

**NUCLEAR REGULATORY COMMISSION:  
OVERSIGHT OF 2003 PROGRAMS**

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**HEARING**  
BEFORE THE  
SUBCOMMITTEE ON CLEAN AIR, CLIMATE CHANGE,  
AND NUCLEAR SAFETY  
OF THE  
COMMITTEE ON  
ENVIRONMENT AND PUBLIC WORKS  
UNITED STATES SENATE  
ONE HUNDRED EIGHTH CONGRESS  
FIRST SESSION  
FEBRUARY 13, 2003

Printed for the use of the Committee on Environment and Public Works



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ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

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## **NUCLEAR REGULATORY COMMISSION: OVERSIGHT OF 2003 PROGRAMS**

**THURSDAY, FEBRUARY 13, 2003**

U.S. SENATE,  
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,  
SUBCOMMITTEE ON CLEAN AIR, CLIMATE CHANGE  
AND NUCLEAR SAFETY,  
*Washington, DC.*

The subcommittee met, pursuant to notice, at 9.30 a.m. in room 406, Dirksen Senate Office Building, Hon. George V. Voinovich (chairman of the subcommittee) presiding.

Present: Senators Voinovich, Inhofe, Carper, Jeffords, and Clinton.

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

Senator VOINOVICH. Good morning. The hearing will come to order.

Today's hearing continues our ongoing oversight of the Nuclear Regulatory Commission. This oversight began by my predecessor, the chairman of this committee, Senator Inhofe back in 1998, and this is the fifth oversight hearing in 6 years. I believe that Chairman Inhofe deserves a lot of credit for starting these hearings. It is my intention as chairman to continue this strong oversight.

One of the main issues that I have had of what I would like to discuss today is an incident involving a nuclear plant in my State. While this may be the first time that I am discussing this matter at a public hearing it is not my only involvement, and I appreciate that the NRC has been open to my requests for information. I am particularly thankful to Chairman Meserve for his willingness to keep me apprised of the situation. I want to thank all of the NRC commissioners and inspector general for being here today with us.

Today's hearing is the first of these oversight hearings since the tragic events of September 11th. As all of you are undoubtedly aware concerns over terrorists attacks on America's nuclear facilities are real and are warranted. Members of this committee on both sides of the aisle, including myself, have worked with the Administration on the creation of the Department of Homeland Security and the protection of our nuclear facilities. Senator Jeffords, while he was chairman of this committee, worked very hard on this issue, as have Senator Reid and Senator Clinton.

I was pleased that Senator Jeffords held one hearing on nuclear security and then a second closed hearing that I requested for national security reasons. Chairman Inhofe and I intend to hold hear-

ings later this year on the issue of nuclear security and will likely mark up a nuclear security bill.

Because we intend to hold those hearings and markups later, I would ask that we keep the focus of the hearings today on the operations budget and oversight activities of the Nuclear Regulatory Commission rather than on the very valid issue surrounding nuclear safety or security. The mission of the Nuclear Regulatory Commission is one of the most vital missions carried out by the Federal Government—to regulate the Nation’s civilian use of the by-products source and special nuclear materials, to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment.

I want to focus for just a minute on these three aspects of this regulatory mission which is laid out in the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974. The first and most important of the NRC’s critical missions is regulation of nuclear materials in order to ensure adequate protection of public health and safety. I want to make myself perfectly clear here: The No. 1 issue for the NRC is safety. Period. There is no greater issue. I want the people I serve in Ohio and my fellow Americans to be safe and it is the NRC’s job to guarantee it.

As you are well aware, there have been some serious problems at the Davis-Besse Nuclear Power Station since this panel’s last oversight hearing and the reactor at Davis-Besse located at Oak Harbor and operated by First Energy. It has been shut down for over a year. Investigations conducted by First Energy and the NRC have revealed that boric acid corrosion had eaten entirely through a 6.63 inch thick carbon steel RVP head, and almost entirely through a thin internal liner of stainless steel cladding. The stainless steel cladding, which is not designed to act as a system pressure boundary, was the only thing preventing a major loss of coolant, an accident that could have released some 60,000 gallons of highly radioactive liquid from the reactor into the containment area.

Following this discovery, I was assured that there were safety measures in place that would have prevented a major nuclear accident. I was told that the people of Ohio were safe because of the design of the plant. To my dismay, I read in a newspaper article on Tuesday in the Akron Beacon Journal entitled “Nuclear Plant’s Cooling System Flawed.” It seems that the emergency cooling system at Davis-Besse that is intended to prevent a nuclear disaster—from First Energy, “would not have worked.” This is from the First Energy engineer—“would not have worked as it’s designed to work.”

Although I was told immediately following this incident there were adequate safety measures in place to prevent a disaster, the fact of the matter is that the plant’s safety measures might have been sufficient really troubles me. And I would like some answers to that and I want somebody to tell me what’s going on.

But it does not stop there. Subsequent investigations have also revealed that both First Energy and the NRC missed several opportunities to identify and correct the corrosion problem before last February. In fact, the NRC has concluded that the boric acid problems have been present and discoverable since 1996. This is par-

ticularly troubling to me. Simply put, I want to get to the bottom of these events. I have expressed my extreme concern to First Energy over what has happened. I have asked the GAO to investigate what happened at Davis-Besse. Now it is your turn to hear of my concern.

It is simply not good enough to know what happened at Davis-Besse. I want to know what the NRC has done to correct the problems. I want to know what the NRC is going to do to prevent this from ever happening again at Davis-Besse or, for that matter, any other nuclear facility in America. I want to know what the NRC is doing to get Davis-Besse back on line in a manner that will absolutely protect the people of my State. I am pleased that the people most intimately affected by Davis-Besse, the people of Ottawa County, are so actively involved in the determination of when and if Davis-Besse will be on line.

I would like to read a portion of the statement from Jere Witt, Ottawa County administrator, who has asked that I submit his statement in our record of this hearing. "A renewed stringent regulation by the NRC must be part of this process. This regulation must be based on knowledge and common sense, not one influenced by political agendas. My personal thanks to the NRC staff, especially Jim Dyer, Jack Grobe, Bill Dean, and Christina Lippa for their open and candid discussion with the residents of Ottawa County and myself. They have gone above and beyond to ensure that we are informed. I would also like to express my appreciation to First Energy, especially to Peter Berg, Bob Saunders, and Lou Meyers, for allowing me to participate on the Restart Overview Panel. They have provided me free access to all facets of Davis-Besse."

I would like unanimous consent to include the entire statement that was submitted to me. There being none, it will be in the record.

I appreciate the fact that the people most impacted by this are intimately involved in this whole business—I hope that you think that we provide you comfortable chairs because you are going to be sitting in them for a long time until we are absolutely assured that this kind of thing is never going to happen again in our country.

The second purpose of the NRC is to promote the common defense and security. Since the terrorists attack on September 11, 2001, this committee has conducted a comprehensive review of the Nation's nuclear facilities, held hearings on their safety and security, marked up nuclear safety security legislation, and participated in the creation of the Department of Homeland Security.

Although the NRC has not been moved under the Department of Homeland Security, it is most important that the commission be considered as a Homeland Security agency. President Bush's fiscal year 2004 budget requests include \$53.1 million for homeland activities at the NRC, more than a 50 percent increase. I would like to hear from the commission what it intends to do with this money and how it intends to work with the newly created Department of Homeland Security.

There are also some other questions that I think we all have concerning your recent budget proposal that need an explanation. Particularly, it is my understanding that the Administration has pro-

posed cutting spending on inspection activities. I just don't understand that, especially when according to what I have read the NRC did an inadequate job of inspecting and monitoring what was going on at Davis-Besse.

As chairman of the Subcommittee on Oversight of Government Management in the Federal Workforce, I am convinced that if the NRC has the right people with the right knowledge and skills in the right place at the right time—if they had—and if First Energy had had the right people with the right knowledge and skills at the right time and the right place, we wouldn't be here today having this hearing.

Lastly, the third of the NRC's critical missions is to protect the environment. Over the last 40 years, nuclear energy has proven to be a safe, reliable, clean source of energy. It currently produces 20 percent of our electricity and since 1973, the use of nuclear energy to generate electricity has prevented 62 million tons of sulphur dioxide, over 32 million tons of nitrogen, and over 2.6 billion tons of carbon being released into the air.

The Energy Information Administration predicts that we will need about a 30 percent increase in electrical generation by the year 2050. We are dependent on fossil fuels, coal, oil, and natural gas—and we will be for the foreseeable future, although we are making some significant progress in the use of renewables. Nuclear energy continues to be our next best alternative. If we are going to be serious about protecting our environment while providing safe, reliable, and affordable electricity to all Americans, we need to increase our use of renewables, improve how we burn fossil fuels, promote efficiency, promote renewables, and increase the development of nuclear energy. If we are to do this we must ensure to the public that those facilities now in operation are safe.

I am anxious to hear from the witnesses today about how they can guarantee that they are safe. Our witnesses today include the chairman and commissioners of the Nuclear Regulatory Commission as well as the Inspector General of the Nuclear Regulatory Commission. I would like to thank Chairman Meserve and the rest of the commission for coming down here to discuss these issues. I look forward to their testimony and working with my colleagues on this issue.

[The prepared statement of Senator Voinovich follows:]

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

The hearing will come to order. Good Morning.

Today's hearing continues our ongoing oversight of the Nuclear Regulatory Commission. This oversight began by my predecessor, Chairman Inhofe, when he was the chairman of this subcommittee in 1998, and is the 5th oversight hearing in 6 years. I believe that Chairman Inhofe deserves a lot of credit for starting these hearings. It is my intention as chairman to continue this strong oversight.

One of the main issues that I would like to discuss today is an incident involving a nuclear plant in my State of Ohio. While this may be the first time that I am discussing the matter at a public hearing, this is not my only involvement. I appreciate that the NRC has been open and responsive to my requests for information. I am particularly thankful to Chairman Meserve and his willingness to keep me apprised of this situation. I want to thank all of the NRC commissioners and Inspector General for being here today.



Today's hearing is the first of these oversight hearings since the tragic events of September 11, 2001. As all of you are undoubtedly aware, concerns over terrorist attacks on America's nuclear facilities are real and are warranted.

Members of this committee on both sides of the aisle—including myself—have worked with the Administration on the creation of the Department of Homeland Security and the protection of our nuclear facilities. Senator Jeffords while he was chairman of this committee worked very hard on this issue, as have Senators Reid and Clinton.

I was pleased that Senator Jeffords held one hearing on nuclear security and then a second closed hearing that I requested for national security reasons. Chairman Inhofe and I intend to hold hearings later this year on the issue of nuclear security and will likely mark up a nuclear security bill.

Because we intend to hold those hearings and markups later, I would ask that we keep the focus of this hearing on the operations, budget, and oversight activities of the Nuclear Regulatory Commission—rather than on the very valid issues surrounding nuclear security.

The Mission of the Nuclear Regulatory Commission is one of the most vital missions carried out by the Federal Government—to regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment.

I want to focus for just a minute on the three aspects of this regulatory mission—which is laid out in the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974.

The first, and most important, of the NRC's critical missions is regulation of nuclear materials in order to ensure adequate protection of public health and safety.

I want to make myself perfectly clear here: The No. 1 issue for the NRC is safety. Period. There is no greater issue. I want the people I serve in Ohio and my fellow Americans to be safe, and it is the NRC's job to guarantee it.

As you are well aware, there have been some serious problems at the Davis-Besse Nuclear Power Station since this panel's last oversight hearing and the reactor at Davis-Besse, located in Oak Harbor, OH, and operated by First Energy, has been shut down for a year.

Investigations—conducted by FirstEnergy and the NRC—have revealed that boric acid corrosion had eaten entirely through a 6.63 inch thick carbon-steel RPV head, and almost entirely through a thin internal liner of stainless steel cladding. This stainless steel cladding, which is not designed to act as a system pressure boundary, was the only thing preventing a major Loss-of-Coolant accident that could have released some 60,000 gallons of highly radioactive liquid from the reactor and into the containment area.

Following this discovery, I was assured that there were safety measures in place that would have prevented a major nuclear accident. I was told that the people of Ohio were safe because of the design of the plant. To my dismay, I read a newspaper article on Tuesday in the Akron Beacon Journal entitled "Nuclear plant's cooling system flawed." It seems that the emergency cooling system at Davis-Besse that is intended to prevent a nuclear disaster, and I quote from a FirstEnergy engineer, "would not have worked as it's designed to work." Although I was told immediately following this incident that there were adequate safety measures in place to prevent a disaster, the fact of the matter is that this plant's safety measures might have been deficient. I was told one thing but read in the newspaper another. I want some answers. I want someone to tell me what is going on here.

But it does not stop there. Subsequent investigations have also revealed that both FirstEnergy and the NRC missed several opportunities to identify and correct the corrosion problem before last February. In fact, the NRC has concluded that the boric acid problems had been present and discoverable since 1996. This is particularly troubling to me.

Simply put, I want to get to the bottom of these events. I have expressed my extreme concern to FirstEnergy over what has happened. I have asked the GAO to investigate what happened at Davis Besse, and now it is your turn to hear my concern.

It is simply not good enough to know what happened at Davis Besse. I want to know what the NRC has done to correct the problems. I want to know what the NRC is doing to prevent this from ever happening again at Davis-Besse or any other nuclear power plant in America. And I want to know what the NRC is doing to get Davis-Besse back online in a manner that will absolutely protect the people of Ohio.

I am pleased that the people most intimately affected by Davis-Besse, the people of Ottawa County are so actively involved in the determination of when and if Davis-Besse will be online.

I would like to read a portion of a statement by Jere Witt, Ottawa County Administrator, who has asked that I submit his statement in our record of this hearing: "A renewed stringent regulation by the NRC must be part of this process. This regulation must be based on knowledge and common sense, not one influenced by political agenda's. My personal thanks to NRC staff especially (Jim Dyer, Jack Grobe, Bill Dean, Christine Lipa) for their open and candid discussion with the residents of Ottawa County and myself. They have gone above and beyond to insure we are informed. I would also like to express my appreciation to FirstEnergy especially (Peter Berg, Bob Saunders, Lew Myers) for allowing me to participate on the Restart Overview Panel. They have provided me free access to all facets of Davis-Besse."

I ask unanimous consent that the entire statement be submitted into the record. No objection heard, it is so ordered.

With that being said, I hope that you think we provide comfortable chairs for our witnesses, because you are going to be sitting in them again and again until this committee is absolutely assured that you have taken the necessary steps to prevent this kind of potential disaster from ever happening again.

The second of the NRC's critical missions is to promote the common defense and security.

Since the terrorist attacks of September 2001, this committee has conducted a comprehensive review of the nation's nuclear facilities, held hearings on their safety and security, marked up nuclear security legislation and participated in the creation of the Department of Homeland Security. As I have already mentioned, we intend to hold more hearings on this topic later.

Although the NRC was not moved into the Department of Homeland Security, it is most important that the commission be considered as a Homeland Security Agency. President Bush's fiscal year 2004 Budget request includes \$53.1 million for Homeland Security activities at the NRC—more than a 50 percent increase. I would like to hear from the commission what it intends to do with this money and how it intends to work with the newly created Department of Homeland Security. There are also some other questions that I think we all have concerning your recent budget proposal that need an explanation. Particularly, it is my understanding that the Administration has proposed cutting spending on inspection activities. I just don't understand that, especially when according to what I have read, the NRC did an inadequate job on inspecting and monitoring what was going on at Davis-Besse.

As chairman of the Subcommittee on Oversight of Government Management and the Federal Workforce, I am convinced that if the NRC had the right people, with the right knowledge and skills in the right place at the right time—and if FirstEnergy had the right people, with the right knowledge and skills in the right place at the right time—we would not be having this discussion today.

Lastly, the third of the NRC's critical missions is to protect the environment.

Over the last 40 years, nuclear energy has proven to be a safe, reliable, and clean source of energy. It currently produces 20 percent of our electricity, and since 1973 the use of nuclear energy to generate electricity has prevented 62 million tons of sulfur dioxide, over 32 million tons of nitrogen, and over 2.6 billion tons of carbon from being released into our air.

The Energy Information Administration predicts that we will need about a 30 percent increase in electrical generation by the year 2015. Today, we are dependent on fossil fuels—coal, oil, and natural gas—and we will be for the foreseeable future. Nuclear energy continues to be our next best alternative.

If we are going to be serious about protecting our environment while providing safe, reliable and affordable electricity to all Americans, we need to increase our use of renewable energy, improve how we burn fossil fuels, promote efficiency, and increase the development of nuclear energy.

If we are to do this we must ensure the public that those facilities now in operation are safe. I am anxious to hear from our witnesses today about how they can guarantee that they are safe.

Our witnesses today include the chairman and commissioners of the Nuclear Regulatory Commission, as well as the Inspector General of the Nuclear Regulatory Commission. I would like to thank Chairman Meserve and the rest of the commission for coming down here to discuss these issues, and I look forward to their testimony and to working with my colleagues on these issues.

Senator VOINOVICH. I would now like to call on the ranking member of this subcommittee, Chairman Inhofe.

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

Senator INHOFE. I had asked the ranking member if he would defer to me for probably less than 2 minutes.

Senator CARPER. And I had refused.

[Laughter.]

Senator INHOFE. Oh, well.

Senator CARPER. I am happy to.

Senator INHOFE. Thank you very much, Senator Carper. I appreciate it. We have Secretary Rumsfeld and General Meyers before the Senate Armed Forces Committee at this very time and I have to go back down there.

I would like to put my whole opening statement in the record.

I would just mention a couple of things. In 1998, as you mentioned Mr. Chairman, there had not been any oversight of NRC for many years. We found—and it's true with any bureaucracy if there's no oversight, things are happening that shouldn't be happening. I just want to compliment this group before us. We got in there. We looked at the problems that were there and have made a lot of corrections.

Mr. Meserve, I understand that this may be your last time you will be appearing before us. We certainly wish you the very best. Mr. Diaz, I understand that your mother is having surgery and you may have to leave early. Of course, we will say a prayer for her, OK?

The last thing I want to do is just emphasize something the chairman said. We have an energy crisis in this country. When we consider an energy bill, we recognize that this Nation needs all forms of energy. We need renewables; we need fossil fuels; we need the natural gas; and we need nuclear energy. Senator Voinovich, you and I can remember people marching in the streets against the nuclear plants—the same people during the ambient air hearings who were concerned about air pollution. We don't have air pollution with nuclear energy. In this country, we are only 20 percent dependent upon nuclear energy. It really should be more than that.

I am hoping that we are going to be able to do something about using this nuclear energy to help us with the current crisis. I am fearful of a lot of the legislation that I see around that might be cutting back on some forms of energy because right now we need it all.

So, Mr. Chairman, you and the ranking member have an awesome obligation to America to do what you can to keep the progress going for nuclear energy to get more of it for America and to run this great economic machine of ours.

The other day commented on a talk show, "You can't run the most highly industrialized nation in the history of the world with windmills." There are a lot of people that believe we can do that. However, until that great day comes, we need all forms of energy, including nuclear energy.

Thank you, Mr. Chairman.

[The prepared statement of Senator Inhofe follows:]

STATEMENT OF HON. JIM INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Thank you Mr. Chairman. Welcome to Chairman Meserve and all of the commissioners. Commissioner Diaz—I understand your mother will be having surgery tomorrow and you may have to leave this hearing early to catch your flight. I wish you very best to you and her and I hope she enjoys a speedy recovery.

I also want to take a moment to publicly thank Chairman Meserve as this may be the last time we see him before this committee. I can think of no higher compliment than to say you are leaving the NRC a more effective and efficient Agency than when you first assumed your position as chairman. Job well done and we all wish you well. I have always been an advocate of nuclear power. Nuclear power has proven to be a safe, reliable and clean source of energy. Over the next 15 years, our energy demands will increase by nearly 30 percent. If we are to meet the energy demands of the future, and we are serious about reducing utility emissions, then we should get serious about the zero emissions energy production that nuclear power provides. Nuclear facilities are more efficient today than ever before and we are exploring new, even better technologies. We should be excited about the future of nuclear energy. I am pleased with NRC's commitment to both license renewal and new reactor licensing as they are key to the continued success of this clean, efficient energy. And this Committee must do its part, and we should start by reauthorizing Price-Anderson. In 1998, as chairman of this subcommittee, I began a series of oversight hearings of the NRC. The hearing I held in 1998 was the first held by this committee in years. Fortunately, every year since that time we have had the commission appear before us. I expect that rigorous oversight of the NRC to continue.

In fact, the committee will hold another nuclear hearing in the near future that will focus on the security of our nuclear energy infrastructure. In this time of the constant threat posed by those who wish to do harm to our Nation and freedom loving people, protecting our Nation's commercial nuclear infrastructure, and more importantly, those who live near these facilities, is paramount.

When I began conducting oversight of the NRC, I did so with the goal of changing the bureaucratic atmosphere that had infected the NRC. By 1998, the NRC had become an Agency of process, not results. It was neither efficient nor effective. If the Agency was to improve it had to employ a more results oriented approach—one that was risk-based and science-based, not one mired in unnecessary process and paperwork. I am pleased that in the last 5 years, we have seen tremendous strides and those who work for the NRC should be proud. This approach has made the NRC a lean and more effective regulatory Agency.

But while I am pleased with the progress, many challenges remain.

Today, this committee will be probing for answers, not only regarding the day-to-day activities of the commission, but also more pointed concerns that have recently come to light. Davis-Besse in Ohio is one such situation where a number of questions have arisen. Those questions need to be answered and public confidence restored. I applaud Senator Voinovich for what he has already done. For some time now he has been asking the tough questions and demanding answers of all involved. He has used his leadership position both forcefully and responsibly. The people of Ohio are fortunate to have such a good person as their Senator.

As the chairman of the full committee, you can count on support and my continued attention to the NRC and its mission. Thank you.

Senator CARPER. Thank you, Mr. Chairman. I look forward to working with you in your new capacity as chairman of the Environment and Public Works Committee.

Senator INHOFE. Thank you, Senator Carper.

Senator VOINOVICH. Now I would like call on the ranking member of this subcommittee, Senator Carper. Governor Carper and I have been friends for a long period of time. We are the only two graduates of the Ohio State University here in the U.S. Senate. Senator Carper and I worked very closely with each other while we were both involved in leadership positions in the National Governor's Association. I am really delighted that Tom and I are going to be working together on this subcommittee. I think because of that we made some fruitful things happen there.

**OPENING STATEMENT OF HON. THOMAS R. CARPER,  
U.S. SENATOR FROM THE STATE OF DELAWARE**

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

To our witnesses today, we welcome you. We thank you for your stewardship and for joining us. Governor Voinovich and I have served together—we haven't really sat together like this for about 10 years now. He was chairman of the National Governor's Association when I was vice chairman and I was privileged to succeed him there. He was chairman of the Jobs for America's Graduates. I was his vice chairman. Here we are here today. He is the chairman of this subcommittee and I am still his sidekick. We have worked on a lot of things together. My hope is that we will find plenty of common ground. I think we will.

I am just delighted that Senator Lieberman is running for President. That gives me an opportunity to serve as the ranking member. I hope he stays in that campaign for as long as he can. God bless him.

[Laughter.]

Senator CARPER. I just want to say—and this is following up on some of the comments of Chairman Voinovich. I am an old Navy guy, and in the Navy we have aircraft carriers that are essentially floating nuclear reactors. We have submarines that are essentially a floating nuclear reactor. When you spend time around vessels that rely on nuclear power largely, and you know people who have lived on those for 3 years, you have a greater degree of comfort with nuclear power than you otherwise would.

I am concerned, however, with the points that Senator Voinovich raises about Davis-Besse. I think Senator Clinton is going to be along later and she will raise some concerns about a plant—I think it is called Indian Point—up in New York. I will raise with you some concerns about releases of tritium, I think in the groundwater, around the Salem One Nuclear Power Plant just across the river from us in Delaware—right across the Delaware River—in Salem, New Jersey, where some tritium apparently last December leaked into the groundwater and was just reported this past week.

I think that I—and certainly in Senator Inhofe, Senator Voinovich—that you have people who believe that nuclear power is important and part of our electric generation in this country. It ought to be a more important aspect as we go forward. One of the best ways to ensure that it is, is to address the concerns that he is raising on Davis-Besse, and that I will raise on Salem, and that Senator Clinton will raise with respect to Indian Point.

Before I come back to the issue of nuclear power, let me say, Mr. Chairman, that I am delighted to be on this subcommittee particularly with you, but the subcommittee's jurisdiction obviously not only includes nuclear issues but also clean air issues. We live in a day where, gosh, 55 percent of our oil today will come from foreign sources—55 percent. And it is growing. We are on a verge of a war with Iraq. We still actually import some oil from them directly or indirectly.

Nuclear power can help us to alleviate the need for that foreign oil. We had a trade deficit of about \$400 billion last year. A lot of that was oil—not all of it—but a lot of it was oil. Nuclear power can help us to reduce that trade deficit, too.

One of the reasons why I tend to be a proponent of nuclear power, though, deals with not just the reductions in foreign oil imports, but with the reduction in CO<sub>2</sub> emissions. The President has proposed—and I think Senator Inhofe will introduce later, maybe this month or next—the President’s Clear Skies initiative which addresses sulfur dioxide, nitrogen oxide, and mercury releases from our power plants. My hope is that at the end of the day we can add a fourth “P” to that package and that would be carbon dioxide.

The ranking Democrat on this committee, Senator Jeffords, I believe unveiled yesterday his “Four P” proposal—he is walking in the room right now. That is pretty good timing, Senator Jeffords. He introduced his “Four P” legislation yesterday. The President’s proposal does not include that. My hope is that we can come to a consensus maybe around a proposal that Senator Chafee, Senator Breaux, Senator Boxer, and I introduced last year which will be re-introduced in here shortly to address all four pollutants into our environment.

Having said that, we are delighted that you are here. We thank you for coming, and, Mr. Chairman, to you for holding this hearing. We very much look forward to working with you on these issues, on the issues of clean air and particularly carbon dioxide as we go forth. Thank you.

Senator VOINOVICH. Thank you. Senator Jeffords is the ranking member of the full committee.

Senator Jeffords, we welcome you this morning. Would you like to make an opening statement?

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

Senator JEFFORDS. Yes, I would.

Chairman Meserve, and Commissioners Dicus, Diaz, McGaffigan, as well as Inspector General Bell, we appreciate your appearing before the subcommittee and on this oversight.

First, allow me to take this opportunity to express my thanks and appreciation to Commissioner Meserve as he leaves the Nuclear Regulatory Commission to become president of the Carnegie Institute. Great. Going up. I congratulate you, Mr. Chairman, on this prestigious assignment and wish you much success. We are very sorry to lose you, though, at the NRC, particularly in these difficult times as we work to ensure the safety of the nuclear facilities against a variety of threats. I commend you for the fine service you have given to the NRC and to your government, and trust that you will continue to lend your expertise and assistance—and I know that you will—and wish you the very best of luck.

This hearing will provide us with the general overview of matters before the NRC. I will not take the subcommittee’s time with a long statement, but I will have a few questions to ask at the conclusion of the testimony. It is nice to have you all here.

Senator VOINOVICH. Thank you. I, too, would again underscore how much we appreciate all of you being here with us this morning. Mr. Meserve, I again appreciate the leadership that you have provided to the Nuclear Regulatory Commission and the wonderful open relationship that I have had with you over the last several years.

Mr. Meserve, I would like you to begin.

**STATEMENT OF RICHARD A. MESERVE, CHAIRMAN, U.S. NUCLEAR REGULATORY COMMISSION ACCOMPANIED BY: GRETA JOY DICUS, COMMISSIONER; NILS J. DIAZ, COMMISSIONER; EDWARD MCGAFFIGAN, JR., COMMISSIONER AND JEFFREY S. MERRIFIELD, COMMISSIONER**

Mr. MESERVE. Chairman Voinovich, Senator Jeffords, Senator Carper, it is a pleasure to appear before you today with my fellow commissioners to discuss the Nuclear Regulatory Commission's program. We would like to thank you and the committee for the past support and advice we have received over the years. The commission looks forward to working with you and the new Congress.

As has been indicated, I have announced my decision to leave the NRC at the end of March, a little more than a year before my term ends, to assume the presidency of the Carnegie Institution of Washington. This decision did not come easily since I have thoroughly enjoyed my tenure as chairman, and the opportunity it has provided me to work on issues of importance to the Nation. My colleagues and I have served during a period of great tragedy and great challenges. I view my tenure as the NRC chairman with great personal pride and accomplishment.

I believe that fiscal year 2002 and the first 4½ months of this fiscal year have been marked by significant achievements by our Agency. My full statement, which I have submitted for the record, enumerates a few of these achievements and challenges. The monthly reports we submit to you and our other authorization and appropriations subcommittees provide a more detailed description of our activities.

Over the past 17 months, the commission has undertaken a comprehensive review of our safeguards and security programs in close consultation with the Department of Homeland Security and the other Federal agencies, and with significant involvement by State agencies.

Out of that review has come, No. 1, a series of interim compensatory measures to strengthen security at our licensed facilities and during transportation of spent fuel. No. 2, a five-tier advisory system compatible with the Homeland Security advisory system. No. 3, orders to strengthen our access authorization programs at power reactors. No. 4, proposed orders to strengthen guard training and address guard fatigue.

We have provided revised design basis threats for comment to other Federal agencies, the States, and cleared industry personnel. We have undertaken enhanced tabletop security exercises at our reactor facilities and will, by the end of this month, begin enhanced force-on-force exercises at these facilities. We have defined actions to ensure better control of high-risk radioactive sources of the most concern for potential use in a radiological dispersal device.

In short, we have a comprehensive and aggressive program to enhance security. Nuclear facilities had very significant security before September 11th and that security has been greatly strengthened in the aftermath of the attacks. The past 17 months have seen the maturing of our new reactor oversight process. We, and most stakeholders, believe that this new program is a significant

improvement over our old inspection process. The transition to the new process has gone remarkably well, although it is still a work-in-progress on which we will make further improvements.

The Davis-Besse plant has been our greatest recent challenge. Mr. Chairman, you addressed this matter in great detail, and we have had meetings about it. Our full statement summarizes the issues and activities regarding Davis-Besse. The NRC staff has devoted significant resources to the Davis-Besse plant and to the broader issues raised by this incident.

The plant will return to operation only after the staff is convinced, through intensive inspections, both that the plant is physically ready to operate, and perhaps more importantly, that the safety culture at the plant, which the licensee has identified as the main root cause of the incident, is on the path to recovery. We also recognize that there were failings by the NRC in connection with this episode. We have undertaken an aggressive lessons-learned exercise and are implementing the resulting high-priority recommendations.

Our statement for the record also describes some significant achievements in our reactor licensing program, including license renewals, power uprates, and license transfers. We are preparing for potential new reactor construction. We expect to review three early site permits starting this year and are undertaking the review of one advanced reactor design, the Westinghouse AP-1000, and are in the pre-application phase for several others.

In our materials program, the NRC, in partnership with the agreement States, conducts a comprehensive program to ensure the safe use of radiological materials in a variety of medical and industrial settings. The commission has completed a complex rulemaking on the medical use of byproduct material, and now faces the challenge of implementing that rule.

The commission has also been implementing a major rule change relating to large fuel cycle facilities and several major licensing reviews are underway or soon will be submitted that will test the application of that rule.

The staff has made progress on a wide array of programs relating to the safe disposal of nuclear waste. A central focus is the preparation for the Department of Energy's application to construct a high-level waste repository at Yucca Mountain, NV. The application is expected in December 2004. Over the past year, the staff has issued a draft Yucca Mountain review plan for public comment and has conducted numerous public meetings with DOE in anticipation of an application. The technical issues involved will be substantial and the NRC decisions will be closely scrutinized. We are preparing for that reality.

Our budget proposal for fiscal year 2004 will allow the NRC to continue to protect public health and safety, promote the common defense and security, and protect the environment, while providing sufficient resources to address increasing personnel costs and workloads. We are seeking an increase in our budget, but the increased workload justifies it.

Mr. Chairman, the NRC has accomplished much over the past year and has many important initiatives underway. This reflects



the reality that we are in a time of striking change. Fortunately, the NRC is up to the challenges before it.

My colleagues and I would welcome the opportunity to respond to your questions. Thank you.

Senator VOINOVICH. Thank you, Mr. Meserve.

Do any of the other members of the commission want to share with us some of your observations? Again, I appreciate your being here. Mr. Merrifield? Mr. Diaz? Ms. Dicus? Mr. McGaffigan?

Mr. MCGAFFIGAN. Waiting for your questions, sir.

Mr. MESERVE. We want to make sure we spend the time addressing the issues that you want to raise with us.

Senator VOINOVICH. Well, I'll begin. I think that in the tradition of the committee we will have 5-minute rounds.

I will start off with one of the most disturbing pieces of this whole Davis-Besse incident, which is as the investigation moves along, continues to unravel surprises. The latest development, as I mentioned in my statement, is that we were all were told if the container had broken and gone through the liner, that there wouldn't have been a problem.

I have been told that if the reactor lid had given way, a major disaster would not have occurred. Now we find that that may not be true. I am very upset about that because we relied on the credibility of the information that was provided to us.

I would like to have some answers about that. The question I have is: Are we going to have more surprises as we move along? Mr. Meserve?

Mr. MESERVE. We had spent an enormous amount of effort to monitor the causes of the event at the Davis-Besse plant and obviously are spending a great deal of effort to make sure that the necessary corrective actions are in place. I visited you in your office and I informed you that there were safety systems in place that would have served to prevent a severe accident in the event that there had been a rupture of the cladding on the top of the reactor pressure vessel head.

Of course, we are dealing with a situation that didn't happen, so we have to speculate and we have to rely on analysis. Fortunately, a rupture didn't happen. In fact, the preliminary work that the NRC has undertaken would suggest that the cladding would have held for a considerable period of time without rupturing. If it had, we would have had the following circumstances unfold. The primary coolant in the reactor is at high temperature and stays as a liquid because it is at very high pressure.

If you were to have a rupture of the top of the head, there would have been a depressurization of the reactor and that liquid that is at high temperature—well above the boiling point of water—would have flashed to steam. So you would have had an ejection of the cooling water from the reactor.

All reactors are designed to be able to address an event of that kind, which is called a loss of coolant accident. And so there are safety systems that inject water into the core in order to preserve cooling. Those systems would have operated and, in fact, they are designed to be able to handle a break that is 20 times larger than the one that would have occurred in the event that there had been a rupture of the cavity at the top of the Davis-Besse head.

The concern that has recently arisen is that there is a large volume of water that is held in reserve that flows into the reactor to cool the reactor, and that would fill the reactor and would be flowing out. It would be collected for recirculation—there is not an infinite supply of water that is available.

Mr. MERRIFIELD. It is 400,000 gallons.

Mr. MESERVE. Mr. Merrifield has indicated that it would be 400,000 gallons of water that would be available in tanks. And then the way the system works is that the water collects in a sump at the base of the reactor building and then that is recirculated back through the reactor. There are certain sprays that occur in the containment to control temperature and pressure and absent chemical processes.

The issue that has recently been raised—and this was identified by the licensee—is a question as to whether there would have been clogging of the sump as a result of debris that might have accumulated in the sump and have covered the screens and prevented the water from being able to flow to the recirculation pumps.

There is another issue that has arisen recently. There was a gap in the screening that might have allowed a large piece of debris to get through and have damaged the impeller on the pump, or conceivably could have constricted or been captured in—

Senator VOINOVICH. The engineer said it would not have worked as it is designed to work. It seems to me that if you had some backup system in place, that somebody would anticipate that debris would fall around, that screens could be cluttered, and so on and so forth. Then the question really is: Is that design adequate, or more than adequate, to get the job done?

Mr. MESERVE. The analysis that we have undertaken is preliminary. We are dealing with what-ifs here, that the screen would have been—that that sump system would have been adequate to handle the Davis-Besse style event. One could imagine circumstances where the debris—because there was material that was in the containment that shouldn't have been there—coatings that were improper—that materials might have been released and collected in the sump.

So we have an issue that was brought to us by the licensee that we are analyzing and that is being addressed. The licensee is on top of this issue, but it is unfortunate that it existed. We don't think it would have created a problem if there had been a rupture, but it is a problem that needs to be corrected. It is being corrected. The screens have an area of about 50 square feet—that is the original design—that is, within the tech specs for the original design. The licensee has changed that to a screen system with 1,200 square feet of screen surface area. So it gives you an enormously larger area within which the water could flow so that you don't have the same issues associated with debris possibly clogging the screen.

This unfortunate event obviously reflects the continuing issues that we have had with the licensee in assuring that there is an appropriate safety culture, to make sure that the licensee is addressing problems such as this one. We are moving in that direction.

Senator VOINOVICH. If you anticipated what might have happened and the design as it was might not have worked, are they

going to be able to follow procedures so that it won't again? Will debris be a problem, and more important than that, are the containment facilities at other plants of the same design being inspected?

Mr. MESERVE. One of the steps that is being taken by Davis-Besse has been to change this whole sump collection system to one with a much larger screen area. This is part of the collective measures that are being put in place before the reactor will restart. We have been following the issue and interacting with licensee on the general issue of making sure that the sump systems is operable.

Senator VOINOVICH. My time is up.

Mr. Diaz, do you want to comment?

Mr. DIAZ. I would just like to make an observation which maybe doesn't reflect on my 6 years as commissioner. I worked 40 years as a nuclear engineer. Sometimes the way we talk and the way that things are interpreted, are not exactly the way that we see them.

Let me assure you that I do not see that at any one time there was an impending disaster in Davis-Besse. I am firmly convinced that the cladding could have withstood twice the pressure in the reactor for quite a period of time. I am also convinced that although it might not have worked well, the circulation system in the containment—it would have cooled the reactor quite adequately.

We are very demanding. We are almost perfectionists. And maybe that is rightly so. Maybe that is the way we have to be. But I think there was plenty of margin to assure the safety of the people of Ohio. There is really significant evidence that points out that this was not an impending disaster, that there was not something that was about ready to burst and create a cloud of radioactivity. All of the systems, including the containment, were able to perform their functions. I think the committee should know that. They were there. They might not have been perfect, but they were there and they would have been able to reduce this in whatever way it happens to a real small accident. I would not have suspected in any way a release of radioactivity to the environment. Thank you, sir.

Senator VOINOVICH. Thank you.

Senator Carper.

Senator CARPER. Thank you, Mr. Chairman.

I have a localized question. I am reminded here of the questions from Senator Voinovich and myself—and if Senator Clinton joins us—and of the old adage from Tip O'Neill that "politics is local." The chairman is interested in Davis-Besse. I am interested in Salem, New Jersey, right across the Delaware River from us. Senator Clinton is interested in Indian Point.

I am also interested in the larger issues including the next generation nuclear power, and threats from the security side. I would hopefully have a chance to address those as well. I look forward to hearing from some of the other commissioners here. Sitting in your shoes you must want to just burst out and say something to us. I hope you will feel comfortable in doing that when the spirit moves you.

Let me just focus initially, though, on Salem, NJ. Right across the Delaware River is a nuclear power plant. In fact, there are a couple of reactors Salem One and Salem Two. Earlier this week—

I think it was on Tuesday—we learned that a small amount of tritium was discovered in the groundwater next to one of the spent fuel buildings there. I believe it was the Salem One nuclear reactor.

As I mentioned earlier, I believe in nuclear power. I believe it is an important part of meeting our power needs in this country. Having said that, we obviously have an oversight requirement to make sure that our citizens are protected. As one who is a proponent of safe nuclear power, I believe if we are going to have more of it, we have to be absolutely sure, absolutely convincing, to the people in my State and your States around the country, that we are going to do every single thing that we can to ensure their safety.

I think it was Mr. Diaz who said, “We are very demanding. We are perfectionists.” Good for you. That is exactly what we want you to be and the kind of standards we want you to set. But my question of the commissioners this morning is: How does the NRC respond in a case such as the one in Salem, New Jersey, where you have the owner of the reactor notifying—I think the commission back in December—that there had been a discovery of some tritium in the groundwater next to the spent fuel building, and the information is made public in February?

I am not one who believes in that there is more to this than needs to be the case. But I just want to know: Why the delay? How do you normally proceed when you learn from the owner of the plant that there has been a discovery of this? What can we tell our citizens in Delaware? What can you tell the folks over in New Jersey? What is the responsibility of the plant owner in this case, PSC&G in cases like this? Again, if tritium was discovered and reported as having gotten into the groundwater in December, why does it become public in February?

Mr. MESERVE. Well, let me say that we do have substantial inspection resources that are present at every site. We have a resident inspector at every reactor. That is where his duty station is. It is to monitor situations at the plant. But the reality is that these are complex machines. Licensees have primary responsibility for assuring the safe operation of the facilities. We have stringent requirements we place on the licensees as to what expectations we have of them.

I will have to respond for the record on the details of when we learned about the event at Salem and when the information became public. It is my understanding with regard to the situation that there has been the detection of tritium in the groundwater in the immediate vicinity of the spent fuel pool. That is, within 20 feet or so of the spent fuel pool. It is at levels that are about three times the State groundwater standards for tritium in groundwater. Nothing has been found in the monitoring wells on the periphery of the plant. There seems to be a very localized area of not very high concentrations of tritium.

There are aggressive efforts that are being undertaken by the licensee, with our supervision, to try to find the source of the leak and to repair it. Let me say that the State is also actively involved in pursuing this issue because of its interest in assuring that groundwater resources are protected.

Senator CARPER. Would one of you talk to us about tritium? Is it something that we ought to be more concerned about? Less concerned about? Talk to us a bit about tritium for those of us who majored in economics.

Mr. DIAZ. Very little concern, sir.

Ms. DICUS. Yes, very little concern.

Mr. DIAZ. It is about the least harmful of all the radiological substances that you can deal with. So it is a very minor radioisotope as far as hazards to the biological systems. It is just really—you know, it is radioactive but its radioactivity is, in many ways, not harmless, but is really quite tolerable and has a very large easy pathway through the human body. It is excreted easily. It is not accumulated. There are many, many things with tritium that although it is not nice, makes it a “nice” radioisotope.

Ms. DICUS. Mr. Chairman, if I could, I want to echo what Commissioner Diaz has said. It's a beta emitter which only has any effect, if any, at the cellular level. But as he said, it is easily eliminated. It is not one of the radioisotopes we have great concern about. It is also a radioisotope that is somewhat difficult to—it has the ability to go where it wants to go when it wants to go there. It can be difficult to contain. That is maybe one of the reasons we have seen it in groundwater immediately near the spent fuel pools.

So, as a health physicist, I can reiterate what my fellow commissioner has said. I am very comfortable with the situation. Would we rather it not be there? Of course. But it's not the issue that we would be highly concerned about.

Mr. MCGAFFIGAN. I would just add that tritium is heavy hydrogen. It is the isotope of hydrogen that has two extra neutrons in the nucleus. The EPA standard—and I believe the State of New Jersey standard—is 20,000 picocuries per liter of drinking water or groundwater. They treat them equivalently. That equates to about 1/50th the dose that you get in a year. If you got the limit, you would get about 1/50th of the dose you would get working in the Capitol as a result of the granite-emitting gamma rays at you because the radium is decaying.

My son was a Senate page for Senator Warner a couple of years ago. We did a physics project for the Page program. We walked around the Capitol with a Micro-R meter. As I said, the drinking water standard for tritium is about 1/50th of what you get walking around the Capitol serving here.

Mr. MESERVE. You have a much more dangerous job.

Mr. MCGAFFIGAN. You have a much more dangerous job.

[Laughter.]

Mr. MERRIFIELD. Senator, you said you wanted to hear from us so you get to hear all. I agree with what my fellow commissioners have said. I look at it a little differently. I worked, as you know, on the Environment Committee for some years. I was one of the Superfund and RCRA counsels. So it is very clear to me that the concerns that the public, the States, the counties, and the others have about the protection of groundwater. It is a vital resource that people really care about.

I want to tell you—you have heard some explanation today as to public hazards of that spill and that we don't believe that this presents a significant public hazard at all, given the proximity of the

site and the fact that it is not spreading significantly we can say with some assurance. But we also have a concern about the environment.

We in our mandate have a requirement that a licensee have sufficient funding available for decommissioning activities. And so at the end of the day someday when this plant is shut down, we will undertake those decommissioning activities. Part of that is to make sure that the environment is protected as well. So the licensees are on top of it. They are working hand-in-hand with us. We are concerned about public health. We are also very concerned about the environment.

Senator CARPER. Thank you.

Ms. Dicus.

Ms. DICUS. Thank you. I just want to add to the explanations that you are hearing. We are not making light of the issue. We don't like the fact that it is there. We are just trying to reassure what the hazard is and we assure you what we are concerned about, that we are not making light of the issue.

Senator CARPER. Mr. Chairman, again, some people in our country are given to conspiracies and they worry about conspiracies. I am not one of those people. I think the best way to confront those who are skeptical of nuclear power is with the facts much as you presented them. Not to hold things back. Not to hold things back for a month or two, either, but to be fully forthcoming and to share with us and with the people of New Jersey and Delaware what we know. I think in the end the truth can be the best antidote here as well.

Mr. MESERVE. All of us are committed to having a completely open Agency. I think we are viewed, quite frankly, as one of the most open agencies in Government. We completely share your view that we will never have the confidence of the public in what we do unless our decisions and the bases for them are accessible to the American people.

Senator CARPER. Thank you.

Senator VOINOVICH. Senator Jeffords.

Senator JEFFORDS. The attacks of September 11, 2001 have increased the need of agencies such as the NRC to keep secure any information that might be used by terrorists. Yet it is important that we not sacrifice too easily the public's interest in accessing information concerning the safe operation and security of facilities in their community. We all know, for example, that it is often citizen complaints that result in improvements that may have been overlooked by those closely involved in the process.

As the NRC revises its policies and regulations in light of the events of September 11, how do you intend to balance the need for security against the public's interest in knowing what the Government is doing in regard to nuclear power plants?

Mr. MESERVE. Well, this is a very difficult issue, as I just said to Senator Carper. We have long been leaning forward in making information available to the American people about our activities. One of things that we have had to recognize after September 11th is that some of the information that we had been routinely providing before that time might be of substantial assistance to terrorists intent on a malevolent act at one of our facilities.

So we have had a task force that has tried to develop guidance which we are prepared to share with you that guides those decisions. We have a very substantial widely used website that we took down temporarily and screened the material. We have now put that website back up after removing some of the material that had been there previously.

It is hard to tell you in an overview exactly how the process works but it is one where you try to look at the nature of the information, try to balance the public's right to know and the interest it might have for terrorists. We try to make sensible decisions.

Many of our activities in the security area in particular are ones that we have had to hold confidential as a result of the fact that we do not want to aid those who might be planning to attack a nuclear facility. So those are areas that we have withheld as Safeguards Information.

Senator JEFFORDS. Thank you.

Mr. MCGAFFIGAN. Mr. Chairman, I just might add that this is an issue we had a lot of discussion with your staff on last year. There is a provision in the Atomic Energy Act, Section 147, that this committee passed in 1980 that provides us something that no other agency of government has, namely, a sensitive unclassified information category against which there are civil penalties if the information is disclosed. I think the committee did a very good job in 1980 in laying out a definition of safeguards information. Indeed, it could be a model for people thinking about the chemical industry or other industries, how you might handle it. I won't read the provision.

But we have to keep a lot of this information from the public just as you do in defending the Capitol or defending the White House or defending other critical elements. We can't talk about the details of the security in public. We have a very robust effort talking with other agencies of government, talking with cleared individuals in State government, talking to your staffs who are cleared. We are happy to have as much input from cleared folks as we can get. But I know the details of defending the Capitol are secret, and some top secret—and appropriately so. Some of our information is secret. And we are bringing licensees into—for the first time, really, we are getting a large number of people within the nuclear power industry with secret level security clearances.

That's an initiative that I think, again, we are ahead of other agencies in doing. We are having some trouble, in all honesty, with the foreign ownership, control, and influence decisions that have to be made for each of these licensees that sometimes have complex corporate situations. But we are getting it done. We are having a dialog with as broad a group of people as possible to get a broader perspective. We are getting a lot of input from the guards on the front lines. Some of it is through the media.

We would prefer to get it directly in a classified setting, but we have a lot of debate about what the right training requirements are, what the right design basis threat is, what is the right place to draw the line between safeguards information and unclassified information. We are happy to work with the committee and with whoever we can. But there is some degree of information—just as you here in the Capitol don't want to have your security divulged,

we have potentially very dire consequences if some of our facilities were successfully attacked. We have to protect that information.

Senator VOINOVICH. I would comment that as we moved into this new life that we are living after September 11, we are being more restrictive about the information that we provided the public. It underscores how important it is that the public have faith in the integrity and the credibility of the organization that has that information. That is very important. I think that your responsibility and of other agencies, that in the past had given out such information, now are more restrictive.

We welcome Senator Clinton this morning.

Senator JEFFORDS. Ms. Dicus.

Ms. DICUS. Just a quick comment with regards to the safeguards information. We have identified a policy issue that we need perhaps to take another look at the criteria that we use to decide if something should be safeguards information or official use only information. I think the commission is going to take a look at that and be sure that our criteria are clear and we know when to call something safeguards or no.

Senator VOINOVICH. Senator Clinton.

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

Senator CLINTON. Thank you very much, Mr. Chairman. I echo your concerns that part of our challenge is obviously to keep confidential information that would in the wrong hands be troublesome and even dangerous, but to establish enough confidence and trust so that people know that they are getting information that they need in order to act.

As this panel and the committee knows, I have a lot of concerns regarding the safety and security of our nuclear plants, but in particular the plants at Indian Point because of their proximity to a very highly densely populated area and because of the topography of the area in which they are located, which makes evacuation and emergency preparedness an extraordinary challenge.

Yesterday, Chairman Meserve spent an hour with me and other members of the New York congressional delegation as well as a few local elected officials from West Chester County where the plants are located. I am very grateful, and I thank the chairman for his time.

As a result of the concerns that we are facing with respect to Indian Point, the Governor of our State asked the former head of the Federal Emergency Management Agency, James Lee Witt, to review the emergency preparedness. I was very grateful that the Governor reached out to have such an independent study, somebody from the outside with a history of knowing what emergencies are.

As a result of that draft report, even more questions were raised because the bottom line was that it seemed unlikely that the kind of evacuation envisioned from either an accidental or a terrorist attack that resulted in some kind of release would be practical and able to be implemented.

Furthermore, Chairman Witt expressed his findings that it may even be that the standards by which we are judging such matters



are not adequate to the times in which we currently live. I did write to Chairman Meserve and ask for the NRC's response to these very legitimate questions raised by Mr. Witt's report. I was frankly concerned and I have talked to the chairman about this, that the chairman characterized the Witt report as placing "undue weight on the impact of potential acts of terrorism on emergency planning and preparedness."

I have just come from a classified briefing with Secretary Rich. We know the level of threat with which we are living. We know that cities like New York and Washington continue to remain at the top of the terrorists' potential targets. I don't think we can place undue weight on the impact of potential acts of terrorism.

I also believe that the difference between an accidental release and a release caused by terrorism is not the same. Yes, indeed, perhaps the same amount of radioactive material would be released into the atmosphere. But the conditions under which that release takes place, the circumstances governing how responses are carried out, who is left at the plant to carry out such responses, the level of panic that is communicated and spread through the neighboring area, is not at all equivalent.

I have already told the chairman that from my perspective we have to not only do everything we can possibly imagine, putting ourselves unfortunately and as disgusting a practice as this might be, into the minds of those who wish to destroy us. And nothing, therefore, is unimaginable.

I know that the NRC under the very dedicated leadership of these commissioners has always tried to do what it thought needed to be done. I just believe we are not thinking hard enough, strategically enough, and taking sufficient actions either in fact, or communicating those to the public sufficiently to reassure them that we are doing what we believe needs to be done.

Now, in the Inspector General's testimony that has been submitted, there are findings from a 2000 event inquiry at Indian Point Two, including the finding that Indian Point Two was a plant that struggled with various challenges in the area of emergency preparedness. The OIG learned that recurring weaknesses that had gone uncorrected appeared to play a role in the poor emergency response performance, and that communication between offsite emergency preparedness officials and the NRC was nonexistent.

Similar findings have been replicated both by the GAO and by the Witt report. So clearly, Mr. Chairman, we have a problem when it comes to communications between offsite emergency preparedness officials, but even more importantly, the people who are expected to carry out the plans.

Just very bluntly, given the topography, the narrow winding roads, the fact that this plant is smack up against the Hudson River on one side and then winds through lots of beautiful small towns on the other, suggests that we have problems already in planning, and certainly suggests that a lot of people in the event—particularly of a terrorist attack—are going to be torn, as we all would, between trying to do what Secretary Ridge and the Department of Homeland Security has told us which is, set a place where you can meet your family, you know, figure out how you are going to be taking care of that primary responsibility, and fulfilling your

official duties. I mean, this is human nature. This is going to be an enormous undertaking.

So as a result, the local county executives—Democrat and Republican alike—have refused to certify the emergency plans for their counties' participation. And the State emergency management organization has refused to certify the emergency plan. We are now in a kind of limbo between whether FEMA will go forward and certify over the objections of local officials and State officials, and what role the NRC will play in this.

So, Chairman Meserve, let me just ask that you give us an update with respect to what the NRC and the plant operator have done to ensure that the onsite emergency preparedness weaknesses that have been identified at the plants have been corrected, and whether there is going to be a continuing problem, as the IG found, that the NRC decided to allow Indian Point Two time to correct its deficiencies, and that that decision outweighed the benefit of increasing NRC oversight, which strikes some of us as a trend we are seeing at the NRC.

Could you comment on both my concerns and those specific questions?

Mr. MESERVE. I would be very pleased to respond, Senator. Let me make a couple of comments in responding to your questions.

First, let me assure you that we take the Witt report very seriously. This was a very substantial effort by a knowledgeable individual and we are not diminishing the significance or the importance of that report. We will—and are—reviewing that report and its recommendations very carefully.

Second, I think it's important that I clarify what perhaps was ambiguous in my letter. We were not intending to suggest—and do not suggest—that we view terrorism as a subject that is not a subject of great concern to us, to the licensee, to you, and to the American people. In fact, we have spent an enormous amount of time over the period since September 11 in assuring ourselves that there are adequate security measures in place at all of our nuclear power plants and other significant licensees that might be the targets for a terrorist attack.

I will come back in a moment to the specifics with regard to Indian Point.

The point that I was trying to make in the letter was merely to say that as a normal part of our emergency planning we do consider events that involve large releases of radioactivity in very short periods of time. And the point we were making is that one could imagine scenarios terrorists could cause that might cause releases of large amounts of radioactivity in a short period of time. But these events are not unique.

We believe, based on our vulnerability studies, that we have enveloped those events within the types of accidents that we routinely consider. So the point in my letter was merely to say that terrorism is not unique in its capacity to cause those sorts of events and such events have been a traditional part of our emergency planning.

With regard to Indian Point, I would say that there have been very significant measures that have been taken by the licensee as the result both of advisories that we have issued and orders that

we have issued to all of our reactor licensees. We have significantly enhanced the manpower that exists as guards at the facilities. The standoff distances for access to the plants has been increased.

The coordination with local law enforcement has been increased and, in fact, as I am sure you know at Indian Point, there is a substantial complement of National Guard troops that is available on the perimeter of that facility and remain there, and have remained there since September 11.

So we have worked also in making sure that the licensees are prepared to deal with various contingencies. In fact, there are 30 or 40 different areas in which we have placed requirements on all of our licensees. Of course, those apply at Indian Point, and the licensee is meeting our orders. We have had very significant inspection resources devoted to Indian Point both in tabletop exercises and also having our security experts, with assistance from expert contractors, visit that facility. We have satisfied ourselves that the security there is adequate.

That is not to say that everything is perfect. We have been finding problems and they are being addressed. One of the problems at Indian Point has had to do with the substantial demands on the guard forces—the guards were working very long hours. And so we had issues of fatigue of guards. It has been a source of discontent that has appeared in the press as well.

We have been trying to address that issue in the short term by way of an order that would impose limits on the hours of guards and, over the longer term, by including guards within a fitness for duty rulemaking that we would encompass those matters.

There are issues as to training for which we are also contemplating taking action in the near-term. That has been an issue at Indian Point. We have spent a lot of time in talking to the guards who have been raising concerns, to make sure that we understand them. Where there are allegations of problems, we run them to ground.

So we are making very major efforts at Indian Point, I can assure you, to satisfy ourselves, that the security there is adequate.

Mr. MCGAFFIGAN. Senator Clinton, might I add a few items? The chairman makes the point that security is something that we consider in emergency planning. Even before September 11th, earlier in 2001, the chairman and I were involved in an exercise at the Palo Verde nuclear station—an emergency exercise that had a very large FBI contingent involved. More recently, we have done a security-induced event at the Diablo Canyon facility in California. We had done that previously in Virginia at the BWXT Lynchburg Category I fuel cycle facility where there is highly enriched uranium.

One of the things I think we can do at some point—and I haven't even talked about this with my fellow commissioners—but just to help bring alive the point that the chairman made, perhaps the next exercise we do at Indian Point, either two or three, we can have a security-induced—the hypothetical event that causes the system to be exercised could well be a security event, just as we have done at Diablo Canyon and as we have done at Palo Verde.

I think then the issues that you raise, we may be able to get greater public confidence. I try very hard. Matt Wald called me the day that the spent fuel pool study came out. We tried to commu-

nicate. I tried to assure him that the physical security that the spent fuel pools at Indian Point—it is almost impossible, barring the mother of all earthquakes in which case we would have other problems—for that pool to drain. It is in bedrock. It is below grade.

The report that Matt was asking me to comment on made the point that if you can keep the pool at 40 percent full with water, you will not get any zirc-clad ignition and you will not get any off-site releases. It is physically impossible to get those pools with any sort of terrorist event to drain below 50 percent deep. One of them is entirely below grade. The other has a very small area above the fuel where you could poke a hole in the pool if you could get through many feet of concrete. That particular point is inaccessible to aircraft.

So there is no—we try to bat down these things, especially in your State, when these issues arise. Those spent fuel pools—there may be issues at other places, and we don't think so. But in your pools it is physically impossible. So we try. We try to bat these things.

In emergency planning, one of the points we made is that the 10-mile emergency zones that were chosen in the late 1970s are the basis for emergency planning. Those were chosen based on the science we had at the time and the multi-agency process involving FEMA, the Environmental Protection Agency, and the NRC. That was based on the science we knew then.

Since then, unfortunately we have had the Three Mile Island event and the Chernobyl event, and we have discovered that we were very, very conservative in choosing that 10-mile zone. It's very hard to imagine events that fully exercise the 10-mile zone, 314 square miles of people.

The events that we actually hypothesized in our exercises—we typically are thinking about a quadrant in a 5-mile zone where we can imagine somebody getting more than one rem, and we in a disciplined way, talking to officials, it's the State's call—I guess in New York's case, the local communities' call to make these decisions as to: Do we evacuate this quadrant of the 5-mile emergency planning zone where the wind is moving?

We need to communicate to the public that we understand that these are very conservative zones that were chosen in the late 1970s and if we were doing it today, based on today's science, many in the industry would argue that the zones should be brought in. We have not gone there. We have kept the conservative larger zones.

Senator CLINTON. Mr. Chairman, if I could just—

Senator VOINOVICH. I think we are running out of time on this question. I would like to wrap it up so we can get on with some other questions.

Senator CLINTON. One quick follow up to Commissioner McGaffigan.

What you just said, I would appreciate having the commission commit to doing a force-on-force test at Indian Point and sooner instead of later. It is something that I—

Mr. MCGAFFIGAN. I was talking about an emergency planning test. The force-on-force is separate.

Senator CLINTON. Well, it fits. There is a whole set of concerns that we are addressing here. I think that we should do it. It would be far better if there could be a clear conveyance of the information that you tell us with such intensity and sincerity, but which does not communicate. And even at the end of it, when you get something like a report from James Lee Witt, whom I have the highest regard for, which says that everybody is honest. People are telling you what they believe. But the standards are not adequate. So it doesn't really matter.

So that is where the disconnect occurs. We just have a lot of unanswered questions that are very troubling to people.

Mr. MERRIFIELD. Senator Clinton, in fact we have been working with Entergy. The chairman may correct me, but I think we have plans underway to have a force-on-force exercise with Entergy at that site. I believe it is in the June-July timeframe. So I think we agree that that is clearly a plant that has a priority.

I know the chairman wants to move on, but I do want to make a couple of really quick observations. I agree with the comments the other commissioners have made about emergency exercises and terrorism. I was the commissioner that led our joint exercise with the FBI at our BWXT facility. I also led the exercise relative to Diablo Canyon, the first time we had a security-initiated event since September 11, 2001.

I will tell you that we take those exercises as commissioners very seriously. Each one of us leads one of those exercises each year that includes hundreds of participants. Many folks on our staff, probably 50 folks in our headquarters, our regional staff, people on-site, FEMA, Federal agencies, State and local governments, and utilities. It is an enormous effort and one that I would certainly welcome and suggest that you come view when we do one of those again to see what we do.

We are going to take James Lee Witt's recommendations very seriously. We are going to look at them. I agree with the chairman that we are not to belittle those. Where we work with FEMA, where we can identify improvements, and where there are those that need to be made, we certainly will.

The last thing I would say is this: You quoted the IG's report from the 1990s. There is one significant thing that has changed in that time period. At the time when they were looking at those issues the plant was owned by ConEd. That was a utility that had one site, Indian Point Two, and it arguably did not have the commitment to keeping that facility where it should be—from a material condition and from having the staff treat that plant the way it should.

I remember when I first came to the commission in 1998, I had a lot of discussions with our regional administrator because we had those concerns about that plant. Entergy has come in. The tone has changed. They have put a significant investment into the site. They have certainly changed the way that they do business around there. They have an expertise with many, many plants.

So that is a component that we certainly look at. The attitude that they have in terms of making sure that that plant is operated appropriately is certainly—I would argue a lot healthier than what

we were dealing with when the IG was looking at that report and ConEd back in the 1998–1999 timeframe.

Senator CLINTON. Thank you.

Senator VOINOVICH. Thank you. We did spend a lot of time on that issue but it's instructive about what you are trying to do at Indian Point. I think it's applicable to other sites around the country. It should give some assurance that you are really paying attention to the issue of security. I think that's important to people's comfort level.

I think you have copies of pictures at your table of the corrosion at the reactor heads at Davis-Besse. I have seen them several times. You have them. It is my understanding that these pictures were taken as part of an inspection of the facility in April 2000.

I further understand that the photographs were included in a report that First Energy filed with the NRC in 2000 and that the NRC did not review that file and that the NRC regularly fails to review these types of reports. I also understand that the corrosion present in these pictures was present and visible during multiple inspections as far back as 1996 and that it was noted in multiple reports as far back as 1996.

If this is true, I think that this committee may have to take a serious look at an overhaul of the NRC's day-to-day oversight at these nuclear facilities. Is it true that these pictures were contained in a report submitted to the NRC that was not even looked at until the reactor was shut down?

Mr. MESERVE. Senator, my understanding is that the licensee had a condition report that it prepared in 2000 that included this picture. This was not a picture that was, to our knowledge, shared with the NRC. However, there is an allegation that has been made that the picture was shown to an NRC inspector who did not follow up on the picture. This is a matter that is under investigation by the Inspector General.

Mr. MCGAFFIGAN. But that allegation was made only last week, sir. So the allegation that an inspector saw this picture was made at a hearing we had before the commission last week.

Senator VOINOVICH. So it's recent? And you're looking into it?

Mr. MESERVE. We are looking into it.

Mr. MCGAFFIGAN. We are looking into it.

Mr. MESERVE. The Inspector General is looking into it. This kind of thing we would refer to the Inspector General.

Senator VOINOVICH. The fundamental question is: Why didn't you as a routine matter see this?

Does the NRC need to have a fundamental overhaul of the way they do their inspections?

Mr. MESERVE. Let me respond to it this way. We have sought to undertake a major overhaul of our inspection program, to focus our inspection resources on the most risk-significant issues. And if there was a failing by the NRC in connection with this episode, it was the failure to appreciate that the kind of circumstances found at Davis-Besse could arise.

We had a conjunction of two phenomena that we had not linked together—which is stress corrosion cracking and the head corrosion. We had not seen that at another plant. One of things that we have done as a result of this incident is to have a very major les-

sons-learned effort to determine what was wrong with our system that we did not catch this.

That has resulted on the order of 50 recommendations that have been briefed to the commission. We have directed that nearly all of those recommendations be pursued. There is an action plan that we will be receiving an action plan and a schedule for the implementation of the high priority recommendations within the next few weeks.

We see this as a failure of our inspection system, as well. And we are changing it to try to deal with it.

Senator VOINOVICH. Would any of the other commissioners want to comment on this?

Mr. MCGAFFIGAN. I would just echo what the chairman said. Obviously this head is not a clean head and the licensee had other documents that suggested that their head was clean. Our inspector—if this was presented to him—it would be a major shortcoming not to have seen it.

Senator VOINOVICH. So what you are saying is that if it was found that it wasn't reviewed. Then is it a major shortcoming in the way these reports are reviewed by the Nuclear Regulatory Commission?

Mr. MCGAFFIGAN. Yes, sir.

Senator VOINOVICH. Also, in the NRC budget, there is a reduction in the amount of money for inspection. At least, that is what it appears to be. How can you get the job done if you don't have the budget, to have the people, to get the job done?

Mr. MCGAFFIGAN. We all have the same answer but we will let the chairman make it.

Mr. MESERVE. We do have a very slight reduction in the budget from fiscal year 2003 to 2004. It is about \$400,000 out of about \$73 million for inspection activities.

That is not a decision that the inspection resources on the ground at the plants should be reduced. In fact, what it reflects is that we are into the fourth year of our implementation of this inspection program, and we believe that a lot of the overhead activities—the guidance, the training of the people—can now appropriately ramp down because of experience.

This budget was developed, however, before the lessons-learned report came in. We certainly have the flexibility within our budget to make adjustments to the allocation of resources and if there is more that needs to be spent on inspection capacities to be able to do the job, we have the flexibility to do that and will do it. The budget you are seeing does reflect something that was developed by us before the full impact of the Davis-Besse episode was appreciated by us.

Mr. MERRIFIELD. Let me just underscore a couple of things the chairman said. You showed us this photo. It is clear that if our inspector had this photo and didn't act on it, then we have to retrain our staff and make sure they have a higher sensitivity about that. And if anybody looks at this photo—as we would—it raises concerns. So we have to fix that.

Your question, though is: Does that bring a question about the fundamental nature of the way in which we do inspections? And I would ask the chairman not to overreact on that. As our chairman

has said, we had a task force that spent 7,000 hours meeting with the local county you talked about—Ottawa County—our own folks, folks outside the agencies, saying, “Is there a way in which we can fix and modify our process so that things like this don’t happen again?” That resulted in the adoption of the recommendations the chairman has spoken about.

But I want to underscore the issue of the inspections. We are not taking any reduction in inspections next year. The savings that the chairman has talked about was a reduction—because we have this new oversight program that we have been working on for years—there are some generic issues related to that that we don’t have to do anymore. So that’s part of the savings.

The other part of the savings that results in a reduction is the fact that we are doing a better job of planning our inspections before the inspections actually take place. This committee and Congress have asked us to work efficiently and effectively. We provided hand-held tools—electronic tools—to our inspectors so that when they go out on their inspections they don’t have to spend 3, 4, or 5 hours in order to prepare for their inspection. They can spend one-half hour doing it.

So we are getting the results of some of those efficiency savings so that more that our inspectors’ time is being spent on inspections and less time during paperwork. That’s the result of what you see in that drop. We are not reducing inspections this year.

Senator VOINOVICH. Mr. Diaz.

Then Ms. Dicus.

Mr. DIAZ. Mr. Chairman, just one simple comment. The bottom line to me is that this issue was preventable. We need to do a better job of making sure that the licensee and us have all the processes that are needed so it is prevented. And it was preventable. We don’t like it any more than you do that we might have had to rely for a potential rupture on a safety system. That is not acceptable and we are taking the steps necessary so this issue will not be repeated.

Senator VOINOVICH. Ms. Dicus.

Ms. DICUS. Thank you. Clearly we, on this issue, have done, as part of the issue, a “mea culpa” on it. Clearly we missed something that it is only part of the issue and perhaps we should have found.

When we had our commission hearing on Davis-Besse that Commissioner McGaffigan referenced, one of the questions I asked of our staff—we had three panels, our staff, the licensee, and then stakeholder involvement, including Ottawa County, as a matter of fact.

One of the questions I asked my staff was: How do I know I don’t have another smoking gun out there? I don’t want this commission to be back here next year with another licensee, another plant, that we had something happen. In this case we had a problem, a technical problem at the plant. We did not have an incident which I think the chairman has made clear, as well as, I think, Commissioner Diaz. The redundant systems we had worked, but that is not what we are interested in having. So our staff—the highly technical, very capable staff that we have at the NRC—they know that this commission is looking at the inspection program, looking at



the oversight program that we have because I don't want any more smoking guns. I made that very clear in the briefing that we had.

Senator VOINOVICH. Well, I'd like to see what it was and what the new plant is, the building of what Mr. Merrifield said. I am also interested in two other areas. One of those is the area of human capital. Another hat that I wear is as chairman of the Subcommittee on Oversight of Government Management in the Federal Workforce. I would like to have a report from you in terms of the capacity of the people that you have on board, the potential for retirements, and your ability to attract the people that you are going to need.

I always quote the statistic that you have more people over 60—6 times more over 60 than you do under 30. So often it depends on the kind of people that you have that are working that determines whether or not you can get the job done.

Also, have any sanctions been taken against individuals who have worked for the NRC where it is obvious that they didn't do the job that they were supposed to do?

Mr. MESERVE. Let me just say just quickly on human capital that we would be happy to provide you with a report. We appreciate your leadership on that issue.

I can report to you that the 6-to-1 ratio that you mentioned—and I appreciate the fact that you have used it elsewhere—is no longer correct. I am afraid I now must say that we have made great progress and it is now 2-to-1.

But unfortunately, I can't tell you that the problem is solved. It was comparatively easy to change that ratio because we hired a lot of younger people. With such a big leverage of six-to-one, we were able to change the ratio quickly. But we still have a serious situation. Thirty-six percent of our employees, including fifty-two percent of our managers, can retire within 5 years. We need to build capacity at this Agency. We are uniquely dependent upon the skills of our staff.

I have sent you a letter with some suggestions as to things that could be done. We very much appreciate your leadership in that area.

With regard to sanctions against the NRC staff there is, of course, the investigation that we mentioned a few minutes ago about whether somebody had seen this. Some actions could arise from that matter if it is substantiated. We have not taken any other sanctions. We view the problem that arose at Davis-Besse as an institutional failure and not a failure of the particular individuals.

Among the lessons learned is to change our inspection resources to make sure that people focus on issues associated with this matter, to make sure that we have trained our people so that they recognize this sort of situation and have the capacity to deal with it, that we have the research in hand to understand the underlying phenomena and have a better handle on these types of issues.

Let me say there has been an enormous issue in the industry, as well, to address the head issue. We have issued orders, including an order earlier this week, to enhance the inspection that is undertaken of the reactor vessel heads and of the nozzles that are on them. So I think we have this particular issue well in hand. The

issues here are not ones that are directed at individuals but rather, quite frankly, at an institutional failure that we are aggressively addressing.

Mr. MCGAFFIGAN. Mr. Chairman, my comment may go more to your last question. One of the lessons learned from Davis-Besse was we were assuming the place was better than it was. And not only “we,” but the Institute for Nuclear Power Operations in Atlanta, which is an industry group that evaluates the plants, also thought the plant was better than it was. As a result, we had a single resident inspector there when we should have had two. And the resident was not fully trained for part of his tenure, at a crucial time.

We had an engineer position back in Chicago that was also vacant for part of the time. We had a project manager back in Chicago who was focused on the Clinton plant, which was a plant in trouble at the time. And then we had the project manager for Davis-Besse back at headquarters. Instead of having our nominal 5-year tenure, we had 9 people in 10 years in that position.

So one of the things that I think the staff has learned as a result of Davis-Besse is that we can’t tolerate long periods of time when we don’t have the right number of inspectors at the site—we can’t tolerate these vacancies. And yet like all Federal agencies, especially Federal agencies where there are changes of station, like the military, people rotate, we have to manage it.

There are a couple of us at this end of the table who have been concerned. We went a few years ago from having three inspectors at a typical two-unit site—Davis-Besse is a one-unit site—but we had an N-Plus-One policy—at least one more inspector than the number and no less than two. We have not always been there. And then it becomes crucial that we backfill with regional inspectors when we don’t have the right number of people at the site.

I think we are learning that lesson. But it is very difficult. We can’t assume somebody is a good guy. We have to carry out the minimal inspection program and do that aggressively at all of the sites. I think that is a lesson we are learning. But there is some real problem at Davis-Besse, I think, in our culture, in that we were assuming that the plant was better than it was, and the industry institution with whom we talk had a similar view, that this plant was better than it, in fact, was.

Mr. MERRIFIELD. Mr. Chairman, I would say that I think one of the significant lessons that we have learned from the Davis-Besse episode is that we need to make sure we have the tools and the people that we can deploy.

Senator VOINOVICH. What I would like to do is this. You have Davis-Besse. Mr. McGaffigan, you have done a nice job of describing it in terms of the personnel thing of “Here is what was there.” Then you went on to describe what should have been there.

I want to know what should have been there and what you are doing to make sure that what should have been done is going to be there because you are going to have the people there to do it.

Mr. MCGAFFIGAN. The question today, sir, is not Davis-Besse because we have more resources than you can imagine at Davis-Besse. The question is. Are we doing it somewhere else?

Senator VOINOVICH. That is a good example. You can use this as a case study that illustrates, "We blew it. This is what we should have had." Multiply that realization across all the other facilities to determine the organizational needs and personnel to ensure that you have the people at the right place with the right skills and knowledge at the right time.

Senator Carper has to leave for a security briefing. Senator Carper.

Senator CARPER. Thank you. I apologize for having to leave again. We appreciate your being here today and your service. Mr. Meserve, we wish you well in your next post. Thank you for your leadership.

I said earlier for those of us who are concerned about reducing the threat of global warming, large amounts of carbon dioxide into our air, nuclear energy can provide real help there to alleviate those, I think, grave concerns. To the extent that we are concerned as a Nation about the ever-growing dependence on the importing of foreign oil and a burgeoning trade deficit, a greater reliance on nuclear energy can help us on that front as well.

Your stewardship and your diligence in making sure that there is a commitment to perfection—in Mr. Diaz's words—a commitment to perfection in the operation of these plants, or something as close to that as we can humanely achieve is very much needed, especially at this time.

I am going to ask a couple of questions for the record and I will submit those in writing.

One of the questions that I will ask is going back to what sounds like what was experienced at Davis-Besse and maybe at this facility in New York State, a more modest incident. But one of the questions I will be asking for the record is for you to find out for us and to report back on the delay until the time the information was actually released as public information to the rest of us.

The final question I want to ask—and this focuses more on a national issue. Mr. Meserve, in your comments earlier, you began to touch on some of the new technology, the next generation of plants that may be in the offing. Just take a couple of minutes and give us a bit more information on what might lie ahead in that regard.

Mr. MESERVE. Of course, we do not make the decision as to whether nuclear plants should be built. That decision is made by others; our focus is making sure there is adequate protection of public health and safety. We anticipate that there may be such construction in the future.

We have revised our regulatory system and our licensees are taking advantage of it in the preparation for new construction. We expect this year, for example, that there will be three early site permits. That's a way to get environmental issues associated with a site examined early before there is an investment, to make sure that the site is suitable for the construction of a plant.

We also have an opportunity that our revised regulations provide for design certification. We have certified three designs. We have one that is in the process and a number that are coming. These range from evolutions from current-types of reactors with upgraded capabilities, to reactors that are entirely different—gas-cooled reac-

tors, for example, which use helium as the working fluid rather than water.

All of these reactors reflect efforts to try to deal with safety issues. Some of them use passive safety systems so that rather than relying on pumps and mechanical devices in order to assure that there is adequate cooling, they rely on gravity or pressure to drive injection and thermally driven circulation as the vehicle for cooling so you don't have the dependence on the reliability of a mechanical device.

A number of vendors are bringing these types of ideas for possible construction to us or are talking about bringing them to us for our review. If we certify them, that is a more streamlined process for the eventual application of these improved technologies in new construction.

Nobody has yet made the decision to come forward and say, "We really want to do it. We are going to file an application to proceed with construction and operation." There is discussion in the industry about that possibility. It may be a year or two before that happens, but as indicated by the early site permits and the certified designs, people are laying the groundwork for those decisions to be made.

Mr. MERRIFIELD. I would also add. Teams are thinking about the way we do business. In our country we no longer manufacture the vessels. We talked about the vessel head at Davis-Besse. We don't manufacture those components anymore in the United States. We don't manufacture steam generators. Those are manufactured in Japan, Korea, Spain, and Canada.

So we are going to have to change our way of doing business if those reactor orders take place. We are going to put people on planes and send them abroad and figure out how do we do those inspections. We do some of that now because we do inspections at foreign facilities.

So there are a lot of things that we have to plan on to make sure that we are ready if, in fact, as the chairman has mentioned, a utility were to decide to go ahead and build a plant.

A second element to that, however, are the sites themselves. As you may have heard—and the chairman touched upon—there are three utilities—Entergy at its Grand Gulf site in Mississippi, Dominion, with its North Anna site in Virginia, and Exelon with its Clinton site in Illinois—have all announced their decision this year to come in and seek pre-licensing of the sites for the future.

So that is another step and sort of a toe in the water, so to speak, of the utilities. We will be working to review those sites to see if they are appropriate for the potential placement of plants down the line.

Mr. MCGAFFIGAN. Senator Carper, I might just mention, given your prior experience with the Navy, we do have somebody who does build reactors. As you know, this year we completed the review of the Virginia class submarine nuclear steam supply system for the Naval Nuclear Propulsion program. It is a classified effort, but we in public said that our judgment was that this was an improvement on the already wonderful record of the Navy in the previous reactor designs that the Navy had. So the Navy does continue to advance technology for its particular uses.

Senator CARPER. Thank you all. Thank you, Mr. Chairman.

Senator VOINOVICH. Senator Clinton.

Senator CLINTON. Thank you. Can I rely on what I heard in the previous round of questioning that we will confirm for the record that there will be a force-on-force drill at Indian Point in June or July?

Mr. MESERVE. I can confirm that Entergy has agreed that it will be an early exercise. The precise date has not been established. June or July is a possibility. It is conceivable even it might be earlier.

Senator CLINTON. Thank you, Mr. Chairman.

Mr. MCGAFFIGAN. Senator Clinton, may I also add that we are probably not going to announce the date to the public. When a plant actually has one of these security exercises, it is potentially a little vulnerable. We have twice as many people there because you have the shadow force and the force that is actually still guarding the plant. We will probably not announce that it occurred until after the fact, just so you understand that.

Senator CLINTON. Just so long as my neighbors don't think they are being invaded, that's fine with me.

[Laughter.]

Mr. MCGAFFIGAN. That's actually something we have thought about. We will not at Indian Point use the full sound system. You will not hear a battle going on. In a more remote location we have gear where it does sound like you have a full battle going on.

Senator CLINTON. That would be good.

[Laughter.]

Mr. MERRIFIELD. I do want to allude to it, though. What Commissioner McGaffigan is talking about is one of the enhancements that we are making. We have decided to move ahead and adopt a system that the military uses.

Senator CLINTON. Good.

Mr. MERRIFIELD. Laser indicators to target individuals who may be invading the plant. Typically the military also uses blanks as part of that program. The commission has affirmatively said that we do not believe in using blanks in highly populated areas where it might disturb local citizens. It is something we are concerned about. So we certainly hear you on that.

Senator CLINTON. That's helpful. And following on that, when is the NRC going to revise the design basis threat to reflect the new threat environment in which we find ourselves?

Mr. MCGAFFIGAN. We have a design basis threat that is now out for interagency review. We work on this issue with other knowledgeable agencies including the FBI and the intelligence community. We are receiving comments on that as we speak. The commission has set a schedule for itself we are aiming to complete that work—have scheduled to complete that work by the end of March.

Senator CLINTON. Thank you.

Mr. MERRIFIELD. If we do achieve that, I think we will be the first Agency in Government that will have revised its design basis threat after September 11th.

Senator CLINTON. That's good news.

Yes, sir?

Mr. DIAZ. In reality, we do have a de facto new design basis threat that we established a year ago. So although there was an old DBT, the newer security requirements make for a much larger DBT than the older one. So a de facto DBT has existed for almost a year.

Senator CLINTON. Good. Mr. Chairman, I am going to have to leave to go to the Armed Services Committee, but I have a question that I would like to submit to Inspector General Bell. I want to read it because it follows up on what we were talking about previously.

As I understand it, the Inspector General's office is currently working on a report concerning NRC's enforcement of regulatory requirements and commitments at the Indian Point Two nuclear power plant. I understand that the Inspector General has been working on this report for quite some kind. My staff has had several discussions with the Office of the IG about the report. I have an extreme interest in receiving that report.

In fact, I wrote to the IG about it just last week in the hope that it could be released before this hearing, or that at least we could hear about its findings because it goes to the point that the IG report that I previously referred to was dated 2000. It was a retrospective report. We do need this updated report. But the release keeps being pushed back. I would like a date certain as to when this report will be released. I would very much like to let the commission and the IG know that this is a matter I will continue to raise in this committee.

Then I will submit a second question for the IG with respect to some of the issues that the chairman has addressed concerning Davis-Besse and the workforce capacities and training.

Before I leave, if any commissioners have any comment on my questions concerning the IG report, I would be interested in hearing them.

Mr. MESERVE. Let me say that, as you know, the whole function of the IG is to be a very independent operation. We welcome and carefully consider the IG recommendations. I am aware as well that the IG report with regard to Indian Point is underway. I don't interfere and none of my colleagues interfere with the IG's effort. So, the answer will have to come from the IG as to what the schedule is for that report. We don't try to control—it would defeat the purpose of the IG, quite frankly, if we tried to exercise those sorts of controls on him.

We would be very happy to respond with regard to Davis-Besse and the various issues that you have.

Senator CLINTON. Thank you. Finally, Mr. Chairman, I would like to express my appreciation to Chairman Meserve for his service. I know this is probably the last time you will appear before this committee, at least if the schedule is any indication; perhaps not. But I personally want to thank you for your service, as I thank the other commissioners.

We are all in uncharted terrain right now. I think it is important that we ask the hard questions. We push each other within Government, from outside of Government, as hard as we can, to be creative, to think about all these issues perhaps in a new and different way because I believe we have to be hypervigilant and per-

haps more committed to thinking outside the traditional boxes that have served us well in the past but are no longer adequate to what we are confronting today.

But I have enjoyed my working relationship with the chairman. We have often disagreed and he continues to object to the Nuclear Security Act which I am going to continue to press forward on.

[Laughter.]

Senator CLINTON. But I am very grateful that a person of his commitment and caliber would be in public service. I regret his loss to public service and this commission. Thank you.

Mr. MESERVE. I very much appreciate your comments. I should state for the record there are only aspects of the bill that I object to.

[Laughter.]

Senator VOINOVICH. We will be having another hearing on that.

Senator CLINTON. Well, maybe I will see you again.

[Laughter.]

Senator VOINOVICH. The lessons-learned report cites significant problems with the safety culture at Davis-Besse. A report by the Institute of Nuclear Power Operations—and I am going to quote from it:

“A major contributor to this event was a shift in focus at all levels of the organization from implementing high standards to justifying minimum standards. This reduction of standards resulted from excessive focusing on meeting short-term production goals, lack of management oversight, base problem solving, justification of plant problems, isolation, ineffective use of operating experience, and lack of sensitivity to nuclear safety.

“A report by the NRC’s Inspector General showed that only 53 percent of the NRC employees feel that is safe to speak up in the NRC about safety issues. That report also states that almost 25 percent of the NRC employees do not believe that the NRC’s commitment to public safety is apparent in what we do on a day-to-day basis.”

These are statistics that frankly are unacceptable. I would like you, Chairman Meserve, to comment on it. Do we have a culture there where we are not encouraging our people to speak up about issues and be forthright?

Mr. MESERVE. I am very pleased that you raised that issue, Senator. What you are referring to is a survey of safety culture that was conducted by the Inspector General. And perhaps your questions could also be directed at him.

Let me say that in many respects this is a report which we received with great enthusiasm. The report shows very significant improvement in terms of the attitudes of the NRC employees in most areas, significant improvement—often double-digit improvement—in things like morale, commitment, respect for the leadership and so forth, over a previous survey that had been done in 1998. And it similarly showed that in nearly all areas that the NRC staff stood up well in these various metrics as compared with benchmarks that were drawn from other R&D agencies or from the R&D world in general.

There were some issues, as all these reports obviously raise some issues. And one of the issues that was raised was an area called the “Continuous Improvement Commitment,” I believe. It included attitudes toward safety, among other elements, in which there were statistics where we fell short. We take that very seriously.

What we have done is asked our executive director for operations, who is the principal staff officer, to undertake an examination of the underlying root causes for that problem and how we should address it. So we took this report as indicating that we had made enormous progress over the past time and stand up well in general in comparison with our benchmarks. But we do have some issues that we need to address, and we are addressing them.

Senator VOINOVICH. And one of them is a comfort level on the part of people to speak out?

Mr. MESERVE. That is an issue. We demand that our licensees provide a system in which people are comfortable to speak up. We can ask no less of ourselves.

Mr. MCGAFFIGAN. Mr. Chairman, I might just go ahead, sir. We try to lead from the top on this issue, Mr. Chairman. At every opportunity we, as commissioners, have to encourage staff to raise issues. We have something in our system, a formal process, for dissenting views within the staff, the differing professional view and the differing professional opinion process.

I can't tell you how often we encourage people to raise issues at the very top. And we give them the opportunity to address us when an issue is before us. Recently we had an issue with regard to a new rule that we are going to be putting out for risk informing our reactor regulations. And we had the three people who had filed dissenting views from the consensus position of the staff appear before the commission.

People raising dissenting views have, during my tenure on numerous occasions, changed commission policy over the last 6 years. So we try to lead—and I think the senior staff is trying to lead—by encouraging those views to come forward. We are best when we have the full diversity of views of our staff. I use this opportunity today, sort of through this question and answer, to reiterate that from the commission on down we want those opposing views. That is how you get the best public policy, I believe.

Mr. MERRIFIELD. Mr. Chairman, I completely agree with the characterization that Commissioner McGaffigan has made, and I would add further that virtually all of us have a policy—the commission having an open door policy, of saying to staff—and we have said this repeatedly in public—if you have a concern, come on in our door.

In the last few months I have had folks who have taken me up on that, who have come in and raised concerns. You can ask the Inspector General. I had one recently. A person brought an issue up. And I referred it to him to take a look into it. That's the way it should work. That's the position we have. Our staff should be raising safety concerns and we should foster an environment in which they are comfortable in doing so.

I would say that given what Commissioner McGaffigan has spoken about, and what I have spoken about, we were somewhat puzzled by that particular outcome. We kind of thought we had an environment in which we were doing that. Obviously members of our staff didn't feel that way, and I think there is a commitment among the commission as a whole that we are going to fix that problem.

Mr. DIAZ. But it does seem that if you look at the statistics from a group that actually is not in high positions in the commission,



and they might have felt—and we need to be very responsive to it—that they couldn't really freely discuss these issues. I think we now realize that that is an issue that we need to look further. We have all of these discussions at multiple levels with top management—that is not the problem. We go to middle management—that is not the problem. It seems like it is further down in the innards of our staff. That is an issue that we really need to address.

Senator VOINOVICH. I would like to agree that the report indicated that there has been improvement. But it also pointed out that half the Agency's employees—53 percent—feel it is safe to speak up. This is a significant 5 percent increase from 1998 that say they don't believe the NRC's commitment to public safety is apparent in what we do on a day-to-day basis.

Obviously we can monitor this situation and perhaps have another survey made in the near future to just compare it with what the statistics were from the one that just was done and see where you are. But I am very pleased to hear that you do encourage people because I think that's the only way that you can have a healthy organization is by encouraging people to speak up and to disagree, and especially in the kind of work that you are doing.

Mr. MERRIFIELD. Mr. Chairman, in the second point that you were making, I think some of that goes to the issue of communications. We have an Agency which is a result of our organization back in 1975. The notion at that time was because we were split from the Atomic Energy Commission, we should not at all be promotional. And I think that feeling has trickled down into the fact that sometimes the Agency isn't as promotional of itself to explain to the public what we do and how we do it and our commitment to safety.

I think if you ask any of us, if you ask any of our management, and hopefully if you ask our staff, we are committed to making sure that these plants and the other people that we license are safe. Perhaps we can, and should, take as a lesson from this survey that we can do a better job of communicating that to the public.

I think if we do a better job of doing that, our staff will have more engagement in terms of having confidence, and, in fact, that the public perceives us that way. I think that is part of what that second question was all about.

Senator VOINOVICH. Well, I have found from my experience that you have your internal customers and you have your external ones. Too often we pay attention to the external ones instead of working with the internal ones.

How much participation do your people have? You are coming back now. You are reviewing what you are doing, to do it better, and so forth. How much input are you getting from the people that are actually doing the job? Do you have quality management at all in the Nuclear Regulatory Commission? Do you have self-improvement teams or anything of that sort?

Mr. MESERVE. We have, as a general philosophy, been trying to flatten the organization, to take out layers of management, to put the responsibility at lower levels so people who should be doing the job are doing the job, strengthen the communications at all levels with regard to how things are going. We have constant efforts to

monitor how we are doing in this area. We very much welcome the input that the IG and others provide to us.

So we are trying. We see this as an essential area for the fulfillment of our mission. It's a way, quite frankly, for us to deal with some of our human capital issues. We want to have people who have pride in the work that they are doing, feel responsible for the work, and have fulfillment from their work. All of this is integrated, I believe, in our achievement of our overall objective.

Senator VOINOVICH. I would be interested in your looking at the way you are operating the organization. I would be interested—and don't have to do it today—but I would like to have it in writing of some specific examples where you are doing things differently and the reason why you are, where the people who are actually doing the job have come back and recommended how they think they can do their job better.

Mr. MESERVE. We would be pleased to do that.

Mr. DIAZ. Mr. Chairman, there is a cultural issue that I think you should be aware of that I think impacts on all of this. The AUC has been trying to become more risk-informed and performance-based through the years. That is a dramatic change to many of our staff members. Many of them are still very devoted—and maybe rightly so—to the way that we were doing things.

So when you get these changes, actually you get diverse opinions. And we welcome the diversity of opinions because in many ways it gives us checks and balances. So I am saying that there are many people in our staff that see some of our new processes as advancing a little too fast, and the commission needs to deal with the fact of how do we keep the staff in there and at the same time go forth with changes.

Senator VOINOVICH. Mr. Diaz, I understand that. We instituted quality management in Ohio with some 58,000 employees.

Mr. DIAZ. I see.

Senator VOINOVICH. The biggest problem I had were the managers who had grown up in a command-and-control environment that didn't want to change because they enjoyed telling everybody what to do. But it is very important that the management style change if you are going to have an efficient organization that is going to have continuous improvement.

The last question I have of the panel is, as the administrator of the Ottawa County Commission said, they are interested in getting this facility back on line, but in a manner that will absolutely protect the people of Ohio. I would like you to comment on just where are we in this initiative.

Mr. MESERVE. Well, we have a special process that we put in place for situations like the Davis-Besse plant. That involves a very substantial inspection effort by some of our most qualified people to evaluate the circumstances at the plant, to assure that the underlying issues that resulted in the problems have been corrected. Only if we are satisfied that the necessary improvements are in place, will we be in a position to authorize the restart. This is a plant that cannot restart without an authorization from the NRC.

This has been an ongoing effort. There are very substantial modifications that the licensee is making. There is a very important test that they need to undertake to bring the reactor under pressure

without a nuclear reaction occurring, to be able to test the new head, and to test the possibility of events that might occur on the bottom of the reactor.

So, there are a number of important steps that need to take place, including this test and the completion of the various upgrades, before the NRC would be in a position to authorize this facility to restart.

Senator VOINOVICH. Do you have any kind of a timeline?

Mr. MESERVE. I believe that First Energy has expressed aspirations of late spring for completing that effort. I think it is too early for us to be able to say that we are sufficiently confident that that is a realistic date.

Mr. MERRIFIELD. I would add, Mr. Chairman, that we are going to use a disciplined approach. The chairman talked about our 0-50 inspection process. It is disciplined. We want to make sure that it is timely, but as much as we want to make sure it is timely, we want to make sure it is done right, and that we are confident that they are operating safely.

Senator VOINOVICH. I need both criteria. I want you to do it right.

I do have a few more questions for you, but I will submit them to you in writing so we can get on with our next witness.

I thank you very much for your being here today. Chairman Meserve, thank you for your service to your country. I think that too often we take for granted the fact that people like yourselves are willing to step forward and take on positions on commissions like this that could be partly controversial and stressful, but I know that you do it because you want to contribute to your country.

I would like to say one other thing to you. I am going to be touching base with you maybe a little bit more often than maybe some of the other chairmen because I do believe in nuclear power. If we are going to go forward with nuclear power in this country, however, we really have to allay the fears of a lot of folks. And you know, there are some people who don't like nuclear power, and any chance they have to find something that they can pick at, they will do it. So that even puts a much heavier burden on the Nuclear Regulatory Commission to do a superlative job.

I wish I could get some of my colleagues to understand this—that we are now in a new world since September 11. It's changed our lives. It's changed the responsibilities that we all have. It's changed the public's interest in some of things that maybe we took for granted before, but no longer.

So it is a heavy burden that you all have. Again, I appreciate your willingness to serve. I am going to be spending more time with you than perhaps those in the past because I think it's necessary. Thank you very much.

Mr. MESERVE. Thank you.

Senator VOINOVICH. Our next witness is Hubert Bell, Inspector General for the Nuclear Regulatory Commission.

We welcome you to this hearing this morning, Mr. Bell, and would appreciate your testimony. I apologize that we don't have more members of this committee here today but there are lots of

things going on as you well know. You may proceed with your testimony.

**STATEMENT OF HUBERT T. BELL, INSPECTOR GENERAL, U.S. NUCLEAR REGULATORY COMMISSION ACCOMPANIED BY: GEORGE A. MULLEY, SENIOR LEVEL ASSISTANT FOR INVESTIGATIVE OPERATIONS, NUCLEAR REGULATORY COMMISSION AND STEPHEN D. DINGBAUM, ASSISTANT INSPECTOR GENERAL FOR AUDITS, NUCLEAR REGULATORY COMMISSION**

Mr. BELL. Good morning. Mr. Chairman and members of the subcommittee, it is a pleasure to appear before you today. I am accompanied today by Mr. Stephen Dingbaum, Assistant Inspector General for Audits, and Mr. George Mulley, Senior Level Assistant for Investigative Operations.

As you know, the mission of the Office of the Inspector General at the Nuclear Regulatory Commission is to assist NRC by ensuring integrity, efficiency, and accountability in the Agency's programs that regulate the civilian use of byproduct, source and special nuclear material in a manner that adequately protects public health and safety and the environment while promoting the Nation's common defense and security.

My office carries out this mission by independently and objectively conducting and supervising audits and investigations related to NRC's programs and operations; preventing and detecting fraud, waste, and abuse; and promoting economy, efficiency, and effectiveness in NRC's programs and operations.

To perform these activities, the OIG employs auditors, management analysts, criminal investigators, investigative analysts, legal counsel, and support personnel. The OIG also uses private-sector contractors to audit NRC's financial statements as mandated by the Chief Financial Officers Act, and for other audit, investigative, and information technology technical support services.

To fulfill our audit mission, we conduct performance, financial, and contract audits. In addition, the audit staff prepares special evaluation reports that present OIG's perspectives or information on specific topics. OIG's investigative program is carried out by performing investigations relating to the integrity of NRC's programs and operations.

Also, periodically the investigative staff conducts event inquiries which yield investigative reports documenting the examination of events or Agency regulatory actions that do not specifically involve individual misconduct. Instead, these reports identify staff actions that may have contributed to the occurrence of an event.

Recent work performed by my audit and investigative staff in furtherance of our mission include an event inquiry into the NRC decision to allow Davis-Besse to continue to operate beyond an NRC established deadline without performing vessel head penetration nozzle inspections.

Additionally, we conducted an event inquiry to address concerns resulting from an incident at Indian Point during which the power plant experienced a steam generator tube rupture in one of its four steam generators.

In the area of nuclear materials we investigated the reported loss of two spent nuclear fuel rods at Millstone Nuclear Power Station Unit 1. In addition, we addressed unrelated allegations that the NRC and the Department of Energy representatives conducted meetings that were contrary to mandates regarding Government activities concerning the Yucca Mountain nuclear waste repository site and made decisions during these meetings from which Nevada representatives were unlawfully excluded.

We also engaged an independent contractor to conduct a survey of NRC's workforce to: (1) measure NRC safety culture and climate; (2) compare the results against NRC's 1998 Safety Culture and Climate Survey; and (3) to compare the results to Government and national benchmarks.

Additionally, pursuant to the requirements of the Government Information Security Reform Act, we completed a review of NRC's implementation of its Information Security Program, and in response to a congressional request, reviewed the adequacy of NRC's programs for handling and releasing sensitive documents.

A key goal of the OIG is to add value to NRC's regulatory and administrative programs. The OIG is encouraged by the Agency's actions to address OIG's findings, and to implement many of the recommendations made by my office. There are many examples of collaborative work between my staff and Agency managers in an effort to refine the effectiveness and efficiency of Agency programs.

While some challenges remain, the OIG supports the Agency's commitment to ensure the effective regulation of the Nation's civilian use of nuclear power and to the integrity of its programs that ultimately protect the health and safety of the public. OIG will remain steadfast in its resolve to assist the NRC in fulfilling this important mission.

Mr. Chairman and members of the subcommittee, this concludes my report on the activities of my office during the recent past. We would be pleased to answer any questions at this time.

Senator VOINOVICH. We reviewed your investigation into the events that took place at Davis-Besse and want you to know how much we appreciate your efforts.

I've got a couple of questions about your investigation. You have been staying in touch with what's been going on. Do you believe that the NRC is doing everything it can to prevent another incident like the one at Davis-Besse?

Mr. BELL. Senator Voinovich, I believe that NRC conducts the various activities as a regulator of nuclear power in a very competent manner. As shown, the events at Davis-Besse on occasion and the actions taken or not by licensees and the Agency can have a large cost consequence.

This is not new in the history of the nuclear industry or NRC. What seems to be more prevalent today in both business and regulatory environments without regard to the venue are financial considerations. Typically a decision has an associated cost and it is taken into consideration. In today's regulatory environment, the NRC is readdressing what is meant by an acceptable level of risk and its relationship to safety.

Are we to the point where we are placing the public at an unacceptable risk? I don't believe so. The events at Davis-Besse and

possibly Indian Point, in my view, are instances where it appears that both the industry and the NRC allowed higher risks to be assumed. Should these risks be considered to be unacceptable? I cannot say.

The licensee and the NRC staff must answer that question. The NRC and its licensees must, however, eventually come to terms as to the appropriate balance among risks, safety, and any identified cost.

I believe that on balance, however, the incidents at Indian Point and Davis-Besse indicate that we are moving close to the undue risk line.

Senator VOINOVICH. Moving forward to the what?

Mr. BELL. The undue risk line. There's a line where we are moving closer to becoming unsafe.

Senator VOINOVICH. Your opinion is that when you have a balance, that you think that too often the considerations are financial and not enough toward to the risk involved; is that right?

Mr. BELL. No, I am saying that—we don't say that the cost outweighs the risk. What we are saying is that any time the risk changes, then there is a cost associated with the change that is involved. And that is when the decision has to be made. Whether you draw the line or you make them do the change, without regard to the cost, or you simply accept the risk. To me, there is a meeting point as to what is acceptable or not acceptable.

Senator VOINOVICH. Well, obviously from your report it was too much toward the financial and what you think needs to be done is that we need to move more toward the risk and if there is any opportunity for something to happen, that your opinion would be that they would take the action immediately and lessen the impact in terms of the financial impact that it would have; is that what you are basically saying?

Mr. BELL. Well, our report didn't say that it was only financially driven. What we said was that there was a decision to be made about the technical and safety issues and also the cost involved. We merely pointed out those two issues. I think the inference from the press was that of the Agency was leaning toward cost.

But our report did not conclude—in fact, that the Agency erred on the side of finances over safety. What we said was they looked at the financial burden that would result from an early shutdown. We said that those are the two issues that we pointed out. They made the decision; the Agency made the decision, sir.

Senator VOINOVICH. The interesting thing to me is that they based it on information that was not as good as it should be. Had they been given the best information, do you think that they would have made the same decision—to delay the shutdown of that facility?

Mr. BELL. Could I have Mr. Mulley go over just what we did in a capsulized form? Then I think that the question will answer itself. I would ask that Mr. Mulley take 2 minutes and explain the work that we did at Davis-Besse.

Senator VOINOVICH. Go ahead.

Mr. MULLEY. Mr. Chairman, in direct answer to your question—

Senator VOINOVICH. Give us your name again.

Mr. MULLEY. My name is George Mulley. I am the Senior Level Assistant for Investigative Operations at the OIG Nuclear Regulatory Commission.

As a direct answer to your question, I believe the answer is: Had the staff known what they know now, there is no doubt in our mind that they would not have allowed that plant to continue to operate. I think the findings of that inquiry show that the staff was weighing the financial impact of a plant shutting down several months early versus the information they had at the time.

I think this is a fact of life in the regulatory environment we have now. We don't believe that the staff gave undue consideration to the financial impact. There is some language in our finding that says the staff's decision to allow them to operate was driven by finances.

The point we're trying to make there is that on one side of the equation you have the technical status of the plant, you have some very serious questions being asked about the safety of the plant. Absent the financial considerations, we believe, FENOC would have shut down Davis-Besse right away. Financially that had an adverse impact.

We also believe the staff considered the financial question of how much it is going to cost to shut this plant down early. And as a result of that they continued to have a dialog with Davis-Besse to try to find a way to accommodate the situation they were in. It was going to cost a lot of money and they weren't prepared to conduct the inspection required by the bulletin prior to the middle of February sometime.

Senator VOINOVICH. So, if they had had better information, you believe that they would not have made the decision that they made?

Mr. MULLEY. I firmly believe that; yes, sir.

Senator VOINOVICH. And you would say that whenever they have such information and must make a decision like this, that they should do a better job of documenting their analysis and conclusions?

Mr. MULLEY. Yes, sir.

Senator VOINOVICH. If you are going to make a decision like this, you really must consider all the details—why you did it, etc. It's a very transparent process in the decisionmaking. The question of arbitrariness, or influence, or something like that can't be an issue in that equation.

Mr. MULLEY. Yes, sir. Our investigation shows that the decision made to allow the plant to continue to operate apparently was made—for lack of a better word—at an ad hoc meeting at the end of a day involving an unspecified number of unnamed people. There was no record of the meeting made, and there was no record until quite a bit later of the justification that the staff used for making the decision to accept the compensatory measures and to allow the plant to continue to operate.

Senator VOINOVICH. That's interesting. What I read—and I can't remember where—was that they had two meetings. They had one meeting in which a vote was taken not to do it. Then they came back and reconsidered it. So that would speak to more deliberation than what you have just indicated.

Mr. MULLEY. There was actually one meeting with two votes. A vote was asked initially of the staff as to whether or not the staff felt that the order should be issued. There was a majority of the staff that felt that the order should not be issued, that the compensatory measures were adequate.

But there were several people who disagreed. Then there was a second question based on the results of the first, were there any people who felt that there was an immediate safety concern if we allowed Davis-Besse to continue to operate until February 16th. The result of that vote was unanimous. Nobody felt that allowing the plant to operate an additional 6 weeks would result in an immediate public safety issue.

Senator VOINOVICH. How long did that meeting last, by the way?

Mr. MULLEY. We don't know, sir.

Senator VOINOVICH. I think it points out that if you are going to make that kind of decision, first of all, you have to have the best information, and then it has to be very well documented in all of its aspects.

Mr. MULLEY. Yes, sir.

Senator VOINOVICH. You were here for the first testimony?

Mr. BELL. Yes, sir.

Senator VOINOVICH. There are photos that were taken as part of the inspection of the facility in April and that they were included in the report of First Energy and that that report wasn't reviewed by the NRC. I found that you are just now looking into that. So it was just about 10 days or a week ago?

Mr. BELL. Yes, sir.

Senator VOINOVICH. I would be very interested in hearing the results of your report. It underscores how important it is that they overhaul the way they go about doing their job.

In addition, your report talked about the attitude—and I think that is so important about the employees. Again, 53 percent of the employees feel that it is safe to speak up in the NRC about safety issues. How does that compare with other organizations of this type? Do you have any statistical background on it? Is that 53 percent—

Mr. BELL. I can submit for the record the exact numbers, Mr. Chairman.

But we think that this 53 percent is above or equal to the national norm. As was noted, prior to 1998 when we did this first safety culture and climate survey, my office had no way of knowing or gauging what the safety culture and climate was. So we did the initial survey in 1998 and then subsequently did the follow up survey.

In all areas except two, there was significant improvement in all areas. I think in all except two areas, they either match or exceed the national norm benchmark that was set. So 53 percent in reality may be just a little over half, but compared to the national norm, the survey indicated that they were at norm or above the national norm in all categories except in the area of continuous improvement commitment.

Senator VOINOVICH. Turning to your investigation into improper contacts between the Department of Energy and the NRC over the licensing of Yucca, I recall that you determined that DOE and NRC



have not had any improper discussions on that matter? I want to clarify that because you brought that up because you were looking into it.

Mr. BELL. Yes, sir. Those allegations were that they were meeting illegally. As a matter of fact, those meetings were all sanctioned. The meetings that involved the DOE and NRC personnel in terms of the progress of applying for the licenses—those meetings were aboveboard and there was nothing improper about the meetings or the personnel involved in the meetings.

Senator VOINOVICH. In your opinion, is the NRC prepared to address the licensing request by the Department of Energy in an independent and impartial manner?

Mr. BELL. The license application is not due to NRC until really late 2004. We intend, next year, in our 2004 audit plan, to look at some of the audit areas for the licensing requirements. So I can't say today because we haven't done any work in that area because the license applications haven't been filed yet. So we really haven't done much work. We're really not in a position to answer that question today, sir.

Senator VOINOVICH. We had an inspector general when I was Governor of the State of Ohio. I talked to him a couple of years ago, since I have been in the Senate. He is doing something that I thought was very well taken; where they had issues that could be very controversial, an agency said to the inspector general, "You know, what are some of the things that we ought to be looking out for as we are going through this process. We want to avoid the appearance of unprofessionalism or impropriety when it's all over and done with. What are some of the things that we should be looking at?" This would be without having to compromise the independence of it.

I don't know what the final outcome of that was but he thought that was a healthy thing for him to be doing with some of these agencies to help avoid them making mistakes and doing things that are improper.

Mr. BELL. We have done a few things in terms of just being on the forefront of it. For instance, in our last information and planning conference that we do every year, we highlighted the issues surrounding NRC's readiness to receive a potential license application from DOE. We used NRC employee panels at our information conference to discuss the information and receive information on the things that were going to be perceived as happening that we needed to get involved in. So the dialog stages of it have begun to occur.

Senator VOINOVICH. So there is communication between you and the NRC?

Mr. BELL. We are having dialog; yes, sir.

Senator VOINOVICH. I have several other questions that I will want to ask of you. I will put them to you in writing. We would appreciate your responding to them.

Let me pose the same question that I asked the NRC: Do you have a budget that's adequate for you to do the job that you have been asked to do? Second, are you able to attract the competent people that you need? You are overseeing an agency that is pretty sophisticated in terms of what they are doing and the quality of the

people that are working there. In terms of your operation, to start off with, are you able to attract the competent people that you need to get the job done? What does your budget look like?

Mr. BELL. In the budget for 2004, we have asked for \$7.3 million and 47 FTEs, which for us would represent three new positions. What we had envisioned—there's a short answer and a long answer.

The short answer is that I feel we have very competent people. We have been fortunate to attract some of the best and the brightest. That's the good side. The down side sometimes is in the IG community, for various and sundry reasons, they don't like to travel. They come here and they don't like the work we are doing. Then they move on to other law enforcement agencies, or other IG agencies.

So sometimes, especially in the investigative side, there has been a little more turnover than I would like. The audit side for us has been a lot more stable. But the good part is that as people leave, I have always been able to get competent investigators to replace them.

The three new positions—and what we really intend to do, is to create a technical unit which will do more of the technical audits of the Agency. We are also in the process, and in the final review process, of hiring for the first time in my office an engineer, a person with an engineering background. That is just to help us to better understand the work that we are doing.

I mean, right now if we do an inquiry—and I think part of it will be my response to Senator Clinton, that the report that she has asked me for that I can't turn over to her yet is because it is incomplete. And it is incomplete because we have not finished the technical review end of it. It doesn't make sense for us to issue reports if they are technically flawed because we aren't the technical experts. So as we complete our work, we do have an outside contractor that we look to for the technical issues.

So hopefully when we bring on this field engineer position, we will be in a better position to do more in real time in terms of making sure what we farm out now is closer to what we think it is and what we are doing is right.

Senator VOINOVICH. That is a problem that runs through a lot of agencies is that too often they have to go out to third parties to do the work for them. They don't have people inside the Agency that can really fully comprehend what the private outfit is doing for them, or for that matter, monitor the work that the private outfit is doing.

So you are going to remedy that situation. That's good.

Mr. BELL. In the past when we have had investigations that involve anything technical, we have gone to the Agency and they have given us engineers on loan to actually help us with the technical aspects of investigations. When you do any inquiry, certainly to keep the independent aspect of it on the up-and-up, we have to make sure that we do have a real independent review of the work that we have done.

Senator VOINOVICH. Are there any other comments that you would like to make here this morning? It's almost afternoon.

Mr. BELL. No, sir.

Senator VOINOVICH. Well, I thank you for the good work that you have done. I am going to continue to stay in touch with your office in terms of Davis-Besse specifically.

Mr. BELL. Yes, sir.

Senator VOINOVICH. It's the 25th year anniversary of the inspector generals. The chairman of your group is over at the Department of the Federal Highway Administration. He came in to see me. I am going to be meeting with your group to talk about inspector generals and your challenges, and to see if there is something that through the other hat that I wear, I can be of help to you. Thank you very much.

Mr. BELL. We are planning a big celebration.

[Laughter.]

Senator VOINOVICH. Thanks, everybody, for being here.

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

[Additional statements submitted for the record follow:]

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

Mr. Chairman, I want to thank you for calling this hearing today.

Under former Chairman Jeffords leadership, this committee succeeded in passing important bipartisan legislation to improve the security of our Nation's nuclear facilities.

I look forward to working with the new subcommittee and full committee chairmen to move that legislation again quickly.

Today we are hearing from the Nuclear Regulatory Commission and the NRC Inspector General about general oversight issues at the NRC.

Until the last Congress it was rare to see the NRC here. Too often this Agency has not had the careful watchful eye of the Congress. That has led to some areas of real concern.

In the last few years, we have seen America's aging fleet of nuclear reactors show their technological wrinkles. These wrinkles are not just surface blemishes—they are signs of real problems ahead, unless we take a new aggressive approach to regulating our Nation's nuclear power plants.

To move in this direction, we need an agency that is committed to protecting the public health and safety—not just preserving the profit margins of the nuclear power industry.

These concerns are not only shared by the public, but even by NRC staff.

A recent report by the Inspector General and I hope he will elaborate on this in his own testimony paints a bleak picture of the NRC's commitment to safety and security.

According to that report, a survey conducted by the Inspector General found that a third of the Agency's employees question the Agency's commitment to public safety and nearly half are not comfortable raising concerns about safety issues within the Agency.

The survey also found that some NRC employees worry that safety training requirements for nuclear facilities are outdated and "leave the security of the nuclear sites . . . vulnerable to sabotage."

This is extremely troubling to me and I hope the commissioners will tell us what they are doing to reform this climate at the NRC.

I am extremely concerned by this, because the Nuclear Regulatory Commission now has the important responsibility of evaluating a license for the proposed nuclear waste repository outside Las Vegas, NV.

I expect the NRC to reverse its recent attachment to the proponents of repository and take a strong stand against the licensing of this facility.

So far the Federal Government has been more concerned with moving this process along than with making this process fair. The NRC is an independent regulator and should live up to its responsibility by taking the following concrete steps prior to the onset of a licensing proceeding:

First, the NRC should revise its regulations to ensure that the NRC staff acts as a party to the licensing proceeding. Although the NRC staff typically plays this role, there has never been a case in which the Federal Government has been the license applicant.

Second, the NRC should ensure that the members of the Atomic Safety and Licensing Boards used for the Yucca Mountain license review are selected from people outside the Agency with strict conflict of interest protections.

Finally, the NRC should strongly reaffirm the importance of maintaining the formal adjudicatory hearing process for the Yucca Mountain license. In particular, there should be full rights to cross examination and discovery.

Implementing these recommendations would go a long way to ensuring that the NRC holds a fair and balanced Yucca Mountain license review.

In the next few years, the NRC will be faced with some of its greatest challenges since the Three Mile Island accident.

There is a continuing need to upgrade security at nuclear power plants.

There will potentially be a license review of the proposed nuclear waste repository outside Las Vegas, NV.

There will be a need to reexamine the safety of our Nation's aging fleet of nuclear reactors.

I hope the NRC officials here today will give us some understanding of how they plan to meet these challenges in a way that puts the health and safety of our citizens foremost.

I look forward to hearing from Chairman Meserve, the other commissioners and the inspector general.

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

INTRODUCTION

Mr. Chairman, and members of the subcommittee, it is a pleasure to appear before you today with my fellow Commissioners to discuss the Nuclear Regulatory Commission's programs. We appreciate the past support that we have received from the subcommittee and the committee as a whole, and we look forward to working with you in the new Congress.

Mr. Chairman, I believe that fiscal year 2002 and the first 4½ months of fiscal year 2003 have been marked by significant achievements by our Agency in the face of great challenges. Let me enumerate a few of our achievements and the challenges. I will not go into great detail here because I submit a monthly report on our activities to you and our other authorization and appropriations subcommittees.

SECURITY

Over the past 17 months, the Commission has undertaken a comprehensive review of safeguards and security programs, in close consultation with the Department of Homeland Security and other Federal agencies and with significant involvement by State agencies. Out of that review has come a series of interim compensatory measures (ICMs) to strengthen nuclear security at power reactors, Category I fuel cycle facilities, decommissioning reactors, research and test reactors, independent spent fuel storage facilities, the two gaseous diffusion plants, and the conversion facility, as well as in the transportation of spent fuel. Last August we put in place a five-tier threat advisory system compatible with the Homeland Security Advisory System, and we have used that system twice, including just last week, to improve security measures at our licensed facilities. We have issued Orders to strengthen our access authorization programs at power reactors. We have drafted proposed Orders to strengthen guard training and address guard fatigue. We have provided revised design basis threats (DBTs) for comment to other Federal agencies, the States and cleared industry personnel. We have been conducting enhanced table-top security exercises at our reactor facilities and will by the end of this month begin enhanced force-on-force exercises at these facilities. We will conduct force-on-force exercises on a 3-year cycle and have requested the resources to do this in our fiscal year 2004 budget. We have defined the actions that we need to take to ensure better control of high risk radioactive sources containing radioactive isotopes of the most concern for potential use in a radiological dispersal device.

In short, we have a comprehensive and aggressive program to enhance security. Nuclear facilities had very significant security before September 11th and that security has been greatly strengthened in the aftermath of the attacks.

REACTOR SAFETY PROGRAMS

The past 17 months have seen the maturing of our new reactor oversight process. We and most stakeholders believe that this new program is a significant improvement over our old inspection, enforcement and assessment processes. One of its

strongest factors is its transparency and accessibility to members of the public. You will find on our web page performance indicators and inspection findings for every power reactor, as well as our current assessment of that reactor's overall performance. The transition to the new process has gone remarkably well, although it is still a work in progress on which we will make further improvements.

Overall the industry has performed very well. As of the end of 2002, there was one plant designated for the highest level of scrutiny, the Cooper plant in Nebraska, and one other plant, the Davis-Besse plant in Ohio, which is effectively being treated similarly under our Manual Chapter 0350 restart process. The Cooper plant has received significant attention from both our Region IV and headquarters staffs, and we are confident that it is on a path to resolving long-standing problems.

The Davis-Besse plant has been our greatest recent challenge. Mr. Chairman, you have followed this matter in detail and we have had meetings about this. But let me try to summarize the issues for your colleagues.

In February 2001, Duke Energy, the licensee at the Oconee Nuclear Station, conducted a vessel head inspection at its Unit 3. The vessel head is the very large steel structure that serves as the top of the reactor pressure vessel. Duke found circumferential cracking in several control rod drive mechanism penetration nozzles within the vessel head. The NRC staff immediately recognized the significance of these inspection findings—the possibility of the ejection of the control rod drive mechanism—and initiated a series of actions to ensure that any similar cracking would be promptly detected and repaired at other pressurized water reactors.

The Davis-Besse plant was one which the staff and the industry believed potentially had high susceptibility to such cracking. The staff's August 2001 bulletin called for such plants to conduct vessel head inspections by December 31, 2001, unless a later time could be justified. Davis-Besse petitioned for additional time (until April 2002) to complete the inspection. The staff initially planned to issue a shutdown Order, but decided in November 2001 to grant Davis-Besse a 46-day extension on the vessel head inspection requirement. When Davis-Besse shut down and conducted the required inspection, they found no through-wall circumferential cracking in the CRDM penetration welds, but, as they began to repair the axial cracks, they unexpectedly found a large cavity in the carbon steel of the reactor head. The cavity had been caused by corrosion due to the presence of boric acid.

This degradation was preventable, and the licensee's actions leading up to the discovery of the corrosion in March 2002 are unacceptable. This discovery has led to investigations, which are ongoing, of the licensee's actions. It has led us to focus large inspection resources on the facility as it seeks to restart its reactor with a new vessel head. It has also caused the Commission's staff to focus on mistakes the NRC made in dealing with boric acid corrosion issues in the 1990's. In this connection, an internal lessons-learned task force has made a comprehensive set of recommendations related to inspections, assessment of operating experience, NRC staff training and experience, and the assessment of stress corrosion cracking, boric acid corrosion, and barrier integrity requirements. The NRC staff is now developing action plans to implement the highest priority recommendations on an aggressive schedule. On Tuesday of this week NRC issued orders to all 69 pressurized water reactor licensees outlining much tougher vessel head inspection requirements than those previously required by our regulations and by industry codes.

The Commission staff has devoted significant resources to the Davis-Besse plant and to the broader issues raised by the Davis-Besse incident. Davis-Besse will only return to operation after the staff is convinced through intensive inspections both that the plant is physically ready to operate, and, perhaps more importantly, that the safety culture at the plant, which the licensee has identified as the main root cause of this event, is on the path to recovery.

#### REACTOR LICENSING PROGRAMS

Let me now turn to significant achievements in our reactor licensing programs. Four reactors—Hatch 1 and 2 in Georgia and Turkey Point 3 and 4 in Florida—have had their licenses renewed to operate for 20 additional years. That brings the total of renewed licenses to ten. The staff currently has license renewal applications under review for 20 additional units. In every instance, the staff has met its timeliness goals in carrying out the safety and environmental reviews required by our regulations. This is truly a remarkable achievement. Today we expect almost all of the 104 reactors licensed to operate to apply for renewal of their licenses. The staff will continue to face an increasing workload in this area for the next several years as a bow wave of license renewal applications are submitted (echoing the bow wave of nuclear reactor construction in the 1970's).

The Commission also carefully reviews requests to raise the maximum power level at which a plant may be operated. These so-called power uprates range from requests for small increases based on better flowmeter technology, to large requests in the 15 to 20 percent range that require substantial hardware modifications at the plants. In all instances, staff must be satisfied that safety margins are maintained. In 2001 and 2002, the NRC approved 40 power uprates, which have added approximately 1800 megawatts electric to the Nation's generating capacity—the equivalent of two large power plants. We expect a similar pace of uprates in the years ahead.

The staff has similarly processed a series of license transfer applications that have allowed significant consolidation within the nuclear power industry. Most of these transfers were processed within a 6-month target, and, with one exception, the NRC was not the last regulatory agency to grant the necessary approval.

The NRC staff is preparing for potential new reactor and reactor design applications. The staff is on target to conduct a timely review of the Westinghouse AP-1000 design certification. It is preparing to review three early site permit requests expected later this year. The staff is also in the pre-application phase in dealing with potential design certifications for several additional reactor designs. And the staff is making infrastructure improvements to prepare for a potential combined operating license request. These are resource-intensive activities, and our fiscal year 2004 budget request provides for the necessary significant growth to meet this challenge.

#### MATERIALS PROGRAM

Mr. Chairman, the NRC in partnership with 32 Agreement States also conducts a comprehensive program to ensure the safe use of radiological materials in a variety of medical and industrial settings.

In the last 17 months, the Commission has completed a complex rulemaking on medical use of byproduct material—a rulemaking on which there was significant interaction with the Congress. We now face the challenge of implementing that rule and assuring that compatible regulations are adopted in the 32 Agreement States.

The Commission has also been implementing a major rule change relating to large fuel cycle facilities. This rule requires the submission of an integrated safety assessment for all new licenses and license renewals that applies risk insights to the regulation of these facilities. Several major licensing reviews underway or soon to be submitted will test the new rule. Substantial new construction of fuel cycle facilities is planned in the near future, including a mixed oxide (MOx) fuel fabrication facility in South Carolina as part of the Department of Energy's program to dispose of excess weapons grade plutonium, as well as two new gas centrifuge enrichment facilities, one in Tennessee proposed by Louisiana Energy Services (LES) and one in Ohio proposed by U.S. Enrichment Corporation. The staff is also providing support to our Russian colleagues at Gosatomnadzor (GAN) regarding the licensing of a Russian MOx facility, which will have an identical design to the U.S. facility.

#### NUCLEAR WASTE PROGRAMS

The Commission staff has made progress on a wide array of programs relating to the safe disposal of nuclear waste.

A central focus of this program is the preparation for the Department of Energy's (DOE's) application to construct a high-level waste repository at Yucca Mountain, NV. That application is currently expected in December 2004. Over the past year the staff has issued a draft Yucca Mountain Review Plan for public comment and has conducted numerous public meetings with DOE in anticipation of its application. Preparations are now underway for the conduct of the licensing proceeding, including the creation of an information technology system to handle the large number of complex documents that will be involved. This licensing proceeding will present the NRC with a formidable challenge. The technical issues involved will be substantial. Moreover, no single NRC decision or set of decisions since the response to Three Mile Island accident is likely to be scrutinized as closely as those concerning this one-of-a-kind facility.

Yucca Mountain is by no means the sole activity in our waste program. The Commission staff has a substantial effort underway in the area of dry cask storage of spent reactor fuel. Storage and transport casks continue to be certified. Independent Spent Fuel Storage Installations (ISFSIs) continue to be licensed. The Atomic Safety and Licensing Board panel will soon issue its final decisions on the Private Fuel Storage (PFS) ISFSI in Utah. And the Surrey ISFSI in Virginia is the lead facility for ISFSI license renewal. Indeed, our workload related to ISFSIs and dry cask storage in general will increase substantially in the years ahead based on licensees' plans to adopt dry cask storage at their sites. We also have a major research pro-

gram underway, the Package Performance Study (PPS), which will conduct full-scale integrity tests of both truck and rail casks under stringent conditions. The PPS test protocols are being issued for public comment.

The NRC staff is also continuing to make significant progress in decommissioning contaminated sites. The staff has identified several issues requiring Commission attention, particularly in the area of making the restricted release and institutional control provisions in our license termination rule work in practice.

#### HUMAN CAPITAL

The NRC is very dependent on a strong and capable work force for the effective execution of its activities. The Commission's human capital planning integrates strategies for finding and attracting new staff, and for promoting employee development, succession planning, and retention. In this connection, the Commission has developed and implemented a strategic workforce planning system to identify and monitor its human capital assets and needs. This includes the development of an agency-wide online skills and competency system which is used to identify gaps in needed skills and to address critical skills shortages; the development of a restructuring initiative to more closely align NRC's organizational structure with its human capital goals; and the development of a web-based vacancy announcement system that includes online application, rating, ranking, and referral features. The Agency has also implemented two leadership competency development programs to select high-performing individuals and train them for future mid-level and senior-level leadership positions. In addition, the Agency has continued to support its fellowship and scholarship programs and identified a significant number of highly qualified entry level candidates through participation in recruitment events and career fairs.

NRC is utilizing a variety of incentives to remain competitive with the private sector. So far we have been successful in attracting new staff, particularly at entry-levels. Nonetheless, it is likely to become more difficult for the Commission, as for many Federal agencies, to hire and retain personnel with the knowledge, skills, and abilities to conduct the safety reviews, licensing, research, and oversight actions that are essential to our safety mission. Moreover, the number of individuals with the technical skills critical to the achievement of the Commission's safety mission is rapidly declining in the Nation, and the educational system is not replacing them. The maintenance of technically competent staff will continue to challenge governmental, academic, and industry entities associated with nuclear technology for some time to come.

#### BUDGET

The NRC has proposed a fiscal year 2004 budget of \$626.1 million. This represents approximately a 7 percent (\$41.1 million) increase over the fiscal year 2003 budget. This budget proposal will allow the NRC to continue to protect the public health and safety, promote the common defense and security, and protect the environment, while providing sufficient resources to address increasing personnel costs and increasing workloads. Approximately 25 percent of the budget growth is for personnel costs, primarily the pay raise that the President has authorized for Federal employees. The remaining increase serves several other needs. First, the NRC's proposed fiscal year 2004 budget supports enhanced security efforts to protect public safety and security. Toward that end, the NRC is strengthening its safeguards and security programs for nuclear reactors, other NRC-regulated facilities, and radioactive materials. Second, the proposed budget addresses the growing interest in building new nuclear power plants. It strengthens the capability of the NRC to conduct reviews of new reactor designs and early site permit applications. Third, the budget enables the Agency to process the increasing flow of applications for license renewal. Finally, with Presidential and congressional approval of the proposed Yucca Mountain site for a HLW repository, the pace of the NRC's high-level waste program is increasing, and the proposed budget enables the NRC to continue its preparations for the license application that the U.S. Department of Energy plans to submit in late 2004. In short, we have important new work and there is strong justification for the budget increase that we seek.

#### CONCLUSION

Mr. Chairman, the NRC obviously has many important initiatives underway. This reflects the reality that we are in a time of striking change. Fortunately the NRC is up to the challenges before it.

I have had the privilege of leading the Commission for over 3 years. I can tell you that I am proud of the people with whom I work. They are dedicated to ensur-

ing the safe use of nuclear technology for the benefit of the Nation. You will not find a more technically competent and hard-working workforce in the Federal Government. Thanks to them the NRC has accomplished many milestones during my tenure and will accomplish many more after I step down.

We appreciate the opportunity to appear before you today. My colleagues and I welcome the opportunity to respond to your questions.

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RESPONSES BY RICHARD MESERVE TO ADDITIONAL QUESTIONS FROM SENATOR INHOFE

*Question 1.* What commitment has the NRC made to new reactor licensing? What are the challenges faced by the NRC, and what is being done to address those challenges in order to ensure a successful program?

Response. The NRC has made a substantial commitment to new reactor licensing. In response to increased industry interest in the possible of deployment of new nuclear plants, the NRC assessed its technical, licensing, and inspection capabilities, and identified enhancements to support new reactor licensing. The results of this assessment are contained in SECY-01-0188, "Future Licensing and Inspection Readiness Assessment (FLIRA)," dated October 12, 2001. To implement recommendations developed as a part of FLIRA, the NRC has provided resources to the Office of Nuclear Reactor Regulation (NRR) to perform new reactor licensing work and has created the New Reactor Licensing Project Office (NRLPO) in NRR to serve as the coordinating organization for new reactor licensing issues. In addition, the Office of Nuclear Regulatory Research (RES) has focused resources on the early identification of potentially important safety issues, and associated development of the technical basis for resolution of identified issues. In addition to providing this support to the new reactor licensing work, RES is leading NRC's effort for the pre-application review of non-light-water reactor (non-LWR) designs, such as General Atomic's high-temperature gas-cooled (HTGR) Gas Turbine-Modular Helium Reactor (GT-MHR) design. Non-LWR HTGR designs present new technical issues and challenges that are different from current generation commercial reactors, and will require an infrastructure of expertise, analytical tools and facilities to meet these new challenges. The NRC is also examining its licensing processes for new reactor design in 10 CFR Part 52 to determine if changes can be made to increase the effectiveness and efficiency of those processes.

The short-term challenge facing the NRC is resolving issues associated with the review of design certification applications, early site permit applications, and for making infrastructure improvements to ensure that tools, information, and regulatory processes are in place for the efficient, effective, and realistic review of new site and reactor applications. Particularly challenging are design concepts that are significantly different from current U.S. operating reactors. The staff is currently reviewing Westinghouse's AP1000 design certification application and has six other designs in various stages of pre-application review. In addition, pre-application discussions are taking place in preparation for three early site permit (ESP) applications expected later this year. The NRC has also begun developing a construction inspection program for advanced reactors. The status of this work and its associated challenges are provided to the Commission and the public in the form of semi-annual updates to the FLIRA report mentioned above. The latest update, titled, "Semi-annual Update of the Status of New Reactor Licensing Activities," dated January 8, 2003, is publicly available at the following address: <http://www.nrc.gov/readingrm/doc-collections/commission/secys/2003/secy2003-0005/2003-0005scy.html>.

The fiscal year 2004 budget request currently provides for the resources to perform this work. However, it should be noted new reactor licensing work has been very difficult to budget because of the high uncertainty associated with some of the applications. Although the NRC certified three advanced reactor designs in the 1990's, the industry's interest in new plant deployment appeared to decline, and the NRC's effort similarly decreased. About 2 years ago, industry activities associated with design certifications and early site permits increased and the NRC initiated the activities described above. If industry's plans change drastically and more work is identified, the Commission would have difficulty accommodating this new work without a supplemental budget increase. This is because the requested budget for fiscal year 2004 does not have enough resources to allow funds to be redirected to support additional new reactor licensing work without impacting other high priority work such as security, license renewal and power uprates.

The longer-term challenge is ensuring that the staff has the adequate skills to perform the reviews and inspections to support new reactor licensing. To address this challenge, NRC's Office of Human Resources has developed a plan of action for



implementing a Strategic Workforce Planning process designed to maintain the NRC's core capacity and allow it to support new reactor licensing activities.

*Question 2.* Could you tell us what has been done in the past year, and what is planned for the future, with regard to cask testing? There was recently a tunnel fire in Baltimore—and that has raised some concerns with the durability of spent fuel casks. What would have been the impact of the Baltimore tunnel fire on a cask?

Response. Since 1999, the NRC has been conducting a Spent Fuel Transportation Package Performance Study, which among other things is planning full scale testing (both impact and fire tests), in order to demonstrate the predictive capability of computer models and the performance of currently licensed spent fuel cask designs. Physical tests are currently planned in the 2004–2005 timeframe. The staff recently issued NUREG–1768 “United States Nuclear Regulatory Commission Package Performance Study Test Protocols,” which outlines how the staff is proposing to test a selection of spent fuel transportation casks. Much of the supporting analyses and development of the protocols report occurred in the past year. The staff is seeking public comments of the test protocols until May 30, 2003.

NRC certification requirements for transportation cask designs (10 CFR Part 71) include an evaluation of cask response to a hypothetical fire accident. Separately, the NRC, working with the National Transportation Safety Board and the National Institutes of Sciences and Technology, has completed an extensive assessment of the fire that occurred in the Howard Street tunnel (the Baltimore Tunnel Fire).

The fire conditions were analytically imposed on a currently licensed spent fuel transportation cask. This assessment evaluated the response of a transportation cask to that thermal environment inside the tunnel. Staff provided their evaluation of a hypothetical event involving a spent fuel transportation cask in SECY–03–0002, dated January 6, 2003. The staff concluded that there would have been no failure of the structural components of the transport cask, no failure of the canister containing the spent fuel inside the transportation cask, and no release of radioactive materials from this analyzed event.

*Question 3.* I know that much is being done to ensure that a Davis-Besse type of situation doesn't occur again—i.e., reactor heads. But what is the NRC doing to address other “passive” areas in order to avoid, not necessarily a repeat of Davis-Besse, but a similar, unacceptable situation from occurring? What sort of changes in oversight is the NRC considering with regard to those “passive” areas?

Response. In March 2002, the NRC issued Bulletin 2002–01, “Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity.” With the then-newly discovered severe boric acid corrosion of the Davis-Besse head, the purpose of this bulletin was to obtain information related to the integrity of the reactor coolant pressure boundary including the reactor pressure vessel head and the extent to which inspection programs for boric acid corrosion satisfy applicable regulatory requirements. The bulletin notes that “this information will also be used by the NRC staff to determine the need for, and to guide the development of, additional regulatory actions to address degradation of the reactor pressure vessel head and/or other portions of the reactor coolant pressure boundary. Such regulatory actions could include regulatory requirements for augmented inspection programs . . .” Based, in part, on the review of the information provided under this bulletin, on February 11, 2003, the staff issued Orders to all licensees of pressurized water reactors establishing interim inspection requirements for reactor pressure vessel heads. The staff is continuing to study the need for additional regulatory requirements for inspections of other passive areas in the reactor coolant pressure boundary.

Regarding changes in oversight being considered for other passive areas, the staff is developing inspection guidance that will provide for timely, periodic inspection of plant boric acid corrosion control (BACC) programs. This task will take into account any new BACC inspection requirements that the staff may develop and is scheduled to be completed early in 2004.

In internalizing lessons learned from Davis-Besse, the staff will pursue improvements to requirements pertaining to reactor coolant system leakage such that licensees properly discriminate between unidentified and identified leakage, and that better on-line enhanced leakage detection systems may be installed to detect leakage rates significantly less than one gpm. The staff will also develop inspection guidance that includes action levels to trigger increasing levels of NRC interaction with licensees to correspond to increasing levels of RCS unidentified leakage.

*Question 4.* Chairman Meserve noted that the NRC has been working on the design basis threat (DBT) in consultation with the Department of Homeland Security, the Central Intelligence Agency and other Federal entities. Could you please de-

scribe what is involved in that consultation and what role these agencies are playing in the review of the design basis threat?

Response. The NRC reviewed the DBTs in the context of the Agency's comprehensive re-evaluation of its safeguards and security programs. This review included significant input from the Intelligence Community, the Departments of Defense, Energy, and Homeland Security, the Federal Bureau of Investigation, other Federal agencies, and State officials. We rely upon the Intelligence Community and other Federal agencies to provide information on the targets, tactics, training, and capabilities of terrorists and other adversaries who may pose a threat to nuclear facilities and activities. They also describe the domestic and international threat environment. NRC then determines the subset of the domestic threat against which NRC operating power reactor licensees and Category I fuel cycle facility licensees should have primary responsibility to defend. In making this determination, NRC assesses the limits on the adversary characteristics against which a private sector guard force can reasonably be expected to defend. In early January 2003, NRC sent a staff draft of the DBT attributes to these Federal agencies as well as authorized State officials, and met with them to discuss their comments on the draft attributes. The Commission issued Orders on April 29, 2003, revising the DBT both for nuclear power plants and for Category I fuel cycle facilities.

*Question 5(a).* The President's Budget for fiscal year 2004 includes a proposal to extend the NRC user fee at 90 percent of the NRC's overall budget. As you may know, this committee considered and passed the initial legislation that has led to a gradual reduction of the user fee from 100 percent to 90 percent. At the time that legislation was being considered, the NRC used data to show that approximately licensees directly benefited from 90 percent of the NRC's budget which was the basis for that legislation. Has the NRC conducted a similar analysis this year to determine the cost of "indirect" services that the NRC provides? Can the NRC provide such information to the committee?

Response. Yes. This year, NRC has estimated the cost of "indirect" services that were included in the analysis based on the 90 percent recovery rate. Examples of activities included in the estimate were international activities, Agreement State oversight, and fee exemptions for nonprofit educational institutions. The estimate for fiscal year 2003 is \$55.1 million, which is approximately 10 percent of the NRC's fiscal year 2003 total budget authority less funding from the Nuclear Waste Fund.

The analysis supporting the 90 percent recovery rate was completed prior to the events of September 11th, which ultimately resulted in the NRC funding homeland security activities. As discussed in our answer to the question concerning fee recovery for homeland security funding, we believe there are activities associated with homeland security that may be of "indirect" benefit to NRC licensees and, therefore, should be funded off the fee base for fairness and equity reasons similar to those identified in the previously referenced analysis.

*Question 5(b).* The President's Budget for fiscal year 2004 includes a proposal to extend the NRC user fee at 90 percent of the NRC's overall budget. As you may know, this committee considered and passed the initial legislation that has led to a gradual reduction of the user fee from 100 percent to 90 percent. At the time that legislation was being considered, the NRC used data to show that approximately licensees directly benefited from 90 percent of the NRC's budget which was the basis for that legislation. Does the NRC believe that additional security-related costs should be added to the fee base?

Response. The Commission does not support additional homeland security-related costs being included in the fee base. Subsequent to the events of September 11th, the NRC has received additional funding for homeland security-related activities from two different sources. For fiscal year 2002, the NRC homeland security activities were funded from the General Fund of the U.S. Treasury. That is, the funds were not added to the fee base. The President's fiscal year 2003 budget proposed that NRC's additional security-related costs continue to be financed from the General Fund, as they were in fiscal year 2002. The Congress did not adopt this proposal in its fiscal year 2003 appropriations and funded NRC's homeland security activities from the fee base. The President's fiscal year 2004 budget includes the NRC costs for homeland security in the fee base, consistent with the final fiscal year 2003 appropriations.

As you stated in your question, the President's Budget for fiscal year 2004 includes a proposal to extend NRC user fee at 90 percent of the NRC's overall budget. As indicated in my earlier response, the resulting 10 percent of the fee base will only cover the costs of the pre-September 11th activities that cause fairness and equity concerns. We believe there are homeland security activities that cause fairness and equity concerns similar to those that were addressed in the previous 10 percent.

Thus, these costs should not be added to the fee base. To accomplish this, the NRC user fees need to be reduced beyond the proposed 90 percent of NRC's overall budget.

An example of the homeland security activities that cause fairness and equity concerns is our efforts to improve control and accountability of radioactive sources. These activities are designed to prevent the potential diversion and misuse of radioactive sources in radiological dispersal devices (RDD) and, therefore, enhance national security by safeguarding the entire citizenry of the United States. NRC's safeguards and security activities for RDDs will also support Agreement States and international efforts, similar to certain safety activities that are already excluded from fees as a result of the previous legislation.

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RESPONSES BY RICHARD MESERVE TO ADDITIONAL QUESTIONS FROM  
SENATOR JEFFORDS

*Question 1.* Commissioner Merrifield testified that the Commission has a design basis threat out for interagency review, and that the Commission is currently receiving comments and expects to have "completed that work by the end of March." Does this mean the Commission expects to have comments back by the end of March, or that the revision of the design basis threat will be completed by the end of March?

Response. On April 29, 2003, the Commission issued Orders revising the design basis threat (DBT) both for nuclear power plants and for Category I fuel cycle facilities; the attached press releases describe these actions.

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U.S. NUCLEAR REGULATORY COMMISSION, NRC PRESS RELEASE NO. 03-052,  
APRIL 29, 2003

NRC NEWS

NRC APPROVES CHANGES TO THE DESIGN BASIS THREAT AND ISSUES ORDER FOR  
CATEGORY 1 FUEL CYCLE FACILITIES

The Nuclear Regulatory Commission, after extensive deliberation and interaction with stakeholders, has approved changes to the design basis threat (DBT) for two category 1 fuel cycle facilities in Virginia and Tennessee that possess enriched uranium used in nuclear reactors. The changes will be issued by an Order amending the design basis threat for theft or diversion of strategic quantities of special nuclear material.

The Order, which is being issued today, will be effective immediately but allows a transition period for full implementation. With this action completed, the Commission expects that there will be a period of regulatory stability during which the two licensees can consolidate this and previously ordered security enhancements.

The details of the design basis threat for theft or diversion are confidential national security information and will not be released to the public. Today's Order builds on the changes made by the Commission's August 21, 2002 Order which made interim security enhancements at these two facilities. The DBT was arrived at after discussions with cleared stakeholders from other Federal agencies, the two State governments and the two licensees.

Under NRC regulations, category 1 fuel cycle facility licensees must ensure that the physical protection plan for each site is designed and implemented to provide high assurance in defending against the DBT to ensure adequate protection of public health and safety and common defense and security. Changes in those plans will now be made and submitted to NRC for approval.

"With the completion of this Order," Chairman Nils J. Diaz said, "the public should be reassured that the nation's category 1 fuel facilities are well-secured against potential threats. The NRC intends to continue working closely with the Department of Homeland Security and other Federal agencies, as well as with State and local law enforcement and emergency planning officials to ensure an overall integrated approach to the security of these critical facilities."

U.S. NUCLEAR REGULATORY COMMISSION, NRC PRESS RELEASE NO. 03-053,  
APRIL 29, 2003

#### NRC NEWS

##### NRC APPROVES CHANGES TO THE DESIGN BASIS THREAT AND ISSUES ORDERS FOR NUCLEAR POWER PLANTS TO FURTHER ENHANCE SECURITY

The Nuclear Regulatory Commission, after extensive deliberation and interaction with stakeholders, has approved changes to the design basis threat (DBT). The Commission believes that the DBT represents the largest reasonable threat against which a regulated private guard force should be expected to defend under existing law. These changes will be issued by Order.

In addition, the Commission has approved the issuance of two other Orders to nuclear plants regarding work hours, training, and qualification requirements for security personnel to further enhance protection of public health and safety, as well as the common defense and security. The three Orders will be issued to all 103 operating commercial nuclear power plants.

The three Orders, which are being issued today, will be effective immediately, but allow transition periods for full implementation. With these actions, the Commission expects that there will be a period of regulatory stability during which operating commercial plant licensees will be able to consolidate these and previously ordered security enhancements.

These Orders, in combination with the recently issued Order in the area of access authorization, enhance the already strong defense capability at these sites using three interdependent elements directed to best protect the public, with the appropriate resources placed at the right places. These elements are:

the revised Design Basis Threat and associated defensive capabilities derived from previous measures that the Commission directed; tighter work hour control and more robust training requirements for security personnel, to increase their capability to respond to threats; and enhanced access authorization controls to ensure all plant personnel with access to critical areas have had the most rigorous background checks permitted by law.

The Order that imposes revisions to the Design Basis Threat requires power plants to implement additional protective actions to protect against sabotage by terrorists and other adversaries. The details of the design basis threat are safeguards information pursuant to Section 147 of the Atomic Energy Act and will not be released to the public. This Order builds on the changes made by the Commission's February 25, 2002 Order. The Commission believes that this DBT represents the largest reasonable threat against which a regulated private security force should be expected to defend under existing law. It was arrived at after extensive deliberation and interaction with cleared stakeholders from other Federal agencies, State governments and industry.

Under NRC regulations, power reactor licensees must ensure that the physical protection plan for each site is designed and implemented to provide high assurance in defending against the DBT to ensure adequate protection of public health and safety and common defense and security. Extensive changes in those physical protection plans will now be made and submitted to NRC for approval.

The second Order describes additional measures related to security force personnel fitness for duty and security force work hours. It is to ensure that excessive work hours do not challenge the ability of nuclear power plant security forces to remain vigilant and effectively perform their duties in protecting the plants. However, the Order does include provisions to allow increases in work hours under certain conditions, once specific requirements are met. The NRC developed this unclassified Order through a public process. The NRC carefully considered comments from power reactor licensees, security force personnel, public citizen groups and other agencies in reaching its final decision. The Order will be publicly available on NRC's website at: <http://www.nrc.gov>.

The third Order describes additional requirements related to the development and application of an enhanced training and qualification program for armed security personnel at power reactor facilities. These additional measures include security drills and exercises appropriate for the protective strategies and capabilities required to protect the nuclear power plants against sabotage by an assaulting force. This Order requires more frequent firearms training and qualification under a broader range of conditions consistent with site-specific protective strategies. The details of the enhanced training requirements are safeguards information, and will not be released to the public. As with the DBT Order, the Commission solicited com-

ments on a draft training Order from cleared stakeholders, including security personnel and took those comments under consideration in reaching its final decision.

“With the completion of these complementary Orders,” Chairman Nils J. Diaz said, “the public should be reassured that the nation’s nuclear power plants are well-secured against potential threats. The NRC intends to continue working closely with the Department of Homeland Security and other Federal agencies, as well as with State and local law enforcement and emergency planning officials to ensure an overall integrated approach to the security of these critical facilities.”

*Question 2.* Commissioner Merrifield testified that the Commission has a design basis threat out for interagency review, and that the Commission is currently receiving comments and expects to have “completed that work by the end of March.” What is the nature of the document NRC has out for agency review? Is it an advanced notice of proposed rulemaking? Is it a draft proposed rule?

Response. Although the DBTs are generally described in 10 CFR 73.1, the specifics of the DBTs which are most important in the review process are not described in the regulations due to the classified or sensitive unclassified information involved. The specific information regarding adversary characteristics of the DBT for radiological sabotage—such as the size, capability, and weaponry of the attacking force—is classified as Safeguards Information under Section 147 of the Atomic Energy Act of 1954, as amended. The specific information regarding adversary characteristics of the DBT for theft or diversion of formula quantities of strategic special nuclear material is confidential national security information. The NRC staff sent a draft set of these adversary attributes to authorized stakeholders on January 2, 2003, in the form of a letter. The NRC focused its effort on the specific adversary attributes and would not put those in the regulation because of their sensitive nature. The Commission issued Orders revising the DBT both for nuclear power plants and for Category I fuel cycle facilities on April 29, 2003, to ensure that necessary additional measures are implemented in the near future. In the longer term, the Commission intends to proceed with rulemaking, as appropriate.

*Question 3.* Commissioner Merrifield testified that the Commission has a design basis threat out for interagency review, and that the Commission is currently receiving comments and expects to have “completed that work by the end of March.” Please identify all agencies and persons to whom the Commission has provided this document that is currently out for agency review?

Response. The staff transmitted the January 2, 2003 letters to the Central Intelligence Agency, Defense Intelligence Agency, Department of Homeland Security, the Federal Bureau of Investigation, and Departments of Energy, Defense, and State and the U.S. Coast Guard, to licensees that operate nuclear power reactors and Category I fuel cycle facilities, and to officials in States where these nuclear facilities are located. We have also provided or discussed the attributes with staff from congressional oversight committees, Homeland Security Council, Duke Cogema Stone and Webster (applicants for Mixed Oxide fuel fabrication facility) and Westinghouse (vendor for new reactor design review). On April 29, 2003, the Commission issued separate Orders revising the DBT for both nuclear power reactors and for Category I fuel cycle facilities.

*Question 4.* Does the NRC intend to revise its design basis threat regulations, and if so, when does it anticipate completing that revision?

Response. Yes. The Commission issued Orders revising the DBT both for nuclear power plants and for Category I fuel cycle facilities on April 29, 2003. Rulemakings to modify unclassified DBT descriptions in 10 CFR Part 73.1 will follow, as appropriate, but would not discuss any of the detailed adversary characteristics contained in the DBTs.

*Question 5.* Commissioner Diaz testified as follows: “In reality, we do have a de facto new design basis threat that we established a year ago. So although it was a DBT, the security requirements are for a much larger DBT than the older one. So a de facto DBT has existed for almost a year.” Please explain the nature of this new design basis threat. Is it consistent with the Commission’s existing design basis threat regulations? If not, please explain what the “new design basis threat” is. Please also explain how its implementation is consistent with the NRC rules and the requirements of the Administrative Procedures Act.

Response. The Commission issued Orders on April 29, 2003, revising the design basis threats (DBT) both for nuclear power plants and for Category I fuel cycle facilities. Chairman Diaz’ comment referred to the fact that the NRC issued Orders on February 25, 2002, to implement interim compensatory measures (ICMs) to pro-

vide protection against an adversary force and characteristics exceeding the DBT in place prior to September 11. The ICMs identified protective measures to be implemented prior to the Agency formally redefining the DBT because we had not established the entire set of parameters needed for long term decisionmaking and there was an urgent need for heightened security, with uniform and enforceable requirements. The details and attributes of a postulated threat were not provided, yet the security requirements established significantly enhanced defensive capabilities to match new threat conditions.

Although the approximate size and attributes of the threat were not formally described in our Orders, the licensee actions that we required were based on our preliminary assessment of the new threat "licensees must defend their facilities against." The DBT in existence before April 29 combined with the "size and attributes of the threat" implied by the new compensatory measures could be considered to have established a defacto-DBT. The defacto interim DBT for power reactors was used since last July in the enhanced adversary characteristics used in the tabletop security exercises which resumed in July 2002 and in the force-on-force security exercises which resumed in February 2003.

The Commission established revised DBTs with its Orders of April 29, 2003, requiring licensees to revise their physical security and safeguards contingency plans to comply with the revised DBT defined in the Order. The issuance of Orders is authorized by the Commission's broad authority in the Atomic Energy Act for the protection of the public health and safety and the common defense and security, as well as by the Commission's implementing regulations. These Orders comply with all applicable provisions of the Administrative Procedure Act, including providing the opportunity to request a hearing. However, the specific details of the design basis threat for radiological sabotage are Safeguards Information and will not be released to the public.

*Question 6.* Chairman Meserve testified that the NRC has a task force that is developing guidance on how to decide whether material should be withheld from public disclosure. Please provide information as to any guidelines or criteria this task force has developed.

Response. Two days after the terrorist attacks, the Defense Department requested that NRC shut down its web site because they believed it contained sensitive information that could be helpful to terrorists. For several days, our web site only made limited, basic information available on employment, public meetings, news releases and links to our electronic document system. We recognized our web site had to be restored quickly, or public confidence in our Agency could be negatively impacted. However, we also needed to strike a balance between the public's right to know and the need to protect sensitive information. We convened a Task Force made up of representatives from our program offices to develop criteria and guidance for the staff so that they could make informed decisions about the specific types of information that could be released to the public. Coincidentally, at the time of the terrorist attacks, we were undertaking a major re-design of our web site. The new site was designed to improve the public's access to information, make navigation easier, and give greater visibility to frequently accessed information. General information that was not considered sensitive was incrementally restored to our web site under the new design. After several months of deliberation, the Task Force recommended to the Commission that certain criteria should be applied when making a determination about the availability of certain documents. Guidance was issued to the staff in June 2002, to assist them in making decisions on when to withhold certain documents from the public, including posting them to the web site or entering them into our ADAMS public library. The general thrust of the criteria was that information should be withheld only if its release could provide a clear and significant benefit to an adversary in a potential attack. The scope of the criteria was limited to documents that will be generated in the future, and not on existing documents that could not be retrieved because they were housed in locations beyond our control. The guidance suggested withholding plant-specific information such as site-specific security measures, access controls, construction details, or information useful to breach key barriers. The Task Force remains available for specific issues that may arise from the guidance issued to the staff.

*Question 7.* Will these general criteria or guidance be made available to the public? If so, will NRC issue a regulation? If not a regulation, what other form will this public release take? If this general guidance will not be provided to the public, please explain why not.

Response. The criteria have been made available to the public through the voting record on COMSECY-02-0015. We are not planning to issue regulations to our licensees regarding these criteria. However, we are preparing a Regulatory Issues

Summary, which is a guidance document for licensees, so they can protect certain information when transmitted to the NRC. Further, Section 147 of the Atomic Energy Act provides the statutory basis for Safeguards Information, a category of sensitive unclassified information that is protected from public disclosure.

*Question 8.* Is the NRC also ensuring that potentially affected private citizens, or non-governmental groups whose mission it is to address safety or security issues at commercial nuclear power plants, will, if they obtain appropriate clearances, have input into NRC decisionmaking, including changes to the design basis threat? If so, how is NRC accomplishing this? If not, why is NRC not doing this?

Response. The NRC is very interested in the views of all its stakeholders. This was true before September 11, 2001, as evidenced by the long history of public meetings and extensive information available to the public, and it remains true today. Since September 11, 2001, however, control of sensitive information has been particularly important and protecting sensitive information has been a major concern for all government agencies.

Prior to gaining access to sensitive information, NRC needs to determine that an individual has a "need to know" the information and the necessary background check or clearance. Even if a person has the appropriate clearance, they may not have a "need to know". NRC determines "need to know" in 10CFR Part 25 as a "determination made by an authorized holder of classified information that a prospective recipient requires access to a specific classified information to perform or assist in a lawful and authorized governmental function under cognizance of the Commission."

This new sensitivity to access to information has reduced the opportunity for the public to access as much information as in the past. However, for adjudicatory proceedings, the Commission's rules of practice specify how interested parties may obtain access to restricted data and national security information. There have been limited situations in specific hearings where appropriately cleared individuals representing private citizens or non-governmental organizations have been granted access, with restrictions, to specific sensitive information. In an ongoing proceeding concerning the application to construct a Mixed Oxide (MOx) Facility at Savannah River, the NRC's Licensing Board found recently that the intervener had made a sufficient showing for its expert witness and counsel of record to make specific applications for security clearances.

The NRC has sought other means of maintaining a dialog with the non-industry stakeholders. One way this is done is to invite representatives of State and local government agencies, including local law enforcement officials, to attend meetings on security issues and provide their perspective.

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RESPONSES BY RICHARD A. MESERVE TO ADDITIONAL QUESTIONS FROM  
SENATOR VOINOVICH

*Question 1.* One of the most disturbing pieces of this whole Davis-Besse incident is that as the investigation progresses it continues to unravel surprises. This latest development that I read about in the newspaper on the emergency cooling system is most troubling. Now—have you found out everything that happened at Davis-Besse? Can you assure me that there will be no more surprises here?

Response. While the majority of problem discovery activities are complete at Davis-Besse, design review activities are ongoing which may reveal additional deficiencies requiring correction.

In response to the discovery of the reactor head degradation at Davis-Besse in March 2002, the NRC established a special Oversight Panel to guide the NRC's response to the situation and provide oversight for Davis-Besse's recovery efforts. The Panel, led by senior managers from the Region III and Headquarters offices, is ensuring that FirstEnergy Nuclear Operating Company identifies all causal factors contributing to the head degradation, bounds the scope of the impact of those causal factors, and implements lasting corrective action before any restart and future operation of the reactor.

In August 2002, the Oversight Panel issued its first Checklist of required actions to be accomplished prior to restart based on the inspection findings and root cause analysis issues identified at that time. Since then, we have revised the Checklist to include new areas of concern such as the radiological protection program and containment sump modifications. The Restart Checklist is used to provide a concise summary of the status of major activities necessary for closeout before the Panel could consider a request for restart of the facility. The checklist is updated as significant new issues emerge.

In May 2002, the licensee submitted its first Return-to-Service Plan, which identified key improvements necessary for restart. This plan considered NRC-identified input as well as issues that FirstEnergy determined were necessary in order for the plant to run reliably in the future. Actions included replacement of the reactor vessel head, correcting degraded conditions within the containment due to boric acid corrosion, verifying the design of key safety systems, improving safety programs and improving the management and human performance of the site workforce. This area, which involves safety culture aspects of the organization, will require long term continued emphasis to ensure lasting corrective action. The NRC Restart Checklist and FirstEnergy Return-to-Service Plan are aligned through the Oversight Panel activities.

The NRC is also addressing the issue of potential wrongdoing on the part of FirstEnergy managers and staff. The NRC Office of Investigations has an ongoing investigation into matters at Davis-Besse. The Oversight Panel is closely monitoring the investigative activities and will ensure appropriate actions are completed before restart is considered.

*Question 2.* I believe that you have copies of several pictures that were distributed during the hearing of the corrosion on the reactor heads at Davis-Besse. It is my understanding that these pictures were taken as part of an inspection of the facility in April 2000. I further understand that these photographs were included in a report that FirstEnergy filed with NRC in 2000, that the NRC did not review that file, and that the NRC regularly fails to review these types of reports. I also understand that the corrosion present in these pictures was present and visible during multiple inspections as far back as 1996 and that it was noted in multiple reports as far back as 1996. If this is true, then I think that this Committee may have to take a very, very serious look at some fundamental overhaul of the NRC's day-to-day oversight at these nuclear facilities. Is it true that these pictures were contained in a report submitted to the NRC that was not even looked at until after the reactor was shut down?

Response. The photograph of the reactor vessel head and service structure depicting corrosion trails on the reactor head streaming from openings in the base of the service structure was not submitted to the NRC.

A power reactor licensee normally generates several thousand internal "condition reports" each year. A condition report describes a deficiency in plant equipment or programs and is used to track corrective actions and ensure adequate resolution of the problem. One condition report generated in April 2000 contained as an attachment the referenced photograph. The routine NRC inspection program examines a sample of onsite activities including condition reports. That specific condition report existed in the files at Davis-Besse, but was not selected as part of a routine baseline inspection sample.

An allegation has been made that the picture was shown to an NRC inspector in 2000. This is a matter that is under investigation by the Office of the Inspector General.

*Question 3.* What have you done to sanction the people involved in the day-to-day oversight of Davis-Besse as a result of this (vessel head corrosion) discovery?

Response. The NRC views the problem that arose at Davis-Besse as an institutional failure and not a failure of the particular individuals. There has been no sanction of any NRC individual as a result of the reactor pressure vessel head degradation at Davis-Besse. We are taking action to correct this institutional failure.

*Question 4.* What changes are you making or contemplating to the overall day-to-day oversight at nuclear power plants (as a result of Davis-Besse)?

Response. The Davis-Besse Lessons Learned Task Force identified a number of program and implementation issues that may have contributed to the inability of the Agency to detect the issues at Davis-Besse in a more timely manner. The Commission approved proceeding with the recommendations identified for action by senior NRC management. The Task Force's recommendations are currently being evaluated and implemented; changes to the Reactor Oversight Process (ROP) will be made as appropriate. For example, the NRC plans to evaluate how to improve the use of industry operating experience in the ROP, and will evaluate the need for additional or improved barrier integrity performance indicators. An evaluation will also be performed to determine whether a more direct method is needed to assess and react to performance weaknesses in the cross-cutting areas of human performance, problem identification and resolution, and safety conscious work environment. The results of this evaluation will be communicated to the Commission in the staff's semi-annual status reports on the Davis-Besse Lessons Learned Action Plans, as well as annual ROP self-assessment report for Calendar Year 2003.



*Question 5.* The Lessons Learned Report cites significant problems with the safety culture at Davis-Besse. A report written by the Institute of Nuclear Power Operations states—and I am going to quote from the report here—“A major contributor to this event was shift in the focus at all levels of the organization from implementing high standards to justifying minimum standards. This reduction in standards resulted from excessive focus on meeting short-term production goals, a lack of management oversight, symptom-based problem-solving, justification of plant problems, isolationism, ineffective use of operating experience, and a lack of sensitivity to nuclear safety. The lessons learned at Davis-Besse are universal in nature and should be used by all nuclear stations.” A report by the NRC’s Inspector General showed that only 53 percent of NRC employees feel that it is “safe to speak up in the NRC” about safety issues. That report also states that almost one-fourth of NRC employees do not believe that “the NRC’s commitment to public safety is apparent in what we do on a day-to-day basis.” These statistics are frankly unacceptable. As I mentioned in my opening remarks, the No. 1 priority for the NRC needs to be the safety of the public. What is the Commission doing to change things and instill a more appropriate level of safety culture in both the NRC’s operations and in the facilities that you regulate?

*Response.* Regarding safety culture in the NRC’s operations, the NRC Executive Director for Operations established a Task Group to review the Inspector General’s 2002 Safety Culture and Climate survey results, identify the key areas for improvement, and identify potential options for improvement. The Task Group is working to develop a better understanding of the survey results including the factors that influenced them. This will allow the Agency to identify and implement improvements in an effective and efficient manner, while continuing to build on those improvements already underway. We are committed to assuring a culture at the NRC where employees feel free to speak about a variety of topics, and where differing opinions are not only welcome, but are encouraged.

The current policy of reviewing safety culture is specified in the staff requirements memorandum (SRM) to SECY-98-059, “Proposed Options for Assessing the Performance and Competency of Licensee Management.” The SRM approved current staff practice of inferring licensee management performance from performance based inspections, routine assessments, and event follow-up. In addition, the SRM to SECY-98-176, “Proposed Options for Assessing a Licensee’s Safety Conscious Work Environment,” approved the staff’s assessment of the safety conscious work environment, part of safety culture, on a case-by-case basis while encouraging licensees to use third parties to survey their own safety conscious work environment. The SRM also allowed the staff to develop and implement additional guidance and training of inspectors in support of more complete and consistent program implementation. More recently, in the SRM to SECY-02-0166, the Commission unanimously reiterated its opposition to pursuing rulemaking for oversight of a safety conscious work environment. The Commission believed that such a rule would be subjective in nature, difficult to inspect and enforce, would likely intrude on management prerogatives and might well cause a chilling effect on the most effective safety culture element—the commitment of management to a safety conscious work environment. In light of efforts by foreign regulators to measure and regulate safety culture, at the Commission’s direction the staff is monitoring developments abroad so as to ensure that the Commission remains informed about these efforts and their effectiveness. In particular, because subjectivity is a principal concern of the Commission regarding the direct regulation of safety culture, the staff will monitor efforts to develop more objective measures that can serve as indicators of possible problems with safety culture.

Finally, the Commission is supportive of the efforts of the Institute of Nuclear Power Operations (INPO) to address issues relating to safety culture through its monitoring of licensees.

*Question 6.* The Lessons Learned Report—produced by an NRC Task Force—states that staffing and resources problems existed at Davis-Besse. That report states that “Regional staffing and resource issues challenged the NRC’s ability to provide effective regulatory oversight of (Davis-Besse).” The report goes on to list recommendations to address what looks like to me to be a human capital problem. How much of a role did NRC’s human capital problems play in this incident, and what can be done to address it? Do you have enough people with the right skills to accomplish your mission?

*Response.* Human capital problems were not a significant contributor to the failures of the NRC to discover the reactor head degradation earlier at Davis-Besse. Throughout this period, both resident inspector positions at Davis-Besse were staffed with the exception of 11 months (December 1998 to October 1999), when

there was only one resident inspector assigned to the site. The inspection program consists of a baseline level of inspection effort plus a range of additional inspection effort to be expended based on the assessment of licensee performance. While the NRC accomplished all required inspections at Davis-Besse throughout this time period, the level of effort was lower than the average facility due to the Agency's perception of good licensee performance.

As presented in the Lessons Learned Task Force report, there were four major areas requiring NRC improvement:

- Assessment of Stress Corrosion Cracking of Reactor Materials
- Assessment of Operating Experience, Integration of Operating Experience into Training and Review of Program Effectiveness Reviews
- Evaluation of Inspection, Assessment and Project Management Guidance
- Assessment of Barrier Integrity Requirements.

In accordance with Lessons Learned Task Force Recommendation 3.3.5(3), the NRC will monitor resident inspector staffing levels and develop human resource strategies to be more effective during inspector turnovers; specifically, the time between a resident inspector leaving a plant site and the arrival of the new inspector.

All inspections to ensure the health and safety of the public at the U.S. nuclear power facilities continue to be accomplished. The NRC has undertaken aggressive action to maintain the high quality and capability of its workforce, including hiring experienced professionals and highly qualified entry level staff.

*Question 7.* I am extremely concerned that in light of the situation at Davis-Besse and the Task Force's report, that the NRC's budget for fiscal year 2004 proposes to cut funding for inspections. This basically means that there will be less people out there doing what we need them to do—inspecting. Could you please comment on the rationale behind this request?

Response. The NRC budget for the entire Reactor Inspection and Performance Assessment program in fiscal year 2003 is \$73,610,000, with \$73,172,000 requested for fiscal year 2004, for a net decrease of \$438,000. Although there was a net decrease in this budget area for fiscal year 2004, resources for the specific activities involved in the inspection and assessment of licensee performance were increased from fiscal year 2003. These increases were made to reflect several lessons learned and inspection program enhancements that were deemed to be appropriate based on the first couple of years of Reactor Oversight Process (ROP) implementation. However, in addition to providing the resources for the conduct of inspections, this budget area encompasses the many different work activities necessary to develop and maintain the inspection program. This includes, for example, program development and oversight by Headquarters staff and the time necessary for regional inspection staff to prepare for inspections and then document the results. With the ROP reaching its fourth year of implementation, program development costs have decreased as would be expected and certain efficiencies have been realized in many of these areas, resulting in less resources being required to support the inspection program. Overall, these reductions in the program support areas offset the increases in resources for conducting actual inspection and assessment, and resulted in the overall net decrease for this budget area. The result is that there will not be a negative impact on the number of inspectors performing the important mission of inspecting the nation's nuclear facilities.

In addition, the fiscal year 2004 budget was prepared before the full extent of Davis-Besse lessons learned were known to the staff and could be reflected in the budget for inspection and assessment. The fiscal year 2004 budget has recently been reviewed by the staff with Davis-Besse lessons learned and inspection follow-up activities factored in. The staff expects that this will result in an increase in budgeted resources above what was initially requested for the Reactor Inspection and Performance Assessment program in fiscal year 2004.

*Question 8.* As I stated in my opening statement at the hearing, this facility (Davis-Besse) needs to get back online, but in a manner that will absolutely protect the people of Ohio. Please comment on what the NRC has specifically done and will do to meet that objective.

Response. The NRC clearly defined those actions necessary to be taken to ensure safe restart and operation of the Davis-Besse facility.

Shortly after discovery of the reactor head degradation, the NRC issued a Confirmatory Action Letter documenting specific commitments including the commitment of FirstEnergy to obtain NRC approval prior to restart of Davis-Besse. On April 29, 2002, the NRC established a special Oversight Panel, led by senior managers from Region III and Headquarters, to coordinate and oversee NRC activities necessary to address repairs and performance deficiencies at the plant in order to assure that it can operate safely. The Oversight Panel established a Restart Check-

list that contains those actions necessary to be resolved before restart of Davis-Besse would be considered. The Oversight Panel has been directing NRC activities to provide effective assessment of Davis-Besse recovery actions and regularly reports its progress publicly.

The Oversight Panel will remain in place as long as necessary, typically 6–12 months following restart, to ensure that corrective actions are and continue to be effective. At the point in time that the Oversight Panel is satisfied that the corrective actions at Davis-Besse are lasting and that the routine reactor oversight program is sufficient to provide effective oversight, the Panel will recommend to NRC senior management that Panel activities be terminated.

*Question 9.* The NRC asked for a significant increase in fiscal year 2004 budget for homeland security. What does the NRC plan to do with this proposed funding increase?

Response. NRC's homeland security resources increased by approximately \$17.5 million in fiscal year 2004. This results from an increase of \$27 million in expanded efforts for controlling high-risk radioactive sources, conducting more frequent force-on-force exercises, reviewing revised nuclear power plant security plans, conducting research on mitigation strategies for potential vulnerabilities, and developing and completing regulatory improvements associated with homeland security initiatives. These increases are offset by a reduction of approximately \$9.5 million resulting from the completion of vulnerability assessments for storage and transportation activities, and completion of NRC security enhancements for the NRC buildings.

The \$27 million increase includes \$11.6 million for enhancing the tracking and regulatory control of high-risk radioactive materials. This effort involves accountability of radioactive sources within the Nation's borders and the export and import of high-risk sources. The objectives are to prevent the potential use of high-risk radioactive sources in a radiological dispersal device and to increase safety and security by reducing the number of incidents involving inadequate control of high-risk sources both domestically and internationally. This will reduce the potential malevolent use of radiological material, which could result in significant public health and safety or environmental impacts. Resources for force-on-force exercises at NRC licensed facilities increased approximately \$7.0 million. The NRC staff has started conducting force-on-force exercises, using enhanced threat capabilities, and plans to conduct these exercises at each nuclear power plant on a 3-year cycle compared to the previous 8-year cycle. Resources for conducting research on mitigation strategies for potential vulnerabilities increased approximately \$6.0 million due primarily to risk-informed vulnerability assessments and mitigation analyses at nuclear power plants to various modes of potential attack, spent fuel pool analyses, and support for radiological dispersal device research. An increase of \$2.4 million will be used to support necessary regulatory improvements related to homeland security initiatives, including rulemaking and guidance development. The staff will also require significant additional resources to review the revised security plans at all operating commercial reactor and Category I fuel cycle licensees, which will be submitted in fiscal year 2004 pursuant to Orders issued by the Commission on April 29, 2003.

*Question 10.* As you know, the NRC was not moved into the Department of Homeland Security. How does the Commission intend to work with the newly created Department of Homeland Security? What steps are you currently taking in this regard?

Response. The NRC has already established a cooperative working relationship with the Department of Homeland Security (DHS). We continue to make progress in enhancing coordination and collaboration with DHS and other agencies on matters of homeland security. The Office of Nuclear Security and Incident Response was formed in April 2002 to unite the Agency's safeguards and security functions with the incident response program. NRC has established a full-time liaison with the Department of Homeland Security (DHS), as well as strengthened existing coordination with other agencies and organizations, such as the Homeland Security Council, Federal Bureau of Investigation, and the Central Intelligence Agency. We provide Situation Reports (SITREPS) to DHS twice a day, promptly exchange sensitive event information with DHS as incidents occur, coordinate changes in threat levels, and hold frequent meetings with DHS to discuss policy issues and status of activities of mutual interest. In addition, NRC currently participates in numerous inter-agency working groups, that are hosted by or involve participation by DHS, such as the working group that conducted the operational plan for Operation Liberty Shield.

*Question 11.* I have read in the newspapers over the last month that two nuclear plants, one in Tennessee and other in Texas, have also discovered coolant leaks that

were causing corrosion. This seems to be an industry-wide problem. Can you tell me about the situation at these plants and what the NRC is doing to prevent anything like what happened at Davis-Besse from occurring anywhere else?

Response. Both of the nuclear power facilities in Texas, Comanche Peak Unit 1, and the South Texas Project Units 1 and 2, have conducted visual inspections of their reactor vessel heads during their respective maintenance outages in Fall 2002 and early Spring 2003. Inspections revealed small reactor coolant leaks from the canopy seal welds associated with the control rod drive mechanisms. While not considered reactor pressure boundary leakage, these leaks sometimes result in the accumulation of boric acid on the reactor vessel heads. The licensees repaired the leaks and cleaned the boric acid deposits on the reactor vessel heads. Contrary to media reports of corrosion to the Comanche Peak Unit 1 vessel head, these leaks did not cause corrosion of either of the reactor vessel heads.

The NRC resident inspection staffs at these facilities and others nationwide have increased their oversight of licensee inspections and have implemented NRC inspections pursuant to an Order that was issued to all pressurized water reactors that required more comprehensive and frequent vessel head inspections to better assure that the situation that occurred at Davis-Besse does not occur at these plants.

In January 2003, the Tennessee Valley Authority (TVA), the licensee for Sequoyah Unit 2, identified an accumulation of boric acid deposits on insulation covering the reactor pressure vessel head (RPVH). These deposits were the result of a leaking pipe fitting connecting two sections of a reactor vessel instrument line that was disconnected and then later reconnected during the plant's May 2002 outage. Leakage from the fitting seeped through a seam in the insulation onto the RPVH. While cleaning the area of the leakage, the licensee observed minor corrosion on the RPVH and determined that the affected area was small. The measurements taken indicated that the corroded area was in the shape of a groove less than half an inch wide, about five inches long, and at most about one-eighth of an inch deep. The RPV head is at least six inches thick in this area.

The NRC performed an onsite review of the corroded area and the piping fitting that had leaked, and reviewed the licensee's technical information and initial evaluations. Based on the cleaning of the corroded area, removal of the boric acid from the area, repair of the leaking pipe fitting, verification of no other leaking components onto the RPVH, and review of the technical information and initial evaluations, the NRC staff identified no immediate safety concerns.

Subsequently, the NRC issued Information Notice 2003-02, "Recent Experience with Reactor Coolant System Leakage and Boric Acid Corrosion," on January 16, 2003, to notify the nuclear operating plant industry of the potential of leakage from fittings disconnected and reconnected during reactor vessel head assembly and disassembly.

In March 2003, during inspections required by an NRC Order issued to the industry on February 11, 2003, TVA identified boric acid deposits on the Sequoyah Unit 1 RPVH. The licensee conducted examinations to determine if RPVH nozzle cracks could have been the cause of this leakage. To date, the licensee has not confirmed any nozzle cracking and believes the source of the boric acid deposits was from leakage of control rod drive canopy seals, which was corrected years ago. After cleaning up the deposits, no corrosion of the RPV head was identified. Currently, the NRC staff is independently assessing the adequacy of the Sequoyah licensee's inspections and analysis.

As mentioned previously, the NRC issued an Order amending the licenses of all pressurized water reactor facilities in February 2003. This Order requires inspections that are more reliable than the previously required visual inspections in determining the presence of reactor pressure vessel head cracking or leakage. As utilities look harder as a result of this Order, there may be more reported occurrences of discovered cracks or even minor leakage. Supplemental inspections performed in response to NRC Bulletins issued in 2002 identified no significant findings of RPVH leakage. The intent of the increased vigilance in this area is to identify minor problems now so that they may be corrected. Longer-term rulemaking is currently planned to incorporate improved vessel head inspection requirements into the NRC's regulations.

*Question 12.* The NRC has stated that it did not consider corrosion of the reactor head a threat prior to the discovery in March 2002 because officials at the Davis-Besse facility informed them that the heads were regularly cleaned and inspected during the refueling shutdowns prior to the discovery. Obviously, this was not the case. What changes are the NRC making to ensure this never happens again?

Response. To address the immediate concerns raised by the increasing discovery of problems with reactor pressure vessel heads (RPVHs) at pressurized water reac-

tors (PWRs), the NRC issued a series of bulletins and other communications. The long-term resolution of this issue is expected to involve changes to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) and will involve changes to the NRC regulations in 10 CFR 50.55a, "Codes and Standards." Although licensees' actions to date have provided reasonable assurance of adequate protection of public health and safety for the near-term operating cycles, the NRC deemed it appropriate to establish a clear regulatory framework pending the revision of 10 CFR 50.55a. Therefore, the NRC issued order EA-03-009 on February 11, 2003, that imposes requirements for PWR licensees to inspect RPVHs and related penetration nozzles pending the revision of 10 CFR 50.55a. The NRC issued Temporary Instruction 2515/150 for inspectors to assess the adequacy of licensees' RPVH and vessel head penetration inspection activities.

The NRC inspection program guidance will be revised to ensure more effective review and evaluation of licensee's programs for boric acid corrosion control (BACC). Staff will collect information available worldwide on boric acid corrosion of pressure boundary materials and operating experience feedback to date for developing the inspection guidance. The revised inspection guidance will provide guidance to determine the adequacy of BACC programs (timely and periodic inspection of PWR plant BACC programs, implementation effectiveness, ability to identify leakage, and adequacy of evaluation of leaks).

*Question 13.* I understand that several contract workers at Davis-Besse tested positive for radiation exposure when they reported to work at their next assigned nuclear plant last February (some contract employees travel from facility to facility to fulfill their contracts). I also understand that these employees did not test positive for radiation exposure when they left Davis-Besse. Has the NRC determined how these workers were exposed and how that exposure was not detected at Davis-Besse when they left the facility?

*Response.* On February 20, 2002, several contract workers were both internally and externally contaminated with radioactive material while installing equipment inside the steam generators at Davis-Besse. The licensee specified radiological controls for the work which were based on historical data for the radiological conditions inside the steam generators. However, the radiological conditions were significantly different during February 2002. There were several indications that radiological conditions were more severe warranting additional precautions for worker safety. However, the licensee failed to adequately evaluate those indications prior to worker entries into the steam generators.

NRC review of the circumstances surrounding the steam generator work revealed that Davis-Besse staff failed to adequately assess the radiological conditions in the workers' environment, failed to provide appropriate protection for those workers, failed to adequately monitor worker exposure to radiation and failed to prevent the release of minute radiological particles that the workers carried offsite. The workers were not overexposed and the offsite release of materials did not pose a health risk to the public.

*Question 14.* This situation at Davis-Besse has provided plenty of ammunition to those who oppose nuclear energy. I agree with them that this is a serious matter, but I still believe that nuclear power is an important and necessary part of our energy future. What does the NRC plan to do to increase public confidence in the safety of nuclear energy following this event?

*Response.* The NRC actively seeks, includes and values stakeholder input in key activities. Enhancing public confidence in the NRC as a strong and credible regulator is one of our four Performance Goals. Following the Davis-Besse event, the NRC responded to the vessel head degradation with a series of actions, including evaluating the event, forming a special oversight panel, and commissioning an independent Lessons Learned Task Force to assess its regulatory processes. Each of these actions was implemented with significant stakeholder input and communication.

The Oversight Panel has established a Communications Plan and a Communications Team to ensure that the activities of the NRC and those of Davis-Besse are made known to interested members of the public. Examples of public access to information regarding Davis-Besse include a monthly newsletter and an extensive web site. The Panel has conducted over 40 public meetings. Typically there are more than one hundred individuals attending the meetings. Outside call-in telephone lines are arranged for some meetings and most meetings are transcribed, with the transcripts posted on the NRC web page. Extensive information about the Davis-Besse reactor vessel head damage and the ensuing activities is also available on the NRC web site. In addition, State of Ohio personnel regularly accompany NRC inspectors and the Ottawa County Administrator is a member of FirstEnergy's Re-

start Oversight Panel. The Commission met publically with FirstEnergy and the NRC staff to discuss the facility status, followed by a public forum with key interested stakeholders.

The NRC's Lessons Learned Task Force conducted an independent evaluation of the NRC staff's regulatory processes related to assuring reactor vessel head integrity in order to identify and recommend areas of improvement applicable to the NRC and/or the industry. The scope of the task force effort included: reactor oversight process issues, regulatory process issues, research activities, applicable practices used in the international community, and the NRC's generic issue process. The Task Force invited input at public meetings on its charter and publicly presented its results. The Commission received the results of the Task Force efforts at a public meeting, followed by a public forum on the issues with key interested stakeholders, and directed the staff to proceed with implementing the recommendations identified for action by senior NRC management.

The NRC has also initiated multiple activities at reactors similar in design to Davis-Besse to ensure that the issues that caused the problems at Davis-Besse were not occurring at other facilities. The development of these actions included public dialog and input from all concerned stakeholders. The NRC's public web site includes direct links to extensive information regarding the NRC's safety initiatives with these other reactors.

The NRC has received positive comments regarding the amount of information provided to the public and the openness with which the NRC conducts its activities. Our redesigned web site is easier to navigate, provides more information, and is more user-friendly than before—making it easy to access information regarding this and other safety issues.

The NRC intends to continue placing a high priority on public involvement and will ensure that Davis-Besse can operate safely before the plant is permitted to restart.

*Question 15.* Senator Voinovich would like information provided regarding the new reactor oversight process.

Response. The current reactor oversight process for power reactors uses a variety of tools to monitor and evaluate the performance of commercial nuclear power plants. The process is designed to focus on those plant activities most important to safety.

The NRC uses inspection findings together with objective performance indicators to assess plant performance. An "action matrix" provides consistent agency action based on licensee performance in seven cornerstones of safety: (1) initiating events, (2) mitigating systems, (3) integrity of barriers to release of radioactivity, (4) emergency preparedness, (5) occupational radiation safety, (6) public radiation safety, and (7) physical protection.

The Performance Indicators and the assessment of inspection findings are posted to the NRC web site, using the color notation of their significance—green, white, yellow, or red. Green indicates that performance is acceptable while red represents unacceptable performance. The NRC addresses any significant performance issues, as necessary, and follows up any other performance issues until they are corrected.

The results of reactor oversight are documented in inspection reports and performance indicators. Inspection reports, correspondence, and other information about the performance of reactor facilities are available to the public in the Agency's document management system (ADAMS). Inspection reports, issued on each inspection, are also available on the reactor oversight process web page.

The NRC's Office of Public Affairs has issued NUREG-1649, "Reactor Oversight Process," dated July 2000, to provide a plain English description of the ROP to our internal and external stakeholders. To view this publication go to: <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1649/r3/index.html>.

In addition, general information about the ROP can be found at NRC's public web page ([www.NRC.gov](http://www.NRC.gov)). From the NRC home page, click on the task-bar tab for "Nuclear Reactors." That will bring up a page with a light-blue "Quick Links" box on the right. Follow the "Reactor Oversight Process" links to obtain specific information about the program.

There are three primary pages that will provide you with different types of information that can be accessed by typing in addresses as follows:

(1) For plant performance information and a high-level summary of the ROP, go to:

<http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/index.html>

(2) The ROP Program Documents page provides a consolidated listing and access to specific program guidance for the key areas of the ROP, including performance indicators, inspection, and assessment. This page also provides links to the policy

documents for the ROP, including the annual ROP self-assessment Commission papers.

To access this page, go to:

<http://www.nrc.gov/reactors/operating/oversight/program-documents.html>

(3) For a more detailed look at documents pertaining to the inspection of NRC-licensed activities, including the inspection procedures used by our inspectors in the field, go to the Inspection Manual at:

<http://www.nrc.gov/reading-rm/doc-collections/insp-manual/>

To download a copy of the attached NUREG-1649, go to:

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1649/r3/sr1649r3.pdf>

*Question 16.* Senator Voinovich would like human capital information: what is the NRC's capacity to keep staff on board and ability to hire the people the Agency needs?

Response. Over the last 2½ years, NRC has implemented a strategic workforce planning process that provides for the systematic and ongoing identification of critical skills gaps and the application of a variety of human capital strategies to close them. With an active partnership between program managers throughout the Agency and human resources staff, NRC is currently enjoying success in hiring and retaining the staff it needs to carry out its vital mission. However, the Agency also recognizes that it must continue to understand and address its strategic human capital management challenges, and it would welcome any assistance Congress could provide to train, hire, and retain individuals with critical skills needed by NRC.

To aid retention, NRC provides a high quality work environment and a variety of incentives and flexibilities. With a focus on continual learning, the Agency supports training and development programs in technical, non-technical, and leadership skills. The human capital budget also funds graduate and senior fellowships, retention allowances, relocation bonuses, and quality of work life programs. Attrition, including losses due to retirement, remains relatively low. Since fiscal year 2000, attrition has ranged between 5 and 6 percent; while in the late 1990's, it jumped to 7.5 percent. Clearly, the economy and the opportunities in the labor market affect employees' decisions about continued government employment.

Through an aggressive, targeted recruitment program for diverse entry-level and experienced candidates, NRC is currently competing successfully to acquire the skills it needs. The Agency is benefiting from the condition of the economy and from NRC's varied recruiting, staffing, and compensation tools. By reinvigorating the cooperative education program and strategically using recruitment bonuses, undergraduate scholarships, and the summer hire program, the Agency has been able to attract and hire entry-level staff. By using a flexible compensation system and recruiting tools such as Monster.com, NRC has had recent success in attracting and hiring experienced staff with specialized technical skills. Over the last year, the Agency hired 261 new permanent employees. Of these new employees, 67 highly qualified engineers and scientists joined the Agency's Nuclear Safety Intern Program.

NRC actively monitors the relevant labor market and the results it is achieving in the strategic management of human capital. The Agency recognizes that external factors, including the economy, impact the strategies it must use to hire and retain the critical technical talent it needs. Through an ongoing planning, implementation, and assessment process, NRC is working to assure that it will continue to maintain the technical competence of its workforce. To help maintain and continue these recent successes, NRC would welcome and strongly support human capital provisions of the type reflected in S. 1591, which was introduced by Senator Voinovich in the last session of Congress.

*Question 17a.* Senator Voinovich asked: What resources should have been in place at Davis-Besse?

Response. Davis-Besse is a single unit pressurized water reactor facility. NRC policy dictates that inspection for this type of facility be performed by both onsite resident inspectors and region-based specialist inspectors. The complement of onsite resident inspectors includes two full time positions—a qualified senior resident inspector and a qualified resident inspector. Specialist inspections are conducted by drawing upon various regional staff inspection resources; these inspections are managed by a Projects Branch in the regional office. Staffing for a typical projects branch includes a Branch Chief and a Project Engineer. Ordinarily a projects branch is responsible for two to three reactor sites.

*Question 17b.* What was in place?

Response. Since at least 1996, at least one fully qualified NRC inspector has always been assigned to the Davis-Besse site. For most of that time, both of the resident inspector positions were staffed with qualified inspectors. One exception involved a 20-month period (November 1998 to July 2000) when only one fully qualified resident inspector was assigned. For an 11-month period (November 1998 to October 1999), there was one resident inspector assigned to the site. When the second resident reported to the site in October 1999, he was partially qualified until July 2000, when he achieved full qualification. Periodic specialist inspections were also conducted at Davis-Besse.

The regional Branch Chief position has always been filled, but the Project Engineer position was not permanently staffed from June 1997 through June 1998, and then again from September 1999 through May 2000. This latter position is not required. In the NRC's independent "Lessons Learned Task Force" report, it was noted that the cognizant Branch Chief for Davis-Besse focused a large amount of his time on the Clinton nuclear facility, a plant in the same branch as Davis-Besse that was under the NRC's intensive "Manual Chapter 0350" Oversight Process. The same report indicated that senior regional management determined that the assigned Branch Chief provided effective oversight of all of his assigned plants.

*Question 17c.* What is the NRC doing to ensure that a similar problem isn't occurring elsewhere?

Response. NRC policies specify that two resident inspectors be assigned to Davis-Besse. As noted above, there was a 20-month period of time when only one fully qualified inspector was assigned to the facility. In response to an NRC "Lessons Learned Task Force" recommendation, the NRC will now more closely monitor resident inspector staffing levels and develop human resource strategies to better manage inspector turnovers. Specifically, NRC policy will be revised and effort will be focused on minimizing the time between when a resident inspector leaves a plant site and when a fully qualified replacement inspector arrives. In addition, the NRC Executive Director for Operations recently issued guidance that permits the assignment of additional inspectors to a site beyond the planned staffing in anticipation of staff turnover. Additional long-term improvements are also being reviewed and evaluated as part of the ongoing, continuing improvement process.

Prior to implementation of a revised Reactor Oversight Process in 2000, the NRC inspection program permitted significant variability in the application of inspection resources, largely based on assessed facility performance. The total inspection hours at Davis-Besse for the 3 years of 1998, 1999, and 2000 were lower than most other single unit sites, although the hours were consistent with the facility performance documented through the previous reactor oversight program. The new program mandates that a minimum baseline inspection effort be completed at every nuclear facility.

All inspections at U.S. nuclear power facilities to ensure the health and safety of the public continue to be accomplished. The NRC has undertaken aggressive action to maintain the high quality and capability of its workforce, including hiring experienced professionals and highly qualified entry level staff.

*Question 18.* Provide specific examples of how the NRC is doing things differently as a result of employees coming forward with recommendations on how to do the job better.

Response. This is an important subject that we continue to work on to achieve further improvements. There are a variety of forums and processes, both formal and informal, available to NRC employees who wish to make recommendations on improvements and efficiencies with regards to policy and safety issues or administrative matters. We have encouraged the staff to engage managers in informal, personal feedback in the course of their daily business. Two of the more formal processes for providing feedback are the NRC's suggestion program and the filing of differing professional views. NRC's review and concurrence process for work products also provides staff, supervisors, and managers opportunities to offer changes in approach and direction. In addition, periodic staff meetings, management retreats, focus groups, task or work groups, self assessments, and a feedback form process (where suggestions or recommendations are brought forward and considered) provide platforms for direct employee involvement in determining policies, processes, and procedures. The Agency has an "open door" policy that encourages staff at all levels to interact with managers anywhere in the Agency.

The attached pages provide some specific examples of changes to NRC's business practices that have occurred as a result of employee recommendations.



## EXAMPLES

- Two recent employee recommendations brought forward through the Agency's Differing Professional View/Differing Professional Opinion (DPV/DPO) process resulted in several enhancements to an ongoing review of NRC's Significance Determination Process. Another employee raised a DPV regarding the appropriateness of the resolution of an allegation raised by a licensee employee which resulted in a re-review of the allegation by the inspection staff and a change in position on the disposition of the allegation.

- NRC employees from all four NRC regional offices and the Technical Training Center, working with the inspection program staff in the Office of Nuclear Reactor Regulation, completely revised the process for training and qualifying NRC power reactor, research and test reactor, decommissioning, vendor, and construction inspectors and operator license examiners to increase efficiency in the program.

- Managers in the regions generally meet two times a year with all reactor inspectors, and two additional times with senior resident inspectors, to solicit feedback and recommendations from the staff on how the Reactor Oversight Program (ROP) can be improved. The best practices are compiled and placed on the regional internal web sites for viewing by all staff, and have resulted in changes to inspection procedures.

- Senior resident inspectors met to discuss the lessons learned from the Davis-Besse event, and developed a list of recommendations for internal process changes. One recommendation resulted in the sharing of a list of special areas to emphasize when inspecting licensee performance during refueling outages and reactor containment or drywell walk downs.

- In addition, the staff has made recommendations which have improved focus on safety and skills in conducting inspections, such as:

- Inspectors have been actively involved in the implementation of, and improvement to, the ROP since its inception.

- Unique inspection techniques, best practices and notable findings are shared among inspectors for use as a reference tool. Some best practices were in heat sink, permanent modifications, and maintenance rule inspections. Typically, the information is provided electronically for inspectors to view.

- An inspector newsletter, initiated in January 2003 and published bimonthly, shares information on a variety of findings and solicits feedback.

Other suggestions from the NRC staff have been acted upon and used to improve how they do their job:

- The use of docking stations, laptop computers, and other technologies to reduce paperwork and speed up completion of inspection reports.

- The use of global positioning devices and cellular telephones to aid in real time communications with licensees and location of mobile or fixed radiation monitoring equipment around nuclear power plants.

- Improved use of electronic printing allows inspection teams to receive inspection reference material and drawings electronically instead of having licensee's mail large volumes of drawings.

- During resident inspector seminars, individual inspectors regularly share insights or lessons learned with other inspectors. In addition, inspectors regularly interact with Headquarters counterparts on several working groups to improve specific inspection areas. One example is a focus group looking into the inspection of corrective action program effectiveness.

- A recent example of a recommendation raised through the Employee Suggestion program involved implementation of a quicker and more cost-effective way of transmitting final letters to persons that had raised safety concerns using the contract overnight service instead of certified mail.

- Staff have made recommendations to add, expand, or re-locate certain training for efficiency and cost savings.

In the materials area, initiatives in tracking, oversight and follow-up reviews of materials Agreement State Programs have been undertaken as the result of suggestions by staff. In addition:

- Staff has suggested and management has supported implementation of several enhancements to the Integrated Materials Performance Evaluation Program (IMPEP). This program is used to evaluate both NRC Regions and Agreement State radioactive material programs. These enhancements include establishment of both a list server for team members and an IMPEP website for resource information, resulting in more efficient and effective completion of IMPEP reviews.

- At the staff's suggestion, management agreed that responsibility for issuing and signing draft IMPEP reports should be delegated to the IMPEP Team Leader. This

change has streamlined the concurrence process and has resulted in efficiencies in the timeliness of issuance of these draft IMPEP reports.

- Staff conceptualized and management supported implementation of a new allegation web site for Agreement State allegations and concerns. The new web site allows members of the public to go directly to the State with concerns regarding areas of their regulatory responsibility. Staff also suggested enhancements in the review of Agreement State regulations and increased use of electronic communications with Agreement States.

A revision to the byproduct materials inspection program focusing inspection on risk significant activities was initiated based on staff review and recommendation.

RESPONSES BY RICHARD MESERVE TO ADDITIONAL QUESTIONS FROM  
SENATOR LIEBERMAN

*Question 1.* What concrete steps has the NRC taken to ensure better accounting of special nuclear materials and to achieve a higher level of confidence in its regulation of special nuclear material? Has the NRC considered resuming periodic Material Control and Accounting inspections at nuclear power reactors?

Response. The NRC is examining material control and accounting (MC&A) programs as part of its comprehensive review of the Agency's safeguards and security program that is being undertaken in response to the terrorist activities of September 11, 2001. While this review proceeds, the NRC continues to conduct MC&A inspections at fuel cycle facilities. The MC&A inspection activities for nuclear power plants are being considered as part of this review.

In the interim, the NRC has developed a Temporary Instruction (TI) to use for conducting audits of MC&A programs at nuclear power plants. This TI will help NRC ascertain the breadth and scope of the MC&A issues which were identified as a result of the evaluation of missing fuel rods at Millstone. The NRC will begin implementing the TI at several sites this year and will complete the audits at all sites in 2004. The NRC will also conduct detailed inspections of MC&A at six nuclear power plants in 2004. Using the results from the MC&A program review, the implementation of the TI, and the inspections at six plants, the NRC will determine what, if any, changes to the MC&A program, including the scope and frequency of MC&A inspections at nuclear power plants, are needed in the context of the overall safeguards program review.

*Question 2.* Because previous NRC inspections at Millstone did not report the fuel rods missing and the NRC no longer performs routine Material Control and Accounting inspections at nuclear power reactors, how confident can the Agency be that this problem is not more widespread?

Response. As noted in Question 1, staff plans to examine MC&A programs as part of the comprehensive review of the Agency's safeguards and security program that is being undertaken in response to the terrorist activities of September 11, 2001. The staff has developed a Temporary Instruction (TI) to ascertain the breadth and scope of the MC&A issues which were identified at Millstone. The staff will begin implementing the TI at several sites this year by conducting an audit of the plants' MC&A process. The NRC will complete the audit at all sites in 2004. In addition, the NRC will conduct full-scale inspections at six nuclear power plants. Changes, if any, to the MC&A program will be evaluated based on the results from these efforts, and as a whole in the context of the overall safeguards program.

*Question 3.* I understand that on March 19, 1999, Dominion Nuclear Connecticut filed an application for a license amendment to increase the storage capacity of its Millstone Unit 3 spent fuel pool from 756 assemblies to 1860 assemblies. The pool currently has 21 high-density fuel racks; the license amendment would allow an additional 15. What is the status of NRC action on this application? Has it been approved?

Response. The NRC approved the license amendment by letter dated November 28, 2000 (Accession No. ML003744387).

*Question 4.* In reviewing this application, what alternatives for storage of nuclear waste did/will the NRC consider? I understand that on March 19, 1999, Dominion Nuclear Connecticut filed an application for a license amendment to increase the storage capacity of its Millstone Unit 3 spent fuel pool from 756 assemblies to 1860 assemblies. The pool currently has 21 high-density fuel racks; the license amendment would allow an additional 15. What is the status of NRC action on this application? Has it been approved?

Response. The NRC reviews the application as submitted by the licensee and either approves or denies the application based on technical considerations. The li-

censee's application was judged to be acceptable. NRC review of alternatives for storage of nuclear waste is not required as part of this application.

*Question 5.* In reviewing an application to increase the capacity of a spent fuel pool, does the NRC take into account the extent to which this action may increase security risks to the plant and possible consequences of pool failure in the event of an accident or security breach at the plant. Were these considerations taken into account in the review of the Millstone Unit 3 expansion request?

*Response.* In accordance with 10 CFR 73, "Physical Protection of Plants and Materials," each operator of a nuclear power plant is required to provide substantial physical protection against radiological sabotage, including the use of detection devices, barriers, access controls, and armed guards. Spent fuel pools are located within protected areas of the plant, which require physical security. A change to the capacity of the spent fuel pool does not directly impact the security measures that protect it. Since September 11, 2001, several orders and numerous advisories have been issued by the NRC to all commercial nuclear plants which improved the physical security at the nuclear plants, including their spent fuel pools. Additional enhancements are under consideration.

In accordance with 10 CFR 50.92, "Issuance of Amendment," license amendments issued to increase spent fuel pool capacity are normally found to involve no significant hazards consideration. This means that the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Because of the robust design and construction of spent fuel pools, the major failure of a spent fuel pool is considered very unlikely and is beyond the design basis of the plant. Nonetheless, the NRC is doing analyses of spent fuel pool vulnerability to a terrorist event. The National Research Council in its 2002 report, *Making the Nation Safer: The Role of Science and Technology in Countering Terrorism*, found: "The threat of terrorist attacks on spent fuel storage facilities, like reactors, is highly dependent on design characteristics. Moreover, spent fuel generates orders of magnitude less heat than an operating reactor, so that emergency cooling of the fuel in the case of an attack could probably be accomplished using 'low tech' measures that could be implemented without significant exposure of workers to radiation." The Commission agrees with this statement. One of the design characteristics of the Millstone 3 spent fuel pool is that the pool is partially below grade, which means that in even a worst case terrorist attack, continuing to cool the fuel and preventing any offsite consequences is eased considerably. The NRC reviews the technical aspects of the application, as specified in the Standard Review Plan, NUREG-0800, section 9.1.2, "Spent Fuel Storage." This includes verifying conformance with 10 CFR 50, Appendix A, General Design Criteria 2, 4, 5, 61, 62, and 63. For example, the effect of the increased number of fuel assemblies on subcriticality criteria, heat load, and seismic qualification are reviewed. For the Millstone Unit 3 expansion request, the NRC reviewed the technical aspects of the application as described above.

*Question 6.* Please describe the current NRC procedures to prevent loss of water from spent rod pools from various causes, including acts of malice. Please describe current NRC procedures to avoid a fire in the fuel pool resulting from a loss of water and to extinguish a fire in the fuel pool should one occur.

*Response.* By NRC regulation, spent fuel pools are designed to prevent a substantial loss of coolant inventory under accident conditions, which include credible random equipment failures and severe natural phenomena, such as earthquakes and hurricanes. This criterion ensures the structure of the pool is robust. In addition, each plant has redundant sources of spent fuel pool makeup, each with at least the capacity to maintain water level following a loss of forced cooling or a failure of the pool's stainless steel liner. Plant emergency procedures include directions for aligning these makeup water sources to the spent fuel pool. In response to the events of September 2001, the NRC issued the Safeguards Advisories for Power Reactors which included guidance for licensees to consider alternate sources and methods for spent fuel pool makeup. Also, as part of the February 25, 2002, Orders and Interim Compensatory Measures, the NRC directed licensees to develop guidance and strategies to maintain or restore spent fuel pool cooling capabilities using existing or readily available resources. It is expected that these strategies would result in plant operators developing alternate means of using the aforementioned systems for a broader range of plant damage conditions, including the loss of large areas of the plant.

*Question 7.* What steps has the NRC taken to make spent rod pools more secure at plants like Millstone since the events of September 2001? What additional steps/

studies does the NRC plan to undertake? If additional study of this subject is planned, what is the timeframe for NRC completion of the work (please indicate month and year)? Is the NRC evaluating alternatives for hardening these and other types of nuclear waste storage facilities?

Response. Spent fuel pools are robust structures constructed of thick concrete walls with stainless steel liners, and are designed to withstand earthquakes and other severe events. NRC's ongoing comprehensive safeguards and security program re-evaluation includes the consideration of potential threats, consequences and risks of terrorist attacks using various explosives or other techniques on spent fuel pools and spent nuclear fuel dry storage casks. An assessment plan is being developed to comprehensively review potential vulnerabilities at spent fuel pools, including both internal and external threats. Completion of the majority of these studies is scheduled for late-2003. The results of the studies will determine whether additional security measures beyond those already taken at these sites are necessary.

Orders were issued by the Commission on February 25, 2002, to operating reactors, on May 23, 2002, to decommissioning reactors and to independent spent fuel storage installations (ISFSIs) using wet storage, and on October 16, 2002, to ISFSIs using dry storage, to enhance the security measures for spent fuel. The specific security measures are Safeguards Information under Section 147 of the Atomic Energy Act of 1954, as amended, 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 authorities. In addition, as mentioned in response to the previous question, the February 25, 2002, Order also directed licensees to develop guidance and strategies to maintain or restore spent fuel pool cooling capabilities using existing or available resources. At pools, such as the Millstone 2 and 3 pools, which are partially below grade, this task, as noted above, is eased considerably by that design characteristic.

*Question 8.* What concrete steps has the NRC taken to ensure that NRC staff with appropriate technical expertise evaluate inspection reports like the 1997 inspection report on Indian Point Unit 2?

Response. The Nuclear Regulatory Commission (NRC) reviewed its previous process for treatment of the Steam Generator Inspection Summary Reports as part of the Steam Generator Action Plan. The action plan was intended to direct and monitor the NRC's effort to ensure issues such as the evaluation of Steam Generator Inspection Reports are appropriately tracked and dispositioned.

In April 2001, a formal process for performing a technical review of licensees' Steam Generator Inspection Summary Reports against newly developed formal written review guidance was implemented. NRC project managers were instructed to send the Inspection Summary Reports required by the plant's technical specifications to the technical staff for review as soon as the reports were received. The technical staff is cognizant of the timing of the industry's maintenance outages that include steam generator inspections, so the technical staff checks that they have received all of the Steam Generator Inspection Summary Reports that are due to the NRC. The Inspection Summary Reports are put into the formal work planning process at the NRC, which tracks the work until completion. A safety evaluation is written as a result of the review, and is provided to the licensee.

To ensure a consistent review of the summary reports by the technical staff, the staff uses formal review guidance that provides a discussion of the technical elements of the inspection summaries that need to be reviewed by the staff, with a discussion of how to evaluate the elements. In addition, the review guidance instructs reviewers (e.g., junior reviewers) to explore and discuss findings and issues with more senior reviewers, as needed. Issues or questions that are raised by any of the reviewers are handled through the normal NRC review process, i.e., discussing the issues with the licensee through formal written requests for additional information, phone calls, and public meetings.

*Question 9.* What concrete steps has the NRC taken to ensure that NRC staff conduct an adequate review of license amendment requests such as the 1999 request to amend the license to extend the steam generator inspection interval? In particular, has the NRC instituted adequate controls to demonstrate that all steps of its process for responding to license amendment requests are completed and supported by sufficient documentation?

Response. Shortly after the February 2000 tube failure, the Office of Nuclear Reactor Regulation (NRR) initiated a self-critical review of its activities and processes used in the prior evaluation of the IP2 steam generator license amendment. In addition to a peer review by the Office of Research, NRR also commissioned a lessons-learned review, the objective of which was to evaluate the NRC staff's technical and regulatory processes related to assuring SG tube integrity in order to identify and

recommend areas for improvements applicable to the NRC and/or the industry. On August 29, 2000, the OIG issued its event inquiry, "NRC's Response to the February 15, 2000, Steam Generator Tube Rupture at Indian Point Unit 2 Power Plant." The OIG had initiated this inquiry because of concerns from Congress and the public about the IP2 event. In particular, the OIG had concluded that "the process does not provide adequate controls to demonstrate that all process steps are completed and supported by adequate documentation." The OIG made several recommendations to enhance the process. The comments and recommendations raised by OIG were factored into the lessons-learned charter.

Based on the results of its lessons-learned review, NRR prepared improved guidance detailing the processes and expectations for reviews of license amendments. NRR Office Instruction LIC-101, "License Amendment Review Procedures," provides guidance to the staff, in particular, about (1) better planning and tracking of the work involved in processing a license amendment, (2) improved control of documents used in the review process and which form the basis of its conclusions, (3) ensuring adequate definition of the regulatory and technical basis for its review and conclusions, and (4) explicitly identifying the basis for its conclusions. In addition, NRR provided training to its staff on the process and management expectations.

In a memorandum dated June 4, 2002, the OIG concluded that adequate corrective actions had been implemented to correct the deficiencies noted in the report and that no further action was necessary.

*Question 10.* What steps has the NRC taken to improve communications between offsite emergency preparedness officials and the NRC to improve emergency preparedness response during the incidents such as the February 15, 2000 incident at Unit 2?

Response. The NRC staff, at the suggestion of the GAO report on Indian Point Emergency Preparedness, has assessed the Agency's policies for non-emergency communication with State and local officials. This activity had previously been initiated in response to findings documented in an NRC Office of the Inspector General report. Our assessment of NRC communication practices has concluded that existing practices are generally adequate and the level of interaction and communication needed between the NRC and local officials remains a site-specific variable. At some sites, regular interaction with NRC representatives is appropriate. However, at other sites, less frequent interaction with NRC representatives has been adequate absent unusual site activities. However, to further enhance the availability of NRC staff to local officials and members of the public, the NRC has revised inspection guidance for regional management to consider the site specific needs for contacts with the members of the public and offsite officials and inspection resources.

In the case of Indian Point, over the past several years the NRC has had extensive interactions with local government and elected officials regarding developments at that site. The NRC has briefed local officials on important plant events and NRC actions on a continuing basis. The NRC routinely holds meetings in the local area which are open to public observation and provide opportunities for comments and questions from the local public. Local officials or their staffs attend these meetings. On a number of occasions the NRC conducted pre-meeting briefings for local officials to facilitate information exchange. The NRC also consistently provides early notifications to congressional, State and local officials of any significant site activity or significant correspondence with the licensee. As a matter of management philosophy, the NRC encourages an "open door" policy with regard to access by the public, State and local officials to the NRC staff.

*Question 11.* Do the NRC and/or FEMA plan to take any interim measures to address the significant concerns identified in the draft Witt report?

Response. Yes. The matters addressed in the draft report in large measure relate to offsite planning and preparedness, which falls primarily under FEMA's authority. While the NRC reserves the right to any judgment as to the overall state of emergency planning and preparedness, in keeping with the longstanding understanding between FEMA and the NRC, we look initially to FEMA for its views on the draft report relating to offsite preparedness. On February 21, 2003, FEMA issued its report on the September 2002 emergency preparedness exercise at Indian Point. We are continuing our review of this FEMA report which addresses a variety of planning issues including FEMA's conclusions regarding concerns raised by Witt and Associates.

One important issue identified by the Witt report relates to plant security and the effect of potential terrorism. Since the terrorist attacks of September 11, 2001, the NRC has taken a number of steps to enhance the already high level of security at the nation's nuclear power plants. These steps have resulted in, among other things, more guards being trained and placed on duty at the plants, providing an even high-

er level of security at what were already the best protected commercial facilities prior to the September 11, 2001, attacks. The NRC's actions have included issuing Orders in February 2002 formalizing certain security enhancements as requirements, issuing more than 40 advisories to licensees to describe threat conditions or recommend protective measures, issuing an NRC Threat Advisory and Protective Measures System, consistent with the Homeland Security Advisory System, to rapidly respond to national changes in the threat environment, and other actions. Additionally, NRC's February 2002 security Orders specifically required licensees to enhance their emergency response plans as appropriate in light of the current threat environment. Licensees were required to ensure that emergency response plans were compatible with enhanced security measures. During 2003, the NRC resumed force-on-force exercises in a pilot program. In addition, the NRC has embarked on a number of studies to assess and address the vulnerability of nuclear plants from the new threats confronting the United States.

Emergency preparedness programs are designed to cope with a spectrum of accidents including those involving rapid, large releases of radioactivity. Emergency response plans are tested during frequent (e.g., quarterly or more often) small-scale drills and periodic full-scale emergency exercises that simulate serious reactor accidents, which have invariably included postulating large releases of radioactivity that occur shortly after the initiation of events. The plans and their implementation are periodically reviewed to confirm that they are being adequately maintained and address changing circumstances appropriate to any given site.

*Question 12.* Please describe the types of actions available to the NRC and/or FEMA to assess the adequacy of an approved emergency response plan if there is an allegation that the plan is insufficient to protect the public health and safety of citizens living within the emergency plan zones for the nuclear power facilities included in the submission by providing reasonable assurance that State and local governments can and intend to effect appropriate protective measure offsite in the event of a radiological emergency. Please describe the range of actions available to the NRC and/or FEMA if they find that an emergency response plan is no longer adequate. Has the NRC and/or FEMA made such a finding in the past? If so, please describe the specific NRC and/or FEMA response in each instance. Has the NRC and/or FEMA action included suspension of the plant's license or temporary shut-down of the plant?

Response. When offsite emergency preparedness (EP) issues are raised to the NRC, either by allegation, 2.206 petitions, general correspondence or other communications, the NRC will request the assistance of FEMA. Offsite EP issues raised in inquiries to the NRC regions will be referred to NRC Headquarters (HQ) for resolution. If at any time during the review FEMA determines that the issues involved could potentially affect its reasonable assurance finding for the site in question, FEMA will immediately bring this preliminary assessment to the attention of the NRC. At that time, FEMA and NRC will determine what additional steps need to be taken to resolve the issue.

If FEMA determines under 44 CFR 350.13 of its regulations that offsite emergency plans or preparedness are not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public, FEMA shall, as described in its rule, advise the Governor of the affected State, and the NRC of that initial determination.

If after 4 months from the date of the initial notification the deficiency is not corrected, or an acceptable plan for correcting the deficiency has not been submitted, then FEMA shall withdraw approval of the plans and immediately inform the NRC and the Governor of the affected State and shall publish in the Federal Register and local newspaper notice of its withdrawal of approval. Upon receiving notification of such action from FEMA, the NRC will promptly review FEMA's findings and determinations and formally document the NRC's position. When, as described, in 10 CFR 50.54(s)(2)(ii) and 50.54(s)(3) of its regulations, the NRC finds the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency and if after 4 months the deficiencies are not corrected, the Commission will determine whether the reactor shall be shut down until such deficiencies are remedied or whether other enforcement action is appropriate. In determining whether a shut-down or other enforcement action is appropriate (including taking such actions before the 4-month period has expired), the Commission shall take into account, among other factors, whether the licensee can demonstrate to the Commission's satisfaction that the deficiencies in the plan are not significant for the plant in ques-

tion, or that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons for continued operation.

10 CFR 50.54 (3) states that "Nothing in this paragraph shall be construed as limiting the authority of the Commission to take action under any other regulation or authority of the Commission or at any time other than that specified in this paragraph." Accordingly, the NRC's February 2002 security Orders specifically required licensees to enhance their emergency response plans as appropriate in light of the current threat environment. The NRC has embarked on a number of studies to assess the vulnerability of nuclear plants to terrorist attacks. Should any of the vulnerability studies indicate a need we would not hesitate to issue additional Orders as necessary.

The NRC has not suspended a plant's license or ordered a temporary shutdown of the plant based on emergency preparedness issues. However, after Hurricane Andrew, for example, the Turkey Point Nuclear power plant delayed restart due to off-site emergency preparedness concerns. The following are examples of NRC actions relative to offsite planning deficiencies:

As a result of the first full-scale exercise in 1982 for Indian Point 3, FEMA identified five deficiencies in the exercise report and the NRC issued a 120-day letter on August 3, 1982. The March 1983 exercise showed progress but two deficiencies remained. On May 5, 1983, the Commission voted 5 to 0 to close the plant by June 9, 1983 unless FEMA indicated sufficient progress to resolve the remaining two deficiencies. A State compensating plan was developed for counties unable or refusing to participate. On June 8, 1983, FEMA reported progress was made and on June 9 the Commission voted 3 to 2 to allow continued operation. Following the November 1984 full-scale exercise, FEMA reported that the Deficiencies had been fully corrected and there was reasonable assurance. In the June 1986 exercise 6 deficiencies were identified. These deficiencies were remediated through exercises by November 1986.

For Shoreham, utility compensating plans were developed and implemented at the licensing stage when Suffolk County and New York State (NYS) both refused to participate in the planning process. The utility provided and trained employees in all functions of plan implementation and passed a full-scale demonstration of the utility plan prior to a full-power license being issued. Shortly after this the plant was sold to NYS and then decommissioned.

For the Seabrook case, prior to licensing, Massachusetts and its towns as well as several New Hampshire towns refused to participate in the emergency preparedness activities for Seabrook including not permitting the erection of siren poles in Massachusetts. As in the Shoreham case compensating plans were developed and staffed by the utility for Massachusetts under the 'realism rule' in 10 CFR 50.47(c)(1). The State of New Hampshire developed compensating plans for the towns that refused to participate. The qualifying exercise prior to the full-power license was successfully conducted for both States. After Seabrook became operational and a change in Massachusetts leadership occurred, Massachusetts rejoined the planning process for Seabrook. The New Hampshire towns also began participating with the State in the planning effort.

*Question 13.* I understand that the State of New York and several of the counties surrounding the Indian Point Plant have declined to provide annual certification of continued adequacy of the emergency preparedness for fiscal year 2003. Is this accurate? Please describe the annual State and local government certification requirement. What is the effect of the failure of a State and/or local government to provide the annual certification?

Response. Yes, it is true that the State of New York and the counties surrounding the Indian Point nuclear plant did not submit their annual letters of certification (ALCs). However, the State of New York did submit their ALCs for the upstate risk counties: Oswego (for the Nine Mile Point and Fitzpatrick plants); and Monroe and Wayne (Ginna plant). It is important to remember that the ALC is not a certification of the adequacy of emergency plans and preparedness, but rather, a list of emergency preparedness activities that the State and local jurisdictions need to perform or address during the year.

The ALC is a method that State and local governments with radiological emergency planning and preparedness responsibilities use to inform FEMA that the requisite preparedness activities have been completed for the previous calendar year. These activities include: distribution of public education and information materials to the residents; testing of radiological instruments; exercises; practice drills of various types, such as for emergency communications; training; updating of plans and Letters of Agreement; and completion of alert and notification tests.

The requisite information concerning local preparedness activities is provided by those local governments to the State. The State then submits the information to FEMA along with the information on completion of the State's own annual preparedness activities. The initiation of the ALC can be found in FEMA Guidance Memorandum PR-1, Section C. If a State fails to submit this information for a specific site, FEMA regional staff may make staff assistance visits to the various jurisdictions for the purpose of verifying local efforts to update and maintain plans, training and readiness. For Indian Point, this would have to be done with the assistance of the State of New York, which provides the multi-jurisdiction oversight that ensures a consistent planning foundation. This is true throughout the Nation with all planning for nuclear sites as well as planning for any major event.

FEMA has given the State and counties involved with emergency preparedness for the Indian Point site until May 2, 2003, to submit the necessary plans and documents including critical evacuation planning elements. FEMA expects this submittal to also contain documents normally submitted as part of the ALC, such as Letters of Agreement and updated school plans.

*Question 14.* What concrete steps does the NRC plan in response to the findings of the fiscal year 2002 Evaluation of the NRC's Information Security Program that (1) the NRC security program is not well integrated and not consistently implemented across the Agency; and (2) NRC officials have not clearly defined the responsibility and accountability for all aspects of the information security program within its organizational structure?

Response. In response to the independent evaluation of the NRC Information Security Program, the NRC developed a plan of action and milestones (POA&M) that has been formally submitted to the Office of Management and Budget (OMB). NRC is also required to file a quarterly report, providing updated status information for all of the actions listed in the POA&M. The POA&M includes specific action items to address the finding noted in the evaluation. The NRC security program is currently governed by a number of policy directives (management directives) that provide guidance for the security disciplines of physical security, personnel security, telecommunications security, classified information security, sensitive unclassified information security, and automated information systems security. In response to the September 11th terrorist event, the NRC made a number of organizational adjustments and re-aligned a number of the security functions. The management directives that clarified the details of the NRC security program are all being updated, with a completion date of December 2003. The management directive that defined the responsibilities and accountability for the NRC information systems security program will be the first policy directive that will be updated, and it is scheduled to be finalized by July 1, 2003. In updating all of the security policy directives, the NRC will ensure that all elements of the NRC security program are well integrated and consistently implemented across the Agency.

*Question 15.* How does the NRC plan to respond to recent Office of Inspector General findings (detailed in the written statement for this hearing) that (1) NRC program guidance does not adequately protect "Official Use Only" documents from inadvertent public disclosure; (2) training on handling, marking, and protecting sensitive unclassified information is not provided to all NRC employees and contractors on a regular basis; and (3) NRC employees are not consistently implementing the requirement to report incidents of inadequate release of sensitive unclassified information to the Office of the Executive Director for Operations?

Response. On December 19, 2002, the NRC staff responded to the OIG's October 16, 2002, report, "Review of NRC's Handling and Marking of Sensitive Unclassified Information"; the staff response is enclosed. The staff's memorandum to the OIG agreed with the OIG findings and included a response for each specific recommendation. With respect to the protection of Official Use Only (OUO) documents, the staff will issue more prescriptive guidance in a revision to Management Directive 12.6. Training regarding the handling of OUO information and reporting of incidents regarding its handling is included in a more comprehensive program on the handling of all types of sensitive information.

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STAFF RESPONSE TO OIG'S OCTOBER 16, 2002, REPORT, "REVIEW OF NRC'S HANDLING AND MARKING OF SENSITIVE UNCLASSIFIED INFORMATION"

December 19, 2002

Memorandum to: Stephen D. Dingbaum, Assistant Inspector General for Audits  
From: William D. Travers /RA/, Executive Director for Operations



Subject: NRC's Handling and Marking of Sensitive Unclassified Information (OIG-03-A-01)

This memorandum provides the staff's response to the findings and recommendations discussed in OIG-03-A-01, Review of NRC's Handling and Marking of Sensitive Unclassified Information, dated October 16, 2002.

*Recommendation 1.* Update the guidance for OOU documents to require clear identification of sensitive unclassified information to prevent its inadvertent disclosure.

*Response.* Agree. More prescriptive guidance for OOU will reduce the likelihood of inadvertent releases of sensitive unclassified information. The staff will conduct a total review of MD 12.6, NRC Sensitive Unclassified Information Security Program, and make appropriate changes concerning the marking and use of OOU cover sheets. We expect this action to be completed not later than July 31, 2003.

*Recommendation 2.* Mandate consistent use of defined markings on documents containing Official Use Only information and clarify the markings that should be used on sensitive unclassified information.

*Response.* Agree. Consistent use of OOU markings would enhance the identifiability of sensitive documents and contribute to the reduction of inadvertent disclosures. Additional guidance for OOU marking, where appropriate, will be prescriptive and will be part of the revision of MD 12.6 expected by July 31, 2003.

*Recommendation 3.* Conduct annual mandatory training for all NRC employees and contractors on the procedures for marking and handling sensitive unclassified information.

*Response.* Agree. Training would heighten employee awareness and knowledge as well as improve employee handling of sensitive unclassified information. However, it may be ineffective to develop a specialized training program dedicated solely to sensitive unclassified information. An agency-wide comprehensive security education program for handling both classified and sensitive unclassified information would place increased emphasis on sensitive unclassified information. Therefore, the staff is exploring the creation of computer-based training to include handling and marking of both classified and sensitive unclassified information.

*Recommendation 4.* Train NRC employees and contractors on the requirement to report incidents of inadvertent releases of sensitive unclassified information to the OEDO in accordance with MD 3.4.

*Response.* Agree. The staff will emphasize the requirement to report inadvertent releases of sensitive unclassified information to OEDO in any future security presentations for employees and contractors.

*Question 16.* In the Performance and Accountability Report for 2002, the NRC indicates that it has been conducting a comprehensive review of its programs and security of the nuclear facilities and activities it regulates, and has made significant changes to its regulatory programs and has enhanced the already robust security of sensitive facilities and activities, including a new homeland security threat advisory system. Please describe the additional concrete steps the NRC has taken to improve security at all nuclear power plants and at the Indian Point and Millstone Nuclear Power Plants, in particular.

*Response.* Immediately following the terrorist attacks of September 11, 2001, the NRC issued a series of safeguards and threat advisories to the major licensed facilities, including Indian Point and Millstone, placing them on the highest security level. Many of the strengthened security measures became requirements as a result of NRC Orders issued to all licensed operating nuclear power plants on February 25, 2002, and to other sensitive nuclear facilities in the following months. The specific details of the new requirements are Safeguards Information, under Section 147 of the Atomic Energy Act, as amended, and cannot be disclosed in a public document; however, generally the new requirements include increased security patrols, augmented security forces, additional security posts, increased vehicle standoff distances, tightened facility access controls, and enhanced coordination with the law enforcement and intelligence communities. The NRC worked with the FBI, the Nuclear Energy Institute, and our licensees to review access lists of employees working at nuclear power plants to identify any individual whose name matched the FBI Watch List. We determined that there were no positive matches. Subsequently, on January 7, 2003, the NRC issued immediately effective Orders to all 103 operating commercial nuclear power plants requiring that licensees enhance their programs that control access to the facility. Some of the requirements formalize a series of security measures that NRC licensees had taken in response to advisories issued by the NRC in the aftermath of the September 11, 2001, terrorist attacks. Additional security enhancements, developed during our ongoing security review, are also provided in the Orders. The specific security measures addressed by the Orders, which

supplement existing regulatory requirements, are classified as Safeguards Information under Section 147 of the Atomic Energy Act, as amended, and 10 CFR 73.21. The measures generally include restricting temporary unescorted access to a facility and with the February 25, 2002 Orders, the January 7 Orders will remain in effect until the Commission determines otherwise.

The Commission has completed an initial assessment of power reactor facility vulnerabilities to intentional malevolent use of commercial aircraft in suicidal attacks and has initiated a broad-ranging research program to understand the vulnerabilities of various classes of facilities to a wide spectrum of attacks. Although our work in this area is ongoing, the Commission has directed nuclear power plant licensees to develop specific plans and strategies to respond to an event that could result in damage to large areas of their plants from impacts, explosions or fire. In addition, licensees must provide assurance that their emergency planning resources are sufficient to respond to such an event.

The Commission worked closely with other Federal agencies to revise the design basis threats that provide the foundation for the security programs of nuclear power plant and Category I fuel cycle facility licensees; Orders revising the DBT were issued on April 29, 2003; the enclosed press releases provide details on this action. The Commission's Orders to these licensees in February and August 2002 effectively enhanced security in the interim while this work was underway. Full security performance reviews, including force-on-force exercises, have resumed at these facilities and will be conducted on a 3-year cycle instead of the 8-year cycle that had been used for nuclear power reactors prior to September 11, 2001. These reviews initially commenced last summer with seven table top exercises that for the first time involved a wide array of Federal, State and local law enforcement and emergency planning officials.

The NRC has developed a new Threat Advisory and Protective Measures System in response to Homeland Security Presidential Directive 3 and as revised by Homeland Security Presidential Directive 5. When a new Homeland Security Advisory System (HSAS) threat condition is declared, the NRC promptly notifies affected licensees of the condition and advises them to the appropriate predefined protective measures that have been developed for each threat level. The new system for NRC licensees has been formally communicated to licensees, Governors, State Homeland Security Advisors, Federal agency administrators and other appropriate officials. The new system replaces the NRC's 1998 threat advisory system and covers additional classes of licensees not included in the 1998 system.

As for site-specific actions, each licensee was required to respond to the NRC Orders they received by describing the actions the licensee planned to take to implement the required actions in accordance with the terms of the Orders. All licensees, including licensees for Indian Point and Millstone, responded and implemented the required actions in accordance with the terms of the Orders. The implementation of the Orders and associated interim compensatory measures have been reviewed by resident inspectors and region-based security inspectors.

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## NRC NEWS

### NRC APPROVES CHANGES TO THE DESIGN BASIS THREAT AND ISSUES ORDER FOR CATEGORY 1 FUEL CYCLE FACILITIES

The Nuclear Regulatory Commission, after extensive deliberation and interaction with stakeholders, has approved changes to the design basis threat (DBT) for two category 1 fuel cycle facilities in Virginia and Tennessee that possess enriched uranium used in nuclear reactors. The changes will be issued by an Order amending the design basis threat for theft or diversion of strategic quantities of special nuclear material.

The Order, which is being issued today, will be effective immediately but allows a transition period for full implementation. With this action completed, the Commission expects that there will be a period of regulatory stability during which the two licensees can consolidate this and previously ordered security enhancements.

The details of the design basis threat for theft or diversion are confidential national security information and will not be released to the public. Today's Order builds on the changes made by the Commission's August 21, 2002 Order which made interim security enhancements at these two facilities. The DBT was arrived at after discussions with cleared stakeholders from other Federal agencies, the two State governments and the two licensees.

Under NRC regulations, category 1 fuel cycle facility licensees must ensure that the physical protection plan for each site is designed and implemented to provide

high assurance in defending against the DBT to ensure adequate protection of public health and safety and common defense and security. Changes in those plans will now be made and submitted to NRC for approval.

“With the completion of this Order,” Chairman Nils J. Diaz said, “the public should be reassured that the nation’s category 1 fuel facilities are well-secured against potential threats. The NRC intends to continue working closely with the Department of Homeland Security and other Federal agencies, as well as with State and local law enforcement and emergency planning officials to ensure an overall integrated approach to the security of these critical facilities.

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## NRC NEWS

### NRC APPROVES CHANGES TO THE DESIGN BASIS THREAT AND ISSUES ORDERS FOR NUCLEAR POWER PLANTS TO FURTHER ENHANCE SECURITY

The Nuclear Regulatory Commission, after extensive deliberation and interaction with stakeholders, has approved changes to the design basis threat (DBT). The Commission believes that the DBT represents the largest reasonable threat against which a regulated private guard force should be expected to defend under existing law. These changes will be issued by Order.

In addition, the Commission has approved the issuance of two other Orders to nuclear plants regarding work hours, training, and qualification requirements for security personnel to further enhance protection of public health and safety, as well as the common defense and security. The three Orders will be issued to all 103 operating commercial nuclear power plants.

The three Orders, which are being issued today, will be effective immediately, but allow transition periods for full implementation. With these actions, the Commission expects that there will be a period of regulatory stability during which operating commercial plant licensees will be able to consolidate these and previously ordered security enhancements.

These Orders, in combination with the recently issued Order in the area of access authorization, enhance the already strong defense capability at these sites using three interdependent elements directed to best protect the public, with the appropriate resources placed at the right places. These elements are:

- the revised Design Basis Threat and associated defensive capabilities derived from previous measures that the Commission directed;
- tighter work hour control and more robust training requirements for security personnel, to increase their capability to respond to threats; and
- enhanced access authorization controls to ensure all plant personnel with access to critical areas have had the most rigorous background checks permitted by law.

The Order that imposes revisions to the Design Basis Threat requires power plants to implement additional protective actions to protect against sabotage by terrorists and other adversaries. The details of the design basis threat are safeguards information pursuant to Section 147 of the Atomic Energy Act and will not be released to the public. This Order builds on the changes made by the Commission’s February 25, 2002 Order. The Commission believes that this DBT represents the largest reasonable threat against which a regulated private security force should be expected to defend under existing law. It was arrived at after extensive deliberation and interaction with cleared stakeholders from other Federal agencies, State governments and industry.

Under NRC regulations, power reactor licensees must ensure that the physical protection plan for each site is designed and implemented to provide high assurance in defending against the DBT to ensure adequate protection of public health and safety and common defense and security. Extensive changes in those physical protection plans will now be made and submitted to NRC for approval.

The second Order describes additional measures related to security force personnel fitness for duty and security force work hours. It is to ensure that excessive work hours do not challenge the ability of nuclear power plant security forces to remain vigilant and effectively perform their duties in protecting the plants. However, the Order does include provisions to allow increases in work hours under certain conditions, once specific requirements are met. The NRC developed this unclassified Order through a public process. The NRC carefully considered comments from power reactor licensees, security force personnel, public citizen groups and other agencies in reaching its final decision. The Order will be publicly available on NRC’s website at: <http://www.nrc.gov>.

The third Order describes additional requirements related to the development and application of an enhanced training and qualification program for armed security

personnel at power reactor facilities. These additional measures include security drills and exercises appropriate for the protective strategies and capabilities required to protect the nuclear power plants against sabotage by an assaulting force. This Order requires more frequent firearms training and qualification under a broader range of conditions consistent with site-specific protective strategies. The details of the enhanced training requirements are safeguards information, and will not be released to the public. As with the DBT Order, the Commission solicited comments on a draft training Order from cleared stakeholders, including security personnel and took those comments under consideration in reaching its final decision.

“With the completion of these complementary Orders,” Chairman Nils J. Diaz said, “the public should be reassured that the nation’s nuclear power plants are well-secured against potential threats. The NRC intends to continue working closely with the Department of Homeland Security and other Federal agencies, as well as with State and local law enforcement and emergency planning officials to ensure an overall integrated approach to the security of these critical facilities.”

*Question 17.* In the Performance and Accountability Report for 2002, the NRC indicates that it is studying the potential vulnerability of nuclear power plants, fuel cycle facilities, and nuclear fuel and materials storage and transportation containers, including deliberate aircraft crashes on power reactor facilities and storage and transportation casks. When does the NRC anticipate this study to be completed (please indicate month and year)?

Response. In January 2002, the NRC completed an initial assessment of the scope of vulnerabilities to aircraft attack. It provided insights that were factored into the interim compensatory measures developed (in February 2002) for nuclear power plants, and influenced NRC’s interactions with other Federal agencies. More detailed analyses for nuclear power plants are expected to be completed by September 2003 with a final report due in December of this year. More detailed analyses for storage and transportation casks are expected to be completed by December 2003. The vulnerability assessments for cyber terrorism are anticipated in August 2003 and results from the irradiation vulnerability studies are scheduled for June 2003.

*Question 18.* As part of these reviews, is the NRC considering whether it requires/would benefit from changes to its existing legal authority? In the Performance and Accountability Report for 2002, the NRC indicates that it has been conducting a comprehensive review of its programs and security of the nuclear facilities and activities it regulates, and has made significant changes to its regulatory programs and has enhanced the already robust security of sensitive facilities and activities, including a new homeland security threat advisory system.

Response. Yes. The NRC for more than a decade has submitted proposed legislation to the Congress that would enhance security at NRC-regulated facilities. Last year, the Commission identified additional measures, particularly relating to access authorization, and communicated those to the Congress. Unfortunately, Congress has not enacted these proposals. The Commission has been consulting with Congress on appropriate security legislation.

*Question 19.* Has the NRC consulted with interested stakeholders (Federal, State, and local government; interest groups; and the public) in conducting these reviews? In the Performance and Accountability Report for 2002, the NRC indicates that it has been conducting a comprehensive review of its programs and security of the nuclear facilities and activities it regulates, and has made significant changes to its regulatory programs and has enhanced the already robust security of sensitive facilities and activities, including a new homeland security threat advisory system.

Response. The NRC has coordinated its review of this issue with appropriate Federal agencies and licensees and industry representatives authorized to receive Safeguards Information. We have involved the States in our review of the design basis threats, in our preparation of Regulatory Issue Summaries to put in place a five-tier threat advisory system, consistent with HSPD-3, and in our review of potential additional measures for materials licensees. We have shared all Orders and Homeland Security Advisory System documents with the affected States.

When possible, such as in developing our Fatigue Order, we have followed an open process, with drafts being shared on our web page and open meetings to discuss the drafts.

However, direct public involvement on sensitive or classified papers is not possible. We do, however, take into account input received from interested stakeholder groups to the extent possible.

*Question 20.* The NRC completed a new round of tabletop exercises using the expanded threat scenarios for power reactor facilities and selected fuel cycle facilities

in November 2002. Does the NRC plan to [write] a report on these exercises? If so, when will the report be released (please indicate month and year)? Does the NRC plan to make the report available to the public?

Response. The staff submitted SECY-02-0223, "Expanded Table-Top Drill Lessons Learned and Proposed Force-on-Force Testing Pilot Program" on December 16, 2002, and the Commission approved this planned approach on January 23, 2003. Because the staff paper and Commission decision contain Safeguards Information under Section 147 of the Atomic Energy Act, as amended, and other sensitive information, there are no plans to release these documents to the public.

*Question 21.* In fiscal year 2003, the NRC plans to complete its review and revision of the design basis threat that provides the foundation for the security programs of nuclear power plant and Category I fuel cycle facility licensees. Please indicate the month in which this review will be completed. What criteria has the NRC established for this review? Will it account for security threats due to terrorist activities?

Response. On April 29, 2003, the Commission issued Orders revising the DBT both for nuclear power plants and for Category I fuel cycle facilities. The DBTs are based on criminal and terrorist activities and capabilities worldwide that pose a threat to licensed nuclear facilities and activities. This review of the DBT included significant input from the intelligence community, the Department of Defense, Energy and Homeland Security, the Federal Bureau of Investigation, other Federal agencies and State officials. We rely upon the intelligence community and other Federal agencies to provide information on the targets, tactics, training and capabilities of terrorists and other adversaries who may pose a threat to nuclear facilities and activities. They also describe the domestic and international threat environment. NRC then determines the subset of the domestic threat against which NRC operating power reactor licensees and Category I fuel cycle licensees should have primary responsibility to defend. In making this determination, NRC assesses the limits on the adversary characteristics against which private sector guard force can reasonably be expected to defend.

*Question 22.* In the Performance and Accountability Report for 2002, the NRC described plans to conduct full security performance reviews, including force-on-force exercises at each nuclear power plant on a 3-year cycle instead of the 8-year cycle that has been used prior to September 11. Does the NRC plan to begin the first force-on-force exercises in fiscal year 2003? How many such reviews will be conducted in fiscal year 2003? How does the NRC plan to prioritize the review of plants? Please confirm my understanding that Chairman Meserve committed to a force-on-force exercise at the Indian Point plant during this calendar year.

Response. In February 2003, the NRC resumed force-on-force exercises using expanded adversary characteristics in a pilot program. We will conduct the pilot program force-on-force exercises at a rate of about two exercises per month, until the revised DBT is effective, at which time the NRC will transition to the revised force-on-force performance evaluation program. There will be a force-on-force exercise at Indian Point during CY2003. The method for prioritization of plants selected for force-on-force performance assessments will be determined as part of the pilot program.

*Question 23.* Does the NRC plan to review the adequacy of the existing 10-mile emergency planning zone around nuclear power plants? How does NRC protect public health and safety of citizens living 20-, 50-, 100-miles downwind of nuclear power plants?

Response. Since September 11, 2001, NRC has been studying the potential vulnerability of nuclear power plants. Nothing in our studies thus far would indicate a problem with the adequacy of the existing 10-mile plume exposure pathway emergency planning zone (EPZ) around nuclear power plants, or the existing 50-mile ingestion exposure pathway EPZ.

An NRC/EPA task force provided the planning basis for offsite emergency preparedness efforts considered necessary and prudent for large power reactors in 1978 in NUREG-0396, EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants" ("Planning Basis for Radiological Emergency Preparedness (REP) Plans"). This planning basis was later incorporated into NRC and FEMA regulations.

Since 1978, NRC's understanding of possible source terms resulting from severe accidents has improved considerably. NUREG-1465 outlines that improved understanding. NUREG-1465 would indicate that the 1978 NRC/EPA task force report

was even more conservative in the spectrum of accident scenarios encompassed by the 10- and 50-mile EPZs than originally envisioned.

At present, commercial nuclear power plants in the United States have two concentric emergency planning zones (EPZs). EPZs are defined as the areas for which planning is needed to assure that prompt and effective actions can be taken to protect the public in the event of an accident. The choice of the size of the EPZs represents a judgment on the extent of detailed planning which must be performed to assure an adequate response. In a particular emergency, protective actions might well be restricted to a small part of the planning zones. On the other hand, for the worst conceivable accidents, protective actions might need to be taken outside the planning zones. The current EPZ distances are considered large enough to provide a response base that would support activity outside the planning zone should this ever be needed.

The first zone, called the plume exposure pathway EPZ, is an area of about 10 miles in radius from the center of the plant. The major protective actions planned for this EPZ, evacuation and sheltering, supplemented by the prophylactic use of potassium iodide (KI), where States have chosen to add that measure, would be employed to reduce fatalities and injuries from exposure to the radioactive plume from the most severe of the core-melt accidents, and to limit unnecessary radiation exposures to the public from less severe accidents. The second zone, called the ingestion pathway EPZ, is an area of about 50 miles in radius from the center of the plant. The major protective actions planned for this zone, putting livestock on stored feed and controlling food and water, would be employed to reduce exposure to the public from ingestion of contaminated food and water. The ingestion exposure pathway EPZ of 50 miles was selected because Federal protective action guidelines would generally not be exceeded beyond 50 miles for a wide spectrum of hypothetical accidents. It is not likely that protective actions would need to be taken for the entire 10- or 50-mile emergency planning zones, respectively, even for a significant release. However, these response measures can and will be expanded if the conditions of a particular accident so warrant.

*Question 24.* I understand that on December 18, 2002, in five separate licensing proceedings for power plants, the NRC issued orders rejecting NEPA claims related to security risks because security risks are incalculable due to the undetermined probability of an attack. Please explain these NRC rulings in detail. How does/will the NRC address these security vulnerabilities in its licensing procedures for specific plants? Does the NRC's commitment to "probabilistic risk-informed management prevent the Agency from addressing security vulnerabilities?"

*Response.* In Private Fuel Storage (a dry cask independent spent fuel storage installation), Duke Cogema Stone & Webster (a mixed oxide fuel fabrication facility), Millstone (expansion of the spent fuel storage pool capacity at a commercial reactor site), and McGuire/Catawba (license renewal for four commercial reactors), the Commission considered whether the National Environmental Policy Act (NEPA) requires the NRC, in rendering licensing decisions, to consider the impacts of terrorism.

At the outset of its decision, the Commission stressed that it had already strengthened its security requirements for licensees in multiple areas, acting under its AEA-rooted duty to protect "public health and safety" and the "common defense and security." The Commission also explained that further changes to address terrorist threats through the security and safeguards requirements for NRC-regulated facilities could result from an ongoing examination of security regulations and programs.

On the legal question concerning NEPA, the Commission held that NEPA does not require a terrorism review, and that an environmental impact statement is not the appropriate format in which to address the challenges of terrorism. The Commission's December 18 adjudicatory decision rested, essentially, on four grounds. First, the link between an agency licensing decision and terrorism is too speculative and remote from the licensing decision. Second, the risk of a terrorist attack at a nuclear facility cannot be adequately determined. The NRC's policy with respect to use of risk information is that this technology should be used to the maximum extent possible in all agency regulatory decisionmaking, to the extent practical, given the state of technology of risk methods and data [Ref: the Commission's PRA Policy Statement of 1995]. In the case of assessing risk from terrorist acts, a major limitation in the state of technology is the inability to estimate the frequency of the initiating act. Since September 11, the NRC staff has been investigating means by which risk information can be used in security-related regulatory decisionmaking, even in recognition of this important limitation. Third, NEPA does not require a "worst case analysis," which "creates a distorted picture of a project's impacts and wastes agency resources." Lastly, NEPA's public process is not an appropriate forum

for considering sensitive security issues. Moreover, given the Commission's existing efforts under the Atomic Energy Act, it was not obvious what additional information or insights a formal NEPA review of such issues would yield.

*Question 25.* The citizens of Connecticut and across the United States are increasingly concerned about the safety and security of nuclear power plants near their homes, particularly during our heightened state of terrorism alert. What steps has the NRC taken to provide regular updates to the public about its ongoing work to address security concerns? What steps has the NRC taken to provide regular information to residents of areas surrounding individual plants about specific measures at those plants?

*Response.* In the past, the NRC has striven to ensure public confidence by being one of the most open agencies in the U.S. Government. We recognize the reality that suspicions are nurtured if our activities are not fully accessible to the concerned public. However, we also recognize the counterbalancing consideration that open discussions of security issues could be exploited by terrorists. Therefore, the level of our communication with the general public on details of security issues has significantly decreased. We believe that extensive interaction with appropriately cleared stakeholders and local, State and Federal agency representatives, including the Department of Homeland Security and the individual State Homeland Security Advisors, is necessary to understand fully the potential ramifications of security-related decisions, to ensure reasonable and consistent application of security measures across national critical infrastructure, and to increase public confidence in the NRC's actions and the industry's preparedness to deal with terrorist attacks.

In this light, the Agency has been meeting often with members of the industry, representatives of Federal agencies, including the Intelligence Community, and State and local law enforcement authorities, and the public when the information is not sensitive, and the public when the information is not sensitive, to resolve the issues and to ensure a range of perspectives are brought to bear in NRC decision-making. Although the sensitive nature of the information discussed prevents the NRC from opening all these meetings to the public, it is expected that the active involvement of Federal, State and local government agencies in these discussions will appropriately represent the public citizens' interests.

The NRC also makes available an extensive public website that contains a wealth of information on our activities including nonsensitive security information. The Office of Public Affairs responds to media requests for information and writes press releases to announce significant activities. These resources and activities are designed to inform the public regularly of pertinent information on each plant in as much detail as allowed by requirements for protection of Safeguards Information.

*Question 26.* I understand that NRC Atomic Safety Licensing Boards are currently adjudicating the "Private Fuel Storage proposal, which would involve transporting 44,000 tons of high-level nuclear waste from reactors across the country to Utah. In the future, the NRC is also expected to consider a DOE license application for shipping 77,000 tons of waste to Yucca Mountain. Leaked results of an explosive test on a German CASTOR nuclear waste cask demonstrated its vulnerability to attack. Apparently, no explosive tests on currently licensed US transport casks have been performed. I also understand that the NRC has contracted with Sandia National Laboratories to perform limited physical tests on nuclear waste transportation casks (the Package Performance Study), but this study will not include explosive tests. Does the NRC plan to include explosive tests in the Package Performance Study test protocol, given the current security context?

*Response.* The NRC has a comprehensive program examining security issues under the current threat environment. The Package Performance Study focuses on the safety of casks in severe transportation accidents, not deliberate criminal acts, so explosive threats are not part of the Package Performance Study.

*Question 27.* What is the NRC currently doing to evaluate and address security vulnerabilities of nuclear waste shipments?

*Response.* NRC's 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. On October 3, 2002, the Commission issued Orders to licensees transporting spent nuclear fuel and will be considering expedited rulemaking in this area as well. In consultation with the Departments of Transportation and Homeland Security, we are also reviewing transportation requirements as part of our comprehensive review of the safeguards and security programs. In addition, NRC is conducting vulnerability

analyses to assess the risk and consequences of attacks on nuclear waste shipments. The results of these analyses will be used to decide on the need for any revisions to NRC requirements or regulatory oversight of nuclear waste shipments.

*Question 28.* What concrete steps is the NRC taking to improve the safety culture within the Agency and clearly demonstrate to its staff and the public a commitment (to) effective regulation and protecting health and safety?

Response. The results of the Office of the Inspector General's 2002 Safety Climate and Culture Survey concluded that the NRC has made substantial progress in improving its safety culture and climate since the last survey was conducted in 1998. The OIG found that NRC has improved significantly across nearly every topical area, and in many categories the Agency's scores exceeded established national benchmarks. However, there were some areas where more information is needed to determine underlying causes of employee attitudes that are reflected in the areas for improvement and to develop strategies to systematically address the underlying causes. In particular, we need to further examine the reasons why only slightly more than half of NRC employees feel that it is "safe to speak up in the NRC and how we can address that issue. We established a task group representing the major program offices to review the survey results, identify the key areas for improvement, identify potential options for improvement, and develop a schedule for implementing these actions. The task force report is due to the Executive Director for Operations (EDO). As discussed in the report, there are a number of strengths which should be maintained as well as areas for improvement. The Task Group will work with the contractor that conducted the survey to gain a better understanding of the survey results including the factors that influenced the results. This will allow us to identify and implement improvements in an efficient manner, while continuing to build on those improvements already underway.

*Question 29.* What enforcement action will NRC take in response to the Davis-Besse incident?

Response. The NRC staff has not yet arrived at final enforcement decisions, thus it is premature to speculate on what enforcement outcome is appropriate and when it will be taken. In accordance with the NRC Enforcement Policy, the staff will evaluate each identified violation and, considering the significance of the violations and the surrounding circumstances, will arrive at appropriate sanctions. Within this process, on February 25, 2003, the NRC issued a preliminary "Red" significance determination for the apparent violations leading to the reactor vessel head incident. A "Red" classification signifies "high safety significance." Completing the significance determination for this performance deficiency is one input into the NRC's final decision on enforcement action.

Another critical input will be the results of the ongoing investigation by the NRC's Office of Investigations to determine if willful violations occurred at Davis Besse. The NRC will also refer any Office of Investigation findings to the Department of Justice (DOJ) for prosecutive determination if there appear to be criminal violations within the NRC's jurisdiction. If DOJ declines to prosecute, the NRC would expect to take its enforcement action(s), including any civil penalties, within a few months of the completion of the Office of Investigations report. If DOJ pursues the case, we normally would not take enforcement action until the DOJ proceedings are complete.

At the outset of its decision, the Commission stressed that it had already strengthened its security requirements for licensees in multiple areas, acting under its AEA-rooted duty to protect "public health and safety" and the "common defense and security." The Commission also explained that further changes to address terrorist threats through the security and safeguards requirements for NRC-regulated facilities could result from an ongoing examination of security regulations and programs.

On the legal question concerning NEPA, the Commission held that NEPA does not require a terrorism review, and that an environmental impact statement is not the appropriate format in which to address the challenges of terrorism. The Commission's December 18 adjudicatory decision rested, essentially, on four grounds. First, the link between an agency licensing decision and terrorism is too speculative and remote from the licensing decision. Second, the risk of a terrorist attack at a nuclear facility cannot be adequately determined. The NRC's policy with respect to use of risk information is that this technology should be used to the maximum extent possible in all agency regulatory decisionmaking, to the extent practical, given the state of technology of risk methods and data [Ref: the Commission's PRA Policy Statement of 1995]. In the case of assessing risk from terrorist acts, a major limitation in the state of technology is the inability to estimate the frequency of the initiating act. Since September 11, the NRC staff has been investigating means by



which risk information can be used in security-related regulatory decisionmaking, even in recognition of this important limitation. Third, NEPA does not require a “worst case analysis, which “creates a distorted picture of a project’s impacts and wastes agency resources.” Lastly, NEPA’s public process is not an appropriate forum for considering sensitive security issues. Moreover, given the Commission’s existing efforts under the Atomic Energy Act, it was not obvious what additional information or insights a formal NEPA review of such issues would yield.

*Question 30.* To what extent is the emphasis on production over safety, reported on at Davis-Besse, characteristic of operations at FirstEnergy’s other nuclear power plants and reactors across the country?”

Response. NRC is closely monitoring activities at other FirstEnergy plants, Beaver Valley and Perry, for indications of improper focus or emphasis. Based on the current NRC onsite inspection and integrated assessment activities, there have been no examples identified which would indicate an emphasis on production over safety as being characteristic of operation at either the Beaver Valley or Perry plants. To the contrary, there have been specific recent instances where FirstEnergy either shut down plant operations or maintained the plant shut down and sacrificed production in order to ensure that issues were fully understood and that safety was not impacted.

In the case of the Beaver Valley Power Station, FirstEnergy has made efforts to improve performance since purchasing the facility from Duquesne Light Company in December 1999. For example, in April 2001, Beaver Valley Unit 1 was voluntarily shut down to replace degrading reactor coolant pump seals. The licensee did not attempt to defer this repair until a later scheduled outage, which might have been possible since the seals were performing adequately at the time. Additionally, in May 2002, Beaver Valley Unit 2 was voluntarily shut down to repair a Nitrogen line leak on the main transformer. Similarly, this repair might have been successfully deferred until a regularly scheduled outage. Several major voluntary projects have also been initiated over the last 2 years to improve overall safety performance. These projects include the Latent Issue Review Project, intended to identify and resolve latent deficiencies in risk significant and generation significant systems, and the Major Equipment Reliability Program, intended to replace major equipment with newer, more reliable equipment at the plant.

In the case of FirstEnergy’s Perry Station, in September 2002, the plant scrambled during performance of routine turbine testing. While attempting to reset the scram following the event, the operator identified that a scram discharge volume drain valve failed to function properly. FirstEnergy established a problem solving team which evaluated the component failure and recommended a design change which was implemented prior to unit restart. Additionally, this outage was used as an opportunity to replace a recirculation pump seal package which had been exhibiting degraded performance. Perry station management chose to extend the forced outage caused by the scram beyond the time needed to fix the specific problems which led to the shutdown in order to resolve these issues.

With respect to the other operating reactors across the country, the NRC routinely observes licensees’ performance in this area during its performance of baseline inspection activities across the country. Specific inspections include the monitoring of the plant operators’ management of “on-line risk,” or the safety risk associated with taking important equipment out of service for maintenance while the plant is operating, rather than performing a plant shutdown to facilitate the maintenance activities. This “maintenance effectiveness” inspection procedure allows inspectors to determine whether licensees are improperly deferring equipment maintenance from shutdown conditions to power operations by evaluating this on-line risk component. The inspection is performed at every operating plant in the country. No significant adverse trends have been detected in this area that would suggest other utilities are improperly placing emphasis on production over safety by deferring maintenance to periods of power operation or to future scheduled outages.

*Question 31.* Why did the NRC take such a weak approach to regulation at Davis-Besse, giving undue consideration to the financial outcomes of decisions critical to public health and safety?

Response. The decisionmaking process used for addressing the issue of Control Rod Drive Mechanism (CRDM) cracking at Davis-Besse constituted an appropriate use of risk-informed decisionmaking. The information presented by the licensee and the staff analysis showed that the likelihood of a loss-of-coolant accident (LOCA) during the proposed period of time (from December 31, 2001 to February 16, 2002) was small. The staff performed independent calculations to verify that a LOCA resulting from a CRDM failure would be effectively mitigated by the Emergency Core Cooling Systems. Based on this information, the staff concluded that the increased

risk of core damage was acceptably small and the risk of a Large Early Release (of radioactivity from within the containment structure) was very small. This analysis placed the results within our guidelines of small changes that were considered “acceptable with [continued] management attention.

Management and staff, given the information available at the time the decision was made, concluded that the additional operating time did not pose an undue risk.

The NRC’s primary obligation is to ensure adequate protection of the public health and safety. Maintaining safety is the primary performance goal on which we base the most important of our decisions. Only if and when this performance goal is satisfied is there consideration of other goals, such as the goal to avoid undue regulatory burden. The Commission unanimously concluded that the staff did not give undue consideration to the financial outcomes of decisions critical to the public health and safety, but rather the staff ensured that safety was maintained as its primary obligation.

*Question 32.* What steps is the NRC taking to prevent incidents similar to Davis-Besse at other nuclear facilities?

Response. Immediately after discovery of the reactor pressure vessel head degradation at Davis-Besse, the NRC issued Bulletin 2002-01, “Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity,” on March 18, 2002, requesting information from licensees concerning the structural integrity of the reactor coolant pressure boundary at pressurized-water reactors (PWR) and to assure that no other pressurized water reactors had a degraded reactor vessel head. On August 9, 2002, the NRC issued Bulletin 2002-02, “Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs,” requesting information about licensees’ plans for future inspections and programs for their reactor pressure vessel (RPV) heads and penetration nozzles, and providing a more rigorous vessel head inspection program that the NRC staff would find acceptable.

The NRC staff issued Orders to PWR licensees in February 2003 to ensure that future inspections of RPV heads and penetration nozzles will supplement visual examination with non-visual non-destructive examination methods, further assuring that the conditions that led to the Davis-Besse head degradation will not occur at other plants.

The NRC formed a Lessons Learned Task Force (LLTF) to review the Davis-Besse incident and make recommendations for improvement in the NRC’s activities. The LLTF has completed its evaluation and made its recommendations. The NRC formed a Senior Management Review Team (SRT) to review the recommendations and the SRT has recommended approval of 49 of the 51 recommendations from the LLTF. The NRC staff developed and forwarded to the Commission detailed action plans, which will facilitate the implementation of the higher priority recommendations. These action plans cover areas such as internal review of operating experience at nuclear facilities and boric acid corrosion control program inspections. The Commission directed the staff to proceed with the action plan.

RESPONSES BY RICHARD MESERVE TO ADDITIONAL QUESTIONS FROM  
SENATOR CARPER

*Question 1.* At today’s hearing, you were kind enough to provide some background on the events related to release of small amounts of tritium at Salem 1 reactor. While I appreciated your response and that of the other commissioners regarding the effect of tritium, I remain concerned about the timeline regarding the effect of tritium, I remain concerned about the timeline regarding the notification of the public in cases such as this. Specifically, I would like to know on what date the NRC onsite inspector was aware of the situation at Salem? What date was the situation reported to the NRC by the plant owner, PSEG? And finally, on what date was a public notice of this event issued by the NRC?

Response. On September 18, 2002, Public Service Electric and Gas (PSEG) identified contaminated water leakage into the Unit 1 Auxiliary Building and initiated an investigation. On November 20, 2002, PSEG informed the Salem NRC resident inspectors that the identified water leakage into the Unit 1 auxiliary building appeared, based on chemical and radiological analyses, to be similar to Unit 1 spent fuel pool water. Earlier, on October 1, PSEG had mentioned leakage evaluations to the Headquarters Project Manager as part of discussions on outage activities, and that the September 18 problem identification document was within the PSEG corrective action system.

When notified, the NRC resident inspectors initiated a review of PSEG’s actions and evaluations regarding the characterization of the leak. Senior regional specialists were sent to the site in early December 2002, to provide additional expertise in evaluating PSEG’s actions relative to characterization of this leakage and its po-

tential impact on workers, the public, and the environment. NRC resident and regional specialist oversight continued over the next several months through direct inspection by resident staff, as well as periodic visits and discussions by the regional specialists with PSEG and State of New Jersey representatives. No immediate health or safety concerns were identified for workers, the public, or the environment.

On February 6, 2003, the initial inspection activities were documented on pages 25–26 of the enclosed quarterly resident inspection report (50–272/02–09) for the period ending December 28, 2002. Also, on February 6, 2003, PSEG formally reported to the State of New Jersey its identification of tritium in two onsite wells near the facility. This identification was the first discovery of tritium, external to plant structures, above the State’s reporting requirement of 1000 pCi/l. Consistent with NRC regulations outlined in 10 CFR 50.72, on that same day, PSEG reported to the NRC, in an Event Notification (39566) (enclosed) that it had formally notified the State of New Jersey regarding “a spill of radioactive material, specifically, tritium.”

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EVENT NOTIFICATION

OFFSITE NOTIFICATION TO STATE AND LOCAL AGENCIES REGARDING TRITIUM SPILL

Notification was made to the State of New Jersey to report a spill of radioactive material, specifically, tritium at a concentration of 6.92 E–5 microcuries/ml. The material is presently contained on the property of Salem Generating Station and was discovered at 0945 on February 6, 2003.

Soil samples obtained at a depth of 20 feet from 2 monitoring wells indicates the presence of tritium. The monitoring wells are adjacent to Salem Unit 1 and within the protected area. We recently sampled all domestic water supplies and the results were negative. There is no indication of any offsite release, there is no threat to the public or company employees. We cannot determine at this time if this is an existing or historic condition. We are continuing with additional analysis to determine the source and extent of the condition.

The licensee informed State agencies and the NRC resident inspector and will inform the local agency of LAC.

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*February 6, 2003.*

Mr. HAROLD W. KEISER, CHIEF NUCLEAR OFFICER AND PRESIDENT,  
PSEG Nuclear LLC–N09,  
P.O. Box 236,  
Hancocks Bridge, NJ.

Subject: Salem Nuclear Generating Station—NRC Inspection Report 50–272/02–09, 50–311/02–09

Dear *Mr. Keiser*: On December 28, 2002, the NRC completed an inspection of Salem Unit 1 and Unit 2 reactor facilities. The enclosed report documents the inspection findings which were discussed on January 16, 2003 with Mr. Lon Waldinger and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission’s rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. Specifically, this inspection involved 3 months of resident inspection and region-based inspections by radiation protection, emergency preparedness, security and in-service inspection specialists.

Based on the results of this inspection, the inspectors identified four issues of very low safety significance (Green). All of these issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as non-cited violations in accordance with Section VI.A.1 of the NRC’s Enforcement Policy.

Additionally, an unresolved item discussed in Inspection Report 02–07 involving the failure to maintain the automatic fire suppression systems in six electrical areas was fully evaluated using the significance determination process during this period and found to be of very low significance (Green).

If you deny the non-cited violations noted in this report, you should provide a response with the basis for your denial within 30 days of the date of this inspection report to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555–0001 with copies to the Regional Administrator, Region I;

the Director, Office of Enforcement; and the NRC Resident Inspector at the Salem facility. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at <http://www.nrc.gov/reactors/operating/oversight.html>.

Since the terrorist attacks on September 11, 2001, the NRC has issued two Orders (dated February 25, 2002 and January 7, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002 that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the February 25th Order. Phase 1 of TI 2515/148 was completed at all commercial nuclear power plants during calendar year (CY) 2002, and the remaining inspections are scheduled for completion in CY 2003. Additionally, table-top security drills were conducted at several licensees to evaluate the impact of expanded adversary characteristics and the ICMs on licensee protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Security and Incident Response. For CY 2003, the NRC will continue to monitor overall safeguards and security controls, conduct inspections, and resume force-on-force exercises at selected power plants. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to ensure adequate safety is being maintained at all commercial power reactors.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

GLENN W. MEYER  
Chief, Projects Branch 3,  
Division of Reactor Projects.

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U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos: 50-272, 50-311

License Nos: DPR-70, DPR-75

Report No: 50-272/2002-09, 50-311/2002-09

Licensee: PSEG Nuclear LLC (PSEG)

Facility: Salem Nuclear Generating Station, Unit 1 and 2

Location: P.O. Box 236, Hancocks Bridge, NJ 08038

Dates: October 1-December 28, 2002

Inspectors: Raymond K. Lorson, Senior Resident Inspector; Fred L. Bower, Resident Inspector; Michael C. Modes, Senior Reactor Inspector; Dave Silk, Senior Emergency Preparedness Inspector; Jason Jang, Senior Radiation Specialist; Joseph T. Furia, Senior Health Physicist; Frederick Jaxheimer, Reactor Inspector; Suresh Chaudhary, Reactor Inspector; Roy L. Fuhrmeister, Senior Reactor Inspector

Approved By: Glen W. Meyer, Chief, Projects Branch 3, Division of Reactor Projects

INSPECTION REPORT

SUMMARY OF FINDINGS—IR 05000272-02-09, IR 05000311-02-09

Public Service Electric Gas Nuclear LLC, Salem Unit 1 and Unit 2 on 10/1-12/28/02, Heat Sink Performance, Fire Protection, Emergent Work, Refueling and Outage, and Temporary Modifications.

The report covered 3 months of inspection by resident inspectors and also included inspection by regional specialists in radiation protection, fire protection, security, emergency preparedness and in-service inspection. This inspection identified five green issues which were non-cited violations (NCVs). The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, Significance Determination Process (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after

NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, Reactor Oversight Process, Revision 3, dated July 2000.

#### A. INSPECTOR IDENTIFIED FINDINGS

##### *Cornerstone: Mitigating Systems*

- *Green.* The inspectors identified that the thermal performance testing of heat exchangers in the component cooling water (CCW) system was inadequate, in that readily apparent CCW flow rate errors existed.

This NCV of 10 CFR 50, Appendix B, Criterion VI, "Test Controls," is greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that inadequate test controls could allow a degraded heat exchanger to go undetected. This finding was of very low significance, because the CCW heat exchangers remained operable when the flow measurement errors were corrected in subsequent evaluations. Also, this finding had an aspect of problem identification and resolution, in that an apparent error was not identified. (Section R07)

- *Green.* The inspectors identified that the records of troubleshooting and repair activities on the 1PR2 valve and on the 22 containment fan cooling unit were incorrect and incomplete.

This NCV of TS 6.10.1.b (records) was greater than minor, because it impacted the inspectors' ability to independently assess the condition of these components following maintenance activities and it affected the Mitigating Systems Cornerstone equipment reliability objective. This finding was of very low significance, because the components performed acceptably during the post-maintenance testing. Also, this finding had an aspect of problem identification and resolution, in that it indicated that corrective actions for a previous, similar violation (IR 2001-12) had not been effective. (Section R13).

- *Green.* A required decay heat removal support system (11 CCW room cooler) was removed from service at conditions not permitted by Technical Specifications (TS) (refueling cavity level less than 23 feet.)

An NCV of TS 6.8.1 was identified for failure to establish and implement adequate procedures to control the removal of the 11 CCW room cooler from service for maintenance. This finding was greater than minor, because it affected the Mitigating System Cornerstone objective of equipment availability, in that it resulted in a condition where two residual heat removal systems were not operable when required by TS. The finding was determined to be of very low significance, since the 11 CCW pump remained functional when the fan was out of service without the necessary compensatory measures. (Section R20)

- *Green.* The inspectors identified that a temporary modification (hose connection and pump) to an operable service water header was not properly evaluated.

This NCV of 10 CFR 50, Appendix B, Criterion III, Design Controls was greater than minor, because it affected the Mitigating System Cornerstone objective of equipment reliability, in that it could have affected the operability of the only service water header while reactor de-fueling operations were in-progress. This finding was determined to be of very low significance, as the service water header remained functional while the hose was attached. (Section R23)

- *Green.* PSEG did not properly maintain room isolation barriers and improperly implemented a modification to the switchgear penetration area ventilation system, both of which caused an existing fire protection concern on carbon dioxide (CO<sub>2</sub>) concentration to be exacerbated. This finding represents the completion of an unresolved item identified in Inspection Report 2002-07 regarding the automatic fire suppression system in six safety-related electrical areas addressed by the fire protection program.

When fully evaluated, this finding was determined to be an NCV for failure to maintain the fire protection program as required by License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2). The finding was greater than minor, because it adversely affected the Mitigating System Cornerstone objective regarding fire suppression equipment capability. The finding was determined to be of very low significance due to the multiple trains of mitigating systems which would have survived postulated fire events. Also, this finding had an aspect of problem identification and resolution, in that ineffective problem evaluation existed regarding the preventive maintenance and modifications on the affected equipment. (Section OA5.3)

## REPORT DETAILS

## SUMMARY OF PLANT STATUS

Unit 1 began the period at full power. On October 10, 2002, the unit was shut-down to begin refueling outage 1R15 (Section R20). On November 5 the unit was taken critical and power ascension continued until November 12 when the unit was returned to full power. On November 12, the unit was manually tripped in response to a lowering steam generator water level condition. The event was investigated and the unit was returned to a critical mode on November 12 (Section R14). The unit operated at approximately full power for the remainder of the period with the exception of power reductions performed at the request of the offsite load dispatcher.

Unit 2 operated throughout the period at approximately full power with the exception of power reductions performed at the request of the offsite load dispatcher.

### 1. Reactor Safety

#### *Initiating Events, Mitigating Systems, and Barrier Integrity [Reactor—R]*

##### 1R01 Adverse Weather Protection

a. *Inspection Scope.*—On December 10 the inspectors performed a walkdown of the Salem Unit 1 and Unit 2 service water (SW) system, refueling water storage tanks, auxiliary feedwater storage tanks, and related heat trace systems to review whether preparations for cold weather conditions were appropriate and consistent with operations procedure, SC.OP-PT.ZZ-0002(Q), “Station Preparations for Winter Conditions.” The inspectors also reviewed S1.OP-AB.ZZ-0001(Q), “Adverse Environmental Conditions,” to determine whether PSEG had defined responsibilities for tornados, hurricanes and high wind conditions.

b. *Findings.*—No findings of significance were identified.

##### 1R04 Equipment Alignment

a. *Inspection Scope.*—The inspectors performed two partial system walkdowns during the Unit 1 refueling outage (1R15). On multiple days the inspectors walked down the 1 SW bay while the 3 SW bay was removed from service for maintenance. The inspectors also walked down the redundant emergency diesel generators (EDGs) while the EDG associated with the out-of-service SW bay was removed from service. Each Unit 1 EDG was removed from service for maintenance during 1R15. To evaluate the operability of the selected train or system when the redundant train was out of service, the inspector checked for correct valve and power alignments by comparing the positions of valves, switches and electrical power breakers to system diagrams. The inspector also verified that key standby and support system process parameters were acceptable to support operation of the redundant equipment.

b. *Findings.*—No findings of significance were identified.

##### 1R05 Fire Protection

###### .1 Fire Area Walkdowns

a. *Inspection Scope.*—During the weeks beginning on December 15 and December 22, the inspectors walked down accessible portions of six areas described below to assess PSEG’s control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. As part of the inspection, the inspectors reviewed fire protection procedure, NC.NA-AP-0025, “Operational Fire Protection Program,” and engineering document, DE.PS.ZZ-0001-A2-FHA, revision 5, “Salem Fire Protection Report—Fire Hazards Analysis,” to ascertain the requirements for required fire protection design features, fire area boundaries, and combustible loading requirements for these areas. The following areas were reviewed:

- 11 and 12 Diesel Fuel Oil Transfer Pump Rooms (fire areas 1FA-DG-84H and 1FA-DG-84G)
- Unit 1 and Unit 2 Carbon Dioxide Equipment Rooms (fire areas 1FA-DG-84F and 2FA-DG-84F)
- 21 and 22 Diesel Fuel Oil Transfer Pump Rooms (fire areas 2FA-DG-84H and 2FA-DG-84G)

The inspectors reviewed the following notifications to determine whether PSEG appropriately addressed these issues in accordance with their corrective action program:

- Notification 20125638 which identified the failure to close fire impairment permits when repairs to fire barriers were completed.
- Notification 20127260 which documented an inspector identified issue involving two potentially degraded fire barrier seals (Unit 1).
- Notification 20125301 which involved excessive cycling of the carbon dioxide tank compressor (Unit 1).

b. *Findings.*—No findings of significance were identified.

.2 *Unannounced Fire Drill Observation*

a. *Inspection Scope.*—The inspectors observed an unannounced, off-hours fire drill on December 4, 2002. The drill involved having the fire brigade respond to a simulated electrical breaker fire in the safety-related 84 foot elevation electrical switchgear room at Salem Unit 2. The inspectors verified that the fire brigade responded to the hazard area with appropriate breathing apparatus, protective clothing, and fire fighting equipment. Additionally, the inspectors verified that the fire brigade leader adequately directed the actions of the fire brigade, referred to the fire fighting response procedures and communicated the fire status to the plant operators. The inspectors also verified that the fire brigade established a monitor to ensure that the fire did not re-flash and searched the area for potential fire victims, and also observed the post-drill critique.

The inspectors reviewed notification 20125652 which identified a deficiency in the development of the fire drill scenario and notification 20125656 which identified that a notification was not promptly developed for the scenario deficiency to assess whether PSEG was appropriately entering items into the corrective action program for resolution.

b. *Findings.*—No findings of significance were identified.

1R06 *Flood Protection Measures*

a. *Inspection Scope.*—The inspectors reviewed flood protection measures for external sources as described in the Individual Plant Examination for External Events. The inspectors reviewed procedure SC.MD-PM.ZZ-0036, “Watertight Door Inspection and Repair,” and selected completed watertight door inspection records. The inspectors also reviewed procedure SC.FP-SV.FBR-0026, “Flood and Fire Barrier Penetration Seal Inspection,” and selected 2002 completed flood seal inspection records. The inspectors observed that seal discrepancies were documented in notification 20102951. This inspection also included tours of various plant areas including 64 feet and 84 feet electrical switchgear rooms for Units 1 and 2 that were identified as risk significant. The inspector located and toured an underground service water pipe and cable tunnel with PSEG engineering personnel. The inspectors noted what appeared to be groundwater dripping from several conduit seals. Sump pumps in this area had discrepancies which appeared to prevent automatic operation.

The inspectors also attempted to locate and inspect additional underground bunkers/manholes subject to flooding that contained risk-significant cables. At the conclusion of the inspection period, PSEG had not identified and provided access to all underground cable vaults with safety-related cables. PSEG initiated notification 20127365 to inspect the safety-related cable vaults at Salem. PSEG was also evaluating their underground cables to determine whether the cables were qualified for wetted or submerged service. PSEG initiated notification 20105022 to capture these issues in the corrective action program. At the completion of this inspection period, the engineering evaluation (order 80048125) for these issues had not been completed. Therefore, the inspectors were unable to determine whether PSEG implemented appropriate corrective actions for industry operating experience related to submerged safety-related electrical cables. This issue remains unresolved pending further review of PSEG’s actions for submerged safety-related electrical cables. (URI 50-272 and 311/02-09-01).

b. *Findings.*—No findings of significance were identified.

1R07 *Heat Sink Performance*

a. *Inspection Scope.*—The inspectors reviewed 12A and 12B CC system heat exchanger performance test data collected on October 11, 2002, to verify that the heat exchangers met the performance requirements and assumptions specified in engineering calculation, S-C-CC-MDC-1798, revision 3, “Component Cooling System Heat Exchangers.” Additionally, the inspectors examined service water and component cooling system drawings, reviewed operations procedure, S1.OP-PT.SW-0017, “12 Component Cooling Heat Exchanger Heat Transfer Performance Data Collection,” and interviewed a design engineer to verify that the test methodology accounted for instrument inaccuracies and differences between test and design basis conditions.

The inspectors also reviewed notification 20125915 which documented inspector identified performance test deficiencies to ensure that PSEG appropriately entered these issues into the corrective action program for resolution. One of the deficiencies involved the failure to maintain the data acquisition system test data as required by procedure S1.OP-PT.SW-0017. The failure to maintain this quality record affected the inspectors’ ability to confirm that the average test data values were representative of the individual test data samples and was similar to the findings discussed Section R13.

b. *Findings*

*Introduction.* The inspectors identified that the thermal performance testing of heat exchangers in the component cooling water (CCW) system was inadequate, in that readily apparent CCW flow rate errors existed. This finding was determined to be of very low significance and was considered a non-cited violation of Appendix B, Criterion XI, "Test Control."

*Description.* The thermal performance testing of the 12A and 12B CC heat exchangers was performed in accordance with operations procedure S1.OP-PT.SW-0017. The test was designed to compute the fouling factor for each heat exchanger based on measured SW and CC system process parameters.

The inspectors identified that the flow values recorded for the CC heat exchangers (CC side) were less than the values recorded for the same flow stream through the residual heat removal (RHR) heat exchanger (i.e. 2636 gpm for the 12B CC heat exchanger vs 3000 gpm for the RHR heat exchanger). This was a readily apparent discrepancy since the flowrate through the CC heat exchanger, which supplied both the RHR heat exchanger in addition to other loads, should have been larger than the CC flowrate through the RHR heat exchanger.

This flow discrepancy introduced a non-conservative error into the determination of the 12A and 12B CC heat exchanger fouling factors. A PSEG engineer re-computed the fouling factors assuming the higher flow values and determined that the heat exchangers remained operable.

*Analysis.* The inspectors determined that this finding was associated with the procedural quality attribute that affected the reliability objective of the Mitigating Systems Cornerstone to properly monitor the CC heat exchanger thermal performance, and is therefore greater than minor. If left uncorrected, this finding could result in a more significant safety concern (i.e. the failure to identify unacceptable CC heat exchanger performance through testing). This finding was evaluated using the Phase I worksheet of the significance determination process (SDP) and determined to be of very low risk significance (Green), since the CC heat exchangers remained operable when the flow measurement error was corrected. Also, this finding had an aspect of problem identification and resolution, in that an apparent error was not identified.

*Enforcement.* 10 CFR 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures. Contrary to the above, PSEG failed to develop adequate procedural controls for measuring the flow through the CC heat exchanger during thermal performance testing. Because the failure to adequately measure the flow through the CC heat exchanger during thermal performance testing was determined to be of very low significance and has been entered into the corrective action program (notification 20129515), this violation is being treated as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-272/02-09-02, Failure to Properly Test the 12 Component Cooling Heat Exchanger.

1R08 *Inservice Inspection Activities*

.1 *Inservice Inspection*

a. *Inspection Scope.*—The inspector reviewed the repair of the refueling water storage tank (RWST) to assure it was in compliance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code). The inspector also reviewed whether PSEG addressed the pre-repair condition of the RWST in accordance with ASME Code requirements as discussed in Inspection Report 50-272/01-07 (unresolved item (URI) 50-272/01-07-01).

The inspector reviewed the work order implementing the visual examination of the reactor head of Unit 1, which included photographic examples of penetration leaks from Surry, Oconee, Davis Besse, and Crystal River 3, in order to evaluate the scope of the visual inspections undertaken by PSEG in response to NRC Bulletin 2002-002. The inspector reviewed the visual examination procedure and the qualifications of the individuals implementing the visual inspection. The inspector reviewed the disposition of the visual examination of the head, which indicated there was no evidence of leakage of any kind, either from the head penetration or the canopy seal. With the inspection personnel who performed the inspection of the reactor head, the inspector discussed the visual evaluation of developer residue remaining on some of the canopy seal welds. Additionally the inspector reviewed the supporting documents for a number of nondestructive examinations that had been completed to determine their compliance with the ASME Boiler and Pressure Vessel Code requirements.

The inspector reviewed the Salem Unit 1 Steam Generator Program, Steam Generator Aging Management Program, and Steam Generator Operational Assessment.



The inspector observed the location verification for the acquisition of automated eddy current data taken from steam generator 14, Column 11, Row 62 taken simultaneously with data from a tube located at Column 11, Row 63, using the Framatome ROGER manipulator, to verify the data set was controlled and opportunities were introduced in the data collection process to capture location errors that might cause data offsets. The inspector reviewed, with the independent Level III eddy current data analyst, the anomalous eddy current drift data of steam generator 14 in the tube located at column 10, row 83, the tube located at column 4, row 75, and the tube located at column 2, row 85.

The inspector reviewed the data to determine if PSEG was taking into account the lessons-learned at Seabrook Unit 1 steam generators because the Salem Unit 1 generators were purchased from Seabrook Unit 2 as replacement generators and are identical in critical areas to Seabrook Unit 1. The inspector discussed the increase in the number of anti-vibration bar wear indications between refueling outage 13 and 14 in order to ascertain what evaluations had been performed. The inspector reviewed the disposition of loose parts in steam generator 11 at tube location Row 1 Column 3 and in steam generator 14 at location row 2, column 23. In addition, the inspector discussed, with the independent eddy current analyst and PSEG steam generator principal engineer, the current evaluation of the previously discovered loose parts at row 42, column 62 and column 63 in steam generator 14 in order to determine if a previous commitment to monitor and evaluate these unplugged tubes had been implemented during the current outage.

The inspector reviewed randomly selected corrective actions in the Steam Generator and Inservice Inspection Programs to determine if actions related to the programs were being addressed.

b. *Findings.* No findings of significance were identified.

The inspector determined that PSEG addressed the pre-repair RWST condition in accordance with the ASME Code and concluded that no violation of NRC requirements had occurred. Therefore, URI 50-272/01-07-01 is closed.

#### 1R11 *Licensed Operator Requalification*

a. *Inspection Scope.*—On November 14, 2002, the inspectors observed a licensed operator simulator training scenario to assess operators' performance and evaluators' critiques. The scenario observed involved operator response to a reduction in main transformer cooling and the implementation of abnormal procedure S2.OP-AB.LOAD-0001(Q), "Rapid Load Reduction." The scenario also involved operator response to a leak in the charging system and the implementation of abnormal procedures S2.OP-AB.RC-0001(Q), "Reactor Coolant System Leak" and S2.OP-AB.RAD-0001, "Abnormal Radiation." The inspectors observed the in-process critiques conducted by the evaluators in the simulator, and reviewed the areas for improvement that were entered into the operator training department critique data base.

b. *Findings.* No findings of significance were identified.

#### 1R12 *Maintenance Rule Implementation*

a. *Inspection Scope.*—The inspectors reviewed recent operating problems, notifications, system health reports, and maintenance rule (MR) performance criteria to determine whether PSEG had effectively monitored the performance of the Unit 1 CC water system and the Unit 1 pressurizer safety relief valves (included with the reactor coolant system MR data). The inspector reviewed the planned and completed corrective actions for recent system problems involving elevated CC pump vibrations and also for a pressurizer "as found" set pressure test failure (notification 20116997) to ensure that these problems were appropriately addressed. The inspector also reviewed PSEG's assessment of these issues to evaluate the adequacy of the functional failure determinations.

b. *Findings.* No findings of significance were identified.

#### 1R13 *Maintenance Risk Assessments and Emergent Work Evaluation*

##### .1 *12 Service Water Header Piping Inspection and WEKO Seal Repair*

a. *Inspection Scope.*—The inspectors reviewed selected maintenance activities associated with the inspection and permanent sealing of the 12 SW header. On November 30, 2001, a leak was discovered on the 12 SW header that was repaired with a temporary rubber WEKO seal. NRC review of the operability determination associated with this temporary repair was documented in Section 1R15.2 of Inspection Report 2002-07. The inspectors reviewed the maintenance records and inspection results of the maintenance activities (order 60024893) to inspect this concrete piping in accordance with engineering change authorization (ECA) 80044126, "No. 12 Service Water Header Piping WEKO Seal Installation." The review also verified that plant risk was properly managed during the installation activities.

b. *Findings.* No findings of significance were identified.

##### .2 *Power Operated Relief Valve IPR2 Repair*

a. *Inspection Scope.*—The inspectors reviewed selected emergent maintenance activities associated with the troubleshooting and repair of Unit 1 power operated relief valve (PORV), 1PR2 and its air operated actuator. The 1PR2 valve lifted, caused a brief depressurization during plant heat-up, and caused the plant to be cooled down for troubleshooting and repairs. The outage control center (OCC) initiated a TARP Team (notification 20119917) that implemented the technical issues process. PSEG attributed the unexpected lifting of 1PR2 to a maintenance technician's failure to install a required spacer during the completion of order 60023070. PSEG's root cause analysis of this event was performed under notification 20120466 and order 70028106. The root cause analysis report had not been issued by the end of the inspection period.

The inspectors reviewed the maintenance records and the results of the maintenance activities to repair 1PR2 under orders 60032780 and 60032911. The inspectors reviewed the completed maintenance procedure, SC.IC-PM.RC-0001(Q), "Pressurizer PORV Valve Actuator Maintenance." The inspectors also interviewed selected engineering and work planning personnel. The inspectors also verified that NRC identified discrepancies associated with the calculations of the valve internal measurements were documented in notification 20122636.

b. *Findings*

*Introduction.* The inspectors identified that the records of troubleshooting and repair activities on the 1PR2 valve were incorrect and incomplete. This finding was evaluated and determined to be of very low risk significance (Green), because it did not directly affect the operation of a mitigating system. This finding was a recurrence of a violation (NCV 2001-12-02) that was previously identified in NRC Inspection Report (IR) 2001-12 and indicated that previous attempts to correct this problem were ineffective.

*Description.* During the review of orders 60032780 and 60032911, the inspectors noted discrepancies between the electronic records of the work orders and the paper records of the work orders. The discrepancies were related to procedures specified to be used versus the procedures actually used. The actual work and troubleshooting records were incomplete and did not document the principal maintenance activities. The inspectors also noted that the 1PR2 air actuator test record was retained by the valve engineering in lieu of being retained as a quality record. PSEG initiated notifications 20125602 and 20125560 to capture these issues in the corrective action program.

*Analysis.* This finding adversely impacted the inspectors' ability to perform their regulatory oversight function to independently assess the operability of equipment important to safety. The finding affected the Mitigating System Cornerstone reliability objective and was therefore greater than minor. The finding was determined to be very low safety significance (Green) since the 1PR2 has been functioning satisfactorily since the completion of the maintenance and post-maintenance testing. Also, this finding had an aspect of problem identification and resolution, in that it indicated that corrective actions for a previous, similar violation (IR 2002-12) had not been effective.

*Enforcement.* Technical Specification (TS) 6.10.1.b requires that records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety be retained for at least 5 years. Contrary to the above, PSEG failed to maintain complete and adequate records of inspection and maintenance activities performed on the 1PR2. This very low risk violation has been entered in the corrective action program (notification 20091973) and is being treated as the first example of a non-cited violation consistent with the Section VI.A of the NRC's Enforcement Policy: NCV 50-272 and 50-311/02-09-03.

3.22 *Containment Fan Cooling Unit (CFCU)*

a. *Inspection Scope.*—The inspectors reviewed selected emergent maintenance activities associated with the troubleshooting and repair of 22 CFCU and its associated flow control valves. These activities were selected for inspection, because following scheduled maintenance, the 22 CFCU began oscillating from 0-2000 gpm when returned to service. Additional aspects of this issue were documented in Sections R15 and R19. Engineering personnel were assembled to implement the technical issues process. The inspectors reviewed the following corrective action and work order documents associated with this issue:

- Notifications 20122677 and 20122736 and order 60033111
- Notifications 20122710 and order 60033240
- Order 60032382

The inspectors reviewed all the maintenance records and results of the maintenance activities provided by PSEG for repairs to the flow controls for the 22 CFCU under orders 60033240, 60033111 and 60032382. The inspectors reviewed the records of the completed procedure used, SH.MD-AP.ZZ-0002(Q), "Maintenance De-

partment Troubleshooting and Repair” for troubleshooting in accordance with order 60033240.

The inspectors verified that an inspector-identified discrepancy associated with PSEG’s failure to include the unavailability of the 22 CFCU in the weekly risk assessment (week 99), when the work was carried over from work week 98, was entered into the corrective action process and documented by notification 201220123088.

*b. Findings*

*Introduction.* The inspectors identified that the records of troubleshooting and repair activities on the the 22 containment fan cooling unit were incorrect and incomplete. This was the second example of this finding. This finding was evaluated and determined to be of very low risk significance (Green), because it did not directly affect the operation of a mitigating system.

*Description.* During the review of notifications 20122677, 20122736 and 20122710, and orders 60033111, 60033240 and 60032382, the inspectors noted discrepancies between the electronic records of the work orders and the paper records of the work orders related to procedures used. The inspectors also noted that the records of the actual work performed were incomplete. Some examples of this observation included: records were not found for troubleshooting under order 60033111; records were not found for Temporary Modification (TM) 02–036 that was installed and removed under order 60033240; and records were not found for testing under order 60032382. Neither the electronic nor the paper records provided the documentation of these principal maintenance activities. PSEG documented these issues in the corrective action program.

*Analysis.* This finding adversely impacted the inspectors’ ability to perform their regulatory oversight function to independently assess the operability of equipment important to safety. This finding affected the Mitigating System Cornerstone reliability objective and was therefore greater than minor. The finding was of very low safety significance, since the 22 CFCU had been tested and found operable during post maintenance testing and in service. Also, this finding had an aspect of problem identification and resolution, in that it indicated that corrective actions for a previous, similar violation (IR 2002–12) had not been effective.

*Enforcement.* Technical Specification 6.10.1.b requires that records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety be retained for at least 5 years. Contrary to the above, PSEG failed to maintain complete and adequate records of inspection and maintenance activities performed on the 22 CFCU. This very low risk violation has been entered in the corrective action program and is being treated as the second example of a non-cited violation consistent with Section VI.A of the NRC’s Enforcement Policy: NCV 50–272 and 50–311/02–09–03.

*4 Other Emergent Maintenance Activities*

*a. Inspection Scope.*—The inspectors reviewed additional selected maintenance activities through direct observation, document review (risk assessment reviews, operating logs, industry operating experience and notifications), and personnel interviews. This review was performed to determine whether PSEG properly assessed and managed the risk, and performed these activities in accordance with applicable TS and work control requirements, including the administrative procedures for managing risk associated with conducting maintenance activities during both on-line and outage conditions. The following activities were reviewed:

- 1A, 1B and 1C EDG maintenance outages during 1R15.
- Unit 1 forced outage activities on November 12, 2002.
- Installation of a bus link on the 2C battery on November 12, 2002.

*b. Findings.* No findings of significance were identified.

*1R14 Personnel Performance During Non-routine Plant Evolutions*

*.1 Synchronizing Main Generator to the Grid*

*a. Inspection Scope.*—The inspectors observed selected portions of the preparations and synchronization of the main generator to the grid on November 6, following the Unit 1 refueling outage and return to Mode 1. The inspectors verified that the activities were performed in accordance with S1.OP-SO.TRB–0001(Q), “Turbine Generator Startup Operations.” The inspectors noted that management oversight was provided by an assistant operations manager and also that identified procedural problems were placed into the corrective actions program (notifications 20120646 and 20120831).

*b. Findings.* No findings of significance were identified.

*.2 Power Operated Relief Valve 1PR2 Lift During Plant Pressurization*

*a. Inspection Scope.*—During plant heatup on November 1, 2002, the 1PR2 PORV lost closed indication and reactor coolant system pressure began to lower. Attempts

to close the valve manually were unsuccessful and the pressure reduction was terminated by closing the PORV block valve, 1PR7. A transient assessment response plan (TARP) team was assembled. Subsequently, the plant was cooled down and the valve internals were inspected. PSEG determined that a spacer from the internal trim package had not been reinstalled when the 1PR2 was worked on during the outage. The inspectors verified that this issue was entered into the corrective action program (notification 20119917) and a level 1 root cause analysis and a review of the human performance aspects were planned. The inspectors observed and monitored selected portions of the TARP team activities.

b. *Findings.* No findings of significance were identified.

*.3 Manual Reactor Trip of Salem Unit 1 Due to Low S/G Water Level Caused by Feed Pump Runback*

a. *Inspection Scope.*—The inspectors reviewed the response to a Unit 1 reactor trip that occurred on November 12, 2002 following the unexpected loss of the 11 main feedwater pump. The 11 main feedwater pump trip was caused by the momentary shorting of an electrical probe to ground during a troubleshooting activity. The inspectors reviewed this event to ensure that the operator response was appropriate and in accordance with operating procedures, mitigating equipment operated properly, and to confirm that PSEG's post-trip review and corrective actions were thorough. The inspectors interviewed operators and operations management, reviewed applicable documentation including operator logs, the TARP report, the post-trip data package, the 4-hour non-emergency event report, applicable notifications and attended the post-trip SORC review meeting to ensure that the cause(s) of the event were understood and addressed. Additionally, the inspectors reviewed notification 20122632 to resolve inspector-identified problems associated with the maintenance and implementation of the Trip Hazards Area program.

b. *Findings.* No findings of significance were identified.

*1R15 Operability Evaluations*

*a. Inspection Scope*

*.1 Containment Isolation Valve Control Cable Cut*

a. *Inspection Scope.*—The inspectors reviewed the operability determination (CROD)-02-009 (notification 20114253) for a control cable for a reactor coolant pump cooling water containment isolation valve (1CC118). Design change activities to replace cable fire wrap resulted in a six-inch longitudinal cut through the outer jacket, copper shielding material, an insulating sheath, an inner protective layer and through one conductor's insulation layer. PSEG's visual inspection of the cut did not find any damage to any conductors. No alarms were received and valve indication was not lost in the control room. PSEG tested and verified circuit continuity of the conductors with a critical safety function. The inspectors verified that compensatory measures were implemented and corrective actions were specified. The inspectors also reviewed order 70027181 that documented the follow-up operability assessment (CRFA) performed in accordance with procedure SH.OP-AP.ZZ-0108, "Operability Assessment and Equipment Control Program."

b. *Findings.* No findings of significance were identified.

*.2 Control Room Ventilation Radiation Monitor 1R1B*

a. *Inspection Scope.*—The inspectors reviewed the operability determination (CROD)-02-008 (Notification 20113713) for the control room ventilation radiation monitor spiking into alarm and realigning the control area ventilation (CAV) system. PSEG believed that a faulty radiation detector temperature alarm module was producing noise that resulted in the spurious radiation alarms and CAV system realignment. PSEG performed troubleshooting and determined that the radiation detector and the radiation detector heater (required for environmental qualification) were working properly. The inspectors verified that compensatory measures were implemented and corrective actions were specified. The inspectors also reviewed Order 70027081 that documented the follow-up operability assessment (CRFA) performed in accordance with procedure SH.OP-AP.ZZ-0108, "Operability Assessment and Equipment Control Program."

b. *Findings.* No findings of significance were identified.

*.3 Unit 1 AMSAC*

a. *Inspection Scope.*—During a control room tour on November 14, 2002, the inspectors noted that the AMSAC trouble alarm was illuminated. Based on discussions with control room operators, the inspectors noted that the system was inoperable, the condition had been logged and had been entered into the corrective action system (notification 20121636). The inspectors discussed the condition further with operations and engineering personnel to determine whether the AMSAC system had been inoperable when the plant was restarted from the Unit 1 forced outage in November. The inspectors reviewed control room alarms and determined that the

AMSAC system was operable during the plant startup. PSEG initiated notifications 20122925, 20122627 and 20122624 to document that an issue associated with operator awareness of the AMSAC system status during the startup and also to identify enhancements to the AMSAC alarm response and maintenance procedures.

b. *Findings.* No findings of significance were identified.

#### .4 22 Containment Fan Coil Unit

a. *Inspection Scope.*—On November 20 PSEG maintenance personnel performed calibration and testing of the 22 CFCU flow instruments (Section R19). On November 23 while attempting to perform procedure SC.IC-LC.SW-0001(Q), “Containment Fan Coil Unit Service Water Flow Instruments Loop Calibration,” in accordance with Order 30069819, control room and maintenance personnel observed 0–2000 g.p.m. flow oscillations with the 22 CFCU in service. The 22 CFCU was removed from service. Unit 2 was in a previously entered (November 19) limiting condition for operation (LCO) for scheduled maintenance on the 22 CFCU. PSEG performed troubleshooting and found that the SW flow could be stabilized with the flow controller in manual control and the flow control valve (22SW223) full open. The oscillations returned when the controller was returned to automatic control. To resolve the inability to control SW flow at the accident flow setpoint, PSEG configured the 22 CFCU in the manual control mode with the 22SW223 valve full open (greater than normal accident flow). The 22 CFCU fans were also configured to only operate at the accident (low) speed. PSEG planned to limit run time on the 22 CFCU to that required for surveillance testing.

PSEG considered the 22 CFCU degraded, but operable with the flow controls in manual in lieu of its normal automatic control mode. The inspectors reviewed the operability determination (CROD)–02–011 (Notification 20122803 and Order 70028270), the regulatory change process determination and the 10 CFR 50.59 screening performed for the degraded condition. The inspectors also observed the SORC meeting that reviewed these documents for safety concerns. The inspector also verified that PSEG implemented administrative controls to declare the 22 CFCU inoperable if the river temperature were to exceed 60 F. The inspectors also reviewed the follow-up operability assessment (CRFA) documented in order 70028270 that was performed in accordance with procedure SH.OP-AP.ZZ-0108, “Operability Assessment and Equipment Control Program.”

b. *Findings.* No findings of significance were identified.

#### .5 14 Containment Fan Cooling Unit

a. *Inspection Scope.*—On December 22 PSEG personnel attempted to place the 14 CFCU in the high-speed, low-flow mode of operation for valve stroke time testing. The 14 CFCU outlet flow control (accident mode) valve (14SW223) slowly stroked closed and one of the normal flow control valves (14SW57) indicated open (accident position) with no measurable stroke time. Unit 1 was in a previously entered (December 17) LCO for scheduled maintenance on the 14 CFCU. PSEG formed a TARP team to investigate (Notification 20125678). Based on troubleshooting PSEG concluded that the most likely cause of this problem was that a second normal flow control valve (14SW65) was throttled open. To resolve this problem PSEG racked out and removed the control power to the high speed fan breaker and performed testing, which demonstrated that the 14 CFCU was operable but degraded in this configuration. The inspectors reviewed PSEG activities to confirm that the 14 CFCU was operable in the “as left” configuration.

b. *Findings.* No findings of significance were identified.

#### 1R16 Operator Work-Arounds

a. *Inspection Scope.*—On December 9–13 the inspectors reviewed the outstanding Salem Unit 1 and Unit 2 operator burdens as described by operations procedure, SH.OP-AP.ZZ-0030(Q), “Operator Burden Program.” Additionally, the inspectors reviewed the open operator workarounds, operator concerns, overhead annunciators, control room instrumentation and computer point deficiencies. These items were reviewed to ensure that identified system deficiencies would not prevent operators from properly responding to plant events.

b. *Findings.* No findings of significance were identified.

#### 1R17 Permanent Plant Modifications

##### .1 12 Service Water Header Piping WEKO Seal Installation

a. *Inspection Scope.*—The inspectors reviewed selected portions of a design change (order 80044126) that had modified the 12 SW header piping and installed a WEKO seal to restore the degraded header to its design qualification. The inspectors reviewed the 10 CFR 50.59 screening done for this design change. The inspectors also reviewed Vendor Technical Document (VTD) 325626 (MPR Associates Calculation 2449, “Evaluation of Salem Generating Station Concrete Service Water Pipe Specials”) that provided analysis and established bounding criteria to demonstrate that

the repair of the 12 SW header with a double wide WEKO seal and segmented stainless steel cylinder would restore the header piping to its original design criteria. The bounding criteria included: (1) minimum remaining average wall thickness of the unflawed metal; (2) length of the through-wall flaw; (3) limited damage to the concrete coating on the steel pipe; (4) mortar coated steel piping without prestressed concrete; and (5) limited deterioration of the longitudinal tie rods. The inspectors verified that the design bases, licensing bases, and performance capability of risk significant systems and components were not degraded by the design change.

b. *Findings.* No findings of significance were identified.

#### 1R19 Post Maintenance Testing

a. *Inspection Scope.*—The inspectors observed the performance of post-maintenance testing (PMT) and/or reviewed documentation for selected risk-significant systems to assess whether the systems met TSs, UFSAR and PSEG procedural requirements. The inspectors assessed whether the testing appropriately demonstrated that the systems were operationally ready and capable of performing their intended safety functions. The following test activities were reviewed:

- Selected maintenance activities associated with the troubleshooting and repair of Unit 1 PORV 1PR2 under order 60032911.
- Selected maintenance activities associated with the troubleshooting and repair of the 1PR2 air operated actuator under order 60032780.
- Calibration of the 22 CFCU loop flow control devices on November 20, 2002, in accordance with Order 30069819 and procedure SC.IC-LC.SW-0001(Q), “Containment Fan Coil Unit (CFCU) Service Water Flow Instruments Loop Calibration.” The inspectors also reviewed the pre and post calibration testing that was completed in accordance with procedure S2.IC-SC.SW-0001(Q), “Containment Fan Coil Unit Service Water Inlet/Outlet Flow.”

• Scheduled maintenance outages on the 12 chilled water pump and the 12 component cooling water pump during the week of December 15, 2002, and EDG maintenance activities performed during 1R15, following their completion.

b. *Findings.* No findings of significance were identified.

#### 1R20 Refueling and Outage Activities

##### .1 Routine Observations

a. *Inspection Scope.*—The inspectors reviewed the key activities planned and scheduled for the Unit 1 refueling outage (1R15), the 1R15 risk assessment report, and the contingency plans developed for the two reactor coolant system (RCS) mid-loop operating periods and for the removal of the 12 service water header from service. This review was performed to determine whether PSEG appropriately assessed and had planned actions to manage the risk associated with the 1R15 activities. Some of the specific activities reviewed included:

- Plant cooldown data to determine whether the plant cooldown was performed in accordance with TS limits.
- Plant configuration to periodically verify its consistency with the plant Outage Risk Assessment and Management (ORAM) plan, including availability of decay heat removal systems as required.
- Reduced inventory and mid-loop conditions. Reviewed contingency plans for inventory control for RCS at mid-loop with fuel in the reactor vessel. Verified that a temporary level column was installed and that it was periodically monitored to determine the water level in the RCS hot leg and the reactor pressure vessel. Reviewed preparations for steam generator nozzle dam removal including mock-up training. Verified that the containment equipment hatch was secured during reduced inventory operations and that the personnel equipment hatch could be promptly secured.
- Fuel handling operations, including removal and insertion of the fuel bundles and fuel movement within the spent fuel pool. Verified that fuel handling was performed in accordance with plant procedures and that the location of fuel assemblies, including new fuel assemblies, and control elements were tracked from core offload through core reload.
- Selected maintenance activities, including RWST discharge nozzle weld inspection and restoration, 12 SW header outage and internal pipe inspections, and EDG maintenance outages.
- Bare metal visual inspection of the Reactor Pressure Vessel (RPV) head with PSEG personnel. Conducted a visual inspection of the under-RPV area at normal operating temperature and pressure conditions.
- Walkdown of selected areas of the containment and pressurizer cubicle during closeout activities and prior to reactor startup to identify debris that could affect the performance of the containment emergency sump. Identified some minor deficiencies to PSEG outage management personnel for resolution following this walkdown.

- Plant restoration, including control of mode changes, startup and power ascension activities.

b. *Findings.*—A finding (discussed in Section R23) was identified involving the failure to properly evaluate a temporary modification to the 11 service water header while the 12 service water header was removed from service. No other findings of significance were identified.

*.2 One Shutdown Cooling Loop Inoperable and less than 23 Feet of Water Above the Fuel*

a. *Inspection Scope.*—On October 25 the inspectors noted a late log entry documenting entry into TS Action Statement (TSAS) 3.9.8.2. Entry into this TSAS was required when less than two RHR loops are operable with the reactor cavity water level less than 23 feet above the top of the fuel in the reactor vessel. The inspectors reviewed selected procedures, risk and contingency planning documents, control room logs, notification 20118564, order 70027847 and discussed the event with PSEG operations, outage management, risk assessment and licensing personnel to evaluate the adequacy of PSEG's review of this event.

b. *Findings*

*Introduction.* PSEG removed the 11 component cooling water (CCW) pump room cooler fan from service at conditions not permitted by TS (i.e., with refueling cavity level less than 23 feet). This finding was determined to be of very low risk significance (Green), because during the event the 11 CCW pump remained available and functional, and therefore did not directly affect the operation of a mitigating system.

*Description.* Technical Specification Action Statement 3.9.8.2 requires that two operable RHR loops be maintained when the reactor cavity water level is less than 23 feet above the top of the active fuel. At 2:23 a.m. on October 25, 2002, the 1C vital bus was de-energized with the refueling cavity drained down below a level of 23 feet of water above the fuel in the reactor vessel. This de-energized the fan motor of the 11 CCW pump room cooler that was required to support operability of the 11 CCW pump (one of two CCW pumps required to maintain two RHR loops operable). This oversight was identified a few hours later by an oncoming operating crew.

Also, PSEG had not implemented the required compensatory measures prior to de-energizing the fan room cooler. These actions would have included, running the available (12) room cooler, propping open the 11 CCW pump room door, tagging the auxiliary feedwater pumps out of service, stopping the safety injection and containment spray pumps, ensuring service water temperature is below 90 F, and monitoring atmospheric temperature. PSEG evaluated this issue and identified human performance, procedure and administrative controls, supervisory oversight and human performance as contributing factors to this event. Additionally, the operating procedures did not cover the 11 CCW pump and room cooler within 1C vital bus de-energizing guidance. Inadequate scheduling and coordination of major outage events and the failure to identify required compensatory measures were also identified as contributors to this event.

*Analysis.* This finding affected the configuration control attribute of the availability objective of the Mitigating System Cornerstone since it involved the failure to adequately control outage activities and affected the operability of required decay removal systems while shutdown and was therefore more than minor. The finding was reviewed by NRC Senior Reactor Analysts from Region I and NRR and determined to be of very low safety significance since the 11 CCW pump was able to function for the period of time that the room cooling fan was removed from service without the necessary compensatory measures. Therefore, the 11 CCW pump remained available and functional.

*Enforcement.* Technical Specification 6.8.1.a requires that written procedures shall be established and implemented for activities in Appendix "A" of Regulatory Guide (RG) 1.33. Regulatory Guide 1.33 requires that procedures be developed to perform maintenance on safety related systems. PSEG failed to establish and implement adequate procedures prior to conducting maintenance that removed the 11 CCW pump room cooler from service. This very low risk violation has been entered in the corrective action program (notification 20118564) and is being treated as a non-cited violation consistent with the Section VI.A of the NRC's Enforcement Policy: NCV 50-272 and 50-311/02-09-04.

*1R22 Surveillance Testing*

*.1 Routine Testing*

a. *Inspection Scope.*—The inspectors reviewed the test results for selected risk significant components systems to assess whether the components met TS, Updated Final Safety Analysis Report, and PSEG procedural requirements. The inspectors assessed whether the testing appropriately demonstrated that the components were

operationally ready and capable of performing their intended safety functions. The following tests and activities were reviewed:

- S1.OP-ST.CH-0002(Q), “Inservice Testing—12 Chilled Water Pump”
- S1.OP-ST.CC-0002(Q), “Inservice Testing—12 Component Cooling Pump”

b. *Findings.* No findings of significance were identified.

.2 *Containment Air Temperature Surveillance Measurement*

a. *Inspection Scope.*—The inspectors interviewed design engineers and reviewed vendor documentation to determine whether the containment integrity design basis accident analysis considered the initial temperature of the containment passive heat sinks. This review was conducted to determine whether PSEG’s method for determining the containment average air temperature per TS 4.6.1.5 was consistent with the design basis accident analysis assumptions for initial containment temperature as discussed in Inspection Report 50-272 & 50-311/01-09 (URI 50-272 & 50-311/01-09-01).

b. *Findings.*—PSEG demonstrated that the initial containment temperature assumed in the containment integrity design basis analysis considered the initial (i.e. pre-accident) temperature of the containment passive heat sinks. The inspectors concluded that PSEG’s method for measuring containment temperature as described in Inspection Report 50-272 & 50-311/01-09 would satisfy design basis accident assumptions. Therefore, no violations of NRC requirements were identified and URI 50-272 & 50-311/01-09-01 is closed.

1R23 *Temporary Plant Modifications*

a. *Inspection Scope.*—The inspectors reviewed the following temporary modifications (TMs) to assess: (1) the adequacy of the 10 CFR 50.59 screen or evaluation; (2) the installation and removal conditions and instructions; (3) the updating of drawings and procedures; and (4) the expected removal date. The following TMs were inspected:

- 02-037, “Bypass Detector Low Temperature Alarm for Radiation Monitor 2R1B, Channel 1”
- Installation of a Temporary Hose to the 11SW527 Valve

b. *Findings*

*Introduction.* The inspectors identified that a temporary modification (hose connection and pump) to the service water system was not properly evaluated. A Green NCV was identified for failure to adequately evaluate a rubber hose that was temporarily attached to the only operable service water header as prescribed by 10 CFR 50, Appendix B, Criterion III, “Design Control.”

*Description.* The inspectors identified that on October 18, 2002, a temporary rubber hose and air-operated pump were connected to the 11SW527 valve to facilitate draining of leakage from the 12 SW header. The hose was approximately 3 inches in diameter, and manually operated 11SW527 valve was left in the open position. In this configuration the temporary hose and air-operated pump formed an extension of the 11 SW header pressure boundary and failure of this temporary assembly would have adversely affected the capability of the SW system to supply required safety-related loads. The 12 SW header was out of service for maintenance and reactor core defueling operations were in progress while the temporary assembly was connected.

The inspectors informed operations personnel regarding this concern and reviewed operations procedure, S1.OP-SO.SW-0005, “Service Water System Operation,” and the temporary modification log to determine whether this configuration had been previously analyzed. The inspectors determined that this configuration had been established without performing an adequate engineering evaluation of the potential impact of this temporary assembly on the SW system. Operations personnel implemented interim corrective measures to shut the 11SW527 valve when not actually using the connection to drain the leakage from the 12 SW header and initiated notification 20117389 to enhance the procedural guidance for control and use of temporary assemblies.

*Analysis.* The inspectors determined that this finding was associated with the evaluation and use of temporary equipment that affected the design control attribute of the capability objective of the Mitigating Systems Cornerstone to maintain an operable service water system, and is therefore greater than minor. If left uncorrected, this finding could have resulted in a more significant safety concern (i.e. the failure of the temporary hose assembly could have challenged the capability of the only operable service water header while reactor core defueling operations were in progress). This finding was evaluated using the Phase I worksheet of the SDP and determined to be of very low risk significance (Green) since the temporary hose assembly remained intact, was installed for a short period of time, and was typically attended by a nuclear equipment operator.



*Enforcement.* 10 CFR 50, Appendix B, Criterion III, "Design Control," requires that applicable regulations for structures, systems, and components are properly translated into specifications, procedures and drawings. Contrary to the above, PSEG failed to develop adequate specifications and procedures prior to connection of a temporary hose assembly to the 11 SW header. Because the failure to develop adequate controls for this configuration was determined to be of very low significance and has been entered into the corrective action program (notification 20117389), this violation is being treated as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy: NCV 50-272/02-09-05, Failure to Properly Evaluate a Temporary Installation to the 11 Service Water Header.

## 2. Radiation Safety

### *Occupation Radiation Safety [OS]*

#### *2OS1 Access Control to Radiologically Significant Areas*

a. *Inspection Scope.*—During the period October 21–25, 2002, the inspector reviewed exposure significant work areas, high radiation areas, and airborne radioactivity areas in the plant and evaluated associated controls and surveys of these areas to determine if the controls (i.e., surveys, postings, barricades) were acceptable. The primary focus of this inspection was observing and reviewing work activities associated with the Unit 1 refueling outage (1R15). For these areas the inspector reviewed radiological job requirements and attended job briefings to determine if radiological conditions in the work area were adequately communicated to workers through briefings and postings. The inspector also verified radiological controls, radiological job coverage, and contamination controls to ensure the accuracy of surveys and applicable posting and barricade requirements. The inspector obtained this information via: interviews with PSEG personnel; walkdown of systems, structures, and components; and examination of records, procedures, or other pertinent documents. The inspector determined if prescribed radiation work permits (RWPs), and procedure and engineering controls were in place; whether PSEG surveys and postings were complete and accurate; and if air samplers were properly located. The inspector reviewed RWPs used to access these and other high radiation areas to identify the acceptability of work control instructions or control barriers specified. The inspector reviewed electronic pocket dosimeter alarm set points (both integrated dose and dose rate) for conformity with survey indications and plant policy. The controls implemented by PSEG were compared to those required under plant technical specifications (TS 6.12) and 10 CFR 20, Subpart G for control of access to high and locked high radiation areas.

b. *Findings.* No findings of significance were identified.

#### *2OS2 As Low As Is Reasonably Achievable (ALARA) Planning and Controls*

a. *Inspection Scope.*—The inspector reviewed ALARA job evaluations, exposure estimates, and exposure mitigation requirements and compared ALARA plans with the results achieved. A review was performed of the integration of ALARA requirements into work procedures and RWP documents, the accuracy of person-hour estimates and person-hour tracking, and generated shielding requests and their effectiveness in dose rate reduction. The inspector obtained this information via: interviews with PSEG personnel; walkdown of systems, structures, and components; and, examination of records, procedures, or other pertinent documents.

The inspector also reviewed exposure goals established for the Unit 1 refueling outage (1R15). An outage goal of 110 person-rem had been established by PSEG, including the following work activities and their outage exposure goal: reactor maintenance (18.500 rem); primary steam generator work [including eddy current testing] (20.335 rem); reactor coolant pump and motor work (3.460 rem); and, in-service inspection (7.700 rem). By day 14 of the outage, outage exposures exceeded 116 person-rem. The primary reason for exceeding the outage goal identified by PSEG was higher than anticipated area dose rates as the result of a shutdown crud burst and the subsequent inability to remove the radioactive material from the primary coolant in sufficient quantity prior to the start of outage work.

Since the 1999 Unit 1 refueling outage (1R13), this is the third time greater than anticipated area dose rates have been created following a shutdown crud burst and subsequent primary coolant clean-up. Similar issues also arose during the 2000 Unit 2 refueling outage (2R11). Corrective actions taken after both of these previous outages proved insufficient to prevent a recurrence during 1R15.

b. *Findings.* No findings of significance were identified.

#### *2OS3 Radiation Monitoring Instrumentation*

a. *Inspection Scope.*—The inspector reviewed field instrumentation utilized by radiation protection technicians and plant workers to measure radioactivity, including portable field survey instruments, friskers, portal monitors and small article mon-

itors. The inspector reviewed selected radiation protection instruments observed in the radiologically controlled area (RCA), specifically verification of proper function and certification of appropriate source checks for these instruments which were utilized to ensure that occupational exposures are maintained in accordance with 10 CFR 20.1201. The inspector obtained this information via: interviews with PSEG personnel; walkdown of systems, structures, and components; and examination of records, procedures, or other pertinent documents.

b. *Findings. No findings of significance were identified.*

### 3. Safeguards

#### *Physical Protection [PP]*

##### *3PP3 Response to Contingency Events*

a. *Inspection Scope.*—The inspectors reviewed the status of security operations and assessed implementation of the protective measures in place as a result of the current, elevated threat environment.

b. *Findings. No findings of significance were identified.*

### 4. Other Activities [OA]

#### *4OA1 Performance Indicator Verification*

##### *.1 Public Radiation Safety Cornerstone*

a. *Inspection Scope.*—The inspector reviewed a listing of licensee event reports for the period January 1, 2002 through October 21, 2002 for issues related to the public radiation safety performance indicator, which measures radiological effluent release occurrences per site that exceed 1.5 milli-rem per quarter (mrem/qtr) whole body or 5 mrem/qtr organ dose for liquid effluents; or 5 mrad/qtr gamma air dose, 10 mrad/qtr beta air dose; or 7.5 mrems/qtr organ doses from I-131, I-133, H-3 and particulates for gaseous effluents.

b. *Findings. No findings of significance were identified.*

##### *.2 Emergency Preparedness*

a. *Inspection Scope.*—The inspector reviewed PSEG's procedure for developing the data for the emergency preparedness PIs which are: (1) Drill and Exercise Performance, (2) Emergency Response Organization Drill Participation and (3) Alert Notification System (ANS) Reliability. The inspector also reviewed PSEG's drill/exercise reports, training records and ANS testing data from the fourth quarter of 2001 to the end of the third quarter of 2002 to verify the accuracy of the reported data. The review was performed in accordance with NRC Inspection Procedure 71151. The acceptance criteria are 10 CFR 50.9 and NEI 99-02, Revision 2, Regulation Assessment Performance Indicator Guideline.

b. *Findings. No findings of significance were identified.*

##### *.3 Reactor Scram and Unplanned Power Reductions*

a. *Inspection Scope.*—The inspectors reviewed the performance indicator (PI) data submitted by PSEG for "Unplanned Scrams per 7000 Critical Hours," "Scrams with a Loss of Normal Heat Removal," and "Unplanned Transients per 7000 Critical Hours" to ensure that the data was consistent with the plant operating histories and with the guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline." The inspectors reviewed the data submitted from the third quarter of 2001 to the third quarter of 2002.

b. *Findings. No findings of significance were identified.*

#### *4OA2 Identification and Resolution of Problems*

##### *.1 Cross Reference to P&IR Findings Documented Elsewhere*

Section 40A5 describes a finding for failure to be able to achieve and maintain a 50 percent concentration of carbon dioxide for 30 minutes by the fire suppression systems for six safety-related areas. The failure of PSEG to identify that modifications to the ventilation system to trip the exhaust fans aggravated this previously identified condition and to implement timely and effective action for the conditions are indicative of potential deficiencies in the licensee's corrective action reviews.

##### *.2 Reactor Safety Cornerstone—Salem Unit 1 Inservice Inspection*

a. *Inspection Scope.*—The inspector reviewed a sample of corrective action reports shown in Attachment 1, which identified problems related to ISI issues. The inspector verified that problems were being identified, evaluated, appropriately dispositioned, and entered into the corrective action program.

b. *Findings. No findings of significance were identified.*

##### *.3 Public Radiation Safety Cornerstone—Salem Unit 1 Auxiliary Building Water Leak*

a. *Inspection Scope.*—The inspectors reviewed PSEG activities regarding problem identification and resolution of contaminated water leaks into the Auxiliary Building. The review noted the applicable information as discussed below.

On September 18, 2002, PSEG documented (notification 20114071) the discovery of water leakage through the Unit 1—78-foot mechanical penetration room wall. PSEG also noted that workers' shoes coming from the room were contaminated. PSEG took smear and water samples. The measurement results indicated that the source of water was from a radioactive system. There has been a history of non-contaminated water leakage in this area (e.g., notification 20001837 in 1999 and MMIS 971217047 in 1977).

On September 25, 2002, PSEG initiated an evaluation (notification 20114152) to resolve the water leakage. Subsequently, PSEG engineering personnel identified a second leak at a spent fuel pool cooling piping penetration (between the Unit 1 spent fuel building and the auxiliary building) located within the Unit 1 78-foot mechanical penetration room.

On November 20, 2002, PSEG informed the resident inspectors of the leak. PSEG personnel reported that chemical analysis of water from the leak was indicative of the Unit 1 spent fuel pool. On November 29, PSEG began installation of a collection device to capture the leakage from under the spent fuel pool cooling line and direct this water to the contaminated drain and liquid radwaste systems.

On December 9–10, 2002, the resident inspectors and a regional specialist toured the Unit 1 78-foot mechanical penetration room and verified the leak catch device under the spent fuel pool cooling water return pipe. The inspectors also toured Unit 1 64-foot switchgear room and noted that there was evidence of five (5) water leaks along the wall in the room. The leaks appeared to be long established with the exception of one (Sample 7). PSEG took five samples and measured for boron, tritium, and gamma analyses. The analytical results of the Sample No. 7 indicated that the source of water was from a radioactive system. Analytical results of the other four (4) samples suggested that these were the results of uncontaminated groundwater intrusion. On December 9 PSEG assigned a full-time team and developed an action plan to address the leaks. Two additional notifications (20123998 and 20120815) were drafted to document the corrective actions.

On January 2 and 3, 2003, the inspectors reviewed analytical data, including water samples from seven (7) onsite environmental test locations. The analytical results for tritium, fission, and activated gamma emitters were well below the required lower limits of detection (LLDs) listed in the Offsite Dose Calculation Manual (ODCM). The inspectors attended PSEG's meetings to observe their discussions of (1) soil and water sampling, (2) drilling of permanent deep sampling wells, (3) spent fuel pool water make-up rate, (4) integrity of the fuel transfer canal, (5) sampling the water at the bottom of spent fuel pool to track iodine-131, and (6) monitoring for spent fuel pool water leaks.

b. *Findings.* No findings of significance were identified at the time of this inspection. At the conclusion of the period the inspectors were unable to determine whether PSEG met all ODCM and 10 CFR 20 effluent release requirements since the environmental sampling activities had not been completed. This issue will remain unresolved pending completion and assessment of the planned environmental monitoring activities (URI 50–272/02–09–06).

#### 4 Unit 2 Residual Heat Removal System Water-Hammer

a. *Inspection Scope.*—An inspection of problem identification and resolution for a selected issue was performed to review the effectiveness of actions in identifying the problem and the implementation of the follow-up corrective actions. The item selected for this review was related to notifications 20099566, 20104986, and 20110575 that documented a water-hammer event during the start of RHR pumps 21 and 22 for testing, and the troubleshooting efforts to determine the cause. The inspection included the review of the troubleshooting efforts, engineering analyses and evaluations, the root cause determination, the corrective action plan, and design modification and post-modification testing following the installation of additional RHR system vents in May 2002. Also, the inspector performed a walkdown of the accessible portions of the RHR system, and reviewed RHR system fill and vent procedure, and reviewed the design and licensing basis for the RHR system.

The inspector did not identify an operability concern with the water hammer events but noted that PSEG's initial efforts to understand and resolve this problem did not appear timely. The initial water-hammer event was identified before the startup from the Unit 2 refueling outage in May 2002, and the cause was attributed to a check valve slamming noise. Based on the document review and interviews, the inspector concluded that PSEG troubleshooting activities for this problem were delayed until August 2002 (notification 20110575). The inspector noted that the eventual investigation of this problem appeared to be better focused and thorough.

b. *Findings.* No significant findings were identified.

.5 *Human Performance Improvement*

a. *Inspection Scope.*—During the June 2001 assessment meeting between the NRC and PSEG, PSEG senior management indicated that a group had been formed to initiate a human performance improvement program. Due to continuing human performance issues at Salem, the inspectors selected this improvement program for review of measurable performance changes regarding the identification and resolution of problems.

The inspectors found that the improvement program described during the 2001 meeting had not been maintained. Also, in the summer of 2002, an industry peer review identified that an integrated and visible approach to improving human performance was not evident at the site. In October 2002 PSEG assigned a new human performance manager and began development of a new human performance program initiative. The inspectors discussed this initiative with the human performance manager and reviewed draft action plans for program implementation. The initial implementation has commenced through the communication and training of senior and mid-level managers on the initiative and tools for implementation. Performance indicators to measure human performance improvement are being developed and populated with data. PSEG indicated that these performance indicators would provide a meaningful measure of performance by the end of 2003. The inspectors determined that it was premature to determine the effectiveness of this program.

b. *Findings.* No significant findings were identified.

4OA3 *Event Followup*

.1 (Closed) *LER 50-311/02-002-00: Containment Internal Pressure Not Maintained Within Technical Specification Limits*

On April 20, 2002, PSEG discovered that the instrumentation used to monitor the containment internal pressure was reading one-half of the actual containment pressure. This lower indicated pressure resulted in operation where the actual containment internal pressure exceeded the 0.3 psig TS 3.6.1.4 limit. The problem resulted from the installation of an incorrect part as an equivalent replacement for an instrumentation module. PSEG's planned and completed corrective actions included repair of the instrument, review of the release calculation used in the Annual Radioactive Effluents Report, review for a similar problem at Unit 1 and entry of this problem into the corrective action program to evaluate the programmatic problems that led to this event. No new findings were identified in the inspector's review. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. PSEG documented the problem in notification 20097451. This LER is closed.

.2 (Closed) *LER 50-272/02-005-00: Unexpected Auto-Start of Turbine Driven Auxiliary Feedwater Pump at Start of Refueling Outage*

On October 10, 2002, during the scheduled manual trip to start the 1R15 refueling outage, an unexpected automatic start of the 13 auxiliary feedwater pump occurred. Operators responded properly to the event. This event resulted from the previous adjustment of the steam generator low-low setpoint that was performed in response to a generic concern (discussed in Inspection Report 50-272 & 50-311/02-03). PSEG's planned and completed corrective actions included evaluation of whether further setpoint changes could be implemented to preclude this type of event and a review to determine whether this type of event can be defined as expected. The LER was reviewed by the inspectors and no findings of significance were identified. PSEG documented this event in notification 20116128. This LER is closed.

.3 (Closed) *LER 50-272/02-007: Core Alterations Performed Without Direct Communications*

On October 16, 2002, while lifting the upper internals from reactor vessel, PSEG failed to establish direct communications between the control room and the refueling station as required by TS 3.9.5. PSEG's planned and completed corrective actions included development of a temporary standing order to clarify roles and responsibilities for the refueling and operating crews, and procedural enhancements. No new findings were identified in the inspector's review. This finding constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the NRC's Enforcement Policy. PSEG documented the problem in notification 20116936. This LER is closed.

4OA5 *Other Activities*

.1 *TI 2515/150—Reactor Pressure Vessel Head (RPV) and Vessel Head Penetration Nozzles (NRC Bulletin 2002-02)*

a. *Inspection Scope.*—The inspectors reviewed PSEG's activities to detect circumferential cracking of RPV head penetration nozzles in response to NRC Bulletin 2002-02, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle In-

spection Programs,” as specified by Temporary Instruction (TI) 2515/150. The activities included interviews with analyst personnel and other technical staff, reviews of qualification records, procedures, and observations of selected video tape and pictures of the reactor vessel closure head visual examination. The inspectors also reviewed the susceptibility calculation to verify that appropriate plant-specific information was used as input. In accordance with TI 2515/150, inspectors verified that deficiencies and discrepancies associated with the RCS pressure boundary or the examination process was identified and that they were placed in PSEG’s corrective action process.

b. *Findings.* No findings of significance were identified and the specific reporting requirements of TI 2515/150 are documented in Attachment 1.

2 *TI 2515/148, Revision 1, Appendix A—Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures*

a. *Inspection Scope.*—An audit of PSEG’s performance of the interim compensatory measures imposed by the NRC’s Order Modifying License, issued February 25, 2002 was completed in accordance with the specifications of NRC Inspection Manual Temporary Instruction (TI) 2515/148, Revision 1, Appendix A, dated September 13, 2002.

b. *Findings.* No findings of significance were identified.

3 *(Closed) URI 50-272; 50-311/02-07-01:* Failure to maintain the Fire Protection Program as described in the FSAR and approved in the SERs.

*Introduction.* PSEG did not properly maintain room isolation barriers and improperly implemented a modification to the switchgear penetration area ventilation system, both of which caused an existing fire protection concern on carbon dioxide (CO<sub>2</sub>) concentration to be exacerbated. This finding (Green NCV) represents the completion of an unresolved item identified in Inspection Report 2002-07 regarding the automatic fire suppression system in six safety-related electrical areas addressed by the fire protection program.

*Description.* During the 1999 triennial fire protection inspection (NRC Inspection Report 50-272&311/99-10), the inspectors identified a White finding involving the initial testing of the 4160V switchgear room and lower electrical penetration area CO<sub>2</sub> fire suppression systems. When initially tested in 1974 (Unit 1) and 1979 (Unit 2), the systems failed to achieve the design concentration of 50 percent CO<sub>2</sub>. The inspectors determined that the plant condition did not meet the requirements of License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2), i.e., the fire protection program. The CO<sub>2</sub> systems as described by PSEG in the FSAR and approved by NRC specify a 50 percent CO<sub>2</sub> concentration to be maintained for 30 minutes.

Following this finding, PSEG initially attempted to replace the CO<sub>2</sub> system with a water-based automatic sprinkler system. This plan was abandoned due to floor drain system limitations. In April 2002 PSEG determined that returning the CO<sub>2</sub> system to fully operable status would be a better alternative.

PSEG performed tracer gas testing in May 2002 to support re-analysis of the CO<sub>2</sub> systems and to resolve issues associated with commitments for CO<sub>2</sub> retention in fire areas at Salem. The test results predicted achievement of approximately 45 percent initial concentrations, which would dissipate to 18 to 28 per cent within 20 minutes.

PSEG identified that the majority of the leakage from the rooms was through the CO<sub>2</sub> isolation dampers and the fire door seals. PSEG subsequently determined that the dampers used were backdraft dampers, and therefore improperly utilized for isolation in the switchgear and penetration area ventilation system. PSEG also determined that the 5 year damper seal replacements recommended by the damper manufacturer had never been done.

The CO<sub>2</sub> system design called for the ventilation system fans to trip on a CO<sub>2</sub> discharge. The initial ventilation system design had the supply fans continuing to operate after a CO<sub>2</sub> discharge, but the exhaust fans tripped. Between 1994 and 1996 PSEG installed engineering changes 1-EC-3377 and 2-EG-3298 that permitted the exhaust fans to continue to operate after a CO<sub>2</sub> discharge, thereby further degrading the ability of the CO<sub>2</sub> system to achieve and maintain a 50 percent CO<sub>2</sub> concentration for 30 minutes.

*Analysis.* The inspector determined that this finding adversely impacted fire suppression equipment capability, affecting the design control attribute of the capability objective of the Mitigating Systems Cornerstone, and therefore is greater than minor.

The finding was evaluated using Inspection Manual Chapter (IMC) 0609, Appendix F. The finding passed the Phase I screening criteria, since it affected either manual or automatic suppression, depending upon the room.

For the phase 2 evaluation, the inspector developed fire scenarios based on the switchgear units in the areas of concern. The IPEEE fire scenarios were used as

the starting point. Since the areas had been the subject of impairments and had fire watch patrols, the transient combustible scenario was not imposed. In addition, the non-propagation fire scenarios for the switchgear fires were assumed to become propagation scenarios, due to the degraded gaseous suppression systems. The most limiting fire scenarios were those which led to a transient with loss of power conversion system, and disabled an auxiliary feedwater pump and a power operated relief valve. The ignition frequencies for these scenarios were summed, and the fire mitigation factors applied. The factors gave full credit for the fire brigade. Existing electrical raceway fire wrap was credited during scenario development by not imposing fire damage to cables which were wrapped. The resulting fire mitigation frequency corresponds to Row D of the risk estimation matrix (Table 5.6 in Appendix F of IMC 0609). The mitigating system capability rating for the remaining auxiliary feedwater trains (3) resulted in an overall risk characterization of Green.

Also, this finding had an aspect of problem identification and resolution, in that ineffective problem evaluation existed regarding the preventive maintenance and modifications on the affected equipment.

*Enforcement.* License Conditions 2.C.5 (Unit 1) and 2.C.10 (Unit 2) require PSEG to implement and maintain in effect all provisions of the fire protection program as approved in the SERs. Contrary to the above, PSEG failed to properly maintain room isolation dampers and improperly implemented a modification to the switchgear and penetration area ventilation system that resulted in the inability of the carbon dioxide fire suppression systems for six safety-related areas to maintain the design concentration for the specified time period. This self-revealing violation of very low safety significance is not being cited since it meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as NCV.

#### 40A6 Management Meetings

a. *Exit Meeting Summary.*—On January 16, 2003, the inspectors presented their overall findings to members of PSEG management led by Mr. Lon Waldinger. PSEG management stated that none of the information reviewed by the inspectors was considered proprietary.

b. *PSEG/NRC Management Meeting.*—On December 17 and 18, 2002, the NRC Region I Deputy Regional Administrator and the Region I DRP Division Director toured Salem Station and met with PSEG management to discuss current plant performance issues.

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### ATTACHMENT 1—SUPPLEMENTAL INFORMATION

#### A. key points of contact

C. Banner, EP Supervisor; D. Burgin, EP Manager; H. Berrick, Licensing Engineer; T. Cellmer, Radiation Protection Manager; C. Conner, NDE Engineer; P. Fabian, Steam Generator Engineer; V. Fregonese, Manager Design Engineering; M. Hassler, Radiation Protection Operations Superintendent—Salem; H. Malikowski, Materials Engineering; J. Nagle, Supervisor Licensing; T. Neufang, ALARA Supervisor—Salem; T. Oliveri, NDE/ISI Inspector; R. Schmidt, Materials Engineering; B. Sebastian, ALARA and Support Superintendent; W. Treston, Supervisor ISI; V. Zabielski, Steam Generator Group Manager.

#### B. list of items opened, closed, and discussed

##### *Opened*

50-272&311/02-09-01; URI; Submerged safety-related electrical cables appropriate corrective actions. (Section R06).

50-272/02-09-06; URI; Salem Unit 1 spent fuel pool water leak. (Section 40A2.3).

##### *Opened/Closed*

50-272/02-09-02; NCV; Failure to properly test the 12 component cooling heat exchanger. (Section R07).

50-272&311/02-09-03; NCV; PSEG failed to maintain complete and adequate maintenance records. (Section R13).

50-272&311/02-09-04; NCV; Shutdown cooling loop inoperable and less than 3 feet of water above the fuel. (Section R20).

50-272/02-09-05; NCV; Failure to properly evaluate a temporary installation to the 11 service water header. (Section R23).

##### *Closed*

50-272/01-07-01; URI; Inservice Inspection Activities. (Section R08).

50-272&311/01-09-01; URI; Containment air temperature surveillance measurement. (Section R22).

50-272&311/02-07-01; URI; Failure to maintain the fire protection program as described in the FSAR and approved in the SERS. (Section OA5.3).  
 50-311/02-02-00; LER; Containment internal pressure not maintained within technical specification limits. (Section OA3.1).  
 50-272/02-05-00; LER; Unexpected auto-start of the turbine driven auxiliary feedwater pump at start of refueling outage. (Section OA3.2).  
 50-272/02-07-00; LER; Core alterations performed without direct communications. (Section OA3.3).

#### C. LIST OF DOCUMENTS REVIEWED

In addition to the documents identified in the body of this report, the inspectors reviewed the following documents and records:

Calculation #S-C-RC-MDC-1928, Rev 0, Determination of Effective Degradation Years (EDY) at RFO 1R15 (Salem Unit 1) and 2R13 (Salem Unit 2).

SH.RA-IS.ZZ-0005(Q), Rev 1, VT-2 Visual Examination of Nuclear Class 1, 2 and 3 Systems

SC.RA-IS.RC-0001(Q), Rev 0, Vessel Head Penetration Examination Drawing E 233-048, Closure Head Assembly for 173" ID Reactor.

Video tape and still photographs of Bare metal inspection and selected RV head nozzles.

NC.NM-AP.22-0004(Q) NDE Inspector vision tests

SH.MD-AS. 22-0001(Q) NDE Certificates of Qualification

Reactor power, RCS Flow and RCS temperature data collected by engineering

LR-N02-0297, Response to NRC Bulletin 2002-02, Reactor Pressure Vessel Head and Vessel Head Penetration Nozzle Inspection Programs Salem Generating Station Units 1 and 2. September 06, 2002.

PSEG Technical Specification 6.9.1.5 Annual Reports Salem and Hope Creek Generating Stations Docket Nos. 50-272, 50-311, and 50-354 dated February 26, 2002.

Engineering Evaluation No. S-1-RC-MEE-1509 Rev 0-1R14 Steam Generator Tubing Operational Assessment for Cycle 15.

Engineering Evaluation No. S-1-RC-MEE-1507 Rev 0-Salem 1R14 Steam Generator Tubing Condition Monitoring Assessment.

Engineering Evaluation No. S-1-RC-MEE-1691 Rev 0-1R15 Steam Generator Degradation Assessment.

Engineering Evaluation No. S-1-RC-MEE-1508 Rev 0-1R14 Steam Generator Tubing Degradation Assessment.

S1.SG-ST.RCE-0001(Q)-Rev 4 Steam Generator Eddy Current Examination.

54-ISI-400-11 Revision August 27, 2000-Framatome Technologies Multi-Frequency Eddy Current Examination of Tubing.

Examination Technique Specification Sheet #1 Rev 3-Bobbin Probe Examination.

Examination Technique Specification Sheet #2 Rev 0-Rotating Probe Examination (115/+Point/080HF).

Examination Technique Specification Sheet #3 Rev 0-Dual Coil Rotating Probe Examination (+Point MR/HF) U-bend.

Examination Technique Specification Sheet #4 Rev 1-Single Coil Rotating Probe Examination (+Point) U-bend.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016623 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016624 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016625 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016626 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016627 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016628 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016629 B-0.

6875 by 040 EPRI, ASME, Wear Cal Standard as built drawing-6016630 B-0.

Radiographic Examination Record Order 600032565.

02RF Examination Summary Record 191000-Integrally welded supports to reactor coolant pump 11 11-PMP-1LG.

02RF Examination Summary Record 191100-Integrally welded supports to reactor coolant pump 11 11-PMP-2LG.

02RF Examination Summary Record 221400-Main Steam System Component 34-MS-2141-1PL-1.

02RF Examination Summary Record 221500-Main Steam System Component 34-MS-2141-1PL-2.

02RF Examination Summary Record 221600-Main Steam System Component 34-MS-2141-1LP-3 thru 6.

02RF Examination Summary Record 222000-Main Steam System Component 34-MS-2141-1PL-7 thru 10.

02RF Examination Summary Record 222210—Main Steam System Component 34-MS-2141-1PL-11.

02RF Examination Summary Record 222215—Main Steam System Component 34-MS-2141-1PL-12.

02RF Examination Summary Record 148200—Safety Injection System Component 2-SJ-1137-13.

02RF Examination Summary Record 148300—Safety Injection System Component 2-SJ-1137-14.

02RF Examination Summary Record 148400—Safety Injection System Component 2-SJ-1137-15.

02RF Examination Summary Record 148500—Safety Injection System Component 2-SJ-1137-16.

02RF Examination Summary Record 148900—Safety Injection System Component 2-SJ-1137-20.

02RF Examination Summary Record 005310—Reactor Pressure Vessel Closure Head Component 1-RPV-NUTS 1-54.

Corrective Actions: 20102540, 20097621, 20098121, 20099595, 20096101, 20096437.

Maintenance of Emergency Preparedness Performance Indicator (PI) Data (NC.EP-DG.ZZ-0001(Z)—Rev 03).

*Notifications and Orders related to the Water-hammer event:*

20099566, 20099608, 20102647, 20104986, 20108933, 20110575, 20111010, 20111212, 20113051, 20113361, 20115277, 20114030, and 20113054.

*Procedures*

Filling and Venting Procedure for RHR: S1.OP-SO.RHR-0003(Q), Rev. 12. Water-hammer Action Plan, Attachment 5 to Procedure NC.PF-AP.ZZ-0082(Z).

*Engineering Evaluations and Related Documents*

RHR Water-hammer Issue Update, dated September 6, 2002.

Level 2 Evaluation RHR Water-hammer.

Event Time Line 04/05/02 through 11/05/02.

*Drawings:*

205350-SIMP, Rev. 02, ECCS-Simplified P&ID, 205332-SIMP, Rev. 01, RH R—Simplified P&ID; RH—2-2, Rev. 11, Aux Bld RHR & Safety Injection; P&ID for Elv. 45', 55', and 64' RH—2-3, Rev. 10, Reactor Containment RHR & SI P&ID for Elv. 78' 0".

#### D. LIST OF ACRONYMS

ALARA—As Low As Is Reasonably Achievable

ANS—Alert and Notification System

ASME—American Society of Mechanical Engineers

CAV—Control Area Ventilation

CC—Component Cooling

CCW—Component Cooling Water

CFCU—Containment Fan Cooling Unit

CFR—Code of Federal Regulations

CO<sub>2</sub>—Carbon Dioxide

CY—Calendar Year

ECA—Engineering Change Authorization

EDGs—Emergency Diesel Generators

EDY—Effective Degradation Years

EFPY—Effective Full Power Years

EPRI—Electric Power Research Institute

ICMs—Interim Compensatory Measures

IR—Inspection Report

ISI—Inservice Inspection

LCO—Limiting Condition for Operation

LLDs—Lower Limits of Detection

MR—Maintenance Rule

NCV—Non-Cited Violation

NDE—Non-Destructive Examination

NRC—Nuclear Regulatory Commission

OCC—Outage Control Center

ODCM—Offsite Dose Calculation Manual

ORAM—Outage Risk Assessment and Management

PARS—Publicly Available Records

PI—Performance Indicator

PMT—Post-Maintenance Testing



PORV—Power Operated Relief Valve  
 PSEG—Public Service Electric Gas  
 PWSCC—Primary Water Stress Corrosion Cracking  
 RCA—Radiologically Controlled Area  
 RCS—Reactor Coolant System  
 RG—Regulatory Guide  
 RHR—Residual Heat Removal  
 RPV—Reactor Pressure Vessel  
 RV—Reactor Vessel  
 RWP—Radiation Work Permit  
 RWST—Refueling Water Storage Tank  
 SDP—Significance Determination Process  
 SW—Service Water  
 TARP—Transient Assessment Response Plan  
 TI—Temporary Instruction  
 TM—Temporary Modification  
 TS—Technical Specifications  
 TSAS—Technical Specification Action Statement  
 URL—Unresolved Item  
 VTD—Vendor Technical Document

E. TI 2515/150—REACTOR PRESSURE VESSEL HEAD AND VESSEL HEAD PENETRATION  
NOZZLES REPORTING REQUIREMENTS

a.1. Was the examination performed by qualified and knowledgeable personnel?

The examination was performed by qualified and knowledgeable personnel. The inspectors found the use of VT-2 certifications including required visual examination for utilized personnel. The inspection technique utilized for bare metal visual examination was as described in the licensee's Bulletin 2002-02 response, dated 6 September 2002.

a.2. Was the examination performed in accordance with approved procedures?

The visual examination was in accordance with approved and adequate procedures.

a.3. Was the examination able to identify, disposition, and resolve deficiencies?

The examination was adequate to identify, disposition and resolve deficiencies.

a.4. Was the examination capable of identifying the PWSCC phenomenon described in the bulletin?

The examination performed was capable of identifying the PWSCC phenomenon described in the Bulletin 2001-01.

b. What was the condition of the reactor vessel head?

The general condition of the Reactor Vessel (RV) head was clean bare metal with some localized grit or fibrous debris on the uphill side of several nozzles. This debris appeared to be a mixture of inert foreign material/dirt and did not contain any evidence of boric acid. The insulation configuration provides relatively easy access for visual examination. No significant visual obstructions were encountered during the bare metal inspection.

c. Could small boron deposits, as described in the Bulletin 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," be identified and characterized?

Small boron deposits, as described in Bulletin 2001-01, could be identified and characterized by the visual examination technique used. None were found during this visual inspection.

d. What material deficiencies were identified that required repair?

No material deficiencies associated with concerns described in Bulletin 2001-01 or 2002-02 were found.

e. What if any, significant items that could impede effective examination?

No significant items were identified that could impede effective examination.

TI 2515/150, Section 04.05 d, requires that inspectors report lower-level issues concerning data collection and analysis, and issues deemed to be significant to the phenomenon described in Bulletin. The inspector found the licensee calculation method was identical to what is provided in Appendix C of TI 2515/150. However, several observations were made regarding the potential for variations in the inputs for a specific plant calculation of effective degradation years (EDY). These insights identified by the inspector are provided for information below.

- The licensee's calculation for EDY for the Salem units does not include uncertainty for the unit Effective Full Power Years (EFPY) or RV head temperatures. The licensee and inspectors found no evidence that other plants have utilized input parameter uncertainty for the relative ranking determination.

- The Salem calculation for EDY utilized reactor thermal power data from PSEG fuels which was demonstrated to be more accurate and provides a more conservative result for the Salem units than the generator electric output data used by MRP-44.
- The Salem Reactor Vessel head closure temperatures were calculated by Westinghouse under the WOG program “Technical Support of Generic Letter 97-01, Response for RV Head Penetration Alloy 600 PWSCC.” The licensee verified the plant specific inputs utilized remained current before using the vendor calculated head temperatures in the susceptibility ranking calculation. The inspector found that the licensee does not have the information to perform a technical comparison of the method utilized by the WOG to determine RV head temperatures with the method utilized to obtain the reference plant RV head temperature of 600 Deg F in the industry susceptibility model.

*Question 2.* At today’s hearing, you were kind enough to provide some background on the events related to release of small amounts of tritium at Salem 1 reactor. While I appreciated your response and that of the other commissioners regarding the effect of tritium, I remain concerned about the timeline regarding the effect of tritium, I remain concerned about the timeline regarding the notification of the public in cases such as this. Also, I would like to know specifically what is the responsibility of the plant’s owner, PSEG in cases like this?

Response. The licensee has the responsibility to identify and correct problems at its facilities. Licensees are required to have a problem identification and resolution program that provides for: (1) identification of problems; (2) reporting of problems in accordance with established criteria (e.g., NRC, State, and/or internal); (3) implementation of mitigating actions as necessary; (4) evaluation of any consequences of the problem (e.g., effect on workers, public, or the environment); (5) evaluation and determination of causes; (6) determination of risk significance; and (7) implementation of corrective actions commensurate with that risk significance. The basic requirements for these activities are outlined in 10 CFR 50, Appendix B. Specifically in this case, when the problem was identified, the licensee documented it in its corrective action program, initiated a review of the issue consistent with its understanding of the safety significance of the problem, implemented various mitigation activities to reduce or eliminate potential effects, and reported the issue to the State and the NRC when reporting criteria were met.

PSEG has taken actions to identify the source and extent of the leakage, including the drilling of a number of sample wells and evaluating sample data. PSEG has also taken action to collect any further leakage and is directing it into plant waste systems. The licensee is closely monitoring the issue consistent with its corrective action program, and is also undertaking a number of activities associated with identifying permanent repair options to the spent fuel pool. The NRC will continue to evaluate PSEG’s activities regarding the root cause for the leak and corrective actions. Further, the NRC has maintained close coordination with the State of New Jersey and will continue to interact frequently with appropriate State officials.

*Question 3.* Question about new technologies related to nuclear power: As I mentioned, I am a Senator who is interested in learning more about nuclear power. In particular, could you elaborate on what new power technologies are expected to be deployed in the coming decade?

Response. The NRC’s responsibilities are to license and oversee the operation of nuclear power plants, and does not promote the use of nuclear power associated technologies, or work on the development of those technologies. Those activities are conducted by the Department of Energy (DOE). DOE has looked at this question recently and organized a near-term deployment group to examine prospects for the deployment of new nuclear plants in the United States during this decade, and to identify obstacles to deployment and actions for resolution. The result of DOE’s effort is documented in a report titled, “A Roadmap to Deploy New Nuclear Power Plants in the United States by 2010,” dated October 31, 2001. This report is available on DOE’s website at: <http://gen-iv.ne.doe.gov/MAP-organization.html>. The NRC does communicate with DOE regarding these activities, to ensure that our activities related to advanced reactor design are consistent with DOE’s plans. The NRC also stays informed of the industry’s activities related to advanced reactor development and deployment.

The Nuclear Energy Institute has indicated to the NRC staff that its candidate for near term deployment will most likely be from one of 10 designs. The designs have or will be reviewed in accordance with a standard design certification process in accordance with regulations contained in 10 CFR Part 52 Subpart B. Through

this process the NRC can certify a reactor design for 15 years independent of a specific site. Three of the ten designs that the nuclear industry is considering have already been certified by the NRC, a fourth application for design certification is currently under review, and six other designs are subjects of pre-application discussions between the NRC and the developers of those designs. The following is a synopsis of the various designs and their NRC review status:

Design	Supplier	Size and Type	NRC Review Status
System 80+ .....	Westinghouse .....	1354 Megawatt-electric (MWe) pressurized water reactor. Advanced light water reactor; spherical containment.	Certified
Advanced Boiling Water Reactor.	General Electric .....	1350 MWe boiling water reactor. Advanced evolutionary design built and operating in Japan.	Certified
AP600 .....	Westinghouse .....	610 MWe pressurized water reactor. Uses passive safety features for core cooling.	Certified
AP1000 .....	Westinghouse .....	1117 MWe pressurized water reactor. Higher capacity version of the AP600.	Application review in progress
ESBWR .....	General Electric .....	1390 MWe boiling water reactor with passive safety features. Based on earlier passive simplified boiling water reactor, but higher in capacity.	Pre-application review in progress
Advanced CANDU Reactor (ACR-700).	Atomic Energy of Canada Limited (AECL).	731 MWe CANDU. Heavy water moderator with light water coolant; on-line refueling; based on Canadian CANDU technology.	Pre-application review in progress
Gas Turbine Modular Helium reactor.	General Atomics .....	288 MWe per module prismatic graphite moderated gas-cooled reactor. Modular direct cycle helium-cooled reactor being considered for power production and disposition of excess weapons-grade plutonium in Russia.	Pre-application review in progress
SWR-1000 .....	ANP Framatome .....	1253 MWe boiling water reactor. Based on a Siemens design; incorporates passive safety features.	Pre-application review in progress
International Reactor Innovative and Secure (IRIS).	Westinghouse .....	300 MWe pressurized water reactor. Integral primary system plant design; eliminates classic loss-of-coolant-accidents; spherical containment.	Pre-application review in progress
Pebble Bed Modular Reactor (PBMR).	PBMR Pty .....	165 MWe per module gas cooled reactor. Modular direct cycle helium-cooled pebble bed design, currently planned for construction in South Africa.	Some discussions with the staff. PBMR Pty. plans to request a pre-application review

*Question 4.* You mentioned that three companies are planning to submit pre-license applications to the Commission. If those were to be approved, what would the likely schedule then be with regard to possible construction of a new reactor at one of those sites.

Response. The staff does not currently have a schedule from industry regarding possible construction activities. Currently, the NRC is involved in several different reviews to prepare for possible new construction. The regulations contained in 10 CFR Part 52 describe a standard plant design certification process, an early site permit process, and a combined licensing process. (The standard plant design certification process is discussed in the previous question). An application for a combined license may incorporate by reference a standard design certification, an early site permit, both or neither. This approach allows early resolution of safety and environmental issues. The issues resolved by the design certification process and during the early site permit process are not reconsidered during the combined license review.

The three early site permit (ESP) prospective applicants have not committed to a timeframe for possible construction at the sites they plan to reference. An ESP addresses site safety issues, environmental protection issues, and plans for coping with emergencies, independent of the review of a specific nuclear plant design. An ESP, if approved, is good for 10 to 20 years and can be renewed for an additional

10 to 20 years. Therefore, there is a long window of opportunity for an applicant to reference an ESP in a combined license (COL) application.

A COL authorizes construction and conditional operation of a nuclear power plant. After a COL application is approved, onsite construction activities could take place. In a recent meeting with the NRC staff, the Nuclear Energy Institute (NEI) indicated that it was targeting a potential COL application for calendar year 2005. While the ESP process is scheduled to be tested later this year and the staff has already certified 3 standard plant designs, a COL application has not yet been reviewed by the NRC. NEI did not commit to referencing one of the three ESP applications expected in calendar year 2003. Therefore, it is possible that industry may use a different site for a COL.

Regardless, if a COL application were received in calendar year 2005 and it referenced both an early site permit and standard certified design, the staff estimates it would take approximately 27 months for the review to be completed. This would place the actual start of construction, at the earliest, in the 2007 to 2008 timeframe. Typical construction schedules for new reactors based on the heavy reliance on modular construction techniques are 5 years. This would result in commercial operation of a new nuclear plant, at the earliest, in the 2012 to 2013 timeframe.

*Question 5.* Mr. Chairman, in your written testimony, you made the following comment: "Moreover, the number of individuals with the technical skills critical to the achievement of the Commission's safety mission is rapidly declining in the Nation, and the educational system is not replacing them. The maintenance of technically competent staff will challenge governmental, academic, and industry entities associated with nuclear technology for some time to come." I have heard similar assessments from other agencies, but not from any more critical to public safety than the NRC. My question is what should we, the Congress, do to reverse this trend? And second, what will happen if we do not?

Response. Congress has already taken some steps that help the NRC combat the shortage of technical skills needed by the Agency. Recent proactive policies and legislation that maximizes human capital flexibilities have helped the NRC with its aging staff issue. While various recruitment, retention and training flexibilities allow the Agency to compete more effectively for existing talent, the pool for that talent is drying up. A report published by the U.S. Nuclear Engineering Department Heads Organization (NEDHO) in 1999 included survey results that indicated school enrollment reductions in nuclear engineering of 72 percent for courses at bachelor's level and 46 percent for courses at master's level, when compared to 1992 levels. At the same time that academic enrollments are decreasing, retirements of current industry professionals are increasing dramatically. Actions to help reverse these trends might include: 1) increased Federal Government assistance to colleges and universities; 2) increased national recruitment efforts and incentives for hard-to-fill Federal positions deemed inherently governmental; and 3) opportunities for Federal/academic/private sector employment sabbatical exchanges.

If some type of action is not taken to reverse trends, then the United States may eventually have a more difficult time ensuring the safety of current and emergent nuclear technologies. Severe competency shortages could eventually force reductions in current regulatory work levels, which could adversely affect licensee operations. Even if competency shortages of this extreme were avoided, delay in addressing the problems will add to the overall cost of solutions.

*Question 6.* Mr. Chairman, during the debate last year over the Senate approval of Yucca Mountain, one of the key issues was that full-scale testing of the containers that would be used to transport the waste has not been conducted. In your testimony you mentioned something about the Package Performance Study to study rail and truck casks at full scale. What is involved in these tests, what schedule do you have for them, and what is your system for double checking the results?

Response. The NRC is conducting a Package Performance Study to investigate the response of spent nuclear fuel transportation casks to transportation accident conditions. In February 2003, the NRC staff published for comment a report that contains the NRC's draft plans for impact and fire testing proposed to be conducted under this study. This report is NUREG-1768 "United States Nuclear Regulatory Commission Package Performance Study Test Protocols." The NRC proposes to use an actual full scale rail cask and an actual full scale truck cask. The impact test that the staff proposed for comment involves a drop from a tower onto a very hard target at a speed in excess of current regulatory criteria, and the thermal test involves testing the cask in a fully engulfing fire that will burn for more than a half hour. The public comment period closes May 30, 2003. Following review and analysis of the comments, the staff will develop the detailed test plans and procedures and initiate procurement of the test specimens and testing equipment. Prior to the

tests, the computer predictions for the expected results will be published. One of the objectives of the study is to improve public confidence both in the ability to model the cask's performance using computers and in the rigor of the certified cask designs. The tests will be conducted under a rigorous quality assurance program. The tests will likely be performed in 2004 and 2005.

*Question 7.* Has there been progress in selecting or designating transportation routes for the high level waste? What is the schedule for those designations and who is involved?

Response. The Federal Motor Carrier Safety Administration, Department of Transportation, specifies the routing requirements for shipment of high level waste and spent nuclear fuel in Title 49, Code of Federal Regulations. State agencies can also designate preferred routes within their States. In general, the shipper of the high-level waste will designate transportation routes on a case-by-case basis, which meet the requirements of Title 49 and any applicable State requirements. After these routes are determined, the NRC (for NRC licensed material) considers the physical security issues associated with the route and may require the shipper to consider additional precautions in timing, stops, or other protections if warranted by the route. For the proposed high level waste repository, it is our understanding that the Department of Energy is developing strategies for the transportation of spent fuel which would include routing considerations.

*Question 8.* The NRC submitted a report last November entitled "Inspector General's Assessment of the Most Serious Management Challenges Facing the NRC." The report identifies nine important management challenges, ranging from:

(a) Protection of nuclear material and facilities used for civilian purposes; (b) Proper administration of all aspects of financial management; to (c) Protection of data bases and other important NRC information.

What has the Commission done to address the concerns raised in that report? Do you believe the IG has accurately characterized the challenges facing the NRC?

Response. The NRC has initiated a number of activities which address the management challenges discussed in the IG's report. These activities are discussed in the NRC's Budget Estimates and Performance Plan, Fiscal Year 2004, NUREG-1000, Volume 19, dated February 2003. The approach begins with an assessment of what, if any changes, should be made to the NRC's Strategic Plan, including a determination of whether our goals, strategies, and measures adequately address the actions that are considered necessary to address the challenges. Volume 19 lists the nine most serious challenges discussed in the IG's November report and describes the actions/milestones being taken by the NRC to address these challenges. The management challenge described as "Protection of Information" was the latest challenge added to the list. We are currently analyzing this challenge and will identify actions/milestones and schedules in the fiscal year 2005 Performance Plan.

In response to the second part of the question, the challenges discussed in the OIG's report accurately describe the key challenges facing the NRC. Key challenges such as those related to human capital, described by the IG as maintenance of a highly competent staff to carry out NRC's public and safety mission, are similar to those being faced by other Federal agencies.

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STATEMENT OF HUBERT T. BELL, INSPECTOR GENERAL,  
U.S. NUCLEAR REGULATORY COMMISSION

INTRODUCTION

Mr. Chairman, members of the subcommittee, it is a pleasure to appear before you today. I am accompanied today by Mr. Stephen Dingbaum, Assistant Inspector General for Audits and Mr. George Mulley, Senior Level Assistant for Investigative Operations.

As you know, the mission of the Office of Inspector General (OIG) at the Nuclear Regulatory Commission (NRC) is to assist NRC by ensuring integrity, efficiency, and accountability in the Agency's programs that regulate the civilian use of byproduct, source, and special nuclear material in a manner that adequately protects public health and safety and the environment, while promoting the Nation's common defense and security. Specifically, NRC's OIG supports the Agency by carrying out its mandate to (1) independently and objectively conduct and supervise audits and investigations related to NRC's programs and operations; (2) prevent and detect fraud, waste and abuse; and (3) promote economy, efficiency, and effectiveness in NRC's programs and operations. The OIG also keeps the NRC Chairman and Members of

Congress fully and currently informed about problems, recommends corrective actions, and monitors NRC's progress in implementing those actions.

#### BACKGROUND

To perform these activities, the OIG employs auditors, management analysts, criminal investigators, investigative analysts, legal counsel and support personnel. The OIG also uses private-sector contractors to audit NRC's financial statements as mandated by the Chief Financial Officers (CFO) Act and for other audit, investigative and information technology technical support services.

To fulfill our audit mission, the OIG conducts performance, financial, and contract audits. Performance audits focus on NRC administrative and program operations and evaluate the effectiveness and efficiency with which managerial responsibilities are carried out and whether the programs achieve intended results. Financial audits attest to the reasonableness of NRC's financial statements. Contract audits evaluate the cost of goods and services procured by NRC from commercial enterprises. In addition, the audit staff prepares special evaluation reports that present OIG perspectives or information on specific topics.

The OIG's investigative program carries out its mission by performing investigations relating to the integrity of NRC's programs and operations. Most OIG investigations focus on allegations of fraud, waste, and abuse and violations of law or misconduct by NRC employees and contractors. Additionally, allegations of irregularities or abuses in NRC programs and operations with special emphasis on those activities that could adversely impact public health and safety are investigated. Also, periodically the investigative staff conducts event inquiries, which yield investigative reports documenting the examination of events or agency regulatory actions that do not specifically involve individual misconduct. Instead, these reports identify staff actions that contributed to the occurrence of an event.

Following are examples of work performed by my audit and investigative staffs in furtherance of our mission to ensure integrity, efficiency and accountability in NRC's programs.

#### INVESTIGATIONS

##### *Nuclear Reactors*

*NRC Regulation of Davis-Besse Regarding Damage to the Reactor Vessel Head.* The OIG completed an inquiry into concerns raised by the Union of Concerned Scientists (UCS) regarding a perceived lack of NRC oversight of the Davis-Besse Nuclear Power Station (DBNPS). NRC Bulletin 2001-01 sought to have licensees perform inspections, which could only be performed when the plant was shut down, by December 31, 2001, on plants identified as highly susceptible to vessel head penetration nozzle cracking. UCS alleged that the NRC allowed DBNPS to continue operating past December 31, 2001, despite indications of significant cracking to the reactor vessel head.

As a result of this inquiry, the OIG found, among other things, that NRC's decision to allow DBNPS to continue operating beyond December 31, 2001, without performing vessel head penetration nozzle inspections was driven in large part by a desire to lessen the financial impact on the licensee that would result from an early shutdown. In addition, the OIG found that NRC staff was reluctant to take regulatory action against a licensee absent absolute proof of a violation, despite strong indications that DBNPS was not in compliance with NRC regulation and plant technical specifications and may have operated with reduced safety margins.

*Steam Generator Tube Rupture at Indian Point Unit 2 Power Plant.* The OIG conducted an event inquiry to address concerns raised by the public and Congress as a result of an incident at the Indian Point Unit 2 Power Plant (IP2), which occurred on February 15, 2000. In that incident, IP2, a pressurized water nuclear reactor plant, experienced a steam generator tube rupture in one of its four steam generators. The OIG's inquiry primarily addressed the adequacy of the NRC staff's handling of issues associated with the IP2 steam generator tube rupture, as well as the NRC's handling of shortcomings identified in the IP2 Emergency Preparedness Plan.

The OIG found that the last steam generator inspection conducted by IP2 took place in 1997, and the results were provided to the NRC staff. However, the OIG learned that the NRC staff did not conduct a technical review of that steam generator inspection report when IP2 submitted it in 1997. The OIG concluded that, had the NRC staff or contractors with technical expertise evaluated the IP2 1997 inspection report, the NRC could have identified the flaw in steam generator number 24 that was indicated in the inspection report. This flaw was the cause of the IP2 steam generator tube rupture on February 15, 2000.

Also, the OIG found that, in 1999, the NRC granted a license amendment to IP2 to extend their steam generator inspection interval, but that the NRC staff conducted an inadequate review of the license amendment request.

During the conduct of this event inquiry, the OIG also found that IP2 was a plant that struggled with various challenges in the area of emergency preparedness. The OIG learned that recurring weaknesses, that had gone uncorrected, appeared to play a role in the poor emergency response performance of IP2 during the incident on February 15, 2000. The OIG also found that communications between offsite emergency preparedness officials and the NRC was non-existent.

#### *Nuclear Materials*

*NRC's Regulatory Oversight Over the Control of Special Nuclear Material at Millstone Unit 1.* The OIG investigated the reported loss of two spent nuclear fuel rods at Millstone Nuclear Power Station Unit 1. In November 2000, the NRC license holder for Millstone discovered they could not locate two spent fuel rods which were last accounted for in 1978. The OIG investigation reviewed NRC oversight of the licensee's special nuclear material accountability program from the late 1970s to the present.

As a result of this investigation, the OIG found that the missing fuel rods were last accounted for during a 1978 Nuclear Material Control and Accountability (MC&A) inspection at Millstone Unit 1 conducted by the NRC. In a 1982 MC&A inspection conducted by the NRC, the fuel rods were no longer present on the inventory. The OIG determined that the NRC inspector did not identify the loss of these fuel rods in the 1982 inspection because he relied on an inaccurate current inventory amount instead of beginning the inspection with the ending inventory amount reflected on the 1978 inspection. The OIG also determined that the last MC&A inspection conducted at Millstone was 1982, and that the NRC ended this inspection program for all nuclear power plants in 1985.

*Unlawful Interaction Between NRC and DOE Staffs Regarding Yucca Mountain.* The OIG conducted an investigation upon receipt of allegations by the Attorney General of the State of Nevada that NRC and U.S. Department of Energy (DOE) representatives conducted meetings that were contrary to mandates regarding Government activities concerning the Yucca Mountain nuclear waste repository site. It was alleged that NRC and DOE representatives made decisions during these meetings from which the State of Nevada representatives were unlawfully excluded.

As a result of this investigation, the OIG determined that the NRC staff did not initiate or coordinate contacts with representatives of DOE to develop policies on issues related to Yucca Mountain. OIG also learned that NRC and DOE representatives did not meet in violation of ex parte provisions. The OIG learned that pre-licensing communications between NRC and DOE representatives occurred during informal meetings which were held in accordance with the pre-licensing phase of the application process and were consistent with NRC regulatory requirements and policy mandates.

*Review of NRC's Staff Approval of the Carolina Power & Light (CP&L) Request for Expansion of High-Level Radioactive Waste Storage.* The OIG completed an investigation into concerns raised by members of the public and elected State officials that (1) the NRC staff and the Atomic Safety and Licensing Board Panel (ASLBP) did not adhere to procedures during their review of the Carolina Power and Light's (CP&L) request to amend its operating license and increase its spent fuel storage capacity at the Shearon Harris Nuclear Power Plant; (2) the NRC staff pressured the ASLBP to expedite the approval of the license amendment and staff did not sufficiently review all relevant contentions; and (3) the NRC was biased toward CP&L and stifled the public's participation in the license amendment review process.

As a result of this investigation, the OIG did not validate claims of misconduct by the NRC staff during its review of the CP&L license amendment requests. The NRC license amendment process was followed. However, the OIG identified several staff actions that gave the appearance that during the license amendment review process the NRC was not an impartial arbiter. This perception of staff bias toward the licensee may have negatively affected the public's confidence in its ruling.

#### AUDITS

##### *Nuclear Reactors*

*Review of NRC's License Amendment/Safety Evaluation Process.* Commercial nuclear power plant licensees submit approximately 1,500 applications each year to request that the NRC amend their operating licenses. Safety evaluations provide the regulatory bases for the staff's decisions regarding licensing actions and the tech-

nical, safety, and legal basis for the Agency's disposition of a license amendment request.

In June 1999, the NRC approved an Indian Point 2 Nuclear Power Plant license amendment request to extend the previously established steam generator inspection interval. In February 2000, a steam generator tube failed. Congressional interest in this event caused the OIG to initiate an audit of the safety evaluation process to (1) evaluate its efficiency and effectiveness and (2) determine whether refinements are needed.

The OIG audit revealed that the Agency has a detailed process for responding to license amendment requests that is well thought out and thorough. The process includes the development of safety evaluations and all the necessary steps when followed would ensure that the staff performs the technical reviews that are required for the Agency to approve or disapprove license amendment requests. However, the OIG did find that the process did not provide adequate controls to demonstrate that all steps are completed and supported by sufficient documentation.

The NRC has taken steps to strengthen the license amendment/safety evaluation process.

*Review of NRC's Significant Determination Process (SDP).* The NRC regulates the Nation's 104 operating commercial nuclear plants through its reactor oversight program. The SDP is a series of analytical steps that the NRC staff use to evaluate inspection findings. The process uses four colors C Green, White, Yellow, and Red C to indicate the significance of inspection findings. While SDP is viewed by the NRC staff, licensees, and stakeholders as an improved method for establishing the significance of inspection findings, the process still needs significant improvement. Specifically, the OIG found that NRC should correct phase 2 analysis weaknesses because it provides conservative results that are subsequently changed, is used infrequently, and adds cost and time to the process. In addition, the NRC should take steps to improve SDP timeliness.

#### *NRC Safety Culture and Climate*

*2002 Survey of NRC's Safety Culture and Climate.* The OIG engaged an independent contractor to conduct a survey of NRC's workforce to: (1) measure NRC's safety culture and climate, (2) compare the results against NRC's 1998 Safety Culture and Climate Survey, and (3) compare the results to government and national benchmarks.

The survey generally concluded that the NRC safety culture and climate appears to be improving. Specifically, the workforce views itself as effective and dedicated to the NRC safety mission. Comparison with the 1998 survey results also indicates improvement in virtually every category or topical area. Further, the survey found that most scores exceed established national benchmarks for government research and technical composites.

However, the survey did reflect that two program support offices will require substantial effort to improve organizational culture and climate.

In addition, the survey also found that Continuous Improvement Commitment, that is employees' views on commitment to public safety, and whether employees are encouraged to communicate ideas to improve safety, regulations and operations, is below norm and a matter of concern. Empowerment, Communication, Quality Focus, Management Leadership, and Organizational Commitment were determined to be areas requiring additional management focus.

As a counterpoint, dramatic improvement was demonstrated in the category, Future of the NRC, that focuses on items that evaluate employee's views on how the NRC's regulation of its licensees have changed in the past year and will change in the future. That is the way people are managed day to day, communication, the quality of work produced, productivity, the public image of the Agency, and the NRC as a whole. The survey concluded that improvement in these topics can positively impact issues gauged in the category Continuous Improvement Commitment.

#### *Security Audits*

*Government Information Security Reform Act (GISRA).* The OIG used an independent contractor to perform the second annual evaluation of NRC's Information Security Program. The fiscal year 2002 evaluation found that NRC made substantial progress in improving its information security program to include implementing the recommendations from the fiscal year 2001 GISRA assessment. However, the NRC security program is not well integrated and not consistently implemented across the Agency. In addition, NRC officials have not clearly defined the responsibility and accountability for all aspects of the information security program within its organizational structure.



NRC senior managers recently increased attention to the information security area. NRC management plans to continue this needed focus to enhance program effectiveness and to ensure its consistent implementation throughout the Agency.

*Sensitive Unclassified Information.* The OIG received a congressional request to review the adequacy of the NRC programs for handling and releasing sensitive documents after a preliminary draft of the Yucca Mountain Review Plan was inadvertently released to the public in September 2000. The plan, a predecisional document, was an Official Use Only document and should have been treated as sensitive unclassified information protected from public disclosure until Commission approval was granted.

The OIG found that the NRC has program guidance to prevent the release of sensitive unclassified information. However, the guidance does not adequately protect Official Use Only documents from inadvertent public disclosure. Additionally, training on handling, marking and protecting sensitive unclassified information is not provided to all NRC employees and contractors on a regular basis. Consequently, many of the staff are not knowledgeable about NRC's requirements and guidance in this area. NRC employees are not consistently implementing the requirement to report incidents of inadvertent release of sensitive unclassified information to the Office of the Executive Director for Operations.

*NRC Headquarters Security.* The OIG conducted an audit, Review of Security at NRC Headquarters, that revealed after security reviews in 1995 and 1999, the NRC increased its protection of Headquarters buildings against unauthorized access. Following the September 11, 2001 attacks, the NRC further tightened its Headquarters security and identified a remaining vulnerability. The Agency is working with the General Services Administration regarding a solution for this vulnerability. Additionally, OIG auditors found that NRC has increasingly hardened its controls to protect against unauthorized access to its Headquarters complex, but still needs to do more.

#### *Financial Management*

*Audit of NRC's Financial Statements.* Since 1994 to the present, the NRC has received an unqualified opinion on their financial statements. During this timeframe, the annual audits identified a number of internal control issues, which did not affect the opinion, the majority of which were resolved. However, one internal control issue has lingered since the fiscal year 1998 audit: implementation of managerial cost accounting in accordance with Federal standards. Although the Agency implemented its cost accounting system in fiscal year 2002, the system failed to meet Federal accounting standards and systems requirements. Cost accounting is a vital component of the Agency's ability to correlate its programs with its costs as mandated by the Government Performance and Results Act and Federal accounting standards. The Agency continues to work on resolving this issue during fiscal year 2003.

*Accountability and Control Over NRC's Noncapitalized IT Equipment.* OIG conducted an audit of the Agency's accountability and control over noncapitalized (initial cost of less than \$50,000 per item) information technology (IT) equipment. The audit found that the Agency's property and supply system (PASS), the official data base for agency property transactions, is responsible for tracking more than 27,000 pieces of noncapitalized equipment valued at approximately \$75 million. Of these totals, IT equipment comprises approximately 16,000 pieces, with an acquisition cost of approximately \$51 million.

This OIG audit revealed that the NRC's property management policies for this equipment adhere to applicable laws and regulations, such as the Federal Property Management Regulations. However, the management controls to implement these policies are inadequate or lacking. Also, PASS contains inaccurate information; in fact, OIG statistical projections indicated that the system did not accurately reflect the locations of as many as 3,571 of the Agency's 16,000 pieces of noncapitalized IT equipment costing approximately \$8.38 million. The Agency has taken steps to reconcile its property inventory and increase property controls.

*Software Accountability.* The OIG audited NRC's compliance with Executive Order 13103, Computer Software Piracy, which requires all executive agencies to adopt policies and procedures to promote legal software use and proper software management. The review determined that the NRC is not in compliance with the Executive Order because its policies (management directives) and its procedures (management controls) do not address the full scope of the Executive Order's requirements. The NRC has not conducted an initial assessment of its software, established a baseline for its software inventory, or determined whether all software on agency computers is authorized. As a result, the NRC needs to incorporate Executive Order requirements into its Management Directives System and implement measures to carry out

the Executive Order. The Agency generally agreed with the report's findings and recommendations and is in the process of taking corrective action.

SUMMARY

A key goal of the OIG is to add value to NRC's regulatory and administrative programs by identifying opportunities for improvement in agency operations and by conducting activities to prevent and detect fraud, waste and abuse. The OIG is encouraged by the Agency's actions to address OIG findings and to implement many of the recommendations made by my office. There are many examples of collaborative work between my staff and agency managers in an effort to refine the effectiveness and efficiency of agency programs.

While some challenges remain, the OIG supports the Agency's commitment to ensure the effective regulation of the Nation's civilian use of nuclear power and to the integrity of its programs that ultimately protect the health and safety of the public. OIG will continue to remain steadfast in its resolve to assist the NRC in fulfilling this important mission.

Mr. Chairman, and members of the subcommittee, this concludes my report to you on the activities of my office during the recent past. I would be pleased to answer any questions at this time.

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RESPONSES BY HUBERT T. BELL TO ADDITIONAL QUESTIONS FROM  
SENATOR INHOFE

*Question 1.* In your opinion, is the NRC doing everything that it can and should be doing to prevent another incident like the events at Davis-Besse from happening again? If not, what needs to be done?

Response. The events at Davis-Besse caused the NRC to undertake an introspective analysis of the technical and programmatic issues that contributed to the event. During this process, the Commission has pressed the staff to carefully evaluate the event so that the circumstances that gave cause to it are not repeated. The Commission has accepted the findings of the agencies Lessons-Learned Task Force and has adopted essentially all senior management's associated recommendations for corrective action.

If the recommendations are followed up on, the NRC will be in a better position to prevent a recurrence.

*Question 2.* Can you assure me that the NRC has found out everything that happened at Davis-Besse and that there will be no more surprises in this matter?

Response. Based on the work completed by this office with respect to the NRC's regulatory oversight of the Davis-Besse Nuclear Power Plant, we believe the NRC staff has demonstrated a willingness to identify and address existing problems at the plant. However, this office is not in the position to provide assurance that the NRC staff or First Energy, the Davis-Besse licensee, have uncovered all the safety issues at the plant.

*Question 3.* I believe that you have copies of several pictures that were distributed during the hearing of the corrosion on the reactor heads at Davis-Besse. It is my understanding that these pictures were taken as part of an inspection of the facility in April 2000, that these photographs were included in a report that First Energy filed with the NRC in 2000, and that this report was never even reviewed by the NRC. Are you looking into this? What-if any-preliminary thought or conclusions do you have?

Response. The Office of Inspector General has an ongoing investigation into the claim that pictures taken by the licensee of the corrosion of the Davis-Besse reactor vessel head were provided to NRC inspectors during the refueling outage in 2000. As part of this investigation, OIG is looking into if, and when, NRC inspectors first obtained a copy of Davis-Besse Condition Report 2000-0782 with the subject photographs attached. Additionally, OIG is examining whether Region III managers appropriately communicated related plant issues to inspectors to allow them to appropriately recognize and follow-up on indicators of these problems when discovered during inspections.

*Question 4.* I understand that a Report that you wrote found that only 53 percent of NRC employees feel that it is "safe to speak up in the NRC" about safety issues. That report also states that almost one-fourth of NRC employees do not believe that "the NRC's commitment to public safety is apparent in what we do on a day-to-day basis." What recommendations would you make to improve the safety culture at the NRC?

Response. The OIG's Safety Culture and Climate Survey was undertaken to solicit the views and opinions of NRC employees on a wide range of subjects, of which Continuous Improvement Commitment is one. Continuous Improvement Commitment assesses employee views on NRC's commitment to public safety, and whether employees are encouraged to communicate ideas to improve safety, regulations, and operations. In comparison to the results of the prior 1998 survey that score improved by 3 percent to 67 percent, but the results were 4 percent below similar governmental norms.

To improve the safety culture at NRC, OIG's report recommended that the Agency focus on seven areas: continuous improvement commitment, empowerment, communication, NRC image, quality focus, management leadership and organizational commitment.

The Commission is already taking action to address the issues stated in the report. In a memorandum dated January 13, 2003, the Chairman advised NRC's Executive Director for Operations that he was concerned that more needed to be done to determine the underlying causes of the employee attitudes reflected in the identified areas for improvement and to develop strategies to address these underlying causes systematically. He directed the Executive Director for Operations to take the following actions and develop an action plan for addressing these matters: (1) develop and conduct a systematic assessment of the areas for improvement identified in the report and establish appropriate priorities for agency attention; and (2) identify the underlying causes for the employee attitudes reflected in each area.

On January 30, 2003, NRC's Executive Director for Operations advised the Commission that he created a task group to respond to the Chairman's Commission's request.

We are following the progress of the task group in its addressing the Chairman's concerns.

*Question 5.* Turning to your investigation into possible improper contacts between the Department of Energy and the NRC over the potential licensing of Yucca Mountain, I recall that you determined that DOE and NRC have not had any improper discussions on the matter. In your opinion, is the NRC prepared to address the licensing request by the Department of Energy in an independent and impartial manner when—and if—it is filed?

Response. Based on the work conducted to date by this office regarding Yucca Mountain, we have no reason to believe that the NRC staff will not address any licensee application from the Department of Energy in an independent and impartial manner.

*Question 6.* Does the fiscal year 2004 Budget Proposal adequately fund you and your office to carry out your mission?

Response. For fiscal year 2004, we requested \$7.3 million and 47 FTE to carry out the mission of my office. This represents a total increase of \$0.5 million over last year's budget. Included within this increase is \$0.3 million to support the addition of 3 FTE to our technical audit staff, and \$.02 million to cover the increased personnel costs associated with existing staff.

If these additional audit resources are provided by Congress, it will enhance our capability to focus on NRC programs related to the handling and disposal of nuclear waste, nuclear fuel fabrication, and nuclear material control and accountability issues. It will also enable my office to provide better oversight of the NRC's safety-related programs and emerging responsibility at certain DOE laboratories, as well as the role of NRC's Enforcement Program. Further, the expanded capability will enable OIG to assist the Agency in the early identification of problems, thereby giving the NRC an opportunity to address the problems at an early stage.

In assessing the basis for the requested OIG budget, it is important to note that three-fourths of the NRC's resources are dedicated to program activities related to nuclear reactors, materials, and waste, while only one-third of OIG auditors work in these program areas. Because of the mandatory nature of audit work in the financial and information management areas, we cannot divert our existing auditing resources into nuclear program activities. To accommodate this disparity, we requested these additional audit resources to accomplish a more balanced audit program that is better aligned with NRC activities and current events.

RESPONSES BY HUBERT T. BELL TO ADDITIONAL QUESTIONS FROM  
SENATOR VOINOVICH

*Question 1.* Fifty-three percent of the employees feel that it is safe to speak up in the NRC about safety issues. How does that compare with other organizations of this type?

Response. NRC is below the composite scores of other organizations in the Government research and technology composite. This composite includes the scores of various Department of Defense research, development, and technology centers (e.g., Naval Undersea Warfare Center) and Department of Energy national laboratories (e.g., Lawrence Livermore National Laboratory). The contractor did not have a basis to compare NRC to other regulatory agencies; as a result there is no direct comparison. NRC is 5 percentage points below the composite for the Government research and technology sector.

*Question 2.* Do you have any statistical background on it?

Response. NRC was 53 percent in the 2002 Safety Culture and Climate Survey (an 8 percent increase from the 1998 survey, which was 45 percent).

U.S. Government research and technology composite was 58 percent.

U.S. research and development norm (includes Merck, Phillips Electronics, and Shell Oil Company) was 59 percent.

The U.S. National Norm (includes organizations such as American Airlines, Citibank, Kerr-McGee, and Pricewaterhouse Coopers) was 56 percent.

RESPONSES BY HUBERT T. BELL TO ADDITIONAL QUESTIONS FROM  
SENATOR CARPER

*Question 1.* Do you believe the Commission has reviewed the report and taken steps to address the concerns you raised?

Response. Yes. In the NRC's Performance and Accountability Report Fiscal Year 2002, the Agency addresses each of the management challenges identified by this office. The Agency's response demonstrates its commitment to address the challenges presented and the Agency provides examples of progress made during fiscal year 2002. As an illustration, during the March 11, 2003, Joint Financial Management Improvement Program conference, the Deputy Director of the Office of Personnel Management praised the Nuclear Regulatory Commission for its efforts in the area of workforce planning.

*Question 2.* Do you believe that the Commission has sufficient resources to adequately address all of the challenges identified in your report?

Response. In addressing each of the challenges, the Agency does not question the adequacy of its resources to make continued progress in the challenge areas. OIG is not aware of resource limitations that could adversely effect sustained progress for each challenge.

*Question 3.* Given what has occurred at Davis-Besse in Ohio, and at Indian Point in New York, do you see any connection between the low score in this category [Continuous Improvement Category] and these events?

Response. The OIG's Safety Culture and Climate Survey was undertaken to solicit the views and opinions of NRC employees on a wide range of subjects, of which Continuous Improvement Commitment is one. Continuous Improvement Commitment assesses employee views on NRC's commitment to public safety, and whether employees are encouraged to communicate ideas to improve safety, regulations, and operations.

In comparison to the results of the prior 1998 survey, that score improved by 3 percent to 67 percent, but the results were 4 percent below similar governmental norms. We do not see a direct correlation between that score and the event that occurred at Indian Point and Davis Besse. Our reports concerning the events at Indian Point and Davis Besse did not directly address employee attitudes in this area. During the investigation, we did observe indications that some employees were discouraged from raising different points of view.

*Question 4.* What should the Commission, and this committee, be doing to raise that score?

Response. The Commission is already taking action to address the issues stated in the report. In a memorandum dated January 13, 2003, the Chairman advised NRC's Executive Director for Operations that he was concerned that more needed to be done to determine the underlying causes of the employee attitudes reflected in the identified areas for improvement and to develop strategies to address these underlying causes systematically. He directed the Executive Director for Operations

to take the following actions and develop an action plan for addressing these matters: (1) develop and conduct a systematic assessment of the areas for improvement identified in the report and establish appropriate priorities for agency attention; and (2) identify the underlying causes for the employee attitudes reflected in each area. We are following the progress of these issues.

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RESPONSES BY HUBERT T. BELL TO ADDITIONAL QUESTIONS FROM  
SENATOR CLINTON

*Question 1.* Mr. Inspector General, is your office currently working on a report concerning NRC's enforcement of regulatory requirements and commitments at the Indian Point 2 nuclear power plant? If so, how long have you been working on that particular report?

Response. The Office of the Inspection General (OIG) is completing its investigation into the effectiveness of NRC's regulation of Indian Point Unit 2. A section of this report deals with our review of NRC's enforcement of regulatory requirements and commitments at that facility. Our investigation was initiated in the spring of 2001. During the conduct of the field work, the events of September 11, 2001, required a large investigative commitment from this office. In the spring of 2002, following on the heels of September 11, the Davis-Besse matter developed. Once again, OIG's efforts in response to this event took investigative resources from the Indian Point 2 investigation.

*Question 2.* My staff has had several discussions with your office about this report, and you know of my extreme interest in the report. I wrote to you about the report just last week in fact, in the hope that you would be able to release the report before the February 13, 2003, hearing, or tell us about its findings at the hearing. The release of this report seems to keep getting pushed back. Can you please give me a date certain that this report will be release?

Response. The OIG Event Inquiry into the effectiveness of NRC's regulation of Indian Point Unit 2 will be released by April 25, 2003.

*Question 3.* Concerning your testimony, and your findings regarding Davis-Besse, Indian Point, and perhaps other plants around the country, would you say that there is any sort of trend in the NRC's behavior, in that the Commission appears to give "undue weight" to what the Commission and the industry consider to be the "costs" of regulatory oversight? That they in essence give greater consideration to these so-called "costs" and perhaps not as much consideration to the adequate protection of human health and safety?

Response. The NRC has adopted as a Performance Goal: reducing unnecessary regulatory burden on stakeholders. As the Agency has explained, its purpose is to make agency and licensee resources available to more effectively focus on safety issues. The costs associated with NRC activities can impact a variety of NRC licensees. Considering the associated cost in the decisionmaking process is not new for the nuclear industry or the NRC.

The events at Indian Point and Davis Besse showed that on occasion actions taken or not taken have financial consequences. Currently, the NRC as part of the exercise of its responsibilities is readdressing what is meant by an acceptable level of risk, its relationship to safety, and associated costs. The work of my office to date does not lead me to believe that the NRC in its reappraisal is placing the public at an unacceptable risk.

The events at Indian Point and Davis Besse are, from my perspective, occasions where it appears that both the licensee and the NRC allowed higher risks to be assumed. I cannot say that these higher risks are unacceptable, but the NRC in its reappraisal deliberations must, along with its licensees, gauge what is the appropriate balance among risk, public health and safety, and any identified associated costs.

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STATEMENT OF JERE WITT, OTTAWA COUNTY ADMINISTRATOR AND MEMBER OF THE  
DAVIS-BESSE RESTART OVERVIEW PANEL

Mr. Chairman, members of the subcommittee, it is my pleasure to present to you a summary of Ottawa County views on the recent events, involving the Nuclear Regulatory Commission and Davis-Besse.

I am Jere Witt, Ottawa County Administrator for the past 25 years, and a member of the Davis-Besse Restart Overview Panel.

Ottawa County is the biggest stakeholder in this process. The residents of Ottawa County are the most affected by the plant.

Safe operation of the plant has and always will be my first priority.

It should also be noted that the Ottawa County Emergency Management Agency has demonstrated itself to be one of the best in the country. This has been done involving drills with FEMA, the NRC, and more importantly real life scenarios of tornadoes, floods, collapsed buildings, etc. The protection of the residents is their only goal.

My role on the Restart Overview Panel is to represent Ottawa County to insure the plant is ready to restart and operate safely.

I have observed the restart activities since day one, attending over 60 meetings, many all day long.

These meetings include:

- a. Restart Overview Panel monthly meetings
- b. Two tours of containment
- c. NRC public meetings
- d. Updates from NRC staff
- e. Three full day meetings with groups of employees on safety conscious work environment
- f. Meeting with employees individually
- g. Two meetings with First Energy Board of Directors—Nuclear Committee
- h. Observing many plant activities including the Restart Readiness Review Board

We must evaluate the value of the continued operation of Davis-Besse in terms of safety and impact to the community. Davis-Besse is the largest employer and the largest taxpayer in Ottawa County.

Obviously Davis-Besse and the NRC made mistakes and we must insure it never happens again.

I have personally been involved in the development of the plan putting together the actions required to safely and effectively operate Davis-Besse in the future.

There is a new commitment to safety development and it will continue to grow.

This commitment started with the new management team and demonstrated through their actions and involvement with the staff.

The Leadership in the Action program is making sure it permeates through all staff from the top to the bottom.

Employees are using the new systems, as evidenced by the many safety improvements being brought to light and instituted, including major ones (Emergency Sump/Decay Heat Valve Pit/Leak Detection Systems, etc.).

This will only help the safety culture continue to grow.

There is a new system in place for the resolution of open issues. Employees are trained on it and see the results.

Management is out in the plant observing the work and being directly involved with the staff.

The CEO and Board of Directors are very involved as evidence by time spent at Davis-Besse and meeting with the Restart Overview Panel.

The NRC 0350 process has been a good one to get to where we are today—We now need a better process to insure it does not happen again.

My recommendations are as follows:

- a. The NRC should meet at least semi-annually with Ottawa County to update the status of the plant and any significant risk issues. We should be a player in any discussion of potential safety risks.

- b. The Restart Overview Panel should continue in some format to continually review the plant operations and the NRC's review of these operations. This panel gives an expert independent review of the plant. I am sure many plants have expert consultants that review their operations, but my experience on this panel has made me keenly aware of how much better this review is done, if they meet as a group. They have asked the toughest questions throughout the Davis-Besse incident and continuously challenged each other and the staff. I also believe the NRC should be involved at least as an observer. I truly believe that independent experts such as this acting as a group could have possibly prevented this incident.

- c. The NRC must be fully funded to make the necessary inspections.

- d. NRC employees should not be allowed to become employees of a utility for a significant time period.

I also have some questions:

- a. How will the NRC change its programs to guarantee the proper inspections at Davis-Besse, to insure safe operations? What methods will you use to assess the effectiveness of these changes and will there be independent oversight of these changes?

- b. The company has shown how it is changing the safety culture at Davis-Besse and how it will measure its effectiveness. I have not seen the plan on how the NRC will change its own safety culture and measure its effectiveness. The NRC as the

regulator must demonstrate to the residents of Ottawa County how they will make necessary changes as recommended in the "Lessons Learned Report".

c. I know that First Energy has dealt with the personnel issues of those involved in this incident. Ottawa County requests that the NRC deals with its own appropriately, if they have not already. This is vital to public confidence.

#### SUMMARY

I will assure that Ottawa County will continue a more active role as a partner in future operations of Davis-Besse. We will challenge and demand answers from both First Energy and the NRC.

The systems and programs are in place to safely operate Davis-Besse and I am confident that with the proper changes made at Davis-Besse, FENOC, First Energy, and the NRC we will all continually monitor all facets into the future to protect the residents of Ottawa County.

A renewed stringent regulation by the NRC must be part of this process. This regulation must be based on knowledge and common sense, not one influenced by political agenda's.

My personal thanks to NRC staff especially (Jim Dyer, Jack Grobe, Bill Dean, Christine Lipa) for their open and candid discussion with the residents of Ottawa County and myself. They have gone above and beyond to insure we are informed.

I would also like to express my appreciation to First Energy especially (Peter Berg, Bob Saunders, Lew Myers) for allowing me to participate on the Restart Overview Panel. They have provided me free access to all facets of Davis-Besse.

Thank you for the opportunity to provide this information.

