for the invitation to testify here today.

I have introduced on the House side the same legislation that Senator Reid and yourself and Senator Clinton, Senator Lieberman, Senator Boxer and Senator Corzine have introduced on this side, dealing with security at our domestic, civilian nuclear power plants. Senator Boxer just dealt with the question of whether or not a discussion of this subject in some way or another deals with the future of nuclear power.

For the record, there has not been a new nuclear power plant ordered successfully in the United States since 1974, 28 years ago. The reason that that is the case, as Senator Boxer pointed out, is that Adam Smith, in his posthumous wisdom, has decided that nuclear power plants cannot gain investment from Wall Street Republican investment bankers. Instead, what they have decided is to put 95 percent of their money into natural gas generated electrical generating facilities. That is not a discussion that has anything to do with the question of what is the level of security around the 104 existing operating nuclear power plants.

Similarly, you have the question of the decommissioned plants, that is those plants that have already retired and what kind of security should be around those plants, pretty much in perpetuity. So these are not questions that we seek to put out in the public in the way that Al Qaeda could gain new information, because neither the chairman of the Nuclear Regulatory Commission nor any of the witnesses are going to betray any classified information.

But in the same way that the CIA and the FBI and their procedures before September 11 must be examined, the public demands that, so too must the Nuclear Regulatory Commission and its pro-

cedures be examined, so that the public knows that the changes are going to be put in place. I think they understand and want some of that information to be classified. Nonetheless, the discussions have to be conducted in a way that ensures that security is enhanced.

Going back to 1991, I began writing to the Nuclear Regulatory Commission about the potential of truck bomb attacks at civilian nuclear power plants. At the time, I was told not to be concerned about the issue. Only after Oklahoma City did the Commission begin the process of upgrading.

However, even that upgrade does not deal with the level of threat which is obvious in the aftermath of September 11. So let me go down, if I could, a number of the issues which I think we have to deal with. The reason, and Senator Clinton focused upon this, the reason that we have to do so is that we've learned from the caves of Afghanistan, on the computers which have been confiscated, in addition to the interviews which have been conducted with captured Al Qaeda members, that nuclear power plants, civilian nuclear power plants, are at the very top of the list of targets that Al Qaeda would attack if they could successfully do so. That's why we're here. Those are the statements of Al Qaeda. So the 280 million Americans who see these headlines have a right to know that changes have been made.

So what are the issues? Well, we begin with something called the design basis threat. That is, what is the level of protection which is built into the design of a nuclear power plant in terms of its security? Now, the bill which has been introduced by Senate and House Members calls for the Nuclear Regulatory Commission to begin a new rulemaking, a brand new rulemaking, to reexamine the design basis threat. That is, what kinds of threats could be posed against a nuclear power plant.

Up until September 11, power plants were only protected against several terrorists who would arrive in an SUV, who would be relatively lightly armed, and who would be non-suicidal. Now, that's all public. Since September 11, it's quite clear that they could arrive in numbers of 19 or more, be coordinated in their attack, have advanced degrees, from European or American universities, be suicidal, arrive with a tractor-trailer and have more insider help than perhaps we had thought previous to September 11.

So what the bill says is, the Nuclear Regulatory Commission should go into a new rulemaking, a formal rulemaking to deal with all of those issues. Nine months after September 11, the Nuclear Regulatory Commission still has not gone into that formal rulemaking.

Now, we believe that the very fact that on a formal basis, a Federal Agency dealing with the security of our country is forced to reexamine all these questions is a good thing and something which the American public wants. The Nuclear Regulatory Commission has not done that. We do not believe that that is an unreasonable request of a Federal Agency dealing with such a sensitive question.

Second, the question dealing with the level of security that actually is at any one of these power plants, what is the mechanism by which we test its efficiency? Well, it's something called an operational safeguards response evaluation, that is, these are mock

tests, force on force tests which are given by the Nuclear Regulatory Commission to determine whether or not any civilian power plant can withstand a test.

Now, before September 11, at that relatively low level of challenge that would come from a terrorist group, that is now we realize historically kind of an elementary school level security exam, they were flunking at nearly a 50 percent rate nationally, nuclear power plants, before September 11. Now, we know that post-September 11, that nuclear power plants have to be protected against college level security exams. So what the bill does is call upon the Nuclear Regulatory Commission to upgrade, again, the testing, the force on force testing against these nuclear power plants, to conduct it not just every 8 years against each individual plant, but every 2 years, so that there is an ongoing evaluation of the security around these plants.

Third, we call for the federalization of the force around these plants, not an unreasonable thing. At airports across the country, the public, I think, feels a lot better that the Federal Government is now going to provide the security at facilities which we know Al Qaeda has targeted, airports, as they have nuclear power plants.

Unfortunately, right now at civilian nuclear power plants, some of the guards are paid less than janitors, they are not equally trained, they are not equally equipped, they don't get the same whistleblower protections that Federal employees would, and as a result, it's not unreasonable to assume that the level of security is not as high as it would be if we had full time Federal employees who had that responsibility. So the Nuclear Security Act, which we've introduced, calls for a federalization of the guard forces at nuclear power plants.

Let's deal with the issue of National Guard. What should be the role of National Guard at these facilities? In some States, National Guard are deployed. In some States, National Guard are not deployed. In some States, National Guard have weapons with bullets already in them, in some they don't. In some States, they are authorized to shoot to kill, in other States they are not.

Is it unreasonable for the American people to ask that we have a uniform policy across the country that everyone can understand is present at their nuclear power plant? I do not believe that that is an unreasonable request. With regard to the decommissioned reactors, that is, when a nuclear reactor has completed its life, the reactor still remains there, as does all of the spent fuel in the facilities that will be stored there until at some point in the long distant future there is a place somewhere in America that we could move all of that spent fuel. But while we wait for that date to finally arrive, we need some security around it.

So what happens at the decommissioned plants? Well, among other things, sometimes they are stored in areas that do not have, clearly, the same security that that domed, reinforced facility does around the reactor as it operates. The casks used to store the spent fuel are not tested to ensure that they can withstand long, hot fire such as that fed by a full tank of a commercial jet liner. There are fewer guards onsite at decommissioned reactors, and security isn't tested using force on force exercises. Let me say that again, security is not tested using force on force exercises.

So there you could create, as Senator Clinton pointed out, the dirty bomb, using a large or small plane attacking those facilities. It's a good question to ask. We know that on September 11, the jets that were scrambled to protect the World Trade Center were in eastern Massachusetts. Was there enough time given for them to arrive over that distance in order to shoot down what was at that point known to be a hijacked airliner?

So in other words, a lot of people think that the plane would just be hijacked at an airport that was only 2 or 3 minutes away from the nuclear power plant. What if the plane was hijacked 30 minutes away, and now it's clear that there is enough time to shoot it down, to have planes be scrambled or to have anti-aircraft weapons on the ground? Is it unreasonable to ask that there be some national policy which is established which has to be put in place on a coordinated basis?

I'll just mention two other issues. Senator Clinton mentioned one, which is the dirty bomb, which can be created from the lower level radioactive materials which are stolen or lost around the country. There have been 1,500 reports of those over the past 5 years, and 50 percent of the cases still remain unsolved.

There's also a question of foreign nationals employed at nuclear reactors. We require a security check dealing with their criminal background, but there is no requirement that they pass any background check intended to identify terrorist links prior to their employment. So these kinds of issues all would be dealt with if the NRC was forced to go into a formal rulemaking, rather than temporary upgrades that are made on an ad hoc basis, but not on a permanent basis and not as part of a full formal national set of hearings that would have to have been conducted, and where necessary, on a classified basis.

So I thank you, Mr. Chairman, very much for the opportunity of testifying before you, and I'd be glad to answer any questions.

Senator JEFFORDS. Thank you. I understand that you also have a telecom hearing that's schedule this morning which you have to attend. So I will be—no questions.

Mr. MARKEY. Thank you, Mr. Chairman.

Senator JEFFORDS. I would be happy to yield to Senator Smith.

Senator SMITH. No questions, Mr. Chairman.

Senator JEFFORDS. Thank you. Any questions?

Senator CARPER. I don't have a question, I just want to say it's great to see my old friend, welcome. He and I used to travel through Central America during the contra wars, fighting on other battlefields at that time. It's always a pleasure to be with you and we appreciate your being here with us.

Mr. MARKEY. It was disconcerting to us to arrive in El Salvador, the country we were supporting, and be put in a secured van with Uzi submachine guns to protect us against being killed, and then to arrive in Nicaragua and for Congressman Carper and I to go out on a 2-mile run and have the people be patting us on the back in the country that we were trying to overthrow.

[Laughter.]

Mr. MARKEY. It was a very disconcerting trip in 1983, to witness the asymmetry of our policies at that time.

I thank you, Mr. Chairman, very much.

Senator JEFFORDS. Thank you for your excellent help. We will work with you as we move forward to make sure that we're sort of on the same page.

Mr. MARKEY. Thank you. I appreciate it.

Senator JEFFORDS. The first witness and the only witness is the Honorable Richard A. Meserve, chairman of the U.S. Nuclear Regulatory Commission. Thank you for testifying for the committee, Mr. Chairman, and it's a pleasure to be with you again. I have enjoyed the working relationship that has evolved, and I commend you for your forthrightness in getting us the information that we have requested and needed.

So you may please proceed.

STATEMENT OF HON. RICHARD A. MESERVE, CHAIRMAN, U.S. NUCLEAR REGULATORY COMMISSION

Dr. MESERVE. Thank you, Mr. Chairman. Mr. Chairman and members of the committee, I am pleased to appear before you this morning on behalf of the U.S. Nuclear Regulatory Commission.

My written testimony discusses the current status of actions that the NRC has taken in response to the terrorist attacks that occurred on September 11 and outlines some of the work that lies ahead. I believe that the NRC's response to the attacks has been appropriate and thoughtful and that the NRC's current programs continue to provide a very high level of security. Let me briefly summarize my written testimony.

Before September 11, nuclear power plants were among the best defended and most hardened facilities of the Nation's critical infrastructure. In the aftermath of the attacks, security has been enhanced even further. On September 11, the NRC advised our licensees to go to the highest level of security, which they promptly did. Our licensees have remained at that level since that time.

Moreover, we have maintained a steady flow of information to our licensees through over 30 updates to our original threat advisory. In light of the continuing threat condition, we have issued orders to our reactor licensees to establish the security requirements within an established regulatory framework. We have continued over the months to work with the intelligence and law enforcement community, the Office of Homeland Security and others to ensure that adequate protection is maintained at our civilian nuclear facilities.

In short, we are comfortable with the security at our nuclear power plants. We are not aware of any significant, credible threat that is directed at the power plants, although there obviously are plants or facilities that are of concern. We had strong security at these facilities before September 11, and that security has been significantly enhanced since that time.

Moreover, the NRC is open to change. We are in the process of revising our design basis threat. We are reexamining how we should reinvigorate the process of conducting exercises. We are examining the processes by which people are cleared into the facilities. All of this is part of the comprehensive review of security that is under way at the NRC.

Many Members of Congress have asked the NRC how they can help to improve security at nuclear power plants and other facili-

ties. In response, the Commission has requested that Congress enact several specific legislative proposals that would amend three sections of the Atomic Energy Act. Most of these provisions are contained in S. 1586, which was introduced by Senators Inhofe and Smith at the end of last October. I should note that all of our proposals have been coordinated with the executive branch and enjoy strong support from the Administration.

One of the proposals would provide Federal authorization for guards to carry and use firearms at NRC regulated facilities designated by the Commission, and to protect property of significance to the common defense and security located at or being transported to or from such facilities. This amendment could provide some protection for licensee guards from State criminal prosecution for actions taken during the performance of their official duties.

At the present time, State laws govern the use of weapons by guards at NRC licensed facilities. Some State laws do not permit guards to use weapons, except to protect against an immediate threat to their own lives or the lives of others. In such States, it may not be possible to shield the guards at NRC licensed facilities from State prosecution.

In addition, some State laws make it difficult for licensees where there are security contractors to use more effective weaponry. To alleviate this problem, the Commission has developed an additional provision not included in S. 1586, that would authorize the guards to carry and use such weapons as the Commission may require. A copy of the original proposal with additional language to address this concern is attached to my written testimony.

Another provision would make it a Federal crime to bring unauthorized weapons and explosives into NRC licensed facilities. Although the NRC may impose sanctions against licensees for violations of its security regulations, there is no Federal law permitting the imposition of criminal sanctions against the person responsible for bringing the weapon or other dangerous instrument to the site.

Our final proposal would make Federal prohibitions on sabotage applicable to the operation and construction of certain NRC licensed and certified facilities. We believe that these legislative changes that I have described will contribute to enhancing the security of nuclear facilities and material.

The Commission opposes S. 1746, which would federalize the security forces at commercial nuclear facilities. We see several fundamental difficulties with this legislation. First, the bill separates the strategy for the security of nuclear facilities from that of all other types of sensitive facilities, such as chemical plants, refineries and dams. We believe society's defensive resources should be allocated in accordance with relative risk, and that the separation of nuclear facilities from all other types of sensitive facilities will fragment the overall consideration of risk inappropriately.

Second, the requirement that the NRC establish a security force for sensitive nuclear facilities addresses, in our view, a non-existent problem. The private guard forces that exist today are qualified, trained and tightly regulated. Unlike the situation at airports, there is no need to federalize security.

Third, the bill would bring about a fundamental shift in the responsibility and mission of the NRC, and could have the unin-

tended consequence of detracting from the Commission's focus on protecting the public health and safety.

Fourth, NRC's role as an independent regulator would be compromised by the bill's requirement that the NRC design security plans for all sensitive nuclear facilities, to implement the plans with NRC employees but then also to conduct evaluations of the efficacy of the plans.

Fifth, the bill would create command and control difficulties because it would establish two classes of employees, both of which would be responsible for safety in the event of a terrorist attack licensee personnel responsible to the licensee for safe operations and Federal employees responsible to the NRC for security. In an emergency, these separate lines of authority could lead to a diminution in the capacity to ensure safety.

These fundamental difficulties in S. 1746 argue against its adoption. But there are also many other concerns raised by the bill which are detailed in my written testimony.

In closing, we look forward to working with the Congress, both on the enactment of the NRC legislative proposals I have discussed, and on continuing to ensure adequate protection of the public health and safety. I appreciate being here today to discuss the NRC's programs and am prepared to answer your questions. Thank you.

Senator JEFFORDS. Thank you for your excellent statement. As I have stated, I commend you and the Nuclear Regulatory Commission for the comprehensive top to bottom review of security measures which you are undertaking. I know this is a complex process, and one that must be carefully considered.

However, we also must be diligent in quickly putting into place appropriate measures to both provide protection and to give the public the confidence that we are doing so. I have been told that the other agencies have set specific timeframes for completing their Agency reviews, such as the National Nuclear Security Agency within the Department of Energy, which has committed its fiscal year 2003 budget request to establish a new design basis threat for the security of the Nation's nuclear weapons facilities by September of this year.

Do you have a date certain for completion of your design basis threat and other security revisions?

Dr. MESERVE. We don't have a date certain by which to complete some of these tasks, although these are very much activities that are fully engaging the Commission. Let me say that we have established what we call interim compensatory measures at our facilities, which are significant enhancements on the requirements that the licensees must meet in order to ensure security. That gives us the comfort that we are in an appropriate position to deal with the situation today.

We're in a somewhat different situation than the Department of Energy in that it has the authority to make the changes without going through a regulatory process in doing so, and so DOE has a somewhat easier situation in bringing about changes in the security environment than the NRC.

But nonetheless, we have serious security that is in place and we are examining where we should go in the long term in terms of regulatory changes.

Senator JEFFORDS. Well, it's important that you communicate with us, if there's anything we can do to make sure that there are no roadblocks that are making it difficult for you to meet these time demands.

Dr. MESERVE. Thank you very much, sir.

Senator JEFFORDS. We want to help in every way we can to make sure it can be done expeditiously.

When do you anticipate completion of the evaluation and can this committee anticipate we will fully share in your findings?

Dr. MESERVE. I'm sorry, explore what, sir?

Senator JEFFORDS. The actions that you are taking now.

Dr. MESERVE. Well, let me say, we are prepared at any time to share the actions that we are undertaking. Let me say that they range over a wide variety of areas, and we're not holding up steps in one area to await actions we might take in the other.

As an example, Mr. Markey had raised the question about dealing with a possibility of foreign nationals who might be employed at nuclear power plants. We have worked with the Immigration and Naturalization Service to complete the screening of employees at nuclear plants to satisfy ourselves that there are appropriate people employed at the plants. We have revised the mechanisms for providing access, particularly temporary access to the facilities, to upgrade the security. So that's a step that we have taken. There are a multitude of different areas in which we have taken steps as the circumstances arise.

I can't commit to you exactly when the whole package of steps will be completed. I see this as an ongoing effort that is going to consume the Commission. It may consume the Congress for an extended period.

Senator JEFFORDS. I just want to make sure that we have a relationship where you can freely come to us if you are having anything that is holding you up for which we can assist you.

Dr. MESERVE. I very much appreciate that, sir. We would not hesitate to seek your assistance.

Senator JEFFORDS. It is my understanding in the past you have conducted force on force training exercises against individual facilities no more often than once every 8 years. Do you intend to increase that, and what additional resources do you anticipate for that, if you do?

Dr. MESERVE. Well, let me say, I think that there has been some confusion about the way exercises were conducted before September 11. It is the case that on average, the operational safeguards response evaluations, the OSREs, which is the terminology we use for the actual force-on-force drills, were conducted on average once every 8 years.

But that doesn't mean that the security at the plants wasn't subject to continuing scrutiny. We have resident inspectors that are at every site. There is evaluation that is undertaken at the sites as part of the ongoing inspection efforts to satisfy ourselves that the security requirements are being met.

The force-on-force drills are very hard tests. There have been some assertions made that we found problems at some of the sites at which these tests were undertaken. That's the case. But it's what you'd expect, in that in conducting the tests, the attacking force knew the entirety of the defensive scheme, and in fact the tests were designed to probe those areas where, based on a full evaluation of the defensive scheme, our experts had some questions about the adequacy of the defensive strategy. So they probed exactly at the sensitivities.

I think it's very doubtful that a real attacking force would have the level of knowledge to be able to design an attack in that way. Nonetheless, we are undertaking a reexamination of the entirety of the way in which we're doing exercises and there is a staff paper on the resumption process that is expected to the Commission later this week. We will be starting the tabletop process, I would anticipate, in the summer, then go to the full force on force exercises and resume them later this year. The Commission has not had the opportunity to examine the budgetary implications of increased frequency. But I think it is very likely that the frequency of the exercises will be significantly increased.

Senator JEFFORDS. What is your budget request for fiscal year 2003 regarding additional security measures and how do you anticipate it will be used?

Dr. MESERVE. We received a supplement for fiscal year 2002 of about $36 million. My recollection for fiscal year 2003 is that it was on the order of $29 million or $30 million for our security efforts. That would involve our continuing work on evaluation of vulnerabilities, enhancements of the communications capabilities and security, and our own capacity to deal with confidential information and things of that nature.

I know you're accustomed to hearing about billions of dollars in the security area, and I think it's important to recognize that we are a regulatory Agency, and the substantial part of the costs associated for security are borne by the licensees and, of course, don't appear in our budget. Our licensees have spent many millions of dollars since September 11 dealing with the requirements that we have imposed.

Senator JEFFORDS. Well, thank you. We have some additional questions which we will submit to you for you and your staff to answer. I now turn to Senator Corzine.

Senator CORZINE. Thank you, Mr. Chairman. I appreciate the testimony.

But I have some concerns about how your arguments flow with regard to S. 1746, particularly the federalization of security. Quite frankly, I have a hard time understanding how defensive resources that might be dedicated to preserving the safety of our nuclear power plants would undermine on a relative risk basis other activities in our society. It just strikes me that one has to assess the kinds of problems that could occur, you speak about Indian Point, with 20 million people in the immediate area.

I don't understand the flow of that logic with respect to chemical plants or other kinds of issues. It's either a priority and a serious risk to the public, which I think the public believes it is, or it isn't. I don't think we're talking about relative risk here, we're talking

about a risk of something that generally is accepted as something that could be extraordinarily dangerous, both by identification by our enemies and also by our Nation itself.

Then I add to that your third argument that somehow or another the unintended consequence of detracting from the mission of protecting public health and safety, nothing would be more seriously detracting or contributing to public health and safety than a terrorist attack that tries to use our infrastructure as a weapon. I'm not sure where I come out on the federalization of security forces. But I don't see those arguments holding any weight whatsoever in the context of a major issue with regard to public health and safety.

First of all, I'd like to hear your comments on that.

Dr. MESERVE. Well, you've flagged a few of the arguments that I presented. With regard to the comparative risk issue, I'm not suggesting that we should not take the risks of security at nuclear plants seriously. What I am suggesting is that we have a societal issue, in fact it's one that you raised in your opening statement, that we have other types of facilities at which there are security issues. You mentioned the chemical plants which could have consequences that are equally as severe as a nuclear plant if there were a successful attack.

Somehow or another, we need to develop a strategy for how we defend critical infrastructure of all kinds. The argument is by focusing just on nuclear plants, we may greatly enhance the security in one area, but we may be missing other areas of vulnerability. We need to have some sort of a comprehensive strategy.

That's not the NRC's responsibility. Our responsibility is for the nuclear plants. But I think as a society we have an issue of recognizing we have limited assets to be able to spend on security, and somehow we need to allocate those in some rational way. It's a policy issue which I think is ultimately one for the Congress.

With regard to the third point on the deflection——

Senator CORZINE. You could agree with your presumption that there are other assets in this society that need security, and maybe are not even meeting the kinds of standards that we're now meeting with regard to our nuclear power plants, and still argue that federalization is a good thing because it would provide even enhanced security on those relative merits. I don't know why that would dismiss it as an initiative.

Dr. MESERVE. I think that's a fair comment. But I think it does lead you on the path, if you're federalizing security for nuclear plants, to look around the corner about the implications of that and whether you want to do that for the entirety of civilian infrastructure. It does set you in a certain mode of how you're going to deal with these problems, and it might be appropriate to think about how we deal with the integrated set of issues, rather than just one sub-part of the total problem that we confront.

The third point which I raised was the possibility of the deflection of the NRC. This is just to recognize the reality that if we were to have responsibility for over 5,000 security guards and implementing security plans and ensuring their adequacy, and putting in the equipment that's necessary, we would have an activity that would involve more than twice the number we currently have. We

would become an Agency that would have new and demanding responsibilities in the security that we have not held in the past. I wouldn't want to suggest that we wouldn't succeed, but one of the things we'd have to fight against is that we could not devote the time and attention to the ordinary safety issues that are the matters that we deal with on a day-to-day basis.

Senator CORZINE. It might come with some of the advantages that Congressman Markey talked about, though, whistleblower protection, greater consistency across the Nation, a number of other elements that I think are possible. Since the fundamental issue is protecting the public from the hazards, as you had talked about, radiological hazards, I'm not sure that that isn't a stronger argument for federalization, to make sure that we have a common approach to protecting security.

Let me ask one other question about spent fuel issues, which are certainly a topic of the day. The idea that there aren't force-on-force tests with regard to commissioned plants, is that something that is one of the options that you are considering? Where are you with regard to that? Is that similarly, is there an intention to work on the dry cask storage of spent fuel which, whether it's decommissioned or it's not decommissioned, in the current world seems to be one of the few options that we have that's available and certainly, we've got a major controversy going on in the State of New Jersey about Oyster Creek's storage of spent fuel in dry casks next to one of our major thoroughfares being an issue. Would you give us some comment on both decommissioned plants and protection with regard to dry casks?

Dr. MESERVE. I'd be glad to. Let me just note before I turn to that, however, that things like whistleblower protections are provided now. If there's an allegation of a problem at a nuclear plant, we provide protection to those people. It's a very important channel for communication.

Senator CORZINE. I'll just give anecdotal information. I did, as Senator Voinovich, spent time touring one of the nuclear power plants and spent time with individual guards. They did not—it was the only weakness that I actually saw in this whole process—is that they did not feel that they were plugged into the structure of protection as securely as they might in other ways. So I'm concerned about that.

Dr. MESERVE. It is in fact the case that since September 11, the concern about spent fuel and possible vulnerability of spent fuel has been something that has received a great deal of attention by the NRC. One of the consequences of that is that we have significantly upgraded the security that is provided for spent fuel, and that has been an ongoing process. There is significantly enhanced protection of spent fuel today as compared to before September 11.

We have not worked out all the implications in terms of how that would affect future exercises, but I would anticipate that future exercises will encompass a variety of aspects of the nuclear industry that were not so much the focus before, including spent fuel.

Senator JEFFORDS. Senator Clinton.

Senator CLINTON. Thank you. Thank you, Chairman Meserve.

As I listened carefully to both your testimony and the answers to questions, there were two statements you made that caused me

some concern. It's not a reflection on the NRC so much as it suggests some of the continuing challenge we face to preparing for whatever might happen.

The first is your reference in your written testimony and in response to Senator Corzine that we have to make hard choices because we have limited resources for security. I think that's the wrong way to go about this issue. We ought to figure out what is it we need, not only to secure nuclear power plants but chemical plants and the rest of our critical infrastructure that might be vulnerable to any kind of attack or even accident. We ought to say to ourselves, OK, that is the cost of security in the 21st century.

Now, I understand that there are budgetary constraints that are imposed, but I certainly don't believe we should be limiting ourselves before we even understand completely what our functional needs are and then put price tags on them. That's not an NRC issue, that's a larger congressional issue. But I believe it's imperative that we do an analysis that is as honest and straightforward and as clear about the costs as we possibly can. Then it's up to the Congress and the American public to decide whether they want to bear the costs. But I don't think anyone in any Agency should be in any way constrained about what is needed before we get to that final point.

The second concern I had is in response to a question by Chairman Jeffords. You were talking about the force-on-force exercises, and made the statement that it was doubtful that attackers would have such intimate knowledge of the nuclear power plants. I just think that's a false assumption. I don't think that's an assumption we can make today. I don't believe any of us should be assuming any limited knowledge or capacity on the part of our adversaries.

So I would reverse the presumption and start from a basis that we have to presume that our adversaries know everything there is to know, and therefore we have to take action to protect ourselves against that presumption of knowledge.

Now, with respect to the design basis threat time line, which apparently has been pushed back, it's already been 9 months. Can you give us an estimate today as to how much longer it will take on the design basis threat re-evaluation? And then, after the DBT is revised, how long will it be before we see new security plans at plants? Will it be a matter of months? Will it be a matter of years? Can you give us some ball park estimate as to when whatever you eventually decide is the new design basis threat will be implemented at plants across the country?

Dr. MESERVE. Let me respond, if I may, first to your concerns, because I think there may have been some misunderstanding of what I intended to say. My comment about the need for allocation of resources was not that this has been a constraint on how the NRC has examined the security issue. We have looked at what we have thought has been necessary to provide adequate protection of public safety and we have imposed those requirements without examination of the cost implications of those actions.

My comment was really a broader societal one, and it was in the context that Congress is going to have to decide about how much our society in the broad sense should spend on security as a whole.

It wasn't that I was purporting to make that as a decision or a factor for the NRC to be making.

Second, my comment about force-on-force exercises may also have been misunderstood. Our pre-September 11 DBT did include and does include inside assistance to the attackers. We conducted the exercises, therefore, assuming detailed knowledge of the details of the security plan. You and I may differ as to our sense of how likely it is that a terrorist attacking force would have that knowledge. But we have assumed that knowledge exists, as it's obviously a conservative approach to be taken.

With regard to the design basis threat, this is something that is subject to evaluation by the Commission now. I think that we're talking about a period of months for us to chart a new course. There are implications for the DBT in terms of how in fact we put it in place. There are some components of it that obviously have to be classified, some components may require some regulatory changes. So there are some details that certainly will have to be worked out. How exactly we proceed I think is going to be guided by the deliberations that are underway before the Commission now.

In the meantime, however, I think the most important point is that we have not waited all these months to make sure that we have put in requirements at the plants to significantly increase the security. We did that on a prescriptive basis, in that we made demands for additional guards and additional weapons and additional patrols, as well as consideration of additional modes of attack, with larger vehicle bombs, and things of that nature. Those are all in place at nuclear power plants today.

Senator CLINTON. Well, let me then just clarify, Mr. Chairman, because in your written testimony, you state that requests have been received by the NRC for extensions of the deadline to submit a schedule for implementation of the new orders that were issued back in February. How many such requests for extensions of time were received by the NRC and how many requests were granted?

Dr. MESERVE. There may be some misunderstanding of the testimony on that point. We have probably 30 requirements of that order of magnitude that we imposed on the licensees. We asked them to come in within 20 days and give us the schedule for completion of implementation and we set an absolute deadline of August 31 for the completion of everything.

Some have come in and asked for an extension of the 20-day period within which they would give us the schedule for completion of all of the activities. The requests focused on one particular measure that required some detailed analysis of blast effects in order to determine what engineering changes would be needed. The licensees made the case that it was going to take them longer than 20 days to be able to complete that work. We have not had a request from anyone to extend the absolute outer limit of completing the work, which was August 31. I apologize if there is some confusion in the statement.

Senator CLINTON. Thank you.

Senator JEFFORDS. Senator Boxer.

Senator BOXER. Thank you.

Mr. Chairman, I'm a little concerned about a few things here. I just perhaps want to make a couple of statements and ask a couple of questions. I am asking you, as one Senator who has four nuclear power plants, please don't spend your time on the issue of the broad question of how much we want to spend protecting our people. That is a decision that will be made by the President and by the Congress as we do our budget.

Your job is to tell us what you need to do to protect the people from the disaster that would follow an attack on a nuclear power plant. I want to stress that. We need you to tell us that. I frankly don't need to hear that you don't think you should federalize employees. You know, to me that is an issue that I can go any way on. I just want to make sure the people we hire aren't coming from the cells of Al Qaeda, whether they join the Federal Government or they join a private security force, OK?

So I am worried. Then I put that together with your point, we need to look at all the threats, you said, don't just do something special for the nuclear industry, and you oppose this legislation, which is your right, I respect that. But why don't you want to be a model of safety? Listen to what happened in New York as our colleague, Senator Clinton well knows. The World Trade Centers were designed for fire protection, but according to the engineers, much of the fire protection materials were displaced after the plane hit the building.

Now, you have said in your testimony that nuclear power plants are designed to withstand tornadoes, hurricanes, fires, floods and earthquake. As a result, the structures inherently afford a measure of protection against deliberate aircraft impacts. I would suggest to you, in light of what we learned from the World Trade Center, that kind of rationale doesn't sit well. Are you—I'm not going to ask this question because I think I have to ask other questions in the closed briefing which I will attend. But I am just going to say then that I trust that you are doing computer modeling to see whether the lessons that we learned after the World Trade Center would not apply to this situation. So I'm not going to ask you a question here. In fact, I'm just assuming you are doing this.

But I guess my point is then you say you don't know of any particular threat against nuclear power plants, but yet you made these pills available to the people, which I'm very grateful you did that. So I hear mixed messages. I think the best thing that we can do is to send a very clear message to everyone in the world that we are doing everything we can, as you say, that we are acting conservatively. I agree with that. That means you do more, not less.

You know, the President announced that the nuclear power plants were listed as targets. We've all seen the actual documents that came out of the search of the caves by our brave men and women in uniform. So we know that.

So you're not suggesting that nuclear power plants are not a target, are you, in saying you have no information? That's one question. Second, are you briefed by the FBI and the CIA on a regular basis? Do you feel comfortable with the type of briefings that you are getting, given all the news that is coming out?

Dr. MESERVE. Let me respond to several points you've made. I think that we've gone off in a direction I had not intended. I was

not suggesting that the NRC should make the judgment as to how much society should spend for security. That is clearly something for the Congress.

With regard to the aircraft, we are undertaking a very major effort to examine the engineering features associated with aircraft vulnerability of nuclear plants. That is something on which I would be prepared to give you a briefing in a closed session. That has been a major activity for the NRC and our contractors in the period since September 11, to assess the vulnerabilities and assess mitigation measures that should be taken.

We have very close coordination with the FBI and the intelligence community and we have analysts who are intimately connected with assisting those agencies in evaluating threat information. As part of our advisory system, when a licensee observes something that is occurring at the plant, they report it to us, we coordinate with the FBI and the intelligence community for its evaluation. There is a very close connection involving security experts at the NRC, working with their counterparts in these other agencies, to assure that we have detailed information that we share with each other. My comment that they are not aware of a credible threat directed at a nuclear power plant is consistent with the information that we have been receiving from the intelligence community.

I very much agree with your notion that the nuclear industry should be a model for society in security. I think in fact we are. I would invite all of you to visit a nuclear plant and to see the level of security that exists at these facilities. I think it would be very reassuring to you to visit a plant and see on the ground all that is in place. I can't obviously describe it in this session, but I very much welcome helping to assist you in a visit if that were necessary.

Senator BOXER. Mr. Chairman, I know my time is up, but I just want to make one point. I want to join with you and other members. We want to work with you for, you know, if there is a time when you don't feel that you're getting the information, these are the kinds of things we can help with. I wanted, and I will in written questions, ask you about, I have 100,000 people, far less than Senator Clinton, living within a 10-mile radius of my plants. But I have many, many more living within 50 miles.

So I'm going to ask you to answer in writing if you will, what measures you're taking beyond the 10-mile rim. I thank you very much.

Senator JEFFORDS. Thank you.

Senator Carper.

Senator CARPER. Thank you, Mr. Chairman.

I just want to say to the chairman, thank you for joining us today and for your stewardship and for your testimony.

In your testimony, your written testimony and also I think in part of your oral testimony, you talked about what we can do to help you and your colleagues to enhance the security of our nuclear facilities. You talked specifically about legislation introduced by several of our colleagues which has been introduced in this Congress which has not yet been acted on. In your testimony, you discuss several of the provisions of that legislation.

Can you just tell me, what is the status of that legislation today with respect to having held hearings, scheduled markups? What is the status?

Dr. MESERVE. The NRC legislative proposals on security, passed the Senate last year, but did not succeed in passage through the House. They were re-introduced here again by Senators Smith and Inhofe.

Senator CARPER. Which Senator Smith?

Dr. MESERVE. Pardon me?

Senator CARPER. Which Senator Smith?

Dr. MESERVE. Senator Smith from New Hampshire, who was with us earlier. We have suggested an additional provision to that legislation, which has been described in our testimony. We have not had an opportunity for a hearing in this session of the Senate to discuss this. So there has not yet been a markup on that legislation.

Senator CARPER. Is the committee jurisdiction for the bill this committee?

Dr. MESERVE. I will defer to you as to the jurisdiction of the committees. But I believe that the jurisdiction is this committee.

Senator CARPER. Mr. Chairman, is that correct?

Senator JEFFORDS. I believe that's correct. We always claim it anyway.

[Laughter.]

Senator CARPER. Let's talk about the legislation that has been assigned to this committee over which we have jurisdiction. Take several pieces of it and talk with me about why they are necessary. Also what criticisms of those proposals that you might be aware of, that we should be aware of. Don't go into great detail, but just give me an overview, the key pieces of the legislation, why they're critical and any opposition or criticism of those that you're mindful of.

Dr. MESERVE. I think that I described in my testimony the NRC proposals and why we think that those are wise and how they would be supplemented. So those are things that—they've also—we have solicited and obtained the support of the executive branch for those components of the legislation. So those would be the three parts that were in Senator Smith's and Senator Inhofe's bill as supplemented by the additional component, which is the attachment to my written testimony.

The other bill that is before this committee is the legislation that would govern the federalization of the guard forces. My testimony discussed why we have concerns that we have with regard to federalization.

There's one aspect of that argument that may require some amplification. There is a command-and-control issue that we take very seriously that would arise if the troops were federalized at the commercial power stations. The reason is that it is the obligation of the licensee to assure the safe operations of the facility. So all of the control room staff and so forth are licensee employees taking instructions from the licensee within the regulatory environment that we establish. But nonetheless, it's the licensee that has the fundamental obligation to assure safe operations.

The legislation would take security and rip that out of the responsibility of the licensee and make that a Federal responsibility.

So that some of the employees at the site would work for the NRC as our employees, responsible for security, and the people responsible for safe operations would report to the licensee. You can imagine in an emergency, heaven forbid, if there was a terrorist attack at a facility that took out some equipment, we would need clear command and control as to responsibilities, and what actions needed to be taken. The licensee actions to assure bringing the plant to a safe condition are ones that would have to be coordinated with the security actions. Fracturing the chains of command in those circumstances, we think, would be a serious mistake. That should be integrated. Having that responsibility integrated together in the licensee organization we think is appropriate.

Senator CARPER. I want to go back to the legislation that you mentioned at the outset, and that is the legislation co-sponsored in part by Senator Smith of New Hampshire. Part of my question was, what are the criticisms, maybe the legitimate criticisms of the legislation, and how would you respond to those criticisms?

Dr. MESERVE. I must admit that it has been a complete puzzle to me in that the NRC for years has been pursuing this legislation. It passed the Senate last year, and I have not heard any criticism of the legislation, but we don't seem to be able to get it done.

Senator CARPER. Why do you think that is?

Dr. MESERVE. I have no idea. I think that part of the concern may be that it is not seen as dramatic enough. I don't know. It seems to me that these are changes that are appropriate steps to take and they are ones that I would urge Congress to enact. I am not aware of any criticism of them.

Senator CARPER. I would just say to my colleagues, we've talked a lot, seen a lot about reports that came out of the FBI, and I guess it was in Minnesota and Phoenix and things that we're mindful of and in retrospect we should have paid more attention to. Someone should have done something as a result of that. I would just hope here in this case that we not be guilty of not pursuing an agenda once we've discussed it and decided it's worth pursuing, that we not be negligent.

Senator JEFFORDS. I thank the Senator for his words. I commend you for your testimony and it's been an enjoyable experience to work with you. You and your members have been very forthright. We will be having another closed session, so that any questions that the members had that they didn't feel appropriate to ask can be answered.

Thank you, and we'll move to the next panel. I also ask unanimous consent that this Nuclear Security General Aviation is Not a Threat document by Senator Inhofe be made a part of the record. Without objection.

[The information referred to follows:]

NUCLEAR SECURITY—GENERAL AVIATION IS NOT A THREAT

(A Report by Nuclear Safety and Security Consultant Robert Jefferson)

Summary: The Aircraft Owners and Pilots Association commissioned internationally recognized nuclear safety and security expert Robert M. Jefferson to examine the potential threat from a general aviation aircraft to a nuclear power facility. Jefferson concluded that even if a general aviation aircraft were loaded with explosives, it "would fail to produce the damage necessary to cause any radiological involvement of the public. Certainly, if a terrorist organization were inclined to undertake

such an effort, a light aircraft would quickly be dismissed as a possible vehicle due to its impracticality."

Specifically, Jefferson's study concluded that:

A general aviation aircraft could not penetrate the concrete containment vessel protecting the nuclear reactor. While many containment vessels were not specifically designed to withstand an aircraft impact, all vessels are designed to withstand the impact of tornado-propelled "missiles." Such missiles exceed the force of a GA aircraft impact.

In one test, a 45,000-pound F4 fighter was propelled into simulated containment wall at over 450 miles per hour. The aircraft was destroyed; the concrete wall was "uncompromised." (An F4 is 18 times heavier than a Cessna 172, the most popular GA aircraft. Even in a dive, a Cessna 172 can't go much faster than 200 mph.)

Even a large commercial airliner such as a Boeing 757 would not likely penetrate the outer containment vessel of a nuclear power plant. But even if it did, the reactor vessel, which contains the nuclear fuel, would remain intact, according to Jefferson.

A general aviation aircraft loaded with explosives would not likely cause a release of radiation. Most GA aircraft have payloads of less than 1,000 pounds. Any explosives would have to be carried in the passenger or cargo compartments. Even if a terrorist were able to rig a contact fuse on the nose of the aircraft, the explosion would be several feet away from the reactor containment building. That distance would reduce the damage to the point that even if the containment vessel were breached, there would be little or no damage to the reactor vessel inside.

An aircraft attack on auxiliary buildings would not likely cause a release of radiation. Nuclear power plants are designed so that a "single failure" cannot cause the loss of critical safety systems. Support systems are not co-located at a single point. An aircraft crash could not destroy every safety and control system at once.

A GA aircraft could not ignite the Zirconium cladding on spent nuclear fuel. Spent nuclear fuel is stored in deep pools, covered with up to 50 feet of water. The pool walls are concrete and steel, The pool itself is a relatively small target. Even if the aircraft could hit the pool, it would not likely disturb the spent fuel. To ignite the fuel cladding, the aircraft would first have to displace all the water, and then create a fire that would burn for about 20 hours. That would take some 176,000 gallons of aviation gasoline, The typical GA aircraft carries 60 gallons of fuel.

Following the attacks of September 11th, the United States government has struggled to identify potential threats and targets for future terrorist activities. Potential targets identified by security officials have included shopping malls, banking institutions, water reservoirs, federal buildings, fairs, festivals, sporting events, and nuclear facilities. Some public officials have focused their attention on the potential use of light, general aviation aircraft to launch attacks against national assets. Specifically, claims have been made concerning the nation's nuclear power plants and their theoretical vulnerability to attacks from light aircraft.

As a result, the government and others continue to examine the issues surrounding both real and perceived weaknesses in nuclear security. One such example of these efforts is the study initiated by U.S. Representative Edward J. Markey titled *Security Gap: A Hard Look At the Soft Spots in Our Civilian Nuclear Reactor Security.* In this "study", Representative Markey, who has historically proven to be an opponent of nuclear energy, attempts to establish a supposition that general aviation poses a national threat based on its potential for use in strikes against nuclear power plants.

In reality, general aviation is a safe and important component of the United States transportation system. Moreover, light, general aviation aircraft do not pose a threat to domestic nuclear power plant security, and the facts presented in this report explain and illustrate this while refuting these accusations.

NUCLEAR FACILITY DESIGN STANDARDS

It has been suggested that the design standards of nuclear power plants offer inadequate protection in resisting airborne attacks. One point raised was the fact that few nuclear reactor facilities were designed specifically against threats from light, general aviation aircraft. This point is misleading, because it overlooks the fact that by their very design, nuclear power plants are inherently resistant to such strikes. For example, in the late 70's, the Japanese government conducted a test in which a 45,000-pound F-4 Phantom jet was impacted at over 450 miles per hour into a concrete wall about the thickness of the containment vessel of a nuclear power plant. The results were dramatic. While the aircraft was completely destroyed upon impact, the integrity of the wall remained uncompromised. To relate this to general aviation, it is important to note that the F-4 Phantom jet weighs 7 times as much

as the average general aviation aircraft and was flown into the wall at speeds exceeding two and one half times that of a general aviation aircraft.

Parallels can also be drawn to one of the standard accident scenarios used in the design of nuclear power plants, the impact of tornado-propelled missiles such as power line poles. In a series of tests conducted by Sandia National Labs in the 1970s, wooden power poles were hurled into a concrete target (simulating a containment wall) at speeds up to 120 miles per hour. The power pole was, in each case, reduced to splinters. However, the thick concrete targets were merely polished at the point of impact. A power pole impacting perpendicular to the surface of the concrete is certainly as effective or a more effective missile than a light (aluminum), general aviation aircraft.

These tests serve to support a statement made by Chairman Richard Meserve of the U.S. Nuclear Regulatory Commission in which he remarked, "Nuclear power plants are among the most formidable structures in existence. Nuclear power plants are certainly far more capable to respond to an aircraft attack than other civilian facilities." This is not to imply that such structures are indestructible but that they are indeed very robust hard targets,

The Markey report implied that a general aviation aircraft impact to the containment structure of a nuclear reactor could cause a full-scale core meltdown. However, engineering data, supported by "real-world" tests, refute these claims. The conclusions to be drawn are clear. Given that aircraft size and speed are two crucial elements in the damage equation, a light, general aviation aircraft weighing less than 6,000 pounds traveling at under 300 miles per hour simply lacks the energy to cause significant damage. In comparison, a commercial aircraft like the Boeing 757 weighs upwards of 250,000 pounds and travels at speeds in excess of 500 miles per hour. Most experts agree in the event an aircraft similar in size to a Boeing 757 airliner were to strike a nuclear power plant, in all likelihood, it would be unable to penetrate the outer containment vessel. But, even if it did manage to do so, the reactor vessel, which contains the nuclear fuel, would remain intact, eliminating the threat of public exposure to radioactive materials.

Others have speculated a light aircraft laden with explosives might be used to breach a reactor containment building, again implying this would result in a full-scale core meltdown. Again, the capabilities of light aircraft argue against such an attack being successful. Very few general aviation aircraft have a payload as high as 1,000 pounds, even if flown by a small pilot and carrying minimum fuel. Further, the explosives would be carried in the cabin placing them at a distance from the point of impact. Modem explosives must be detonated, and impact has a small probability of causing detonation. So, even if the terrorist rigged a contact fuse on the nose of the airplane to set off the explosives, there would be several feet between the reactor building and the detonation. That distance would reduce the damage to the point that, even should the containment building be breached, there would be little damage inside (and no aircraft fuel to cause a fire). Again, such an attack would be an exercise in futility as there would be no radiation release and no public involvement.

Hypothetically, a larger aircraft (not the typical general aviation aircraft) carrying thousands of pounds of explosives may be able to penetrate the outer containment vessel of a nuclear power plant, causing severe damage to systems inside. However, this would affect an immediate shutdown of the reactor, which would remain intact in such a scenario.

It has been asserted that, "NRC recognizes aircraft crashes may result in multiple-failure initiating events, and that non-safety system malfunctions could contribute to such events." The regulations for analyzing the safety of nuclear power plants require every conceivable element that could contribute to safety degradation must be considered a "safety system." Further, nuclear power plants must be designed to prevent "single failures," no matter how they propagate, to cause loss of critical safety systems. It is inconceivable that the crash of a general aviation aircraft could accomplish such broad safety problems in a nuclear power plant.

Others have postulated that it would only take two hours after loss of "on-site power" at a nuclear facility for core damage to begin. This assumes not only loss of on-site power but also loss of standby power and loss of emergency core cooling. Piling one miniscule probability on top of another quickly stretches the limits of believability. These entities have also proposed that support systems and auxiliary buildings as also vulnerable to a successful attack. This assertion assumes that all support systems are co-located at a single point, allowing an aircraft crash to destroy everything at once. This is a simplification that serves the alarmist argument, but it is simply untrue.

SPENT FUEL STORAGE AND UNSUBSTANTIATED RISK OF FIRE RESULTING FROM THE IGNITION OF NUCLEAR MATERIALS

Another possibility discussed regarding nuclear power plants involves the scenario of an aircraft crash somehow igniting the Zirconium cladding on the nuclear fuel elements. Unlike Sodium, which bums on exposure to air, or Magnesium, which ignites at relatively low temperature, solid Zirconium will not burn. Zirconium doesn't melt until approximately 3,330 degrees Fahrenheit. However, fine Zirconium shavings or dust will bum. In order to cause a Zirconium fire, it would be necessary for a terrorist to fracture the nuclear fuel cladding into small pieces before subjecting it to a source of ignition. Even assuming that the Zirconium was fragmented into chips, the spent fuel elements are either under water (upwards to 50 feet in many cases) or contained in massive shielding systems. This means that it would take an incredibly large quantity of heat to raise the temperature of the Zirconium and the surrounding shielding to the point of ignition.

Moreover, since aviation gasoline burns at approximately 2,000 degrees Fahrenheit, it would take an extended period of time to achieve the temperatures needed to ignite Zirconium shavings. A fire that persists for a long time (twenty hours has been mentioned) requires a substantial fuel source. In an open configuration, such as might take place on the ground surrounding a dry storage facility, gasoline will burn at a rate close to ⅓ inch per minute (i.e., a large pan of gasoline burning will reduce the level of the fuel in the pan about ⅓ inch per minute). Given that even the largest light aircraft carries less than 300 gallons of fuel, the possibility of such a condition is practically non-existent.

Further, to provide an optically opaque fire and transmit as much heat as possible, the flames have to be at least ten feet thick. Thus, to engulf a dry storage cask in flames (one model is about 10 feet in diameter, others are larger) would require a pool at least 30 feet in diameter. At ⅓ inch a minute, this would consume almost 150 gallons a minute even if there were no runoff. At that rate, a 20-hour fire would consume 400 inches of fuel, or slightly over 176,000 gallons (equaling one million pounds). Not even the largest military tanker can transport that much fuel. Using the figure of 20,000 gallons of fuel mentioned in the Markey report, a fire 30 feet in diameter would bum for a maximum of about 2.3 hours. Since light general aviation aircraft carry only a fraction of the cited fuel volume plus, considering runoff, the resulting fire from a small airplane crash would be mere minutes. The possibility of a fuel explosion igniting the Zirconium is refuted by carefully reviewing the dynamics of such an event. The temperature of a fireball is again about 2,000 degrees, but the exposure lasts for only milliseconds. This would produce insufficient heat to raise the temperature of the Zirconium more than a degree or so even if directly exposed to the fireball.

It is hard to conceive that even a deliberate attempt to continuously provide additional combustible fuel to the fire over a prolonged time could ever ignite the Zirconium cladding on the reactor fuel elements. If the combustible fuel is to be delivered by an aircraft impacting the facility, the crash will disburse the fire over a wide area, and, thus, present absolutely no hazard to the spent fuel in either the fuel pool or the dry storage casks.

ANTI-AIRCRAFT DEFENSE UNWARRANTED AND INEFFECTIVE

One of the most unreasonable ideas presented to the public calls for anti-aircraft capabilities around nuclear power plants. The idea begs careful analysis focused on the potential for the unintended consequences of shooting down an innocent civilian aircraft. The claim that other countries have adopted this strategy does little to quell the fears of general aviation pilots or the air traveler. The volume of general aviation traffic and the freedom with which it is utilized is unique to the United States, rendering such comparisons of little value. The entire concept is flawed for a more significant reason. The federal government has a finite amount of capital available to protect its citizens, and, when it is spent in support of irrelevant strategies (leaving the more critical considerations unprotected), the nation becomes far more vulnerable to terrorist threats.

ATTACK BY LIGHT GENERAL AVIATION AIRCRAFT IMPRACTICAL

General aviation aircraft would prove ineffective in an attack, similar to those carried out on September 11th. The World Trade Center towers and the Pentagon were large, conspicuous landmarks and, as such, were more easily targeted in an aerial attack than would be a nuclear power plant. The success of these attacks was predicated on the use of large, turbine-powered commercial aircraft with immense fuel carrying capacity. A general aviation aircraft, at only a fraction of the weight, speed

and fuel load, would be unable to inflict damage on the scale witnessed on that tragic day.

In spite of this fact, concerns have been raised regarding the perceived threat of general aviation to nuclear power plants. For example, it was reported that 21 power plants lay within 5 miles of an airport, implying that these airports present an inherent threat based on their proximity to nuclear power plants. Common sense would dictate that proximity is hardly the issue in such cases. It is unlikely that a terrorist would rule out a given target based on the travel time involved in reaching it. The reality is that the proximity of these power facilities to active airfields does not increase their exposure to terrorist threats.

However, since the point has been raised, these airports (many of which are small general aviation facilities) serve as excellent examples as to why general aviation is not a threat. The light aircraft flown into small general aviation airports throughout the United States are ill suited for terrorist use, given they lack the weight, speed, fuel and load carrying capacity to do significant damage to a target.

Of the 23 airports listed in the government study, 5 are so small that they do not even appear in AOPA's *Airport Directory, a comprehensive compendium of civil airport data.* Eleven of the airports are small private airstrips, most with turf (unpaved) runways. Five of the airstrips have runways too short to permit operations by large, turbine-powered aircraft. In reality, only two of the airports listed in the report have runways large enough to allow operation by large, transport-category aircraft. One of these is located proximate to the Three Mile Island facility in Harrisburg, Pennsylvania, which was specifically designed to sustain an impact from a large aircraft. The Markey report implies to a large degree that nuclear security concerns rest squarely with general aviation. However, scientific evidence to the contrary demonstrates that the concerns raised have no basis in fact and are completely unwarranted.

CONCLUSION

General aviation is a safe and important part of the United States transportation system. For the reasons cited in this report, it is unlikely that a terrorist would choose a light, general aviation aircraft to threaten a nuclear power plant. The result of such an endeavor would fail to produce the damage necessary to cause any radiological involvement of the public, Certainly, if a terrorist organization were inclined to undertake such an effort, a light aircraft would quickly be dismissed as a possible vehicle due to its impracticality.

Senator JEFFORDS. Thank you, Mr. Chairman. I enjoy working with you. We'll be back with you soon.

Dr. MESERVE. Thank you.

Senator JEFFORDS. Our next panel consists of five witnesses. Our first witness is David Lochbaum, a nuclear safety engineer with Union of Concerned Scientists. Our second witness will be Mr. Jack Skolds, chief nuclear officer at Exelon Corporation. Next we will have Danielle Brian, executive director of the Project on Government Oversight. After Ms. Brian, Donna J. Hastie, a specialist in emergency preparedness, will testify. Finally, Dr. Irwin Redlener, president of the Children's Health Fund, will finish our committee's testimony this morning.

Each witness is requested to keep his or her testimony to no more than 5 minutes. After the conclusion of all testimony, members will be free to ask questions. Please, speak clearly into the microphone to all of you. Sometimes it's difficult to hear from here. We greatly appreciate all of your time and your willingness to share your expertise with the committee and thank you for being here.

Mr. Lochbaum, please proceed with your testimony.

STATEMENT OF DAVID LOCHBAUM, NUCLEAR SAFETY ENGINEER, UNION OF CONCERNED SCIENTISTS

Mr. LOCHBAUM. Good morning, Mr. Chairman and members of the committee. My name is David Lochbaum. I have been the nu-

clear safety engineer for the Union of Concerned Scientists since October 1996. Prior to joining UCS, I worked for over 17 years in the nuclear power industry.

The issue before you today is the security of our nuclear facilities. As with many nuclear power issues, we have firmly staked out middle ground on this one. We disagree with industry representatives who contend that nuclear power plants are hardened structures, virtually immune from attack, and who claim that the health consequences from a successful attack would be insignificant.

But we also disagree with those who contend that nuclear power plants are an undue hazard that can only be dealt with by immediately shutting them down. We view nuclear power plants as being vulnerable to sabotage and advocate taking all reasonable steps to reduce the chances of a successful attack and to minimize the harm from a successful attack.

We are therefore pleased to support the legislation proposed in S. 1586 and S. 1746. Once enacted into law, these bills would provide millions of Americans with greater protection against nuclear sabotage.

The Price Anderson Act proves the need for adequate security. Price Anderson was created because the liability from a nuclear plant accident could be so large as to prevent private insurance companies from underwriting that risk. Congress is in the process of renewing Price Anderson because nuclear power plants remain immense risks, hazards. The chemical industry and other industries do not receive comparable Federal liability protection.

The 1975 fire at the Browns Ferry nuclear plant illustrates their vulnerability. A worker checking for air leaks with a candle started a fire that burned out of control for nearly 7 hours. The blaze disabled all of the emergency core cooling systems for Unit 1 and nearly all of these systems for Unit 2. Only innovative efforts by workers to cobble together a makeshift scheme for adding water to the Unit 1 reactor prevented a core meltdown.

It is not farfetched to think that one or more attackers armed with explosives or a large aircraft fully loaded with jet fuel might be able to cause more damage than one worker with one candle. While all provisions of both bills have merit, the most valuable portion of the proposed legislation is section four of the Nuclear Security Act. This section requires the Nuclear Regulatory Commission to conduct force on force testing at each nuclear facility at least once every 2 years. The force on force tests pit mock intruders against the plant's barriers and defenders.

How do teachers evaluate their students' academic performance? Do they use a checklist to verify that students attend classes and have textbooks, pencils, paper and calculators? No. They use tests that demonstrate their students' capabilities. Textbooks and class attendance are the pathway to knowledge, while tests are the best measure of progress along that pathway.

Likewise, security checklists show that a nuclear power plant has gates, guards and guns. But they don't provide enough insight on progress toward security.

Force on force tests demonstrate whether adequate security has been achieved. Frequent demonstration of adequate security performance is invaluable. The Nuclear Security Act also requires po-

tassium iodide stockpiling for people living within 50 miles of each nuclear facility. This provision is urgently needed to eliminate current inequities.

That potassium iodide has value is clearly demonstrated by the fact that it would be distributed to nuclear plant workers and Federal, State and local officials responding to an accident. It would seem unwise not to provide equivalent protection for Americans living downwind of the facilities. But according to the NRC, only 13 States currently stockpile potassium iodine for people living within the emergency planning zones. The NRC protecting only some Americans makes about as much sense as the U.S. Coast Guard requiring lifeboats in only some cruise ships.

Expanding the potassium iodide inventory to cover a 50-mile radius, rather than a 10-mile radius, increases the likelihood that all people in harm's way will be protected. No matter where the line is drawn, the question will remain about people living at N plus 1 miles. The 50-mile radius seems to be a reasonable compromise. Even if conditions affect people 60 or 70 miles downwind of a plant, potassium iodide upwind could be redirected to the folks that are in harm's way.

The proposed legislation would greatly improve nuclear facility security. The only element potentially missing from the proposed legislation is adequate protection against insider sabotage. There's language in the Nuclear Security Act touching upon insider sabotage, but it does not specifically address factors such as the two-person rule for vital areas, use of in-plant security cameras, armed security guard escorts for visitors to vital areas, integration of security considerations into normal plant safety decisionmaking, and training for operators when responding to acts of sabotage.

UCS recommends the committee consider strengthening the proposed legislation by explicitly incorporating these items, obtaining a firm commitment for the NRC to include these items in their top to bottom review, or by providing clear guidance on expectations regarding these items in the committee reports that accompany these bills.

In closing, UCS supports S. 1586 and S. 1746 and hopes that both bills become law. I have testified before Congress several times. Until now, it has been always to oppose this or to complain about that. It is a welcome change to appear today in full support of these bills. The worst part about these bills is they address reasonable steps that could be taken but have not yet been taken. The best part about these bills is that they will solve problems once they're enacted. Thank you.

Senator JEFFORDS. Thank you. Very good. You were almost right on the 5 minutes. I appreciate that.

Mr. LOCHBAUM. I practiced more than once.

[Laughter.]

Senator JEFFORDS. Mr. Skolds.

STATEMENT OF JACK SKOLDS, CHIEF NUCLEAR OFFICER, EXELON NUCLEAR

Mr. SKOLDS. Thank you, Mr. Chairman and members of the committee. Thank you for the opportunity to appear before you today to discuss this important issue.

I would also like to thank several members of the committee for investigating the issues of nuclear plant security first-hand. Senators Graham, Clinton, Corzine, Smith, Voinovich and Specter have all toured nuclear power plants to receive briefings on plant security since September 11, as have several members of the committee's staff members. In fact, Senator Specter has toured three of the five nuclear power plants in Pennsylvania, including two Exelon facilities.

I will focus my comments today on the legislative proposals before the committee, though my written statement provides extensive background on security at commercial nuclear plants in the United States after September 11 and recommendations that the Federal Government should take to enhance security.

Before addressing the legislation pending before the Senate, however, I would like to make a few comments. We believe that there are people interested in doing harm to nuclear power plants. We have the most at risk, and we take this issue very seriously. The nuclear power industry is absolutely committed to ensuring that our plants are operated safely and that all necessary steps are taken to protect the health and safety of the public and our employees. Thousands of our employees live within the 10-mile EPZ surrounding the nuclear plants and no one has a greater interest than we do.

Second, commercial nuclear power plants are the most well protected industrial facilities in the United States today and in fact, many businesses are turning to us as a model for security and emergency planning at their industrial complexes. Third, as the United States acts to strengthen homeland security in light of the new threats to the Nation's security, it's imperative that Federal, State and local officials work cooperatively with nuclear plant operators to build on the solid foundation of emergency response capabilities that existed prior to September 11.

Let me turn my specific comments to the legislation. On S. 1586, the nuclear industry is on record as supporting the provisions included in S. 1586. While some NRC licensees have recently expressed concern about the possible legal implications of providing wide ranging arrest authority to private security forces, the industry stands ready to work with the committee to resolve these concerns.

Concerning S. 1746, it makes sweeping changes in the manner in which security at commercial nuclear facilities is addressed. Unfortunately, this legislation puts the proverbial cart before the horse by mandating radical legislative solutions to issues that have not been identified as problems.

Section 3 of the bill would substitute a statutorily mandated design basis threat for that developed by the NRC and would federalize security at commercial nuclear power plants by establishing a nuclear security force within the NRC and by requiring the Commission to develop a security plan for each of the Nation's sensitive nuclear facilities. Section 3 also levies a tax on sensitive nuclear facilities to fund a newly created nuclear security fund.

Before legislating the details of a design basis threat, Congress should first direct the President to conduct a comprehensive review with the various energy, intelligence and law enforcement agencies

of the various threats facing nuclear power plants. Once such a review is completed, the NRC should be directed to adjust the design basis threat accordingly.

With regard to federalization of nuclear security forces, Exelon strongly opposes such a drastic and unjustified change in the security requirements. Security forces at nuclear power plants are highly trained professionals. Substituting Federal employees to safeguard sensitive nuclear facilities may actually degrade security. We believe that the integrated command and control of plant security forces is an important aspect of our operations, and plant operations personnel, and it's essential to ensure the protection of the public health and safety.

Similarly, requiring the NRC to develop the security plans for each of the Nation's sensitive nuclear facilities within 180 days would be a significant task that would result in an unnecessary and perhaps dangerous diversion of Commission resources. As with federalization of the nuclear plant security forces, requiring a federally developed security plan for several dozen sites is unnecessary given the lack of evidence that the current system is deficient.

Finally, a tax on nuclear power plant operators would fund a new and unnecessary Federal bureaucracy and would be unparalleled in the private sector. Simply put, this $700 million tax would fund an activity that is effectively managed by the private industry.

Section 4 establishes an operation safeguards and response unit at the NRC. The existing NRC operational safeguards and response evaluations, or OSRE, has been applied and interpreted in an inconsistent and at times arbitrary manner. Anti-nuclear groups and the NRC have at times inaccurately characterized licensee performance under the existing program by claiming that we have failed.

Now, these programs have been conducted for approximately 15 year. If the report had been that we had found no areas for improvement, I'd be very concerned. There are areas for improvement, and these exercises are very rigorous, these exercises are very detailed, and they're intended to identify areas for improvement.

Senator CLINTON [assuming the chair]. Mr. Skolds, you'll have to sum up, you're at the end of your time.

Mr. SKOLDS. All right. I'll stop right there then. Thank you for the opportunity.

Senator CLINTON. Thank you very much.

Ms. Brian.

STATEMENT OF DANIELLE BRIAN, EXECUTIVE DIRECTOR, PROJECT ON GOVERNMENT OVERSIGHT

Ms. BRIAN. The Project on Government Oversight, an investigative organization that works with insiders in order to improve public policy, first began investigating nuclear security by looking at the Department of Energy's nuclear weapons facilities. This work caused security guards at commercial reactors, current and former NRC security officials and contractors with military experience to contact POGO about inadequate security at commercial nuclear plants.

My testimony is based on information and documents from these insiders. I must strongly emphasize that our sources of information

are not anti-nuclear. In fact, most of them have spent their entire professional lives working and supporting the nuclear industry. We applaud the sponsors of Senate Bills 1586 and 1746, the Nuclear Security Act, for several important provisions contained in these bills.

The NRC's current DBT is wholly inadequate. According to published sources, the NRC's DBT requires protection against fewer than a handful of outside attackers. This is absolutely absurd, given the September 11 attack. I'd suggest that the fuss about disclosing the already very public number of attackers nuclear plants are currently planning to defend against appears more that the NRC and utilities are embarrassed about this ridiculously low number.

Half the nuclear power plants cannot even protect against these paltry current threat assumptions. Let me caution the committee, despite what Chairman Meserve said earlier, these tests are seriously dumbed down. They are not hard tests. They first do not go beyond this paltry threat assumption. I outline in my written testimony many of the other artificialities, including, as I think you, Senator, mentioned, that they give 6 to 10 months advanced warning, which obviously a terrorist would not do.

Can the guard force protect the integrity of the plant from a suicidal terrorist attack? The statistics say no. How much worse would those statistics be if the DBT accurately represented the threat we now face?

The NRC has never tested a power plant guard force's ability to protect spent fuel pools, possibly the prime target of a terrorist attack. It is estimated that a terrorist could penetrate the fence line and breach a secured spent fuel pool in less than 60 seconds. We encourage the NRC to immediately recognize spent fuel pools as a primary terrorist target.

Military special forces have told us about obvious vulnerabilities at most nuclear power plants that I would be very happy to discuss with Senators or staff. I'm uncomfortable, however, outlining them in public testimony. In very general terms, a terrorist carrying an explosive could blow a sizable hole in the reinforced concrete around a spent fuel pool. At one third of our reactors, the spent fuel pools are above ground, where they could be targeted from outside the fence line, resulting in the immediate release of high levels of radiation, quickly turning into an uncontrolled radioactive fire.

The Nuclear Security Act requires a plant to increase security of these spent fuel pools. In the meantime, we recommend barriers and delay mechanisms to supplement security until the spent fuel is placed in dry casks underground. Guards at one plant told POGO that their only firearms training was firing 96 rounds or shots with their handguns, and far fewer with their shotguns. Standard training requires only that they can stand and hit a stationary target 25 years away. They have no training shooting on the run at a moving target.

Recently, some of the facilities, because of the more advanced attention to this issue in the last few months, have introduced a running man across the target, where the standing shooter is allowed to have 10 shots trying to hit the target. Guards have admitted that their training is so inadequate in the face of a real terrorist

attack, many would simply use their guns to protect themselves while they escaped.

Additionally, nuclear power plant guards are severely outgunned. Even the NRC's DBT assumes that attackers will be armed with automatic weapons and explosives. Yet many guards are equipped only with shotguns and revolvers. Contrary to the ads in the Washington Post, placed by the nuclear industry lobbyist, NEI, guards do not normally wear flak jackets nor carry semi-automatic weapons. At one-third of nuclear power plants, the guards only have access to shotguns that are locked up at a distant central location.

POGO strongly agrees with the Nuclear Security Act's provision reviving the OSRE program and requiring that mock attacks occur no less than every 2 years. Chairman Meserve also mentioned that the NRC is in the process of revitalizing the OSRE process of testing facilities. I'd like to mention that the NRC has twice closed that shop down because they didn't like what they were finding out. I would not frankly trust the NRC without congressional involvement to make the decisions on how they are going to revive that office.

Anti-terrorism experts tell us that the worst enemy of any guard force is the daily grind of nothing happening. A simple solution is to add unannounced tests, which aren't happening right now by the NRC.

Senator CLINTON. You'll have to wrap up.

Ms. BRIAN. Yes. POGO believes the goals achieved by federalizing could instead be accomplished through the following improvements. Security guards are among the lowest compensated employees. I spoke with one last night who is getting $2 less an hour than custodians at his facility. Guards must be given whistleblower protections. Despite what the chairman said, only Federal employees have legal whistleblower protection. Currently, utility and security subcontract employees do not.

The Federal Government's expanded role should be to provide independent oversight rather than managing security and we strongly recommend taking the security oversight function out of the NRC. I'd also just like to conclude that we support S. 1586 as it's intended to remedy some obvious failures in the ability of guards to protect against attacks.

Senator CLINTON. Thank you very much.

Ms. Hastie.

STATEMENT OF DONNA J. MILLER HASTIE, EMERGENCY PREPAREDNESS SPECIALIST, MARRIETTA, GA

Ms. HASTIE. Thank you, Senator Clinton.

I appreciate the opportunity to talk to you today about the status, the current status at commercial nuclear power plants in the United States. I'd like to make three points today.

First, commercial nuclear power plants have comprehensive, well developed and regularly tested emergency preparedness programs. The full scope of regulation pertaining to our nuclear emergency programs would cover a length of about 28.7 feet. The bibliography alone for these plans is well over an inch thick. I've provided a description in my written testimony of the comprehensive programs.

Currently, there is strong inter-agency coordination among the Federal, State and local agencies and with the utility to carry out their specific response. I believe that many of these Federal agencies are under the oversight of this committee.

Nuclear power plants have to participate in an independently reviewed, full scale exercise every 2 years. We have conducted over 1,000 full scale exercises in the past 25 years. We provide training to local workers through the cooperation of State agencies, and that includes firefighters, police, medical personnel, ambulance personnel, school personnel, school bus drivers and even local farmers. These integrated training programs are an excellent way that we build trusting relationships with the local communities that surround our power plants and also credibility with our State and Federal regulators and personnel.

Second point is that the emergency preparedness programs are founded on a strong scientific and technical basis. This includes the two emergency planning zones around nuclear power plants. In 1976, a joint EPA and NRC task force developed a planning basis for offsite emergency preparedness. The task force performed a detailed analysis of the full range of possible reactor accidents to determine the appropriate distances from the plant that should be used for planning purposes. The task force received substantial input from all Federal agencies and relevant State agencies that would be responsible for implementing these protective actions.

Following a 2-year plus study, the task force concluded that it was highly unlikely that prompt protective actions for the public would need to be taken beyond the 10 miles. That study led to the 10-mile and the 50-mile emergency planning zones that are currently used today. We know our emergency response plans work. Because emergency response plans developed by nuclear plants have been used for many non-nuclear emergencies.

Evacuation of 10,000 people from Cedar Rapids, IA, following a fire, used the Dwayne Arnold plant. There were 17,000 residents in St. Charles Parish in Louisiana that were evacuated following a leak from a nearby chemical plant, using Intergy's water for a three nuclear power plant plan. We've had hurricanes, evacuations caused by a volcano at Mount St. Helen's. We've used Hurricane Andrew at Turkey Point. So we have tested these plans many times in real events. We have never had to use them for a nuclear plant evaluation.

Over the years, as new insights and experience regarding reactor safety have been analyzed, the 10- and 50-mile planning zones have continued to be found valid for our emergency preparedness programs. I am not aware of any new scientific or technical information, even post-9/11, that would support fundamental changes to the existing 10- and 50-mile planning zones.

My third point is brief. Continual learning is an integral part of each of our emergency preparedness programs. We have a commitment to excellence throughout the industry, coupled with continued training, self-assessment and testing that has produced a high level of preparedness.

In summary, in the past 30 years, the nuclear industry has conducted, as I said, over 1,000 full scale graded exercises. We have

evidence that our emergency preparedness programs are effective. We continue to strive for new levels of safety.

I thank you for the opportunity today to provide testimony at this hearing. I am sure that everyone here shares a common goal, and that is to protect the health and safety of the public. That's the commitment that binds us all. Thank you.

Senator CLINTON. Thank you very much, Ms. Hastie.

Dr. Redlener.

STATEMENT OF DR. IRWIN REDLENER, M.D., PRESIDENT, THE CHILDREN'S HOSPITAL AT MONTEFIORE AND PRESIDENT, THE CHILDREN'S HEALTH FUND

Dr. REDLENER. Thank you, Senator Clinton and Senator Carper. I'm also pleased to be here, and I'm anxious to be supportive of the Nuclear Security Act and so glad that it has been proposed.

As a pediatrician, and as a public health expert who's been involved in public health for 30 years, I have been increasinly involved locally in New York and nationally in a variety of efforts with respect to the public health and general preparedness planning for ongoing terrorism. Specifically, among my most important concerns now has been the growing awareness of potential terrorist attacks on nuclear power facilities. Clearly, the events of September 11 demand a reexamination of all aspects of the vulnerability and security of these facilities. The fact is that because of the potential human consequences of a successful attack on power plants, this issue represents one of the most important public health challenges of our time.

Here in a nutshell is what we know about the public health and health risks of nuclear attacks. Depending on the specifics of the projected attack scenarios and the extent of damage to a reactor, its support systems and/or the spent fuel containment systems, immediate civilian fatalities can range from 100 or so to 5,000 or more plus long term excess cancers from radiation exposure ranging at least into the tens of thousands. Moreover, nuclear terrorism is in a special category of psychological horror, even different from chemical and other kinds of violent terrorist attacks, because nuclear terrorism is evocative of nightmare scenarios that we've lived with for decades.

In addition to the human toll studies, which have been done by many independent experts, other experts have also concluded that thousands of square miles could be contaminated and uninhabitable for years or decades under a variety of possible nuclear plant attack scenarios. In sum, the economic, psychological and societal consequences of such an event in a major population center would be almost incalculable.

For all of these reasons, it's imperative that we take necessary and prudent steps, as we would with any other kind of major public health threat, to reduce the likelihood of a successful act of terrorism against a nuclear power plant.

There are some steps that I believe can help us assure the public that we're dealing with this challenge preventively and effectively. Much of this is addressed in the legislation at hand. First and foremost, I believe strongly that the security at nuclear plants needs to be upgraded dramatically and immediately. Importantly, the up-

grade of plant security needs to be commensurate with our new and totally different understanding of the capacity, ferocity and intelligence of terrorism as we've seen it on American soil. As a public health professional, having some understanding of what the public needs, practically and psychologically, I believe that federalizing the security forces at nuclear power plants is an urgent priority.

Second, all spent fuel rods should be stored in hardened, onsite dry storage facilities pending more definitive solutions to the challenge of permanent storage. Unlike the reactor core itself, which is in a hardened containment structure, the spent fuel in many plants, for example, the Indian Point plant that Senator Clinton referred to, is in an adjacent, comparatively lightweight structure covered with nothing more than a corrugated steel roof. A significant terrorist-induced explosion and fire could potentially release massive doses of radioactive material into the atmosphere. Dry storage can reduce this risk dramatically.

Third, there needs to be a top to bottom revision and upgrading of the emergency planning process with active Federal oversight. Planning for evacuation, especially in densely populated areas, is extremely difficult under any circumstance. The grossly inadequate emergency evacuation planning process around the Indian Point facility is a case study. The planning zone of 10 miles is entirely too limited and is inconsistent with potential expectations of damage, contamination and human behavior under crisis conditions.

In fact, spontaneous, uncontrolled evacuations in a time of crisis, well beyond the 10-mile zone, could quickly result in chaos and paralysis of egress for people. Permanent relocation for evacuees in the event of substantial ground contamination would be an extraordinary challenge. Furthermore, children in school and day care would need to be reunited with their parents. Hospitalized patients, senior citizens, disabled persons, prisoners, persons refusing to leave the area, all represent some of the vexing real world challenges not met by the current evacuation plans.

Finally, potassium iodide should be acquired and distributed on a point of use basis for a minimum of 50 miles from all the nuclear power plants.

There is, of course, much more to talk about. I'm obviously available for whatever questions you might have.

Senator CLINTON. Well, I want to thank all of the witnesses. I know that other members could not stay, obviously the hearing went on longer than anticipated. But I think on behalf of every one of our members on this committee, I greatly appreciate your expertise, your testimony and the different perspectives that you have brought to bear on the issues confronting us.

I think it would be very helpful for us to be able to submit questions to you for the record. I also would invite perhaps questions from the witnesses for other witnesses or for ongoing discussion. Because as one listened to this panel, you can see there is a very different perspective that I think is legitimately held in good faith. But it is our job to try to sort it out, to figure out exactly where we need to take action and encourage whatever steps are necessary to maximize the security of our nuclear power plants.

So I thank you very much for your testimony today. I look forward to the questions being answered that I know I will be submitting to each of you. I wish that you would be, all of you, on call for further consultation by members and staff, because this is an extremely important issue. I don't think we can take anything for granted, no matter what worked in the past, I don't think we can take it for granted now and into the future.

We need the extraordinary commitment that each of you brings to this issue to help us sort out what we should be doing in the future. Again, I thank you and I thank all of the audience, who's been very patient. I've seen heads nodding, depending on which perspective you agree with. But I think for all of us, we need to put aside preexisting attitudes, beliefs, experience, and take a new look at this, no matter what perspective we came into the hearing with today.

With that, the committee is adjourned.

[Whereupon, at 12:33 p.m., the committee was adjourned, to reconvene at the call of the chair.]

[Additional statements submitted for the record follow.]

STATEMENT OF RICHARD A. MESERVE, CHAIRMAN, U.S. NUCLEAR REGULATORY COMMISSION

Mr. Chairman and members of the committee, I am pleased to appear before you on behalf of the United States Nuclear Regulatory Commission (NRC) to discuss safeguards and security for NRC-licensed commercial nuclear power plants as well as certain legislation that has been introduced to strengthen security at these facilities. I will discuss the current status of actions that NRC has taken in response to the terrorist acts that occurred on September 11, and will outline some of the work that lies ahead. I believe that the NRC's response to the attacks has been appropriate and thoughtful, and that the NRC's current programs continue to provide a very high level of security. l also believe that certain specific legislative proposals, which I will discuss later, would contribute further to the enhancement of nuclear plant security and l would urge the Congress to enact this legislation before adjourning later this year.

The Commission recognizes the elevated concern of the American public about the potential for terrorist attacks on nuclear facilities and the use of radioactive materials for purposes of terrorism. I hope that my testimony today will provide a useful perspective for the Committee and will correct any erroneous perceptions on this important subject.

For decades before September 11, 2001, nuclear power plants were among the best defended and most hardened facilities of the Nation's critical infrastructure. In the aftermath of the attacks, security has been enhanced even further. On September 11, the NRC immediately advised the licensees of nuclear power plants and certain other licensees to go to the highest level of security and they promptly did so. Our licensees have remained at the highest level of security since that time.

We have maintained a steady flow of information with our licensees through over 30 updates to the original threat advisory. In February, we issued Orders to each operating power reactor licensee specifying actions they must take to continue the high level of security to protect the plants, and thereby to protect public health and safety and common defense and security.

The NRC receives a substantial and steady flow of information from the intelligence community, law enforcement, and licensees that requires prompt evaluation to assess threats to facilities or activities regulated by the agency. The NRC routinely communicates with other Federal agencies, such as the Office of Homeland Security, the Federal Bureau of Investigation, the Federal Emergency Management Agency, the Federal Aviation Administration and the Department of Defense. The protection of nuclear power plants and other nuclear facilities and activities has been a matter on which the NRC has received assistance from across the Government.

ORGANIZATION

Within a few weeks of the September 11 terrorist attacks, I, with the full support of the Commission, directed the staff to conduct a comprehensive re-evaluation of the current safeguards and security programs. The review encompasses analysis of the agency's threat assessment framework and design basis threat, evaluation of facility vulnerabilities, access authorization processes, and emergency preparedness and response, and review of NBC's infrastructure, programs, and communications.

In this connection, I specifically directed the staff to review the agency's organizational structure, staffing, and training in the security and safeguards area. In early April 2002, the Commission established a new Office of Nuclear Security and Incident Response in order to consolidate NRC security, safeguards, and incident response capabilities and resources. The primary responsibilities of this new Office include safeguards and security programs and related policy development, threat assessment, and incident response operations.

ADVISORIES AND ORDERS

As noted previously, after the events of September 11, 2001, the.NRC issued numerous safeguards and threat advisories to our major licensees in order to strengthen the licensees' capabilities and readiness to respond to a potential attack on their facilities. The advisories provide concise and relevant guidance relating to the need for a given category of licensee to take specific action to enhance security. Some of the specific measures implemented by the licensees in response to the advisories included increased patrols, augmented security forces and capabilities, additional security posts, installation of additional physical barriers, vehicle checks at greater stand-off distances, enhanced coordination with law enforcement and military authorities, and more restrictive site access controls.

The advisory process, which was in place prior to September 11, was developed in order to ensure rapid communication and response to potential security concerns. It proved to be a quick and effective means for communicating with licensees. Subsequent inspections and audits by the NRC confirmed that licensees appropriately responded to the actions specified in the advisories issued after the September 11 attacks. However, in light of the current threat environment, the Commission concluded that the additional actions to strengthen security at operating power reactors and other facilities should be embodied in an established regulatory framework. Therefore, on February 25, 2002, the NRC issued Orders that modified the operating licenses for each of the power reactors to require compliance with specified interim compensatory measures.

A number of the Orders' requirements formalize measures specified in the advisories issued earlier, and have already been implemented. Other requirements provide additional security enhancements that have emerged from the on-going comprehensive safeguards and security program re-evaluation. Implementation of the requirements must be completed by August 31, 2002. A licensee would have to meet a very high threshold to receive an extension of that date, and no such extension has been granted thus far.[1]

An Order was also issued on March 25, 2002, to the licensee of the one existing uranium conversion facility. And, on May 24, the NRC issued Orders for the decommissioning reactor facilities. The NRC is also developing Orders or considering other actions that will require implementation of interim compensatory measures for other categories of licensees.

The NRC will continue to evaluate whether further changes are needed as part of our ongoing comprehensive safeguards and security program re-evaluation.

ISSUES

I would now like to discuss briefly a number of specific issues that may be of interest to the Committee. These are: (1) the design basis threat used to assess security readiness at nuclear facilities, (2) the threat of airborne attack, (3) the adequacy of security exercises at nuclear facilities, (4) personnel access authorization and re-

[1] Licensees were also required to submit *a schedule of* implementation of the Orders' requirements within 20 days of the February 25 Order. Requests have been received for extension of that deadline, and are considered on a case-by-case basis. Granting an extension to the schedule submission does not change the requirement for implementation of the February 25 Order by August 31. Nor does granting an extension to the schedule submission deadline mean that a licensee cannot meet the August 31 implementation deadline. Any extension dates granted for schedule submissions have been set so as to leave sufficient time to meet the implementation date of August 31.

lated security background checks, and (5) protection of spent nuclear fuel. This will be followed by a discussion of proposed legislation.

(1) Design Basis Threat

Security programs at certain NRC-licensed facilities, including nuclear power reactors, are designed to protect against a specified level of threat called the Design Basis Threat (DBT). After September 11, the NRC initiated a re-examination of the basic threat assumptions underlying the current civilian nuclear facility security programs, including its two established DBTs. The DBTs characterize the adversary force against which certain NRC licensees (power reactors, Category I fuel cycle facilities, and transportation of Category I special nuclear material) must design their physical protection systems and response strategies. The NRC continually assesses the threat environment and regularly reviews the adequacy of the DBTs in close coordination with the national intelligence and law enforcement community. Longer term revisions to the DBTs are now needed to reflect changes in the threat environment. Commission is currently developing specific guidance to the NRC staff for revising the DBTs. Any final decision on the DBTs will be considered with appropriate stakeholders and Federal and The State agencies. These revisions will lead to changes in the security requirements for licensed facilities and activities. The February 25 Order referred to above includes enhancements to respond to the current threat environment.

(2) Airborne Attack

Following the use of commercial jetliners as missiles on September 11, many questions have been raised regarding the potential effects on public health and safety if an aircraft attack were made on a nuclear facility. As we have stated many times, nuclear facilities are among the most hardened industrial facilities. But no existing nuclear facilities were specifically designed to withstand a deliberate, high-velocity, direct impact of a large commercial airliner.

The capability of a plant to cope successfully with an aircraft impact will, in the first instance, depend upon the plant's specific design features. It should be recognized that nuclear power plants are massive structures with thick exterior walls and interior barriers of reinforced concrete. The plants are designed to withstand tornadoes, hurricanes, fires, floods, and earthquakes. As a result, the structures inherently afford a measure of protection against deliberate aircraft impacts. In addition, the defense-in-depth philosophy used in nuclear facility design means that plants have redundant and separated systems in order to ensure safety. That is, active components, such as pumps, have backups as part of the basic design philosophy. This provides a capability to respond to a variety of events, including aircraft attack.

It is also important to note that nuclear power plants have a robust emergency preparedness program that includes biennial, evaluated exercises. In the event of a serious problem including a terrorist attack around a nuclear power plant, the plans and procedures that have been routinely exercised would be activated. This, provides a capability to respond to events of all types, including aircraft attack.

In our recent Orders to nuclear power plant licensees, the Commission directed licensees to develop specific plans to respond to an event that results in damage to large areas of their plants from explosions or fire. In addition, mitigative measures required by the Orders include assuring the presence of Emergency Plan staffing and associated resources needed to respond to such an event. The NRC is also continuing a major engineering evaluation relating, to the vulnerabilities and potential effects of a large commercial aircraft striking a nuclear facility. This effort includes consideration of additional mitigative and protective measures.

Suggestions have been made that anti-aircraft defenses should be installed at U.S. nuclear power plant sites. Such a step would present very difficult command and control issues, and the use of such weaponry could lead to significant collateral damage to plant workers and members of the public. Although the decision whether to deploy anti-aircraft capability must rest with the military, the Commission believes that the best approach to dealing with threats from aircraft is through strengthening airport and airline security measures.

(3) Security Exercises

The NRC has conducted force-on-force security exercises, known as Operational Safeguards Response Evaluations (OSREs), at nuclear reactor sites since 1991, and carried out similar tests before that time. These are tough, simulated commando-style raids, designed to identify shortcomings in security personnel performance or strategy Identification of a weakness during an exercise leads to immediate, corrective or compensatory measures. We are not aware of any comparable performance testing of security measures for any other commercial facilities in the United States.

Following the September 11 attacks, force-on-force exercises were temporarily suspended because, in the heightened threat environment, the conduct of exercises would be a significant distraction to security forces. In addition, the NRC had diverted its limited security inspection resources to staff response centers and to monitor and evaluate the licensees' heightened security posture. We recognize, however, that force-on-force drills are an important means to assess security readiness. The NRC staff is currently preparing options for Commission consideration on how to reinstate security exercises. For example, in the future we may involve local and State law enforcement in the exercises and we may look at beyond-design basis threats and the ability of operator actions to mitigate any hypothetical damage caused by a beyond-design basis attack.

(4) Personnel Access Authorization

The NRC's comprehensive security program re-evaluation includes an assessment of the personnel access authorization requirements and programs at nuclear power facilities. This effort is intended, in part, to address potential insider threats.

Current NRC regulations, which are the toughest in any non-defense industry in this country and which were in place prior to September 11, generally require an individual seeking unescorted access to a nuclear power plant to undergo a background investigation to verify the individual's true identity and require the licensee to develop information about the person's background. The investigation includes review of the individual's employment history, education history, credit history, military service, and character and reputation, as well as a psychological assessment to evaluate trustworthiness and reliability. The background investigation also, includes a criminal history check conducted by the FBI.[2] The requirements related to unescorted access are also supplemented by behavioral monitoring once on the job, and random drug and alcohol testing as part of a comprehensive fitness for duty program. Further, those who enter the protected area pass through portal monitors that detect weapons or explosives.

We took additional steps after September 11. The NRC, in coordination with the FBI, checked NRC employees and licensee personnel against the FBI watch list established as part of the investigation of the events of September 11. Since that time, we have been working, with the Office of Homeland Security to facilitate information sharing among Federal agencies to enhance access to relevant information and improve the access authorization programs.

The NRC is also coordinating with the Immigration and Naturalization Service (INS) in the effort to validate the employment eligibility of employees at nuclear power plants. We seek to ensure that only persons authorized to work in the U.S. are employed in nuclear power plants. However, there are limitations on the NRC's and its licensees' ability to obtain and use information available in INS and other Federal data bases for this purpose. For example, current law (8 U.S.C. § 1342b) prohibits discrimination on the basis of alienage in the context of employment. This section has been interpreted to preclude asking non-citizens for more proof of identity than citizens. In addition, in the process of dealing with access authorization, the Constitutional rights of both citizens and non-citizens must be protected.

(5) Spent Nuclear Fuel

Most of the radioactive material at power reactors is concentrated in the spent nuclear fuel that has been removed from the reactors. Spent nuclear fuel is stored at reactor sites in spent fuel pools or in dry cask storage facilities. Spent fuel pools use water to cool the spent fuel and shield personnel from radiation. The pools are robust structures constructed of very thick concrete walls with stainless steel liners, and are designed to withstand earthquakes. Spent fuel casks are also robust, typically constructed of a combination of concrete and steel that allow for air cooling of the spent fuel.

Spent fuel stored at NRC-licensed facilities poses a lesser security challenge than an operating reactor because the risk to the public health and safety is diminished. NBC's comprehensive safeguards and security program re-evaluation includes the consideration of potential consequences of terrorist attacks using various explosives or other techniques on spent fuel pools and spent nuclear fuel dry casks at storage sites. The program also addresses the transportation of spent fuel and other significant quantities of radioactive material.

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[2] Current NRC regulations allow an individual to obtain temporary unescorted access during the conduct of the criminal history check, but many of the other requirements for unescorted access must be satisfied in such a situation. The Orders issued to commercial nuclear power licensees in February required additional restrictions on the use of temporary unescorted access authorizations.

The Orders issued by the Commision on February 25, 2002, to operating reactors, and on May 2, 2002, to decommissioning reactors and the General Electric spent fuel storage facility, enhance the security measures for spent fuel stored in spent fuel pools. The specific security measures are understandably sensitive, but generally include requirements for increased patrols, augmented security forces and capabilities, additional security posts, vehicle stand-off distances, and enhanced coordination with law enforcement and military authorities. We will shortly issue a similar Order to independent spent fuel storage facilities using dry cask storage.

I would also like to address security during transportation. Our existing regulations currently contain significant safety and security requirements for the transport of radioactive material. After the September 11, 2001 event, we also issued advisories to increase security in transportation of specific types of radioactive material, including spent fuel shipments and shipments referred to as Highway Route Controlled Quantities of radioactive material. In order to codify the advisories, the Commission is currently in the process of issuing Orders to licensees shipping specific quantities of radioactive material and will be considering, expedited rulemaking in this area as well. We will also review transportation requirements as part of our comprehensive review of the safeguards and security programs that I previously mentioned.

LEGISLATIVE NEEDS

Since the events of September 11, 2001, many Members of Congress have asked the NRC how they can help to improve the security at nuclear power plants and other facilities. In response, the Commission has requested that Congress enact several specific legislative proposals that would amend three sections of the Atomic Energy Act. These proposals were contained in an omnibus bill the Commission transmitted to the Congress in June of last year and in letters I sent to Congress this fiscal year. The NRC has been seeking enactment of most of these amendments for almost 15 years. Most of these provisions are contained in S. 1586, which was introduced by Senators. Inhofe and Smith at the end of last October. I should note that all of our proposals have been coordinated with the executive branch and enjoy the strong support of the Administration.

One of the proposals would provide Federal authorization for guards to carry and use firearms at NRC-regulated facilities designated by the Commission, and to protect property of significance to the common defense and security located at, or being transported to or from, such facilities. The proposal would enhance national security by eliminating several weaknesses under the current safeguards and security regime. In particular, this amendment could provide some protection for licensee guards from State criminal prosecution for actions taken during the performance of their official duties. Ameliorating guards' concerns regarding State prosecution should make their actions more dependable in situations calling for use of their weapons.

The Atomic Energy Act permits the Department of Energy (DOE) and its contractors and subcontractors engaged in the protection of property located at nuclear facilities, or being transported to or from such facilities, to carry arms, make arrests, and use force as the Department deems necessary in the interests of the common defense and security. As a result, DOE guards may be shielded from State criminal prosecution for actions taken during the performance of their official duties. However, this does not apply to guards at NRC-licensed facilities. State laws govern the use of weapons by guards at NRC-licensed facilities, and some States laws do not permit guards to use weapons, except to protect against an immediate threat to their own lives or the lives of others. In such States, it may not be possible to shield the guards at NRC-licensed facilities from State criminal prosecution for actions taken during the performance of official duties.

This difference between the protections offered to DOE guards and guard's at NRC-licensed facilities exists even where both are protecting special nuclear material. Several years ago, Congress extended the protections applicable to DOE guards to guards at the gaseous diffusion facilities. operated by the United States Enrichment Corporation. It would seem logical to extend equivalent protections to guards at NRC-licensed or certified facilities designated by the Commission.

In addition, some State laws make it difficult for licensees or their security, contractors to use more effective weaponry. To alleviate this problem, the Commission has developed an addition to the proposed amendment establishing Federal authorization for guards to carry and use firearms at NRC-regulated facilities. This additional provision—not included in S. 1586—would authorize the guards to carry and use, where necessary to the discharge of their official duties, such weapons as the Commission may require, pursuant to guidelines issued with the concurrence of the

Attorney General. *A copy of the original proposal with additional language—to address this concern is attached to my written statement.*

Another provision would make it a Federal crime to bring unauthorized weapons and explosives into NRC-licensed facilities. There have been a number of reported incidents where persons without authorization have brought firearms into protected areas of NRC-regulated sites. Although the NRC may impose sanctions against the licensee for violations of its security regulations, there is no Federal law permitting the imposition of criminal sanctions against the person responsible for bringing the weapon or other dangerous instrument to the site. This amendment would assist NRC licensees in their efforts to safeguard licensed nuclear facilities and materials that must be protected against radiological sabotage or nuclear theft. It would permit the NRC to promulgate regulations prohibiting the unauthorized introduction of weapons into NRC-regulated sites. Violation of the regulations would constitute a Federal crime, which could result in a fine or imprisonment, or both.

Our final proposal would make Federal prohibitions on sabotage applicable to the operation and construction of such NRC-licensed or certified facilities as nuclear reactors and enrichment and fuel fabrication facilities. This amendment would provide criminal sanctions for sabotage or attempted sabotage of such a facility during its operation or construction where the action could affect public health and safety during the operation of the facility.

We believe that the modest legislative changes that I have described will contribute to enhancing the security of nuclear facilities and material. S. 1586 contains provisions that are similar to these proposals, except that it does not contain the more recently developed provision I have described authorizing guards to carry and use, where necessary to the discharge of their official duties, such weapons as the Commission may require, pursuant to guidelines issued with the concurrence of the Attorney General.

S. 1746

The Commission opposes S. 1746, which would Federalize the security forces at commercial nuclear facilities. There are several fundamental difficulties with this legislation.

First, S. 1746 separates the strategy for the security of nuclear facilities from that of all other types of sensitive facilities (e.g., chemical plants, refineries, and dams). We believe society's defensive resources should be allocated in accordance with relative risk, and that the separation of nuclear facilities from all other types of sensitive facilities will fragment the overall consideration of risk inappropriately. Since resources are not infinite, disproportionate protection at one kind of facility may increase the risks at other kinds of facilities.

Second, the requirement that the NRC establish a security force for sensitive nuclear facilities addresses a non-existent problem. S. 1746 would require the hiring of thousands of new Federal guards to displace the private security forces now used by licensees. The private guard forces that exist today at such facilities are qualified, trained, and tightly regulated. There is no need, unlike the situation of airports, to Federalize security at such plants. There have been no failures in nuclear plant security that would warrant the creation of a new Federal security force for NRC-licensed facilities.

Third, S. 1746 would bring about a fundamental shift in the responsibility and mission of the NRC. The demands of the legislation would refocus the NRC principally as an agency to ensure nuclear security, which could have the unintended consequence of detracting from the Commission's mission to protect the public health and safety from radiological hazards.

Fourth, NRC's role as an independent regulator would be compromised by the bill's requirement that the NRC design security plans for all sensitive nuclear facilities, implement the plans with NRC employees, and then conduct safeguards evaluations of the efficacy of the implementation of those plans. In the security area, the legislation would force the, NRC to regulate its own activities.

Fifth, the bill would create command and control difficulties because it would establish two classes of, employees at commercial nuclear sites, both of which would be responsible for safety in the event of a terrorist attack—licensee personnel responsible to the licensee for safe operations and Federal employees responsible to the NRC for security. In an emergency situation, these separate lines of authority could, in fact, lead to a diminution of the capacity to ensure safety.

Sixth, making guards at nuclear facilities employees of the Commission (as S. 1746 would do) would require significant additional resources that could be used more effectively in other efforts to enhance the security of the nation's infrastructure. Moreover, given the enhancement in the security threat against which the guard force would be required to defend in accordance with the proposed legislation,

the NRC would be required to hire more than 5,000 new Federal workers, which is nearly twice the number of staff now employed by the agency.

These fundamental difficulties in S. 1746 argue against its adoption, but there are also other concerns raised by the bill, including the following:

• S. 1746 does not alleviate concerns, arising from State law, similar to those described earlier in my discussion of differences between the situation of guards at DOE facilities and guards at NRC-licensed facilities.

• S. 1746 would create a "Nuclear Security Fund," to be used to pay costs of salaries, training, and other expenses of the nuclear security force established by the bill as well as costs of developing and implementing security plans. To ensure that adequate amounts are available for these purposes, the Commission would be directed to assess licensees a fee "not to exceed 1 mill per kilowatt-hour of electricity generated" by "sensitive nuclear facilities". This does not take into account that a significant portion of those facilities (for example, decommissioned nuclear power plants) do not produce electricity.

• S. 1746 would create a new NRC Office (the Operations Safeguards and Response Unit) within the NRC. This aspect of the legislation has already been accomplished and thus the statutory provision is unnecessary. In early April of this year the Commission established a centralized security organization within the NRC—the Office of Nuclear Security and Incident Response. This office combines security responsibilities previously exercised by the Office of Nuclear Material Safety and Safeguards and the Office of Nuclear Reactor Regulation.

• S. 1746 provides a new focus on Federal-State relationships. For example, until now States have borne the primary responsibility for emergency response. However, the bill would require the Commission to certify that stockpiles of potassium iodide (KI) tablets have been established within a 50-mile radius of sensitive nuclear facilities, and to develop plans for prompt distribution of the stockpiles in the event of a release of radionuclides. Thus, S. 1746 would require intrusion by the NRC into the States' responsibilities in this area. In addition, Congress recently addressed the subject of KI distribution in the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, which now awaits Presidential signature. No further legislation regarding KI is warranted.

In light of the above considerations, the Commission believes that the current system, with coordination of security and safety through, organizations subject to NRC regulatory scrutiny, is clearly preferable to that proposed by S. 1746.

CONCLUSION

In closing, the events of September 11 have had, and continue to have, a significant effect on both the NRC and our licensees. Nonetheless, our licensees' primary responsibility of ensuring safe operation of their facilities, and the NBC's fundamental mission of protecting public health and safety, have not changed. Licensees' physical protection programs in place prior to September 11 continue to be effective in protecting the public, and have been appropriately enhanced since September 11. Moreover, the NRC continues to work with a variety of agencies, including the Office of Homeland Security, in an effort to develop an integrated national strategy to deal with critical infrastructure. We continue to believe that nuclear security would be enhanced by enactment of the legislation proposed by the NRC. We look forward to working with the Congress both on the enactment of the NRC legislative proposals I have discussed and on continuing to ensure adequate protection of the public health and safety and the common defense and security.

I appreciate being here today to discuss the NRC's programs and am prepared to answer your questions.

ATTACHMENT

SECTION. CARRYING OF FIREARMS BY LICENSEE EMPLOYEES

Section 161 k. of the Atomic Energy Act of 1954 (42 U.S.C. 2201(k)) is amended to read as follows:

"Sec. 161. GENERAL PROVISIONS.

"In the performance of its functions the Commission is authorized to—

"k. (1) authorize such of, its members, officers, and employees as it deems necessary in the interest of the common defense and security to carry firearms while in the discharge of their official duties. The Commission may also authorize—

"(A) such of those employees of its contractors and subcontractors (at any tier) engaged in the protection of property under the jurisdiction of the United States located at facilities owned by or contracted to the United States or being trans-

ported to or from such facilities as it deems necessary in the interests of the common defense and security; and

"(B) such of those employees of persons licensed or certified by the Commission (including employees of contractors of licensees or certificate holders) engaged in the protection of (i) facilities owned or operated by a Commission licensee or certificate holder that are designated by the Commission, or (ii) property of significance to the common defense and security located at facilities owned or operated by a Commission licensee or certificate holder or being transported to or from such facilities;

to carry firearms while in the discharge of their official duties. A person authorized to carry firearms under this subsection may, while in the performance of, and in connection with, official duties, make arrests without warrant for any offense against the United States committed in that person's presence or for any felony cognizable under the laws of the United States if that person has reasonable grounds to believe that the individual to be arrested has committed or is committing such felony. An employee of a contractor or subcontractor or of a Commission licensee or certificate holder (or a contractor of a licensee or certificate holder) authorized to carry firearms under this subsection may make such arrests only when the individual to be arrested is within, or in direct flight from, the area of such offense. A person granted authority to make arrests by this subsection may exercise that authority only in the enforcement of (A) laws regarding the property of the United States in the custody of the Department of Energy, the Nuclear Regulatory Commission, or a contractor of the Department of Energy or Nuclear Regulatory Commission or a licensee or certificate holder of the Commission, or (B) laws applicable to facilities owned or operated by a Commission licensee or certificate holder that are designated by the Commission pursuant to this subsection, and property of significance to the common defense and security that is in the custody of a licensee or certificate holder or a contractor of a licensee or certificate holder of the Commission, or (C) any provision of this chapter that may subject an offender to a fine, imprisonment, or both. The arrest authority conferred by this subsection is in addition to any arrest authority under other laws; The Secretary and the Commission, with the approval of the Attorney General, shall issue guidelines to implement this subsection;

"(2) authorize employees of persons licensed or certified by the Nuclear Regulatory Commission (including employees of contractors of licensees or certificate holders) who are trained and qualified as guards and whose duty is the protection of facilities designated under paragraph (1)(B)(i) or property described under paragraph (1)(B)(ii) to carry and use, where necessary to the discharge of their official duties, such weapons, devices, or ammunition as the Commission may require. Such employees shall have the power to carry and use such weapons while in the discharge of their official duties, regardless whether such employees have been designated as Federal, State, or;local law enforcement officers. Such employees shall have such law enforcement powers as are provided to them under this section and section 161 i. of this Act. The Nuclear Regulatory Commission shall issue guidelines, with the approval of the Attorney General, to implement this paragraph. The authority conferred by this paragraph with respect to employees of persons licensed or certified; by the Nuclear Regulatory Commission (including employees of contractors of licensees or certificate holders) who are trained and qualified as guards and whose duty is the protection of facilities designated under paragraph (1)(B)(i) or property described under paragraph (1)(B)(ii) shall not be implemented until such guidelines have become effective;"

RESPONSES BY CHAIRMAN MESERVE TO ADDITIONAL QUESTIONS FROM SENATOR CLINTON

Question 1. In your December 3rd letter to the Committee, you noted that NRC had a two-phase project to understand plant vulnerabilities to attacks by either commercial or general aviation aircraft, which you again mentioned today. The first phase was to be completed in January of 2002 and the second in June of this year. Can you please update the Committee on the progress of this project? Specifically, what have your studies determined about the ability of containment vessels to withstand assault by a modern aircraft?

Response. The first phase of the project was completed in January 2002. Simplified analyses were performed to estimate the response of key buildings and structures. Insights from the first phase were used to develop the interim compensatory measures. Specific insights from the first phase, including perspectives on the abil-

ity of containment to withstand various loads, have been classified as national security information.

The staff used the insights from the first phase to develop plans for the detailed analyses in the second phase. Detailed models of representative structures and aircraft have been developed and calculations were performed to demonstrate the ability to perform the analyses. Aviation fuel combustion and fire propagation were also included in these analyses. These models are now being used to refine the insights from the first phase. The results of these analyses are also classified. I should also note that we are in contact with certain foreign governments, who are conducting similar classified vulnerability assessments, to peer review our results and to gain additional insights from their work.

In my December 3, 2001 letter, I indicated that the need to perform additional work may be identified as the work progressed. Based on the insights gained to date, additional research and analyses are being planned to further refine vulnerability and consequence assessments, and to support evaluation of the effectiveness of compensatory measures. This work is currently planned through June 2003. NRC is also developing an experimental program to quantify more definitively the accuracy of the analysis methods in predicting (1) the performance of reinforced concrete structures under extreme loads, (2) dispersion of aviation fuel on impact, and (3) fire propagation. The experimental program is currently expected to continue through 2005.

Question 2. NRC has not yet issued a revised Design Basis Threat, but has required that the nuclear industry implement interim security measures. As I understand it, in the normal course of events, security measures are based on a defined DBT. A DBT is defined first, and security plans are developed to meet that Threat. How were the interim security measures determined if a new DBT has not been defined? How can we be assured the interim measures are adequate if they are not based on an agreed DBT?

Response. The design basis threat (DBT) for radiological sabotage was established in the 1970s and modified at various times since then so as to enable licensees to develop security plans to meet that threat. In the elevated threat environment that has existed since September 11, the Commission decided that immediate upgrades in security were necessary. Rather than change the DBT, the Commission issued advisories and then issued Orders to establish a variety of prescriptive requirements to enhance security. These enhancements include increased numbers of guards, increased weaponry, tightened access controls, increased standoff distances, as well as other changes. Because these prescriptive measures were highly specific, they were unambiguous and could be put in place quickly. The introduction of changes by way of modification to the DBT, by contrast, would have delayed implementation because of the need for the licensees to analyze the DBT to determine the additional measures that were necessary in order to satisfy it. In light of the comprehensive nature of the actions required by the Commission, the NRC is satisfied that an appropriate security capability is in place.

The NRC is undertaking a revision of its security requirements and the DBT at this time. In fact, the staff expects to submit a first draft of the revised DBT to the Commission within the next few months. Changes to the DBT will be coordinated with the other agencies of the Government.

Question 3. On the other hand, if the interim measures are in fact based on an assumed threat, then the NRC must already have a good idea of what a revised DBT should be. Why hasn't NRC issued the revised DBT yet?

Response. No agency of Government has revised its DBT as yet as a result of September 11. The Commission has put in place a process that will lead to a staff recommendation for a revised DBT in the next few months. The NRC is coordinating with appropriate Federal agencies as it develops a revised DBT to ensure full consideration is given to information from the intelligence community and others.

Question 4. In your recent letter to me on the damage that small planes could cause to a reactor, you noted that you do not expect a small plane attack to result in a "serious threat to public health and safety." Please describe what kind of threat to public health and safety such an attack might pose, even if not deemed serious by your standards. Could such an attack disable several safety-related systems at once? Could such an attack conceivably result in "total station blackout", where all power to the reactor is cut off?

Response. A small plane is extremely unlikely to penetrate nuclear power plant structures in a way that would disable several safety-related systems at once. Therefore, the impact of a small plane into a site structure is unlikely to cause either core damage or containment failure, both of which are required for a significant

offsite release. Such an impact thus does not post a serious threat to public health and safety.

Such an attack could conceivably cause the loss of offsite power. The Commission's regulations require that each plant must be able to recover from a station blackout. Nuclear power plants are designed with redundant emergency electrical power sources, in particular emergency diesel generators, which provide electrical power to safety system equipment in the case off-site power is not available.

Question 5. Does the NRC intend to continue to run the OSRE force-on-force exercises? When do you think these exercises will resume? Who serves as the mock terrorists in these exercises? I understand that up until recently, these exercises were only run about once every eight years. How often will these exercises be performed at each facility in the future?

Response. Following the September 11 attacks, NRC-evaluated force-on-force exercises were temporarily suspended because, in the heightened threat environment, the conduct of exercises could create vulnerabilities and would be a significant distraction to security forces. Moreover, the NRC had diverted its security inspection resources to staff response centers and to monitor and evaluate the licensees' heightened security posture. We recognize that force-on-force drills are an important means to assess security readiness and the NRC intends to re-initiate these drills. We are doing so by initially exercising the table top component of the exercises and will then expand the exercises to include a force-on-force component. Our goal is to evaluate an integrated security exercise at each site every three years. Licensees conduct more frequent exercises as part of their training programs.

Throughout the OSRE program, the licensees have provided the personnel to make up the mock terrorist team for the exercises, subject to supervision by the NRC's experts. Some licensees trade teams of mock adversaries, which provides teams with the requisite expertise, but without the day-to-day knowledge of each site. This provides a more realistic simulation of the presumed expertise of the potential terrorists.

Question 6. In your December 17 response to the Committee, the Commission indicated that the performance of more frequent periodic drills and exercises "could enhance our licensees' capabilities to protect against the design basis threat of radiological sabotage." Have you budgeted for increased exercises in the future?

Response. Yes, the NRC is budgeting for more frequent exercises and more oversight of the licensees' security programs in general.

Question 7. Is the NRC looking into how spent fuel can be better secured through dry cask storage?

Response. Spent fuel pools are robust structures constructed of very thick concrete walls with stainless steel liners, and are designed to withstand earthquakes. Spent fuel casks are also robust, typically constructed of a combination of concrete and steel that allow for air cooling of the spent fuel. Both pools and casks can be used to store spent fuel safely and securely in accordance with NRC requirements.

The comprehensive safeguards and security program re-evaluation being conducted by the NRC includes the consideration of potential consequences of terrorist attacks using various explosives or other techniques on spent fuel pools and spent nuclear fuel dry casks at storage sites. The Commission continues to evaluate the need for additional interim compensatory measures.

Question 8. When was the Design Basis Threat last revised?

Response. The DBT was last revised in 1994 to include a vehicle threat. This change to the DBT was reflected in a revision to 10 CFR 73.55 and required licensees to provide measures for protection against a vehicle being used as a means of transporting personnel or explosives to the proximity of vital areas. Certain of the guidance relating to the implementation of the DBT has been subject to subsequent revision.

Question 9. Is it true that the current DBT does not include a waterborne component? Does it include an airborne component?

Response. Title 10 of the Code of Federal Regulations, Section 73.1(a) defines the design basis threat in general terms. Specific details of the DBT are considered sensitive Safeguards Information and cannot be included as part of the public record. We would be pleased to respond to the question in a different forum.

RESPONSES BY CHAIRMAN MESERVE TO ADDITIONAL QUESTIONS FROM SENATOR VOINOVICH

Question 1. During the hearing, there seemed to be some confusion about the NRC's and your concerns regarding the federalization of a nuclear plant guard force. Can you please address this confusion?

Response. The Commission opposes Senate bill S. 1746, which would federalize the security forces at commercial nuclear facilities. All NRC commissioners have given the matter careful consideration, and unanimously oppose federalization. The Commission's concerns are described in detail in Chairman Meserve's written testimony submitted for the June 5, 2002 hearing.

Question 2. Could you please go into greater detail about the communication enhancements that have occurred following September 11th? Specifically, between the various federal agencies and NRC, the agencies and plants, and the plants and NRC.

Response. The NRC has maintained steady communication with the intelligence community throughout the years. However, since September 11, we have increased this communication to stay abreast of potential changes in the threat environment.

Following the terrorist attacks of September 11, the NRC issued over 30 advisories to its licensees, focusing on the threat to the nuclear industry and providing guidance as to measures that should be considered by licensees to enhance the security at their facilities. Following these advisories, Orders have been issued to certain classes of licensees, including the licensees for power reactors, decommissioning power reactors, a uranium conversion facility, gaseous diffusion plants, and Category I fuel facilities, requiring the implementation of interim compensatory measures designed to protect against an adversary force in excess of the design basis threat. We are preparing Orders for independent spent fuel storage installations, Category III fuel facilities, and licensees who ship or receive large quantities of radioactive material. We are also evaluating the need to issue Orders to certain other licensees.

The NRC has held various workshops with members of industry to discuss security at licensed facilities, including the means of testing the security programs that have been enhanced. Licensees have regularly provided information and reports to the NRC summarizing their security enhancements, the level of commitment of resources from the State and local agencies, and the weapons assigned to their security force. Licensees also regularly report suspicious activity, including cars and pedestrians approaching the facility, fly-overs by aircraft, and boats approaching by waterway.

The NRC has participated in many of the Office of Homeland Security's working groups and workshops, conferences, and meetings regarding the status of various initiatives, such as the Homeland Security Advisory System. The agency's participation in these conferences and meetings has been very useful and the NRC will continue to support them.

For several weeks following September 11, an NRC employee was assigned to the FBI's Strategic Information Operations Center (SIOC). The NRC has maintained regular communications with the Federal Aviation Administration, the Coast Guard, the Pentagon (particularly NORAD), and other Federal agencies to provide a forum for better information exchange on security issues.

The NRC is in the process of deploying Secure Telecommunications Units (STU) and Secure Terminal Equipment (STE) at the offices of our Resident Inspectors at each nuclear power plant. This will allow the NRC to communicate sensitive and classified information to and from each site directly.

The NRC continues to maintain a liaison with the Office of Homeland Security on matters relating to threats. In addition, the NRC continues to support national efforts in Continuity of Government (COG) and Continuity of Operations (COOP) programs.

Question 3. In regards to the security forces at the nuclear facilities, the NRC has repeatedly asked for over 15 years that they be allowed to carry arms, use force, and make arrests. Can you please explain the current situation at facilities across our nation and how the lack of this authority jeopardizes our national security? For example, what do these forces have the ability to do today and what can they not do?

Response. The security forces at the nuclear facilities are armed with sidearms for routine duties and tactical response weapons for responding to safeguards contingencies. The two principal changes that the Commission seeks is Federal authority to use deadly force and to carry weapons comparable to those used at Department of Energy facilities.

One provision would authorize guards at NRC-regulated facilities to carry and use firearms to protect property of significance to the common defense and security. This provision is aimed at giving guards some protection from State criminal prosecution for actions taken during the performance of their official duties. Another provision would allow the Commission, in consultation with the Attorney General, to confer upon guards at NRC-designated facilities the authority to possess or use weapons that are comparable to those available to the Department of Energy guard forces. Some State laws currently preclude private guard forces at NRC-regulated facilities from utilizing a wide range of weapons. These provisions would allow guard forces to respond with comparable weapons in the event of an assault on a nuclear site by a sophisticated, well armed adversary group.

Question 4. What kind of crime is it today to bring unauthorized weapons and explosives into an NRC-licensed facility? Also, please explain NRC's requested sabotage provisions and the expected effects.

Response. At present, only individual State laws prohibit bringing weapons and explosives into an NRC-licensed facility. The NRC has requested legislation that would make it a Federal crime to bring unauthorized weapons and explosives into NRC-licensed facilities and to create Federal prohibitions against sabotage applicable to both operation and construction of nuclear facilities. The NRC has been seeking legislative authority for most of these changes for almost fifteen years.

Question 5. Could you please speak to the claim that force-on-force tests by the NRC since 1991 have been below NRC's minimum expectations nearly half of the time?

Response. The force-on-force drills that are conducted during an Operational Safeguards Response Evaluation (OSRE) are limited scope drills designed to test the licensee's ability to protect the plant against a violent external assault by a mock adversary force having the characteristics of the design basis threat. Typically, four drills were conducted at each site and results were documented.

The attacking force is credited with detailed knowledge of the plant's lay-out, vulnerabilities and security force defense plans, acquired through table top exercises carried out before the force-on-force drills. The overall goal of the OSRE is to improve the efficacy of facility security by immediate identification and correction of weaknesses.

In 37 of 81 OSREs conducted between August 1991 and August 2001, the NRC identified weaknesses.[1] In other words, the licensee did not get a perfect score. For those plants at which a weakness was found, the attacking force was typically able in one of the four drills to reach a target set and simulate destruction of that equipment. In general, these weaknesses occurred due to deficiencies in the licensee's contingency response plan, in training, or in executing the plan. No one issue dominates the weaknesses found.

It is agency policy for NRC licensees to address identified weaknesses immediately through the implementation of compensatory measures and, where appropriate, permanent corrective actions. The NRC believes that the program has served an important function by contributing to the identification of areas for improvement in the licensees' security programs. The tests are considered challenging because they are designed to exploit potential vulnerabilities revealed in associated table top drills. They do not necessarily reflect the likelihood of success by a less informed attacking force.

Question 6. In his testimony, Dr. Irwin Redlener alleges that "Immediate civilian fatalities [from an attack on a nuclear power plant] can range from a hundred or so to five thousand or more depending on the extent of damage to the reactor, its support systems and spent fuel containment systems. Excess cancers from radiation exposures can range into the tens of thousands." Does NRC agree with that statement?

Response. No. We believe that Dr. Redlener's consequence estimates of immediate civilian fatalities and excess cancers do not consider the likely range of consequences from an attack on a nuclear power plant.

The NRC has performed a large number of analyses of the risks and consequences from severe reactor accidents. From these studies, we conclude that the risks and consequences are generally dominated by events involving a sustained loss of cooling. Events involving a sustained loss of cooling would proceed, in terms of fuel damage progression, in much the same manner regardless of whether the initiator

[1] For the 15 OSREs conducted between April 2000 and August 2001, a total of 59 exercises were conducted. Weaknesses were identified in 9 of 59 exercises or 15 percent of the time. Eighty-five percent of the time the attacking force was defeated.

was an accident or an intentional terrorist act. Possible differences between core damage accidents initiated by terrorist attacks and those initiated by other accidental means are being assessed.

From our past severe accident studies, we conclude that only events involving both rapid core melt and early failure of the enclosing containment building could lead to immediate public fatalities. It is unlikely that terrorist attacks will result in rapid core melt or early containment failure because of the reactor's diverse and redundant safety features and robust containment. Thus, the expected number of prompt fatalities among the public is zero. In the unlikely event that rapid core melt and early containment failure were to occur, preliminary analyses indicate only a few immediate public fatalities, if any, at a representative site. The number of immediate fatalities near the plant is expected to be small, because of the preplanned emergency response actions for this population and the high threshold dose for immediate fatalities. In this connection, it should be noted that the number of prompt fatalities from the effects of radiation of the Chernobyl accident, including plant workers and firemen, was about 30.

Public fatalities would not be expected in an attack on a spent fuel pool unless the pool were to drain rapidly with no cooling measures available for an extended period of time. Rapid draining of the pool as a result of a terrorist attack is highly unlikely because of the robustness of the spent fuel pool and its large inventory of water. The much lower decay heat of the spent fuel in the pool would permit emergency cooling of the fuel using readily available measures that could be accomplished without significant exposure of workers to radiation and would also provide additional time to evacuate the area near the plant to prevent immediate fatalities in the event the pool were to drain rapidly. Also, in comparison to an operating reactor, the spent fuel in the pool has a lower inventory of radioactive isotopes that contribute to early health effects. All of these factors make it unlikely that a terrorist attack on a spent fuel pool would result in any immediate public fatalities.

Similarly, because it is unlikely that a terrorist attack would result in rapid core melt and early containment failure and failure of preplanned emergency response actions, we believe that the number of additional latent cancers, if any, resulting from a terrorist attack would likely not be detectable as an increase in the normal background cancer rate. Estimates of latent (long term) cancer fatalities are typically based on the assumption that increasing levels of exposure result in a proportional increase in the risk of cancer, even at very low radiation doses. This assumption, which is referred to as the linear-nonthreshold (LNT) hypothesis, may be conservative, but it is customarily used for purposes of regulatory decision making. The high normal background cancer rate makes refinement of the models that quantify the increase in cancer due to low levels of exposure difficult.

The LNT hypothesis can predict large numbers of latent cancer facilities when very small exposures are received by a very large number of people. To put this in perspective, scheduled domestic airline travel totals about 500 billion passenger miles per year. According to the LNT hypothesis, the radiation exposure associated with the airline travel would result in thousands of fatal cancers in the following decades.

In summary, we believe that Dr. Redlener's consequence estimates overstate the consequences from an attack on a nuclear power plant. Estimated consequences are very dependent upon a number of parameters including timeliness of evacuations, weather conditions and site specific characteristics. As indicated above, more realistic assumptions result in significantly smaller consequences than those suggested by Dr. Redlener.

Question 7. In his testimony, Dr. Irwin Redlener alleges that "Studies . . . have concluded that thousands of square miles could be contaminated and uninhabitable for years or decades under a variety of highly plausible attack scenarios." Does NRC agree with that statement?

Response. No. The only reactor events that could lead to a release of radioactivity that could potentially contaminate the land to levels that would make it uninhabitable involve both core melt and containment failure. However, as discussed in the response to the Question 7, a terrorist attack is unlikely to result in rapid core melt and early containment failure. More slowly evolving scenarios provide additional time for local authorities and reactor operators to intervene to prevent a release. Attacks on a spent fuel pool are less likely to lead to such a release because even if an attack could somehow drain the water from the spent fuel pool, the lower decay heat of the spent fuel in the pool would provide additional time for intervention to prevent a release.

Question 8. S. 1746 would provide for mandatory stockpiling of potassium iodide tablets for use by populations within a 50-mile radius of nuclear power plants, as

compared to the current NRC program for voluntary stockpiling within 10 miles and the provision for voluntary stockpiling up to 20 miles included in the "Public Health Security and Bioterrorism Preparedness Response Act of 2002." What are the Commission's views on the need to stockpile potassium iodide for populations out to 50 miles from a nuclear power plant?

Response. The Commission believes that distribution of potassium iodide (KI) within the 10-mile emergency planning zone (EPZ) is a reasonable and prudent measure for specific accident scenarios under conditions that involve a significant release of radioactive iodides. We do not agree that there is a need to stockpile KI for populations beyond the 10-mile EPZ.

The objective of emergency response is to minimize the dose received by the public from a spectrum of accidents that could produce doses in excess of the Environmental Protection Agency (EPA) Protective Action Guides (PAGs). PAGs are radiation doses that warrant the implementation of protective actions for the public.

There are two EPZs around nuclear power plants. These are the 10-mile plume exposure EPZ and the 50-mile ingestion pathway EPZ. There are PAGs established for the 10-mile plume exposure EPZ as well as for the 50-mile ingestion pathway EPZ. Separate PAGs are established for each EPZ because the health risks to the public are different. The PAGs for the 10-mile EPZ are established to avoid early health effects. The protective actions include evacuation and sheltering, with consideration to be given of KI distribution. The PAGs for the 50-mile EPZ are established to reduce the risk of long-term or latent health effects. The protective actions include interdiction of contaminated food, relocation of a population out of a contaminated area, placing farm animals on stored feed, and access control to contaminated areas.

The reason for the different approach is because only the population close (within the 10-mile EPZ) to the nuclear power plant is at meaningful risk of exposure to radiation and radioactive materials from exposure to the plume. Evacuation is the most effective protective measure in the event of a radiological emergency because it protects the whole body (including the thyroid gland and other organs) from all radionuclides and all exposure pathways. However, in situations when evacuation is not feasible, in-place sheltering is substituted as an effective protective action. In addition, administering potassium iodide is a reasonable, prudent, and inexpensive supplement to evacuation and sheltering for specific local conditions. When the population is evacuated out of the plume and potentially contaminated foodstuffs are embargoed, the risk from further radioactive iodine exposure to the thyroid gland is eliminated.

Beyond the 10-mile EPZ, the primary radiation exposure route is the ingestion of radionuclides (including radioactive iodides) from water or contaminated foodstuff (including milk). Therefore, the primary protective action strategy beyond the 10-mile EPZ is eliminating consumption of contaminated food and water, as well as access controls and decontamination. While KI is a component of the protective strategy within the plume exposure pathway EPZ during the plume phase of the event, restricting consumption of contaminated foodstuff up to 50 miles from the plant in the direction of the release, as needed, is part of the overall protective strategy for all radionuclides. If ingestion is prevented, there is no benefit to KI administration. Moreover, the risk arises from ingestion of contaminated food or water over a long time. It is inappropriate to use KI to deal with chronic exposure.

Question 9. S. 1746 would provide for planning of evacuation of populations from within a 50-mile radius surrounding nuclear power plants in the event of an emergency, as compared to the current Federal emergency program that includes planning for evacuation out to 10 miles from nuclear power plants. What are the Commission's views on the need to plan for evacuation out to 50 miles from a nuclear power plant?

Response. The Commission does not support a requirement for the planning of evacuation of the population out to a 50-mile radius from a nuclear power plant. The Commission requires that two emergency planning zones (EPZs) be established around each nuclear power plant; an EPZ of about 10 miles in radius for planning to protect the public from airborne exposure (the plume exposure pathway) and an EPZ of about 50 miles in radius for planning for actions to prevent radioactive material from entering the food chain (the ingestion pathway). The size of the EPZs represents a judgment as to the extent of detailed planning that must be performed to ensure an adequate response based on the consideration of the probabilities and consequences of a spectrum of accidents.

For the 10-mile plume exposure EPZ, shelter, evacuation and prophylactic use of KI would be the likely principal immediate protective actions recommended to the general public. For the 50-mile ingestion pathway EPZ the planning effort involves

the identification of major exposure pathways from contaminated food and water and the associated control points and mechanisms. The ingestion pathway exposures in general would represent a longer term problem, although some early protective actions to minimize subsequent contamination of milk or other supplies should be considered.

The Commission evaluated several factors in establishing the size of the EPZs. These included risk, probability, cost effectiveness and the accident consequence spectrum. The Commission chose to base the size of the EPZs on the probability of a spectrum of accidents and the corresponding consequences. The Commission requires that emergency response plans be useful for responding to any accident that would produce offsite doses in excess of the EPA's Protective Action Guides (PAGs). These accidents include the more severe design basis accidents. After reviewing the potential consequences of these types of accidents, the Commission determined that emergency plans should be based upon a generic distance within which predetermined actions would minimize the dose received by the public. Based on the source term resulting from this spectrum of accidents and the applicable PAGs, a radius of about 10 miles was selected for the plume exposure pathway and a radius of about 50 miles was selected for the ingestion exposure pathway. Although the radius of the EPZ implies a circular area, the actual shape would depend upon the characteristics of a particular site. The circular or other defined shape is assumed for planning purposes, whereas necessary response would likely involve only a portion of the total area because of meteorological conditions at the time of the accident. For example, there is no danger of plume exposure upwind of the site even within the 10-mile EPZ. Thus, in a particular emergency, protective actions would most likely be restricted to a small part of the planning zones.

The need for evacuation beyond a few miles from the plant is extremely unlikely. If protective actions were needed beyond 10 miles, the action required would most likely be sheltering while the plume passes and then evacuation of relatively small areas based on the amount of deposition of radioactive materials on the ground from the passing plume. The risk is highly concentrated near the nuclear plant. Although there is no line at 10 miles beyond which radiation cannot pass, the hazard from an accident tends to decrease as one moves further from the plant. The Commission has concluded that beyond a distance of 10 miles the hazard is small enough that specific detailed planning for evacuation is not necessary.

Question 10. S. 1746 would provide for emergency planning exercises out to 50 miles every three years. What is the current Federal and licensee program for conducting emergency planning exercises and drills at and around nuclear power plants, i.e., onsite and at 10 miles and 50 miles?

Response. Emergency planning regulations currently require emergency planning exercises to be conducted onsite for the 10-mile plume exposure pathway EPZ every two years, and for the 50-mile ingestion pathway EPZ with State involvement every six years, as described below.

A full participation exercise, which tests as much of the licensee, State and local emergency plans as is reasonably achievable (without mandatory public participation), is conducted for each site. In such an exercise, appropriate offsite State and local authorities and licensee personnel physically and actively take part in testing their integrated capability to assess and respond adequately to a nuclear power plant accident. This exercise is conducted within 2 years prior to the issuance of the first operating license for full power (>5% power) and includes participation by each State and local government within the 10-mile plume exposure pathway EPZ and each State within the 50-mile ingestion pathway EPZ. Subsequently, each licensee is required to conduct an exercise of its onsite emergency plan every 2 years. In addition, the licensee takes actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's emergency response capabilities.

Offsite plans for each site are also exercised biennially with full participation by each offsite authority having a role under the plan. (This may be included as part of the biennial onsite exercise.) Where the offsite authority has a role under a radiological response plan for more than one site, it fully participates in one exercise every two years, and at least partially participates in other offsite plan exercises in this period. Partial participation means that offsite authorities exercise sufficiently to test direction and control functions; i.e., (a) protective action levels, and (b) communication capabilities among affected State and local authorities and the licensee. A State should fully participate in the ingestion pathway portion of exercises at least once every 6 years.

The following NRC regulations lay out the requirements:

10 CFR 50.47(b)(14)

"Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected."

10 CFR 50, App. E, (F)(2)(b)

"Each licensee at each site shall conduct an exercise of its onsite emergency plan every 2 years. The exercise may be included in the full participation biennial exercise. In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, protective action decision-making, and plant system repair and corrective actions."

10 CFR 50, App. E, (F)(2)(c)

"Offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every two years, and shall, at least, partially participate in other offsite plan exercises in this period."

10 CFR 50, App. E, (F)(2)(d)

"A State should fully participate in the ingestion pathway portion of exercises at least once every six years. In States with more than one site, the State should rotate this participation from site to site."

Question 11. In his testimony, Dr. Irwin Redlener questions why aircraft are not forbidden to fly over nuclear plants. Since NRC has worked closely and extensively with NORAD and FAA on this very topic, what are the Commission's views on the practicality of excluding nuclear power plants, as well as other sensitive targets (sports stadiums, chemical facilities, tall buildings, etc.) from fly zones?

Response. On September 23, 2001, representatives of the Federal Aviation Administration (FAA), Department of Defense (DoD), and NRC met to discuss aviation security. The FAA determined that an FAA Notice To Airmen (NOTAM) was the appropriate vehicle to advise pilots about the need to avoid air space above sensitive sites, such as nuclear power plants. The NOTAM subsequently issued on September 26, 2001, and updated by later NOTAMs, strongly urged pilots "to not circle or loiter over the following sites: Nuclear/Electrical power plants, power distribution stations, dams, reservoirs, refineries, or military installations, unless otherwise authorized by air traffic control or as required to land or depart at towered/non-towered airports." This notice is still in effect.

Since September 11, 2001, nuclear plant licensees have reported aircraft flying in close proximity to their facilities. On October 12, 2001, the NRC formalized the process by issuing an advisory to licensees which requested that they provide immediate reports of any flyovers to the FAA, FBI, local law enforcement agencies, and the NRC.

The NRC contends that the most effective means of ensuring protection against attack by commercial aircraft is by interdiction at the airport (through personnel and baggage screening), hardened cockpit doors, support from the U.S. Air Marshal program, warning signals from aircraft that a high-jacking is underway, etc.

No fly zones around nuclear power plants and other sensitive targets are not practical as a matter of routine. Because of nuclear power plants' location in areas of dense air traffic, such as the northeast corridor of the United States, such flight restrictions would significantly disrupt air travel. A 5- or 10-mile no fly zone would also provide very little warning of attack, insufficient for a combat air patrol aircraft to respond unless it were already in the immediate vicinity.

Question 12. In his testimony, Dr. Irwin Redlener states that nuclear fuel rods are extremely vulnerable in the deep pools where they are currently stored. What are the Commission's views on the protection provided by the pools from aircraft or ground assault?

Response. The Commission does not agree that spent fuel stored in pools is "extremely vulnerable". The construction of the spent fuel storage pools is robust. Spent fuel pool wall thicknesses typically exceed containment wall thicknesses and are frequently not exposed on the exterior wall of the building in which they are housed. Although the structures over spent fuel pools tend to be less robust than the pools

themselves, attacks that damage the overhead structure are not likely to cause the pool water to drain down. In the highly unlikely event that an attack caused structural debris to fall into the pool and damage the stored fuel, the pool water would reduce the release of radioactive material to the environment. In addition, the location of system connections to the pools is designed to prevent uncovering spent fuel due to drain down if the connections should fail. Most pool drain-down or heat-up scenarios develop slowly, thus providing time for operators to act to mitigate the event and prevent radiological release. As we stated in response to question 7, even if an attack could somehow rapidly empty the pool, the much lower decay heat of the spent fuel in the pool would permit emergency cooling of the fuel using readily available measures that could be accomplished without significant exposure of workers to radiation and would also provide additional time to evacuate the area near the plant to prevent any immediate fatalities.

Question 13. In his testimony, Dr. Irwin Redlener states that nothing but costs prevent immediate transfer of spent fuel rods to dry cask storage. What are the Commission's views on this statement?

Response. NRC believes that reactor licensees can safely store spent fuel in either spent fuel pools or in dry spent fuel storage casks. With respect to potential terrorist attacks, we believe that there is reasonable assurance that the health and safety of the public is protected against such attacks for both types of spent fuel storage. Licensees have implemented actions as a result of the NRC Orders and advisories to protect against a potential terrorist attack. Nonetheless, we are continuing to assess whether additional measures are needed to strengthen further the current capability to defend such structures against terrorism.

NRC disagrees with the statement that "nothing but costs prevent immediate transfer of spent fuel rods to dry cask storage." There are technical issues associated with dry cask storage that need resolution before transfer of all spent fuel rods to dry cask storage is practical. The dry cask storage systems currently approved by NRC have not been evaluated for all the different types of fuel currently stored in reactor pools. New spent fuel dry storage systems would need to be designed, and then evaluated and approved by NRC prior to their use. In addition, the current production capacity of dry cask storage system vendors is limited and time is needed to increase production capacity. Finally, in the case of a site specific license application, schedules must allow for contested issues to be resolved through hearings prior to a licensing decision.

Question 14. In her testimony, Danielle Brian implies that the times needed for security officers to retrieve weapons and protective gear is not included in the timelines for security planning and is not simulated in actual drills and exercises. What are the Commission's views on this statement?

Response. Ms. Brian's statement is incorrect. Prior to commencement of the exercise, licensees are expected to have their responding guards positioned about the plant in places normally occupied, and with equipment normally carried during routine duties. As an additional complement to realism, the guards assigned to respond to the exercise scenario are required to shadow the actual on-duty guard force until the drill commences, ensuring that they would not be pre-positioned in preparation for the exercise. The timelines that are used in measuring licensees' performance include the time required for the guards to retrieve their response weapons and report to their post.

Question 15. In her testimony, Danielle Brian states that spent fuel pools are not presently included in target sets for purposes of security evaluations and drills at nuclear plants. What are the Commission's views on this statement?

Response. OSREs conducted in the past have not specifically targeted spent fuel pools. However, the need for performance testing scenarios at spent fuel pools is being included as part of NRC's comprehensive re-evaluation of the security and safeguards program.

STATEMENT OF DAVID LOCHBAUM, NUCLEAR SAFETY ENGINEER, UNION OF CONCERNED SCIENTISTS

On behalf of the Union of Concerned Scientists (UCS), it is my pleasure to appear before the Committee and express our support for both S. 1586 and S. 1746. We believe that these bills, if enacted, would significantly reduce the risk of radiological sabotage by lessening the probability that attempted sabotage will be successful and by lessening the consequences should sabotage be successful despite all protective measures.

My name is David Lochbaum. After obtaining a degree in nuclear engineering from The University of Tennessee in 1979, I worked more than 17 years in private industry, most of that time at operating nuclear power plants in Georgia, Alabama, Mississippi, Kansas, New Jersey, and Pennsylvania. I have been the Nuclear Safety Engineer for UCS since October 1996. UCS, established in 1969 as a non-profit, public interest group, seeks to ensure that all people have clean air, energy and transportation, as well as food that is produced in a safe and sustainable manner. UCS has worked on nuclear plant safety issues for nearly 30 years.

Some representatives of the nuclear industry claim that nuclear power plants are such hardened structures as to be virtually immune from attack. Other industry representatives assert that even a successful attack would not endanger the American public because radioactive material released from the sabotaged nuclear plant would so diluted within 5 miles as to preclude the need for either sheltering or evacuation. There would be no need for the security upgrades specified in the proposed legislation if either of these claims were valid.

Compelling circumstantial evidence creates more than reasonable doubt for the veracity of the industry's claims. Force-on-force tests of nuclear plant security administered by the Nuclear Regulatory Commission (NRC) since 1991 consistently demonstrated security capabilities below NRC's minimum expectations nearly half of the time. Nuclear plants cannot be considered immune from attack when security forces, given up to 6 months advance warning of the precise test date, are unable to prevent simulated reactor core damage from a very, very small band of mock attackers. On at least two recent occasions, a single mock intruder successfully simulated the destruction of the equipment needed to cool the reactor. Nuclear plants cannot be considered immune from attack when security forces are unable to prevent a lone saboteur from triggering a reactor meltdown. In the past 2 years, I have attended numerous NRC public meetings where industry representatives contended that poor performance on a security test would not have occurred had an armed guard not taken a wrong turn while rushing to his or her response position. Again, nuclear plants cannot be considered immune from attack when a single mistake by a single guard means the difference between successful defense and reactor sabotage.

With respect to the potential consequences from the successful attack on a nuclear plant, the industry's actions speak much louder than its rhetoric. If it were even close to being true that radioactivity releases would not endanger people living 5 miles or more away, then it would also be true that the nuclear power industry would not need Federal liability protection. Representatives of the nuclear power industry testified before the Congress that the Price-Anderson Act needed to be renewed for existing plants and expanded to cover any new nuclear plants that are built. The industry's need for Price-Anderson protection is an implicit concession that the offsite consequences from a nuclear plant accident/attack could be extremely serious.

It is our steadfast position that U.S. nuclear plants are vulnerable to attack and that the consequences from a successful attack could be dire. It is further our position that all reasonable measures must be taken to lessen this risk. The proposed legislation in S. 1586 and S. 1746 represents reasonable steps that would reduce the probability of a successful attack and reduce the consequences following a successful attack. Thus, we support both bills and hope they become law.

OPERATION SAFEGUARDS AND RESPONSE UNIT

While all provisions of both bills have merit, the most valuable portion of the proposed legislation is Section 4 of S. 1746 (the Nuclear Security Act of 2001). This section would amend Section 204 of the Energy Reorganization Act of 1974 (42 U.S.C. 5844) to create an Operation Safeguards and Response Unit within the NRC. Subsection (d)(3)(B) of the amended act requires the NRC to conduct force-on-force testing at each nuclear plant at least once every 2 years. Force-on-force tests are the best measure of the integrated capability of security fences, locked doors, intrusion detection equipment, access control barriers, and armed guards to defend the plant from attempted sabotage. Absent such performance demonstrations, security must be evaluated via piece-meal audits of the various physical protection elements.

How do teachers evaluate their students' academic performance? Do they use a checklist to verify that students attend classes with textbooks, pencils, paper, and calculators? No, they use tests that demonstrate their students' capabilities. Textbooks and class attendance are the pathway to knowledge while tests are the best measure of progress along that pathway. Likewise, security checklists show that a nuclear plant has gates, guards, and guns, but they provide little insight on how far the plant has progressed along the pathway to adequate security. Force-on-force

tests demonstrate whether the desired performance objective of adequate security has been achieved. Frequent demonstration of adequate security performance is invaluable.

The NRC initiated force-on-force testing in 1991. Due to resource constraints, the NRC only tested each nuclear plant about once every 8 years. UCS heard from many NRC staffers and nuclear plant workers that security capabilities ramped up at some nuclear plants in advance of the force-on-force tests and rapidly declined shortly afterwards. More frequent testing levels out the peaks and valleys and assures more consistent security capabilities.

Legislation directing the NRC to conduct frequent force-on-force tests ensures that the agency has the budget necessary to administer the tests. In July 1998, resource allocation issues prompted the NRC to cancel force-on-force testing. The ensuing public outcry reversed the NRC's decision with testing re-instituted in fall 1998. This legislation ensures that nuclear facility security tests are not discarded at the next budget crisis.

This legislation also ensures that testing of nuclear facility security remains in the NRC's hands where it belongs. The nuclear industry has been campaigning to conduct the security tests themselves and to evaluate their performance on the tests. Nuclear facility security is too important to permit the equivalent of take-home tests that are self-graded. The industry's consistently poor performance on security tests since 1991 does not warrant self-assessment in this vital area.

The very nature of nuclear plant security does not lend itself to industry self-assessment. The nuclear industry has successfully employed self-assessment in other areas. For example, requalification of control room operators is conducted by plant owners subject to audit by the NRC. The standards employed by the plant owners and the audit reports issued by the NRC are all publicly available for perusal by people living near the facility and by public-interest groups like UCS. In addition, NRC inspection reports covering control room operator performance during routine operations and during transient conditions are publicly available. This transparency makes it harder for self-assessments to cover up poor performance.

Conditions are significantly different when it comes to nuclear plant security. For obvious reasons, the public does not have the same access to either security standards or NRC audit reports. This necessary opaqueness makes it easier for self-assessment to cover up poor performance. The NRC must retain control over nuclear plant security tests to protect the public against inadequate security being masked by the self-assessment process.

Subsection (d)(3)(F) of the amended act requires the NRC to submit an annual report on force-on-force testing results to the Congress and the President. This annual report facilitates oversight of this important public health issue. This report also provides the American public with the "big picture" it deserves regarding nuclear facility security. The anxiety level in America following 09/11 about potential vulnerabilities of nuclear facilities to terrorist attack would have been significantly lessened had the Federal Government been able to point to the information in this annual report as tangible evidence of security preparedness. People living near nuclear facilities that had performed well on robust security tests conducted by NRC would take comfort in that knowledge. People living near nuclear facilities that had not performed so well on security tests would also benefit, albeit in a different way. Anxiety about abstract security concerns would be replaced by more focused concerns. The ensuing discussions about actions taken to compensate for and correct problem areas would allay anxiety faster than press releases about hardened facilities and lack of credible threats against specific nuclear facilities.

Subsection (d)(4) of the amended act requires NRC in conjunction with FEMA and other Federal, State, and local agencies to exercise response to a radiological emergency at each nuclear facility at least once every 3 years. Appendix E to 10 CFR Part 50 currently requires a full-scale exercise of the emergency response plan for each nuclear power plant at least once every 2 years. UCS believes that the key difference between the existing requirement in Appendix E to 10 CFR Part 50 and the intent of subsection (d)(4) is emergency response to an act of radiological sabotage. The exercises conducted to satisfy 10 CFR 50 Appendix E simulate nuclear accidents that cause releases of radioactivity to the air and water. The emergency response to radiological sabotage would be similar, but it might be more complicated. For example, Federal, State, and local resources might be more challenged following a sabotage event because of the need to also provide protection of other potential targets in the region. In addition, protective measures of securing bridges and tunnels might impede evacuation efforts. Therefore, it seems prudent and reasonable to periodically assess whether emergency response plans for nuclear facilities can also handle acts of sabotage.

DESIGN BASIS THREAT

The second most valuable part of the proposed legislation is Section 3 of the Nuclear Security Act of 2001 which would amend Chapter 14 of the Atomic Energy Act of 1954 (42 U.S.C. 2201 et seq.) to add Section 170C, "Protection of Sensitive Nuclear Facilities Against the Design Basis Threat." Subsection (c)(1) requires the NRC to revise the design basis threat from its 1960's-vintage level to a more realistic level. The current design basis threat was promulgated by the NRC nearly 40 years ago and has not been substantively changed other than the addition of the vehicle bomb requirement in 1993/1994. Subsection (c)(1) requires the NRC, in consultation with the Assistant to the President for Homeland Security and other appropriate Federal, State, and local agencies to review the design basis threat every 3 years and revise it as applicable. Subsection (c)(2) requires the NRC to report to Congress on changes made to the design basis threat. These provisions ensure that he design basis threat remains at the Goldilocks' level—not too high, not too low, but just right.

Defining the design basis threat level appropriately is extremely important. The nuclear facility owner is responsible for protecting against an attack up to and including the design basis threat level. The Federal Government is responsible for protecting the facility from larger threats. This division of responsibility is both necessary and practical. The owner of a nuclear power plant situated along our coasts cannot be expected to defend the facility against an enemy destroyer cruising offshore. Likewise, the Federal Government cannot be expected to defend a privately owned nuclear power plant against sabotage by a handful of individuals or a small group of plant workers.

The initial upgrade of the design basis threat is warranted. Left unchanged, the current design basis threat requires the Federal Government to protect Americans from radiological sabotage caused by as few as four persons or two plant workers. It requires the Federal Government to protect nuclear plants from a truck bomb of the size used by Timothy McVeigh in Oklahoma City. It's unrealistic to expect that the Federal Government could adequately defend against such a small attacking force.

Subsections (d)(2)(B)(iv) and (d)(2)(B)(v) explicitly require security protection for spent fuel whether it is stored in wet-pools or dry casks. Highlighting the potential hazard from spent fuel, and the corresponding need for its protection, is very important. Since 1991, Over 300 force-on-force exercises have been administered by NRC at U.S. nuclear power plants. *None* of those exercises ever tested the security protection for spent fuel. We are not suggesting that the spent fuel hazard is equivalent to the reactor hazard; rather that the spent fuel hazard is not negligible and must be appropriately protected. Thus, it is beneficial that this proposed legislation clearly establishes that the design basis threat applies to both the reactor and its spent fuel, thus making it more likely that both hazards will be adequately protected.

POTASSIUM IODIDE STOCKPILES

Section 5 of the Nuclear Security Act of 2001 amends Section 170 of the Atomic Energy Act of 1954 (42 U.S.C. 2210) to require stockpiling of potassium iodide for the population with a 50-mile radius around each nuclear facility. The amendment additionally requires distribution plans to be developed to get the potassium iodide to people as expeditiously as possible in event of a nuclear accident/attack.

Potassium iodide does not provide immunity from all radioactivity that could be released following a nuclear accident/attack, but it does provide protection against thyroid damage caused by radioactive iodine (I–131). That potassium iodide has value is clearly demonstrated by the fact that it is distributed to nuclear plant workers and to Federal, State, and local personnel responding to the nuclear accident/attack. It would seem imprudent public policy not to provide equivalent protection for the innocent people living downwind of the facility.

According to the NRC, 13 states currently stockpile potassium iodide for the people living within the emergency planning zone around nuclear power plants. The proposed legislation eliminates the inequity associated with some Americans being protected while many other Americans are not protected. The NRC protecting only some Americans makes about as much sense as the U.S. Coast Guard requiring lifeboats on only some cruise ships. Given its low cost and long shelf life, it would seem exceedingly difficult for Federal, State, and local authorities to assure American victims that everything had been done to protect them from radiation if potassium iodide hadn't been stockpiled and distributed.

Consider the following hypothetical situation. State X has two operating nuclear power plants. Plant A is located in the northern part of the State while Plant B is in the southeastern corner of the state. State X has not stockpiled potassium io-

dide, while State Y on its eastern border has done so. A serious accident at Plant B releases large amounts of radiation to the air necessitating both sheltering and evacuations. Residents in State Y living within the emergency planning zone are also provided potassium iodide. Residents in State X living within the emergency planning zone do not receive potassium iodide.

In all likelihood, the post-mortem for this accident would cause potassium iodide to be stockpiled in State X for the people within the emergency planning zone around Plant A. Federal and State X authorities would have a very tough time explaining why the people in State Y received greater protection. Parents in State X will never know whether their children's thyroid illnesses might have been prevented had they just been given a dollar's worth of potassium iodide like their friends with healthy kids over in State Y received. Enacting the proposed legislation will prevent this hypothetical situation from becoming a tragic reality.

Expanding the potassium iodide inventory to cover a 50-mile radius rather than a 10-mile radius decreases the likelihood that affected people will not be protected. No matter where the line is drawn, the question will remain about people living at N+1 miles. The 50-mile radius seems to be a reasonable compromise. Even if conditions affect people 60 or 70 miles downwind, the 50-mile inventory makes it more likely that potassium iodide can be redirected from people living 40- to 50-mile upwind to affected people downwind.

CARRYING OF FIREARMS BY NUCLEAR FACILITY SECURITY FORCES

Section 1 of S. 1586 would amend Chapter 14 of Title I of the Atomic Energy Act of 1954 (42 U.S.C. 2201 et seq.) to replace subsection k with a subsection authorizing security guards to carry firearms. Another subsection would be added to authorize security guards to make arrests, subject to limitations, of persons committing felonies or reasonably believed to have committed felonies. This legislation ensures security guards are properly equipped and authorized to carry out their protective assignments.

FEDERALIZATION OF THE NUCLEAR SECURITY FORCE

Section 3 of the Nuclear Security Act of 2001 would amend Chapter 14 of the Atomic Energy Act of 1954 (42 U.S.C. 2201 et seq.) to add Section 170C, "Protection of Sensitive Nuclear Facilities Against the Design Basis Threat." Subsection (b)(1) requires NRC to employ the nuclear security force at sensitive nuclear facilities. This provision is our least favorite part of the proposed legislation. Our concern is in having the NRC responsible both for providing security and for assessing whether security is adequate. It would seem to create at least organizational tension if not an outright conflict-of-interest for the NRC staff to do both.

Federalization of the nuclear security force provides gains to offset the conflict-of-interest concern. For example, subsection (e)(2)(A) requires the NRC to establish minimum qualification standards for members of the nuclear security force. Currently, the qualification standards for security personnel are established by the plant owners or the companies they've contracted with for security. Consequently, there's a very wide range of "minimum" qualification standards.

There is also a wide range of working conditions for security guards at nuclear plants. Security guards at some plants have told me about good working conditions. They get fair compensation and benefits and receive good initial and follow-up training. They reported security staffing levels sufficient to permit adequate coverage of all posts and to avoid fatigue associated with chronic overtime. Unfortunately, I have also heard from security guards complaining about poor training, defective equipment, insufficient staffing levels, low pay, lack of medical benefits, and other factors contributing to bad morale. Federalization is unlikely to make all security guards content all the time, but it should serve to narrow the gap between the guard forces at facilities where management recognizes their importance and the guard forces at facilities where management views them as undesired financial drains.

The periodic force-on-force testing conducted by the NRC as proposed in Section 4 of the Nuclear Security Act of 2001 could achieve the same positive gain as would result from federalizing the nuclear security force. Plant owners who currently undervalue their security guards would likely have to change that outlook in order to attain the required performance levels on the 2-year force-on-force tests.

PROTECTION AGAINST INSIDER SABOTAGE

As detailed above, the proposed legislation contains many provisions that individually and collectively improve nuclear facility security. The only element potentially missing from the proposed legislation is adequate protection against insider sabo-

tage. Subsection (c)(1)(A)(iv) of the proposed amendment to Chapter 14 of the Atomic Energy Act of 1954 (42 U.S.C. 2201 et seq.) outlined in Section 3 of the Nuclear Security Act of 2001 requires the NRC to revise the design basis threat to include several nuclear workers assisting in an attack. Subsection (b)(2) requires the NRC to "develop and implement a security plan for each sensitive nuclear facility to ensure the security of all sensitive nuclear facilities against the design basis threat." UCS recommends that the Committee consider strengthening the proposed language by revising it to explicitly incorporate the following items, obtaining a firm commitment from the NRC to include these items as appropriate in the security plans, or providing clear guidance on expectations regarding these items in the Committee reports accompanying the bills:

• *Two person rule for vital areas.*—Authorized individuals typically gain entry to vital areas within nuclear facilities using computerized access cards. An authorized individual could thus enter vital area(s) alone and tamper with safety equipment. Adoption of the two-person rule for vital area entry would eliminate the opportunity for a single person acting alone to attempt sabotage.

• *In-plant security cameras.*—The majority of security cameras in use today at nuclear facilities protect against unauthorized intrusion to the site. Fewer security cameras are deployed inside the facility to protect against sabotage. Installation of additional security cameras within the nuclear facility would provide greater protection against sabotage by workers.

• *Security guard accompanying visitors in vital areas.*—Under certain conditions, a single authorized individual can escort five visitors into vital areas without being accompanied by a security guard. These visitors have had no background investigations other than a perfunctory check using the social security numbers they provide. The potential exists for an insider to arrange for the external attackers to enter the facility as visitors and then escort them into vital areas. Requiring all visitors into vital areas to be accompanied by a security guard provides substantive protection against this threat.

• *50.59 screenings for insider sabotage.*—10 CFR 50.59 requires proposed modifications to nuclear facilities and planned changes to procedures to be reviewed for possible erosion of safety margins. Safety margin reductions must be approved in advance by the NRC. But these 50.59 screenings do not specifically require an evaluation of whether the changes provide insiders with greater opportunities for sabotage. For example, a temporary configuration during a refueling outage may reduce response time to less than that available when the plant is operating. The insider may elect to attempt sabotage during this vulnerable period. If this vulnerability was identified, it would be possible to compensate for it by posting a security guard by essential equipment during the temporary alignment. Requiring 50.59 screenings to explicitly assess insider sabotage provides substantive protection against this threat.

• *Compensation for longer testinglinspection intervals.*—In recent years, the NRC has allowed plant owners to lengthen the interval between tests and inspections of safety equipment. The reductions in testing/inspection frequencies have been justified using actual experience of component failure rates. Longer testing/inspection intervals-particularly when their schedules are readily available-provide insiders with ample opportunities to plan and execute a campaign of tampering with safety equipment over time with the aim of disabling all mitigating and containment systems when sabotage is ultimately attempted. These opportunities should be lessened by the NRC (a) recognizing that equipment tests and inspections also guard againstsabotage and therefore intervals must not be solely based on observed failure rates, or (b) requiring random tests/inspections to be conducted if the intervals are solely based on observed failure rates.

• *Providing operators with anti-sabotage training.*—The NRC's Generic Fundamentals Examination Question Bank for boiling water reactor (BWR) operator license candidates has 959 pages of questions while the NRC's Generic Fundamentals Examination Question Bank for pressurized water reactor (PWR) operator license candidates has 977 pages of questions Not a single one of the literally hundreds of questions directly deals with how to defend the plant from an insider attempting radiological sabotage. Operator candidates receive classroom instruction and control room simulator training on how to cope with postulated pipe breaks, pump failures, and power outages. Licensed operators receive annual retraining on these subjects. Training operator candidates and licensed operators on how to respond to scenarios such as an insider attempting to take over the control room or an insider manipulating switches from the remote shutdown panel would supplement the skills they develop to handle nonsabotage emergencies.

In summary, UCS supports both S. 1586 and S. 1746 and hope that both bills become law. If only one part of the bills became law, we'd prefer that it be the part

requiring the NRC to conduct force-on-force security tests at each nuclear facility at least once every 2 years. If only one part of the bills didn't become law, we'd least miss the part federalizing the nuclear security forces.

RESPONSES BY DAVID LOCHBAUM TO ADDITIONAL QUESTIONS FROM SENATOR CLINTON

Question 1. In your testimony, you stated that you thought "the most valuable portion of the proposed legislation is Section 4" to create on Operation Safeguards and Response Unit within the NRC. Can you please comment on Chairman Meserve's testimony, which indicated that this aspect of the legislation has already been accomplished and is therefore unnecessary?

Response. On April 7, 2002, the Nuclear Regulatory Commission established an Office of Nuclear Security and Incident Response to consolidate the agency's efforts for nuclear facility security. This office is in many ways superior to the Operation Safeguards and Response Unit described in the proposed legislation. For example, it reports at a more senior level within the NRC than was proposed for the Operation Safeguards and Response Unit. However, we disagree with Chairman Meserve that the objective of the proposed legislation has already been accomplished. The proposed legislation in Section 4 of the Nuclear Security Act did not merely shuffle and rename bureaucratic pieces. It charged the Operation Safeguards and Response Unit with performing force-on-force security exercises at all nuclear facilities under NRC's purview at least once every 2 years. The newly established Office of Nuclear Security and Incident Response would conduct these security exercises, but the NRC did not require it to conduct exercises at all, let alone once every 2 years. Thus, the actions taken by the NRC on April 7th were a step in the right direction, but they remain several steps shy of the destination. The proposed legislation in Section 4 will move the agency the remaining steps. Absent this legislation, those steps might not be taken.

Question 2. In your testimony, you talked about NRC's resource constraints, which apparently inhibited the Commission's ability to run force-on-force exercises at the plants. Can you provide more detail on this issue and explain how the legislation we are considering today addresses that issue?

Response. In June 1998, the Senate Appropriations Committee suggested that it would cut the NRC's budget by approximately 40 percent. In the ensuing discussions regarding this suggestion, the budget cut was scaled back to a much more modest reduction. The Appropriations bill authorizing the NRC's budget required the agency to report monthly to the Congress on its progress in handling specific activities. For example, the NRC reported on goals of completing 95 percent of all license amendment applications within 1 year and 100 percent of all such applications within 2 years. The NRC did not want to miss goals it was reporting to Congress each month. Therefore, the agency reallocated staff so as to provide greater assurance that these tasks would be completed on time. The NRC was not required to report to Congress on its progress in other areas, such as how often it tested nuclear plant security. Thus, the aforementioned staff reassignments were from non-reported areas to reported areas. In July 1998, the NRC's Director of the Office of Nuclear Reactor Regulation canceled the force-on-force security testing program that the agency had been conducting since 1991. This cancellation was part of the staff reassignments made following the June 1998 budget debates.

The proposed legislation would address the problem by providing the NRC with a mandate to conduct force-on-force security tests at all nuclear facilities at least once every 2 years. The NRC would have to request in its annual budget sufficient funding to accomplish this mandate.

Question 3. You and others today have expressed concerns about federalizing security at our Nation's nuclear power plants, but you have also indicated that there are certain threats against which plants cannot be expected to defend as has the NRC. So how do we best provide seam-less security at these facilities?

Response. UCS views the Design Basis Threat (DBT) as the line between the threat level that individual plant owners must defend against and the larger threat level that the Federal Government is expected to defend against. The best way to provide seam-less security would be to require the NRC to promulgate regulations analogous to those in Appendix E to Title 10 of the Code of Federal Regulations. The NRC promulgated Appendix E to require all nuclear plant owners to have an emergency plan in case of accidents. The regulations include provisions for periodically testing the emergency plan with exercises involving local, state, and Federal agencies. Collectively, these regulations help assure that all of the entities that

would need to function following a nuclear plant accident have procedures in place along with adequate training. During the hearing on June 5th, the Committee heard testimony praising the effectiveness of emergency planning.

Comparable regulations could require nuclear plant owners to have formal plans in case of larger than DBT attacks. Periodic exercises of the plans would enable U.S. military, State National Guardsmen, local law enforcement, U.S. Coast Guard, and other entities to demonstrate their proficiencies. As in the case of emergency planning, it would seem most appropriate for the NRC to be responsible for bringing these various authorities together to ensure adequate nuclear plant security. If it promulgated comparable regulations, the NRC would be positioned to assure that plant owners could defend against threats up to and including the DBT and that other entities could defend against larger threats.

Question 4. In your testimony, you indicate that the qualification standards for security personnel are established by the plant owners or the companies that the have contracted with for security resulting in a wide range of minimum qualification standards. Is this something that needs to be addressed and if so, how? In your opinion, does the legislation being considered today address this issue?

Response. We believe that the proposed legislation does address the concern about diverse qualification standards. The force-on-force security tests conducted at least once every 2 years as specified in Section 4 of the Nuclear Security Act represent a performance standard that is superior to minimum qualification standards. Poor performance on the security tests would require plant owners to fix the problems, either by upgrading the caliber of security guards or by increasing the security guard staffing levels to compensate for qualification shortfalls. With respect to public health and safety, either option is acceptable as long as adequate overall performance is demonstrated by the force-on-force testing.

RESPONSES BY DAVID LOCHBAUM TO ADDITIONAL QUESTIONS FROM SENATOR VOINOVICH

Question 1. In your testimony, you stated that the second most valuable provision of S. 1746 deals with amending the design basis threat. One of the sections provides for a NRC report to Congress about the changes made to the design basis threat. In your opinion, what do you think the value of making the changes public will have?

Response. UCS did not envision the NRC's report to Congress being publicly available. Congress receives information from other agencies that is not made public. We thought this report would also be treated confidentially. We considered this report as providing Congress with essential information needed to make informed oversight decisions and helping to ensure that the design basis threat remained neither too high nor too low.

Question 2. Specifically, what impact does this have on our national security by publishing these changes, and do you think Members of Congress should be involved in making decisions about the adaptation of this threat analysis?

Response. As indicated in our response to Question 1, UCS did not envision that the NRC's report would be publicly available. In that context, we see no adverse impact to national security. We feel the report would enhance national security by affording Congress the opportunity to evaluate threat management for nuclear power plants with threat management in other areas. Armed with this information Members of Congress would be better positioned to shore up identified vulnerabilities through better definitions of where security surpluses exist.

Question 3. In terms of retired military and law enforcement officials, such as the FBI, what impact do you think federalizing the nuclear security force would have on personnel?

Response. Based on statements by nuclear industry representatives about their high retention rate for security personnel and our own discussions with security personnel at several nuclear plant sites, UCS believes that the majority of people guarding nuclear plants today would be guarding nuclear plants tomorrow in Federal hats if the proposed legislation were enacted. Some of the security personnel have told us they are pleased with their labor contacts and are apprehensive about "trading down" if federalization occurred. But most of the security personnel we have talked with complain about low wages, poor health plans, insufficient training, and long working hours. They consider federalization was one way, but not the only way, to remedy unsatisfactory working conditions.

As noted in our written testimony, if one part of the proposed legislation was not enacted, we'd hope it was the federalization part. If the force-on-force security test-

ing part was enacted, we believe it would cause those plant owners who may be currently undervaluing their security personnel to remedy any unsatisfactory working conditions.

STATEMENT OF JACK SKOLDS, CHIEF NUCLEAR OFFICER, EXELON NUCLEAR

Mr. Chairman, members of the committee: I am Jack Skolds, Chief Nuclear Officer for Exelon Nuclear, the nuclear division of Exelon Generation Company. Exelon Generation is a wholly owned subsidiary of Exelon Corporation, which was formed in 2000 by the merger of Unicom Corporation of Chicago and PECO Energy Company of Philadelphia. Exelon Generation currently owns and operates approximately 37,000 megawatts of diversified electrical generation, including 17 nuclear reactors that generate 16,970 megawatts of electricity. Exelon is the largest nuclear generation operator in the country with approximately 20 percent of the nation's nuclear generation capacity, and the third largest private nuclear operator in the world. We also own 50 percent of AmerGen Energy, which is a partnership with British Energy of Edinburgh, Scotland. AmerGen owns 3 of the 17 units in the Exelon fleet, with plants in Illinois, New Jersey and Pennsylvania.

Thank you for the opportunity to appear before you today to discuss legislative proposals addressing several important security issues at commercial nuclear power plants.

I would also thank several members of the committee for their efforts to investigate the issue of nuclear plant security first-hand. Senators Graham, Clinton, Corzine, Smith, Voinovich and Specter have all toured nuclear power plants to receive briefings on plant security since September 11, as have several of the committee's staff members. In fact, Senator Specter has toured three of the five nuclear power plants in Pennsylvania, including two Exelon facilities.

My testimony today will focus on three areas:

First, I will address legislative proposals pending before the Senate on nuclear plant security.

Second, I will provide the Committee with an overview of nuclear plant security.

Third, I will provide the Committee with recommendations regarding actions the Federal Government can take to address nuclear plant security issues in the post-September 11th environment.

Before addressing these issues, however, let me make a few preliminary comments.

Let me begin by assuring the Committee that the nuclear power industry is absolutely committed to ensuring that our plants are operated safely and that all necessary steps are taken to protect the health and safety of the public and our employees. No one has a greater interest in protecting the safety and security of nuclear plants than the owners and operators of those facilities.

In addition, it is important for the Committee to understand that commercial nuclear power plants are the most well-protected industrial facilities in the United States today. In fact, many businesses are turning to the nuclear industry as a model for providing security and emergency planning at their industrial complexes.

Finally, as the United States acts to strengthen homeland security in light of new threats to the nation's security, it is imperative that Federal, State, and local officials work cooperatively with nuclear plant operators to buildupon the solid foundation of emergency response capabilities that existed prior to September 11th.

PENDING LEGISLATIVE PROPOSALS

The Committee's letter of invitation requested comments on two legislative proposals pending before the Senate: S. 1586, "a bill to amend the Atomic Energy Act of 1954 to authorize the carrying of firearms by employees of licensees, and for other purposes" and S. 1746, "a bill to amend the Atomic Energy Act of 1954 to strengthen security at sensitive nuclear facilities." My comments will address these bills, as well as H.R. 2983, legislation to reauthorize the Price-Anderson Act of 1954, which was passed by the U.S. House of Representatives and which is awaiting action by the Senate.

S. 1586

S. 1586, introduced by Senator Jim Inhofe, amends the Atomic Energy Act to authorize NRC licensee employees to carry firearms, provides limited arrest authority to such employees, and establishes a fine or imprisonment for the sabotage of commercial nuclear facilities. These provisions were submitted to Congress by the Nuclear Regulatory Commission several years ago and were approved by the Senate

during the 106th Congress as part of S. 1627, the NRC Fairness in Funding Act of 2000, and as part of separate appropriations legislation.

The nuclear industry testified in support of the provisions as part of its testimony on S. 1627 during the 106th Congress, though some NRC licensees have recently expressed concern about the possible legal implications of providing wide-ranging arrest authority to private security forces. The industry stands ready to work with the Committee to resolve these concerns.

S. 1746

S. 1746, introduced by Senator Harry Reid and other members of the Committee, makes sweeping changes in the manner in which security at commercial nuclear facilities is addressed. Unfortunately, S. 1746 puts the proverbial cart before the horse by mandating radical legislative solutions to issues that have not been identified as problems.

Section 3 would substitute a statutorily mandated design basis threat for that developed by the independent Nuclear Regulatory Commission and would federalize security at commercial nuclear power plants by establishing a nuclear security force within the NRC and by requiring the Commission to develop a security plan for each of the nation's sensitive nuclear facilities. Section 3 also levies a tax on sensitive nuclear facilities to fund a newly created Nuclear Security Fund within the Treasury to pay for these massive and sweeping new Federal responsibilities.

Exelon is concerned about the imposition of a statutorily mandated design basis threat which prejudges the nature of the design basis threat without a comprehensive review by the NRC in conjunction with Federal intelligence and law enforcement agencies. If legislative action in this area is deemed necessary, Congress should first direct the President to conduct a comprehensive review with the various energy, intelligence and law enforcement agencies of the various threats facing nuclear power plants. Once such a review is completed, the NRC should be directed to adjust the design basis threat accordingly.

With regard to federalization of nuclear plant security forces, Exelon strongly opposes such a drastic and unjustified change in security requirements. Security forces at nuclear power plants are highly trained professionals. Substituting Federal employees to safeguard sensitive nuclear facilities may actually degrade security. The background check requirements, hiring qualifications, and training standards in the bill are actually less stringent than those currently enforced by the NRC.

Federalizing the nuclear security forces would also eliminate some of the best candidates for nuclear security forces by effectively barring recipients of Federal pensions from serving as Federal employees. Some of the current members of nuclear security forces are military retirees who would be forced to choose between resigning their position or giving up their Federal pensions. In addition, nuclear power plant security forces work in an integrated manner with plant operators during a security event to coordinate responses to security threats. Integrated command and control of plant security forces and plant operations personnel is essential to assure the protection of public health and safety. Finally, federalizing nuclear security forces would fundamentally change the mission of the Nuclear Regulatory Commission. Hiring, training, and managing a security force of 7,000 employees would be a massive undertaking and might well detract from the Commission's core mission of assuring that plants are operated in a manner that protects the public health and safety. It also places the NRC in an active role in day to day operations at the nation's nuclear power plants—a dramatic reversal of the efforts the Congress, the executive branch, the Commission, and the industry have made over the past 30 years to ensure the NRC is a regulator, not an operator.

Similarly, requiring the NRC to develop security plans for each of the nation's sensitive nuclear facilities within 180 days would be a significant task that would result in an unnecessary—and perhaps dangerous—diversion of Commission resources. The NRC currently has detailed regulations governing security requirements at plants, and plant personnel can best handle the coordination of plant security forces with State and local law enforcement officials. As with federalization of nuclear plant security forces, requiring a federally developed security plan for several dozen sites is unnecessary given the complete lack of evidence that the current system is deficient.

Finally, a tax on nuclear plant operators would fund a new and unnecessary Federal bureaucracy and would be unparalleled in the private sector. Simply put, the tax would fund an activity that is currently being effectively managed by the private industry. In addition, the tax potentially would force nuclear power plant customers to inappropriately fund national defense activities and would likely result in some nuclear plants subsidizing the cost of security at other plants.

Section 4 establishes an Operation Safeguards and Response Unit at the NRC. The existing NRC Operational Safeguards and Response Evaluations (OSRE) program has been applied and interpreted in an inconsistent and at times arbitrary manner. Anti-nuclear groups and the NRC have at times inaccurately characterized licensee performance under the existing OSRE program by claiming that licensees have "failed" a significant portion of force-on-force drills.

It is important to note that the OSRE program evaluates plant security, and not plant safety. Given the ability of plant operators to safely shut down an operating reactor in a matter of seconds, OSRE drills alone are not an accurate reflection of plant safety.

The NRC has been striving to develop a more objective methodology for determining the ability of nuclear plants to respond to design basis threats. The program would potentially result in more frequent force on force drills than in the past. The Commission has also moved to enhance its organizational structure with respect to security by creating a new office dealing with security policies and programs.

Senator Reid's legislation seeks to address problems with the current program by mandating a highly prescriptive program that could prevent the Commission from establishing amore effective and more appropriate program to evaluate the performance of plant security forces.

Section 4 also inappropriately expands the emergency planning zone around sensitive nuclear facilities from a 10-mile radius to a 50-mile radius. There has been no evidence to suggest that such a radical change in the current regulatory system is warranted to protect public health and safety. Extending the 10-mile emergency planning zone to a 50-mile radius would require planners to address an area of 7,857 square miles (as opposed to the current emergency planning zone which encompasses 315 square miles). Such an expansion would only serve to diffuse the resources available to and distract the personnel responsible for emergency planning from focusing on enhancing planning that may have been ignored in other sectors prior to 9/11 and from continuing to ensure current planning is satisfactory. Again, absent compelling evidence on the need to undertake such a massive effort, Congress should defer to the NRC, FEMA, and EPA in determining the appropriate radius for emergency planning purposes.

Section 5 directs the Commission to establish a stockpile of potassium iodide tablets and to develop plans for the prompt distribution of potassium iodide tablets within a 50-mile radius of all sensitive nuclear facilities; The NRC, in conjunction with the Environmental Protection Agency, the Department of Health and Human Services, and the Federal Emergency Management Agency, has recommended that potassium iodide be made available at the request of State governments for distribution within the 10-mile emergency planning zone around commercial nuclear power plants. There is no scientific basis for expanding the distribution of potassium iodide to an area within 50 miles of a sensitive nuclear facility.

Section 6 of the legislation directs the Commission to request assistance from Governors and the President in the event of war or other national emergency. While such assistance may be appropriate in the event of war or other national emergency, the Commission is not barred under current law from requesting such assistance. In addition, as the Commission stated in its review of the legislation, such assistance may not be appropriate in all circumstances and could divert resources from more vulnerable parts of the nation's infrastructure.

H.R. 2983

H.R. 2983, which was passed by the U.S. House by voice vote last year, includes an amendment by Representative Ed Markey to address the nuclear security issue. Under the Markey amendment, the President is directed to conduct a study to identify the types of threats that pose an appreciable risk to NRC licensed facilities. The legislation includes a number of issues to be considered during this study, including each of the issues enumerated in Section 3 of S. 1746. The President is also required to classify each type of threat as being the responsibility of the Federal Government or of NRC licensees.

Exelon strongly supports the Markey amendment as an appropriate first step in identifying what additional changes maybe necessary to protect commercial nuclear facilities in he aftermath of September 11th. The amendment allows the White House to tap all Federal intelligence and law enforcement resources to assess the nature of the threats that are faced by commercial nuclear facilities. The amendment also directs the White House to clearly delineate between threats against which licensees must defend and threats against which law enforcement officials and the Federal Government must defend. Only after such an assessment is conducted can Congress make a well-informed decision regarding what additional resources and requirements are necessary to protect commercial nuclear facilities.

THE INDUSTRY'S APPROACH TO NUCLEAR PLANT SECURITY

Protection of public health and safety requires both the safe operation of nuclear plants and the physical protection of the plant against potential threats.

The industry today is operating the nation's 103 nuclear reactors more efficiently and safely than ever before. The average capacity factor for nuclear plants reached an all-time high of 91 percent in 2001 according to preliminary data from the Nuclear Energy Institute, while the industrial safety accident rate for nuclear plants in 2000 was a record-low 0.26, compared to an average accident rate in the manufacturing sector of 4.0.

As another measure of safety, the Nuclear Regulatory Commission monitors the number of "significant events" at each nuclear reactor (broadly defines as occurrences that challenge a plant safety system). The average number of significant events per unit has declined from 2.37 per year in 1985 to 0.03 per year in 2000, the latest year for which data is available.

Nuclear power today provides 20 percent of the nation's electricity each year, and it does so without emitting any of the pollutants associated with acid rain or global warming. In fact, nuclear power has played a major role in allowing many regions of the country come into compliance with Clean Air Act requirements.

The industry's commitment to safety also extends to plant security. In fact, commercial nuclear power plants are regarded by many to be the most well protected industrial facilities in the United States today. Indeed, many other industries are turning to the nuclear industry as a model for providing security at a variety of commercial facilities. For example, in addition to unique physical protections employed at commercial nuclear facilities, the nuclear industry is alone among critical infrastructure industries in using the Federal Bureau of Investigations to run criminal background checks on applicants for positions at sensitive facilities.

Current Law

Existing Federal statutes and regulations provide strict standards requiring licensees to take actions necessary to protect the public health and safety. NRC requirements and industry programs are predicated on the need to protect the public from the possibility of exposure to radioactive release caused by acts of sabotage.

The current design basis threat—the threat against which a plant licensee must be able to protect—assumes a suicidal, well-trained paramilitary force, armed with automatic weapons and explosives, that is intent on forcing its way into a nuclear power plant to commit radiological sabotage. The design basis threat also assumes that the attackers will have insider knowledge of plant systems and plant security plans and even insider assistance.

This assumed threat forms the basis for security response plans and training drills. These plans and drills are tested regularly by the NRC as part of their Operational Safeguards Response Evaluation (OSRE). The OSRE program has also provided the industry with the opportunity to identify areas where security can be improved and enhanced.

Physical Design of Plants

A number of defenses exist to counter such a threat. Nuclear plants, by their very design, provide a redundant set of physical barriers designed both to keep radiation and radioactive materials inside the plant and to keep intruders outside' the plant. The reactor core is protected by a containment structure comprised of several feet of thick reinforced concrete walls, a steel liner, additional concrete walls within containment, and a several inches-thick high tensile steel reactor vessel. The metal cladding on the fuel itself also serves as an additional protective barrier. In addition, there are multiple systems of the safety equipment needed to safely shut down the reactor. This "defense in depth" design explains why the FBI considers nuclear plants to be "hardened targets."

Nuclear plant sites have three distinct zones, each of which has different levels of physical and human defenses. The first zone, called the "owner-controlled area," includes all of the property that is associated with the plant. The owner controlled area typically ranges in size from several dozen to hundreds of acres of land and serves as an effective buffer zone around the critical areas of the plant.

The second zone, the "protected area," is a physically enclosed area' surrounding the plant into which access in controlled. Physical barriers to intrusion include barbed wire and razor' wire fences, microwave and electronic intrusion detection systems, closed circuit television systems, isolation zones, extensive lighting, system monitoring by redundant alarm stations, and vehicle barrier systems. Access to the protected area is restricted to a select population of site personnel with a need for entry.

To access the protected area, plant employees and visitors must pass through a metal detector and an explosives detector. X-ray machines are also used to screen material brought into the protected area by employees and visitors. In addition, employees must utilize a hand-geometry device to confirm their identity before entering the protected area.

The third zone, the "vital area," includes those areas within the protected area containing equipment essential for operating the plant safely and successfully shutting, down in the case of an event. Additional barriers are in place to protect vital areas of the plant; including concrete floors, walls, and ceilings; steel locked and alarmed doors; and key card access doors. Access to the vital area is even further restricted to a select population of site personnel with a need for entry. These access lists are routinely reviewed to confirm the need for access. The defensive contingency plans used by security forces are geared toward protection of these critical areas:

Security Forces

In addition to the robust physical structures protecting the plant, licensees maintain a highly trained, well-equipped security force to guard each facility. Security personnel, many of whom have law enforcement or military experience, must undergo extensive background checks, including fingerprint submittal for an FBI criminal record check; physical and psychological testing and screening; credit and reference checks; education and work history verification; and routine drug and alcohol screening. The nuclear industry is unique among energy industries in having a cooperative relationship with the FBI to facilitate such criminal record checks.

In addition, security personnel are subject to rigorous training requirements. Initial nuclear security officer training includes a wide variety of topics, including NRC requirements for nuclear—facility physical security, recognition of sabotage devices and equipment, contraband detection devices and operation, firearms training and tactical response training. Annual supplemental training covers areas such as weapons proficiency, physical readiness, stress fire course, force-on-force drills, and table top drills. A significant amount of annual training focuses on force-on-force training, which covers such topics as threat assessment and tactical response, response force deployment and interdiction, protection of specified vital equipment and protected areas, multiple target acquisition and engagement, and the use of armored body bunkers, ballistic shields, and other specialized security equipment.

As a further protection to the public, each nuclear power plant has an extensive and well-honed emergency response organization and systems in place to respond to and mitigate any emergency that arises. Emergency response plans are tightly integrated with local, State and Federal regulatory and emergency authorities and undergo regular training and drilling. The emergency planning zone includes an area within a 10-mile radius of the plant, an area encompassing roughly 315 square miles. Since September 11, Exelon Nuclear has conducted security briefings for State and local officials in each of the States in which we operate to reinforce the coordination and response plans in the event of an emergency.

September 11 and Its Aftermath

Upon notification by the Nuclear Regulatory Commission on September 11, all nuclear plants immediately increased their security to Level 3, the highest level of security maintained at commercial nuclear reactors. All U.S. commercial reactors remain at Level 3.

Since September 11, nuclear plants have also extended the point of initial screening of people entering the plant site from the protected area boundary to a point in the owner controlled area boundary. This initial screening includes an identification check, confirmation of the purpose for entering the site, and a thorough vehicle inspection for all visitors. State police and, in some cases the National Guard, have augmented this effort. In addition, armed patrols have extended their patrols to include a larger portion of the owner-controlled area. These patrols are coordinated with onsite personnel to enhance detection and deter potential threats.

Given the uncertain nature of potential attacks, Exelon Nuclear and other reactor operators took a variety or protective measures in conjunction with NRC guidance. These included actions to harden site access, increase security resources, and improve operational readiness.

To harden site access, Exelon has: established armed owner control area checkpoints for all vehicles entering the site; implemented additional vehicle pre-screening and control of all onsite deliveries upon entry to the owner-controlled area; positioned barriers to prevent access at alternate Owner Controlled Area entrances; restricted visitor access to those required for essential plant work; extended background checks for all personnel with temporary unescorted access; checked employee

data bases against FBI watch lists of suspected terrorists from all known terrorist organizations.

To increase security resources, Exelon has: increased the number of security officers; procured additional weapons and upgraded armaments; added armed security posts at key plant locations; increased the security presence at each site entrance; added local law enforcement, and at times National Guard, posted at site entrances.

To enhance operational readiness, Exelon has: enhanced plant procedures and operator training for use during an attack or credible threat; implemented a fleet-wide threat assessment procedure to respond to threat situations; elevated attention to security and fire protection related equipment; established protocol for augmented Federal and State law enforcement assistance and intervention.

Since shortly after September 11, the Nuclear Regulatory Commission has been engaged in a top-to-bottom review of the Design Basis Threat to reevaluate its adequacy. As an interim measure, the Commission issued Orders on February 25th of that year which imposes significant additional requirements on licensees pending the completion of a more comprehensive review of safeguards and security program requirements.

While many of the specifics regarding the NRC Orders are classified as safeguards information and cannot be disclosed to the public, issues addressed by the Orders include security officer staffing levels, protection against potential vehicle and waterborne threats, protection of used fuel, enhanced access authorization controls, and mitigation efforts in the event of an attack.

ADDITIONAL SECURITY CHALLENGES AND RECOMMENDATIONS

As the United States acts to strengthen homeland defense in light of new threats to the nation's security, it is imperative that Federal, State, and local officials work cooperatively with nuclear plant operators to buildupon the solid foundation of emergency response capability that existed prior to September 11.

In particular, there are several steps that we believe the Federal Government should take to address security issues at nuclear power plants.

• There must be a clearer delineation of responsibility between government and plant licensees. Federal law currently requires NRC licensees to protect against a variety of potential threats to commercial nuclear power plants, but the law also considers many threats to be outside the scope of licensee responsibility and instead relies on law enforcement agencies and the military to protect against certain threats. Congress and the Administration must determine where the line between licensee and government responsibility lies in light of the new threats faced by nuclear power plants and other facilities that make up the nation's critical energy infrastructure.

• There must be improved communication and coordination among licensees and the various Federal, State and local agencies involved in emergency response planning. The Federal Government has a role in financially supporting many of the actions necessary to accommodate this improved communication and coordination.

• The Nuclear Regulatory Commission has incurred—and will continue to incur—additional costs to address new security concerns. Congress should support the NRC's request for additional funding to support additional actions undertaken in support of homeland defense.

• The Nuclear Regulatory Commission should revise its protocol of threat levels to conform with that used by the Office of Homeland Security.

• In determining the resources necessary to protect nuclear power plants, the Federal Government should consider the potential vulnerability of these plants relative to other potential critical infrastructure targets and allocate limited Federal resources to those facilities deemed to be most vulnerable to terrorist attack.

Delineation of Government and Licensee Responsibility

The most pressing challenge facing Congress and other Federal policymakers is ow to allocate responsibility for protecting the nation's critical infrastructure against attacks by terrorists and other enemies of the state. Federal law currently requires Nuclear Regulatory Commission (NRC) licensees to protect against a variety of potential threats to commercial nuclear power plants. Federal law considers many potential threats to be outside the scope of licensee responsibility and instead relies on law enforcement agencies and the military to protect against certain threats. The question facing Congress and the Administration is where the line between licensee and government responsibility lies in light of the new threats faced by nuclear power plants and other facilities that make up the nation's critical energy infrastructure.

The events of September 11 have presented the Nation with a variety of new challenges. Protection of the country's critical infrastructure is among the most impor-

tant of these challenges, but it is a challenge that I am confident the nuclear energy industry can and will continue to meet.

Exelon Nuclear fully supports the NBC's efforts to conduct a top-to-bottom review of security requirements pertaining to nuclear facilities. We continue to assess security at our plants and have taken appropriate steps to increase security measures as a result of the heightened State of alert.

As Congress and the Administration debate what changes in Federal law and policies are appropriate in the aftermath of the September 11 attacks, strong consideration should be given to building upon the existing regulatory system which distinguishes between threats for which licensees are responsible and threats for which law enforcement and the military are responsible.

As I mentioned earlier in my testimony, the House of Representatives endorsed one such approach last year as part of H.R. 2983, the Price-Anderson Amendments Act, which passed by the House by voice vote. The House legislation directs the President to conduct an assessment of potential threats against nuclear facilities and to classify each threat as one for which the Federal Government should be responsible or as one for which NRC licensees should be responsible The measure also requires the Nuclear Regulatory Commission to promulgate a rulemaking to ensure that licensees address the threats identified in the report as a licensee responsibility.

Exelon strongly supports the Price-Anderson provisions as a reasoned approach to this very important issue. The Presidential study will allow the White House to coordinate the efforts of a number of Federal agencies to conduct a comprehensive threat assessment. Such an approach will also allow personnel knowledgeable in security matters to make decisions in coordination with intelligence officials to ensure that nuclear facilities are treated in a manner consistent with the protection of other critical infrastructure facilities.

Improved Communication and Coordination

The need for improved communication and coordination among licensees and Federal, State and local government agencies is perhaps best illustrated by an event at AmerGen's Three Mile Island (TMI) plant last year. The Nuclear Regulatory Commission notified AmerGen on October 17, 2001, that the Federal Government had received information that it believed constituted a credible threat against the plant. A number of Federal agencies and organizations, including the NRC, the FBI, the FAA, and NORAD, were involved in the subsequent response to what was later determined not to be a credible threat.

Site personnel took immediate action to secure the plant, which was in the midst of a maintenance and refueling outage. The company also requested—and received—additional security assistance from the Pennsylvania State Police.

The "threat" against Three Mile Island showed that the regulatory system currently in place can work effectively in response to a potential threat. As the licensee, AmerGen took immediate action to secure the site physically and called in additional assistance from the law enforcement community, while the Federal Government and the military took action to protect the plant against potential threats that fell outside the design basis threat against which AmerGen is responsible for defending.

At the same time, the TMI event also provided both the industry and the government with some valuable "lessons learned," including the need to work more closely with Federal officials to clarify the nature of threat information, the need to develop coordination procedures with multiple Federal agencies, and the need to communicate effectively with local elected officials and emergency services personnel.

The Commission took a step toward addressing some of these issues earlier this year when it established an Office of Nuclear Security and Incident Response to consolidate and streamline selected NRC security, safeguards, and incident response responsibilities and resources. While this should address some coordination and communications issues, other Federal agencies must engage in similar efforts.

Finally, it is important that the NRC be integrated into the intelligence community's process for assessing and communicating potential threats against commercial nuclear facilities and other NRC licensees. Nuclear plant licensees are highly dependent on receiving threat information from the NRC, so it is essential that the Commission itself be fully integrated into the intelligence community's threat assessment process.

Expansion of NRC Mission

The Nuclear Regulatory Commission has incurred—and will continue to incur—additional costs to address new security concerns. While the Commission plans to reallocate existing resources to support the new Office of Nuclear Security and Inci-

dent Response, the NRC's mission with regard to security is likely to expand as the Federal Government reassesses the responsibilities of various parties for providing nuclear security. NRC's efforts should be coordinated with the broader efforts of the Office of Homeland Security. Congress should support the NRC's request for additional funding to support additional actions undertaken in support of homeland defense.

Security Protocols and Procedures

As I noted earlier, the NRC currently uses a three level security classification system. Each of the nation's 103 reactors have been at the top level, Level 3, since September 11 and the Commission has indicated that plants will remain at Level 3 for the foreseeable future. This situation begs the question of how meaningful the different security classifications are if the highest level of alert effectively becomes the only level of security. Given these concerns and the need for consistency in communicating the urgency of potential threats, the Commission should revise its protocol of security levels to conform to the five level classification system established by the Office of Homeland Security. Such a system would also allow the Commission and licensees to distinguish between the current generalized heightened State of alert and a more specific threat against a plant or plants.

As the NRC develops a new security level classification; it should establish security requirements that correspond appropriately to the various threat levels. In essence, the Commission must redefine the baseline security requirements for plants assuming a "green" alert level where no threat exists. The Commission should then require appropriate additional security requirements as alert levels are upgraded. This will allow plant operators and emergency response officials to develop readiness levels commensurate with the threat level that exists.

Balancing the Need for Enhanced Security and Limited Federal Resources

In determining the resources necessary to protect nuclear power plants, the Federal Government should consider the potential vulnerability of these plants relative to other potential critical infrastructure targets and allocate limited Federal resources to those facilities deemed to be most vulnerable to' terrorist attack.

For example, some in Congress have advocated federalizing nuclear plant security forces. As I mentioned earlier in my testimony, the industry has a highly trained force of security personnel guarding commercial nuclear plants. Replacing these forces with Federal employees is unnecessary and would complicate the ability of licensees to coordinate the response of plant and security personnel in the event of a terrorist attack. Federalizing nuclear security forces would also unnecessarily limit the pool of potential guards by prohibiting retired military and other government officials who would' be prohibited from serving as Federal security personnel and continuing to draw, their Federal pension.

Others in Congress and elsewhere have advocated placing anti-aircraft artillery installations at nuclear plants to protect against an air attack. The industry believes that Federal resources would be more properly focused on increased airport security to ensure that terrorists are denied access to the large commercial airliners that are of most concern.

Given the strong physical structures at nuclear plants and the highly trained guard force to protect commercial nuclear facilities, resources may be more appropriately focused on other critical infrastructure facilities.

Mr. Chairman, thank you for the opportunity to discuss these issues with you. Let me close by reiterating that the nuclear industry recognizes our responsibility, for protecting the public health and safety, and we are committed to taking the steps necessary to do so.

I would be pleased to answer any questions you may have.

RESPONSES BY JACK SKOLDS TO ADDITIONAL QUESTIONS FROM SENATOR VOINOVICH

Question 1. Please explain your claim that the owners and operators of nuclear facilities have the greatest interest in protecting the safety and security of the plants.

Response. As the owner and operator of a commercial nuclear reactor, Exelon's foremost responsibility is to the protection of the health and safety of the public and of our employees. Exelon Nuclear's commitment is outlined in our Conduct of Operations policy, which states that we "will operate and maintain nuclear power plants with the full commitment to public and employee health and safety."

Thousands of nuclear plant workers and their families live within the 10-mile emergency planning zone which surrounds commercial nuclear reactors. Clearly,

these employees have an overriding personal interest in making sure that they do not take any action that would threaten the safety or security of the plant.

From a business perspective, nuclear plants represent the largest corporate asset of most nuclear plant owner and operators. The management of the corporation would never place these assets at risk by cutting back on necessary safety and security measures. The safe operation of our plants is the first priority of plant operators.

Thus, while the general public undoubtedly shares our strong interest in assuring that nuclear plans are operated safely and securely, the combination of personal and business factors mentioned above make it clear that the owners and operators of nuclear facilities have the greatest interest in protecting the safety and security of the plants.

Question 2. What are the specific concerns with Congress being involved with, and possibly even setting, the design basis threat?

Response. Congress has the responsibility to provide guidance to—and to conduct oversight of—the Nuclear Regulatory Commission (NRC) and other Federal agencies regarding the level of security and safety expected by the American public, but establishing the details of the design basis threat is best accomplished by experts in nuclear safety who have access to the full range of intelligence information regarding threats to nuclear facilities.

Establishing the details of the design basis threat through the regulatory process is beneficial for several reasons:

First, establishing the design basis threat requires a significant amount of expertise in the area of threat assessment. The NRC and other Federal agencies have an established relationship with the intelligence community and have established a process for gathering and evaluating threat information.

Second, it is important that the NRC have the ability to update the design basis threat without the enactment of legislation, a difficult task in the best of times. The design basis threat is currently codified in NRC regulations and can be changed through the rulemaking process.

Finally, although the regulatory process can be lengthy, it provides for significant input from all stakeholders and interested parties in a manner that cannot be duplicated by the Congress. Regulations are typically issued in draft form, with an opportunity for public comment and, in some cases, public hearings.

The industry recognizes that Congress is responsible for assuring that the NRC and the nuclear industry are examining and responding to the events of September 11th, including the nature of the potential threat to our national infrastructure.

The nuclear industry would welcome the opportunity to provide to the Committee with more details on the nature of plant security and information regarding the many improvements in plant security operations that have been made since last year in a closed session.

Question 3. Could you please explain specifically why you believe the requirements, standards, and qualifications of a federalized security force would degrade security?

Response. Following the introduction of legislation in both the Senate and the House of Representatives calling for the federalization of the security forces at nuclear power plants, the industry conducted a review of this issue through its trade association, the Nuclear Energy Institute (NEI). NEI issued a lengthy report on the issue (*"Implications of Security Force Federalization on Nuclear Plant Security Safety"*), which I am attaching to this response. The report concludes that federalizing nuclear power plant security could have several negative impacts:

- It could diminish and disrupt plant security by bifurcating the management responsibilities over the security forces.
- It could unnecessarily distract the NRC from its NRC's primary mission of protecting public health and safety through the safe operation of nuclear plants by creating one of the largest law enforcement and security agencies in the country.
- It could reduce the stringent hiring standards, extensive background checks, training and performance reviews that are already in place for our private security forces since existing standards exceed the minimum standards specified in proposed legislation.
- It could squander vital experience that current forces now have by replacing these private security forces with Federal personnel with little or no experience at nuclear plant facilities.
- Federalizing nuclear plant security forces when nuclear plants are already among the most secure privately owned facilities in the country may easily result in a mis-allocation of limited Federal security forces. For this reason, the industry believes that Congress and the Administration should conduct a comprehensive re-

view of security at all critical energy infrastructure before making patchwork changes in security requirements.

Question 4. Can you explain the concerns of NRC licensees about he possible legal implications of providing arrest authority to private security forces and the possible remedies to these concerns?

Response. The nuclear industry largely supports the efforts of the NRC to increase the legal authority of our security forces. We are concerned, however, that efforts to blur the distinction between local law enforcement agencies and private security forces may have unintended consequences. For example, a wide body of State and Federal law has developed to establish the rights and responsibilities associated with the arrest authority of local law enforcement agents, but it is not clear how the underlying principles would be applied to private security forces. For example, would the arrest authority of our private security forces extend beyond our perimeters to permit the arrest of demonstrators that might block access to our facilities? In addition, would granting arrest authority to private security forces restrict their ability to engage in interviews of individuals or conduct searches of an individual's property on the plant site?

Notwithstanding the authority to arrest or not arrest, our nuclear plant security officers are currently fully prepared to perform their duties to protect our facilities.

Question 5. As the largest nuclear operator in the country, can you speak to how the NRC and the facilities have responded to various threats and concerns following Three Mile Island up to September 11?

Response. Since the Three Mile Island incident, a significant number of security measures have been taken. Improved vehicle barriers have been installed, improved training of security officers has been employed, and strengthened physical barriers have been erected.

STATEMENT OF DANIELLE BRIAN, EXECUTIVE DIRECTOR, PROJECT ON GOVERNMENT OVERSIGHT (POGO)

Mr. Chairman and members of the committee, POGO first began investigating security at nuclear facilities over 16 months ago. We are an investigative organization that works with insiders in order to improve public policy. We have neither a pronor an anti-nuclear agenda. We began investigating the Department of Energy's (DOE) nuclear weapons facilities because more than a dozen insiders—current and former DOE and contractor security officials, contractors with military experience who test and evaluate the security at these facilities, and members of various guard forces—came to us with grave concerns regarding inadequate security pre-September 11.

Just prior to September 11, we completed our report "U.S. Nuclear Weapons Complex: Security at Risk," concluding that our nation's ten nuclear weapons facilities, which house nearly one thousand tons of weapons-grade plutonium and highly enriched uranium, regularly fail to protect this material from mock terrorist attacks. Once security became a national priority, we briefed these alarming findings with the National Security Council, the Office of Homeland Security, the Pentagon Nuclear Command and Control staff, the staff of the Scowcroft End-to-End Review, the Office of Management and Budget, numerous Congressional Committees and Members, and at Rep. Chris Shays' request, the General Accounting Office.

Because of this work, guards from commercial nuclear power plants across the country began contacting POGO with similar concerns about inadequate security at the plants where they work. In April, POGO accompanied a group of nuclear power plant security guards to brief a dozen Congressional offices and Committee staff about their first hand concerns. We then began working with current and former Nuclear Regulatory Commission (NRC) security officials and contractors with military capabilities who test and evaluate security at commercial reactors. These people echo the same concerns about ongoing inadequate security at commercial nuclear power plants.

My testimony is based on the information and documents gathered from these insiders. Again, I believe it is important to emphasize that our sources of information are not "anti-nuclear." In fact, most of them have worked in the nuclear energy field for most of their adult lives. We applaud the sponsors of Senate Bills 1586 and 1746, the "Nuclear Security Act," for several important provisions contained in these bills.

THE DESIGN BASIS THREAT

Nuclear facilities are required to protect against a specified level of threat (known as the Design Basis Threat or DBT) from outside attackers and inside conspirators using a specific set of weapons. NRC's current DBT is wholly inadequate and must be made more realistic. According to published sources including U.S. News and World Report, the NRC's DBT requires protection against only three outside attackers with the help of one passive insider. This is absurd given the 19 terrorists involved in the highly coordinated, technologically advanced September 11 attack.

Rumors are that DOE will increase its DBT to approximately ten outside attackers and significantly upgrade the weaponry and tools that adversaries can be expected to use in an attack; However, although some in NRC have also recommended an increase tots DBT, there seems to be resistance within the senior ranks of the NRC to committing to making these improvements. There appears to be no justification for the NRC to have a less robust DBT for nuclear power plants than DOE has for nuclear weapons facilities. A successful attack on either a nuclear power plant or weapons facility would cause unfathomable damage to surrounding populations. We believe that the provisions in the "Nuclear Security Act" for a new and significantly upgraded DBT are absolutely essential.

In addition to the inadequate number of attackers to be protected against, the current DBT does not require protection against some of the most dangerous weapons that are available on the open market today, such as 50 caliber API sniper rounds that can penetrate hardened guard posts and vehicles, nor do they use simulated chemical or biological agents that would require the guard force to be trained with gas masks. Furthermore, performance tests do not employ diversionary tactics that are likely to be used during an attack, such as remote controlled explosives. POGO agrees with the Nuclear Security Act's provisions that the new DBT include enhanced requirements for more realistic weapons, explosives, tools, and tactics, as well as more outside attackers and active inside collaborators.

POOR PERFORMANCE

Though the DBT is severely inadequate compared to what we now recognize as the threat, half the nuclear power plants cannot even protect against this current standard of three outside attackers. David Orrik, the head of the Operational Safeguards Response Evaluation (OSRE) program, testified before the House Commerce Committee on April 11, that in 46 percent of the force-on-force security tests:

> "the expert NRC team identified a significant weakness—significant being defined as the adversary team simulating sabotaging a target set, which would lead to core damage and in many cases, to a probable radioactive release. It is important to note that, even with adequate time for the plants to prepare and make themselves ready for the OSRE, that 46 percent still had—a weakness in armed response."

Let me caution the Committee—these tests are seriously dumbed down to favor the guard forces. The utilities are informed of an upcoming test six to 10 months in advance giving them plenty of time to prepare, the guards are usually aware of the attack scenarios, the mock terrorists are allowed to be made up of the utilities' own management staff, and the weapons used in the tests are not nearly as dangerous as those that can easily be found on the open market.

Despite their clear artificiality and imperfections that favor the guard forces, force-on-force performance tests are still the best test of the performance of a guard force in protecting key targets at a nuclear facility. This is the key issue that cannot be forgotten—can the guard force protect the integrity of the reactor and the spent fuel pools from a suicidal terrorist attack? The statistics say no. How much worse would those statistics be if the DBT accurately represented the very real and sophisticated threat we know we are now facing?

The mindset of both the utilities and the NRC is far too compliance-oriented—rather than performance tested. Our security guards are regularly told that security upgrades are unnecessary because the utility is already in "compliance" with NRC regulations. In other words, if a checklist of requirements for detection, delay, and response is met—to include such items as a double-fence, alarms, a certain number of guards—the facility is deemed secure. However, performance tests repeatedly reveal that despite this "compliance" with requirements, physical security and the guard forces cannot stop terrorists from causing catastrophic damage to the reactor. This institutionalized bureaucratic complacency may be the biggest impediment to adequate security.

A post-September 11 example of this phenomenon is that armed guards are now required to accompany all visiting trucks coming onto the site. We are told, there

is often no extra guard available, and therefore, a guard is required to leave his post uncovered to accompany the truck. In these cases, the facility may be in compliance with this new requirement, yet guards are concerned that there is a hole in their defensive posture.

SPENT FUEL POOLS ARE SECURITY'S POOR STEPCHILD

The NRC has never tested a power plant guard force's ability to protect spent fuel pools—possibly the prime target of a terrorist attack. In October of 2000 the NRC started to recognize the problem of spent fuel fires in a study of the effects of accidents. However, in 100 pages of analysis, they never considered sabotage by terrorists. The NRC needs to create a target/assets list prioritized by importance.

Several spent fuel pools at nuclear power plants across the country are only 50 yards from the double fence line. In a terrorist attack, the initial strike would likely be extraordinarily violent, fast, and with a significant level of human carnage. According to Sandia National Lab's "Barrier Technology Handbook," it is estimated that a terrorist could penetrate the fence line and breach a door or side of a secured building in less than 60 seconds. We encourage the NRC to immediately recognize spent fuel pools as a primary terrorist target.

We have been advised by military Special Forces sources of specific and obvious vulnerabilities at most nuclear power plants that I would be happy to discuss with Senators or staff. I am uncomfortable, however, outlining them in public testimony.

To explain in general terms, a certain type of explosive, which a terrorist could carry on his back, would allow him to blow a sizable hole in the reinforced concrete bottom or wall of the spent fuel pool. At nuclear plants that have boiling water reactors (BWR)—about one-third of the existing reactors are BWRs—things could be even worse. These reactors have the spent fuel pools above ground. In these cases, a certain kind of explosive could even be launched from outside the fence line into the side of the pool. According to an unclassified study by Brookhaven National Lab, under certain conditions, the pool would start draining immediately, which could result in the immediate release of high-levels of radiation, quickly turning into an uncontrolled radioactive fire, and the plant could do nothing effective about it.

The Nuclear Security Act does require a plan to increase security of these spent fuel pools. In the meantime, we would encourage the addition of barriers and delay mechanisms to supplement security until the spent fuel is placed in dry casks underground.

INADEQUATE TRAINING AND WEAPONRY

Guards from several of the power plants have registered complaints with POGO about inadequate training as well. For example, one facility hired a new class of guards after September 11. The vast majority of the new recruits had never fired a gun before. During their training, they were limited to firing 96 rounds with their handgun, and far fewer with their shotguns. Two guards quit after 2 months on the job believing they couldn't protect the plant in the case of a terrorist attack. They told POGO, and other guards have admitted to NRC inspectors, that their training is so inadequate; in the face of real terrorist attack, many guards would use their guns simply to protect themselves while they escaped from the plant. Other guards with decades of experience protecting nuclear power plants bemoaned the lack of training outside the classroom, as well as the lack of modern tactical training. For example, their firearms training requires only that they be capable of standing and hitting a stationary target 25 yards away—they have *no* training shooting on the run at a moving target.

Additionally, the guard forces at nuclear power plants are severely out-gunned. Even the NRC's DBT assumes that attackers will be armed with automatic weapons and explosives, yet many guard forces around the country are equipped only with shotguns and revolvers. We understand that the NRC is working with the Committee on legislative language to address this discrepancy.

SECURITY TESTS: MORE OFTEN AND MORE ROBUST

NRC's virtually defunct Operational Safeguards Response Evaluation (OSRE) program conducts force-on-force tests using mock attackers only once every eight years at each plant. According to the nuclear power plant security guards and NRC inspectors we have interviewed, this 8-year hiatus creates a woeful lack of focus on security between tests. According to the guards with whom we have been working, because the tests are announced so far in advance, the utility management has time to quickly invest in security training consultants to improve their posture and chances of success. The guards advise us that after OSRE force-on-force tests, the security posture regularly returns to a bare minimum.

POGO agrees with the Nuclear Security Act's provision to require that such tests occur no less than every 2 years to ensure that heightened standards remain in effect. POGO additionally recommends that the utility only be given 24- to 36-hour notice and that the utility be required to freeze in place the guard force to be tested at the moment of notification, rather than being allowed to call in the youngest or most capable guards.

Currently, the mock terrorists and the attack scenarios to be tested are chosen by the utilities. The mock terrorists can be county or State police, the utility's own training staff, or even their own utility management staff—the very people who have a stake in ensuring success. With all due respect to these people, and as genuine as they may be in trying to test the physical security of the facility, none of them are trained to have the mindset or skills of highly trained terrorists. POGO recommends the use of military Special Forces units that are already trained to act as the adversarial team in force-on-force tests.

According to the guards, they know within an hour or two when a test will take place and what part of the plant the mock terrorists will attack. They tell us that contrary to the full-page ads in the Washington Post and other newspapers, they do not normally wear flack jackets or their communications gear, nor do they carry their semi-automatic weapons. Sometimes, the guards are more than a football field's distance away from their weapons and flack jackets. However, when the mock attack is about to take place, the guards are magically wearing their flack jackets and communications gear and have their weapons in hand. Even more troubling is the fact that, at one-third of nuclear power plants, the guards only have access to shotguns, and they are locked up at a central location. In case of a real attack, the guards would have to go to that location, unlock the cabinet, get their shotguns and protective gear, and return to their post. By that time, the terrorists would have achieved their goals and caused catastrophic damage. Ongoing, limited-scope performance tests should regularly be testing the timelines for terrorist access to critical components.

If the facility fails a performance test, the Nuclear Security Act requires re-testing every 6 months until it passes. We would recommend immediately calling in a well-armed and trained National Guard unit as compensatory action to supplement security until the facility passes a new OSRE test.

We have learned from anti-terrorism experts that the worst enemy of any guard force is the daily grind of nothing happening. Guards are only human. A simple way to combat this problem is to add unannounced checks by the NRC to security testing. Fast food chains and the Postal Service frequently use a "mystery shopper" to use a false ILK or exploit some other weakness. Because the guards know a "mystery shopper" may be in their midst at any time, they remain more alert. This would be a very low cost tool that would significantly supplement security.

FEDERALIZATION

We recognize that federalizing the security force is a contentious issue. POGO believes that the same goals can be accomplished through far more vigorous Federal oversight, along with upgraded training, compensation, and authority granted to security forces.

Currently, security guards who are risking their lives are among the lowest compensated employees at many plants. Pay scales and first responder benefits for security forces, including life and disability insurance, should be commensurate with those accorded to local police and fire departments. We cannot expect our security guards to give their all when we do not fairly provide for them in the event that they are injured while performing this dangerous and important job. Also, people working at nuclear power plants, including NRC and utility employees as well as contractor and subcontractor employees, should be given whistleblower protections. In the current climate of fear and whistleblower retaliation, it has been our experience that people have been deterred from coming forward with important information that could help fix security problems. The Paul Revere Act, introduced in the House; and soon to be introduced in the Senate, would strengthen whistleblower rights and extend them to Federal contractor employees.

We applaud the introduction of Senate Bill 1586 that recognizes that security forces do not have enough authority to carry out their mission. Currently, guards are prohibited from using deadly force unless an intruder wields a gun; or they feel their life or the life of someone else is in danger, in accordance with State law. In other words, if an attacker jumps over the fence with a backpack and runs toward the reactor building or spent fuel pool, the guard can only attempt to chase down the attacker. We have been told of an instance when an NRC inspector observed a guard follow a mock terrorist during a force-on-force drill as he destroyed critical

target sets in the reactor complex. When asked why he wasn't doing anything to stop him, the guard explained that he didn't have the authority to shoot an intruder who was only destroying property. The NRC has been trying to resolve this conflict for years. This legislation must remedy this obvious failure.

Local law enforcement and first responders should also be given clearance to receive safeguard information so they can better coordinate emergency response plans. Currently, local law enforcement and first responders, in many cases, do not have adequate familiarity with the layout of critical areas of the plant that is necessary to respond to an emergency.

If there is any expanded role for the Federal Government, it should be providing independent oversight, rather than management of security. Robust and credible Federal oversight is absolutely key to adequate security at both the nuclear power plants and nuclear weapons facilities. POGO has already recommended taking the security oversight function out of DOE, and we strongly recommend the same for NRC. NRC has historically been altogether too compliant with industry's wishes. For example, recently agreeing to industry's demands to replace OSRE with industry self assessments of security was totally irresponsible. History has shown that the critical job of security oversight cannot be adequately performed from within these agencies. Therefore we suggest that a small independent Office of Nuclear Security be created, perhaps housed in the Office of Homeland Security, or perhaps as an independent agency reporting to the Congress and President. Its purpose would be to provide oversight over and test the security of both government and commercial nuclear facilities.

We would be happy to assist you and your staff as you work to refine these pieces of legislation, as well as making some of our inside sources available to you so that you can learn from their first-hand experiences.

RESPONSE BY DANIELLE BRIAN TO AN ADDITIONAL QUESTION FROM SENATOR CLINTON

Question. In your testimony, you indicate that the mock terrorists and the attack scenarios to be tested at the plants are chosen by the utilities themselves. Can you explain further?

Response. The OSRE does not use special forces military units, or their own trained adversary units, in their force on force tests of the power plant guard forces. The utilities are allowed to choose the adversary force—which is a key element of these tests. The utilities over time have chosen their own management personnel, their own training staff, and local and State police units as adversaries. This is a serious flaw in the tests. Even if these adversary forces are trained at all, they are not trained to have a terrorist mindset—as some military special forces units are. We strongly recommend that special military units, or OSRE's own trained adversary units be used for force-on-force tests. The utilities are also allowed to choose the scenario to be tested—for example, the location of the attack, as well as the target. In that the guard force has 6–9 months to practice these particular scenarios, the guards are never surprised by either the timing of the attack, or the tactics of the "terrorists." When they are surprised by an unscripted tactic, the utility complains that the adversaries "cheated." For these reasons, and others, we believe these tests are dumbed-down and not credible.

One way to address these artificialities in the oversight would be to create a permanent Office of Nuclear Security in the new Department of Homeland Security. We have come to believe that the nuclear agencies, including the Department of Energy, are incapable of serious self-evaluation. We have talked to OMB and Homeland Security about this idea, and they believe it has merit. Moving the OSRE function out of NRC and into Homeland Security would be a quantum leap toward serious security oversight of our nation's nuclear power plants.

RESPONSES BY DANIELLE BRIAN TO ADDITIONAL QUESTIONS FROM SENATOR VOINOVICH

Question 1. In your testimony, you stated that a re-evaluation of the design basis threat is necessary. However, S. 1746 provides for a NRC report to Congress about the changes made to the design basis threat. In your opinion, what is the value of making these changes public?

Response. I never suggested that the new DBT be made public. In fact, I believe it should not be public. However, the Congress should fully understand the basis for and the credibility of the new DBT—not only for the number of outside attackers, and the issue of passive/active insiders, but also the kinds of weaponry,

tools, explosives, etc. that can be used by the adversaries. Without informed Congressional oversight, agencies have historically been incapable of maintaining even adequate standards.

Question 2. Specifically, what impact will publishing these changes have on our national security and do you think Members of Congress should be involved in making decisions about the adaption of this threat analysis?

Response. I never suggested that the new DBT be made public. In fact, I believe it should not be public. However, the Congress should fully understand the basis for and the credibility of the new DBT—not only for the number of outside attackers, and the issue of passive/active insiders, but also the kinds of weaponry, tools, explosives, etc. that can be used by the adversaries. Without informed Congressional oversight, agencies have historically been incapable of maintaining even adequate standards.

Question 3. Currently, the NRC, like many other Federal agencies, is facing a human capital crisis to get people to work for the agency with the appropriate education, training, and experience. Many of the steps that you suggest in your testimony, such as training and testing, require more people with this specialized knowledge. How do you suggest that the NRC attract and keep these appropriate nuclear security people to meet these proposed requirements?

Response. The NRC is currently in the process of hiring a number of new people in security, and we understand their applicants are highly qualified. Our testimony, however, referred specifically to the inadequate training provided to the security guards by the utility's security subcontractors. The poor pay, benefits and training afforded many nuclear security guard forces is a very serious issue that may require a legislative fix.

STATEMENT OF DONNA J. HASTIE, BS, MS, EMERGENCY PREPAREDNESS SPECIALIST, MARRIETTA, GA

Thank you, Mr. Chairman. My name is Donna Miller Hastie. My experience in emergency planning includes 23 years in the commercial nuclear power industry in the U.S. and abroad. Before joining the nuclear industry, I supervised a nuclear medicine program in a hospital. During my career, I have served as an evaluator or observer at over 500 emergency preparedness drills and exercises. And, for many years, I have had the pleasure of co-sponsoring and teaching emergency preparedness in a continuing education course at Harvard University. I have also made presentations or taught at MIT, Rutgers, and the Leadership School at Wharton.

My experience includes:

• Manager of the Emergency Preparedness (EP) program for the Beaver Valley Power Plant in Pennsylvania, including onsite emergency response readiness and coordination with offsite State and local emergency response organizations. The 10-mile emergency planning zone (EPZ) for Beaver Valley included three States, three counties, 30 municipalities, three NRC regions, two FEMA regions, and 37 Federal agencies that make up the Regional Advisory Council (RAC).

• Program Manager in the emergency preparedness division for the Institute of Nuclear Power Operations (INPO). During my 14 years at INPO, I completed 280 plus plant visits and at the time of my retirement, was manager of the emergency preparedness program for the Institute. I have been to every plant in the United States at least once, many more than once, and many outside the US. INPO's EP program included identifying areas of strengths and recommendations for enhancements for emergency response programs at nuclear power plants.

• Manager of the Emergency Preparedness program at PSEG, (Salem/Hope Creek plants) in New Jersey for 5 years. The 10-mile EPZ for PSEG included two States, four counties, one NRC region, two FEMA regions, and again, multiple other Federal agencies.

Since my second retirement in August of 2001, I have worked as an emergency preparedness consultant in the nuclear industry.

As you can see, most of my career has been in emergency planning in radiation-related fields. And, like many people whose career is devoted to one area, I am occasionally reminded that many people are not familiar with the extensive history and experience in emergency planning that is the standard for commercial nuclear power plants.

I look at my testimony today as an opportunity to provide enlightenment about an area that has, since September 11, generated considerable concern and much speculation among many Americans, and that is, the history of emergency preparedness programs at U.S. nuclear power plants.

Emergency planning for nuclear plants actually goes back to 1970. In my testimony today, I will review how the work of the past 30 years has put in place emergency preparedness program elements to protect the health and safety of the public. This will include sections on:

- What is Emergency Planning?
- What is the Regulatory History of Emergency Planning?
- What are the Existing Roles and Responsibilities?
- What are the Existing Emergency Preparedness Program Elements?
- What is the Experience with Nuclear Plant Emergency Response Programs?

What is the Nuclear Industry's Commitment to Emergency Planning?

Any comprehensive history of emergency planning must include the regulatory history, complete with titles and citations that can often make for laborious reading. But to not detail that history would be a disservice to this committee.

A. WHAT IS NUCLEAR PLANNING?

Emergency Preparedness has three goals: (1) to protect the plant worker; (2) to protect the plant equipment; and (3) to protect the health and safety of the general public. An emergency plan and implementing procedures provide the basis for safeguarding the population and the work force.

Since 1980, every nuclear power plant in the United States has been required by Federal law to create an onsite emergency response plan and ensure that offsite plans exist to protect public health and safety. The Nuclear Regulatory Commission (NRC) approves onsite plans. Approval of offsite plans is coordinated between NRC and the Federal Emergency Management Agency (FEMA). Both onsite and offsite plans must be approved for the plant to obtain and retain an operating license.

Total emergency preparedness requires plans for the response of both systems and people. The engineering design of the plant provides for safe operations. The operating procedures address appropriate systems response during emergencies. The emergency plan and implementing procedures provide the basis for safeguarding the population and the work force.

In the nuclear industry, effective emergency preparedness depends on mutually supportive planning. The multi jurisdictional nature of the emergency planning zone (EPZ) plan requires that arrangements must be made at multiple governmental levels—contiguous counties within the 10-mile EPZ cooperating with mutual aid agreements, joined by State and Federal agency coordination. Federal departments and agencies, State and local governments, voluntary disaster relief organizations, and the private sector work together to meet basic human needs and restore essential services after an emergency.

B. REGULATORY HISTORY

In December 1970, the NRC (then the Atomic Energy Commission) introduced emergency planning requirements into the regulations. (35FR19568, December 24, 1970). The content of application, technical information section was amended to include Section 10CFR50.34 "A discussion of the applicant's preliminary plans for coping with emergencies". 10CF50.34 embodying the first emergency planning rules, required a discussion of plans for coping with emergencies, and set forth-minimum requirements. Also, Appendix E provided additional items that shall be included in these plans. (35FR19568, December 24, 1970).

In 1973, the Federal interagency responsibility for radiological incident emergency response planning was identified in the Federal Register Notice of January 17. (38FR2356). The notice was revised December 24, 1975, and published in the Federal Register (40FR248).

In the January 17, 1973 notice, the Environmental Protection Agency (EPA) was assigned the responsibility for:

(1) establishing protective action guidelines; (2) recommending appropriate protective actions; (3) assisting State agencies in the development of emergency response plans; and (4) establishing radiation detection and measurement systems.

In December 1974, the NRC developed NUREG75–111, "Guide and Checklist for the Development and Evaluation of State and Local Government Radiological Emergency Response Plans in Support of Fixed Nuclear Facilities" to assist in developing the offsite plans.

In September 1975, the EPA issued EPA–520/1–75–001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents."

In 1975, the NRC published Regulatory Guide 1.101 that set out the format and content of onsite emergency plans. At that time, offsite emergency planning was required for licensing purposes only in the low-population zone (LPZ) located within

about a 3-mile radius of the plant. The EPZ was defined in 10CR100.11. At this time the only plan required to be submitted was the plant plan.

In 1976, a Task Force of NRC and EPA representatives determined the appropriate degree of emergency response planning efforts. A joint EPA/NRC document in December 1978: NUREG–0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants." introduced the concept of establishing emergency planning zones (EPZs)—the Plume Exposure Pathway (0 to 10 miles) and the Ingestion Pathway (0 to 50) miles.

In December 1979, FEMA was assigned lead responsibility for the evaluation of offsite planning and response by President Carter in a White House statement and Fact Sheet. FEMA developed a review process, established in the 44 CFR350 regulations. These regulations were finalized in the Federal Register Notice on September 28, 1983 (48FR44332). NRC retained jurisdiction over plant licensing and operation and onsite emergency preparedness.

In August 1979, extensive changes were made to the NRC's regulations following the TMI accident. The changes were noticed in the August 19, 1979 Federal Register pages 55402—55418. There were several key changes to the regulations. These included the addition of 10CFR 50.47 and major additions to Appendix E. The additions included detailed instruction for developing the emergency response organization, assessment action, activation of the emergency organization, notification procedures, emergency facilities and equipment, training, emergency procedures, recovery efforts and emergency computer systems.

In November 1980, a joint NRC/FEMA document, NUREG–0654/FEMAEP–1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" establishing the substantive basis for both onsite and offsite emergency planning. It required joint licensee/state/offsite agency participation in an annual simulated accident scenario (exercise) as a condition for an operating license.

On December 16, 1980, memorandums of understanding written between the NRC and FEMA were formalized.

In September 1984, the Federal Radiological Emergency Response Plan (FRERP), published as an interim document in the September 12, 1984, Federal Register (29FR35896) outlined the authority and responsibility of each of the 12 Federal agencies that have the resource and capabilities needed to respond to a radiological emergency. The plan was first tested in a full-scale exercise at the St. Lucie Nuclear Facility on March 6–8, 1984. FEMA published the final operational FRERP in the November 8, 1985, Federal Register (50FR46542).

In February 1985, the NRC/FEMA response was published in NUREG–098 1/FEMA–51, Rev. l, "NRC/FEMA Operational Response Procedures for Response to a Commercial Nuclear Reactor Accident".

In November 1985, FEMA issued FEMA-REP–10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants". The Guide establishes the areas to be reviewed and the acceptance criteria.

In November 1986, FEMA issued Guidance Memorandum EV–2, "Protective Actions for School Children". The purpose of the guidance is to assist State and local government officials and administrators of public and private schools in developing emergency response plans for use in protecting the students.

In 1992, the Federal Response Plan (FRP) was implemented. (This comprehensive plan may be implemented concurrently with the Federal Radiological Emergency Response Plan (FRERP), which details the Federal response to a peacetime radiological emergency). The FRP describes the policies, planning assumptions, concept of operations, response and recovery actions, and responsibilities of 27 Federal departments and agencies, including the American Red Cross, that guide Federal operations following residential declaration or emergency.

In July 1996, a Federal Register notice announced the strategic review of FEMA's Radiological Emergency Preparedness (REP) program and requested comments.

In 1999, the Environmental Protection Agency (EPA) published the EPA Radiological Emergency Response Plan (EPA-RERP) to replace the 1986, EPA Radiological Emergency Response Plan. The EPA-RERP has been developed to reflect changes in EPA's programmatic and operational concepts for responding to radiological incidents and emergencies. The new plan represents EPA's integrated approach to management of radiological releases.

In 1999, the NRC's risk significance program; the Reactor Oversight Process integrated the NRC's inspection, assessment, and enforcement programs. The Operating Reactor Assessment Program evaluates the overall safety performance of operating commercial nuclear reactors and communicates those results to licensee management, members of the public, and other government agencies.

The assessment program collects information from inspections and performance indicators (PIs) in order to enable the agency to arrive at objective conclusions about the licensee's safety performance. Based on this assessment information, the NRC determines the appropriate level of agency response, including supplemental inspection sand pertinent regulatory actions ranging from management meetings up to and including orders for plant shutdown. The NRC's revised inspection program includes three parts: baseline inspections; generic safety issues and special inspections; and supplemental inspections performed as a result of risk significant performance issues.

In April 2001, NRC published new EP inspection procedures to determine, in conjunction with the performance indicators, whether a licensee is meeting the Cornerstone Objective and Performance Expectation. The cornerstone objective is "To ensure that the licensee is capable of implementing adequate measures to protect the public health and safety in the event of a radiological emergency". The cornerstone performance expectation is "Demonstration that reasonable assurance exists that the licensee can effectively implement its emergency plan to adequately protect the public health and safety in the event of a radiological emergency."

In September 2001, FEMA published the "Radiological Emergency Preparedness: Exercise Evaluation Methodology" (66FR47526), the Radiological Emergency Preparedness exercise evaluation areas and associated criteria, to be effective October 1, 2001.

In April 2002, FEMA published corrections to certain provisions of the "Radiological Emergency Preparedness Exercise Evaluation Methodology" exercise evaluation areas.

Since 1979, more than 2000 graded exercises have been conducted. In-depth critiques are conducted following each exercise and areas for improvement, as well as strengths, are identified. The improvement areas are corrected and tested in subsequent exercises to prevent recurrence.

C. ROLES AND RESPONSIBILITIES

Before March 1979, accident at Three Mile Island (TMI), offsite emergency planning at nuclear power sites by utilities and local and State authorities was done under the NRC oversight and basically on a voluntary basis. Specific requirements for off-site emergency planning as a precondition for licensing had not been established, and as a result, the capabilities to respond to a radiological accident varied greatly.

One of the major lessons learned from TMI was the need for a comprehensive, coordinated response plan, by every level of government and integration with onsite and offsite plans.

To investigate these and other concerns, President Carter appointed a special investigative body, the Kemeny Commission, to study the Three Mile Island accident. Following the Commission's report, the President directed that principal Federal responsibility for off-site emergency planning around nuclear power plants would be transferred from NRC to FEMA.

FEMA had been established in 1978 (prior to TMI) in order in order to create a single emergency planning and response manager for the Federal Government. FEMA coordinates offsite measures at all levels of government to safeguard the population, while NRC maintains responsibility to oversee emergency actions taken inside the nuclear plant boundaries. NRC maintains its authority as the licensing authority for commercial nuclear power plants; FEMA provides recommendations and findings to NRC for use in its deliberations. Both agencies have issued extensive instruction in the Code of Federal Regulations to explain how their respective responsibilities are carried out.

Following is a brief description of licensee, state, local, and Federal responsibilities:

- *Licensees* are responsible for operating the plant in a safe manner and for being prepared to respond to a radiological emergency in a manner such as to effectively mitigate the consequences of the emergency. If an accident should occur, the licensee is responsible for stabilizing the situation, bringing the plant to a safe condition, limiting the consequences, implementing on-site emergency planning, making off-site initial notifications and protective recommendations and providing sufficient plant status information to assist in off-site emergency response. The licensee is responsible for monitoring the plant and radiological parameters to determine the level of the emergency (unusual event, alert, site area emergency, or general emergency and recommend onsite and offsite protective actions.
- *State and local agencies* are responsible for maintaining the offsite emergency preparedness. In case of an accident, the State and local designee will consider the

emergency action recommendation of the licensee and make any off-site protective action decision, including sheltering and evacuation. The offsite authorities are responsible for activating the alert and notification systems. Having alerted the public, the State or local agency will provide additional information to the public through the electronic media including what protective actions should be taken.

• *State Emergency Management Agencies* are the lead organization responsible for developing the State Radiological Emergency Preparedness Plan and for coordinating the development of associated county plans. They have a lead role and responsibility for the training of State and local emergency response organizations and for the conduct of public information and education. (In California the local agencies have the lead role).

• *State Departments of Health* are the State technical agencies responsible for the assessment of the impact of a radiological emergency and the environment. These agencies also function as the technical advisor to the emergency management organization in radiological matters and protective actions.

• *County and municipal emergency management officials* are responsible for the development and implementation of their respective emergency response plans. The Federal, state, county, and local governments have developed coordinated radiological emergency preparedness plans. The plans are coordinated with the licensee onsite emergency plan and periodically exercised to ensure a fully coordinated, effective response and the availability by the required offsite support for an onsite emergency. State and local emergency plans have been prepared for every commercial nuclear power site in the country. All have received FEMA 44CFR350 evaluation and have been tested in exercises.

• *The Federal Government's* role is to support the licensee, State, and local agencies in an emergency.

• *The Nuclear Regulatory Commission (NRC)* is the Cognizant Federal Agency when an event occurs at a commercial nuclear power plant. The NRC/FEMA response is documented in NUREG–0981 /FEMA 51, Rev. 1, "NRC/FEMA Operational Response Procedures for Response to a Commercial Nuclear Reactor Accident, " February 1985. The agency maintains a 24-hour-a-day Headquarters Incident Response Center where the Operations Officer is an engineer or scientist specifically trained for that job. The Center functions as the NRC's point of direct communication through dedicated telephone lines with all operating commercial nuclear power plants. The Center notifies additional NRC personnel, including regional offices, and other Federal agencies as needed. During an emergency, the NRC establishes three teams:

- the Reactor Safety Team follows the course of the plant event and attempts to anticipate future plant responses;
- the Protective Measures Team follows the event from the radiological standpoint; and
- the headquarters Executive Team determines if or when to escalate the NRC response.

The teams also include Congressional, Government, and Public Affairs liaison. NRC participates in a licensee-graded exercise once each quarter.

• *The Federal Emergency Management Agency (FEMA)* is responsible for off-site emergency plans and maintains the Emergency Information and Coordination Center (EICC) in Washington, DC, with communications capability to its regions and other Federal agencies. FEMA's Radiological Emergency Preparedness Program (REP) has a two fold emphasis: (1) assistance to State and local governments in developing emergency plans (44 CFR 350); (2) coordination of Federal agencies' assignments to carry out Federal functions (44 CFR 351).

D. WHAT ARE THE ELEMENTS OF AN EMERGENCY PREPAREDNESS PROGRAM?

All U.S. nuclear reactor facilities are required to participate in independently reviewed; full-scale emergency exercises every 2 years (and training drills in off years). For each exercise, the licensee creates a confidential emergency scenario to be played out by plant staff and local emergency response organizations, including law enforcement, local hospitals, radiological monitoring teams and others. Post-exercise critiques by the Federal agencies and exercise participants identify areas that need to be corrected in future exercises or improvements that need to be made to the plan itself. Following is a brief summary of the elements that are tested regularly:

• *Onsite Emergency Organization.*—The licensee is responsible for developing the onsite emergency organization of plant staff personnel for all shifts. An emergency coordinator must be designated who shall be on shift at all times and have the authority and responsibility to immediately and unilaterally initiate any emergency

actions required to protect the health and safety of the public. Certain responsibilities cannot be delegated to others in the organization, including the decision to notify and to recommend protective actions to authorities responsible for offsite emergency measures.

• *Emergency Classification System.*—All utilities at all commercial nuclear power plants use a standard emergency classification system. The emergency classification system provides for graduated levels of response from minor events of low consequence to very severe events. Specific Emergency Action Levels (EAL) trigger each classification.

• *Emergency Communications and Notification Methods and Procedures.*—The licensee must have the capability to notify responsible State and local government agencies within 15 minutes after declaring one of four emergency action levels. The licensee must also demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the 10-mile plume exposure pathway. The notification system should have the capability to essentially complete the initial notification of the public within the EPZ within about 15 minutes once the offsite responsible State or local authorities decide to notify them. In November 1985, FEMA issued FEMA-REP–10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants.

Offsite Communications.—Each licensee is responsible for a primary and backup telephone system to make notifications to offsite agencies (e.g., NRC, State, and counties) within 15 minutes after recognition and classification of an emergency condition at the plant. A dedicated telephone line has been established between the plant control room and the NRC's headquarters Incident Response Center. IE Information Notice No. 86–97, "Emergency Communications System," dated November 28, 1986, defines the emergency communications requirements.

Public Alerting Systems.—Off-site emergency agencies are responsible for notifying the public of an emergency and activating the notification system. However, the licensee must be able to demonstrate that a notification system is available within the 10-mile EPZ. Sirens are the predominant method of public alerting around the U.S. commercial nuclear plants and Federal regulations have established criteria for the design of acceptable siren systems. The number of sirens that are required for the 10-mile EPZ will depend on the population density, type of terrain and other limiting factors. The average site will have between 50 to 85 sirens positioned throughout their EPZ.

Public Notification.—Once the public has been alerted to an emergency, the capability must be in place to provide an informational message or instructions to the public through out the 10 miles EPZ within 15 minutes. This capability must be available 24 hours per day. The most common method of providing instructions to the public is local radio and television stations. Another method of providing instructions to the public is by the Alert Notification System (ANS), a system of AM and FM radio stations which provide or are capable of providing, 24 hours per day transmission and have backup power generation capability.

In order to instruct the public to tune to a specific radio, television, or an EBS radio station for emergency information once alerted, emergency preparedness public information brochures are distributed throughout the 10-mile EPZ. The brochures identify the method of alerting and measures to be taken once alerted. The brochures discuss the various protective measures that residents may be asked to take, including sheltering, evacuation, and use of thyroid blocking agents or other precautionary measures.

• *Public Education and Information.*—The responsibility to insure the education of the general public concerning radiological emergencies and protective actions is jointly shared by the licensee, the State and the local governments. Information is disseminated annually to the public within the 10-mile EPZ. Specifically, information is provided describing how they will be notified in the event of an emergency and what initial actions should be taken upon notification. In addition, educational information on radiation contacts and special needs for the handicapped are addressed, as well as how to obtain additional information.

• *Emergency Facilities and Equipment.*—Adequate provisions must be made for facilities and equipment to support the response to a given emergency. This includes monitoring, assessment, decontamination, first aid treatment and transportation. The physical facilities include an onsite technical support center, an operational support center, a near-site emergency operations facility, an onsite and offsite communications system, and a media center.

Emergency Response Centers

Control Room (Onsite).—The Control Room is the primary facility where plant conditions are monitored and controlled and where corrective actions are taken to mitigate degradation of reactor systems.

Technical Support Center (Onsite).—The TSC is an emergency operations work area from that designated technical and engineering personnel trend plant conditions in order to predict further degradation and to devise appropriate corrective actions.

Operational Support Center (OSC) (Onsite).—The OSC is the assembly point for personnel providing emergency assistance to the Emergency Organization. The purpose of the OSC is to provide an assembly. and staging area for essential operations support personnel who are deployed into onsite areas.

Emergency Operations Facility (EOF) (Offsite).—The EOF is the primary offsite center for the management of the licensee's emergency response, coordination of radiological and environmental assessments, and determination of recommended public protective actions.

Joint Public Information Center (JPIC) (Offsite).—The JPIC is the principal media contact point for the licensee, state, and local communities during a radiological emergency.

State Emergency Operations Center (EOC).—This facility provides the management of offsite emergency responses. The State EOC will serve as a location from which local officials may request manpower and resource assistance.

Local Community Emergency Operations Centers (EOC).—The local EOCs serve the purpose of maintaining a communications point within each community as well as providing this capability with other adjacent communities and the State. Each local chief executive can direct protective actions to be taken for his community and can activate the public alerting system for his community.

• *Accident Assessment.*—The means for determining the magnitude of and for continually assessing the impact of the release of radioactive material must be available to respond to an accident. Dose assessment is performed using actual in-plant effluent radiation monitors to generate the radionuclide source term, meteorological instrumentation, and associated hardware to develop a dispersion model for an atmospheric release, hydrological instrumentation to develop dilution factos for a liquid release, and the assumption of appropriate dose conversion factors (DCF) to account for the isotopic mixture and its concurrent chemical and physical state.

As part of the Radiological Environmental Monitoring Program, nuclear power plants maintain a fixed environmental monitoring system, within the 10-mile EPZ, consisting of Thermoluminescent Dosimeters (TLDs), air particle detectors and another environmental media sampling stations. During 12 and/or subsequent to emergency conditions, this program is modified to collect and analyze additional samples from existing stations. Results are used to confirm radiation exposure estimates and environmental calculations.

• *Protective Response.*—A range of protective actions for emergency workers and the public have been developed for the 10-mile EPZ. Systems are available to warn and advise onsite individuals including employees not having emergency assignments, visitors, contractors, construction personnel, or others in public access areas. Provisions have been made for these individuals to leave the site by designated routes to some suitable offsite locations.

If needed, monitoring and decontamination capabilities of individuals leaving the site have been established. Having requested non-essential personnel to leave the site, the licensee must have the capability to account for all individuals onsite and be able to provide the names of missing individuals within 30 minutes of the start of an emergency. The licensee must be able to account for all onsite individuals continuously after that time.

The licensee will also make recommendations, if needed, to the affected State and local authorities. This may include sheltering, evacuation, or use of potassium iodide in a sector around the plant, early dismissal of school children, or relocating individuals in a specific sector. As part of this process, the emergency plan includes a designated evacuation route and relocation centers in most areas and shelter areas. People whose mobility is impaired and the means for registering and monitoring of individuals at relocation centers have been established.

For the 50-mile ingestion pathway, the procedure for protecting the public from consuming contaminated foodstuffs is addressed. The requirement that dairy animals be put on stored feed is a protective action. Lists are available of the names and locations of all plants that process milk products and other agricultural products.

• *Radiological Exposure Control.*—The licensee has established onsite exposure guidelines that are consistent with the EPA's Emergency Worker and Lifesaving Ac-

tivity Protective Action Guidelines. These guidelines address providing first aid, performing assessment actions, and decontamination, removal of injured persons and providing transportation and medical treatment of the injured. As an example of guidance developed on this subject, FEMA issued Guidance Memorandum EV–2, "Protective Actions for School Children" dated November 13, 1986. The purpose of the guidance is to assist State and local government officials and administrators of public and private schools in developing emergency response plans for use in protecting the students.

• *Medical and Public Health Support.*—Local and backup hospitals and medical services are identified for medical support of contaminated injured individuals. The licensee is responsible for having the onsite-first aid capability. Transportation arrangements of the injured persons to the medical facilities are also part of the emergencyplanning program.

• *Recovery and Reentry Planning and Post Accident Operations.*—Following the accident and when the plant has.been stabilized, the licensee will go into the recovery phase of the event.

• *Exercises and Drills.*—Each licensee is required to exercise its emergency plan annually. Each licensee is required to exercise with offsite authorities within the plume exposure pathway 10-mile EPZ biennially. All parties within the ingestion pathway 50-mile EPZ must exercise its plan every 6 years.

• *Continual Improvement. Critiques and Corrective Actions.*—Following each exercise or drill, the licensee and Federal, State and local emergency response personnel conduct an in-depth critique. Areas for improvement are noted and placed in the licensee corrective action system. Corrective action attention is a year round responsibility.

• *Audits, Reviews, and Self Assessments.*—One element assuring corrective actions is the audit or program review process through which all emergency preparedness programs work. Program reviews (checks) range from one end of the spectrum to the other . . . from quarterly communications checks (internally and externally) and equipment/facility checks to independent program reviews of the EP program. Periodic (on a set schedule) tests of the prompt public notification system are also a part of this process.

Audits are conducted by the licensee's own quality assurance departments and inspections are conducted at various times by outside regulatory groups such as the NRC. These audits/inspections cover all aspects of the emergency preparedness program. In all cases, the associated emergency plans and procedures must be reviewed at least annually and revised as necessary.

Licensee's periodically self-assess their program elements. Frequently the licensee will request a subject matter expert from another department or licensee to participate in the self-assessment.

• *Emergency Response Training.*—Annual training of company personnel (onsite and offsite) and training of noncompany personnel (offsite at the local level) is conducted. This process is continual throughout the year. This element of emergency planning incorporates the following methods: classroom instruction; performance-based training, walk through for specific groups within certain emergency response facilities and between facilities; integrated drills; training drills; and medical drills.

• *Emergency Planning Zones (EPZ).*—In 1978, a joint task force of the US Environmental Protection Agency (EPA) and US Nuclear Regulatory Commission (NRC) developed the planning basis for offsite emergency preparedness efforts considered "necessary and prudent" for power reactor facilities. During the development of the planning basis, the task force received substantial input from other Federal agencies and the Inter-organizational Advisory Committee on Radiological Emergency Response Planning and Preparedness of the Conference of State Radiation Control Program Directors, which also included representatives of the National Association of State Directors for Disaster Preparedness and the U.S. Civil Defense Council.

Subsequently, the planning basis has been adopted by the Federal Emergency Management Agency, which assumed the Federal lead role in offsite radiological emergency planning and preparedness responsibilities under order from President Carter in 1979. This planning basis continues today as the primary basis utilized by the Federal Radiological Preparedness Coordinating Committee (FRPCC)[1] with respect to coordinating all Federal responsibilities for assisting State and local governments in radiological emergency planning and preparedness activities.

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[1] The FRPCC is chaired by FEMA, and includes representatives from the Departments of Commerce, Defense, Energy, Health and Human Services, Transportation, Agriculture, Interior, Veterans Affairs, State, Housing and Urban Development, Justice, and the General Services Administration, NASA, USEPA and USNRC.

An important element of the planning basis developed by the NRC/EPA task force is that it defines the geographical area around nuclear power plants over which planning for predetermined actions should be carried out to protect public health and safety in the event of a radiological emergency at a nuclear power plant. In developing the planning basis, the task force did not attempt to define a single accident scenario. Rather, the task force considered a number of potential accidents, including the core-melt accident release scenarios of the Reactor Safety Study.

The planning basis was related to two predominant pathways by which a population might be exposed to radiation released as the result of an accident. The two exposure pathways include the following:

a. The *plume exposure pathway* includes direct exposure from radiation in a plume as it passes, as well as from radioactive material deposited on the ground or other surfaces. The pathway also includes exposure from inhalation of radioactive material in the passing plume. The recommended protective actions for the plume exposure pathway are evacuation from the area, or sheltering, if timely evacuation is not-practical. More recently, the States are considering whether to include the distribution and use of potassium iodide to protect against exposure from radioactive iodine in the plume, as a supplement to evacuation and sheltering.

b. The *ingestion exposure pathway* includes exposure from the consumption of contaminated water, milk, or foods. The recommended protective actions for the ingestion pathway include near-term actions, such as removing cows from pasture and putting them on stored feed supplies, as well as long-term actions such as monitoring and interdicting sources of water, milk and foods, as necessary to protect public health and safety.

The areas, over which planning efforts are carried out, referred to as emergency planning zones (EPZs), are associated with the plume exposure pathway and the ingestion exposure pathway. The EPZs are defined as the areas for which planning is carried out to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The two EPZs are discussed in more details below:

(a) The plume exposure EPZ includes a radius of 10 miles (more than 300 square miles) around the plant. The size of the plume exposure EPZ is based on the following conclusions by the NRC/EPA task force:

- Projected doses to the public from design basis accidents would not exceed Protective Action Guide (PAG) levels[2] beyond the 10-mile zone;
- Projected doses from most core melt sequences would not exceed PAG levels beyond the 10-mile zone;
- For the worst-case core melt sequences, immediately life-threatening doses would generally not occur beyond the 10-mile zone;
- Detailed planning within the 10-mile zone would provide a substantial base to support the expansion of emergency response efforts in the event this proved necessary.

b. The ingestion exposure EPZ includes a radius of 50 miles (more than 2500 square miles) around the plant. The size of the ingestion exposure EPZ is based on the following conclusions by the NRC/EPA task force:

- The downwind range within which contamination might occur will generally not exceed PAG levels beyond the 50-mile zone because of wind shifts during the release and travel periods;
- There may be conversion of radioactive iodine suspended in the atmosphere during transit to chemical forms that do not readily enter the ingestion pathway;
- Much of the particulate material in a plume will have deposited on the ground during transit within the 50-mile zone; and
- The small likelihood of exceeding ingestion pathway PAG levels at 50 miles is comparable to the small likelihood of exceeding plume exposure PAG levels at 10 miles.

The 10- and 50-mile EPZs are currently employed in nuclear power plant emergency preparedness programs as the basis for planning, testing and exercising predetermined emergency response capabilities.

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[2] Protective Action Guide (PAG) levels refer to criteria that are established by the EPA. The PAG is a level of projected radiation dose from an unplanned release at which a specific protective action should be taken. For example, the PAG for initiating evacuation or sheltering is when members of the public are projected to receive 1 rem or more from an actual or anticipated release. The PAGs are published in EPA Report 400-R–92–001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," 1992.

D. WHAT IS THE EXPERIENCE WITH NUCLEAR PLANT EMERGENCY RESPONSE PROGRAMS?

Emergency response plans developed by the nuclear industry have been activated successfully by local officials for use in other emergencies. A few examples:

- The evacuation of 10,000 people from Cedar Rapids, Iowa, in July 1985, following a fire at a city-operated sewage treatment plant that dispersed a black cloud of toxic fumes over the city. State and local officials used a draft plan developed for Alliant Energy's Duane Arnold nuclear plant.
- The evacuation of 17,000 residents of St. Charles Parish, LA., following a leak from a nearby chemical plant in December 1982. State and local officials worked from a draft plan for Entergy's Waterford 3 nuclear plant, which was not yet operating.

E. WHAT IS THE NUCLEAR INDUSTRY'S COMMITMENT TO EMERGENCY PLANNING?

Emergency preparedness at U.S. nuclear power plants is an integral part of daily operations. A commitment to excellence throughout the industry coupled with continual training and testing, has produced a high level of preparedness. For example:

- Emergency response plans are constantly upgraded through lessons learned from actual plan activation, as well as repeated drills, exercises and independent critiques.
- Training programs are conducted annually for all emergency response personnel. The National Nuclear Accrediting Board accredits training programs for operators and technical staff.
- Effective methods have.been developed to assess performance in drills and exercises, and to improve emergency preparedness through lessons learned.
- State-of-the-art response facilities have been built and existing facilities upgraded to aid effective handling of emergencies.
- Sophisticated plant computer systems have been developed to serve as effective tools for dealing with emergencies.
- Advancements in communications technology have been incorporated to improve the industry's ability to respond to emergencies.

RESPONSE BY DONNA J. MILLER HASTIE TO AN ADDITIONAL QUESTION FROM SENATOR CLINTON

Question. Your testimony provides a great deal of detail on emergency preparedness and evacuation. It cites several cases of evacuations using response plans developed by the nuclear industry. However, these examples were all populations less than 17,000. What complications do you expect with populations much larger than this? What effect would population density have on the ability to evacuate an area?

Response. The studies provided in NUMARC NESP-004 "Identification and Analysis of Factors Affecting Emergency Evacuations," (Table 2-2) (Document Attached) provide a study of fifty evacuations of up to 300,000 people.

In addition, a 1989 Nuclear Energy Institute (NEI) study showed that during the 9-year period 1980–1988, the United States experienced 250 emergencies that required the evacuation of more than 1,000 people. The emergencies ranged from hurricanes and floods to spills and leaks of toxic chemicals. Some critics have voiced skepticism that any large number of people could be evacuated in a short period of time, but experience demonstrates the contrary.

The following are examples of successful evacuations of larger populations for non-nuclear emergencies. All the evacuations were performed safely and orderly.

- 300,000 evacuees of Hurricane Elena (Pinellas, Florida) 8/29/85.
- 150,000 evacuees Hurricane Gloria (Monmouth County, NJ), 37,000 evacuees from New Hanover County, NC, and 50,000 evacuees from Worcester, MD, 9/26/85.
- 42,000 evacuees from Hurricane Alicia (Galveston, TX) 8/16/83.
- 25,000 evacuees from a transport accident (Cambridge, Ohio) 6/2/87.
- 20,000 evacuees from a train derailment (Miamisburg, Ohio 7/8/86.
- 10,000 evacuees from a chemical explosion (Superior, WI) 5/6/82.

I am not aware of any evacuations in the United States that experienced significant problems. State and local emergency management personnel are well trained to effectively conduct safe evacuations, and take this responsibility seriously.

The effect that a large population density would have on the ability to evacuate an area has been demonstrated on a number of occasions, such as frequent evacuations of 100,000 plus people from large sporting events. I believe the type of planning we currently perform for a nuclear power plant provides a sound basis for large population evacuations.

RESPONSES BY DONNA J. MILLER HASTIE TO ADDITIONAL QUESTIONS FROM SENATOR VOINOVICH

The United States nuclear industry, in coordination with Federal, State and local agencies has the most advanced and demonstrated effective emergency preparedness programs in the country, perhaps the world. In partnership with our Federal, State and local colleagues, we are the recognized experts.

Even with the expertise and history, we are not complacent. Our history is one of continuous improvement and we are currently evaluating and responding to the implications of September 11, 2001. Emergency Preparedness performed interim compensatory measures in response to September 11 that included specific actions to:

- Determine the potential effect on the plant and on site evacuation strategies, modify procedures and equipment, as necessary.
- Review site response plans and take actions to assure the response to terrorist threats is well planned, tested and available.
- Provide emergency action levels (EALs) to ensure that a site-specific credible threat results in a declaration of at least a notification of unusual event. Review and validate the strategy for escalation to higher event classifications.
- Implement site specific, credible threat EALs per November 6, 2001 NRC recommended actions, as confirmed by the NRC letter to NEI February 4, 2002.

We, the industry and involved local, State, and Federal agencies believe that we can help the country in the War on Terrorism and Homeland Security by serving as a model for other industries and critical infrastructure that have not had the same advantage of long-term experience in testing and refining emergency preparedness programs.

Question 1. In your testimony, you have provided an extensive list on the history of emergency planning. Could you briefly highlight the major changes the NRC and facilities have gone through in response to national security and other perceived threats since Three Mile Island? In your opinion, do they respond well and make the necessary changes?

Response. The Three Mile Island (TMI)-related changes are only the beginning of immediate and continuous improvements the industry made in emergency preparedness. As an industry, we continue to actively identify and implement improvements to nuclear safety and emergency preparedness as an intended, industry safety culture that rests on continuing self-assessment and continuous learning.

As a result of the accident in March 1979 at the TMI site, several study groups were formed to study the responses to the accident and to make recommendations for corrective actions.

On April 11, 1979, in response to TMI, President Carter established a Commission to conduct . . . "a comprehensive study and investigation of the recent accident involving the nuclear power facility on Three Mile Island in Pennsylvania." Dr. John G. Kemeny, then President of Dartmouth College chaired the Commission. The "Report of the President's Commission on the Accident at Three Mile Island" (Kemeny Commission) concluded that prior to the accident, emergency planning had not received sufficient priority and that programs needed to be upgraded.

Recommendations made by the Kemeny Commission included:

1. Responsibility for offsite emergency planning should be assigned to the Federal Emergency Management Agency (FEMA); before an operating license is granted the State must have an emergency plan approved by FEMA.
2. Planning should involve the identification of several different kinds of accidents with different possible offsite radiological consequences; local communities should have funds and support adequate for preparing these plans
3. Medical means should be developed for protecting the public against radiation.
4. The public should be better informed about nuclear power and given clear information on what actions to take during emergencies
5. Further studies should be conducted with reference to evacuation planning and methodologies.
6. The role of various Federal support agencies must be specified.

The industry made a strong and comprehensive response to the overall recommendation, "Utilities must make sufficient advance preparation for the mitigation of emergencies . . ." The industry's response included, but was not limited to, the following:

- Utilities have established emergency response organizations using personnel with a wide variety of technical expertises useful in responding to emergencies. Members of emergency response organizations are designated and trained in advance regarding their roles during an emergency.

• Using scenario information similar to a real event, practice emergency drills are held several times a year so emergency teams can develop and maintain proficiency in their emergency response roles. Each utility is also required to regularly pass a Nuclear Regulatory Commission (NRC) and Federal Emergency Management Agency (FEMA) graded exercise that tests the level of preparedness within the 10-mile emergency planning zone. The exercises are conducted every two years involving utility, local, and state emergency organizations and response teams. Emergency preparedness programs within the 50-mile emergency planning zone are tested every six years.

• Each plant now maintains an onsite technical support center that is activated and staffed during an emergency to assist the plant operations staff. Emergency offsite facilities have also been established that are activated and staffed by utility personnel during an emergency to coordinate off-site support for the utility. local, State, and Federal emergency response organizations.

• The industry now has in place mutual assistance agreements in which all utilities agree to share their resources promptly in the event of a transportation accident or a plant emergency. An *Emergency Resources Manual*, maintained for the industry by the Institute of Nuclear Power Operations (INPO) lists emergency response points of contact at all utilities, identifies equipment and technical expertise available at various organizations, and provides copies of the agreements that specify the terms and conditions that apply to exchange of equipment or services provided.

Another recommendation, "Emergency plans must detail clearly and consistently the actions public officials and utilities should take in the event of off-site radiation doses resulting from release of radioactivity . . ." also received strong industry response.

• Each nuclear utility has developed station and corporate emergency plans to coordinate their response efforts in the event of a significant release of radioactivity off-site. These comprehensive radiological emergency response plans were developed in conjunction with State and local governments to define the actions to be taken by each party to protect the public's health and safety. Supporting implementation procedures provide guidance for accomplishing the detailed actions.

• The effectiveness of these plans has been demonstrated through the successful completion of regular federally graded full-scale exercises at all plants.

• Emergency plans also include provisions for providing timely and accurate information to the public. Joint information centers have been established where utility and government representatives prepare press releases and hold briefings for the public and media.

The Special Inquiry Group (Rogovin Report) reached many of the same conclusions as the Kemeny Commission. The report pointed out that the existence of adequate county and local emergency plans is a critical component of the overall emergency planning effort. The recommendations made in the report include:

1. Workable evacuation plans must be considered a prerequisite to continued operation of existing and future reactors.
2. Plant operations, however, should not be made absolutely contingent on approved local plans.
3. Adequate funding must be provided to local emergency planning, perhaps by the utility.
4. The emergency plan should be treated as if it were an engineered safety system. If a portion of the plan cannot be carried out (evacuation cannot be carried out due to a blizzard, for example) considerations should be given to limiting operations.
5. Emergency planning zones should be developed on a site specific basis
6. Existing reactors may be required to install additional accident mitigation systems to limit offsite consequences.

These recommendations, and many more, have been successfully implemented and tested following the TMI accident. Additional post-TMI planning requirements are listed in Attachment 1. These are just the beginning of regulation regarding Emergency Preparedness programs. The regulations grew from these few to the current 28-feet of EP regulation in the Public Document room.

In addition to Federal regulation, licensee applicants have to describe the emergency plan in their Preliminary Safety Analysis Report (PSAR) and submit as part of the Final Safety Analysis Report (FSAR). The PSAR must contain sufficient preliminary information to ensure that adequate emergency planning will exist. The plans must show compatibility of the onsite and offsite emergency plans, and of facility and site design with respect to roads, population distribution and land use. The FSAR must contain detailed plans for coping with emergencies. The information must be sufficient to provide the NRC with assurance of coordination among the licensee and supporting groups prior to issuing an operating license for the plant.

The TMI-related changes are only a part of the scale and scope of emergency preparedness program improvements. The industry continues to actively identify and implement improvements to nuclear safety and emergency preparedness. This trend of continuous improvement is demonstrated in the included graphs.

In conclusion, industry standards and NRC regulations and oversight require industry programs have the continuous capability to protect the public from possible exposure to radioactive release caused by an accident or a terrorist event. All plants have comprehensive measures for safety and security that include: Robust containment; Redundant; diverse plant safety systems; Trained plant staff, skilled in accident and event response; Comprehensive emergency plans; Rigorous security plans and well-trained and equipped security forces; Established facilities and equipment to support accident mitigation and communications with offsite emergency response organizations; Alert and notification systems, such as siren systems, to notify the public of an event; and Annual, communications with the population within the 10-mile emergency planning zone describing what to do in the case of an emergency.

Question 2. In your testimony, you discuss and provide several examples of situations where nuclear power plant emergency response plans have been activated successfully by local officials to support evacuations for other, non-nuclear events. Can you please provide a fuller set of examples and/or references that more fully describe such situations?

Response. A 1989 Nuclear Energy Institute (NEI) study showed that during the nine year period 1980–1988, the United States experienced 250 emergencies that required the evacuation of more than 1,000 people. The emergencies ranged from hurricanes and floods to spills and leaks of toxic chemicals. Some critics have voiced skepticism that any large number of people could be evacuated in a short period of time, but experience demonstrates the contrary.

Evacuation plans have never been used to evacuate a nuclear power plant in the event of an emergency. Several nuclear emergency response plans, however, were activated successfully by local officials for use in non-nuclear emergencies. All the evacuations were performed safely and orderly. A few examples:

• The evacuation of 10,000 people from Cedar Rapids, Iowa, in July 1985, following a fire at a city-operated sewage treatment plant that dispersed a black cloud of toxic gas fumes over the city. State and local officials used a plan developed for the now Nuclear Management Company's Duane Arnold nuclear plant.

• The evacuation of 17,000 residents of St. Charles Parish, LA, following a leak from a nearby chemical plant in December 1982. State and local officials worked from a plan for the now Entergy's Waterford 3 nuclear plant, which was in the late stages of final construction.

• The evacuation of 13,000 people from Naticoke, PA, in March 1987, when a fire from a metal plant blanketed the community with toxic smoke. Pennsylvania Power and Light's Susquehanna nuclear plant response plan was used.

• The evacuation of about 6,000 residents and visitors from Grover City, CA, in July 1985, when a 10-day fire costumed more than 75,000 acres of nearby grassland. The evacuation was based on the Diablo Canyon nuclear plant emergency plan produced by Pacific Gas & Electric Co.

Examples of large numbers of people that can be evacuated in a relatively short period of time:

• In August 1965, nearly all the 150,000 people living in Baton Rouge, LA, were evacuated in only two hours following an accident involving a chorine-carrying barge.

• In June 1972, virtually all of Wilks-Barre, PA's, 75,000 residents were evacuated in an hour after flood warnings were issued.

• Several large-scale evacuations preceding on coming hurricanes have been carried out successfully, including: the 1980 evacuation of 400,000 from Corpus Christi, TX, to escape Hurricane Allen; the 1985 evacuation of 300,00 from Pinellas County, FL, in advance of Hurricane Elena; the 1985 evacuations from Connecticut, Maryland, New Jersey, New York and North Carolina totaling 318,000 in the Path of Hurricane Gloria; and the 1992 evacuation of several 100,000 from south Dade County, FL, as Hurricane Andrew approached.

NEI's 1989 study of evacuations found that communities that have conducted field exercises of emergency plans performed better than the communities that had not. The study concluded that there was significant value in testing plans, because such plans revealed areas for improvement.

The crash of USAir Flight 427 in PA in September 1994 called on the expertise of the emergency responders from Beaver County, who had trained and practiced through the many years with the now First Energy's Beaver Valley Nuclear Power Plant. Employees of Beaver Valley's emergency preparedness department worked

with the State and local emergency management agency personnel in the recovery effort. The plant also filled the state emergency management agency's request for disposable suits, gloves, boots, etc. for use by the workers at the crash site, which had been declared a biological hazard.

Additional information: NEI, (previously NUMARC) authorized an independent study "Identification and Analysis of Factors Affecting Emergency Evacuations," NUMARC/NESP-004, February 1989.

This study of the "Identification and Analysis of Factors Affecting Emergency Evacuations," was undertaken in 1987–1988. The study effort entailed the compilation and analysis of data on emergency evacuations occurring in the United States since 1980. The study focused on 50 disaster events that required 1000 or more persons to be evacuated.

The report shared insights, understanding, and knowledge gained from the collection and analysis of large scale, U.S. evacuations occurring in response to both natural and man-made hazards. The results of the study enhanced the level of understanding of the evacuation process.

Evacuations of the public in connection with natural disasters or technological/industrial accidents are a frequent occurrence in the United States. Emergency evacuations involving 100 or more persons occur, on the average, more than once per week. These evacuations generally have proceeded smoothly and safely without plans and with little evacuation training.

Following each United States census, utilities conduct new population density charts and could designate new evacuation routes, if significant changes occur in population densities or in critical locations such as schools, hospitals, elderly care facilities, etc. For example, when a minor bridge (not a primary evacuation route) was closed for repair near the St. Lucie Nuclear Power Plant in Florida, extensive compensatory measures were put in place.

Communities around nuclear power plants are better protected in the event of all types of emergencies than other communities, by virtue of the emergency preparedness infrastructure that has been put in place.

Question 3. S. 1746 would provide for mandatory stockpiling of potassium iodide tablets for use by populations within a 50-mile radius of nuclear power plants, as compared to the current NRC program for voluntary stockpiling within 10 miles and the provision for voluntary stockpiling up to 20 miles included in the "Public Health Security and Bioterrorism Preparedness and Response Act of 2002." What are your views on the need to stockpile potassium iodide for populations out to 50 miles from a nuclear power plant?

Response. The current NRC/Federal program requires States and Tribal governments to consider including KI as a supplemental protective measure (i.e., the State and Tribal governments make the decision). The program is limited to covering populations in the 10-mile emergency planning zone around nuclear power plants. NRC will provide an initial supply of KI tablets upon request, and may consider extending the program to fund replenishment supplies. Distribution of KI is a "supplement" to the primary protective actions of evacuation and sheltering in the 10-mile emergency planning zone and protecting food and water supplies in the 50-mile ingestion-planning zone.

Attachment 2 is a listing of States that have agreed to stockpile or distribute potassium iodide.

In my testimony I discussed the technical basis for the 10- and 50-mile emergency planning zones. In 1978, a joint task force of the US Environmental Protection Agency (EPA) and the US Nuclear Regulatory Commission (NRC) developed the planning basis for offsite emergency preparedness efforts considered "necessary and prudent" for power reactor facilities. During the extensive two-year study the task force performed a detailed analysis of the full range of possible reactor accidents to determine the appropriate distance from the plant that should be used for planning prompt protective actions, such as evacuation and sheltering, as well as longer-term actions such as protecting food supplies.

The task force received substantial input from all Federal agencies and relevant State agencies that would be responsible for implementing protective action. Even following the events of September 11, there is no credible scientific or technical information to indicate the need for a 50-mile distribution of KI or to suggest that the EPZs and related current regulatory system for emergency preparedness should be changed.

The current KI distribution programs are voluntary and delegate decision-making authority to State and local governments. S. 1746 would abrogate the authority of the States to reflect the specific needs of their people and could create a Federal program that would likely be less effective. Used nuclear fuel discharged from the reactor is not a radioiodine KI issue.

Question 4. S. 1746 would provide for planning of evacuation of populations from within a 50-mile radius surrounding nuclear power plants in the event of an emergency, as compared to the current Federal emergency program that includes planning for evacuation out to 10 miles from nuclear power plants. What are your views on the need to plan for evacuation out to 50 miles from a nuclear power plant?

Response. The above response contains answers to part of this question. The current NRC/Federal program includes provisions to extend protective actions such as evacuation and sheltering beyond 10 miles, if needed. The dilution of resources and refocus of priorities to plan for a 50-mile emergency planning zone, that does not have a credible scientific or technical basis, may degrade the current high level of protection that is provided to citizens that live within the 10-mile EPZ that is based on our best scientific and technical understanding of potential consequences.

Question 5. S. 1746 would provide for emergency planning exercises out to 50 miles every three years. What is the current Federal and licensee program for conducting emergency planning exercises and drills at and around nuclear power plants, i.e., onsite and at 10 miles and 50 miles?

Response. Emergency exercises and drills are important as a test of the planning, procedures, and training of utility, State, and local community emergency capabilities. Planning, coordinating and evaluating drills and exercises are major undertakings involving significant resources both within and outside the utility.

Utilities are required to conduct a full-scale; NRC graded exercise every two years. During the off year, the utility conducts a self-evaluated exercise. In addition multiple training drills are conducted throughout the year.

Under 10 CFR 50.47 and Appendix E the nuclear power licensees, State, and local emergency response organizations are required to exercise the 10-mile plume pathway emergency-planning zone biennially. The 50-mile ingestion pathway is exercised every 6 years. Conduct of the 50-mile ingestion-planning zone involves the full or partial participation of Federal, State and local agencies with the planning zone.

The specific response capabilities for the 12 Federal agencies involved in responding to an emergency at a nuclear power plant are contained in the Federal Radiological Emergency Response Plan (FRERP), published as an interim document in the September 12, 1984, Federal Register (29FR35896). This plan outlined the authority and responsibility of each of the 12 Federal agencies that have the resource and capabilities needed to respond to a radiological emergency. The plan was first tested in a full-scale exercise at the St. Lucie Nuclear Facility on March 6–8, 1984. FEMA published the final operational FRERP in the November 8, 1985, Federal Register (50FR46542). This plan works in conjunction with the Federal Response Plan (FRP) that identifies the responsibilities of the Federal agencies involved in response to all emergencies. The FRP has been in place since April 1992, Public law 93–288, as amended. The FRP represents a concerted effort by the Federal Government to provide assistance in an expeditious manner to save lives and protect property.

The FRP was developed through the efforts of 27 departments and agencies. The purpose of the FRP is to facilitate the delivery of all types of Federal response assistance to States to help them deal with the consequences of significant disasters. This plan outlines the planning assumptions, policies, concept of operations, organizational structure and specific assignments of responsibility to the department and agencies in providing Federal response assistance to supplement the State and local response.

ATTACHMENT 1

POST TMI-PLANNING REQUIREMENTS

In July 1979 the NRC issued NUREG-0578, TMI-2 Lessons Learned Task Force Status Report and Short Term Recommendations. The report identified short-term engineering fixes to assure more reliable reactor operations, recommended the establishment of an onsite technical support center and operational support center, and specified improved in-plant monitoring and staffing.

In September, 1979 the NRC issued NUREG-0610, Draft Emergency Action Level guidelines, which established the four classes of emergency action levels (Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency.)

On December 19, 1979, the NRC published for comment the proposed new regulations concerning emergency planning for power reactors (10 CFR 50. Appendix E). The proposed rulemaking would incorporate the various NUREGs, recommendations, letters, and proposals which had been issued since March.

In January 1980, the NRC published the first draft for comment of NUREG-0654, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants. This interim document was based on the draft version of Appendix E and public comment was formally requested under Federal Register Notice 44 FR 9768 on February 13, 1980.

On August 19, 1980, the final version of Appendix E was adopted by publication in the Federal Register (45 FR 55410). It became effective on November 3, 1980. Subsequently in October 1980, the final version of NUREG-0654 was published as NUREG-0654, FEMA-REP-1, Revision 1.

STATEMENT OF IRWIN REDLENER, M.D., PRESIDENT, THE CHILDREN'S HOSPITAL AT MONTEFIORE; AND PRESIDENT, THE CHILDREN'S HEALTH FUND

Thank you, Chairman Jeffords, Ranking Member Smith and Members of the Committee, for the opportunity to testify this morning. I am Dr. Irwin Redlener, a pediatrician and president of the Children's Health Fund headquartered in New York and the new Children's Hospital at Montefiore Medical Center in the Bronx. I have had a career in public health and health services delivery spanning more than three decades. However, allow me to share some background information with respect to my role in the matters before the Committee today.

First, on September 11, 2001 I dispatched two mobile medical units from our New York programs to lower Manhattan to participate in the enormous emergency medical response to the terrorist attacks at the World Trade Center. We also assisted in a number of additional ways in the immediate aftermath in terms of medical services and continue to provide mental health support to families and children throughout the City who have been affected by the attacks.

In addition, with a colleague who heads the Center for Pediatric Emergency Medicine at the New York University Medical Center, Dr. George Foltin, I established the New York City Task Force on Pediatric Disaster Preparedness in December. I am also a founding member of the Task Force on Terrorism of the American Academy of Pediatrics. Over the last 8 months I have been working to ensure that Federal efforts designed to improve preparedness for terrorist attacks include specific provisions to ensure the safety of children.

In New York City I have had regular contact, formal and informal, with City and private sector officials responsible for disaster response. Since October of last year I have had continuous contact with Federal officials regarding various issues with respect to homeland security. These issues have included my ongoing concerns regarding the security of nuclear power plants in general and the Indian Point nuclear power plants in particular. Finally, during the 1980's, I was significantly involved in the analysis of Crisis Relocation Planning, the response proposed by the Federal Emergency Management Agency, to the threat of large-scale nuclear attack on the United States.

The September 11 attacks on the United States have had remarkable consequences for Americans and for American society. In a real sense, on a beautiful day this past September, we were both invaded and profoundly shaken as a nation. For generations we have had a sense of detachment from the grim realities which plague so many parts of the world, where uncertainty and terror play out in daily life and the public consciousness is always aware, on some level, of the potential for deadly large-scale violence. Less than two dozen violent and suicidal fanatics, connected to a diffusive and elusive global network of terror, has essentially ended the American reverie of protected isolation.

The cliche is that this is a "new world", and, indeed, it is. How we respond, what plans we make, how we adjust ourselves psychologically, what resources we ultimately bring to bear and how we reorganize our government systems and agencies to prevent, mitigate or reduce the impact of on-going terrorism in the United States remain open questions.

We will see conflicts between civil rights and necessary intelligence gathering capability; we'll struggle with interagency communications and rivalries over areas of responsibility and control. And there 'will be major debates over how to prioritize and balance the response to terrorism against the ongoing societal concerns which pre-date September 11, 2001.

However, no matter how these debates unfold, it is clear that the perceptions of risk, vulnerability and homeland security must rapidly evolve and adapt to the new realities of a Nation targeted by smart, committed agents of terror. There are, needless to say, a myriad of complex issues to be covered under the rubrics of the war against terrorism and the effort to enhance the security of the United States. One of these areas, the subject of this morning's hearings, concerns the potential risks and vulnerabilities of the 103 nuclear power plants currently operating throughout

the country. Unfortunately, I also need to add that children, the elderly and the infirm bear a disproportionately high burden of vulnerability to consequences of and reactions to a successful terrorist attack on a nuclear power plant.

Although the possibility of a catastrophic event occurring at a nuclear power plant as a result of accident, natural disaster or deliberate act of terrorism has always been on the table, the events of September 11 demand a re-examination of all aspects of the vulnerability and security of the nation's nuclear facilities. Simply put, what was improbable to the point of impossible, has become possible. Assessment of risk and specific planning scenarios need to evolve to new levels taking into account a much more aggressive, educated, trained and organized terrorist for whom capture or death is not a deterrent to action.

A medical analogy here would be the mutation of a bacteriologic agent which becomes orders of magnitude more virulent and simultaneously unresponsive to first-line antibiotics. Traditional approaches to prevention, early identification and treatment would need to change dramatically. In effect, this is precisely what we are dealing with in terms of necessary measures to secure and reduce the risk posed by nuclear power facilities today in the United States. Acceptable risk and security measures appropriate on September 10, became unacceptable and insecure on September 11.

The potential consequences of failing to do everything possible to reduce or eliminate the population risks from acts of terrorism carried out against nuclear facilities are extraordinary and horrific. Attack scenarios well within the realm of possibility for many nuclear facilities can have horrendous consequences for populations in the vicinity of a nuclear plant. Immediate civilian fatalities can range from a hundred or so to five thousand or more, depending on the extent of damage to the reactor, its support systems and the spent fuel containment systems. Excess cancers from radiation exposures can range into the tens of thousands. Moreover, nuclear terrorism is in a special category of horror, evocative of the nightmare scenarios which first arose during the height of the cold war.

Beyond the direct mortality and morbidity estimates, verified by numerous studies of experts in and out of government, are layer upon layer of unimaginable potential health and economic consequences from a successful attack on a power plant. Studies by independent physicists and organizations, including the Brookhaven National Laboratories, have concluded that thousands of square miles could be contaminated and uninhabitable for years or decades under a variety of highly plausible attack scenarios. In sum, the economic, psychological and societal consequences of such an event in a major population center would be almost incalculable.

For all of these reasons, it is imperative that we take necessary and prudent steps to reduce the likelihood of a successful act of terrorism against a nuclear power facility. There are two points which are, perhaps obvious, but worth stating:

First, to the very limits of our human limits, intelligence capacity should be upgraded to the point where terrorist planning can be disrupted prior to implementation. And, second, a cogent case can be made for closing nuclear power plants altogether, particularly those with inherent safety problems, those in highly populated areas with inadequate evacuation plans or those with relatively insufficient means of safeguarding spent fuel rods. The fact is that the Indian Point facility meets all three criteria for closing, even though discontinuing energy production does not fully eliminate the risk and even though there would be modest temporary increases in energy costs in the region. In my opinion, this is clearly a case in which the true risks to people of continuing operations are far greater than the benefits, by any measure.

Putting aside the question of plant decommissioning, here are some actions that can be undertaken immediately:

1. *Security at nuclear plants needs to be upgraded dramatically and immediately, commensurate with our new and totally different understanding of the capacity and ferocity of terrorism on American soil.*— The "design basis threats" which used to be the standard scenarios for anti-terrorism planning need to be upgraded, informed by the events of September 11, to include a whole new range of potential actions for which security measures must anticipate, plan for and test. Can we explain to our children and grandchildren in Westchester County, New York why special U.S. military forces, for instance are not guarding Indian Point? Incredibly, just 6 weeks ago the New York Post reported that a journalist spent 20 minutes flying over the Indian Point facility. Can we explain why aircraft are not forbidden to fly over the plant?

2. *All spent fuel rods should be stored in hardened, onsite, dry storage facilities, pending a more definitive solution to the challenge of permanent storage.*—Spent nuclear fuel rods in places like the Indian Point plant are kept in deep water pools. Unlike the reactor core itself, which is in a hardened containment structure, the

spent fuel pool is in an adjacent, comparatively lightweight structure. Many of these spent rod structures are covered with nothing more than a corrugated steel roof. Moreover, the pools are now packed at high density, so much so that spent fuel will ignite and burn if water, essential to keeping the spent rods cool, is lost from the pool. This would release a massive amount of radioactive material to the atmosphere. Dry storage can make the spent fuel dramatically less vulnerable. Money is the only barrier to moving rapidly to hardened, dry storage of the used fuel.

3. *There needs to be a top-to-bottom revision and upgrading of the emergency planning process, with active Federal oversight.*—Planning for evacuation in densely populated areas is extremely difficult. The grossly inadequate emergency evacuation planning process around the Indian Point facility is a case in point. Spontaneous, uncontrolled evacuation in time of crisis, as happened at Three Mile Island, could quickly result in chaos and paralysis of egress. Permanent relocation for evacuees in the event of substantial ground contamination would be an extraordinary challenge.

Reuniting school children and children in day care with their parents in the current plans are dependent upon wildly unrealistic expectations with respect to the likely behavior of school bus drivers, emergency officials and parents. Plans are extremely insufficient regarding the size and scope of the area which would need evacuation in a nuclear emergency. The same could be said regarding what to do with senior citizens, hospitalized or disabled individuals and those who refuse to leave. The entire notion of evacuation planning is so massive, complex and resource intense that it is unfair and unreasonable to expect this to happen, if it can happen at all, without extensive and revised preparations and a strong role for the Federal Government. A recent Marist Institute survey on the subject of evacuation planning revealed that more than 75 percent of residents living within 10 miles of Indian Point do not believe that the current evacuation plan is workable. Only a very small percentage of people even within a 10-mile radius of the plant know where the reception centers are located. Chaos would ensue under any attempt to evacuate the area in the event of a terrorist nuclear incident at Indian Point since 60 percent of people within 50 miles of the plant, well beyond the planning zone, would attempt to evacuate. We have every reason to be concerned that people within the 10-mile evacuation zone would, in fact, not be able to leave because of road and transportation congestion caused by people in large numbers outside the 10-mile range attempting to leave as quickly as possible.

4. *Potassium iodide should be acquired and distributed on a "point of use" basis for a minimum of 50 miles radius from all nuclear power plants.*—Radioactive iodine, I–131, is released from reactor explosions and, if inhaled or ingested in sufficient quantities, can cause high rates of thyroid cancer in children. If the proper dose of potassium iodide (KI) is given prior to or within 2 hours of exposure to I–131, this particular outcome, that is excess thyroid cancers, can be almost entirely prevented.

Because the window of opportunity to have this beneficial effect of KI is very narrow, it is not sufficient to have the drug only at central distribution points. It must be available at home, in schools and in day care centers. In addition, there must be a major public education campaign to inform people about the benefits of having KI ready for administration, especially to children and pregnant women. It also must be pointed out that KI is *not* a "radiation pill." It will do nothing for any other consequence of exposure to cesium–137 or other isotopes. It is also essential that proper measures be taken by government to ensure that food and water available for ingestion by children not have evidence of I–131 or other harmful radiation byproducts such as Strontium–90.

These four steps would, in my estimation, be appropriate initial measures to prevent and/or ameliorate a terrorist attack on any one of the nation's nuclear power facility. As a physician and public health professional, as a resident of a community with the least safe nuclear power plant in the nation—one which has 21 million people living with 50 miles of the facility, I urge you to strongly consider these recommendations and move forward as quickly as possible.

I also recognize that this is just the beginning and nothing more than a component—albeit a very important component—of a much larger agenda. Even in the nuclear arena, there are many other concerns beyond nuclear plant security. The Federation of American Scientists and the Health Physics Society have begun to raise important concerns about the status of so-called "sealed" and "orphan" sources of radioactive materials used in health care and many other industries. Management control, security and oversight of these materials is variable to the extreme. Stolen radioactive materials can be used to make simple and potentially deadly "dirty bombs" which, if nothing else, have the capability of rendering large land areas uninhabitable.

Again, I thank you for the opportunity to offer testimony at this hearing. I deeply respect the responsibility you and your colleagues have in this time of enormous uncertainty and danger. On behalf of my colleagues in health care and public health I wish you strength and courage to do what needs to get done to safeguard all Americans from every form of terror.

Thank you.

RESPONSES BY IRWIN REDLENER, M.D. TO ADDITIONAL QUESTIONS FROM SENATOR CLINTON

Question 1. In your testimony, you talk about how children and the elderly bear a disproportionately high burden of vulnerability to consequences of a radiological release. Can you please elaborate on this?

Response. Children represent a special level of vulnerability to any act of terrorism, particularly those involving chemical, biological or radiological agents. I have elaborated on the chemical and biological issues elsewhere, but I would like to focus on the problem with excess radiologic exposure. In incidents such as a successful attack on the main reactor core of a nuclear power plant, release of radioactive iodine, I-131, is rapidly absorbed into the thyroid gland of a child (most rapidly in younger children and infants) resulting in a very dramatic rate of thyroid cancer. Although this can happen with adults, absorption is much slower and the cancer rates much less affected.

It should be noted that children are more likely to be crawling around the ground, more exposed to radioactive contamination, and more likely to ingest toxic or contaminated substances. Finally, children need to receive potassium iodide (KI) just before or immediately after (within two hours) exposure in order for the KI to have any beneficial effect.

Radiation sickness itself can be much more severe in children resulting in more rapid decline and greater loss of life. There are other potential health consequences, but the we need to also note that the psychological needs of children in a time of crisis and chaos, in terms of potential separation from caretaker (school and day care) and needs during evacuation make this a major issue, as well.

Seniors, more likely to be infirm, needing medications and other health related devices and management will have another series of special vulnerabilities during a time of rapid evacuation and resettlement

Question 2. There are some who have testified today that it should be up to the states to decide whether or not to stockpile KI tablets and how to distribute these tablets to their residents, should the state chose to make them available at all.

Do you think it is important for KI tablets to be available to everyone living near one of these plants? And if so, how should distribution be handled?

Response. KI distribution should be a national policy of the highest priority, as long as any possibility of nuclear terrorism exists. A 50-mile distribution radius from every nuclear power plant should be the absolute minimum, although a good case can be made for having a 200-mile distribution objective. Many cases of thyroid cancer in children were found at significant distances from Chernobyl following the reactor accident there. Although some have made the case that this resulted from the fact that children were allowed to eat contaminated food, the evidence is far from conclusive. Distribution of KI, in any case, should be to "point of use" (i.e., homes, school, day care, etc.), not central stockpiles. There is no justification to permit states or localities to "opt out" of KI distribution.

Finally, a clear, on-going, public education campaign must accompany the plan to be sure that people understand what the dangers are and what is accomplished by administration of KI. It also needs to be clarified that KI is not a general "anti-radiation panacea", since it does nothing whatsoever for any other issue than the prevention of thyroid cancer following inhalation or ingestion of I-131.

Question 3. In your testimony, you noted that lost or stolen radioactive sealed sources can be used to make a simple and potentially deadly "dirty bomb". Are there any suggestions you could offer us on how to better protect these so-called sealed sources.

Response. Much greater accountability is needed for the management of the nation's supplies of radioactive materials used in health care and throughout many industries. These sealed and orphan sources represent a significant vulnerability in terms of the construction of so-called "dirty nuclear bombs" by terrorists.

RESPONSES BY IRWIN REDLENER, M.D. TO ADDITIONAL QUESTIONS FROM SENATOR VOINOVICH

Question 1. In your testimony, you stated that our nation should consider the "closing of nuclear plants altogether" that have a variety of problems. What do you recommend be the process for evaluating a facility for this kind of drastic step?

How does the fact that communities rely on this low cost reliable energy source or that a facility does not immediately become safe after it is shutdown play in this determination?

What impact would the closing of a nuclear site have on the elderly, poor, and children who are vulnerable to the high costs of energy??

Response. Closing a nuclear power plant is an extremely serious decision with obvious impact on energy production and cost, employment and other concerns. We are simply weighing risks and benefits and need to be extremely mindful of the dramatic increase of perceived and actual vulnerability that America has experienced since last fall. I also need to emphasize that the closing or decommissioning of a nuclear power plant does not eliminate risk, but does significantly reduce certain of the risks over time.

That said, there are clearly a large number of America's nuclear power plants for which the benefits of remaining active are overwhelmed by down-side risks and newly appreciated levels of vulnerability. In my mind there are a number of threshold issues which need to be explored in assessing the risk of any plant. Here are several criteria which would lead me to suggest that a particular plant should be considered for closing:

- Is the plant a "high target value" in terms of population density or economic impact of a potential successful attack?
- Are there particular vulnerabilities of the plant's containment systems for either the main reactor or the spent fuel rod storage system?
- Is there a history of poor safety or security ratings?
- Is there a viable evacuation plan?

The Indian Point facility in Buchanan, New York, some 40 miles from midtown Manhattan, for instance, fails all of these criteria and should be high on the list of plants needing to be closed.

Still, even with all four of these criteria being met by Indian Point, this is still an important question with major economic considerations for local and regional residents.

My feeling is, however, that under the circumstances, in the post-9/11 world of terrorist reality in America, we need do what needs to be done. We are at war. If there is need to help the elderly and low-income populations manage with higher energy costs, then, in my judgement, part of the homeland security strategy may well entail providing an energy supplemental resource for those who need it.

Question 2. Are there any harmful effects of the misuse of potassium iodide?

If distributed widely, as you suggested, how can we ensure that it is not misused?

Response. The main harmful effect of potassium iodide would be related to overdosage in infants which could result in dangerous situations of low thyroid function with potential complications of slowing brain growth and development. This is preventable with education about dose and administration of KI for providers and the general public, just as we do for Tylenol, cold medications or anything else we do for pediatric medication management.

Again, thank you so much for allowing me this opportunity to expand my testimony to the Committee on Environment and Public Works.

STATEMENT OF ROBERT ALVAREZ, PROGRAM DIRECTOR FOR THE STAR FOUNDATION

My name is Robert Alvarez, Program Director for the STAR Foundation. We are grateful for the opportunity to provide this written statement regarding the Nuclear Security Act of 2001. The STAR Foundation is a research and advocacy organization, which is focused on energy, health and environmental policy issues. The Foundation is based in East Hampton, NY and has offices in Washington D.C. Phone: 301–585–7672.

Between 1993 and 1999, I served as a Senior Policy Advisor to the Secretary of Energy for National Security, Environment, Safety & Health, and Labor Policy. My responsibilities included directing the DOE's Office of Energy Emergency Planning. In this position, I directed assessments of the risks and consequences of energy emergencies, including those involving nuclear facilities.

RECOMMENDATIONS FOR IMPROVEMENTS TO NUCLEAR SAFETY AT REACTOR FACILITIES

The Nuclear Security Act (S. 1746) represents a positive step in the protection of public safety and health from acts of terror against commercial nuclear facilities.

The Need for Timely Revised Design Basis Threat.—The STAR Foundation strongly supports the provision in S. 1746 which requires the Nuclear Regulatory Commission to develop a realistic and timely Design Basis Threat for commercial nuclear power stations. We respectfully recommend that this legislation include formal participation in the development of a revised Design Basis Threat by other affected agencies, such as the Defense and Energy Departments, the Coast Guard, the Federal Emergency Management Administration, the Federal Bureau of Investigation and the Federal intelligence community. Such an interagency effort is necessary and will avoid the costly, inefficient, and largely ad hoc approach now being taken.

The NRC's current "top to bottom" review of security at nuclear power stations appears to have no endpoint. By comparison the National Nuclear Security Agency (NNSA) within the Department of Energy has committed in its fiscal year 2003 Budget Request to establish a new Design Basis Threat for the security of the nation's nuclear weapons facilities by September of this year. The NNSA has already established a dedicated taskforce to review current security measures and to provide recommendations for a revised Design Basis Threat, which takes into account the tragic attacks of September 11, 2001.

There is no good reason why the NRC should not follow the lead of the NNSA and establish a timely revision of its Design Basis Threat with a date certain. Due to the absence of clarity and timeliness by the NRC, the Nuclear Security Act of 2001 (S. 1746) is very necessary, and if adopted, will establish the necessary Federal framework to meet the challenges in this era of terrorism.

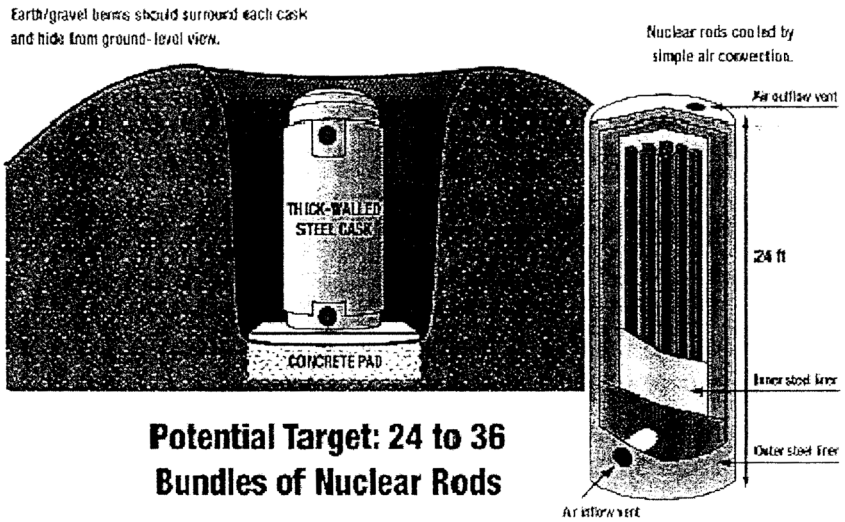
Protection of Spent Fuel Should be Given High Priority.—Specifically, the STAR Foundation urges major emphasis be given to provisions that which would reduce the risks associated with inherent vulnerabilities associated with spent fuel pools.

Unlike reactors, which are in steel vessels surrounded by thick concrete containment, spent fuel pools, containing some of the largest concentrations of radioactivity on the planet, are in unhardened structures that include thin metal corrugated buildings. If enough water drains by accident or design, the fuel could heat up and catch fire with catastrophic consequences comparable to a reactor meltdown. This is of particular concern for the many BWR spent fuel pools which are elevated several stories above the ground.

The first place to begin is to promptly remove as much of the 40,000+ tons of spent nuclear fuel as possible, and place it in multiple, dry, *hardened* onsite storage containers. This will greatly reduce risks in the near term by reducing fire dangers and the potential for large radiological releases. The technology exists to achieve this important public safety objective and has been deployed for several years on a modest scale in the United States and more extensively in Europe.

For more than twenty years, Germany officially recognized that densely compacted spent fuel pools cannot be protected against acts of terror and has implemented an extensive dry spent fuel storage program. By comparison, the Nuclear Regulatory Commission, which in its more recent studies, concedes these risks may exist at U.S. nuclear stations, supports "wall-to-wall" fuel pool compaction. Before September 11th the NRC had already reduced security, emergency planning and accident insurance coverage at eleven closed reactors with spent fuel pools.

In a world where animus against the United States remains high, and where detailed knowledge about nuclear technologies and access to advanced weaponry are widespread, a national program to achieve safe and secure storage of spent reactor fuel should be given high priority. In particular, efforts should be undertaken to further harden existing dry spent fuel storage containers, such as berming or additional hardened containment. The following illustration provides and example of what additional hardening of dry spent fuel containers might look like.



The costs of hardened onsite dry storage are not prohibitively expensive and are estimated in the range of tens-of-millions of dollars per site. Currently a single dry cask unit costs between half a million to one million dollars. Additional hardening may double this cost. For instance, a recent study done at Princeton University found that if the Salem Reactor station in New Jersey placed all of it's spent fuel into dry-hardened casks, the costs for 38 new dry casks would be between $34 and $76 million. However, the costs of doing too little or nothing could be incalculable.

The Need for Logical and Adequate Nuclear Emergency Planning and Response.—S. 1746 calls for the expansion of the emergency planning zone for nuclear accidents from 10 to 50 miles. The logic of simply expanding the emergency planning zone does not necessarily provide for adequate emergency response and public safety. Even with an expanded emergency planning zone, the current system is unstructured and is not site-specific, with respect to population density, meteorology, logistical, transportation access criteria, and long-term risks from land and building contamination.

Instead the STAR Foundation recommends a framework for nuclear accident emergency planning and response be established as part of S. 1746. Such a framework would include:

• Development of a specific prioritized system based on the goals of (1) saving lives and early injuries; (2) and reducing radiation doses below limits of exposure (Protective Action Guides—PAGs) for purposes of evacuation, relocation and safe return.

• Initiation of a precautionary response when the probability of a major release of radioactivity from a core melt or spent fuel fire becomes significant (10 percent or greater). State authorities should have the technical capability to promptly identify and evaluate plant conditions that call for a precautionary response.

• Protective Action Recommendations should be based on measurements that are compared to pre-established long-term guidelines for annual exposures—set as a small faction of the short term Protective Action Guides. The current system is based on measurements of contamination levels of food, water and land and buildings, without any regard for long-term exposures and critical issues such as when people are able to return.

• There should be three zones:

1. 0 to 5 miles for "plume protection"—emphasizing prompt early evacuation.

2. 5–25 Miles: for "plume protection" that includes evacuation and sheltering based on weather conditions.

3. >25 miles for "plume protection" for evacuation, sheltering or relocation based on monitoring.

Because of the ability of large concentrations to travel and be deposited over great distances, from weather conditions such as rainstorms, there should be an Ingestion Protection Plan based on Protective Action Guides set by the EPA for contaminated foodstuffs.

• There should be a classification level that addresses releases from spent fuel pools and other spent fuel storage facilities. Currently, there are four classification levels based on severity, plant condition, size of release, and accident probability, none of which apply to spent fuel pools.

• There should be intensive, broad-based pre-emergency educational in the "Inner Planning Zone" that goes from 0 to 25 miles, and information dissemination in all other zones. Citizens should be involved in the design and implementation of the educational program. There should be an upgraded flow of information during emergencies. Currently, pre-emergency education is limited to disseminating brochures, calendars etc by the utility, with a 10-mile radius, as well as emergency procedures that are distributed to key locations within the 10-mile zone.

• State authorities should have the independent technical capability to identify, and classify the severity of an emergency. States should also have a quick-reaction capability for plume tracking and dose projection. Currently, the reactor owner has the primary responsibility for identifying an emergency and classifying its severity. States are totally dependant on the reactor owner for information and have limited capability for plume tracking and dose estimation. Federal authorities have substantial plume tracking and radiation monitoring capabilities that are subject to several hours of delay before deployment.

• Local counties potentially at risk should coordinate the development and implementation of emergency plans. There should be extensive "horizontal" communications among counties and municipalities. There should be extensive training, especially for volunteer emergency workers and staff at schools, hospitals and other institutions. Currently, there is limited coordination and minimal training if any provided to potential "at risk" counties.

• There should be plans for screening and external decontamination of persons potentially exposed or concerned about exposure. There should be plans to call in national medical resources in the event of a severe accident/event in which thousands of people may require treatment for serious radiation exposures. Currently, the NRC requires screening for 20 percent of the people in a 10-mile zone. There are limited arrangements for treating a small number of seriously exposed people. There is no explicit for the integration of national medical resources in the case of a large-scale emergency.

• Emergency preparedness should be regarded as a safety-system equivalent to an in-plant system (e.g., emergency core cooling). As such significant degradation of state emergency preparedness (e.g. failure to remove snow from roads) should be grounds for shutting down the plant. The plant's operating license should be contingent on the continuous maintenance of an effective emergency response capability. Currently, there is a Federal requirement of an emergency plan to be in place as a condition for continued plant operation. There are no requirements that the plan be capable of execution when the plant is operating.

BACKGROUND

As the 21st century begins, the basic concepts of warfare are being transformed by the highly destructive acts of terror by small, well-organized groups against military and civilian targets. Over the past two decades, such attacks have occurred, tragically, with increased frequency and destruction. Of particular concern are nuclear reactor stations. By virtue of their potentially enormous radiological impacts, nuclear energy facilities represent an unpredictable risk of becoming weapons of mass destruction at the hands of terrorists.

This concern was underscored by President Bush, on January 27th, when he informed the Nation in his State Of the Union Address that U.S. nuclear reactor information was found in a terrorist enclave in Afghanistan.

Nuclear power facilities have long been considered as potential terrorist targets, and limited programs are in place to protect them. But, in the aftermath of September 11th, the Nuclear Regulatory Commission concedes that U.S. reactor stations are not designed to withstand destructive attacks using a jumbo passenger jet with a full load of fuel as a missile. For over three decades now, the NRC and it's predecessor—the Atomic Energy Commission—have refused to require reactors to be hardened against aerial attacks because it is considered prohibitively expensive.

After September 11th, nuclear reactors can no longer be viewed merely as machines that generate electricity. The potential consequences of a terrorist attack transcend cost/benefit analyses of nuclear energy. No other energy technology has the potential for catastrophic releases of radioactivity, even greater than nuclear weapons explosions, causing thousands of deaths and cancers, and rendering large populated or farming areas uninhabitable, possibly for centuries.

The only "real world" analog to the potential consequences of a nuclear terrorist attack is the tragic aftermath of the 1986 Chernobyl reactor accident in the Ukraine. Fourteen years after the accident, U.N. scientists estimated that some 74,000 square-miles in Northern and Eastern Europe still remain heavily contaminated with cesium–137 from Chernobyl. Large numbers of people still live in contaminated zones that would trigger evacuation, and removal of foodstuffs, in the United States.

There are no credible scientific tools to predict acts of malice, much less to compare the risk of terrorism with the benefits of nuclear generated electricity. A terrorist attack, by its very nature occurs by total surprise. Yet, knowing this, the U.S. commercial nuclear industry and the Nuclear Regulatory Commission have steadfastly resisted inclusion of terrorism into the underlying safety requirements for nuclear power stations, on the absurd, but technically correct basis that terrorist acts cannot be foreseen.

In a world where animus against the United States is growing, and where detailed knowledge about nuclear technologies and access to advanced weaponry are widespread, the security and safety of nuclear power stations should be of the highest priority.

REACTOR SPENT FUEL POOLS POSE THE GREATEST POTENTIAL FOR HARM

In terms of severe radiological impacts, the most significant vulnerabilities at nuclear stations involve reactor spent fuel pools. Unlike reactors, which are in steel vessels surrounded by thick concrete containment, spent fuel pools, which contain some of the largest concentrations of radioactivity on the planet, are in less hardened structures that include corrugated buildings. An attack against a spent fuel pool could drain enough water to cause a catastrophic radiological fire that cannot be extinguished.

Depending on the reactor design, significant water drainage exposing highly radioactive cores could occur in less than an hour. Once the spent fuel rods are exposed the zirconium cladding could heat up in a matter of hours to about 1000 degrees Celsius, and undergo instantaneous ignition. As the fire a rages, the zirconium interacts with the remaining water and steam, generating hydrogen, which further intensifies the conflagration.

Over the past several decades, the U.S. nuclear power industry has generated several billion curies of long-lived radioactivity, contained in more than 40,000 tons of reactor-irradiated spent fuel. One spent fuel pool has more long-lived radioactivity than was released into the northern hemisphere by all nuclear weapons tests combined. On average, spent fuel pools hold 5 to 10 times more long-lived radioactivity than a reactor core. Pools at one third of U.S. reactor sites are in unhardened buildings, elevated several stories above ground.

The NRC concluded over the past several years that the loss of pool water by accident or by acts of malice could lead to very serious radiological fires that are comparable or worse than reactor meltdowns. The NRC also finds that ponds at reactors closed for many years could pose similar dangers. The Nuclear Regulatory Commission (NRC) concedes that such a fire probably could not be extinguished; it could rage for days. Most important in June 2001, the NRC staff informed the Commission that its spent fuel safety policy and procedures did not cover vulnerabilities to terrorism or sabotage. Despite these concessions, the NRC staff recommended that the Commission greatly reduce security and emergency evacuation requirements at decommissioning reactors and reducing accident insurance coverage by more than half. Prior to September 11th particularly, worrisome is the large amount of cesium 137 in fuel ponds. With a half-life of 30 years, cesium 137 gives off highly penetrating radiation and is absorbed in the food chain as if it were potassium. According to the NRC, as much as 100 percent of a pool's cesium 137 would be released into the environment in a fire. In comparison, the 1986 Chernobyl accident released about 40 percent of the reactor core's 6 million curies of cesium 137 into the atmosphere, resulting in massive offsite radiation exposures. According to a 1997 study done by Brookhaven National Laboratory for the NRC, a spent fuel fire could render about 188 square miles uninhabitable and cause as many as 28,000 cancer fatalities and $59 billion in damage.

Despite the fact that the Nuclear Regulatory Commission recognizes this problem, the commercial nuclear power industry thus far, has successfully resisted security upgrades that involve the hardening of spent fuel storage. It is time for Congress to act.

YUCCA MOUNTAIN AND NUCLEAR TERRORISM

Early this year, President Bush submitted a formal certification to proceed with the construction of a permanent high-level radioactive waste repository at the Yucca Mountain site in Nevada. Much has been said by the nuclear industry and the Bush administration that opening the Yucca Mountain site will serve as a primary means to protect existing spent fuel from terrorist attacks.

Recently the House of Representatives, fueled by terrorism concerns, voted overwhelmingly to proceed with a geological repository for high-level radioactive wastes at the Department of Energy's Yucca Mountain site in Nevada. Now the battle lines are drawn in the Senate, as arguments heat up over the risks of transporting reactor spent fuel versus disposing of it in Yucca Mountain.

Obscured in this contentious debate, however, is a more important and timely question. How can we protect spent reactor fuel already in vulnerable pools scattered across the country from terrorist attacks over the next 30–40 years.

The first place to begin is to promptly remove as much of the more than 40,000 tons of spent nuclear fuel and place it in multiple, dry, hardened onsite storage containers. This will greatly reduce risks in the near term by reducing fire dangers and the potential for large radiological releases.

Even if the Yucca Mountain site opens under the DOE's optimistic date of 2010, large amounts of spent fuel will remain in pools for decades, awaiting shipment. By the time the Yucca Mountain Repository fills up, reactors allowed to operate beyond their 30-year NRC licenses, could generate over 40,000 additional tons of spent fuel for storage in vulnerable pools.

THE CHALLENGE AHEAD

The current Design Basis Threat, which provides the "envelope" in which nuclear power station safeguards and security operate does not factor in the type of attacks that occurred on September 11th. Guards are only required to protect against no more than 4 individuals, and have not taken any steps to harden vital parts of the reactor station such as the control room and spent fuel pools. These latter vulnerabilities are the primary focus of the Project, because "gates, guards, and guns" are not sufficient to defend against an advanced weapons or aircraft attack against facilities that are similar in construction to ordinary commercial structures.

Nonetheless, the commercial nuclear industry strongly resists significant security improvements, particularly capital upgrades to harden facilities. Attacks against spent fuel pools were never part of NRC security performance tests prior to September 11th.

A major factor that fuels industry resistance to increasing the design basis threat is that the financial stability of much of the nuclear power industry has been undercut through deregulation.

As a result of utility deregulation many of America's nuclear power stations are now owned by limited liability corporations, (some with foreign partners) which possess questionable capital reserves. This means these companies may not have sufficient funds to manage major contingencies such as major equipment failure and replacement, nuclear safety upgrades, and increased safeguards and security. Under deregulation, these new reactor owners can no longer rely on a regulated rate base for cash-flow. Competitive market pressures and bankruptcy can put pressure on reactor owners to cut back on "variable" costs such as meeting safety requirements, repairing safety systems and other equipment, and having adequate staffing to ensure safe operation. Adding to existing difficulties are the impacts of electric utility deregulation. Three nuclear power station owners (Enron, P,G&E, and Southern California Edison) are in bankruptcy.

STATEMENT OF EDWIN S. LYMAN, PH.D., PRESIDENT,
NUCLEAR CONTROL INSTITUTE

The purpose of this brief testimony is to provide preliminary data to support the contention that the current 10-mile radius of the emergency planning zone for plume exposure ("plume exposure EPZ") is inadequate, in the event of a beyond-design-basis ("severe") accident or terrorist event at a commercial nuclear power plant, and will fail to protect the public in accordance with Federal guidelines. Therefore, the call for an extension of the emergency planning zone to 50 miles contained in S. 1746, "Nuclear Security Act of 2002," is an appropriate and prudent measure that merits serious consideration. In fact, such a change will be necessary to provide the level of protection now called for by FDA and EPA in the event of a severe nuclear reactor accident.

We have used the MACCS2 code to generate estimates of thyroid dose and total effective dose equivalent (TEDE)[1] to members of the public downwind of a severe radiological release at a nuclear power plant, involving core melt, vessel breach and containment failure.[2] The total radioactive iodine release assumed is about 60 percent of the core inventory, similar to the release from the Chernobyl accident. The calculated doses assume only exposures due to passage of the initial plume and due to deposited contamination for 1 week following the accident; thus long-term doses are not considered. Ingestion doses (the milk pathway) are also not considered. The calculations are for a generic pressurized-water reactor and a single meteorological condition (atmospheric stability class D, wind speed 4.4 miles per hour, and no precipitation). The exposed individuals are assumed to be 30-year-old adults. Other assumptions for this model, including the source term, can be found in a recent publication.[3] The intent here is not to be comprehensive, but simply to demonstrate the severity of these events.

The pertinent results are summarized in the following table:

Distance (miles): 15; Peak Thyroid Dose (rem): 626; Peak TEDE (rem): 163.
Distance (miles): 28; Peak Thyroid Dose (rem): 292; Peak TEDE (rem): 60.
Distance (miles): 45; Peak Thyroid Dose (rem): 254; Peak TEDE (rem): 38.

The relevance of these values is as follows:

Thyroid prophylaxis. According to the FDA's recent guidance on the administration of potassium iodide (KI) as a prophylactic measure, it is recommended that adults between the ages of 18 and 40 take 130 mg of KI daily if their thyroid exposure is projected to exceed 10 rem.[4] From the table, it can be seen that this threshold is exceeded by a factor of 25 for the most affected individuals at a distance of 45 miles. Thus according to FDA guidance, KI administration would be recommended for some individuals located at least 45 miles downwind of the accident.

The situation is even more severe for children and pregnant or lactating women. For these individuals, the FDA recommends KI prophylaxis if the projected thyroid dose is greater than 5 rem. To convert the thyroid doses in the above table, which were estimated for 30-year-old adults, to children, who would receive a larger thyroid dose for the same radioactive iodine intake, a factor of between two and ten should be applied, depending on the age.[5] Thus the thyroid dose to children could exceed the FDA threshold for KI administration at even greater distances than for adults.

Evacuation. According to the EPA "protective action guides" (PAGs), evacuation should normally be initiated if the total effective dose equivalent (TEDE) exceeds 1 rem.[6] It is obvious from the above table that according to this rule, evacuation would be recommended at more than 45 miles downwind from the site.

Conclusion. The 10-mile plume exposure EPZ was never intended to provide significant protection against the long-term carcinogenic effects of radiation exposure, but was only intended to reduce the early fatalities that could occur from acute radiation poisoning. Nevertheless, the ultimate long-term health consequences of a severe radiological release would be catastrophic, and the government must be obliged to ensure that these longer-term effects be avoided to the maximum extent possible. Thus an extension of emergency planning to a region extending at least 50 miles downwind of nuclear reactor sites is an essential measure to bolster protection of the public in the event of a terrorist attack on a nuclear plant.

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[1] TEDE is the sum of the dose due to external radiation and the "committed effective dose" delivered for up to a 50-year period as a result of internal exposure resulting from radionuclide intake.

[2] D.I. Chanin and M.L. Young, *Code Manual for MACCS2: Volume 1, User's Guide,* SAND97–0594, Sandia National Laboratories, 1997.

[3] Edwin S. Lyman, "Public Health Risks of Substituting Mixed-Oxide for Uranium Fuel in Light-Water Reactors," *Science and Global Security* 9 (2001) 33–79.

[4] U.S. Department of Health and Human Services, Food and Drug Administration, Center for Drug Evaluation and Research, "Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies," Guidance Document, November 2001. Available on the Web at *www.fda.gov/cder/guidance/index.htm.*

[5] International Commission on Radiological Protection (ICRP), *Age-Dependent Doses to Members of the Public From Intake of Radionuclides, Part 5,* ICRP Publication 72, Vol. 26, No. 1 (1996).

[6] T. McKenna, J. Tefethen, K. Gant, J. Jolicoeur, G. Kuzo and G. Athey, *RTM–96: Response Technical Manual,* NUREG/BR–0150, Vol. 1, Rev. 4, U.S. Nuclear Regulatory Commission, March 1996, p. G–7.

IMPLICATIONS OF SECURITY FORCE FEDERALIZATION ON NUCLEAR POWER PLANT SECURITY: AN EVALUATION BY THE NUCLEAR ENERGY INSTITUTE

EXECUTIVE SUMMARY

The September 11 attacks have prompted new consideration of security arrangements in the United States. They have caused us all to reconsider past efforts regarding security and to reevaluate the threats we face. The nation, reluctantly, is adapting to heightened security alerts, and airport security personnel have been federalized.

This era of heightened homeland security also has prompted the introduction of legislative proposals to federalize security forces at the nation's nuclear facilities. This paper addresses the implications of proposals to replace an established, skilled private security force with federal guards at nuclear power plants.

Recently, airport baggage screening functions were federalized for a fixed period to correct deficiencies that could not be solved by any other means. The responsibilities and attributes of airport baggage screeners and nuclear power plant security forces, which protect the plants, are not comparable. Although they performed relatively simple and limited duties, airport security personnel were characterized as untrained, unscreened, transitory, poorly supervised, poorly regulated and low paid.

In sharp contrast, nuclear power plant security forces, many of which have law enforcement or military experience, are subject to FBI background checks, physical and psychological testing and screening and substance abuse testing as part of the hiring process. The nuclear energy industry is unique among energy industries in having a cooperative relationship with the FBI to facilitate such criminal record checks.

Nuclear plant security personnel also undergo rigorous training. Initially, they are provided seven weeks of training, including weapons proficiency and proof of marksmanship, recognition of sabotage devices and equipment, and tactical response training. Nuclear security personnel are required to requalify annually in physical and physical fitness characteristics and in job skills. They are subject to a continuous behavior observation program for substance abuse and psychological fitness. On average, retention of the security force is above 90 percent and the officers are paid an annual salary of $35,000 and provided a full benefits package.

The duties of these personnel involve both traditional industrial security and defense of the facility against a specified, military-capable land assault force. The industry's security forces are aided in this effort by modern intrusion detection systems and barriers, biometric and other advanced recognition technology for workers entering vital areas of the plant, internal fortifications and the most capable weaponry permitted under law.

As a part of their training, security officers participate in exercises on an annual basis. As part of the Nuclear Regulatory Commission's federal oversight of security requirements, the industry's private security forces must demonstrate their readiness during mock assaults conducted by federally supervised forces. No other private industrial facilities have the combination of robust physical protection, well-trained and armed security forces and emergency response capability that is found at every nuclear power plant in the United States.

All of these attributes of the industry security program are embedded in federal regulations and federal oversight. It is possible for federally employed forces to replace private security officers, but it would result in numerous and significant disadvantages that could result in diminished security at these facilities.

There are more than 5,000 privately employed security officers in the nuclear energy industry. Their compensation levels correspond to GS-9 on the federal scale or E-8 (O-2) on the military scale. Owing to the large number of the current force with prior military or local law enforcement backgrounds and the restrictions imposed by federal law and/or local laws associated with their existing pension credits, many will find federal employment less attractive. They will choose to leave this service and seek different private employment. This will result in potentially thousands of displaced workers and difficulties in recruiting individuals with comparable backgrounds and skills. In addition, hiring a federal work force of more than 5,000 officers at these pay scales may have significant impact on existing federal pay scales for current federal security forces with less sophisticated responsibilities.

Legislative proposals such as S. 1746 to federally employ security personnel at nuclear power plants would have the Nuclear Regulatory Commission manage the program. Adding more than 5,000 employees to the NRC workforce would nearly triple the size of the agency and significantly dilute its focus on safety and oversight. The hiring, training and management of this workforce also could result in a transition period of diminished efficiency and security protection. If a different federal em-

ployer is chosen, the NRC as an independent federal agency will be faced with oversight of another federal agency as well as the company that owns and/or operates the power plant. This would dilute the NRC's safety focus as well.

FEDERALIZING SECURITY FORCE WOULD WEAKEN COORDINATION WITH REACTOR OPERATORS

Federal employment would result in a bifurcation of responsibility for activities on a privately owned site. There would be two separate chains of command for site employees—one for the security force and one for the plant operating staff. This may result in a cooperative working relationship during routine plant activity. But in the event of a threat against the facility, this division of responsibility could hinder the plant's response.

Protecting a nuclear facility against intruders requires highly coordinated action on the part of both the reactor operating professionals and the security forces. Reactor safety could be compromised without excellent coordination. Given the variety of tactical situations that could exist under an attack, this coordination must occur in real time and under rapidly changing circumstances. Dual chains of command would make this coordination very difficult, if not impossible.

Dual chains of command also complicate efficiency of operations. The size and tactical deployment of security forces is highly dependent on physical features and the use of intrusion detection and monitoring systems. The placement and use of these systems also impacts equipment accessibility for plant operating staffs, which in turn has an impact on reactor safety during normal operation and if the facility faces an attack. Resolution of these conflicting interests to achieve high levels of both efficiency and protection will be adversely affected by a bifurcation of accountability.

Security forces at nuclear facilities have multiple responsibilities. They are responsible for industrial security and protection of the plant assets on a daily basis. But they also must demonstrate the ability to protect the facility from a defined attack scenario, as required by NRC regulation.

Undertaking both roles, a federal employer will face a broad range of new liabilities. This will impose a significant new dimension for the federal government and will become a distinct disadvantage to federal employment. Conversely, the dual responsibilities associated with private employment of a federally regulated security force is a significant advantage. It allows the private employer to provide a more diverse set of assignments for security forces. Without such diversity, the security forces would be relegated to armed sentry duties only. Maintaining a highly alert security posture is difficult without this diversity of assignments.

OTHER LEGISLATIVE CHANGES COULD IMPROVE SECURITY

Whether the security force is federally or privately employed, there are necessary and beneficial legislative changes directly impacting the effectiveness of the security force that the industry and the Nuclear Regulatory Commission recommend. Without new legislation, some security forces are restricted in the use of deadly force, and state/local laws limit the weapons that may be deployed on private property. Federal legislation is needed to remove these constraints and make security programs consistent nationwide.

Clearly, private employees provide excellent nuclear power plant security. Routine security could be accomplished by federal employees, but entails significant difficulties that, in a practical sense, would result in diminished safety, security and efficiency both during a transition period and in the long run. This paper does not address the protection of nuclear facilities and other parts of the national critical infrastructure from broader acts of war. The industry supports a broad analysis to determine the threats we now face and develop a seamless defense that integrates the capabilities of our industry, state and local governments, and the federal government, including the CIA, FBI, FEMA and the military. Broader acts of war and the relative risks of the facilities should be considered as part of this comprehensive analysis.

Nuclear power plants are the most robust physical structures in the industrial sector and are protected by highly skilled, well-armed paramilitary forces. The industry has been at the highest state of alert since September 11 and is reviewing its security programs to incorporate lessons learned from the attacks. The NRC also is conducting a "top-to-bottom" review of the federal regulations that apply to nuclear plant security and the security. More than 20 of the nation's governors, state security directors and Members of Congress who have toured nuclear power facilities since September 11 have commented on the outstanding security programs.

The nuclear energy industry has always had an uncompromising commitment to safety and security. The industry remains committed to providing the best possible security for workers at our plants, their families and residents of 31 states who live near the nation's nuclear power plants. The industry will work with the Bush administration and the Congress to review and enhance our security as may be required in light of recent events. However, a transition from private to federal security forces at nuclear power plants is an illconceived and misguided proposal that provides no enhanced protection of the public or the nuclear power facilities that provide electricity for one of every five American homes and businesses.

INTRODUCTION

The Nuclear Regulatory Commission sets rigorous standards for nuclear power plant security measures and security forces. These security forces represent an elite group of individuals—carefully screened before hiring, trained both in general and facility—specific security knowledge, and required to requalify every year.

Security begins with the hiring process. Applicants for security officer positions must undergo detailed evaluations, including FBI background checks and evaluations of their psychological and physical fitness. Those who are hired are subject to ongoing behavior observation and drug and alcohol screening. They also are trained regularly and evaluated in "anti-terrorist" exercises.

A clear chain of command is necessary for effective security at a nuclear power plant because of the close interrelationship between the security force and plant operators. In the event of a threat, plant operators carry out plant emergency operations and procedures, while the security force protects the equipment that is needed to maintain reactor safety. Close coordination between the security force and plant operators is best achieved when both are integrated under a single management structure. Federalization would undercut this.

A REVIEW OF SECURITY ISSUES

Since September 11, the nuclear energy industry has reviewed nuclear plant security requirements and assessed the advantages and disadvantages of federalizing security professionals. This review included:

1. policy and implementation issues associated with federalizing nuclear power plant security forces;
2. attributes of an effective security force, how it might be affected by federalization, and the related NRC regulatory requirements;
3. characteristics of the existing nuclear plant security force, regulated under Title 10 of the Code of Federal Regulations (CFR) Part 73;
4. industry-supported security improvements that should be implemented.

This paper discusses the industry's findings and conclusions.

POLICY IMPLICATIONS

There are numerous negative policy and safety implications of legislation introduced by Senator Harry Reid (S. 1746) and the companion bill (H.R. 3382) in the House of Representatives introduced by Congressman Ed Markey. Fundamentally, the legislation would weaken security at nuclear power plants by unnecessarily federalizing nuclear power plant security. The proposed legislation also would have a profound impact on the nation's energy diversity, environmental well-being, economic security and the national common defense. Those impacts include:

• *Diminishing and disrupting plant security.* Effective security, including a successful response to a terrorist threat at a nuclear power plant, is highly dependent upon coordinated efforts by security forces and power plant operators. By replacing the proven, effective security forces already in place at nuclear plants, the Reid-Markey proposals bifurcate management responsibilities for these functions. Doing so will lessen the industry's ability to fully protect public health and safety.

• *Creating one of the largest law enforcement and security agencies in the country.* The Reid-Markey legislation would require the NRC to hire an estimated 5,000 additional security employees and would make the NRC one of the largest law enforcement/security agencies in the country—larger than the Secret Service or the Bureau of Alcohol, Tobacco and Firearms. By doubling or tripling the workforce of the NRC, the legislation could change the agency's primary mission from that of protecting public health and safety to providing for the general defense of the country.

• *Reducing the stringent screening requirements for security personnel.* Requiring security forces at nuclear facilities to be federal employees likely would reduce the strict hiring standards, extensive background checks, training and ongoing performance reviews already in place for private security forces. In fact, many Department

of Energy nuclear facilities have private security forces, as do federally operated nuclear plants, such as the Tennessee Valley Authority reactors. The qualifications outlined in the Reid-Markey legislation are less stringent than those already in place in the industry.

• *Squandering vital experience.* Replacing private nuclear plant security forces with federal personnel with little or no experience at nuclear power facilities would set aside years of on-the-job experience gained through countless security exercises and NRC-managed drills. Moreover, such a transition raises serious contractual issues regarding existing security forces.

• *Misallocating vital and limited federal security resources.* Nuclear power plants are already among the most secure private facilities in the country, while other components of the nation's critical infrastructure may require greater protection. Only through a comprehensive review of critical infrastructure security needs can policymakers balance the available resources with the wide spectrum of legitimate security needs. Coordinating the efforts of federal agencies to conduct a comprehensive threat assessment will avoid having regulatory and security decisions made in a political vacuum without necessary guidance from government experts in security and intelligence gathering.

• *Blurring the line between providing national defense and maintaining industrial security.* By placing the burden of providing for the common defense solely upon consumers of nuclear energy, the Reid-Markey proposal undermines both national security and energy diversity.

• *Reducing economic stability and environmental well-being.* Nuclear power provides economic stability to our nation's consumers and industries by providing a reliable source of electricity at a low cost. By discouraging its use, the legislation erodes that stability and constrains an essential source of electricity that does not produce greenhouse gases or other air pollutants.

• *Breaching the line between civilian law enforcement and military force.* By placing the command of a military-like force—consisting of more than 5,000 personnel—in the hands of an independent U.S. agency, the legislation obfuscates the clear historical line between civilian and military responsibilities.

NUCLEAR POWER PLANT SECURITY IS EFFECTIVE TODAY

The federal requirements for security at our nation's nuclear power facilities are designed to provide a high assurance that the nuclear power plants are protected from radiological sabotage. Rigorous requirements, coupled with industry commitment and strong NRC oversight, have resulted in well-designed paramilitary security programs at our nation's nuclear plants. These plants have multi-layered security programs that effectively combine engineered physical security features, administrative controls, and a highly trained and equipped security response force.

Employment requirements for security force personnel are quite extensive, with specific requirements for employment suitability, medical qualifications, physiological requirements and physical fitness.

They are also very specific and detailed with respect to training and qualification. Security officers are required to complete training in more than 70 security-related areas, including weapons training, tactical response force operations, use of deadly force, and the searching of vehicles, packages and personnel. Security force personnel must requalify every year. In addition to the performance requirements, security officers must re-qualify each year on the employment suitability, physical, psychological and physical fitness requirements.

The security force weapons and equipment regulations are also extensive and formidable. Armed security personnel are required to be proficient with semiautomatic rifles, shotguns and semiautomatic pistols or revolvers. They also are required to have available tactical response equipment such as tactical helmets, body armor, gas masks, tear gas, night vision equipment and portable radios.

The NRC's security regulations specifically require that each company operate, develop and maintain a well-designed security response plan for its facility. The response plans must be reviewed and approved by the NRC prior to being implemented. Finally as part of the response plan, the security force is required to develop a strong liaison with local law enforcement to ensure effective coordination of response.

NRC security requirements have resulted in the development of highly professional security programs and security forces at our nation's nuclear power plants:

1. The nuclear energy industry employs more than 5,000 trained nuclear security professionals.

2. On average, each facility employs 80 nuclear security officers dedicated to protecting the nuclear facility against the threat of radiological sabotage.

3. Approximately 67 percent of the industry's security officers have prior military, law enforcement or industrial security experience.

4. More than 17 percent have a college degree.

5. Nuclear security officers are well-paid professionals, with an average annual salary of $35,000.

6. Job satisfaction for the security officers is extremely high, as demonstrated by a retention rate of 90 percent.

7. Training for a new security officer is extensive. On average, a nuclear security officer receives 270 hours of training prior to being deployed to the security force.

8. The industry has a strong commitment to continuing training and drills for security officers. On average, the nuclear security officer will spend approximately 60 hours each year completing requalification training, with approximately 30 hours spent on anti-terrorist tactical training exercises.

9. Security officers also participate in considerable training activities with local law enforcement agencies and emergency response agencies. At least annually, and in many cases more often, familiarization and coordination training is conducted with local law enforcement personnel and such organizations as fire departments and emergency medical organizations.

10. Physical fitness is an important requirement for security force officers. Each facility's security program includes a physical fitness regime that effectively tests the cardiovascular fitness and endurance levels of security force personnel.

11. In addition to security program duties, nuclear security officers also perform a number of other critical safety functions for the plant. These include plant fire brigade, plant fire watch patrols, emergency medical technicians for first aid responses, and designated emergency response plan actions.

INDUSTRY SUPPORTS SECURITY CHANGES

The nuclear energy industry took immediate actions to enhance security in response to the events of September 11. However, federal legislation is required to make improvements in some areas, such as the authority to use automatic weapons where state laws preclude their use by nuclear security officers.

In fact, the industry has supported the NRC's repeated requests to Congress to enhance security, long before the attacks of September 11. Combining these long-requested authorities with additional actions suggested by recent security reviews, the nuclear industry has compiled the following list of industry-supported security improvements.

The nuclear energy industry supports legislation that would contain the following elements:

1. The president, or his designee, should conduct a comprehensive review of nuclear power plant security, including consideration of the entire spectrum of possible terrorist threats.

2. The NRC should determine if changes are needed in the criteria against which nuclear plant security forces must successfully defend the facility—which is called the plant's design basis threat. Any revisions to the threat against which plant security forces must defend should be based on a reasonable expectation of the security responsibility of the industry. As such, the review of possible terrorist threats against nuclear plants should determine whether the defense against such a threat should be the responsibility of the federal government or the company.

3. The NRC should be granted the authority to permit plant security forces to carry and use weapons commensurate with the plant's responsibilities to respond to the design basis threat and to permit plant security forces to make arrests without warrants if and as necessary.

4. A nuclear plant's security forces should be granted the authority to use deadly force, if necessary, to protect the plant. This authority currently is subject to varying interpretations of state and federal law.

5. Federal law should be expanded to prohibit the unauthorized introduction of firearms into facilities licensed by the NRC and to prohibit the sabotage of NRC-licensed or NRC-certified facilities.

6. Communications between nuclear plants, law enforcement agencies, and, when appropriate, armed services (including the National Guard) should be reinforced, and consideration should be given to placing secure communications equipment at each facility.

The costs of additional security—such as National Guard personnel and state police, which have been and may be necessary to respond to terrorist threats that are clearly acts of war—should be the responsibility of the federal government or the states.

ATTRIBUTES OF EFFECTIVE SECURITY

Which would provide more effective security at a nuclear power plant—a security force that is federally staffed or one that is federally regulated? Is there a significant difference between the two approaches?

To answer these questions, the nuclear energy industry analyzed security force effectiveness and identified 10 attributes of an effective security officer. These qualities are similar to those examined by the NRC in 1976 when it determined that private security forces would be a more effective means of safeguarding nuclear power plants than federal guards. The attributes were evaluated to determine whether a federal security force or a federally regulated force of private security officers would have an advantage for each attribute.

The results indicate areas where plant safety would be disadvantaged by the use of federal officers. Of these, the most important is the introduction of a second chain of command. Who makes decisions during an attack, and how well the security force is coordinated with other activities on site, is extremely important in determining security force effectiveness. Two chains of command, one federal and the other corporate, will significantly complicate coordination. Plant response must be fully integrated during a crisis.

The industry's review raised other issues related to federalization. A change to federally staffed security would disrupt existing security during the implementation period. This disruption could compromise nuclear plants' ability to respond to threats at a time when the threats are believed to be greater than usual.

GENERAL OBSERVATIONS

In order to respond to a new assessment of the post-September 11 terrorist threats, federal legislation may be required under either approach.

The same security standards should be set under either approach. Regulatory changes would be required in either case. NRC regulations contain stringent security standards that the industry must meet.

Integrating federal security officers into normal plant operations would be essential for smooth day-to-day operations—but such integration would present major challenges.

A dual chain of command for security forces and plant operations personnel would make effective crisis response more difficult.

A transition to federal security employees at nuclear power plants would cause major disruptions in security force stability for several years, displace many of the thousands of current security officers, and potentially undermine security effectiveness at this time of heightened alert.

DETAILED DISCUSSION OF SECURITY ATTRIBUTES

1. Physical and Mental Fitness

Physical and mental fitness standards must be applied to applicants for security positions and to security personnel already employed at the facility. Security officers must meet stringent physical standards, be free of psychological disorders and substance abuse problems, and must undergo criminal background checks.

These standards should be appropriate for the expected duties. Thus, standards for a checkpoint officer may differ from those of an armed responder. In both cases, standards would have to be set by federal regulation. There are no generic federal standards that would automatically apply to a federal guard force. Moreover, there is concern that the myriad of civil service requirements may be an impediment to maintaining an effective security force and achieving standards as high as those now in the NRC's regulations.

Existing NRC regulations require:

Physical Qualifications.—Prior to employment, or assignment to the security organization, an individual must meet the following physical qualification criteria:

1. A nuclear security officer must have no physical weaknesses or abnormalities that would adversely affect his/her performance of assigned security job duties.

2. The officer must successfully pass a physical examination administered by a licensed physician.

3. Armed personnel must meet the following additional physical requirements: (a) Vision: Distant visual acuity in each eye shall be correctable to 20/30 in the better eye and 20/40 in the other eye with eyeglasses or contact lenses. Field of vision must be at least 70 horizontal meridians in each eye. The ability to distinguish red, green and yellow is required. Loss of vision in one eye is disqualifying. Glaucoma is disqualifying, unless controlled by acceptable medical or surgical means. (b) Hearing: Individuals shall have no hearing loss in the better ear greater than 30 decibels av-

erage at 500 Hz, 1,000 Hz, and 2,000 Hz with no hearing loss exceeding 40 decibels at any one frequency. (c) Diseases: Individuals must have no established medical history or medical diagnosis of epilepsy or diabetes, or any other disease that would adversely affect his or her ability to perform assigned duties. (d) Addiction: Individuals must have no established medical history or medical diagnosis of habitual alcoholism or drug addiction. (e) Other physical requirements: An individual who has been incapacitated due to a serious illness, injury, disease or operation that could interfere with the effective performance of assigned security job duties must, prior to resumption of such duties, provide medical evidence of recovery and ability to perform such security job duties.

Mental Qualifications.—Prior to employment, or assignment to the security organization, an individual must meet the following mental qualification criteria:

1. Individuals whose security tasks and job duties are directly associated with the effective implementation of physical security and contingency plans must demonstrate mental alertness and the capability to exercise good judgment, implement instructions, assimilate assigned security tasks, and accurately communicate as required by their job duties.

2. In addition, armed officers and central alarm station operators must have no emotional instability that would interfere with the effective performance of assigned security job duties. This determination must be made by a licensed psychologist, psychiatrist, physician or other person professionally trained to identify emotional instability.

3. The company must arrange for continuous observation of security personnel and for appropriate corrective measures by supervisors for indications of emotional instability of individuals in the course of performing assigned security job duties.

Physical Fitness Qualifications.—Security force members must demonstrate physical fitness for assigned security job duties by performing a practical physical exercise program within a specific time period as described in the licensee training and qualifications plan. This program must consider job-related functions such as strenuous activity, physical exertion, levels of stress and exposure to the elements as they pertain to security duties.

Requalification.—At least every 12 months, security officers are required to demonstrate that they continue to meet the physical, mental and physical fitness requirements.

2. Security Knowledge

Certain general knowledge of security procedures and skills is important, no matter what type of facility the security officer is protecting. This includes use of equipment and weapons, general tactics, general procedures, self-defense and knowledge of legal authority.

There may be a benefit to standardizing training through a central academy or use of centrally generated training guides and material. The federal government could do this, but the nuclear energy industry already has a proven track record for developing standardized training programs—notably for reactor operator training.

For a specific site, a security officer needs substantial local knowledge to be effective. This includes detailed knowledge of procedures, strategies and the facility's physical layout. At a nuclear power plant, security officers also must understand plant operations and procedures, radiation protection and safety procedures. This knowledge is site-specific and precludes moving officers from one facility to another without extensive retraining.

Although general security and facility-specific training is integrated into an on-site training program, facility-specific training cannot be effectively integrated into a central security academy program.

Existing NRC regulations require:

Training Requirements.—Before performing security-related tasks or duties, an individual must be trained and must demonstrate that he or she can perform these tasks and duties in accordance with the licensee's documented training and qualifications plan. This training must include knowledge of the threat conditions that must be deterred. These include:

1. a determined violent external assault, attack by stealth, or deceptive actions, by several persons;

2. well-trained (including military training and skills), dedicated individuals;

3. inside assistance, which may include a knowledgeable individual who attempts to participate in a passive role (e.g., providing information), an active role (e.g., facilitating entrance and exit, disabling alarms and communications, participating in violent attack), or both;

4. weapons, up to and including hand-held automatic weapons, equipped with silencers and having long range accuracy;
5. hand-carried equipment, including incapacitating agents and explosives for use as tools of entry or for otherwise destroying reactor, or features of the safeguards system; and
6. a four-wheel drive vehicle for transporting personnel and their hand-carried equipment or explosives.

Qualification Requirements.—An individual must be qualified in accordance with the company's NRC-approved training and qualifications plan before being assigned to perform security-related duties.

1. Educational development: Possess a high school diploma or pass an equivalent performance examination.
2. Criminal history: Have no criminal history that reflects on his or her reliability.
3. Age: An armed officer must be 21 years of age or older.

Security Knowledge, Skills and Abilities.—Each individual assigned to perform the security-related task identified in the licensee physical security or contingency plan must demonstrate his or her capability in the following areas:

1. NRC requirements and guidance for physical security at nuclear facilities;
2. nuclear security officer's duties and responsibilities;
3. physical security system design and operation;
4. security access control system design and operation;
5. vehicle, package and personnel contraband search process;
6. self defense and weapons use;
7. adversary force capabilities, tactics, motivation and objectives;
8. tactical response program design and operations; and
9. security contingency event response program.

Requalification.—Security personnel must requalify at least every 12 months to perform assigned security tasks and duties for both normal and contingency operations—which include radiological safety, operating practices, quality assurance, industrial safety and fire protection.

3. Alertness, Motivation and Adherence to Requirements

Maintaining an alert security force capable of supporting long periods of routine activity without any hostile activity is essential. Techniques used to maintain alertness include the integration of training and drills, rotation of assignments, and the introduction of varied activity into the security officer's schedule. Officers need to be involved in day-to-day activity without detracting from their ability to respond to a threat. Involving a federal officer force in routine plant activities would be a challenge. Yet it is very difficult to maintain a highly trained, motivated force whose only responsibility is to sit in a fixed position and respond when there is a terrorist threat.

Motivation is a willingness to endure hardships in the performance of duty, to use force when necessary, and even to risk one's life. Close integration of the security force in plant operations helps to establish those personal relations with other plant workers that are so important in providing continuous motivation. Under ideal conditions, the security officer is protecting more than a physical structure—he is protecting a closely-knit workforce that operates the facility. Involvement with those he is protecting at the plant and within the local community is a significant motivating factor.

Adherence to requirements is the willingness to enforce unpopular rules and procedures. This is a complex issue that must be fostered by effective management methods. The nuclear energy industry's strong safety culture fosters strict compliance with rules and procedures.

4. Legal Authority: Weapons, Detention, Search and Use of Force

Security officers must have clear authority under the law to detain and search intruders and to use deadly force, if necessary, to protect public health and safety. They also must be equipped with, and authorized to use, weapons and equipment that are adequate for the threat and defensive strategy being used.

State laws vary in what they permit. In most states, civilian security forces are restricted in the weapons they can use and in their authority to detain and search intruders. These laws would apply equally to federally regulated and federally employed security officers. Regardless of whether nuclear power plant security is federalized, legislation is needed to establish the necessary authority in this area.

Existing NRC regulations require:

Weapons Training

Security officers who are armed to perform assigned security duties must be trained in accordance with the licensee's weapons training program. Security offi-

cers must be proficient in the use of assigned weapon(s) and shall meet prescribed standards in the following areas:

1. mechanical assembly, disassembly, range penetration capability of weapon, and bull's-eye firing;
2. weapons cleaning and storage;
3. combat firing, day and night;
4. safe weapons handling;
5. clearing, loading, unloading, and reloading;
6. when to draw and point a weapon;
7. rapid-fire techniques;
8. close-quarter firing;
9. firing under stress; and
10. zeroing assigned weapon(s).

Weapons Qualification and Re-qualification Program

Prior to working as an armed security officer, an individual must qualify on each weapon are used at the facility. In addition, each individual must be requalify at least every 12 months.

Handgun.—Armed security officers must qualify with a revolver or semiautomatic pistol firing a nationally recognized course of fire. The qualifying score shall be an accumulated total of 70 percent of the maximum obtainable score.

Semiautomatic Rifle.—Security officers assigned to use semiautomatic rifle must qualify with a semiautomatic rifle by firing a nationally recognized Course of fire. The qualifying score shall be an accumulated total of 80 percent of the maximum obtainable score.

Shotgun.—Security officers assigned to use the shotgun must qualify by firing 15 yards from the hip and 25 yards from the shoulder.

Requalification.—Individuals shall requalify on weapons at least every 12 months.

Security Officer Weapons and Response Equipment

Semiautomatic Rifles; Shotguns; Semiautomatic pistols or revolvers; Ammunition.—For each assigned weapon as appropriate to the individual's assigned contingency security job duties.

5. Security Workforce Stability

The 90 percent retention rate for the industry's security forces is an excellent indication of the stability of the current workforce. A transition to a federalized workforce would not improve this outstanding retention rate.

6. Physical Barriers and Other Protection

Physical barriers to entry, electronic aids, plant layout, defensive positions, and personnel protective equipment all enhance security force effectiveness. Although these are major factors in effective security of a facility, they are not related to whether guards are private or federalized. However, these physical features affect the number of armed responders needed. Increased use of physical features may reduce the number of responders needed for a given threat but may impact plant operations. There are frequent conflicts between the needs for security and free access of the plant for safe operations.

Existing NRC regulations require:

Physical Protection.—Vehicle barriers and/or other physical restrictions must be provided as necessary to ensure that the protected area of the plant cannot be breached by a direct vehicular assault or by detonation of a vehicle carrying a bomb. All vehicles, personnel and material entering the protected area must first be thoroughly inspected by security officers to ensure that no weapons, explosive or other such items are brought onto the plant site.

Physical access to the protected area of the plant is controlled through the use of physical barriers, intrusion detection equipment, closed circuit surveillance equipment, a designated isolation zone and exterior lighting. Physical access to the inner areas of the plant where vital plant equipment also is controlled through the use of physical barriers, locked and alarmed doors, and cardreader access control systems. The barriers are substantial enough to effectively delay entry in order for effective armed response by plant security forces.

Within the protected zone, access to all vital areas of the plant must be further protected. This access may be controlled by a security officer or provided by computer-controlled "key-card" access systems. Plant employees must have a documented need prior to gaining access to each vital area.

Physical security plans must document the defensive positions and delaying barriers used to enhance security force effectiveness.

Personnel Protective Equipment.—The following personal equipment must be readily available for individuals assigned to security duties:
(1) combat helmet;
(2) body armor (bullet-resistant vest);
(3) full-face gas mask;
(4) flashlights and batteries;
(5) baton;
(6) handcuffs;
(7) ammunition/equipment belt;
(8) binoculars;
(9) night-vision aids, i.e., hand-fired illumination flares or equivalent;
(10) tear gas or other non-lethal gas;
(11) duress alarms; and
(12) two-way portable radios.

7. Deterrent Image

The industry's security programs combine strong physical security features with highly trained paramilitary security professionals. Both features are highly visible and provide a strong deterrent to anyone considering attacking a nuclear power plant.

8. Compatibility With Normal Operations

Nuclear power plant security forces are extremely well integrated into the normal day-to-day operations of the facility. The security officers and staff work closely with reactor operators and other plant staff to help ensure the safe and efficient operation of the facilities. For instance, during plant maintenance and refueling outages, plant management must be able to increase the security force to clear additional worker and vehicles into the plant protected area. They must be able to balance the extra cost of those security assets against the increase in productivity associated with enabling more rapid access to the facility. In addition, basic industrial security must be integrated into the security force responsibility on a redundant force is needed.

9. Liaison With Local Officials

Close liaison with local officials is an integral provision of the security regulations and, in fact, has been implemented effectively by the industry. Efforts undertaken since September 11 are an excellent example of the effective working relationships that exist among industry security forces and their counterparts in local law enforcement.

10. Chain of Command and Control During Crisis

Security forces also are extremely well integrated into the emergency operations of the nuclear facilities. During plant emergencies, particularly security situations, security forces work very closely with the plant operating staff to help ensure the safe operation and, if required, shutdown of the reactor.

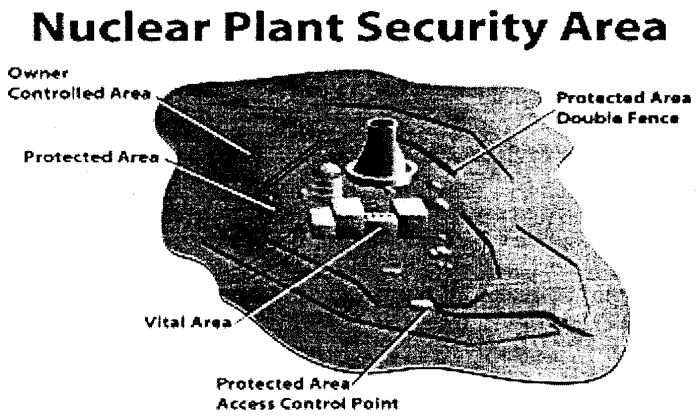
CONCENTRIC RINGS OF SECURITY

Nuclear power plant security is a multifaceted approach that can best be thought of as concentric rings, with security becoming tighter as one reaches the center.

The first layer of security is found at the "owner-controlled area." This area includes all property associated with the plant. Electric companies generally patrol and control vehicle access to this area.

The second layer of security is in the "protected area." Access to this enclosed area is strictly controlled. Unescorted access requires a computer-coded badge issued by security personnel. Fences, barbed wire, microwave detection equipment, cameras and other detection devices prevent unauthorized entry.

The third layer of security, and most heavily controlled area of the plant, is the "vital area." This area contains the equipment essential for operating the plant safely and successfully shutting it down in case of an unusual event. Security contingency plans are designed to protect this area of the plant.

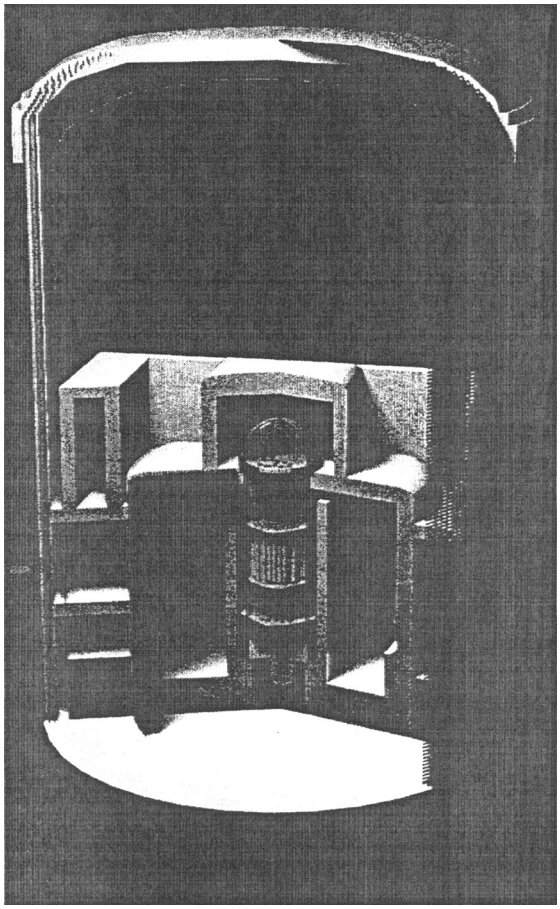


MULTIPLE LAYERS OF REACTOR SAFETY

The Atomic Energy Act and NRC's regulations are the basis for the industry's approach to security. These guidelines and the industry's commitment to safety ensure that nuclear power plants are operated in a manner that protects public health and safety. Licenses issued by the NRC contain technical specifications that establish safety limits for plant operation.

The plant designs and physical features are the first line of defense. By design, our plants provide multiple concrete and steel barriers that protect vital safety systems and the reactor fuel from sabotage. These barriers begin with the fuel-rod casing, or "cladding," itself, and progresses outward from the fuel to include several-inch-thick steel that makes up the reactor vessel, a bioshield that is composed of steel and leaded concrete, covered by a steel containment vessel, and capped by a several-foot-thick shield building wall.

Nuclear power plants also incorporate systems that are designed to prevent the type of accident that could cause the release of radioactive material into the environment. These include operating and safety systems that ensure full redundancy for necessary supporting equipment, onsite and offsite power sources, redundant sources of emergency power, with additional redundancy in the emergency reactor cooling and shutdown systems.



CONCLUSION: NO CLEAR ADVANTAGE TO FEDERALIZING SECURITY FORCES

The Nuclear Energy Institute believes that the continued use of private security forces that meet strict federal standards provides greater security at nuclear power plants than replacing these established, well-trained forces with teams of federal officers, as contemplated by legislation proposed in both the U.S. Senate and House of Representatives.

Force effectiveness depends upon personal qualities and actions that are prescribed by standards, regulations or policies essentially independent of the officer's federal or private status. For example, NRC regulations equally applicable to federal or private officers specify physical and mental requirements, criminal background checks, training, weaponry and duties. Based on established effectiveness criteria, there is no clear advantage to a federal security force. But there are significant disadvantages.

NEI's findings confirm the results of the original NRC study (NUREG 0015, 1976) used to support rulemaking that established the existing use of federally regulated private nuclear security forces.

Security is enhanced by stability. The current officer forces are well trained and familiar with existing plant-specific security plans, the facility, local law enforcement agencies, the local geography and the local community. Federalizing the nuclear security officers likely would result in major changes to the current security force. This would severely disrupt the current organizational structure and effectiveness of the force. New security officers would require extensive training and orientation. This is particularly imprudent in a time of heightened homeland security.

OPPORTUNITIES FOR IMPROVING SECURITY THROUGH LEGISLATION

Notwithstanding the strength of the nuclear industry's security program, the industry is examining how security programs at nuclear power plants can be augmented in the aftermath of the September 11 events. The industry supports a number of security enhancements that could be achieved through legislation, such as granting nuclear plant security officers the authority to detain and search intruders and to use deadly force when necessary.

II

107TH CONGRESS
1ST SESSION

S. 1586

To amend the Atomic Energy Act of 1954 to authorize the carrying of firearms by employees of licensees, and for other purposes.

IN THE SENATE OF THE UNITED STATES

OCTOBER 30, 2001

Mr. INHOFE (for himself and Mr. SMITH of New Hampshire) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

NOVEMBER 5, 2001

Committee discharged; referred to the Committee on Environment and Public Works

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A BILL

To amend the Atomic Energy Act of 1954 to authorize the carrying of firearms by employees of licensees, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. CARRYING OF FIREARMS BY LICENSEE EMPLOYEES.

(a) IN GENERAL.—Chapter 14 of title I of the Atomic Energy Act of 1954 (42 U.S.C. 2201 et seq.) is amended—

(1) in section 161, by striking subsection k. and inserting the following:

"k. authorize to carry a firearm in the performance of official duties such of its members, officers, and employees, such of the employees of its contractors and subcontractors (at any tier) engaged in the protection of property under the jurisdiction of the United States located at facilities owned by or contracted to the United States or being transported to or from such facilities, and such of the employees of persons licensed or certified by the Commission (including employees of contractors of licensees or certificate holders) engaged in the protection of facilities owned or operated by a Commission licensee or certificate holder that are designated by the Commission or in the protection of property of significance to the common defense and security located at facilities owned or operated by a Commission licensee or certificate holder or being transported to or from such facilities, as the Commission considers necessary in the interest of the common defense and security;" and

(2) by adding at the end the following:

"SEC. 170C. CARRYING OF FIREARMS.

"(a) AUTHORITY TO MAKE ARREST.—

"(1) IN GENERAL.—A person authorized under section 161k. to carry a firearm may, while in the

performance of, and in connection with, official duties, arrest an individual without a warrant for any offense against the United States committed in the presence of the person or for any felony under the laws of the United States if the person has a reasonable ground to believe that the individual has committed or is committing such a felony.

"(2) LIMITATION.—An employee of a contractor or subcontractor or of a Commission licensee or certificate holder (or a contractor of a licensee or certificate holder) authorized to make an arrest under paragraph (1) may make an arrest only—

"(A) when the individual is within, or is in flight directly from, the area in which the offense was committed; and

"(B) in the enforcement of—

"(i) a law regarding the property of the United States in the custody of the Department of Energy, the Commission, or a contractor of the Department of Energy or Commission or a licensee or certificate holder of the Commission;

"(ii) a law applicable to facilities owned or operated by a Commission licensee or certificate holder that are des-

ignated by the Commission under section 161k.;

"(iii) a law applicable to property of significance to the common defense and security that is in the custody of a licensee or certificate holder or a contractor of a licensee or certificate holder of the Commission; or

"(iv) any provision of this Act that subjects an offender to a fine, imprisonment, or both.

"(3) OTHER AUTHORITY.—The arrest authority conferred by this section is in addition to any arrest authority under other law.

"(4) GUIDELINES.—The Secretary and the Commission, with the approval of the Attorney General, shall issue guidelines to implement section 161k. and this subsection.".

(b) CONFORMING AMENDMENT.—The table of contents of the Atomic Energy Act of 1954 (42 U.S.C. prec. 2011) is amended by adding at the end of the items relating to chapter 14 the following:

"Sec. 170C. Carrying of firearms.".

SEC. 2. UNAUTHORIZED INTRODUCTION OF DANGEROUS WEAPONS.

Section 229a. of the Atomic Energy Act of 1954 (42 U.S.C. 2278a(a)) is amended in the first sentence by inserting "or subject to the licensing authority of the Commission or to certification by the Commission under this Act or any other Act" before the period at the end.

SEC. 3. SABOTAGE OF NUCLEAR FACILITIES OR FUEL.

Section 236a. of the Atomic Energy Act of 1954 (42 U.S.C. 2284(a)) is amended—

(1) in paragraph (2), by striking "storage facility" and inserting "storage, treatment, or disposal facility";

(2) in paragraph (3)—

(A) by striking "such a utilization facility" and inserting "a utilization facility licensed under this Act"; and

(B) by striking "or" at the end;

(3) in paragraph (4)—

(A) by striking "facility licensed" and inserting "or nuclear fuel fabrication facility licensed or certified"; and

(B) by striking the period at the end and inserting "; or"; and

(4) by adding at the end the following:

"(5) any production, utilization, waste storage, waste treatment, waste disposal, uranium enrichment, or nuclear fuel fabrication facility subject to licensing or certification under this Act during construction of the facility, if the person knows or reasonably should know that there is a significant possibility that the destruction or damage caused or attempted to be caused could adversely affect public health and safety during the operation of the facility;".

○

II

107TH CONGRESS
1ST SESSION

S. 1746

To amend the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974 to strengthen security at sensitive nuclear facilities.

IN THE SENATE OF THE UNITED STATES

NOVEMBER 29, 2001

Mr. REID (for himself, Mrs. CLINTON, Mr. LIEBERMAN, and Mr. JEFFORDS) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To amend the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974 to strengthen security at sensitive nuclear facilities.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Nuclear Security Act of 2001".

SEC. 2. DEFINITIONS.

Section 11 of the Atomic Energy Act of 1954 (42 U.S.C. 2014) is amended—

(1) by redesignating subsection jj. as subsection ii.; and

(2) by adding at the end the following:

"jj. DESIGN BASIS THREAT.—The term 'design basis threat' means the design basis threat established by the Commission under section 73.1 of title 10, Code of Federal Regulations (or any successor regulation developed under section 170C).

"kk. SENSITIVE NUCLEAR FACILITY.—The term 'sensitive nuclear facility' means—

"(1) a commercial nuclear power plant and associated spent fuel storage facility;

"(2) a decommissioned nuclear power plant and associated spent fuel storage facility;

"(3) a category I fuel cycle facility;

"(4) a gaseous diffusion plant; and

"(5) any other facility licensed by the Commission, or used in the conduct of an activity licensed by the Commission, that the Commission determines should be treated as a sensitive nuclear facility under section 170C.".

SEC. 3. NUCLEAR SECURITY.

(a) IN GENERAL.—Chapter 14 of the Atomic Energy Act of 1954 (42 U.S.C. 2201 et seq.) is amended by adding at the end the following:

"SEC. 170C. PROTECTION OF SENSITIVE NUCLEAR FACILITIES AGAINST THE DESIGN BASIS THREAT.

"(a) DEFINITIONS.—In this section:

"(1) NUCLEAR SECURITY FORCE.—The term 'nuclear security force' means the nuclear security force established under subsection (b)(1).

"(2) FUND.—The term 'Fund' means the Nuclear Security Fund established under subsection (f).

"(3) QUALIFICATION STANDARD.—The term 'qualification standard' means a qualification standard established under subsection (c)(2)(A).

"(4) SECURITY PLAN.—The term 'security plan' means a security plan developed under subsection (b)(2).

"(b) NUCLEAR SECURITY.—The Commission shall—

"(1) establish a nuclear security force, the members of which shall be employees of the Commission, to provide for the security of all sensitive nuclear facilities against the design basis threat; and

"(2) develop and implement a security plan for each sensitive nuclear facility to ensure the security of all sensitive nuclear facilities against the design basis threat.

"(c) DESIGN BASIS THREAT.—

"(1) IN GENERAL.—Not later than 90 days after the date of enactment of this section, and at

least once every 3 years thereafter, the Commission, in consultation with the Assistant to the President for Homeland Security, the Attorney General, the Secretary of Defense, and other Federal, State, and local agencies, as appropriate, shall revise the design basis threat to include—

"(A) threats equivalent to—

"(i) the events of September 11, 2001;

"(ii) a physical, cyber, biochemical, or other terrorist threat;

"(iii) an attack on a facility by multiple coordinated teams of a large number of individuals;

"(iv) assistance in an attack from several persons employed at the facility;

"(v) a suicide attack;

"(vi) a water-based or air-based threat;

"(vii) the use of explosive devices of considerable size and other modern weaponry;

"(viii) an attack by persons with a sophisticated knowledge of the operations of a sensitive nuclear facility; and

"(ix) fire, especially a fire of long duration; and

"(B) any other threat that the Commission determines should be included as an element of the design basis threat.

"(2) REPORTS.—The Commission shall submit to Congress a report on each revision made under paragraph (1).

"(d) SECURITY PLANS.—

"(1) IN GENERAL.—Not later than 180 days after the date of enactment of this section, the Commission shall develop a security plan for each sensitive nuclear facility to ensure the protection of each sensitive nuclear facility against the design basis threat.

"(2) ELEMENTS OF THE PLAN.—A security plan shall prescribe—

"(A) the deployment of the nuclear security force, including—

"(i) numbers of the members of the nuclear security force at each sensitive nuclear facility;

"(ii) tactics of the members of the nuclear security force at each sensitive nuclear facility; and

"(iii) capabilities of the members of the nuclear security force at each sensitive nuclear facility;

"(B) other protective measures, including—

"(i) designs of critical control systems at each sensitive nuclear facility;

"(ii) restricted personnel access to each sensitive nuclear facility;

"(iii) perimeter site security, internal site security, and fire protection barriers;

"(iv) increases in protection for spent fuel storage areas;

"(v) placement of spent fuel in dry cask storage; and

"(vi) background security checks for employees and prospective employees; and

"(C) a schedule for completing the requirements of the security plan not later than 18 months after the date of enactment of this section.

"(3) ADDITIONAL REQUIREMENTS.—A holder of a license for a sensitive nuclear facility under section 103 or 104 or the State or local government in which a sensitive nuclear facility is located may peti-

tion the Commission for additional requirements in the security plan for the sensitive nuclear facility.

"(4) IMPLEMENTATION OF SECURITY PLAN.—Not later than 270 days after the date of enactment of this section, the Commission, in consultation with a holder of a license for a sensitive nuclear facility under section 103 or 104, shall, by direct action of the Commission or by order requiring action by the licensee, implement the security plan for the sensitive nuclear facility in accordance with the schedule under paragraph (2)(C).

"(5) SUFFICIENCY OF SECURITY PLAN.—If at any time the Commission determines that the implementation of the requirements of the security plan for a sensitive nuclear facility is insufficient to ensure the security of the sensitive nuclear facility against the design basis threat, the Commission shall immediately submit to Congress and the President a classified report that—

"(A) identifies the vulnerability of the sensitive nuclear facility; and

"(B) recommends actions by Federal, State, or local agencies to eliminate the vulnerability.

"(e) NUCLEAR SECURITY FORCE.—

"(1) IN GENERAL.—Not later than 90 days after the date of enactment of this section, the Commission, in consultation with other Federal agencies, as appropriate, shall establish a program for the hiring and training of the nuclear security force.

"(2) HIRING.—

"(A) QUALIFICATION STANDARDS.—Not later than 30 days after the date of enactment of this section, the Commission shall establish qualification standards that individuals shall be required to meet to be hired by the Commission as members of the nuclear security force.

"(B) EXAMINATION.—The Commission shall develop and administer a nuclear security force personnel examination for use in determining the qualification of individuals seeking employment as members of the nuclear security force.

"(C) CRIMINAL AND SECURITY BACKGROUND CHECKS.—The Commission shall require that an individual to be hired as a member of the nuclear security force undergo a criminal and security background check.

"(D) DISQUALIFICATION OF INDIVIDUALS WHO PRESENT NATIONAL SECURITY RISKS.—

The Commission, in consultation with the heads of other Federal agencies, as appropriate, shall establish procedures, in addition to any background check conducted under subparagraph (B), to ensure that no individual who presents a threat to national security is employed as a member of the nuclear security force.

"(3) ANNUAL PROFICIENCY REVIEW.—

"(A) IN GENERAL.—The Commission shall provide that an annual evaluation of each member of the nuclear security force is conducted and documented.

"(B) REQUIREMENTS FOR CONTINUATION.—An individual employed as a member of the nuclear security force may not continue to be employed in that capacity unless the evaluation under subparagraph (A) demonstrates that the individual—

"(i) continues to meet all qualification standards;

"(ii) has a satisfactory record of performance and attention to duty; and

"(iii) has the knowledge and skills necessary to vigilantly and effectively pro-

vide for the security of a sensitive nuclear facility against the design basis threat.

"(4) TRAINING.—

"(A) IN GENERAL.—The Commission shall provide for the training of each member of the nuclear security force to ensure each member has the knowledge and skills necessary to provide for the security of a sensitive nuclear facility against the design basis threat.

"(B) TRAINING PLAN.—Not later than 60 days after the date of enactment of this section, the Commission shall develop a plan for the training of members of the nuclear security force.

"(C) USE OF OTHER AGENCIES.—The Commission may enter into a memorandum of understanding or other arrangement with any other Federal agency with appropriate law enforcement responsibilities, to provide personnel, resources, or other forms of assistance in the training of members of the nuclear security force.

"(f) NUCLEAR SECURITY FUND.—

"(1) ESTABLISHMENT.—There is established in the Treasury of the United States a fund to be

known as the 'Nuclear Security Fund', which shall be used by the Commission to administer programs under this section to provide for the security of sensitive nuclear facilities.

"(2) DEPOSITS IN THE FUND.—The Commission shall deposit in the Fund—

"(A) the amount of fees collected under paragraph (5); and

"(B) amounts appropriated under subsection (g).

"(3) INVESTMENT OF AMOUNTS.—

"(A) IN GENERAL.—The Secretary of the Treasury shall invest such portion of the Fund as is not, in the judgment of the Secretary of the Treasury, required to meet current withdrawals. Investments may be made only in interest-bearing obligations of the United States.

"(B) ACQUISITION OF OBLIGATIONS.—For the purpose of investments under subparagraph (A), obligations may be acquired—

"(i) on original issue at the issue price; or

"(ii) by purchase of outstanding obligations at the market price.

"(C) SALE OF OBLIGATIONS.—Any obligation acquired by the Fund may be sold by the Secretary of the Treasury at the market price.

"(D) CREDITS TO FUND.—The interest on, and the proceeds from the sale or redemption of, any obligations held in the Fund shall be credited to and form a part of the Fund.

"(4) USE OF AMOUNTS IN THE FUND.—The Commission shall use amounts in the Fund to pay the costs of—

"(A) salaries, training, and other expenses of the nuclear security force; and

"(B) developing and implementing security plans.

"(5) FEE.—To ensure that adequate amounts are available to provide assistance under paragraph (4), the Commission shall assess licensees a fee in an amount determined by the Commission, not to exceed 1 mill per kilowatt-hour of electricity generated by a sensitive nuclear facility.

"(g) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated such sums as are necessary to carry out this section.".

(b) IMPLEMENTATION.—The Commission shall complete the full implementation of the amendment made by

subsection (a) as soon as practicable after the date of enactment of this Act, but in no event later than 270 days after the date of enactment of this Act.

(c) TECHNICAL AND CONFORMING AMENDMENT.—The table of contents for chapter 14 of the Atomic Energy Act of 1954 (42 U.S.C. prec. 2011) is amended by adding at the end the following:

"Sec. 170B. Uranium supply.
"Sec. 170C. Protection of sensitive nuclear facilities against the design basis threat.".

SEC. 4. OPERATION SAFEGUARDS AND RESPONSE UNIT.

Section 204 of the Energy Reorganization Act of 1974 (42 U.S.C. 5844) is amended by adding at the end the following:

"(d) OPERATION SAFEGUARDS AND RESPONSE UNIT.—

"(1) DEFINITIONS.—In this subsection:

"(A) ASSISTANT DIRECTOR.—The term 'Assistant Director' means the Assistant Director for Operation Safeguards and Response.

"(B) DESIGN BASIS THREAT.—The term 'design basis threat' has the meaning given the term in section 11 of the Atomic Energy Act of 1954 (42 U.S.C. 2014).

"(C) SENSITIVE NUCLEAR FACILITY.—The term 'sensitive nuclear facility' has the meaning

given the term in section 11 of the Atomic Energy Act of 1954 (42 U.S.C. 2014).

"(D) UNIT.—The term 'Unit' means the Operation Safeguards and Response Unit established under paragraph (2)(A).

"(2) ESTABLISHMENT OF UNIT.—

"(A) IN GENERAL.—There is established within the Office of Nuclear Material Safety and Safeguards the Operation Safeguards and Response Unit.

"(B) HEAD OF UNIT.—The Unit shall be headed by the Assistant Director for Operation Safeguards and Response.

"(C) DUTIES.—The Assistant Director shall—

"(i) establish a program for the conduct of operation safeguards and response evaluations under paragraph (3); and

"(ii) establish a program for the conduct of emergency response exercises under paragraph (4).

"(D) MOCK TERRORIST TEAM.—The personnel of the Unit shall include a Mock Terrorist Team comprised of—

"(i) not fewer than 20 individuals with advanced knowledge of special weapons and tactics comparable to special operations forces of the Armed Forces;

"(ii) at least 1 nuclear engineer;

"(iii) for each evaluation at a sensitive nuclear facility under paragraph (3), at least 1 individual with knowledge of the operations of the sensitive nuclear facility who is capable of actively disrupting the normal operations of the sensitive nuclear facility; and

"(iv) any other individual that the Assistant Director determines should be a member of the Mock Terrorist Team.

"(3) OPERATION SAFEGUARDS AND RESPONSE EVALUATIONS.—

"(A) IN GENERAL.—Not later than 1 year after the date of enactment of this subsection, the Assistant Director shall establish an operation safeguards and response evaluation program to assess the ability of each sensitive nuclear facility to defend against the design basis threat.

"(B) FREQUENCY OF EVALUATIONS.—Not less often than once every 2 years, the Assistant Director shall conduct and document operation safeguards and response evaluations at each sensitive nuclear facility to assess the ability of the members of the nuclear security force at the sensitive nuclear facility to defend against the design basis threat.

"(C) ACTIVITIES.—The evaluation shall include 2 or more force-on-force exercises by the Mock Terrorist Team against the sensitive nuclear facility that simulate air, water, and land assaults (as appropriate).

"(D) CRITERIA.—The Assistant Director shall establish criteria for judging the success of the evaluations.

"(E) CORRECTIVE ACTION.—If a sensitive nuclear facility fails to complete successfully an operation safeguards and response evaluation, the Commission shall require additional operation safeguards and response evaluations not less often than once every 6 months until the sensitive nuclear facility successfully completes an operation safeguards and response evaluation.

"(F) REPORTS.—Not less often than once every year, the Commission shall submit to Congress and the President a report that describes the results of each operation safeguards and response evaluation under this paragraph for the previous year.

"(4) EMERGENCY RESPONSE EXERCISES.—

"(A) IN GENERAL.—Not later than 1 year after the date of enactment of this subsection, the Assistant Director, in consultation with the Assistant to the President for Homeland Security, the Director of the Federal Emergency Management Agency, the Attorney General, and other Federal, State, and local agencies, as appropriate, shall establish an emergency response program to evaluate the ability of Federal, State, and local emergency response personnel within a 50-mile radius of a sensitive nuclear facility to respond to a radiological emergency at the sensitive nuclear facility.

"(B) FREQUENCY.—Not less often than once every 3 years, the Assistant Director shall conduct emergency response exercises to evaluate the ability of Federal, State, and local emergency response personnel within a 50-mile

radius of a sensitive nuclear facility to respond to a radiological emergency at the sensitive nuclear facility.

"(C) ACTIVITIES.—The response exercises shall evaluate—

"(i) the response capabilities, response times, and coordination and communication capabilities of the response personnel;

"(ii) the effectiveness and adequacy of emergency response plans, including evacuation plans; and

"(iii) the ability of response personnel to distribute potassium iodide or other prophylactic medicines in an expeditious manner.

"(D) REVISION OF EMERGENCY RESPONSE PLANS.—The Commission shall revise the emergency response plan for a sensitive nuclear facility to correct for any deficiencies identified by an evaluation under this paragraph.

"(E) REPORTS.—Not less often than once every year, the Commission shall submit to Congress and the President a report that describes—

"(i) the results of each emergency response exercise under this paragraph conducted in the previous year; and

"(ii) each revision of an emergency response plan made under subparagraph (D) for the previous year.".

SEC. 5. POTASSIUM IODIDE STOCKPILES.

Section 170 of the Atomic Energy Act of 1954 (42 U.S.C. 2210) is amended by adding at the end the following:

"u. Not later than 180 days after the date of enactment of this subsection, the Commission, in consultation with the Director of the Federal Emergency Management Agency, the Secretary of Health and Human Services, and other Federal, State, and local agencies, as appropriate, shall—

"(1) ensure that sufficient stockpiles of potassium iodide tablets have been established at public facilities (such as schools and hospitals) within at least a 50-mile radius of all sensitive nuclear facilities;

"(2) develop plans for the prompt distribution of the stockpiles described in paragraph (1) to all individuals located within at least a 50-mile radius of

a sensitive nuclear facility in the event of a release of radionuclides; and

"(3) submit to Congress a report—

"(A) certifying that stockpiles have been established as described in paragraph (1); and

"(B) including the plans described in paragraph (2).".

SEC. 6. DEFENSE OF FACILITIES.

(a) IN GENERAL.—In a case in which a state of war or national emergency exists, the Commission shall—

(1) request the Governor of each State in which a sensitive nuclear facility is located to deploy the National Guard to each sensitive nuclear facility in that State; and

(2) request the President to—

(A) deploy the Coast Guard to sensitive nuclear facilities on the coastline of the United States; and

(B) restrict air space in the vicinity of sensitive nuclear facilities in the United States.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated such sums as are necessary to carry out this section.

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