YUCCA MOUNTAIN: BROKEN MANAGEMENT, BROKEN QUALITY ASSURANCE, BROKEN PROJECT

HEARING

BEFORE THE

SUBCOMMITTEE ON THE FEDERAL WORKFORCE AND AGENCY ORGANIZATION

OF THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

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YUCCA MOUNTAIN: BROKEN MANAGEMENT, BROKEN QUALITY ASSURANCE, BROKEN PROJECT

TUESDAY, APRIL 25, 2006

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON FEDERAL WORKFORCE AND AGENCY ORGANIZATION,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 2 p.m., in room 2154, Rayburn House Office Building, Hon. Jon C. Porter (chairman of the subcommittee) presiding.

Present: Representatives Porter, Issa, and Norton.

Also present: Representative Gibbons.

Staff present: Ronald Martinson, staff director; Chad Bungard, deputy staff director/chief counsel; Shannon Meade, professional staff member; Alex Cooper, legislative assistant; Michelle Triestman, GAO detailee; Tania Shand, minority professional staff Member; and Teresa Coufal, minority assistant clerk.

Mr. PORTER. Good afternoon everyone. Welcome. I appreciate you all being here today.

I would like to bring the meeting to order, this meeting of the Subcommittee on the Federal Workforce and Agency Organization.

Today marks the third hearing the subcommittee has held with regard to its investigation of the Yucca Mountain Project. Today's hearing is about mismanagement and the problems that flow from it.

Last year, when the USGS e-mails surfaced indicating quality assurance deficiencies, I requested the Government Accountability Office to conduct a followup study of the Department of Energy's quality assurance program. GAO recently completed the study and released its report entitled Quality Assurance at DOE's Planned Nuclear Waste Repository Needs Increased Management Attention. Today's hearing will examine these findings in more detail.

The GAO study examined, No. 1, the history of the Project's quality assurance problems; No. 2, DOE's tracking of these problems and efforts to address them; and, No. 3, challenges facing DOE as it continues to address quality assurance issues within the Project.

First, GAO found that DOE has had a long history of quality assurance problems at Yucca Mountain. In the late 1980's and 1990's, DOE had problems assuring the Nuclear Regulatory Commission that it had developed adequate plans and procedures related to

quality assurance. More recently, as it prepares to submit a license application to the NRC, DOE has been relying on costly and time-consuming rework to resolve lingering quality assurance problems uncovered during audits and after-the-fact evaluations.

The subcommittee's investigation sheds some light on these findings. Subcommittee investigators have interviewed current and former high-level quality assurance personnel. There is a consensus among those interviewed professionals that the type of audits conducted by the program today are ineffective at addressing quality assurance problems. Specifically, QA Management has shifted from conducting performance-based audits to compliance audits, which look at adherence to general procedures only. The ability to identify substantive issues and technical weaknesses makes performance-based audits more effective in correcting problems head on. This shift to compliance audits restrict's DOE's ability to identify and correct problems, which was a poor management decision.

Second, GAO found that DOE cannot be certain its efforts to improve quality assurance have been effective because of ineffective management tools.

For example, in 2004, DOE announced it was making a commitment to continuous quality assurance improvement and that its efforts would be tracked by performance indicators that would enable it to assess progress and direct management attention as needed. However, GAO found that the Project's performance indicators and other management tools were not effective for this purpose. Specifically, the management tools did not target existing areas of concern and did not track progress in addressing them. The tools also had weaknesses in detecting and highlighting significant problems for management attention.

Finally, GAO found that DOE continues to face a number of quality assurance and other challenges.

First, DOE is engaged in extensive efforts to restore confidence in scientific documents because of the quality assurance problems raised in the USGS e-mails. At the recommendation of the DOE Inspector General, the Department has about 14 million more project e-mails to review.

Second, DOE faces quality assurance challenges in resolving design control problems associated with its requirements management process. The process for ensuring the high-level plans and regulatory requirements are incorporated in specific engineering details. In fact, problems with this process lead to the recent December 2005, work suspension of certain project work.

And, third, DOE is challenged by management continuity. In just the last year, the Project lost its program director, licensing manager and quality assurance director in all key managerial positions—pardon me—all key managerial position.

GAO findings in this report present real concerns that the Department is running an ineffective program that has not implemented quality as a top priority and DOE's management of this project is to blame.

The importance of a rigorous quality assurance program is paramount to a project of this magnitude. All of the scientific data and engineering design submitted to support a license for Yucca Mountain should be credible, have to be credible, have to be reliable,

have to be traceable, have to be transparent. In short, if quality assurance is not in place, the NRC could and should reject the license application on that ground alone.

Moreover, already $9 billion has been spent. $9 billion has been spent on this project. Rather than appropriating more money and pushing legislation through to expedite the Project, these serious problems should be fixed.

This is clearly a project that is consistently failing under the weight of its own mismanagement and ineptitude at correcting reoccurring quality assurance deficiencies. In fact, in recent weeks, Secretary Bodman himself conceded the Yucca Mountain Project has been poorly managed and labeled the Project—and this is his own word—"broken."

Mr. Bodman is preceded by Energy Secretaries who did not provide the necessary quality assurance and oversight, including Secretary Richardson of the Clinton administration under whose watch two USGS scientists e-mailed accounts of fabricating quality assurance data to multiple recipients.

Despite a clear record of mismanagement, however, it is important to recognize that the vast majority of Federal employees are reliable and hard-working individuals. It is unfortunate that management structure and the procedures at the Yucca Mountain Project have impaired their ability to perform. Therefore, I want to take a moment to recognize those Federal employees who have worked and continue to work very hard on this project.

If this were NASA and this were a space shuttle, the space shuttle would not fly. We have a program that is broken, and the reason we are here today is to continue our investigation in looking at the Department of Energy and its management.

[The prepared statement of Hon. Jon C. Porter follows:]

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Opening Statement of Chairman Jon Porter

Hearing of the House Government Reform
Subcommittee on Federal Workforce and Agency Organization

"Yucca Mountain: Broken Management, Broken Quality Assurance, Broken Project"
April 25, 2006

Today marks the third hearing the Subcommittee has held with regard to its investigation of the Yucca Mountain Project. Today's hearing is about mismanagement and the problems that flow from it. Last year when USGS emails surfaced, indicating quality assurance deficiencies, I requested the Government Accountability Office (GAO) to conduct a follow-up study of the Department of Energy's (DOE) quality assurance program. GAO recently completed the study and released its report entitled "*Quality Assurance at DOE's Planned Nuclear Waste Repository Needs Increased Management Attention.*" Today's hearing will examine these findings in more detail.

The GAO study examined: (1) the history of the Project's quality assurance problems, (2) DOE's tracking of these problems and efforts to address them, and (3) challenges facing DOE as it continues to address quality assurance issues within the Project.

First, GAO found that DOE has had a long history of quality assurance problems at the Yucca Mountain Project. In the late 1980s and 1990s, DOE had problems assuring the Nuclear Regulatory Commission (NRC) that it had developed adequate plans and procedures related to quality assurance. More recently, as it prepares to submit a license application to NRC, DOE has been relying on costly and time-consuming rework to resolve lingering quality assurance problems uncovered during audits and after-the-fact evaluations. The Subcommittee's investigation sheds some light on this finding. The investigators have interviewed current and former high-level quality assurance personnel. There is a consensus among these interviewed professionals that the type of audits conducted by the Program today are ineffective at addressing problems early on. Specifically, QA Management has shifted from conducting performance-based audits to compliance audits, which look at adherence to general procedures only. The ability to identify substantive issues and technical weaknesses makes performance-based audits

more effective in correcting problems head-on. This shift to compliance audits restricts DOE's ability to identify and correct problems, which was a poor management decision.

Secondly, GAO found that DOE cannot be certain its efforts to improve quality assurance have been effective because of ineffective management tools. For example, in 2004, DOE announced that it was making a commitment to continuous quality assurance improvement and that its efforts would be tracked by performance indicators that would enable it to assess progress and direct management attention as needed. However, GAO found that the project's performance indicators and other management tools were not effective for this purpose. Specifically, the management tools did not target existing areas of concern and did not track progress in addressing them. The tools also had weaknesses in detecting and highlighting significant problems for management attention.

Finally, GAO found that DOE continues to face a number of quality assurance and other challenges. First, DOE is engaged in extensive efforts to restore confidence in scientific documents because of the quality assurance problems raised in USGS emails. At the recommendation of the DOE Inspector General, the Department has about 14 million more project emails to review. Second, DOE faces quality assurance challenges in resolving design control problems associated with its requirements management process – the process for ensuring that high-level plans and regulatory requirements are incorporated into specific engineering details. In fact, problems with this process led to the recent December 2005 work suspension of certain project work. Third, DOE is challenged by management continuity. In just the last year, the Project lost its Program Director, Licensing Manager, and Quality Assurance Director --- all key managerial positions.

GAO's findings in this report present real concerns that the Department is running an ineffective program that has not implemented quality as a top priority and that DOE's management of this project is to blame. The importance of a rigorous quality assurance program is paramount to a project of this magnitude. All of the scientific data and engineering designs submitted to support a license for Yucca Mountain should be credible, reliable, traceable and transparent. In short, if quality assurance is not in place, the NRC could and should reject the license application on that ground alone. Moreover, already $9 billion has been spent on this Project. Rather than appropriating more money and pushing legislation through to expedite the project, these serious problems should be fixed. This is, clearly, a project that is consistently failing under the weight of its own mismanagement and ineptitude at correcting recurring quality assurance deficiencies. In fact, in recent weeks, Secretary Bodman himself conceded that the Yucca Mountain Project has been poorly managed and labeled the Project as -- and this is his own word -- "broken."

Mr. Bodman is preceded by energy secretaries who did not provide the necessary quality assurance oversight, including Secretaries Peña and Richardson of the Clinton Administration under whose watch two USGS scientists emailed accounts of fabricating quality assurance data to multiple recipients.

Despite a clear record of mismanagement, however, it is important to recognize that the vast majority of Federal employees are reliable and hard-working individuals. It is unfortunate that the management structure and procedures at the Yucca Mountain Project have impaired their ability to perform. Therefore, I want to take a moment to recognize those Federal employees who have worked and continue to work very hard on this project.

I thank our witnesses for being here, and I look forward to the discussion.

Mr. PORTER. I would like to thank, of course, our witnesses who are here today; and I would like to first really recognize my colleague to my immediate left, and that is Congressman Gibbons from Nevada. Welcome.

Mr. GIBBONS. Well, Mr. Chairman, first of all, I want to thank you for your leadership on this issue and thank you for what this committee is doing in terms of highlighting the very sincere problems that all of us feel this issue has; and I want to also thank you for inviting me to participate with the committee today in hearing this issue.

Before I allow for you to continue, Mr. Chairman, I would hope that my full and written statement can be entered into the record on this issue.

But since the proposed Yucca Mountain Project has begun, and it was started over two decades ago, Nevadans have opposed this ill-advised project for many, many reasons. I only hope that someday Nevadans will have an opportunity to see and celebrate the demise of this disastrous proposal, and only then will Nevadans no longer need to worry about living next to the most dangerous substance on Earth.

Unfortunately, Mr. Chairman, today is not that day.

I do agree with many of the panel that we must find solutions to the escalating nuclear waste problem in this country. However, simply digging a hole in the Nevada desert and burying the waste is not that answer.

One only needs to look at the recent history of the Yucca Mountain Project to get a sense of the DOE's motivations. Unfortunately, it is extremely disturbing to me to see that, since the birth of this project, that the Department of Energy has consistently failed to use sound science as their guide and has instead been blinded by its obsession to do anything to rubber stamp this project in order to rush it to completion.

While this might be OK to the bureaucrats at DOE headquarters 2,500 miles away, it is completely inadequate to the people of Nevada and throughout this country who have to live with the reality of this substance, the deadliest substance known to man, contaminating perhaps our water supply, traveling through our communities and along our roads and perhaps endangering our communities.

Last year, under Chairman Porter's leadership, this committee held a hearing which shed a very revealing light on the recent scandal plaguing this problem; and since that time, it seems clear that every month a new revelation about Yucca Mountain is revealed that continues to disturb but should not surprise Nevadans.

First, the EPA comes out with an arbitrary and grossly inaccurate guideline to help them push this project forward. Then there are accounts that Yucca Mountain Project is falling apart from inside and will require millions of dollars to repair. Next, on April 4th, DOE sent its Yucca Mountain bill to Congress. Since Yucca fails the test of science and cannot satisfy traditional safety regulations for nuclear projects, the bill would unabashedly do an end run around those obstacles, constituting DOE's last-ditch attempt to salvage a repository that has failed nearly every test that it has been put through.

And today, Mr. Chairman, you are holding a hearing on the Government Accountability's Office's assessment of the effectiveness of DOE's quality assurance program; and this report, may I say, is alarming, to say the least. It reinforces what many have been saying for years, that the Yucca Mountain Project is fatally flawed and should be stopped immediately, without delay.

Chairman Porter, I applaud your ongoing efforts to try to investigate the alleged falsifications of scientific data on the Yucca Mountain Project through the House Government Reform Committee; and I look forward to hearing today from the witnesses who will try to explain the need to continue forward with this project despite the mounting evidence that points to the need to look for an alternative.

I want to thank you again for the opportunity and inviting me to join you today, and I look forward to the opportunity as well to hear from our witnesses.

Thank you, Mr. Chairman.

Mr. PORTER. Thank you, Congressman.

I will note for the record that Members will be coming and going today, and we have also received or will be receiving statements from other members of the Nevada delegation who are also invited to be on the dais today but because of schedules weren't able to be here but will be submitting their own documents.

At this point, I would like to ask that the witnesses today recognize that there may be additional questions that will be addressed later from members of the committee, and I would like to ask that you all stand at this point, and we will do the customary swearing in.

[Witnesses sworn.]

Mr. PORTER. Let the record reflect the witnesses answered in the affirmative.

Please be seated. Thank you.

Our first witness today will be Mr. Jim Wells, who is Director of Natural Resources and Environment, U.S. Government Accountability Office; followed by Gregory Friedman, Inspector General, U.S. Department of Energy; Margaret Federline—did I pronounce that correctly—Deputy Director, Office of Nuclear Material Safety and Safeguards, the U.S. Nuclear Regulatory Commission; and Mr. Paul Golan, Acting Director, Office of Civilian Radioactive Waste Management, U.S. Department of Energy.

So, first, Mr. Wells, we appreciate your testimony. Keep it approximately 5 minutes.

STATEMENTS OF JIM WELLS, DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE; GREGORY FRIEDMAN, INSPECTOR GENERAL, U.S. DEPARTMENT OF ENERGY; MARGARET FEDERLINE, DEPUTY DIRECTOR, OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS, U.S. NUCLEAR REGULATORY COMMISSION; AND PAUL GOLAN, ACTING DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, U.S. DEPARTMENT OF ENERGY

STATEMENT OF JIM WELLS

Mr. WELLS. Thank you, Mr. Chairman.

Thank you for the opportunity to discuss our work concerning the quality assurance challenges facing DOE as it tries to obtain a license to construct a geological repository at the Yucca Mountain site. Our most recent March 2006, report, Quality Assurance Needs Attention, and in our earlier 2004 report, Persistent Quality Assurance Problems, continued the description of a troubled QA program.

As a Nation, we are 25 years into a process to deal with geological burial of 50,000 metric tons and growing nuclear waste. Most in the room today are well aware of the twists and turns this program has taken over the years.

Today, after continuing delays, DOE still must prepare a license request for approval from the NRC to begin construction. NRC requires that a quality program—quality assurance program must exist to ensure that the work and the technical information is supporting a license that is deemed accurate and defensible. DOE is not there yet.

While we were doing our most recent audit, DOE announced the "new path forward" initiative, but it has not yet established a new date when they will be ready to ask for a license.

I want to start and finish my statement today saying that resolving the QA problem we and others have found is essential to proceeding with construction.

In 2004, we reported recurring QA problems could delay the licensing of the repository. 2006, 2 years later, we still don't have the request for a license.

DOE tried to make changes to improve. In 2005, DOE reported that it had discovered a series of e-mail messages written in the late 1990's by USGS Geological Survey employees that appeared to imply that workers had falsified records for scientific work. Several of these messages appear to show disdain for the Project's quality assurance program and its requirements; and in December 2005 and again in February 2006, some project work has been stopped due to continuing QA problems.

Our most recent report once again found problems.

Over the years, NRC, the DOE IG and DOE's own management team were finding inadequate QA procedures, ineffective fixes to earlier problems, and continuing weaknesses in data, software, and modeling information.

Mr. Chairman, of particular concern to us was DOE's reliance on costly and time-consuming rework to resolve lingering quality as-

surance concerns, as opposed to building quality assurance in at the beginning.

Second, we found significant problems with the management tools, as you have mentioned in your opening statement, that DOE was using to target, to track, to report, and document successful fixes to past QA problems.

I guess the best way to describe by findings was that, due to the numerous technical design flaws, what management tools DOE management was using to fix the problems was not adequately describing the problem or sufficiently drawing management's attention to the best solutions.

In our report, we recommended that DOE needed to strengthen its management tools, and we offered suggestions as to ways to improve. DOE agreed with our recommendations.

Third, DOE's aggressive new path forward faces substantial QA challenges going forward. They are not out of the woods yet.

The e-mails suggesting the possible falsification of quality assurance records had resulted in extensive, again, rework efforts to restore confidence in scientific documents. DOE is conducting a review of 14 million additional e-mails to determine whether they raise additional QA problems. I suspect we will hear today about where the status of that is.

DOE also has two stop-work orders in place as they continue to resolve new-found QA problems.

As they announce new organizational changes, including bringing in new players to fix the problems, they will face potential for further confusion of their accountability as roles and responsibilities change. This will impose over an organization that is experiencing high managerial turnover and existing vacancies in various senior management positions. For example, 9 of the 17 key management positions at the Project level have turned over since 2001, and 3 different directors have served in Washington recently.

In conclusion, Mr. Chairman and members, I would like to say that, clearly, DOE was assigned a task with a very complex and changing requirement to build something which has never been done before.

Our GAO audit team continually met with and discussed the Project with some really smart DOE people, very talented people that are doing many things right. Our audits, however, we do have—this is where we find things that can be done better. We have made recommendations to DOE which they agree with. It is too early for us to conclude today whether its new path forward effort will resolve these tremendous challenges.

I will end with what I started with: Resolving the QA problems we and others have found is essential to proceeding with this construction.

Thank you, Mr. Chairman.

Mr. PORTER. Thank you, Mr. Wells. Again, we appreciate your being here.

[The prepared statement of Mr. Wells follows:]

United States Government Accountability Office

GAO

Testimony

Before the Subcommittee on the Federal Workforce and Agency Organization, Committee on Government Reform, House of Representatives

For Release on Delivery
Expected at 2:00 p.m. EDT
Tuesday, April 25, 2006

YUCCA MOUNTAIN

DOE's Planned Nuclear Waste Repository Faces Quality Assurance and Management Challenges

Statement of Jim Wells, Director
Natural Resources and Environment

GAO-06-550T

GAO
Accountability·Integrity·Reliability

Highlights

Highlights of GAO-06-550T, a testimony before the Subcommittee on the Federal Workforce and Agency Organization, Committee on Government Reform, House of Representatives

Why GAO Did This Study

The Department of Energy (DOE) is working to obtain a license from the Nuclear Regulatory Commission (NRC) to construct a nuclear waste repository at Yucca Mountain in Nevada. The project, which began in the 1980s, has been beset by delays. In 2004, GAO raised concerns that persistent quality assurance problems could further delay the project. Then, in 2005, DOE announced discovery of employee e-mails suggesting quality assurance problems. Quality assurance, which establishes requirements for work to be performed under controlled conditions that ensure quality, is critical to making sure the project meets standards for protecting public health and the environment.

This testimony, which summarizes GAO's March 2006 report (GAO-06-313), provides information on (1) the history of the project's quality assurance problems, (2) DOE's tracking of these problems and efforts to address them since GAO's 2004 report, and (3) challenges facing DOE as it continues to address quality assurance issues within the project.

What GAO Recommends

In its March 2006 report, GAO recommended actions DOE can take to improve the project's management tools and their use in identifying and addressing quality assurance and other problems. In commenting on a draft of the report, DOE agreed with GAO's recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-06-550T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Jim Wells at (202) 512-3841 or wellsj@gao.gov.

April 25, 2006

YUCCA MOUNTAIN

DOE's Planned Nuclear Waste Repository Faces Quality Assurance and Management Challenges

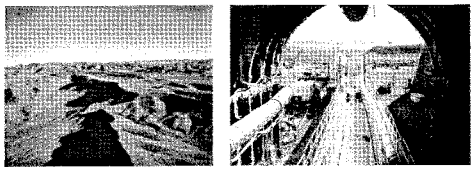
What GAO Found

DOE has had a long history of quality assurance problems at the Yucca Mountain project. In the 1980s and 1990s, DOE had problems assuring NRC that it had developed adequate plans and procedures related to quality assurance. More recently, as it prepares to submit a license application for the repository to NRC, DOE has been relying on costly and time-consuming rework to resolve lingering quality assurance problems uncovered during audits and after-the-fact evaluations.

DOE announced, in 2004, that it was making a commitment to continuous quality assurance improvement and that its efforts would be tracked by performance indicators that would enable it to assess progress and direct management attention as needed. However, GAO found that the project's performance indicators and other key management tools were not effective for this purpose. For example, the management tools did not target existing areas of concern and did not track progress in addressing them. The tools also had weaknesses in detecting and highlighting significant problems for management attention.

DOE continues to face quality assurance and other challenges. First, DOE is engaged in extensive efforts to restore confidence in scientific documents because of the quality assurance problems suggested in the discovered e-mails between project employees, and it has about 14 million more project e-mails to review. Second, DOE faces quality assurance challenges in resolving design control problems associated with its requirements management process—the process for ensuring that high-level plans and regulatory requirements are incorporated into specific engineering details. Problems with the process led to the December 2005 suspension of certain project work. Third, DOE continues to be challenged to manage a complex program and organization. Significant personnel and project changes initiated in October 2005 create the potential for earlier problem areas, such as confusion over roles and responsibilities, to reoccur.

View of Yucca Mountain and the Exploratory Tunnel for the Repository



Source: DOE.

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss our work concerning quality assurance and other management challenges facing the Department of Energy (DOE) as it prepares to construct a deep geological repository at Yucca Mountain in Nevada for the nation's nuclear wastes. My testimony is based on our March 2006 report entitled *Yucca Mountain: Quality Assurance at DOE's Planned Nuclear Waste Repository Needs Increased Management Attention.*[1]

DOE is preparing an application for a license from the Nuclear Regulatory Commission (NRC) to construct an underground geological repository at Yucca Mountain for the permanent storage of highly radioactive nuclear waste. Nuclear waste is a by-product of the production of nuclear power, which provides about 20 percent of U.S. electricity. About 50,000 metric tons of nuclear waste are stored at 72 sites around the country, principally at commercial nuclear power plants. These wastes have been accumulating for several decades in surface storage designed to be temporary. The Nuclear Waste Policy Act of 1982 required DOE to construct a repository for permanent storage and to begin accepting these wastes by January 31, 1998. In 2002, after more than 15 years of scientific study, the President recommended and the Congress approved Yucca Mountain as a suitable location for the repository. However, DOE continues to encounter delays, and it is not certain when it will apply for the license to construct the repository.

The licensing process requires DOE to demonstrate to NRC that its plans for the repository will meet Environmental Protection Agency standards for protecting public health and the environment from harmful exposure to the radioactive waste. To show that it can meet these standards, DOE has been conducting scientific and technical studies at the Yucca Mountain site that will provide supporting documentation for its planned license application. DOE has also established a quality assurance program to meet NRC requirements and ensure that its work and the technical information it produces are accurate and defensible. To accomplish this goal, the program established procedures that require scientific, design, engineering, procurement, records keeping, and other work to be performed under controlled conditions that ensure quality and enable the work to be verified by others. However, persistent problems implementing

[1]GAO-06-313 (Washington, D.C.: Mar. 17, 2006).

these procedures and resulting questions about the quality of the work are significantly contributing to delays in DOE's submission of the license application. Resolving these quality assurance issues is essential to proceeding with construction.

In April 2004, we reported that recurring quality assurance problems at the Yucca Mountain project could delay the licensing and operation of the repository. At that time, we also reported that DOE had completed efforts—known as Management Improvement Initiatives (Initiatives)—to better manage quality assurance problems, but could not assess their effectiveness because its performance goals lacked objective measures and time frames for determining success.[2] Then, in early 2005, DOE reported that it had discovered a series of e-mail messages written in the late 1990s by U.S. Geological Survey (USGS) employees working on the Yucca Mountain project under a contract with DOE that appeared to imply that workers had falsified records for scientific work. Several of these messages appeared to show disdain for the project's quality assurance program and its requirements. In October 2005, DOE began planning an aggressive series of changes—known as the "new path forward"—to the facility design, organization, and management of the Yucca Mountain project. These efforts are intended to address quality assurance and other challenges, including those associated with the USGS e-mails, and advance the license application process. However, in December 2005 and again in February 2006, some project work was stopped due to continuing quality assurance problems.

Our March 2006 report examined (1) the history of the project's quality assurance problems since its start in the 1980s, (2) DOE's tracking of quality problems and progress implementing quality assurance requirements since our April 2004 report, and (3) challenges that DOE faces as it continues to address quality assurance issues with the project. To determine the history of quality assurance problems, we reviewed previous GAO, DOE, and NRC documents, visited the Yucca Mountain site, and interviewed officials from DOE, NRC, and Bechtel/SAIC Company, LLC (BSC), which is DOE's management contractor for the Yucca Mountain project. To assess DOE's tracking of quality-related problems and progress in addressing them, we examined management tools and associated documentation, and interviewed BSC and DOE officials

[2]GAO, *Yucca Mountain: Persistent Quality Assurance Problems Could Delay Repository Licensing and Operation*, GAO-04-460 (Washington, D.C.: Apr. 30, 2004).

regarding those tools. To identify current quality assurance and other challenges, we attended quarterly NRC management meetings, interviewed the Acting Director and other senior managers of the DOE project, and gathered information on management turnover. The work on our report was conducted from July 2005 through January 2006 in accordance with generally accepted government auditing standards.

In summary, we found the following:

- DOE has had a long history of quality assurance problems at the Yucca Mountain project. In the late 1980s and early 1990s, DOE had problems assuring NRC that it had developed adequate plans and procedures related to quality assurance. As we reported in 1988, NRC had found that DOE's quality assurance procedures were inadequate and its efforts to independently identify and resolve weaknesses in the procedures were ineffective. By the late 1990s, DOE had largely addressed NRC's concerns about its plans and procedures, but its own audits identified quality assurance problems with the data, software, and models used in the scientific work supporting its potential license application. For example, in 1998, a team of project personnel determined that 87 percent of the models used to simulate the site's natural and environmental conditions, and to demonstrate the future repository's performance over time, did not comply with requirements for demonstrating their accuracy in predicting geologic events. More recently, DOE has relied on costly and time-consuming rework to resolve lingering quality assurance concerns. Specifically, in the spring of 2004, DOE implemented a roughly $20 million, 8-month project called the Regulatory Integration Team to ensure that scientific work was sufficiently documented and explained to support the license application. This effort involved about 150 full-time employees from DOE, USGS, and multiple national laboratories, such as Sandia and Los Alamos, working to inspect technical documents to identify and resolve quality problems.

- DOE cannot be certain that its efforts to improve quality assurance have been effective because the management tools it adopted did not target existing management concerns and did not track progress in addressing significant and recurring problems. DOE announced in 2004 that it was making a commitment to continuous quality assurance improvement and that its efforts would be tracked by performance indicators that would enable it to assess progress and direct management attention as needed; however, its management tools have not been effective for this purpose. Specifically, its one-page summary, or "panel," of selected performance indicators that project managers used in monthly management meetings was not an effective tool for assessing progress because the indicators

poorly represented the major management concerns and were changed frequently. For example, the panel did not include an indicator to represent the management concern about unclear roles and responsibilities—a problem that could undermine accountability within the project. Use of the indicator panel was discontinued in late 2005, and DOE is deciding on a tool to replace it. Moreover, a second management tool—trend evaluation reports—also did not track relevant concerns. The reports generally had technical weaknesses for identifying recurrent and significant problems and inconsistently tracked progress toward resolving the problems. For example, lacking reliable data and an appropriate performance benchmark for determining the significance of human errors as a cause of quality problems, DOE's trend reports offered no clear basis for tracking progress on such problems. In addition, under the trend reports' rating categories, the rating assigned to convey the significance of a problem was overly influenced by a judgment in the report that there were already ongoing management actions to address the problem, rather than solely assessing the problem's significance. For example, the trend report's rating of one particular problem at the lowest level of significance did not accurately describe the problem or sufficiently draw management's attention to it.

- DOE's aggressive "new path forward" effort faces substantial quality assurance and other challenges, as it prepares to submit the license application to construct the repository at Yucca Mountain. First, the March 2005 announcement of the discovery of USGS e-mails suggesting the possible falsification of quality assurance records has resulted in extensive efforts to restore confidence in scientific documents, and DOE is conducting a wide-ranging review of approximately 14 million e-mails to determine whether they raise additional quality assurance issues. Such a review creates a challenge not just because of the sheer volume of e-mails to be reviewed, but also because DOE will have to decipher their meaning and determine their significance, sometimes without clarification from authors who have left the project. Furthermore, if any of the e-mails raise quality assurance concerns, further review, inspection, or additional work may need to be performed. Second, DOE faces quality assurance challenges associated with an inadequate requirements management process—the process responsible for ensuring that broad plans and regulatory requirements affecting the project are tracked and incorporated into specific engineering details. In December 2005, DOE issued a stop-work order on some design and engineering work until it can determine whether the requirements management process has been improved. Third, DOE continues to be challenged by managing a changing and complex program and organization. The significant project changes initiated under the new path forward create the potential for confusion over

accountability as roles and responsibilities change—a situation DOE found to contribute to quality assurance problems during an earlier transition period. For example, one proposed reorganization—establishing a lead laboratory to assist the project—would not only have to be effectively managed, but also would introduce a new player whose accountability DOE would have to ensure. DOE has also experienced turnover in 9 of 17 key management positions since 2001—including positions related to quality assurance—that has created management continuity challenges. For example, three individuals have directed the project since 1999, and the position is currently occupied by an acting director. Since DOE is still formulating its plans, it is too early to determine whether its new path forward effort will resolve these challenges.

In our report, we recommend that DOE strengthen its management tools by (1) improving the tools' coverage of the Initiatives' areas of concern, (2) basing the tools on projectwide analysis of problems, (3) establishing quality guidelines, (4) making indicators and analyses more consistent over time, and (5) focusing rating categories on problem significance rather than a judgment on the need for management action. In commenting on the report, DOE agreed with our recommendations.

Background

The Congress enacted the Nuclear Waste Policy Act of 1982 to establish a comprehensive policy and program for the safe, permanent disposal of commercial spent nuclear fuel and other highly radioactive wastes in one or more mined geologic repositories. The act charged DOE with (1) establishing criteria for recommending sites for repositories; (2) "characterizing" (investigating) three sites to determine each site's suitability for a repository (1987 amendments to the act directed DOE to investigate only the Yucca Mountain site); (3) recommending one suitable site to the President, who would submit a recommendation of such site to the Congress if he considered the site qualified for a license application; and (4) upon approval of a recommended site, seeking a license from NRC to construct and operate a repository at the site. The Yucca Mountain project is currently focused on preparing an application for a license from NRC to construct a repository. DOE is compiling information and writing sections of the license application, conducting technical exchanges with NRC staff, and addressing key technical issues identified by NRC to ensure that sufficient supporting information is provided.

In February 2005, DOE announced that it does not expect the repository to open until 2012 at the earliest, which is more than 14 years later than the

1998 goal specified by the Nuclear Waste Policy Act of 1982. More recently, the conference report for DOE's fiscal year 2006 appropriations observed that additional significant delays to submitting a license application are likely. In October 2005, the project's Acting Director issued a memorandum calling for the development of wide-ranging plans for the "new path forward" to submitting the license application. The plans address the need to review and replace USGS work products, establish a lead national laboratory to assist the project, and develop a new simplified design for the waste canisters and repository facilities, among other things. In addition, DOE announced, in April 2006, that it was proposing legislation intended to accelerate licensing and operations. For example, the legislation provides that if NRC authorizes the repository, subsequent licensing actions would be conducted using expedited, simplified procedures.

Given the delays, the Congress has considered other options for managing existing and future nuclear wastes, such as centralized interim storage at one or more DOE sites. In addition, the conference report for DOE's fiscal year 2006 appropriations directed DOE to develop a spent nuclear fuel recycling plan to reuse the spent fuel. However, according to the Nuclear Energy Institute, which represents the nuclear energy industry, none of technological options being considered will eliminate the need to ultimately dispose of nuclear waste in a geologic repository.

DOE Has a Long History of Quality Assurance Problems at Yucca Mountain

DOE has had a long history of quality assurance problems at the Yucca Mountain project. In the project's early stages, DOE had problems assuring NRC that it had developed adequate quality assurance plans and procedures. By the late 1990s, DOE had largely addressed NRC's concerns about its plans and procedures, but its own audits identified quality assurance problems with the data, software, and models used in the scientific work supporting its potential license application. While recently resolving these quality problems, DOE is now relying on costly and time-consuming rework to ensure the traceability and transparency of several technical work products that are key components of the license application.

As we reported in 1988, NRC reviewed DOE's quality assurance program for the Yucca Mountain project and concluded that it did not meet NRC

requirements[3] and that DOE's quality assurance audits were ineffective. In 1989, NRC concluded that DOE and its key contractors had yet to develop and implement an acceptable quality assurance program. However, by March 1992, NRC determined that DOE had made significant progress in improving its quality assurance program, noting among other things, that all of the contractor organizations had developed and were in the process of implementing quality assurance programs that met NRC requirements, and that DOE had demonstrated its ability to evaluate and correct deficiencies in the overall quality assurance program.

By the late 1990s, however, the DOE quality assurance program began detecting new quality problems in three areas critical to demonstrating the repository's successful performance over time: data management, software management, and scientific models.

- *Data management.* In 1998, DOE identified quality assurance problems with the quality and traceability of data, specifically that some data had not been properly collected or tested to ensure its accuracy and that data used to support scientific analysis could not be properly traced back to its source. DOE found similar problems in April and September 2003.

- *Software management.* DOE quality assurance procedures require that software used to support analysis and conclusions about the performance and safety of the repository be tested or created in such a way to ensure that it is reliable. From 1998 to 2003, multiple DOE audits found recurring quality assurance problems that could affect confidence in the adequacy of software.

- *Model validation.* In 1998, a team of project personnel evaluated the mathematical models used to simulate natural and environmental conditions and determined that 87 percent of them did not comply with validation requirements to ensure they accurately predict geologic events. In 2001, and again in 2003, DOE audits found that project personnel were not properly following procedures, specifically in the areas of model documentation, model validation, and checking and review. Further, the 2003 audit concluded that previous corrective actions designed to improve validation and reduce errors in model reports were not fully implemented.

[3]GAO, *Nuclear Waste: Repository Work Should Not Proceed Until Quality Assurance Is Adequate*, GAO/RCED-88-159 (Washington, D.C.: Sept. 29, 1988).

After many years of working to address these quality assurance problems with data, software, and models, DOE had mostly resolved these problems by February 2005.

As DOE prepares to submit the Yucca Mountain project license application to NRC, it is relying on costly and time-consuming rework to ensure that the documents supporting its license application are accurate and complete. Although the department had known for years about quality assurance problems with the traceability and transparency of technical work products called Analysis and Model Reports (AMR)—a key component of the license application—DOE did not initiate a major effort to address these problems until 2004. AMRs contain the scientific analysis and modeling data that demonstrate the safety and performance of the planned repository and, among other quality requirements, must be traceable to their original source material and data and be transparent in justifying and explaining their underlying assumptions, calculations, and conclusions. In 2003, based in part on these problems, as well as DOE's long-standing problems with data, software, and modeling, NRC conducted an independent evaluation of three AMRs to determine if they met NRC requirements for being traceable, transparent, and technically appropriate for their use in the license application. In all three AMRs, NRC found significant problems with both traceability and transparency.[4] NRC concluded that these findings suggested that other AMRs may have similar problems and that such problems could delay NRC's review of the license application, as it would need to conduct special inspections to resolve any problems it found with the quality of technical information.

To address problems of traceability and transparency, DOE initiated an effort in the spring of 2004 called the Regulatory Integration Team (RIT) to perform a comprehensive inspection and rework of the AMRs and ensure they met NRC requirements and expectations.[5] According to DOE officials, the RIT involved roughly 150 full-time personnel from DOE, USGS, and multiple national laboratories such as Sandia, Los Alamos, and Lawrence Livermore. The RIT decided that 89 of the approximately 110 AMRs needed rework. According to DOE officials, the RIT addressed or

[4]U.S. Nuclear Regulatory Commission, *U.S. Nuclear Regulatory Commission Staff Evaluation of U.S. Department of Energy Analysis Model Reports, Process Controls, and Corrective Actions* (Washington, D.C., Apr. 7, 2004).

[5]In addition, the RIT edited the AMRs to assure consistency and ease of technical and regulatory reviews.

corrected over 3,700 problems, and was completed approximately 8 months later at a cost of about $20 million. In a February 2005 letter to DOE, the site contractor stated that the RIT effort had successfully improved the AMRs' traceability and transparency.

Subsequently, however, DOE identified additional problems with traceability and transparency that required further inspections and rework. DOE initiated a review of additional AMRs that were not included in the scope of the 2004 RIT review after a March 2005 discovery of e-mails from USGS employees written between May 1998 and March 2000 implying that employees had falsified documentation of their work to avoid quality assurance standards. These additional AMRs contained scientific work performed by the USGS employees and had been assumed by the RIT to meet NRC requirements for traceability and transparency. However, according to DOE officials, DOE's review determined that these AMRs did not meet NRC's standards, and rework was required. DOE identified similar problems as the focus of the project shifted to the design and engineering work required for the license application. In February 2005, the site contractor determined that, in addition to problems with AMRs, similar traceability and transparency problems existed in the design and engineering documents that constitute the Safety Analysis Report—the report necessary to demonstrate to NRC that the repository site will meet the project's health, safety, and environmental goals and objectives. In an analysis of this problem, the site contractor noted that additional resources were needed to inspect and rework the documents to correct the problems.

DOE Cannot Be Certain Its Efforts to Improve Quality Assurance Have Been Effective Because of Weaknesses in Tracking Progress and Identifying Problems

DOE's management tools for the Yucca Mountain project have not enabled it to effectively identify and track progress in addressing significant and recurring quality assurance problems. Specifically, its panel or one-page summary of selected performance indicators did not highlight the areas of management concern covered by its Management Improvement Initiatives (Initiatives) and had weaknesses in assessing progress because the indicators kept changing. Its trend reports also did not focus on tracking these management concerns, had technical weaknesses for identifying significant and recurrent problems, and has inconsistently tracked progress with problems. Furthermore, the trend reports have sometimes been misleading as to the significance of the problems being presented because their significance ratings tend to be lower if corrective actions were already being taken, without considering the effectiveness of the actions or the problem's importance to the project.

In April 2004, DOE told us it expected that the progress achieved with its Initiatives for improving quality assurance would continue and that its performance indicators would enable it to assess further progress and direct management attention as needed. By that time, the actions called for by the Initiatives had been completed and project management had already developed a "panel" of indicators to use at monthly management meetings to monitor project performance. The panel was a single page composed of colored blocks representing selected performance indicators and their rating or level of performance. For example, a red block indicated degraded or adverse performance warranting significant management attention, a yellow block indicated performance warranting increased management attention or acceptable performance that could change for the worse, and a green block indicated good performance. The panel represented a hierarchy of indicators where the highest-level indicators were visible, but many lower-level indicators that determined the ratings of the visible indicators were not shown. Our review analyzed a subset of these indicators that DOE designated as the best predictors in areas affecting quality.

We found that the panel was not effective for assessing continued progress because its indicators poorly represented the management concerns identified by the Initiatives. The Initiatives had raised concerns about five key areas of management weakness as adversely affecting the implementation of quality assurance requirements, and had designated effectiveness indicators for these areas. (These areas of concern are described in app. I.) However, two of the Initiatives' five key areas of concern—roles and responsibilities as well as work procedures—were not represented in the panel's visible or underlying indicators. In other cases, the Initiatives' effectiveness indicators were represented in underlying lower-level indicators that had very little impact on the rating of the visible indicator. For example, the Initiatives' indicator for timely completion of employee concerns was represented by two lower-level indicators that together contributed 3 percent of the rating for an indicator visible in the panel.

Another shortcoming of the panel was that frequent changes to the indicators hindered the ability to identify problems for management attention and track progress in resolving them. The indicators could change in many ways, such as how they were defined or calculated. Such changes made it difficult to measure progress because changes in indicator ratings could reflect only the changes in the indicators rather than actual performance changes. Some of the indicators tracking quality issues changed from one to five times during the 8-month period from

April 2004 through November 2004. Even after a major revision of the panel in early 2005, most of the performance indicators tracking quality issues continued to change over the next 6 months—that is, from March 2005 through August 2005. Only one of these five indicators did not change during this period. One indicator was changed four times during the 6-month period, resulting in it being different in more months than it remained the same. Moreover, the panel was not always available to track problems. It was not created for December 2004 through February 2005, and it has not been created since August 2005. In both cases, the panel was undergoing major revisions. In December 2005, a senior DOE official told us that the project would begin to measure key activities, but without use of the panel.

According to DOE, a second management tool, the project's quarterly trend evaluation reports, captured some aspects of the Initiatives' areas of concern and their associated effectiveness indicators that were not represented in the performance indicators. However, the trend reports are designed more to identify emerging and unanticipated problems than to monitor progress with already identified problems, such as those addressed by the Initiatives. In developing these reports, trend analysts seek to identify patterns and trends in condition reports, which document problematic conditions through the project's Corrective Action Program. For example, analysis might reveal that most occurrences of a particular type of problem are associated with a certain organization.

In practice, DOE missed opportunities to use trend reports to assess progress in the Initiatives' areas of concern. For example, DOE missed an opportunity to use trend reports to discuss the Initiatives' goal that the project's work organizations become more accountable for self-identifying significant problems. The August 2005 trend report briefly cited an evaluation of a condition report highlighting the low rate of self-identification of significant problems during the previous quarter and reported the evaluation's conclusion that it was not a problem warranting management attention. However, the trend report did not mention that about 35 percent of significant problems were self-identified during the previous quarter, while the Initiatives' goal was that 80 percent of significant problems would be self-identified.

Beyond whether they effectively track the Initiatives' areas of concern, trend reports generally face serious obstacles to adequately identifying recurrent and significant problems. For example, trend analysis tends to focus on the number of condition reports issued, but the number of reports does not necessarily reflect the significance of a problem. For

example, the number of condition reports involving requirements management decreased by over half from the first quarter to the second quarter of fiscal year 2005. However, this decrease was not a clear sign of progress. Not only did the number rise again in the third quarter, but the May 2005 trend report also noted that the number of all condition reports had dropped during the second quarter. According to the report, the volume of condition reports had been high in the first quarter because of reviews of various areas, including requirements management.

Due, in part, to these obstacles, trend reports have not consistently determined the significance of problems or performed well in tracking progress in resolving them. For example, trend reports have questionably identified human performance as a significant problem for resolution and ineffectively tracked progress in resolving it because there was (1) no clearly appropriate or precise benchmark for performance, (2) a changing focus on the problem, and (3) unreliable data on cause codes. The February 2004 trend report identified a human performance problem based on Yucca Mountain project data showing the project's proportion of skill-based errors to all human performance errors was two times higher than benchmark data from the Institute of Nuclear Power Operations (INPO).[6] Interestingly, the report cautioned that other comparisons with these INPO data may not be appropriate because of differences in the nature, complexity, and scope of work performed, but did not explain why this caution did not apply to the report's own comparison. While this comparison has not appeared in trend reports since May 2004, a November 2004 trend report changed the focus of the problem to the predominance of human performance errors in general, rather than the skill-based component of these errors. (Later reports reinterpreted this predominance as not a problem.) The report cited an adverse trend based on the fact that the human performance cause category accounted for over half of the total number of causes for condition reports prepared during the quarter. Nevertheless, by February 2005, trend reports began interpreting this predominance as generally appropriate, given the type of work done by the project. That is, the project's work involves mainly human efforts and little equipment, while work at nuclear power plants involves more opportunities for errors caused by equipment. In our view, this interpretation that a predominance of human performance errors would

[6]Skill-based errors are defined in trend reports as unintentional errors resulting from people not paying attention to the task at hand.

be expected implies an imprecise benchmark for appropriate performance.

Further, although trend reports continued to draw conclusions about human performance problems, the February 2005 report indicated that any conclusions were hard to justify because of data reliability problems with cause coding. For example, the majority of problems attributed to human performance causes are minor problems, such as not completing a form, that receive less-rigorous cause analysis. This less-rigorous analysis tends to reveal only individual human errors—that is, human performance problems—whereas more-rigorous analysis tends to reveal less-obvious problems with management and procedures.

Another shortcoming of the trend reports was that their rating categories made it difficult to adequately determine the significance of some problems. Specifically, trend reports sometimes assigned a problem a lower significance than justified because corrective actions were already being taken. The rating categories for a problem's significance also involve an assessment of the need for management action. In their current formulation, DOE's rating categories cannot accurately represent both these assessments, and the designated rating category can distort one or the other assessment. For instance, a November 2005 trend report rated certain requirements management issues as a "monitoring trend"—defined as a small perturbation in numbers that does not warrant action but needs to be monitored closely. However, this rating did not accurately capture the report's simultaneous recognition that significant process problems spanned both BSC and DOE and the fact that the numbers and types of problems were consistently identified over the previous three quarters. A more understandable explanation for why the problem received a low rating is that designating the problem at any higher level of significance would have triggered guidelines involving the issuance of a condition report, which, according to the judgment expressed in the report, was not needed. Specifically, the report indicated that existing condition reports have already identified and were evaluating and resolving the problem, thereby eliminating the need to issue a new condition report.

However, by rating the problem at the lowest level of significance, the trend report did not sufficiently draw management's attention to the problem. At about the same time the trend report judged no new condition reports were necessary, a separate DOE investigation of requirements management resulted in 14 new condition reports—3 at the highest level of significance and 8 at the second-highest level of significance. These condition reports requested, for instance, an analysis of the collective

significance of the numerous existing condition reports and an assessment of whether the quality assurance requirement for complete and prompt remedial action had been met. As a result of the investigation and a concurrent DOE root cause analysis,[7] DOE stated during the December 2005 quarterly management meeting with NRC that strong actions were required to address the problems with its requirements management system and any resulting uncertainty about the adequacy of its design products.

I would now like to update you on the project's February 2006 stop-work order, which occurred too late to be included in our report. We believe this incident is an example of how the project's management tools have not been effective in bringing quality assurance problems to top management's attention. After observing a DOE quality assurance audit at the Lawrence Livermore National Laboratory in August 2005, NRC expressed concern that humidity gauges used in scientific experiments at the project were not properly calibrated—an apparent violation of quality assurance requirements. According to an NRC official, NRC communicated these findings to BSC and DOE project officials on six occasions between August and December 2005, and issued a formal report and letter to DOE on January 9, 2006. However, despite these communications and the potentially serious quality assurance problems involved, the project's acting director did not become aware of the issue until January 2006, after reading about it in a news article. Due to concerns that quality assurance requirements had not been followed and the length of time it took top management to become aware of the issue, BSC issued a February 7, 2006, stop-work order affecting this scientific work. Project officials have begun a review of the issue.

[7]A root cause analysis seeks to determine the root cause of a problem, which is the underlying cause that must change in order to prevent the problem from reoccurring.

DOE's New Path Forward to Submitting a License Application Faces Substantial Quality Assurance and Other Challenges

In pursuing its new path forward, DOE faces significant quality assurance and other challenges, including (1) determining the extent of problems and restoring confidence in the documents supporting the license application after the discovery of e-mails raising the potential of falsified records, (2) settling the design issues and the associated problems with requirements management, and (3) replacing key personnel and managing the transition of new managers and other organizational challenges.

The early 2005 discovery of USGS e-mails suggesting possible noncompliance with the project's quality assurance requirements has left lingering concerns about the adequacy of USGS's scientific work related to the infiltration or flow of water into the repository and whether other work on the project has similar quality assurance problems. As part of its new path forward, DOE has taken steps to address these concerns. It is reworking technical documents created by USGS personnel to ensure that the science underlying the conclusions on water infiltration is correct and supportable. In addition, DOE is conducting an extensive review of approximately 14 million e-mails to determine whether they raise additional quality assurance concerns. According to NRC on-site representatives, screening these millions of e-mails to ensure that records were not falsified will be challenging. Further, many of the e-mails were written by employees who no longer work at the project or may be deceased, making it difficult to learn their true meaning and context. Moreover, if additional e-mails raise quality assurance concerns, DOE may have to initiate further review, inspections, or rework.

DOE officials have stated that it will need to resolve long-standing quality assurance problems involving requirements management before it can perform the design and engineering work needed to support the revised project plans called for by its new path forward. According to a 2005 DOE root cause analysis report, low-level documents were appropriately updated and revised to reflect high-level design changes through fiscal year 1995. However, from 1995 through 2002, many of these design documents were not adequately maintained and updated to reflect current designs and requirements. Further, a document that is a major component of the project's requirements management process was revised in July 2002, but has never been finalized or approved. Instead, the project envisioned a transition to a new requirements management system after the submission of the license application, which at that time was planned for December 2004. However, for various reasons, the license application was not submitted, and the transition to a new requirements management system was never implemented. The DOE report described this situation as "completely dysfunctional" and identified the root cause of these

conditions as DOE's failure to fund, maintain, and rigidly apply a requirements management system. According to an NRC on-site representative, repetitive and uncorrected issues associated with the requirements management process could have direct implications for the quality of DOE's license application.

In December 2005, DOE issued a stop-work order on design and engineering for the project's surface facility and certain other technical work. DOE stated that a root cause analysis and an investigation into employee concerns had revealed that the project had not maintained or properly implemented its requirements management system, resulting in inadequacies in the design control process. The stop-work order will be in effect until, among other things, the lead contractor improves the requirements management system, validates that processes exist and are being followed, and requirements are appropriately traced to implementing mechanisms and products. Further, DOE will establish a team to take other actions necessary to prevent inadequacies in requirements management and other management systems from recurring.

Finally, DOE continues to be challenged to effectively manage a changing and complex program and organization. The significant project changes initiated under the new path forward create the potential for confusion over accountability as roles and responsibilities change—a situation DOE found to contribute to quality assurance problems during an earlier transition period. An important part of this challenge is ensuring that accountability for quality and results are effectively managed during the transition to the new path forward. For example, DOE's plan to establish a lead laboratory to assist the project would not only have to be effectively managed, but also would introduce a new player whose accountability DOE would have to ensure. According to one DOE manager, transitioning project work to a lead laboratory under a direct contract with DOE could pose a significant challenge for quality assurance because the various laboratories assisting with the project are currently working under BSC quality assurance procedures and will now have to develop their own procedures.

In addition, the project faces management challenges related to ensuring management continuity at the project. DOE has experienced turnover in 9 of 17 key management positions since 2001. For example, in the past year, the project has lost key managers through the departures of the Director of Project Management and Engineering, the Director of the License Application and Strategy, the Director of Quality Assurance, and the contractor's General Manager. To ensure the right managers move the

project forward to licensing, the project has a recruitment effort for replacing key departing managers. Further, the director position for the project has been occupied by three individuals since 1999 and is currently filled by an acting director. The current Acting Director took his position in summer 2005, and initiated the new path forward in October 2005. DOE is currently awaiting congressional confirmation of a nominee to take the director position. However, the current Acting Director told us he expects that the new path forward will be sustained after the new director assumes the position because it has been endorsed by the Secretary of Energy.

Conclusions

DOE has a long history of trying to resolve quality assurance problems at its Yucca Mountain project. Now, after more than 20 years of work, DOE once again faces serious quality assurance and other challenges while seeking a new path forward to a fully defensible license application. Even as DOE faces new quality assurance challenges, it cannot be certain that it has resolved past problems. It is clear that DOE has not been well served by management tools that have not effectively identified and tracked progress on significant and recurring problems. As a result, DOE has not had a strong basis to assess progress in addressing management weaknesses or to direct management attention to significant and recurrent problems as needed. Unless these quality assurance problems are addressed, further delays on the project are likely.

Mr. Chairman, this concludes my prepared statement, I would be happy to respond to any questions that you or other Members of the Subcommittee may have at this time.

GAO Contact and Staff Acknowledgments

For further information about this testimony, please contact Jim Wells at (202) 512-3841 or wellsj@gao.gov. Casey Brown, John Delicath, Terry Hanford, and Raymond Smith also made key contributions to this statement.

Appendix I: The Management Improvement Initiatives' Key Areas of Concern

The Department of Energy's Management Improvement Initiatives (Initiatives) perceived five key areas of management weakness as adversely affecting the implementation of quality assurance requirements at the Yucca Mountain project:

1. Roles and responsibilities were becoming confused as the project transitioned from scientific studies to activities supporting licensing. The confusion over roles and responsibilities was undermining managers' accountability for results. The Initiatives' objective was to realign DOE's project organization to give a single point of responsibility for project functions, such as quality assurance and the Corrective Action Program, and hold the project contractor more accountable for performing the necessary work in accordance with quality, schedule, and cost requirements.

2. Product quality was sometimes being achieved through inspections by the project's Office of Quality Assurance rather than being routinely implemented by the project's work organizations. As a result, the Initiatives sought to increase work organizations' responsibility for being the principle means for achieving quality.

3. Work procedures were typically too burdensome and inefficient, which impeded work. The Initiatives sought to provide new user-friendly and effective procedures, when necessary, to allow routine compliance with safety and quality requirements.

4. Multiple corrective action programs existed, processes were burdensome and did not yield useful management reports, and corrective actions were not completed in a timely manner. The Initiatives sought to implement a single program to ensure that problems were identified, prioritized, and documented and that timely and effective corrective actions were taken to preclude recurrence of problems.

5. The importance of a safety-conscious work environment that fosters open communication about concerns was not understood by all managers and staff, and they had not been held accountable when inappropriately overemphasizing the work schedule, inadequately attending to work quality, and acting inconsistently in practicing the desired openness about concerns. Through issuing a work environment policy, providing training on the policy, and improving the Employee Concerns Program, the Initiatives sought to create an environment in which employees felt free to raise concerns without

fear of reprisal and with confidence that issues would be addressed promptly and appropriately.

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Mr. PORTER. Mr. Friedman, Inspector General, U.S. Department of Energy, welcome.

STATEMENT OF GREGORY FRIEDMAN

Mr. FRIEDMAN. Thank you, Mr. Chairman.

Mr. Chairman and members of the subcommittee, I am pleased to be here today at your request to testify on matters related to quality assurance procedures and general management at the U.S. Department of Energy's Yucca Mountain Project.

My office has conducted a number of reviews involving Yucca Mountain Project over the last several years. In today's testimony, I would like to highlight three recent reviews relating to quality assurance and general project management.

First, my office, in coordination with the Department of Interior Office of Inspector General and the Federal Bureau of Investigation, initiated a criminal investigation focusing on potential falsification of research data and quality assurance requirements pertaining to computer modeling of net water infiltration at the proposed Yucca Mountain repository.

As part of the investigation, we conducted numerous interviews of current and former employees of the Department of Energy, Yucca Mountain Project contractors, and employees of the U.S. Geological Survey. We analyzed about 150,000 e-mails directly and also obtained and examined numerous documents that included various reports on internal and external reviews of the Yucca Mountain Project operations. The objective of the investigation was to identify the facts and circumstances surrounding a series of e-mails that discussed the potential fabrication of data and compromise of quality assurance requirements.

The extensive factual record developed was provided to the U.S. Attorney's Office in December 2005 at the conclusion of our field work.

Just last evening, on April 24th, the U.S. Attorney's Office notified the OIG they had declined to pursue criminal prosecution in this matter. Among the reasons given by the Department of Justice were that they could not show intent and the action did not rise to the level of criminality.

My written testimony, Mr. Chairman, does not include this information because it was submitted prior to our being notified by the Department of Justice; and my verbal testimony will have to do in this regard.

During the investigation, we observed internal control deficiencies that warrant the attention of Department of Energy program managers. A memorandum highlighting these issues has been issued to the Secretary of Energy. We understand the Department of Interior's Office of Inspector General was planning to issue a separate report to the Department of Interior Management regarding issues specific to the geological survey.

With respect to the Department of Energy, we identified the following internal control deficiencies: First, a nearly 6-year delay in surfacing and appropriately dealing with the controversial e-mails, for which, frankly, we could find no satisfactory explanation; second, the compromise of scientific notebook requirements for an analysis and model report, an AMR report, on simulation of net in-

filtration for modern potential future climates; and, three, a failure to properly maintain critical control files relating to that same AMR in accordance with data management system requirements established by the project managers.

Although criminal prosecution will not be pursued based on the Department of Justice's declaration, observers have pointed out that the authors of the e-mails demonstrated irresponsible and reckless behavior and their actions have had the effect of undermining public confidence in the quality of science associated with the Yucca Mountain Project. This incident has forced the Department of Energy to spend millions in actions to address the quality assurance issues raised in the e-mails.

The second matter I would like to address is an IG report issued in November 2005.

Nuclear Regulatory Commission procedures for granting a license for the proposed Yucca Mountain nuclear waste repository require the Department publicly disclose on a Web site all documents, including e-mails, relative to the licensing process. In 2004, the Office of Civilian Radioactive Waste Management took action to review approximately 10 million archived e-mails associated with Yucca Mountain for relevancy to the licensing process.

Internal to the Yucca Mountain Project, an administrative procedure required that throughout the course of all project activities—and I stress all project activities—there be a conscious effort to identify and resolve any and all conditions adverse to quality. As a result of our inspection, we concluded that the Department's review of the archived e-mails had not been structured so as to ensure the quality assurance issues were identified and addressed.

We were informed that, as a result of our report, Waste Management is developing a corrective action plan to expand its quality-assurance-related search effort to include a more comprehensive review of the approximately 10 million or more archived e-mails.

Finally, Mr. Chairman, I would like to discuss an IG report issued in December 2005. We found the Department had paid approximately $4 million in incentive fees to Bechtel SAIC, Yucca Mountain's prime contractor, even though the firm did not meet contract performance expectations. We concluded that Waste Management had not established an adequate process to monitor and evaluate the contractor's work products and services.

As a result of management weaknesses, the contractor was rewarded for projects and services integral to the Yucca Mountain project for services that did not meet the requirements of the contract, including matters related to ensuring project quality. As a result of our report, Waste Management agreed to establish a performance incentive plan with clearly defined standards and document its rationale for fee payments.

The efforts to determine whether Yucca Mountain is a suitable site for disposal of the Nation's high-level nuclear waste and spent nuclear fuel is a complex challenge. Of paramount concern is that this evaluation be objective and that it be based on sound and unbiased scientific analysis consistent with the highest possible quality assurance standards. Thus, it is vital the Department intensify its efforts in the quality assurance arena.

We are committed to performing independent reviews to assist in this effort. In fact, in late 2005, at the request of the Acting Director of the Office of Civilian Radioactive Waste Management, Mr. Golan, we initiated a review of the completeness and effectiveness of the corrective action program to address quality assurance problems. This review is in process.

Mr. Chairman and members of the subcommittee, this concludes my statement. I would be pleased to answer any questions that you might have.

Mr. PORTER. Thank you very much, Mr. Friedman. I appreciate all your efforts and your staff.

[The prepared statement of Mr. Friedman follows:]

STATEMENT OF GREGORY H. FRIEDMAN
INSPECTOR GENERAL
U.S. DEPARTMENT OF ENERGY

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES

COMMITTEE ON GOVERNMENT REFORM

SUBCOMMITTEE ON THE FEDERAL WORKFORCE AND AGENCY ORGANIZATION

FOR RELEASE ON DELIVERY

2:00 p.m., Tuesday, April 25, 2006

Mr. Chairman and members of the Subcommittee, I am pleased to be here today at your request to testify on matters relating to quality assurance procedures and general management at the U.S. Department of Energy's Yucca Mountain Project, which is under the auspices of the Office of Civilian Radioactive Waste Management (Waste Management).

My office has conducted a number of reviews involving the Yucca Mountain Project over the last several years. In today's testimony, I would like to highlight three recent reviews relating to quality assurance and general project management. The first matter I will discuss is the status of a criminal investigation involving alleged falsification of work and compromise of quality assurance requirements. The second matter is an inspection that examined the process used by the Department to review electronic mail (e-mail) messages for relevancy to the licensing process. The third matter is an audit of performance based incentives for Bechtel SAIC Company, LLC, the contractor that manages and operates Yucca Mountain Project for Waste Management.

Investigation

The first matter I would like to address is the status of the criminal investigation. In March 2005, senior Department of Energy officials were alerted to the discovery of a series of e-mail messages that discussed the potential falsification of data and compromise of quality assurance requirements related to the Yucca Mountain Project. The e-mails primarily involved work done by the United States Geological Survey (Geological Survey) in the 1998 to 2000 timeframe under an Interagency Agreement with the Department. My office initiated a criminal investigation focusing on potential falsification of research data pertaining to

computer modeling of "net water infiltration" of the Yucca Mountain repository and false representation of compliance with quality assurance requirements. Net water infiltration is a significant element in the *Total System Performance Assessment*, which serves as an important reference to the license application for the Yucca Mountain Project. Because of the role of Geological Survey personnel in this matter, the criminal investigation became a joint effort with the Department of Interior Inspector General. The case was coordinated with the Federal Bureau of Investigation. Additionally, we regularly consulted with the United States Attorney's Office for the District of Nevada.

As part of the investigation, we conducted extensive interviews of approximately 70 current and former employees of the Department of Energy, Yucca Mountain Project contractors and of the Geological Survey. The investigative team analyzed about 150,000 e-mails written during an expanded time period of 1998 through 2005. We also obtained and analyzed numerous documents, including various reports on internal and external reviews of Yucca Mountain Project operations.

The objective of the investigation was to identify the facts and circumstances surrounding a series of e-mails that discussed potential fabrication of data and compromise of quality assurance requirements. The extensive factual record developed was provided to the United States Attorney's Office at the conclusion of the field work. We are currently awaiting a response from that office.

Inspection

The second matter I would like to address is an Office of Inspector General inspection report issued on November 9, 2005, entitled, "*Quality Assurance Weaknesses in the Review of Yucca Mountain Electronic Mail for Relevancy to the Licensing Process*" (DOE/IG-0708).

As background, the Nuclear Regulatory Commission procedures for granting a license for the Department's Yucca Mountain nuclear waste repository require that the Department publicly disclose all documents, including e-mails, relevant to the licensing process. In the 2004 timeframe, the Office of Civilian Radioactive Waste Management took action to review approximately 10 million archived e-mails to determine their relevancy to the licensing process. It identified approximately 1.1 million e-mails as relevant.

Waste Management's Administrative Procedure 16.1 Q, "Condition Reporting and Resolution," which is applicable to Federal and contractor employees working on Yucca Mountain matters, required that throughout the course of all project activities, there be a conscious effort to identify and resolve any and all "conditions adverse to quality."

The purpose of our inspection was to determine if the process for conducting the relevancy review of the archived e-mails assured that "conditions adverse to quality" were identified and addressed.

We found that the Department's review of the archived e-mails had not been structured to fully ensure that quality assurance issues were identified and addressed in accordance with the Administrative Procedures. Specifically, Department requirements for identifying and

addressing "conditions adverse to quality" were not always considered during the relevancy review.

To address this condition, we recommended that the Department expand its review of the approximately 10 million archived e-mails to ensure that quality issues are identified and addressed. The Department agreed with the recommendation.

Audit

The third matter I would like to discuss is an Office of Inspector General audit report on *Use of Performance Based Incentives by the Office of Civilian Radioactive Waste Management* (DOE/IG-0702, September 2005). The audit found that since 2001, Waste Management had paid approximately $4 million in incentive fees, or approximately ten-percent of the total fees paid, to Bechtel SAIC, Yucca Mountain's prime contractor, even though the firm delivered poor quality work and missed deadlines. Specifically, Waste Management paid incentive fees despite the fact that its own performance monitors determined that: (1) additional time beyond the performance period was needed by the contractor to correct poor quality work; (2) work scope was reduced due to poor contractor performance; and, (3) delivered products were not acceptable to the Department. Additionally, the Department eliminated incentivized work because of concerns about the contractor's past performance.

We concluded that Waste Management, in administering the contract, had not established an adequate process to monitor and evaluate the contractor's work products. For example, the Department did not (1) identify acceptable quality levels for each incentive; (2) specify methods for measuring and evaluating performance; or (3) include procedures to adjust

incentive fee payments when milestones were not met. Further, the Department did not update its performance incentive plan when incentive expectations changed nor had it fully documented its rationale for incentive fee payments. As a result of these management weaknesses, the contractor was rewarded for products and services integral to the Yucca Mountain project that did not meet the requirements of the contract, including matters related to assuring project quality. We recommended that Waste Management establish a performance incentive plan with clearly defined standards and document its rationale for fee payments. The Department agreed to implement the recommendation.

Conclusion

The effort to determine whether Yucca Mountain is a suitable site for the disposal of the Nation's high-level nuclear waste and spent nuclear fuel is a complex challenge. Of paramount concern is that this evaluation be objective and based on sound and unbiased scientific analysis consistent with the highest possible quality assurance standards.

It is vital that the Department intensify its efforts in the quality assurance arena. We are committed to performing independent reviews to assess whether the highest quality assurance standards are implemented and maintained. In late 2005, for example, we initiated a review at the request of the Acting Director for the Office of Civilian Radioactive Waste Management, to examine the completeness and effectiveness of the Yucca Mountain Project's Corrective Action Program for addressing quality assurance problems. This work is on-going.

Mr. Chairman and members of the Subcommittee, this concludes my statement. I will be pleased to answer any questions.

Mr. PORTER. Next, we have Margaret Federline, Deputy Director of the Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission.

Welcome, Margaret. Thank you.

STATEMENT OF MARGARET FEDERLINE

Ms. FEDERLINE. Mr. Chairman and members of the subcommittee, it is a privilege to appear before you today to share with you the Nuclear Regulatory Commission's perspective on the role of quality assurance in the Department of Energy's Yucca Mountain program.

Since I will be presenting an abbreviated version of my testimony, I would ask that my entire written statement be made part of the hearing record. Thank you very much.

The Nuclear Waste Policy Act assigns NRC the role of regulator for the proposed high-level waste repository. In addition to reviewing DOE's license application, the NRC observes and comments on DOE's quality assurance program as part of NRC's prelicensing activity. Implementation of an effective QA program during the prelicensing, licensing and operational periods will ensure that repository activities are consistent with safety requirements.

The purpose of our observing DOE activities during the prelicense application phase is to verify that DOE clearly understands our requirements. We review the implementation and effectiveness of DOE's quality assurance program by performing independent reviews, observing audits and surveillances performed by DOE and its contractors and monitoring significant quality effecting activities.

While no regulatory conclusions are made during our reviews, we do provide feedback to DOE for consideration.

For example, we performed an independent review of important DOE model reports. Through independent technical work, NRC had identified that the information in these model reports was significant to a safety demonstration. During the review, NRC staff identified concerns with some aspects of the technical basis and information in the model reports. Also, NRC staff identified concerns with the effectiveness of some of DOE's corrective actions.

NRC staff members also observe DOE audits of QA program implementation to determine their effectiveness in identifying issues that pertain to safety in their design for the proposed repository. Of the audits that we have observed, we have noted that the auditors are generally qualified, trained and independent of the areas being audited, and most audits were adequate in assessing the activities being audited.

For example, NRC observers of a DOE audit of design engineering products related to the fuel handling and canister handling facilities determined that the audit was effective in assessing the adequacy, implementation and effectiveness of technical products and processes.

On the other hand, NRC staff has identified other concerns during these observations. One such observation noted that NRC did not agree with the DOE auditors' conclusion that Lawrence Livermore National Laboratories effectively implemented certain aspects related to control of measurement and test equipment and correc-

tive action. As a result of our observations, DOE is performing additional reviews in this area.

During the current year, NRC staff reviews have noted that DOE has made significant changes to its corrective action and trending process as a result of Yucca Mountain Project internal audit findings as well as the result of NRC comments.

NRC staff will continue to observe DOE activities in areas of science as well as design work to ensure that DOE's QA program is appropriately applied in developing the safety case for licensing.

Some current QA program implementation issues are of concern to us. These issues include those identified at the U.S. Geologic Survey, DOE's design controls and requirements flow-down and the calibration of test equipment at Lawrence Livermore Labs. These issues concern us because they raise questions about the systematic and effective implementation of DOE's QA program, which is an integral part of a high-quality license application. NRC staff will continue to review DOE's technical approaches, findings and conclusions regarding QA issues. We will closely observe DOE's corrective actions and will continue to bring any issues to DOE's attention.

At the most recent quarterly management meeting, QA program implementation issues were discussed, and DOE presented its plans for resolving the issues.

Our recent observations of Yucca Mountain Project activities have noted that DOE's plans for addressing current QA program issues with design control and requirements flow-down appear to be directed at the right problems and to be using good approaches for correcting the root causes.

Recent Yucca Mountain Project staff additions have brought in management personnel with previous experience in implementing quality assurance programs for NRC-regulated activities.

In March 2006, as we have heard, the Government Accountability Office issued its report on Yucca Mountain quality assurance. NRC staff had reviewed the GAO report and found that these conclusions are consistent with what we have observed, some of which I have discussed today.

In conclusion, the NRC staff has noticed improvements in effectiveness of DOE's quality assurance program implementation. We will, however, continue to fulfill our responsibilities to ensure the adequate protection of public health and safety and the environment.

Thank you very much.

Mr. PORTER. Thank you. Appreciate your testimony.

[The prepared statement of Ms. Federline follows:]

STATEMENT SUBMITTED

BY THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

COMMITTEE ON GOVERNMENT REFORM

SUBCOMMITTEE ON THE FEDERAL WORKFORCE AND AGENCY ORGANIZATION

UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING

YUCCA MOUNTAIN PROJECT:

PERSISTENT MANAGEMENT AND QUALITY ASSURANCE PROBLEMS

PRESENTED BY

MARGARET FEDERLINE

DEPUTY DIRECTOR

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

SUBMITTED: APRIL 25, 2006

Mr. Chairman and members of the Subcommittee, it is a privilege to appear before you today to share with you the U.S. Nuclear Regulatory Commission's (NRC) perspective on the role of quality assurance (QA) in the Department of Energy's (DOE) preparation to apply for a license for a proposed high-level radioactive waste repository at Yucca Mountain, Nevada.

As you are aware, the Nuclear Waste Policy Act of 1982, as amended, assigns roles and responsibilities to various federal agencies for developing, licensing, and regulating a proposed repository. Through a process outlined in the Act, DOE is required to pursue development of a proposed repository, the Environmental Protection Agency (EPA) is responsible for establishing environmental standards specific for the proposed repository, and the NRC is required to establish regulatory requirements that implement EPA standards and to establish a licensing process for the proposed repository. As part of this licensing process, NRC is responsible for reviewing DOE's license application to ensure that the NRC's regulatory requirements, primarily in 10 CFR Part 63, are met.

The NRC observes and comments on the DOE quality assurance program as part of NRC's pre-licensing activities and has periodically identified deficiencies that DOE should address to meet NRC's expectations. For example, it appears that the Yucca Mountain Project staff's implementation of their quality assurance program is not consistent with the program, resulting in errors and problems that I will discuss later.

As required in 10 CFR Part 63, DOE's quality assurance program governs all activities necessary to provide adequate confidence that the geologic repository and its structures, systems, and components will perform satisfactorily in service. DOE's quality assurance

program applies to the design of structures, systems, and components important to safety and to the evaluation of natural barriers important to waste isolation. Demonstrating safety for a geologic repository over many years will require clear articulation of the safety of the integrated repository system including geologic and engineered barriers. It also will require a clear demonstration of the safety of preclosure operations for handling of spent nuclear fuel and other high-level radioactive waste. Implementation of an effective quality assurance program during the pre-licensing, licensing, and operational periods will ensure that planning and execution of repository activities are coherent, clear, and well documented, as well as consistent with safety requirements.

NRC's understanding of the importance of an effective quality assurance program comes from our extensive experience in licensing commercial nuclear activities. This experience suggests that establishing an effective quality assurance program is an essential aspect of a license application. The application should clearly articulate the technical basis for demonstrating compliance with the regulatory requirements of 10 CFR Part 63 in order for the NRC staff to make a timely licensing decision after a thorough regulatory review.

A quality assurance program helps ensure that a systematic approach is used to address all factors important to repository safety and ensure that corrective actions are taken when any inconsistencies or weaknesses are identified. The DOE's implementation of an effective quality assurance program to ensure that technical information, on which NRC would rely in making its licensing decision, must be traceable, transparent, consistent, and defensible. In addition, if NRC grants DOE authorization to construct a repository, the quality assurance

program would be critical to ensuring that DOE constructs the repository in accordance with licensing requirements and that the subsequent operation of the facility will be safe.

During the pre-license application phase of the Yucca Mountain Project, NRC staff is observing DOE activities, to verify that DOE clearly understands NRC requirements. NRC Headquarters' staff and On-Site representatives review the implementation and effectiveness of DOE's quality assurance program by performing independent reviews, observing audits and surveillances performed by DOE and its contractors, and monitoring significant quality-affecting activities. While no regulatory conclusions are made during these observation activities, NRC does provide its observations to DOE for their consideration and action, as appropriate.

For example, between November 2003 and January 2004, NRC staff performed an independent review of important DOE model reports that were intended to support DOE's safety case as well as some quality-affecting activities. Through independent technical work, NRC had identified the information in these reports as being significant to a safety demonstration. During the review, NRC staff identified concerns with the clarity and sufficiency of some aspects of the technical basis and information in the model reports. Also, NRC staff identified concerns with the effectiveness of some of DOE's corrective actions. NRC staff concluded from its review that the number and similar pattern of concerns that it found in the model reports suggest that other model reports may have similar deficiencies. NRC also concluded that if DOE continued to use its existing policies, procedures, methods, and practices at the same level of implementation and rigor, then the NRC staff's safety review of a potential license application could be significantly extended because of the NRC's need for a large volume of additional information in

some areas. Consequently, the NRC could be prevented from making a timely decision regarding issuance of a construction authorization to DOE.

NRC staff members also observe DOE audits of quality assurance program implementation to determine their effectiveness in identifying issues that pertain to safety in DOE's design for the proposed repository. Of the audits observed, we have noted that the auditors were qualified, trained, and independent of the areas being audited, and most audits were adequate in assessing the activities being audited and identifying issues. For example, NRC observers of a DOE September 2005 audit of design engineering products relating to the Fuel Handling and Canister Handling Facilities determined that the audit was effective in assessing the adequacy, implementation, and effectiveness of technical products and processes. NRC staff will continue to observe DOE activities in other areas of design work, such as Transportation, Aging, and Disposal Canister, to ensure that DOE's QA program is appropriately applied in developing the design and its safety basis.

Consistent with our pre-licensing role, NRC staff has sampled a number of DOE activities to determine the effectiveness of the quality assurance program implementation as it pertains to safety in DOE's design for the Yucca Mountain Project. NRC staff does not review all quality assurance program implementation activities; rather our observations are conducted on a sample basis with additional actions taken to address issues. On the other hand, NRC staff has identified other concerns during these observations as illustrated by the following examples:

(1) NRC observers of an August 2005 DOE audit of scientific activities supporting the Waste Package and Drip Shield Degradation models did not agree with the DOE auditors' conclusion that Lawrence Livermore National Laboratories effectively implemented certain aspects control of maintenance and test equipment and corrective action. As a result of the NRC's observations, DOE is performing additional reviews in this area.

(2) NRC observers of a December 2005 DOE audit of the adequacy, implementation, and the effectiveness of the Corrective Action Program commented that the auditors had elected not to perform the reviews necessary to determine the effectiveness of the overall corrective action process as described in DOE's audit plan. As a result of the NRC observers' comments, DOE reviewed corrective action effectiveness and found significant issues in the trend process. During the current year, NRC staff reviews have noted that DOE has made significant changes to its corrective action and trending process as a result of NRC comments and Yucca Mountain Project internal audit findings and condition reports. In particular, the trending process has been changed to include greater management attention to the review of condition reports for emerging trends, identification and monitoring of emerging and adverse trends, identification of the extent of conditions, and more effective and immediate action to address identified trends.

Current quality assurance program implementation issues are of concern to NRC staff. These issues include those identified at the United States Geological Survey, DOE's design controls and requirements flow-down, and test equipment calibration at Lawrence Livermore

Labs. These issues are of concern because they raise questions about the systematic and effective implementation of DOE's quality assurance program, which is an integral component of a high-quality license application. NRC staff will continue to review DOE's technical approaches, findings, and conclusions regarding quality assurance issues, will closely observe DOE's corrective actions, and will continue to bring these issues to DOE's attention.

To effectively communicate requirements, issues, and concerns, NRC management and staff met with DOE management and staff at Technical Exchanges and Management Meetings, which are open to the public. Technical Exchanges are also held as needed to gain an understanding of technical or regulatory issues. On March 21, 2006, a Quarterly Management Meeting between NRC and DOE was conducted at NRC headquarters in Rockville, Maryland, to discuss programmatic issues. During that Quarterly Management Meeting, many of these quality assurance program implementation issues were discussed and DOE presented its plans for resolving the issues. Recent NRC staff observations of Yucca Mountain Project activities have noted that the DOE plans for addressing current QA program issues with design control and requirements flow-down appear to be directed at the right problems and to be using good approaches for correcting the root causes. Recent Yucca Mountain Project staff additions have brought in management personnel with previous experience in implementing a quality assurance program for NRC-required activities at NRC-regulated facilities.

In March 2006, the Government Accountability Office (GAO) issued its report, "Yucca Mountain: Quality Assurance at DOE's Planned Nuclear Waste Repository Needs Increased Management Attention." In its report, the GAO drew three conclusions: (1) "DOE has had a long history of quality assurance problems at the Yucca Mountain project"; (2) "... the project's

performance indicators and other key management tools were not effective..."; and; (3) "DOE continues to face quality assurance and other challenges." NRC staff has reviewed the GAO report and found that these conclusions are consistent with what the NRC has observed, some of which I have mentioned today. For example, NRC has observed, and informed DOE, that the Yucca Mountain Project corrective action program has not been effective in identifying the extent and root causes of QA problems, and has not effected timely actions and resolutions.

In conclusion, the NRC staff has noticed improvements in the effectiveness of DOE's quality assurance program implementation. We will, however, continue to review their QA implementation during the pre-license application period and will provide feedback to DOE on our observations. NRC review of any license application submitted by DOE will ensure that QA requirements will be satisfied, and that appropriate commitments have been made for the DOE QA program implementation for any subsequent activities. QA program implementation for any Yucca Mountain Project activities subsequent to a license application would be monitored by NRC QA oversight and inspection to ensure the adequate protection of public health and safety and the environment.

Mr. PORTER. Next, Mr. Paul Golan, Acting Director, Office of Civilian Radioactive Waste Management, U.S. DOE.

Welcome.

STATEMENT OF PAUL GOLAN

Mr. GOLAN. Thank you Mr. Chairman, members of the subcommittee.

My name is Paul Golan, and I am Acting Director of the Office of Civilian Radioactive Waste Management since May 2005. Previously, I served in the Department of Energy's environment cleanup program; and prior to that I had the privilege of serving in the U.S. Navy Nuclear Propulsion Program.

In order for my testimony to be more productive today, I would like to provide the subcommittee my perspective of quality.

When most people speak of QA, they envision an organization of auditors armed with checklists and pencil stubs counting beans and making sure all the boxes are checked and putting an "inspected by" label on the box with your product. That is not quality assurance. Rather, that is an audit or assessment. While a necessary component of a QA program, by all means not the most important aspect.

When I speak of quality today, quality assurance, I am referring to an organizational culture, a culture that is a collection of the organization's standards, actions, behaviors, and ultimately its performance. People and organizations that set high standards act professionally, behave responsibly and perform in accordance with the requirements, embody good quality.

These characteristics are critical to an organization's ability to function effectively in a regulated environment.

Quality is an organizational trait earned by an organization's living up to its standards and is demonstrated by its performance.

Over the years, the Yucca Mountain QA program has been reviewed by many of the organizations at the table today. The set of documents here is a compilation of the reports by these organizations, some of which go back to the 1980's. They addressed deficiencies in the Yucca Mountain QA program and found that, despite the development of corrective action plans, deficiencies have not been completely corrected and the same deficiencies tend to reoccur.

Again, these findings were consistent with the findings of the latest review by the GAO in March 2006. In nearly all these reviews, the Department concurred with the findings and instituted corrective actions to address these deficiencies. I have read the reports and agree with the findings.

The QA program and, more importantly, the culture of this organization needs to improve. In order for us to improve, there are two components of this program and this culture that I would like to focus on. The first is focus, and the second is accountability.

With respect to the first component, we need to consider whether we are focusing on the symptoms or we are addressing the root cause. It is like taking an aspirin for a headache. If the headache keeps on coming back, then perhaps, maybe, the aspirin wasn't the right medicine. We need to focus on the true cause of the issue and

ensure that the effectiveness of our corrective actions can be objectively measured through improvements in performance.

The second aspect is accountability. Some call accountability follow through. Accountability is critical for any organization or any program to be successful.

Employees are trained on the requirements and understand the requirements. Managers and leaders need to mentor their staff and make sure these requirements are met. Then if employees or managers are either unwilling or unable to meet those requirements, they need to be held accountable for their actions. On one level, that may call for additional training. In more egregious cases, it may also mean consequences ranging from counseling to letters of reprimand, from potentially being removed from having the privilege to work on this project depending on the severity of the situation.

At the Yucca Mountain Project, it is important to recognize that the vast majority of the nearly 2,000 people who work on the Project—most of them citizens of Nevada—have high standards, behave professionally and perform good work, day in and day out. At the same time, though, we need to recognize that the actions of a few or the actions of the one can dramatically undermine the confidence and damage the reputation of hundreds of credible, honest and trustworthy people who have worked very long and hard on this project. Managers and leaders of this organization need to monitor their ongoing activities and address quality issues real-time. They need to know what is going on in their work spaces and correct issues on the spot.

In order to be effective, managers and leaders need to be visible, they need to be engaged, and they need to actively listen. Managers and leaders need to communicate issues up the chain of command quickly and effectively as well as be responsible for developing solutions.

Managers and leaders need to do this today, and they need to do it again tomorrow and the day after that until it becomes habit. Habits, good or bad, help define who we are as individuals and who we are as organizations. Habits over time become our culture.

If I may take a couple of minutes to talk briefly on some of the work stoppages that my office has ordered, I would appreciate 2 more minutes.

Mr. PORTER. No problem.

Mr. GOLAN. First, I would like to talk about the USGS work performed by the Department, which were discussed in our technical report issued in February 2006.

Our independent technical evaluation noninfiltration estimates developed by the U.S. Geologic Survey were found to be consistent with the conclusions that were completed by scientists independent of this project under future predicted climate conditions. Nevertheless, our quality assurance requirements were not met; and, consequently, we are expending time and resources to replace that work.

We have directed that Sandia National Laboratories redevelop computer codes that will generate new infiltration rate estimates in accordance with our QA requirements and then replace those in-

filtration rate estimates after the work has been independently reviewed.

I take full accountability for that decision, sir.

In other matters, more recently, we suspended the authority of our contractor to approve quality documents in the area of facility design because the flow-down of design requirement was not documented in accordance with our procedures. While our QA procedures did not require us to suspend work in this case, we nonetheless did to address any potential issues before moving forward with our new design to support the clean canistered approach to waste handling operations.

In January of this year, we issued a stop-work order at the site when a cable being laid in the exploratory tunnel did not meet established code requirements. Workers at the site brought this to our attention, and we appreciate and applaud their actions. We have taken steps to address this issue.

In April, we issued a stop-work order for work associated with the use of certain chemical standards because we found procedures used to procure those standards did not meet our specifications. We are taking steps to address this issue.

Additionally, we are continuing our investigation on the calibration and use of humidity and temperature probes by one of our national laboratories.

In all these cases, after we understand the facts, we will in a very deliberate way take actions necessary to ensure the quality of our work and hold managers and employees accountable for their actions as well as recognize those individuals who identified issues and took the right action.

We are taking aggressive actions and measures to find quality assurance issues as well as take actions to address them. However, as everyone on the panel has pointed out today, these corrective actions in my mind amount to rework and a defect. While we will do what is necessary to ensure our work products meet our quality assurance requirements, I have a management goal where we do all our work right the first time, every time.

Let me digress for a moment. I do not want to give the impression that a good QA program or good QA is defined by the absence of issues. We will find those situations that do not meet our requirements that will necessitate action. We believe, however, that with a good QA program we will find these situations early, within hours or days, and correct issues while they are small. Early detection and prompt action is our goal.

Secretary Bodman a year ago asked this team to focus on working to make this project safer, simpler and more reliable and to improve the quality and culture of this organization as our No. 1 priority. We have worked diligently on this task, and the Department will seek to demonstrate good quality, good science, and good processes in our license application and across our entire organization through our performance.

Thank you very much.

Mr. PORTER. Thank you for your testimony.

[The prepared statement of Mr. Golan follows:]

Statement of
Paul M. Golan, Acting Director
Office of Civilian Radioactive Waste Management
U.S Department of Energy
before the
Subcommittee on the Federal Workforce and Agency Organization
Committee on Government Reform
U. S. House of Representatives
April 25, 2006

Mr. Chairman and members of the Subcommittee, I am Paul Golan, a career civil servant, and have acted as the Director of the Office of Civilian Radioactive Waste Management (OCRWM) since May 2005. I previously served in the Department of Energy's environmental management organization and prior to that as an officer in the United States Naval Nuclear Propulsion Program.

I have been asked by this Subcommittee to testify on quality assurance (QA) issues at Yucca Mountain. In order for my testimony to be productive and meaningful, I would like to provide this Subcommittee my perspective on quality assurance.

When most people speak about quality assurance, they may envision an organization of auditors armed with checklists and pencil stubs, counting beans and making sure all the boxes are checked. That is not quality assurance; rather, it is an audit or an assessment. While that is a necessary component of a good QA program, it is not the most important part.

When I speak of quality assurance, I am referring to an organizational culture… that is, a collection of an organization's **standards**, **actions**, **behaviors**, and ultimately its **performance**. People and organizations that set high **standards, act** professionally, **behave** responsibly, and **perform** in accordance with requirements embody good quality.

These characteristics are critical to an organization's ability to function effectively in a regulated environment, especially a regulated nuclear environment.

Quality is an organizational trait that is ***earned*** by an organization's living up to its **standards** and is ***demonstrated*** by its actions and its performance.

Over the years, the Yucca Mountain QA program has been reviewed by many independent organizations including the Government Accountability Office and the Nuclear Regulatory Commission, as well as the by the Department of Energy's Office of the Inspector General, all of whom are represented here today. The set of documents to my left represents a compilation of the reports that have resulted from quality assurance reviews. The reports, which go back to the 1980's, address past deficiencies in the Yucca Mountain quality assurance program and have found that despite the development of corrective action plans, deficiencies have not been completely corrected and the same issues tend to reappear. In nearly all of these reviews, the Department concurred with the findings and instituted corrective action plans to address the deficiencies. I have read the reports and I agree with their findings. The quality assurance program and the culture of this organization do not currently meet my standards or expectations.

In my view, corrective action plans require two critical components: **focus** and **accountability**.

With respect to the first component, we need to consider whether we are focusing on addressing the symptoms, or whether we are addressing the root cause. It's like taking an aspirin for a headache; if the headache keeps coming back maybe the aspirin is the wrong medicine. We need to **focus** on the cause, not merely the symptom.

Second is **accountability.** Accountability is critical for any organization, any program, or any system to be successful. Individuals are trained on the requirements and understand the requirements; managers and leaders mentor their staff and enforce the requirements. If people or managers are then unwilling or unable to meet those

requirements, they need to be held accountable for their actions, with consequences ranging from counseling to letters of reprimand to potentially being removed from this project.

At the Yucca Mountain site, it is important to recognize that the vast majority of the nearly two-thousand people who work on this project, many of them citizens of Nevada, perform good work, have high standards, behave professionally, and perform to our standards and requirements day-in and day-out. At the same time, we recognize that the actions of a few, or the actions of an individual, can drastically undermine confidence and damage the reputation of hundreds of credible, honest, and trustworthy people who have worked very long and hard on this project.

We have established the following expectations for the leaders and managers of our organization:

- They need to monitor ongoing activities and address quality assurance issues immediately.
- They need to communicate quality assurance issues to senior management quickly and effectively.
- They need to do that today, and they need to do it again tomorrow and the day after, until it becomes a habit.

Habits, good or bad, help define who we are as individuals and as organizations. Habits, over time, become our culture.

Let me turn to the infiltration work that the U.S. Geological Survey performed for the Department, and which we discussed in our technical report issued in February 2006. We found the infiltration estimates were consistent with the conclusions of other independent scientists; however, our QA requirements were not met, and we are expending significant time and resources to carry out additional analysis to ensure the infiltration work has been properly performed.

More recently, we also suspended the authority of the management and operating contractor to approve quality documents in the area of design because there was not a proper establishment of design requirements in accordance with our procedures. While we were not required to take that action, we did it to address any potential issues before moving forward with our new design.

We stopped work at the site when a communications cable being laid in the exploratory tunnel did not meet established requirements. Workers brought that to our attention, and we appreciate and applaud their actions. We are taking steps to address this issue.

We also stopped work associated with use of chemical standards because we found that procedures used to procure those standards did not meet our specifications. We are taking steps to address this issue, as well.

Currently, we are investigating the calibration and use of humidity/temperature probes by one of our national laboratories. After we understand the facts, we will, in a deliberate way, hold managers and individuals accountable for their actions as well as recognize those who identify issues.

We are taking aggressive action to find any quality assurance issues and address them. But let me digress for a moment. I do not want to give the impression that a good QA program is defined by the absence of issues...we will find situations that do not meet our requirements and that will require us to act. We believe that, with a good QA program, we will find these situations early, within hours or days rather than months or years, and correct issues while they are small. Early detection and prompt action is our goal.

Two additional items that I would like to highlight are the selection of a University Consortium to perform independent reviews of our technical work products and the implementation of the Safety Conscious Work Environment, or SCWE, across the entire Civilian Radioactive Waste Management Program.

Ensuring the quality and culture of this organization is our single highest priority for the project. The Department will seek to demonstrate good quality, good science, and good processes in our license application and across the entire organization. This concludes my opening statement.

Mr. PORTER. At this time, I would like to ask unanimous consent that all Members have 5 legislative days to submit written statements and questions for the hearing record, and answers to written questions provided by the witnesses also be included in the record.

Without objection, it is so ordered.

I would also like to ask unanimous consent that all exhibits, documents and other materials referred to by Members and witnesses may be included in the hearing record and that all Members be permitted to revise and extend remarks. Without objection.

Let the record reflect a quorum is now present. Thank you.

I would like to now open it up for some questions for the panel. I would like to really begin myself and, since we are two Members—Congressmen—will be informal with questions. I would like to begin.

Mr. Golan, I wear two hats, one as a Member of Congress from Nevada, one as chairman of this subcommittee. And whether—of course, my position is very clear on the Project, because I represent the State of Nevada and am very concerned about Yucca Mountain and its impact on our community and State. But let me put on my hat for one moment as chairman.

It appears to me that no one is in charge of the Yucca Mountain Project. And I appreciate that you have been there about a year. But whether this is a design of a space shuttle or whether this is a design of an airplane, I personally would be afraid to fly it. And I know that a lot of DOE folks mean well and are working hard and a lot of great employees that mean well, but I am not sure any of them are responsible or taking full responsibility. And I am not sure whether you would let one of your children fly on an airplane that DOE is building right now, referring to Yucca Mountain.

Time and time again, there has been questions of the safety and quality assurance. And, again, whether it is Wall Street or the private sector, with this much turnover in management, Wall Street would shut you down, the private sector or local government would shut you down, with 9 of 17 key management positions gone, 3 of the directors gone.

Time and time again, testimony by experts that are saying that there are serious, serious safety problems—forget the word quality assurance. This is safety about men, women, and children around this country and in the State of Nevada.

But my biggest concern, whether I was for or against the Project—and you know I am opposed to the Project—I would not trust my child to fly on your airplane. I would not trust my child's safety to be in your hands, because I don't believe anybody is in charge.

My staff has done hours and hours of testimony with employees. I have spent time talking to employees, again, find hard-working individuals, but I have yet to find anyone that says that this project to date will be safe, other than management personnel. They are all very concerned. Employees are concerned. There's a morale problem. They are concerned about the turnover in management. They are concerned about the change in design of your airplane every other week. So I, too, share that concern.

I know today is about some questions, but I will tell you that I am very, very troubled as a Member of this Congress. And I know

other Members of Congress, all they want to do is find—not all but many just want to find a place for the storage of nuclear waste. And out of sight out of mind. But for the folks living in Nevada, it is not out of sight, out of mind; and I am very concerned.

Again, we have document after document after document stating that there is serious problems from management of the contract, with your subcontractors, there has been safety of employees because of different things through the years. I state that I question if anybody is in charge.

Mr. GOLAN. Well, sir, I am in charge; and I take responsibility for this operation. Over the last year, I have spent a lot of time on various aspects of the Project, from the total systems performance assessment [TSPA], through the seismic analysis, through the design analysis of the facilities, all the way down to the layout of the facility at the site.

Secretary Bodman asked—he gave us direction a year ago, very clear direction. He said, make it simpler and make it safer; and over the last year, we focused on that, sir.

We talked about the redesign of the surface facilities. That is the first time we have done the redesign of the surface facilities since the site recommendation was basically made. And we took the approach with the clean canistered approach to make it safer, simpler and more reliable. Rather than handling bare spent fuel at the site, we are going to predominantly handle canister fuel. That is safer for the workers. That is safer for the State. That is simpler and more reliable.

Second, we designated Sandia National Laboratory to coordinate all our scientific work. We are taking advantage of truly one of the gems of the national laboratory system in Sandia, and Sandia earned the right as our lead laboratory because of the good work they did at the waste isolation pilot plant. We want to establish a trust but verify culture.

A couple of weeks back, we designated the Oak Ridge Institute for Science and Education [ORISE], as our independent review of our technical work. When we issued our technical report on the USGS infiltration work, we had that work independently verified, but we had to put together a team of individuals from the University of Arizona, Colorado School of Mines and the Department of Agriculture. Now we have access to nearly 100 universities to do the independent work.

We have established our safety conscious work environment across the entire organization. Before, it was just set up in the Yucca Mountain Project office out in Las Vegas. I have the employee concerns manager and the director of quality assurance reporting to my office. We recently reorganized our staff to focus on line management accountability; and we have project offices, from chief scientist to chief engineer, regulatory authority, all assigned line management responsibilities, reporting to the director to clarify roles and responsibilities.

These are just a few actions that we have taken to focus on making it safer, simpler, and more reliable. As I said, I have looked at aspects of this project from the infiltration down to the transport of the water as it leaves the waste package here. I think our science is sound, our engineering is sound and conservative, and

the path forward that we intend to put this project on will make it safer, simpler and more reliable than it was before.

Mr. PORTER. Do you agree with the Secretary's comments that our Yucca Mountain Project is broken?

Mr. GOLAN. I want to put that into context. The Yucca Mountain was supposed to start accepting waste in 1998. We are 8 years beyond that schedule. Clearly, there were things not going right for us not to meet that deadline. So I can understand the Secretary's frustration, and I can understand that classification of the Project as being broken.

Mr. PORTER. Thank you.

Congressman Gibbons.

Mr. GIBBONS. Thank you, Mr. Chairman.

Mr. Golan, I think you can agree with GAO's study, can you not, that there has been a serious quality control problem over years. Do you agree with that?

Mr. GOLAN. I agree. I have read the reports by the general of the Government Accountability Office over the years; and I agree with the conclusions of their reports, sir.

Mr. GIBBONS. And, as you heard today, in their testimony it does tell of a long history of quality assurance problems. You heard their testimony as they sat here today.

Mr. GOLAN. I did. But the reports also include, sir, the recognition over the years that the quality assurance program has been improving since the 1980's.

Mr. GIBBONS. I will buy that. You say you are making improvements; you are making steps forward.

Let me ask you a question, because you just testified that you want to make it safer. The legislative bill that you are supporting, that you are pushing, that is coming before this Congress eliminates any applicability of our Nation's hazardous waste disposable laws, preempts State and local air quality regulations and usurps a State's traditional authority to administer the waters within its regions. How do you believe that makes it safer?

Mr. GOLAN. Sir, if I may, in regards to the Resource Conservation and Recovery Act provision, the requirements for shallow land disposal of hazardous waste compared to the disposal requirements of the spent nuclear fuel and high-level waste proposed for Yucca Mountain, Yucca Mountain has orders of magnitude, more safeguards and more protection than what you would find in a standard hazardous waste disposal cell.

Mr. GIBBONS. So you're saying that DOE's high-level waste management protection would preempt and actually be on an order of magnitude greater maybe than the State laws that have air and water quality assurances in them?

Mr. GOLAN. Sir, I am talking about the Resource Conservation and Recovery Act provision——

Mr. GIBBONS. I am talking about the bill that is before Congress today that your organization—your Department supports.

Mr. GOLAN. I would like to go through the other two aspects of the bill that you mentioned, sir.

Mr. GIBBONS. I just want your statement. Do you believe that DOE, by supporting this piece of legislation, will make Yucca Mountain safer?

Mr. GOLAN. If I might just add the air provision, sir——

Mr. GIBBONS. It is a yes or no question.

Mr. GOLAN. I would like just to go through the three provisions that you mentioned.

Mr. GIBBONS. You can go through the provisions. Just give me a yes or no answer to it.

Mr. GOLAN. With regard to the air provision, we still are required to get air permits; and the environmental protection agency would be the issues of those air permits.

Mr. GIBBONS. But this legislation is going to take State standards out of it.

Mr. GOLAN. It puts authority to issue air permits with the Environmental Protection Agency, sir.

Mr. GIBBONS. Yes, the government, Federal Government.

Mr. GOLAN. Yes, sir.

And, last, with regard to water, the only thing the Department is asking for is to be treated by like any other entity. Most of the water we are using is for worker safety. It is for dust suppression. It gets very dry and dusty. Most of the water is being used for dust suppression.

Over the course of 5 years we intend to use the equivalent of 4 days worth of water that is used in Las Vegas, so over the course of 5 years we are just asking to be treated as any other person or any other entity asking for a State water permit. We would not be using the water that Las Vegas typically uses the aquifers for, and all we are asking for is to be treated equally under that provision.

Mr. GIBBONS. Well, that doesn't require a law change.

Mr. GOLAN. We find it very difficult, sir, to get water permits issued for simple things such as dust suppression at the site.

Mr. GIBBONS. Is that because you don't have access or you don't have title to the water?

Mr. GOLAN. It is because we have a difficult time getting permits from the State and to get access to the water, sir.

Mr. GIBBONS. There are courts to deal with that if the State doesn't give you a permit.

But let me ask you a question, because you are the expert and you are the person sitting here talking to me about quality assurance. I am a scientist. I come out of the mining industry. Let me ask you a question.

Do you feel that the quality assurance standards for the rock bolts that are in the mine that are applied today meet the quality assurance for a long-term assessment for those rock bolts that are in there? I mean——

Mr. GOLAN. Are we talking about the rocks bolts that are currently installed, sir?

Mr. GIBBONS. Yes.

Mr. GOLAN. For the—when—if we get construction authorization from the NRC, our intent is to change the nature of the support structures inside the Yucca Mountain facility.

Mr. GIBBONS. Why do you need to do that?

Mr. GOLAN. Because we have a provision that has—the waste has to be retrievable for a period of time from 50 to up to 300 years after emplacement. So we are going to change the nature of the ground support.

Mr. GIBBONS. In other words, the rock bolt quality assurance today doesn't meet those standards?

Mr. GOLAN. Again, this is an exploratory tunnel, sir; and when we go into actual mining excavation and preparation for the tunnel for actual waste disposal, there will be a different set of standards and a different set of requirements that will be implemented.

Mr. GIBBONS. But the standards today don't meet what your expectations are, do they?

Mr. GOLAN. We don't intend to dispose of the waste in the exploratory tunnels.

Mr. GIBBONS. You have a wonderful way of articulating a nonanswer to my question.

Mr. GOLAN. I just said we are going to use a different set of standards when we actually——

Mr. GIBBONS. We will move on.

You anticipate removing about 147,000 acres, withdrawing that land——

Mr. GOLAN. Yes, sir.

Mr. GIBBONS [continuing]. In the State of Nevada. Where is that land located today?

Mr. GOLAN. It is located around the Yucca Mountain site; and I can provide a map for the record, sir.

Mr. GIBBONS. Would you please?

Mr. GOLAN. Yes, sir.

Mr. GIBBONS. Is it within the Air Force training area?

Mr. GOLAN. Part of the land is within Nellis Air Force Base, yes, sir.

Mr. GIBBONS. How much of it?

Mr. GOLAN. About a quarter, sir.

Mr. GIBBONS. You anticipate restricting overflight and training from Nellis Air Force Base in that area.

Mr. GOLAN. We anticipate there will be some flight restrictions that may be required during the waste in place and the waste handling operations.

Mr. GIBBONS. So about 30,000 acres is going to be removed from the Air Force training capability, a little more?

Mr. GOLAN. About, a little more, somewhere around that, yes, sir.

Mr. GIBBONS. Somewhere around 37. Nellis is one of the principal pilot training areas that we have in this country, one of the few remaining where those of us who have trained there are able to get the skills and the ability to defend this country; and because of your now urgency of withdrawing 147,000 acres, taking part of that away from the Air Force, we are going to restrict those pilots from being able to get that training, to be able to protect this country, to be able to learn themselves how to better do their jobs. How do you justify national security concerns?

Mr. GOLAN. Because, sir, this project has been approved by the President and both Houses of Congress.

Mr. GIBBONS. There is a lot of things we approved in this Congress, a lot of things that are signed by the President of United States and a lot of things that don't jeopardize the national security of this country.

Your removal of that land, your removal of restricting that area, in my view, takes away a measurable part of the training area that these pilots train on; and, in addition to that, you are going to restrict them because of the railroad access, the highway accesses that you are going to have to build in there. So it is more than just that small fragment. You are going to set aside a large part of true training area that is the PhD for our men and women who fly these airplanes and defend this country because you want a larger and restricted area for this waste management area.

You know, I am not opposed to nuclear energy. I am opposed to the poorly thought-out provision of Yucca Mountain.

Mr. GOLAN. Sir, I am a member of the U.S. Armed Forces; and I appreciate your concern. But when the site recommendation was approved by Congress, it was always the intent to remove the 147,000 acres permanently as part——

Mr. GIBBONS. Whose intent? I have been here for 10 years.

Mr. GULAN. That was—in order for us to receive a construction authorization from the Nuclear Regulatory Commission require permanent land withdrawal.

Mr. GIBBONS. Congress hasn't said we are going to permanently withdraw 147,000——

Mr. GULAN. No, that's in front of Congress to decide, sir.

Mr. GIBBONS. Exactly. It's your decision to bring it before us today.

We'll have another round, Mr. Chairman. I'm sorry to keep dominating the questions here.

Mr. PORTER. Thank you, Congressman.

Question. Margaret, explain the process of the licensing application. Once it's provided to you, then your team investigates all the information of the provider? How does that work?

Ms. FEDERLINE. Yes, sir. Once the license application is submitted to the NRC we have a 90-day acceptance period where we will conduct an acceptance review before we decide if it will be docketed. At that point all the information needs to be complete. Once the application is docketed, we will conduct a detailed rigorous independent review based on our staff's independent knowledge of Yucca Mountain. Once that is complete, we will develop a safety evaluation report and it will go to the licensing board for decision.

Mr. PORTER. How do you do that in 90 days?

Ms. FEDERLINE. We have established a prelicensing—Congress, in its wisdom, established a prelicensing consultation. And when I say consultation, I don't mean—it is a process by which we interact with DOE so that we can identify issues which would be essential to address to ensure a complete license application. We have referred to these as key technical issues, and we've identified over 290 of these issues which we believe would be important to address in order to have adequate information to conduct a licensing review.

Mr. PORTER. So in other words, you're periodically doing audits of your own and working with DOE and giving advice, although they don't have to follow it at this point. Will you give some direction as to some of the things they need to do prior to the application being submitted?

Ms. FEDERLINE. We want to make sure that DOE understands our licensing requirement, so we feel it's very important for them in developing a license application to be clear as to what our licensing requirements require. And so the prelicensing period is for us to interact with DOE and to provide information and guidance similar to what we do with other—licensing other nuclear facilities.

Mr. PORTER. So are we technically in the prelicensing stage at this point?

Ms. FEDERLINE. Yes, we are.

Mr. PORTER. So the last 20 years technically has been prelicensing period?

Ms. FEDERLINE. Yes, it has.

Mr. PORTER. So you have found close to 290 areas of concern; is that what you're saying?

Ms. FEDERLINE. No. We identified a framework of issues which need to be addressed to thoroughly characterize or thoroughly make a safety case which answers the requirements in our regulations.

Mr. PORTER. So it's like questions that you have that they need to answer?

Ms. FEDERLINE. Well, they're actually part of the demonstration of the safety case, pieces of the safety case that would need to be demonstrated to provide adequate information for us to conduct a safety review.

Mr. PORTER. So do they, then, give you preliminary prelicensing information that may be a test prior to the final application being submitted?

Ms. FEDERLINE. No, they don't. We have interactions in which we identify the types of information that would be necessary, and we do provide guidance back to them if we feel that they don't understand our requirements. It's not—it would be—as a regulator, we could not make a predecision before the license application comes in. And so it's strictly intended to establish a framework which explains our regulations and what would be required.

Mr. PORTER. So throughout this process there has been communication between NRC and DOE which is normal in whether it be a nuclear reactor or Department of Energy, sort of following the guidelines that are consistent throughout the industry, correct?

Ms. FEDERLINE. Yes. As part of design certification we do do precertification reviews where we do a similar type of thing, identify issues which need to be addressed as part of the design certification.

Mr. PORTER. Would the USNRC have a problem with Congress being able to see a draft license application from DOE regarding this project?

Ms. FEDERLINE. We have not seen a draft license application. And when one became available to us when it was submitted, if DOE had not made it publically available, obviously we would make it publically available.

Mr. PORTER. Would you have a problem with Congress seeing one today if one were—or I guess let me ask this question a little differently. We have asked numerous times for a copy of a draft license application, and Department of Energy has consistently refused to provide it to the American public. Would you have a prob-

lem with us asking for a copy of that from the Department of Energy?

Ms. FEDERLINE. Well, my sense is that at the time the license application is submitted it would contain the necessary and complete information. You know, we would not get involved between Congress and DOE in terms of what you require from DOE.

Mr. PORTER. So you wouldn't have a problem, then, with us requesting that information, it's between us and DOE?

Ms. FEDERLINE. Yes.

Mr. PORTER. Thank you.

Congressman.

Mr. GIBBONS. Let me followup with some of my questioning that I started before. And Director Federline, if the proposal that's before Congress today, the legislation which, if I may describe radically undercuts the traditional requirements by demonstrating nuclear safety by allowing unlimited changes in the repository with no right to a formal or informal oral hearing and only 18 months for environmental review, do you feel that is sufficient to give the American public confidence in the proposals as they move forward?

Ms. FEDERLINE. I'm sorry, sir, but the Commission has not completed its review of the legislation; we have not completed development of comments.

Mr. GIBBONS. OK. Without having a formal opinion of the—about the condition, what's your personal opinion of language that completely undercuts and removes the, as I said, removes the right to a formal or informal oral hearing and restricts it to 18 months for environmental review?

Ms. FEDERLINE. With all due respect, sir, it would be inappropriate for me as a regulator to comment on standards that could be the subject of a licensing proceeding.

Mr. GIBBONS. Well, let me go back to Mr. Gulan. What's your opinion of having no right to a formal or informal oral hearing on changes to Yucca Mountain?

Mr. GULAN. Well, first, sir, after we submit the license application the NRC, in accordance with the Nuclear Waste Policy Act, is 3 years, with the possible exception they can request an additional 4th year before they make a decision on whether to grant the Department construction authorization.

What we are asking for in the legislative package is, in the second phase of that—in other words, the licensing amendment to receive and possess—that the NRC basically have 12 months, with the possible extension of 6 months, to review that process, which I don't think is inconsistent with—because they'll have had 4 years to review the license before—inconsistent with potentially how they would review an action in a nuclear reactor licensing arena.

Mr. GIBBONS. But in demonstrating nuclear safety there's a lot of people outside of DOE would have concerns, and you're now restricting or limiting to any formal or informal oral statements or position——

Mr. GULAN. I don't believe the proposed legislation restricts the interactions as you're talking through here, sir.

Mr. GIBBONS. Well, the way I read it for those unlimited changes that DOE wants to make to Yucca Mountain, and that means expanding from 70,000 to whatever number you plan to propose in

the future, that you are going to restrict the informal and formal oral hearings.

Mr. GULAN. Sir, that provision in the legislative proposal refers to the second step in the licensing process. When we submit our license application to the NRC, they'll have a period up to 4 years to review and to grant the Department the license——

Mr. GIBBONS. But that's for the original 70,000 tons?

Mr. GULAN. Yes, sir.

Mr. GIBBONS. And now I'm talking about the unlimited changes that you want to make. Why would it be good, why should we permit you to restrict informal or formal hearings and restrict it to 18 months, for example, if you wanted to double the size?

Mr. GULAN. Sir, that provision, I'd just like to go back to, that's after receiving construction authorization, the 18-month provision would be a license to receive and possess. So the Nuclear Regulatory Commission would still have up to 4 years to review the license application and go through the hearing process, the formal hearing process in that 4-year period.

Mr. GIBBONS. Including the unlimited extensions and expansions that you want to put on Yucca Mountain after you get the original 70,000-ton determination?

Mr. GULAN. Sir, again, the second part of the license application is the license amendment to receive and possess. And again, I don't have a copy of the Nuclear Waste Policy Act in front of me here, and I'd be glad to take that question for the record, but the Nuclear Waste Policy Act is clear on the amount of time the Regulatory Commission has to review and issue a judgment on construction authorization. What the Nuclear Waste Policy Act didn't have when it was written or amended was a timeframe in which the NRC would then grant the second part of that license for receive and possess.

Mr. GIBBONS. One of the things that troubles me about the bill that your organization is proposing to Congress is the authority to limit the exercise of jurisdictional power by States, tribal governments, etc., over the transportation requirements through their communities, through their reservations, along their highways and byways. Why do you want to take away local government's authority to review transportation routes?

Mr. GULAN. Sir, I'd like to offer a briefing to your office and to you on the full scope of the legislative package. I didn't come prepared to necessarily talk in detail on that today; however, I do want to point to the transportation aspect.

The Department has been transporting nuclear materials and nuclear waste over the last 50 years and it has a very good safety record. Our intention, with the transportation provision in our legislative proposal, was to extend all the work, all the interactions that we currently do when we ship special nuclear materials, when we ship low level waste and when we ship transuranic waste. And it was meant to extend those types of provisions to how we transport waste to Yucca Mountain, sir.

Mr. GIBBONS. If those provisions, as you say, have resulted in such a historic safety record, why do you want to exclude local government from having a say in either the routes, which roads or

which train lines or over what bridges or along what schools or along which communities that this material travels?

Mr. GULAN. Sir, again, I'd offer again that we would come and provide you a briefing on the legislative package; but again, the intent of that provision was basically to extend the type of activities and the type of provisions that we have with the other nuclear materials that we ship and extend that over into the shipment of spent nuclear fuel——

Mr. GIBBONS. Well, I understand the idea and the intent, but I don't understand the idea to exclude and cut out of the picture those people which are charged with overseeing the safety in some of these communities, including their first responders, which would have to respond if there was an incident or an accident, from you giving them or bringing them into the picture. That's what I don't understand.

Mr. GULAN. Again, I would offer that our office could come and provide you a briefing on this and walk through that specific provision.

Mr. GIBBONS. Mr. Chairman.

Mr. PORTER. Thank you.

Mr. Friedman, thank you for your hard work for probably 8 or 9 months—I didn't add up the time, but I appreciate it very much.

Mr. FRIEDMAN. Thank you.

Mr. PORTER. In the report that we received today you point out some key areas, and I appreciate you addressing them in your opening comments. But more specifically, you talked about the compromise of scientific notebook requirements. Now I'm not a scientist, but it's my understanding from your information that a scientific notebook is a standard protocol in the science community—I'm quoting from your statement—that document research approaches and outcomes, and in doing so they aid an individual other than the original author in reproducing and tracing the effort. And according to your report as of today, an area of concern is there was the lack of a scientific notebook—or at least that they weren't following the requirements; and you—if I read it properly, and correct me if I'm wrong, it's like this—it appears that this notebook requirement was stopped once they found problems. Is that what you're saying in this report?

Mr. FRIEDMAN. Mr. Chairman, what we—on the particular—first of all, you have, of course, correctly characterized the importance of lab notebooks. They're essential in the science field. It allows recording of information that's generated during current analyses and allows others to buildupon that. So you have characterized it correctly.

What we found in the incident in question is the lab notebook had not been maintained from the outset, which violated good science principles, and this is a 6-year old problem. And it was compounded from our perspective by the fact that once it was determined that the lab notebook had never been maintained from the outset, the contractor and the USGS and the Department decided to compromise the requirement using an alternate document, which in our view was an unacceptable remedy to the problem.

Mr. PORTER. So how do you define the difference between intentional negligence and something that's criminal; how do you define the difference?

Mr. FRIEDMAN. Well, there are questions of intent, Mr. Chairman, there are questions of materiality that are key, and those are the essence of the items that I would identify to you.

Mr. PORTER. It appears to me there was intentional behavior to not keep track of this science so no one would be able to check it in the future, and it appears to me that's intentional, is that what you're saying, that it's intentional?

Mr. FRIEDMAN. I could not reach the conclusion that there was an intent to not participate in the lab notebook requirement for some nefarious reason as to the future ability to track the work. I can't reach that conclusion, Mr. Chairman.

Mr. PORTER. Also, you mention the 6-year delay in servicing is and dealing with the controversial e-mails, those are inconsistent with sound quality assurance protocols. You go on to say we could not find a satisfactory explanation as to why the e-mails had not been recognized as problematic years earlier. This would allow the Department to address the concerns raised by the contents of the e-mails in a timely manner.

Despite this, the comments—and I'm paraphrasing and moving ahead on your comments because you know them better than I do, but despite this the comments and e-mails appears to have gone unchallenged. Additionally, internal quality assurance reviews over the years failed to identify the questionable e-mails.

Again, can you explain to me a little bit more about what you're saying here?

Mr. FRIEDMAN. Yes. Six years obviously has passed, Mr. Chairman, since the original offending e-mails were written. And in that 6-year period you referred earlier, or Mr. Gibbons did, to the turnover in personnel—maybe it was you, Mr. Chairman—people have minds, memories have faded, people have moved on, documentation is no longer available. And the point that we are trying to make is that if these offending e-mails had been identified contemporaneously or very close to the time that they were in fact written, minds would have been fresh, memories could have been fresh, the Department could have addressed the issues very promptly and saved a great deal of turmoil that has occurred as a result. So our point is that there was reason to believe—we had testimony to suggest that quality assurance people had in fact seen the e-mails, and yet for some reason the light bulb did not go on or they did not bring those to anybody's attention until a 6-year period had elapsed.

Mr. PORTER. The genesis of the project is that Yucca Mountain was chosen because the mountain may provide some natural barrier to prevent filtration—or infiltration of moisture into the storage which could then contaminate ground water. And the genesis of the science is that the mountain is safe, and that there is minimal, if any, infiltration of moisture. Again, in your report you mention that control files relating to the simulation of net infiltration from modern and potential future climates, AMR was not maintained in accordance with Data Management System's requirements, and that during the evaluation of AMR for the simulation

of net infiltration from modern and potential future climates the team wasn't able to reproduce the model due to the absence of certain control files. Can you explain your findings under that No. 3?

Mr. FRIEDMAN. I can, Mr. Chairman. In recent years there was an attempt made to reconstruct that model, to evaluate it further and to see whether it withstood the test of time. When they tried to recreate it, they found that there were certain control documents which they could not find in the master control file. And of course in a $9 billion project overall you would anticipate that would be absolutely essential. Ultimately the files were located in the residence of one of the participants—or at least part of the files were found there.

Mr. PORTER. Thank you.

Mr. GIBBONS. Mr. Chairman, I'm a bit taken aback by some of the answers we've gotten today because I expected a little more of being able to bridge between the problems of the quality assurance issues that have been described by either DOE or the GAO in their development of the program and the policy here at Yucca Mountain. But I'm more troubled by the fact that we are here in Congress and we are trying to bridge and overcome these quality assurance issues, and you know, it seems to me right now that we've kind of got the cart before the horse. You know, we've seen a lot of problems with the scientific analysis coming up, maybe they weren't intentionally changed or fraudulently put out there, and that did not give rise to a criminal action, but it does give rise to some serious concerns, concerns as a scientist myself, as a geologist, as a mining geologist, it gives rise of concern to me that perhaps those that were in charge of doing the science work and those who actually performed that science didn't have in their bag of work ethics the right motivation to be doing what they should have been doing on this project and simply took shortcuts. If that's the case, we've obviously got some serious problems here, or if they just simply said if they want more quality assurance I'll go write more quality assurance. Nonetheless, there's some real serious quality assurance problems here that haven't been answered adequately in my mind.

There is also this question about the new piece of legislation which DOE is supporting before this Congress in an effort to overcome some problems that they can't meet today. And I think unfortunately I'm still of the opinion that this project that's fatally flawed, that no matter how much you move the goalpost to make it work, no matter how many times you change the standard to make something fit, no matter how many times you get a bigger hammer to fit a square peg in a round hole, it's still going to be a square peg in a round hole. And I think the bill that's before us is an unconstitutional usurpation of the States' sovereign prerogatives, whether it's in Nevada, but it sets a horrible precedence across this country because you're forcing communities, you're forcing States to give up traditional jurisdiction under the Constitution of areas that they normally had authority to regulate. It circumvents the scientific flaws that these people here have already said have existed and have a history of existing. It deprives the States, as I said, and localities nationwide for the role in waste

transport. It exonerates the Department of Energy from traditional regulations for nuclear projects.

I think what we are doing here is getting the bigger hammer out and we are trying to make everything fit. As a geologist, I can't accept it. First of all, to build Yucca Mountain in a safe place or build a project at Yucca Mountain that is supposed to be geologically stable should at first raise the flags automatically when it was a mountain. You know, it didn't get there, it didn't get to be a mountain by some placid tectonic activity. It's got serious geologic problems, and we don't have the vision to look down the road and say when those are going to reoccur. We are hoping that the blindness—with blinders on that we will somehow get past this, wash our hands of it and say out of sight, out of mind, we are done, and oh, by the way, let's make it bigger so we can take in everything.

What's happening here today is that, because of the NIMBY syndrome—and I have to admit, it's in Nevada, we don't want it in our back yard, no other State wants it in their back yard, but we've failed to meet, I think, this country's expectations of how to deal with nuclear energy, and it will result in the end of nuclear energy in this country if the Department of Energy is allowed to complete Yucca Mountain.

So my view, Mr. Chairman, is that the bill is fatally flawed, the project is fatally flawed, the concepts of how to deal with nuclear waste are fatally flawed. It has for 30 years had blinders on to just go forward with this, to make sure the deep geologic burial, according to the Nuclear Energy Institute, accommodates all of those power plants that want to close down or are closed down, but it doesn't meet the safety requirements that this country and this public expect. And I'm sad, saddened by the day that we sit here in here and talk about changing the standards, eliminating the oversight, giving unlimited jurisdiction to a department who's got sole responsibility for this type of occurrence. And it's worse than the chicken watching the fox—or the hen—excuse me, the fox watching the chicken house—I'll get that yet.

And so, Mr. Chairman, I want to thank you again for your leadership. I have no more questions about this. I haven't heard anything that allows me to get a better feeling for what's going on, but I do appreciate the fact that you've invited me here today, and I appreciate the fact that you have allowed me to participate in this hearing.

With that, I want to thank all of our witnesses. I know you have tough jobs ahead of you, just as we have tough decisions to make, and I appreciate the fact that you have been here before us and responded to our questions.

Thank you very much, Mr. Chairman.

Mr. PORTER. Thank you, Congressman. I'd like to ask just a couple more questions.

And Mr. Wells, again, thank you for being here. I did not want you to feel like we left you out of this debate——

Mr. WELLS. No problem.

Mr. PORTER. But I know that you and your staff spent a lot of time and we greatly appreciate it, and on behalf of the American people we appreciate it.

GAO has investigated quality assurance in Yucca Mountain for 20 something years. And the title of the 1988 report was Repository Work Should Not Proceed Until Quality Assurance Is Adequate. Now this is 1988. In light of the GAO's extensive work, why do you think DOE is still experiencing these same problems, since 1988, the same problems?

Mr. WELLS. You know, I think it goes back to—it was encouraging, everyone in the room probably picked up on Mr. Gulan's statement that their goal was to have early detection of these problems; and we have—since 1988 people have gone in and looked and found problems that seemed to—quality assurance problems that seemed to fester under the surface for a lot of years and under the radar screen, and all of a sudden they accumulate and they explode, and then the Department of Energy jumps to some type of fix, and it's rework and it's expensive. And you have to ask yourself why does that happen. And you know, consistently talking to the audit teams that have looked at the Yucca Mountain project and the quality assurance program, consistently we hear things with the culture, the importance of QA not being as high as the importance of meeting a schedule, or the ability to think that if it's wrong somebody else will find it and fix it later. And I think Mr. Gulan's commitment to change the culture is on the right track, to elevate the importance of quality assurance to keep these problems from festering so long. It shouldn't take 6 year e-mails to discover that they occurred; it shouldn't take the NRC to observe an audit and point out that the equipment they're using hasn't been calibrated in years. It's that culture that's unacceptable and it has to be changed.

Mr. PORTER. Thank you, Mr. Wells. And I find it truly amazing that we are talking about high level nuclear waste, and again, whether you're for or against Yucca Mountain, the fact that these questions of safety keeps coming up, it's nuclear waste, it's not about a bicycle plant someplace in Des Moines, we are talking about high level nuclear waste, a science that's untested, and continually questions of safety. And again, I appreciate your comments, Mr. Wells.

Ms. Federline, another question for you, please. Is this turnover of management, 9 of 17 key positions and 3 directors in a short period of time, is that a concern for the NRC?

Ms. FEDERLINE. Well, I think overall the NRC feels that the perspective of QA at DOE is very important; in other words, finding problems is not the problem; a good QA program will normally find problems. The issue with us is those problems need to be quickly fixed and they need to be prevented from recurrence. And those are two aspects that we want to emphasize to DOE. And they need to put in place an organizational structure which they feel will be effective in making those corrections and seeing that the problems don't reoccur.

Mr. PORTER. I see Congresswoman Eleanor Holmes has left. I'd like to just ask a couple of additional questions.

Mr. Gulan, regarding the turnover of staff, 9 of 17, were any of those individuals asked to leave?

Mr. GULAN. No. We did not renew a limited term SES appointment, but the people that you talk about left on their own volition.

Mr. PORTER. So there was no encouragement on the part of DOE for any of these individuals, it was just purely attrition and retirement?

Mr. GULAN. Basically, sir.

Mr. PORTER. So then who has been held accountable for information that's been provided today? Has anyone been held accountable?

Mr. GULAN. Yes, they have. And there are people who are no longer working on this project.

Mr. PORTER. You just moved them to another project, somewhere in the nuclear industry?

Mr. GULAN. No. There's been folks in the contract or organization who are no longer part of this project, sir.

Mr. PORTER. And they're still working for the Federal Government?

Mr. GULAN. I don't know, sir. They don't work on this project.

Mr. PORTER. OK. Is there a way that we can find out?

Mr. GULAN. Sure. We'll take that question for the record.

Mr. PORTER. I appreciate that. Thank you.

I guess in closing, Mr. Gulan, I'll ask you a question. Based on the findings of GAO and the Inspector General's office, in discussions today and in prior discussions, how can you say that we can assure the American public that Yucca Mountain is and will be safe?

Mr. GULAN. Sir, that's our—the burden is on us to demonstrate to you and to the American public that we can operate Yucca Mountain safely. There is an established process through the Nuclear Waste Policy Act, through the licensing process that will be a very public process, the regulator being the Nuclear Regulatory Commission. So there is a formal process. But before we get to that formal process there is a process within the Department. Before we submit a license application it has to pass our standards. And one of the things that we didn't talk about today is the fact that we have not talked about a schedule of when the license application will be submitted.

I mentioned earlier in my testimony, Secretary Bodman gave me clear instructions, make it simpler, make it safer, and improve the quality and culture of this organization. Those were his marching orders to me, sir, and we are following that.

After we review everything from the model down through the design basis for the facilities, the safety analysis, the seismic analysis and develop our license application, it's our intent to conduct our internal reviews, our internal independent reviews to ensure that our standards have been met, to ensure that our quality standards have been met. And only after our standards have been met will we be in a position to submit our licensing application to the Nuclear Regulatory Commission for them to adjudicate the licensing process here. So there are standards that have to be met in this organization, and the bar is set high, before we send our application request in to the Nuclear Regulatory Commission.

Mr. PORTER. So once the application is submitted, is it the NRC's responsibility to determine if it's safe or is it DOE's?

Mr. GULAN. It's the Nuclear Regulatory Commission's responsibility to adjudicate that process, it's not ours.

Mr. PORTER. So you don't accept responsibility if it's safe——

Mr. GULAN. No. I accept responsibility. It is my responsibility that we submit a high quality license application that our standards have been met. It's the NRC's job then to evaluate on whether or not they issue us a license to construct, and then subsequently a license to receive and possess; but it's our responsibility to meet our standards first.

Mr. PORTER. You know, I can remember growing up many, many years ago—and I'm not sure if this cartoon is still around, it was Family Circle. Steve, is it still in the paper, the Family Circle?

Mr. CASTOR. Yes, it's in the Washington Post, sir.

Mr. PORTER. Thank you. I haven't had a chance to look at the cartoon pages as much as I'd like to, but there was this cartoon, the Family Circle, and these kids were around saying not me, not me, not me, not my fault, not my fault, not my fault. And my biggest concern—again, whether you're for or against Yucca Mountain—is that someday we are going to wake up and 2000 DOE employees are going to say it wasn't my job, NRC may wake up and say it wasn't our job, even though there was a major catastrophe or major accident, and everyone is going to go, not me. And I sense that time and time again, as I hear the facts that are presented, that so far your decisions have not been based upon sound science at the Department of Energy. The White House, multiple administrations, have based decisions on what they believe is sound science, this Congress is basing decisions that are based upon what they feel are sound science, and I have yet to hear the Department of Energy is using sound science. It appears to me that there is a rush—20 years, but there's a rush to appease the nuclear industry, there's a rush to appease certain Members of Congress and certain administrations, and there's a rush to get the job done. And Mr. Gulan, I would just hope that someday Department of Energy officials don't wake up and say not me, because I'm very, very concerned.

Mr. GULAN. You won't hear those words from my mouth, sir.

Mr. PORTER. Again, I want to thank you all for being here. We will continue our investigation. We still have numerous documents to review.

I appreciate Mr. Wells, Mr. Friedman, Ms. Federline and Mr. Gulan for being here today, and look forward to continued testimony in the future. We will be forwarding additional questions that we'd like to have answers for the record. So with that, we'll adjourn the meeting. Thank you all very much.

[Whereupon, at 3:38 p.m., the subcommittee was adjourned.]

[The prepared statement of Hon. Danny K. Davis follows:]

STATEMENT OF CONGRESSMAN DANNY K. DAVIS AT THE COMMITTEE ON GOVERNMENT REFORM HEARING ON
Yucca Mountain: Broken Management, Broken Quality Assurance, Broken Project

Tuesday, April 25, 2006

Mr. Chairman, while it is a very important issue, the effectiveness of the Department of Energy's quality assurance program is not within the jurisdiction of this Subcommittee. Furthermore, the Subcommittee's year long investigation into Yucca Mountain has yielded no tangible evidence that federal employees falsified documents.

Last month, the Government Accountability Office issued a report, noting that DOE's Yucca Mountain project has been wrestling with quality assurance issues for some time. I trust that today's witnesses will assist Chairman Porter in learning more about DOE's management and quality assurance problems and what DOE intends to do to correct them.

Thank you Mr. Chairman.

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