

Courtesy Visit with Senator George V. Voinovich  
April 30, 2003; 5:00 p.m.

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317 Hart Senate Office Building;  
(202) 224-3353

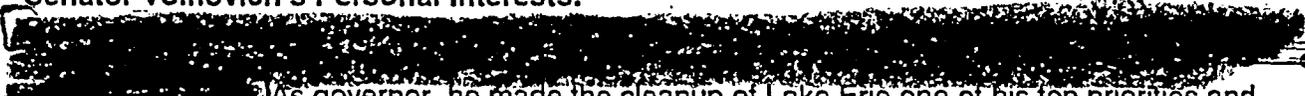
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Courtesy Visit with Senator George V. Voinovich  
April 30, 2003; 5:00 p.m.  
317 Hart Senate Office Building; (202) 224-3353  
[Scheduler: Melanie (202) 224-0788]

- A. Letter of Congratulations on being designated Chairman
  - B. Profile
  - C. April 22, 2003, comments on Senator Voinovich's S. 1591, "Nuclear Safety and Promotion Act of 2001"
  - D. December 6, 2002, letter from former Chairman Meserve responding to Senator Voinovich's questions raised during their October 9, 2002 meeting.
  - E. Security update
  - F. Nuclear Security Legislation and Energy Bill
  - G. Davis-Besse update
  - H. Recent bills sponsored by Senator Voinovich
  - I. Transcript Highlights and Responses to Questions from Senator Voinovich from the February Oversight Hearing
- 
- J. March 28, 2003 Monthly Report to Congress

**Senator Voinovich's Personal Interests:**

 As governor, he made the cleanup of Lake Erie one of his top priorities and instituted Fish For Free Days (days when no fishing license is required). SVE



UNITED STATES SENATOR

GEORGE V. VOINOVICH  
OHIO

April 2, 2003

Commissioner Nils J. Diaz  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Nils:

Congratulations on being designated as the Chairman of the Nuclear Regulatory Commission by President George W. Bush. You should be honored that your hard work and dedication over the years has received such significant recognition.

Your experience as a member of the Commission, as well as your extensive background and commitment to the nuclear sciences have more than prepared you for your new responsibilities as Chairman and official spokesperson for the NRC. I am certain that your leadership will provide many opportunities for continued progress for the NRC.

I look forward to working with you in your new capacity, and please feel free to contact my office at any time.

Sincerely,

George V. Voinovich  
United States Senator

*If you get a chance  
I'd love to see you.*

GEORGE V. VOINOVICH  
OHIO

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## United States Senate

WASHINGTON, DC 20510-3504

GOVERNMENTAL AFFAIRS  
RANKING MEMBER, SUBCOMMITTEE ON  
OVERSIGHT OF GOVERNMENT MANAGEMENT,  
RESTRUCTURING AND THE  
DISTRICT OF COLUMBIA

ENVIRONMENT AND  
PUBLIC WORKS  
RANKING MEMBER,  
SUBCOMMITTEE ON CLEAN AIR, WETLANDS,  
AND CLIMATE CHANGE

ETHICS

October 10, 2002

Dr. Richard Meserve  
Chairman  
Nuclear Regulatory Commission  
One White Flint North Building  
11555 Rockville Pike  
Rockville, Maryland 20852.

Dear Chairman Merserve:

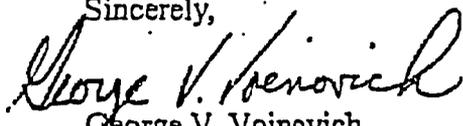
Thank you for taking the time to brief me yesterday on the NRC's "Lesson's Learned" Task Force Report on Agency's Handling of Davis-Bessie Reactor Vessel Head Damage. I appreciate your candor in explaining to me the situation surrounding the reactor head damage and the investigation conducted by the NRC.

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I consider the information regarding the causes of the damaged head to be both serious and troubling. While I appreciate your assurances that the safety mechanisms in place would have guarded against any external release of radiation, I nevertheless remain concerned about the events which led to the deteriorated reactor head.

With the release of the NRC's "lessons learned" report I believe it is now time for the General Accounting Office to begin an investigation into this matter. I ask that both you and your staff cooperate fully with the GAO, as you have done in the past. In addition, I will be asking for the Senate Environment and Public Works Committee to conduct an oversight hearing into this matter as soon as practicable in the 108<sup>th</sup> Congress. I know your work in this matter will continue over the coming weeks and months and I ask that you continue to keep me informed on the progress.

Sincerely,

  
George V. Voinovich  
United States Senator

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# Davis-Besse Reactor Vessel Head Damage NRC UPDATE

April 2003

This is the eighth periodic update on the NRC response to the reactor vessel head damage at the Davis-Besse Nuclear Power Station. The updates will be available at public meetings of the NRC Davis-Besse Oversight Panel which is coordinating the agency's activities related to the damage. Each update will include background information to assist the reader in understanding issues associated with the corrosion damage.

## Safety Culture Review

On April 7 the NRC began a special inspection to review the processes used at the Davis-Besse Nuclear Power Station to assess safety culture improvements. Weaknesses in the plant's safety culture were identified as key contributors in the corrosion of the reactor vessel head, which has resulted in the plant's extended shutdown since February 16, 2002.

The inspectors will assess the scope of FENOC's approach and its methods for collecting and evaluating data and developing conclusions regarding safety culture and safety conscious work environment. In addition, the NRC team will evaluate the independent safety culture assessment performed by Performance, Safety, and Health Associates, Inc., consultants for FENOC. The team will also review the utility's plans for future monitoring in this area and the implementation of the Employee Concerns Program.

The NRC's Oversight Panel, which has been coordinating the agency's activities at Davis-Besse following the identification of reactor head degradation, will use the results of this special inspection, combined with results from other completed and ongoing inspections, to evaluate the effectiveness of the utility's management and human performance corrective actions. This aspect of plant performance is critical to safe facility restart and operation.

The seven-member inspection team led by Geoffrey Wright, a senior inspector in NRC's Region III office, includes experts in human performance and organizational effectiveness, as well as former industry executives who have a track record of improving safety culture at problem nuclear power

## Recent NRC Inspections

- Radiation Protection** - This inspection examined the Davis-Besse program for radiation protection for workers at the plant as well as for the general public. The inspection was an outgrowth of earlier inspections of worker radiation exposures and minor radioactive contamination that was found in offsite locations. The inspection findings were discussed in a public meeting April 15, and an inspection report will be issued in mid-May.
- Containment Sump Modification** - This inspection, completed April 11, reviewed the design and installation of new screens for the containment sump, which increased the surface area to avoid possible clogging of the screens during certain accident conditions. The inspection results are under review, and a report will be issued in mid-May.
- Integrated Containment Leak Rate Test** - This inspection monitored the testing by the plant staff of the reactor containment to assure that it meets the NRC requirements for "leak-tightness" of the containment. The results of the test, conducted April 8-9, are under review, and the inspection team's report will be issued in mid-May.

plants. Two members of the safety culture inspection team are outside consultants; and the other five members are NRC employees.

## Containment Test Completed

On April 8 and 9 the plant completed the integrated leak rate test of the reactor containment to make sure that it meets NRC requirements for leaktightness. In order to bring the new reactor vessel head into the containment and remove the old one, FENOC cut an opening in the containment. The leakage test was intended to verify that the restoration of the opening was sufficient. The test involved pumping air into the containment until it was almost three times normal pressure - and then measuring the pressure for possible leaks. In addition, some local leakage tests were performed on portions of the containment where pipes or conduits pass through the containment wall.

NRC inspectors observed the test and are continuing their review of the results. Initial indications are that the test was successful and demonstrated that the containment is sufficiently leaktight.

## Upcoming FENOC Work at Davis-Besse

- Resolving an issue with the high pressure injection pumps identified by FENOC during its safety system design reviews. FENOC engineers found that under certain specific accident conditions, the pumps could be damaged if they needed to draw cooling water from the reactor sump. The utility is reviewing options to correct the problem, including possible replacement of the pumps.
- ~~Performing a special seven-day test of the reactor and reactor cooling system to assure there are no~~ leaks, particularly from the tubes which pass through the bottom of the reactor. The reactor will not be started up for the test; heat added through the operation of the reactor cooling pumps will be sufficient to approach normal operating temperature and pressure.

## Ongoing and Planned NRC Inspections

The NRC has a series of inspections planned before any decision on whether or not the Davis-Besse plant may resume operations. These inspections include:

- Management and Human Performance, Phase III (Safety Culture) - This inspection (described in greater detail on page 1) focuses on FENOC's actions to improve management effectiveness and human performance and its processes to survey and assess the safety culture among the staff at Davis-Besse - how the management and workers will deal with safety concerns.
- Corrective Action Team Inspection - This inspection looks at the effectiveness of the corrective action program at Davis-Besse - how the utility finds, evaluates, and fixes problems.
- Reactor Vessel Test (Normal Operating Pressure) - Monitoring the plant's test of the reactor vessel and associated piping to assure there are not leaks in the system.
- Safety System Design Reviews - The utility's Systems Health verification program and earlier NRC inspections had found potential design questions that needed to be resolved. This inspection will look at the effectiveness of the design reviews and the resolution of any issues found.

<p>Next NRC Davis-Besse Oversight Panel Meetings - 2 p.m. and 7 p.m. - Tues., May 6, Camp Perry - Highway 2 west of Port Clinton OH</p>
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- ❑ Boric Acid Corrosion Management Program - This inspection will focus on the utility's program for controlling boric acid leakage and its possible effects.
- ❑ Reactor Coolant System Integrated Leakage Program - Evaluate the utility's program for detecting small amounts of leakage from the reactor cooling system for comprehensiveness and effectiveness.
- ❑ Assessment of Backlog Issues - Evaluating the work Davis-Besse plans to defer until after the plant has resumed operations or to be performed during future outages. This review will consider the appropriateness and safety of the proposed deferrals.
- ❑ Restart Assessment Team - As the utility nears the point where it will seek NRC authorization for restart, this team inspection will thoroughly review the readiness of the plant and the plant staff to resume plant operations safely and in compliance with NRC requirements. The inspection findings will be considered by the NRC Oversight Panel in making its recommendation to the Regional Administrator on possible restart.

## Background: What Happened at Davis-Besse

In March 2002 plant workers discovered a cavity in the head or top of the reactor vessel while they were repairing control rod tubes which pass through the head.

The tubes, which pass through the reactor vessel head, are called control rod drive mechanism nozzles. Cracks were detected in 5 of the 69 nozzles. In three of those nozzles, the cracks were all the way through the nozzle, allowing leakage of reactor cooling water, which contains boric acid.

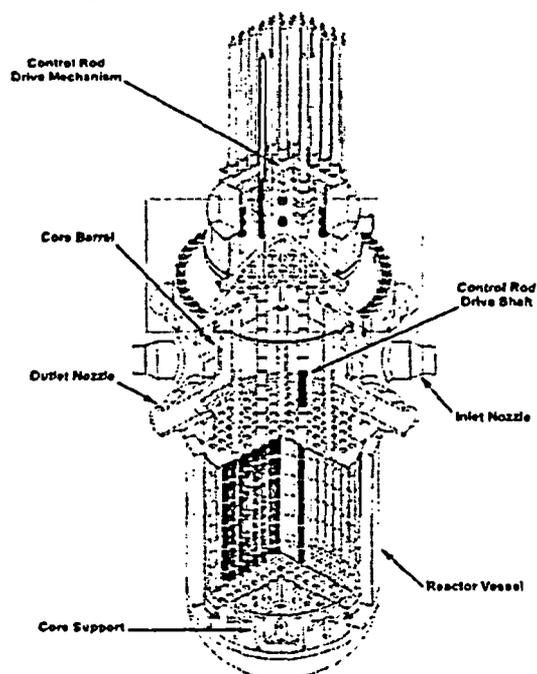
Corrosion, caused by the boric acid, damaged the vessel head next to Nozzle No. 3, creating an irregular cavity about 4 inches by 5 inches and approximately 6 inches deep. The cavity penetrated the carbon steel portion of the vessel head, leaving only the stainless steel lining. The liner thickness varies somewhat with a minimum design thickness of 1/8 inch. Subsequent examination by Framatome, FirstEnergy's contractor, found evidence of a series of cracks in the liner, none of which was entirely through the liner wall.

### Earlier indications of the problem: Through-Wall Cracking of Nozzles in France and at the Oconee Nuclear Power Station in South Carolina

In the early 1990's control rod drive mechanism nozzle cracking was discovered at a nuclear plant in France. These cracks penetrated the nozzle wall along the length of the nozzle (referred to as 'axial' cracking).

In 1997 the NRC issued Generic Letter 97-01 to gather information on the inspection activities for possible cracking in the control rod drive mechanism nozzles in plants in the United States. Subsequently, through-wall circumferential cracks -- around the nozzle wall -- were discovered in two control rod

Typical Pressurized Water Reactor



drive mechanism nozzles at the Oconee Nuclear Power Station, Unit 3, in 2001. While axial cracking had been found at several other plants and repaired, circumferential cracking had not been seen before. Circumferential cracking is more significant because it could lead to complete separation of the nozzle and a resulting loss-of-coolant accident.

After the Oconee discovery, the NRC issued Bulletin 2001-01, requiring all pressurized water reactor (PWR) operators to report to the NRC on structural integrity of the nozzles, including the extent of any nozzle cracking and leakage and their plans to ensure that future inspections would guarantee structural integrity of the reactor vessel boundary. The NRC's Bulletin instructed nuclear power plants with similar operating history to Oconee Unit 3, including Davis-Besse, to inspect their reactor vessel head penetrations by December 31, 2001, or to provide a basis for concluding that there were no cracked and leaking nozzles.

FirstEnergy Nuclear Operating Company requested an extension of the inspection deadline until its refueling outage beginning March 30, 2002, and provided the technical basis for its request. The NRC did not allow the plant to operate until March 30, but agreed to permit operation until February 16, provided that compensatory measures were taken to minimize possible crack growth during the time of operation. The NRC was unaware that nozzle leakage or corrosion had occurred at Davis-Besse when it agreed to the February 16 date.

### **Boric Acid Corrosion Control Procedure**

The water that circulates through a pressurized water reactor to cool the nuclear fuel contains a low concentration of boric acid. This boric acid water can potentially leak through flanges, pump and valve seals, and other parts of the reactor cooling system and cause corrosion.

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The NRC has taken steps to make sure that PWR operators are aware of and pay attention to the corrosion boric acid can cause in certain environments:

- In 1986-89, the NRC issued a series of documents, called "generic communications," informing PWR licensees that boric acid can corrode and damage steel reactor components.
- The NRC's Generic Letter 88-05 requested PWR operators to implement a program to ensure that boric acid corrosion does not lead to degradation of the reactor cooling system components. All nuclear power plants with PWRs, including Davis-Besse, reported to NRC that the Boric Acid Control Procedures had been established and would be implemented.

### **Barriers Built into Nuclear Plants to Protect Public Health and Safety**

The design of every nuclear power plant includes a system of three barriers which separate the highly radioactive reactor fuel from the public and the environment. The Davis-Besse reactor head damage represented a significant reduction in the safety margin of one of these barriers, the reactor coolant system. The reactor coolant system, however, remained intact, as well as the other two barriers, the fuel and the containment.

#### **1. Fuel Pellets and Rods**

The first barrier is the fuel itself. The fuel consists of strong, temperature-resistant ceramic pellets made of uranium-oxide. The pellets are about the size of a little finger-tip. They retain almost all of the highly radioactive products of the fission process within their structure.

The pellets are stacked in a rod made of a zirconium alloy. At Davis-Besse, each fuel rod is about 13 feet long. The rods are assembled into bundles, with each assembly containing 208 rods. The reactor core contains 177 fuel assemblies. Any fission products which escape from the pellets are captured inside the cladding of the rod, which is designed to be leak-tight. Small pin hole leaks do occasionally occur, however, and the operating license requires leakage monitoring and contains limits on the maximum allowable leakage of radioactive materials from the fuel rods.

## 2. Reactor Coolant System

The second barrier is the reactor coolant system pressure boundary. The reactor core is contained inside the reactor pressure vessel, which is a large steel container. Thick steel pipes supply cooling water to the reactor and carry away the heated water after it passes through the reactor core. The pressure vessel, the connected piping, and other connected components make up the reactor coolant system pressure boundary. At Davis-Besse, the reactor coolant system contains about 60,000 gallons of cooling water, circulated by four large pumps at a rate of about 360,000 gallons per minute.

This system is designed to be leak-tight at operating conditions which include a water temperature of 605° F and a water pressure of 2,150 pounds per square inch. The operating license contains limits on the maximum allowable amount of leakage from the system, and it specifies requirements for monitoring any leakage. If a leak is identified as being through any solid wall of the system (reactor vessel, cooling pipes or other components) continued operation of the plant is prohibited, no matter how small the leak rate.

## 3. Containment Building

The third barrier is the containment building. This is a large cylindrical building which contains the entire reactor coolant system. None of the piping that contains the high-temperature and high-pressure reactor coolant water extends outside the containment building. The containment is a 1 1/2 inch thick steel cylinder, rounded at the top and bottom, which is designed to be leak-tight. This steel structure is surrounded by a reinforced concrete shield building, which is the round building visible from the outside of the plant. Its walls are 2 to 3 feet thick.

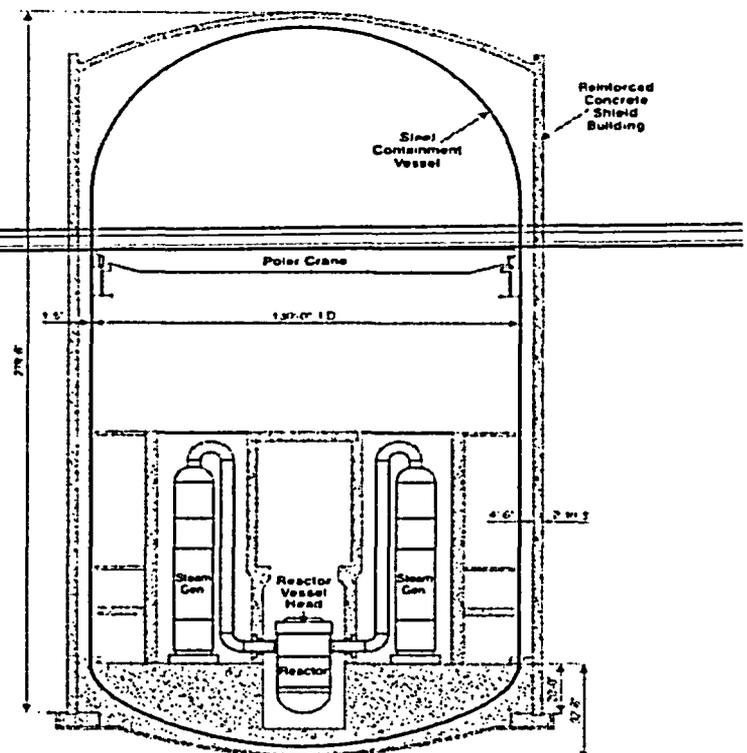
## NRC's Response to Vessel Head Damage

The NRC responded to the vessel head degradation with a series of actions, some specific to Davis-Besse and others aimed at other PWR plants. The agency began a review of its regulatory activities as well.

### Davis-Besse

On March 12, 2002, the NRC initiated an Augmented Inspection Team to examine conditions that led to the head degradation and on March 13, 2002, the NRC issued a Confirmatory Action Letter to Davis-Besse documenting a number of actions the plant needed to implement for the unit to be allowed to restart. On April 29, 2002, the NRC established an Oversight Panel under the Agency's Manual Chapter 0350, to coordinate and oversee NRC activities necessary to address repairs and performance deficiencies at the plant in order to

Simplified View of Containment Building Interior



guarantee that it can operate safely. The plant will not restart until the NRC is satisfied that plant operators have met all necessary safety requirements.

### Generic

On March 18, 2002, the NRC issued Bulletin 2002-01, instructing PWR licensees to report on the condition of their head, past incidents of boric acid leakage and the basis for concluding that their boric acid inspection programs were effective. All plants sent their responses and indicated that no evidence of extensive corrosion of reactor vessel heads was found at these plants. On August 9, 2002, the NRC issued Bulletin 2002-02 advising PWR operators that more stringent inspection techniques may be necessary to detect head penetration nozzle cracks. Visual examination of reactor vessel heads and nozzles may need to be supplemented with other inspection techniques, such as the use of ultrasound, electric currents and liquid dyes. In October, the agency also requested PWR licensees to provide additional information on their boric acid inspection program with greater detail than initially covered in the responses to Bulletin 2002-01.

On February 11, 2003, the NRC an order to all Pressurized Water Reactor operators establishing interim inspection requirements for reactor pressure vessel heads. The Order requires specific inspections of the reactor pressure vessel head and associated penetration nozzles depending on the licensee's susceptibility to primary water stress corrosion cracking.

### NRC Davis-Besse Oversight Panel

An NRC Davis-Besse Oversight Panel was created to make sure that all corrective actions, required to ensure that Davis-Besse can operate safely, are taken before the plant is permitted to restart and that Davis-Besse maintains high safety and security standards if it resumes operations. Should the plant restart, the Oversight Panel will evaluate if Davis-Besse's performance warrants reduction of the NRC's heightened oversight and, if so, recommend to NRC management that the plant return to a regular inspection schedule. The panel was established under the agency's Manual Chapter 0350.

The panel brings together NRC management personnel and staff from the Region III office in Lisle, Illinois, the NRC Headquarters office in Rockville, Maryland and the NRC Resident Inspector Office at the Davis-Besse site. The eight-member panel's chair and co-chair are John Grobe, a senior manager from Region III and William Ruland, a senior manager from NRC headquarters

As part of determining if plant corrective actions are adequate to support restart, the Oversight Panel will evaluate FirstEnergy's return to service plan, which is divided into seven areas of performance that the utility calls "building blocks." A series of NRC inspections are being performed to verify the company is taking proper actions in each of the seven areas. These reviews will include the work by the FirstEnergy staff and, in addition, the NRC staff will perform independent inspections in each of the "building block" areas.

### **Issues to be resolved in order for Davis-Besse to restart**

The NRC Oversight Panel will only consider recommending that Davis-Besse resume operations when the plant has demonstrated its readiness to operate safely. Key elements will include:

- Davis-Besse management and personnel properly understand the technical, organizational, programmatic and human performance problems that led to the extensive degradation of the plant's reactor vessel head.

- Davis-Besse enhances programs for operating the plant safely, detecting and correcting problems, controlling boric acid corrosion, and is fostering a more safety-conscious environment among plant managers and workers.
- Davis-Besse improves the performance standards of its managers and workers, including their "ownership" of the quality of work products and the safety focus of decision-making.
- The replacement of the vessel head is technically sound and all reactor components are inspected, repaired as necessary, and demonstrated to be ready for safe operation.
- Plant safety systems inside and outside containment are inspected, repaired as necessary, and have been confirmed to be ready to resume safe operation of the plant.
- Plant operators demonstrate appropriate safety focus and readiness to restart the plant.
- Any organizational or human performance issues resulting from the ongoing investigation conducted by the NRC's Office of Investigations are addressed.
- All licensing issues that have arisen as a result of the reactor head replacement have been resolved.
- ~~Resolution of radiation protection issues associated with the radiation exposure to workers during steam generator work and the particle contamination found in offsite locations.~~
- Modification of the strainer system for the containment sump, which would be the source of cooling water for recirculation in the event of a loss-of-coolant accident.

### What Happens If the Plant is Allowed to Restart

If the facility is permitted to restart, the NRC Oversight Panel will continue to monitor plant activities and operations until panel members are confident that the root cause(s) of the problem have not recurred. Should FirstEnergy achieve that performance level, the NRC Oversight Panel would recommend to NRC management that responsibility for the plant oversight be transferred back to the Region III line organization for monitoring under the Reactor Oversight Process. The panel would then cease to exist. Should FirstEnergy not demonstrate sustained improved performance, the panel will recommend appropriate regulatory actions.

### Public Participation In the Process

The NRC's experience is that members of the public, including public officials and citizens, often raise questions or provide insights that are important to consider. If you have questions or want to provide information or a point of view, please contact us. For feedback on this newsletter, contact Viktoria Mitlyng 630/829-9662 or Jan Strasma 630/829-9663 (toll free 800/522-3025 - ext -9662 or -9663). E-mail: opa3@nrc.gov. Extensive information about the Davis-Besse reactor vessel head damage and the ensuing activities is available on the NRC web site: <http://www.nrc.gov> - select "Davis-Besse" under the list of key topics.

OVERSIGHT OF THE NUCLEAR REGULAR COMMISSION  
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, Senate Dirksen Building, the 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 six 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 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 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 number one 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 -- and I quote 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 particularly 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. And 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.

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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 <sup>Grobe</sup> ~~Roague~~, Bill Dean, and X 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.

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 five-minute rounds.

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

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In other words, 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. And 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 did~~ inform<sup>ed</sup> 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. X

Of course, we are dealing with a situation that didn't happen, <sup>so</sup> we have to speculate and we have to rely on analysis. ~~And~~ Fortunately, <sup>a rupture</sup> it 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. ~~that~~ 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 ~~that~~ <sup>the</sup> 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 ~~at~~ <sup>of</sup> the cavity at the top of the Davis-Besse ~~head~~ <sup>head</sup>.

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 collecting <sup>ed</sup> -- there is not an infinite supply of water that is available. for recirculation

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 ~~about~~ <sup>and</sup> chemical processes. <sup>pressure</sup>

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 pumps, that <sup>recirculation</sup> would cause it to recirculate. X

There is another issue that has arisen recently, ~~that~~ There was a gap in the screening that might have allowed a large piece of debris to get through ~~when it might~~ <sup>and</sup> have damaged the impeller on the pump, or conceivably could have constricted or been captured in -- X

Senator Voinovich. The thing is that the engineer said 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?

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~~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 we are analyzing and that is being addressed. ~~This is something that was brought to us by the licensee~~ <sup>this is the licensee that is</sup> ~~this is the licensee that was on top of trying to find the situation, and it is unfortunate that it existed. We don't think it would have created a problem if there had been a rupture in this event. But it is a problem that needs to be corrected. And they are.~~ <sup>it's being corrected,</sup> ~~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~~ <sup>this issue, but</sup>

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 ~~is an~~ unfortunate event, ~~obviously it does~~ reflect the continuing issues that we have had with the licensee in assuring that there is an appropriate safety culture, to make sure that <sup>the licensee is</sup> ~~they are~~ addressing problems such as this one. We are moving in that direction.

Senator Voinovich. The real issue is if you anticipated what could have happened and you said that the design as it was might not have worked, are they going to be able to do whatever it is so that if this would occur again, that the debris would not be a problem, and more important than that, are the containment facilities at other plants of the same design and should something be done to look at what was being done at those facilities to kind of guarantee that they couldn't be cluttered up and so forth.

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Mr. Meserve. ~~One of the steps that is being taken by~~ Davis-Besse has been to change this whole sump collection system to ~~this~~ 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 <sup>the</sup> ~~licensees~~ on the general issue of making sure that ~~these~~ sump systems <sup>is</sup> ~~are~~ operable, ~~for a considerable period of~~ time.

Senator Voinovich. My time is up.

Mr. Diaz, do you want to comment?

Mr. Diaz. I would <sup>on</sup> just like to make an observation which <sup>worked</sup> ~~maybe~~ doesn't reflect ~~as~~ my six years as Commissioner. I ~~studied~~ <sup>worked</sup> ~~four~~ <sup>forty</sup> 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. X

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.

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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 "all 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.

healthier than what we were dealing with when the IG was looking at that report and ConEd back in the 1998-1999 time frame.

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 and I think it's applicable to other sites around the country and 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 -- and 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 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 with the picture. This is a matter that is under

investigation by the Inspector General, ~~to get to the bottom of~~  
~~it.~~ X

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. ~~Let me see if~~ <sup>General</sup> The Inspector <sup>is</sup> looking into it. This kind of thing we would refer to the Inspector General. X

Senator Voinovich. But I think the more fundamental question though, is why didn't we, as a routine matter, see this? What was the concern? X

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The question really is. Does the NRC need to have a fundamental overhaul of the way they do their inspections? X

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. X  
And if there was a failing by the NRC in connection with this episode, it was the failure to appreciate that <sup>the</sup> this kind of X  
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 lessons-learned effort <sup>to determine</sup> ~~about~~ 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~~ <sup>an action plan and a</sup> ~~action plan that~~ <sup>W</sup> we will be receiving ~~as to the~~ schedule for the implementation of the high priority recommendations within the next few weeks. X

~~We are taking~~ <sup>W</sup> we see this as a failure of our inspection system, as well. And we are changing it to try to deal with it. X

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: If it is found that it wasn't reviewed, then it is a major shortcoming and should cause some concern about the way these reports are reviewed by the Nuclear Regulatory Commission?

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Mr. McGaffigan. Yes, sir.

Senator Voinovich. The other issue is: In the budget presented, there is a reduction in the amount of money for inspector. Or at least that is what 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 <sup>a</sup> the decision that the inspection resources on the ground at the plants should be reduced. In fact, what it X

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 ~~the~~ experience. X

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 ~~got~~ 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 concern<sup>s</sup>. So we have to fix that. X

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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. X

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. X

The other part of the savings that results in <sup>a</sup>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 three, four, or five hours in order to prepare for their inspection. They can spend half an hour doing it. X  
X

And 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 <sup>it</sup> any more than you do that we might have had to rely <sup>for</sup> on a potential rupture <sup>on</sup> of a safety system. That is not acceptable and we are taking the steps necessary so this issue will not be repeated. X  
X

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.

And I am also interested in two other areas: One of those is the area of human capital. Another hat that I wear is Chairman of the 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 to get the job done.

I always quote the fact, the statistic, that you have more people over 60 -- six 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.

The last is: 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 <sup>that</sup> we would be happy to provide you with a report. We appreciate your leadership on that issue.

I can report to you that the six-to-one ratio that you mentioned -- and I appreciate the fact that you have used it elsewhere -- ~~but~~ I am afraid I now must say that we have made great progress and it is now two-to-one.  
is no longer correct.

But unfortunately I can't tell you that the problem is solved, ~~and that~~ ~~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 <sup>ratio quickly,</sup> ~~situation.~~ But  
We still have a serious situation. Thirty-six percent of our employees, including 52 percent of our managers, can retire within five years. We need to build ~~the~~ 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 <sup>matter</sup> against the NRC staff there is, of course, <sup>e</sup> ~~this~~ investigation that we mentioned a few minutes ago about whether somebody had seen this, ~~and that conceivably~~ <sup>Some</sup> actions could arise from that <sup>if</sup> it is substantiated. We have not taken any other sanctions. We view <sup>the</sup> ~~this~~ 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, ~~but~~ <sup>T</sup> The issues here are not ones that are directed at individuals but rather, quite frankly, <sup>at</sup> 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 five-year tenure, we had nine people in ten 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 ~~have to make sure, if 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 <sup>where</sup> ~~were~~ there are changes of station, like the military, people rotate, we have to manage it.

And 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 <sup>the</sup> significant lessons that we have learned <sup>from</sup> ~~out of~~ the Davis-Besse episode is that we need to make sure we have the tools and the people that we can deploy. X

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. The point is, that is a good example. If you zero in there -- I am talking about using this as a kind of a case study that says, "This is where we blew it. This is what we should have had." And then you multiple that across and see kind of a management-type of organization and personnel to deal with making you 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?

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 perhaps 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.

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[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.

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Let me say that in many respects ~~that~~ this is a report which we received with great enthusiasm, ~~because~~ <sup>the</sup> 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. X

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, ~~is~~ <sup>what it was called.</sup> ~~But~~ It included attitudes toward safety, among other elements, in which there were statistics where we X

fell short. ←

What we have done is, We take that very seriously. ~~We have~~ asked our ~~Executive~~ <sup>7</sup> director for ~~operations~~ <sup>7</sup>, who is the principal staff officer, to undertake an examination of the underlying root causes for that problem and how we <sup>should</sup> 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 <sup>them</sup>.

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 six 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 <sup>our</sup> staff -- and we have said this repeatedly in public -- if you have a concern, come on in our door. X

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 <sup>were</sup> doing that. Obviously members of our staff didn't feel that way, and I think there is a commitment <sup>problem</sup> among the Commission as a whole that we are going to fix that. X

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 <sup>look</sup> 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. X

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 five 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 <sup>at that time</sup> was because we were split X 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 <sup>an essential</sup> ~~not an~~ 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 <sup>for</sup> ~~in~~ 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.

[The information to be submitted follows:]

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.

<sup>NRC</sup>  
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 <sup>were</sup> ~~are~~ doing things. X

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 <sup>the staff</sup> ~~them~~ in there and at the same time go forth <sup>with changes</sup>. X

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

Mr. Diaz. I see. X

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. X

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 is 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 ~~this, like when we find ourselves at~~ 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 ~~will~~ be in a position to authorize the restart. This is a plant that cannot restart without an authorization from the NRC, ~~that the issues have been addressed and corrected.~~

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 without a nuclear reaction occurring, ~~to bring the reactor~~ under pressure, ~~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 ~~these~~ <sup>the</sup> various upgrades, ~~that need to be done before the staff would be in a position,~~ the NRC would be in a position <sup>x</sup> 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 ~~sort of the~~ late spring <sup>for</sup> when they complete <sup>ing</sup> 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 <sup>1</sup> chairman talked about our <sup>0350</sup> ~~zero through-50~~ inspection process. It is disciplined. We <sup>X</sup> 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, <sup>X</sup> 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.

[The information to be submitted follows:]

Senator Voinovich. Again, I thank you very much for your being here today. Chairman Meserve, again 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 and that is that 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. But if we are going to go forward with nuclear power in this country, we really have to allay the fears of a lot of folks that are out there. And you know, there are some people out there that 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.

We are also -- and I wish I could get some of my colleagues to understand this -- that we are now in a new world since 9-11.

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 and no longer can we take them for granted.

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

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 the response to a Congressional request, and 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 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 this 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.

[The prepared statement of Mr. Bell follows:]

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. I guess, first of all, after the investigation -- and 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 we had 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 rate 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, at any rate of the cost, or you simply accept. 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 towards 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 financially driven. What we said was that there was a decision to be made about undue burden and also there was a cost involved. We merely pointed out those two issues. I think the inference of the Agency leaning towards cost.

But our report did not say -- in fact, that the Agency erred on the side of money over safety. What we said was they looked at the regulatory financial burden and then they looked at the cost end of it. 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 they had and that information was not as good as it should be. If they had had the information that they should have had, do you think that they would have made the same decision that they did to allow delaying 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 two minutes and direct

a question of 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 asking us to allowing 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, FENOT 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 dialogue 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 going to be prepared to conduct the inspection required

by the bulletin and prior to the middle of February sometime.

Senator Voinovich. So, number one, 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 information and have to make a decision like this that they would have to do a better job of documenting their analytical basis and conclusions that supported this decision?

Mr. Mulley. Yes, sir.

Senator Voinovich. If you are going to make a decision like this, that you really have got to go into all of the details of why you did it, so it's very, very clear about the decision making, so the issue 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 people, 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 have read -- and I can't remember where I read it -- was that they had two meetings in regard to this. They had one meeting where there was a vote not to do it, and then they came back and reconsidered it again a second time. So that would speak to more consideration than what you have just said.

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 six weeks would result in an immediate public safety issue and safety issue.

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

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

Senator Voinovich. Well, anyhow, I think what it does point out is what I just said. If you are going to be doing it, first of all, you have to have the best information, and then if you are going to make that kind of a decision, that 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 ten days or a week ago?

Mr. Bell. Yes, sir.

Senator Voinovich. I would be very interested in hearing the results of your report. As I said, in the event that that

did not take place, then 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.

[The information to be submitted follows:]

Mr. Bell. 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.

And 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 in reality 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 above board 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 arena 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. One of the things that he is doing which I thought was very well taken is that where they had issues that could be very controversial, the agency sat down with the inspector general and said, "You know, what are some of the things that we ought to be looking out for while we are going through this process to avoid so we don't end up when it's over -- 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 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 dialogue stages of it have begun to occur.

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

Mr. Bell. We are having dialogue; 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.

[The information to be supplied follows:]

Senator Voinovich. But 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? Number two, 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. 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 either law enforcement agencies, or 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 just to create a technical unit which will do more of the technical audits for the Agency. We are also in the process, and in the final reviewing 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 do work, then we do have an outside contractor that we look 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 right now.

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 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 U.S. Senator Harry Reid  
Subcommittee on Clean Air, Climate Change, and Nuclear Safety

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?

ANSWER.

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 Energy 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

Voinovich/RIII  
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QUESTION 1.

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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.

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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?

ANSWER.

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.

Voinovich/RIII  
04/10/03

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?

ANSWER.

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.

Voinovich/R111  
04/15/03

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)?

ANSWER.

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.

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04/15/03

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% 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 number 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?

ANSWER.

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.

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For our regulated facilities, the NRC is doing a number of things to promote improvements in safety culture. These activities are consistent with a number of positive steps outlined in a 1999 international task group<sup>1</sup> report entitled, "The Role of the Nuclear Regulator in Promoting and Evaluating Safety Culture." Specific examples are as follows:

**Setting a Good Example** -- First and foremost, the regulator should set a good example with its own performance.

**Communicating Expectations** -- The agency's policy on the Freedom of Employees to Raise Safety Concerns sets forth its expectations that operators will establish and maintain an environment where employees are free to raise concerns.

**Observing Demonstrated Behavior** -- The baseline inspection program assesses programmatic areas that provide important insights into an operator's behavior with respect to having a "safety first" focus. The agency also examines allegations and observes daily interactions between individuals to provide additional insights into the safety culture of the organization.

**Putting Safety Culture on the Agenda** -- The agency participates in various forums, both internationally and domestically, that reinforce safety culture themes and related assessments.

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<sup>1</sup>The task group was formed by the Committee on Nuclear Regulatory Activities (CNRA) of the OECD Nuclear Energy Agency and included S. Collins, R. Zimmerman, and M. Cullingford of the NRC and T. Murley, formerly of the NRC.

QUESTION 5.

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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. In light of efforts by foreign regulators to measure and regulate safety culture, 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 try to develop more objective measures that can serve as indicators of possible problems with safety culture.

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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?

ANSWER.

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 fully staffed with the exception of ten months (December 1998 to October 1999), when there was only one resident inspector assigned to the site. The inspection program consists of a minimum 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

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- 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 FY2004 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?

ANSWER.

The NRC budget for the entire Reactor Inspection and Performance Assessment program in FY2003 is \$73,610,000, with \$73,172,000 requested for FY2004, for a net decrease of \$438,000. Although there was a net decrease in this budget area for FY2004, resources for the specific activities involved in the inspection and assessment of licensee performance were increased from FY2003. 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

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QUESTION 7.

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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 FY2004 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 FY2004 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 FY2004.

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QUESTION 8.

As I stated in my opening statement at the hearing, this facility 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.

ANSWER.

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 Checklist 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 publically.

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

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QUESTION 8.

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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.

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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?

ANSWER.

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 reports by the media 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.

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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.

QUESTION 11.

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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 were 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.

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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?

ANSWER.

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

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QUESTION 12.

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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).

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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?

ANSWER.

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 workers would be subjected to, 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

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QUESTION 13. (Continued)

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particles that the workers carried offsite. Fortunately, the workers were not overexposed and the offsite release of materials did not pose a health risk to the public.

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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?

ANSWER.

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

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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 Restart 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 dialogue 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.

QUESTION 14.

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Many positive comments have been received 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.

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

ANSWER.

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

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(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.

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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 17. Senator Voinovich asked: what resources should have been in place at Davis-Besse, what was in place, and what is the NRC doing to ensure that a similar problem isn't occurring elsewhere?

ANSWER.

Davis-Besse is a single unit pressurized water reactor facility. NRC policies specify that this type of facility receive inspection from resident inspection staff and region-based specialists. The complement of resident office technical staff included two positions: a senior resident inspector and a resident inspector.

NRC resources dedicated to Davis-Besse did not play a significant role in the failures of the NRC to discover the reactor head degradation earlier at Davis-Besse. Both resident office positions at Davis-Besse were fully staffed with qualified inspectors throughout the period in question with the exception of eleven months (November 1998 to October 1999), when there was only one qualified resident inspector assigned to the site. The Agency accomplished all required inspections at Davis-Besse throughout this time period.

In accordance with Lessons Learned Task Force Recommendation 3.3.5(3), the NRC will monitor resident inspector staffing levels more closely and develop human resource strategies to deal more effectively during inspector turnovers; specifically, the time between a resident inspector leaving a plant site and the arrival of the new inspector. In addition, the Agency annually reviews the resources required to complete its inspection program and makes necessary adjustments to ensure the program is completed at nuclear facilities nation-wide.

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All inspections at U.S. nuclear power facilities to provide adequate assurance of 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.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 28, 2003

CHAIRMAN

The Honorable George V. Volnovich, Chairman  
Subcommittee on Clean Air, Climate Change,  
and Nuclear Safety  
Committee on Environment and Public Works  
United States Senate  
Washington, D.C. 20510

Dear Mr. Chairman:

The Fiscal Year (FY) 2003 Energy and Water Development Appropriations Act, House Reports 107-681 and 108-10, directed the Nuclear Regulatory Commission (NRC) to continue to provide a monthly report on the status of its licensing and regulatory duties and expanded the scope of the report to include a new section on the status of the Davis-Besse Nuclear Power Station. This new reporting requirement is reflected in the January 2003 Monthly Report (Enclosure). The initial reporting requirement arose in the FY 1999 Energy and Water Development Appropriations Act, Senate Report 105-206. On behalf of the Commission, I am pleased to transmit the fiftieth report, which covers the month of January 2003.

The December report provided information on a number of significant NRC security and safeguard activities, including issuance of immediately effective Orders to all 103 operating commercial nuclear power plants requiring that licensees enhance their programs to control access to the facility, and the issuance of immediately effective Orders modifying the licenses of Category III fuel cycle facilities to require interim compensatory security measures. We have also resumed force-on-force testing evaluations of security performance at power reactor facilities using the expanded interim threat capabilities derived from the February 25, 2002 Orders. The NRC staff has begun these exercises with voluntary participation by power reactor licensees on a pilot program basis. After the Commission has revised the design basis threat, we will transition from the pilot program into performing comprehensive security performance reviews at each nuclear power plant on a three-year cycle, instead of the eight-year cycle that had been applied in the past. These reviews will include enhanced force-on-force exercises and table-top exercises (facilitated discussions using credible scenarios).

The December report also provided information on a number of significant NRC nuclear safety activities, including an immediately effective Order issued to all licensees operating pressurized water reactors as part of the NRC's ongoing efforts to ensure the continued protection of public health and safety following the discovery of degradation of the reactor pressure vessel head (RPV) head at the Davis-Besse reactor. The Order requires licensees to increase the frequency of bare metal visual examinations of the entire vessel head surface, as well as non-visual examinations of each RPV head penetration, as the head's susceptibility to degradation increases.

Since our last report, significant milestones have been reached in the joint work of the Department of Energy and the Commission to increase the protection of the high-risk radioactive sources which could be useful in a radiological dispersal device (RDD). The Commission and Secretary Abraham were recently presented with the results of a joint

DOE/NRC working group set up specifically to study this issue. The working group determined the types and quantities of isotopes that are of greatest concern from an RDD perspective (also referred to as high-risk sources). The working group also outlined actions to increase the regulatory oversight of these sources and to prevent ready access to these sources by terrorists. Elements of this system will include: verification of the legitimacy of the applicants for licenses; requirements governing the security of high risk sources while in transit, in storage, and in use; controls on access to sources to prevent diversion by an insider; requirements for tracking and inventorying of high-risk sources to ensure that the source has not been lost or stolen; export and import controls on high-risk sources; and more frequent inspections to verify the adequacy of the regulatory controls, and measures to ensure safe disposal. In short, we are striving to establish cradle-to-grave security for these high-risk sources.

On March 17, 2003, consistent with the launch of Operation Liberty Shield and the increase in the national threat level to high (Orange), NRC issued a nationwide safeguards advisory to all NRC and Agreement State licensees authorized to possess and/or transport the types and quantities of radioactive isotopes that are of greatest concern for potential malevolent use in an RDD. In the advisory, we urged licensees to increase security for high-risk radioactive sources immediately and to maintain a high level of alertness to security-related matters. The details of the safeguards advisory involve sensitive information that cannot be publicly released.

Internationally, NRC played a key role in a conference conducted during the week of March 10 that was sponsored by the Department of Energy and the International Atomic Energy Agency, and attended by over 100 nations. That conference discussed key issues relating to the security of high-risk radioactive sources and the actions which must be taken world-wide to improve the protection of these sources. In short, significant progress is being made toward putting in place complimentary national and international controls on high-risk radioactive sources.

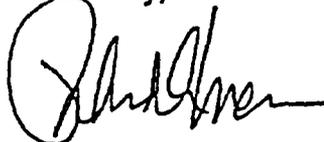
Since our last report, the Commission and the NRC staff also:

- renewed the operating licenses of the North Anna Nuclear Power Station, Units 1 and 2, and the Surry Power Station, Units 1 and 2, for an additional 20 years. North Anna Units 1 and 2 are pressurized water nuclear reactors located near Richmond, Virginia; Surry Units 1 and 2 are pressurized water nuclear reactors located near Newport News, Virginia. The Commission has now renewed the licenses of 14 units at seven sites for an additional 20 years. Eight applications covering sixteen units are currently under review. As indicated by our licensees, many more applications for renewal are anticipated in the coming years.
- issued a master materials license to the U. S. Department of Veterans Affairs to take over principal regulatory functions for its medical facilities throughout the United States. Previously, 116 VA medical facilities were licensed separately by the NRC for various uses of radioactive materials for the diagnosis and treatment of diseases. The new master materials license, encompassing those facilities previously licensed by the NRC, will be administered by the NRC's Region III Office in Lisle, Illinois.

- received from Duke Power (the licensee for the Catawba Nuclear Station, Units 1 and 2, and the McGuire Nuclear Station, Units 1 and 2) on February 27, 2003, an application for amendment to the facility operating licenses that would, if granted, allow the use of several mixed oxide (MOX) lead test fuel assemblies in one of the McGuire or Catawba units.
- published in the Federal Register on March 5, 2003 (68 FR 10362), a direct final rule amending the regulations that require licensees to report their holdings of source material to the NRC. The amended regulations require licensees to report the receipt or transfer of source material controlled under any of the various International Agreements for Peaceful Nuclear Cooperation. This amendment will enable the U.S. Government to maintain the comprehensive national inventory of nuclear material required under these agreements. The direct final rule becomes effective October 1, 2003.
- conducted two public meetings on February 11, 2003, in the vicinity of the Davis-Besse nuclear power station. During the first meeting, the NRC Davis-Besse oversight panel and officials from the FirstEnergy Nuclear Operating Company discussed the status of activities at the plant, including preparations for refueling the reactor. During the second meeting, NRC discussed activities involving the plant and responded to questions and concerns from the public.
- received, on February 12, 2003, a license application from the U.S. Enrichment Corporation (USEC) to construct and operate for 5 years a gas centrifuge uranium enrichment test and demonstration facility (Lead Cascade). The proposed facility will be based on DOE advanced gas centrifuge technology. USEC plans to assemble and operate the Lead Cascade in an existing DOE gas centrifuge building located at the Portsmouth Gaseous Diffusion Plant site in Piketon, Ohio.
- approved, on March 20, 2003, a request by the Amergen Energy Company, LLC, to consolidate the Emergency Operations Facility (EOF) for the Three Mile Island, Unit 1 nuclear power plant near Middleton, Pennsylvania with the EOF in Coatesville, Pennsylvania, currently serving the Limerick and Peach Bottom nuclear power plants.

Please do not hesitate to contact the Commission if you would like additional information.

Sincerely,



Richard A. Meserve

Enclosure:  
Monthly Report

cc: Senator Thomas R. Carper